Addiction and Lifestyles in Contemporary Europe: Reframing Addictions Project (ALICE RAP)

Social costs: a report specifying the costs of addiction to societies

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Part I

Social costs: a report specifying the costs of addiction to societies

Abuse of alcohol, illegal drugs and tobacco

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1. Introduction

Alcohol abuse, illegal drugs, tobacco as well as gambling/gaming imposes a high economic and social cost to society. As decision makers are interested in cost-effective allocation of limited funds for prevention, treatment, and attenuation of negative effects of the above, understanding the nature, sources and level of the costs is a very important matter.

The first attempts of estimating these costs were already undertaken in previous centuries – e.g. in Poland two books describing negative, social and economic effects of alcohol abuse appeared around 1850[1], but most of contemporary researches concerning cost estimations in Europe started in the XX century, and were intensified from 1950 onwards. A good example of these researches is a description of estimations of the costs of alcohol use and abuse for the Scandinavian countries, found in [Osterberg 1983, pp. 83-96]. Since the second half of XX century, numerous estimation efforts were undertaken in different European countries to estimate social and economic costs of alcohol abuse, illegal drugs, tobacco and gambling/gaming, which were done, as a rule, separately for each of the considered psychoactive substances or gambling/gaming. The costs studies in Europe dealing with more than one of the substances and gambling/gaming are rare; as mentioned in ALICE-RAP work package description ….*only one study tried to estimate the costs of alcohol, illegal drugs and tobacco addictions for Europe based on EU countries (Andlin-Sobocki & Rehm, 2005)*.

The purpose of this study is to determine the social costs attributable to the abuse of alcohol, illegal drugs and tobacco as well as of gambling/gaming for three EU countries with different policies with respect to illegal drugs: i.e.: Poland, Portugal and Catalonia (Spain). As a framework for the study, the standard methodology for determining social costs of alcohol abuse, use of tobacco and illicit drugs, based on the WHO guidelines [Single et al. 2001a] is applied; the estimates will include health, crime and lost productivity costs. Additional methods are used, including the ones proposed by the authors.

1.1. Approaches to Estimate Social and Economic Costs of Alcohol, Illegal Drugs and Tobacco Abuse

Alcohol abuse, use of tobacco and illegal drugs causes a wide variety of adverse health and social consequences, which results are social and economic costs. Estimating the magnitude of these costs is for many reasons, very difficult. First of all, a wide range of existing studies on estimation of costs of alcohol abuse, use of tobacco and illicit drugs differ according to theoretical approach, methodology and items of the costs included. Generally speaking, two main approaches can be mentioned:

- Cost-benefit analysis,
- Cost of illness study (COI).

Cost and benefits analysis was introduced by Dahlgren in 1924[2], who proposed to produce a "profit and loss" account for alcohol use in society. As "profit" he considered …*the importance of manufacture of alcohol to agriculture; the alcohol industry; and alcohol sales* [Dahlgren 1924 quoted after Osterberg 1983, p.83]. The list describing losses contained: …*reduced work performance; a greater likelihood of accident; more sickness; shortened life expectancy; increasing crime; lower living*

[1]Dohmer B. (1859). *Pozytek i szkodliwosc gorzalki. Nowa i trafna nauka dla ludu, jak najpewniejszym sposobem uchronic się od wiecznego zepsucia* (Benefit and harm of booze. New and suitable knowledge for people, how most likely to avoid eternal depravation). Naklad Maurycy Orgelbrand, Vilnius, at present Lithuania; Hechell Fr. (1844). *O pijanstwie o jego szkodliwych skutkach i o srodkach zapobiezenia onemu* (About drunkenness about its negative effects and about means of its prevention), W drukarni Stanislawa Gieszkowskiego, Cracow, Poland.

[2][Dahlgren 1924], see [Osterberg 1983], p.83.

standards; a weakening of future generations; the destruction of property; a weakened capital formation [ibid.]. This approach is much less often applied than the COI one.

Cost of illness methodology was developed by Rice [Rice 1966], and its basic purpose has been ….*to asses the aggregate burden of the health effects of illness by estimating costs alone* [Godfrey, Powell…p.33]. Cost-of-illness studies measure the economic burden of diseases and estimate, in monetary terms, what amount of money could potentially be saved or gained if the diseases could be eradicated. The social cost of the illness is thereby obtained by comparing the actual situation and the counterfactual one.

Most of cost-of-illness studies include both direct and indirect costs. Direct costs measure the opportunity cost of resources used for treating a particular illness, whereas indirect costs measure the value of resources lost due to such illness. Direct medical costs usually include costs of: hospital, outpatient, emergency department, nursing home, rehabilitation, different health specialist's care, diagnostic tests, prescription drugs, and medical supplies. The indirect ones are mainly productivity losses, due to premature death, morbidity and absenteeism.

The results of these studies could be applied in public health policy because they highlight the influence of an illness on society and give information on the relative importance of specific diseases and injuries, so estimated magnitude of the costs can help policy makers to decide which diseases need to be addressed first by health care and prevention policy. On the basis of COI methodology the social costs of alcohol, tobacco and drug abuse are quantified and estimated in the form of common monetary units; some of the effects are impossible to be presented in that form, so some effects remain not fully accounted for in the estimation.

Some studies include the above mentioned intangible costs of pain and suffering (usually in the form of quality of life measures), but, as mentioned above, this category of costs is often omitted because of the difficulty in quantifying pain and suffering in monetary terms.

The COI technique is used here to estimate share of costs of various diseases linked to alcohol abuse, and tobacco or illegal drugs use; for that purpose usually an attributable risk factor is applied, which allows to cover direct as well as indirect influence of the use of thesepsychoactive substances.

There are some basic questions to be answered in every attempt of estimation of the cost of use of psychoactive substances.

1.2. Private and Social costs

The first question is, from whose point of view is estimation performed? In the literature several different approaches to such classification can be found, yet the main division according to WHO guidelines on which the presented research is based [Single et al. 2001a], are: private costs versus social costs (p.15-16). "Private costs" are those …..*which accrue only to the people engaged in the activity in question (for example, the consumption of alcohol or tobacco)*; the term "social cost" describes ….*the costs which are imposed upon the rest of society* by the persons using the psychoactive substances.

It should be stressed that this terminology differs from the one used in most of the literature on the subject – for instance the Pompidou Group concept of "social cost" refers to …*the overall cost to society, i.e. to both private and public agents, and caused by use and trafficking of psychotropic substances* [*Calculating* …p.11]. According to this opinion the "social costs" are sum of "private cost", "public expenditure", and "external costs". "Private costs" are understood as [ibid.]: *Expenditure of users of psychotropic substances on these substances, and other expenses not reimbursed (lawyers'*

fees, certain medical expenses, etc.). In turn "Public expenditure" contain: *total expenditure incurred by central and local government in combating use (and trafficking) of psychotropic substances. This expenditure can be grouped under three main headings: enforcement, treatment and prevention;* whereas "external costs" include (i.a.): *lost productivity, absenteeism, premature death, reimbursement of medical expenses, and treatment of illnesses sometimes linked to substance abuse, etc*.

So "social costs" in understanding of [Single et al. 2001a] are usually called "external costs" or "externalities" in the other literature.

1.3. Different Kinds of Costs

The next problem is to identify the various negative consequences attributable to use of the considered psychoactive substances, and assigning economic values (in monetary items) to them, which demands distinguishing between tangible and non-tangible (suffering, pain etc.) costs not included, as a rule, in the cost researches; there are also distinguished: values of goods and services, value of lost productivity, and generally some of the non quantifiable costs, for instance for the case of drug use [*Calculating* …p.15], as follows:

Table 1.1 Drug-related effects accounted for in social cost studies

Specification	Values of goods and services	Value of lost productivity	Generally non quantifiable costs
Health	Specialty drug/alcohol treatment and prevention. Support for specialty treatment, including training, research, and insurance administration. Health consequences of alcohol and drug abuse, including hospital care, physician services, nursing home care, and pharmaceuticals, or the continuum of services for certain disease categories as HIV/AIDS, drug-exposed infants and boarder babies, hepatitis and tuberculosis.	Reduced or lost earnings while impaired or unemployed. Lost earnings due to premature death or to institutionalisation	Pain and suffering. Bereavement. Psychosocial development impairment among alcohol and drug abusers and their children. Family health. Out-of-pocket costs other than deductibles and co pays such as transportation, child care, and other factors associated with health care use.
Other (non-health)	Criminal justice system expenses, including protection, adjudication, and corrections. Victim expenses. Crime-related property destruction. Administration of income transfer programs. Motor vehicle crashes. Fire destruction.	Lost earnings while crime victims cannot work. Lost earnings while criminals are incarcerated. Lost legitimate earnings, including lost tax dollars due to "careers of crime".	Reduced product quality. Secondary market effects. Productivity consequences for family members. Productivity consequences for coworkers and firms that are not reflected in the earnings of alcohol and drug abusers.

Source: NIDA 1998, quoted after [Calculating …p.15].

According to [Single et al. 2001b, p.3] there are four major types of tangible costs that have been analysed in cost estimations:

1. Health care costs:
   - treatment for substance abuse and dependence;
   - treatment for chronic and acute conditions attributable to substance abuse;
   - treatment for co-morbidity and trauma;
2. Productivity costs:
   - premature mortality;

- morbidity – lost employment or on-the-job productivity;
- non-workforce mortality and morbidity;

3. Law enforcement and the criminal justice costs:
   - criminal justice expenditures (law enforcement, courts and corrections);
   - crime victim's time losses;
   - incarceration (incarcerated individuals' productivity losses);
   - crime career costs;
4. Other costs such as property destruction from alcohol- or drug-attributable accidents or crime:
   - research, education and law enforcement costs;
   - prevention and other public health efforts;
   - property losses or losses due to crime and accidents;
   - welfare costs.

Health negative effects and health care costs concerned with the use of the considered psychoactive substances can be 100% attributable to the substance use (meaning no substance use, no negative health effect and no cost, for instance: no alcohol, no acute alcohol poisoning) or only in a certain degree attributable to the substance use.

The following table lists most of the negative health consequences attributable to alcohol abuse, use of tobacco and illegal drugs [Single et al. 2001a, p.54]:

Table 1.2. Social costs associated with substance abuse with examples

Costs	Costs associated with the use of:		
Consequences to health and welfare system	Alcohol	Tobacco	Other drugs
Treatment for substance abuse: hospital costs, physician fees, costs of medication + other health costs multiplied by appropriate attributable fraction	100% attributable to alcohol use: alcoholic psychosis, alcohol dependence, alcohol abuse, alcoholic polyneuropathy, alcoholic cardiomiopathy, alcoholic gastritis, alcoholic liver cirrhosis, ethanol toxicity, methanol toxicity, other alcohol poisonings **partly attributable to alcohol:** lip cancer, oral cancer, pharyngeal cancer, oesophageal cancer, colon cancer, rectal cancer, hepatic cancer, pancreatic cancer, laryngeal cancer, breast cancer, pellagra, hypertension, ischaemic heart disease, cardiac dyrshythmias, heart failure, stroke, oesophageal varices, gastro-oesophageal haem., cholelithiasis, acute pancreatitis, low birthweight, road injuries, fall injuries, fire injuries, drowning, aspiration, machine injuries, suicide, assault, child abuse	100% attributed to tobacco: tobacco abuse **partly attributed to tobacco:** respiratory TB, lip cancer, oral cancer, pharyngeal cancern, oesophageal cancer, gastric cancer, pancreatic cancer, larngeal cancer, lung cancer, bladder cancer, renal parenchymal cancer, renal pelvic cancer, respiratory carcinoma-in-situ, Parkinson's disease, ischaemic heart disease, pulmonarycirculatory disease, cardiac dysrhythmias, heart failure, stroke, atherosclerosis, peripheral vascular disease, phenumonia and influenza, chronic bronchitis, peptic ulcer, ulcerative colitis, low birthweight, sudden infant death syndrome, fire injuries	100% attributed to drugs: opiate dependence, opiate non-dependent abuse, opiate accidental poisoning, opiate cause suicide, other opiate poisonings, barbiturate dependence, barbiturate non-dependent abuse, barbiturate accidental poisoning, barbiturate suicide, other barbiturate poisonings, other drug dependence, other drug non-dependent abuse, other drug accidental poisoning, other drug suicide, other drug poisonings, drug psychosis, maternal drug dependence, newborn drug toxicity **partly attributed to drugs:** viral hepatitis, infective endocarditis, opiate caused low birthweight

Source: [Single et al. 2001a], p.54.

It should be stressed that in practise the kind of the cost items included in the estimation depends strongly on the availability of data, and in many cases it is not possible to include all desirable items of the costs (see below). The access to data often depends on the type of consequence and its

relation to substance abuse. Most important is to obtain data that will provide a plausible basis for attributing some proportion of the costs associated with the different negative consequences to substance abuse (the attributable fraction).

In most COI studies estimating the costs of substance abuse, the largest cost involves lost productivity due to premature death, disability and absenteeism. Estimation of productivity costs requires first of all estimates of premature mortality and morbidity that can be attributed to substance abuse.

Underneath are 3 examples of lists of kinds of costs included in the cost study of alcohol (for Scotland), drugs (for Spain), and of alcohol, drugs and smoking (for Canada).

I. Costs of alcohol misuse in Scotland [see: Alcohol Misuse… 2001]:

Health service resource use associated with:
GP consultations
GP-prescribed drugs percent of drugs prescribed by GPs for substance dependency
Consultations with practice nurses, district nurses and health visitors – No information currently recorded. Unable to quantify.
Laboratory tests
Hospitalization days
Accident and emergency attendances
Outpatient visits
Day hospital attendances
Community psychiatric team visits percent of total community psychiatric team expenditure
Ambulance journeys
Health promotion/prevention by Health Education Board for Scotland (HEBS), Scottish Executive and health boards, HEBS, Drinkwise, Alcohol Development Officers
Health board expenditure to alcohol related voluntary organizations

Social work services and associated organizations resource use:
Children and Families. Percent of total expenditure on children's and families social work
Community Care. Percent of social work expenditure on the substance misuse client group
Criminal Justice social work. Percent of total expenditure on criminal justice social work
Children's Hearing System. Percent of expenditure
Voluntary and private sector alcohol services
Expenditure directly on alcohol misuse – unavailable

Criminal justice system and emergency services resource use associated with:
Custodial sentences number of days in prison
Court time and legal costs for prosecutions number of offences proceeded
Property damage – Unable to quantify
Police time percent of all expenditure
Fire services time on alcohol-related road traffic accidents – Unable to quantify
Fire service time on alcohol-related fires – Unable to quantify
Drink-driving campaign amount spent on the drink driving campaign and to be spent on research

Wider economic costs due to:
Inability to work (unemployment) number of unemployed individuals
Working days lost (absenteeism) number of days absent from work
Working days lost by those caring for those with alcohol problems – Unable to quantify
Premature mortality in the working population (discounted) number of deaths
Reduced productivity in the workplace – Unable to quantify

Human costs
Premature mortality in the non-working population (discounted)
Morbidity – Unable to quantify the cost of reduced quality of life

II. The social cost of illegal drug consumption in Spain [García-Altés et al. 2002]:

Health care costs
Acute care
Emergency care
Primary care
Specific health-care resources
Long-term care
Pharmaceutical expenditure
Transport

Prevention
Continuing education and research
Social programmes
Administration
Total non-health care costs
Asociación Proyecto Hombre
Fundación de Ayuda contra la Drogoadicción
Total other organizations

Justice
Penal system
Total crime-related costs
Total direct costs
Mortality
Institutionalization

III. The costs of alcohol, illegal drugs and tobacco in Canada [Rehm et al. 2007]:

1 Direct health care costs: total
1.1 Morbidity
- Acute care hospitalization
- Psychiatric Hospitalization

1.2 Inpatients specialized treatment
1.3 Outpatient specialized treatment
1.4 Ambulatory care: physician fees
1.5 Family physician visit
1.6 Prescription drugs

2 Direct law enforcement costs
2.1 .Police
2.2 Courts
2.3 Corrections (including probation)

3 Direct costs for prevention and research
3.1 Research
3.2 Prevention programs
3.3 Salaries and operating funds

4 Other direct costs
4.1 Fire damage
4.2 Traffic accident damage
4.3 Losses associated with the workplace
4.4 Administrative costs for transfer payments

5 Indirect costs: productivity losses
5.1 Owing to long-term disability
5.2 Owing to short-term disability (days in bed)
5.3 Owing to short-term disability (days with reduced activity)
5.4 Owing to premature mortality

In spite of using different terminology in every quoted cost study the authors undertook the effort to include the commonly accepted kinds of costs listed above [Single et al. 2001b, p.3].

1.4. Demographic approach vs. the human capital approach

The next question to be answered in the estimation of the cost of use of the psychoactive substances is which of the two basic approaches should be applied: "human capital" or "demographic"?

The key difference between the two approaches concerns the manner in which the costs of premature mortality are treated. In the human capital approach, the lost value of a deceased worker's production is estimated by present earnings plus a discounted rate of future earnings.

Demographic approaches compare the actual population size and structure to that of an "otherwise healthy" population, i.e. an alternative population in which there were no drug-related deaths [Single et al. 2001a, p.22].

Discounting is an economic method expressing an individual's preference for income of the present moment rather than income in the future so, discounting allows to calculate the present value of payments (or costs) that occur in the future, and is relevant for direct and indirect costs that accrue past the first year of the cost study. To discount future costs different discount rates can be used, but often applied is discount rate of 3 percent.

1.5. Prevalence vs. incidence based approaches

The next important matter is whether the estimates of the economic costs of substance abuse should be prevalence-based or incidence-based. Prevalence-based studies estimate the number of cases of death and hospitalisations attributable to substance abuse in a given year, while in incidence-based studies the number of new cases of death or hospitalisation in a given year is estimated. Thus, prevalence-based estimates generally measure the costs of substance abuse in the present and the past in a given year, while incidence-based studies generally estimate the present and future costs of substance abuse in a given year. For ongoing health and social problems such as illicit drug use, the results of prevalence-based and incidence-based estimates are often similar [Ibid., p.23].

So, the prevalence-based studies, in which annual costs are estimated, measure the costs of an illness in one period, usually a year, regardless of the date of onset of the illness. Incidence-based studies estimate lifetime costs, from onset of an illness to its end. Prevalence-based studies are more common than incidence-based studies, and one of reasons is that they require less data (only from one year) and fewer assumptions.

1.6. Basic characteristics of participating countries

1.6.1.Socio-economic characteristics

Country statistical profiles from OECD[3] provide comparative data for Poland, Portugal and Spain. For Catalonia (Spain), this data has to be supplemented by the regional statistics from the Official Statistics Website of Catalonia (Spain) (http://www.idescat.cat/en/).

[3] OECD (2014), "Country statistical profile: Poland", *Country statistical profiles: Key tables from OECD*. DOI: 10.1787/csp-pol-table-2014-1-en; OECD (2014), "Country statistical profile: Portugal", *Country statistical profiles: Key tables from OECD*. DO I: 10.1787/csp-prt-table-2014-1-en; OECD (2014), "Country statistical profile: Spain", *Country statistical profiles: Key tables from OECD*. DOI: 10.1787/csp-esp-table-2014-1-en

1.6.1.1 Poland

Among participating countries, Poland is the youngest member of EU – entering in 2004. In 2010 the total Polish population exceeded 38,5 millions, including 27,5 millions aged15 to 64. The average life expectancy at birth was 76.4 (lower for men – 72.1 than women – 80.7). The unemployment rate was rather low - 9.7% of total labor force and the average number of hours worked per person in a year was rather high – 1940. Polish citizens were rather well educated – nearly 24% attained tertiary education. Still, the GDP per capita (20,210 USD), as well as the public health and social expenditure were rather low (5.0% and 21.8% of GDP respectively).

1.6.1.2 Portugal

Portugal is a member of the EU since 1986. In 2010 the total Portuguese population was 10,573 millions, including 7 millions aged 15 to 64. The average life expectancy at birth was 80.0 (lower for men – 76.8 than women – 83.2). The unemployment rate was rather high – 12.0% of total labor force and the average number of hours worked per person in a year was – 1740. Portuguese citizens who attained tertiary education accounted for 17.3% of adults. The GDP per capita (19,542 EURO), as well as the public health and social expenditure were higher than in Poland (7.1% and 25.4% of GDP respectively).

1.6.1.3 Catalonia (Spain)

As Portugal, Spain is a member of the EU since 1986. Catalonia is an autonomous community of Spain inhabited by 16% of the Spanish population - about 7.5 million people. The average life expectancy at birth in Catalonia (Spain) in 2010 was higher than in Poland or Portugal – 82.3 (lower for men – 79.3 than women – 85.2). The unemployment rate in Spain was very high – 19.9% (in Catalonia around 19%) of the total labor force. The average number of hours worked per person in a year in Spain was relatively low – 1673. The GDP per capita in Spain was relatively high 24,046 EURO, and even higher in Catalonia (Spain) – about 120% of the Spanish GDP per capita. The public health and social expenditure in Spain were similar to those in Portugal (7.2% and 26.7% of GDP respectively).

1.6.2.Policies, laws and health system regarding addictive substances in countries participating in the study

Below, a general description of national policies related to psychoactive substances is presented. Appendix 8.4 contains the table summarizing in a comparative manner those policies and regulations which potentially may generate (or influence) social costs of addictions. These are legislations aimed at controlling alcohol and tobacco supply (taxes, limits on selling alcohol and tobacco, restrictions on advertisement); facilitating access to the health-care services; regulating access to social support and sickness benefits (social insurance) in case of productivity lost related to alcohol/tobacco/drugs; criminal-justice policies; and other, country specific regulations.

1.6.2.1.Poland

ALCOHOL POLICIES AND LEGAL REGULATIONS

In Poland, the legal basis for solving alcohol-related problems is provided by the Act on Raising in Sobriety and Counteracting Alcoholism. The National Programme for the Prevention of Alcohol-Related Problems (coordinated by the State Agency for Prevention of Alcohol-Related Problems) forms the platform for the implementation of an integrated policy towards alcohol and to counteract the negative effects of its use, indicates the tasks performed by the government and integrates all three areas of activity - national, provincial and communal.

Funds for financing tasks arising from the Act on Upbringing in Sobriety on the national level are earmarked in the state budget under proper chapter, whereas funds for financing tasks performed by specific central bodies of governmental administration are earmarked in their relevant budgets.

Funds for financing provincial programmes for preventing and resolving alcohol-related problems are earmarked in the budgets of specific provinces. In addition to their own funds, the provincial administrations contribute to the implementation of the above-mentioned programmes by allocating funds from the revenues from collected licence fees for wholesale trade in the beverages that contain up to 4.5% alcohol, beer, and beverages that contain between 4.5% and 18% alcohol.

Communal programmes for preventing and solving alcohol-related problems are financed from: own funds of the communes and additional funds acquired by communes from collected fees for licenses for retail sale of alcoholic beverages.

In Poland selling and serving alcoholic beverages in many public buildings (e.g. schools, workplaces) is banned. It is forbidden to consume alcoholic beverages in streets, squares and parks. The sale of alcoholic beverages to persons under 18 years of age; on credit and secured; and to people in a state of intoxication is banned. It is forbidden to advertise and promote alcoholic beverages (only beers can be advertised and promoted under certain - defined in the Act on Upbringing in Sobriety and Counteracting Alcoholism - conditions). There is no possibility to sell alcoholic beverages on the Internet. Both wholesale and retail trade of alcoholic beverages is subject to licensing .

Intoxicated persons behaving scandalously in a public place or at their workplace; people whose life or health are under threat or; who pose a threat to life or health of third persons, may be placed at sobering stations (sobering-station can be arranged in cities with populations over 50,000 inhabitants).

According to Polish law, the state of intoxication occurs when:

1. alcohol blood concentrations is above 0.5 ‰ or
2. presence of alcohol in exhaled air is greater than 0.25 mg per 1 dm^3 .

However, the state after use of alcohol occurs when:

1. alcohol blood concentrations range from 0.2 ‰ to 0.5 ‰ or
2. presence of alcohol in exhaled air range from 0.1 mg to 0.25 mg per 1 dm^3 .

Treatment of alcohol-dependent people and their families is free, funded by the National Health Fund. Children of alcohol addicted parents, affected by alcohol abuse by a parent, receive free psychological and socio-therapeutic support free of charge.

Withdrawal treatment is voluntary but, at the request of a communal committee on resolving alcohol-related problems or a prosecutor, it is possible to oblige by law a dependent person to undergo treatment at inpatient or outpatient facilities.

People addicted to alcohol and their families, under certain conditions, may be supported by social welfare system.

TOBACCO POLICIES AND LEGAL REGULATIONS

The Act on Protection of Health Against the Consequences of Consumption of Tobacco and Tobacco Products and the Programme for Limiting the Health-Threatening Consequences of Tobacco-Smoking are the main Polish policies concerning tobacco. The Program sets objectives, priorities and tasks for

reducing harmful effects of smoking and include: educational activities, monitoring of tobacco products, training medical staff, supporting people addicted to smoking etc.

The character of the Program is interdisciplinary and involves many areas of national economy. The person in charge of all activities is the Ministry of Health. The Program is coordinated by the Chief Sanitary Inspectorate and its costs are covered from the funds allocated by state budget.

Smoking is forbidden in public places e.g pubs, educational, health care units or workplaces. It is possible to arrange special areas dedicated to smokers.

Selling tobacco is limited. It is forbidden to sell tobacco products to persons under 18. It is not allowed to sell tobacco in health care units, educational and recreational areas. Cigarettes can be sold only in packages of minimum 20 units.

It is forbidden to advertise and promote tobacco products. Tobacco producers are not allowed to sponsor any kind of sports, culture, educational, health and social activity, as well as exposing fake packages imitating tobacco products in points of sale.

On each packet of cigarettes the following must be visible: permanent and clear warning against harm of tobacco consumption as well as information about content of tar substances, nicotine and carbon dioxide per cigarette.

Tobacco is an excise good which results in strict control of its production, transport, storing and sale of tobacco. All these activities must be reported.

Treatment of addiction to smoking is guaranteed by the National Health System. It is financed from public money. Patients who are insured by the system are treated free of charges.

DRUG POLICIES AND LEGAL REGULATIONS

The legal basis for solving drug related problems are formulated in the Act on Counteracting Drug Addiction. The National Bureau for Drug Prevention is responsible for implementation and monitoring of the National Programme for Counteracting Drug Addiction but the tasks of this Programme are divided between governmental and local administration.

The costs of implementing the National Programme tasks are covered from the state budget through the ministers responsible for their completion. Implementation of communal and provincial drug prevention programmes may be supported from the revenues from the fees for permits for selling alcoholic beverages.

In Poland drugs possession and trading is illegal (except for subjects holding a required entitlement). In case of small quantity of narcotic drugs or psychotropic substances intended for personal use, proceedings might be discontinued. However police and prosecutors rarely use that possibility.

Advertisement and promotion of narcotic drugs or psychotropic substances is prohibited. Medical products containing narcotic drugs or psychotropic substances may be advertised pursuant to the Pharmaceutical Law. It is prohibited to advertise and promote foods or other products through suggesting that they have effects of psychotropic substances or narcotic drugs or their consumption, may cause effects similar to the use of psychotropic substances or narcotic drugs.

Treatment for drug-addicted persons and their families is free of charge, financed by the National Health Fund. One of the treatment options is substitution treatment. Addicted persons and their families – after fulfilling some requirements – may benefit from the social assistance.

Upon request of a statutory representative, a family member or a legal guardian, a court may refer an addicted person who has not turned 18 years of age to compulsory medical treatment or rehabilitation.

1.6.2.2 Portugal

POLICIES - ILLICIT DRUGS, ALCOHOL, OTHER ADDICTIVE BEHAVIORS AND TOBACCO – MOVING TOWARD AN INTEGRATE FRAMEWORK

In Portugal, the "National Health Plan 2012-2016", was built with the vision "to maximize health gains through the alignment and integration of sustained efforts of all sectors of society and the use of strategies based on citizenship, equity and access, quality and health policies" and provides a global framework for general health policies.

Concerning policies related to illicit drugs and alcohol, currently there is the "National Plan to Reduce Addictive Behaviors and Dependences 2013-2020" (NPRABD) defining the framework to address, in an integrated approach, the variety of problems related to all addictive behaviors and dependences (either concerning psychoactive substance use and abuse, or of other type of addictive behaviors like gambling, Internet, etc.). A new body, the "Service for Intervention on Addictive Behaviors and Dependences" (SICAD) replaced the former Institute on Drugs and Drug Addiction (IDT) in the role of monitoring the implementation of the new National Plan and in the institutional support to the National Coordinator.

This global perspective in the approach to addictive behaviors begun in 2010, when the national policy on drugs was the restructured and the "National Coordination Structure for the Fight on Drugs and Drug Addiction" was replaced by the "National Coordination Structure for Drugs, Drug Addiction and Alcohol Related Problems" (Decree-Law 40/2010 of 28 April 2010). This National Coordination Structure includes:

a) the "Inter-Ministerial Council for Drugs, Drug Addiction and Alcohol related Problems" (Prime Minister, 13 Ministers and the National Coordinator for Drugs, Drug Addiction and Alcohol related Problems),
b) the "National Coordinator for Drugs, Drug Addiction and Alcohol related Problems" – the Head of the executive body in charge of coordinating the implementation of the policies in the field (currently SICAD), in the dependence of the Ministry of Health, and
c) The "National Council for Drugs, Drug Addiction and Alcohol related Problems" a consultation body, headed by the Prime-Minister, where institutions, entities and organizations relevant in the field are represented.

The "National Plan to Reduce Addictive Behaviors and Dependences 2013-2020" (NPRABD) follows the formers "National Plan on Drugs and Drug Addictions 2005-2012" and the "National Plan to Reduction of Alcohol related Problems 2010-2012". The NPRABD is the first formal strategic document providing a global and integrate vision about legal and illegal substance use behaviors and, also, addictive behaviors/addictions without substances; it includes an action plan to reduce demand and supply, according to the integrate interventions approach (already implemented in the illicit drug field) using the existing specialized prevention, treatment, harm reduction and social rehabilitation network of services (for illicit drugs and alcohol), and reinforced by all the other health services network.

Concerning Portuguese tobacco policies, in 2012, smoking prevention was considered a national priority and a "National Program for Tobacco Prevention and Control" has been put in place, aiming at reducing smoking prevalence and eradicating the environmental exposition to smoke. Its implementation is responsibility of the Directorate General for Health (DGS) in the Ministry of Heath.

So, at the operational level, the bodies in charge of coordinating the implementation of policies related to illicit drugs, alcohol, and tobacco are two Directorates Generals under the scope of the Ministry of Health: "SICAD" for illicit drugs and alcohol, "DGS" for Tobacco.

In synthesis, all the referred National Plans aim at reducing the age at which young people begin to experiment the use of psychoactive substances through prevention, and to reach the goal that people already using them will be able to quit that use, when necessary with the support of public health and social systems. Also a wide range of harm reduction and social rehabilitation interventions is available in order to help psychoactive substance users to reduce to the harms of use or to return into an active life. Practitioners in charge of the implementation of the actions planned are well qualified professionals.

Despite the financial constraints introduced in the last three years in the public services - globally, there is a trend to merge the specialized services in order to get efficiency gains - until now, the specialized public health services to treat alcohol and illicit drugs addictive behaviors and addictions, are still available all over the country; access to these services is easy, either because it is free (or almost free) of charge or because the waiting list to get a consultation is irrelevant (access to National Health Service is, also, almost free of charge).

Also the "National Mental Health Program 2012-2016" aims at restructuring the Mental Health Services in order to increase the articulation with either the primary care services or other specialized services in order to better serve the patients.

The need to improve efficacy and efficiency and to better answer to the needs of people with problems related to addictive behaviors and dependences, lead to the formalization of how all the different National Plans and Health Services will articulate their interventions and collaborations in the "Reference/articulation Network for Addictive Behaviors and Dependences".

LEGAL REGULATIONS

Concerning the legal framework, despite the differences related to the specificities of each substance, there is a common decriminalized approach to the use of all psychoactive substances side by side with a differentiated approach to the supply related activities ranging from criminalization in the case of illicit drugs, and regulation (strong, sometimes) in the case of alcohol and tobacco.

ALCOHOL

Regulations about alcohol use, purchasing and selling, namely to minors, were changed last year (Decree-Law Nr. 50/2013) and more restrictions were introduced. Under this new legislation, the following were introduced:

a) a differentiation between high alcoholic drinks – "spirits" – (more than 15% of alcohol by volume) and low alcoholic drinks – "non-spirits" (more than 0.5% and less than 17% of alcohol by volume – it includes beer and wine);
b) a differentiation in the legal age limit to selling, purchase and consume alcohol in public: 16 years old for "non-spirits" and 18 years old for "spirits";

c) an increase in the existing restrictions to the places allowed to sell, make available or where to consume alcoholic drinks (that now include: all health services, automatic machines, gas/fuel supply stations, in all shops - but restaurants, bares, airports and night recreational settings - between 0 a.m. and 8 a.m.
d) more sanctions and the increase in the value of fines to be applied in case of violation of Law.

Driving under the influence of alcohol is forbidden, the maximum blood alcohol concentration limit differ according two types of drivers:

- 0.5 g/L for drivers in general, and
- 0.2 g/L for recent drivers, drivers of SOS or urgent vehicles, public transports of children and teenagers until 16 y.o., taxi, and heavy vehicles (people or goods).

Sanctions to this law are reinforced if the maximum blood alcohol concentration is in the second og these two following levels:

- for drivers, in general: more than 0.5 g/L and less than 1.2 g/L; or higher than 1.2 g/L;
- for the other type of drivers: more than 0.2 g/L and less than 0.5 g/L; or higher than 0.5 g/L.

Advertising alcoholic beverages is regulated under the Advertising Code (Decree-Law Nr-330/90, with updates): it is forbidden if it is associated to specific ideas (DL 275/98) or national symbols (DL 332/2001), if it is directed to minors, is to be placed in schools, or presented in Radio or TV between 7a.m. and 9.30p.m

TOBACCO

In 2008, a new legislative framework entered in force "Tobacco Law" (Law n.º 37/2007) aiming specially at introducing measures to protect citizens from the harmful effects of passive/involuntary exposition to tobacco smoking through a ban on smoking in most of the closed public places. A transitory norm, allows restaurants, bars and other night recreational settings to have specific places for smokers as long as they respect strict technical aspects related to quality of air control (it is expected that this transitory norm will soon be removed).

Among the most recent measures implemented are, for example, raising cigarette prices by increasing tobacco taxes - in particular for "roll your own" tobacco (because smokers were moving to this type of use, due to a less expensive price) - or reinforcing health education in schools.

Since 1982, Portugal has a ban on tobacco advertising but, since 2008, stronger measures were introduced, like total advertising ban on points of sale, tobacco vending machines obliged to have an electronic system to control the access by minors, and prohibition of having these vending machines inside schools or other places accessible to young people; video games, toys or food products cannot use brands or images of tobacco products.

ILLICIT DRUGS

In Portugal, since 2001, illicit drug use was decriminalized but remains forbidden (Law Nr. 30/2000), becoming an Administrative Offense (Law Nr. 30/2000). The sanctions are applied by the "Drug Addiction Dissuasion Commissions" (CDT) that also try to find the best way to help drug users to quit drug use or follow treatment, according each specific user. Trafficking illicit drugs remains a crime.

1.6.2.3 Catalonia (Spain)

ALCOHOL AN ILLEGAL POLICIES AND LEGAL REGULATIONS

Catalonia (Spain)[4] is an autonomous community and exercises its self-government in the Spanish State in accordance with the Constitution of 1978 and the new Statute of Autonomy, approved in 2006. The Generalitat is the institutional system around which Catalonia (Spain)'s self-government is politically organised and it consists of the Parliament, the Presidency, the Government and other self-governing institutions. The Generalitat has extensive competencies in matters such as education, health, citizen security and civil protection, culture, linguistic policy, industry, urban development, housing, regional politics, transport and the environment, among others.

The parliament of Catalonia (Spain) approved Law 20/1985 on prevention and treatment in matters of substances that can generate addiction, in which alcohol, tobacco and non-institutionalized drugs, certain medicaments and some products for industrial use are included. This Law was modified in part by Laws 10/1991, 8/1998 and 1/2002.

The financing fund for the deployment of the different laws and activities in the year 2010 came from these sources: 23% from the budget of the Government of Catalonia (Spain) itself, 70% from the National Plan on Drugs (Government of the State of Spain), 5% from projects financed by the European union and 2% from the Healthcare Ministry of the Spanish government. With these laws the Government of Catalonia (Spain) assumes competences for prevention in all settings (education, community, workplace...), promotion, attention, treatment, rehabilitation and reinsertion of all persons with addictions. Furthermore any person or relative of a person with addiction to tobacco, alcohol, drugs, medicaments, etc., can have free access, and free of charge, to drug addiction treatment centres (64 outpatients units, 12 hospital detoxification units, therapeutic communities, harm reduction units, etc) all over Catalonia (Spain) and can request assessment and all kind of treatments.

With the modification of Law 8/1998, 10th July, the consumption of tobacco and alcoholic drinks over 20 degrees proof was limited in public places such as: healthcare services centres and establishments, universities and higher education centres, public sports centres, educational centres and social protection centres for minors, service and rest areas on motorways from 23.00 to 08.00, public transport companies, public thoroughfares and areas of public passage. In places where food is sold or consumed, the sale of alcoholic beverages is not permitted between 23.00 and 08.00. In addition, it is forbidden to sell alcoholic drinks to under-18s.There are other relevant laws, like the ones regulating drink driving and defining BAC limits (above 0.3 ‰ in newly qualified drivers and professional drivers (transporting goods or passengers) and in 0.5 ‰ in habitual drivers and cyclists).

The Spanish justice system considers to be prohibited or controlled substances those which figure in certain lists in international accords, such as the single convention of 1961 on narcotics, which include the majority of illegal drugs: cocaine, LSD, heroin, cannabis, ecstacy, etc. The Penal Code considers it an offence to create, produce, cultivate or traffic in any of the substances included in these lists, as well as any activity destined to promoting their use. In the case of trafficking, the Penal Code makes a distinction between substances which cause serious harm to health and other substances which the legislator considers less harmful to health. Consuming or having small quantities of drugs for personal use is not an offence. But how is this quantity determined? In the event of a court case, the courts tend to take into account aspects such as the quantity of the drug and whether the person is a habitual user or not, as well as the existence of a criminal record for drug trafficking. Possession and consumption in public places are punishable with fines from 301 to 30,000 euros, which can be suspended if the person enters addiction treatment.

Advertisement and promotion of narcotic drugs or psychotropic substances is prohibited. Medical products containing narcotic drugs or psychotropic substances may be advertised pursuant to the

[4] Generalitat of Catalonia Institutional web page. Available in http://www.gencat.cat/catalunya/eng/

Pharmaceutical Law. It is prohibited to advertise and promote foods or other products through suggesting that they have effects of psychotropic substances or narcotic drugs or their consumption, may cause effects similar to the use of psychotropic substances or narcotic drugs.

Upon request of a statutory representative, a family member or a legal guardian, a court may refer an addicted person who has not turned 18 years of age to compulsory medical treatment or rehabilitation.

TOBACCO POLICIES AND LEGAL REGULATIONS

On 2nd January 2011, the regulation on tobacco came into force prohibiting smoking in all enclosed public areas. Smoking is forbidden in public places e.g pubs, educational, health care units or workplaces. It is possible to arrange special areas dedicated to smokers. It is estimated that this Law has helped to prevent between 700 and 800 deaths through passive smoking which occurred every year in Catalonia (Spain). Sale of tobacco is limited. It is forbidden to sell tobacco product to persons under 18. It is not allowed to sell tobacco in health care units, educational and recreational areas. Cigarettes can be sold only in packages of minimum 20 units. It is forbidden to advertise and promote tobacco products. Tobacco producers are not allowed to sponsor any kind of sports, culture, educational, health and social activity, as well as exposing fake packages imitating tobacco products in points of sale. On each packet of cigarettes the following must be visible: permanent and clear warning against harm of tobacco consumption as well as information about content of tar substances, nicotine and carbon dioxide per cigarette.

Tobacco is an excise good which result in strict control of its production, transport, storing and sale of tobacco. All these activities must be reported. Treatment of addiction to smoking is guaranteed and financed from public money. Any person can receive tobacco addiction treatment at the specific tobacco units in the Drug Addictions Treatment Centres and in Primary Healthcare Centres. The pharmacological treatment for tobacco addiction is offered without any cost to certain groups, such as sufferers of cardiovascular complaints, sufferers of chronic respiratory illnesses, mental health patients.

1.6.2.4.Summary of cross-country differences in alcohol, tobacco and drug related policies.

Our study concerns the social costs attributable to abuse of alcohol, illegal drugs and tobacco for three EU countries with different policies, especially in regard to illicit drugs. Actually there are much more similarities than differences between Polish, Portuguese and Catalan (Spanish) policies and legislations concerning alcohol and tobacco related taxes and excise fees; restrictions of legal substances availability, purchase and advertisement; access to health and social services and criminal sector (see appendix). That is quite natural since all three countries are EU members, and their legal systems have to be in accordance with global regulations.

The most significant differences between participating countries concern the penal system perspective on the illicit drugs. Generally speaking, in Portugal, a large proportion of offenses related to drugs is classified as misdemeanors, while in Poland and Spain - as crimes. Moreover, in Portugal, there are separate categories in the penal code classifying crimes committed in a state of intoxication or under the influence of a narcotic drug or psychotropic. In Poland, such offences are not distinguished in the penal code but alcohol or drug intoxication is taken into account by a court passing the judgment. In Spain and Portugal, possession of small amounts of drugs for personal use is not a crime while in Poland it is but, legal "proceedings might be discontinued."

Minor differences in policies generating/influencing social costs of substance addiction may be

summarized as follow:

- With regard to taxes and fees - in Portugal and Catalonia (Spain) tobacco purchasing is a subject of licensing, while in Poland sale of cigarettes does not require a permit. In all countries alcohol sell is licensed.
- In terms of the availability of alcohol and tobacco the regulations in the surveyed countries are similar (a total ban on tobacco advertising, sales / use of tobacco and alcohol in specific locations, e.g. schools).
- In all three countries tobacco advertisement is prohibited. In Portugal alcohol beverages commercials and in Poland beer commercials are permissible under certain conditions; Spain allows to advertise alcoholic beverages with an alcohol content of less than 20% in places where it can not be sold or consumed.
- In all three countries the sale of tobacco to persons under 18 years of age is prohibited, but there are significant differences in the sale of alcohol. In Poland and Spain, the age limit is 18 years, while in Portugal - 16 years. Poland and Portugal apply a ban on the sale of alcoholic beverages to persons indicating a state of intoxication. In addition, the Polish legislation prohibits selling alcoholic beverages on credit, and the Portuguese - to people who are "intellectually disable".
- Policies regulating access to health-care are very similar across countries. Simply, the treatment is free of charge or mostly free.
- In all countries addicted people, under certain conditions, may be supported by social welfare systems. Portugal has a specific social care help for drug users (tobacco addicts or alcoholics were not included). In Poland and Spain there is – free of charge - support for children (psychological and socio-therapeutic).
- In all countries sickness benefits depend on the length of the exemption. In Poland, the state budget covers the costs in the event of dismissal over 33 days, shorter leaves are paid by an employer. In Portugal, the employee does not receive benefits for the first 3 days of release; between 4 and 15 days an employer is responsible for the provision, and from the day 16 – it is the duty of the state budget or a private insurer.
- It is difficult to capture cross-country legal differences concerning prevention, education and research. In all countries theses activities are mandatory.
- Other regulations: In Poland, function alcohol sobering station , in Spain - "crisis units", and in Portugal - 'commissions for dissuasion (due to the fact that drug use is an offense).

1.7. The scope of this study

The social and economic costs of alcohol, tobacco and illicit drugs to the societies of Poland, Portugal and Catalonia (Spain) are estimated using a cost of illness framework as described in [Single et al. 2001a]. In the cost research *social costs* understood as the costs which are imposed upon the rest of society by the persons using psychoactive substances are taken into account, and the study is *prevalence-based* one, meaning that it estimates the cost of the problems appearing during a given year. In this study it is the year 2010. The losses of income and productivity due to premature death are estimated according to the *demographic approach* applied for the chosen kinds of social costs.

To derive at attributable fractions [formulae (4)] for the causes of disease or death (using ICD-10 categories), *relative risk* estimates or *standardized mortality ratio* estimates are combined with prevalence data by age and gender. The resulting estimates allow to establish the proportion of deaths and hospitalizations and some other costs associated with health care, law enforcement, productivity and others attributable to alcohol, tobacco or illicit drugs. The value of lost productivity resulting from premature death caused by the use or abuse of alcohol, illicit drugs and tobacco is estimated as the product of the number of deaths attributed to the use of the substance and the present value of potential income.

2. Method

2.1. Scope of the data and procedure of data collection

According to the WP6 plan, data needed for social costs estimation in Poland, Portugal and Spain (Catalonia) has been collected by the national project partners. The proposed list of data included:

1. Additional health service costs (in- and out-patients), costs of prescribed drugs (not paid by individuals), cost of laboratory tests, directly and indirectly attributable to alcohol, smoking and drug use.
2. Emergency stations costs attributable to alcohol and drug use.
3. Emergency service costs attributable to alcohol and drug use.
4. Police, law courts, prosecutors and probation officers costs attributable to alcohol and drug use.
5. Costs of imprisoning attributable to alcohol and drug use.
6. Costs attributable to alcohol, tobacco and drugs connected with smuggling.
7. Costs of fire services attributable to smoking
8. Social assistance attributable to alcohol and drug use.
9. Costs of sobering-up stations
10. Expenditures for prevention, education and researches attributable to alcohol, smoking and drug use.
11. Lost productivity caused by premature mortality and sick leave.

It was decided to focus on the data for 2010, with the possibility of fulfilling the gaps with data from other years. Main data sources to check in all countries were: Chief Statistical Office, Yearbooks (general and special), police, criminal justice, health and social security system databases. In Poland, an additional survey was designed in order to collect data not available from official statistics sources, showing costs of employment attributable to various addictions in law enforcement and health care.

Taking into account that in different countries different kinds of statistics are available, a short list of key data to be collected in three countries, was defined:

1. basic description of the country population
2. alcohol, tobacco and illicit drug consumption
3. mortality and morbidity data
4. crime and justice data
5. health system data (mainly costs)

Data was collected from the end of 2011 to the beginning of 2014. The process of collecting data needed to make an assessment of social costs proved to take much more time than planned. The main problems were related to the fact that some data did not exist in official national statistics and additional surveys were needed to estimate costs of addictions in various areas. Another challenge was to get access to some data sources in hands of external institutions, which usually resulted in a long process of applying and negotiating. Finally, as expected, not all data were available for all three countries.

Therefore, the wide range of missing data for Portugal and, some data for Catalonia (Spain) were imputed on the basis of other studies.

2.2. Data imputation

Because of the lack of statistical data, available on time, to estimate the costs of alcohol drinking, smoking and use of drugs in Portugal, the existing studies were used to estimate the 2010 costs. The same was done to estimate the costs of alcohol drinking and use of drugs in Catalonia (Spain), in the

case when authors' own estimation based on original Catalan data was not possible.
To update the results for Portugal and Catalonia (Spain) three variables were applied:
1. Size of the populations in question,
2. Exposure to the addictive substances in populations in question.
3. GDP per capita, as it has been assumed, that if GDP in the country is higher, the expenditures and costs connected with alcohol use, smoking and drugs use would be also higher.

As the growth of costs and expenditures according to the growth of GDP per capita may not necessary be proportional, the estimates where differences in GDP are taken into account are treated as maximum values, and without that difference – as minimum values.

In particular, for the purpose of imputations for Catalonia (Spain), three researches were applied [Garcia-Altes et al. 1997; Rivera et al., 2011; Portella et al., 1998]. For updating the first of them [Garcia-Altes et al. 1997], differences in population size and drugs exposure among Spain in the year 1997 and 2010, and Spain and Catalonia (Spain) in the year 2010, were taken into account. In case of the Rivera et al. [2011] study, differences in population size between Galicia and Catalonia (Spain), and in case of Portella et al. [1998] differences in population size between Spain 1996 and 2010, and also between Spain and Catalonia (Spain) in 2010 were taken into account.

From research available for imputation for Portugal, the most comprehensive is that of Lima, Esquerdo [2003], so these results were first of all basis of updating. This study was, developed at Applied Micro Economy Research Unit, Minho University (Braga), "focusing on the nine most frequent diseases associated with alcohol misuse. The societal perspective was adopted and the prevalence-based Cost-of-Illness studies used to evaluate annual costs" [Lima, Esquerdo, 2003]. Data sources used for the report included: "Medical records from 88 public short-stay hospitals, provided by the Financing Management Institute (Ministry of Health), Hospital discharges, death causes and consultations obtained from Health Statistics and Mortality Statistics, published by the National Statistical Institute, and data on crime and motor vehicle crashes reported in the Sixth United Nations Survey on Crime Trends (UNICRI) and in the General State Account, published by the Ministry of Finance".

Since the research concerns year 1995, following differences in population size, alcohol exposure and GDP values were taken into account:

Table 2.2.1 Basic numbers

Year	Recorded per capita alcohol consumption (l of 100% alcohol)*	Population size (15 years old and older)**	GDP per capita, current prices, €***
1995	12,8	8279702	8761
2010	10,84	8969498	16349
Relation 2010/1995	0,846875	1,083312	1,866111

Sources: authors' own on basis of: * WHO: Global Health Observatory; ** INE (National Statistics Institute) estimations (at the time, not yet adjusted 2011 Census); *** PORDATA (www.pordata.pt) based on INE, BP, updated on 16-01-2014).

To estimate some of the health service costs related to alcohol, i.e. in-patients and out-patients costs, two other research were utilized [Cortez-Pinto et al., 2010; Botelho et al., 2008].

The "Alcohol Attributable Fractions and Costs in Portugal" study by Botelho A., Lima E., Pinto L., & Veiga, P. (2008) - Applied Micro Economy Research Unit, Minho University, Braga – is based on estimations of alcohol-attributable expenditures following an approach that take into account all expenditures considered as being attributable to excessive drinking (directly and indirectly related to alcohol associated diseases). Data sources for that study were two data sets from the "1995 National

Health Survey".

According to [Cortez-Pinto 2010] ("The burden of disease and the cost of illness attributable to alcohol drinking--results of a national study") – from Portuguese Catholic University and Lisbon University/School of Medicine - the burden and costs of diseases attributable to alcohol drinking were estimated based on demographic and health data available for 2005, using the Disability-Adjusted Life Years (DALY) lost generated by death or disability.

For updating estimation of social costs attributable to smoking in Portugal in 2010, based on [Gouveia et al. 2007], two variables were applied:
1. Size of the populations in questions,
2. GDP per capita.

In "*Estudo Comparativo Dos Custos E Carga Da Doença Do Tabagismo E Alcoolismo Em Portugal* " – Comparative study on the costs and burden of tobacco and alcohol diseases - Gouveia et al [2007] estimated the burden of disease based on mortality and DALYs (with WHO and WB methodology), and the cost of illness on NHS of the related and the attributable diseases, in 2005. Since there were no available data on smoking prevalence in Portugal in 2005 (year of quoted research and 2010), the results of Eurobarometer 2009 were used for updating. Eurobarometer data indicated that changes were probably rather small between the years in question (in 2006- 24%, and in 2009 - 23% of Portuguese citizens were regarded as current smokers).

The estimations from Gonçalves et al. [2014] are directly quoted for drug related judicial system and prisons administration costs, as well as for drug attributable morbidity.

As, in 2010, main drug related services were provided through IDT (currently SICAD), the main data sources for the costs presented below, were IDT "Relatório de Atividades 2010", [IDT, 2011a] and "A Situação do País em Matéria de Drogas e Toxicodependências. Relatório Anual 2010" [IDT, 2011b]. The drug related costs, for 2010, were either extracted directly from them or, when not available there, estimated based on data:

- From 2005, included in "2007 National Report (2006 data) to the EMCDDA-Portugal" [IDT, 2008],
- From 2012, included in "2013 National Report (2012 data) to the EMCDDA" [SICAD, 2014], and also,
- quantitative information from "Relatório de Atividades 2010", [IDT, 2011a], and "Relatório Avaliação Externa Plano Nacional Contra a Droga e as Toxicodependências 2005-2012 (PNCDT)" [Gesaworld, 2013], to disaggregate the aggregate costs related to integrated interventions
- from "Droga e Propinas. Avaliações de impacto legislativo" [SICAD, 2014] - an English version will appear soon [Gonçalves et al., 2014] - for estimations related to enforcement cost, hospital health cost related top HIV and Hepatitis B/C, or indirect cost related to lost income and productivity.

2.3. Estimation of attributable fraction

The concept of attributable fraction (population attributable fraction, attributable risk, etiologic fraction, excess fraction) was first proposed by Levin (1953) and is presently commonly applied in researches on the costs of psychoactive substance use and abuse. The concept determines the proportion of disease risk in a population that can be attributed to certain risk factor (or risk factors).

As indicated in [Rockhill, Newman, Weinberg, 1998, p.16] …*The population attributable fraction is*

most commonly defined as the proportional reduction in average disease risk over a specified time that would be achieved by eliminating the exposures(s) of interest from the population while distributions of others risk factors in the population remain unchanged. This also can be interpreted as proportion of disease cases over a specified time that would be prevented following elimination of the exposures, assuming the exposures are casual.

There are several formulas applied to define attributable fraction, and the matter is widely discussed in literature {[Walter, 1976], [Ezzatti, Lopez, 2003], [Eide, Heuch, 2001], and many others}.

Let [see: Eide, Heuch, 2001, p.160]:

P(D) denotes probability of disease *D*,
X - exposure variable whose distribution is given by the cumulative distribution function *F(x)* for $x \in R$,
$P(D/X=x)=p(x)$ - the conditional probability of disease *D* for *x*-value of the exposure variable,
$\hat{P}(D)$ - probability of disease *D* after modification, which in the case of the psychoactive substances cost studies means probability of disease *D* of persons unexposed for these substances.
Then the attributable fraction *λ* can be defined as:

$$\lambda = \frac{P(D) - \hat{P}(D)}{P(D)} \tag{1}$$

Which can also be written in the case *X* is a continuous variable as:

$$\lambda = \frac{\int_{-\infty}^{\infty} p(x) d\left[F(x) - \hat{F}(x)\right]}{\int_{-\infty}^{\infty} p(x) dF(x)} \tag{2}$$

where $\hat{F}(x)$ is cumulative distribution function.

After modification, and in the case when *X* is a discrete exposure variable the formulae can be written as:

$$\lambda = \frac{\left[P(D/E) - P(D/\bar{E})\right]}{P(D)} \tag{3}$$

where

$P(D/E)$ denotes the conditional probability of disease for the exposed persons,

$P(D/\bar{E})$ – the conditional probability of disease for the unexposed persons.

For calculations based on observed data the distribution of continuous variables is often estimated in categories, and a continuous distribution function is replaced by a discrete empirical one.

As indicated in [Eide, Heuch, 2001, p.183] for case–control studies the joint distribution of exposures and disease cannot be estimated and direct use of formula (1) is not feasible for estimation; usually the alternative equivalent formulae is used:

$$\lambda = \frac{(RR-1)\cdot P(E)}{(RR-1)\cdot P(E)+1} \tag{4}$$

where $RR = \frac{P(D/E)}{P(D/\bar{E})}$ is the relative risk comparing exposure level with unexposed group, and $P(E)$ is probability of exposure.

Population attributable fractions usually are estimated for one risk factor, but they can also be

estimated for more then one risk factors. The formula (4) can be extended for use with multicategory exposures – under assumption that there is no confounding of exposure-disease association [Rockhill, Newman, Weinberg, 1998, p.16]:

$$\lambda = \frac{\sum_{i=1}^{k} p_i (RR_i - 1)}{1 + \sum_{i=1}^{k} p_i (RR_i - 1)} \quad (5)$$

i – refers here to the i^{th} exposure level.

The formulae (5) is in practice often applied to estimate attributable fraction with regard to different categories of drinkers (smokers, drug users). In that way it is taken into account that each of those categories have a different value of relative risk.

Interpretation of population attributable fraction with multicategory exposures would be in such case as follows:... *a population attributable fraction estimates the proportional amount by which disease risk would be reduced if all of the factors were to be simultaneously eliminated from the population. The exposed group consists of those exposed to at least one of the factors* [Ibid., p.15].

Estimation of attributable fraction is based on two components: the prevalence of drinkers, smokers or drugs users in each of their categories and the relative risk estimate of each alcohol, smoking or drugs related consequence, which can be partly caused by the considered substance use and abuse. Because prevalence of drinkers, smokers or drugs users of different levels varies among countries, the use of attributable fraction estimated for another country is doubtful[5].

As the relative risk estimates are not available for every country, it is common practice to adopt estimation results for other countries, or functions of several estimates. On the other hand the prevalence of drinkers, smokers and drugs users are usually estimated in different countries, and can be applied in estimation of attributable fractions for each country.

There are several relative risk estimates for causes of deaths partly attributable to alcohol, smoking or drugs[6]. For the purpose of the research, estimates published in the following documents were chosen:

- Alcohol: [English, 1995], [Corrao et al., 2004], [Rehm et al., 2004], [Gujahr et al., 2001], [Shield et al., 2012], [Zeisser et al., 2013]. List of causes of deaths and ICD 10 codes was taken after [Grant, Springbett, Graham 2009, p.3 and 4]
- Smoking: [SAMMEC 2001], [Ezzati et al. 2005]. List of causes of deaths and ICD 10 codes was taken after [Assessment …2011].
- Drugs: [English 1995], [The Economic Cost… 2004]. List of causes of deaths partly attributable to drugs use and ICD 10 codes after [The Economic Cost, 2004, B-11]. List of causes of deaths in 100% attributable to drugs use was taken according to Chief Statistical Office in Poland.

One of the problems with the use of the estimates of the relative risks is, that they are usually available only for the whole populations of men and women, without specification in age classes. The populations considered in estimation of the relative risks are, as a rule, limited to age range [15-64), [15-74). In particular they are not available in higher age classes, which is specially needed in cases of alcohol and smoking.

The other difficulty is to find the exposure data in desired 5-years long age classes for each of the

[5]Also relative risks of alcohol, smoking or drugs use are most probably different in different countries, but as they are estimated only in a few countries, those estimates have to be applied in another countries.
[6] See for instance: [Grant, Springbett, Graham, 2009], .

genders, which are needed to estimate the attributable mortality (the mortality data are available in such age classes). The exposure data are usually given in broader age classes of different ranges and lengths.

To achieve the values of exposure data in 5-year-long age classes adequate regression functions were estimated and subsequently their theoretical values were applied. Such approach gives additional benefit – it can be expected that smoothing the empirical survey distributions could restrict the range of random deviations. The role of the regression functions here is not explanatory; they are applied only to smooth the distributions and to achieve estimates in certain age classes, therefore the functions are not described in detail. Coefficients of determination R^2 are presented as the measure of goodness of fit of the regression functions to the data..

In the present study attributable fractions for Poland, Catalonia (Spain) and Portugal were estimated according to formulae (5).

It should be stressed that, as for the purpose of the study the relative risks (or SMR) estimates are adopted from different sources, and come from different countries and years, the estimates of attributable fractions and attributable mortality in Poland, Catalonia (Spain) and Portugal should be regarded as approximate.

As to explain how the estimations were performed, basic original data followed by the estimates are now presented.

2.4. Estimation of attributable mortality

There are no problems with calculation of mortality attributable to alcohol or drugs use in cases of those causes of deaths which can be in 100% ascribed to alcohol or drugs use. The adequate mortality data are accessible and they should be only added up.

To arrive to estimates of mortality partly attributable to alcohol abuse, smoking or drugs use the estimated values of attributable fractions are multiplied by the numbers of deaths from the considered causes in every gender/age class.

As was already mentioned above, the relative risks (or SMR) estimates are based on population studies, where higher age classes were excluded. On the other hand, in authors' opinion, the mortality attributable – specially – to alcohol abuse or smoking in those classes should be included – in the case of alcohol the necessity is shown by existence of deaths in 100% attributable to alcohol in older age classes (see fig 5.1.1); in the case of smoking a strong argument is that the consequences of smoking arrive after a long period of smoking, so they are often postponed, and can arise in higher age classes[7].

With the use of theoretical values of regression functions fitted to exposure data it is possible to estimate attributable fractions and subsequently attributable mortality for older people, but in such cases the values of attributable fractions as well as the values of attributable mortality in these classes are strongly overestimated. The main cause of the problem is that in cases of deaths in old age – occurred in fact as result of a natural process –, the usually mentioned cause of deaths on death certificates are either circulatory system diseases, or respiratory system diseases or cancer – causes of deaths that are also partly attributable to alcohol drinking or smoking.

Two possible solutions to this problem can be proposed:

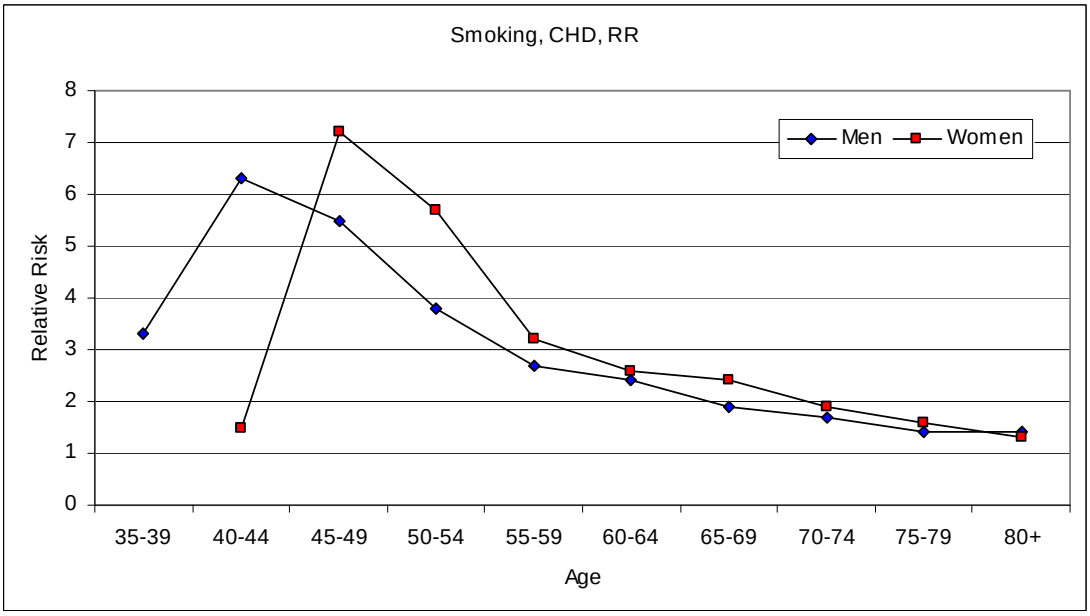
[7]See for instance: [Kirstein, 1984], [Peace, 1985].

- To limit the estimates to lower age classes for instance to: [15-64),
- To estimate the attributable mortality in higher age classes, using certain properties of the attributable mortality distribution according to age, which is specially needed for estimating the years of life lost because of alcohol abuse, smoking or drugs use.

Both approaches are presented in the study. Estimates of attributable mortality in age class [15-64) are given. The limit [15-64) was chosen on the basis of graphical presentation of the distributions of attributable mortality, -+in the way that enables comparison of the results for Poland, Catalonia (Spain) and Portugal.

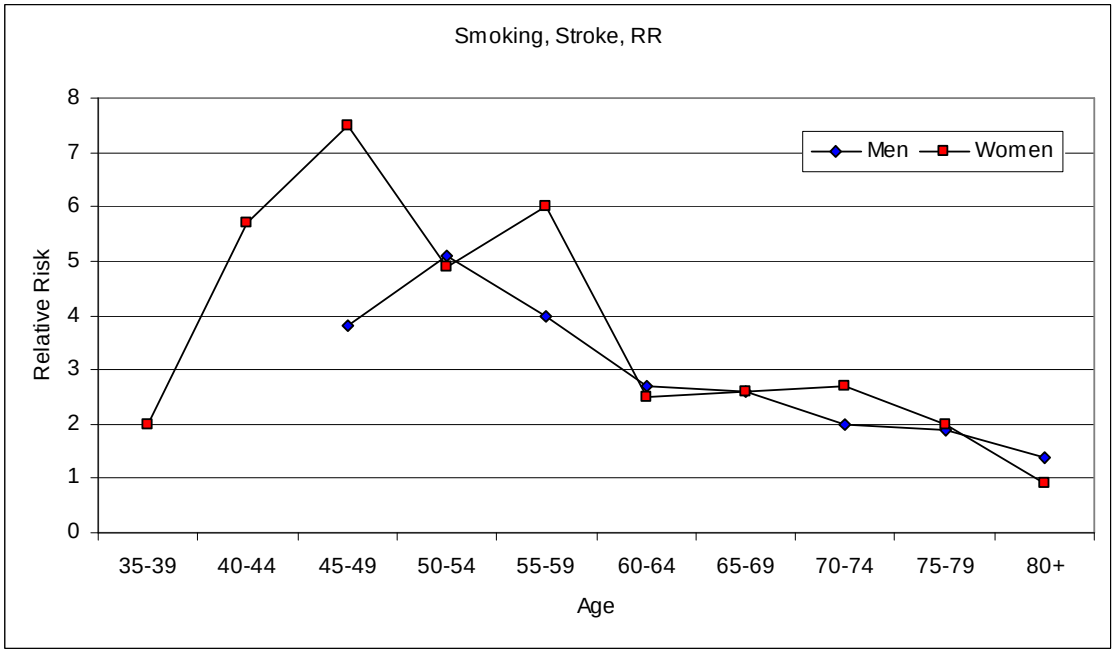
The second approach is based on observation that the exposure for alcohol and smoking diminishes as the people get older (see for instance fig. 4.1.3, 4.1.4, 4.1.9, 4.3.12), and simultaneously rarely available in literature distributions of relative risks estimates according to age indicate, that also the relative risk is smaller in higher age classes (seefig.2.4.1-2.4.3).

Figure 2.4.1 Relative risk of deaths from Coronary Heart Disease caused by smoking according to gender and age



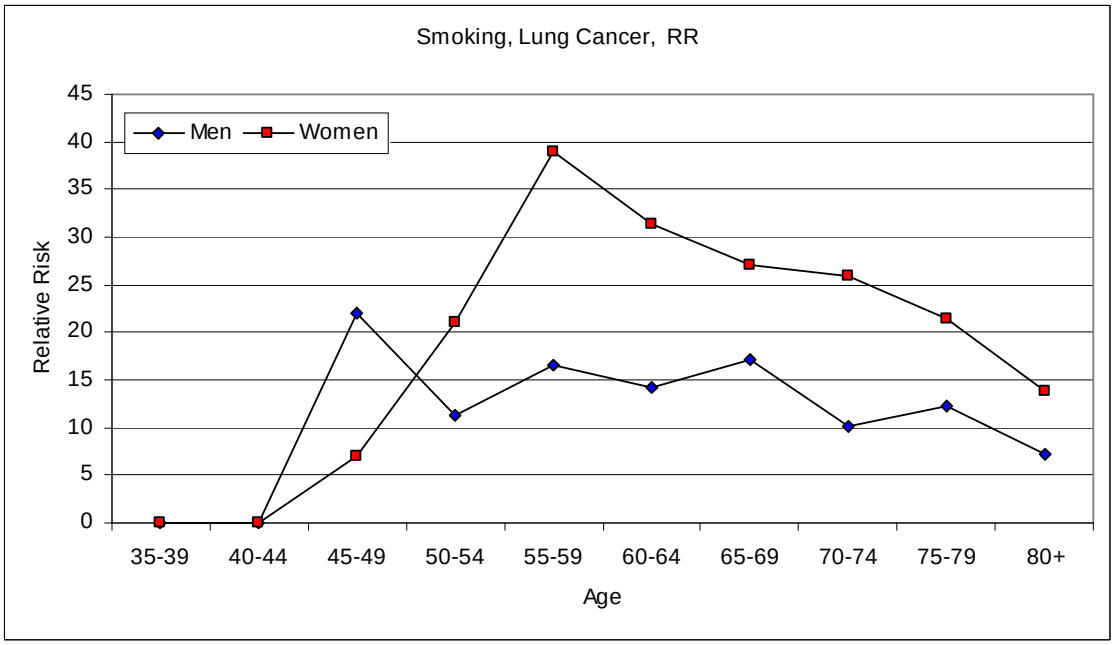
Source: authors' own on the basis of [Thun et al., 1980].

Figure 2.4.2 Relative Risk of deaths from Stroke caused by smoking according to gender and age



Source: authors' own on the basis of [Thun et al., 1980].

Figure 2.4.3 Relative Risk of deaths from Lung Cancer caused by smoking according to gender and age



Source: authors' own on the basis of [Thun et al., 1980].

As also the exposure data show decline of its values as the age grows, for further estimation it has been assumed that the slope in the declining part of mortality distribution according to age corresponds with its increasing part. The results are presented (among others) in fig. 5.1.2, 5.1.3, 5,1,6, 5.1.7, and although the accepted assumption can be discussed, the estimation gives at least a raw approximation of the mortality attributable to the substance use in older age.

Because of small numbers of deaths caused by drug use and the subsequent existence of random deviations in Poland, Catalonia (Spain) and Portugal it was not possible, specially in the case of

women, to observe any distribution in mortality figures, therefore the method was not applied.

Estimates for age [15-84) based on estimated values of attributable fraction are presented in part 8.1.1 of the Appendix, but to stress that the values of attributable fractions as well as excess mortality in the age [65-84) are overestimated, they are marked in italics.

As there are people who simultaneously drink and smoke, drink and use drugs etc. presented sums of the numbers of deaths attributable to alcohol consumption, smoking and drug use (all substances) are overestimated (some people can be counted twice or even three times).

Small discrepancies in some of the sums are caused by rounding the numbers up or down.

Unless it has been specially marked in text, source of all presented tables and figures are authors' own, on the basis of specified sources of primary data and adequate literature.

2.5. Estimation of costs of working time in Poland

To estimate alcohol, tobacco and drugs' attributable costs of crimes and offences in Poland the method proposed by Zofia Mielecka-Kubien and in detail described in [Kuzmicz, Mielecka-Kubien, Wiszejko-Wierzbicka, 2009, p.103-146][8] was applied, which, generally speaking, is based on estimation of percent of time and consequently percent of wages of criminal justice employees attributable to handling cases of certain type – in presented research results connected with alcohol use, smoking and drugs use. The costs estimation was restricted to estimation of values of wages of criminal justice employees plus costs of experts' opinions, and some other costs directly bounded with handling the considered kinds of cases.

It can be disputable whether the other categories of costs, as annual public budget allocated to computerisation (equipment, investments, maintenance) to court buildings (maintenance, operating costs), to investments in new buildings, to training and education etc. should be taken into account. In Poland justice institutions are overburdened, so it can be expected that, given there were no cases attributable to alcohol, smoking or drugs, the other categories of costs would not change much – but time would be saved, and could be devoted to hasten work on cases of other type; therefore the estimation was restricted to the above listed kinds of costs.

For the purpose of estimating the criminal justice costs surveys (on small scale) were conducted, including: the police, public prosecutors, law courts (for adults and juvenile), probation officers (for adults and juvenile), border guards and custom service and fire brigades. To question all services except border guards and custom service, a sample of 48 cities, that is 3 cities in every province of Poland: one small (up to 50 thousands inhabitants), one medium (50 – 100 thousands inhabitants) and one big city (over 100 thousands inhabitants) was selected. Simple random sampling was applied to select a city in a province and also to select: a police station, a public prosecutor office, a law court, and probation officers in the chosen city. One representative per unit was invited to participate in the survey.

In border guards and custom service three officers from each unit were included into the survey sample, that is 33 border guard officers and 48 custom service officers.

[8]Kuzmicz E., Mielecka-Kubien Z., Wiszejko-Wierzbicka D. (eds.). (2009). *Karanie za posiadanie. Artykuł 62 ustawy o przeciwdzialaniu narkomanii – koszty, czas, opinie*. (Penelizing possesion: Article 62 of the Drug Use Prevention Act – Costs, Time & Impact), Foundation of the Institute of Public Affairs in Warsaw.

Distribution of survey questionnaires (through emails) was preceded by the written consent from the head-quarter of each service and accompanied by the information letter clarifying survey objectives, procedure and assuring respondents confidentiality.

Questions for all services were similar and concerned the total number of cases in the first half of the year 2012 (from January to June) and the share of cases related to alcohol or tobacco or drugs as well as the estimated time of work (in hours) devoted to theses cases. Respondents were instructed to give their personal estimates if hard measures (records) were not available to determine their work load related to psychoactive substance abuse.

The scope of data collected was restricted to a few kinds of crimes and offences – those directly related to alcohol drinking, smoking or drugs use. Also estimated are some costs of dealing with crimes and offences committed under influence of alcohol, drugs and alcohol + drugs, which requires assumption, that those crimes and offences would not be committed, if the criminals were not under influence of alcohol or drugs – as a matter of fact in such cases should be estimated relative risk and attributable fraction of committing a crime or offence under the influence of alcohol or drugs, which presently are not available.

Additionally, for the purpose of estimatinghealth service costs in Poland, similar surveys were conducted in emergency/ambulance units in the chosen community.

Since surveys were conducted in 2012, and the whole research is based on 2010 data, it was necessary to update some of the results of the survey using coefficients expressing the relation of number of cases in considered category in 2010 to the adequate number in 2012. For that purpose the Statistical Yearbooks 2011 and 2013 data were applied.

Response rates differed significantly between services (table 2.5.1), from 16 (33% of the sample) in emergency units to 44 (92%) among probation officers for adults.

Table 2.5.1 Surveys' samples and response rates

Nr	Service	Sampling	Sample size (N)	Response rate (N)
1.	Police	Random sample of units per province x town size	48	31
2.	Criminal law courts	Random sample of units per province x town size	48	25
3.	Juvenile law courts	Random sample of units per province x town size	48	22
4.	Public prosecutors	Random sample of units per province x town size	48	32
5.	Probation officers for adults	Random sample of units per province x town size	48	44
6.	Probation officers for juvenile	Random sample of units per province x town size	48	42
7.	Border guards	3 respondents from all 11 units	33	31
8.	Custom service	3 respondents from all 16 units	48	72*
9.	Fire service	Random sample of units per province x town size	48	67*
10.	Emergency service	Random sample of units per province x town size	48	39
11.	Ambulance service	Random sample of units per province x town size	48	16

* In custom and fire service units more than one person answered the survey questionnaire

As the samples, which were sources of some of the necessary data, were small, the results should be treated as rough estimates.

3. Exposure

3.1. Exposure, Poland

Alcohol

Figures 3.1.1 and 3.1.2 show the changes in the consumption of alcohol from 1950 to 2010. From the 50's to late 70's attempts were made to reduce the size of the consumption of alcoholic beverages several times, mainly through price regulation. However, they relate only temporary effects. During this period, the volume of consumption of alcohol increased from about 4 liters in 1950 to more than 11 liters per capita area. 15 years of age in the late 70's.

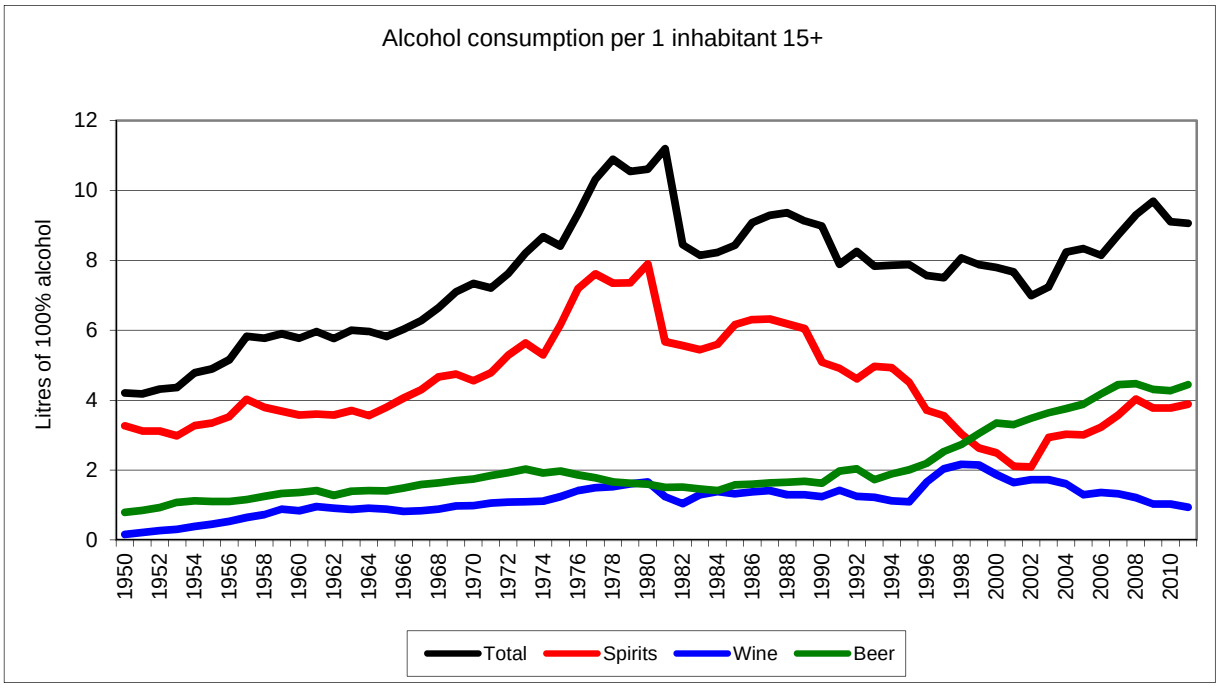
A significant decrease in alcohol consumption can be seen in the 80's. In 1980 the total alcohol intake was more than 11 liters to over two years to fall to around 8 liters per capita area. 15 years of age. In the next years there has been a slight increase in consumption, however, it did not exceed 9 liters. Of great importance was the adoption by the Parliament Act of 26 October 1982 on Upbringing in Sobriety and Counteracting Alcoholism, which was groundbreaking in terms of approach to issues related to alcohol (adopted by the law, although after many revisions, continue to regulate a number of issues related to alcohol). An important factor in the reduction of intake was also limiting the availability of alcohol through the system of rationing of goods, including alcohol, introduced in the early 80's, due to the huge market deficiencies.

The nineties were characterized by a stabilization of the total consumption of approximately 7.5 - 8 liters per capita, where significant changes have occurred in the field of various alcoholic beverages. The consumption of spirits was significantly reduced due to the growth in beer consumption. In 1999, for the first time beer consumption was greater than the consumption of spirits.

Since 2000 there is an increase in total alcohol consumption, with a steady growth in the case of beer and spirits since 2003. Increasing consumption of spirits in this period is associated with a reduction in excise duty on ethyl alcohol. In the case of wine since the late 90's, there is a trend towards decreasing consumption.

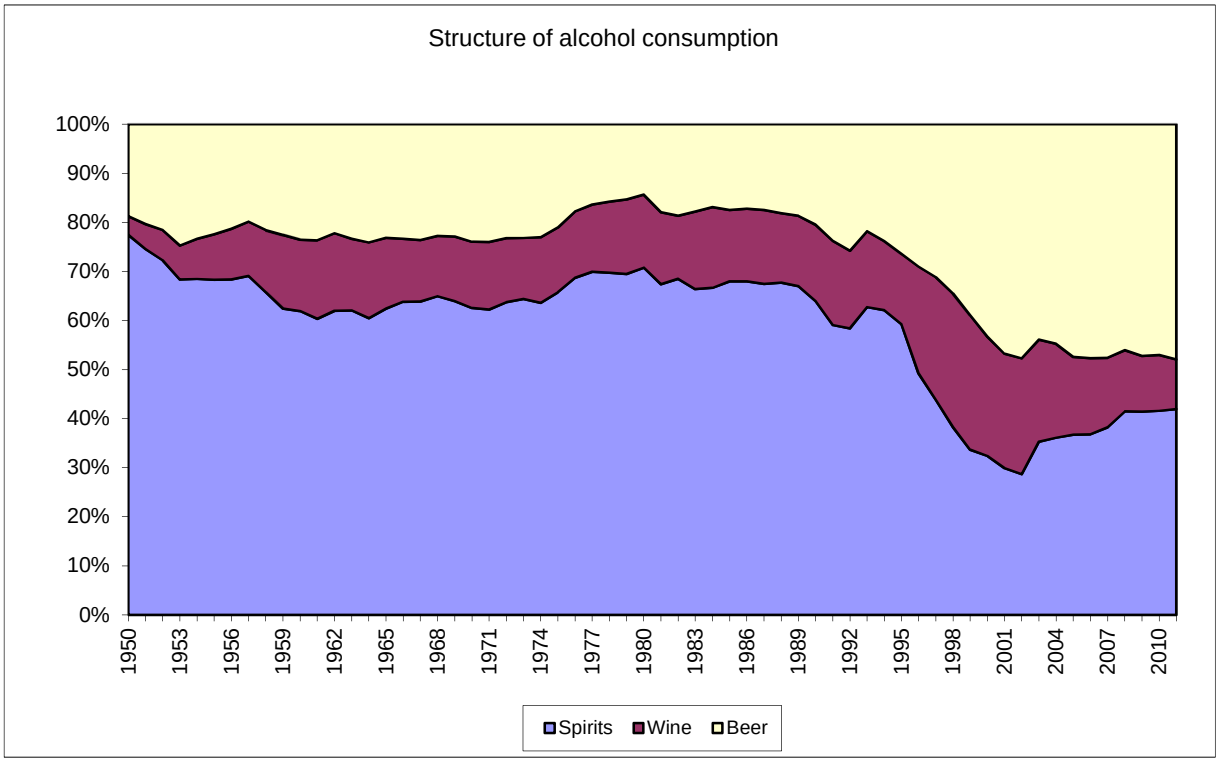
The growth of consumption of alcoholic beverages broke in 2009, when rates of excise duty on all types of alcoholic beverages were increased. In 2010, the volume of consumption of alcoholic beverages was more than 9 liters per capita above 15 years of age.

Figure 3.1.1 Alcohol consumption per 1 inhabitant 15 years and older in 1950-2010[9], Poland



Source: authors' own on basis of Statistical Yearbook of the Republic of Poland 1955-2011

Figure 3.1.2 Structure of alcohol consumption in Poland in 1950-2010, Poland



Source: authors' own on basis of Statistical Yearbook of the Republic of Poland 1955-2011

[9] 100% alcohol is calculated based on the assumption that: wine –contains 12,5% of alcohol, beer – 4%, spirists data is given in Statistical Yearbook as 100% alcohol.

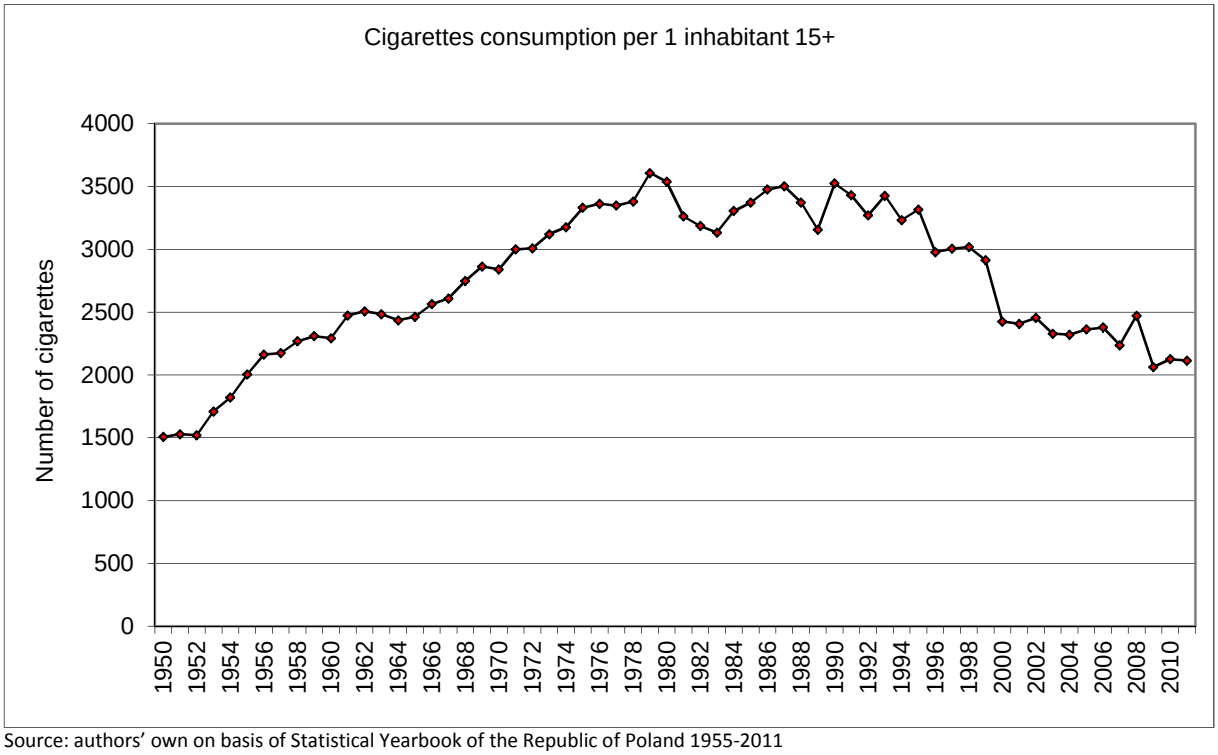
Tobacco

Figure 3.1.3 shows the changes in the consumption of cigarettes from the 50's to 2010. The consumption is calculated as production plus imports, minus exports and the loss or damage of agricultural products and in manufacturers divided per capita.

By the end of the 70's cigarette consumption has steadily increased in 1980, reaching a size of around 3600 cigarettes per year per inhabitant over 15 years of age. The eighties and nineties were characterized by the lack of a permanent trend, consumption fluctuated. Between 1998 and 2000 there was a significant decrease in consumption of approximately 500 cigarettes (down from about 2,900 to 2,400 cigarettes per person). Between 2000-2010we see a stabilization of consumption, with slight variations, with a slight downward trend. In 2010, consumption of cigarettes was reported at the level of 2,100 units per capita older than 15 years of age.

In addition to the official statistics from the 70's, surveys are conducted. In the mid- 70's, 62% of men and 19% women smoked cigarrettes. In the early 80's the number of smokers increased, especially in the population of women - up to 65% of men and 30% women. Since the mid- 80's we see a steady decline in the number of smokers. Between 2000 – 2004 the percentage of male smokers was 43%, and 25% of women. According to data from research conducted GATS in 2010 30.3 % of adult Poles smoked cigarrettes. 33.5 % of adult men were daily cigarette smokers (5.2 million); 21.0 % of adult women (3.5 million) - a total of 27.0 % of adults (8.7 million).

Figure 3.1.3 Cigarettes consumption per 1 inhabitant 15 years and older in 1950-2010, Poland



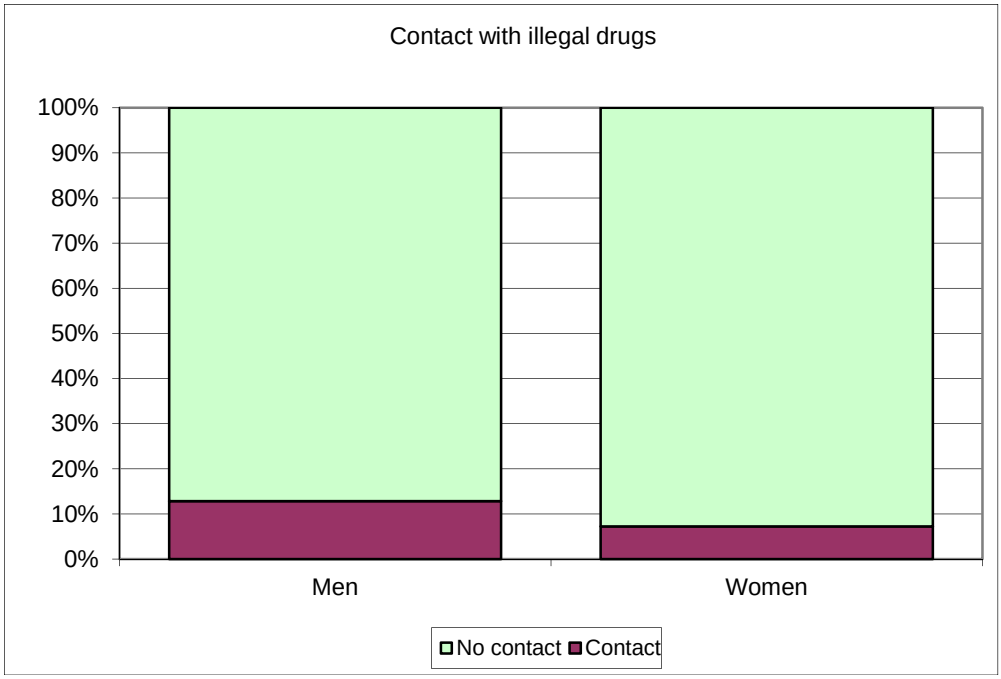
Source: authors' own on basis of Statistical Yearbook of the Republic of Poland 1955-2011

Drugs

According to the survey conducted in 2009 6% of women and 11% of men had contact with drugs. The most popular drugs (both among men and women) were: cannabis – from people which had contact with drugs, 33% of men and 18% of women smoked cannabis –and amphetamines –17% of men and 6% of women had contact with this drug.

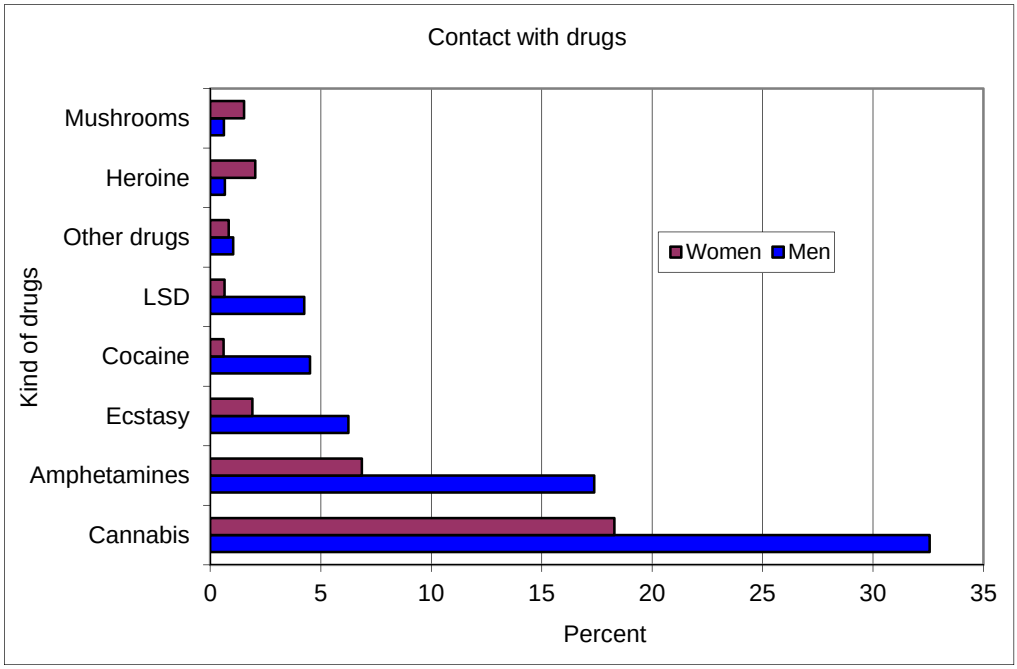
In case of other drugs differences based on sex are noticed. Among women the third most popular drug was heroin; among men – ecstasy. The less popular drug among women was cocaine, among man – mushrooms.

Figure 3.1.4 Contact with illegal drugs in Poland according to gender in 2009, Poland



Source: authors' own on basis of Public Poll Survey on Drug Policy Attitudes in 6 EU Member States (2009).

Figure 3.1.5 Contact with illegal drugs in Poland according to gender and kind of drugs in 2009



Source: authors' own on basis of Public Poll Survey on Drug Policy Attitudes in 6 EU Member States (2009).

Table 3.1.1 Alcohol and cigarettes consumption per 1 inhabitant 15 years and older in chosen years, Poland

YEAR	CONSUMPTION (L OF 100% ALCOHOL)				CONSUMPTION STRUCTURE (%)			NUMBER OF CIGARETTES
	TOTAL	SPIRITS	WINE	BEER	SPIRITS	WINE	BEER	
1950	4.2	3.3	0.2	0.8	77.5	3.8	18.7	1507
1960	5.8	3.6	0.8	1.4	61.9	14.5	23.5	2292
1970	7.3	4.6	1.0	1.7	62.5	13.5	24.0	2841
1980	11.2	7.9	1.7	1.6	70.8	14.9	14.3	3537
1990	7.9	5.1	1.2	1.6	64.0	15.6	20.5	3525
2000	7.7	2.5	1.9	3.3	32.4	24.3	43.3	2426
2010	9.1	3.8	1.0	4.3	41.6	11.4	47.0	2126

Source: authors' own on basis of Statistical Yearbooks of the Republic of Poland 1955-2011.

3.2. Exposure, Portugal

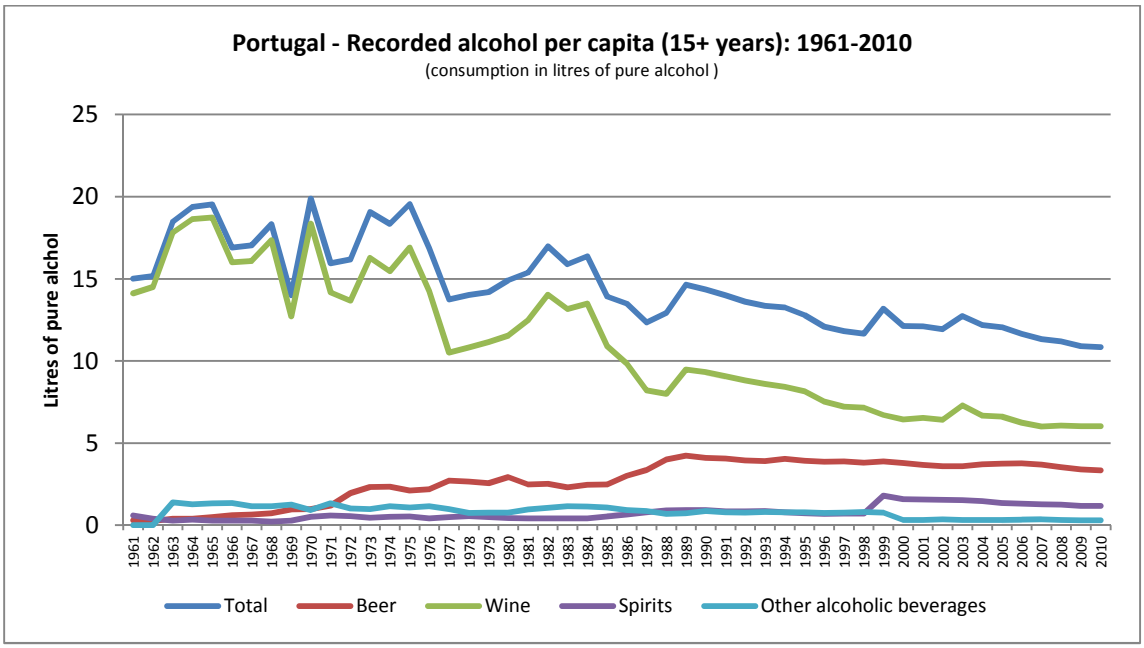
Alcohol

The production and consumption of alcoholic beverages is deeply ingrained in the Portuguese economy and culture.

In 2011, Portugal was among the ten largest wine exporters in the world (10th place, being the first three Italy, Spain and France). Wine production is an important activity in the country economy and has a long tradition, while beer production got big relevance mainly during two decades.

Despite the (almost) consistent decreasing since last three decades, Portugal still remains among the countries with high levels of alcohol consumption (10.84 liters, per capita, in 2011).

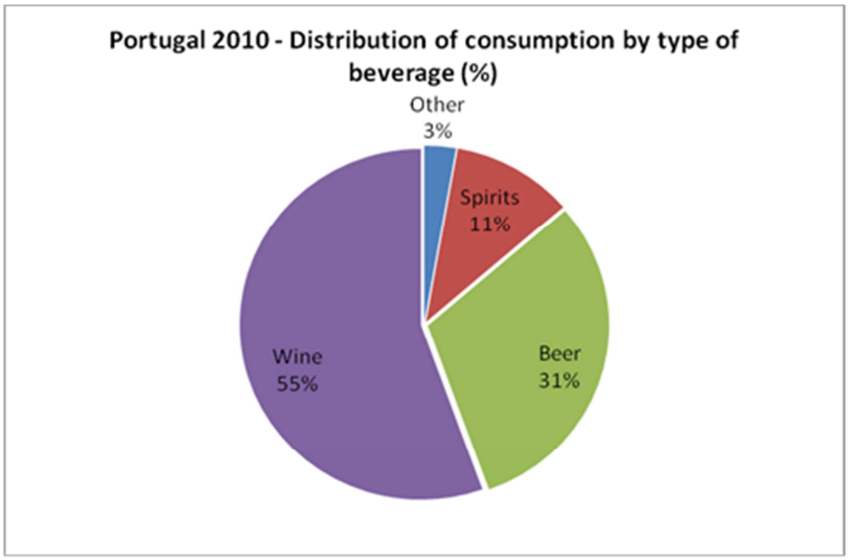
Figure 3.2.1 Portugal - Recorded Alcohol per capita (15+ years): 1961-2010



Source: WHO: GISAH

Wine accounts for 55% of total alcoholic beverages consumed, beer for 31% and spirits for 11%, as show in next table.

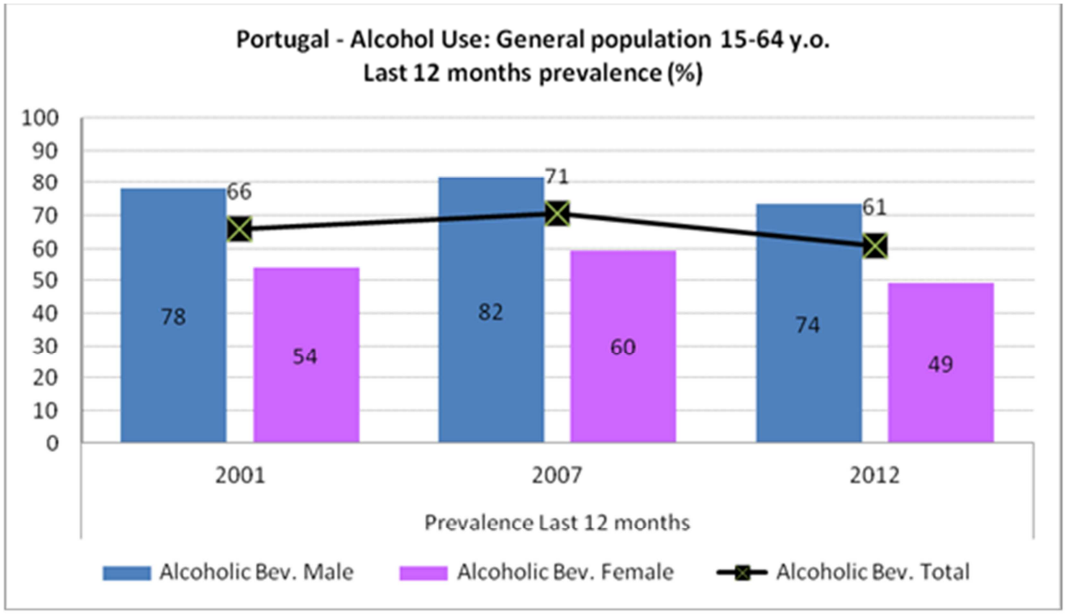
Figure 3.2.2 Portugal 2010 – Distribution of consumption by type of beverage (%)



Source: WHO: GISAH

Considering trends in alcohol consumption, as reported in General population surveys carried out since 2001, there was a decrease in the percentage of either man or women that consumed alcoholic beverages in the last twelve months before the survey. Either the economic crisis or very high level of Portuguese that leave the country looking for work abroad or the decrease of immigrants working in Portugal might contribute to that decrease.

Figure 3.2.3 Portugal – Alcohol use: general population 15-64. Last 12 months prevalence (%)

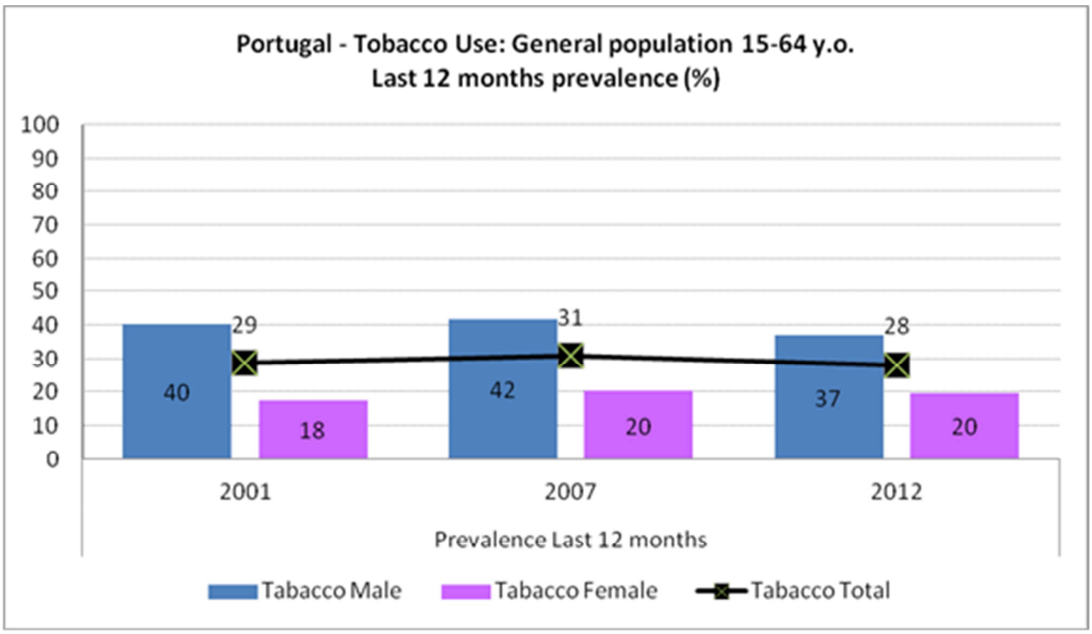


Source: General Population Survey on Psychoactive Substance Use - Portugal 2012

Tobacco

Regarding Tobacco, there was also some decrease in the percentage of men who smoked in the last twelve months before the survey, but among women, the percentage remains stable.

Figure 3.2.4 Portugal – tobacco use: general population 15-64. Last 12 months prevalence (%)



Source: General Population Survey on Psychoactive Substance Use - Portugal 2012

Illicit Drug Use

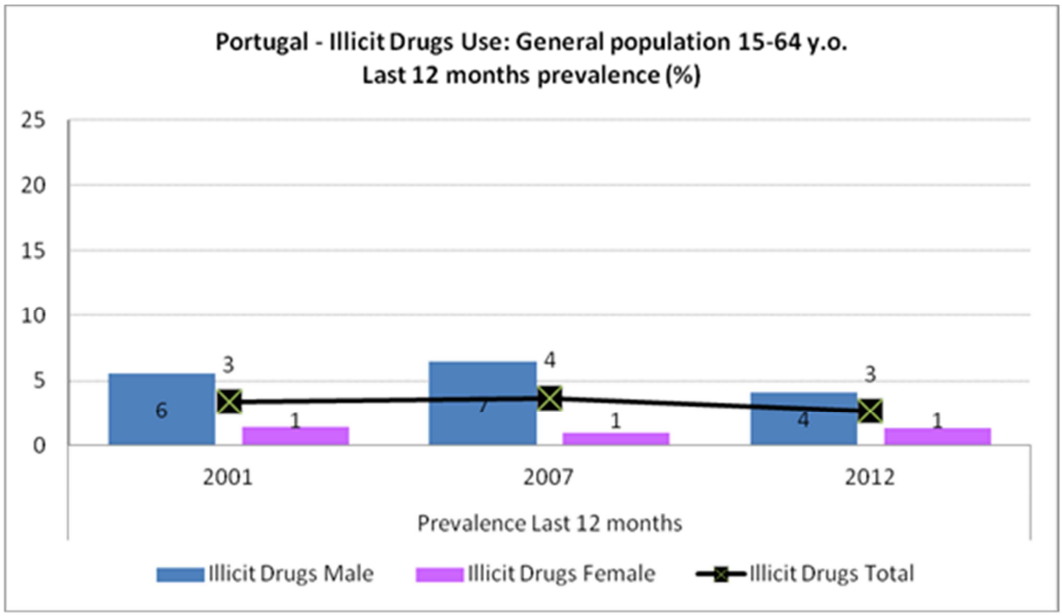
Global values of illicit drug use in Portugal, among general population (15-64 y.o.) are not high, if compared with most of other European countries – in 2012 9.5% have used illicit drugs.

According to the 2012 General Population Survey (GPS), considering any illicit drug use, it was found that: 9.5% of the population had already tried some drug ("lifetime" prevalence), 2.5% had consumed in "last 12 months", and 1.5% had consumed in "last 30 days" before the survey.

Drug use in Portugal is mainly a behavior common among youth; the same GPS shows that in the last 12 months prevalence by age group were: 5.8% of the 15-24 y.o. ; 4.6% for 25-34 y.o.; 2.4% for 35-44 y.o., 1.0% for 45-54 y.o., and 0.2% for 55-64 y.o. If we consider the recent use (last 30 days), the percentages for the same age groups are respectively; 3.5%, 2.8%, 1.4%, 1.0% and 0.1%.

Differences among men and women are high, as shown in the chart bellow.

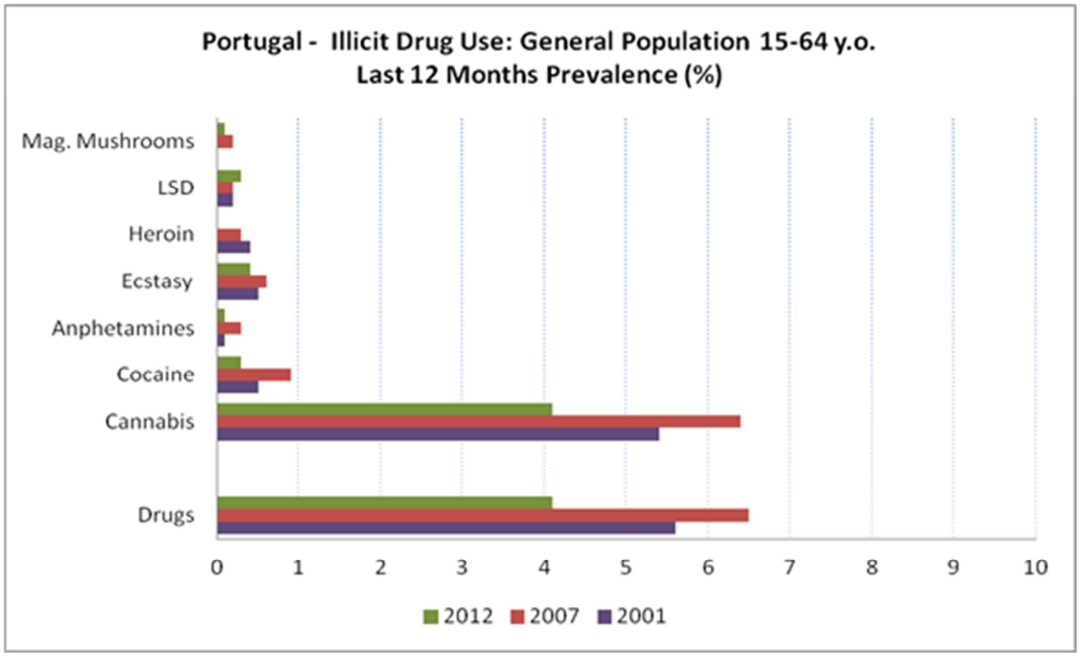
Figure 3.2.5 Portugal – Illicit drugs use: general population 15-64. Last 12 months prevalence (%)



Source: General Population Survey on Psychoactive Substance Use - Portugal 2012

Illicit drug use in Portugal is, basically, cannabis drug use, as shown in next chart.

Figure 3.2.6 Portugal – tobacco use: general population 15-64. Last 12 months prevalence (%). Type of drugs



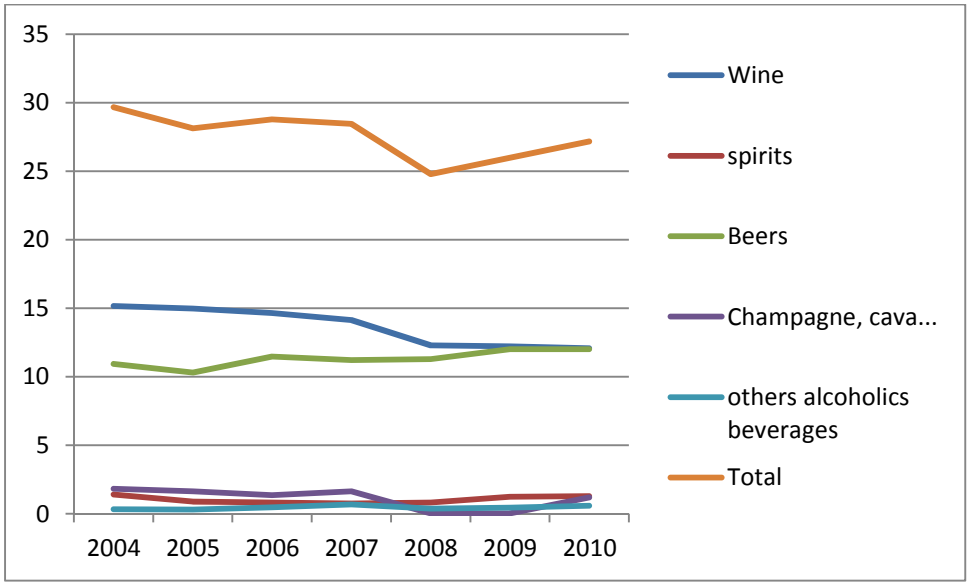
Source: General Population Survey on Psychoactive Substance Use - Portugal 2012

3.3. Exposure, Catalonia (Spain)

Alcohol

According to the Ministry of Agriculture, Food and the Environment, in Catalonia (Spain), between 2004 and 2010 there was a slow and progressive decrease in the consumption of wine in litres per capita, while at the same time consumption of alcoholic beer increased so that the consumption of each is currently equal. Sparkling drinks, spirit drinks and the other alcoholic drinks remained stable over this 6-year period.

Figure 3.3.1 Catalonia (Spain) - Alcohol cosumption per capita, 2004-2010



Source: Ministry of Agriculture, Food and the Environment

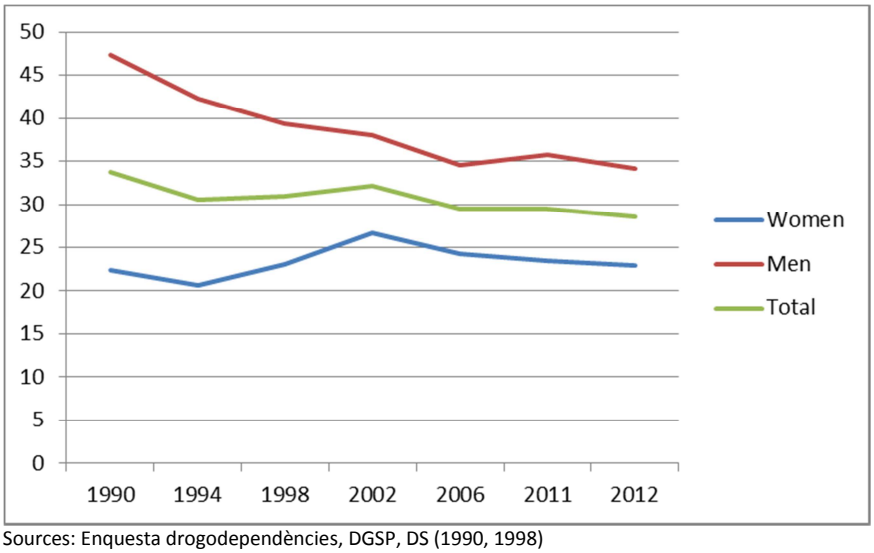
Risky consumption of alcoholic drinks is determined through a calculation which takes into account the quantity, frequency and type of drinks consumed (SDUs). Risky consumption is different in men than in women. In the year **2010** 6.2% of the population aged >15 registered a **risky consumption of alcohol** (8.7% of men and 3.7% of women). 64.7% of the population drink in moderation (70.9% of men). Only 29.1% of the population did not drink (20.4% of men and 34.4% of women).

In comparison with the year 2005, the percentage of this risky consumption has gone up from 4.7% to 6.2%, and is significantly higher as a consequence of a significantly higher percentage of risky consumption among women (1.8% in 2006, 3.7% in 2010). The prevalence of risky drinkers of alcohol is higher in men of all ages. The highest percentage of women risky drinkers corresponds to women aged from 15 to 24, with a prevalence of 4.5%, while in men the highest percentage of risky drinkers of alcohol can be seen in men aged 24 to 34, with a prevalence of 13.2%

Tobacco

The evolution of tobacco shows different tendencies according to sex. Since 1990 the prevalence of tobacco use among men has decreased, while in women an increase in prevalence can be seen until 2002 and then a slight downward trend from that year on.

Figure 3.3.2 Catalonia (Spain) - Prevalence of tobacco use, 1990-2012, .



Sources: Enquesta drogodependències, DGSP, DS (1990, 1998)
Enquesta de Salut de Catalonia (Spain), DS (1994, 2002, 2006, 2011, 2012). Elaboració ASPCAT, 2013

The percentage of the population who smoke, according to ESCA 2010, does not differ significantly from the results from ESCA 2006. This can be explained, in part, by the fact that it was between 2002 and 2006 that the percentage of the population who smoke decreased more dramatically, with the fieldwork of the 2006 ESCA coinciding with the approval of Law 38/2005, of 26th December, on healthcare measures to combat tobacco use and to regulate the sale, supply, consumption and advertising of tobacco products. See table 3.3.1.

Table 3.3.1 Catalonia (Spain) - Tobacco use according to ESCA

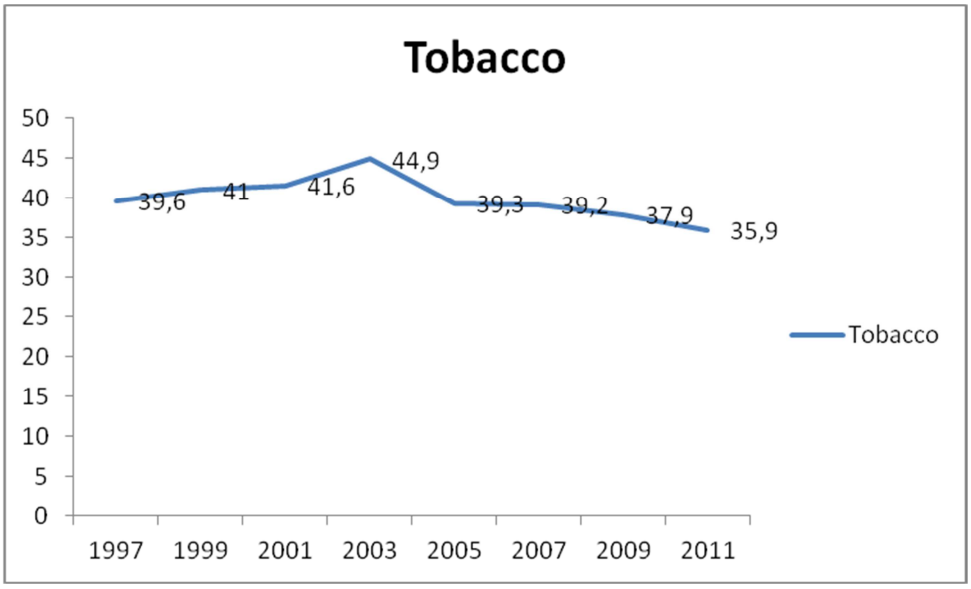
	2002			2006			2010		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
Smokers population	34.30%	23.60%	28.80%	30.30%	20.90%	25.50%	34.10%	24.80%	29.50%
Ex-smoker population	20.60%	7.50%	13.90%	25.80%	13.70%	19.70%	26.60%	16.90%	21.70%
No smoking	35.80%	63.20%	49.80%	65.50%	75.60%	70.60%	39.30%	58.20%	48.90%

Source: ESCA

According to the survey administered by EDADES to persons aged 15 to 64, the prevalence of tobacco use in the last 30 days and since 2003 has been gradually decreasing and now stands at 35.9% (Table 3.3.1).

Alcohol, in first place, and tobacco in second, are the most consumed substances.

Figure 3.3.3 Catalonia (Spain) - Prevalence of tobacco use in the last 30 days among persons aged 15-64, 1997-2011



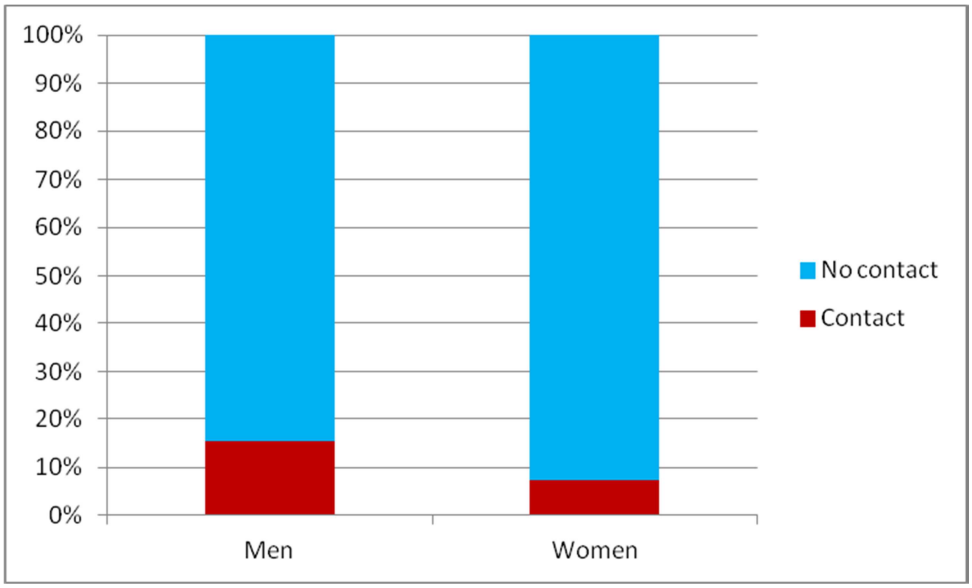
Source: EDADES

In Catalonia (Spain), although levels of prevalence of tobacco use are falling each year, it currently stands at 29.5% of the adult population and is remaining stable.

Drugs

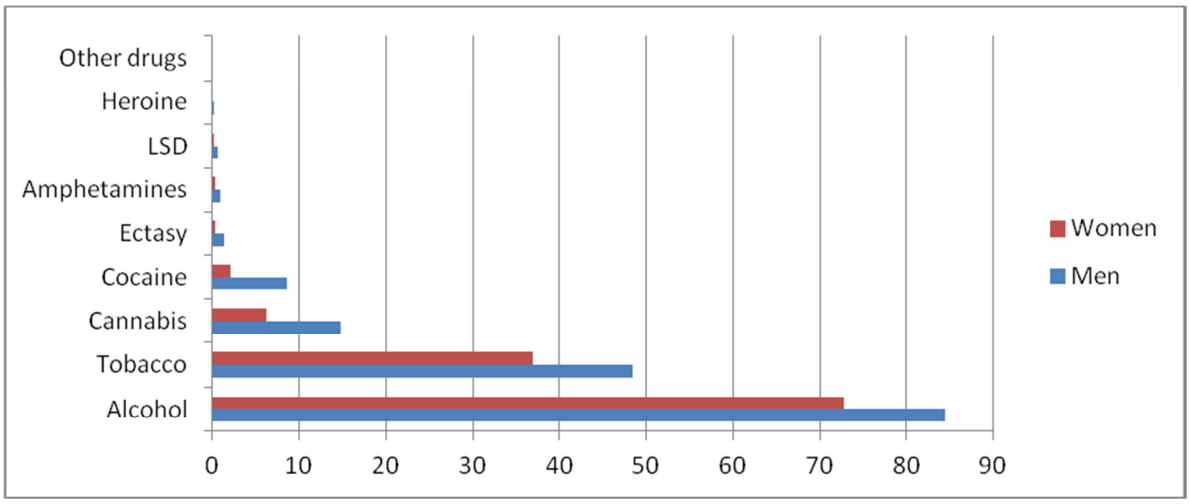
According to the survey conducted in (EDADES) 2011 contact with drugs in the lifetime had 7.4% of women and 15.4 % of men. The last 12-month most consumed illegal drug was cannabis (14.8% and 6.2% respectively in the last 12 months) followed by cocaine (8.6% and 2.1%) and ecstasy (1.4% y 0.3%).

Figure 3.3.4 Catalonia (Spain) - Contact with drugs in the lifetime, 2011



Source: EDADES

Figure 3.3.5 Catalonia (Spain) - Prevalence of drug use in the last 12 months, 2011



Source: EDADES

3.4. Summary of exposure in three countries

In 2010 per capita alcohol consumption in participating countries varied from 9.1 l in Poland to 10.8 l in Portugal. Worth noting are differences in the structure of alcoholic beverages between Mediterranean countries and Poland. In Catalonia and Portugal more than 50% of alcohol has been consumed in wines, 30%-40% in beers and the share of spirits has not exceed 11% (in Portugal, while in Catalonia was even lower). In Poland, 50% of pure alcohol has been consumed in beers, 40% - in spirits, and only 10% in wines.

The prevalence of tobacco use was quite similar in participating countries, in total, ranging from 28% in Portugal to 30% in Poland. However, Polish men have been smoking more frequently than men in Portugal and Catalonia (43%, 37% and 34% respectively), while women in Portugal have been smoking less (20% compared to 25% in two other countries).

The lifetime prevalence of illicit drug use ranged from about 8.5% in Poland to 11.4% in Catalonia. The biggest gender differences were observed in Portugal where drug use was more than three times more prevalent among males than females (15% vs. 4.5%). In the two other countries, approximately twice as many men as women have been using drugs (11% vs. 6% in Poland and 15.4% vs. 7.4% in Catalonia).

4. Estimation of attributable fraction

4.1. Poland

ALCOHOL

As mentioned in the Methods section, estimation of attributable fraction is based on two components: the prevalence of drinkers in each of alcohol drinkers' categories, and the relative risk of each of alcohol related consequence of alcohol abuse.

The relative risk estimates are available for low, hazardous and harmful drinkers (men and women). Therefore to estimate the attributable fraction and number of deaths, which can be ascribed to alcohol abuse, it was necessary to estimate the percent of drinkers in each category in populations of men and women. In the Polish case it was possible to apply the survey data (PARPA 2002 and 2008) for the purpose, so the percent of drinkers drinking on low, hazardous and harmful level was estimated by Zofia Mielecka-Kubien on the basis of the distribution of alcohol consumption in Poland (see Appendix 7.2).

Table 4.1.1 presents estimated percent of drinkers of different categories in the population, on the basis of previously estimated distributions of alcohol consumption for males and females in Poland, and the percent of abstainers according to [Fudala 2008, p.14].

Table 4.1.1 Percent of drinkers of different categories in the Polish population

DRINKING LEVEL	PERCENT IN POPULATION OF:		
	MEN	WOMEN	TOTAL
Abstainers	17.3	37.5	27.9
Low	62.3	45.8	53.6
Hazardous	9.3	10.3	9.8
Harmful	11.2	6.4	8.7

Source: authors' own calculation on the basis of [English 2005], [Fudala 2008], survey and Statistical Yearbook data. Percent of abstainers after [Fudala 2008, p.14].

To arrive to estimates of attributable fraction with regard to its distribution according to age and the distribution of male and female abstainers, [Fudala 2008, p.14] was used as a basis. The basic data are presented in table 4.1.2.

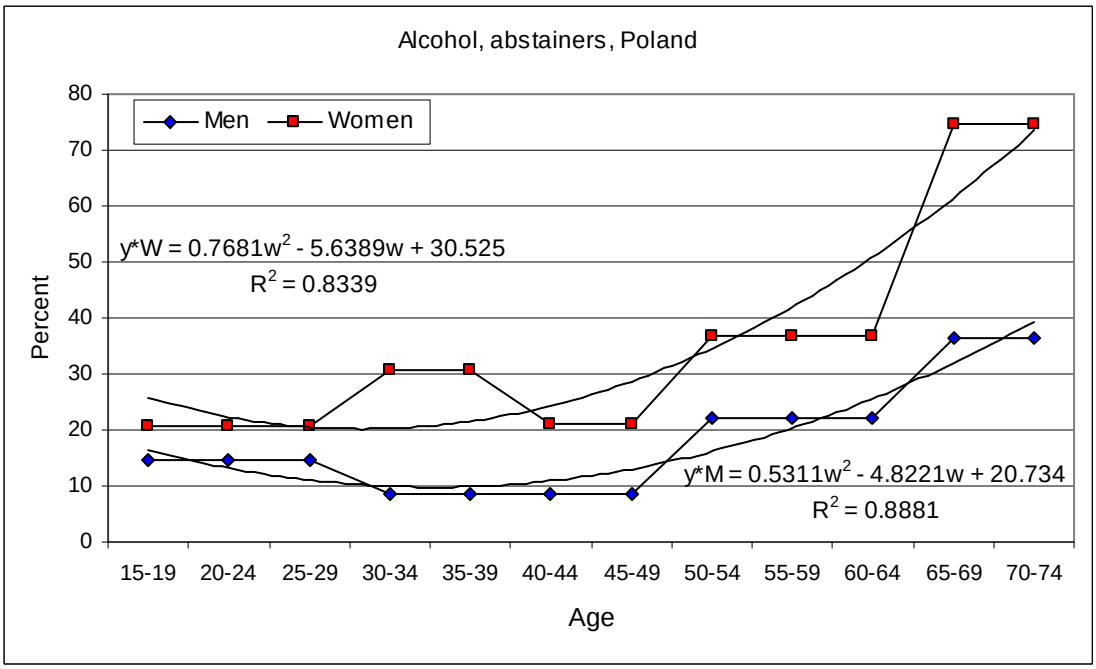
The fitted regression functions are presented in fig. 4.1.1, whereas fig. 4.1.2 presents the final results of the estimation of abstainers distributions in Poland.

Table 4.1.2 Percent of abstainers in population according to gender and age, basic data, Poland

AGE	ABSTAINERS	
	MEN	WOMEN
18-29	14.7	20.6
30-39	8.7	30.8
40-49	8.6	21.2
50-64	22.0	36.9
65+	36.6	74.6

Source: [Fudala 2008, p.14].

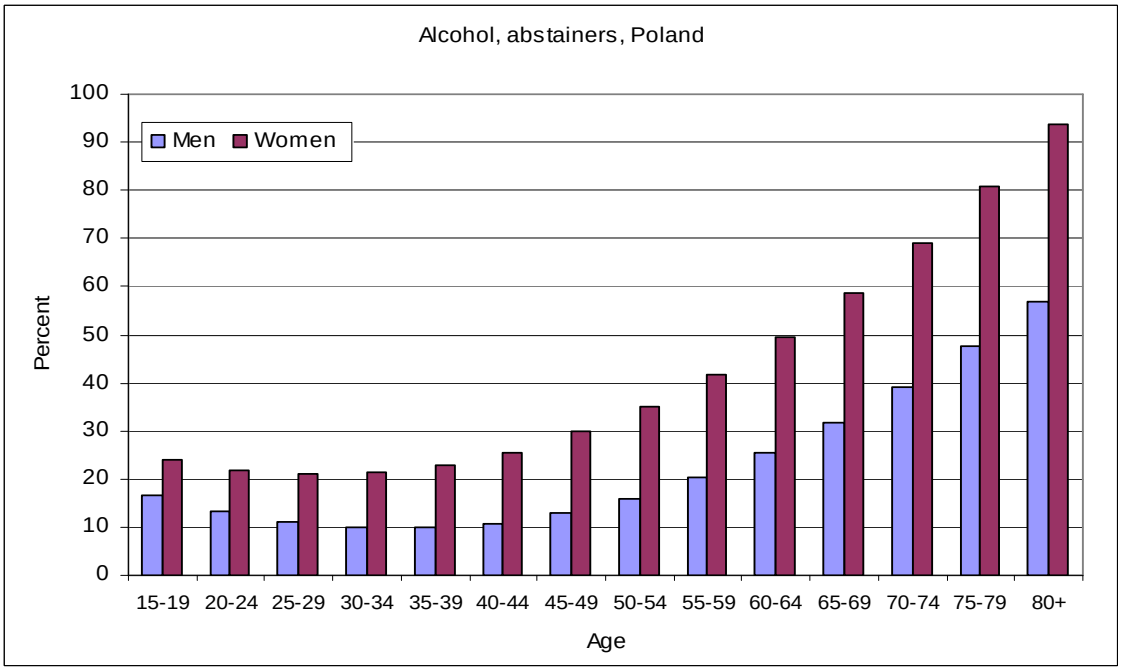
Figure 4.1.1. Percent of abstainers [men (M) and women (W)] and fitted egression functions[10], Poland



Source: authors' own calculation on the basis of [Fudala 2008].

The above presented (tab.4.1.1 and 4.1.2, fig. 4.1.1) results served, in turn, as starting point of the estimation of the distributions of alcohol consumers drinking on low, hazardous and harmful levels according to age (fig.4.1.3 and 4.1.4).

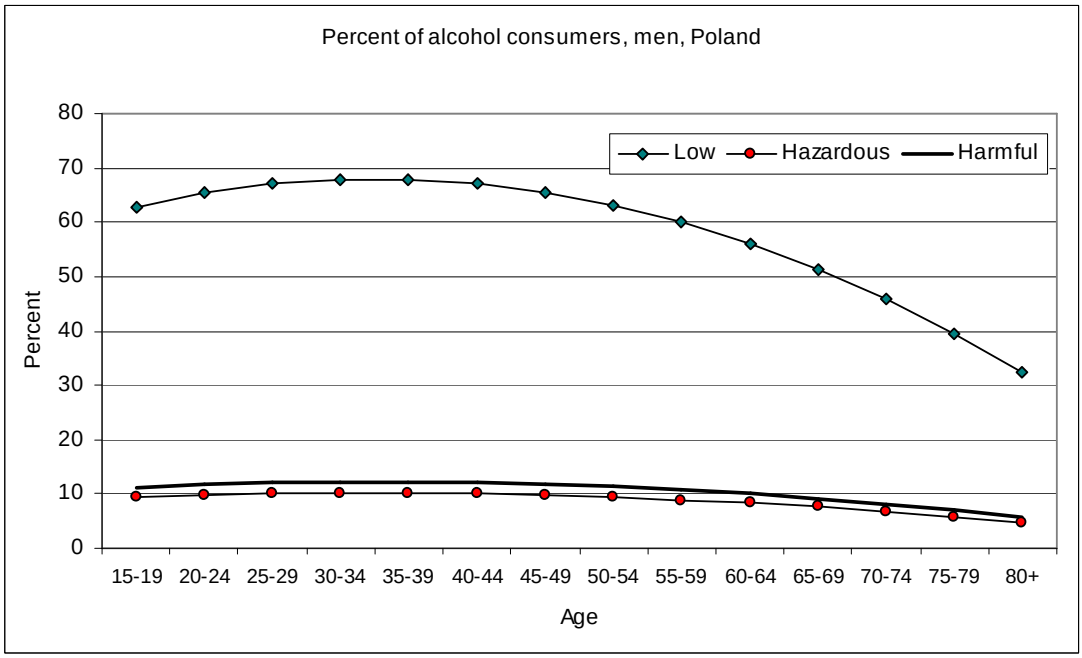
Figure 4.1.2 Estimated percent of abstainers according to gender and age, Poland



Source: authors' own calculation on the basis of [Fudala 2008].

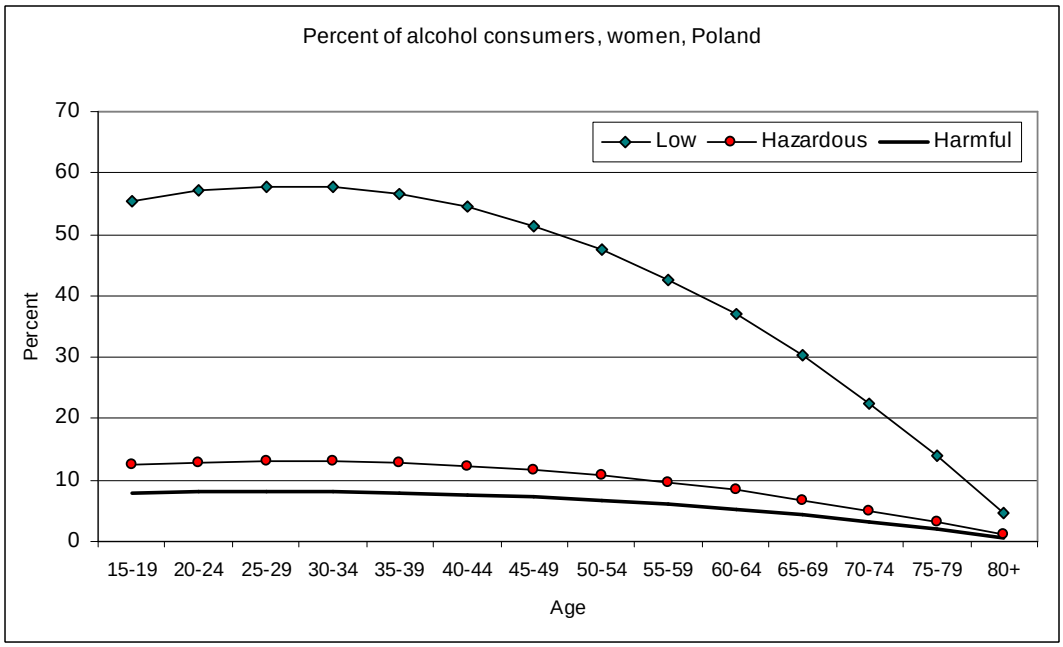
[10]In all presented in the study regression functions: *w* – denotes age, R^2 – coefficient of determination.

Figure 4.1.3 Estimated percent of alcohol consumers (men) drinking on low, hazardous and harmful level, Poland



Source: authors' own.

Figure 4.1.4 Estimated percent of alcohol consumers (women) drinking on low, hazardous and harmful level, Poland



Source: authors'.

On the basis of exposure data presented above and relative risks estimates (see tab. 8.1.1.1) attributable fractions for some conditions partially attributable to alcohol use in Poland were estimated. The results are presented in Appendix tables 8.1.1.1-8.1.1.3. Table 8.1.1.3 presents attributable fraction estimated for the whole population [15+), without taking into account distributions of alcohol consumers and abstainers according to age, whereas tab. 8.1.1.2-8.1.1.3 present results of estimation of attributable fractions for different causes of deaths which can be

partly attributed to alcohol abuse in Poland, were distributions of alcohol consumers and abstainers according to gender and age were taken into consideration.

It can be observed that in two cases [*Coronary heart disease* (I20-I25), *Cholelithiasis* (K80)] the sign of estimated attributable fraction is negative, which means that the benefits of consuming alcohol prevail in these cases its negative consequences (relative risk coefficients for low and hazardous drinkers were less than 1).

In Appendix table 8.1.1.4 causes of death caused 100% by alcohol consumption are listed.

As already mentioned in chapter 2, the attributable fractions for older age classes [here, as assumed, age class [65+)] are most probably overestimated, therefore they are marked by the use of fonts in italics.

Smoking

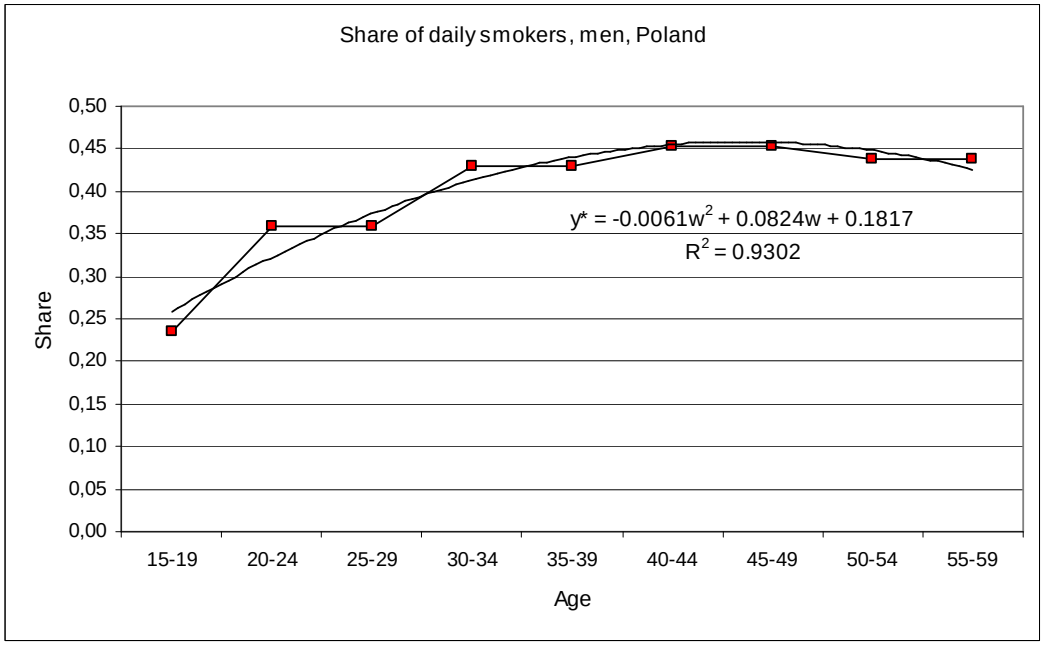
Data on smoking prevalence in Poland come from the WHO study GATS (Global Adult Tobacco Survey) conducted in Poland in the years 2009-2010.

Table 4.1.3 Smokers distribution by status and gender according to GATS (%), Poland

SMOKING STATUS	POPULATION 15 YEARS AND OLDER	
	MEN	WOMEN
Daily smokers	33.5	21.0
Occasional smokers	3.3	3.4
Former daily smokers	21.8	11.3
Never daily smokers	41.3	64.3

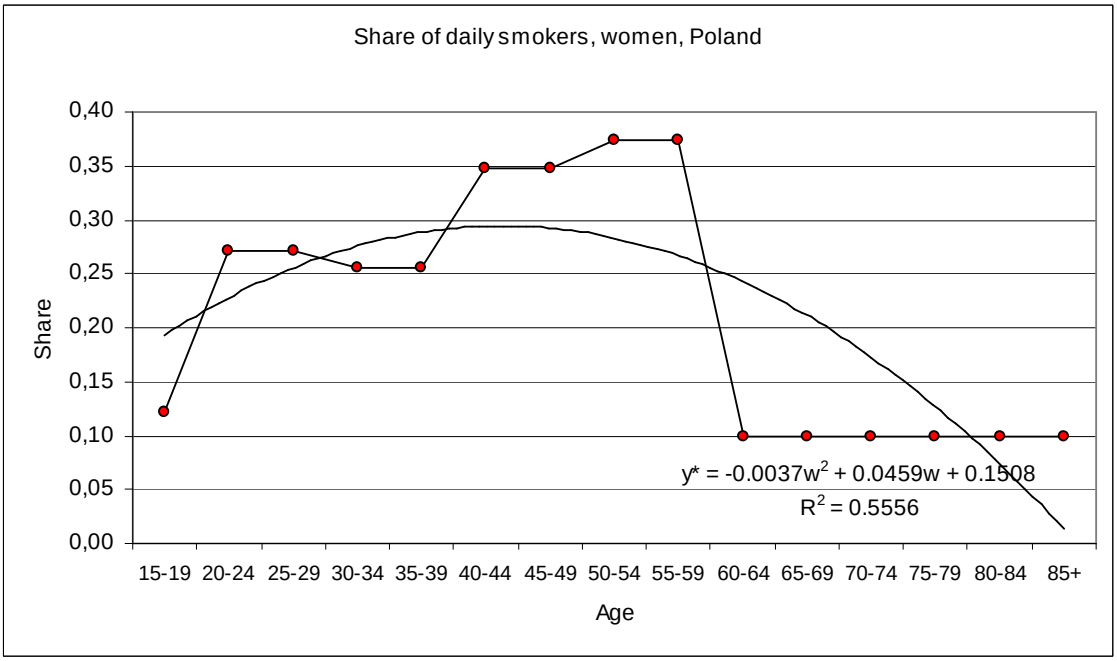
Source: authors' own on the basis of: [GATS 2010, p.37].

Figure 4.1.4 Share of daily smokers (men) and fitted theoretical function, Poland



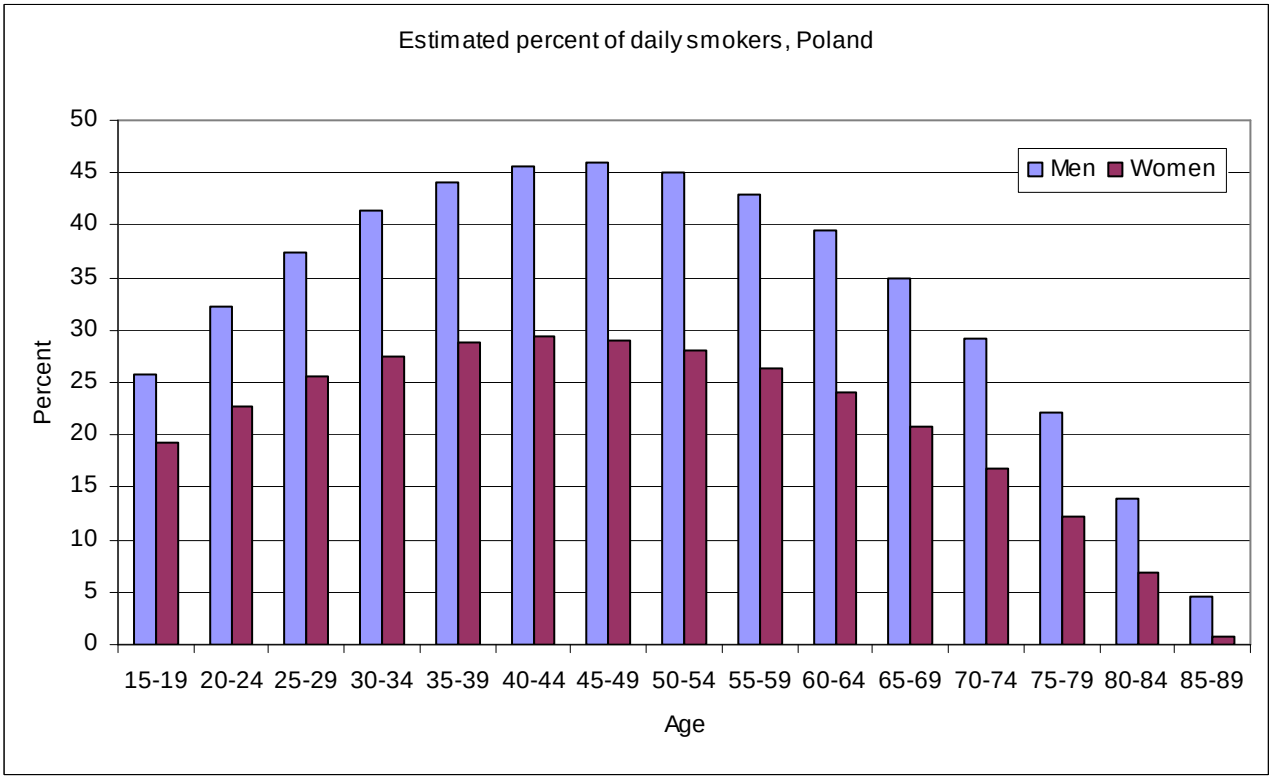
Source: authors' own on the basis of: [GATS 2010].

Figure 4.1.8 Share of daily smokers (women) and fitted theoretical function, Poland



Source: authors' own on the basis of: [GATS 2010].

Figure 4.1.9 Estimated percent of daily smokers according to gender and age, Poland



Source: authors' own on the basis of: [GATS 2010].

To estimate the distribution of smokers according to age similarly as in the case of alcohol, the theoretical functions were fitted to empirical data of age distribution of smokers (fig. 4.1.7 and 4.1.8), and then, in further analysis, theoretical values of the estimated regression functions were applied.

The level of fitting of the theoretical functions to empirical data was much better in case of men than of women; on the other hand it can be hardly expected that the share of smoking women dropped down suddenly by 36.4% between age classes [55-59) and [60-64); the difference is most probably due to a non-sampling error occurred in the survey.

The final results of the estimation are presented in fig. 4.1.9. Table 8.1.1.5 (in the Appendix) presents the estimated attributable fractions for smokers without taking into account their age distribution, whereas tab. 8.1.1.6 and 8.1.1.7 present attributable fractions for smokers with regard of their age and in this case distribution of smokers according to age was taken into account.

As already mentioned in chapter 2 the attributable fractions for older age classes [here, as assumed, age class [65+)] are most probably overestimated, therefore they are marked by the use of fonts in italics.

Drugs

According to 2011 National Report (2010 data) of National Bureau for Drug Prevention in Warsaw to the EMCDDA (p.70) number of problem drug users in Poland was estimated[11] as equal to: 56.694 + 102.570 = 159.264.

Table 4.1.5 Attributable fractions for causes of death partially attributable to drug use in Poland

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION POPULATION
Tuberculosis	A15-A19	na	0.045
Hepatitis C	B17.1, B18.2, B16, B18.0	English 1995	see table 4.1.6
Hepatitis B	B18.1	English 1995	see table 4.1.6
HIV/AIDS	B20-B24	na	0.531
Homicide or injury inflicted by another person with intend to injure or kill, by any means	X85-Y09	na	0.158

Source: authors' own on basis of: [English 1995], [The Economic Cost… 2004], and National Institute of Public Health data. List of causes of deaths and ICD 10 codes after [The Economic Cost.. 2004, B-11].

For *Homicide or injury inflicted by another person with intend to injure or kill, by any means* and for *Tuberculosis* 15.8 and 4.5% percent respectively were attributed to drug abuse, following [*The Economic Costs*… 2004, Appendix B].

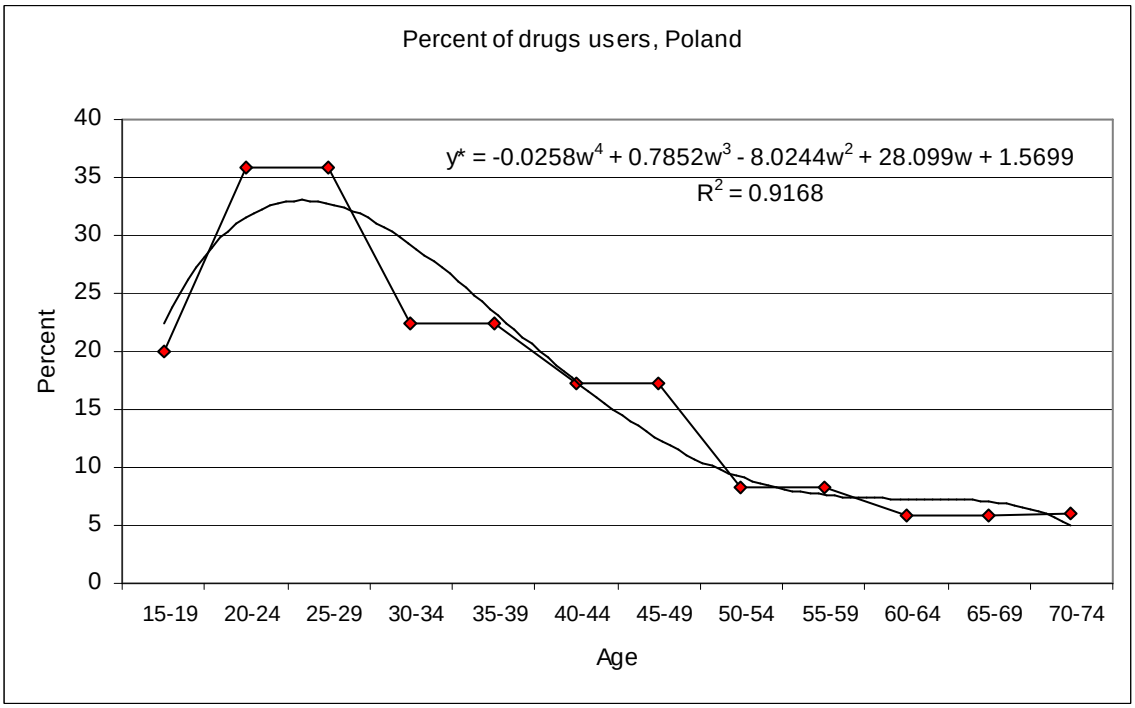
According to data of the National Institute of Public Health (National Institute of Hygiene)[12] in Warsaw, Poland about 53.1% of HIV/AIDS deaths can be ascribed to injecting drug users, as the most probable way of infection.

There were no deaths in Poland in 2010 for Viral Hepatitis A (B15.9).

To estimate attributable fraction for causes of deaths partially attributable to illegal drug use (Hepatitis B and C) the theoretical function was fitted to empirical data concerning percent of drug users in age classes (fig. 4.1.10). Unfortunately in the case of drugs use the data are available only for the whole population, without division for men and women. In the analysis the theoretical values of the regression function presented in fig.9 were applied for men and women.

[11] Estimation was performed with the combined use of 2009 and 2010 data; the method of benchmarking was applied.
[12] Authors' own estimation, cases of lack of the data excluded.

Figure 4.1.10 Percent of illegal drug users (men and women) and fitted theoretical function, Poland



Source: authors' own on basis of: Public Poll Survey on Drug Policy Attitudes in 6 EU Member States (2009).

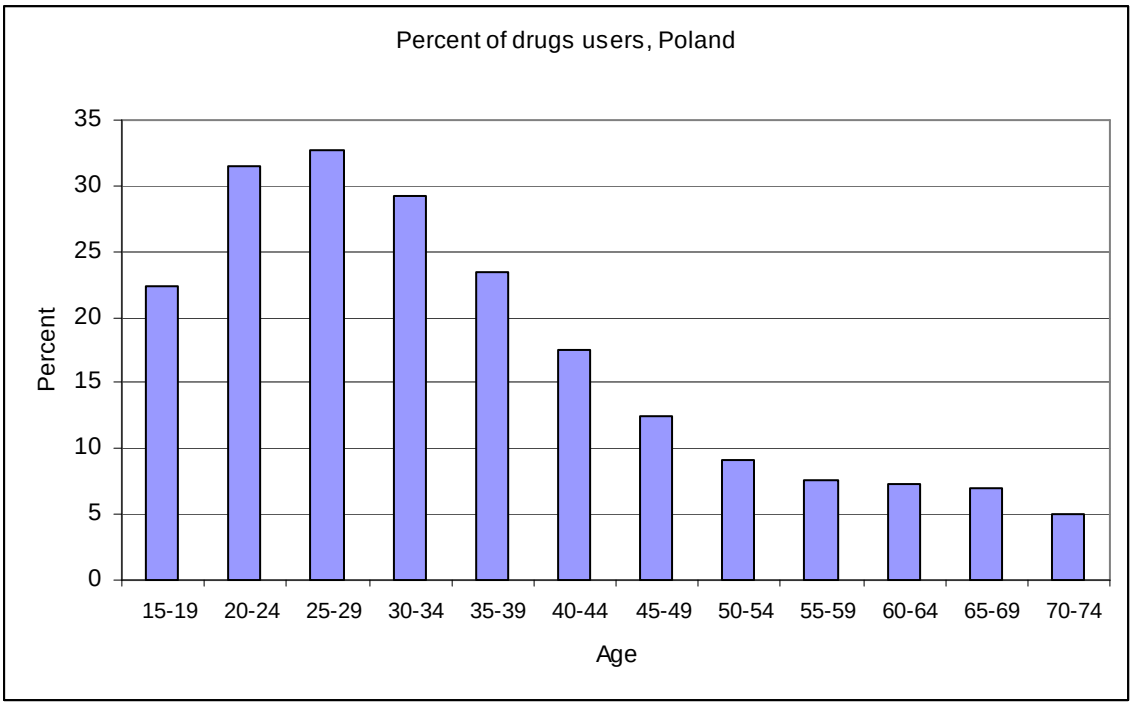
The results of the estimation are presented in table 4.1.6.

Table 4.1.6 Attributable fractions for causes of death partially attributable to drug use according to age, Poland

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34
Hepatitis C	B17.1, B18.2, B16, B18.0	0.259	0.330	0.338	0.313
Hepatitis B	B18.1	0.266	0.338	0.346	0.321
CAUSES OF DEATH	ICD10 CODES	55-59	60-64	65-69	70-74
Hepatitis C	B17.1, B18.2, B16, B18.0	0.106	0.102	0.099	0.073
Hepatitis B	B18.1	0.110	0.106	0.102	0.076

Source: authors' own on basis of: [English 1995], 2011 National Report of National Bureau for Drug Prevention in Warsaw to the EMCDDA, and Public Poll Survey on Drug Policy Attitudes in 6 EU Member States (2009)

Figure 4.1.11 Estimated percent of illegal drugs users (men and women), Poland



Source: authors' own on basis of: Public Poll Survey on Drug Policy Attitudes in 6 EU Member States (2009).

4.2. Portugal

Attributable fraction for Portugal was estimated according to formulae (5).

ALCOHOL

Table 4.2.1 presents the percent of drinkers of different categories in the population.

Table 4.2.1 Percent of alcohol consumers in the last 12 months in population according to gender and age, basic data, Portugal

AGE	CONSUMERS		
	MEN	WOMEN	TOTAL
15-24	66.2	50.7	58.6
25-34	76.5	50.2	63.2
35-44	72.3	53.7	62.8
45-54	74.6	49.0	61.3
55-64	79.2	42.8	60.0
65-74	74.2	33.5	51.9
Total	73.9	47.2	60.1

Source: Balsa, C., Vital, C. & Urbano, C. (2013). "III Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Portuguesa. Portugal 2013. Relatório Preliminar" .

To estimate the percent of *Low Risk*, *Hazardous* and *Harmful* drinkers according to gender the following calculation was performed:

- Percents of abstainers were calculated as 100 minus percent of alcohol consumers (tab.4.2.1), i.e: (100 – 73.9 = 26.1, 100 – 47.2 = 52.8, 100 – 60.1 = 39.9).
- Percent of *Low Risk* drinkers was calculated as the difference between *No/Low Risk* drinkers and abstainers (90.4 – 39.9 = 50.5).

- It has been assumed that harmful drinking includes *Harmful* and *Dependence* in basic data (tab.4.2.2, columns 1-2).
- Percents of *Low Risk*, *Hazardous* and *Harmful* drinkers according to gender were estimated under the following assumption: the proportion of alcohol consumers in every drinking category is the same as the proportion of men and women alcohol consumers (tab.4.2.1), i.e.: 73.9/47.2 = 1.57. Percents of *Low Risk*, *Hazardous* and *Harmful* drinkers according to gender and age were estimated using the same procedure in each of the age classes.
- To estimate the percent of men and women who drunk alcohol in the last 12 months, in 5-years long age classes there were estimated regression functions (fig.2.2.1) and their theoretical values were applied in further analysis.

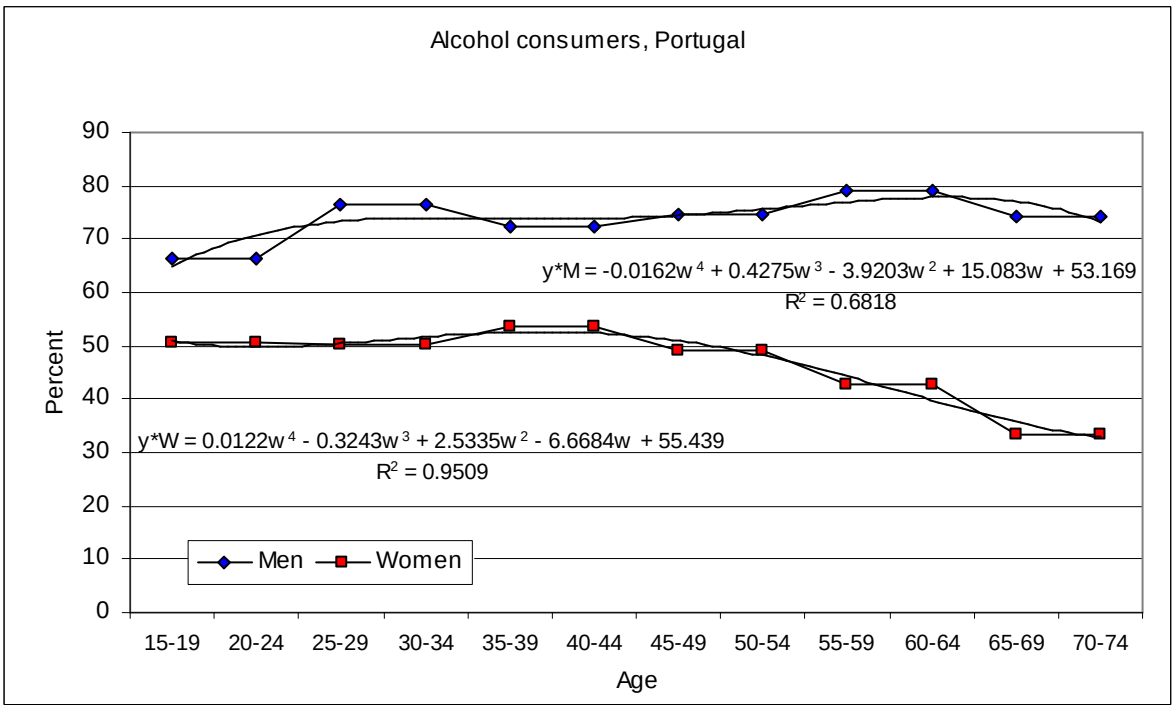
The results of this estimation are presented in tab.4.2.2 and fig. 4.2.1-4.2.4

Table 4.2.2 Percent of drinkers in different categories in population, Portugal

ALCOHOL DEPENDENCE (AUDIT TEST)		DRINKING LEVEL	ESTIMATED PERCENT OF:	
			MEN	WOMEN
No/Low Risk	90.4	Abstainers	26.10	52.80
Hazardous	8.3	Low	64.30	37.60
Harmful	0.4	Hazardous	9.73	6.21
Dependence	0.9	Harmful	1.52	0.97

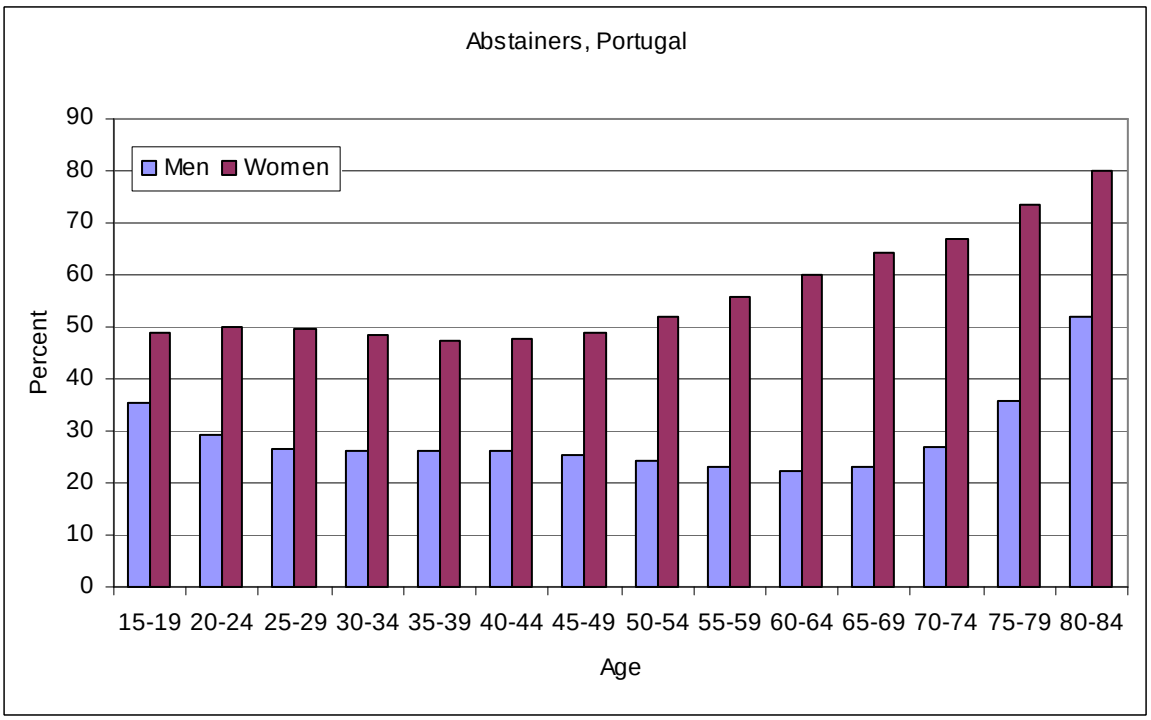
Source: basic data: Balsa, C., Vital, C. & Urbano, C. (2013). "III Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Portuguesa. Portugal 2013. Relatório Preliminar". Estimated percent according to gender: authors' own calculation.

Figure 4.2.1 Percent of alcohol consumers in the last 12 months in population according to gender and age, Portugal



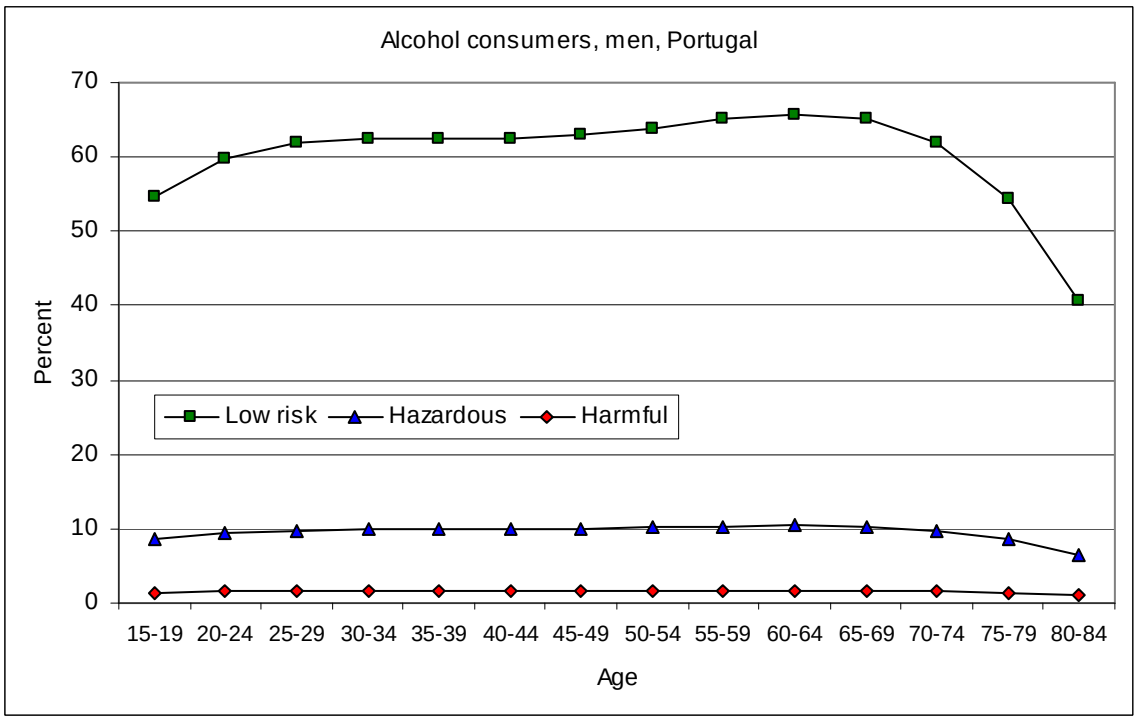
Source: authors' own.

Figure 4.2.2 Estimated percent of abstainers in the last 12 months in population according to gender and age, Portugal



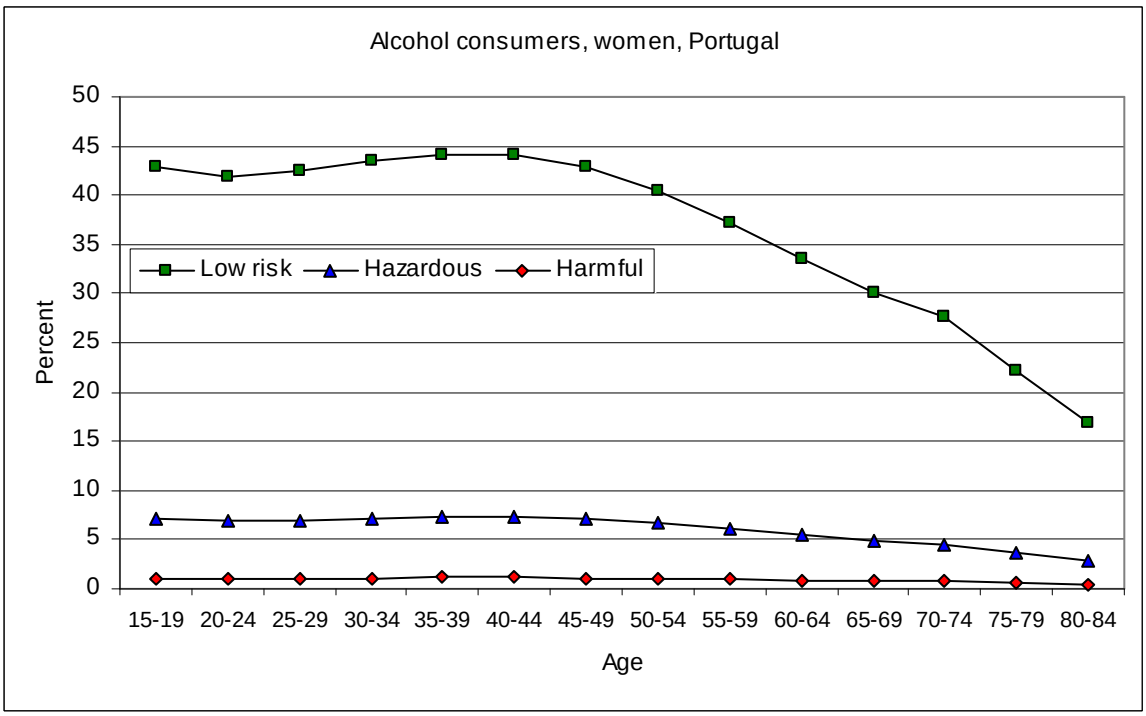
Source: authors' own.

Figure 4.2.3 Estimated percent of low risk, hazardous and harmful drinkers in the last 12 months in population according to age, men, Portugal



Source: authors' own.

Figure 4.2.4 Estimated percent of low risk, hazardous and harmful drinkers in the last 12 months in population according to age, women, Portugal



Source: authors' own.

Table 8.1.1.10 (in the Appendix) presents estimated attributable fractions for some conditions partially attributable to alcohol use in Portugal, without taking into account distributions of alcohol consumers and abstainers according to age.

In 2 cases [*Coronary heart disease* (I20-25), *Cholelithiasis* (K80)] the sign of estimated attributable fraction coefficient is negative, which means, that benefits of consuming alcohol prevail their negative consequences (relative risk coefficients for low and hazardous drinkers were less than 1).

In tables 8.1.1.11 and 8.1.1.12 there are presented attributable fractions for different causes of deaths, where estimated distributions of alcohol consumers and abstainers according to gender and age were taken into consideration.

SMOKING

Data on smoking prevalence in Portugal come from different sources. Basic data come from Balsa, C., Vital, C. & Urbano, C. (2013). "III Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Portuguesa. Portugal 2013. Relatório Preliminar" (tab.2). Unfortunately these data are grouped in categories: *Lifetime, Last 12 Months, and Last 30 Days* smokers so, for the purpose of comparability with results of estimation for Poland and Catalonia (Spain), additional information from WHO publications and Special Eurobarometer 385 were applied (tab.1), which allowed to estimate the percent of daily smoking men and women in Portugal (fig.2).

Table 4.2.3 Smokers distribution by status and gender according to WHO and Eurobarometer, basic data, Portugal

SMOKING STATUS*	POPULATION 15 YEARS AND OLDER	
	MEN	WOMEN
Daily smokers	27.6	10.6
	TOTAL	
Former daily smokers	15.0	
	MEN	WOMEN
Former daily smokers, estimated	21.7	8.3
	TOTAL	
Never smokers	62.0	

Source: http://who.int/tobacco/surveillance/policy/country_profile/prt.pdf, and Special Eurobarometr 385, T1. Former daily smokers according to gender – authors'own estimation.
* The data come from different sources, surveys and years.

Table 4.2.4 Percent of alcohol consumers in the last 12 months in population according to gender and age, basic data, Portugal

AGE	LAST 12 MONTHS SMOKERS		
	MEN	WOMEN	TOTAL
15-24	34.2	23.0	28.7
25-34	49.9	26.0	37.8
35-44	42.8	25.3	33.8
45-54	33.2	17.5	25.1
55-64	24.2	7.6	15.4
65-74	14.9	3.6	8.7
Total	34.6	17.7	25.9

Source: Balsa, C., Vital, C. & Urbano, C. (2013). "III Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Portuguesa. Portugal 2013. Relatório Preliminar" .

In further estimations it was assumed that percent of daily smokers is equal to 27.6 for men and to 10.6 for women (WHO data) and that their distribution according to age is as in the population of last 12 months smokers (tab. 4.2.4). To estimate the percent of former smokers according to gender it was assumed that their proportion in populations of men and women is equal to that for daily smokers (tab.4.2.3). Then the regression functions were fitted (fig.4.2.5) and their theoretical values were applied in further estimation of attributable fractions.

Assuming that the decrease of percent of daily smokers in the age classes follows the regression functions:

Men: $\hat{y}_M = 42.76 - 3.59w$ $R^2 = 0.9665$ (1)

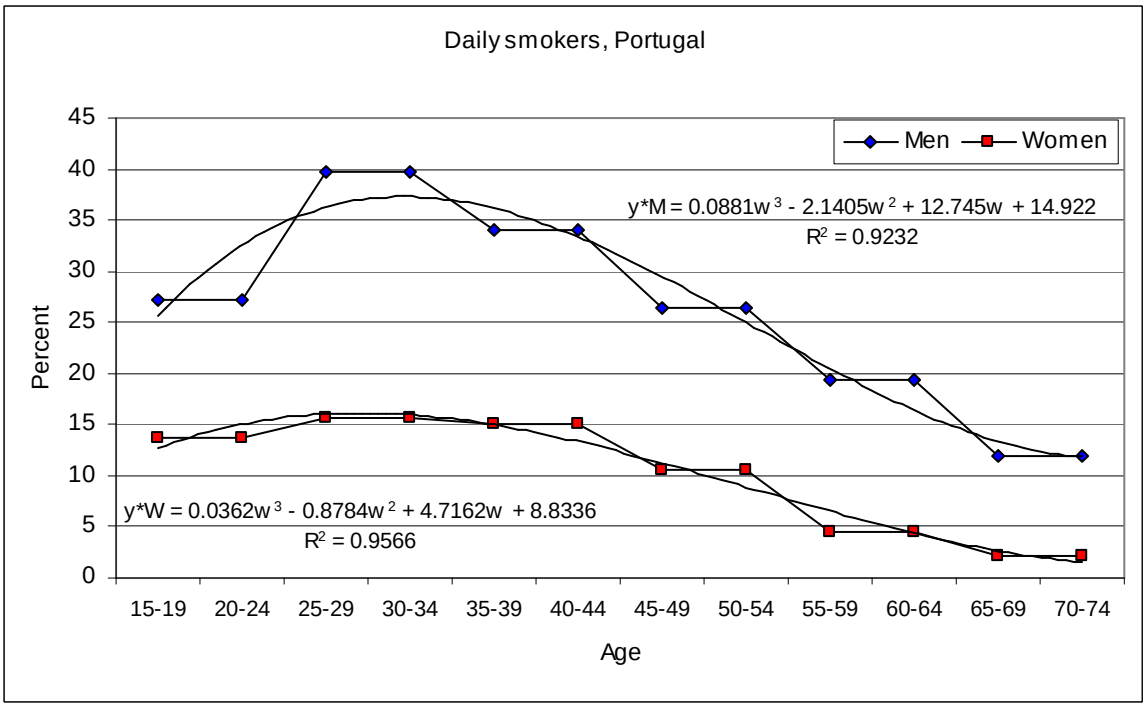
Women: $\hat{y}_W = 149.46w^{-1.9048}$ $R^2 = 0.9083$ (2)

it was possible to estimate percent of smokers in the age classes [75-79), [80-84).

The results of the estimation of percent of daily smokers according to gender and age classes in Portugal are presented in fig.2.

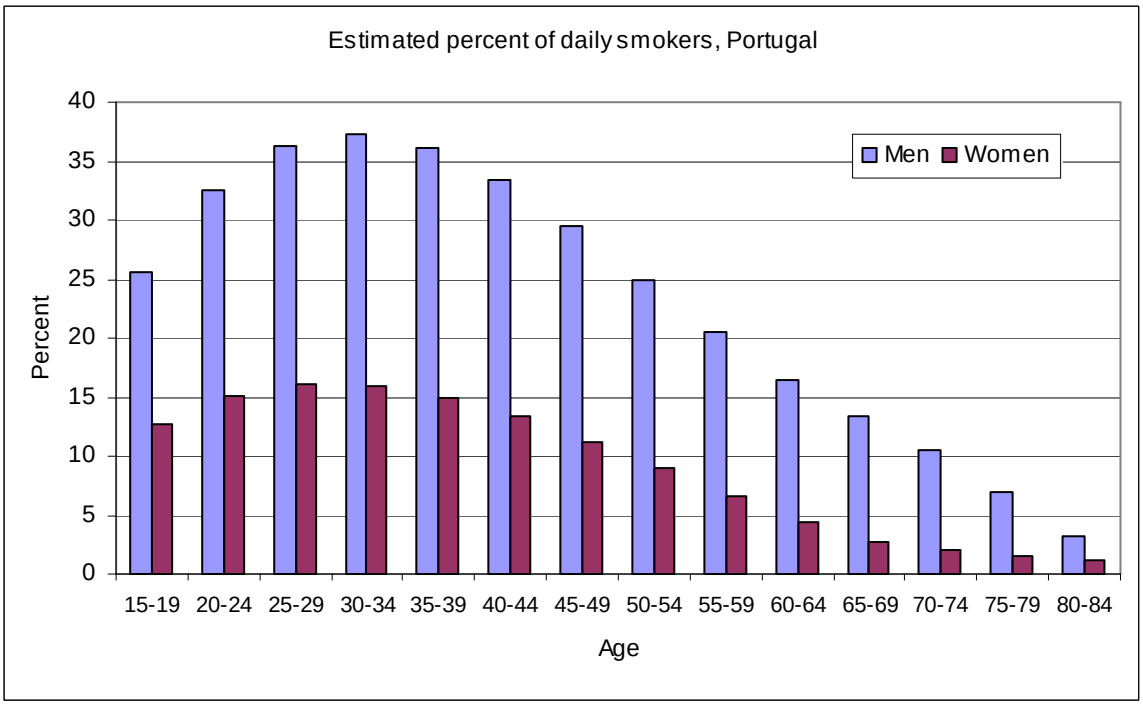
Table 8.1.1.12 (in the Appendix) presents the estimated attributable fractions for smokers without taking into account their age distribution, whereas tab. 8.1.1.13 and 8.1.1.14 present attributable fractions for smokers with regard of their age and in this case the distribution of smokers according to age was taken into account.

Figure 4.2.5 Percent of daily smokers (men and women) and fitted theoretical functions, Portugal



Source: authors' own on the basis of: Source: Balsa, C., Vital, C. & Urbano, C. (2013). "III Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Portuguesa. Portugal 2013. Relatório Preliminar", and http://who.int/tobacco/surveillance/policy/country_profile/prt.pdf

Figure 4.2.6 Estimated percent of daily smokers according to gender and age, Portugal

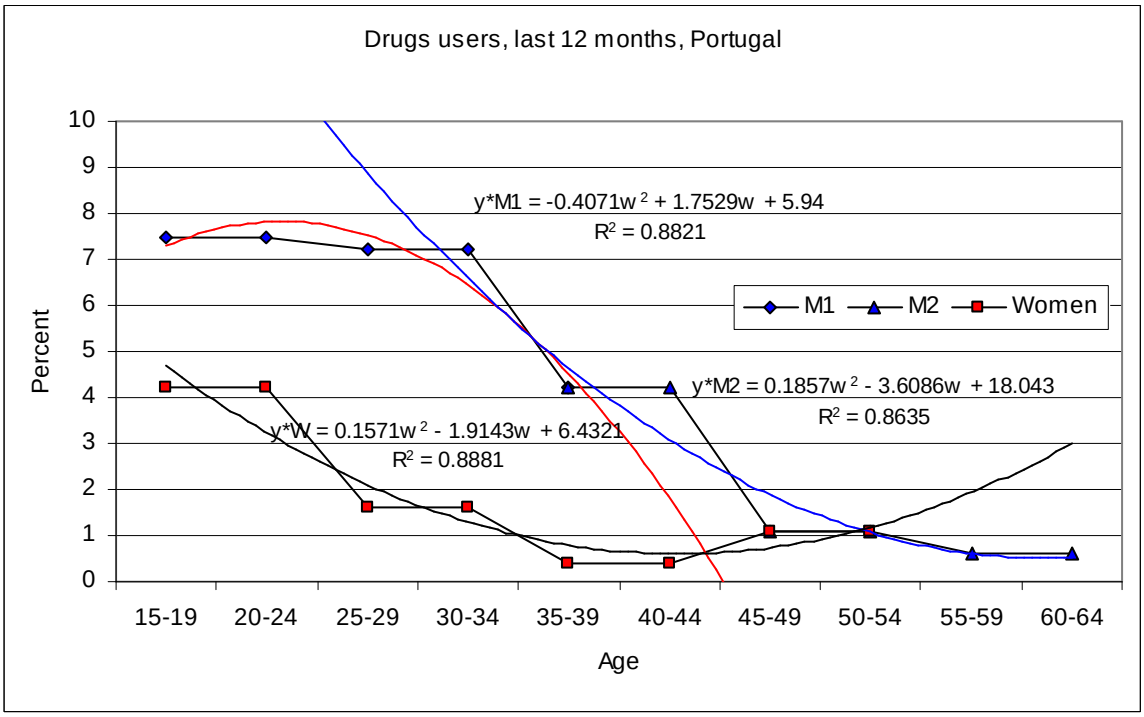


Source: authors' own.

DRUGS

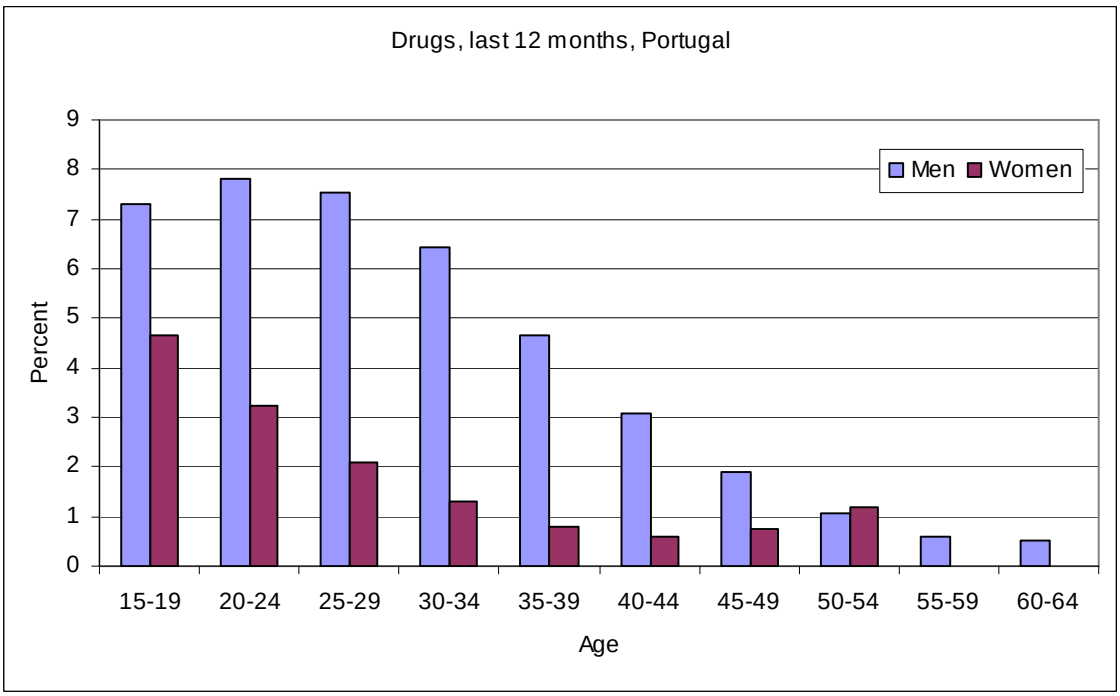
Based on the data on prevalence of illicit drugs use in Portugal presented by Balsa, Vital & Urbano (2013), theoretical values of fitted regression functions describing percent of drugs users according to age were applied (fig. 4.2.7 and 4.2.8). For men, due to irregular shape of the relation between the percent of drug users and age, it was necessary to apply two regression fuctions, M1 and M2 (fig. 4.2.7).

Figure 4.2.7 Percent of drugs users (last 12 months), and fitted regression functions, Portugal



Source: authors' own.

Figure 4.2.8 Estimated percent of drugs users (last 12 months), according to gender and age, Portugal



Source: authors' own.

Table 4.2.5 Attributable fractions for causes of death partially attributable to drug use in Portugal

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION POPULATION
Tuberculosis	A15-A19	na	0.045
Hepatitis C	B17.1, B18.2, B16, B18.0	English 1995	see tab. 4.2.6 - 4.2.7
Hepatitis B	B18.1	English 1995	see tab. 4.2.6 –4.2.7
HIV/AIDS	B20-B24	na	0,111
Homicide or injury inflicted by another person with intend to injure or kill, by any means	X85-Y09	na	0.158

Source: authors' own on basis of: [English 1995], [The Economic Cost… 2004], and National Institute of Public Health data. List of causes of deaths and ICD 10 codes after [The Economic Cost.. 2004, B-11].

For *Homicide or injury inflicted by another person with intend to injure or kill, by any means* percent of 15.8%, and for *Tuberculosis* percent of 4.5% were attributed to drug abuse, following [*The Economic Costs*… 2004, Appendix 8.3].

Applying the data of EMCDDA, Statistical Bulletin 2012, about 11.1% of HIV/AIDS deaths in Portugal can be ascribed to injecting drug users, as the most probable way of infection[13].

Table 4.2.6 Attributable fractions for causes of death partially attributable to drug use according to age, men, Portugal

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
Hepatitis C	B17.1, B18.2, B16, B18.0	0.800	0.811	0.806	0.780	0.719	0.629	0.509	0.368	0.251	0.225
Hepatitis B	B18.1	0.806	0.817	0.811	0.786	0.726	0.637	0.518	0.377	0.258	0.232

Source: authors' own.

Table 4.2.7 Attributable fractions for causes of death partially attributable to drug use according to age, women, Portugal

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54
Hepatitis C	B17.1, B18.2, B16, B18.0	0.720	0.640	0.536	0.415	0.303	0.249	0.287	0.393
Hepatitis B	B18.1	0.727	0.648	0.545	0.424	0.310	0.256	0.294	0.401

Source: authors' own.
Remark: for older age classes attributable fractions: 0.

4.3. Catalonia (Spain)

Attributable fraction for Catalonia (Spain) was estimated according to formulae (5). To achieve desired values of exposure data in 5-years long age classes from broader classes of different length there were estimated adequate regression function and their theoretical values were applied. Such approach gives additional benefit – it can be expected that smoothing the empirical survey distributions could restrict the range of random deviations.

[13]In 2010, data from 2 studies (SP study in DTCs using serum as specimen and DT study in DTCs using serum and DBSs as specimen) were provided, and as the estimates from the two studies vary a lot (4,9% and 17,2%) in the research average value was applied (11,1%).

ALCOHOL

Table 4.3.1 presents the percent of drinkers of different categories in the population, according to data from a study in Primary Health care using AUDIT10.

Table 4.3.1 Percent of drinkers of different categories* in population, Catalonia (Spain)

DRINKING LEVEL	PERCENT IN POPULATION OF:		
	MEN	WOMEN	TOTAL
Abstainers	9.54	16.78	13.21
Low	78.89	73.59	76.20
Hazardous	6.43	7.75	7.10
Harmful	5.14	1.88	3.49

Source: *Drink less Program* - Public Health Agency of Government of Catalonia (Spain), total – authors' own estimation.* - For Men : Low (<9) Hazardous (>9-13) Harmful (>13), For Women: Low (<6) Hazardous (>6- 13) Harmful (>13) l of 100% alcohol

Table 4.3.2 presents original basic data on drinkers of different categories according to gender and age.

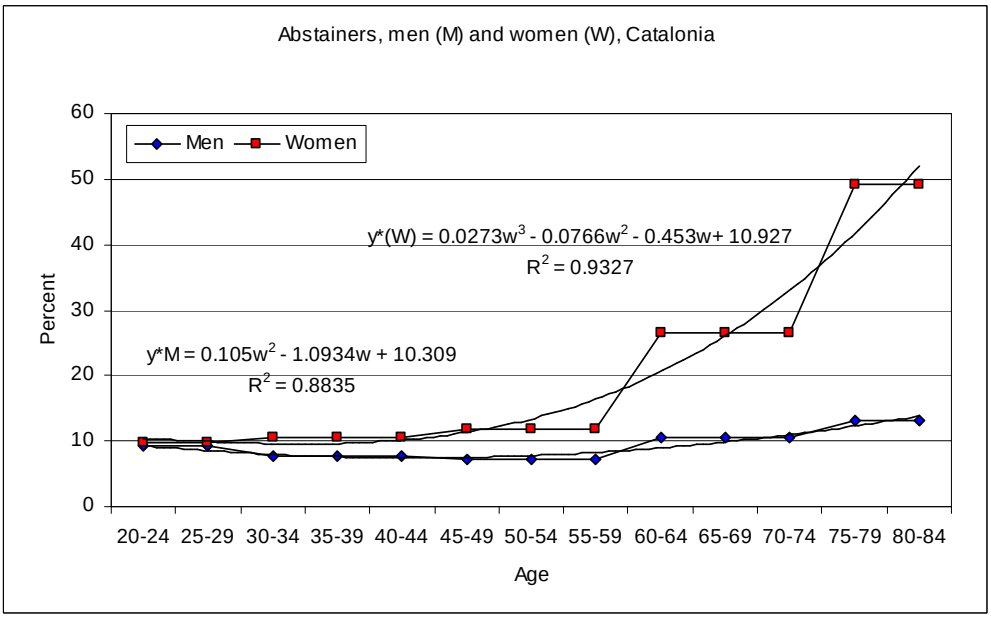
Table 4.3.2 Percent of drinkers of different categories* in population according to gender and age, basic data, Catalonia (Spain)

AGE	ABSTAINERS		LOW RISK		HAZARDOUS		HARMFUL	
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN
18-31	9.17	9.84	68.81	70.49	12.84	12.30	9.17	7.38
31-45	7.65	10.45	82.51	84.55	3.28	5.00	6.56	0.00
46-60	7.20	11.76	78.8	78.43	8.40	8.24	5.60	1.57
61-75	10.50	26.59	79.41	64.16	5.46	8.09	4.62	1.16
75+	13.08	49.18	83.08	42.62	3.85	8.20	0.00	0.00

Source: *Drink less Program* - Public Health Agency of Government of Catalonia (Spain).
* - For Men : Low (<9) Hazardous (>9-13) Harmful (>13), For Women: Low (<6) Hazardous (>6- 13) Harmful (>13) l of 100% alcohol.

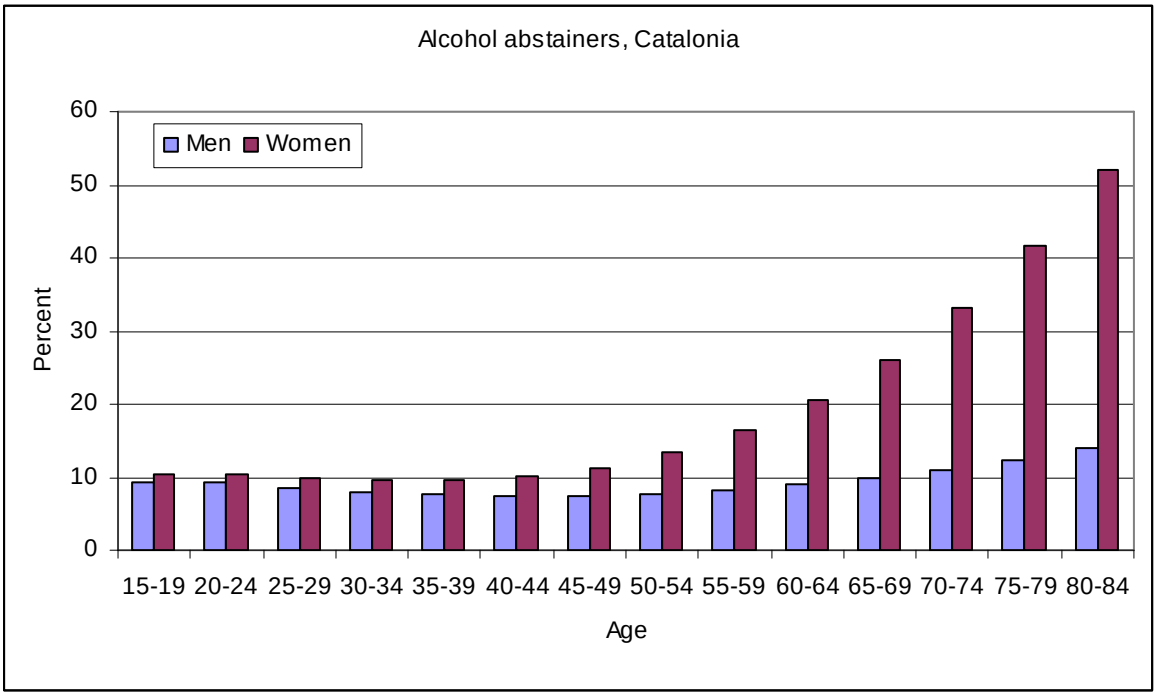
For further estimation of attributable fractions and excess mortality related to alcohol abuse, percentages of drinkers categories in 5-year long classes were needed, therefore regression functions were estimated and their theoretical values were applied (fig 4.3.1, 4.3.3, 5.3.5, 4.3.6, 4.3.8 ,4.3.9). The results are presented in fig. 4.3.2, 4.3.4, 4.3.7, 4.3.10.

Figure 4.3.1. Percent of abstainers [men (M) and women (W)] and fitted egression functions, Catalonia (Spain)



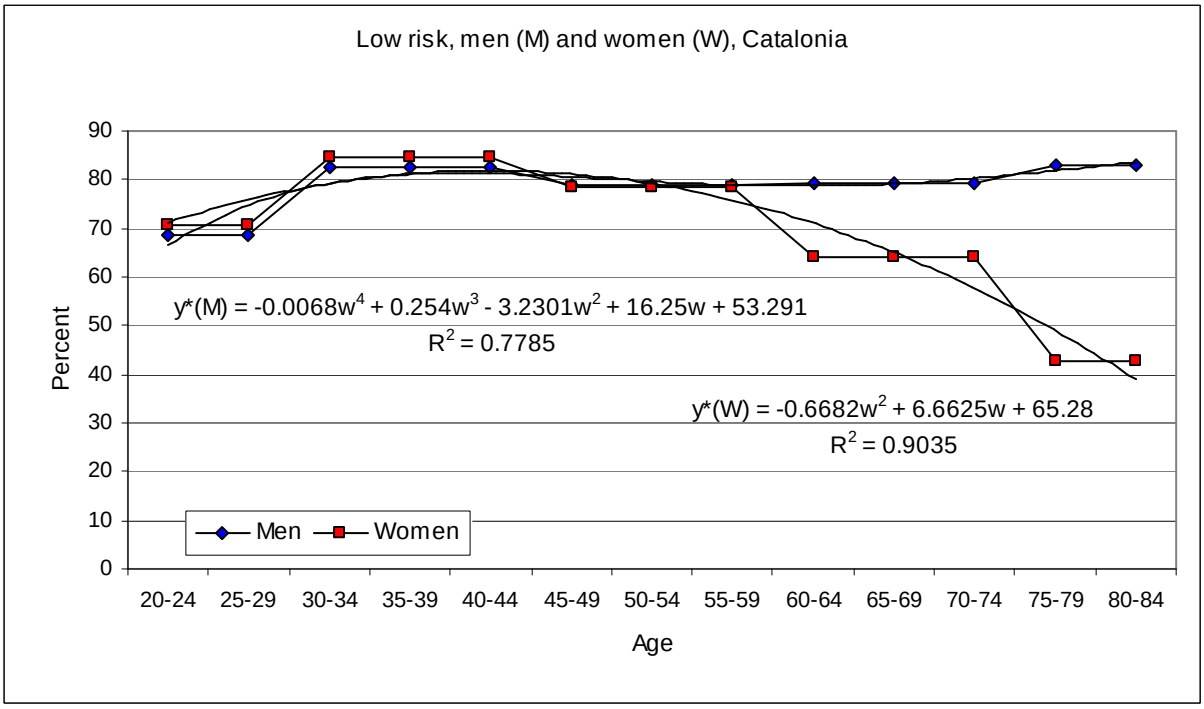
Source: authors' own.

Figure 4.3.2 Estimated percent of abstainers according to gender and age, Catalonia (Spain)



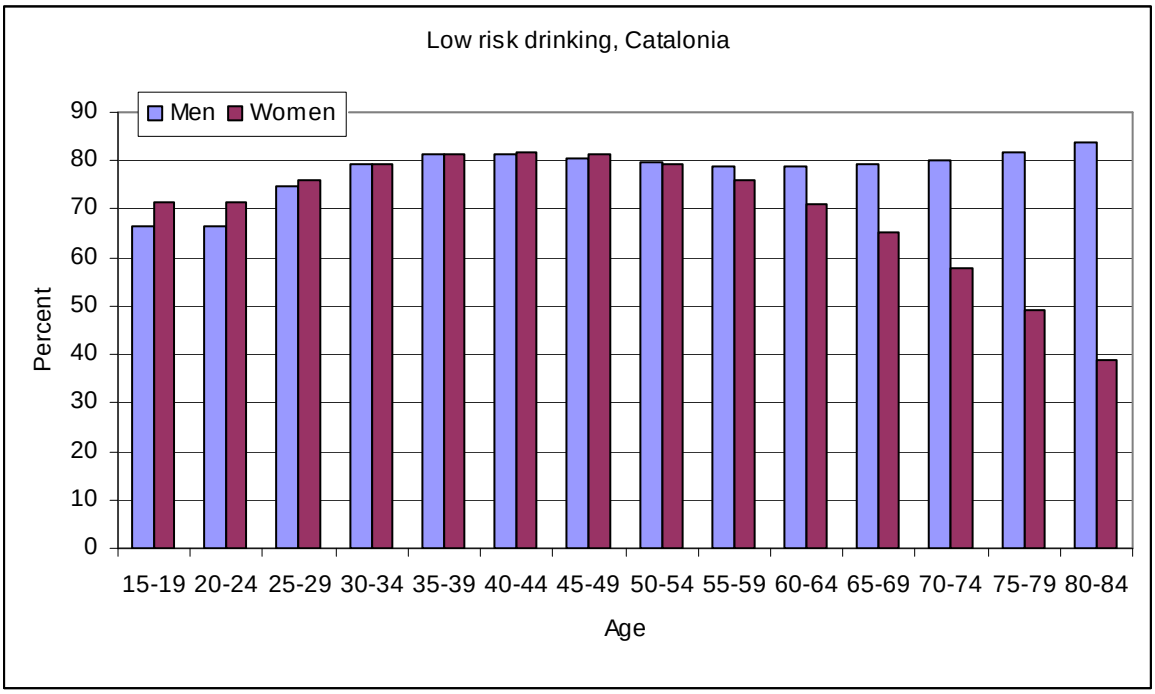
Source: authors' own.

Figure 4.3.3 Percent of low risk drinkers [men (M) and women (W)], and fitted egression functions, Catalonia (Spain)



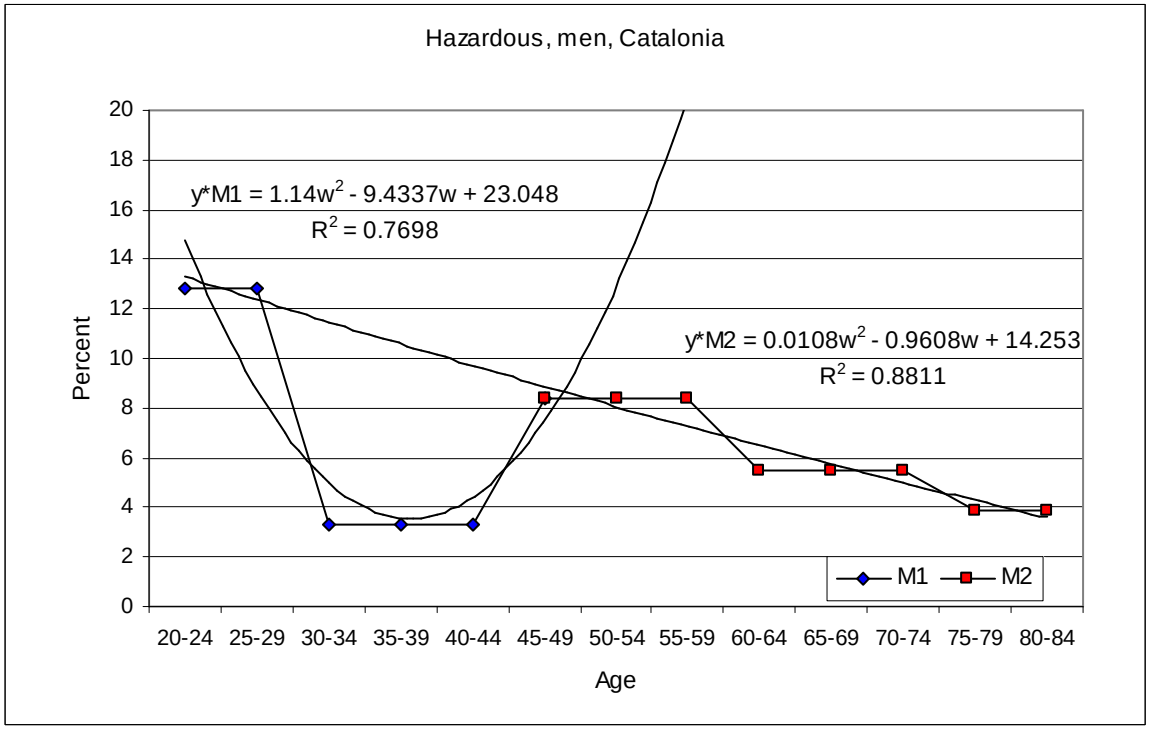
Source: authors' own.

Figure 4.3.4. Estimated percent of low risk drinkers according to gender and age, Catalonia (Spain)



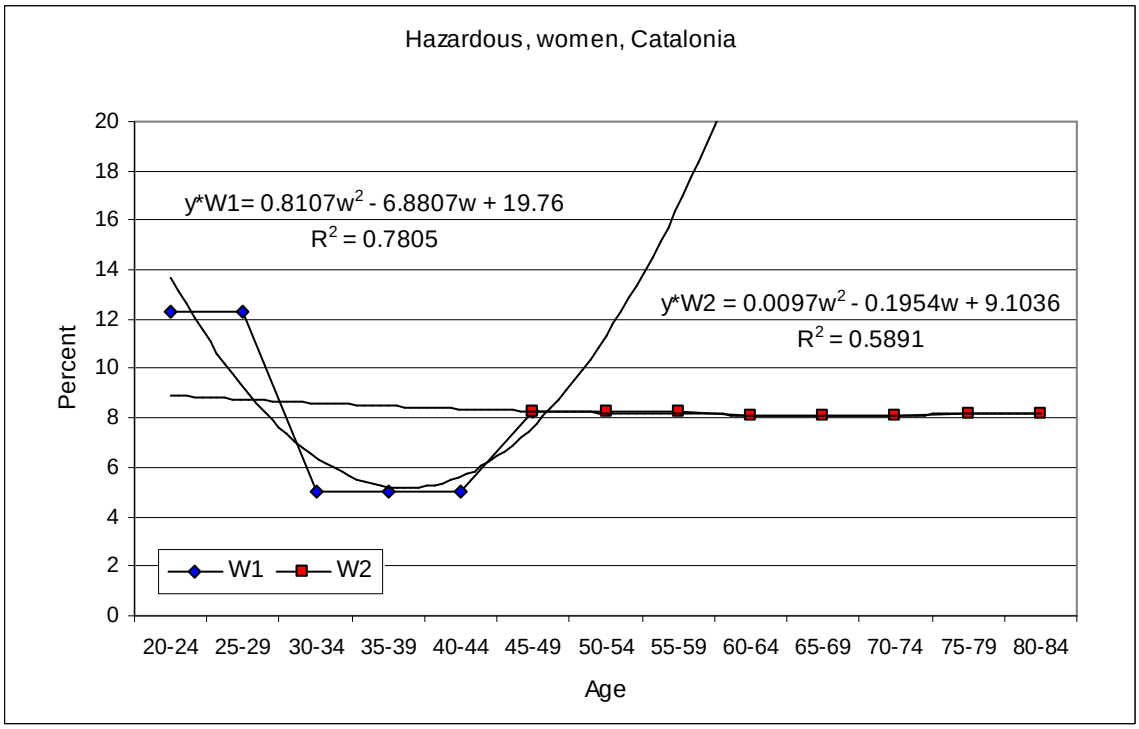
Source: authors' own.

Figure 4.3.5. Percent of hazardous drinkers, men, and fitted regression functions (M1 and M2), Catalonia (Spain)



Source: authors' own.

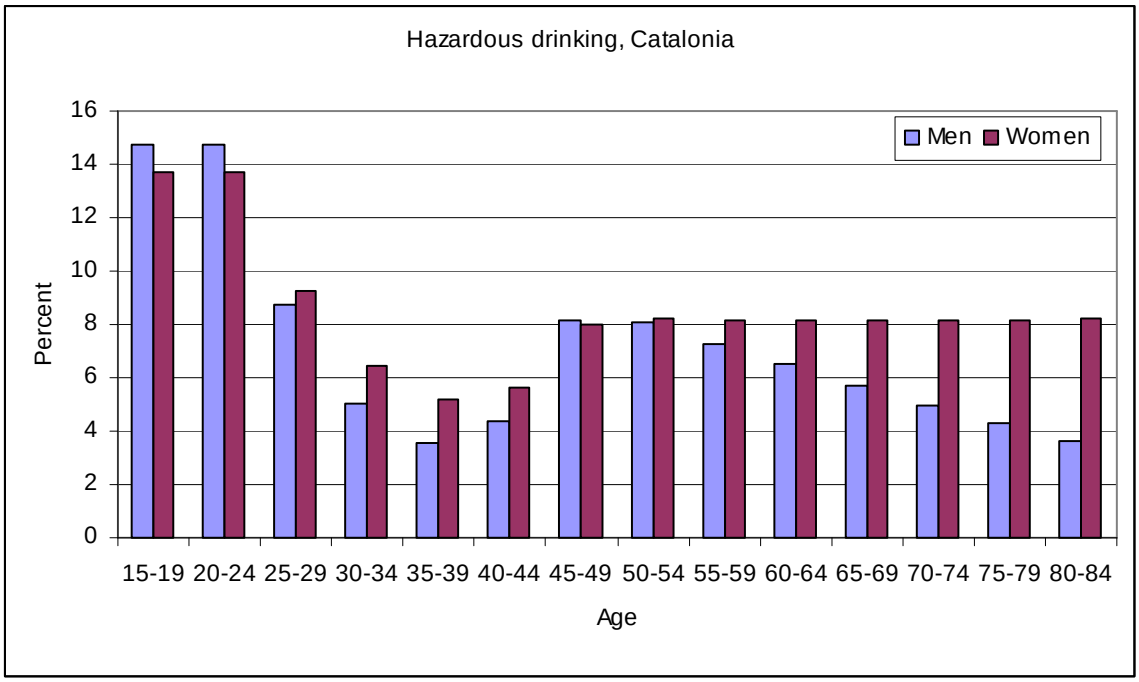
Figure 4.3.6. Percent of hazardous drinkers, women, and fitted regression functions (W1 and W2), Catalonia (Spain)



Source: authors' own.

In the case of hazardous drinking a significant decrease of the percent of drinkers (men and women) in age class 30-44 could be observed. As the decrease occurred in the usual age of bringing up young children, this most probably cannot be treated as casual. It was hardly possible to fit a regression function to such a shape of the distribution of percentages of hazardous drinkers, therefore the sets of the observations were broken into two parts (age 20-49 and 45-84) and in both cases (for men and women) two regression functions were estimated.

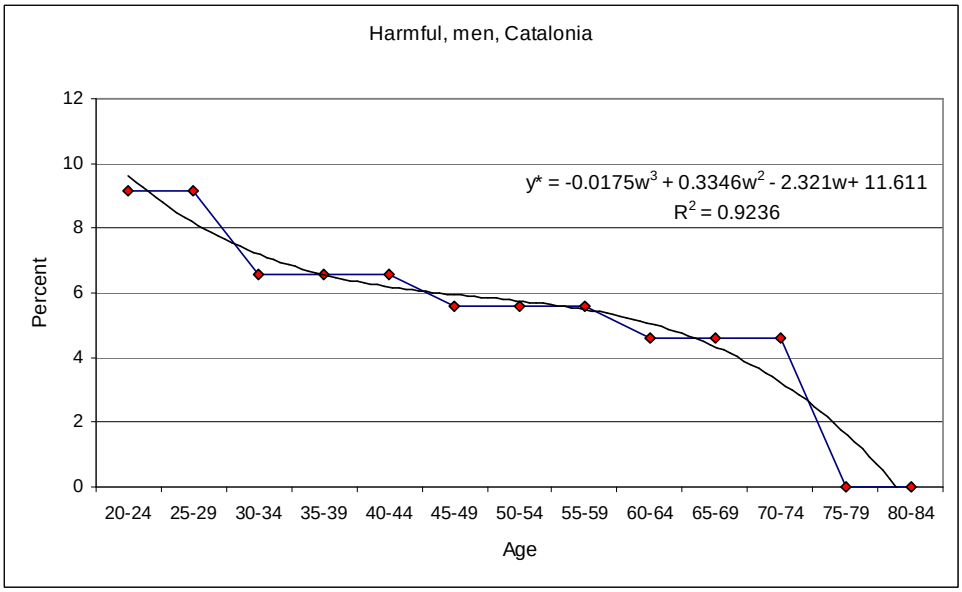
Figure 4.3.7. Estimated percent of hazardous drinkers according to gender and age, Catalonia (Spain)



Source: authors' own. .

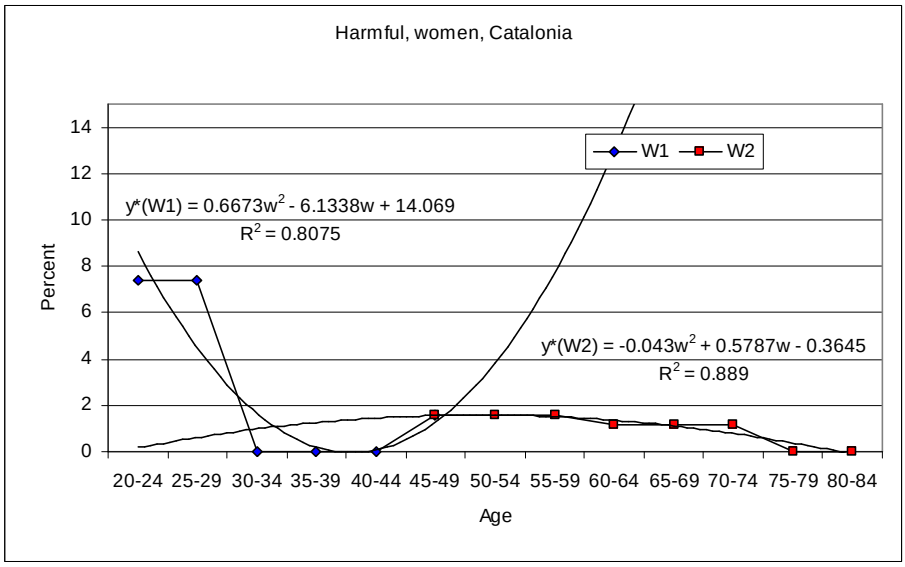
A similar situation occurred in case of women who were harmfully drinking, and also in this case to estimate percent of harmfully drinking women according to age two regression functions were estimated (fig. 4.3.9); in the case of men it was possible to fit one function (fig. 4.3.8).

Figure 4.3.8. Percent of harmfully drinking men and fitted regression function, Catalonia (Spain)



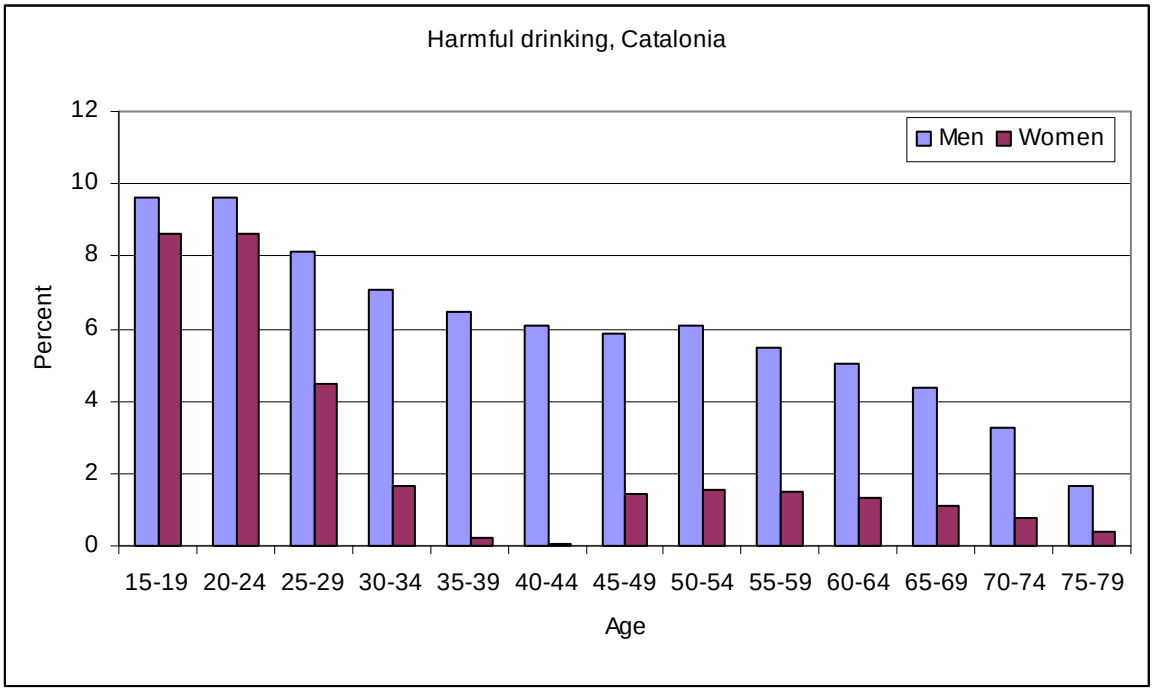
Source: authors' own.

Figure 4.3.9. Percent of harmfully drinking women, and fitted regression functions (W1 and W2), Catalonia (Spain)



Source: authors' own.

Figure 4.3.10. Estimated percent of harmful drinkers according to gender and age, Catalonia (Spain)



Source: authors' own.

SMOKING

Data on smoking prevalence in Catalonia (Spain) came from: *Tobacco Control Program at the Catalan Agency of Public Health. Secretary of the Catalan Advisory Council on Tobacco*.

Table 4.3.3 Smokers distribution by smoking status and gender in 2010 (%),Catalonia (Spain)

SMOKING STATUS	PERCENT		
	Men	Women	Total
Daily smokers	30.0	21.5	25.4
Occasional smokers	4.4	3.8	4.0
Former daily smokers	26.3	17.1	21.6
Never daily smokers	39.3	57.6	48.8

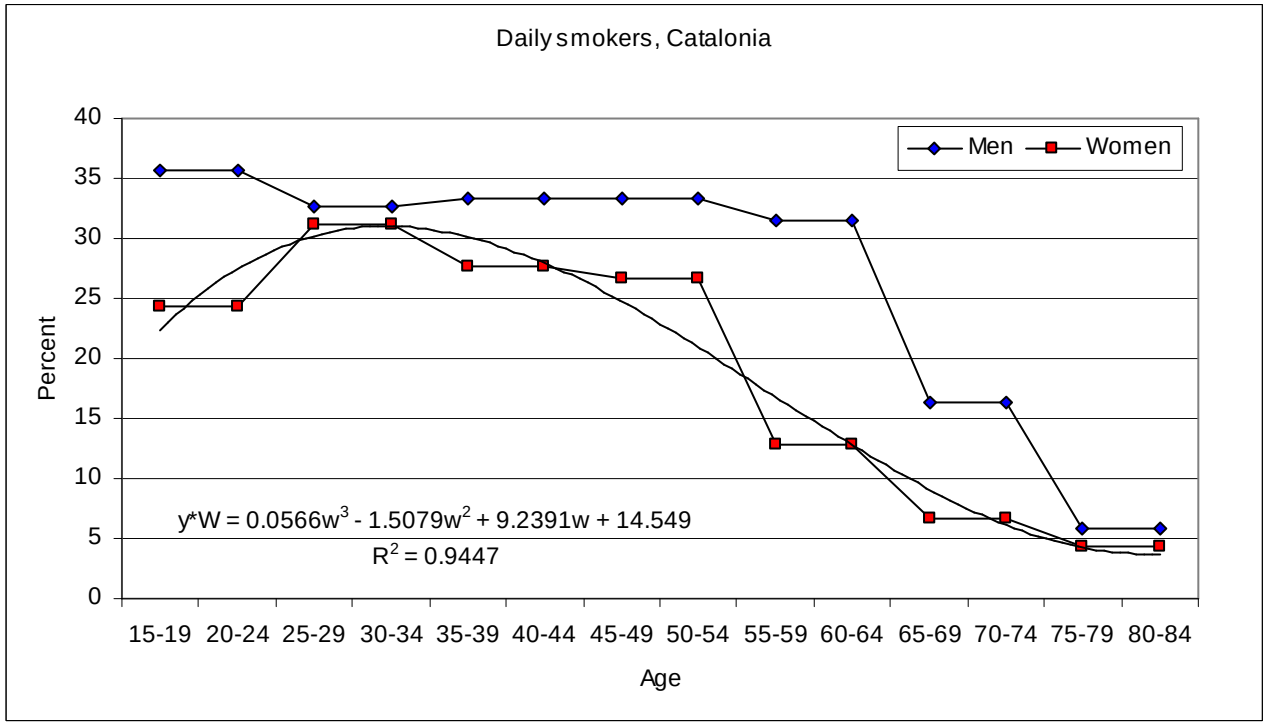
Source: Total - Tobacco Control Program at the Catalan Agency of Public Health. Secretary of the Catalan Advisory Council on Tobacco, gender distribution - authors' own estimation on base of tab.4.3.4.

Table 4.3.4 Percent of smokers in age classes according to gender and smoking status, basic data, Catalonia (Spain)

SMOKING STATUS		15-24	25-34	35-44	45-54	55-64	65-74	75+
Men	Daily Smoker	35.7	32.7	33.4	33.4	31.5	16.3	5.9
	Occasional Smoker	3.7	9.9	3.3	1.8	2.0	3.2	4.6
	Ex-smoker	7.4	13.4	23.6	33.7	39.6	42.1	45.3
	Never Smoker	53.2	44.0	39.7	31.1	26.8	38.4	44.2
Women	Daily Smoker	24.4	31.1	27.7	26.7	12.9	6.7	4.3
	Occasional Smoker	4.6	5.0	6.7	3.5	1.7	1.5	0.0
	Ex-smoker	7.7	23.9	16.5	30.7	13.3	7.7	7.4
	Never Smoker	63.3	40.0	49.1	39.1	72.0	84.1	88.3
Total	Daily Smoker	30.2	31.9	30.7	30.1	22.0	11.2	4.9
	Occasional Smoker	4.1	7.5	4.9	2.6	1.9	2.3	1.8
	Ex-smoker	7.5	18.5	20.3	32.2	26.1	23.6	22.3
	Never Smoker	58.1	42.1	44.1	35.1	50.0	63.0	70.9

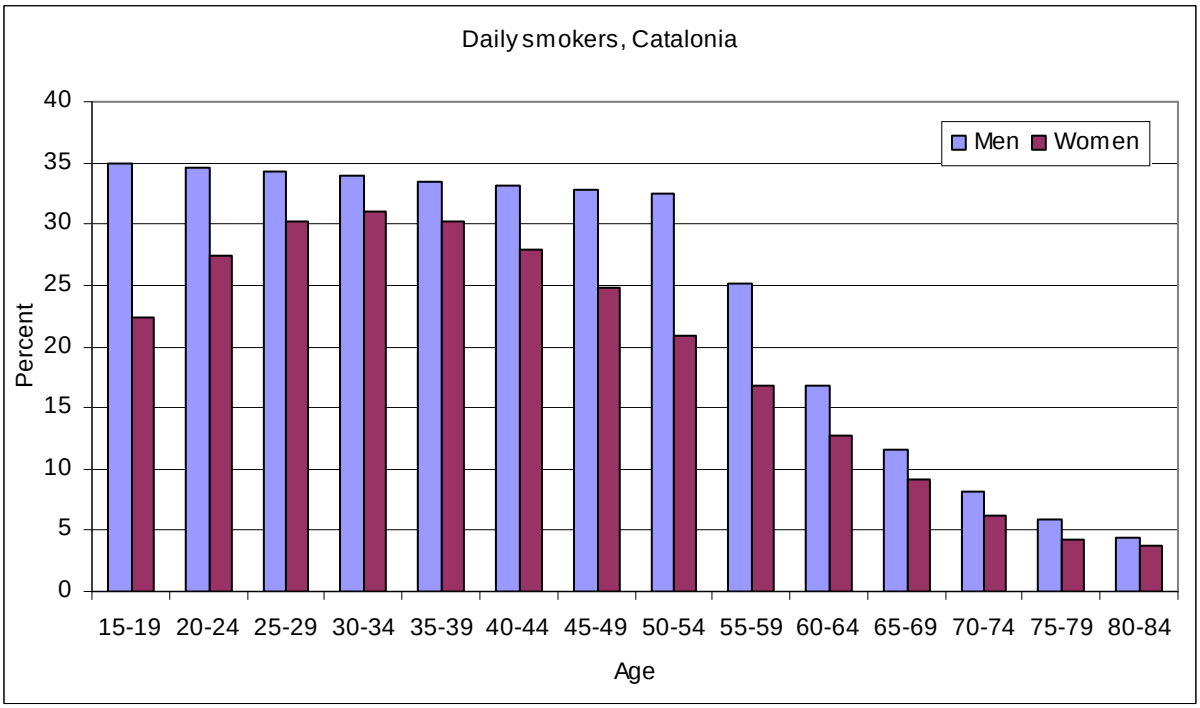
Source: Tobacco Control Program at the Catalan Agency of Public Health. Secretary of the Catalan Advisory Council on Tobacco.

Figure 4.3.11 Percent of daily smokers, men (M) and women (W), and fitted theoretical functions, Catalonia (Spain)



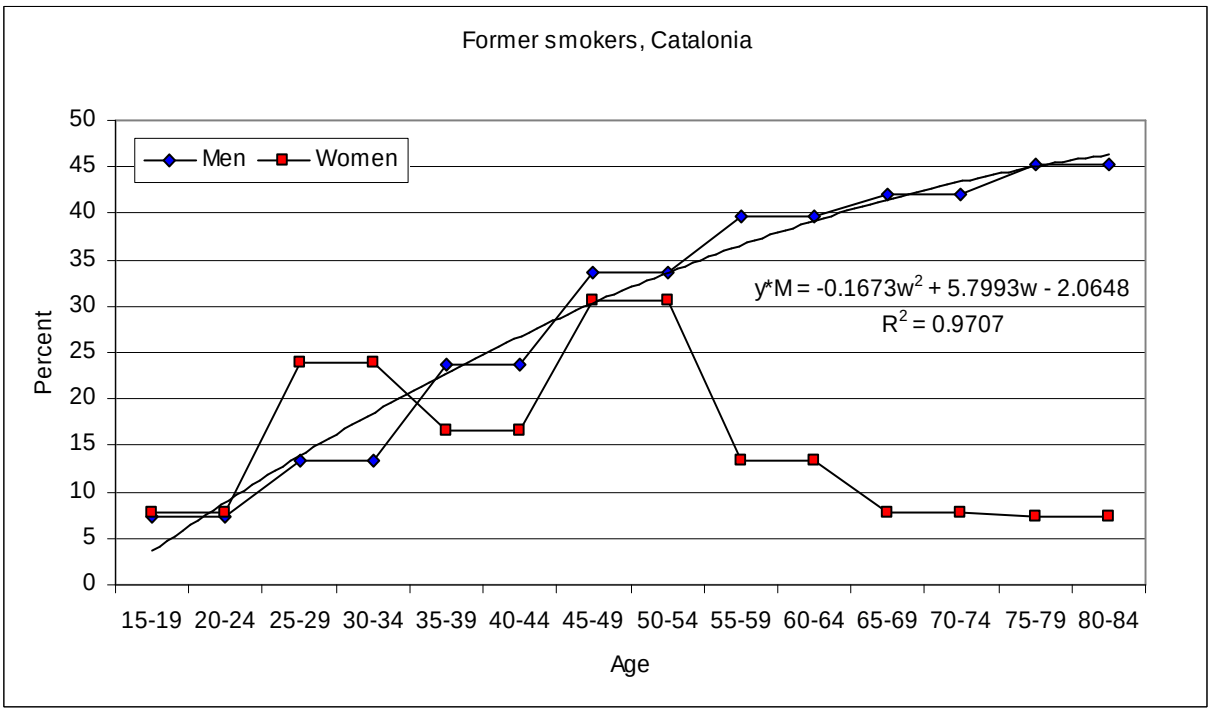
Source: authors' own.

Figure 4.3.12 Estimated percent of daily smokers according to gender and age, Catalonia (Spain)



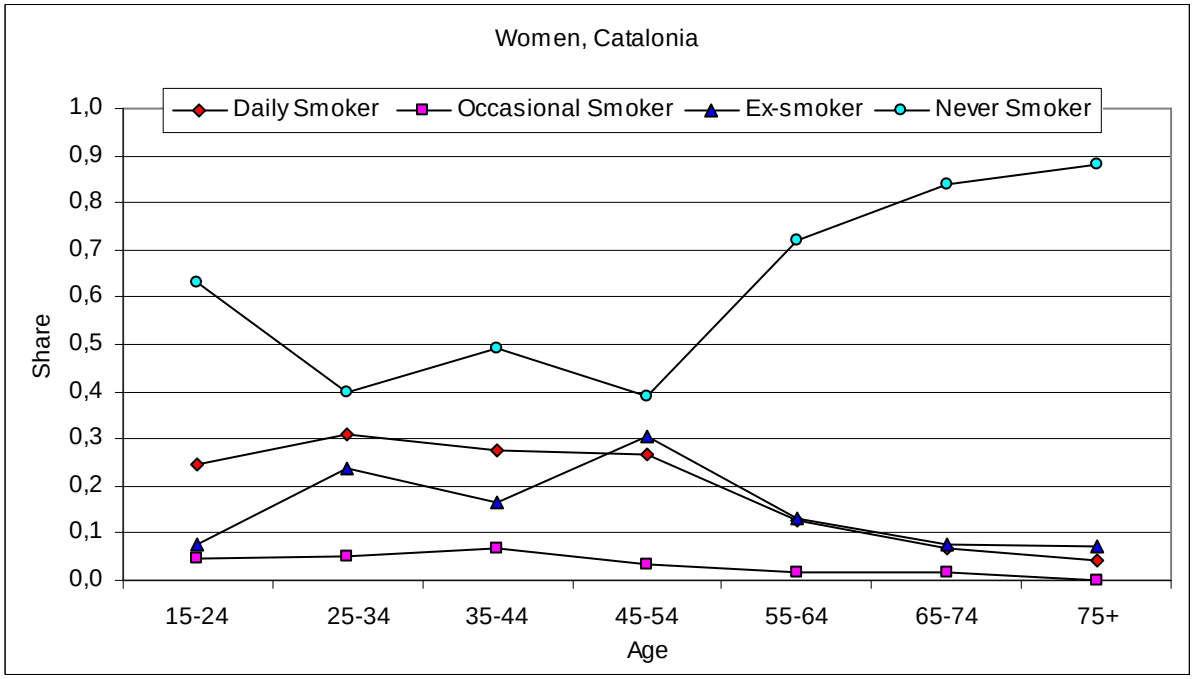
Source: authors' own.

Figure 4.3.13 Percent of former smokers according to age, men and women, and fitted theoretical function for men (M), Catalonia (Spain)



Source: authors' own.

Figure 4.3.14 Women in Catalonia (Spain) according to smoking status and age, basic data



Source: authors' own.

In the case of women in order to take into account the decrease of *former smokers* in age class [35-44) it was necessary to break the set of observations into two parts. The decrease of percent of *former smokers* in that age is highly negatively correlated (r_{xy} = -0.956) with that of *never smokers*, and therefore it was stated that it was not casual.

The two estimated regression functions (W1 and W2) were as follows:
W1:

$$\hat{y}_{W1} = 2.252 - 0.00016w^3 + 0.012w^2 - 0.288w \qquad R^2 = 0.9077 \qquad (1)$$

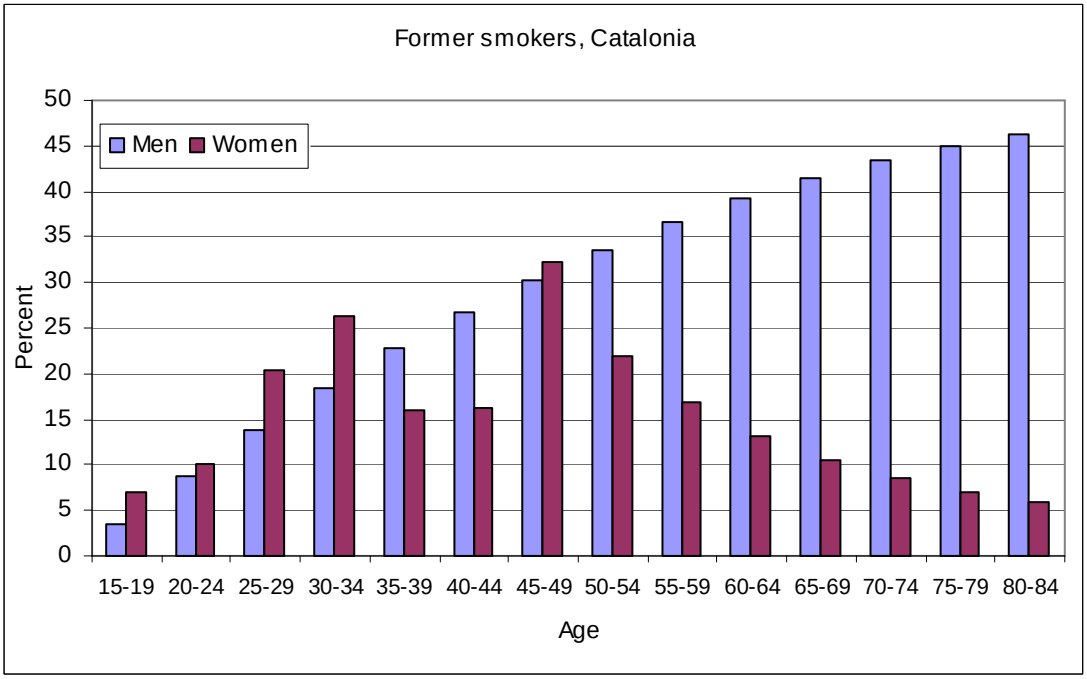
W2:

$$\hat{y}_{W2} = 23955.3 \cdot e^{-2.929} \qquad R^2 = 0.8028 \qquad (2)$$

and then, in further analysis, theoretical values of the above regression functions were applied.

The final results of this part of the estimation are presented in fig.4.3.15. Table 8.1.1.18 presents estimated attributable fractions for smokers in Catalonia (Spain) without taking into account their age distribution, whereas tab. 8.1.1.19 and 8.1.1.20 present attributable fractions for smokers with regard of their age and in this case the distribution of smokers according to age was taken into account.

Figure 4.3.15 Estimated percent of ex-smokers in Catalonia (Spain) according to gender and age



Source: authors' own.

DRUGS

Data for the estimation of attributable fraction for drugs users in Catalonia (Spain), comes from the National Household EDADES Survey on Drugs from the National Drug Plan (2011). Percents of drug users in the past 12 months according to age categories are presented in table 4.3.5. As previously, in order to obtain percents of illicit drugs users in desired age classes, theoretical values of fitted regression functions were applied (fig. 4.3.16). The results of the estimation are presented in fig. 4.3.17. These values were needed to estimate attributable fractions for causes of deaths partially attributable to illegal drug use (Hepatitis B and C; table 4.3.6.).

Table 4.3.5 Percent of drug users in the last 12 months according to gender and age, basic data, Catalonia (Spain)

AGE	GENDER	ABSTAINERS (%)	DRUG USERS (%)
15-24	Men	68.6	31.4
	Women	76.8	23.2
25-34	Men	76.2	23.8
	Women	91.2	8.8
35-44	Men	82.6	17.4
	Women	96.2	3.8
45-54	Men	96.7	3.3
	Women	95.5	4.5
55-64	Men	99.1	0.9
	Women	99.1	0.9

Source: Program on substance Abuse. Pubic Agency of Government of Catalonia (Spain). Data for Catalonia (Spain) elaborated from the National Household EDADES Survey on Drugs from the National Drug Plan (2011) - 15 - 64 years.

Table 4.3.6 Attributable fractions for causes of death partially attributable to drug use in Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION POPULATION
Tuberculosis	A15-A19	na	0.045
Hepatitis C	B17.1, B18.2, B16, B18.0	English 1995	see table 4.3.7
Hepatitis B	B18.1	English 1995	see table 4.3.7
HIV/AIDS	B20-B24	na	0.328
Homicide or injury inflicted by another person with intend to injure or kill, by any means	X85-Y09	na	0.158

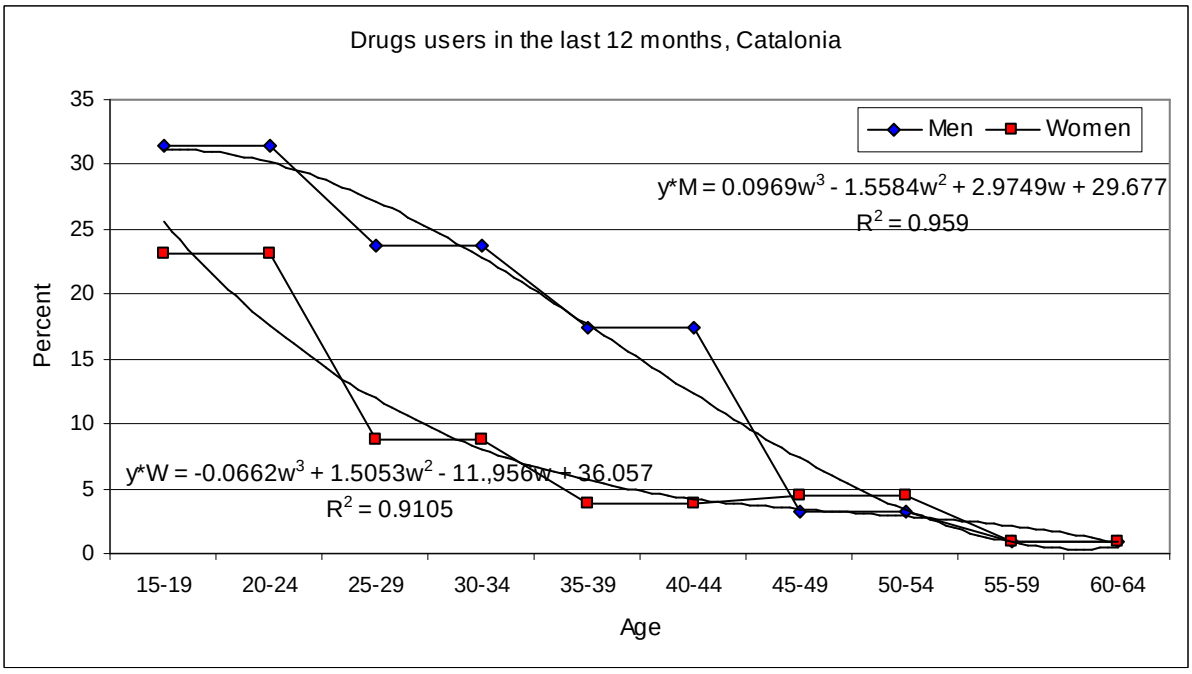
Source: authors' own on basis of: [English 1995], [The Economic Cost… 2004], data of Centre d'Estudis Epidemiològics sobre les ITS/HIV/SIDA de Catalonia (Spain) (CEEISCAT)* and Table 4.3.5. List of causes of deaths and ICD 10 codes after [The Economic Cost, 2004, B-11].

For *Homicide or injury inflicted by another person with intend to injure or kill, by any means* and for *Tuberculosis* 15.8 and 4.5% respectively were attributed to drug abuse, following [*The Economic Costs*… 2004, Appendix 8.2].

According to data of the Centre d'Estudis Epidemiològics sobre les ITS/HIV/SIDA de Catalonia (Spain) (CEEISCAT) about 43.2% of AIDS deaths and 16.7% of HIV positive diagnose deaths can be ascribed to injecting drug users, as the most probable way of infection, which gives an average (weighted with total number of AIDS and HIV deaths) equal to 32.8%.

To estimate attributable fractions for causes of deaths partially attributable to illegal drug use (Hepatitis B and C) theoretical functions were fitted to empirical data concerning percent of drug users in age classes (fig. 4.3.16).

Figure 4.3.16 Percent of illegal drug users in the last 12 months and fitted theoretical functions, Catalonia (Spain)



Source: authors' own.

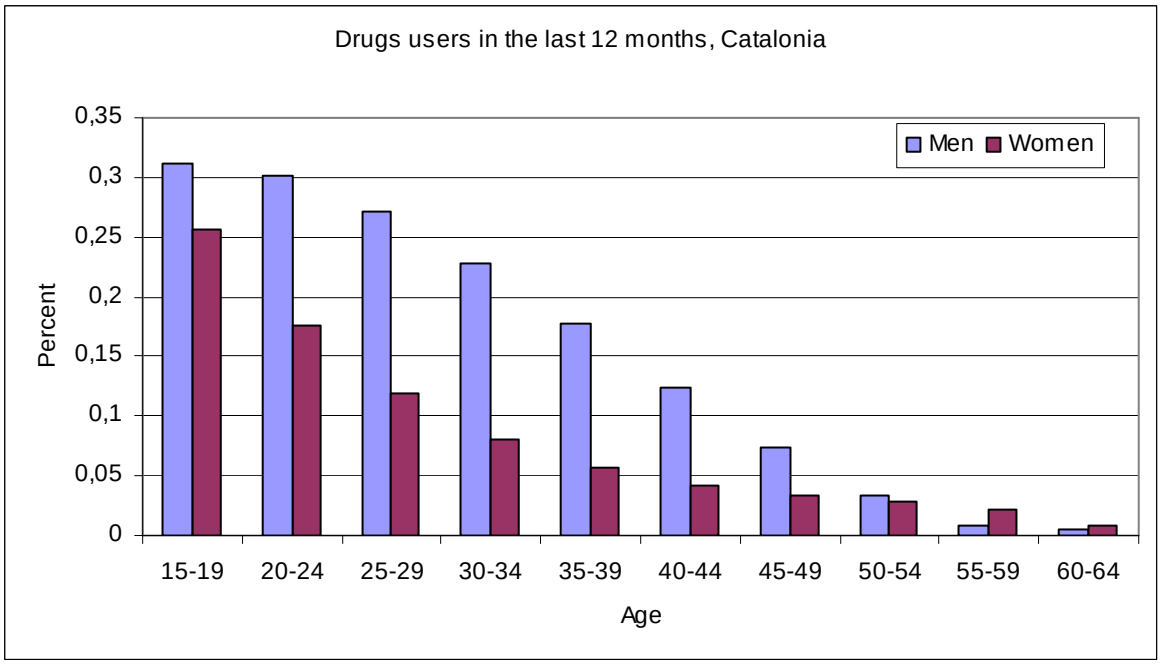
The results of the estimation are presented table 4.3.7.

Table 4.3.7 Attributable fractions for causes of death partially attributable to drug use according to gender and age, Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
MEN											
Hepatitis C	B17.1, B18.2, B16, B18.0	0.945	0.943	0.937	0.926	0.907	0.872	0.802	0.649	0.326	0.220
Hepatitis B	B18.1	0.947	0.945	0.939	0.929	0.910	0.876	0.808	0.657	0.334	0.226
WOMEN											
Hepatitis C	B17.1, B18.2, B16, B18.0	0.934	0.907	0.868	0.816	0.756	0.699	0.654	0.613	0.542	0.323
Hepatitis B	B18.1	0.936	0.910	0.872	0.822	0.763	0.706	0.662	0.621	0.551	0.331

Source: authors' own on basis of: [English 1995], and Table 4.3.5.

Figure 4.3.17 Estimated percent of illegal drug users in the last 12 months, Catalonia (Spain)



Source: authors' own on basis of table 4.3.5.

4.4. Summary of estimation of attributable fraction in three countries

The results above estimating attributable fractions of deaths related to alcohol drinking, smoking or drugs use require the acceptance of several assumptions. First of all none of the applied relative risks estimates were estimated for neither of the three considered countries, so it has been assumed that they are valid for Poland, Catalonia (Spain) and Portugal.

The relative risks estimates were available for the whole considered in original studies populations, without distribution of their values according to age. This has special meaning in attempts of estimating premature mortality attributable to alcohol, smoking and drugs use for higher age classes [65+). With the proposed and applied method it was possible to estimate attributable fraction and premature mortality in those age classes, but the values were overestimated.

The exposure data were available in different range and age classes, which required estimation of their values in 5-year long age classes.

The results of the estimation could be more precise if the relative risk estimates and exposure data were available in comparable age classes.

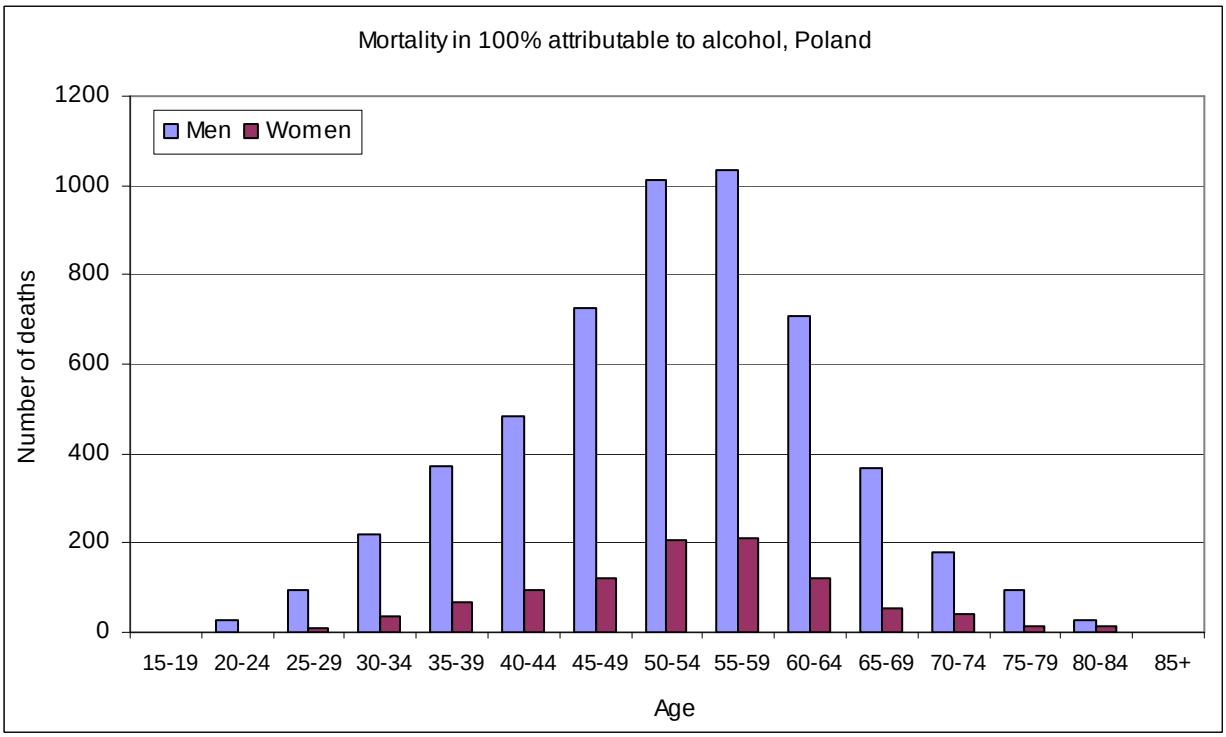
5. Mortality

5.1. Poland

ALCOHOL

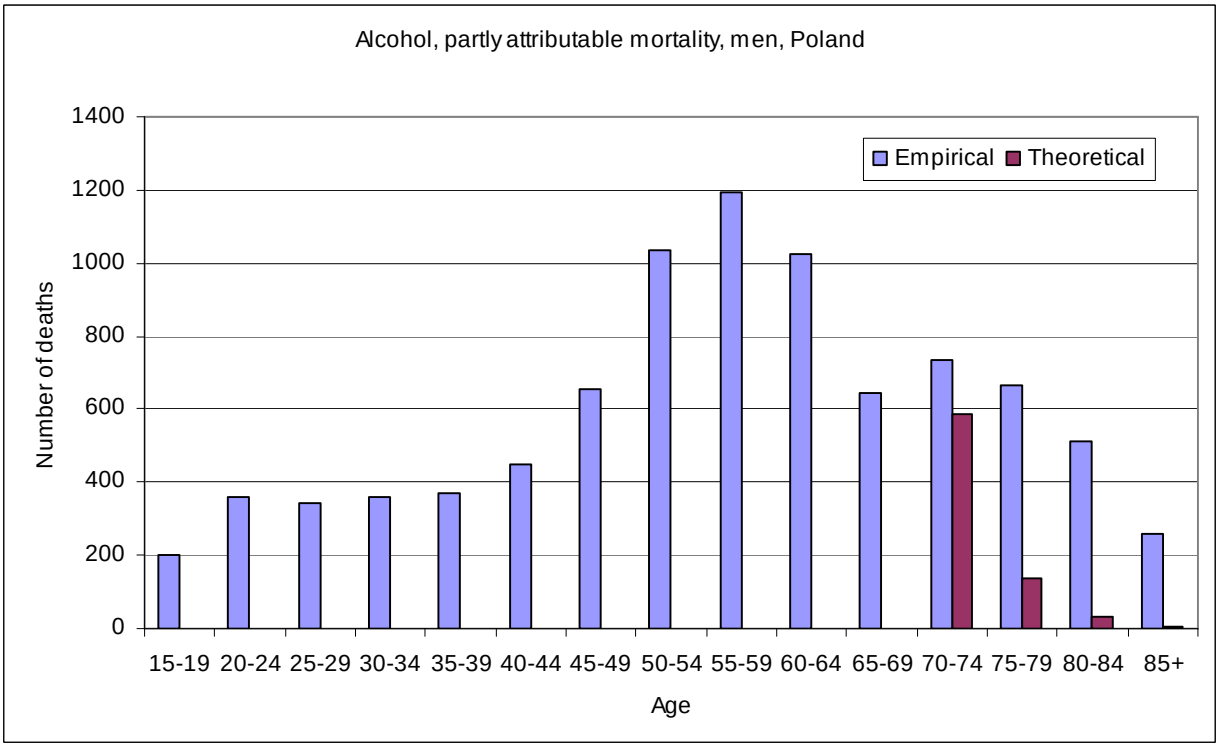
Estimation of mortality attributable to alcohol in Poland was performed on basis of several sources: Chief Statistical Office in Poland data, survey performed by the Foundation – Public Opinion Research Centre, in Warsaw in 2008 at the request of PARPA, titled "Alcohol consumption patterns in Poland", and Zofia Mielecka-Kubien's estimation of distribution of alcohol consumption (see Appendix 7.2).

Figure 5.1.1 Mortality in 100% attributable to alcohol consumption according to gender and age, Poland



Source: authors' own.

Figure 5.1.2 Mortality partly attributable to alcohol consumption according to age, men, Poland

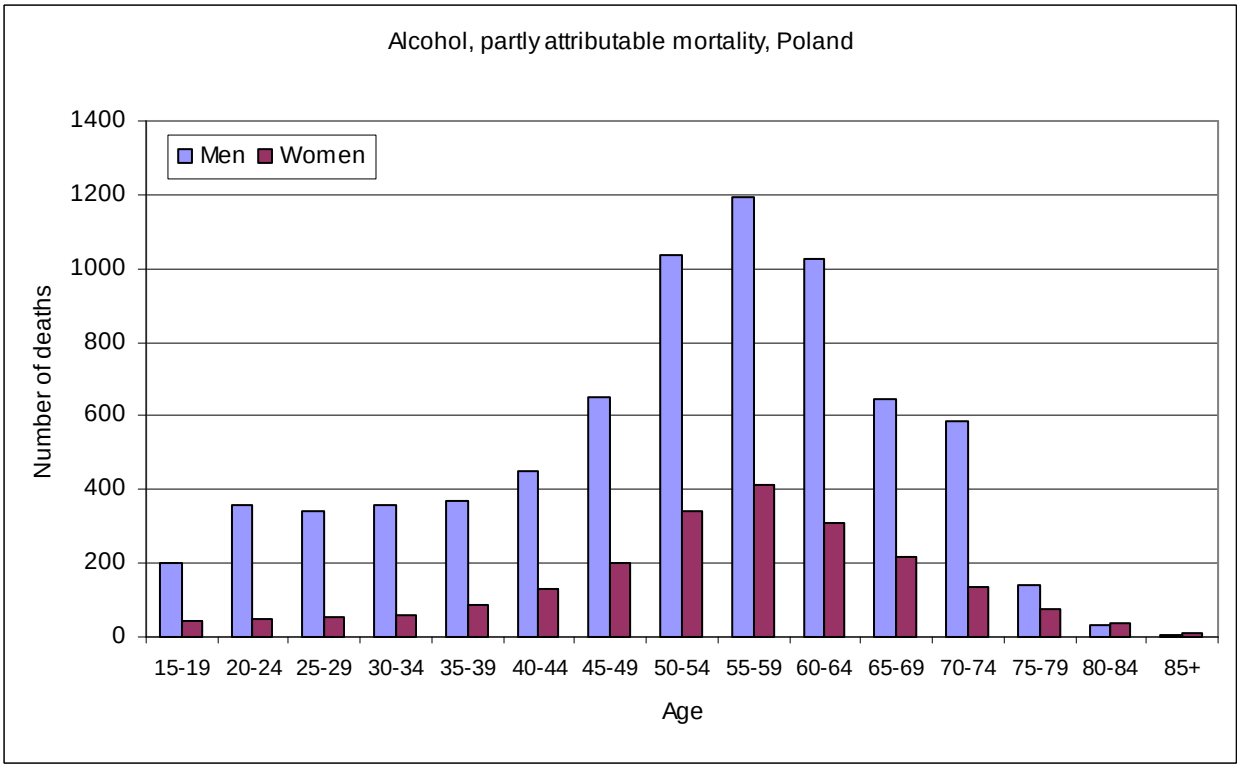


Source: authors' own.

Figure 5.1.3 Mortality partly attributable to alcohol consumption according to age, women, Poland

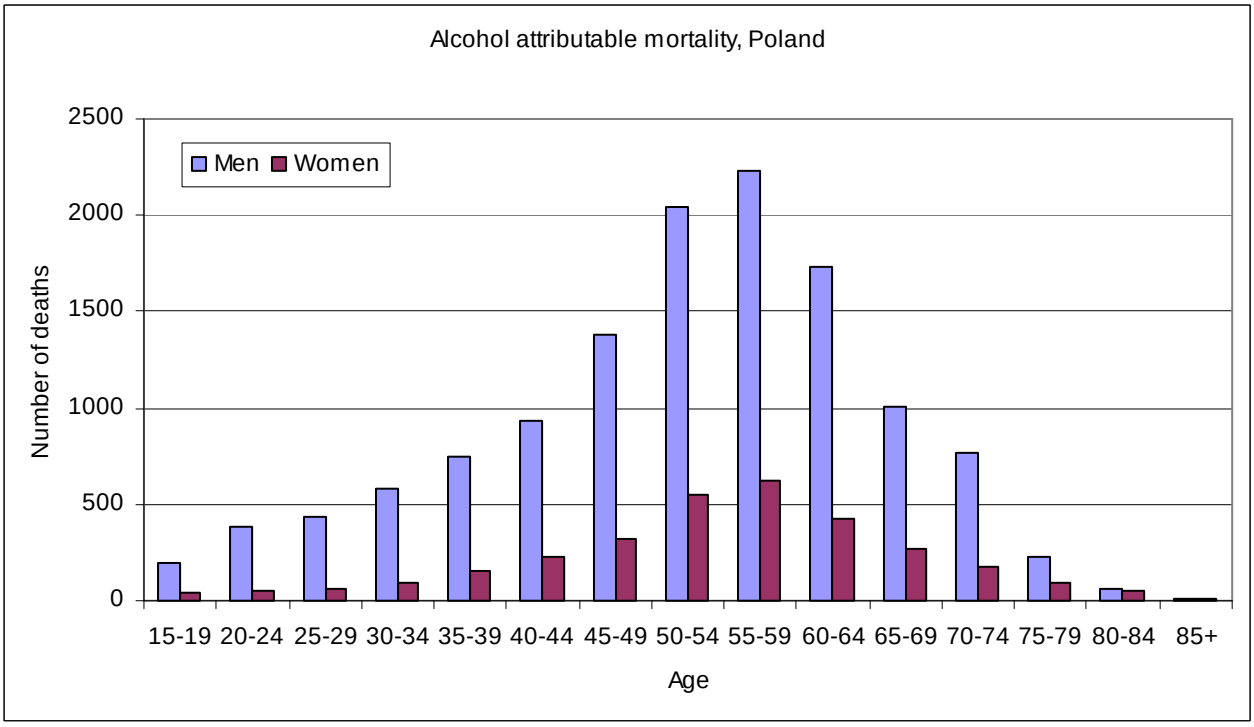
Source: authors' own.

Figure 5.1.4 Mortality partly attributable to alcohol consumption according to gender and age, Poland



Source: authors' own.
Remark: age [70+) for men and [60+) for women – theoretical values.

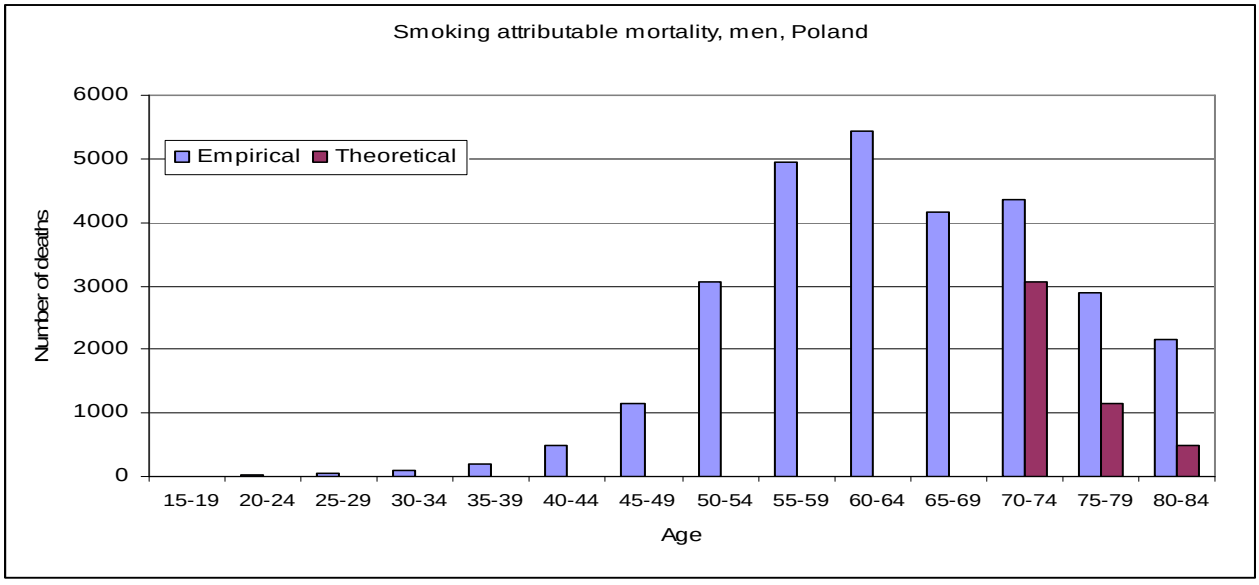
Figure 5.1.5 Mortality attributable to alcohol consumption according to gender and age, Poland



Source: authors' own.
Remark: Partly attributable mortality at age [70+) for men and [60+) for women – theoretical values.

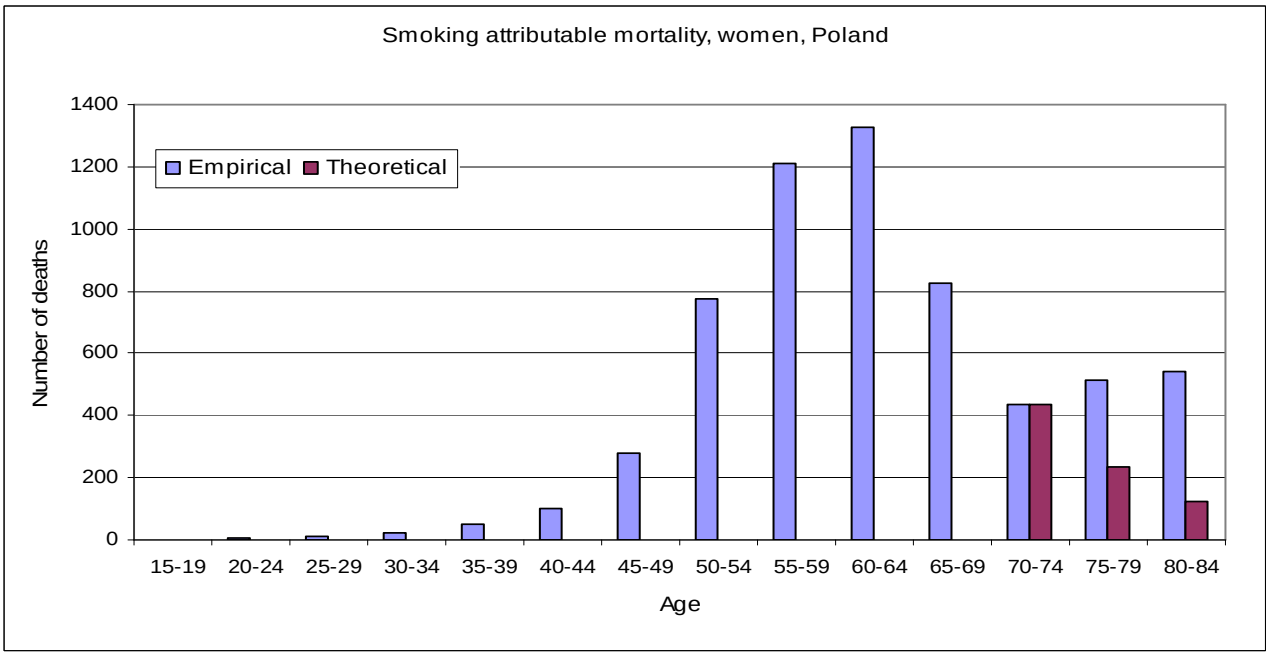
As already indicated in chapter 2.4. (p.24-25), with the use of theoretical values of regression functions fitted to exposure data, it is possible to estimate attributable fractions and subsequently attributable mortality for any age class. That is true for older people, too, but in such cases the values of attributable fractions, as well as the values of attributable mortality, are strongly overestimated because they include cases of deaths from natural causes. Therefore, under some previously specified assumptions, it has been estimated which mortality in older age classes can be ascribed to smoking (burgundy rectangles). The results are presented in fig. 5.1.6 and 5.1.7. Such an approach is specially needed in the case of smoking, as its consequences are often postponed in time.

Figure 5.1.6 Mortality attributable to smoking according to age, men, Poland



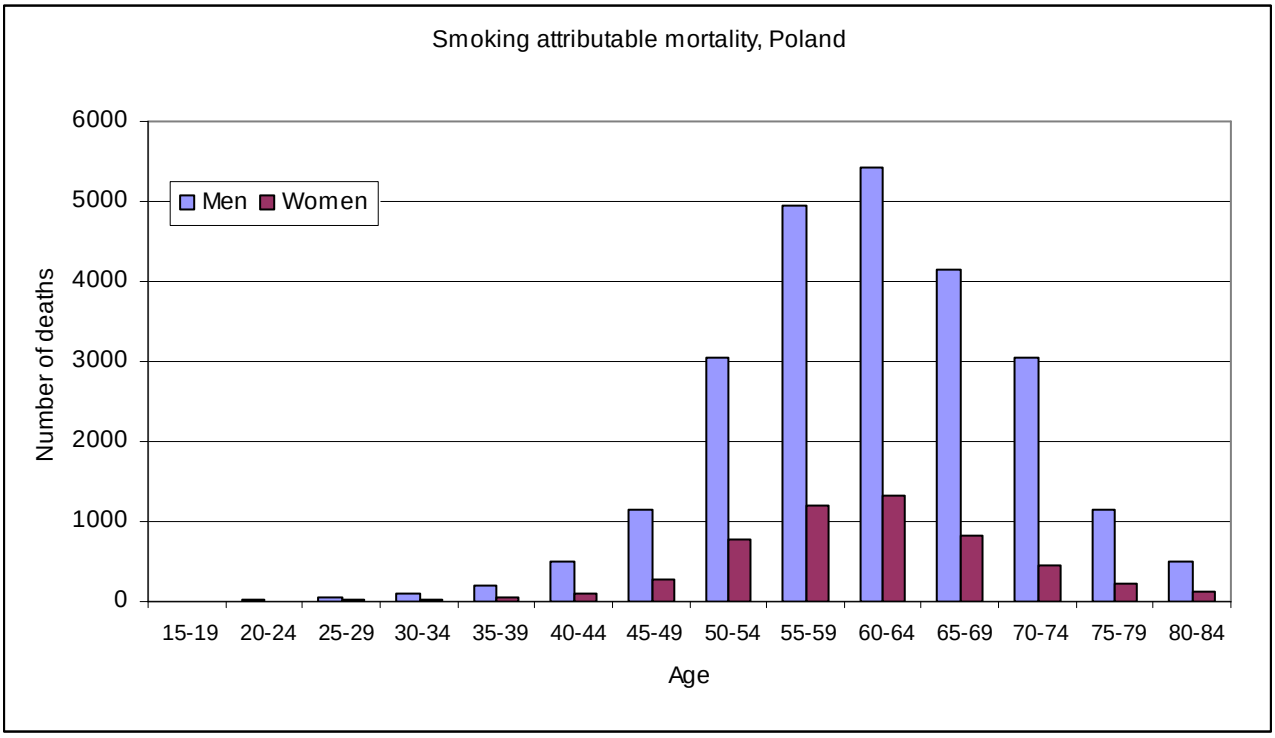
Source: authors' own.

Figure 5.1.7 Mortality attributable to smoking according to age, women, Poland



Source: authors' own.

Figure 5.1.8 Mortality attributable to smoking according to gender and age, Poland



Source: authors' own.
Remark: age [70+) for men and women – theoretical values.

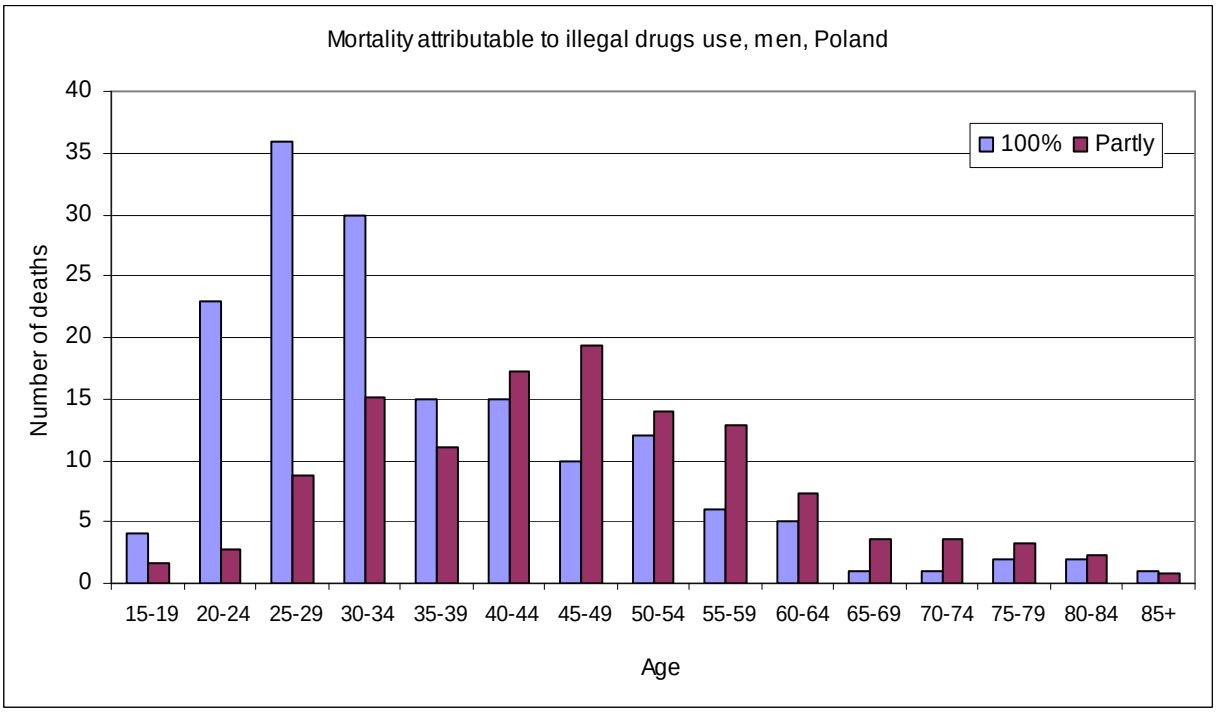
DRUGS

The method of estimation of the magnitude of health consequences which can be ascribed to alcohol or smoking was not applied in the case of illegal drugs. There were two reasons for that:

1. victims of use of drugs are mainly younger than victims of legal drugs, and
2. their deaths from Hepatitis B and C do not stand for deaths from natural causes, as in cases of cancer, deaths from circulatory or respiratory diseases, partly caused by alcohol or smoking.

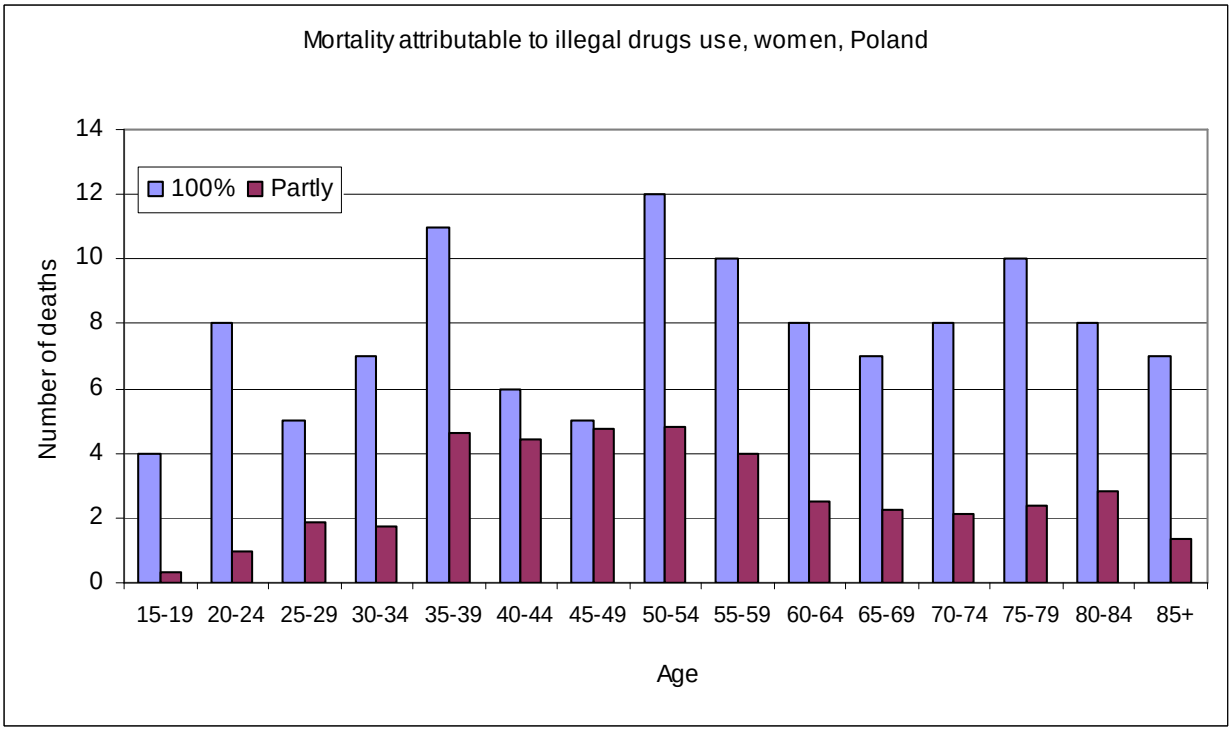
Additionally, in Poland in 2010 there were only a few cases of deaths from Hepatitis B and C, making it difficult to fit any regression function.

Figure 5.1.9 Mortality attributable to illegal drug use according to age, men, Poland



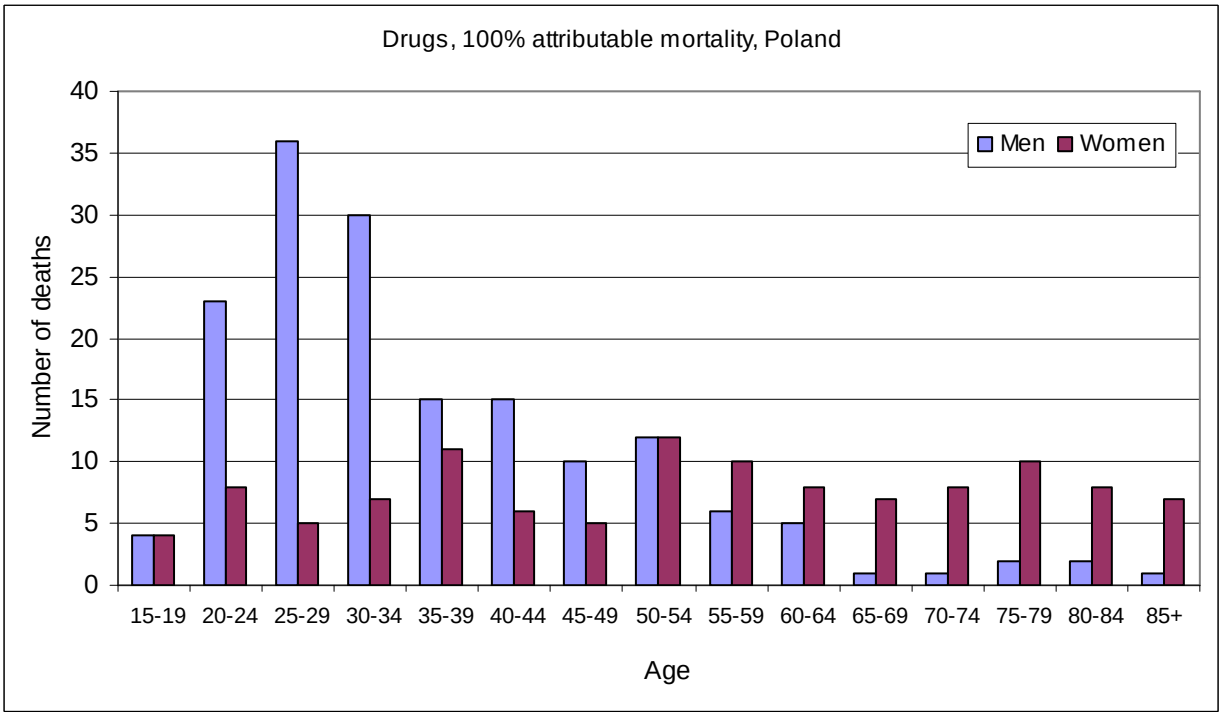
Source: authors' own.

Figure 5.1.10 Mortality attributable to illegal drug use according to age, women, Poland



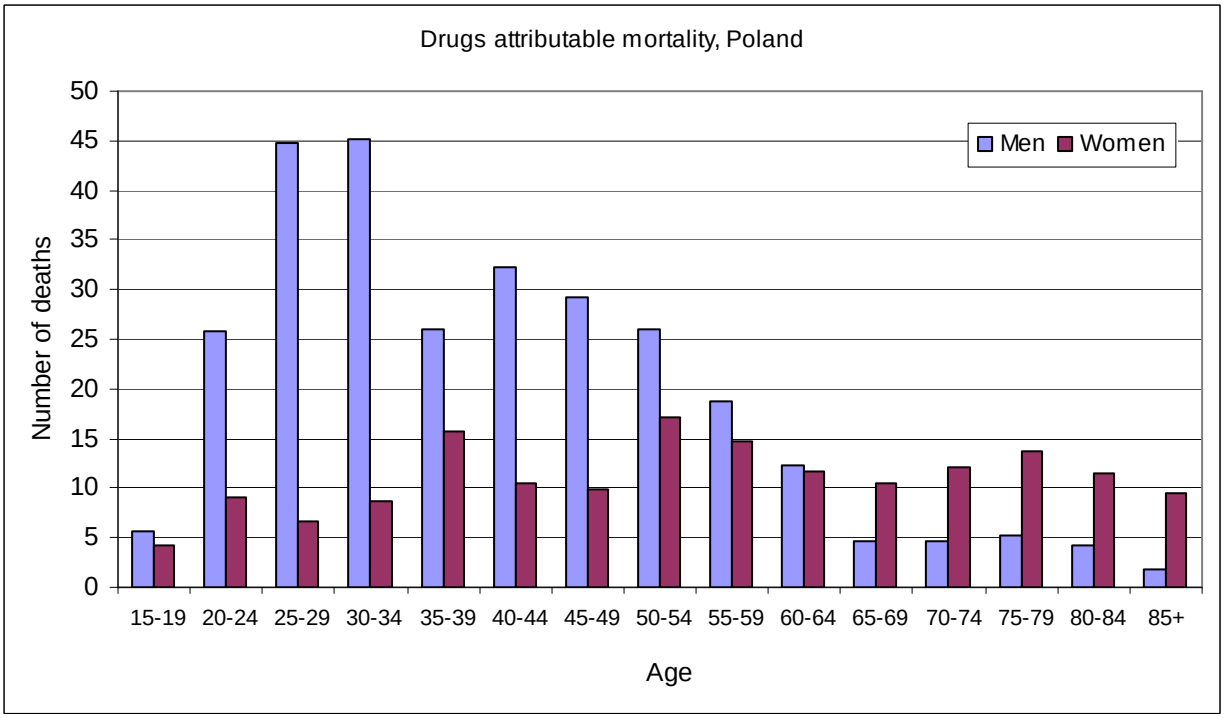
Source: authors' own.

Figure 5.1.11 Mortality in 100% attributable to illegal drugs use according to gender and age, Poland



Source: authors' own.

Figure 5.1.12 Mortality attributable to illegal drugs use according to gender and age, Poland



Source: authors' own.

The table below shows alcohol, tobacco and drug attributable mortality in Poland in the population between 15 and 64 years of age. It indicates that the biggest burden is related to tobacco use. Alcohol and tobacco together account for 99% of mortality attributable to psychoactive substances. Regardless of the kind of the substance, mortality rates are much higher among men than women. In total, approximately 31% of death in the general population, may be attributed to tobacco or alcohol use.

Table 5.1.1 Mortality attributable to alcohol consumption, smoking or illegal drugs use according to gender, age 15-64, Poland

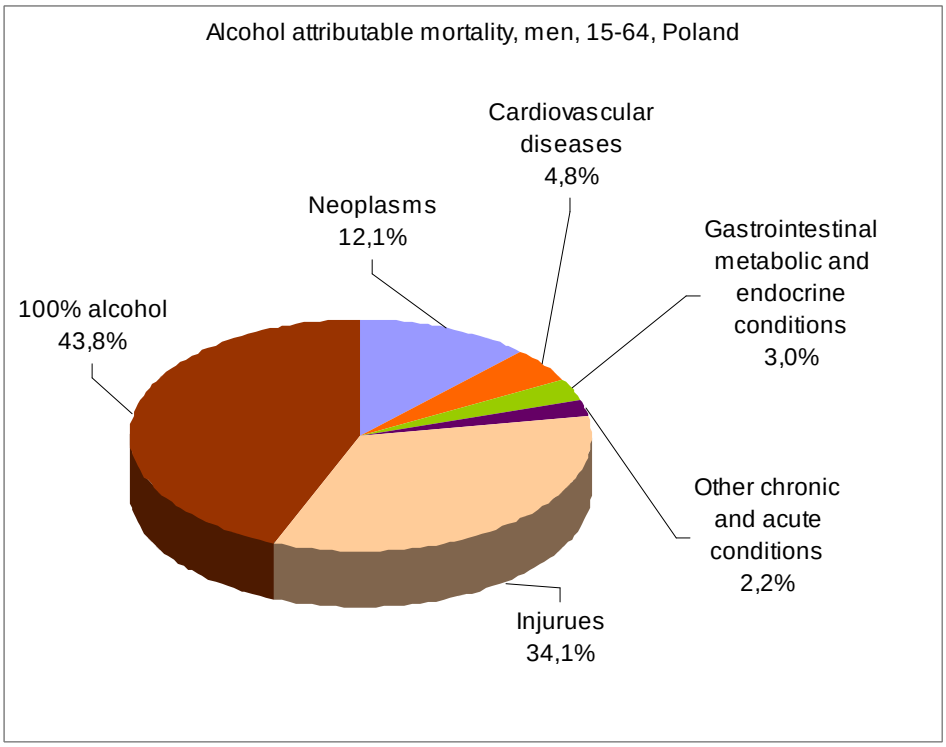
SUBSTANCE	NUMBER OF DEATHS			PERCENT							
	MEN	WOMEN	TOTAL	ACCORDING TO GENDER		OF DEATHS IN POPULATION 15-64			ACCORDING TO SUBSTANCE		
				MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
ALCOHOL	10672	2634	13306	80.2	19.8	13.5	8.4	12.0	38.8	38.9	38.8
SMOKING	16539	4034	20573	80.4	19.6	20.9	12.8	18.6	60.2	59.6	60.1
DRUGS	266	106	372	71.5	28.5	0.3	0.3	0.3	1.0	1.6	1.1
ALL SUBSTANCES	27477	6774	34251	80.2	19.8	34.7	21.5	31.0	100	100	100

Source: authors' own.

Remark: As there are people who simultaneously drink and smoke, drink and use drugs etc. the sums of the numbers of deaths attributable to alcohol consumption, smoking and drug use (all substances) are overestimated (some people can be counted twice or even three times).

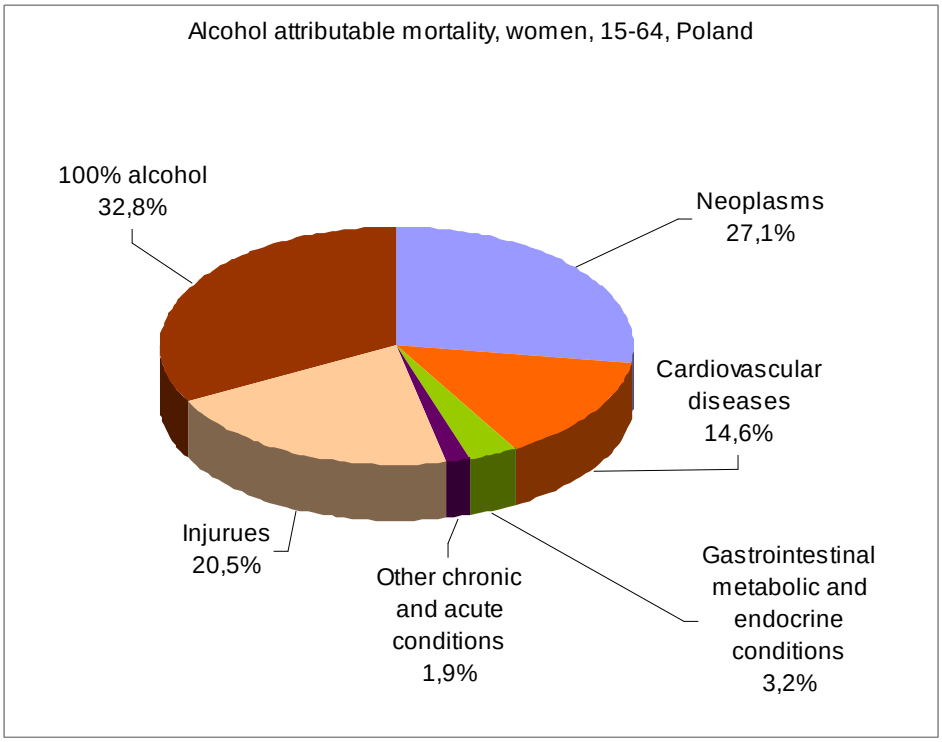
Figures below show that besides death in 100% attributable to alcohol (as specified in table 8.1.1.4), the most prevalent cause of death associated with alcohol use are injuries. Tobacco smokers most often die because of neoplasms and illicit drug users – due to diseases in 100% attributable to drugs, i.e. mental and behavioral disorders, injuries, accidental poisoning by and exposure to noxious substances.

Figure 5.1.13 Deaths attributable to alcohol consumption according to causes of deaths, men, age 15-64, Poland



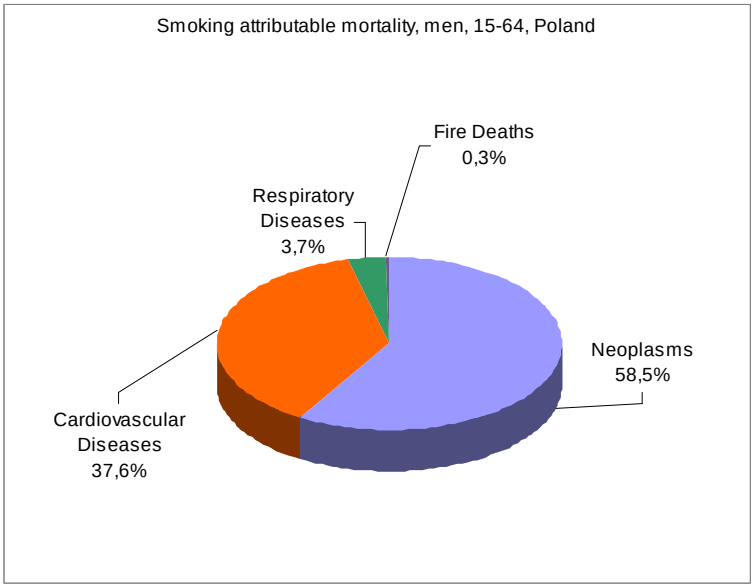
Source: authors' own.

Figure 5.1.14 Deaths attributable to alcohol consumption according to causes of deaths, women, age 15-64, Poland



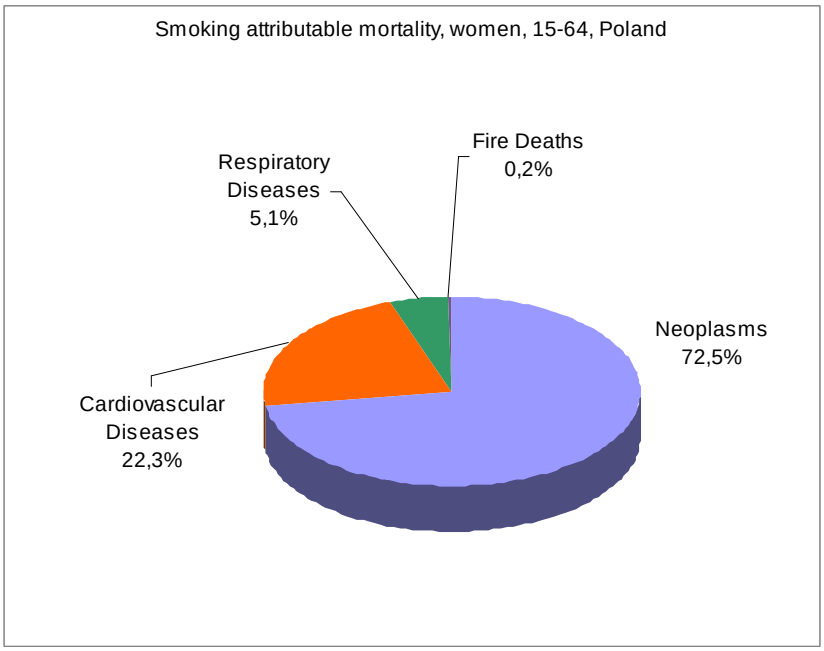
Source: authors' own.

Figure 5.1.15 Deaths attributable to smoking according to causes of deaths, men, age 15-64, Poland



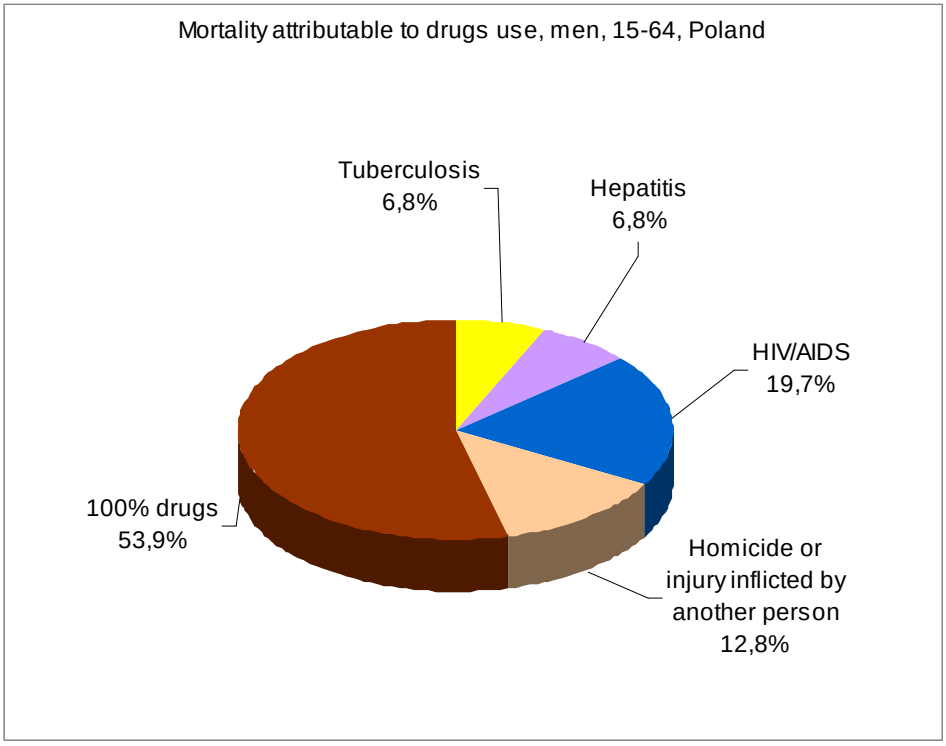
Source: authors' own.

Figure 5.1.16 Deaths attributable to smoking according to causes of deaths, women, age 15-64, Poland



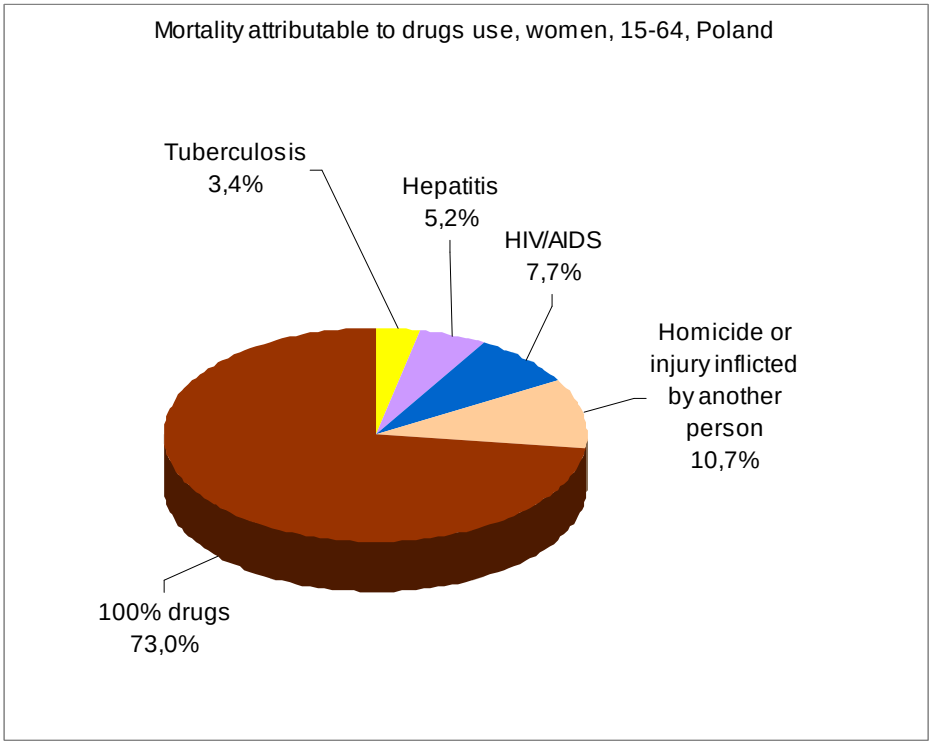
Source: authors' own.

Figure 5.1.17 Deaths attributable to drugs use according to causes of deaths, men, age 15-64, Poland



Source: authors' own.
Remark: Deaths caused in 100% by illicit drugs use have ICD-10 codes: F11-F12, F14-16, F19, X42, X44, X62, X64, Y12-Y14.

Figure 5.1.18 Deaths attributable to drugs use according to causes of deaths, women, age 15-64, Poland



Source: authors' own.
Remark: Deaths caused in 100% by illicit drugs use have ICD-10 codes: F11-F12, F14-16, F19, X42, X44, X62, X64, Y12-Y14.

Years of life lost

Table 5.1.2. presents the results of estimating the number of years of life lost due to alcohol consumption, smoking or drugs use, according to gender and age in Poland in 2010. The estimation is based on data on life expectancy for Poland (2010) and previously estimated number of deaths caused by alcohol drinking, smoking or drugs use in gender/age classes.

Table 5.1.2 Number of years of life lost due to alcohol consumption, smoking or drugs use, according to gender and age, Poland

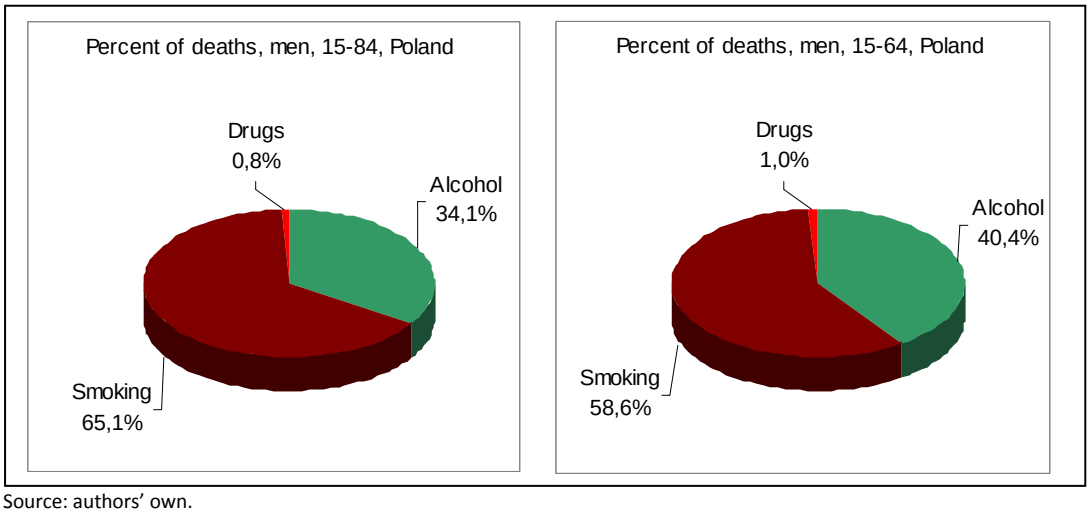
Age	Life expectancy (e_x)		Number of lost years of life					
			Alcohol		Smoking		Drugs	
	Men	Women	Men	Women	Men	Women	Men	Women
15-19	55.2	63.6	11064.8	2862.6	580.5	118.4	331.3	254.5
20-24	50.5	58.7	19527.8	3064.2	1147.4	390.1	1311.8	528.3
25-29	45.7	53.8	19951.5	3397.3	2395.1	685.4	2057.2	376.4
30-34	41.0	48.9	23741.9	4654.5	4246.1	1084.7	1844.6	439.7
35-39	36.3	44.0	26982.8	6722.7	7486.0	2251.5	944.8	703.6
40-44	31.9	39.2	29826.8	8759.2	15835.7	3961.4	1019.2	391.7
45-49	27.6	34.5	37975.9	11070.6	31800.1	9696.5	799.4	344.7
50-54	23.6	29.9	48228.6	16306.8	71947.8	23275.5	613.3	508.9
55-59	20.0	25.6	44538.0	15826.8	98945.2	31003.7	379.1	358.1
60-64	16.6	21.4	28853.2	9206.1	90352.4	28372.3	199.4	235.5
65-69	13.6	17.4	13691.0	4656.8	56342.1	14349.4	67.8	156.8
70-74	10.8	13.6	8290.6	2455.1	32863.0	5965.5	53.9	136.3
75-79	8.3	10.2	1933.7	944.8	9586.7	2374.9	41.6	122.5
80-84	6.3	7.4	382.6	358.7	3110.0	914.7	25.0	81.3
Total			314989.2	90285.9	426638.2	124444.0	9688.4	4638.0
Age of professional activity*			290691.2	72664.6	324736.4	72467.2	9500.2	3905.7

Source: authors' own.
Remark: For alcohol and smoking in high age classes theoretical values of number of deaths were applied.
The e_x values were calculated as averages of subsequent years.
* For men [18-64), for women [18-59), here [15-64) and [15-59).

COMPARISON

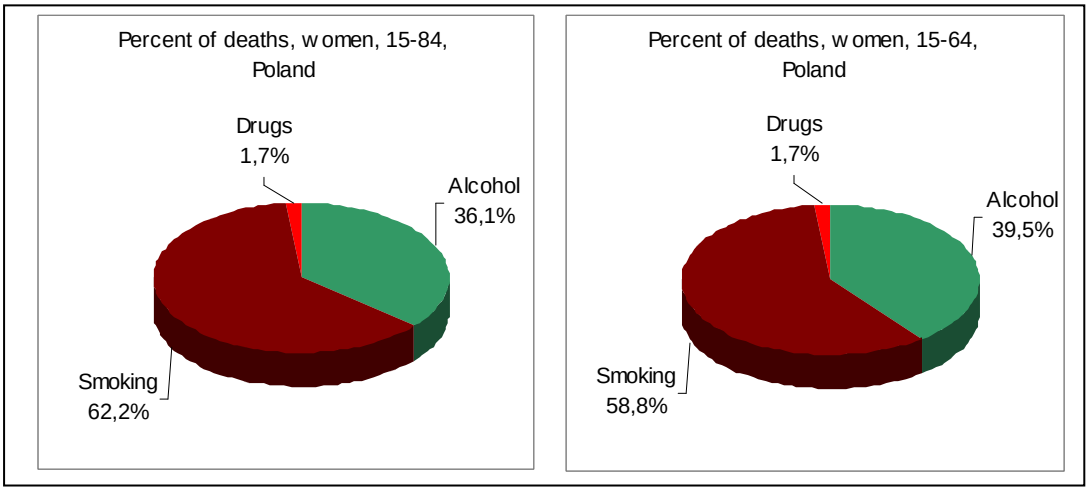
In the figures 5.1.19. and 5.1.20. the mortality rates attributable to alcohol, smoking or drugs in the general adult population (15-84 years of age) and in the working population (15-64 for men and 15-59 for women) of men and women are compared, indicating higher risk of death attributable to tobacco in the older population than in the population of working age.

Figure 5.1.19 Percent of deaths attributable to alcohol consumption, smoking or drugs use in all years of life lost due the three psychoactive substances, men, age 15-84* and 15-64, Poland



Source: authors' own.
*For alcohol and smoking in high age classes theoretical values of number of deaths were applied.

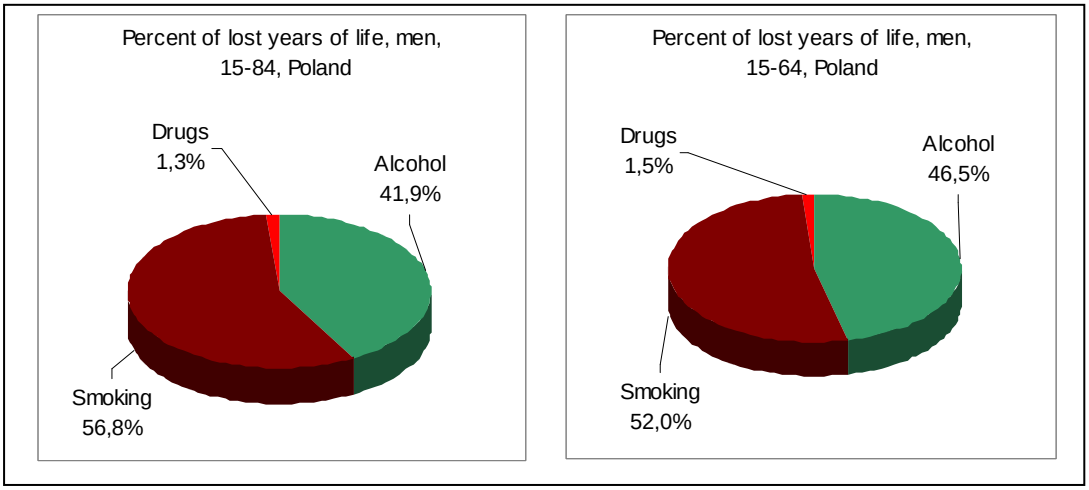
Figure 5.1.20 Percent of deaths attributable to alcohol consumption, smoking or drugs use in all years of life lost due the three psychoactive substances, women, age 15-84 and age of professional activity [15-59), Poland



Source: authors' own.

Figures 5.1.21. and 5.1.22. indicate that in the general adult population most of years of life lost can be attributable to tobacco use, while in the professionally active female population the highest percent of years of life lost are associated with alcohol drinking.

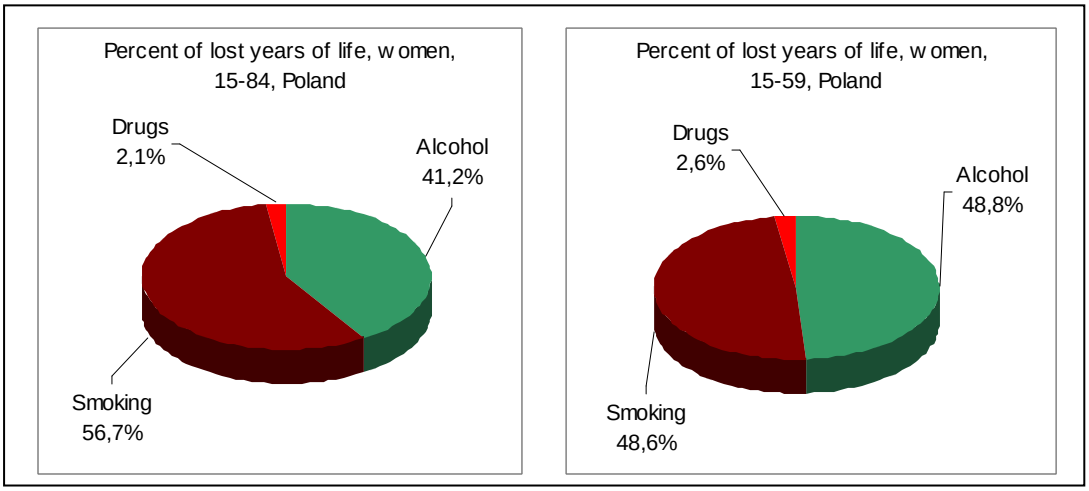
Figure 5.1.21 Percent of years of life lost due to alcohol consumption, smoking or drugs use in all years of life lost due to the three psychoactive substances, men, age 15-84* and 15-64, Poland



Source: authors' own.

*For alcohol and smoking in high age classes theoretical values of number of deaths were applied.

Figure 5.1.22 Percent of years of life lost due to alcohol consumption, smoking or drugs use in all years of life lost due to the three psychoactive substances, women, age 15-84 and 15-59 - age of professional activity, Poland



Source: authors' own.

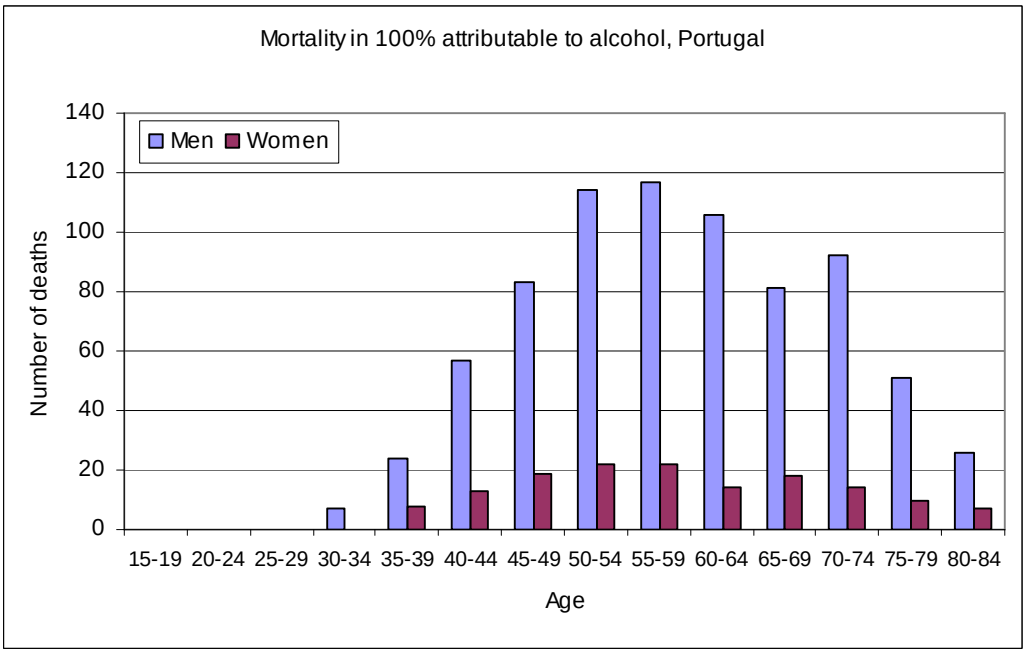
5.2. Portugal

Alcohol

Table 5.2.1. lists causes of death which are 100% ascribed to alcohol consumption, estimated for the entire population, without taking into account age distributions of abstainers and alcohol consumers of different levels of drinking.

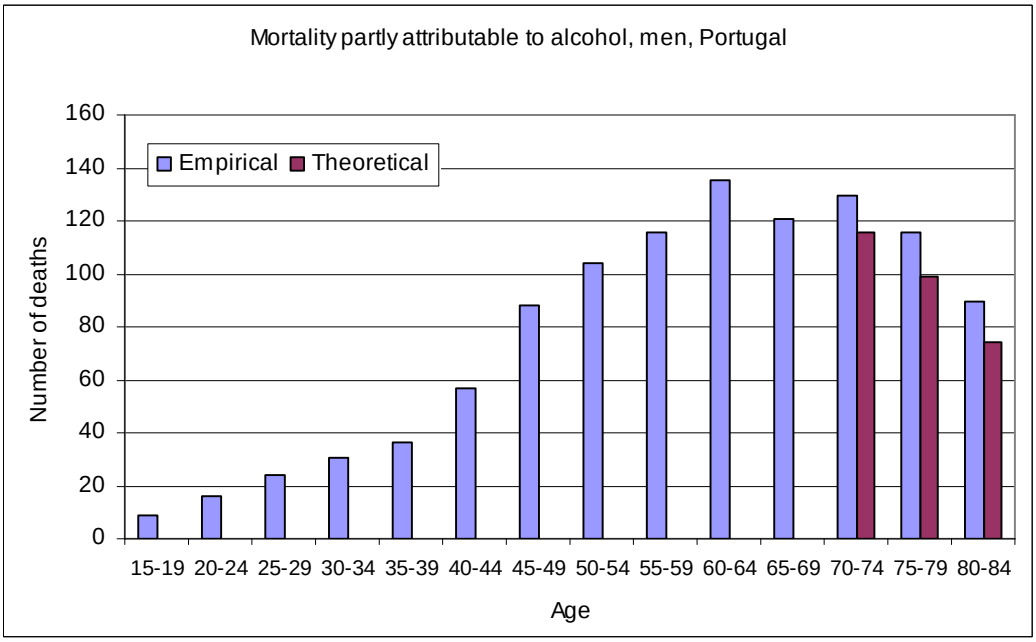
As in the case of Poland mortality caused by drinking alcohol was divided into two classes: those which can be in 100% ascribed to alcohol and those only partially caused by alcohol. For mortality in older age classes (to avoid counting deaths from natural causes) the previously described method of estimation was applied. The results are marked with burgundy rectangles.

Figure 5.2.1 Mortality in 100% attributable to alcohol consumption according to gender and age, Portugal



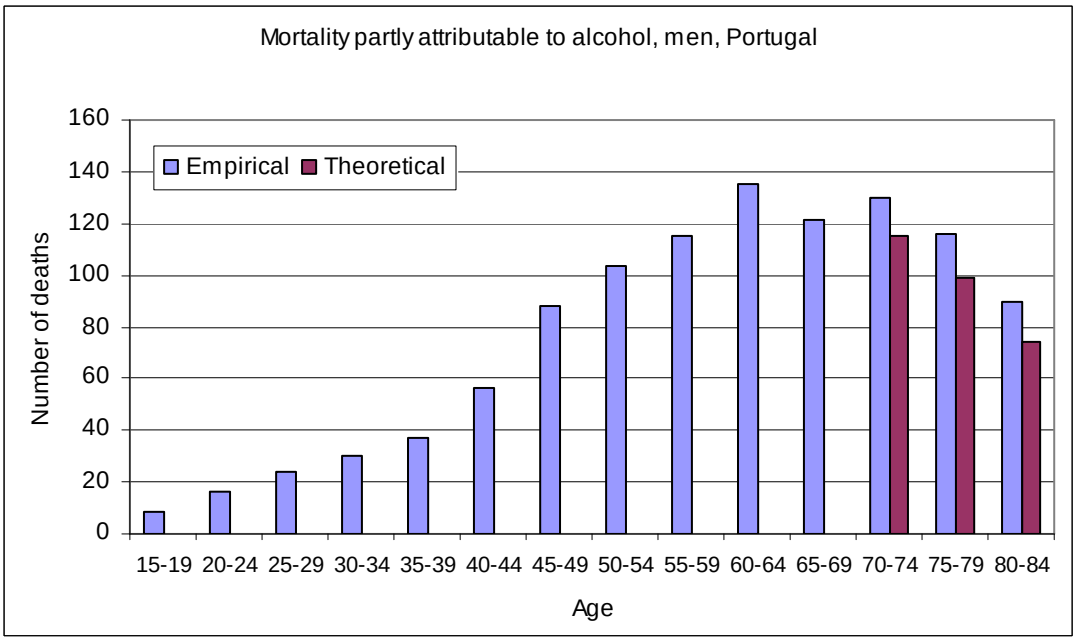
Source: authors' own.

Figure 5.2.2 Mortality partly attributable to alcohol consumption according to age, empirical and theoretical values, men, Portugal



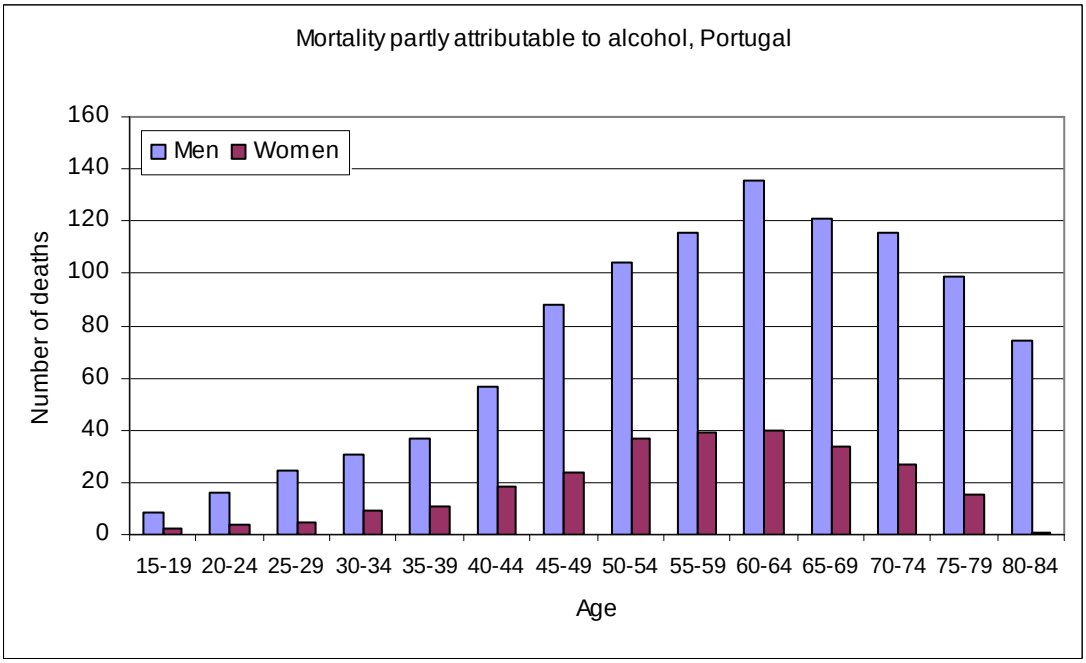
Source: authors' own.

Figure *5.2.3* Mortality partly attributable to alcohol consumption according to gender, empirical and theoretical values, women, Portugal



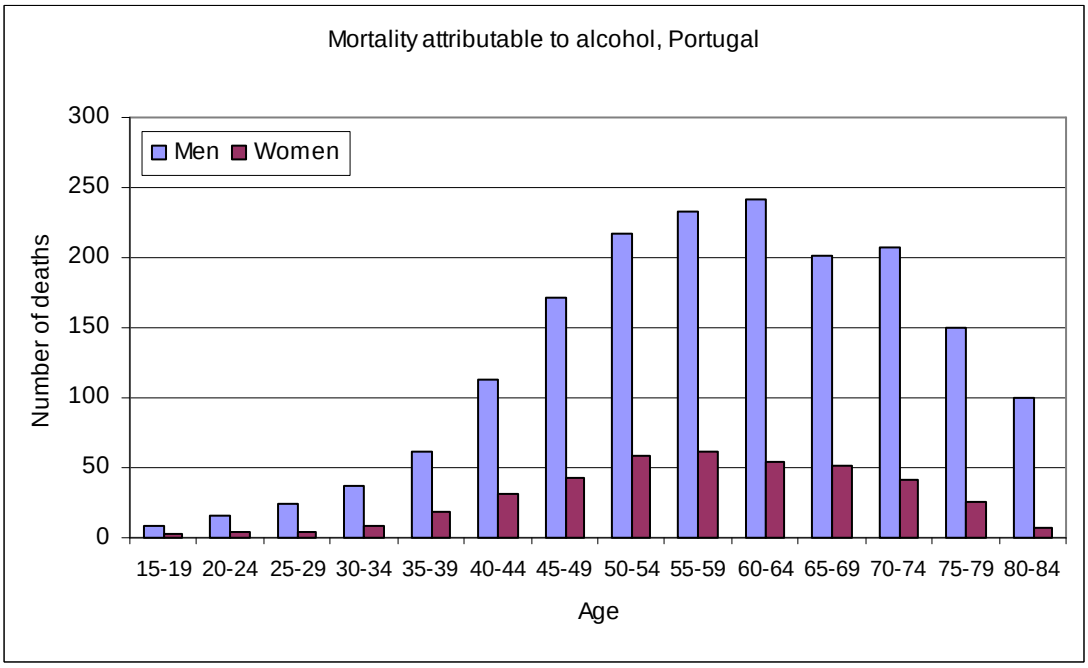
Source: authors' own.

Figure *5.2.4* Mortality partly attributable to alcohol consumption according to gender and age, theoretical values, Portugal



Source: authors' own.

Figure *5.2.5* Mortality attributable to alcohol according to gender and age, Portugal

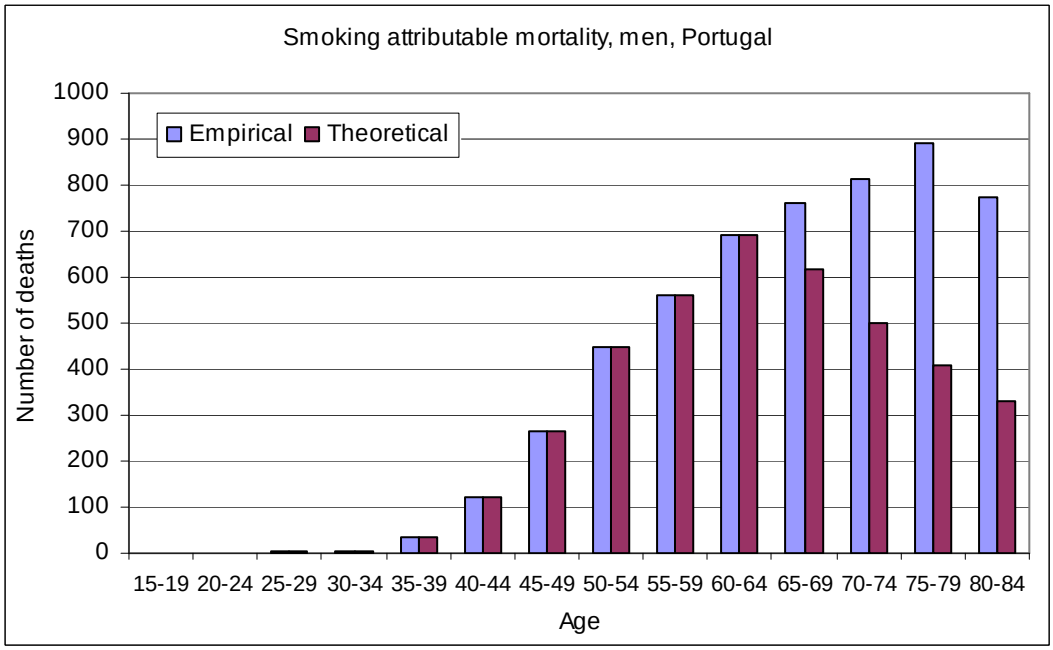


Source: authors' own.
Remark: Partly attributable mortality at age [70+) for men and women – theoretical values.

Smoking

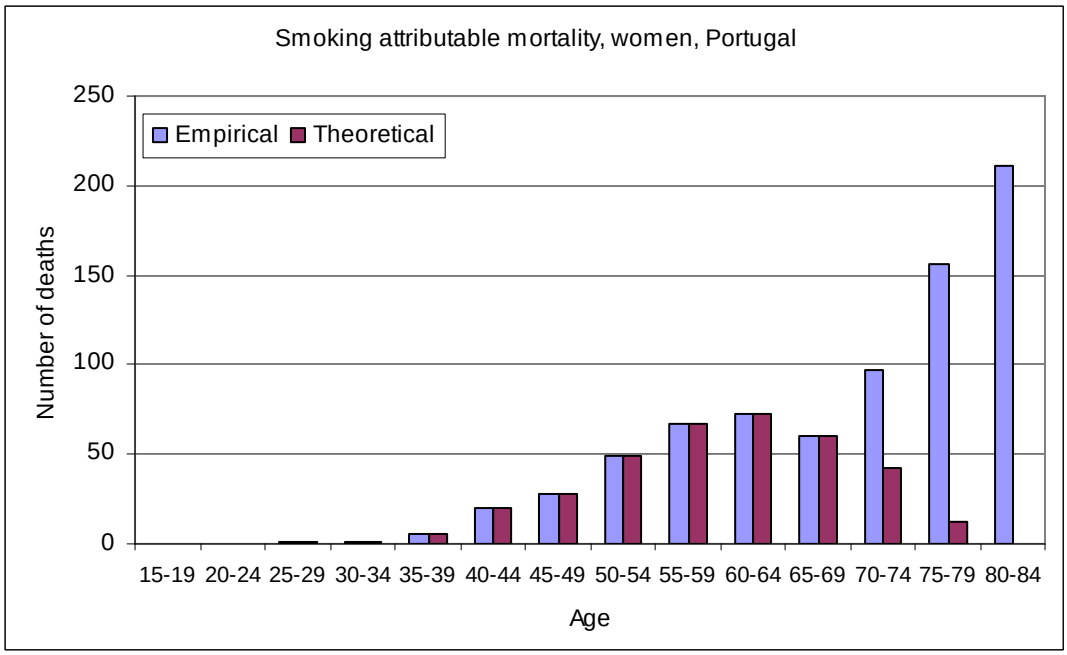
A similar method as in the case of alcohol (see above) was applied to estimate the mortality attributable to smoking. The results of estimating mortality partly caused by smoking in older age classes are marked with burgundy rectangles.

Figure 5.2.6 Mortality attributable to smoking according to age, empirical and theoretical values, men, Portugal



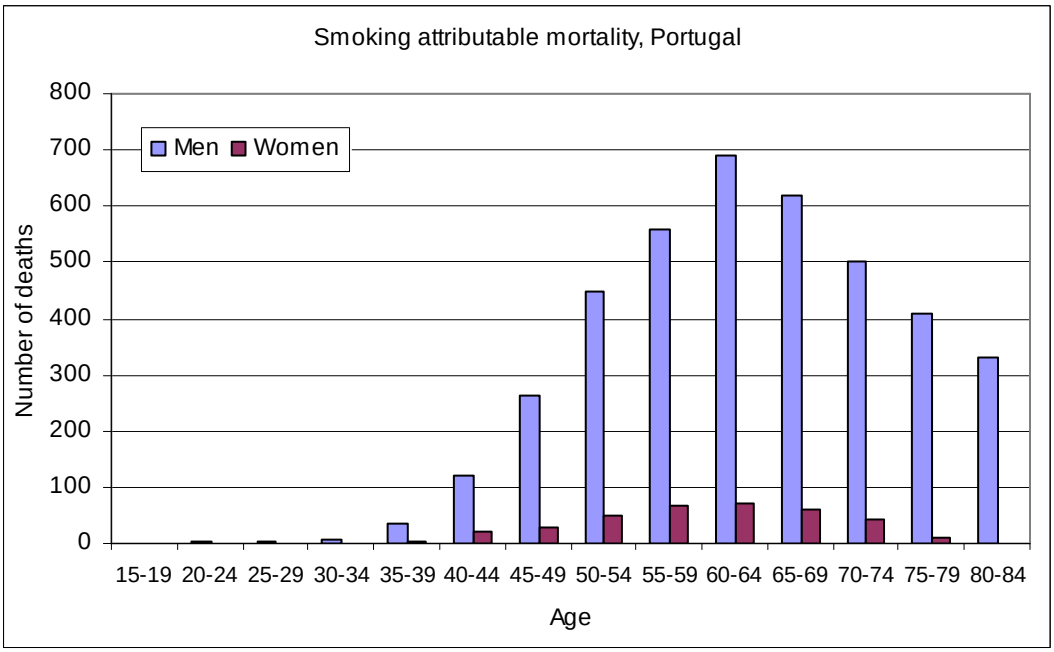
Source: authors' own.

Figure 5.2.7 Mortality attributable to smoking according to age, empirical and theoretical values, women, Portugal



Source: authors' own.

Figure 5.2.8 Mortality attributable to smoking according to gender and age, Portugal

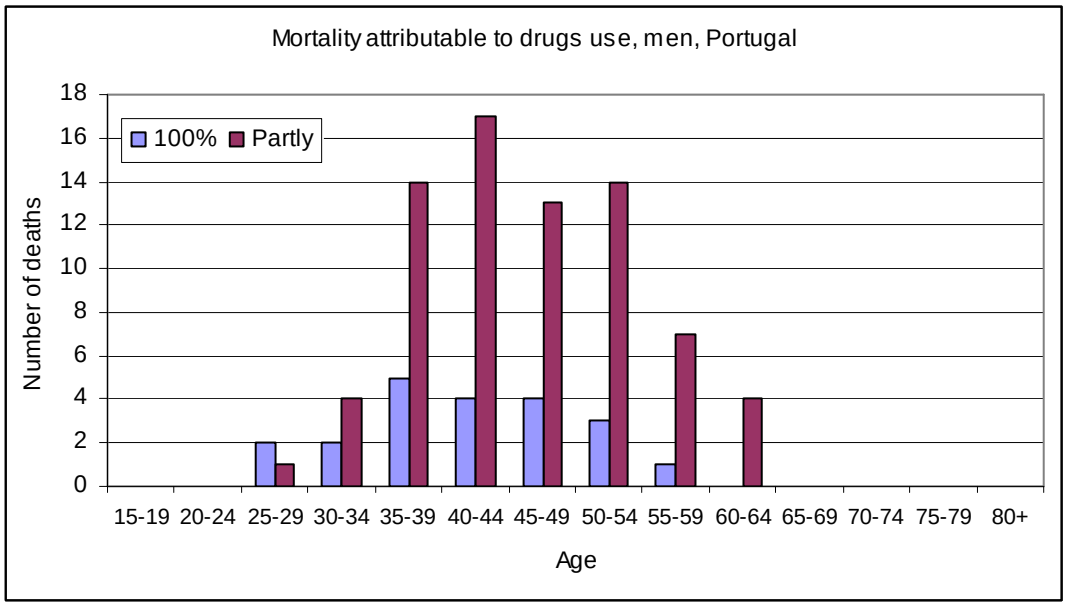


Source: authors' own.
Remark: age [70+) for men and women – theoretical values.

Drugs

Figures 5.2.8 and 5.2.9 present results of estimating mortality attributable to the use of illicit drugs in Portugal. Mortality in 100% ascribed to drugs use includes causes of deaths with ICD-10 codes: F11-F12, F14-16, F19, X42, X44, X62, X64, Y12-Y14.

Figure 5.2.8 Mortality attributable to illegal drug use according to age, men, Portugal



Source: authors' own.

Figure 5.2.9 Mortality attributable to illegal drug use according to age, women

Source: authors' own.

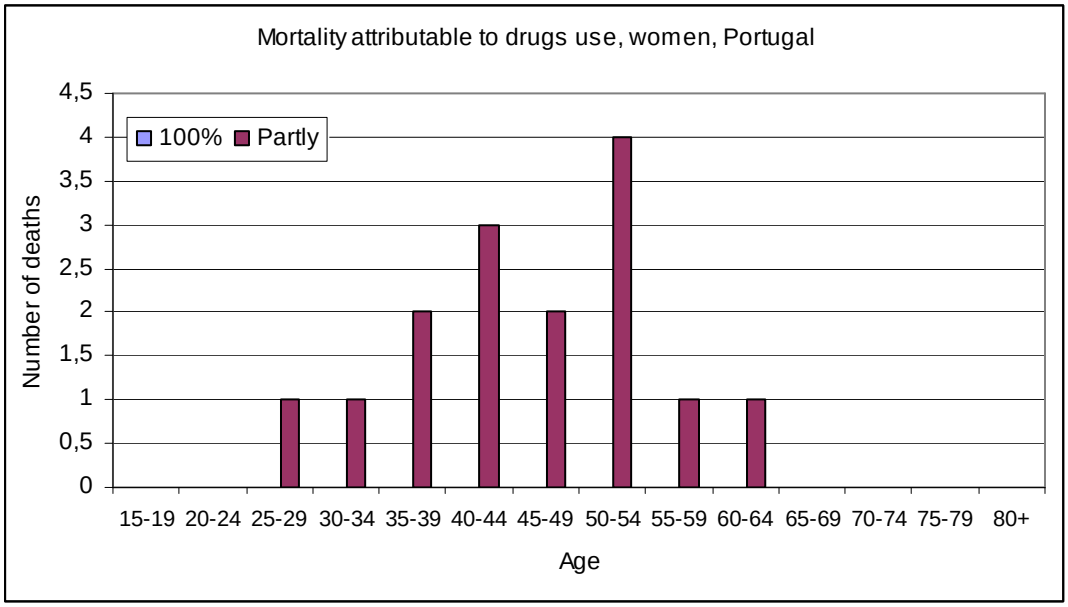
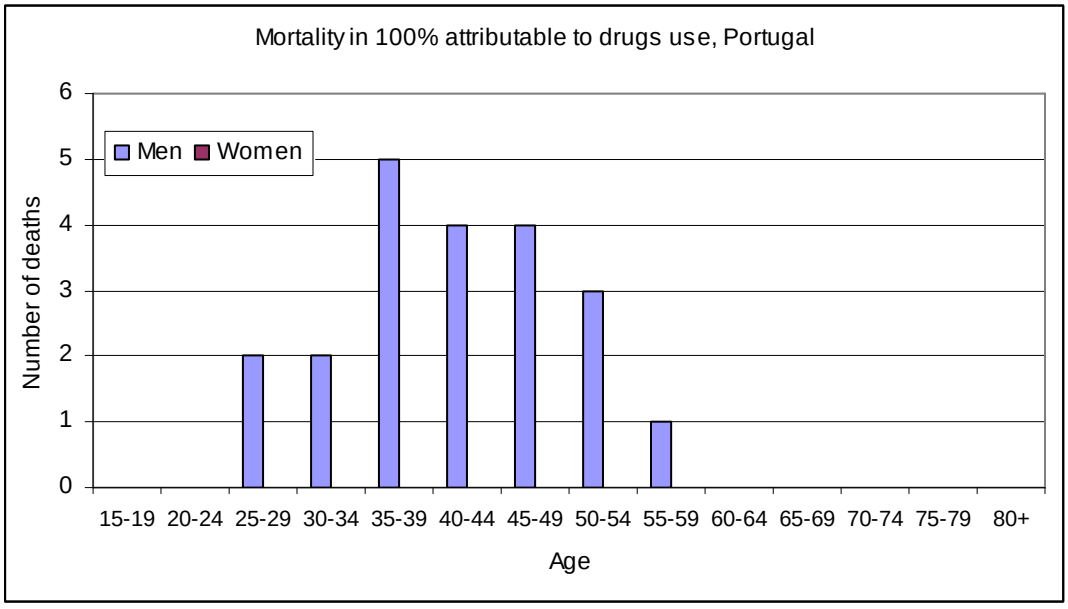
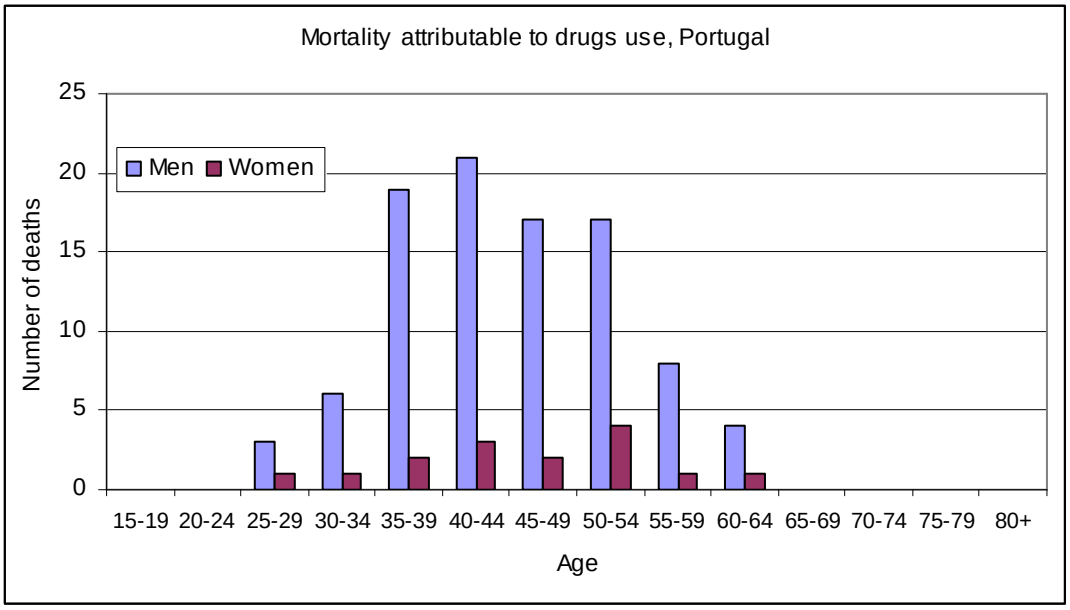


Figure 5.2.10 Mortality in 100% attributable to illegal drug use according to gender and age, Portugal



ource: authors' own.

Figure 5.2.11 Mortality attributable to illegal drug use according to gender and age, Portugal



Source: authors' own.

The table below shows alcohol, tobacco and drug attributable mortality in Portugal in the population between 15 and 64 years of age. It indicates that the biggest burden is related to tobacco use. Alcohol and tobacco together account for 97% of mortality attributable to psychoactive substances. Regardless of the kind of substance, mortality rates are much higher among men than women. In total, approximately 21% of deaths in the general population (10% less than in Poland), may be attributed to tobacco or alcohol use.

Table 5.2.2 Mortality attributable to alcohol consumption, smoking and illegal drug use according to gender, age 15-64, Portugal

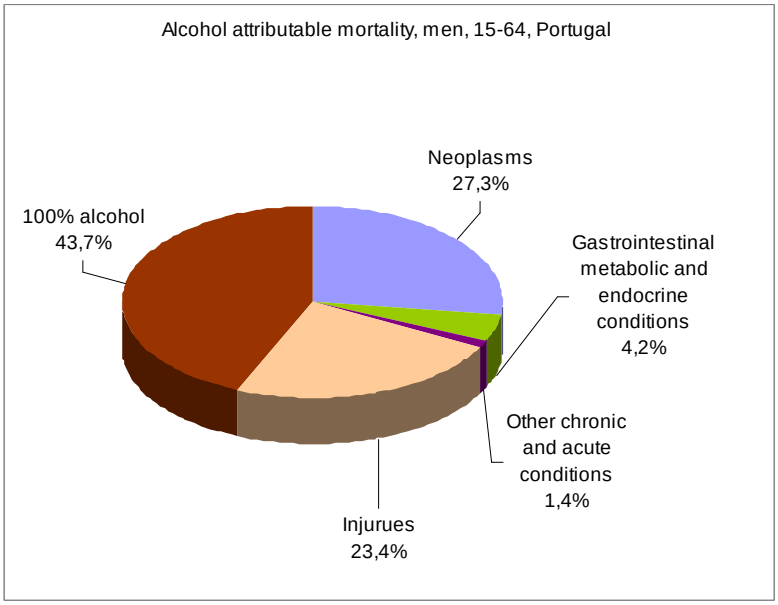
SUBSTANCE	NUMBER OF DEATHS			PERCENT							
	MEN	WOMEN	TOTAL	ACCORDING TO GENDER		OF DEATHS IN POPULATION 15-64			ACCORDING TO SUBSTANCE		
				MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
ALCOHOL	1123	286	1409	79.7	20.3	9.0	5.2	7.9	33.5	52.6	36.2
SMOKING	2131	244	2375	89.7	10.3	17.2	4.5	13.3	63.6	44.9	61.0
DRUGS	95	14	109	87.2	12.8	0.8	0.3	0.6	2.8	2.6	2.8
ALL SUBSTANCES	3349	544	3893	86.0	14.0	27.0	10.0	21.8	100	100	100

Source: authors' own.

Remark: As there are people who simultaneously drink and smoke, drink and use drugs etc. the sums of the numbers of deaths attributable to alcohol consumption, smoking and drug use (all substances) are overestimated (some people can be counted twice or even three times).

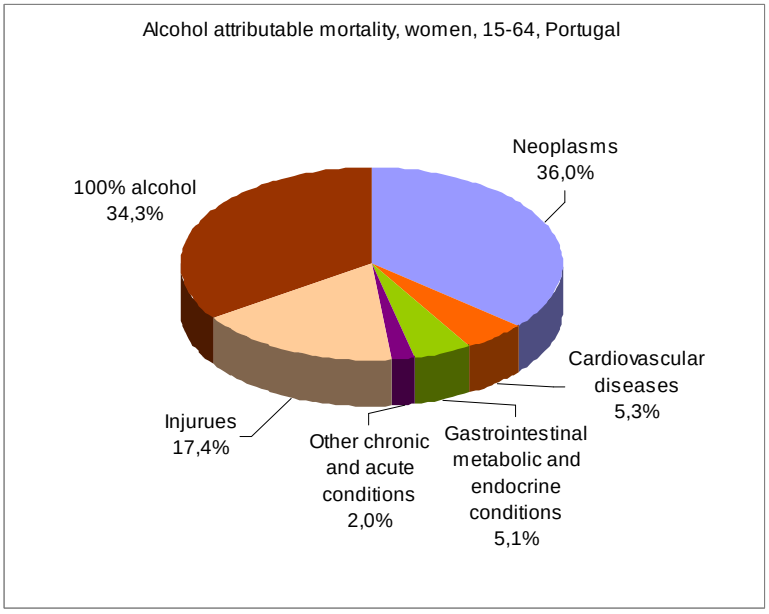
The figures below show that besides death in 100% attributable to alcohol, the most prevalent cause of death associated with alcohol use in Portugal are neoplasms. Tobacco smokers also die most often because of neoplasms, whereas for illicit drug users it is most oftenly due to HIV/AIDS, while diseases in 100% attributable to drugs (i.e. mental and behavioral disorders, injuries, accidental poisoning by and exposure to noxious substances) are a less prevalent cause of death.

Figure 5.2.12 Deaths attributable to alcohol consumption according to causes of deaths, men, age 15-64, Portugal



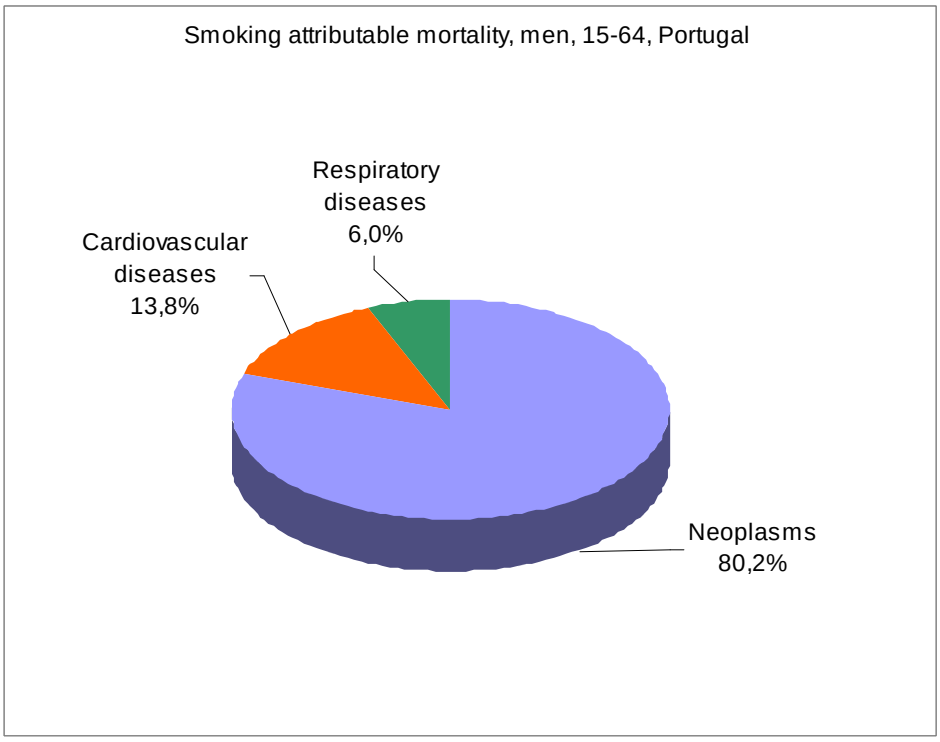
Source: authors' own.
As number of deaths for cardiovascular diseases was negative (the lives were saved due to alcohol drinking) it is not presented on fig.12.

Figure 5.2.13 Deaths attributable to alcohol consumption according to causes of deaths, women, age 15-64, Portugal



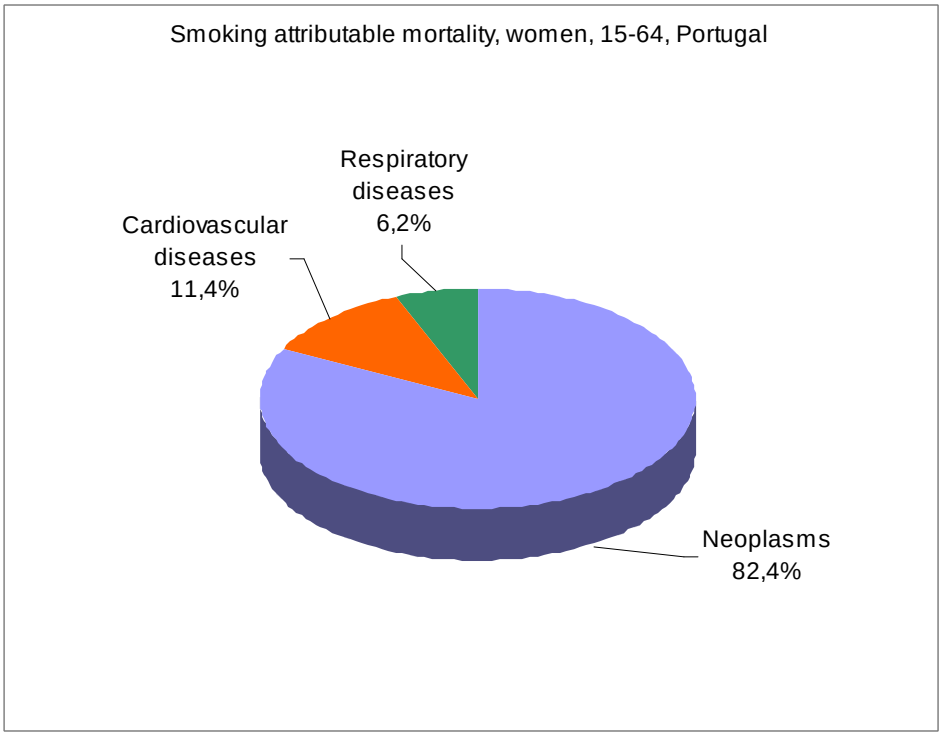
Source: authors' own.

Figure 5.2.14 Deaths attributable to smoking according to causes of deaths, men, age 15-64, Portugal



Source: authors' own.

Figure 5.2.15 Deaths attributable to smoking according to causes of deaths, women, age 15-64, Portugal



Source: authors' own.

Figure 5.2.16 Deaths attributable to drugs use according to causes of deaths, men, age 15-64, Portugal

Source: authors' own.

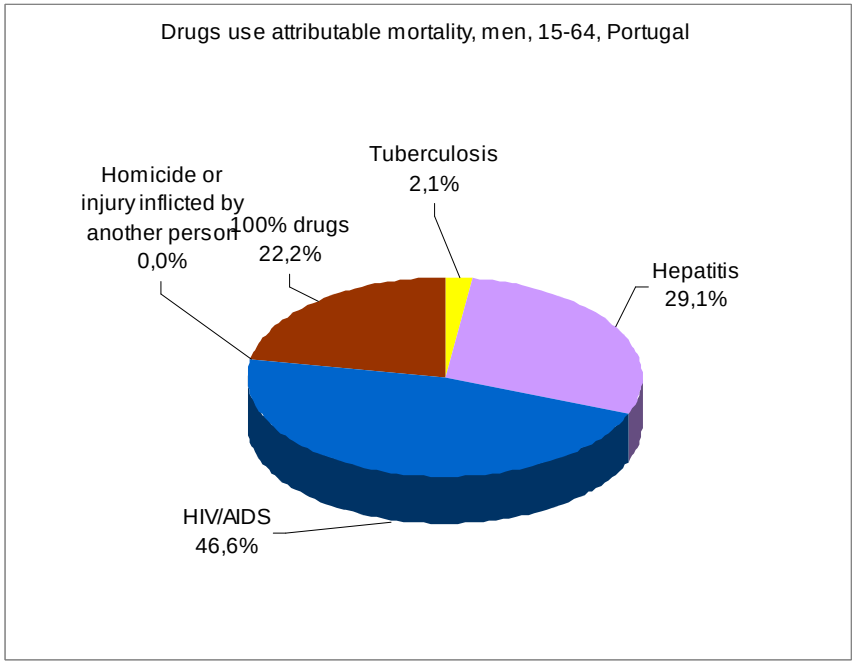
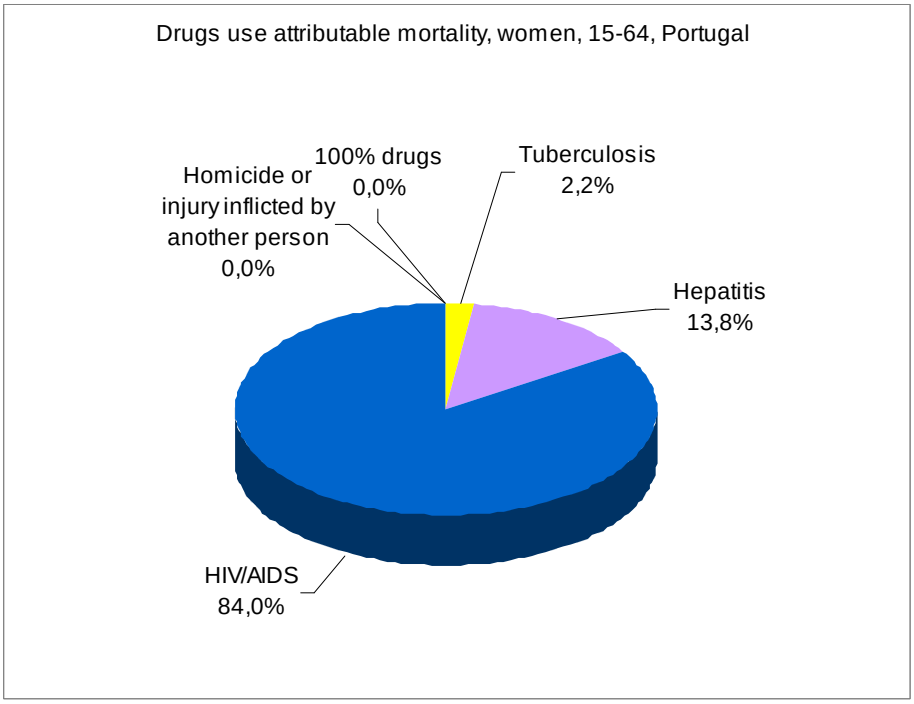


Figure 5.2.17 Deaths attributable to drugs use according to causes of deaths, women, age 15-64, Portugal

Source: authors' own.



Years of life lost

Table 5.2.3 presents the results of estimating the number of years of life lost due to alcohol consumption, smoking or drugs use, according to gender and age in Portugal in 2010. The estimation is based on data on life expectancy for Portugal (2010) and previously estimated number of deaths caused by alcohol drinking, smoking or drugs use in gender/age classes.

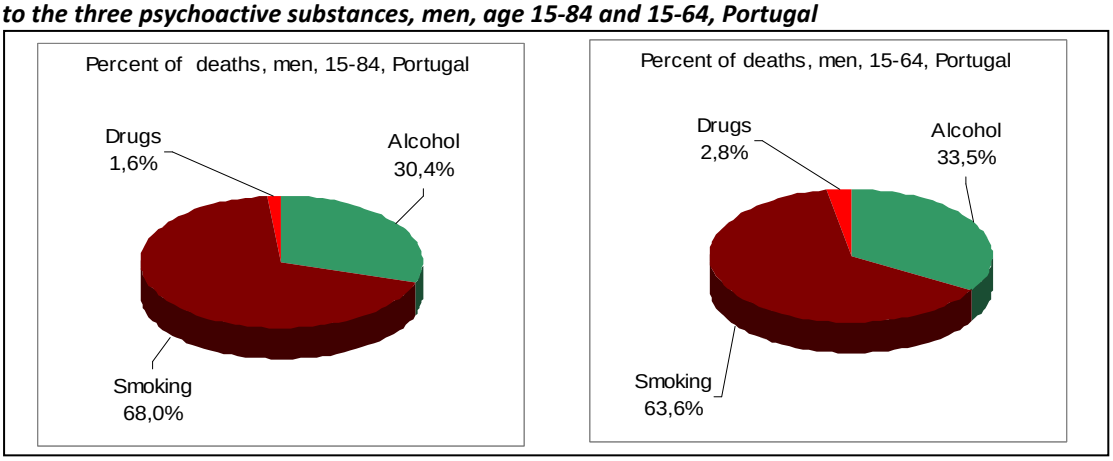
Table 5.2.3 Number of years of life lost due to alcohol consumption, smoking or drugs use, according to gender and age, Portugal

Age	Life expectancy (e_x)		Number of lost years of life					
			Alcohol		Smoking		Drugs	
	Men	Women	Men	Women	Men	Women	Men	Women
15-19	60.1	66.0	518.1	153.5	56.2	3.0	0,0	0,0
20-24	55.2	61.0	891.0	229.6	103.9	33.1	0,0	0,0
25-29	50.4	56.1	1226.4	268.0	130.5	37.6	139,9	49,8
30-34	45.6	51.2	1697.5	452.1	264.3	81.3	267,3	64,8
35-39	40.8	46.3	2479.2	867.2	1478.2	246.3	785,0	96,7
40-44	36.2	41.5	4107.4	1296.8	4432.2	818.5	765,0	117,0
45-49	31.7	36.7	5428.3	1559.0	8368.4	1006.4	550,5	76,7
50-54	27.4	32.1	5964.0	1880.7	12268.4	1587.3	453,2	114,8
55-59	23.3	27.5	5404.8	1670.9	13021.0	1828.1	185,2	21,3
60-64	19.3	22.9	4650.1	1237.3	13279.7	1669.4	72,0	20,4
65-69	15.4	18.5	3120.1	958.0	9541.2	1126.6	0,0	0,0
70-74	11.9	14.3	2461.1	587.9	5950.7	613.8	0,0	0,0
75-79	8.6	10.4	1286.5	267.1	3501.8	128.7	0,0	0,0
80-84	5.7	6.9	572.8	51.9	1890.5	0.0	0,0	0,0
Total			39807.5	11480.0	74287.0	9180.0	3218.1	561.5
Age of professional activity*			32367.0	9615.1	53402.9	7310.9	3218.1	561.5

Source: authors' own.
Remarks: For alcohol and smoking theoretical values of numbers of deaths were taken.
The e_x values[14] were calculated as averages of subsequent every 5 years.
*For men and women [16-64), here [15-64), [http://assembly.coe.int/CommitteeDocs/2012/BILsocdocinf06rev_2012.pdf]

In figures 5.2.18. and 5.2.19. the mortality rates attributable to alcohol, smoking or drugs in the general adult population (15-84 years of age) and in the working population (15-64 for men and 15-59 for women) of men and women are compared. Among men the highest risk of death is associated with tobacco use, while among women – with alcohol.

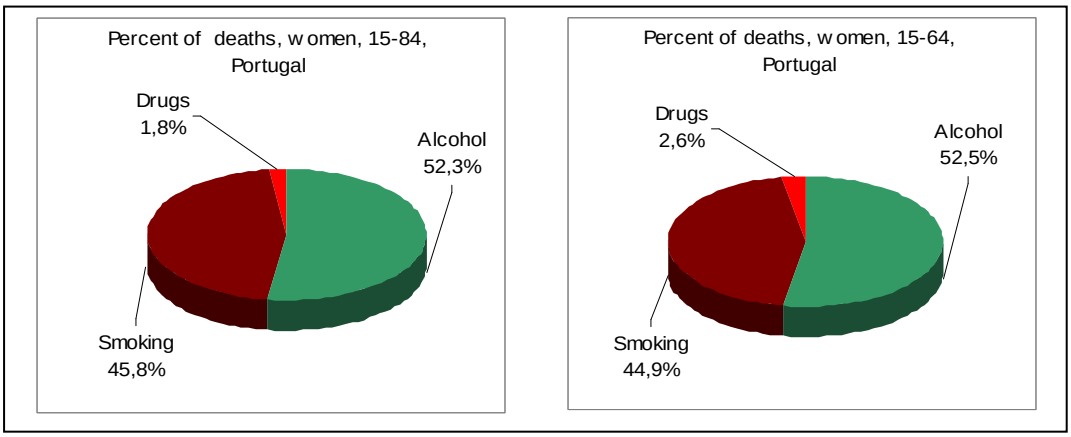
Figure 5.2.18 Percent of deaths attributable to alcohol consumption, smoking or drugs use in all deaths due to the three psychoactive substances, men, age 15-84 and 15-64, Portugal



Source: authors' own.

[14]Source for life expectancy values: Instituto Nacional de Estatistica, Statistics Portugal, http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_destaques&DESTAQUESdest_boui=151972577&DESTAQUESmodo=2

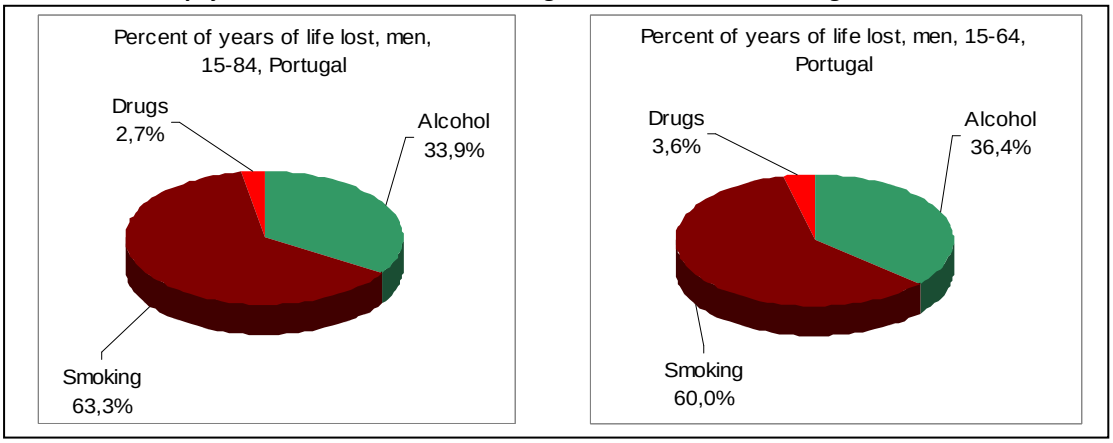
Figure *5.2.19* Percent of deaths attributable to alcohol consumption, smoking or drugs use in all deaths due to the three psychoactive substances, women, age 15-84 and 15-64, Portugal



Source: authors' own.

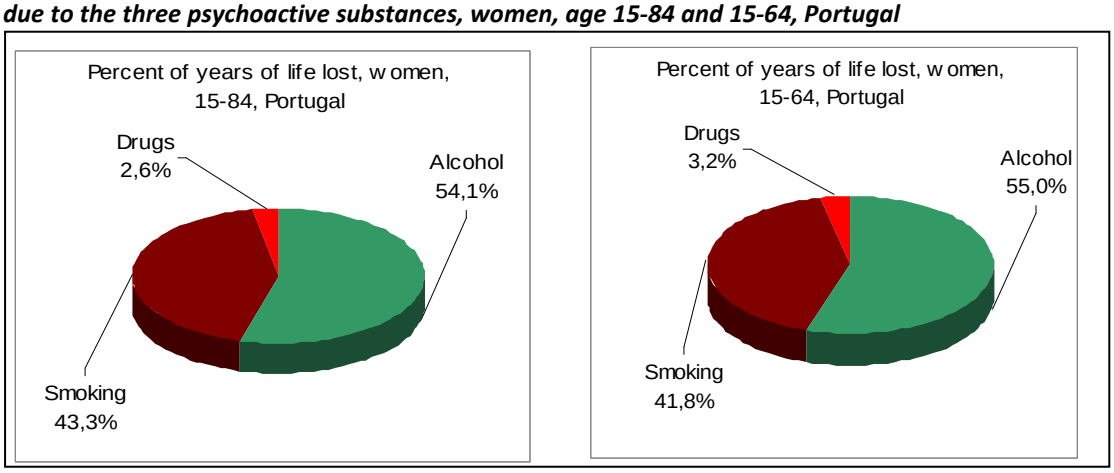
Figures 5.2.20. and 5.2.21. indicate that in Portugal most of years of life lost among men can be attributable to tobacco use, while among women - with alcohol drinking.

Figure 5.2.20 Percent of years of life lost due to alcohol consumption, smoking or drugs use in all years lost due to the three psychoactive substances, men, age 15-84 and 15-64, Portugal



Source: authors' own.

Figure 5.2.21 Percent of years of life lost due to alcohol consumption, smoking or drugs use in all years lost due to the three psychoactive substances, women, age 15-84 and 15-64, Portugal



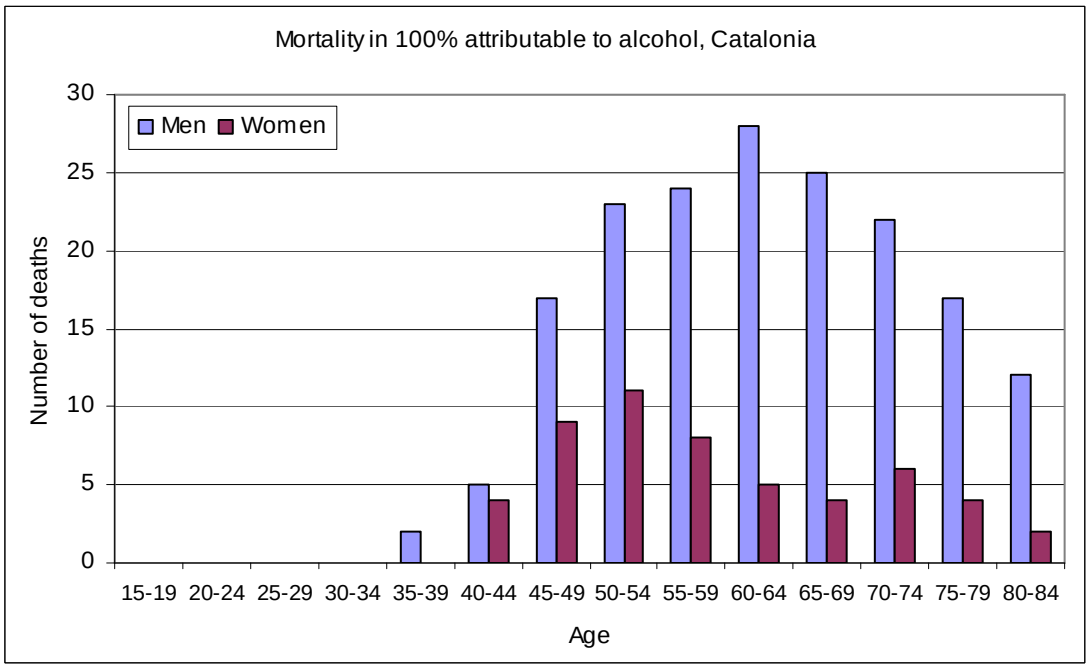
Source: authors' own.

5.3. Catalonia (Spain)

ALCOHOL

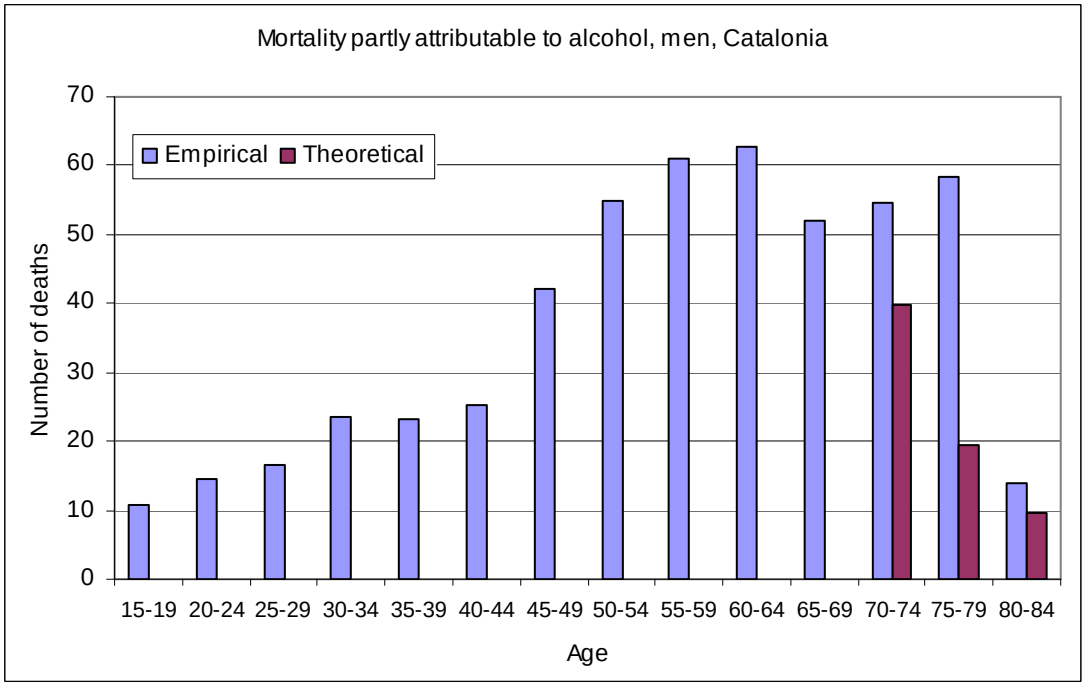
Figures 5.3.1-5.3.5 present results of estimating the mortality attributable to alcohol in Catalonia (Spain). As in the previous cases of Poland and Portugal, two classes were distinguished: deaths in 100% caused by alcohol drinking and cases where alcohol was only one of the causes of death. For older age classes a special estimation method (described in chapter 2.4 was applied).

Figure 5.3.1 Mortality in 100% attributable to alcohol consumption according to gender and age, Catalonia (Spain)



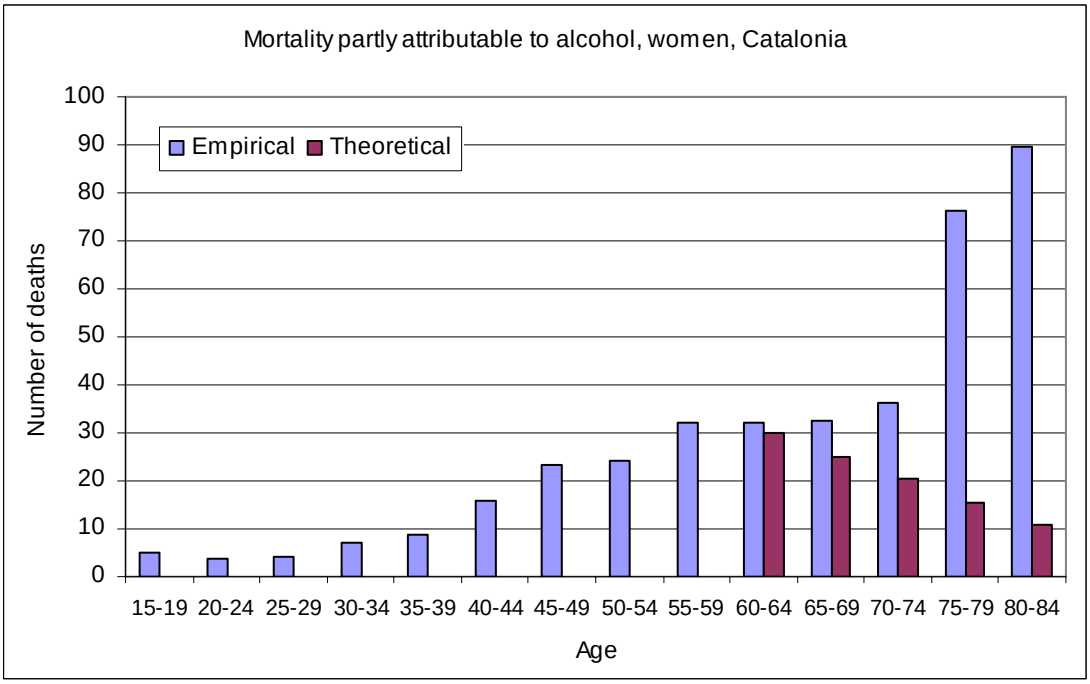
Source: authors' own.

Figure 5.3.2 Mortality partly attributable to alcohol consumption according to age, men, Catalonia (Spain)



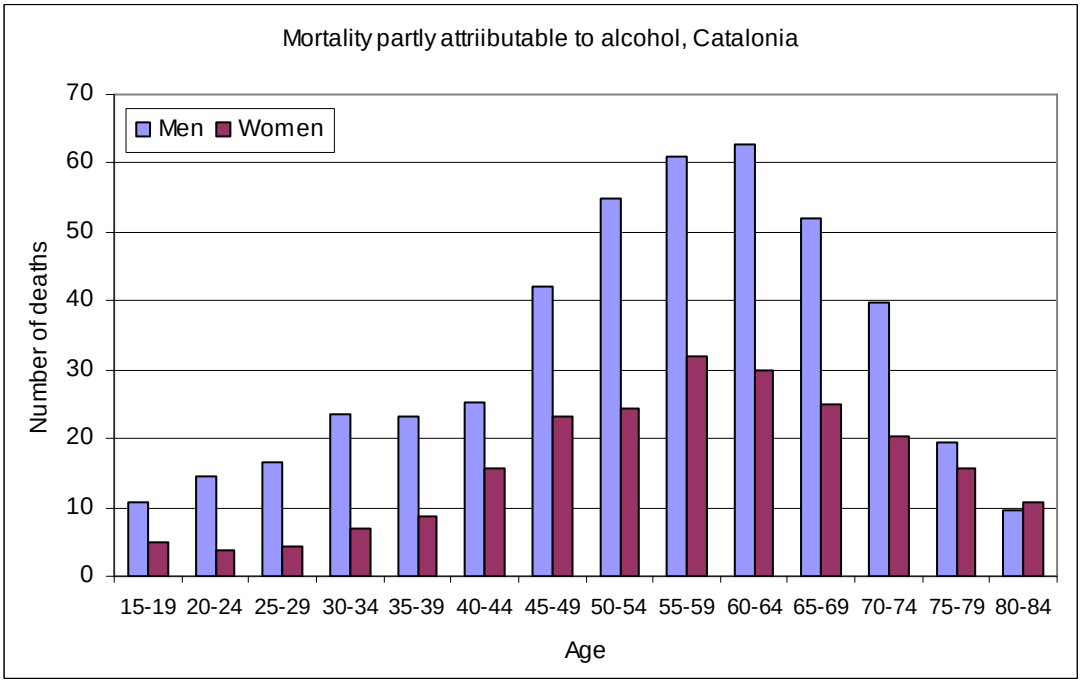
Source: authors' own.

Figure 5.3.3 Mortality partly attributable to alcohol consumption according to age, women, Catalonia (Spain)



Source: authors' own.

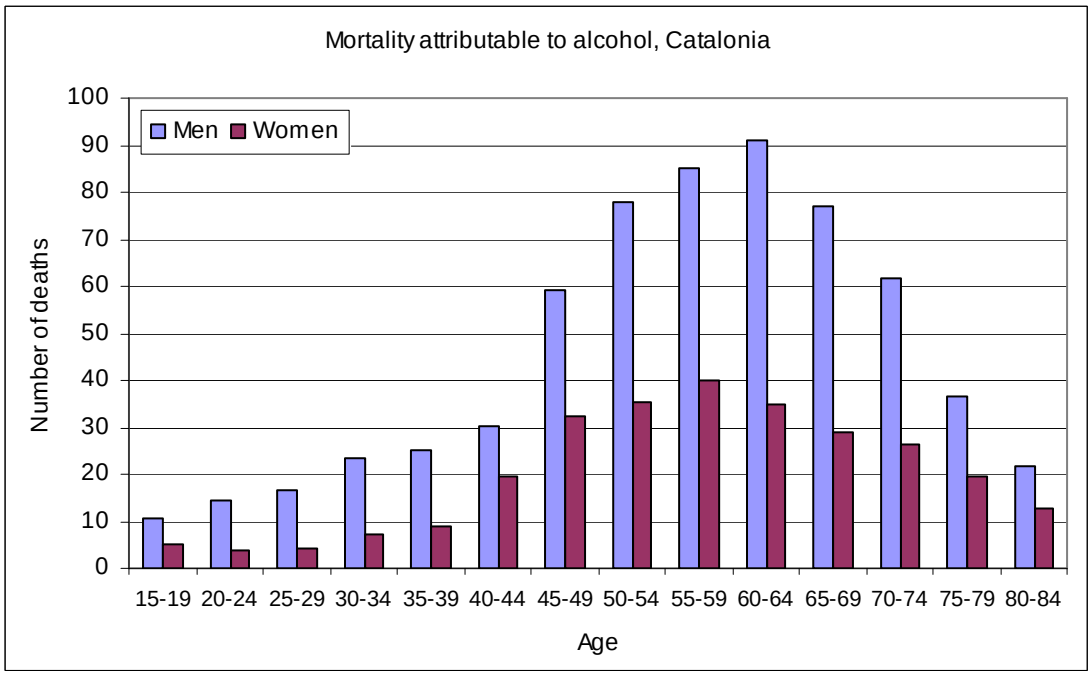
Figure 5.3.4 Mortality partly attributable to alcohol consumption according to gender and age, Catalonia (Spain)



Source: authors' own. Remark: age [70+) for men and [60+) for women – theoretical values.

Figure 5.3.5 Mortality attributable to alcohol consumption according to gender and age, Catalonia (Spain)

Source: authors' own.

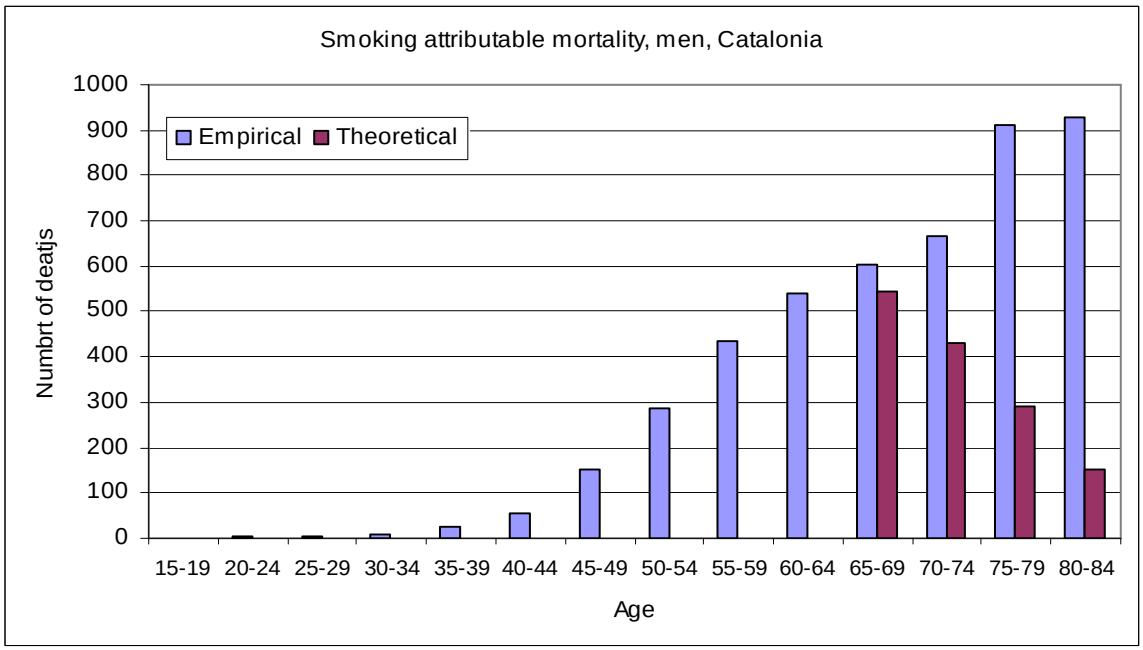


Remark: Partly attributable mortality at age [70+) for men and [60+) for women – theoretical values.

Smoking

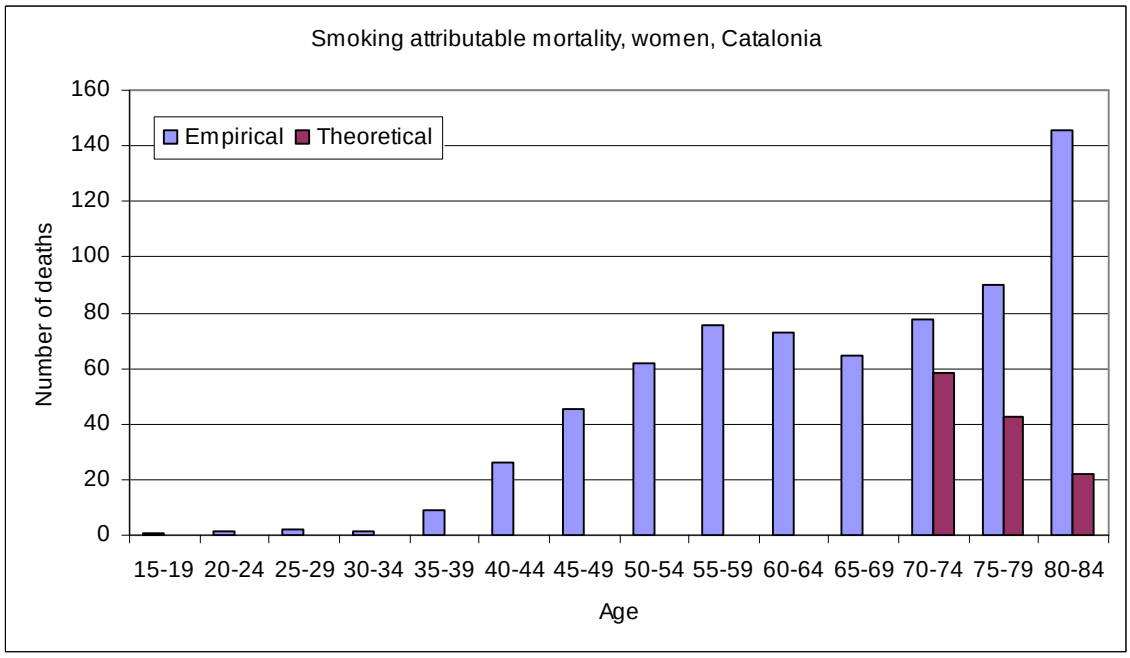
Figures 5.3.6-5.3.7 present results of estimating the mortality attributable to smoking in Catalonia (Spain). As previously (in the cases of Poland and Portugal), to avoid counting deaths from natural causes for older age classes a special estimation method (described in chapter 2.4) was applied. The final results of the estimation are presented in the figure 5.3.8.

Figure 5.3.6 Mortality attributable to smoking according to age, empirical and theoretical values, men, Catalonia (Spain)



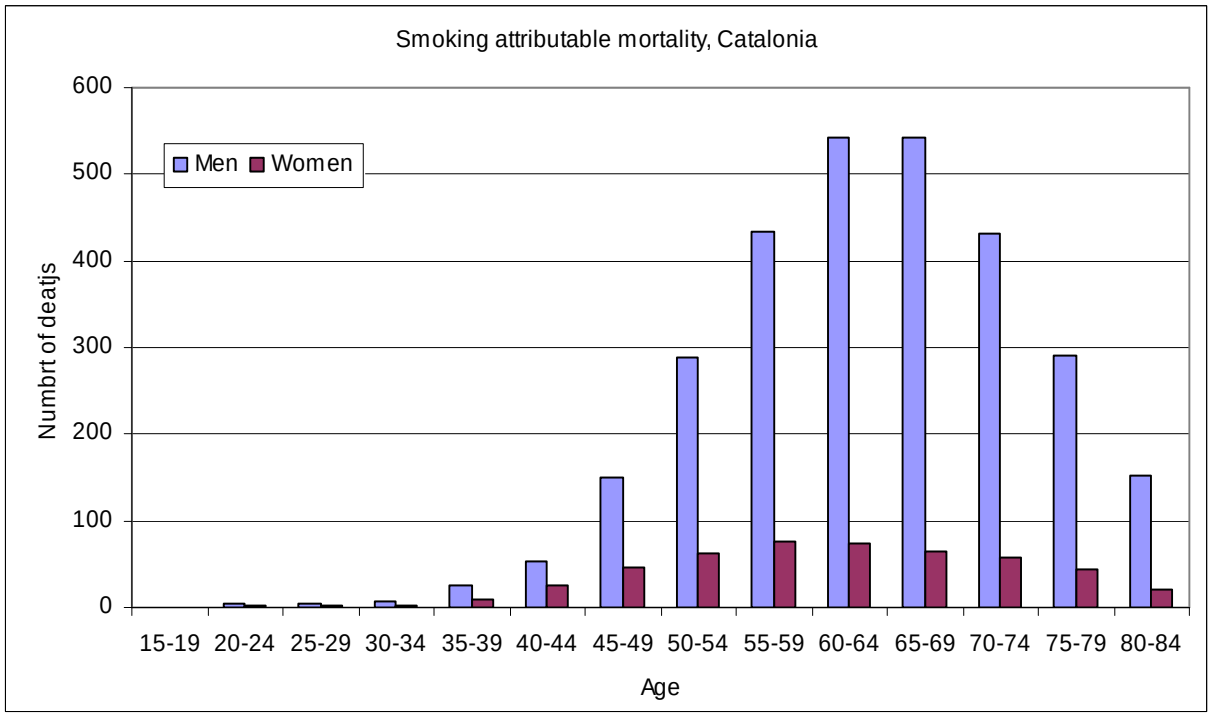
Source: authors' own.

Figure 5.3.7 Mortality attributable to smoking according to age, empirical and theoretical values, women, Catalonia (Spain)



Source: authors' own.

Figure 5.3.8 Mortality attributable to smoking according to gender and age, Catalonia (Spain)

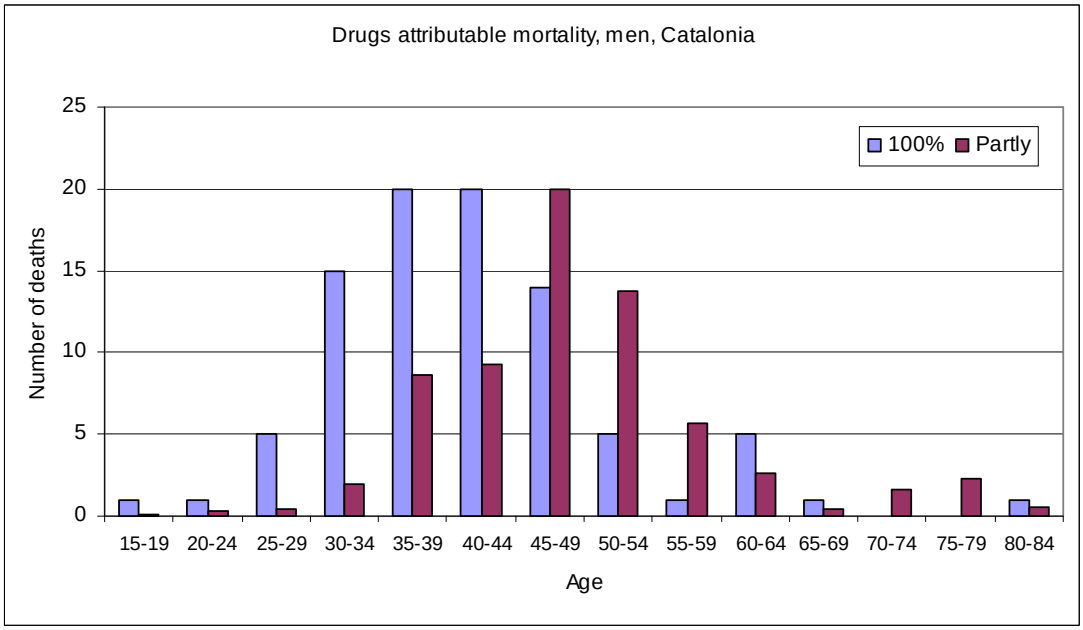


Source: authors' own.
Remark: age [65+) for men and [70+) women – theoretical values.

Drugs

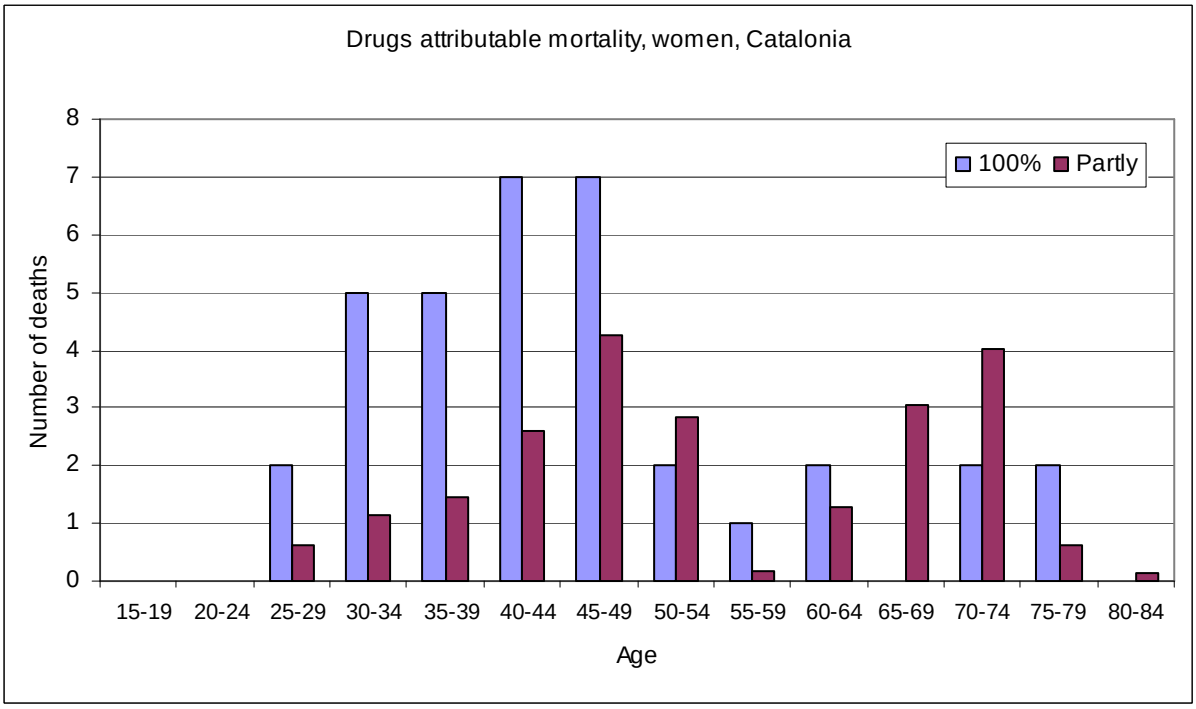
Figures 5.3.9-5.3.11 present the results of estimating the mortality attributable to illegal drugs use in Catalonia (Spain). Figures 5.3.9 and 5.3.10 present results for causes of deaths partly attributable to use of drugs, and figures 5.3.11 those in 100% caused by use of drugs. The final results are presented in the figure 5.3.12.

Figure 5.3.9 Mortality attributable to illegal drug use according to age, men, Catalonia (Spain)



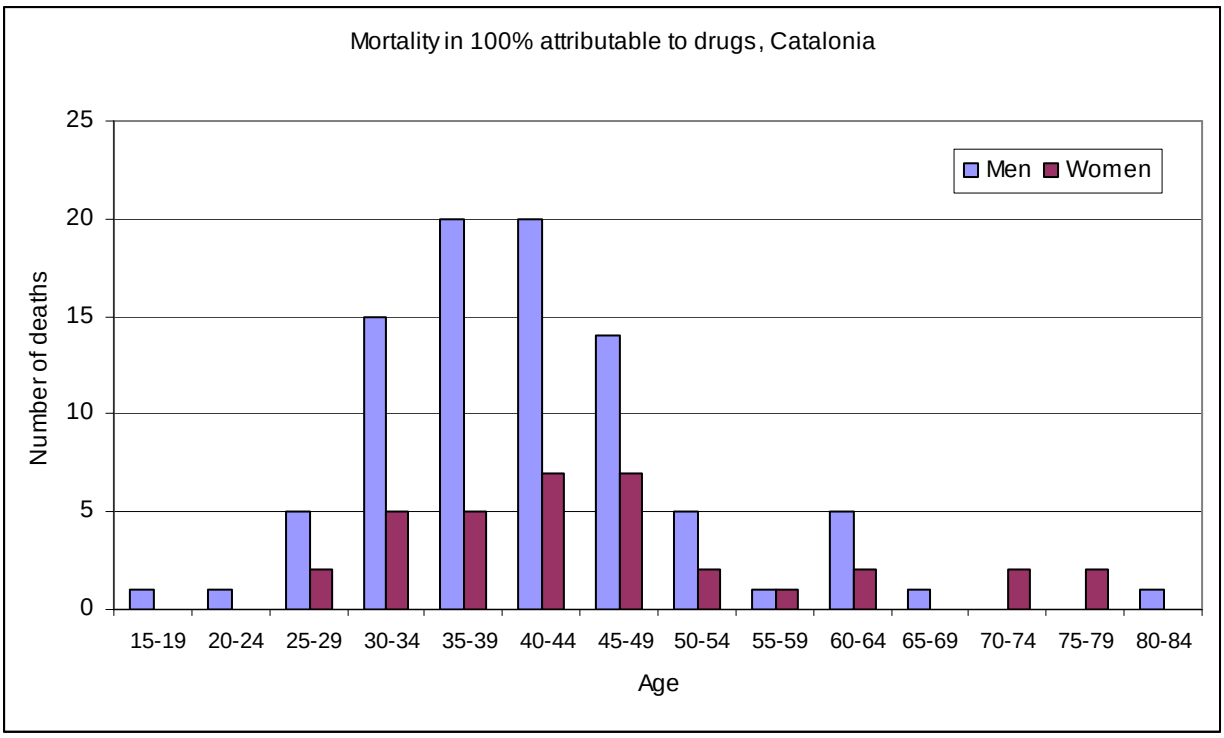
Source: authors' own.

Figure 5.3.10 Mortality attributable to illegal drug use according to age, women, Catalonia (Spain)



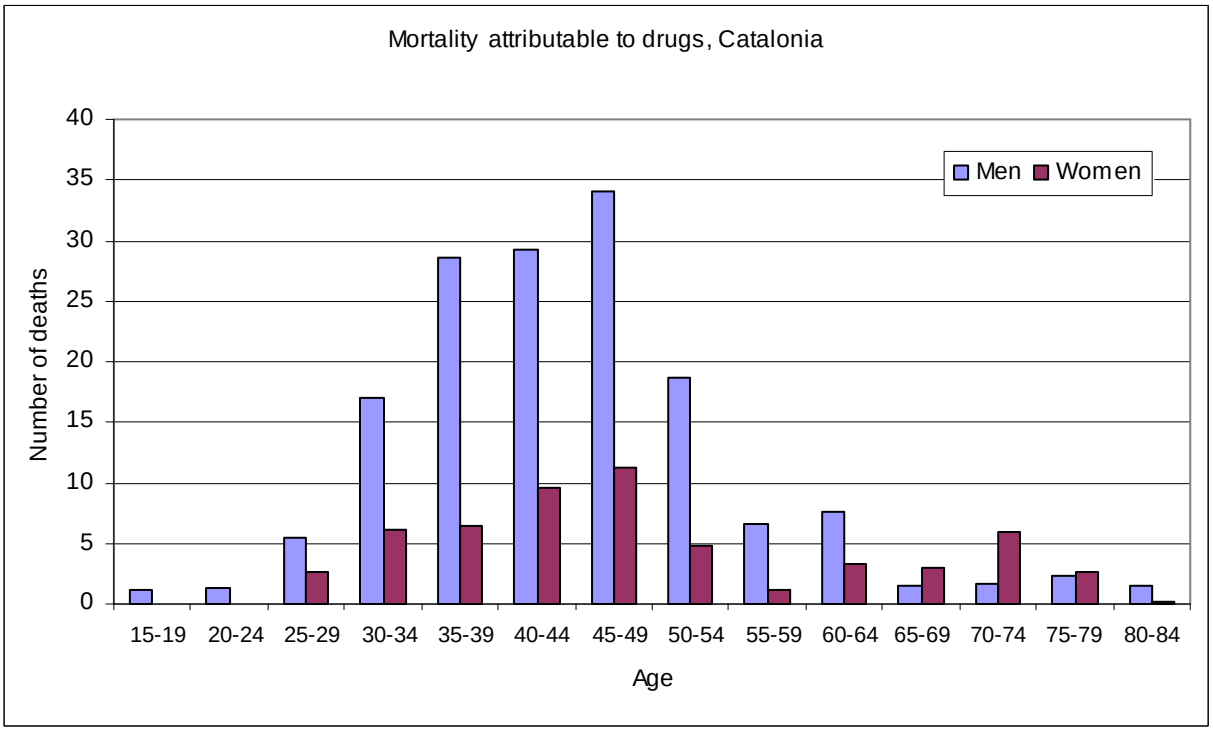
Source: authors' own.

Figure 5.3.11 Mortality in 100% attributable to illegal drug use according to gender and age, Catalonia (Spain)



Source: authors' own.

Figure 5.3.12 Mortality attributable to illegal drug use according to gender and age, Catalonia (Spain)



Source: authors' own.

The table below shows alcohol, tobacco and drug attributable mortality in Catalonia (Spain) in the population between 15 and 64 years of age. It indicates that, as in Poland and Portugal, the biggest burden is related to tobacco use. Alcohol and tobacco together account for 93% of mortality attributable to psychoactive substances – less than in the two other countries. In Catalonia (Spain) the share of deaths attributable to illicit drugs is relatively high – more than 7% of all deaths associated with psychoactive substances. For all substances, mortality rates are much higher among men than women. In total, approximately 29% of death in the general population, may be attributed to tobacco or alcohol use.

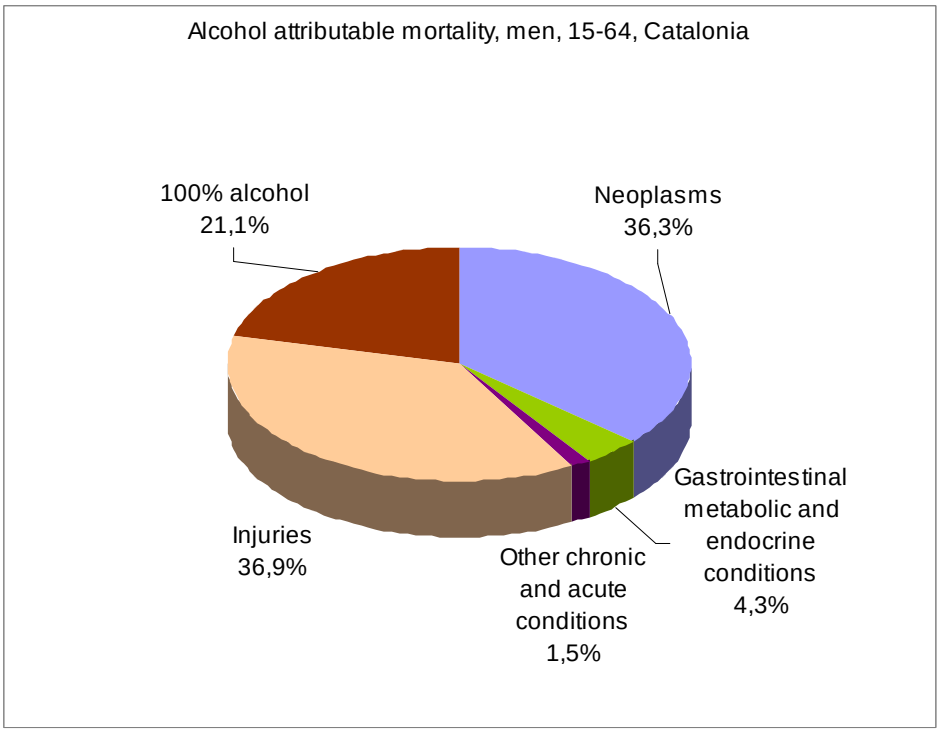
Table 5.3.1 Mortality attributable to alcohol consumption, smoking or illegal drug use according to gender, age 15-64, Catalonia (Spain)

SUBSTANCE	NUMBER OF DEATHS			PERCENT							
	MEN	WOMEN	TOTAL	ACCORDING TO GENDER		OF DEATHS IN POPULATION 15-64			ACCORDING TO SUBSTANCE		
				MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
ALCOHOL	432	192	624	69.2	30.8	6.9	6.7	6.8	20.6	35.9	23.8
SMOKING	1511	297	1808	83.6	16.4	24.2	10.3	19.8	72.2	55.6	68.8
DRUGS	150	45	195	76.8	23.2	2.4	1.6	2.1	7.2	8.5	7.4
ALL SUBSTANCES	2093	534	2627	79.7	20.3	33.5	18.6	28.8	100	100	100

Source: authors' own.
Remark: As there are people who simultaneously drink and smoke, drink and use drugs etc. the sums of the numbers of deaths attributable to alcohol consumption, smoking and drug use (all substances) are overestimated (some people can be counted twice or even three times).

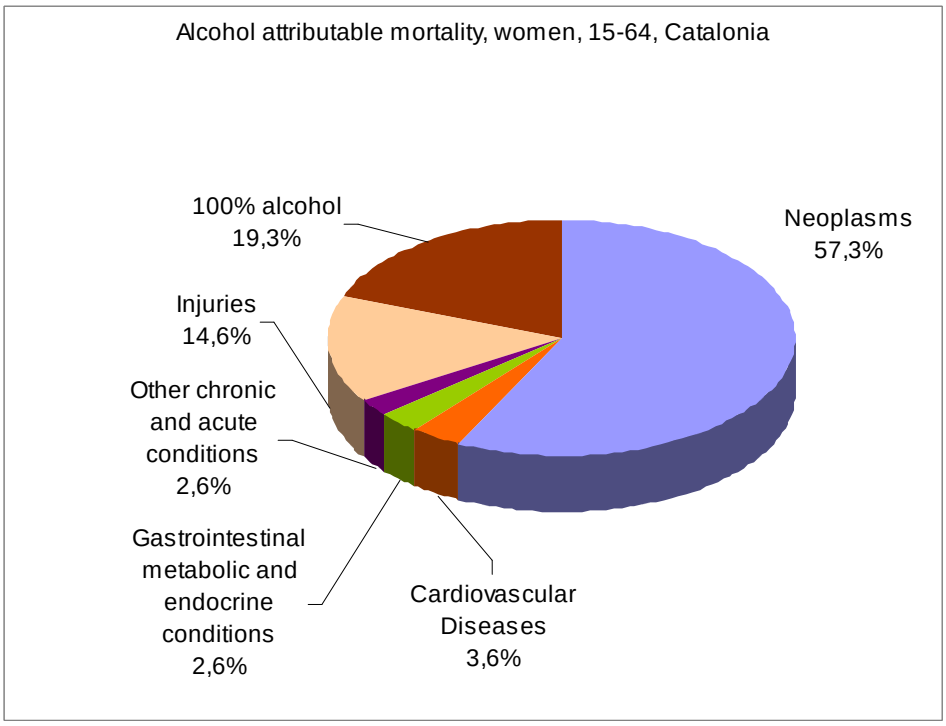
The figures below show that, in contrast to Poland and Portugal, deaths in 100% attributable to alcohol are not the most prevalent cause of alcohol related mortality. In Catalonia (Spain), for men the most prevalent cause of death associated with alcohol use are injuries, and for women – neoplasms. Tobacco smokers most oftenly die because of neoplasms and illicit drug users – due to diseases in 100% attributable to drugs, i.e. mental and behavioral disorders, injuries, accidental poisoning by and exposure to noxious substances.

Figure 5.3.13 Deaths attributable to alcohol consumption according to causes of deaths, men, age 15-64, Catalonia (Spain)



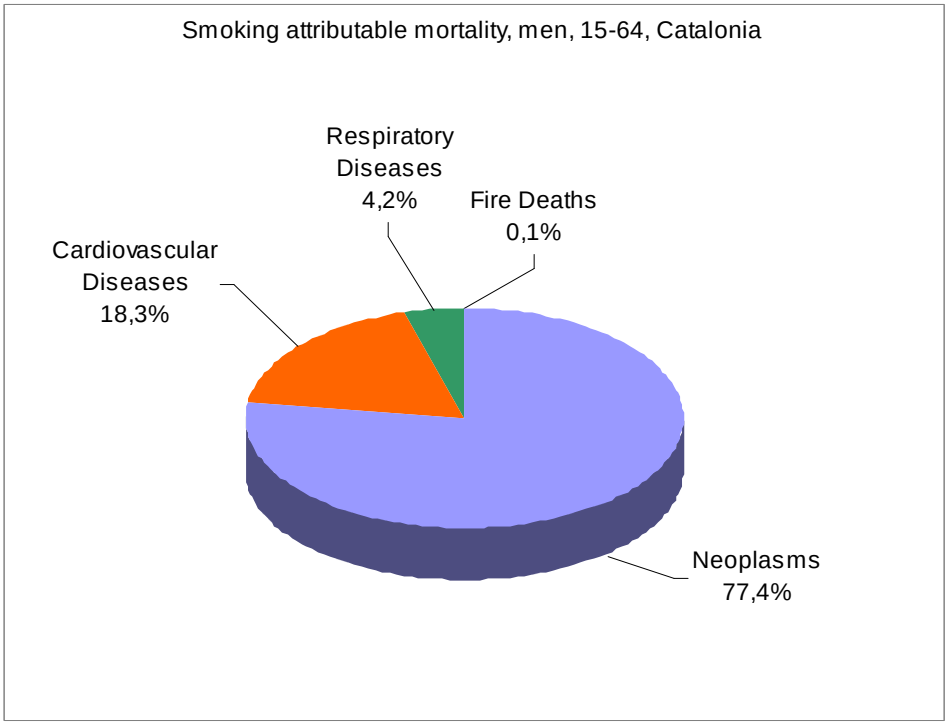
Source: authors' own.
Remark: As number of deaths for cardiovascular diseases was negative (the lives were saved due to alcohol drinking) it is not presented on fig.12.

Figure 5.3.14 Deaths attributable to alcohol consumption according to causes of deaths, women, age 15-64, Catalonia (Spain)



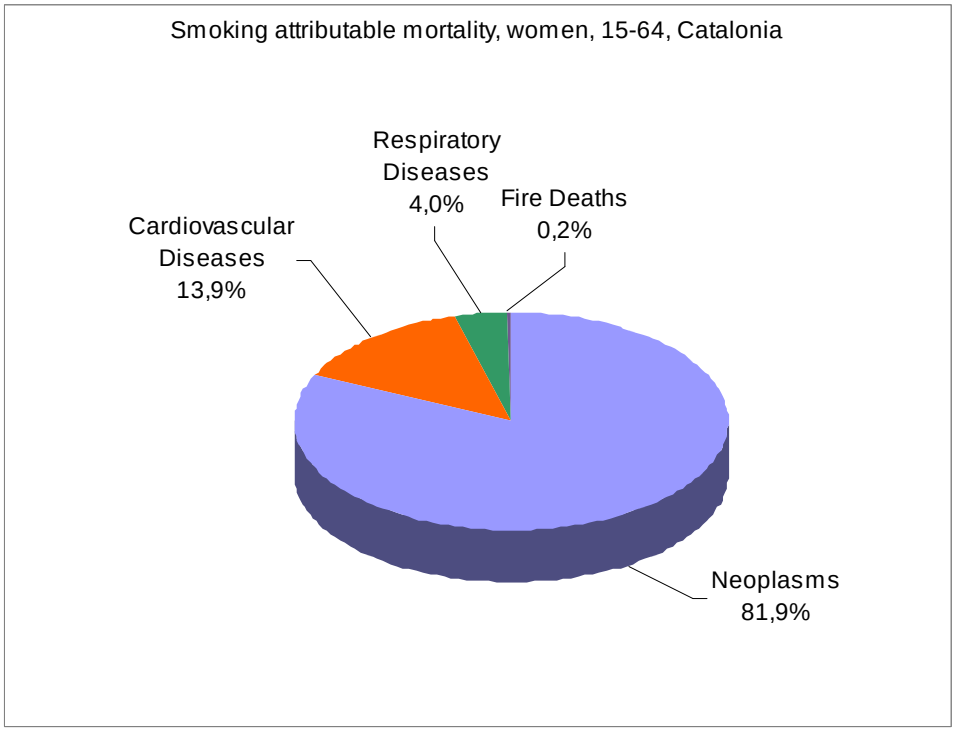
Source: authors' own.

Figure 5.3.15 Deaths attributable to smoking according to causes of deaths, men, age 15-64, Catalonia (Spain)



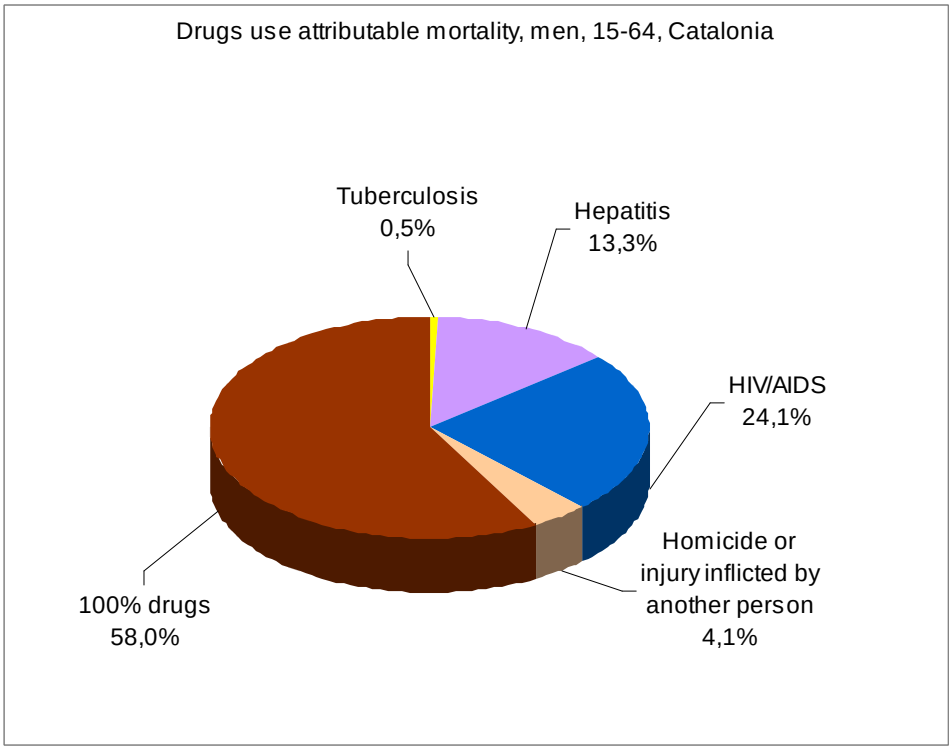
Source: authors' own.

Figure *5.3.*16 Deaths attributable to smoking according to causes of deaths, women, age 15-64, Catalonia (Spain)



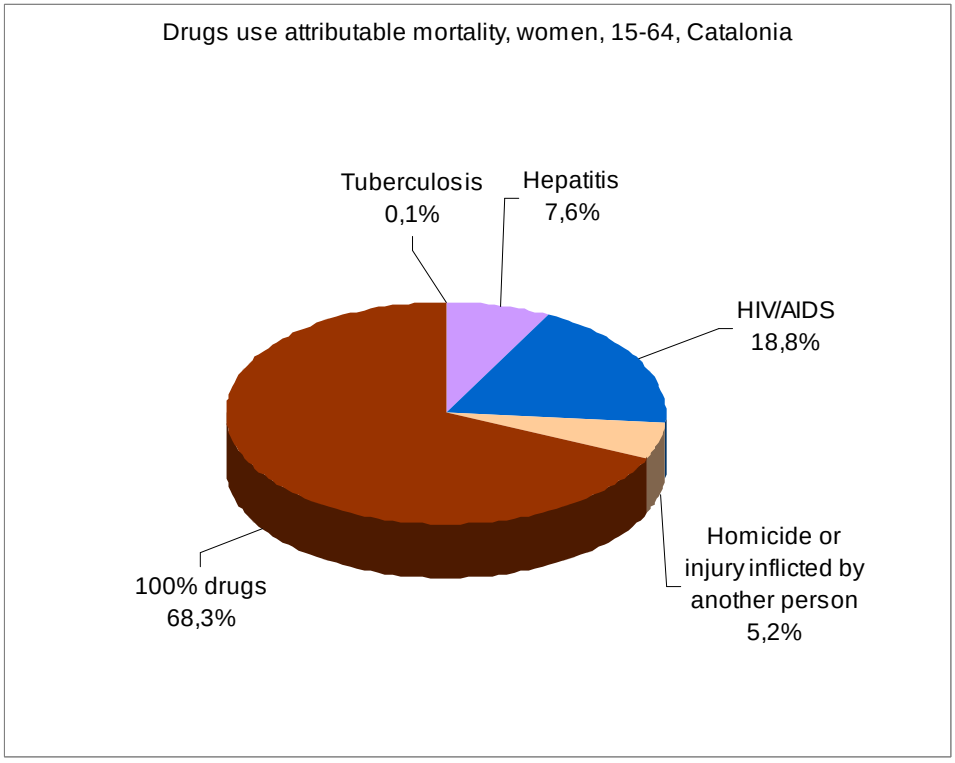
Source: authors' own.

Figure 5.3.17 Deaths attributable to drugs use according to causes of deaths, men, age 15-64, Catalonia (Spain)



Source: authors' own.

Figure 5.3.18 Deaths attributable to drugs use according to causes of deaths, women, age 15-64, Catalonia (Spain)



Source: authors' own.

Years of life lost

Table 5.3.2 presents the results of estimating the number of years of life lost due to alcohol consumption, smoking or drugs use, according to gender and age in Catalonia (Spain) in 2010. The estimation is based on data on life expectancy for Catalonia (2010) and the previously estimated number of deaths caused by alcohol drinking, smoking or drugs use in gender/age classes.

Table 5.3.2 Number of years of life lost due to alcohol consumption, smoking or drugs use, according to gender and age, Catalonia (Spain)

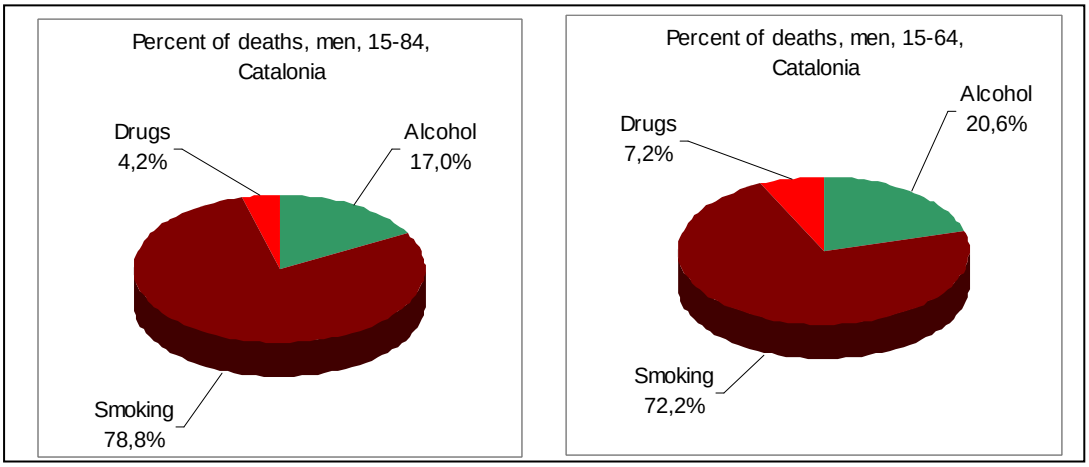
Age	Life expectancy (e_x)		Number of lost years of life					
			Alcohol		Smoking		Drugs	
	Men	Women	Men	Women	Men	Women	Men	Women
15-19	62.1	68.0	559.0	272.0	71.2	34.0	71.9	0.0
20-24	57.2	63.0	801.1	252.1	284.0	87.9	75.3	0.0
25-29	52.3	58.1	889.7	232.4	286.5	136.4	286.5	152.9
30-34	47.5	53.2	1138.8	372.1	317.1	85.3	806.1	325.8
35-39	42.6	48.2	1065.0	434.1	1034.8	423.6	1220.2	312.1
40-44	37.8	43.4	1134.6	867.7	2003.9	1118.2	1108.3	417.0
45-49	33.2	38.6	1957.3	1235.7	5008.6	1739.9	1128.5	434.4
50-54	28.7	33.9	2239.8	1187.2	8254.3	2096.6	538.1	164.7
55-59	24.5	29.3	2079.5	1172.2	10626.2	2208.4	162.2	33.9
60-64	20.4	24.8	1856.9	866.8	11048.1	1802.3	155.9	81.6
65-69	16.5	20.3	1274.0	588.6	8971.2	1315.8	24.6	61.6
70-74	13.0	16.0	804.5	415.7	5602.2	928.4	21.4	96.3
75-79	9.7	12.0	359.6	240.1	2817.1	513.2	22.4	31.4
80-84	6.9	8.5	152.7	110.8	1050.5	184.9	10.5	1.2
Total			16312.4	8247.3	57375.7	12675.0	5631.9	2112.7
Age of professional activity*			13721.7	6892.2	38934.6	9732.7	5553.0	1922.3

Source: authors' own.
For alcohol and smoking theoretical values of numbers of deaths were applied. The e_x values were calculated as averages of subsequent every 5 years.
* For men and women [16-64), here [15-64).

COMPARISON

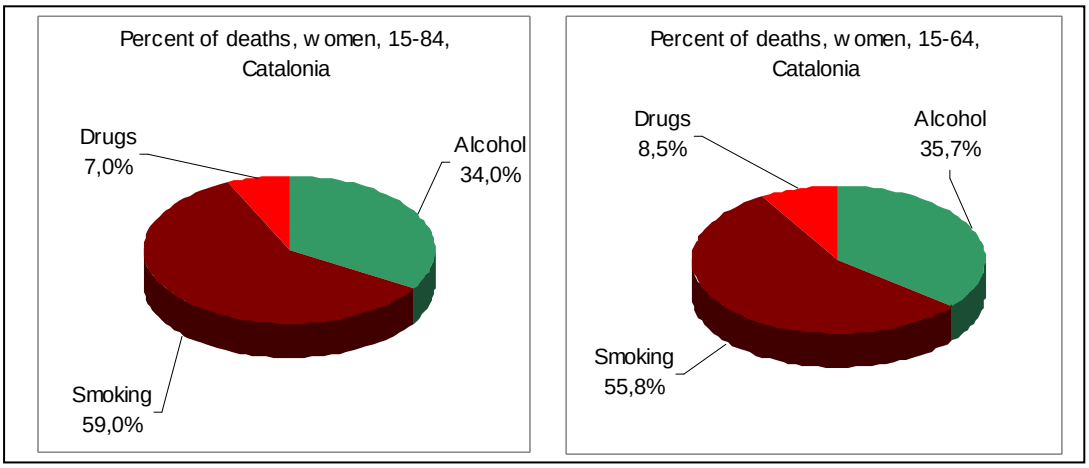
In the figures 5.3.19. and 5.3.20. the mortality rates attributable to alcohol, smoking or drugs in the general adult population (15-84 years of age) and in the working population (15-64 for men and 15-59 for women) of men and women are compared, indicating a higher risk of death attributable to tobacco among men than women.

Figure *5.3.19* Percent of deaths attributable to alcohol consumption, smoking or drugs use in all deaths due the three psychoactive substances, men, age 15-84 and 15-64, Catalonia (Spain)



Source: authors' own.

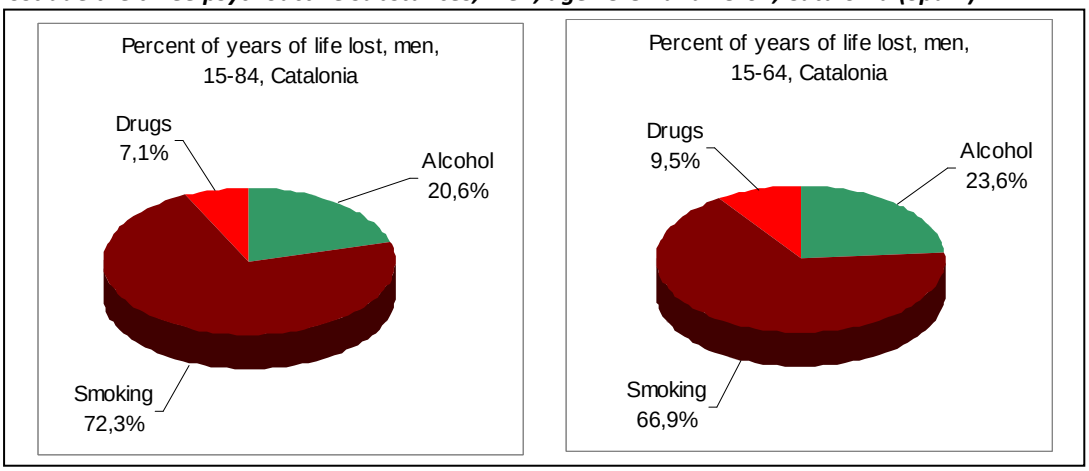
Figure 5.3.20 Percent of deaths attributable to alcohol consumption, smoking or drugs use in all deaths due the three psychoactive substances, women, age 15-84 and 15-64, Catalonia (Spain)



Source: authors' own.

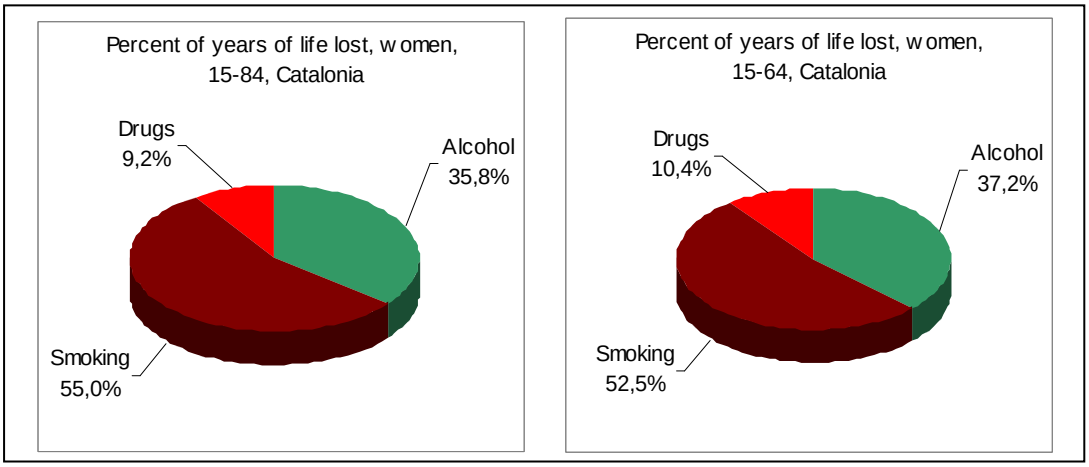
Figures 5.3.21. and 5.3.22. indicate that most of years of life lost can be attributable to tobacco use.

Figure 5.3.21 Percent of years of life lost due to alcohol consumption, smoking or drugs use in all years of life lost due the three psychoactive substances, men, age 15-84 and 15-64, Catalonia (Spain)



Source: authors' own.

Figure 5.3.22 Percent of years of life lost due to alcohol consumption, smoking or drugs use in all years of life lost due the three psychoactive substances, women, age 15-84 and 15-64, Catalonia (Spain)



Source: authors' own.

5.4. Summary of mortality in three countries

In order to compare the burden of harmful use of particular substances it has been assumed that 100% make the three of them: alcohol, tobacco and drugs. However, it should be mentioned, that as there are people who simultaneously drink and smoke, drink and use drugs etc. the sums of the numbers of deaths attributable to alcohol consumption, smoking and drug use (all substances) are overestimated (some people can be counted twice or even three times).

The table below presents the summary of cross-country comparisons in terms of deaths attributable to addictive substances. Considering death rate and years of life lost in men population, in all three countries, the greatest burden is caused by smoking (age range 15-84 and productive age). In women population, crucial cross country differences can be observed: In Catalonia the greatest burden is caused by smoking, in Poland – smoking and drinking alcohol and in Portugal – drinking.

There are significant cross country differences in terms of burden connected to the use of drugs. Even though in all countries mortality attributable to drugs is the lowest (compared to alcohol and tobacco use) it is significantly higher in Catalonia compared to Poland and Portugal. Men's burden is two times and women's burden is three times higher than in the two other countries.

Table 5.4.1 Percent of deaths {age [15-64)} attributable to alcohol, smoking and drugs in all deaths in this age in Catalonia (Spain), Poland and Portugal according to gender

COUNTRY	PERCENT OF DEATHS IN ALL DEATHS AT AGE [15-64) ATTRIBUTABLE TO:							
	ALCOHOL		SMOKING		DRUGS		ALL SUBSTANCES	
	Men	Women	Men	Women	Men	Women	Men	Women
CATALONIA	6.9	6.7	24.2	10.3	2.4	1.6	33.5	18.6
POLAND	13.5	8.4	20.9	12.8	0.3	0.3	34.7	21.5
PORTUGAL	9.0	5.2	17.2	4.5	0.8	0.3	27.0	10.0

Source: authors' own.

It is also worth noting that in all three countries and despite the type of the psychoactive substance, men are at much higher risk for dying due to substance abuse than women (table below).

Table 5.4.2 Comparison of gender distribution of percent of deaths {age [15-64)} attributable to alcohol, smoking and drugs in all deaths in this age in Catalonia (Spain), Poland and Portugal

SUBSTANCE	CATALONIA		POLAND		PORTUGAL	
	Men	Women	Men	Women	Men	Women
ALCOHOL	69.2	30.8	80.2	19.8	79.7	20.3
SMOKING	83.6	16.4	80.4	19.6	89.7	10.3
DRUGS	76.8	23.2	71.5	28.5	87.2	12.8
ALL SUBSTANCES	79.7	20.3	80.2	19.8	86.0	14.0

Source: authors' own.

Mortality rates attributable to alcohol and smoking are the highest in Poland, while for illicit drugs they are the highest in Catalonia.

Table 5.4.3 Mortality rates per 100 000 of population for deaths {age [15-64)} attributable to alcohol, smoking and drugs in all deaths in this age in Catalonia (Spain), Poland and Portugal

SUBSTANCE	MORTALITY RATES PER 100 000 OF POPULATION, AGE [15-64)								
	CATALONIA			POLAND			PORTUGAL		
	Men	Women	Total	Men	Women	Total	Men	Women	Total
ALCOHOL	16.9	7.8	12.4	78.5	19.2	48.6	32.8	8.0	20.1
SMOKING	59.2	12.0	35.9	121.6	29.3	75.2	62.3	6.8	33.9
DRUGS	5.9	1.8	3.9	2.0	0.8	1.4	2.8	0.4	1.6
ALL SUBSTANCES	82.0	21.6	52.2	202.0	49.3	125.2	98.0	15.2	55.6

Source: authors' own.

6. Costs

6.1. Criminal justice costs

6.1.1.Poland

6.1.1.1 Estimation of percent of work-time connected with alcohol use, smoking and drugs use.

Police

The average number of all cases (not only related to psychoactive substances) policemen at one station have been working on in a given time period was 123.9. As can be seen in the table 6.1.1.2, among all these cases, 28,6 (23,1%) concerned criminal offences committed under influence of psychoactive substances (most of them under influence of alcohol).

The average estimated time of working hours spent on all cases by a single policeman was 826.4 hours per 6 months. Estimated share of time devoted to alcohol/tobacco/drugs cases was 15.8%. The most time consuming among all cases related to psychoactive substances are those concerning illicit drugs (in average more than 2 hours per policeman).

Table 6.1.1.1 Average number of cases and estimated time of work of a policeman per six months, attributed to criminal offences committed under influence of alcohol and drugs, in the first half of 2012, Police, Poland

SUBSTANCE	NUMBER OF CASES	ESTIMATED TIME	PERCENT OF CASES	PERCENT OF TIME	HOURS PER ONE CASE
Alcohol	21.4	78.2	17.2	9.5	0.55
Drugs	1.0	15.2	0.8	1.8	2.28
Alcohol + Drugs	6.3	36.7	5.1	4.4	0.88
Total	28.6	130.2	23.1	15.8	0.68

Source: authors' own on basis of the surveys.

Detailed analysis of crimes and offences committed under influence of alcohol indicate that the most prevalent are health impairment and damages, while among crimes committed under influence of drugs or drugs and alcohol were larcenies and damages (table 6.1.1.2). The average time a policeman spends on working on a case significantly differs between various crimes. As might be expected, the most time-consuming are homicides committed under influence of drugs. Among alcohol related cases, usually the most time is devoted to fights and batteries and health impairment. Very time consuming are also cases denoted in table 6.1.1.2 as "others". The great majority of them are offences related to driving under the influence of alcohol (Penal Code, art.178 a), which is the offence immanently associated with alcohol or drugs and therefore, is described in details in table 6.1.1.3 concerning offences against special laws.

Table 6.1.1.2 Average number of cases and estimated time of work (in hours) attributed to chosen criminal offences committed under influence of alcohol and drugs according to kind of crime, in the first half of 2012, Police, Poland

CRIMINAL OFFENCES	ALCOHOL		DRUGS		ALCOHOL + DRUGS	
	Number of cases	Estimated time	Number of cases	Estimated time	Number of cases	Estimated time
Health Impairment	3.29	10.36	0.03	0.28	0.97	5.60
Fight and Battery	2.00	11.36	0.07	0.72	0.83	5.20
Larceny	1.75	6.00	0.24	0.76	1.43	5.27
Sexual offences	0.29	3.18	0.00	0.00	0.03	0.40
Robbery	1.71	8.21	0.10	3.24	0.67	6.93
Homicide	0.07	0.43	0.07	6.90	0.03	0.27
Damages	2.64	8.39	0.21	0.83	1.33	5.77
Others*	9.61	30.25	0.28	2.52	0.97	7.30

* Most of these cases concern drunk driving

Source: authors' own on basis of the surveys.

As can be seen in table 6.1.1.3, many police cases are related to driving under the influence of alcohol, selling, or serving alcoholic beverages in cases in which it is prohibited, as well as to offences against the Law of counteracting drug addiction.

Table 6.1.1.3 Average number of cases and estimated time of work (in hours) attributed to criminal offences concerning special laws for alcohol, tobacco and drugs, in the first half of 2012, Police. , Poland

CRIMINAL OFFENCES AGAINST SPECIAL LAWS	NUMBER OF CASES	ESTIMATED TIME
Act of Upbringing in Sobriety and Counteracting Alcoholism, art. 43-45(3) (Selling, or serving alcoholic beverages in cases, in which it is prohibited)	11.93	13.13
Law of Production of Ethyl Alcohol and Tobacco, art.12-14 (illegal production)	0.10	1.27
Law of Counteracting Drug Addiction, art. 53-68 (manufacturing, import, export, purchasing, possession, cultivation etc. of illicit drugs)	13.47	87.55
Penal Code, art.178 a (leading to motor vehicle traffic)	24.47	46.45
Penal Code, art. 207 (domestic violence)	7.50	6.63
Penal Code, art. 208 (making minor drinking alcohol)	0.07	0.33
Offences Code, art. 70 § 2 (professional or business activities under influence of psychoactive substances)	0.43	0.63
Offences Code, art. 86 § 2 (causing a safety hazard on the road while under influence of psychoactive substances)	0.53	1.10
Offences Code, art. 87 § 1, 1a and 2 (leading to motor vehicle traffic)	1.93	17.10
Revenue Code, art. 63-75 Crimes and offences connected with excise goods (tobacco and alcohol)	0.23	3.57

Source: authors' own on basis of the surveys.
The remaining laws: number of cases $\approx$ 0, average estimated time $\approx$ 0.

Public Prosecutors

Among all cases public prosecutors have been working on in the first half of 2012, 20% was related to psychoactive substances (table 6.1.1.4). Most of theses cases concerned alcohol (17.5% of all cases), while illicit drugs were mentioned in less than half percent of cases.

Table 6.1.1.4. Average percent of criminal offences committed under influence of alcohol and drugs in the first half of 2012, Public Prosecutors, Poland

CRIMINAL OFFENCES	PERCENT OF CASES OF CRIMINAL OFFENCES COMMITTED UNDER INFLUENCE OF:			
	Alcohol	Drugs	Alcohol + Drugs	Total
Health Impairment	27.4	0.61	2.7	30.7
Fight and Battery	29.8	0.38	5.6	35.8
Larceny	8.1	0.59	1.0	9.6
Sexual offences	10.7	0.31	1.8	12.7
Robbery	14.3	0.48	2.9	17.7
Homicide	6.6	0.00	0.3	6.9
Damages	16.5	0.74	2.2	19.4
Others*	26.8	0.56	3.4	30.7
Mean	17.5	0.46	2.5	20.4

* Most of these cases concern drunk driving
Source: authors' own on basis of the surveys.

The average estimated percent of time spent by public prosecutors on cases related to psychoactive substances was highest for drunk driving (14.3%) and domestic violence (12.2%) and lowest for cases related to illegal alcohol selling or serving and smoking in places where it is prohibited (1%, table 6.1.1.5). The highest costs are generated by criminal offences against the Law of Counteracting Drug Addiction.

Table 6.1.1.5 Average number of cases, percent of time, costs of experts opinions, and other costs attributed to criminal offences related to alcohol, smoking, and drugs in the first half of 2012, Public Prosecutors, Poland

	NUMBER OF CASES	PERCENT OF TIME	TYPICAL EXPERTS OPINIONS		OTHER COSTS* (€)
			Percent of cases	Cost (€)	
Act of Upbringing in Sobriety and Counteracting Alcoholism, art. 43-45(3) (Selling, or serving alcoholic beverages in cases, in which it is prohibited)	1	1.0	0	0	0
Law of Counteracting Drug Addiction, art. 53-68 (manufacturing, import, export, purchasing, possession, cultivation etc. of illicit drugs)	15.8	5.4	25.4	133.6	414.2
Law of Health Protection Counteracting Tobacco	1	1.0	0	0	27.5
Penal Code, art.178 a (drunken drivers)	42.2	14.3	9.4	56.9	197.2
Penal Code, art. 207 (domestic violence)	20.41	12.2	16.8	42.8	117.3
Revenue Code, art. 63-75 (excise duty)	0.61	0.32	0.16	2.4	3.8

* OTHER COSTS include e.g.: extra expertise or travel costs of witnesses
Source: authors' own on basis of the surveys.
The remaining laws: number of cases ≈ 0, average estimated time ≈ 0.

Law Courts

Juvenile Courts

The average percentage of alcohol cases considered by juvenile courts is 8.7% and drug related cases – 1.2% (table 6.1.1.6). In terms of time devoted by employees of juvenile courts for these cases it is 10% and 1.5% respectively.

Table 6.1.1.6 Average percent of cases and percent of time of work attributed to criminal offences committed under influence of alcohol and drugs, in the first half of 2012, Juvenile Courts. Poland

SUBSTANCE	PERCENT OF:	
	CASES	TIME
Alcohol	8.7	10.0
Drugs	1.2	1.5

Source: authors' own on basis of the surveys.

Courts of Law

Among all cases considered by law courts, more than 12% was related to alcohol and less than 2% - to illicit drugs alone or together with alcohol (table 6.1.1.7).

Table 6.1.1.7 Average percent of chosen kinds of cases concerning criminal offences committed under influence of alcohol and drugs, in the first half of 2012, Courts of Law, Poland.

CRIMINAL OFFENCES	PERCENT OF CASES OF CRIMINAL OFFENCES COMMITTED UNDER INFLUENCE OF:			
	ALCOHOL	DRUGS	ALCOHOL + DRUGS	TOTAL
Health Impairment	14.2	2.2	1.5	18.0
Fight and Battery	14.5	1.6	1.5	17.6
Larceny	7.9	1.1	0.5	9.5
Sexual offences	9.4	0.7	0.7	10.8
Robbery	12.5	1.5	1.6	15.6
Homicide	12.8	4.2	4.0	21.0
Damages	9.4	0.6	1.8	11.8
Others*	16.8	1.0	3.1	20.9
Mean	12.2	1.6	1.9	15.7

* Most of these cases concern drunk driving
Source: authors' own on basis of the surveys.

The average estimated percent of time devoted at law courts to alcohol, drug or tobacco related cases depends on the type of the offence (table 6.1.1.8). The most time and money consuming cases are those concerning drunk driving.

Table 6.1.1.8 Average number of cases, percent of time, costs of experts opinions, and other costs attributed to criminal offences related to alcohol, smoking, and drugs in the first half of 2012, Courts of Law. Poland

	NUMBER OF CASES	PERCENT OF TIME	TYPICAL EXPERTS OPINIONS		OTHER COSTS* (€)
			Percent of cases	Cost (€)	
Act of Upbringing in Sobriety and Counteracting Alcoholism, art. 43-45(3) (Selling, or serving alcoholic beverages in cases, in which it is prohibited)	3.0	1.04	0.26	9.8	13.6
Law of Production of Ethyl Alcohol and Tobacco, art.12-14	0.22	0.22	0.22	5.4	21.8
Law of Counteracting Drug Addiction, art. 53-68 (manufacturing, import, export, purchasing, possession, cultivation etc. of illicit drugs)	11.0	9.10	32.63	69.4	306.5
Law of Health Protection Counteracting Tobacco	0.04	0.04	1.00	125.1	125.1
Penal Code, art.178 a (drunken drivers)	50.5	17.76	5.24	48.0	298.0
Penal Code, art. 207 (domestic violence)	11.1	7.96	6.32	36.2	44.1
Offences Code, art. 70 § 2 (professional or business activities under influence of psychoactive substances)	0.16	0.24	0.04	.	2.0
Offences Code, art. 86 § 2 (causing a safety hazard on the road while under influence of psychoactive substances)	8.4	4.14	4.60	4.0	8.0
Offences Code, art. 87 § 1, 1a and 2 (leading to motor vehicle traffic)	22.3	6.27	1.00	1.5	42.0
Revenue Code, art. 63-75 (excise duty)	0.8	0.64	0.24	13.0	21.2

* OTHER COSTS include e.g.: extra expertise or travel costs of witnesses

Source: authors' own on basis of the surveys.

The remaining laws: number of cases $\approx$ 0, average estimated time $\approx$ 0.

Probation officers

The average percentage of time probation officers for juveniles spent on alcohol cases is 24.6% of their total working time. That is nearly twice as much as time spent on alcohol related cases by probation officers for adults (table 6.1.1.9). Among juveniles' probation officers, drug-related cases account for more than 40% of their working hours. While among probation officers for adults the percentages of time they spent on running alcohol and drug related cases are similar (12.8% and 11.7% respectively).

Table 6.1.1.9 Average percent of time of work attributed to cases concerning alcohol and drugs, probation officers, in the first half of 2012, Poland.

SUBSTANCE	PERCENT OF TIME	
	JUVENILE	ADULTS
Alcohol	24.6	12.8
Drugs	41.1	11.7

Source: authors' own on basis of the surveys.

Custom Service, Border Guards

About 50% of all cases run by custom service officers concerns psychoactive substances (table 6.1.1.10). Most of them are related to alcohol and tobacco. However, estimated share of time devoted to alcohol cases is less than 10%, while for tobacco cases – more than 20%. For border guard, among psychoactive substances related cases, most time consuming are those concerning tobacco (27,2% of time).

Table 6.1.1.10 Average number of cases and estimated time of work attributed to cases concerning alcohol, drugs and tobacco, in the first half of 2012, Custom Service, Border Guards. , Poland

SUBSTANCE	NUMBER OF CASES	PERCENT OF CASES	PERCENT OF TIME	HOURS PER ONE CASE
CUSTOM SERVICE				
Alcohol	15.6	22.8	9.6	9.0
Drugs	1.8	2.2	2.3	4.8
Tobacco	45.2	23.8	20.6	10.3
BORDER GUARDS				
Alcohol	1.2	5.3	6.2	24.0
Drugs	0.7	13.9	9.6	25.9
Tobacco	7.9	29.5	27.2	73.8

Source: authors' own on basis of the surveys.

6.1.1.2 Estimation of costs of working time attributable to alcohol, tobacco and drugs

THE POLICE

The average yearly salaries of a policeman in 2010 was estimated[15] as equal to 9743,8 €, and as, according to the Police data, in 2010 there were 96 589 policemen employed; thus, the total salary budget was equal to 941.1 million Euros.

The number of 96 589 policemen employed includes neither civil staff nor ancillary workers of the Police, and the estimated salary budget does not include their wages. To assure comparability to the results of estimation for courts of law and prosecution's system, it was taken into account that in 2010 there were 12 522 persons employed in the Civil Service of the Police, and 12 809 ancillary workers, together 25 331 persons (source: the Police data). Assuming that the number of cases, percent of time and their average wages were the same as that of a policeman, the preliminary results were multiplied by (25 331+96 589)/96 589 = 1.26.

For some types of criminal offences (health impairment, fight and battery, larceny, sexual offences, robbery, and homicide) there were available data about *Ascertained crimes by the police and prosecutors office in completed preparatory proceedings by type of crime* (Statistical Yearbook 2011, p.145-147), and, at the same time, about the number of cases investigated by the Police, understood here as number of suspects of committing certain kinds of crimes. On that basis it was possible to estimate that, as an average, the Police was investigating 6.36 times more cases than were completed. This value was applied to estimate the number of cases investigated by the Police in those types of crimes and offences, where the Police data were not available.

According to the Statistical Yearbook 2011, p.145-147 the number of criminal offences listed in table 6.1.1.11 accounted for 5,89% of *Ascertained crimes…*. in Poland in 2010, and the number of criminal offences listed in table 6.1.1.12**.** accounted for 3.01%.

The results of estimating police work costs attributable to criminal offences related to psychoactive substance abuse are presented in tab. 6.1.1.11 and 6.1.1.12.

[15]Authors own estimation on basis of the Police data.

Table 6.1.1.11 Estimated value of the Police salaries (ths €) attributed to criminal offences committed under influence of alcohol and drugs according to kind of crime in 2010, Poland

CRIMINAL OFFENCES	ALCOHOL	DRUGS	ALCOHOL + DRUGS	TOTAL	TOTAL x 1.26
	thousands Euros				
Health Impairment	162.2	9.2	2.9	174.3	219.2
Fight and Battery	264.4	6.2	5.5	276.1	347.3
Larceny	2367.2	158.1	313.2	2838.4	3569.4
Sexual offences	188.6	0.0	34.2	222.8	280.2
Robbery	441.9	97.0	194.5	733.4	922.3
Homicide	16.3	0.0	0.1	16.3	20.6
Damages	3715.1	209.9	674.6	4599.6	5784.1
Others	830.5	50.3	252.7	1133.5	1425.4
Total	7986.2	530.6	1477.7	9994.5	12568.5
Total x 1.26	10042.9	667.3	1858.3	12593.1	x
Percent of the Police salaries in 2010	0.85	0.06	0.16	1.06	x

Source: authors' own.

Total police salaries attributed to criminal offences committed under influence of alcohol and drugs according to kind of crime, in 2010 amount to 12.6 mln €, which constitutes about 1,1% of the salaries of whole police staff in Poland.

Table 6.1.1.12 Estimated value of the Police salaries (ths €) attributed to criminal offences committed under influence of alcohol and drugs according to special laws, in 2010

NAME OF LAW	SALARIES (thousands Euros)
Act of Upbringing in Sobriety and Counteracting Alcoholism, art. 43-45(3) (Selling, or serving alcoholic beverages in cases, in which it is prohibited)	46.7
Law of Production of Ethyl Alcohol and Tobacco, art.12-14 (illegal production)	0.0
Law of Counteracting Drug Addiction, art. 53-68 (manufacturing, import, export, purchasing, possession, cultivation etc. of illicit drugs)	15000.6
Penal Code, art.178 a (drunken drivers)	8602.8
Penal Code, art. 207 (domestic violence)	547.2
Penal Code, art. 208 (inducing to drink a juvenile)	60.4
Offences Code, art. 70 § 2 (professional or business activities under influence of psychoactive substances)	379.7
Offences Code, art. 86 § 2 (causing a safety hazard on the road while under influence of psychoactive substances)	1441.8
Offences Code, art. 87 § 1 , 1a and 2 (leading to motor vehicle traffic)	23512.2
Revenue Code, art. 63-75 (excise duty)	539.9
Total	50131.2
Total x 1.26	63041.8
Percent of the police salaries in 2010	5.33

Source: authors' own.

The total value of the Police salaries attributed to alcohol drinking, smoking and drugs use is equal about: 12.6 + 63.0 = 75.6 mln Euros, which constitutes about 1.06 + 5.33 = 6.39% of the whole estimated Police salaries budget in 2010.

PROSECUTORS

For the purpose of estimatingprosecutors salaries budget attributed to cases concerning alcohol, smoking and drugs, several sources of data were applied, including:

- the above described survey results (tables 6.1.1.4 and 6.1.1.4),
- *Statistical Yearbook* of Poland 2011 and 2013,
- *Report of The European Commission for the Efficiency of Justice* (CEPEJ), 2012.

The survey results were applied to estimate the percent of time of work of the prosecutors attributed to the considered category of cases, the percent of cases of the kind where experts were applied and the average cost of a typical expertise (table 6). Some other costs directly related to the cases were also estimated.

The [*Report*…2012] contains many interesting information about justice systems in European Countries in 2010, among others in Poland. Data on public budget allocated to courts, legal aid and public prosecution in 2010 (in €), and their break-down by components of court budgets in 2010 were applied in estimations (tab. 2.9, p.30). For theprosecuting system the value of salaries of prosecutors and other staff had to be estimated. It was assumed that the percent of annual public budget allocated to (gross) salaries to public prosecution system in total annual approved public budget allocated to the public prosecution system was such as in case of courts of law[16].

As the mentioned above percent of law employees' salaries in courts was equal to 65.52% and the total annual approved public budget allocated to the public prosecution system according to the [*Report*…2012] was equal in 2010 to 312 514 570 € (tab.2.1, p.19), it was estimated that salaries in public prosecutors system were equal to 204 773 123,9 €. The total number of criminal cases run by prosecutors in 2010 was equal to 1 161 457 [Report…2012, p. 200], so per one case the salaries in public prosecutors system come to 176,3 €.

The results of estimation are presented in tables 6.1.1.13 and 6.1.1.14.

Table 6.1.1.13 Estimated value of prosecutors system employees salaries, costs of experts opinions, and some other costs attributed to criminal offences directly related to alcohol, smoking and drugs, Poland

NAME OF LAW	SALARIES	TYPICAL EXPERT OPINIONS	OTHER	TOTAL
	thousands Euros			
Act of Upbringing in Sobriety and Counteracting Alcoholism, art. 43-45(3), and Law of Production of Ethyl Alcohol and Tobacco, art.12-14	232.7	0.0	0.0	232.7
Law of Counteracting Drug Addiction, art. 53-68	4468.3	2457.9	7613.8	14540.0
Law of Health Protection Counteracting Tobacco	5.9	0.0	0.0	5.9
Penal Code, art.72 § 1 p.5 (abstaining from drinking or use of other psychoactive substances)	3	0.1	0.0	3.1
Penal Code, art.178 a (drunken drivers)	8700.9	760.6	2636.1	12097.7
Penal Code, art. 207 (domestic violence)	2025.5	135.0	369.9	2530.4
Revenue Code, art. 63-75 (excise duty)	4535.3	0.0	0.0	4535.3
Total	19971.6	3353.6	10619.8	33945.1

Source: authors' own.

[16]Break-down by components of prosecutors system budgets was not available.

Table 6.1.1.14 Estimated value of prosecutors system employees salaries and some other costs attributed to other criminal offences related to alcohol drinking, smoking and drugs, Poland

CRIMINAL OFFENCES	ALCOHOL	DRUGS	ALCOHOL + DRUGS	TOTAL	TOTAL x 1.7
			thousands Euros		
Health Impairment	758.2	16.9	74.7	849.8	1444.4
Fight and Battery	624.3	8.0	117.3	749.6	1274.1
Larceny	5216.2	379.9	644	6240.2	10606.3
Sexual offences	92.2	2.7	15.5	110.4	187.6
Robbery	686.2	23.0	139.2	848.4	1442.0
Homicide	7.9	0.0	0.4	8.3	14.1
Damages	6254.1	280.5	833.9	7368.5	12524.0
Others	1410.1	29.5	178.9	1618.4	2750.7
Total	15049.3	740.4	2003.8	17793.6	30243.3
Total x 1.7	25578.9	1258.4	3405.8	30243.3	x
Percent of the prosecutors salaries in 2010	7.3	0.4	1.0	8.7	x

Source: authors' own.

The percent of salaries of employees attributed to crimes and offences listed in table 6.1.1.13 is equal to 9.7%, in table 6.1.1.14 – equal to 8.7%, and in both tables equal to 18.4% of the whole estimated salaries budget in public prosecution system.

Costs of typical expert opinions and other costs for crimes and offences directly attributable to alcohol drinking, smoking and drugs constituted 58.8% of total costs, so the total costs were about 1.7 times higher than the salaries, as presented in table 6.1.1.13.

Assuming that the proportion remains the same for other categories of crimes and offences, the total costs ascribed was: $17.8 \cdot 1.7 = 30.2$ mln €, and the sum of both kinds of costs accounted for 34.0 + 30.2 = 64.2 mln Euros, which is final estimate for costs of public prosecutors system salaries in Poland in 2010 attributed to cases concerning alcohol drinking, smoking and drugs use.

LAW COURTS COSTS

The estimation of law courts costs attributed to alcohol drinking, smoking and drugs use was performed in similar way as for public prosecution system.

As the total number of cases investigated by law courts, numbers of adults validly sentenced by common courts for crimes prosecuted on the basis of an indictment by type of crime (*Statistical Yearbook* 2011, p.168-170) were taken into account.

It has been assumed that the percent of cases examined by other than judges staff of law courts, and the percent of their time devoted to cases of the considered categories was the same as those of the judges (who took part in the survey), so in case of cost estimation for law courts the estimate comprises of estimated percent of law courts employees' salaries + estimated cost of typical expert opinions, and some other costs directly bounded with investigated cases.

To estimate the costs of dealing with crimes and offences committed under influence of alcohol, drugs and alcohol together with drugs survey results were applied (table 6.1.1.7), and the [*Report*…2012] information about the law courts employees' salaries [especially break-down by components of court budgets in 2010 (tab. 2.9. p.30), i.e. Annual public budget allocated to (gross) salaries in law courts, equal to 894 463 000 €], and also total number of criminal cases, in Poland in 2010, which was 1 111 772. On that basis it was calculated that value of the courts of law employees' salaries (C_c) per one case, as an average, was equal to:

$$C_c = \frac{894463000}{1111772} = 804.5\ € \quad (1)$$

The results of estimation are presented in tables 6.1.1.15 and 6.1.1.16.

Table 6.1.1.15 Estimated value of courts of law employees salaries, costs of experts opinions, and other costs attributed to criminal offences directly related to alcohol, smoking and drugs, Courts of Law, Poland

NAME OF LAW	SALARIES	TYPICAL EXPERT OPINIONS	OTHER	TOTAL	TOTAL X 2.56
	thousands Euros				
Act of Upbringing in Sobriety and Counteracting Alcoholism. art. 43-45(3). and Law of Production of Ethyl Alcohol and Tobacco, art.12-14	138.2	0.1	0.2	138.4	355.6
Law of Counteracting Drug Addiction, art. 53-68 (manufacturing, import, export, purchasing, possession, cultivation etc. of illicit drugs)	6886.5	18.5	81.5	6986.4	17942.9
Law of Health Protection Counteracting Tobacco	5.2	0.4	0.4	5.9	15.3
Penal Code, art.72 § 1 p.5 (abstaining from drinking or use of other psychoactive substances)	16.5	0.1	0.3	17.0	43.5
Penal Code, art.178 a (drunken drivers)	19075.2	415.4	2576.6	22067.1	56673.9
Penal Code, art. 207 (domestic violence)	3790.7	30.6	51.8	3873.1	9947.1
Offences Code, art. 70 § 2 (professional or business activities under influence of psychoactive substances)	1893.3	0.0	0.0	1893.4	4862.6
Offences Code, art. 86 § 2 (causing a safety hazard on the road while under influence of psychoactive substances)	1545.3	1.4	2.6	1549.3	3979.1
Offences Code, art. 87 § 1, 1a and 2 (leading to motor vehicle traffic)	3631.7	0.4	12.5	3644.7	9360.5
Revenue Code, art. 63-75 (excise duty)	1827.5	0.1	0.3	1827.8	4694.3
Total	38810.0	467.0	2726.2	42003.2	107874.7
Total x 2.56	99673.8	1199.4	7001.5	107874.7	x

Source: authors' own.

As the *Number of incoming criminal cases….in first instance courts in 2010* according to [*Report*…2012. p.200] was equal to 1 111 772 and the number of *Adults validly sentenced by common courts*.. according to *Statistical Yearbook* 2011, p.168-170 (which numbers were initially applied in estimation for different types of crimes) was equal to 432 891, so the preliminary results were divided by the later number (1 111 772:432 891) = 2.56.

Table 6.1.1.16 Estimated value of courts of law employees salaries attributed to other criminal offences related to alcohol, smoking and drugs, Courts of Law, Poland

CRIMINAL OFFENCES	ALCOHOL	DRUGS	ALCOHOL + DRUGS	TOTAL	TOTAL x 2.56 x 1.08
	thousands Euros				
Health Impairment	773.0	119.8	81.7	974.4	2708.4
Fight and Battery	1345.2	148.4	139.2	1632.8	4538.4
Larceny	3573.1	497.5	226.1	4296.7	11943.0
Sexual offences	113.3	8.4	8.4	130.2	361.8
Robbery	869.5	104.3	111.3	1085.1	3016.2
Homicide	54.9	18.0	17.2	90.1	250.3
Damages	4557.6	290.9	872.7	5721.2	15902.4
Others	1546.4	92.0	285.3	1923.8	5347.3
Total	12832.9	1279.4	1741.9	15854.2	44067.7
Total x 2.56 x 1.08	35669.7	3556.3	4841.7	44067.7	x
Percent of courts of law salaries in 2010	3.68	0.37	0.50	4.55	x

Source: authors' own.

Costs of typical expert opinions and other costs for crimes and offences directly attributable to alcohol drinking, smoking and drugs constituted 7.6% of total costs, so the total costs were about 1.08 times higher than the salaries, as presented in table 6.1.1.16.

Assuming that the proportion remains the same for other categories of crimes and offences (listed in tab. 6.1.1.15), the total ascribed costs was equal to 44.1 mln €, and the sum of both kinds of costs comes to 107.9 + 44.1 = 152.0 mln €, which is the final rough estimate for some of the costs of courts of law in Poland in 2010 attributed to alcohol drinking, smoking and drugs use.

Percent of salaries of courts of law employees attributed to crimes and offences listed in table *6.1.1.15* is equal to 11.14%, in table *6.1.1.16* – equal to 4.55%, and in both tables, equal about 15.7% of the whole amount of court of law employees' salaries.

JUVENILE COURTS

To estimate value of law employees' salaries attributed to criminal offences related to alcohol and drugs in juvenile courts, results of survey presented in table 6.1.1.6, and number of cases concerning juveniles *In investigation proceedings directed to session or hearing due to punishable acts* (*Statistical Yearbook* 2013, p.169) were applied. The results of salaries' costs estimation are presented in table 6.1.1.17.

Table 6.1.1.17 Estimated value of courts of law employees' salaries attributed to criminal offences related to alcohol and drugs, Juvenile Courts, Poland

SUBSTANCE	SALARIES (thousand Euros)
Alcohol	287.7
Drugs	14.8
Total	302.4
Percent of total salaries of Courts of Law in 2010	0.034

Source: authors' own.

The estimated value of courts of law employee salaries attributed to criminal offences related to alcohol and drugs in Juvenile Courts in 2010 was equal to 0.30 mln Euros.

COSTS OF INCARCERATION

The estimation of costs of incarceration attributed to alcohol drinking, smoking and drugs use in Poland in 2010 was performed on basis of data coming from several sources: *Ministry of Justice Statistical Yearbook (Prison Service)* 2010, *Central Board of Prison Service Statistical Yearbooks* 2008-2011, the Police data, the survey data. The estimation was based on number of *Adults validly sentenced by common courts for crimes prosecuted on the basis of an indictment by type of imprisonment punishment* (*Statistical Yearbook* 2011, p.172-173), where, apart from numbers of punished criminals, were presented their distributions according to length of punishment and type of crime.

In most cases of prison punishment the criminals were sentenced with conditional suspension of punishment; only 13.62% were sentenced for absolute imprisonment (in case of Law of Counteracting Drug Addiction the percent was equal to 13.51). Those percentages were applied to estimate the number of sentenced for absolute imprisonment for the considered types of crimes, with the exception of homicide, where it has been assumed that 100% of punished criminals were sentenced to absolute punishments.

It has been also taken into account that in 2010 in prisons stayed persons sentenced, for the considered types of crimes, before 2010 for more than a year. The numbers of such prisoners were traced up to 10 years.

The percent of criminal offences attributed to alcohol drinking, smoking and drugs use was as established in surveys for courts of law (table 6.1.1.7). The estimated numbers of persons sentenced for absolute imprisonment in 2010 and before (those, who were staying in prisons in 2010), for available types of crimes were finally multiplied by average expenditure for one prisoner (which constitutes of cost of living + cost of functioning of prisons and custody) equal to 78.3 zloties [*Ministry of Justice Statistical (Prison Service) Yearbook* 2010, p.50], i.e. about 19.6 €.

To estimate the prisons expenditure for imprisonment of pretrial detainees it has been assumed that for all types of crimes (but Law of Counteracting Drug Addiction) their percent was equal to relation of number of pretrial detainees (71867) to the number of sentenced (290669) that is 24.7%. For Law of Counteracting Drug Addiction special value was available i.e. 7.9%. It was assumed that the length of pretrial detain was, as an average, equal to 3 months.

The results of the estimation are presented in table 6.1.1.18.

Table 6.1.1.18 Estimated value of expenditures (ths €) ascribed to absolute imprisonment for criminal offences attributed to alcohol and drugs according in 2010, Poland

CRIMINAL OFFENCES	ALCOHOL	DRUGS	ALCOHOL + DRUGS	TOTAL
	thousands Euros			
Homicide	1512.0	496.1	47.2	2055.3
Law of Counteracting Drug Addiction	x	19153.2	x	19153.2
Penal Code, art.178 a (drunken drivers)	36088.9	x	x	36088.9
Sexual offences	238.9	17.8	17.8	274.5
Larceny	1992.2	277.4	126.1	2395.7
Robbery	2955.3	411.5	187.0	3553.9
Revenue Code, art. 63-75 (excise duty)	3483.4	x	x	3483.4
Total	46270.7	20356.0	378.1	67004.9
Pretrial detainees	3474.4	920.6	21.8	4416.7
Total	49745.1	21276.6	399.9	71421.7

Source: authors' own.

Post-penal help for the persons concerned was in 2010 equal to 0.61 mln € (17.02% of total value), so total costs ascribed to absolute imprisonment for criminal offences attributed to alcohol and drugs in 2010 were approximately equal 71.42 + 0.61 = 72.0 mln €.

PROBATION OFFICERS

As to estimate the costs of work of probation officers data of Ministry of Justice (Budget 2010), National Council of Probation Officers and the results of conducted surveys (table 6.1.1.9) were applied.

According to the Ministry of Justice data in 2010 in Poland there were 5209 professional probation officers, among them 61.3% for adults and 38.7% for juveniles. Their average yearly salaries in 2010 were equal to 18539.1 €.

According to National Council of Probation Officers data in 2010 in Poland there were 31 185 social probation officers, among them 42.5% for adults and 57.5% for juveniles; average yearly repayment for one social probation officer in 2010 was equal to 1203.6 €.

The results of this estimation are presented in tables 6.1.1.19-6.1.1.21.

Table 6.1.1.19 Estimated costs of work of professional probation officers attributed to alcohol and drugs, Poland

SUBSTANCE	JUVENILE	ADULTS	Total
	thousands Euros		
Alcohol	9016.3	7445.3	16461.6
Drugs	15063.9	6805.5	21869.4
Total	24080.2	14250.8	38331.0

Source: authors' own.

Table 6.1.1.20 Estimated repayment of social probation officers attributed to alcohol and drugs, Poland

SUBSTANCE	JUVENILE	ADULTS	Total
	thousands Euros		
Alcohol	3920.7	2764.3	6685.0
Drugs	6550.5	2526.7	9077.2
Total	10471.2	5291.0	15762.2

Source: authors' own.

Table 6.1.1.21 Estimated probation costs attributed to alcohol and drugs, Poland

SUBSTANCE	JUVENILE	ADULTS	Total
	thousands Euros		
Alcohol	12937.1	10209.6	23146.6
Drugs	21614.4	9332.2	30946.5
Total	34551.4	19541.8	54093.1

Source: authors' own.

Total probation costs attributed to alcohol and drugs in Poland on 2010 was approximately equal to 54.1 mln €; among them 42.8% can be ascribed to alcohol and 57.2% to drugs.

CUSTOM SERVICE AND BORDER GUARDS

CUSTOM SERVICE

Estimation of scale of custom service salaries attributed to cases concerning alcohol, tobacco and drugs was performed on basis of the survey data (table 6.1.1.10) and data from *Statistical Bulletin of Custom Service* 2011. It should be stressed[17] that The Custom Service in Poland retained during controls in 2010: drugs of value 7.1 mln € (*Departments of Combating of Custom Criminality*, p.52), alcohol of value 0.7 mln €, and tobacco products of value 8.4 mln € (*Custom Chambers*, p.143).

Taking into account: the number of controls performed in 2010 by *Departments of Combating of Custom Criminality* + number of controls performed by *Inspection's Units* + number of controls of custom's declarations in 2010, the survey results, and average salary of a custom employee[18] in 2010 equal to 18 445.1€, it was estimated that custom service employees' salaries attributed to cases concerning alcohol, tobacco and drugs were equal to 17.5 mln € (table 6.1.1.22).

[17]Authors' own estimation on basis of Statistical Bulletin of Custom Service, 2011 data.
[18]Authors' own estimation on basis of Statistical Bulletin of Custom Service, 2011 data.

Table 6.1.1.22 Estimated custom service salaries attributed to cases concerning alcohol, tobacco and drugs, Poland

SUBSTANCE	SALARIES (thousands Euros)	Percent
Alcohol	8858.1	50.7
Drugs	1774.8	10.1
Tobacco	6848.0	39.2
Total	17480.9	100

Source: authors' own.

BORDER GUARDS

Estimation of boarder guards salaries attributed to cases concerning alcohol, tobacco and drugs was performed on basis of the survey data (table 6.1.1.10), *Statistical Yearbook* 2011 and *The Supreme Audit Office* data.

According to Statistical Yearbook 2011, p.150 in 2010 there were 8431 *Preparatory proceedings regarding offences investigated by the Border Guard*, and average yearly salaries of a Border Guard employee was equal[19] to 10476.1 €.

On that basis it was estimated that the Border Guard employees' salaries attributed to cases concerning alcohol, tobacco and drugs were equal to 1.4 mln € (table 24).

Table 6.1.1.23 Estimated Border Guard salaries attributed to cases concerning alcohol, tobacco and drugs, Poland

SUBSTANCE	SALARIES (thousands Euros)	Percent
Alcohol	120.9	8.6
Drugs	841.9	59.6
Tobacco	448.6	31.8
Total	1411.3	100

Source: authors' own.

Together, custom service and border guards estimated salaries attributed to cases concerning alcohol, tobacco and drugs were equal in 2010 to 18.9 mln €.

6.1.1.3 TOTAL ESTIMATED COSTS IN CRIMINAL JUSTICE

The total cost of criminal justice institutions attributable to cases related to alcohol, tobacco and drugs in 2010 in Poland accounted for about 436.5 mln Euros.

[19] Authors' own estimation on basis of Supreme Audit Office data.

Table 6.1.1.24 Estimated criminal justice institutions costs attributed to cases concerning alcohol, tobacco and drugs, Poland

INSTITUTION	ALCOHOL	DRUGS	ALCOHOL +DRUGS	TOBACCO	TOTAL	PERCENT
	thousands Euros					
THE POLICE	54220.9	19568.1	1858.3	0.0	75647.3	17.3
PROSECUTION SYSTEM	44978.1	15798.5	3405.8	5.9	64188.2	14.7
COURTS OF LAW	125873.9	21514.0	4841.7	15.3	152244.9	34.9
PRISONS	49745.1	21276.6	399.9	0.0	71421.6	16.4
PROBATION OFFICERS	23146.6	30946.5	.	0.0	54093.1	12.4
CUSTOM SERVICE + BORDER GUARD	8979.0	2616.7	.	7296.6	18892.3	4.3
TOTAL	306943.6	111720.3	10505.7	7317.8	436487.4	100
PERCENT	70.3	25.6	2.4	1.7	100	x

Source: authors' own.

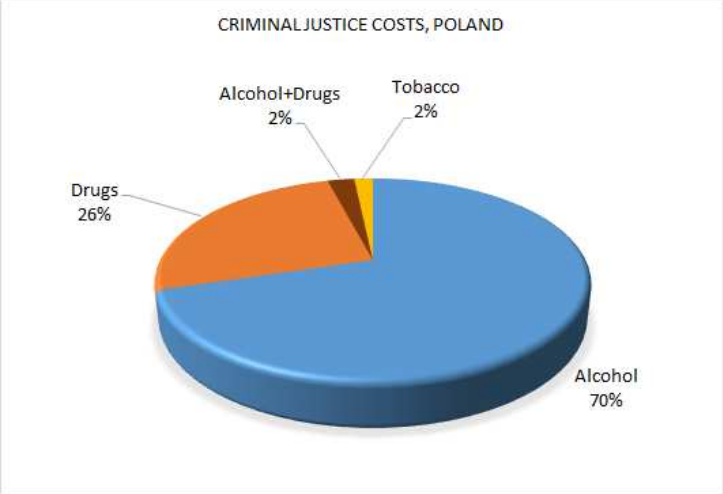
Alcohol is the most burdening substance from all substances taken into account.

***Figure 6.1.1.1 Estimated criminal justice costs attributed to cases concerning alcohol, tobacco and drugs,* according to institution, Poland**

Source: authors' own

The highest costs in criminal justice attributable to using alcohol, tobacco and drugs are incurred by courts of law.

Figure 6.1.1.2 Estimated criminal justice costs attributed to cases concerning alcohol, tobacco and drugs, according to substance, Poland



Source: authors' own

6.1.2.Portugal

The imputation of alcohol related criminal justice costs based on Lima, Esquerdo [2003], indicates that in 2010 this costs may have been as high as 129,5 mln. €, mainly due to the costs of accidental property damages.

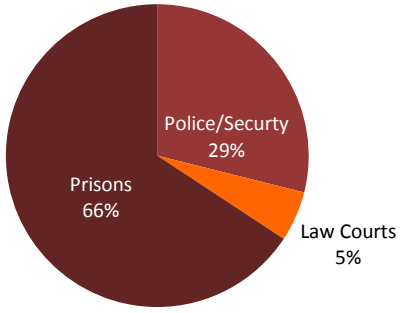
Table 6.1.2.1 Economic costs of alcohol abuse in 2010 by types of costs, Portugal

TYPE OF COSTS	Minimum	Maximum
	Mln €	
Criminal Justice System	4.6	8.6
Prison Administration	12.7	23.7
Property Damages Due To Accidents	52.0	97.1
Criminal Justice Social Work Administration	0.05	0.09
Total	69.35	129.49

Source: authors'own on basis [Lima, Esquerdo 2003].

Criminal justice costs attributable to illicit drugs estimated by Gonçalves et al.,[2014] include costs of law courts and prisons accounting for 4 mln. € and 49 mln. € respectively.
The results of the police costs estimates are presented in the table below, indicating the division of funds between various ministries. More detailed description of drug related costs in Portugal assessment is presented in Appendix 8.5.

Portugal 2010: Direct Costs: Enforcement



Enforcement

- The Prison costs cover more than enforcement costs (in 2010, Drug Law related prisoners were 21% of total prison population)
- The Law Courts, small budget is related to the fact that most of prison sentences are related to crimes connected to drug traffic

Table 6.1.2.2 Economic costs of police in regard to drug use in 2010, Portugal

Public body in charge	Institution	2010 budget (€)
Ministry of Finances	DGAIEC*	2 800 000
Ministry of Defence	AN (Naval Aut.)*	190 000
	PSP *	5 000 000
Ministry of Internal Administration	GNR *	4 500 000
	ANSR (former DGV) – Kits**	80 000
	ANSR (former DGV) - Toxic. Test**	1 477 052
	PJ – DCITE*	6 000 000
Ministry of Justice	PJ – LPC*	18 000
	INML**	1 477 052
	Total	**21 254 392**

* estimations based on existing values from 2005 [1] and 2012 [7], updated to 2010 prices
**based on Relatório de Atividades 2010, [2]

6.1.3.Catalonia (Spain)

In Catalonia, criminal justice costs related to drugs were estimated in a frame of the study made in 1997 by the Catalan Agency of Evaluation and medical research technology together with the Health Department and other institutions. Crime-related costs included direct costs together with health-care costs, prevention, continuing education, research, administrative costs, and non-governmental organizations costs. Indirect costs included lost productivity associated with mortality and the hospitalization of patients. Estimation of intangible costs was not included. The main results found: the minimum cost of illegal drug consumption in Spain is 88 800 million pesetas (PTA) (467 million dollars). Seventy-seven per cent of the costs correspond to direct costs. Of those, crime-related costs represent 18%[20].

After updating for differences in population size and drugs exposure among: Spain in the year 1997 and 2010, and Spain and Catalonia in the year 2010, this study provided data for criminal justice costs imputation (table below).

Table 6.1.3.1 The criminal justice cost of illegal drug consumption in Catalonia in 2010

Drugs	Minimum	Maximum
	Thousands Euros	
Justice	7354.5	23130.5
Penal system	31227.4	98212.8
Total crime-related costs	**38581.9**	121343.3

Source: Authors' own on basis of [Garcia-Altez et al. 1997], p.1148.
Source for exposure: Spain: EDADES. DGPNSD. National Plan of Drugs

[20] To read more about this study and the results of costs imputation based on it, see appendix 8.2

6.2. Health care and labour costs

6.2.1. Poland

Health care costs

The estimation includes:
- In-patients costs (hospital costs) for general and psychiatrics hospitals and departments,
- Out-patients costs (general and psychiatric clinics),
- Ambulance Service and Emergency Service,
- NHF payment of medicaments,

In-patients (hospital) costs

In-patients costs were calculated on the basis of earlier calculated attributable fractions for mortality related to alcohol abuse, cigarette smoking and use of drugs, and the data on hospital morbidity coming from *The National Institute of Public Health* (*National Institute of Hygiene*) in Warsaw. The hospital morbidity in applied source of data is listed according to ICD-10 codes, though in broader groups of illnesses, therefore, to make the data comparable, it was necessary to divide the proper part of hospital morbidity related to alcohol abuse, cigarette smoking and use of drugs from such groups. It was done using mortality data named with ICD-10 codes, that is, it was assumed that the proportion of hospital morbidity on certain illness related to the considered addictive substances in broader group of illnesses was the same as the adequate proportion of mortality. In several cases this procedure was not possible to apply, because there was no mortality on certain causes of death, which is marked in tables 8.1.3.4, 8.1.3.5, 8.1.3.6 as *not available*. In cases of *Degeneration of nervous system due to alcohol* (G31.2), and *Alcoholic polyneuropathy* (G62.1) in women population there were no deaths due to these causes of deaths, so the adequate shares for men were applied.

As the average length of stay in hospital according to kind of illness, gender and age classes: [15-19), [20-34), [35-44), [45-54), [55-64), [65+) is also available, by multiplying estimated number of hospital patients suffering on illnesses attributed to use of the addictive substances by the average length of stay in hospital, it was then calculated how many hospital person-days can be attributed to the considered illness. By multiplying these numbers by average cost of one person-day in a hospital, the total costs were estimated.

For diseases in 100% attributed to alcohol drinking (F10) and use of drugs (F11-F19) there were also applied data concerning psychiatric hospitals and departments of psychiatric hospitals (source of statistical data: Statistical Yearbook of Institute of Psychiatry and Neurology in Warsaw, 2010).
No hospital morbidity data on injuries were available.

As mentioned above (p.18-21) estimated numbers of deaths partly attributable to alcohol, smoking or drugs in older age classes are strongly overestimated; the same situation occurred in morbidity and hospital costs. Those estimates are presented in Appendix in tables 8.1.3.1-8.1.3.6, 8.1.3.8-8.1.3.16, 8.1.3.18, 6.2.1.20, 8.1.3.21 and marked in Italics, but, as they are not reliable, for the purpose of comparisons only age class [15-64) is considered (last column of tables mentioned above).

For Coronary heart disease and Cholelithiasis the relative risks coefficients in case of alcohol drinking were less than one (which means that the lives were saved due to alcohol consumption), so numbers of attributed cases were negative. In estimation of costs of in-patients those numbers were not taken into account, as there were considered costs of patients, who were treated in hospitals.

As there are people who simultaneously drink alcohol and smoke or smoke and use drugs etc., the sum of the results for psychoactive substances overestimates the number of person-days in hospitals and the adequate costs (tab. 6.2.1.24), and can be treated only as rough estimate. The overestimation is especially visible in cases where the same listed disease can be related to more than one substance (for instance to alcohol and smoking).

Comparison

Table 6.2.1.18 Hospitals costs (thousands Euros) attributed to alcohol use according to gender and age

LIST	COSTS (THOUSANDS EUROS)							
	MEN							
GENERAL HOSPITALS	15-19	20-34	35-44	45-54	55-64	*65+*	*Total*	15-64
Neoplasm	149.7	541.3	475.5	1584.8	3383.9	*3615.3*	*9750.5*	6135.2
Cardiovascular Diseases	965.0	1706.0	2714.9	8767.7	17739.4	*23861.6*	*55754.6*	31893.0
Gastrointestinal, Metabolic And Endocrine Conditions	81.1	915.6	1210.5	1436.5	1289.3	*955.1*	*5888.0*	4932.9
Other Chronic And Acute Conditions	313.5	512.3	377.2	535.2	595.7	*508.3*	*2842.3*	2334.0
Total partly attributable	1509.4	3675.2	4778.1	12324.1	23008.2	*28940.3*	*74235.3*	45295.0
100% alcohol, general hospitals	97.5	1923.5	3051.4	4625.9	4465.3	2397.0	16560.6	14163.6
Total general hospitals	1606.9	5598.7	7829.5	16950.1	27473.5	*31337.2*	*90795.9*	59458.7
PSYCHIATRIC HOSPITALS	<18	19-29		30-64		65+	Total	[15-64)
100% alcohol (F10)	3789.3	10874.2		7316.1		131.2	22121.5	21990.3
	WOMEN							
GENERAL HOSPITALS	15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
Neoplasm	26.0	198.1	558.7	1470.9	1887.5	*1443.9*	*5585.0*	4141.1
Cardiovascular Diseases	498.4	898.9	1578.0	5103.1	9333.7	*22437.2*	*39849.4*	17412.2
Gastrointestinal, Metabolic And Endocrine Conditions	52.3	279.7	275.5	480.7	558.1	*720.0*	*2366.4*	1646.4
Other Chronic And Acute Conditions	391.2	447.2	231.0	309.6	318.3	*486.3*	*2183.6*	1697.3
Total partly attributable	968.0	1823.9	2643.2	7364.2	12097.6	*25087.4*	*49984.4*	24897.0
100% alcohol, general hospitals	1014.6	2075.8	2884.9	4701.9	3955.5	8734.0	23366.7	14632.7
Total general hospitals	1982.6	3899.7	5528.1	12066.1	16053.1	*33821.4*	*73351.1*	39529.6
PSYCHIATRIC HOSPITALS	<18	19-29		30-64		65+	Total	15-64
100% alcohol (F10)	917.4	2632.7		1771.3		31.8	5355.7	5323.9

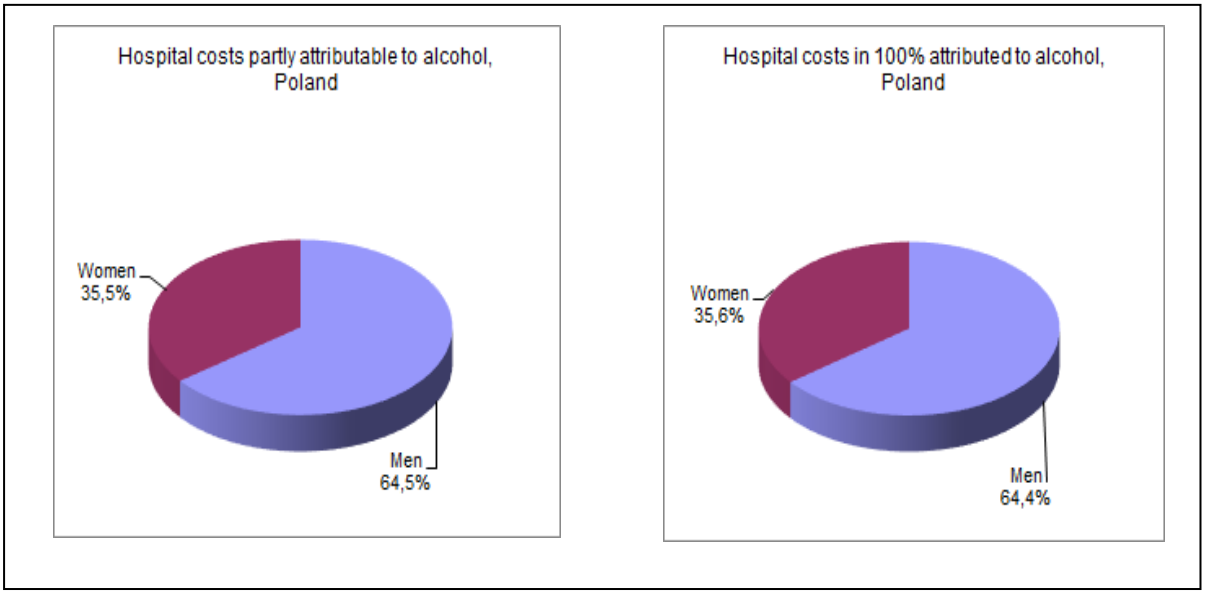
Source: authors' own.

Table 6.2.1.19 Hospitals costs (thousands Euros) attributed to alcohol use according to gender, age [15-64), Poland

LIST	COSTS (thousands Euro)		PERCENT	
	MEN	WOMEN	MEN	WOMEN
Neoplasm	6135.2	4141.1	59.7	40.3
Cardiovascular Diseases	31893.0	17412.2	64.7	35.3
Gastrointestinal, Metabolic and Endocrine Conditions	4932.9	1646.4	75.0	25.0
Other Chronic and Acute Conditions	2334.0	1697.3	57.9	42.1
TOTAL PARTLY ATTRIBUTABLE	45295.1	24896.9	64.5	35.5
100% alcohol	36153.9	19956.6	64.4	35.6
TOTAL	81449.0	44853.5	64.5	35.5

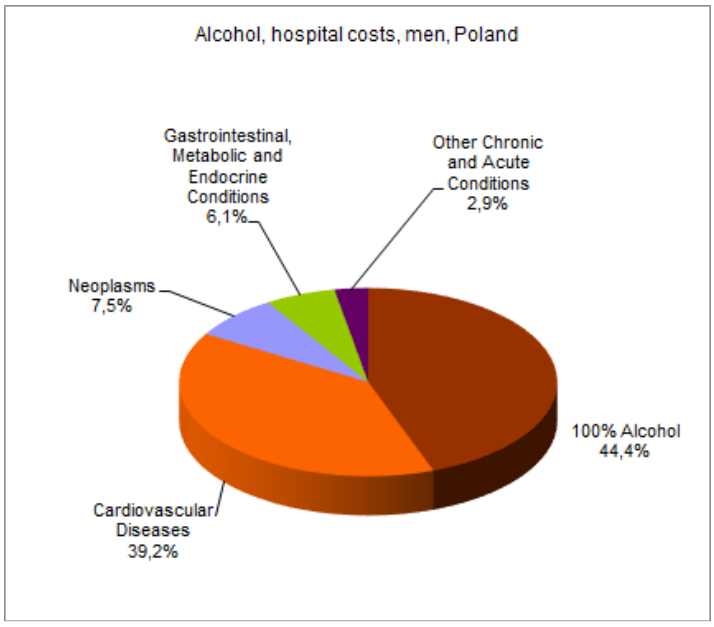
Source: authors' own.

Figure 6.2.1.1 Hospitals costs (thousands Euros) partly and in 100% attributed to alcohol use according to gender, age [15-64), Poland



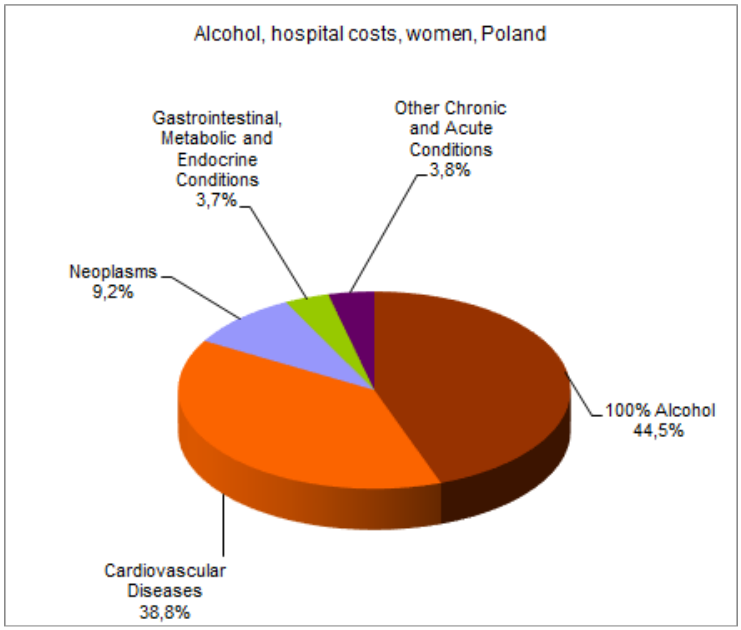
Source: authors' own.

Figure 6.2.1.2 Hospitals costs (thousands Euros) attributed to alcohol according to kind of disease, men age [15-64), Poland



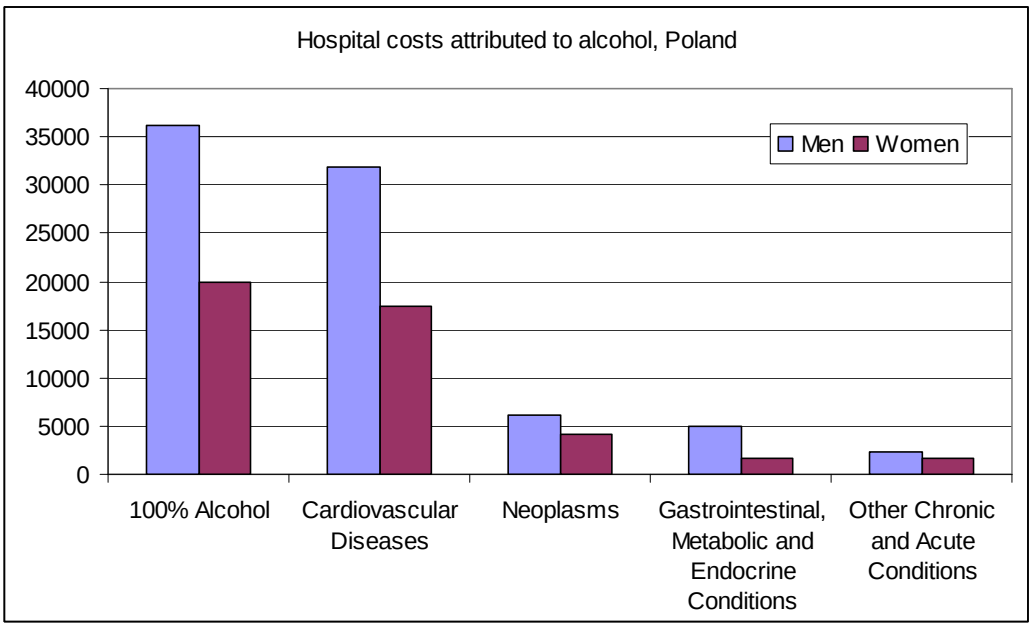
Source: authors' own.

Figure 6.2.1.3 Hospitals costs (thousands Euros) attributed to alcohol according to kind of disease, women age [15-64), Poland



Source: authors' own.

Figure *6.2.1.4* Hospitals costs (thousands Euros) attributed to alcohol use according to gender, age [15-64), Poland



Source: authors' own.

Table 6.2.1.20 Hospitals costs (thousands Euros) attributed to smoking according to gender and age, Poland

KIND OF DISEASE	COSTS (thousands Euros)							
				MEN				
GENERAL HOSPITALS	15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
Neoplasm	257.4	1066.4	1186.1	6025.3	15835.2	*18331.2*	*42701.5*	24370.3
Cardiovascular Diseases	511.7	2421.9	3884.1	15479.7	34412.6	*39045.0*	*95755.0*	56710.0
Respiratory Diseases	532.5	1091.5	1131.6	3013.7	6725.4	*15418.3*	*27913.1*	12494.8
TOTAL	1301.7	4579.7	6201.8	24518.7	56973.1	*72794.5*	*166369.6*	93575.1
				WOMEN				
GENERAL HOSPITALS	15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
Neoplasm	40.8	245.3	495.5	2189.4	4749.8	*4266.3*	*11987.1*	7720.8
Cardiovascular Diseases	100.7	538.8	1121.6	4695.6	10202.0	*14315.6*	*30974.3*	16658.7
Respiratory Diseases	337.0	583.5	628.1	1633.3	3257.1	*8493.2*	*14932.2*	6439.0
TOTAL	478.5	1367.6	2245.3	8518.2	18208.9	*27075.1*	*57893.6*	30818.5
TOTAL MEN + WOMEN	1780.2	5947.3	8447.1	33037.0	75182.0	*99869.5*	*224263.1*	124393.6

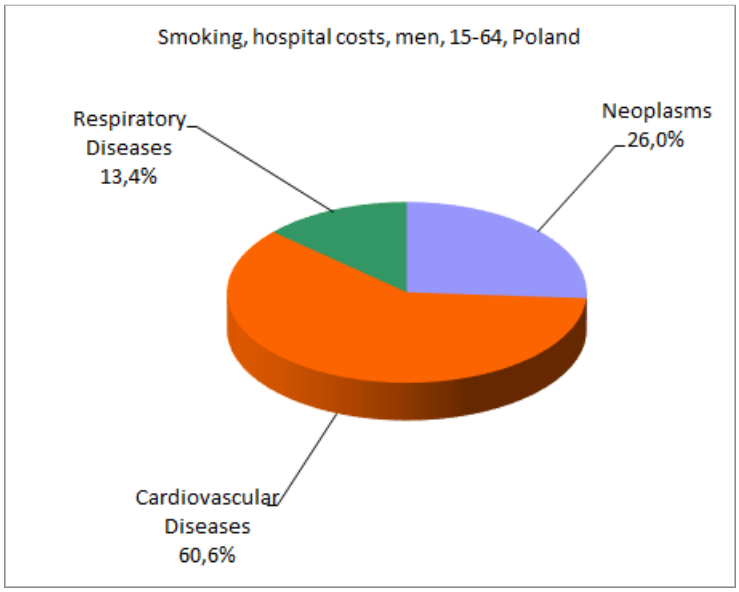
Source: authors' own.

Table 6.2.1.21 Hospitals costs (thousands Euros) attributed to smoking according to gender, age [15-64), Poland

KIND OF DISEASE	COSTS (THOUSANDS EURO)		PERCENT	
	MEN	WOMEN	MEN	WOMEN
Neoplasm	24370.3	7720.8	75.9	24.1
Cardiovascular Diseases	56710.0	16658.7	77.3	22.7
Respiratory Diseases	12494.8	6439.0	66.0	34.0
TOTAL	93575.1	30818.5	75.2	24.8

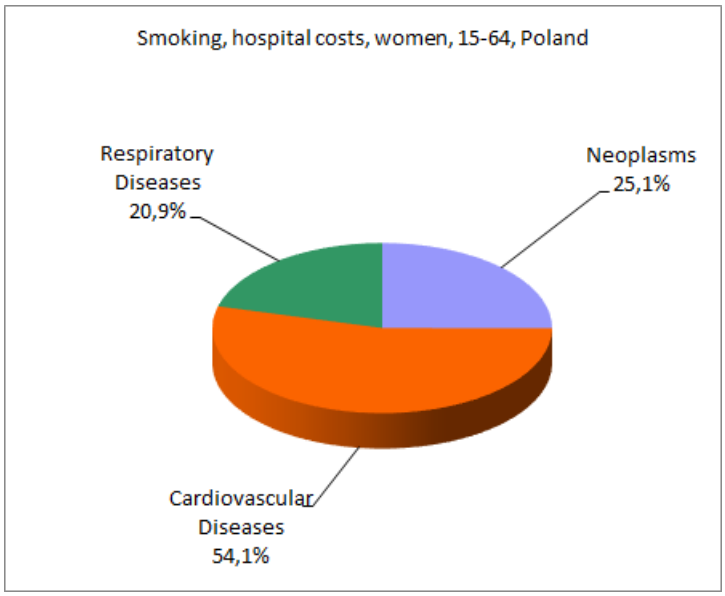
Source: authors' own.

Figure 6.2.1.5 Hospitals costs (thousands Euros) attributed to smoking, men age [15-64), Poland



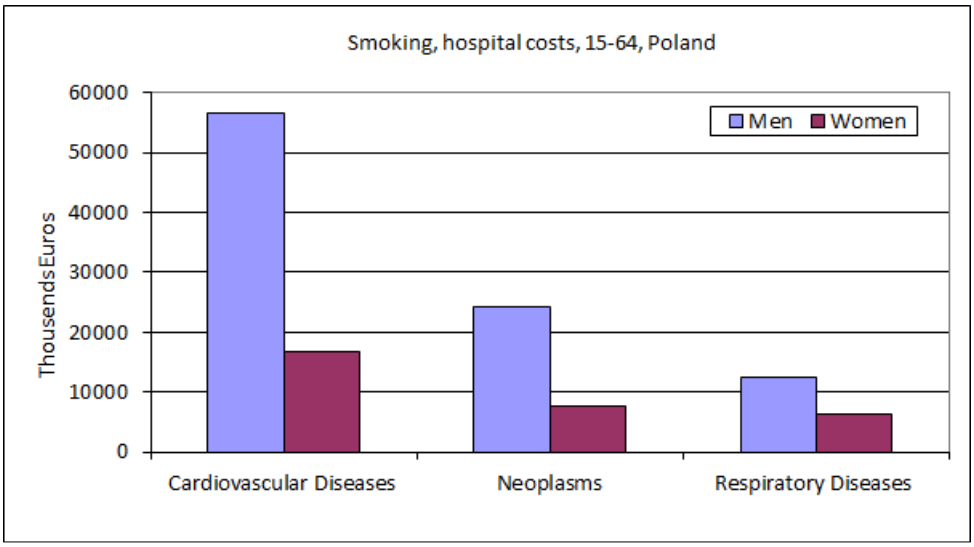
Source: authors' own.

Figure 6.2.1.6 Hospitals costs (thousands Euros) attributed to smoking, women age [15-64), Poland



Source: authors' own.

Figure 6.2.1.7 Hospitals costs (thousands Euros) attributed to smoking, according to gender, age [15-64), Poland



Source: authors' own.

Table 6.2.1.22 Hospitals costs (thousands Euros) attributed to drugs use according to gender and age

LIST	COSTS (THOUSANDS EUROS)							
				MEN				
GENERAL HOSPITALS	15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
Total partly attributable	176.4	679.2	685.6	993.3	541.4	*469.2*	*3545.1*	3075.9
100% drugs, general hospitals	9.6	114.6	41.2	25.0	14.8	7.0	212.3	205.3
Total general hospitals	186.0	793.8	726.8	1018.3	556.3	*476.2*	*3757.4*	3281.2
PSYCHIATRIC HOSPITALS	<18	19-29		30-64		65+	Total	15-64
100% drugs, (F11-F19)	3789.3	10874.2		7316.1		131.2	22121.5	21990.3
				WOMEN				
GENERAL HOSPITALS	15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
Total partly attributable	167.2	445.5	364.0	429.8	236.6	*388.9*	*2032.1*	1643.2
100% drugs, general hospitals	4.5	12.5	17.7	28.1	13.9	1.8	78.5	76.8
Total general hospitals	171.7	458.0	381.8	457.9	250.5	*390.7*	*2110.6*	1719.9
PSYCHIATRIC HOSPITALS	<18	19-29		30-64		65+	Total	15-64
100% drugs, (F11-F19)	917.4	2632.7		1771.3		31.8	5355.7	5323.9

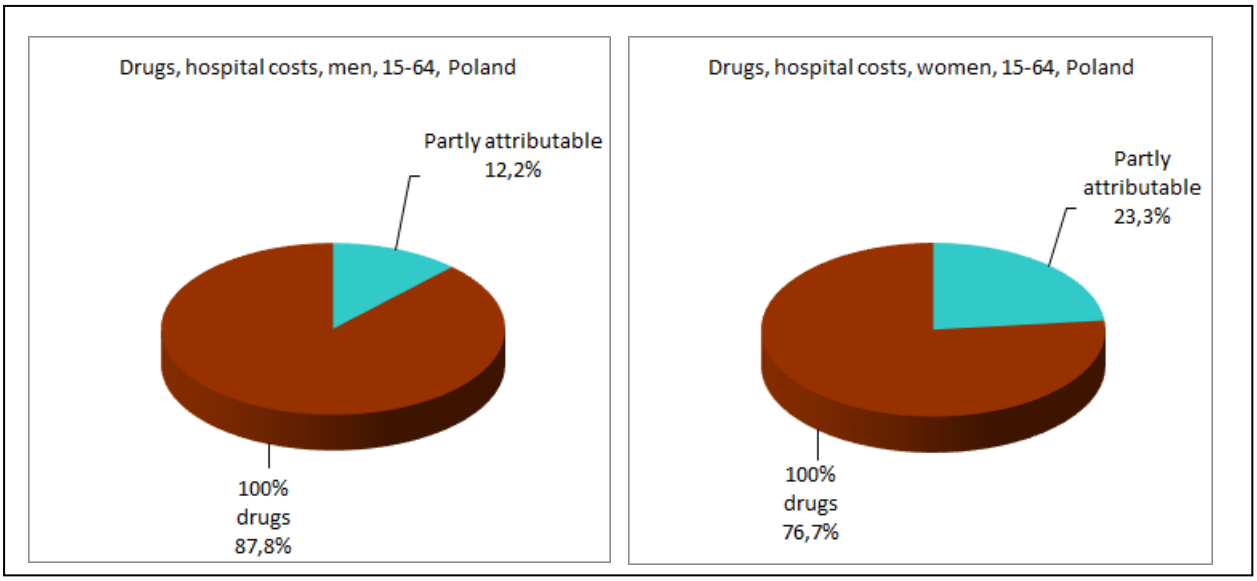
Source: authors' own.

Table 6.2.1.23 Hospitals costs (thousands Euros) attributed to drugs use according to gender, age [15-64)

LIST	COSTS (THOUSANDS EURO)		PERCENT	
	MEN	WOMEN	MEN	WOMEN
Partly attributable	3075.9	1643.2	65.2	34.8
100% drugs	22195.6	5400.7	80.4	19.6
TOTAL	25271.5	7043.9	78.2	21.8

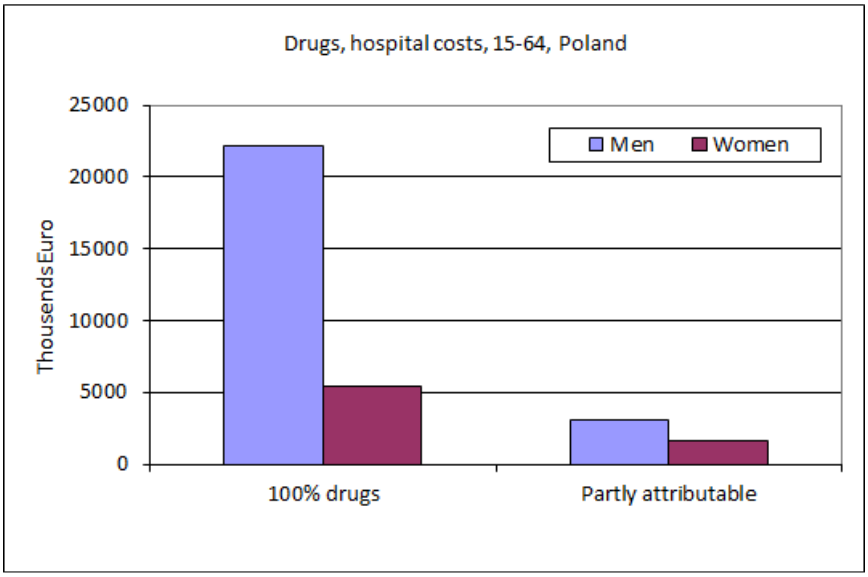
Source: authors' own.

Figure 6.2.1.8 In-patients costs (thousands Euros) partly and in 100% attributed to drugs use according to gender, age [15-64)



Source: authors' own.

Figure 6.2.1.9 Hospitals costs (thousands Euros) partly and in 100% attributed to drugs use according to gender, age [15-64)



Source: authors' own.

Table 6.2.1.24 Hospitals costs (thousands Euros) attributed to alcohol, smoking and drugs use according to gender, age [15-64)

SUBSTANCE	COSTS (thousands Euro)			PERCENT		
	MEN	WOMEN	TOTAL	SUBSTANCE	MEN	WOMEN
Alcohol	81449.0	44853.5	126302.5	44.6	64.5	35.5
Smoking	93575.1	30818.5	124393.6	44.0	75.2	24.8
Drugs	25271.5	7043.9	32315.4	11.4	78.2	21.8
TOTAL	200295.6	82715.9	283011.5	100	70.8	29.2

Source: authors' own. Remark: As they are people who drink and smoke or smoke and use drugs etc. the sum of costs for the three substances is overestimated.

It can be stated that the total in-patients' costs attributed to alcohol drinking, smoking and use of drugs for persons age [15-64) constituted 4.3% of total in-patients costs in 2010 in Poland, with the remark that in-patients costs caused by injuries could not be included because of lack of statistical data.

Out-patients costs

Estimation of the out-patients costs is based on National Health Fund (NHF) data concerning number of consultations and their costs in out-patients clinics, and previously estimated attributable fractions of morbidity for considered diseases, applied also to estimate the in-patients care costs attributed to alcohol drinking, smoking and drugs use. The average cost per one patient in general out-patients clinics in 2010, according to NHF data was equal to 76.72 zloties, i.e. 19.20 €, and in psychiatric out-patient clinic to 121.50 zloties – 30.40 €.

The results of the estimation are presented in tab. 6.2.1.25 and 6.2.1.26.

Table 6.2.1.25 Estimated costs of out-patients consultations attributed to alcohol drinking, smoking or drugs use, general clinics, according to gender, age [15-64), Poland

SUBSTANCE	MEN	WOMEN	TOTAL	PERCENT OF COSTS:		
	thousands Euros			Men	Women	In total out-patients cost
Alcohol	13548.2	5842.7	19390.9	69.9	30.1	2.5
Smoking	21223.3	5935.7	27158.9	78.1	21.9	3.6
Drugs	1292.6	668.1	1960.7	65.9	34.1	0.3
Total	36064.1	12446.6	48510.6	74.3	25.7	6.4

Source: authors' own.

Table 6.2.1.26
Estimated costs of out-patients consultations attributed to alcohol drinking, smoking or drugs use, psychiatric clinics, according to gender, Poland

SUBSTANCE	MEN	WOMEN	TOTAL	PERCENT OF COSTS:		
	thousands Euros			Men	Women	In total out-patients cost
Alcohol	4376.2	1205.8	5582.0	78.4	21.6	9.0
Smoking	.	.	141.6	.	.	0.2
Drugs	696.3	340.7	1037.0	67.1	48.9	1.7
Total	5072.5	1546.5	6634.7	76.6	23.4	10.9

Source: authors' own.

Apart from the above, NHF paid in 2010 for substitution treatment for drugs users 4337.5 ths Euro.

Ambulance Service and Emergency Service

Table 6.2.1.27 Average percent of ambulance and emergency services concerning persons under influence of alcohol and drugs, in the first half of 2012, Poland

SUBSTANCE	AMBULANCE SERVICE	EMERGENCY SERVICE
	Percent of cases	
Alcohol	24.5	5.24
Drugs	2.4	0.09
Alcohol + Drugs	5.9	0.78
Total	32.8	6.12

Source: authors' own on basis of the surveys.

For estimating the magnitude of costs of ambulance and emergency service the survey data (tab. 6.2.1.27) and information coming from Supreme Audit Office report (*Functioning of System of Medical Rescue*, 2012) were applied. As the cost[21] of ambulance service was in 2010 equal to 8.96 mln €, and that of hospital emergency service was equal to 151.36 mln €, assuming that the percent of ambulance and emergency services concerning persons under influence of alcohol and drugs was in 2010 such as in the first half of 2012, it was estimated that the whole considered costs in 2010 were equal to 56.17 mln € (tab. 6.2.1.28).

Table 6.2.1.28
Estimated costs of ambulance and emergency services concerning persons under influence of alcohol and drugs, Poland

SUBSTANCE	AMBULANCE SERVICE	EMERGENCY SERVICE
	thousands Euros	
Alcohol	35016.7	7938.3
Drugs	3426.7	137.7
Alcohol + Drugs	8470.8	1184.8
Total	46914.1	9260.7

Source: authors' own.

NHF payment of medicaments

As in Poland the National Health Fund pays for chosen medicaments (total or partly) the amount of NHF payments which can be ascribed to alcohol drinking, smoking or drugs use was estimated.

Estimation was based on NHF data concerning total costs of NHF payments for medicaments, and previously estimated attributable fractions of morbidity for considered diseases attributed to alcohol drinking, smoking and drugs use.

The results of this estimation are presented in table 6.2.1.29.

[21] Both kinds of costs were recalculated in mln € by authors on basis of [Functioning…2010, p.59-60].

Table 6.2.1.29 Estimated costs of NHF payments for medicaments attributed to alcohol drinking, smoking or drugs use, according to gender, age [15-64), Poland

SUBSTANCE	MEN	WOMEN	TOTAL	PERCENT OF COSTS:		
	thousands Euros			Men	Women	In total cost
Alcohol	38.0	16.4	54.4	69.9	30.1	2.5
Smoking	59.6	16.7	76.2	78.1	21.9	3.6
Drugs	3.6	1.9	5.5	65.9	34.1	0.3
Total	101.3	34.9	136.2	74.3	25.7	6.4

Source: authors' own.

Labor costs

Labor costs here are understood as: premature mortality costs and absenteeism costs. We have estimated what value of GDP could be produced in Poland, if there were no premature mortality and no absenteeism related to alcohol drinking, smoking or drugs use in 2010. Such an estimation requires strong assumptions, as:

1. Premature mortality

Employment rate among the persons in questions would be the same as employment rate among the whole (living) population in age of economic activity {in Poland in 2010: men – [15-64), women – [15-59)} in 2010, so it has been assumed that those persons would be employed in 2010.

If those persons hadn't died prematurely in 2010, that is, if they had lived that one year longer, they could have produced the same average value of GDP, as the other employed people in Poland in 2010.

2. Absenteeism

If the considered persons weren't ill in 2010, that is, if they were working all the time, they could produce the same average value of GDP as the people who were working in Poland in 2010 (without absent persons).

For the estimation of premature mortality costs we applied previously estimated numbers of premature deaths related to alcohol drinking, smoking or drugs use (chapter 5), and *Statistical Yearbook* 2011 data, concerning the employment rate in Poland in 2010 (equal to 50.4%, p.281) and value of GDP (p.674) equal in 2010 to 354 159.24 mln Euro.

For the estimation of absenteeism costs we applied data of ZUS (*Social Insurance Company*), year 2010, and previously estimated morbidity attributable fractions.

The results of this estimation are presented in tables 6.3.1.30-6.3.1.31.

Table 6.2.1.30 Estimated costs of labor due to premature mortality attributed to alcohol drinking, smoking or drugs use, Poland

SUBSTANCE	NUMBER OF POTENTIALLY EMPLOYED			VALUE OF GDP (mln Euros)			PERCENT
	Men	Women	Total	Men	Women	Total	
Alcohol	5378	1327	6705	119.3	29.5	148.8	38.8
Smoking	8334	2033	10367	184.9	45.1	230.0	60.1
Drugs	134	53	187	3.0	1.2	4.2	1.1
Total	13846	3414	17260	307.2	75.8	383.0	100

Source: authors' own.

Given that among persons in age of economic activity there was no premature mortality related to alcohol drinking, smoking or drugs use in Poland in 2010, there could be about 17.3 thousand people more working, and they could produce additional GDP of value about 383.0 mln Euro, that is, 0.11% of value of the Polish GDP in 2010.

Table 6.2.1.31 Estimated costs of labor due to absenteeism attributed to alcohol drinking, smoking or drugs use, Poland

SUBSTANCE	DAYS OF ABSENTEEISM (thousands)	VALUE OF GDP (mln Euros)	PERCENT
Alcohol	2357.7	147.3	58.2
Smoking	1581.2	98.8	39.0
Drugs	114.0	7.1	2.8
Total	4052.9	253.2	100

Source: authors' own.

Given that among employed in Poland nobody were ill for diseases related to alcohol drinking, smoking or drugs use in Poland in 2010, they could work about 4052.9 thousands days more, and they could produce additional GDP of value about 253.2 mln Euro, that is 0.07% of value of the Polish GDP in 2010.

Together the estimated labor costs attributed to alcohol drinking, smoking or drugs use in Poland in 2010 are equal about 383.0 + 253.2 = 636.2 mln Euros, that is, 0.18% of GDP in 2010.

RECAPITULATION

Table 6.2.1.32 Health Care costs (thousands Euros), and labour costs (mln Euros) attributed to alcohol, smoking and drugs use, Poland

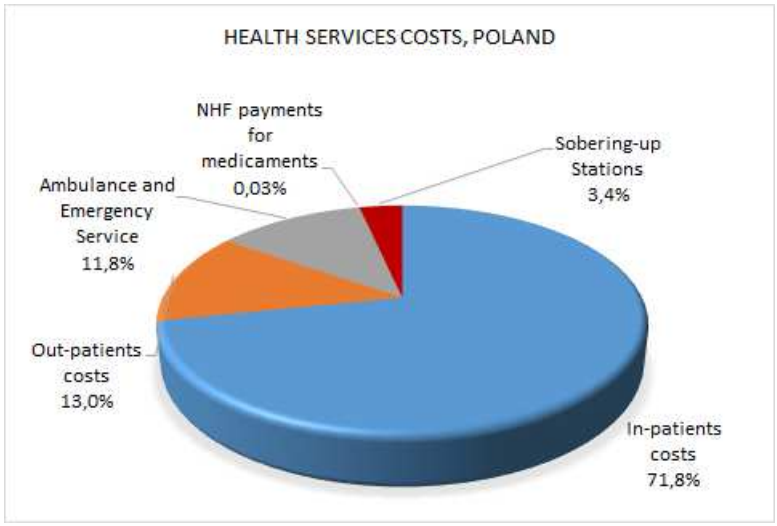
INSTITUTION	COSTS (thousands Euros)				PERCENT		
	Alcohol	Smoking	Drugs	Total	Alcohol	Smoking	Drugs
In-patients costs**	126302.5	124393.6	32315.4	283011.5	44.6	44.0	11.4
Out-patients costs (general clinics)**	19390.9	27158.9	1960.7	48510.5	40.0	56.0	4.0
Out-patients costs (psychiatric clinics)	2225.9	x	413.5	2639.4	84.3	x	15.7
Ambulance service	35016.7	x	3426.7	38443.4*	91.1	x	8.9
Emergency service	7938.3	x	137.7	8076.0*	98.3	x	1.7
NHF payments for medicaments**	54.4	76.2	5.5	136.1	40.0	56.0	4.0
Sobering-up stations	13500.8	x	x	13500.8	100	x	x
Total	204429.5	151628.7	38259.5	394317.7	51.8	38.5	9.7
	LABOR COSTS (mln Euros)						
Due to premature mortality	148.8	230.0	4.2	383.0	38.9	60.1	1.1
Due to absenteeism	147.3	98.8	7.1	253.2	58.2	39.0	2.8
Total	296.1	328.8	11.3	636.2	46.5	51.7	1.8

Source: authors' own.

* The sum does not include money attributed to alcohol+drugs (see tab.25).

** For population age [15-64).

Figure 6.2.1.10 Health Care costs attributed to alcohol, smoking and drugs use, Poland



Source: authors' own.

6.2.2. Portugal

HEALTH CARE COSTS

ALCOHOL

Based on Lima, Esquerdo [2003] attributable to alcohol health-care costs estimates presented below were made (tables below).

Table 6.2.2.1 Estimated inpatients costs due to alcohol-related illnesses in 2010, Portugal

TYPE OF COSTS	Minimum	Maximum
	Mln €	
Acute General Hospitals		
Morbidity	15.6	29.1
Co-Morbidity	1.2	2.2
Psychiatric Hospitals	0.2	0.3
Alcoholic Regional Centres	0.7	1.4
Psych. Depart. of District Hospitals	1.4	2.6
Total	**19.1**	**35.6**

Source: authors'own on basis [Lima, Esquerdo 2003].

Table 6.2.2.2 Estimated costs of consultations, emergencies due to alcohol misuse in 2010, Portugal

TYPE OF COSTS	Consultations		Emergencies	
	Minimum Mln €	Maximum	Minimum Mln €	Maximum
Alcoholic Regional Centres	2.0	3.7	-	-
Psychiatric Hospitals	3.2	5.9	0.04	0.07
Psych. Depart. Of Distric Hospitals	2.1	3.9	-	-
Central Hospitals	-	-	1.8	3.3
District Hospitals	-	-	2.0	3.8
Health Centres	0.1	0.1	-	-
Total	**7.3**	**13.7**	**3.9**	**7.2**

Source: authors'own on basis [Lima, Esquerdo 2003].

Data imputation suggests that total direct costs of alcohol related inpatient care in 2010 were up to 35,6 mln €, ambulatory care – 13,5 mln € and emergency care – 7,2 mln €. It means that total alcohol related direct health care costs might have been as high as 56,3 mln €. After adding indirect costs, total costs in 2010 may be estimated as ranging between **258.8-482.9 mln Euros** (table below).

Table 6.2.2.3. Economic costs of alcohol abuse in 2010 by types of costs, Portugal

TYPE OF COSTS	Minimum	Maximum
	Mln €	
HEALTH COSTS		
Direct Core Costs		
• Inpatients Care	19.1	35.6
• Ambulatory Care	7.2	13.5
• Emergency Care	3.9	7.2
Indirect Core Costs		
Morbidity		
• Non-institutionalized Persons	225.5	420.8
• Institutionalized Persons	3.1	5.8
Total Health Costs	**258.8**	**482.9**

Source: authors'own on basis [Lima, Esquerdo 2003].

The results updated on the basis of Botelho et al. [2008] indicate much higher inpatient health care costs ranging in 2010 from 30,4 mln € to 56,7 mln €. Also the costs estimated on the basis of Cortez-Pinto [2010] suggest significantly higher costs of ambulatory services and hospitalizations related to alcohol (table below).

Table 6.2.2.4 Annual alcohol-related health-care costs in 2010, Portugal

TYPE OF COSTS	Minimum	Maximum
	Mln €	
Ambulatory/Outpatient Costs	87.4	97.3
Hospitalization/Inpatient Costs	86.7	96.6
Total	**174.2**	**193.9**

Source: authors' own on basis [Cortez-Pinto 2010].

Similar costs estimates results from Gouveia et al. [2008] for alcohol attributable diseases.

Table 6.2.2.5 Annual heath alcohol costs in 2010, Portugal (related and attributable diseases)

TYPE OF HEALTH COSTS	Related Disease		Attributable Diseases	
	Minimum	Maximum	Minimum	Maximum
	Mln €		Mln €	
Ambulatory/Outpatient Costs	749.6	834.4	84.8	94.4
Hospitalization/Inpatient Costs	511.2	569.1	87.8	97.7
Total	**1260.8**	**1403.5**	**172.6**	**192.1**

Source: authors'own on basis [Gouveia et al. 2008].

TOBACCO

Based on Gouveia et al. [2007; 2008] the health care costs attributable to tobacco use in Portugal in 2010 may be estimated as not lower than 497 mln € and not higher than 553 mln €.

Table 6.2.2.6. Annual heath tobacco costs in 2010, Portugal (related and attributable diseases)

TYPE OF HEALTH COSTS	Related Disease		Attributable Diseases	
	Minimum	Maximum	Minimum	Maximum
	Mln €		Mln €	
Ambulatory/Outpatient Costs	956.3	1064.5	368.8	410.5
Hospitalization/Inpatient Costs	430.1	834.4	128.0	142.5
Total	**1386.4**	**1898.9**	**496.8**	**553.0**

Source: authors'own on basis [Gouveia et al. 2007, 2008].

Table 6.2.2.7 Social costs attributable to smoking in Portugal in 2010

TYPE OF DISEASE	Minimum			Maximum		
	Outpatients Costs	Inpatients Costs	Total	Outpatients Costs	Inpatients Costs	Total
		Mln €			Mln €	
Neoplasm	44.0	45.5	89.5	49.0	50.6	99.6
Cardio-Vascular Diseases	118.3	41.9	160.2	131.7	46.6	178.3
Respiratory Diseases	206.4	40.7	247.1	229.8	45.3	275.1
Total	**368.8**	**128.0**	**496.8**	**410.5**	**142.5**	**553.0**

Source: authors' own based on [Gouveia et al., 2007; 2008].

As expected different methodologies lead to different estimations. Next table summarize the findings for alcohol and tobacco.

Table 6.2.2.8 Global alcohol and tobacco related economic cost estimations, Portugal, 2010: attributable diseases

ESTIMATION OF HEALTH-CARE COSTS	Minimum	Maximum
	Mln €	
ALCOHOL		
• authors'own on basis [Lima, Esquerdo 2003].	258.8	482.9
• authors'own on basis [Botelho et al. 2008].	151.9	283.5
• authors'own on basis [Cortez-Pinto 2010].	174.2	193.9
• authors'own on basis [Gouveia et al. 2008].	172.6	191.1
TOBACCO		
• authors'own on basis [Gouveia et al. 2007; 2008].	496.8	553.0
Global Health Costs estimation	**669.4**	**744.1**

Summing up the costs of outpatient and inpatient care related to alcohol and tobacco use in Portugal we arrive at the total costs between **669** and **744 mln €.**

DRUGS

The health care costs attributable to illicit drug morbidity were estimated by Gonçalves et al.[2014] as approximately **1.9 mln. €.**

The cost categories classified by SICAD as related to inpatient or outpatient drug treatment are presented below (for more detail see Appendix 8.5). Their total amount rises to **48,1 mln. €.**

Table 6.2.2.9 Drug treatment costs, Portugal, 2010 (by the public body in charge)

Public body in charge	Institution	2010 budget (€)
	IDT_Treatment_outpatient*	33 380 054
	IDT_Treatment (PORI)_outpatient*	49 384
Ministry of Health	IDT_Tratment (NGO/Priv)_inpatient*	11 583 113
	SNS/Hosp(Hep B/C (Drug addicts)_inpatient**	1 500 000
	SNS/Hosp_AIDS (Drug addicts)_inpatient**	1 000 000
Ministry of Justice	DGSP – inpatient (drug free wings)***	200 000
Ministry of Defence	DGPRM- outpatient#	631 717
	Total	**48 144 468**

*estimations based on data disaggregation ([IDT, 2011a] and [Gesaworld, 2013])

** estimations based on the study developed by "Fundação Francisco Manuel dos Santos" [Gonçalves et al., 2012], with updated prices and considering the trend for the other costs.
*** estimations based on existing values from 2005 [IDT, 2008] and 2012 [SICAD, 2014], updated to 2010 prices
# data from [IDT, 2011a]

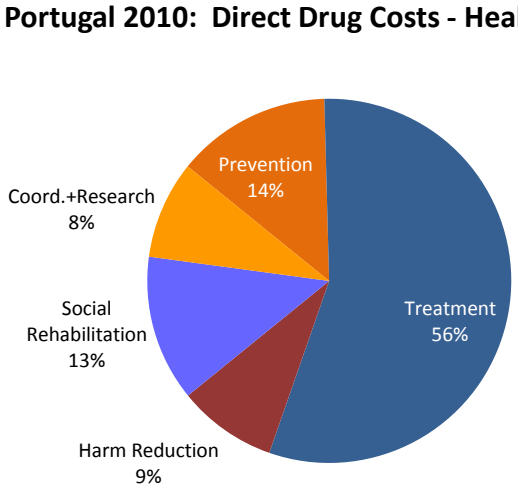
In Portuguese Drug related health care, harm reduction plays an important role, the costs of which are covered by the Ministry of Health (see the table below).

Table 6.2.2.10 Drug related harm reduction costs, Portugal, 2010 (by the public body in charge)

Public body in charge	Institution	2010 budget (€)
Ministry of Health	IDT_ HR*	3 761 133
	IDT_HR (PORI)*	583 872
	IDT _HR (NGO/private)*	2 308 945
	CNLCS (AIDS)(syr-exch-prg)**	1 000 000
	Total	**7 653 950**

* estimations based on data disaggregation ([IDT, 2011a] and [Gesaworld, 2013]);

** estimations based on the study developed by "Fundação Francisco Manuel dos Santos" [4], with updated prices and considering the trend for the other costs.



Health

- More than half of the Health related costs were spent in treatment area
- Prevention and Social Rehabilitation got similar funding
- Harm Reduction is at the same level of National Coordination and Research and Monitoring

LABOR COSTS

Premature mortality costs represent here labor costs. We have estimated what value of GDP could be produced in Portugal, if there were no premature mortality related to alcohol drinking, smoking or drugs use in 2010. Such estimation requires strong assumptions, that the employment rate among the persons in questions would be the same as employment rate among the whole (living) population in age of economic activity {in Portugal in 2010: men – [16-64), women – [16-64), here – [15-64)} in 2010, so it has been assumed that those persons would be employed in 2010.

If those persons hadn't died prematurely in 2010, that is, if they had lived that one year longer, they could have produced the same average value of GDP, as the other employed people in Portugal in 2010.

GDP per capita in 2010 was equal to 16349.0 Euro.

Economic activity rate: males 85.5%, females 73.9%, average 79.6%.

Table 6.3.3.1 Estimated costs of labour due to premature mortality attributed to alcohol drinking, smoking or drugs use, Portugal

SUBSTANCE	NUMBER OF POTENTIALLY EMPLOYED			VALUE OF GDP (mln Euros)			PERCENT
	Men	Women	Total	Men	Women	Total	
Alcohol	960	211	1171	29.8	6.6	36.3	35.9
Smoking	1822	180	2002	56.5	5.6	62.1	61.3
Drugs	81	11	92	2.5	0.3	2.8	2.8
Total	2863	402	3265	88.8	12.5	101.3	100

Source: authors' own.

Given that among persons in age of economic activity there was no premature mortality related to alcohol drinking, smoking or drugs use in Portugal in 2010, there could be about 3.3 thousand people more working, and they could produce additional GDP of value about 101.3 mln Euro, that is 0.058% of value of the Portugal GDP in 2010.

6.2.3. Catalonia (Spain)

Through the analysis of data from different sources, several types of health care costs associated with alcohol, tobacco and illicit drug use in 2010 in Catalonia were estimated (table below).

Table 6.2.3.1 Treatment costs in thousands Euros.

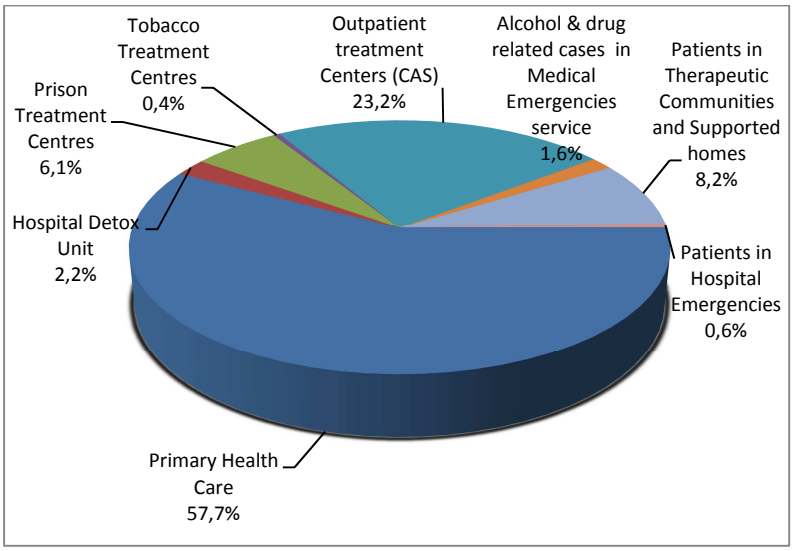
Concept	Drugs	Tobacco	Alcohol	Total	%
Primary Health Care*	1085.6	1884.8	58868.5	61839.0	57.74%
Hospital Detox Unit **	670.0	146.2	1518.1	2334.3	2.18%
Prison treatment centers***	6502.8	0.0	0.0	6502.8	6.07%
Tobacco treatment Centers+	0.0	467.9	0.0	467.9	0.44%
Outpatient treatment Centers (CAS)**	12308.6	1395.5	11185.2	24889.2	23.24%
Alcohol & drug related cases in Medical Emergencies service##	461.5	0.0	1231.2	1692.8	1.58%
Patients in Therapeutic Communities and Supported homes++	8739.6	0.0	0.0	8739.6	8.16%
Patients in Hospital Emergencies*	640.5	0.0	0.0	640.5	0.60%
Total	30 408.60	3 894.40	72 803.00	107 106.10	100
%	28.6	3.6	67.8	100	x

Sources:
*Health Department. Government of Catalonia
**Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia
*** Department of Justice. Government of Catalonia
# Catalan Institute of Road Safety. Government of Catalonia
Medical Emergencies Service (SEM). Department of Health. Government of Catalonia.
+ Tobacco prevention and control program. Public health Agency of Catalonia. Health Department. Government of Catalonia
++ Social Services Department. Government of Catalonia

Among the treatment costs, alcohol costs are higher than for other substances mainly due to the inclusion of the costs of the implementation of the "Drink Less" project throughout the PHC of Catalonia aimed at detecting and intervening with risky drinkers with a current coverage estimated in 42% of the total population. Unfortunately those calculations were not available for the tobacco programme that is being also implemented.

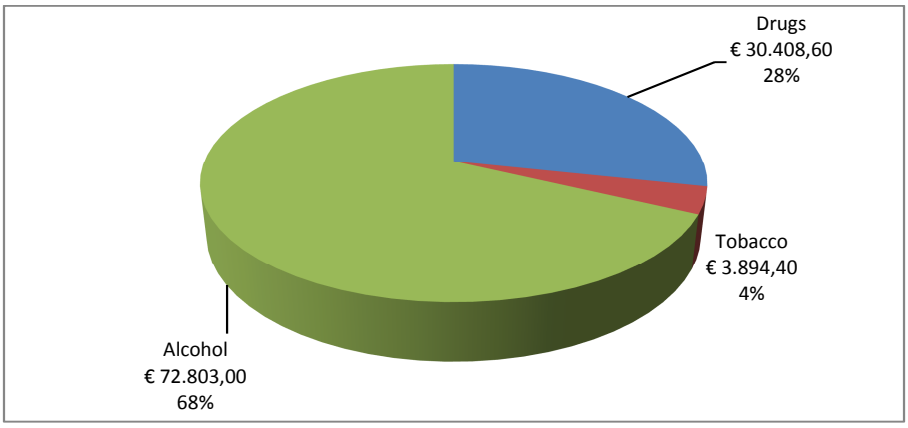
Illustration to the data is presented in fig. 6.2.3.1 and 6.2.3.2

Figure 6.2.3.1 Treatment Costs, Catalonia (Spain), 2010



Sources:
*Health Department. Government of Catalonia
**Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia
*** Department of Justice. Government of Catalonia
# Catalan Institut of Road Safety. Government of Catalonia
Medical Emergencies Service (SEM). Department of Health. Government of Catalonia.
+ Social Services Department. Government of Catalonia

Figure 6.2.3.2 Treatment Costs in thousands Euros, Catalonia, 2010



Sources:
*Health Department. Government of Catalonia
**Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia
*** Department of Justice. Government of Catalonia
# Catalan Institute of Road Safety. Government of Catalonia
Medical Emergencies Service (SEM). Department of Health. Government of Catalonia.
+ Social Services Department. Department of Social Welfare and Family
Government of Catalonia

The data presented above has to be complemented in several areas:

In-patients costs

On the basis of data available only costs for psychiatric hospitals could be estimated: 300 thousand Euros, of which 2/3 concerns alcohol treatment. For general hospitals, data were too general to be used for this estimating exercise.

Out-patients costs

To assess outpatient costs associated with psychoactive substances several assumptions were made:

- Time devoted to advice constitutes 40% of the total cost of the medical visit and 60% of the total cost of nurse visit.
- The costs of a visit was estimated as an average cost of a visit by a medical doctor (40*40/100) = 16€ and by a nurse (28*60/100) = 16,8 €, average = 16,4€.

Table 6.2.3.2 Estimated costs of out-patient care ascribed to alcohol, smoking or drugs

SPECIFICATION	ALCOHOL	SMOKING	DRUGS	TOTAL
Number of patients	1757 734	56 278	32 416	1 846 428
Cost (thousands Euros)	**28 826. 8**	**923.0**	**531. 6**	**30 281. 4**
Percent	95.2	3.0	1.8	100

Source: authors' own. Remark: data for 2011.

Sources of data:
Health Report. Government of Catalonia (2011) and Annual report of the Catalan Health Purcharser Agency (Cat Salut, 2011)

http://www.gencat.cat/ics/memoria_2011/ICS2011.html

Official Journal of the Catalan Government (Diari Oficial Generalitat Catalunya, 2012) - Nr. 6079-2.3.2012
Art. 2.1 Decree Law 3/2010, 29 of May Cat Salut.
http://portaldogc.gencat.cat/utilsEADOP/PDF/6079/1227866.pdf

Ambulance emergency service

In 2010 there were 44 657 alcohol and drugs patients attended through the Catalan ambulance emergengy service and total cost was equal to **12 663 162.0 €.**
Source of data:
Medical Emergencies Service (SEM). Department of Health. Government of Catalonia.

Cost of prescription

Cost of drug prescriptions for some drugs used in treating addiction was equal to **6 022 264.06 Euros**.

Sources of data:
1.Pharmaceutics unit. Health Area. Catalan Health Service (CatSalut)
2.CatSalut (2010) Annual report
http://www.gencat.cat/salut/botss/html/ca/dir6_l74/doc34860.html

Detoxification and social care for drug addicts

These types of costs can be divided into several categories, including detoxification in hospitals (already mentioned above, see Table 6.2.3.1). Other costs are related to the functioning of social care institutions and detoxification out of hospitals. Social care costs, with 65.8%, account for the majority of the detoxification treatment costs.

Table 6.2.3.3 Costs related to drug addiction.

Drug Addiction	ths. Euro	%
Hospital Detoxification Unit	763.2	2.5
Social Care from Drug Addiction	19869.6	65.8
Detox Units	9545.5	31.6
Total	30178.3	100

Source: Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia

Based on the data from the Department of Social Welfare and Family of the Government of Catalonia it is possible to distinguish costs of detoxification for each substance (tables below).

Table 6.2.3.4 Detoxification treatment in Therapeutic communities by drug, Catalonia, 2010

Substance	Thousands Euros	Percentage
Cocaine	2 277.8	35
Alcohol	2 082.5	32
Heroine	585.7	9
Cannabis	260.3	4
Benzodiazepines	65.1	1
Amphetamines	0.0	0
Polydrug use	1 236.5	19
Total	6 507.9	100

Source: Department of Social Welfare and Family. Government of Catalonia

Table 6.2.3.5 Detoxification treatment in supported homes by drug, Catalonia, 2010

Substance	**Thousands Euros**	**Percentage**
Cocaine	1 008.8	45.2
Alcohol	562.4	25.2
Heroine	109.4	4.9
Cannabis	62.5	2.8
Benzodiazepines	22.3	1
Amphetamines	22.3	1
Polydrug use	444.1	19.9
Total	2 231.8	100

Source: Department of Social Welfare and Family
Government of Catalonia

Cocaine, followed by alcohol are the substances that account for the majority of the detoxification treatment costs (35% and 32% respectively).

Prisons treatment costs

Costs concerning treatment in prisons cannot be estimated separately for alcohol or drugs on the basis of available data. That is because in the survey on health and drug use in prisons, persons were counted several times, for instance using alcohol and cannabis or cannabis, cocaine and crack etc. (the sum of percent is not equal 100).

Total prison treatment costs in 2010 were equal to **6 502.8 thousands Euro**.

Sources of data:
1. Program on Substance Abuse .Public Health Agency of Catalonia. Government of Catalonia
2. National Drug Plan (2010, 2011) http://www.pnsd.msc.es/Categoria2/publica/pdf/memo2010.pdf
3. Foundation “La Caixa”
4. Department of Justice. Government of Catalonia

LABOR COSTS

Premature mortality costs are interpreted here as labor costs. We have estimated what value of GDP could be produced in Catalonia, if there were no premature mortality related to alcohol drinking, smoking or drugs use in 2010. Such estimation requires strong assumptions: that economic activity rate among the persons in questions would be the same as economic activity rate among the whole (living) population in age of economic activity {in Catalonia in 2010: men – [16-64), women – [16-64), here – [15-64)} in 2010, so it has been assumed that those persons would be employed in 2010.

If those persons hadn't died prematurely in 2010, that is, if they had lived that one year longer, they could have produced the same average value of GDP, as the other employed people in Catalonia in 2010.

GDP per Capita in 2010 in Catalonia was equal to 26521.0Euro.
Economic activity rate: males 81.8%, females 69.7%, average 79.6%.

Table 6.2.3.5 Estimated costs of labor due to premature mortality attributed to alcohol drinking, smoking or drugs use, Catalonia

SUBSTANCE	NUMBER OF POTENTIALLY EMPLOYED			VALUE OF GDP (mln Euros)			PERCENT
	Men	Women	Total	Men	Women	Total	
Alcohol	354	134	487	17.5	6.6	24.1	23.4
Smoking	1237	207	1443	61.0	10.2	71.2	69.2
Drugs	123	31	154	6.1	1.5	7.6	7.4
Total	1713	372	2085	84.5	18.3	102.8	100

Source: authors' own.

Given that among persons in age of economic activity there was no premature mortality related to alcohol drinking, smoking or drugs use in Catalonia in 2010, there could be about 2.1 thousand people more working, and they could produce additional GDP of value about 102.8 mln Euro, that is 0,052 % of value of the Catalonia GDP in 2010.

6.3. Social security costs

6.3.1.Poland

In Poland, Social Insurance Institution (*Zakład Ubezpieczeń Społecznych – ZUS*) collects, on a monthly basis, social insurance contributions for about 16 million persons and health insurance contribution, for more than 24 million persons insured (which is then transferred to the National Health Fund). Moreover, ZUS collects the contribution to the Labour Fund and to the Fund of Guaranteed Employee Benefits. From these money, ZUS covers:

- old-age pensions,
- disability pensions,
- sickness allowances,
- accident insurances.

In the tables below cash benefits financed by the Social Insurance Fund due to diseases partially attributable to alcohol (table 6.3.1.1.), in 100% attributable to alcohol (table 6.3.1.2), attributable to

tobacco (table 6.3.1.3.) and illicit drugs (table 6.3.1.4) are specified. Theses costs are related to disability pensions, social pensions, sickness allowances, rehabilitation benefits and accident and pension prevention.

As can be seen, the highest social security costs are associated with tobacco attributable health impairment (app. 375 thousands Euros per year for men and 73 thousands Euros for women). Rather high are costs of social insurances related to alcohol use, too (app. 144 thousands Euros for men and 48 thousands Euros for women). When compared with the costs for the society of legal substances, the social security costs attributable to illegal drugs seems rather low – less than 8 thousand Euros in total.

Table 6.3.1.1 Social security costs attributable to alcohol consumption according to gender in Poland, (partly attributable)

DISEASE	ICD10 CODES	COSTS (thousands Euros)	
		MEN	WOMEN
Cancer of the lip	C00	183.7	6.4
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	4961.3	784.2
Oesophageal cancer	C15	503.9	61.9
Colorectal cancer	C18-C20	682.9	155.8
Cancer of the liver and intrahepatic bile ducts	C22	169.1	55.3
Laryngeal cancer	C32	.	.
Breast cancer	C50	161.6	12004.6
NEOPLASMS		6662.5	13068.3
Hypertensive diseases	I10-I15	67190.8	21954.1
	I20-25	0.0	0.0
Cardiac arrhythmias	I47, I48	5427.2	1135.1
Haemorrhagic stroke	I60-I62	4459.8	1582.6
Ischaemic stroke	I63-I66	9253.7	1716.0
Oesophageal varices	I85, I98.2	264.8	114.3
CARDIOVASCULAR DISEASES		86596.3	26502.1
Mallory-Weiss syndrome	K22.6	165.3	13.6
Unspecified liver disease	K73, K74.0-2. K76.0, K76.9	726.7	310.9
Portal hypertension	K76.6	.	.
Cholelithiasis	K80	0.0	0.0
Acute and other chronic pancreatitis	K85, K86.1	425.3	658.1
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS		1152.1	969.0
Psoriasis	L40 excl. L40.5	.	.
Spontaneous abortion	O03	x	.
Epilepsy and Status epilepticus	G40-G41	.	.
OTHER CHRONIC AND ACUTE CONDITIONS			
Pedestrian traffic accidents	V1-V10	135.5	37.8
Road traffic accidents - non pedestrian	V11-V89	218.3	173.3
Water transport injuries, Fall injuries, Occupational work/machine injuries	V90-V94, W00-W19, W24-W31, W45	0.6	4.7
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31, X40-X49 excl. X45	33.6	31.8
Intentional self-harm\Event of undetermined intent	X60-X84, Y10-Y34, Y87.0, Y87.2	3.3	1.2
Assault	X85-Y09, Y87.1	0.8	1.4
INJURIES		354.4	215.8
TOTAL		94 968.2	40 803.1

Source: authors' own.
Remark: for Cholelithiasis (K80) and Coronary heart disease (I10-I15) attributable fraction is negative, so they are not included.

Table 6.3.1.2 Social security costs attributable to alcohol consumption according to gender in Poland, (100% attributable)

DISEASE	ICD10 CODES	COSTS (thousands Euros)	
		MEN	WOMEN
Alcohol induced pseudo Cushing's Syndrome	E24.4	109.7	232.8
Wernicke's encephalopathy	E51.2	11.2	6.6
Mental and behavioural disorders due to use of alcohol	F10	27 187.8	4 006.1
Degeneration of nervous system due to alcohol	G31.2	1019.6	417.0
Alcoholic polyneuropathy	G62.1	804.4	262.5
Alcoholic myopathy	G72.1	33.7	19.8
Alcoholic cardiomyopathy	I42.6	8 261.1	977.5
Alcoholic gastritis	K29.2	4476.4	681.7
Alcoholic liver disease	K70	4 634.7	7.6
Alcohol induced chronic pancreatitis	K86.0	1679.7	65.3
Fetus and newborn affected by maternal use of alcohol	P04.3, O35.4	x	0.2
Fetal alcohol syndrome	Q86.0	40.3	28.0
Excessive blood level of alcohol	R78.0	0,7	0.8
Toxic effect of alcohol	T51.0, T51.9	627.7	51.2
Accidental poisoning by and exposure to alcohol	X45	1.7	0.0
Intentional self poisoning by, and exposure to alcohol	X65	1.5	0.1
Poisoning by and exposure to alcohol, undetermined intent	Y15	0.3	0.3
Evidence of alcohol involvement determined by blood alcohol level	Y90	0.5	0.0
Evidence of alcohol involvement determined by level intoxication	Y91	14.9	13.7
ALCOHOL 100%		48 905.9	6 770.9

Source: authors' own.

Table 6.3.1.3 Social security costs attributable to smoking according to gender in Poland

DISEASE	ICD10 CODES	COSTS (thousands Euros)	
		MEN	WOMEN
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	251.1	6.3
Esophagus	C15	944.5	115.6
Stomach	C16	2110.4	208.7
Pancreas	C25	711.5	212.9
Larynx	C32	12565.6	1136.7
Trachea, Lung, Bronchus	C33, C34	23502.5	5533.8
Cervix Uteri	C53	x	1227.9
Urinary Bladder	C67	5109.4	322.6
Kidney and Renal Pelvis	C64, C65	3816.2	165.9
Acute Myeloid Leukemia	C92.0	773.4	125.0
NEOPLASMS		49784.6	9055.4
Hypertension	I10	20 690.0	7 356.8
Ischemic Heart Disease	I25	128 252.8	13 933.1
Other Heart Disease	I00-I52 excl.I10, I25	65225.1	8601.7
Cerebrovascular Disease	I67	1911.5	960.5
Atherosclerosis	I70	35401.6	5401.1
Aortic Aneurysm	I71	4932.77	554.3
Other Arterial Disease	I72-I79	2936.1	982.7
CARDIOVASCULAR DISEASES		259 349,87	37 790.20
Pneumonia, Influenza	J10-J18	5 222.6	2 799.2
Bronchitis, Emphysema	J20, J43	40589.1	8782.1
Chronic Airways Obstruction	J44.9	19486.0	14994.5
RESPIRATORY DISEASES		65 297.7	26 575.8
TOTAL		374 432.2	73 421.4

Source: authors' own.

Table 6.3.1.4 Social security costs attributable to drugs use according to gender in Poland

DISEASE	ICD10 CODES	COSTS (thousands Euros)	
		MEN	WOMEN
Tuberculosis	A15-A19	286.5	130.6
Hepatitis	B17.1, B18.2, B16, B18.0, B.18.1	1 404.9	1 012.0
HIV/AIDS	B20-B24	1 055.1	390.6
Homicide or injury inflicted by another person with intend to injure or kill, by any means	X85-Y09	2.0	2.6
Mental and behavioral disorders due to psychoactive substance use	F11-F12, F14-F16, F19	2 833.4	863.4
Accidental poisoning by and exposure to noxious substances	X42, X44, X62, X64	4.7	2.1
Injury, undetermined whether accidental or purposely inflicted	Y12-Y14	0.3	5.6
TOTAL		5 586.9	2 406.9

Source: authors' own.

6.3.2.Portugal

No data allowing estimation or imputation of social security costs attributable to alcohol, tobacco or illicit drug use has been collected for Portugal.

6.3.3.Catalonia (Spain)

Total costs of sick leave (without alcohol and alcohol disease) was equal to 3575.4 thousands Euros, of which 50.1% was related to tobacco and drugs and 49.9% to alcohol.

Table 6.3.3.1 Estimated costs of sick leave ascribed to alcohol, smoking or drugs

Specification	Alcohol			Smoking and drugs		
	Men	Women	Total	Men	Women	Total
Number of patients	379	74	453	343	47	390
Cost (thousands Euros)	1366.1	397.8	1763.9	1648.1	163.4	1811.5
Percent	77.4	22.6	100	91.0	9.0	100

Source: authors' own. on basis of :
Catalonia Institute of Medical Evaluations - Institut Català d' Avaluacions Mèdiques (ICAM), Authors: Alberti Casas, Constança & Jardi Lliberia, Josefa, Site web:
http://www20.gencat.cat/portal/site/salut/menuitem.f33aa5d2647ce0dbe23ffed3b0c0e1a0/?vgnextoid=3e6b449294ca3310VgnVCM1000008d0c1e0aRCRD&vgnextchannel=3e6b449294ca3310VgnVCM1000008d0c1e0aRCRD&vgnextfmt=default

6.4.Other costs

6.4.1.Poland

Social assistance benefits

Data: According to Statistical Yearbook 2011, p.378, GUS:
Social assistance benefits in 2010, total 913.5 mln Euro
of which monetary assistance 680.0 mln Euro.

According to Ministry of Labor and Social Policy
2 664 080 families have been helped in 2010, so per 1 family:
Social assistance benefits 342.9 Euro
Monetary assistance 255.2 Euro

Percent of domestic violence offenders under influence of alcohol in all offenders of domestic violence: 64.8% (source: the Police data).

Table 6.4.1.1 Estimation of value of social assistance benefits for families with alcohol, drugs and domestic violence related to alcohol problems, Poland

SOCIAL ASSISTANCE BENEFITS			ALCOHOL		DOMESTIC VIOLENCE RELATED TO ALCOHOL		DRUGS	
Scope	Total (mln Euros)	Per 1 family (Euros)	Number of families	Total (mln Euros)	Number of families	Total (mln Euros)	Number of families	Total (mln Euros)
Total	913.5	342.9		30.85		0.172		1.199
of which: Monetary assistance	680.0	255.2	89960	22.96	9824	0.128	3497	0.893

Source: authors' own on basis of data of Ministry of Labour and Social Policy and Statistical Yearbook 2011.

According to [Palmowski, 2010] about 99% of homeless[22] persons are addicted to alcohol, though it is not clear whether alcohol caused homelessness or opposite, they drank alcohol because they were homeless. Assuming, that the proportion is the same in the whole country, it can be estimated that this group of alcohol consumers received in 2010 social assistance benefits as follows:

Table 6.4.1.2 Estimation of value of social assistance benefits for homeless families with alcohol problem

HOMELESSNESS RELATED TO ALCOHOL	
Number of families	Total (mln Euros)
33 551	11.50 8.96

Source: authors' own on basis of data of Ministry of Labour and Social Policy, Statistical Yearbook 2011 and [Palmowski 2010].

[22] The research took place in the city of Gdynia in 2009.

Table 6.4.1.3 Value of social assistance benefits for families with alcohol, drugs and domestic violence related to alcohol problems according to provinces, Poland

PROVINCE	ALCOHOL		DOMESTIC VIOLENCE RELATED TO ALCOHOL		DRUGS	
	Total	Monetary	Total	Monetary	Total	Monetary
			mln Euros			
Dolnoslaskie	2.44	1.82	0.227	0.169	0.131	0.097
Kujawsko - pomorskie	1.82	1.35	0.172	0.128	0.044	0.032
Lubelskie	2.16	1.61	0.092	0.068	0.038	0.028
Lubuskie	1.15	0.86	0.136	0.102	0.078	0.058
Lodzkie	2.20	1.64	0.342	0.254	0.060	0.044
Malopolskie	1.64	1.22	0.402	0.299	0.053	0.040
Mazowieckie	4.15	3.09	0.052	0.039	0.232	0.173
Opolskie	0.72	0.53	0.183	0.136	0.027	0.020
Podkarpackie	1.39	1.04	0.047	0.035	0.019	0.014
Podlaskie	0.84	0.63	0.216	0.161	0.024	0.018
Pomorskie	2.23	1.66	0.402	0.299	0.075	0.056
Slaskie	2.68	2.00	0.166	0.124	0.104	0.077
Swietokrzyskie	1.24	0.92	0.215	0.160	0.024	0.018
Warminsko-mazurskie	1.82	1.36	0.330	0.246	0.079	0.058
Wielkopolskie	2.54	1.89	0.199	0.148	0.112	0.083
Zachodniopomorskie	1.82	1.36	3.369	2.508	0.100	0.075
Total	30.85	22.96	0.172	0.128	1.199	0.893

Source: authors' own on basis of data of Ministry of Labor and Social Policy and Statistical Yearbook 2011.

Sobering-up Stations

Estimation was performed on basis of sobering-up station reports gathered by PARPA. According to the report 200,354 persons were patients of sobering-up stations in Poland in 2010. Assuming, that the average costs of a stay in a sobering-up station per one person in 2010 was such as in 2011 (for 2010 data are not available) and equal to 67.38 €, it was estimated that costs of supporting of sobering-up station in 2010 was equal about 13.50 mln €.

About 92.3% of that amount (i.e. about 12.5 mln €) was used for sobering-up men, the rest (1.0 mln €) – for women.

Fire Brigades

Table 6.4.1.4 Average percent of cases and time attributed to interventions concerning alcohol, drugs and tobacco, in the first half of 2012, Fire Brigades, Poland

SUBSTANCE	PERCENT OF:	
	CASES	TIME
Alcohol	9.1	11.4
Drugs	1.5	4.0
Tobacco	9.1	13.4

Source: authors' own on basis of the surveys.

For the purpose of estimating the value of salaries of Fire Brigades employees attributed to cases concerning alcohol drinking, smoking and drugs ,survey results (tab.6.5.1.4), *Statistical Yearbook* 2011 data, data of *Chief Statistical Office* in Poland and those of *Information Bulletin of the State Fire Brigades* 2010 were applied. In 2010 in Poland there were 135.5 thousands fires.

Taking into account the above presented survey results and the average yearly salary of a firemen[23] equal to 12476.11€, it was estimated that attributed value of the salaries in 2010 was equal to 0.6 mln € (tab.2).

Table 6.5.1.5 Estimated value of the salaries of Fire Brigades employees attributed to interventions concerning alcohol, tobacco and drugs, Poland

SUBSTANCE	SALARIES (thousands Euros)	PERCENT
Alcohol	261.0	44.78
Drugs	15.1	2.59
Tobacco	306.7	52.63
Total	582.8	100

Source: authors' own.

Prevention, education, research and other expenditure.

Alcohol:

Source of data: *Report of realization of the Act of Upbringing in Sobriety and Counteracting Alcoholism*, 1.01.2010-31.12.2010, Warsaw 2013.

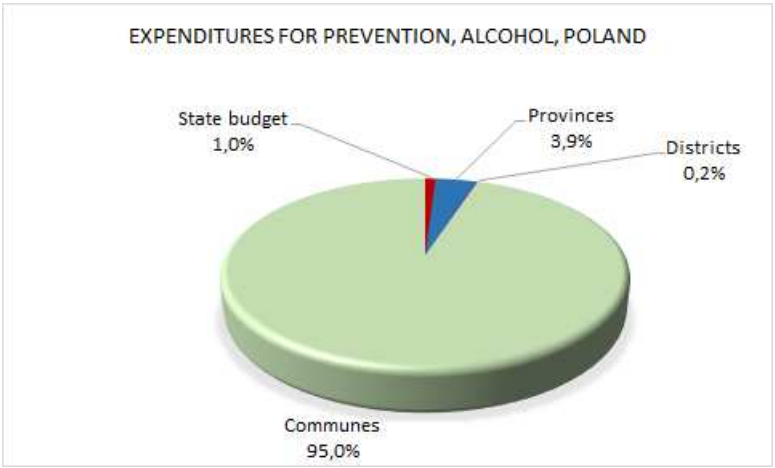
Table 6.4.1.6 Expenditures for prevention and solving of alcohol problems, Poland

INSTITUTIONS	EXPENDITURES (mln Euros)	PERCENT
Communes	146.7	95.0
Provinces	6.0	3.9
State budget*	1.5	1.0
Districts	0.3	0.2
Total	154.5	100

Source: authors' own.

*State budget includes costs of PARPA and money spent by one of the province.

Figure 6.4.1.1 Structure of expenditures for prevention and solving of alcohol problems, Poland



Source: authors' own.

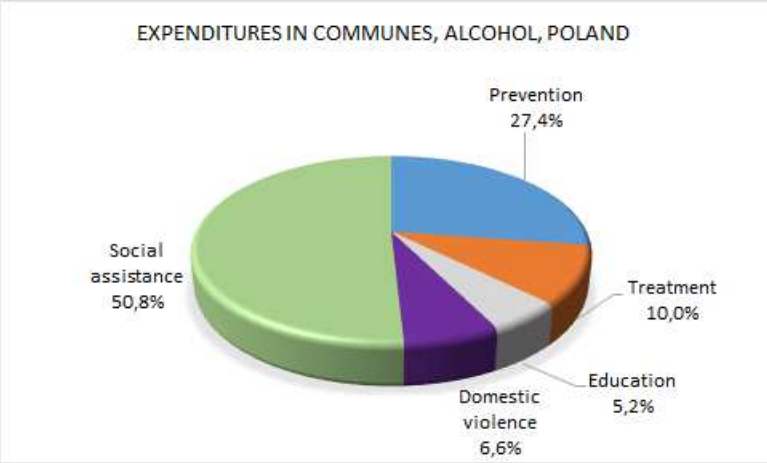
[23] Authors' own estimate on basis of Chief Statistical Office in Warsaw data.

Table 6.4.1.7 Expenditures for counteractive of alcoholism in communes and provinces, Poland

OBJECTIVE	EXPENDITURES (thousands Euros)		PERCENT	
	Communes	Provinces	Communes	Provinces
Prevention	24 514.6	1 710.8	27.4	26.1
Treatment	8 973.0	3 074.7	10.0	46.9
Education	4 639.8	635.8	5.2	9.7
Domestic violence	5 905.7	243.9	6.6	3.7
Social assistance	45 548.3	853.9	50.8	13.0
Research	0.0	31.1	0.0	0.5
Total	89 581.3	6 550.1	100	100

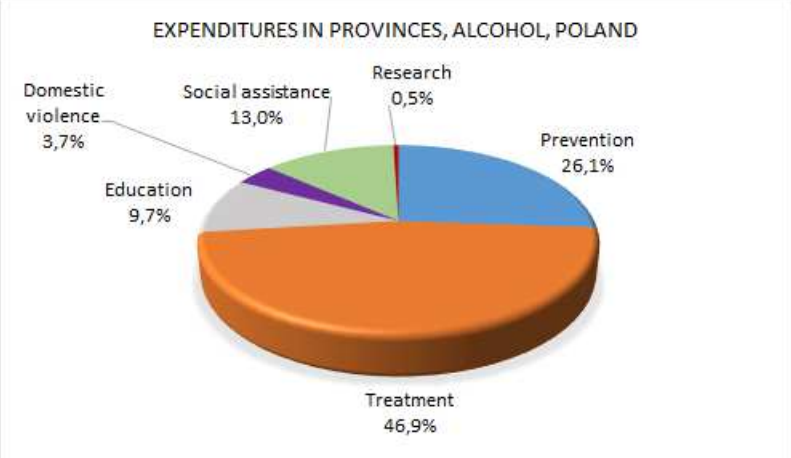
Source: authors' own.

Figure 6.4.1.2 Structure of expenditures for counteractive of alcoholism in communes, Poland



Source: authors' own.

Figure 6.4.1.3 Structure of expenditures for counteractive of alcoholism in provinces, Poland



Source: authors' own.

Table 6.4.1.8 Researches concerning alcohol problems financed and co-financed by state budget, Poland

KIND OF RESEARCH	EXPENDITURES (thousands Euros)
International	110.9
Polish	70.3
Total	180.2

Source: authors' own.

Apart from the expenditures presented above, many other institutions like ministries, TV, or the Radio ran actions of preventive or educational character in 2010 in Poland, but the structure of their expenditures is not available.

Smoking:

Source of data: *Information of realization of National Program of Reducing of Health Consequences of Smoking in 2010,* Warsaw 2011.

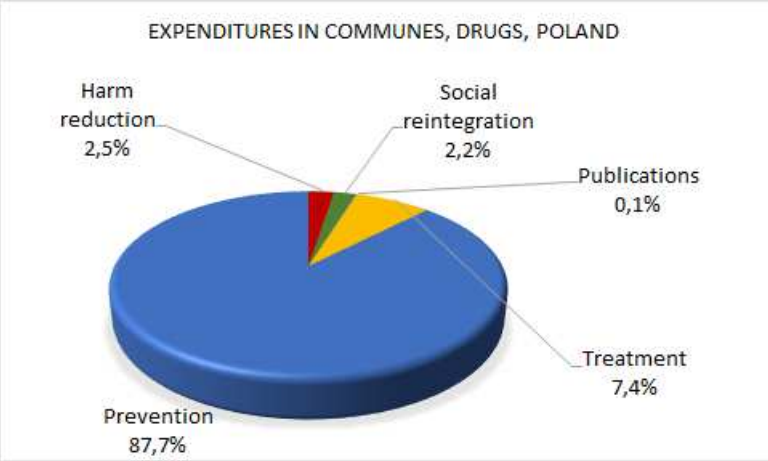
Expenditures for *National Program of Reducing of Health Consequences of Smoking* in 2010 were equal to 261.5 ths Euro, among them 38.3% constituted state budget expenditures (Chief Sanitary Inspectorate), 49.8% Voivodship State Sanitary - Epidemiological Stations, and 11.9% – other Central Institutions. The program includes mainly prevention and educational activities.

Drugs:

Source of data: *Information of realization of results of working of National Program for Drug Addiction in 2010,* Warsaw 2011.

Expenditures for prevention in 2010 were equal to 811.8 ths Euro in provinces, and 13 980.3 ths Euro in communes. Apart from that many Central Institutions paid for prevention, education, researches etc. however the structure of those expenditures is not available. Total expenditures of Central Institutions concerning different aspects of drugs users' problem were in 2010 equal to 65602.1 ths Euro, of which costs of National Bureau for Drug Prevention were equal to 2438.7 ths Euro.

Figure 6.4.1.4 Structure of expenditures for counteractive drugs addiction in communes, Poland



Source: authors' own.

6.4.2.Portugal

As Portugal follows an integrated approach under a public health perspective, it is not easy to specify the budget allocated in detail,to each of the interventions (prevention, treatment, harm reduction, social reintegration/rehabilitation) because programs and projects are globally funded and account reports done accordingly. However, efforts have been made to estimate segmented financing, to facilitate policy evaluations. The table below presents the cost estimates for drug related prevention, social rehabilitation and coordination/research.

Table 6.4.2.1 Drug related costs of prevention, social rehabilitation, coordination and research, Portugal, 2010 (by the public body in charge)

Public body in charge	Institution	2010 budget (€)
Ministry of Internal Administration	PSP – prevention*	400 000
Ministry of Education	DGIDC – prevention**	170 000
Ministry of Health	IDT_Prevention***	5 641 699
	IDT_Prevention (PORI)***	2 787 237
	IDT_Dissuasion***	2 907 727
	IDT_Social Rehabilitation***	4 231 274
	IDT _Social Rehabilitation (PORI)***	278 754
	IDT_(Adm.+Manag.+Coord)*	7 076 728
	IDT_(Reseach)*	477 512
Ministry of Labour and Social Security	ISSS*	3 109 738
	IEFP*	3 611 261
	Total	**30 122 500**

* data from [IDT, 2011a]
** estimations based on existing values from 2005 [IDT, 2008] and 2012 [SICAD, 2014], updated to 2010 prices;
*** estimations based on data disaggregation ([IDT, 2011a] and [Gesaworld, 2013]);

6.4.3.Catalonia

Social assistance, prevention, coordination, research

In Catalonia social programs are available for drug addicts in general, as well as for those who are imprisoned. Their costs can be estimated as 10681,2 thousands Euro (for general population) plus 1,9 thousands Euro (within the penal system).

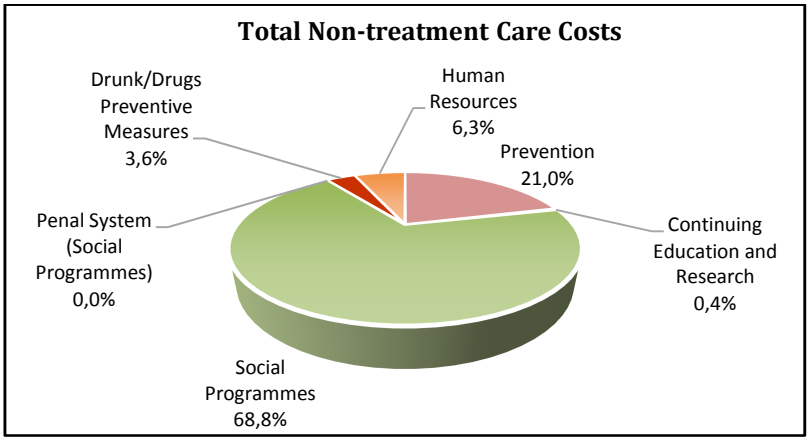
The table and two figures below show the distribution of various non-treatment costs between different activities and attributable to different substances. Among the non-treatment costs, 68.8% are devoted to the implementation of social programmes and 21% to prevention programmes. Importantly, 96% of the non-treatment costs are used to help people with drug problems.

Table 6.4.3.1 Non-treatment costs

Concept	Drugs	Alcohol	Tobacco	Total	%
Prevention	3106.6		149.0	3255.6	21.0
Continuing Education and Research	55.2			55.2	0.4
Social Programmes	10681.2			10681.2	68.8
Penal System (Social Programmes)	1.9			1.9	0.0
Drink/Drug Preventive Measures	220.2	338.9		559.1	3.6
Human resources	832.1		150.0	982.1	6.3
Total	14897.1	338.9	299.0	15535.1	100
%	95.9	2.2	1.9	100	x

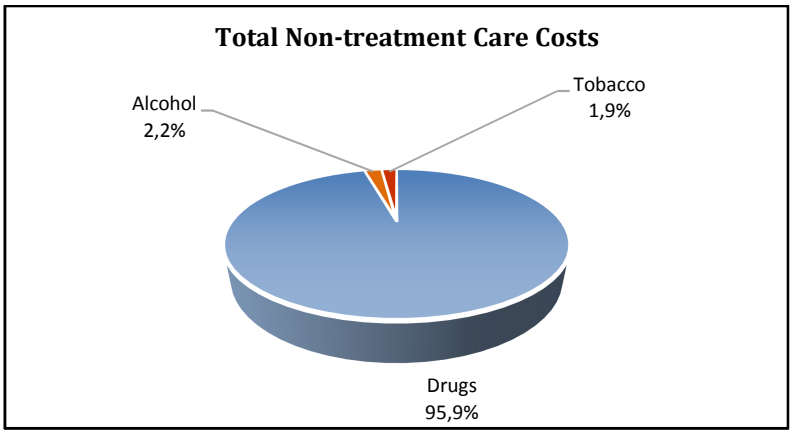
Source: Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia

Figure 6.4.3.1 Non-treatment Care Costs, Catalonia, 2010



Source: Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia

Figure 6.4.3.2 Non-treatment Care Costs, Catalonia, 2010



Source: Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia

As regard the cost of institutions, 57.5% of the costs are for those dealing with alcohol and drugs and 75,3% of budget of alcohol and drug related institutions are devoted to prevention. In total, costs of institutions account for 7 mln Euro in total.

Table 6.4.3.2 Costs of Institutions

Concept	Prevention	Research and Training	Coordination	Total
Drugs and Alcohol	3031.4	132.2	864.8	4028.4
Tobacco	2247.0	145.0	331.0	2723.0
Public Research Agency, Spain	0.0	255.2	0.0	255.2
Total	5278.4	532.4	1195.8	7006.6

Source: Program on Substance Abuse. Public Health Agency of Catalonia. Health Department. Government of Catalonia

Costs of drugs and drink driving controls

The Government of Catalonia reported the costs of drink driving controls in 2010 as 315.9 thousands Euros, and the costs of drug driving controls as 376.1 thousands Euros. In total it indicates that costs of controls were 692.0 thousands Euros in one year.

6.5.Summary of the costs in three countries

6.5.1.Poland

Total estimated financial costs were equal to 1 950.4 mln Euros and constituted 0.55% of GDP in 2010 in Poland.

Health service costs constituted 2.85% of National Health Fund expenditures for health care in 2010.

Criminal Justice costs constituted 18.0% of state budget expenditures for Administration of Justice in 2010. (Remark: criminal justice costs presented in table 6.5.1.1 cover broader categories of costs than state budget expenditures for Administration of Justice.)

Social Assistance benefits constituted 2.7% of total benefits.

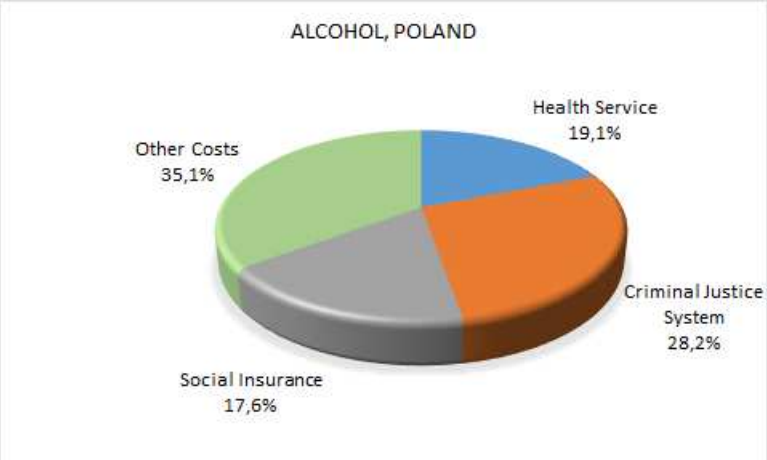
Exchange rate (average in 2010 according to National Bank of Poland): 1 Euro = 3,9964 zloties.
1 mln = 1 000 000

Table 6.5.1.1 Estimated financial and social costs of alcohol, smoking and drugs use in 2010, Poland

SPECIFICATION	ALCOHOL	SMOKING	DRUGS	TOTAL
FINANCIAL COSTS (MLN EUROS)				
HEALTH SERVICE				
In-patients costs*	126.3	124.4	32.3	283.0
Out-patients costs (general clinics)*	19.4	27.2	2.0	48.5
Out-patients costs (psychiatric clinics)	5.1	0.1	1.5	6.8
Ambulance service	35.0	0.0	3.4	38.4
Emergency service	7.9	0.0	0.1	8.1
NHF payments for medicaments*	0.1	0.1	0.0	0.1
Sobering-up stations	13.5	x	x	13.5
Substitution treatment	x	x	4.3	4.3
Total Health Service	207.3	151.8	43.7	402.8
CRIMINAL JUSTICE SYSTEM				
The Police	54.2	0.0	19.6	73.8
Prosecution System	45.0	0.006	15.8	60.8
Courts of Law	125.9	0.015	21.5	147.4
Prisons	49.7	0.0	21.3	71.0
Probation Officers	23.1	0.0	30.9	54.1
Custom Service + Border Guard	9.0	7.3	2.6	18.9
Alcohol + Drugs	x	x	x	10.5
Total Criminal Justice System	306.9	7.3	111.7	436.5
OTHER COSTS				
Fire Brigades	0.3	0.3	0.015	0.6
Social assistance benefits	42.5	x	1.2	43.7
Prevention, education, research, other	339.3	0.3	80.4	420.0
Social insurance	191.4	447.9	8	647.3
Total Other Costs	573.5	448.5	89.615	1111.6
TOTAL FINANCIAL COSTS	1087.7	607.6	245.015	1950.9
SOCIAL COSTS				
PREMATURE MORTALITY* (number of deaths)	13306	20573	372	34251
LABOUR COSTS (mln Euro)				
Mortality	143.0	215.2	4.0	362.2
Absenteeism	147.3	98.8	7.1	253.2
TOTAL LABOUR COSTS	290.3	314.0	11.1	615.4
YEARS OF LIFE LOST (thousands)	405.3	551.1	14.3	970.7
In age of professional activity (thousands)	363.4	397.2	13.4	774.0

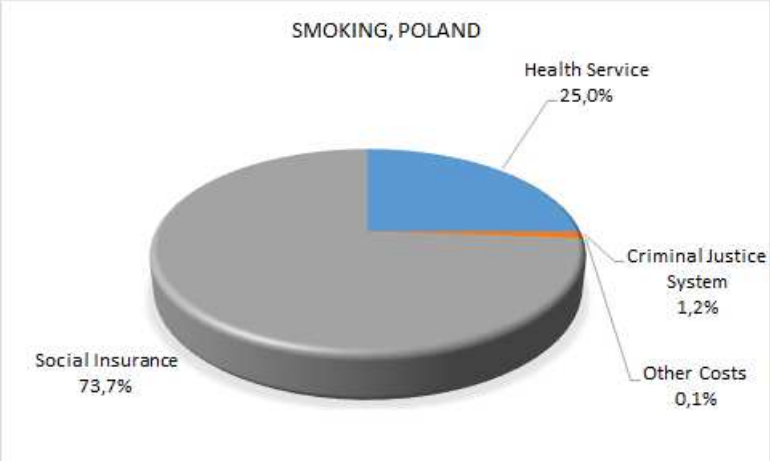
Source: authors' own. *For population age [15-64).

Figure 6.5.1.1 Structure of estimated financial costs of alcohol, Poland



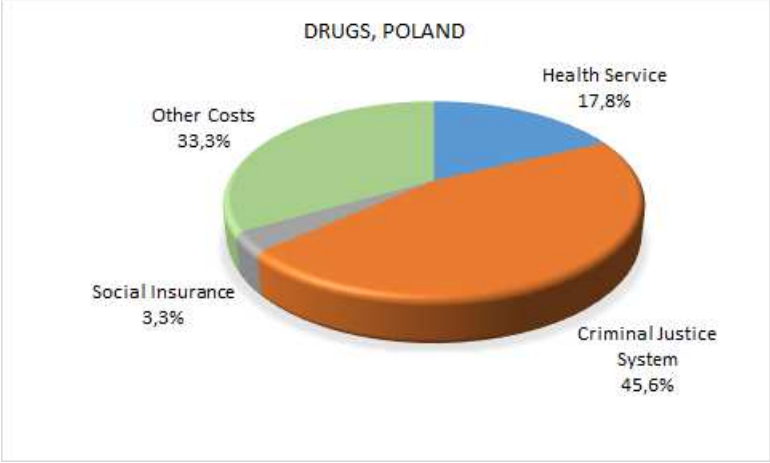
Source: authors' own.

Figure 6.5.1.2 Structure of estimated financial costs of smoking, Poland



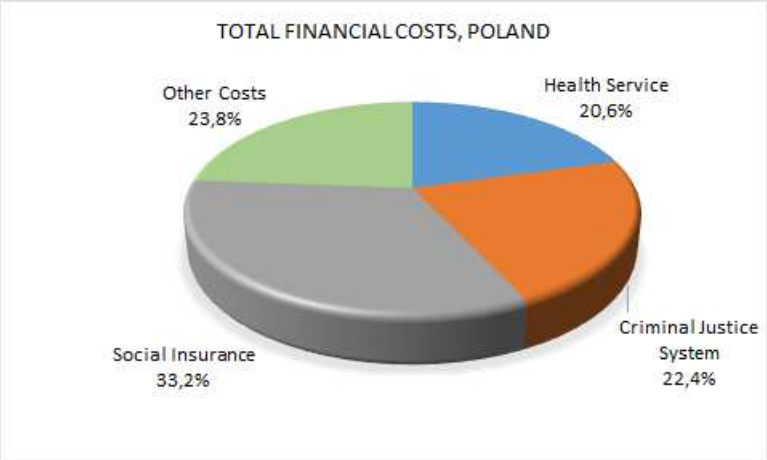
Source: authors' own.

Figure 6.5.1.3 Structure of estimated financial costs of drugs use, Poland



Source: authors' own.

Figure 6.5.1.4 Structure of estimated financial costs of alcohol, smoking and drugs use, Poland



Source: authors' own.

6.5.2.Portugal

Table 6.5.2.1 Estimated costs attributable to alcohol, smoking or drugs

SPECIFICATION	ALCOHOL	SMOKING	DRUGS	TOTAL
FINANCIAL COSTS (mln Euros)				
Inpatients Care	19.1	368.8	14.1	402.0
Ambulatory Care	7.2	128.0	34.1	169.3
Emergency Care	3.9			3.9
Harm reduction			7.7	7.7
Morbidity			1.9*	1.9
Non-institutionalized Persons	225.5			225.5
Institutionalized Persons	3.1			3.1
TOTAL HEALTH SERVICE COSTS	**258.8**	**496.8**	**57.8**	**813.4**
Judicial System And Prisons Administration	17.2		53.0*	70.2
Property Damages Due To Accidents	52.0			52.0
Criminal Justice Social Work Administration	0.05			0.05
Police			21.3	**21.3**
TOTAL CRIMINAL JUSTICE SYSTEM	**69.3**		**74.3**	**143.6**
Prevention			8.4	
Dissuasion			2.9	
Social rehabilitation			11.2	
Coordination/research			7.6	
TOTAL OTHER COSTS			29.9	
Total costs	**328.1**	**496.8**	**162.2**	**987.1**
SOCIAL COSTS				
SPECIFICATION	ALCOHOL	SMOKING	DRUGS	TOTAL
Premature mortality** (number of deaths)	1409	2375	109	3893
LABOUR COSTS (mln Euros)				
Mortality	36.3	62.1	2.8	**101.3**
YEARS OF LIFE LOST (thousands)	51.3	83.5	3.8	138.5
In age of professional activity (thousands)	42.0	60.7	3.8	106.5

Source: authors' own on basis of: [Lima, Esquerdo 2003] and [Gouveia et al. 2007]
*on the basis of [Gonçalves et al., 2014], approximate values read from figures.

Total estimated financial costs attributable to the use of psychoactive substances in Portugal in 2010 were equal to **987 mln Euros** and constituted 0.57% of GDP. Health service costs constituted the biggest share in it – 82% of all costs. Nearly 60% of all health-care costs are associated with tobacco use.

The data sources for computing costs caused by drugs use in Portugal, in 2010, were:

1. IDT (2008). "2007 National Report (2006 data) to the EMCDDA by the Reitox National Focal Point. Selected Issue about "Public Funding". http://www.emcdda.europa.eu/attachements.cfm/att_61234_EN_NR2007Portugal.pdf
2. IDT (2011a). Relatório de Atividades 2010. Lisboa: IDT. http://www.sicad.pt/BK/Institucional/Instrumentos/RelatoriosAtividade/Lists/SICAD_RELATORIOSATIVIDADES/Attachments/2/Relatorio%20_actividades_2010.pdf
3. IDT (2011b). A Situação do País em Matéria de Drogas e Toxicodependências. Relatório Anual 2010. Lisboa: IDT. http://www.sicad.pt/PT/Publicacoes/Paginas/detalhe.aspx?itemId=18&lista=SICAD_PUBLICACOES&bkUrl=BK/Publicacoes/
4. Gonçalves, R., Lourenço, A., Nascimento, A., Rodrigues, V. & Silva, S. (2012). Droga e Propinas. Avaliações de impacto legislativo. Lisboa: Fundação Francisco Manuel dos Santos. http://www.ffms.pt/upload/docs/relatorio-do-estudo-dez-2012_hJisYudjiEOTBR6C_MPQdQ.pdf
5. Gesaworld, SA (2013). Relatório Avaliação Externa Plano Nacional Contra a Droga e as Toxicodependências 2005-2012 (PNCDT). Lisboa: SICAD http://www.sicad.pt/BK/Publicacoes/Lists/SICAD_PUBLICACOES/Attachments/30/PNCDT_relatorio_final.pdf
6. Gesaworld, SA (2013).Executive Summary. External Evaluation of National Plan GAINSTS Drugs and Drug Addiction 2005-2012 (PNLCDT). http://www.sicad.pt/BK/Publicacoes/Lists/SICAD_PUBLICACOES/Attachments/30/Executive%20Summary%20External%20Evaluation%20PNCDT%202005-2012.pdf
7. SICAD (2014). "2013 National Report (2012 data) to the EMCDDA by the Reitox National Focal Point. http://www.emcdda.europa.eu/attachements.cfm/att_228494_EN_2013_Portugal%20National%20report.pdf
8. Gonçalves, R., Lourenço, A., & Silva, S. (2014). *A Social Cost Perspective In The Wake Of The Portuguese Strategy For The Fight Against Drugs*, April 2014, International Journal of Drug Policy, in press.

6.5.3.Catalonia (Spain)

Total estimated financial cost which can be in Catalonia (Spain) attributed to alcohol drinking, smoking and use of drugs, for those categories of costs were the statistical data were sufficient for estimation, in 2010 was equal to **247.5 mln Euros**, with the cost of healthcare representing the greatest expenditure (76%).

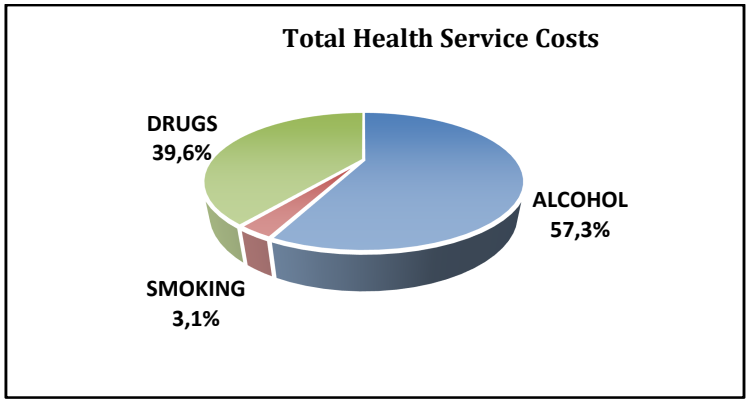
This calculation includes the minimum assumption of criminal justice costs (38.6 mln Euros). If the maximum value (121.2 mln Euros) would be included the total financial costs would increase up to **330.1 mln Euros**. It would also change the proportion between health-care costs and other types of costs. For illicit drugs non-treatment costs would constitute 41% and for all three substances – 42% of all financial costs.

Table 6.5.3.1 Estimated costs attributable to alcohol, smoking or drugs

SPECIFICATION	ALCOHOL	SMOKING	DRUGS	TOTAL
FINANCIAL COSTS (mln Euros)				
HEALTH SERVICE COSTS				
Primary Health Care	58.9	1.9	1.1	61.8
In-patients, psychiatric hospitals	0.2	.	0.1	0.3
Out-patients	28.8	0.9	0.5	30.3
Treatment centres	11.2	1.4	12.3	24.9
Cost in emergency stations	1.2	.	0.5	1.7
Ambulance emergency service	.	.	.	12.7
Patients Attending Therapeutic Communities	.	.	8.7	8.7
Patients in Emergency Hospitals	.	.	0.6	0.6
Cost of prescription	.	.	6.0	6.0
Cost of detoxification Units, Hospitals	1.5	0.1	0.7	2.3
Social Care from Drug Addiction	x	x	19.9	19.9
Detox Units	x	x	9.5	9.5
Prisons treatment costs	.	.	6.5	6.5
Sick leave	1.8	0.9	0.9	3.6
TOTAL HEALTH SERVICE COSTS	**103.6**	**5.2**	**67.3**	**188.8**
Driving controls	0.3		0.4	0.7
Prevention, coordination, Research	2.0	2.7	2.0	6.8
Public Investigation Agency, Spain, Researches	.	.	.	0.3
Social programmes	.	.	10.7	10.7
Penal System (Social Programmes)	.	.	0.0	0.0
Drunk/Drugs preventive measures	0.3	.	0.2	0.6
Human Resources	.	0.2	0.8	1.0
Justice *	.	.	7.4	7.4
Penal system*	.	.	31.2	31.2
TOTAL NO-TREATMENT COSTS	**2.6**	**2.9**	**52.7**	**58.7**
TOTAL FINANCIAL COSTS	**106.2**	**8.1**	**120**	**247.5**
	SOCIAL COSTS			
SPECIFICATION	ALCOHOL	SMOKING	DRUGS	TOTAL
Premature mortality** (number of deaths)	624	1808	195	2627
LABOUR COSTS (mln Euros)				
Mortality	25.1	74.3	7.9	102.8
YEARS OF LIFE LOST (thousands)	24.6	70.1	7.7	102.4
In age of professional activity (thousands)	20.6	48.7	7.5	76.8

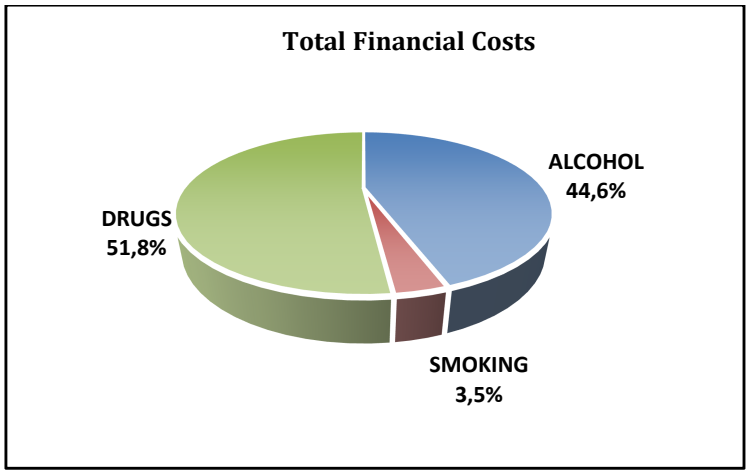
Source: authors' own. * Based on [Garcia-Altes et al. 1997] minimum variables, **For population age [15-64).

Figure 6.5.3.1 Total health Service Costs, Catalonia (Spain), 2010



Source: Authors' own

Figure 6.5.3.2 Total Financial Costs, Catalonia (Spain) 2010



Source: Authors' own

Sources of statistical data for Catalonia:

1. Network addictive and behavioral disorders (RETIC) Carlos III Health Institute. http://www.isciii.es/
2. Diari Oficial de la Generalitat de Catalunya, 2006;Gisbert i Brosa, 2006(2) http://portaldogc.gencat.cat/utilsEADOP/PDF/6079/1227866.pdf
3. Health Report. Government of Catalonia (2011) http://www.pnsd.msc.es/Categoria4/ongs/proyecInvestig.htm
4. Annual report of the Catalan Health Purcharser Agency (Cat Salut, 2011) http://www.gencat.cat/ics/memoria_2011/ICS2011.html
5. Program on Substance Abuse .Public Health Agency of Catalonia. Government of Catalonia
1. National Drug Plan (2010, 2011) http://www.pnsd.msc.es/Categoria4/ongs/proyecInvestig.htm
6. Mental Health Unit. Department of Health. Government of Catalonia
7. Tobacco Unit. Public Health Agency of Catalonia. Government of Catalonia
8. Foundation "La Caixa"
9. Department of Justice. Government of Catalonia
10. Emergency Medical Service (SEM). Government of Catalonia

11. Gerència d'Atenció Farmacèutica i Prestacions Complementàries. Àrea Sanitària. Servei Català de la Salut (CatSalut)
12. Public Health Agency of Barcelona (ASPB) http://www.aspb.es/
13. Catalonia Institute of Medical Evaluations - Institut Català d' Avaluacions Mèdiques (ICAM)
14. Survey Annual Social Welfare and Family Department. Government of Catalonia
15. OFICIAL WEB Institute of Statistics of Catalonia http://www.idescat.cat/
16. Prevalence of mental disorders in Europe: results from the European Study of the epidemiology of Mental Disorders (ESEMeD) project. Acta Psychiatr Scand (2004):109 (420):27-27.
17. Mortality in Catalonia (2010) Government of Catalonia. http://www20.gencat.cat/docs/salut/Home/El%20Departament/Estadistiques%20sanitaries/Dades%20de%20salut%20i%20serveis%20sanitaris/Mortalitat/documents_mortalitat/arxius/mortaliti2010.pdf
18. Catalan Interior Department. Government of Catalonia

7.Summary and discussion

Although there are a number of cost studies from different EU countries most of them concern either one country (most often from the Nordic countries) or one psychoactive substance and focus on health care costs (Andlin-Sobocki & Rehm, 2005). Estimation of social costs attributable to alcohol, tobacco and illicit drug use from Central and Eastern European countries are missing.

This study aimed at going beyond the current knowledge in several ways:

- including to a greater detail the social costs from the non-health care sector.
- presenting costs of different kinds of addiction in a comparative framework.
- focusing on costs actually incurred from public budgets in a particular year (2010).
- for the first time, assessing costs in Poland, Portugal and Catalonia in a manner allowing for cross-country comparisons.

These ambitious objectives were met only partially. First of all, we faced the most prevalent problem in this research area, that is lack of data or inexact data on financial issues. The scope of problems related to data collection was different in each country significantly affecting comparability of the results. Secondly, as expected, data available in each country reflected each country's organization of health care system and structure of other services. Therefore some cost categories existed in only one of participating countries.

The most comprehensive social costs estimations were possible for Poland and included costs of health services, criminal justice system and other costs (social assistance benefits, social insurance, prevention, education, research, estimated costs of fire brigades work attributable to addictive substances), accounting for 1950.9 million Euros, that is 0,55% of GDP (in 2010). The majority of this cost is related to alcohol (0,31% of GDP) and tobacco use (0,17% of GDP), while the share of costs attributable to illicit drugs is much lower (0,07% of GDP). Social costs incurred because of alcohol are higher than costs associated with other substances in each of the categories, i.e. health-care costs, criminal justice costs and other costs, except for social insurance costs. The latter costs are higher for cigarettes smoking (0,13% of GDP, compared to 0,05% attributable to alcohol). The estimations above do not include labour costs (due to absenteeism and premature mortality attributable to alcohol, tobacco or illicit drug use) assumed as 615 million Euros in 2010 (0,17% of GDP). This, presumably lost money, is quite equally distributed between losses attributable to alcohol and tobacco.

Total financial costs, for the costs items where estimation was possible on basis of available data, assessed for Portugal are equal to 987.1 million Euros (0,57% of GDP) and for Catalonia - 247.5 million Euros (0,13% of GDP). The total burden for the public budget attributable to psychoactive substances is very similar in Poland and Portugal, and significantly lower in Catalonia. While the health-care costs accounts for the similar percentage of GDP in Poland (0,11%) and in Catalonia (0,10%), it is much higher in Portugal (0,47%). This difference is caused by very high health care costs of treating, firstly – tobacco, and secondly - alcohol attributable diseases in Portugal, estimated as 0,29% and 0,15% of GDP, and reflects the methodological differences in data collection between countries. For Portugal, health care costs were imputed on the basis of earlier Portuguese comparative study on the costs and burden of tobacco and alcohol diseases [Gouveia et al. 2007, 2008]. For Poland and Catalonia, health care costs reported by various institutions for 2010 were used for the estimations.

The costs in non-health care categories are significantly higher in Poland than in Catalonia. These differences are mainly related to:

- very high costs of social insurance in Poland – sick leaves and pensions for people unable to work because of health problems associated with tobacco and alcohol - account for 0,18% of GDP. In Catalonia the public budget burden related to sick leaves is 0,002%.
- in Poland, reported within the cost category entitled "Prevention, education, research, other" are local governments budgets allocated to solving alcohol and drug problems. In common practice, these funds are spent on different purposes including, supporting treatment facilities; providing social assistance to children from families with special needs; or other socially important purposes beyond alcohol/drug prevention, education or research.
- high criminal justice costs attributable to alcohol in Poland (0,09% of GDP), while in Catalonia costs incurred by criminal justice sector have been reported only for illicit drugs, at the level of 0,02%). However this type of cost in Catalonia (Spain) may be as high as 0,06% of GDP.

According to this Alice Rap study, in Catalonia (Spain), the cost of health-care would represent the greatest expenditure (between 41% if the upper boarder of criminal justice costs is taken into account and 76% - if the lower boarder is included). This result is in accordance with earlier costs studies conducted in Spain. García Altés et al. (2002) for illicit drugs in Spain estimated, that crime-related costs represented 18%, while the largest part of costs corresponded to the health-care costs (50% of direct costs). Rivera et al. (2012) found that in the autonomous region of Galicia drug related health care costs accounted for 52% of all drug related costs.

In the Alice Rap project it was estimated that costs of the consumption of alcohol, tobacco and illicit drugs resulted in a 0.13% of the value of the GDP of Catalonia in 2010, which is lower than values estimated by other authors. The calculations for illegal drugs oscillated around 0.07% (García Altés et.al, 2002) and for alcohol - around 0.12% (Portella et.al., 1996). That suggests the total budget burden, without inclusion of tobacco attributable costs, of approximately 0,2% of GDP.

Probably, the key explanation of these differences is related to the fact that in this study, estimations were based mostly on the costs actually incurred in 2010, while in other studies they were based mainly on costs estimates.

Cost imputation from other studies was the main source of information in the case of Portugal. Therefore, final results are not really comparable with the results of the other participating countries. Keeping in mind that the estimation is not based on the calculation of costs actually incurred in 2010 (as it is in case of Poland and Catalonia), but imputed from other studies, we may conclude that in Portugal alcohol attributable costs account for 0,19% of GDP, costs attributable to tobacco – 0,29% and to drugs – 0,09%. For alcohol, that is much less than similar costs in Poland but significantly more than in Catalonia (Spain). Drug related costs are rather similar across countries (ranging from 0,06% of GDP in Poland to 0,09% in Portugal). But tobacco related costs are the highest in Portugal. That is especially surprising because tobacco attributable mortality is the lowest in Portugal, when compared to Poland and Catalonia (Spain) (as described in chapter 5 of this report) and indicates that due to differences in the methods applied for costs estimation in Portugal and other countries, any cross-country comparison are rather uncertain.

As the purpose of this study was to determine the social costs attributable to abuse of alcohol, illegal drugs and tobacco for three EU countries with different policies, it is worth to look on the results from the perspective of legislations related to psychoactive substances. Actually, comparison of policies and legislations concerning alcohol and tobacco related taxes and excise fees; restrictions on legal substances availability, purchase and advertisement; access to health and social services and; criminal law, indicates more similarities than differences between three countries (see appendix 8.4). That is not surprising, as all countries are EU members, and their legal systems have to be in accordance with global regulations. Therefore, it may be concluded that the cross-country differences in social financial costs of addiction are to a lower extent related to national legislations

and to higher extent - to other factors. Of course, the key determinant is exposure to alcohol, tobacco and illicit drugs causing health deterioration. Also health risks attributable to substance abuse are significantly different in each country what reflects more global health status differences and other general inequalities between Poland and two other countries (e.g. in GDP per capita or public expenditures oh health-care).

The most significant differences between participating countries concern the penal system perspective on the illicit drugs. Generally speaking, in Portugal, a large proportion of offenses related to drugs is classified as misdemeanors, while in Poland and Spain - as crimes. Moreover, in Portugal, there are separate categories in the penal code classifying crimes committed in a state of intoxication or under the influence of a narcotic drug or psychotropic. In Poland, such offences are not distinguished in the penal code but alcohol or drug intoxication is taken into account by a court passing the judgment. In Spain and Portugal, possession of small amounts of drugs for personal use is not a crime while in Poland it is but legal "proceedings might be discontinued."

According to our study results, these legal differences are translated into criminal sector social costs attributable to drugs, showing the lowest costs in Portugal approximately, 53 mln Euro (Goncalves et al., in press), and higher in Catalonia (38-121 mln Euro) and Poland – 112 mln Euro.

In all three countries, different costs data and different methods of social costs estimation had to be applied. Therefore, the final costs estimates are not comprehensive for any of three countries, neither fully comparable between them.

In all three countries the same problems with the data collections were faced, including:

- availability of data in only some kinds of direct costs categories;
- unavailability of some data important for the assessment of health-care costs, e.g. the expenditure relative to hospitals, health insurers and private centers, economic expenditure involved in the carrying out of diagnostic tests, analyses or pharmacological treatment. Most of these data are missing because they are not associated with the diagnostic codification.
- difficulties to establish a real cost of sick leave for temporary incapacity since doctors do not codify addictions as the cause of the sick leave.
- lack of a specific register of the criminal cases or sentences in which drug or alcohol consumption have played a part or real calculation of security costs (police or border police forces) associated to addiction.

Due to these limitations, due to lack of studies, correct codification and quantification, it has been impossible to refine the data for the calculation of the costs of addictions in the Alice Rap project.

Our study confirmed that additional, systematic research within the EU is necessary in order to reliably assess the economic and social costs associated with alcohol, tobacco and illicit drug abuse. Despite limitations, already well known from other studies, it also confirmed that costing addiction is in general terms feasible in EC member states and provides very useful data for decision makers in the area of social and health policy.

8. Appendix

8.1.Tables

8.1.1 Attributable fractions for causes of death

Table 8.1.1.1 Attributable fractions for causes of death partially attributable to alcohol consumption according to gender in Poland

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION	
			MEN	WOMEN
NEOPLASMS				
Cancer of the lip	C00	Corrao et al. 2004	0.517	0.442
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	Corrao et al. 2004	0.517	0.442
Oesophageal cancer	C15	Corrao et al. 2004	0.331	0.266
Colorectal cancer	C18-C20	Corrao et al. 2004	0.049	0.037
Cancer of the liver and intrahepatic bile ducts	C22	Corrao et al. 2004	0.164	0.129
Laryngeal cancer	C32	Corrao et al. 2004	0.353	0.286
Breast cancer	C50	Corrao et al. 2004	0.226	0.177
CARDIOVASCULAR DISEASES				
Hypertensive diseases	I10-I15	Corrao et al. 2004	0.364	0.294
Coronary heart disease	I20-25	Corrao et al. 2004	-0.102	-0.082
Cardiac arrhythmias	I47, I48	Rehm et al. 2004	0.313	0.265
Haemorrhagic stroke	I60-I62	Corrao et al. 2004	0.327	0.252
Ischaemic stroke	I63-I66	Corrao et al. 2004	0.209	0.134
Oesophageal varices	I85, I98.2	Rehm et al. 2004	0.604	0.560
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS				
Mallory-Weiss syndrome	K22.6	Gutjahr et al. 2001	0.602	0.559
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	Rehm et al. 2004	0.647	0.593
Portal hypertension	K76.6	Gutjahr et al. 2001	0.604	0.560
Cholelithiasis	K80	English 1995	-0.050	-0.036
Acute and other chronic pancreatitis	K85, K86.1	Rehm et al. 2004	0.288	0.229
OTHER CHRONIC AND ACUTE CONDITIONS				
Psoriasis	L40 excl. L40.5	Rehm et al. 2004	0.279	0.231
Spontaneous abortion	O03	Rehm et al. 2004	0.183	0.153
Epilepsy and Status epilepticus	G40-G41	Rehm et al. 2004	0.528	0.487
INJURIES				
Road traffic accidents - non pedestrian	V10-V89	English 1995	0.472	0.402
Pedestrian traffic accidents	V1-V10	Shield et al. 2012	0.369	0.179
Water transport injuries, Fall injuries, Occupational work/machine injuries	V90-V94, W00-W19, W24-W31, W45	Zeisser et al. 2013	0.587	0.524
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31, X40-X49 excl. X45	Shield et al. 2012	0.454	0.357
Intentional self-harm\Event of undetermined intent	X60-X84, Y10-Y34, Y87.0, Y87.2	English 1995	0.097	0.099
Assault	X85-Y09, Y87.1	English 1995	0.051	0.061

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013]. List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.2 Attributable fractions for causes of death partially attributable to alcohol consumption according to age, men, Poland

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Cancer of the lip	C00	0.575	0.584	0.590	0.593	0.594	0.591	0.585	0.576	0.564	0.547	*0.525*	*0.497*	*0.460*	*0.411*
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	0.575	0.584	0.590	0.593	0.594	0.591	0.585	0.576	0.564	0.547	*0.525*	*0.497*	*0.460*	*0.411*
Oesophageal cancer	C15	0.385	0.394	0.399	0.402	0.403	0.400	0.394	0.386	0.374	0.358	*0.338*	*0.313*	*0.282*	*0.243*
Colorectal cancer	C18-C20	0.061	0.063	0.064	0.065	0.065	0.064	0.063	0.061	0.058	0.054	*0.050*	*0.045*	*0.039*	*0.032*
Cancer of the liver and intrahepatic bile ducts	C22	0.199	0.205	0.209	0.211	0.211	0.210	0.206	0.200	0.192	0.181	*0.169*	*0.153*	*0.135*	*0.113*
Laryngeal cancer	C32	0.408	0.417	0.423	0.426	0.426	0.424	0.418	0.409	0.397	0.381	*0.360*	*0.334*	*0.302*	*0.262*
Breast cancer	C50	0.269	0.277	0.281	0.284	0.284	0.282	0.277	0.270	0.260	0.247	*0.231*	*0.211*	*0.188*	*0.159*
CARDIOVASCULAR DISEASES															
Hypertensive diseases	I10-I15	0.420	0.429	0.435	0.438	0.438	0.436	0.430	0.421	0.409	0.392	*0.371*	*0.345*	*0.312*	*0.271*
Coronary heart disease	I20-25	-0.133	-0.138	-0.142	-0.144	-0.145	-0.143	-0.139	-0.133	-0.126	-0.117	*-0.106*	*-0.093*	*-0.079*	*-0.064*
Cardiac arrhythmias	I47, I48	0.365	0.374	0.380	0.383	0.383	0.380	0.375	0.366	0.354	0.339	*0.320*	*0.295*	*0.265*	*0.228*
Haemorrhagic stroke	I60-I62	0.380	0.389	0.395	0.398	0.398	0.396	0.390	0.382	0.370	0.354	*0.334*	*0.309*	*0.278*	*0.240*
Ischaemic stroke	I63-I66	0.256	0.264	0.268	0.271	0.271	0.269	0.264	0.257	0.248	0.235	*0.220*	*0.201*	*0.178*	*0.151*
Oesophageal varices	I85, I98.2	0.658	0.667	0.672	0.675	0.675	0.673	0.668	0.659	0.648	0.632	*0.611*	*0.584*	*0.548*	*0.498*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS															
Mallory-Weiss syndrome	K22.6	0.657	0.665	0.671	0.674	0.674	0.671	0.666	0.658	0.646	0.631	*0.610*	*0.582*	*0.546*	*0.496*
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	0.699	0.706	0.712	0.714	0.714	0.712	0.707	0.700	0.689	0.674	*0.654*	*0.628*	*0.593*	*0.544*
Portal hypertension	K76.6	0.658	0.667	0.672	0.675	0.675	0.673	0.668	0.659	0.648	0.632	*0.611*	*0.584*	*0.548*	*0.498*
Cholelithiasis	K80	-0.064	-0.066	-0.068	-0.069	-0.069	-0.068	-0.067	-0.064	-0.061	-0.056	*-0.051*	*-0.046*	*-0.039*	*-0.032*
Acute and other chronic pancreatitis	K85, K86.1	0.339	0.347	0.353	0.356	0.356	0.353	0.348	0.340	0.328	0.314	*0.295*	*0.272*	*0.243*	*0.209*
OTHER CHRONIC AND ACUTE CONDITIONS															
Psoriasis	L40 excl. L40.5	0.328	0.337	0.342	0.345	0.345	0.343	0.338	0.329	0.318	0.304	*0.285*	*0.263*	*0.235*	*0.201*
Spontaneous abortion	O03	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Epilepsy and Status epilepticus	G40-G41	0.586	0.595	0.601	0.604	0.604	0.601	0.596	0.587	0.574	0.558	*0.536*	*0.507*	*0.470*	*0.421*
INJURIES															
Road traffic accidents - non pedestrian	V10-V89	0.530	0.540	0.546	0.549	0.549	0.547	0.541	0.532	0.519	0.502	*0.480*	*0.452*	*0.415*	*0.368*
Pedestrian traffic accidents	V01-V10	0.425	0.434	0.440	0.443	0.444	0.441	0.435	0.426	0.414	0.397	*0.376*	*0.350*	*0.317*	*0.276*
Water transport injuries Fall injuries Occupational work/machine injuries	V90-V94 W00-W19 W24-W31, W45	0.642	0.651	0.656	0.659	0.659	0.657	0.651	0.643	0.631	0.615	*0.594*	*0.566*	*0.530*	*0.480*
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31 X40-X49 excl. X45	0.512	0.521	0.528	0.531	0.531	0.528	0.522	0.513	0.500	0.483	*0.461*	*0.433*	*0.397*	*0.351*
Intentional self-harm\Event of undetermined intent	X60-X84, Y10-Y34, Y87.0, Y87.2	0.120	0.124	0.127	0.128	0.128	0.127	0.124	0.120	0.115	0.108	*0.100*	*0.090*	*0.079*	*0.066*
Assault	X85-Y09, Y87.1	0.064	0.066	0.068	0.068	0.068	0.068	0.066	0.064	0.061	0.057	*0.053*	*0.047*	*0.041*	*0.034*

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013]. List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.3 Attributable fractions for causes of death partially attributable to alcohol consumption according to age, women, Poland

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Cancer of the lip	C00	0.539	0.546	0.549	0.548	0.543	0.534	0.520	0.500	0.473	0.437	*0.388*	*0.322*	*0.228*	*0.087*
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	0.539	0.546	0.549	0.548	0.543	0.534	0.520	0.500	0.473	0.437	*0.388*	*0.322*	*0.228*	*0.087*
Oesophageal cancer	C15	0.349	0.355	0.358	0.357	0.353	0.344	0.332	0.314	0.291	0.262	*0.226*	*0.179*	*0.119*	*0.042*
Colorectal cancer	C18-C20	0.054	0.055	0.056	0.056	0.055	0.053	0.050	0.046	0.042	0.036	*0.030*	*0.023*	*0.014*	*0.005*
Cancer of the liver and intrahepatic bile ducts	C22	0.180	0.184	0.186	0.185	0.182	0.177	0.169	0.158	0.144	0.127	*0.106*	*0.082*	*0.052*	*0.018*
Laryngeal cancer	C32	0.371	0.378	0.381	0.380	0.375	0.366	0.353	0.335	0.312	0.282	*0.243*	*0.193*	*0.130*	*0.046*
Breast cancer	C50	0.241	0.246	0.249	0.248	0.244	0.238	0.227	0.214	0.196	0.174	*0.147*	*0.114*	*0.074*	*0.025*
CARDIOVASCULAR DISEASES															
Hypertensive diseases	I10-I15	0.381	0.388	0.391	0.390	0.385	0.376	0.363	0.345	0.321	0.290	*0.251*	*0.200*	*0.134*	*0.048*
Coronary heart disease	I20-25	-0.126	-0.130	-0.132	-0.131	-0.128	-0.123	-0.115	-0.106	-0.094	-0.080	*-0.065*	*-0.048*	*-0.029*	*-0.009*
Cardiac arrhythmias	I47, I48	0.348	0.354	0.357	0.356	0.352	0.343	0.331	0.313	0.291	0.262	*0.225*	*0.178*	*0.119*	*0.042*
Haemorrhagic stroke	I60-I62	0.332	0.339	0.341	0.340	0.336	0.328	0.315	0.298	0.276	0.248	*0.213*	*0.168*	*0.112*	*0.039*
Ischaemic stroke	I63-I66	0.191	0.196	0.198	0.197	0.194	0.188	0.180	0.169	0.154	0.136	*0.114*	*0.088*	*0.056*	*0.019*
Oesophageal varices	I85, I98.2	0.653	0.659	0.662	0.661	0.657	0.648	0.635	0.617	0.591	0.555	*0.506*	*0.433*	*0.322*	*0.134*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS															
Mallory-Weiss syndrome	K22.6	0.651	0.658	0.661	0.660	0.655	0.647	0.634	0.615	0.590	0.554	*0.504*	*0.432*	*0.321*	*0.133*
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	0.683	0.689	0.691	0.691	0.686	0.678	0.666	0.648	0.623	0.588	*0.539*	*0.467*	*0.352*	*0.150*
Portal hypertension	K76.6	0.653	0.659	0.662	0.661	0.657	0.648	0.635	0.617	0.591	0.555	*0.506*	*0.433*	*0.322*	*0.134*
Cholelithiasis	K80	-0.055	-0.056	-0.057	-0.057	-0.056	-0.053	-0.050	-0.046	-0.041	-0.036	*-0.029*	*-0.021*	*-0.013*	*-0.004*
Acute and other chronic pancreatitis	K85, K86.1	0.305	0.311	0.314	0.313	0.309	0.301	0.289	0.273	0.252	0.226	*0.193*	*0.151*	*0.100*	*0.035*
OTHER CHRONIC AND ACUTE CONDITIONS															
Psoriasis	L40 excl. L40.5	0.307	0.314	0.316	0.316	0.311	0.303	0.291	0.275	0.254	0.228	*0.195*	*0.153*	*0.101*	*0.307*
Spontaneous abortion	O03	0.210	0.215	0.217	0.216	0.213	0.207	0.197	0.185	0.169	0.150	*0.126*	*0.097*	*0.063*	*0.210*
Epilepsy and Status epilepticus	G40-G41	0.583	0.590	0.593	0.592	0.587	0.578	0.565	0.545	0.518	0.482	*0.432*	*0.363*	*0.261*	*0.583*
INJURIES															
Road traffic accidents - non pedestrian	V10-V89	0.498	0.506	0.509	0.508	0.503	0.493	0.479	0.460	0.433	0.398	*0.351*	*0.288*	*0.201*	*0.498*
Pedestrian traffic accidents	V01-V10	0.243	0.248	0.251	0.250	0.246	0.239	0.229	0.216	0.198	0.176	*0.149*	*0.116*	*0.075*	*0.243*
Water transport injuries Fall injuries Occupational work/machine injuries	V90-V94 W00-W19 W24-W31, W45	0.619	0.626	0.629	0.628	0.623	0.615	0.601	0.582	0.556	0.520	*0.469*	*0.398*	*0.291*	*0.118*
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31 X40-X49 excl. X45	0.450	0.457	0.461	0.460	0.455	0.445	0.431	0.412	0.386	0.353	*0.308*	*0.250*	*0.171*	*0.063*
Intentional self-harm\Event of undetermined intent	X60-X84, Y10-Y34, Y87.0, Y87.2	0.140	0.143	0.145	0.144	0.142	0.138	0.131	0.122	0.111	0.098	*0.081*	*0.062*	*0.039*	*0.013*
Assault	X85-Y09, Y87.1	0.087	0.090	0.091	0.090	0.089	0.086	0.081	0.076	0.068	0.060	*0.049*	*0.037*	*0.024*	*0.008*

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013]. List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.4 Causes of death in 100% attributable to alcohol consumption

CAUSES OF DEATH	ICD10 CODES
Alcohol induced pseudo Cushing's Syndrome	E24.4
Wernicke's encephalopathy	E51.2
Mental and behavioural disorders due to use of alcohol	F10
Degeneration of nervous system due to alcohol	G31.2
Alcoholic polyneuropathy	G62.1
Alcoholic myopathy	G72.1
Alcoholic cardiomyopathy	I42.6
Alcoholic gastritis	K29.2
Alcoholic liver disease	K70
Alcohol induced chronic pancreatitis	K86.0
Fetus and newborn affected by maternal use of alcohol	P04.3, O35.4
Fetal alcohol syndrome	Q86.0
Excessive blood level of alcohol	R78.0
Toxic effect of alcohol	T51.0, T51.9
Accidental poisoning by and exposure to alcohol	X45
Intentional self poisoning by, and exposure to alcohol	X65
Poisoning by and exposure to alcohol, undetermined intent	Y15
Evidence of alcohol involvement determined by blood alcohol level	Y90
Evidence of alcohol involvement determined by level intoxication	Y91

Source: [Grant, Springbett, Graham 2009, p.3].

Table 8.1.1.5 Attributable fractions for causes of death partially attributable to smoking, according to gender in Poland

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION POPULATION	
			MEN	WOMEN
NEOPLASMS				
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	SAMMEC 2001	0.806	0.533
Esophagus	C15	SAMMEC 2001	0.742	0.649
Stomach	C16	SAMMEC 2001	0.313	0.110
Pancreas	C25	SAMMEC 2001	0.340	0.269
Larynx	C32	SAMMEC 2001	0.861	0.773
Trachea, lung, bronchus	C33, C34	SAMMEC 2001	0.908	0.765
Cervix uteri	C53	SAMMEC 2001	x	0.138
Urinary bladder	C67	SAMMEC 2001	0.518	0.285
Kidney and renal pelvis	C64, C65	SAMMEC 2001	0.442	0.071
Acute myeloid leukemia	C92.0	SAMMEC 2001	0.280	0.069
Hypertension	I10	Ezzati et al. 2005	0.261	0.215
CARDIOVASCULAR DISEASES				
Ischemic heart disease	I25	SAMMEC 2001	0.445	0.352
Other heart disease	I00-I52 excl.I10, I25	SAMMEC 2001	0.251	0.119
Cerebrovascular disease	I67	SAMMEC 2001	0.458	0.434
Atherosclerosis	I70	SAMMEC 2001	0.376	0.168
Aortic aneurysm	I71	SAMMEC 2001	0.703	0.616
Other arterial disease	I72-I79	SAMMEC 2001	0.284	0.230
RESPIRATORY DISEASES				
Pneumonia, influenza	J10-J18	SAMMEC 2001	0.262	0.229
Bronchitis, emphysema	J20, J43	SAMMEC 2001	0.901	0.796
Chronic airways obstruction	J44.9	SAMMEC 2001	0.827	0.783
FIRE DEATHS	X00-X01	na	0.23	

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al. 2005]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.6 Attributable fractions for causes of death partially attributable to smoking according to age, men, Poland

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
NEOPLASMS																
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	0.755	0.788	0.809	0.822	0.830	0.834	0.835	0.833	0.827	0.816	*0.799*	*0.773*	*0.731*	*0.656*	*0.492*
Esophagus	C15	0.691	0.723	0.744	0.758	0.767	0.772	0.773	0.770	0.763	0.752	*0.735*	*0.709*	*0.670*	*0.609*	*0.504*
Stomach	C16	0.259	0.292	0.316	0.333	0.345	0.351	0.352	0.349	0.340	0.325	*0.305*	*0.277*	*0.240*	*0.191*	*0.127*
Pancreas	C25	0.270	0.313	0.343	0.365	0.379	0.387	0.388	0.384	0.373	0.355	*0.329*	*0.293*	*0.244*	*0.177*	*0.084*
Larynx	C32	0.824	0.847	0.862	0.872	0.878	0.881	0.881	0.879	0.875	0.867	*0.856*	*0.837*	*0.807*	*0.754*	*0.640*
Trachea, lung, bronchus	C33, C34	0.881	0.898	0.909	0.916	0.920	0.922	0.923	0.921	0.918	0.913	*0.904*	*0.891*	*0.869*	*0.827*	*0.729*
Cervix uteri	C53	x	x	x	x	x	x	x	x	x	x	*x*	*x*	*x*	*x*	*x*
Urinary bladder	C67	0.452	0.492	0.521	0.541	0.553	0.560	0.562	0.558	0.548	0.532	*0.508*	*0.474*	*0.426*	*0.357*	*0.254*
Kidney and renal pelvis	C64, C65	0.376	0.416	0.445	0.465	0.479	0.486	0.487	0.483	0.473	0.456	*0.432*	*0.398*	*0.351*	*0.285*	*0.192*
Acute myeloid leukemia	C92.0	0.227	0.259	0.282	0.300	0.311	0.317	0.318	0.315	0.306	0.292	*0.272*	*0.244*	*0.208*	*0.161*	*0.100*
CARDIOVASCULAR DISEASES																
Hypertension	I10	0.268	0.299	0.323	0.340	0.351	0.357	0.359	0.355	0.346	0.332	*0.312*	*0.285*	*0.249*	*0.201*	*0.139*
Ischemic heart disease	I25	0.377	0.418	0.448	0.469	0.483	0.490	0.492	0.487	0.477	0.460	*0.435*	*0.400*	*0.350*	*0.281*	*0.181*
Other heart disease	I00-I52 excl.I10, I25	0.199	0.230	0.254	0.270	0.282	0.288	0.289	0.285	0.277	0.263	*0.243*	*0.216*	*0.181*	*0.136*	*0.077*
Cerebrovascular disease	I67	0.373	0.425	0.462	0.487	0.503	0.511	0.513	0.508	0.496	0.476	*0.445*	*0.402*	*0.339*	*0.246*	*0.100*
Atherosclerosis	I70	0.307	0.349	0.379	0.400	0.414	0.422	0.423	0.419	0.408	0.391	*0.365*	*0.330*	*0.281*	*0.215*	*0.121*
Aortic aneurysm	I71	0.642	0.680	0.706	0.723	0.733	0.739	0.740	0.737	0.729	0.715	*0.695*	*0.664*	*0.617*	*0.541*	*0.407*
Other arterial disease	I72-I79	0.218	0.258	0.287	0.308	0.322	0.329	0.331	0.326	0.316	0.299	*0.274*	*0.239*	*0.193*	*0.132*	*0.048*
RESPIRATORY DISEASES																
Pneumonia, influenza	J10-J18	0.214	0.242	0.264	0.280	0.290	0.296	0.297	0.294	0.286	0.273	*0.254*	*0.229*	*0.197*	*0.155*	*0.101*
Bronchitis, emphysema	J20, J43	0.880	0.893	0.902	0.908	0.911	0.913	0.914	0.913	0.910	0.905	*0.898*	*0.888*	*0.871*	*0.845*	*0.797*
Chronic airways obstruction	J44.9	0.789	0.813	0.829	0.839	0.846	0.849	0.850	0.848	0.843	0.835	*0.822*	*0.802*	*0.772*	*0.722*	*0.629*
FIRE DEATHS	X00-X01	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	*0.23*	*0.23*	*0.23*	*0.23*	*0.23*

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al.2005]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.7 Attributable fractions for causes of death partially attributable to smoking according to age, women, Poland

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
NEOPLASMS																
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	0.483	0.518	0.543	0.559	0.569	0.573	0.571	0.564	0.550	0.529	*0.499*	*0.455*	*0.392*	*0.298*	*0.148*
Esophagus	C15	0.601	0.635	0.658	0.673	0.682	0.686	0.684	0.677	0.665	0.646	*0.616*	*0.573*	*0.507*	*0.399*	*0.199*
Stomach	C16	0.096	0.106	0.114	0.119	0.123	0.124	0.123	0.121	0.116	0.109	*0.100*	*0.088*	*0.074*	*0.057*	*0.037*
Pancreas	C25	0.233	0.258	0.276	0.289	0.297	0.300	0.299	0.293	0.282	0.266	*0.244*	*0.215*	*0.177*	*0.128*	*0.066*
Larynx	C32	0.736	0.762	0.780	0.791	0.797	0.800	0.799	0.794	0.785	0.770	*0.748*	*0.714*	*0.660*	*0.563*	*0.356*
Trachea, lung, bronchus	C33, C34	0.726	0.754	0.772	0.783	0.790	0.793	0.792	0.787	0.777	0.762	*0.739*	*0.703*	*0.646*	*0.545*	*0.324*
Cervix uteri	C53	0.115	0.131	0.143	0.151	0.157	0.159	0.158	0.154	0.147	0.136	*0.122*	*0.103*	*0.081*	*0.053*	*0.019*
Urinary bladder	C67	0.252	0.275	0.292	0.304	0.311	0.314	0.313	0.307	0.297	0.282	*0.262*	*0.235*	*0.200*	*0.155*	*0.098*
Kidney and renal pelvis	C64, C65	0.058	0.067	0.074	0.079	0.082	0.083	0.083	0.080	0.076	0.070	*0.062*	*0.052*	*0.039*	*0.025*	*0.008*
Acute myeloid leukemia	C92.0	0.064	0.068	0.071	0.073	0.074	0.075	0.075	0.074	0.072	0.069	*0.065*	*0.061*	*0.056*	*0.049*	*0.042*
CARDIOVASCULAR DISEASES																
Hypertension	I10	0.217	0.240	0.258	0.270	0.277	0.280	0.279	0.273	0.263	0.248	*0.227*	*0.200*	*0.165*	*0.121*	*0.064*
Ischemic heart disease	I25	0.304	0.338	0.362	0.378	0.388	0.392	0.391	0.383	0.369	0.349	*0.128*	*0.110*	*0.088*	*0.060*	*0.026*
Other heart disease	I00-I52 excl.I10, I25	0.099	0.113	0.123	0.131	0.136	0.137	0.137	0.133	0.127	0.118	*0.105*	*0.090*	*0.070*	*0.047*	*0.019*
Cerebrovascular disease	I67	0.380	0.418	0.444	0.462	0.473	0.477	0.475	0.467	0.453	0.430	*0.095*	*0.079*	*0.060*	*0.036*	*0.007*
Atherosclerosis	I70	0.138	0.159	0.175	0.186	0.193	0.196	0.194	0.189	0.180	0.166	*0.147*	*0.123*	*0.092*	*0.054*	*0.006*
Aortic aneurysm	I71	0.564	0.601	0.625	0.642	0.651	0.655	0.654	0.646	0.633	0.612	*0.580*	*0.534*	*0.463*	*0.348*	*0.140*
Other arterial disease	I72-I79	0.193	0.219	0.238	0.251	0.259	0.263	0.261	0.255	0.244	0.227	*0.204*	*0.174*	*0.135*	*0.085*	*0.021*
RESPIRATORY DISEASES																
Pneumonia, influenza	J10-J18	0.192	0.217	0.237	0.250	0.258	0.262	0.260	0.254	0.243	0.226	*0.203*	*0.173*	*0.134*	*0.083*	*0.019*
Bronchitis, emphysema	J20, J43	0.770	0.789	0.801	0.810	0.815	0.817	0.816	0.812	0.805	0.794	*0.778*	*0.755*	*0.720*	*0.663*	*0.564*
Chronic airways obstruction	J44.9	0.749	0.773	0.789	0.799	0.805	0.807	0.806	0.802	0.794	0.780	*0.760*	*0.729*	*0.680*	*0.596*	*0.424*
FIRE DEATHS	X00-X01	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	*0.23*	*0.23*	*0.23*	*0.23*	*0.23*

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al.2005]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.8 Causes of death in 100% attributable to drug use according to Chief Statistical Office in Warsaw, Poland

CAUSES OF DEATH	ICD10 CODES
Mental and behavioral disorders due to psychoactive substance use	F11-F12, F14-F16, F19
Accidental poisoning by and exposure to noxious substances	X42, X44, X62, X64
Injury, undetermined whether accidental or purposely inflicted	Y12-Y14

Table 8.1.1.9 Attributable fractions for causes of death partially attributable to alcohol consumption according to gender in Portugal

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION	
			MEN	WOMEN
NEOPLASMS				
Cancer of the lip	C00	Corrao et al. 2004	0.474	0.353
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	Corrao et al. 2004	0.474	0.353
Oesophageal cancer	C15	Corrao et al. 2004	0.290	0.198
Colorectal cancer	C18-C20	Corrao et al. 2004	0.045	0.028
Cancer of the liver and intrahepatic bile ducts	C22	Corrao et al. 2004	0.154	0.099
Laryngeal cancer	C32	Corrao et al. 2004	0.310	0.214
Breast cancer	C50	Corrao et al. 2004	0.201	0.132
CARDIOVASCULAR DISEASES				
Hypertensive diseases	I10-I15	Corrao et al. 2004	0.315	0.218
Coronary heart disease	I20-25	Corrao et al. 2004	-0.151	-0.084
Cardiac arrhythmias	I47, I48	Rehm et al. 2004	0.324	0.224
Haemorrhagic stroke	I60-I62	Corrao et al. 2004	0.230	0.155
Ischaemic stroke	I63-I66	Corrao et al. 2004	0.038	0.028
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS				
Oesophageal varices	I85, I98.2	Rehm et al. 2004	0.549	0.435
Mallory-Weiss syndrome	K22.6	Gutjahr et al. 2001	0.547	0.433
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	Rehm et al. 2004	0.567	0.453
Portal hypertension	K76.6	Gutjahr et al. 2001	0.549	0.435
Cholelithiasis	K80	English 1995	-0.027	-0.017
Acute and other chronic pancreatitis	K85, K86.1	Rehm et al. 2004	0.247	0.166
OTHER CHRONIC AND ACUTE CONDITIONS				
Psoriasis	L40 excl. L40.5	Rehm et al. 2004	0.309	0.210
Spontaneous abortion	O03	Rehm et al. 2004	x	0.119
Epilepsy and Status epilepticus	G40-G41	Rehm et al. 2004	0.483	0.370
INJURIES				
Road traffic accidents - non pedestrian	V10-V89	English 1995	0.298	0.233
Pedestrian traffic accidents	V1-V10	Shield et al. 2012	0.306	0.111
Water transport injuries, Fall injuries, Occupational work/machine injuries	V90-V94, W00-W19, W24-W31, W45	Zeisser et al. 2013	0.622	0.494
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31, X40-X49 excl. X45	Shield et al. 2012	0.385	0.241
Intentional self-harm\Event of undetermined intent	X60-X84, Y10-Y34, Y87.0, Y87.2	English 1995	0.075	0.059
Assault	X85-Y09, Y87.1	English 1995	0.039	0.036

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013]. List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.10 Attributable fractions for causes of death partially attributable to alcohol consumption according to age, men, Portugal

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Cancer of the lip	C00	0.421	0.443	0.452	0.454	0.454	0.454	0.456	0.459	0.464	0.466	*0.464*	*0.451*	*0.419*	*0.351*
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	0.421	0.443	0.452	0.454	0.454	0.454	0.456	0.459	0.464	0.466	*0.464*	*0.451*	*0.419*	*0.351*
Oesophageal cancer	C15	0.248	0.265	0.272	0.273	0.273	0.273	0.275	0.278	0.281	0.283	*0.282*	*0.271*	*0.246*	*0.196*
Colorectal cancer	C18-C20	0.037	0.041	0.042	0.043	0.042	0.042	0.043	0.043	0.044	0.045	*0.044*	*0.042*	*0.037*	*0.028*
Cancer of the liver and intrahepatic bile ducts	C22	0.130	0.141	0.145	0.146	0.146	0.146	0.147	0.149	0.151	0.152	*0.151*	*0.145*	*0.129*	*0.100*
Laryngeal cancer	C32	0.266	0.284	0.291	0.293	0.293	0.293	0.294	0.297	0.301	0.303	*0.301*	*0.291*	*0.265*	*0.212*
Breast cancer	C50	0.169	0.182	0.187	0.189	0.189	0.189	0.190	0.192	0.195	0.197	*0.195*	*0.187*	*0.168*	*0.131*
CARDIOVASCULAR DISEASES															
Hypertensive diseases	I10-I15	0.269	0.287	0.294	0.296	0.296	0.296	0.297	0.301	0.304	0.307	*0.305*	*0.294*	*0.268*	*0.215*
Coronary heart disease	I20-25	-0.128	-0.142	-0.148	-0.149	-0.149	-0.149	-0.150	-0.153	-0.156	-0.158	*-0.156*	*-0.147*	*-0.127*	*-0.092*
Cardiac arrhythmias	I47, I48	0.287	0.306	0.313	0.315	0.315	0.315	0.316	0.320	0.324	0.326	*0.324*	*0.313*	*0.285*	*0.230*
Haemorrhagic stroke	I60-I62	0.184	0.198	0.203	0.205	0.204	0.204	0.206	0.208	0.211	0.213	*0.211*	*0.203*	*0.183*	*0.143*
Ischaemic stroke	I63-I66	0.007	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	*0.008*	*0.008*	*0.007*	*0.005*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS															
Oesophageal varices	I85, I98.2	0.499	0.522	0.530	0.533	0.532	0.532	0.534	0.538	0.542	0.545	*0.543*	*0.530*	*0.498*	*0.426*
Mallory-Weiss syndrome	K22.6	0.497	0.519	0.528	0.530	0.530	0.530	0.531	0.535	0.540	0.542	*0.540*	*0.527*	*0.495*	*0.423*
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	0.511	0.533	0.542	0.544	0.544	0.544	0.546	0.549	0.554	0.557	*0.554*	*0.541*	*0.509*	*0.437*
Portal hypertension	K76.6	0.499	0.522	0.530	0.533	0.532	0.532	0.534	0.538	0.542	0.545	*0.543*	*0.530*	*0.498*	*0.426*
Cholelithiasis	K80	-0.020	-0.022	-0.023	-0.023	-0.023	-0.023	-0.024	-0.024	-0.024	-0.025	*-0.024*	*-0.023*	*-0.020*	*-0.015*
Acute and other chronic pancreatitis	K85, K86.1	0.208	0.224	0.230	0.231	0.231	0.231	0.232	0.235	0.238	0.240	*0.239*	*0.229*	*0.207*	*0.164*
OTHER CHRONIC AND ACUTE CONDITIONS															
Psoriasis	L40 excl. L40.5	0.274	0.292	0.300	0.301	0.301	0.301	0.303	0.306	0.310	0.312	*0.310*	*0.299*	*0.273*	*0.219*
Spontaneous abortion	O03	x	x	xx	x	x	x	x	x	x	x	x	x	x	x
Epilepsy and Status epilepticus	G40-G41	0.435	0.457	0.466	0.468	0.468	0.468	0.469	0.473	0.478	0.480	*0.478*	*0.465*	*0.433*	*0.364*
INJURIES															
Road traffic accidents - non pedestrian	V10-V89	0.230	0.246	0.253	0.254	0.254	0.254	0.256	0.258	0.262	0.264	*0.262*	*0.252*	*0.229*	*0.181*
Pedestrian traffic accidents	V01-V10	0.264	0.282	0.289	0.291	0.290	0.290	0.292	0.295	0.299	0.301	*0.299*	*0.288*	*0.263*	*0.210*
Water transport injuries Fall injuries Occupational work/machine injuries	V90-V94 W00-W19 W24-W31, W45	0.581	0.603	0.611	0.613	0.613	0.613	0.615	0.619	0.623	0.625	*0.623*	*0.611*	*0.580*	*0.508*
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31 X40-X49 excl. X45	0.337	0.357	0.366	0.368	0.367	0.367	0.369	0.373	0.377	0.379	*0.377*	*0.365*	*0.336*	*0.274*
Intentional self-harm\Event of undetermined intention	X60-X84, Y10-Y34, Y87.0, Y87.2	0.062	0.067	0.070	0.070	0.070	0.070	0.071	0.072	0.073	0.074	*0.073*	*0.070*	*0.062*	*0.047*
Assault	X85-Y09, Y87.1	0.032	0.035	0.036	0.036	0.036	0.036	0.037	0.037	0.038	0.038	*0.038*	*0.036*	*0.032*	*0.024*

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013]. List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.11 Attributable fractions for causes of death partially attributable to alcohol consumption according to age, women, Portugal

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Cancer of the lip	C00	0.366	0.361	0.364	0.369	0.373	0.372	0.366	0.353	0.334	0.311	*0.288*	*0.272*	*0.230*	*0.186*
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	0.366	0.361	0.364	0.369	0.373	0.372	0.366	0.353	0.334	0.311	*0.288*	*0.272*	*0.230*	*0.186*
Oesophageal cancer	C15	0.207	0.203	0.205	0.209	0.212	0.212	0.207	0.198	0.185	0.170	*0.155*	*0.144*	*0.119*	*0.094*
Colorectal cancer	C18-C20	0.030	0.029	0.030	0.030	0.031	0.031	0.030	0.028	0.026	0.023	*0.021*	*0.019*	*0.016*	*0.012*
Cancer of the liver and intrahepatic bile ducts	C22	0.106	0.104	0.105	0.107	0.109	0.109	0.106	0.101	0.093	0.085	*0.077*	*0.071*	*0.058*	*0.045*
Laryngeal cancer	C32	0.223	0.219	0.222	0.226	0.229	0.228	0.223	0.214	0.200	0.184	*0.168*	*0.157*	*0.129*	*0.102*
Breast cancer	C50	0.139	0.136	0.138	0.141	0.143	0.142	0.139	0.132	0.123	0.112	*0.101*	*0.094*	*0.077*	*0.060*
CARDIOVASCULAR DISEASES															
Hypertensive diseases	I10-I15	0.226	0.222	0.224	0.228	0.231	0.231	0.226	0.216	0.202	0.186	*0.170*	*0.159*	*0.131*	*0.103*
Coronary heart disease	I20-25	-0.098	-0.095	-0.097	-0.099	-0.101	-0.101	-0.098	-0.092	-0.084	-0.075	*-0.067*	*-0.061*	*-0.048*	*-0.036*
Cardiac arrhythmias	I47, I48	0.242	0.238	0.240	0.244	0.247	0.247	0.242	0.231	0.217	0.199	*0.182*	*0.171*	*0.141*	*0.112*
Haemorrhagic stroke	I60-I62	0.153	0.150	0.151	0.154	0.156	0.156	0.152	0.145	0.135	0.123	*0.112*	*0.104*	*0.085*	*0.066*
Ischaemic stroke	I63-I66	0.007	0.007	0.007	0.007	0.008	0.008	0.007	0.007	0.006	0.006	*0.005*	*0.005*	*0.004*	*0.003*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS															
Oesophageal varices	I85, I98.2	0.447	0.441	0.444	0.450	0.454	0.453	0.446	0.433	0.412	0.387	*0.361*	*0.343*	*0.294*	*0.242*
Mallory-Weiss syndrome	K22.6	0.444	0.438	0.441	0.447	0.451	0.451	0.444	0.430	0.410	0.384	*0.359*	*0.340*	*0.292*	*0.240*
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	0.458	0.452	0.456	0.461	0.465	0.465	0.458	0.444	0.423	0.398	*0.372*	*0.353*	*0.304*	*0.250*
Portal hypertension	K76.6	0.447	0.441	0.444	0.450	0.454	0.453	0.446	0.433	0.412	0.387	*0.361*	*0.343*	*0.294*	*0.242*
Cholelithiasis	K80	-0.017	-0.016	-0.016	-0.017	-0.017	-0.017	-0.017	-0.016	-0.014	-0.013	*-0.012*	*-0.011*	*-0.008*	*-0.006*
Acute and other chronic pancreatitis	K85, K86.1	0.173	0.170	0.171	0.175	0.177	0.177	0.173	0.165	0.154	0.140	*0.128*	*0.119*	*0.098*	*0.076*
OTHER CHRONIC AND ACUTE CONDITIONS															
Psoriasis	L40 excl. L40.5	0.229	0.225	0.227	0.232	0.234	0.234	0.229	0.219	0.205	0.189	*0.172*	*0.161*	*0.133*	*0.105*
Spontaneous abortion	O03	0.129	0.126	0.127	0.130	0.132	0.132	0.129	0.122	0.114	0.103	*0.094*	*0.087*	*0.071*	*0.055*
Epilepsy and Status epilepticus	G40-G41	0.384	0.378	0.381	0.387	0.391	0.390	0.383	0.370	0.351	0.327	*0.303*	*0.287*	*0.243*	*0.197*
INJURIES															
Road traffic accidents - non pedestrian	V10-V89	0.218	0.214	0.216	0.220	0.223	0.223	0.218	0.208	0.195	0.179	*0.163*	*0.152*	*0.126*	*0.099*
Pedestrian traffic accidents	V01-V10	0.114	0.112	0.113	0.115	0.117	0.117	0.114	0.108	0.101	0.091	*0.083*	*0.077*	*0.062*	*0.048*
Water transport injuries Fall injuries Occupational work/machine injuries	V90-V94 W00-W19 W24-W31, W45	0.522	0.517	0.520	0.526	0.530	0.529	0.522	0.508	0.487	0.461	*0.434*	*0.414*	*0.361*	*0.302*
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31 X40-X49 excl. X45	0.247	0.243	0.245	0.250	0.253	0.252	0.247	0.237	0.222	0.204	*0.187*	*0.175*	*0.145*	*0.115*
Intentional self-harm\Event of undetermined intention	X60-X84, Y10-Y34, Y87.0, Y87.2	0.061	0.060	0.061	0.062	0.063	0.063	0.061	0.058	0.054	0.048	*0.044*	*0.040*	*0.033*	*0.025*
Assault	X85-Y09, Y87.1	0.037	0.036	0.037	0.037	0.038	0.038	0.037	0.035	0.032	0.029	*0.026*	*0.024*	*0.019*	*0.015*

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013]. List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.12 Attributable fractions for causes of death partially attributable to smoking, according to gender in Portugal

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION	
			MEN	WOMEN
NEOPLASMS				
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	SAMMEC 2001	0.765	0.351
Esophagus	C15	SAMMEC 2001	0.701	0.464
Stomach	C16	SAMMEC 2001	0.268	0.061
Pancreas	C25	SAMMEC 2001	0.283	0.151
Larynx	C32	SAMMEC 2001	0.831	0.618
Trachea, lung, bronchus	C33, C34	SAMMEC 2001	0.887	0.605
Cervix uteri	C53	SAMMEC 2001	x	0.069
Urinary bladder	C67	SAMMEC 2001	0.463	0.169
Kidney and renal pelvis	C64, C65	SAMMEC 2001	0.388	0.034
Acute myeloid leukemia	C92.0	SAMMEC 2001	0.236	0.043
CARDIOVASCULAR DISEASES				
Hypertension	I10	Ezzati et al. 2005	0.276	0.141
Ischemic heart disease	I25	SAMMEC 2001	0.389	0.198
Other heart disease	I00-I52 excl.I10, I25	SAMMEC 2001	0.208	0.060
Cerebrovascular disease	I67	SAMMEC 2001	0.388	0.255
Atherosclerosis	I70	SAMMEC 2001	0.319	0.081
Aortic aneurysm	I71	SAMMEC 2001	0.654	0.423
Other arterial disease	I72-I79	SAMMEC 2001	0.229	0.118
RESPIRATORY DISEASES				
Pneumonia, influenza	J10-J18	SAMMEC 2001	0.222	0.117
Bronchitis, emphysema	J20, J43	SAMMEC 2001	0.884	0.674
Chronic airways obstruction	J44.9	SAMMEC 2001	0.796	0.638
FIRE DEATHS	X00-X01	na	0.23	

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al. 2005]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.13 Attributable fractions for causes of death partially attributable to smoking according to age, men, Portugal

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	0.753	0.789	0.804	0.808	0.804	0.793	0.774	0.749	0.718	0.682	*0.648*	*0.609*	*0.546*	*0.458*
Esophagus	C15	0.690	0.724	0.740	0.743	0.739	0.728	0.710	0.686	0.659	0.629	*0.603*	*0.575*	*0.534*	*0.484*
Stomach	C16	0.258	0.293	0.310	0.315	0.310	0.297	0.278	0.255	0.230	0.206	*0.187*	*0.168*	*0.144*	*0.118*
Pancreas	C25	0.269	0.315	0.337	0.343	0.336	0.320	0.295	0.265	0.231	0.198	*0.172*	*0.145*	*0.109*	*0.070*
Larynx	C32	0.823	0.848	0.859	0.862	0.859	0.851	0.838	0.820	0.798	0.772	*0.748*	*0.721*	*0.677*	*0.616*
Trachea, lung, bronchus	C33, C34	0.881	0.899	0.907	0.909	0.907	0.901	0.892	0.879	0.862	0.842	*0.823*	*0.800*	*0.762*	*0.706*
Cervix uteri	C53	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Urinary bladder	C67	0.450	0.494	0.514	0.520	0.514	0.498	0.475	0.446	0.412	0.378	*0.351*	*0.322*	*0.282*	*0.237*
Kidney and renal pelvis	C64, C65	0.375	0.418	0.439	0.444	0.438	0.423	0.399	0.370	0.338	0.306	*0.280*	*0.253*	*0.217*	*0.177*
Acute myeloid leukemia	C92.0	0.226	0.260	0.277	0.282	0.277	0.264	0.245	0.223	0.198	0.175	*0.157*	*0.139*	*0.116*	*0.091*
CARDIOVASCULAR DISEASES															
Hypertension	I10	0.266	0.300	0.318	0.322	0.317	0.304	0.286	0.263	0.239	0.215	*0.197*	*0.179*	*0.155*	*0.129*
Ischemic heart disease	I25	0.375	0.420	0.442	0.448	0.441	0.425	0.401	0.371	0.336	0.303	*0.275*	*0.247*	*0.208*	*0.165*
Other heart disease	I00-I52 excl.I10, I25	0.198	0.232	0.248	0.253	0.248	0.235	0.217	0.195	0.172	0.149	*0.132*	*0.115*	*0.092*	*0.068*
Cerebrovascular disease	I67	0.371	0.428	0.454	0.461	0.453	0.434	0.404	0.365	0.321	0.276	*0.238*	*0.198*	*0.142*	*0.077*
Atherosclerosis	I70	0.306	0.351	0.373	0.378	0.372	0.356	0.331	0.301	0.268	0.235	*0.209*	*0.182*	*0.146*	*0.106*
Aortic aneurysm	I71	0.641	0.682	0.700	0.705	0.700	0.686	0.665	0.636	0.602	0.566	*0.534*	*0.499*	*0.447*	*0.383*
Other arterial disease	I72-I79	0.216	0.260	0.281	0.286	0.280	0.264	0.241	0.212	0.181	0.151	*0.127*	*0.103*	*0.070*	*0.036*
RESPIRATORY DISEASES															
Pneumonia, influenza	J10-J18	0.213	0.244	0.259	0.263	0.259	0.247	0.230	0.210	0.188	0.167	*0.151*	*0.135*	*0.115*	*0.093*
Bronchitis, emphysema	J20, J43	0.879	0.894	0.900	0.902	0.900	0.895	0.888	0.878	0.866	0.853	*0.842*	*0.829*	*0.811*	*0.787*
Chronic airways obstruction	J44.9	0.788	0.814	0.826	0.828	0.825	0.817	0.803	0.785	0.763	0.739	*0.717*	*0.693*	*0.657*	*0.611*
FIRE DEATHS	X00-X01	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	*0.23*	*0.23*	*0.23*	*0.23*

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al.2005], [GATS 2010]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.14 Attributable fractions for causes of death partially attributable to smoking according to age, women, Portugal

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	0.385	0.419	0.433	0.431	0.418	0.394	0.361	0.320	0.272	0.223	*0.177*	*0.162*	*0.147*	*0.137*
Esophagus	C15	0.502	0.538	0.552	0.551	0.537	0.512	0.476	0.428	0.371	0.308	*0.247*	*0.225*	*0.205*	*0.189*
Stomach	C16	0.068	0.075	0.078	0.078	0.075	0.069	0.063	0.055	0.048	0.041	*0.035*	*0.033*	*0.031*	*0.030*
Pancreas	C25	0.170	0.190	0.198	0.197	0.189	0.175	0.157	0.136	0.113	0.091	*0.073*	*0.067*	*0.062*	*0.058*
Larynx	C32	0.652	0.683	0.695	0.694	0.682	0.661	0.629	0.586	0.531	0.466	*0.400*	*0.374*	*0.350*	*0.332*
Trachea, lung, bronchus	C33, C34	0.640	0.672	0.685	0.684	0.672	0.649	0.616	0.572	0.514	0.447	*0.377*	*0.350*	*0.325*	*0.306*
Cervix uteri	C53	0.080	0.091	0.096	0.096	0.091	0.083	0.072	0.060	0.048	0.036	*0.027*	*0.023*	*0.021*	*0.019*
Urinary bladder	C67	0.186	0.205	0.213	0.212	0.204	0.191	0.174	0.154	0.133	0.113	*0.096*	*0.091*	*0.086*	*0.082*
Kidney and renal pelvis	C64, C65	0.039	0.046	0.048	0.048	0.045	0.041	0.035	0.029	0.023	0.017	*0.012*	*0.010*	*0.009*	*0.008*
Acute myeloid leukemia	C92.0	0.046	0.049	0.050	0.050	0.049	0.047	0.044	0.041	0.039	0.036	*0.034*	*0.033*	*0.033*	*0.032*
CARDIOVASCULAR DISEASES															
Hypertension	I10	0.158	0.176	0.184	0.183	0.175	0.163	0.146	0.126	0.106	0.086	*0.069*	*0.064*	*0.059*	*0.056*
Ischemic heart disease	I25	0.225	0.253	0.265	0.264	0.253	0.233	0.207	0.175	0.140	0.106	*0.076*	*0.066*	*0.057*	*0.050*
Other heart disease	I00-I52 excl.I10, I25	0.069	0.079	0.083	0.082	0.078	0.071	0.063	0.052	0.042	0.032	*0.024*	*0.021*	*0.019*	*0.017*
Cerebrovascular disease	I67	0.289	0.323	0.336	0.335	0.322	0.298	0.266	0.226	0.181	0.135	*0.095*	*0.081*	*0.068*	*0.059*
Atherosclerosis	I70	0.095	0.111	0.118	0.117	0.111	0.100	0.085	0.069	0.052	0.035	*0.022*	*0.017*	*0.013*	*0.010*
Aortic aneurysm	I71	0.462	0.501	0.515	0.514	0.500	0.473	0.435	0.386	0.327	0.262	*0.200*	*0.178*	*0.157*	*0.142*
Other arterial disease	I72-I79	0.137	0.157	0.165	0.164	0.156	0.142	0.124	0.102	0.080	0.058	*0.039*	*0.033*	*0.028*	*0.024*
RESPIRATORY DISEASES															
Pneumonia, influenza	J10-J18	0.136	0.156	0.164	0.163	0.155	0.141	0.123	0.101	0.078	0.056	*0.038*	*0.032*	*0.026*	*0.023*
Bronchitis, emphysema	J20, J43	0.697	0.719	0.727	0.727	0.718	0.703	0.681	0.653	0.618	0.580	*0.543*	*0.530*	*0.518*	*0.509*
Chronic airways obstruction	J44.9	0.668	0.697	0.708	0.707	0.696	0.677	0.648	0.609	0.560	0.503	*0.445*	*0.423*	*0.403*	*0.388*
FIRE DEATHS	X00-X01	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	*0.23*	*0.23*	*0.23*	*0.23*

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al.2005], [GATS 2010]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.15 Attributable fractions for causes of death partially attributable to alcohol consumption according to gender in Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION	
			MEN	WOMEN
NEOPLASMS				
Cancer of the lip	C00	Corrao et al. 2004	0.523	0.473
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	Corrao et al. 2004	0.523	0.473
Oesophageal cancer	C15	Corrao et al. 2004	0.334	0.290
Colorectal cancer	C18-C20	Corrao et al. 2004	0.054	0.046
Cancer of the liver and intrahepatic bile ducts	C22	Corrao et al. 2004	0.178	0.157
Laryngeal cancer	C32	Corrao et al. 2004	0.356	0.310
Breast cancer	C50	Corrao et al. 2004	0.234	0.202
CARDIOVASCULAR DISEASES				
Hypertensive diseases	I10-I15	Corrao et al. 2004	0.362	0.313
Coronary heart disease	I20-25	Corrao et al. 2004	-0.179	-0.173
Cardiac arrhythmias	I47, I48	Rehm et al. 2004	0.353	0.331
Haemorrhagic stroke	I60-I62	Corrao et al. 2004	0.282	0.214
Ischaemic stroke	I63-I66	Corrao et al. 2004	0.095	0.003
Oesophageal varices	I85, I98.2	Rehm et al. 2004	0.544	0.503
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS				
Mallory-Weiss syndrome	K22.6	Gutjahr et al. 2001	0.541	0.500
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	Rehm et al. 2004	0.578	0.519
Portal hypertension	K76.6	Gutjahr et al. 2001	0.544	0.503
Cholelithiasis	K80	English 1995	-0.032	-0.021
Acute and other chronic pancreatitis	K85, K86.1	Rehm et al. 2004	0.286	0.245
OTHER CHRONIC AND ACUTE CONDITIONS				
Psoriasis	L40 excl. L40.5	Rehm et al. 2004	0.345	0.326
Spontaneous abortion	O03	Rehm et al. 2004	x	0.181
Epilepsy and Status epilepticus	G40-G41	Rehm et al. 2004	0.474	0.440
INJURIES				
Road traffic accidents - non pedestrian	V10-V89	English 1995	0.360	0.266
Pedestrian traffic accidents	V1-V10	Shield et al. 2012	0.293	0.132
Water transport injuries, Fall injuries, Occupational work/machine injuries	V90-V94, W00-W19, W24-W31, W45	Zeisser et al. 2013	0.660	0.641
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31, X40-X49 excl. X45	Shield et al. 2012	0.370	0.280
Intentional self-harm\Event of undetermined intention	X60-X84, Y10-Y34, Y87.0, Y87.2	English 1995	0.071	0.072
Assault	X85-Y09, Y87.1	English 1995	0.037	0.043

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013], *Drink less Program* - Public Health Agency of Government of Catalonia (Spain). List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4].

Table 8.1.1.16 Attributable fractions for causes of death partially attributable to alcohol consumption according to age, men, Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Cancer of the lip	C00	0,564	0.585	0.560	0.540	0.529	0.529	0.542	0.543	0.530	0.521	*0.510*	*0.494*	*0.470*	*0.443*
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	0,564	0.585	0.560	0.540	0.529	0.529	0.542	0.543	0.530	0.521	*0.510*	*0.494*	*0.470*	*0.443*
Oesophageal cancer	C15	0,373	0.393	0.369	0.351	0.341	0.340	0.352	0.352	0.341	0.333	*0.322*	*0.308*	*0.287*	*0.264*
Colorectal cancer	C18-C20	0,058	0.064	0.059	0.056	0.055	0.055	0.057	0.057	0.055	0.053	*0.052*	*0.049*	*0.046*	*0.043*
Cancer of the liver and intrahepatic bile ducts	C22	0,193	0.209	0.195	0.186	0.181	0.181	0.189	0.189	0.183	0.178	*0.173*	*0.166*	*0.157*	*0.148*
Laryngeal cancer	C32	0,396	0.416	0.391	0.373	0.363	0.362	0.374	0.374	0.363	0.355	*0.344*	*0.329*	*0.307*	*0.284*
Breast cancer	C50	0,259	0.277	0.259	0.246	0.239	0.238	0.248	0.248	0.239	0.233	*0.225*	*0.215*	*0.201*	*0.186*
CARDIOVASCULAR DISEASES															
Hypertensive diseases	I10-I15	0.407	0.426	0.401	0.381	0.371	0.370	0.381	0.382	0.370	0.361	*0.350*	*0.334*	*0.310*	*0.284*
Coronary heart disease	I20-25	-0.121	-0.154	-0.167	-0.174	-0.177	-0.180	-0.185	-0.182	-0.180	-0.178	*-0.180*	*-0.183*	*-0.189*	*-0.195*
Cardiac arrhythmias	I47, I48	0.364	0.390	0.371	0.356	0.349	0.352	0.369	0.367	0.359	0.352	*0.346*	*0.338*	*0.329*	*0.320*
Haemorrhagic stroke	I60-I62	0.367	0.377	0.340	0.312	0.297	0.294	0.304	0.307	0.292	0.280	*0.264*	*0.239*	*0.202*	*0.158*
Ischaemic stroke	I63-I66	0.235	0.227	0.182	0.149	0.130	0.121	0.120	0.127	0.110	0.097	*0.076*	*0.040*	*-0.017*	*-0.084*
Oesophageal varices	I85, I98.2	0.690	0.693	0.621	0.554	0.516	0.525	0.585	0.586	0.564	0.543	*0.516*	*0.478*	*0.419*	*0.344*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS															
Mallory-Weiss syndrome	K22.6	0.689	0.692	0.618	0.550	0.512	0.521	0.582	0.583	0.561	0.540	*0.513*	*0.473*	*0.414*	*0.337*
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	0.719	0.722	0.657	0.598	0.563	0.568	0.617	0.619	0.597	0.577	*0.549*	*0.507*	*0.438*	*0.344*
Portal hypertension	K76.6	0.690	0.693	0.621	0.554	0.516	0.525	0.585	0.586	0.564	0.543	*0.516*	*0.478*	*0.419*	*0.344*
Cholelithiasis	K80	-0.067	-0.067	-0.049	-0.038	-0.032	-0.032	-0.038	-0.039	-0.035	-0.032	*-0.027*	*-0.022*	*-0.014*	*-0.006*
Acute and other chronic pancreatitis	K85, K86.1	0.329	0.346	0.321	0.303	0.293	0.292	0.304	0.304	0.293	0.285	*0.275*	*0.261*	*0.241*	*0.218*
OTHER CHRONIC AND ACUTE CONDITIONS															
Psoriasis	L40 excl. L40.5	0.313	0.347	0.349	0.347	0.347	0.348	0.356	0.354	0.348	0.345	*0.342*	*0.340*	*0.338*	*0.336*
Spontaneous abortion	O03	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Epilepsy and Status epilepticus	G40-G41	0.622	0.627	0.549	0.480	0.443	0.453	0.515	0.515	0.493	0.473	*0.448*	*0.412*	*0.361*	*0.299*
INJURIES															
Road traffic accidents - non pedestrian	V10-V89	0.526	0.526	0.462	0.409	0.378	0.373	0.397	0.403	0.377	0.357	*0.325*	*0.274*	*0.187*	*0.072*
Pedestrian traffic accidents	V01-V10	0.446	0.466	0.377	0.302	0.264	0.272	0.335	0.336	0.313	0.292	*0.265*	*0.228*	*0.176*	*0.114*
Water transport injuries Fall injuries Occupational work/machine injuries	V90-V94 W00-W19 W24-W31, W45	0.625	0.661	0.663	0.662	0.662	0.663	0.670	0.668	0.663	0.659	*0.657*	*0.655*	*0.653*	*0.652*
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31 X40-X49 excl. X45	0.554	0.554	0.462	0.381	0.337	0.347	0.416	0.418	0.393	0.370	*0.339*	*0.296*	*0.233*	*0.154*
Intentional self-harm\Event of undetermined intent ion	X60-X84, Y10-Y34, Y87.0, Y87.2	0.139	0.139	0.100	0.074	0.062	0.065	0.085	0.085	0.077	0.071	*0.062*	*0.052*	*0.038*	*0.023*
Assault	X85-Y09, Y87.1	0.075	0.075	0.053	0.038	0.032	0.033	0.044	0.045	0.040	0.037	*0.032*	*0.027*	*0.019*	*0.012*

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013].
List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4]. *Drink less Program* - Public Health Agency of Government of Catalonia (Spain)

Table 8.1.1.17 Attributable fractions for causes of death partially attributable to alcohol consumption according to age, women, Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Cancer of the lip	C00	0.569	0.578	0.522	0.476	0.451	0.453	0.486	0.484	0.476	0.461	*0.442*	*0.415*	*0.381*	*0.337*
Cancer of the oral cavity and pharynx	C01-C06, C09-10, C12-14	0.569	0.578	0.522	0.476	0.451	0.453	0.486	0.484	0.476	0.461	*0.442*	*0.415*	*0.381*	*0.337*
Oesophageal cancer	C15	0.377	0.386	0.332	0.292	0.270	0.272	0.300	0.298	0.291	0.280	*0.264*	*0.243*	*0.217*	*0.186*
Colorectal cancer	C18-C20	0.060	0.063	0.054	0.047	0.044	0.045	0.049	0.049	0.047	0.044	*0.041*	*0.037*	*0.032*	*0.027*
Cancer of the liver and intrahepatic bile ducts	C22	0.199	0.206	0.179	0.160	0.150	0.152	0.165	0.164	0.159	0.152	*0.142*	*0.129*	*0.114*	*0.097*
Laryngeal cancer	C32	0.400	0.409	0.354	0.312	0.290	0.292	0.321	0.319	0.312	0.299	*0.283*	*0.261*	*0.234*	*0.201*
Breast cancer	C50	0.265	0.273	0.233	0.204	0.190	0.191	0.211	0.209	0.204	0.195	*0.182*	*0.167*	*0.147*	*0.125*
CARDIOVASCULAR DISEASES															
Hypertensive diseases	I10-I15	0.410	0.419	0.360	0.315	0.291	0.292	0.323	0.322	0.314	0.302	*0.285*	*0.263*	*0.235*	*0.202*
Coronary heart disease	I20-25	-0.150	-0.166	-0.177	-0.186	-0.192	-0.194	-0.194	-0.189	-0.180	-0.168	*-0.153*	*-0.135*	*-0.115*	*-0.093*
Cardiac arrhythmias	I47, I48	0.378	0.389	0.357	0.335	0.325	0.328	0.346	0.344	0.336	0.324	*0.308*	*0.288*	*0.262*	*0.231*
Haemorrhagic stroke	I60-I62	0.357	0.361	0.278	0.210	0.170	0.170	0.215	0.215	0.211	0.201	*0.188*	*0.170*	*0.148*	*0.124*
Ischaemic stroke	I63-I66	0.204	0.200	0.087	-0.010	-0.070	-0.075	-0.018	-0.012	-0.009	-0.010	*-0.013*	*-0.017*	*-0.022*	*-0.026*
Oesophageal varices	I85, I98.2	0.675	0.676	0.578	0.473	0.403	0.412	0.504	0.509	0.506	0.499	*0.489*	*0.477*	*0.461*	*0.445*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS															
Mallory-Weiss syndrome	K22.6	0.673	0.675	0.575	0.468	0.397	0.406	0.500	0.506	0.502	0.495	*0.486*	*0.474*	*0.458*	*0.443*
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	0.703	0.705	0.604	0.488	0.405	0.413	0.516	0.522	0.518	0.510	*0.499*	*0.484*	*0.465*	*0.445*
Portal hypertension	K76.6	0.675	0.676	0.578	0.473	0.403	0.412	0.504	0.509	0.506	0.499	*0.489*	*0.477*	*0.461*	*0.445*
Cholelithiasis	K80	-0.060	-0.060	-0.034	-0.018	-0.010	-0.010	-0.020	-0.020	-0.020	-0.019	*-0.018*	*-0.017*	*-0.016*	*-0.014*
Acute and other chronic pancreatitis	K85, K86.1	0.331	0.339	0.286	0.246	0.225	0.226	0.253	0.252	0.246	0.236	*0.222*	*0.203*	*0.181*	*0.154*
OTHER CHRONIC AND ACUTE CONDITIONS															
Psoriasis	L40 excl. L40.5	0.339	0.354	0.343	0.337	0.335	0.337	0.345	0.341	0.332	0.319	*0.302*	*0.280*	*0.251*	*0.216*
Spontaneous abortion	O03	0.231	0.238	0.204	0.180	0.169	0.172	0.190	0.189	0.184	0.176	*0.167*	*0.155*	*0.140*	*0.123*
Epilepsy and Status epilepticus	G40-G41	0.607	0.609	0.509	0.411	0.350	0.359	0.442	0.447	0.443	0.436	*0.427*	*0.415*	*0.400*	*0.384*
INJURIES															
Road traffic accidents - non pedestrian	V10-V89	0.622	0.522	0.384	0.237	0.134	0.134	0.249	0.257	0.256	0.247	*0.235*	*0.219*	*0.198*	*0.177*
Pedestrian traffic accidents	V01-V10	0.26	0.260	0.178	0.113	0.079	0.083	0.130	0.133	0.133	0.130	*0.127*	*0.123*	*0.119*	*0.115*
Water transport injuries Fall injuries Occupational work/machine injuries	V90-V94 W00-W19 W24-W31, W45	0.653	0.667	0.658	0.652	0.650	0.653	0.660	0.656	0.647	0.634	*0.614*	*0.588*	*0.552*	*0.503*
Firearm injuries, Drowning, Inhalation and ingestion of food causing obstruction of respiratory tract, Fire injuries, Accidental excessive cold, Accidental poisoning by and exposure to noxious substances	W32-W34, W65-W74, W78-W79, X00-X09, X31 X40-X49 excl. X45	0.473	0.473	0.356	0.246	0.179	0.187	0.275	0.282	0.281	0.277	*0.271*	*0.264*	*0.256*	*0.248*
Intentional self-harm\Event of undetermined intention	X60-X84, Y10-Y34, Y87.0, Y87.2	0.151	0.151	0.099	0.061	0.042	0.044	0.070	0.072	0.072	0.071	*0.069*	*0.067*	*0.064*	*0.062*
Assault	X85-Y09, Y87.1	0.095	0.095	0.061	0.037	0.025	0.026	0.042	0.044	0.044	0.043	*0.042*	*0.040*	*0.039*	*0.037*

Source: authors' own calculation on the basis of: [English 1995], [Corrao et al. 2004], [Rehm et al. 2004], [Gujahr et al. 2001], [Shield et al. 2012], [Zeisser et al. 2013], *Drink less Program* - Public Health Agency of Government of Catalonia (Spain).List of causes of deaths and ICD 10 codes after [Grant, Springbett, Graham 2009, p.4]

Table 8.1.1.18 Attributable fractions for causes of death partially attributable to smoking, according to gender in Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	SOURCE OF RELATIVE RISK ESTIMATE	ATTRIBUTABLE FRACTION	
			MEN	WOMEN
NEOPLASMS				
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	SAMMEC 2001	0.782	0.523
Esophagus	C15	SAMMEC 2001	0.725	0.637
Stomach	C16	SAMMEC 2001	0.292	0.117
Pancreas	C25	SAMMEC 2001	0.302	0.266
Larynx	C32	SAMMEC 2001	0.846	0.767
Trachea, lung, bronchus	C33, C34	SAMMEC 2001	0.897	0.757
Cervix uteri	C53	SAMMEC 2001	x	0.131
Urinary bladder	C67	SAMMEC 2001	0.492	0.293
Kidney and renal pelvis	C64, C65	SAMMEC 2001	0.414	0.066
Acute myeloid leukemia	C92.0	SAMMEC 2001	0.256	0.085
Hypertension	I10	Ezzati et al. 2005	0.782	0.523
CARDIOVASCULAR DISEASES				
Ischemic heart disease	I25	SAMMEC 2001	0.301	0.250
Other heart disease	I00-I52 excl.I10, I25	SAMMEC 2001	0.415	0.334
Cerebrovascular disease	I67	SAMMEC 2001	0.226	0.114
Atherosclerosis	I70	SAMMEC 2001	0.409	0.410
Aortic aneurysm	I71	SAMMEC 2001	0.342	0.151
Other arterial disease	I72-I79	SAMMEC 2001	0.678	0.598
RESPIRATORY DISEASES				
Pneumonia, influenza	J10-J18	SAMMEC 2001	0.242	0.212
Bronchitis, emphysema	J20, J43	SAMMEC 2001	0.897	0.808
Chronic airways obstruction	J44.9	SAMMEC 2001	0.815	0.782
FIRE DEATHS	X00-X01	na	0.23	0.23

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al. 2005]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.19 Attributable fractions for causes of death partially attributable to smoking according to age, men, Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	0.780	0.784	0.788	0.791	0.794	0.797	0.799	0.801	0.771	0.722	*0.681*	*0.649*	*0.624*	*0.606*
Esophagus	C15	0.681	0.697	0.710	0.722	0.731	0.739	0.746	0.752	0.731	0.699	*0.677*	*0.663*	*0.655*	*0.649*
Stomach	C16	0.261	0.272	0.283	0.292	0.300	0.308	0.314	0.320	0.293	0.257	*0.234*	*0.220*	*0.211*	*0.206*
Pancreas	C25	0.317	0.318	0.320	0.321	0.321	0.322	0.322	0.322	0.278	0.218	*0.176*	*0.147*	*0.126*	*0.112*
Larynx	C32	0.832	0.838	0.844	0.848	0.852	0.856	0.859	0.861	0.843	0.814	*0.791*	*0.774*	*0.762*	*0.754*
Trachea, lung, bronchus	C33, C34	0.890	0.894	0.897	0.900	0.902	0.904	0.906	0.908	0.894	0.871	*0.852*	*0.838*	*0.827*	*0.819*
Cervix uteri	C53	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Urinary bladder	C67	0.454	0.469	0.481	0.493	0.502	0.511	0.518	0.525	0.493	0.447	*0.417*	*0.397*	*0.384*	*0.376*
Kidney and renal pelvis	C64, C65	0.386	0.398	0.408	0.418	0.426	0.434	0.440	0.446	0.412	0.365	*0.334*	*0.314*	*0.301*	*0.292*
Acute myeloid leukemia	C92.0	0.238	0.246	0.254	0.261	0.267	0.272	0.277	0.281	0.252	0.215	*0.191*	*0.176*	*0.166*	*0.160*
CARDIOVASCULAR DISEASES															
Hypertension	I10	0.262	0.276	0.288	0.298	0.308	0.316	0.324	0.330	0.305	0.272	*0.251*	*0.238*	*0.231*	*0.226*
Ischemic heart disease	I25	0.395	0.405	0.414	0.421	0.428	0.434	0.440	0.444	0.408	0.356	*0.321*	*0.298*	*0.283*	*0.272*
Other heart disease	I00-I52 excl.I10, I25	0.219	0.225	0.229	0.234	0.238	0.241	0.244	0.247	0.217	0.178	*0.153*	*0.137*	*0.127*	*0.119*
Cerebrovascular disease	I67	0.443	0.441	0.439	0.437	0.435	0.433	0.431	0.429	0.370	0.284	*0.218*	*0.168*	*0.131*	*0.105*
Atherosclerosis	I70	0.340	0.345	0.350	0.354	0.358	0.361	0.364	0.366	0.326	0.271	*0.233*	*0.207*	*0.189*	*0.177*
Aortic aneurysm	I71	0.655	0.665	0.674	0.682	0.689	0.695	0.700	0.705	0.674	0.628	*0.593*	*0.570*	*0.553*	*0.542*
Other arterial disease	I72-I79	0.273	0.271	0.269	0.267	0.265	0.263	0.262	0.260	0.215	0.155	*0.113*	*0.084*	*0.063*	*0.048*
RESPIRATORY DISEASES															
Pneumonia, influenza	J10-J18	0.216	0.226	0.235	0.243	0.250	0.257	0.262	0.267	0.243	0.211	*0.191*	*0.179*	*0.171*	*0.166*
Bronchitis, emphysema	J20, J43	0.860	0.873	0.883	0.891	0.897	0.902	0.907	0.910	0.904	0.894	*0.888*	*0.885*	*0.883*	*0.882*
Chronic airways obstruction	J44.9	0.781	0.793	0.803	0.812	0.819	0.825	0.831	0.835	0.819	0.795	*0.778*	*0.767*	*0.761*	*0.756*
FIRE DEATHS	X00-X01	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	*0.23*	*0.23*	*0.23*	*0.23*

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al.2005], [GATS 2010]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

Table 8.1.1.20 Attributable fractions for causes of death partially attributable to smoking according to age, women, Catalonia (Spain)

CAUSES OF DEATH	ICD10 CODES	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84
NEOPLASMS															
Lip, oral cavity, pharynx	C00, C01-C06, C09-10, C12-14	0.501	0.555	0.599	0.616	0.589	0.574	0.588	0.532	0.475	0.409	*0.336*	*0.265*	*0.501*	*0.555*
Esophagus	C15	0.621	0.670	0.706	0.719	0.699	0.685	0.692	0.644	0.590	0.523	*0.445*	*0.362*	*0.621*	*0.670*
Stomach	C16	0.094	0.116	0.148	0.164	0.137	0.132	0.161	0.127	0.103	0.081	*0.062*	*0.047*	*0.094*	*0.116*
Pancreas	C25	0.241	0.285	0.329	0.347	0.317	0.305	0.327	0.277	0.232	0.188	*0.146*	*0.110*	*0.241*	*0.285*
Larynx	C32	0.749	0.788	0.818	0.828	0.811	0.801	0.812	0.774	0.731	0.676	*0.605*	*0.522*	*0.749*	*0.788*
Trachea, lung, bronchus	C33, C34	0.741	0.781	0.810	0.820	0.803	0.793	0.801	0.763	0.719	0.662	*0.589*	*0.504*	*0.741*	*0.781*
Cervix uteri	C53	0.124	0.150	0.171	0.180	0.167	0.158	0.161	0.134	0.109	0.086	*0.064*	*0.046*	*0.124*	*0.150*
Urinary bladder	C67	0.251	0.298	0.355	0.380	0.337	0.327	0.371	0.311	0.262	0.214	*0.170*	*0.131*	*0.251*	*0.298*
Kidney and renal pelvis	C64, C65	0.064	0.078	0.089	0.093	0.087	0.082	0.081	0.067	0.054	0.042	*0.031*	*0.022*	*0.064*	*0.078*
Acute myeloid leukemia	C92.0	0.053	0.069	0.104	0.123	0.091	0.089	0.134	0.100	0.079	0.062	*0.049*	*0.039*	*0.053*	*0.069*
CARDIOVASCULAR DISEASES															
Hypertension	I10	0.224	0.266	0.310	0.328	0.297	0.286	0.311	0.261	0.218	0.176	*0.137*	*0.103*	*0.224*	*0.266*
Ischemic heart disease	I25	0.328	0.376	0.410	0.422	0.404	0.388	0.382	0.336	0.288	0.235	*0.182*	*0.134*	*0.328*	*0.376*
Other heart disease	I00-I52 excl.I10, I25	0.107	0.129	0.150	0.159	0.145	0.138	0.143	0.118	0.096	0.075	*0.056*	*0.040*	*0.107*	*0.129*
Cerebrovascular disease	I67	0.409	0.461	0.492	0.502	0.488	0.470	0.456	0.410	0.357	0.297	*0.233*	*0.173*	*0.409*	*0.461*
Atherosclerosis	I70	0.156	0.186	0.201	0.205	0.200	0.188	0.170	0.148	0.123	0.096	*0.070*	*0.048*	*0.156*	*0.186*
Aortic aneurysm	I71	0.589	0.639	0.672	0.684	0.667	0.651	0.649	0.601	0.546	0.478	*0.399*	*0.317*	*0.589*	*0.639*
Other arterial disease	I72-I79	0.213	0.250	0.274	0.283	0.271	0.257	0.247	0.213	0.178	0.142	*0.106*	*0.076*	*0.213*	*0.250*
RESPIRATORY DISEASES															
Pneumonia, influenza	J10-J18	0.212	0.249	0.272	0.280	0.269	0.255	0.244	0.211	0.176	0.140	*0.105*	*0.074*	*0.212*	*0.249*
Bronchitis, emphysema	J20, J43	0.764	0.804	0.847	0.862	0.834	0.829	0.861	0.824	0.786	0.739	*0.681*	*0.614*	*0.764*	*0.804*
Chronic airways obstruction	J44.9	0.757	0.796	0.828	0.840	0.820	0.812	0.829	0.792	0.750	0.697	*0.630*	*0.552*	*0.757*	*0.796*
FIRE DEATHS	X00-X01	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	*0.23*	*0.23*	*0.23*	*0.23*

Source: authors' own calculation on the basis of: [SAMMEC 2001], [Ezzati et al.2005], [GATS 2010]. List of causes of deaths and ICD 10 codes after [Assessment …2011].

8.1.2 Mortality

Table 8.1.2.1 Mortality partly attributable to alcohol consumption according to gender and age, Poland

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
NEOPLASMS	0	0	2	4	12	42	103	280	448	403	*258*	*265*	*190*	*127*	*2133*	1293
CARDIOVASCULAR DISEASES	3	4	9	13	20	28	44	83	146	167	*141*	*220*	*277*	*363*	*1518*	518
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS	0	4	12	21	25	31	40	67	66	50	*27*	*30*	*19*	*25*	*416*	316
OTHER CHRONIC AND ACUTE CONDITIONS	4	6	10	14	24	26	33	45	44	27	*9*	*10*	*8*	*6*	*265*	232
INJURUES	192	345	312	306	291	325	434	560	492	380	*209*	*209*	*175*	*251*	*4481*	3637
TOTAL	199	360	344	358	372	451	654	1034	1196	1027	*643*	*734*	*668*	*772*	*8813*	5996
TOTAL THEORETICAL	199	360	344	358	372	451	654	1034	1196	1027	643	588	140	33	7401	x
							WOMEN									
NEOPLASMS	0	1	3	10	20	43	79	156	214	186	*119*	*120*	*82*	*27*	*1061*	713
CARDIOVASCULAR DISEASES	1	4	7	7	15	25	37	79	91	120	*109*	*148*	*187*	*94*	*923*	385
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS	1	1	3	4	5	6	11	18	21	16	*14*	*12*	*12*	*6*	*127*	83
OTHER CHRONIC AND ACUTE CONDITIONS	2	2	5	3	4	7	6	8	7	7	*3*	*3*	*4*	*2*	*62*	50
INJURUES	40	43	37	37	42	48	67	79	77	68	*43*	*66*	*78*	*54*	*780*	540
TOTAL	44	50	55	61	86	129	200	340	410	397	*287*	*349*	*364*	*183*	*2954*	1772
TOTAL THEORETICAL	44	50	55	61	86	129	200	340	410	397	287	186	10	0	2254	x
MEN + WOMEN																
TOTAL	243	410	400	419	457	580	854	1374	1606	1424	*930*	*1083*	*1031*	*955*	*11767*	7768
TOTAL THEORETICAL	243	410	400	419	457	580	854	1374	1606	1424	930	774	150	33	9655	x

Source: authors' own.

Table 8.1.2.2 Mortality in 100% attributable to alcohol consumption according to gender and age, Poland

SPECIFICATION	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
MEN	1	27	92	221	371	485	724	1010	1036	709	366	181	93	31	5347	4676
WOMEN	1	2	8	34	67	95	121	205	209	120	52	42	14	13	983	862
MEN + WOMEN	2	29	100	255	438	580	845	1215	1245	829	418	223	107	44	6330	5538

Source: authors' own.

Table 8.1.1.4 Mortality attributable to alcohol consumption* according to gender and age, Poland

SPECIFICATION	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
MEN	200	387	436	579	743	936	1378	2044	2232	1736	1009	769	233	64	12748	2634
WOMEN	45	52	63	95	153	224	321	545	619	517	339	228	24	13	3237	10672
MEN + WOMEN	245	439	499	674	896	1160	1699	2589	2851	2253	1348	997	257	77	15985	13306

Source: authors' own.

* As mortality partly attributable to alcohol theoretical values were taken.

Table 8.1.2.5 Mortality attributable to smoking according to gender and age, Poland

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
NEOPLASMS	3	5	9	21	51	202	582	1812	3245	3743	*2968*	*3513*	*2825*	*2154*	*21133*	9673
CARDIOVASCULAR DISEASES	7	14	35	73	135	277	544	1251	1832	2046	*1452*	*1909*	*2148*	*2930*	*14651*	6212
RESPIRATORY DISEASES	3	5	9	10	21	26	55	100	182	200	*213*	*328*	*462*	*661*	*2274*	610
FIRE DEATHS	1	1	2	3	4	3	5	10	8	5	*4*	*2*	*4*	*3*	*56*	43
TOTAL	13	25	55	107	210	508	1186	3173	5267	5995	*4637*	*5753*	*5438*	*5748*	*38115*	16539
TOTAL THEORETICAL	11	23	52	104	206	497	1154	3050	4958	5436	4153	3050	1154	497	24345	x
							WOMEN									
NEOPLASMS	0	2	3	9	31	65	205	599	952	1061	*768*	*808*	*696*	*622*	*5819*	2925
CARDIOVASCULAR DISEASES	1	3	7	9	12	27	56	147	257	377	*321*	*604*	*912*	*1490*	*4225*	898
RESPIRATORY DISEASES	1	3	4	4	6	6	14	34	58	74	*83*	*119*	*169*	*267*	*843*	205
FIRE DEATHS	0	0	0	0	1	0	2	1	1	2	*1*	*1*	*2*	*4*	*15*	7
TOTAL	3	8	14	22	50	98	276	781	1268	1514	*1172*	*1533*	*1779*	*2384*	*10902*	4034
TOTAL THEORETICAL	2	7	13	22	51	101	281	778	1212	1325	824	438	233	124	5410	x
							MEN + WOMEN									
TOTAL	16	34	69	129	260	606	1462	3954	6535	7509	*5809*	*7286*	*7217*	*8132*	*49017*	20573
TOTAL THEORETICAL	12	29	65	126	257	598	1435	3827	6171	6762	4977	3488	1386	621	29755	x

Source: authors' own.

Table 8.1.2.5 Mortality attributable to illegal drugs use according to gender and age, Poland

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
100%	4	23	36	30	15	15	10	12	6	5	1	1	2	3	163	156
PARTLY	2	3	9	15	11	17	19	14	13	7	4	4	3	3	124	110
TOTAL	6	26	45	45	26	32	29	26	19	12	5	5	5	6	287	266
							WOMEN									
100%	4	8	5	7	11	6	5	12	10	8	7	8	10	15	116	76
PARTLY	0	1	2	2	5	4	5	5	4	3	2	2	2	5	41	30
TOTAL	4	9	7	9	16	10	10	17	14	11	9	10	12	20	157	106
							MEN + WOMEN									
TOTAL	10	35	52	54	42	43	39	43	33	23	14	15	18	26	444	372

Source: authors' own.

Table 8.1.2.6 Mortality attributable to alcohol consumption, smoking or illegal drugs use according to gender, age 15-64, Poland

SUBSTANCE	NUMBER OF DEATHS			PERCENT							
	MEN	WOMEN	TOTAL	ACCORDING TO GENDER		OF DEATHS IN POPULATION 15-64			ACCORDING TO SUBSTANCE		
				MEN	WOMEN	MEN	WOMEN	TOTAL	MEN	WOMEN	TOTAL
ALCOHOL	10672	2634	13306	80.2	19.8	13.5	8.4	12.0	38.8	38.9	38.8
SMOKING	16539	4034	20573	80.4	19.6	20.9	12.8	18.6	60.2	59.6	60.1
DRUGS	266	106	372	71.5	28.5	0.3	0.3	0.3	1.0	1.6	1.1
ALL SUBSTANCES	27477	6774	34251	80.2	19.8	34.7	21.5	31.0	100	100	100

Source: authors' own.

Remark: As there are people who simultaneously drink and smoke, drink and use drugs etc. the sums of the numbers of deaths attributable to alcohol consumption, smoking and drug use (all substances) are overestimated (some people can be counted twice or even three times).

Table 8.1.2.7 Mortality partly attributable to alcohol consumption according to gender and age, Portugal

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
NEOPLASMS	0	0	0	0	1	20	50	69	81	96	*82*	*79*	*63*	*39*	*581*	*317*
CARDIOVASCULAR DISEASES	0	0	0	0	1	-1	-5	-8	-12	-13	*-20*	*-17*	*-5*	*7*	*-73*	*-39*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS	0	0	0	0	2	4	6	7	13	17	*14*	*18*	*13*	*9*	*103*	*49*
OTHER CHRONIC AND ACUTE CONDITIONS	0	0	0	2	0	4	4	3	2	1	*3*	*4*	*4*	*3*	*30*	*16*
INJURUES	9	16	25	28	33	30	34	32	31	34	*42*	*45*	*41*	*32*	*431*	*272*
TOTAL	9	16	24	30	37	57	88	104	115	135	121	*129*	*116*	*90*	*1071*	*615*
TOTAL THEORETICAL	9	16	24	30	37	57	88	104	115	135	121	115	99	74	1025	x
							WOMEN									
NEOPLASMS	0	0	1	2	6	10	16	22	22	24	*23*	*29*	*26*	*23*	*204*	*103*
CARDIOVASCULAR DISEASES	0	0	1	0	0	1	2	4	5	3	*4*	*8*	*14*	*24*	*66*	*15*
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS	0	0	0	0	0	2	0	3	4	5	*1*	*3*	*6*	*3*	*27*	*14*
OTHER CHRONIC AND ACUTE CONDITIONS	0	0	0	1	1	1	0	1	1	0	*0*	*1*	*3*	*3*	*12*	*6*
INJURUES	2	4	4	5	3	5	6	7	7	8	*5*	*11*	*16*	*16*	*98*	*50*
TOTAL	2	4	5	9	11	18	23	37	39	40	34	*51*	*65*	*69*	*406*	*188*
TOTAL THEORETICAL	2	4	5	9	11	18	23	37	39	40	34	27	16	0	265	x
							MEN + WOMEN									
TOTAL	11	20	29	39	47	75	112	141	154	175	155	*180*	*181*	*159*	*1478*	*803*
TOTAL THEORETICAL	11	20	29	39	47	75	112	141	154	175	155	143	114	75	1289	x

Source: authors' own.

Table 8.1.2.8 Mortality in 100% attributable to alcohol consumption according to gender and age, Portugal

SPECIFICATION	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
MEN	0	0	0	7	24	57	83	114	117	106	81	92	51	26	758	508
WOMEN	0	0	0	0	8	13	19	22	22	14	18	14	10	7	147	98
MEN + WOMEN	0	0	0	7	32	70	102	136	139	120	99	106	61	33	905	606

Source: authors' own.

Table 8.1.2.9 Mortality attributable to alcohol consumption* according to gender and age, Portugal

SPECIFICATION	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
MEN	9	16	24	37	61	114	171	218	232	241	202	207	150	100	1783	1123
WOMEN	2	4	5	9	19	31	42	59	61	54	52	41	26	7	412	286
MEN + WOMEN	11	20	29	46	79	145	214	277	293	295	254	249	175	108	2194	1409

Source: authors' own.

* As mortality partly attributable to alcohol theoretical values were taken.

Table 8.1.2.10 Mortality attributable to smoking according to gender and age, Portugal

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
NEOPLASMS	1	0	0	1	22	98	212	372	459	542	*574*	*531*	*490*	*374*	3677	1709
CARDIOVASCULAR DISEASES	0	2	1	3	10	19	37	53	74	95	*115*	*156*	*188*	*172*	925	294
RESPIRATORY DISEASES	0	0	1	1	4	5	15	23	26	52	*72*	*126*	*215*	*226*	768	128
FIRE DEATHS	1	2	3	6	36	122	264	448	560	689	*761*	*813*	*893*	*772*	5370	2131
TOTAL	1	2	3	6	36	122	264	448	560	689	*618*	*501*	*407*	*331*	3988	x
TOTAL THEORETICAL	1	0	0	1	22	98	212	372	459	542	*574*	*531*	*490*	*374*	3677	1709
							WOMEN									
NEOPLASMS	0	0	0	1	4	17	25	45	55	54	39	*50*	*68*	*61*	*419*	201
CARDIOVASCULAR DISEASES	0	0	0	0	1	2	2	4	8	12	12	*26*	*46*	*72*	*184*	28
RESPIRATORY DISEASES	0	0	0	0	0	1	1	1	4	7	10	*21*	*43*	*78*	*167*	15
FIRE DEATHS	0	0	0	0	0	0	0	0	0	0	0	*0*	*0*	*0*	*0*	0
TOTAL	0	1	1	2	5	20	27	50	67	73	61	*97*	*157*	*211*	*769*	244
TOTAL THEORETICAL	0	1	1	2	5	20	27	50	67	73	61	*43*	*12*	*0*	*360*	x
							MEN + WOMEN									
TOTAL	1	2	3	7	42	142	292	498	626	762	*821*	*911*	*1049*	*983*	*6139*	2375
TOTAL THEORETICAL	1	2	3	7	42	142	292	498	626	762	*678*	*544*	*420*	*331*	*4348*	x

Source: authors' own.

Table 8.1.2.11 Mortality attributable to illegal drug use according to gender and age, Portugal

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
100%	0	0	2	2	5	4	4	3	1	0	0	0	0	0	21	21
PARTLY	0	0	1	4	14	17	13	14	7	4	0	0	0	0	74	74
TOTAL	0	0	3	6	19	21	17	17	8	4	0	0	0	0	95	95
							WOMEN									
100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PARTLY	0	0	1	1	2	3	2	4	1	1	0	0	0	0	14	14
TOTAL	0	0	1	1	2	3	2	4	1	1	0	0	0	0	14	14
							MEN + WOMEN									
TOTAL	0	0	4	7	21	24	19	20	9	5	0	0	0	0	109	109

Source: authors' own.

Table 8.1.2.12 Mortality partly attributable to alcohol consumption according to gender and age, Catalonia (Spain)

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	Total	15-64
							MEN									
NEOPLASMS	0	0	1	1	2	6	19	35	52	55	*56*	*55*	*64*	*45*	*390*	170
CARDIOVASCULAR DISEASES	0	0	0	1	-2	-2	-5	-6	-10	-11	-17	-18	-26	-49	-147	-37
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS	0	0	0	0	0	1	3	5	5	6	2	8	9	4	43	20
OTHER CHRONIC AND ACUTE CONDITIONS	0	0	0	0	0	0	1	3	0	1	*2*	*2*	*1*	*2*	*14*	7
INJURUES	9	15	16	22	23	20	25	18	13	12	9	8	12	12	213	173
TOTAL	9	14	17	24	23	25	42	55	61	63	52	55	58	14	9	333
TOTAL THEORETICAL	9	14	17	24	23	25	42	55	61	63	*52*	40	20	10	455	x
							WOMEN									
NEOPLASMS	1	1	1	3	6	13	15	21	28	23	*24*	*28*	*36*	*37*	*233*	110
CARDIOVASCULAR DISEASES	0	0	0	0	0	-1	1	0	1	3	2	2	22	31	64	7
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS	0	0	0	0	0	1	0	1	1	2	1	2	7	6	21	5
OTHER CHRONIC AND ACUTE CONDITIONS	0	0	0	1	0	0	3	0	0	1	*1*	*1*	*2*	*3*	*12*	5
INJURUES	3	3	3	3	2	2	4	2	2	3	4	4	10	13	59	28
TOTAL	4	4	4	7	9	16	23	24	32	32	32	36	76	90	390	155
TOTAL THEORETICAL	4	4	4	7	9	16	23	24	32	30	25	20	16	11	225	x
							MEN + WOMEN									
TOTAL	13	18	21	31	32	41	65	79	93	95	84	91	135	104	902	488
TOTAL THEORETICAL	13	18	21	31	32	41	65	79	93	93	77	60	36	21	680	x

Source: authors' own.

Table 8.1.2.13 Mortality in 100% attributable to alcohol consumption according to gender and age, Catalonia (Spain)

SPECIFICATION	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
MEN	0	0	0	0	2	5	17	23	24	28	25	22	17	12	175	99
WOMEN	0	0	0	0	0	4	9	11	8	5	4	6	4	2	53	37
MEN + WOMEN	0	0	0	0	2	9	26	34	32	33	29	28	21	14	228	136

Source: authors' own.

Table 8.1.2.14 Mortality attributable to alcohol consumption according to gender and age, Catalonia (Spain)*

SPECIFICATION	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
MEN	9	14	17	24	25	30	59	78	85	91	77	62	37	22	630	432
WOMEN	4	4	4	7	9	20	32	35	40	35	29	26	20	13	278	192
MEN + WOMEN	13	18	21	31	34	50	91	113	125	126	106	88	57	35	908	624

Source: authors' own.

* As mortality partly attributable to alcohol theoretical values were taken.

Table 8.1.2.15 Mortality attributable to smoking according to gender and age, Catalonia (Spain)

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	Total	15-64
							MEN									
NEOPLASMS	0	2	2	2	11	30	114	227	349	432	*444*	*447*	*543*	*438*	*3041*	1169
CARDIOVASCULAR DISEASES	1	3	3	3	13	22	32	51	70	80	*101*	*116*	*180*	*227*	*901*	277
RESPIRATORY DISEASES	0	0	1	2	1	1	5	10	15	30	*56*	*105*	*186*	*261*	*672*	64
FIRE DEATHS	0	0	0	0	0	0	0	0	0	0	*1*	*0*	*0*	*0*	*3*	1
TOTAL	1	5	5	7	24	53	151	288	435	542	*602*	*668*	*910*	*927*	*4618*	1511
TOTAL THEORETICAL	1	5	5	7	24	53	151	287	434	541	542	432	290	151	2925	x
							WOMEN									
NEOPLASMS	1	1	2	1	7	21	36	53	64	59	*45*	*48*	*40*	*48*	*423*	242
CARDIOVASCULAR DISEASES	0	1	0	1	2	4	7	6	9	11	*13*	*20*	*35*	*64*	*173*	41
RESPIRATORY DISEASES	0	0	0	0	0	1	2	3	3	2	*7*	*10*	*15*	*34*	*77*	12
FIRE DEATHS	0	0	0	0	0	0	0	0	0	0	*0*	*0*	*0*	*0*	*1*	0
TOTAL	1	1	2	2	9	26	45	62	75	73	*65*	*78*	*90*	*145*	*675*	297
TOTAL THEORETICAL	1	1	2	2	9	26	45	62	75	73	65	58	43	22	483	x
							MEN + WOMEN									
TOTAL	2	7	8	8	33	79	196	349	510	615	*667*	*746*	*1000*	*1072*	*5293*	1808
TOTAL THEORETICAL	2	6	8	8	33	79	196	349	510	614	607	490	333	173	3408	x

Source: authors' own.

Table 8.1.2.16 Mortality attributable to illegal drug use according to gender and age, Catalonia (Spain)

CAUSES OF DEATH	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	Total	15-64
							MEN									
100%	1	1	5	15	20	20	14	5	1	5	1	0	0	1	89	87
PARTLY	0	0	0	2	9	9	20	14	6	3	0	2	2	1	68	63
TOTAL	1	1	5	17	29	29	34	19	7	8	1	2	2	2	157	150
							WOMEN									
100%	0	0	2	5	5	7	7	2	1	2	0	2	2	0	35	31
PARTLY	0	0	1	1	1	3	4	3	0	1	3	4	1	0	22	14
TOTAL	0	0	3	6	6	10	11	5	1	3	3	6	3	0	57	45
							MEN + WOMEN									
TOTAL	1	1	8	23	35	39	45	24	8	11	5	8	5	2	214	195

Source: authors' own.

8.1.3.Costs

Alcohol

Table 8.1.3.1 Number of general hospital patients attributed to alcohol use according to ICD10 codes and age, men

ILLNESS	ICD10 CODES	Number of hospital patients							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Cancer of the lip, Cancer of the oral cavity and pharynx	C00, C01-C06, C09-10, C12-14	86	230	215	662	1589	*1859*	*4641*	2782
Oesophageal cancer	C15	41	110	103	316	744	*818*	*2133*	1315
Colorectal cancer	C18-C20	0	11	57	222	595	*608*	*1494*	886
Cancer of the liver and intrahepatic bile ducts, Laryngeal cancer	C22, C32	269	615	470	1356	2722	*2306*	*7739*	5433
Breast cancer	C50	0	9	20	57	88	*61*	*236*	174
CARDIOVASCULAR DISEASES									
Hypertensive diseases	I10-I15	890	1283	1646	3380	4664	*3457*	*15321*	11864
Coronary heart disease	I20-25	negative values							
Cardiac arrhythmias	I47, I48	41	75	85	207	437	*661*	*1506*	845
Haemorrhagic stroke	I60-I62	8	80	156	604	1483	*2450*	*4781*	2331
Ischaemic stroke	I63-I66	14	134	262	1009	2448	*3900*	*7766*	3866
Oesophageal varices	I85, I98.2	2	10	9	19	35	*51*	*126*	75
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS									
Mallory-Weiss syndrome	K22.6	142	355	326	553	674	*596*	*2645*	2050
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	20	80	91	149	175	*122*	*636*	514
Portal hypertension	K76.6	0	0	0	1	1	*1*	*3*	3
Cholelithiasis	K80	negative values							
Acute and other chronic pancreatitis	K85, K86.1	70	1215	1582	1728	1257	*850*	*6702*	5852
OTHER CHRONIC AND ACUTE CONDITIONS									
Psoriasis	L40 excl. L40.5	0	0	0	0	0	*0*	*0*	0
Spontaneus abortion	O03	x	x	x	x	x	*x*	*x*	x
Epilepsy and Status epilepticus	G40-G41	1000	2041	1659	2007	1688	*1099*	*9494*	8395
100% ALCOHOL									
Mental and behavioral disorders due to use of alcohol	F10	96	2614	3126	3407	1894	363	11500	11137
Degeneration of nervous system due to alcohol	G31.2	55	164	130	210	270	237	1065	828
Alcoholic polyneuropathy	G62.1	9	27	22	35	45	40	178	138
Alcoholic cardiomyopathy	I42.6	56	213	200	429	813	1390	3101	1710
Alcoholic gastritis	K.29.2	128	426	322	485	606	796	2763	1967
Alcoholic liver disease	K70	3	913	1869	3366	3420	1162	10733	9571
Alcohol induced chronic pancreatitis	K86.0	5	93	119	134	104	91	547	455

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.2 Number of general hospital person-days attributed to alcohol use according to ICD10 codes and age, men

ILLNESS	ICD10 CODES	Number of person-days							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Cancer of the lip, Cancer of the oral cavity and pharynx	C00, C01-C06, C09-10, C12-14	292	1035	988	3577	8581	*10969*	*25442*	14472
Oesophageal cancer	C15	139	497	476	1707	4018	*4828*	*11664*	6836
Colorectal cancer	C18-C20	1	72	222	998	2858	*4257*	*8408*	4151
Cancer of the liver and intrahepatic bile ducts, Laryngeal cancer	C22, C32	1105	3939	3151	9896	19056	*16832*	*53978*	37146
Breast cancer	C50	0	10	42	80	202	*202*	*537*	334
CARDIOVASCULAR DISEASES									
Hypertensive diseases	I10-I15	3472	3979	5268	12505	18191	*15210*	*58624*	43415
Coronary heart disease	I20-25	negative values							
Cardiac arrhythmias	I47, I48	152	241	271	704	1617	*2842*	*5826*	2984
Haemorrhagic stroke	I60-I62	72	935	1933	8030	18984	*29399*	*59354*	29954
Ischaemic stroke	I63-I66	121	1567	3249	13419	31329	*46800*	*96485*	49685
Oesophageal varices	I85, I98.2	10	45	46	114	233	*384*	*833*	449
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS									
Mallory-Weiss syndrome	K22.6	439	1066	1075	2100	3100	*3098*	*10879*	7781
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	85	518	592	1180	1519	*1086*	*4979*	3894
Portal hypertension	K76.6	0	3	3	6	8	*6*	*27*	21
Cholelithiasis	K80	negative values							
Acute and other chronic pancreatitis	K85, K86.1	509	10088	13766	15031	11813	*7989*	*59196*	51207
OTHER CHRONIC AND ACUTE CONDITIONS									
Psoriasis	L40 excl. L40.5	0	0	0	0	0	*0*	*0*	0
Spontaneus abortion	O03	x	x	x	x	x	*x*	*x*	x
Epilepsy and Status epilepticus	G40-G41	3998	6532	4810	6825	7596	*6482*	*36245*	29762
100% ALCOHOL									
Mental and behavioral disorders due to use of alcohol	F10	230	31891	44077	49742	26137	3703	155780	152077
Degeneration of nervous system due to alcohol	G31.2	436	1230	936	1844	2727	2706	9880	7173
Alcoholic polyneuropathy	G62.1	73	205	156	307	455	451	1647	1196
Alcoholic cardiomyopathy	I42.6	236	1001	1018	2576	5445	10426	20701	10274
Alcoholic gastritis	K.29.2	346	894	868	1602	2182	3582	9473	5892
Alcoholic liver disease	K70	19	7487	17008	31304	34542	11039	101398	90359
Alcohol induced chronic pancreatitis	K86.0	40	769	1034	1166	981	859	4848	3989

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.3 General hospital costs attributed to alcohol use according to ICD10 codes and age, men (thousands Euros)

ILLNESS	ICD10 CODES	Costs (thousands Euros)							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Cancer of the lip, Cancer of the oral cavity and pharynx	C00, C01-C06, C09-10, C12-14	28.4	100.9	96.3	348.6	836.5	*1069.3*	*2480.0*	1410.7
Oesophageal cancer	C15	13.5	48.4	46.4	166.4	391.6	*470.6*	*1137.0*	666.4
Colorectal cancer	C18-C20	0.1	7.0	21.6	97.3	278.6	*415.0*	*819.6*	404.6
Cancer of the liver and intrahepatic bile ducts, Laryngeal cancer	C22, C32	107.7	384.0	307.1	964.6	1857.5	*1640.7*	*5261.6*	3620.9
Breast cancer	C50	0.0	1.0	4.1	7.8	19.7	*19.7*	*52.3*	32.6
CARDIOVASCULAR DISEASES									
Hypertensive diseases	I10-I15	875.5	1003.2	1328.4	3153.1	4586.6	*3835.0*	*14781.8*	10946.8
Coronary heart disease	I20-25	negative values							
Cardiac arrhythmias	I47, I48	38.3	60.6	68.2	177.4	407.8	*716.7*	*1469.0*	752.4
Haemorrhagic stroke	I60-I62	18.3	235.7	487.3	2024.8	4786.7	*7412.9*	*14965.7*	7552.8
Ischaemic stroke	I63-I66	30.4	395.2	819.3	3383.5	7899.4	*11800.3*	*24328.1*	12527.8
Oesophageal varices	I85, I98.2	2.6	11.3	11.6	28.8	58.8	*96.7*	*209.9*	113.2
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS									
Mallory-Weiss syndrome	K22.6	34.5	83.6	84.3	164.7	243.1	*243.0*	*853.2*	610.2
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	6.7	40.6	46.4	92.5	119.1	*85.1*	*390.5*	305.3
Portal hypertension	K76.6	0.0	0.2	0.3	0.5	0.6	*0.5*	*2.1*	1.7
Cholelithiasis	K80	negative values							
Acute and other chronic pancreatitis	K85, K86.1	39.9	791.1	1079.5	1178.7	926.4	*626.5*	*4642.2*	4015.7
OTHER CHRONIC AND ACUTE CONDITIONS									
Psoriasis	L40 excl. L40.5	0	0	0	0	0	*0*	*0*	0
Spontaneus abortion	O03	x	x	x	x	x	*x*	*x*	x
Epilepsy and Status epilepticus	G40-G41	313.5	512.3	377.2	535.2	595.7	*508.3*	*2842.3*	2334.0
100% ALCOHOL									
Mental and behavioral disorders due to use of alcohol	F10	7.3	1015.1	1403.0	1583.3	832.0	117.9	4958.6	4840.7
Degeneration of nervous system due to alcohol	G31.2	34.2	96.4	73.4	144.6	213.9	212.2	774.8	562.5
Alcoholic polyneuropathy	G62.1	5.7	16.1	12.2	24.1	35.6	35.4	129.1	93.8
Alcoholic cardiomyopathy	I42.6	18.5	78.5	79.8	202.0	427.0	817.6	1623.3	805.7
Alcoholic gastritis	K.29.2	27.1	70.1	68.1	125.6	171.1	280.9	742.9	462.0
Alcoholic liver disease	K70	1.5	587.1	1333.8	2454.9	2708.8	865.7	7951.7	7086.0
Alcohol induced chronic pancreatitis	K86.0	3.1	60.3	81.1	91.4	76.9	67.3	380.2	312.8

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.4 Number of general hospital patients attributed to alcohol use according to ICD10 codes and age, women

ILLNESS	ICD10 CODES	Number of hospital patients							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Cancer of the lip, Cancer of the oral cavity and pharynx	C00, C01-C06, C09-10, C12-14	28	136	174	355	409	*332*	*1433*	1101
Oesophageal cancer	C15	14	69	87	175	194	*145*	*684*	539
Colorectal cancer	C18-C20	1	12	40	165	302	*269*	*788*	520
Cancer of the liver and intrahepatic bile ducts, Laryngeal cancer	C22, C32	33	87	80	169	284	*267*	*918*	652
Breast cancer	C50	1	310	1276	3113	3661	*1597*	*9957*	8361
CARDIOVASCULAR DISEASES									
Hypertensive diseases	I10-I15	311	501	870	2835	4720	*6417*	*15656*	9239
Coronary heart disease	I20-25	negative values							
Cardiac arrhythmias	I47, I48	107	168	145	295	670	*1647*	*3031*	1384
Haemorrhagic stroke	I60-I62	6	46	82	253	476	*1532*	*2394*	862
Ischaemic stroke	I63-I66	12	94	167	510	933	*2865*	*4581*	1716
Oesophageal varices	I85, I98.2	1	3	3	6	11	*28*	*52*	24
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS									
Mallory-Weiss syndrome	K22.6	80	92	81	144	194	*228*	*819*	591
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	16	42	39	91	124	*114*	*425*	311
Portal hypertension	K76.6	0	0	0	0	0	*0*	*0*	0
Cholelithiasis	K80	negative values							
Acute and other chronic pancreatitis	K85, K86.1	53	411	367	555	595	*765*	*2747*	1982
OTHER CHRONIC AND ACUTE CONDITIONS									
Psoriasis	L40 excl. L40.5	not available							
Spontaneus abortion	O03	not available							
Epilepsy and Status epilepticus	G40-G41	1188	1391	685	858	738	*912*	*5772*	4860
100% ALCOHOL									
Mental and behavioral disorders due to use of alcohol	F10	44	395	504	541	272	76	1832	1756
Degeneration of nervous system due to alcohol	G31.2	76	171	137	253	272	355	1265	910
Alcoholic polyneuropathy	G62.1	13	29	23	42	45	59	211	152
Alcoholic cardiomyopathy	I42.6	2	7	8	16	30	103	165	62
Alcoholic gastritis	K.29.2	74	127	95	151	210	433	1090	656
Alcoholic liver disease	K70	0	192	513	1019	1079	261	3064	2803
Alcohol induced chronic pancreatitis	K86.0	0	2	2	3	4	8	18	11

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.5 Number of general hospital person-days attributed to alcohol use according to ICD10 codes and age, women

ILLNESS	ICD10 CODES	Number of person-days							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Cancer of the lip, Cancer of the oral cavity and pharynx	C00, C01-C06, C09-10, C12-14	83	462	711	1598	1964	*1958*	*6776*	4818
Oesophageal cancer	C15	42	234	358	787	930	*856*	*3208*	2352
Colorectal cancer	C18-C20	2	63	189	709	1389	*1936*	*4288*	2352
Cancer of the liver and intrahepatic bile ducts, Laryngeal cancer	C22, C32	138	468	518	1097	1902	*1920*	*6041*	4121
Breast cancer	C50	2	805	3956	10897	13179	*8142*	*36982*	28840
CARDIOVASCULAR DISEASES									
Hypertensive diseases	I10-I15	1400	1705	2960	10490	17466	*27595*	*61615*	34020
Coronary heart disease	I20-25	negative values							
Cardiac arrhythmias	I47, I48	396	453	434	972	2345	*7248*	*11848*	4600
Haemorrhagic stroke	I60-I62	59	459	939	2908	5803	*18841*	*29010*	10169
Ischaemic stroke	I63-I66	121	945	1922	5859	11385	*35237*	*55469*	20231
Oesophageal varices	I85, I98.2	3	10	12	29	61	*207*	*323*	115
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS									
Mallory-Weiss syndrome	K22.6	239	249	235	491	794	*1255*	*3263*	2008
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	69	276	268	697	966	*1038*	*3313*	2275
Portal hypertension	K76.6	0	0	0	0	0	*0*	*0*	0
Cholelithiasis	K80	negative values							
Acute and other chronic pancreatitis	K85, K86.1	360	3042	3011	4942	5357	*6888*	*23599*	16711
OTHER CHRONIC AND ACUTE CONDITIONS									
Psoriasis	L40 excl. L40.5	not available							
Spontaneus abortion	O03	not available							
Epilepsy and Status epilepticus	G40-G41	4989	5703	2945	3948	4059	*6202*	*27845*	21643
100% ALCOHOL									
Mental and behavioral disorders due to use of alcohol	F10	53	5728	9425	9522	4406	752	29886	29133
Degeneration of nervous system due to alcohol	G31.2	458	925	795	1673	2147	3657	9656	5999
Alcoholic polyneuropathy	G62.1	76	154	133	279	358	609	1609	1000
Alcoholic cardiomyopathy	I42.6	8	24	28	71	165	761	1057	296
Alcoholic gastritis	K.29.2	214	241	218	423	650	2037	3784	1747
Alcoholic liver disease	K70	0	2016	5951	10496	11653	2819	32935	30116
Alcohol induced chronic pancreatitis	K86.0	2	15	15	26	33	68	158	90

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.6 General hospital costs attributed to alcohol according to ICD10 codes and age, women, (thousands Euros)

ILLNESS	ICD10 CODES	Costs (thousands Euros)							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Cancer of the lip, Cancer of the oral cavity and pharynx	C00, C01-C06, C09-10, C12-14	8.1	45.0	69.3	155.8	191.4	*190.9*	*660.5*	469.7
Oesophageal cancer	C15	4.1	22.8	34.9	76.7	90.7	*83.5*	*312.7*	229.2
Colorectal cancer	C18-C20	0.2	6.1	18.4	69.2	135.4	*188.7*	*418.0*	229.2
Cancer of the liver and intrahepatic bile ducts, Laryngeal cancer	C22, C32	13.4	45.6	50.5	106.9	185.4	*187.1*	*588.9*	401.7
Breast cancer	C50	0.2	78.5	385.6	1062.2	1284.7	*793.7*	*3604.9*	2811.2
CARDIOVASCULAR DISEASES									
Hypertensive diseases	I10-I15	353.0	429.9	746.2	2645.0	4403.9	*6957.9*	*15535.8*	8577.9
Coronary heart disease	I20-25	negative values							
Cardiac arrhythmias	I47, I48	100.0	114.2	109.4	245.1	591.2	*1827.6*	*2987.5*	1159.9
Haemorrhagic stroke	I60-I62	14.9	115.8	236.8	733.3	1463.2	*4750.6*	*7314.7*	2564.1
Ischaemic stroke	I63-I66	30.4	238.2	484.6	1477.4	2870.6	*8884.9*	*13986.1*	5101.2
Oesophageal varices	I85, I98.2	0.3	0.8	0.9	2.3	4.8	*16.3*	*25.3*	9.0
GASTROINTESTINAL, METABOLIC AND ENDOCRINE CONDITIONS									
Mallory-Weiss syndrome	K22.6	18.7	19.5	18.4	38.5	62.3	*98.4*	*255.9*	157.4
Unspecified liver disease	K73, K74.0-2, K76.0, K76.9	5.4	21.6	21.0	54.7	75.7	*81.4*	*259.8*	178.4
Portal hypertension	K76.6	0.0	0.0	0.0	0.0	0.0	*0.0*	*0.0*	0.0
Cholelithiasis	K80	negative values							
Acute and other chronic pancreatitis	K85, K86.1	28.2	238.5	236.1	387.5	420.1	*540.2*	*1850.7*	1310.5
OTHER CHRONIC AND ACUTE CONDITIONS									
Psoriasis	L40 excl. L40.5	not available							
Spontaneus abortion	O03	not available							
Epilepsy and Status epilepticus	G40-G41	391.2	447.2	231.0	309.6	318.3	*486.3*	*2183.6*	1697.3
100% ALCOHOL									
Mental and behavioral disorders due to use of alcohol	F10	1.7	182.3	300.0	303.1	140.3	23.9	951.3	927.3
Degeneration of nervous system due to alcohol	G31.2	35.9	72.6	62.4	131.2	168.4	286.8	757.2	470.4
Alcoholic polyneuropathy	G62.1	6.0	12.1	10.4	21.9	28.1	47.8	126.2	78.4
Alcoholic cardiomyopathy	I42.6	0.6	1.9	2.2	5.6	13.0	59.7	82.9	23.3
Alcoholic gastritis	K.29.2	16.8	18.9	17.1	33.2	50.9	159.7	296.7	137.0
Alcoholic liver disease	K70	0.0	158.1	466.7	823.1	913.8	221.1	2582.7	2361.7
Alcohol induced chronic pancreatitis	K86.0	0.1	1.1	1.2	2.1	2.6	5.3	12.4	7.1

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.7 Psychiatric departments (hospitals), Mental and behavioral disorders due to use of alcohol (F10)

Number of patients							
Men	Women	Age				Total	Age 15-64
		<18	19-29	30-64	65+		
55673	9552	94	6156	56677	2077	65225	63148
Number of person-days							
1509496	306947	3559	164552	1583668	63688	1816443	1752755
Costs (thousands Euros)							
48048.4	9770.4	113.3	5237.8	50409.3	2027.2	57818.7	57616.5

Source: Statistical Yearbook of Institute of Psychiatry and Neurology in Warsaw, 2010, authors' own calculation on the basis of Statistical Yearbook of Institute of Psychiatry and Neurology in Warsaw, 2010, and NHF data.

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Table 8.1.3.8 Number of hospital patients attributed to smoking according to ICD10 codes and age, men

ILLNESS	ICD10 CODES	Number of hospital patients							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	142	357	282	834	1715	*1602*	*4933*	3331
Esophagus	C15	93	233	185	547	1119	*1058*	*3236*	2178
Stomach	C16	76	235	202	589	1106	*849*	*3057*	2208
Pancreas	C25	62	213	187	543	996	*681*	*2681*	2001
Larynx	C32	140	335	261	772	1611	*1594*	*4712*	3118
Trachea, Lung, Bronchus	C33, C34	15	77	423	4907	15428	*15595*	*36446*	20851
Cervix Uteri	C53	x	x	x	x	x	*x*	*x*	x
Urinary Bladder	C67	3	73	240	1431	4503	*7277*	*13527*	6250
Kidney and Renal Pelvis	C64, C65	67	197	166	486	932	*742*	*2590*	1848
Acute Myeloid Leukemia	C92.0	15	48	42	122	225	*166*	*618*	452
CARDIOVASCULAR DISEASES									
Hypertension	I10	163	315	451	933	1200	*804*	*3866*	3062
Ischemic Heart Disease	I25	2	83	734	5161	11328	*9764*	*27073*	17308
Other Heart Disease	I00-I52 excl.I10, I25	153	887	967	2032	3264	*3590*	*10893*	7303
Cerebrovascular Disease	I67	2	26	57	222	506	*677*	*1490*	812
Atherosclerosis	I70	0	14	119	1171	3611	*4297*	*9212*	4915
Aortic Aneurysm	I71	159	720	715	1525	2711	*3813*	*9642*	5829
Other Arterial Disease	I72-I79	12	74	82	172	271	*267*	*877*	610
RESPIRATORY DISEASES									
Pneumonia	J10-J11	223	401	163	138	116	*82*	*1123*	1041
Influenza	J12-J18	150	411	474	930	1537	*3027*	*6529*	3502
Bronchitis	J20	120	258	162	241	410	*905*	*2097*	1191
Emphysema	J43	2	4	5	28	84	*216*	*339*	123
Chronic Airways Obstruction	J44.9	52	118	161	872	2539	*6222*	*9963*	3741

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.9 Number of hospital person-days attributed to smoking according to ICD10 codes and age, men

ILLNESS	ICD10 CODES	Number of hospital person-days							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	582	2287	1892	6090	12007	*11694*	*34551*	22857
Esophagus	C15	381	1494	1242	3994	7835	*7724*	*22670*	14946
Stomach	C16	312	1505	1355	4302	7739	*6196*	*21410*	15213
Pancreas	C25	256	1362	1251	3963	6969	*4971*	*18772*	13802
Larynx	C32	572	2141	1748	5636	11279	*11634*	*33010*	21376
Trachea, Lung, Bronchus	C33, C34	192	421	2709	28953	94111	*112283*	*238671*	126388
Cervix Uteri	C53	x	x	x	x	x	*x*	*x*	x
Urinary Bladder	C67	11	160	576	4435	14408	*26925*	*46516*	19590
Kidney and Renal Pelvis	C64, C65	273	1262	1114	3549	6523	*5418*	*18139*	12721
Acute Myeloid Leukemia	C92.0	61	308	281	889	1577	*1211*	*4327*	3116
CARDIOVASCULAR DISEASES									
Hypertension	I10	636	977	1442	3452	4680	*3537*	*14724*	11186
Ischemic Heart Disease	I25	9	331	3156	22194	50978	*47846*	*124514*	76668
Other Heart Disease	I00-I52 excl.I10, I25	643	4169	4931	12193	21870	*26924*	*70731*	43806
Cerebrovascular Disease	I67	16	303	703	2953	6476	*8127*	*18579*	10452
Atherosclerosis	I70	8	95	1109	10422	32497	*37817*	*81948*	44131
Aortic Aneurysm	I71	668	3382	3645	9148	18164	*28600*	*63607*	35007
Other Arterial Disease	I72-I79	49	347	418	1031	1814	*2000*	*5659*	3659
RESPIRATORY DISEASES									
Pneumonia	J10-J11	803	1001	423	429	395	*271*	*3322*	3051
Influenza	J12-J18	1184	3822	4551	9669	16143	*31482*	*66852*	35370
Bronchitis	J20	598	1135	812	1253	2380	*6064*	*12243*	6179
Emphysema	J43	23	23	36	223	710	*1901*	*2916*	1015
Chronic Airways Obstruction	J44.9	655	706	1111	6891	21579	*54751*	*85694*	30942

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.10 Hospital costs attributed to smoking according to ICD10 codes and age, men, (thousands Euros)

ILLNESS	ICD10 CODES	Costs (thousands Euros)							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	56.8	222.9	184.4	593.6	1170.4	*1139.9*	*3368.0*	2228.1
Esophagus	C15	37.2	145.6	121.0	389.3	763.8	*752.9*	*2209.8*	1456.9
Stomach	C16	30.4	146.7	132.1	419.4	754.4	*604.0*	*2087.0*	1483.0
Pancreas	C25	25.0	132.8	122.0	386.3	679.3	*484.5*	*1829.9*	1345.4
Larynx	C32	55.8	208.7	170.3	549.4	1099.4	*1134.0*	*3217.7*	2083.7
Trachea, Lung, Bronchus	C33, C34	18.8	41.1	264.1	2822.3	9173.8	*10945.1*	*23265.1*	12320.0
Cervix Uteri	C53	x	x	x	x	x	*x*	*x*	x
Urinary Bladder	C67	1.1	15.6	56.2	432.3	1404.5	*2624.6*	*4534.2*	1909.6
Kidney and Renal Pelvis	C64, C65	26.6	123.0	108.6	346.0	635.9	*528.1*	*1768.1*	1240.0
Acute Myeloid Leukemia	C92.0	6.0	30.0	27.3	86.7	153.8	*118.0*	*421.8*	303.7
CARDIOVASCULAR DISEASES									
Hypertension	I10	160.4	246.3	363.5	870.3	1180.1	*891.9*	*3712.5*	2820.6
Ischemic Heart Disease	I25	2.3	83.5	795.9	5596.1	12853.8	*12064.1*	*31395.6*	19331.5
Other Heart Disease	I00-I52 excl.I10, I25	162.2	1051.1	1243.4	3074.3	5514.5	*6788.8*	*17834.4*	11045.5
Cerebrovascular Disease	I67	4.1	76.5	177.3	744.6	1632.9	*2049.2*	*4684.5*	2635.3
Atherosclerosis	I70	2.0	24.1	279.7	2627.8	8193.9	*9535.3*	*20662.8*	11127.5
Aortic Aneurysm	I71	168.5	852.8	919.0	2306.7	4579.9	*7211.3*	*16038.2*	8826.9
Other Arterial Disease	I72-I79	12.3	87.6	105.3	259.9	457.5	*504.3*	*1427.0*	922.6
RESPIRATORY DISEASES									
Pneumonia	J10-J11	131.1	163.4	69.1	69.9	64.4	*44.2*	*542.2*	498.0
Influenza	J12-J18	193.3	623.7	742.8	1578.1	2634.8	*5138.2*	*10910.8*	5772.7
Bronchitis	J20	97.6	185.3	132.6	204.6	388.4	*989.8*	*1998.2*	1008.4
Emphysema	J43	3.7	3.8	5.9	36.4	115.9	*310.3*	*475.9*	165.6
Chronic Airways Obstruction	J44.9	106.9	115.2	181.3	1124.7	3522.0	*8935.9*	*13986.0*	5050.1

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

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Table 8.1.3.11 Number of hospital patients attributed to smoking according to ICD10 codes and age, women

ILLNESS	ICD10 CODES	Number of hospital patients							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	13	53	56	126	215	*217*	*679*	461
Esophagus	C15	13	50	52	117	206	*223*	*661*	438
Stomach	C16	12	54	62	137	217	*207*	*689*	483
Pancreas	C25	33	159	179	397	633	*574*	*1974*	1400
Larynx	C32	11	35	35	80	146	*177*	*483*	306
Trachea, Lung, Bronchus	C33, C34	5	44	278	2369	5703	*3814*	*12213*	8399
Cervix Uteri	C53	0	29	114	305	386	*210*	*1045*	835
Urinary Bladder	C67	2	28	60	313	894	*942*	*2238*	1297
Kidney and Renal Pelvis	C64, C65	3	18	22	47	69	*51*	*210*	159
Acute Myeloid Leukemia	C92.0	2	8	9	19	33	*39*	*110*	71
CARDIOVASCULAR DISEASES									
Hypertension	I10	32	92	195	661	1027	*1322*	*3329*	2006
Ischemic Heart Disease	I25	0	24	204	1864	4422	*2466*	*8980*	6514
Other Heart Disease	I00-I52 excl.I10, I25	33	242	335	671	953	*1783*	*4017*	2234
Cerebrovascular Disease	I67	2	28	60	197	357	*207*	*851*	644
Atherosclerosis	I70	0	4	26	195	481	*1136*	*1842*	706
Aortic Aneurysm	I71	26	137	169	346	568	*1368*	*2615*	1247
Other Arterial Disease	I72-I79	5	37	51	102	147	*267*	*609*	342
RESPIRATORY DISEASES									
Pneumonia	J10-J11	108	273	113	120	102	*57*	*773*	716
Influenza	J12-J18	77	238	267	523	766	*1781*	*3651*	1870
Bronchitis	J20	66	100	74	136	221	*697*	*1294*	597
Emphysema	J43	1	1	2	9	22	*59*	*93*	35
Chronic Airways Obstruction	J44.9	45	79	117	490	1210	*3081*	*5022*	1941

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.12 Number of hospital person-days attributed to smoking according to ICD10 codes and age, women

ILLNESS	ICD10 CODES	Number of hospital person-days							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	53	284	364	818	1437	*1563*	*4519*	2956
Esophagus	C15	55	270	337	761	1382	*1604*	*4409*	2805
Stomach	C16	51	294	402	891	1454	*1490*	*4582*	3092
Pancreas	C25	139	856	1161	2581	4240	*4132*	*13109*	8977
Larynx	C32	44	189	228	518	979	*1272*	*3230*	1958
Trachea, Lung, Bronchus	C33, C34	53	275	1360	13266	33080	*28226*	*76261*	48035
Cervix Uteri	C53	0	162	923	2505	3323	*1913*	*8825*	6912
Urinary Bladder	C67	1	45	113	688	2146	*2919*	*5913*	2994
Kidney and Renal Pelvis	C64, C65	12	97	140	308	464	*368*	*1390*	1022
Acute Myeloid Leukemia	C92.0	10	44	56	125	221	*280*	*735*	456
CARDIOVASCULAR DISEASES									
Hypertension	I10	142	312	663	2445	3801	*5685*	*13048*	7363
Ischemic Heart Disease	I25	1	68	856	7456	19014	*12574*	*39969*	27395
Other Heart Disease	I00-I52 excl.I10, I25	123	846	1239	3018	5339	*13194*	*23758*	10565
Cerebrovascular Disease	I67	19	283	695	2263	4355	*2540*	*10156*	7616
Atherosclerosis	I70	0	17	182	1421	3948	*10681*	*16249*	5568
Aortic Aneurysm	I71	96	481	625	1559	3181	*10127*	*16069*	5942
Other Arterial Disease	I72-I79	18	130	188	460	824	*1974*	*3594*	1620
RESPIRATORY DISEASES									
Pneumonia	J10-J11	410	546	284	323	348	*176*	*2086*	1910
Influenza	J12-J18	693	2162	2399	5178	7812	*18347*	*36591*	18244
Bronchitis	J20	357	401	354	720	1326	*4948*	*8106*	3158
Emphysema	J43	11	8	14	66	185	*534*	*818*	285
Chronic Airways Obstruction	J44.9	594	458	797	3720	10286	*28034*	*43890*	15856

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.13 Hospital costs attributed to smoking according to ICD10 codes and age, women, (thousands Euros)

ILLNESS	ICD10 CODES	Costs (thousands Euros)							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
NEOPLASMS									
Lip, Oral Cavity, Pharynx	C00, C01-C06, C09-10, C12-14	5.2	27.7	35.4	79.7	140.1	*152.4*	*440.5*	288.1
Esophagus	C15	5.3	26.4	32.8	74.2	134.7	*156.4*	*429.8*	273.4
Stomach	C16	5.0	28.7	39.2	86.9	141.8	*145.2*	*446.6*	301.4
Pancreas	C25	13.6	83.5	113.1	251.5	413.3	*402.8*	*1277.8*	875.0
Larynx	C32	4.3	18.4	22.2	50.4	95.5	*124.0*	*314.8*	190.8
Trachea, Lung, Bronchus	C33, C34	5.2	26.8	132.6	1293.2	3224.6	*2751.4*	*7433.8*	4682.4
Cervix Uteri	C53	0.0	15.7	90.0	244.1	323.9	*186.5*	*860.3*	673.8
Urinary Bladder	C67	0.1	4.4	11.1	67.1	209.2	*284.5*	*576.4*	291.9
Kidney and Renal Pelvis	C64, C65	1.2	9.4	13.7	30.0	45.3	*35.9*	*135.5*	99.6
Acute Myeloid Leukemia	C92.0	1.0	4.3	5.4	12.2	21.6	*27.3*	*71.7*	44.4
CARDIOVASCULAR DISEASES									
Hypertension	I10	35.8	78.7	167.2	616.5	958.3	*1433.5*	*3290.0*	1856.5
Ischemic Heart Disease	I25	0.2	17.0	216.0	1880.0	4794.3	*3170.5*	*10078.0*	6907.5
Other Heart Disease	I00-I52 excl.I10, I25	31.0	213.3	312.3	761.1	1346.1	*3326.8*	*5990.6*	2663.8
Cerebrovascular Disease	I67	4.8	71.4	175.3	570.7	1098.1	*640.5*	*2560.7*	1920.3
Atherosclerosis	I70	0.0	4.2	46.0	358.3	995.4	*2693.1*	*4097.0*	1403.9
Aortic Aneurysm	I71	24.3	121.3	157.5	393.1	802.0	*2553.4*	*4051.6*	1498.3
Other Arterial Disease	I72-I79	4.6	32.8	47.4	115.9	207.8	*497.8*	*906.3*	408.5
RESPIRATORY DISEASES									
Pneumonia	J10-J11	66.9	89.1	46.3	52.7	56.8	*28.7*	*340.4*	311.8
Influenza	J12-J18	113.1	352.9	391.6	845.0	1274.9	*2994.5*	*5972.0*	2977.5
Bronchitis	J20	58.2	65.5	57.8	117.5	216.3	*807.6*	*1323.0*	515.3
Emphysema	J43	1.9	1.3	2.3	10.8	30.2	*87.1*	*133.6*	46.5
Chronic Airways Obstruction	J44.9	97.0	74.7	130.1	607.2	1678.8	*4575.4*	*7163.2*	2587.9

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.14 Number of general hospital patients attributed to drugs according to ICD10 codes and age, men and women

ILLNESS	ICD10 CODES	Number of hospital patients							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
MEN									
Tuberculosis	A15-A19	5	29	38	75	71	*60*	*278*	218
Hepatitis B and C	B17.1, 18.2, 16,18.1, B15.9	23	391	366	215	56	*12*	*1063*	1051
HIV/AIDS	B20-B24	558	962	698	1088	401	*395*	*4102*	3707
Mental and behavioral disorders due to psychoactive substance use	F11-F19	57	343	98	66	44	16	624	608
WOMEN									
Tuberculosis	A15-A19	5	21	15	18	21	*46*	*126*	80
Hepatitis B and C	B17.1, 18.2, 16,18.1, B15.9	27	152	135	39	14	*0*	*367*	367
HIV/AIDS	B20-B24	440	901	597	745	319	*377*	*3379*	3002
Mental and behavioral disorders due to psychoactive substance use	F11-F19	21	69	41	73	28	18	250	232

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.15 Number of general hospital person-days attributed to drugs according to ICD10 codes and age, men and women

ILLNESS	ICD10 CODES	Number of hospital person-days							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
MEN									
Tuberculosis	A15-A19	132	1468	2079	4236	3676	*2594*	*14185*	11592
Hepatitis B and C	B17.1, 18.2, 16,18.1, B15.9	51	3439	3664	2338	624	*151*	*10268*	10117
HIV/AIDS	B20-B24	2065	3753	3000	6092	2604	*3239*	*20753*	17514
Mental and behavioral disorders due to psychoactive substance use	F11-F19	302	3602	1294	785	466	221	6670	6449
WOMEN									
Tuberculosis	A15-A19	138	798	594	819	913	*1870*	*5132*	3262
Hepatitis B and C	B17.1, 18.2, 16,18.1, B15.9	103	1367	1422	640	191	*0*	*3722*	3722
HIV/AIDS	B20-B24	1892	3516	2626	4023	1914	*3090*	*17060*	13970
Mental and behavioral disorders due to psychoactive substance use	F11-F19	141	393	558	883	437	56	2468	2412

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.16 General hospital costs attributed to drugs according to ICD10 codes and age, men and women (thousands Euros)

ILLNESS	ICD10 CODES	Costs (thousands Euros)							
		15-19	20-34	35-44	45-54	55-64	65+	Total	15-64
MEN									
Tuberculosis	A15-A19	10.4	115.1	163.0	332.2	288.3	*203.4*	*1112.4*	909.0
Hepatitis B and C	B17.1, 18.2, 16,18.1, B15.9	4.0	269.7	287.3	183.4	49.0	*11.8*	*805.2*	793.4
HIV/AIDS	B20-B24	162.0	294.3	235.3	477.8	204.2	*254.0*	*1627.5*	1373.5
Mental and behavioral disorders due to psychoactive substance use	F11-F19	9.6	114.6	41.2	25.0	14.8	7.0	212.3	205.3
WOMEN									
Tuberculosis	A15-A19	10.8	62.6	46.6	64.2	71.6	*146.6*	*402.4*	255.8
Hepatitis B and C	B17.1, 18.2, 16,18.1, B15.9	8.1	107.2	111.5	50.2	14.9	*0.0*	*291.8*	291.8
HIV/AIDS	B20-B24	148.4	275.7	206.0	315.5	150.1	*242.3*	*1337.8*	1095.5
Mental and behavioral disorders due to psychoactive substance use	F11-F19	4.5	12.5	17.7	28.1	13.9	1.8	78.5	76.8

Source: authors' own calculation on the basis of: The National Institute of Public Health (National Institute of Hygiene) in Warsaw data.

Table 8.1.3.17 Psychiatric departments (hospitals), Mental and behavioral disorders due to psychoactive substance use (F11-F19)

Men	Women	Number of patients Age				Total	Age
		<18	19-29	30-64	65+		15-64
8770	2282	1267	5174	4419	136	11052	10916
		Number of person-days					
694973	168256	147867	424335	285492	5120	863229	858109
		Costs (thousands Euros)					
22121.5	5355.7	4706.7	13506.9	9087.4	163.0	27477.2	27314.2

Source: Statistical Yearbook of Institute of Psychiatry and Neurology in Warsaw, 2010, authors' own calculation on the basis of Statistical Yearbook of Institute of Psychiatry and Neurology in Warsaw, 2010.

8.2.Catalonia (Spain) - Estimation of costs on the basis of other researches

Besides estimation of social costs of addictive behaviors based on original (raw) Catalan data, imputation of the results of other cost-estimates may be conducted. Few studies on the costs of the various addictions in Spain have been found, and three of them were used in the Alice-rap study for comparison or for imputation of results in the estimations done for Catalonia. The imputation based on research made for Spain in 1996 (on alcohol) and 1997 (on drugs) and Galicia (in 2010 on drugs), updated for size of the populations and exposure to the addictive substances in these populations is presented below.

To update the results for Portugal and Catalonia (Spain) three variables were applied:
1. Size of the populations in questions,
2. Exposure to the addictive substances in populations in questions.
3. GDP per capita, as it has been assumed, that if GDP in the country is higher, the expenditures and costs connected with alcohol use, smoking and drugs use would be also higher.

As the growth of costs and expenditures according to the growth of GDP per capita may not necessary be proportional, the estimates where difference in GDP are taken into account are treated as maximum values, and without that difference – as minimum values.

1. Drugs

An estimation of the social cost of the consumption of illegal drugs in Spain was made in 1997 by the Catalan Agency of Evaluation and medical research technology together with the Health Department and other institutions (Garcia-Altes et al., 1997). A cost-of-illness study was performed, using a prevalence approximation and a societal perspective. The estimation of costs and consequences referred to 1997. As direct costs we included health-care costs, prevention, continuing education, research, administrative costs, nongovernmental organizations and crime-related costs. As indirect costs we included lost productivity associated with mortality and the hospitalization of patients (not utilized for imputation). Estimation of intangible costs was not included. The main results found: the minimum cost of illegal drug consumption in Spain is 88 800 million pesetas (PTA) (467 million dollars). Seventy-seven per cent of the costs correspond to direct costs. Of those, crime-related costs represent 18%, while the largest part corresponds to the health-care costs (50% of direct costs). From the perspective of the health-care system, the minimum cost of illegal drug consumption is 44 000 million PTA (231 million dollars). The cost of illegal drug consumption represents 0.07% of the Spanish GDP. This gross figure compares with 2250 million PTA (12.5 million dollars) invested in prevention programmes during the same year, and with 12 300 million PTA (68.3 million dollars) spent on specific programmes and resources for the drug addict population.

For updating there were taken into account differences in population size, drugs exposure, and GDP per capita among: Spain in the year 1997 and 2010, and Spain and Catalonia in the year 2010.

Table 8.2.1 The social cost of illegal drug consumption in Catalonia in 2010

Drugs	Minimum	Maximum
	Thousands Euros	
Acute care	20389.6	64126.8
Emergency care	820.3	2580.0
Primary care	3500.9	11010.7
Specific health-care resources	29215.8	91886.2
Long-term care	2137.1	6721.3

Pharmaceutical expenditure	48308.0	151932.4
Transport	59.5	187.1
Total health care costs	**104431.2**	**328444.4**
Prevention	5349.5	16824.7
Continuing education and research	1209.1	3802.8
Social programmes	4718.7	14840.6
Administration	4249.8	13365.8
Total non-health care costs	15527.1	48833.8
Asociación Proyecto Hombre	415.2	1305.7
Fundación de Ayuda contra la Drogoadicción	492.6	1549.4
Total other organizations	**907.8**	**2855.1**
Justice	7354.5	23130.5
Penal system	31227.4	98212.8
Total crime-related costs	**38581.9**	**121343.2**
Total direct costs	**159447.9**	**501476.5**

Source: Authors' own on basis of [Garcia-Altez et al. 1997], p.1148.
Sources for exposure: Spain - EDADES. DGPNSD. National Plan of Drugs; Catalonia - Program on Substance Abuse. Public Health Agency of Catalonia. Govermment of Catalonia. Survey on Alcohol and Drugs in Spain (AGES) 1997-2011. Spanish Observatory on Drugs (DGPNSD).

The second source for drug attributable costs imputation was Rivera et al. [2011] – the study concerning Galicia in 2010. Therefore, for updating differences in population size and GDP per capita between Galicia and Catalonia were applied.

Table 8.2.2 Cost of drug consumption in Catalonia 2010

COSTS	**Minimum**	**Maximum**
	THOUSANDS EUROS	
Health direct costs [52,03%]		
Hospitalizations - Main diagnose	3551.2	4571.2
Hospitalizations - Secondary diagnose	2088.8 - 4826.6	2688.8 - 6213.0
Hospitalizations - Infections diseases	2798.4 - 4011.1	3602.2 - 5163.2
Primary care	1116.9 - 1332.7	1437.8 - 1715.5
HIV/AIDS	57169.1 - 90784.0	73590.4 - 116860.8
Pharmacies programme	5760.9	7415.6
Specific treatment resources	32302.2	41580.7
TOTAL	**104787.5 - 142568.7**	**134886.7 - 183520.1**
Non health direct costs [7,45%]		
Prevention programmes	3443.7	4432.8
Social reintegration programmes	70.5	90.8
Training, research and communication	952.3	1225.8
Institutional coordination	384.7	495.1
TOTAL	**5486.0**	7061.7
TOTAL DIRECT COSTS	**110273.5 - 148054.7**	**141948.4 - 190581.9**
Indirect costs [40,52%]		
Premature deaths		
Acute drug reactions	24247.7 - 41953.4	31212.6 - 54004.1
Infectious diseases	13429.1 - 23461.0	17286.4 - 30199.9
Traffic accidents	1696.0 - 2962.9	2183.1 - 3814.0

Unemployment	43516.3	56015.9
Hospitalizations	429.8	553.3
TOTAL	**81622.9 - 112323.4**	**105068.2 - 144587.2**
COSTS TOTALS	**201416.0 - 269897.8**	**259270.7 - 347423.1**

Source: Authors' own on basis of [Rivera et al. 2011], p.121.

From Rivera et al. [2011] study, direct and indirect costs were used for imputation, what resulted in the total drug related costs estimates for Catalonia ranging from **201** to **347 million Euro** in 2010. This estimation is quite similar to the one based on [Garcia-Altez et al. 1997] indicating costs between results **120-380 million Euro** (without criminal justice cost).

2. Alcohol

Estimation of alcohol related costs is based on Portella et al. [1998] study on health care costs in Spain. Data imputation indicates that the total health costs attributable to alcohol in Catalonia in 2010 accounted for **204 up to 436 million Euro.**

Table 8.2.3 Costs of health care, alcohol, Catalonia 2010

Variables analysed	Minimum	Maximum
	Thousands Euros	
Expenses of visits to walk-in clinics derived from alcohol consumption		
Staff and structure costs	1211.7	2591.7
Pharmacy costs	26541.5	56766.6
Laboratory costs	1208.9	2585.6
Expenses of hospitalization derived from alcohol consumption		
Current average expenses per hospitalization	0.7	1.4
Total hospitalizations attributed to alcohol	190.7	407.9
Total expenses of hospitalization	107898.3	230771.8
Total healthcare costs due to alcoholism		
Visits to walk-in clinics	39866.6	85266.2
Visits to emergency units	12076.6	25829.3
Hospital admissions	107898.3	230771.8
Other healthcare costs	23424.4	50099.9
Specialized centres	20773.1	44429.3
Total	**204039.0**	**436396.6**

Source: Authors'own on the basis of [Portella et al. 1998], p. 282.

8.3.Estimation of shares of men and women of low, hazardous and harmful drinking levels on the base of estimated distributions of alcohol consumption (Poland)

Estimation of the distribution of alcohol consumption for Poland was performed after [Mielecka-Kubien 2001][24], and the applied method can be in short described as follows:

It was assumed that alcohol consumption in Poland, with respect to the levels of consumptions, is distributed according to log-normal distribution, so we consider variable X ($X>0$) such as $Y=\ln X$ is normally distributed with mean μ and variance σ^2 [$Y:N(\mu,\sigma)$], then X is log-normally distributed [$X:\Lambda(\mu,\sigma)$], with the density function:

$$f(x)=\frac{1}{x\sigma\sqrt{2\pi}}e^{\frac{-(\ln x-\mu)^2}{2\sigma^2}} \qquad \text{for} \quad X\in(0,\infty) \tag{1}$$

expected value:
$$E(X)=e^{\mu+0,5\sigma^2} \tag{2}$$

and the mode:
$$M_0=e^{\mu-\sigma^2} \quad . \tag{3}$$

The rate of underestimation (p) of average consumption level taking from a survey ($\bar{x}$) can be now formulated as:

$$p=\frac{E(X)-\bar{x}}{\bar{x}}, \tag{4}$$

while the rate of underestimation (k) of the mode of alcohol consumption in the survey (d) can be written as:

$$k=\frac{M_0-d}{d} \tag{5}$$

Combining properties of the log-normal distribution with survey results and taking into account (2), (3), (4), (5) leads to two equations with two unknowns ($\hat{\mu}$ and $\hat{\sigma}$), where $\hat{\mu}$ and $\hat{\sigma}$ are adequately estimators of the parameters μ, σ. The solution, in regard to $\hat{\mu}$ and $\hat{\sigma}$, is:

$$\hat{\sigma}=\sqrt{\frac{2}{3}\left\{(\ln\bar{x}-\ln d)+\left[\ln(1+p)-\ln(1+k)\right]\right\}} \tag{6}$$

$$\hat{\mu}=\ln d+\ln(1+k)+\hat{\sigma}^2 \tag{7}$$

As in Poland men consume much more alcohol than women (see tab.1) it was necessary to estimate two separate distributions of alcohol consumption, for each of the genders. The survey data come from the latest survey on alcohol consumption in Poland, which was conducted by PARPA in 2008, and is described in [Fudala 2008], and from the previous survey conducted by PARPA in 2002. The aggregate data come from Statistical Yearbook of Poland 2011.

Following [English 2005, p.61] persons consuming [0-0.25] standard drinks per day were considered 'abstainers'; the same source was applied to classify drinking levels for the both genders as: low, hazardous and harmful.

Figures 8.3.1 and 8.3.2 present survey distributions of alcohol consumption for men and women in Poland in 2008. To assure comparability with the survey design the average volume of alcohol

[24]The idea was for the first time presented by Z.Mielecka-Kubien during The Kettil Bruun Society for Social and Epidemiological Research on Alcohol conference in Cracow, Poland in 1993 as presentation entitled: *Some Considerations on the Distribution of Alcohol Consumption in Poland*, later described in [Mielecka-Kubien 2001] and, in different form, in [Mielecka-Kubien 2008].

consumption (liters of 100% of alcohol per 1 inhabitant 15 years and older) was recalculated to average volume of alcohol consumption (liters of 100% of alcohol per 1 inhabitant 18 years and older), and then, taking into account the share of abstainers, average alcohol consumption (liters of 100% of alcohol) per 1 alcohol consumer 18 years and older was estimated. Obtained average total alcohol consumption was divided between the both genders proportionally to the values of theirs survey averages of alcohol consumption. The necessary data for estimation of the distributions of alcohol consumption for men and women are presented in table 8.3.1.

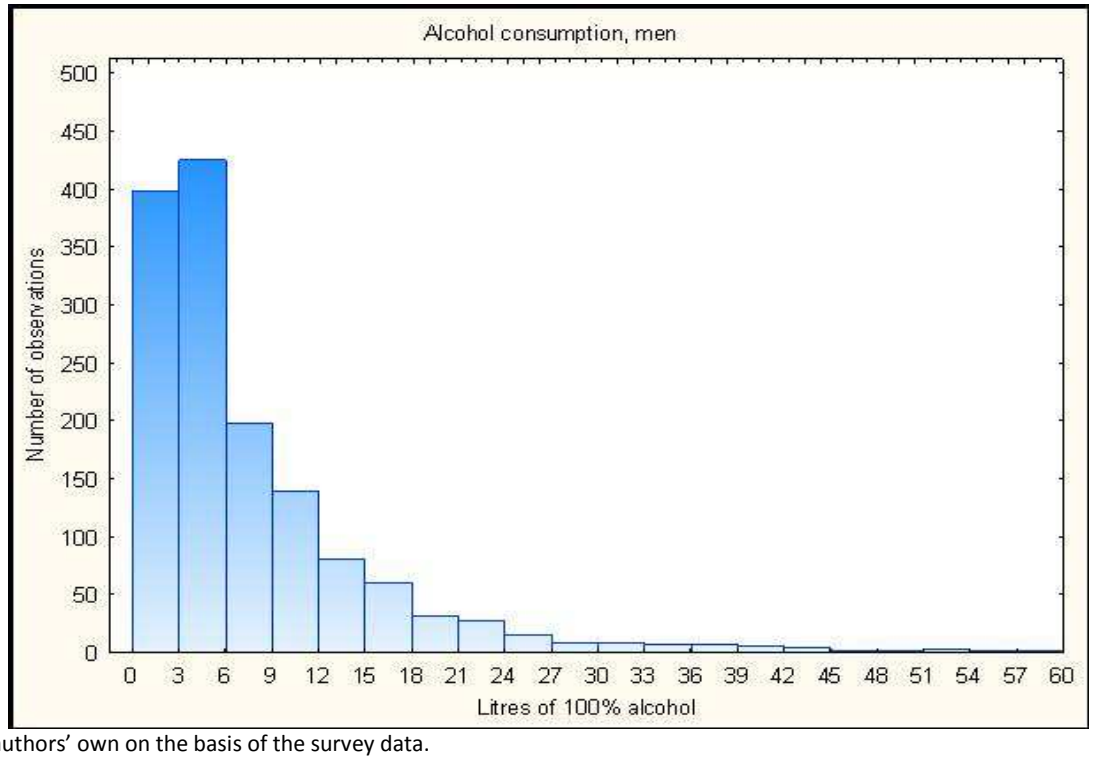
Two estimated log-normal distributions of alcohol consumption (for men and women) are defined as follows:

$$X_M : \Lambda(2.452827\,;0.806927) \quad \text{for men,}$$
$$X_W : \Lambda(1.881884;0.716909) \quad \text{for women.}$$

Figures 8.3.3 and 8.3.4 present comparisons of the log-normal distributions of alcohol consumption based on the survey data and the estimated ones. It can be observed that the estimated distributions are shifted to the right, which means that the shares of drinking less are smaller, and drinking more – higher than in the survey distributions.

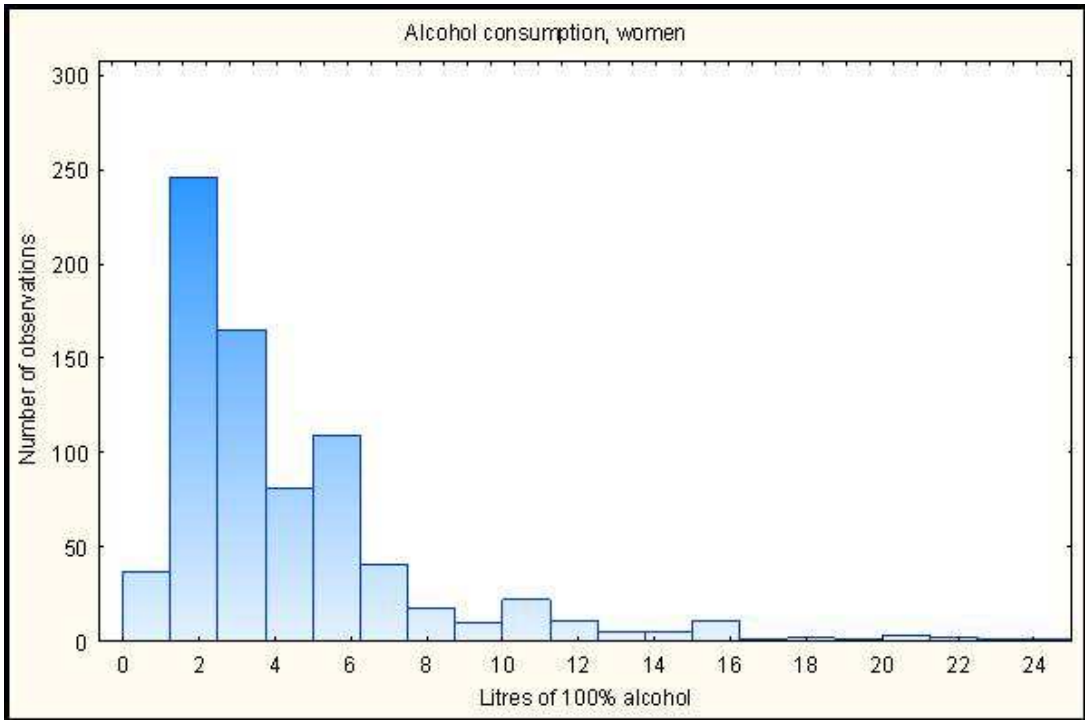
Finally, on the basis of estimated alcohol consumption distributions there were estimated shares of male and female populations of low, hazardous and harmful drinking level (tab.8.3.2).

Figure 8.3.1. Survey distribution of alcohol consumption, men



Source: authors' own on the basis of the survey data.

Figure 8.3.2. Survey distribution of alcohol consumption, women



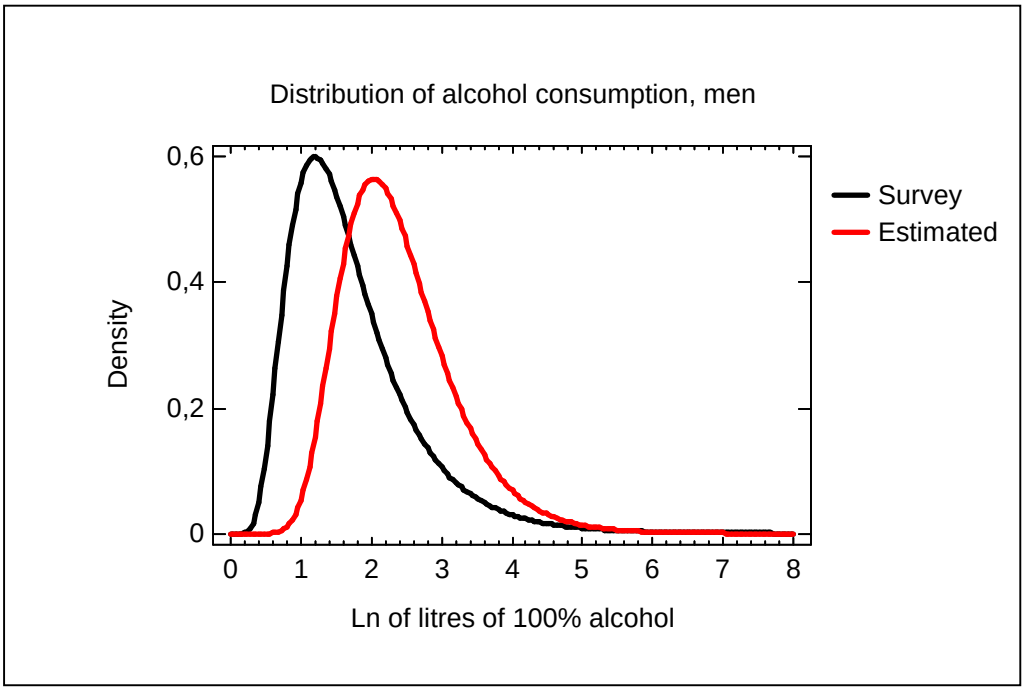
Source: authors' own on the basis of the survey data.

Table 8.3.1. Data applied in estimation of the distributions of alcohol consumption

DESCRIPTION	VALUE		SOURCE
Average alcohol consumption (liters of 100% alcohol per 1 inhabitant 15 years and older)	9.1		Own estimation on base of Statistical Yearbook data
Average alcohol consumption (liters of 100% alcohol per 1 inhabitant 18 years and older)	9.4		Own estimation on base of Statistical Yearbook data
	MEN	WOMEN	
Share of abstainers in the population (%)	17.3	37.5	[Fudala 2008, p.14]
Average alcohol consumption (liters of 100% alcohol per 1 alcohol consumer 18 years and older)	8.81	4.6	Own calculation on base of survey data
Average alcohol consumption (liters of 100% alcohol per 1 alcohol consumer 18 years and older)	16.1	8.5	Own estimation on base of survey and Statistical Yearbook data
$\hat{\mu}$	2.452827	1.881884	Own estimation on base of survey and Statistical Yearbook data
$\hat{\sigma}$	0.806927	0.716909	Own estimation on base of survey and Statistical Yearbook data

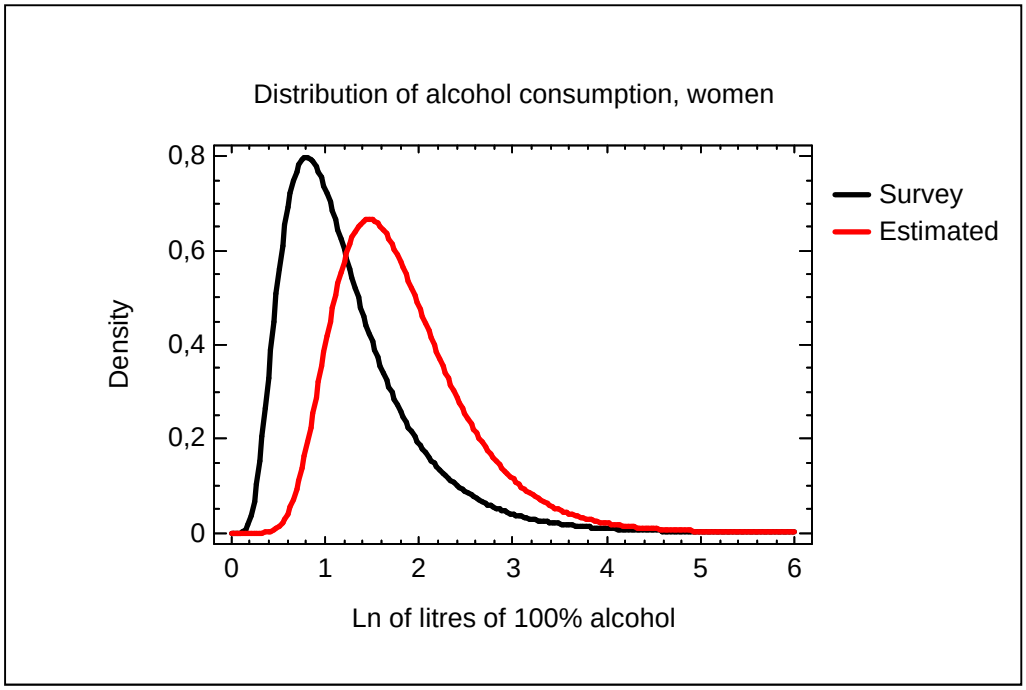
Source: authors' own

Figure 8.3.3. Comparison of the survey and estimated log-normal distributions of alcohol consumption, men



Source: authors' own on the basis of the survey and Statistical Yearbook data.

Figure 8.3.4. Comparison of the survey and estimated log-normal distributions of alcohol consumption, women



Source: authors' own on the basis of the survey and Statistical Yearbook data.

Table 8.3.2. Estimated percents of men and women alcohol consumers of low, hazardous and harmful drinking levels

ALCOHOL INTAKE LEVEL	MEN			WOMEN		
	STANDARD DRINKS PER DAY*	LITERS OF 100% ALCOHOL	PERCENT	STANDARD DRINKS PER DAY	LITERS OF 100% ALCOHOL	PERCENT
Low	0.25-4.00	1.1375	75.3	0.25-2.00	1.1375	73.2
Hazardous	4.00-6.00	18.2	11.2	2.00-4.00	9.1	16.5
Harmful	6.00+	27.6	13.5	4.00+	18.2	10.3

* 1 standard drink = 10 g alcohol
Source: authors own calculation on the basis of [English 1995], survey and Statistical Yearbook data.

Mielecka-Kubień Z. (2008). *Methodological Remarks on Estimation of Alcoholism Prevalence on the Basis of Distribution of Alcohol Consumption*, w: A.Zeliaś, J.Pociecha (red.), Postępy statystyki, ekonometrii i matematyki stosowanej w Polsce Południowej.

8.4.Policies generating (influencing) social costs of addictions

Table 8.4.1. Policies generating (influencing) social costs of addictions

Policies generating (influencing) social costs of addictions	Poland	Portugal	Spain (Catalonia)
Policies regulating availability of alcohol, tobacco, illicit drugs			
taxes, excise fees	- excise tax on alcohol and tobacco - licenses for selling and fees for advertising alcohol	In 2010: According to DL. 300/99 + DL. 73/2010: - excise tax on alcohol and alcoholic beverages (IABA) - excise tax on tobacco (IT) Changes introduced by Law 83-C/2013. In 2010: According to DL. 259/2007 + Port. 791/2007: - licenses for and alcoholic beverages selling points - licenses for tobacco selling points	- Excise tax on alcohol (21% IVA) and tobacco (80.3% on the RRP) - Licenses for selling and advertising alcohol and tobacco
availability (nets of places selling alcohol/tobacco)	- Ban on internet sale of alcohol - Ban on alcohol and tobacco use/sell in specified places - Limited number of places selling alcohol, defined minimal distance between alcohol selling point and protected places (e.g. schools)	In 2010, according to: - Ban on alcoholic beverages selling points in specified places: health institutions + vending machines (DL. 9/2002), or restaurants, bars, etc. close to basic and secondary schools (DL. 259/2007). In 2010: (Lei 37/2007) - Ban on tobacco selling points in specified places and out of specific rules – public places, restaurants, schools, vending machines, etc.	-Ban on alcohol and tobacco use in specified places - Ban selling alcohol or tobacco in schools, health centers, public institutions, etc.
Advertising, promotion	- Ban on alcoholic beverages and tobacco advertising and promotion (only advertising and promotion of beer is allowed under specific rules)	- Ban on alcoholic beverages advertising out of specific rules (associations, times on TV or radio, etc.) or events (sports, cultural, recreational, etc.) attended by minors (DL 330/90). Changes introduced by DL50/2013. - Ban on tobacco advertising and/or promotional campaigns, or event sponsorship by tobacco related organizations	-Ban marketing or advertising of tobacco in all media -Allow to advertise alcoholic beverages under 20º proof in places where they can't be sold or consumed.
purchase restrictions (regarding age, intoxication, etc.)	<18 (alcohol, cigarettes) , for intoxicated clients (alcohol), on credit (alcohol)	In 2010: - Ban on selling/using in public places, alcoholic beverages to under 16 y.o. children, intoxicated persons or intellectual disable people (DL nr 9/2002) - Ban on purchasing (on-premise or out-premise)	<18 (alcohol, cigarettes)

		alcoholic beverages by under 16 y.o. children, intoxicated persons or intellectual disable people (DL nr 9/2002) Changes introduced by DL. 50/2013. In 2010: - Ban on selling tobacco products to minors (<18 y.o.) even through vending machines (Lei n.º 37/2007).	
Policies regulating access to health-care services - Free treatment (of what? For whom?)	Health Service is free of charge. Treatment of alcohol and drug-dependent people and their families and treatment of addiction to smoking is free, too.	In 2010: - In public National Health Service (SNS), health care was provided mainly free/almost free of charge. - Medicines and complementary diagnosis means are partially supported by patients. - Licit and illicit drugs addictions treatment, was provided free of charge (out of SNS) by public IDT (Institute of Drugs and Drug Addictions) and financed, by IDT, when provided by social or private services (mainly, in Therapeutic Communities, Harm Reduction, but also some Social Rehabilitation areas). Medicines for drug addiction treatment were free of charge. Changes introduced by DL 124/2011 In 2010: - Tobacco addiction treatment, only when provided by National Health Service (SNS) was free/almost free of charge. Tobacco medicines follow general rule (no specific benefits). Changes introduced by Law 83-C/2013.	Any person or relative of a person with addiction to tobacco, alcohol, drugs, medicaments, etc., can have free access, and free of charge, to drug addictions treatment centres Source: http://www20.gencat.cat/docs/canalsalut/Home%20Canal%20Salut/Professionals/Temes_de_salut/Drogues/documents/Llei%208-1998.pdf
Policies regulating access to social support			
pensioning (social-care availability) – doles, child benefits, situational handouts related to alcohol/tobacco/drugs	People addicted to alcohol or drugs and their families, under certain conditions (e.g. low income), may be supported by social welfare system	In 2010: - In Portugal, very deprived people can get access to a “social reintegration income”. Licit and illicit addicts, if they fit the requirements can get access to it.	People addicted to alcohol or drugs and their families, under certain conditions (e.g. low income), may be supported by social welfare system Source: http://www20.gencat.cat/portal/site/portaljuridic/menuitem.d15a4e5dfb99396dc366ec10b0c0e1a0/?action=fitxa&documentId=673958
social assistance	Children of alcohol addicted parent, receive psychological and socio-therapeutic support free of charge	In 2010: - Because, in Portugal, there is an integrated approach to (licit and illicit) drug users health	Children of alcohol of drugs addicted parent with mental health disease or behavioral disorder receive psychological and socio-

		recovery, harm reduction and social rehabilitation, are key interventions as well as treatment - A wide range of interventions are available in order to help psychoactive substance users to reduce to the harms of use, to be treated and to return into an active life. - Specific social care measures, provided by the Ministry of Employment and Social Security (MESS), for illicit drug users, include access to housing facilities (when very deprived) and specific recovery measures like professional training or professional work integration programs. - Tobacco addicts or alcoholics were not included in these specific social care help from the MESS.	therapeutic support free of charge http://www20.gencat.cat/portal/site/portaljuridic/menuitem.d15a4e5dfb99396dc366ec10b0c0e1a0/?action=fitxa&documentId=673958
Policies regulating sickness benefits (social insurance) in case of productivity lost related to alcohol/tobacco/drugs (for whom? When? How much?)	Depends on the length of sick leave (sick leave up to 33 days is covered by an employer; longer leaves – by the State budget; if an employee is over 50 years of age , an employer covers this expenses up to 14 days)	In 2010: - In Portugal, salary due during sick leave depends on the length: 55% if less than 30 days; 60% for the time since 30 days until 90 days; 70% for the time since 90 days until 365 days; and 75% for the time over 365 days. (DL 302/2009 – private sector; Law 4/2009 public sector). - In private sector, contributions to Social Security are: 23.75% of salary, due employers, and 11% due to employees. Law 110/2009. - In public sector, equivalent contributions were: 15% of salary, due employers (public institutions), and 11% due to employees (public servants) – Law 4/2009 + Law 3-B/2010. There are no special conditions for sickness related to alcohol, drugs or tobacco.	For the worker to have the right to receive temporary disability benefit, he must be affiliated and enrolled in the social security scheme, or having similar status and must have covered a period of contribution of 180 days in the previous 5 years ● From the 1st to the 3rd day of sick leave: the worker does not receive pay. ● From the 4th to the 15th day of sick leave: the employer is liable for payment. The company assumes the cost of and effects the payment. Cost for the company. ● From the 16th day of sick leave: the **INSS** (Instituto Nacional de Seguridad Social – National Institute of Social Security) is liable, or the private health insurer. In 2013 the average time of sick leave for mental illness, according to ICAM (2012) was 75.3 days Persons who cannot be incorporated into the labour market have an extra monthly contribution of 106.72€ per month, and if they have a degree of disability of 65% for mental illness and addictions the person may be eligible to receive a non-contributory disability pension of a minimum of 91.48€ and a maximum of 365.90€ multiplied by 14 monthly payments over the year (18-65 years of age) Non-contributory pension due to retirement

			> 65 years of age minimum of 91.48€ and a maximum of 365.90€ multiplied by 14 monthly payments over the year. Source: http://www.empleo.gob.es/es/Guia/texto/guia_1/index.htm

Policies regulating criminal sector costs related to psychoactive substances

Costs of work of police, persecutors, courts, etc. (types of offences related to alcohol/tobacco/drugs)	Disobeying of legal restrictions on: • alcohol / tobacco consumption (in places in which it is not allowed) • alcohol / tobacco production (obligatory registration , quantity limits in case of production from own cultivation) • alcohol / tobacco advertising (only beer may be advertise under certain conditions) • alcohol / tobacco selling Driving in the state after alcohol / drug consumption (fines or detention or imprisonment) Drugs possession, production and trading is illegal. In case of small quantity of narcotic drugs or psychotropic substances intended for personal use, proceedings might be discontinued - crimes connected with excise duties	In 2010: <u>Criminal offenses</u>: - driving under alcohol influence (Penal Code: updated by Law 61/2008, art. 81º+292º) - driving under drugs influence (Penal Code: updated by Law 61/2008, art. 81º+292º) - Crimes under drunkenness (Penal Code: updated by Law 61/2008, art. 295º) - Crimes under drugs intoxication (Penal Code: updated by Law 61/2008, art. 295º) - Alcohol smuggling or tax evasion related actions (production, transport, etc.). (Law 15/2001, updated by Law 3-B/2010) - Tobacco smuggling or tax evasion related actions (production, transport, etc.). (Law 15/2001, updated by Law 3-B/2010) - Illicit Drug plants growing or cultivation, illicit drugs production, traffic, use promotion or possession (DL. 15/93,update by Law 18/2009) + Law 30/2000) - Illicit Drug plants growing or cultivation, illicit drugs production or possession, if not fitting the law limits for <u>own occasional use</u> (Law 30/2000). <u>Administrative Offense</u>: - Alcohol selling points location and sales schedules - Tobacco selling points location - Alcohol selling to under 16 y.o. children - Tobacco selling to minors (<18 yo) - Tobacco consumption places where it is not allowed	Disobeying of legal restrictions on: • alcohol / tobacco consumption (in places in which it is not allowed) • alcohol / tobacco production • alcohol / tobacco advertising • alcohol / tobacco selling The Penal Code considers it an offence to create, produce, cultivate or traffic in any of the substances included in these lists, as well as any activity destined to promoting their use. In the case of trafficking, the Penal Code makes a distinction between substances which cause serious harm to health and other substances which the legislator considers less harmful to health. Consuming or having small quantities of drugs for personal use is not an offence Source: https://www.boe.es/legislacion/codigos/codigo.php?id=038_Codigo_Penal_y_legislacion_complementaria&modo=1

		- Alcohol consumption (in places in which it is not allowed) - Alcohol advertising (it is forbidden if associated to specific ideas or national symbols, addressed to minors, placed in schools, or presented in Radio or TV between 7a.m. and 9.30p.m) - tobacco advertising (total ban) - Illicit drug use is forbidden, but is an Administrative Offense. In 2010: - Drink/ Drug driving: up to 1 year (Law 61/2008, art. 292º)) - Alcohol tax crimes (smuggling, circulation, etc) up to 3 years, (DL 300/99 + DL 73/2010). - Tobacco tax crimes (smuggling, circulation, etc) up to 3 years, (art. 92º to 97º).	Drink/Drug driving **Article 379** sanctions anyone "who drives a motor vehicle or a motorcycle under the influence of toxic drugs, narcotics, psychotropic substances or alcoholic drinks with prison terms of 3 to 6 months or sentences of 6 to 12 months or community service during 31 to 90 days and in all cases the deprivation of the right to drive motor vehicles and motorcycles for a time exceeding one year and up to four years"
Imprisoning (for what? For how long?)	Drink/ Drug driving (up to 2 years; recidivism – up to 5 years); Drugs: - Making, processing (up to 3 years), - Making, storing, disposing (up to 2 years), - Import, export, transport (up to 5 years), - Placing on the market (up to 8 years), - Providing, facilitating, promoting use (up to 3 years), if in order to get financial profits - up to 10 years), - Possessing (up to 3 years), if in big quantities - up to 10 years.	In 2010: Drugs – DL 15/1993: - Trafficking, growing, production, selling, distribution, transportation, import, export, etc.: from 4 up to 12 years (subst. Tables I to III), or from 1 to 5 years (subst. Table IV), - Providing precursors to illicit drug production: from 2 up to 10 years - Small traffic – from 1 to 5 years (Tables I to III), or up to 2 years (Table IV). - Drug related criminal organizations: from 10 up to 25 years; - Promoting illicit drug use: up to 3 years (tables I to III) or up to 1 year (Table IV). - Facilitating drug traffic in public places: from 1 to 8 years.	**Artículo 368.** -Trafficking, cultivating or making processing (3-6 years) and economic fine. Prison until 12 years depending on severe offense (use of minors, authorities, dangerous substances, etc) **Source:** https://www.boe.es/buscar/act.php?id=BOE-A-2009-18732
Prevention, education – legal obligations of governments/institutions	National/Provincial/Communal programmes for preventing and solving alcohol-related problems + Illicit drug programmes	In 2010: Alcohol - Until 2010, alcoholic diseases where treated in National Health Service agencies and in 3 Specialized prevention and treatment centers. Tobacco - Until 2010, tobacco related diseases where treated in National Health Service agencies Drugs - According to National Strategy on Drugs and Drug Addictions, and the Govern should provide a wide range of interventions –	Government of Catalonia assumes competences for prevention in all settings (education, community, workplace...), promotion, attention, treatment, rehabilitation and reinsertion of all persons with addictions. Source: http://www20.gencat.cat/docs/canalsalut/Home%20Canal%20Salut/Professionals/Temes_de_salut/Drogues/documents/Llei%208-1998.pdf

		prevention, dissuasion, treatment, harm reduction, social rehabilitation - that are supposed to be free/almost free of charge for drug users. Alcohol - No specific sobering stations. When it is the case, drunk people stays in the Police Stations until recover to a normality. Drugs - Because in Portugal drug use is an Administrative Offence, since 2001, there is all over the country a network of "Commissions for Dissuasion" of drug use where illicit drug users are presented by Police and other Authorities in order to evaluate the best intervention leading to quit drug use and to doo the follow-up.	
Other	sobering stations		Crisis units

8.5.Portugal drug costs

In 2010, Portugal had a specialized health care system, out of National Heal Care System (SNS), to provide all types of health care to Drug Users, directly or indirectly through funding to NGOs or private institutions. The Institution in charge of providing such services was IDT,IP (Institute on Drugs and Drug Addictions, IP). In 2012, IDT give place to SICAD (General Directorate on Addictive Behaviours and Dependences), after the care delivering was integrated in the National Health System.

The costs presented here can be found or derived from aggregate data presented in IDT National Reports or from two studies carried out in the context of external evaluations on the results of Portuguese drug policies.

The National Reports referred [3], [2], and [1], [7] are the result of IDT role in the framework of the Drugs Policy Coordination structure (namely as supporting service to the National Coordinator on Drugs), or as the body in charge to provide care to drug users, or as EMCDDA Focal Point, respectively.

Reports [5] and [6], relate to an external evaluation of the National Plan on Drugs developed by an international team, after an international call. This evaluation addresses only some programs (not all the interventions included in PNLCDT 2005-2012). Reports [4] and [8] relate to a study developed under funding of "Fundação Francisco Manuel dos Santos" a private Foundation, promoting in-depth analysis of social issues.

As, in 2010, main services were provided through IDT (currently SICAD) the main data sources were IDT "Relatório de Atividades 2010", [2] and " A Situação do País em Matéria de Drogas e Toxicodependências. Relatório Anual 2010" [3]. The drug related costs, for 2010, were either extracted directly from them or, when not available there, estimated based on data:

- From 2005, included in " 2007 National Report (2006 data) to the EMCDDA-Portugal" [1],
- From 2012, included in "2013 National Report (2012 data) to the EMCDDA" [7], and also,
- quantitative information from "Relatório de Atividades 2010", [2], and qualitative information obtained from "Relatório Avaliação Externa Plano Nacional Contra a Droga e as Toxicodependências 2005-2012 (PNCDT)" [5], to disaggregate the aggregate costs related to integrated interventions
- from "Droga e Propinas. Avaliações de impacto legislativo" [4] - an English version will appear soon [8] - for estimations related to enforcement cost, hospital health cost related top HIV and Hepatitis B/C, or indirect cost related to lost income and productivity.

Global drug related public expenditures, for 2005(6) and 2012, in the different ministries, presented in former "National Report to the EMCDDA" – respectively [1] and [7], are included in table 8.5.1. In the "2007 National Report (2006 data) to the EMCDDA" costs were presented according to classifications: COFOG[25] Structure and Reuteur's Division[26]. As the aim of the current report is to do cost estimations for 2010, data from these two reports will be presented to facilitate an overview of the design of the Portuguese institutional framework regarding the drug and drug addiction public policy, and to allow a comparison between the three years.

As mentioned before in this report, according to the "National Plan on Drugs and Drug Addictions

[25] COFOG – Classifications of Functions of Government (OECD) (http://www.oecd.org/gov/48250728.pdf)
[26] Reuter, P. (2006). What drug policies cost. Estimating government drug policy expenditures. Addiction, 1001 (3), 315-322.

2005-2012", several Ministries contribute with actions to attain the National Plan objectives either in the supply or the demand fields. However there is no State budget rubric for drug and drug addiction policy. On an annual basis, each of these Ministries are granted rubric for the development of their own activities.

In 2010, because of its coordination and implementation roles, Institute on Drugs and Drug Addictions (IDT) in the Ministry of Health was the public administration body with the largest budget for drugs and drug addiction policy. As Portugal follows an integrated approach under a public health perspective, is not easy to specify the budget allocated in detail, to each of the interventions (prevention, treatment, harm reduction, social reintegration/rehabilitation) because programs and projects are globally funded and account reports done accordingly. However, efforts have been made to estimate segmented financing, to facilitate policy evaluations.

In 2010, health and social care for drug users was a public service provided free of charge or almost free of charge, and could be provided either by a public body (IDT the main provider) or developed through NGOs or private organizations under public funding (mainly IDT). In this case, either "PORI - Operational Plan for Integrated Responses" - for programs with interventions mainly in Prevention, Harm Reduction or Social Rehabilitation, according to the evaluation needs developed at local level – or specific conventions/contracts answering to stable needs - particularly related to Treatment (Therapeutic Communities, mainly) or Harm Reduction (Street Teams) are the ways to fund the interventions. Estimations were made based on aggregate data presented in [2] and disaggregation done accordingly to:

- Percentage of users by area of intervention (excluding those related to information campaigns or interventions in big recreational settings), reported in [2], in the case of PORI;
- Or qualitative information obtained from [5] in what concerns integrated interventions provided directly by IDT.

When reading table 8.5.1, it is necessary to consider that:

- In 2010, IDT was the specialized institution providing or funding, almost all drug addictions treatment.
- Health cost related to drug connected diseases (related or attributable) were treated in the National Health Service (SNS) and its cost is not included here (only some estimations for HIV/AIDS and Hep. B/C. Hospital care).
- Dissuasion related cost – due to the Commissions for Dissuasion (of drug use and drug addiction – are included under "Prevention Programs" Reuter's Division.
- Social Rehabilitation costs are under "Treatment" Reuter's Division.
- Concerning interventions provided by IDT or financed by IDT, in table 8.5.1 a small number of alcoholics is included. It was not possible, for the moment, to exclude the percentage of costs related to them.
- Drug related medications (methadone, buprenorphine, etc.) are included in the costs reported.
- In the 2010 Budget column of table 8.5.1, the colours of figures mean that:
    - Black – data from [2];
    - Red – estimations made based on data disaggregation referred above ([2] and [5]);
    - Pink – estimations based on existing values from 2005 [1] and 2012 [7], updated to 2010 prices;
    - Green – estimations based on the study developed by "Fundação Francisco Manuel dos Santos" [4], with updated prices and considering the trend for the other costs.

The data sources for computing costs caused by drugs use in Portugal, in 2010, were:

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TABLE 8.5.1 – Portugal/2010: Drug cost distribution, according to the public bodies in the "Nation Plan on Drugs and Drug Addictions" PNLCDT)				2007-NR [1]	FFMS [4]	RA/2010 [2]	2013-NR [7]
Reuter's Division	COFOG Structure	Ministry	Institution	2006 (or 2005) Budget (€)	FMSS -2010 estimation*	2010 Budget (€)	2012 Budget (€)
1. Prevention programs	03.6.0 Police Services	Ministry of Internal Administration	GNR				48,104
			PSP			400,000	
	07.4.0 Public Health Services	Ministry of Education	DGIDC	191,000		170,000	150,000
		Ministry of Health	IDT_Prevention	5,542,172		5,641,699	
			IDT_Prevention (PORI)			2,787,237	
			IDT_Dissuasion			2,907,727	
2. Treatment	0.7.2.2 Specialised Medical Services	Ministry of Health	IDT_Treatment_outpatient	39,853,789		33,380,054	
			IDT_Treatment (PORI)_outpatient			49,384	
			IDT_Tratment (NGO/Priv)_inpatient			11,583,113	
			IDT_Social Rehabilitation			4,231,274	
			IDT _Social Rehabilitation (PORI)			278,754	
		Ministry of Justice	DGSP(drug free wings)			200,000	162,350
		Ministry of Defence	DGPRM	1,424,501		631,717	528,805
3. Enforcement programs	01.1.2 Financial and Fiscal Affairs	Ministry of Finances	DGAIEC	2,095,000		2,800,000	
	02.1 Military Defence	Ministry of Defence	AN (Naval Aut.)	180,000		190,000	
	03.1 Police Services	Ministry of Internal Administration	PSP	4,667,960	7,000,000	5,000,000	4,122,149
			GNR	4,400,000	5,800,000	4,500,000	
			ANSR (former DGV) - Kits	40,259		80,000	
			ANSR (former DGV) - Toxic. Test			1,477,052	
		Ministry of Justice	PJ - DCITE	4,409,482	14,000,000	6,000,000	7,083,650
			PJ - LPC	12,766		18,000	
			INML	655,564		1,477,052	841,230
	03.4 Prisons	Ministry of Justice	Law Courts		3,000,000	4,000,000	
			DGSP (28.8%total - 2005; 21% em 2010)	53,631,500	35,000,000	49,000,000	
4. Harm reduction	0.7.2.2. Specialised Medical Services	Ministry of Health	IDT_ HR	3,043,379		3,761,133	
			IDT_HR (PORI)			583,872	
			IDT _HR (NGO/private)			2,308,945	
			IGIF (syringe exchange program)	1,021,962			
			CNLCS (AIDS)(syr-exch-prg)		650,000	1,000,000	6038253*
	1. Social Protection	Ministry of Labour and Social Security	ISSS			3,109,738	1,620,808
			IEFP		2,850,000	3,611,261	
			Sub -Total	**121,169,334**		**151,178,012**	**14,557,096**
		Ministry of Health	IDT_(Adm.+Manag.+Coord)	19,044,953		7,076,728	
			IDT_(Reseach)	624,223		477,512	
			SNS/Hosp(Hep B/C (Drug addicts)_inpatient		**1,200,000**	1,500,000	
			SNS/Hosp_AIDS (Drug addicts)_inpatient		**700,000**	1,000,000	
			TOTAL	**140,838,510**		**161,232,252**	
			Total IDT	**68,108,516**	**58,000,000**	**75,067,432**	

*1999 const prices

* total

TABLE 8.5.2 – PT/Costs by area			FFMS Study	RA2010/FF		
		Institution	2010 estimation	2010 Budget (€)		
MIA	P	GNR_prevention				
MIA	P	PSP_Prevention		**400,000**		
ME	P	DGIDC_Prevention		**170,000**		
MH	P	IDT_Prevention		**5,641,699**		prevention
MH	P	IDT_Prevention (PORI)		**2,787,237**		8,998,936
MH	P	IDT_Dissuasion		**2,907,727**	11,906,663	
MH	T	IDT_Treatment_outpatient		**33,380,054**		
MH	T	IDT_Treatment (PORI)_outpatient		**49,384**		outpacient
MD	T	DGPRM_Treat_outpatient		**631,717**		34,061,155
MH	T	IDT_Tratment (NGO/Priv)_inpatient		**11,583,113**		
MH	T	SNS/Hosp_Hep B/C (Drug addicts)_inpatient	**1,200,000**	**1,500,000**		
MH	T	SNS/Hosp_AIDS (Drug addicts)_inpatient	**700,000**	**1,000,000**		inpatient
MJ	T	DGSP(drug free wings)_inpatient		**200,000**	48,344,268	14,283,113
MH	HR	IDT_ HR		**3,761,133**		
MH	HR	IDT_HR (PORI)		**583,872**		
MH	HR	IDT _HR (NGO/private)		**2,308,945**		
MH	HR	IGIF (syringe exchange program)				
MH	HR	CNLCS (AIDS)(syr-exch-prg)	650,000	**1,000,000**	7,653,950	
MH	SR	IDT_Social Reahab.		**4,231,274**		
MH	SR	IDT _Social Reahab. (PORI)		**278,754**		
MLSS	SR	ISSS_SR		**3,109,738**		
MLSS	SR	IEFP_SR	2,850,000	**3,611,261**	11,231,027	
MH	C	**IDT_Admin.+ Manag.+Thech. Coord.**		**7,076,728**		
MH	R	**IDT_Research** (Development and promotion)		**477,512**	7,554,240	
MF	E	DGAIEC		**2,800,000**		
MD	E	AN (Naval Aut.)		**190,000**		
MIA	E	PSP	7,000,000	**5,000,000**		
MIA	E	GNR	5,800,000	**4,500,000**		
MIA	E	ANSR (former DGV) - Kits		**80,000**		
MIA	E	ANSR (former DGV) - Toxic. Test		**1,477,052**		
MJ	E	PJ - DCITE	14,000,000	**6,000,000**		
MJ	E	PJ - LPC		**18,000**		
MJ	E	INML		**1,477,052**	21,542,104	
MJ	E	Law Courts	3,000,000	**4,000,000**	4,000,000	
MJ	E	DGSP (28.8%total - 2005; 21% em 2010)	35,000,000	**49,000,000**	49,000,000	
		Sub -Total		**161,232,252**	161,232,252	
		TOTAL		**161,232,252**		
		Total IDT	**58,000,000**	**75,067,432**		

TABLE 8.5.3 - PORTUGAL COSTS: DRUGS

Direct Costs

Type	Areas		Budget 2010			%	
Health							
	Prevention						
		Prevention	8,998,936				
		Dissuasion	2,907,727	11,906,663		**0.07**	
	Treatment						
		Outpacient	34,061,155				
		Inpatient	14,283,113	48,344,268		**0.30**	
	Harm Reduction		7,653,950	7,653,950		**0.05**	
	Social Rehabilitation		11,231,027	11,231,027		**0.07**	
	Coordination+Research		7,554,240	7,554,240	**86,690,148**	**0.05**	**0.54**
Other							
	Enforcement						
		Police	21,542,104				
		Law Courts	4,000,000				
		Prisons	49,000,000	74,542,104	**82,096,344**	**0.46**	**0.46**
		TOTAL		161,232,252		1.00	1.00

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Part II

Social costs: a report specifying the costs of addiction to societies

Gambling and gaming

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1. Introduction

The intent of the ALICE-RAP project is to (a) determine the social costs attributable to alcohol, substance and tobacco abuse as well as pathological gambling in three EU countries (Poland, Portugal, and Spain); (b) to examine the relationships between policies and costs, with particular emphasis on criminal behaviors and costs; (c) to estimate the avoidable costs associated with key policy directives and actions; and (d) to specify the costs associated with addictive behaviors to society in general. The intent of this review is to review models for examining the impact of available gambling in general, and with respect to the currently available data. It should be noted at the outset that there is considerably less available data concerning the impacts of gambling on the individual, his/her family and society than is available for alcohol, drugs and tobacco.

2. Context

Internationally, the past three decades have witnessed an unprecedented expansion in the gambling industry. Within Europe, more land-based venues have been built, others are being planned (e.g., EuroVegas in Spain; a Super-Casino Resort in Cyprus; a new gaming act in Ireland allows for upwards of 40 small scale casinos, etc.) and Internet gambling has exploded. Other jurisdictions such as the U.S., Canada, Australia, New Zealand, Macau, Japan, Taiwan, Malaysia, Singapore, Korea, Vietnam, Sri Lanka, and the Philippines amongst others have similarly witnessed a significant expansion in gambling venues and opportunities. There is little doubt that such expansion while frequently having economic benefits to governments, increased employment and expansive tourism have some concomitant costs whether they be social, personal, familial or economic (Anielski&Braaten, 2008; Collins &Lapsley, 2003; Korn, Gibbins&Azmier, 2003; Williams, Stevens &Rehm, 2011; Wynne & Shaffer, 2003). The rapid expansion of the gambling industry, however, has not been restricted to casino operations. Today, most jurisdictions regulate, license, organize, operate or own at least one type of gambling activity, with only a minority of states and countries that continue to strictly prohibit any form of gambling. Some of the more popular forms of government-sponsored or government-regulated gambling include lottery draws and instant scratch cards, electronic gambling machines (EGMs) (e.g., slot machines, video lottery terminals [VLTs], pokies), pari-mutuel wagering (i.e., racing) and sports betting. It should be noted that with new emerging technologies such as Internet and mobile (remote) wagering, the environmental landscape of gambling is not only significantly changing the availability, accessibility and landscape of gambling, it is likely having an enormous impact on the social costs associated with gambling.

Gambling regulation has been a matter of public concern within Europe, with all member countries being able to enact restrictive or liberal measures to regulate its national gambling market (Griffiths, Hayer & Meyer, 2009). Although now almost four years old, to have a better snapshot of the recent history, gambling offers (although continuously changing), and policies in Europe one is referred to the book *Problem Gambling In Europe: Challenges, Prevention and Intervention* (Meyer, Hayer & Griffiths, 2009). Within this book, many of the social policy issues are discussed by leading authorities among 21 EU countries. Meyer and his colleagues clearly suggest that, in general, the vast majority of individuals gamble in a responsible manner but "it is also clear that the social and health costs of problem gambling are large on both an individual and societal level." Personal and societal costs are numerous and varied, and may be dependent upon a wide number of variables - personal, geographic, type of gambling venue, etc. The intent of this report is to review our current knowledge and understanding concerning the methodological concerns and framework for examining the positive and negative impacts associated with gambling and in particular to present the available information on gambling in Poland, Portugal and Spain.

The unprecedented growth in the worldwide gaming industry has been the inevitable outcome of governmental policies and decisions to legalize various forms of gambling and to make them readily available to their citizens (Wynne & Shaffer, 2003). Such policy decisions have been implemented and touted by governments and the industry as a way of generating revenues for health care, education, social services, economic development, employment, increased tourism, charitable organizations and as a way of providing entertainment opportunities for their constituents. The development of government regulated forms of gambling and their increased accessibility has also been viewed as a way of minimizing illegal gambling opportunities and limiting or diminishing criminal activities. Critics of gambling have been equally vociferous in their condemnation of gambling's expansion often citing the increased number of disordered gamblers, societal costs (e.g., increased criminal activity including fraud, theft, embezzlement), familial problems (e.g., domestic violence, suicide, divorce) and personal issues (e.g., financial, bankruptcy, inter-personal, increased mental health issues), and the cannibalization of surrounding industries (in jurisdictions where a land-based casino has been developed the surrounding restaurants and entertainment facilities often report a decrease in business).

Wynne and Shaffer (2003), early on, aptly noted that both proponents and critics of government sponsored/regulated gambling remain staunchly committed to their perspective, with each group citing research to support their position. They contend that this has created a classic public policy dilemma for governments as the purported evidence is typically promoted by special interest groups. This has inevitably resulted in proponents and critics favouring one form of gambling over another. While some have argued that specific games are more problematic than others (e.g., EGMs, Internet gambling), others have suggested that it may well be not the form of gambling per se, but rather the structural characteristics inherent within the games, their availability and their accessibility (Griffiths, 1999; St-Pierre, Walker, Derevensky & Gupta, in press). It is also important to note that public policy approaches toward gambling are often the result of extenuating/external circumstances (e.g., economic downturn in the economy; legislative policies dictated by the EU court), the belief that patrons will seek alternative venues in which to gamble and governmental revenues will decline, and that legislators rarely have the time, inclination and/or knowledge to weigh the currently available empirical evidence being presented (Wynne & Shaffer, 2003).

In 2000, the *First International Symposium on the Economic and Social Impact of Gambling* was held in Whistler, British Columbia, Canada in an attempt to bring together policy makers, researchers, social scientists and economists to discuss and begin development on an internationally acceptable set of guidelines and framework for assessing the positive and negative impacts associated with gambling's expansion. At the time, there was a general consensus that there was (a) a paucity of research into the socioeconomic impact of gambling expansion; (b) much of the existing research was not scientifically rigorous (and in some instances it is was thought to be biased towards a particular perspective); and (c) there was little agreement as to conceptual and analytical frameworks and methodologies to guide cost-benefit analyses of gambling policy decisions. The symposium was attended by sixty gambling researchers, economists, legislators, government officials, and gaming industry representatives from Canada, the United States, Australia, United Kingdom, and Europe to discuss and debate various perspectives, definitions, and methods for assessing the social and economic societal impacts of gambling. An ambitious agenda was set over four days, with a view to achieving five significant objectives:

1. To describe and discuss recent attempts to estimate the socioeconomic impacts of gambling in various settings;
2. To identify gaps in methodology and data required to estimate gambling's impact and outline critical research required to address these issues;
3. To begin developing an analytical framework and research guidelines for estimating the benefits and costs of gambling policy decisions;

4. To develop a strategy for the implementation of these research guidelines; and
5. To identify what other steps are required to expand the concept of using impact studies as a means to inform public policy decision-makers.

A number of eminent economists and gambling researchers were commissioned to write five scholarly papers (see Wynne & Shaffer, 2003; special issue of the *Journal of Gambling Studies)* to help fill conceptual and methodological gaps by considering economic, psychological, and sociological perspectives and to propose alternative prospective models and frameworks that might underpin future research into the socioeconomic impact of gambling. The presented papers suggested that there was a remarkable range of estimates associated with gambling and problem gambling (ranging from a relatively insignificant cost to massive social costs)(Collins &Lapsley, 2003), that the field was unable to establish an operational standardized definition of social costs and how to best measure these costs (Walker, 2003a, 2003b), that examining only the economic costs does little to help social scientists examine the "human costs" (Eadington, 2003), that models used for estimating the social costs associated with substance abuse may provide a framework for assessing the impact of gambling (Single, 2003), that further consensus-building is essential in order to ascertain reliable measures and comparative data between jurisdictions (Single, 2003), and that a strong case can be made for examining problem gambling from a public health perspective (Korn, Gibbins&Azmier, 2003). Unfortunately, while a major goal was to achieve methodological consensus on how to measure the impact of gambling expansion, there was little consensus on (a) the most salient philosophical perspective or conceptual framework toward assessing the social and economic impacts of gambling; (b) definitions of *private* costs versus *social* costs attributable to gambling; (c) what costs and benefits should be counted in socioeconomic impact analyses; and (d) the best methodological approach for measuring the impact of gambling expansion and their subsequent benefits and costs (Wynne & Shaffer, 2003). A decade later, there still remains controversy as to the best methodological approach for assessing the social and economic impacts of gambling. However, this is has not stopped social scientists and economists from speculating on the use of different models and frameworks and for trying to assess the impact (both costs and benefits) of gambling expansion and types of gambling from a socioeconomic perspective.

Williams, Rehm and Stevens (2011), in a very comprehensive review of the social and economic impacts of gambling, have suggested that while many gambling impacts are readily observable and clearly negative (e.g., increased problem gambling, increased criminal behavior) or positive (e.g., employment gains, increased tourism), the positive or negative nature of several other changes is less clear and are somewhat subjective (e.g., changed societal pattern of leisure pursuits, cannibalization of competing industries, increases in tax revenue). Rather than using the terms "costs" and "benefits" associated with gambling, they suggest that the term "impact"' may be more appropriate as it conveys that change has occurred without having to characterize it is as positive or negative. While this perspective is not necessarily new, it has represented a more neutral perspective. It should be noted that a number of other researchers have examined specific risk factors for analyzing the social impacts of gambling (Black, McCormick, Losch, Shaw, Lutz & Allen, 2012; Campbell & Lester, 1999; Collins &Lapsley, 2003; Daraban&Thies, 2011; Downs &Woolrych, 2010; Fong, Fong & Li, 2011; Grinols, 1995; Grinols& Mustard, 2006; Sevigny, Ladouceur, Jacques &Cantinotti, 2008; Walker, 2006; 2008a, 2008b, 2008c, 2011; Welte, Barnes, Wieczorek, Tidwell & Hoffman, 2007; Welte, Wieczorek, Barnes, Tidwell & Hoffman, 2004; Wenz, 2008; Wickwire, Whelan, West, Myers, McCausland&Leullen, 2007).

In their review, Williams et al. (2011) report on a surprisingly large number of social-economic impact studies (N = 492), a result of the growing interest associated with both the expansion of gambling and the importance placed upon understanding the impacts by legislators. Of these studies, they note that 199 are not empirical investigations but rather are concerned with

methodological issues, the potential impacts of future forms of gambling (scoping studies), or secondary reviews of the existing literature. Of the remaining 293 empirical studies, many investigated only specific issues relevant to impacts (e.g., correlates of gambling and/or problem gambling) but were not necessarily intended to be controlled empirical investigations. In their analysis they suggested that only a minority of studies included stringent methodological rigor to unambiguously attribute the correlates or observed changes to the introduction of gambling (i.e., pre-and post-comparisons; control groups/regions; having both a micro and macro geographic scope; examining impacts over an extended time period; and inclusion of sufficiently large sample sizes). Still further, a good number of these studies were reported to have had a very limited scope as they only assessed one particular impact of gambling (e.g., property values or bankruptcies), and as such had limited ability to address the overall impacts that potentially existed.

Their review suggested that 1% of studies were published prior to 1990, 29% between 1990-1999, and 70% were published from 2000 - 2011. Of these studies, 62% were conducted in the United States, 16% in Canada, 8% in Australia, 4% in New Zealand, and 10% in other countries (South Korea = 6, worldwide = 4, United Kingdom = 3, China = 3, Slovenia = 2, South Africa = 2, Taiwan = 2, Austria = 1, Germany = 1, Hong Kong = 1, Switzerland = 1, Malaysia = 1) (see Figure 1 for a distribution). This North American focus is important to bear in mind when evaluating both the pattern of research findings and the changing landscape of gambling during the past decade (the U.S. for example currently only has two (very recent) jurisdictions operating any form of Internet gambling although this will likely grow), with a number of states not having casinos or any form of land-based venues). Figure 2 from Williams et al. (2011) further illustrates that the socioeconomic impacts of different forms of gambling have not been studied equally, with the large majority of empirical studies having focused on the impact of casinos (56.6%), multiple forms of gambling (25.7%), and the impact of EGMs (10.1%), with none looking exclusively at bingo, sports betting, raffles, specific casino table games (e.g., blackjack, roulette, etc.) or social gambling, and only one study that looked exclusively at lottery instant win tickets.

Figure 2.1: Location of Empirical Socio-Economic Impact Studies of Gambling

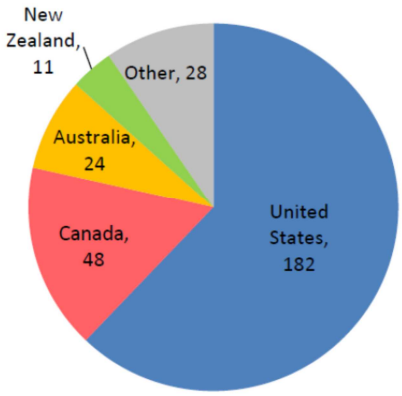
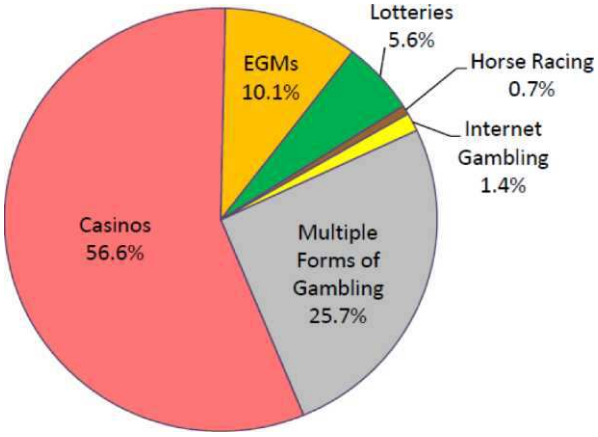


Figure 2.2: Type of Gambling that has been the Focus of Empirical Socio-Economic Impact Studies



A significant body of national and international research reveals that certain forms of land-based gambling (e.g., EGMs) are more strongly associated with disordered gambling behaviours(Clarke, Pulford, Bellringer, Abbott, & Hodgins, 2012; Doiron & Nicki, 2001; Grusser, Plontzke, Albrecht, & Morsen, 2007; Hendriks, Meerkerk, Van Oers, & Garretsen, 1997; Smith et al., 2013; Welte, Barnes, Tidwell, & Hoffman, 2009; Welte, et al., 2007; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2004). Further, there is some preliminary evidence to suggest that specific forms of gambling are associated with the rapid onset of gambling problems (EGMs)(Breen, 2004; Breen & Zimmerman, 2002). These findings have led gambling researchers to speculate about the potentially addictive properties of certain types of gambling activities that may have a more powerful impact on the development of problem gambling.

Griffiths and others have suggested that some land-based gambling games and activities contain unique structural characteristics which have the potential to induce and maintain regular or excessive gambling behaviour(Griffiths 2002; Parke & Griffiths, 2006). Structural characteristics proposed to develop and maintain regular or excessive play behaviour include rapid event frequencies (i.e., opportunities to gamble limited only by how fast a person can play), short pay out intervals (i.e., brief time lapse between the initial gamble and the payment of winnings), player involvement and perceived skill features (i.e., create the illusion of control over the outcome of the game), and the incorporation of near miss designs (i.e., create the illusion of coming close to winning a substantial prize). While problem gamblers do not represent a homogeneous group(Blaszczynski & Nower, 2002) and research has yet to establish which structural characteristics may be more likely to impact the 'addictive' potential of particular forms of gambling relative to others (Dowling, Smith, & Thomas, 2005; Parke & Griffiths, 2006), the relationship between specific types of land-based gambling and regular or problematic wagering behaviour cannot be discounted.

2.1. Electronic Gambling Machines

Within the psychological and sociological literature, there is a general assumption that electronic gaming is a "highly addictive" form of gambling, and that it contributes to the development of problem gambling more than other gambling activities (Dowling et al., 2005). Some empirical support for this assumption exists. In a study of the gambling behaviours of a representative sample of 809 adults residing in the Canadian province of Prince Edward Island, Doiron and Nicki(2001) used multiple regression analyses to examine the unique associations between different forms of gambling and problem gambling. Although they observed significant relationships between participation in several "continuous-play" gambling activities where there is a short lag of time between wager and outcome (e.g., scratch cards, horse races, casino table games), they indicated that involvement in VLT (EGMs) play demonstrated the largest unique association to problematic

gambling behaviour. Similar findings have been reported in other jurisdictions. For example, Clarke et al. (2012) found that of 11 gambling activities available in New Zealand, only gambling on EGMs distinguished problem gamblers from non-problem gamblers. Of interest, the authors also observed that non-casino EGM gambling demonstrated a greater unique association to current problem gambling status than casino EGM play when controlling for demographic characteristics (e.g., age, gender, ethnicity, marital status, employment status, etc.) and the total number of gambling activities in which individuals engaged. Additionally, Smith et al. (2013) conducted a prospective study of a large sample of different types of gamblers (i.e., gamblers in the past 12 months but not on EGMs, low frequency EGM gamblers, moderate frequency EGM gamblers, and high frequency EGM gamblers) in Alberta, Canada to investigate whether EGM play presents a greater risk for problem gambling than other gambling formats, and to examine whether the frequency of EGM play poses an elevated risk for problem gambling. Preliminary findings suggested that compared with non-EGM gamblers, EGM gamblers were more likely to be categorized as problem gamblers. The results also revealed that frequency of EGM play is associated with problem gambling status, with high frequency players more likely to be categorized as problem gamblers than low or moderate frequency players.

In another line of investigation, Breen and Zimmerman (2002) compared the latency of the onset of pathological gambling symptoms for predominantly EGM gamblers versus those who gambled primarily on other forms of gambling. From their sample of 44 treatment-seeking adult pathological gamblers, they found that the progression to pathological gambling was significantly shorter for individuals who were primarily machine gamblers (mean latency = 1.08 years) than individuals who gambled predominantly on other forms of gambling (mean latency = 3.58 years). These findings were replicated by Breen (2004) using a larger sample *(N* = 180) of treatment-seeking adult pathological gamblers.

While these studies suggest a greater association with, and more rapid transition to, pathological gambling among EGM gamblers, the results should be interpreted in light of important limitations. First, the generalizability of the findings to all pathological gamblers remains tenuous since most of the data were collected from non-random or non-representative samples(Breen, 2004; Breen & Zimmerman, 2002; Clarke et al., 2012). Additionally, research on EGM play and problematic gambling behaviour has generally been limited to their retrospective or concurrent relationships (Breen, 2004; Breen & Zimmerman, 2002; Clarke et al., 2012; Doiron & Nicki, 2001). Further, there is some research evidence that when controlling for gambling involvement (i.e., the number gambling activities in which individuals participate), the statistically significant association between EGM play and problem gambling disappears (LaPlante, Nelson, LaBrie, & Shaffer, 2011).

2.2. Casino Gambling

In addition to EGM gambling, casino gambling has been speculated to contribute to the development of problem gambling since this particular form of gambling is purported to incorporate the largest number of gambling-inducing structural characteristics, as well as a large number of different gambling opportunities within a single venue (Thomas et al., 2011). An early study by (Fisher, 2000), comparing regular casino patrons who visit casinos once a week or more to non-regular casino visitors, revealed that the prevalence of problem gambling among regular casino gamblers was more than twice that of non-regular casino patrons (14.8% vs. 6.8%). The high proportion of problem gambling observed among regular casino patrons should nevertheless be interpreted with caution; it is unclear whether the regular casino gamblers in this study's sample also participate in other betting activities that can equally present a risk for the development of problematic wagering behaviours. More robust evidence for the association of casino play with gambling pathology is provided by Welte and his colleagues (2004, 2007, 2009a). Drawing from

representative samples of U.S. youth (aged 14 - 21 years) and adults (aged 18 years and older), Welte et al. (2004, 2009a) found that when all forms of gambling are considered simultaneously, casino gambling had the second greatest impact on individual gambling pathology. Further, using a more sensitive data analysis methodology, Welte et al. (2007) observed that casino wagering makes the largest contribution to the gambling problems of adult gamblers. Although the results from these studies suggest that casino gambling is strongly associated with disordered gambling, the methodology used does not allow for definitive conclusions to be drawn about whether one particular casino game or activity presents a greater risk to individuals for problem gambling, or whether it is the multiple opportunities to gamble afforded by casinos which poses a greater risk. Indeed, there is ample evidence to suggest that problem gamblers are more likely to engage in a larger number of gambling activities than non-problem gamblers(Holtgraves, 2009; Kessler et al., 2008; Welte, 2004). Mast studies have focused on casino gambling rather than lotteries, horse racing etc. as these have been shown to have greater costs.

2.3. The Influence of Gambling Availability and Accessibility on Problem Gambling

Besides the unique structural characteristics of different forms of gambling which have the potential to induce and maintain regular or excessive wagering behaviour, it has also been suggested that the situational characteristics of different gambling venues can also serve as a starting point for increased vulnerability in developing gambling problems (Abbott & Clarke, 2007; Blaszczynski & Nower, 2002; Griffiths, 1999; Shaffer et al., 2004). Situational characteristics refer to the features of the environment that are external to the gambling activity or venue itself, such as the location of the gambling venue/outlet, the number of gambling outlets in a specified area, opening hours, the use of advertising, and consumer incentives (Dowling et al., 2005; Griffiths, 1999). The availability and accessibility of gambling venues are particular situational characteristics that have attracted increased public and research attention over the past few decades.

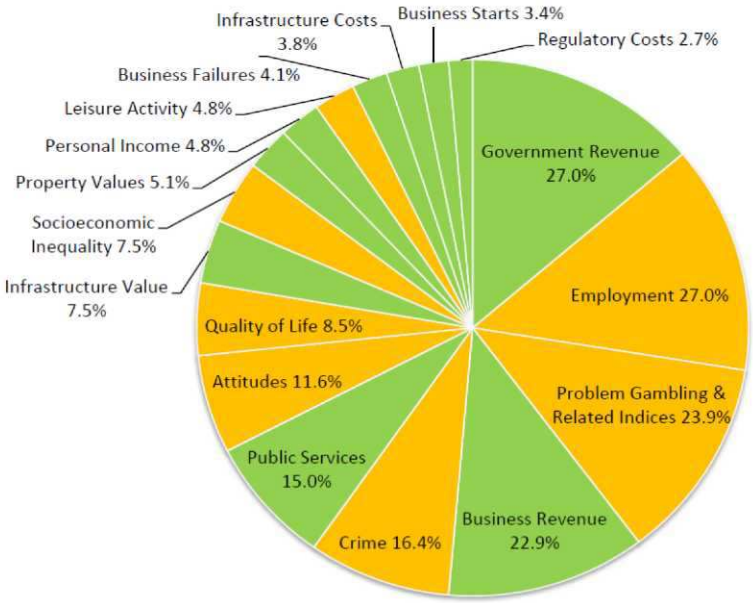
Gambling availability and accessibility can be conceptualized along several different dimensions: geographical, temporal, and social accessibility (Marshall, 2005; Moore, Thomas, Kyrios, Bates, & Meredyth, 2011; Thomas et al., 2011). Geographical accessibility refers to the spatial distribution of venues and gambling opportunities within a geographical area. Comprised within geographic accessibility are objective measures of the number of venues and gambling opportunities per capita, as well as the distance or travel time from the gambling opportunity to home, work, or community and socializing venues. Temporal accessibility, conversely, is conceptualized as the hours of operation of gambling venues or the amount of time where legal gambling opportunities have been available in a given jurisdiction. Recently, researchers have considered an interaction between geographic and temporal accessibility, called "space-time accessibility" or "geo-temporal accessibility", as a dimension of accessibility that warrants greater consideration, since gambling venues which are closer in proximity and have longer hours of operation offer far greater accessibility than those which are equally close in proximity but have shorter hours of operation or those that offer the same hours of operations but are more distant (Marshall, 2005; Thomas et al., 2011). Finally, social accessibility refers to the degree that a gambling product or venue is perceived as attractive and safe. Encompassed within the concept of social accessibility are the subjective judgements of conditions of entry (e.g., membership conditions and dress codes), ease of use (e.g., skill requirements of a game), and safety (e.g., cleanliness, trustworthiness, and reputation).

3. Conceptual models of examining the impact of gambling

3.1. Areas in Need of Measurement to Assess Social Impact

Figure 3 illustrates those impact areas that have been previously investigated, with *Economic Impacts* being highlighted in green and the *Social Impacts* in orange (Williams et al., 2011). The most commonly examined areas have been government revenue (27%), employment (27%), problem gambling and related indices, primarily bankruptcy and changes in prevalence rates of problem gambling (24%), business revenue (23%), crime (16%), public services (15%), and attitudes (12%). Fewer than 10% of studies examined impacts related to either quality of life, infrastructure value, socioeconomic inequality, property values, personal income, leisure activity, business starts and failures, infrastructure costs, or regulatory costs.

Figure 3.1.1: Impact Areas Examined in the Empirical Socio-Economic Impact Studies



3.2. Social and economic impacts of Gambling (Williams et al.)

Williams et al. (2011) and his colleagues argue that there are actually multiple different but equally legitimate ways of organizing and categorizing the areas most directly impacted by gambling expansion. In their conceptualization, they examine both *economic impacts* (those that are primarily monetary in nature) and *social impacts*(primarily non-monetary) (see Table 3.2.1).

Table 3.2.1: A Framework for Examining Social and Economic Impacts of Gambling

ECONOMIC IMPACTS (impacts primarily monetary in their nature)	
Government Revenue	Government revenue received directly from gambling provision or indirectly from taxation of businesses providing gambling. Taxes come in the form of licensing fees, property tax, corporate income tax, and goods and services taxes. It is also important to consider whether taxes may have risen if government had not received additional revenue from gambling.
Public Services	Changes in the quantity or quality of government or charity provided services (e.g., health care, education, social services, infrastructure, etc.) as a direct or indirect result of increased government revenue from gambling. *Note: this category could also be put in the Social Impacts section but is kept in the Economic Impacts section because of its close association with Government Revenue and because these services usually have a clear monetary value.*
Regulatory Costs	Changes in the amount of government revenue directed to ensuring that the new form of gambling operates according to government regulation.
Infrastructure Value	The introduction of any buildings (e.g., casino), roads, and infrastructure upgrades which add to the capital wealth of the community and which are directly or indirectly attributable to the introduction of gambling.
Infrastructure Costs	The amount of revenue allocated by various levels of government to support the infrastructure needed to service new gambling facilities (i.e., road maintenance, utilities, fire services, police services). This does not include regulatory services or services specific to problem gambling.
Business Starts and Failures	The number of new businesses as well as business failures (commercial bankruptcy) associated with gambling introduction. Certain businesses should receive particular attention because research has shown them to be more likely impacted by gambling introduction. Specifically, these are other forms of gambling (i.e., bingo, horse racing, lotteries); the hospitality industry (i.e., hotels, restaurants, lounges); the construction industry; pawnshops; cheque cashing stores; horse breeding and training operations; tourism; and other entertainment industries.
Business Revenue	Changes in overall business revenue/sales in industries that are typically affected by the introduction of gambling. This does not include revenue received by the new forms of gambling.
Personal Income	Changes in average personal income or rates of poverty associated with gambling introduction.
Property Values	Changes in property values in geographic areas proximate to new gambling venues.

SOCIAL IMPACTS (Impacts primarily non-monetary in their nature)

Problem Gambling	Changes in the prevalence of problem gambling and the main indices potentially associated with problem gambling (i.e., personal bankruptcy rates, divorce rates, suicide rates, treatment numbers). There are also monetary costs associated with changes in problem gambling that should be tabulated (and included in the Economic Impact section). Specifically, these are the amount of money spent on a) treatment and prevention; b) policing, prosecution, incarceration, and probation for gambling-related crime; c) child welfare involvement for gambling-related family problems; and d) unemployment and welfare payments and lost productivity because of gambling-related work problems.
Crime	Change in the rate of crime and gambling-related crime. This would also include any observed decreases in illegal gambling with the introduction of a legalized form.
Employment	The number of full and part time jobs that are directly or indirectly created as a result of gambling introduction and the percentage of the general workforce that this represents.
Socioeconomic Inequality	Evidence that the introduction of gambling has a differential financial impact on people of different socioeconomic levels (e.g., potentially making it more or less 'regressive')
Leisure Activity	Changes in the pattern of leisure behaviour associated with gambling introduction.
Public Attitudes	Change in public attitudes associated with gambling introduction. This could include changed attitudes about gambling (e.g., perceived benefits/harms), or changed attitudes about government or the role of government for allowing/providing gambling, etc.
Quality of Life/Public Health/Social Capital/Values	Change in the general quality of life, state of public health, societal interconnectedness, societal values, and related indices. These indices are often difficult to measure and also difficult to attribute to the introduction of gambling. Nonetheless, they are relevant impacts if they exist, and if they can be captured.

According to Williams and his colleagues, for something to have a meaningful economic or monetary impact one of the following needs to be present:

1. *The economic activity causes either an influx of money/assets from outside the jurisdiction or a loss of money/assets to an outside jurisdiction.* For gambling, an influx occurs when the primary patronage base is from outside the jurisdiction, or capital investments are made in the community by outside agencies (e.g., casino developer, private businesses, government).
2. *The economic activity results in either an increase or decrease in the value of existing assets.* They contend that this impact generally does not apply to gambling, given gambling primarily involves a transfer of wealth rather than a creation or loss of wealth (a perspective often taken by economists). However, it can occur when the introduction of a new gambling venue either increases or decreases the market value of neighbouring property. It may also occur in the manufacturing of gambling-related equipment (e.g., EGMs) that can be sold for an amount worth more than the sum of its parts.
3. *The economic activity produces increased or decreased utilization of existing money.* Money sitting dormant has little economic utility to the broader economy. Rather, it has much greater utility if it is spent on gambling as gambling revenue is spent on employee wages, and these wages are then used to buy local goods and services. Money is thought to increase in economic value as a function of the number of people that use the money and the speed of the cash flows from one person to the next. Increased utilization of existing money likely occurs if gambling patronage comes from individuals who are not financing their gambling by reducing their spending on other activities.

4. *The transfer of wealth and changed monetary flow caused by the new economic activity strengthens or weakens sectors of the economy capable of producing an influx/outflow of wealth, increased/decreased value of existing assets, or increased/decreased utilization of money.* One of the potential concerns with gambling is that it may redirect money from wealth-producing sectors (i.e., private business) to sectors not known for wealth creation (i.e., government).
5. *The failure to implement the economic activity would have resulted in an influx/outflow of wealth, increased/decreased value of existing assets, or increased/decreased utilization of money.* Even if there is not a clear economic gain, an economic benefit still exists if the gambling activity prevented assets or money from leaving the jurisdiction (often a justification for governmental expansion of gambling), prevented a decrease in the value of existing assets, or prevented decreased utilization of existing money.

In looking at a suitable methodological framework for a socioeconomic impact study, Williams and his colleagues suggest initially documenting (a) how much money is being transferred; (b) where the money is coming from; and (c) where the money is going. They argue that demographic characteristics of gamblers are particularly important, with the most important socioeconomic variables being age, gender, ethnicity, personal income, and severity of having a gambling problem. The geographic origin of the gamblers remains essential to determine whether the revenue is an infusion of new wealth or local money that has been redirected and the geographic range in which to expect the impacts. Finally, from an economic perspective they suggest it is important to clearly document which groups/sectors are the primary recipients of gambling revenue (i.e., private operator, different levels of government, charity, local community) as well as the geographic location of each of these groups. They contend it is also essential to document how these groups disburse or spend the money so as to identify all the beneficiaries. The geographic origin of the operating expenses to operate new types of gambling, as well as the origin of any equipment purchased are also relevant to a socioeconomic accounting. (i.e., if gambling revenues are primarily collected at the state or federal level [rather than at the municipal level] and are redistributed provincially or federally, then there is a good chance that there will be a net outflow of money from the local municipality hosting the gambling venue).

Williams and his colleagues further argue that it is important to be able to disentangle the unique influence of gambling on observed socioeconomic changes given there are a multitude of economic and social forces that may account for social/economic changes in a community, with gambling often representing only a small fraction of the total economic activity within a community. Similarly, a number of the adverse effects of problem gambling may not be uniquely attributed to the introduction of a single new gambling venue/activity, as most problem gamblers engage in a wide variety of gambling activities and also have comorbid conditions that contribute to their constellation of problems (e.g., substance abuse, mental health problems) (Australia Productivity Commission, 1999; Crockford & el-Guebaly, 1998; Lorains, Cowlishaw, & Thomas, 2011; Walker, 2008d).

Methodologically, a much stronger approach is attained when a matched control comparison is used, where changes in a specific region engaged in a new form of gambling are compared directly against changes in an economically, socially, and demographically similar region that did not receive this new form of gambling. This approach, however, is not without some limitations as there may be baseline attitudinal differences; the control region should be sufficiently far so as not to be secondarily impacted by the introduction of the new form of gambling, often making finding controlled regions much more difficult.

Most impact studies collect yearly statistical 'snapshots' of a community's socioeconomic indicators. Williams and his colleagues argue that attempts made to attribute any changes to the introduction of the new gambling activity is indeed limiting. Like many others, they argue for the inclusion of not cross sectional data but rather longitudinal data. Still further, they argue that the length of time it takes for all economic and social impacts of gambling to manifest themselves is unknown. While some of the economic impacts (e.g., revenues, employment, etc.) appear to be fairly immediate, it should be noted that it may take several years for competing industries to fail or for increased utilization of roads, sewers, etc. to result in needed repairs. The development of problem gambling similarly takes time to develop.

Considering this vast global expansion and active promotion, exposure to legal gambling opportunities has been widely speculated as a possible factor associated with the potential increase in pathological and problem gambling (LaPlante & Shaffer, 2007; Shaffer, LaBrie, & LaPlante, 2004). Both early and more recent research findings suggest that regional differences in the availability of gaming options are positively correlated with differences in prevalence rates of problem gambling(Adams, Sullivan, Horton, Menna, & Guilmette, 2007; Pearce, Mason, Hiscock, & Day, 2008; Room, Turner, & Ialomiteanu, 1999; Rush, Veldhuizen, & Adlaf, 2007; Welte, Barnes, Tidwell, & Hoffman, 2009b; Welte, Barnes, Wieczorek, Tidwell, & Hoffman, 2007; Welte, Wieczorek, Barnes, Tidwell, & Hoffman, 2004). However, the results have not been consistent across all studies. Within the extant literature, some studies have reported no concurrent link between legal gambling accessibility and rates of problem gambling (Sevigny, Ladouceur, Jacques, & Cantinotti, 2008; Young, Markham, & Doran, 2012), while other studies have observed a significant increase or decrease in the prevalence of problem gambling following the introduction or removal of gambling venues or opportunities (Govoni, Frisch, Rupcich, & Getty, 1998; Jacques & Ladouceur, 2006; Jacques, Ladouceur, & Ferland, 2000; Lund, 2009). Although the inconsistencies in the findings may be the result of methodological and measurement issues, the disparities may also suggest that the relationship of gambling availability and accessibility with prevalence of gambling problems may not be a direct or linear one (LaPlante & Shaffer, 2007; St-Pierre et al, in press; Thomas et al., 2011). According to the adaptation hypothesis, individuals will gradually adjust and become more resistant to new and novel gambling opportunities following initial increases in the number and types of adverse reactions to those opportunities, and this adaptation will eventually result in stable or lower prevalence rates of gambling problems (Shaffer et al., 2004; Shaffer & Martin, 2011). This consideration notwithstanding, the impact of exposure to legal gambling venues on problem gambling remains both an important population health and public policy concern, particularly since a number of adverse health, interpersonal and social consequences associated with gambling problems have been observed(Korn, 2000). These consequences include comorbid substance use problems and psychiatric conditions (e.g., depression, anxiety), disruption of family relationships, loss of employment, and criminal behaviour to finance wagering activities (e.g., fraud, theft, and embezzlement).

It is important to note that while some individuals experience rapid onset of gambling problems, others gamble safely for several years before problems develop (Productivity Commission, 1999). There is also evidence that rates of gambling and problem gambling may decline with extended exposure (LaPlante & Shaffer, 2007; Shaffer, LaBrie& LaPlante, 2004). As well, new gambling opportunities are changing and being added to the availability of gambling. As a result, pre-existing gambling opportunities can easily be mistaken for immediate impacts of the new forms of gambling.
Williams and his colleague caution readers of impact studies to recognize that (a) impacts are dependent upon the magnitude of the change in gambling that has occurred for the population; (b) they are typically specific to the type of gambling studied; (c) impacts are geographically dependent; and (d) impacts are related to the period studied. Their review suggests the most consistent impacts across all forms of gambling tend to be:

- increased government revenue
- increased public services
- increased regulatory costs (a relatively minor expense)
- either positive or negative impacts on non-gambling businesses
- The most consistent social impacts across all forms of gambling tend to be:
  - increased problem gambling, with most of this increase occurring after initial introduction
  - increased crime (to a small extent)
  - increased socioeconomic inequality (to a small extent)
  - increased negative attitudes toward gambling.

However, the most serious limitation of the studies is that they provide inadequate context for the pattern of results. The impacts of gambling have been shown to be strongly mediated by several other important variables:

1. The magnitude of the change in gambling availability that has occurred for the population. A large new casino in a small community with limited prior exposure to gambling has a much larger impact than, for instance, adding additional EGMs to a large metropolitan area that already has access to these devices.
2. The types of gambling being introduced (different forms of gambling have different patterns of impacts).
3. The length of time that gambling has been legally available in the jurisdiction prior to the introduction of additional or new forms. Many of the negative social impacts of gambling (e.g., problem gambling) are most apparent in populations with limited prior exposure to gambling.
4. Whether patrons and revenues are locally derived or come from outside the jurisdiction. Out-of-jurisdiction patronage has a strong relationship to positive economic and social impacts at the local level. When patronage and revenue is local, there are primarily substitution effects with little net benefit.
5. The type and extent of gambling opportunities in neighbouring jurisdictions influences the likelihood that new gambling opportunities will attract out-of-jurisdiction patrons, which is strongly related to the potential for positive economic impacts.
6. The strength of jurisdictional policies and educational programs to mitigate the negative effects of gambling.
7. Baseline levels of community impoverishment (an influx of new revenue to an impoverished area has much more dramatic effects on the general economy).
8. Whether the impacts are being examined at a micro community-specific level, or whether larger macro regional impacts are taken into account. Community specific impacts are much more likely to be positive, but regional-wide benefits are rarer.
9. The length of the time in which impacts are evaluated.
10. How gambling revenue is ultimately disbursed.

Williams and his colleagues concluded after reviewing the available evidence that depending on these variables, the overall impact of gambling, in a particular jurisdiction in a specific time period, ranges from small to large, and from strongly positive to strongly negative. *"That being said, in most jurisdictions, in most time periods, the impacts of gambling are mixed, with a range of mild positive economic impacts offset by a range of mild to moderate negative social impacts. "*

Better quality socioeconomic impact studies have cast a wider net and included important social impacts such as problem gambling and crime. Further to this end, Anielski and Braatan(2008) have recently proposed a framework for analyzing the social and economic impacts of gambling that comprehensively assesses gambling's impact in six areas: *Health and Well-Being; Economic and Financial; Employment and Education; Recreation and Tourism; Legal and Justice; and Culture.*

Within each of these areas there are specific costs and benefits of gambling that need to be addressed (a total of 34 variables/indicators).

The more problematic issue has been how to directly compare the social impacts with the financial/economic ones so that an overall determination of the positive or negative nature of gambling can be made. Some studies have attempted to do this by estimating the monetary value of these social impacts so that they can be combined with the monetary/economic impacts in other areas. This is the cost-benefit analysis (CBA) approach to gambling that is best illustrated by the work of the economist, Earl Grinols (2004).

However, while determining the financial costs of some social impacts is reasonably straightforward (e.g., costs of treating problem gamblers, or the costs of prosecuting and incarcerating gambling-related crime), estimating costs for many other social impacts is not. This includes the costs related to suicides, divorces, loss of social capital, the leisure benefit of gambling, as well as the psychic trauma of being a problem gambler. Most often these latter types of social impacts are excluded from analyses. However, this exclusion seriously limits the comprehensiveness and fairness of the overall analysis. Anielski and Braatan (2008) argue that an alternative is to try to establish an approximate financial cost. For example, by asking people "how much would you pay not to be a problem gambler"; or tabulating the direct and indirect financial ramifications of gambling-related suicides (funeral costs, lost productivity, etc.); or trying to financially quantify the leisure benefit of gambling by calculating 'consumer surplus' (i.e., difference between what people would be willing to pay for gambling versus what they actually pay). Other examples of how to monetize social impacts are provided in Anielski and Braatan (2008) and Anielski and Wynne (2009) (this general approach being described as 'full-cost- benefit-accounting' by these investigators).

Unfortunately, the financial data obtained from this approach are somewhat arbitrary and fairly unreliable, making them subject to widely different estimates. It also continues to remain unclear how to create a monetary value for some variables (e.g., loss of social capital). Even the strongest supporters of this full-cost-benefit approach acknowledge these serious limitations. For example, Anielski and Wynne (2009) ended up abandoning this strategy in their socioeconomic impact study of gambling in Nova Scotia.

Aside from practical issues, an argument can be made from a theoretical standpoint that it is inappropriate to apply an arbitrary monetary amount to something that is clearly nonmonetary in value or consequences to the participant. Furthermore, doing so simply reinforces the erroneous notion that money is the appropriate and important metric upon which to judge the impact and/or the overall value of gambling.

This latter issue is not restricted to gambling. Widespread dissatisfaction with reliance on financial measures such as gross domestic product (GDP) or CBA to measure societal progress or impacts on overall societal well-being has existed for many years (e.g., Atkinson, 2000; Daly & Cobb, 1989; Dasgupta & Maler, 2000; Tinbergen & Hueting, 1992). This situation has directly led to the development of several alternative measures to assess progress/impacts in a more comprehensive fashion. Such measures include the United Nations Human Development Index, the Quality of Life Index, Full Cost Accounting, the Canadian Index of Wellbeing, the Index of Sustainable Economic Welfare, the Gross National Product and the Genuine Progress Indicator. Most of these measures recognize economic productivity as an important aspect to be considered, but they do not make it the central basis upon which a judgement about progress or societal well-being is made.

Unfortunately, while these approaches may be more theoretically satisfying, they have practical problems of their own. First, although they all have similar goals, their specifics are markedly

different from each other. This illustrates the fact that determining which indicators contribute to societal well-being is a very value-laden task for which there is little consensus. Second, most of these approaches have the same problem as cost-benefit analysis in that they aspire to combine all impacts into a single index, typically just by summing the number of beneficial indicators against the detrimental ones. This is problematic given it makes all impacts equivalent in value and/or requires a subjective judgement about the relative value/weight of one impact against the others.

The reality is that there is no reliable way of combining social impacts with monetary impacts to produce a single summative measure. Anielski and Braatan (2008) suggest that instead, "assessing the overall positive or negative nature of an enterprise that has wide ranging social and economic impacts (such as gambling) will always be a subjective judgement about the relative importance of the observed social impacts compared to the observed economic impacts."

However, while problematic, this does not negate conducting meaningful socioeconomic analyses of gambling. Rather, there are many basic principles for conducting socioeconomic impact studies that can ensure that the obtained results are comprehensive, balanced, and scientifically rigorous. An alternate framework may be necessary. These principles are very much in the spirit of the Anielski and Braatan's (2008)framework as they ensure there is a meaningful accounting of the social impacts of gambling. At the same time, they address critiques of this framework (e.g., Walker, 2008d), and of socioeconomic research more generally by (a) proposing a simpler and more user-friendly categorization of impacts, (b) providing a clearer description of how these impacts are to be evaluated and combined, (c) enshrining basic principles of economic gain/value in the evaluation (Walker 2003, 2008a, 2008d; Walker & Barnett, 1999), and (d) outlining scientifically rigorous strategies to better ensure the reliability of findings related to the causal direction of the impacts.

3.3. The Socio-Economic Impact of Gambling (SEIG) Framework

The SEIG Framework (Anielski & Braaten, 2008) (Table 3.3.1) was designed to help guide researchers and policy makers to measure, assess and report on the social and economic impact - both positive (benefits) and negative (costs).This framework best reflects the interdisciplinary and complex nature of gambling and takes a broader and integrated systems approach to measuring impact. It incorporates analytical tools, including quantitative and qualitative research methods, conventional economic analysis, as well as social welfare economic analysis measurements to facilitate the development of an objective profile of legalized gambling's impact. While the SEIG Framework contains some strategies for estimating the impact of gambling, it is not a "one-size-fits-all" universal framework and as such it allows for considerable flexibility. While the SEIG Framework was originally developed to measure the impact of gambling in Canada, its utility and usefulness for other jurisdictions is evident. It is important to note that the *Data Source* section within the framework may not be applicable for EU Member States, as this was intended for a Canadian sample. Rather, it is the *Variables, Data Required, Data Collection and Method,* and *Unit* of *Analysis* which is most important.

The SEIG Framework consists of six impact themes, each of which has its own associated variables and accompanying indicators that address the question of positive and negative impact and can be conceptually viewed in Figure 3.3.1, with details presented in Table 3.3.1.

Figure 3.3.1: Overview of the SEIG Framework

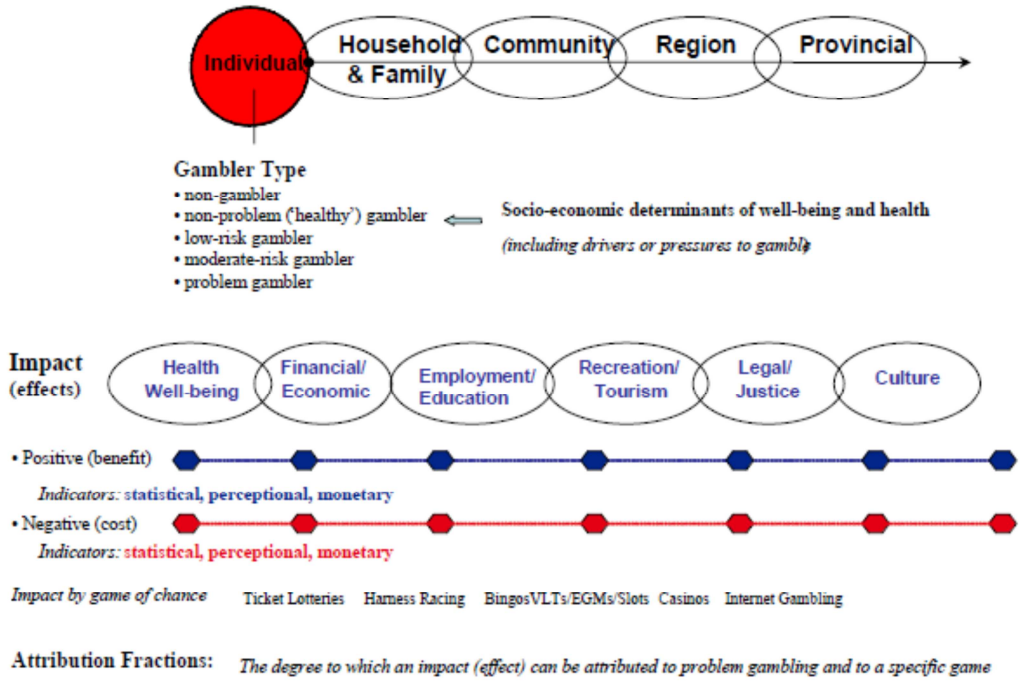


Table 3.3.1: Framework for the SEIG Assessment and Indicators

Health and Well-Being

Health and Well-Being Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis
			Benefit		
Entertainment pleasure	Level of enjoyment in time spent gambling	Gambler self-rated enjoyment in spending time gambling	There is no known source of research into self-rated personal enjoyment of gambling	New surveys of gambler levels of personal enjoyment would have to be constructed.	Individual
	Citizen positive or negative attitudes toward gambling	Community member perceptions	There is no known source of statistical research into public attitudes towards gambling across Canada though individual.	Public opinion polling and/or focus group dialogue would have to be conducted at the local community level, regionally, and provincially.	Individual/ Community
			Cost		
Problem gambling (PG) prevalence	PG prevalence/ incidence rate in a region or community Number of problem PG who seek help through community based and residential treatment services	PG prevalence study survey data, agency case load data Private agency case load data Surveys/estimates from mutual support groups.. Distribution and follow-up records (self directed training manuals)	In many cases, provincial statistics (e.g. Canadian Community Health Survey) and studies of the incidence of problem gambling using various gambling typologies (e.g. CPGI) have been conducted over the years in Canada.	Review existing survey data sets/reports Conduct new surveys as required to update problem gambling incidence. Also consult with government gambling addictions agencies, EAPs, Gamblers Anonymous and other private agencies,	Community/ Provincial
Problem gambling and co-morbidity	Prevalence of PG and comorbid disorders: • Mental health • Depression and mood disorders • Physical (e.g. gastric problems, high blood pressure, etc.)	Co-morbid disorders in PG populations and PG disorders in co-morbid populations Level of depression and mood disorders in PG population	Most provincial deaths and hospitalization data are collected at hospitalization release but do not necessarily identify PG as cause of morbidity. Special attention must be paid to attribution fractions.	Attribution analysis is ultimately needed to determine comorbidity. This will require new epidemiologic al research, forensic analysis of provincial morbidity statistics and clinical trials and surveys will be required. Surveys and anecdotal evidence from interviews with problem gamblers and their families would be useful.	Community/ Provincial
	Prevalence of PG and substance abuse	Substance abuse in PG populations and vice-versa	Some studies have been conducted provincially though comorbidity statistics on the relationship of PG and substance abuse are generally poor in Canada	Attribution analysis is required using new epidemiologic al research, clinical trials and surveys of problem gamblers.	Community/ Provincial

Health and Well-Being

Health and Well-Being Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis
Mortality	Deaths from natural causes attributed to PG	Deaths by cause in a population Deaths by cause in a PG population	Vital statistics do not generally identity PG as the primary or even secondary cause of death.	Detailed attribution analysis of vital statistics, including examination of corner reports, will be required, complimented with anecdotal evidence from interviews and surveys of PGs and family interviews	Individual
Suicide	Suicides attributed to PG	Deaths by suicide in a population Deaths by suicide in a PG population	As with other morbidity statistics, the precise number of suicide (both attempted and successful) are generally lacking in evidence of attribution to PG.	Detailed attribution analysis of suicide statistics through a forensic review of police and coroner records, as well as suicide help organizations. In addition, some data can be collected anecdotally through interviews of problem gamblers and their families.	Individual
Social relationships	Family breakdown: separation and divorce due to gambling impacts	Divorce and separation in a population Divorce and separation in a PG population Family members' perceptions of impact of divorce or separation	Divorce and separation vital statistics that attribute PG as either the major or a secondary driver of separation and divorce may exist..	Attribution analysis is required to examine vital statistics on divorce and separation as to whether PG is identified as a driver or cause. This statistical evidence could be supported by anecdotal evidence from interviews with PGs and family members.	Individual
	Impact on children, spouses and other family members of problem gamblers	Perceptions of problem gambler family members, loss of quality time with family, friends, and community.	As with the impacts of PG on separation and divorce, data is generally lacking either statistical or qualitative data.	Qualitative research and surveys, focus group dialogue processes to examine impacts on children and family members from PG.	Individual
	Social Isolation	Perceptions of gamblers and others directly impacted by gambler behaviour.	Some studies may be available however; few qualitative studies of the loss of personal and community social capital due to social isolation attributed to gambling behaviour exist.	Qualitative research into the impacts of gambling on the loss of social capital for both the individual and the community.	Individual/ Community
	Psychological impacts on family and friends of gamblers	Perceptions of gamblers and others directly impacted by gambler behaviour.	Some psychological and sociological research studies may be helpful.	Requires psychological research and profiling, along with using surveys and interviews with PGs and their families	Individual

Health and Well-Being					
Health and Well-Being Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
	Domestic Violence	Domestic violence population statistics Domestic violence prevalence in a PG population Family members' perceptions of impact of domestic violence	Statistical evidence of the relationship of PG and domestic violence, like other health and well-being indicators is generally scarce. However, some data may be available from local and provincial police records and court files	Primary research and forensic examination/ review of police and court records complimented with interviews with PGs and the PG family members, who identify instances of PG-related domestic violence.	Individual
Economic and Financial					
Economic and Financial Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
			Benefit		
Contribution to economic growth	Contribution gambling sector makes to provincial Gross Domestic Product (GDP)	Estimates of various components, which make up GDP for gambling: • personal consumption expenditures • business investment; • government expenditures	While GDP estimates for gambling, as an economic sector, do not currently exist, the necessary data for the components to derive GDP estimates in many jurisdictions are available.	According to Statistics Canada estimates of gambling GDP could be constructed from the respective components of the GDP formula with respect to gambling as an economic activity tracked in the national income accounts.	Provincial/ National/ Governmental
	Changes in investment, housing starts, value of residential and commercial building permits, hotel and commercial starts	Regional and local community investment, housing starts, value of residential and commercial building permits, hotel and commercial starts	The relationship between legalized gambling development, as a sector in the economy, and key economic growth indicators is generally lacking and would require new analysis.	This requires data collection and detailed analysis of real estate development records and experts as to how real estate development has been related to gaming venue development. Possible data sources include municipal government statistics, Statistics Canada statistics (community profiles data), and real estate industry statistic	Community/ Provincial/ Governmental

Economic and Financial					
Economic and Financial Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
			Benefit		
Personal gambling expenditure	Net gambling expenditures as a percentage of household income Changes in disposable household income, as potential proxy driver of gambling activity	Official government statistics or estimates of net "games of chance" annual gaming expenditures (distinguish between adult gross expenditures and losses) Personal disposable income trend statistics by socio-economic cohort	Annual and quarterly accounts of data on household expenditure data on "games of chance" but limited to CMA6 level of analysis.	Household expenditure surveys. Expenditure diaries	Individual/ Household
Personal entertainment satisfaction benefit	Consumer surplus	Economic research estimates of consumer surplus (i.e. willingness to pay more for existing legal gambling opportunities) and elasticity of demand for gambling empirical estimates	Consumer surplus estimates for gambling do not exist; Australia is the only jurisdiction to have conducted studies but these estimates are questionable.	New primary economic research and analysis by professional economists using willingness-to pay surveys to derive consumer surplus estimates.	Individual/ Community/ Provincial/ National/ Governmental
	Distance surplus	Distance surplus empirical estimates	Measuring distance surplus would require special economic research of the willingness of gamblers to pay incremental costs of travel from their home to specific gaming venues.	Travel cost surveys and analysis to derive distance surplus estimates.	

Economic and Financial					
Economic and Financial Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
Gaming Industry Benefit	Producer surplus Revenues by industries on which gambling may have a large impact on such as: leisure, hotel, restaurant, and traditional gambling	Gaming industry profits Revenues of businesses most affected by gambling	Gaming ministry, commissions or other agency annual reports.	Because producer surplus estimates have not been derived for gambling, primary economic research would be required.	Community/ Provincial/ Governmental
	Net growth in revenues/sales and employment in other sectors that benefit from gaming industry development	Business sales/revenues statistics for other sectors and employment statistics of sectors that benefit directly or indirectly from gaming industry (e.g. food services, retail sales and construction activity)	Labour force data by industry sector	New economic research Employment surveys.	Community/ Provincial/ Governmental
Government Revenue	Government revenues from gambling, including incremental tax revenues (GST, PST, corporate income taxes) related to gaming activity as a percentage of total revenues	Government gaming revenues (gross sales, gross profits, net profits); a) obtained from local spending; b) obtained from tourist spending; c) spending on charities and community programs)	Provincial government accounts and gaming commissions.	New detailed/ forensic analysis of provincial and federal Government public accounts	Provincial/ Governmental
Capital Gains	Capital gains to consumers, including increases in private and commercial property values related to gambling venues and development	Increase (or decrease) in average residential and commercial property values adjacent to gaming venues	There are no known studies of capital gains on private or commercial property attributed to gambling industry development	Capital gains analysis has not been conducted in the past related to gambling which would require new research.	Individual/ household

Economic and Financial					
Economic and Financial Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
			Cost		
Bankruptcy	Personal bankruptcy rates attributable to problem gambling	Bankruptcies attributable to gaming and gaming-related bankruptcies as a percentage of total personal bankruptcies	Bankruptcy files (government, financial institutions) do not necessarily identify PG as a key driver of personal or business bankruptcy or financial difficulties.	Analysis of bankruptcy files to determine if the bankruptcies were due to an "overextension of credit" that can be attributed to problem gambling.	Individual/ household
Financial problems (gambling debts)	Self-reported financial problems, including gambling debts borrowing or financing of gambling activity and debts Changes in personal savings rates and liquidation of assets (e.g. RSPs, RESPs, home equity)	Level of gambling related debt and debt servicing costs, including estimated cost of recovering bad debts Statistics on personal saving rates and changes statistically attributed to gambling activity	There is no known source of data on self reported financial problems that may include PG as an identifiable cause.	New self-reported surveys could be a source of indirect evidence and anecdotal information from self reports of borrowing money to finance gaming. Discerning changes in personal savings and investment rates related to gambling activity would be difficult to collect expect through experiential information from problem gamblers.	Individual/ household
Value of losses in quality of life time	The value of volunteer time spent by households to work charity gambling venues to raise money for community programs and infrastructure; time that would not otherwise have to be invested if other government general revenues were available for fully funding these community needs	Volunteer time contributed (total time and "reluctant" time) by individuals and households in the community to working bingos, casinos and other charity gaming venues to help raise revenues for non-profit organizations, schools and other social economy enterprise	While time use studies are conducted, which include analysis of changes in leisure time, family time and other household time-use, it is not known whether these statistics account for gambling as an individual or household time-use activity.	Time use survey statisticians need to be consulted to inquire into whether gambling, as an activity, is accounted for in time-use diaries and whether analysis has been done to examine the key drivers of changes (including gambling as an activity).	Individual/ household

Public Sector Costs	Government expenditures allocated for problem gambling treatment, education and prevention	Government incremental health, welfare, and social service program expenditures allocated to problem gambling impacts	Analysis of government public accounts should reveal the amount and share of revenues that support government departments/ministry expenditures that come from net gambling revenues.	Fiscal analysis of government program spending to determine how changes in government program spending are related to changes in problem gambling behaviour and impact.	Provincial/ Governmental

Economic and Financial

Economic and Financial Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis
	Government regulatory costs (government expenditures) related to gambling industry	Government regulatory costs related to gambling industry	Government public accounts	Fiscal analysis of government program spending would be required to determine how changes in government program spending are related to changes in problem gambling behaviour and impact.	Provincial/ Governmental
	Public infrastructure costs related to gaming industry development	Additional public infrastructure development or replacement costs (as long as the province pays for a portion	Government public accounts	Fiscal analysis of government program spending would be required to determine how changes in government program spending are related to changes in problem gambling behaviour and impact	Provincial/ Governmental
	Government subsidies to the gaming industry	Direct and indirect subsidies (e.g. public infrastructure benefits to casinos) provided by governments that benefit the gaming industry	Government public accounts and special analysis	Analysis of government program and capital spending to determine how public expenditures have benefited the gaming industry.	Provincial/ Governmental

Employment and Education

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis

Benefit

Job Creation	Direct employment (job creation) in gaming industry	Employment statistics for gaming industry (number of employees; percentage employed full time)	Data on number of employees by industry sector.	Data is most likely available on the gaming industry, both provincially and possibly at the municipal level, from the national Labor Force Survey. Compilation of the data would be required.	Community/ Provincial/ Governmental

Employment and Education

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis
	Indirect employment related to gaming industry	Indirect employment resulting from gaming industry development. Employment statistics of sectors that benefit directly or indirectly from gaming industry (e.g. food services, retail sales and construction activity) Estimates of the economic value of indirect employment	Input-Output tables or analysis from provincial statistical/government agencies.	Input-Output analysis is likely the best approach to measuring the indirect employment impacts related to the gaming sector.	Provincial/ Governmental
	Annual and hourly wages for gambling industry employees	Annual and hourly wage data	Data on annual and hourly wages generated by the gambling industry.	Labour force survey should provide annual salaries and hourly wage data for gaming industry workers.	Provincial/ National/ Governmental
	Job intensity: Gambling related jobs created per $1 million of gambling income (or GDP), *compared with other sectors in the economy*	Gambling-sector employment statistics Gambling income Gambling GDP	Building a GDP formula then comparing GDP estimates with statistics of employment in the gambling industry.	Estimates of GDP for the gaming sector would have to be derived from Statistics Canada national income accounts data. Industry revenue data should be available from provincial gaming agencies.	Provincial/ Governmental
Unemployment and underemployment	Changes in unemployment and underemployment rates resulting directly from gaming industry development	Special analysis of the number of new employees in the gaming sector who were previous unemployed or underemployed	Analysis of changes in unemployment and underemployment rates attributed to changes in legalized gambling.	Special statistical trend analysis of Statistics Canada unemployment and underemployment in the gaming and entertainment industries would be required.	Provincial/ Community/ Governmental

Employment and Education

Employment and Education Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis
		Cost			
Work Performance	Productivity losses, absenteeism due, and increased likelihood of unemployment to problem gambling activity by employees	Estimated losses of productive work time and absenteeism by employees who are problem gamblers	Statistical and anecdotal data on losses in work productivity due to PG behaviour by employees may be spotty or generally unavailable.	Interviews with PGs, employers of PGs and family members, including self-reported surveys, indirect evidence and anecdotal information from self-reports of borrowing money to finance gaming.	Individual/ Household
Employment Cost	Retraining and other employment cost impacts sustained by in other industries	Employment retraining and other unexpected labour costs incurred by businesses affected by gambling industry development	Studies of the economic estimates of the costs of retraining and labour productivity losses attributed to gambling development.	Employment retraining cost information to be collected from firms impacted by gaming industry development. Much of the information will be anecdotal.	Business

Recreation and Tourism

Recreation and Tourism Variable	Indicator	Data Required	Data Source	Data Collection Method	Unit of Analysis
		Benefit			
Gambling tourism	Gambling tourist rate Percentage of patrons/visitors from outside the region/community making day or overnight trips to a local gaming venue Tourists citing gambling as primary reason to visit region; as a contributing factor. Overnight trips made by local residents to other regions with gaming venues. Average tourist spending on gambling revenues.	Tourism statistics including visits to gambling venues from outside the immediate community Tourist expenditures at gaming venues	Collect tourism data (e.g. visitation rate statistics) that identify gambling venues as a primary reason for visitation, though such evidence has not yet been examined.	Tourist surveys maintained by tourism ministries or agencies could be a source of information on visitation rates related to gaming venues.	Individual

Recreation and Tourism					
Recreation and Tourism Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
		Cost			
Negative impact on other recreational industries	Income and employment losses sustained by traditional forms of entertainment and recreation in the community	Economic and financial losses sustained by traditional forms of entertainment and recreation that existed prior to the introduction of gaming venues3	Studies of the impacts (positive or negative) of legalized gambling on other recreation sectors (see also Economic(s).	It may be possible to infer losses in income and employment in terms of determining how much money is now spent on games of chance (e.g. VLTs or slots) that might otherwise have been spent in the community on other forms of recreation and entertainment.	Provincial/ Governmental/ Regional

Legal and Justice					
Legal and Justice Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
		Benefit			
Reduced illegal gambling	Reduction in illegal gambling activities using court proceeding statistics as a proxy	Court statistics on gambling related hearings and convictions	Current court statistics to help assess a trend in illegal gambling activity that can be attributed to the increased availability of legalized gambling.	Custom research and analysis.	Provincial/ Governmental
Crime rates related to gambling	Decreased crime rates related to gambling (e.g. embezzlement, fraud) as a result of legalization of gambling activities Benefits (or costs) of crimes related to problem gambling in a legalized gambling context	Policy records and court statistics Economic analysis	While police and court statistics may provide general crime rates that may relate to PG activity, however, it is unlikely that they identify legalized gambling as a key driver of reduced crime rates. Economic analysis would be required to examine the full benefits/costs of legalized gambling.	Much of the information about positive effects of legalized gambling on crime rates would have to be anecdotal information/experiential information from police and court officials, and government gambling addiction agencies. Full cost accounting of the monetary value of reduced crime rates attributed to legalized gambling.	Individual/ Provincial/ Governmental
Decreased crime judiciary and policing cost	Reduced policing and court costs associated with illegal gambling	Reduction in illegal gambling related charges, convictions or court proceedings	The same commentary as above applies to data on reductions in judiciary and policing costs.	Detailed analysis of all police/court records that cites illegal gambling as a cause of criminal activity along with supporting anecdotal evidence from police/court officials.	Individual

Legal and Justice					
Legal and Justice Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
		Cost			
Crime rates related to gambling	Violent crimes (homicides, attempted murders, assaults, robberies, harassment/stalking) attributed to gambling Non-Violent crimes-break and enter, vehicle theft, fraud, theft over/under $5,000	Policy records and court statistics, which cite gambling as a motivating factor	General crime rates that may relate to PG activity.	Detailed analysis of police and court records that cite illegal gambling as a cause of criminal activity; supporting anecdotal evidence from police and court official interviews	Individual/ Provincial/ Governmental
Criminal cost	Negative crime impacts including losses to other businesses from gaming related crime (e.g. fraud and theft, money laundering and loan sharking)	Gambling-related criminal activity, arrests and convictions as well as analysis of what percentage of the net change in crime rates in a region that can be attributed to gaming industry development Perceived negative impacts (crime, fraud, theft, money laundering, loan sharking) by other businesses impacted by gaming venues	Studies or data on the losses sustained by businesses impacted negatively by crime due to increased legalized gambling.	Analysis of all police and court records that cites illegal gambling as a cause of criminal activity; supporting anecdotal evidence from police and court official interviews. Stakeholder interviews and perception surveys and analysis of businesses impacted by gaming venues	Provincial/ Regional/ Governmental
Judiciary and policing cost	Policing and court costs related to gambling related crime, total and as a percentage of total policing and court costs	Total number of police and court cases and related program expenditures that are problem gambling related. Cost of gambling related crime regulation (policing) and prevention programs	Police and court statistics provide some evidence that a case or file is attributed to problem gambling	Fiscal analysis of police and court program expenditures related to problem gambling activity.	Individual
Security cost	Increased security (private and public) costs related to gambling activities	Statistics on private and public security system expenditures related to gambling development	Analysis of security cost data that focuses on changes in legalized gambling in communities	Economic research and analysis of security industry expenditures related to gambling activities	Individual/ Business

Culture					
Culture Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
		Benefit			
Community benefit from gaming activity	Local charities and non-profit sector who derive in come from gaming revenue transfers from government	Total number of gambling-related charitable donations, value and number of grants Number, type and size of charities that receive gambling revenue donations and grants Percentage of revenues to community organizations that come from gaming	Gaming ministry statistics and public accounts should provide necessary statistics on which community organizations benefit from legalized gaming revenues and by how much, however, more detailed analysis of how the revenue mix has changed for these organizations (e.g. losses in charitable giving.)	Requires research and analysis of community organizations as to the income they derive from gaming revenue sources	Provincial/ Governmental
Public sector benefit from gaming activity	Gambling revenue contributions to government social program spending, grant programs, and organizations (e.g. schools) that come from gaming revenues	Financial information on the total dollars of revenues and percentage of revenues to other government/public sector organizations that come from gaming	Governmental or public accounts data that identify gaming revenues as a source of revenue for funding respective government departments, ministries or agencies.	Fiscal analysis to determine what, specific amounts and percentage of revenues that supports government programs from gambling revenues	Provincial/ Governmental
Sense of safety from gaming venues	Increased sense of personal safety because of gaming venues	Sense of personal safety surveys related to the existing of legalized gaming venues		Attitudinal surveys augmented with focus group interview input.	Individual
		Cost			
Non-gambling charitable sector impact	Changes in the amount and value of non-gambling charitable donations and grants	Charitable donations, giving and grants statistics	Changes in charitable giving can be assessed from national non-profit sector statistics, however, attributing these trends to the development of legalized gambling opportunities may be problematic without anecdotal evidence from interviews with tax payers as to changes in their charitable giving behaviour.	Tax filer data, for assessing changes in charitable giving but determining whether these changes related to the impacts of expenditures on games of chance requires new research and anecdotal information through PG and gambling stakeholder interviews.	Individual

Culture					
Culture Variable	**Indicator**	**Data Required**	**Data Source**	**Data Collection Method**	**Unit of Analysis**
			Cost		
Loss of social cohesion (i.e. sense of community; social capital) in a community due to legalized gambling development	Loss (or gain) in community social capital (i.e. sense of cohesion, trust, belonging)	Perceptional survey statistics		Primary research, special perceptional surveys, and supported by citizen dialogue.	Individual

Challenges and Limitations with the SEIG Framework

As with new initiatives, limitations, challenges and issues surfaced during the development of this framework. According to Anielski and Braaten (2008) these limitations include:

- The general absence of adequately robust data for the various impact domains, variables and indicators. New research and a commitment to forensic analysis of existing societal health, social and economic indicators and data sets will be required with a special focus on gambling's impact.
- The issue of causality, namely, the difficulty in determining the degree to which problem gambling is a key contributing factor to a change in a given measure of well-being, especially in relation to health indicators.
- The challenge of estimating the full monetized cost and benefit of gambling on society remains problematic. While conventional cost-benefit analysis methods are beneficial, there still remains considerable disagreement among economists as to the best taxonomy of cost and benefit for gambling and how to measure this impact.

In spite of these limitations and in acquiring pertinent data, the SEIG Framework can provide a useful paradigm for assessing the impact of gambling.

3.4. Genuine Progress Index for Atlantic Canada (GPI Atlantic) for Assessing the Impact of Gambling

While a number of other frameworks and models exist (e.g., State of Victoria Inquiry into the Costs of Problem Gambling, 2012), one last framework which holds promise for investigating the impacts of gambling is presented. This framework was chosen by GPI Atlantic (Haward & Colman, 2004) over others for its comprehensiveness, its ability to integrate multiple dimensions, and its clarity in an attempt to assess the costs and benefits of gambling in Nova Scotia, Canada. Adapted from the framework developed in Australia by the Social and Economic Research Centre (SERC), the basic format includes seven areas of impact; *Health and Wellbeing, Culture, Recreation and Tourism, Employment and Education, Crime, Economic Development (macro level), and Financial.* Each of the seven impact areas affects society on four levels of analysis; the individual and family, the community, geographic region, and the jurisdiction.

The Framework identifying the major costs and benefits associated with gambling can be found in Table 3.4.1.The specific costs and benefits identified go beyond those in the original SERC framework to include other costs and benefits prominently identified in the literature. These additional costs and benefits have been incorporated into the seven-part SERC framework as have the four levels of analysis.

Table 3.4.1: The Genuine Progress Index for Atlantic Canada (GPI Atlantic) for Assessing the Impact of Gambling

Level of Analysis		Individual/Family	Community	Region	Provincial
Areas of Impact	**Indicators of Costs and Benefits**				
	Gambling prevalence statistics, e.g. percentage of population gambling, number of problem gamblers, etc.				
	Standard socio-demographic data &other gambler characteristics: age, sex, region of residence, education, work status, income, number of household members, head of household, marital status, cultural identification, type of games played				
Health &Well Being	Physical health: (issues related to gambling) Individual health, premature mortality, life expectancy				
	Mental health: (issues related to gambling) Cognitive and sensory stimulation (positive or negative) Stress (reduction or increase) Depression Anxiety Suicide				
	Pain and suffering incurred by gambler's family				
	Increased substance abuse (alcohol, drugs, tobacco)				
	Social health and wellbeing: Social interaction or isolation Relationship breakdown Family problems Effects on children Child abuse Divorce				
	Effects on community groups				

Level of Analysis		Individual/Family	Community	Region	Provincial
Areas of Impact	**Indicators of Costs and Benefits**				
	Social cohesion				
	Motivations for gambling				
	Quality of life				
	Time use (paid and unpaid work, quality time, amount of time spent gambling)				
	Costs of health treatment				
	Costs of problem gambler treatment services and numbers in treatment				
	Public health and community support services for problem gamblers				
	Welfare program costs				
Environmental Wellbeing	Air quality, noise, land, soil contamination, environmental sustainability				
	Public attitudes, beliefs, values toward gambling (how these affect costs and benefits)				
Culture	Impacts on specific demographic and cultural groups, e.g. Women, youth, seniors, First Nations peoples				
	Gaming provision of acceptable social facilities				
	Funds for community groups and charities				
	Entertainment benefits				
	Additional recreational options				
Recreation & Tourism	Costs diverted from other forms of entertainment or other activities				
	Effect on tourism				
	Amount of tourist gambling				
	New money brought into area from tourism				
	Spill over effects from tourist gambling on facilities such as accommodation, dining, and shopping establishments				

Level of Analysis		Individual/Family	Community	Region	Provincial
Areas of Impact	**Indicators of Costs and Benefits**				
Employment	Increased jobs in gambling industry				
	Number of employees in gambling industry and types of jobs, e.g. full/part time, salary, qualifications, staff turnover				
	Industry policies, union participation, affirmative action programs				
	Number of employees previously unemployed				
	Increased jobs in service provider industries				
	Indirect spin-off employment in sectors such as hotels, restaurants				
	Reduced unemployment levels				
	Work productivity losses (including unpaid work)				
	Absenteeism				
	Job loss & job change				
	Employee search and retraining costs				
	Business profits and losses				
	Non-gaming venues experiencing a loss of activity				
	Redirection of expenditures out of local area, leading to job loss				
	Increased taxation revenue providing government with additional opportunities for expenditure on public goods like education, health, environmental protection and related areas				
	Loss of taxation revenue; e.g. from failed businesses, from sales tax, from money that would have been spent elsewhere in lieu of gambling				
	Government unemployment and welfare costs				

Level of Analysis		Individual/Family	Community	Region	Provincial
Areas of Impact	**Indicators of Costs and Benefits**				
Education	Lost time from study				
	Academic performance				
	Educational attainment				
	Time and money spent on gambling by adolescents				
	Implications for future human capital				
Legal, justice, and crime	Levels and types of criminal activity attributable to gambling; e.g. street crime, fraud, embezzlement, money laundering, theft, burglary, loan sharking, drug dealing, white collar crime, passing counterfeit currency				
	Number of people who committed gambling related crime				
	Value of money and goods obtained illegally				
	Law enforcement personnel costs				
	Incarceration costs				
	Gambling-related crime regulations and prevention programs				
	Court costs				
	Domestic and other violence				
	Illegal gambling and organized crime				
	Benefits of regulation (legal vs. illegal gambling)				
	Loss to business from gambling-related crime				
	Lawsuit costs				
	Effects of corruption				
	Costs of intangible impacts: pain and suffering of crime victims				
	Higher insurance rates				
	Costs of Increased security measures				

Level of Analysis		Individual/Family	Community	Region	Provincial
Areas of Impact	**Indicators of Costs and Benefits**				
Economic Development	Increase or decrease in economic activity; e.g. gambling supply and support services Diversion of local monies from other enterprises				
	New markets				
	Impact on local industries, e.g. business closures or new development				
	Efficiency of tax instrument				
	Regressive nature of tax				
	Income distribution				
	Disadvantaged areas: number of gaming machines compared with more wealthy areas, amount of social problems associated with gambling				
	Business losses from bad debts and bankruptcy of customers who experience gambling losses				
	Property values				
	Pawnshop activity				
	Reduction in savings rates due to gambling				
	Long-term infrastructure replacement				
	City image and infrastructure indicators: Natural setting, safe, clean streets, supportive of our neighbourhoods, cultural diversity, social responsibility, relaxed, healthy lifestyle, architectural landscape, pedestrian patterns, traffic, heritage and cultural issues				
	Town planning requirements				

Level of Analysis		Individual/Family	Community	Region	Provincial
Areas of Impact	**Indicators of Costs and Benefits**				
	Gaming expenditures (losses)				
	Percentage of income spent on gambling				
	Increased debt				
	Unpaid debt				
	Bankruptcy				
Financial	Government gambling revenue: Increase or loss of revenue to the province from gaming, sales and payroll tax, % of total government revenue, distribution of revenue				
	Detailed industry operating data				
	Annual gambling growth rates				
	Gaming regulation costs				
	Percentage of gambling revenue to government from problem gamblers				
	Costs of advertising, marketing, promotions, public education, research, data collection				
	Lobby expenses				
	Percentage of the total net profit from gaming that goes to charities				
	Gambling-related refinancing, loans, mortgage closures				

While a number of models and frameworks for examining the impact of expanded gambling have been presented, to date no single model or framework has been universally accepted to measure the overall impact of gambling. The Figures below nevertheless summarize many of the areas which potentially impact the individual and the community. While most individuals recognize the personal and governmental benefits of gambling, it is not unusual to minimize the costs. There is little doubt that problem gambling is an important social policy issue and legislators and the general public are anxious to know the impacts of gambling expansion in general, and related to specific forms of gambling. Identifying and measuring the important variables and determinants will help researchers address this important issue. The debate continues as we search for the best and most accurate model.

Figure 5: Individual and Family/Household Socio-Economic Impact of Gambling

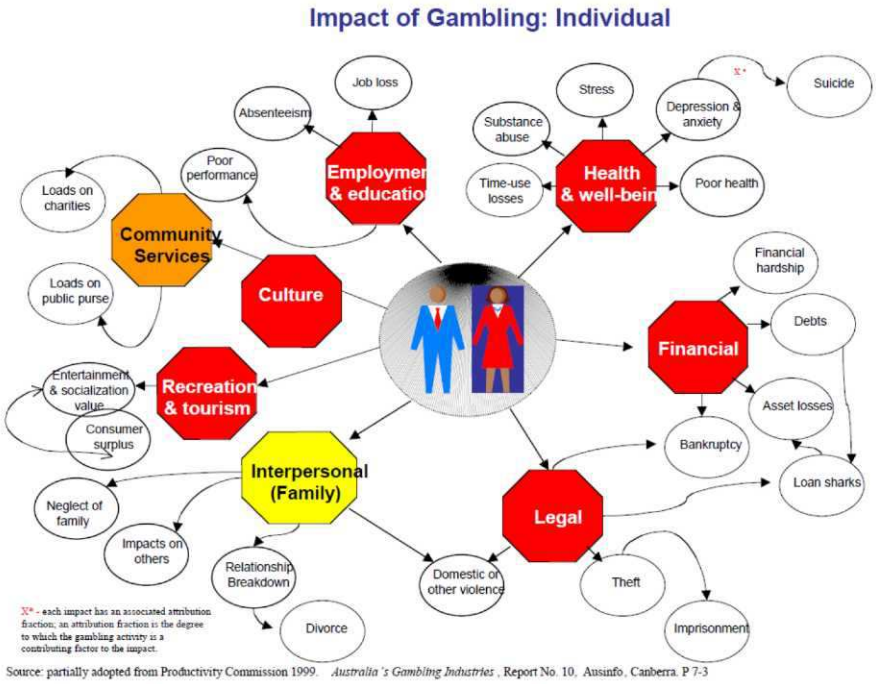


Figure 6: Community Socio-Economic Impact of Gambling

4. Gambling in Europe

Regulatory measures in the European Union Member States (MS) vary between being extremely liberal with widespread acceptance and those enforcing rather restrictive constraints and practices (Bühringer, Braun, Kráplin, Neumann & Sleczka, 2013). As aptly noted by Griffiths, Hayer and Meyer (2009), new forms of gambling have brought upon a number of gambling-related problems for a growing number of help-seeking individuals and concomitant challenges for regulatory bodies. It has been argued that even where there are rather restrictive measures, a considerable amount of illegal gambling has emerged. Bühringer and colleagues suggest that that different Member States have widely disparate views on the optimum balance between gambling opportunities and effective public health measures and safeguards. They further argue that a public debate is needed to strive for consensus on the multitude of issues examining the impacts of gambling on society. As in many other jurisdictions around the world, the competition between raising increased revenues for governments and protecting gamblers is omnipresent. The social and health costs associated with problem gambling for the individual and society have become of great concern in Europe as well as elsewhere.

Bühringer et al. (2013) provide data in the ALICE RAP Policy Brief 2, concerning gambling, suggesting that the annual revenues associated with gambling within the EU are formidable. They suggest that revenues in 2012 were approximately€80.3 billion, with projections that by 2015 the revenues will increase to €85,74 billion. The greatest gains to date have been on Internet gambling (going from €1.1 billion in 2003 to €10.55 billion in 2012). With respect to land-based gambling, those venues with electronic gambling machines outside casinos have shown the strongest growth (€10.83 billion in 2003 to €22.98 billion in 2012). Both growth areas are indicative of greater accessibility, the normalization and liberalization of gambling in Europe, and the popularity of divergent forms of gambling.

There is little doubt that most gambling operators, whether governmental or private, face a delicate balance between generating revenues and protecting individuals from harm. Buhringer and colleagues have estimated, based upon selected studies from Member States, that approximately 0.1-0.8% of the general population fulfill the criteria for a gambling disorder/pathological gambling and an additional 0.2-2.2% demonstrate potentially problematic gambling behaviours (Sassen et al., 2011). While this was not always the case, more and more government regulators are mandating that operators include protections and harm minimization strategies to help minimize the "costs" associated with increased gambling.

Very few impact studies of any kind have been conducted in Europe, however Professor Tilman Becker (personal communication) has provided some estimations of the social costs of gambling in Germany. Using standards established by the World Health Organization, he estimated that in Germany in 2008 the social costs were estimated to be €326 million, consisting of both direct and indirect costs. Costs for inpatient treatment was estimated to be €17 million; costs for outpatient treatment were €24 million, gambling-related crime was estimated to have cost €30 million, costs for court proceedings and prosecution were €18 million, administrative costs for unemployed individuals were €12 million, divorce costs €16 million, costs for player protection €26 million, €9 million for prevention, and less than €1 million for debt counselling. Indirect costs (€174 million), were thought to consist of gambling-related job losses, illness related absences, and reduced labour productivity by problem gamblers. Overall, Professor Becker concluded that while the costs are considerable, they represent only a "small fraction if compared to the social costs incurred by the consumption of tobacco (€20-50 billion) and alcohol (€ 20-30 billion)."

As the intent of this report is to examine the current benefits and costs associated with gambling in Poland, Portugal and Catalonia (Spain), Spain, the following section deals with our current knowledge. All information was provided by representatives from each of the countries and was not edited or verified for its accuracy.

5. Gambling in Poland

Gambling in Poland is legal (except Internet gambling), however limited according to the gambling Act of 19 November 2009. Gambling games can be provided on the basis of permit/concessions issued by the Ministry of Public Finance or head of the Custom Chamber. Gambling providers must obtain a permit, are required to report their activities to the respective governmental authorities, are taxed, with taxes being considered part of the state revenue.

Admission to gambling venues is free for all individuals over age 18. Advertising and promoting cylindrical games, card games, dice games, mutual wagering and slot machines are prohibited. Pat Pathological gambling within Poland is considered an illness according to ICD10 (F63.0), with treatment being available to all individuals without costs through the national health system insurance.

One of the significant provisions of the 2009 Gambling Act is Article 88 whereby the Gambling Problem Solving Fund was established. This Fund, operated by the minister responsible for health matters, is a state special fund and accounts for 3% of the revenue from gambling. Initially, this Fund was designated exclusively for gambling-related programmes; however, the amended Act of 26 May 2011 extends Article 88, which apart from funding gambling related assistance includes other non-chemical or behavioural addictions (i.e., Internet, computer games, mobile phones, shopping, sex or work addictions). The National Bureau for Drug Prevention administers the fund on behalf of the Minister of Health. Five major programmes have been developed through this fund; research, prevention, improvement of prevention and therapeutic programmes, information and education initiatives to help solve gambling-related problems, and programmes associated with other behavioural, non-substance, addictions.

The problem of addictions, in general, has been well recognized in Polish public opinion and social debates, with a heavy emphasis on alcohol consumption and substance abuse (Dzik, 2009). Prior to 1990 the primary forms of gambling available in Poland included the state run lottery, scratch tickets and small wage horse racing. After the decline of the communist government, a vast expansion of gambling was begun during the 1990s, with legislators tending to look at gambling as a significant source of revenue and generator of tourism. Today, most forms of gambling can be found in Poland. While there are no national prevention programs, awareness campaigns or telephone hotlines for problem gamblers, treatment services for problem gamblers have been available since 1992. During the first 8 years of service, over 5,000 individuals reportedly sought treatment for a gambling addiction (Dzik, 2009).

The Foundation of Public Opinion Research Center (CBOS), between November 2011 and July 2012, conducted research on behavioral addictions in Poland. According to their report (Bandora et al., 2012), more than 50,000 Poles are addicted to gambling, and nearly 200,000 are exposed to the risk of addiction. In the past year, nearly one quarter of Polish people over the age of 15 was playing some form of cash game. Their data suggests an inverse relationship between age and addiction, that is, the risk of addiction is higher amongst the youngest people in the population. Among people aged 15 to 34, the percentage of players who have problems with gambling remains the highest. Playing slot machines with low prizes and casino players are the most frequent activity engaged in by most problematic gamblers.

The following data was provided by Marta Zin-Sedek (2013) from The State Agency for the Prevention of Alcohol Related Problems (September, 2013). In addition to the data provided below, an attempt to ascertain the relationship between problem gambling and criminal behaviour was made. A short questionnaire was provided to individuals in the criminal justice system (judges, prosecutors, law enforcement officers). Their responses suggested no direct relationship between criminal behaviour and gambling problems, with none reporting any gambling-related cases. However, it should be noted that individuals in the criminal justice system frequently don't ask the reasons underlying criminal behaviour. Overall, 23.5% of respondents reported gambling during the past year.

Table 5.1: Playing Behaviour of Polish People Over the Age of 15: Games Played for Money During the Past 12 Months

Sports Lottery (Lotto, Multi Multi etc.)	20,5%
Scrapers	3,7%
Lotteries/sms competitions	2,1%
Slot machine games with low stake prizes	1,0%
Bookmaker sweepstakes out of Internet	0,8%
Cards in private (except casino and off-line)	0,7%
Online gaming and betting (regardless oftype)on the Internet	0,6%
Casino Games (except Internet) - Roulette, cards and other	0,4%
Horse or other animals racing - on the track	0,1%

The following gender and age distributions are noted with males more likely to be engaged in gambling.

Figure 5.1: Gambling Behavior by Gender (Poland)

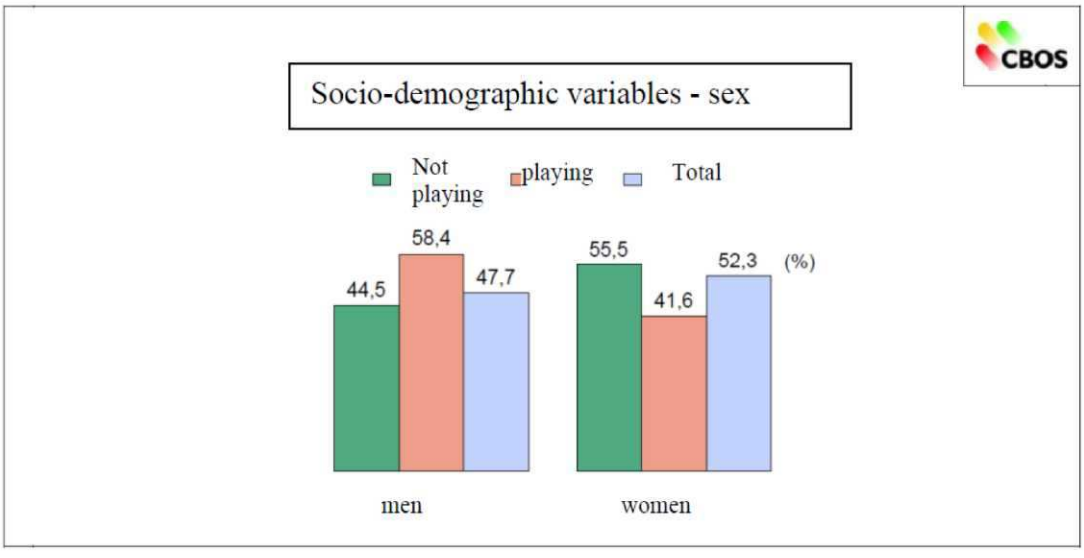
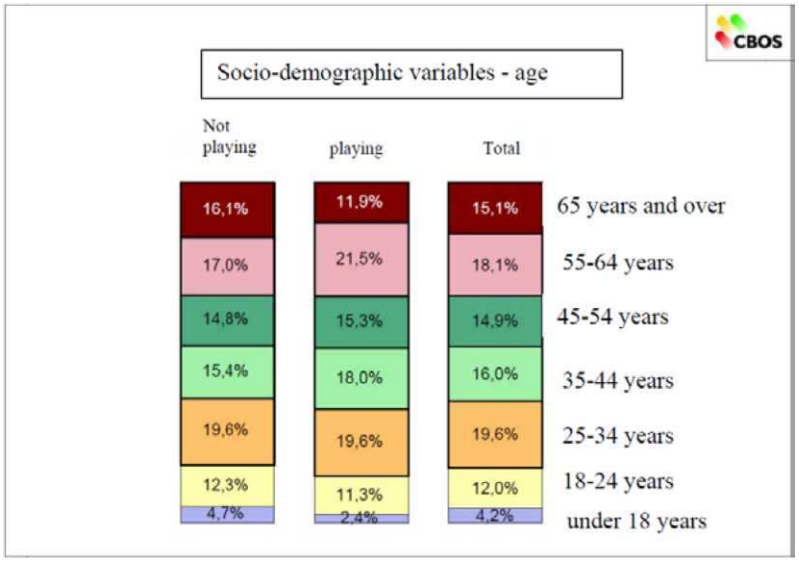


Figure 5.2: Gambling Behaviour by Age (Poland)



As can be seen from the Figures below, individuals with the greatest monthly income and those with at least a secondary school education were more likely to gamble. Financial resources have been shown to be related to gambling in general, the greater the amount of disposable income the more likely individuals are to gamble. However, the proportion of income spent on gambling is typically higher for those with less economic means.

Figure 5.3: Gambling Behavior by Monthly Net Personal Income (Poland)

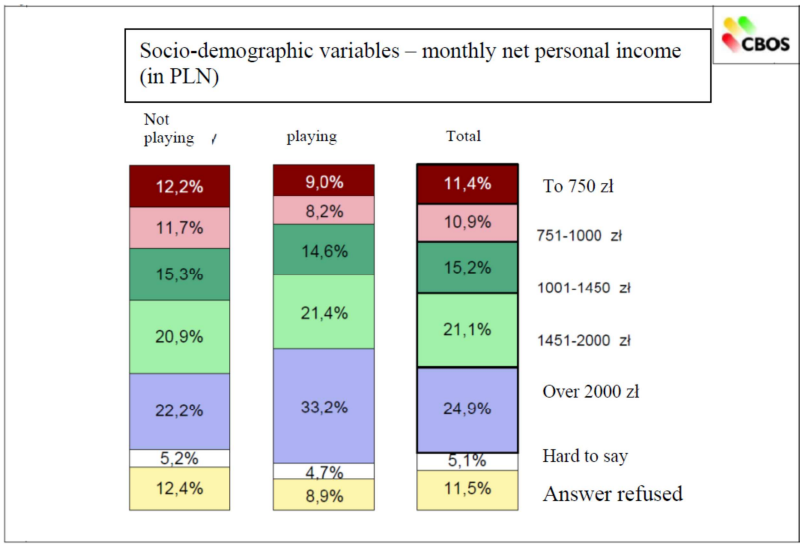
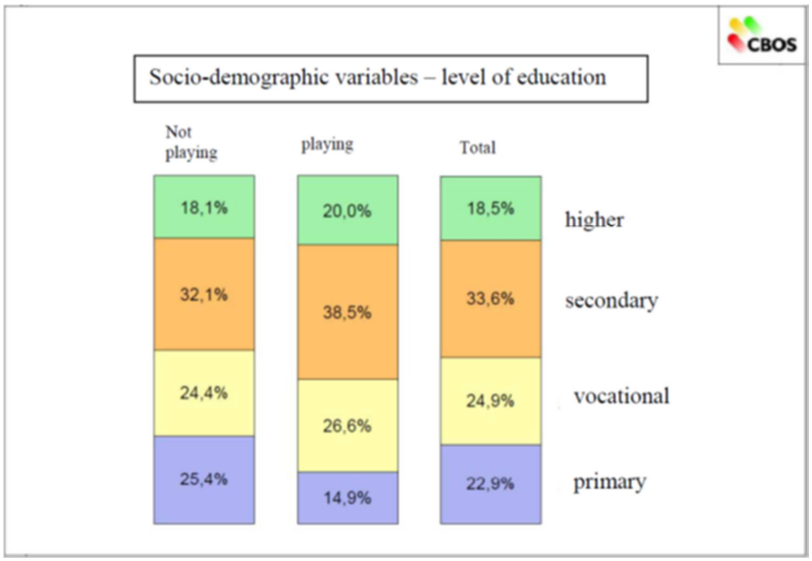


Figure 5.4: Gambling by Level of Education (Poland)



In general, more males than females reported gambling, with the highest proportion of players being 55-64 years of age, although this may be a function of their income. Of note, is the extremely small percentage of young individuals (2.4% under 18 years of age; 11.3% between 18-24 years of age) reported gambling.

The overall global prevalence rates of severe gambling problems were 0.2%, for moderate risk 0.9%, and low level of addictive behaviours 2.6%. These prevalence rates are relatively low when compared with other international jurisdictions, even amongst gamblers. As typically found, more male gamblers were found to have a gambling disorder (6.3% vs. 2.8%), with those individuals with the lowest monthly incomes having the highest prevalence rates. Overall, those with a higher level of education were least likely to have a gambling problem (11.4%) versus those with a secondary level of education (33.9%), vocational training (29.7%) and individuals with a primary school education (25.1%).Of particular concern is that the risk for an indication (see Figure 5.8) is in general inversely related to the individual's age.

Figure 5.5: Risk of Gambling Addiction in the General Population (Poland)

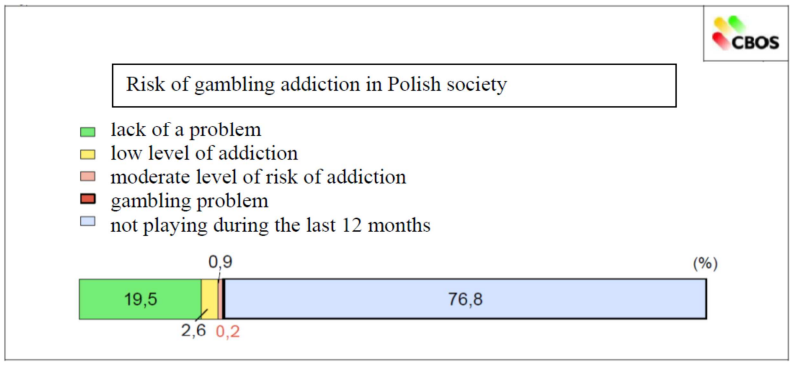


Figure 5.6: Risk of Gambling Addiction Among Gamblers (Poland)

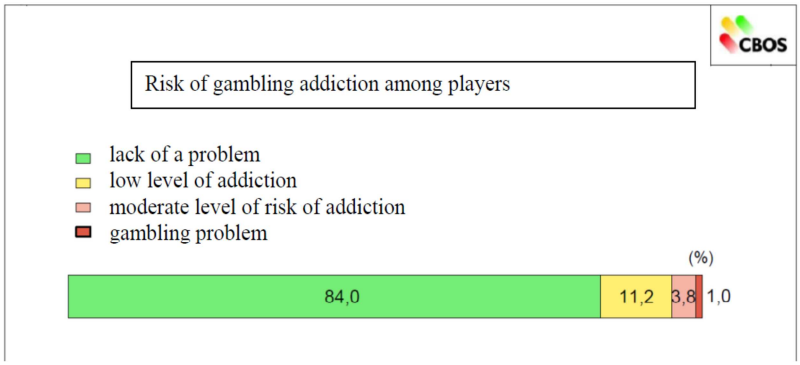


Figure 5.7: Risk of Gambling Addiction by Gender (Poland)

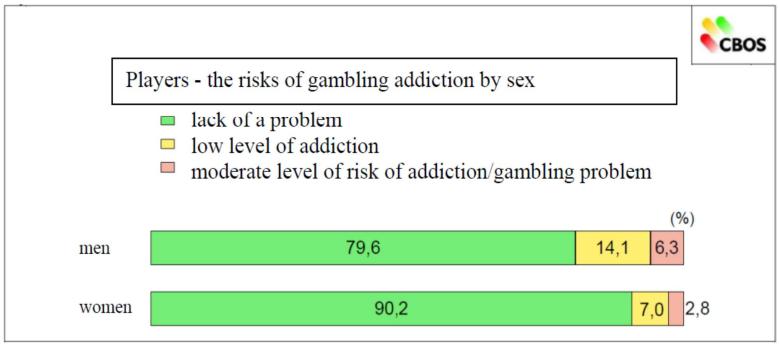


Figure 5.8: Risk of Gambling Addiction by Age (Poland)

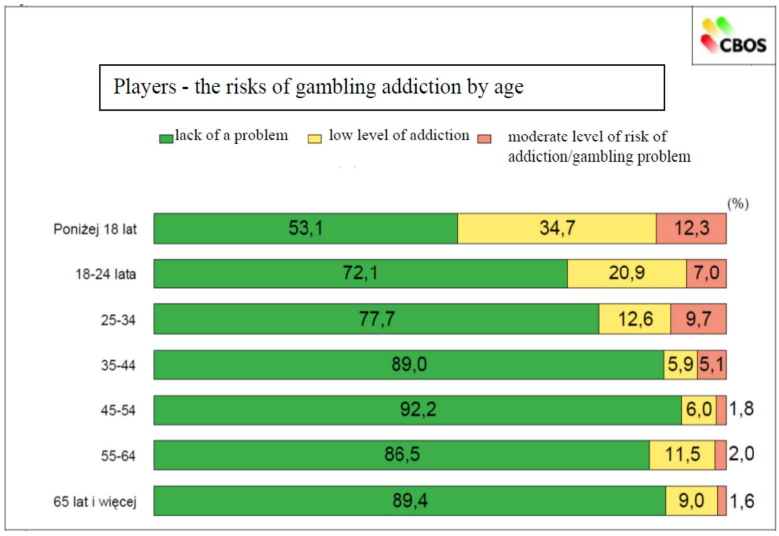


Figure 5.9: The Age of Players at Varying Risk of a Gambling Addiction (Poland)

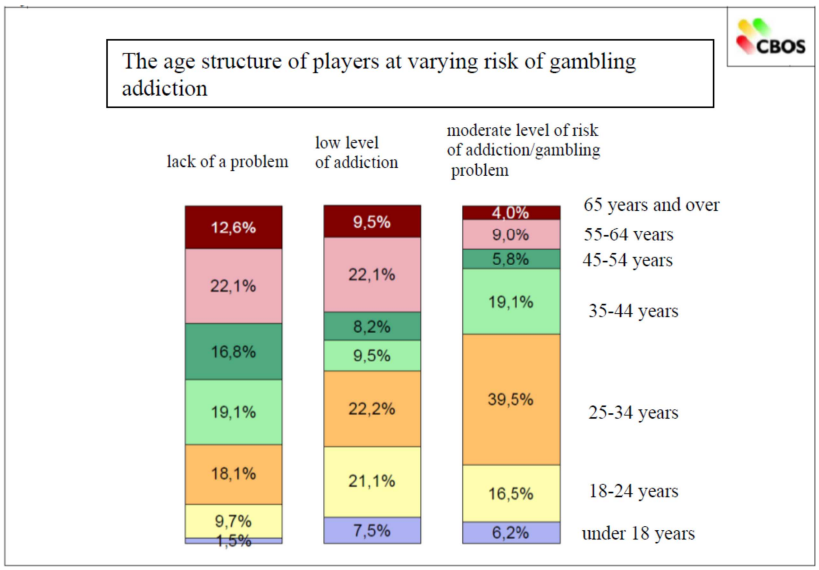
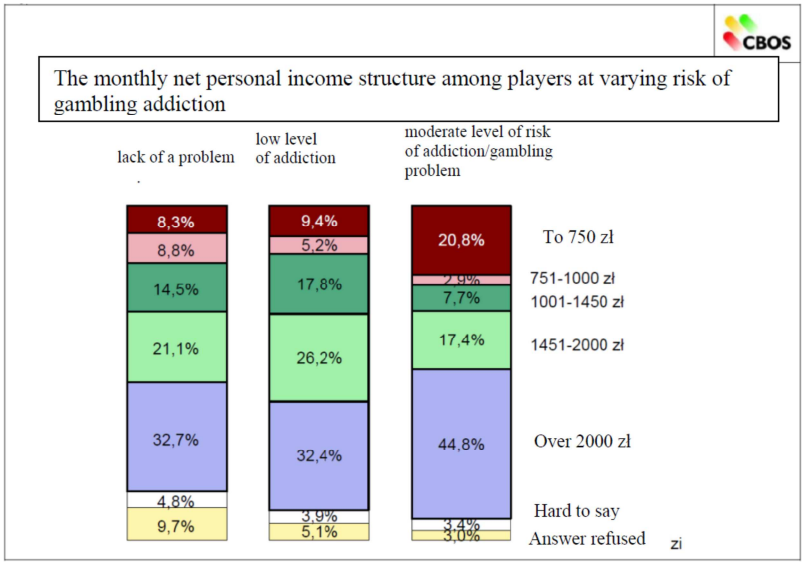


Figure 5.10: Monthly Net Income Among Players at Varying Risk of a Gambling Addiction (Poland)



It should be noted that while overall per capita expenditures showed a modest increase between 2010 and 2011, gambling-related expenditures per capita showed a decrease as did the number of individuals employed in gambling venues during this same period.

Figure 5.11: Players - Risks of Gambling Addiction by Monthly Net Personal Income (Poland)

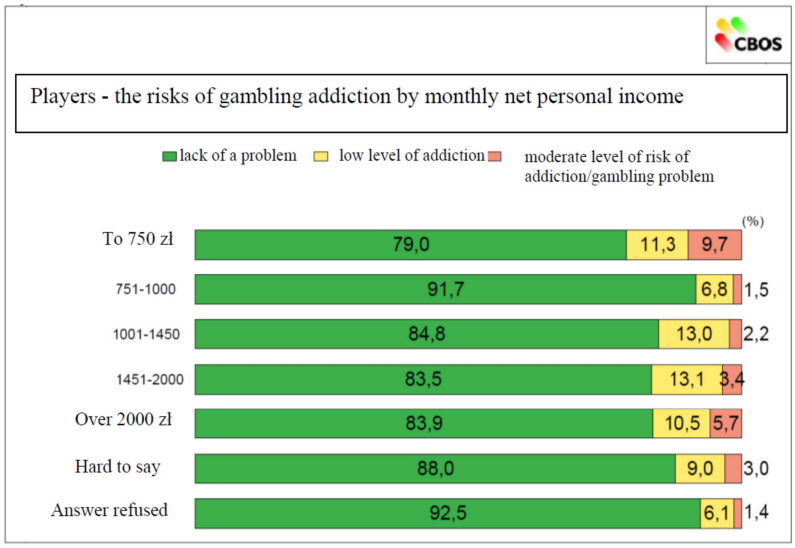


Figure 5.12: Risks of Gambling Addiction by Educational Level (Poland)

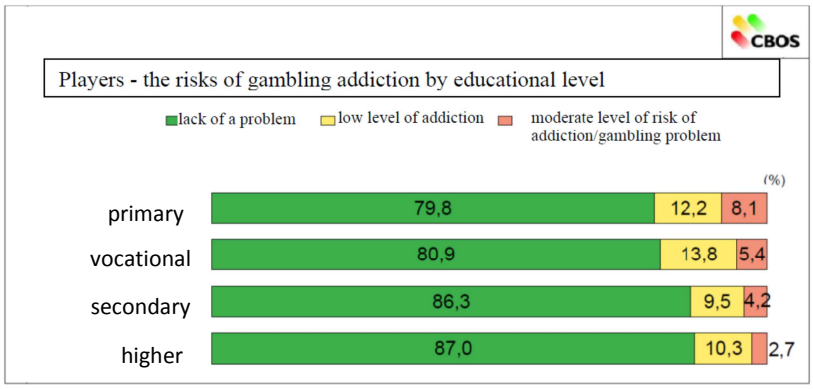


Figure 5.13: Risks of Gambling Addiction by Educational Level (Poland)

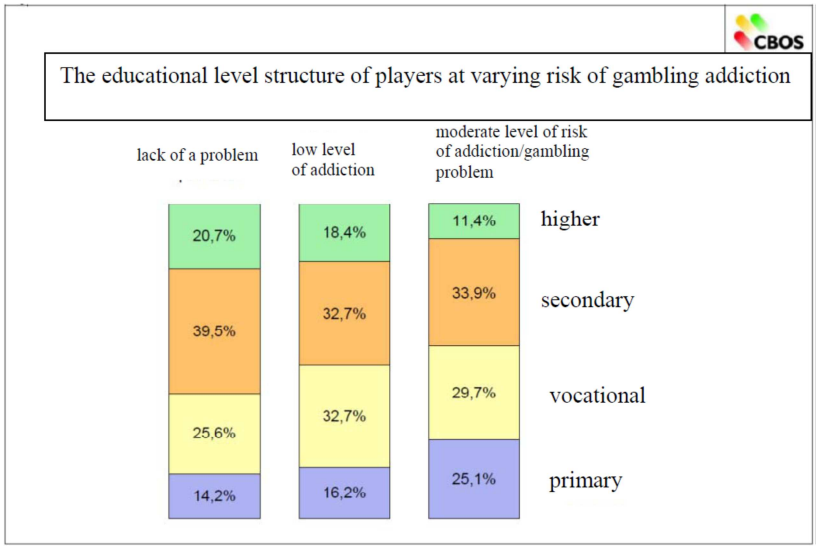


Table 5.2: Availability of Gaming in Poland (2010-2011)

Detailed List	Number of existing premises/ licenses		**Number of game centers/points, which have been granted permits/licenses**		Number of authorized premises/licenses	
	as at 31.12.2010	as at 31.12.2011	as at 31.12.2010	as at 31.12.2010	in 2010	in 2011
Casinos	33	34	33	34	13	12
Bingo amusement arcades	0	0	0	0	0	0
Bookmaker points of mutual wagering	46	42*	2452	2416	6	6
Sweepstake points of mutual wagering	5	8*	669	808	1	5
Gaming Machine amusement arcades	266	241	266	241	0	0

* 2 permits include bookmaker sweepstakes points of mutual wagering(Score of mutual wagering was recognized both at acceptance points for betting and sweepstake), thus the total number of existing agreements as 31 December 2011 is 48

Table 5.3: Changes in Gambling Availability Between 2010-2011 (Poland)

Detailed List	Number of subjects			**Number of arranged lotteries, gaming centers and points of mutual wagering, audio text lotteries and cash games, and points of slot machine games with low prizes**		
	2010	2011	Change 10/11(%)	2010	2011	Change 10/11 (%)
Lotteries	1	1	0 %	7	6	-14,3 %
Casinos	6	6	0 %	27	32	18,5 %
Gaming machines amusement arcades	18	17	-5,6 %	287	258	-10,1 %
Mutual wagering	7	8	14,3 %	1 760	1 746	-1,1 %
Audio text lotteries	9	6	-33,3 %	22	17	-22,7 %
Bingo amusement arcades (for cash)	1	0	-100,0	0	0	
Cash lotteries	1	1	0 %	53	55	3,8 %
Points of slot machine games with low prizes	63	56	-18,8 %	10 708	7 442	-30,5 %

Between 201-2011 gaming opportunities within Poland have remained relatively constant, with a slight decrease in electronic i gambling machines.

Table 5.4: Number of Gaming Machines in Poland

Types of Devices	Number of gaming machines(average)			
	In casinos		In an amusement arcades or points of slot machine games with low stake prizes	
	2010	2011	2010	2011
Tables for cylindrical games	118	99	X	X
Tables for card games	133	156		
Tables for dice games	0	0		
Slot machines	705	760	7 603	6 992
Machines with low prizes	X	X	19 190	14 157

Table 5.5: Taxation on Games (Poland)

	Tax on games(payable) *in thousands PLN		
Detailed list	**2010**	**2011**	**Change 2011/2010 (%)**
Lotteries	488 332	522 725	7 %
Casinos	127 632	129 461	1 %
Gaming machines amusement arcades	295 383	295 773	0 %
Mutual wagering	92 558	86 770	-6 %
Audio text lotteries	19 592	10 771	-45 %
Cash lotteries	36 561	54 921	50 %
Bingo amusement arcades (for cash)	0	3	0
Total	**1 060 058**	**1 100 424**	4 %
Points of slot machine games with low prizes	525 316	383 078	-27 %
Total	**1 585 374**	**1 483 502**	**-6 %**

*Data on tax due from the system Zefir (without tax on poker games being played in a poker tournament)

Table 5.6: Governmental Gambling Revenue(Poland)

Detailed list	The structure of gaming tax(%)	
	2010	**2011**
Lotteries	**30,8 %**	**35,2 %**
Casinos	**8,1 %**	**8,7 %**
Gaming machines amusement arcades	**18,6 %**	**19,9 %**
Mutual wagering	**5,8 %**	**5,8 %**
Audio text lotteries	**1,2 %**	**0,7 %**

Cash lotteries	**2,3 %**	**3,7 %**	
Total	66,9 %		74,2 %
Points of slot machine games with low prizes	**33,1 %**	**25,8 %**	
Total	100,0 %		100,0 %

Income on the account of the Ministry of Finance including:	**Sum (in thousands PLN)1**	
	2010	**2011**
From fees for licenses issued for casinos, permits to organize betting poker games and tournaments	13038	13 441
From exam fees for employees in casinos, slot machine parlors, points games with low prizes, betting service and audio-text promotional lotteries and other games	3550	3 337
From fees for issuing certificates of training for people employed in casinos, slot machine parlors, sweepstake and promotional audio text, number games, points furnishing slot machine games with low prizes, mutu betting and other games as well as fees for recognition as equivalent to the certificate issued by leadin training organization specializing in gambling	10488	11 636
Total	27066	28 414
Receipts on account of custom chambers From fees for permits issued for audio-text lotteries, lottery games, bingo or lottery promotion	21160	22 796

1,000 PLN = approximately 238 Euros

In games offered by the State monopoly (i.e., lotteries, cash lotteries and tele-bingo) surcharges are collected. According to the established laws on gambling, payments are paid into the account of the Customs Chamber in Warsaw, and then distributed to (a) the Fund for the Development of Physical Culture, which is administered by the Minister responsible for physical education and sport (77%); (b) the Fund for the Promotion of Culture, administered by the Minister responsible for culture and national heritage (20%); and (c) the Fund for solving Gambling Problems, administered by the Minister responsible
for health (3%).

Table 5.7: Distribution of Gambling Revenues (Poland)

	2010 Amount in thousand PLN	**2011 Amount in thousand PLN**
Fund for the Development of Physical Culture	480.790	524 188
Fund for the Promotion of Culture	124.880	136 153
the Gambling Problem Solving Fund	18.732	20 423
Total	**624.402**	**680 764**

1000 PLN = approximately 238 Euros

Table 5.8: Services Costs for Individuals Having a Primary Diagnosis of Pathological Gambling (Poland)

Year	**The value of approved account units**	**Value of settled account units**	**Number of patients**
2010	2129467,17 zt	2053591,98 zt	2677

Data from the Gambling Problem Solving Fund

In keeping with the intent of the Alice Rap project on costing addictions, PARPA attempted to assess policing and court costs associated with gambling-related crime (total costs and as a percentage of total policing and court costs). A random sample of individuals in the criminal justice system (judges, prosecutors, law enforcement officers) were asked about the share of gambling-related cases among their activities in 2012. Their responses indicated no such cases in 2012 and as a result no criminal

sector costs were attributed to problem gambling. However, it should be noted that individuals in the criminal justice system frequently don't ask the reasons underlying criminal behaviour.

6. Gambling in Portugal

The National Plan to Reduce Addictive Behaviours and Dependencies 2013-2020 (NPRABD), and the correspondent Action Plan 2013-2016, is under approval by the Portuguese Government. This plan follows the former Strategy and National Plans (2000 - 2010) focused on illicit drugs, with alcohol-related harm and dependence being integrated in 2010. The newly adopted Portuguese policy is proactively addressing all the additive behaviours and dependencies - with and without substances - under the same perspective and approach. As such, gambling related disorders are for the first time being included.

Following the plans for substance use and abuse, this Plan is predicated upon a vision of consolidating and integrating an efficient public policy in the domain of additive behaviours and dependencies, aimed at sustainable health and well-being. The principles underlying this revised and updated plan are similar to those articulated in the original 2000 plan, with special emphasis on humanism and pragmatism, centrality on the citizen, an integrated approach, quality and innovation. Among the primary goals are to (1) prevent, dissuade, reduce and minimise problems related to psychoactive substance use, additive behaviours and dependencies; (2) provide legal and safe gambling opportunities, minimizing additive behaviours; and (3) ensure the quality of the services provided to citizens and the sustainability of policies and interventions in the different areas. The gambling specific targets to be achieved are to reduce pathological/disordered gambling, among the general population (15-74 years) from 0.3% in 2012, to 0.27% in 2016 and 0.24% in 2020 (as measured by the SOGS).

The NPRAB's policy is primarily incorporating a public health approach in an effort to minimize the concomitant risks and costs associated with addictive behaviors for the individual, his/her family and society. The aim is to address the individual's needs in a dynamic way along the life cycle; interventions from more general to more specific are planned, including general health promotion, prevention, treatment, harm reduction and social reintegration related to all additive behaviours and dependencies. A variety of services, mainly in the public health system, provide the appropriate interventions in the different areas.

Most forms of gambling are legal in Portugal, including casinos, the lottery and Internet gambling. The state has the right to operate games of chance, which they may either organize themselves or permit outside vendors to operate, being state social games implemented by "Santa Casa da Misericordia de Lisboa" (SCML) - Decree-Law n.° 235/2008, December 3rd- and chance games under the competence of the Govern member in charge of Tourism sector (Inspecáo-Geral de Jogos) - Decree-Law n.° 422/89, December 2rd.

Among the social games implemented by the "Games Department" of SCML, are state lotteries (traditional - classic and popular -and instant scratch cards/scratch tickets), lotto (national and European), and sports betting (only football related *"totobolcT;* horses racing not included). Most of these games are played through traditional channels and via online gambling. If permission is granted by the government, the SCML may also establish other lotteries. SCML began to explore using lottery revenues as early as 1783 as a way of raising funds for the royal hospital and poor, and has maintained the distribution of revenues through several entities devoted to social assistance and promoting health prevention (Decree-Law n° 55/2006, March 15th).

Portugal is divided into ten gambling zones and each is responsible for the administration and regulation of games of chance, that is, table games (craps, baccarat, roulette, blackjack, chukluck, etc.), machine games (slot machines, etc.), and other gambling activities (bingo, keno, etc.). In most cases, one land-based casino is allowed to exist in each gambling zone. Games such as bingo, horse

racing, and casinos are allowed to operate through a contract (typically 20-30 years). According to legislation, access to casinos is prohibited to minors and those with a reduced mental capacity. Slot machines remain consistently the most popular games in Portuguese casinos.

Concerning social games operated by SCML, the last available *Report and Accounts, 2011* details the operating indicators. The Games Department had 275 employees as at December 2011, 3% more than a year before. The report suggests that from 2010 to 2011, there was an increase in wagering on all games.

Table 6.1: Gambling Revenues (Portugal)

Portugal - SCML - Social Games -Results 2011 (Thousand Euros)							
	Totobola	**Totoloto**	**Joker**	**Euromilhões**	**Nacional lottery**	**Scratch tickets**	**TOTAL**
Total income	3,31	69,374	25,503	449,168	15,359	54,247	616,961
Total costs	2,186	9,887	4,176	50,744	7,395	7,395	91,002
Net profit	1,124	59,487	21,327	398,424	7,964	37,632	525,959
Equipment renewal fund	161	2,147	-	517	.	.	2,825
Profit distributed to beneficiaries	963	57,34	21,327	397,907	7,964	37,632	523,134

Betting through the SCML online website continued to increase in 2011 (450,316 registered users; almost double that reported in 2007). From 2010 to 2011, the gross earnings by game and sales channels are presented in Table 6.3.

Table 6.2: Revenues by Games (Portugal)

	Portugal - SCML / Social Games - Gross Earning By Sales Channel 2011/2010 (Thousand Euros)									
	2011					**2010**				
Games	**Traditional chanel**	**Internet**	**SMS**	**Demat . LN**	**Total**	**Traditional chanel**	**Internet**	**SMS**	**Demat . LN***	**Total**
Totobola	10,512	583	.	.	11,095	9,886	542	.	.	10,427
Totoloto	184,12	11,549	20	.	195,669	182,227	10,582	18	.	192,808
Joker	69,174	2,817	5	.	71,991	85,903	2,927	6	.	88,831
Euromillions	1,012,865	47,117	134	.	1,059,982	848,553	34,744	80	.	883,298
Classic Lottery	56,146	983	2	7,596	64,726	64,451	1,007	1	3,101	69
Popular Lottery	26,391	561	1	4,899	31,851	30,794	604	1	1,423	32,821
Scratch Tickets	207,193	.	.	.	207,193	105,557	.	.	.	105,557
Total	1,566,402	63,61	162	12,496	1,642,507	1,327372	50,406	106	4,523	1,382,302
(*) The de-materialisation of the National Lottery project (online sales) began 2010.						on 5 October				

Data concerning casino games of chance and bingo activities are not easily obtainable. The following Table however provides information depicting the status of types of gambling, gross revenues, and recipients of contributions between 2010 and 2011.

Table 6.3: Casinos and Bingo Data (Portugal)

Information needs:	Year 2010	Year 2011
Types of gambling operations (number, types of games, size of venues)	Number Game tables - 190 Number Machines - 5712 Gross Earnings total (casinos) - € 344,485,696 Gross Earnings total (bingos) - € 74,371,266	Number Game tables - 184 Number Machines - 5743 Gross Earnings total (casinos) - € 325,792,942 Gross Earnings total (bingos) - € 60,529,925
Government revenue (casinos + bingo)	**Remaining counterparts** € 31,521,105	**Remaining counterparts** € 27,426,588
Government revenues by gambling type (Taxation)	IEJ (casinos) - € 105,826,269 IS (bingos) - € 10,246,163 Other (bingos) - € 854,596	IEJ (casinos) - € 102,854,850 IS (bingos) - € 8,342,920 Other (bingos) - € 6,094,923
Community benefits from gambling (touristic projects and amount of money)	Casinos in Chaves, Pôvoa de Varzim e Espinho are obliged to do these contributions	Casinos in Chaves, Pôvoa de Varzim e Espinho are obliged to do these contributions

(Source: Direcção Geral do Turismo)

Epidemiology of Gambling and Problem Gambling

In Portugal, gambling issues have only begun to draw attention from the research community. Several studies have been carried out in general population, students, amongst online gamblers, or those individuals seeking treatment. Unfortunately, many of these studies incorporated non-representative samples. However, a more recent study assessing gambling and problematic gambling using data from a 2012 representative household sample of approximately 6,000 individuals is provided in Tables 6.5, 6.6, 6.7 and 6.8. As can be seen, males tend to gamble more frequently than females, with gambling beginning as young as age 15 but older individuals are more likely to be participating (70.2% vs. 29.8% for males and 69.4% vs. 30.6% respectively. Employed males and females are also more likely to gamble than the general population.

The characteristics of of the general population and gamblers is described below:

Table 6.4: General Population vs. Gamblers by Gender and Age (Portugal)

Portugal - GPS/2012 (15-74 years) - General population vs. Gamblers Socio-demographic and economic characteristics by gender (%)					
		General population		Gamblers (LT)	
		Male	Female	Male	Female
Age Groupe (1)					
	15-34	33,2	31,1	29,8	30,6
	35-14	66,8	68,9	10,2	69,4
Age Groupe (2)					
	15-24	15	13,6	11	10,8
	25-34	18,2	11,5	18,8	19,9
	35-44	20,1	19,8	21,6	22,5
	45-54	18,5	18,1	19,8	20,3
	55-64	16	16,7	11,4	16,2
	65-14	12,2	13,8	11,4	10,3

Table 6.5: Lifetime Prevalence of Gambling By Type of Game (Portugal)

	Global (ages 15-74)										
				15-34	35-74	15-24	25-34	35-44	45-54	55-64	65-74
Type of Games:	**Male**	**Female**	**Total**								
Global	73.9	58.1	65.7	61.7	67.6	50.0	71.2	72.8	70.7	67.9	54.8
Euromilhoes	69.4	53.8	61.3	55.9	63.9	42.2	66.9	69.2	67.6	63.5	51.1
Totobola or Totoloto	38.6	25.5	31.8	25.4	34.9	18.2	31.1	37.3	37.5	33.7	28.9
Scratch Tickets	24.6	24.4	24.5	21.9	25.7	18.3	24.8	27.7	28	26.1	18.9
Lotteries (Classic and Popular)	23	14.1	18.4	11	21.9	7.3	13.9	20	24.7	23.1	19.2
Betting in game rooms	8.8	4.1	6.4	6.2	6.4	4.4	7.6	9.4	8.0	4.6	1.9
Card games (friends/acquaintances)	9.1	1.9	5.4	7.4	4.4	6.2	8.4	6.2	5.0	3.4	2.1
Sports games	9.1	1.9	5.4	8.2	4.1	8.2	8.2	6.3	4.6	2.7	1.8
Skill games	6.2	1.1	3.6	4.1	3.3	4.3	4	4.8	4.2	2.1	1.4
Betting games (friends/acquaintances)	5.3	1.2	3.2	3.9	2.9	4.5	3.4	4.4	2.6	2.4	1.6
Dice games	3.3	1.5	2.4	2.4	2.3	3	2	2.7	3.4	1.4	1.5

As can be seen, a greater proportion of males have engaged in a wide diversity of gambling activities compared with females. For both males and females, the purchasing of lottery tickets are the most common form of gambling.

Table 6.6: Demographic Characteristics of Gamblers (Portugal)

	General population		Gamblers (LT)	
	Male	**Female**	**Male**	**Female**
Marital status				
Single	34,1	24	29,8	22,5
Married or consensual union	57,2	60,1	61,7	62,3
Separated, divorced or widowed	8,6	15,9	8,5	15,1
Nationality				
Portuguese	95,9	94,4	96,7	95,1
Other	4,1	5,6	3,3	4,9
Geographic Region				
North	18,3	18,6	18,6	19,9
Center	15,3	15,4	15,5	15,4
Lisbon	16,2	16,8	18,1	20,3
Alentejo	12,9	12,5	14,5	14,4
Algarve	11,4	11,1	11,3	11,1

Azores	15	14,3	13,1	9,6
Madeira	10,9	11,3	8,9	9,3
Job situation				
I have a job	55,3	46,4	59,9	51,8
I'm unemployed	11,9	14	11,5	16,2
I'm sick	0,7	0,5	0,7	0,5
I'm retired	19,7	17,6	19,1	14,9
I'm desible for work	0,7	0,4	0,5	0,5
I live on my incomes	0,1	0,2	0,1	0,2
I'm a student	10,9	9,1	7,3	6,2
I'm paying my Military Service	0	0	0	0
I take care of household chores	0,2	10,7	0,3	8,9
Other situation	0,5	1	0,5	0,8
Gross monthly income of the household				
Until 500 Euros	6,6	8,2	5,2	6,5
Between 501 and 1000 Euros	14,8	15,5	15,6	16,4
Between 1001 and 2000 Euros	13,6	11,3	15,6	13,5
Between 2001 and 3000 Euros	2,8	2,5	3,2	2,6
Between 3001 and 4000 Euros	0,8	0,5	1	0,7
More than 4000 euros	0,6	0,2	0,6	0
Do not know	19,8	23,8	16,3	21,7
No answer	41	37,9	42,6	38,5

In Portugal, in general, the largest amounts of money wagered in a one day period are typically small, as depicted in Table 16.8 (This is in line with the relatively low gross monthly salaries).

Table 6.7: Largest Amount Wagered in a Single Day (Portugal)

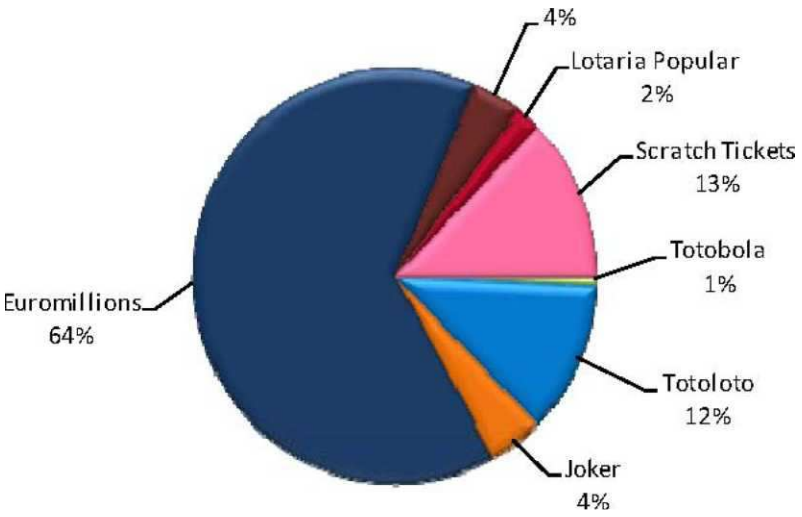
Portugal - GPS/2012 - (ages 15-74 years) -Largest Amount Wagered in a Single Day	
Largest amount of money ever gambled on any one-day?	**% population**
Never Gambled	35,5
Less than 1€	1,7
Between 1 and 9€	45,4
Between 10 and 49€	15,3
Between 50 and 99€	1,1
Between 100 and 499€	0,8
Between 500 and 999€	0,1
Between 1000 and 4999€	0,1
Between 5000 and 99999€	0
More than 10000€	0
Total	100

The overall Gross Domestic Product (GDP) fell 1.5% in 2011, due to steep cuts in household spending and investment, with unemployment having risen. Earnings from Santa Casa Games Department followed the long term deceleration in annual activity despite a year-on-year increase of 18.8% to €1,643 million in 2011. This increase was attributed to an increase in gaming taxation and the introduction of a second weekly Euromillions draw. As a result, a 21.1% increase in revenues was realized (€364.7 million).

A series of projects were undertaken in 2011, to boost revenues by bolstering sales, marketing activities and increase recognition of the branding of its gaming offers. The change operated on the Totoloto model; individualizing the games through the introduction of a second weekly in an effort to rejuvenate the product, assuring the loyalty of current players, and to attract a broader audience. The results were also a result of expansion and the renovation of their retail network, increasing the number of retailers (4,352 retailers). Scratch ticket sales saw sustained growth with better advertising and a wider range of options. Increased revenues were also realized as a result of a greater number of prosecutions associated with illegal gambling. Bet sizes on several lottery tickets were increased as well. All these actions resulted
in a net profit of €525,959,000.

Gross income from games can be seen in Figure 6.1.

Figure 6.1: Gross Income from Games (Portugal)



Euromillions remains the highest grossing game (64.5%) (Increasing 20% in 2011 and contributing towards the overall performance of the lottery business. Scratch tickets also showed large increases in revenues (growing 96.3%) and represented 12.6% of all gross revenues.
For comparative purposes the gross per capita earnings for 9 EU states for Euromillions can be seen in Table 6.9.

Table 6.8: Gross per Capita Earnings by EU States for Euromillions

(Euros / per capita)		
Countries	**2011**	**2010**
Belgium	38.0	32.3
United Kingdom	25.5	16.6
France	22.8	17.5
Ireland	28.4	22.3

Portugal	100.4	83.0
Spain	31.9	23.2
Luxemburg	73.8	62.7
Austria	35.7	22.0
Switzerland	44.4	34.4
Total	31.6	23.4

Population, Source - Portugal: INE, Other Countries: Eurostat

Unfortunately, while little information on Portugal's economic impacts are available, Balsa, Vital and Urbano (2013) seems to suggest that approximatly 0.5% of individuals between ages 15 and 74 are experiencing some gambling-related problems, with another 0.5% experiencing multiple problems and are likely pathological/disordered gamblers. However, in a recent study examining online gambling among University students in Portugal, Magalhâes, Lopes and Derevensky (2013) reported that online gambling prevalence rate of 1.5% for moderate problems and 0.7% for individuals with severe gambling problems. While these prevalence rates of problems are slighly higher than that reported for individuals between 15 and 74, it may well be related to Internet gamblers andéor university students. A similar finding was found by Williams and Wood (2007) and Wood and Williams (2007) who reported greater gambling problems among Internet gamblers. It should be noted that these rates may not be representative of the general adult Internet gambling populationas it only explored Internet gambling among University students. The overall prevalence of problem gambling can be seen in Table 6.10.

Table 6.9: Lifetime Prevalence and Rates of Problem Gambling (Portugal)

Portugal - GPS/2012 - GAMBLING - Lifetime Prevalence and SOGS Global Results									
Type of games:	**Global (15-74)**			**15-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65-74**
	Male	Female	**Total**						
Lifetime prevalence	73.9	58.1	65.7	50	71.2	72.8	70.7	67.9	54.8
SOGS Test									
No problem	98.8	99.4	99.0	99.3	99.1	99.1	99.8	99.3	98.4
Some problem	0.5	0.4	0.5	0.4	0.7	0.6	0.3	0.4	0.4
Probable pathological gambler	0.7	0.2	0.5	.0.3	0.2	0.3	0.9	0.2	1.2

It should be noted that Hubert, Griffiths and Sommer (2013), comparing a sample 1365 offline and online gamblers, concluded that online gambling addiction may be less problematic than reported, and that pathological/disordered gamblers were more represented among offline gamblers. As the mean age of online gamblers gamblers were lower than that of non-online gamblers, that difference may disappear in the future.There is also reason to believe that young males in gerneral are at greatest risk for gambling problems.

Table 6.10: Gambling Industry Indicators (Portugal)

Information needs:	Does it exist?	Source of information?	Type of information?	Year 2010	Year 2010
Types of gambling operations (number, types of games, size of venues)	Yes	Concessionaries Serviçode Inspeção de Jogos (Turismo de Portugal, I.P.)	Type of game; type of machine; revenues by game; layout	Game tables - 190 Machines - 5712 Gross Earnings total (casinos) - € 344.485.696,71 Gross Earnings total (bingos) - € 74.371.266,00	Game tables - 184 Machines - 5743 Gross Earnings total (casinos) - € 325.792.942,30 Gross Earnings total (bingos) - € 60.529.925,00
Internet(# of operators, revenues,)	No			No answer	No answer
Governme nt revenue (casinos +bingos)	Yes	Serviçode Inspeção de Jogos (Turismo de Portugal, I.P.)	Counterparts	Remaining counterparts € 31.521.105,61	Remaining counterparts € 27.426.588,93
Gambling-related employme nt statistics	Perhap s	Sindicatos e Associação Portuguesa de Casinos e Associação Portuguesa de Bingos		No answer	No answer
Bad debts, bankruptcie s gambling and non gambling	Perhap s	Entidadesbancarias e Banco de Portugal		No answer	No answer
Governme nt revenues (Taxation) by gambling type	Yes	Serviçode Inspeção de Jogos (Turismo de Portugal, I.P.)	Excise duty game (IEJ), (table games, not banked and machines) Tax on bonuses bingo game (IS) Other taxes (Other)	IEJ (casinos) - € 105.826.269,59 IS (bingos) - € 10.246.163,43 Other (bingos) - € 8.545.961,59	IEJ (casinos) - € 102.854.850,08 IS (bingos) - € 8.342.920,73 Other (bingos) - € 6.094.923,99
Employme nt by gambling industry	Perhap s	Sindicatos e Associaçâo Portuguesa de Casinos eAssociaçâo Portuguesa de Bingos		No answer	No answer
Any governmen t subsidies to the industry	No				
Any data on employme nt-related to servicing casinos	Yes	Concessionaries Serviçode Inspeção de Jogos (Turismo de Portugal, I.P.)	Relacoesnominais de pessoal	Not provided	
Gambling tourism	No				
Community benefits from gambling	Yes	Turismo de Portugal, I.P.	Information about entities with social relevance that got financial support from gambling to develop touristic projects, and the amount of money	Casinos in Chaves, Povoa de Varzim e Espinho are obliged to do these contributions	Casinos in Chaves, Povoa de Varzim e Espinho are obliged to do these contributions

7. Gambling in Spain and Catalonia

Prior to 1977, a limited number of gambling opportunities were present. These included the lotteries, football pools and horserace wagering. In 1977, the government began to consider the legalization of gambling as a way of increasing tourism (Becoña, 2009) (for a review of the history of gambling in Spain see Jiménez-Murcia, Fernández-Aranda, Granero&Menchón, in press). However, this should not be misconstrued that the government at that time did not foresee gambling's expansion as a significant way to increase governmental revenues. It also coincided with gambling's expansion throughout Europe. The current range of gambling opportunities include casino games (with the Sands group from the U.S. originally scheduled to build EuroVegas but have put a temporary hold on its development), bingo, lotteries, electronic gambling machines (typically located in bars, pubs, restaurants), and specific lotteries at certain times of the year. There are also illegal forms of gambling, which involve wagering on animal fights. Becoña (2009) has suggested that gambling in Spain represents an important economic force, with increased employment being one of its principal benefits. Most money seems to be wagered on slot machines and other forms of electronic gambling machines. While representing significant economic gains, Becoña has argued these are this form of gambling is most problematic amongst pathological/disordered gamblers, with 75% of all those seeking treatment in Spain reporting a significant problem with electronic gambling machines (legalized in 1981) (Becoña, 2004; 2009; Gonzalez, 1989). In 2005, spending per individual in Spain was €642.37 for its over 44 million inhabitants (Ministry of the Interior, 2006). Becoña has suggested that overall Spain is among the countries with the highest gambling rate per capita and has amongst the highest number of gambling machines per capita, with gambling expenditures continuously rising. Multiple prevalence studies of gambling and problem gambling have been carried out in Spain over the past two decades. When one combines problem and pathological gambling rates, the prevalence seems to range between 1.1% and 6.2% depending upon the study, methodology used for data collection, the population studied and geographic region. In an early study, Viloria (2003) reported prevalence rates of 4.5% of pathological gamblers and 6.6% of problem gamblers amongst University students. More recently, Jiménez-Murcia et al. (in press) after a review of studies in Spain concluded that similar to some other EU countries Spain actually has a higher prevalence of pathological gambling, focused upon specific culturally bounded types of gambling (e.g., electronic gambling machines). Significant concerns were raised about expenditures related to online gambling which has prompted new legislation and regulatory procedures. There are various resources for the treatment of pathological gamblers, via associations of rehabilitated gamblers and through the public healthcare system.

Prevalence of Pathological Gambling

Number, age and gender of patients with a primary/secondary diagnose code 312.31visited at Hospital Units and Outpatient Mental Health Centers between 2010 and 2011(Source: Mental Health Unit. Department of Health, Government of Catalonia (Spain)) is presented in Tables 7.2, 7.3, and 7.4. It should be noted that this only includes those individuals receiving some form of hospitalized care with either a primary or secondary diagnosis of pathological gambling. As can be seen in Table 7.2, the number of individuals with a primary diagnosis is significantly less for hospitalized care than those with a comorbid disorder whereas the opposite is true for outpatient treatment. However, even for the outpatient group, approximately 40% of clients have a dual diagnosis. As such, it is difficult to calculate the costs attributable to pathological gambling versus one's primary diagnosis. Total expenditures in the gambling unit decreased between 2010 and 2012.

The following information has been provided by Lidia Segura Garcia (ASSIST project en Government of Catalonia (Spain)), from data ascertained by the Mental Health Unit, Department of Health.

Table 7.1: Gender Distribution of Visits to Hospitals and Outpatient Mental Health Centers (Spain)

		2010			2011		
		Primary	**Secondary**	**Subtotal**	**Primary**	**Secondary**	**Subtotal**
Hospital Units	**Men**	10	86	96	9	83	92
	Women	0	18	18	4	10	14
Outpatient Mental Health	**Men**	382	154	536	295	147	442
Centers	**Women**	47	26	73	39	17	56
		439	**284**	**723**	**347**	**257**	**604**

Table 7.2: Number of Outpatient Visits to Mental Health Centers by Age (Spain)

	2010		2011	
	Primary	**Secondary**	**Primary**	**Secondary**
< 15 years	4	0	5	0
15-19 years	7	1	10	1
20-24 years	22	2	15	1
> 24 years	396	177	304	162
Total	429	180	334	164

Table 7.3: Age and Gender Distribution of Outpatient Visits to Mental Health Centers (Spain)

				< 15 Years	**15-19 Years**	**20-24 Years**	**> 24 Years**
2010	Primary		Men	3	4	22	353
			Women	1	3	0	43
		Total		**4**	**7**	**22**	**396**
	Secondary	Men		0	1	1	152
		Women		0	0	1	25
		Total		**0**	**1**	**2**	**177**
2011	Primary		Men	3	8	15	269
			Women	2	2	0	35
		Total		**5**	**10**	**15**	**304**
	Secondary	Men		0	0	1	146
		Women		0	1	0	16
		Total		**0**	**1**	**1**	**162**

Table 7.4: Total Expenditures in Gambling Units in Catalonia (Spain)

Health Región	Health Center	2010	2011	2012
Barcelona	Hospital de Sant Pau	77.618,79 €	71.409,29 €	71.409,29 €
Barcelona	Consorci Sanitari de Terrassa	77.628,53 €	71.418,24 €	71.418,24 €
Barcelona	Consorci Sanitari del Maresme	166.396,65 €	153.084,92 €	153.084,92 €
Camp de Tarragona	Institut Pere Mata SA	59.856,34 €	55.067,83 €	55.067,83 €
Catalonia (Spain) Central	ALTHAIA	77.618,79 €	71.409,29 €	71.409,29 €
Girona	Institut d'Assistència Sanitària (IAS)	65.260,01 €	60.039,21 €	60.039,21 €
Lleida	Gestiô de Serveis Sanitaris	77.618,00 €	71.409,29 €	71.409,29 €
TOTAL		**601.997,11 €**	**553.838,07 €**	**553.838,07 €**

The hospital budgets related to gambling decreased between 2010 and 2011 but have remained constant during the period from 2011-2012.

There are predominantly four types of gambling available:
(a) National management (lotteries, sports (football), etc.)
(b) Autonomic management (lotteries, etc.)
(c) Authorized (ONCE, etc.)
(d) Private gambling (casinos, etc.)

In 2006, there were a total of 39,145 venues with gambling machines, 98% of them were within the hospitality sector, with only 2% of recreational machines being located in bingo halls and casinos. As one can observe, Bingo Halls have decreased over time (between 1997-2006).

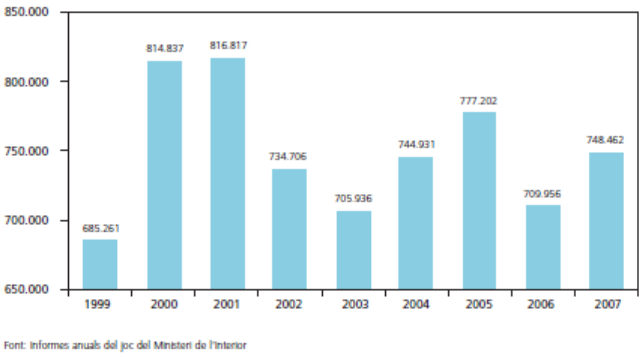
Table 7.5: Number of Gambling Establishments in Catalonia (Spain)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Casinos	3	3	3	3	3	3	3	3	3	4
Bingo Halls	75	72	71	71	73	72	71	68	57	56
Halls with game machines										
• Type A or recreational	246	207	219	205	187	168	136	121	104	93
• Type B or gambling	92	93	94	96	98	111	121	126	126	127
Sports Halls	318	340	420	442	449	446	443	434	434	432
Hotel Establishments	N.A.	32.397	33.216	34.095	34.879	N.A.	36.289	36.991	37.672	38.433
Total	**-**	**33.112**	**34.023**	**34.912**	**35.689**	**-**	**37.063**	**37.743**	**38.396**	**39.145**

Source: Reports by the Ministry of Home Affairs, Government of Catalonia (Spain) N.A. - Not Available

Effective March 2008, new legislation regulates the number of casinos (4), bingo halls (75), arcades and game establishments (125) and Type B Machines to 37.000. In 2007 there were 748,462 visits to casinos.

Figure 7.1: Casino Visits in Catalonia (Spain)



Source: Annual Reports on Gambling, Ministry of Home Affairs

Table 7.6: Number of Gambling Machines and Income between 1999 and 2007

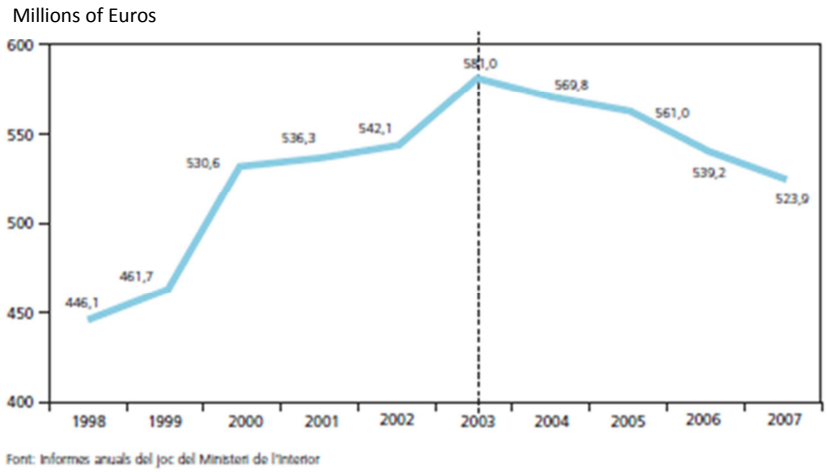
	C-Type Machines (Number)	Revenue (Millions of Euros)	Average per Machine (Thousands of Euros)
1999	571	15,0	26,2
2000	496	20,4	41,1
2001	496	23,6	47,5
2002	482	28,3	58,7
2003	378	31,8	84,2
2004	360	38,7	107,4
2005	391	41,9	107,2
2006	382	44,5	116,4
2007	395	48,5	122,8

(Inter-annual rate of variation, in percentages)

	C-Type Machines	Revenue	Average per Machine
2000	-13,1	36,2	56,8
2001	0,0	15,6	15,6
2002	-2,8	20,2	23,7
2003	-21,6	12,4	43,4
2004	-4,8	21,5	27,5
2005	8,6	8,5	-0,1
2006	-2,3	6,0	8,5
2007	3,4	9,1	5,5

Source: Annual Reports on Gambling, Ministry of Home Affairs

Figure 7.2: Revenues from Bingo Halls in Catalonia (Spain)



Source: Annual Reports on Gambling, Ministry of Home Affairs

Revenues from bingo halls continue to decline, although the data is only available through 2007.

Pathological Gambling in Catalonia (Spain) (2007-2008)*

In an epidemiological study on pathological gambling in Catalonia (Spain) (2007-2008), it was reported that 90.2% of respondents (adults) participated in some form of gambling activity, with prevalence rates for gambling problems being: Risky gambling (2%) (approximately 116,000 people); Problematic gambling (0.5%) (approximately 29,000 people); and Pathological gambling (0.2%) (approximately 11,500 people).

For comparative purposes, a distribution of number of problem drug users by gender and age in the last 12 months (2011) and the last 30 days (2011) is provided. It is important to note that this is for drug use not necessarily drug abuse and/or drug dependence.

Table 7.7: Number of Problem Drug Users in Last 12 Months (Catalonia (Spain))

				Drugs users in the last 12	
		Abstainers		**months**	
		N	%	N	%
15-24	Men	257.410	68,6	117,594	31,4
	Women	274.884	76,8	82.830	23,2
25-34	Men	469.587	76,2	146.917	23,8
	Women	532.136	91,2	51.658	8,8
35-44	Men	546.115	82,6	114.675	17,4
	Women	553.575	96,2	22.002	3,8
45-54	Men	469.643	96,7	15.322	3,3
	Women	526.272	95,5	24.549	4,5
55-64	Men	469.136	99,1	4.082	0,9
	Women	439.467	99,1	3.817	0,9

Table 7.8: Number of Problem Drug Users in Last 30 Days (Catalonia (Spain))

				Drugs users in the last 30	
		Abstainers*		days*	
		N	%	N	%
15-24	Men	296.274	79	78.730	21
	Women	295.478	82,6	62.216	17,4
25-34	Men	502.475	81,5	114.029	18,5
	Women	594.043	94	34.751	6
35-44	Men	578.116	87,5	82.675	12,5
	Women	556.746	96,7	18.832	3,3
45-54	Men	462.586	98,5	7.057	1,5
	Women	534.660	97,1	16.160	2,9
55-64	Men	469.136	99,1	4.082	0,9
	Women	439.467	99,1	3.817	0,9

* Data provided by the Mental Health Unit of the Department of Health

In Catalonia (Spain) in 2007 a total of € 4,897.21 million were wagered (63% on private gambling and 37 % public gambling). From the private gambling, €1.9547 million (63 %) were wagered on Type B machines; € 608,7million (20 %) in casinos and € 523,9 million on (17 %) bingos.

In 2007, players were spending 939 million euros in the private gaming sector in Catalonia (Spain), which is equivalent to the gross income of the sector including taxes. Overall, 62%of these revenues came from machine B gambling, 24%from bingo and14% from casinos.

In 2007, every Catalan adult (18 or more) spent on average € 517.3 per year in private games (Type B -€327.5, €102 in casinos and€87.8 in bingo). The distribution of expenditures by year is presented below (upper is the general expenditure, lower is the expenditure by person).

Table 7.9: Distribution of Gambling by Type of Gambling Establishment (1998-2007) (Catalonia (Spain))

	Casinos	Bingo Halls	B-Type Machines	Total
Millions of Euros				
1998	236,5	500,9	1.507,1	2.244,5
1999	310,5	518,6	1.601,6	2.430,6
2000	393,4	530,6	1.706,6	2.630,7
2001	419,5	536,3	1.698,2	2.654,0
2002	454,6	542,1	1.676,2	2.673,0
2003	465,0	581,0	1.652,0	2.697,9
2004	535,7	569,8	1.648,8	2.754,3
2005	568,1	561,0	1.714,6	2.843,7
2006	586,8	539,2	1.725,6	2.851,6
2007	608,7	523,9	1.954,7	3.087,3
(Euros/Adult Inhabitant)				
1998	46,8	99,0	297,9	443,7
1999	60,6	101,1	312,4	474,0
2000	75,7	102,1	328,4	506,2
2001	79,3	101,4	320,9	501,6
2002	83,9	100,1	309,4	493,3
2003	83,3	104,0	295,8	483,1
2004	94,5	100,5	290,8	485,9

2005	97,7	96,5	295,0	489,2
2006	99,2	91,1	291,6	481,9
2007	102,0	87,8	327,5	517,3

Source: Data from Annual Reports on Gambling, Ministry of Home Affairs and the INE

Table 7.10: Mean Expenditure by Casino Visit (1999-2007) (Catalonia (Spain))

	Gambling	1 C-Type Machines |	Other* 1	Total
(Euros)				
1999	57,9	21,8	26,9	106,5
2000	60,9	25,0	26,5	112,4
2001	63,8	28,8	26,7	119,4
2002	73,3	38,5	28,9	140,7
2003	74,5	45,1	27,8	147,4
2004	77,4	51,9	28,5	157,9
2005	79,0	54,0	26,9	159,9
2006	93,9	62,6	29,1	185,6
2007	85,1	64,8	28,8	178,6

Source: Annual Reports on Gambling, Ministry of Home Affairs *Entrance fees and tips

To provide some perspective, the average expenditures on personal consumption costs (e.g., food, clothing, housing, medical care, transportation, recreation) are presented in Table 7.11.

Table 7.11: Mean Expenditure per Household and per Person, by Spending Groups[1]) (Catalonia (Spain), 2007)

	Grp 1	Grp 2	Grp 3	Grp 4	Grp 5	Grp 6	Grp 7	Grp 8	Grp 9
Per Household	4.671	528	2.163	9.609	1.774	1.094	4.373	983	2.685
Per Person	1.756	198	813	3.613	667	411	1.644	370	1.010
(Euros)									
	Grp 10	**Grp 11**	**Grp 12**						
Per Household	387	3.235	2.701						
Per Person	145	1.216	1.016						

Source: Idescat, from Data from the Household Budgets Survey, 2006 Base

Group 1: Food
Group 2: Alcohol drinks, drugs and narcotics
Group 3 : Footwear and clothing
Group 4: Housing, water, electricity, etc.
Group 5: Furniture, household equipment, etc.
Group 6: Health
Group 7: Transports
Group 8: Communications, telephone, Internet, etc.
Group 9: Leisure, entertainment and culture
Group 10: Education, schools, etc.
Group 11: Hotels, coffees, restaurants, etc.
Group 12: Others services

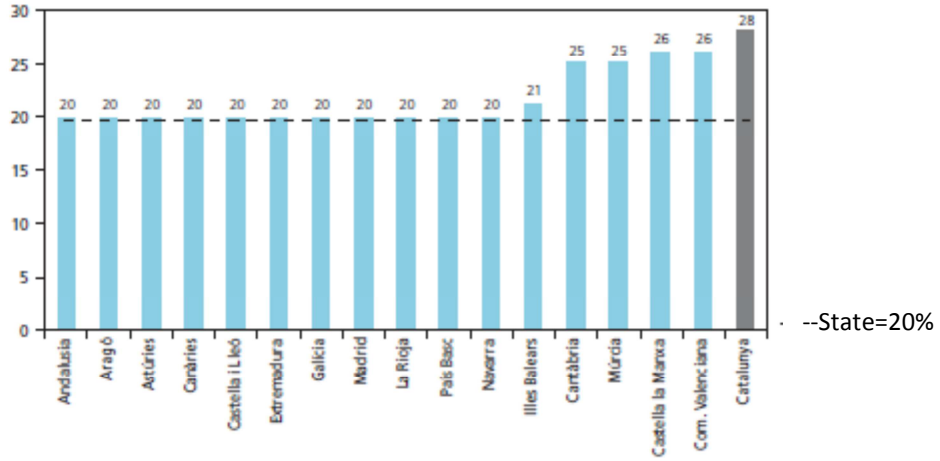
Gambling-Related Suicide

No reliable estimates are available.

Government Gambling Revenue

Taxes from private gambling have been completely transferred since 1982 to autonomies (legislation, management, etc.). Gambling taxes together with the national transfers are the largest sources of revenue for the regional governments.

Figure 7.3: Government Revenues By Gambling Type (Percentage) for 2008 (Catalonia (Spain))



Source: Ministry of Finance

Since 1999, the 28% gambling tax in Catalonia (Spain) is the highest in Spain. This tax is applied to the amount expended in Bingo and in Casinos is applied to the amount expended minus prizes and a fix quota in Machines (see the taxes below).

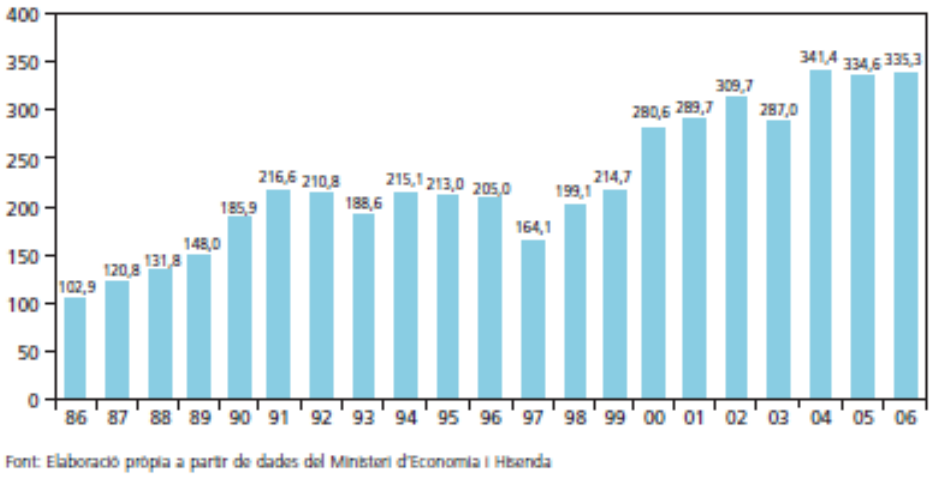
Table 7.12: Government Revenues by Gambling Type (2008) (Catalonia (Spain))

General and Gambling Tax Rate Applied to Bingo (On Amount Played)	28%
Quotas for Recreational and Gambling Machines (In Euros Per Quarter)	
B-Type Machines |	
1 Player	914
2 Players	1.828
3 or More Players	1.828 + 570 * Mp
Increase in the Quota per 0.05 Euros that the Maximum Price Rises	17
C-Type Machines	
1 Player	1,316
2 Players	2.632
3 or More Players	2.632 + 395 *N
Casino Tax According to Tax Base (On Amount Played Less Prizes)	
Between 0 i 1.322.226,63	20%
Between 1.322.226,64 i 2.187.684,06	35%
Between 2.187.684,07 i 4.363.347,88	45%
More than 4.363.347,88	55%

N = Number of Players/Mp = Maximum Authorized Price per Game (0.20 Euros) Source: Data from the Secretariat of State for Revenue and Finance (MEH)

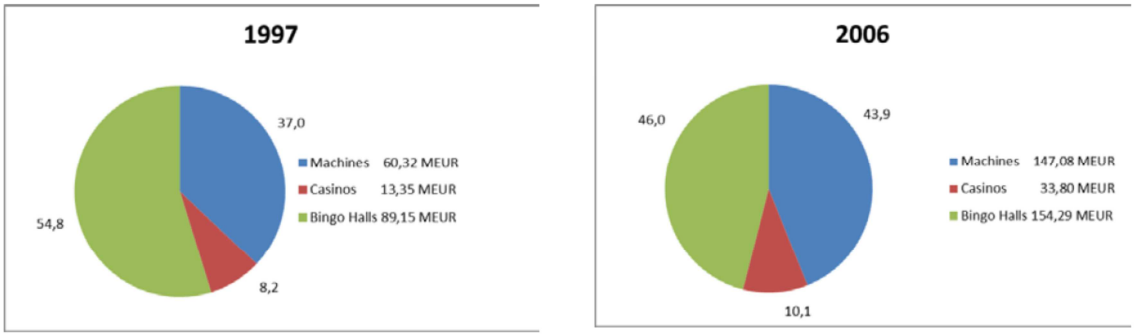
In 2006, the total gambling tax revenues in Catalonia (Spain) were 335,3 million Euros.

Figure 7.4: Gambling-Related Governmental Revenues[1] (Catalonia (Spain))



[1] revenue in millions or euros.
Source: Data from the Ministry of Finance

Figure 7.5: Tax Revenues by Type of Gambling Activity in 1997 and 2006 (Catalonia (Spain))



Source: Reports by the Ministry of Home Affairs of the Government of Catalonia (Spain)

Gambling-Related Employment Statistics

In 2006, a total of 1.444 enterprises were directly or indirectly involved in gambling-related activities in Catalonia (Spain) (60% operators, 19% machine manufacturers, 13% managers of the venues and others).
In 2007, 4.600 direct gambling workers represented 0.32% of all workers within the service sector and 0.17 % of all affiliated workers. Direct and indirect jobs are estimated to be approximately 15,000.

Table 7.13: Total Costs (Gambling and Non-Gambling) Associated with Treatment and Social Services (Catalonia (Spain))

Health Región	Health Center	2010	2011
Barcelona	Hospital de Sant Pau	77.618,79 €	71.409,29 €
Barcelona	Consorci Sanitari de Terrassa	77.628,53 €	71.418,24 €
Barcelona	Consorci Sanitari del Maresme	166.396,65 €	153.084,92 €
Camp de Tarragona	Institut Pere Mata SA	59.856,34 €	55.067,83 €
Catalonia (Spain) Central	ALTHAIA	77.618,79 €	71.409,29 €

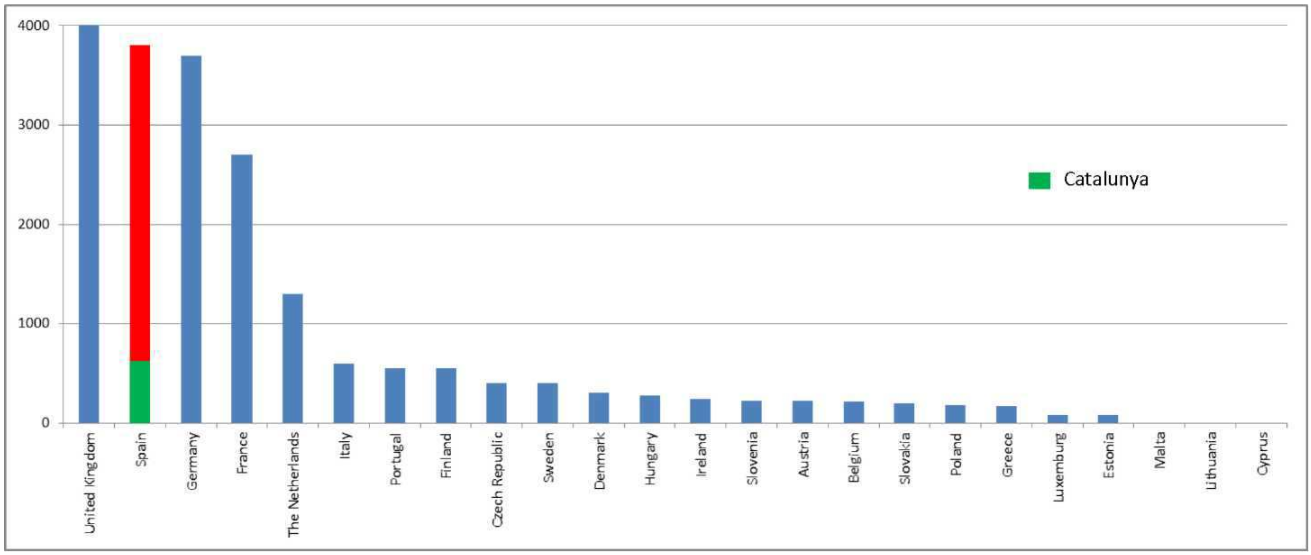
Girona	Institut d'Assistència Sanitària (IAS)	65.260,01 €	60.039,21 €
Lleida	Gestiô de Serveis Sanitaris	77.618,00 €	71.409,29 €
TOTAL		**601.997,11 €**	**553.838,07 €**

Table 7.14: Costs Associated with Addictive Behaviors (2010-2011) (Catalonia (Spain))

Costs of institution 2011				
CONCEPT	**PREVENTION**	**RESEARCH AND TRAINNING**	**COORDINATION**	**TOTAL €**
DRUGS AND ALCOHOL	**3.106.575,50**	**55.160,52**	**832.117,95**	**3.993.853,97**
TOBACCO	**2.476.232**	**149.000**	**150.000**	**2.775.232**
Public Investigation Agency, Spain		**€ 255.188,86**		**€ 255.188,86**
Gambling				**€ 553.838,07**
TOTAL				**€ 7.578.112,90**
Costs of institution 2010				
CONCEPT	**PREVENTION**	**RESEARCH AND TRAINNING**	**COORDINATION**	**TOTAL €**
DRUGS AND ALCOHOL	**€ 3.031.404,10**	**€ 132.168,38**	**€ 864.788,00**	**€ 4.028.360,48**
TOBACCO	**€ 2.247.036,00**	**€ 145.000,00**	**€ 331.000,00**	**€ 2.723.036,00**
Public Investigation Agency, Spain		**€ 255.188,87**		**€ 255.188,87**
Gambling				**€ 601.997,11**
TOTAL				**€ 7.608.582,46**

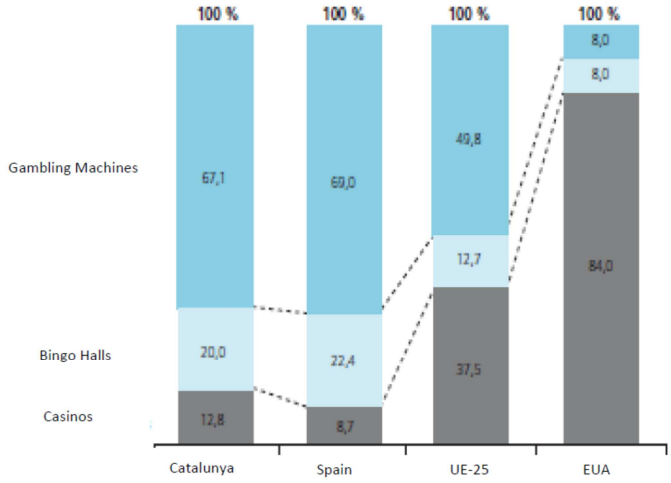
Total costs associated with treatment and social services declined between 2010-2011 (no data is available after that time). similarly, the costs associated to gambling not only decreased between 2010 and 2011, but were considerably lower than that allocated for drugs, alcohol, and tobacco.

Figure 7.6: Gross Income Within the Private Sector (2003)(Catalonia (Spain))



Source: Study of Gambling Services in the International Market of the European Union, 2006, European Commission
N.A. No data is available for revenue in bingo halls for France, Germany, Austria, Slovenia, Slovakia, Luxemburg, Estonia, Lithuania, and The Netherlands, and for revenue from gambling machines for Luxemburg and Estonia.

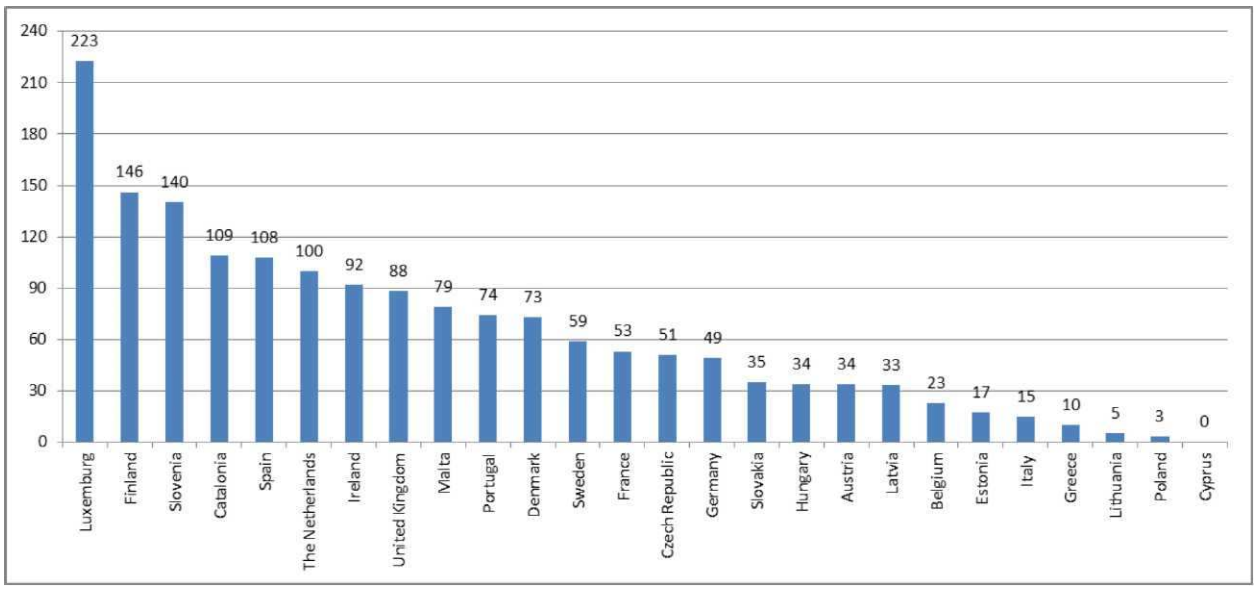
Figure 7.7: Percentage of Gross Income by Game (2003) (Catalonia (Spain))



Source: 2003 Report by the Ministry of Home Affairs (Study of Gambling Services in the International Market of the European Union, 2006, European Commission.

Expenditure

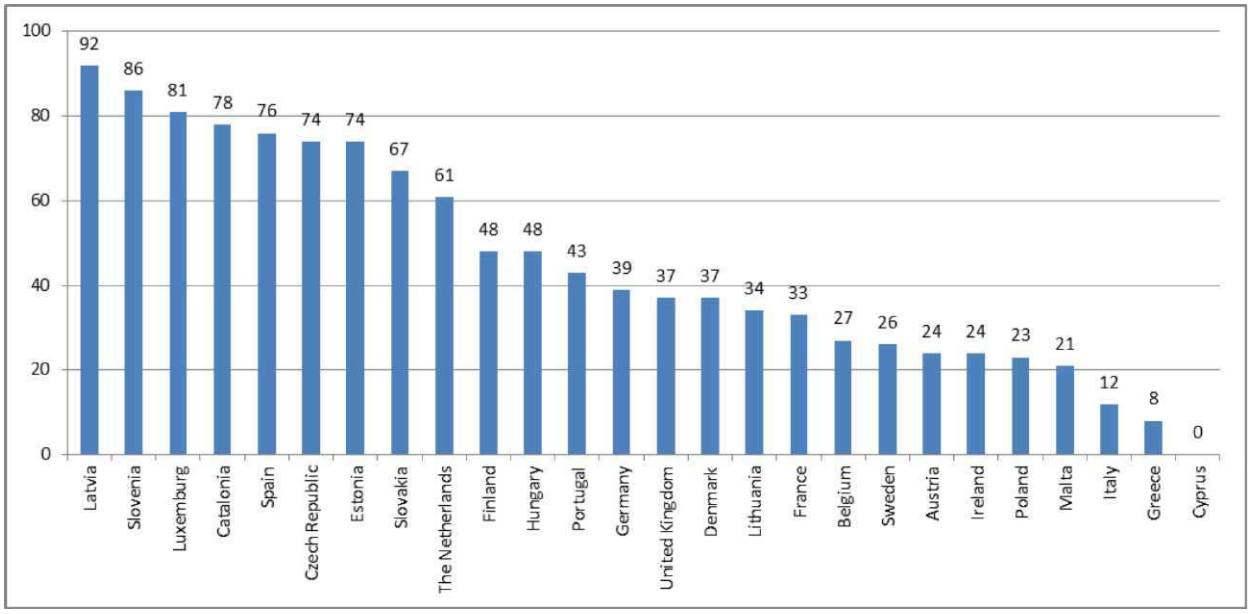
Figure 7.8: Spending per Person in Gaming (Euros) (2003) (Catalonia (Spain))



Source: Data from the Regional Accounts of the INE, Eurostat and the Study of Gambling Services in the International Market of the European Union, 2006, European Commission.

The expenditure by person (18+) in 2003, in Catalonia (Spain) was €109 (one Euro more than in Spain) but double that of Europe (€54). Only Luxembourg, Finland and Slovenia were higher.

Figure 7.9: Private Gambling (2003) (Catalonia (Spain))



The income from private gambling represents 80% of all gambling income; approximately double the percentage throughout Europe.

8. Discussion & conclusions

Assessing the European Data

An analysis of the regulatory framework throughout the European Member States with respect to gambling varies considerably. While the problems associated with other forms of addiction (e.g., drugs, alcohol, and to some extent smoking) have been well documented, problem gambling appears to have been under the radar in spite of its public health implications. This may well be because of the public perception that a gambling problem is not as serious as a drug or alcohol problem) and that the 'medical costs' of problem gambling are indeed lower. There is little doubt that gambling remains a popular activity with lotteries in general, and the *Megamillions* lottery in particular, being a very popular activity. However, the assessment of problem gambling varies between countries with respect to the methodologies used, instrumentation, and data of study. Large-scale country-wide prevalence studies are typically non-existent. While the vast majority of individuals report gambling with few problems, there is some consistency in the prevalence rates of problem gambling (if one combines moderate problem gambling rates with pathological/problem gambling rates) rates within Poland (3.5%), Portugal (1.0%) and Cataluyna/Spain (between 1.1%-6.2%, based upon the study). All studies similarly report higher rates of gambling and problem gambling amongst males compared to females. Yet the data lacks comparability as different measures have been used for assessment and the time periods between prevalence studies differed considerably. All countries indicated a significant increase in gambling opportunities during the past decade, with relatively few people seeking treatment. As such, the health costs remain considerably lower than that of other addictive behaviors (e.g., substance abuse). No systematic data was collected across the countries concerning legal or judicial costs. In spite of the general lack of data concerning social costs and benefits associated with gambling's expansion, there is clear indication that gambling remains a popular activity and that it is accompanied by both social benefits and costs.

Data Deficiencies

As previously noted there is a lack of annual systematic data collection being collected in most countries. While tax revenues are tracked fairly closely, large-scale gambling and problem gambling prevalence studies are only sporadically done, with little consistency in methodologies. Hospital and psychiatric data concerning problem/pathological/disordered gambling as either a primary or secondary diagnosis are inconsistent. Given the high co-morbidity with other mental health and addictive disorders this data is missing.

Using any of the models looking at the social costs presented in this report, information concerning gambling-related mortality, suicide, domestic violence, divorce, employment, absenteeism, work related productivity losses, criminal behavior, bankruptcy, theft, welfare, job creation data, tourism data related to land-based gambling visits, legal, justice and court costs, serious financial concerns, changes related to charitable donations and gift giving would be necessary to accurately quantify the social costs and/or benefits.

Meeting Data Requirements

In the absence of any consensus concerning those variables necessary to be examined to assess gambling-related social costs and benefits, the SEIG model (Anielski & Braaten, 2008) (Table 3.3.1) outlines those factors which should be included in future studies. General domains should focus on Health and Well-Being (e.g., prevalence of gambling, problem gambling and co-morbidity with other addictive behaviors and mental health disorders, mortality, suicide, social relationships, impact upon

gambling-related divorces); Economic and Financial Indices (e.g., contributions to economic growth, personal gambling expenditures, personal entertainment satisfaction benefits, industry benefits, governmental revenues, bankruptcy, personal debt, and public sector costs); Employment and Education impacts (e.g., job creation, employment changes, work/school performance, direct and indirect employment costs); Recreation and Tourism variables (e.g., gambling-related tourism, impact on existing businesses); Legal and Justice costs (e.g., impact upon illegal gambling operations, gambling-related criminal rates, judiciary, prosecution and policing costs, security-related costs), and Cultural Factors (e.g., impact upon local charities and donations, contributions to government social program spending). While the instrumentation for each of these variables would need to be agreed upon, for comparability purposes, the data collection methodologies are articulated in Table 3.3.1. Within any of the presented models there are methodological limitations and challenges. It should further be noted that given linguistic and cultural differences across the EU member states, caution must be exercised in selecting appropriate indices.

Discussion & conclusions

There is a general consensus that on an international level our tools, analyses and frameworks have little agreement as to how best study the overall impacts of gambling. This is most evident in the recent Gambling Impact Study Report for the State of Florida (Pennington-Gray & Dunn, 2013). Even within their report, they examined the economic impact questions using three different analytic methodologies, with economists suggesting even more alternative strategies. While they concluded that the three different methodological approaches had key distinctive distinctions in their assumptions and data, their overall findings were in fact similar. While the similarities exist for the economic costs, concerns for social costs vary considerably depending upon what is measured and how one attributes costs to social and psychological impacts. Of importance, is that the Pennington-Gray and Dunn impact study was focused on a proposed expansion of casino gambling where gambling was already widespread across the State. Nevertheless, they estimated that the overall social costs associated with Problem Gambling was $274.3 million, while that for Pathological Gambling was $548.8 million, for a population of 19.32 million people (this is also somewhat deceiving as Florida has a huge number of semi-permanent residents who reside there in the winter months and Florida is not considered their primary residence). Overall, the lifetime costs associated with problem gambling were estimated to be $1.189 billion. It should also be noted that the legal age for state-regulated gambling in Florida is 21, with the only exception being for lottery purchases where the legal age is 18. Within Canada, a recent report by the British Columbia Office of the Provincial Health, released in October 2013, suggests that on average, problem gamblers incur more than four times the medical-related expenses compared to patients without a diagnosis of pathological gambling. They suggested that the costs are $6,862 CND per problem gambler, per year, excluding the impact upon the family members of a problem gambler (the British Columbia Problem Gambling Prevalence Study in 2007 suggested that approximately 1 of 7 (14.3%) of individuals had experienced some problems resulting from someone else's gambling. This is equivalent to $1.092 billion CND for only one Province in Canada (this is predicated on the assumption that all problem gamblers have equal social costs and likely seek treatment).

As Walker (2013) has aptly noted, the social cost estimates vary considerably and upon reanalysis using different perspectives one can arrive at very diverse conclusions. For example, Thompson, Gazel and Rickman (1997) estimates of $9,469 per pathological gambler per year were reduced to $2,974 by Walker and Barnett (1999) after their reanalysis. Such variability does not bode well for the accuracy of measurements.

There are also significant data gaps, methodological issues and inconsistency amongst existing data sources which has resulted in widely disparate estimates of the costs and benefits associated with

the expansion of gambling. In particular, when one examines the scant available data from Poland, Catalonia (Spain) and Portugal, significant gaps of information are evident as the data was either not systematically collected or was unavailable (we have included all the data provided in spite of the lack of reliability and somewhat tangential nature of some of the data). Given much of the data is incomplete or dated, no reliable estimates of the social costs are possible. In addition, it should be noted that much of the data was provided without much explanation as to the methodology of data collection procedures especially that related to the assessment of problem and pathological gamblers. As such, little comparability is possible as there is a lack of methodological rigor reported for comparative purposes. Ascertaining reliable estimates of direct costs are highly problematic as many governments have failed to systematically collect, on an ongoing basis, the necessary data related to problem gambling. Data provided was often dated with much necessary information not having been collected. There nevertheless remains ample evidence to suggest both positive benefits as well as social costs associated with gambling's expansion. Of particular concern have been the social costs (often difficult to quantifiably measure) associated with problem/disordered gambling. Given many pathological/disordered gamblers have dual diagnoses with either substances or mental health issues, how can the appropriate share of the costs be determined? This issue has recently been repeatedly raised by economists and researchers. Whether the social and economic costs exceed the benefits still remains open to one's interpretations, perspectives and source of data.

Within Europe, Buhringer and his colleagues (2013) concluded from their analyses that the gambling market and gambling-related regulations are extremely diverse across Member States, that significant and vital information is lacking to make informed decisions and that from a public health perspective it is "difficult to estimate the impact of different gambling regulations on the prevalence of gambling disorders." This further compounds the ability to make reliable comparisons between the costs associated with gambling, alcohol, substance abuse, and tobacco. Buhringer and colleagues have proposed important research steps necessary in helping establish more empirically-based knowledge from which responsible social policy directives can be established. In the meantime, they have made important suggestions for a common gambling policy across the EU Member States and have also suggested 24 public health initiatives to protect vulnerable gamblers and as a way of promoting harm minimization (see ALICE RAP Policy paper Series, Policy Brief 2). The limited available information from Poland, Portugal and Catalonia (Spain)/Spain would certainly strongly support further research efforts to examine the impacts of the expansion of gambling, the need to develop more effective harm minimization strategies, and the development of innovative empirically-based prevention and intervention programs. In the meantime, the recommendations produced in the ALICE RAP Brief 2 are not only important but imperative.

As already argued, there exist a number of models to assess the economic and social costs associated with gambling. The academic community still has not reached a consensus on either the tools or measures necessary to draw definitive conclusions; no "gold standard" currently exits. As aptly noted by Pennington-Gray and Dunn (2013), when comparing "starkly different costs in different states, it is likely that each of the studies has measured costs differently." Walker (2013), a noted economist, goes even further stating that in spite of his earlier belief that researchers adopt a single cost methodology, that "since Banff, I am more convinced that it is simply not possible to effectively estimate the social costs associated with disordered gambling. There are too many complications and too many arbitrary assumptions necessary to provide such estimates." How one attributes the social costs to the multiplicity of problems associated with disordered gamblers (e.g., substance abuse, mental health issues (mood and anxiety disorders, obsessive-compulsive personality disorders, nicotine dependence, etc.) has been absent in the literature (likely because it is difficult to accurately assess).

In the absence of such consensus, the SEIG model (Anielski & Braaten, 2008) previously discussed seems a movement toward a reliable and comprehensive way of assessing both benefits and costs. It is important that in order to make reliable estimates of the costs associated with gambling, data needs to be collected as described within this model. It should be noted however that this report is not without its critics and high costs associated with data collection and analyses (Walker, 2008). While economic costs and benefits seem easier to assess then social costs per se, there still remain questions as to how one can reliably and accurately measure certain social costs. Such costs related to familial disruptions, divorce, and suicide, for both the problem gambler and his/her family, still remain highly contentious. Other questions are similarly pertinent, for example, few studies address the issue of co-morbidly in spite of large numbers of problem gamblers experiencing alcohol, drug, mood, anxiety, and obsessive compulsive disorders as well as a host of other mental health issues (Petry, Stinson & Grant, 2005; Westphal & Johnson, 2007). How does one measure the costs of an individual who has a comorbid disorders - split the costs? In most social cost studies, little or no provision is made for adjusting the costs (e.g., Thompson & Schwer, 2005). As noted previously, when reviewing the social and economic impacts of gambling, many of the costs associated with gambling are non-monetary in nature. Attempts to monetize these costs may lead to serious under- or over-estimates depending upon pre-existing assumptions. To complicate matters, a report by Kessler et al. (2008) suggests that many co-morbid disorders actually precede the onset of a gambling disorder. As such, they raise issues as to whether or not the costs should be attributable to the problem gambling or the preceding disorder.

There is little doubt that additional, systematic research within the EU is necessary in order to reliably assess the economic and social costs associated with gambling availability and expansion. The landscape of gambling throughout Europe has dramatically changed within the past decade. Our social cost studies are merely a 'snapshot' in time. Only future research will be able to reliably measure its true benefits and costs.

9. Executive summary

Gambling, which dates back to early civilization, has expanded dramatically during the past two decades. Not only have traditional forms of gambling expanded but technological advances have seen gambling take on many new forms. No longer are individuals restricted to gamble at traditional land-based venues but online wagering via computer desktops, laptops, Tablets and Smart Mobile Phones have enabled individuals to gamble in many jurisdictions almost 24 hours per day from any location. Gambling's popularity and acceptability has also grown dramatically, with governments generating huge tax revenues from gambling. At the same time, attitudes toward gambling have dramatically shifted and it is generally viewed as a socially acceptable form of behaviour. While we typically restrict underage individuals from gambling, there is worldwide research suggesting that among adults it is has become a socially acceptable form of recreation. While most individuals gamble in a responsible manner, a small but identifiable number of individuals gamble excessively, with serious financial, familial, health, psychological, legal and social costs.

The intent of the ALICE-RAP project is to have a better understanding of the social costs attributable to alcohol, substance and tobacco abuse as well as pathological gambling in three EU countries (Poland, Portugal, and Spain). This report attempts to specifically examines the social costs related to gambling. Unlike the data available for other potentially addictive behaviours (e.g., alcohol, drug use and tobacco), the recognition of pathological or disordered gambling has only become of recent concern and as such fewer models of assessing social costs and data have been systematically collected.

Based upon the available data, the following summarizes the current findings:

- An analysis of the social impact of gambling is extremely difficult given a lack of consensus and agreement as to how to measure the overall impacts.
- The available data used to assess the social impact of problem gambling impact varied greatly across the three countries studied. Significant data gaps and inconsistencies were evident, with data not being systematically collected, unavailable, or dated.
- Given the lack of systematic data collection, lack of comparable data, and lack of reliability of the data no reliable estimates of the social costs is possible at this time.
- In spite of the lack of reliable data, there is clear indication from these three countries and comparable work done internationally that there is evidence suggesting both positive benefits as well as social costs related to the expansion of gambling.
- The SEIG model (Anielski & Braaten, 2008) is proposed as a framework for future consideration in order to reliably assess the economic and social costs of gambling within the EU.

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