Reducing inequalities in access to primary health care for socially significant diseases in disadvantaged communities across borders

Deliverable 3.1.3. Analysis of the current situation of health inequalities for socially significant diseases in the GR CB area

PROJECT

EQUAL2HEALTH

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1 Introduction

The Equal2Health project entitled "Reducing access inequalities in primary health care for socially significant diseases in disadvantaged communities in cross-border areas" was designed and implemented under the 2nd call for proposals of the Interreg VA Cooperation Program in Priority Axis 4 "A cross-border area without social exclusion" and in investment priority 9a. "Investing in health and social infrastructure that contributes to national, regional and local development, reducing health inequalities, promoting social inclusion through improved access to social, cultural and recreational services and the transition from institutional to community-based services".

The overall goal of the Equal2Health program is to reduce health inequalities in the cross-border area and to contribute to the diversion of a significant volume of healthcare services from hospitals to primary care facilities and indirectly to provide better healthcare to remote and / or remote communities: (1) the protection (medical examinations) of citizens (particularly socially vulnerable groups) from socially sensitive diseases; (2) the promotion of health prevention and "knowledge" of health issues in disadvantaged communities for better understanding and benefit from primary health care services and (3) the development of a supportive environment for healthy lifestyle.

The main objective of this deliverable is the analysis of the current situation in health inequalities for socially important diseases in the cross-border area of Greece - Bulgaria. The core idea is to produce an expert study to better prepare ta strategic plan tackling with inequalities in the cross-border area.

To this end, the present study begins with a literature review on the presentation of social determinants in health. This chapter, in addition to the literature review, describes the research questions that need to be answered and describes all the methodological approaches, techniques and data that will be used by the project team to prepare the study.

Successively a comparative presentation and analysis of socially important diseases in combination with the factors that cause them is employed. In particular, social determinants of health are examined as described by the WHO and have been identified in the literature review. For example, issues of unemployment, education, nutrition, material deprivation and working conditions are discussed.

The study continues with the presentation of the social determinants and the current situation in the cross-border area. At the same time, some good practices and results of previous reports of the project are presented very briefly, in order to draw the main conclusions and to present the proposals for mitigating inequalities in health.

2 Literature review and theoretical presentation of social determinants of health and diseases significantly affected by them.

2.1 Assessment of the investigation needs and clear definition of the purpose of the review

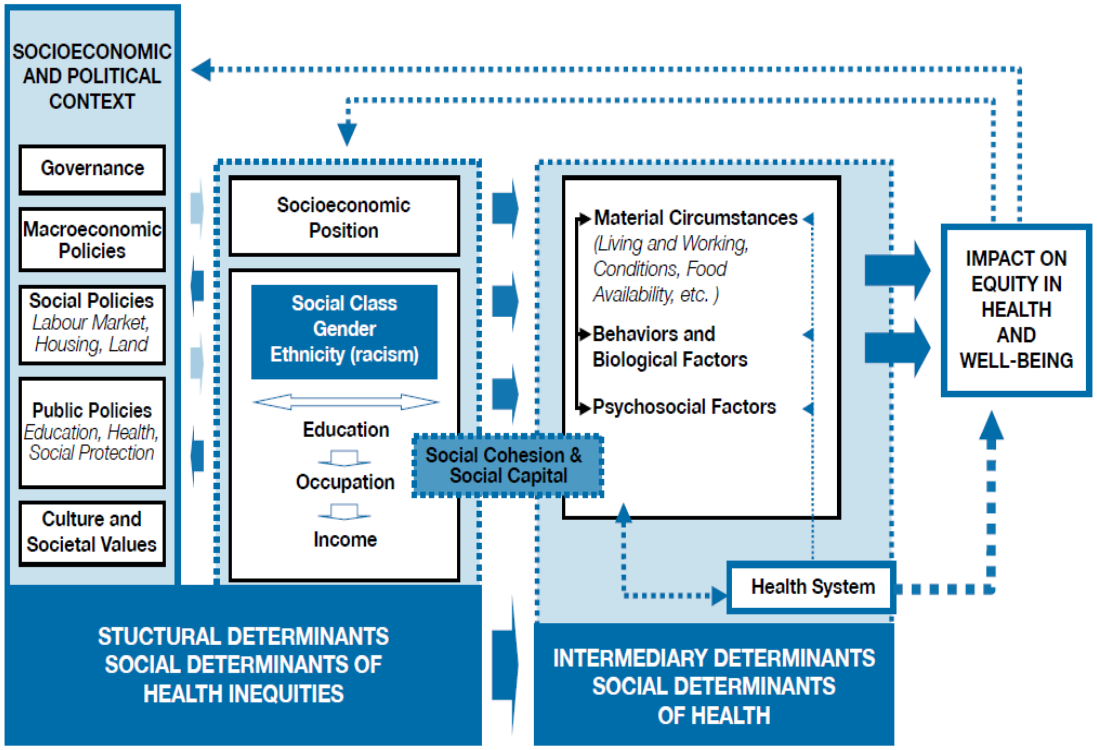
The dimensions of health as described and recorded are related and differentiated according to the respective socio-political conditions that prevail. Today, it is widely understood that health includes those factors that aim to protect and increase the well-being of the individual and society in general. The definition of "health" as given by the World Health Organization includes a negative semantic approach and specifically "health is the absence of disease". Factors affecting health and disease have been recorded in the international literature as determinants of health.

The World Health Organization (WHO) has extensively analyzed the social determinants and the diseases that are significantly affected by them. The following Figure 1 summarizes the key elements of the framework from WHO. Figure 1 identifies and summarizes all the key points of the framework, organizing in a unified way all the main categories for the social determinants that create inequalities in health (1). The framework makes certain categories specific, which will be discussed in the present study.

The general idea of this framework is that social stratification plays a key role in the "mechanisms of inequality in health". Social stratification creates different exposure to health-threatening conditions and or vulnerability to health conditions and the availability of material resources. In addition, it sets marginal consequences for reduced health in vulnerable social groups (including economic and social consequences). In essence, it seems that the socio-economic and political context of countries is the wide range of factors that affect the level of individual health. These factors have a strong shaping effect on the patterns of social stratification and, therefore, on human health.

Indeed, some researchers have amassed an increasingly consistent body of evidence over the years that the quality of many social determinants of health depends on policy approaches to public health. To give just one example, the state of Kerala in India has been extensively studied, showing the relationship between the dramatic reduction of inequalities over the last 40 years and the improvements in the health of its population. (2) Respectively, other studies have explored relationship between policy variables and population health at national level and none has included a comprehensive number of policy variables to understand their impact on population health, while at the same time adapting economic determinants to health outcomes. (3)

Figure 1 Social determinants of health Framework



Source solar & Irwin (2010) (1)

Based on all the above and given that even in the case of the European Union inequalities in access to health are identified, the present study at this point attempts to analyze the social determinants in a theoretical context so that a comparative presentation can be made later and appropriate conclusions can be drawn.

Health, measured life expectancy at birth, improves rapidly as per capita income increases. Health indicators, therefore, seem to depend on the distribution of income of the individual, while on the contrary, poverty in the form of low per capita income is associated with a decrease in life expectancy and increased infant mortality (4,5). In most OECD countries in 2011 there was an increase in life expectancy, with the average age being 82 years. Compared to 1970, there is an increase of 10 years. Due to rising incomes in countries such as China, Indonesia and India, the age limit has also been raised (4,6–8).

Indisputably, however, are the evidence of infant mortality that prove precisely the relationship between social stratification, income and social conditions in countries such as India, Ethiopia and Afghanistan. (4,8) In 2010, these countries according to WHO data recorded the highest infant mortality from 0-56 months. Millions of children in the above-mentioned countries are unable to access health services, drinking water and food. Added to these figures are diseases such as malaria, AIDS, measles, social conflicts, slavery, miserable living conditions and child labor under harsh conditions.

Accordingly, the modern lifestyle inflates stress, which is an important factor in the determinants of health. Stress works aggravatingly causing particular effects on the physical and mental health of patients. It creates an exacerbation of cardiovascular diseases and an increase in autoimmune and rheumatic diseases. Skin diseases,

hypertension, seasonal allergies and headaches have an increased prevalence due to increased stress. It is also worth mentioning its effect on the mental health of patients causing anxiety attacks, difficulty in managing and solving everyday problems, increasing tobacco use, increasing alcohol consumption and possibly toxic substances. These in turn aggravate cardiovascular disease, rising triglyceride and cholesterol levels and storkes (4,9)

Another social determinant is unemployment. Unemployment has been on the rise in recent years, especially in the last two years since the outbreak of the pandemic. Unemployment is associated with the prevalence, incidence and prognosis of mental disorders. Discomfort, depression, anxiety, feelings of low self-esteem lead to suicide and the use of illicit drugs. There is also an increase in the number of suicides with an accompanying increase in crime and an increase in violent behavior and the phenomenon of domestic violence. (4,10)

Unemployment is also a factor of destabilization of the family institution, which cannot meet the daily economic needs that arise, in order to maintain the standard of living expected for society. At the same time, however, there is a reduced access to the National Health System, with the result that they cannot be treated immediately and effectively, leaving the issue of prevention in second place.

Correspondingly, education seems to be a key social determinant of health. In particular, the expectation of survival depends on the educational status of the individuals. Correlation between cardiovascular disease and lower levels of education were confirmed in a research at USA (11). Specifically, this study showed that people with lower education were more likely to have a heart attack due to the fact that higher levels of cholesterol and triglycerides and higher rates of smoking were recorded. The highest level of education provides about 6 extra years of living.

Research in recent years has highlighted nutrition as a key social determinant of health. Eating habits are an important factor in maintaining the health of individuals. Obesity is a major aggravating factor for the health of the population and is associated with many social diseases (cardiovascular, musculoskeletal, etc.). In addition, obesity has been linked to an increased risk of diseases such as diabetes, hypertension, high cholesterol, metabolic syndrome, heart disease, stroke, certain cancers and even premature death. In particular, obesity is the most common pathogen that leads to type 2 diabetes. For every 1 kg of weight gain above normal, the risk of developing type 2 diabetes increases by 9%. Obesity can also aggravate other conditions and make them more difficult to treat. In the European Union about 60% of adults and over 20% of children are overweight or obese. In Greece 27.9% of men and 25.6% of women are obese (data 2001-03) while 37% of girls and 45% of boys are either overweight or obese (data 2005-06) (12).

The role of the family in the first years of the child is crucial for his physical, mental and mental development. This includes normal family relationships, the father's attitude towards the mother and children, the low social and educational level of the parents, events that may affect the children's mental health such as divorce or the death of a family member. Also, Studies that have taken place in developed countries, have highlighted and

demonstrated the inextricable link between social-family support and cardiovascular events. Difficult family relationships increase alcohol consumption and smoking.

Work shapes income so that a person can live, be productive and meet their daily needs. It also affects the psychosocial development and maturation of individuals. It is the means of social and classification of individuals in society.

The appearance of the effects of work stress on the mental health of employees and especially the appearance of depression we observe how they appear in recent years. Cardiovascular diseases appear to be associated with occupational stress as a major modifiable risk factor. Empirical studies have been conducted on work characteristics, with the risk of mortality from heart disease and the occurrence of increased negative work stress. The results of these studies have shown the strong negative effect of work stress on cardiovascular disease and especially on workers who do not change jobs. In the health professions, in the social welfare professions, we observe that high job demands receive negative effects of work stress in combination with the lack of self-esteem and job satisfaction. Manual work, as well as people working in mining, are also more prone to musculoskeletal diseases and respiratory diseases.

It is a fact that the economic crisis is bringing about rapid changes in work, with new forms of employment and movement of workers, but also a large number of people outside the labor sector, with unemployment affecting low and middle developing countries, but also with lower socio-economic layers.

Access to health services is by definition a key factor in helping to prevent, treat and cure health problems that may arise in a person's life. In a way, immediate, unhindered and complete access to health services helps crucially and decisively in dealing with any incidents that may have occurred.

However, access to health care and services varies by country, income, social class and education. Immigrants, for example, live in difficult conditions, do not have an insurance company that can cover them immediately and adequately. Even the unemployed who, due to non-coverage by an insurance company, do not have the same access to health services. This is the reason why social clinics have been organized in places, in which doctors provide non-profit and voluntary services to people who need immediate help, leaving prevention in a secondary role.

2.2 Defining the research questions

There is a long debate on public health inequalities both between the countries of the European Union and between different population groups in these countries. An essential factor for social inequalities in health is social determinants, which have an impact on life expectancy and general health status.[1] At the same time, these diseases are burdening health systems, as they need more resources. (9,13–15)

[1] Categories of diseases associated with deprivation, poverty, inequality and other social and economic factors of health, and subsequently can be classified as social are important non-communicable diseases, mainly cardiovascular

Throughout the European Union, social inequalities are identified concerning the health of the population. Socially vulnerable groups and people with low incomes have a lower life expectancy and a higher incidence of health problems. Vulnerable and socially excluded groups, such as immigrants or people belonging to ethnic minorities, people with disabilities, or the homeless, have a particularly low average level of health. Causes of poor health in these groups can be poor housing conditions, poor nutrition, health-related behaviours as well as discrimination, stigma, and barriers to accessing health and other services (16,17).

The COVID-19 pandemic is projected to lead to an economic downturn across Europe, exacerbating health inequalities. It will exacerbate pre-existing health inequalities with a greater impact on the lives of deprived people. Research suggests that black men and women are 4.2 and 4.3 times more likely to die from COVID-19-related deaths than white ones, respectively. Most deaths are among those with underlying diseases such as high blood pressure, diabetes, and heart or respiratory diseases from which socially and financially disadvantaged people are more likely to suffer. Diseases that can be largely preventable. At the same time, the spread of the virus highlighted the needs of migrants, asylum seekers, and Roma who already suffer discrimination and inequalities in health. This tendency also applies to risks of poor mental health, exacerbated by isolation, fear, and insecurity (18–25)

In the context of this deliverable, an overview of the phenomenon of socially significant diseases will be made in order to capture the current situation in the cross-border area of Greece - Bulgaria and to determine actions for their mitigation.

Due to all the above, the objectives of the study are:

1. Mapping of health social determinants in Greece and Bulgaria
2. Comparative analysis of social determinants for Greece and Bulgaria
3. Specialisation for the cross-border area of Greece - Bulgaria
4. Development of mitigation measures for social inequalities in health for the cross-border area.

2.3 Research Protocol

Part of the Contractor's concession with the Contracting Authority is the development of a research protocol. Below is the Research Protocol on which the present study was prepared and conducted.

2.3.1 Purpose and Objectives of the Research

The main purpose of the research is to capture an overall view of the phenomenon of socially significant diseases in order to capture the current situation in the cross-border

diseases (including cholesterol), chronic respiratory diseases and ocular diseases as well as psychiatric conditions such as depression, anxiety and neurological diseases / headache, dementia.

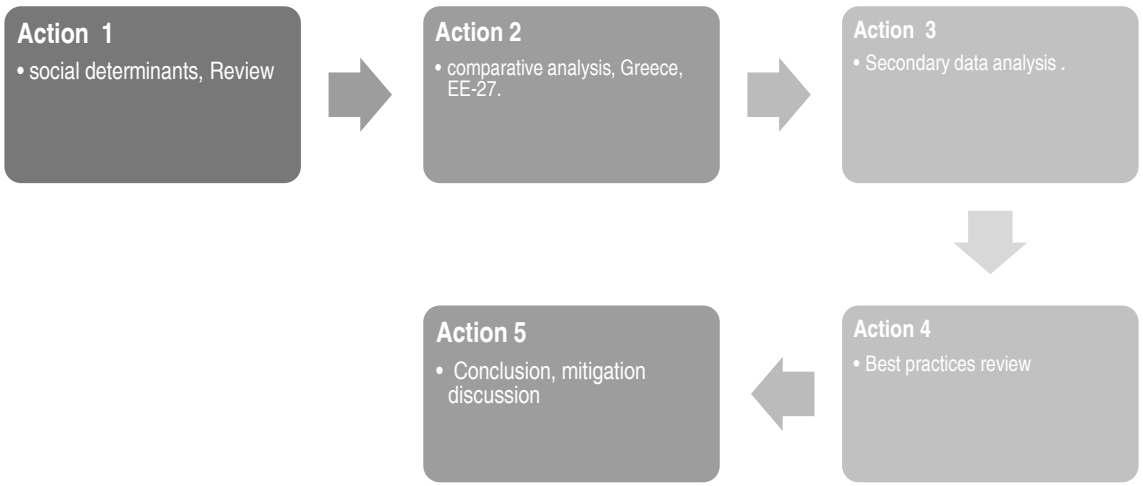
area of Greece - Bulgaria and to determine actions to mitigate them. Due to all the above, the objectives of the study are:

1. Mapping of health social identifiers in Greece and Bulgaria
2. Comparative analysis of social identifiers for Greece and Bulgaria
3. Specialisation for the cross-border area of Greece - Bulgaria
4. Development of measures to mitigate social inequalities in health for the cross-border area.

2.3.2 Methodology

The successful completion of the present study requires the following activities - methodological steps - to be carried out. The present study is an *ad hoc* case study developed in the following steps/activities as described in Figure 2.

Figure 2 Methodology



In particular, a literature review and a theoretical presentation of health social determinants and the diseases that are significantly affected by them will be initially conducted. The central idea is to understand the object of this study and its content and help the researchers fully develop the research questions and the research protocol. With the development of the protocol, researchers will conduct a *rapid literature review* with specific criteria to identify social determinants of health and access inequalities.

Researchers will collect data from secondary sources (e.g., Eurostat, National Statistical Services, United Nations, World Health Organization, World Bank) that describe and demonstrate the issues of social inequalities in health. Based on these data, specialisation will be made for the countries under consideration, Greece, and Bulgaria.

The specialisation will be based on a descriptive presentation and comparative analysis of socially significant diseases and their triggers (social characteristics, bad habits, etc.) in Greece and Bulgaria with the EU average.

Then the project team will specialise its research at the level of the Greek cross-border area. Having identified the socially significant diseases according to the international literature and having studied the position of Greece at the European level, the team will

proceed to the analysis of the available secondary sources to capture the situation in the Greek cross-border area. Indicative sources that will be used include scientific journals and presentations in conferences, articles, the internet, ELSTAT, studies, and data from the Ministry of Health.

In the end, the project team, in collaboration with the Contracting Authority, will study all previous relevant research and studies conducted within the project, to identify data useful for the purposes of this research. The composition of the results of the above procedures will include conclusions and proposals for policy measures. The policy measures will be defined in the direction of implementing actions for the mitigation of socially significant diseases in the cross-border area of Greece-Bulgaria.

The main methodological tools that the project team will use during the elaboration of the study-expertise are:

- The primary research (interviews with key stakeholders and individuals active in the study area).
- The literature research will include (a) the study of the international literature on health inequalities and socially important diseases, (b) the study of the National Health Strategy and actions in the field of health, (c) related studies and projects to health.
- Desk research, recording, and analysis.
- Benchmarking analysis to identify the best and most relevant in the case of projects/studies.

2.3.3 Rapid Literature Review Criteria

The databases described in Table 2 will be used to conduct the literature review. The literature review was conducted during June and July. The criteria used to identify the suitable articles are those presented in Table 1. The time period is spanning from 2014 to 2021.

Table 1 Literature review criteria

A/A	Λέξεις κλειδιά
1	Social determinants of health / determinants / health / socioeconomic status, geographical location,
2	Health inequalities / mental health/ inequalities /
3	Unemployment/ NEETs/ job insecurity
4	vulnerable populations / minorities
5	Covid, pandemics
6	Obesity / BMI / tobacco use / smoking / environmental pollution / degrade neighborhoods/ depression /
7	Education

2.3.4 Data Sources

Indicative sources of data that will be used for the above information:

Table 2 Data sources

A/A	Περιγραφή
1	Greece/Bulgarian Ministries of Health
2	Central Institution of the 3rd and 4th Health Districts and the corresponding institution in Bulgaria
3	Greek and Bulgarian Statistical Authority
4	European Statistical Authority (Eurostat)
5	World Health Organization, World Bank, United Nations
6	PubMed, Scholar, Cochrane Library, Embase
7	Bases of good practice in the field of health of the European Commission.
8	The Operational Programme of the Region of Eastern Macedonia and Thrace 2014-2020, the Operational Programme "Regions in Development 2014-2020" of Bulgaria, the Operational Programme INTERREG VA "Greece-Bulgaria 2014-2020", the 3rd Action Programme for health, the "The EU for health" Programme, the National Health Strategy and actions of the health sector in the NSRF 2014-2020

2.3.5 Gantt Chart

The study completion schedule is presented at Figure 3 below.

Figure 3 Gantt Chart

Στάδια	Ιούνιος	Ιούλιος
Beginning of data collection		
Literature review & analysis		
Processing and analysis of secondary data		
Writing results		

3 Comparative presentation and analysis of socially significant diseases and their triggers (social characteristics, bad habits, etc.) in Greece and Bulgaria in relation to the EU average.

3.1 Analysis of socially significant diseases

Non-contagious diseases, such as cardiovascular diseases, cancer, chronic respiratory diseases and diabetes, are major causes of disability, ill health, retirement for health reasons and premature death in the EU and have significant social and economic costs. According to the OECD, around 550,000 people of working age die prematurely from non-contagious diseases in the EU each year. These diseases are the leading cause of death in the EU and therefore account for the largest share of healthcare costs. In particular, they cost the EU economies 115 billion euros or 0.8% of GDP per year.

Table 3 presents the leading causes of death from non-contagious diseases in the EU, Greece and Bulgaria. Higher death rates are due to cancer, cardiovascular and respiratory diseases.

Table 3 Number of deaths per cause, Greece, Bulgaria, EU, 2018-2019

		2018	2019
All causes of death (A00-Y89) excluding S00-T98	EU-27	4.321.930	4.321.930
	BG	107.292	106.625
	GR	120.363	120.363
Certain infectious and parasitic diseases (A00-B99)	EU-27	67.381	67.381
	BG	603	442
	GR	4.054	4.054
Malignant neoplasms (C00-C97)	EU-27	1.121.400	1.121.400
	BG	17.369	18.149
	GR	29.732	29.732
Non-malignant neoplasms (benign and uncertain)	EU-27	36.564	36.564
	BG	95	117
	GR	599	599
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	EU-27	:	:
	BG	145	146
	GR	263	:
Endocrine, nutritional and metabolic diseases (E00-E90)	EU-27	132.301	132.301
	BG	1.708	1.563
	GR	2.509	2.509
Mental and behavioural disorders (F00-F99)	EU-27	:	:
	BG	85	92
	GR	1.940	:
Diseases of the circulatory system (I00-I99)	EU-27	:	:
	BG	70.692	69.764
	GR	44.590	:

		2018	2019
Diseases of the respiratory system (J00-J99)	EU-27	:	:
	BG	4.883	4.205
	GR	12.668	:
Diseases of the digestive system (K00-K93)	EU-27	:	:
	BG	3.960	4.128
	GR	3.544	:
Diseases of the skin and subcutaneous tissue (L00-L99)	EU-27	:	:
	BG	47	46
	GR	54	:
Diseases of the musculoskeletal system and connective tissue (M00-M99)	EU-27	:	:
	BG	35	38
	GR	352	:
Diseases of the genitourinary system (N00-N99)	EU-27	:	:
	BG	1.538	1.827
	GR	3.544	:
Pregnancy, childbirth and the puerperium (O00-O99)	EU-27	:	:
	BG	4	0
	GR	4	:
Certain conditions originating in the perinatal period (P00-P96)	EU-27	:	:
	BG	173	155
	GR	173	:
Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)	EU-27	:	:
	BG	98	111
	GR	184	:
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)	EU-27	:	:
	BG	2.348	2.243
	GR	7.910	:
Transport accidents (V01-V99, Y85)	EU-27	:	:
	BG	574	579
	GR	918	:
Falls	EU-27	:	:
	BG	406	459
	GR	918	:
Intentional self-harm	EU-27	:	:
	BG	641	574
	GR	567	:
Accidental poisoning by and exposure to noxious substances	EU-27	10.190	10.190
	BG	75	66
	GR	268	:
Assault	EU-27	4.262	4.262
	BG	83	71
	GR	111	:

Note. Empty cells in the table correspond to uninformed data from the respective Statistical Services of the countries
Source Eurostat, 2021 Causes of death - deaths by country of residence and occurrence [hlth_cd_aro]

Mortality does not give a complete picture of the disease severity in different populations. So, different indicators have been developed to help better assess the overall burden of the disease through the use of the Disability-Adjusted Life Year (DALY), a time-based measure that combines years of premature mortality (PYLLs) and years of life loss (YLLs) due to life time in situations less than full health, or years of healthy life lost due to disability (YLDs) (26). A DALY represents the loss of the equivalent of one year of full health. Using DALYs, the severity of diseases that cause premature death but little disability (such as drowning or measles) can be compared to that of diseases that do not cause death but cause disability (such as cataracts that cause blindness (27).

Thus, a DALY represents the loss of the equivalent of one year of full health. DALYs for a disease or health condition is the sum of the years of life lost (YLLs) due to premature mortality and the years lived with a disability due to widespread cases of the disease or health status in a population (28).

From 2010 to 2019 there was a reduction in risk exposure to a number of factors that are closely linked to social and economic development, including household air pollution, dirty water, inadequate sewerage system, and failure in child development. Global reductions were also recorded for smoking and lead exposure.

The largest increases in exposure were related to particulate matter (PM1, PM10): drug use, high plasma glucose fasting, and high body mass index. In 2019, the leading Level 2 risk factor worldwide for attributed deaths was high systolic blood pressure, which accounted for 10.8 million deaths (19.2% of all deaths in 2019), followed by smoking, which accounted for 8.71 million (15.4% of all deaths in 2019). The main level 2 risk factor for DALYs attributed worldwide in 2019 was child and maternal malnutrition, which greatly affects the health of younger age groups and accounted for 295 million (253–350) DALYs (11.6%) of all global DALY that year. The weight of the risk factor varies significantly in 2019 between age groups and locations. Among children aged 0-9 years, the three main detailed risk factors for attributable DALY are related to malnutrition. Iron deficiency was the main risk factor for people aged 10–24 years, alcohol use for people aged 25–49 years, and high systolic blood pressure for people aged 50–74 years and 75 years and older (29).

Table 4 below presents the DALYs for Greece, Bulgaria, and the European Union. For Bulgaria, the main diseases that affect the quality of life of the inhabitants are in order of importance, cardiovascular diseases, neoplasms, diabetes, and musculoskeletal problems. For the European Union as a whole are neoplasms, cardiovascular diseases, musculoskeletal problems, and neurological disorders. Finally for Greece are cardiovascular diseases, neoplasms, musculoskeletal problems, and mental disorders.

Overall, the main causes seem to be cardiovascular problems and tumors. However, it is worth noting that in Greece, the fourth major cause of reduced patient quality of life is mental illness. This deserves special mention on one hand, because the project aims to develop a supportive environment for all patients and especially for the mentally ill, where the supportive environment is of paramount importance. On the other hand, the mentally ill in Greece have lower access to mental health services (30). This situation has been

exacerbated since 2013 due to health cuts, with a dramatic increase in mental illness and suicide (31), and does not appear to have improved even years later.

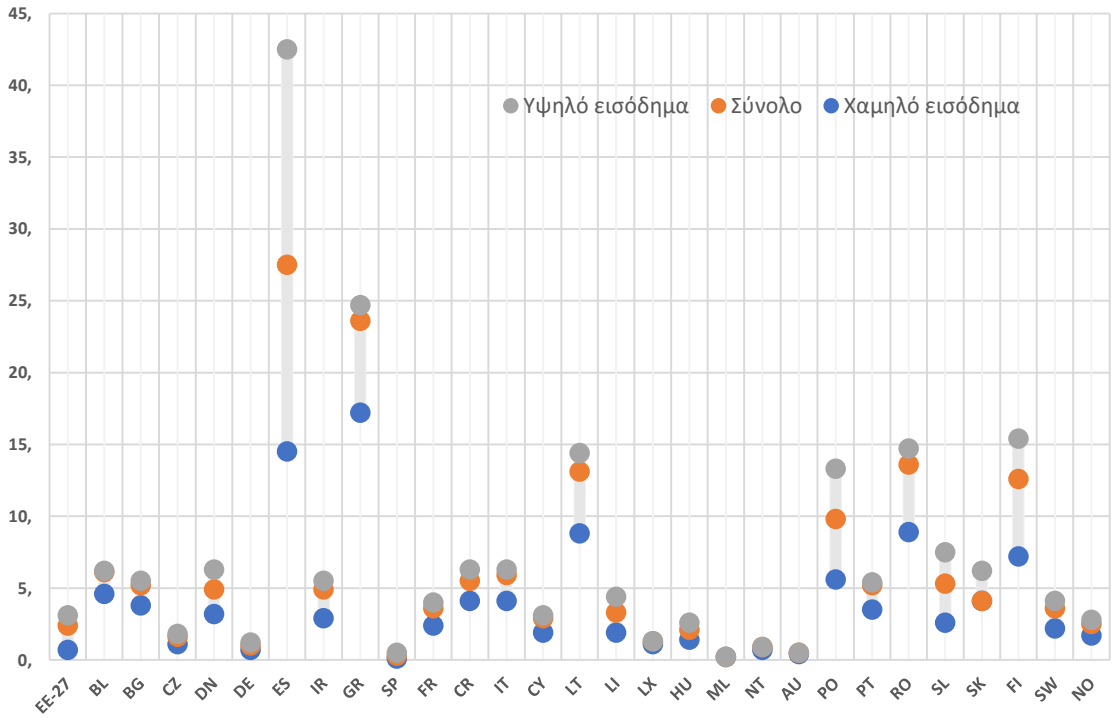
Table 4 Percentage DALYs Greece, Bulgaria, EE, 2019

Bulgaria	DALYs	EU	DALYs	Greece	DALYs
Cardiovascular diseases	0,4105	Neoplasms	0,1970	Cardiovascular diseases	0,2297
Neoplasms	0,1620	Cardiovascular diseases	0,1890	Neoplasms	0,1955
Diabetes and kidney diseases	0,0489	Musculoskeletal disorders	0,0920	Musculoskeletal disorders	0,0893
Musculoskeletal disorders	0,0479	Neurological disorders	0,0689	Mental disorders	0,0764
Unintentional injuries	0,0452	Mental disorders	0,0665	Neurological disorders	0,0661
Digestive diseases	0,0427	Other non-communicable diseases	0,0591	Other non-communicable diseases	0,0561
Neurological disorders	0,0410	Sense organ diseases	0,0513	Diabetes and kidney diseases	0,0504
Other non-communicable diseases	0,0338	Diabetes and kidney diseases	0,0487	Chronic respiratory diseases	0,0448
Mental disorders	0,0335	Chronic respiratory diseases	0,0432	Unintentional injuries	0,0394
Chronic respiratory diseases	0,0257	Digestive diseases	0,0404	Digestive diseases	0,0260
Sense organ diseases	0,0233	Unintentional injuries	0,0274	Sense organ diseases	0,0252
Transport injuries	0,0182	Skin and subcutaneous diseases	0,0223	Skin and subcutaneous diseases	0,0208
Self-harm and interpersonal violence	0,0148	Substance use disorders	0,0210	Transport injuries	0,0203
Skin and subcutaneous diseases	0,0093	Self-harm and interpersonal violence	0,0179	Substance use disorders	0,0122
Substance use disorders	0,0085	Transport injuries	0,0149	Self-harm and interpersonal violence	0,0082

Source Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available from http://ghdx.healthdata.org/gbd-results-tool.

This situation has not improved much. The percentages for 2020 are presented in Figure 4, showing that for 2020, Estonia and Greece have the highest rates of unmet health needs compared to the rest of Europe. These rates will be probably altered in the future by the covid-19 pandemic because several Eurostat surveys have not been carried out and this may have an impact on the secondary data presented.

Figure 4 Unmet health needs, EU-27, 2020



Note The data refers to unmet needs for medical examination or treatment due to cost, distance or waiting time. When comparing data between countries, care is required as there are some differences in the research tool used.
Source Eurostat, 2021, Self-reported unmet needs for medical examination by sex, age, main reason declared and income quintile [HLTH_SILC_08__custom_1103873]

3.2 Analysis of determinants

Socially significant diseases seem to be very much related to social factors (9,15,32). The WHO has identified the social determinants of health as: (i) stress, (ii) social exclusion, (iii) unemployment, (iv) education, (v) nutrition, (vi) home environment, (vii) working conditions, (viii) access to health services, (ix) income. (9).

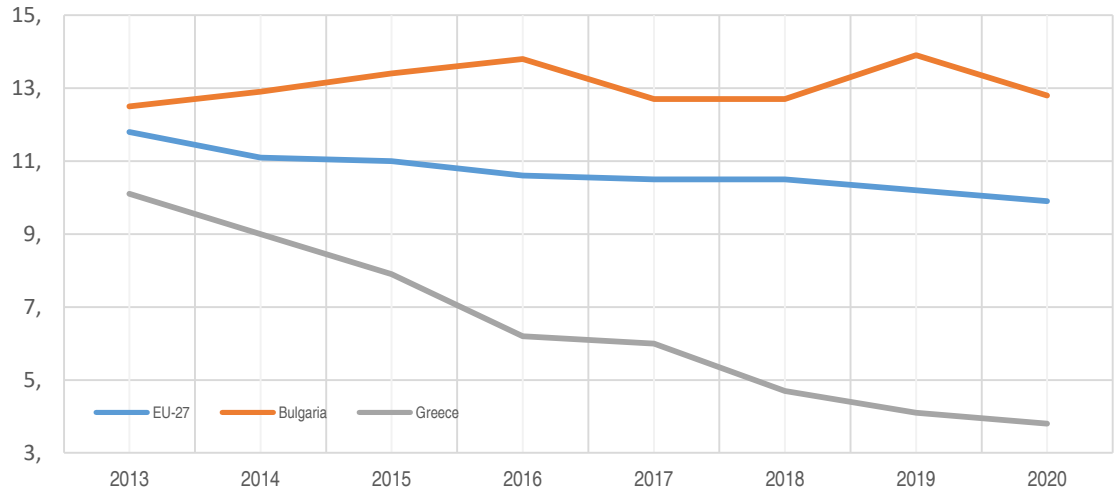
Several studies have shown that these determinants also contribute to health inequalities both internationally, between developed and less developed countries and within countries' borders (33). Socio-economic factors have a significant impact on health, for example lead ingestion in deprived neighbourhoods is associated with poor cognitive function and developmental delays in children (34). Causes of asthma and allergies are related to low air quality. Socioeconomic factors can affect sleep, which can be affected by work, home and neighbourhood environments and can have short-term health effects (35).

In the following subchapters, some basic statistics for the countries under consideration are presented in relation to the social determinants of health, in order to better identify the causes and factors that affect the health of citizens in Greece and Bulgaria.

3.2.1 Education

The dropout rates are higher in Bulgaria compared to Greece and the EU. In 2020, the percentage of early leavers from education in Bulgaria was 12.8%, in Greece 9.9%, while in the EU it was 3.8%. Bibliographically there appears to be an association of people with low levels of education with lower levels of health (36,37). It also appears that countries with stronger public health systems (e.g., Scandinavian) have smaller disparities in health inequalities based on educational level, comparing to countries that do not (36).

Figure 5 Percentage of dropping out school, 2013-2020

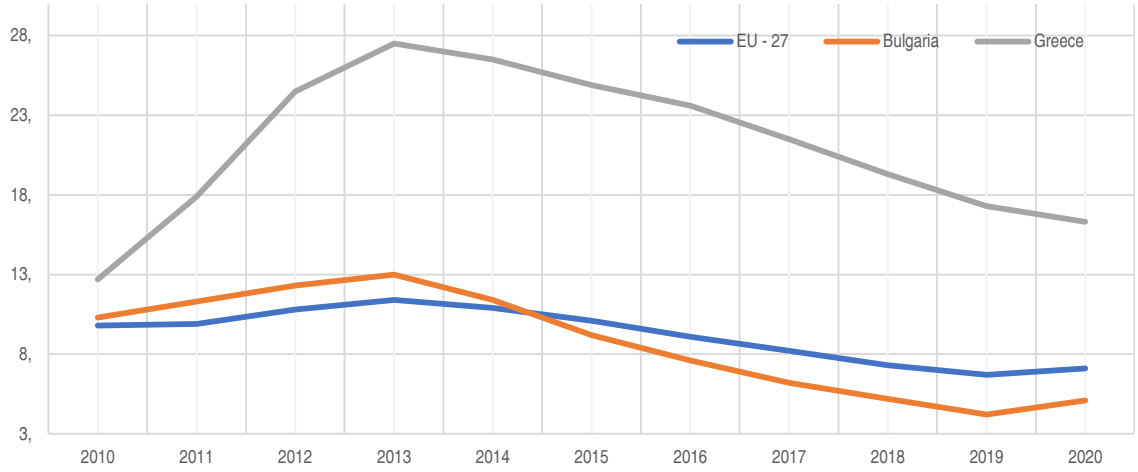


Source Eurostat, 2021,Early leavers from education and training by sex [SDG_04_10]

3.2.2 Unemployment & Job Insecurity

Unemployment rates in Greece are much higher than in the EU and Bulgaria in the years under review. Although unemployment in Greece has decreased compared to 2013, it remains at high levels reaching 16.3%. On the contrary, for 2020, unemployment rates in the EU are 7.1% and in Bulgaria 5.1%.

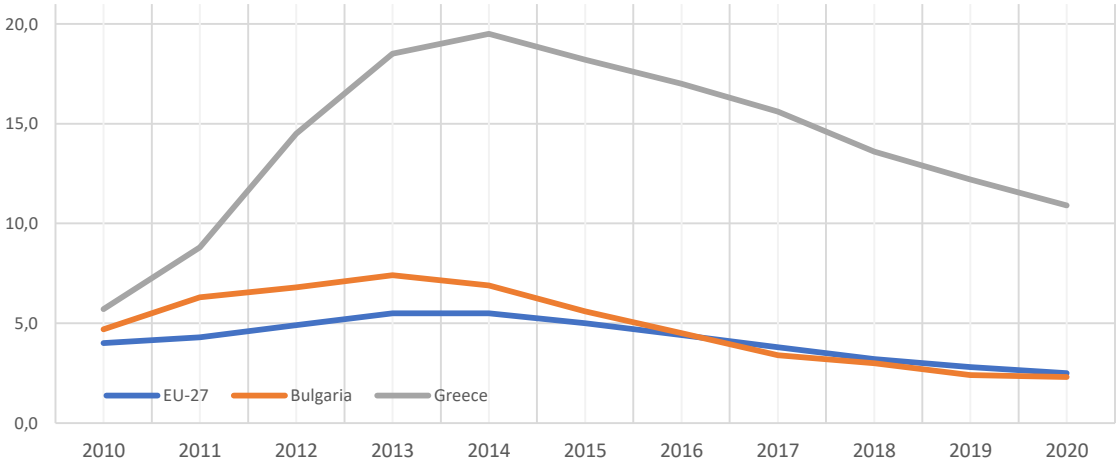
Figure 6 Unemployment rates, 2010-2020



Source Eurostat, 2021, Unemployment rate by age [TEPSR_WC170]

Unemployment is linked to reduced income; therefore a country's weak public health system can worsen the health status of the unemployed and negatively affect them. Apart from physical health, problems are also found in mental health, where unemployment is associated with cases of depression and anxiety. In several cases unemployment is also associated with suicides (13,14,16,38,39).

Figure 7 Long-term unemployment, 2010-2020



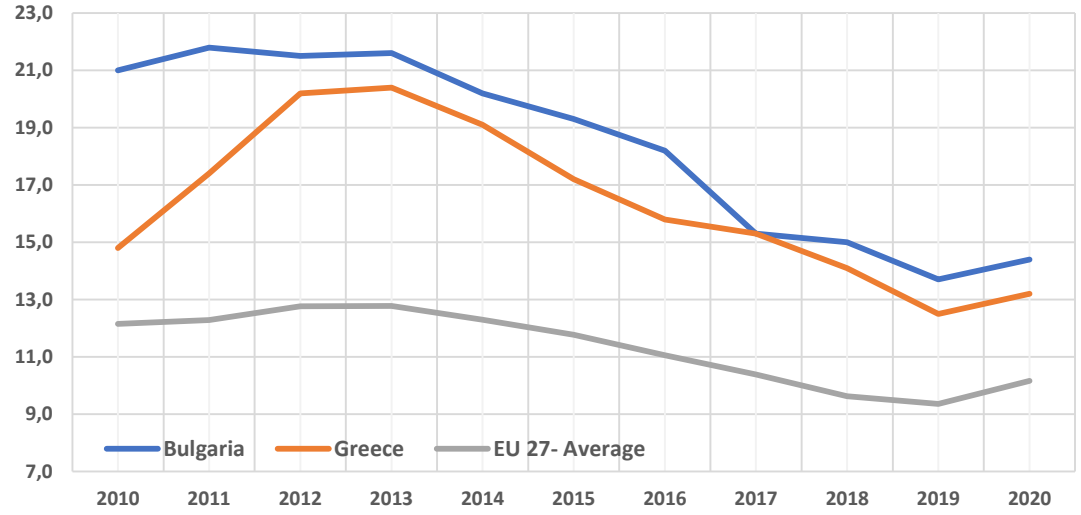
Source Eurostat, 202, Long-term unemployment rate by sex [SDG_08_40__custom_1138788]

Another group that needs attention because it is facing high health inequalities, and is at high risk of developing deteriorating health is the NEETs. Unemployment and non-participation in education are associated with aggravating consequences for their health, mental health, increased incidence of depression, suicidal episodes, lower long-term health levels, and cancer(40–46).

The above can be linked to unemployment and the adoption of unhealthy behaviours, such as smoking, alcohol consumption and bad eating habits, and not participating in sports activities (47,48). These have been linked to various cancers such as breast, lung, and colon cancers. It appears that NEETs are at a higher risk of developing such cancers (48–50) ε mainly due to their socioeconomic status (43,46), which contributes to increasing health inequalities. Figure

8 shows the percentage of NEETs in Greece and Bulgaria. Both countries appear to have declining NEETs from 2010 onwards. However, these percentages remain high and relatively higher than those of the EU. The percentages of NEETs in Greece were 13.2% for 2020, in Bulgaria 14.4%, while in the EU-27 10.6%.

Figure 8 NEETs percentage, 2010-2020



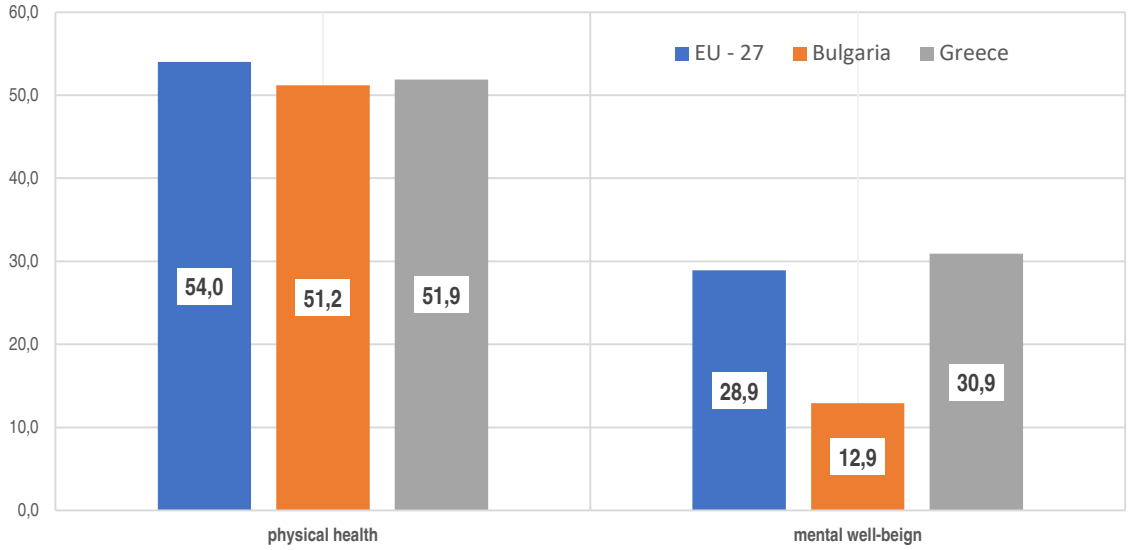
Source. Eurostat (2021), [TIPSLM90]

3.2.3 Working Conditions

Many scholars found correlations and causations between working conditions and social determinants of health. Occasional work, dangerous tasks, child labour, poor working conditions, work intensity, and stress, all contribute negatively to one's health (17,51).

Figure 9 shows the percentage of individuals who stated that they are at risk of exposure to factors dangerous to their physical and mental health. Rates in the EU are relatively higher than in the other two countries, but in Greece 30% of survey participants appear to be exposed, according to them, to risk factors for their mental health, while 51.9% for their physical health. The figures are similar for Bulgaria in the case of physical health, at 51.2%. On the contrary, for mental health, only 12.9% answered that they are exposed to dangerous factors.

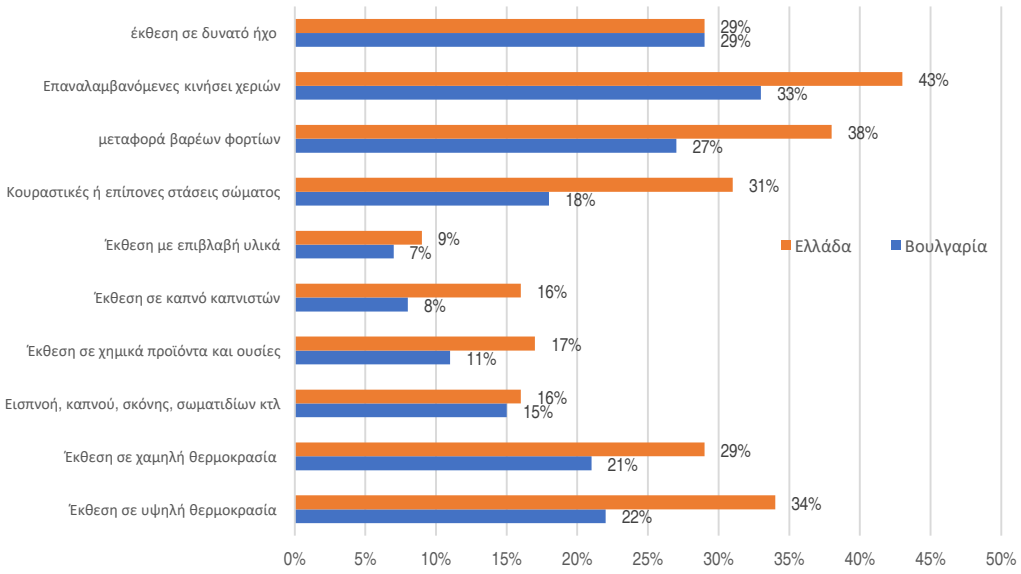
Figure 9 Risk of exposure to risk factors for physical or mental health, 2020



Source Eurostat, 2021 Persons reporting exposure to risk factors that can adversely affect physical health by sex, age and NACE Rev. 2 activity [HSW_EXP6B__custom_1138956] & Persons reporting exposure to risk factors that can adversely affect mental well-being by sex, age and NACE Rev. 2 activity [HSW_EXP5B$DEFAULTVIEW]

The Eurofound survey on working conditions showed the results presented in Figure 10. Working conditions are relatively worse in Greece than in Bulgaria, as higher response rates are related to exposure to harmful factors for health. For example, as repetitive hand movements (43% Greece, 33% Bulgaria), exposure to high temperatures (34% Greece, 22% Bulgaria), exposure to chemicals and substances (17% Greece, 11% Bulgaria).

Figure 10 Working conditions, Greece, Bulgaria (ad hoc, 2017)



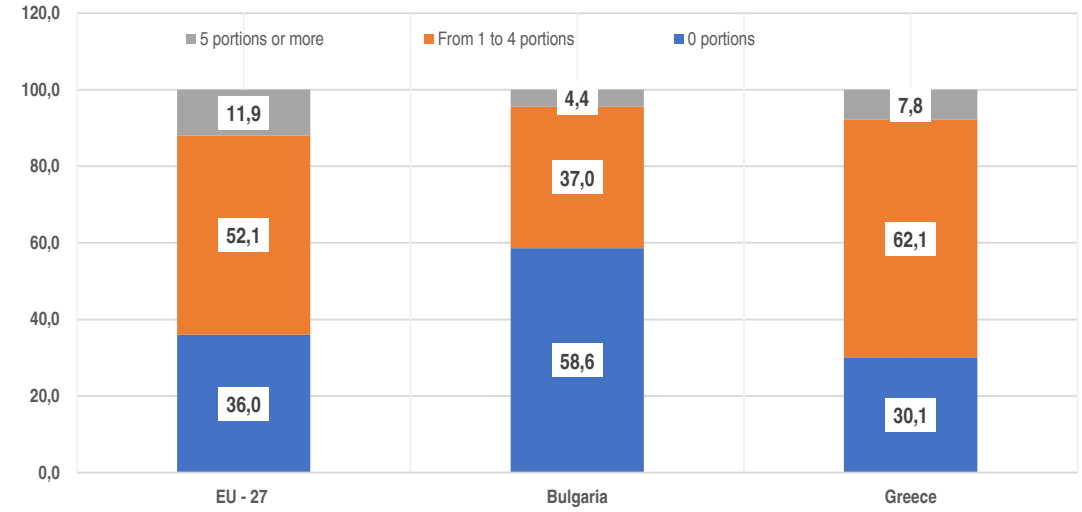
Source Eurofound, 2020, European Working Conditions Survey (EWCS)

3.2.4 Nutrition

Nutrition issues are also very important for maintaining the good health of the population. In Greece it seems that the majority of the population (62.1) consumes from 1 to 4 servings of

fruit and vegetables on a daily basis, followed by the EU with 52.1% and finally Bulgaria with 37%. Reduced consumption of fruit and vegetables can be combined with a number of health problems such as weight gain.

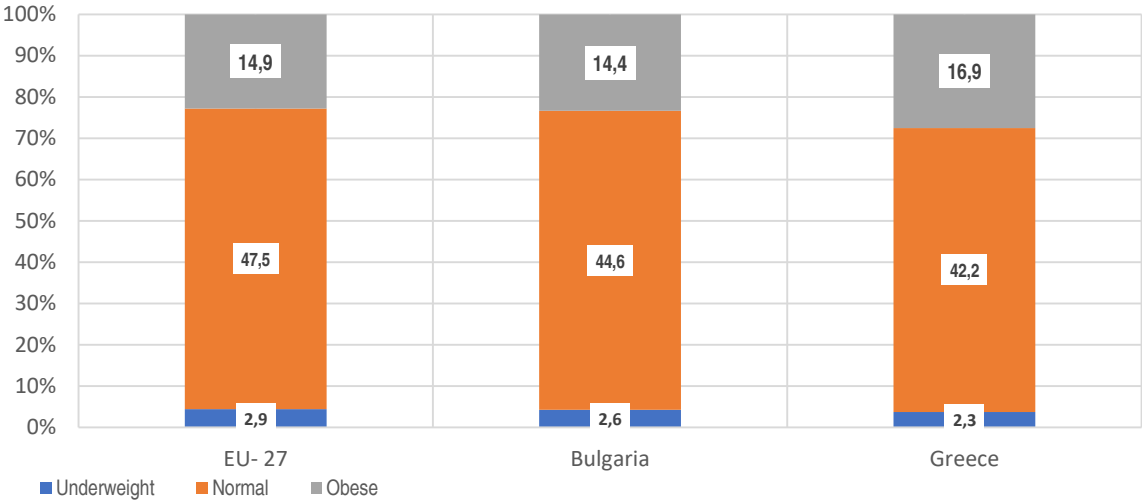
Figure 11 Consumption of fruit and vegetables, (ad hoc, 2014)



Source Eurostat, 2021,Daily consumption of fruit and vegetables by sex, age and educational attainment level [HLTH_EHIS_FV3E$DV_462]

Obesity rates are relatively higher in Greece, with 16.9% of the population being obese, compared to 14.9% in the EU and 14.4% in Bulgaria. This percentage is relatively high for Greece and is also associated with weaker health.

Figure 12 obesity rates, (ad hoc, 2014)



Source Eurostat, 2021, Body mass index (BMI) by sex, age and income quintile [HLTH_EHIS_BM1I$DV_306]

3.2.5 Housing, basic amenities and environment

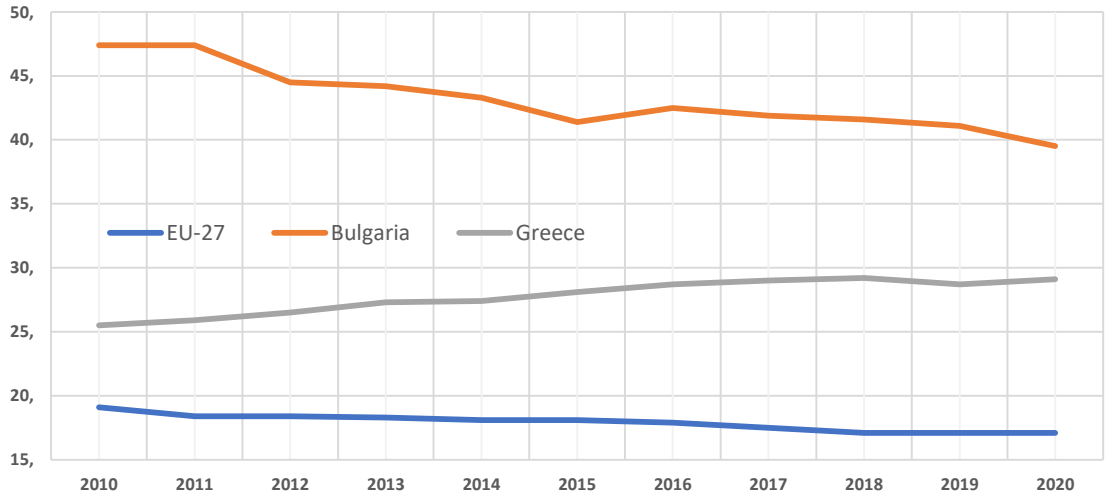
Many factors affect health depending on the socio-economic level of individuals. In particular, the literature supports the hypothesis that socioeconomic status is associated with the wider living environment of individuals and therefore with their health, as they can be exposed to hazardous, waste, toxins, poorly ventilated areas, in an environment with intense noise

pollution, densely populated areas, low-level educational facilities, etc. All of these seem to have an impact on the health of lower-income people or the most vulnerable social groups. (52,53)

A typical example of this is the COVID-19 pandemic. Various studies show that people living in poor, densely populated neighborhoods, who do not have adequate ventilation in their homes, who have low incomes and are forced to stay with many people in one house, have limited health care and reduced ability to comply with mitigation pandemics strategies (25)

The percentage of overcrowding in houses is much higher in Bulgaria compared to Greece and the EU-27. However, while Bulgaria is slowly reducing the overcrowding rate, Greece is showing a relative increase. This is due to the reduced income of the people after the austerity measures and the increase of the migration flows, which forces too many people to live together in a limited space.

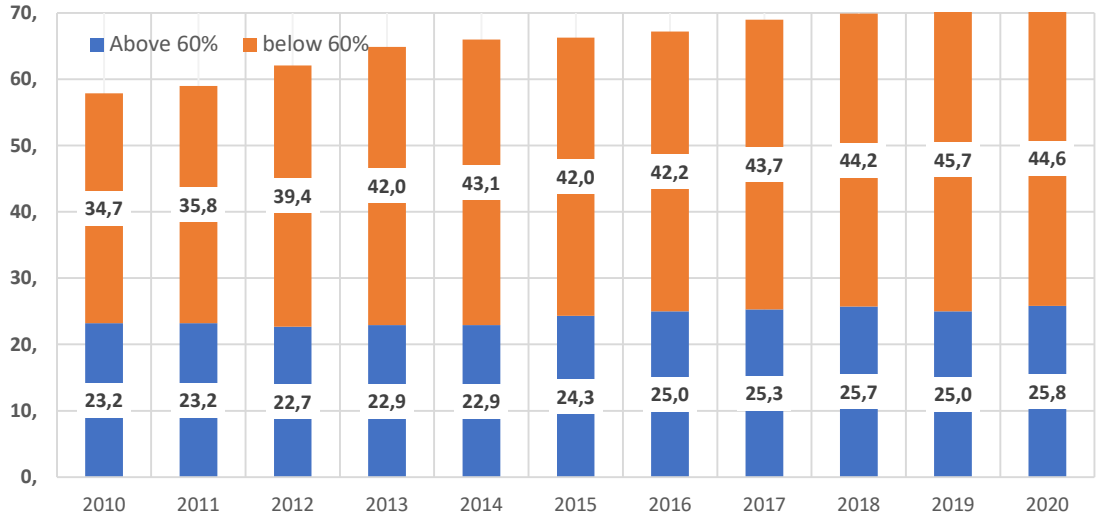
Figure 13 Percentage of overcrowding in homes, 2010-2020



Source Eurostat (2021), Overcrowding rate by poverty status - EU-SILC survey [TESSI172]

The above is also confirmed by Figure 13, where people in Greece who are below 60% of the poverty line live in houses with heavy crowds. In particular, 44.6% of people below 60% of the poverty line live overcrowded in homes.

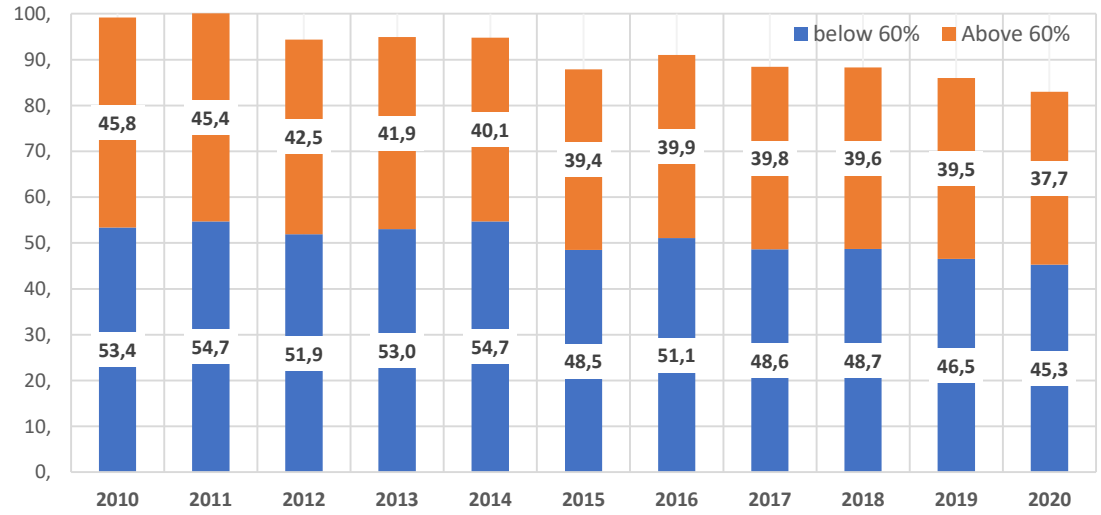
Figure 14 Overcrowding rate by poverty status, Greece, 2010-2020



Source Eurostat (2021), Overcrowding rate by poverty status - EU-SILC survey [TESSI172]

This percentage is slightly higher in the case of Bulgaria where 45.3% live in multi-person homes.

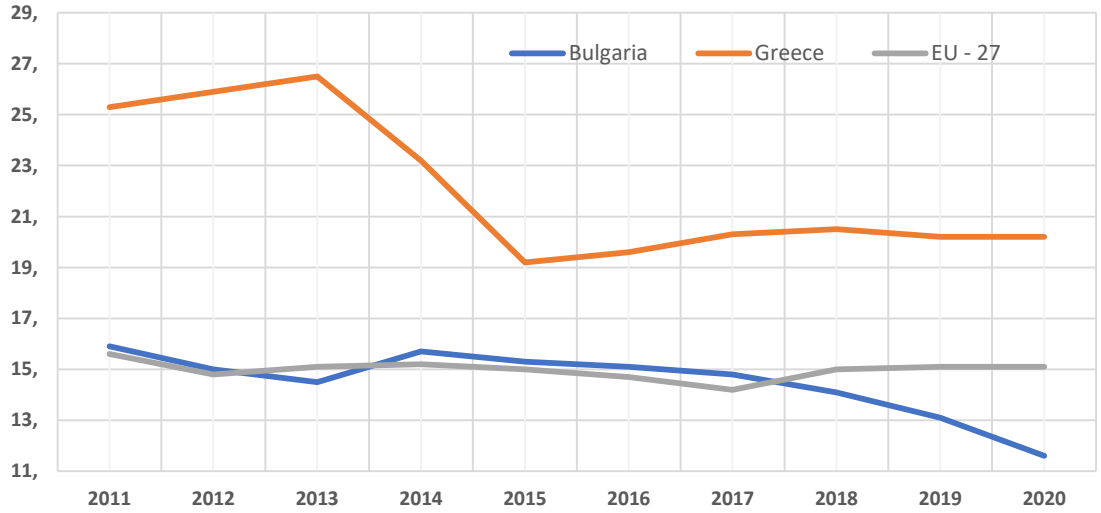
Figure 15 Overcrowding rate by poverty status, Bulgaria, 2010-2020



Source Eurostat (2021), Overcrowding rate by poverty status - EU-SILC survey [TESSI172]

In Greece, 20% of the population reported living in neighborhoods with pollution, dirt, and other environmental problems, while the EU-27 average is 15%. Correspondingly, Bulgaria has only 11% of the population living in such neighborhoods.

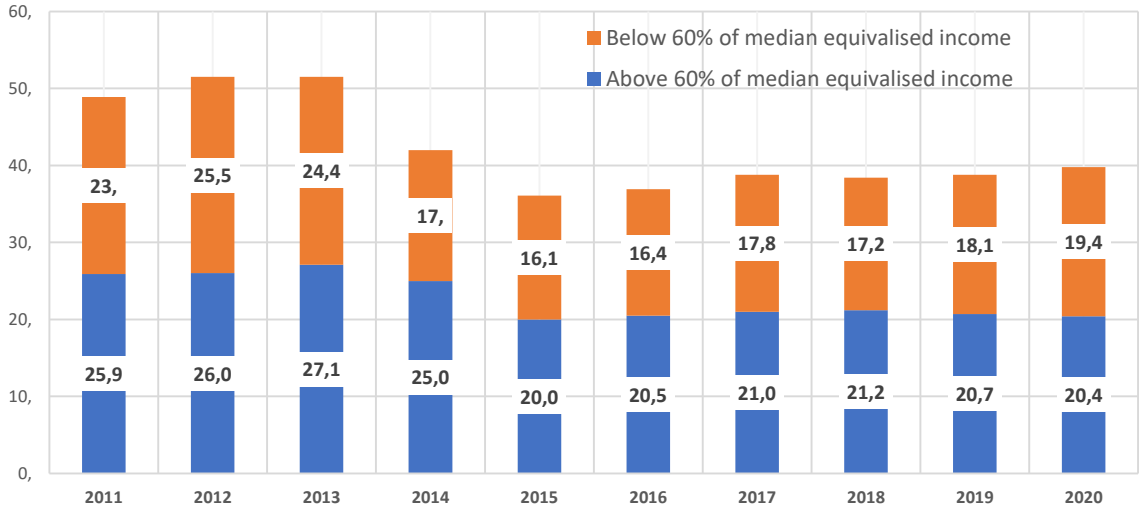
Figure 16 Pollution, grime or other environmental problems, 2010-2020



Source Eurostat (2021), Pollution, grime or other environmental problems - EU-SILC survey [ILC_MDDW02__custom_1130590]

In the case of both Greece and Bulgaria, people with lower incomes live in neighborhoods with pollution, dirt, and other environmental problems.

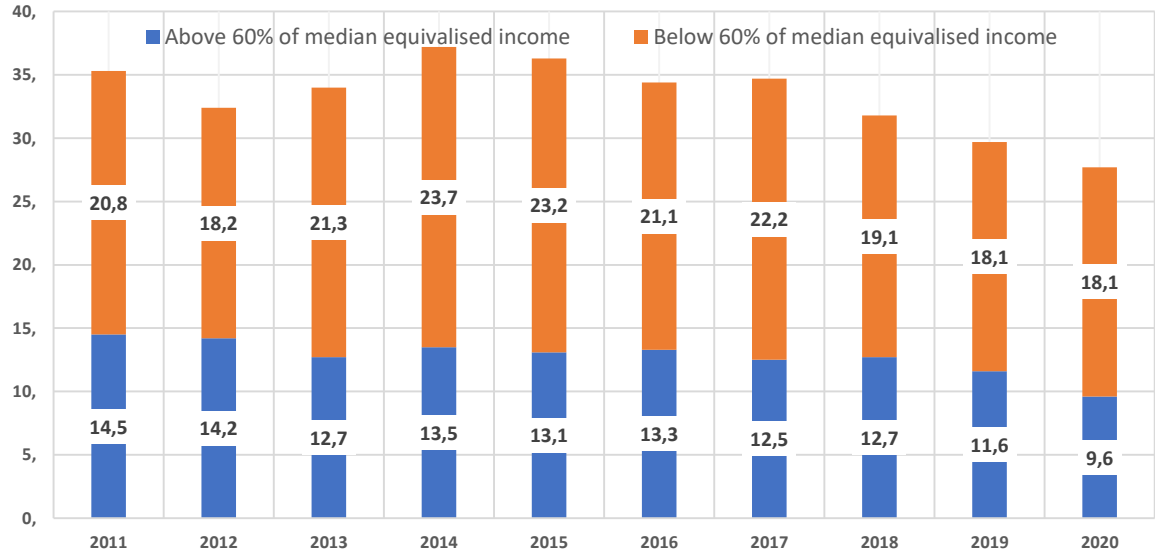
Figure 17 Pollution, grime or other environmental problems, Greece, 2010-2020



Source Eurostat (2021), Pollution, grime or other environmental problems - EU-SILC survey [ILC_MDDW02__custom_1130590]

It is obvious that low-income people are more exposed to health risks as they are forced to live in environments that are not suitable and their overall health deteriorates.

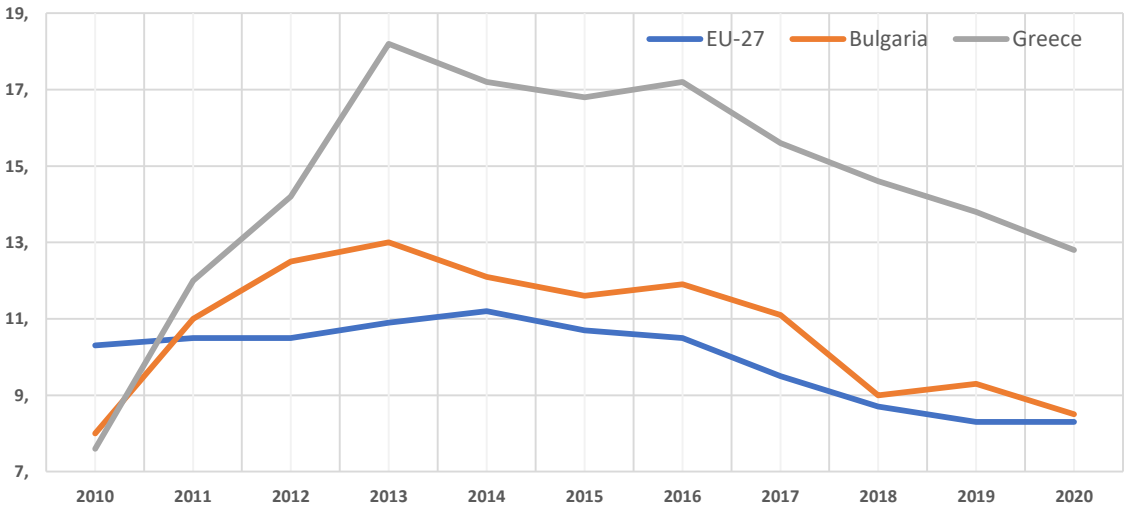
Figure 18 Pollution, grime or other environmental problems, Bulgaria, 2010-2020



Source Eurostat (2021), Pollution, grime or other environmental problems - EU-SILC survey ILC_MDDW02__custom_1130590]

Figure 19 shows the percentage of people living in households with very low employment (adult household members were employed only 20% of their time or less in the previous year). These percentages for Greece reach 12.8% in 2020, while for Bulgaria it is 8.5% and for the EU 8.3%. It seems that in Greece, these percentages are much higher in both cases.

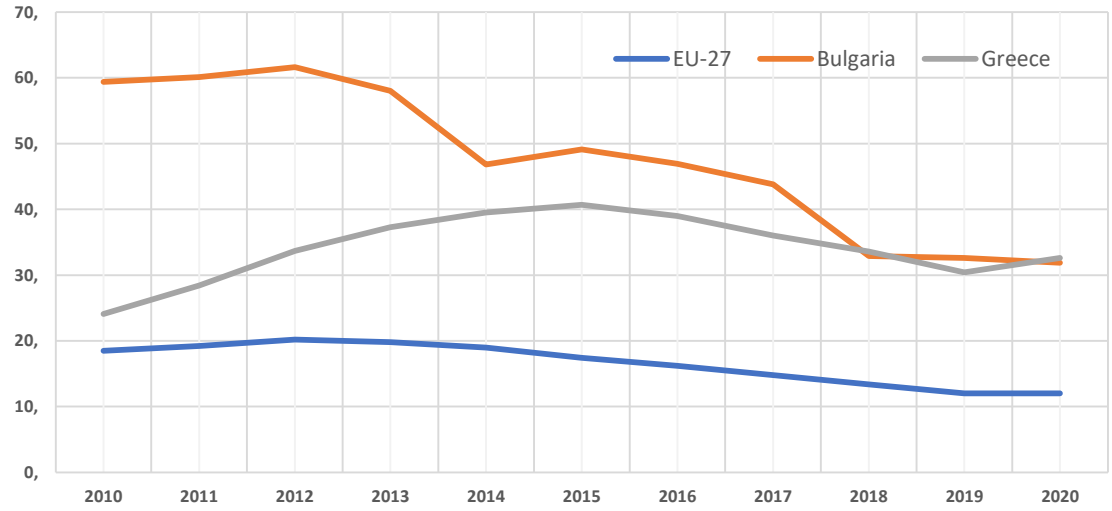
Figure 19 People living in households with very low work intensity, 2010-2020



Source Eurostat (2021), People living in households with very low work intensity [T2020_51]

Another social determinant of population health is material deprivation. The highest rates of material deprivation are presented until 2018 in Bulgaria, which managed to reduce from 60% in 2010 to 32.6% in 2020. Respectively, Greece shows an increase in material deprivation in recent years, with the main cause of deprivation in economic crisis and austerity measures. In any case, both countries are well above the EU-27 average, which has only 12% of the population experiencing material deprivation problems.

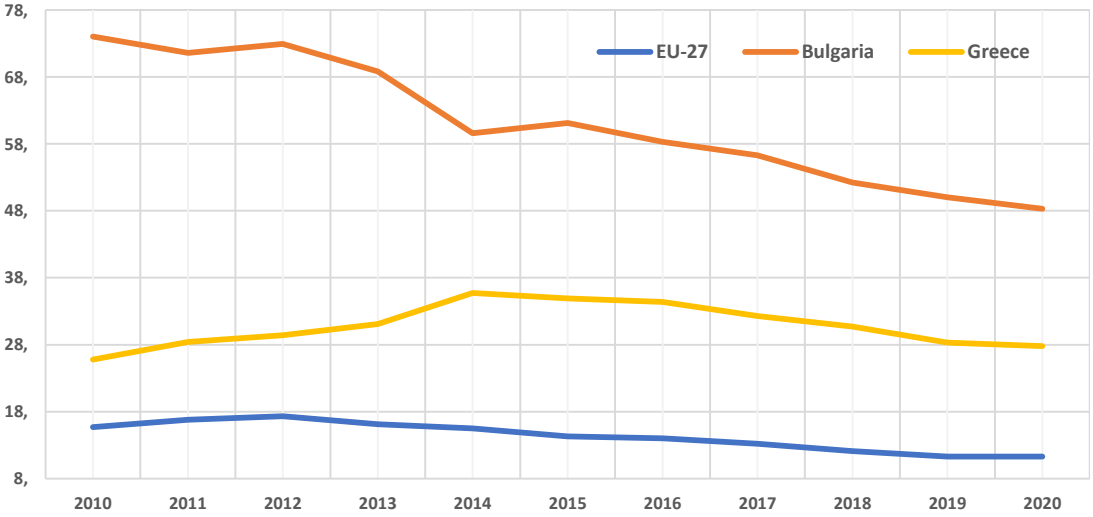
Figure 20 Material deprivation, 2010-2020



Source Eurostat (2021), Material Deprivation rate by age group - EU-SILC survey [TESSI082]

The issue of material deprivation of the elderly is extremely important. As shown in Figure 21, Bulgaria has the highest rates of material deprivation in people over 65, followed by Greece with 27.8% of the population reporting deprivation. It is followed by the EU-27 with 11.3% of the population in material deprivation.

Figure 21 Material deprivation in people over 65 years



Source Eurostat (2021), Material Deprivation rate by age group - EU-SILC survey [TESSI082]

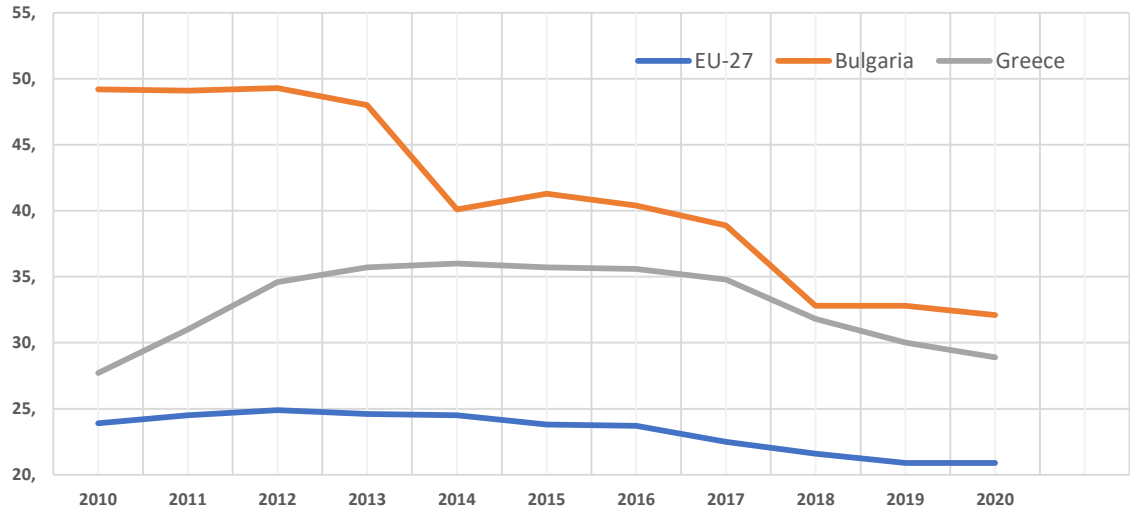
3.2.6 Social exclusion and discrimination

Social exclusion and discrimination also contribute in health inequalities. Social exclusion is very much related to income and poverty (54). Therefore, the issue of exclusion is multilevel and can very hardly be covered within this study. In any case, aRoPE, which is shown in Figure 22, was set as an indicator of social exclusion.

In particular, the percentages of people at risk of poverty in Bulgaria for 2020 are 32.1%, for Greece 28.9% and for the EU-27 20.9%. Although the rates in Bulgaria are higher, in all three cases the rates are very high. This can create problems in accessing health and be associated with worse health for the population.

The elderly and children living in poverty, single mothers, the unemployed and migrants represent around 98% of disadvantaged people in the EU. Low incomes have a direct impact on poverty, and the indirect effects of social exclusion on certain groups. However, there are other factors associated with exclusion and poor health, such as social behaviour determined by alcohol or drug use and mental disorders. These risk factors could potentially exacerbate the link between income inequality and health outcomes. Alcoholics and drug addicts are another vulnerable social group. Despite the extent of alcoholism, there is an abysmal lack of information about this population. The use of alcohol and other substances is associated with poor social behaviour, low employability, and an overall burden on the health of these populations. Due to the chronic social problems that these individuals present, they are at a higher risk of social exclusion (55)

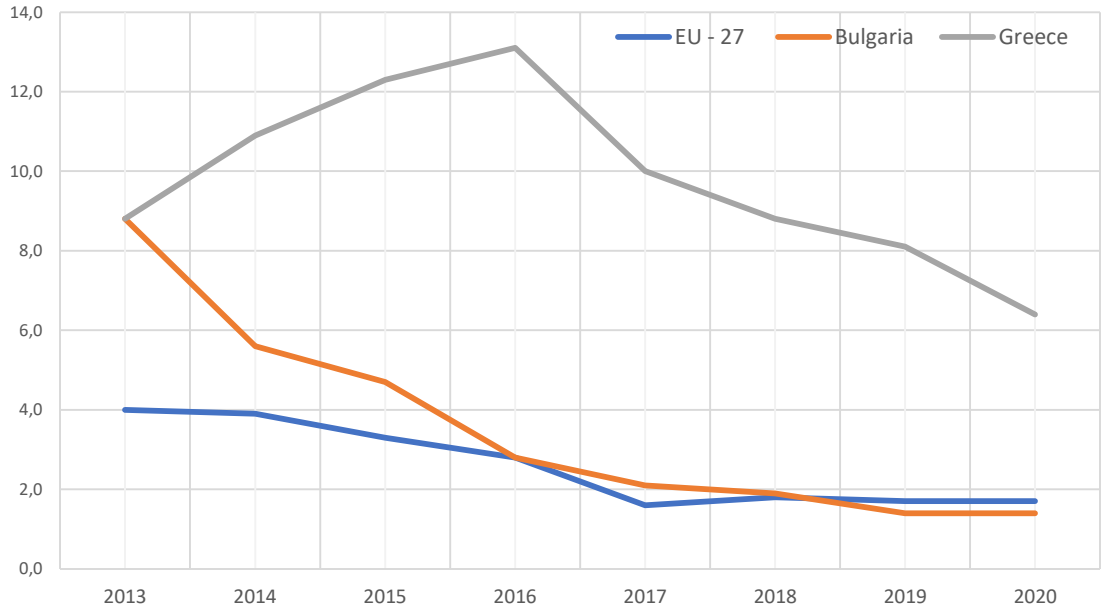
Figure 22 People at risk of poverty or social exclusion 2010-2020



Source Eurostat (2021) People at risk of poverty or social exclusion [T2020_50]

Finally, regarding unmet health needs, Figure 23 describes the percentages of the population who responded that their needs were not met because the health structure was too far away, too expensive, or the queue was too long. In Greece, the percentage was 6.4%, in Bulgaria 1.4% and in the EU-27 1.7%. These rates are controversial as in 2020 these countries had restrictions due to the pandemic and the unmet health needs seem to be much higher. These percentages are questionable as many studies have not been conducted due to the pandemic and these figures are likely to change for 2020 in the next period. In any case, Greece had very high rates of unsatisfied health needs, especially during the period of economic crisis (13.1% in 2016), although the percentages were reduced to 6.4%. Definitely, the rate remains higher than in Bulgaria and in the EU-27. One reason is the reduce funding in the health system due to austerity measures and the rapid privatisation of some health services.

Figure 23 Self-reported unmet needs for medical examination, 2013-2020



Source Self-reported unmet needs for medical examination by sex, age, main reason declared and educational attainment level [HLTH_SILC_14__custom_1159397]

3.2.7 Structural factors

There is a close relationship between the socio-political context and what is called the structural determinant of health inequalities. The structural determinants are those that create or enhance the stratification in society and that determine the individual socio-economic position. In all cases, the structural determinants are presented in a specific political and historical context. It is not possible to analyse the impact of structural determinants on health inequalities or to assess policy and intervention options if aspects of context are not included. As can be seen, key elements of the framework include: governance standards, macroeconomic policies social policies and public policies. Aspects of the framework, including education, employment and social protection policies, act as regulators influencing the impact of socioeconomic status on health outcomes and well-being between social groups.

At the same time, the framework is part of the "origin" and nourishment of a given distribution of power, prestige and access to material resources in a society and thus, in the end, the pattern of social stratification and social class relations that exist in that society. The positive significance of this link is that it is possible to address the impact of structural determinants on health inequalities through deliberate action on environmental characteristics, in particular the policy dimension.

3.3 Comparative analysis

The presentation of the above data shows that comparing Greece and Bulgaria, problems are identified in almost all social determinants of health. Both countries face significant issues concerning poverty and social exclusion, living conditions, low incomes, and unemployment. Of course, Greece is in a worse position compared to Bulgaria, mainly due to the economic and humanitarian crisis during the period 2010-2016.

The austerity measures implemented in Greece, the increase in taxation, the increase in unemployment, the salaries reduction, and the fund reducing in public health, created an unfavorable climate reflected in the data. All social health determinants in the country are extremely low with results which, although not seen, are expected to be more pronounced in the coming years (increased morbidity, lower level of health, etc.).

Bulgaria has a better picture of social determinants, but more specific issues in the country's remote areas need to be addressed. Undoubtedly, Bulgaria has made leaps and bounds in recent years in improving social health determinants. An important role in this is played by the fact that the health system in Bulgaria is completely national with good development of the primary level.

4 Analysis of secondary sources related to social determinants of health (socially significant diseases) in the Greek cross-border area.

4.1 Socially significant diseases

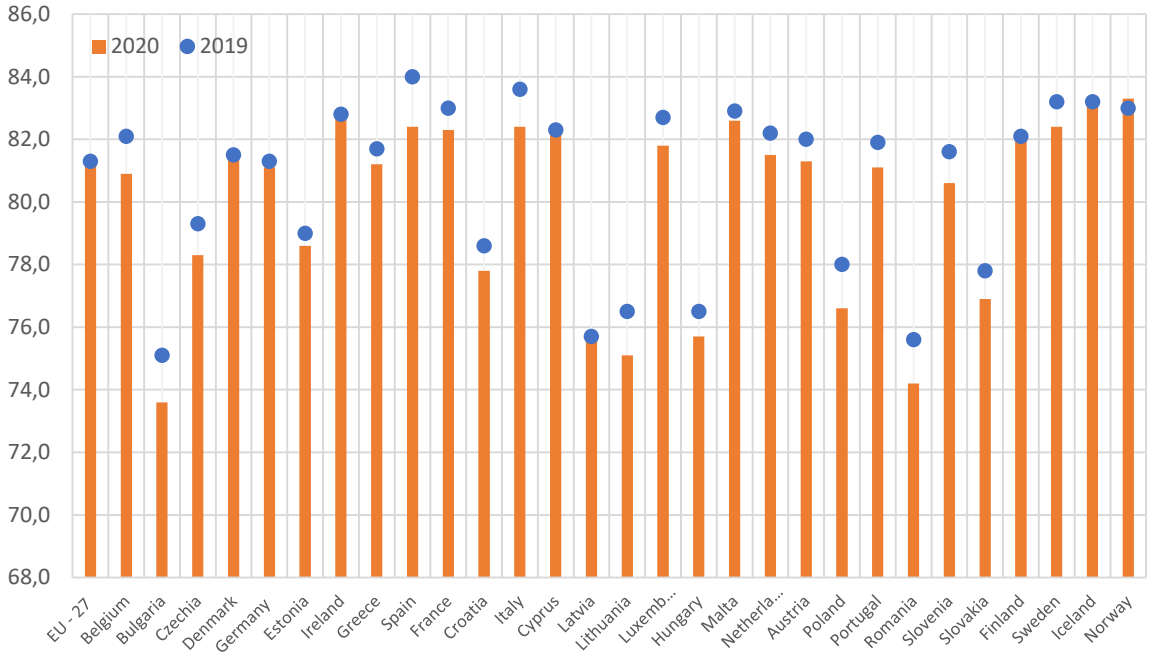
4.1.1 Greece

Below is a brief presentation of the socially significant diseases for the two countries under consideration. The idea of this chapter is to present a general profile for the two countries in relation to the level of health of the populations and later to specialise in the cross-border area.

Life expectancy in Greece is still above the EU average, but it is growing more slowly than in many other EU countries. Life expectancy at birth in Greece reached 81.2 years in 2020, which is about equal to the EU average (Figure 24). Since 2000, when it was among the highest in the EU, it has risen by 2.8 years, and at a slower pace than observed in the EU as a whole. Life expectancy has risen slightly faster for men, while it has remained stagnant for women in recent years, resulting in a gender gap of about five years, similar to the EU average.

Slightly higher than 40% of deaths in Greece can be attributed to behavioural risk factors (above 39% which is the EU average), with smoking being the main factor. More than one in four adults smoke on a daily basis, which is the second-highest rate among EU countries. High rates of overweight and obesity are also a source of concern, as is the lack of exercise for children. The relatively low rates of harm associated with alcohol consumption reflect the low alcohol consumption of adults, however, the occasional excessive alcohol consumption in children is on the rise.

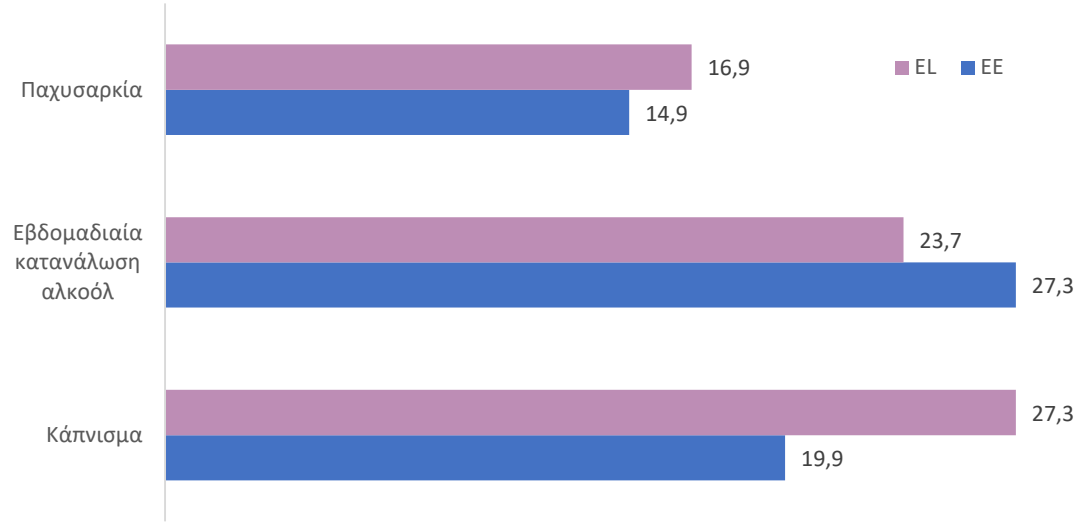
Figure 24 Life expectancy



Source, Eurostat (2021), [DEMO_MLEXPEC__custom_1091300]

Smoking and obesity appear to be higher in Greece than in the EU-27. In particular, 16.9% of Greeks are reported as obese, while in the EU it is 14.9%. Respectively, smokers in Greece are 27.3% compared to 19.9% in the rest of Europe. Finally, in terms of weekly alcohol consumption, Greece has relatively lower rates compared to Europe, as described in Figure 25.

Figure 25 Risks Factors, Greece, 2020

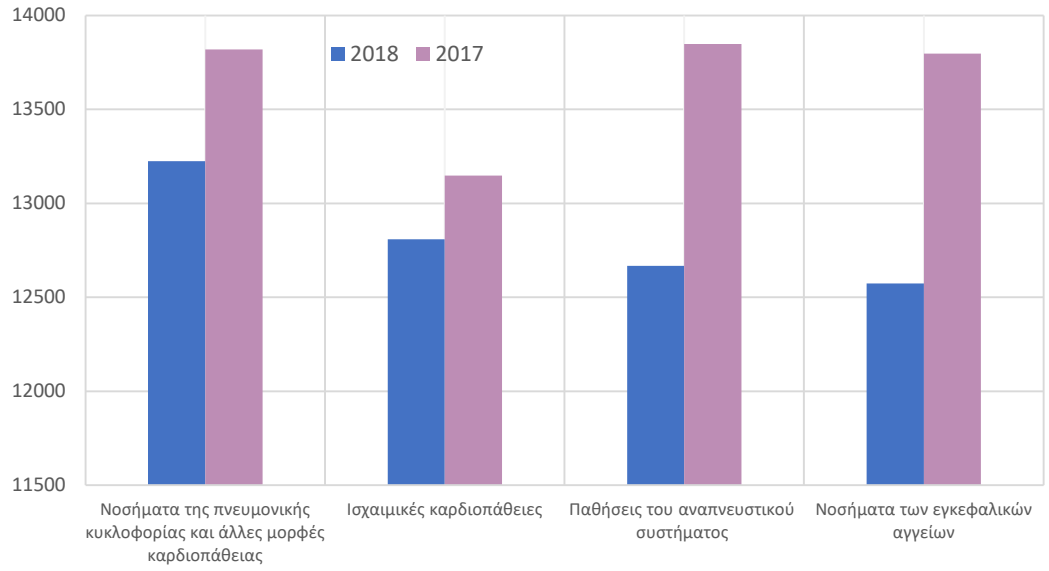


Source Eurostat, 2021, HLTH_EHIS_SK1E

Strokes and ischemic heart disease are the leading causes of death along with pulmonary circulatory diseases (Figures 26 and 28). Despite the significant reduction in mortality rates

from stroke and ischemic heart disease since 2000, these two diseases continue to be the leading causes of death along with neoplastic diseases (Graph 5). Lung cancer is the most common cause of death from cancer, with rates that remain reasonably constant over time. Deaths from diabetes and chronic respiratory diseases have been a growing problem for the past two decades. Even if levels are below the EU average, this increase may be a sign of weakness in the treatment of chronic diseases.

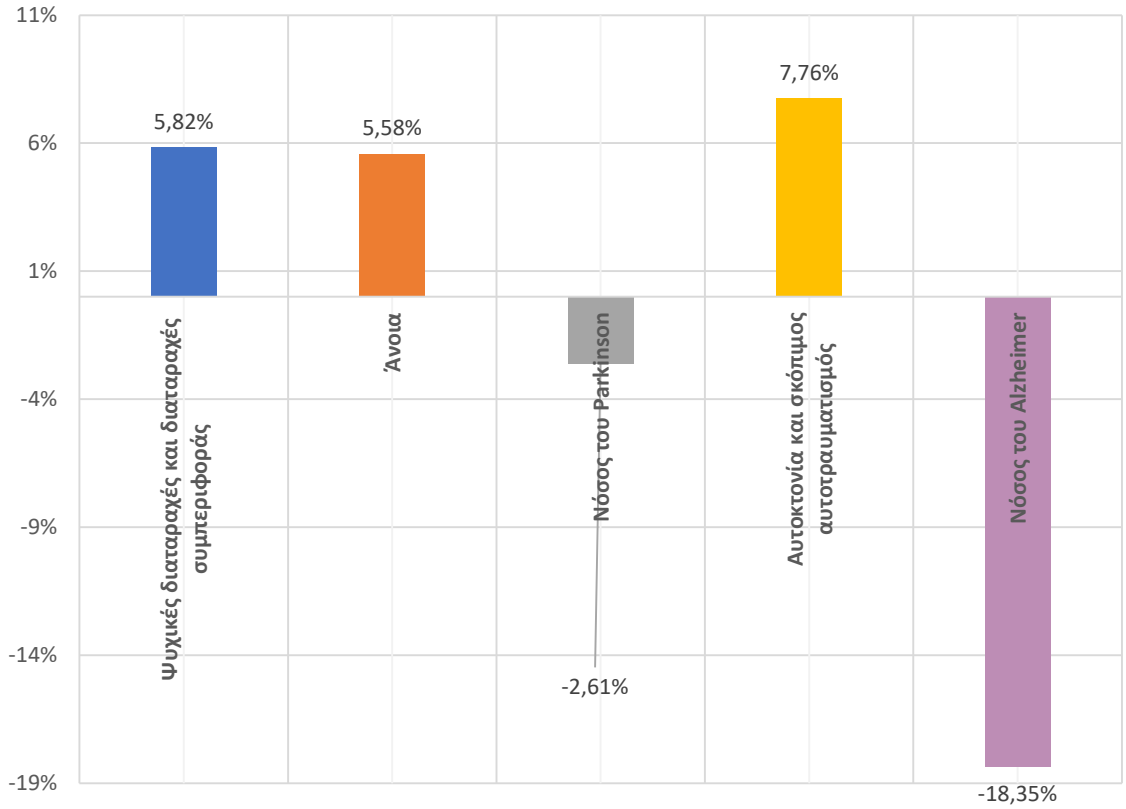
Figure 26 Main causes of death, Greece, 2017-2018



Source. ΕΛΣΤΑΤ, 2021 (ICD-10,έκδοση 2008)

Except for road accident deaths, which have declined, the financial crisis has had a significant impact on the health of the Greek population. Furthermore, there has been an increase in deaths due to mental disorders and suicides, which rose from 2017 to 2018 by 7.76%. In contrast, deaths from Alzheimer's disease have been reduced (Figure 27).

Figure 27 Change in deaths from other diseases, Greece, 2017-2018

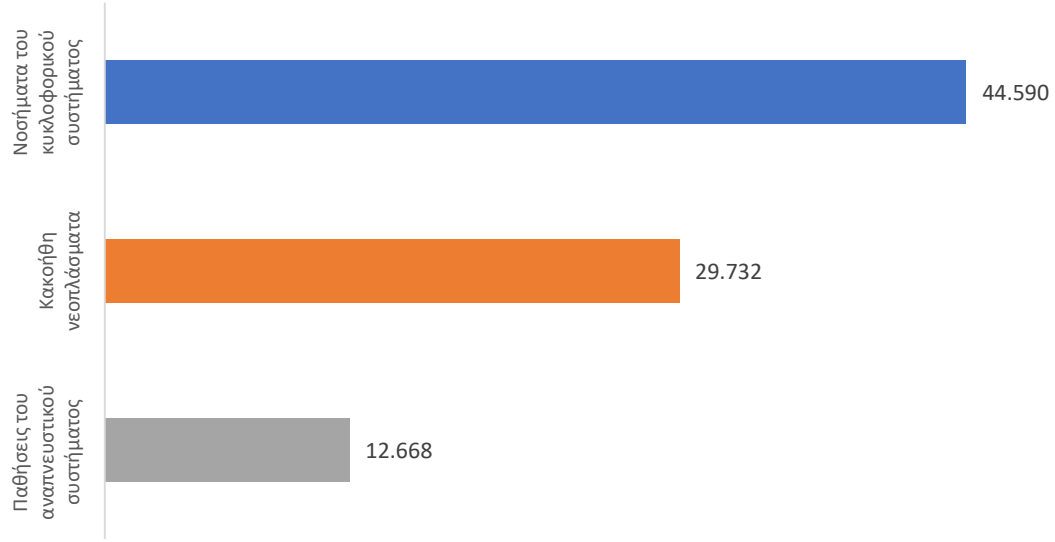


Source. ΕΛΣΤΑΤ, 2021 (ICD-10,έκδοση 2008)

In particular, mental health, expressed in suicide rates and levels of severe depression, has deteriorated. The rates are the lowest after Cyprus and well below the EU average (10.3 per 100.000 inhabitants in 2016). However, suicide rates have increased by 30% - an average of 4.3 per 100 000 inhabitants since 2010 (compared to 3.3 in the previous decade). Several studies have shown an increase in major depression in the general population, from 3.3% in 2008 to 12.3% in 2013 (56).

The steady decline in infant mortality is a sensitive indicator for the quality of health care and socioeconomic conditions. That percentage has been reversed from the three-year average of 3.1 per 1,000 live births in 2007-2009, to 3.9 in 2015-2017, exceeding the EU average (3,6).

Figure 28 Deaths in Greece by main cause, 2018



Source. ΕΛΣΤΑΤ, 2021 (ICD-10,έκδοση 2008)

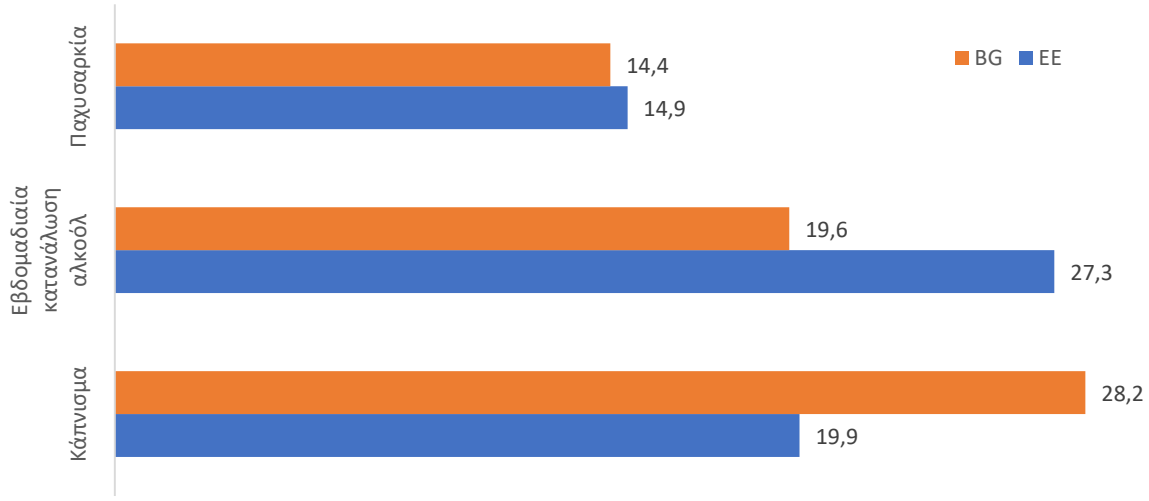
4.1.2 Bulgaria

Smoking is the most significant risk factor. In 2014, Bulgaria had the highest smoking rate in the EU: the proportion of people aged 15 and over who smoke daily in Bulgaria was 27.3%, much higher than the EU average (18.4%). The percentage of young smokers aged 15-24 is also high: 20.5% in Bulgaria and 15.5% in the EU28. These rates remain relatively high, as 29% of the population in Bulgaria for 2020 does smoke.

EU figures show that alcohol consumption rates in Bulgaria are similar or slightly higher than the EU28 average. The tendency for alcohol consumption is gradually declining in many European countries, but it has increased in Bulgaria. Together with Lithuania, Croatia, Belgium, and Austria, Bulgaria has one of the highest levels of alcohol consumption in the EU (OECD / EU, 2016). In addition, Bulgaria does not agree with the EU averages in some other lifestyle indicators that determine good health, such as high blood pressure and fruit consumption (57).

In line with the general trend of increased obesity worldwide and in the EU, obesity in Bulgaria has also increased, albeit more modestly. The rate of self-reported obesity among adults in 2014 (15%) was slightly lower than the EU average28 (16%), while these rates remain about the same for 2020 (Figure 29). However, between 2001/2002 and 2013/2014, Bulgaria (along with Greece and Malta) was among the countries with the highest increase in self-reported rates of overweight (including obesity), among 15-year-olds, reaching about 20% of the corresponding population.

Figure 29 Risk Factors, Bulgaria, 2020



Source Eurostat, 2021, HLTH_EHIS_SK1E

4.2 Data Presentation for CBA

4.2.1 CBA's Demographics

According to the Eurostat population projection, the cross-border area (CBA) in both countries hosts a population of about 2.5, with about 32% living in Bulgaria. There are no major cities on the Bulgarian side. However, on the Greek side, there is Thessaloniki, the 2nd largest city in Greece, with 64% of the population of the cross-border area (CBA).

The population in both countries, nationally and regionally, is declining, more on the Bulgarian side. The Bulgarian cross-border area shrank by 3.38% between 2015 and 2019, while the Smolyan region decreased by 7.5%

Table 5 Population in the programme area

	2015	2016	2017	2018	2019	% Change 2015-2019
Bulgaria	**7,202,198**	**7,153,784**	**7,101,859**	**7,050,034**	**7,000,039**	**-2.81**
BG CBA	**819,278**	**812,134**	**803,998**	**797,553**	**791,558**	**-3.38**
Blagoevgrad	315,577	312,831	310,321	307,882	305,123	-3.31
Haskovo	237,664	236,383	233,415	231,276	228,141	-4.01
Smolyan	113,984	111,601	109,425	107,282	105,421	-7.51
Kardzhali	152,053	151,319	150,837	151,113	152,873	0.54
Greece	**10,858,018**	**10,783,748**	**10,768,193**	**10,741,165**	**10,724,599**	**-1.23**
GR CBA	**1,723,584**	**1,714,473**	**1,710,884**	**1,706,838**	**1,704,413**	**-1.11**
Evros	147,915	147,796	147,709	147,488	147,190	-0.49
Xanthi	112,532	112,275	112,112	111,885	111,631	-0.80
Rodopi	112,325	112,088	111,731	111,193	110,666	-1.48
Drama	97,466	97,041	96,836	96,760	96,845	-0.64
Kavala	136,252	135,304	134,411	133,849	133,391	-2.10
Thessaloniki	1,117,094	1,109,969	1,108,085	1,105,663	1,104,690	-1.11

CBA Area Total	**2,542,862**	**2,526,607**	**2,514,882**	**2,504,391**	**2,495,971**	**-1.84**

Source Eurostat

The situation is equally problematic in macroeconomic indicators. GDP per capita based on current market prices was as low as 10.7% of the EU - 28 average in Haskovo for 2010. All Bulgarian regions are even below 17%.

While the situation in Greece is better in all prefectures, the economy deviates from the EU average. In the case of Bulgaria, the economy converges. The figures represent the financial crisis of 2008 in Greece that led to a significant contraction in national GDP, which also strongly affected the Greek CBA.

Table 6 GDP per capita, current prices

GEO/TIME	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
EU - 28	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Bulgaria	**18.7**	**20.0**	**19.9**	**21.5**	**21.5**	**21.5**	**21.4**	**21.7**	**23.1**	**24.3**
Blagoevgrad	12.7	13.5	13.0	14.5	14.5	14.5	14.0	13.9	14.5	15.0
Haskovo	11.6	11.6	10.7	12.0	12.2	11.7	11.9	12.3	12.7	13.3
Smolyan	14.3	14.1	13.9	14.4	14.3	13.6	14.0	15.0	15.1	16.6
Kardzhali	11.1	11.5	11.0	11.1	12.2	11.8	11.2	11.4	12.0	12.7
Greece	**83.6**	**87.2**	**79.7**	**71.2**	**65.0**	**61.4**	**59.2**	**56.3**	**56.0**	**55.8**
Evros	59.1	63.9	64.0	55.8	50.0	45.5	43.8	41.8	42.4	NA
Xanthi	55.6	56.5	55.1	46.2	41.9	40.2	35.2	33.2	34.2	NA
Rodopi	58.0	59.5	53.5	47.8	42.6	38.9	35.3	33.1	34.3	NA
Drama	51.2	54.5	51.1	44.9	41.2	38.9	38.3	36.9	35.8	NA
Kavala	70.4	72.7	67.1	56.2	53.7	48.3	48.9	46.1	45.8	NA
Thessaloniki	74.4	77.2	68.7	61.5	55.0	51.3	48.7	47.4	47.9	NA
Serres	43.7	45.6	43.5	39.5	37.1	35.9	34.1	33.5	33.7	NA

Source Eurostat

Based on NUTS 2 per capita GDP data expressed as PPS, the different trends between the Greek and Bulgarian sides of the CBA region are more pronounced. While the significant increase in Yugozapaden is mainly due to Sofia's contribution, there is a 6% increase in Yuzhen Tsentralen, while in the Greek CBA there is a 20% and 23% decrease in the same years.

Table 7 GDP per capita, PPS

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
EU - 28	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Yugozapaden	73	76	76	76	74	76	77	79	80
Yuzhen tsentralen	30	31	32	33	32	32	34	34	35

Anatoliki Makedonia, Thraki	68	63	54	52	51	50	48	48	47
Kentriki Makedonia	75	66	60	56	56	55	54	54	54

Source Eurostat

Examining unemployment, it is clear that the financial crisis has seriously affected the Greek CBA region. Unemployment rates were high even before the crisis, e.g., in Drama 22.3%, and the crisis led to unemployment rates of up to 38%. In recent years, there has been a general trend of declining unemployment rates, which remain lower on the Bulgarian side of the CBA. Unemployment remains a major concern in the Smolyan region because it remains above 10% despite the overall declining trend. The chart below shows the evolution of unemployment rates in the CBA region from 2001 to 2018.

Table 8 Unemployment rate, cross-border region of Greece-Bulgaria

NUTS 3 Area	2014	2015	2016	2017	2018
GR CBA					
Drama	35.3	27.6	23.9	21.7	15.3
Kavala	22.4	16.8	16.3	14.9	9.8
Evros	20.8	28.5	24.2	17.5	13.0
Xanthi	31.8	26.9	30.2	25.5	23.7
Rodopi	15.6	17.7	19.8	18.2	16.5
Thessaloniki	30.2	27.0	25.4	22.2	20.4
Serres	25.0	29.1	24.9	23.6	21.1
BG CBA					
Blagoevgrad	14.1	10.3	8.3	4.5	4.7
Kardzhali	(4.9)	(2.3)	(1.7)	(1.6)	(3.3)
Smolyan	19.4	17.2	14.2	11.2	10.3
Haskovo	10.4	8.6	7.0	4.7	(3.0)

( ) - due to a small sample figures in brackets are not reliable Source Eurostat

All of the above is reflected in the level of people at risk of poverty or social exclusion in the area that remains high. All NUTS 2 regions have a high percentage of people at risk of poverty or social exclusion, with the highest in Bulgaria's Yuzhen Tsentralen region reaching almost 38%. However, the rates are reduced in Bulgaria, where data are available for a regional base. After 2015, the percentages decrease nationally in Greece as well, although not in Bulgaria.

Table 9 Percentage of people at risk of poverty or social excludion

GEO/TIME	2015	2016	2017	2018
Bulgaria	**41.3**	**40.4**	**38.9**	**32.8**
Yugozapaden	30.0	30.1	29.3	23.0
Yuzhen tsentralen	48.6	46.2	43.8	37.9
Greece	**35.7**	**35.6**	**34.8**	**31.8**
Anatoliki Makedonia, Thraki				33.8
Kentriki Makedonia				30.4

Source Eurostat

4.2.2 Health infrastructure and staff

Both the Greek and Bulgarian health systems have undergone significant reforms in recent years. Specifically, reforms in Bulgaria have focused on expense control and efficiency-enhancing (EU Commission, 2019). Recent reforms in Greece have focused on introducing and strengthening mechanisms to achieve better results after a long period of structural reforms and cost reductions.

Table 10 Health Centres and number of beds, Greece

	Health Centres	Beds		
Year	**2018**	**2016**	**2017**	**2018**
Greece	204	928	903	901
E. Macedonia-Thrace	15	58	55	58
Central Macedonia	33	124	113	111

Source Eurostat

Table 11 Health Professionals in Health Centres, Greece

	Medical Doctors			Nurses			Other Personnel		
Year	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**
Greece	1674	1776	1797	3136	2215	2318	1657	1800	1967
E. Macedonia-Thrace	105	124	114	200	208	213	116	126	141
Central Macedonia	316	342	335	492	512	537	294	343	346

Source Eurostat

As can be seen in Figure 30, health professionals in the Bulgarian cross-border area are relatively few, and in any case, fewer than anywhere else in the country. This demonstrates a strong need to stimulate health services in the project area.

Figure 30 Number of health professionals per region, Bulgaria 2017

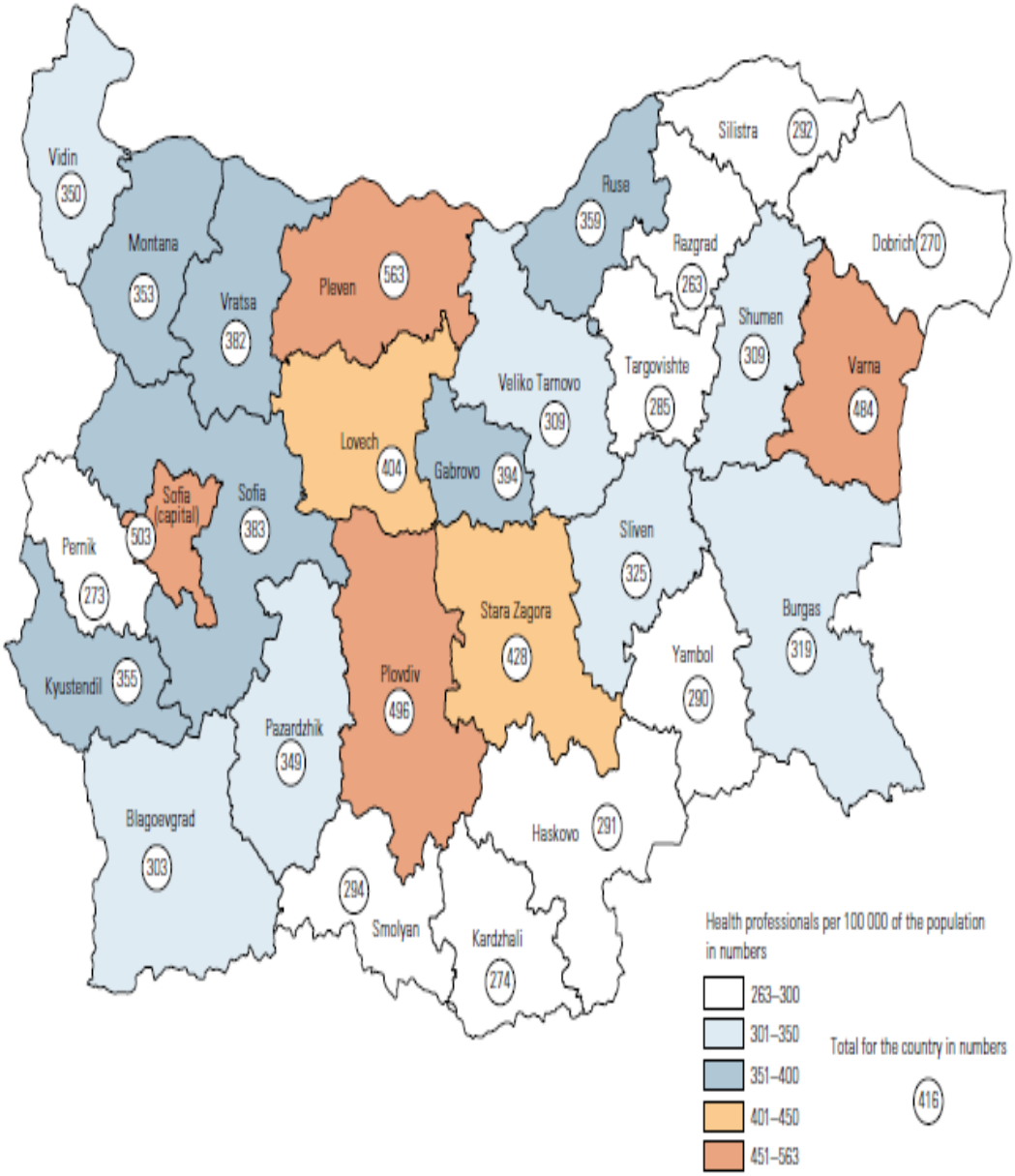


Table 12 Health infrastructures, Greece

	Public				Private		Total	
	Hospitals	Beds	Health centres	Beds	Clinics	Beds	Hospital/ HC/Clinic	Beds
Greece	**96**	**33630**	**204**	**901**	**168**	**16765**	**468**	**51296**
E. Macedonia-Thrace	6	2345	15	58	11	869	32	3272
Central Macedonia	11	4851	33	111	26	3270	70	8232

Source Eurostat

Table 13 Health structures, Bulgaria

Districts	Establishments	Number	Beds
Blagoevgrad	Health establishments for hospital aid	11	1 650
	of which:		
	Multi profile hospitals	5	1 074

Districts	Establishments	Number	Beds
	Specialized hospitals	5	496
	Outpatient health establishments	75	39
	Diagnostic and consulting centres	-	-
	Medical centres	28	19
	Dental centres	-	-
	Medical-dental centres	5	20
	Medical-diagnostical and medical-technical laboratories	42	-
	Other health establishments	4	23
Kardzhali	Health establishments for hospital aid	6	826
	of which:		
	Multi profile hospitals	5	556
	Specialized hospitals	1	270
	Outpatient health establishments	20	12
	Diagnostic and consulting centres	1	2
	Medical centres	3	10
	Dental centres	-	-
	Medical-dental centres	-	-
	Medical-diagnostical and medical-technical laboratories	16	-
	Other health establishments	6	132
Smolyan	Health establishments for hospital aid	8	1 027
	of which:		
	Multi profile hospitals	4	555
	Specialized hospitals	3	432
	Outpatient health establishments	37	10
	Diagnostic and consulting centres	1	-
	Medical centres	9	10
	Dental centres	-	-
	Medical-dental centres	-	-
	Medical-diagnostical and medical-technical laboratories	27	-
Haskovo	Health establishments for hospital aid	11	1 120
	of which:		
	Multi profile hospitals	5	802
	Specialized hospitals	5	238
	Outpatient health establishments	62	41
	Diagnostic and consulting centres	2	10
	Medical centres	17	31
	Dental centres	-	-
	Medical-dental centres	-	-
	Medical-diagnostical and medical-technical laboratories	43	-

Source Eurostat

Based on the available data, the number of beds per 1000 people is better in the CBA region of Bulgaria. The highest number of beds per 1000 people is in Smolyan with 9.7, while the lowest is in Central Macedonia with 4.3.

Table 14 Beds per 1000 people, CBA

Region	Beds/1000 people
E. Macedonia-Thrace	5.5
Central Macedonia	4.4
Blagoevgrad	5.4
Kardzhali	5.4
Smolyan	9.7
Haskovo	4.9

Source Eurostat

According to the Hellenic Statistical Authority, births since 2008 (after the economic crisis) decreased, while at the same time, deaths increased. The result was that births in 2011 were fewer than deaths, as shown in Table 13, indicating the demographic challenge of an aging population.

Table 15 Deaths and births, 2008-2011

Year	2008	2009	2010	2011
Births	118.302	117.933	114.766	106.428
Deaths	107.979	108.916	109.084	111.099

Source: Hellenic Statistics Authority

During the same period, mortality by age did not fluctuate significantly, nor did the leading causes of death change in the hierarchy. The most important category is still that of heart disease in 37.8%, followed by neoplasm diseases (32.7%), cerebrovascular diseases (18%), respiratory diseases (8.1%), and accidents (3, 3%).

Table 16 Main causes of death, Greece

Year	2008	2009	2010	2011
Heart Diseases	32.212	31.976	31.837	31.625
Neoplasms	21.386	27.345	27.177	27.357
Diseases of brain vessels	16.064	15.493	14.910	15.041
Respiratory diseases	6.794	7.095	7.053	6.815
Accidents	3.326	3.310	2.983	2.790

Source Eurostat

The following table describes mortality per age group, which increases over time. Although child mortality is declining, as is mortality between 35-49 years old, it is increasing in the other categories. Prevention and better health services seem to have a positive effect on younger age mortality.

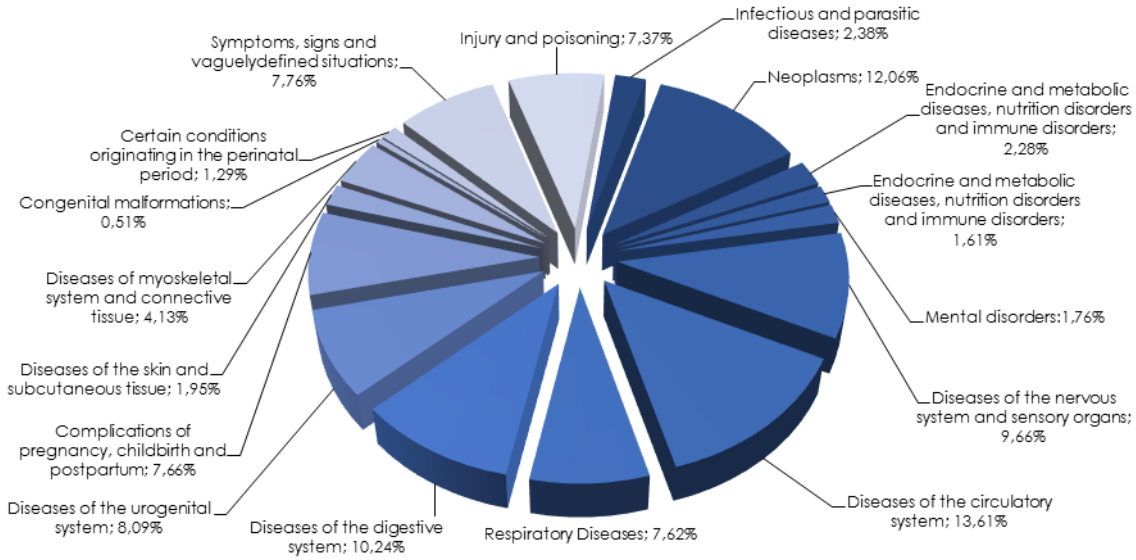
Table 17 Mortality per age group

Age	2007	2008	2009	2010	2011	2012
0-14	599	432	585	630	565	469
15-34	2.050	1.857	1.986	1.739	1.553	1.469
35-49	3.944	3.731	3.755	3.589	3.617	3.558
50-64	11.152	11.327	11.308	11.450	11.514	11.702
65+	92.150	90.562	90.680	91.676	93.850	99.740
Total	109.895	107.909	108.314	109.084	111.099	116.938

Source Eurostat

At the same time, there is an increase in life expectancy in both men and women. Given that most deaths in Greece are due to vascular disease and cancer, the risk factors for these diseases are currently considered the most critical aspects of public health. In this context, smoking, malnutrition, obesity, environmental pollution, and lack of exercise contribute to the emergence of certain organic disorders such as hypertension and diabetes, which have a negative impact on the level of health and mortality of the Greek population.

Figure 31 Death by main cause, 4th Health District



According to the Graph, the most notable differences in the area and throughout Greece are observed in injuries and poisonings, circulatory diseases, diseases of the nervous system, and sensory organs. Diseases of the respiratory system, of the digestive system, of the skin, and of the connective tissue are much below the national average.

For the cross-border region of Bulgaria, the most important causes of death for the years 2015-2018 include neoplasms and heart disease, as shown in the table and Figure.

Table 18 Main causes of death, Bulgaria

	2017					2018				
ICD, Xth Revision	**BG**	**Blagoevgrad**	**Kardzhali**	**Smolyan**	**Haskovo**	**BG**	**Blagoevgrad**	**Kardzhali**	**Smolyan**	**Haskovo**
Total	1551.6	2031.4	1765.8	1702.2	1652.3	1544.8	1323.3	1277.0	1569.3	1641.6
Infectious and parasitic diseases (A00-B99)	9.9	6.3	9.9	12.2	4.5	8.5	8.8	3.3	10.3	2.6
Neoplasms (C00-D48)	246.3	299.3	291.2	218.2	271.1	248.6	131.8	175.7	303.7	253.4
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism (D50-D89)	2.0	2.8	2.1	2.6	1.3	2.1	0.3	-	0.9	1.3
Endocrine, nutritional and metabolic diseases (E00-E89)	22.4	35.4	20.2	22.7	20.2	24.3	3.6	5.3	18.8	4.8
Mental and behavioural disorders (F01-F99)	1.1	1.3	3.1	11.3	1.8	1.3	1.6	3.3	1.9	0.4
Diseases of the nervous system and the sense organs (G00-H95)	12.5	16.3	13.7	26.2	12.1	13.4	25.1	5.3	15.0	34.8
Diseases of the circulatory system (I00-I99)	1017.5	1376.1	1149.7	1140.0	1047.2	1004.2	826.1	806.0	987.3	1153.6
Diseases of the respiratory system (J00-J99)	64.5	76.2	64.5	94.3	66.1	69.3	217.6	46.1	48.9	34.8
Diseases of the digestive system (K00-K92)	54.8	57.6	67.1	63.7	74.6	56.2	23.2	36.8	82.7	43.1
Diseases of the skin and subcutaneous tissue (L00-L99)	0.8	0.7	2.2	0.9	4.9	0.7	-	0.7	-	0.4
Diseases of the musculoskeletal system/connective tissue (M00-M99)	0.5	0.5	0.6	-	-	0.5	-	-	3.8	0.4
Diseases of the genitourinary system (N00-N99)	21.9	27.4	29.7	21.0	30.6	21.9	13.7	19.1	24.4	12.2
Complications of pregnancy, childbirth and puerperium (O00-O99)	0.1	0.1	-	-	-	0.1	-	0.7	-	-
Certain conditions originating in the perinatal period (P00-P96)	2.9	2.9	3.1	0.9	3.6	2.5	1.6	1.3	0.9	3.5
Congenital malformations and chromosomal abnormalities (Q00-Q99)	1.5	2.6	1.5	1.7	2.2	1.4	1.6	-	0.9	1.7
Symptoms, signs, ill-defined causes (R00-R99)	54.9	69.5	63.6	55.0	71.9	53.9	47.0	140.1	35.7	57.0
External causes of morbidity and mortality (V01-Y98)	38.1	56.5	43.4	31.4	40.0	36.2	21.2	33.6	33.9	37.4

5 Utilisation of all previous reports and studies in the field implemented within the project.

In this section there will be a brief summary of the previous reports implemented within the project, in order to utilize the existing knowledge and experience to better formulate mitigation proposals. Specifically, two studies were utilized: To Deliverable 4.1.1: On-going evaluation of short-term results on health of Thessaloniki pilot action community population. And "Proposals for policies, programs and action plans on tackling health inequalities in the Program area" within the framework of the Equal2Health project which is part of the INTERREGV RE A GREECE BULGARIA Operational Program

In addition, some good practices from other cross-border programs were studied. The idea in this case is through experience to create new proposals for the case of the cross-border area Greece - Bulgaria.

5.1 Utilisation of previous reports

The following section presents the most important conclusions from the project studies, presenting the general context in which they were implemented and linking them to the context of the World Health Organization.

The World Health Organization has introduced and interpreted the effects of social inequalities in the field of health, distinguishing primarily the low educational level and socially disadvantaged areas as the main factors that play a key role in the manifestation of diseases. Diseases such as cardiovascular disease, obesity, diabetes are recorded with a particularly high prevalence.

In this context, awareness campaigns were carried out for the population groups that did not have direct access to health structures and did not have the possibility of direct contact with health professionals-medical and paramedical staff, as well as the creation of a communication network between health units. and their staff, for exchange and know-how.

The four areas in which the deliverable "Proposals for policies, programs and action plans related to the treatment of health inequalities in the area of application of the Program" concern 1st in the proposed programs and strategies to eliminate inequalities. 2nd in the proposals and policies for dealing with inequalities in Greece, 3rd in the implementation of workshops by health professionals and finally 4th in the conclusions that emerge from this action.

The European Union promotes programs to address inequalities, based on evidence based policy. It is clear from these data that the main factors of unequal access to medical structures are geographical distance and long waiting lists. All countries involved need to take action at local and national level to improve the health situation and therefore promote funding for programs that promote co-operation between EU countries.

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take action at local and national level to improve the health situation and therefore promote funding for programs that promote co-operation between EU countries. The future planning that has been achieved, in the next 6 years, aims to create a new fund focused on education, employment and social inclusion.

In particular, information on childhood obesity and its effects on children's health in the future, the adoption of healthy eating habits, smoking cessation, and the reduction of alcohol consumption, which are associated with low socioeconomic habits, have attracted European investment (European Investment Fund).

Greece, social actors pursue social policy by promoting ways to promote health and avoid the above harmful factors or by actions at national level such as the mandatory labeling of cigarette packs to inform smokers about the harmful effects of smoking. In an effort to raise public awareness and reduce social injustice, health professionals are provided with well-equipped mobile units that have access to remote populations. TOMY units also follow this logic, offering quality and holistic and community-tailored Primary Health Care services. Also, their main priority is the prevention, management and treatment of diseases of the general population, with services both in public structures and at home, monitoring, guidance and treatment of people with chronic diseases. Elderly people and young children need special care due to the vulnerability of the population. In parallel with the TOMY, EODY contributes with primary prevention actions in communicable diseases among special groups of the population, such as against HIV with interventions at reference points.

In conclusion, informing the population about the prevention, treatment and monitoring of diseases with significant effects on health can be achieved by strengthening the immediate and effective access to health facilities, doctors and medical staff, but also through actions-interventions in social level of the organizations and the promotion of these actions for wider information of the public.

The Greek-Bulgarian partnership in the implementation of the Equal to Health program was aimed at reducing inequalities in access to health structures and informing the population and primarily the socially vulnerable groups living in degraded areas or in areas far from large urban centers.

In this context, the planned visits through the program were carried out in areas that did not have the possibility of direct and timely access to health services. It is worth mentioning the contribution of the program in areas where Roma live, whose population has many peculiarities socially, politically and in terms of customs and traditions.

The program developed in 3 pillars. Cardiac, Psychiatric and Neurological diseases were examined and from these visits corresponding conclusions were drawn.

A total of 798 health care recipients came for examination and corresponding analyzes were performed at the cardiology, psychiatric and neurological clinics. Within the observatory, the largest percentage of the recipients visited the cardiology office first, then the psychiatric one and then the neurological one.

The visits that took place were attended by a total of 215 people, with the most successful in terms of attendance in the 1st where the number of recipients reached 50 in total. And in the case of visits, the largest percentage of attendance belonged to the cardiologist.

Analyzing the social data, they found that the largest percentage of patients had health insurance - 80%, while a percentage of 8% appears to be uninsured. Regarding the place of residence, 80% of the examined live in Thessaloniki, while the rest in provincial areas. 60% of patients were male, and 65% of the population were unemployed, 25% were working. The remaining 9% were already retired.

The educational level is another parameter, which was examined. 44% of the patients had completed primary education, while it is worth mentioning the high percentage of illiterates recorded (39%), university education had 1% of the examined. Of the people who came, 35% reported in marriage and the largest percentage of recipients had 2-3 children.

A special chapter is the Roma population in unfavorable social and economic conditions. The Roma had an extremely difficult time appealing to this new opportunity provided by the program and this was because the program could not serve them in matters of prescribing, in matters concerning their allowances and several times while their mediators made appointments for examination. , they themselves did not come to their appointment. The way they treated the medical visit to a psychiatrist or neurologist was very different and special compared to the rest of the population.

In conclusion, it is worth mentioning that the project was carried out successfully due to the number of people who came and due to the specialized medical assistance and assistance they received. However, it should be noted that its conduct for a long time took place in the midst of a COVID 19 pandemic where some of its actions were suspended, and therefore it is estimated that the number of final beneficiaries would be higher. Let us also keep in mind that the specialties of psychiatry and neurology are still "forbidden" social specialties and there was difficulty in visiting patients and admitting the existence of any neurological or psychiatric health issue.

5.2 Best Practices

One of the main goals of cross-border health co-operation is to create a balanced supply-demand relationship to improve patient mobility in the health system. In addition, the systematisation of methods and practices of simultaneous use is achieved through cross-border co-operation. The exchange of knowledge and experiences between the collaborating parties could improve their involvement and project results. Best practices are described below in order to introduce proposals towards the implementation of the actions that would help to mitigate socially significant diseases in the cross-border area of Greece-Bulgaria.

5.2.1 Trisan

TRISAN is a project co-financed by the INTERREG V A Upper Rhine programme. It comes from the healthcare collaboration of the German-French-Swiss Upper Rhine Conference and the Euro-Institut. The main objective of healthcare co-operation is to encourage cross-border exchanges on health issues, with the aim of supporting or creating networks of

stakeholders, encouraging the development of cross-border co-operation projects, and optimising cross-border healthcare co-operation in the upper Rhine.

Table 19 Trisan's project ID

Title	TRISAN - Optimising cross-border cooperation on healthcare to meet the needs of public authorities and healthcare providers
Object	The creation of a tri-national skills centres to coordinate and develop cross-border cooperation on health
Border area	Upper Rhine between France, Germany and Switzerland
European Programme	Interreg VA – France-Germany-Switzerland 2014-2020
Budget	€801.916
Status	Closed on 30/06/2019
Website	http://www.trisan.org/

The tri-national cross-border project TRISAN aims to identify, coordinate and amplify the synergies born of several decades of cooperation on health in the Upper Rhine. It is intended to support administrations and healthcare providers on every side of the borders in order to best structure and develop partnerships and projects.

The idea for the TRISAN project came from the difficulties experienced by the Euro-Institut and its partners when conducting cross-border health projects. Not only do these projects involve rules and protocols which vary greatly from one side of the border to the other, but they also concern multiple administrative levels.

In 2015, in response to the experiences gained in the Upper Rhine area, the institutional partners came together in a healthcare working group to consider setting up a centre to develop cross-border healthcare cooperation in collaboration with the Euro-Institut. During the 18-month-long preparation and development phase, appropriate partners and funding were found for the actual launch of the project.

The TRISAN project was established in June 2016. It created a tri-national skills centre with multiple aims: networking healthcare actors, supporting project design and the improvement and dissemination of experiences in the matter of cross-border medical knowledge.

The project is organised by the Euro-Institut, on the French side by the Grand-Est regional health authority (ARS), on the German side by the Ministerium für Soziales und Integration Baden-Württemberg, the Regierungspräsidium in Karlsruhe, and the Ministerium für Soziales, Arbeit, Gesundheit und Demografie Rheinland-Pfalz, and on the Swiss side by the Bâle-Ville health department, the cantons of Bâle-Ville, Bâle-Campagne and Argovie, and the Swiss Confederation. The centre opened on 19 December 2016.

Obstacles

Although the partners have known and worked with each other for many years, setting up TRISAN was not straightforward; no cross-border healthcare project is. It appears that health systems differ widely from one side of the border to another, and consequently the parties involved had to work hard to identify and negotiate their common denominators. This solid basis was the essential precondition enabling the operators to plan the

implementation of the project. Linguistic and cultural diversity, coupled with the differences in terms of background and working methods, also complicated the process.

Developing and piloting cross-border projects calls for certain aptitudes; for example, openness towards others and a real desire to learn about the neighbouring system. It is essential to show great flexibility and a capacity for innovation. These qualities do not enable to erase the differences between the systems concerned, but rather to overcome them by integrating them into the reasoning and modes of action within these territories.

The added value produced by health cooperation seems easier to identify in the field of research. Firstly, it enables the teams to develop synergies between their strengths; and secondly, it develops the capacity to work collectively. This type of scientific collaboration is a genuinely experimental field.

Key factors for consolidating cooperation

For such dynamics to succeed, it is essential to conceive the health project as a multi-sectoral project, consequently calling for solutions that are at the intersection of the sectors concerned (medical, administrative, policy, insurance, communication, managerial, legal, etc.). Common objectives must be established right from the start, with a continuously developing process of dialogue. The project also requires sufficient long-term political, financial and administrative support.

Communication, both external and internal, is an important aspect. Among the main obstacles identified to local cross-border healthcare is the lack of transparency as to the patient rights and the possibility or not of reimbursement. The low profile of cross-border healthcare is a major obstacle which must be resolved upstream, by disseminating the maximum possible information about current projects and, in particular, their results.

Finally, two other factors are indispensable: commitment and a sense of community. Success often relies on a few key people with unfailing commitment, often of a personal nature. This is both a strength and a weakness for healthcare cooperation, because some of these people may be assigned elsewhere. It is also essential for the project to develop a feeling of belonging that creates a real sense of community, drawing on methods of win-win cooperation for all the stakeholders, including patients.

5.2.2 Project INTERSYC

Table 20 INTERSYC's project ID

Title	INTERSYC Integrated Territorial Synergies for Children Health and Protection
Object	Coordination of activities to improve prevention, protection and health for children and families
Border area	Central Macedonia, eastern Macedonia and Thrace (Greece) and the southern centre and south-west regions of Bulgaria
European Programme	European Territorial Cooperation Programme Greece – Bulgaria 2007-2013 2007-2013:
Budget	€624 362

Status	Closed on September 2015
Website	https://intersyc.eu/

The «Integrated Territorial Synergies for Children Health and Protection-INTERSYC» project was funded by the European Territorial Cooperation Programme "Greece - Bulgaria 2007-2013"and was the big winner of the "Interreg 25 years Project Slam", a competition organised on the occasion of the celebration of the 25th anniversary of Interreg.

The border between Greece and Bulgaria runs through a mountainous region remote from any urban centres. This remoteness causes significant challenges on both sides of the border in terms of public services, in particular in the area of health.

This translates into gaps or even a total absence in healthcare provision in the area. This situation also creates shortfalls in prevention and social protection. It became also apparent that the remoteness was causing an even more serious absence of coordination in case where child abuse or trafficking were observed but not acted upon.

The INTERSYC project (INTegrated TERritorial SYnergies for Children, Health and Protection) was established between 2013 and 2015. It was set up by the organisation The Smile of the Child in coordination with the Bulgarian non-profit association Chance, the Bulgarian Nadja Centre Foundation, the towns of Kavala and Paggaion (Greece) and the Kardzali regional health inspectorate (Bulgaria).

Bringing together these diverse skills and expertise made it possible to overcome regional isolation. The partnership made it possible to carry out a series of measures, seminars and training courses to improve protection, prevention and healthcare, particularly for children and their families.

The INTERSYC project has included a range of activities targeted on children through three priority axes. The first addresses the emergency situations caused by the disappearance of children, the second concerns prevention and care, and the third offers health and social services to families and children in difficulty.

The first axis targets cases of child disappearance or trafficking. It offers training and knowledge transfer so that people can find information, and, above all, it focuses on taking action when these situations arise. On the Bulgarian side, the use of existing European tools in the field were encouraged, in particular the use of the missing child hotline 116 000 and the coordination platform combining the European Child Alert Automated System (ECAAS) and the Amber Alert system. The South-eastern European Centre for Missing and Exploited Children (SEEC) was also promoted in Bulgaria.

Secondly, INTERSYC develops activities to improve child health, particularly through prevention. This objective is achieved through mobile medical units and specialist visiting staff on both sides of the border. These mobile services include the medical prevention units run by The Smile of the Child, including a unit specialising in ophthalmology, and a mobile multi-clinic called Hippocrates which has audiology, cardiology, and paediatric and dentistry departments. These units are intended to provide support to local doctors, especially on the Bulgarian side of the border. Prevention activities have exposed flagrant shortcomings in the prevention of ill-health, and in addition to the medical impact they

have uncovered cases of child abuse or neglect. Prevention has therefore been extended beyond medicine into the psychological and social fields.

Finally, the third priority axis targets a more general improvement in the availability of health and social services directed to children and families in difficulty. It offers training courses for staff working with children. In both Greece and Bulgaria, it encourages the setting-up of aid centres for families. Seminars providing first-aid training are offered to volunteers and staff working with children. These courses are based on the commendations and principles of the European Resuscitation Council (ERC) or the Bulgarian Red Cross and are organised in the municipality of Paggaio in Thessaloniki in Greece and in Kardzhali and Razlog in Bulgaria.

As part of the preventive medicine activities of the project, 7579 medical examinations were carried out in Greece to a total number of 2,022 children. Respectively preventive medicine actions took place in Bulgaria in the cities Sandanski and Kardzhali. The mobile medical unit "Hippocrates", the medical ophthalmologic unit of "The Smile of the Child" and staff of the Greek NGO visited Bulgaria in order to provide support to the local doctors. In Bulgaria, 5.594 medical examinations were undertaken for 1.594 children in total

The project has definitely improved the situation of children and families, but its success does not stop there. In more general terms, it has encouraged public stakeholders, NGOs and associations to collaborate on both sides of the border and together to establish sustainable actions for children. It is interesting to highlight the diversity of the partners who have been involved in setting up this project, including educational institutions, health bodies, and national police services through the ECAAS platform and the fight against the disappearance of children.

The strength and expertise - dating back to 1996 - of The Smile of the Child in Greece, in collaboration with numerous organisations, have enabled the partners to share the now-how and facilities required.

Another key to this success was the fact that The Smile of the Child and the Nadja Centre Foundation in Bulgaria had already worked together for many years in the South Eastern Europe Centre for Missing/ Exploited Children (SEEC) and that different partners of the same nationality were already working together locally.

The question of capitalising on good practices has also been integrated into the approach by organising training. Social workers now have the necessary knowledge, in particular for the local management of first aid. The dissemination of information about prevention and communication with local populations has been developed, in particular using brochures.

The SEEC, which takes action in missing child cases or child exploitation, has expanded its work in Bulgaria through a National Plan to combat child trafficking headed by the Bulgarian foreign affairs ministry.

5.2.3 Healthacross for future

Table 21 Healthacross for future project ID

Title	Healthacross for future
Object	set further steps to improve the quality of life and conditions of life for the population in the border region and to guarantee and expand access to high-calibre health care close to where they life
Border area	Austria – Czech Republic
European Programme	INTERREG V-A Austria – Czech Republic programme
Budget	€1 653 000
Status	Under implementation
Website	-

The main objective of the EU co-founded project "Healthacross for future" between Lower Austria and South Bohemia is to set further steps to improve the quality of life and conditions of life for the population in the border region and to guarantee and expand access to high-calibre health care close to where they life.

The project is co-funded through the INTERREG V-A Austria – Czech Republic programme and it includes all relevant stakeholders from the health sector in the border regions. Regular meetings and events between the project partners guarantee the implementation of the project.

The project focuses on two main pillars:

1. Cross-border health care provision

Bring the benefits of the respective health systems in line with the needs of the local population to allow equal access to medical care on both sides of the border. This is to be achieved by the mutual and optimal use of health infrastructure and resources by focusing on. Main objective is to ensure inpatient cross-border healthcare and expand it to inpatient care for CZ patients.

2. Cross-border health cube

Numerous international scientific studies show a stronger orientation of the health care system towards a decentralized, comprehensive primary health care for Europe. This primary care covers not only the general medical field, but also areas such as physiotherapy, logo therapy as well as the social component. To achieve this, a repositioning of the health professions as well as the establishment of corresponding structural and organizational framework conditions in the extramural care area is necessary. Therefore, the project will plan and prepare a "Cross-border health centre" for the border region.

The main outcomes of the project are:

- Ensuring inpatient cross-border healthcare and expand to inpatient care for Czech patients
- Analyse possibilities of the exchange of medical treatments between Austria and Czech Republic.

- Organise study visits between the participating hospitals for different professional groups
- Analyse opportunities for a long-term cooperation
- Planning and prepare a "cross-border health cube" (= cross-border health / primary health care centre)
- Analyse of performance spectrum, personnel and financial situation for a "cross-border health cube"

The project aimed to provide optimum usability of health services and equal access to health care by all people living in the border region of Lower Austria and South Bohemia (Czech Republic), especially in the "divided" City Gmünd - České Velenice, through close cooperation among health service providers. Especially this region makes evident how cross-border cooperation makes people's everyday lives easier – after all, the hospital in Gmünd is situated directly on the border – and on the Czech side the nearest emergency doctor's vehicle is over 30 km away; indeed, the nearest hospital is 60 km away.

The precursor project "Healthacross" was the first large-scale project on cross-border cooperation in health care between an old and a new EU Member State and acts as a model for other border regions and the current EU enlargement. The follow-up project, "Healthacross in practice", enabled Czech patients from the border region of Lower Austria and South Bohemia to have simple and uncomplicated access to medical treatment at the hospital Gmünd in Austria. In the pilot period from 25 February 2013 to 30 June 2013, around 100 Czech patients received outpatient treatment in Austria. The pilot project was institutionalized and now about 4000 Czech patients have received outpatient treatment at hospital Gmünd. The new project "Healthacross for future" will use this already good foundation and will set further step in the field of cross-border health care.

The project serves as a best practice in cross-border healthcare for other regions within Europe. The project partners will share their experiences within their own networks (both nationally and internationally). The lead partner is a member of various European networks and ensures a transfer of knowledge to other regions of Europe. The procedures for medical treatment are available and can be transferred to other hospitals as an example for the transfer of knowledge, as well as the experience gained in in-and outpatient cross-border health care, as well as the planning and preparation of a cross-border health cube.

Key learning points

Since the fall of the Iron Curtain, Lower Austria has moved closely to its neighbours, the Czech Republic and Slovakia. Unfortunately, health care is one of the few aspects of daily life that does not work well in cross-border aspects. Therefore cross-border cooperation is gaining in significance in the health sector. Cooperation arrangements between hospitals can help balance out regional demands and guarantee a better provision of health care to the population to reduce health and social inequalities. It can also help in optimizing costs due to the shared use of resources and a better return on resource investment. By leading and carrying out EU-co-founded projects, Lower Austria, through the Health and Social Fund of Lower Austria (NÖGUS) has not only taken responsibility for its own population

but also for the population of the neighbouring regions: It's not about moving borders, but about reducing their separating character.

6 Drawing conclusions and proposals towards the implementation of actions for the mitigation of socially important diseases in the cross-border area of Greece-Bulgaria.

6.1 Conclusions

The main goal of the deliverable was the description and analysis of the social determinants of health in the cross-border area of Greece - Bulgaria. To this end, a literature review was conducted on social determinants and inequalities in health. The findings show that social determinants play a key role in health inequalities.

The study of secondary data shows that problems are found in almost all social determinants of health. Overall, both countries have strong issues with poverty and social exclusion, living conditions and low incomes and unemployment. Of course, Greece is in a worse position compared to Bulgaria, mainly due to the economic and humanitarian crisis during the period 2010-2016.

The austerity measures implemented in Greece, the increase in taxation, the increase in unemployment. The reduction of salaries and the cuts in public health, created an unfavorable climate in Greece, which is also reflected in the data. All social determinants of health in the country are extremely low with results which, although not seen, are expected to be more intense in the coming years (increased morbidity, lower level of health, etc.).

Bulgaria has a better picture than social identifiers, but more specific issues in the country's remote areas need to be addressed. Undoubtedly, Bulgaria has made leaps and bounds in recent years to improve the social determinants of health.

The most important differences between the area of responsibility and throughout Greece are observed in injuries and poisonings, circulatory diseases, diseases of the nervous system and sensory organs. Respectively, significantly lower than the national average, there are diseases and diseases of the respiratory and digestive systems of the skin and connective tissue. For the cross-border region of Bulgaria, the most important causes of death for the years 2015-2018 include neoplasms and heart disease.

The above demonstrates that socially important diseases are important in the cross-border area and that the project objectives help to improve access to health services.

6.2 Mitigation proposals

Acceptance by both the European Union and the WHO of the social determinants of health and their contribution to the widening of health inequalities now emphasizes that the issue should be addressed globally and health policies based on the current state of health inequality around the world (1,58). Through these efforts, some countries have achieved a partial reduction in health inequality problems, such as child mortality, family health, etc. (58–60). However, despite various efforts, the problem of health inequality seems to remain (61)

There are several studies in the international literature on policy measures to alleviate health inequalities. Some are about prevention for socially vulnerable populations, some are boosting their income and some are contributing to the free provision of health services, (62) attributing a mix of health policy interventions. A survey conducted in England on the combination of these policies showed that these measures only work for the extremely low-income groups of the population (63).

Of course, prevention and educational programs for maintaining and protecting health do not seem to be as effective, as it is very difficult and time consuming to educate the population about preventing and maintaining health. Alternatively, the second explanation offered is that the focus on behavior change as a means of mitigating the effects of the most fundamental causes of inequality on health is inherently problematic, because the social determinants of health are not touched by small-scale interventions and need change. at country level or globally (63). Especially, in the case of the mentally ill, the problem is even more intense, because issues of social exclusion, etc. are also identified.

Another policy measure is to strengthen the institution of the general practitioner / family doctor. The results show that this measure will only affect the very low income groups and not the middle classes. In any case, this measure contributes positively to socially vulnerable groups, materially deprived populations and remote areas. In any case, the measure is weak on an aggregate scale (country level).

Income increase (salary increase, lower salary level, minimum guaranteed income, etc.). This mitigation measure seems to reduce the gap in health inequality, especially for people with very low incomes. This redistributive policy seems to have higher benefits and impact at country level, but it depends very much on the level of wages set, consumer price indices, etc. In any case, this policy strategy is an aggressive response to the issue of health inequalities, as it responds with two different mechanisms, the first is the economic growth and the second is psychosocial (increase of social appreciation, improvement of quality of life, etc.)

Finally, the increase in the public nature of Health Systems will definitely lead to a reduction in health inequalities and will increase the health of the population.

The above mainly concerns policies that can be taken at a macro level and have an overall effect in a country and / or globally. However, at the micro level, other policy measures can be taken at a lower level, locally or incidentally.

Strengthening primary health care is also a policy measure that can contribute at the local level. The projects included in the NSRF, in the priority axis 09A, are such examples of implementation of a policy of strengthening the primary health level.

Providing information and challenge to vulnerable social groups is also a relatively effective measure at the local level. INTERREG projects respond to this need, as described in the previous chapter.

The interconnection of health and social policy structures can contribute positively to reducing health inequalities, through better planning and monitoring of the needs of the inhabitants of the region. Utilizing inclusion policies to enhance the health of special population groups can also make a positive contribution. Of course, these measures

concern very focused geographical areas or population groups and therefore the impact in the long run or in the short term may be relatively weak.

Overall, policy measures may need to be a mix of macro and micro policies in order to achieve the objectives of reducing health inequalities in the cross-border area as a whole. The cooperation of the regions and the recognition of the problems by the state authorities are also a *sine qua non* condition for the successful reduction of the gap inequality.

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