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JRC TECHNICAL REPORTS

The European Cancer Information System (ECIS) web application

*Computing and disseminating
European statistics on
cancer burden*



International Agency for Research on Cancer



Giorgia Randi, Fabrizio Zaro, Raquel N. Carvalho, Carmen Martos, Nadya Dimitrova, Tadeusz Dyba, Francesco Giusti, Luciana Neamtii, Emanuele Crocetti, Roisin Rooney, Davor Aslanovski, Stefano Adriani, Antonino Brunetto, Silvio Grispo, Massimiliano Gusmini, Nicholas Nicholson, Enrico Ben, Manola Bettio

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Acknowledgments

The data of population-based cancer registries form the basis for the estimation of the cancer burden and its trends over time and are crucial in the planning and evaluation of cancer control programmes.

Grateful acknowledgement is given to the European cancer registries for contributing to the initiatives and studies included in ECIS.

The European Cancer Information System and the ECIS web application

Cancer is the second most common cause of death in the EU¹, claiming many lives and exerting an enormous toll both on our health systems and on our economy. In order to tackle these challenges more effectively and to profit from EU-added value, the European Commission has proposed and initiated a number of actions, including those that transcend the traditional boundaries of health systems and move into policy areas such as education, environment, taxation, research, and social and external affairs². However, actual effectiveness of any such measure cannot be assessed without the availability of accurate and comparable data on cancer that can be translated into reliable incidence, prevalence, survival and mortality statistics. For this purpose, the Joint Research Centre (JRC), acting as the scientific service to the European Commission and in close collaboration with the Commission's Directorate-General for Health and Food Safety (DG SANTE) as well as with major European stakeholders in the field, has started developing a comprehensive cancer information system for Europe.

In 2012, the two Directorate-Generals (DG SANTE and JRC) have first entered into a formal collaboration with the aim of supporting the European Network of Cancer Registries (ENCR). In order to ensure the continued administrative functioning of the network, the ENCR secretariat was transferred to the JRC. On the scientific side, the JRC has been supporting the ENCR in the harmonisation of data and registration processes. This collaboration has also included the development of specific infrastructural elements of a European Cancer Information System (ECIS). Building upon existing experience, competence, and cooperation of cancer registries with membership in the ENCR, and in collaboration with other stakeholders in the cancer information domain, DG SANTE and JRC have been developing ECIS with the following aims:

- to monitor the burden of cancer and its trends over time across Europe and its geographical regions;
- to assess the magnitude of the cancer burden and its likely future evolution;
- to illustrate the effects of health policy interventions;
- to establish a reference base for cancer epidemiological research;
- to provide information for further research on possible underlying causes of cancer as well as best practices for prevention, treatment, and control; and
- to provide information and educational resources to the general public to explain the variations observed in different populations.

A key component of this integrated and comprehensive system is the so-called ECIS web application. This web-based module, conceived and developed by the JRC and launched in February 2018, was designed to provide information on and to visualise the cancer burden indicators. The ECIS web application displays three different types of information: historical incidence and mortality indicators

1. EUROSTAT. – Causes of death statistics, https://ec.europa.eu/eurostat/statistics-explained/index.php/Causes_of_death_statistics

2. Cf. Communication on Action Against Cancer: European Partnership (COM(2009) 291 final), <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52009DCo291>.

at registry level; national incidence and mortality estimates; and national survival estimates. It permits the exploration of geographical patterns and temporal trends of incidence, mortality, and survival based on data submitted by approx. 150 European population-based cancer registries for the major cancer sites. This enables researchers to assess the magnitude and monitor the cancer burden and its changing trends over time. The ECIS web application also helps to illustrate the effects of health policy interventions aimed at reducing the cancer burden.

Cancer Registration in Europe and the European Network of Cancer Registries (ENCR)

Cancer registration in Europe³ comprises some 200 population-based cancer registries, residing in most European countries. These registries provide information on cancer cases with varying degrees of geographical coverage, ranging from national to regional and local coverage. There are also notable differences between registries in terms of data quality and comprehensiveness of reporting.

The ENCR⁴ was established in 1990, within the framework of the European Commission's Europe Against Cancer programme. It promotes collaboration between cancer registries, defines data collection standards and supports the registries as the providers of the information necessary to quantify and monitor the burden of cancer in Europe. The ENCR currently comprises 178 individual registries across Europe (including non-EU countries). Figure 1 shows the tapestry of general cancer registries (i.e. those that collect data on all cancer sites and on patients of all ages) with ENCR membership.

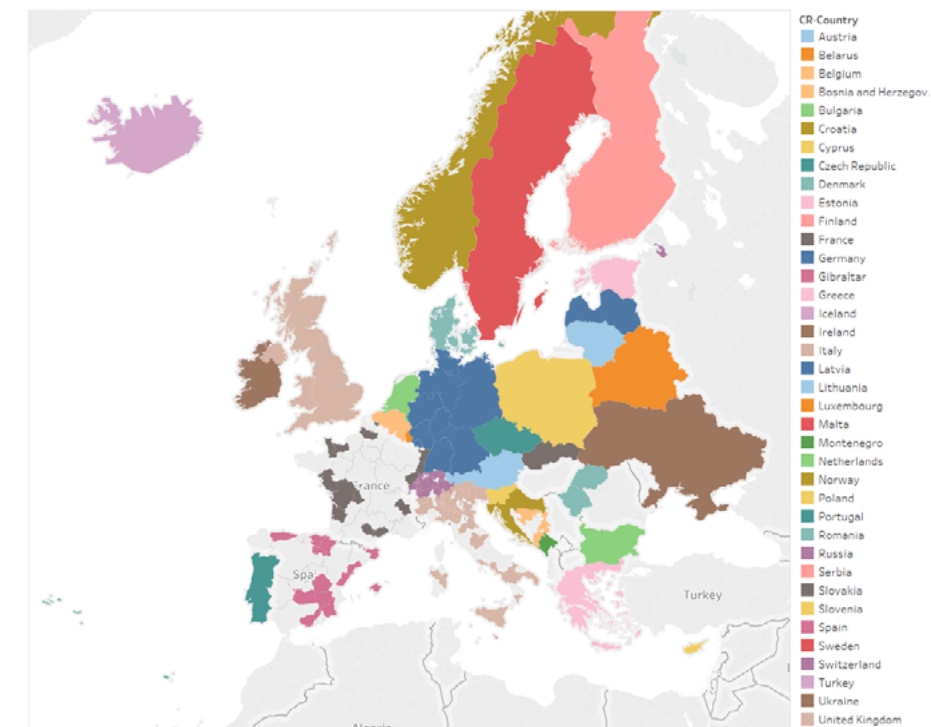


Figure 1. General cancer registries in Europe with ENCR membership

The European Commission's Joint Research Centre hosts the secretariat of the ENCR and coordinates its underlying activities.

3. Defined according to the UN definition: <http://unstats.un.org/unsd/methods/m49/m49regin.htm#europe>, with the addition of Cyprus..

4. <http://www.encre.eu/>.

Cancer burden indicators in the ECIS web application

The ECIS web application displays three different types of indicators reporting on the cancer burden in Europe (Figure 2) that are based on the results of three European studies and projects:

- historical data on incidence and mortality, displayed at cancer-registry level and derived from the ENCR-JRC project ‘Cancer Incidence and Mortality in Europe’⁵;
- national-level survival estimates, derived from the latest published edition of the EUROCARE study (currently EUROCARE-5)⁶;
- 2018 incidence and mortality estimates, at national level, developed by the International Agency for Research on Cancer (IARC) in collaboration with International Association of Cancer Registries, the JRC, and the ENCR.⁷

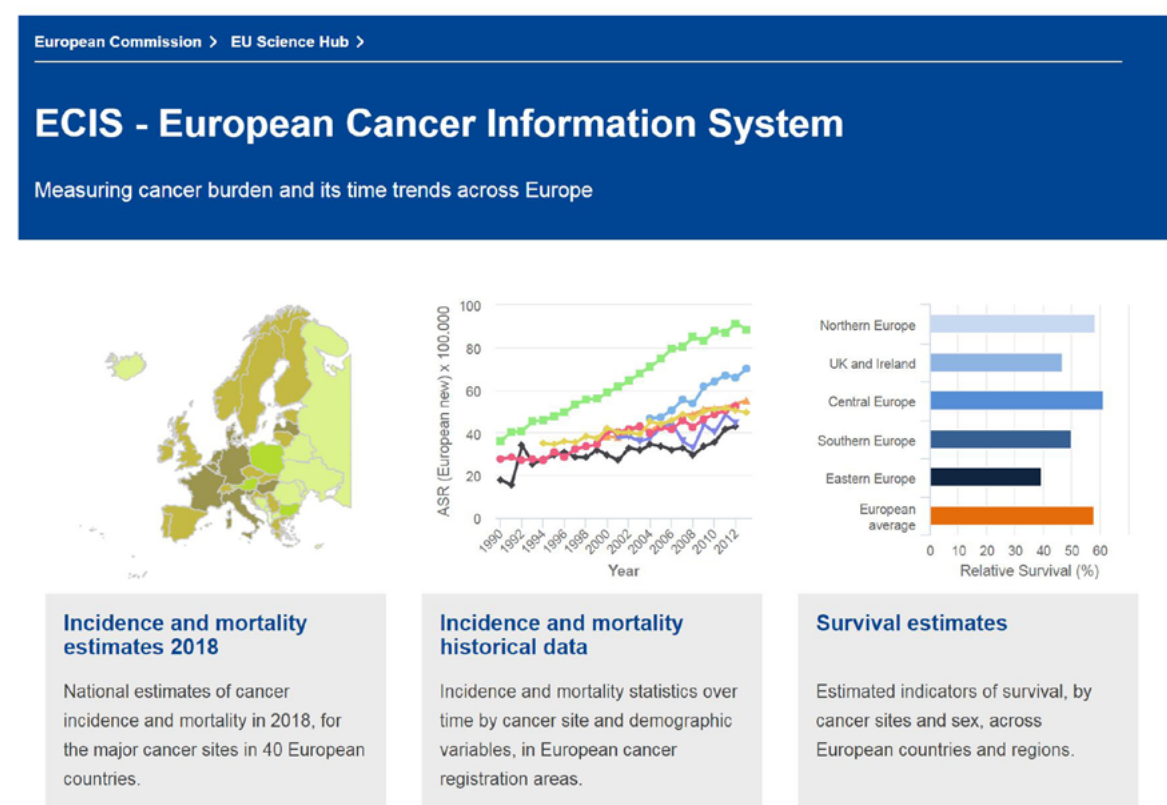


Figure 2. The homepage of the ECIS web application

All the cancer indicators displayed in the ECIS web application are based on incidence data submitted

5. <https://ecis.jrc.ec.europa.eu/info/initiatives.html#encr-jrc>.

6. <http://www.eurocare.it/>

7. Ferlay J, Colombet M, Soerjomataram I, Dyba T, Randi G, Bettio M, Gavin A, Visser O, Bray F. Cancer incidence and mortality patterns in Europe: Estimates for 40 countries and 25 major cancers in 2018. *Eur J Cancer*. 2018 Aug 9. [Epub ahead of print].

by the European population-based cancer registries participating in the corresponding projects/studies (Figure 3). The mortality data come either from the EUROSTAT and WHO or are provided by the European cancer registries. The population data come from EUROSTAT, WHO, and UN, or they are provided by the European cancer registries. The cancer burden indicators reported in ECIS are the results of data analysis at cancer-registry level (incidence and mortality historical data) or at country level (survival estimates and 2018 estimates of incidence and mortality).

The database feeding the ECIS application is dynamic and updated as new data become available. The ECIS web application has been developed and is maintained by the JRC and can be accessed here: <https://ecis.jrc.ec.europa.eu/>.

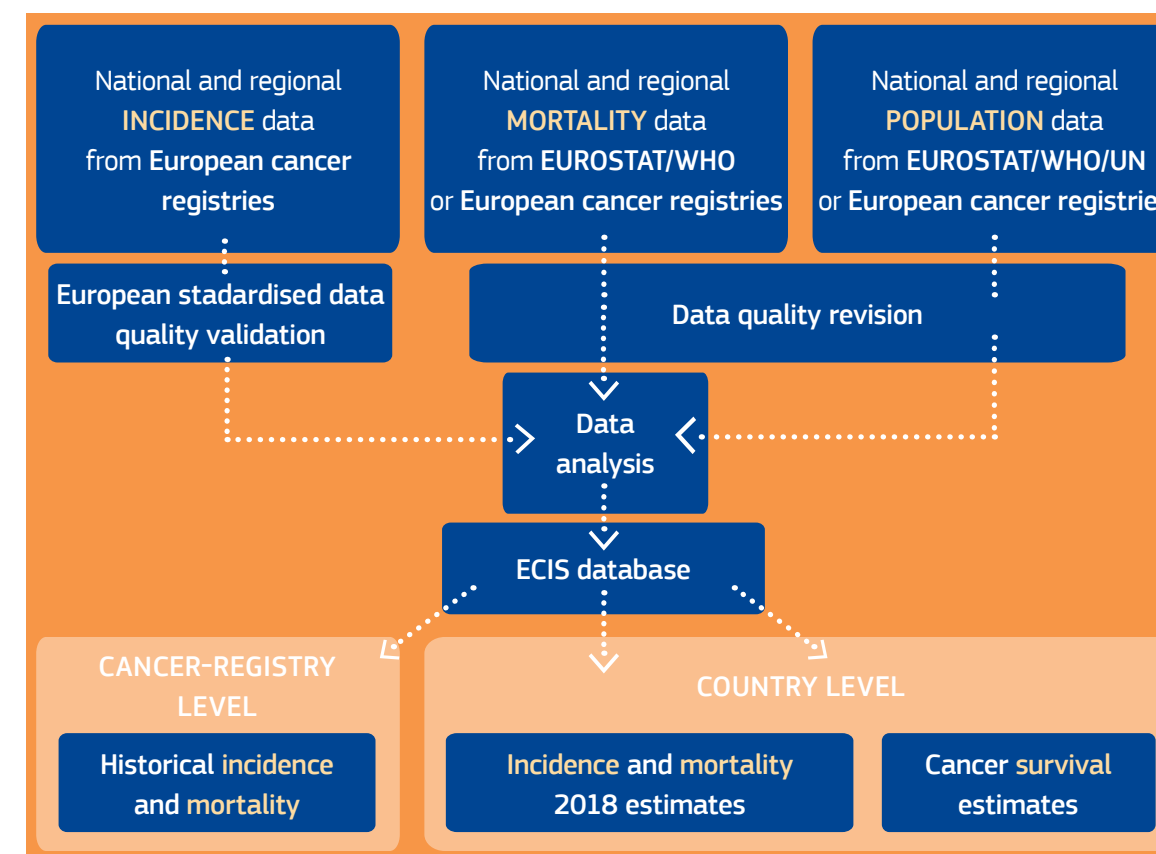


Figure 3. Data sources and data flow feeding the database of the ECIS web application

Incidence and mortality estimates for 2018 – the IARC-IACR-ENCR-JRC collaboration

The ECIS web application presents national estimates of incidence and mortality for the major cancer types in 40 European countries for the year 2018. These estimates are the outcome of an exercise led by the International Agency for Research on Cancer (IARC) in collaboration with the JRC, the ENCR, and the International Association of Cancer Registries (IACR). They are based on the historical data on incidence and mortality provided by European population-based cancer registries.

The 2018 incidence estimates for 40 European countries are based on the data from European cancer registries participating in IARC's *CI5: Cancer Incidence in Five Continents vol. XI*⁸ as well as from the NORDCAN⁹ database and other published reports. The mortality data was extracted from the WHO mortality database¹⁰.

The 2018 incidence and mortality estimates are shown both for the whole Europe and for the four geographic European areas:

CENTRAL AND EASTERN EUROPE: Belarus, Bulgaria, Czech Republic, Hungary, Moldova, Poland, Romania, Russian Federation, Slovakia, and Ukraine;
NORTHERN EUROPE: Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Norway, Sweden, and United Kingdom;
SOUTHERN EUROPE: Albania, Bosnia Herzegovina, Croatia, Cyprus, Greece, Italy, FYR Macedonia, Malta, Montenegro, Portugal, Serbia, Slovenia, and Spain
WESTERN EUROPE: Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Switzerland;

Other European areas considered are the EU28 countries and the EU28 plus the four European Free Trade Association (EFTA) countries (Iceland, Liechtenstein, Norway and Switzerland).

Historical incidence and mortality – the ENCR-JRC Project ‘Cancer incidence and mortality in Europe’

The ENCR-JRC project on cancer incidence and mortality aims to compute and disseminate indicators for assessing and monitoring the burden of cancer in Europe and its trends over time. These indicators can be explored by cancer site, sex, age group, calendar period and geographical area of the registries.

In 2015, the first call for data was sent to all European population-based registries. As of September 2018, a total of 149 registries from 34 European countries have responded and were included in the ENCR-JRC project. The data submitted by cancer registries on all ages and all cancer sites are included in the ECIS web application.

The outputs of the project are produced in collaboration with cancer registries and their representative body – the ENCR Steering Committee.

Survival estimates – the EURO CARE project

EURO CARE (EUROpean CAncer REgistry-based study on survival and care of cancer patients) is the widest collaborative research project on cancer survival in Europe. The aims of the study are to provide

8. <http://ci5.iarc.fr/Default.aspx>

9. NORDCAN is the database of cancer statistics for the Nordic countries: Denmark, Finland, Iceland, Norway, Sweden, Faroe Islands and Greenland, <http://www-dep.iarc.fr/NORDCAN/english/frame.asp>.

10. http://www.who.int/healthinfo/statistics/mortality_rawdata/en/

an updated description of cancer-survival time trends and differences across European countries; to measure cancer prevalence; and to study patterns of care of cancer patients.

The ECIS reports the results of the EURO CARE's study latest published edition, currently EURO CARE-5. This edition includes data on more than 21 million cancer diagnoses provided by 99 cancer registries in 26 European countries.

The survival estimates in EURO CARE are also provided for the four European regions defined as follows:

NORTHERN EUROPE: Denmark, Finland, Iceland, Norway, and Sweden;
UK AND IRELAND: Ireland; UK (England, Northern Ireland, Scotland, and Wales)
CENTRAL EUROPE: Austria, Belgium, France, Germany, Switzerland, and the Netherlands;
SOUTHERN EUROPE: Croatia, Italy, Malta, Portugal, Slovenia, and Spain;
EASTERN EUROPE: Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Poland, and Slovakia.

Work in progress for ECIS

The ECIS web application is continuously updated with new features and data as soon as they are ready for publication.

Additional features currently under development address the following areas: i) dissemination of data on paediatric and rare cancers; ii) historical national estimates of cancer incidence in countries without a national registry; iii) cancer factsheets summarising information from different projects in ECIS by cancer site.

Getting started with the ECIS web application

The ECIS data explorer

The core of the ECIS web application, its data explorer, is divided into three areas, reporting separately on national estimates of cancer incidence and mortality for the most recent year, on incidence and mortality indicators over time (historical data until the most recent available year) at registry level, and on national survival estimates. All the possible analyses (Table 1) can be displayed in the ECIS through maps, charts, and tables, according to the indicator (incidence, mortality, survival) and the scenario selected (analyses specific for registry/country and cancer site, analyses by cancer, analyses by registry/country).

Selecting the data to be displayed

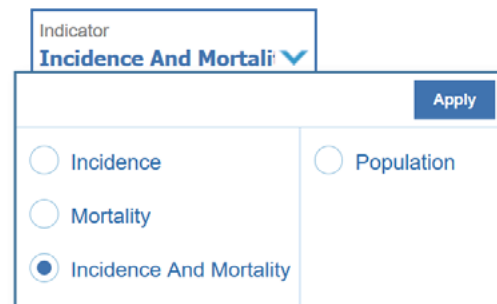
Filter menu for selections

The maps, tables, and charts displaying the ECIS analyses can be modified by selecting different filters in the top menu, including: country/registry, cancer site, sex, age at diagnosis/death, year of diagnosis/death, and type of indicator (incidence, mortality, population, survival). The filter menu is adjusted to each study/project depending on the corresponding available selections as in this example:



Indicator selection

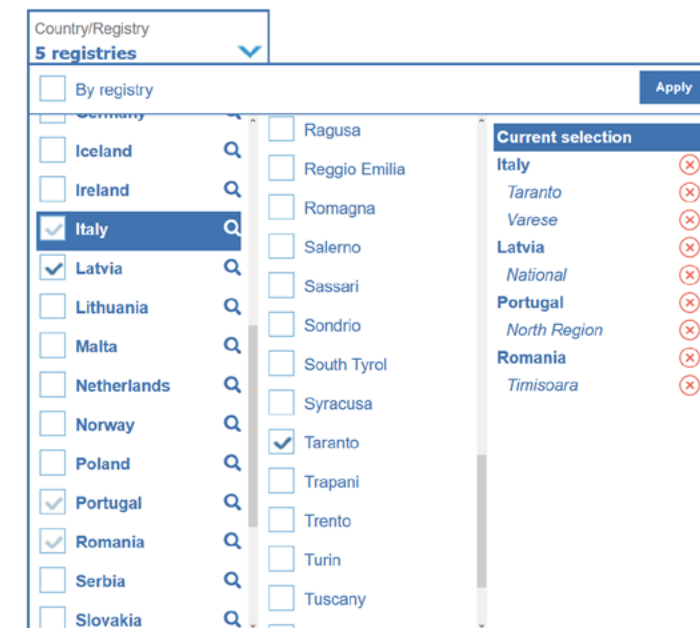
The 'Indicator' field allows the user to focus on the indicator(s) of interest:



Country/Registry selection

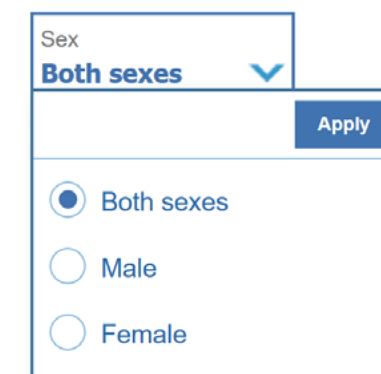
The 'Country/Registry' field enables the selection of the country or registry for the desired analysis. For historical data, one or more registries can be selected – if more than one are selected, the analyses will display a comparison between different registries. In the 'Current selection' box, the user can unselect either individual registries or countries.

Selecting the 'By registry' or 'By country' option enables the user to toggle between different sets of analyses (Table 1).



Sex selection

The 'Sex' field enables the user to choose between 'Male', 'Female', or 'Both sexes'. In the latter case, analyses can be displayed separately for males and females or for both sexes combined.



Cancer site selection

The 'Cancer' filter depends on the country/registry and sex combination. When more than one tumour site are selected, analyses can be displayed separately by cancer or grouped (all cancers combined). Selecting the 'By cancer' option on the menu enables the user to toggle between different sets of analyses (Table 1).

Cancer
All sites but non mel

By cancer Apply

<input checked="" type="checkbox"/> All sites but non melanoma skin	<input type="checkbox"/> Lip	<input type="checkbox"/> Other thoracic organs
<input type="checkbox"/> Adrenal gland	<input type="checkbox"/> Lip, oral cavity, and pharynx	<input type="checkbox"/> Ovary
<input type="checkbox"/> Anus	<input type="checkbox"/> Liver and intrahepatic bile ducts	<input type="checkbox"/> Pancreas
<input type="checkbox"/> Bladder	<input type="checkbox"/> Lung	<input type="checkbox"/> Penis
<input type="checkbox"/> Bones and joints	<input type="checkbox"/> Lymphocytic Leukemia	<input type="checkbox"/> Pharynx
<input type="checkbox"/> Brain and other CNS	<input type="checkbox"/> Melanoma of the skin	<input type="checkbox"/> Primary site unknown
<input type="checkbox"/> Breast female	<input type="checkbox"/> Mesothelioma	<input type="checkbox"/> Prostate
<input type="checkbox"/> Cervix uteri	<input type="checkbox"/> Mouth	<input type="checkbox"/> Rectum
<input type="checkbox"/> Colon	<input type="checkbox"/> Myeloid and Monocytic Leukemia	<input type="checkbox"/> Rectum and anus
<input type="checkbox"/> Colon, rectum, and anus	<input type="checkbox"/> Myeloma	<input type="checkbox"/> Renal pelvis
<input type="checkbox"/> Corpus Uteri and unspecified uterus	<input type="checkbox"/> Nasal cavity and sinuses	<input type="checkbox"/> Retroperitoneum and peritoneum
<input type="checkbox"/> Endocrine	<input type="checkbox"/> Nasopharynx	<input type="checkbox"/> Salivary glands
<input type="checkbox"/> Eye and adnexa	<input type="checkbox"/> Non Hodgkin lymphoma	<input type="checkbox"/> Small intestine

Age selection

The 'Age' filter depends on the data availability following the registry/registries selection. The age at diagnosis is displayed in five-year intervals, with the exception of the last age bracket, which includes all ages over 85. The user can select the age interval to be considered for analysis.

Age
All ages

All ages Apply

<input checked="" type="radio"/> 0	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 9
<input type="radio"/> 10	<input type="radio"/> 14
<input type="radio"/> 15	<input type="radio"/> 19
<input type="radio"/> 20	<input type="radio"/> 24
<input type="radio"/> 25	<input type="radio"/> 29
<input type="radio"/> 30	<input type="radio"/> 34
<input type="radio"/> 35	<input type="radio"/> 39
<input type="radio"/> 40	<input type="radio"/> 44
<input type="radio"/> 45	<input type="radio"/> 49
<input type="radio"/> 50	<input type="radio"/> 54
<input type="radio"/> 55	<input type="radio"/> 59
<input type="radio"/> 60	<input type="radio"/> 64
<input type="radio"/> 65	<input type="radio"/> 69
<input type="radio"/> 70	<input type="radio"/> 74
<input type="radio"/> 75	<input type="radio"/> 79
<input type="radio"/> 80	<input type="radio"/> 84
<input type="radio"/> 85	<input checked="" type="radio"/> 85+

Year selection

The 'Year' field depends on the data availability following the registry/registries selection. The user can select the range of years to be considered for analysis; when several years are selected, analyses can be displayed separately for each year or grouped (all years together).

Year
2004 to 2010

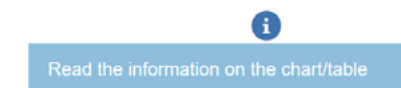
All years Apply

<input checked="" type="radio"/> 2004	<input type="radio"/> 2004
<input type="radio"/> 2005	<input type="radio"/> 2005
<input type="radio"/> 2006	<input type="radio"/> 2006
<input type="radio"/> 2007	<input type="radio"/> 2007
<input type="radio"/> 2008	<input type="radio"/> 2008
<input type="radio"/> 2009	<input type="radio"/> 2009
<input type="radio"/> 2010	<input checked="" type="radio"/> 2010
<input type="radio"/> 2011	<input type="radio"/> 2011
<input type="radio"/> 2012	<input type="radio"/> 2012
<input type="radio"/> 2013	<input type="radio"/> 2013

Exploring, grouping, and exporting the displayed data

Help information

Dedicated help windows are available to guide the user understand the meaning of and to interpret the maps, charts, and tables. The small icon on the right side of each element opens a window with the corresponding help text.



Specific settings

The 'Specific settings' icon allows the user to select different map/chart/table parameters, including: grouping of cancer sites, sexes, or years when multiple selections are performed, the selection of the displayed statistic; the length of age-groups; the logarithmic scale; and the reference area.

Sexes display: Individual

Cancers display: Individual

Years display: Grouped

Logarithmic scale: Disabled

Grouping of specific filters is allowed only on multiple selection

Apply

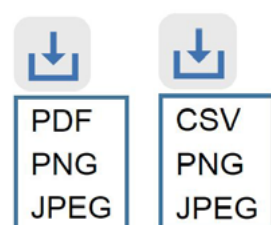
Visualisation type

Data can be visualised in map, chart, or tabular form by clicking on the appropriate icon:



Download

Maps and charts can be downloaded as PDF, PNG, and JPEG files; tables are downloadable in CSV, PNG, and JPEG file formats.



Description of the ECIS analyses

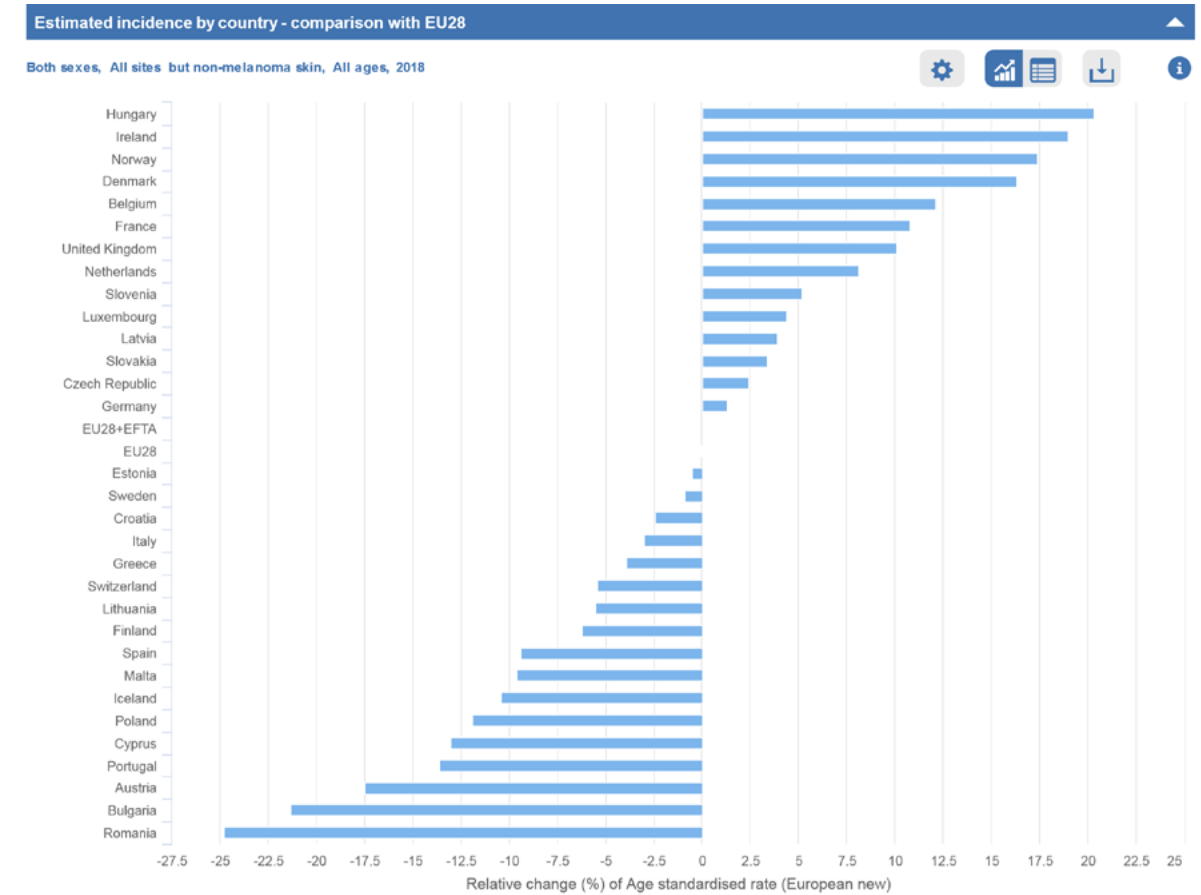
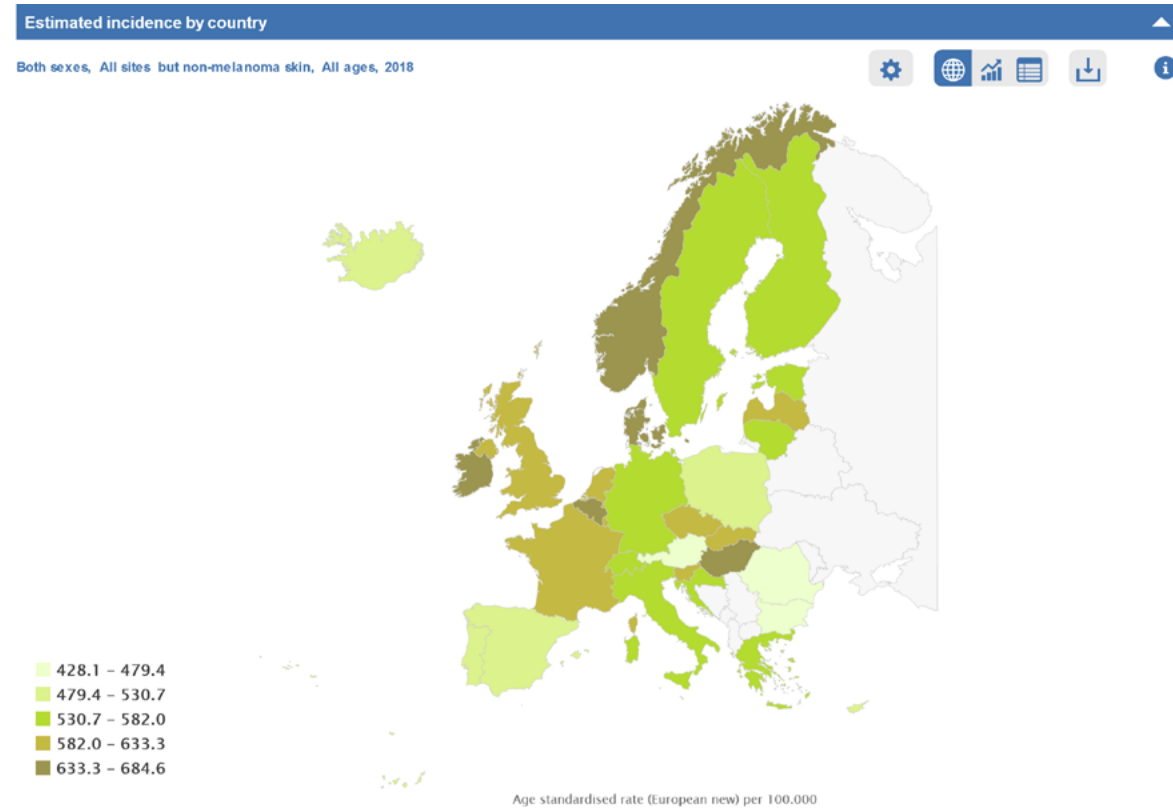
The following pages give a description of each ECIS analysis (Table 1), reporting on how to read it and detailing the specific settings available to the user.

Analyses		Incidence and mortality estimates 2018	Incidence and mortality historical data	Survival estimates
	Age-specific		p. 25	p. 40
	Time trends by age		p. 26	
	Time trends by period		p. 27	
	Time trends by cohort – year of diagnosis/ year of birth/age at diagnosis		pp. 28-30	
	By year – summary		p. 31	
	By age and follow-up interval			p. 41
	By follow-up interval – summary			p. 42
	Population pyramid		p. 32	
	Population by year		p. 33	
	By registry/ country	By registry/country	p. 18	p. 34
By country – comparison with EU28/EU28+EFTA/ Europe		p. 19		
By registry/country – summary		p. 20	p. 35	
By country and follow-up interval				p. 44
Population by registry			p. 36	
By cancer	By cancer	p. 21	p. 37	
	By cancer – percentage distribution	p. 22		
	By cancer – comparison with EU28/EU28+EFTA/ Europe	p. 23		
	By cancer – summary	p. 24	p. 38	
	Age-specific by cancer		p. 39	

Table 1. Analyses available in the ECIS data explorer

Incidence and mortality estimates - by country

Incidence and mortality estimates - by country



ANALYSIS DESCRIPTION

This type of map displays data on estimated incidence and/or mortality rates by country for the selected cancer site and sex. It shows quintiles of the incidence/mortality statistics, visualised as different shades of colour (as explained in the legend).

In this example the map shows the estimated age-standardised incidence of all sites (except non-melanoma skin cancers) in the countries belonging to the EU28 and EFTA, for both sexes together.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: incidence or mortality rates standardised with world standard population, old, or new European standard population.

The same data can also be visualised in bar-chart or table format.

ANALYSIS DESCRIPTION

For the selected cancer site and sex, this chart plots the relative change, by country and European region, of the estimated incidence or mortality rates as compared to the rates of the reference European area. Countries are ordered by decreasing value of the relative change (expressed in percentages and measured along the horizontal axis) for the selected statistic: those with higher rates being above the reference geographic area, those with lower rates being below the reference geographic area. In this example, the chart compares the estimated rates of all sites (except non-melanoma skin cancers) of EU28 + EFTA

countries with the corresponding rate of EU28, for both sexes together.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: incidence or mortality rates standardised with world standard population, old, or new European standard population.

The user can select the reference geographic area to be either the EU28, EU28 plus EFTA countries, or the whole Europe.

The same data can also be visualised in table format

Incidence and mortality estimates - by country

Country	Number of cases	Crude rate	ASR (European new)	ASR (European old)	ASR (world)
Austria	42318	483.5	489.6	329.6	235.1
Belgium	72088	626.9	638.0	451.0	322.5
Bulgaria	33778	480.0	447.6	325.7	234.8
Croatia	24147	579.8	555.6	392.5	280.5
Cyprus	4592	386.2	495.2	341.3	242.1
Czech Republic	61680	580.5	582.5	403.1	284.2
Denmark	38000	660.4	661.5	457.7	323.6
Estonia	7520	575.5	566.0	395.8	279.7
Finland	31333	565.3	533.9	363.7	256.2
France	412952	633.0	630.4	450.7	323.0
Germany	531470	645.8	576.3	401.4	285.6
Greece	64863	582.1	546.6	382.7	273.0
Hungary	66804	687.4	684.6	493.2	353.4
Iceland	1415	418.9	509.6	350.3	245.5
Ireland	25975	540.7	677.3	468.8	330.3
Italy	379558	640.2	552.1	387.0	277.0
Latvia	11888	616.0	591.0	418.2	297.4
Lithuania	15857	551.3	537.5	390.1	280.0
Luxembourg	2946	499.1	594.3	406.9	285.3
Malta	2213	512.2	514.2	347.3	242.7
Netherlands	104962	614.4	615.1	427.7	302.8
Norway	32142	600.4	668.1	458.2	322.6
Poland	181530	476.4	501.1	351.4	249.5
Portugal	55710	541.3	491.6	351.0	252.4
Romania	82061	419.1	428.1	307.8	219.4
Slovakia	28450	522.0	588.4	410.9	291.2
Slovenia	12971	623.2	598.8	419.2	296.8
Spain	249000	536.7	515.3	363.8	259.4
Sweden	55983	560.8	563.7	392.3	278.7
Switzerland	45525	532.8	538.5	375.0	266.6
United Kingdom	401507	603.1	626.3	423.2	296.4
EU28	3001956	589.0	569.0	398.0	283.0
EU28+EFTA	3081038	588.1	569.3	398.1	283.0

ANALYSIS DESCRIPTION

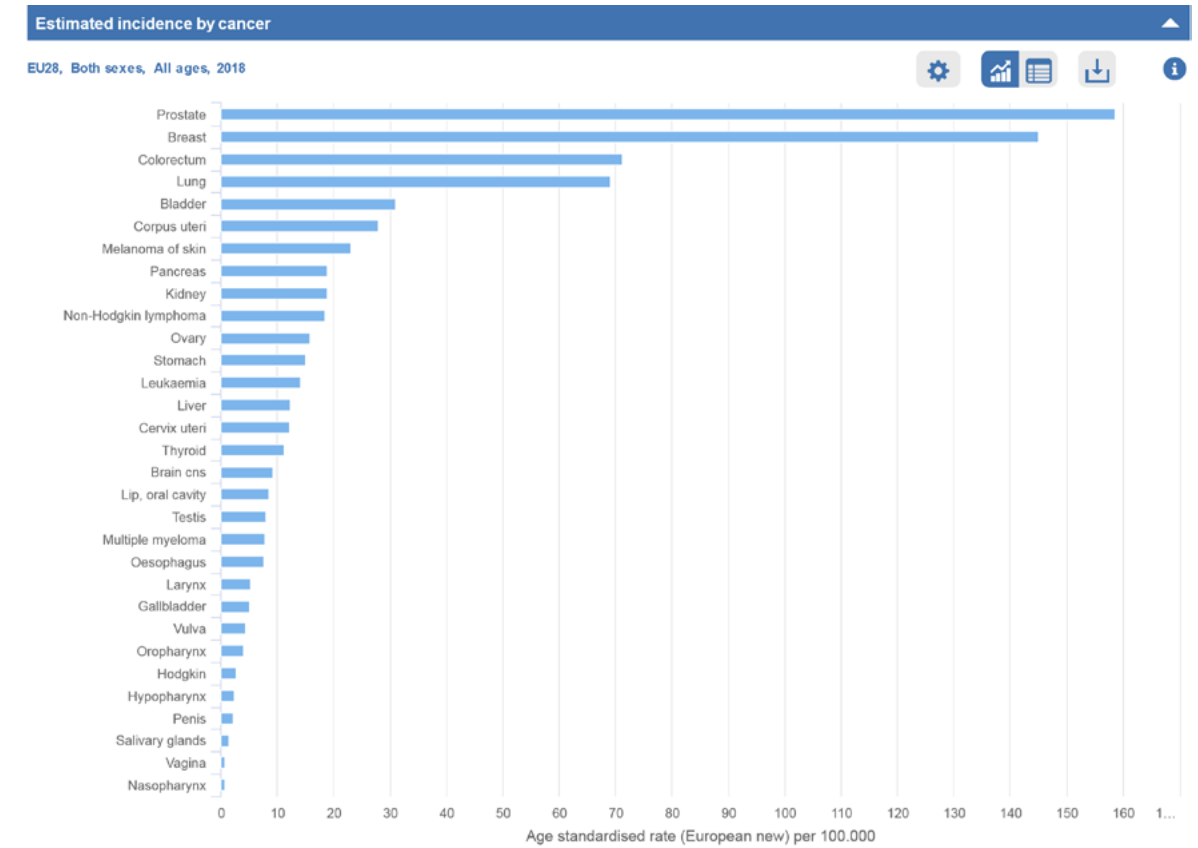
This table presents data on estimated cancer incidence or mortality by country and European region, for the selected cancer site and sex. The displayed statistics are the number of cases or deaths, crude rates, and age-standardised rates (ASR) with world standard population, old, or new European standard population.

In this example the table shows the estimated incidence statistics of all cancer sites (except non-melanoma skin cancers), by country, for both sexes together, for the EU28 and EFTA.

SPECIFIC OPTIONS

The user can select the list of countries to be included in the table by selecting the geographic area: EU28, EU28 + EFTA, or Europe. The table can be sorted according to each column field in ascending or descending order by clicking on corresponding arrows.

Incidence and mortality estimates - by cancer



ANALYSIS DESCRIPTION

This chart plots data on estimated incidence and/or mortality rates by cancer site for the selected country/region and sex. The cancer sites are ordered by decreasing value of the statistic displayed; if both incidence and mortality are selected, the sorting is done according to incidence. The cancer sites are listed along the vertical axis and the incidence/mortality rates (per 100,000) are measured along the horizontal axis.

In this example the chart shows the estimated age-standardised incidence rates (new European standard population) of EU28 by cancer, for both sexes together.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: incidence or mortality rates standardised with world standard population, old, or new European standard population.

This data can also be visualised in table format.

Incidence and mortality estimates - by cancer

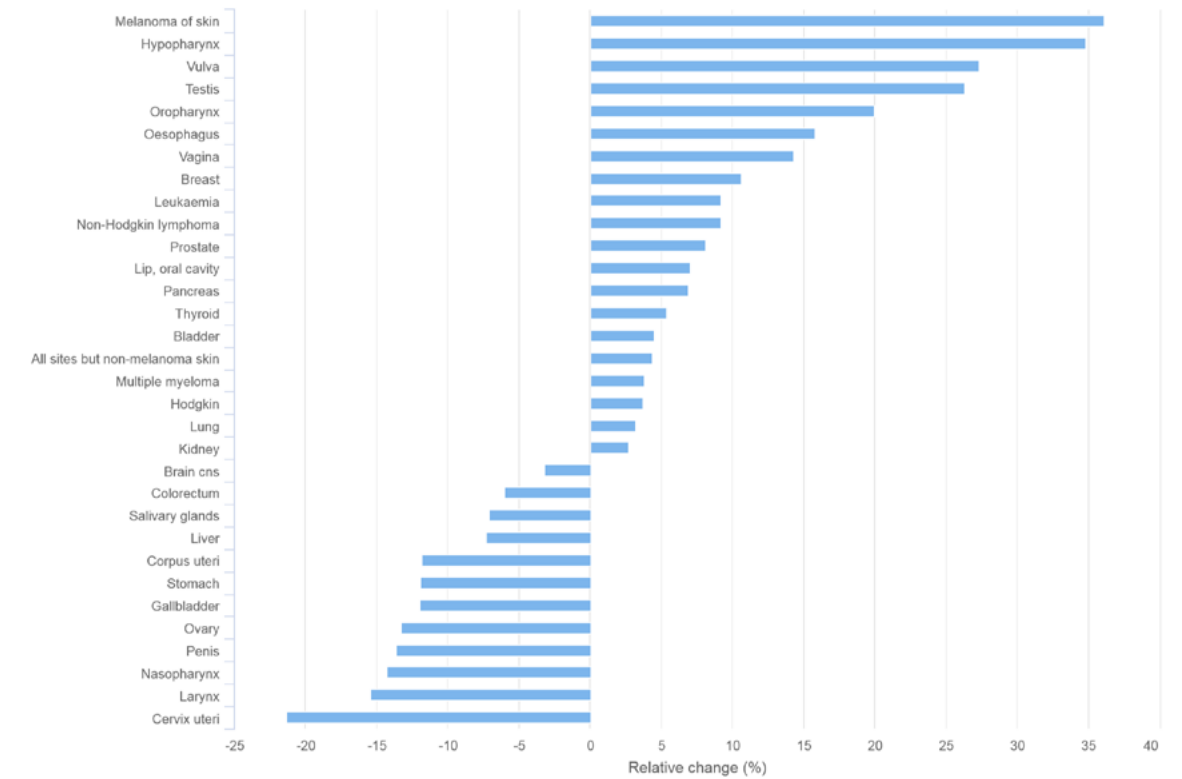
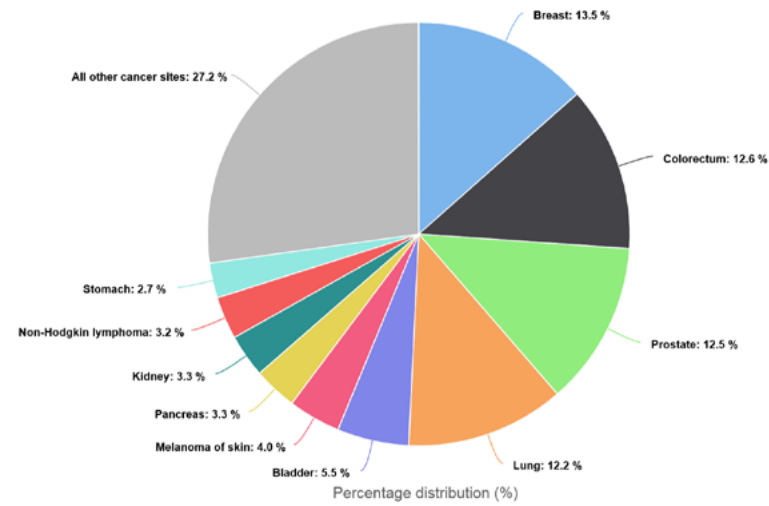
Incidence and mortality estimates - by cancer

Estimated incidence by cancer - percentage distribution

Estimated incidence by cancer - comparison with EU28

EU28, Both sexes, All ages, 2018

Western Europe, Both sexes, All ages, 2018



ANALYSIS DESCRIPTION

This chart reports the percentage distribution of cancers for the selected country/region and sex, in terms of the number of new cases (incidence) or deaths (mortality).

In this example the chart shows the estimated percentage frequency distribution of cancer sites in the EU28, for both sexes together.

SPECIFIC OPTIONS

This data can also be visualised in table format.

ANALYSIS DESCRIPTION

This chart plots the relative change of the estimated incidence or mortality rates for the selected country/region and sex, as compared to the rates of the reference European area, by cancer site. Cancer sites are ordered by decreasing value of the relative change (expressed in percentages and measured along the horizontal axis) for the selected statistic: those with rates higher than the corresponding ones of the reference geographic area have positive relative change, while those with rates lower than the reference geographic area have negative relative change.

In this example the chart compares the estimated rates for Western Europe with those of the EU28, for both sexes together.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: incidence or mortality rates standardised with world standard population, old, or new European standard population.

The user can select the reference geographic area choosing between EU28, EU28 plus EFTA countries, or Europe.

This data can also be visualised in table format.

Incidence and mortality estimates - by cancer

Estimated incidence by cancer - summary					
Western Europe, Both sexes, All ages, 2018					
Cancer site	Number of cases	Crude rate	ASR (European new)	ASR (European old)	ASR (world)
All sites but non-melanoma skin	1212725	624.9	593.8	417.6	297.9
Bladder	67299	34.7	32.4	20.0	13.2
Brain cns	18066	9.3	9.0	7.2	5.8
Breast	169640	172.4	160.2	125.5	92.6
Cervix uteri	9658	9.8	9.6	8.5	6.8
Colorectum	138820	71.5	67.0	42.8	28.8
Corpus uteri	26737	27.2	24.6	17.8	12.3
Gallbladder	9206	4.7	4.4	2.7	1.7
Hodgkin	5381	2.8	2.8	2.7	2.5
Hypopharynx	6249	3.2	3.1	2.3	1.7
Kidney	39563	20.4	19.3	13.6	9.7
Larynx	8923	4.6	4.4	3.2	2.3
Leukaemia	31651	16.3	15.4	10.9	8.5
Lip, oral cavity	18755	9.7	9.2	6.9	5.0
Liver	23659	12.2	11.5	7.7	5.3
Lung	145656	75.1	71.2	49.1	33.9
Melanoma of skin	62821	32.4	31.3	24.7	18.8
Multiple myeloma	16830	8.7	8.1	5.1	3.4
Nasopharynx	1196	0.6	0.6	0.5	0.4
Non-Hodgkin lymphoma	41281	21.3	20.2	14.0	10.1
Oesophagus	17980	9.3	8.8	6.0	4.2
Oropharynx	9820	5.1	4.8	3.8	2.8
Ovary	15052	15.3	13.7	9.8	7.0
Pancreas	41679	21.5	20.1	12.6	8.3
Penis	1795	1.9	1.9	1.2	0.8
Prostate	160684	167.9	171.4	111.9	75.8
Salivary glands	2555	1.3	1.3	0.9	0.7
Stomach	27596	14.2	13.3	8.6	5.8
Testis	9616	10.1	10.1	10.5	9.7
Thyroid	23208	12.0	11.8	10.5	8.5
Vagina	893	0.9	0.8	0.5	0.4
Vulva	6361	6.5	5.6	3.7	2.6

ANALYSIS DESCRIPTION

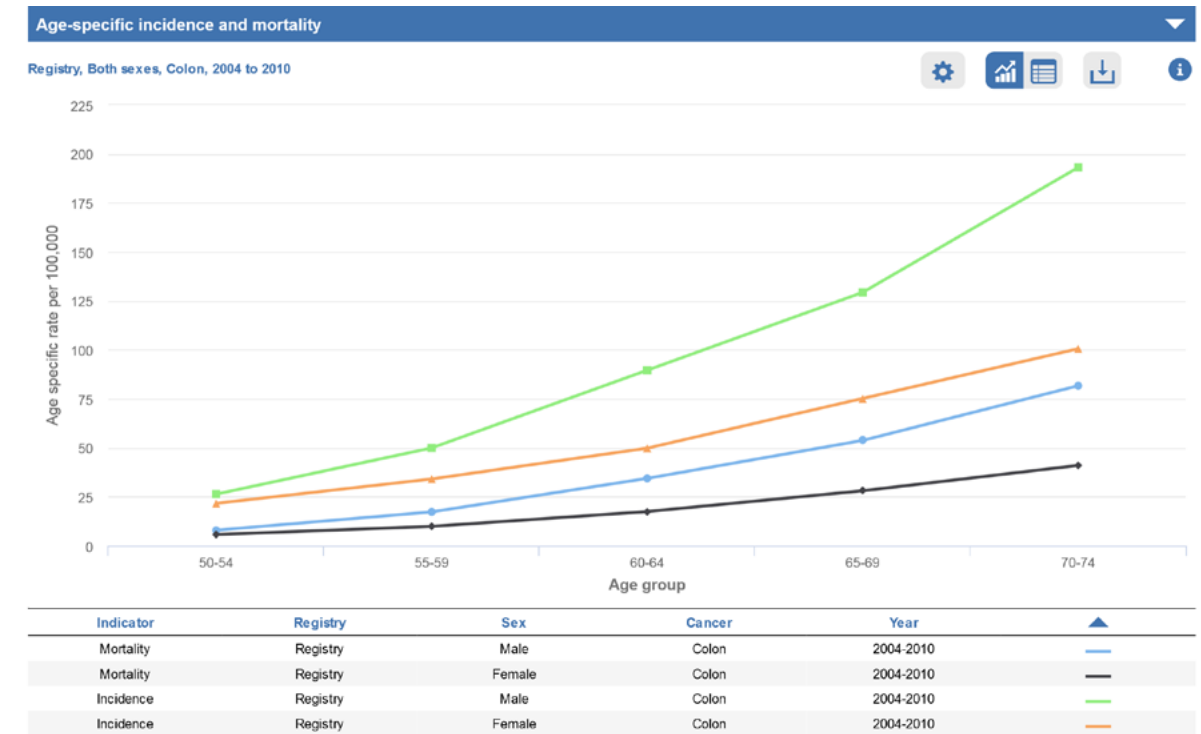
The table presents data on estimated cancer incidence or mortality by cancer site, for the selected country/region and sex. The displayed statistics are number of cases or deaths, crude rates, and age-adjusted rates (world standard population, old, or new European standard population).

In this example, the table shows incidence estimates in Western European countries by cancer site, for both sexes together and all ages.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Incidence and mortality historical data



ANALYSIS DESCRIPTION

The chart shows age-specific incidence and/or mortality rates observed in each age group, by registry, cancer sites (separately or grouped), year of diagnosis/death (separately or for a time interval), and sex (males and females separately or together). The incidence/mortality age-specific rates (expressed per 100,000) are measured along the vertical axis and the age groups appear on the horizontal axis.

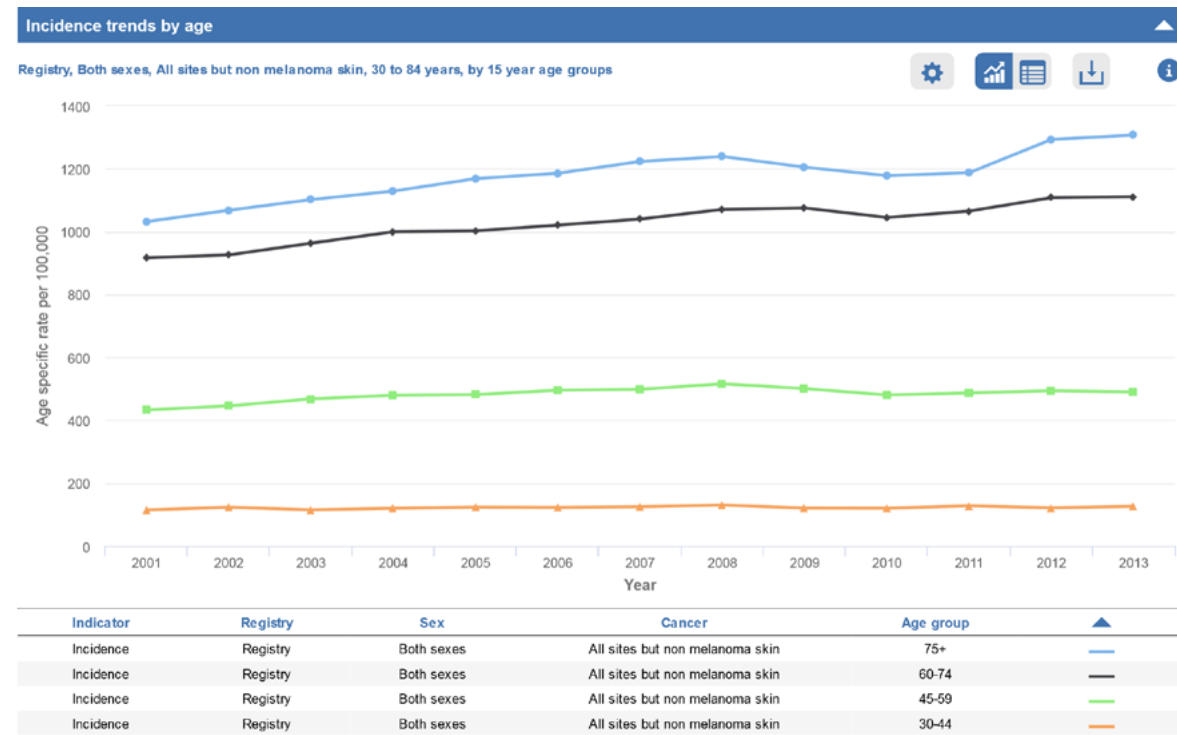
In this example, the incidence and mortality age-specific rates for colon cancer are shown separately for males and females in the period 2004-9, for age groups ranging from 50-54 to 70-74 years.

SPECIFIC OPTIONS

If more than one sex, cancer site, or year are selected, the user can visualise incidence and/or mortality rates grouping together the two sexes, cancer sites, or the years selected.

The age-specific rates can be displayed in the standard or in the logarithmic scale. This data can also be visualised in table format.

Incidence and mortality historical data



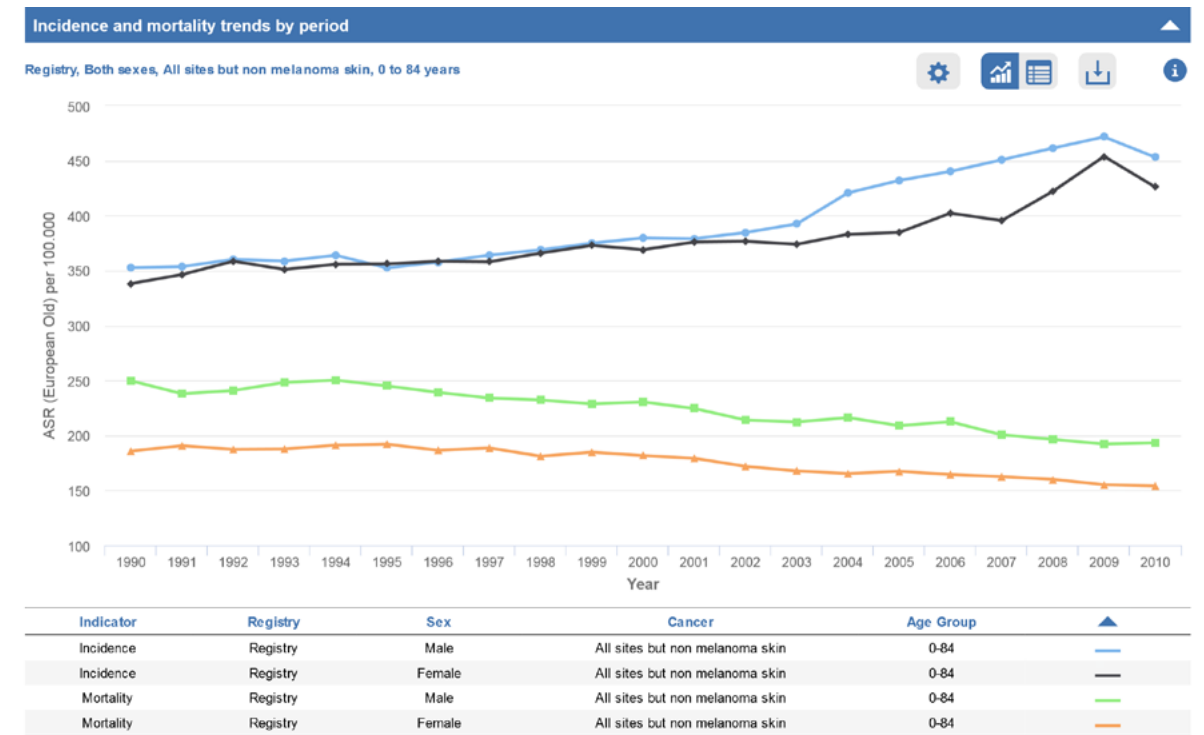
ANALYSIS DESCRIPTION

The chart shows the trends in age-specific incidence and/or mortality rates over a period of time, separately in each age group (and sex) for selected cancer site(s). The incidence/mortality age-specific rate (expressed per 100,000) is measured along the vertical axis and the year at diagnosis/death appears on the horizontal axis. The lines in the chart show the time patterns of age-specific rates by year of diagnosis/death. In this example, the age-specific incidence rates for all cancer sites (excluding non-melanoma skin cancers) for both sexes together are reported for the period 2001-13, separately for the age groups 30-44, 45-59, 60-74, and 75+ years.

SPECIFIC OPTIONS

If more than one sex or cancer site are selected, the user can visualise incidence and/or mortality rates grouping together the two sexes or cancer sites. The span of the age groups can be modified by choosing between 5, 10, 15, and 30 years. The age-specific rates can be displayed in the standard or in the logarithmic scale. This data can also be visualised in table format.

Incidence and mortality historical data



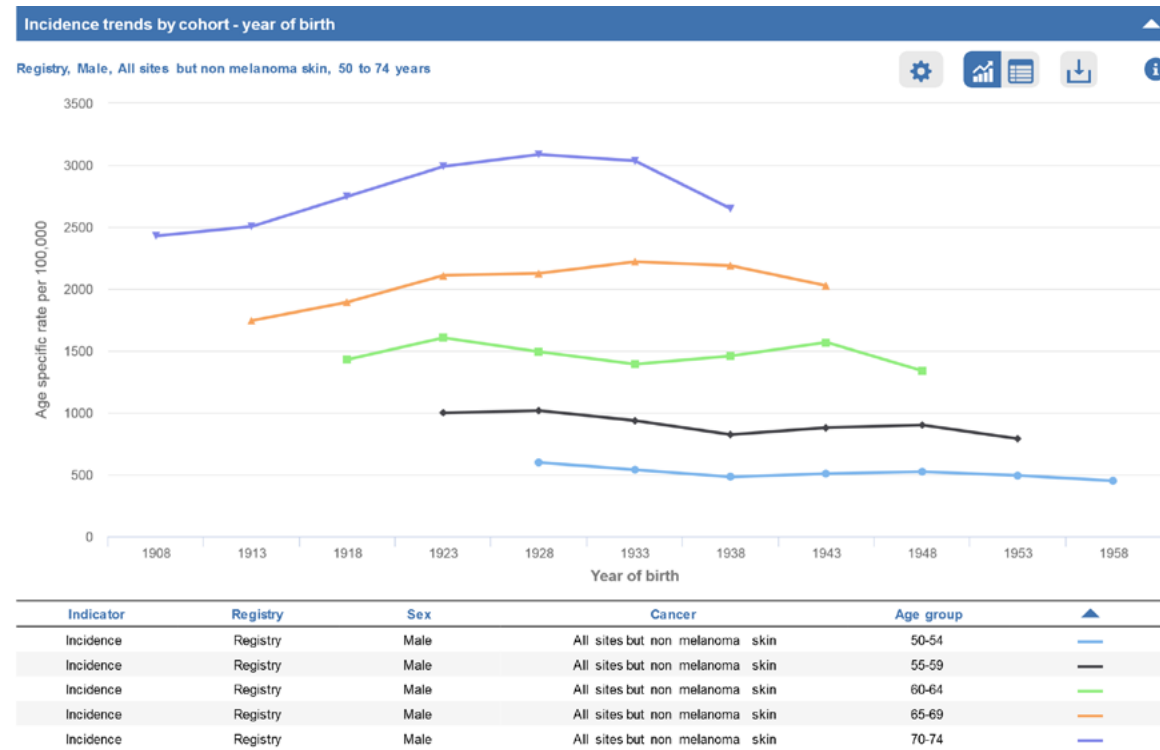
ANALYSIS DESCRIPTION

This chart reports incidence and/or mortality trends over the selected time period of diagnosis/death, by sex and cancer site. The incidence/mortality rates (expressed per 100,000) are measured along the vertical axis and the years at diagnosis/death appear on the horizontal axis. In the example above, age-standardised incidence and mortality rates (old European standard population) computed separately for men and women in the age interval 0-84 years are plotted for the period 1990-2014, for all sites (except non-melanoma skin cancers).

SPECIFIC OPTIONS

If more than one sex or cancer site are selected, the user can visualise incidence and/or mortality statistics grouping together the two sexes and cancer sites. The user can select the statistic to be visualised: number of new cases/deaths; crude or age-standardised rates (ASR), for world standard population, old, or new European standard population; or cumulative risks. The incidence and mortality statistics can be displayed in the standard or in the logarithmic scale. This data can also be visualised in table format.

Incidence and mortality historical data



ANALYSIS DESCRIPTION

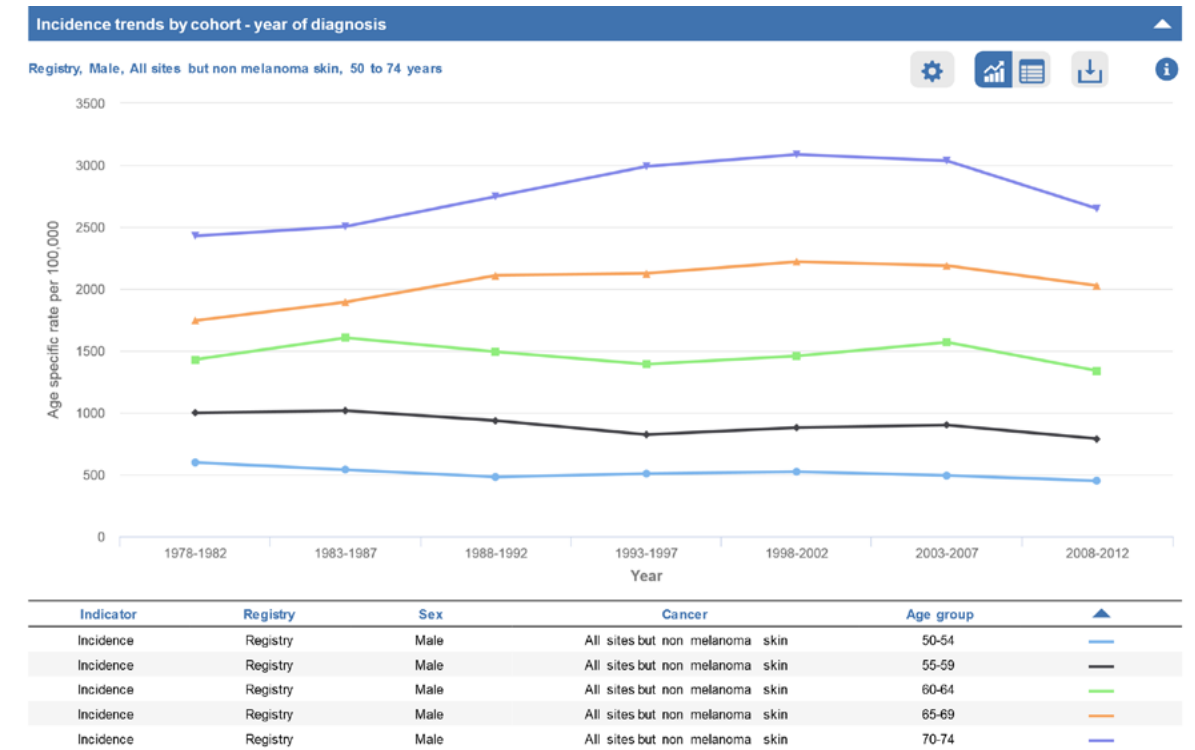
One approach to summarising time trends by cohort is to look at the patterns by year of birth. In this chart, age-specific rates stratified by age group at diagnosis/death are plotted against year of birth (cohorts in five-year intervals). The incidence/mortality age-specific rates (expressed per 100,000) are measured along the vertical axis and the years of birth appear on the horizontal axis.

In the example above, the five-year age-specific incidence rates (from 50-54 to 70-74 years of age at diagnosis) of all sites (excluding non-melanoma skin cancers) are plotted against the years of birth, ranging from 1908-12 to 1958-62, for men.

SPECIFIC OPTIONS

The user can toggle between the 'By cohort – year of birth', 'By cohort – year of diagnosis', and 'By cohort – age at diagnosis' views. The incidence and mortality age-specific rates can be displayed in the standard or in the logarithmic scale. This data can also be visualised in table format.

Incidence and mortality historical data



ANALYSIS DESCRIPTION

Another approach to summarising time trends by cohort is to look at the patterns according to the year when the disease was diagnosed or death occurred.

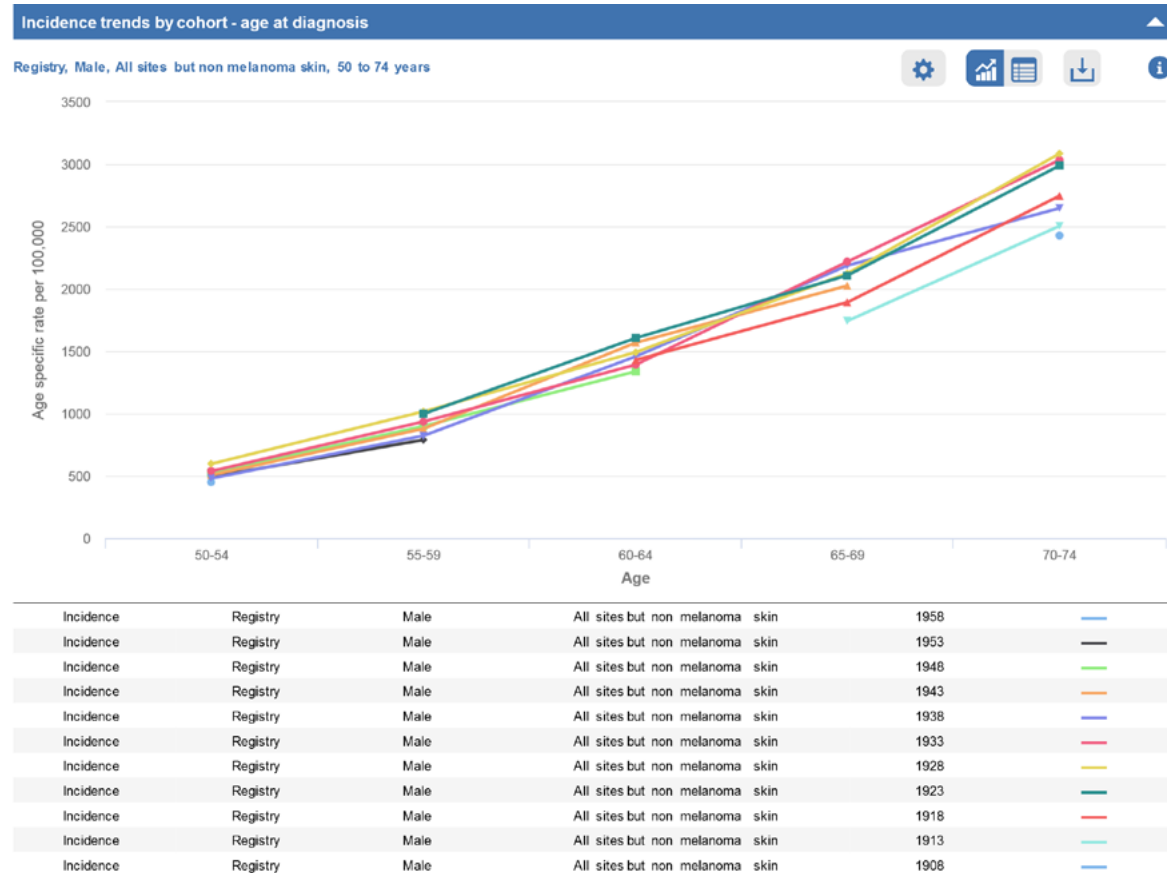
In this chart, age-specific rates stratified by age group at diagnosis or death (five-year groups) are plotted against time of diagnosis or death (five-year intervals). The incidence or mortality age-specific rates (expressed per 100,000) are measured along the vertical axis and the years at diagnosis/death appear on the horizontal axis.

In the example above, the age-specific rates (age at diagnosis in five-year intervals, from 50-54 to 70-74 years) for all cancer sites (excluding non-melanoma skin cancers) are plotted by five-year intervals of diagnosis, corresponding to intervals from 1978-82 to 2008-12, for men.

SPECIFIC OPTIONS

The user can toggle between the 'By cohort – year of diagnosis', 'By cohort – year of birth', and 'By cohort – age at diagnosis' views. The incidence and mortality age-specific rates can be displayed in the standard or in the logarithmic scale. This data can also be visualised in table format.

Incidence and mortality historical data



ANALYSIS DESCRIPTION

A third approach to summarising time trends by cohort is to look at the patterns by the age at diagnosis or death. In this type of chart, age-specific rates stratified by year of birth (cohorts in five-year intervals) are plotted against the age group of diagnosis or death (five-year groups). The incidence or mortality age-specific rates (expressed per 100,000) are measured along the vertical axis and age-groups at diagnosis/death appear on the horizontal axis. In the example above, the five-year age-specific rates are plotted by age at diagnosis (from 50-54 to 70-74 years), for the different cohorts of men born in the five-year intervals from 1908-12 to 1958-62.

SPECIFIC OPTIONS

The user can toggle between the 'By cohort - age at diagnosis', 'By cohort - year of birth', and 'By cohort - year of diagnosis' views. The incidence and mortality age-specific rates can be displayed in the standard or in the logarithmic scale. This data can also be visualised in table format.

Incidence and mortality historical data

Incidence by year - summary

Registry, Male, All sites but non melanoma skin, All ages

Years	Number	Crude rate	ASR (W)	ASR (E Old)	ASR (E New)	Cumulative Risk
2005	15201	404.77	238.45	335.21	472.74	36.08
2006	15331	410.78	241.27	338.97	477.19	36.24
2007	15844	427.03	247.6	349.58	495.72	37.5
2008	16357	443.22	256.18	361.37	511.07	38.34
2009	16227	442.12	254.17	358.36	508.47	38.15
2010	15738	431.82	245.28	346.74	494.05	37.49
2011	16590	463.69	251.9	356.23	508.95	38.67
2012	17398	489.27	262.12	372.25	537.68	40.1
2013	17448	493.58	261.58	371.36	536.6	40.43

ANALYSIS DESCRIPTION

The table presents data on cancer incidence or mortality by year, in the selected time period. Output statistics are: the number of new cases, crude and age-adjusted rates (world standard population, old, or new European standard population), and cumulative risk. In this example, the table reports incidence statistics for all cancers (excluding non-melanoma skin cancers) in the period 2005-13 for all ages.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Incidence and mortality historical data



ANALYSIS DESCRIPTION

This chart plots population data by sex and age group for the selected registry and year(s). If more than one year is selected, the mean population for the period is displayed. The age groups appear on the vertical axis, and the the number of residents (expressed in thousands) are measured along the horizontal axis.

In this example, the chart shows the mean population for years 2010-13 by sex and age group in the geographic area covered by the registry.

SPECIFIC OPTIONS

This data can also be visualised in table format.

Incidence and mortality historical data

Population by year
Registry, 2005 to 2013

Sex	Year	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74
Female	2005	162972	156063	196454	251477	262416	282587	276939	262518	263231	275343	284309	292787	239342	222823	2
Female	2006	165241	156200	184040	244522	260434	278329	280225	267444	257473	271651	281144	294177	246865	219184	2
Female	2007	168695	158182	172956	234488	258568	273653	284556	271097	252186	268776	279992	290695	255336	217294	2
Female	2008	172859	161487	162868	223004	256329	269089	286883	272097	251739	266147	277001	288043	262852	218407	2
Female	2009	177604	163244	157074	209765	253740	263966	284269	272488	255406	263412	273649	282833	272079	220485	2
Female	2010	180763	164392	155284	195277	249666	258725	278474	273539	259144	258912	269454	275793	280835	223919	1
Female	2011	167524	154777	152452	179199	234497	235614	254316	265313	251686	241726	258498	272845	288778	237444	2
Female	2012	168290	157502	152688	168352	226620	235741	247147	268508	255192	236227	254395	270430	284409	246334	1
Female	2013	167583	160717	154317	158749	216036	235814	241262	269143	256492	235633	250802	266313	280863	254182	2
Male	2005	172877	164683	207081	263804	277010	296646	286927	268534	263919	268704	267685	263534	202410	176270	1
Male	2006	175281	165080	193648	256891	274270	292392	290577	274416	258445	266208	264890	264260	208310	172322	1
Male	2007	178695	167205	182039	247033	271591	287771	295522	278957	253823	263927	264294	260512	215356	169837	1
Male	2008	183025	170832	171431	235263	269130	283478	298492	280598	253961	262086	261708	258203	221278	169950	1
Male	2009	187710	172949	165317	221204	266324	278811	297129	281240	258311	260175	258798	254082	228684	171279	1
Male	2010	190786	174280	163814	205693	261788	273975	292487	282568	263366	256103	256049	248465	236026	173445	1
Male	2011	177165	164294	161332	189842	248534	255187	273750	282401	266150	248465	255163	252273	245782	186240	1
Male	2012	177947	167057	161486	178574	240138	253779	266962	285447	270703	243855	252294	251394	242476	193281	1
Male	2013	176888	170393	163166	168513	229271	252994	261529	286261	272689	243855	250123	248578	240556	199098	1

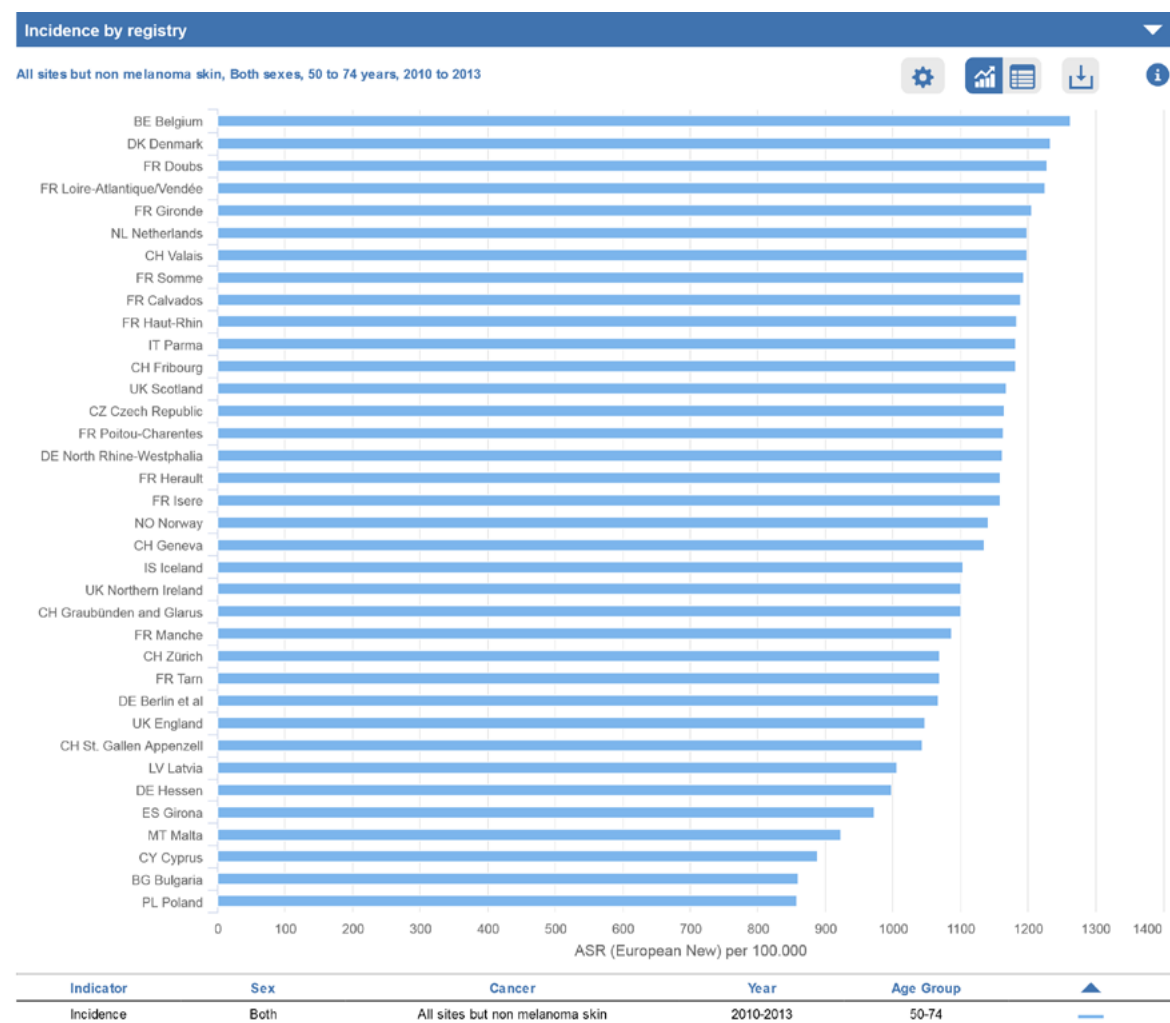
ANALYSIS DESCRIPTION

This table reports the population data by sex, year, and age group for the selected registry. In this example, the table shows the population by year (2005-13), sex, and age group in the geographic area covered by the registry.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Incidence and mortality historical data - by registry



ANALYSIS DESCRIPTION

This chart plots incidence and/or mortality statistics by registry for the selected cancer site, sex, age interval, and time period. Registries are ordered by decreasing value of the visualised statistic. If both incidence and mortality are selected, the sorting is done according to incidence. The registries are listed on the vertical axis and the incidence/mortality rates (expressed per 100,000) are measured along the horizontal axis. This example shows the age-standardised (European new standard population) incidence

rates of all cancer sites (excluding non-melanoma skin cancers) for registries providing data in the time period 2010-13, for both sexes together, for cases diagnosed at ages 50-74.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: number of new cases/deaths, crude or age-standardised rates (world standard population, old, or new European standard population), or cumulative risks. This data can also be visualised in table format.

Incidence and mortality historical data - by registry

Registry	Years	Number	Crude rate	ASR (W)	ASR (E Old)	ASR (E New)	Cumulative Risk
AT Austria	2010-2012	66557	916.85	874.36	870.04	932.4	21.67
BA Republic of Srpska	2010-2012	8584	624.46	600.32	600.36	642.62	15.48
BE Belgium	2010-2013	150150	1217.33	1183.45	1177.59	1263.22	28.19
BG Bulgaria	2010-2013	79877	857.48	815	811.7	860.24	20.05
BY Belarus	2010-2012	69680	882.22	891.46	887.71	942.34	21.76
CH Aargau	2013-2013	1759	937.66	914.16	910.64	992.52	23.11
CH Basel	2010-2011	2331	836.43	792.58	786.33	847.74	19.98
CH Central Switzerland	2011-2013	3956	943.69	918.7	913.75	990.38	22.99
CH Fribourg	2010-2013	3373	1119.03	1099.98	1095.79	1181.55	26.71
CH Geneva	2010-2013	5371	1096.06	1057.45	1052.58	1134.79	25.8
CH Graubünden and Glarus	2010-2013	3010	1061.83	1017.94	1011.36	1100.92	25.26
CH St. Gallen Appenzell	2010-2013	6271	1004.15	971.57	966.07	1043.94	24.03
CH Thurgau	2012-2013	1554	1037.35	1024.32	1019.87	1114.78	25.59
CH Ticino	2010-2012	3342	1071.41	996.08	990.22	1066.55	24.44
CH Valais	2010-2013	4364	1171.61	1121.71	1113.63	1198.24	27
CH Zug	2011-2013	919	917.94	896.94	891.27	966.16	22.5
CH Zürich	2010-2013	15673	1033.43	990	985.75	1069.43	24.6
CY Cyprus	2010-2013	7391	846.42	823.54	822	887.89	20.84
CZ Czech Republic	2010-2013	143928	1147.28	1078.6	1073.69	1164.43	26.46
DE Bavaria	2010-2012	118554	1038.36	971.23	966.84	1040.94	23.93
DE Berlin et al	2010-2013	158854	1075.27	996.89	992.81	1067.71	24.44
DE Bremen	2010-2012	7084	1148.7	1044.52	1041.14	1123.56	25.59
DE Hessen	2010-2013	74189	987.12	926.28	922.09	997.99	23.13
DE Lower Saxony	2010-2012	85567	1147.77	1062.07	1057.35	1138.42	25.85
DE North Rhine-Westphalia	2010-2013	252239	1146.18	1083.45	1078.58	1161.4	26.3
DE Rhineland-Palatinate	2010-2012	39539	1043.13	982.59	978.12	1050.82	24.09
DE Saarland	2010-2012	11392	1107.87	1049.37	1043.86	1119.87	25.44
DE Schleswig-Holstein	2010-2012	33622	1223.84	1115.27	1109.67	1196.21	26.99
DK Denmark	2010-2013	80725	1227.81	1141.77	1137.13	1232.23	27.75
EE Estonia	2010-2012	12735	1094.93	1037.59	1031.47	1113.82	25.41
ES Albacete	2010-2010	806	835.98	805.34	804.66	851.62	19.85
ES Asturias	2010-2010	3470	1058.76	1024.82	1021.13	1085.25	24.63
ES Balearic Islands	2010-2011	4495	1060.09	1039.51	1034.01	1108.63	25.21
ES Basque Country	2010-2012	22601	1189.02	1131.56	1127.4	1205.22	27.04
ES Canary Islands	2010-2011	8221	928.93	910.81	906.86	969.25	22.39
ES Castellón	2010-2012	4177	921.67	892.82	888.22	950.81	22.03

ANALYSIS DESCRIPTION

The table presents data on cancer incidence or mortality for the selected cancer site by registry. It includes the following statistics: number of new cases or deaths, crude and age-adjusted rates (world standard population, old, or new European standard population), and cumulative risk. This example shows the incidence statistics by cancer registry of all cancer sites (excluding non-melanoma skin cancers) in the time period 2010-13, for both sexes together, for cases diagnosed at ages 50-74.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Incidence and mortality historical data - by registry

Population by registry														
By registry, 2004 to 2010														
Registry	Sex	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
AT National	Female	193227	204355	229015	241026	257519	264322	278652	326119	348070	321321	274716	248673	236167
AT National	Male	203097	214870	240536	253681	263211	267952	277970	329020	357244	325980	270277	239344	219047
BA Republic of Srpska	Female	28118	33568	39900	38424	45924	49075	48591	46813	47521	53142	56521	56234	46271
BA Republic of Srpska	Male	28721	34096	40306	37914	43401	47492	49359	49386	49824	54579	55791	54578	41960
BE National	Female	290601	289408	302346	312143	320680	336225	348299	377862	399307	392899	363314	335734	282449
BE National	Male	304222	302115	316122	325457	324041	338463	354615	387655	409551	398591	365329	334211	271601
BG National	Female	169997	159582	177015	230484	258163	273250	280828	268118	258011	269035	279510	286832	256161
BG National	Male	180004	168696	186492	242520	271591	287560	292215	275558	259904	264072	263905	257780	216027
BY National	Female	237825	216155	230151	313869	379567	365426	341615	339661	347022	406963	399366	341342	248214
BY National	Male	251690	228335	243901	333043	398875	374330	337346	322967	322876	371851	345644	273950	183384
CH Basel	Female	9930	9623	10522	11694	14242	15854	15297	16089	18544	18413	16403	14993	14785
CH Basel	Male	10478	10352	11109	12010	13745	15625	15476	16082	18665	18796	16600	14516	13849
CH Central Switzerland	Female	11864	11547	13544	15018	15749	16226	16079	16876	19673	19789	17030	14431	13123
CH Fribourg	Female	7015	7543	8515	8872	8348	8334	9120	10436	11011	9869	8331	7590	6786
CH Fribourg	Male	7456	8027	8807	8817	8489	8284	8978	10362	11281	10431	8840	7933	6949
CH Geneva	Female	11597	11817	12137	12252	13517	16598	18236	18690	18894	16842	14743	13950	13090
CH Geneva	Male	12031	12397	12794	12802	13167	15737	17522	18043	18431	16592	14177	12769	11634
CH Graubünden and Glarus	Female	4873	5443	6287	7022	6763	6961	7567	8565	9151	8788	7787	7160	6540
CH Graubünden and Glarus	Male	5139	5908	6716	7324	6406	6596	7809	9088	9650	9203	8414	7635	6508
CH St. Gallen Appenzell	Female	12891	14335	16206	16927	16043	16876	17888	19910	21558	20257	17684	15887	14550
CH St. Gallen Appenzell	Male	13465	14919	17323	18426	16970	16909	18138	20373	22060	20758	18247	16604	14778
CH Ticino	Female	7000	7611	7951	8013	8296	9394	11246	13458	14245	12627	11078	10867	10868
CH Ticino	Male	7398	7950	8351	8359	8453	9058	10656	12858	14078	12586	11001	10488	9978
CH Valais	Female	6791	7443	8425	9030	9608	9369	9838	11154	12271	11371	9878	9475	8929
CH Valais	Male	7309	7845	8836	9438	9888	9767	9966	11204	12199	11589	10022	9306	8485
CH Zug	Female	2785	2791	2957	3131	2867	3328	4048	4690	4833	4201	3546	3266	2891
CH Zug	Male	2978	3082	3237	3405	2945	3049	3922	4992	5287	4683	3805	3392	3096
CH Zürich	Female	32128	30485	31263	32546	38193	45029	49121	53679	55017	49551	44083	41504	38221
CH Zürich	Male	33897	32411	33336	34416	39243	45261	49574	55681	57851	50869	43685	40274	36942
CY Cyprus	Female	21255	21968	26053	29594	31744	31705	30052	29400	28815	28199	24876	22838	19482
CY Cyprus	Male	22594	23124	27442	31360	32653	30600	26626	25490	26089	26898	24410	22324	18618
CZ National	Female	248835	223320	257227	312561	341970	400576	433585	365834	339472	333998	376995	394309	346272
CZ National	Male	262524	236076	271129	327954	361637	422499	455339	384838	354316	340915	370697	372183	307852

ANALYSIS DESCRIPTION

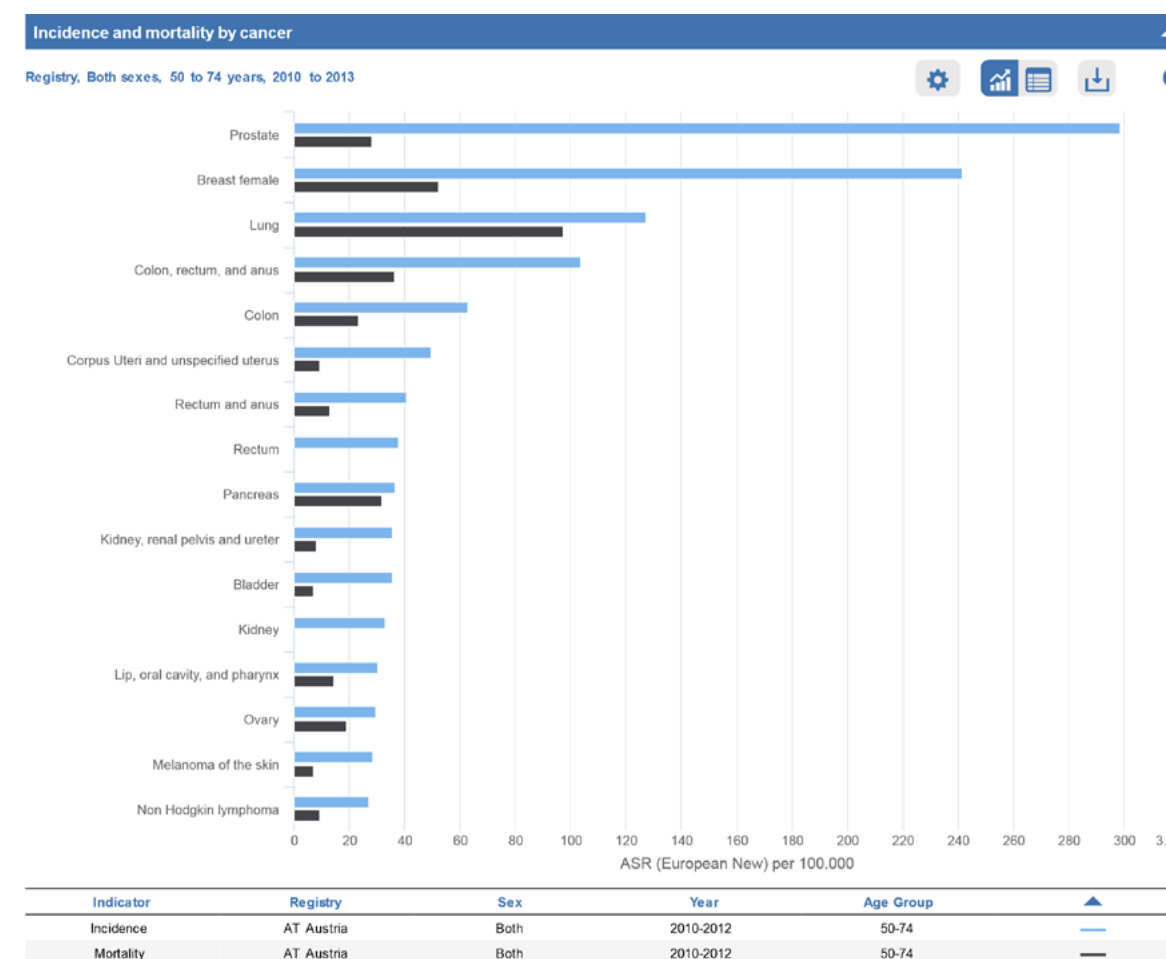
The table presents the population data by registry, sex, and age group. If more than one year is selected, the mean population for the period is displayed.

In this example, the table shows the population by registry, sex, and age group for the period 2004-10.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Incidence and mortality historical data - by cancer



ANALYSIS DESCRIPTION

This chart plots incidence and/or mortality statistics by cancer site for the selected registry, sex, age interval, and time period.

The cancer sites are ordered by decreasing value of the visualised statistic. If both incidence and mortality are selected, the sorting is done according to incidence. The cancer sites appear on the vertical axis and the incidence/mortality statistic are measured along the horizontal axis.

In this example, the incidence and mortality rates (expressed by 100,000) standardised using the old European standard population are shown, for both

sexes, for the period 2010-13, with age at diagnosis /death in the interval 50-74 years.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: number of new cases/deaths, crude or age-standardised rates (world standard population, old, or new European standard population), or cumulative risks.

This data can also be visualised in table format.

Incidence and mortality historical data - by cancer

Incidence by cancer - summary							
Registry, Both sexes, All ages, 2004 to 2010							
Cancer	Number	Crude rate	ASR (W)	ASR (E Old)	ASR (E New)	Cumulative Risk	ICD-10
Adrenal gland	26	0.47	0.45	0.46	0.46	0.04	C74
All sites but non melanoma skin	37019	625.04	298.84	421.63	611.65	44	C00-96/C44
Anus	107	1.81	0.86	1.23	1.75	0.17	C21
Bladder	1841	31.08	13.13	19.55	30.5	2.96	C67
Bones and joints	59	1.07	0.93	0.99	1.1	0.09	C40-41
Brain and other CNS	567	9.57	5.88	7.34	9.38	0.86	C70-72
Breast female	5160	169.21	90.24	121.97	155.21	12.64	C50
Cervix uteri	250	8.2	5.33	6.71	7.64	0.62	C53
Colon	3483	58.81	24.84	37.06	57.87	5.42	C18
Colon, rectum, and anus	4899	82.72	35.58	52.8	81.37	7.49	C18-21
Corpus Uteri and unspecified uterus	809	26.53	12.7	17.92	24.32	2.19	C54
Endocrine	31	0.52	0.56	0.54	0.53	0.05	C74-75
Eye and adnexa	52	0.94	0.69	0.74	0.92	0.1	C69
Gallbladder and biliary tract	494	8.34	3.2	4.97	8.27	0.77	C23-24
Hodgkin's lymphoma	220	3.71	3.8	3.79	3.79	0.33	C81
Kaposi Sarcoma	73	1.33	0.62	0.86	1.32	0.12	C46
Kidney	1189	20.08	9.84	13.74	19.64	1.87	C59
Kidney, renal pelvis and ureter	1349	22.78	10.88	15.34	22.28	2.14	C64-66
Larynx	406	6.86	3.25	4.65	6.67	0.65	C32
Leukaemia	892	15.06	8.79	10.91	14.82	1.4	C91-95
Lip	40	0.79	0.32	0.48	0.78	0.07	C00
Lip, oral cavity, and pharynx	745	12.58	6.71	9.24	12.32	1.07	C00-14
Liver and intrahepatic bile ducts	1031	17.41	7.54	11.06	17.08	1.66	C22
Lung	3945	66.61	27.82	41.88	65.25	6.34	C33-34
Lymphocytic Leukemia	359	6.06	4.23	4.77	6.02	0.57	C91
Melanoma of the skin	1082	18.27	10.84	14.15	17.59	1.54	C43
Mesothelioma	240	4.05	1.68	2.5	3.95	0.4	C45
Mouth	145	2.45	1.26	1.77	2.39	0.21	C03-06
Myeloid and Monocytic Leukemia	494	8.34	4.24	5.7	8.14	0.78	C92-C93
Myeloma	535	9.03	3.79	5.66	8.85	0.87	C90
Nasal cavity and sinuses	52	0.88	0.41	0.6	0.88	0.07	C30-31
Nasopharynx	51	1.01	0.67	0.85	0.98	0.07	C11
Non Hodgkin lymphoma	1396	23.57	12.43	16.65	23.02	2.15	C82-85,C96
Oesophagus	274	4.63	2.09	3.06	4.52	0.44	C15
Other endocrine glands	5	0.29	0.49	0.4	0.34	0.03	C75
Other female genital organs	154	5.05	1.61	2.52	4.3	0.44	C51;52;58;57.7-9
Other Leukemias	39	0.66	0.32	0.45	0.66	0.06	C94-95

ANALYSIS DESCRIPTION

The table presents data on cancer incidence or mortality for the selected registry by cancer site. It includes the following statistics: number of new cases or deaths, crude and age-adjusted rates (world standard population, old, or new European standard population), and cumulative risk. In this example, the table describes the incidence for both sexes together, for cases of all ages diagnosed in the period 2004-10.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Incidence and mortality historical data - by cancer

Age-specific incidence by cancer							
Registry, Both sexes, 50 to 74 years, 2004 to 2010							
Cancer	Number	50-54	55-59	60-64	65-69	70-74	ICD-10
All sites but non melanoma skin	20545	514.87	763.58	1175.77	1548.63	1967.98	C00-96/C44
Prostate	3438	65.88	211.05	403.95	654.75	841.47	C61
Colon, rectum, and anus	2794	62.66	100.67	157.53	207.43	288.05	C18-21
Breast female	2737	241.71	261.15	322.69	351.93	288.91	C50
Lung	2245	40.83	73.15	119.60	176.66	250.78	C33-34
Colon	1953	41.34	68.30	110.19	147.60	204.12	C18
Bladder	1043	17.46	36.19	63.40	76.93	112.13	C67
Rectum and anus	841	21.31	32.37	47.34	59.84	83.93	C19-21
Rectum	786	19.77	29.56	44.57	56.42	78.56	C19-20
Kidney, renal pelvis and ureter	763	20.54	26.76	47.82	52.71	74.19	C64-66
Non Hodgkin lymphoma	741	20.54	26.76	43.47	47.01	78.56	C82-85,C96
Stomach	736	10.53	17.84	41.25	62.69	85.94	C16
Kidney	686	19.52	24.47	42.36	46.44	66.47	39
Liver and intrahepatic bile ducts	572	10.53	16.82	31.56	42.17	68.15	C22
Pancreas	540	12.07	21.66	29.82	38.47	55.73	C25
Melanoma of the skin	533	26.96	24.98	30.45	27.64	41.29	C43
Corpus Uteri and unspecified uterus	528	35.83	46.67	64.11	77.07	60.82	C54
Lip, oral cavity, and pharynx	488	15.66	20.90	30.45	33.05	39.95	C00-14
Leukaemia	431	10.27	16.06	22.15	35.62	41.29	C91-95
Brain and other CNS	325	9.50	13.00	17.44	27.07	26.52	C70-72
Ovary	324	28.76	25.82	39.00	38.26	43.18	C56
Thyroid gland	298	16.69	18.86	16.89	15.39	14.77	C73
Myeloma	279	5.39	10.96	15.23	20.80	29.21	C90
Larynx	276	5.65	9.18	15.50	24.79	25.18	C32
Primary site unknown	262	5.91	8.16	13.29	19.95	29.88	C80
Gallbladder and biliary tract	238	3.85	9.68	9.97	21.94	24.17	C23-24
Myeloid and Monocytic Leukemia	235	6.42	7.39	12.46	19.09	23.16	C92-C93
Pharynx	195	6.93	9.94	12.73	11.97	13.76	C09-14
Lymphocytic Leukemia	179	3.08	7.65	9.14	15.67	16.45	C91
Other pharynx	169	5.39	8.67	10.24	11.40	12.42	C09-10, C12-14
Oesophagus	162	4.88	6.12	11.35	12.25	11.75	C15
Mesothelioma	147	2.05	3.57	7.75	12.82	17.46	C45
Tongue	128	3.34	5.10	9.97	8.26	10.07	C01-02
Mouth	101	3.34	4.33	5.81	8.26	7.05	C03-06
Cervix uteri	97	10.60	10.92	11.75	9.16	9.12	C53
Soft tissue	96	5.14	3.06	6.37	5.41	7.39	C47 C49
Small intestine	66	0.77	3.57	3.60	4.27	7.05	C17

ANALYSIS DESCRIPTION

The table presents data on cancer incidence or mortality by cancer site and age group for the selected registry, sex, age interval, and time period. It includes the following statistics: number of new cases or deaths, crude and age-adjusted rates (world standard population, old, or new European standard population), and cumulative risk. In this example, the table shows incidence statistics by cancer for both sexes, diagnosed in the period 2004-10, with age at diagnosis in the interval 50-74 years of age.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Survival estimates



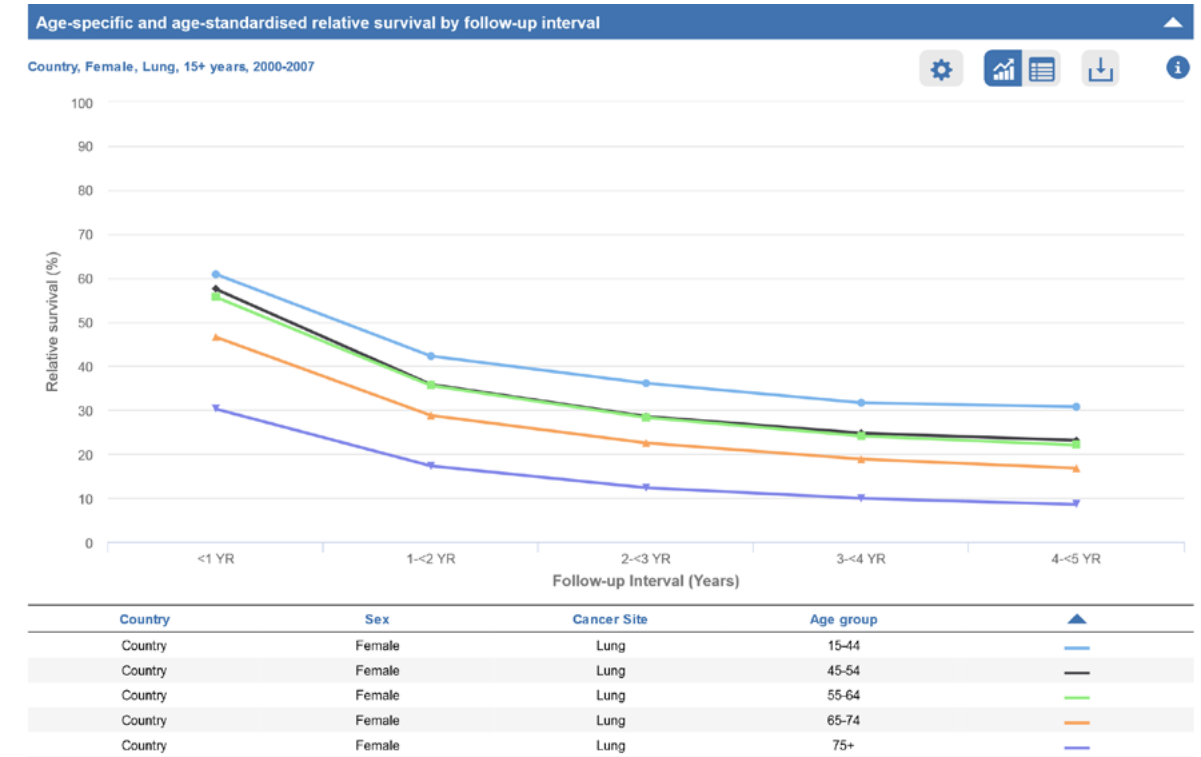
ANALYSIS DESCRIPTION

The chart shows the five-year observed or relative survival (%) for adult (aged 15 and over) patients diagnosed with the selected cancer in 2000-7 according to the age at diagnosis in the selected country. The 5-year observed or relative survival figures (expressed in percentage) are measured along the vertical axis and the age at diagnosis appears on the horizontal axis. Each line in the chart represents one country and one cancer site. This example shows the 5-year relative survival for breast cancer in two different European regions according to age at diagnosis.

SPECIFIC OPTIONS

If more than one sex is selected, the user can visualise survival for both sexes together. The user can select the statistic to be visualised choosing between observed and relative survival. This data can also be visualised in table format.

Survival estimates



ANALYSIS DESCRIPTION

The chart shows the age-specific and age-standardised observed and relative survival at different follow-up intervals for adult (aged 15 and over) patients diagnosed with the selected cancer in 2000-7 in the selected countries or European areas. European average figures are population-weighted averages of the country-specific relative survival estimates. The relative survival (expressed in percentage) is measured along the vertical axis the follow-up intervals appear on the horizontal axis. Each line in the chart represents a specific age group/cancer site/country. This example shows (for each age group) the relative survival of women diagnosed with lung cancer after one to five years after diagnosis.

SPECIFIC OPTIONS

If more than one sex is selected, the user can visualise survival grouping men and women together. The user can visualise the age-specific survival of an age group or the survival standardised by age using the International Cancer Survival Standards (ICSS). The user can select the statistic to be visualised choosing observed or relative survival. This data can also be visualised in table format.

Survival estimates

Age-specific and age-standardised observed (obs) and relative (rel) survival - summary

Country, Lung, 15+ years, 2000-2007

Female

Age group	Number of cases		One year	Three years	Five years
ICSS-Std	19432	obs	45.50	21.64	16.21
		rel	46.24	22.56	17.33
15+	19431	obs	42.18	19.32	14.06
		rel	43.36	20.66	15.64
15-44	553	obs	60.83	36.01	30.62
		rel	60.88	36.09	30.74
45-54	1735	obs	57.35	28.35	22.85
		rel	57.47	28.53	23.11
55-64	3514	obs	55.42	27.89	21.48
		rel	55.67	28.29	22.04
65-74	5890	obs	46.03	21.68	15.66
		rel	46.57	22.51	16.77
75+	7740	obs	28.51	10.41	6.37
		rel	30.24	12.33	8.53

ANALYSIS DESCRIPTION

The table shows the number of adult (aged 15 and over) patients diagnosed with the selected cancer in 2000-7 in the selected country and the observed and relative survival at one, three, and five years after diagnosis. The number of cases and the survival are expressed by age groups at diagnosis and for all adult ages together. The observed and relative survival estimates for all adults are age-standardised. Age standardisation is achieved with cancer-specific weightings obtained from the International Cancer Survival Standards (ICSS). This example shows the observed and relative survival of women diagnosed with lung cancer after one, three, and five years after diagnosis.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

Survival estimates - by country



ANALYSIS DESCRIPTION

The chart shows the relative survival at five years after diagnosis for adult (aged 15 and over) patients diagnosed with the selected cancer in 2000-7 by country. Each blue bar corresponds to the survival estimate of each European country, while orange and orange-bordered bars refer respectively to Europe as a whole and to five European areas (Northern Europe, UK and Ireland, Central Europe, Southern Europe and Eastern Europe). Relative survival for Europe is computed as the weighted average of country-specific survival estimates. All relative survival estimates refer to all adult ages and are age-standardised. Age standardisation is

made with the direct method using cancer-specific weightings obtained from the International Cancer Survival Standards (ICSS). The survival estimate of all sites, except non-melanoma skin cancers, is also cancer-site, case-mix standardised. This example shows age-standardised five-year relative survival of patients diagnosed with cancer in all sites by European regions and country.

SPECIFIC OPTIONS

The user can select the statistic to be visualised: age-standardised five-year observed or relative survival.

This data can also be visualised in table format.

Survival estimates - by country

Age-standardised relative survival by country and follow-up interval			
Both sexes, All Sites, 2000-2007			
Country	Number of cases	1-year relative survival	5-year relative survival
Austria	265141	75.87 (75.7 - 76.04)	60.1 (59.86 - 60.34)
Belgium	251308	78.9 (78.73 - 79.07)	60.44 (60.19 - 60.7)
Bulgaria	200823	58.17 (57.94 - 58.41)	38.72 (38.41 - 39.03)
CENTRAL EUROPE	1988384	75.98 (75.92 - 76.04)	58.04 (57.95 - 58.13)
Croatia	152142	62.05 (61.79 - 62.31)	46.23 (45.88 - 46.58)
Czech Republic	349482	68.31 (68.15 - 68.47)	50.66 (50.43 - 50.88)
Denmark	216679	69.84 (69.64 - 70.03)	50.92 (50.64 - 51.2)
EASTERN EUROPE	996116	64.08 (63.98 - 64.18)	45.03 (44.89 - 45.16)
Estonia	42182	65.89 (65.41 - 66.37)	45.99 (45.33 - 46.65)
EUROPEAN AVERAGE	7478936	72.53 (72.48 - 72.58)	54.15 (54.08 - 54.22)
Finland	179141	76.85 (76.65 - 77.05)	61.36 (61.07 - 61.66)
France	175163	77.75 (77.54 - 77.95)	58.62 (58.34 - 58.89)
Germany	644742	76.71 (76.6 - 76.82)	59.09 (58.92 - 59.25)
Iceland	9159	78.31 (77.43 - 79.2)	61.22 (59.91 - 62.55)
Ireland	118218	70.3 (70.03 - 70.56)	53.95 (53.57 - 54.32)
Italy	718677	74.87 (74.77 - 74.97)	56.77 (56.63 - 56.91)
Latvia	62103	60.92 (60.51 - 61.33)	41.69 (41.15 - 42.24)
Lithuania	90179	63.78 (63.45 - 64.12)	46.06 (45.63 - 46.51)
Malta	10162	70.04 (69.11 - 70.97)	52.93 (51.64 - 54.25)
Netherlands	572138	73.02 (72.9 - 73.14)	54.57 (54.4 - 54.74)
NORTHERN EUROPE	899932	76.66 (76.57 - 76.75)	59.65 (59.51 - 59.78)
Norway	165641	76.07 (75.86 - 76.28)	58.57 (58.26 - 58.88)
Poland	132555	61.74 (61.47 - 62.02)	40.59 (40.24 - 40.94)
Portugal	173200	73.95 (73.73 - 74.17)	56.39 (56.09 - 56.7)
Slovakia	118812	65.41 (65.11 - 65.7)	44.75 (44.37 - 45.14)
Slovenia	67248	67.73 (67.36 - 68.11)	47.79 (47.29 - 48.28)
SOUTHERN EUROPE	1263363	72.31 (72.23 - 72.39)	54.25 (54.15 - 54.36)
Spain	141934	71.48 (71.24 - 71.73)	52.82 (52.52 - 53.13)
Sweden	329312	81.13 (80.99 - 81.27)	64.75 (64.53 - 64.97)
Switzerland	79892	78.34 (78.04 - 78.64)	59.15 (58.71 - 59.59)
UK and Ireland	2331141	67.94 (67.88 - 68.01)	50.06 (49.98 - 50.14)
UK, England	1832375	68.14 (68.07 - 68.21)	50.2 (50.11 - 50.29)
UK, Northern Ireland	53354	67.46 (67.06 - 67.87)	51.01 (50.47 - 51.56)
UK, Scotland	206193	65.39 (65.18 - 65.6)	46.62 (46.35 - 46.9)
UK, Wales	121001	67.27 (67 - 67.54)	49.94 (49.58 - 50.29)

ANALYSIS DESCRIPTION

The table shows the number of adult patients (aged 15 and over) diagnosed with the selected cancer in 2000-7, and the age-standardised relative survival at one and five years after diagnosis by European country and area (Northern Europe, UK and Ireland, Central Europe, Southern Europe, Eastern Europe, and Europe as a whole). Relative survival for Europe is computed as the weighted average of country-specific survival estimates. The relative survival estimates refer to all adult ages and they are age-standardised. Age standardisation is

made with the direct method using cancer-specific weightings obtained from the International Cancer Survival Standards (ICSS). The survival estimates of all sites except non-melanoma skin cancers are also cancer-site, case-mix standardised.

SPECIFIC OPTIONS

The table can be sorted according to each column field in ascending or descending order by clicking on the corresponding arrows.

GLOSSARY

Adjustment A summarising procedure applied to a statistical measure in which the effects of differences in composition of the populations being compared have been minimised by statistical methods.

Age-specific rate An age-specific rate is the incidence or mortality rate for a specified age group, in which the numerator and denominator refer to the same age group; it is expressed as the number of new cancer cases or deaths per 100,000 population at risk. Five-year age categories are normally used (highest group 85+).

ASR (age-standardised rate) The ASR is a weighted mean of the age-specific rates where the weights are taken from the population distribution of a standard population; the ASR is expressed per 100,000. Comparison of rates referring to different time periods or different geographical areas is only possible after considering the differences in the age structure of the underlying populations. The age-standardisation allows the comparison of the rates that are arithmetically adjusted to have the same age structure of the standard population. The standard population used in the ECIS are the following old European Standard Population, new European Standard Population, and World Standard Population.

Crude rate The crude rate is the ratio of the number of new cases or deaths in a specified population and time period to the size of the population at risk during the same time period. Incidence and mortality rate are usually presented as an annual rate per 100,000 persons at risk.

Cumulative risk Cumulative incidence/mortality is the probability or risk of individuals getting/dying from the disease over a specified age-span. Cumulative risk is expressed as the number of cases/deaths per 1000 person-years that are expected to occur in a given population between the specified age limits (e.g. between birth and the age 84 years) if the cancer rates were as those observed in the specified time period in the absence of competing causes. Like the age-standardised rate, cumulative risk permits comparing between populations of different age structures.

Incidence Incidence is the number of new cases arising in a given period in a specified population. This information is collected routinely by cancer registries. It can be expressed as an absolute number of cases per year or as a rate per 100,000 persons per year (see age-specific rate and rate above). The rate provides an approximation of the average risk of developing a cancer in a population for the time period of reference.

Mortality Mortality is the number of deaths occurring in a given period in a specified population. It can be expressed as an absolute number of deaths per year or as a rate per 100,000 persons per year.

Population at risk The part of a population which is susceptible to develop a specific cancer. It is defined on the basis of demographic data, such as place of residence, sex, age group, etc. Years of risk duration are counted in person-years.

Relative change The relative change compares two age-standardised rates (ASR): the rate of the selected country with the rate of the selected reference (Europe or EU28). The formula is: $(ASR_{country} - ASR_{reference}) / ASR_{reference}$. For example, a relative change of +5% indicates that the country rate is 5% higher than the selected reference rate. Similarly, a relative change of -10% indicates that the country rate is 10% lower than the selected reference rate.

Relative survival The relative survival is a standard indicator for comparing cancer survival in population-based studies when the underlying cause of death is unknown. Relative survival is the ratio of the observed survival of patients to the expected survival in a comparable group in the general population for the same region, age, sex and calendar year. It can be interpreted as

the survival probability of cancer patients in the absence of other causes of death, which can vary widely between countries. In the EURO-CARE-5 study the expected survival was estimated by the Ederer II method from the lifetables of all causes mortality by age, sex, cancer registry and calendar year. Relative survival of patients diagnosed in 2000-2007 and followed up to 2008 was estimated using the classic cohort approach. Relative survival was standardised by age using the International Cancer Survival Standards (ICSS). The mean European relative survival was estimated by weighting country-specific relative survival by the country population.

Survival or Observed survival It is the probability to survive after a given time from diagnosis (1,3, or 5-year), regardless from the cause of death. Observed survival probability is influenced by mortality due to cancer and to other causes of death. In international comparisons of cancer survival the effect of causes other than cancer, which can vary widely by countries, is removed by using relative survival.

References:

Greenland, Sander, et al. A Dictionary of Epidemiology. Vol. 6, edited by Miquel Porta, Oxford University Press, 2014

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