# HEALTH SYSTEM PERFORMANCE ASSESSMENT FOR SLOVENIA

SRSS PROJECT

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# ABBREVIATIONS

AGS - American Geriatrics Society

AIDS - Acquired Immune Deficiency Syndrome

ALOS - average length of stay

AMI - acute myocardial infarction

ASR - Age-standardized Rates

ATADD - Survey on the use of tobacco, alcohol and illicit drugs

ATC - Anatomical Therapeutic Chemical

BMI - Body Mass Index

CHF - chronic heart failure

CONCORD-3 - Global surveillance of trends in cancer survival 2000–14

COPD - chronic obstructive pulmonary disease

CSR - Country Specific Recommendation

CT  - Computed Tomography

DDD - Defined daily dose

DORA - Slovenian preventive program for the early detection of breast cancer

DTP - diphtheria, pertussis and tetanus

ECDC - European Centre for Disease Prevention and Control

ED - Emergency department

EEA - European Economic Area

EHIS - European Health Interview Survey

ESP - European standard population

EU – European Union

EUROSTAT - European Statistical Office

GDP – Gross domestic product

GHDx - Global Health Data Exchange

GP – General Practitioner

HBSC - Health Behaviour in School-Aged Children

HBV - Hepatitis B virus

HCQI - Health Care Quality Indicators

HCV. . Hepatitis C virus

HED  - Heavy episodic drinking

HIV – Human Immunodeficiency Viruses

HPV - Human Papilloma Virus

HSPA - Health System Performance Assessment

ICD - International Statistical Classification of Diseases and Related Health Problems

IHME - Institute for Health Metrics and Evaluation

LEA - lower extremity amputation

LOS - length of stay

MMR - Measles, Mumps, and Rubella

MoH - Ministry of Health

MRI – Magnetic Resonance Imaging

MRSA – Methicillin-resistant Staphylococcus aureus

MTS - Manchester Triage System

NCD – Non-communicable Diseases

NGO – Non-governmental organization

NHCP 2016–25 - The National Health Care Plan 2016–2025

NIPH - National Institute of Public Health

OECD - Organisation for Economic Cooperation and Development

OOPs - Out-of-pocket payments

OWG – Operational Working Group

PIMs - potentially inappropriate medications

PPP - Purchasing power parity

PREMS – Patient-Reported Experience Measures

SC – Steering committee

SES – socioeconomic status

SHARE - Survey of Health, Ageing and Retirement in Europe

SILC - statistics on income and living conditions

SLORA - Cancer Registry of Republic of Slovenia

SRSS - Structural Reform Support Service

STIs - sexually transmitted infections

Svit - Slovenian national program for the screening and early detection of colorectal cancer

TS – Technical support

WHO - World Health Organisation

ZORA - Slovenian population based organised cervical cancer screening programme

ZZVZZ - Healthcare and Health Insurance Act

# EXECUTIVE SUMMARY

## AIM

This is the first national health system performance assessment (HSPA) undertaken in Slovenia. Health system performance assessment (HSPA) is an important instrument in measuring the performance of a health system and is fast becoming a key standard in performance measurement. It has become a standard tool in the arsenal available to health policy makers in planning and determining the direction of health system policy. More countries, especially in Europe, are using HSPA as a means to measure its country's health status in terms of its national priorities such as quality of care, access to adequate health care, sustainability and other important aspects of national health policy.

HSPA is therefore the process of monitoring and evaluating various aspects of a health system in terms of comparison to the past and international benchmarks. The main purpose of HSPA is to assess whether progress is being made towards desired goals and whether appropriate activities are undertaken to promote achievement of those goals.

The Tallinn Charter (2008) (1) of the World Health Organisation (WHO) marked the beginning of evaluating health system performance in Europe, after which several countries have started to develop their own HSPA. International organisations such as the Organisation for Economic Cooperation and Development (OECD), WHO European Region and the European Observatory on Health Systems and Policy have also undertaken several HSPA initiatives.

The decision to commission the HSPA was based on the Resolution on the National Healthcare Plan 2016–2025 »Together for a Health Society« (NHCP 2016–25) (2). The NHCP 2016–2025 is the central strategic programming document in the health sector. The project was taking place with the technical support of the University of Malta and of the School of Advanced Studies Sant'Anna, and financed by the European Commission through the Structural Reform Support Service (SRSS). Its adoption is required by the Health Care and Health Insurance Act (Official Gazette of Republic of Slovenia, No. 114/06 and subsequent) (3). The purpose of the NHCP 2016–2025 is defined in Article 6. The document was proposed by the Government and adopted by Parliament. In the subsection on strengthening governance and management, the NHCP 2016–2025 foresees the implementation of the following action: »The introduction of a monitoring system according to the Health System Performance Assessment methodology«. The NHCP 2016–2025 also foresees the establishment of a national coordination group in charge of, among other things, producing reports to monitor the implementation of the NHCP 2016–2025. The document also includes a number of process and outcome indicators to support the work of the coordination group.

The main aim for Slovenian first HSPA is to serve as an adjuvant to NHCP 2016–2025 in terms of monitoring the implementation and the attainment of the targets outlined in this resolution.

## METHODS

The methodology for the development and implementation of Slovenian HSPA framework consisted of a number of iterative steps.

The first step involved the elucidation of the archetypal model that best reflects the Slovenian healthcare system. Following internal discussion and external verification, it was agreed that the Donabedian paradigm could serve as an underpinning model of the HSPA framework. This is consonant with other European countries with similar health systems.

The next step included the drafting of a framework and the selection of indicators to populate the framework. Domains were selected through an iterative process, starting from a list of domains commonly used by HSPA in other countries. The provisional selection was discussed with the Steering Committee of the HSPA project and then at a workshop with a broader group of stakeholders. The selection of domains, which represent the building blocks of the HSPA framework, was, at this point, unrelated to the NHCP 2016–2025. The draft framework, based on the domains thus selected, was revised after the indicators to be used in the HSPA had been identified.

The subsequent step required population and mapping of the domains with indicators. The operational working group first compiled a comprehensive list of all the indicators identified from existing national health strategies and programmes. Through an iterative process that engaged a number of stakeholders and area experts, a final list of 69 indicators and 26 sub-indicators was short-listed.

## RESULTS

Several HSPA frameworks were analysed. These included frameworks pertaining to the OECD, the WHO, the Netherlands, Portugal, Estonia, Malta, Canada and China. Based on these frameworks and after consideration by the SC and OWG, it was decided that the Donabedian model would be the most suitable to reflect the facets of the Slovenian healthcare system. This comprised an input stream, process stream and outputs. Domains were then mapped onto the model in line with these three tracks. Chosen domains were Health status, Quality and Safety, Generation and Management of Resources, Equity and Access, Financial Sustainability, Efficiency, Health Promotion and Disease Prevention, Responsiveness and Person Centeredness and Health Determinants.

Given that Slovenia already developed several national and local health strategies and policies, which each contained indicators and measures to assess their implementation, the OWG and SC opted to source indicators from local sources mainly. The OWG reviewed the current national programmes and strategies related to health in Slovenia. The review process took place between November 2017 and March 2018. 2099 indicators were extracted through this first process.

In the next step, the OWG reviewed the indicators' list for duplicates, relevance and suitability. Several indicators were excluded for not being suitable for HSPA. Other indicators were grouped into so-called "families", indicating indicators that differ slightly in the definition but actually monitor the same process, structure or outcome. Each "family" of indicators was represented by only one member on the indicators' list. After the indicators were shortlisted, the ones that were considered as the most appropriate in terms of availability, international comparability etc. were chosen. Once duplicates and unsuitable indicators were excluded and families of indicators grouped together, the resulting list produced 560 'candidate' indicators.

The candidate indicators were scored according to scoring criteria based on the RAND Appropriateness Methodology (4), amended for the Malta HSPA. A different weight was assigned to each criterion, depending on its importance, relevance and feasibility for Slovenia's specific needs. This exclusion process led to a list of 198 indicators.

These 198 indicators were submitted to the SC for initial review and then to a larger pool of stakeholders. A workshop took place between 19 and 20 July 2018. One of the aims of the workshop was to finalize the list of indicators. Following this workshop, a final list of 60 indicators was selected.

Additionally, 9 indicators and 26 sub-indicators were added in order to provide coverage for domains, where reference indicators were lacking. The selected indicators were presented to and confirmed by the SC. The final list of indicators was then mapped to the domains by the OWG and TS at this same workshop (**Table 1**). Each indicator was mapped onto one or more domains.

Table 1: Mapping of final list of indicators with domains.

| DOMAIN | TOTAL MAIN INDICATORS | TOTAL MAIN SUBINDICATORS | TOTAL UNUSED INDICATORS |
|---|---|---|---|
| **HEALTH STATUS** | 8 | 6 | 0 |
| **QUALITY AND SAFETY** | 5 | 8 | 0 |
| **GENERATION AND MANAGEMENT OF RESOURCES** | 9 | 0 | 3 |
| **FINANCIAL SUSTAINABILITY** | 3 | 4 | 0 |
| **EFFICIENCY** | 7 | 0 | 2 |
| **RESPONSIVENESS AND PERSON CENTEREDNESS** | 4 | 0 | 2 |
| **EQUITY AND ACCESS** | 5 | 0 | 0 |
| **HEALTH DETERMINANTS** | 8 | 2 | 1 |
| **HEALTH PROMOTION AND DISEASE PREVENTION** | 20 | 6 | 6 |

The next step that was carried out by the OWG was data collection. ‘Ownership’, definition and unique identifiable numbers were assigned for each indicator. Data pertaining to the indicators was collated and analysed and the results presented using a classification system linked to each indicator and finally to each domain. The **Table 2** provides a representation of the performance of Slovenian health system for each domain.

Table 2: Assessment of the Slovenian health System for the year 2016.

| |
|---|
| **HEALTH STATUS** |
| **QUALITY AND SAFETY** |
| **GENERATION AND MANAGEMENT OF RESOURCES** |
| **FINANCIAL SUSTAINABILITY** |
| **EFFICIENCY** |
| **RESPONSIVENESS AND PERSON CENTEREDNESS** |
| **EQUITY AND ACCESS** |
| **HEALTH DETERMINANTS** |
| **HEALTH PROMOTION AND DISEASE PREVENTION** |

None of the domains were classified as Very Good or Very Poor. Four domains (Health Status, Quality and Safety, Efficiency, Equity and Access) were classified as Good (marked in green), while three domains (Generation and Management of Resources, Responsiveness and Person Centeredness, Health Promotion and Disease Prevention) were classified as fair (marked in yellow) and two domains (Financial Sustainability, Health Determinants) were classified as poor (marked in orange).

**Health Status** indicators show a mixed picture. Child mortality rate is decreasing over time and Slovenia is doing better than other European countries. AIDS mortality rate is stable through the time and is one of the lowest in Europe. Diabetes prevalence rate is deteriorating, but this is similar to the other European countries. Cancer incidence rates are almost all stable in time; solely incidence rates of colorectal and cervical cancer are getting better. In comparison to the EU–28 average, incidence rates of all cancer, breast and cervical cancer are improving, others have remained the same. Circulatory system diseases mortality rates are decreasing, but in comparison to other European countries are still high. Despite the decreasing suicide mortality rate, Slovenia is still one of the European countries with the highest suicide mortality rate. The main problem is healthy life years at 65. Slovenia was among

European countries with lower rate. Closer scrutiny of circulatory system diseases mortality rates, suicide mortality rate and healthy life years at 65 is merited over the next few years.

**Quality and Safety** indicators are positive. Cancer survival rates are improving. However, in comparison to other European countries, Slovenia is generally doing worse, except for cervical and breast cancer. The same applies to the diabetes lower extremity amputation rate. On the other hand, Slovenia is doing well with infant mortality rate, which is one of the lowest in Europe. Beside this, thirty-day mortality rates after stroke and acute myocardial infarction are similar to most European countries and better usage of second-line antibiotics was observed. However, diabetes lower extremity amputation rate and cancer survival rates require better collection methods and further analysis. Hence, the full picture for this domain is difficult to ascertain.

**Generation and Management of Resources** is another domain where indicators are almost positive. Although the number of practising and primary care physicians, dentists and nurses is improving, comparison to other European countries show that Slovenia is doing worse with its healthcare human resources. Overall, it is still satisfactory. On the other hand, usage of pharmaceutical and technical resources is similar to most of European countries and is even better in overall volume of prescribed antibiotics. Due to the dearth of data and information available for some indicators under this domain, it is not yet possible to assign a ranking. It is important that this report will spearhead the collection and analysis of the required data in the near future.

**Financial Sustainability** indicators show a generally poor outlook. The worst performance was on growth of healthcare expenditure for selected functions per capita. Besides decreasing growth rates, Slovenia is also facing with lower growth rates in comparison to other European countries. Similarly the growth of total healthcare expenditure by financing per capita was registered. However, this time Slovenia was very similar to other European countries. Also public and private expenditures on healthcare were lower than in other European countries, the same holds for share of public spending in overall expenditure. On the other hand pharmaceutical expenditure was comparable to the expenditure of other European countries.

**Efficiency** indicators also show a positive picture. Overall assessment shows that Slovenia was doing similar to other European countries. This was particularly applied for the average length of stay and hospital discharges per 1 000 inhabitants. Slovenia was doing better in the share of surgeries, carried out as day cases. On the other hand, despite the fact the number of MRI and CT examinations per 100,000 inhabitants is improving, Slovenia still lags behind other European countries. Due to the dearth of data and information available for some indicators under this domain, it is not yet possible to assign a ranking. It is important that this report will spearhead the collection and analysis of the required data in the near future.

**Responsiveness and Centeredness** indicators show a mixed outlook. However, it must be emphasized that only two indicators were evaluated. Two indicators were not evaluated because Slovenian data on PREMS and readmissions are not yet available or just cannot be evaluated. Overall assessment shows that Slovenia is doing similar to other European countries. A clear picture of that how Slovenia was/is facing with responsiveness and person centeredness is not known and all the conclusions must be taken with cautions.

**Equity and Access** indicators are generally classified as good. Overall assessment shows that Slovenia is doing well in comparison to other European countries. This is most obvious seen for access to compulsory health insurance and in the area of out-of-pocket expenditure. Regardless the problem of waiting times, Slovenia was doing the same as other European countries with waiting times for elective surgical procedures. This was also noticed for the unmet needs for healthcare due to financial reasons. The only indicator in which Slovenia is doing worse was public expenditure on long-term care services. The reason for this is also that this area has not been systematically regulated yet but the Government is intensively preparing the law draft on long-term care which should be accepted at the first half of the year 2020.

**Health Determinants** indicators are also one of indicators that show a generally poor outlook. Overall assessment shows that Slovenia had a worse outcome for some health determinants. Particularly overweight and obesity among adults and teenagers are worse in comparison to other European countries. Beside this, excessive drinking of alcoholic beverages is deteriorating in Slovenia. However, in comparison to other European countries, a significant difference was not noted. Instead, this was observed in weekly drinking among teenagers, where Slovenia is worse than other European countries. Regarding cannabis use among adolescents and daily smokers, Slovenia is on the same as other European countries. This domain also contains two indicators about number of cigarettes sold and prevalence of type 2 diabetes in children. According to the Slovenian way of defining patients with diabetes, it is impossible to distinguish type 1 and 2 diabetes among children. Therefore, data cannot be collected. Besides, international data is missing.

**Health Promotion and Disease Prevention** indicators are generally classified as fair. This domain with was the most populated. Some of the indicators were not evaluated because of lack of or unavailable data. Overall, Slovenia is doing well in comparison with other European countries. Regarding communicable disease prevention Slovenia is comparable to other European countries. However, we are faring better in the case of the number of new HIV diagnosis and AIDS cases and other sexually transmitted diseases. On other hand, we have one of the lowest influence coverage rates for people aged over 65. Besides doing well with some communicable diseases, we had a better share of persons responding to screening programs. Incidence rate of skin melanoma in Slovenia is not just increasing but it is also higher in comparison to other European countries. Exposure to tobacco smoke indoors has significantly decreased after the law on restricting the use of tobacco and related products was approved. Excessive use of alcoholic beverages is still a significant problem in Slovenia. Regardless decrease in the prevalence and death rate of alcoholic liver cirrhosis, Slovenia is still worse than other European countries. We are visiting dentist more frequently than in the past and this is comparable to the other European countries.

## CONCLUSIONS

This is the first time that Slovenia performed a formal assessment of its health system at a national level. After many efforts, the final outcome is a framework with clear domains and appropriate indicators that are linked to the priorities of the Slovenian health system.

It proved to be a positive and enriching process which gave us the opportunity to identify our weaknesses in data collection, as well as our areas of strength. Although the base year chosen for the compilation of the report was 2016, depending upon the availability of data, a few indicators cover more recent or older data, as required for international comparison.

Despite numerous improvements during the process of data collection and analysis, there is still much to be done. All efforts must need to focus on the data sources that can and will provide the data we need. Besides this, the required resources are required to maintain the HSPA and produce further iterations after this first one. Refining the methodology in the future would also be appropriate, to ensure better international comparability especially for indicators pertaining to the domains of Health Promotion and Disease Prevention, Generation and Management of Resources, Efficiency, Responsiveness and Person Centeredness and Health Determinants.

# INTRODUCTION

This is the first national health system performance assessment (HSPA) undertaken in Slovenia. HSPA is an important instrument in measuring the performance of a health system and is fast becoming a key standard in performance measurement. It has developed into a standard tool in the arsenal available to health policy makers in planning and determining the direction of health system policy. More countries, especially in Europe, are using HSPA as a means to measure its country's health status in terms of its national priorities such as quality of care, access to adequate healthcare, sustainability and other important aspects of national health policy.

Both the World Health Organisation and the European Union promote and encourage the formulation and use of HSPAs. The development and implementation of a Slovenian HSPA brings Slovenia in line with many of its European peers in developing a framework that measures and assesses the performance of their health system. As with the rest of Europe, Slovenia's healthcare system faces various challenges and the development of a performance assessment framework is considered key to the future sustainability of its health system.

A health system incorporates all activities and structures that determine or influence health in its broadest sense, which also includes social, environmental and economic determinants of health. Health system performance is a broader concept that also acknowledges the broad range of determinants of population health that are not directly related to healthcare service delivery. HSPA is therefore the process of monitoring and evaluating various aspects of a health system in terms of comparison to the past and international benchmarks. The main purpose of HSPA is to assess whether progress is being made towards desired goals and whether appropriate activities are undertaken to promote achievement of those goals.

The Tallinn Charter (2008) (1) of the World Health Organisation (WHO) has marked the beginning of evaluating health system performance in Europe, after which several countries have started to develop their own HSPA. International organisations such as Organisation for Economic Cooperation and Development (OECD), WHO European Region and European Observatory on Health Systems and Policy have also undertaken several HSPA initiatives.

## A HSPA FOR SLOVENIA

The decision to commission a national HSPA for Slovenia was based on the Resolution on the National Healthcare Plan 2016–2025 »Together for a Health Society« (NHCP 2016–2025) (2). The NHCP 2016–2025 is the fundamental strategic programming document in the health sector. Its adoption is required by the Healthcare and Health Insurance (3). The purpose of the NHCP 2016–2025 is defined in Article 6. The document was proposed by the Government and adopted by Parliament. In the subsection on strengthening governance and management, the NHCP 2016–2025 foresees the implementation of the following action: »The introduction of a monitoring system according to the Health System Performance Assessment methodology«. The NHCP 2016–2025 also foresees the establishment of a national coordination group in charge of, among other things, producing reports to monitor the implementation of the NHCP 2016–2025. The document also includes a number of process and outcome indicators to support the work of the coordination group.

The main aim for Slovenian first HSPA is to serve as an adjuvant to NHCP 2016–2025 in terms of monitoring the implementation and the attainment of the targets outlined in this resolution.

The Slovenian HSPA was developed through a project funded by the European Commission through the Structural Reform Support Service (SRSS), with the technical support of the University of Malta, Malta and of the School of Advanced Studies Sant'Anna, Pisa. The project started in October 2017 and proceeded for 18 months until March 2019. It consisted of several meetings and workshops in Ljubljana and Riga, with the participation of key personnel within the Ministry for Health, the National Institute for Public Health and other stakeholders. The project was steered by a Steering Committee (**Appendix 1**) and managed by an Operational Working Group (**Appendix 2**). The methodology followed will be outlined later.

# CONCEPTS, METHODS AND PRINCIPLES OF HEALTH SYSTEM PERFORMANCE ASSESSMENT

## CONCEPT OF HEALTH SYSTEM PERFORMANCE ASSESSMENT

According to the World Health Organization (WHO), a health system consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health (5). This includes efforts to encompass personal health services (usually under the control of health ministries), non-personal health services (public health and health promotion interventions), and inter-sectoral actions to improve health (such as anti–alcohol anti–tobacco campaigns).

Health systems around the world vary widely in their designs and organization. Each nation designs and develops its health system in accordance with its needs and resources. However, many health systems share common goals, that of reaching good population's health, being responsive to people's expectations, and social and financial protection (5), (6).

A tool was needed to understand how different health systems work. Health system performance assessment (HSPA) was developed to reply to this need (5). HSPA is a country-owned, participatory process that allows the health system to be assessed as a whole, using several quantitative and qualitative indicators, and one that should be linked to national health plans or strategies, whenever possible (7). In the last 20 years, many international organizations such as the Organization for Economic Cooperation and Development (OECD), WHO Europe Office and European Observatory on Health Systems and Policy have undertaken several initiatives for HSPA.

Although there are different HSPA frameworks in place at national and international level with varying domains and indicators, all HSPA frameworks have a commonality, that of their conceptualisation of the health system.

In 2008, all European countries agreed with the Tallinn Charter, committing themselves to strengthen their health systems through promoting transparency and accountability for their performance, increasing the responsiveness to people's needs, preferences and expectations and enhancing health systems resilience to crises (1). This Charter was an introduction to the start of evaluating HSPA across the Europe. In 2013, 13 EU member states had some sort of HSPA at national and regional level (8).

WHO defines HSPA as “a country-specific process of monitoring, evaluating, communicating and reviewing the achievement of high-level health system goals based on health system strategies” (1). HSPA is not just a tool, but is a complex process, surrounded by several objectives (9). It plays an important role in the following areas:

- fostering transparency in the health system regarding performance and progress;
- creating a shared understanding and vision among stakeholders of the priorities for strengthening the health system;
- supporting evidence-based policy-making and priority-setting by providing information on system performance;
- providing a platform for dialogue between programmes and sectors to create a shared understanding of how joint actions influence health outcomes;
- monitoring the effects of health system reforms and national health strategies and providing a basis for adapting these as needed;
- fostering understanding of potential areas for improving efficiency and equity in the system; and
- formulating well-supported and convincing applications for donor funding.

Regarding the experience of several European countries, HSPA can be a powerful driver of health system improvement if properly implemented. Otherwise, conclusions can be misleading and policy responses can be inappropriate. Therefore, it is very important that HSPA is conducted on reliable data, comprehensive analysis and interconnected measurable indicators.

## HSPA FRAMEWORKS

Before the first attempts of HSPA, the use of the performance indicators was widespread. However, at that time, a conceptual framework of putting these indicators into domains did not yet exist.

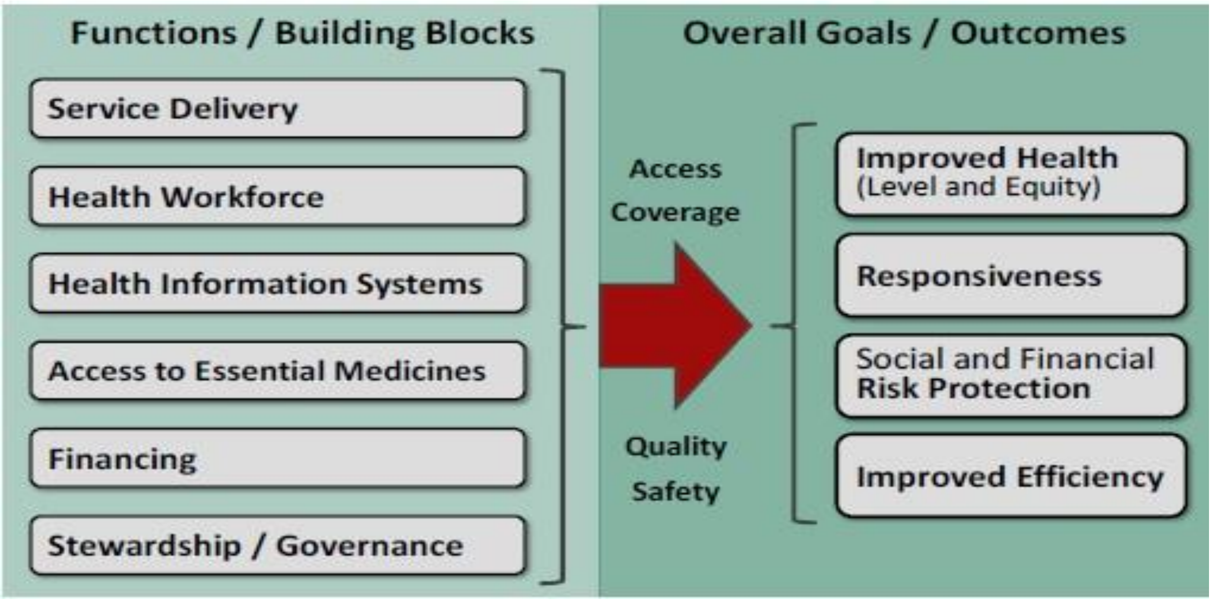
After some local attempts, WHO in 2000 made a first systematic effort to measure and compare different health systems (5), leading the way to the development of diverse frameworks throughout the world (10).

WHO has developed a framework, comprised of six building blocks or domains (service delivery, health workforce, health information system, access to essential medicines, financing, stewardship/governance) **(Table 3)**. Collectively, these six building blocks represent the "complete" health system. The WHO framework is presented in **Figure 1**.

Table 3: WHO building blocks.

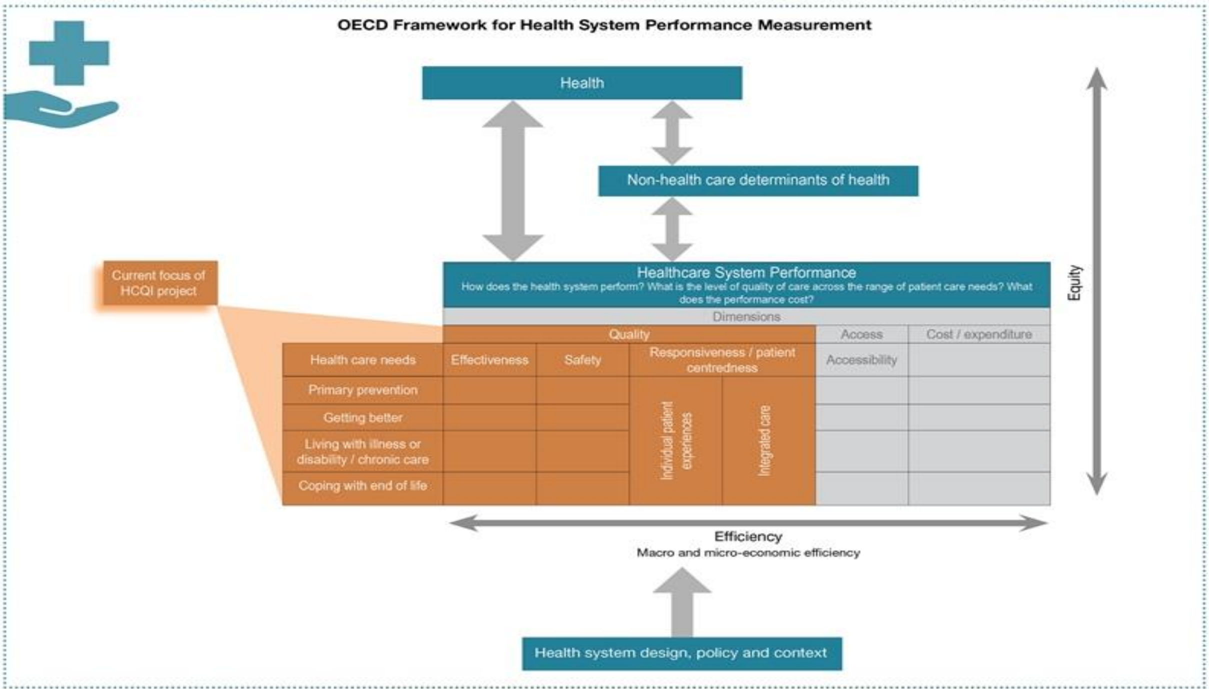
| | |
|---|---|
| **SERVICE DELIVERY** | This represents the effectiveness, safety and the quality of health interventions. It means that health interventions are available to whoever needs them, regardless of where and when they are needed, with minimum waste of resources |
| **HEALTH WORKFORCE** | A professional health workforce is responsive, fair and efficient in achieving the best possible health outcomes, making optimal use of the available resources and given circumstances. There should be an adequate number and diversity of competent, productive and responsive medical professionals, distributed fairly amongst society. |
| **HEALTH INFORMATION SYSTEM** | A well-functioning health information system ensures the production, analysis, dissemination and use of reliable and up-to-date information on health determinants, health system performance and health status. |
| **ACCESS TO ESSENTIAL MEDICINES** | Essential medical products, vaccines and technologies should be equitably accessible to the population. These medical provisions should be of guaranteed quality, safety, efficacy and cost-effectiveness. |
| **FINANCING** | Adequate funding for health should be ensured, to make sure citizens could obtain needed services. Citizens should be protected from disproportionate financial losses when obtaining health services. |
| **STEWARDSHIP/GOVERNANCE** | Also called leadership. It involves establishing strategic policy frameworks in which effective oversight, coalition-building, adequate regulations and incentives, and accountability issues are all properly implemented and addressed. |

Figure 1: WHO 2000 HSPA framework (Source: http://www.europeanpublichealth.com/health-systems/health-system-performance-assessment/).



In 2001, OECD published its own version of HSPA framework, which is similar to WHO's framework with some modifications (11). The OCED framework adopted a narrower definition of a health system, which was limited only to the performance of the system itself without public health activities. Through the years, OECD added Access as a component of Responsiveness and the level of health expenditure as an objective. The last version of OECD HSPA framework is from 2015 (**Figure 2**).

Figure 2: OECD HSPA framework 2015 (Source: https://www.oecd.org/els/health-systems/health-care-quality-indicators.htm)




The Dutch HSPA followed from this and developed a similar framework, with three overarching themes, those of quality of care, access to care and healthcare expenditure. For this purpose, the HCQI framework proposed by OECD and the Netherlands focused upon quality of healthcare, whilst maintaining a broader perspective on health and its other determinants.

The Donabedian Model for assessing quality of care is one of the common models that is used to underpin the development of many HSPA frameworks (12). This model, first developed in the sixties by Avedis Donabedian, assesses quality through three broad areas – structure or inputs, process and outcomes. Structure refers to all the various inputs and resources that are utilised to provide a healthcare service such as infrastructure, equipment, human capital, training, financial resources and IT systems. The way the structural factors come together and interact delineate the process of care. This includes care pathways, the interaction between patients, care providers and funders, clinical protocols and guidelines. Many models then identify and measure outcomes in the form of health status of the population, patient satisfaction, financial and social protection systems, quality of life measures, hospital indices and many others. The HSPA frameworks of Portugal, Estonia and Malta followed this conceptual model.

Whilst adopting a similar model, the Canadians and Chinese frameworks also offer a structured approach towards the development of an information system where this is absent (13) (14).It has therefore been used in settings where data is absent or rudimentary and hence was adopted for the development of a framework and indicators in the primary care setting, both in Canada and in China (15) (16). In 2013 this model was updated by the Canadian Institute for Health Information (CIHI), with the intention to provide a pan-Canadian perspective on health system performance (17).

The English model following several iterations, where the focus now lays on outcome indicators, rather than input or process measures. Due to its emphasis upon performance monitoring and reporting, this framework was based upon the balanced scorecard approach. This model coalesces all the indicators in a unified cohesive manner and creates a system of measurement, assessment and reward (or retribution). The first NHS Outcomes Framework contained five domains, derived from Lord Darzi's work. These are:

- Domain 1: Preventing people from dying prematurely;
- Domain 2: Enhancing quality of life for people with long-term conditions;
- Domain 3: Helping people to recover from episodes of ill health or following injury;
- Domain 4: Ensuring that people have a positive experience of care; and
- Domain 5: Treating and caring for people in a safe environment; and protecting them from avoidable harm.

Based on already adopted frameworks proposed by international organisations, several country-specific HSPA frameworks have been developed (Netherlands, Canada, Belgium, Malta, New Zealand, etc.) (17) (18) (19) (20) (21). These frameworks are based on pre-existing frameworks and adapted to the country's health system. The process of developing such specific framework includes consultation with experts.

The HSPA drivers and factors for health improvement vary in the different frameworks and so do the domains and indicators for each framework. Therefore, the framework should include the national goals and targets as well as health system's profile.

## HEALTH SYSTEM GOALS, TARGETS AND PERFORMANCE INDICATORS

### HEALTH SYSTEM GOALS

The four goals of a health system are (6) (5):

1. improving population health with equity across different socioeconomic groups
2. social and financial risk protection in health
3. responsiveness and people-centeredness
4. efficiency

Improving population health is the main health system goal. Population health status should be measured across different socioeconomic groups. Health systems should strive for equity in health and inequitable disparities in health must be minimized. There are significant disparities in health outcomes not just across the world, but also within the country and region. Disparities are most effectively reduced when they are recognized.

Another health system goal is to provide social and financial risk protection in health. A WHO definition of a fairly financed health system is one that does not deter individuals from receiving needed care due to payments required at the point of service and one in which each individual pays approximately the same percentage of their income for needed services.

Responsiveness and people-centeredness is a concept where the health system provides services in the manner that people want or desire and engages people as active partners. It embodies values of respectfulness, non-discrimination, humaneness and confidentiality. Responsive health systems maximize people's autonomy and control, allowing them to make choices, placing them at the centre of the healthcare system.

Improved efficiency is a preferred outcome of a health system. People have a legitimate expectation of receiving the maximum health gain for the money they and their society invest in health. There are large variations in health costs across the world and the region, even among countries with similar socioeconomic status and similar health outcomes. Part of the variation can be attributed to the efficiency of health systems. Health systems oriented towards primary healthcare have been shown to provide better health outcomes for the money invested (22) (23) (24).

These goals are almost universally found in existing health system frameworks while several of them also include other goals such as productivity or sustainability.

### TARGETS

After the definition of appropriate health system goals, measurable targets can be selected for the HSPA. The chosen targets depend on the aim of monitoring and evaluation. All indicators must be useful, clear, reliable, valid, objective, specific, sensitive to changes (in health status or performance) and available in time at reasonable cost. The information provided by the selected outcome and process indicators should be reviewed regularly and used to inform further action. As current targets are achieved and new ones adopted, the health policy cycle supports the initiation of new activities and selection of new indicators (25). Setting health targets is also a way of rationalising health policy. As the choice of the selected health targets is a more political one, health targets can be used as a tool to make the health policy consistent and coherent (25). When the health targets are based on available knowledge, one can also speak of evidence-based policy. The setting and monitoring of health targets is one way in which a government may provide leadership, guidance and strategic direction for the health sector (25).

### INDICATORS

After establishing health system goals, appropriate tools to assess, compare and improve health system performance are needed. Beside this, it is also necessary to have a performance improvement policy written in a national performance framework with clear objectives and priorities (26). The WHO, OECD and other organizations wanted to rank health systems in such way to meet with consumers' expectations and their own desire to make it possible for an internal and external comparison (27) (28) (29) (30).

For this purpose, performance indicators were designed to routinely monitor aspects of healthcare performance such as effectiveness, efficiency, safety and quality (31). At the beginning, most of indicators were for the assessment of safety and quality of healthcare provision. However, a need for a multidimensional framework have contributed to the development of waste sort of indicators. Eventually this was expanded to include every aspect of health system performance. Regulators, policymakers, researchers and clinicians have endeavoured to improve the quality of healthcare by designing and applying indicators of performance.

Indicator sets commonly contain a combination of structure, process and outcome assessments (32). They serve as tools or measures of performance for assessing the performance of healthcare practitioners, healthcare organisations and the health system as a whole. The OECD for example, published 60 internationally comparable indicators of healthcare quality (33). However, many countries, even those with advanced data systems, have difficulty linking practice performance to outcomes because of limitations in data availability and poor capabilities to link data. Besides, indicators are not always axiomatically good since their application depends upon the framework in which they are developed. Indicators must be developed within the correct context. Inappropriate and useless indicators can be dangerous since they may provide for incorrect and misleading data and information.

An indicator is appropriate for inclusion in a HSPA if 5 criteria are met:

- importance – the indicator reflects critical aspects of health system functioning
- relevance – the indicator provides information that is useful for monitoring and measuring health system performance for an extended time period
- feasibility – the required data are readily available or can be obtained with reasonable efforts
- reliability – the indicator produces consistent results
- validity – the indicator is an accurate reflection of the dimension it is supposed to represent

A set of possible indicators that many existing HSPA frameworks use, linked to their domains are provided in the **Table 4**.

Table 4: Possible indicator areas for health system goals.

| DIMENSION | EXEMPLARY INDICATORS |
|---|---|
| **ACCESS** | - Physicians per 1 000 inhabitants<br>- Waiting time for an appointment with a GP or medical specialist<br>- Waiting time for an donor organ<br>- Geographic coverage of GP practices (percentage of people that are within a 20 minute drive from a GP) |
| **QUALITY** | - Immunization rates<br>- Five year survival rates for breast, cervix and colon cancer<br>- Percentage of patients treated in accordance with evidence-based guidelines |
| **SAFETY** | - Rate of MRSA infections<br>- Percentage of patients in long-term care facilities with decubitus<br>- Percentage of patients experiencing side-effects of medication |
| **EQUITY** | - Life expectancy at birth<br>- Avoidable mortality<br>- Health service utilisation<br>- Differences per gender, age group, income, living area, SES |
| **FAIRNESS** | - Government spending on health as a percentage of total government spending<br>- Total household out-of-pocket payments<br>- Health insurance affordability and coverage |
| **CONTINUITY** | - Support after leaving the hospital<br>- Percentage of chronically ill patients experiencing coordination problems with medical tests<br>- Patients enrolled in disease management programs<br>- Patients receiving contradictory information from different healthcare providers |
| **EFFICIENCY** | - Average length of hospital stay<br>- Percentage of surgeries in day-clinics |
| **RESPONSIVENESS** | - General satisfaction with the healthcare system<br>- Patient-perceived interpersonal contact<br>- Patient involvement in decision-making processes<br>- Patient-doctor interaction (explanations, possibility for asking questions, check-up telephone calls) |
| **SUSTAINABILITY** | - Healthcare expenditure as percentage of GDP<br>- Cost-effectiveness |
| **POPULATION HEALTH** | - Healthy life years<br>- Infant mortality<br>- Obesity rates<br>- Ischaemic heart disease rates<br>- Self-perceived health |

# DEVELPOMENT OF SLOVENIAN HSPA

## BACKGROUND, AIM AND OBJECTIVES OF SLOVENIAN HSPA

Slovenia has been committed to proceed with a number of structural reforms in the healthcare sector with the aim of improving the fiscal sustainability and the efficiency of its health system. To meet the many challenges facing the health system and healthcare provision in Slovenia, the Slovenian parliament launched the Resolution on the National Healthcare Plan 2016–2025 (2). One of a key parts of this substantial reform effort was to establish a Health System Performance Assessment (HSPA), since Slovenia did not have one until now.
With the Resolution of the National Healthcare Plan 2016-2025, Slovenia was committed to the adoption of a national healthcare plan that includes the strategy of developing healthcare with the purpose, vision and mission, principles, goals, priority areas of development and elements of strategic planning. The Resolution of the National Healthcare Plan 2016-2025 recognized the need for a more comprehensive approach to monitoring the performance of the health system, explicitly mentioning HSPA as a tool for gaining better quality, efficiency, accessibility and overall performance of health system.

It is expected that the creation of the first Slovenian HSPA and the assessment of the performance of the Slovenian healthcare system would contribute to the improvement of the Slovenian healthcare system and its policymaking. The main objectives of the Slovenian HSPA were to:

1. inform policy makers, providers of health services and patients on the state of the Slovenian health system
2. to act as an information system for taking evidence-based policy actions
3. to assist in monitoring progress towards defined goals of the health system reforms and health policy actions
4. for intra-country and inter-country comparative assessment of performance and
5. to promote transparency and accountability

Based on the above, the main goals were to develop a framework for HSPA and produce a baseline HSPA report based on the Resolution of the National Healthcare Plan 2016-2025. Building capacity to perform subsequent HSPAs in the future without further external technical support was also an important objective.

A limited human capacity in HSPA, which is partially due to the relatively small size of the country's administration, and an insufficient experience in performing HSPA, posed the challenge in setting up the framework for HSPA. Slovenia also faced challenges related to data availability and quality and had the need to strengthen methodological expertise on HSPA.

In this process, Slovenia and Latvia joined forces on this project due to the similar needs and jointly applied for financial and technical assistance through the European Commission Structural Reform Support Service (SRSS). This joint work has provided a greater transfer of knowledge through mutual learning and exchange of experiences. The final aim was to deliver a country-specific HSPA framework and HSPA report and to train national experts for evaluating HSPA without external support in the future.

Support of this project was also a priority for the European Commission in the light of the country specific recommendation (CSR) to improve Slovenian health system performance. The CSR addressed to Slovenia in 2017 stressed the need to "adopt and implement the proposed reform of the healthcare system and adopt the planned reform of long-term care, increasing cost-effectiveness, accessibility and quality care". Also SRSS paid a close attention to the knowledge transfer and training aspects of the technical support.

## DEVELOPMENT PROCESS OF THE SLOVENIAN HSPA

The typical objectives of a HSPA are to monitor, evaluate and communicate the extent to which various aspects of the health system meet their objective, to demonstrate the outcomes of health strategies, including investments and continuous improvements and to inform policy for setting priorities and allocating financial and other resources.

## STEERING COMMITTEE

A steering committee was appointed to supervise and make available all the relevant data and documents to the contractor. Besides this, it was also responsible for reviewing and commenting on documents submitted by the contractor and for the acceptance of deliverables. The European Commission was invited to all meetings of the Steering committee.

The Slovenian Steering Committee consisted of all 4 directors of directorates of the Ministry of health, the director of National Institute of Public IPH and a representative of the Health Insurance Institute of Slovenia. The technical support provider was also invited to the meetings of the Steering Committee.

## OPERATIONAL WORKING GROUP

The Operational Working Group (OWG) was formed to develop HSPA framework and its accompanying monitoring system. A Medical Officer, then a Public health consultant, chaired this group and coordinated the day-to-day communication with the other national members of the OWG. In Slovenia, OWG consisted of public health experts from National institute of public health and experts in health policy from Ministry of health. A list of the members is provided at **Appendix 2**.

## TECHNICAL SUPPORT PROVIDER

Technical support (TS) was providing by the University of Malta, Malta. The contact person was Dr. Kenneth Grech.

TS organized a kick-off meeting with the Steering committee and OWG with the aim to align everyone's expectations and to provide the additional information necessary to the TS provider to prepare a more detailed project plan. After consultation with OWG members, the TS provider prepared and provided detailed inception reports to the Steering committee. The inception reports contained updated project actions and implementation plans which were agreed with the Slovenian authorities.

Following the kick-off meeting, TS provider organized HSPA training workshops in each of the beneficiary countries, one in Latvia and other in Slovenia. The purpose of workshops were to provide basic training in HSPA to OWG members, its purpose, tools, international experience and methodologies on the drafting the HSPA framework. Workshops lasted 3 days. They included interactive training techniques, such as exercises and discussions.

## PROCESS

The development of the HSPA Framework was an iterative process comprising several steps. These consisted of:

1. Understanding HSPA frameworks and their relevance for Slovenia
2. Development of the Slovenian HSPA Model
3. Elucidation of Domains
4. Selection of Indicators and mapping of model
5. Data analysis and reporting

The above-mentioned steps have been undertaken by the OWG together with the TS Provider. This was undertaken over the period October 2017–March 2019 through a number of meetings, conference calls, and email correspondence, the main events being (**Table 5**):

Table 5: Stages of development of Slovenia HSPA.

| EVENT | DATE | PARTICIPANTS | OUTCOMES |
|---|---|---|---|
| Video-conference meeting | 31 August 2017 | OWG, TS | Plan of action for first 6 months of project;<br>Methodology to be adopted;<br>Composition of SC, OWG |
| Kick-off meeting, Ljubljana | 10-12 October 2017 | OWG, SC, TS | Inception Report;<br>Programme for project;<br>Objectives and deliverables<br>Agreement on methodology<br>Responsibilities of players |
| OWG meeting | 21 November 2017 | OWG | Action following agreement on Inception Report;<br>Planning for stakeholder meeting;<br>Discussion on domains and selection of indicators |
| OWG Meeting | 5 December 2017 | OWG | Selection and configuration of domains |
| HSPA Expert Group, Brussels | 7 December 2017 | TS, OWG member | Discussion on domains |
| Video-conference meeting | 18 December 2017 | TS, OWG Project Lead | Preparation for stakeholders' meeting |
| Stakeholders meeting | 19 December 2017 | OWG, SC, wider stakeholders | Presentation and agreement on model and domains; discussion on methodology |
| OWG Meeting | 10 January 2018 | OWG | Discussion of HSPA model after stakeholders' comments |
| SC meeting | 17 January 2018 | SC | Agreement on model and domains; discussion on methods; deliverables during training event |

| | | | |
|---|---|---|---|
| Training workshop, Ljubljana | 22-24 January 2018 | TSs, OWG, SC | Methodological overview |
| OWG meeting | 1 March 2018 | OWG | Finalisation of extraction of indicators and agreement on division of publication to review for indicators among OWG members |
| Study Visit, Italy | 12-15 March 2018 | OWG, TSs | Methodology overview; presentation of results |
| OWG Meeting, Italy (bus meeting) | 14 March 2018 | OWG, TS | Planning of next steps |
| OWG Meeting | 13 April 2018 | OWG | Cleaning, mapping and scoring of indicators |
| Steering Committee receives report | 19 April 2018 | SC | Confirmation of criteria for indicator selection |
| OWG meeting | 23 April 2018 | OWG | Calibration of scoring by OWG members |
| OWG meeting | 25 May 2018 | OWG | Review of indicators' scoring for phase 1, if differences of values of 2 different scorers were big |
| OWG meeting | 30 May 2018 | OWG | Continue from previous meeting |
| OWG meeting | 15 June 2018 | OWG | Review of indicators' scoring for phase 2 and 3 |
| OWG meeting | 19 June 2018 | OWG | Continue from previous meeting |

| | | | |
|---|---|---|---|
| Steering Committee receives report | 22 June 2018 | SC | Review of initial list of approx. 300 indicators |
| HSPA Expert Group, Lisbon | 26 June 2018 | TS, OWG members | Discussion on methods and results of mapping process; next steps |
| Stakeholder participation | 4 July 2017 | OWG, stakeholders | Stakeholders are invited to score the list of about 200 indicators for further selection. |
| Workshop, Ljubljana | 19-20 July 2018 | TS, OWG, SC | Shortlisting of indicators; mapping of indicators to domains |
| SC meeting | 20 July 2018 | SC, TS | Presentation of indicators and framework |
| Workshop, Riga | 23-25 October 2018 | TS, OWG | Presentation of indicators and framework |
| SC and OWG meeting | 23-24 January 2019 | TS, OWG, SC | Presentation of indicators and framework |
| Workshop, Ljubljana | 5-7 March 2019 | TS, OWG, stakeholders | Presentation of indicators and framework |
| OWG meeting | 22 May 2019 | OWG | Final analysis of the report |

## UNDERSTANDING HSPA FRAMEWORKS AND THEIR RELEVANCE FOR SLOVENIA

In the last decade, numerous conceptual health system frameworks have been developed (34). A robust performance assessment framework should facilitate the selection, collection and interpretation of performance data for health systems improvement and policymaking. There are a number of conditions that need to be met, namely that it takes into account the perspectives of all relevant stakeholders, that it is clearly connected to the health system and that it is sustainable to allow a dynamic assessment process (27).

Following from the above, in drawing up a framework, the overall objectives and boundaries of the health system must first be agreed to. Narrow boundaries can be better aligned with identifiable improvement actions to ensure greater accountability. However, they can also introduce severe problems of attribution, because many of the determinants of health lie outside these narrow boundaries. Broader boundaries therefore present a more comprehensive understanding of most of the factors that impact upon health. On the other hand, these factors usually lie beyond the direct control of health ministers and this presents challenges in terms of attributability and accountability (27). The OWG considered a number of models in pursuit of one that is most suited for Slovenia's needs and health system. These models are used by several countries and health systems.

The framework proposed by WHO is based on a health systems goals approach, focusing on stewardship, financing, service provision and resource generation (5). The OECD Healthcare Quality Indicator (HCQI) project was based upon developing quality indicators within a conceptual framework to emphasis primarily the quality dimension of the project, whilst also keeping in mind a broader perspective on health and its other determinants, in line with the priorities and objectives of OECD member states (35). The Dutch HSPA followed from this and developed a similar framework to the OECD one. The Donabedian Model for assessing quality of care is one of the more common models that is used to underpin the development of many HSPA frameworks (12). This model assesses quality through three broad areas – structure or inputs, process and outcomes. The Canadians and Chinese adopted this model, where it pursues a Donabedian approach but also offers a structured approach towards the development of an information system where this is absent (13) (14). This framework was also adopted by England following several iterations, where the focus lay on outcome indicators, rather than input or process measures and by Malta, Portugal and Estonia.

## SLOVENIAN HSPA MODEL

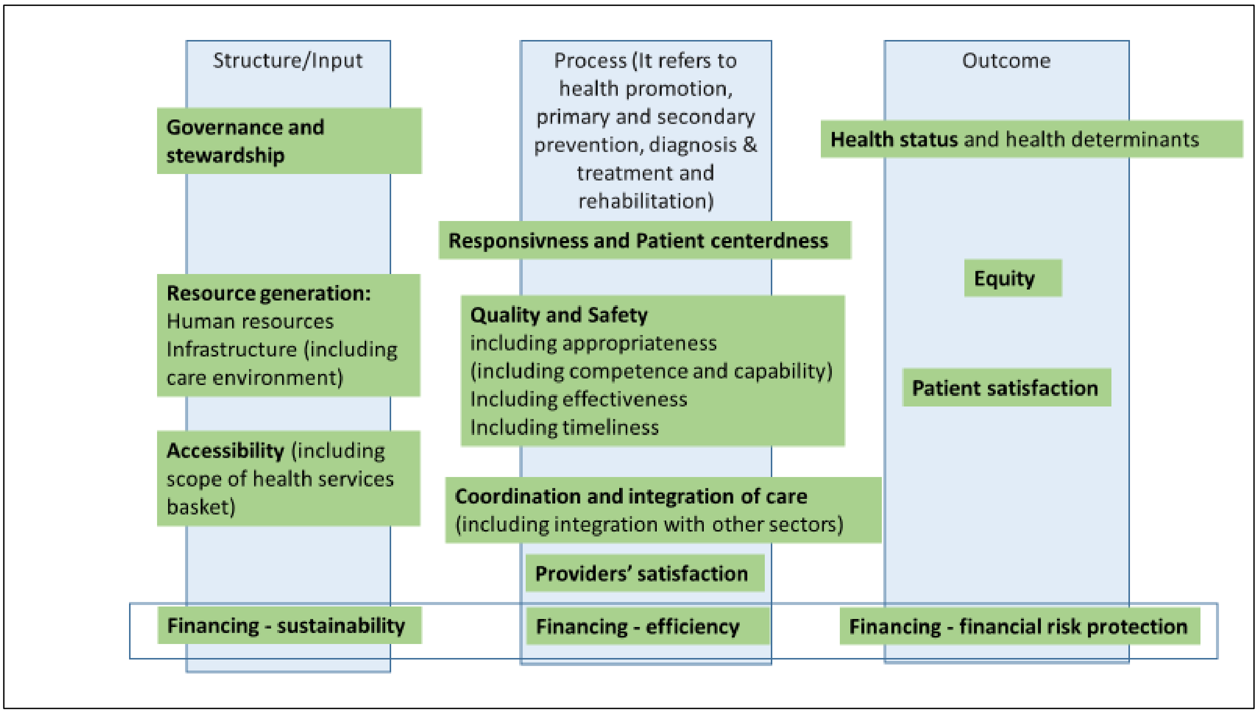
Based on the above models and after due consideration by the SC and OWG, it was decided that the Donabedian model would be the most suitable to reflect the Slovenian healthcare system. This comprised an input stream, process stream and outputs. Possible domains were then mapped onto the model in line with these three tracks.

## ELUDICATION OF MODEL AND DOMAINS

The OWG also reviewed the domains to be included in the model. A list of domains was prepared for the OWG's consideration, as outlined in the **Appendix 3**.

The initial Donabedian model with domains developed by the OWG and approved by the SC is shown in **Figure 3**.

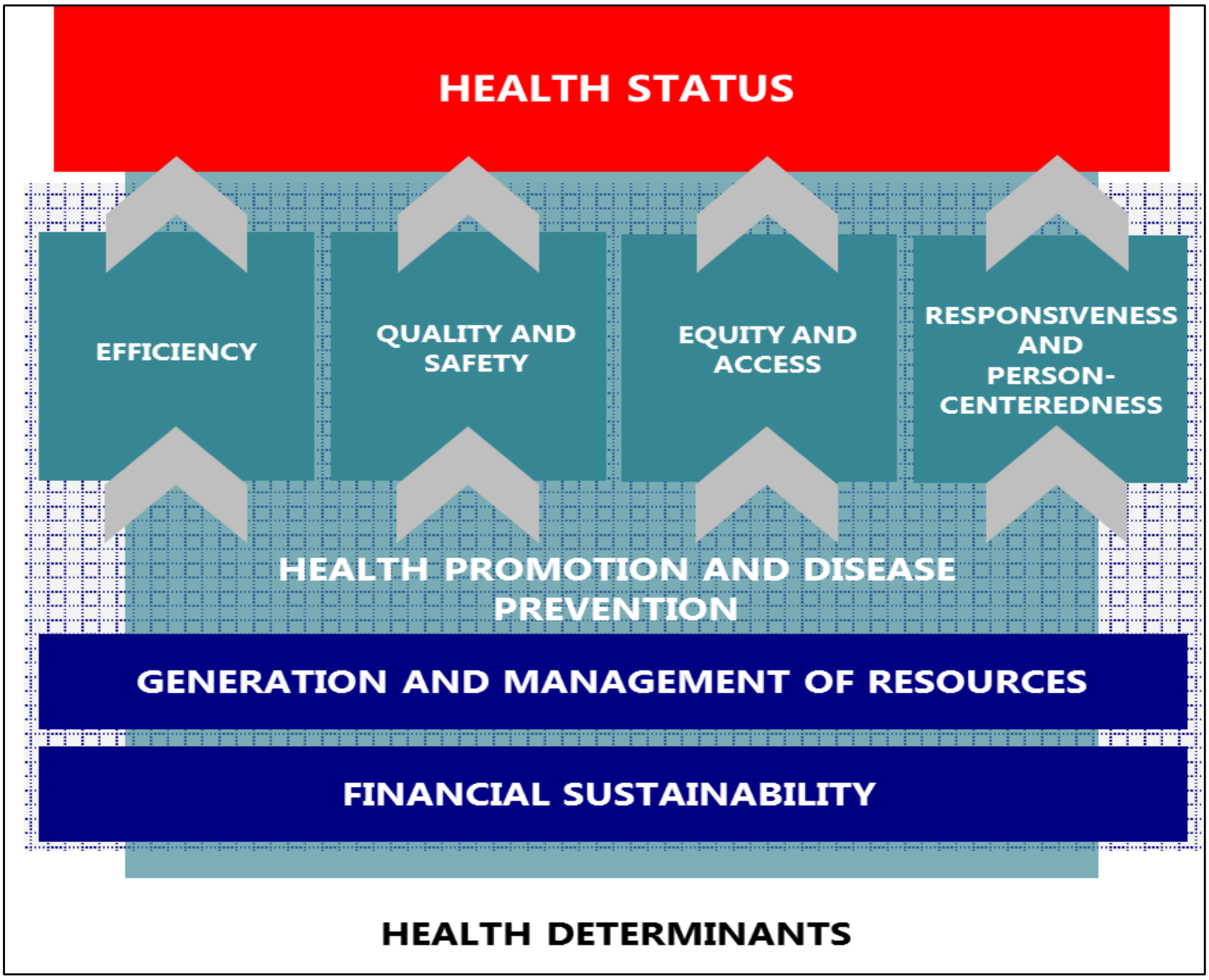
Figure 3: An adopted Slovenian version of Donabedian model.



## FURTHER ITERATIONS OF THE MODEL

The initial model was later developed further and amended following feedback received from the consultation process with wider stakeholders and following further internal discussion. The revised model considered the feedback received from the Directorate of Public Health in terms of public health indicators. Discussion at the meeting in July 2018 also led to the merging of a few of the domains and exclusion of others that were sparsely populated by indicators. Discussion also ensued on the description of the Donabedian streams and the OWG, together with the TS, considered giving the input, process and outcome pillars alternative names for policy makers and the public to better understand and identify with their own reality and experience. The last and ultimate version of the model emerged during the last workshop in March 2019 (**Figure 4**). The domains included in the final model were Financial Sustainability and Generation and Management of Resources (Inputs); Efficiency, Quality and Safety, Equity and Access and Responsiveness and Person-Centeredness (Process); Health Status (Outcomes). Another domain on Health Determinants was also included.

Figure 4: Final Slovenian HSPA framework.



## SELECTION OF INDICATORS AND MAPPING OF MODEL

### METHODOLOGY

The OWG and TS discussed and considered the methodology to be adopted for the selection of indicators. Several options were considered. These included identification of indicators from the literature, obtaining indicators from national and international HSPA models and organisations and identifying indicators based on local experience and availability.

Indicators derived from international sources have the advantage of better comparability, standardisation and readily available definitions. The main drawback of this approach is that the indicators chosen may not necessarily be relevant or appropriate for the local healthcare system, in this case, for Slovenia. Another drawback of this approach is that not all the internationally derived indicators would be available or measured locally, leaving gaps in the analysis. On the other hand, extracting indicators from local sources has the benefit of choosing indicators which are relevant and considered important for the Slovenian health system and which should be readily available for measurement and analysis. However, international comparability may prove to be a problem, depending on the definitions adopted for these locally derived indicators.

Given that, Slovenia already developed several national and local health strategies and policies which each contained indicators and measures to assess their implementation, the OWG and SC opted to derive their indicators from local sources mainly, keeping in mind the need for international benchmarking.

### SOURCE OF INDICATORS

The OWG reviewed the current national programmes and strategies related to health in Slovenia. The strategies reviewed and included are mentioned in **Appendix 4**.

The review process took place between November 2017 and March 2018. 2099 indicators were initially extracted from these strategies.as compiled.

As a next step, members of the OWG reviewed the indicators for duplicates, relevance and suitability. Several indicators were excluded as not being suitable for HSPA. For example, some implementation indicators were defined by whether a specific policy document had been adopted or not within a predetermined timeframe. This monitoring of the implementation process of a policy was deemed not useful in the context of HSPA. Other indicators were grouped into so-called "families", indicating indicators that differ slightly in the definition but actually monitor the same process, structure or outcome. Each “family” of indicators was represented by only one member on the indicators’ list. After the indicators were shortlisted, the one that is most appropriate considering availability, international comparability etc. was chosen.

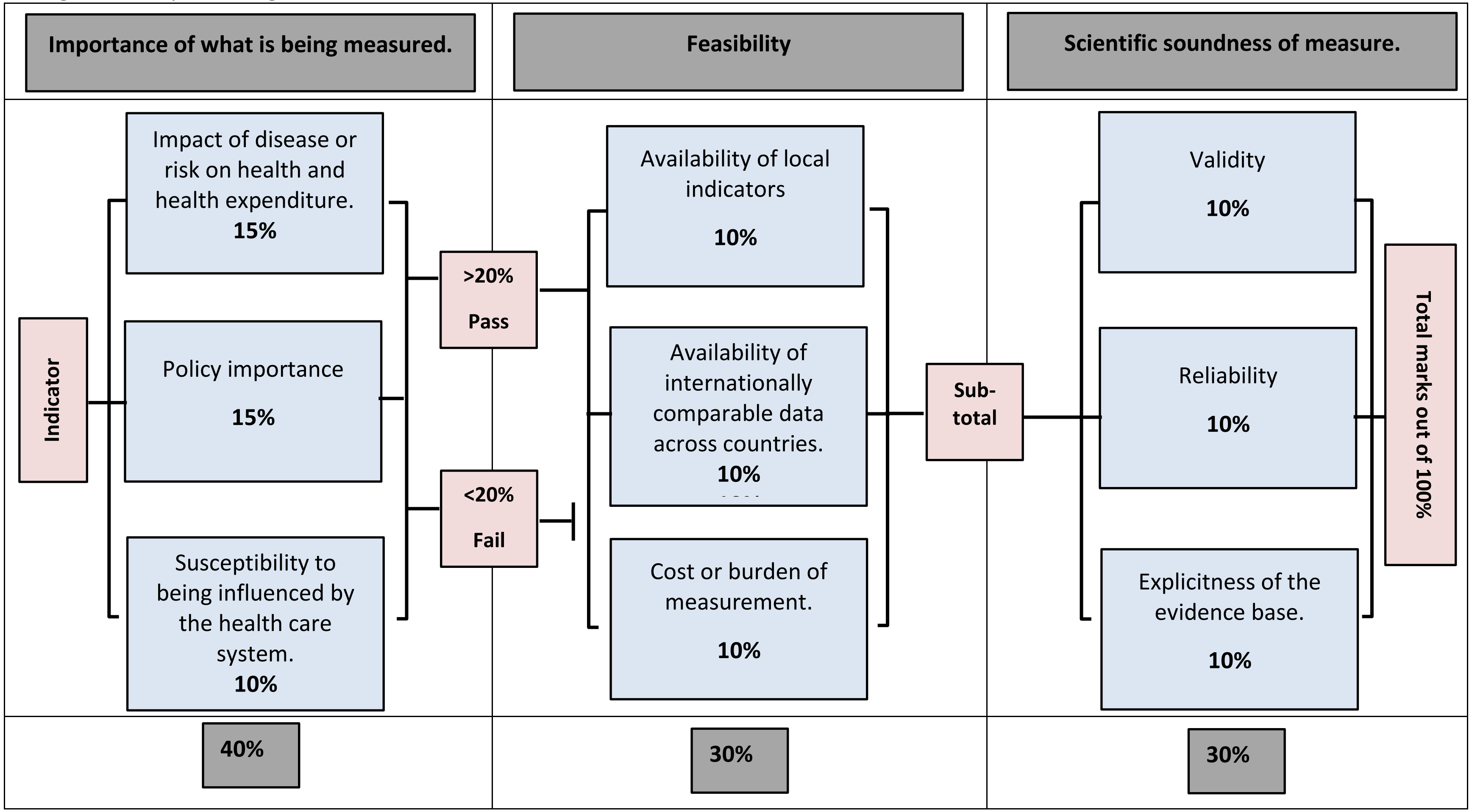
Once duplicates and unsuitable indicators were excluded and families of indicators were grouped together, the resulting list produced 560 ‘candidate’ indicators.

### CRITERIA FOR SHORTLISTING CANDIDATE INDICATORS

The candidate indicators were scored according to a scoring criteria based on the RAND Appropriateness Methodology (4). It was amended by the Malta HSPA and an algorithm was produced for this purpose. The method consisted of scoring each candidate indicator according to a set of criteria (36). A different weight was assigned to each criterion, depending on its importance, relevance and feasibility for Slovenia’s specific needs. Adopted algorithm is shown in **Figure 5**.

The first set of criteria was based on ‘importance’, and was given 40% of the total marks, sub-divided into three sub-criteria, namely ‘Impact of disease or risk on health and health expenditure’ (15%), ‘Policy importance’ (10%) and ‘Susceptibility to being influenced by the healthcare system’ (15%), as indicated in the diagram below. If an indicator did not achieve 20% or more on this first set of criteria, it failed to pass onto the next round of scoring, which consisted of another two sets of criteria (**Figure 5**).

Figure 5: Algorithm of processing indicators.




Source: Malta HSPA

## SCORING OF CANDIDATE INDICATORS

The first phase involved weighing the importance of what is being measured. This phase required scoring each indicator according to the 3 criteria outlined above, namely:

1. Impact of disease risk on health & health expenditure
2. Policy importance
3. Susceptibility to being influenced by the healthcare system.

Each indicator was scored by criteria on a scale from 1 to 10. The total score for the first phase of selection for each indicator was the weighted average of the scores attained on each of the 3 criteria. The maximum number of points attainable in the first phase was 40.

Each indicator was scored by at least 2 members of the OWG independently. The results were then compared. If the difference in the score attained by an indicator in the first phase differed between two members of the OWG by more than 30%, then the indicator was discussed by the whole OWG and a final score was decided by consensus. In cases where the differences in scores obtained was lower than 30%, the simple arithmetic average was taken as the final value.

Those indicators which obtained a lower score than 20, on average, were excluded. This exclusion process produced a list of 310 indicators, with a score higher than 20 in the first phase, which the OWG continued to score in phase 2 and 3.

Each indicator in phase 2 was scored independently by 2 members of the OWG using criteria based on "Feasibility" and "Scientific Soundness of Measure". A similar approach to the one described for phase 1 of the scoring was used, namely calculating the average of the scores and discussing in the OWG group those results were the differences in scoring were high. Each of the criteria of phase 3 was scored only once by one of the members of the OWG. As a result of this process, a total score for each indicator was calculated. The indicators were ranked by the attained score, from the highest to the lowest.

A cut off point of 60% was chosen. Those indicators which obtained more than 60% were included and these numbered 198 indicators.

## INVOLVEMENT OF STAKEHOLDERS

The 198 indicators, which attained a score higher than 60 (out of 100) were selected for further work. These indicators were submitted to the Steering committee for initial review and then to a larger pool of stakeholders. The stakeholders included those individuals who attended the workshop on HSPA in January, as well as those institutions which were invited to the workshop in January, but whose representatives could not participate.

In addition to the NIPH and the Ministry of Health, the OWG invited the following institutions to participate in this process:

- The Health Insurance Institute of Slovenia,
- the Medical Chamber of Slovenia
- The Chamber of Nurses and Midwives of Slovenia
- The Chamber of Pharmacy of Slovenia
- The Association of Health Institutions of Slovenia
- The Network 25x25 (umbrella NGO for patients)
- CNVOS (national umbrella NGO network)
- The Institute of Macroeconomic Analysis and Development of Slovenia
- The Slovenian Institute for Social Protection

The 198 shortlisted indicators were grouped by area of interest, instead of domains, to make it easier for responders to recognize those areas, where they felt comfortable assessing the shortlisted indicators. Stakeholders were asked to score the indicators according to the criteria of phase 1 in the Malta model (called "Importance of what is being measured").

These results were included in the final scoring of indicators, modifying the number of points attained by each indicator. Unfortunately, only two institutions sent their scorings on time (the Chamber of Nurses and Midwives of Slovenia and The Slovenian Institute for Social Protection). The Institute of Macroeconomic Analysis and Development of Slovenia was also able to send their scores with a delay.

The remaining 198 indicators were assigned up to 3 domains by a member of the OWG.

## INDICATORS SELECTION WORKSHOP

A workshop took place between 19 and 20 July 2018. The aim of the workshop was to finalize the list of indicators. The stakeholders listed above were invited to participate. Only the Chamber of Nurses and Midwives of Slovenia were in a position to send a representative. The other attendees were members of the OWG and NIPH employees. The workshop was led by the Technical support team from the University of Malta.

All 198 indicators were reviewed and discussed, taking into account aspects such as international comparability, inclusion of indicators related to pressing health issues and the need for a number of indicators for each domain that would allow assessment of each domain.

Following this exercise, a final list of 60 indicators was selected. Additionally, 9 indicators and 26 sub-indicators were added in order to provide complete coverage for domains, where reference indicators were lacking. Indicator selection was achieved by a consensus discussion amongst participants. The selected indicators were presented to the Steering Committee at the end of the meeting, which later confirmed this final list.

## MAPPING OF INDICATORS ONTO MODEL AND DOMAINS

The final list of indicators was then mapped to the domains by the OWG and TS at this same workshop. Each indicator was mapped onto one or more domains. This resulted in the configuration of domains with indicators (**Appendix 5**).

The following next steps were agreed:

- Members of the Steering Committee were to review and provide feedback on the selected indicators
- For some indicators, particularly those stemming from “family” of indicators, experts in the various areas were contacted directly for additional input
- Additional input from patient representative organizations was sought by members of the OWG
- The draft HSPA model was reviewed with the aim of producing a final draft.

The algorithm in Appendix 6 outlines the main steps that were taken to reach the final set of indicators.

## DATA COLLECTION AND ANALYSIS

### DATA COLLECTION

The next step that was carried out by the OWG was data collection. The OWG first assigned 'ownership' for each indicator. Whilst most data reside within the National Institute of Public Health, data ownership was deemed important to ensure data integrity. To ensure a standardised approach and allow for consistent internal and external comparability, definitions were assigned to each indicator. Each indicator was given a unique identifiable number and name, and its definition includes information on its numerator and denominator, its unit of measurement, year of assessment, a time trend analysis and benchmarking with external comparable data. Owners of the indicators also provided qualitative comments where appropriate or necessary.

### REPORTING OF RESULTS

Results of the performance of each indicator were presented in graphical, tabular or another form as appropriate. Each indicator was presented individually whilst a narrative followed for every indicator.

### ASSESSMENT AND SCORING OF INDICATORS

Following discussions between the OWG, SC and TS, it was decided to assess and evaluate the performance of each indicator on 2 main criteria – trend over time and comparison with external benchmarks.

Whilst the base year for the Slovenian HSPA is 2016 (given that the National Health policy runs from 2016-2024), a time trend analysis is important to assess whether the indicator is improving or regressing over time. Depending on the indicator, a time trend analysis spanned at least 3 data points over at least 10–15 years, depending on data availability.

It was also decided that the data is compared and benchmarked primarily with EU–28 data. If this is not available, then OECD or WHO benchmarks were used. Deviations from the norm were highlighted.

The same scoring and weighting method used in Malta was replicated for the Slovenian HSPA (**Table 6**). This consisted of a scoring and weighting system used to classify each indicator in terms of performance (score) and importance (weight) Table 6. With regards to performance, each indicator was scored by independent assessors for its performance in terms of 'trend over time' and 'international comparison.' Points were allotted using these criteria from 0 to 2. For each indicator, the sum of each category was then added to derive the overall performance 'Assessment' score, ranging from Very Poor (0), Poor (1), Satisfactory (2), Good (3) and Very Good (4). The median score for 'Trend Over Time,' 'International Comparison' and 'Assessment' from the independent assessors was then calculated for each indicator. The results from all the indicators of each domain were then examined together. A traffic-light colour coded system to aid comprehension was introduced, given that the report needs to be disseminated widely to a diverse audience. Points are indicated in brackets.

Table 6: Scoring system for each indicator.

| INDICATOR REFERENCE NUMBER | INDICATOR | TREND OVER TIME | INTERNATIONAL COMPARISON | ASSESSMENT | SCORE | WEIGHT |
|---|---|---|---|---|---|---|
| | | | | VERY GOOD (4) | 4 | |
| | | IMPROVING (2) | SLOVENIA FARES BETTER (2) | GOOD (3) | 3 | |
| | | STABLE (1) | SLOVENIA FARES THE SAME (1) | SATISFACTORY (2) | 2 | |
| | | DETERIORATING (0) | SLOVENIA FARES WORSE (0) | POOR (1) | 1 | |
| | | | | VERY POOR (0) | 0 | |
| | | MORE DATA / RESEARCH IS NEEDED | MORE DATA / RESEARCH IS NEEDED | MORE DATA / RESEARCH IS NEEDED | | |

With regards to importance (weight), given that not all indicators carry the same weight in terms of policy importance and relevance in the local context, and in order to have a more realistic representation of these indicators in relation to the domains they represent, weights were assigned to each indicator. Weights were also assigned to each indicator independently by assessors who weighted each indicator from one (1) to three (3), with 1 being the least important and 3 being the most important. The median score of these independent assessors was then calculated for each indicator.

Once the 'Assessment' scores and 'Weighted' scores for each indicator are computed and agreed, the overall score for each domain is extracted using the sum of the scores and weights of each indicator within each domain, producing a classification for each dimension, ranging from Very Poor to Very Good as shown in the table below. The range of points allocated to each tier was equally distributed from 0 to 4 (4 divided by 5 = 0.8). The range of points allotted across the classification can also be seen in the **Table 7**.

Table 7: Overall scoring schedule and classification for each domain.

| DOMAIN | UNDETERMINED | VERY POOR | POOR | FAIR | GOOD | VERY GOOD |
|---|---|---|---|---|---|---|
| RANGE | NIL | 0 to 0.8 | 0.81 to 1.6 | 1.61 to 2.4 | 2.41 to 3.2 | 3.21 to 4 |

Finally, a commentary on the results of each indicator and the overall assessment of each domain was provided as part of the final HSPA report.

# RESULTS

## INTRODUCTION

The data for each indicator listed in **Appendix 5** was collected and analysed. An 'owner' was assigned to each indicator, the owner being a member of OWG, responsible for the collection and analysis of the indicator.

The owner of the indicators had to provide three parameters:

1. Data on the indicator for the base year 2016 obtained from official sources
2. A time trend analysis where available and if relevant
3. International benchmarks with the EU–28, WHO Europe and OECD

In the next step, the owner also had to provide qualitative comments to enrich the information and provide explanations to the data provided.

For each indicator, the data was collected, collated, scrutinised and converted into graphs, figures and tables as appropriate. Indicators were grouped into their domains and the results for each domain were reviewed and commented upon. Missing or incomplete data was also noted.

A classification system was devised for each indicator. This is already shown in **Table 6** . Since not all indicators carried the same weight in terms of policy and national importance and importance in term of burden of disease, weights were assigned to each indicator independently by 5 local assessors. These weighted each indicator from one (1) being the least important to three (3) being the most important. The median score of at least 5 assessors was then calculated for each indicator.

In the next step, 6 local assessors and 2 foreign advisors scored each indicator. Points were allotted for 'Trend Over Time' and 'International Comparison' (points in brackets, ranging from 0 to 2). The sum of scores of trend over time and international comparison provided the overall 'Assessment' score. The median score for 'Trend Over Time', 'International Comparison' and 'Assessment' of the 8 independent assessors was then calculated for each indicator.

It is to be noted that international comparison was primarily carried out with the EU–28 average wherever possible. If this was not possible, comparison with EU 15, OECD or WHO (Europe) was carried out.

After the weighing and scoring of each indicator, the weight of each indicator was multiplied by the assessment score of the same indicator. Final 'weighted scores' showing the performance of each indicator were produced, ranging from Very poor (0) to Very good (4). The results from all the indicators of each domain were then examined together.

After the 'Assessment' scores and 'weighted' scores for each indicator were computed and agreed, the overall score for each domain was extracted using the sum of the scores and weights of each indicator within each domain. A classification was produced for each domain. The classification was similar to that for each indicator, ranging from Very poor to Very good as already shown in **Table 7.** The range of points allocated to each tier was equally distributed from 0 to 4.

## OVERALL ASSESSMENT OF THE SLOVENIAN HEALTH SYSTEM FOR THE BASE YEAR

The results of the assessment for each domain as well as for each indicator are shown in **Table 8**.

None of the domains were classified as Very Good or Very Poor. Four domains (Health Status, Quality and Safety, Efficiency, Equity and Access) were classified as Good, while three domains (Generation and Management of Resources, Responsiveness and Person Centeredness, Health Promotion and Disease Prevention) were classified as fair and two domains (Financial Sustainability, Health Determinants) were classified as poor.

These results show that the Slovenian health system fairs a reasonably well, although there is definitely room for additional improvement before Slovenia can reach an excellent healthcare system in comparison to other European health systems.

Table 8: Assessment of the Slovenian health System for the year 2016 (numbers refer to individual indicators).

| DOMAIN | INDICATORS | | | | | | |
|---|---|---|---|---|---|---|---|
| HEALTH STATUS | 1 LIFE EXPECTANCY | 14 CIRCULATORY SYSTEM DISEASES MORTALITY RATES | 17A INCIDENCE OF ALL CANCERS | 17B INCIDENCE OF COLORECTAL CANCER | 17C INCIDENCE OF BREAST CANCER | 17D INCIDENCE OF LUNG CANCER | 17E INCIDENCE OF PROSTATE CANCER |
| | 17F INCIDENCE OF CERVICAL CANCER | 24 DIABETES PREVALENCE RATE | 40 SUICIDE MORTALITY RATE | 211 HEALTHY LIFE YEARS AT AGE 65 | 911 AIDS–RELATED MORTALITY RATE | 2028 CHILD MORTALITY RATE | |
| QUALITY AND SAFETY | 2 INFANT MORTALITY RATE | 21A CANCER PATIENTS SURVIVAL RATE | 21B COLORECTAL CANCER PATIENTS SURVIVAL RATE | 21C BREAST CANCER PATIENTS SURVIVAL RATE | 21D LUNG CANCER PATIENTS SURVIVAL RATE | 21E PROSTATE CANCER SURVIVAL RATE | 21F CERVICAL CANCER PATIENTS SURVIVAL RATE |
| | 30 ADMISSION-BASED DIABETES LOWER EXTREMITY AMPUTATION RATE | 1772A THIRTY–DAY MORTALITY AFTER ADMISSION TO HOSPITAL FOR AMI | 1772B THIRTY–DAY MORTALITY AFTER ADMISSION TO HOSPITAL FOR STROKE | 2007 SECOND-LINE ANTIBIOTICS (QUINOLONES AND CEPHALOSPORINS) AS A PROPORTION OF ALL ANTIBIOTICS PRESCRIBED IN PRIMARY CARE | | | |
| GENERATION AND MANAGEMENT OF RESOURCES | 7 NUMBER OF PRACTISING PHYSICIANS PER 100 000 | 8 NUMBER OF PRACTISING NURSES PER 100 000 | 199 NUMBER OF PRIMARY CARE PHYSICIANS (GENERAL MEDICAL PRACTITIONERS) | 1802 AVAILABILITY OF EXPENSES FOR DEVELOPMENT - NEW HEALTH TECHNOLOGIES | 1823 OVERALL VOLUME OF PRESCRIBED ANTIBIOTICS | 2090 NUMBER OF HOSPITAL BEDS BY HEALTHCARE FUNCTION | |
| | 2112 NUMBER OF DENTIST PER 100 000 | 2116 ORGANIZATION CLIMATE SURVEY BASED INDICATOR | | | | | |
| FINANCIAL SUSTAINABILITY | 1851A HEALTHCARE EXPENDITURE AS A SHARE OF GDP | 1851B PUBLIC AND PRIVATE EXPENDITURE ON HEALTHCARE | 1851C PHARMACEUTICAL EXPENDITURE | 1851D SHARE OF PUBLIC EXPENDITURE ON PHARMACEUTICALS COMPARED WITH SERVICES OF HEALTHCARE | 1884 GROWTH OF HEALTHCARE EXPENDITURE FOR SELECTED FUNCTIONS PER CAPITA | 1890 GROWTH OF TOTAL HEALTHCARE EXPENDITURE BY FINANCING PER CAPITA - ANNUAL GROWTH RATE IN REAL TERMS | |
| EFFICIENCY | 12 AVERAGE LENGTH OF STAY | 1769 USE OF EQUIPMENT RESOURCES | 1773 SHARE OF SURGERIES, CARRIED OUT AS DAY CASES | 2004 RATE OF PREVENTABLE EMERGENCY DEPARTMENT VISITS | 2087 NUMBER OF MRI EXAMINATIONS PER 100 000 | 2088 NUMBER OF CT EXAMINATIONS PER 100 000 | 2092 HOSPITAL DISCHARGES PER 1 000 |
| RESPONSIVNESS AND PERSON CENTEREDNESS | 1863 USE OF LONG–ACTING BENZODIAZEPINES IN ELDERLY PATIENTS | 2006 AVOIDABLE ADMISSIONS FOR CHRONIC AMBULATORY CARE SENSITIVE CONDITIONS (CONGESTIVE HEART FALIURE, ASTHMA, COPD, HYPERTENSION, DIABETES) | 2100 INDICATOR ON PATIENT EXPERIENCE BASED ON PREMS | 2101 INDICATOR ON READMISSION | | | |
| EQUITY AND ACCESS | 5 ACCSS TO COMPULSORY HEALTH INSURANCE | 60 WAITING TIMES FOR ELECTIVE SURGERY PROCEDURE | 62 OUT–OF–POCKET EXPENDITURES | 1699 PUBLIC EXPENDITURE ON LONG-TERM CARE SERVICES | 2002 UNMET NEEDS FOR HEALTHCARE DUE TO FINANCIAL REASONS | | |
| HEALTH DETERMINANTS | 18A SHARE OF ADULT SMOKERS | 18B SHARE OF SMOKERS AMONG CHILDREN AND ADOLESCENTS | 22 SHARE OF OVERWEIGHT AND OBESE ADULTS | 23 SHARE OF OVERWEIGHT AND OBESE CHILDREN AND ADOLESCENTS | 238 SHARE OF HEAVY EPISODIC DRINKERS | 239 SHARE OF ALCOHOLIC CONSUMPTION IN CHILDREN AND ADOLESCENTS | 376 PREVALENCE OF TYPE 2 DIABETES IN CHILDREN |
| | 1957 CANNABIS CONSUMPTION IN YOUNG ADULTS | | | | | | |
| HEALTH PROMOTION AND DISEASE PREVENTION | 184 VACCINATION RATES FOR DIPHTHERIA, TETANUS AND PERTUSSIS (DTP) AND MEASLES, MUMPS AND RUBELLA (MMR) | 185A HIV NOTIFICATION RATES | 185B NOTIFIED AIDS INCIDENCE | 188 SHARE OF PERSONS RESPONDING TO SCREENING PROGRAMS FOR BREAST, CERVICAL, COLORECTAL CANCER | 1476A INCIDENCE OF MALIGNANT SKIN MELANOMA | 1476B MALIGNANT SKIN MELANOMA SURVIVAL RATE | 1783 INFLUENZA VACCINATION COVERAGE, POPULATION AGED 65 AND OVER |
| | 1915 NOTIFICATION RATE FOR MEASLES | 1920 SEXUALLY TRANSMITTED INFECTIONS NOTIFICATION RATES | 2102 NUMBER OF PARTICIPANTS TO PREVENTION PROGRAMMES OF HEALTH PROMOTION CENTRES | 2103 EXPOSURE TO TOBACCO SMOKE INDOORS | 2104 SMOKING IN CHILDREN AND ADOLESCENTS | 2107 THE NUMBER OF PARTICIPANTS IN COUNSELLING (BRIEF INTERVENTIONS CARRIED OUT) | 2108 PREVENTION PROGRAMS AMONG CHILDREN AND YOUTH |
| | 2109 SICK LEAVE DUE TO ALCOHOL | 2110A PREVALENCE OF ALCOHOLIC LIVER CIRRHOSIS | 2110B DEATH RATE OF ALCOHOLIC LIVER CIRRHOSIS | 2111 INDICATOR ON FRAILTY | 2113 VISITS TO A DENTIST | 2114 BRUSHING TEETH | |

| | |
|---|---|
| | - VERY GOOD |
| | - GOOD |
| | - FAIR |
| | - POOR |
| | - VERY POOR |
| | - WITHOUT WEIGHING |

## DOMAIN 1: HEALTH STATUS

**Definition**

According to the WHO, health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (**1**).

Health Status is the level of health of the individual, group, or population as subjectively assessed by the individual or by more objective measures.

Health status indicators are a set of surveillance data that has been analysed in a way that permits assessment of the health status of the population so that public health priorities and actions can be appropriately identified. The selection of indicators should be primarily based on existing and comparable data sets for which regular monitoring is feasible, but it should also take into consideration likely future data needs and diagnostic and treatment developments.

Results are shown in **Table 9** and **Figure 6**.

## MAIN RESULTS

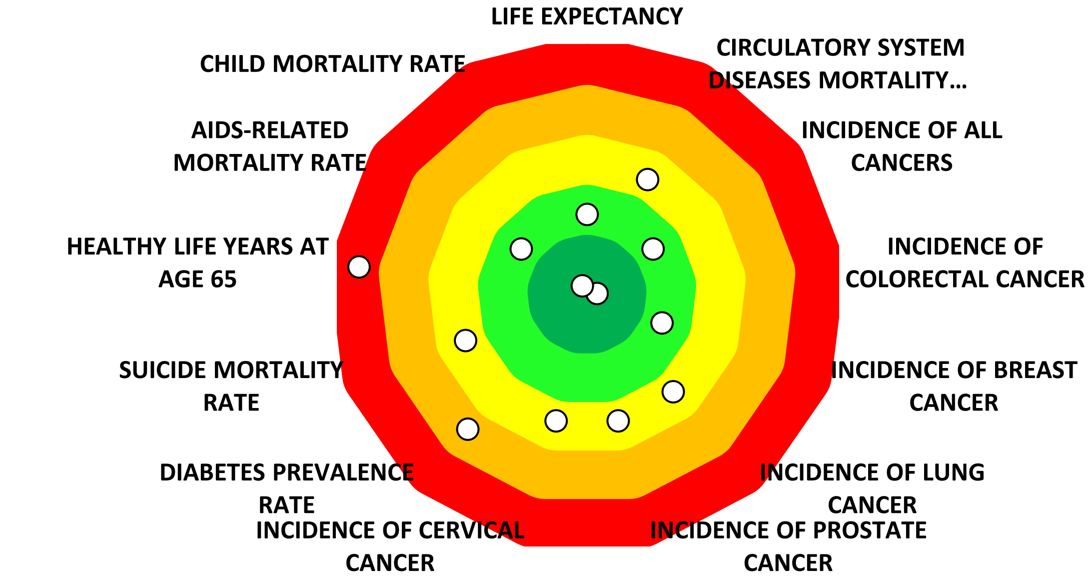
Table 9: Health status main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 1 | LIFE EXPECTANCY | 3 | IMPROVING | SAME | GOOD |
| 14 | CIRCULATORY SYSTEM DISEASES MORTALITY RATES | 3 | IMPROVING | WORSE | SATISFACTORY |
| 17A | INCIDENCE OF ALL CANCERS | 2 | STABLE | BETTER | GOOD |
| 17B | INCIDENCE OF COLORECTAL CANCER | 2 | IMPROVING | SAME | GOOD |
| 17C | INCIDENCE OF BREAST CANCER | 2 | STABLE | BETTER | GOOD |
| 17D | INCIDENCE OF LUNG CANCER | 2 | STABLE | SAME | SATISFACTORY |
| 17E | INCIDENCE OF PROSTATE CANCER | 2 | STABLE | SAME | SATISFACTORY |
| 17F | INCIDENCE OF CERVICAL CANCER | 2 | IMPROVING | BETTER | VERY GOOD |
| 24 | DIABETES PREVALENCE RATE | 2 | DETERIORATING | SAME | POOR |
| 40 | SUICIDE MORTALITY RATE | 2 | IMPROVING | WORSE | SATISFACTORY |
| 211 | HEALTHY LIFE YEARS AT AGE 65 | 2 | DETERIORATING | WORSE | VERY POOR |
| 911 | AIDS–RELATED MORTALITY RATE | 1 | STABLE | BETTER | GOOD |
| 2028 | CHILD MORTALITY RATE | 2 | IMPROVING | BETTER | VERY GOOD |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **HEALTH STATUS** | **Good** | **2.44** |

Figure 6: Dartboard presentation of assessment score of domain - Health status.




In the final stage, 8 indicators have been selected to measure health status outcomes. One indicator (incidence of cancer) was divided into 6 sub-indicators. A mixed but overall positive picture is presented. Life expectancy compares well with other European countries and is generally improving. Although mortality rates from circulatory diseases are decreasing, they are still above EU average. Except for colorectal and cervical cancer incidence rate, cancer incidence rates have remained stable over time. Colorectal and cervical cancer incidence rates are decreasing and cervical cancer incidence rate is below the EU-28 average in the last years. However, it must be emphasized that data for cancer incidence rates was taken only from accessible sources. Diabetes prevalence rate is deteriorating, but this is similar to the other European countries. In spite of the decreasing suicide mortality rate, Slovenia is still one of the European countries with the highest suicide mortality rate. Child mortality rate is still decreasing over time and Slovenia is doing better than other European countries. The main problem is healthy life years at 65. Slovenia was among European countries with a lower rate.

Closer scrutiny of circulatory system diseases mortality rates, suicide mortality rate and healthy life years at 65 is merited over the next few years.

## INDICATOR 1: LIFE EXPECTANCY

**Definition**

Life expectancy is one of the key measures of a population's health. It refers to the number of years a person can expect to live. By definition, life expectancy is based on an estimate of the average age that members of a particular population group will be when they die. Estimating life expectancy typically requires making assumptions.

The most common measure of life expectancy is life expectancy at birth. This is the mean number of years that a person can expect to live at birth if subjected to current mortality conditions throughout the rest of their life. Life expectancy at birth rose rapidly during the last century due to a number of factors, including advances in healthcare and medicine with reduction in infant mortality, better living conditions, improved lifestyles and better education. The measure differs considerably by sex, age, education level, race, and geographic location. Therefore, life expectancy is commonly given for specific categories, rather than for the population in general.

Life expectancy at age 65 years old is the average number of years that a person at that age can be expected to live, assuming that age-specific mortality levels remain constant. However, the actual age-specific death rate of any particular birth cohort cannot be known in advance.

The methodology used to calculate life expectancy can vary slightly between countries. This can change a country's estimates by a fraction of a year. This indicator is presented by gender and is measured in years.

Data was obtained from NIPH and EUROSTAT database.

**Analysis**

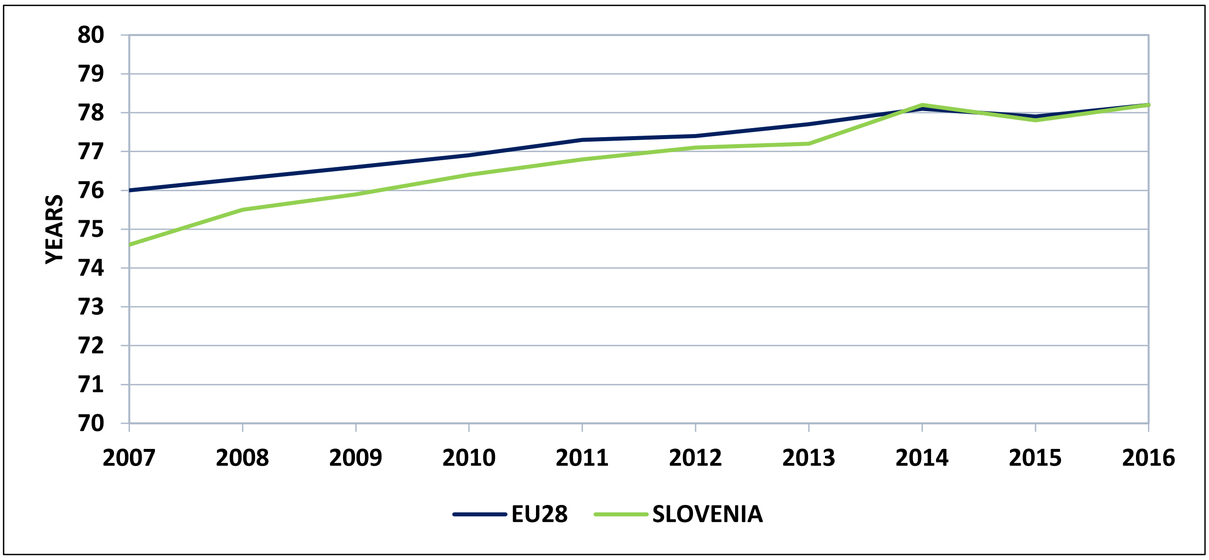
The results show that Slovenia's life expectancy at birth is steadily increasing in both males and females (**Figure** 7 and **Figure 9**). In males, life expectancy was almost the same as in EU–28 between 2014 and 2016. On the other hand, Slovenian females had a slightly better life expectancy at birth from 2008 onwards.

In 2016 Slovenian males had a shorter life expectancy at birth in comparison to some European countries (**Figure 8**). The life expectancy of Slovenian females was one of the highest in Europe (**Figure 10**).

Also, Slovenia's life expectancy at 65, as for the EU–28, is increasing in both males and females (**Figure 11** and **Figure 13**). While Slovenian males had a slightly lower life expectancy at 65 in comparison to EU–28, Slovenian females had almost a same from 2007 onwards.

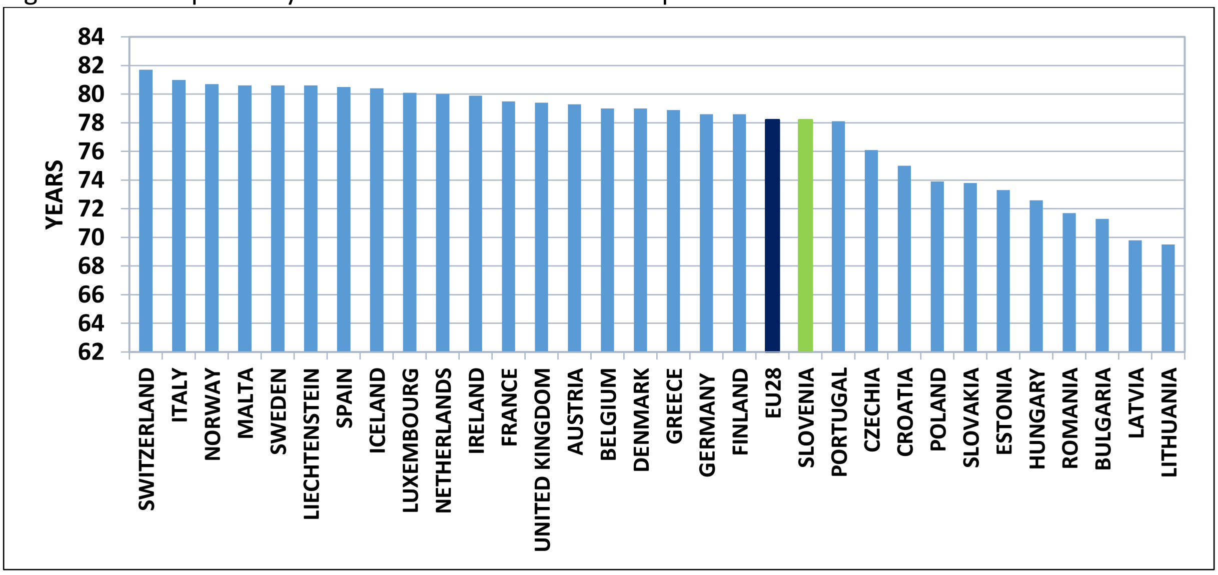
In 2016 both Slovenian males and females had a moderate life expectancy at 65 in comparison to majority of European countries (**Figure 12** and **Figure 14**).

Figure 7: Life expectancy at birth, males, Slovenia and EU–28, 2007–2016



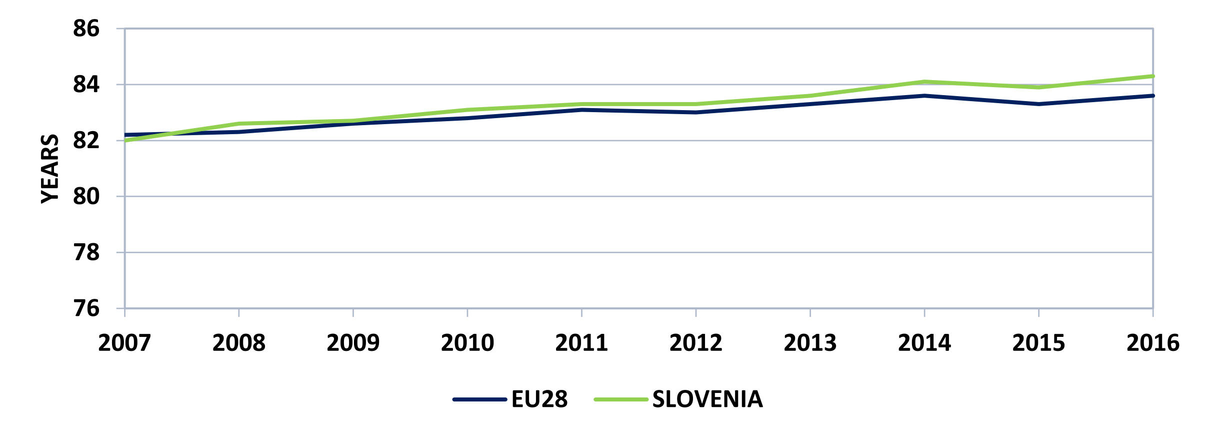

Source: NIPH, EUROSTAT

Figure 8: Life expectancy at birth in males in some European countries in 2016



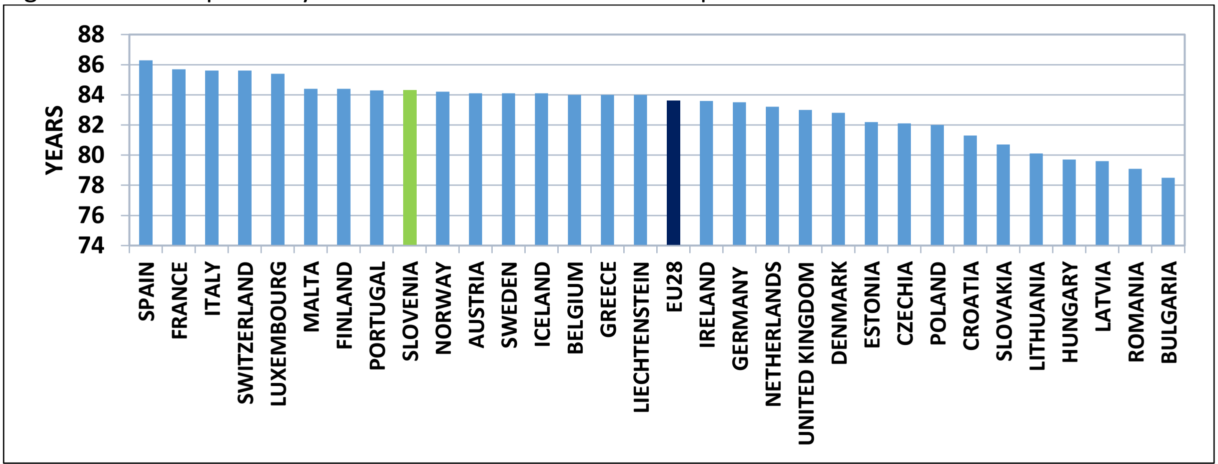

Source: EUROSTAT

Figure 9: Life expectancy at birth, females, Slovenia and EU–28, 2007–2016



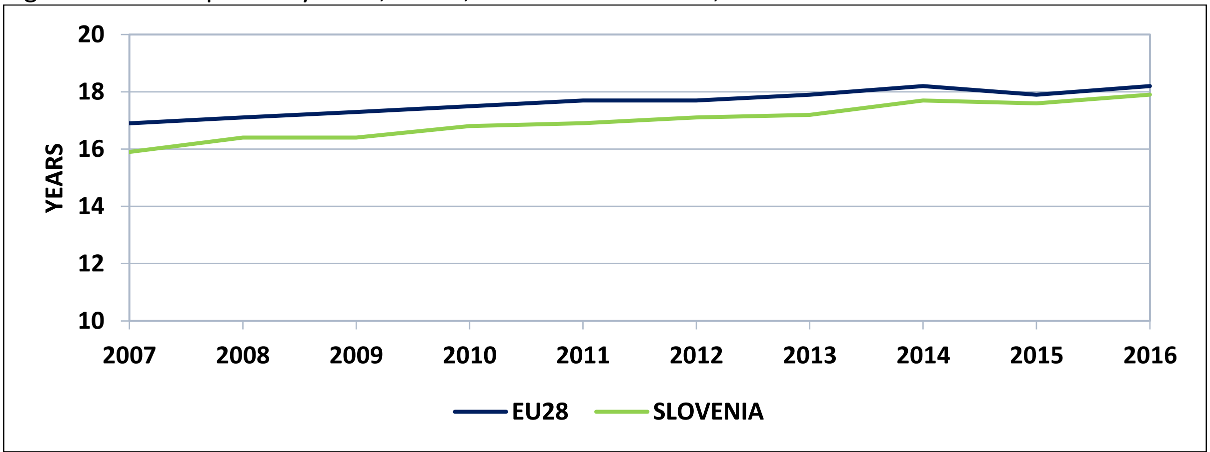

Source: NIPH, EUROSTAT

Figure 10: Life expectancy at birth in females in some European countries in 2016



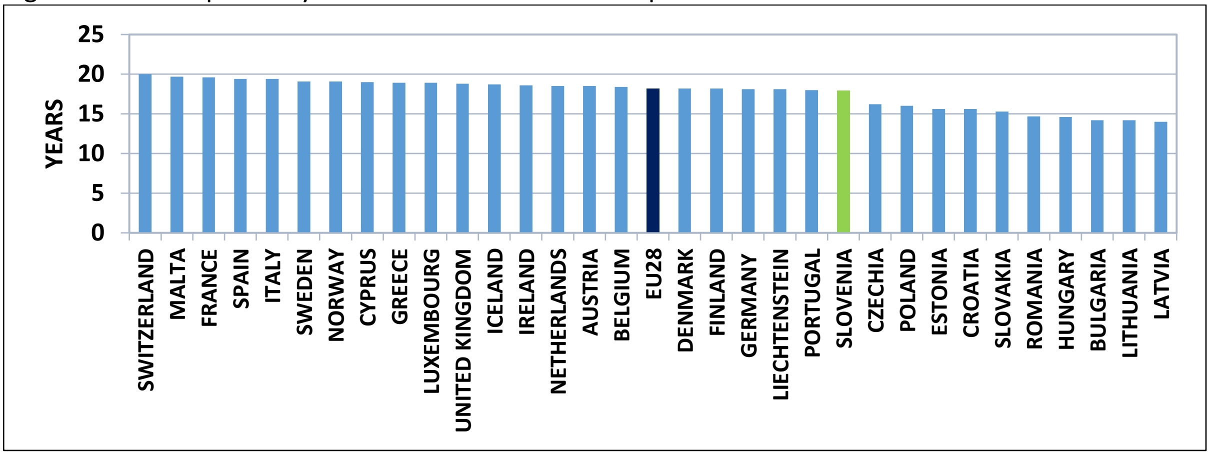

Source: EUROSTAT

Figure 11: Life expectancy at 65, males, Slovenia and EU–28, 2007–2016



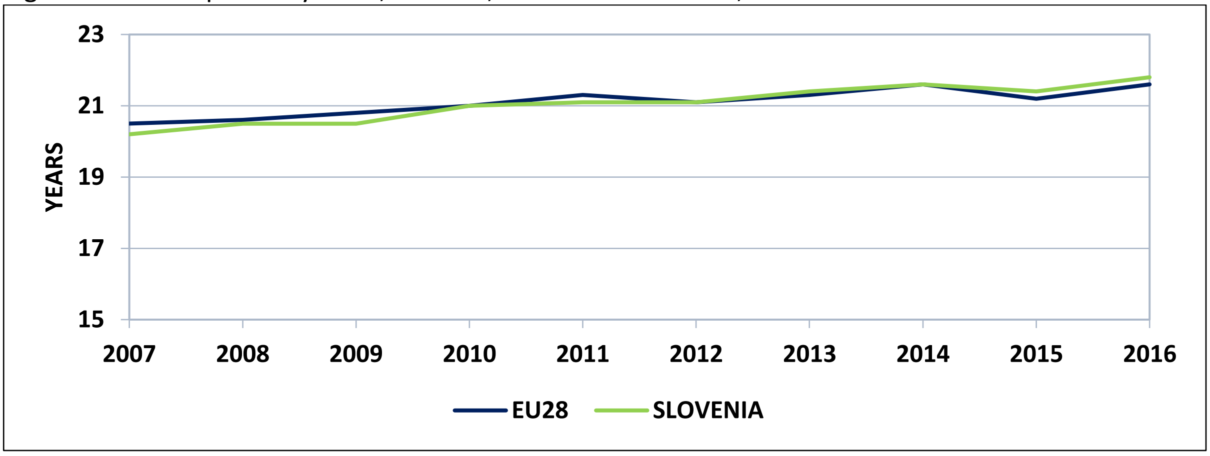

Source: NIPH, EUROSTAT

Figure 12: Life expectancy at 65 in males in some European countries in 2016



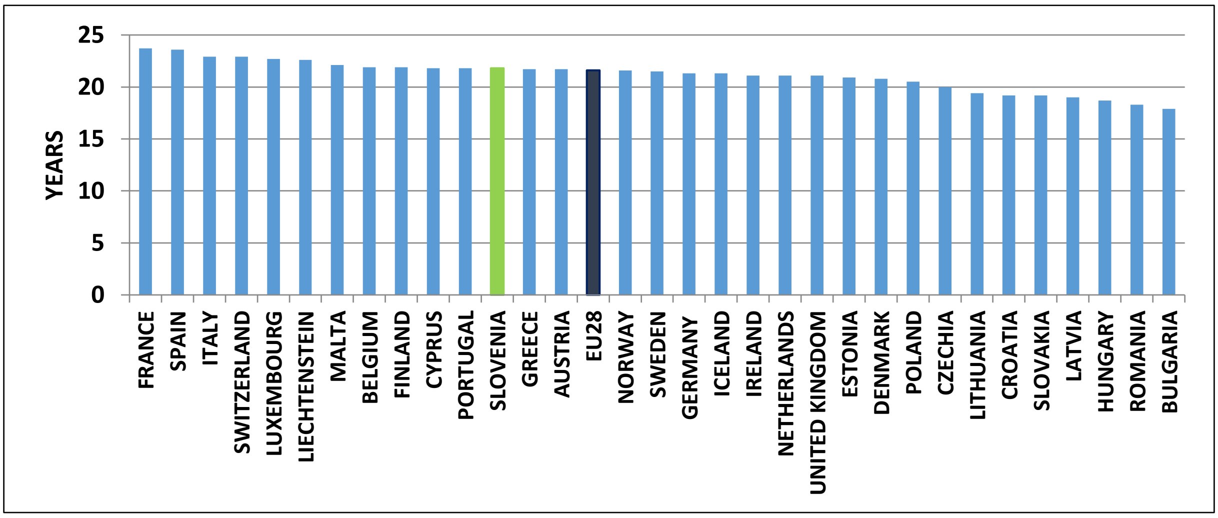

Source: EUROSTAT

Figure 13: Life expectancy at 65, females, Slovenia and EU–28, 2007–2016.




Source: NIPH, EUROSTAT

Figure 14: Life expectancy at 65 in females in some European countries in 2016




Source: NIPH, EUROSTAT.

## INDICATOR 14: CIRCULUATOY SYSTEM DISEASE MORTALITY RATES

**Definition**

Diseases of the circulatory system are the leading cause of death in the EU. They cover a broad group of medical problems that affect the circulatory system (the heart, blood vessels and arteries), often resulting from atherosclerosis. Some of the most common diseases that affect the circulatory system include ischaemic heart disease (heart attacks) and cerebrovascular diseases (strokes).

Diseases of the circulatory system have a significant impact on healthcare systems and government budgets. In 2015 there were 1.91 million deaths resulting from diseases of the circulatory system in the EU–28, which was equivalent to 36.7% of all deaths. This was considerably higher than the second most prevalent cause of death, cancer (25.4%).

Diseases of the circulatory system are also an important cause of mortality in Slovenia. Their incidence is influenced by many risk factors on that we can influence (smoking, physical activity, diet, arterial hypertension, hyperlipidaemia, overweight, diabetes, etc.). With a healthy lifestyle, the formation and progression of diseases of the circulatory system and their complications can be delayed.

The standardized mortality rate due to the diseases of the circulatory system is the ratio between the number of deaths due to the diseases of the circulatory system in the observed calendar year and the number of inhabitants in the middle of the same year, multiplied by 100 000.

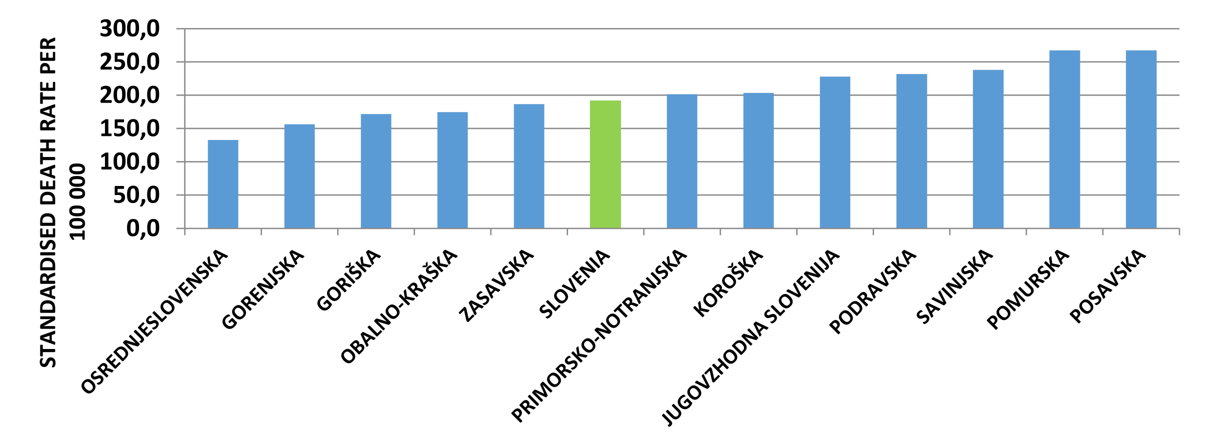
Data was obtained from NIPH and EUROSTAT database.

**Analysis**

The results show that the death rate in Slovenia due to diseases of the circulatory system was considerably higher than EU–28 from 2011 to 2015 (

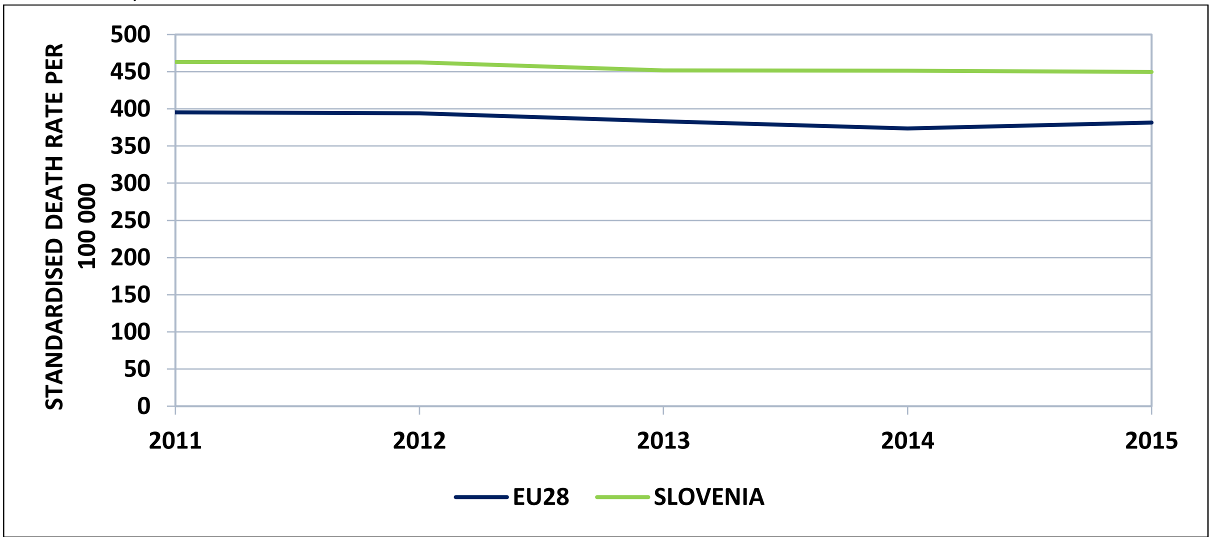
Figure 15). However, Slovenia was not among the European countries with the worst standardised death rate due to diseases of the circulatory system (**Figure 16**).

In 2016, there was a big difference in standardised death rates due to diseases of the circulatory system among Slovenian regions, with the worst standardised death rates in the regions of the eastern part (**Figure 17**: Standardised death rate per 100 000 due to diseases of the circulatory system in Slovenian regions in 2016.



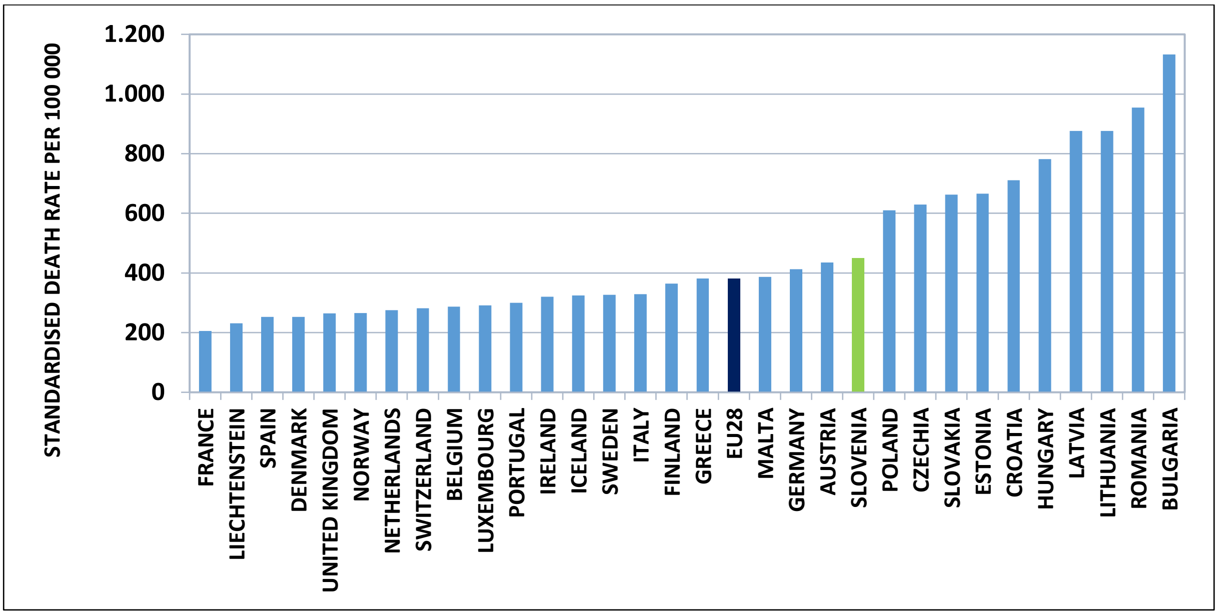

Regarding sex, both Slovenian males and females had a higher standardised death rate in comparison to EU–28 (**Figure 18** and **Figure 20**). Furthermore, Slovenian males and females had a higher risk for death due to diseases of circulatory system in comparison to many European countries in 2016 (**Figure 19** and **Figure 21**).

Figure 15: Standardised death rate per 100 000 due to diseases of the circulatory system in Slovenia and EU–28, 2011–2015.



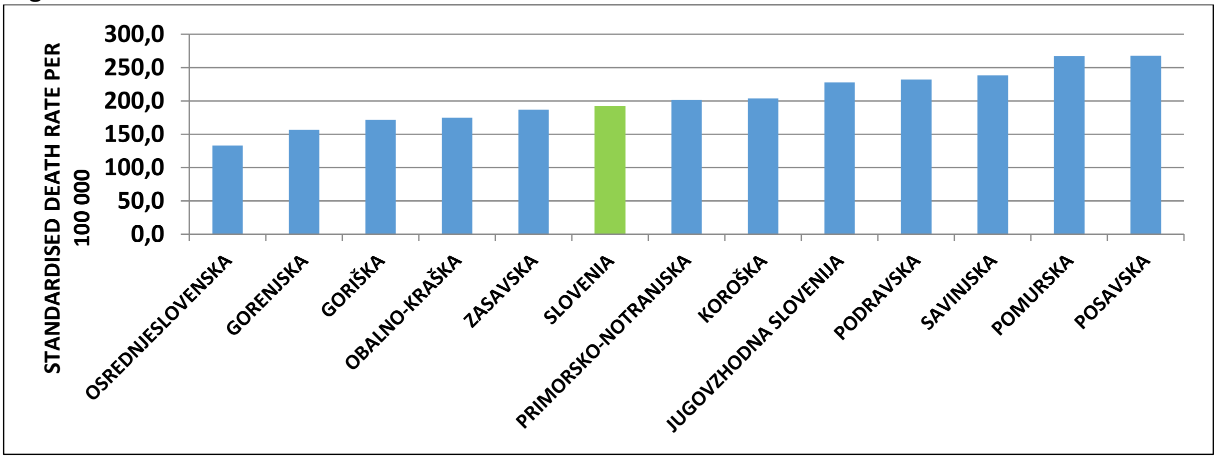

Source: NIPH, Eurostat

Figure 16: Standardised death rate per 100 000 due to diseases of the circulatory system in European countries in 2015.



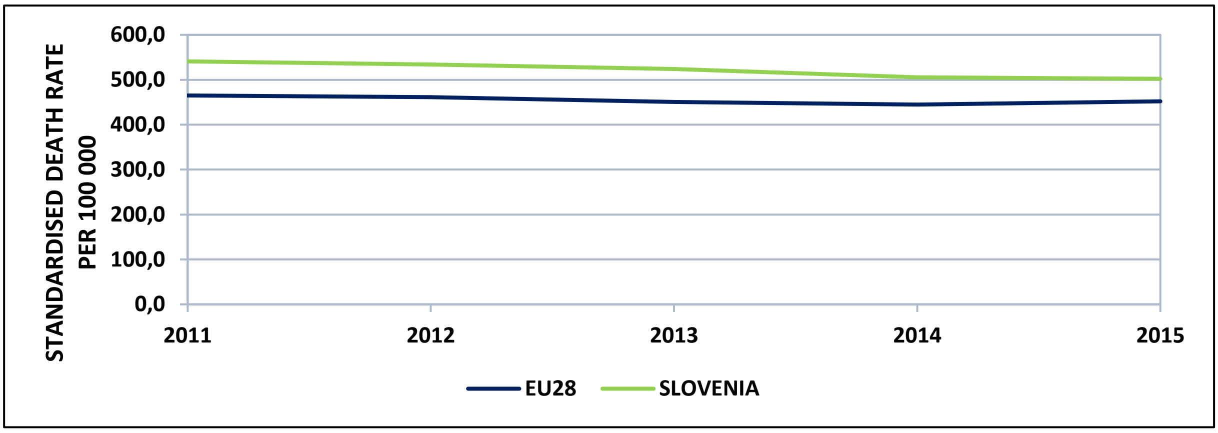

Source: Eurostat

Figure 17: Standardised death rate per 100 000 due to diseases of the circulatory system in Slovenian regions in 2016.



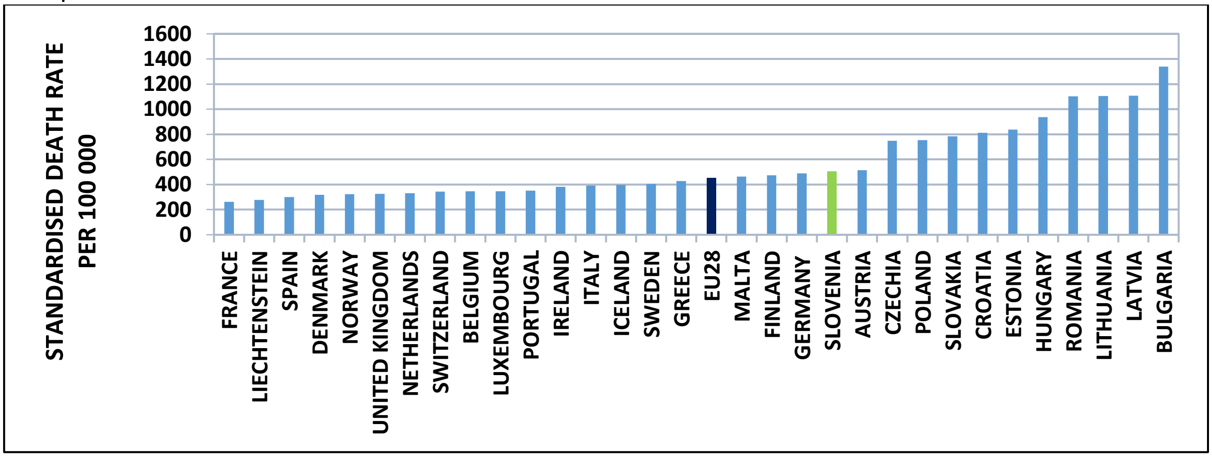

Source: NIPH

Figure 18: Standardised death rate per 100 000 due to diseases of the circulatory system in males, Slovenia and EU 2011–2015.



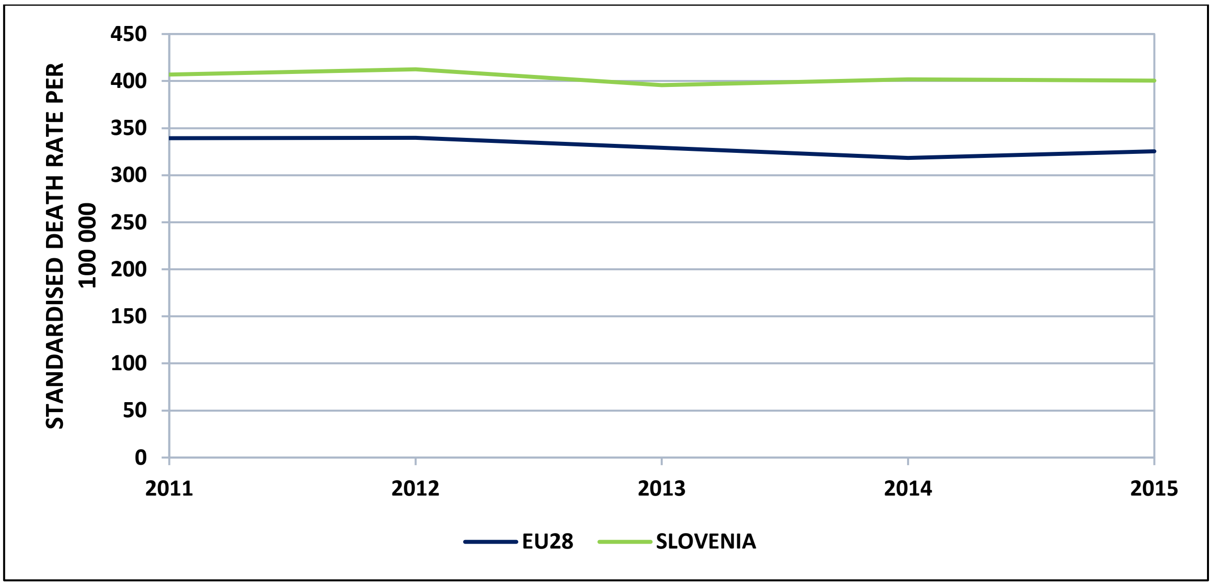

Source: NIPH, Eurostat

Figure 19: Standardised death rate per 100 000 due to diseases of the circulatory system in males in European countries in 2015.



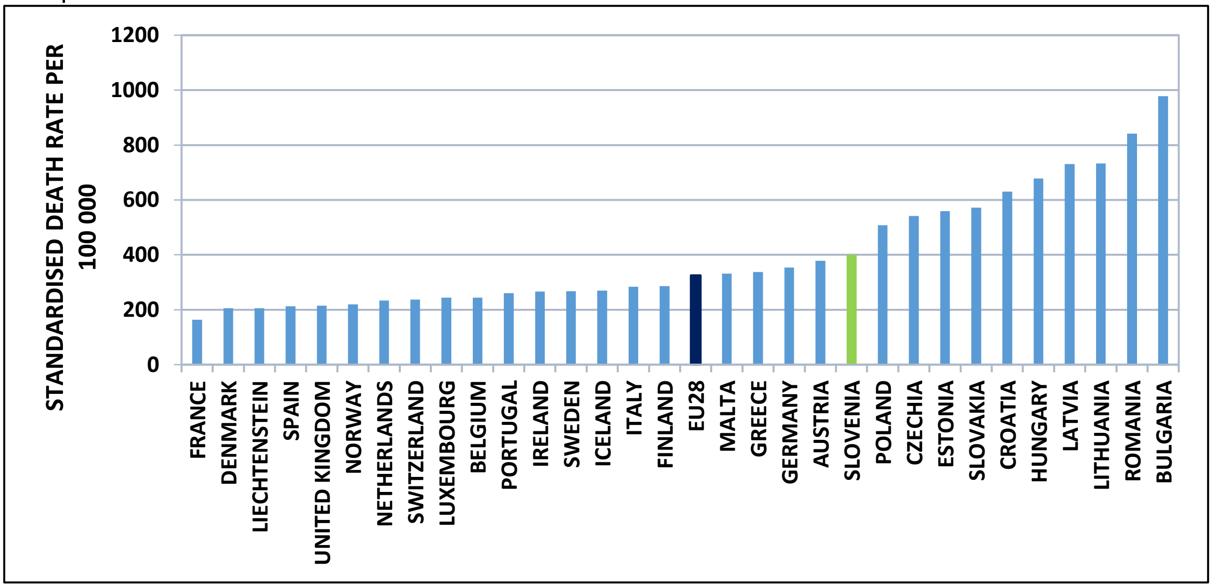

Source: Eurostat

Figure 20: Standardised death rate per 100 000 due to diseases of the circulatory system in females, Slovenia and EU 2011–2015.




Source: NIPH, Eurostat

Figure 21: Standardised death rate per 100 000 due to diseases of the circulatory system in females in European countries in 2015.




Source: Eurostat

## INDICATOR 17: INCIDENCE OF CANCERS

## INDICATOR 17A: INCIDENCE OF ALL CANCERS

**Definition**

Europe is characterized by striking geographical differences in cancer occurrence. There were an estimated 3.5 million new cancer cases and 1.9 million cancer deaths in Europe in 2012. Cancers of the female breast, colon, rectum, prostate and lung constitute over half of the overall incidence, while lung and colorectal cancer rank as the most common causes of cancer death.

In men, prostate cancer is the most frequent form of cancer incidence in most Northern, Western and Southern European countries, while lung cancer is the most frequently diagnosed cancer in Central and Eastern Europe. Lung cancer is the leading cause of cancer death among men in almost all European countries, while breast cancer as the most frequent in women. Lung cancer is also a leading cause of death due to cancer in certain European countries among women, overtaking breast cancer.

Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. New primary cancers of the same histology in paired organs, e. g. on the left and right breast, are not comprised in the incidence figures, neither are any new cancers of the same histology appearing in the same organ, e.g. multiple lesions of the colon.

The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

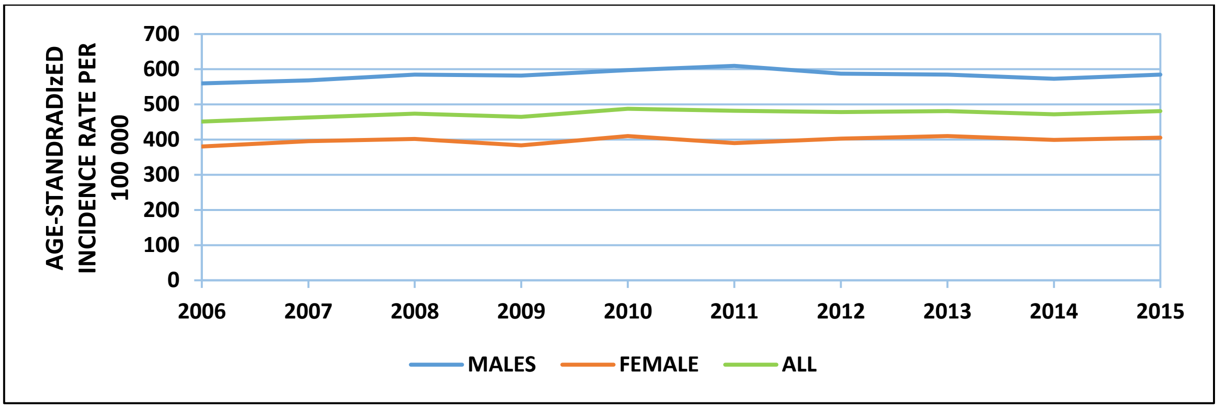
**Analysis**

The trend rate shows that age standardized incidence rate of all cancers was slowly progressive from 2006 to 2010 and after 2010 is stable and below 500/100 000 (**Figure 22**). Regarding the sex, males had a higher age standardized incidence rate between 2006 and 2015 compared to females (**Figure 22**). While males had a rate little below 600 per 100 000, females had it around 400 per 100 000.

However, some Slovenian regions had a higher age standardized incidence rate in 2015 (**Figure 23**).

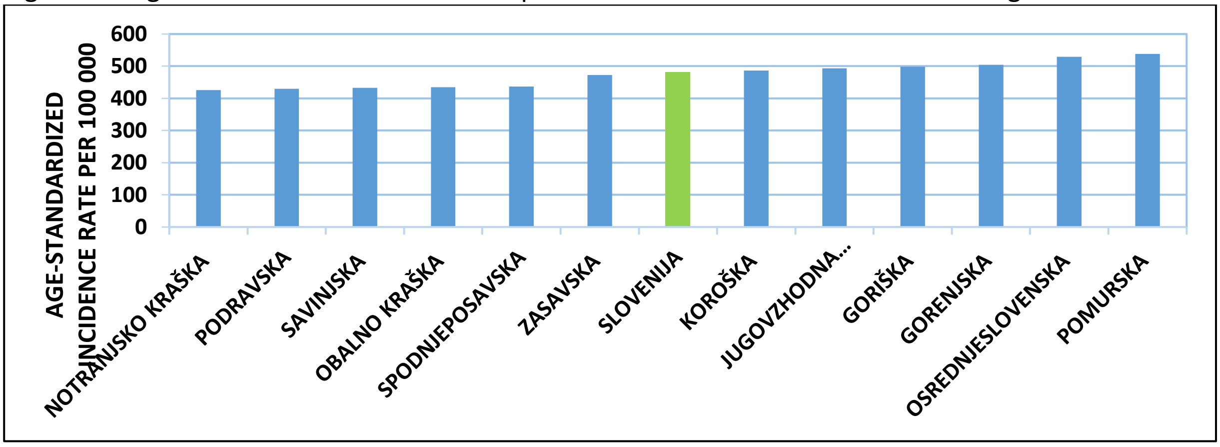
In comparison to EU–28 average, both Slovenian males and females had a lower age-standardized incidence rate from 2007 to 2016 (**Figure 24**).

Figure 22: Age-standardized incidence rate per 100 000 of all cancers in females and males in Slovenia between 2006 and 2015.



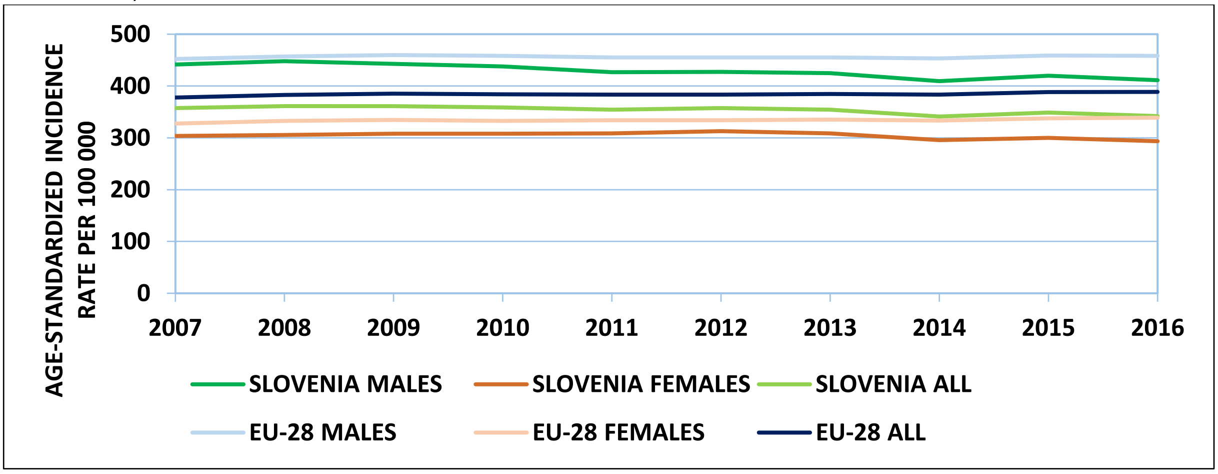

Source: SLORA

Figure 23: Age-standardized incidence rate per 100 000 of all cancers in Slovenian regions in 2015.




Source: SLORA

Figure 24: Age-standardized incidence rate per 100 000 of all cancers in females and males, Slovenia and EU–28, 2007– 2016.




Source: IHME, GHDx

## INDICATOR 17B: INCIDENCE OF COLORECTAL CANCER

### Definition

Colorectal cancer is the third most commonly diagnosed malignancy and the fourth leading cause of cancer-related deaths in the world. Furthermore, it is the third most commonly occurring cancer in men and the second most commonly occurring cancer in women. In 2015, 154 000 people died from colorectal cancer in the EU–28, equivalent to 11.7 % of all deaths from cancer and 3.0 % of the total number of deaths from any cause.

From 2011 to 2015, there were 1465 new cases (876 males and 589 females) of colorectal cancer in average in Slovenia. This represented 10.6 % of all new cancer cases (11.6 males, 9.4 females) in average. Age-standardized incidence rate was 33.4 per 100 000 inhabitants (45.35 males, 23.6 females) in average. The number of deaths due to colorectal cancer was 768 (438 males, 330 females). Age-standardized death rate was 14.8 per 100 000 inhabitants (43.0 males, 31.8 females).

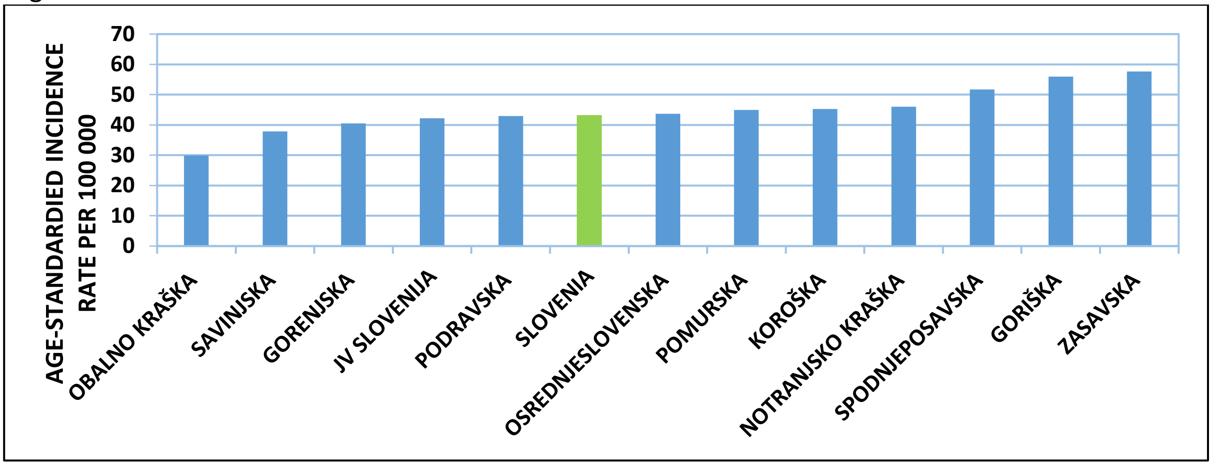
The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence rate was evaluated (ESP was used).

### Analysis

The results show a difference in age-standardized incidence rate of colorectal cancer among Slovenian regions in 2015, from 29.9 per 100 000 in Obalno-kraška region to 57.7 per 100 000 in Zasavska region (**Figure 25**). It is also noticeable that after the initial milder rise from 2006 to 2010, age-standardized incidence rate quickly began to descend after 2010 (**Figure 26**).

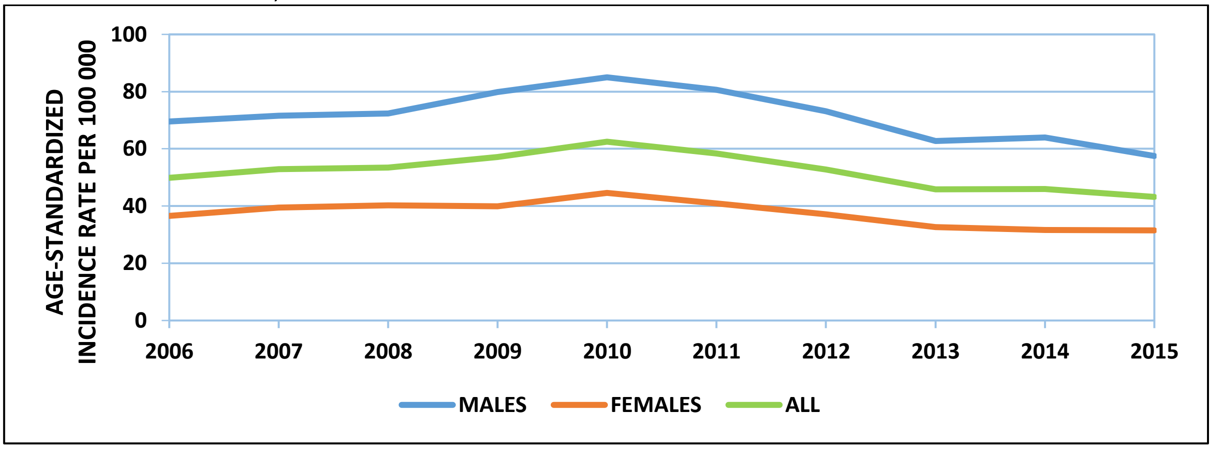
In comparison to EU–28 average, Slovenia had a slightly higher age-standardized incidence rate between 2007 and 2016 (**Figure 27**). This was more obvious in males, while females had a slightly lower age-standardized incidence rate after 2014 (**Figure 27**). Moreover, Slovenia was among EU countries with the highest age-standardized incidence rate in 2016 (**Figure 28**).

Figure 25: Age-standardized incidence rate per 100 000 inhabitants of colorectal cancer, Slovenian regions in 2015.



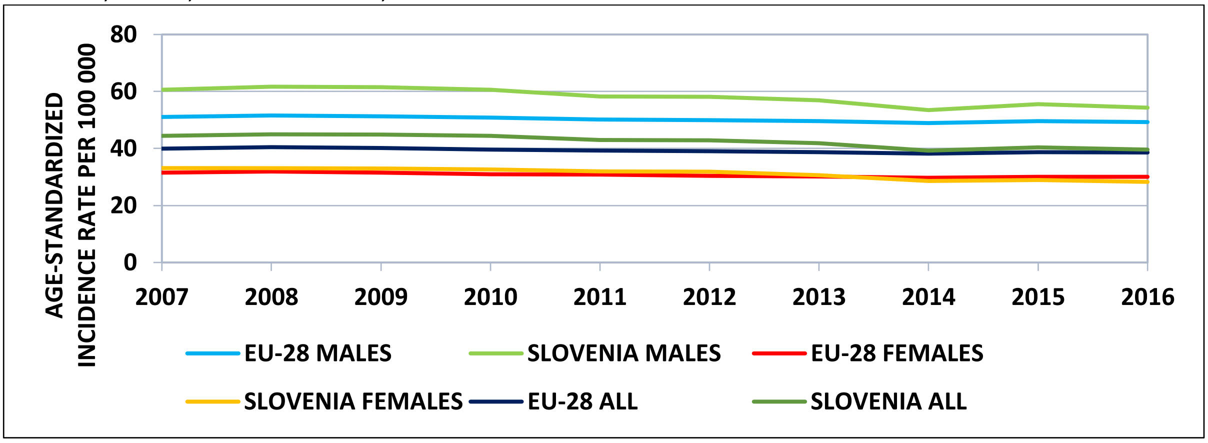

Source: SLORA

Figure 26: Age-standardized incidence rate per 100 000 of colorectal cancer of males, females and all inhabitants in Slovenia, 2006–2015.



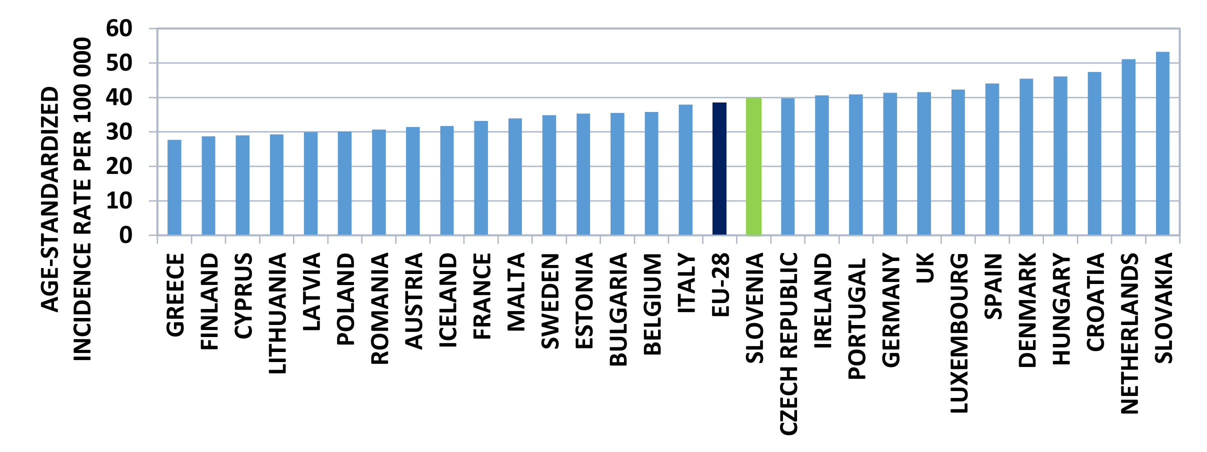

Source: SLORA

Figure 27: Age-standardized incidence rate per 100 000 inhabitants of colorectal cancer, EU–28 and Slovenia, males, females and all, 2007–2016.




Source: IHME, GHDx

Figure 28: Age-standardized incidence rate per 100 000 inhabitants of colorectal cancer in EU in 2016.




Source: IHME, GHDx

## INDICATOR 17C: INCIDENCE OF BREAST CANCER

**Definition**

Breast cancer is the most common cancer in the WHO Europe region and is the most prevalent form of cancer in females across EU countries. One in nine women will develop breast cancer at some point in their life and one in thirty will die from the disease. There are more than twice as many new breast cancer cases annually than new cases of cancer in any other site. Breast cancer also appears in a much lesser extent in males.

An average of 20% of breast cancer cases in Europe occur in females younger than 50 years. 36% of breast cancer cases occur at age 50–64 and the remaining in females above this age. Breast cancer therefore affects many females during their years dedicated to working and raising a family.

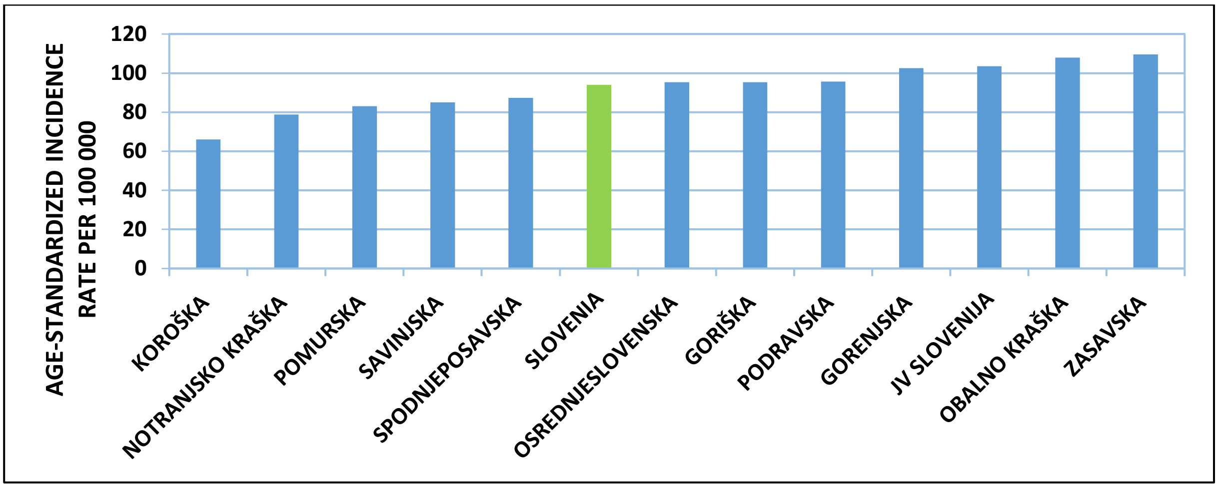
The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

**Analysis**

The results show differences in age-standardized incidence rate among Slovenian regions in 2015 (**Figure 29**). Trend line of age-standardized incidence rate shows a small increase in age-standardized incidence rate after 2009 with a stagnation after 2012 (**Figure 30**).

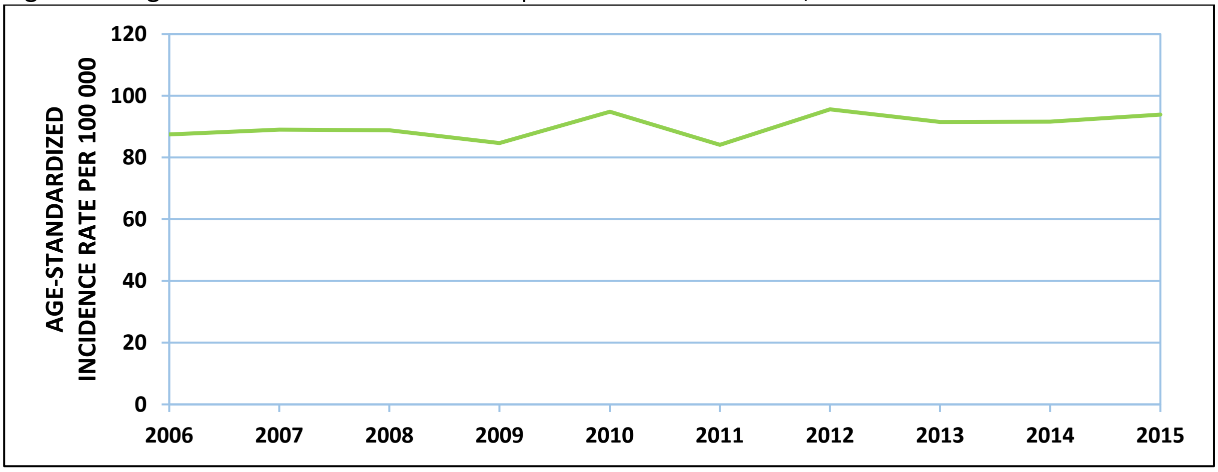
The comparison between Slovenia and other EU–28 countries shows that Slovenia had one of the lowest age-standardized incidence rates in 2016 (**Figure 31**). This is also seen from a trend line that compares Slovenia and EU–28 average age-standardized incidence rate (**Figure 32**).

Figure 29: Age-standardized incidence rate per 100 000 inhabitants of breast cancer, Slovenian regions in 2015.



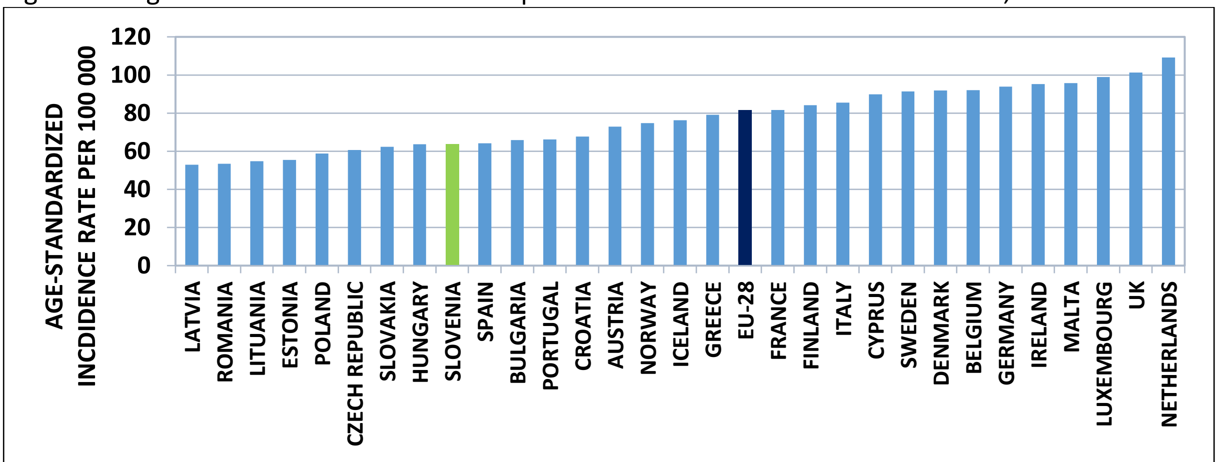

Source: SLORA

Figure 30: Age-standardized incidence rate per 100 000 inhabitants, Slovenia 2006–2015.



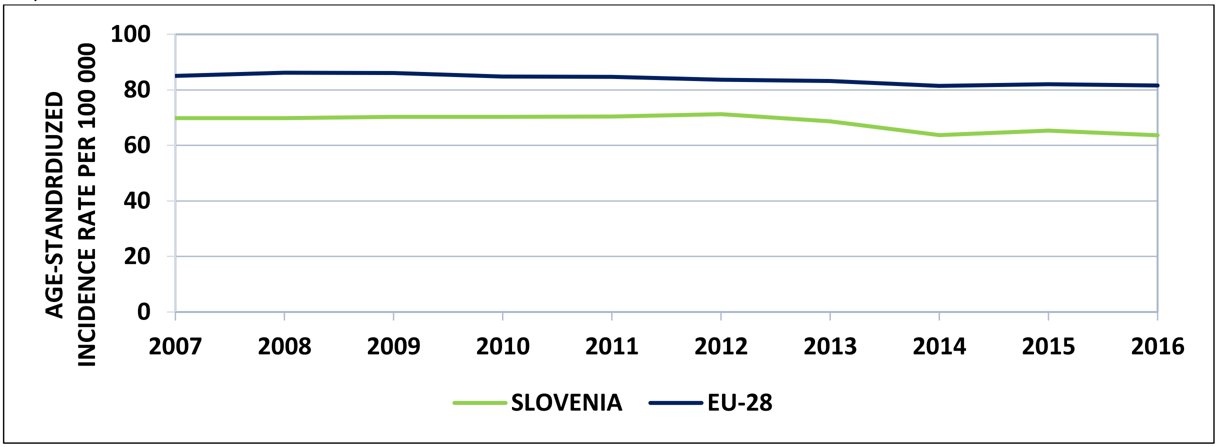

Source: SLORA

Figure 31: Age-standardized incidence rate per 100 000 inhabitants of breast cancer, EU–28 in 2016.




Source: IHME, GHDx

Figure 32: Age-standardized incidence rate per 100 000 inhabitants of breast cancer, Slovenia and EU–28, 2007–2016.




Source: IHME, GHDx

## INDICATOR 17D: INCIDENCE OF LUNG CANCER

**Definition**

Cigarette smoking is the major cause of lung cancer. Around 80-90% of all lung cancers are attributable to tobacco. Active cigarette smoking is the main risk factor, but lung cancer has multifactorial causes. Interactions between environmental, occupational and genetic factors are also important causes of lung cancer.

Thousands of people are diagnosed with lung cancer every year. Its mortality rate is the highest among all cancers. The highest age-standardized rates of lung cancer incidence are found in North America and Europe. In the EU, lung cancer is the fourth most commonly diagnosed cancer, affecting more than 312 000 people every year (GLOBOCAN 2012). Only breast, colorectal and prostate cancers present higher incidence rates.

In Europe, around 213 663 men and 98 982 women are diagnosed with lung cancer every year. This makes lung cancer the second and third most commonly diagnosed cancer in males and females, respectively. Males are more affected by lung cancer. However, the gender gap is decreasing in most European countries due to changes in the last few decades in the pattern of tobacco use. Incidence rates of lung cancer in women are lower, but are on the rise in many countries.

The incidence rate in 23 European countries is higher than the worldwide average (23.1 per 100 000). Hungary has the highest incidence of lung cancer, with an age-standardized rate of 51.6 per 100 000. In the EU, Hungary is followed by Denmark, Poland, the Netherlands and Belgium.

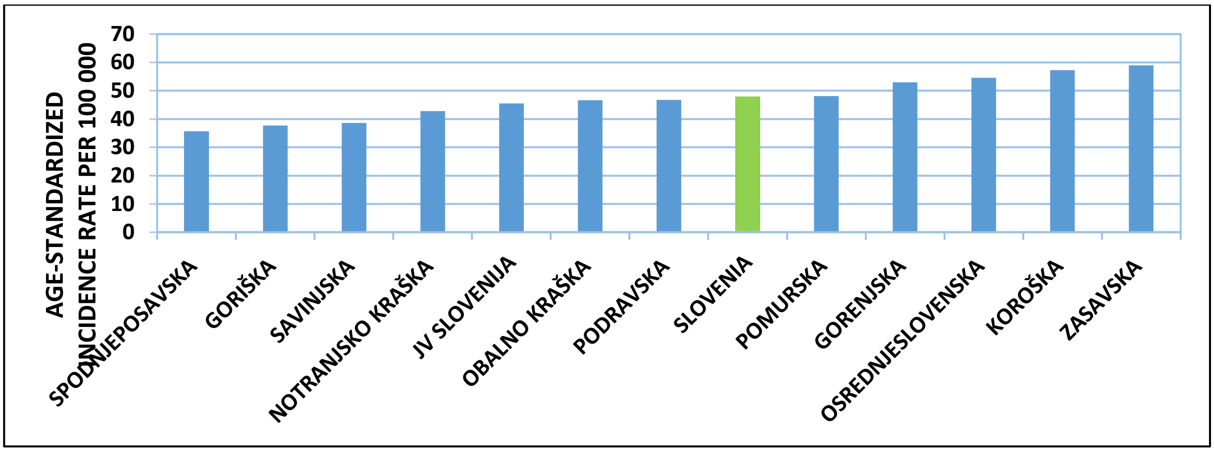
The indicator shows the incidence rate of lung cancer in adults in Slovenia and selected EU countries. The data was obtained from SLORA and IHME. Age-standardized incidence was evaluated (ESP was used).

**Analysis**

The results show differences in age-standardization incidence rate across Slovenian regions in 2015 (**Figure 33**). Trend line does not show an increase in age-standardized incidence rate after 2006, at most it shows a transient decrease between 2006 and 2015 (**Figure 34**).

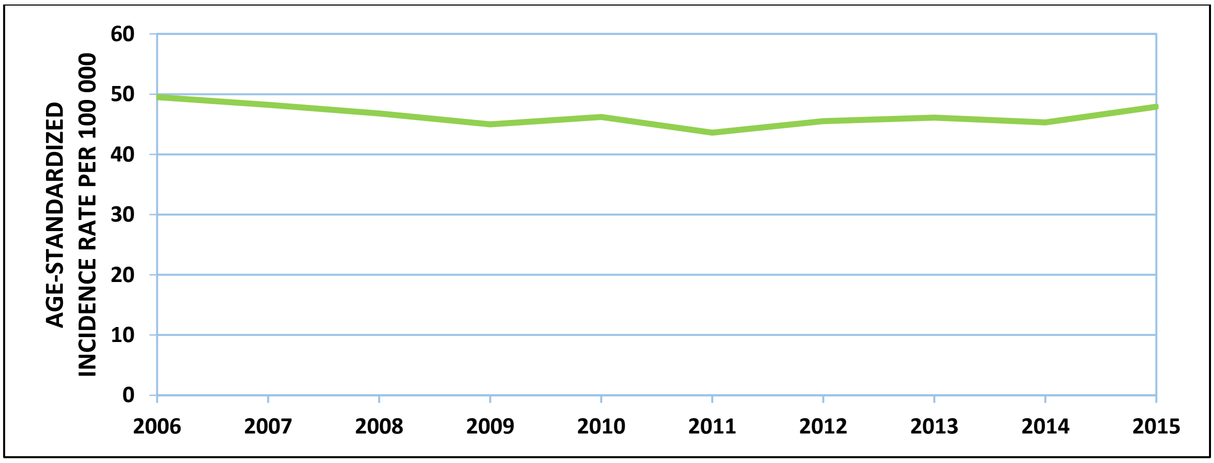
In comparison to EU–28 average age-standardized incidence rate, Slovenia did not significantly differ in the rate, at most it had a similar rate in both males and females after 2011 (**Figure 35**).

Figure 33: Age-standardized incidence rate per 100 000 inhabitants of lung cancer, Slovenian regions in 2015.



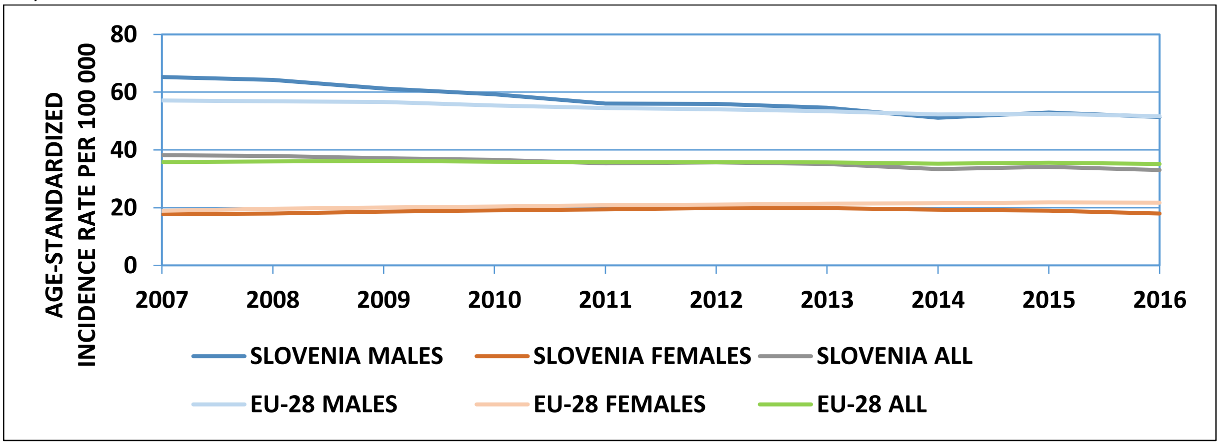

Source: SLORA

Figure 34: Age-standardized incidence rate per 100 000 inhabitants of lung cancer, Slovenia 2006–2015.




Source: SLORA

Figure 35: Age-standardized incidence rate per 100 000 inhabitants of lung cancer, Slovenia and EU–28, 2007–2016.




Source: IHME, GHDx

## INDICATOR 17E: INCIDENCE OF PROSTATE CANCER

**Definition**

In the European Union, prostate cancer is ranked first among the most frequently diagnosed cancer among males, with around 345 000 new cases estimated in 2012. Prostate cancer accounted for 24 per cent of all new cancers in the same year. For 2015 the estimated number of new prostate cancer cases is about 365,000. Within the European Union there is a huge variability in incidence rates, from Sweden (age-adjusted rate on the European standard population, ASR 175) to Greece (ASR 34).

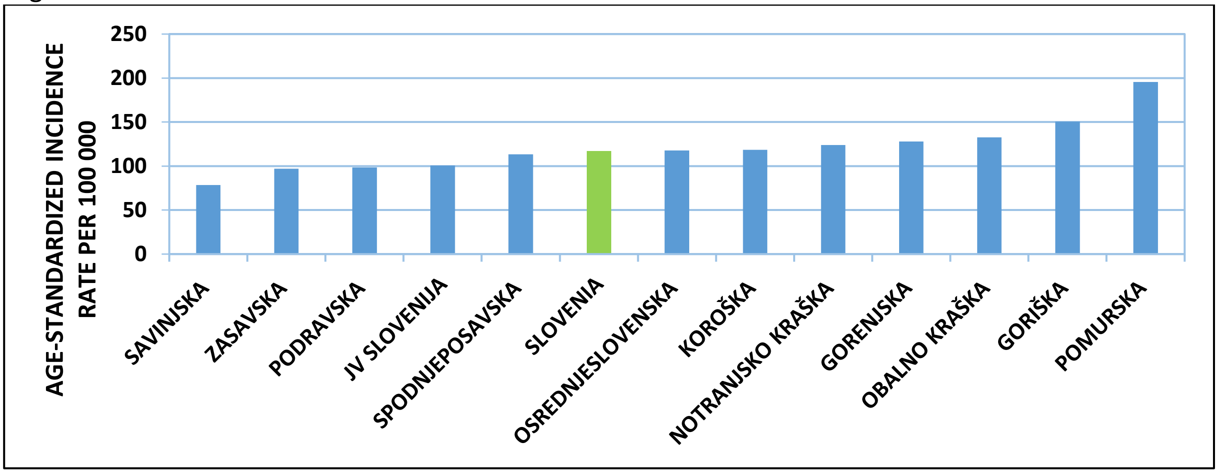
The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

**Analysis**

The results show great differences in age-standardized incidence rate among Slovenian regions in 2015 with the highest rate in Pomurska region (**Figure 36**). Trend line of age-standardized incidence rate shows a rapidly increasing age-standardized incidence rate from 2006 to 2011 with a stagnation after 2012 (**Figure 37**).

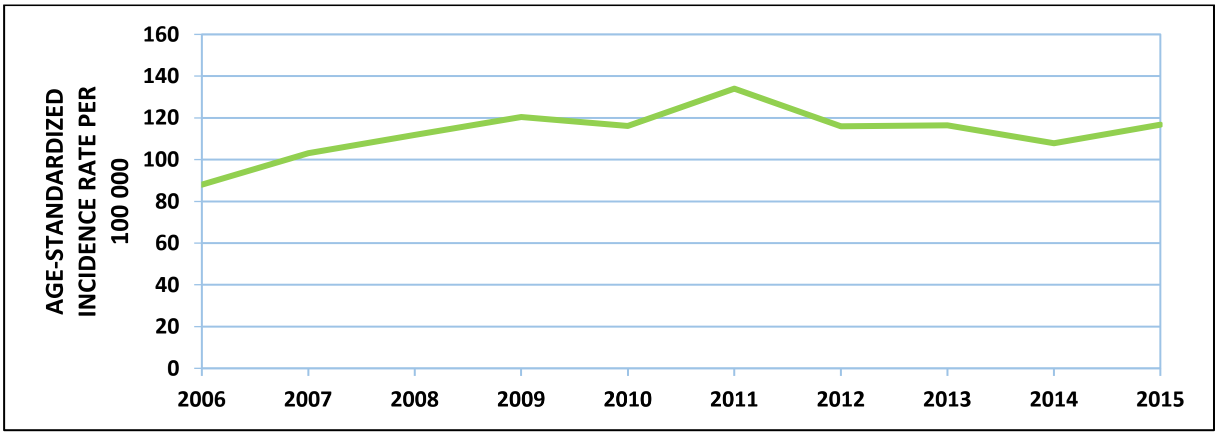
The comparison between Slovenia and EU–28 average shows a similar age-standardized incidence rate between 2008 to 2013 with a slow decrease in Slovenian rate after 2013 (**Figure 38**).

Figure 36: Age-standardized incidence rate per 100 000 inhabitants of prostate cancer, Slovenian regions in 2015.



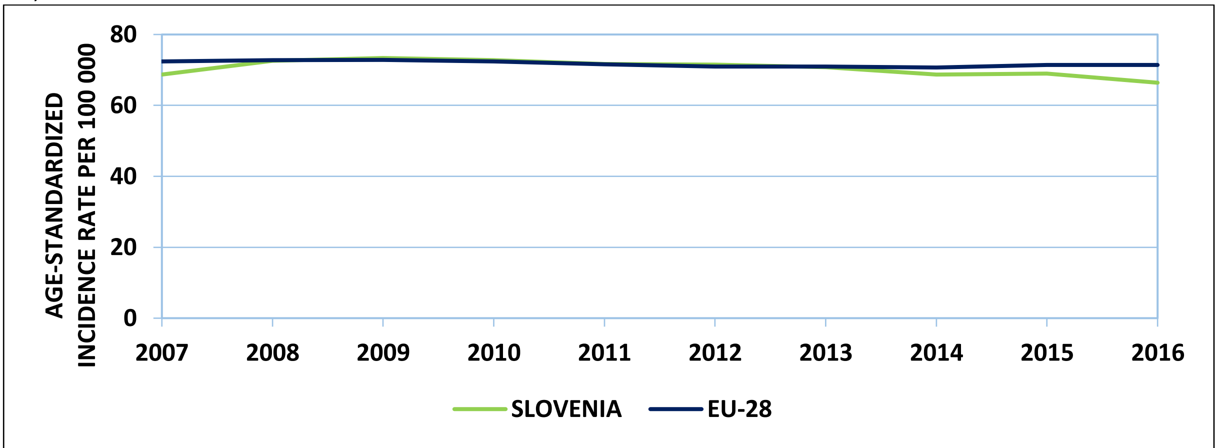

Source: SLORA

Figure 37: Age-standardized incidence rate per 100 000 inhabitants, prostate cancer, Slovenia 2006–2015.




Source: SLORA

Figure 38: Age-standardized incidence rate per 100 000 inhabitants, prostate Cancer, Slovenia and EU–28, 2007–2016




Source: IHME, GDHx

## INDICATOR 17F: INCIDENCE OF CERVICAL CANCER

**Definition**

Cervical cancer is highly preventable if precancerous changes are detected and treated before progression occurs. The main cause of cervical cancer is the human papilloma virus (HPV) which accounts for approximately 95% of all cases.

EU countries follow a number of different approaches with regards to the prevention and early diagnosis of cervical cancer. Over half of EU countries have cervical cancer screening organised through population-based programmes but the periodicity and target age groups vary (OECD, 2013). WHO recommends HPV vaccinations as part of national immunisation programmes primarily to girls aged 9-13. Studies show these programmes to be cost-effective and the majority of EU countries have a plan currently in place (WHO, 2014). Screening rates for cervical cancer range from 25.0% in Latvia to 86.6% in Austria in 2014 and have increased from 63.0% to 64.4% on average across EU countries over the past decade. The coverage increase was particularly large in the Slovak Republic where rates almost doubled over this period. In several EU countries screening coverage declined, which may be related to the introduction of HPV vaccinations started in the late 2000s (OECD, 2013).

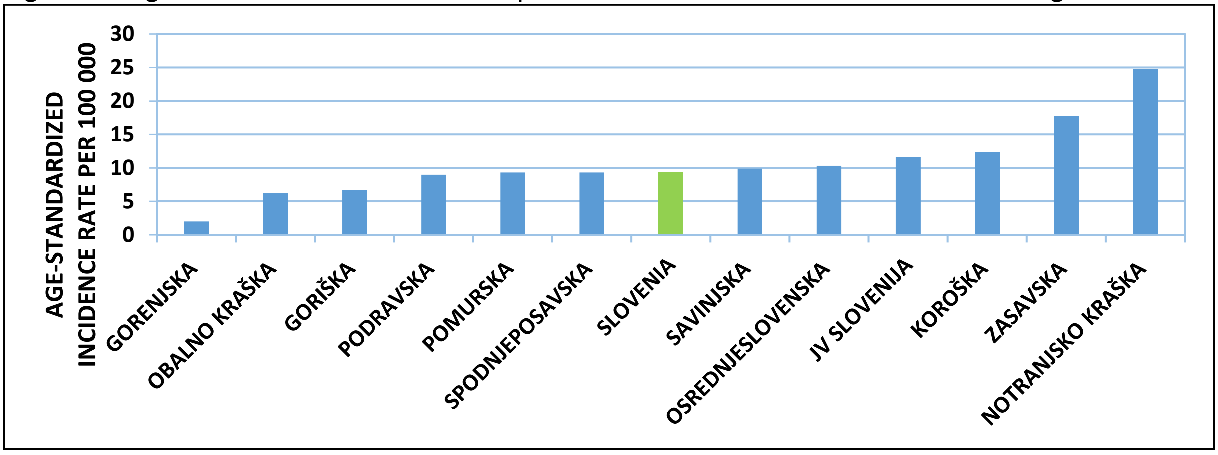
The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

**Analysis**

The results show great differences in age-standardized incidence rate among Slovenian regions in 2015 with the highest rate in Obalno-kraška region (**Figure 39**). Trend line of age-standardized incidence rate shows a decreasing age-standardized incidence rate after 2006 (**Figure 40**).

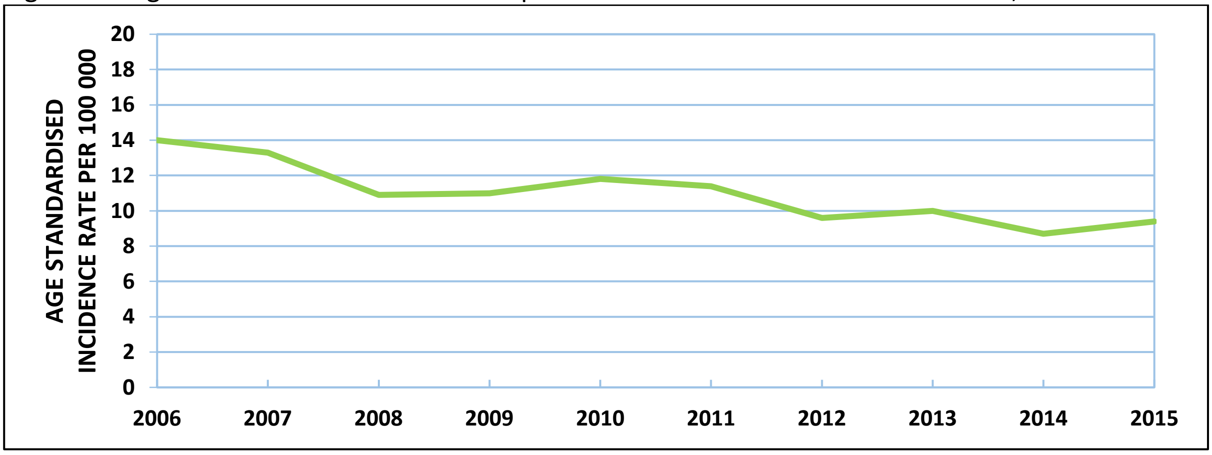
The comparison between Slovenia and EU–28 average shows a quite similar age-standardized incidence rate between 2007 to 2016 with a decrease in Slovenian rate after 2013 (**Figure 41**).

Figure 39: Age-standardized incidence rate per 100 000 of cervical cancer in Slovenian regions in 2015.



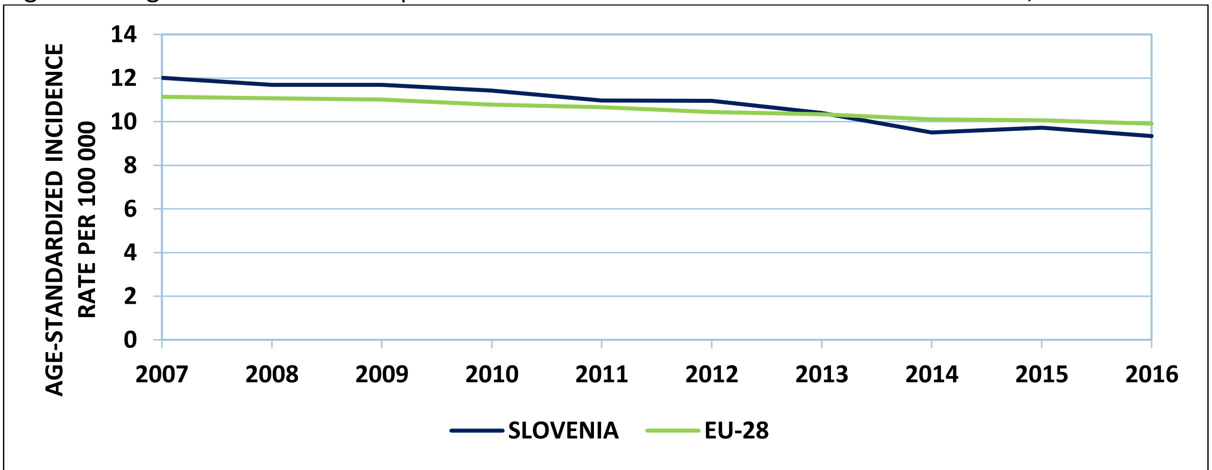

Source: SLORA

Figure 40: Age-standardized incidence rate per 100 000 of cervical cancer in Slovenia, 2006–2015.




Source: SLORA

Figure 41: Age-standardized rate per 100 000 of cervical cancer in Slovenia and EU–28, 2007–2016.




Source: IHME, GDHx

## INDICATOR 24: DIABETES PREVALENCE RATE

### Definition

Diabetes is a chronic disease characterized by high levels of blood sugar. It may be due to defected pancreatic production of insulin (Type 1) or poor response of body cells to insulin (Type 2). Type 2 diabetes is largely preventable since the risk factors such as overweight, obesity, diet and physical inactivity can be greatly affected. People with diabetes have a greater risk of developing cardiovascular diseases such as myocardial infarction and stroke. In addition, they have also a greater risk of vision loss, foot and leg amputation and renal failure. According to the WHO data the number of people having diabetes is continuously growing. In addition, the economic burden of diabetes is significant.

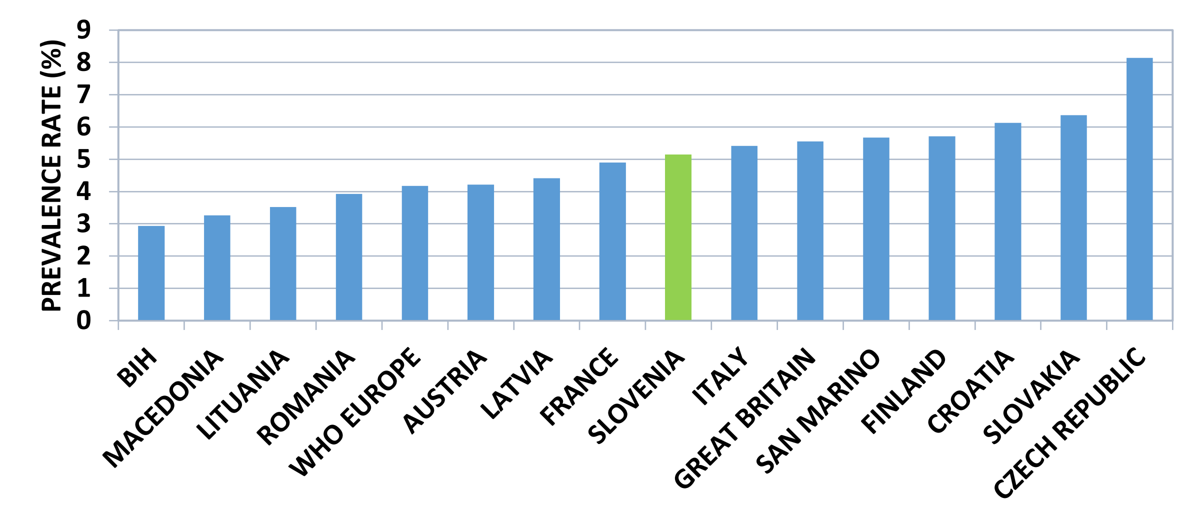
The age-standardized prevalence rate of diabetes among adults has stabilized in many EU countries but is still slightly increasing in the southern, central and eastern European countries. Part of the upward trend is due to an increase in obesity and physical inactivity and their interactions with the aging of the population (NCD Risk Factor Collaboration, 2016). People with lower education have more than twice as high diabetes as those with higher education in the European Union (European Health Interview Survey, 2014). This is partly due to the higher proportion of the lower educated among the elderly population and the higher risk for diabetes in later years of life. The number of patients with diabetes is also steadily increasing in Slovenia. More than 108.000 people receive medications for the treatment of diabetes. The number is about 3% higher each year. Within the framework of the National Diabetes Control Program 2010–2020, many steps have already been taken in 8 years to better control this chronic disease. However, there are still many challenges in this area that we will face in the future.

Data were obtained from WHO database. In Slovenia data for WHO database are provided by the National prescription database (data from Compulsory Health Insurance Database). The total number includes all patients receiving antidiabetic drugs (ATC code A10) and all types of diabetes were included. Diabetic patients treated only with lifestyle modification are not included. It needs to be mentioned that many countries did not provide data for each year and there was a little data for 2016, so we analysed data of 2015.

### Analysis

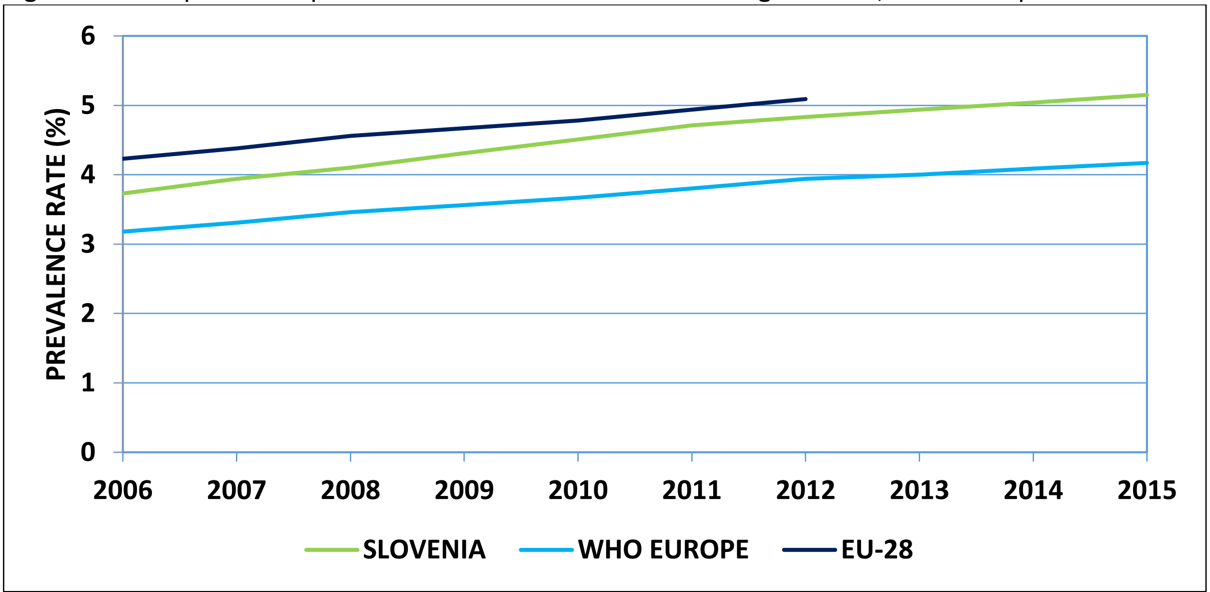
The results show that Slovenia had a moderate prevalence rate of diabetes mellitus compared to other European countries in 2015 (5.15 %, **Figure 42**). Besides this Slovenia had a lower prevalence rate than EU–28 average, but higher than WHO Europe average (**Figure 43**). As in other European countries, the prevalence rate in Slovenia is increasing from year to year.

Figure 42: Prevalence of diabetes mellitus in some European countries in 2015.




Source: WHO

Figure 43: Comparison of prevalence of diabetes mellitus among Slovenia, WHO Europe and EU–28.




Source: WHO

## INDICATOR 40: SUICIDE MORTALITY RATE

**Definition**

Suicide death is defined as the death deliberately initiated and performed by a person in the full knowledge or expectation of its fatal outcome. Comparability of data between countries is affected by a number of reporting criteria, including how a person's intention of killing themselves is ascertained, who is responsible for completing the death certificate, whether a forensic investigation is carried out, and the provisions for confidentiality of the cause of death. Caution is required therefore in interpreting variations across countries. Risk factors for suicide include mental disorder, especially depression, neurological disorders, cancer and HIV infection. Every year, almost one million people die from suicide around the world, 86% of whom are from low/middle-income countries. Suicide is among the three leading causes of death for young people under 25 and accounts for 10%–20% of deaths in women up to one year after giving birth. The median suicide rate for the countries of the Eastern Mediterranean Region is 4.90 per 100 000 people, compared with 6.55 for all countries of the world.

Every year, more than 400 people commit suicide in Slovenia, but the number seems to decrease. According to the international data, Slovenia is one of the countries in the world’s top suicide death rate. Among mental disorders the other factors that increase the risk of suicide in Slovenia are suicide in the family, previous suicide attempts, poor socio-economic standards, poor education, certain social circumstances and the presence of serious physical illnesses. The reasons for the decline in the suicide number can be multi-layered. Over the last few years, preventive activities have been stepped up (awareness of the general public, activities of destigmatization, work on strengthening skills and competencies for identifying and dealing with suicidal threats in different target groups - general public, different profiles of experts, etc.), and accessibility to assistance, especially in the non-governmental sector, has also increased.

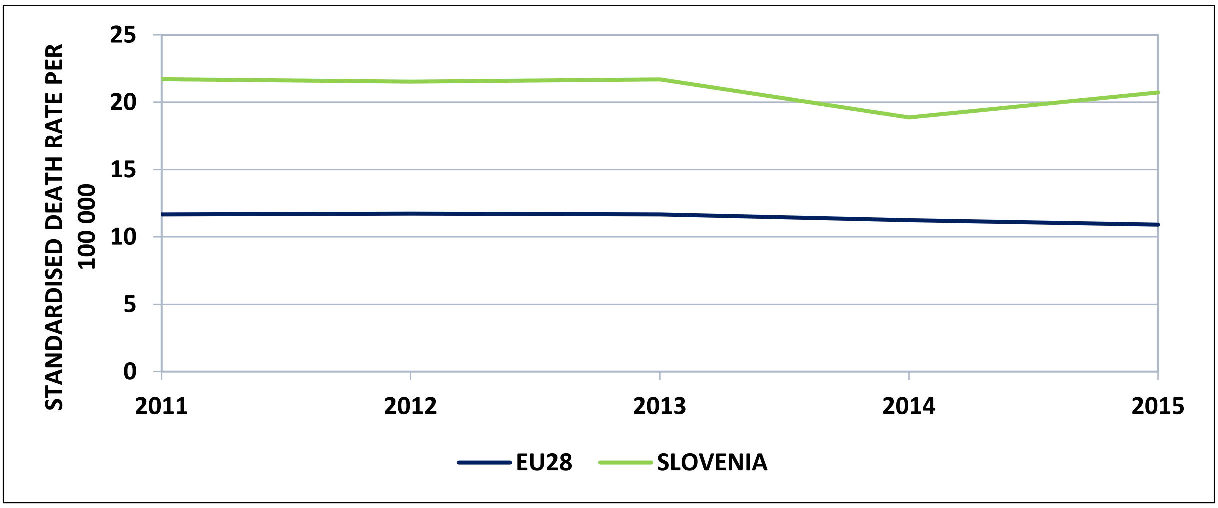
The rates have been directly age-standardised to remove variations arising from differences in age structures across countries and over time. The original sources of the data are NIPH and EUROSTAT Database. This indicator is presented as a total and is measured in terms of deaths per 100 000 inhabitants.

**Analysis**

The results show that Slovenia had a significant higher suicide death rate than EU–28 between 2011 and 2015 (Slovenia 20.72/100 000, EU–28 10.91/100 000 in 2015) (**Figure 44**). Furthermore, Slovenia had one of the highest rates among European countries in 2015 (**Figure 45**).

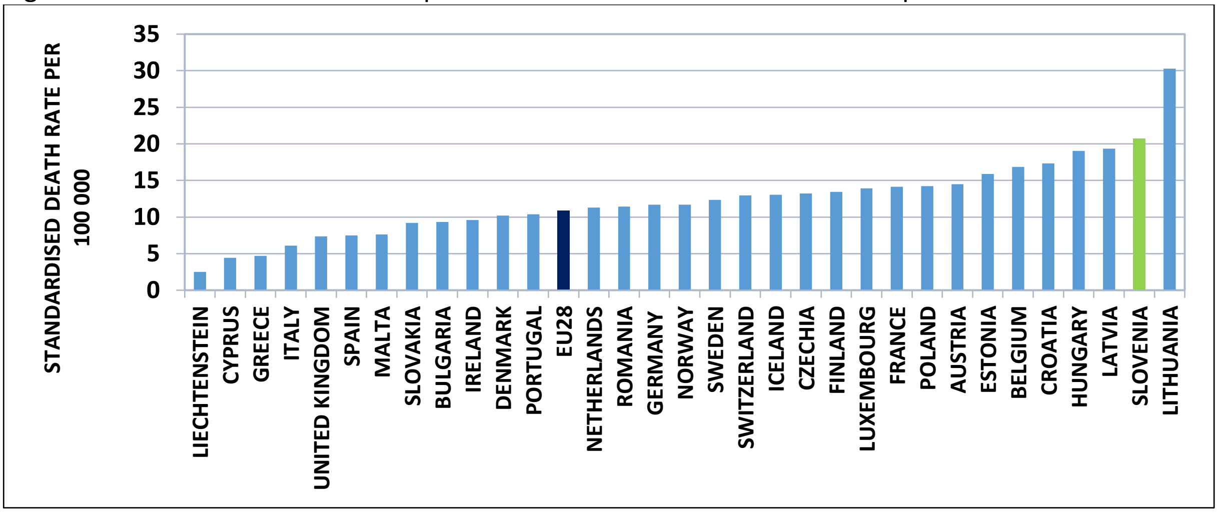
There were big differences in suicide death rate among Slovenian regions in 2016 where the rate was higher in eastern part (**Figure 46**). Total suicide rate was 17.97 (28.71 for males and 7.40 for females) (**Figure 47**). In absolute numbers, this means that 371 people died (294 men and 77 women) as a result of suicide. The ratio between men and women suicides was 3.8.

Figure 44: Standardised death rate per 100 000 due to suicide in Slovenia and EU–28 between 2011 and 2015.



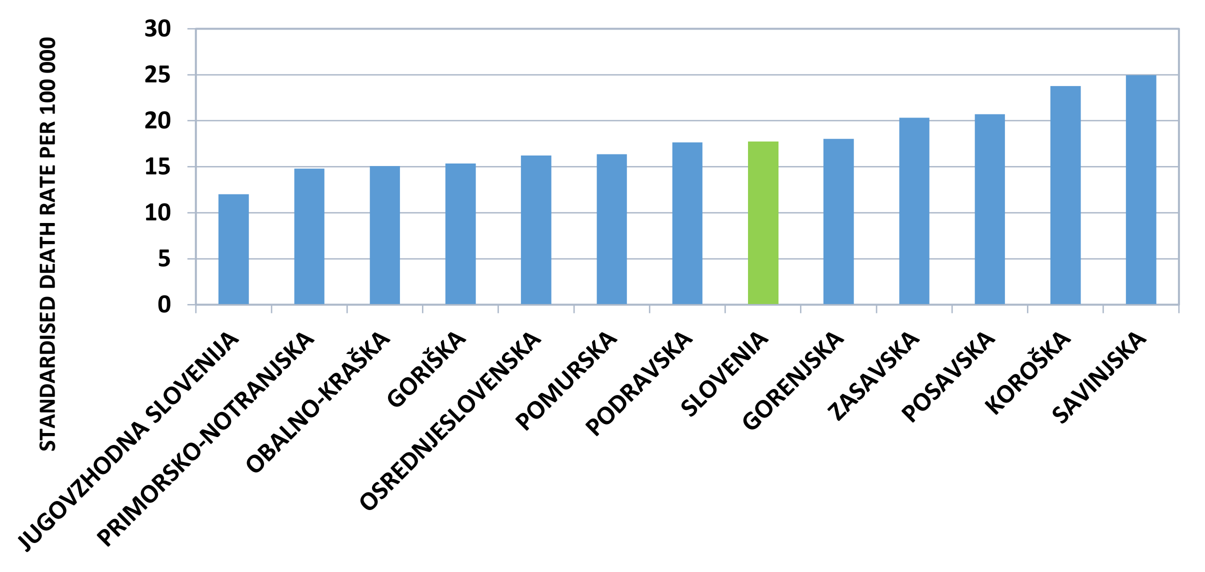

Source: EUROSTAT

Figure 45: Standardised death rate per 100 000 due to suicide in some European countries in 2015.



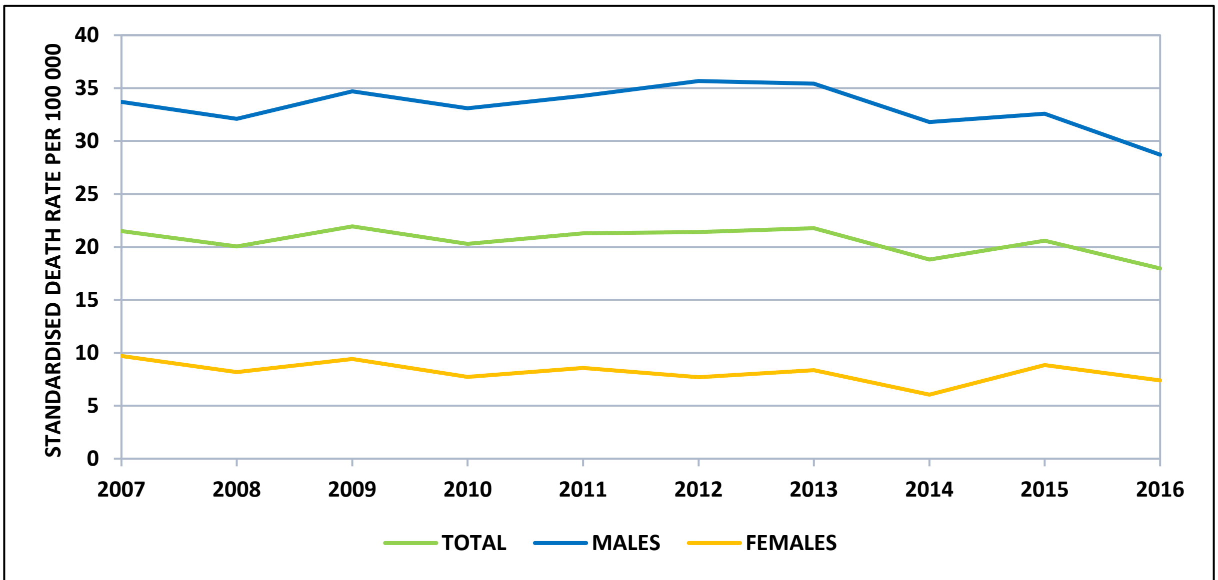

Source: EUROSTAT

Figure 46: Standardised death rate per 100 000 due to suicide in Slovenian regions in 2016.




Source: EUROSTAT

Figure 47: Standardised death rate per 100 000 due to suicide, total, females and males in Slovenia between 2007 and 2016.




Source: NIPH

## INDICATOR 211: HEALTHY LIFE YEARS AT AGE 65

**Definition**

Life expectancy at birth is not able to explain whether extra years of life gained through increased longevity are spent in a good or bad health. For this purpose indicators of health expectancies, such as healthy life years, have been developed. These focus on the quality of life spent in a healthy state, rather than longevity, as measured by life expectancy. Healthy life years are an important measure of the relative health of populations in the EU. In the case that healthy life years increase faster than life expectancy of the population, then this suggests that people live longer and spend most of their lives without restrictions or disabilities.

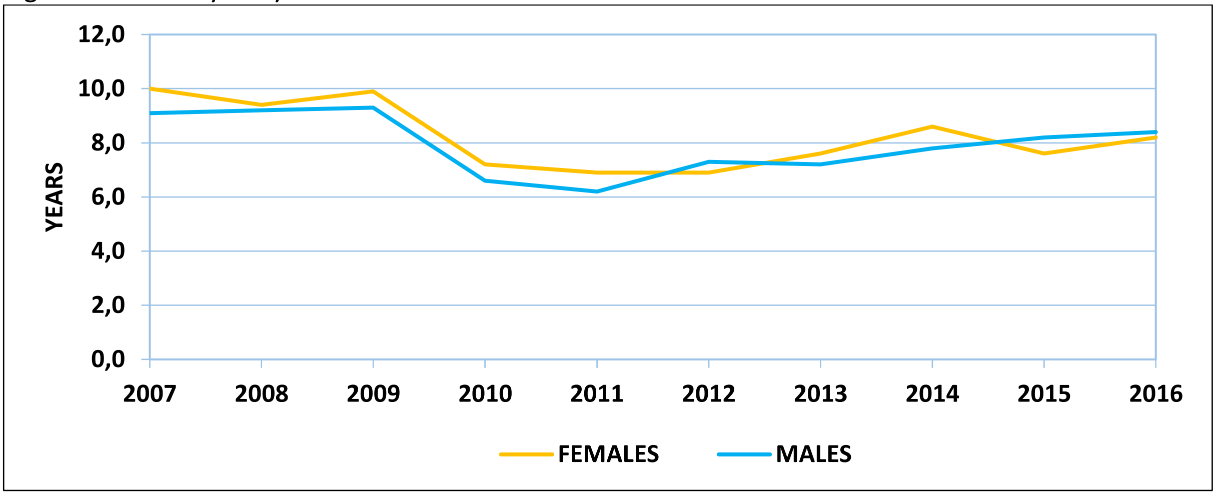
Healthy life years at age 65 measures the number of years that a person at age 65 is expected to live in a healthy condition. A healthy condition is defined by the absence of limitations in functioning and disability. The methodology used to calculate life expectancy varies slightly between countries. This can change a country's estimates by a fraction of a year.

Data was obtained from EUROSTAT database. The indicator is calculated separately for males and females.

**Analysis**

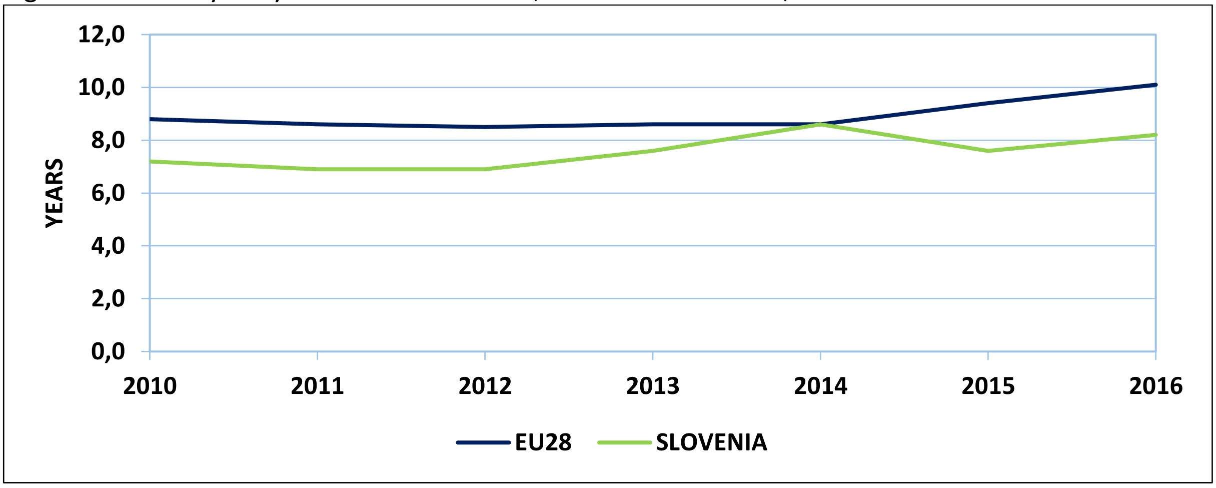
The results show that Slovenia's healthy life years at 65 fluctuates over the years and it is around 8.0 years (**Figure 48**). In comparison to EU–28, Slovenia had lower healthy life years at 65 both in both females in males in the last years (**Figure 49** and **Figure 50**). Moreover, in 2016 Slovenia was one of the European countries with the lowest rate, well below the EU–28 average (**Figure 51** and **Figure 52**).

Figure 48: Healthy life years at 65 of females and males in Slovenia 2007–2016.



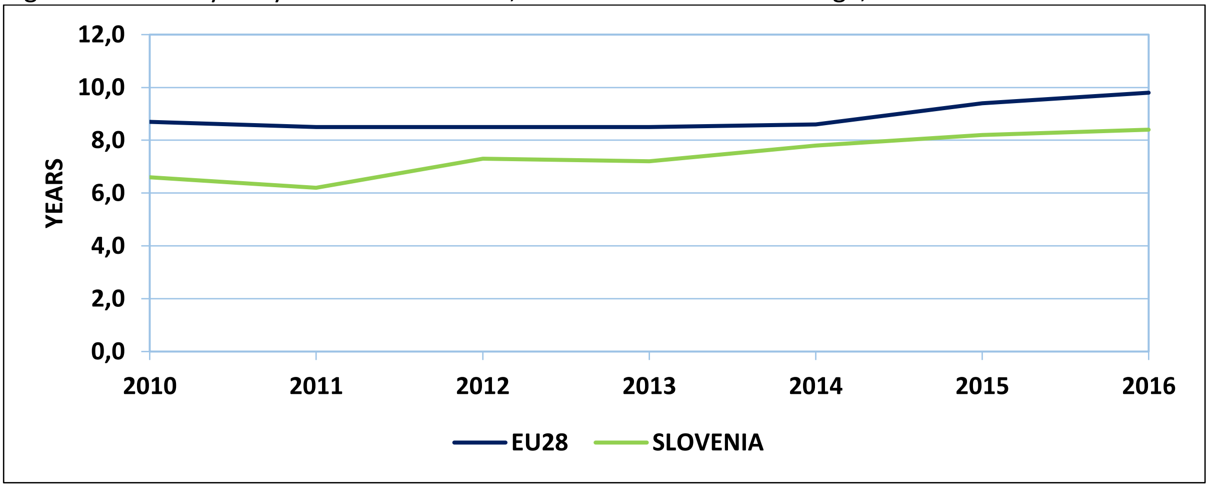

Source: EUROSTAT

Figure 49: Healthy life years at 65 of females, Slovenia and EU–28, 2010–2016.



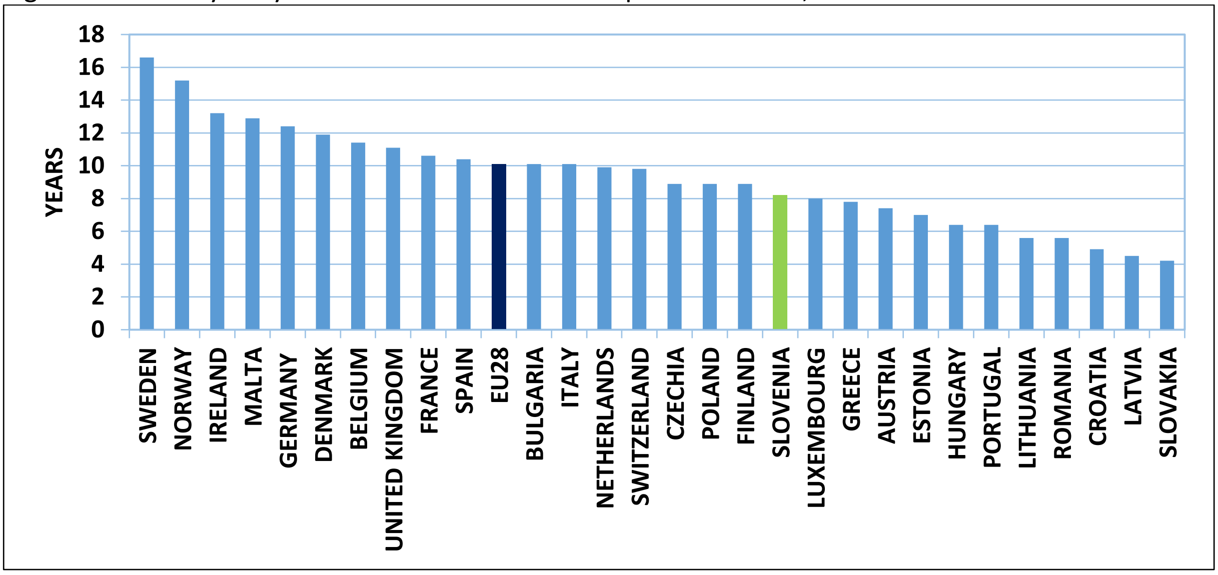

Source: EUROSTAT

Figure 50: Healthy life years at 65 of males, Slovenia and EU–28 average, 2010–2016.



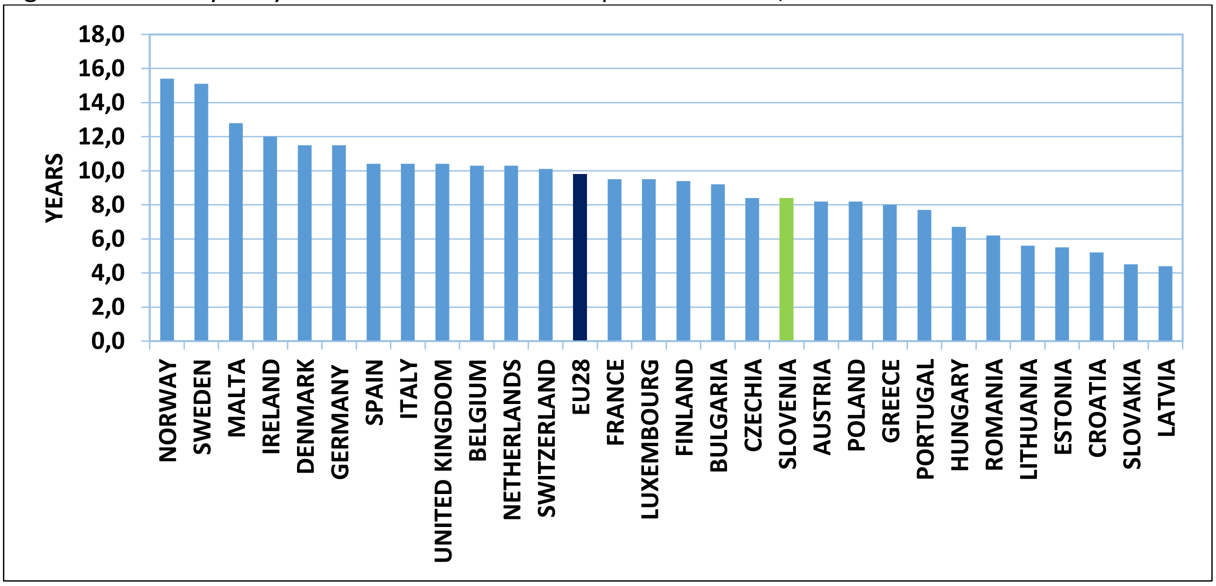

Source: EUROSTAT

Figure 51: Healthy life years at 65 of females in European countries, 2016.




Source: EUROSTAT

Figure 52: Healthy life years at 65 of males in European countries, 2016.




Source: EUROSTAT

## INDICATOR 911: AIDS–RELATED MORTALITY RATE

### Definition

HIV remains one of the most important health issues in Europe. More than 610 000 people were infected in European Union (EU) countries in 2016. Although HIV is preventable through effective public health measures, significant HIV transmission continues in Europe with nearly 30 000 newly-diagnosed cases reported in 2016. HIV weakens the human immune system, leaving affected people vulnerable to infections and other health issues. The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS).

The number of people infected with HIV in Slovenia has increased gradually until 2016. However, less than one person per 1 000 inhabitants has been infected in previous years. Most of the infections were experienced by men who had sex with men. In 2016, 56 new cases of HIV infection were detected (2.7/100 000 inhabitants), the highest number of reported cases of HIV infection in one year. Of the 54 new cases among men in 2016, there were 46 cases among men who had sex with men (4.5/100 000 male inhabitants), the highest number in one year. In 9 of 10 patients who were diagnosed with AIDS in 2016, HIV infection was identified in the same year. 10 patients were diagnosed with AIDS (0.5/100 000 inhabitants) in 2016, one less than in 2008, 2012, 2013 and 2015. In 9 cases, HIV infection was identified in 2016. Over the past 10 years (2007-2016), 119 persons were diagnosed with AIDS.

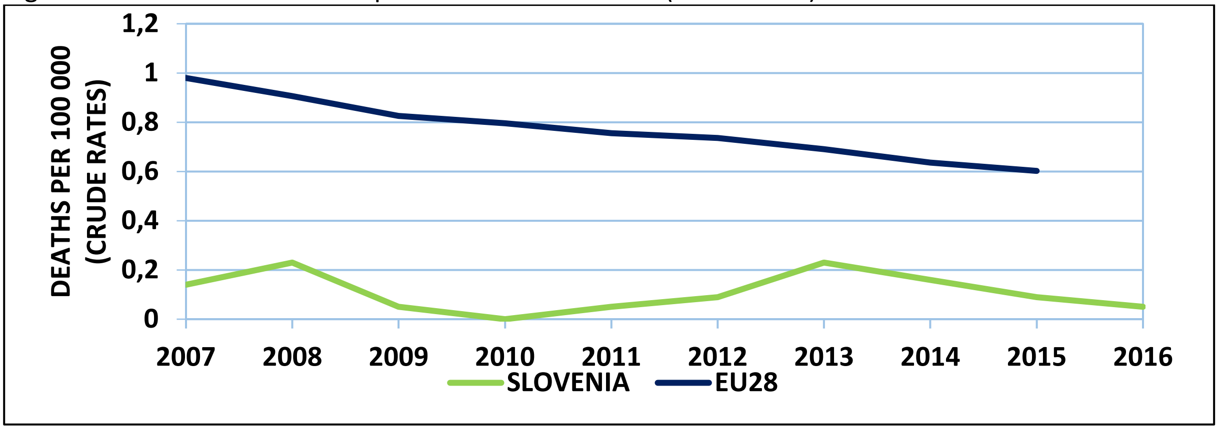
AIDS-related mortality rate provides a measurement of impact of HIV prevention, care and treatment programmes. Early testing for HIV allows infected people to be put on treatment quickly leading to earlier viral suppression and allowing them to continue to live a normal life and to avoid infecting others. Efforts to enlarge access to antiretroviral therapy should significantly reduce the number of people dying from AIDS-related causes.

Data was taken from WHO, OECD, EUROSTAT and NIPH database. Most of the data is in a crude rate.

### Analysis

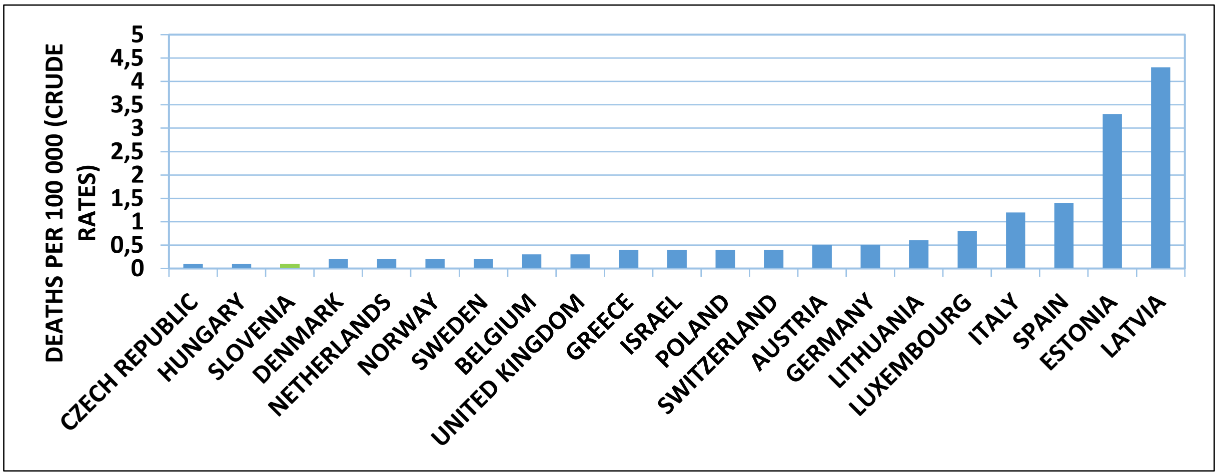
The results show that Slovenia had a significantly lower AIDS-related mortality rate in comparison to EU–28 between 2007 and 2015(6) (**Figure 53**). Furthermore, Slovenia had one of the lowest AIDS-related mortality rate in Europe in 2015 (**Figure 54** and **Figure 55**).

Figure 53: AIDS-related deaths per 100 000 inhabitants (crude rates) in Slovenia and EU 2007–2016.



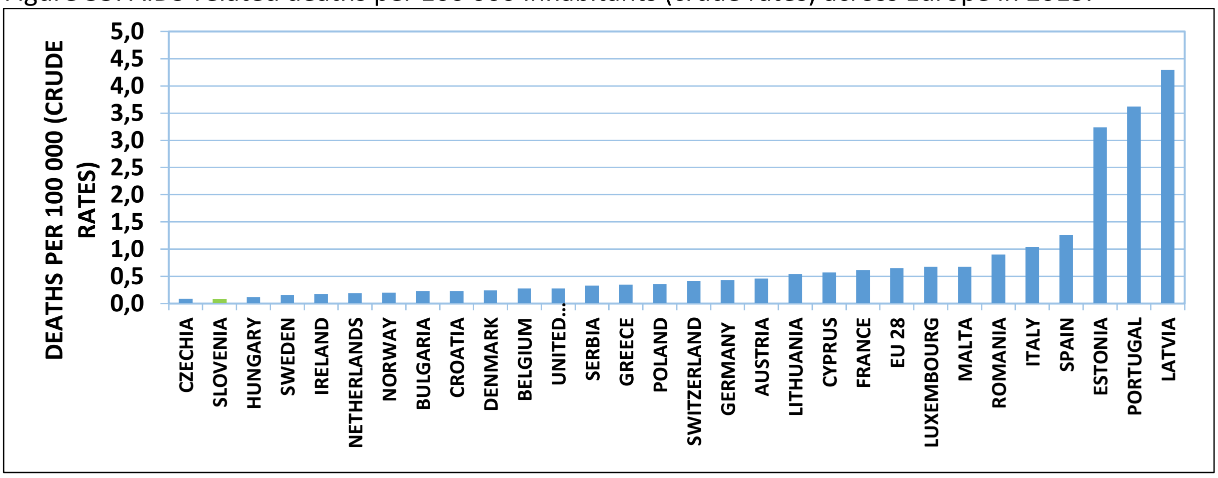

Source: WHO, NIPH

Figure 54: AIDS-related deaths per 100 000 inhabitants (crude rates) across Europe in 2015.




Source: OECD

Figure 55: AIDS-related deaths per 100 000 inhabitants (crude rates) across Europe in 2015.




Source: EUROSTAT

## INDICATOR 2028: CHILD MORTALITY RATE

**Definition**

Child mortality refers to the death of children aged 1 to 14 years and encompasses national data on under-5 mortality and mortality of children aged 5–14. It has decreased considerably in past decades. Premature mortality of children aged 1 to 14 years can be avoided, since most of the morbidity and mortality in this age group can be prevented. It is related to the degree of vaccination coverage, prevention in the use of illicit drugs, injuries and mental disorders. Socio-economic inequalities also have a significant impact on child mortality. The total number of under-5 deaths worldwide has declined from 12.6 million in 1990 to 5.4 million in 2017. Since 1990, the global under-5 mortality rate has dropped by 58%, from 93 deaths per 1 000 live births in 1990 to 39 in 2017. More than half of under-5 child deaths are due to diseases that are preventable and treatable through relatively simple measures. Injuries (road traffic injuries, drowning, burns, falls) rank among the top causes of death and lifelong disability among children aged 5-14 years.

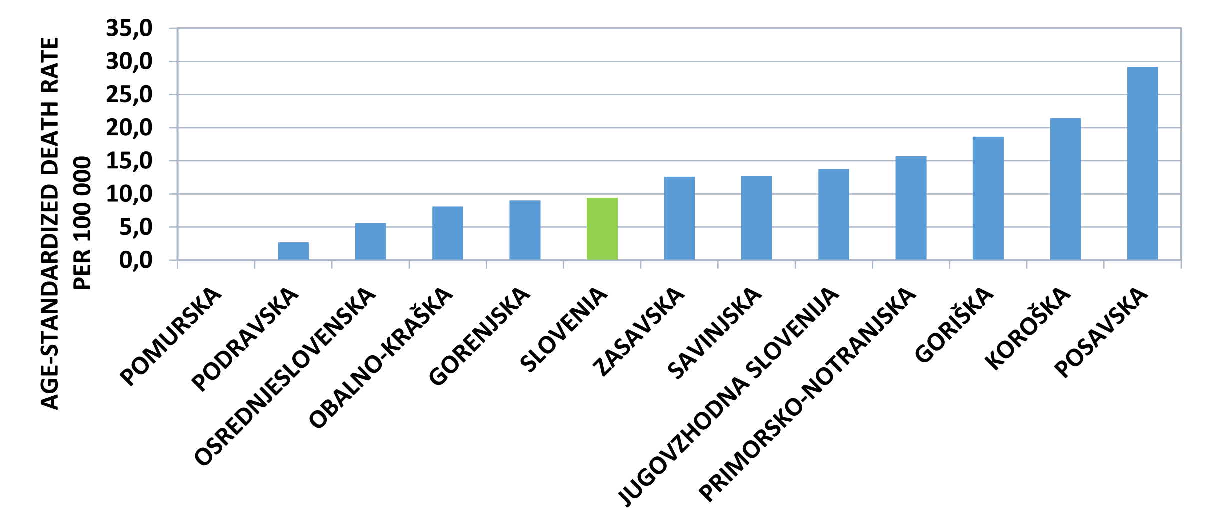
In Europe, external causes of death were the leading cause of death among children in that age group, accounting for 25% of all deaths (of which 32% was due to transport accidents and 16% from drowning). Cancer accounted for 22% of all deaths among children (mainly due to brain cancer and leukaemia). There has been a steady decline in child mortality in EU countries since the 1970s. For example, in Portugal, childhood mortality came down from about 80 deaths per 100 000 children in the late 1970s (one of the highest rates in EU countries then) to 12 per 100 000 children in 2013 (which is around the EU average now).

Child mortality rate is the number of deaths (from all causes) of children aged 1 to 14 years, per 100 000 children. The data was obtained from NIPH and OECD (EUROSTAT) database. Data from OECD (EUROSTAT) database are just for 2013.

**Analysis**

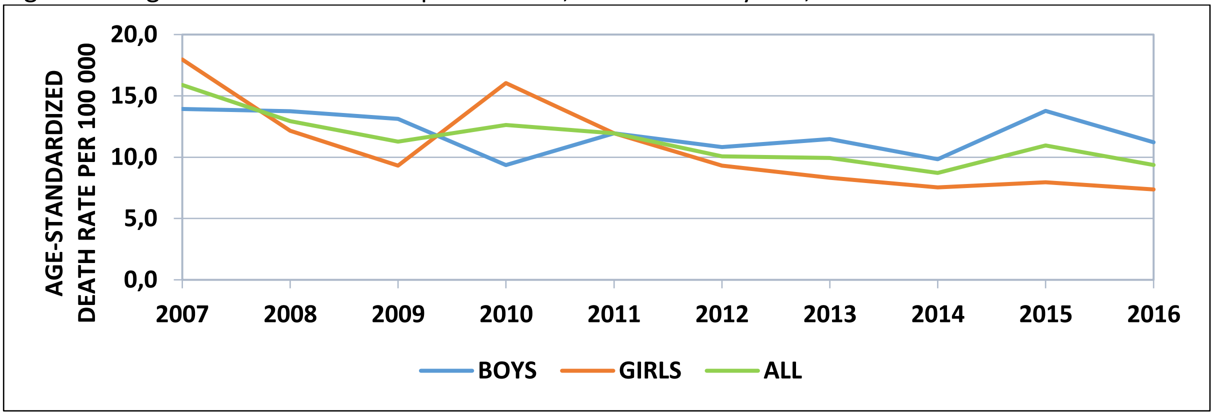
The results show regional differences in age-standardized death rate per 100 000 of children aged 1–14 years among Slovenian regions in 2016 (**Figure 56**). At that year Slovenia in average had an age-standardized death rate a slightly below 10 per 100 000. Mortality death rate as in other European countries is also decreasing in Slovenia, both for girls and boys as is seen in **Figure 57**. However, this decrease is not as high as it was in the past. Injuries are the leading cause of death in children aged 1–14 years. In comparison to the other EU countries, Slovenia had one of the lowest children death rates in 2013 (**Figure 58**).

Figure 56: Age-standardized death per 100 000, children 1-14 years, Slovenia 2016.



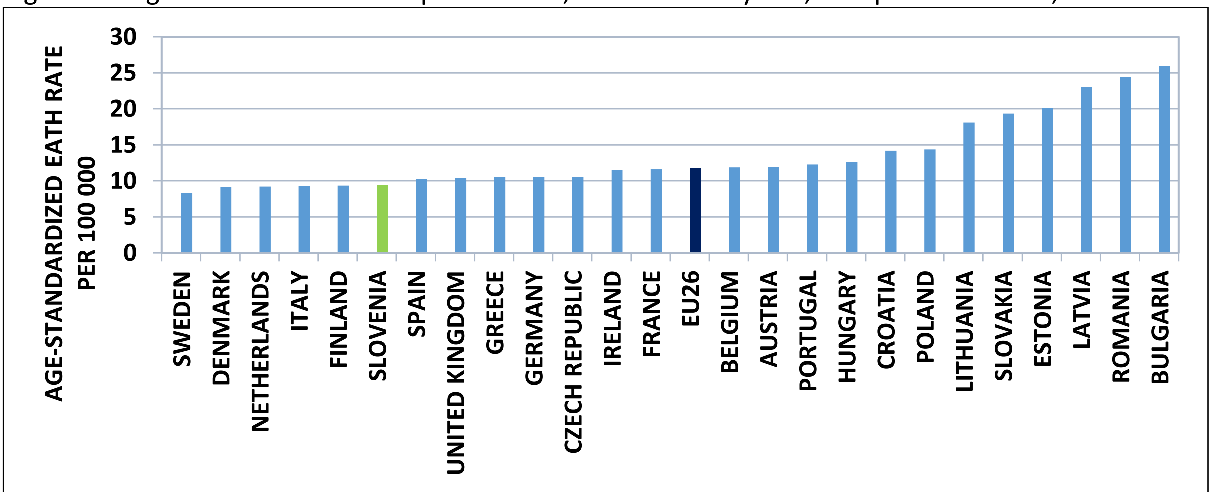

Source: NIPH

Figure 57: Age-standardized death per 100 000, children 1-14 years, Slovenia 2007–2016.




Source: NIPH

Figure 58: Age-standardized death per 100 000, children 1-14 years, European countries, 2013.




Source: OECD (EUROSTAT)

## DOMAIN 2: QUALITY AND SAFETY

**Definition**

Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.

Safety is a state of risk reduced to an acceptable level.

The indicators assess the process or the outcome of care. They serve primarily as quality improvement tools for healthcare organisations.

Results are shown in **Table 10** and **Figure 59**.

## MAIN RESULTS

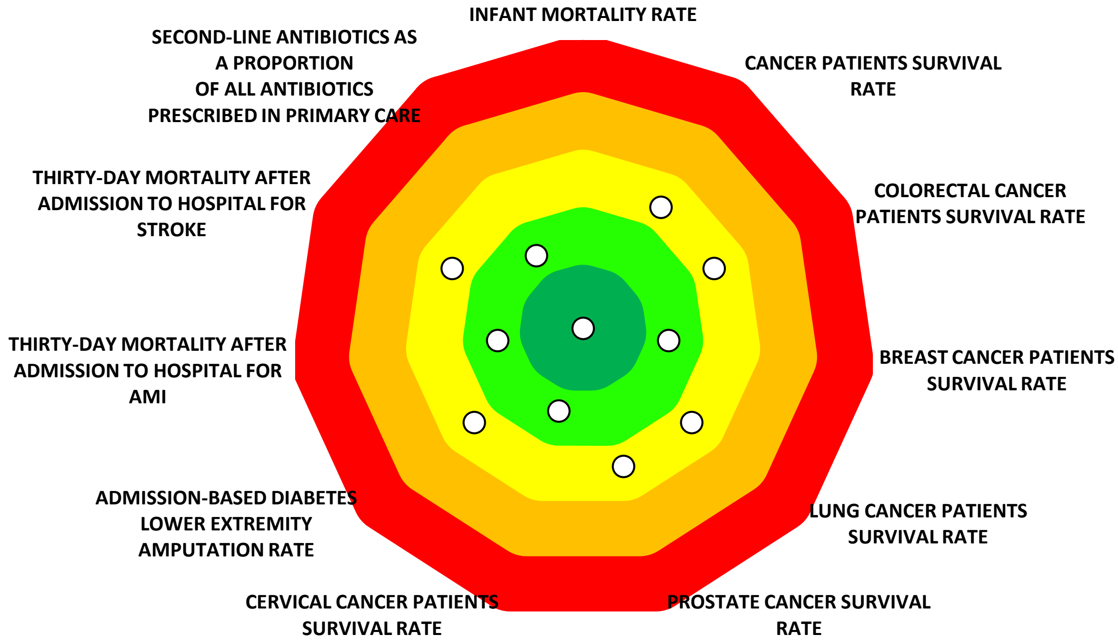
Table 10: Quality and safety main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 2 | INFANT MORTALITY RATE | 3 | IMPROVING | BETTER | VERY GOOD |
| 21A | CANCER PATIENTS SURVIVAL RATE | 2 | IMPROVING | WORSE | POOR |
| 21B | COLORECTAL CANCER PATIENTS SURVIVAL RATE | 2 | IMPROVING | WORSE | POOR |
| 21C | BREAST CANCER PATIENTS SURVIVAL RATE | 2 | IMPROVING | SAME | GOOD |
| 21D | LUNG CANCER PATIENTS SURVIVAL RATE | 2 | IMPROVING | WORSE | POOR |
| 21E | PROSTATE CANCER SURVIVAL RATE | 2 | IMPROVING | WORSE | POOR |
| 21F | CERVICAL CANCER PATIENTS SURVIVAL RATE | 2 | STABLE | BETTER | GOOD |
| 30 | ADMISSION-BASED DIABETES LOWER EXTREMITY AMPUTATION RATE | 1 | IMPROVING | WORSE | POOR |
| 1772A | THIRTY–DAY MORTALITY AFTER ADMISSION TO HOSPITAL FOR AMI | 2 | IMPROVING | SAME | GOOD |
| 1772B | THIRTY–DAY MORTALITY AFTER ADMISSION TO HOSPITAL FOR STROKE | 2 | STABLE | SAME | POOR |
| 2007 | SECOND-LINE ANTIBIOTICS (QUINOLONES AND CEPHALOSPORINS) AS A PROPORTION OF ALL ANTIBIOTICS PRESCRIBED IN PRIMARY CARE | 1 | STABLE | BETTER | GOOD |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **QUALITY and SAFETY** | **Good** | **2.62** |

Figure 59: Dartboard presentation of assessment score of domain Quality and safety.




Cancer survival rates are improving. However, in comparison with other European countries, Slovenia is generally doing worse, except for cervical and breast cancer. The same applies to the diabetes lower extremity amputation rate. However, it must be emphasized that data for cancer survival rates was taken only from accessible sources.

On the other hand Slovenia is doing well with infant mortality rate, which is one of the lowest in Europe. Besides this, thirty-day mortality rates after stroke and acute myocardial infarction are similar to most European countries and better usage of second-line antibiotics was observed.

However, diabetes lower extremity amputation rate requires better collection methods and further analysis. Hence, the full picture for this dimension is difficult to ascertain.

## INDICATOR 2: INFANT MORTALITY RATE

**Definition**

Infant mortality is the death of young children under the age of 1. It is an important indicator of the health and social well-being of the population. It is also an important indicator of the quality and accessibility of healthcare during the pregnancy and the first months of the child's life.

Premature birth is the biggest contributor to the infant mortality. Other leading causes are birth asphyxia, pneumonia, congenital malformations, term birth complications, neonatal infection, diarrhoea, measles and malnutrition. One of the most common preventable causes of infant mortality is smoking during pregnancy.

Many factors contribute to infant mortality, such as the mother's level of education, environmental conditions, and political and medical infrastructure. Improving sanitation, access to clean drinking water, immunization against infectious diseases and other public health measures can help reduce infant mortality.

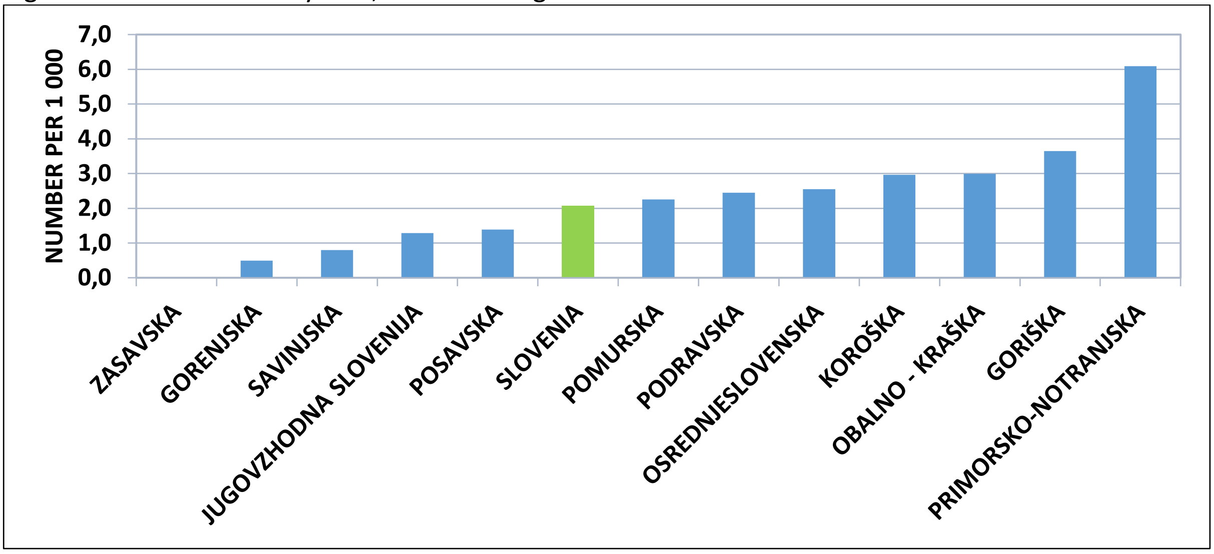
Infant mortality rate is defined as the number of deaths of children under one year of age, expressed per 1 000 live births.

The data was obtained from NIPH and EUROSTAT database.

**Analysis**

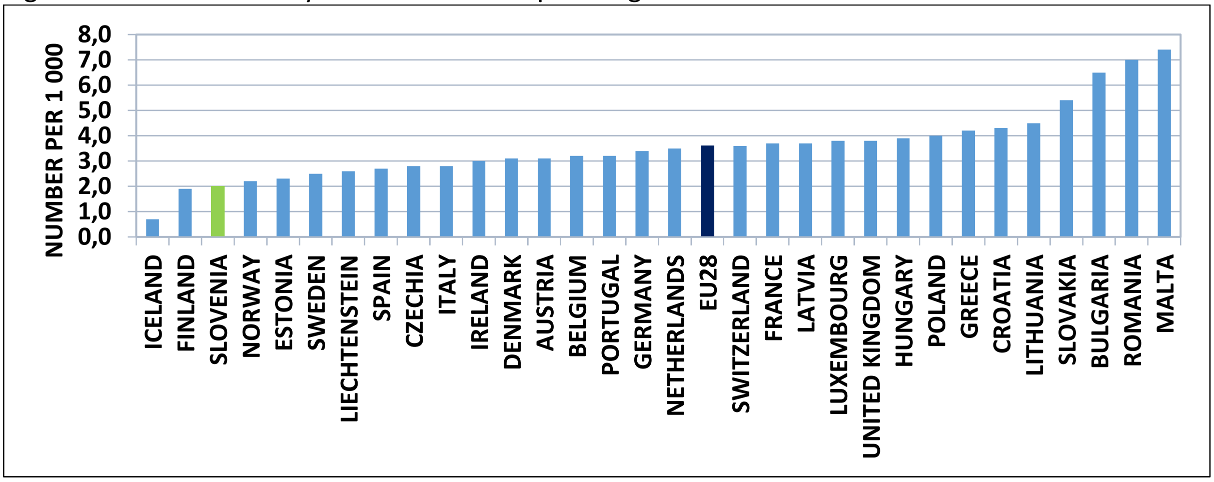
The results show great differences in infant mortality rate among Slovenian regions in 2016 (**Figure 60**). However, Slovenia was one of the European countries with the lowest infant mortality rate in Europe in the same year (**Figure 61**). Also, Slovenia had a significant lower infant mortality rate than EU–28 average between 2007 and 2016 (**Figure 62**).

Figure 60: Infant mortality rate, Slovenian regions in 2016.



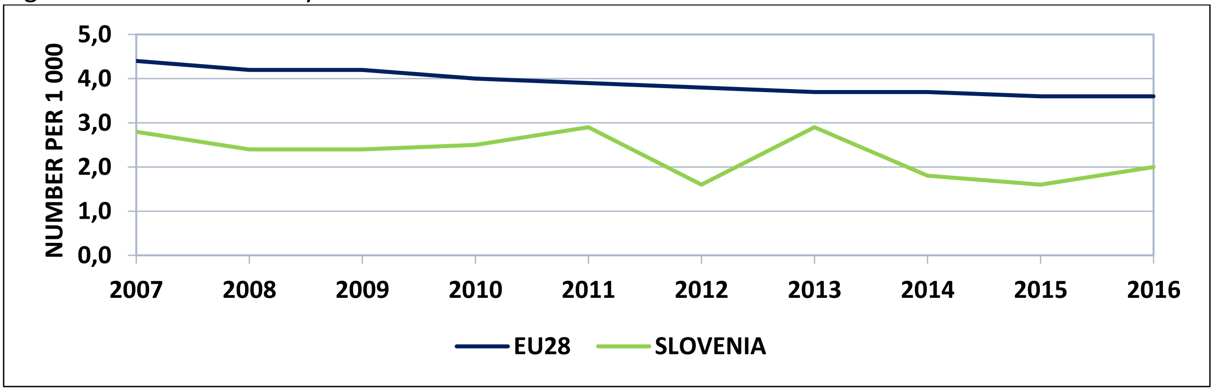

Source: NIPH

Figure 61: Infant mortality rate of some European regions in 2016.




Source: EUROSTAT

Figure 62: Infant mortality rate in Slovenia and EU–28 between 2007 and 2016.




Source: EUROSTAT

## INDICATOR 21: 5–YEAR SURVIVAL RATES OF CANCERS

## INDICATOR 21A: 5–YEAR SURVIVAL RATE OF ALL CANCERS

**Definition**

The CONCORD-3 study analysed individual patient records from 322 cancer registries in 71 countries and territories to compare 5-year survival from diagnosis.

For most cancers, 5-year net survival remains the highest in the world in the United States, Canada, Australia, New Zealand, Finland, Iceland, Norway, and Sweden. In some countries, survival has increased by up to 5% for cancers of the liver, pancreas, and lung, which are some of the more lethal cancers.

For European females, the 5-year breast cancer survival rate increased to 85% or more in 16 countries.

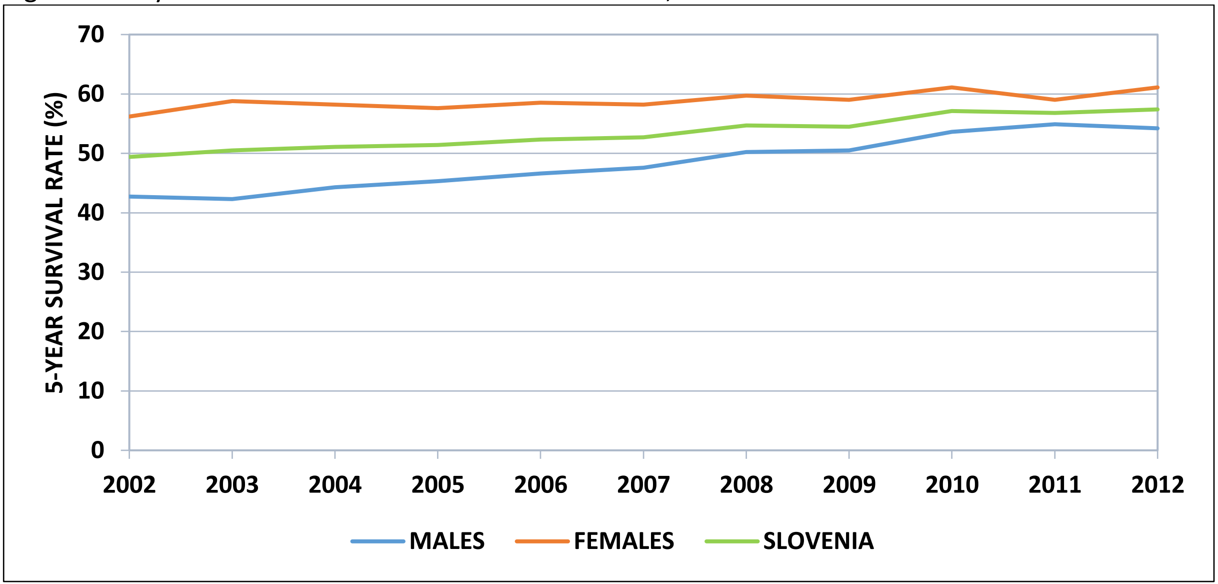
Not all major cancers have seen large improvements. Even in 2014, pancreatic cancer remained highly lethal in all countries, with 5-year survival typically less than 15%.

The data was obtained from Cancer registry of republic of Slovenia (SLORA) and EUROCARE database.

**Analysis**

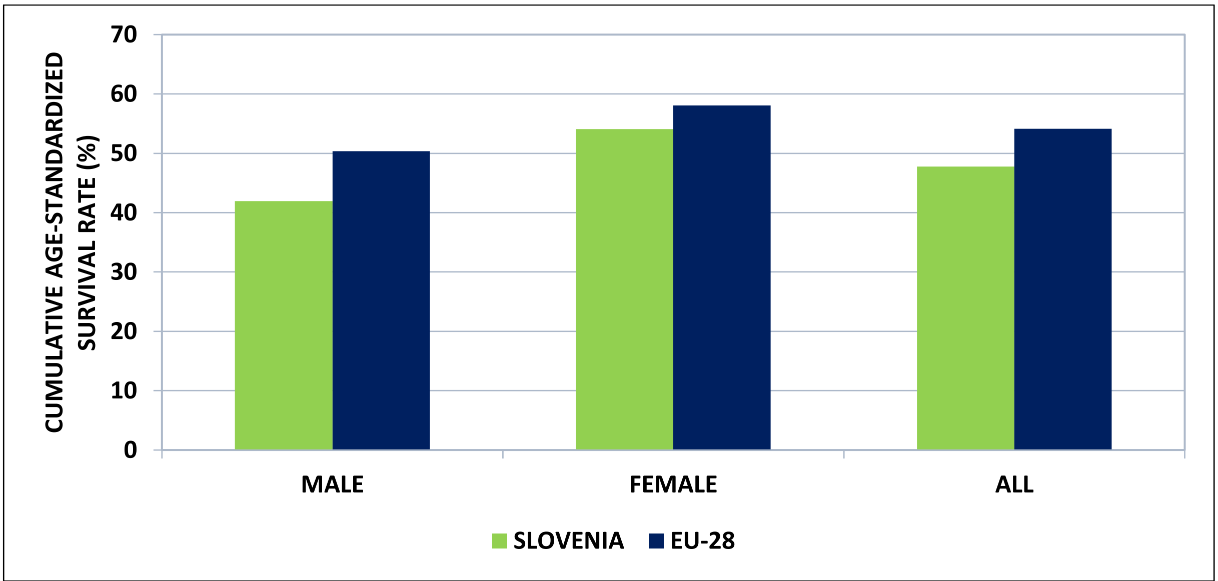
Trend graph shows a slowly progression of survival rate from 2002 to 2012, in both males and females (**Figure 63**). In comparison to EU–28 average, Slovenia had a little worse cumulative age-standardized 5-year survival rate for both males and females between 2000 and 2007 (**Figure 64**).

Figure 63: 5-year survival rate for all cancers in Slovenia, 2002–2012.




Source: SLORA

Figure 64: Cumulative age-standardized 5-year survival rate for all cancers, Slovenia and EU–28, 2000–2007.




Source: EUROCARE-5

## INDICATOR 21B: 5–YEAR SURVIVAL RATE OF COLORECTAL CANCER

### Definition

The share of deaths attributed to colorectal cancer was 3.3 % for men and 2.6 % for women. Among the EU Member States, the share of the total number of deaths that were attributed to colorectal cancer peaked at 4.0 % in Slovenia, with shares below 2.5 % recorded in Bulgaria, Finland, Greece, Romania and Lithuania. Slovenia also recorded the highest share for males (4.7 %) and together with Denmark and Slovakia recorded the highest shares of female deaths (3.3 %).

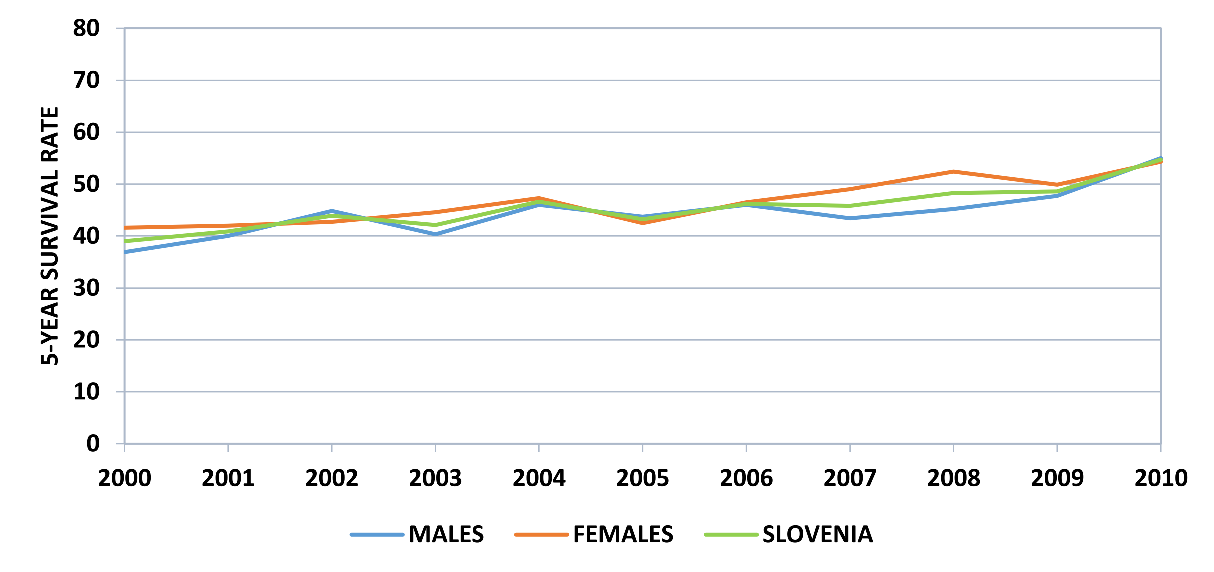
The standardised death rate for colorectal cancer across the EU for males was 75 % higher than for women. The standardised death rate for colorectal cancer for persons aged 65 and was 18 times as high as it was for younger persons. The highest standardised death rate among the EU Member States in 2015 was recorded in Hungary (54.1 per 100 000 inhabitants), followed by Croatia and Slovakia with rates around 50 per 100 000 inhabitants. Austria, Greece, Finland and Cyprus had standardised death rates below 25.0 per 100 000 inhabitants.

The data was obtained from SLORA and EUROCARE-5 database.

### Analysis

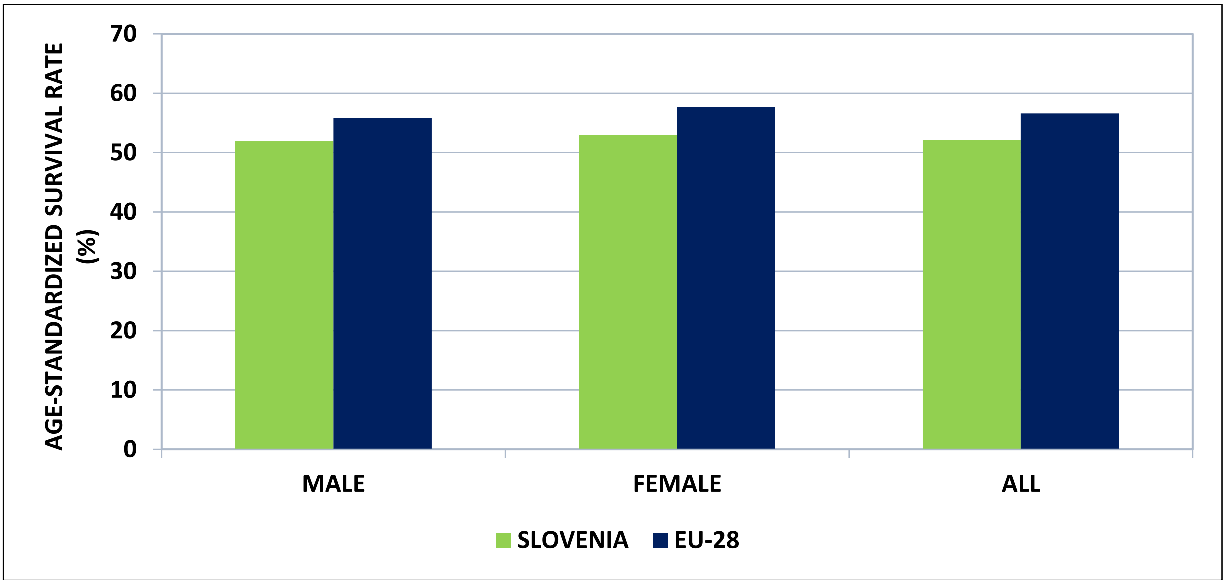
The 5-year survival rate for colorectal cancer increased between 2000 and 2010, probably due to advances in treatment and early detection of disease (**Figure 65**). In comparison to EU–28 average, Slovenia had a slightly worse cumulative age-standardized 5-year survival rate for both males and females between 2000 and 2007 (**Figure 66**).

Figure 65: 5-year survival rate for colorectal cancer in Slovenia, 2000–2010.




Source: SLORA

Figure 66: Cumulative age-standardized 5-year survival rate for colorectal cancer, Slovenia and EU–28, 2000 –2007.




Source: EUROCARE-5

## INDICATOR 21C: 5–YEAR SURVIVAL RATE OF BREAST CANCER

**Definition**

Breast cancer survival is increased with early detection and most EU countries have adopted breast cancer screening programmes. Over the last decade, the five-year relative breast cancer survival has improved across all EU countries and rates have increased from 79% to 84% on average between 2003 and 2013. This increase has been particularly noticeable in Eastern Europe where Estonia, the Czech Republic and Latvia have increased rates by 11, 9 and 8 points respectively. This improvement may be related to strengthening of cancer care governance in these countries.

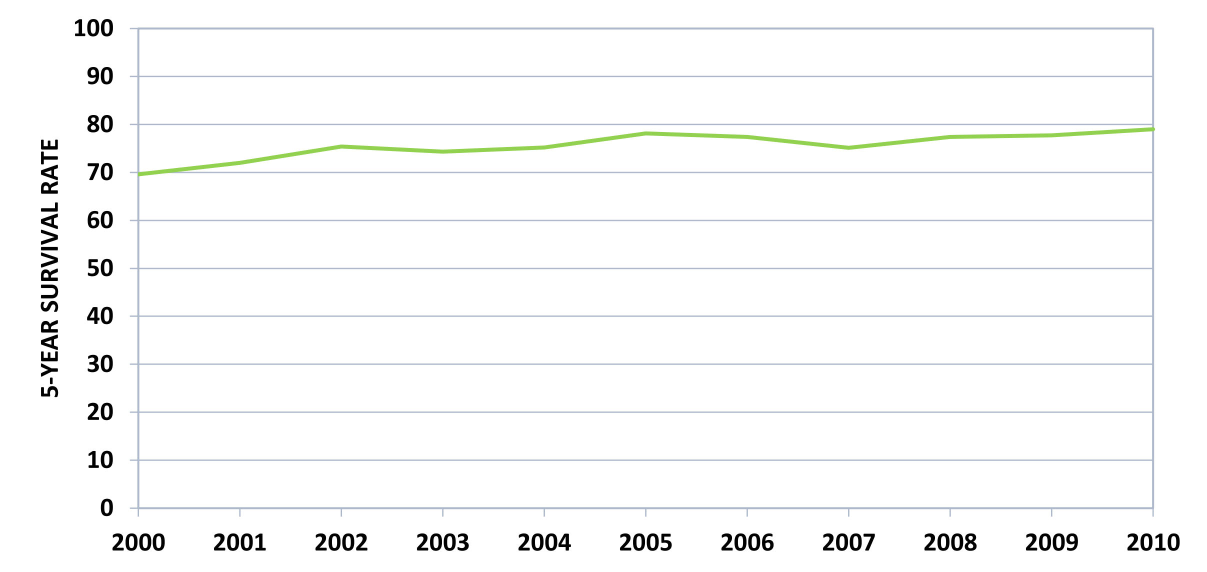
Mortality rates have declined in most EU countries over the past decade, with the EU average falling from 37.3 per 100 000 females in 2003 to 33.2 in 2013. Significant improvements were seen in both the Czech Republic and Denmark with declines of over 24% during this period. A small number of countries reported increased rates of mortality in 2013, including Poland, Bulgaria, Latvia and the Slovak Republic. In 2015, around 95 300 people died from breast cancer in the EU–28, of which just less than 1 000 were males. Deaths from breast cancer made up around 7.2 % of all deaths from cancer, among women breast cancer accounted for 15.6 % of all deaths from cancer. In the same year, the EU–28 standardised death rate for breast cancer was 32.7 per 100 000 inhabitants for females and 0.5 per 100 000 inhabitants for males. Among the EU Member States, the highest standardised death rate for breast cancer among females was in Croatia (43.1 per 100 000 inhabitants), with the lowest rate recorded in Spain (23.4 per 100 000 inhabitants).

The data was obtained from SLORA and OECD database.

**Analysis**

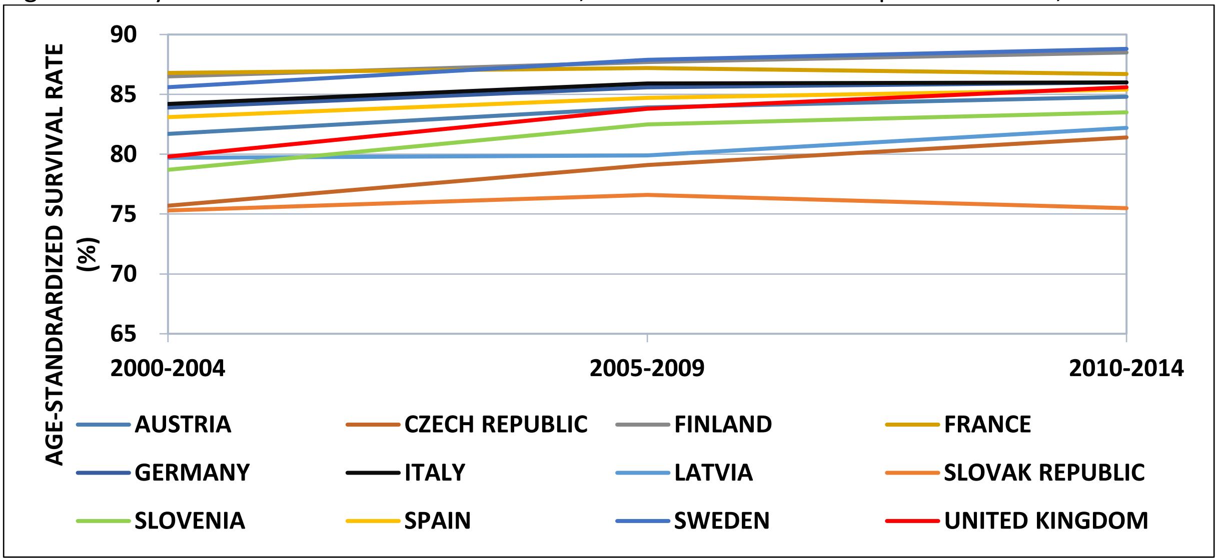
5-year survival rate shows a slowly increasing rate from 2000 to 2010 in Slovenia (**Figure 67**). In comparison to some European countries, Slovenia had a mediocre age-standardized survival rate (**Figure 68**).

Figure 67: 5-year survival rate for breast cancer, Slovenia 2000–2010.




Source: SLORA

Figure 68: 5-year survival rates for breast cancer, Slovenia and some European countries, 2000–2014.




Source: OECD

## INDICATOR 21D: 5–YEAR SURVIVAL RATE OF LUNG CANCER

**Definition**

Lung cancer survival remains poor in Europe, although it is slightly increasing due to advances in cancer management. The overall 5-year survival is around 13% since diagnosis, and it decreases in people with advanced ages at diagnosis. This rate is considerably influenced by the stage of the disease at diagnosis, but there are also variations depending on gender. Statistics show that females worldwide have better survival rates than males across all ages. The 5-year survival rate is 11.2% for males and 13.9% for females.

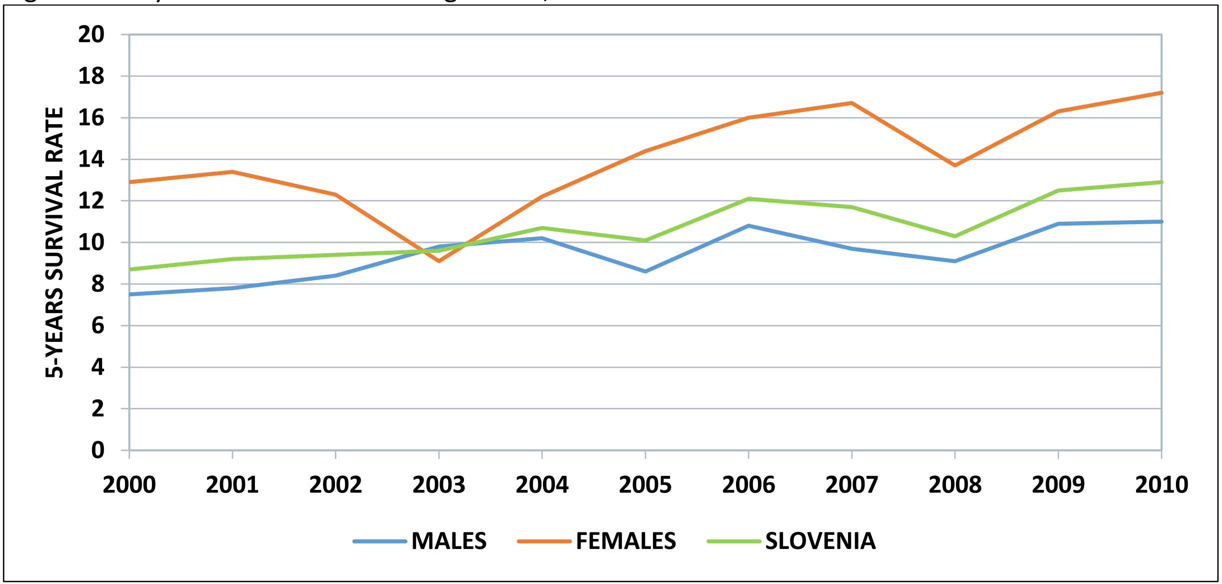
In 2015, more than a quarter of a million (273 000) people died from lung cancer in the EU–28, 20.7 % of all deaths from cancer and 5.2 % of the total number of deaths. The share of all deaths attributed to lung cancer was 7.2 % among males, more than double the share (3.4 %) recorded for females.

The data was obtained from SLORA and EUROCARE database.

**Analysis**

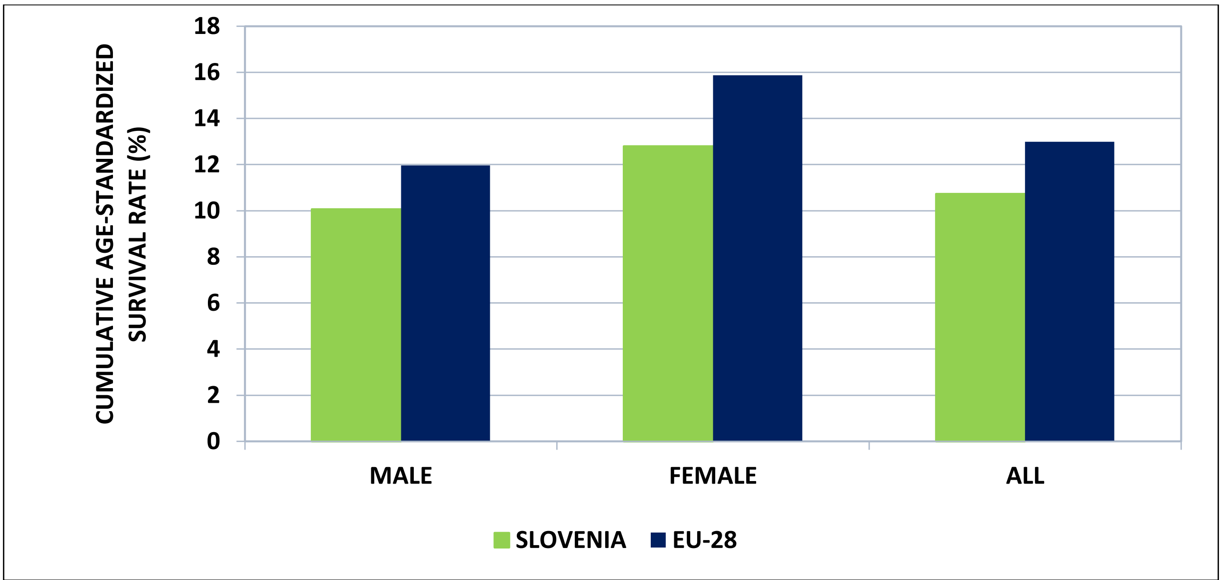
The 5-year survival rate was still low regardless the improvement in therapies and its slow increase (**Figure 69**). In comparison to EU–28 average, Slovenia had a worse cumulative age-standardized 5-year survival rate for both males and females between 2000 and 2007 (**Figure 70**).

Figure 69: 5-year survival rate for lung cancer, Slovenia 2000–2010.




Source: SLORA

Figure 70: Cumulative age-standardized 5-year survival rate for lung cancer, Slovenia and EU–28, 2000 –2007.




Source: EUROCARE-5

## INDICATOR 21E: 5–YEAR SURVIVAL RATE OF PROSTATE CANCER

**Definition**

The most recent data of the Eurocare project on 5-year relative survival for cancers diagnosed in 2003-2007 show that prostate cancer ranked fourth in Europe amongst the cancers with the best prognosis with a 5-year relative survival of 83%. Survival varied from 88% in Southern and Central European countries to 76% in Eastern ones. Moreover, in all the European countries survival has increased over time with the highest improvement observed in the Eastern countries.

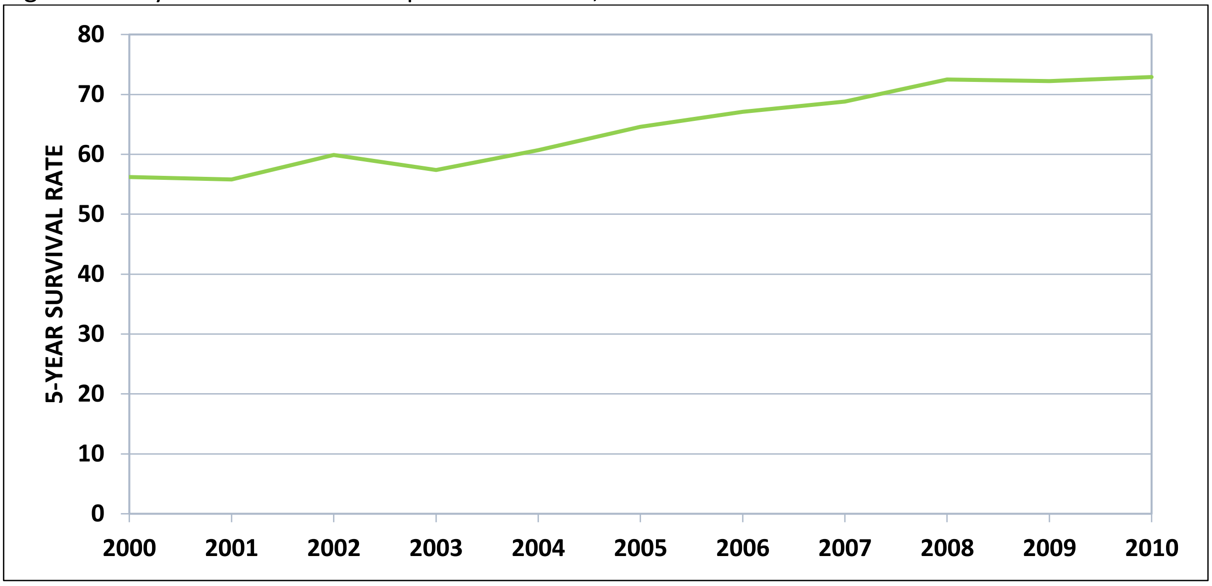
In 2015, 75 300 males died from prostate cancer in the EU–28, equivalent to 5.7% of all deaths from cancer and 1.4% of the total number of deaths from any cause.

The data was obtained from SLORA and EUROCARE database.

**Analysis**

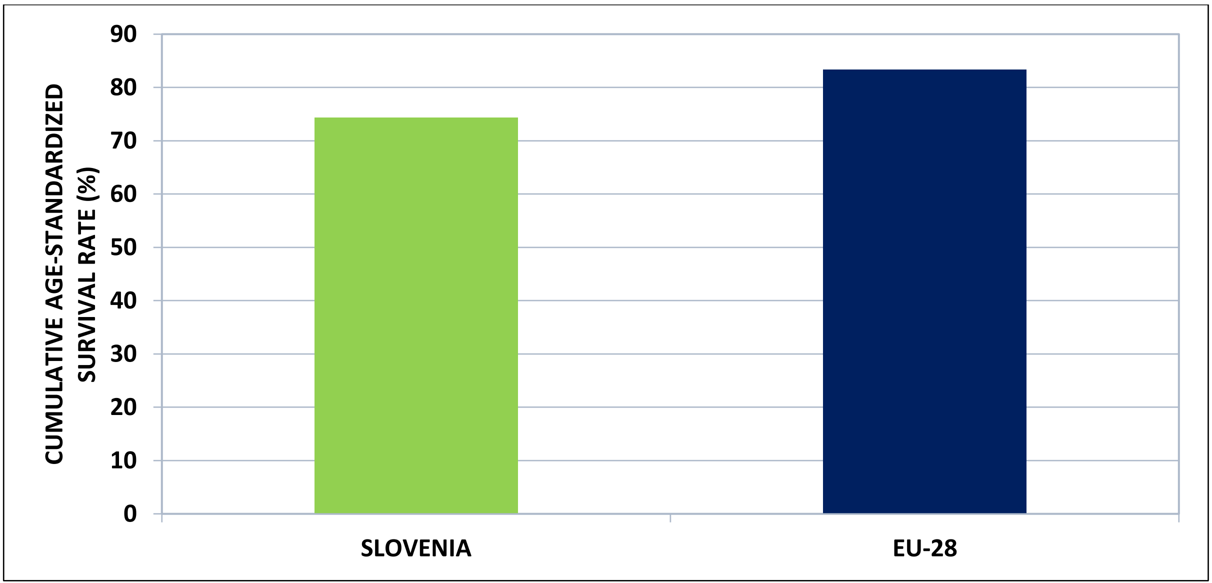
5-year survival rate shows a rapidly increasing rate from 2000 to 2010 in Slovenia (**Figure 71**). In comparison to EU–28 average, Slovenia had a worse cumulative age-standardized 5-year survival rate between 2000 and 2007 (**Figure 72**).

Figure 71: 5-year survival rate for prostate cancer, Slovenia 2000–2010.




Source: SLORA

Figure 72: Cumulative age-standardized 5-year survival rate for prostate cancer, Slovenia and EU–28, 2000 –2007.




Source: EUROCARE-5

## INDICATOR 21F: 5–YEAR SURVIVAL RATE OF CERVICAL CANCER

**Definition**

Cancer survival is one of the key measures of the effectiveness of cancer care systems, taking into account both early detection of the disease and the effectiveness of treatment. 5-year relative survival in EU countries ranged from 70.6% in Italy to 54.5% in Poland in recent years. Some countries with relatively high screening coverage such as Austria, the United Kingdom or Slovenia had only average or low survival rates. However, all three countries reported below average cervical cancer mortality suggesting low incidence.

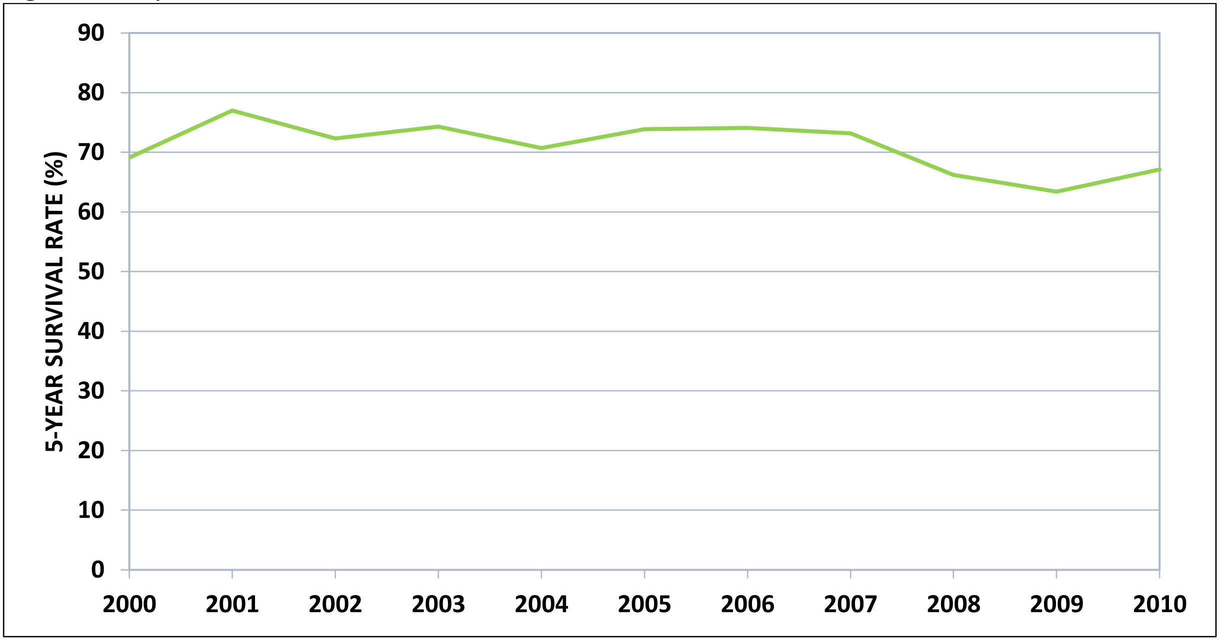
Mortality rates reflect the effect of cancer care over the past years and the impact of screening, as well as changes in incidence. The mortality rates for cervical cancer declined across EU countries between 2003 and 2013. A number of countries however showed increased mortality including Latvia which reported rates 31% higher than in 2003.

The data was obtained from SLORA and OECD.

**Analysis**

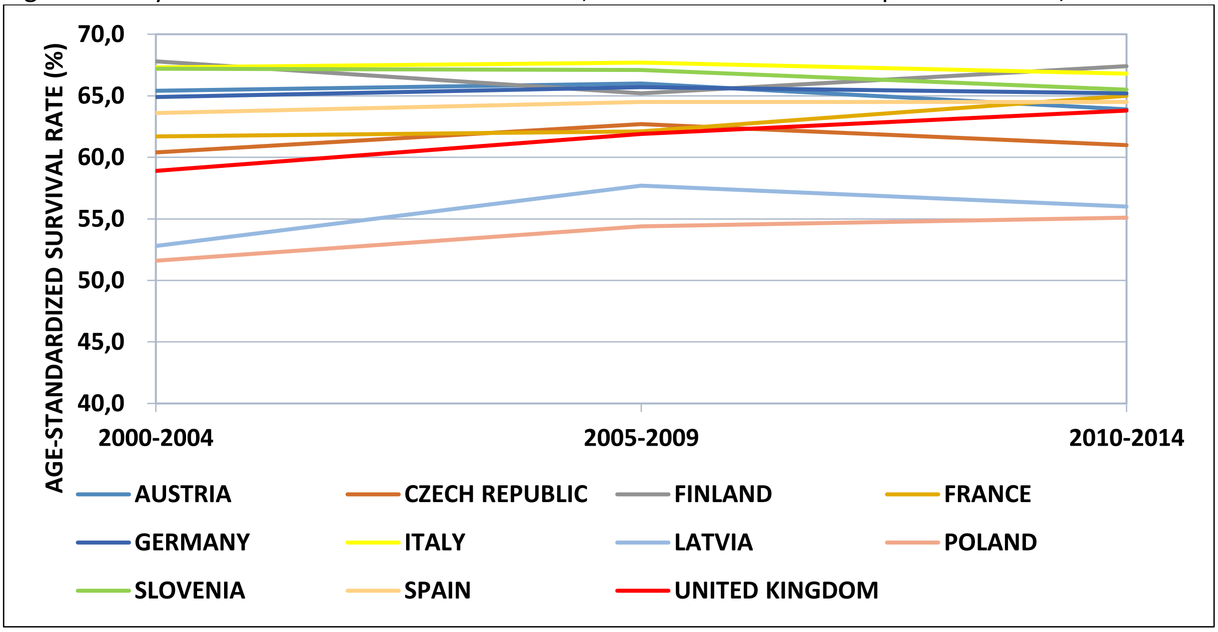
5-year survival rate does not show any important change in rate from 2000 to 2010 in Slovenia (**Figure 73**). In comparison to some European countries, Slovenia had one of the highest 5-year survival rates (**Figure 74**).

Figure 73: 5-year survival rate for cervical cancer in Slovenia, 2000–2010.




Source: SLORA

Figure 74: 5-year survival rate for cervical cancer, Slovenia and some European countries, 2000–2014.




Source: OECD

## INDICATOR 30: ADMISSION BASED LOWER EXTREMITY AMPUTATION RATE

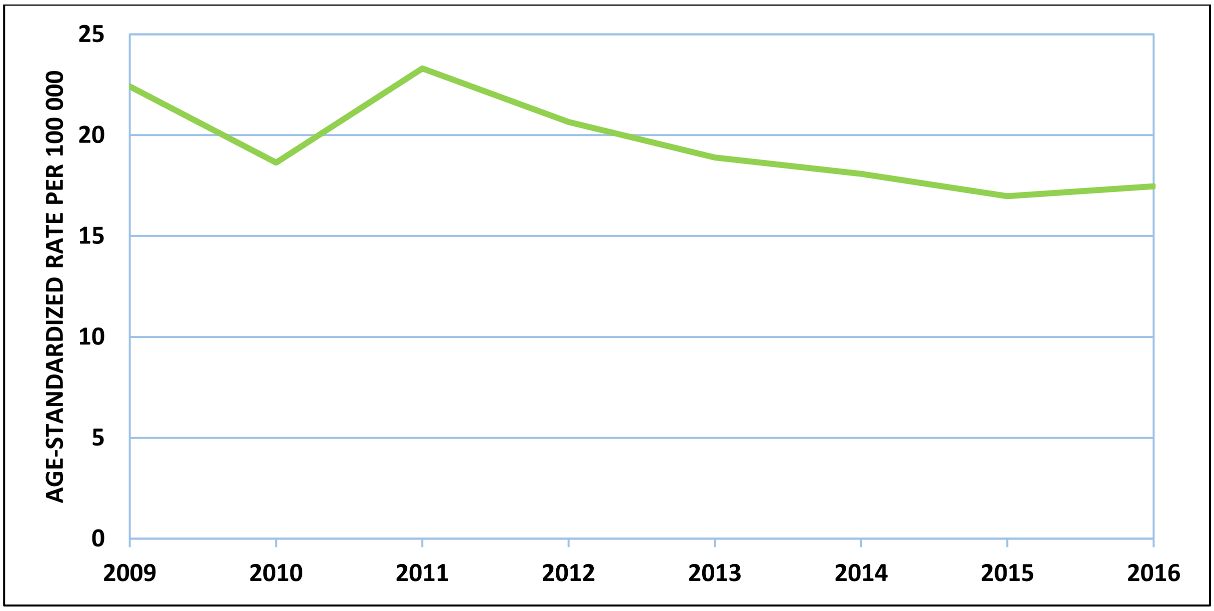
**Definition**

Diabetes is a chronic disease, requiring lifelong management in order to avoid complications including lower extremity amputation (LEA), as diabetes is major cause for non-traumatic amputations of lower extremity. In 1989, health departments across Europe signed the St Vincent Declaration, an international endeavour to improve the quality of diabetes care. Improving quality of care is recognized as an essential element in the provision of effective healthcare. However, measuring and monitoring quality of care is complex and different approaches exist. One approach is to develop a set of specific indicators that would capture important performance aspects, be scientifically sound and be potentially feasible. International consensus does not exist as to which indicators should be used and various organizations around the world have developed sets of indicators to assess the quality of diabetes care. Since 2001, the Organization for Economic Cooperation and Development (OECD) has been collecting a series of indicators as a core activity of the “HealthCare Quality Indicators” (HCQI) Project, with the aim of developing and reporting international comparisons on the various dimensions of quality of care. Lower extremity amputation is therefore used as a quality indicator, reflecting long-term management of diabetes.

**Analysis**

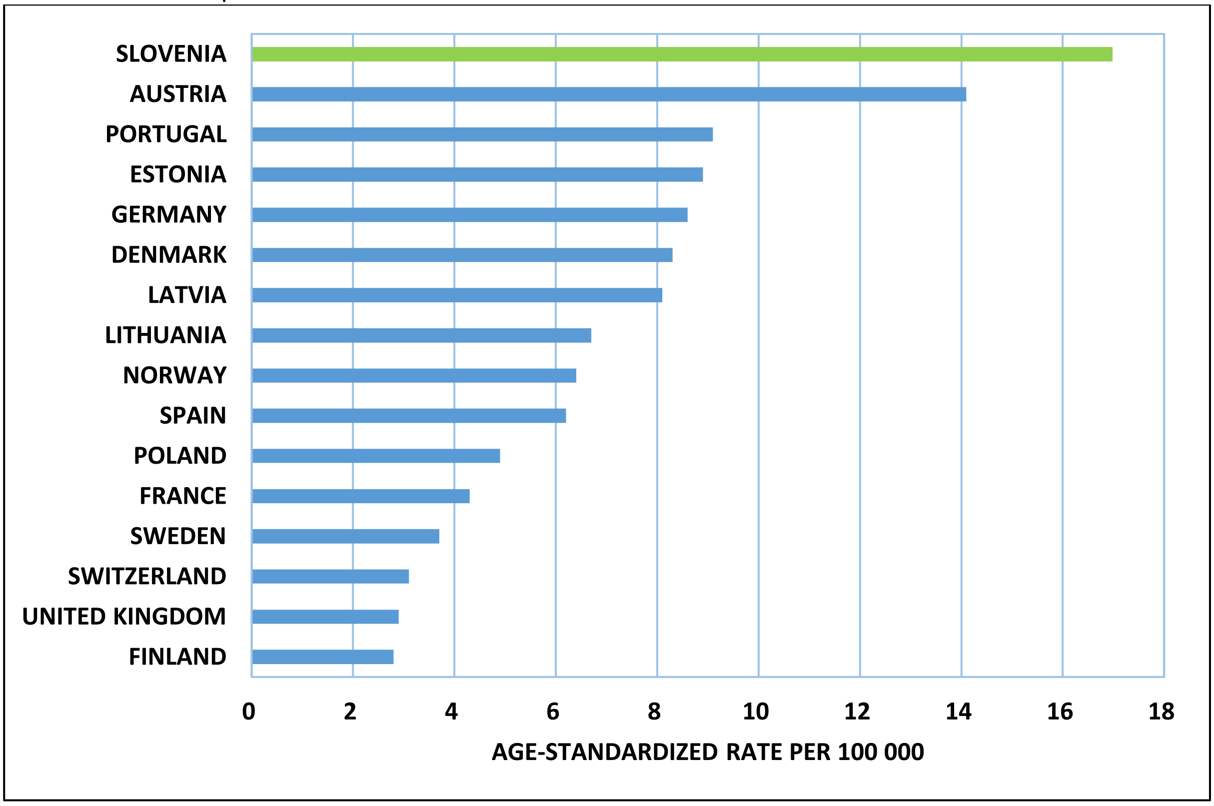
Slovenian data demonstrate that amputee rate is slowly decreasing since 2011, from 23.31 to 17.47 per 100 000 population in 2016 (**Figure 75**). Still, these rates are above average and among the highest, if not highest in European OECD countries, where data are available. In 2015, Slovenia recorded the highest rate of diabetes-related lower leg amputations (17 per 100 000 inhabitants) (**Figure 76**). At the same time, the lowest rates were recorded in Finland (2.8), United Kingdom (2.9) and Switzerland (3.1). Still, rates for Slovenia should be interpreted with caution, as these may be over-reported in line with current definitions. This is such because of the paying model to healthcare providers which are given additional financial incentives when treating diabetic patients. Additional scrutiny of medical histories of treating diabetic patients should be conducted to assure only amputations which comply with the standard definition are counted. Nevertheless, more efforts should be aimed at improved management of diabetic patients in ambulatory services.

Figure 75: Diabetes-related lower extremity amputations, Slovenia, age-standardized rate per 100 000 inhabitants.




Source: NIPH

Figure 76: Diabetes-related lower extremity amputations, selected European countries, 2015, age-standardized rate per 100 000 inhabitants.




Source: OECD

## INDICATOR 1772: THIRTY-DAY MORTALITY RATE AFTER HOSPITAL ADMISSION TO HOSPITAL FOR ACUTE MYOCARDIAL INFARCTION AND STROKE

## INDICATOR 1772A: THIRTY-DAY MORTALITY RATE AFTER HOSPITAL ADMISSION FOR ACUTE MYOCARDIAL INFARCTION

**Definition**

Mortality due to coronary heart diseases has decreased considerably over the past few decades. Reductions in smoking, healthier lifestyle and improved treatment for heart diseases have contributed to the decrease. Despite advances, acute myocardial infarction (AMI) remains the leading cause of cardiovascular deaths across European countries.

Thirty-day AMI mortality rate after hospital admission reflects the processes of care, such as timely transport of patients and effective medical interventions. However, the indicator is influenced not only by the quality of care provided in hospitals but also differences in hospital transfers, average length of stay and AMI severity.

Using linked data is maybe more appropriate than unlinked data because fatalities are recorded regardless of where they occur (in the hospital where the patient was initially admitted, after transfer to another hospital or after discharge). However, it requires a unique patient identifier and linked data which are not available in all European countries.

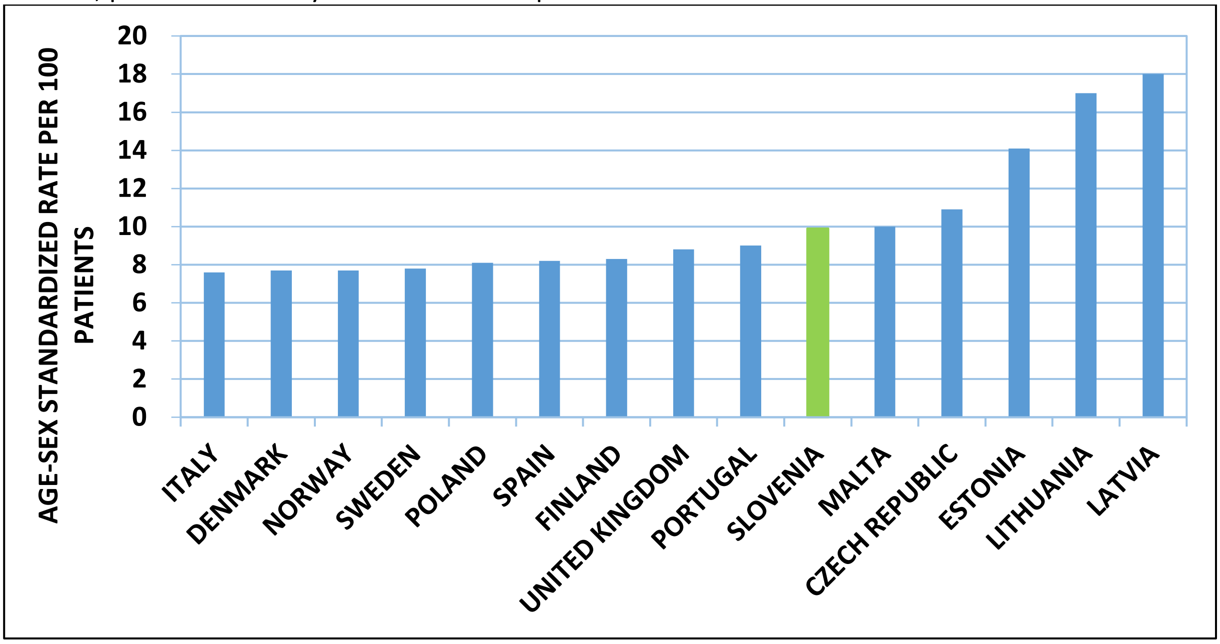
We used linked data obtained from NIPH and OECD database. The values are calculated according to the OECD methodology. Time trend line was used only for Slovenian time comparison because of unavailability of EU–28 or EU-14 averages.

**Analysis**

The results show that Slovenia has similar thirty-day mortality rates after hospital admission for AMI in comparison to some European countries in 2015 (**Figure 77**).

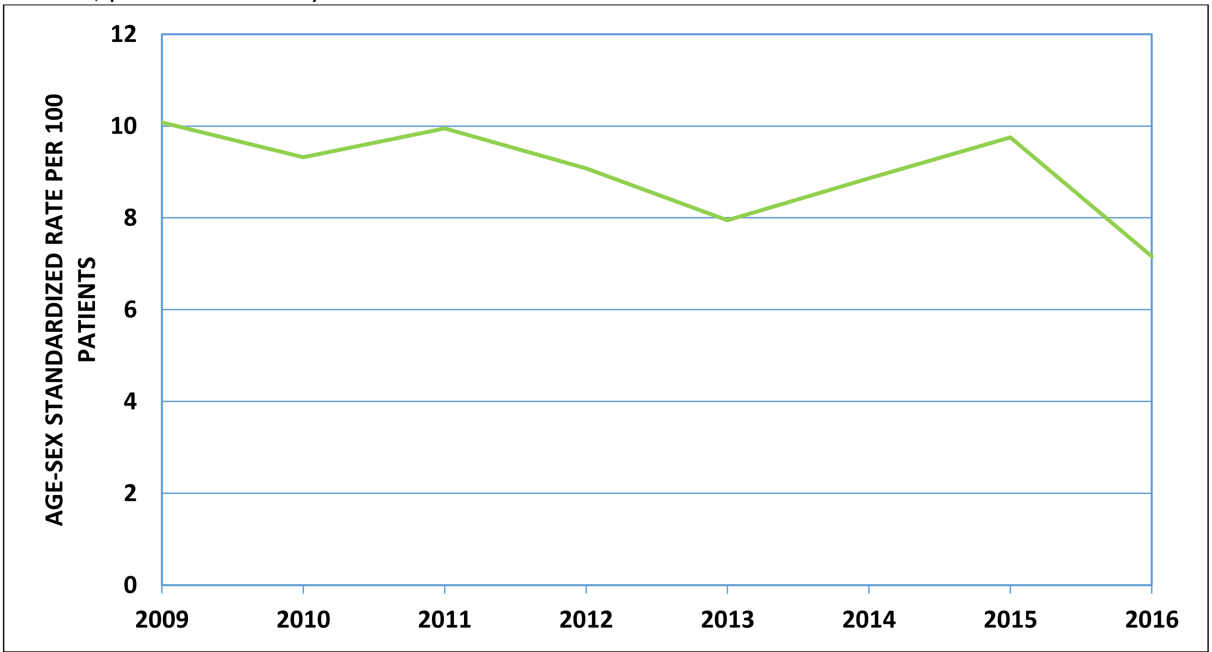
In Slovenia, a fluctuation in the rate of thirty-day mortality after hospital admission for AMI has been observed over the past 7 years (**Figure 78**). Following the rise in 2014 and 2015, a decline in 2016 was observed.

Figure 77: Age-sex standardized rate per 100 patients for thirty-day mortality after hospital admission for AMI, patients over 45 years in some European countries in 2015.




Source: OECD.

Figure 78: Age-sex standardized rate per 100 patients for thirty-day mortality after hospital admission for AMI, patients over 45 years in Slovenia 2009–2016.




Source: NIPH

## INDICATOR 1772B: THIRTY-DAY MORTALITY RATE AFTER HOSPITAL ADMISSION FOR STROKE

**Definition**

Stroke is the second leading cause of death after heart disease and the second leading cause of disability after depression. Mortality of patients with stroke represents a significant outcome potentially related to quality of care. This rate-based indicator identifies an undesirable outcome of care. High rates over time warrant investigation into the quality of care provided.

About 85% strokes are ischaemic and 15% haemorrhagic. However, 40% of all stroke deaths are due to haemorrhagic stroke.

The underlying stroke aetiology influences thirty-day mortality rate: 8 – 15% for ischaemic, 42-46% for subarachnoid haemorrhage and 48-82% for intracerebral haemorrhage. However, thirty-day mortality rates for stroke have decreased in nearly all countries. Better timely transportation of patients, evidence based medical interventions and stroke units have helped to reduce 30-day mortality rates. However, despite the progress, there is much more to improve.

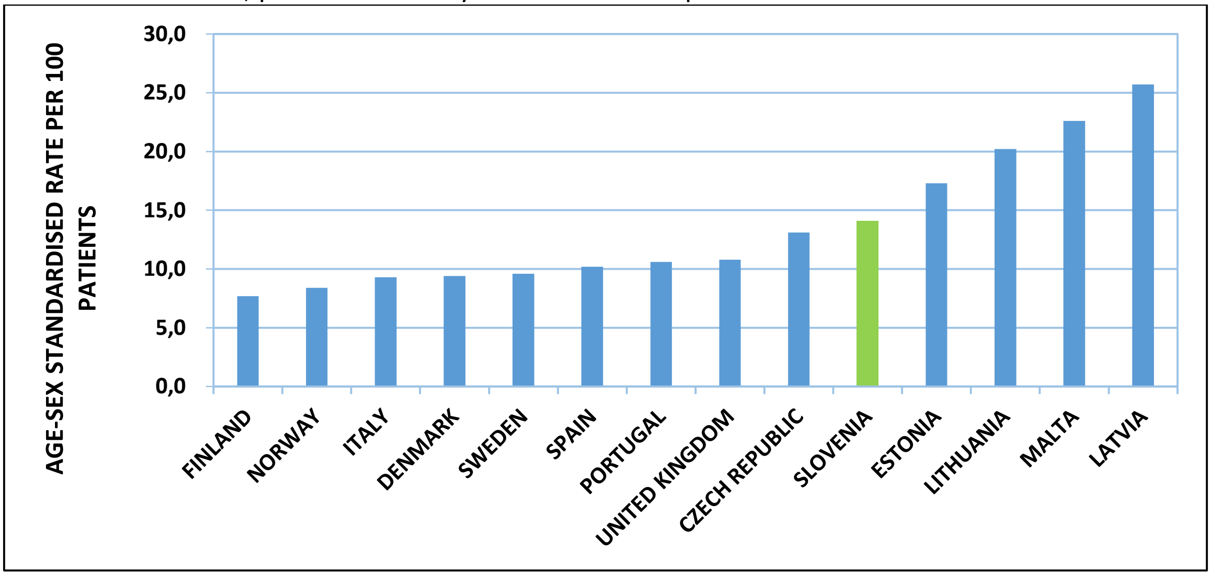
Using linked data is maybe more appropriate than unlinked data because fatalities are recorded regardless of where they occur (in the hospital where the patient was initially admitted, after transfer to another hospital or after discharge). However, it requires a unique patient identifier and linked data which are not available in all European countries.

**Analysis**

The results show that Slovenia has a moderate thirty-day mortality rate for ischaemic and haemorrhagic stroke in comparison to some European countries in 2015 (**Figure 79** and **Figure 80**).

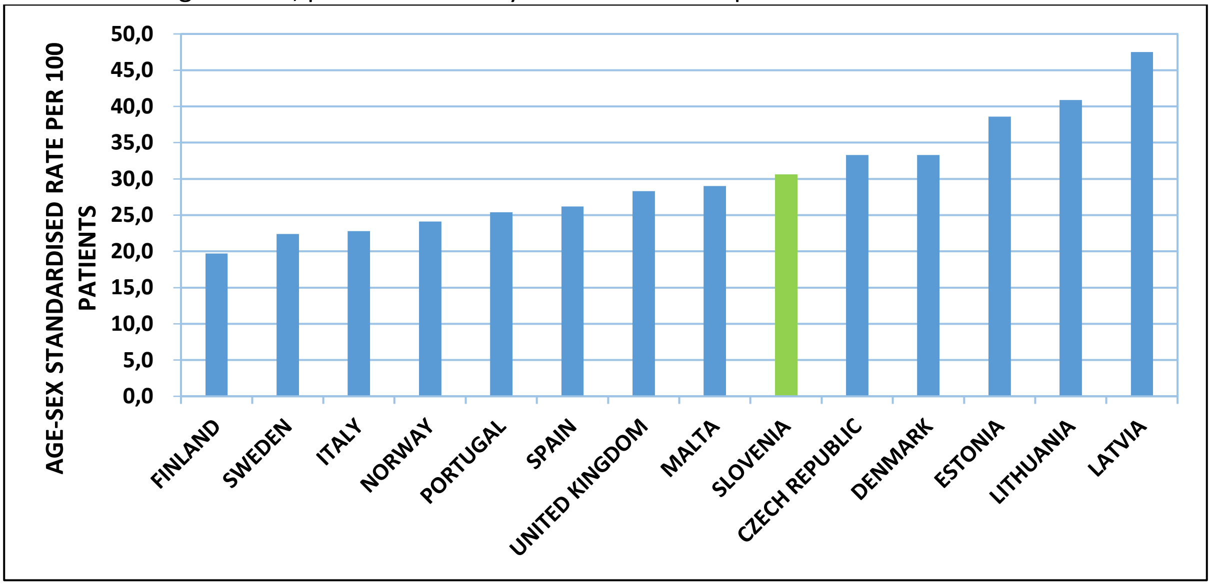
In the case of a haemorrhagic stroke, a thirty-day mortality rate gradually drops after 2009, with more pronounced decreases between 2009-2010, 2011-2012 and in 2016, while in the case of ischemic stroke a drop between 2009 and 2013 was followed with fluctuations in the rate of thirty-day mortality (**Figure 81** and **Figure 82**).

Figure 79: Age-sex standardised rate per 100 patients for thirty-day mortality after hospital admission for ischaemic stroke, patients over 45 years in some European countries in 2015.



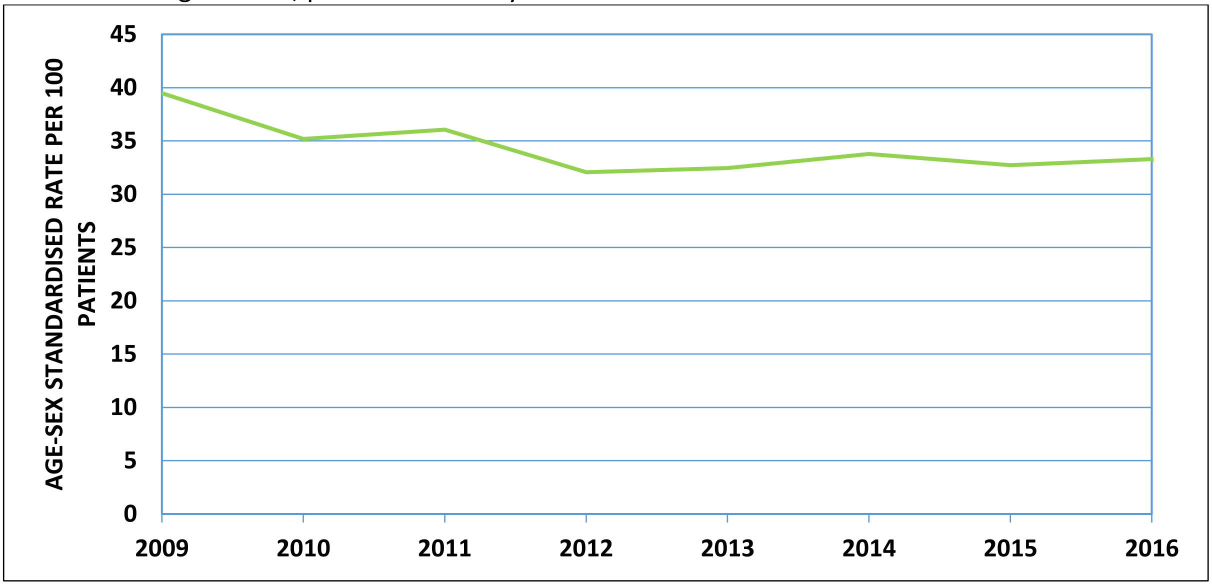

Source: OECD

Figure 80: Age-sex standardised rate per 100 patients for thirty-day mortality after hospital admission for haemorrhagic stroke, patients over 45 years in some European countries in 2015.



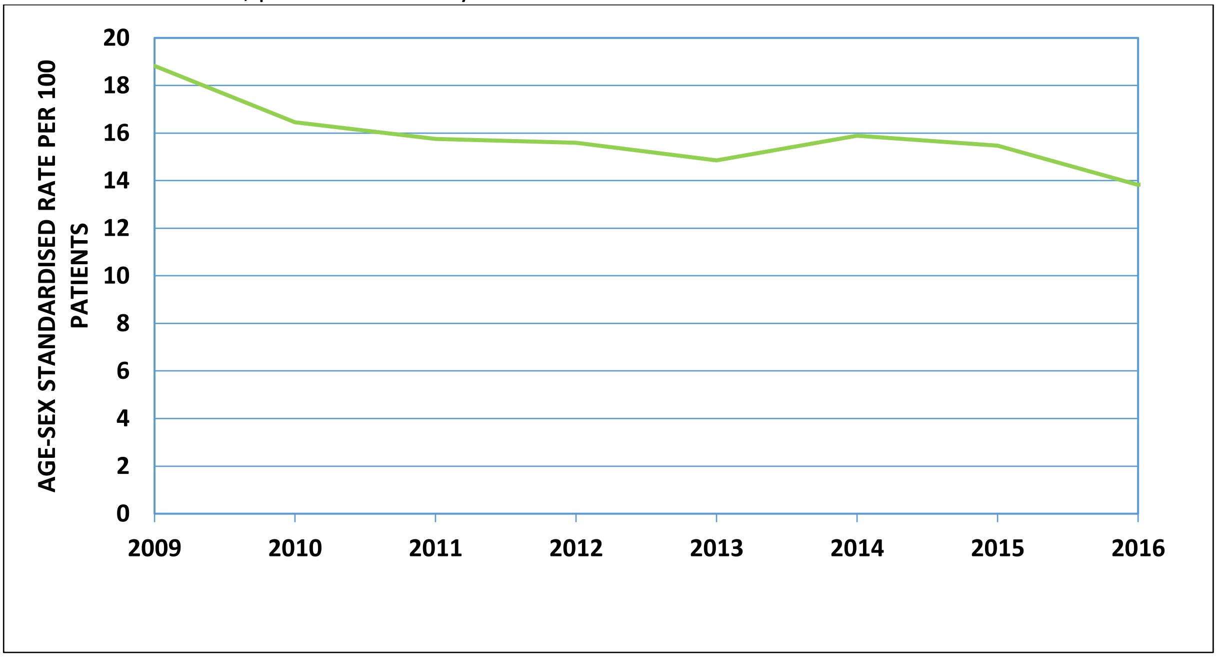

Source: OECD

Figure 81: Age-sex standardised rate per 100 patients for thirty-day mortality after hospital admission for haemorrhagic stroke, patients over 45 years in Slovenia 2009–2016.




Source: NIPH

Figure 82: Age-sex standardised rate per 100 patients for thirty-day mortality after hospital admission for ischaemic stroke, patients over 45 years in Slovenia 2009–2016.




Source: NIPH

## INDICATOR 2007: SECOND–LINE ANTIBIOTICS (QUINOLONES AND CEPHALOSPORINES) AS A PROPORTION OF ALL ANTIBIOTICS PRESCRIBED IN PRIMARY CARE

**Definition**

Prescribing of antibiotics is commonly used as an indicator of healthcare quality. Antibiotics should be prescribed only where there is an evidence-based need, to reduce the risk of resistant strains. Quinolones and cephalosporins are considered second-line antibiotics in most prescribing guidelines.

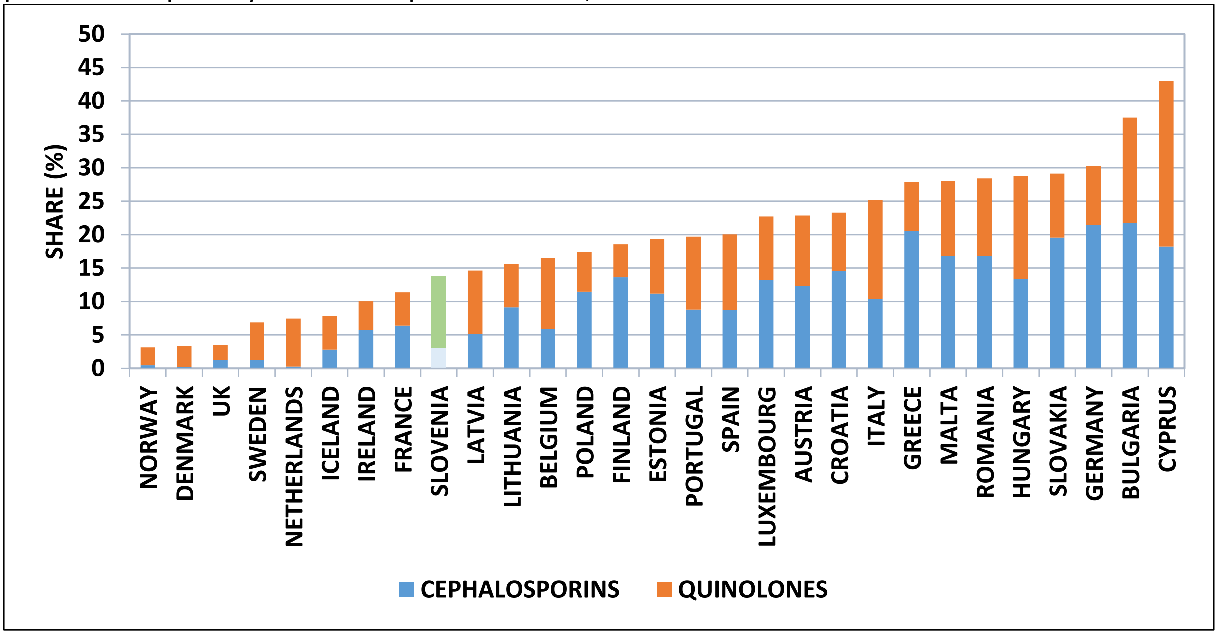
Total volume of antibiotics prescribed and second-line antibiotics prescribed as a proportion of total volume have been validated as markers of quality in the primary care setting.

Data was obtained from ECDC database and Database of Outpatient Prescribed Medications at the National Institute of Public Health in Slovenia (NIPH).

**Analysis**

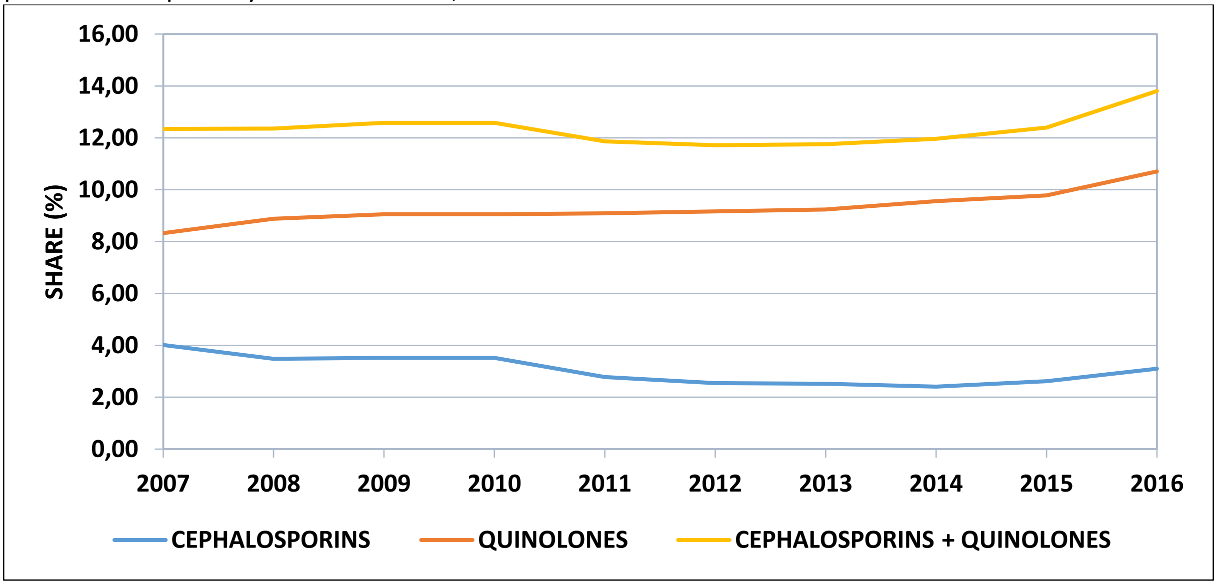
The results show that Slovenia was one of the European countries with the lowest share of prescribed second-line antibiotics in 2016 (**Figure 83**). However, it is noticeable that after 2015, the share has started to increase in Slovenia (**Figure 84**).

Figure 83: Second-line antibiotics (quinolones and cephalosporins) as a proportion of all antibiotics prescribed in primary care in European countries, 2016.




Source: ECDC, NIPH

Figure 84: Second-line antibiotics (quinolones and cephalosporins) as a proportion of all antibiotics prescribed in primary care in Slovenia, 2007–2016.




Source: ECDC, NIPH

## DOMAIN 3: GENERATION AND MANAGEMENT OF RESOURCES

**Definition**

The domain corresponds to the "financial, human, physical, technical and informational (including evidence and high-quality data) resources" that are available to the health system.

Results are shown in **Table 11** and **Figure 85**.

## MAIN RESULTS

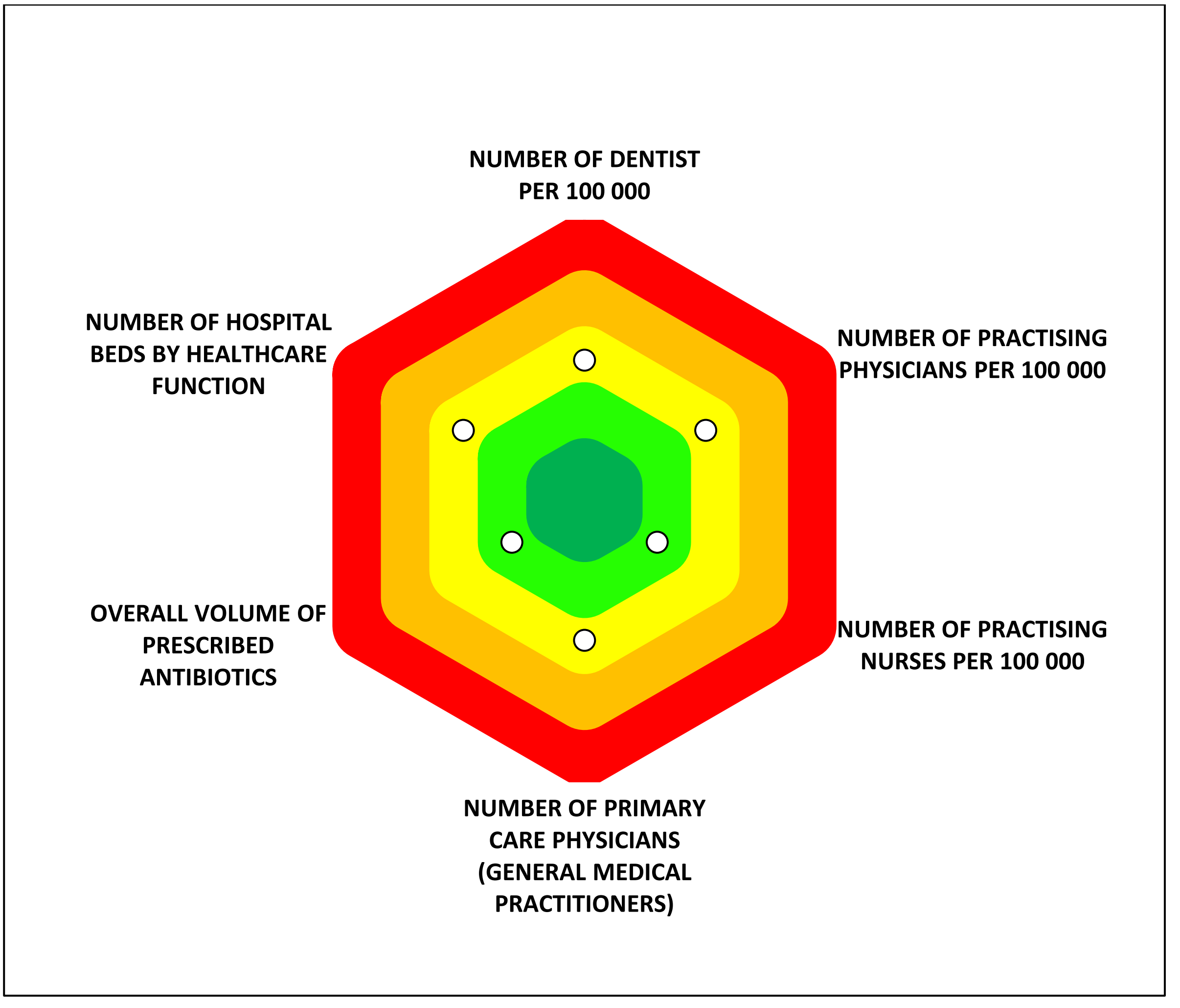
Table 11: Generation and management of resources main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 7 | NUMBER OF PRACTISING PHYSICIANS PER 100 000 | 3 | IMPROVING | WORSE | SATISFACTORY |
| 8 | NUMBER OF PRACTISING NURSES PER 100 000 | 3 | IMPROVING | SAME | GOOD |
| 199 | NUMBER OF PRIMARY CARE PHYSICIANS (GENERAL MEDICAL PRACTITIONERS) | 2 | IMPROVING | WORSE | SATISFACTORY |
| 1802 | AVAILABILITY OF EXPENSES FOR DEVELOPMENT - NEW HEALTH TECHNOLOGIES | | | | |
| 1823 | OVERALL VOLUME OF PRESCRIBED ANTIBIOTICS | 2 | STABLE | BETTER | GOOD |
| 2090 | NUMBER OF HOSPITAL BEDS BY HEALTHCARE FUNCTION | 2 | STABLE | SAME | SATISFACTORY |
| 2112 | NUMBER OF DENTIST PER 100 000 | 2 | IMPROVING | WORSE | SATISFACTORY |
| 2116 | ORGANIZATION CLIMATE SURVEY BASED INDICATOR | | | | |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **GENERATION AND MANAGEMENT OF RESOURCES** | **Satisfactory** | **2.36** |

Figure 85: Dartboard presentation of assessment score of domain Generation and management of resources.




Although the number of practising and primary care physicians, dentists and nurses is improving, comparison to other European countries show that Slovenia is doing worse with its healthcare human resources. On the other hand, usage of pharmaceutical and technical resources is similar to most of European countries and is even better in overall volume of prescribed antibiotics.

Due to the dearth of data and information available for some indicators under this domain, it is not yet possible to assign a score. It is important that this report will spearhead the collection and analysis of the required data in the near future.

## INDICATOR 7: NUMBER OF PRACTISING PHYSICIANS PER 100 000

**Definition**

The relationship between the number of physicians and the population in a particular geographical area is an indicator of the development of a health system and access to health services. The unequal regional distribution of physicians can lead to inequalities in access to healthcare, such as longer waiting times or a long travel time to a chosen physician.

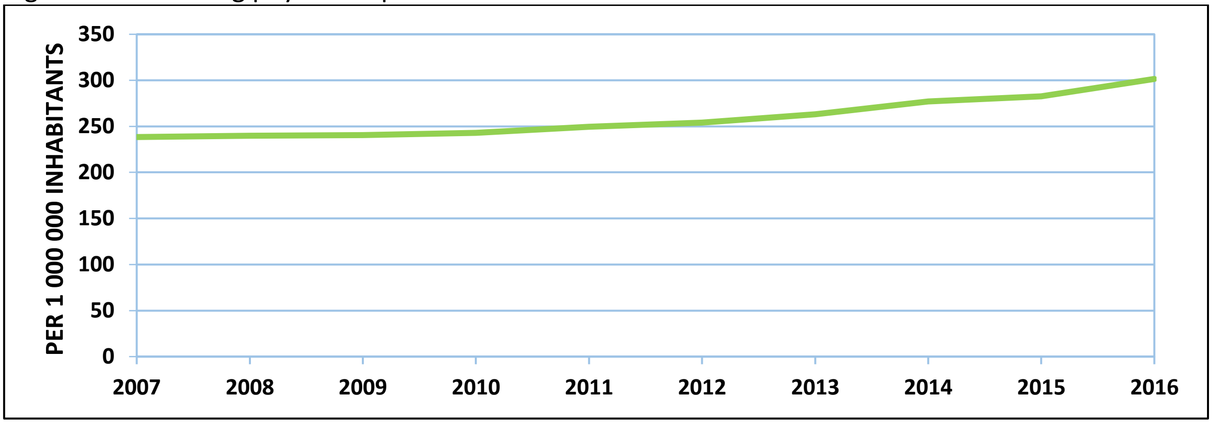
The data was obtained from NIPH and EUROSTAT database.

**Analysis**

The results show that the number of Slovenian practising physicians has increased after 2012 (**Figure 86**). However, there are large variations in the regions where central regions of Slovenia have more physicians than other regions (**Figure 87**).

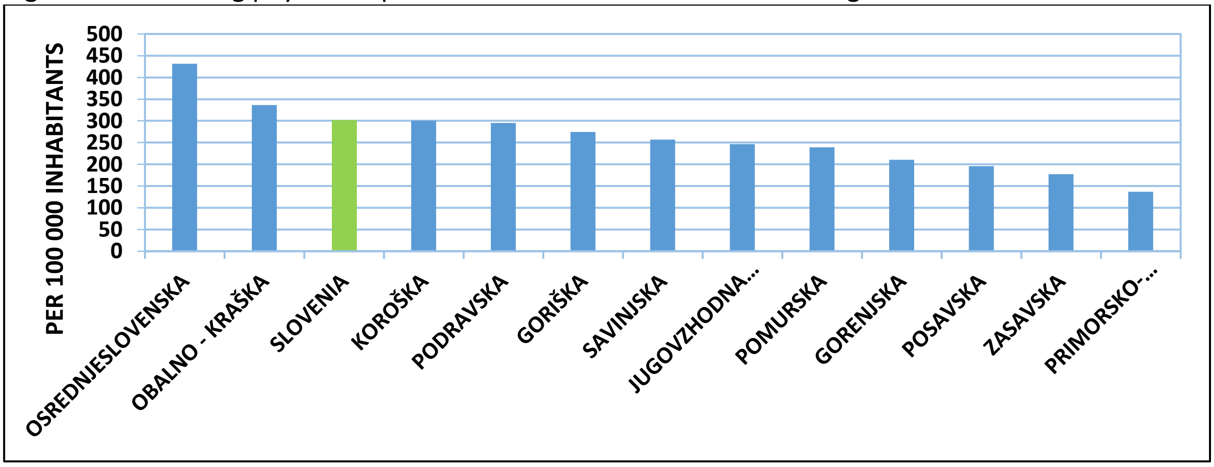
In comparison to some European countries, Slovenia was one of the European countries with a lowest number of practising physician in 2016 (**Figure 88**).

Figure 86: Practising physicians per 100 000 inhabitants in Slovenia 2007–2016.



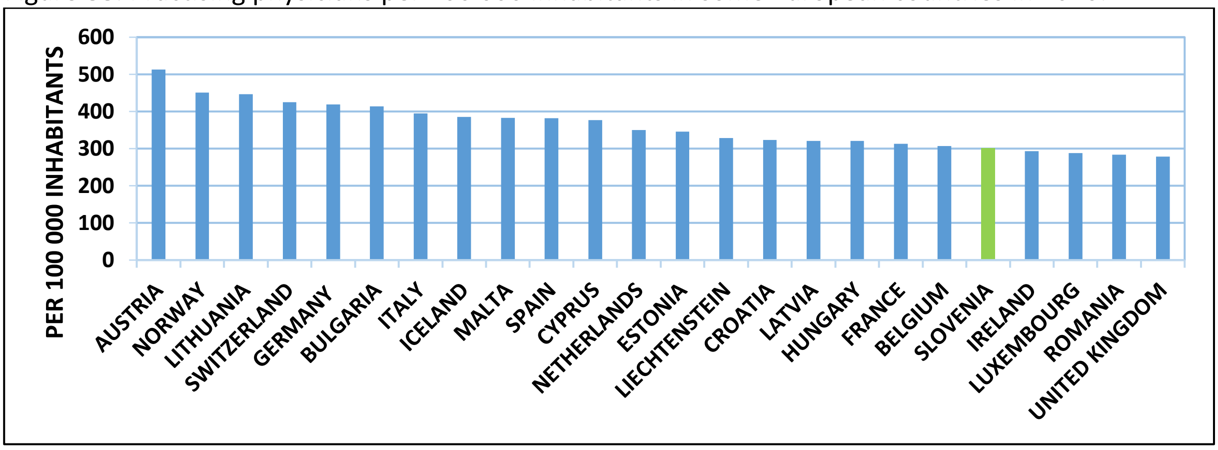

Source: NIPH

Figure 87: Practising physicians per 100 000 inhabitants in Slovenian regions in 2016.




Source: EUROSTAT

Figure 88: Practising physicians per 100 000 inhabitants in some European countries in 2016.




Source: EUROSTAT

## INDICATOR 8: NUMBER OF PRACTISING NURSES PER 100 000

**Definition**

Practising nursing professionals assume responsibility for the planning and management of patient care, including the supervision of other healthcare workers, working autonomously or in teams with medical doctors and others in the application of preventive and curative care. Although nurses have traditionally provided care to patients under the guidance of a physician, they are increasingly being permitted in many EU Member States to practise independently as professionals. This however depends to some degree on their qualifications and level of training, with an increasing proportion of nurses following university courses to degree level.

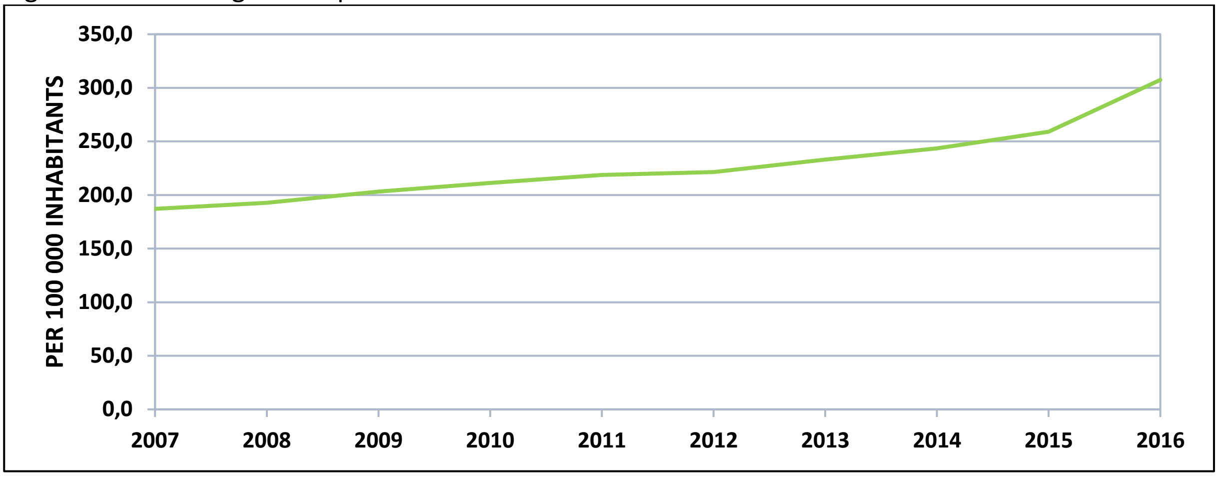
The number of nurses may vary according to differences in healthcare systems. Equally, the number of nurses compared with other healthcare personnel also varies between different providers of healthcare, for example between hospitals and long-term nursing care facilities.

For the purpose of the performance assessment, the number practising nurses who are nursing professionals, were evaluated.

**Analysis**

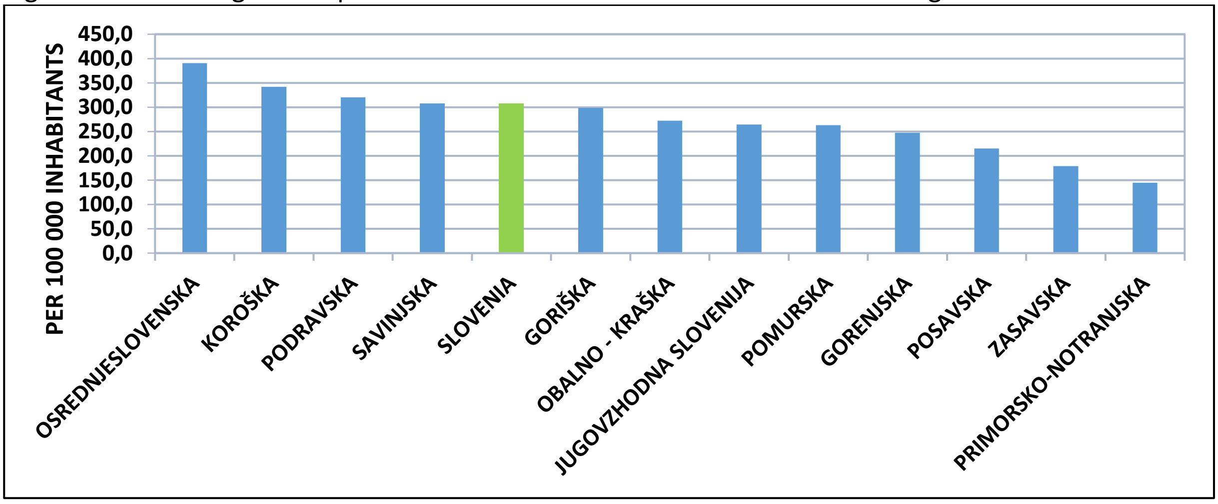
The results show that the number of practising nurses is rapidly increasing in Slovenia (**Figure 89**). However, there is a significant interregional difference in the number of practising nurses (**Figure 90**). In comparison to some European countries Slovenia had one of the lowest number of practising nurses in Europe in 2016 (**Figure 91**).

Figure 89: Practising nurses per hundred thousand inhabitants in Slovenia 2007–2016.



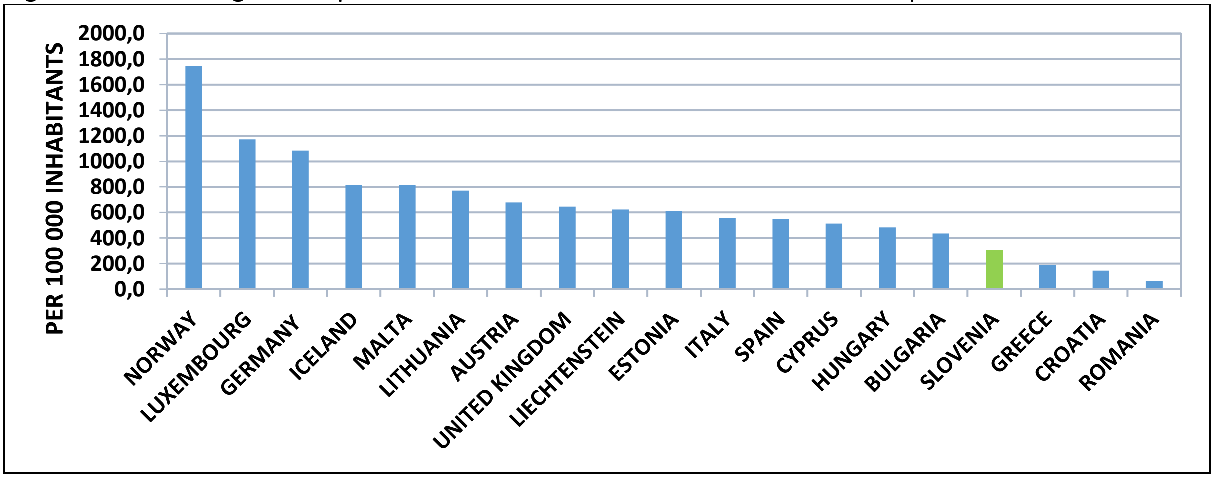

Source: NIPH

Figure 90: Practising nurses per hundred thousand inhabitants in Slovenian regions in 2016




Source: NIPH

Figure 91: Practising nurses per hundred thousand inhabitants in some European countries in 2016.




Source: OECD

## INDICATOR 199: NUMBER OF PRIMARY CARE PHYSICIANS (GENERAL MEDICAL PRACTITIONERS)

**Definition**

Slovenian primary healthcare is composed of health services of general medicine - specialists of general and family medicine, paediatrics, gynaecologists and dentists. Primary care provides the first contact with a physician for the diagnosis and treatment of acute and chronic diseases, the promotion of health and a healthy lifestyle, disease prevention, counselling and patient care. Under the current Slovenian legislation, the care at primary level is organised and implemented by the municipality around health centres and medical stations, which are linked to the nearest health centre.

The role of specialists in family and general medicine varies widely across Europe. In the UK general practitioners) carry out paediatric and gynaecology tasks, but on the other hand, while working in the outpatient clinic, they do not perform the work of an emergency doctor, which is a practice in Slovenia, but this part of the service performs other personnel. In their methodology, OECD, WHO and EUROSTAT state that this category (generalist medical practitioners) does not include paediatricians or gynaecologists at the primary level.

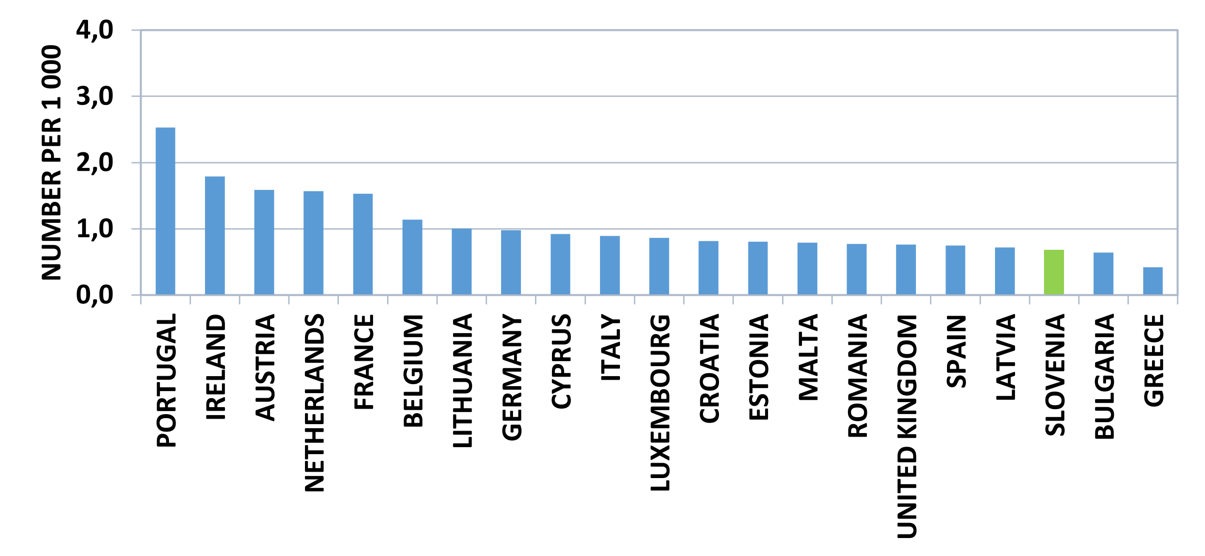
The comparison among different European countries is also difficult due to varying definitions. In Slovenia, the definition includes general outpatient or family medicine outpatient clinic work physician without a specialization (according to the old program), physician of general medicine and family medicine, occupational medicine and individual doctors from other specializations. Therefore, a methodological comparison of Slovenian and other countries primary care is very difficult.

WHO and EUROSTAT data was used for this indicator.

**Analysis**

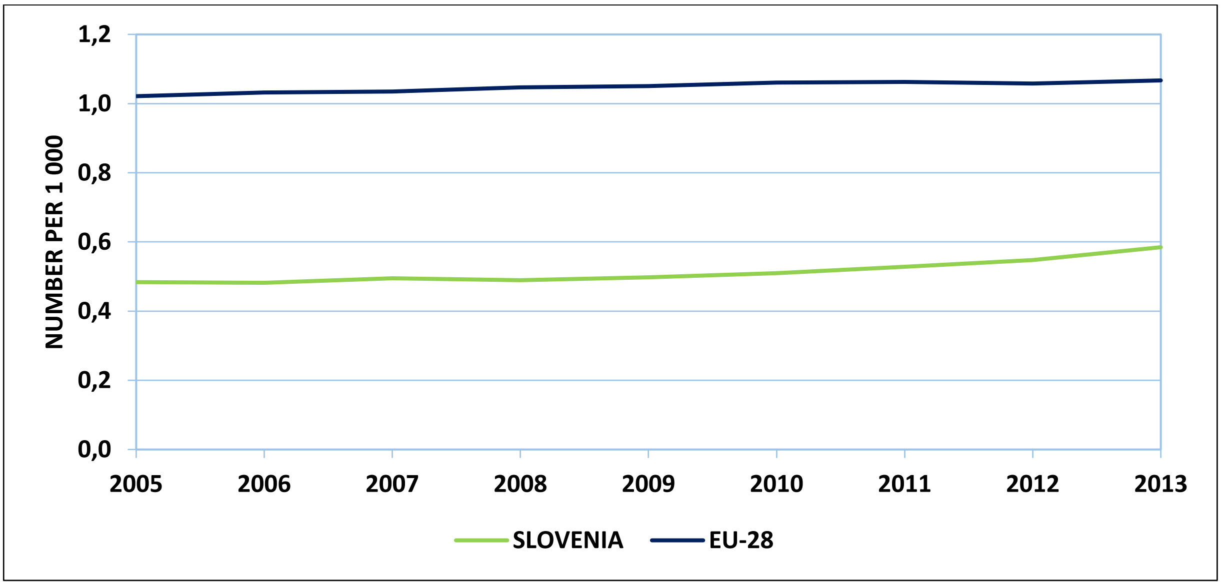
In comparison with other European countries, Slovenia had one of the lowest numbers of general medical practitioners per thousand people in 2016 despite the rising number over the years (**Figure 92** and **Figure 93**).

Figure 92: Number of general medical practitioners per 1 000 in some European countries in 2016.




Source: EUROSTAT

Figure 93: Number of general medical practitioners per 1 000, Slovenia and EU–28 average, 2005–2013.




Source: WHO

## INDICATOR 1823: OVERALL VOLUME OF PRESCRIBED ANTIBIOTICS

**Definition**

Antibiotics, the mainstay of treatment against bacterial infections, are losing their effectiveness. The rise in antibiotic resistance is one of the biggest challenges of modern medicine. Because antibacterial resistance is associated with the consumption of antibiotics, prescribing has to be rational. Antibiotics should be prescribed only where there is an evidence based need to reduce the risk of resistant strains.

The European Centre for Disease Prevention and Control (ECDC) announced that the average consumption of antibiotics for systemic use was 22.4 defined daily doses (DDD) per 1 000 inhabitants per day (country range: 10.7–36.1) in 2015. During the period 2011–2015, there was no statistically significant change. However, a statistically significant decreasing trend was observed for Finland, the Netherlands and Sweden. In the hospital sector, the average consumption of antibiotics for systemic use was 2.0 DDD per 1 000 inhabitants per day (country range: 1.0–2.9) and did not show any statistically significant change during the period 2011–2015.

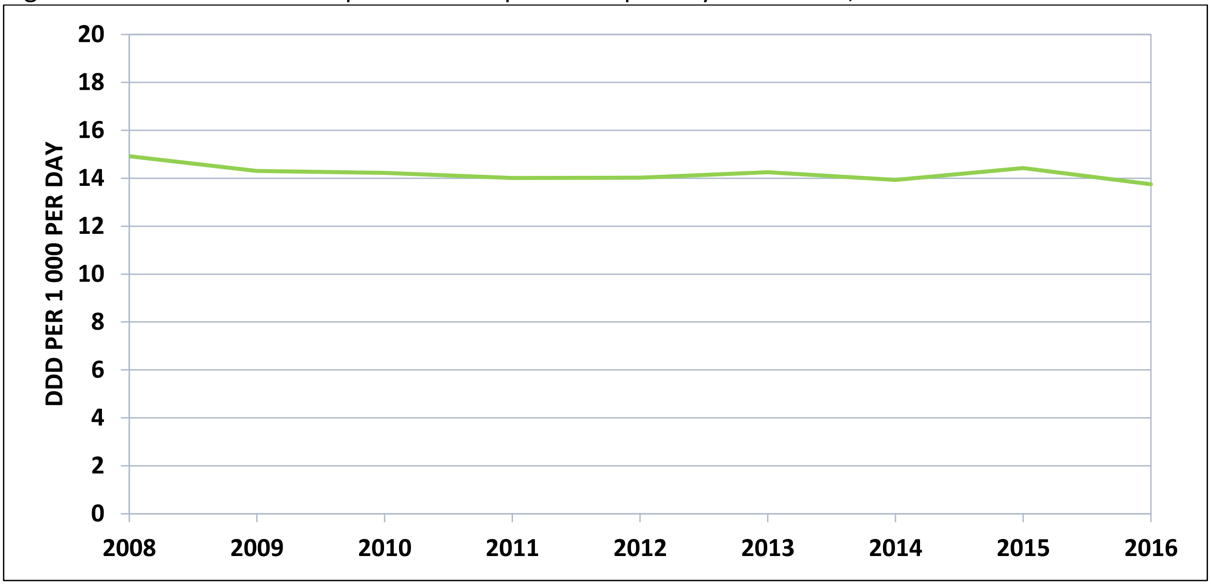
The data was obtained from NIPH and OECD database.

**Analysis**

The results show that antibiotic consumption did not significantly change between 2009 and 2016 in Slovenia (**Figure 94**).

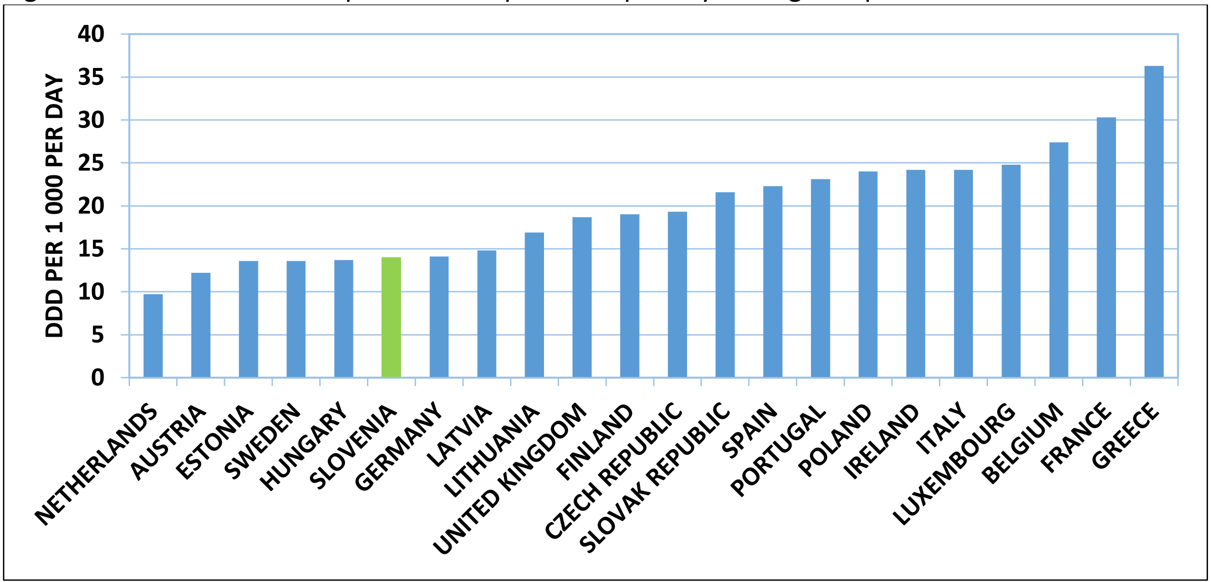
In comparison to the other European countries Slovenia had one of the lowest antibiotic consumption rates in 2016 (**Figure 95**).

Figure 94: Antibiotic consumption in DDD per 1 000 per day in Slovenia, 2008–2016.




Source: NIPH

Figure 95: Antibiotic consumption in DDD per 1 000 per day among European countries in 2016




Source: OECD

## INDICATOR 2090: NUMBER OF HOSPITAL BEDS BY HEALTHCARE FUNCTION

**Definition**

Traditionally, the hospital bed count is a simple enumeration of the number of beds in the wards of a hospital at a point in time. However, this count might be “flexible”, or even “rubbery”, as spaces with capacity for beds might be included and some hospitals might count only beds they consider to be funded, others only those they could fully staff. This section presents data for different types of care (curative care, rehabilitative care, long-term care and other functions).

The number of hospital beds per capita has decreased over the past decade in most OECD countries, falling on average from 5.6 per 1 000 population in 2000 to 4.7 in 2015. The total number of hospital beds in Slovenia has been decreasing since the 1980s in all hospitals – from 695 per 100 000 population in 1980 to 451 in 2015. This process was affected by significant changes in the hospital reimbursement systems, including the shift from bed-day payments to case-based payments. This reduction is part of a voluntary effort in most countries, partly driven by progress in medical technology, which has enabled a move to day surgery for a number of procedures and a reduced need for hospitalisation. In many European countries, the financial and economic crisis, which started in 2008, provided an additional stimulus to reduce hospital capacity in line with policies to reduce public spending on health.

On average, about three-quarters of hospital beds (77%) are allocated for curative care across OECD countries. The rest are distributed between long-term care (12%), rehabilitation (9%), and other types of care (2%).

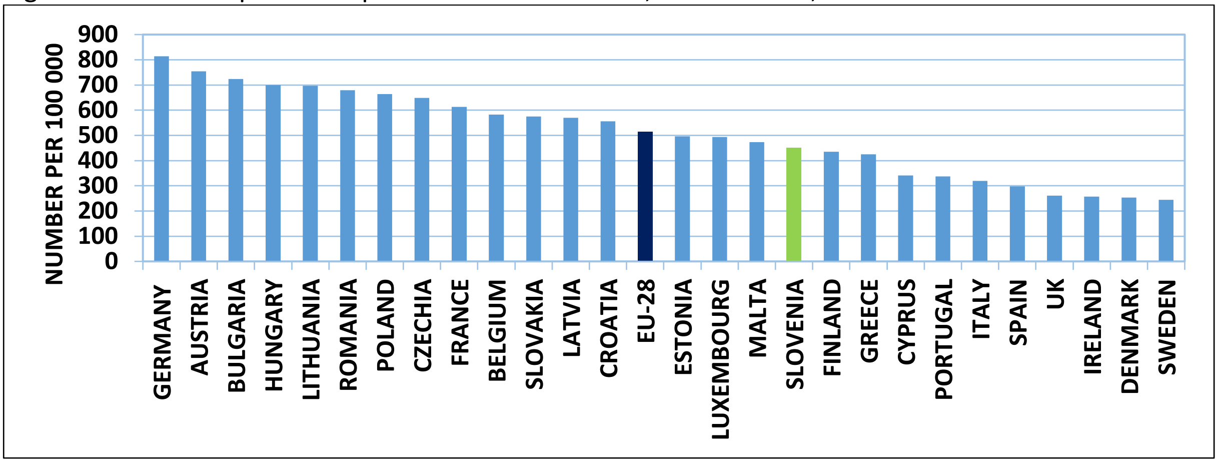
Data was obtained from EUROSTAT database.

**Analysis**

Compared to EU–28 member states, Slovenia has lower rate of hospital beds (**Figure 96**), but similar pattern of decreasing hospital beds is observed between 2008 and 2015 (**Figure 97**).

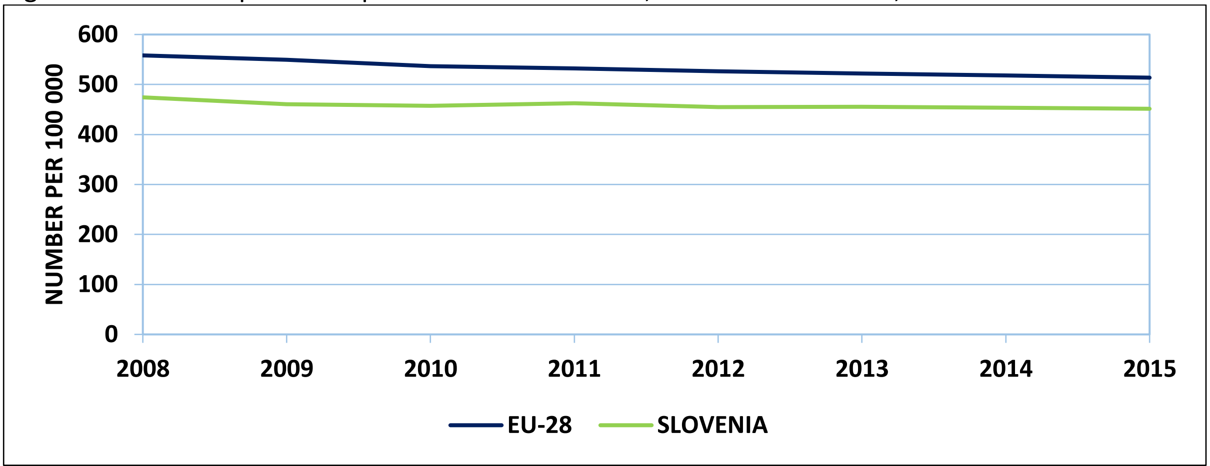
Regarding their function, the rate of curative beds was decreasing gradually from 2008 to 2016, while the rate of rehabilitative and long-term care was stable (**Figure 98**).

Figure 96: Total hospital beds per 100 000 inhabitants, EU countries, 2015.



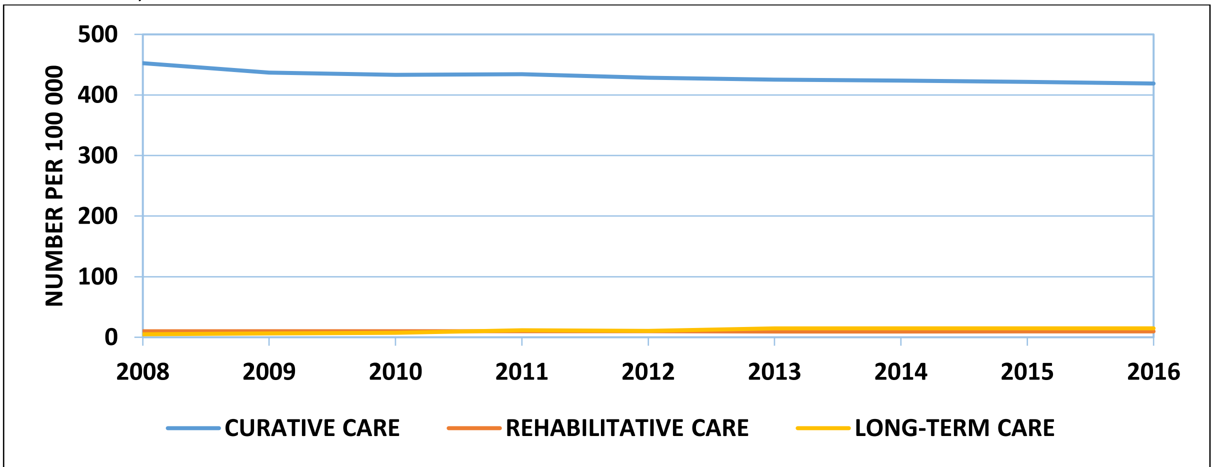

Source: EUROSTAT

Figure 97: Total hospital beds per 100 000 inhabitants, Slovenia and EU–28, 2008–2015.




Source: EUROSTAT

Figure 98: Number of curative care, rehabilitative care and long-term care beds per 100 000 inhabitants, Slovenia 2008– 2016.




Source: EUROSTAT

## INDICATOR 2112: NUMBER OF PRACTISING DENTISTS PER 100 000

### Definition

Dentists diagnose, treat and prevent diseases, injuries and abnormalities of the teeth, mouth, jaws and associated tissues. They use a broad range of specialised diagnostic, surgical and other techniques to promote, improve and restore oral health. Practising dentists provide services directly to patients. Doctors of dental medicine and dental specialists are included.

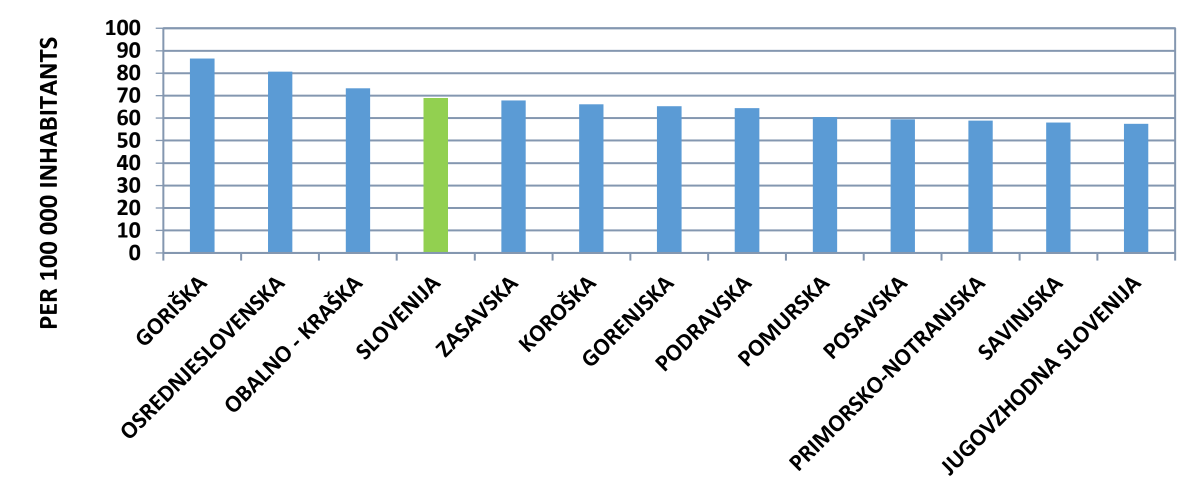
The number of practising dentists per 100 000 inhabitants remained relatively unchanged in most of the EU Member States between 2011 and 2016.

Data was obtained from NIPH and EUROSTAT database.

### Analysis

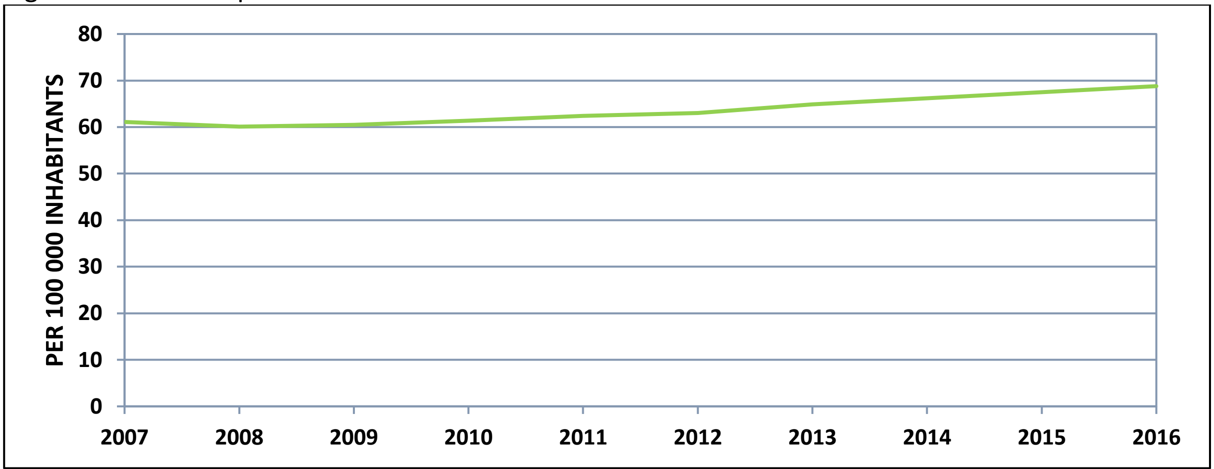
The results show that there were some regional differences in the number of practising dentists in Slovenia in 2016 (**Figure 99**). The number of practising dentists in Slovenia was moderately increasing from 2007 to 2016 (**Figure 100**). In comparison to some European countries, Slovenia has one of the lowest rates of practising dentists (**Figure 101**).

Figure 99: Dentist per 100 000 inhabitants in Slovenian regions in 2016.



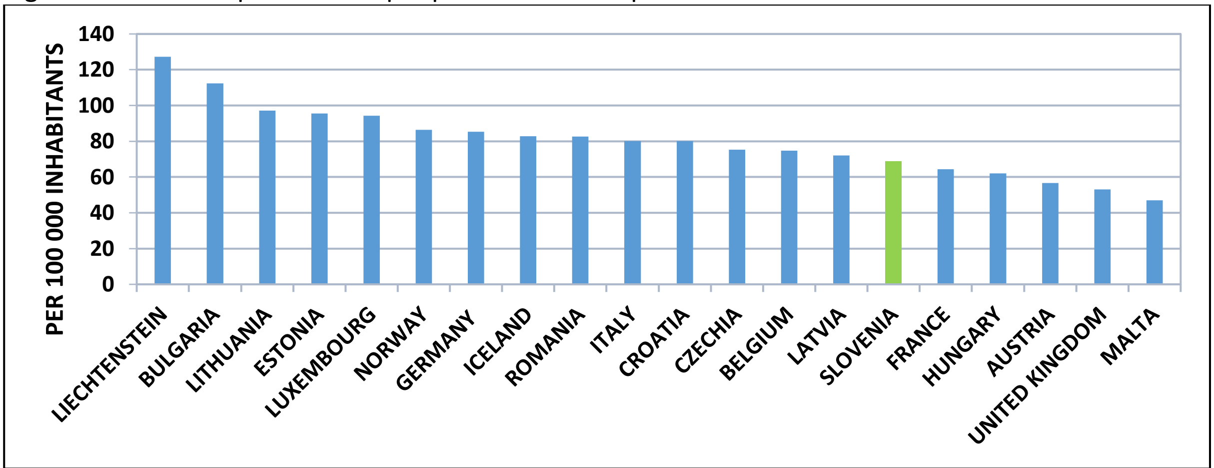

Source: NIPH

Figure 100: Dentist per 100 000 inhabitants in Slovenia 2007–2016.




Source: NIPH

Figure 101: Dentist per 100 000 people in some European countries in 2016.




Source: EUROSTAT

## DOMAIN 5: FINANCIAL SUSTAINABILITY

**Definition**

Health financing is to make funding available, as well as to set the right financial incentives to providers to ensure that all individuals have access to effective public health and personal healthcare (**2**). A good health financing system raises adequate funds for health, so that people would have access to needed services and are protected from catastrophic out-of-pocket payments when using health services or impoverishment associated with having to pay for them. It also provides incentives for providers and users to be efficient.

Results are shown in **Table 12** and **Figure 102.**

## MAIN RESULTS

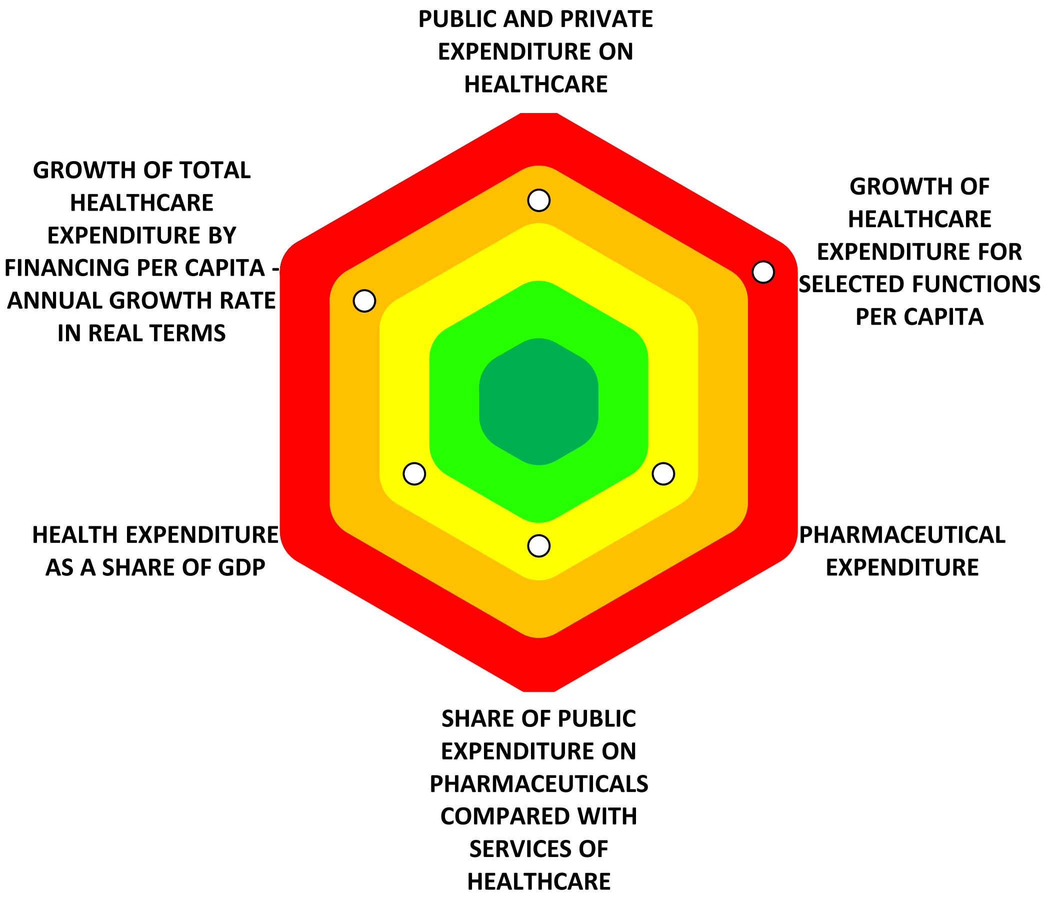
Table 12: Financial Sustainability main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 1851A | HEALTHCARE EXPENDITURE AS A SHARE OF GDP | 3 | STABLE | SAME | SATISFACTORY |
| 1851B | PUBLIC AND PRIVATE EXPENDITURE ON HEALTHCARE | 3 | STABLE | WORSE | POOR |
| 1851C | PHARMACEUTICAL EXPENDITURE | 2 | STABLE | SAME | SATISFACTORY |
| 1851D | SHARE OF PUBLIC EXPENDITURE ON PHARMACEUTICALS COMPARED WITH SERVICES OF HEALTHCARE | 2 | STABLE | SAME | SATISFACTORY |
| 1884 | GROWTH OF HEALTHCARE EXPENDITURE FOR SELECTED FUNCTIONS PER CAPITA | 2 | DETERIORATING | WORSE | VERY POOR |
| 1890 | GROWTH OF TOTAL HEALTHCARE EXPENDITURE BY FINANCING PER CAPITA - ANNUAL GROWTH RATE IN REAL TERMS | 2 | DETERIORATING | SAME | POOR |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **FINANCIAL SUSTAINABILITY** | **Poor** | **1.37** |

Figure 102: Dartboard presentation of assessment score of domain Financial Sustainability.




Overall assessment of this domain shows that Slovenia is fairing relatively well. The worst performing indicator was that related to growth of total healthcare expenditure by financing per capita. Besides decreasing annual growth rates, Slovenia is also facing with lower annual growth rates in comparison to other European countries. Similar was almost seen in growth of healthcare expenditure for selected functions per capita. However, this time Slovenia was doing better than other European countries. Also public and private expenditure on healthcare was lower than in other European countries, the same holds for share of public expenditure in overall health care expenditure. On the other hand pharmaceutical expenditure was comparable to the expenditure of other European countries.

## INDICATOR 1851: EXPENDITURE ON HEALTHCARE AND PHARMACEUTICALS

## INDICATOR 1851A: HEALTHCARE EXPENDITURE AS A SHARE OF GDP

**Definition**

Expenditure on inpatient and outpatient care covers almost two-thirds of current health expenditure across EU countries. A further one-fifth was allocated to medical goods (mainly pharmaceuticals), remaining to long-term care, public health and prevention services as well as administration.

Greece, Romania, Bulgaria, Poland, Austria, France and Italy had a higher share of expenditure on inpatient care than other EU countries, comprising more than a third of total costs. On the other hand, Portugal, Cyprus and Estonia had a high share of outpatient spending, representing more than 40% of health expenditure.

Differences in the consumption pattern of pharmaceuticals and their relative prices and expenditure on long-term care are some of the main factors explaining the variations between countries.

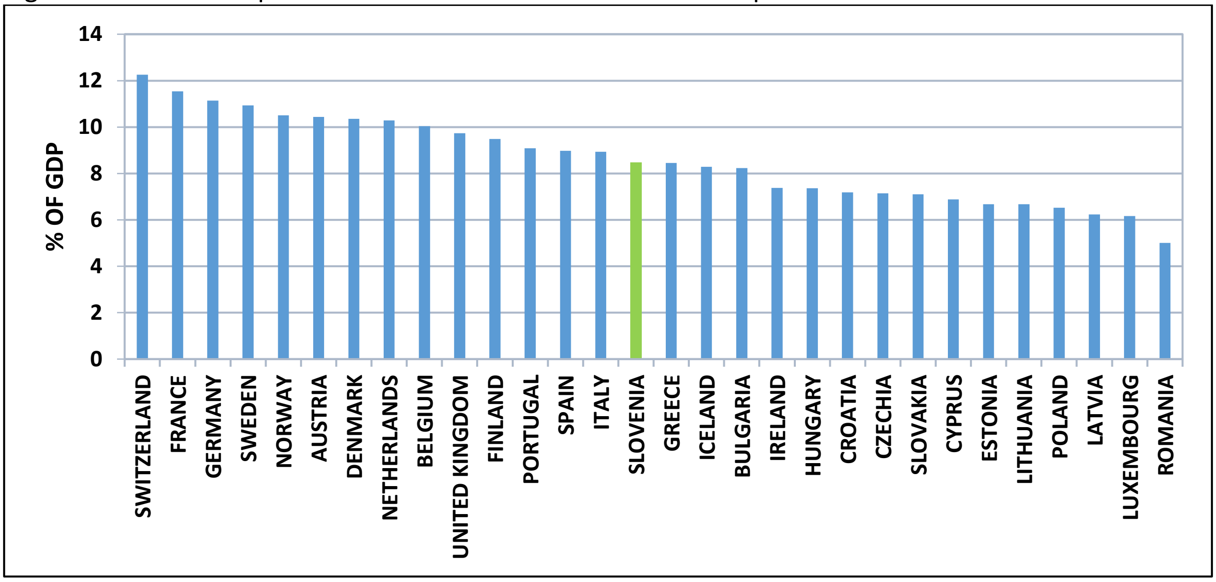
Current health expenditure comprises personal healthcare (curative care, rehabilitative care, long-term care, ancillary services and medical goods) and collective services (prevention and public health services as well as health administration). Curative, rehabilitative and long-term care can also be classified by mode of production (inpatient, day care, outpatient and home care). Concerning long-term care, only the health aspect is reported as health expenditure, although it is difficult in certain countries to separate out clearly the health and social aspects of long-term care. Some countries with comprehensive long-term care packages focusing on social care might be ranked surprisingly low based on SHA data because of the exclusion of their social care. Thus, estimations of long-term care expenditure are one of the main factors limiting comparability across countries.

Data was derived from OECD database.

**Analysis**

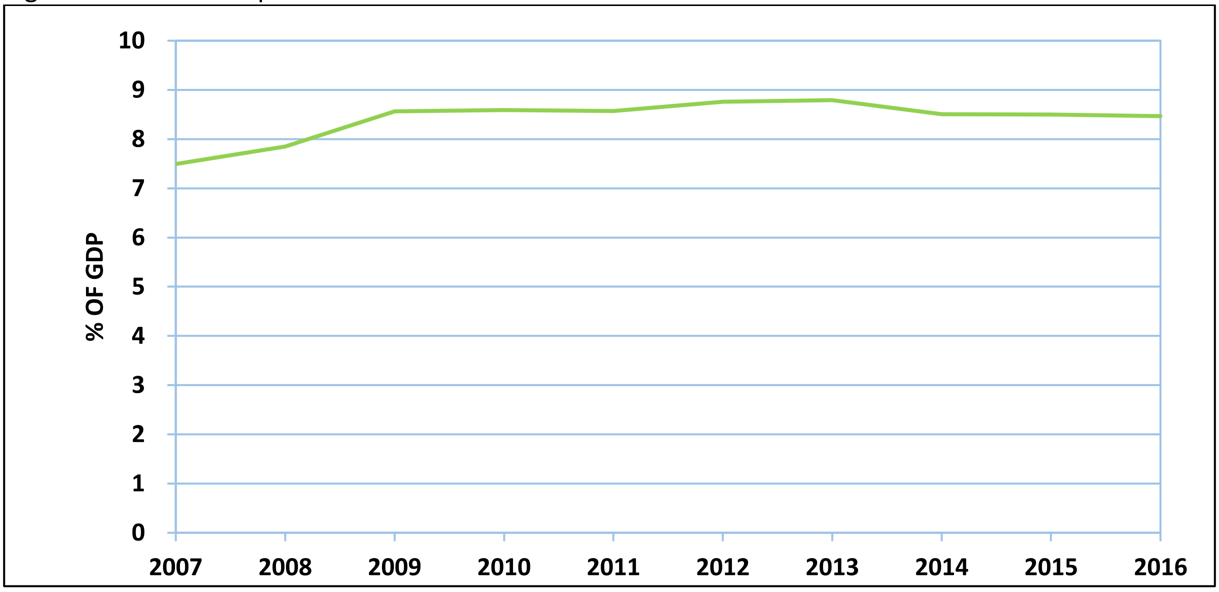
Analysis showed that Slovenia has a modest and consistent share of GDP for total health expenditure in comparison to other European countries in 2016, and it was around 8.0% in last years (**Figure 103** and **Figure 104**).

Figure 103: Health expenditure as a share of GDP in some European countries in 2016.




Source: OECD

Figure 104: Health expenditure as a share of GDP in Slovenia from 2007 to 2016.




Source: OECD

## INDICATOR 1851B: PUBLIC AND PRIVATE EXPENDITURE ON HEALTHCARE

**Definition**

The largest public and private expenditures in absolute terms in Europe are attributable to Germany and France. On the other hand, countries that allocate less than half of their financial resources to health care compared to the OECD average are central and eastern European countries (eg. Estonia, Poland).

In general, the allocation of government expenditure per capita and compulsory insurance is comparable to total expenditure. Healthcare expenditure per capita in OECD countries is still increasing after a sudden slowdown between 2009 and 2011 due to the global financial and economic crisis. The average annual increase since 2009 in the OECD countries is 1.4%, in the six years before 2009 was 3.6%. Some European countries have a reduction in healthcare expenditure (Greece from 5.4% to -5.0%, Portugal 2.2% to -1.3%). In general, the increase in consumption is gradually slowing down in most OECD countries. In some cases the increase is close to zero, indicating a negative trend. Only Iceland, Hungary and Switzerland in Europe have a major increase in the period since 2009 compared to the period before.

In Slovenia, current expenditure on healthcare in 2015 increased by 3.3% compared to the previous years (this was the first higher nominal growth of total healthcare expenditures after 2009) and reached 8.54% of GDP in the same year, which was the same as in the previous year.

The share of private sources in financing healthcare in 2015 was 28.3%. Compared to 2014, the structure of the public - private sector stayed more or less unchanged. Otherwise, the resources from both public and private sources increased in 2015, public by 4.3% and private by 0.9%.

Expenditure on health measures the final consumption of health goods and services (*i.e.* current healthcare expenditure). This includes spending by both public and private sources on medical services and goods, public health and prevention programmes and administration. To compare spending levels between countries, per capita healthcare expenditures are converted to a common currency (EUR or US dollar,0) and adjusted to take account of the different purchasing power of the national currencies, in order to compare spending levels. Economy-wide (GDP) PPPs are used as the most available and reliable conversion rates.

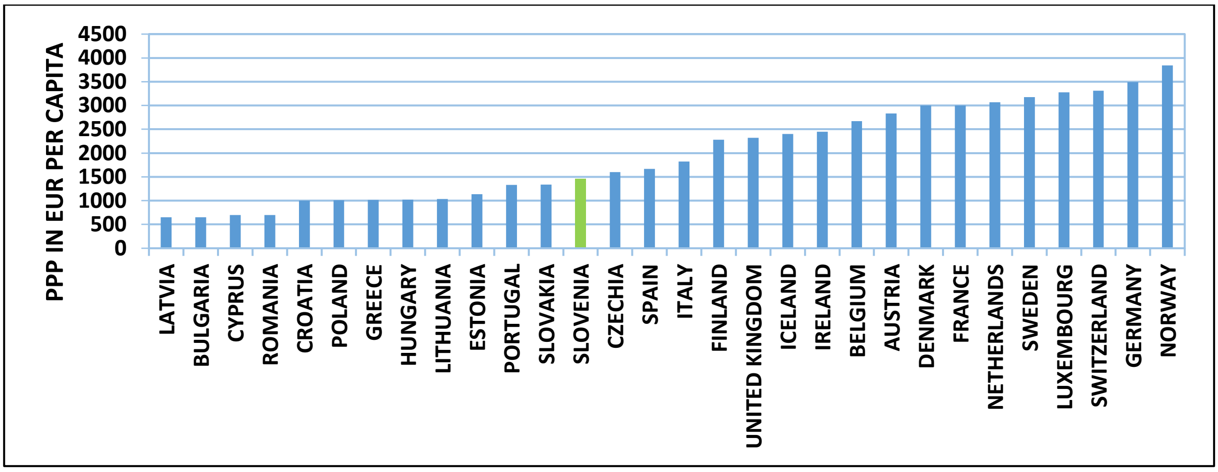
Data was obtained from EUROSTAT and OECD database.

**Analysis**

The results show that Slovenia did not have one of the lowest public and private healthcare expenditure level in PPP in EUR per capita in comparison to other European countries in 2016 (**Figure 105** and **Figure 106**). On the other hand share of private healthcare in overall expenditure as well as in private expenditure as share of GDP was one of the highest among European countries in 2016 (**Figure 107**). However, public healthcare expenditure in share of GDP was on a similar level as other European countries had it in 2016 (**Figure 108**).

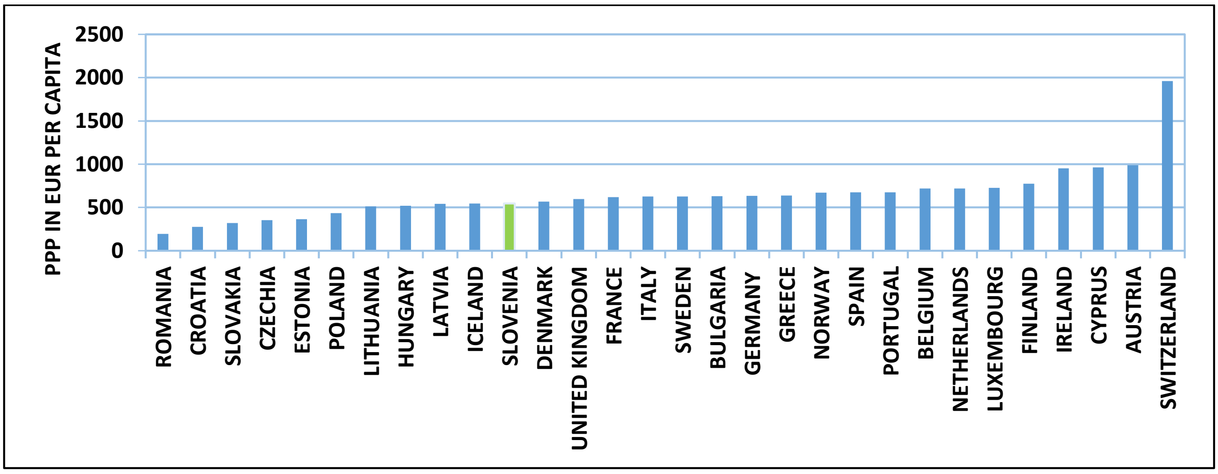
A trend line shows that Slovenian public healthcare expenditure in share of GDP increased slightly after 2007 and has been almost stable after 2009 (**Figure 109**). Also, private healthcare expenditure in share of GDP did not change significantly between 2007 and 2016 (**Figure 110**).

Figure 105: Public expenditure on healthcare in PPP in EUR per capita in some European countries in 2016.



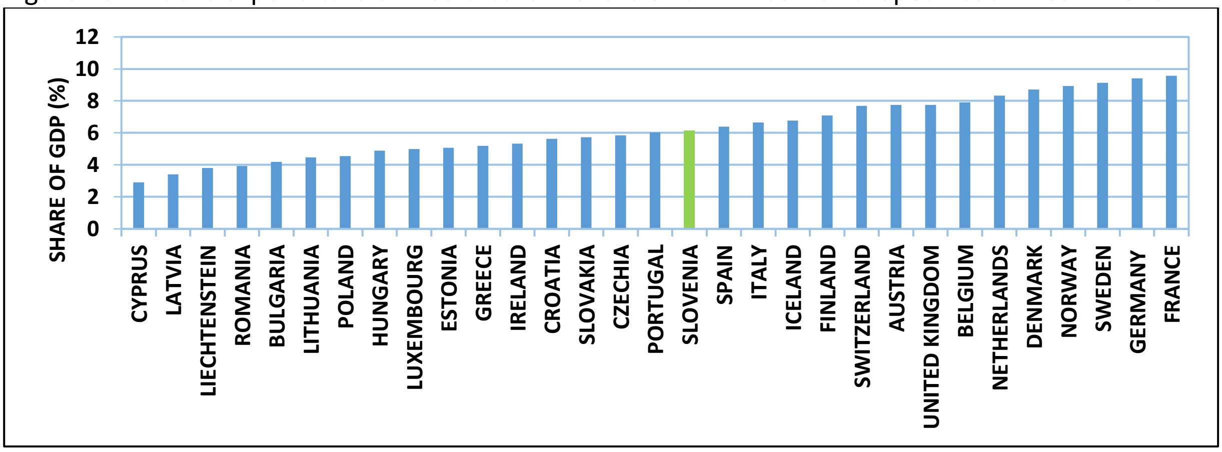

Source: EUROSTAT

Figure 106: Private expenditure on healthcare in PPP in EUR per capita in some European countries in 2016



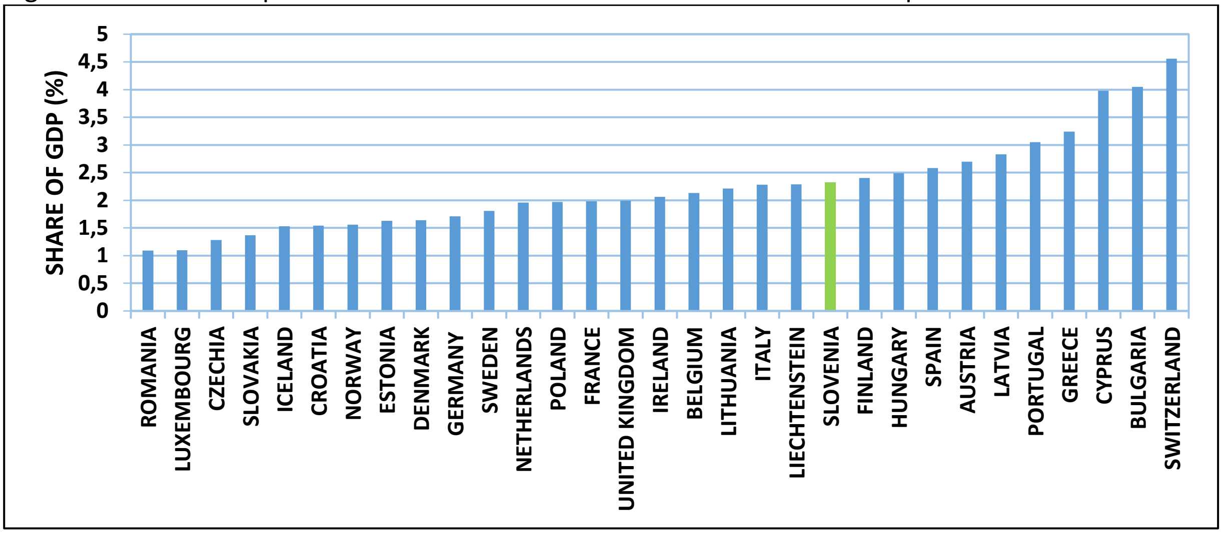

Source: EUROSTAT

Figure 107: Public expenditure on healthcare in share of GDP in some European countries in 2016



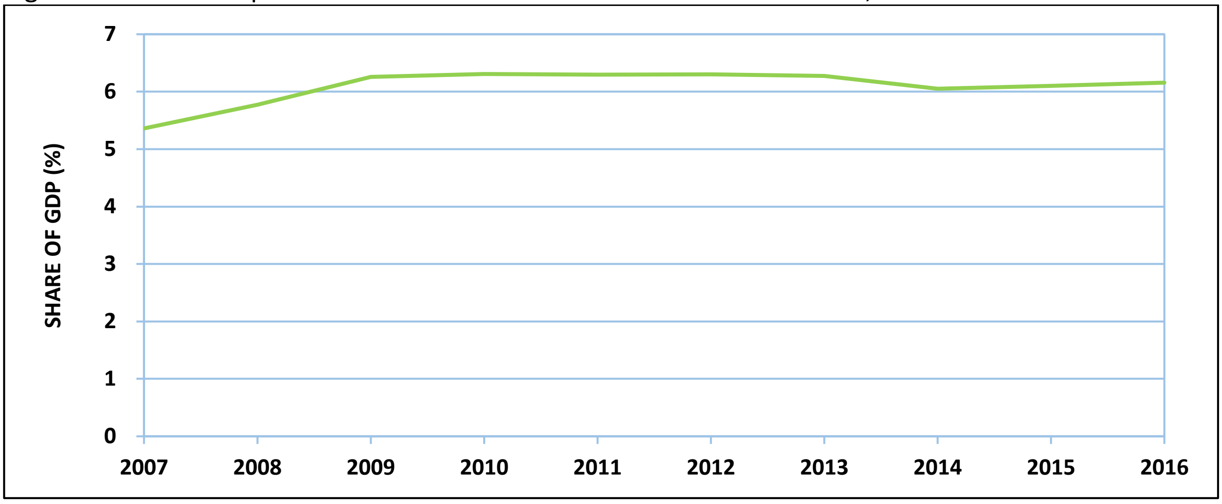

Source: OECD

Figure 108: Private expenditure on healthcare in share of GDP in some European countries in 2016.



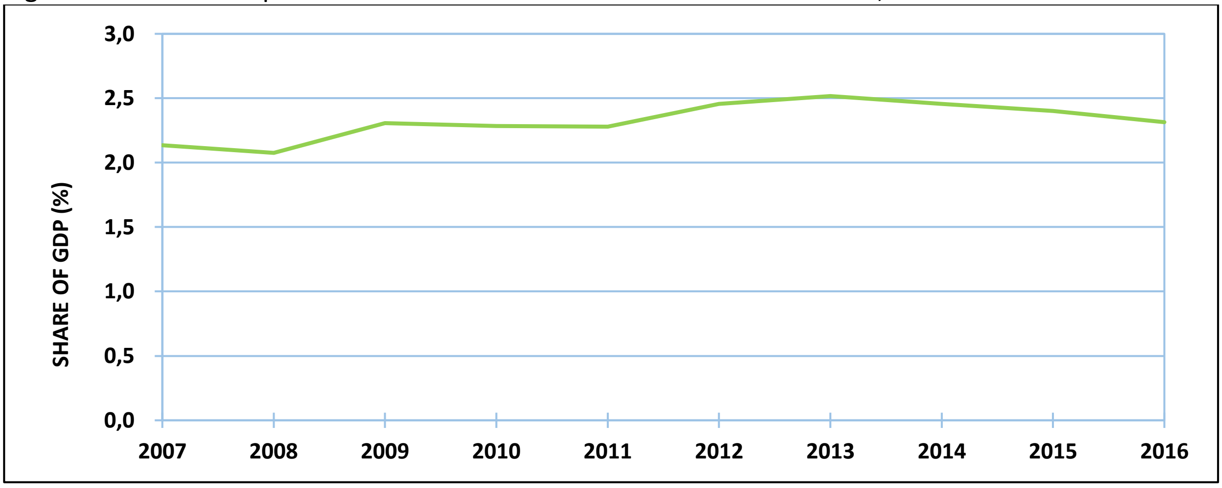

Source: OECD

Figure 109: Public expenditure on healthcare in share of GDP in Slovenia, 2007– 2016.




Source: OECD

Figure 110: Private expenditure on healthcare in share of GDP in Slovenia, 2007– 2016.




Source: OECD

## INDICATOR 1851C: PHARMACEUTICAL EXPENDITURE

**Definition**

Pharmaceutical expenditure covers expenditure on prescription medicines and self-medication, often referred to as over-the-counter products. In some countries, other medical non-durable goods are also included. It also includes pharmacists' remuneration when the latter is separate from the price of medicines. Final expenditure on pharmaceuticals includes wholesale and retail margins and value-added tax. Total pharmaceutical spending refers in most countries to "net" spending, i.e. adjusted for possible rebates payable by manufacturers, wholesalers or pharmacies. Pharmaceuticals consumed in hospitals and other healthcare settings as part of an inpatient or day case treatment are excluded. Comparability issues exist with regards to the administration and dispensing of pharmaceuticals for outpatients in hospitals. Pharmaceutical expenditure per capita is adjusted to take account of differences in purchasing power. For the calculation of pharmaceutical spending growth rates in real terms, economy-wide GDP deflators are used.

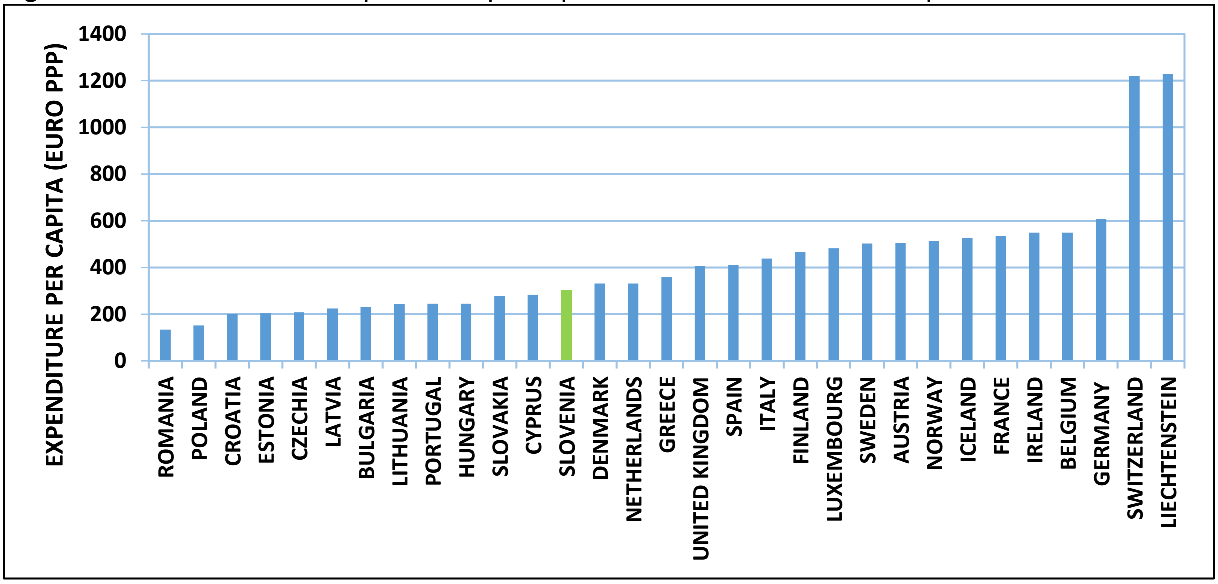
Comparison of pharmaceutical expenditure between EU countries has several challenges due to the application of different definitions of pharmaceutical products, confidential agreements on prices and excluded expenditure on pharmaceuticals in hospitals.

Data was obtained from EUROSTAT database.

**Analysis**

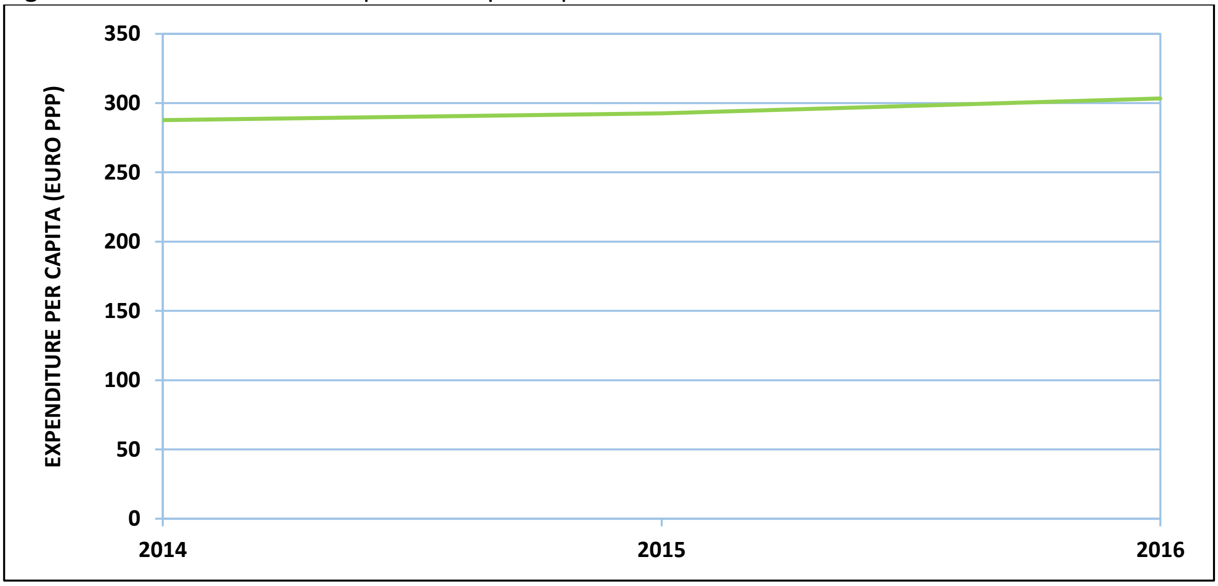
The results show that Slovenia had a lower pharmaceutical expenditure compared to other European countries in 2016 (**Figure 111**). Its pharmaceutical expenditure did not significantly change between 2014 and 2016 and was around 300 EURO PPP (**Figure 112**).

Figure 111: Pharmaceutical expenditure per capita in EURO PPP in some European countries in 2016.




Source: EUROSTAT

Figure 112: Pharmaceutical expenditure per capita in EURO PPP in Slovenia 2014–2016.




Source: EUROSTAT

## INDICATOR 1851D: SHARE OF PUBLIC EXPENDITURE ON PHARMACEUTICALS COMPARED WITH SERVICES OF HEALTHCARE

**Definition**

After inpatient and outpatient care, pharmaceuticals represent the third largest expenditure item of healthcare spending, accounting for more than 16% of healthcare expenditure on average across OECD countries in 2015. Similar to other healthcare functions, the cost of pharmaceuticals is predominantly covered by government financing or compulsory insurance schemes.

There is a large variation in pharmaceutical expenditure across the EU, especially in the proportion of health expenditure as well as in the rate of expenditure growth for pharmaceuticals compared to health expenditure. Beside this, there are wide variations in pharmaceutical spending per capita across countries, reflecting differences in volume, patterns of consumption and pharmaceuticals prices, as well as in the use of generics.

Across OECD countries, share of public expenditure on pharmaceuticals cover on average around 57% of all retail pharmaceutical spending. This share is the highest in Germany and Luxembourg where government and compulsory insurance schemes pay for 80% or more of all pharmaceutical costs. In the case of Poland (34%) and Latvia (35%), the share of public expenditure is much lower. In these countries, voluntary private insurance or out-of-pocket payments play a much bigger role in financing pharmaceuticals.

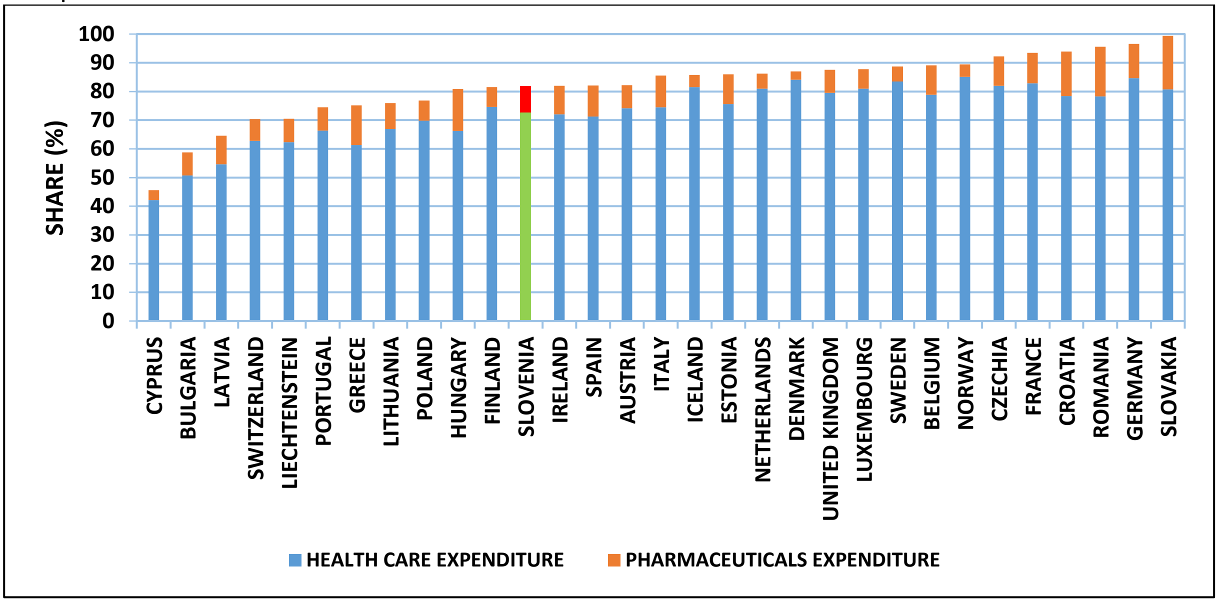
Average annual pharmaceutical spending growth between 2009 and 2015 has been much lower compared with pre-crisis years and dropped by 0.5% per year on average across the OECD. In more recent years a number of European countries, including Germany, Switzerland and Belgium have seen the return of higher pharmaceutical spending growth.

Data were obtained from EUROSTAT database.

**Analysis**

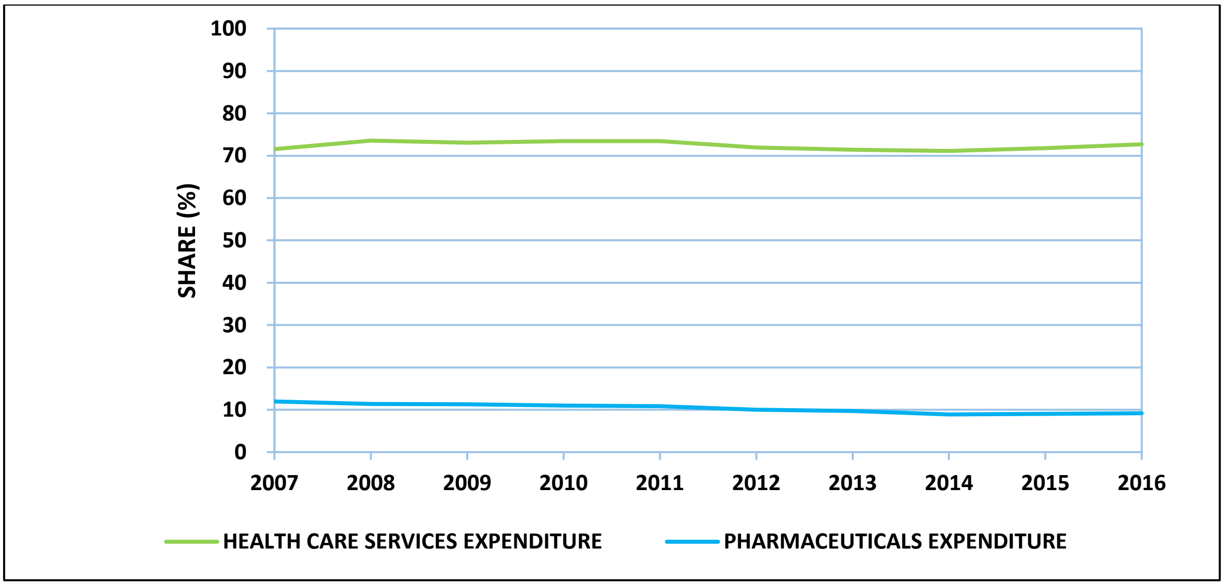
The results show that Slovenia had a similar share of public pharmaceuticals expenditure as other European countries in 2016 and its value was stable from 2007 to 2016 (around 10%) (**Figure 113** and **Figure 114**).

Figure 113: Share of current public healthcare expenditure and public pharmaceuticals expenditure, European countries 2016.




Source: EUROSTAT

Figure 114: Share of current public healthcare expenditure and public pharmaceuticals expenditure, Slovenia 2007– 2016.




Source: EUROSTAT

## INDICATOR 1884: GROWTH OF HEALTHCARE EXPENDITURE FOR SELECTED FUNCTIONS PER CAPITA

**Definition**

Social and economic factors as well as the financing and organisational structures of a country's health system affect the extent and speed of expenditure for healthcare. Beside this, there is a strong relationship between the overall income level of a country and expenditure of that country on health.

In 2015, expenditure on inpatient and outpatient care represented almost two-thirds of current healthcare expenditure in EU. 19% of all EU healthcare expenditure was allocated to medical goods (mainly pharmaceuticals), 15% to long-term care and the remaining 6% to other services, such as public health and prevention services and administration. In the same year inpatient care played an important role in Greece, Poland, Austria and France, taking up more than a third of total expenditure. Countries with a high share of outpatient expenditure were Portugal and Israel. There were some variations that influenced expenditure on medical goods (different distribution channels in place, extent of generic use, relative prices of pharmaceuticals. Etc.) In Slovakia and Hungary, medical goods represented the largest component of health spending. On the other hand, expenditure on medical goods was the lowest in Denmark, Luxembourg and Norway. There was also a difference in expenditure on long-term care services between northern and other European countries with Norway, Sweden and the Netherlands allocating the highest share to long-term care.

In Slovenia, three quarters of current healthcare expenditure (75.7%) was spent in 2015 to finance curative treatment services and pharmaceuticals and other medical goods. The share of expenditure for both purposes increased in 2015: for services of curative treatment by 5.8% and for pharmaceuticals and other medical goods by 2.2%. Expenditure on long-term healthcare services followed the same trend, amounting to 9.9%. The total nominal increase in expenditures for long-term care was 0.4% in comparison to 2014. This was 1.27% of GDP.

For the calculation of growth rates in real terms in Slovenia, economy-wide GDP deflators were used. Expenditures on inpatient, outpatient and long-term healthcare, pharmaceuticals, prevention and administration were compared between two periods, 2007–2011 and 2012–2016.

**Analysis**

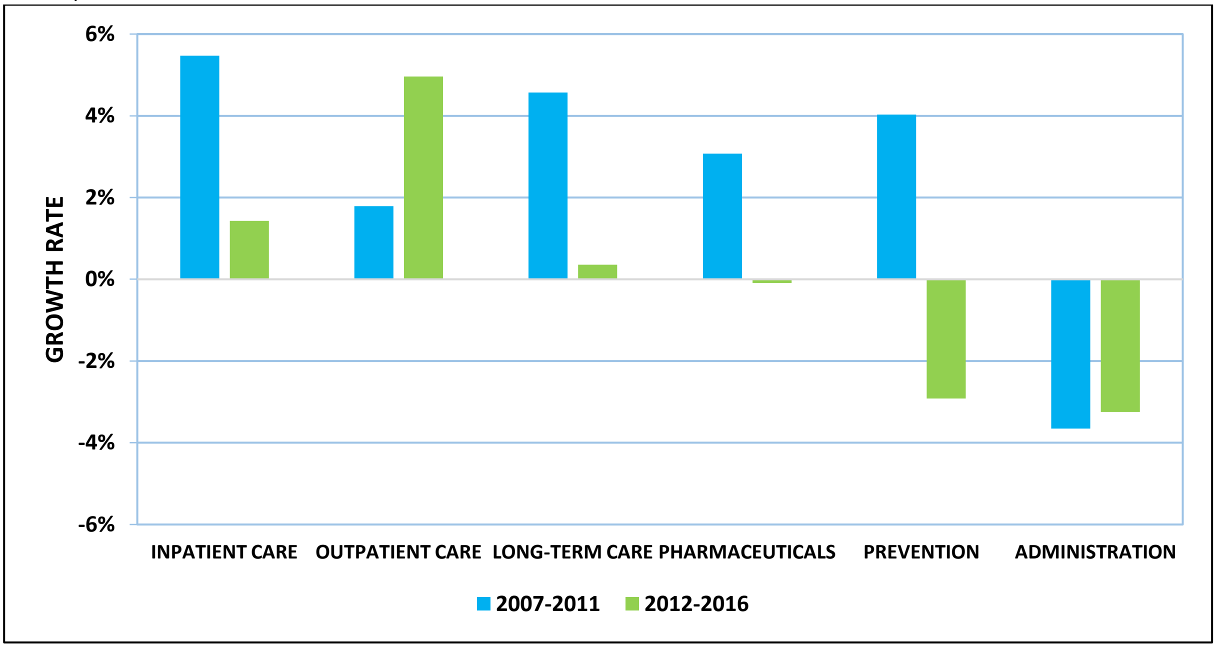
The results showed that during the above mentioned periods growth of healthcare expenditure remained positive for inpatient, outpatient and long-term care, however with a significant decline in growth in long-term in inpatient care (

**Figure** 115). On the other hand the growth rate of expenditure for outpatient care increased at a higher rate.

In contrast to inpatient, outpatient and long-term healthcare expenditure, growth of healthcare expenditure for pharmaceuticals, prevention and administration was negative. The highest levels of negative growth are particularly noticeable in expenditure for administration.

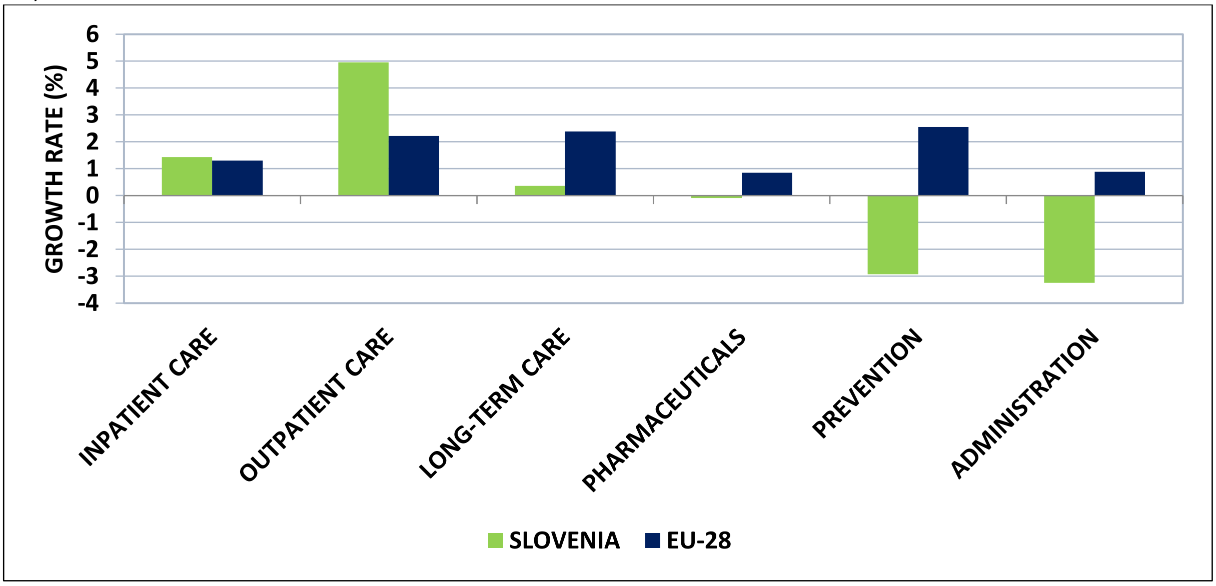
In comparison to EU–28 average, Slovenia had a higher positive growth rate of inpatient and outpatient care expenditure and lower of long-term care expenditure (**Figure 116**). On the other hand Slovenia had a negative growth rate of pharmaceuticals, prevention and administration expenditure.

Figure 115: Average annual growth rate in health expenditure for selected functions in Slovenia in real terms, 2007–2016.




Source: OECD

Figure 116: Average annual growth rate in health expenditure for selected functions, Slovenia and EU–28, 2012–2016.




Source: OECD

## INDICATOR 1890: GROWTH OF TOTAL HEALTHCARE EXPENDITURE BY FINANCING PER CAPITA – ANNUAL GROWTH RATE IN REAL TERMS

### Definition

After the financial crisis in 2008 and consequently fall on total healthcare expenditure across the globe, the OECD expenditure on healthcare slowly increased after 2009, although is still below pre-crisis level. In 2016, total healthcare expenditure as a share of GDP was 8.9% in average in OECD countries. United States had dominance with 17.2% of GDP. Switzerland had the highest share in Europe (12.3%).

In Slovenia, growth of total healthcare expenditure in 2016 is attributed to increases in outpatient care, followed by long-term care, retail pharmaceuticals and inpatient care. These and other issues, such as the effects of an ageing population, or tracking the financial burden of households, have probably been challenging the traditional system of health expenditure statistics.

Total healthcare expenditure in Slovenia is also increasing. In 2015 it increased by 3.3% compared to the previous year (this was the first higher nominal growth of total healthcare expenditure after 2009). It represented 8.54% of Slovenian GDP, which was similar to the previous year. In spite of higher nominal growth, the share of total healthcare expenditure remained unchanged, which is almost equal to nominal GDP growth.

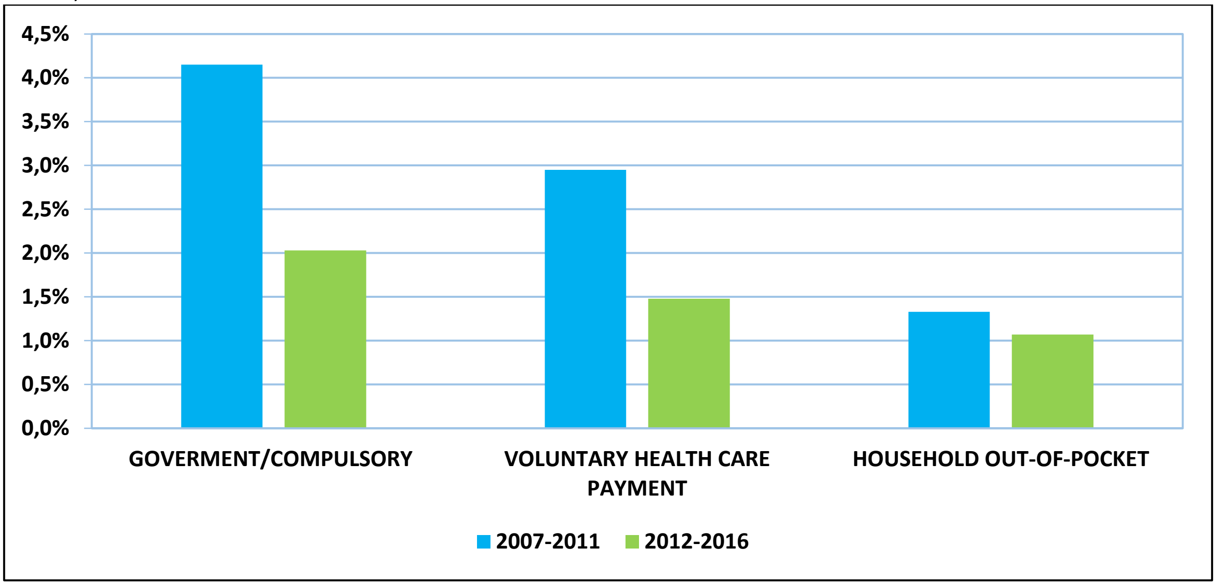
A comparison of growth of public and private total healthcare expenditure was made between two time periods (2007–2011, 2012–2016). For the calculation of growth rates in real terms, economy-wide GDP deflators are used.

### Analysis

Analysis shows that all kind of health expenditures are still increasing in Slovenia (**Figure 117**). However, a significant decline is seen in state/compulsory and voluntary healthcare expenditure. Out-of-pocket payments have remained fairly consistent over the same time period.

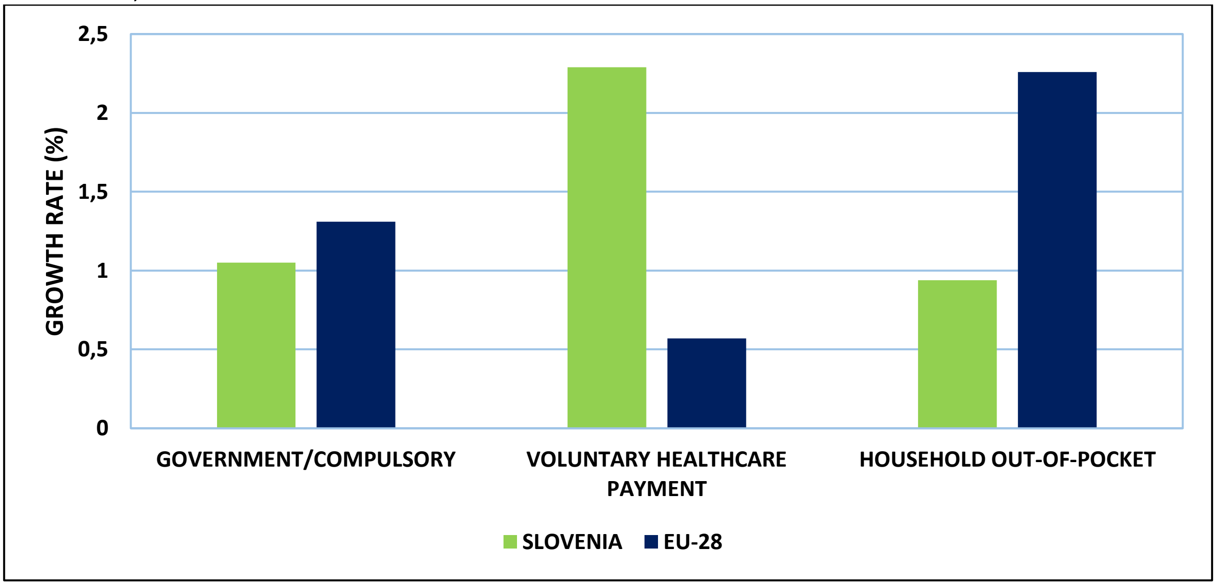
In comparison to the EU–28 average, Slovenia had a quite similar growth rate in government (compulsory) expenditure in contrast to higher voluntary healthcare expenditure and lower household out-of pocket expenditure (**Figure 118**).

Figure 117: Average annual growth rate in healthcare expenditure by financing in Slovenia in real terms, 2007–2016




Source: EUROSTAT

Figure 118: Average annual growth rate in healthcare expenditure by financing in real terms, Slovenia and EU–28, 2011–2016.




Source: EUROSTAT

## DOMAIN 6: EFFICIENCY

**Definition**

Healthcare efficiency measurement examines the extent to which the inputs to the health system, in the form of expenditure and other resources, are used to best effect to secure health system outputs and/or valued health system goals. It could embrace either allocative or technical efficiency, and is often conceptualized as waste.

Results are shown in **Table 13** and **Figure 119**.

## MAIN RESULTS

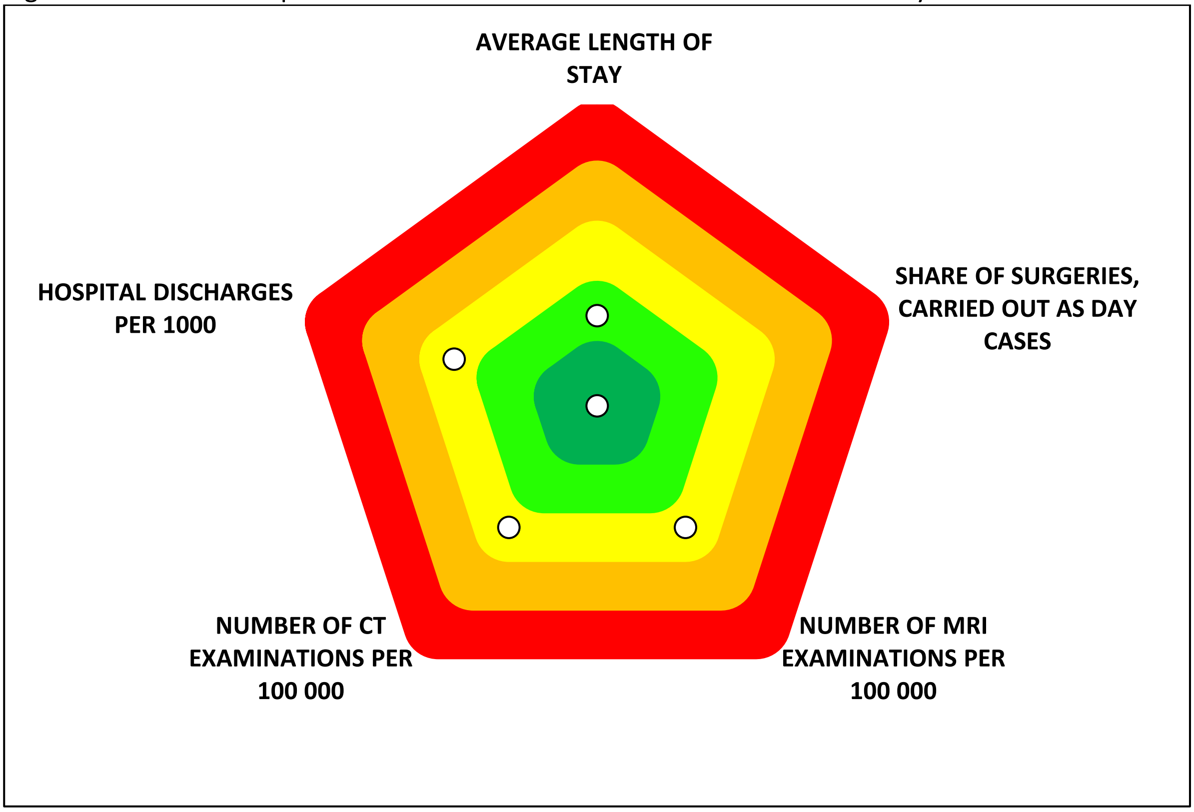
Table 13: Efficiency main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 12 | AVERAGE LENGTH OF STAY | 1 | IMPROVING | SAME | GOOD |
| 1769 | USE OF EQUIPMENT RESOURCES | | | | |
| 1773 | SHARE OF SURGERIES, CARRIED OUT AS DAY CASES | 2 | IMPROVING | BETTER | VERY GOOD |
| 2004 | RATE OF PREVENTABLE EMERGENCY DEPARTMENT VISITS | 2 | | | |
| 2087 | NUMBER OF MRI EXAMINATIONS PER 100 000 | 2 | IMPROVING | WORSE | SATISFACTORY |
| 2088 | NUMBER OF CT EXAMINATIONS PER 100 000 | 2 | IMPROVING | WORSE | SATISFACTORY |
| 2092 | HOSPITAL DISCHARGES PER 1 000 | 2 | STABLE | SAME | SATISFACTORY |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **EFFICIENCY** | **Good** | **2.64** |

Figure 119: Dart board presentation of assessment score of domain Efficiency.




Overall assessment shows that Slovenia was doing similar to other European countries. This was particularly applicable for the average length of stay and hospital discharges per 1 000 inhabitants.

Slovenia was doing better in the share of surgeries, carried out as day cases.

On the other hand, despite the fact the number of MRI and CT examinations per 100 000 inhabitants is improving, Slovenia still lags behind other European countries.

Indicators use of equipment resources and rate of preventable emergency department admissions were not evaluated due to lack of data or different international methodological approaches.

## INDICATOR 12: AVERAGE LENGTH OF STAY

**Definition**

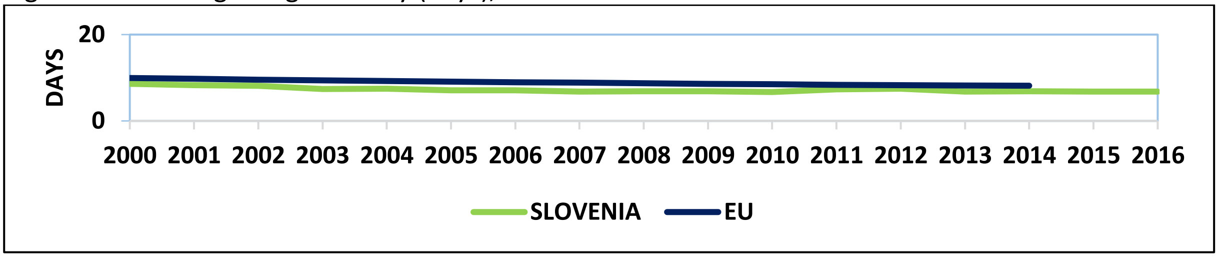
The average length of stay (ALOS) in hospitals is often regarded as an indicator of efficiency, hence decreasing length of stay (LOS) is traditionally understood as »good« while increasing length of stay is viewed negatively. All else being equal, a shorter stay will reduce the cost per discharge and shift care from inpatient to less expensive post-acute settings. Longer stays can be indicative of poor-value care, inefficient hospital processes and poor care co-ordination and discharge planning. At the same time, some people may be discharged too early, when staying in hospital longer could have improved their outcomes or reduced chances of re-admission. Still, one has to bear in mind that while LOS is a useful measure of efficiency it is subject to influences that are sometimes outside of the control of a hospital.

**Analysis**

ALOS in Slovenia is on the decline, dropping from 8.6 days in 2000 to 6.8 days in 2016 (**Figure 120**). Compared to EU countries, Slovenia presents somewhat lower ALOS, but a similar trend is also observed in EU, where ALOS has dropped from 9.9 in 2000 to 8.2 in 2014 (**Figure 120**). The shortened ALOS in Slovenia can be attributed to continuous development of health technologies and changes in the hospital reimbursement system. As a consequence, the turnover of patients increased, which is leading to less demand for hospital beds. When analysing ALOS data for acute care hospitals only, Slovenia measured below the EU average for the period between late 1990´s and 2010 (**Figure 121**). There was a methodological change in data interpretation in 2011, which led to increasing ALOS by 23% to 6.8 days, thus exceeding EU average of 6.4. Since then, however, ALOS in acute care hospitals has been slowly decreasing to 6.5 in 2014, which is a fraction above EU average. Comparison between 2010 and 2016 shows that Slovenia's and others' European countries ALOS decreased, while only 3 others' European countries ALOS (France, Luxembourg and Iceland) increased (**Figure 122**).

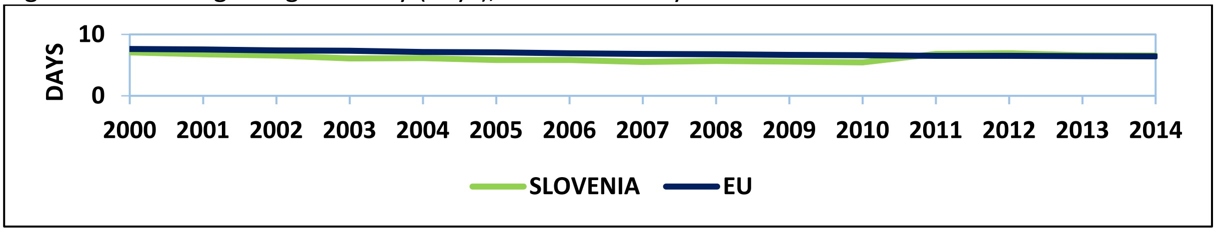
In general, shortening of ALOS can be achieved by payment methods modification, reduction of hospital beds, development of community services or better coordination between hospital and post-discharge care settings.

Figure 120: Average length of stay (days), total.



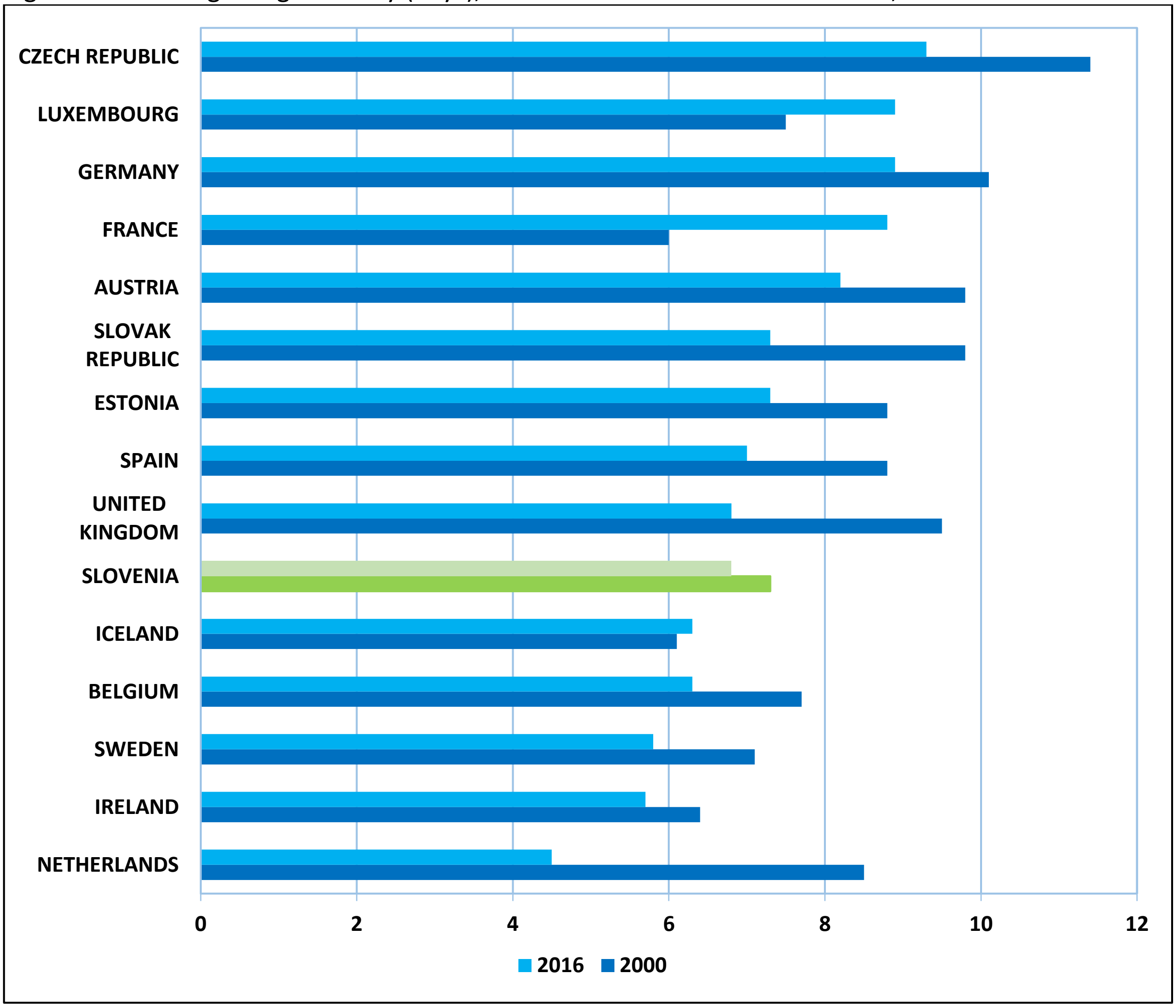

Source: WHO

Figure 121: Average length of stay (days), acute care only.




Source: WHO

Figure 122: Average length of stay (days), Slovenia and selected EU countries, 2000 and 2016




Source: OECD

## INDICATOR 1773: SHARE OF SURGERIES CARRIED OUT AS DAY CASES

**Definition**

Day surgery also referred to as ambulatory surgery or same day surgery is a concept where patients are admitted for surgical procedures and discharged the same day. It has expanded in EU countries over the past few decades, thanks to progress in surgical techniques and anaesthesia, although the pace of diffusion has varied widely across countries. Cost containment is also one of catalysts for the increase of day surgeries.

For the purpose of this report, three surgical interventions are analyzed which can be regarded as classic or suitable cases of day surgery: cataract surgery, tonsillectomy and inguinal hernia repair. All cases of same day surgery, regardless whether patients were formally admitted (day surgery) or not admitted (outpatient cases) to the hospitals were taken into account.

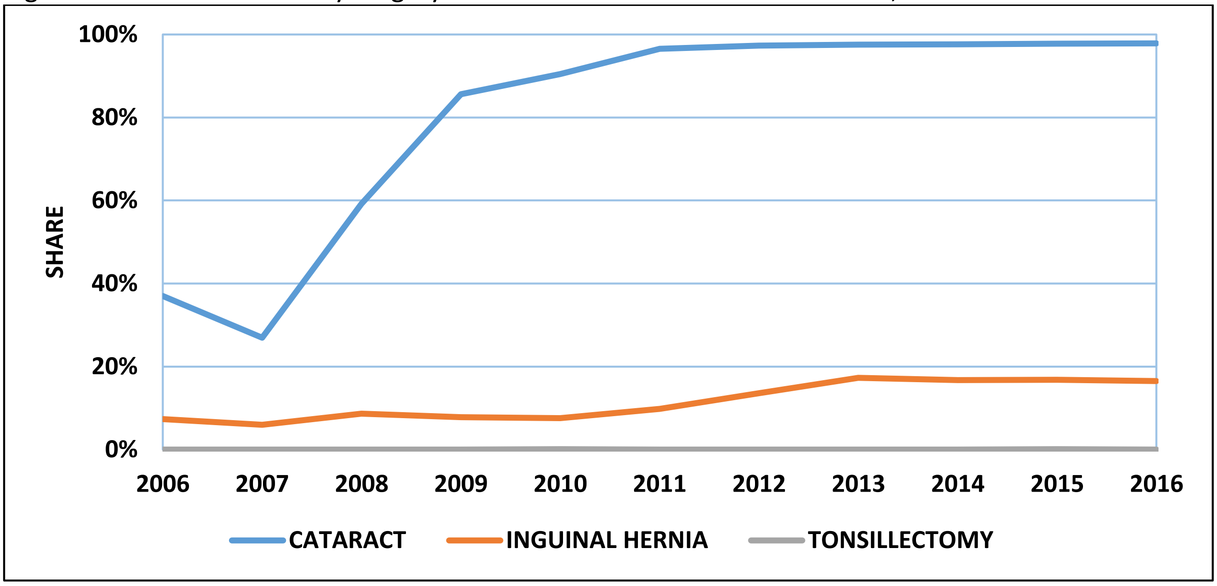
**Analysis**

In Slovenia day cases for cataract surgery has significantly increased in the last decade, from 37% in 2006 to 97.9% in 2016 (**Figure 123**). This share is comparable to a majority of EU countries, although there are countries that have not reached such a high share of day surgery for this intervention (**Figure 124**).

More than half of all inguinal hernia repair interventions in many EU countries are now performed as day surgery, whereas this proportion remains close to zero in other countries (**Figure 125**). Slovenia remains in bottom half within EU countries when share of day cases for this intervention are considered, although the share has increased from 7.3% in 2006 to 16.9% in 2016.

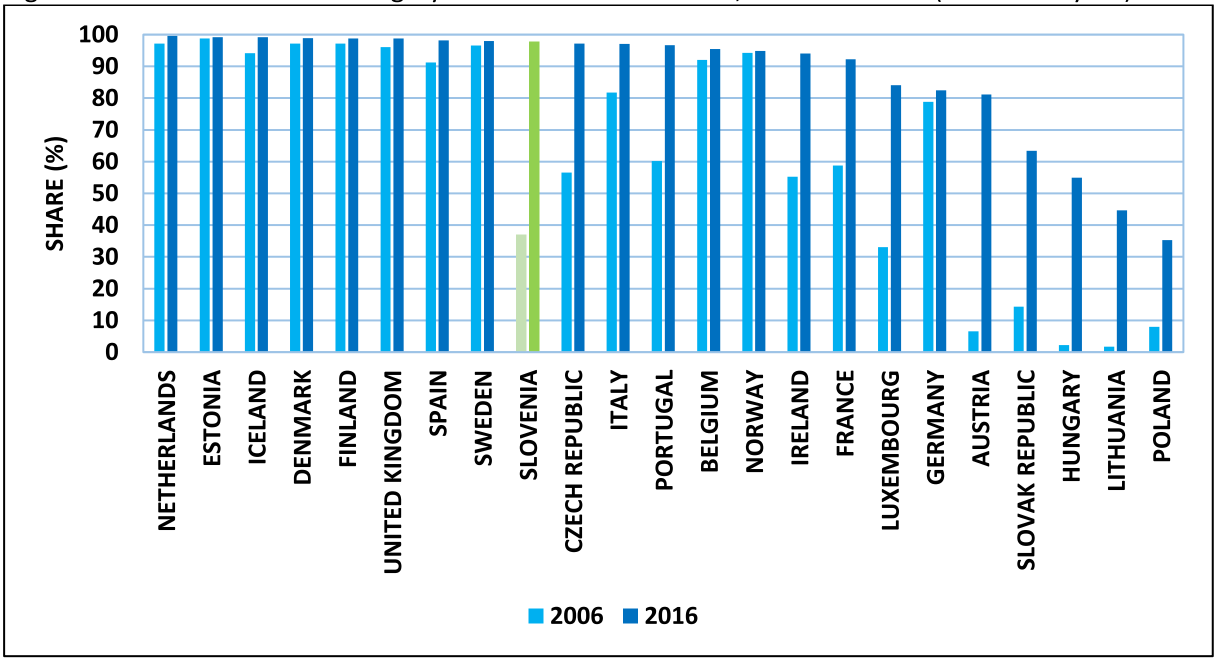
Tonsillectomy is one of the most frequent surgical procedures in children. Although the operation is performed under general anaesthesia and generally involves a post-operative observation period of about 6 to 8 hours, it is now carried out mainly as a day surgery in many countries, with children returning home the same day. As depicted in **Figure 126**, more than half of all tonsillectomies are now performed as day surgery in several EU countries, but there has not been any movement yet towards day surgery in other countries. Slovenia is one of the countries where progress has not been reached in previous period, with share of one day surgery for tonsillectomy remaining at 0%.

Figure 123: Share of one-day surgery for selected interventions in Slovenia, 2006 –2016.



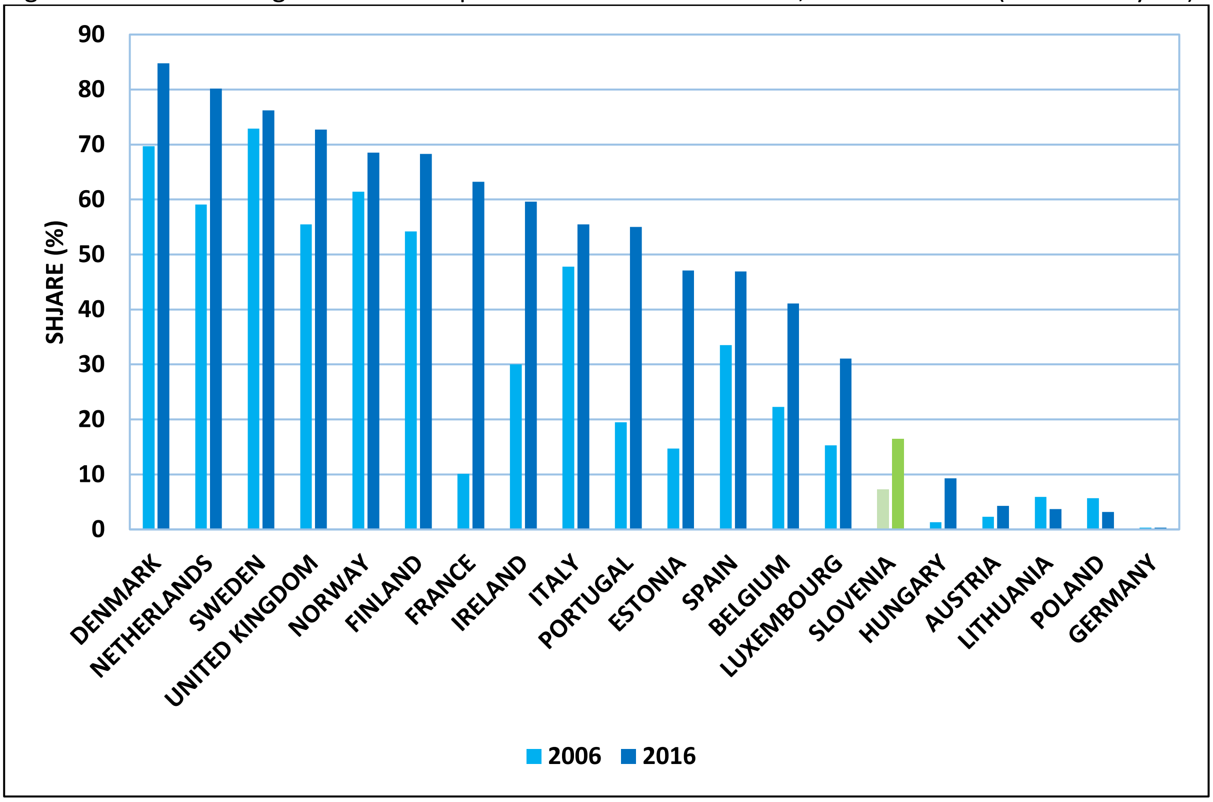

Source: NIPH

Figure 124: Share of cataract surgery in selected EU countries, 2000 and 2016 (or nearest year).



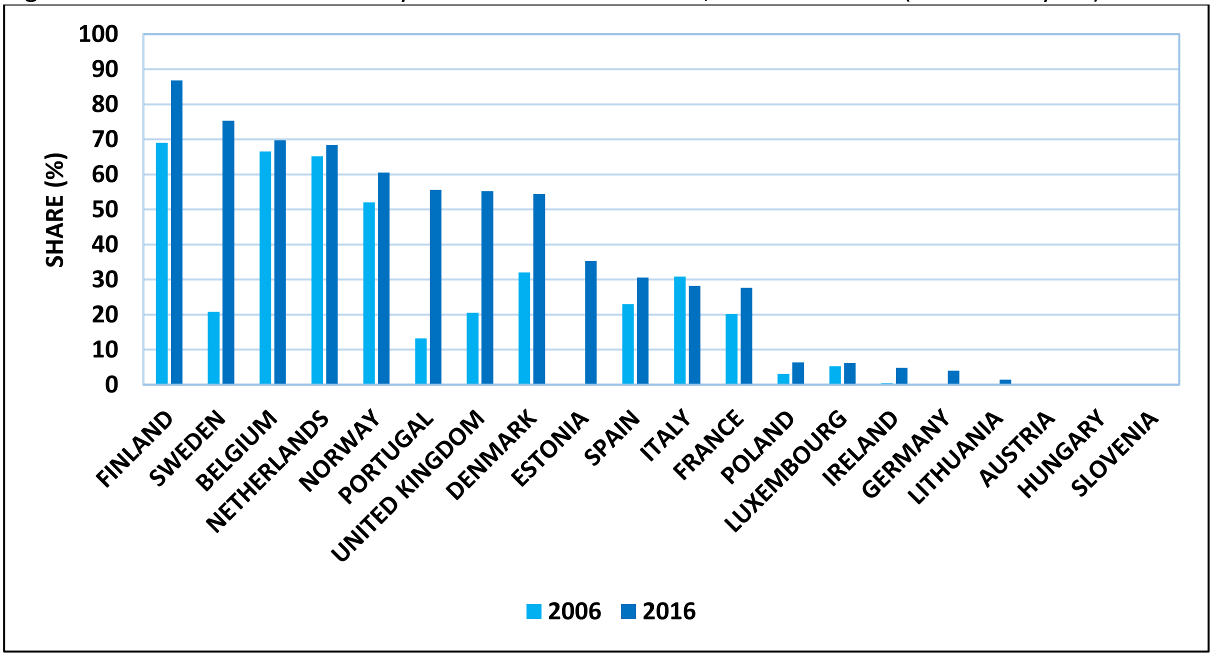

Source: OECD

Figure 125: Share of inguinal hernia repair in selected EU countries, 2000 and 2016 (or nearest year).




Source: OECD

Figure 126: Share of tonsillectomy in selected EU countries, 2000 and 2016 (or nearest year).




Source: OECD

## INDICATOR 2004: RATE OF PREVENTABLE EMERGENCY DEPARTMENT VISITS

**Definition**

By definition, an emergency patient is the one who, due to his or hers current condition requires medical care in a given moment and not in a scheduled term. Emergency Departments (ED) are constantly overwhelmed with increasing number of patients seeking immediate medical care, very often for unjustified purposes. ED visits are costly, meaning that any unjustified visit to an ED generates unwarranted expenses for the health system, thus potentially depriving medical care for patients in need. However, often healthcare providers cannot deny medical care to unjustified ED visitors, as healthcare providers are legally bound to treat all patients accessing ED in Slovenia without any exemption.

There are different approaches to define preventable or avoidable emergency care visits. For the purposes of this report and based on data available, we have projected the share of preventable ED visits based on triage category each patient is assigned to when seeking medical care in EDs. In Slovenia a Manchester Triage System (MTS) is in place, which, based on presented signs and symptoms, classifies patients in five categories: red, meaning patients in need for urgent medical attention, without waiting times; orange, meaning patients who are supposed to receive medical care within 10 minutes time; yellow, meaning patients who are supposed to receive medical care within 60 minutes; green, meaning patients who are supposed to receive medical care within 240 minutes and blue, meaning patients who should be further referred to a specialist care and who are not in urgent need for medical care. Based on this categorization, we have assumed that all patients coded blue could be preventable visits (best case scenario) or all patients coded blue and green could be preventable visits (worst case scenario). Because of missing and inadequate data, we have excluded two largest university hospitals in Ljubljana and Maribor. We present data for 2017 only, since organized monitoring system was established in early 2016 and data for 2016 and before are incomplete or missing.

International comparison is challenging to determine, as diverse approaches and methodology are used to estimate the share of potentially preventable ED visits. Nevertheless, studies in USA estimate that between 13 and 27% of ED visits could have been prevented; in Italy, a study among older population has led to conclusion that at least 14.3% of ED visits could have been prevented.

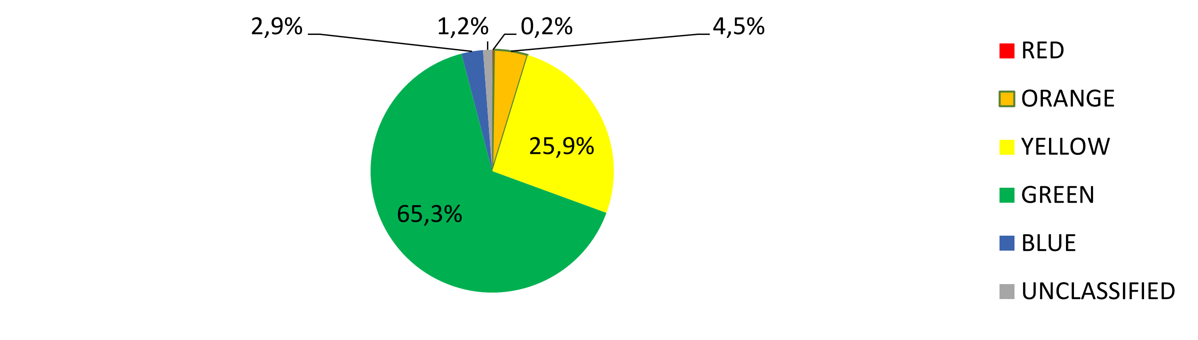
We stress out these are pretty raw and broad assumptions and more comprehensive data keeping and analysis is required for more precise estimations.

Data was obtained from Slovenian Ministry of health (MoH). International comparison has been done only for patients who visited an ED because the primary care physician was not available (OECD database).

**Analysis**

Based on our assumption, the share of potentially preventable ED visits was between 4.1% (best case scenario, code blue and unclassified) and 69.4% (worst case scenario, codes green and blue and unclassified, **Figure 127**). There is no seasonality pattern in ED visits, as shares were similar throughout the whole year (**Table 14**). In comparison to European countries, Slovenia had one of the highest proportions of avoidable ED visits due to unavailability of physicians on primary care (**Figure 128**).

Figure 127: Share of ED visits in Slovenia, 2017.



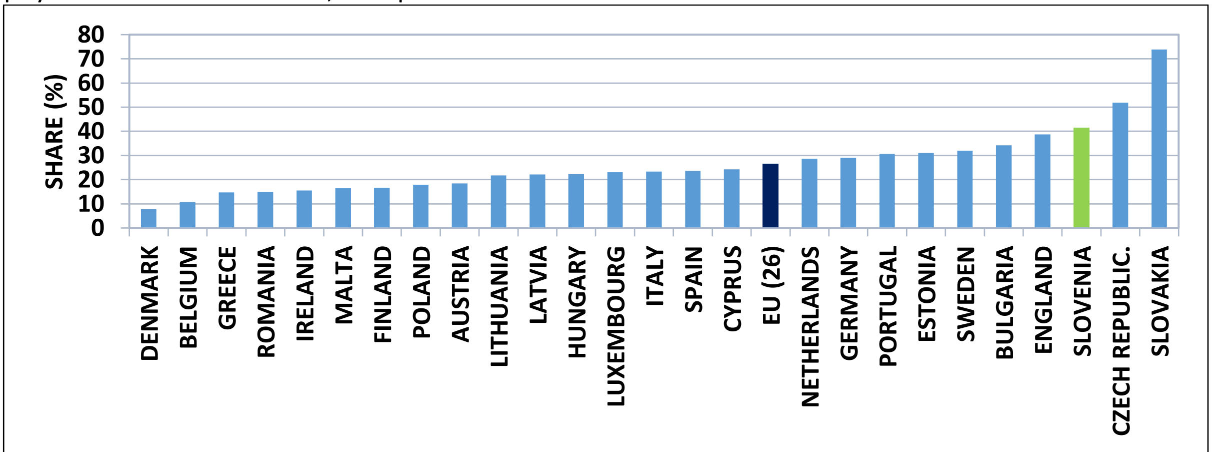

Source: MoH

Table 14: Seasonality of ED visits in Slovenia, 2017.

| Month | RED | ORANGE | YELLOW | GREEN | BLUE | UNCLASSIFIED |
|---|---|---|---|---|---|---|
| **January** | 0.2% | 5.1% | 26.5% | 64.5% | 2.7% | 1.1% |
| **February** | 0.2% | 4.4% | 26.5% | 65.3% | 2.4% | 1.2% |
| **March** | 0.2% | 4.6% | 26.0% | 66.0% | 2.2% | 1.1% |
| **April** | 0.3% | 4.7% | 24.8% | 65.9% | 3.1% | 1.2% |
| **May** | 0.2% | 4.5% | 24.4% | 66.6% | 3.0% | 1.3% |
| **June** | 0.2% | 4.3% | 25.3% | 66.2% | 2.8% | 1.2% |
| **July** | 0.2% | 4.5% | 25.5% | 65.8% | 2.8% | 1.2% |
| **August** | 0.2% | 4.0% | 26.6% | 64.9% | 2.8% | 1.6% |
| **September** | 0.2% | 4.6% | 25.8% | 65.1% | 2.9% | 1.2% |
| **October** | 0.2% | 4.4% | 26.0% | 64.9% | 3.3% | 1.2% |
| **November** | 0.3% | 4.5% | 27.0% | 63.9% | 3.2% | 1.2% |
| **December** | 0.2% | 4.4% | 26.1% | 64.8% | 3.3% | 1.1% |

Source: MoH

Figure 128: Proportion of patients who visited an emergency department because the primary care physician was not available, European countries 2011–2013.




Source: OECD

## INDICATOR 2087: NUMBER OF MRI EXAMINATIONS PER 100 000

**Definition**

The sustained increase in demand for MRI within health systems has led to concerns about cost effectiveness and over diagnosis. The availability and use of MRI scanners has increased dramatically over the last two decades in many European countries. Their availability and use are different across European countries and also inside each European country.

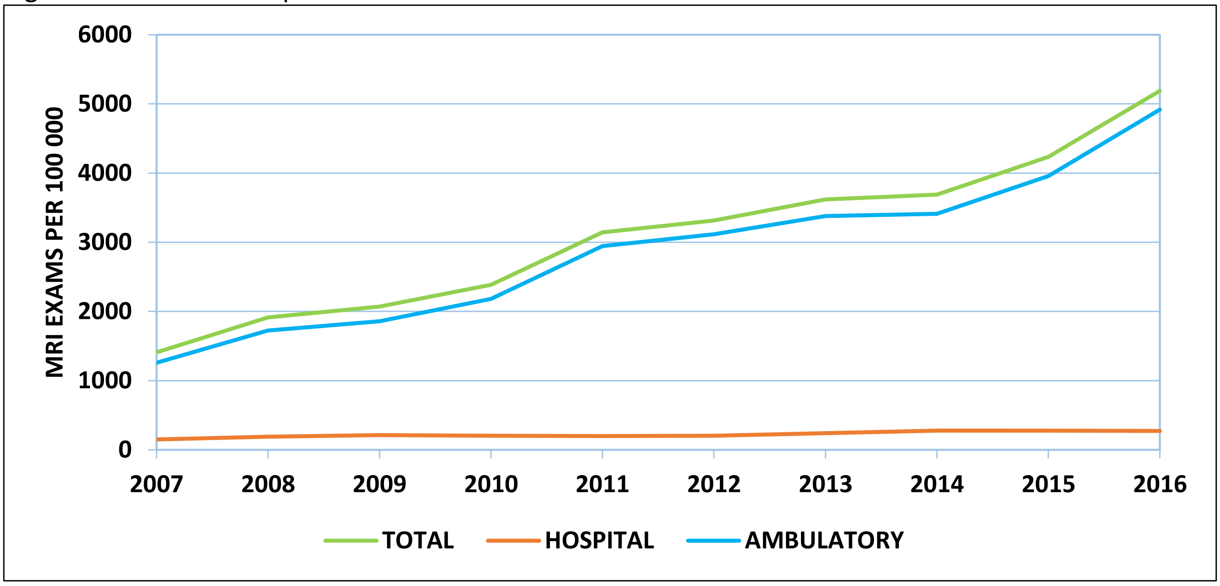
This indicator is presented as a total and broken down between hospitals and ambulatory care providers. It is measured per hundred thousand inhabitants. Data was obtained from NIPH and EUROSTAT database. International comparison was possible only for each country because there are no EU–28 or EU15 data in EUROSTAT database. The international comparison was performed for 2016.

**Analysis**

The results show that the number of hospital and ambulatory MRI examinations is continuously increasing in Slovenia, especially ambulatory MRI exams like as in other European countries (**Figure 129**).

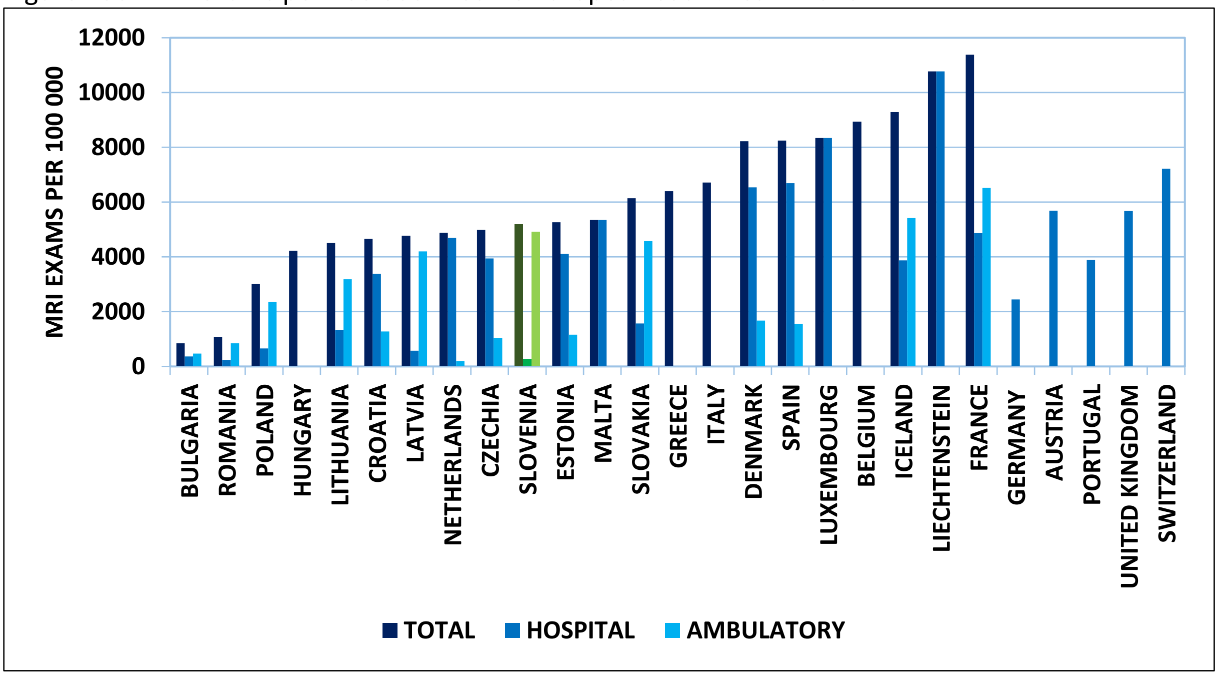
Slovenia had a lower number of performed total MRI exams than some European countries in 2016 (**Figure 130**). On the other hand, it had one of the lowest numbers of hospital and one of the highest number of ambulatory MRI exams compared to some European countries.

Figure 129: MRI exams per 100 000 in Slovenia 2007-2016.




Source: EUROSTAT, NIPH

Figure 130: MRI exams per 100 000 in some European countries in 2016.




Source: EUROSTAT

## INDICATOR 2088: NUMBER OF CT EXAMINATIONS PER 100 000

**Definition**

The availability and use of CT scanners has increased dramatically over the last two decades in many European countries (37). Their availability and use are different not only across European countries but also inside each European country.

Clinical guidelines have been developed in some European countries to promote a rational use of CT scanners.

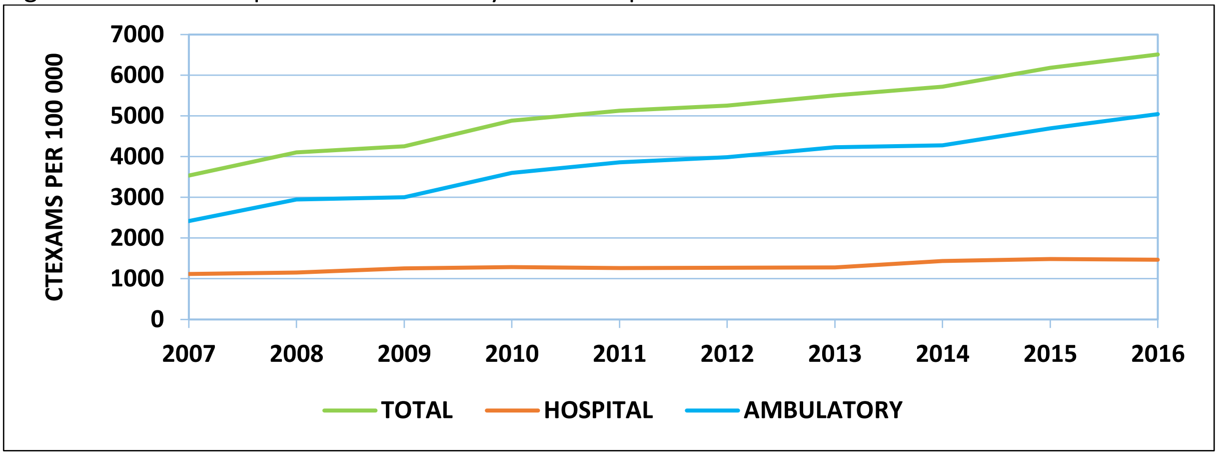
The indicator is presented as a total and broken down between hospitals and ambulatory care providers. It is measured per hundred thousand inhabitants. Data was obtained from NIPH and EUROSTAT database. International comparison was possible only for each year because there are no EU–28 or EU15 data in EUROSTAT database. The international comparison was performed just for 2016.

**Analysis**

The results show that the number of hospital and ambulatory CT exams is continuously increasing in Slovenia, especially ambulatory CT exams (**Figure 131**). This is consistent with the situation in the Europe.

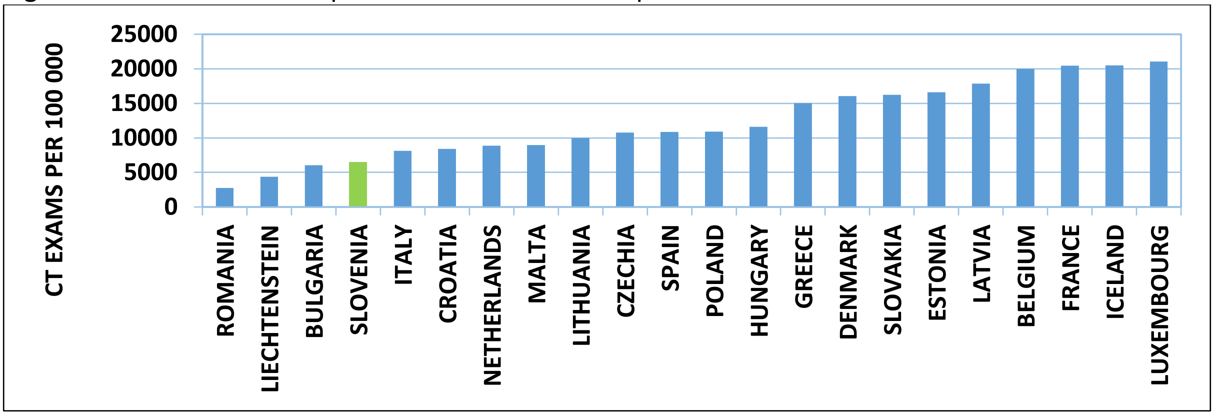
Slovenia had the lowest number of performed total CT exams in 2016 (**Figure 132**). This was due to the small number of performed hospital CT exams, while the number of ambulatory CT exams was one of the highest among European countries (**Figure 133**).

Figure 131: Total hospital and ambulatory CT exams per 100 000 in Slovenia 2007–2016.



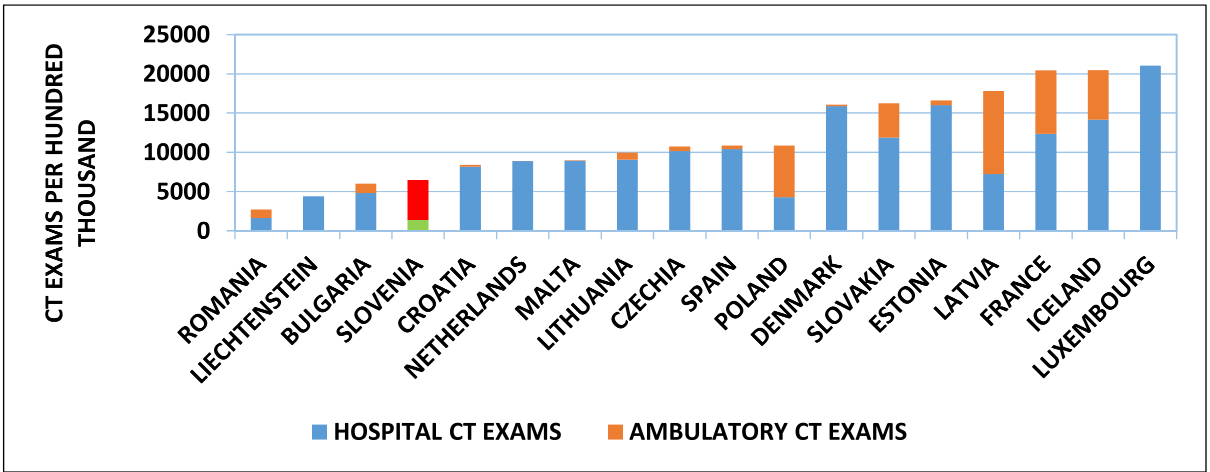

Source: EUROSTAT, NIPH

Figure 132: Total CT exams per 100 000 in some European countries in 2016.




Source: EUROSTAT

Figure 133: Hospital and ambulatory CT exams per hundred thousand in some European countries in 2016




Source: EUROSTAT

## INDICATOR 2092: HOSPITAL DISCHARGES PER 1 000

**Definition**

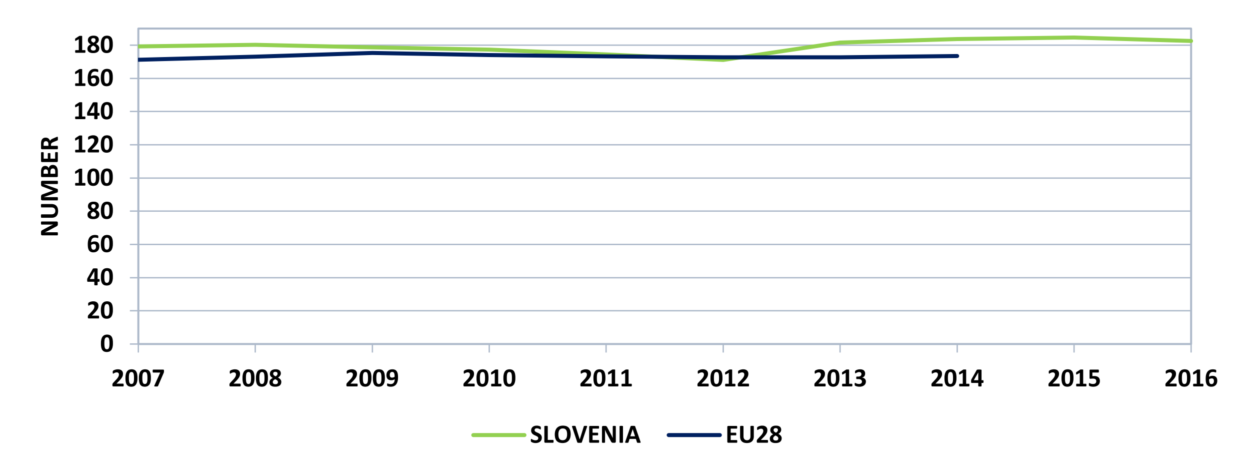
Hospital discharges describe the point at which inpatient hospital care ends, with on-going care transferred to other primary, community or domestic environments. The rate of hospital discharges measures the number of patients who leave a hospital after staying at least one night. Together with average length of stay, they both are important indicators for hospital activities, which may be affected by a number of factors including the demand for hospital services, the capacity of hospitals to treat patients, the payment and reimbursement systems, the ability of the primary health sector to prevent avoidable hospital admissions and the availability of post-acute care settings to provide rehabilitative and long-term care services.

**Analysis**

In 2016, hospital discharge rates across Europe present considerable differences among countries, with rates as low as 84.9/1 000 population (in Portugal) to 256/1 000 population (in Germany). In general, hospital discharges rates have decreased in most EU countries since 2008, with some exceptions, including Slovenia, where rates have increased. While hospital discharge rate in EU has remained stable in last 10 years, Slovenia is somewhat above this average for the same period, with the lowest rate measured in 2012 (171.1/1 000 population) and highest in 2015 (184.6/1 000 population, **Figure 134**). Trends in hospital discharges reflect the interaction of several factors, like aging of population and changes in medical technologies and medical practices.

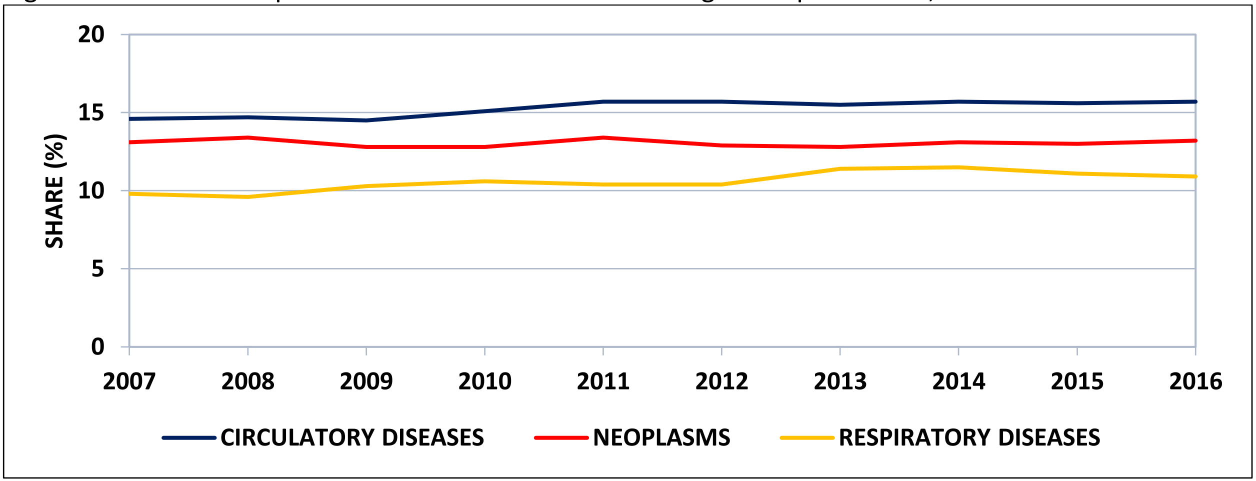
In general across EU countries, the main conditions leading to hospitalization are circulatory diseases, pregnancy and childbirth, injuries and other external causes, diseases of digestive systems, respiratory diseases and cancers. In Slovenia in 2016, diseases of circulatory system were the main conditions leading to hospitalization, accounting for 15 % of all hospitalizations. They were followed by neoplasms (13.2%) and diseases of respiratory system (10.9%). The shares of these top 3 conditions are rather stable throughout last 10 years (**Figure 135**). Compared to other EU countries, hospital discharges due to circulatory diseases in Slovenia in 2016 were around the mid-distribution, while neoplasm discharge rates were among the highest in the EU (**Figure 136**).

Figure 134: Hospital discharges, all types in Slovenia and EU–28, 2007–2016.



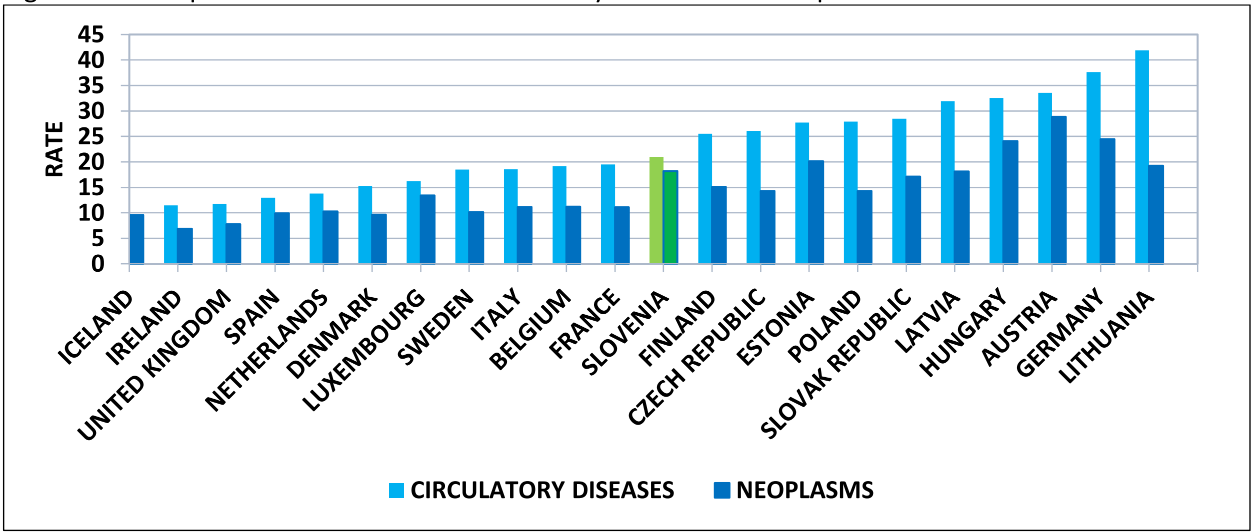

Source: WHO

Figure 135: Share of top 3 most common conditions leading to hospitalization, Slovenia 2007–2016.




Source: NIPH

Figure 136: Hospitalization rates due to circulatory diseases and neoplasms in 2016.




Source: OECD

## DOMAIN 10: RESPONSIVENESS AND PERSON CENTEREDNESS

**Definition**

Responsiveness relates to a system's ability to respond to the legitimate expectations of potential users about non-health enhancing aspects of care and in broad terms can be defined as the way in which individuals are treated and the environment in which they are treated, encompassing an individual's experience of contact with the health system.

Responsiveness is used synonymously with person centeredness. Person centeredness is the degree to which a system actually functions by placing the user at the centre of its delivery of healthcare and is often assessed in terms of patient’s experience of their healthcare. This experience of care refers to the caring, communication and understanding that should characterize the clinician-patient relationship.

Results are shown in **Table 15**.

## MAIN RESULTS

Table 15: Responsiveness and person centeredness main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 1863 | USE OF LONG–ACTING BENZODIAZEPINES IN ELDERLY PATIENTS | 1 | IMPROVING | WORSE | SATISFACTORY |
| 2006 | AVOIDABLE ADMISSIONS FOR CHRONIC AMBULATORY CARE SENSITIVE CONDITIONS (CONGESTIVE HEART FALIURE, ASTHMA, COPD, HYPERTENSION, DIABETES) | 2 | STABLE | SAME | SATISFACTORY |
| 2100 | INDICATOR ON PATIENT EXPERIENCE BASED ON PREMS | | | | |
| 2101 | INDICATOR ON READMISSION | | | | |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **RESPONSIVNESS AND PERSON CENTEREDNESS** | **Satisfactory** | **2.0** |

Overall assessment shows that Slovenia is not faring well when compared with other European countries. However, it must be emphasized that only two indicators were evaluated. Therefore, a clear picture of that how Slovenia was/is facing with responsiveness and person centeredness is not yet known and so the results are inconclusive. Furthermore, two indicators were not evaluated because Slovenian data on PREMS and readmissions are not available or just cannot be evaluated.

## INDICATOR 1863: USE OF LONG–ACTING BENZODIAZEPINES IN ELDERLY PATIENTS

**Definition**

Benzodiazepine use in older adults has been a highlighted topic of discussion ever since benzodiazepines made an appearance on the Beers Criteria list as potentially inappropriate medications (PIMs). Concern for older adults who take benzodiazepines is substantiated by the potential increased risk of adverse events (eg, falls, fractures, cognitive impairment, and sedation). The American Geriatrics Society (AGS) placed benzodiazepines on a list of medications that should be avoided in patients over 65 years of age. Despite these recommendations, benzodiazepines continue to be prescribed to a group with the highest risk of serious adverse effects from these medications.

Educating patients about the potential risks of long-term benzodiazepine use is the most effective first step in reducing use. A common misperception among primary care physicians is that convincing a patient to begin tapering benzodiazepines takes too much time and is unlikely to succeed. However, studies have consistently found that minimal interventions are needed to initiate a successful tapering protocol in a large proportion of elderly long-term benzodiazepine users.

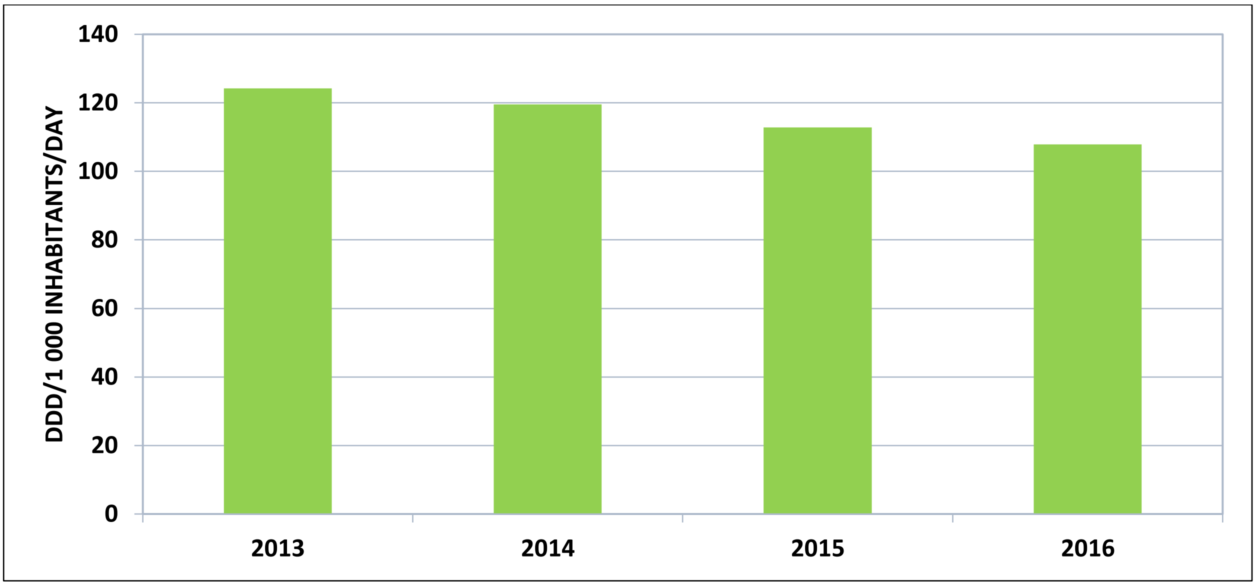
Data was obtained from OECD database and Database of Outpatient Prescribed Medications at the National Institute of Public Health in Slovenia (NIPH).

It presents the number of individuals aged 65 and more with at least one prescription of long-acting benzodiazepines among all individuals aged 65 and more.

**Analysis**

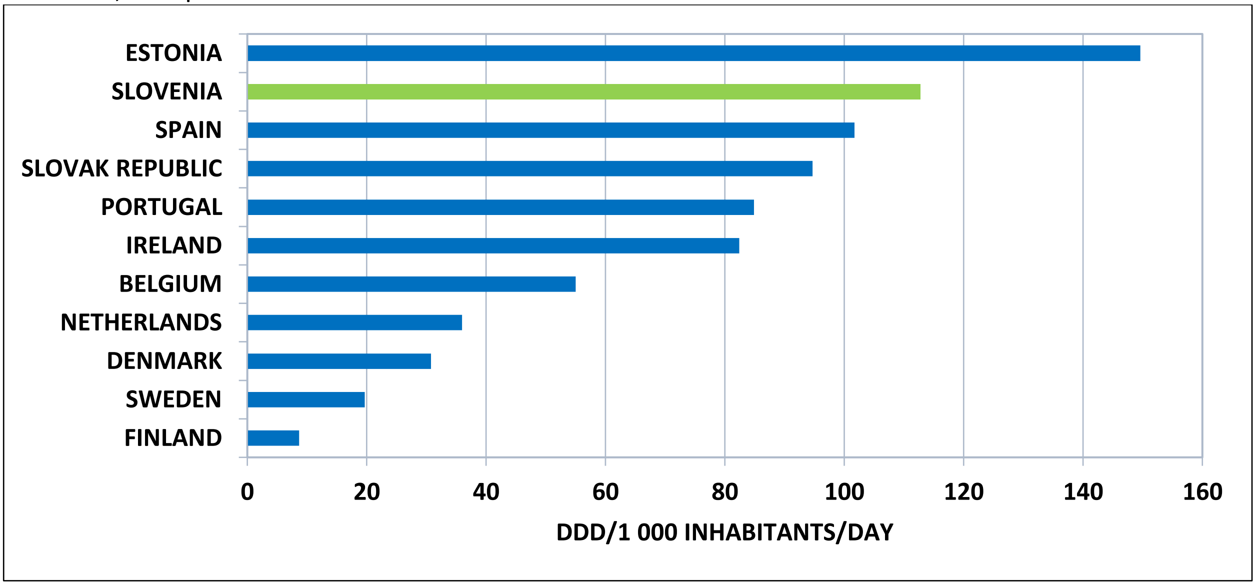
Although data for Slovenia show somewhat decreased prescription of these drugs among elderly (**Figure 137)**, the rate is among the highest in Europe (**Figure 138**).

Figure 137: Use of long-acting benzodiazepines among elderly aged 65 and more in Slovenia, rate per 1 000 inhabitants.




Source: OECD, NIPH

Figure 138: Use of long-acting benzodiazepines among elderly aged 65 and more in selected European countries, rate per 1 000 inhabitants.




Source: OECD, NIPH

## INDICATOR 2006: AVOIDABLE ADMISSIONS FOR CHRONIC AMBULATORY CARE SENSITIVE CONDITIONS (CONGESTIVE HEART FAILURE, ASTHMA, COPD, HYPERTENSION, DIABETES MELLITUS)

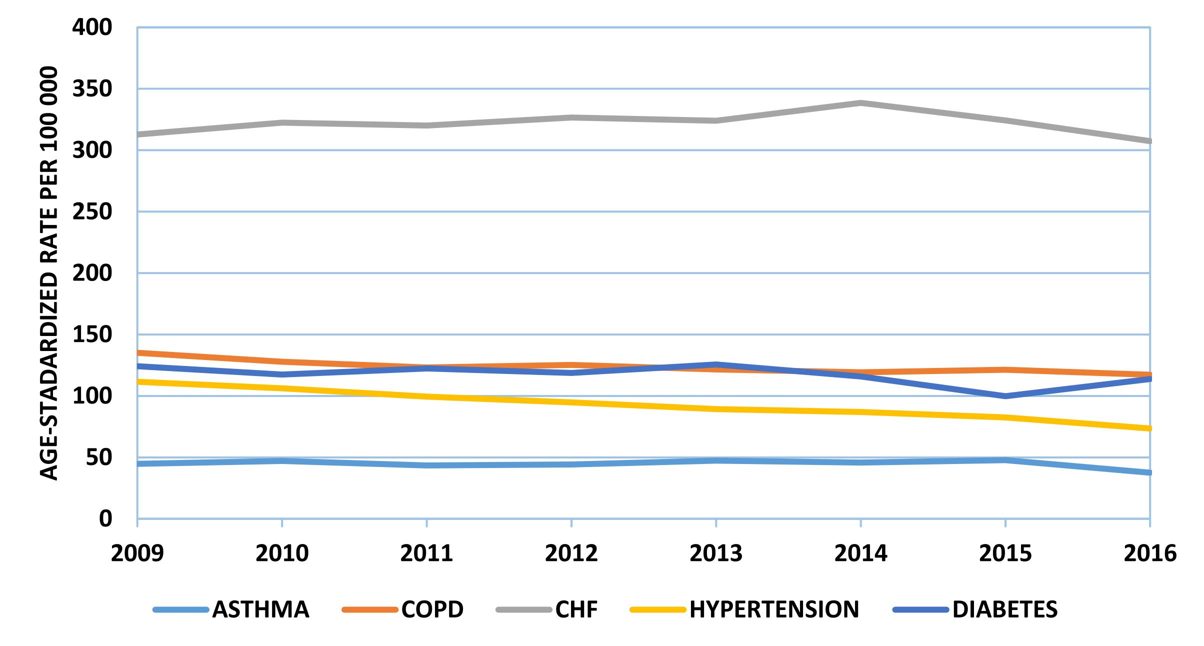
**Definition**

Robust primary care and community services are required to promote health and prevent disease and to manage chronic diseases. This also reduces the need for admissions into hospitals, whilst ensuring appropriate referral to hospital care when appropriate. A large number of hospital admissions could be averted through better prevention and management of both acute and chronic conditions outside the hospital. Out of more than 30 conditions for which hospitalization could be reduced with better primary care, five stand out as particularly relevant in European countries: 1) diabetes, 2) hypertension, 3) heart failure, 4) chronic obstructive pulmonary disease (COPD) and bronchiectasis and 5) asthma. Common to all of these conditions is the fact that the evidence base for effective treatment is well established and much of it can be delivered at a primary care level. A high-performing primary care system, where accessible and high quality services are provided, can reduce acute deterioration in people living with these diseases and reduce unnecessary admissions to hospital.

**Analysis**

Slovenian data for 2009–2016 period shows a slight decrease in values or improvement in performances in all 5 indicators (**Figure 139**), although the reduction is not equally prominent for all indicators. Admission rates for asthma decreased from 44 in 2009 to 36 per 100 000 population in 2016; COPB from 135 to 114; CHF from 312 to 280; hypertension from 111 to 56 and diabetes from 124 to 116. When analysed within country variation, admission rates vary 2 to 6 fold among different regions (**Table 16**). Disease prevalence and availability of hospital care may explain some, not all, variations in cross-country rates; other variations may stem from doctors' practices and hospitalization guidelines and patients' and families' insistence on hospitalization. Compared to European countries, Slovenia stands in the middle or at lower end within the ranges of these indicators (**Figure 140 - Figure 144**).

Figure 139: Hospital admissions for asthma, COPD, CHF, hypertension and diabetes mellitus in Slovenia 2009–2016, age-standardized rates per 100 000 inhabitants.



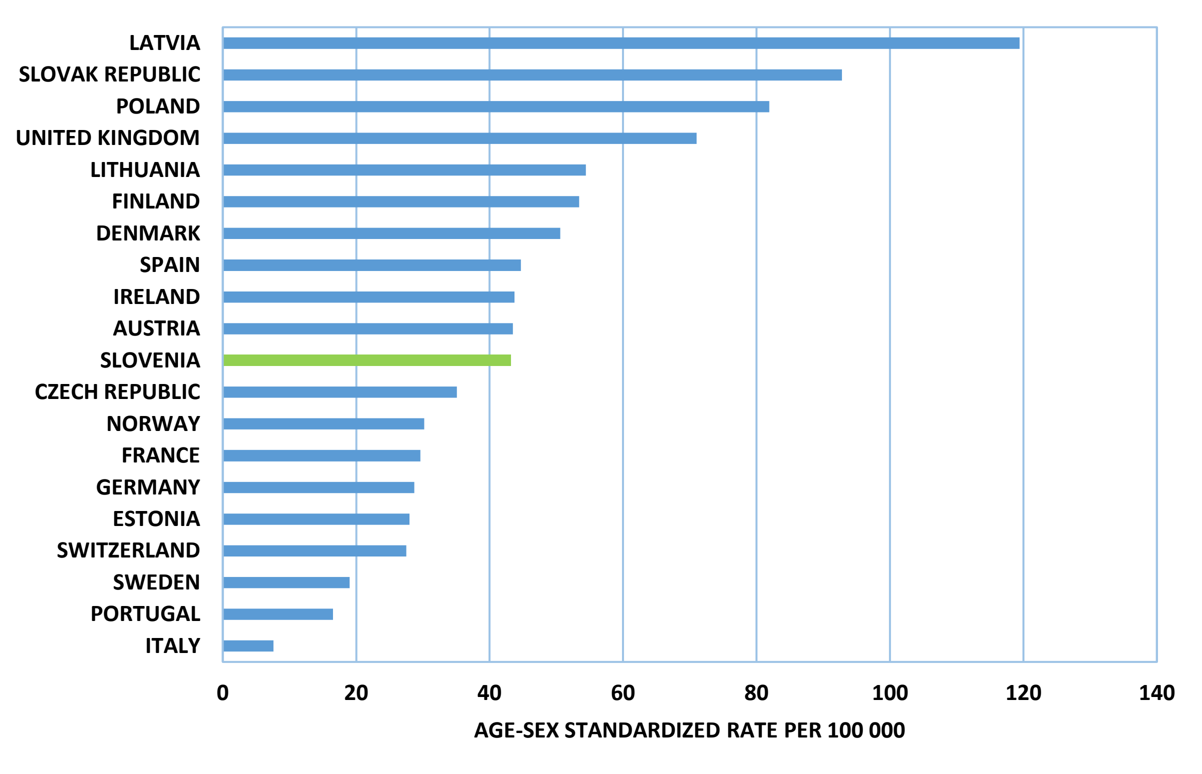

Source: NIPH

Table 16: 3-years average admissions rates per 100 000 in Slovenian regions, asthma, COPD, CHF, hypertension and diabetes mellitus.

| REGION | ADMISSION RATE PER 100 000, CRUDE RATE | | | | |
|---|---|---|---|---|---|
| | ASTHMA | COPD | CHF | HYPERTENSION | DIABETES |
| **POMURSKA** | 49.3 | 154.4 | 432.9 | 171.9 | 96.9 |
| **PODRAVSKA** | 60.4 | 151.8 | 249.0 | 80.3 | 123.8 |
| **KOROŠKA** | 48.2 | 123.1 | 306.6 | 65.1 | 222.2 |
| **SAVINJSKA** | 44,8 | 94.1 | 328.9 | 52.6 | 105.9 |
| **ZASAVSKA** | 41.8 | 163.2 | 308.7 | 41.7 | 139.6 |
| **POSAVSKA** | 17.0 | 71,1 | 612.8 | 88.1 | 93.3 |
| **SE SLOVENIA** | 26.9 | 96.3 | 286.2 | 56.9 | 126.3 |
| **CENTRAL SLOVENIA** | 27.4 | 89.6 | 184.9 | 42.2 | 91.1 |
| **GORENJSKA** | 47.4 | 125.3 | 276.4 | 51.3 | 82.6 |
| **PRIMORSKO-NOTRANJSKA** | 39.6 | 129.2 | 303.8 | 28.4 | 88.8 |
| **GORIŠKA** | 25.8 | 100.9 | 357.9 | 169.6 | 162.5 |
| **OBALNO-KRAŠKA** | 47.5 | 150.6 | 349.0 | 47.8 | 56.0 |
| **SLOVENIA** | **40.3** | **116.3** | **289.7** | **69.0** | **108.1** |

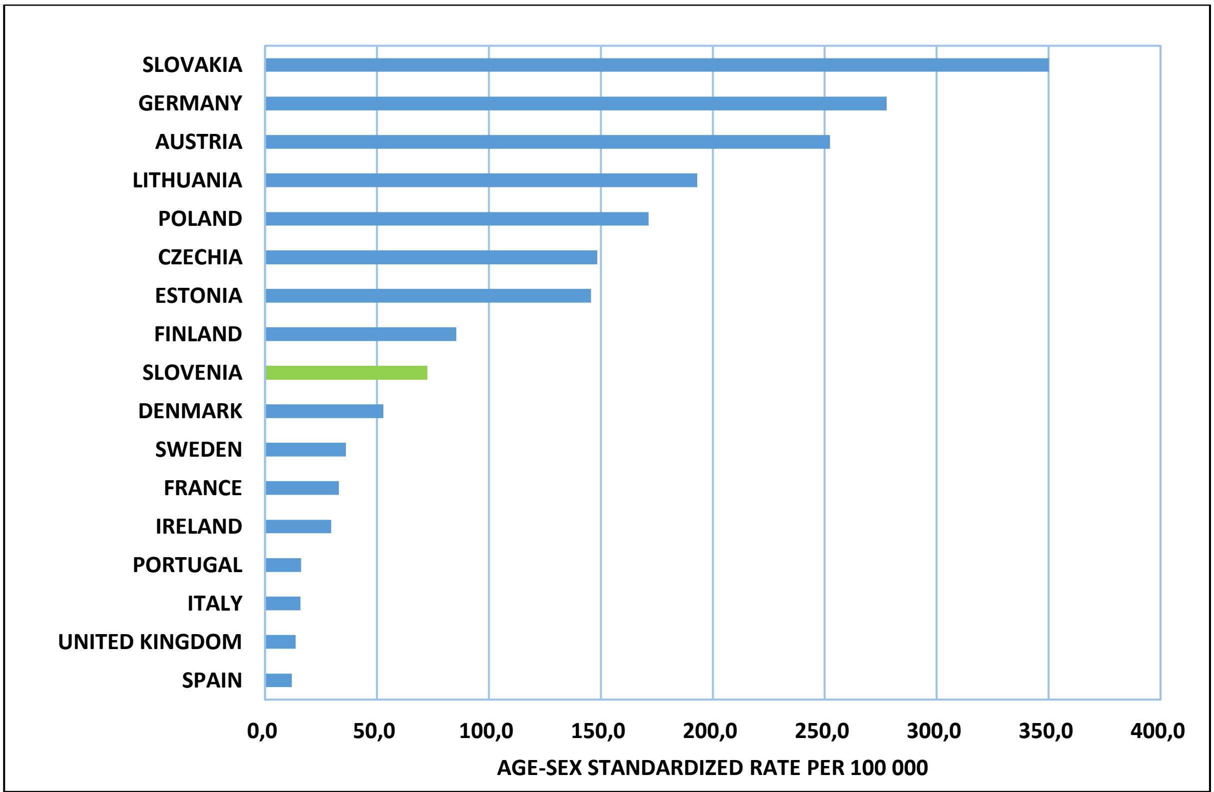
Source: NIPH

Figure 140: Age-sex standardized admission rates for asthma in selected European countries in 2015



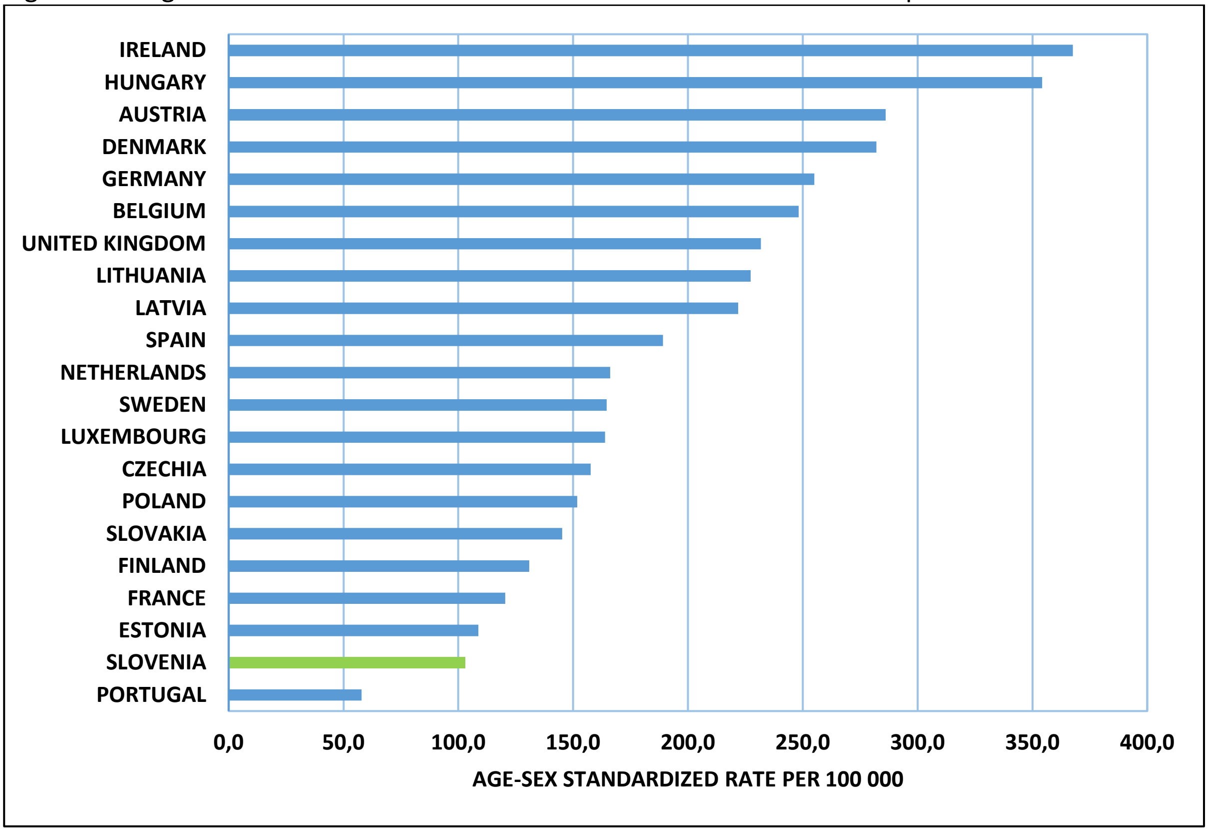

Source: OECD

Figure 141: Age-sex standardized admission rates for hypertension in selected European countries in 2015



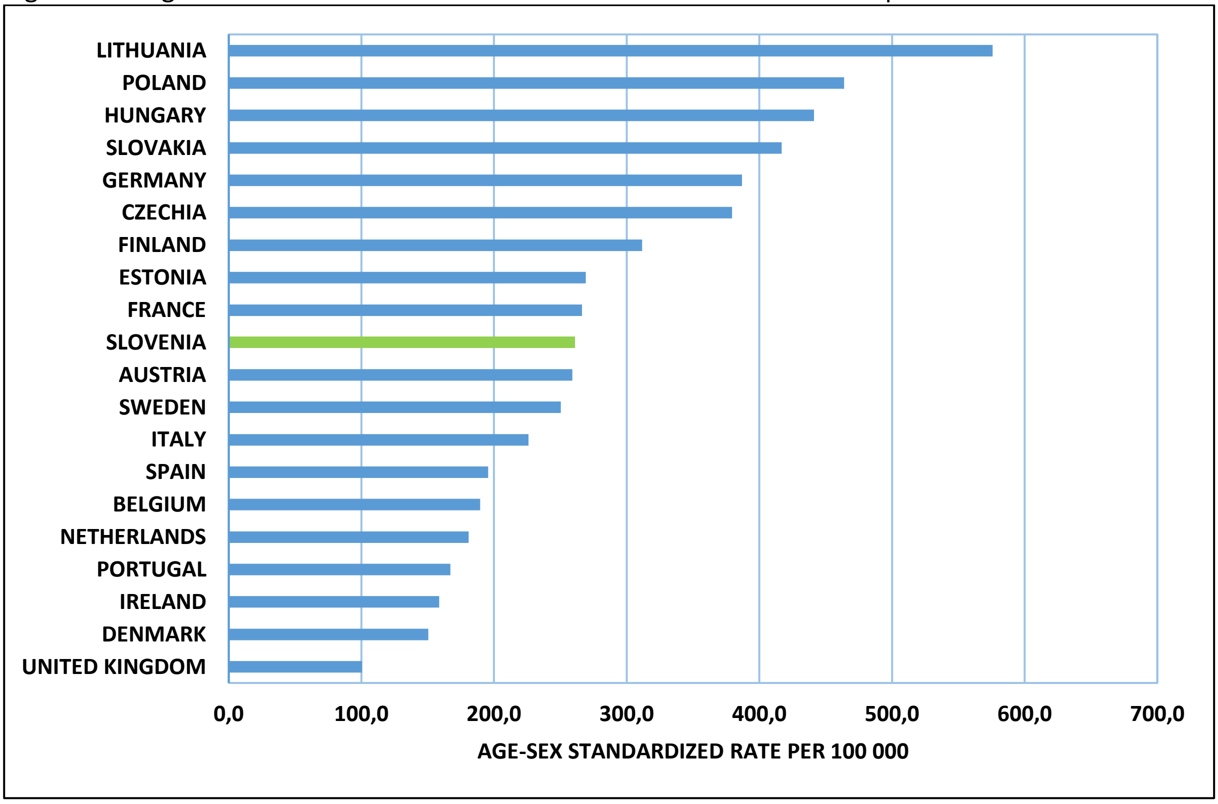

Source: OECD

Figure 142: Age-sex standardized admission rates for COPD in selected European countries in 2015.



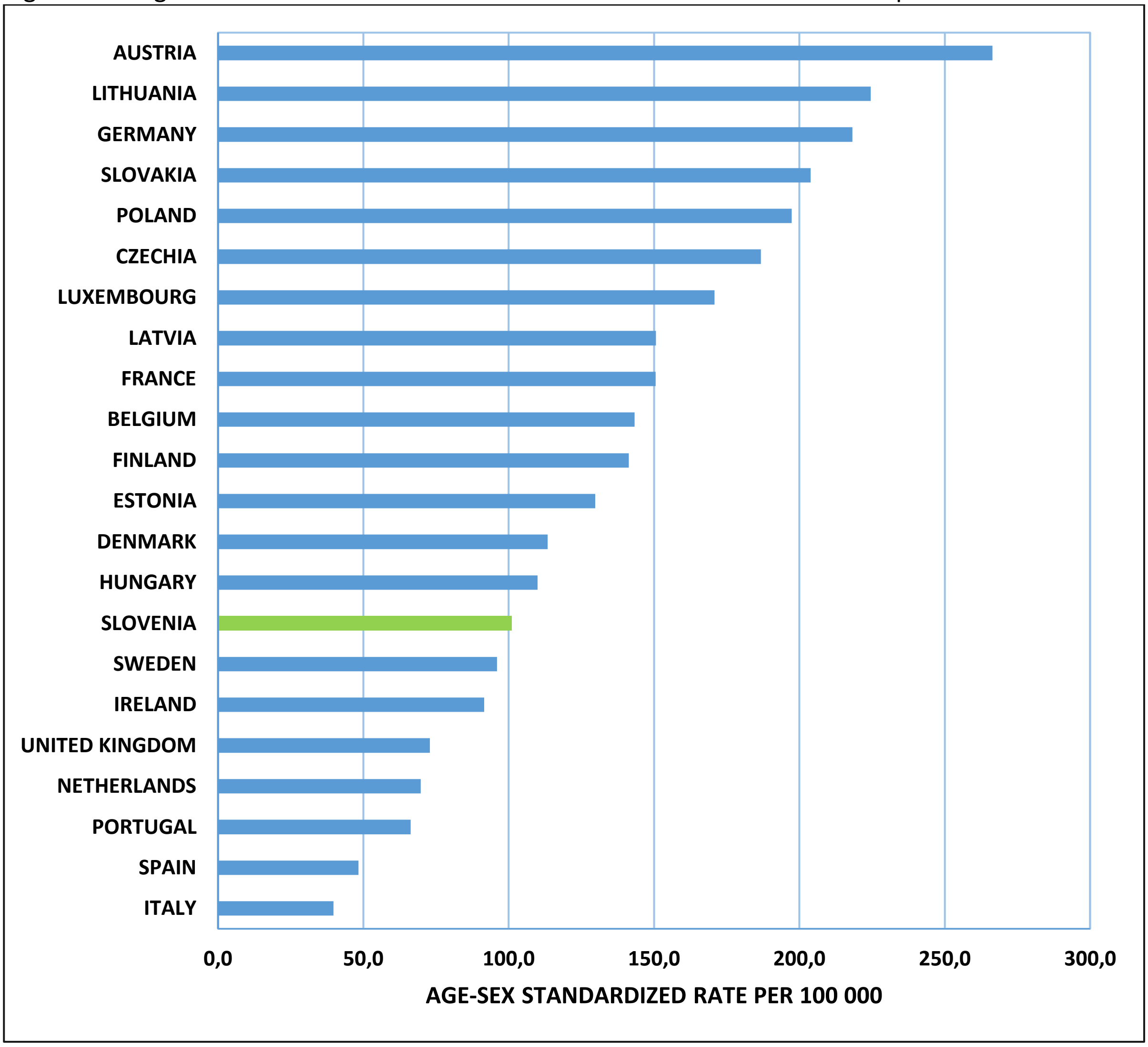

Source: OECD

Figure 143: Age-sex standardized admission rates for CHF in selected European countries in 2015.




Source: OECD

Figure 144: Age-sex standardized admission rates for diabetes in selected European countries in 2015




Source: OECD

## DOMAIN 11: EQUITY AND ACCESS

**Definition**

Equity means that health services are accessible on the basis of need rather than on geographical location or ability to pay.

Access can by physical, financial or psychological, and requires that health services are *a priori* available. It encompasses all types of delay during the contact between a patient and a provider, such as delay for a medical appointment, the waiting time in an emergency room and delays for surgery after admission.

Results are shown in **Table 17** and **Figure 145**.

## MAIN RESULTS

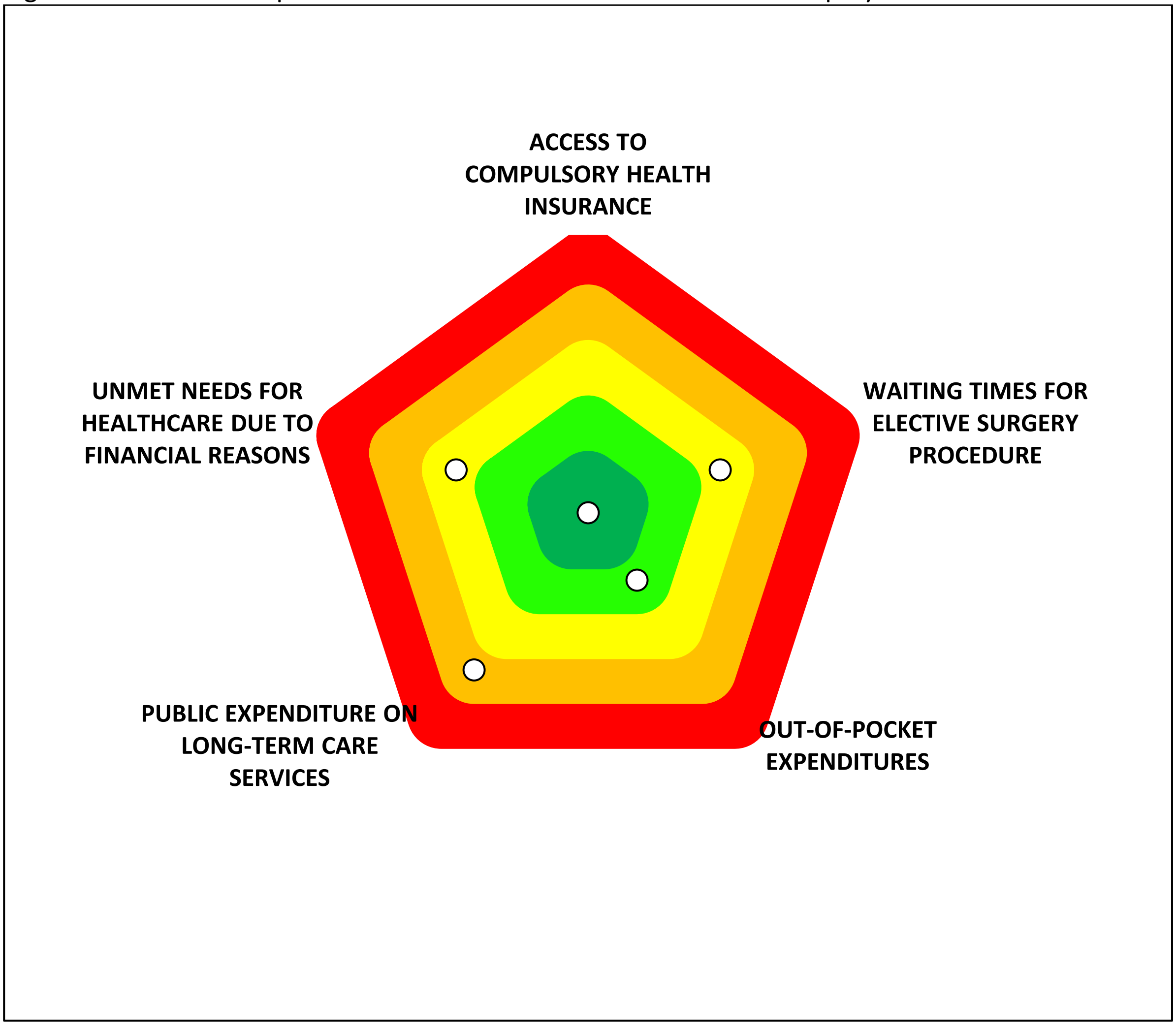
Table 17: Equity and access main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 5 | ACCESS TO COMPULSORY HEALTH INSURANCE | 2 | IMPROVING | BETTER | VERY GOOD |
| 60 | WAITING TIMES FOR ELECTIVE SURGERY PROCEDURE | 2 | STABLE | SAME | SATISFACTORY |
| 62 | OUT–OF–POCKET EXPENDITURES | 2 | STABLE | BETTER | GOOD |
| 1699 | PUBLIC EXPENDITURE ON LONG-TERM CARE SERVICES | 2 | STABLE | WORSE | POOR |
| 2002 | UNMET NEEDS FOR HEALTHCARE DUE TO FINANCIAL REASONS | 1 | STABLE | SAME | SATISFACTORY |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **EQUITY AND ACCESS** | **Good** | **2.44** |

Figure 145: Dart board presentation of assessment score of domain Equity and access.




The overall assessment of this domain shows that Slovenia is doing well in comparison to other European countries. This is most apparent when assessing access to compulsory health insurance and out-of-pocket expenditure. However, Slovenia has similar waiting times for elective surgical procedures. This was also noted for the unmet needs for healthcare due to financial reasons. The only indicator in which Slovenia is doing worse was public expenditure on long-term care services. This is a well-known Slovenian problem.

## INDICATOR 5: ACCESS TO COMPULSORY HEALTH INSURANCE

**Definition**

According to the Healthcare and Health Insurance Act (in Slovene ZZVZZ), all Slovenian inhabitants or citizens are covered by compulsory health insurance, either as insurants or members of their families (e.g. children). This kind of access should allow complete inclusion of all inhabitants or citizens to compulsory health insurance.

In Slovenia, the largest group of insurants is represented by employees. They are followed by retired insurants. Unemployed persons are insured through Employment service of Slovenia. Some insurants are obliged to take care of their compulsory health insurance, for example sole proprietors.

European countries have different kinds of compulsory health insurance, but most of them have universal (or near universal) health coverage, except Cyprus, Romania and Greece.

The data were obtained from OECD statistics and business report of Health insurance institute of Slovenia.

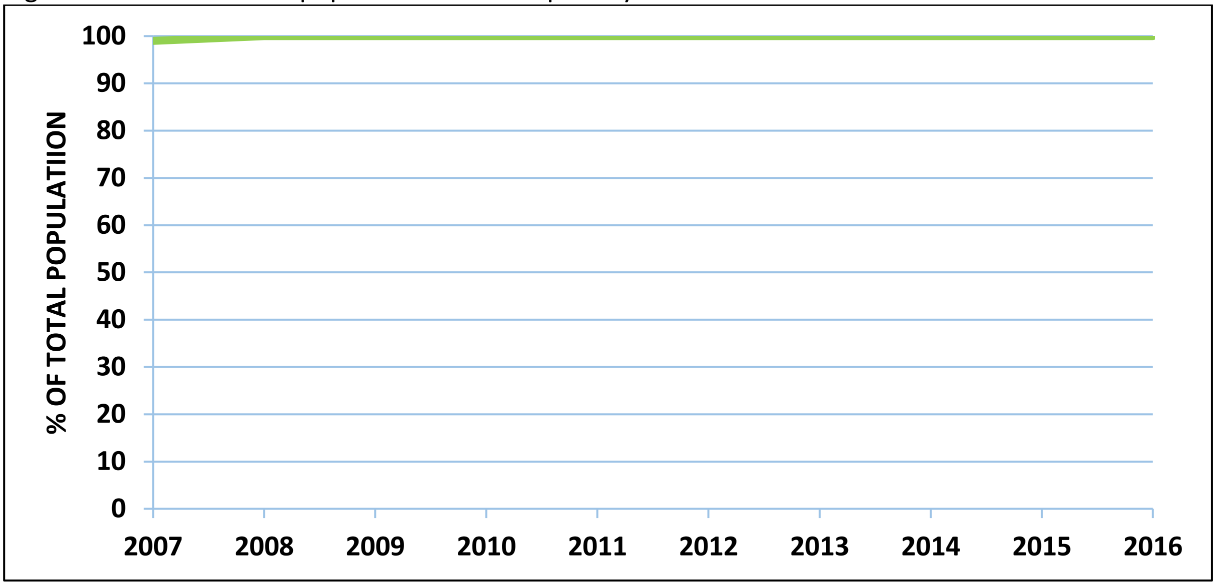
**Analysis**

Data obtained from OECD database showed that the vast majority of Slovenians have compulsory health insurance in the last 9 years (**Figure 146**), apart from European citizens who also have compulsory health insurance (**Figure 147**).

However, according to the business report of Health insurance Institute of Slovenia there are some persons without arranged compulsory insurance for over 2 months (4 038 or 0.2% on 31.12.2016). This group also includes "temporary" unsecured persons. These persons are awaiting recognition of the right to a pension or the right to unemployment benefit.

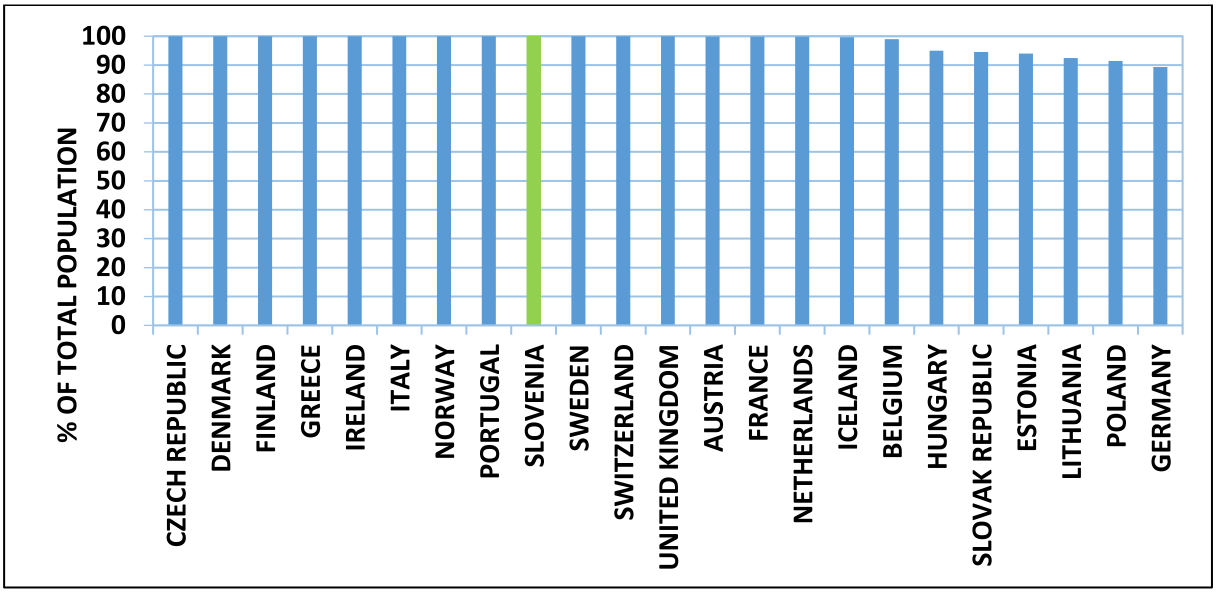
There is another group of persons that have retained compulsory health insurance due to the failure to fulfil the obligation to pay contributions (20 196 or 1.0% on 31.12.2016).

Figure 146: Rate of total population with compulsory health insurance in Slovenia 2007–2016.




Source: OECD

Figure 147: Rate of total population with compulsory health insurance in some European countries in 2016.




Source: OECD

## INDICATOR 60: WAITING TIMES FOR ELECTIVE SURGERY PROCEDURE

### Definition

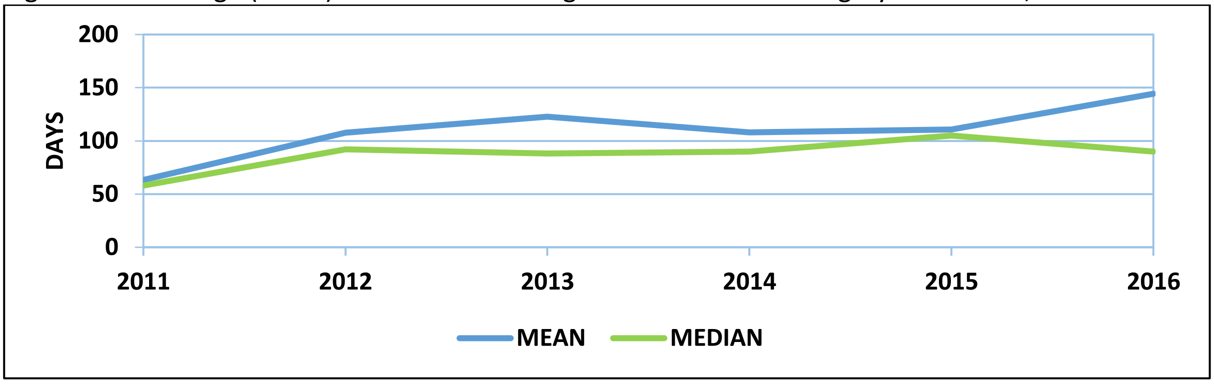
Long waiting times for elective surgery are an important policy issue in many European countries. They are the result of a complex interaction between the demand and supply of health services and as such waiting lists generally tend to be found in countries which combine public health insurance with zero or low patient cost sharing, as well as inadequate surgical capacity. The demand for elective surgery is determined by the health needs of the population, progress in medical and surgical technologies, and patient preferences. However, doctors play a crucial role in the decision to operate a patient or not. On the supply side, the availability of surgeons and other staff in surgical teams, as well as the supply of the required equipment and hospital space affect surgical activity rates.

For the purposes of this report, waiting times of patients on the surgical list is used as an indicator and it includes the time elapsed for patients on elective surgery waiting list from the date they were added to the waiting list for the procedure (following specialist assessment) to a designated date of elective surgery. It is expressed as both a mean (average) and median, where mean (average) represents number of days that patients have been waiting for each procedure, while median is the number of days separating evenly the higher half of patients who have waited the most from the other half who have waited the least.

### Analysis

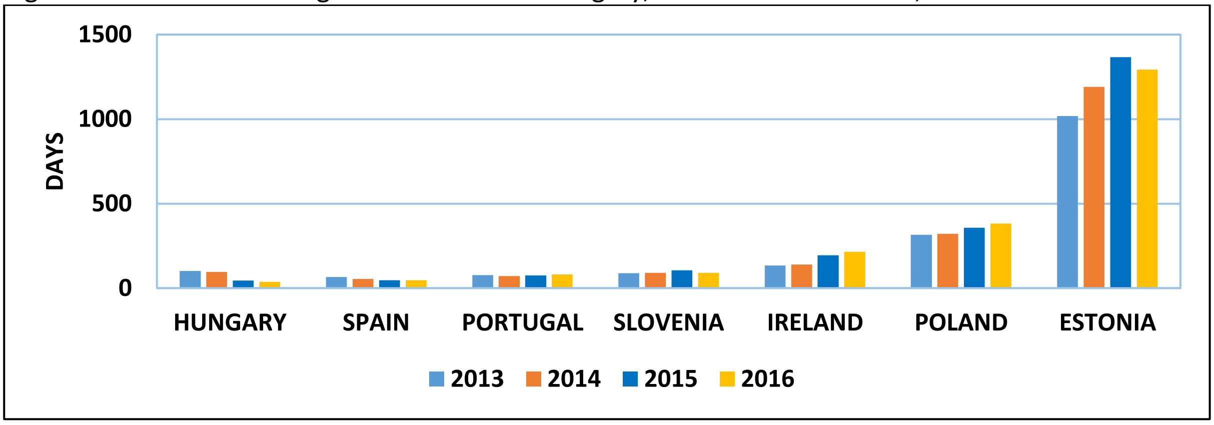
Three elective surgical procedures are analysed, based on data available: cataract surgery, hip replacement and knee replacement. In Slovenia, the average waiting times for elective cataract surgery has increased from 63.3 days in 2011 to 144.3 days in 2016 (from 58 to 90 days median for the same period) (**Figure 148**). When compared to several selected EU countries, Slovenia is inferior to Hungary and Spain, but far better than Poland and Estonia (**Figure 149**). Data for hip and knee replacement surgery show some improvement, as average waiting times for hip surgery have reduced from 354.4 in 2011 to 316.9 in 2016 (from 340 to 273 days median for the same period), while knee replacement surgery average waiting times reduced from 512 days in 2011 to 369.1 days in 2016 (from 495 to 352 for the same period). Comparison with selected EU countries shows similar pattern for these two indicators as with cataract, as Slovenia's waiting time is worse than countries such as Spain, Hungary, Portugal and Ireland but is better than Poland and Estonia (**Figure 150 - Figure 153**).

Figure 148: Average (mean) and median waiting times for cataract surgery in Slovenia, 2011–2016.



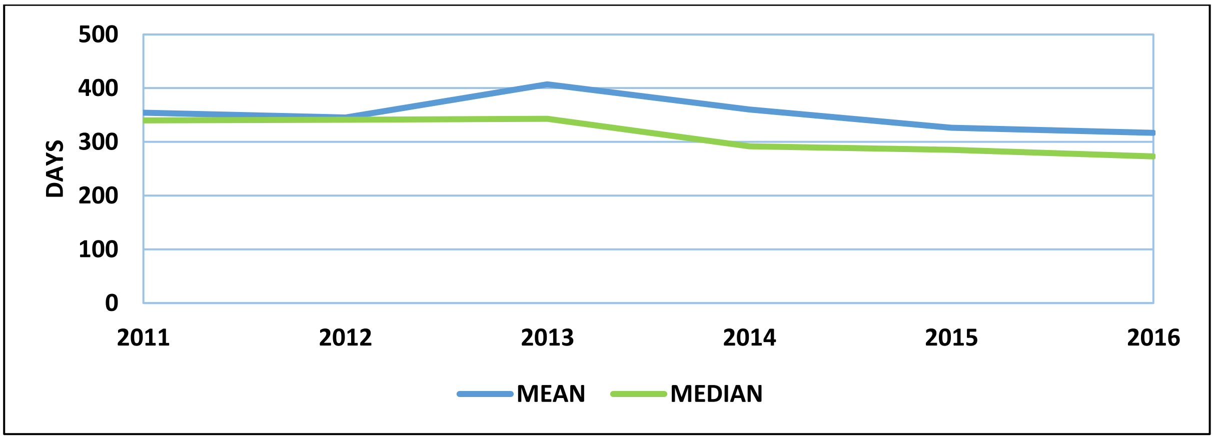

Source: OECD

Figure 149: Median waiting times for cataract surgery, selected EU countries, 2013–2016.



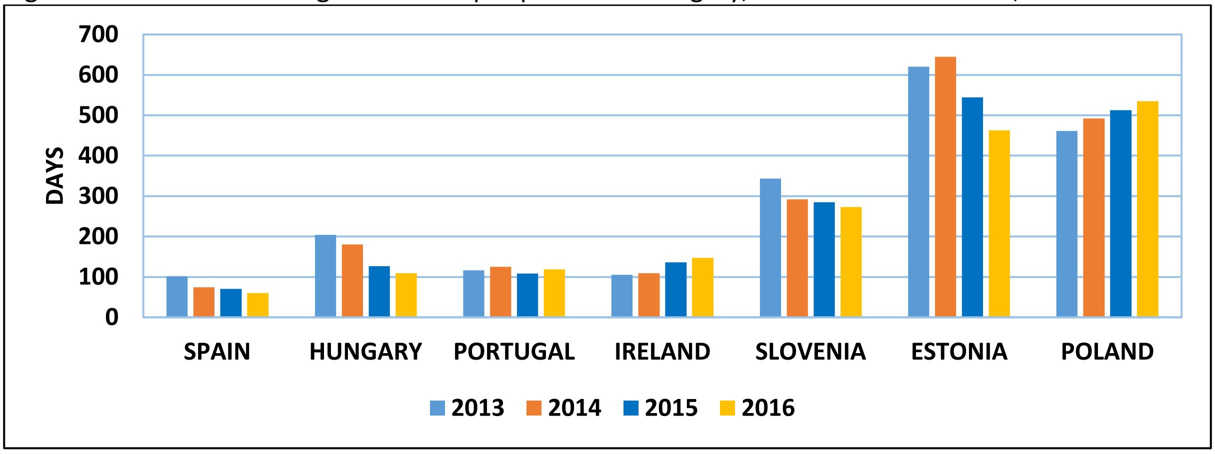

Source: OECD

Figure 150: Average (mean) and median waiting times for hip replacement surgery in Slovenia, 2011-2016.



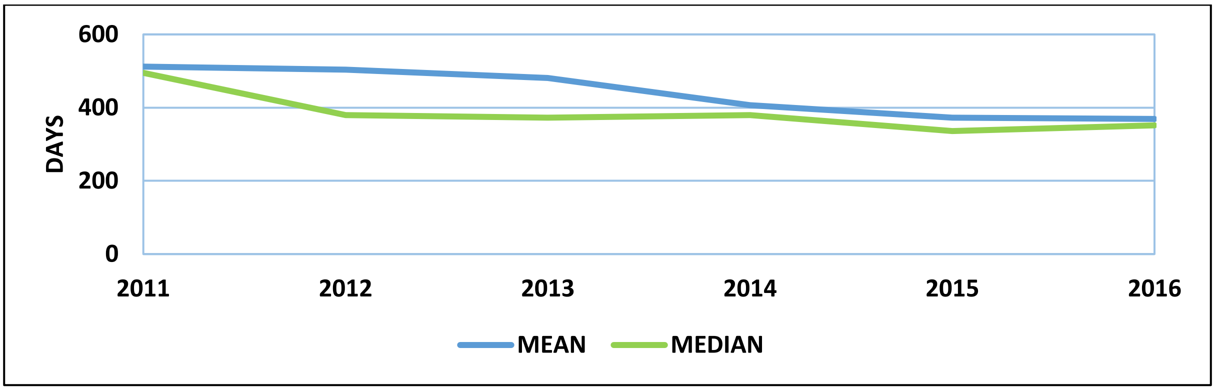

Source: OECD

Figure 151: Median waiting times for hip replacement surgery, selected EU countries, 2013–2016.



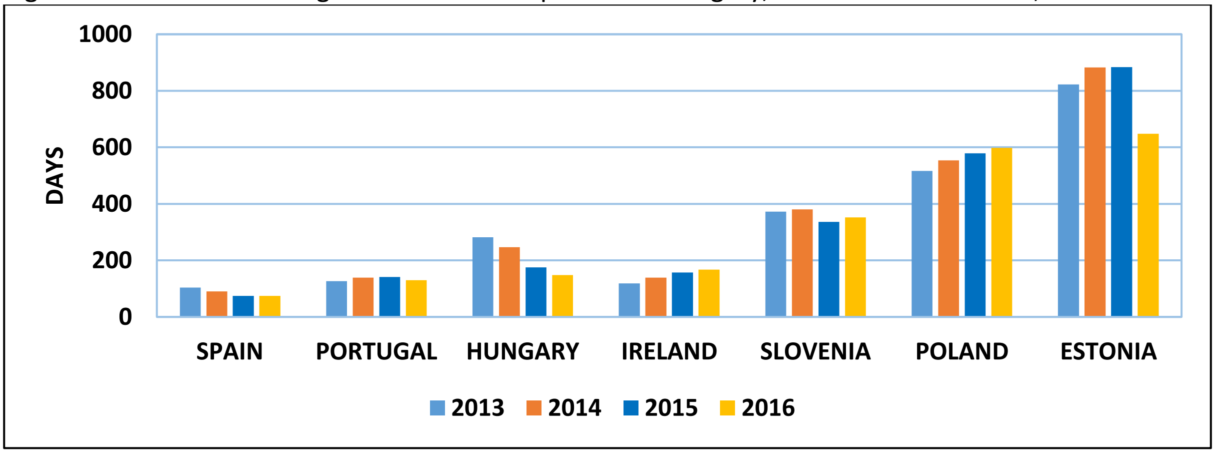

Source: OECD

Figure 152: Average (mean) and median waiting times for knee replacement surgery in Slovenia, 2011-2016.




Source: OECD

Figure 153: Median waiting times for knee replacement surgery, selected EU countries, 2013–2016.




Source: OECD

## INDICATOR 62: OUT-OF-POCKET EXPENDITURES

**Definition**

Out-of-pocket payments (OOPs) are expenditures borne directly by a patient where neither compulsory nor voluntary insurance cover the full cost of the health good or service. They are direct payments made by individuals to healthcare providers at the time of service use. They include cost-sharing and other expenditure paid directly by private households and should also include estimations of informal payments to healthcare providers. Only expenditure for medical spending (i.e. current health spending less expenditure for the health part of long-term care) is presented here, because the capacity of countries to estimate private long-term care expenditure varies widely.

This is a core indicator of health financing systems. It contributes to the understanding of the relative weight of direct payments by households in total health expenditure. High out-of-pocket payments are strongly associated with catastrophic and impoverishing spending, so this indicator represents a key support for equity and planning processes. Financial protection through compulsory or voluntary health coverage can substantially reduce the amount that people need to pay directly for medical care. Yet in some countries the burden of out-of-pocket spending can still create barriers to healthcare access and use: households that face difficulties paying medical bills may delay or even forgo needed healthcare. On average across OECD countries, a fifth (18 % OECD-EU countries, 2016) of all spending on healthcare comes directly from patients.

The burden of out-of-pocket medical spending can be measured either as a share of total household income or consumption. The share of household consumption allocated to medical care varied considerably across OECD countries in 2015. On average, across OECD countries, 3% of household spending goes on medical goods and services. Health systems in OECD countries differ in the degree of coverage for different health services and goods. In most countries, a higher proportion of the cost is paid directly for pharmaceuticals, dental care and eye care than for hospital care and doctor consultations (Paris et al., 2016). Taking into account these differences and also the relative importance of these different spending categories, it is not surprising that there are significant variations between OECD countries in the breakdown of the medical costs that households have to bear themselves. In most OECD countries, spending on pharmaceuticals and outpatient care (including dental care) are the two main spending items for out-of-pocket expenditure.

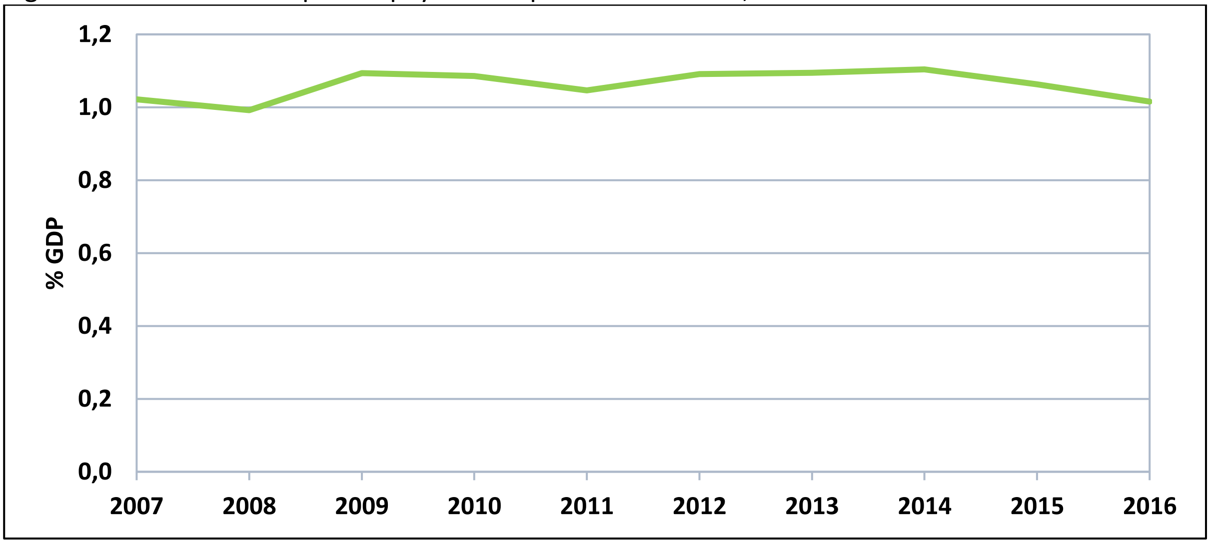
Analysed data are presented as percentage of GDP and total health expenditure in 2016 across Europe and from 2007 to 2016 in Slovenia.

**Analysis**

Between 2007 and 2016 the share OOPs expenditure on Slovenian GDP slightly increased during the financial crisis, but in recent years it is decreasing again (**Figure 154**). Beside this, it did not have any significant impact on share of health spending during these years (**Figure 155**).

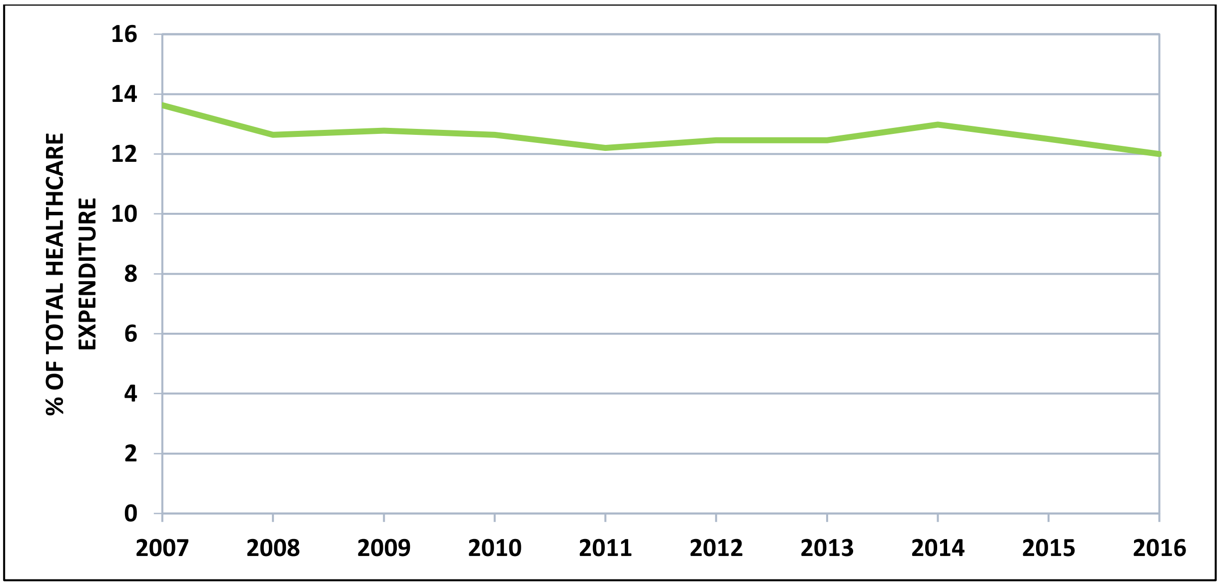
The comparison among EU countries shows that Slovenia is among countries with low share of OOPs in GDP 2016 (**Figure 156** and **Figure 157**).

Figure 154: Share out-of-pocket payment expenditure on GDP, Slovenia 2007–2016.



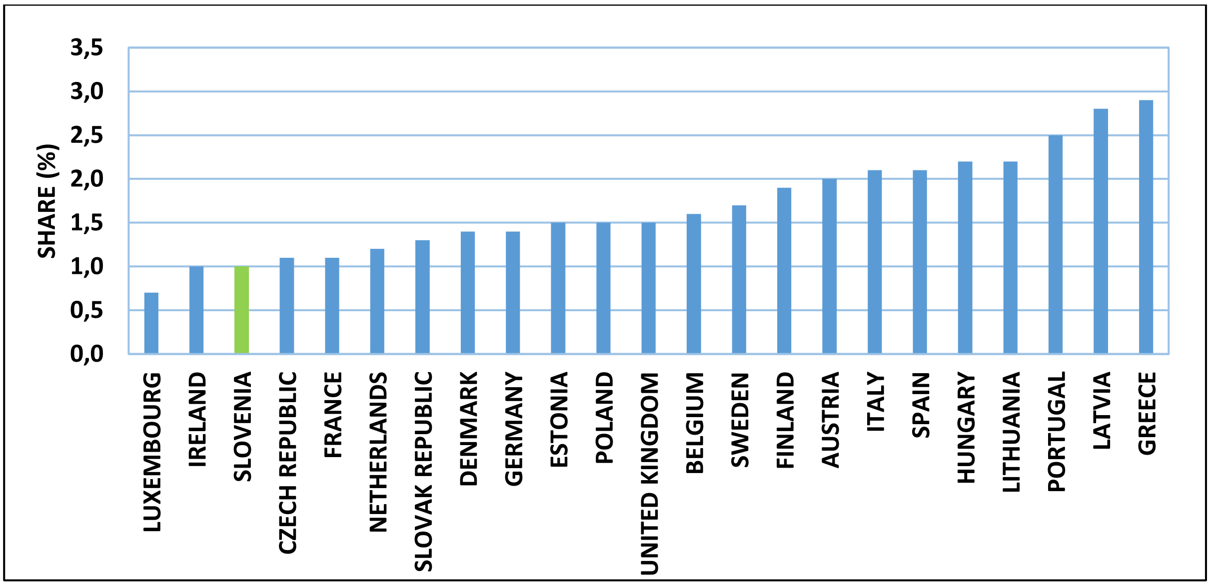

Source: EUROSTAT

Figure 155: Share out-of-pocket payment expenditure on total healthcare expenditure, Slovenia 2007–2016.



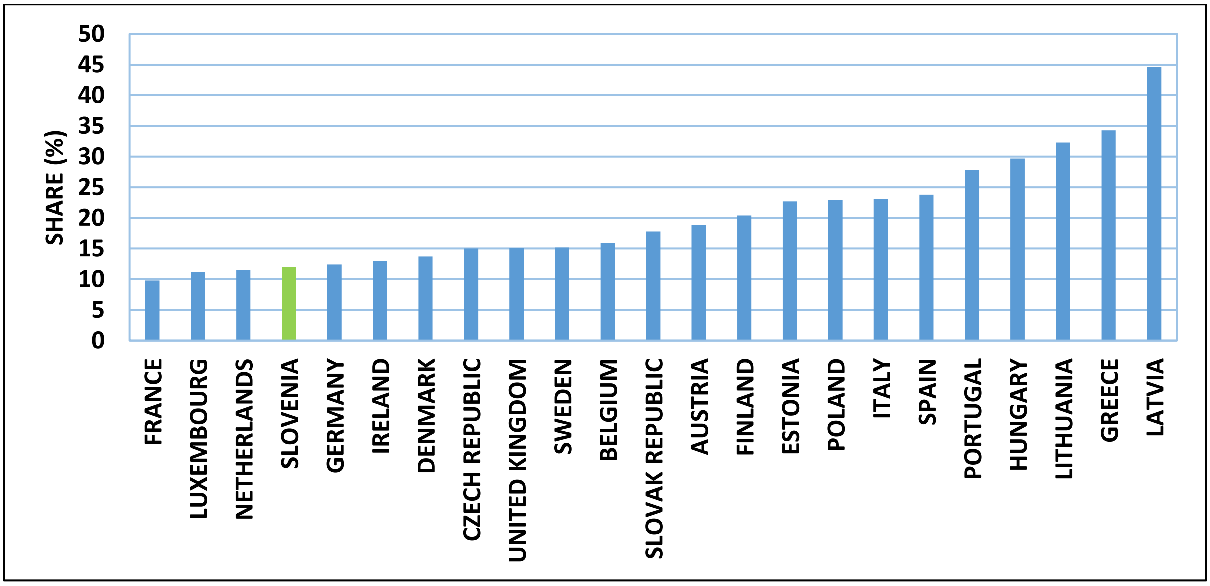

Source: EUROSTAT

Figure 156: Share of out-of-pocket payment expenditure in the share of GDP across European countries in 2016.




Source: OECD

Figure 157: Share of out-of-pocket payment expenditure to total health expenditure across European countries in 2016.




Source: OECD

## INDICATOR 1699: PUBLIC EXPENDITURE ON LONG–TERM CARE SERVICES

### Definition

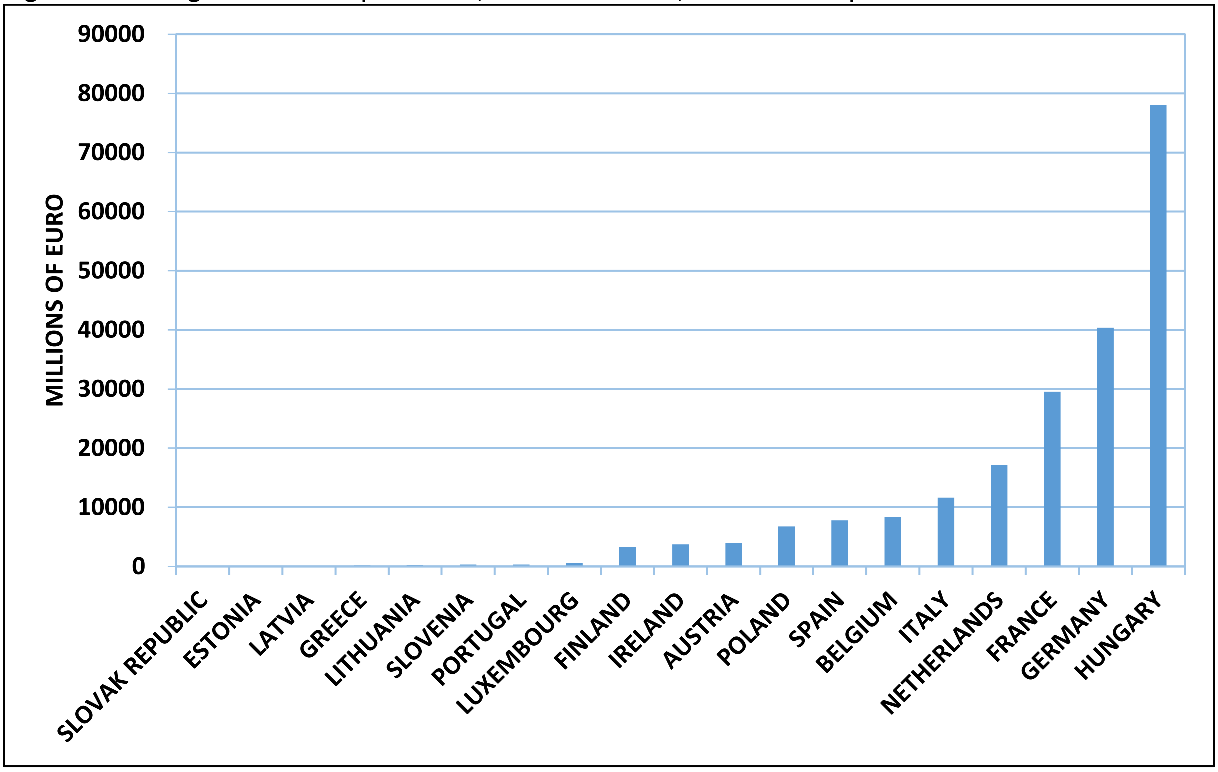
Long-term care is a set of services needed by people with reduced levels of physical and cognitive ability that, over a longer period of time, require help to do basic or supported daily tasks. In the future, it will be an ever-increasing challenge as the population is aging. The supply of informal care is potentially shrinking and productivity gains are difficult to achieve in such a labour-intensive sector. All these factors create upward pressures on spending. It seems that long-term care expenditure has seen the highest growth across the various functions and is expected to rise further in the coming years. Long-term care expenditure has risen over the past few decades in most OECD countries and is expected to rise further in the coming years, with population ageing leading to more people needing on-going health and social care. Especially public expenditure on long-term care has grown rapidly in recent years in some countries. The annual growth rate in public expenditures on was 4.0% between 2005 and 2013 across OECD countries, which was above the growth in care expenditures over the same period. In Europe a significant share of long-time care is paid from government payments or compulsory insurance schemes. Total government/compulsory expenditure on long-time care (including the health and social care components) accounted for 1.7% of GDP on average across OECD countries in 2015 with a small role of privately-funded expenditure. The boundaries between the health and social long-term care expenditure are still not fully consistent across European countries. Projection scenarios suggest that public resources allocated to long-term care as a share of GDP could double or more by 2060.

Data for analysis was obtained from OECD database. Values were measured in millions of euro and share of GDP.

### Analysis

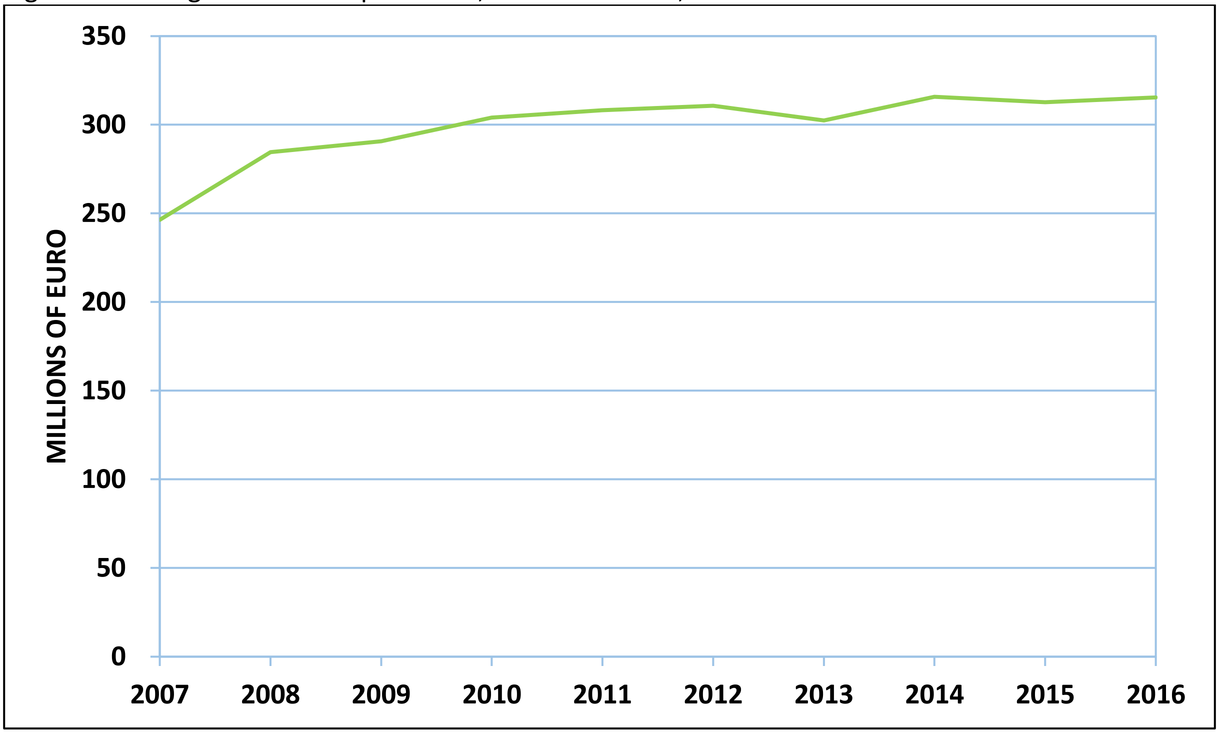
Analysis shows that long-term care expenditure in Slovenia is not as high as in some European countries and was one of the lowest in Europe, expressed in millions of euro and share of GDP (**Figure 158** and **Figure 160**). Long-term care funding is currently very fragmented among different agencies and payers. Public funding is carried out by HIIS (nearly 50 % of all public expenditure), Ministry of labour, Pension institute and municipalities. Private expenditure consists almost only from out-of-pocket payments and represents 25 % of total long-term care expenditure. One of the most important reason is that act on long-term care has not yet been adopted in Slovenia. However, in the last decade steady increase long-term care expenditure is seen (**Figure 159** and **Figure 161**).

Figure 158: Long-term care expenditure, millions of euro, in some European countries in 2016.



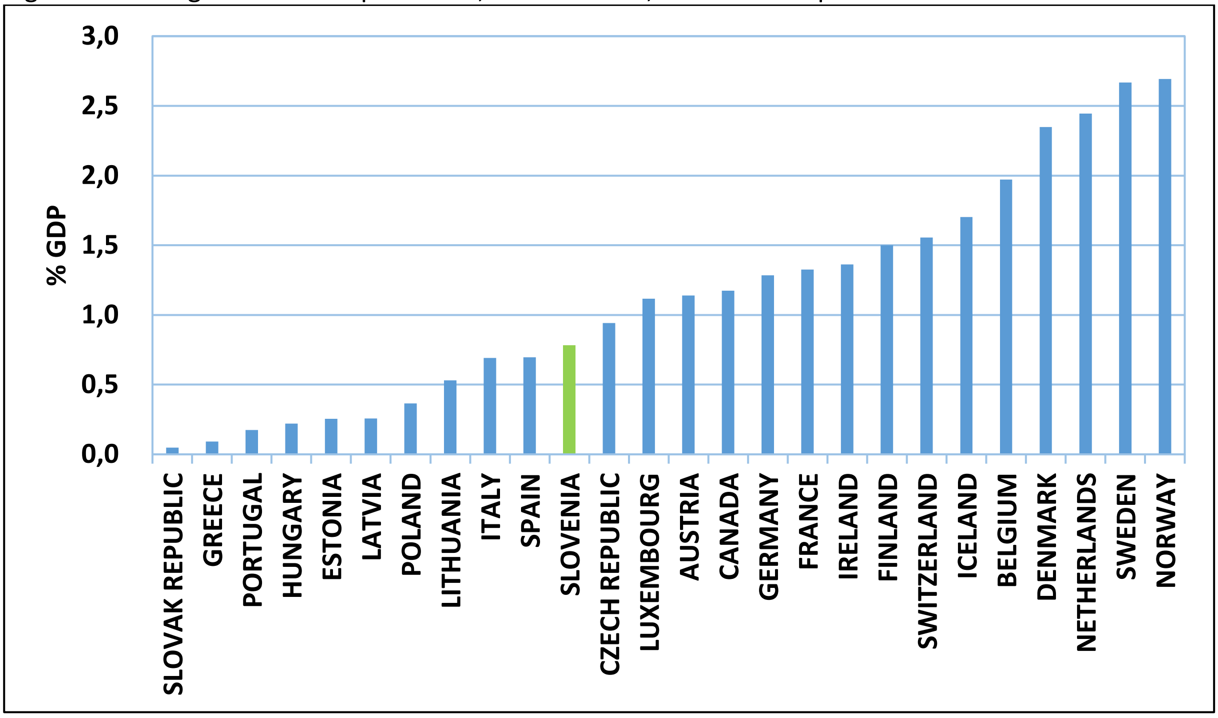

Source: OECD

Figure 159: Long-term care expenditure, millions of euro, in Slovenia 2007–2016.



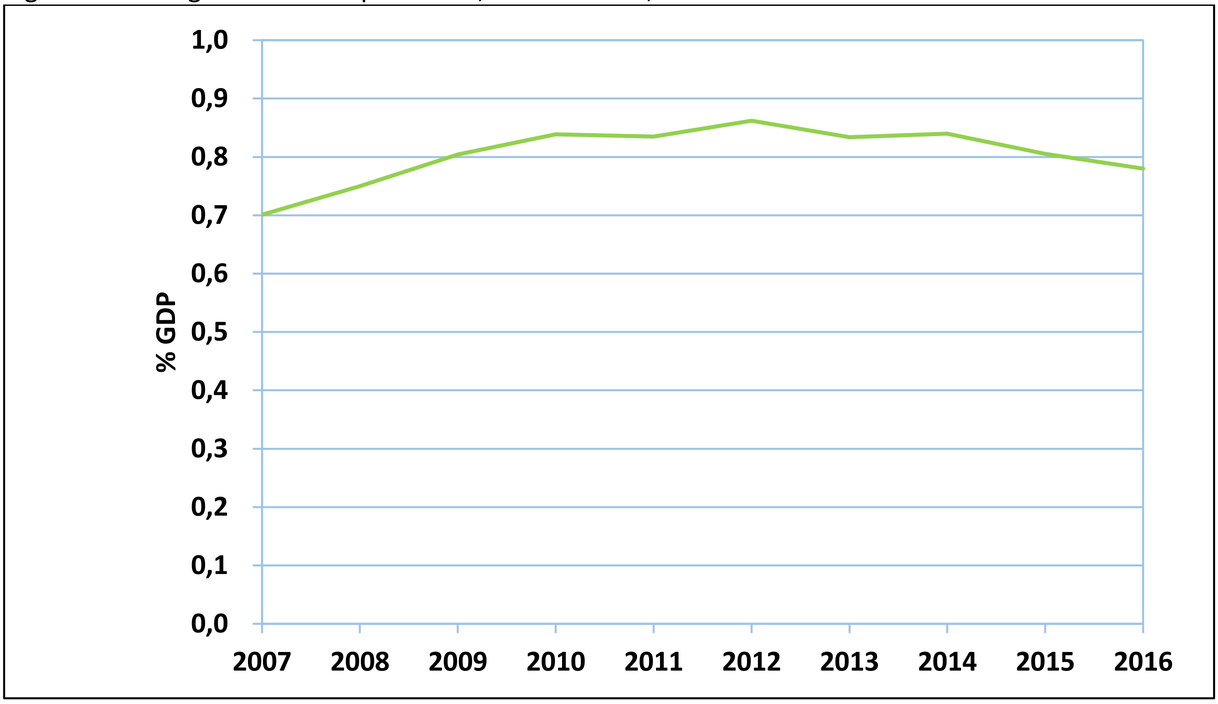

Source: OECD

Figure 160: Long-term care expenditure, share of GDP, in some European countries in 2016.




Source: OECD

Figure 161: Long-term care expenditure, share of GDP, in Slovenia 2007–2016.




Source: OECD

## INDICATOR 2002: UNMET NEEDS FOR HEALTHCARE DUE TO FINANCIAL REASONS

**Definition**

In Slovenia direct household expenditure for health is among the lowest in the OECD countries because of the almost universal health coverage and additional coverage of the supplementary health insurance. In terms of financial access to healthcare services, direct expenditure from out of pocket payments is significantly more problematic than private insurance, because the burdens of the poorer households, the chronically ill and the elderly are the most burdensome and they are unpredictable.

Unmet need is also low in Slovenia, to which, in particular, good financial accessibility to health services or low direct payments contributes. The income differences are also relatively small, which is also confirmed by the EU-SILC annex in addition to the SHARE survey. In Slovenia, the main driver for unsatisfied need is primarily due to prolonged waiting periods at secondary level.

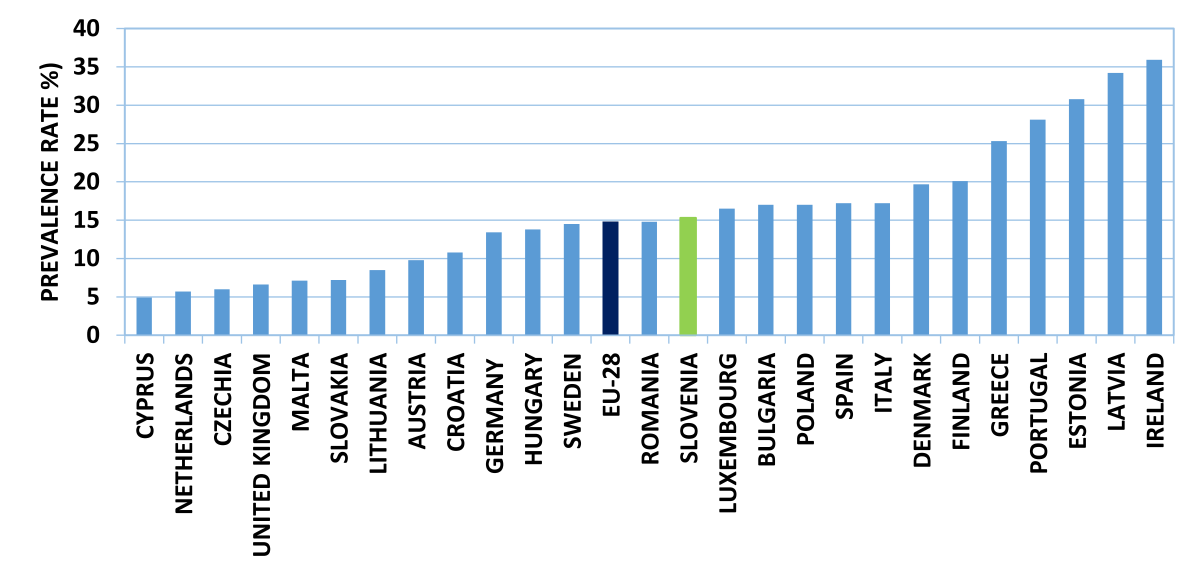
The data was obtained from NIPH and EUROSTAT database. It is available only for 2014.

**Analysis**

The results show that Slovenia had a similar prevalence rate of unmet needs due to financial reasons as EU–28 average in 2014 (**Figure 162**).This is a consequence of extensive healthcare “basket” that is covered by compulsory and complementary health insurance.

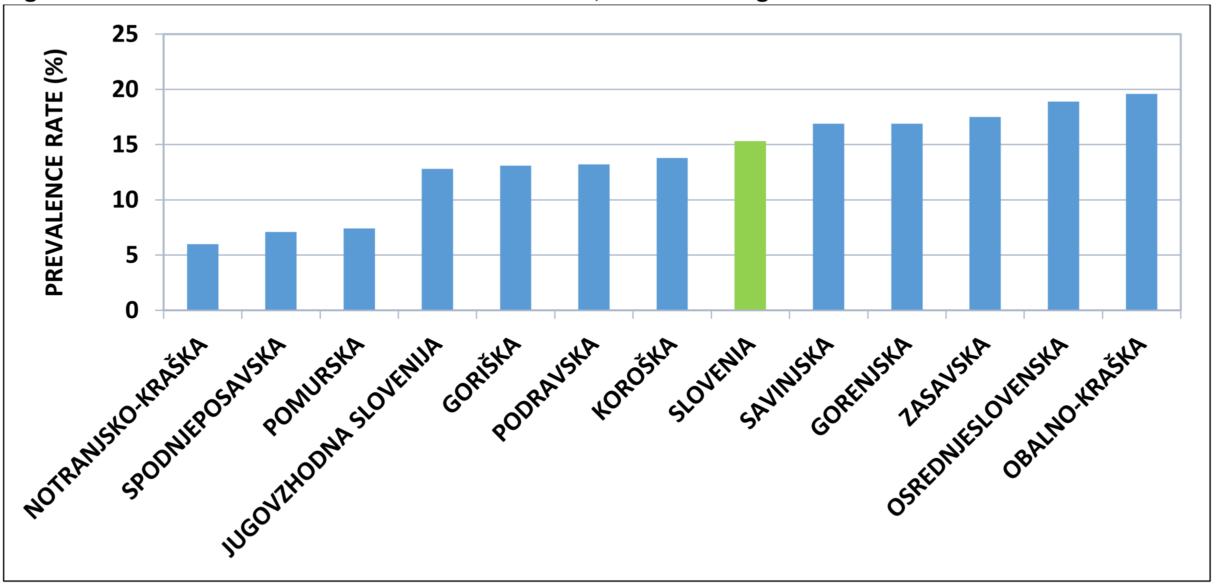
On the other hand, there were differences among Slovenian regions in the same year (**Figure 163**). Exact reason is unknown, but it is speculated that dental services that are not covered by compulsory health insurance are the main reason for the observed differences.

Figure 162: Unmet needs due to financial reasons in EU in 2014.




Source: EUROSTAT – EHIS 2014

Figure 163: Unmet needs due to financial reasons, Slovenian regions in 2014.




Source: NIPH – EHIS 2014

## DOMAIN 14: HEALTH DETERMINANTS

**Definition**

The health of individuals and communities is affected through many factors, such as their circumstances and environment. Factors including genetics, income and education level, home, relationships with friends and family and environment have a considerable impact on health, whereas more commonly considered factors such as access and use of health care services often have a lesser impact.

The impact of these determinants is as follow:

- **INCOME AND SOCIAL STATUS** - higher income and social status are linked to better health
- **EDUCATION** – low education levels are linked with poor health
- **PHYSICAL ENVIRONMENT** – safe water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health
- **EMPLOYMENT AND WORKING CONDITIONS** – people in employment are healthier, particularly those who have better working conditions
- **SOCIAL SUPPORT NETWORKS** – greater support from families, friends and communities is linked to better health
- **CULTURE** - customs and traditions, and the beliefs of the family and community all affect health
- **GENETICS** - inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses
- **PERSONAL BEHAVIOUR AND COPING SKILLS** – balanced eating, keeping active, smoking, drinking, and how we deal with life's stresses and challenges all affect health
- **HEALTH SERVICES** - access and use of services that prevent and treat disease influences health
- **GENDER** - men and women suffer from different types of diseases at different ages

Results are shown in **Table 18** and **Figure 164**.

## MAIN RESULTS

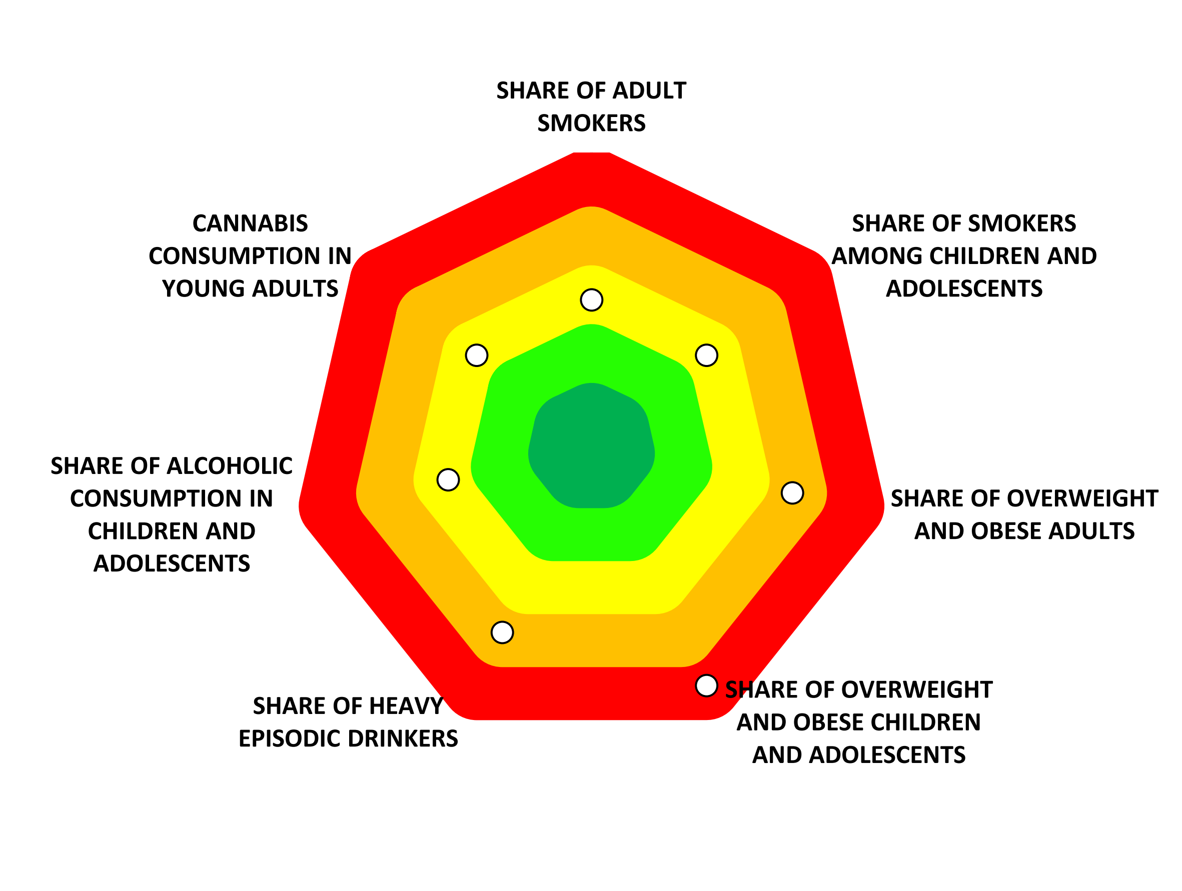
Table 18: Health Determinants main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 18A | SHARE OF ADULT SMOKERS | 2 | STABLE | SAME | SATISFACTORY |
| 18B | SHARE OF SMOKERS AMONG CHILDREN AND ADOLESCENTS | 2 | IMPROVING | SAME | SATISFACTORY |
| 22 | SHARE OF OVERWEIGHT AND OBESE ADULTS | 3 | STABLE | WORSE | POOR |
| 23 | SHARE OF OVERWEIGHT AND OBESE CHILDREN AND ADOLESCENTS | 3 | DETERIORATING | WORSE | VERY POOR |
| 238 | SHARE OF HEAVY EPISODIC DRINKERS | 2 | DETERIORATING | SAME | POOR |
| 239 | SHARE OF ALCOHOLIC CONSUMPTION IN CHILDREN AND ADOLESCENTS | 2 | IMPROVING | WORSE | SATISFACTORY |
| 376 | PREVALENCE OF TYPE 2 DIABETES IN CHILDREN | | | | |
| 1957 | CANNABIS CONSUMPTION IN YOUNG ADULTS | 1 | STABLE | SAME | SATISFACTORY |

**Overall Assessment and Main Conclusions**

| | | |
|---|---|---|
| **HEALTH DETERMINANTS** | **Poor** | **1.40** |

Figure 164: Dartboard presentation of assessment score of domain - Health Determinants.




The overall assessment shows that Slovenia has poorer health determinants than its European peers. Particularly, overweight and obesity amongst adults and teenagers are worse in comparison to other European countries.

Beside this, excessive drinking of alcoholic beverages is deteriorating in Slovenia. However, in comparison to other European countries, a significant difference was not noted. Instead, this was observed in weekly drinking among teenagers, where Slovenia is worse than other European countries.

Regarding cannabis use among adolescents and daily smokers, Slovenia is on the same level as other European countries.

This domain also contains two indicators on number of cigarettes sold and prevalence of type 2 diabetes in children. According to the Slovenian method of defining patients with diabetes, it is impossible to distinguish type 1 and 2 diabetes among children. Therefore, data cannot be collected. Besides, international data is not available.

## INDICATOR 18: SHARE OF SMOKERS

## INDICATOR 18A: SHARE OF ADULT SMOKERS

**Definition**

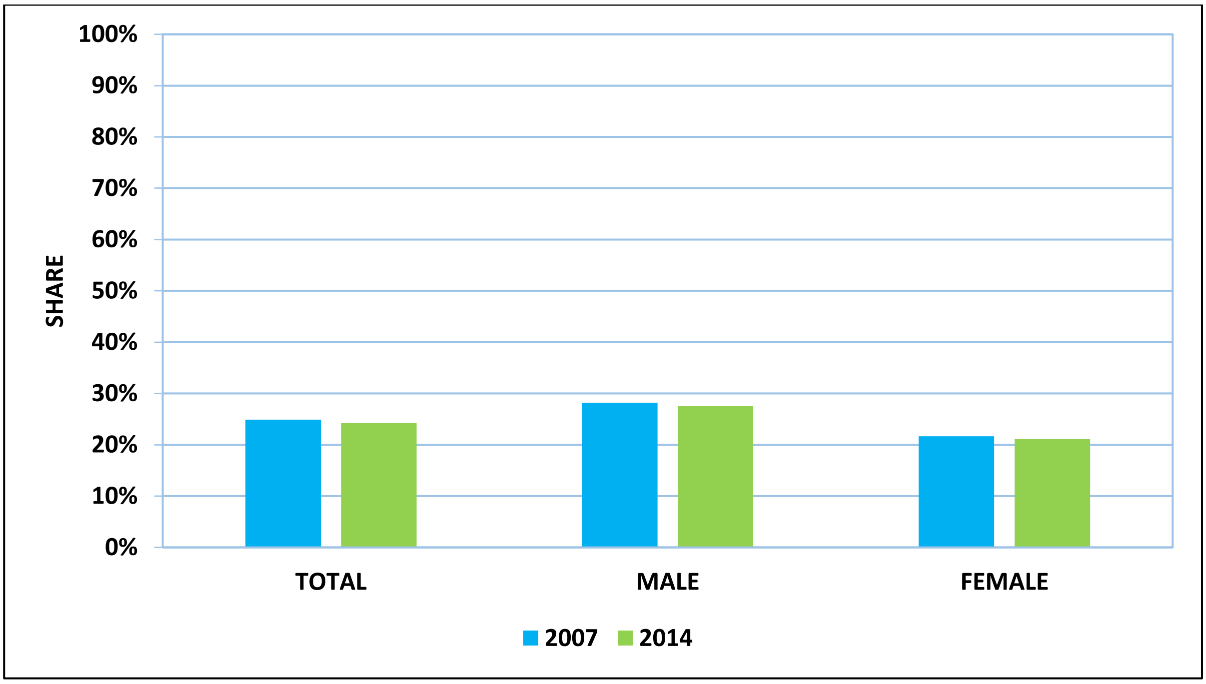
Smoking is one of the main preventable causes of morbidity and mortality in modern world. There is no safe level of tobacco use. Smoking is associated with cancers, cardiovascular, respiratory and other diseases. People who quit smoking have substantial gains in life expectancy and quality of life in comparison to those who continue to smoke.

The indicator on smoking in adults uses data from the European Health Interview Survey (EHIS). Self-reported data on current smoking status is used to calculate the share of people aged 15 years or more that smoke daily or occasionally.

**Analysis**

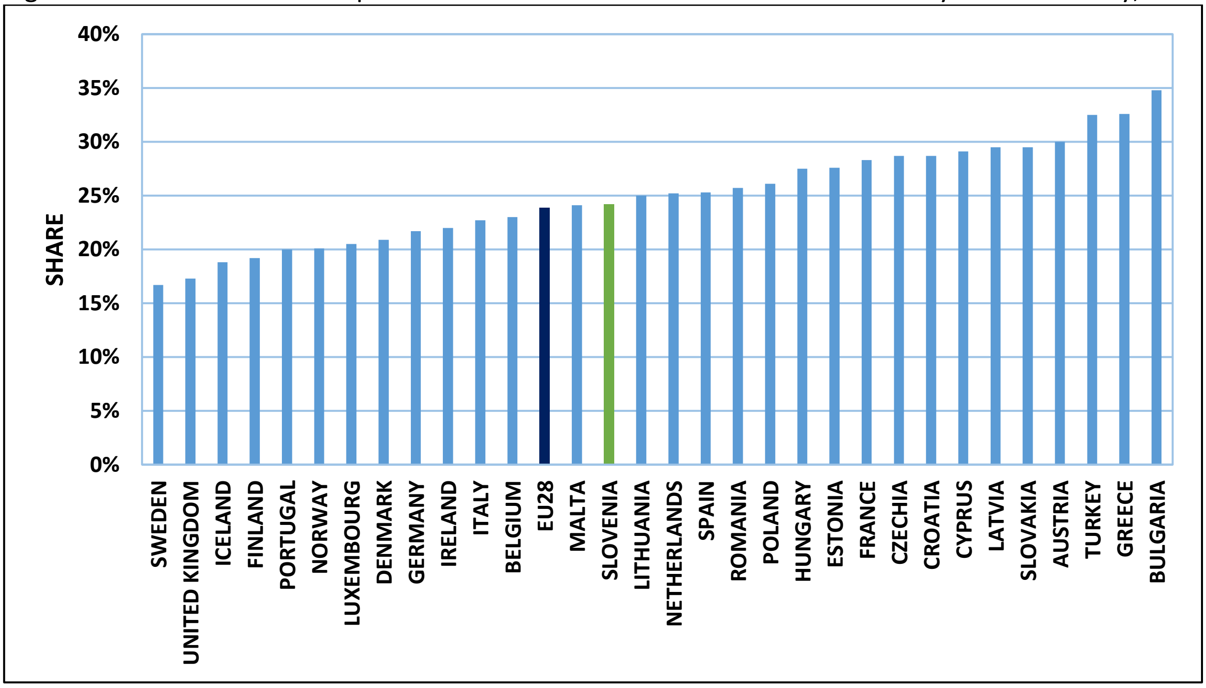
The share of adults who smoke daily or occasionally has not statistically significant decreased in 2014 when compared to data from 2007 (**Figure 165**). Males have higher shares of smokers when compared to females in both renditions of the nationally representative survey. International comparison shows Slovenia is almost in the same range as the EU–28 average (**Figure 166**).

Figure 165: Share of adults who smoke tobacco daily or occasionally by gender in Slovenia, 2007 and 2014.




Source: EHIS

Figure 166: International comparison of share of adult who smoke tobacco daily or occasionally, 2014.




Source: EHIS

## INDICATOR 18B: SHARE OF SMOKERS AMONG CHILDREN AND ADOLESCENTS

**Definition**

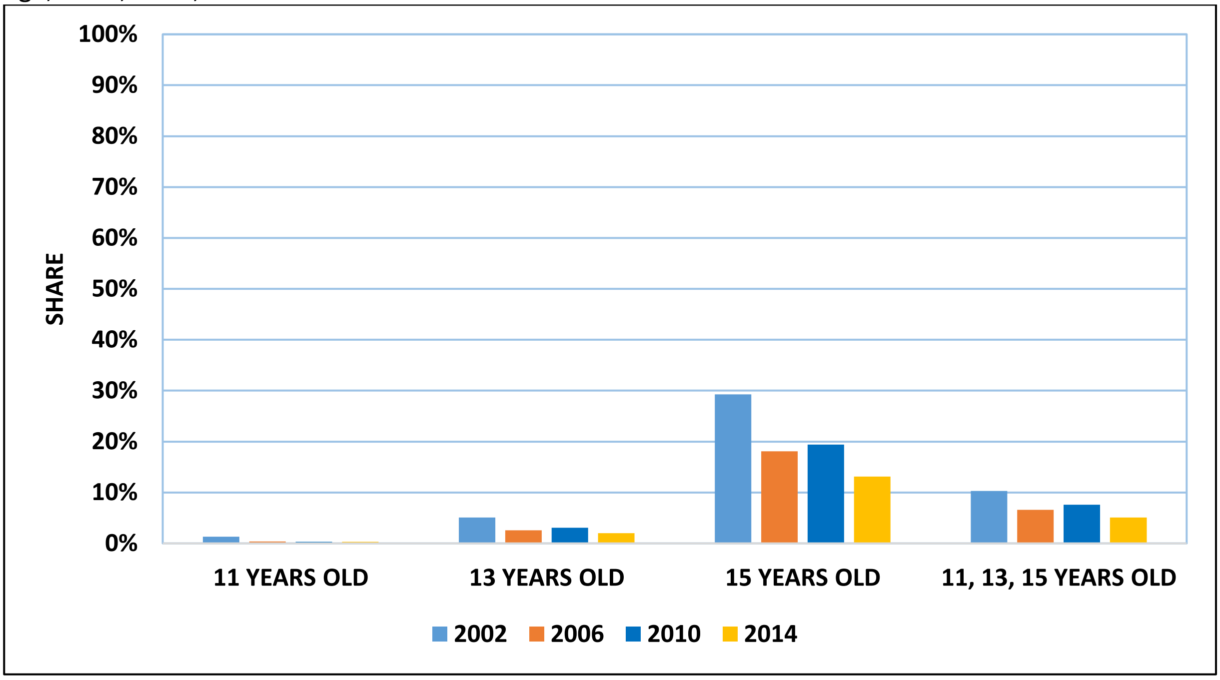
Tobacco use is the leading cause of preventable death worldwide. Smoking behaviour in children and adolescents is an important indicator of smoking behaviour in adulthood. The majority of adult smokers started smoking in their childhood. Adolescents are more susceptible to nicotine addiction than adults and require fewer cigarettes smoked and shorter duration of smoking to become addicted.

The indicator on smoking in children and adolescents uses data from the Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on frequency of smoking tobacco products of 11-, 13-, and 15-year olds is used to calculate the share of children and adolescents who smoke tobacco products at least once per week.

**Analysis**

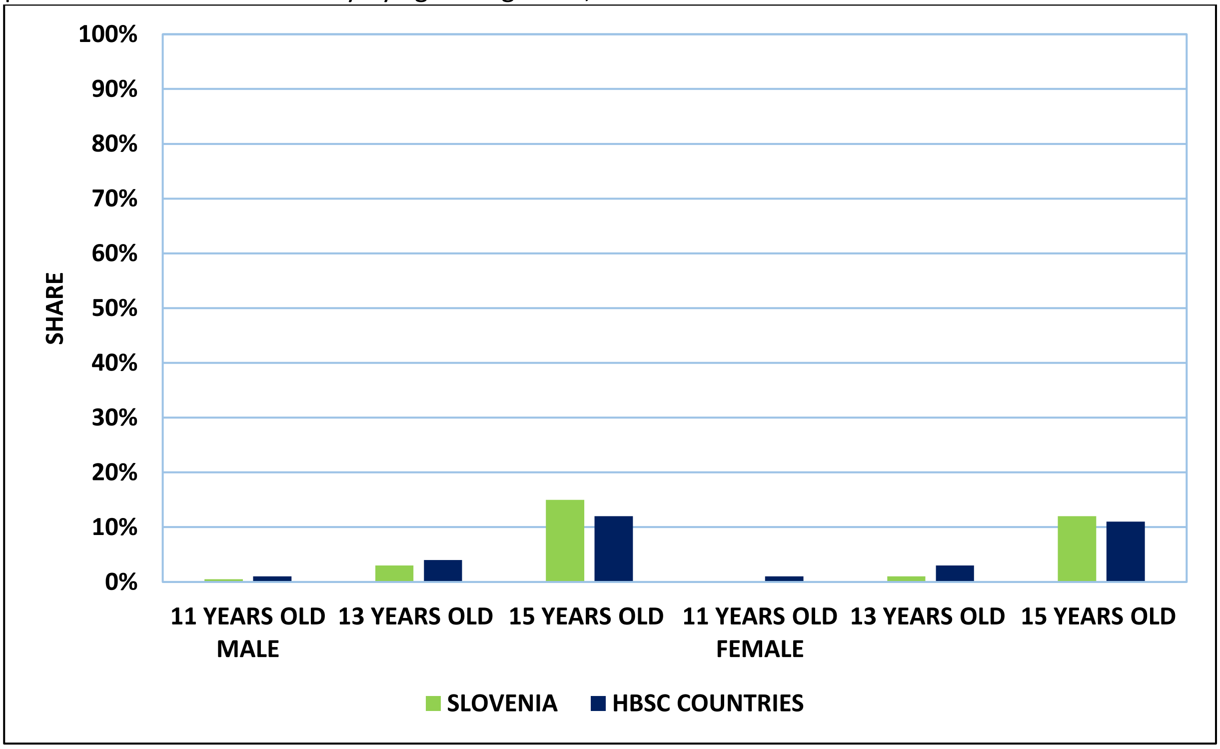
The share of children and adolescent who smoke at least once per week has decreased since 2002 in Slovenia (**Figure 167**). A statistically significant trend is observed in all age groups. However, in comparison to the average of HBSC countries, it seems that more Slovenian 15-year olds smoke tobacco products at least once weekly, but the difference does not seem statistically significant (**Figure 168**). On the other hand, it seems that the shares of Slovenian 11- and 13-year olds who smoke tobacco products at least once weekly are lower than the average of HBSC countries, but again the differences do not seem statistically significant.

Figure 167: Share of children and adolescents that smoke tobacco products at least once weekly by age, 2002, 2006, 2010 and 2014 in Slovenia.




Source: HBSC

Figure 168: International comparison in shares of children and adolescents who smoke tobacco products at least once weekly by age and gender, 2014.




Source: HBSC

## INDICATOR 22: SHARE OF OVERWEIGHT AND OBESE ADULTS

### Definition

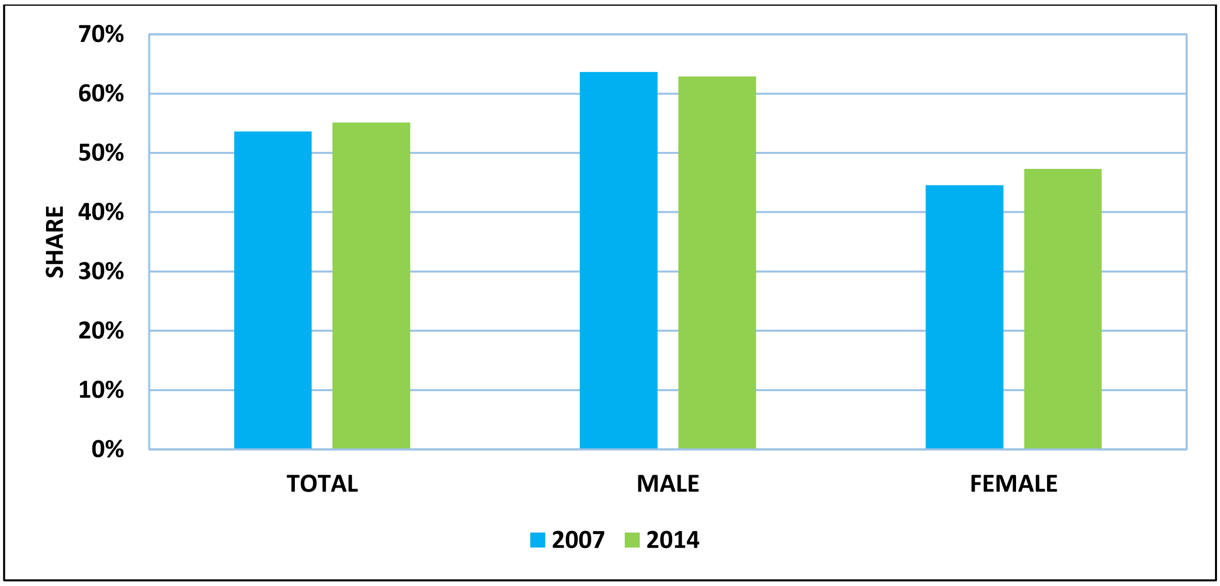
The number of overweight and obese adults in Slovenia has increased substantially over the past few decades. Overweight and obesity cause complications such as metabolic syndrome (high blood pressure, high blood sugar, and abnormal cholesterol or triglyceride levels), type 2 diabetes mellitus, cardiovascular diseases, musculoskeletal disorders and cancers.

The indicator on overweight and obesity in adults uses data from the European Health Interview Survey (EHIS). Self-reported data on body weight and height is used to calculate the share of people aged 15 years or more with BMI exceeding 25.

### Analysis

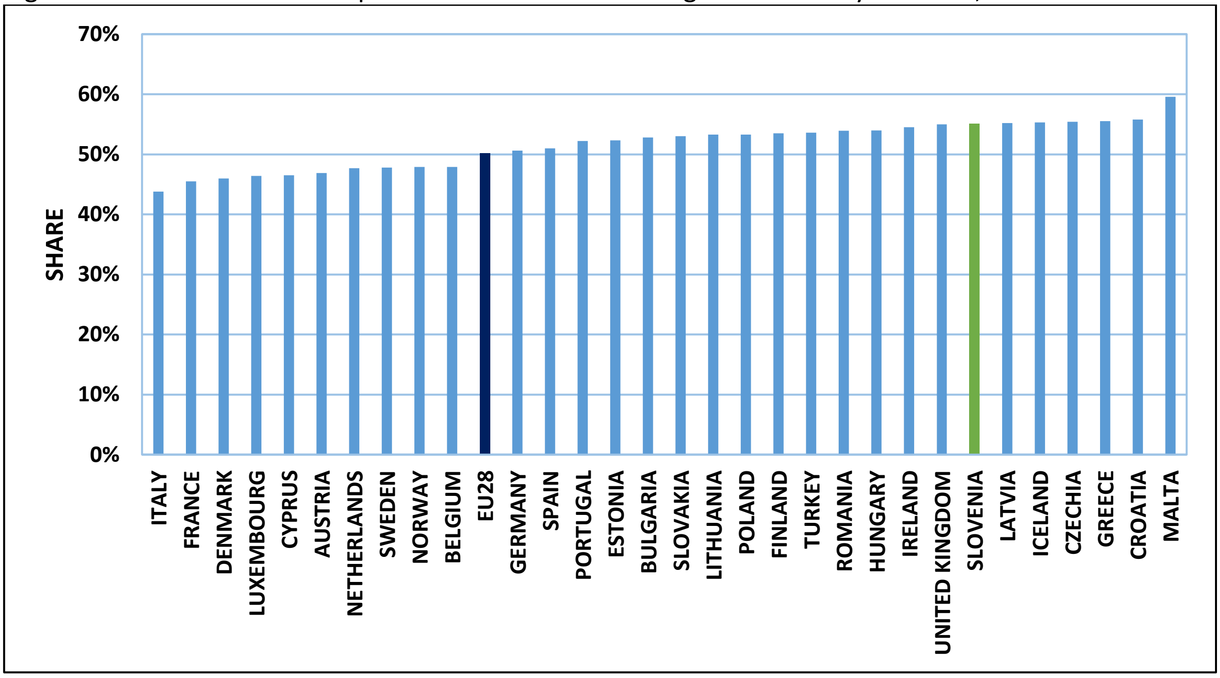
Share of overweight and obesity in adults has risen slightly in 2014 when compared to 2007 data (**Figure 169**). The increase of overweight and obese people aged 15 years or more is observed particularly among women. Overweight and obesity in Slovenia is more prevalent than in most of European countries (**Figure 170**). Compared to EU–28 average, we have 5 % more overweight and obese adults in Slovenia.

Figure 169: Share of people aged 15 years or more that are overweight or obese by gender, 2007 and 2014.




Source: EHIS

Figure 170: International comparison of share of overweight and obesity in adults, 2014.




Source: EHIS

## INDICATOR 23: SHARE OF OVERWEIGHT AND OBESE CHILDREN AND ADOLESCENTS

**Definition**

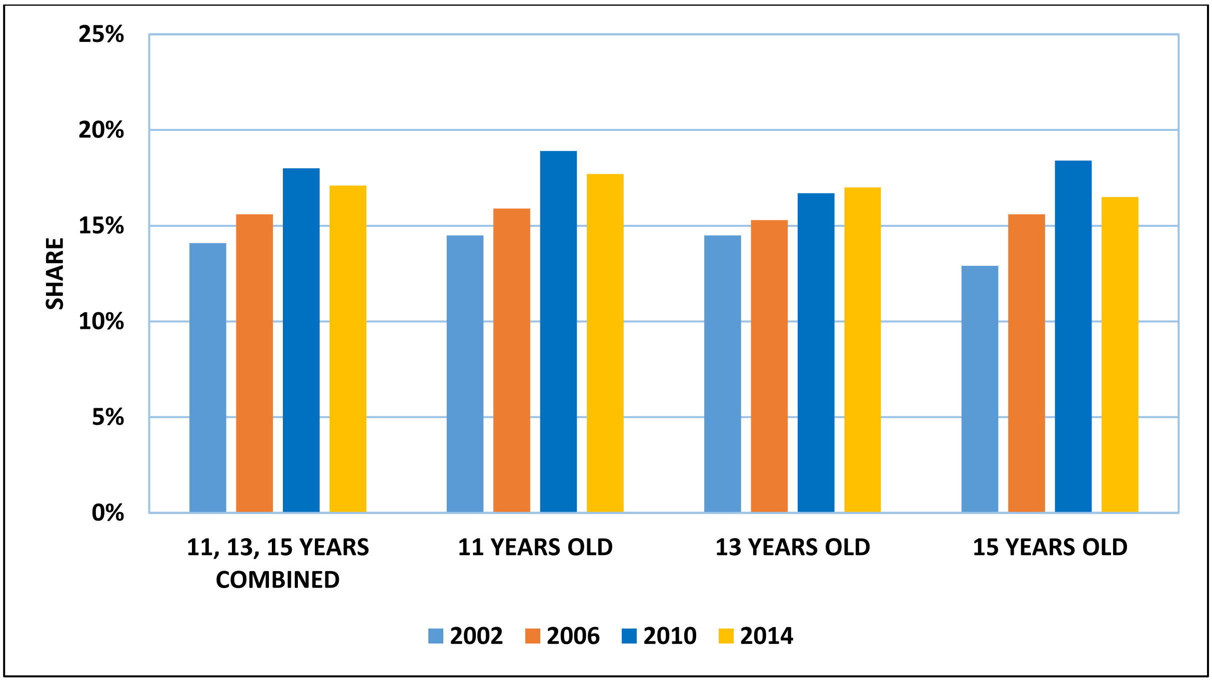
The prevalence of overweight and obesity in children and adolescents has increased substantially in the last few decades. Childhood obesity is related to health conditions such as high blood pressure, high cholesterol, and impaired glucose tolerance, which lead to preventable chronic diseases that significantly burden our society. Children and adolescents who are overweight or obese may also face joint and muscular discomfort, psychological and social problems, such as low self-esteem and bullying. Overweight and obese children and adolescents are more likely to be overweight and obese in adulthood, which is in turn associated with higher severity of risk factors of major chronic non-communicable diseases.

The indicator on overweight and obesity in children and adolescents uses data from Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on height and weight of 11-, 13-, and 15-year olds is used to calculate the share of children and adolescents whose body mass index exceeds 25.

**Analysis**

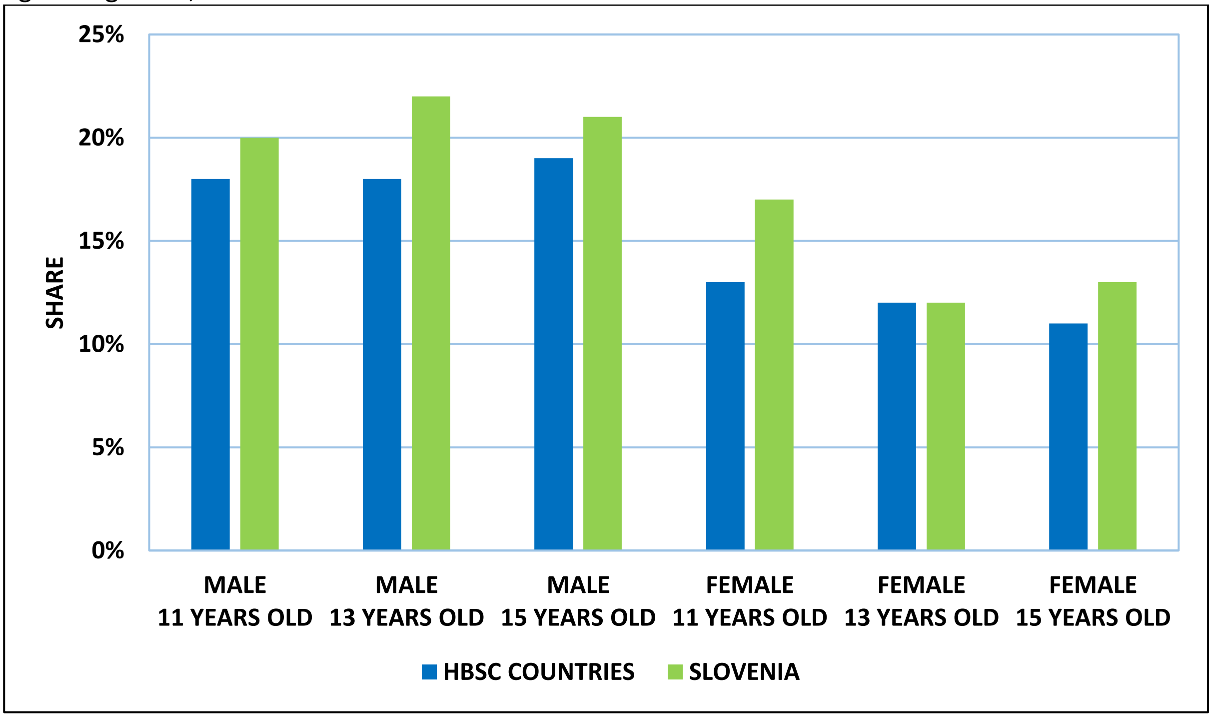
The share of overweight and obese children and adolescents in Slovenia has risen consistently from 2002 to 2010 for all age groups and both genders (**Figure 171**). The observed trend is statistically significant for all ages combined as well as for individual age groups. A slight decrease in share of overweight and obese children and adolescents is observable in 2014 in 11- and 15-year olds. More children and adolescents are overweight and obese in Slovenia in comparison to average shares of overweight and obesity in HBSC countries (**Figure 172**).

Figure 171: Share of overweight and obese children and adolescents in Slovenia by age, 2002, 2006, 2010 and 2014.




Source: HBSC

Figure 172: International comparison of shares of overweight and obese children and adolescents by age and gender, 2014.




Source: HBSC

## INDICATOR 238: SHARE OF HEAVY EPISODIC DRINKERS

**Definition**

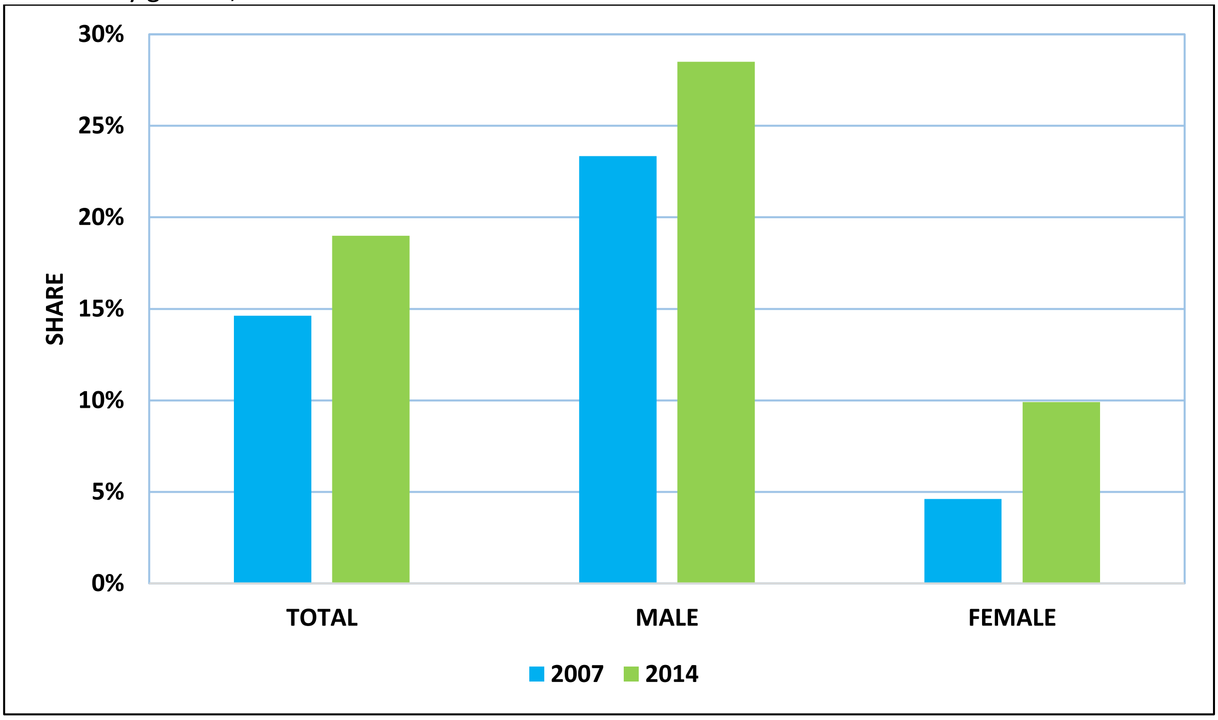
Heavy episodic drinking (HED) is defined as drinking at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days. Those who drink heavily on a given occasion are more likely to experience adverse outcomes, such as injuries, drunk driving, and alcohol dependence, than those who do not. Harmful alcohol use is associated with more than 200 diseases and injuries, and contributes to an important share of overall burden of disease.

The indicator on heavy episodic drinking uses data from the European Health Interview Survey (EHIS). Self-reported data on frequency of ingesting more than 60 g of pure ethanol on a single occasion is used to calculate the share of people aged 15 years or more who had an episode of heavy drinking at least once a month.

**Analysis**

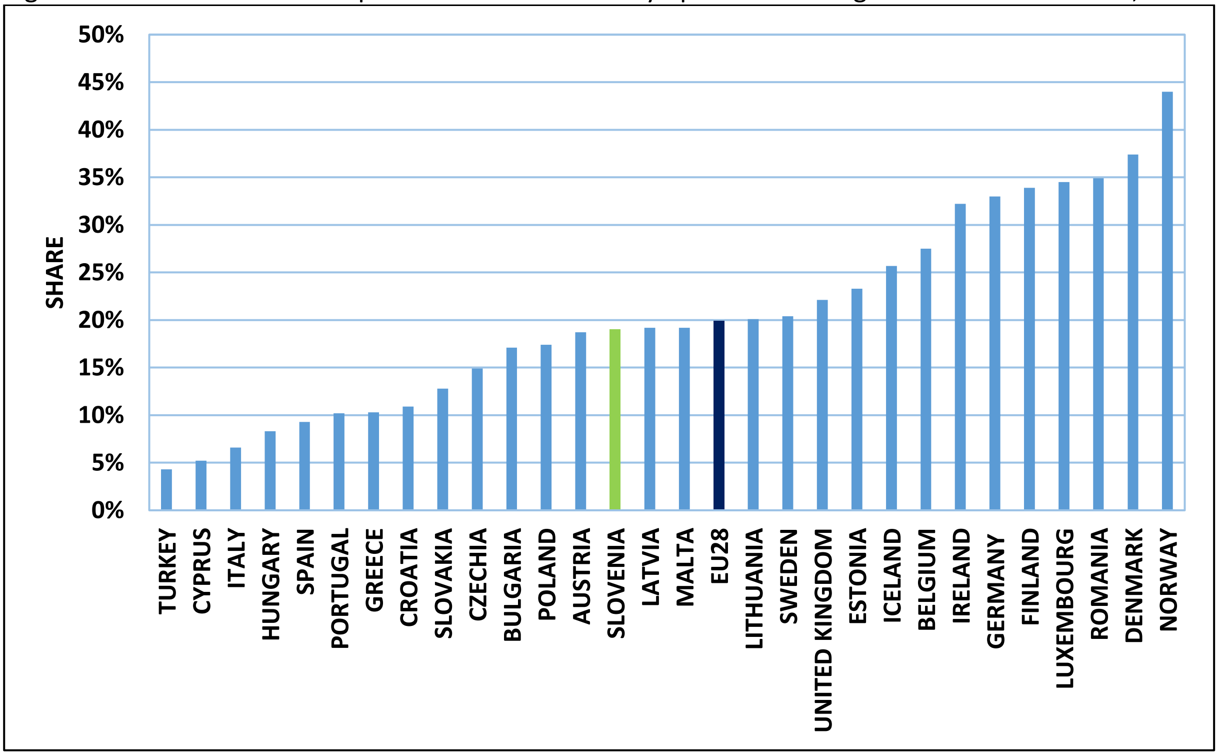
In Slovenia, share of people aged 15 years or more who had an episode of heavy drinking at least once a month in 2014 has grown substantially compared to data from 2007 (**Figure 173**). Heavy episodic drinking is almost three times as common in males compared to females. Slovenia scores slightly below EU–28 average when compared internationally (**Figure 174**).

Figure 173: Share of people aged 15 years or more that had an episode of heavy drinking at least once a month by gender, 2007 and 2014.




Source: EHIS

Figure 174: International comparison of share of heavy episodic drinking at least once a month, 2014.




Source: EHIS

## INDICATOR 239: SHARE OF ALCOHOL CONSUMPTION IN CHILDREN AND ADOLESCENTS

**Definition**

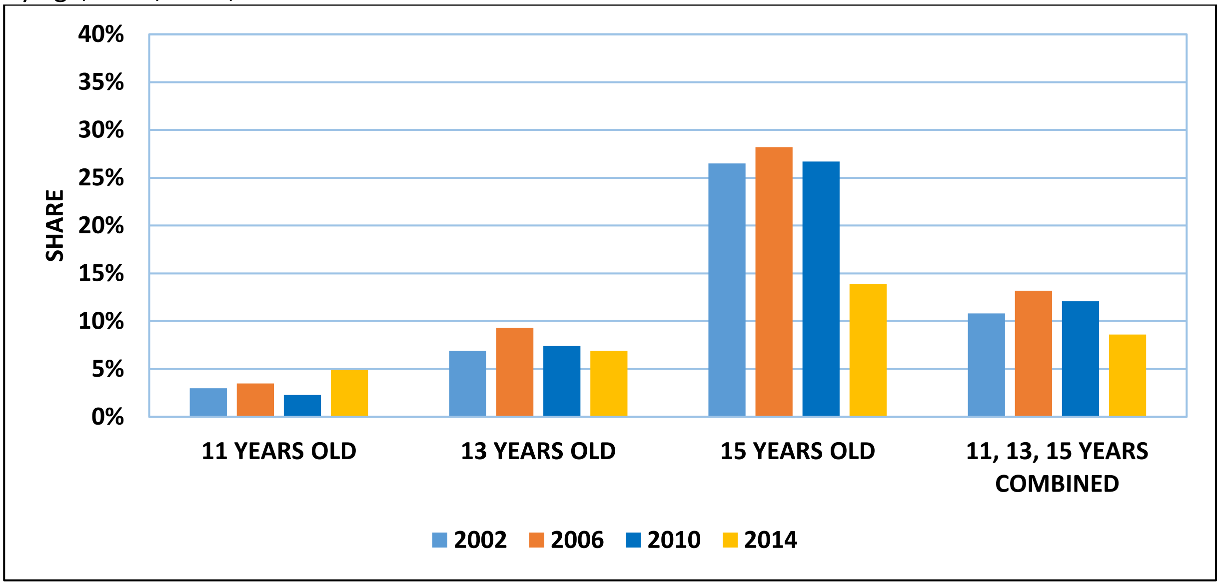
Although there is no safe level of alcohol use for children and adolescents, many still consume it on weekly basis. Adolescence is an especially important time for brain development and neurotoxins such as alcohol can leave long-lasting deleterious consequences on brain functioning. Children who start consuming alcohol at an early age have higher rates of sexual risk-taking, academic problems, other substance use and delinquent behaviour. Alcohol use in childhood is also associated with alcohol-related problems in adulthood.

The indicator on alcohol consumption in children and adolescents uses data from the Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on frequency of consuming alcohol of 11-, 13- and 15-year olds is used to calculate the share of children and adolescents who consume alcoholic beverages at least once weekly.

**Analysis**

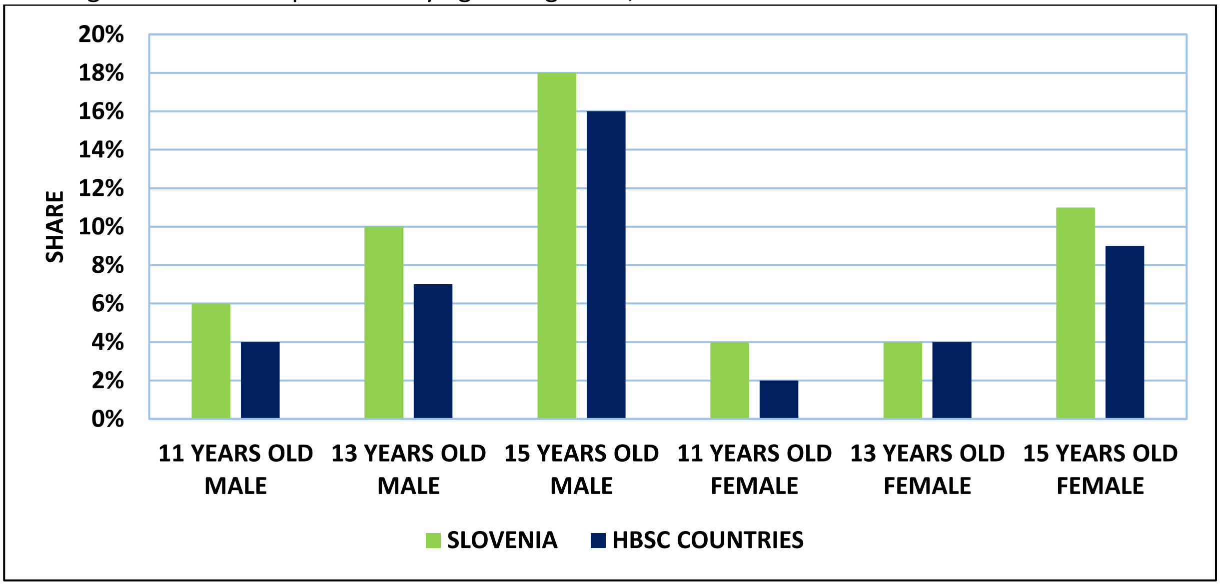
A downward trend in share of 11-, 13-, and 15-year old children and adolescents that drink alcoholic beverages at least once weekly is evident (**Figure 175**). The trend is statistically significant in 11-, 13-, and 15-year olds combined and in 15-year old age group. A considerable decrease in share of 15-year olds that consume alcohol at least once weekly is observable from 2010 (27 %) to 2014 (14 %). In comparison to international averages of HBSC countries, more Slovenian children and adolescents consume alcoholic beverages at least once per week in all age groups and both genders, except for 13-year old girls where shares of weekly consumers of alcohol are comparable to HBSC average (**Figure 176**).

Figure 175: Share of children and adolescents that consume alcoholic beverages at least once per week by age, 2002, 2006, 2010 and 2014.




Source: HBSC

Figure 176: International comparison of shares of children and adolescents that consume alcoholic beverages at least once per week by age and gender, 2014.




Source: HBSC

## INDICATOR 1957: CANNABIS CONSUMPTION IN YOUNG ADULTS

### Definition

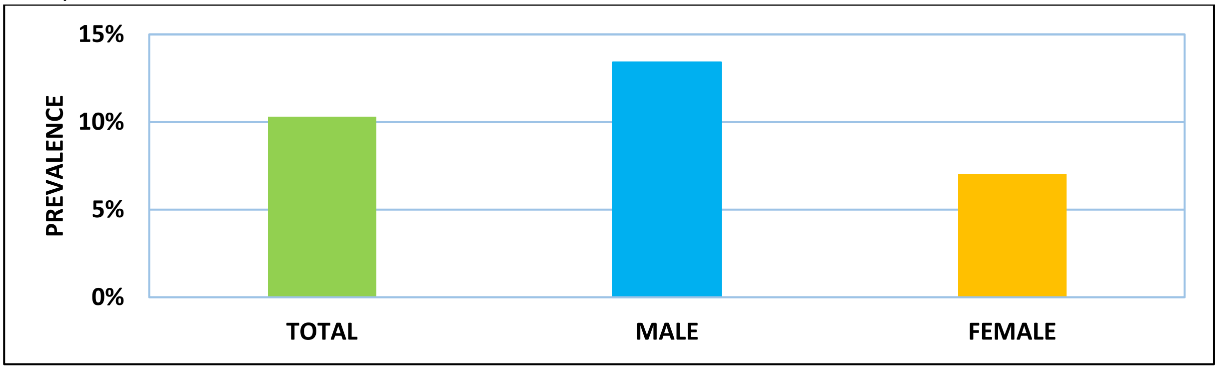
After alcohol, cannabis is the most widely consumed drug amongst the Slovenian population. Consumption of cannabis is associated with short and long-term health hazards. Short-term effects of cannabis use include slower reaction times, lower ability to pay attention, worsening of coordination, reduced decision-making ability, and various changes in mood, feelings, and mental health, including psychotic episodes. Cannabis use in younger ages increases the risk of developing addictions and leaves long-term effects that can include reductions in thinking, memory, and learning functions.

The indicator on cannabis consumption in young adults uses data from survey on the use of illicit drugs, tobacco and alcohol in Slovenia (ATADD). Self-reported data on cannabis use of young adults aged 15 to 34 years old is used to calculate the prevalence of last year cannabis use.

### Analysis

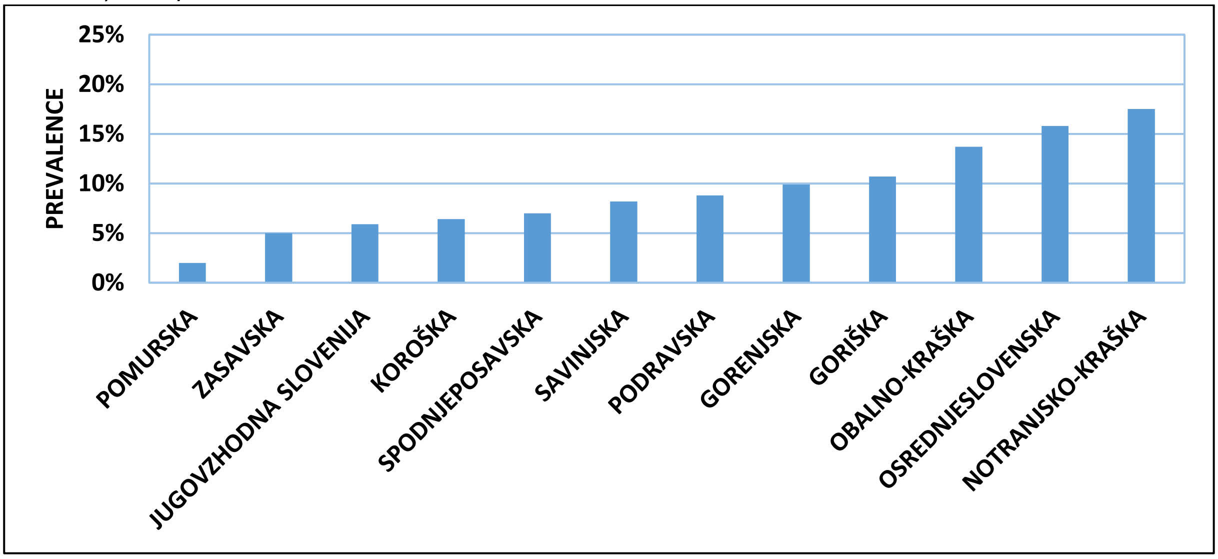
Approximately 10 % of young adults in Slovenia consume cannabis at least once a year (**Figure 177**). A significant country level variation in prevalence of last year cannabis use is observed. Prevalence of last year cannabis use is almost nine times lower in regions with least cannabis users in comparison to the region with most cannabis users (**Figure 178**). International comparison of last year prevalence of cannabis shows that prevalence in Slovenia is somewhere nears the group average (**Figure 179**). Prevalence estimates range from 0.4 % in Turkey to 21.5 % in France. It is to be noted that estimates are derived from surveys conducted at different times.

Figure 177: Last year prevalence of cannabis use among 15–34 year olds in Slovenia by gender, 2011/2012.



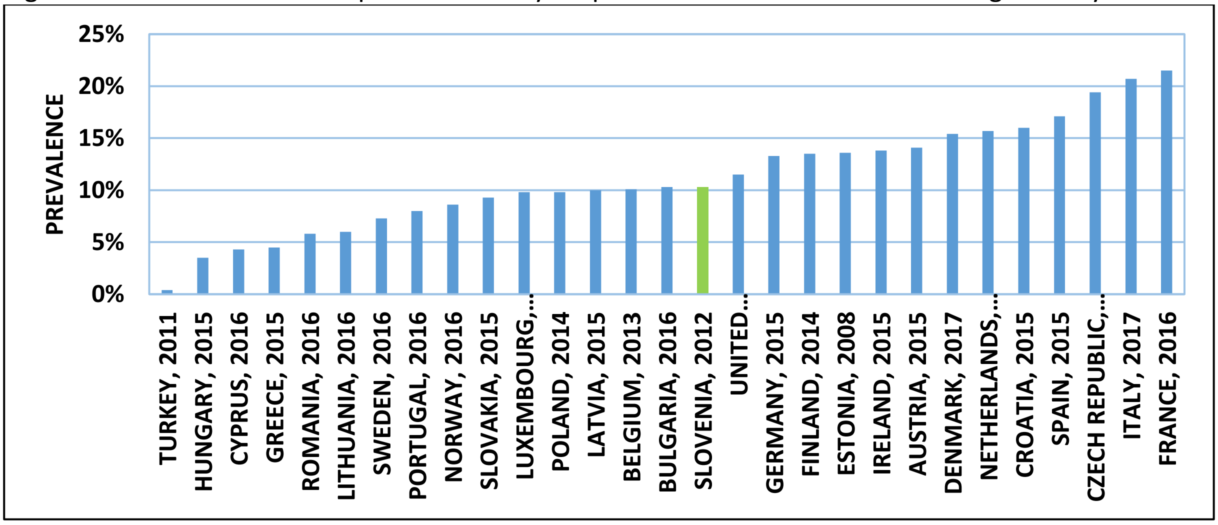

Source: ATADD

Figure 178: Last year prevalence of cannabis use among 15–34 year olds by statistical regions in Slovenia, 2011/2012.




Source: ATADD

Figure 179: International comparison of last year prevalence of cannabis use among 15–34 year olds.




Source: EMCDDA

## DOMAIN 98: HEALTH PROMOTION AND DISEASE PREVENTION

**Definition**

Disease prevention are population and individual based interventions for primary and secondary (early detection) prevention, aiming to minimize the burden of disease and associated risk factors. Primary prevention refers to actions aimed at avoiding the manifestation of a disease and secondary prevention deals with early detection when this improves the chances for positive health outcomes.

Health promotion is the process of empowering people to increase control over their health and its determinants through health literacy efforts and multi-sectoral action to increase healthy behaviours.

Disease prevention and health promotion share many goals, and there is considerable overlap between functions.

Results are shown in **Table 19** and **Figure 180**.

## MAIN RESULTS

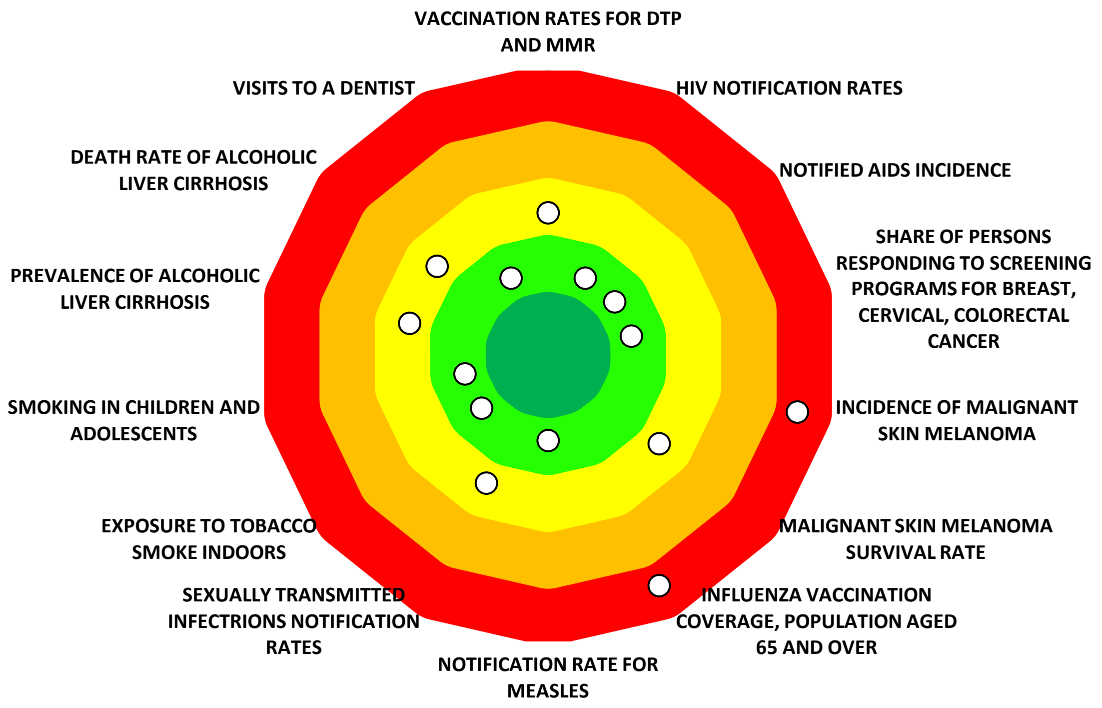
Table 19: Health promotion and disease prevention main results.

| INDICATOR NUMBER | INDICATOR | WEIGHT | SCORE TREND OVER TIME | SCORE INTERNATIONAL COMPARISON | ASSESSMENT SCORE |
|---|---|---|---|---|---|
| 184 | VACCINATION RATES FOR DIPHTHERIA, TETANUS AND PERTUSSIS (DTP) AND MEASLES, MUMPS AND RUBELLA (MMR) | 3 | STABLE | SAME | SATISFACTORY |
| 185A | HIV NOTIFICATION RATES | 2 | STABLE | BETTER | GOOD |
| 185B | NOTIFIED AIDS INCIDENCE | 2 | STABLE | BETTER | GOOD |
| 188 | SHARE OF PERSONS RESPONDING TO SCREENING PROGRAMS FOR BREAST, CERVICAL, COLORECTAL CANCER | 2 | STABLE | BETTER | GOOD |
| 1476A | INCIDENCE OF MALIGNANT SKIN MELANOMA | 2 | DETERIORATING | WORSE | VERY POOR |
| 1476B | MALIGNANT SKIN MELANOMA SURVIVAL RATE | 2 | IMPROVING | WORSE | SATISFACTORY |
| 1783 | INFLUENZA VACCINATION COVERAGE, POPULATION AGED 65 AND OVER | 2 | DETERIORATING | WORSE | VERY POOR |
| 1915 | NOTIFICATION RATE FOR MEASLES | 2 | STABLE | BETTER | GOOD |
| 1920 | SEXUALLY TRANSMITTED INFECTIONS NOTIFICATION RATES | 2 | DETERIORATING | BETTER | SATISFACTORY |
| 2102 | NUMBER OF PARTICIPANTS TO PREVENTION PROGRAMMES OF HEALTH PROMOTION CENTRES | | | | |
| 2103 | EXPOSURE TO TOBACCO SMOKE INDOORS | 2 | STABLE | BETTER | GOOD |
| 2104 | SMOKING IN CHILDREN AND ADOLESCENTS | 2 | IMPROVING | SAME | GOOD |
| 2107 | THE NUMBER OF PARTICIPANTS IN COUNSELLING (BRIEF INTERVENTIONS CARRIED OUT) | | | | |
| 2108 | PREVENTION PROGRAMS AMONG CHILDREN AND YOUTH | | STABLE | | |
| 2109 | SICK LEAVE DUE TO ALCOHOL | | STABLE | | |
| 2110A | PREVALENCE OF ALCOHOLIC LIVER CIRRHOSIS | 1 | IMPROVING | WORSE | SATISFACTORY |
| 2110B | DEATH RATE OF ALCOHOLIC LIVER CIRRHOSIS | 1 | IMPROVING | WORSE | SATISFACTORY |
| 2111 | INDICATOR ON FRAILTY | | | | |
| 2113 | VISITS TO A DENTIST | 2 | IMPROVING | SAME | GOOD |
| 2114 | BRUSHING TEETH | 2 | IMPROVING | | |

### Overall Assessment and Main Conclusions

| | | |
|---|---|---|
| **HEALTH PROMOTION AND DISEASE PREVENTION** | **Satisfactory** | **2.18** |

Figure 180: Dartboard presentation of assessment score of domain Health promotion and disease prevention



This domain is represented by the greatest number of indicators. Some of the indicators were not evaluated because of lack of data. Overall, Slovenia is doing well comparable to other European countries.

Indices on communicable disease prevention in Slovenia are comparable to other European countries. However, we are doing better in the case of the number of new HIV diagnosis and AIDS cases and other sexually transmitted diseases. On other hand,Sloveniaregistered one of the lowest influence coverage rates for people aged over 65.

Besides doing well with some communicable diseases, we had a better share of persons responding to screening programs.

The incidence rate of skin melanoma in Slovenia is not just increasing but it is also higher in comparison to other European countries, even though survival rate is improving. . However, it must be emphasized that data for skin melanoma incidence and survival rate was taken only from accessible sources.

Exposure to tobacco smoke indoors has significantly decreased after the law on restricting the use of tobacco and related products was passed. Excessive use of alcoholic beverages is still a significant problem in Slovenia. Besides, Slovenia is worse than other European countries in the prevalence and death rate of alcoholic liver cirrhosis.

We are visiting dentists more frequently than in the past and this is comparable to the other European countries.

## INDICATOR 184: VACCINATION RATES FOR DIPHTERIA, TETANUS AND PERTUSSIS (DTP) AND MEASLES, MUMPS AND RUBELLA (MMR)

**Definition**

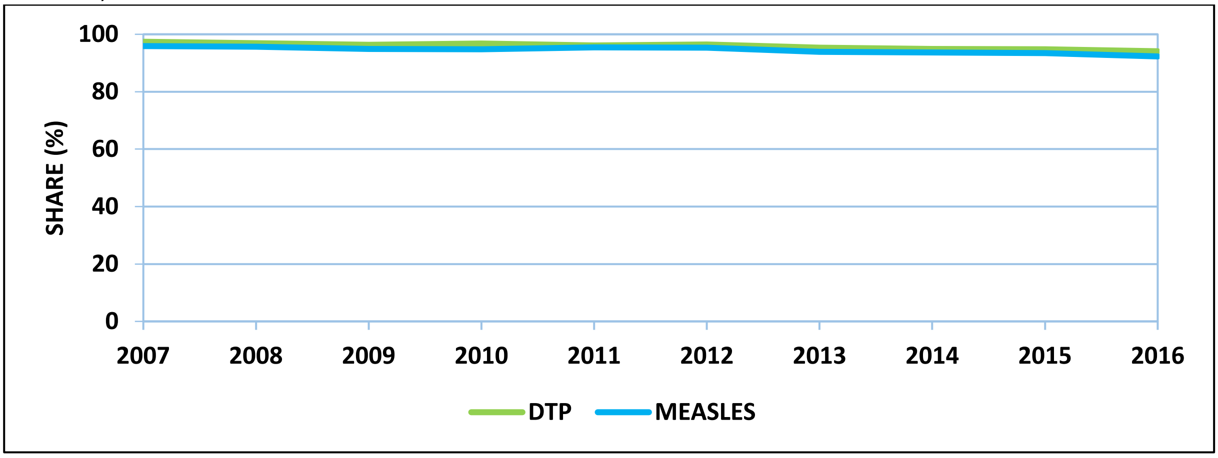
Very few public-health interventions have been as successful as immunizations in providing substantial and highly cost-effective improvements to human health, particularly to that of children. Vaccination is one of the most available cost-effective health interventions. Effective and safe vaccines, which protect against a number of serious diseases, are available and many promising new vaccines are being developed. Effective vaccination is available to prevent a number of infectious diseases, such as measles, diphtheria, pertussis, influenza, poliomyelitis and Haemophilus influenza type B infections. All EU countries have established childhood vaccination programs, contributing to reducing many deaths related to these diseases, although the number and type of vaccines vary to some extent across countries.

The national immunization program in Slovenia includes vaccinations against 9 infectious diseases that are compulsory for children and adolescents, and it is set up in accordance with the Communicable diseases Act (38). Vaccination against diphtheria, tetanus, pertussis (including also infections with Haemophillus influenzae type B and poliomyelitis) is compulsory for children 0–2 years of age (three doses are administered from 3 to 12 months of age and then the fourth dose in the second year of life) and vaccination with first dose against measles, mumps and rubella (MMR vaccine) is compulsory between 12 and 18 months of age. The proportion of vaccinated children (vaccination coverage) presents the number of children that were actually vaccinated in relation to all children who are obliged to receive vaccination. In recent years, the global anti-vaccine movement has not bypassed Slovenia either and as a result, the share of children who were immunized with DTP and MMR vaccine has steadily dropped.

**Analysis**

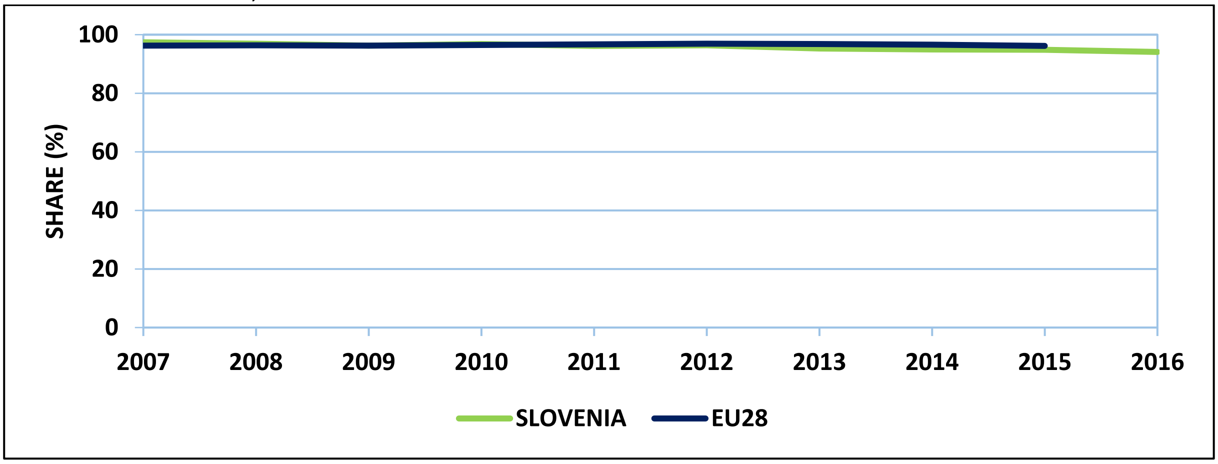
The results show that the proportion of children vaccinated with DTP vaccine (with three doses in first year of life) has dropped from 97.4% in 2007 to 94.1% in 2016 (**Figure 181**). In the same period, the proportion of children vaccinated against measles with first dose has dropped from 95.9% to 92.3% (**Figure 182**). As a result, when compared to EU–28 average, Slovenia has recently dropped below the average for both DTP and measles vaccination coverage (**Figure 182** and **Figure 183**).

Figure 181: Proportion of children vaccinated against diphtheria, tetanus and pertussis (DTP) and measles, Slovenia 2007–2016.



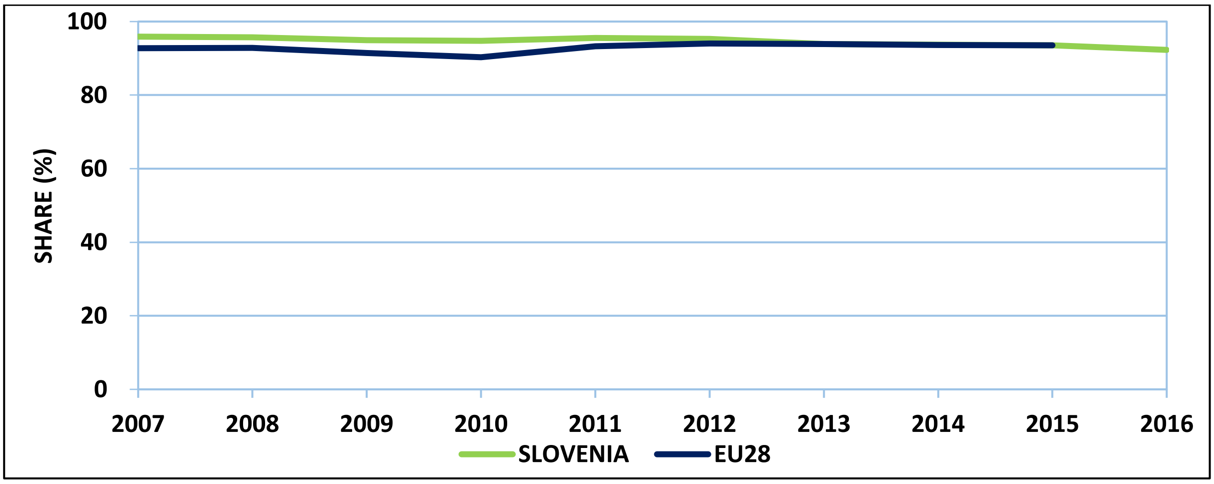

Source: NIPH

Figure 182: Proportion of children vaccinated against diphtheria, tetanus and pertussis (DTP), Slovenia and EU–28 countries, 2007–2016.




Source: NIPH, WHO

Figure 183: Proportion of children vaccinated against measles, Slovenia and EU–28 countries, 2007–2016.




Source: NIPH, WHO

## INDICATOR 185: HIV AND AIDS NOTIFICATION RATES

**Definition**

HIV infection remains a major public health concern in the EU region. How common is HIV infection is often expressed in new HIV diagnoses notification rates. Previously increasing trend in HIV notification rates in EU–28 has changed in 2016. Due to inadequate access to voluntary HIV testing and counselling in many countries – especially among key populations at higher risk of HIV infection – many people living with HIV in the region remain undiagnosed. Thus, HIV notification rates should be interpreted with caution. AIDS notification rates are more accurate.

HIV notification rates are defined as the number of reported new HIV diagnosed cases per 100 000 population in one calendar year.

AIDS notification rates are defined as the number of reported new AIDS diagnosed cases per 100 000 population in one calendar year.

**Analysis**

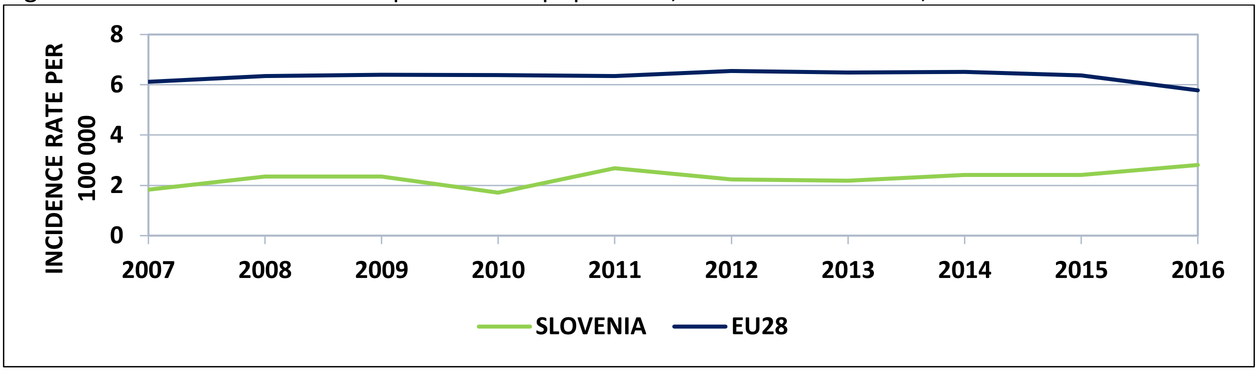
### INDICATOR 185A: HIV NOTIFICATION RATE

During the period of last ten years, the annual HIV notification rate in Slovenia varied between the lowest 1.7/100 000 in 2010 to the highest 2.7/100 000 population in 2016. The highest ever notification rate in 2016 could be a reflection of increased number of new infections or increased testing. However, in comparison to EU–28 countries, the HIV notification rates in Slovenia are relatively low (**Figure 184**), lower than the EU–28 average and among the lowest in the region (**Figure 185**).

### INDICATOR 185B: NOTIFIED AIDS INCIDENCE

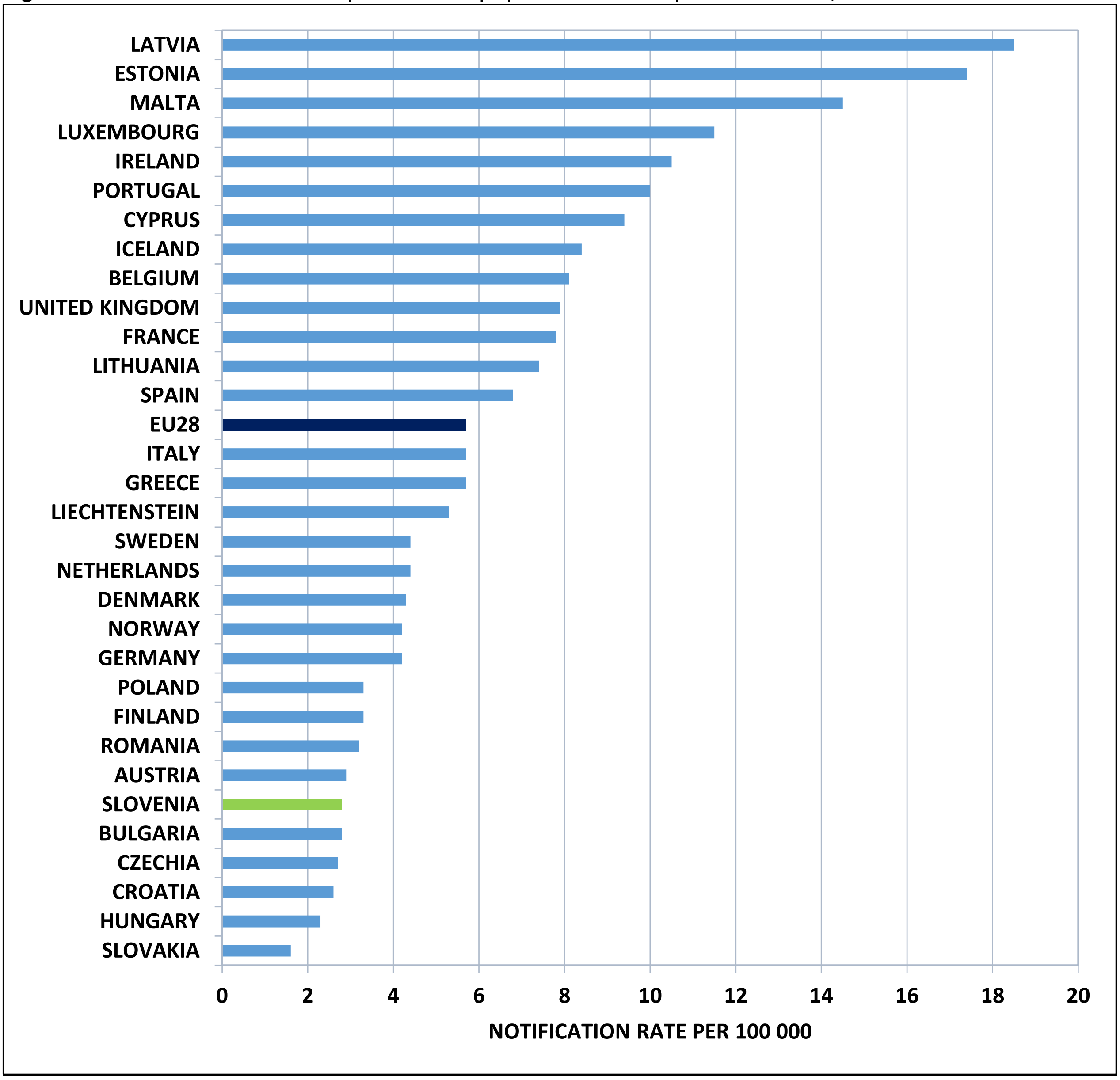
In 2016, the notified aids incidence rate has been 0.5/100 000 population, which is also lower than the EU–28 average (**Figure 186**). During the period of last ten years, the annual HIV notification rate varied between the lowest 0.3/100 000 population in 2010 to the highest 0.9/100 000 population in 2009 Relatively low aids morbidity in Slovenia can be attributed to excellent treatment coverage.

Figure 184: HIV notification rate per 100 000 population, Slovenia and EU–28, 2007–2016.



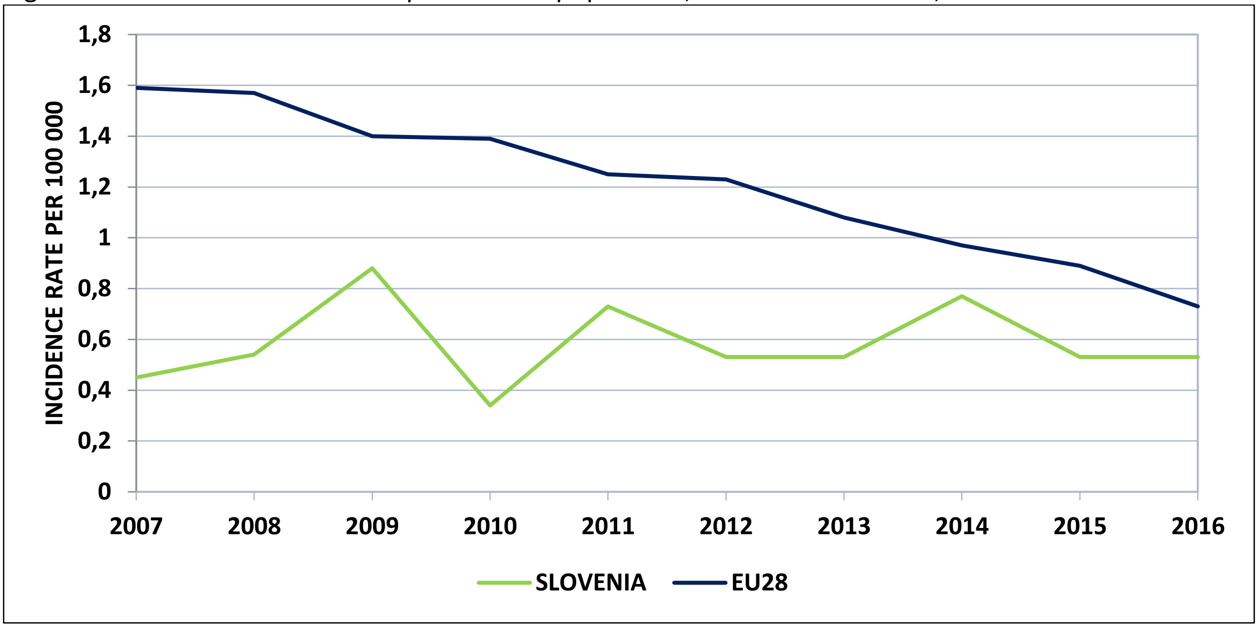

Source: WHO

Figure 185: HIV notification rate per 100 000 population in European countries, 2016.




Source: WHO

Figure 186: AIDS notification rate per 100 000 population, Slovenia and EU–28, 2007–2016.




Source: WHO

## INDICATOR 188: SHARE OF PERSONS RESPONDING TO SCREENING PROGRAMS FOR BREAST, CERVICAL AND COLORECTAL CANCER

## INDICATOR 188A: SHARE OF PERSONS RESPONDING TO SCREENING PROGRAM FOR CERVICAL CANCER

**Definition**

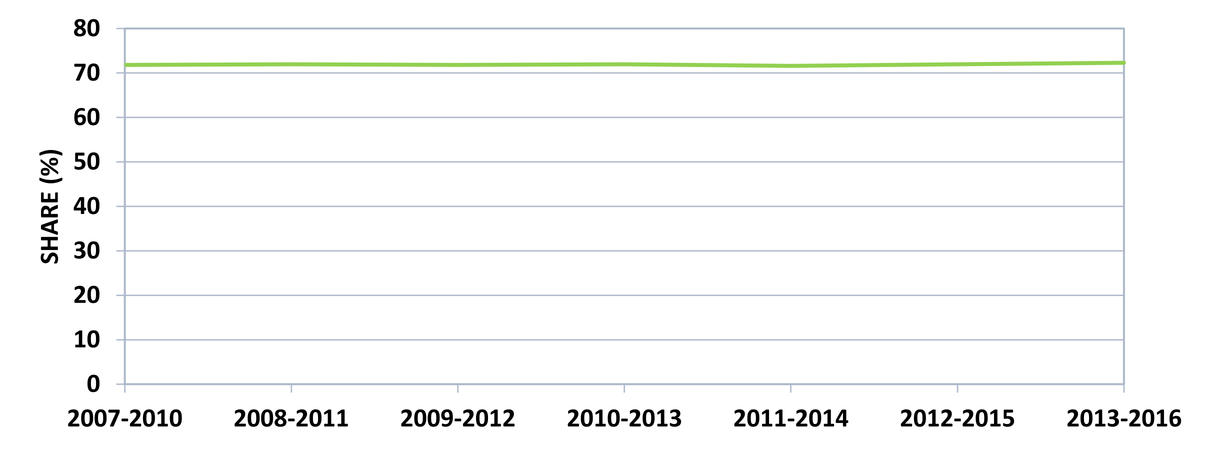
More than 100 000 females of European countries are diagnosed each year with cervical cancer. Cervical cancer is highly preventable if precancerous cells are detected and treated before progression occurs. The human papilloma virus (HPV) is found in over 90% of cervical cancers. It is expected that vaccination against the main types of HPV responsible for cervical cancer will reduce incidence. European countries follow various approaches to the prevention and early diagnosis of cervical cancer. According to the IARC report over half of the countries have implemented population-based cervical cancer screening programmes (39). WHO recommends HPV vaccination for girls aged 9–13 years (40). Most European countries now have national HPV vaccination programmes. Vaccination for boys is also considered effective when coverage for girls is low. On average, the proportion of females in EU countries aged 20-69 years who have been screened for cervical cancer within the past three years has increased from 54% to 60% over the past decade. However, the proportion has fallen in several countries. ZORA is Slovenian population based organised cervical cancer screening programme. Screening of healthy females enables timely detection of those who have pre-stage or initial stages of cervical cancer. It is an organized state screening program, which systematically invites all females between the ages of 20 and 64 who have not undergone a gynaecological examination in the past three years for a cervical smear.

The data was obtained from NIPH, EUROSTAT and OECD database.

**Analysis**

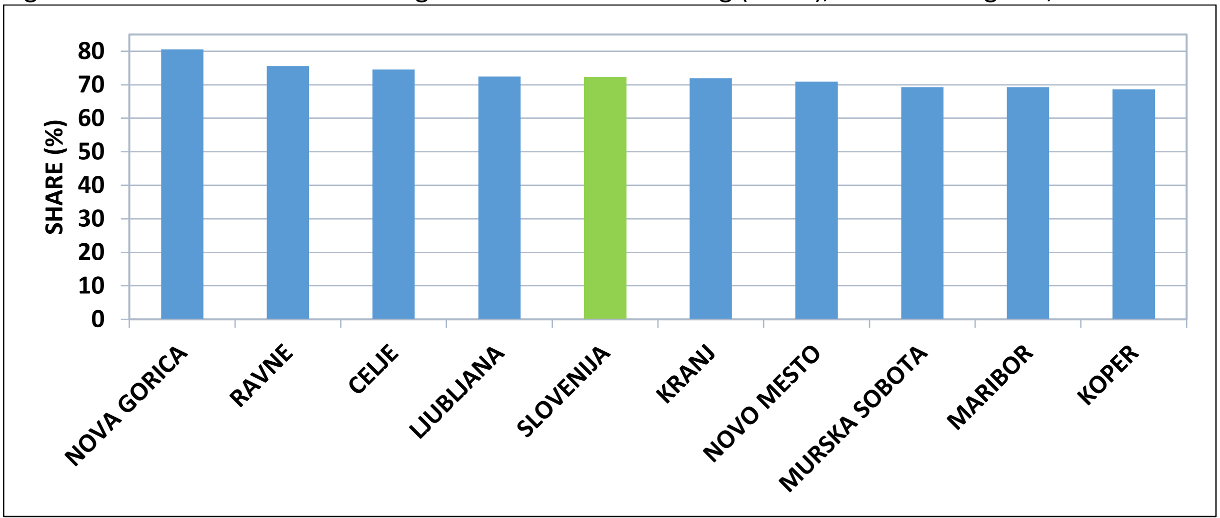
The results show that share of cervical cancer screening in Slovenia did not change from 2007 to 2016 (**Figure 187**). This may be due to the fact that females aged 50 years and more do not participate to screening regularly or no longer. Moreover, the burden of disease falls on these females. In 2016, there were some differences among Slovenian regions (**Figure 188**). The responsiveness of females to the program is closely linked to their awareness, sympathy for the program and the accessibility of services. Compared to European countries Slovenia had one of the highest share in Europe in 2016 (**Figure 189**).

Figure 187: Share of females having cervical cancer screening (ZORA) in Slovenia, 3 year periods.



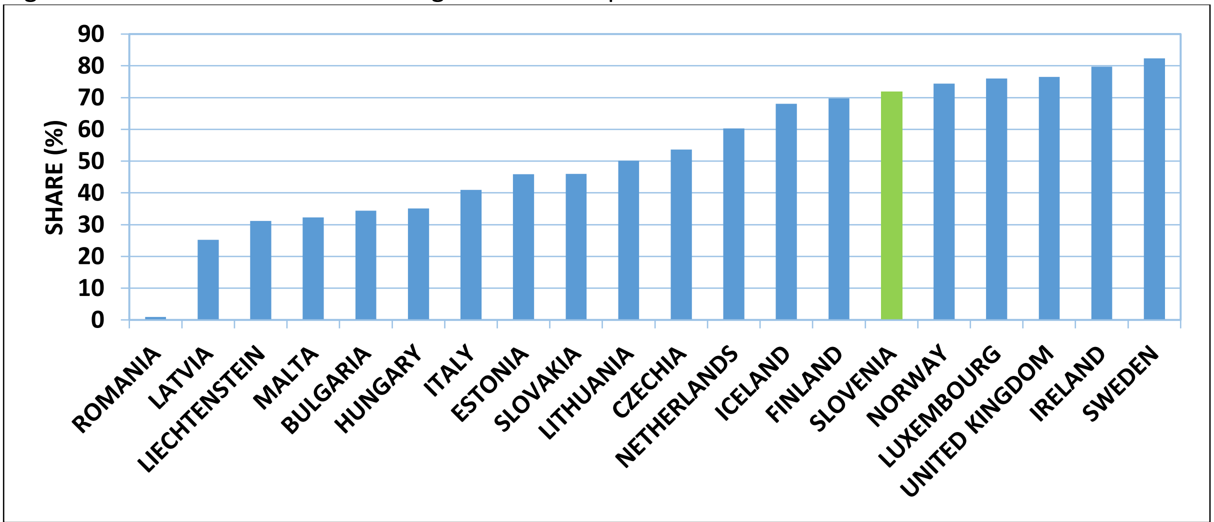

Source: Cervical cancer screening registry ZORA

Figure 188: Share of females having cervical cancer screening (ZORA), Slovenian regions, 2016.




Source: Cervical cancer screening registry ZORA

Figure 189: Cervical cancer screening in some European countries in 2016.




Source: OECD, EUROSTAT

## INDICATOR 188B: SHARE OF PERSONS RESPONDONG TO SCREENING PROGRAM FOR BREAST CANCER

**Definition**

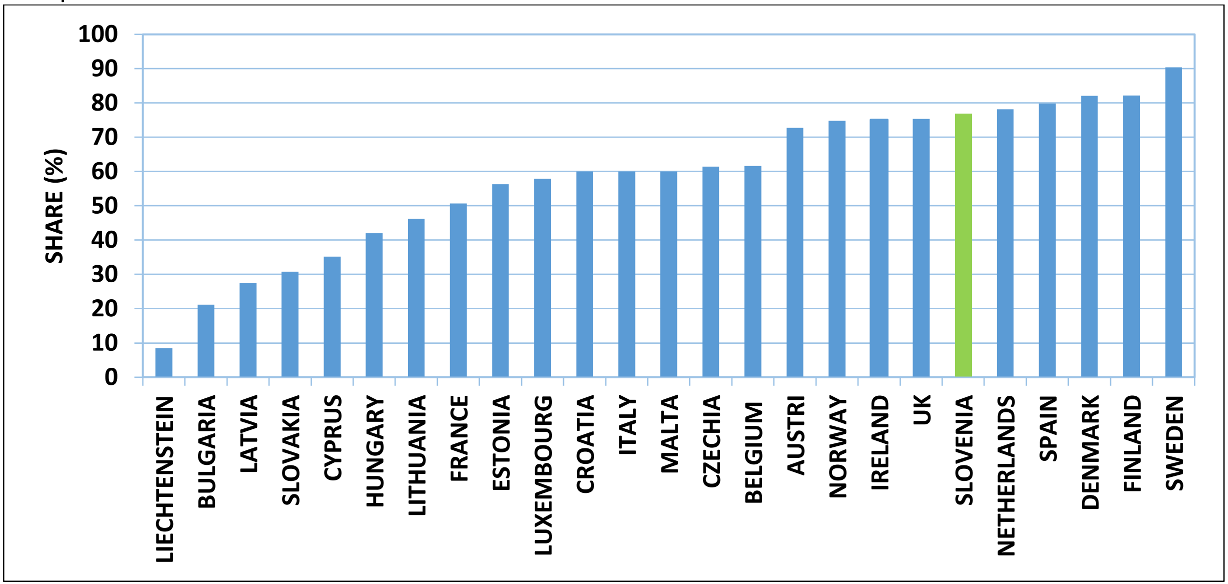
Breast cancer is the most frequent cancer among females across European countries, with more than 400 000 cases diagnosed each year across EU countries. Many European countries have breast cancer screening programmes for detecting the disease in early stage. However, due to progress in treatment outcomes and concerns about false-positive results, over-diagnosis and overtreatment, breast cancer screening recommendations have been re-evaluated in recent years. WHO recommends organised population-based mammography screening for females aged between 50 and 69. On average across European countries, the proportion of screened females increased from 54% to 58% between 2006 and 2016.

DORA is a Slovenian preventive program for the early detection of breast cancer for females aged 50 to 69 years. Target groups are invited to receive screening mammography every two years within the program. The program is managed by the Oncology Institute in Ljubljana. Since the process of establishing the DORA screening program in the whole Slovenia has not yet been completed before January 2018, data and analysis to the extent that we present are not yet available.

**Analysis**

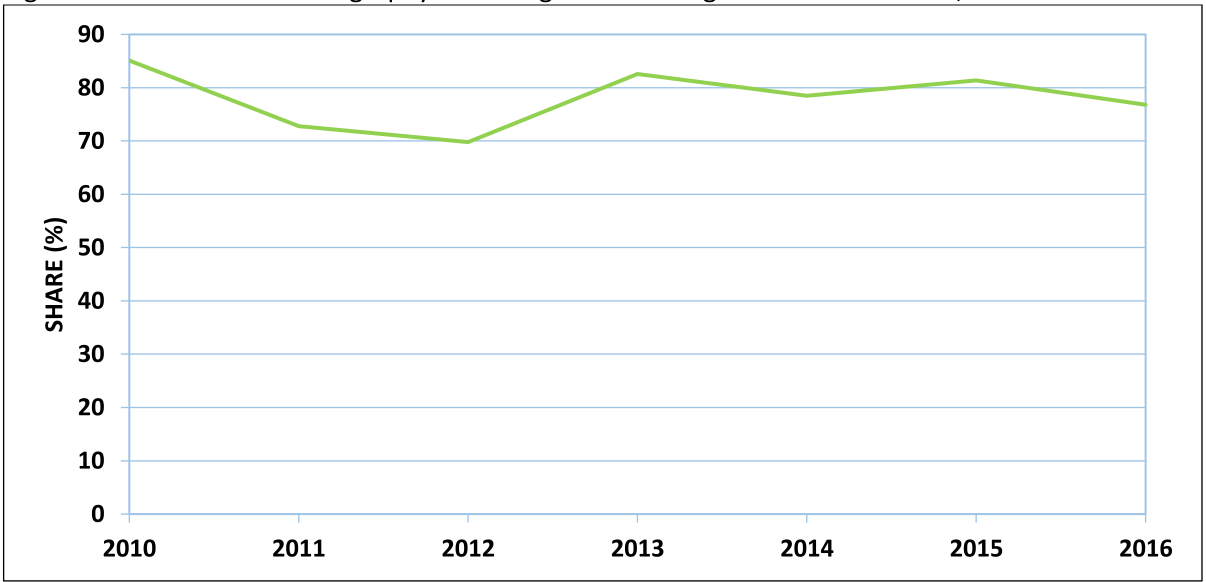
The results show that Slovenia had one of the highest shares of performed mammography in Europe in 2016 (**Figure 190**). However, the share was higher in 2010 and after a decrease in 2011 and 2012, it has been stable after 2013 (**Figure 191**).

Figure 190: Share of mammography screening in females aged 50-69 within the past 2 years some European countries in 2016.




Source: OECD

Figure 191: Share of mammography screening in females aged 50-69 in Slovenia, 2010–2016.




Source: OECD

## INDICATOR 188B: SHARE OF PERSONS RESPONDING TO SCREEENING PROGRAM FOR COLORECTAL CANCER

**Definition**

Colorectal cancer is the second most common cause of cancer deaths after lung cancer among males, and the third most common cause of cancer deaths after breast and lung cancers among females across European countries. The incidence of colorectal cancer is significantly higher among males. Generally, rectal cancer is more difficult to treat than colon cancer due to a higher probability of spreading to other tissue, recurrence and postoperative complications. Several countries have introduced free population-based colorectal cancer screening programmes over the past few years, targeting people in their 50s and 60s. In most countries that use the faecal occult blood test, screening is available every two years. The screening schedule is less frequent with colonoscopy and flexible sigmoidoscopy. These differences complicate international comparisons of screening coverage.

The Svit program is a Slovenian national program for the screening and early detection of colorectal cancer that has been operating nationally since 2009 within the framework of the National Institute of Public Health. The Svit program includes males and females aged between 50 and 74 years old with compulsory health insurance and responding to an invitation received every two years from the Svit Center.

Data was obtained from NIPH. International comparison is possible only with EHIS data.

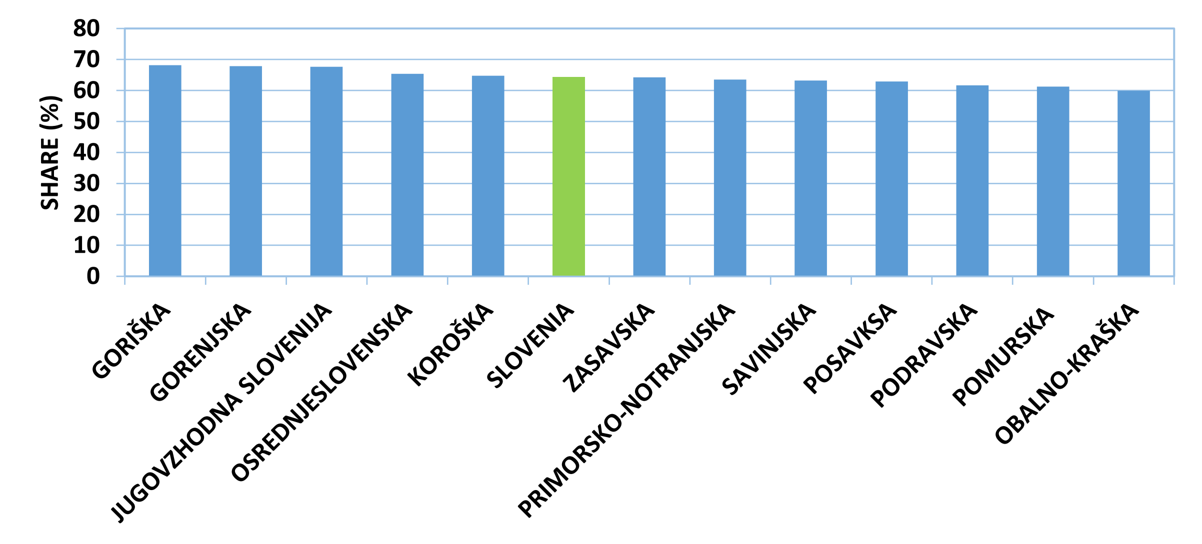
**Analysis**

The results show differences in responsiveness to Svit program among inhabitants of Slovenian regions in 2016 (**Figure 192**). However, there were no significant deviations from the mean.

Trend line shows a stable mean share of responsiveness from 2010 to 2015 with a moderate increase in 2016 (**Figure 193**).

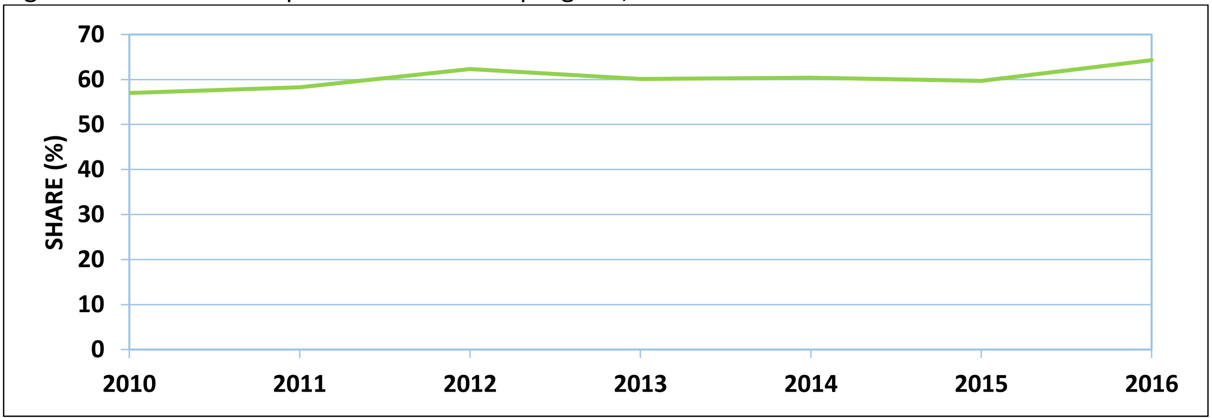
International comparison is only possible through self-reported last colorectal cancer screening test. The result shows that Slovenians are more responsiveness to colorectal cancer screening that most of European nations (**Figure 194**).

Figure 192: Share of responsiveness to Svit program among inhabitants of Slovenian regions in 2016



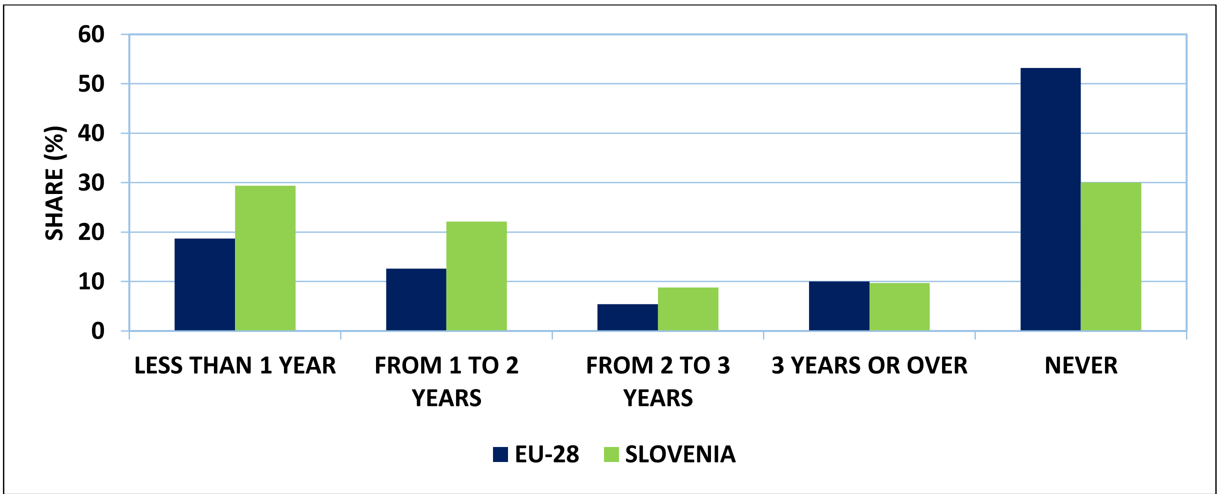

Source: NIPH

Figure 193: Share of responsiveness to Svit program, Slovenia 2010–2016




Source: NIPH

Figure 194: Share of self-reported last colorectal cancer screening test, Slovenia and EU–28 average, 2014




Source: EHIS

## INDICATOR 1476: BURDEN OF MALIGNANT SKIN MELANOMA

## INDICATOR 1476A: INCIDENCE OF MALIGNANT SKIN MELANOMA

**Definition**

Melanoma is a potentially lethal cancer that is most commonly cutaneous. The worldwide incidence of melanoma has risen rapidly over the last 50 years. Annual incidence has risen as rapidly as 4–6%. Its incidence is greatest among fair-skinned populations, and in regions of lower latitude. Incidence is greater among geriatric populations, but melanoma is also among the most common cancers found in adolescent and young adult populations. Moreover, incidence varies by sex, which is also associated with differences in melanoma anatomic site. Similar differences by region, ethnicity, age, and sex are observed in mortality rates of melanoma.

Data for Slovenia shows that in people younger than 55 years, the incidence of newly detected cases of malignant skin melanoma is increasing, more in women than in men. Most cases of malignant melanoma of the skin are most likely associated with acute, occasional and excessive exposure to the sun, especially in childhood. Given the 20-40 year time lag between exposure to the sun and the occurrence of cancer, the incidence of malignant melanoma in people under 55 years of age is a good indication of the ultimate success of measures against excessive exposure to ultraviolet (UV) radiation in childhood.

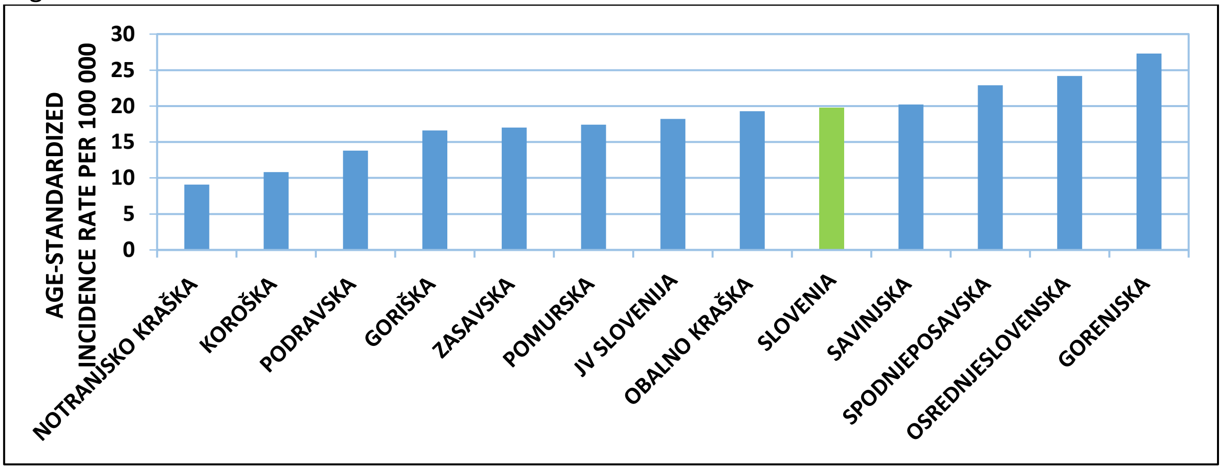
The indicator shows the incidence of skin melanoma in adults in Slovenia and selected EU countries. Differences in the quality of cancer surveillance and reporting across countries may affect the comparability of the data. Rates have been age-standardised based on the new European Standard Population to remove variations arising from differences in age structures across countries and over time. The data was obtained from SLORA and IHME.

**Analysis**

**Figure 195** shows regional differences in age-standardized incidence rate across Slovenia. A trend line shows that age-standardized rate did not increase a lot after 2007 and was stable around 20 new cases per 100 000 inhabitants (**Figure 196**). However, males had a higher and still increasing age-standardized incidence rate than females after 2009.

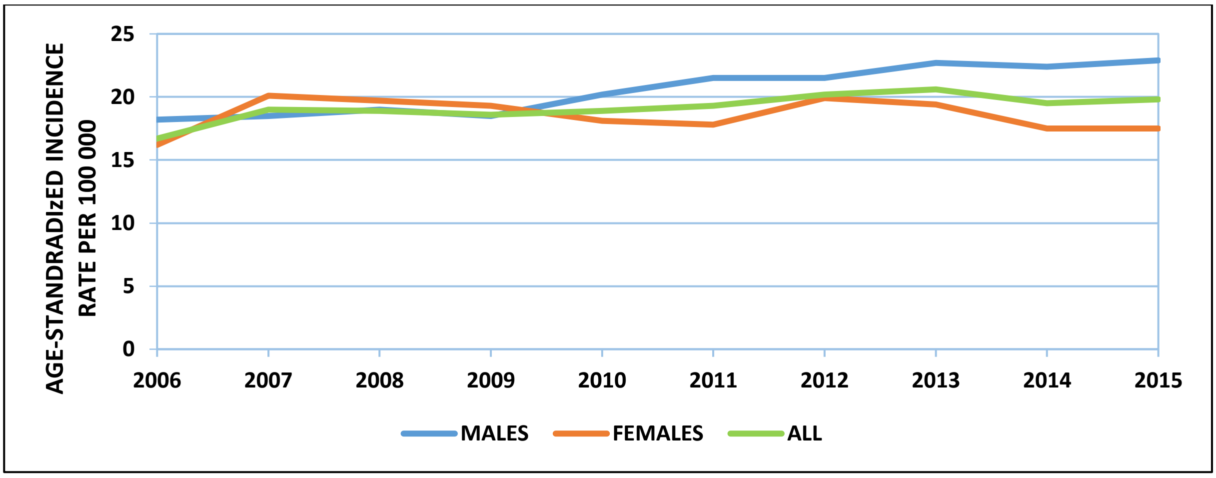
In comparison to EU–28 average, Slovenia had a much higher age-standardized incidence rate, both in females and males, between 2007 and 2016 (**Figure 197**).

Figure 195: Age-standardized incidence rate per 100 000 inhabitants of skin melanoma, Slovenian regions in 2015.



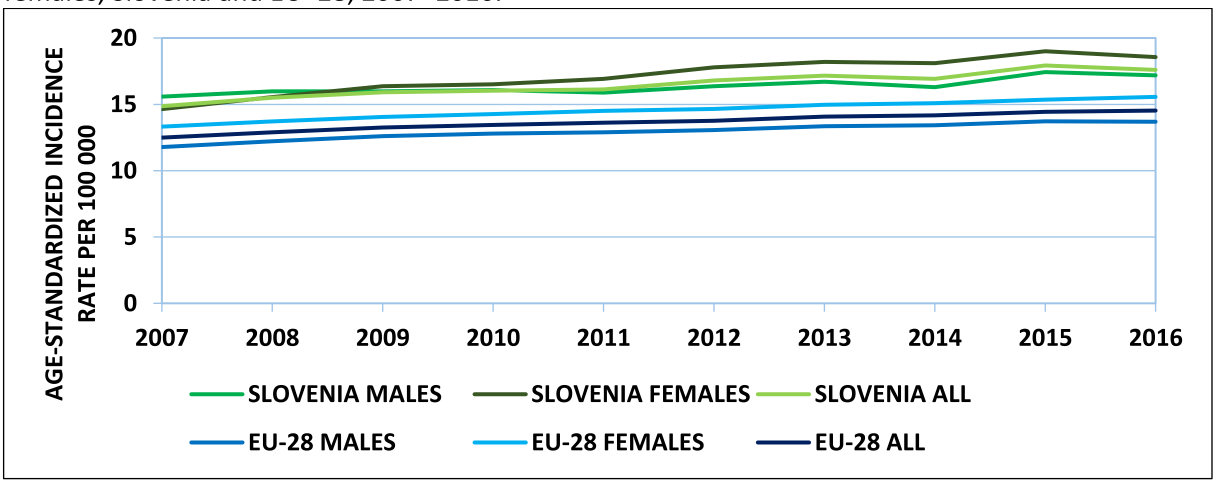

Source: SLORA

Figure 196: Age-standardized incidence rate per 100 000 of skin melanoma in males and females, Slovenia 2006–2015.




Source: SLORA

Figure 197: Age-standardized incidence rate per 100 000 inhabitants of skin melanoma in males and females, Slovenia and EU–28, 2007–2016.




Source: IHME, GHDx

## INDICATOR 1476B: MALIGNANT SKIN MELANOMA SURVIVAL RATE

**Definition**

According to EUROCARE studies, malignant skin melanoma relative survival has increased over time. Malignant skin melanoma ranks fourth among cancers with the best survival in Europe. However, survival varies markedly between and within European regions with only a slight decrease in geographical differences seen over time. Survival also varies across age groups and between sexes.

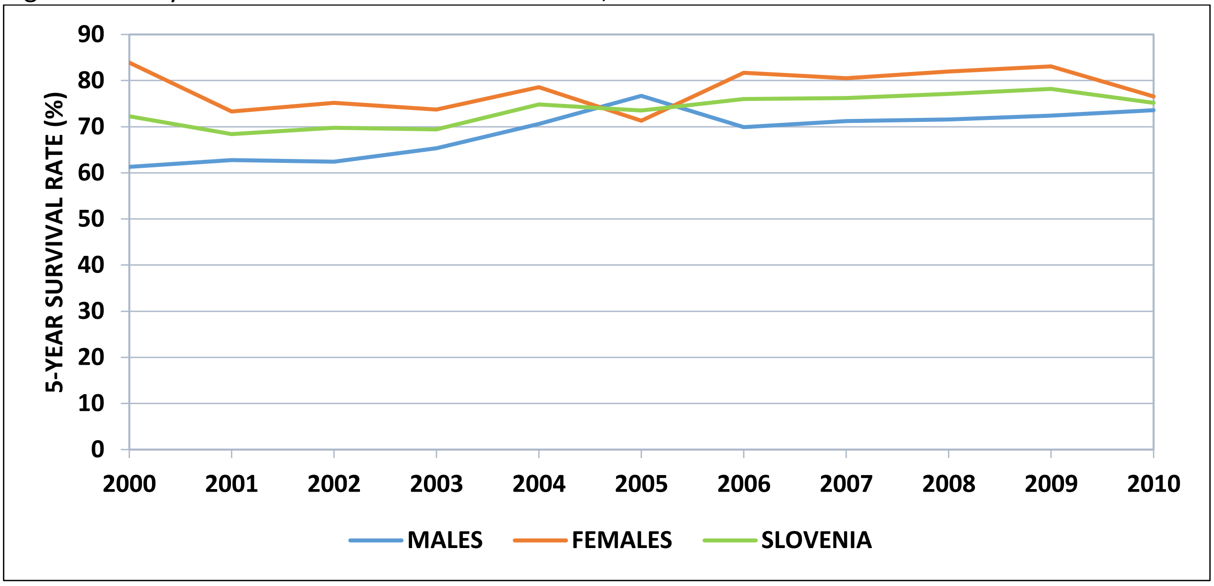
The main prognostic factor for malignant skin melanoma is stage at diagnosis (Breslow thickness) and prompt and appropriate treatment. Therefore, in many countries a lot of effort is put into early diagnosis. However, improvements in survival do not necessarily reduce mortality. In fact, over-diagnosis and lead time bias affect survival without preventing deaths. Therefore, differences and changes in survival must be interpreted with caution.

The data was obtained from SLORA and EUROCARE database.

**Analysis**

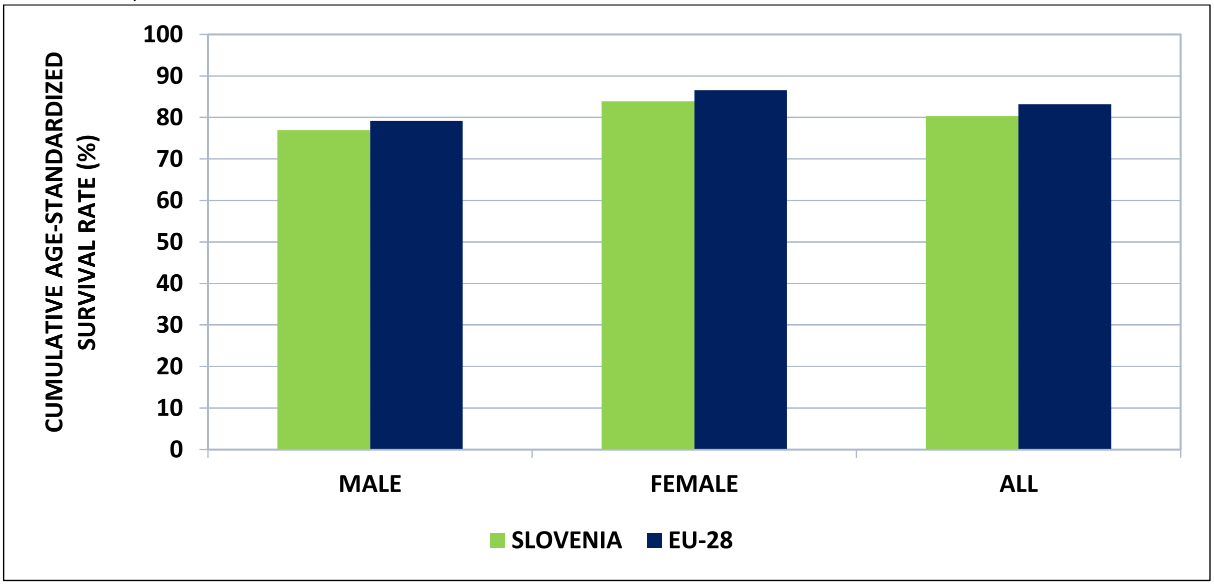
Regardless its potential lethality, 5-year survival rate for malignant skin melanoma was high between 2000 and 2010 (**Figure 198**). In comparison to EU–28 average, Slovenia had a slightly worse cumulative age-standardized 5-year survival rate between 2000 and 2007 (**Figure 199**).

Figure 198: 5-year survival rate for skin melanoma, Slovenia 2000–2010.




Source: SLORA

Figure 199: Cumulative age-standardized 5-year survival rate for malignant skin melanoma, Slovenia and EU–28, 2000 –2007.




Source: EUROCARE-5

## INDICATOR 1783: INFLUENZA VACCINATION COVERAGE, POPULATION AGED 65 AND OVER

**Definition**

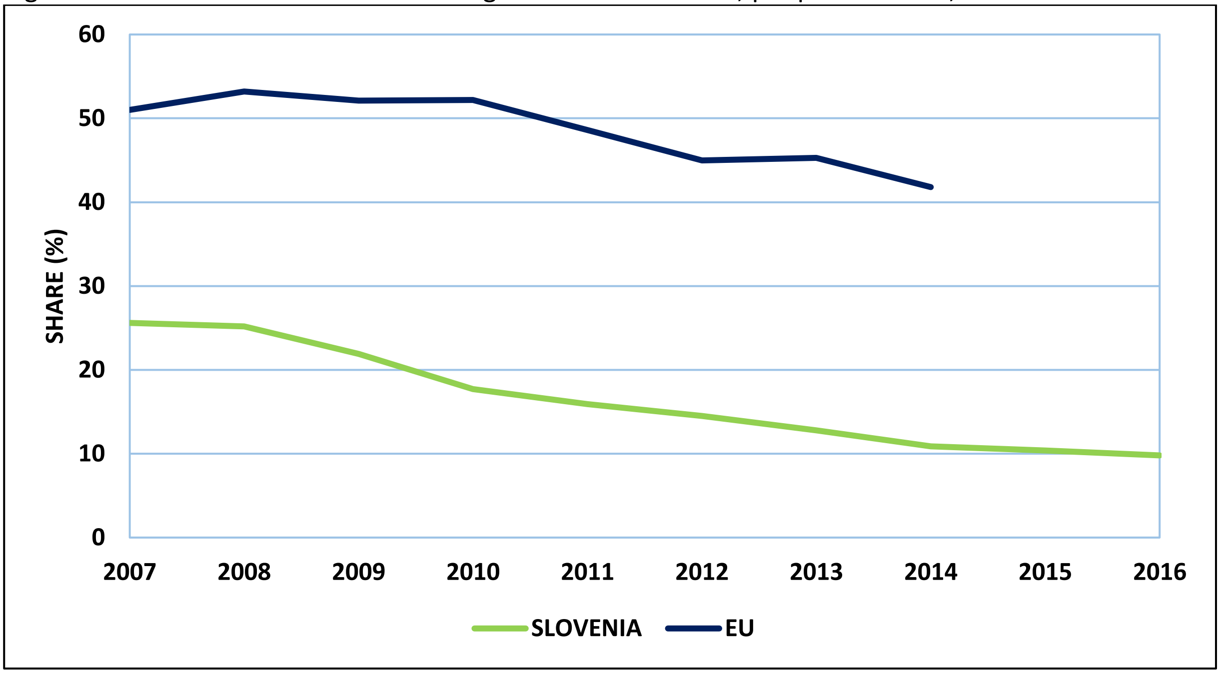
Influenza is an acute viral infection that spreads easily from person to person in any age group and that can cause serious complications in certain risk groups, such in older people. It is a common infectious disease affecting 5-10% of adults and 20-30% of children. Seasonal influenza causes 4-50 million symptomatic cases in the UE/EEA each year, and 15 000-70 000 European citizens die every year of causes associated with influenza. Older people are at high risk for serious illness from influenza and WHO recommends vaccination in this group, among others. Vaccination has proven to be an effective tool in reducing the burden of seasonal influenza.

Influenza vaccination rate refers to the number of people aged 65 and older who have received an annual influenza vaccination, divided by the total number of people over 65 years of age.

**Analysis**

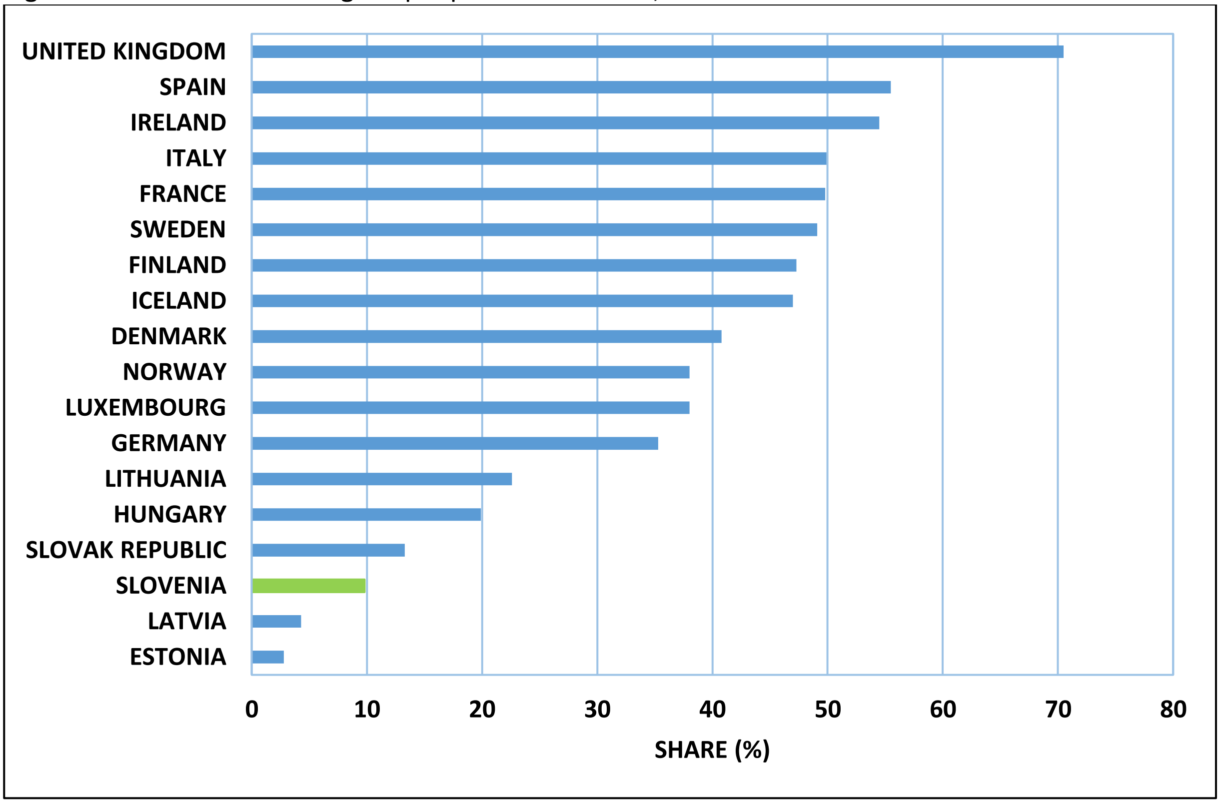
Although proven effective, the influenza vaccination coverage in elderly in Slovenia is unsatisfactory and in fact has been declining in recent years, with share of vaccinated people aged 65 and more dropping from 25.9% in 2007 to only 9.8% in 2016. It needs to be stressed out that influenza vaccination is not covered by the health insurance, although vaccination for elderly and other vulnerable groups is being subsidized and costs 7 EUR (in 2018). These coverage levels are far below the EU average, which has also dropped from 51% in 2007 to 41.8% in 2014 (**Figure 200**). In fact, none of the European Union Member States could demonstrate that they reach the EU target of 75% influenza vaccination coverage for vulnerable groups. The discrepancies within EU remain huge, with coverage in 2016 varying from 2.8% in Estonia to 70.5% in UK (**Figure 201**).

Figure 200: Influenza vaccination coverage in Slovenia and EU, people above 65, 2007-2016.




Source: OECD, ECDC

Figure 201: Influenza coverage in people 65 and above, selected EU countries.




Source: OECD

## INDICATOR 1915: NOTIFICATION RATES FOR MEASLES

**Definition**

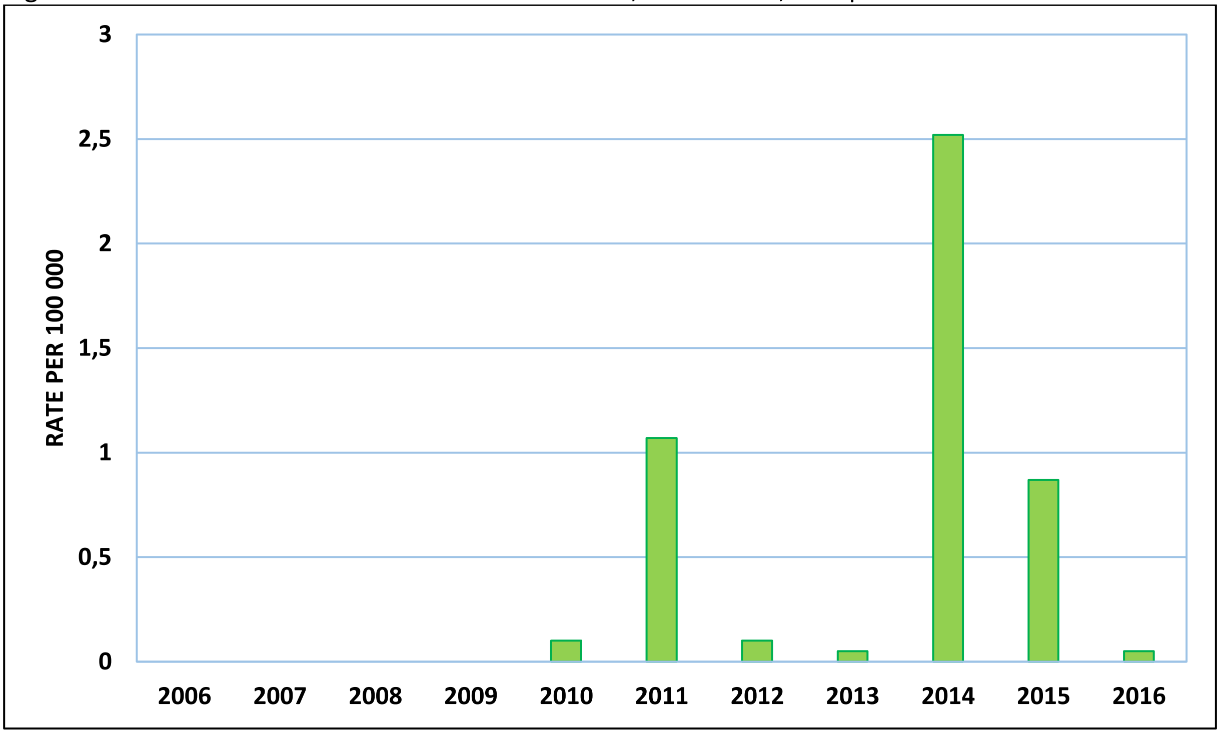
Measles, a highly infectious vaccine-preventable disease, remains one of the leading causes of childhood mortality, leading to an estimated 450 deaths each day worldwide. Measles is preventable through immunization and all countries in the European Region include highly effective and safe measles vaccines in their vaccination programs; however, due to persistent gaps in immunization coverage outbreaks of measles and rubella continue to occur.

**Analysis**

There was only 1 notified case of measles in Slovenia in 2016 and it was imported from abroad (0,05/100 000 population). The diseased was a female, aged between 30 and 49, who was not hospitalized and vaccination status has been unknown. Ever since vaccination against measles was introduced in 1968, measles incidence has significantly dropped when compared to pre-vaccination period. In 1974 a revaccination for children aged 4 or 5 was introduced, which have already been vaccinated. Thus, persons born 1969 and later have received two doses of measles vaccine. In the last few decades measles incidence has been very low, in fact in period between 2000 and 2009 no single case has been reported. After a 10 year absence measles were diagnosed again in 2010 with 3 cases (0.1/100 000) (one imported in foreign citizen, two others were secondary cases in domestic citizens). In 2011 there were 22 cases (1.1/100 000) reported, 6 of these being imported, while in 2012 only 2 (0.1/100 000) cases have been reported. In 2013 there was only 1 imported case (0.05/100 000) while in 2014 total of 52 people (2.5/100 000) have been reported, majority of these (44 cases) were related to an international dog show that took place in Slovenia. In 2015 18 cases have been reported (0.9/100 000), majority of these were imported cases from Bosnia and Herzegovina (7 cases) while 2 cases were imported from Austria (**Figure 202**).

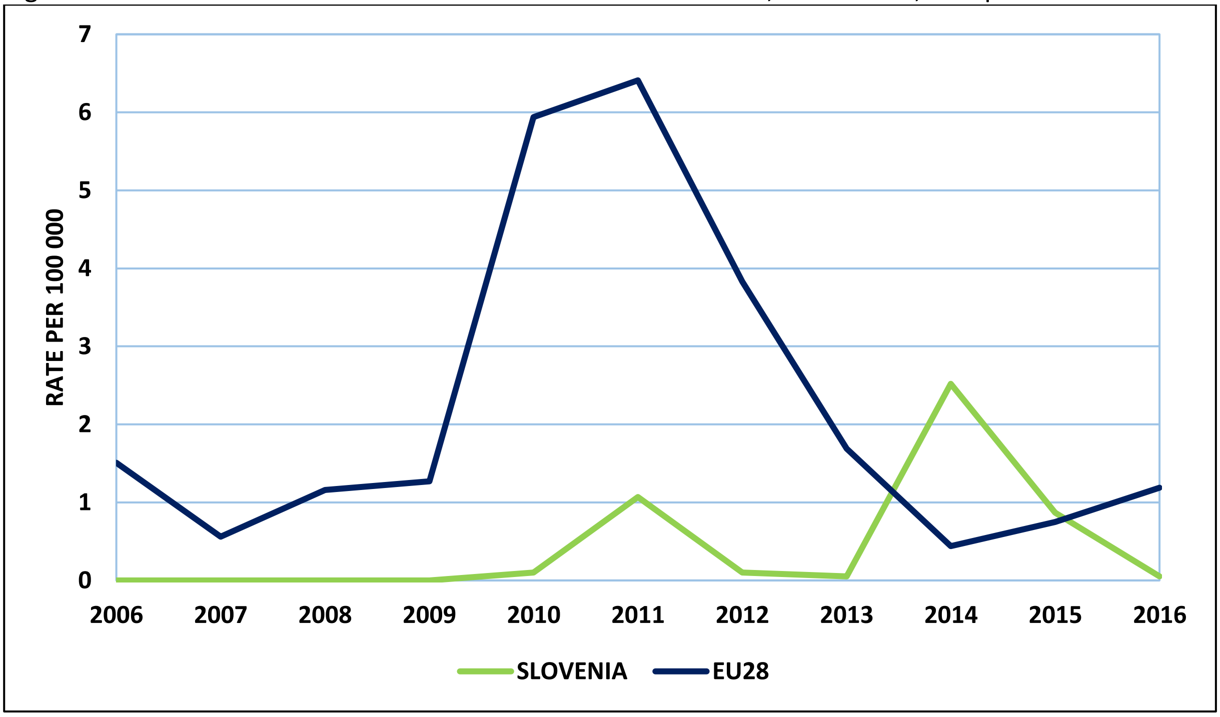
When compared to EU–28 average, Slovenia presents lower notification rates, with 2014 being the only exemption (**Figure 203**). Still, this comparison has to be interpreted with precaution, as wide variations among European countries exist; Romania, for example, has reported extremely high notification rate for measles in recent years (**Figure 204**).

Figure 202: Notification rates for measles in Slovenia, 2006–2016, rate per 100 000.



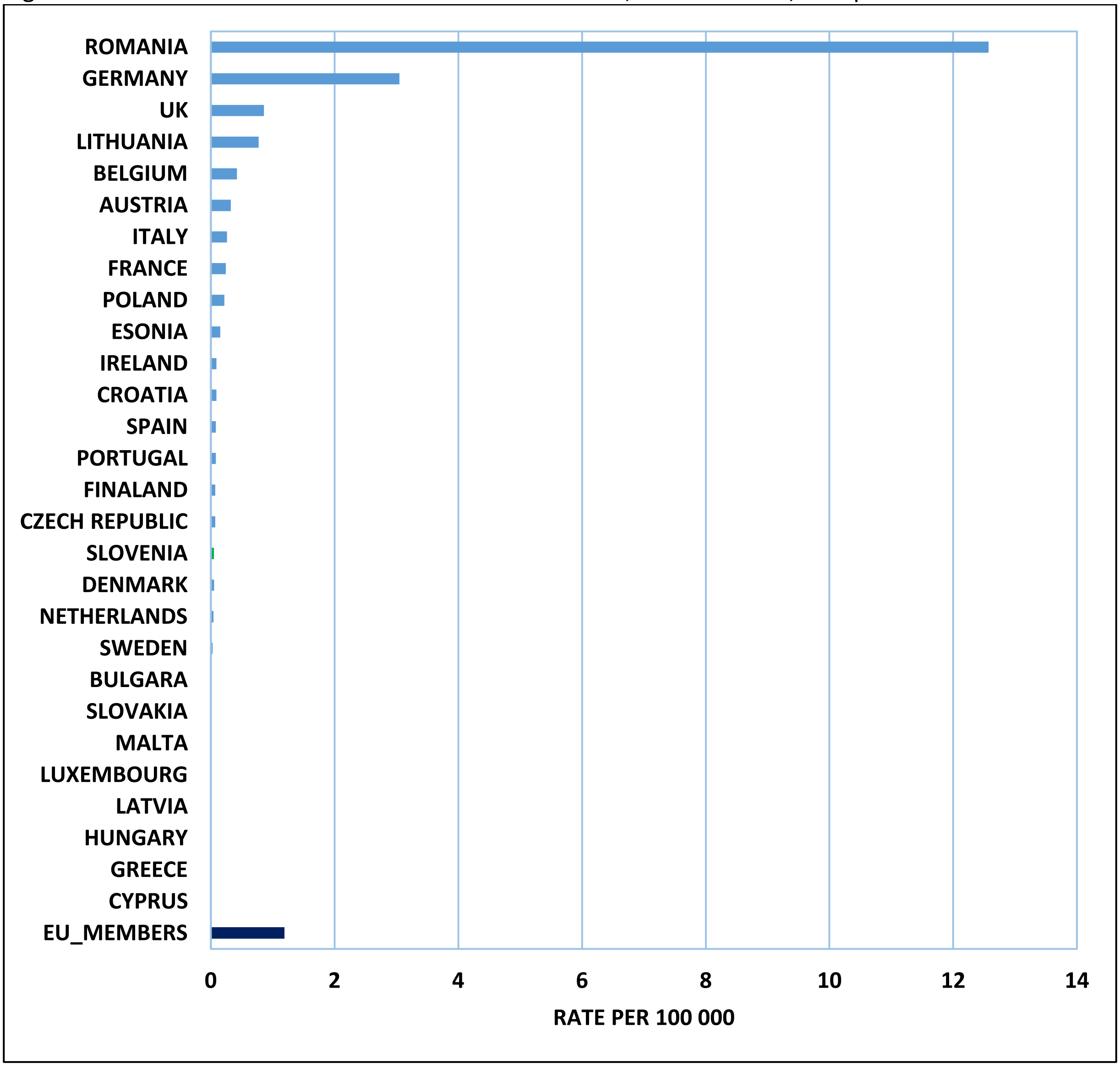

Source: NIPH

Figure 203: Notification rates for measles in Slovenia and EU–28, 2006–2016, rate per 100 000.




Source: WHO

Figure 204: Notification rates for measles in EU countries, 2016 or latest, rate per 100 000.




Source: WHO

## INDICATOR 1920: SEXUALLY TRANSMITTED INFECTIONS NOTIFICATION RATES

**Definition**

Prevention and control of sexually transmitted infections (STIs) represents one of the major challenges in sexual health promotion. How common are STIs is most often expressed in STIs notification rates. Due to under-diagnosis and under-reporting STIs notification rates should be interpreted with caution.

Notification rates for STIs (infection with chlamydia, gonorrhoea and early syphilis) are defined as the number of new diagnosed cases notified per 100 000 population in one calendar year.

**Analysis**

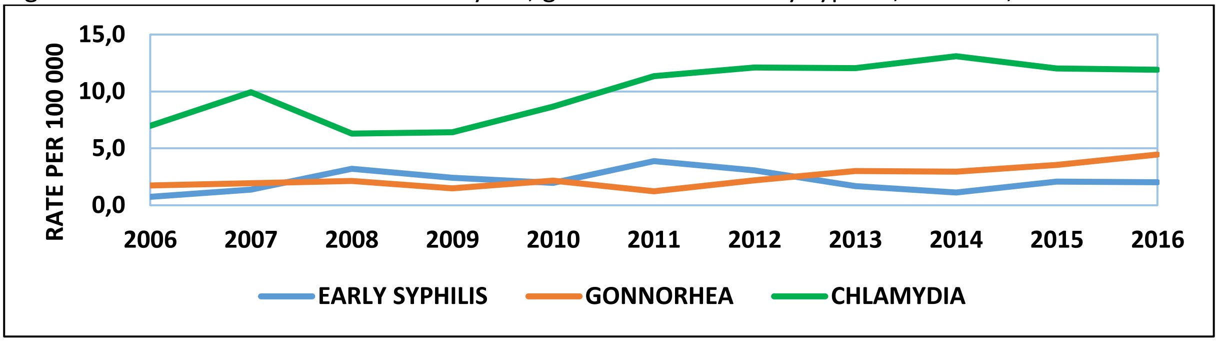
Notification rates for all three aforementioned infections in Slovenia have been slowly increasing during the period 2006-2016 (**Figure 205**). However, notification rates are lower than EU–28 averages.

Slovenian notification rate of chlamydia infection is about 15 times lower than EU–28 average for the same period (**Figure 206**). However, this notification rate has to be interpreted with caution as chlamydia infection rates varies considerably across Europe, with the highest country-specific rates more than 5 000 times higher in comparison to the lowest rate. This is mainly a reflection of the differences in national chlamydia testing rates and corresponding case finding rates rather than real differences in chlamydia prevalence or incidence.

Notification rates for gonorrhoea are on the rise in both Slovenia and EU–28, although EU–28 average is up to 6-times higher (**Figure 207**).

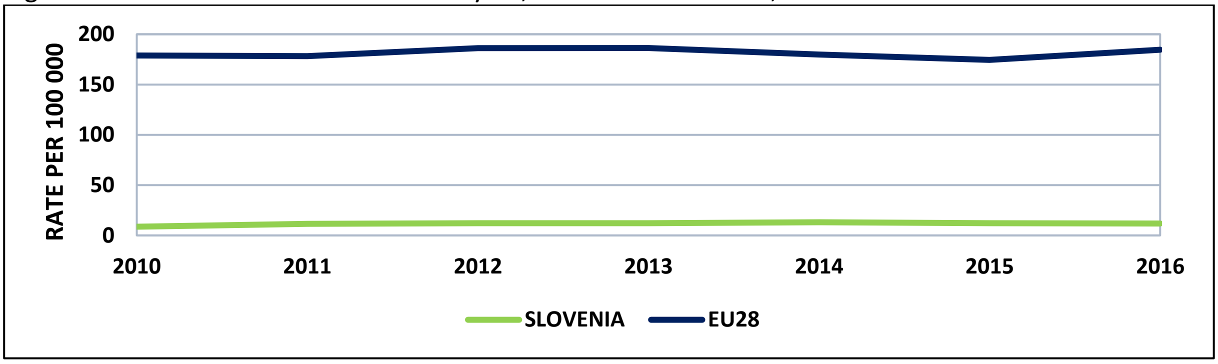
Early syphilis notification rates have been also on the rise with the increase in the notification rates in EU–28 of approximately 20% since 2012 (**Figure 208**). Slovenia follows the same pattern, although notification rates are up to 4 times lower.

Figure 205: Notification rates for chlamyidia, gonorrhoea and early syphilis, Slovenia, 2006–2016.



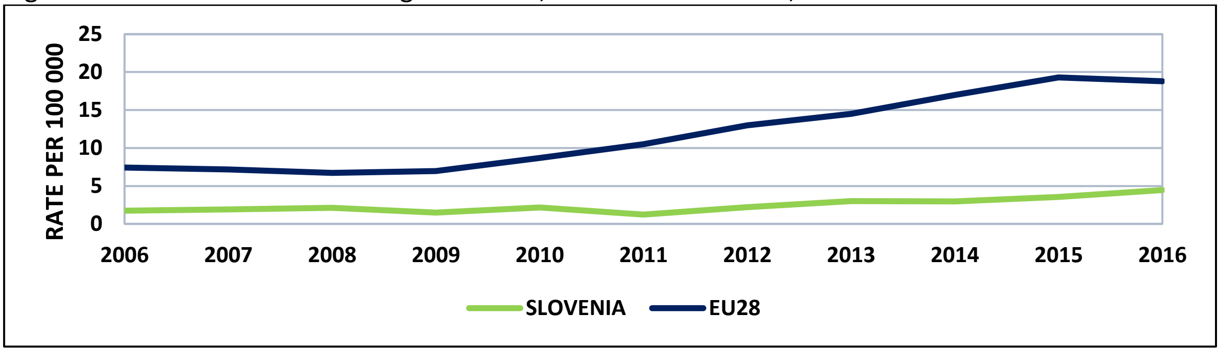

Source: NIPH

Figure 206: Notification rates for chlamydia, Slovenia and EU–28, 2010-2016.



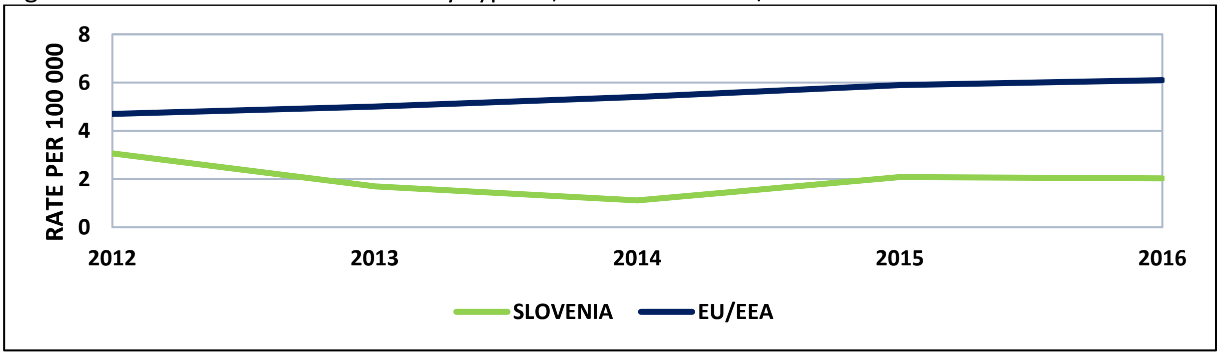

Source: NIPH, ECDC

Figure 207: Notification rates for gonorrhoea, Slovenia and EU–28, 2006-2016.




Source: NIPH, ECDC

Figure 208: Notification rates for early syphilis, Slovenia and EU/EEA 2012-2016.




Source: NIPH, ECDC

## INDICATOR 2103: EXPOSURE TO TOBACCO SMOKE INDOORS

### Definition

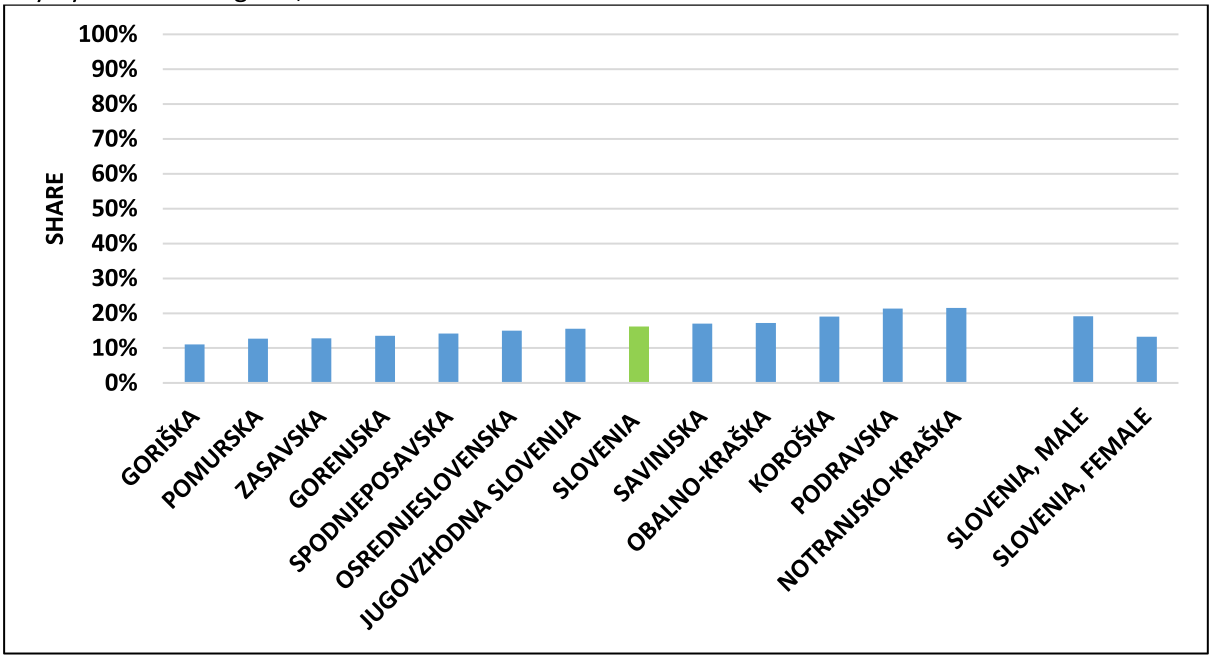
Non-smokers who are exposed to tobacco smoking indoors inhale the smoke, which is often referred to as second-hand smoke. Exposure to second-hand smoke is causally associated with an increased risk of cancer, cardiovascular diseases, and acute complications in people with chronic respiratory diseases. Although smoking is banned in public places in Slovenia, children and adults are still exposed to tobacco smoke in cars and at home.

The indicator on exposure to tobacco smoke indoors uses data from the European Health Interview Survey (EHIS). Self-reported data on frequency of being exposed to tobacco smoke indoors is used to calculate the share of people aged 15 years or more who are exposed to tobacco smoke indoors less than 1 hour or 1 hour or more per day.

### Analysis

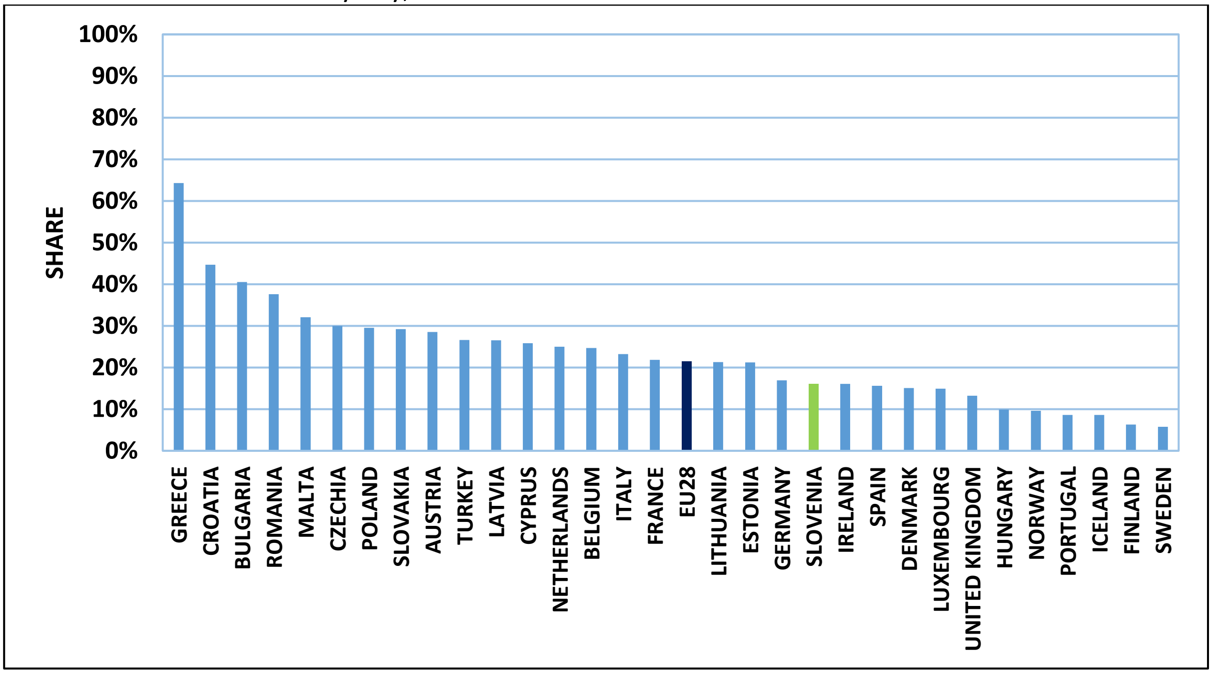
Approximately 16 % of people in Slovenia, aged 15 years or more, are exposed to tobacco smoke indoors (**Figure 209**). The share is significantly higher in men, with 1 in 5 men being exposed to indoor tobacco smoke daily. Large variation is also observed among statistical regions in Slovenia. The difference between regions with lowest and highest share of people exposed to tobacco smoke indoors is nearly twofold. In international perspective, Slovenia fares relatively well with below average shares of people exposed to tobacco smoke indoors compared to EU–28 average (**Figure 210**).

Figure 209: Share of people aged 15 years or more that are exposed to tobacco smoke indoors every day by statistical regions, 2014.




Source: EHIS

Figure 210: International comparison in shares of people aged 15 years or more that are exposed to tobacco smoke indoors every day, 2014.




Source: EHIS

## INDICATOR 2104: SMOKING IN CHILDREN AND ADOLESCENTS

**Definition**

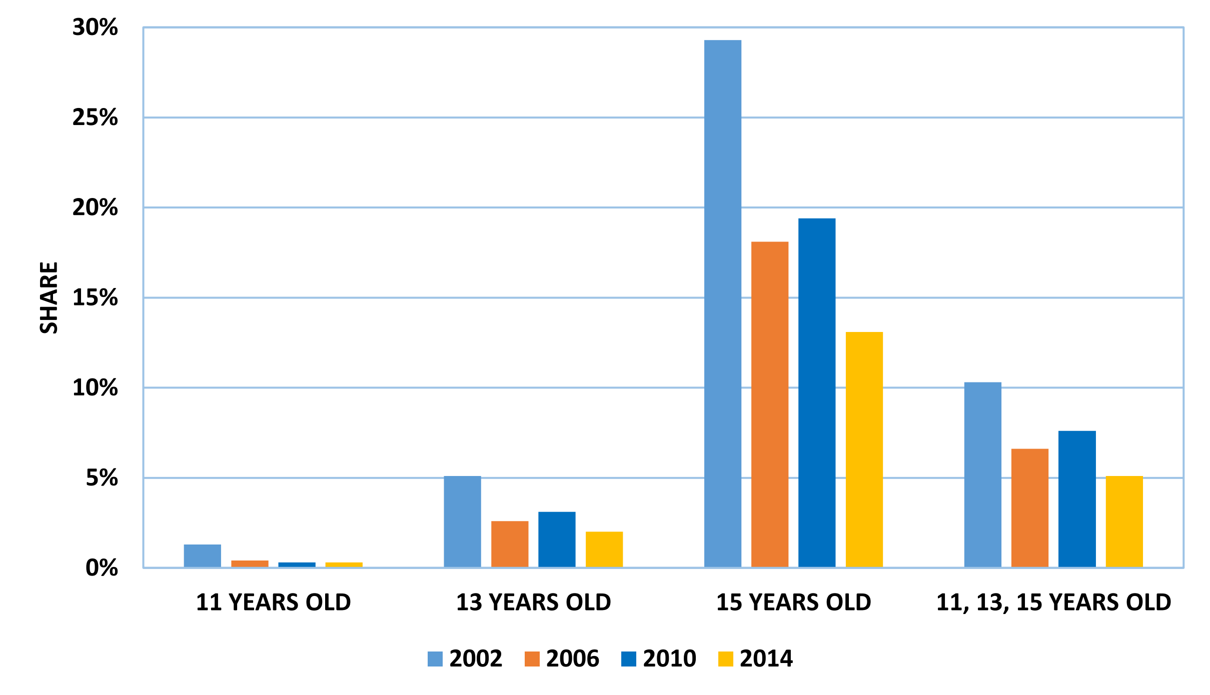
Tobacco use is the leading cause of preventable death worldwide. Smoking behaviour in children and adolescents is an important indicator of smoking behaviour in adulthood. The majority of adult smokers started smoking in their childhood. Adolescents are more susceptible to nicotine addiction than adults and require fewer cigarettes smoked and shorter duration of smoking to become addicted.

The indicator on smoking in children and adolescents uses data from the Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on frequency of smoking tobacco products of 11-, 13-, and 15-year olds is used to calculate the share of children and adolescents who smoke tobacco products at least once per week.

**Analysis**

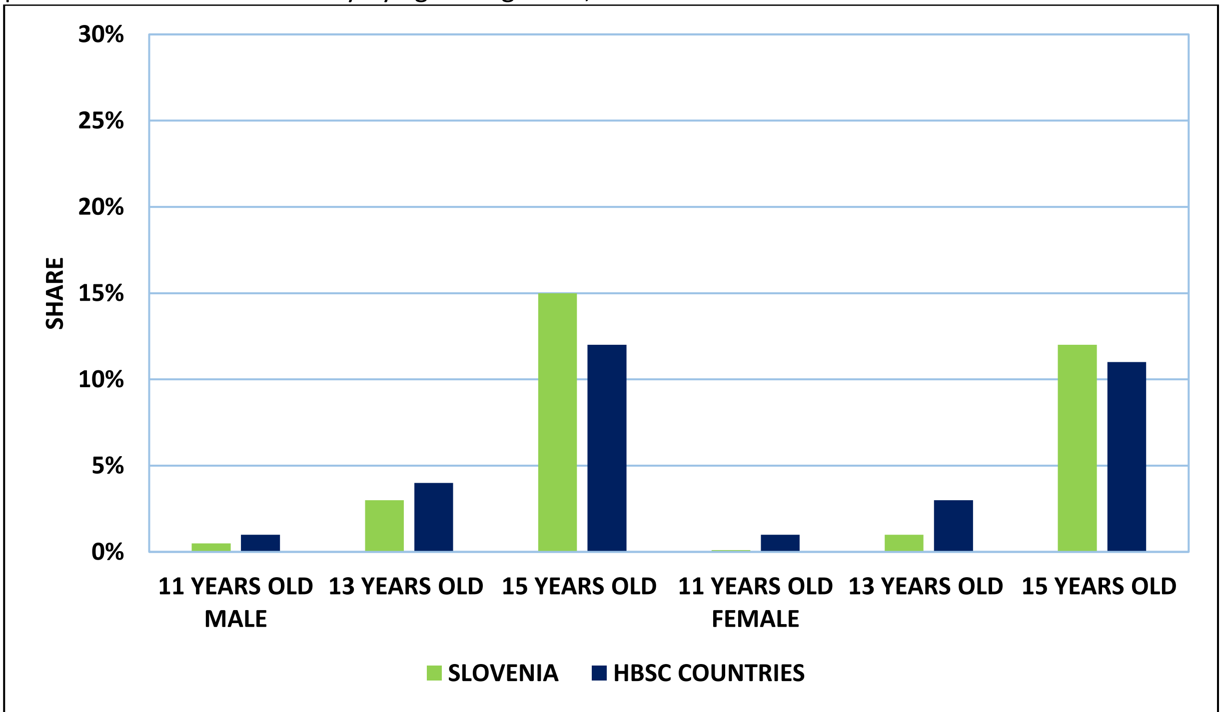
The share of children and adolescent who smoke at least once per week has decreased since 2002 in Slovenia (**Figure 211**). A statistically significant trend is observed in all age groups and both genders. However, in comparison to the average of HBSC countries, more Slovenian 15-year olds smoke tobacco products at least once weekly (**Figure 212**). On the other hand, the shares of Slovenian 11- and 13-year olds who smoke tobacco products at least once weekly are lower than the average of HBSC countries.

Figure 211: Share of children and adolescents that smoke tobacco products at least once weekly by age, 2002, 2006, 2010, and 2014.




Source: HBSC

Figure 212: International comparison in shares of children and adolescents who smoke tobacco products at least once weekly by age and gender, 2014.




Source: HBSC

## INDICATOR 2108: PREVENTION PROGRAMS AMONG CHILDREN AND YOUTH

### Definition

In Slovenia, infants and pre-school children have access to a systematic examination at the age of one, three, six, nine, twelve and eighteen months, and three and five years. This includes clinical examination, the implementation of compulsory vaccination prescribed by the vaccination program and implementation of programmed health education and individual counselling. A systematic examination of the child at the age of three years is accompanied by a psychologist's examination and an examination at the age of five years by a speech therapist.

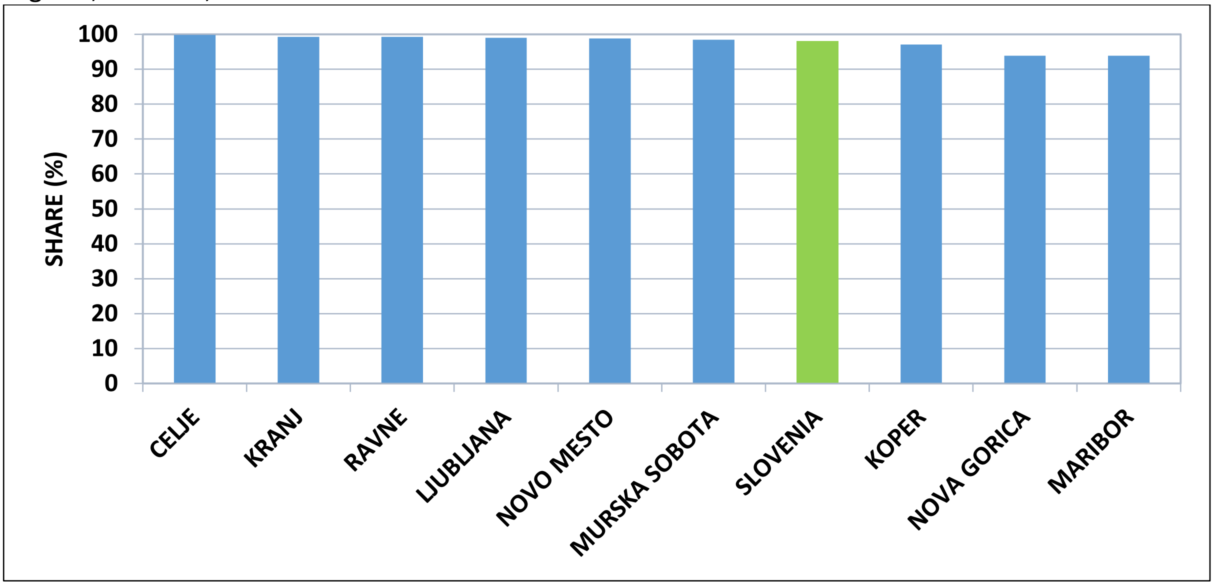
School children and youth up to the age of 19 have the right to the following preventive examinations by a team of specialist medical school specialists. This includes systematic preventive examinations prior to entry into school, in the 1st, 3rd, 6th and 8th grades of the elementary school, and in the 1st and 3rd year of the secondary school. Young people who do not continue their education have the right to a preventive examination at the age of 18, others have the right to a systematic preventive examination in the 1st and 3rd year of a faculty at tertiary level.

Data was obtained from NIPH database. There is no international comparison.

### Analysis

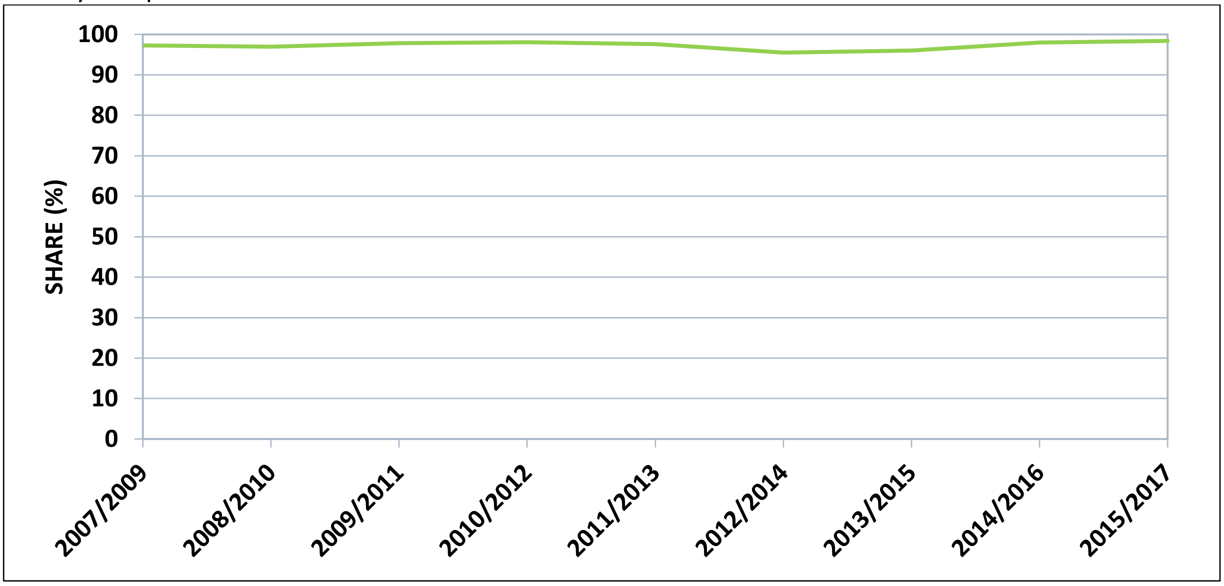
There were small differences in shares of systematic examinations of school children and youth in all schools among Slovenian health regions in 2016 (**Figure 213**). Analyse of trend line do not show any significant difference in mean share of three years periods from 2007 to 2016 (**Figure 214**).

Figure 213: Share of systematic examinations of school children and youth in all schools, by health regions, Slovenia, 2016.




Source: NIPH

Figure 214: Share of systematic examinations of school children and youth in all schools in Slovenia, three years period.




Source: NIPH

## INDICATOR 2110: PREVALENCE AND DEATH RATE OF ALCOHOLIC LIVER CIRRHOSIS

**Definition**

Liver cirrhosis is a chronic, scarring phase of chronic liver disease. It is a fibrous transformation of the structure with a redirection of the blood circulation and a lobe regeneration of the liver tissue.

The onset of cirrhosis can be associated with a number of diseases: excessive alcohol consumption, chronic infection with hepatitis B (HBV) and C virus (HCV), haemochromatosis, autoimmune hepatitis, primary biliary cirrhosis, primary sclerosing cholangitis, Wilson's disease, lack of alpha-1 antitrypsin and in some cases the reason is unknown (cryptogenic liver cirrhosis). 10 to 20 % of heavy drinkers will develop liver cirrhosis. Many are unaware of having liver cirrhosis. About 30 to 40 % of liver cirrhosis cases are discovered at autopsy.

The 5–year survival rate for people with liver cirrhosis who stop drinking is about 90 %, compared with 70 % of those who do not stop drinking. However, for late–stage cirrhosis, the survival rate is only 60 % for those who stop drinking and 35 % for those who do not.

According to the WHO, liver cirrhosis accounted for 1.8 % of all deaths in Europe, causing around 170 000 deaths per year. However, mortality from liver cirrhosis has been declining over the last decades due to reduction in alcoholic liver disease prevalence, fall in transmission of HCV and vaccination campaigns against HBV.

In the last decades of the 20th century, a very strong east-west gradient in mortality rates was observed, with the level of liver cirrhosis mortality in south-eastern Europe (especially in Hungary and Moldova but also in Slovakia, Slovenia and Romania) and in north-eastern European countries achieving the highest rates.

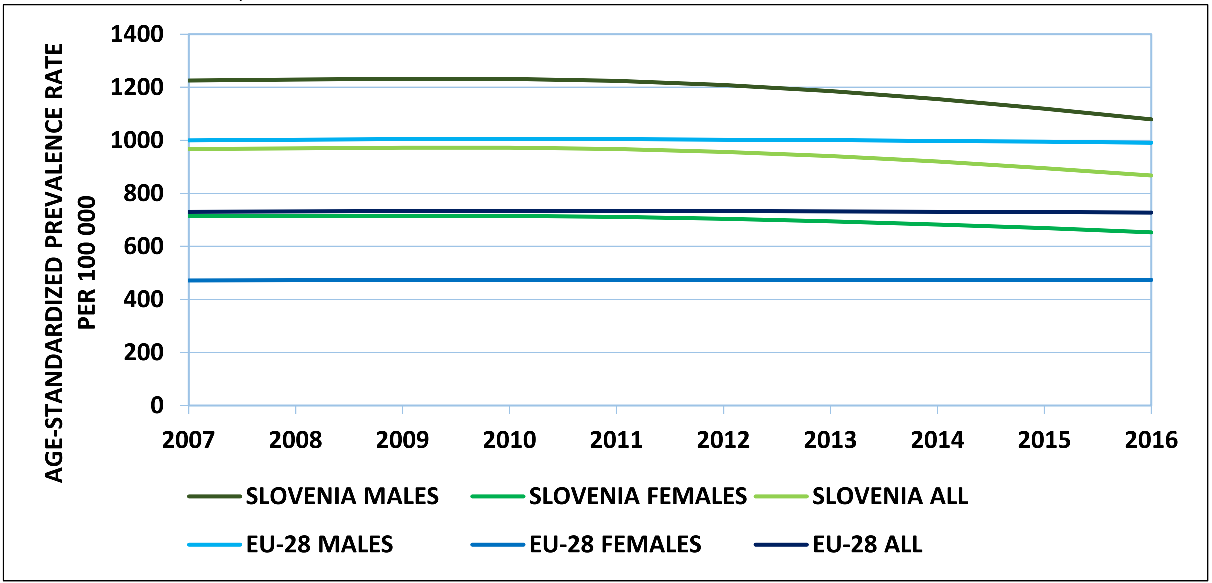
In Slovenia, the development of liver cirrhosis is most often associated with excessive alcohol consumption. Prevalence and mortality due to alcoholic liver cirrhosis are one of the highest in Europe.

The data was obtained from Institute for Health Metrics and Evaluation (IHME). Age-standardized prevalence and death rates were evaluated.

## INDICATOR 2110A: PREVALENCE OF ALCOHOLIC LIVER CIRRHOSIS

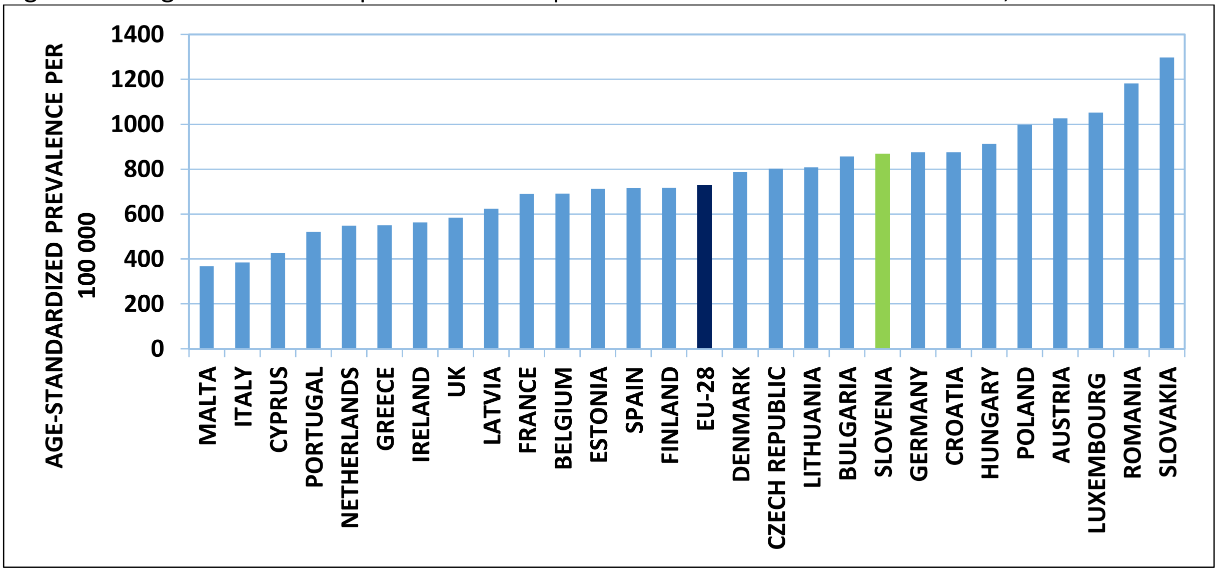
The results show that age-standardized prevalence rate of alcoholic liver cirrhosis was much higher in Slovenia than EU–28 average between 2007 and 2016 (**Figure 215**). In 2016 was one of the highest in Europe (**Figure 216**).

Figure 215: Age-standardized prevalence rate per 100 000 inhabitants of alcoholic liver cirrhosis, Slovenia and EU–28, 2007–2016.




Source: IHME, GHDx

Figure 216: Age-standardized prevalence rate per 100 000 of alcoholic liver cirrhosis, EU–28 in 2016.

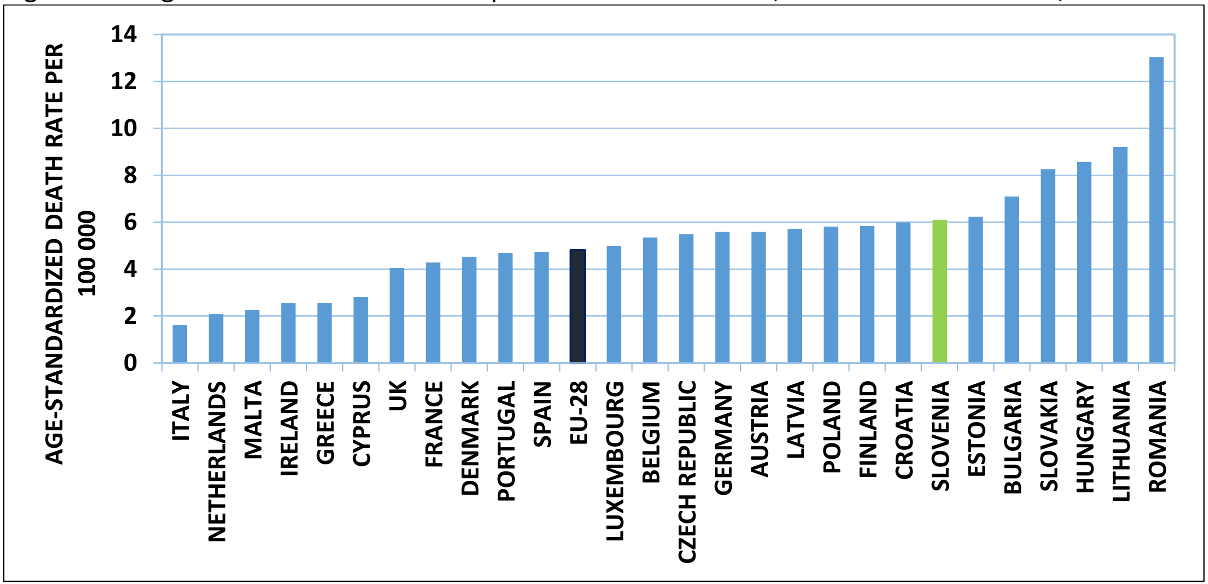



Source: IHME, GHDx

## INDICATOR 2110B: DEATH RATE OF ALCOHOLIC LIVER CIRRHOSIS

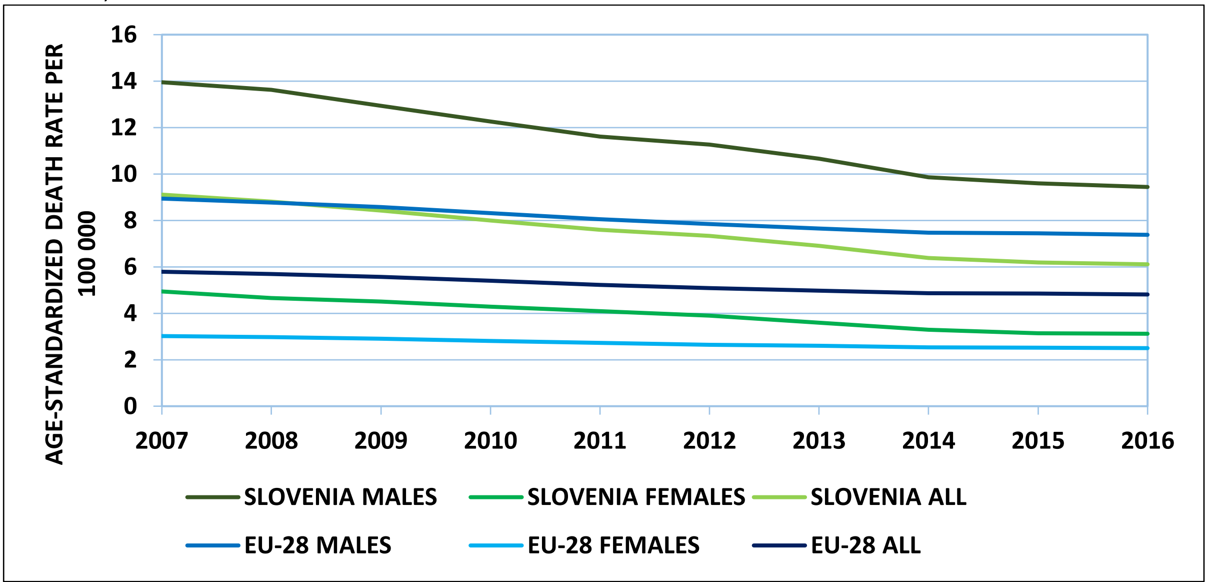
The results show that age-standardized death rate was also one of the highest in Europe and from 2007 to 2016 was well above the EU–28 average (**Figure 217** and **Figure 218**).

Figure 217: Age-standardized death rate per 100 000 inhabitants, alcoholic liver cirrhosis, EU in 2016.




Source: IHME, GHDx

Figure 218: Age-standardized death rate per 100 000 inhabitants, alcoholic liver cirrhosis, EU–28 and Slovenia, 2007–2016.




Source: IHME, GHDx

## INDICATOR 2113: VISITS TO A DENTIST

**Definition**

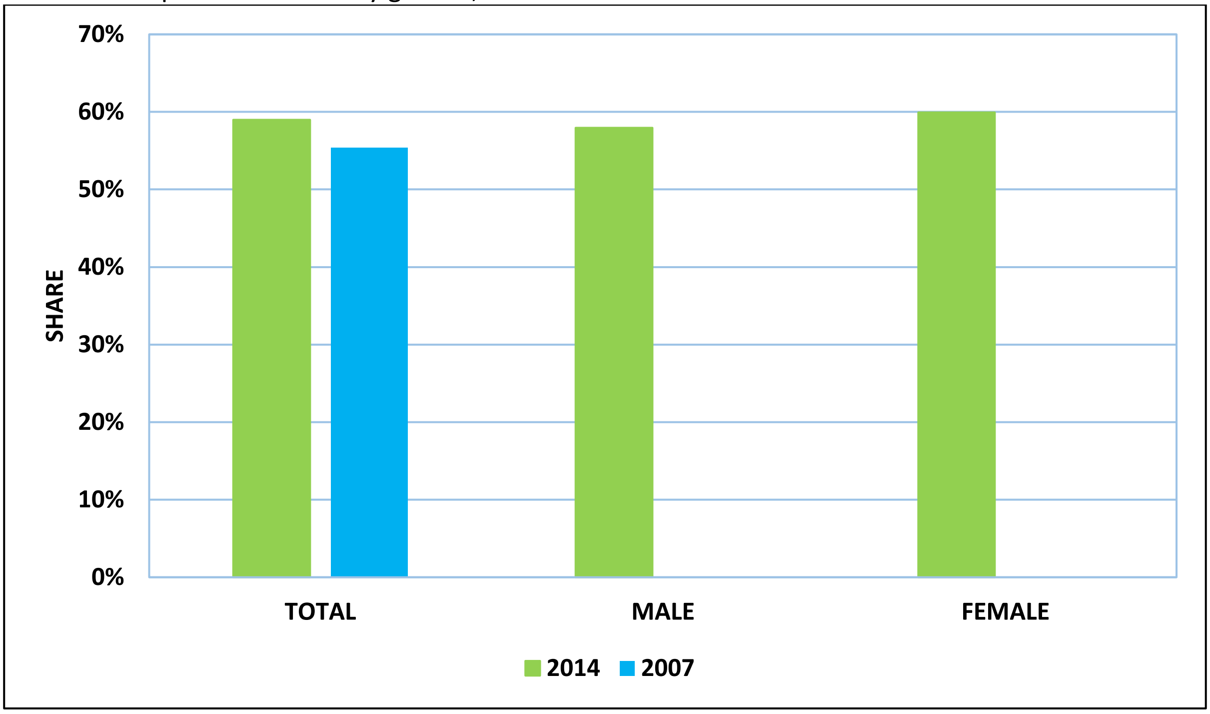
Oral health is an essential component of general health and important factor of quality of life. Oral health is defined as a state of being free from mouth and facial pain, oral diseases and disorders that limit the individual's capacity in biting, chewing, smiling, speaking and psychosocial wellbeing. Oral diseases are associated with various conditions such as cardiovascular diseases, diseases of cardiovascular system, metabolic disorders (diabetes mellitus type 2) and complications during pregnancy. Maintaining proper oral hygiene and attending regular preventive dental check-ups are essential for maintaining appropriate oral and subsequently general health.

The indicator on dentists' consultations uses data from the European Health Interview Survey (EHIS). Self-reported data on time since the last visit to a dentist or orthodontist is used to calculate the share of people aged 15 years or more that have visited a dentist or orthodontist in past 12 months.

**Analysis**

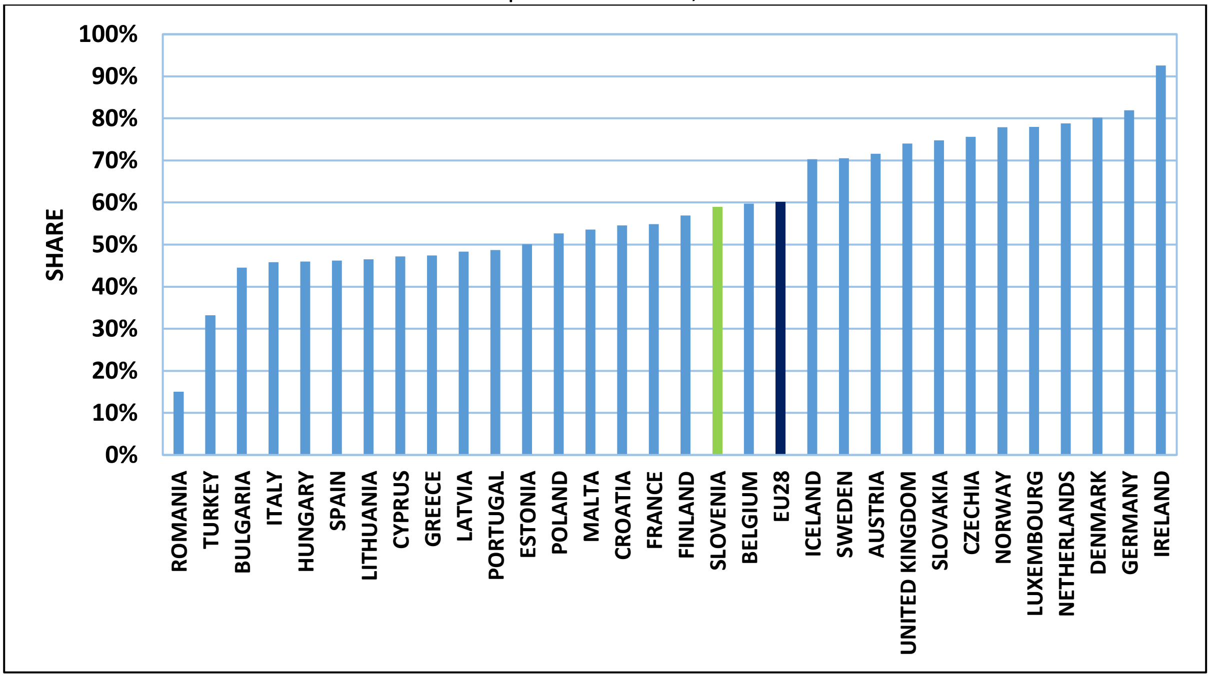
The share of people who visited a dentist or an orthodontist in past 12 months was nearly 60 % in 2014 (**Figure 219**). Compared to data from 2007 a slight increase of 3.5 % is observed. International comparison shows Slovenia has a share of people that have visited a dentist or an orthodontist similar to the EU–28 average (**Figure 220**).

Figure 219: Share of people aged 15 years or more that have visited a dentist or an orthodontist at least once in past 12 months by gender, 2014 and 2007.




Source: EHIS

Figure 220: International comparison in shares of people aged 15 years or more that have visited a dentist or an orthodontist at least once in past 12 months, 2014.




Source: EHIS

## INDICATOR 2114: BRUSHING TEETH

**Definition**

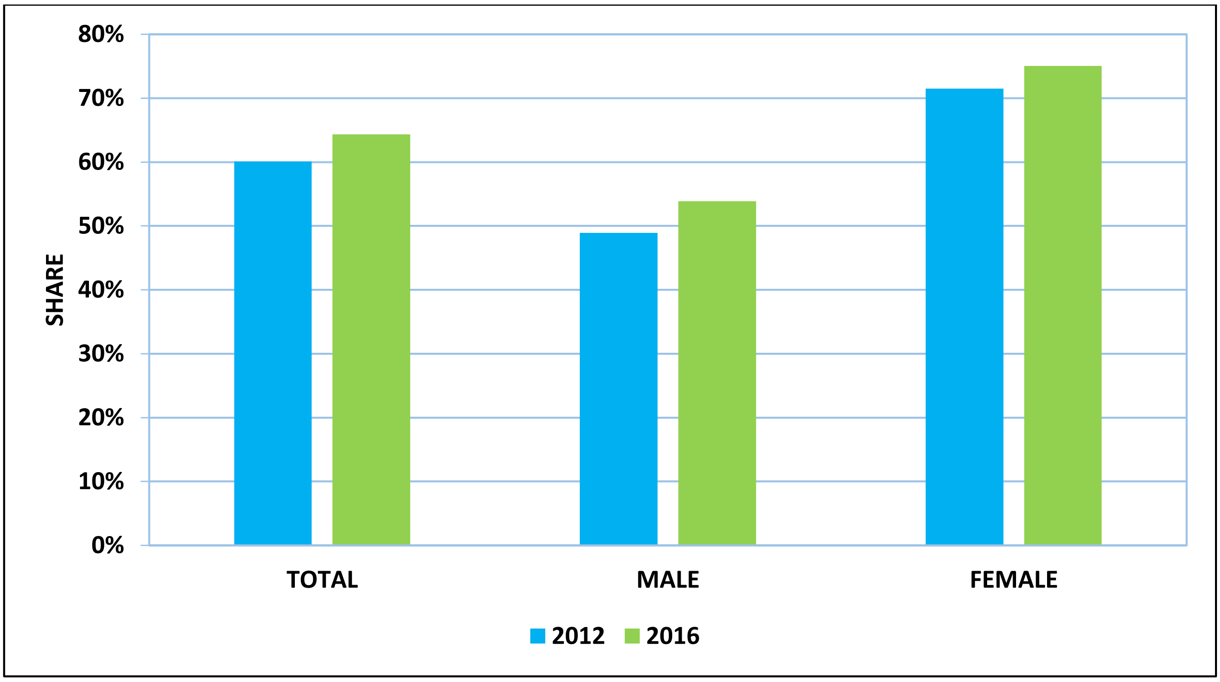
Oral health is an essential component of general health and important factor of quality of life. Oral health is defined as a state of being free from mouth and facial pain, oral diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking and psychosocial wellbeing (41). Oral diseases are associated with various conditions such as cardiovascular diseases, metabolic disorders (diabetes mellitus type 2) and complications during pregnancy. Mechanical removal of plaque from teeth surfaces by brushing teeth twice a day is the most important practice for maintaining appropriate oral health, among regular attending at dental check-ups (5).

The indicator on tooth brushing uses data from the CINDI Health Monitor Survey (CHMS). Self-reported data on frequency of daily tooth brushing is used to calculate the share of people aged from 25 to 74 years old that brush their teeth at least twice daily.

**Analysis**

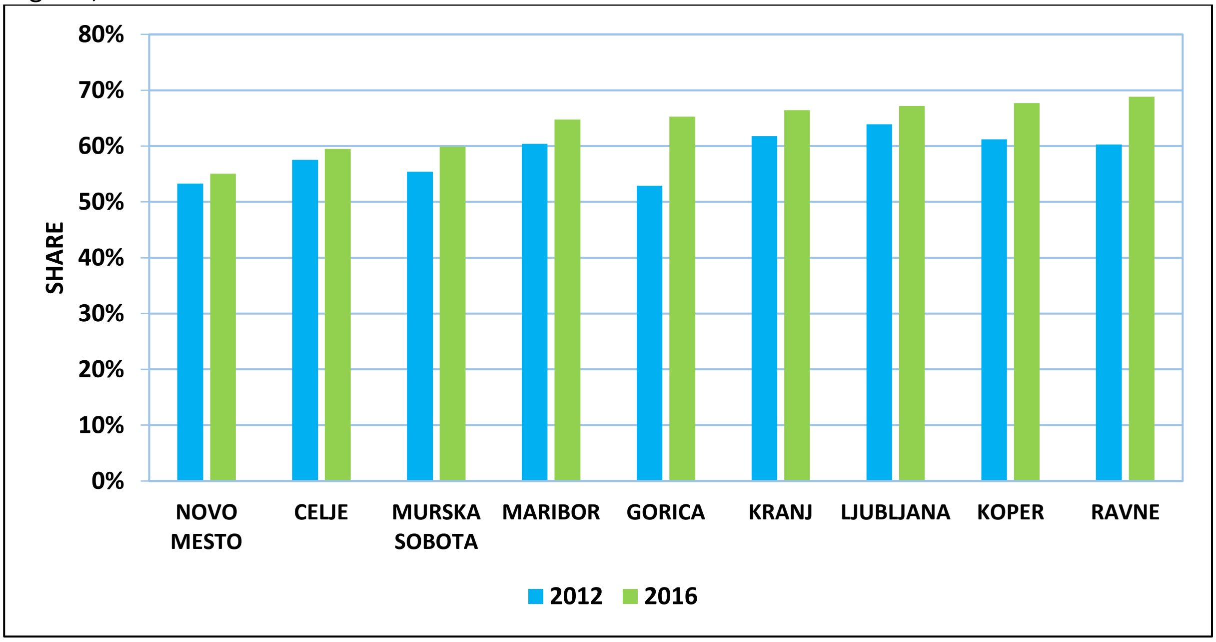
Nearly two thirds of people aged 25 to 74 years old brush their teeth at least twice daily (**Figure 221**). The share of people who brush their teeth at least two times a day in 2016 is 4 % higher than the share in 2012. Substantial differences are noted within the regions of Slovenia (**Figure 222**). Difference in shares of people brushing teeth at least twice daily is nearly 14 % between regions with highest and lowest values. There is no international comparison.

Figure 221: Share of people aged 25 to 74 years old that brush teeth at least twice daily by gender, 2012 and 2016.




Source: CHMS

Figure 222: Share of people aged 25 to 74 years old that brush teeth at least twice daily by health regions, 2012 and 2016.




Source: CHMS

## CONCLUSIONS AND RECOMMENDATIONS

This is the first time that Slovenia performed a formal assessment of its health system at a national level. Until now, Slovenia did not evaluate its health system in this manner that provided a framework with intelligible domains and indicators linked to the priorities of the Slovenian health system. Over the past decade, several reports on health quality indicators were drawn up. Nonetheless, a will to measure health system performance in a structured, defined and standardised manner was always present. After many efforts, this HSPA framework has been developed, with clear domains and appropriate indicators that are linked to the priorities of the Slovenian health system.

The development of the framework followed an iterative methodology. In this process, several frameworks adopted by other countries and international agencies were analysed. The Donabedian model was recognised as the most suitable for Slovenia's HSPA. The resultant HSPA Framework is a combination of international experience, which was provided by Maltese and Italian experts, and Slovenian previous efforts to establish a performance monitoring system.

The choice of domains was also an iterative process. Domains from international frameworks were examined and included or excluded through consensus discussion. New domains emerged and others were excluded for various reasons. These were mapped appropriately onto the framework model based on the input, process and output streams. The result of choosing appropriate domains was consistent with the final results confirming our thoughts that Slovenia is doing well in some areas, while requiring improvement in other areas.

The process of selection and analysis of the performance indicators was a challenging road. After numerous exclusion procedures, the final number of 69 indicators and 26 sub-indicators emerged. Several stakeholders were invited to participate in this process, although their response was not as expected. Another challenge that emerged was the collection of data, both local and international. For example, in Slovenia the number of patients with diabetes mellitus is known only from the number of prescribed drugs (oral antidiabetics, insulin). Therefore, it is impossible to distinguish between patients with type 1 and 2 diabetes mellitus. Another example was getting data for preventive programs for children. Although we obtained Slovenian data, the international comparison was impossible because there is no comparable international data. Apart from this, for many chosen indicators the comparison might not have been as relevant or appropriate as expected, due to differences among different health systems and different methodologies used. Therefore, international comparability proved to be problematic in some instances, depending on the definitions adopted for some indicators.

However, on the whole, this proved to be a positive and enriching process which gave us the opportunity to identify our weaknesses in data collection, as well as acknowledging our areas of strength. Although the base year chosen for the compilation of the report was 2016, depending upon the availability of data, a few indicators cover more recent or older data, as required for international comparison.

Despite numerous improvements during the process of data collection and analysis, there is still much to be done.

First of all, all efforts must need to focus on the data sources that can and should provide the data we need. Besides this, the required resources are required to maintain the HSPA and produce further iterations after this first one. Refining the methodology in the future would also be appropriate, to ensure better international comparability especially for indicators pertaining to the domains of Health Promotion and Disease Prevention, Generation and Management of Resources, Efficiency, Responsiveness and Person Centeredness and Health Determinants. Many of these indicators could not be compared internationally as data on these was not available.

This report is complemented by another report on the relationship between this HSPA and the Slovenian National Healthcare Plan, 2016–2025. The HSPA was spurned by this National Plan which required a national system of performance assessment to measure progress and set priorities. The two reports were compared and shown how they are matched. The indicators selected in the HSPA project were mapped against the overarching targets, the priority areas as well as the priority area specific objectives and specific topics of the national plan. The HSPA does not provide an assessment to all the targets of the Health Plan and therefore further work needs to be done to assess the outcomes of the Health Plan.

## RECOMMENDATIONS FOR IMPROVING THE SLOVENIAN HEALTHCARE SYSTEM

The Slovenian health system is facing several serious challenges. This highlights the need for reforming healthcare. Aging population requires adjustment of the health system in improving its accessibility and efficiency. Healthcare personnel are not satisfied with their working conditions. In some cases, waiting times are too long and people in addition to healthcare personnel are dissatisfied with the health system. Despite the rising number of health personnel, this number does not follow the increasing needs for health services.

Besides, as in the other European countries, due to elderly population growth and lower fertility rate, the burden on long-term healthcare will be greater, even in the light of smaller share of GDP that a country allocates to the health system. However, on the other hand, Slovenia has one of the lowest child and infant mortality rate in the Europe.

Within this context, improvement of the healthcare system is of significant importance in order to contribute towards the continued prosperity of the Slovenian population. The next section outlines areas that require improvement or change. It is for the respective service heads and those in authority to adopt the recommendations outlined below.

### HEALTH STATUS

Although mortality rates from circulatory diseases are decreasing, they are still above EU average. Besides better awareness of the population about healthy lifestyle, improvements in the performance of healthcare providers with better equipment and the provision of more healthcare professionals is required. From this point of view, not only life expectancy would be longer, but also healthy life years at 65.

The same could be said of the incidence rate of different cancers, as healthy lifestyle is especially very important in the burden of many cancers.

Like other European countries, Slovenia is facing an increasing prevalence rate of people with diabetes. Again, healthy lifestyle and specific policies to combat this phenomenon are crucial in establishing lower diabetes prevalence rate.

Suicide mortality rate is still one of the Slovenian most important weaknesses. Despite many efforts have been done, the rate is still not decreasing as expected. Window of opportunities is still open for additional efforts in combating this huge problem.

## QUALITY AND SAFETY

Cancer survival rates are improving, but in comparison to the other European countries are still lower, except for cervical and breast cancer. As it has been already said, better awareness is needed although Slovenia has one of the best cancer screening programs (for breast, cervical and colorectal cancer).

Slovenia has the highest diabetes lower extremity amputation rate. However, it must be emphasized that this indicator requires better collection methods and further analysis. Hence, the full picture for this indicator is difficult to ascertain. Therefore, this indicator is controversial. Slovenian data is no longer included in the international reporting of HCQO.

## GENERATION AND MANAGEMENT OF RESOURCES

Although the number of practising and primary care physicians, dentists and nurses is improving, comparison to other European countries show that Slovenia has less healthcare workers than the average number in the EU.

Actually, Slovenia is facing with its most important challenge regarding human resources. Many physicians and nurses are leaving Slovenia for a better working environment abroad. The situation is even more aggravated within primary healthcare sector and especially general practitioners. This is an issue of highest priority.

## FINANCIAL SUSTAINABILITY

Comparison to other European countries showed that Slovenia is fairing relatively well. The worst performance was related to growth of total healthcare expenditure by financing per capita.

Besides decreased annual growth rates in total expenditure by financing per capita, Slovenia is also facing lower growth rate for healthcare expenditure for selected functions per capita. However, Slovenia was doing better than other European countries.

In addition, public and private expenditures on healthcare were lower than in other European countries. The unfavourable ratio between public and private sources indicate that public financing needs to improve.

It is apparent that Slovenia needs additional financial resources in health care to resolve certain financial problems and strengthen its health system.

## EFFICIENCY

Overall assessment showed that Slovenia faired similarly to other European countries. However, despite the fact that the number of MRI and CT examinations is improving, Slovenia still lags behind other European countries. The main problem lies with medical equipment resources.

## RESPONSIVENESS AND PERSON CENTEREDNESS

A clear picture on the responsiveness and person centeredness of Slovenia’s health system is not yet known as a few indicators were evaluated. Therefore, recommendations cannot be put forward.

## EQUITY AND ACCESS

Overall assessment showed that Slovenia was performing similarly to other European countries. However, the only one case in which Slovenia is doing worse was public expenditure on long-term care services. The reason for this is also that this area has not yet been rigorously regulated, although the Government is intensively preparing the law draft on long-term care which should be enacted in the first half of 2020.

## HEALTH DETERMINANTS

Overweight and obesity amongst adults and teenagers are becoming a prominent problem.  More effort needs to be put into raising awareness of being healthy, especially in children.

Beside this, excessive drinking of alcoholic beverages is deteriorating in Slovenia which has always been an important health problem. A particular problem is the increasing consumption of alcoholic beverages among teenagers. Again, action is urgently required.

Regarding cannabis use among adolescents and daily smokers, Slovenia is on the same level as other European countries. However, youngsters must made more aware about cannabis’s harmful effects.

## HEALTH PROMOTION AND DISEASE PREVENTION

Overall, Slovenia is doing well in comparison to other European countries.

Indicators on communicable disease prevention in Slovenia are comparable to other European countries. However, Slovenia had one of the lowest influenza vaccination coverage rates for people aged over 65. More has to be done to raise the awareness of the population.

The incidence rate of skin melanoma in Slovenia is not just increasing but it is also higher in comparison to other European countries. Again, more has to be done to raise the awareness of the population.

As a consequence of excessive alcohol consumption, Slovenia has a worse prevalence and death rate of alcoholic liver cirrhosis in comparison to other European countries. Again, more has to be done to raise the awareness of the population.

# APPENDICES

## APPENDIX 1 – LIST OF MEMBERS OF STEERING COMMITTEE

Dr. Tit Albreht (NIPH)

Klavdija Kobal Strauss (Ministry of Health)

Dr. Ivan Eržen (NIPH)

Boris Kramberger (Health Insurance Institute of Slovenia)

Tanja Mate (Ministry of Health)

Mojca Gobec (Ministry of Health)

Mirko Stopar (Ministry of Health)

Federico Paoli (Structural Reform Support Service, European Commission)

## APPENDIX 2 – LIST OF MEMBERS OF OPERATIONAL WORKING GROUP

Dr. Denis Perko (National Institute of Public Health)

Dr. Mircha Poldrugovac (National Institute of Public Health)

Mr. Robert Potisek (National Institute of Public Health)

Dr. Matej Vinko (National Institute of Public Health)

Dr. Blashko Kasapinov (National Institute of Public Health)

Mrs. Mojca Simončič (National Institute of Public Health)

Mr. Dušan Josar (Ministry of Health)

Mrs. Vesna Zupančič (Ministry of Health)

Mrs. Mojca Presečnik (Ministry of Health)

Mrs. Anita Jacović (Ministry of Health)

Dr Kenneth Grech (University of Malta, Malta)

## APPENDIX 3 – DEFINITION OF DOMAINS

| CATEGORY | DOMAIN | DEFINITION |
|---|---|---|
| **DRIVERS (INPUT)** | **HEALTH DETERMINANTS** | The health of individuals and communities is affected through many factors, such as their circumstances and environment. Factors including genetics, income and education level, home, relationships with friends and family and environment have a considerable impact on health, whereas more commonly considered factors such as access and use of healthcare services often have a lesser impact. |
| | **GENERATION AND MANAGEMENT OF RESOURCES** | The domain corresponds to the “financial, human, physical, technical and informational (including evidence and high-quality data) resources” that are available to the health system. |
| | **FINANCIAL SUSTAINABILITY** | Health financing is to make funding available, as well as to set the right financial incentives to providers to ensure that all individuals have access to effective public health and personal healthcare [2]. A good health financing system raises adequate funds for health, so that people would have access to needed services and are protected from financial catastrophe or impoverishment associated with having to pay for them. It also provides incentives for providers and users to be efficient. |
| | **HEALTH PROMOTION AND DISEASE PREVENTION** | Disease prevention are population and individual based interventions for primary and secondary (early detection) prevention, aiming to minimize the burden of disease and associated risk factors. Primary prevention refers to actions aimed at avoiding the manifestation of a disease and secondary prevention deals with early detection when this improves the chances for positive health outcomes. Health promotion is the process of empowering people to increase control over their health and its determinants through health |

| | | |
|---|---|---|
| | | literacy efforts and multi-sectoral action to increase healthy behaviours. |
| **INTERMEDIATE GOALS** | **EFFICIENCY** | Healthcare efficiency measurement examines the extent to which the inputs to the health system, in the form of expenditure and other resources, are used to best effect to secure health system outputs and/or valued health system goals. It could embrace either allocative or technical efficiency, and is often conceptualized as waste. |
| | **QUALITY AND SAFETY** | Quality of care is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge. The indicators assess the process or the outcome of care. They serve primarily as quality improvement tools for healthcare organisations. |
| | **EQUITY AND ACCESS** | Equity means that health services are accessible on the basis of need rather than on geographical location or ability to pay. Access can by physical, financial or psychological, and requires that health services are a priori available. It encompasses all types of delay during the contact between a patient and a provider, such as delay for a medical appointment, the waiting time in an emergency room and delays for surgery after admission. |
| | **RESPONSIVENESS AND PERSON CENTEREDNESS** | Responsiveness relates to a system's ability to respond to the legitimate expectations of potential users about non-health enhancing aspects of care and in broad terms can be defined as the way in which individuals are treated and the environment in which they are treated, encompassing an individual's experience of contact with the health system. Responsiveness is used synonymously with person centeredness. Person centeredness |

| | | |
|---|---|---|
| | | is the degree to which a system actually functions by placing the user at the centre of its delivery of healthcare and is often assessed in terms of patient's experience of their healthcare. This experience of care refers to the caring, communication and understanding that should characterize the clinician-patient relationship. |
| **GOALS (OUTCOMES)** | **HEALTH STATUS** | According to the WHO, health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity (1). Health Status is the level of health of the individual, group, or population as subjectively assessed by the individual or by more objective measures. |

## APPENDIX 4 – SOURCE OF INDICATORS

- Resolution on the National Healthcare Plan 2016-2025 “Together for the society of health”
- National programme on palliative care
- Action plan for the National programme on palliative care
- Resolution on the National Programme on Nutrition and Physical Activity for Health 2015–2025
- Action plan for the National Programme on Nutrition and Physical Activity for Health 2015–2025
- 2020 Strategy for Dementia control in Slovenia
- National Diabetes Prevention and Care Development Programme 2010 – 2020
- National strategy for the prevention and control of HIV infections 2017 – 2025
- Resolution on the National Road Safety Program for the period 2013 – 2022
- Resolution on the National Programme on Illicit Drugs 2014–2020
- Action plan in the area of illicit drugs
- Slovenian Strategy for the environment related health of children and adolescents 2012 – 2020
- Action plan for the implementation of the Slovenian Strategy for the environment related health of children and adolescents 2012 – 2020
- Strategy for a Long-Lived Society
- Slovenia Development Strategy 2030
- Strategic Development program of the Health Insurance Institute of Slovenia 2014 – 2019
- General Agreement (between healthcare partners) of 2017,
- Annual business report of the Health Insurance Institute of Slovenia for 2016,
- The OECD publication Health at a Glance 2017 and Health at a Glance Europe 2016,
- The European Commission’s publication “state of Health in the EU – Slovenia 2017” and “Towards a Joint Assessment Framework in the Area of Health”

## APPENDIX 5 – MAPPING OF INDICATORS

| **Indicator** | **Name of Domain** |
|---|---|
| Life expectancy | Health Status |
| Circulatory system diseases mortality rates | Health Status |
| Incidence of all cancers | Health Status |
| Incidence of colorectal cancer | Health Status |
| Incidence of breast cancer | Health Status |
| Incidence of lung cancer | Health Status |
| Incidence of prostate cancer | Health Status |
| Incidence of cervical cancer | Health Status |
| Diabetes prevalence rate | Health Status |
| Healthy life years at age 65 | Health Status |
| Suicide mortality rate | Health Status |
| AIDS–related mortality rate | Health Status |
| Child mortality rate | Health Status |
| Infant mortality rate | Quality and Safety |
| Cancer patients survival rate | Quality and Safety |
| Colorectal cancer patients survival rate | Quality and Safety |
| Breast cancer patients survival rate | Quality and Safety |
| Lung cancer patients survival rate | Quality and Safety |
| Prostate cancer patients survival rate | Quality and Safety |
| Cervical cancer patients survival rate | Quality and Safety |
| Admission–based diabetes lower extremity amputation rate | Quality and Safety |
| Thirty–day mortality rate after admission to hospital for AMI; | Quality and Safety |

| | |
|---|---|
| Thirty–day mortality rate after admission to hospital for stroke | Quality and Safety |
| Second-line antibiotics (quinolones and cephalosporins) as a proportion of all antibiotics prescribed in primary care | Quality and Safety |
| Number of practising physicians per 100 000 | Generation and management of resources |
| Number of practising nurses per 100 000 | Generation and management of resources |
| Number of primary care physicians (general medical practitioners) | Generation and management of resources |
| Availability of expenses for development - new health technologies | Generation and management of resources |
| Overall volume of prescribed antibiotics | Generation and management of resources |
| Number of hospital beds by healthcare function | Generation and management of resources |
| Indicator on implementation of National Healthcare Plan | Generation and management of resources |
| Organization climate survey based indicator | Generation and management of resources |
| Health expenditure as a share of GDP | Financial Sustainability |

| | |
|---|---|
| Public and private expenditure on healthcare | Financial Sustainability |
| Pharmaceuticals expenditure | Financial Sustainability |
| Share of public expenditure on pharmaceuticals compared with services of healthcare | Financial Sustainability |
| Growth of healthcare expenditure for selected functions per capita | Financial Sustainability |
| Growth of total healthcare expenditure by financing per capita–annual growth rate in real terms | Financial Sustainability |
| Share of surgeries, carried out as day cases | Efficiency |
| Average length of stay | Efficiency |
| Use of equipment resources | Efficiency |
| Rate of preventable emergency department visits | Efficiency |
| Number of MRI examinations per 100 000 | Efficiency |
| Number of CT examinations per 100 000 | Efficiency |
| Hospital discharges per 1 000 | Efficiency |
| Use of long–acting benzodiazepines in elderly patients | Responsiveness and person centeredness |
| Avoidable admissions for chronic ambulatory care sensitive conditions (Congestive heart failure, Asthma, COPD, Hypertension, Diabetes mellitus) | Responsiveness and person centeredness |
| Indicator on patient experience based on PREMS | Responsiveness and person centeredness |

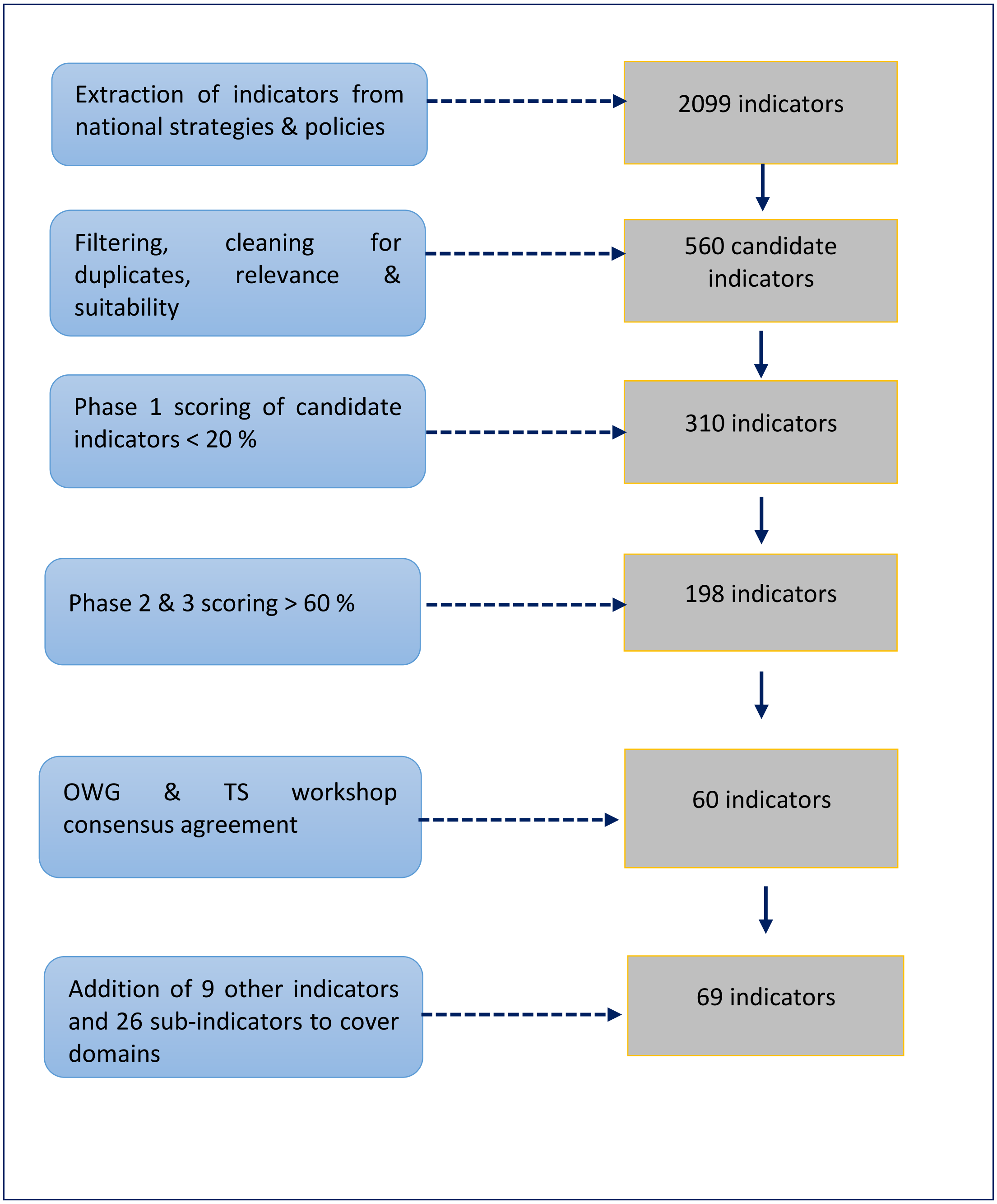
| | |
|---|---|
| Indicator on readmission | Responsiveness and person centeredness |
| Access to compulsory health insurance | Equity and Access |
| Waiting times for elective surgery procedure | Equity and Access |
| Out–of–pocket expenditure | Equity and Access |
| Public expenditure on long-term healthcare services | Equity and Access |
| Unmet needs for healthcare due to financial reasons | Equity and Access |
| Share of adult smokers | Health determinants |
| Share of smokers among children and adolescents | Health determinants |
| Share of overweight and obese adults | Health determinants |
| Share of overweight and obese children and adolescents | Health determinants |
| Number of cigarettes sold | Health determinants |
| Share of heavy episodic drinkers | Health determinants |
| Share of alcohol consumption in children and adolescents | Health determinants |
| Prevalence of type 2 diabetes in children | Health determinants |
| Cannabis consumption in young adults | Health determinants |

| | |
|---|---|
| Vaccination rates for diphtheria, tetanus and pertussis (DTP) and measles, mumps and rubella (MMR) | Health promotion and disease prevention |
| HIV notification rate | Health promotion and disease prevention |
| Notified AIDS incidence | Health promotion and disease prevention |
| Share of persons responding to screening programs for cervical cancer | Health promotion and disease prevention |
| Share of persons responding to screening programs for breast cancer | Health promotion and disease prevention |
| Share of persons responding to screening programs for colorectal cancer | Health promotion and disease prevention |
| Incidence of malignant skin melanoma | Health promotion and disease prevention |
| Malignant skin melanoma survival rate | Health promotion and disease prevention |
| Influenza vaccination coverage, population aged 65 and over | Health promotion and disease prevention |

| | |
|---|---|
| Notification rate for measles | Health promotion and disease prevention |
| Sexually transmitted infections notification rates | Health promotion and disease prevention |
| Number of participants to prevention programmes of health promotion centres | Health promotion and disease prevention |
| Exposure to tobacco smoke indoors | Health promotion and disease prevention |
| Smoking in children and adolescents | Health promotion and disease prevention |
| The number of participants in counselling (brief interventions carried out) | Health promotion and disease prevention |
| Preventive program among children and youth | Health promotion and disease prevention |
| Sick leave due to alcohol | Health promotion and disease prevention |
| Prevalence of alcoholic liver cirrhosis | Health promotion and disease prevention |
| Death rate of alcoholic liver cirrhosis | Health promotion and disease prevention |

| | |
|---|---|
| Indicator on frailty | Health promotion and disease prevention |
| Visits to a dentist | Health promotion and disease prevention |
| Brushing teeth | Health promotion and disease prevention |

## APPENDIX 6 – ALGORITHM SHOWING THE EXTRACTION, FILTERING, SCORING AND SELECTION OF INDICATORS



## APPENDIX 7 – DEFINITION OF INDICATORS

## DOMAIN 1: HEALTH STATUS

### INDICATOR 1: LIFE EXPECTANCY

**DEFINITION:** Life expectancy at different ages is the average number of years that a person at that age can be expected to live, assuming that age-specific mortality levels remain constant. However, the actual age-specific death rate of any particular birth cohort cannot be known in advance.

**Life expectancy at birth**

Life expectancy at birth is defined as how long, on average, a newborn can expect to live, if current death rates (age-specific death rates) do not change.

**Life expectancy at 50**

Life expectancy at age 50 years old is the average number of years that a person at that age can be expected to live, assuming that age-specific mortality levels remain constant.

**Life expectancy at 65**

Life expectancy at age 65 years old is the average number of years that a person at that age can be expected to live, assuming that age-specific mortality levels remain constant.

Life expectancy is not able to explain whether extra years of life gained through increased longevity are spent in a good or bad health. For this purpose indicators of health expectancies, such as healthy life years, have been developed.

**CALCULATION:** Life expectancy is calculated by constructing a life table. A life table incorporates data on age-specific death rates for the population in question, which requires enumeration data for the number of people, and the number of deaths at each age for that population. Those numbers typically are derived from national census and vital statistics data, and from them the average life expectancy for each of the age groups within the population can be calculated.

The methodology used to calculate life expectancy can vary slightly between countries. This can change a country’s estimates by a fraction of a year. This indicator is presented by gender and is measured in years.

## INDICATOR 14: DEATHS DUE TO DISEASES OF THE CIRCULATORY SYSTEM/ CIRCULATORY SYSTEM DISEASES MORTALITY RATES

**DEFINITION:** Circulatory system diseases mortality rates is the number of registered deaths in a year, divided by the population, from circulatory system diseases related to ICD-10 codes I00 – I99.

**CALCULATION:** Number of registered deaths due to diseases of the circulatory system in a year, divided by the population. The rates have been age standardized to European standard population (ESP 2013) to avoid variations arising from differences in age of population and over time.

## INDICATOR 17A: INCIDENCE OF ALL CANCERS

**DEFINITION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. New primary cancers of the same histology in paired organs, e. g. on the left and right breast, are not comprised in the incidence figures, neither are any new cancers of the same histology appearing in the same organ, e.g. multiple lesions of the colon. ICD-10 codes are C00–C96.

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. New primary cancers of the same histology in paired organs, e. g. on the left and right breast, are not comprised in the incidence figures, neither are any new cancers of the same histology appearing in the same organ, e.g. multiple lesions of the colon.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated.

### *INDICATOR 17B: INCIDENCE OF COLORECTAL CANCER*

**DEFINITION:** Total colorectal cancer incidence per 100 000 population in a given year (ICD-10 codes C18-C20).

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. Any new cancers of the same histology appearing in the same organ are not comprised in the incidence figures.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

### *INDICATOR 17C: INCIDENCE OF BREAST CANCER*

**DEFINITION:** Total breast cancer incidence per 100 000 population in a given year (ICD-10 codes C50).

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. New primary cancers of the same histology in paired organs, e. g. on the left and right breast, are not comprised in the incidence figures, neither are any new cancers of the same histology appearing in the same organ, e.g. multiple lesions of the colon.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

### *INDICATOR 17D: INCIDENCE OF LUNG CANCER*

**DEFINITION:** Total lung cancer incidence per 100 000 population in a given year (ICD-10 codes C33-C34).

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. New primary cancers of the same histology in paired organs, e. g. on the left and right breast, are not comprised in the incidence figures, neither are any new cancers of the same histology appearing in the same organ, e.g. multiple lesions of the colon.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

### *INDICATOR 17E: INCIDENCE OF PROSTATE CANCER*

**DEFINITION:** Total prostate cancer incidence per 100 000 population in a given year (ICD-10 codes C61).

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he is diagnosed with more than one different cancers in the same year. Any new cancers of the same histology appearing in the same organ are not comprised in the incidence figures.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

### *INDICATOR 17F: INCIDENCE OF CERVICAL CANCER*

**DEFINITION:** Total cervical cancer incidence per 100 000 population in a given year (ICD-10 codes C53).

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if she is diagnosed with more than one different cancers in the same year. Any new cancers of the same histology appearing in the same organ are not comprised in the incidence figures.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated (ESP was used).

### INDICATOR 24: DIABETES PREVALENCE

**DEFINITION:** The diabetes prevalence indicator is the ratio of cumulative number of blood glucose lowering drugs recipients and population in the middle of the year.
The numerator includes all patients, who were prescribed at least one diabetes medicine, during the year. All types of diabetes are included in the calculation. It is not possible to differentiate between diabetes types (type 1 or type 2) from the prescription medicine database.

**CALCULATION:** The diabetes prevalence is the ratio between cumulative number of recipients of prescribed diabetes drugs in the observed calendar year and number of population in the middle of the observed calendar year.

- All recipients with type 1 and 2 diabetes, who received at least one recipe for Drugs used in diabetes in the observed calendar year, are included in calculation.
- A10 - Drugs used in diabetes, according to the Anatomical-Therapeutic-Chemical Classification of Drugs ATC.
- Indicator does not include people with diabetes who do not receive antihyperglycaemic drugs and are only on diet. There are many variations in international definitions and data of the diabetes prevalence.

## INDICATOR 40: SUICIDE MORTALITY RATE

**DEFINITION:** Suicide mortality rate is the number of registered deaths due to suicide in an observed year, divided by the population. Suicides are classified under ICD-10 codes X60-X84, Y870.

**CALCULATION:** The number of registered deaths due to suicide in an observed year, divided by the population, presented in terms of deaths per 100 000 inhabitants. The rate have been age standardized to European standard population (ESP 2013) to avoid variations arising from differences in age of population and over time. The rates have been directly age-standardized to remove variations arising from differences in age structures across countries and over time. The original sources of the data are NIPH and EUROSTAT Database.

## INDICATOR 211: HEALTHY LIFE YEARS AT AGE 65

**DEFINITION:** Healthy life years at age 65 measures the number of years that a person at age 65 is expected to live in a healthy condition.

**CALCULATION:** The indicator is calculated following the Sullivan method (http://www.ehemu.eu/pdf/Sullivan_guide_final_jun2007.pdf). The indicator is calculated separately for males and females.

## INDICATOR 911: AIDS-RELATED MORTALITY RATE (PER 100 000 POPULATION)

**DEFINITION:** Aids-related mortality rate is mortality rate due to AID in a given calendar year per 100 000 population. Deaths from AIDS are related to ICD-10 codes B20-B24.

**CALCULATION:** Mortality data are based on the number of registered deaths in a year per 100 000 inhabitants. AIDS-related mortality rate is age-standardized death rate calculated using the direct method and standard European population structure.

## INDICATOR 2028: CHILD MORTALITY 1-14 YEARS

**DEFINITION:** Child mortality refers to the death of children under the age of 14 and encompasses national mortality, under-5 mortality, and mortality of children aged 5–14.

**CALCULATION:** Death rate of children aged 1 – 4 years and 5-14 years per 100,000 population. Number of deaths at age 1 – 4 years and 5 – 14 years divided by the midterm population aged 1 – 4 and 5 – 14 years, expressed in 100 000 population. The rates have been age standardized to European standard population (ESP 2013) to avoid variations arising from differences in age of population and over time.

## DOMAIN 2: QUALITY AND SAFETY

### INDICATOR 2: INFANT MORTALITY

**DEFINITION:** Infant mortality is the death of young children under the age of one. It is an important indicator of the health and social well-being of the population. It is also an important indicator of the quality and accessibility of healthcare during the pregnancy and the first months of the child's life.

**CALCULATION:** Infant mortality rate is defined as the number of deaths of children under one year of age, expressed per 1 000 live births.

### INDICATOR 21: 5-YEAR SURVIVAL RATES OF CANCERS

**DEFINITION:** The relative survival rate for cancer is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality.

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

#### *INDICATOR 21A: 5-YEAR SURVIVAL RATE OF ALL CANCERS*

**DEFINITION:** The relative survival rate for all cancers is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C00–C96).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

#### *INDICATOR 21B: 5-YEAR SURVIVAL RATE OF COLORECTAL CANCER*

**DEFINITION:** The relative survival rate for colorectal cancer is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C18-C20).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with colorectal cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

### *INDICATOR 21C: 5-YEAR SURVIVAL RATE OF BREAST CANCER*

**DEFINITION:** The relative survival rate for breast cancer is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C50).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with breast cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

### *INDICATOR 21D: 5-YEAR SURVIVAL RATE OF LUNG CANCER*

**DEFINITION:** The relative survival rate for lung cancer is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C33–C34).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with lung cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

### *INDICATOR 21E: 5-YEAR SURVIVAL RATE OF PROSTATE CANCER*

**DEFINITION:** The relative survival rate for prostate cancer is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C61).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with prostate cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

### *INDICATOR 21F: 5-YEAR SURVIVAL RATE OF CERVICAL CANCER*

**DEFINITION:** The relative survival rate for cervical cancer is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C53).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with lung cancer surviving five years after diagnosis, divided by expected survival rate in the general population.

### INDICATOR 30: ADMISSION-BASED DIABETES LOWER EXTREMITY AMPUTATION RATE

**DEFINITION:** Number of admission-based diabetes lower extremity amputation per 100 000 inhabitants.

**CALCULATION:** Lower extremity amputation in adults with diabetes is defined as the number of discharges of people aged 15 years and over per 100 000 inhabitants, for the general population and the estimated population with diabetes. Rates for these indicators have been age-standardised.

## INDICATOR 1772: THIRTY-DAY MORTALITY RATE AFTER HOSPITAL ADMISSION TO HOSPITAL FOR ACUTE MYOCARDIAL INFARCTION AND STROKE

### *INDICATOR 1772A: THIRTY-DAY MORTALITY RATE AFTER HOSPITAL ADMISSION FOR ACUTE MYOCARDIAL INFARCTION*

**DEFINITION:** Thirty-day mortality rate after hospital admission for acute myocardial infarction measures the percentage of people aged 45 and over who die within 30 days following admission to hospital for an acute myocardial infarction. Rates based on linked data refer to a situation where the death occurred in the same hospital, a different hospital, or out of hospital. Rates are age-sex standardised to the 2010 OECD population aged 45+ admitted to hospital for an acute myocardial infarction (ICD-10 I21, I22).

**CALCULATION:**

***Numerator:*** Number of deaths in the same hospital or any hospital or outside hospital, within 30 days from the first day of hospitalization, among all cases that correspond to inclusion and exclusion criteria for denominator.

***Denominator:*** All admitted patients aged 45 years or more with a major diagnosis acute myocardial infarction (ICD-10 I21, I22). In calculating the indicator, all patients are included, no matter what the possible transfer.

### *INDICATOR 1772B: THIRTY-DAY MORTALITY RATE AFTER HOSPITAL ADMISSION FOR STROKE*

**DEFINITION:** Thirty-day mortality rate after hospital admission for stroke measures the percentage of people aged 45 and over who die within 30 days following admission to hospital for stroke (ischaemic, haemorrhagic). Rates based on linked data refer to a situation where the death occurred in the same hospital, a different hospital, or out of hospital. Rates are age-sex standardised to the 2010 OECD population aged 45+ admitted to hospital for and ischaemic (ICD-10 I63-I64) and haemorrhagic stroke (ICD-10 I60–I62).

**CALCULATION:**

***Numerator:*** Number of deaths in the same hospital or any hospital or outside hospital, within 30 days from the first day of hospitalization, among all cases that correspond to inclusion and exclusion criteria for denominator.

***Denominator:*** All admitted patients aged 45 years or more with a major diagnosis stroke (ICD-10 I21, I22). In calculating the indicator, all patients are included, no matter what the possible transfer.

## INDICATOR 2007: SECOND-LINE ANTIBIOTICS (QUINOLONES AND CEPHALOSPORINS) AS A PROPORTION OF ALL ANTIBIOTICS PRESCRIBED IN PRIMARY CARE

**DEFINITION:** Total volume of second-line antibiotics (quinolones and cephalosporines) as a proportion of all systemic antibiotics prescribed.

**CALCULATION:** Volume of cephalosporines and quinolones as a proprortion of all systemic antibiotics prescribed (DDD). Defined daily dose (DDD) is the assumed average maintenance dose per day for a drug used for its main indication in adults. DDDs are assigned to each active ingredient(s) in a given therapeutic class by international expert consensus.

## DOMAIN 3: GENERATION AND MANAGEMENT OF RESOURCES

### INDICATOR 7: NUMBER OF PRACTISING PHYSICIANS PER 100 000

**DEFINITION:** Medical doctors (physicians) are defined as doctors who are providing care for patients per 100 000 population. The numbers also include doctors working in administration, management, academic and research positions ("professionally active" physicians).

**CALCULATION:** The indicator of practising physicians is defined as number of practising physicians, expressed per 100 000 population. Coverage: Practising physicians are those working in the healthcare sector (primary, secondary and tertiary care), including public health institutes and health insurance funds.

### INDICATOR 8: PRACTISING NURSES PER 100 000 INHABITANTS

**DEFINITION:** Practising nursing professionals assume responsibility for the planning and management of patient care, including the supervision of other healthcare workers, working autonomously or in teams with medical doctors and others in the application of preventive and curative care. They are providing care for patients per 100 000 population.

**CALCULATION:** The indicator of practising nurses is defined as number of practising nurses, expressed per 100 000 population. Coverage: Practising nurses are those working in the healthcare sector (primary and secondary care), including public health institutes and the health insurance institute.

### INDICATOR 199: NUMBER OF PRIMARY CARE PHYSICIANS (GENERAL MEDICAL PRACTITIONERS)

**DEFINITION:** The role of specialists in family and general medicine varies widely across Europe. In the UK general practitioners carry out paediatric and gynaecology tasks, but on the other hand, while working in the outpatient clinic, they do not perform the work of an emergency doctor, which is a practice in Slovenia, but this part of the service performs other personnel. In their methodology, OECD, WHO and EUROSTAT state that this category (generalist medical practitioners) does not include paediatricians or gynaecologists at the primary level. Slovenian primary healthcare is composed of health services of general medicine - specialists of general and family medicine, paediatrics, gynaecologists and dentists. The comparison among different European countries is therefore difficult due to varying definitions. A methodological comparison of Slovenian and other countries primary care is very difficult.

**CALCULATION:** The total number of general medical practitioners by the end of a given calendar year, per 1 000 inhabitants (end of year population).

### INDICATOR 1802: AVAILABILITY OF EXPENSES FOR DEVELOPMENT - NEW HEALTH TECHNOLOGIES

### INDICATOR 1823: OVERALL VOLUME OF PRESCRIBED ANTIBIOTICS

**DEFINITION:** Prescribed antibiotics as a defined daily doses (DDD) per 1 000 population per day. DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults. DDDs are assigned to each active ingredient(s) in a given therapeutic class by international expert consensus. For instance, the DDD for oral aspirin equals 3 grams, which is the assumed maintenance daily dose to treat pain in adults. DDDs do not necessarily reflect the average daily dose actually used in a given country. For more detail, see http://www.whocc.no/atcddd. Data for Slovenia include only those dispensed by community pharmacies.

**CALCULATION:** Defined Daily Dose per 1 000 population per day = (Number of Defined Daily doses * 1 000) / (population * 365). Calculation include Antibacterials for systemic use (ATC index code J01).

### INDICATOR 2090: NUMBER OF HOSPITAL BEDS BY HEALTHCARE FUNCTION

**DEFINITION:** Number of hospital beds (curative care, rehabilitative care, long-term care and other functions) per 100 000 inhabitants.

**CALCULATION:** The total number of hospital beds at the end of the calendar year divided by the end of year population expressed per 100 000 inhabitants. Total hospital beds are all hospital beds which are regularly maintained and staffed and immediately available for the care of admitted patients. Both occupied and unoccupied beds are included

### INDICATOR 2116: ORGANIZATION CLIMATE SURVEY BASED INDICATOR

## DOMAIN 5: FINANCIAL SUSTAINABILITY

### INDICATOR 1851: EXPENDITURE ON HEALTHCARE AND PHARMACEUTICALS

### *INDICATOR 1851A: HEALTH EXPENDITURE AS A SHARE OF GDP*

**DEFINITION:** Expenditure on health measures the final consumption of health goods and services. As defined in the System of Health Accounts (OECD, Eurostat and WHO, 2017). This refers to current expenditure on medical services and goods, public health and prevention programmes, and administration irrespective of the type of financing arrangement. Gross domestic product (GDP) is the sum of the final consumption, gross capital formation and net exports. Final consumption includes all the community to satisfy their individual needs. It includes final consumption expenditure of households, general government and non-profit institutions serving households. The indicator shows the share of the budget that a country allocates to healthcare in the observed calendar year.

**CALCULATION:** Indicator measures how much a country spends on healthcare in relation to all other goods and services in the economy.

**Numerator:** Governmental expenditure on healthcare in the observed calendar year.

**Denominator:** Total government expenditure in the observed calendar year.

### *INDICATOR 1851B: PUBLIC AND PRIVATE EXPENDITURE ON HEALTHCARE IN SLOVENIA AND EUROPE IN EUR PER CAPITA AND IN THE SHARE OF GDP IN SLOVENIA COMPARED TO EUROPEAN COUNTRIES*

**DEFINITION:** Expenditure on healthcare measures the final consumption of health goods and services, as defined in the System of Health Accounts manual (OECD, Eurostat and WHO, 2011). This refers to current spending by both public and private sources on medical services and goods, public health and prevention programmes, and administration. Countries' health expenditures are converted to a common currency (euro) and are adjusted to take account of the different purchasing power of the national currencies, in order to compare spending levels. Economy-wide (GDP) PPPs are used to compare relative expenditure on health in relation to the rest of the economy. Health expenditure is the sum of public and private health expenditures as a ratio of total population. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health. Data are in current EUR.

**CALCULATION:** Methodology is defined by the System of Health Accounts manual (OECD, Eurostat and WHO). Current expenditure per capita is measured in PPP EUR.

**Numerator:** Current expenditure for health in PPP (public, private, total)

**Denominator:** Population in Slovenia for the same year as nominator.

### *INDICATOR 1851C: PHARMACEUTICAL EXPENDITURE*

**DEFINITION:** Pharmaceutical expenditure covers expenditure on prescription medicines and self-medication, often referred to as over-the-counter products. In some countries, other medical non-durable goods are also included. It also includes pharmacists' remuneration when the latter is separate from the price of medicines. Final expenditure on pharmaceuticals includes wholesale and retail margins and value-added tax. Total pharmaceutical expenditure refers in most countries to "net" expenditure, i.e. adjusted for possible rebates payable by manufacturers, wholesalers or pharmacies. Pharmaceuticals consumed in hospitals and other healthcare settings as part of an inpatient or day case treatment are excluded. Comparability issues exist with regards to the administration and dispensing of pharmaceuticals for outpatients in hospitals. Pharmaceutical expenditure per capita is adjusted to take account of differences in purchasing power.

**CALCULATION:** Methodology is defined by the System of Health Accounts manual (OECD, Eurostat and WHO). For the calculation of pharmaceutical spending growth rates in real terms, economy-wide GDP deflators are used. Unit is in PPP EUR.

**Numerator:** Expenditure for pharmaceuticals using SHA methodology (spending on prescription medicines, OTCs).

**Denominator:** Population in Slovenia for the same year as nominator.

### *INDICATOR 1851D: SHARE OF PUBLIC EXPENDITURE ON PHARMACEUTICALS COMPARED WITH SERVICES OF HEALTHCARE*

**DEFINITION:** The indicator shows the share of expenditures on pharmaceuticals compared to the expenditures on healthcare in the observed calendar year.

**CALCULATION:** Methodology is defined by the System of Health Accounts (SHA) manual (OECD, Eurostat and WHO). For the calculation of pharmaceutical spending growth rates in real terms, economy-wide GDP deflators are used.

**Numerator**: Public expenditure on pharmaceuticals defined by SHA.

**Denominator**: All public expenditure for healthcare defined by SHA.

### INDICATOR 1884: GROWTH OF HEALTH EXPENDITURE FOR SELECTED FUNCTIONS PER CAPITA

**DEFINITION** Health expenditure growth in time, measured as index. Expenditures on inpatient, outpatient and long-term healthcare, pharmaceuticals, prevention and administration are compared in two different times periods.

**CALCULATION:** In the numerator is included the latest available expenditure data for the selected functions of selected year or time period, in the denominator is data for the previous year or time period to which it is compared. The fraction is multiplied by 100. The indicator can be calculated as year vs. year period vs. period, or as a chain index (indexes of successive years in each period) or average annual growth rate over the period.

### INDICATOR 1890: GROWTH OF TOTAL HEALTHCARE EXPENDITURE BY FINANCING PER CAPITA - ANNUAL GROWTH RATE IN REAL TERMS

**DEFINITION:** A comparison of growth of public and private total healthcare expenditure is made between two times. For the calculation of growth rates in real terms, economy-wide GDP deflators are used.

**CALCULATION:** In the numerator is included the latest available expenditure data for the selected functions of selected year or time period, in the denominator is data for the previous year or time period to which it is compared. The fraction is multiplied by 100. The indicator can be calculated as year vs. year period vs. period, or as a chain index (indexes of successive years in each period) or average annual growth rate over the period

## DOMAIN 6: EFFICIENCY

### INDICATOR 12: AVERAGE LENGTH OF STAY (ALOS)

**DEFINITION:** The average length of stay (ALOS) in days in a hospital per discharged inpatient is an average duration of a single episode of hospitalization.

**CALCULATION:** ALOS is computed by dividing the total number of inpatient hospital days, in all hospitals, counted from the date of admission to the date of discharge by the total number of discharges (including deaths) in all hospitals during a given year. A hospital day (or bed-day or inpatient day) is a day, during which a person admitted as an inpatient, is confined to a bed and stays overnight in a hospital. Day-cases (patients formally admitted for a medical procedure or surgery in the morning and discharged before the evening) are excluded. Patients admitted with the intention of discharge on the same day, but who subsequently stay in hospital overnight, are included

### INDICATOR 1773: SHARE OF SURGERIES, CARRIED OUT AS DAY CASES

**DEFINITION:** Number of selected interventions performed in one-day surgery (without overnight hospitalization) according to the total number of interventions carried out in the hospital, expressed as a percentage.

**CALCULATION:**

***Numerator:*** Number of interventions planned and performed as one-day surgical interventions without hospitalization, among all the procedures included in the denominator.

***Denominator:*** Total number of patients treated in these interventions.

### INDICATOR 1769: USE OF EQUIPMENT RESOURCES

### INDICATOR 2004: RATE OF PREVENTABLE EMERGENCY DEPARTMENT VISITS

**DEFINITION:** By definition, an emergency patient is the one who, due to his or hers current condition requires medical care in a given moment and not in a scheduled term. Emergency Departments (ED) are constantly overwhelmed with increasing number of patients seeking immediate medical care, very often for unjustified purposes.

**CALCULATION:** There are different approaches to define (calculate) preventable emergency care visits. For the purposes of this report and based on data available, calculation of the share of preventable ED visits is based on triage category (Manchester Triage System.

International comparison has been done only for patients who visited an ED because the primary care physician was not available (OECD database).

### INDICATOR 2087: NUMBER OF MRI EXAMINATIONS

**DEFINITION:** This indicator is presented as a total and broken down between hospitals and ambulatory care providers. It measures MRI examinations per 100 000 inhabitants.

**CALCULATION:** Indicator MRI exams is calculated as total number of all MRI exams performed in a calendar year, compared to 100 000 population.

### INDICATOR 2088: NUMBER OF CT EXAMINATIONS

**DEFINITION:** This indicator is presented as a total and broken down between hospitals and ambulatory care providers. It measures CT examinations per 100 000 inhabitants.

**CALCULATION:** Indicator MRI exams is calculated as total number of all CT examinations performed in a calendar year, compared to 100 000 population.

### INDICATOR 2092: HOSPITAL DISCHARGES

**DEFINITION:** Hospital discharge rates measure the number of patients who leave a hospital after receiving care. Hospital discharge is defined as the release of a patient who has stayed at least one night in hospital. It includes deaths in hospital following inpatient care. Same-day discharges are usually excluded. This indicator is measured per 1 000 inhabitants.

**CALCULATION:** Indicator Hospital discharge rate measure the number of hospital discharges, compared to 1 000 inhabitants.

## DOMAIN 10: RESPONSIVNESS AND PERSON CENTEREDNESS

### INDICATOR 1863: USE OF LONG-ACTING BENZODIAZEPINES IN ELDERLY PATIENTS

**DEFINITION:** Indicator presents the number of individuals aged 65 and more with at least one prescription of long-acting benzodiazepines among all individuals aged 65 and more.

**CALCULATION:** Number of individuals aged 65 and more with at least one prescription of long-acting benzodiazepines divided by all individuals aged 65 and more in 1 000.

### INDICATOR 2006: AVOIDABLE ADMISSIONS FOR CHRONIC AMBULATORY CARE SENSITIVE CONDITIONS (CONGESTIVE HEART FAILURE, ASTHMA, COPD, HYPERTENSION, DIABETES MELLITUS)

**DEFINITION:** Out of more than 30 conditions for which hospitalization could be reduced with better primary care, five stand out as particularly relevant in European countries: 1) diabetes, 2) hypertension, 3) heart failure, 4) chronic obstructive pulmonary disease (COPD) and bronchiectasis and 5) asthma. Common to all of these conditions is the fact that the evidence base for effective treatment is well established and much of it can be delivered at a primary care level.

**CALCULATION:** OECD Healthcare Quality and Outcomes (HCQO) - 2018-19 Data Collection; Guidelines for Filling in the Data Collection Questionnaires and using SAS programs

***AA1) ASTHMA HOSPITAL ADMISSION***

***Coverage:*** Population aged 15 and older (5 year age groups). All acute care hospitals, including public and private hospitals that provide inpatient care.

***Numerator:*** All non-maternal/non-neonatal hospital admissions with a principal diagnosis code of asthma in a specified year.

***Denominator:*** Population count.

***AA2) CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) HOSPITAL ADMISSION***

***Coverage:*** Population aged 15 and older (5 year age groups). All acute care hospitals, including public and private hospitals that provide inpatient care.

***Numerator:*** All non-maternal/non-neonatal hospital admissions with a principal diagnosis code of Chronic Obstructive Pulmonary Disease (See COPD diagnosis codes below) in a specified year

***Denominator:*** Population count.

***AA3) CONGESTIVE HEART FAILURE (CHF) HOSPITAL ADMISSION***

***Coverage:*** Population aged 15 and older (5 year age groups). All acute care hospitals, including public and private hospitals that provide inpatient care.

***Numerator***: All non-maternal/non-neonatal hospital admissions with principal diagnosis code of Congestive Heart Failure in a specified year.

***Denominator:*** Population count.

**AA4) *HYPERTENSION HOSPITAL ADMISSION***

***Coverage:*** Population aged 15 and older (5 year age groups). All acute care hospitals, including public and private hospitals that provide inpatient care.

***Numerator:*** All non-maternal/non-neonatal hospital admissions with principal diagnosis code of Hypertension in a specified year.

***Denominator:*** Population count.

***AA5) DIABETES HOSPITAL ADMISSION***

***Coverage:*** Population aged 15 and older (5 year age groups). All acute care hospitals, including public and private hospitals that provide inpatient care.

***Numerator:*** All non-maternal/non-neonatal hospital admissions with a principal diagnosis code of diabetes in a specified year.

***Denominator:*** Population count.

## INDICATOR 2100: INDICATOR ON PATIENT EXPERIENCE BASED ON PREMS

## INDICATOR 2101: INDICATOR ON READMISSION

## DOMAIN 11: EQUITY AND ACCESS

### INDICATOR 5: ACCESS TO COMPULSORY HEALTH INSURANCE

**DEFINITION:** The proportion of the population covered by compulsory health insurance.

**CALCULATION:** The number of inhabitants covered by compulsory health insurance, divided by number of all population, expressed in percentages.

### INDICATOR 60: WAITING TIMES FOR ELECTIVE SURGERY

**DEFINITION:** Mean and median waiting time for cataract, hip and knee replacement surgery.

**CALCULATION:** Mean and median number of days of waiting times for cataract, hip and knee replacement surgery in a specific year.

### INDICATOR 62: OUT-OF-POCKET EXPENDITURE

**DEFINITION:** Out-of-pocket payment (OOP, also: household expenditure on health) include formal and informal payments made by people at the time of using any health service provided by any type of provider. They exclude pre-payment (taxes, premiums, contributions etc.) and reimbursement by third parts such as government, health insurance fund or private insurance company. Only expenditure for medical spending (i.e. current health spending less expenditure for the health part of long-term care) is presented here, because the capacity of countries to estimate private long-term care expenditure varies widely. Hence, medical spending mainly refers to expenditure for curative and rehabilitative care in inpatient and outpatient settings, dental care, ancillary services, pharmaceuticals and therapeutic appliances.

**CALCULATION:** In percentage of GDP and total health expenditure, survey based data.

### INDICATOR 1699: LONG-TERM HEALTHCARE EXPENDITURE

**DEFINITION:** Expenditure for long-term healthcare is an expenditure for a set of services needed by people with reduced levels of physical and cognitive ability that over a longer period of time require help to do basic or supported daily tasks.

**CALCULATION:** Calculation of indicator is based on the System of Health Accounts (SHA) methodology. It is measured in millions of euro and share of GDP.

## INDICATOR 2002: UNMET NEEDS FOR HEALTHCARE DUE TO FINANCIAL REASONS

**DEFINITION:** Proportion of people in need of healthcare, reporting that they could not afford it in the previous 12 months. Source: European Health Interview Survey, wave 2.

**CALCULATION:** Indicator Unmet need for healthcare due to financial reasons presents the number of people reporting that they could not afford it in the previous 12 months, divided by the population included in the survey.

Reference population: The population aged 15 or over living in private households residing in the territory of the country and who are in need of healthcare.

## DOMAIN 14: HEALTH DETERMINANTS

### INDICATOR 18: SHARE OF SMOKERS

#### *INDICATOR 18A: SHARE OF ADULT SMOKERS*

**DEFINITION:** Proportion of smokers among children and adolescents.

**CALCULATION:** The indicator on smoking in adults uses data from the European Health Interview Survey (EHIS). Self-reported data on current smoking status is used to calculate the proportion of people aged 15 years or more that smoke daily or occasionally. Indicator is calculated by dividing the number of Current smokers (Daily and Occasional smokers) by the population that participated in European Health Interview Survey (EHIS).

#### *INDICATOR 18B: SHARE OF SMOKERS AMONG CHILDREN AND ADOLESCENTS*

**DEFINITION:** Proportion of smokers among children and adolescents.

**CALCULATION**: The indicator on smoking in children and adolescents uses data from the Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on frequency of smoking tobacco products of 11-, 13-, and 15-year olds is used to calculate the proportion of children and adolescents who smoke tobacco products at least once per week.

### INDICATOR 22: SHARE OF OVERWEIGHT AND OBESE ADULTS

**DEFINITION:** Proportion of overweight and obese adults.

**CALCULATION:** The indicator on overweight and obesity in adults uses data from the European Health Interview Survey (EHIS). Self-reported data on body weight and height is used to calculate the proportion of people aged 15 years or more with BMI exceeding 25.

### INDICATOR 23: OVERWEIGHT AND OBESITY IN CHILDREN AND ADOLESCENTS

**DEFINITION:** Proportion of overweight and obese children and adolescents.

**CALCULATION:** Indicator on overweight and obesity in children and adolescents uses data from Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on height and weight of 11-, 13-, and 15-year olds is used to calculate the proportion of children and adolescents whose body mass index exceeds 25.

### INDICATOR 179: NUMBER OF CIGARETS SOLD – REMOVED

### INDICATOR 238: HEAVY EPISODIC DRINKING

**DEFINITION:** Heavy episodic drinking (HED) is defined as drinking at least 60 grams or more of pure alcohol on at least one occasion in the past 30 days.

**CALCULATION:** Indicator on heavy episodic drinking uses data from European Health Interview Survey (EHIS). Self-reported data on frequency of ingesting more than 60 g of pure ethanol on a single occasion is used to calculate the proportion of people aged 15 years or more who had an episode of heavy drinking at least once a month.

### INDICATOR 239: ALCOHOL CONSUMPTION IN CHILDREN AND ADOLESCENTS

**DEFINITION:** Proportion of children and adolescents consuming alcohol beverages.

**CALCULATION:** Indicator on alcohol consumption in children and adolescents uses data from Health Behaviour in School-Aged Children (HBSC) survey. Self-reported data on frequency of consuming alcohol of 11-, 13- and 15-year olds is used to calculate the proportion of children and adolescents who consume alcoholic beverages at least once weekly.

### INDICATOR 376: PREVALENCE OF TYPE 2 DIABETES IN CHILDREN

**DEFINITION:** Number of children between 0–14 years of age with diagnosed type 2 diabetes during a given calendar year.

**CALCULATION:** The diabetes prevalence is the ratio between cumulative number of children aged 0–14 years with prescribed diabetes drugs in the observed calendar year and number of children aged 0–14 years in the middle of the observed calendar year.

However, it is not possible to differentiate between diabetes types (type 1 or type 2) from the prescription medicine database.

### INDICATOR 1957: CANNABIS CONSUMPTION IN YOUNG ADULTS

**DEFINITION:** Proportion of young adults, aged 15 to 34 years, consuming cannabis.

**CALCULATION:** The indicator on cannabis consumption in young adults uses data from survey on the use of illicit drugs, tobacco and alcohol in Slovenia (ATADD). Self-reported data on cannabis use of young adults aged 15 to 34 years old is used to calculate the prevalence of last year cannabis use.

## DOMAIN 98: HEALTH PROMOTION AND DISEASE PREVENTION

### INDICATOR 184: VACCINATION RATES FOR DIPHTERIA, TETANUS AND PERTUSSIS (DTP) AND MEASLES

**DEFINITION:** The immunization program in Slovenia is rather extensive. Some vaccinations are compulsory for children and adolescents, and it is set up in accordance with the Contagious diseases Act. Vaccination against diphtheria, tetanus, pertussis (including also Haemophillus influenzae B and poliomyelitis) is compulsory for children 0–6 years of age (three doses are administered from 3 to 12 months of age and then the fourth dose in the second year of life) and vaccination against measles, mumps and rubella (MMR vaccine) is compulsory between 12 and 18 months of age.

**CALCULATION:** Vaccination rates reflect the percentage of children who receive the respective vaccination in the recommended timeframe. The proportion of vaccinated children presents the number of children that were actually vaccinated in relation to all children who are obliged to receive vaccination.

### INDICATOR 185: HIV AND AIDS INCIDENCE

#### *INDICATOR 185A: HIV INCIDENCE*

**DEFINITION:** Rate of new HIV diagnoses per 100 000 population during the calendar year. See also: http://www.euro.who.int/en/health-topics/communicable-diseases/hivaids/publications/ecdcwho-hivaids-surveillance-in-europe-annual-reports

**CALCULATION:** HIV incidence rates are based on number of new HIV diagnoses in a year, divided by the population in the same calendar year.

#### *INDICATOR 185B: AIDS INCIDENCE*

**DEFINITION:** Rate of new AIDS cases per 100 000 shares the definition with the parent indicator "Number of new AIDS cases".

**CALCULATION:** AIDS incidence rates are based on number of new AIDS cases in a year, divided by the population in the same calendar year.

## INDICATOR 188: SHARE OF PERSONS RESPONDING TO SCREENING PROGRAMS FOR BREAST, CERVICAL AND COLORECTAL CANCER

### *INDICATOR 188A: SHARE OF PERSONS RESPONDING TO SCREENING PROGRAM FOR CERVICAL CANCER*

**DEFINITION:** Cervical cancer is highly preventable if precancerous cells are detected and treated before progression occurs. ZORA is a Slovenian population based organised cervical cancer screening programme.

**CALCULATION:** Share of females, aged between 20 and 64 years, who have undergone a gynaecological examination in the past three years for a cervical smear.

### *INDICATOR 188B: SHARE OF PERSONS RESPONDING TO SCREENING PROGRAM FOR BREAST CANCER*

**DEFINITION:** WHO recommends organised population-based mammography screening for females aged between 50 and 69. DORA is a Slovenian preventive program for the early detection of breast cancer for females aged 50 to 69 years.

**CALCULATION:** Share of females, aged between 50 and 69 years, who have undergone a breast screening examination within the past two years.

### *INDICATOR 188C: SHARE OF PERSONS RESPONDING TO SCREENING PROGRAM FOR COLORECTAL CANCER*

**DEFINITION:** Several countries have introduced free population-based colorectal cancer screening programmes over the past few years, targeting people in their 50s and 60s. In most countries that use the faecal occult blood test, screening is available every two years. The Svit program is a Slovenian national program for the screening and early detection of colorectal cancer that has been operating nationally since 2009 within the framework of the National Institute of Public Health. The Svit program includes males and females aged between 50 and 74 years old with compulsory health insurance and responding to an invitation received every two years from the Svit Center.

**CALCULATION:** Proportion of persons aged between 50 and 74 years responding to screening program for colorectal cancer. Data is obtained from NIPH. International comparison is possible only with EHIS data.

## INDICATOR 1476: BURDEN OF SKIN MELANOMA

### *INDICATOR 1476A: INCIDENCE OF SKIN MELANOMA (C43), ADULT POPULATION*

**DEFINITION:** Incidence of skin melanoma (ICD C43) in a calendar year per 100 000 inhabitants

**CALCULATION:** Incidence stands for number of all newly diagnosed cases of a disease that develop in a defined population in one calendar year. The incidence consider the number of cases of disease not the number of patients, therefore the same patient can contribute to the incidence number more than one case of disease, if he/she is diagnosed with more than one different cancers in the same year. New primary cancers of the same histology in paired organs, e. g. on the left and right breast, are not comprised in the incidence figures, neither are any new cancers of the same histology appearing in the same organ, e.g. multiple lesions of the colon.

Data source on incidence is Cancer Registry of Republic of Slovenia database. Web page SLORA includes data on patients, diagnosed from the year 1961, with permanent residence in Slovenia at the time of diagnosis. The data was obtained from Cancer registry of republic of Slovenia (SLORA) and Institute for Health Metrics and Evaluation (IHME). Age-standardized incidence was evaluated.

### *INDICATOR 1476B: 5-YEAR SURVIVAL RATE OF MALIGNANT SKIN MELANOMA*

**DEFINITION:** The relative survival rate for malignant skin melanoma is the proportion of patients who survive at least five years after diagnosis, after correction for background mortality (ICD-10 diagnoses C43).

**CALCULATION:** Relative survival rate is calculated as the observed rate of persons diagnosed with malignant skin melanoma surviving five years after diagnosis, divided by expected survival rate in the general population.

## INDICATOR 1783: INFLUENZA VACCINATION COVERAGE, POPULATION AGED 65 AND OVER

**DEFINITION:** Proportion of people aged 65 and older who have received one shot of influenza vaccine during the last 12 months

**CALCULATION:** Number of people aged 65 and older who have received an annual influenza vaccination, divided by the total number of people over 65 years of age during the last 12 months.

### INDICATOR 1915: NOTIFICATION RATES FOR MEASLES

**DEFINITION:** Notification rate of measles.

**CALCULATION:** Number of new measles cases, divided by the population in the observed year. Number of new measles cases relate to ICD-10 codes B05.

### INDICATOR 1920: SEXUALLY TRANSMITTED INFECTIONS NOTIFICATION RATES

**DEFINITION:** Notification rate of sexually transmitted infections (chlamydia, gonorrhea and syphilis).

**CALCULATION:** Number of new diagnosed cases of chlamydia, gonorrhea and syphilis per 100 000 population (ICD-10 codes A51, A52, A53, A54 and A56).

### INDICATOR 2102: NUMBER OF PARTICIPANTS TO PREVENTION PROGRAMMES OF HEALTH PROMOTION CENTRES

### INDICATOR 2103: EXPOSURE TO TOBACCO SMOKE INDOORS

**DEFINITION:** A proportion of people aged 15 years or more who are exposed to tobacco smoke indoors.

**CALCULATION:** A proportion of self-reported exposure to tobacco smoke indoors of people aged 15 years or more who are exposed less than 1 hour or 1 hour or more per day. The data is taken from the European Health Interview Survey (EHIS).

### NDICATOR 2104: SMOKING IN CHILDREN AND ADOLESCENTS

**DEFINITION:** A proportion of children and adolescents who smoke tobacco products. Indicator uses data from Health Behaviour in School-Aged Children (HBSC) survey.

**CALCULATION:** Proportion of self-reported users of smoking tobacco products among 11-, 13-, and 15-year olds who smoke tobacco products at least once per week.

### INDICATOR 2107: THE NUMBER OF PARTICIPANTS IN COUNSELLING (BRIEF INTERVENTIONS CARRIED OUT)

### INDICATOR 2108: PREVENTIVE PROGRAMS AMONG CHILDREN AND YOUTH

**DEFINITION and CALCULATION:** Proportion of systematic examinations of schoolchildren and youth in all schools at specific year and three years period. Data is taken only from NIPH database. There is no international comparison.

### INDICATOR 2109: ALCOHOL USE DISORDER RELATED SICK LEAVE

**DEFINITION:** Alcohol use disorder related sick leave is calculated through the number of days lost per person per year.

**CALCULATION:** Total number of day lost due to alcohol use disorder divided by the number of employees at the end of the calendar year.

### INDICATOR 2110: PREVALENCE AND DEATH RATE OF ALCOHOLIC LIVER CIRRHOSIS

#### *INDICATOR 2110A: PREVALENCE OF ALCOHOLIC LIVER CIRRHOSIS*

**DEFINITION:** Prevalence of alcoholic liver cirrhosis indicates the prevalence of liver cirrhosis due to excessive alcohol drinking. The data was obtained from Institute for Health Metrics and Evaluation (IHME).

**CALCULATION:** Total number of alcoholic liver cirrhosis during a calendar year, among the country's population, described as per 100 000 inhabitants and standardized by age.

#### *INDICATOR 2110B: DEATH RATE OF ALCOHOLIC LIVER CIRRHOSIS*

**DEFINITION:** The death rate of alcoholic liver cirrhosis indicates the rate of deaths from alcoholic liver cirrhosis. The data was obtained from Institute for Health Metrics and Evaluation (IHME).

**CALCULATION:** The total number of deaths from alcoholic liver cirrhosis during a calendar year, among the country's population, described as per 100 000 inhabitants and standardized by age.

### INDICATOR 2111: INDICATOR ON FRAILITY

### INDICATOR 2112: NUMBER OF PRACTISING DENTISTS PER HUNDRED THOUSAND

**DEFINITION:** Practising dentists provide services directly to patients. They include stomatologists and dental surgeons. Data is taken from NIPH and EUROSTAT database.

**CALCULATION:** Total number of practicing dentists by the end of the calendar year per 100 000 inhabitants (end of year population).

## INDICATOR 2113: DENTISTS' CONSULTATIONS

**DEFINITION:** Indicator dentists' consultations is a proportion of people aged 15 years or more who visited a dentist or orthodontist. Data is taken from European Health Interview Survey (EHIS).

**CALCULATION:** Number of people aged 15 years or more who self-reported visit to a dentist or orthodontist at least one time in past 12 months divided by all people who participated in survey.

## INDICATOR 2114: TOOTH BRUSHING

**DEFINITION:** Indicator tooth brushing is a proportion of people aged from 25 to 74 years who brush their teeth at least twice daily. Data is taken from CINDI Health Monitor Survey (CHMS).

**CALCULATION:** Number of people aged from 25 to 74 who self-report brushing their teeth at least twice daily divided by people who brush their teeth never, once, twice or more time daily.

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