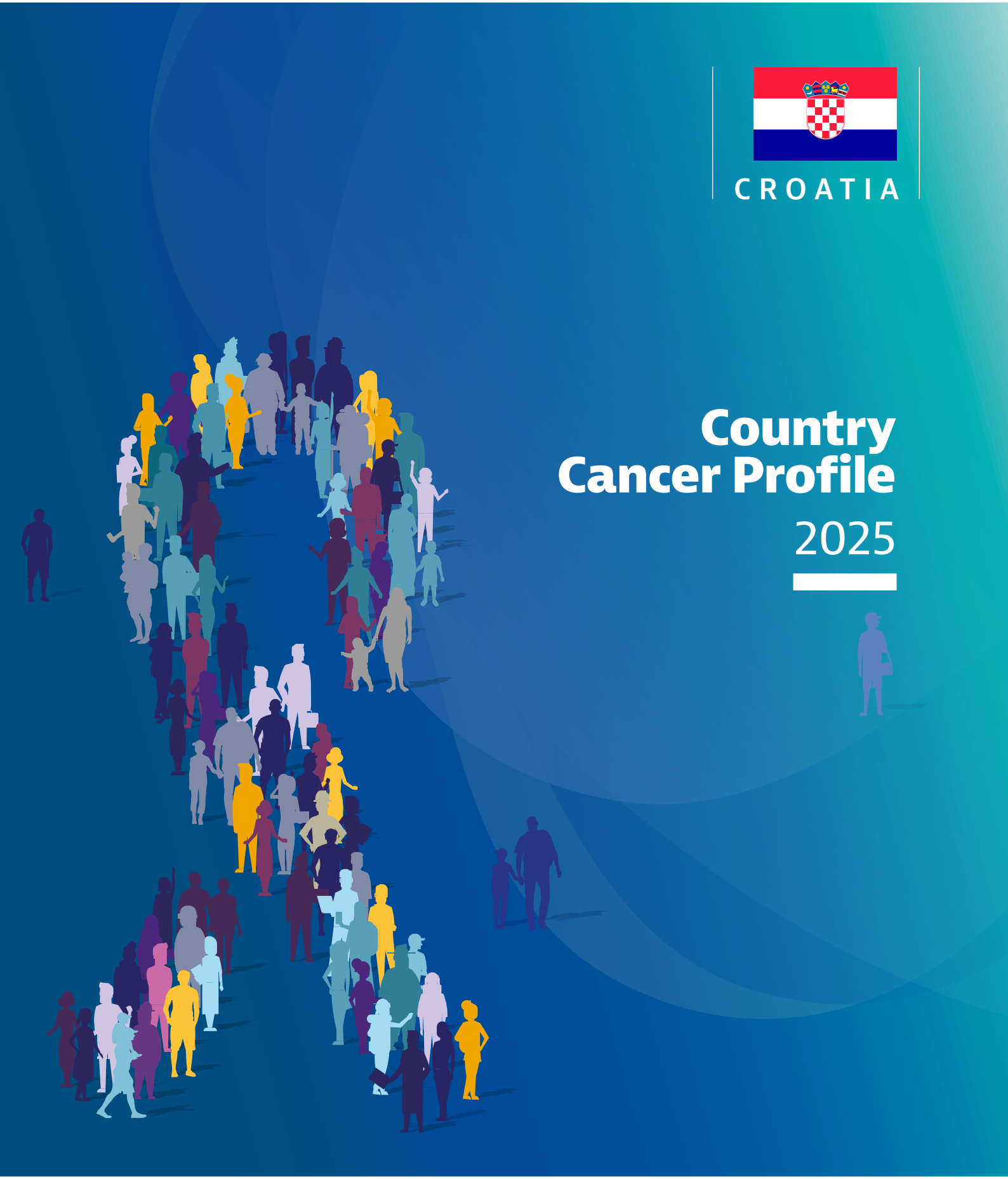
European Cancer Inequalities Registry



CROATIA

Country Cancer Profile

2025

European Commission

OECD

BETTER POLICIES FOR BETTER LIVES

The Country Cancer Profile Series

The European Cancer Inequalities Registry is a flagship initiative of 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, regions and population groups. 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 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 Thematic Working 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 and information also come from the European Commission's Joint Research Centre (EC-JRC), the EU statistics on income and living conditions (EU-SILC) Survey, the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), the International Atomic Energy Agency (IAEA), the European Society for Paediatric Oncology (SIOPE), the European Union Agency for Fundamental Rights (FRA LGBTIQ), the Health Behaviour in School-aged Children (HBSC) survey as well as from the 2023 Country Health and Cancer Profiles, 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. Mortality and incidence rates are age-standardised to the European standard population adopted by Eurostat in 2013.

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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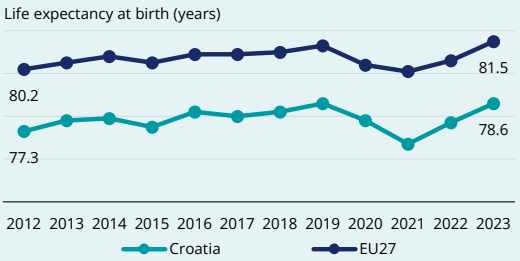
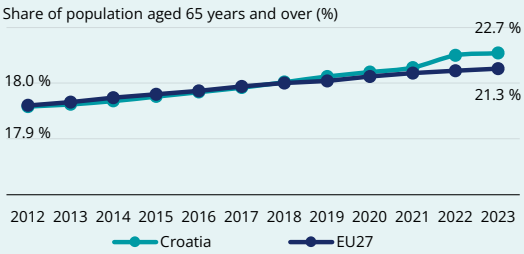
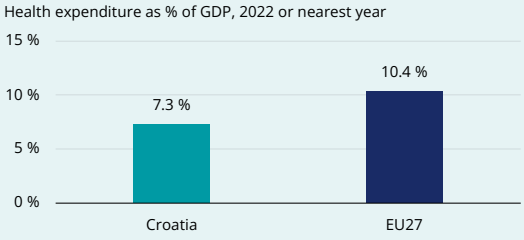
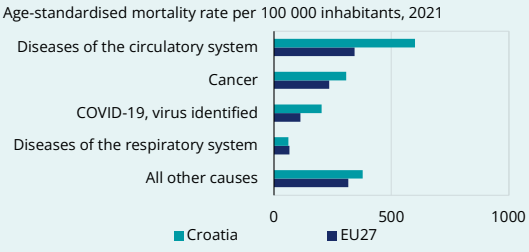


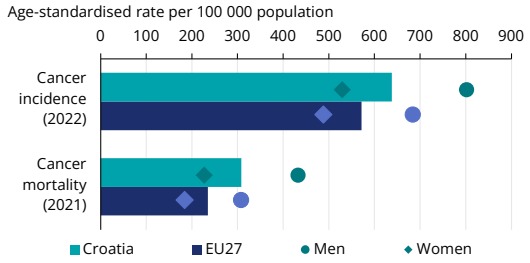






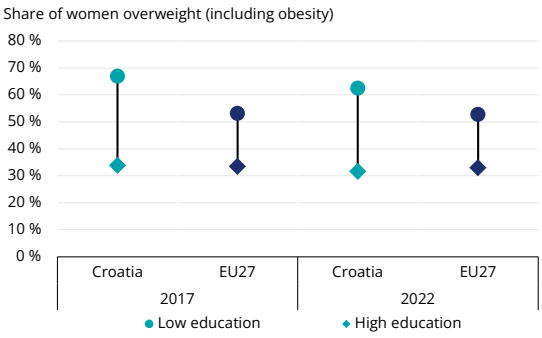
Source: Eurostat Database.

1. Highlights



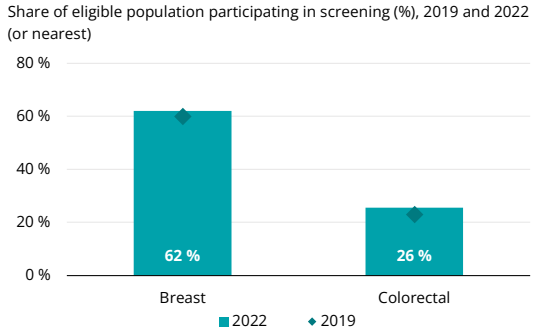
Cancer in Croatia

In 2022, Croatia's age standardised cancer incidence rate was estimated at 638 cases per 100 000 – the fifth highest among the EU, Norway and Iceland and 12% above the EU average. Moreover, geographical differences in incidence within the country reached 30% in 2020. Along similar lines, the 2021 cancer mortality rate was 308 per 100 000, which is 31% above the EU average and the second highest in the EU. In 2022, Croatia had five year prevalence of 1 953 cancer cases per 100 000 population – 4% higher than the 1 876 cases per 100 000 across the EU.



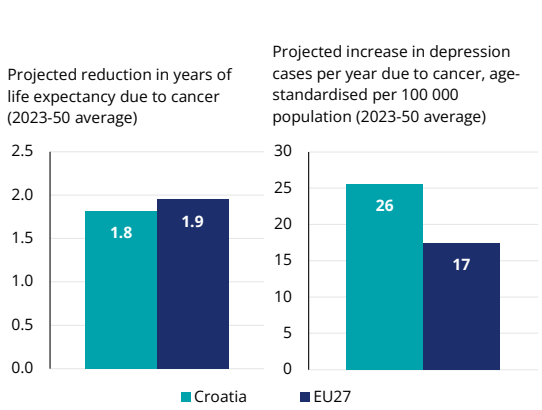
Risk factors and prevention policies

In 2022, Croatia ranked in the bottom third of EU countries for five of nine cancer risk factors (smoking, overweight or obesity, low physical activity, occupational exposure and air pollution). Overweight or obesity affected 58% of the population, which is 13% above the EU average. Croatia also had the largest gap in obesity based on socio economic status across the EU, at 63% among women with lower education levels and 32% among those with higher education levels. However, the country has relatively low alcohol consumption compared to other EU countries.



Early detection

Croatia has two population-based screening programmes for breast and colorectal cancer while cervical cancer screening is opportunistic. In 2022, 62% of the eligible population in Croatia was screened for breast cancer – similar to the 60% in 2019. Colorectal cancer screening reached 26% in 2023 – up from 23% in 2019. Disparities exist by income and education in breast and cervical cancer screening, and by geography in colorectal cancer. In addition, colorectal cancer screening coverage is higher among women than men.



Cancer care performance

In 2023, Croatia has 376 oncology specialists, equating to 9 per 100 000 population, which is sufficient for current needs. Significant strides in oncology nursing include the first international academy, and plans for specialisation and advanced roles in cancer care. Croatia supports high-value cancer care with robust biosimilar adoption. In palliative care, 52 co-ordinators and 41 mobile teams were established across 30 health centres in 21 counties in 2023. Between 2023-50, cancer is expected to lead to more cases of depression in Croatia but to reduce life expectancy by less than in the EU on average.

2. Cancer in Croatia

Croatia has the fourth largest estimated cancer incidence rate in the EU

According to the European Cancer Information System (ECIS) of the Joint Research Centre based on incidence trends from pre-pandemic years, estimated incidence rate of cancer in Croatia in 2022 was 638.3 cases per 100 000 population, which is 12% higher than the EU average of 571.5 cases per 100 000. Moreover, Croatia's estimated incidence is the fifth largest in the EU+2,[1] only behind Norway, Denmark, Ireland and the Netherlands.

These incidence measures are not affected by COVID-19, as the ECIS estimates are based on pre-pandemic trends. Nevertheless, Croatia had a 10% decline in new cancer diagnoses in 2020 compared to 2019, attributed to the healthcare system's reorganisation during the pandemic. However, healthcare services in Croatia rapidly returned to normal by 2021 (Kelemenic-Drazin et al., 2021; Kirac et al., 2020).

Croatian men are significantly more at risk. In 2022, the incidence rate for men was estimated at 802 per 100 000, which is 17% higher than the EU average of 684 new cases per 100 000. In 2022, the incidence rate for women was 529 per 100 000, while the EU average stood at 488 per 100 000. This represents an 8% difference. Looking forward, ECIS estimates that cancer cases in Croatia will increase by 4% between 2022 and 2040.

Four cancer types account for more than 55% of cancer incidence rates

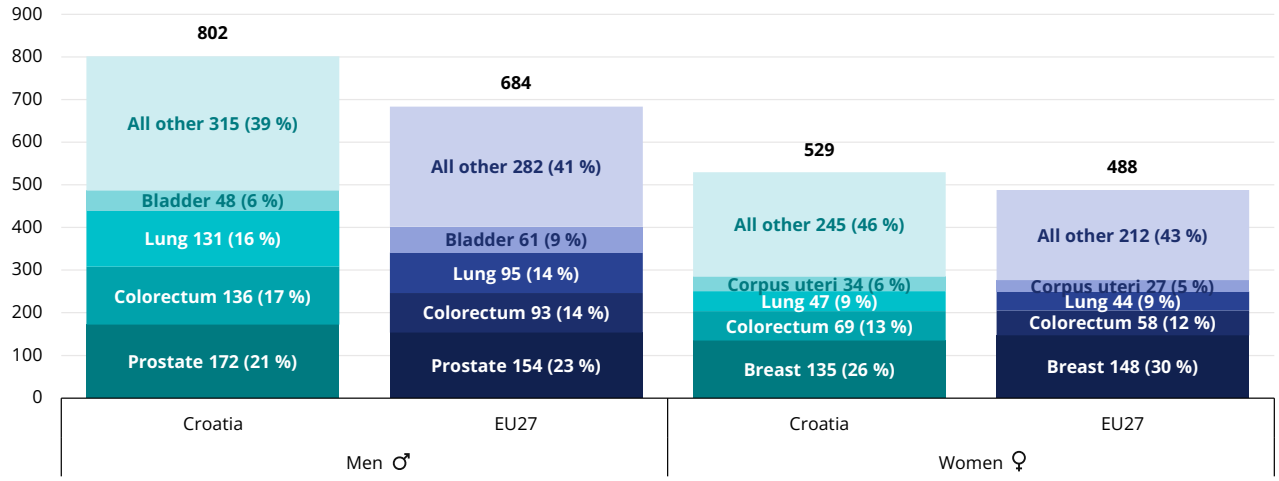
In Croatia, prostate cancer is responsible for the highest incidence of new cancer cases among men, at 21% of cancer incidence rates, compared to 23% across the EU. Colorectal cancer is next (17%), then lung cancer[2] (16%) – slightly higher rates than the EU averages (Figure 1).

Among women in Croatia, breast cancer is responsible for the highest incidence, at 26% of cancer incidence rates, which is lower than the 30% across the EU. Colorectal cancer is next (13%), then lung cancer (9%) – similar rates to the EU averages.

In the EU, the combination of colorectal and lung cancers accounts for 28% of new male cancer cases (33% in Croatia) and 21% of female cancer (22% in Croatia), highlighting a higher risk among Croatian men than both Croatian women and the EU average.

Figure 1. Four cancer types account for more than half of all new cancers in Croatia and across the EU, with a higher burden in Croatia

Age-standardised incidence rate per 100 000 population, estimates, 2022



Notes: 2022 figures are estimates based on incidence trends from previous years, and may differ from observed rates in more recent years. Includes all cancer sites except non-melanoma skin cancer. Corpus uteri does not include cancer of the cervix.
Source: European Cancer Information System (ECIS). From https://ecis.jrc.ec.europa.eu, accessed on 10 March 2024. © European Union, 2024. The incidence percentage breakdown was re-computed based on age-standardised incidence rates and as such differs from the percentage breakdown of absolute numbers shown on the ECIS website.

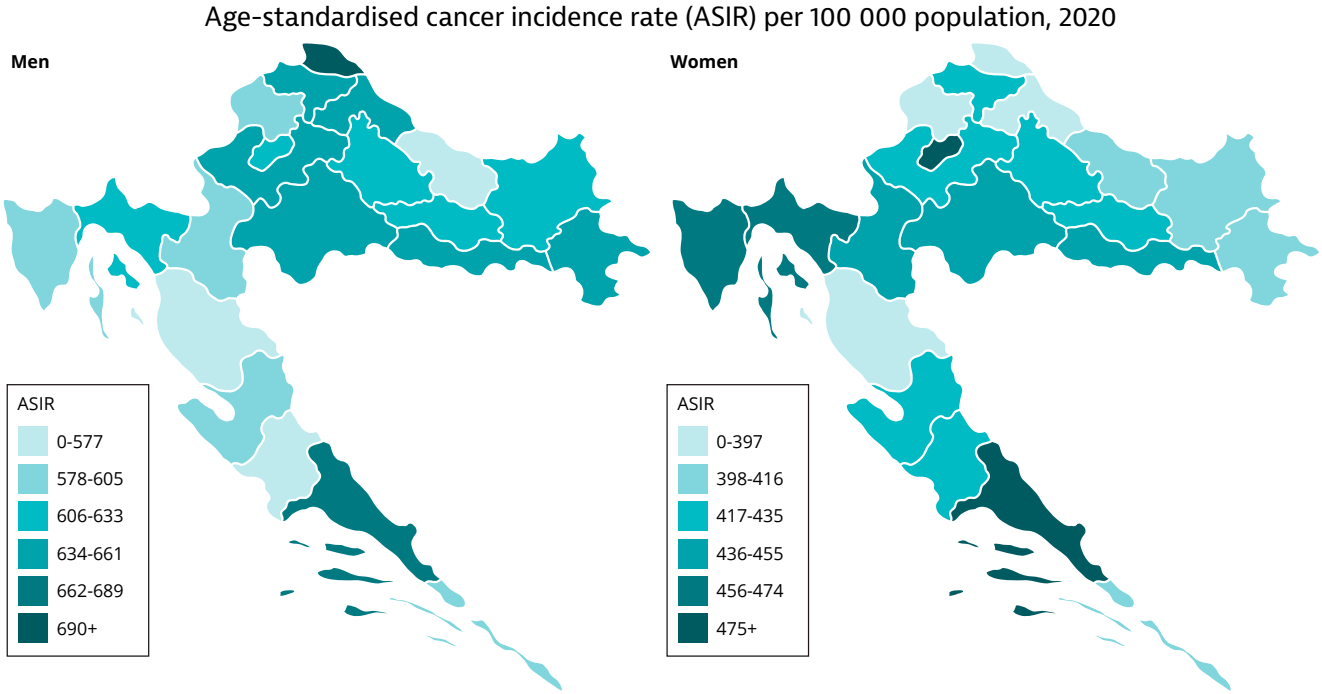
1 *EU+2 countries include 27 EU Member States (EU27), plus Iceland and Norway.*

2 *Lung cancer also refers to trachea and bronchus cancers.*

Regional differences in cancer incidence reach 30% for both men and women

In 2020, Medimurje registered the highest cancer incidence among men and Greater Zagreb the highest incidence among women (Figure 2). Conversely, Lika-Senj and Koprivnica-Krizevci reported the lowest cancer incidence rates. Notably, the disparity in cancer incidence between the counties with the highest and lowest rates was substantial, at 30% for both sexes. This disparity may be partially attributed to the COVID-19 pandemic in 2020, with resulting limitations differing by county.

Figure 2. Medimurje and Greater Zagreb registered the highest cancer incidence rates for men and women



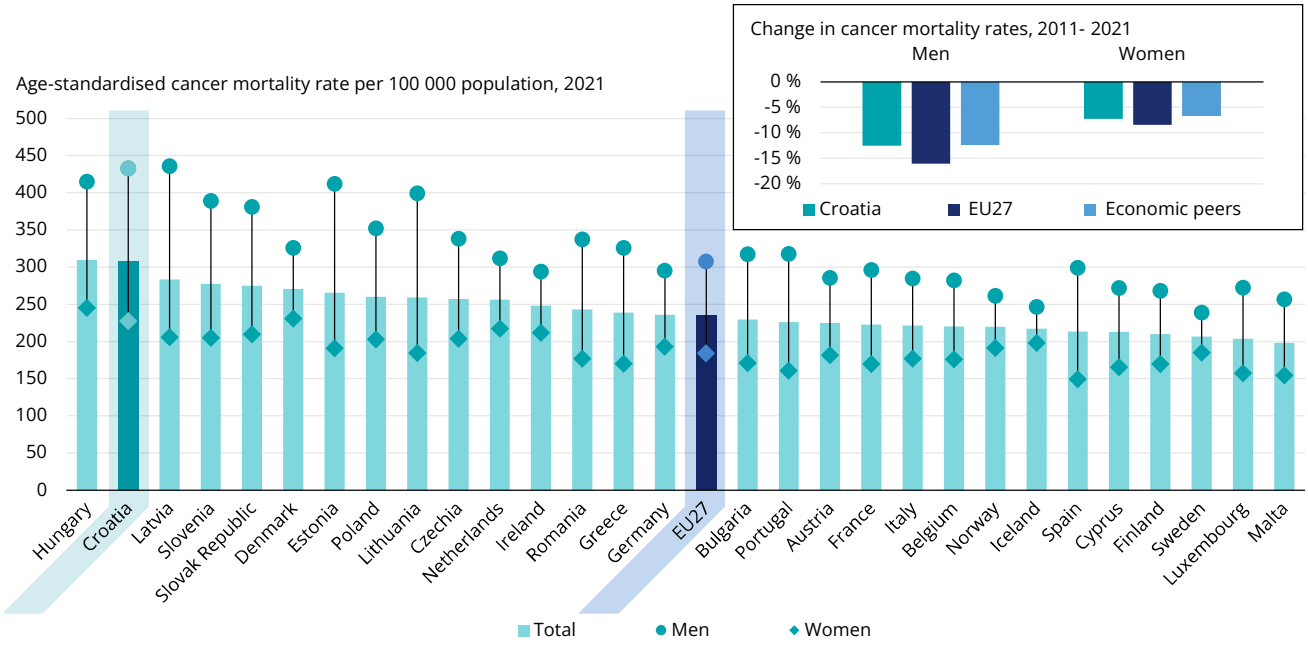
Source: Adapted from the National Cancer Registry (2020).

Croatia registered the second highest cancer mortality rate in the EU+2 in 2021

In Croatia, the age-standardised cancer mortality rate per 100 000 people in 2021 was 308, which is 31% higher than the EU average (235 per 100 000) and second only to Hungary in the EU+2 (Figure 3). As in all other EU+2 countries, men had significantly higher mortality rates than women (90% difference in Croatia). Nevertheless, this difference is considerably higher than the EU average (67%). Croatian men (433 per 100 000 population) have the second highest cancer mortality rates among EU+2 countries, while women (227 per 100 000) have the third highest rate. On a positive note, the mortality trend over time shows an improvement. Cancer mortality rates among men decreased by 13% between 2011 and 2021 – a slightly larger reduction than that among the country's economic peers (12%)[3]. Mortality rates among women decreased by 7% between 2011 and 2021 – also a larger reduction than that among the country's economic peers (7%).

3 *Economic peers are defined as tercile clusters based on 2022 GDP per capita in purchasing power standard terms. Economic peers for HR are BG, EE, EL, HU, LV, PL, PT, RO, SK*

Figure 3. Cancer mortality rates have decreased at the same rate as the country's economic peers, but improvements are slower than the EU average



Notes: Economic peers are defined as tercile clusters based on 2022 GDP per capita in purchasing power standard terms. Economic peers for HR are BG, EE, EL, HU, LV, PL, PT, RO, SK.
Source: Eurostat Database.

Treatable colorectal and breast cancer mortality is higher in Croatia than the EU average

Given the high influence of risk factors in lung cancer (smoking in particular), some of these cancers are considered preventable. Furthermore, when caught early and provided with high-quality healthcare, many cases of breast and colorectal cancer are highly treatable.

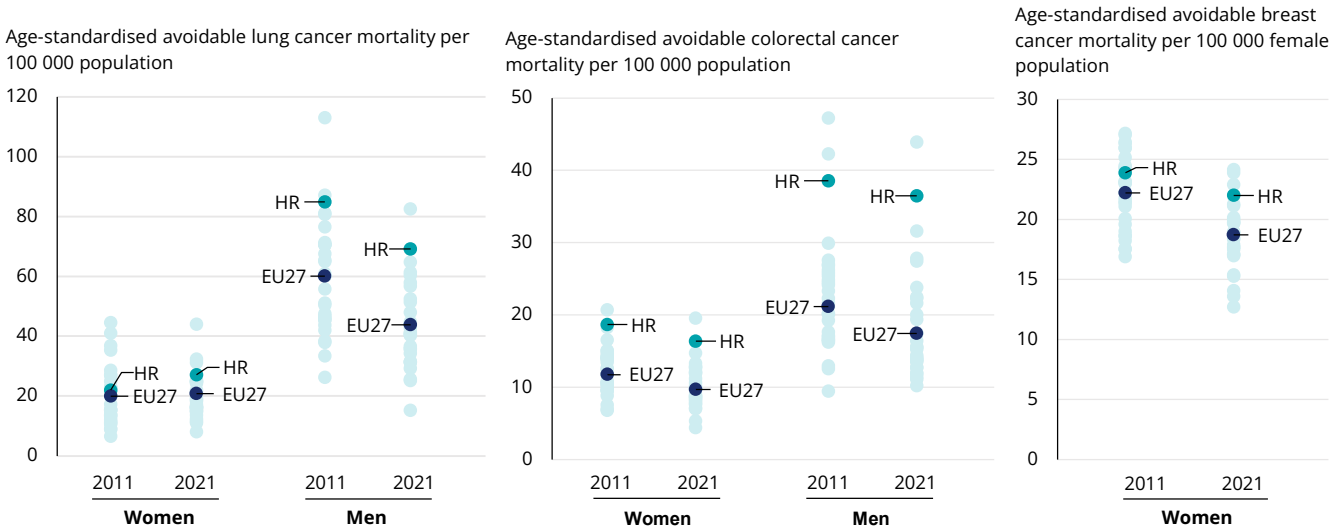
Avoidable mortality from lung cancer in Croatia was 27 per 100 000 women (30% higher than the EU average) and 69 per 100 000 men (58% higher than the EU average) in 2021.[4] Compared to 2011, the rate has increased by 23% among women – much faster than the 4% increase across the EU (Figure 4). This above-average increase is closely linked to the higher proportion of smokers aged 15 and over among Croatia's women population. The Croatian Government is taking action against these trends with a pioneering programme on lung cancer screening (see Section 4) and national prevention campaigns (see Section 3).

In 2021, breast cancer was the third most common cause of cancer death among women in Croatia, following lung and colorectal cancer. However, the number of women dying from breast cancer has been decreasing steadily since 2016 (Brkljačić & Šupe Parun, 2020). In 2021, avoidable mortality from breast cancer in Croatia was 22 per 100 000 women, which is 18% higher than the EU average. The rate has decreased by 8% compared to 2011 – slower than the EU average decrease of 16% in the same period.

Aligning with the higher incidence in Croatia, avoidable mortality from colorectal cancer was particularly high, at 16 per 100 000 among women (69% higher than the EU average) and 37 per 100 000 in men (109% higher than the EU average). It also decreased less than EU averages between 2011 and 2021. These worse-than-average trends go hand in hand with the rate of colorectal cancer screening, which is significantly lower than the EU average (see Section 4).

4 *Avoidable mortality includes both preventable deaths that can be avoided through effective public health and prevention interventions, and treatable deaths that can be avoided through timely and effective healthcare interventions.*

Figure 4. Avoidable cancer deaths decreased in Croatian men but remain over 50% higher than the EU average

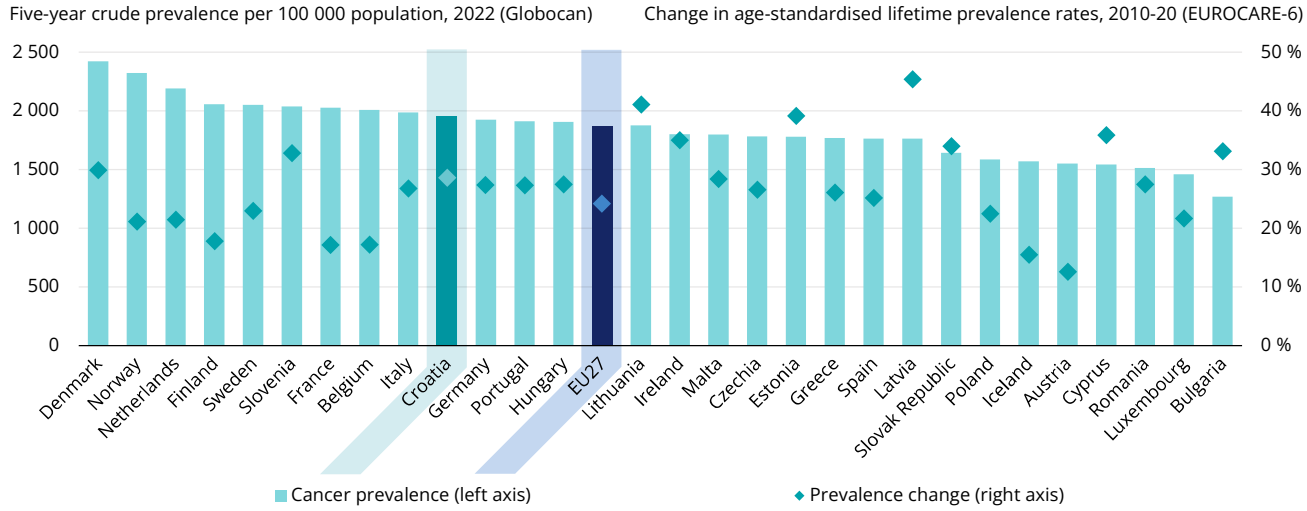


Note: Avoidable mortality figures relate to deaths of people aged under 75.
Source: Eurostat Database. Data refer to 2021.

In 2022, almost 2 in every 100 living Croatians had received a cancer diagnosis in the past five years

In 2022, Croatia had five-year prevalence[5] of 1 953 cancer cases per 100 000 population, which is 4% higher than the 1 876 cases per 100 000 across the EU. Between 2010 and 2020, lifetime cancer prevalence in the country increased by 29%, while across the EU27 it increased by 24% (Figure 5). The substantial increase in cancer prevalence poses a major public health concern and is a primary driver behind Croatia's National Strategic Framework for Cancer 2020-30 (Box 1).

Figure 5. Five-year cancer prevalence is close to the EU average



Sources: IARC Globocan Database 2024; EUROCARE-6 study (De Angelis et al., 2024).

5 *Cancer prevalence refers to the proportion of the population who have been diagnosed with cancer and are still alive, including those currently undergoing treatment for cancer and those who have completed treatment. Five-year cancer prevalence includes people who have been diagnosed within the previous five years, while lifetime prevalence considers those who have ever received a cancer diagnosis.*

Box 1. Croatia's National Strategic Framework for Cancer aligns with Europe's Beating Cancer Plan

In 2020, Croatia introduced the National Strategic Framework for Cancer 2020 30 (NSFC), aiming to improve the health of citizens and enhance quality of life for cancer patients. However, the rollout of many planned initiatives was impeded by the COVID-19 pandemic, causing significant delays to the implementation of various programmes and strategies.

In 2024, Croatia revitalised its efforts with a comprehensive overhaul focused on optimising cancer care organisation, ensuring access to high-quality treatments, and emphasising primary and secondary prevention strategies. An action plan for 2024-25 was adopted to address these delays, concentrating on three priority areas: reducing cancer incidence through promotion of healthy habits and enhanced national prevention programmes, establishing an optimal system for monitoring and controlling data on oncology patients, and reducing cancer mortality while improving quality and longevity of life for cancer patients. These measures are designed to curb the rising trend in cancer incidence, and improve overall patient outcomes.

The NSFC aligns with Europe's Beating Cancer Plan (Table 1). It sets comprehensive policies in cancer prevention, treatment, rehabilitation and palliative care, and prioritises the creation of a national oncology network and patient registry. The NSFC includes screening programmes for breast, cervical, colorectal and lung cancer, and aims to combat cancer risk factors with comprehensive prevention measures. Further, it ensures universal coverage for prevention, treatment, rehabilitation, and palliative care, including psycho oncological support. Finally, it has a focus on paediatric cancer and family psychological support, with less emphasis on vulnerable groups and socio-economic disparities.

Table 1. Croatia's NSFC aligns well with Europe's Beating Cancer Plan

Pillars of EBCP				Transversal themes of EBCP		
Prevention	Early Detection	Diagnosis and treatment	Quality of life	Cancer inequalities	Paediatric cancer	Research and innovation
●	●	●	●	●	●	●

Notes: EBCP = Europe's Beating Cancer Plan; Blue indicates that the NSFC includes a specific section on the topic; orange indicates that the topic is covered in one of the NSFC's sections without being the only focus; and pink indicates that this topic is not covered in the NSFC.
Sources: Parliament of Croatia (2020); Adapted from "Study on mapping and evaluating the implementation of Europe's Beating Cancer Plan" (not yet published).

3. Risk factors and prevention policies

Croatia's performance on cancer risk factors has improved in recent years, although more can be done

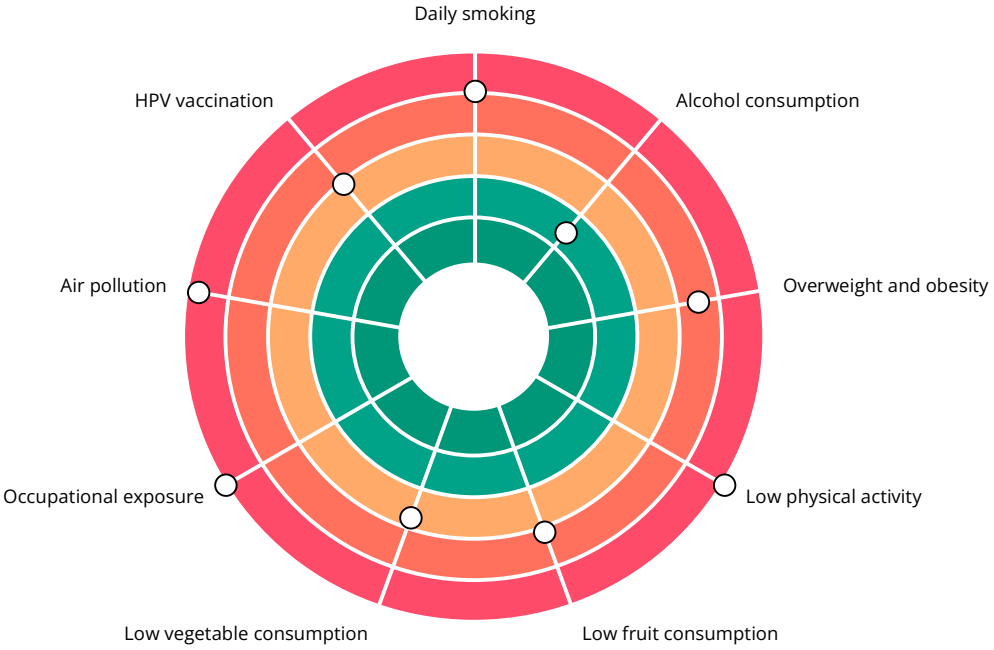
In 2021, Croatia spent 4% of total current health expenditure on preventive care – lower than the average 6% spend across the EU[6]. However, Croatian spending on preventive care was aligned closely to the EU average between 2014 and 2020 (less than 0.5 percentage points difference), with the gap only widening in 2021 during the COVID-19 pandemic.

Nevertheless, Croatia's performance ranks among the lower third of countries in the EU in five out of nine identified cancer risk factors (Figure 6). Policy actions are under way to address these issues. The National Healthy Living Programme was adopted by the Croatian Government in 2015. This was spearheaded by the Ministry of Health and the Croatian Institute of Public Health, working with county public health institutes, non-governmental organisations (NGOs) and local civil associations. Initially funded by the European Social Fund, the Programme aims to enhance public health by reducing behavioural, biomedical and environmental risk factors. It focuses on educating and sensitising Croatian citizens to adopt healthier lifestyles via proper nutrition, physical activity, and preventing obesity and chronic non-communicable diseases. These efforts are directed at mitigating the high incidence of diseases responsible for over three-quarters of the deaths in Croatia, including cancer deaths, and encompass five key areas: health education, health and physical activity, health and nutrition, health and workplace, and health and environment.

More recently, the first priority of the 2024-25 action plan for implementation of the NSFC (see Box 1) is promoting healthy lifestyle habits and more effective primary and secondary cancer prevention. The action plan includes 11 distinct programmes in this direction, focusing on dietary habits, physical activity, smoking, alcohol consumption, living and working environments, risk factors specific to the female sex, and infection-caused cancers such as the human papilloma virus (HPV). Among these programmes is the Action Plan for Obesity Prevention 2024-27, which acknowledges obesity as the most pressing risk factor in Croatia, and aims to promote healthy lifestyles and prevent risk factors, as well as strengthening activities aimed at identifying, monitoring and treating obesity. The action plan also includes several programmes to strengthen screening and early detection of breast, colon, cervical and lung cancers.

6 *Prevention expenditures as reported in health accounts should include activities outside of national programmes (e.g. opportunistic cancer screening or counselling for smoking cessation during a routine physician contact), however in practice countries may have difficulty in identifying prevention spending outside of such programmes.*

Figure 6. Except for alcohol consumption, Croatia faces various challenges in managing cancer risk factors



Notes: 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. Air pollution is measured as particulate matter with a diameter less than 2.5 micrometres ($PM_{2.5}$).
Sources: OECD calculations based on 2022 EU-SILC Survey for overweight, obesity, physical activity, fruit and vegetable consumption (in adults); Eurofound Survey for occupational exposure; OECD Health Statistics for smoking, alcohol consumption (in adults) and air pollution; and WHO for human papillomavirus (HPV) vaccination (programme coverage among girls).

Croatia increased its low HPV vaccination coverage following a promotional campaign

The HPV vaccine in Croatia is quadrivalent, offering protection against HPV subtypes 6, 11, 16 and 18 to prevent diseases such as precancerous lesions; cancer of the cervix, vulva and vagina; and anogenital warts. Since 2016, it has been offered to boys in addition to girls.

Coverage has historically been low. Self-reported coverage rates among 1 197 individuals aged 18-25 in 2023 were close to 18% (25% of women and 12% of men), with significantly higher odds of HPV vaccination among female participants. Low literacy levels among parents, education authorities and children were recognised as a possible cause for non-participation. In 2019, a campaign was launched for all young, unvaccinated individuals up to the age of 25. Since 2023, school doctors recommend and offer HPV vaccination on a voluntary basis to all students from grades 5-8 of elementary school for free vaccination and other preventive activities. The efforts appear to be working, as 55% of girls of vaccination programme age in Croatia in 2023 received their doses of HPV vaccine, close to the EU average of 57%. Within the HPV vaccination programme, 36% of boys received all recommended doses of the HPV vaccine in 2023 (compared to 51% on average in the EU).

Croatia's HPV programme guidelines include recommendations for follow-up and improving health literacy, with a focus on regular cervical cancer screening. They highlight the importance of educating healthcare providers and the public on the vaccine's benefits and limitations, advocating a thorough ongoing public health strategy to mitigate HPV-related health risks (Nemeth Blažić et al. 2023).

Challenges in smoking rates contrast with an above-average performance in alcohol consumption

In Croatia in 2019, 22% of the population aged 15 and over reported being daily smokers. While this is an improvement since 2014 (25%), it is still far above the average of 24 EU countries with available data (19%). Smoking rates have come down for both males (by 3 percentage points) and females (by 4 percentage points) in Croatia since 2014, although males exhibit considerably riskier behaviour: in 2019, 26% of Croatian males were daily smokers, compared to 20% of Croatian females (a 6 percentage point difference) and 23% of males across EU countries.

The positive trend but overall subpar performance in smoking rates directly correlates to the strength of the country's tobacco control measures. As measured by the Tobacco Control Scale, Croatia strengthened its tobacco control policies slightly in 2013-21 (Tobacco Control Scale, 2022). However, it remains among the countries with low tobacco control policies (ranked 21 out of 37). Moreover, the country's score deteriorated between the 2019 and 2021 editions, when some of its price control policies were relaxed (OECD, 2024a).

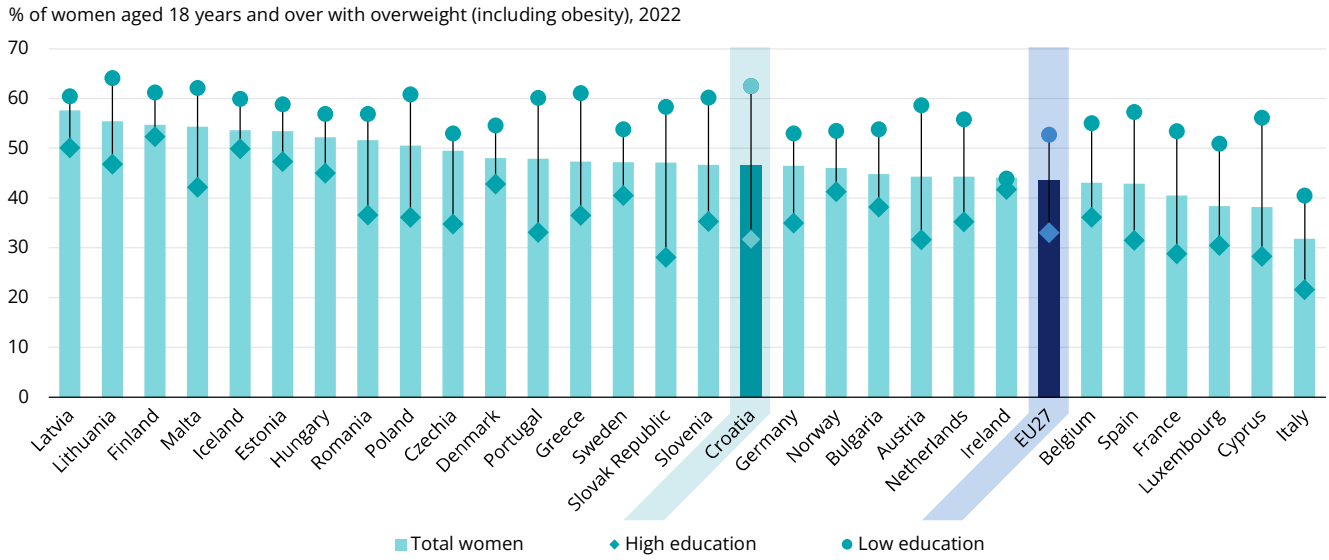
In contrast, Croatians consumed on average 9 litres of alcohol per person aged 15 and above per year in 2020, which is close to the EU average of 10 litres. Moreover, the age-standardised cancer incidence rate attributable to alcohol in Croatia is among the 10 lowest in the EU for breast (5 cases per 100 000 women – 17% lower than the EU average) and pharynx (1 cases per 100 000 individuals – 29% lower than the EU average). Nevertheless, Croatian men have cancer incidence rates attributable to alcohol above the EU average for colorectal, larynx, liver and oral cavity cancers.

Obesity, diet and physical activity remain among Croatia's biggest challenges

In 2022, the share of the overweight or obese population reached 58% in Croatia, which is 13% higher than the EU average rate of 51%. However, this is an improvement compared to the 61% share reached in 2017 and the highest rate (65%) recorded in 2019.

In Croatia, 47% of adult women are overweight or obese, which is higher than the EU average of 44% (Figure 7). Overweight rates are notably higher among women with lower (63%) than those with higher education levels (32%). This 31 percentage point difference is the highest in the EU+2. It should be noted that lifestyle interventions seem to have had a positive effect. Between 2017 and 2022, prevalence of overweight or obese women with lower education levels decreased significantly by 7%, far surpassing the EU average decline of 1%. Similarly, among women with higher education levels, overweight rates fell by 7%, also exceeding the EU average reduction of 1%.

Figure 7. The share of overweight or obese women with lower education levels in Croatia is among the highest in the EU+2



Note: Overweight (including obesity) includes those with a body mass index (BMI) above 25.
Source: Eurostat Database.

Poor nutrition and lack of physical activity contribute to overweight and obesity. In 2022, only 14% of the population reported doing physical activity three times or more per week, compared to an EU average of more than twice this rate (31%). The comparative deficit in physical activity is most pronounced in the population aged over 75 with higher education levels, among whom only 10% reported doing any physical activity three times per week, compared to 39% across the EU.

In contrast, the population aged 16-24 with lower education levels is the only group that reported a higher proportion doing physical activity more than three times a week (38%) than the EU average (37%).

Among dietary aspects, 53.0% of Croatians reported eating fruit at least once daily in 2022, compared to 61% across the EU. While there has been a small improvement since 2017, the population with lower education levels is most at risk: only 44% eat fruits

once a day, compared to 64% among the population with higher education levels. These disparities are consistent in terms of the shares of the population eating vegetables at least once a day.

Exposure to environmental risks is also a concern

Exposure to harmful substances, such as polluted air and chemicals, is also an important concern in Croatia. Some 34% of people age 15+ reported exposure to chemical products or substances in 2021, which is among the highest rates in the EU. Likewise, on average, in 2020, the Croatian population was exposed to 16 μg/m^3 of $PM_{2.5}$. This is the third highest level in the EU+2, behind only Poland and Bulgaria.

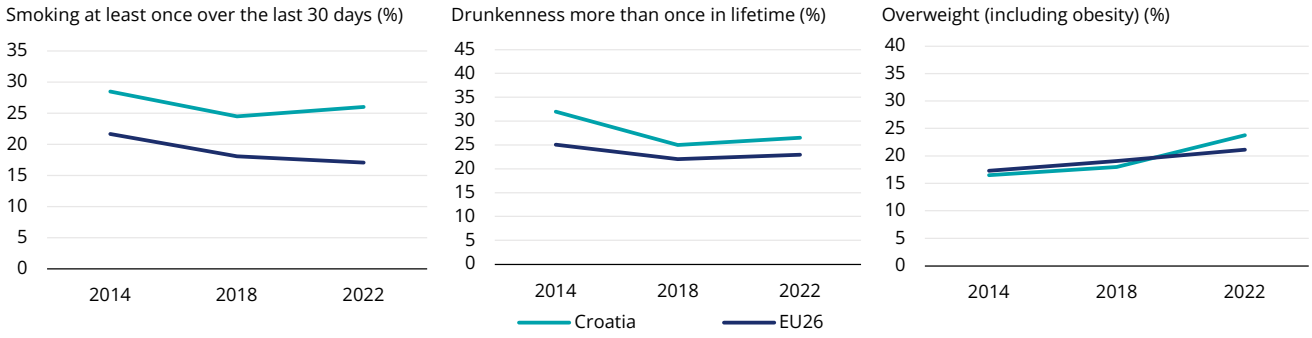
Reductions in smoking, repeated drunkenness, dietary risks and physical inactivity among adolescents in Croatia are encouraging

Notable shifts in health behaviours among 15-year-olds were observed from 2014 to 2022. However, while there was a reduction in tobacco use by 3 percentage points, prevalence of daily smoking in 2022 was still almost 9 percentage points higher than the EU average, indicating a significant area of concern (Figure 8). In addition, 25% of 15-year-olds in Croatia reported using an e-cigarette in the last 30 days, a rate higher than the 21% in the EU. Similarly, prevalence of repeated drunkenness decreased by 6 percentage points from 2014-22, yet it remained 4 percentage points above the EU average. In this sense, the lack of alcohol regulation in media environments usually frequented by adolescents, such as social media and national television, seems to be an important action point (OECD, 2024a).

On the other hand, positive changes were noted in dietary habits: daily fruit consumption rose by 6 percentage points, and vegetable intake increased by 5 percentage points during 2014-22, although vegetable consumption was still 4 percentage points below the EU average in 2022. Conversely, overweight and obesity rates among 15-year-olds rose by 7 percentage points – a faster increase than that across the EU – positioning the country 3 percentage points above the EU average.

Croatia's adolescents have seen improvements in some lifestyle behaviours that surpass EU norms. Prevalence of daily physical activity improved by 2 percentage points between 2014 and 2022, with Croatian teens engaging in daily physical activity 5 percentage points more frequently than their EU counterparts in 2022. In early 2024, Croatia adopted the Action Plan for Addiction (2024-26), which includes measures to prevent addiction among children and adolescents, and to reduce availability of alcohol, tobacco, related products and electronic cigarettes. Moreover, as of 2023, Croatia participates in the Unplugged Programme for children aged 12-14 and their parents, delivered by trained teachers. This focuses on coping with emotions and stress, and educates about the harmful effects of alcohol, drugs and smoking. The generally positive results reflect Croatia's ongoing efforts to enhance youth health behaviours, although work remains to be done – particularly with regard to negative trends in overweight and obesity.

Figure 8. Improvements in smoking and drunkenness among 15-year-olds contrast with overweight challenges



Notes: The EU average is unweighted. Data refer to 2022, and are based on children aged 15 years. EU26 for smoking and drunkenness; EU25 for overweight.
Source: Health Behaviour in School-aged Children Survey.

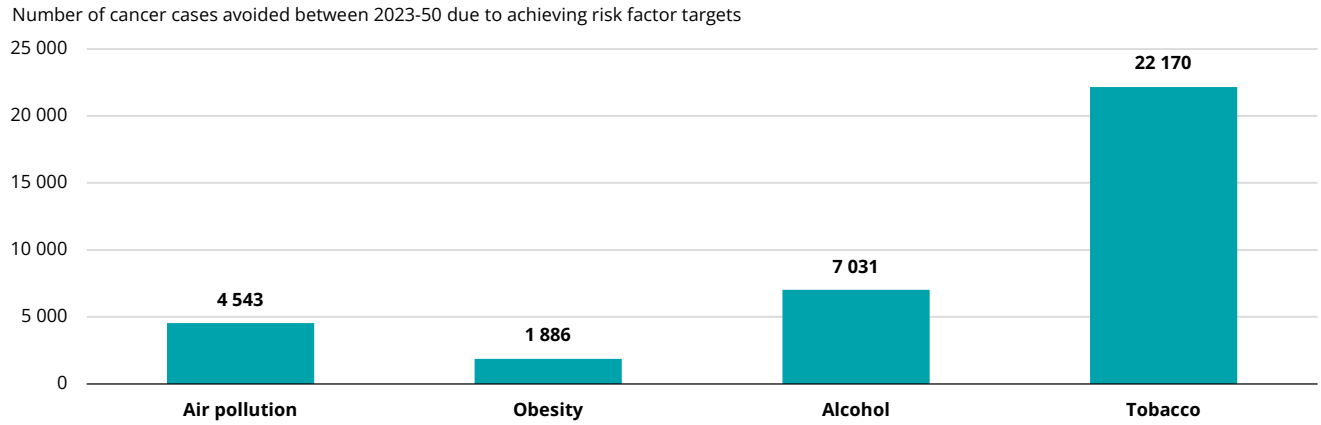
Croatia scores below the EU average in most risk factors for both the top and bottom income quintiles among 11- to 15-year-olds

According to the HBSC, significant disparities exist among 11- to 15-year-olds across socio-economic groups, with differences in risk factors more pronounced for drunkenness and overweight. Drunkenness is 36% more prevalent in the top income quintile, while overweight is 27% more common in the bottom quintile. Meanwhile, smoking is 12% more prevalent in the top income quintile. The top 20% and bottom 20% of family affluence in Croatia exhibit higher prevalence risk factors than their EU counterparts.

Reducing tobacco consumption is the most efficient way of reducing new cancer cases in Croatia and the EU

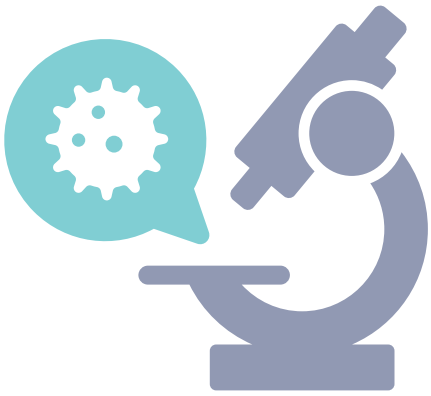
The biggest potential for reducing cancer cases in Croatia between 2023-50 comes from meeting tobacco reduction targets, which could prevent about 22 170 new cancer cases (Figure 9). Achieving alcohol reduction targets could further prevent around 7 031 cases, while addressing other risk factors could also significantly reduce the cancer burden: air pollution (4 543 cases) and obesity (1 886 cases).

Figure 9. Croatia can prevent over 22 000 cancer cases between 2023-50 by meeting tobacco reduction targets



Notes: The target for tobacco is 30% reduction in tobacco use between 2010 and 2025 and less than 5% of the population using tobacco by 2040. For alcohol, it is a reduction of at least 20% in alcohol consumption and 20% reduction in binge drinking between 2010 and 2030. For air pollution, it is an annual average $PM_{2.5}$ level capped at 10 µg/m³ by 2030 and at 5 µg/m³ by 2050. On obesity, the target is a reduction in obesity level to 2010 level by 2025.
Source: OECD (2024b), Tackling the Impact of Cancer on Health, the Economy and Society, https://doi.org/10.1787/85e7c3ba-en.

4. Early detection



Croatia has improved breast and cervical cancer screening rates above the EU averages, but colorectal cancer screening rates remain low

In 2020, Croatia launched its NSFC, outlining screening programmes for breast, cervical and colorectal cancer. The programmes detail target ages, testing methods, invitation plans, coverage goals and follow-up procedures. Screening programmes are managed by the Ministry of Health and co-ordinated by the Croatian Institute of Public Health, following international recommendations (Table 2).

Table 2. Cancer screening in Croatia follows international recommendations

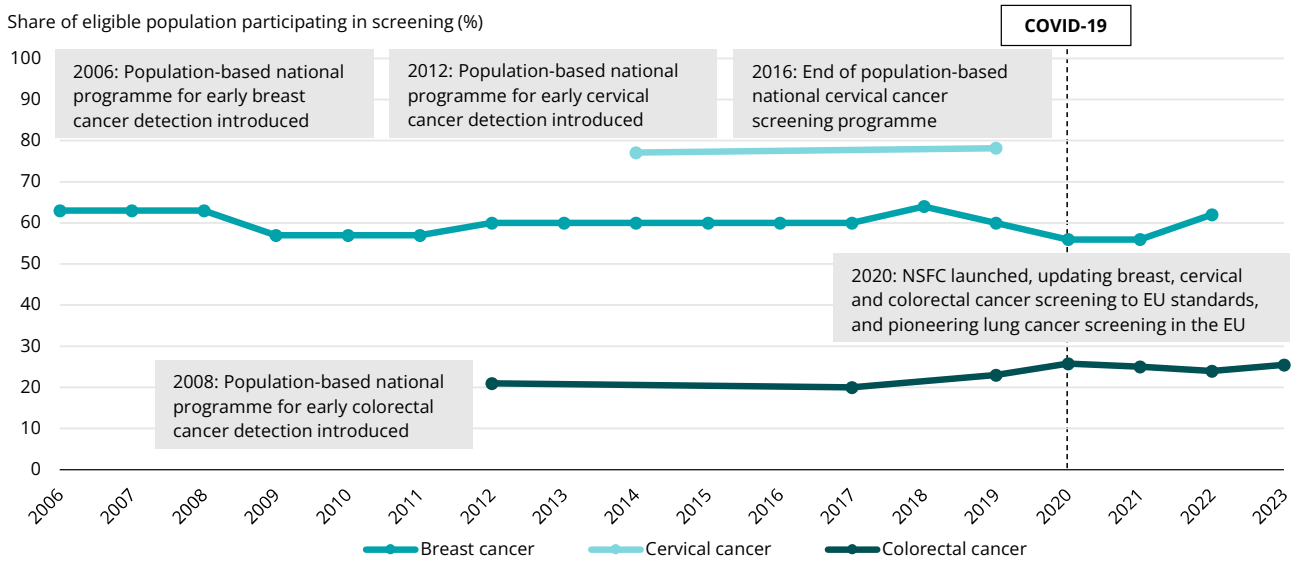
Cancer	Breast	Colorectal	Cervical
Coverage	National (programme)	National (programme)	National (recommendations to physicians)
Administration	Population-based	Population-based	Opportunistic. Population-based pilot organised in one county
Target age	Women aged 50-69	Population aged 50-74	Women aged 25-64
Test	Mammogram	Guaiac faecal occult blood test (gFOBT)	Combination of cytology and HPV testing

Source: 2023 OECD Policy Survey on Cancer Care Performance.

The Croatian National Breast Cancer Screening Programme screens approximately 150 000 eligible women with mammography annually. Between 2006 and 2016, breast cancer was identified in 5 583 women, with 5 cancers detected per 1 000 mammography exams (Šupe Parun et al., 2022).

In 2022, the share of the eligible population screened for breast cancer in Croatia was 62%, reflecting a slight decrease from 63% in 2006 (Figure 10). This is significantly higher than the average breast cancer screening coverage of 56% across EU countries. For cervical cancer screening, the most recent data from 2019 show that 78% of the eligible population in Croatia reported that they had been screened, marking a 1% increase from 77% in 2014. In 2023, 26% of the eligible population was screened for colorectal cancer – a 21% increase from 21% in 2012, but still lower than the average coverage of 42% across EU countries. Colorectal cancer screening coverage is higher among women, reaching 26% in 2021, while among men it was only 23%.

Figure 10. Consistent breast and cervical cancer screening participation contrasts with colorectal screening participation below the EU average



Notes: Data refer to mammography screening among women aged 50-69 within the past two years (based on programme data), cervical cancer screening among women aged 20-69 within the past three years (based on survey data), and colorectal cancer screening coverage among the population aged 50-74 over the past two years (based on programme data).
Source: OECD Health Statistics 2024.

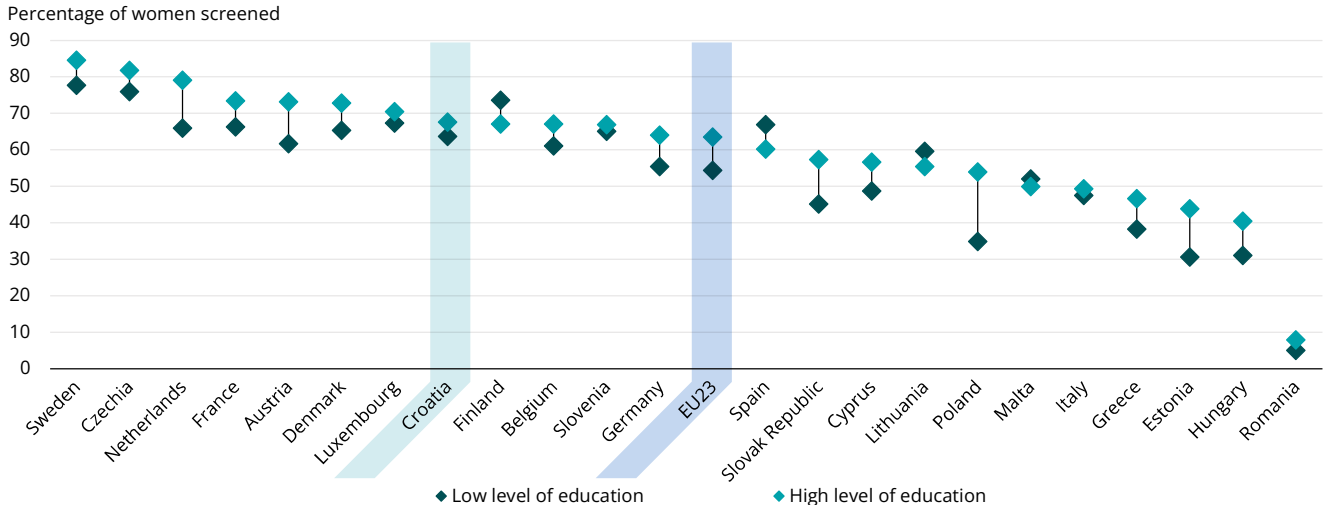
Disparities exist by income and education in breast and cervical cancer screening, and by geography in colorectal cancer

Breast and cervical cancer screening coverage in Croatia is generally close to the EU average, but significant disparities exist across income levels. In 2019, 77% of eligible women in the highest income quintile reported being screened for breast cancer, compared to only 44% of women in the lowest income quintile (OECD, 2023). These disparities are not replicated by education level. In 2020-21, the difference in breast cancer screening coverage

between woman with higher (68%) and lower (64%) education levels was only 4 percentage points (Figure 11). This is notable, considering that among 23 EU countries, the average gap was 9 percentage points.

In contrast, according to the last European Health Interview Survey, only 33% of women with lower education levels reported having a cervical smear test in the past three years, compared to 80% among women with higher education levels. Furthermore, Croatia's education gap is more pronounced than the gap across the EU, and has widened over time.

Figure 11. In Croatia, disparities in breast cancer screening coverage between women with lower and higher education levels are minimal



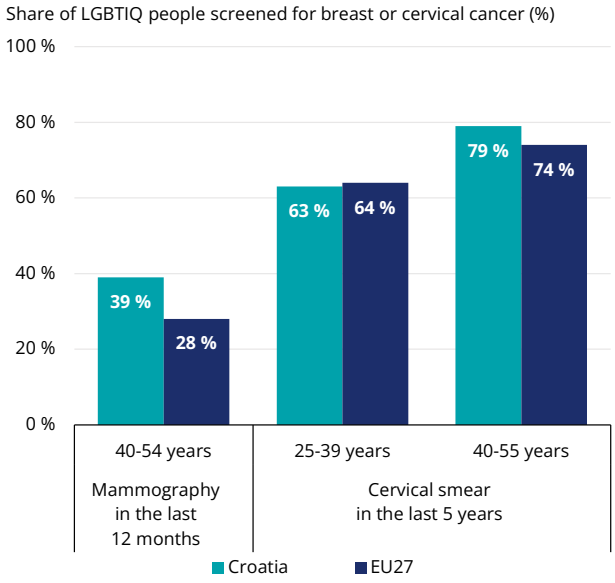
Notes: Measures are standardised by age and sex. Data collected in 2020 and 2021.
Source: OECD (2024) Based on the Survey of Health, Ageing and Retirement in Europe 2024, wave 8.

In 2019, only 23% of Croatians with lower education levels reported undergoing colorectal cancer screening within the past two years, compared to 35% of those with higher education levels. This highlights significant educational disparities. However, differences in colorectal screening rates by age, sex and income were relatively minor in 2019 (OECD, 2023).

LGBTIQ persons in Croatia participate more in cancer screening than their counterparts in the EU

According to the EU LGBTIQ Survey III, 39% of LGBTIQ cisgender females, trans women and intersex people aged 40-54 years in Croatia reported having had a mammogram in the previous 12 months, much higher than the EU average of 28% (Figure 12). For cervical cancer screening, 63% of the relevant LGBTIQ population aged 25-39 in Croatia reported having had a smear test in the previous 5 years (similar to the EU average of 64%), while 79% of those aged 40-55 in the country reported a smear test (higher than the 74% in the EU). This aligns with the higher screening rates seen in the general population in Croatia compared with the EU.

Figure 12. LGBTIQ persons in Croatia participate more in breast cancer screening



Note: LGBTIQ survey results refer to age groups and/or screening intervals that do not align with the population screening approach in EU countries, and should not be compared.
Source: The European Union Agency for Fundamental Rights (EU LGBTIQ Survey III).

National screening programmes in Croatia are well organised

For colorectal and breast cancer screening in Croatia, invitations are issued based on the population registry using tax identification numbers for all insured people. Given that health insurance is mandatory for all citizens, this approach guarantees comprehensive coverage. These organised screening programmes, along with other diagnostic and therapeutic procedures, are available to all citizens, ensuring that everyone benefits from the national health insurance system.

Under the national colorectal cancer screening programme, general practitioners and field nurses actively motivate the population through personal or telephone contact to participate in the programme. Similarly, while the breast cancer screening programme sends invitation letters for mammography exams, primary healthcare providers play a motivational role. These structured efforts ensure that screening is systematically offered to the population.

The National Cervical Cancer Screening Programme started in 2012. It was organised as a population-based programme until 2016, after which it continued as national recommendations and opportunistic screening. Further, a pilot organised programme using a combination of cytology and HPV testing is under way in one county.

Despite the absence of official reports, cancer screening databases in Croatia maintain comprehensive data on participation rates. They collect extensive information covering both population-based and opportunistic screening, and include details on education and geographical location. Further, performance measures related to access and quality of cancer screening programmes are used in quality improvement cycles.

Various initiatives and policies are in place to build public awareness and support for cancer screening and early detection, especially among vulnerable populations. For instance, mobile breast cancer screening units are deployed to reach remote and underserved areas. Further, colonoscopy units are installed in hospitals across all 21 counties. In cases of staff shortages, patients are referred to other counties – usually the capital. These measures have been implemented to reduce socio-economic and geographical disparities in access to screening programmes.

Croatia pioneers lung cancer screening, but implementation of new technologies could be improved

Croatia was highlighted as a pioneer in the EU for implementing lung cancer screening in 2020. Croatia's NSFC includes strategies for risk-stratified opportunistic screening by low dose computed tomography (CT) for lung cancer, administered annually to active smokers of 30 packs a year aged 50-70, as well as those who quit smoking within the last 15 years. The goals of the NSFC include achieving a target population turnout of 60% and increasing five-year survival to 15%. Moreover, there are plans for integration of genetic data into personalised screening strategies, emphasising the country's commitment to advanced cancer detection methodologies. Nevertheless, no policies currently regulate biomarker screening and genetic testing; nor are there policies integrating artificial intelligence or machine learning into cancer screening programmes. However, Croatia has implemented policies supporting use of teleconsultation within screening programmes. Since October 2020, the Croatian Institute of Emergency Medicine has partnered with Clinical Hospital Zagreb in the National Programme for Lung Cancer Screening. In this Programme, CT images from access centres are sent via telemedicine to Clinical Hospital Zagreb for specialist interpretation. A similar protocol is used for enhancing early detection and improving access to care for skin melanoma.

5. Cancer care performance

5.1 Accessibility

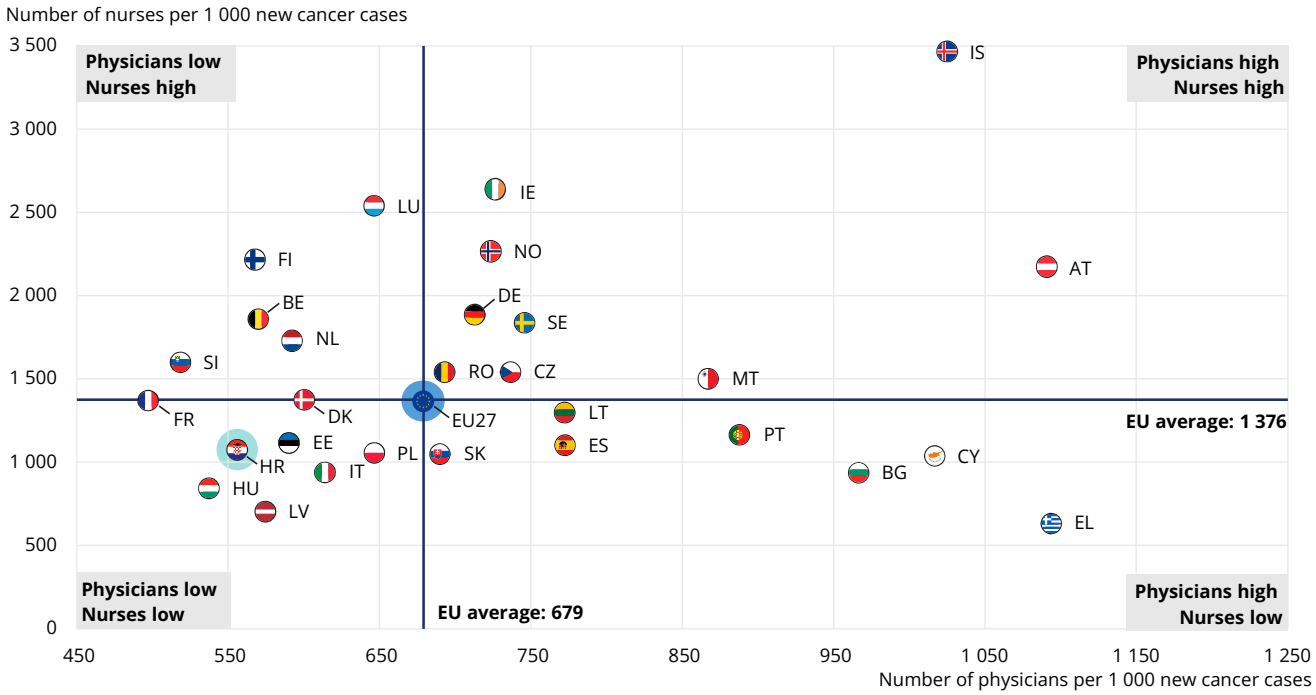
In Croatia, mandatory health insurance covers all cancer care, but it includes a 20% copayment and additional fixed costs for certain services. Nevertheless, copayments for cancer care are capped at EUR 266 per illness episode.

Croatia reports no shortages of cancer specialist doctors

According to the National Registry of Health Care Providers at the Croatian Institute of Public Health, in 2023, approximately 376 specialists in radiotherapy, oncology or medical oncology, or who have completed sub-speciality training in oncology are available. This amounts to about 9 cancer specialist doctors per 100 000 inhabitants, which was reported to be sufficient for current needs. Moreover, the supply of cancer specialist appears to be stable. The National Registry of Health Care Providers reports 39 residents in medical oncology, 41 in radiotherapy and oncology, and 38 in haematology (although not all go into oncology), with about a fifth of this number expected to be licensed annually.

The majority of EU+2 countries reported shortages of various types of professionals engaging in cancer care. However, Croatia only reports a shortage of general practitioners. In 2022, Croatia reported 556 physicians per 1 000 new cancer cases, which is lower than the EU unweighted average ratio of 679 per 1 000 (Figure 13).

Figure 13. While Croatia has lower supplies of physicians and nurses per cancer case than other countries, it reports a sufficient supply of oncologists



Notes: The data on nurses include all categories of nurses (not only those meeting the EU Directive on the Recognition of Professional Qualifications). Data refer to practising nurses except in Portugal and the Slovak Republic, where they refer to professionally active nurses. In Greece, the number of nurses is underestimated as it only includes those working in hospitals. In Portugal and Greece, data refer to all doctors licensed to practise, resulting in a large overestimation of the number of practising doctors. The EU average is unweighted.
Source: OECD Health Statistics 2024. Data refer to 2022 or latest available year.

Croatia is making progressive strides in oncology nursing, overcoming significant educational and professional gaps

Until recently, Croatian cancer nursing faced numerous challenges. In 2020, there were substantial areas for improvement in education, career development and safety conditions. The lack of specialist education programmes, master's programmes and advanced nursing roles underscored the critical need to enhance the professional qualifications and work conditions of oncology nurses. By 2023, the situation began to evolve positively, as the Ministry of Health decided to initiate specialisations for oncology nurses. A curriculum proposal was submitted to the legislative system, marking a significant step forward in formalising oncology nursing as a recognised specialty.

In 2024, the Ministry of Health and the Croatian Society of Oncology Nurses and Technicians took active steps towards establishing a specialist oncology nursing programme, and the first international academy for oncology nurses was held, signifying a major advancement in continuing education and international collaboration. Planning for future advanced oncology nursing roles and the upcoming publication of the first textbook for oncology nurses underscore the progress made.

It is not currently possible to determine the supply of oncology nurses from the registry of health workers. The country has 1 081 nurses per 1 000 new cancer cases, which is lower than the EU unweighted average ratio of 1 376 per 1 000 (see Figure 13). Nevertheless, there are no reported shortages for cancer care.

Several policies are being implemented to expand cancer workforce capacities

Croatia is streamlining the recognition of qualifications for foreign-trained doctors and nurses residing within the country, easing their integration into the healthcare system. It is also expanding use of teleconsultation to foster multidisciplinary learning and practices in cancer care. This approach not only facilitates greater collaboration among specialists but also enhances the accessibility and quality of care in more isolated areas.

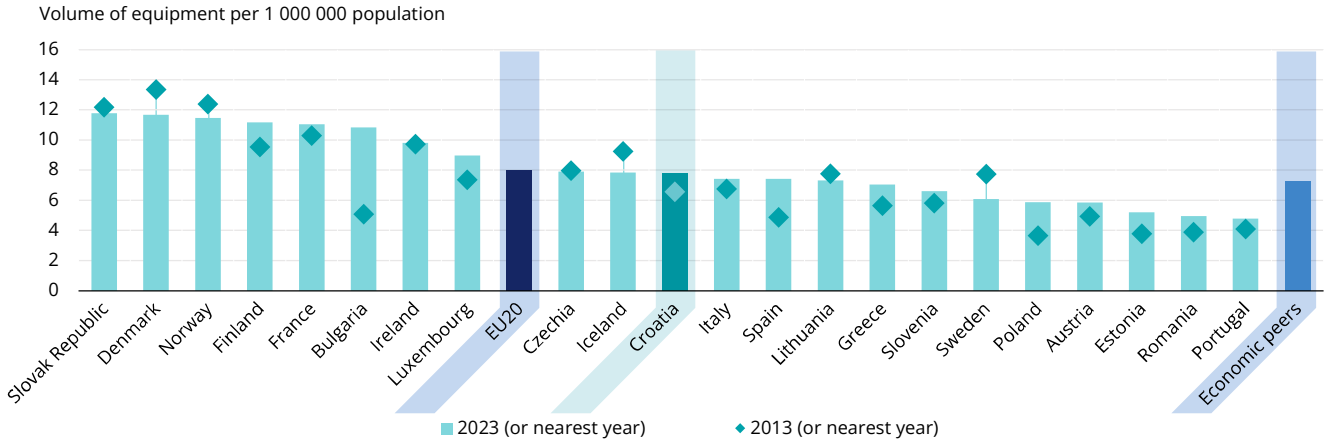
Delays in expanding access to medical technologies compromise the ability to provide timely cancer treatment

One of the main priorities of the NSFC is improving access to the latest medical technologies and reducing waiting times. In 2022, supply of radiotherapy equipment was 8 per 1 000 000 population, which is similar to the EU20 average and 7% higher than the average of its economic peers (7.3 per 1 000 000) (Figure 14).

The positive trend is boosted by the newest developments in this area. As part of the National Recovery and Resilience Plan approved in December 2023 and worth a total of EUR 10 billion, six Croatian hospitals – including all five clinical hospital centres and the General Hospital in Zadar – are being equipped with advanced radiotherapy technology on schedule. The acquisition includes 21 linear accelerators, with 4 specialised for stereotactic radiotherapy and radiosurgery: one for each of the four major clinical oncology centres in the country. The total investment in medical equipment exceeds EUR 88 million, with EUR 55 million allocated to the linear accelerators. These efforts are aimed at ensuring timely and optimal therapy for all oncology patients in Croatia.

Essential medical technologies such as CT scanners, mammographs, magnetic resonance imaging (MRI) and positron emission tomography (PET) scanners are crucial for prompt diagnosis and effective treatment of cancer. In 2022, Croatia had a supply of mammographs of 31 per 1 000 000 inhabitants, 47% higher than the average among EU22 countries (21 per 1.000.000 inhabitants) with available data. In contrast, it had a supply of CT scanners (22 per 1 000 000) that was 16% lower than the EU average of 27, a supply of MRI scanners that was 6% lower that the EU average, and a supply of PET scanners that was 43% lower. Additional equipment purchases in the National Recovery and Resilience Plan included 9 CT scanners, 4 brachytherapy devices, and supporting dosimetry and fixation equipment for quality control and patient positioning.

Figure 14. Despite improvements, availability of radiation therapy equipment remains below the EU average



Notes: The vast majority of radiotherapy equipment in EU countries is found in hospitals. Data for Portugal and France includes equipment in hospitals only while data for other countries refer to all equipment. Economic peers are defined as tercile clusters based on the 2022 GDP per capita in purchasing power standard terms. The economic peers of HR are: BG, EE, EL, PL, PT, RO, SK. The EU average is unweighted.

Source: OECD Health Statistics 2024.

Croatia's health technology assessment agency strategically guides the reimbursement of new cancer medicines, yet budget constraints can limit access

Like many EU+2 countries, Croatia has established a health technology assessment agency to guide decision making in the pricing and reimbursement of new medicines or indications. This agency utilises various criteria such as relative therapeutic benefits, medical necessity (taking into account the availability of alternatives), cost – effectiveness and budget impact to determine the publicly funded coverage of new cancer medicines. This comprehensive approach ensures that decisions are made based on a thorough evaluation of each treatment's value and impact.

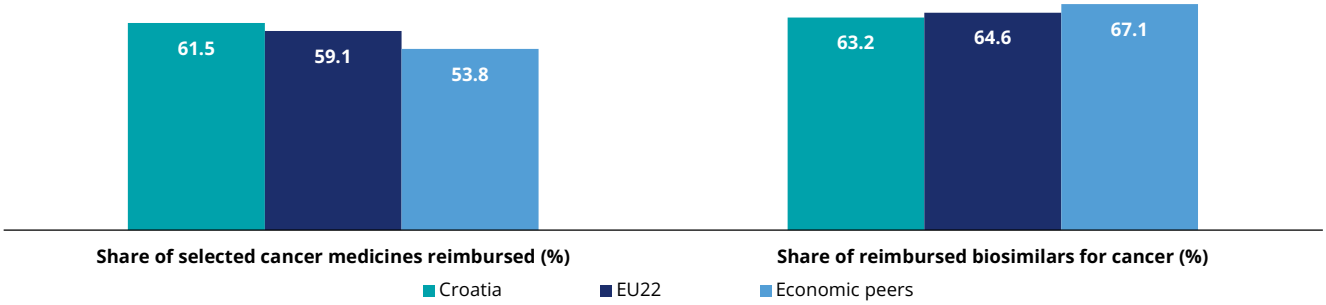
However, in Croatia, reimbursement of oncology medicines is often restricted to smaller patient populations than those defined in the market authorisation. In fact, more than half of all reimbursed indications come with such restrictions. This trend is increasingly influenced by the significant budget impact due to the high cost of new medicines, the growing number of available treatments and the rising number of cancer patients. Croatia employs managed entry agreements, which include performance-based arrangements and financial mechanisms such as discounts and rebates, as well as structured payment plans spanning several years for high-cost treatments like gene therapy. Despite these mechanisms, however, no early access schemes or programmes (apart from those for compassionate use) are currently implemented for oncology medicines.

Croatia's robust adoption of biosimilars for cancer treatment shows strong support for high-value care, yet opportunities for growth exist

Croatia demonstrates strong support for high-value innovative cancer treatments: 62% of indications for a selected range of new breast and lung cancer medicines receive public reimbursement or coverage. This exceeds the EU average of 59% and is higher than the 54% average rate among the country's economic peers.

In Croatia, the substitution of generic oncology medicines is permitted solely during times of medicine shortages, and substitution of biosimilars for treatment-naïve patients is prohibited. This reflects strict controls over cancer treatments and a cautious approach to medication substitution. Despite this, Croatia's adoption of biosimilars for cancer medicines is robust, with a 63% share of oncology biosimilars enjoying public reimbursement or coverage, aligning closely with the EU average of 65%. However, this rate falls slightly below the 67% average among Croatia's economic peers, indicating room for growth in biosimilar utilisation (Figure 15).

Figure 15. Croatia shows relatively high reimbursement of new oncology medicines and biosimilars



Notes: The analysis includes a sample of 13 indications of 10 new cancer medicines for breast and lung cancer with a high clinical benefit and 19 biosimilars of three cancer medicines (bevacizumab, rituximab, trastuzumab), with active marketing authorisation by the European Medicines Agency as of 26 March 2023. The data represent the share of the indications or biosimilars that were on the public reimbursement list on 1 April 2023. Economic peers are defined as tercile clusters based on 2022 GDP per capita in purchasing power standard terms. Economic peers for HR are BG, EE, EL, HU, LV, PL, PT. The EU average is unweighted.
Source: Hofmarcher, Berchet and Dedet (2024), "Access to oncology medicines in EU and OECD countries", https://doi.org/10.1787/85e7c3ba-en.

5.2 Quality

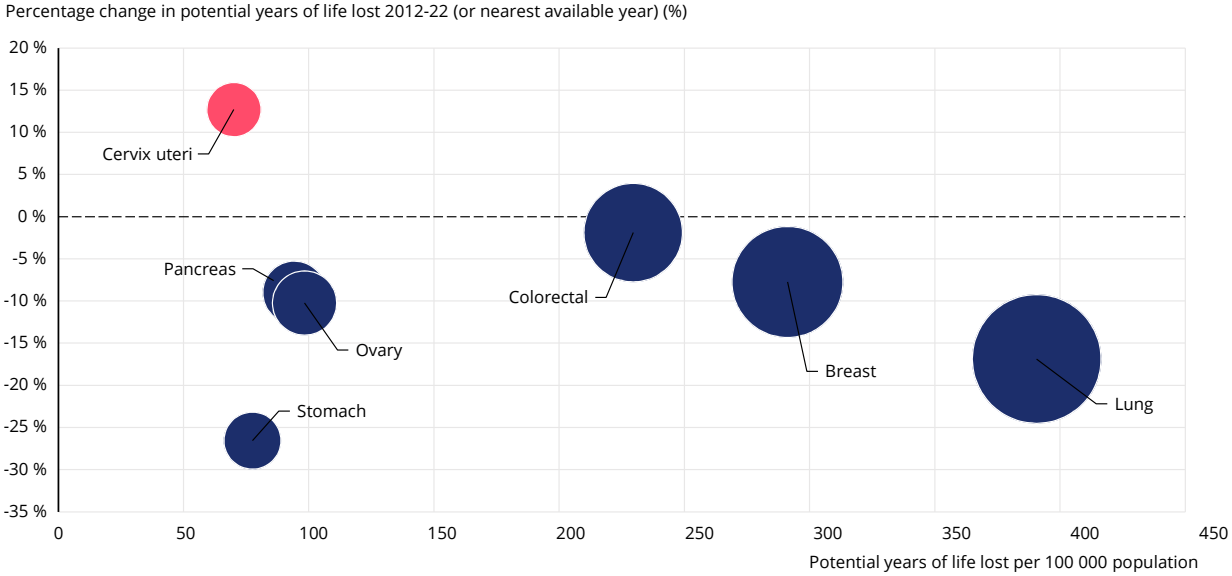
The quality of cancer care is lower in Croatia than among EU countries, but the gap is decreasing

Potential years of life lost (PYLL) is an interesting complementary measure of the impact of different cancers on society, because it puts a higher weight on cancer deaths among younger individuals. Examining the change in PYLL over time across various cancer sites can point to improvements in cancer care systems via reductions in premature mortality. In Croatia, the overall potential years of life lost due to cancer across all sites, per 100 000 population in 2021, was 1 761, which is 30% higher than the EU average (1 355 per 100 000). Despite these high figures, Croatia has seen a significant reduction of 13.9% in potential years of life lost since 2012, less than the EU average decrease of 19%.

In 2021, the cancer responsible for the most potential years of life lost was lung cancer, at 391 years per 100 000 population, representing a little above one fifth of all potential life years lost to cancer. Nevertheless, following the downward trend in smoking prevalence, this rate decreased by 17% from 2012 (Figure 16). Other notable reductions have been seen in stomach, ovary, pancreas and breast cancers, but cervix uteri registered an increase in the number of potential years of life lost between 2012 and 2021, highlighting the need for better cervical cancer treatment and prevention.

Croatian men lose 24% more potential life years to cancer than the EU average.

Figure 16. Reductions in the impact of cancer on potential years of life lost in Croatia are notable



Notes: The rate of PYLL from breast, cervical and ovarian cancer is calculated in women only, while the rate of PYLL from prostate cancer refers to men. Pink bubbles signal an increase in the percentage change in PYLL during 2012-22 (or latest available year); blue bubbles signal a decrease. The size of the bubbles is proportional to the PYLL rates in 2022.
Source: OECD Health Statistics 2024.

Cancer survival rates have improved dramatically in recent years

Croatian cancer care is strongly supported by its digital infrastructure (see Box 3). Using centralised data from the National Cancer Registry, experts systematically monitor cancer survival. According to these estimates, the five-year net survival rates for cancer patients diagnosed between 2016 and 2020, as followed up until the end of 2021, vary significantly by type. Childhood acute lymphoblastic leukaemia shows an exceptionally high survival rate of 94%. Prostate cancer patients have a five-year survival rate of 90% and breast cancer patients a rate of 84%, closely followed by skin melanoma patients at 82%. Conversely, survival rates for more aggressive cancers are considerably lower, with cervical cancer at 61%, colorectal cancer at 54% and lung cancer at just 15%. Pancreatic cancer has the lowest survival rate, at only 8% (Figure 17).

Compared to patients diagnosed in 2011-15, five-year survival has increased for all eight cancer sites except cervical cancer, which shows a decrease of 1 percentage point. On the other hand, prostate cancer survival increased by 7 percentage points in this period, which was the highest increase among these sites. Meanwhile, childhood acute lymphoblastic leukaemia (7 percentage points), skin melanoma (5 percentage points), lung (4 percentage points), colorectal (3 percentage points), breast (3 percentage points) and pancreatic cancer (2 percentage points) all had notable improvements in the period.

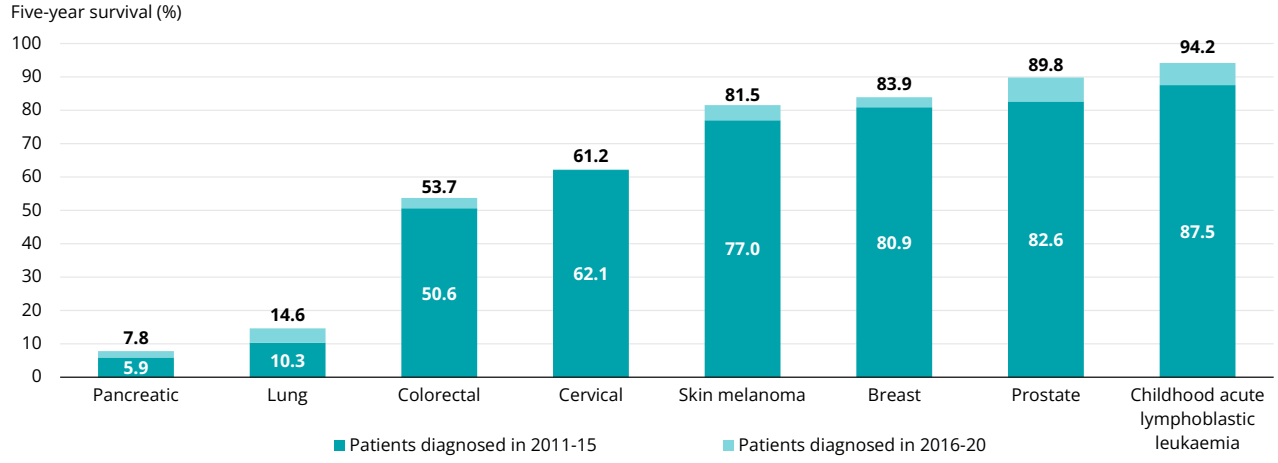
Box 3. Croatia has robust cancer care digital infrastructure

Croatia's National Cancer Registry is a comprehensive, integrated information system that covers the entire population, without separate registries for specific cancer types/sites or regions. It includes essential information such as survival, cancer stage and diagnostic data. It can also be easily linked with other important datasets, including mortality, screening and treatment data. However, it does not include or have the capability to link to genetic information or patient-reported experiences/outcomes. The registry meticulously collects basic information on cancer cases, including International Classification of Diseases, tenth revision (ICD-10) diagnoses and International Classification of Diseases for Oncology (ICD-O) morphological code.

Efforts have been made to link registry data with other databases using personal identification numbers, but these attempts have been ad hoc and are not routinely feasible, highlighting a limitation of current integration capabilities.

Source: *Croatian National Cancer Registry.*

Figure 17. Increases in five-year survival signal important improvement in cancer care, but challenges remain in cervical cancer



Notes: Five-year survival uses the Pohar-Perme estimator and a period approach. Patients were followed up until 2021.
Source: Croatian National Cancer Registry

Planned care co-ordination policies were delayed during COVID-19 but started to pick up in 2024

Croatia has not yet reorganised or concentrated cancer care delivery; nor has it established or restructured cancer care networks as outlined in the NSFC. Likewise, multidisciplinary teams for cancer care are not yet systematically in place. Nevertheless, the National Recovery and Resilience Plan of 2023 (aligned with 2024-25 action plan) aims to connect data from hospital and clinic information technology (IT) systems and other care

and monitoring stakeholders of cancer care into a national oncology database. This would support and enhance the national oncology network by providing streamlined access to diagnosis, treatment and outcome data while monitoring processes with performance indicators.

In March 2024, a contract worth EUR 7.4 million was signed for creation of an IT platform supporting the national oncology database. This innovation is thought to bring standardisation and compliance with national cancer care guidelines to all cancer patients through monitoring of performance indicators and use of algorithms to help with identification of the most appropriate treatment. The new platform also connects with existing systems used across providers of cancer care, minimising the burden on healthcare employees, and aiding co-ordination across cancer care providers.

A successful pilot to streamline waiting times for cancer care treatment is under way in 15 hospitals

The Rapid Processing of Oncological and Oncological Suspected Patients Programme was launched by the Ministry of Health to shorten waiting lists. By May 2023, it included 15 Croatian hospitals and covered suspected breast, prostate, lung, digestive system and skin cancers. The Programme allows family doctors to ensure that suspected oncology patients receive hospital treatment within seven days by providing centralised information on oncology appointment availability. Through their doctors, patients are informed about oncology services based on priority protocols at the nearest institution, ensuring quick access to services within their region. Moreover, the 15 hospitals participating in the pilot have established different protocols for processing oncology patients, optimising the handling of regular, priority and emergency cases.

Significant advances in cancer care innovations are focused on capacity building to implement the latest technologies

In 2022, specialisations in medical genetics were included in guidelines on specialist training, to be carried out in six health institutions authorised by the Ministry of Health. The introduction of specialisations in medical genetics will create a generation of doctors with competence to decide on diagnosis and treatment and provide appropriate genetic information not only to the sick patient but also to relatives at risk, which will significantly improve healthcare for patients and availability of genetic counselling for people at risk.

In March 2024, the Institute for Personalised Medicine, incorporating the National Laboratory for Gene Profiling of Tumours, was officially opened at Clinical Hospital Zagreb, making it only the third medical centre in Europe with such a facility. The Laboratory's setup and equipment are part of a broader project on personalised medicine in oncology, with an initial investment of EUR 7.7 million, expected to reach a total of EUR 9.1 million, fully financed by the pharmaceutical company Roche®. The project also includes staff education and training, and has a direct connection to the national oncology database. It aims not only to meet the needs of Croatian patients but also to provide services to neighbouring countries.

As noted earlier, Croatia has implemented policies for use of teleconsultation, such as telediagnosis for lung cancer and melanoma (see Section 4). While robotic and robot-assisted surgery is not yet in use, adoption of these advanced technologies is being considered for the near future to enhance surgical precision and efficiency. Policies for biomarker screening and the use of artificial intelligence in cancer screening are not yet in place.

Cancer patient-reported indicators are not collected systematically. However, Croatian authorities use the patient-reported experiences in the European Health Interview Survey to monitor experiences and quality of life of cancer patients using primary care.

5.3 Costs and value for money

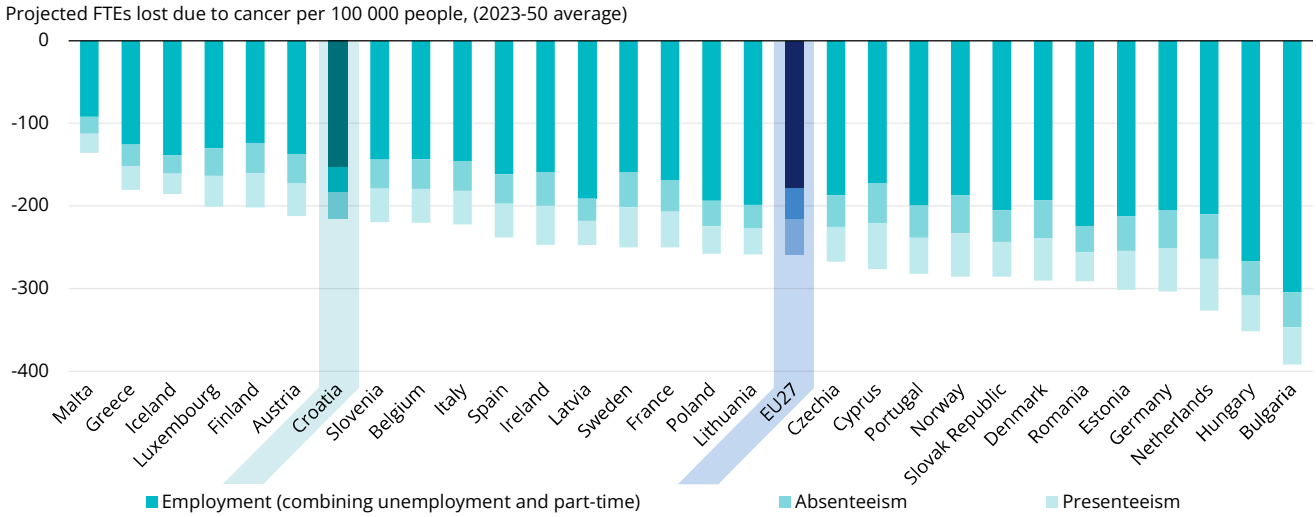
Cancer is anticipated to have an impact on the labour market in Croatia in the coming decades

According to OECD SPHeP modelling work, the per capita health expenditure on cancer care is expected to grow by 62% in Croatia between 2023 and 2050, compared to 59% in the EU27.

Furthermore, between 2023 and 2050 on average, there is expected to be a loss of 151 full time equivalent workers (FTEs) per 100 000 people in Croatia due to reduced employment, which is less than the EU average of 178 FTEs per 100 000. It is also anticipated that there will be a loss of 64 FTEs per 100 000 due to both absenteeism and presenteeism,[7] which is somewhat lower than the EU average of 81 FTEs per 100 000 (Figure 18).

7 *Presenteeism refers to lost productivity that occurs when employees are not fully functioning in the workplace because of an illness, injury or other condition.*

Figure 18. Cancer is expected to have a smaller impact on the labour market in Croatia than in the EU on average



Note: The EU average is unweighted.
Source: OECD (2024b), Tackling the Impact of Cancer on Health, the Economy and Society, https://doi.org/10.1787/85e7c3ba-en.

The NSFC addresses the reduced burden of indirect costs that would arise by improving prevention capacities and patients' quality of life. A recent study (Vrdoljak et al., 2021) evaluated implementation of Croatia's NSFC (including informal care costs, working days lost to cancer and productivity loss due to early death) and the direct costs of implementing NSFC activities (including investments in primary and secondary prevention, diagnostics, treatment, specialty cancer areas such as paediatric oncology, palliative care, education, and research and development of the national oncology network). The total direct cost of implementing the national cancer care plan was estimated at EUR 161 109 819, with investments for breast, lung, prostate and colorectal cancer accounting for the majority of this. However, given the focus on prevention, the plan is anticipated to reduce indirect costs for cervical, colorectal, melanoma and liver cancers. Subtracting the savings, the net cost of implementation of the NSFC amounts to EUR 11 745 785. At the same time, the plan is expected to result in gains of 114 392 life years, meaning that one additional life year would cost EUR 1 021. Accounting only for direct healthcare costs (disregarding indirect costs savings), the NSFC produces an additional life year gained at an additional cost of EUR 1 408.

Several strategies are in place to contain and share the burden of the cost of cancer

The Croatian Institute for Health Insurance, with the Croatian Medical Association and other relevant stakeholders, has codified a significant number of new diagnostic and therapeutic procedures to encourage shorter hospital stays and reduce costs. One such measure is one-day surgery. The mechanism sets a higher price for the procedure compared to inpatient hospital treatment, on top of quality standards to respect the time and personnel norms, to stimulate one-day surgery.

In addition, to share the burden of high-cost acute hospital treatments exceeding DRG prices, the Croatian Institute for Health Insurance approves additional funding requests, especially for expensive drugs and implants. The Institute also contracts out-of-limit diagnostic procedures like PET/CT scans and stereotactic radiosurgery to ensure timely diagnosis and treatment, with contracts totalling approximately EUR 18 million for the first half of 2024.

Croatia participates in joint assessments and information sharing with other EU countries for negotiation on procurement of cancer medicines

Croatia participates in joint public procurement with other EU Member States through the Valletta Declaration (OECD, 2023). Despite challenges such as varying national priorities and legislative frameworks, this regional co-operation has been pivotal in addressing disparities in medicine pricing and access. The policy initiative, backed by the EU's Health Programme, has led to improved access to new and emerging medicines, and bolstered the sustainability of national healthcare systems.

Further, the Croatian Institute for Health Insurance regularly updates the list of drugs for malignant diseases, including innovative and particularly expensive drugs. For the latter, the Institute

manages a special fund, ensuring access to high-cost treatments for insured people without overburdening hospital budgets. In any given year, spending on drugs for malignant diseases represents 70.8% of the particularly expensive drugs fund, with immunotherapy drugs comprising the largest share.

A legal framework has been established to collect implementation data systematically and monitor the effectiveness, determinants and outcomes of particularly expensive drugs, ensuring accountability and optimal use.

5.4 Well-being and quality of life

The NSFC is marked by its comprehensive approach, addressing the entire continuum of cancer care from primary prevention through to rehabilitation, reintegration and palliative care. This demonstrates a robust commitment to enhancing cancer patients' quality of life.

Croatia participates in the EU-funded e-QuoL Project, which uses e-health tools to promote equity in care and quality of life for children, adolescents and young adult cancer survivors and their families. The project is expected to adapt existing, accessible and affordable e-health tools and best practices for supportive care through personalised counselling approaches.

However, there is still important room for improvement, as currently no systematic strategies or policies are in place in the fields of fertility preservation or return-to-work programmes. Likewise, no recent reports have analysed the quality of life for people with cancer.

Croatia is actively developing palliative care programmes

Plans for development of palliative care in the NSFC call for extensive participation of patient groups. The aim is to provide equal access to high-quality palliative care, integrated into all levels of the healthcare system.

There have been significant strides across multiple dimensions in this direction. As of 31 March 2023, Croatia has engaged 52 palliative care co-ordinators and established 41 mobile teams operating out of 30 health centres across the 21 counties. These teams are integral to the national strategy to provide home-based care, ensuring that incurable patients receive consistent and compassionate care until their final days. In time, hospital palliative care will be carried out in palliative departments – in palliative beds in general and special hospitals, with a total of 349 palliative beds in hospital institutions.

Moreover, Croatia is actively expanding lending centres for home care aids to support palliative patients in their communities. These centres are equipped with essential items such as beds, mattresses, toilet chairs and infusion stands, with a pilot programme in place to refine these services and craft guidelines for national implementation.

Education and training are key components of Croatia's palliative care strategy. Targeted training programmes are being rolled out for healthcare professionals, social welfare employees, informal caregivers, family members and volunteers from NGOs. The programmes are hosted in health centres and include establishment of educational centres with simulation training "cabins" (sets that mimic real-world scenarios), enhancing practical learning experiences.

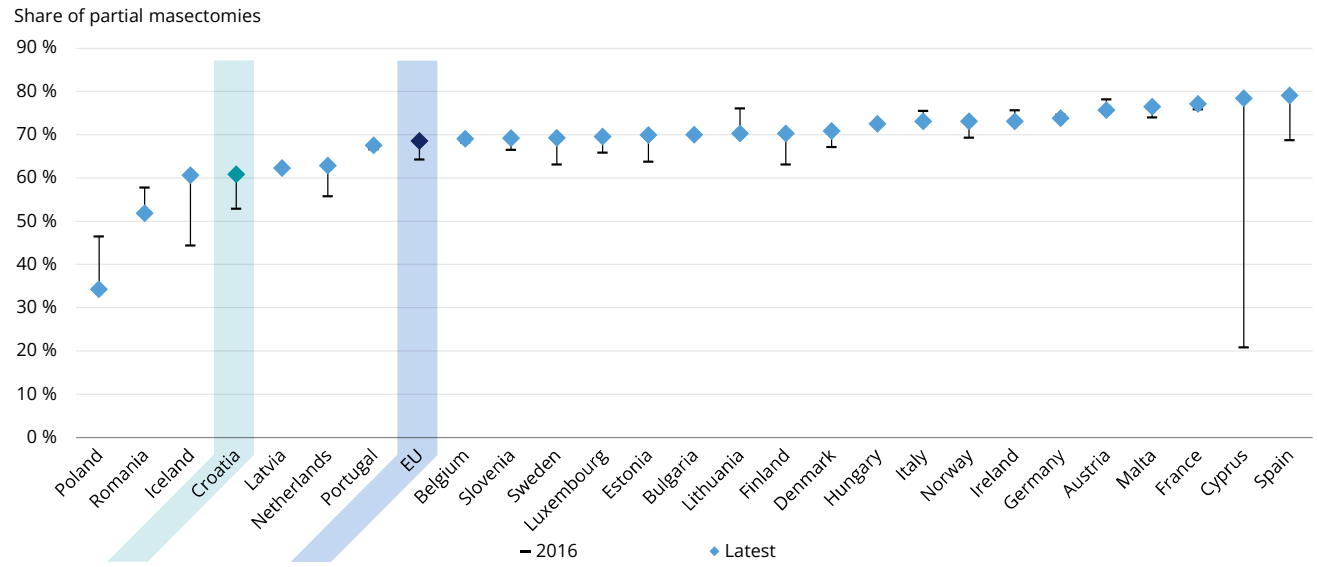
In terms of pain management, Croatia is expanding its national network to include procurement of patient-controlled analgesia pumps with remote monitoring capabilities. Plans are also under way to establish at least four new palliative clinics in hospitals – fully equipped and staffed to meet the needs of patients requiring intensive palliative care.

Croatia could improve establishment of breast conservation therapy as the standard of care

Partial mastectomy complemented with breast irradiation (as opposed to total mastectomy) has been deemed an appropriate therapy for most women with breast cancer. Breast-conserving surgery improves patients' care experience and outcomes, and should be established as the standard of care, as confirmed by a number of landmark trials (Keelan, Flanagan & Hill, 2021).

In Croatia in 2021, only 61% of breast cancer surgeries were partial mastectomies, while the EU + 2 average was 69%, and highest share was 79% in Spain (Figure 19). However, Croatia has seen relatively rapid improvement from 53% in 2016 – a rise of 8 percentage points.

Figure 19. Croatia performs relatively fewer partial mastectomies than other EU countries



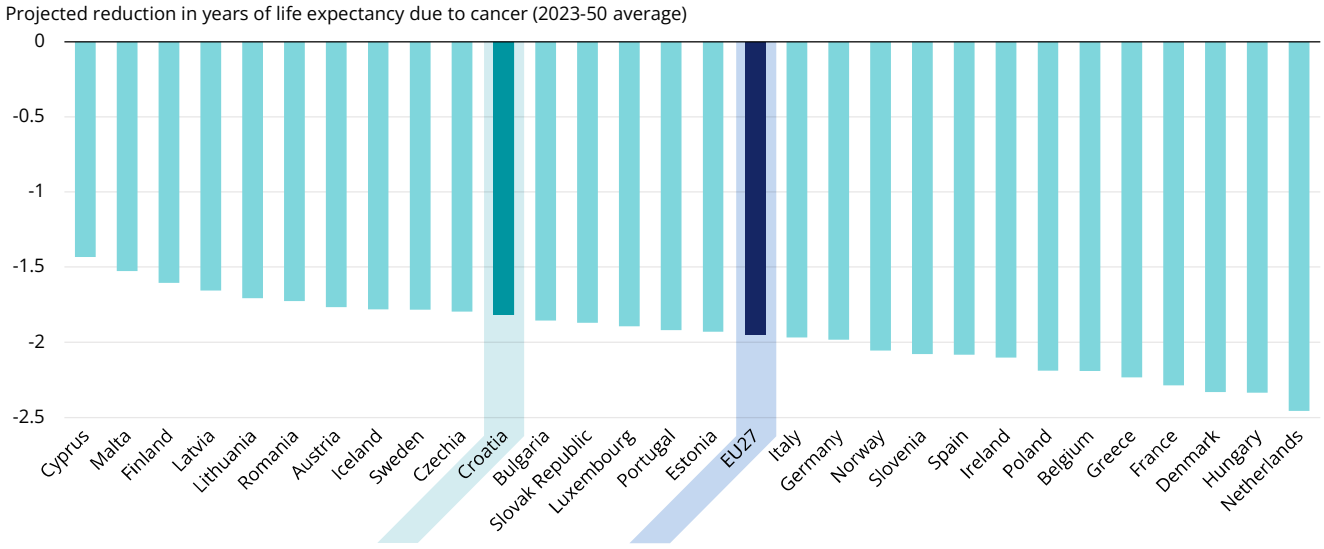
Note: The share of partial mastectomies is calculated out of the sum of both partial and total breast removal surgeries in the country.
Source: 2024 OECD Health Statistics.

Cancer has a smaller impact on life expectancy in Croatia than in most EU+2 countries

OECD SPHeP modelling projections indicate that from 2023 to 2050, cancer is expected to decrease average life expectancy in Croatia by 1.8 years, compared to a scenario without cancer. This reduction is slightly lower than the EU average of 1.9 years (Figure 20).

In addition, cancer takes a substantial toll on the mental health of the population through its associated symptoms and treatment side effects, and impact on daily life, social roles and work. According to the OECD's SPHeP model, Croatia is anticipated to have much higher depression rates because of cancer than the EU, at an additional age-standardised rate of 26 cases per 100 000 per year: much higher than the average of 17 per 100 000 across the EU.

Figure 20. Cancer affects life expectancy less in Croatia than in most of the EU+2



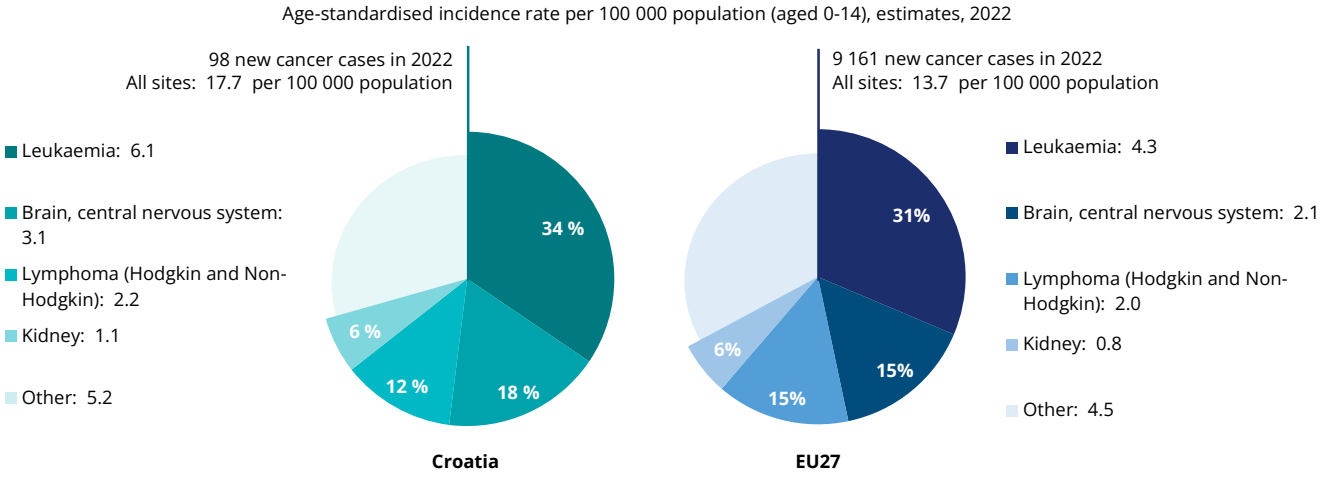
Note: The EU average is unweighted.
Source: OECD (2024b), Tackling the Impact of Cancer on Health, the Economy and Society, https://doi.org/10.1787/85e7c3ba-en.

6. Spotlight on paediatric cancer

According to ECIS, it is estimated that 98 children and adolescents up to age 15 were diagnosed with cancer in 2022 in Croatia. Incidence rates for ages 0-14 in 2022 were estimated at 17.7 per 100 000 children in Croatia, as compared to 13.7 in the EU27 (Figure 21). Incidence rates among boys are slightly lower than among girls in Croatia, while the reverse holds true in the EU. The most common cancer groups are leukaemia, at 6.1 cases per 100 000 children (34%), brain and central nervous system, at 3.1 cases per 100 000 (18%), lymphoma, at 2.2 cases per 100 000 (12%) and kidney, at 1.1 per 100 000 (6%).

While cancer incidence rates among children aged 0-14 are higher in Croatia as compared to the EU, the 3-year average mortality rates are the same – at 2.1 per 100 000 children, according to Eurostat.

Figure 21. Cancer incidence rates among children in Croatia are higher than in the EU



Notes: 2022 estimates are based on incidence trends from previous years, and may differ from observed rates in more recent years. "All sites" includes all cancer sites except non-melanoma skin cancer.
Source: European Cancer Information System (ECIS) for cancer incidence. From https://ecis.jrc.ec.europa.eu, accessed on 10 March 2024. © European Union, 2024.

According to the European Society of Paediatric Oncology (SIOPE)'s Organisation of Care & Research for Children with Cancer in Europe (OCEAN) Project, Croatia has four institutions treating children with cancer (SIOPE, 2024). Specifically, none of this is classified strictly as cancer-only centres. Out of the 13 infrastructural aspects and treatment modalities covered by the OCEAN project, nine are available in the country including inpatient and outpatient chemotherapy, surgery for solid tumours, and the central nervous system, both autologous and allogenic stem cell transplants, and photon radiation therapy. However, options like proton radiation therapy, brachytherapy and phase I/II clinical trials are not available (SIOP, 2024).

In 2018, 88% of the 68 medicines identified as essential for treating cancer in patients aged 0 to 18 were available in Croatia, compared to 76% in the EU on average (Vassal et al., 2021). Between 2010 and 2022, Croatia participated in only 4 of the 436 European clinical trials on cancer involving children (1% of the total).

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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
Czechia	CZ	Greece	EL	Lithuania	LT	Portugal	PT		

European Cancer Inequalities Registry

Country Cancer Profile 2025

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 Thematic Working 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 quality of life.

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