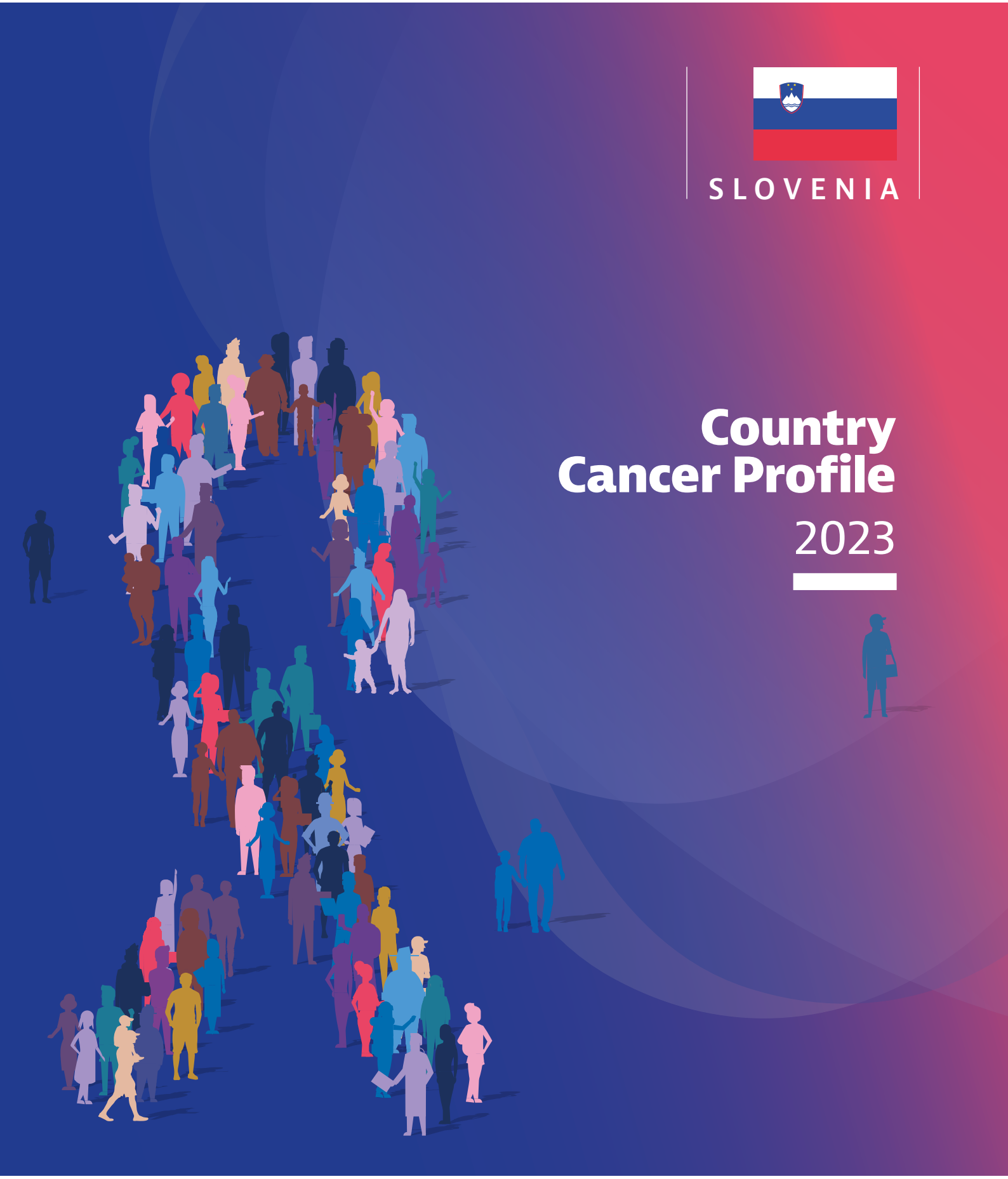
European Cancer Inequalities Registry



SLOVENIA

Country Cancer Profile

2023

European Commission

OECD

BETTER POLICIES FOR BETTER LIVES

The Country Cancer Profile Series

The European Cancer Inequalities Registry is a flagship initiative of the Europe's Beating Cancer Plan. It provides sound and reliable data on cancer prevention and care to identify trends, disparities and inequalities between Member States and regions. The Country Cancer Profiles identify strengths, challenges and specific areas of action for each of the 27 EU Member States, Iceland and Norway, to guide investment and interventions at the EU, national and regional levels under the Europe's Beating Cancer Plan. The European Cancer Inequalities Registry also supports Flagship 1 of the Zero Pollution Action Plan.

The Profiles are the work of the OECD in co-operation with the European Commission. The team is grateful for the valuable inputs received from national experts and comments provided by the OECD Health Committee and the EU Expert Thematic Group on Cancer Inequality Registry.

Data and information sources

The data and information in the Country Cancer Profiles are based mainly on national official statistics provided to Eurostat and the OECD, which were validated to ensure the highest standards of data comparability. The sources and methods underlying these data are available in the Eurostat Database and the OECD Health Database.

Additional data also come from the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), the International Atomic Energy Agency (IAEA), the Institute for Health Metrics and Evaluation (IHME) and other national sources (independent of private or commercial interests). The calculated EU averages are weighted averages of the 27 Member States unless otherwise noted. These EU averages do not include Iceland and Norway.Purchasing Power Parity (PPP) is defined as the rate of currency conversion that equalises the purchasing power of different currencies by eliminating the differences in price levels between countries.

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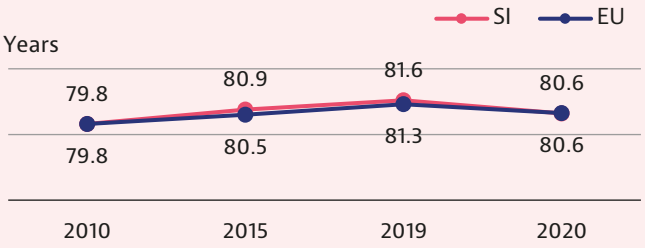

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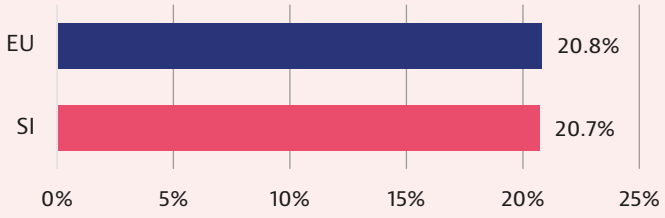

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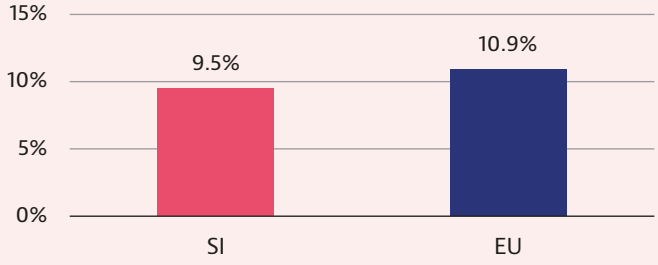
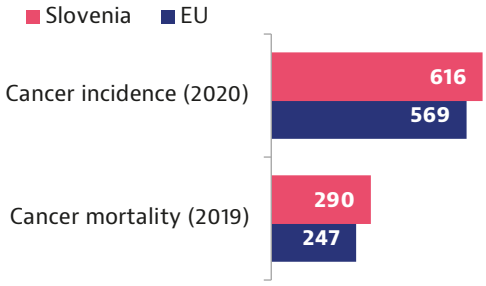


Source: Eurostat Database.

1. Highlights



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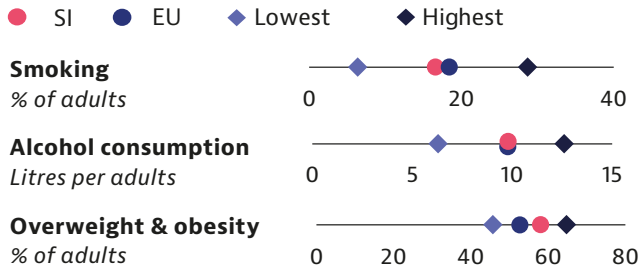
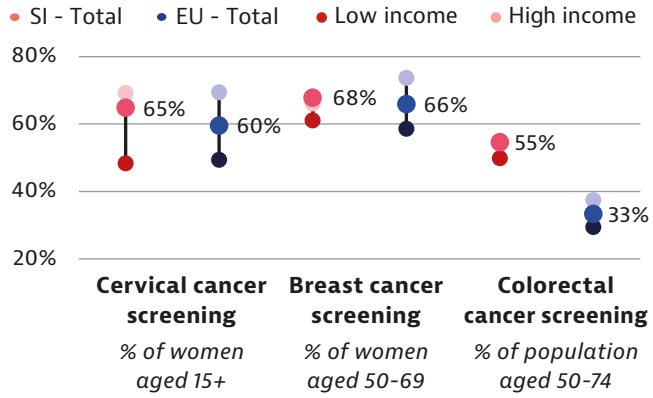
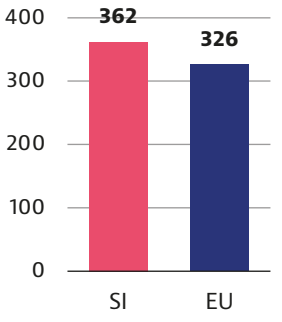
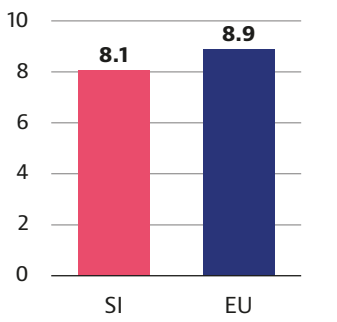






Total cost of cancer (EUR per capita PPP), 2018



Number of radiation therapy centres per 100 000 population, 2007-22

Cancer in Slovenia

In Slovenia, both cancer incidence and mortality are above EU rates, and cancer is the second leading cause of death in the country. Since the implementation of the National Cancer Control Programme (NCCP) in 2010, a reduction in mortality and a slower increase in incidence have been observed.

Risk factors and prevention policies

Unhealthy lifestyles, which are more common among lower socioeconomic groups, are the major risk factor for the most prevalent cancers. Alcohol consumption and obesity are still widely reported, but smoking has decreased. Sunlight exposure is the main environmental risk factor, driving the rise in skin melanoma.

Early detection

Three population-based cancer screening programmes are in place for cervical, breast and colorectal cancers. Participation rates for cervical and breast cancer screening are close to the EU averages, while for colorectal cancer screening partipation is well above. A National Screening Committee has been established to support implementation of possible new screening programmes.

Cancer care performance

In Slovenia, cancer care expenditure relies fully on social health insurance, and is therefore accessible to more than 99 % of the population. Costs of cancer care are 11 % higher than the EU average. There are shortages of oncology specialists and diagnostic equipment, especially positron emission tomography (PET) scanners. During recent decades, five-year net survival rates of cancer patients have improved to 58 %, and are close to the EU average for most common cancers. The NCCP aims to improve quality of cancer care, relying on cancer burden monitoring provided by the Slovenian Cancer Registry. Patient-reported measures are in the process of implementation to all cancer care pathways.

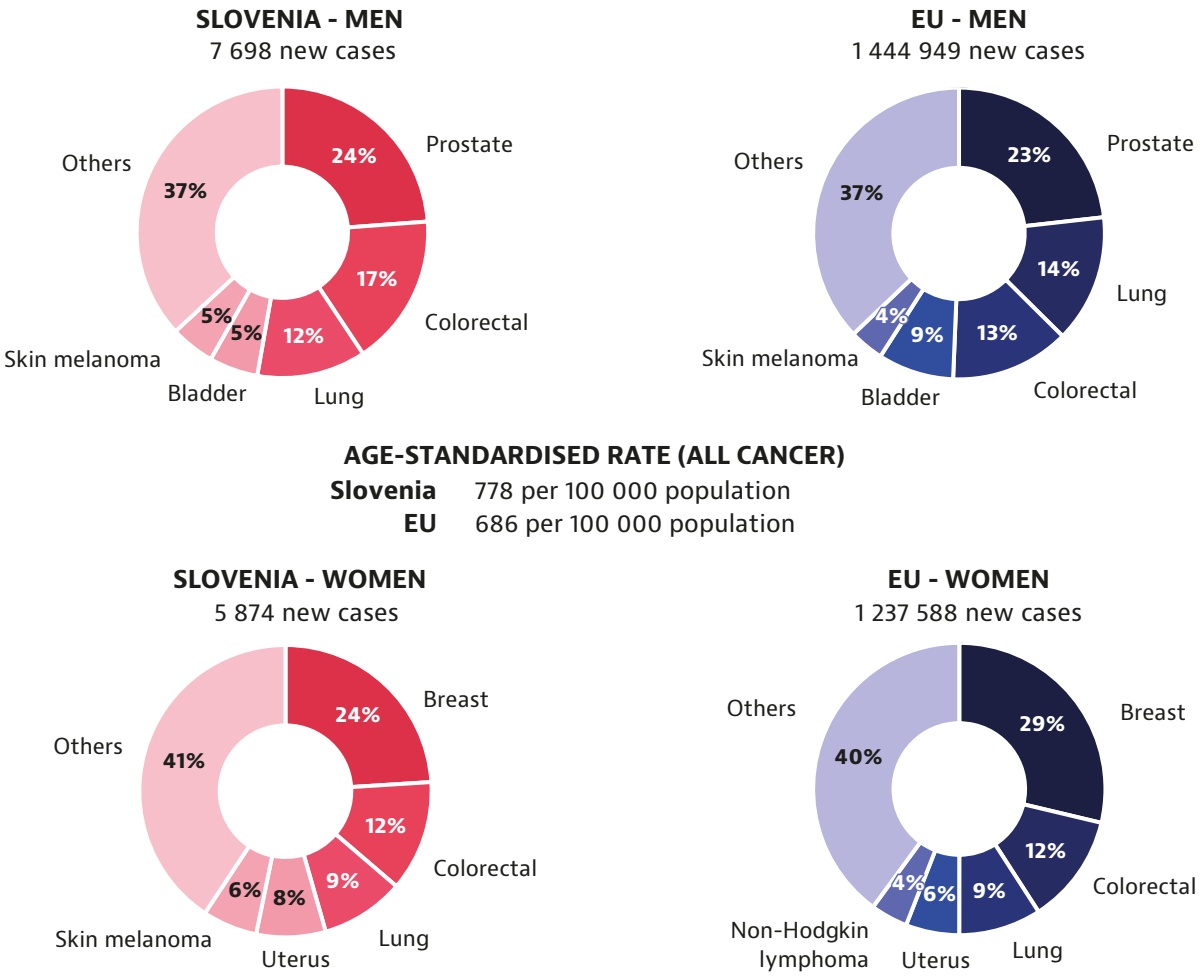
2. Cancer in Slovenia

Cancer incidence in Slovenia is the eight highest in the EU

According to European Cancer Information System (ECIS) of the Joint Research Centre based on incidence trends from pre-pandemic years, around 14 000 new cancer cases were expected in Slovenia in 2020[1] (Figure 1). In 2020, cancer incidence was estimated to be the eight highest in the EU, at 616 new cases per 100 000 age-standardised population – well above the EU average of 569 new cases per 100 000 age-standardised population. According to ECIS projections, there will be on average a 22 % increase in new cancer cases across the EU by 2040. Slovenia is projected to experience a similar increase (25 %), which will be especially prominent

Figure 1. Cancer incidence among Slovenian men is at a higher rate than the EU average in 2020

Distribution of cancer incidence by sex in Slovenia and the EU



Note: Corpus uteri does not include cancer of the cervix. These estimates were created before the COVID-19 pandemic, based on incidence trends from previous years, and may differ from observed rates in more recent years.
Source: European Cancer Information System (ECIS). From https://ecis.jrc.ec.europa.eu, accessed on 09/05/2022. © European Union, 2022.

1 *The observed number of new cancer cases was more than 16 000 in 2019.*

among people aged 65 years and over (44 %) while decreasing in younger ages.

More than 120 000 people living in Slovenia have been diagnosed with cancer at some point during their lifetime. Five-year cancer prevalence was reported to be 2 038 per 100 000 population in 2020 by the IARC – slightly above the EU average of 1 913. Despite socioeconomic disparities, there are no significant differences in the burden of cancer between two main Slovenian regions.

In 2020, more than half (62 %) of new cancer cases were expected in people aged 65 years and over, and 1.3 times more cancer cases were expected in men than women (Figure 1). The age-standardised incidence rate among Slovenian men was estimated to be significantly above the EU average (778 vs. 686 per 100 00 population), while the gap between Slovenian women and the EU average was less prominent (493 vs. 484 per 100 000 population). However, during 2010-2019, the cumulative annual cancer incidence rate slowly increased. The rate among women increased by 1.6 % per year, while the rate among men decreased slightly by 0.9 %.

According to ECIS, prostate, lung, colorectal and breast cancers made up almost half of the new cancer cases in 2020 in both the EU and Slovenia. Among Slovenian women, the proportions of cancer types among new cases were similar to the EU averages: 24 % for breast cancer, 12 % for colorectal cancer and less than 10 % for lung cancer, uterus cancer and skin melanoma each. Among Slovenian men, the most common type was prostate cancer (24 %). This was followed by colorectal cancer (17 %), which holds a third place in incidence across the EU.

Lung cancer was expected to account for around a tenth of all new cancer cases in both sexes (9 % among women and 12 % among men) in 2020. During 2010-2019, a steady increase in new lung cancer cases was observed among women, probably resulting from increased prevalence of smoking, especially among women with low education levels (see Section 3).

According to 2020 estimates, the skin melanoma incidence and mortality rates (33.6 and 5.8 per 100 000 age-standardised population) ranked Slovenia alongside other northern EU countries, where the burden of skin melanoma is the highest in the EU. Moreover, skin melanoma showed the highest increase in incidence between 2000 and 2020, as in other northern EU countries. The highest risk was observed among women on higher incomes.

For paediatric cancer, the age-standardised incidence rate in children under 15 years in 2020 was 11 per 100 000, which is lower than the EU average (15 per 100 000 population), according to ECIS estimates (see also Box 1). In 2020, gastric (stomach) cancer was expected to constitute 4 % of new cancer cases in men and 3 % in women, and it accounted for an age-standardised incidence rate of 20 per 100 000 population, which is higher than the EU average (15.8 per 100 000 population).

National screening programmes have significantly reduced cervical and colorectal cancer incidence

Thanks to the national cervical cancer screening programme implemented in 2003 (see Section 4), cervical cancer incidence among women decreased by 3.7 % per year during 2009-2019 (to 10 new cases per 100 000 population in 2019). Likewise, colorectal cancer incidence decreased by 2.6 % per year in both sexes after implementation of the national colorectal cancer screening programme in 2009 (to crude rate of 67 new cases per 100 000 population in 2019).

A substantial reduction in cancer mortality was achieved in less than a decade, especially in men

With around 6 500 deaths every year, cancer is the most common cause of death among men and the second most common among women in Slovenia. The country ranked fifth in the EU for overall cancer mortality in 2019, but with a significant average reduction of 10 % since 2011 (Figure 2). This improvement in mortality rate was twice as large among men as women. However, there is still room for improvement, as more cancer deaths occur in Slovenia than the EU average (290 vs. 247 per 100 000 standard population in 2019). Overall, 25 % of cancer deaths among men and 15 % among women were preventable,[2] though 6 % among men and 13 % among women were treatable.[3]

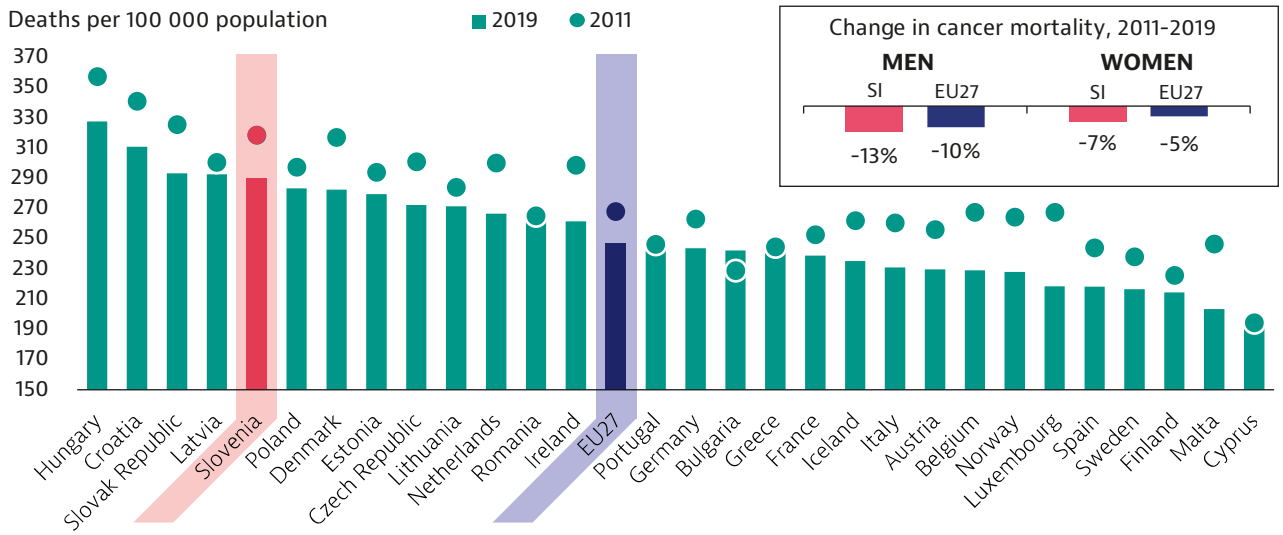
The rise in lung cancer mortality among women has become a concerning trend

Lung, colorectal, prostate and breast cancers were responsible for the largest shares of cancer mortality in Slovenia in 2019 (Figure 3). Lung cancer mortality was higher among men than women (rate of 82 vs. 35 per 100 000 population), but according to the national data, it has risen among women

2 *Preventable mortality refers to malignant neoplasm of lip, oral cavity, pharynx, oesophagus, stomach, liver, trachea, bronchus and lung, cervix and bladder.*

3 *Treatable mortality refers to malignant neoplasm of colon and rectum, breast, cervix, uterus, testis and thyroid.*

Figure 2. Cancer mortality in Slovenia decreased faster than the EU average

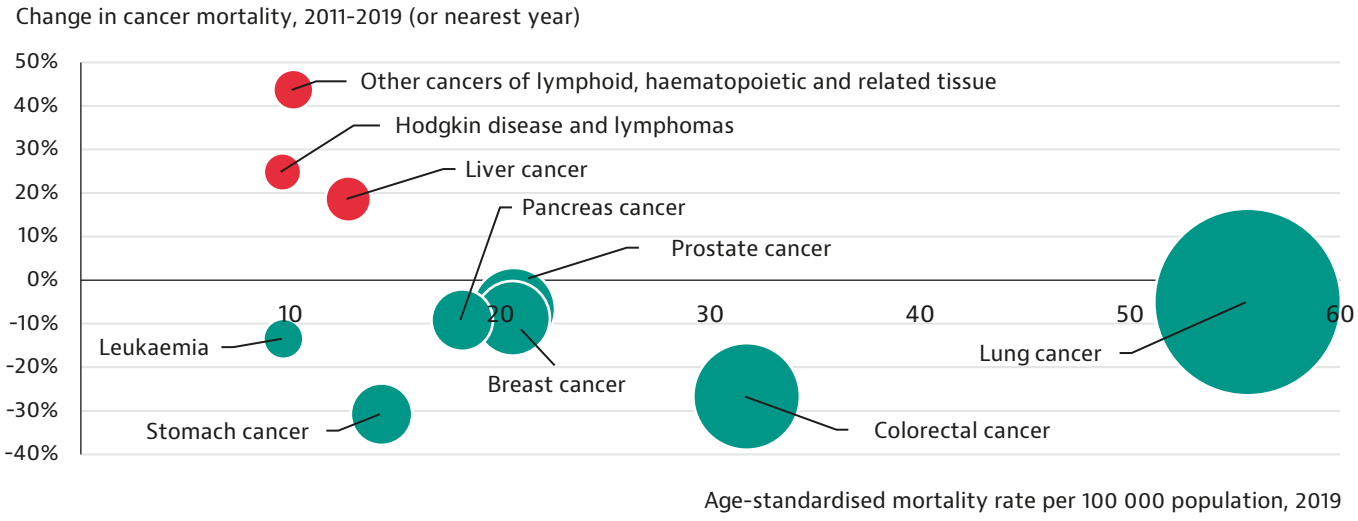


Note: The EU average is weighted (calculated by Eurostat for 2011-2017 and by the OECD for 2018-2019).
Source: Eurostat Database.

in the last decade (a 4 % increase per year during 2010-2019) due to increased smoking prevalence. During 2011-2019, reductions in mortality were observed for selected cancers, including decreases of 31 % for gastric (stomach) cancer, 5 % for lung cancer and 7 % for prostate cancer, and of 27 % for colorectal cancer and 14 % for leukaemias in both sexes (Figure 3).

During 2000 and 2019, potential years of life lost due to malignant neoplasms saw a relative decrease of 31 %, and it accounted for 1 350 years of life lost among 100 000 people aged up to 75 years in 2019. The relative decrease was larger among men (35 %) than women (27 %), with 1 588 and 1 115 years of life lost in 2019, respectively.

Figure 3. Lung cancer is a key driver of cancer mortality in Slovenia



Note: Red bubbles signal an increase in the percentage change in cancer mortality during 2011-2019; green bubbles signal a decrease. The size of the bubbles is proportional to the mortality rates in 2019. The mortality of some of these cancer types is low; hence, the percentage change should be interpreted with caution. Bubble sizes for mortality rates are not comparable between countries.
Source: Eurostat Database.

The National Cancer Control Programme (NCCP) has achieved major goals during its first 12 years

The first comprehensive NCCP was established in Slovenia in 2010. Overall, reductions in mortality for both sexes and slower growth in cancer incidence (more among men than women) were achieved, and crucial programmes on rehabilitation and palliative care were launched (Section 5.1, Box 3).

In 2022, coordination of NCCP was taken over by the Institute of Oncology Ljubljana (IOL), where screening, diagnostics and treatment of cancer patients are performed at a national level. During 2022-2026, the policy priorities of the NCCP consist of further slowing incidence and increasing survival and quality of life of cancer patients.

A particular focus of the current NCCP is monitoring quality of care, which will provide further insight into the costs of treatment. Another focus area is comprehensive rehabilitation, with improvements in availability of psychological support and return-to-work policies for people with a history of cancer. The right to be forgotten (a right that gives individuals the ability to exercise control over their personal data, including health information, by deciding what should be accessible to the public) is an emerging issue in Slovenia, and has received strong political support. All these areas are aligned with the Europe's Beating Cancer Plan (European Commission, 2021).

From its inception, all iterations of the NCCP have involved civil society as partners during planning and implementation. People with a history of cancer and their carers have been treated as equivalent stakeholders via representative non-governmental organisations. The IOL also has a cancer patient board that acts in an advisory capacity and oversees its functioning.

Box 1. Comprehensive care and follow-up for rare paediatric cancers are centralised

Around 3 000 patients are newly diagnosed with rare cancers every year – a crude incidence rate of around 120 per 100 000 population, estimated for 2013 by RARECAREnet. During last decade, the Slovenian Cancer Registry has actively collaborated with RARECARE and RARECAREnet project, a population-based study on rare cancers in Europe. In 2022, IOL and two Slovenian faculties started a multidisciplinary project on comparative oncology for rare cancers. Two tertiary-level hospitals are active members of cancer-related networks inside European Reference Networks (ERN).

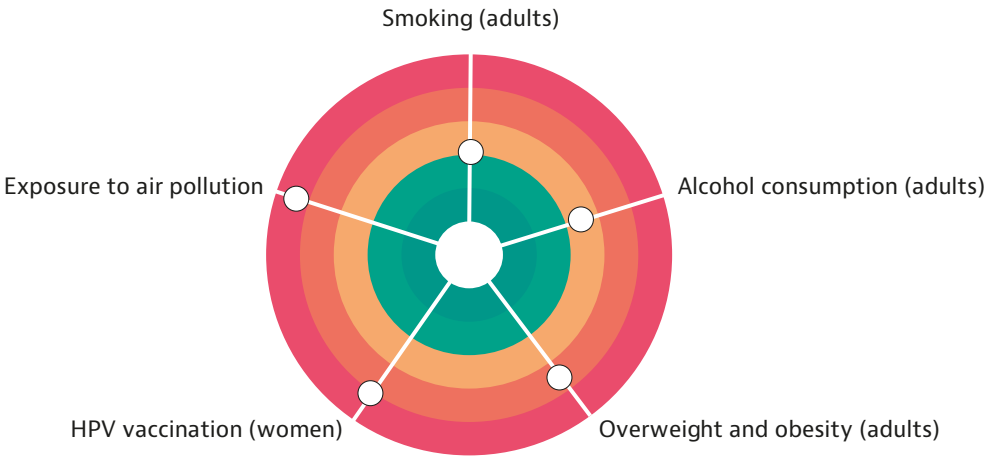
In Slovenia, incidence of rare paediatric cancers is increasing, although mortality is steadily decreasing. Comprehensive cancer care for children and adolescents has always been centralised at the tertiary-level Division of Paediatrics at the University Medical Centre Ljubljana, which is part of the European Reference Network for Paediatric Oncology (ERN PaedCan) as well. In addition, young adults aged 16 years and over with a history of paediatric cancer are followed up regularly by the centralised department at the IOL, which has operated for more than 35 years. In 2022, a national registry of the late sequelae of paediatric cancer treatment was established as part of the Slovenian Cancer Registry.

3. Risk factors and prevention policies

In Slovenia, almost half of cancer deaths are attributable to lifestyle and behavioural risk factors according to Institute for Health Metrics and Evaluation – smoking, obesity, poor nutrition, physical inactivity and alcohol consumption. Slovenia fares relatively poorly than other EU countries with higher rates of overweight and obesity rates, and lower rates of HPV vaccination (Figure 4). Among environmental risk factors, the most important are sun exposure (see Section 2) and air pollution.

Slovenia spent 3 % of overall health expenditure on prevention in 2020, which is slightly below the EU average (3.4 %). Lifestyle programmes and health promotion activities are coordinated by the National Institute of Public Health and are fully integrated within primary-level community health centres across the country. The European Code Against Cancer and human papillomavirus (HPV) vaccination are actively promoted by oncological health professionals, institutions and cancer patient organisations. Prevention and health promotion programmes are covered by the compulsory social health insurance (SHI) scheme, and are thus accessible to more than 99 % of population, including some vulnerable groups, such as people with low education levels or on low incomes, and unemployed people. Moreover, the Ministry of Health provides annual financial incentives to support prevention and educational programmes run by cancer patient associations.

Figure 4. Prevention measures for obesity, HPV vaccination and air pollution need to be intensified



Note: The closer the dot is to the centre, the better the country performs compared to other EU countries. No country is in the white "target area" as there is room for progress in all countries in all areas.
Sources: OECD calculations based on the European Health Interview Survey (EHIS) 2019 for smoking and overweight and obesity rates, OECD Health Statistics 2022 and WHO Global Information System on Alcohol and Health (GISAH) for alcohol consumption (2020), WHO for HPV vaccination (through the WHO/UNICEF Joint Reporting Form on Immunization) (2020), and Eurostat for air pollution (2019).

Exposure to air pollution by $PM_{2.5}$ is higher in Slovenia than in the EU

In 2019, exposure to PM_{10}[4] in Slovenia reached 20.4 µg/m^3, which is similar to the EU average (20.5 µg/m^3). Slovenia had a higher concentration of $PM_{2.5}$ than in the EU (15.3 µg/m^3 vs. 12.6 µg/m^3), though its level has considerably decreased from 2008 on (23.9 µg/m^3). According to the Institute for Health Metrics and Evaluation, ozone and $PM_{2.5}$ exposure accounted for 5 % of all deaths in Slovenia in 2019.

Education and income are key drivers of smoking habits

In 2017-2019, 45 % of all cancer deaths were attributed to smoking in Slovenia, with highest prevalence among men (Koprivnikar, 2021). Premature death rate due to cancer, attributable to smoking, was 69.3 per 100 000 population aged 30 years or more, while it is two-fold higher among men compared to women.

According to the EHIS, the percentage of daily smokers in Slovenia decreased slowly to 17 % in 2019, which is below the EU average (18 %). More men (18 %) than women (15 %) smoke, but the percentage of male smokers is lower than the EU average (22 %), while for women it is similar to the EU average.

As in many EU countries, smoking is significantly more prevalent among people with lower income levels. Daily smoking is more prevalent among people on low (18 %) than high incomes (14 %) (Figure 5), while the proportions of daily smokers according to education level are similar (around 15 %). The increase in smoking-related cancer cases among women is also more prominent among those with low education levels.

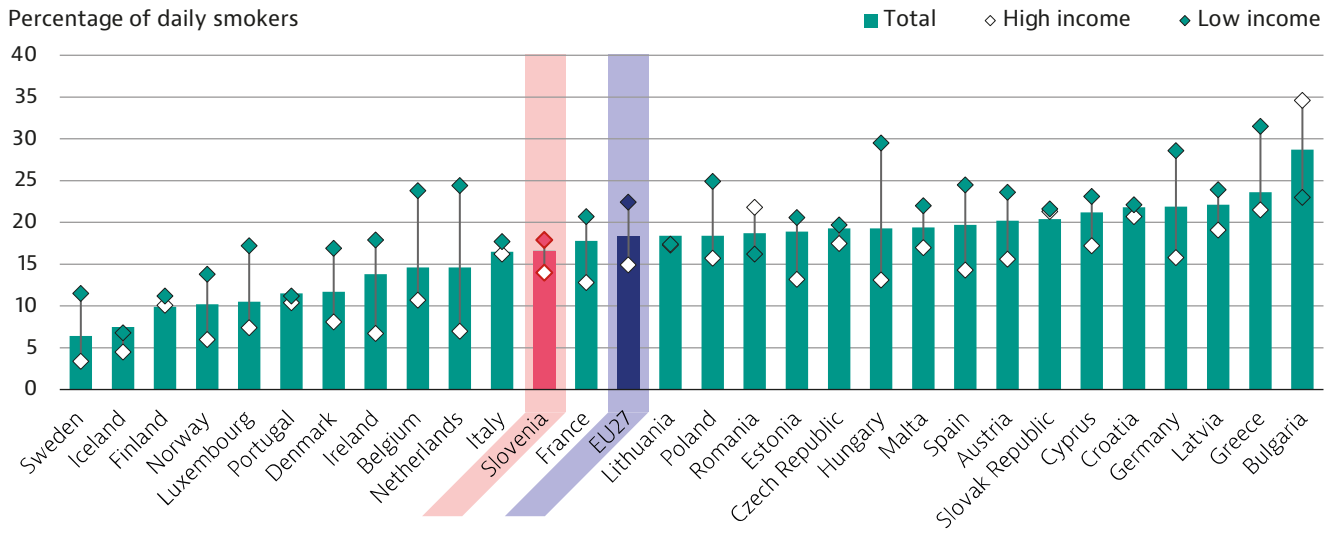
Slovenia has had strict tobacco control legislation since 2007, and cigarette sales have declined by more than a third in the last 10 years. In 2017, legislation started to include new tobacco products and instituted even stricter comprehensive tobacco control measures, including a ban on smoking in all enclosed public places and workplaces. In 2020, plain packaging for cigarettes and tobacco was enacted by law. In 2022, the government passed the strategy Towards a Tobacco-Free Slovenia 2040, which aims to reduce the proportion of smokers in the population to 5 %. Various prevention programmes and group or individual counselling modalities are accessible free of charge – including those targeting specific vulnerable groups, such as schoolchildren and young adults – and the aim is to strengthen these further.

The risk of health consequences of high alcohol consumption is higher in Eastern Slovenia

In 2020, people aged 15 years and over in Slovenia consumed 9.8 litres of registered alcohol per capita, which was equal to the EU average (9.8 litres). Slovenians tend to report lower degrees of hazardous drinking than the EU average (1.7 % per year vs. 2.7 % in 2014). However, heavy episodic alcohol consumption is increasing; almost four out of ten adults reported binge drinking at least once in 2019, with a concerning rise among men, younger people, those with lower income or

4 *Particulate matter (PM) is classified according to size: PM_{10} refers to particles less than 10 micrometres in diameter; $PM_{2.5}$ to particles less than 2.5 micrometres in diameter.*

Figure 5. Cigarette smoking is more prevalent among people on low incomes



Note: The EU average is weighted (calculated by Eurostat).
Source: Eurostat Database (EHIS). Data refer to 2019.

education and residents of the Eastern Slovenia (Gabrijelčič, 2021). Generally, people on lower incomes drink hazardously 1.6 times as frequently as people on higher incomes.

In 2019, 5 % of all deaths were attributed to alcohol consumption. Residents of Eastern Slovenia had a relative risk of death 1.7 times higher and a relative risk of hospitalisation for alcohol-attributed causes 1.2 times higher than residents of Western Slovenia. According to IARC, the alcohol-attributed cancer incidence rate for 2020 is estimated to be three times higher among men than women, but overall at an estimated 13.8 per 100 000 age-standardised population, which is above the EU average of 12.3 per 100 000.

In the last two decades, many policies, laws and prevention programmes have been implemented to tackle high alcohol consumption, including a ban on alcohol consumption at work since 2011 and strict measures to curb drink driving.

Overweight among schoolchildren has become a national public health problem

In 2014-2019, obesity among Slovenian adults increased to almost 20 %, which is well above the EU average (16 %). The largest increase was observed among adults with secondary education, and obesity was more prevalent in Eastern Slovenia.

Overweight and obesity in children and adolescents have become a major public health concern. Data of HBSC survey for Slovenia reported that more than 20 % of adolescents were overweight or obese in 2014-2018, with rates 1.7 times higher among boys than girls.

Poor nutrition, low levels of physical activity and sedentary lifestyles are key factors driving high rates of overweight and obesity. Daily fruit consumption and physical activity decreased in the Slovene population between 2014 and 2019, while they increased in the EU as a whole. Although close to the EU average of 25 %, only 22 % of Slovenians with low education levels reported at least 150 minutes of health-enhancing aerobic physical activity per week in 2019 – much lower than the 40 % among people with high education levels. In addition, the reduction in daily fruit consumption was particularly marked among people with low educational attainment (from 66 % in 2014 to 58 % in 2019). To tackle these issues, the government implemented the comprehensive multisectoral National Nutrition and Physical Activity Strategy 2015-2025.

Major differences in human papillomavirus vaccination coverage exist across Slovenian regions

In 2020, there were 104 estimated new cases of cervical cancer among Slovenian women, with a decreasing age-standardised incidence rate of 9.4 per 100 000 population (vs. 9.1 per 100 000 in the EU, according to ECIS), which can be attributed to the national screening programme (see Section 4).

In Slovenia, HPV vaccination has been available free of charge for girls aged 12-13 years since 2009 and for boys since 2021. Data from the National Institute of Public Health show that in 2019/20, 59 % of girls aged 15 years were vaccinated against HPV, which is close to the EU average (62 %). Overall, HPV vaccination coverage increased by 10 percentage points in a decade, in part because of public campaigns by health institutions and non-governmental organisations targeting parents

of schoolchildren. However, there are major differences in coverage among regions: Ravne na Koroškem had the widest coverage (88 %) and the capital Ljubljana had the lowest (45 %) in 2021. In 2019/20, during the COVID-19 pandemic lockdown, the percentage of vaccinated girls dropped to 50 % (see Section 5.4).

4. Early detection

Slovenia has successfully implemented three population-based cancer screening programmes

Slovenia implemented national screening programmes for breast, colorectal and cervical cancers during 2003-2009. The National Screening Committee was established to decide on new screening programmes (Box 2).

Cancer screening programmes for breast, colorectal and cervical cancers are financed by compulsory SHI, which covers more than 99 % of population, although some legal statuses do not include automatic coverage (such as immigrants and asylum seekers with temporary residence permits). All three screening programmes are managed and monitored centrally. Quality indicators are reported regularly and results are publicly available. The programmes achieve high organisational standards set by EU recommendations. Each programme has an advisory board with experts from a wide range of professions and a common steering committee, including policy makers and public representatives, to strengthen communication among all stakeholders. Promotional materials are available in the languages of official minorities in Slovenia. Colorectal cancer screening programme provides promotional and screening materials also in other most commonly spoken languages (English, Croatian, Shqiptar), as well. Population-based cancer screening programmes web pages are adapted for people with sight impairments.

Participation in cervical cancer screening is above the EU average

Slovenia is one of eight EU countries with a national cervical cancer screening programme, which has operated since 2003, although opportunistic screening has been available since 1960. Since the introduction of the population-based programme (screening offered to a specific at-risk target population), the burden of cervical cancer has dropped significantly (see Section 2).

Cervical cancer screening is available to women aged 20-64 years: a smear test is performed every three years by a gynaecologist at the primary care level. Since 2010, triage HPV tests have been also in use. Samples are processed by nine designated laboratories and the results of cytopathology (also HPV triage tests and all cervical histopathology, regardless of the age of woman and indication) are collected centrally.

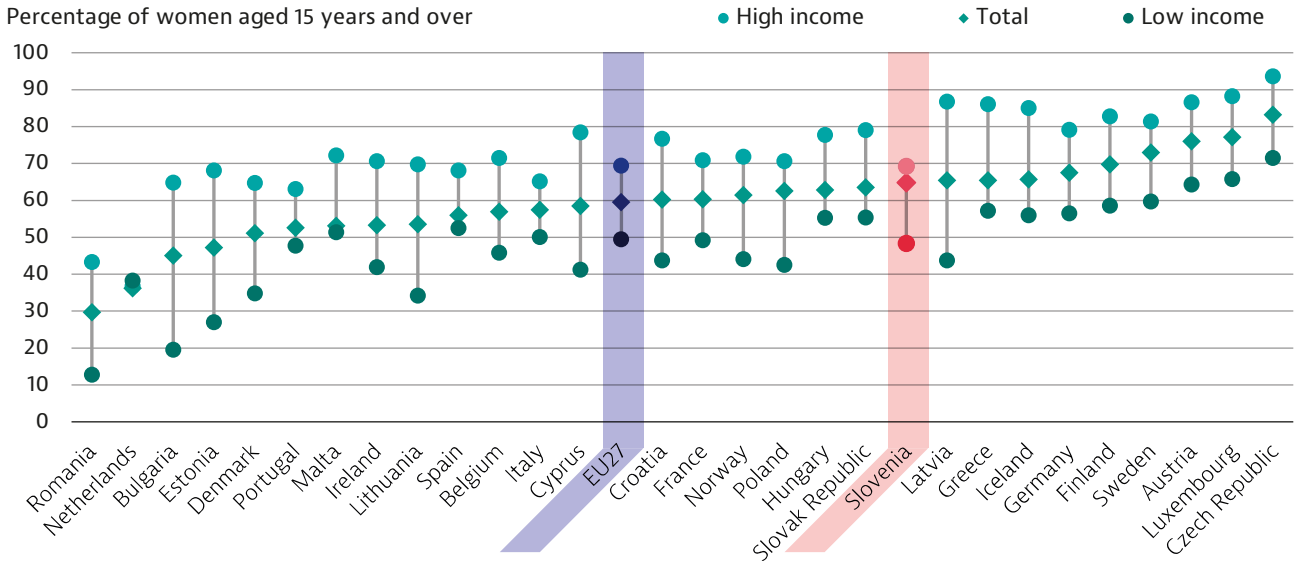
Three-yearly participation in the cervical cancer screening programme has been over 70 % since 2006, and according to the EHIS it was well above the EU average in 2019 (65 % vs. 59 %). Five-year coverage of the target population by the screening test is above 85 %. Women on lower incomes (48 %) reported to have a pap smear test during the last three years less frequently than women with higher incomes (69 %), however (Figure 6). In 2014, a pilot project was carried out in two Slovenian regions, providing non-participants in the cervical cancer screening programme with a self-sampling smear test, and participation rates were high (Ivanuš et al., 2018).

During 2016-2019, two of the nine Slovenian regions had participation rates slightly below 70 %. To address this, numerous activities were carried out in local communities (including education, active promotion of screening at local community events, collaboration with local media, and regular health promotion in kindergartens, schools and workplaces).

Breast cancer screening became nationwide in 2017

The breast cancer screening programme was introduced in 2008, and was running nationwide at the end of 2017. Women aged 50-69 years are invited to have a mammogram every two years. The programme is carried out at 18 locations for screening and at two locations for diagnostics and

Figure 6. The uptake of cervical cancer screening is less frequently reported by women on low incomes



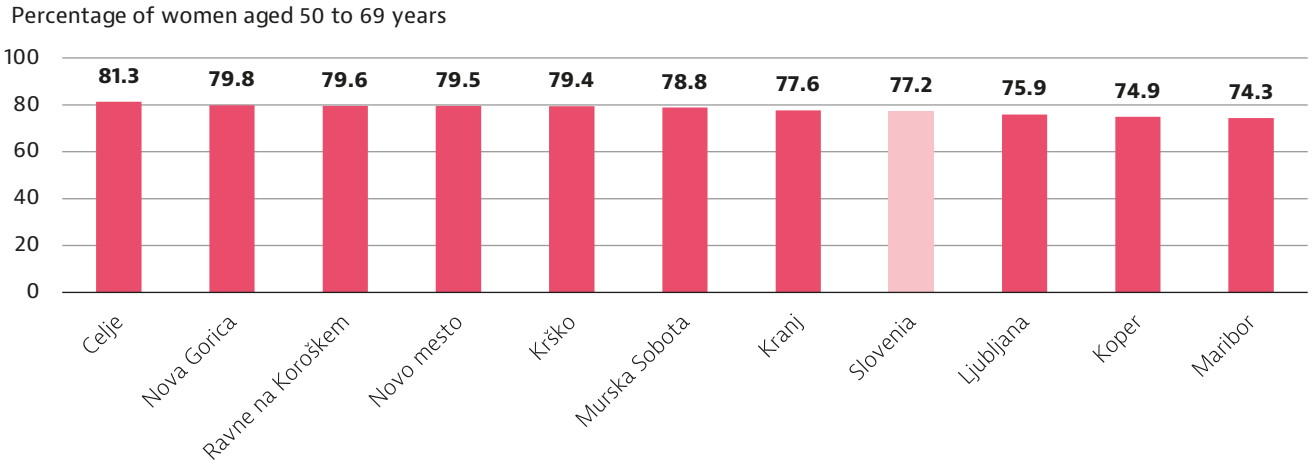
Note: The EU average is weighted (calculated by Eurostat). The figure reports the percentage of women aged 15 years and over who reported having a cervical smear test in the past three years.
Source: Eurostat Database (EHIS). Data refer to 2019.

treatment. Overall participation is high (77 % in 2021), while all regions had participation rates between 74 % and 81 % in 2021 (Figure 7).

Participation rates are lower among women invited to screening for the first screening round (49 %), but increase substantially for subsequent rounds (88 %).

According to the 2019 EHIS, fewer women from rural areas (68 %) reported getting a mammogram during the last two years compared to women from cities (71 %). In 2019, there were significant difference related to education or income.

Figure 7. Despite small differences, uptake of breast cancer screening is above 74 % in all regions



Note: Breast cancer screening uptake across different Slovenian regions.
Source: Institute of Oncology Ljubljana, data for 2021.

Colorectal cancer incidence dropped significantly after implementation of a screening programme

A colorectal cancer screening programme was introduced in Slovenia in 2009. Men and women aged 50-74 years are invited to participate every two years. The faecal immunochemical test (FIT) is used on two samples of stools, followed by colonoscopy if findings are positive. Testing of all samples is centralised, and colonoscopies are performed by certified experts throughout the country. Since the programme's introduction, incidence rates of colorectal cancer have decreased significantly due to an increased in diagnosed, and consequently removed polyps that would have progressed into cancer otherwise. According to Slovenian Cancer Registry data, during 2009-2019, the average cancer incidence rate reduction was 3 % per year among men and 2.1 % among women.

In 2021, overall screening uptake was 63 %. More women participated than men (69 % vs. 58 %) – rates similar to other EU countries. The region with the lowest participation rate in 2021 was Koper with 60 %; the region with the highest was Kranj with 67 %. Data from the EHIS for 2019 showed that more people from cities (56 %) than rural areas (53 %) reported undergoing a a faecal occult blood test during the last two years, but there was also difference by education or income. In 2019, more people aged 50 to 74 years on high (55 %) than low incomes (50 %) reported participating in screening for example.

Initiatives to promote colorectal screening have been employed among the general public and experts at the local level. To enhance participation rates among men, initiatives focused on settings such as voluntary fire-fighting brigades, hunting societies and car-repair shops. Another initiative where people (including prominent members of society) shared their experiences of the screening programme had positive impacts on destigmatisation and promotion. Access to screening activities for people with disabilities (such as visual and hearing impairments) was ensured – notably by adapting reading and audio materials and making them available online.

Box 2. The National Screening Committee was established to decide on new screening programmes

In 2020, in accordance with the NCCP, the National Screening Committee was established in Slovenia. Its aim is to guide the comprehensive process from evaluation of proposals to implementation of new cancer screening programmes, to provide high-quality programmes compliant with EU quality control standards. Based on promising results from international studies and the goal to improve survival, there have been national initiatives to start implementing screening for lung and gastric (stomach) cancers. Prostate cancer screening has been carried out opportunistically; this needs to change to an organised programme. Slovenian experts have participated in preparation of the new European screening recommendations, which will form guidance for future screening programmes along with the quality control standards.

5. Cancer care performance

5.1. Accessibility

Cancer care is accessible to all free of charge

All cancer care in Slovenia is accessible free of charge for all, including those not fulfilling formal residency requirements. Most cancer pharmaceuticals are covered by the compulsory SHI scheme, complementary voluntary health insurance and government schemes. As a result, Slovenia had a low rate (12 %) of out-of-pocket expenditure in the EU, compared to the EU average of 15 % in 2019. Although cancer patients are at risk of financial hardship due to care costs, Slovenia also had the lowest rate of catastrophic health expenditure (0.8 %) across the EU countries in 2018.

For 2 million residents of Slovenia, comprehensive multidisciplinary cancer care is provided by the IOL, which is the only specialised oncology institution in the country. Three other tertiary care hospitals also provide multidisciplinary oncology treatment for specific cancer types. Meanwhile, a wide range of diagnostics, systemic therapy and surgery for cancer patients is provided by all tertiary and secondary hospitals and some ambulatory providers. Access to secondary and tertiary care is via referral from primary care. Weekly online multidisciplinary tumour boards and consultations are established in bigger secondary and tertiary hospitals for all cancer types, where the majority of cancer cases are presented by treating physicians to determine their optimal care.

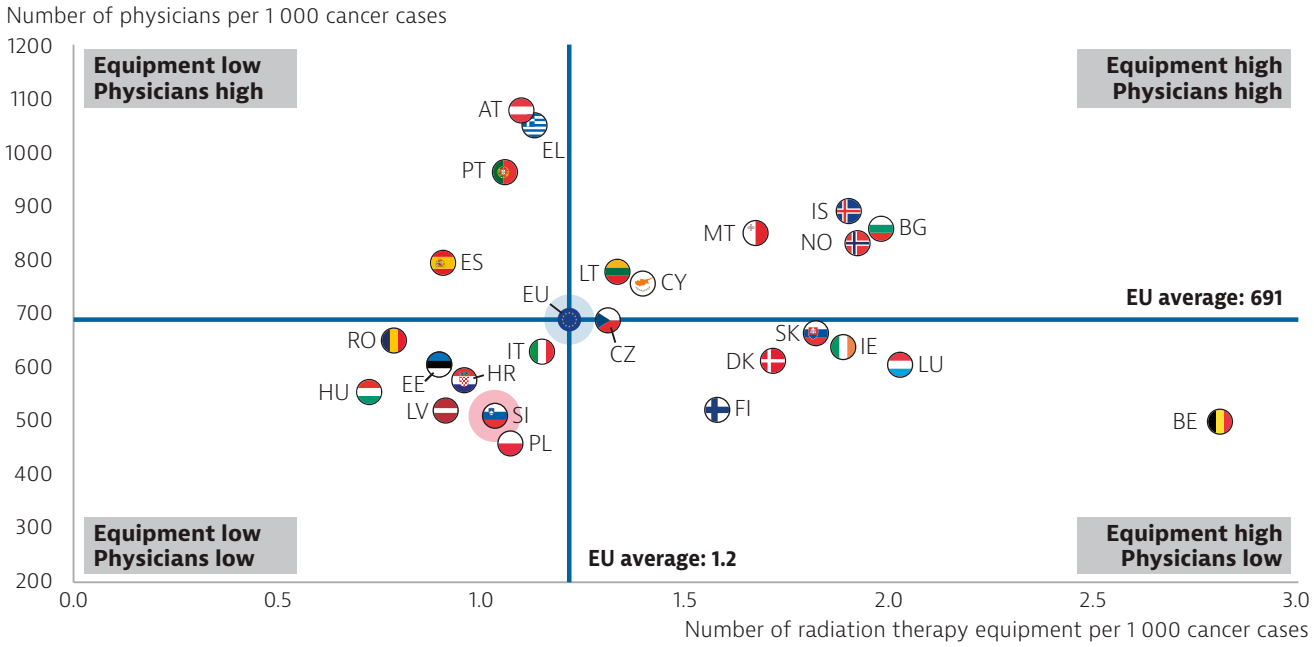
Slovenia is facing a shortage of oncology specialists and equipment

Eurostat data from 2015 show a shortage of oncology specialists in Slovenia compared to the EU average (1.7 vs. 3.4 per 100 000 population). For example, only half the annual national places for oncology residents have been filled in recent years, highlighting the challenges of workforce shortages in the future. In 2021, there were 501 physicians and 1 radiation therapy equipment per 1 000

cancer cases in Slovenia, which is one of lowest ratios across the EU (Figure 8). In 2020, national estimates of future needs to 2030 for oncology professionals across all levels of the health care system were made according to personnel standards and projected cancer incidence. They found that an overall 15 oncology specialists per 100 000 population would be needed in 2021 and 18 in 2030. This was taken into consideration in the latest NCCP.

Since 2016, radiation therapy is provided at two tertiary care centres, as inpatient or ambulatory care. In 2022, the National Health Council approved an agreement to establish proton therapy in Slovenia. Previously, all eligible cancer patients were entitled to receive proton therapy abroad funded by the Health Insurance Institute, but relatively few took this up.

Figure 8. Densities of physicians and radiation therapy equipment are among the lowest across the EU



Note: EU average is unweighted (calculated by the OECD). Radiation therapy equipment from hospitals and providers of ambulatory care.
Sources: Eurostat and OECD Health Database (data refer to 2020, or nearest year).

A lack of positron emission tomography scans is prolonging waiting times

With a rise in incidence of cancer and expansion of indications, the need for diagnostic equipment is growing. Availability has been sufficient for most equipment, except PET scanners, where prolonged waiting times have occurred nationally. The average waiting time for a referral designated under "fast" or "normal" to a PET scan is between three and six months. Therefore, oncology specialists sometimes use other diagnostic proceedings instead of PET scan to start oncology treatment without delay. Slovenia has made an action plan to provide more PET scans and also use its own cyclotron for isotope production.

To improve access to cancer care, a significant change has been made to the referral system in the past decade with the introduction of "very fast" referrals, where patients with suspected or diagnosed cancers should receive care within 14 days. Consequently, additional outpatient clinics for triage have been introduced at some tertiary centres, and efforts have been made to ensure that the crucial first oncological appointments occur within this timeframe.

Slovenia ensures access to new cancer therapies

Access to anticancer medicinal products is fast and good. At the Health Insurance Institute, which maintains a list of medicines covered by SHI, a special board enables fast introduction of new drugs approved by the European Medicines Agency. The treating oncologist can also request compassionate use of medicines on a patient's behalf; such requests are handled promptly.

Box 3. Access to specialty palliative care for cancer patients is limited, but has improved

Patients with incurable cancer and terminal illness represent an increasing burden in Slovenia, as around 17 % of all new cancer cases are diagnosed at an advanced stage. The National Palliative Care Programme was established in 2010, followed by a comprehensive palliative care plan for adult cancer patients in 2020. Basic palliative care for patients with incurable cancer is accessible through the primary health care network and in all hospitals, but access to specialty care is still limited. The Department for Acute Palliative Care was established at the IOL in 2007; this provides patient-centred ambulatory and inpatient care and consultations for all levels of health care for the most complex palliative care needs of patients and carers. During the last decade, many certified trainings on palliative care have been carried out aimed at healthcare workers, patients and their caregivers as well. Additionally, five mobile palliative care teams offering 24-hour telephone consultations were set up throughout Slovenia in 2021, despite the COVID-19 pandemic. Further improvements in palliative care are planned in the NCCP.

5.2 Quality

Survival rates have improved substantially over the last 20 years

Data from the Slovenian Cancer Registry for 1997-2016 showed that five-year net survival for cancer patients increased from 46 % to 58 %. This improvement is largely attributed to successful screening programmes, early access to diagnostics and progress in therapy. The most substantial increase in five-year survival was observed among men (from 38 % in 1997-2001 to 55 % in 2012-2016), which is slightly below the survival rate for women (from 54 % to 60 %).

Based on the results of the international CONCORD Programme, five-year net survival rates for selected cancer types were close to the EU averages (Figure 9). The five-year relative survival of patients with rare cancers in Slovenia was 50 % – similar to the EU average of 49 % according to RARECAREnet. Paediatric cancers represent only 1 % of all cancer cases in Slovenia. During 1997-2017, the five-year net survival for paediatric cancers also increased from 79 % to 86 %.

Figure 9. Survival rates for selected cancer types in Slovenia are similar to the EU averages

Prostate cancer	Breast cancer	Cervical cancer	Colon cancer	Lung cancer
Slovenia: 85%	Slovenia: 84%	Slovenia: 66%	Slovenia: 62%	Slovenia: 15%
EU24: 87%	EU24: 83%	EU24: 64%	EU24: 60%	EU24: 15%

Note: Data refer to people diagnosed between 2010 and 2014.
Sources: CONCORD Programme, London School of Hygiene and Tropical Medicine, and Slovenian Cancer Registry.

The national comprehensive oncology centre was established in 1938

The IOL is the only specialised comprehensive oncology centre in Slovenia. It was established already 85 years ago and is recognised as one of the best oncology centres in central Europe. More than half of all Slovenian cancer patients receive treatment at the IOL, and its professionals play a major role in the progress of multidisciplinary, comprehensive cancer care, education and research at a national level. Other tertiary-level oncology departments exist as departments inside university hospitals. Quality assurance in comprehensive cancer care at a national level is controlled by multidisciplinary tumour boards and via up-to-date development and implementation of guidelines and disease management plans. The IOL also provides centralised treatment for specific types of adult cancers (such as sarcoma and melanoma), but for paediatric cancers it is provided at Division of Paediatrics, University Medical Centre Ljubljana, with radiotherapy at the IOL.

Patient-reported measures are not yet fully embedded in cancer care

The NCCP and comprehensive cancer care in Slovenia focus on quality of care for patients. Quality control via patient-reported outcome

measurements (PROMs) is carried out regularly at health care institutions throughout the country, including oncological services. The use of PROMS is in the implementation phase.

Recently, patient-reported experience measurements (PREMs) were introduced into care as part of national and institutional surveys. In 2018, the National Institute of Public Health carried out a national PREMs study in specialised ambulatory services (including oncological services). In 2022, the OECD's Patient-Reported Indicator Survey initiative for patients with chronic diseases was launched at the Community health centre in Ljubljana. Further, two questionnaires were validated for use in oncological care and research, and the initial findings have been published for patients with head and neck cancers. From 2022, the questionnaires are being implemented in routine practice for all patients at the IOL. However, there is still room for improvement in embedding PREMs and PROMs in cancer care, such as linking them to the new national clinical registries for the most common cancer types.

Slovenia has several national cancer registries to help improving care quality

In the NCCP 2022-2026, the country has set a strategic goal to establish a national network of oncology providers at all levels of health care to achieve more centralised, high-quality and cost-effective care for all patients. Surveillance data along the whole continuum of cancer care throughout Slovenia is provided by the Slovenian Cancer Registry situated at the IOL, along with centralised governance of the NCCP.

Specialised screening registries are established for each of the three national cancer screening programmes at the screening coordination centres, and national clinical registries have been set up at the Slovenian Cancer Registry for five most common cancer types (skin melanoma, lung, breast, colorectal and prostate cancer) and for follow-up of late sequelae paediatric cancers. National multidisciplinary teams can use the data to assess the quality of cancer care and provide proposals for improvements to policy makers through managerial structures of the NCCP. Monitoring compliance of cancer care with clinical guidelines at the national level is already done for skin melanoma, and annual feedback – comprising quality indicators – is provided to national oncology professionals, to each provider. Data links with other national health care and administrative databases are facilitated by unique resident identification numbers.

In addition, the Slovenian Cancer Registry studies socioeconomic disparities among cancer patients, and recently validated the Slovenian version of the European Deprivation Index.

5.3 Costs and value for money

Total costs of cancer care remain slightly above the EU average

In 2018, the cost of cancer care – adjusted for purchasing power parity (PPP) – was EUR 362 per capita, which is 11 % higher than the EU average (EUR 326) (Figure 10). In Slovenia, cancer care expenditure relies on the SHI scheme provided by the Health Insurance Institute, which covers over 99 % of residents. Coverage of emergency health care services for all others is provided by government schemes (Section 5.1).

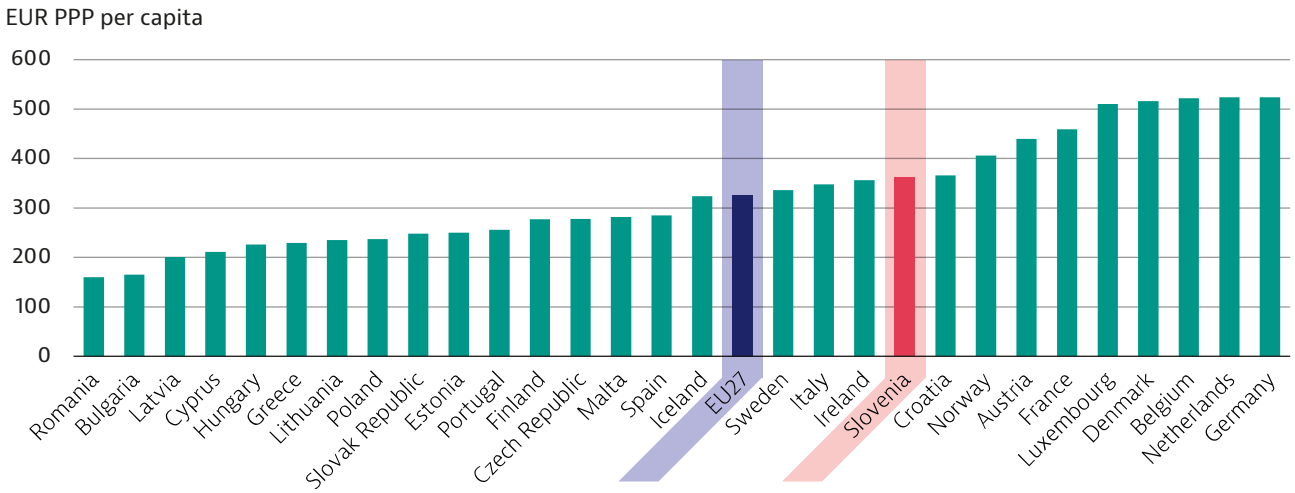
In 2018, costs of cancer medicines comprised one third of the direct costs (EUR 105 million or EUR 51 per capita) of cancer care in Slovenia, which were around EUR 10 per capita less than in Spain, Italy, the Netherlands, Finland and Iceland. Costs of cancer drugs have been, to some extent, alleviated by a growing generics market. Informal care costs for cancer patients remain similar to the EU average (EUR 37 vs. EUR 39 per capita). The same holds true for indirect costs resulting from the productivity loss from premature mortality (EUR 80 per capita in Slovenia vs. the EU average of EUR 79). However, large indirect costs of productivity losses due to cancer morbidity (EUR 67 per capita vs. the EU average of EUR 42) present a challenge for cancer care in Slovenia.

Costs of cancer care are expected to rise in the future, linked in part to new technologies and innovative therapeutics. This represents a problem for the financial sustainability of the health care system. Hence, the NCCP has ambitions to increase efficiency of oncological services and reduce growth in costs by developing a national network of cancer care quality (see Section 2).

Financial incentives for cancer research are expected to grow via trans-European co-operation

The IOL as a comprehensive cancer centre covers research including basic studies, research into diagnostic and prognostic factors, preclinical research and clinical and epidemiological studies. Research is also carried out at the other three tertiary centres dealing with oncology and at the National Institute of Public Health.

Figure 10. Per capita expenditure on cancer care was higher than the EU average in 2018



Note: The EU27 average is unweighted (calculated by the OECD).
Source: Hofmarcher et al., (2020).

So far, the majority of research has been financially supported by the Slovenian Research Agency, but further strengthening is expected from European financial mechanisms supporting research into cancer (such as Mission Cancer).

Slovenia has been a strong player in the European project sphere. The National Institute of Public Health has coordinated three cancer joint action projects and has recently begun a new one addressing comprehensive cancer infrastructures throughout Europe. Slovenian institutions are also partnering within other international collaboration activities, including clinical studies, European reference networks, the European Network of Cancer Registries, Interreg projects and similar.

Generic prescribing decreased inequalities in access to oncology medicines

In Slovenia, introduction of generic prescribing for new oncology medicines, especially biologics, has improved cost–effectiveness and decreased inequalities in access to oncology medicines. Cancer patients who have been prescribed a medicinal product with a higher price than the one defined and covered by compulsory SHI may choose either to pay the difference out of pocket or to receive a generic product without copayment. During 2009-2019, the share of the generics market in Slovenia increased from 42 % to 53 %, which is above the EU average (49 %).

Research into prices of originator oral cancer medicines without available generics showed significant positive correlation between the price and GDP per capita for Slovenia and other selected European countries.

5.4 COVID-19 and cancer: building resilience

A website was established to monitor the impact of COVID-19 on cancer care

COVID-19 has disrupted provision and use of health care services. From the start of the pandemic, all non-essential health care services were put on hold by government decree, although oncological services were listed as an exception. In May 2020, after the end of the first wave, the Slovenian Cancer Registry set up a website to carry out timely analyses of the impact on cancer burden and care, using readily available, up-to-date and reliable data sources. The indicators produced were reported online at the onKOvid web page (Slovenian Cancer Registry, 2022). Beyond the impact of COVID-19, onKOvid continually monitors new diagnoses for all cancers and for particular types, referrals to first and follow-up oncological appointments, and diagnostic procedures and treatments administered at the IOL.

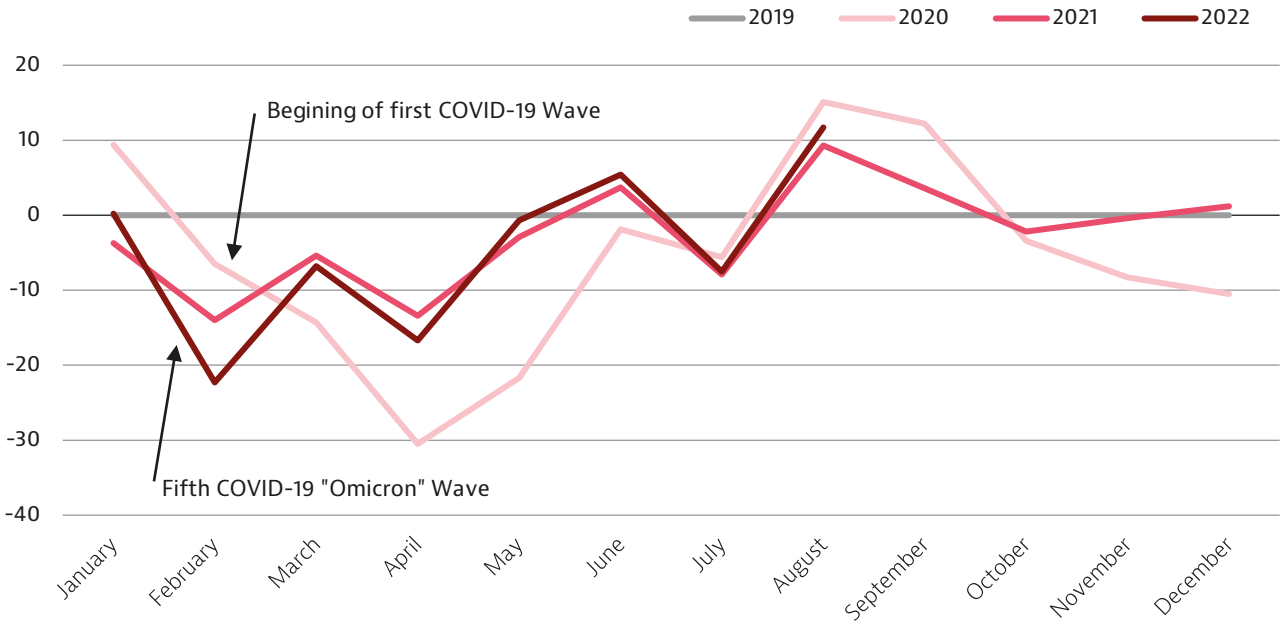
Delays in cancer diagnoses and referrals were most pronounced at the beginning of the pandemic

The most substantial reduction in new cancer cases was recorded in April 2020, in the middle of the first COVID-19 wave in Slovenia (Figure 11). The number of newly diagnosed cancers fell by 30 % in March and April 2020 compared to the same period in 2019. There were, however, some cancer types with a much larger drop (e.g. new non-melanoma skin cancers declined by 60 % during the same period). First oncological referrals declined by one third and follow-up referrals halved. Furthermore, only half the number of X-rays and ultrasound

scans were performed at the IOL, while almost two thirds of all mammograms were provided. In autumn and winter 2020/21, during a prolonged second wave of the pandemic, the reduction in new cancer cases (10 %) was less prominent than during spring 2020, and referrals and diagnostic imaging were not significantly affected.

Figure 11. The largest drop in new cancer diagnoses occurred during the first wave of the pandemic

Percentage change in new cancer cases treated in hospitals compared to 2019 data



Source: Slovenian Cancer Registry, 2022.

Cancer screening programmes were suspended, but the backlog has been cleared

The three cancer screening programmes (cervical, breast and colorectal) were temporarily suspended during the first wave of COVID-19 in Slovenia (March-May 2020). During the first half of 2020, uptake of all three programmes was lower than anticipated, but activity had returned to normal by the end of that year. To encourage participation, each cancer screening programme released information reiterating the importance of screening and assuring patients of safe delivery of cancer care. Furthermore, prominent public figures supported participation, and screening programmes for cancer were listed as exempt from further suspension by a government decree.

For example, the cervical cancer screening coordination team has identified all participants from the Cervical Screening Registry being late for follow-up or treatment due to programme suspension (Ivanuš, 2021). Personalised lists of participants and a prioritisation tool were sent to each gynecologist with a request to prioritise management of higher risk patients. In addition, Slovenia carried-out a survey among all cervical cancer screening providers to identify workforce challenges during the COVID-19 pandemic, along with the national survey on pandemic fatigue (so-called SI-PANDA).

Uptake of three-yearly cervical screening fell below 70 % for the first time since establishment of the national programme in 2003. Uptake of smears among women aged 30-39 years was lower in part due to the double burden of jobs and home-schooling children amid school closures. The number of invasive procedures on the cervix also decreased, which explains the 14 % drop in newly diagnosed high-grade cervical dysplasia among this group. Conversely, at the end of 2020, time to diagnosis and time to treatment were maintained at pre-pandemic levels, according to the Cervical Screening Registry. By the end of the Summer 2020, three-year cervical screening uptake increased again above 70 % due to intensified screening activities. In 2021, the overall number of screening smears and newly detected high-grade cervical dysplasia in women aged 20-64 was comparable to the pre-pandemic years (Jerman et al., 2022).

The burden of cancer risk factors has increased dramatically among the Slovenian population

Results of the Slovenian online survey on the impact of COVID-19 showed an increase of more than 10 % in alcohol consumption among adults during the pandemic. Moreover, almost two out of five adults reported being less physically active than before, and the physical performance index also dropped significantly among schoolchildren.

Additionally, the prevalence of overweight children increased significantly. Pre-existing intervention programmes for overweight and physically inactive children, such as free-of-charge extracurricular physical activity at school, were enhanced after 2021, but there is still room for improvement in implementing more frequent physical activity for all schoolchildren (see Section 3).

6. Spotlight on inequalities

Cancer care in Slovenia is available to all people. A wide range of cancer medications and treatment modalities are provided in the public health system, without the need for out-of-pocket payments. Despite this, some inequalities are observed in the cancer burden, risk factors, uptake of screening programmes and outcomes of cancer patients.

- No regional differences in cancer incidence and mortality were observed, while the expected cancer incidence rate (778 per 100 000 age-standardised population) and mortality rate (399 per 100 000 population) are higher among men than women.
- In women, lung cancer mortality rose by four percentage points per year during 2010-2019, while it still remains lower compared to men; similar dynamic is observed for lung cancer incidence.
- Main modifiable risk factors for cancer – such as smoking, alcohol consumption and obesity – are more prevalent in lower socioeconomic groups. Smoking is more prevalent in men and in low income people. Alcohol-attributed cancer incidence rate are higher among men than women, and residents of Eastern Slovenia have a higher risk of hospitalisation and death for alcohol-attributed causes than Western Slovenia.
- Significant differences by income, education or region are also observed for the three cancer screening programmes. Women on lower income (48 %) compared to high income women (69 %) participate less frequently in cervical cancer screening, similar to women with lower education. Women from rural areas report to participate in breast cancer screening programme (68 %) less frequently than women from urban areas (71 %).
- Five-year net survival of cancer patients was slightly lower among men (55 %) than women (60 %) during 2012-16, but in the past two decades it has increased more (17 percentage points) among men than women (6 percentage points).

During COVID-19, cervical cancer screening uptake fell below 70 % for the first time, but the activity has fully recovered during the summer 2020. The COVID-19 pandemic has most likely increased inequalities in access to cancer care in Slovenia, although such care was considered a priority. A reduction in new cancer cases was observed, with incidence rates returning to pre-pandemic levels only during 2022. Cancer screening programmes were temporarily stopped for 2.5 months, but all programmes were resolving the backlog in the following months. As of late 2022, all screening programmes were operating normally as before the pandemic.

References

European Commission (2021), *Europe's Beating Cancer Plan*. Brussels, European Commission, https://ec.europa.eu/info/strategy/priorities-2019-2024/promoting-our-european-way-life/european-health-union/cancer-plan-europe_en.

Florjančič M et al. (2022), Značilnosti neodzivnic v programu ZORA. In: Ivanuš U, ed. *Zbornik predavanj, 11. izobraževalni dan programa ZORA – ZORA 2021*. Ljubljana, Onkološki inštitut Ljubljana, http://zora.onko-i.si/11zd/zbornik.

Gabrijelčič BM et al. (2021), *Inequalities in health: future challenges for intersectoral cooperation (summary)*, Ljubljana, National Institute of Public Health, http://www.nijz.si/sites/www.nijz.si/files/publikacije-datoteke/neenakosti_povzetek_angleski_e_verzija_24_6_21_1.pdf.

Gatta G, RARECAREnet working group et al. (2017), Burden and centralised treatment in Europe of rare tumours: results of RARECAREnet-a population-based study, *Lancet Oncology,* 18(8):1022-1039.

Hofmarcher T et al. (2020), The cost of cancer in Europe 2018, *European Journal of Cancer,* 129:41-49.

Institute of Oncology Ljubljana (2022), *Annual report of the national breast cancer screening programme 2021*, Ljubljana, Institute of Oncology Ljubljana, http://dora.onko-i.si/fileadmin/user_upload/Dokumenti/DORA_Letno_porocilo_2021_WEB_apr_2022.pdf.

Institute of Oncology and Ministry of Health of Republic of Slovenia, *National Cancer Control Programme Slovenia,* Ljubljana, http://www.dpor.si/eng/.

Ivanus U et al. (2018), Randomised trial of HPV self-sampling among non-attenders in the Slovenian cervical screening programme ZORA: comparing three different screening approaches, *Radiology and Oncology,* 14;52(4):399-412.

Ivanuš U et al. (2021), The impact of the COVID-19 pandemic on organised cervical cancer screening: The first results of the Slovenian cervical screening programme and registry, *the Lancet Regional Health – Europe,* 13;5:100101.

Jarm K et al. (2021), Quality assured implementation of the Slovenian breast cancer screening programme, *PLOS One,* 16 (10):1-16.

Jerman T et al. (2022), ZORA Programme monitoring and evaluation. *ZORA: Slovenian national cervical cancer screening programme and registry,* Ljubljana, Institute of Oncology Ljubljana, https://zora.onko-i.si/en/monitoring-and-evaluation/.

Koprivnikar H et al. (2021), *Tobaku pripisljiva umrljivost v Sloveniji 1997-2019,* Ljubljana, Nacionalni inštitut za javno zdravje.

National Institute of Public Health (2022), *Annual report of the national colorectal screening programme 2021,* Ljubljana, National Institute of Public Health, https://www.program-svit.si/wp-content/uploads/2022/04/Letno-porocilo-o-delovanju-Programa-Svit-za-obdobje-od-1.1.-do-31.12.2021.pdf

Slovenian Cancer Registry (2022), onKOvid: http://www.slora.si/en/novi-primeri-raka; accessed on 7 October 2022.

Zadnik V et al. (2022), Cancer patients' survival according to socioeconomic environment in a high-income country with universal health coverage, *Cancers (Basel),* 14(7):1620.

Zadnik V et al. (2021), Trends in population-based cancer survival in Slovenia, *Radiology and Oncology,* 55(1):42-49.

Zadnik V et al. (2017), Cancer burden in Slovenia with the time trends analysis. *Radiology and Oncology,* 51(1):47-55.

Zadnik V et al. (2020), Impact of COVID-19 on cancer diagnosis and management in Slovenia - preliminary results, *Radiology and Oncology,* 54(3):329-334.

Country abbreviations

Austria	AT	Denmark	DK	Hungary	HU	Luxembourg	LU	Romania	RO
Belgium	BE	Estonia	EE	Iceland	IS	Malta	MT	Slovak Republic	SK
Bulgaria	BG	Finland	FI	Ireland	IE	Netherlands	NL	Slovenia	SI
Croatia	HR	France	FR	Italy	IT	Norway	NO	Spain	ES
Cyprus	CY	Germany	DE	Latvia	LV	Poland	PL	Sweden	SE
Czech Republic	CZ	Greece	EL	Lithuania	LT	Portugal	PT		

European Cancer Inequalities Registry

Country Cancer Profile 2023

The European Cancer Inequalities Registry is a flagship initiative of the Europe's Beating Cancer Plan. It provides sound and reliable data on cancer prevention and care to identify trends, disparities and inequalities between Member States and regions. The Registry contains a website and data tool developed by the Joint Research Centre of the European Commission (https://cancer-inequalities.jrc.ec.europa.eu/), as well as an alternating series of biennial Country Cancer Profiles and an overarching Report on Cancer Inequalities in Europe.

The Country Cancer Profiles identify strengths, challenges and specific areas of action for each of the 27 EU Member States, Iceland and Norway, to guide investment and interventions at the EU, national and regional levels under the Europe's Beating Cancer Plan. The European Cancer Inequalities Registry also supports Flagship 1 of the Zero Pollution Action Plan.

The Profiles are the work of the OECD in co-operation with the European Commission. The team is grateful for the valuable comments and suggestions provided by national experts, the OECD Health Committee and the EU Expert Thematic Group on Cancer Inequality Registry.

Each Country Cancer Profile provides a short synthesis of:

- the national cancer burden
- risk factors for cancer, focusing on behavioural and environment risk factors
- early detection programmes
- cancer care performance, focusing on accessibility, care quality, costs and the impact of COVID-19 on cancer care.

Please cite this publication as:
OECD (2023), *EU Country Cancer Profile: Slovenia 2023*, EU Country Cancer Profiles, OECD Publishing, Paris, https://doi.org/10.1787/cd631ba0-en.

ISBN 9789264397477 (PDF)
Series: EU Country Cancer Profiles

European Commission

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