

# Cancer Incidence in Belgium 2008

**10 years** in Flanders

**5 years** in Belgium, Brussels  
and Wallonia

## years

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Stichting Kankerregister - Fondation Registre du Cancer – Stiftung Krebsregister

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This publication is the final piece of our five year anniversary celebration and it is the result of a fruitful cooperation between numerous parties. This report contains the newest cancer incidence data for the year 2008. Data were handled in 2010 and published at the beginning of 2011. Reporting time is gradually decreasing and this favors a timely and relevant use of the cancer registration data.

The Cancer Registry is proud to present 5 year cancer incidence data for Belgium, the Flemish, the Walloon and the Brussels Capital Region. For the Flemish Region, data on 10 year cancer incidence are available and are compared to mortality data; trends are presented and shortly commented in this book. Even in a decade, these patterns are altering due to many and interacting causes such as early detection, screening programs, changing exposure to risk factors and advances in cancer care. Cancer trends indeed represent a subtle interplay between incidence, mortality and survival. In the coming months, survival data will become available for all types of cancer. This will provide us with more insights on the relation between cancer incidence and mortality in Belgium.

With the introduction of the National Cancer Plan in 2008 and the close collaboration between the different authorities responsible for public health, the role of the Belgian Cancer Registry has been growing continuously. From 2009 onwards, the collaboration with the pathologists was extended. A registration of all cyto-histological specimens taken for early diagnosis and screening for breast, colorectal and cervical cancer is being set up. These data will contribute to monitor and to evaluate screening initiatives. In the context of Biobanking, the Cancer Registry took a new step in the creation of an online catalogue of available tissues for research. The Cancer Registry is also involved in (prospective) registration projects and evaluation of quality of care. The global objective is to improve the quality and outcome of cancer treatment. Registration takes into account prognostic variables and allows individual feedback to all cancer centers on process and outcome indicators.

Cancer registration should never be a goal on itself. Joint venture research and the use of the cancer registry data by researchers or public authorities, show that the efforts invested by all authorities involved in public health have been successful. Let's continue this path to meet with international examples on population based cancer research.

We thank all the physicians, pathologists and data managers in the hospitals without whom we would never have been able to present these data. We really appreciate their sustained efforts.

We are very proud of our Cancer Registry staff. Our special thanks for this publication go to all our data managers who work so meticulously, day in day out, to compile the present information.

We are grateful for all our close collaborations and look forward to continue these efforts. You are cordially invited to visit our website ([www.kankerregister.be](http://www.kankerregister.be); [www.registreducancer.be](http://www.registreducancer.be)) that has been redesigned on the occasion of our fifth anniversary. We sincerely hope that these data will be useful in your daily professional activities related to health care.

*Brussels, March 2011*

*Liesbet Van Eycken*

*Director*



In 2008, a total number of 59,996 new cases of cancer (excluding non-melanoma skin cancer) were diagnosed in Belgium. In general, cancer occurs more frequently in males (32,508) than in females (27,488). About one in three males and one in four females will develop cancer before their 75<sup>th</sup> birthday.

Cancer chiefly affects older persons: approximately 64% of the females and 75% of the males are 60 years or older at the time of diagnosis. In 2008, a total number of 319 new cancer cases occurred in children (less than 1% of all cancers).

The most frequently occurring tumour in males is prostate cancer, followed by lung cancer and colorectal cancer. In females, the most frequently occurring tumours are breast cancer (more than one third of all cancers in females), colorectal cancer and lung cancer.

A total number of 26,647 patients died from cancer in 2008 in Belgium, 15,095 males and 11,552 females. The major cause of cancer death in males is lung cancer (about one third of all male cancer deaths) while breast cancer is the most frequent cause of cancer death in females.

Separate analyses were performed on the data from all three Belgian regions. In general, the results were largely comparable between the regions. However for some tumour types, differences were observed. E.g. a higher risk for head and neck cancer was observed in the south-west of Belgium; a higher incidence of lung cancer was mainly observed in females in the Walloon and Brussels Capital Region.

For the first time, incidence data for a 10 year period are available for the Flemish Region which makes it possible to report on trends in the incidence of cancer. In this publication, overviews of the evolution in incidence and mortality for the major tumour types are presented. Specific trends related to screening practices for breast cancer and prostate cancer are described. For lung cancer and some subtypes of head and neck cancer, a decrease in the sex ratio (M/F) over time was observed indicating that females are evolving towards the same risk as males in developing these tobacco-related cancers.

In addition to standard tables and graphs, a geographical representation of the Belgian cancer incidence is included for the more common malignancies. The methodology (mapping of smoothed incidence for the entire country, with exception of the largest cities where the age-standardised incidence is represented) was developed by the Finnish Cancer Registry.





# 1 CANCER REGISTRATION IN BELGIUM: METHODOLOGY

## 1.1 THE BELGIAN CANCER REGISTRY 2005-2010

New legislation initiatives since 2003 and the foundation of a new Belgian Cancer Registry in 2005 by all Belgian authorities involved in public health, forced a breakthrough in the Belgian cancer registration. The history of the Belgian Cancer Registry has been described in detail in the previous publication 'Cancer Incidence in Belgium, 2004-2005'.

Especially the Royal Decree on the oncological care programs in 2003 with the reimbursement of the multidisciplinary oncological consultations (MOC-CMO) and the creation of the specific law on the Cancer Registry in 2006 provided a firm legal basis for cancer registration in Belgium<sup>(1)(2)</sup>. This legislation makes cancer registration compulsory for the oncological care programs and the pathological anatomy laboratories. The law authorizes to the Belgian Cancer Registry the use of the national social security number (INSZ/NISS) as the unique identifier of the patient. The use of this unique number favors linkage with other available medical and/or administrative data. It must be clear that such a linkage not only requires the authorization of the Privacy Commission but also implies severe measures and rules for privacy protection and confidentiality.

### Financial contributors to the Belgian Cancer Registry

The involved authorities (*Table 1*) contribute financially to insure the continuity of cancer registration. The Belgian Cancer Registry also received financial support from the Foundation against Cancer (Stichting tegen Kanker – Fondation contre le Cancer) and the Flemish League against Cancer (Vlaamse Liga tegen Kanker).

**Table 1** Financial contributors to the Belgian Cancer Registry

FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu, Minister bevoegd voor Volksgezondheid  
SPF Santé publique, Sécurité de la Chaîne alimentaire, Ministre de la Santé

Vlaams Agentschap Zorg en Gezondheid, Afdeling Informatie en Ondersteuning, Vlaams Minister van Welzijn,  
Volksgezondheid en Gezin

Communauté Française, Ministre de l'enfance, de l'aide à la jeunesse et de la Santé

Gouvernement Wallon, Ministre de la Santé, de l'action sociale et de l'égalité des chances

Gemeenschappelijke gemeenschapscommissie van Brussel Hoofdstad  
Commission communautaire commune de Bruxelles-Capitale

RIZIV, Dienst Geneeskundige verzorging  
INAMI, Service des soins de santé

Minister der Deutschsprachigen Gemeinschaft für Beschäftigung, Ausbildung, Soziales und Tourismus

Stichting tegen Kanker  
Fondation contre le Cancer

Vlaamse Liga tegen Kanker

### Executive Board and the Scientific Advisory Board

The Belgian Cancer Registry reports to the Executive Board (Raad van Bestuur – Conseil d'Administration) and the Scientific Advisory Board (Raadgevend Comité – Comité Consultatif). The Executive Board was founded on July 1st 2005. Representatives of the ministers entitled to Health Policy and all the Health Insurance Companies take part. The Executive Board has financial responsibility and initiates all actions to insure that the Cancer Registry can obtain its objectives. The Scientific Advisory Board comprises representatives of all involved authorities, scientific medical societies involved in oncology, the College of Oncology, the Intermutualistic Agency, the Belgian Health Care Knowledge Centre, the Cancer Centre, the Privacy Commission and the RIZIV/INAMI.

The assignments of the Scientific Advisory Board are the supervision and evaluation of the qualitative and quantitative aspects of the cancer registration, to give advice about possible procedures to improve the registration and data analysis and the approval of reports made by the Cancer Registry. In the Belgian Law Gazette (Belgisch Staatsblad – Moniteur Belge) of 07/08/2008, the legal basis of the Scientific Advisory Board was created<sup>(6)</sup>.

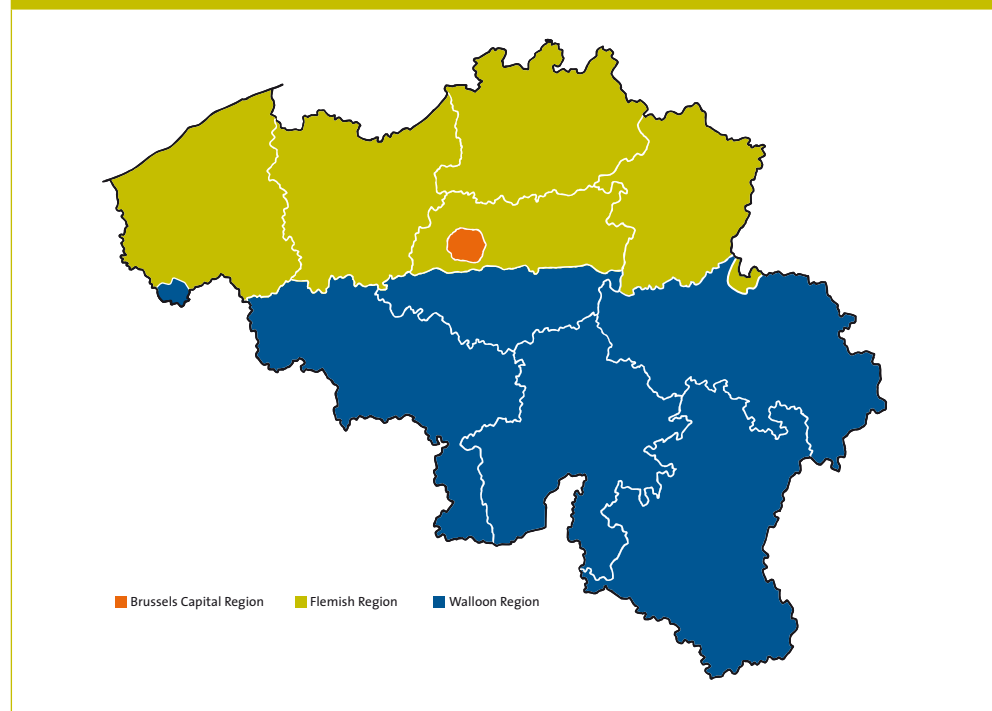
## 1.2 POPULATION AND REGION

Belgium (*Figure 1*) comprises an area of 30,528 square kilometers. On January 1st 2008, Belgium had a population of 10,666,866 including 5,224,309 males and 5,442,557 females. The population is divided over the Flemish Region (6,161,600), the Walloon Region (3,456,775) and the Brussels Capital Region (1,048,491).

Seventeen percent of the population is 65 years of age or older and 4.7% is 80 years of age or older. According to the Directorate-general Statistics and Economic Information<sup>(4)</sup>, the percentage of over 65-year-olds will continue to rise to 26% in 2060 (3,326,205 inhabitants). Life expectancy at birth is 83.5 years in females and 77.5 years in males. Due to an increasing life expectancy, the Directorate-general Statistics and Economic Information estimates an increase of the over 80-year-olds with about 1 million by 2060.

The population density is 456 inhabitants per square kilometer for the Flemish Region and 205 and 6,497 for the Walloon Region and the Brussels Capital Region respectively.

Figure 1 Belgium



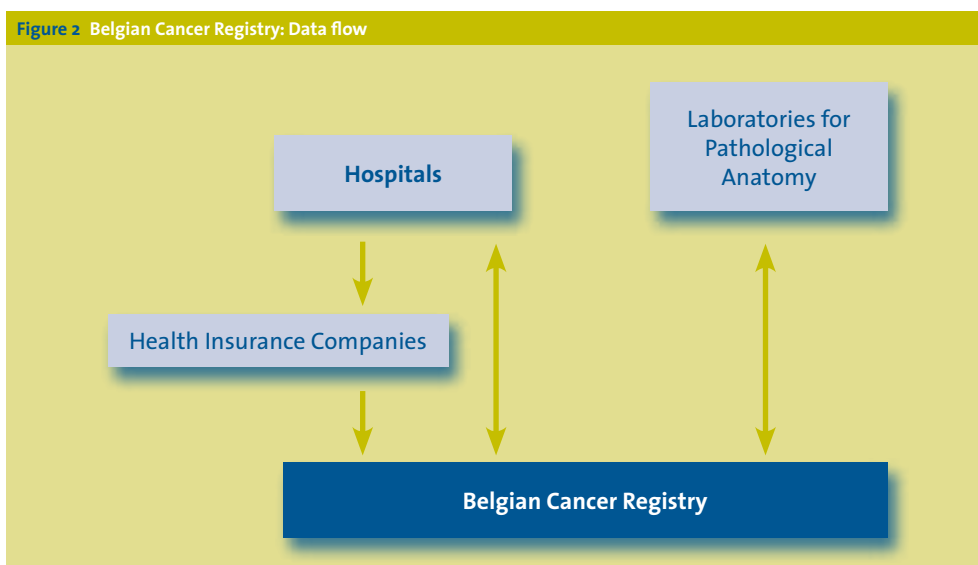
## 1.3 DATA COLLECTION

### 1.3.1 Notification and submission to the registry

This publication reports on the incidence data for the year 2008. Moreover, it presents an overview of 5 year cancer incidence data for Belgium, the Flemish, the Walloon and the Brussels Capital Region and an overview of 10 year cancer incidence for the Flemish Region.

The data on cancer incidence before the year 2004 concern only the Flemish Region. For this time period, the data collection in this region was performed by the Flemish Cancer Registry Network. A complete description of this data registration and data collection was reported in the publication of 'Cancer Incidence and Survival in Flanders, 2000-2001'<sup>(6)</sup>. As of the year of incidence 2004, data for all three Belgian regions are available. The data flow relied on all information (notifications) coming from the oncological care programs (clinical network) and from all pathological anatomy laboratories related to hospitals (pathology network).

Figure 2 Belgian Cancer Registry: Data flow



#### Clinical network

Hospitals have to register all new cancer diagnoses, irrespective of the fact the diagnosis is discussed during a multidisciplinary oncological consultation. Each tumour has to be recorded by means of a standard form including a confined set of variables (*Appendix 1*)<sup>(8)</sup>. To code tumour characteristics, this data set used the International Classification of Diseases for Oncology (ICD-O-2), 2<sup>nd</sup> edition<sup>(6)</sup>. Since the incidence year 2002, the ICD-O, 3<sup>rd</sup> edition has been in use<sup>(7)</sup>. The staging of the tumour has to be defined according to the TNM Classification of Malignant Tumours, fifth edition (until 2002)<sup>(29)</sup> and sixth edition (from 2003 on)<sup>(9)</sup>.

Registration by the hospitals only based on paper is strongly discouraged. Sending an electronic file with all data on a yearly basis, or direct registration via the online Web Based application for Cancer Registration (WBCR) is more straightforward. Moreover, with the start of the National Cancer Plan in March 2008<sup>(10)</sup>, the hospitals are refunded to employ a data manager as from July 1st 2008. To be refunded, data managers have to follow a training organised by the Belgian Cancer Registry.

Since the database of the Belgian Cancer Registry contains sensitive and confidential information, the online application of the Belgian Cancer Registry has to work under strict safety conditions. Therefore, the Belgian Cancer Registry collaborates since September 2007 with the eHealth service platform<sup>(11)</sup> for the user authentication and the user management procedures. The identification of the users preferentially occurs by electronic identity card although token is also possible. Moreover, to verify the type of user (physician/specialist) the eHealth platform uses information of authentic sources like for example the official list of Belgian specialists. The official of the hospital authorises access to medical doctors and administrative collaborators to the online application and also determines the access rights (profile management). The Belgian Cancer Registry manages the database and the application.

### Pathology network

The pathological anatomy laboratories encode the received specimens following classification rules approved by the Consilium Pathologicum Belgicum. In Flanders most of the laboratories follow the Codap-2007 classification. Various coding systems are used in the Walloon and Brussels Capital Region. Every (pre-)malignant diagnosis is encoded and yearly transferred to the Belgian Cancer Registry, accompanied by the protocols as foreseen by law. After quality control, the specimen classification is converted to a tumour registration in ICD-O-3 at the registry.

### 1.3.2 Quality control and data linkage

Every tumour record is subjected to an automated quality control in which the format and the contents of each field are checked. In addition, the contents of the fields are checked for inconsistencies against the other fields. Relationships are checked between topography and gender, topography and histology and age and tumour characteristics. These checking procedures were based on the IARC guidelines<sup>(12)</sup>. Also a number of manual interventions is carried out e.g. all liver tumours are manually checked.

Subsequently, the individual tumour records from clinical sources and pathological anatomy laboratories are linked by means of the unique patient identifier. If these tumour records contain data on the same tumour, the data from the various sources are combined to form one definitive tumour record (merging process). At this stage it is determined whether or not this concerns a second (third, etc.) primary tumour. The linkage of the data is largely an automated process, but in less than 20% of the data links, manual intervention is necessary. In the more complex cases, the data source is consulted to provide additional information.

As mentioned earlier and according to article 39 of the Health Law 2006, the Belgian Cancer Registry has the authorisation to use the national social security number as a unique patient identifier. To protect the privacy of the patients, strict rules are applied. Before 2006, identification characteristics of the patient (date of birth, name and gender) were encrypted irreversibly at the source into a unique code (hash code) before the information was transferred to the Cancer Registry. Writing errors in the name or date of birth caused serious linkage errors<sup>(13)</sup>. These errors could only be detected and corrected by means of a labour-intensive correction procedure. Such linkage errors will gradually disappear by replacing the hash code by the national social security number.

### 1.3.3 Exclusion criteria and multiple tumours

All invasive and in situ malignancies were registered, except for basal cell carcinoma of the skin. Also the borderline malignant tumours of the ovary, the non-invasive and borderline malignant tumours of the bladder, borderline malignant and benign tumours of the central nervous system, pituitary gland and craniopharyngeal duct were registered.

In this report on cancer incidence, only the invasive malignancies are described, unless explicitly stated otherwise in the tables or figures. Squamous cell carcinoma of the skin was registered, but often omitted from the general analysis of the incidence of cancer in a population. For the calculation of the incidence rates of multiple tumours in the same patient, this publication used the IACR/IARC rules<sup>(12)</sup> except for tumours of the colon, skin, bone or soft tissues. The Belgian Cancer Registry considered these tumours at the sublocalisation or 4-character ICD-O-3 topography code to be one tumour.

Chronic myeloproliferative diseases and myelodysplastic syndromes are registered as from 2004 on, as they became part of the malignant diseases<sup>(14)</sup>, they are reported in the booklet.

## 1.4 USE OF CANCER MORTALITY DATA

Cancer mortality data are very useful in cancer epidemiology. They complete the information provided by a cancer registry. Although cancer mortality trends reflect a complex interaction between incidence, changes in treatment and/or diagnostic procedures (survival), they were often used in the past as a proxy for trends in incidence<sup>(15)</sup>.

It is important to combine both the cancer mortality and the cancer incidence data for the analysis and interpretation of trends. Mortality data are usually routinely available as they represent a basic indicator in public health.

Cancer mortality data are often used and referred to in this book. In Belgium, mortality statistics are collected and treated by the Communities and the Brussels Capital Region<sup>(16)(17)(18)</sup>. Next, the data from the three regions are merged and published by the General Direction of Statistic and Economic Information of the Federal Government<sup>(19)</sup>.

Mortality statistics for Belgium and the three regions are published until 1997<sup>(20)</sup>. They are also at one's disposal for the three Belgian regions for 1998 and 1999<sup>(19)</sup>. From 2000 to 2008, mortality data are published for the Flemish and the Brussels Capital Region. Mortality data in the Walloon Region are available for the years 2004, 2005 and 2008. The Cancer Registry calculated the Belgian cancer mortality for 2004, 2005 and 2008 by merging the regional data.

Care must be taken in the interpretation of the regional mortality statistics, because of an underregistration, when compared with the data published by the Directorate-general Statistics and Economic information. This underregistration occurs due to the fact that each region collects information on all deaths occurring within its borders but information on inhabitants from one region who die in another are not available in the respective regional statistics<sup>(16)(17)(18)</sup>. These deaths are added only in the last phase to the final Belgian mortality statistics at national level by the Directorate-general Statistics and Economic information<sup>(19)</sup>.

To quantify this underregistration in mortality statistics, data for Walloon residents who died in the Brussels Capital and Flemish Region in 2008 have been recovered. This resulted in 392 missing cases (all cancers combined) on a total of 8,765 cancer deaths (4.5%) in the Walloon Region.

**Table 2** Availability of cancer incidence and mortality data by region between 1999 and 2008

Incidence	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						X	X	X	X	X
Flemish Region	X	X	X	X	X	X	X	X	X	X
Brussels Capital Region						X	X	X	X	X
Walloon Region						X	X	X	X	X
Mortality	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						X*	X*			X*
Flemish Region	X	X	X	X	X	X	X	X	X	X
Brussels Capital Region	X	X	X	X	X	X	X	X	X	X
Walloon Region	X					X	X			X

Status on the 1<sup>st</sup> of Januari 2011

\* Belgian cancer mortality data compiled by the Belgian Cancer Registry

## 1.5 QUALITY OF INCIDENCE DATA

This chapter discusses the quality of the cancer registry data, which depends on different aspects<sup>(12)(21)</sup>. Only invasive tumours are taken into account. Non-melanoma skin cancers are excluded.

### Completeness of the cancer registry (degree of coverage)

Completeness is the extent to which all incident cancers in the Belgian population are included in the cancer registry. Incidence rates will be close to their true value if maximum completeness in case-finding procedures can be achieved.

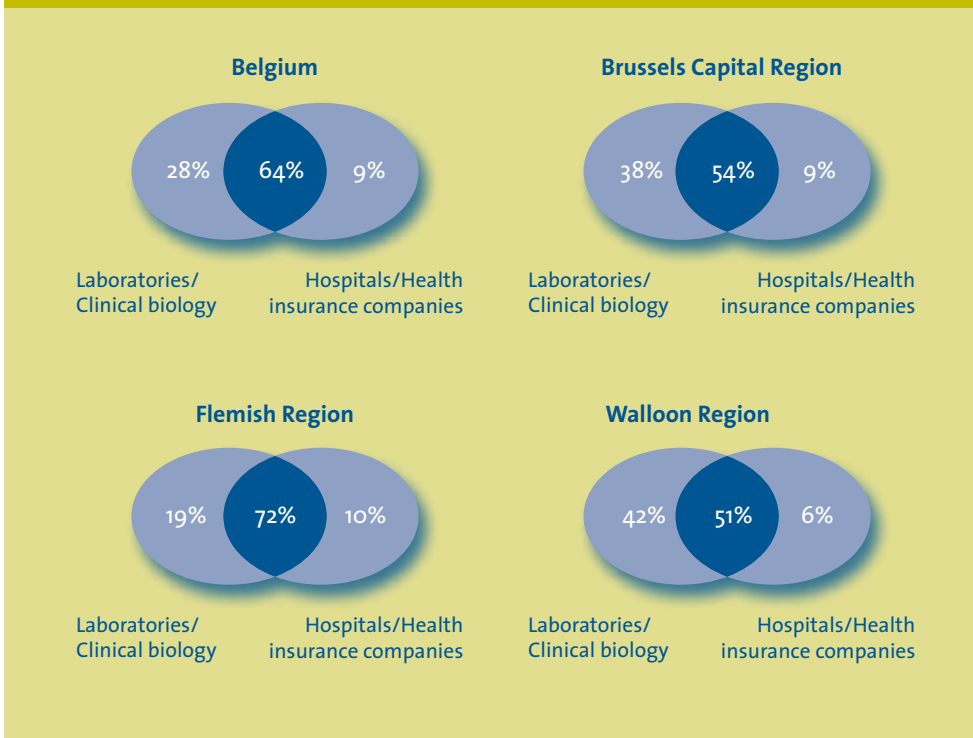
#### Number of notifications/data sources

The number of notifications and data sources per tumour is a raw indicator of completeness, the higher the average, the more complete the registration process. The reasoning behind this is that very few cases will be missed when multiple sources are used. Linkage of data from different sources and source types leads to information that is more complete, precise and reliable.

In 2008, the Belgian Cancer Registry has recorded 59,996 invasive tumours (non-melanoma skin cancer excluded), originating from 120,118 notifications (on average 2 notifications per tumour, range: 1-9). The average number of notifications is higher in the Flemish and the Walloon Region (2.05, range: 1-8 and 1.96, range: 1-9 respectively) than in the Brussels Capital Region (1.81, range: 1-7).

When considering two main groups of source types, pathological anatomy laboratories/clinical biology versus hospitals/health insurance companies, 64% of tumours were notified by both groups (Belgium 2008), rising to 72% of tumours in the Flemish Region for the same period (Figure 3).

Figure 3 Combination of source types by region, 2008



### Mortality incidence ratios

Mortality incidence ratios (M/I ratios) reflect the relationship between the number of deaths (which must come from an independent source) and the number of new cancer cases, both from a specific type of cancer and from the same period. These cancer cases and deaths do not necessarily refer to the same cases, but rather to the same diagnosis. When the figures on the causes of death and the cancer incidence are accurate and the assumption of a steady state of incidence and mortality is fulfilled, the M/I ratio gives an indication of global survival. For instance, the M/I ratio of 0.25 for breast cancer in women in the Flemish Region can be interpreted as a global survival of 75% (*appendix 2*). In other words, one in four women with breast cancer will die from the disease.

M/I ratios of close to 1 are typically found in cancer types that are fatal in the short-term, such as lung, liver, oesophageal and pancreas carcinoma. Other types of cancer such as breast, colon, skin, uterine cervix and testis with a better prognosis, have an M/I ratio of less than 1. M/I ratios of greater than 1 reflect under-recording of new cancer cases and/or inaccurate mortality statistics. In case of liver cancer, it might be assumed that mortality statistics include cases of liver metastases that are reported in the cancer registration with another primary site, resulting in a higher M/I ratio. In case of pancreatic cancer (all regions), an under-registration of new cancer cases can be assumed.

### Independent data set method: PROCARE

Another technique to check the completeness of cancer registration is the independent data set method. This method assumes the availability of a data source that is not used by the cancer registry itself, but does permit comparison with the (completeness of the) cancer registry data.

In the national multidisciplinary project on cancer of the rectum (PROCARE) several medical and surgical disciplines have been registering information about rectum cancers on a voluntary basis since 2005<sup>(22)(23)(24)</sup>. To check the completeness of the Cancer Registry, an evaluation was made on the extent to which 2,599 PROCARE



cases, registered in 70 Belgian hospitals between 2005 and 2008, were present in the Cancer Registry data for the same period. A total of 2,589 cases (99.6%) were found in the Cancer Registry database.

Among the 10 patients which could not be traced, five had a foreign nationality. One patient was diagnosed in December 2008 according to the PROCARE database and consequently might be reported to the Cancer Registry database with the data for the year of incidence 2009 (not yet available).

### Validity

Validity or accuracy is the proportion of cases in a dataset with a given characteristic (e.g. cancer site, TNM stage, age at diagnosis) which truly have the attribute.

The validity of the data in the cancer registry depends strongly on the quality offered by the sources.

When discrepancies occurred, reapplication was made for the information at the original data source by means of direct questions. After linkage with data of other sources, more administrative and inconsistency checks were performed.

Generally accepted methods were used to assess validity of the final tumour records.

#### Microscopically verified tumours (MV%)

Validity of the diagnosis is likely to be higher if it is based on histological or cytological examination. The percentage of microscopically verified tumours (MV%) is a positive indicator of validity, however, a very high MV% would imply an over-reliance on the pathology laboratory as a source of information and failure to find cases diagnosed by other means. The absolute value of MV% has little meaning without comparing it to expected values of similar registries.

The MV% for all sites excluding non-melanoma in Belgium was 97.6% in 2008 (*Appendix 3*). Compared to other cancer registries like in Finland, Austria and Switzerland with MV% between 90% and 94%, the result for Belgium is higher than expected<sup>(25)</sup>.

As expected, MV% are slightly lower for cancer of the pancreas, liver and hepatic bile duct as well as for persons aged 75 years of age and older (data not shown) for whom curative therapy is often not planned or where the tests themselves are too invasive or distressing.

#### Missing information

The proportion of registered cases with unknown values for data items is also an indicator of data quality. Table 3 shows the percentage of registered cases with known values (as a positive indicator of validity) for the most important data items.

The basis of diagnosis was rarely missing. All tumours combined, this variable was missing in only 0.8% of the cases.

The availability of laterality differed on the primary tumour localisation. Breast tumours were best specified for laterality (95%), while in melanoma laterality was missing in almost half of all diagnoses.

The clinical and pathological TNM are reported to provide more detail on the availability of tumour stage. A combined modality of both staging systems is also men-

tioned. Further in this report, only the results of the 'combined TNM' will be reported. To determine the combined TNM, the pathological TNM prevails over the clinical TNM, except when the clinical TNM is stage IV.

Clinical TNM stage information is overall quite low, but higher for sites with little surgical treatment where it is often not possible to determine the pathological TNM (e.g. lung cancer). Rather often, there is no clinical counterpart reported for the pathological TNM stage or vice versa, but together they resulted in a combined TNM in about 74% of the cases.

The staff of the registry uses methods to recover a lot of the pathological stage information from the written pathology reports. Where possible, efforts must be done to receive both clinical and pathological stage of the tumour in coded form directly from the sources.

**Table 3** Availability of information on basis of diagnosis, laterality and stage (clinical, pathological and combined), Belgium 2008

Tumour localisation		All tumours					Only stageable tumours						
		Total	Basis of diagnosis		Laterality*		Total	cTNM		pTNM		Combined TNM stage	
			N	%	N	%		N	%	N	%	N	%
C00	Lip	55	54	98.2	NA	NA	54	23	42.6	25	46.3	36	66.7
C01	Base of tongue	126	125	99.2	NA	NA	126	101	80.2	40	31.7	108	85.7
C02	Tongue	238	237	99.6	NA	NA	238	139	58.4	136	57.1	177	74.4
C03-C06	Oral cavity	435	431	99.1	NA	NA	433	264	61.0	193	44.6	311	71.8
C07-C08	Salivary glands	107	105	98.1	81	75.7	91	46	50.5	53	58.2	68	74.7
C09	Tonsil	265	263	99.2	211	79.6	264	184	69.7	60	22.7	200	75.8
C10	Oropharynx	168	166	98.8	NA	NA	44	33	75.0	6	13.6	34	77.3
C11	Nasopharynx	55	55	100.0	NA	NA	55	37	67.3	11	20.0	42	76.4
C12	Pyrimiform sinus	141	141	100.0	NA	NA	141	105	74.5	28	19.9	110	78.0
C13	Hypopharynx	81	81	100.0	NA	NA	81	63	77.8	8	9.9	66	81.5
C15	Oesophagus	892	889	99.7	NA	NA	885	515	58.2	264	29.8	601	67.9
C16	Stomach	1,303	1,292	99.2	NA	NA	1,243	543	43.7	572	46.0	823	66.2
C17	Small intestine	199	198	99.5	NA	NA	167	50	29.9	92	55.1	108	64.7
C18-C20	Colon and rectum	8,175	8,119	99.3	NA	NA	8,164	3,104	38.0	6,140	75.2	6,999	85.7
C22-C24	Liver, gallbladder and biliary tract	947	940	99.3	NA	NA	892	366	41.0	285	32.0	550	61.7
C25	Pancreas	1,155	1,145	99.1	NA	NA	1,151	636	55.3	390	33.9	827	71.9
C30-C31	Nasal cavity, middle ear and sinuses	129	128	99.2	83	64.3	85	51	60.0	25	29.4	59	69.4
C32	Larynx	676	670	99.1	NA	NA	579	381	65.8	118	20.4	418	72.2
C34	Bronchus and lung	7,182	7,131	99.3	5,959	83.0	7,140	4,822	67.5	1,717	24.0	5,252	73.6
C40-C41	Bone and articular cartilage	128	128	100.0	83	64.8	72	15	20.8	9	12.5	18	25.0
C43	Malignant melanoma	1,903	1,901	99.9	1,068	56.1	1,869	541	28.9	1,505	80.5	1,514	81.0
C50	Breast	9,782	9,735	99.5	9,326	95.3	9,754	5,536	56.8	7,621	78.1	8,597	88.1
C51	Vulva	187	185	98.9	NA	NA	180	47	26.1	130	72.2	137	76.1
C52	Vagina	35	33	94.3	NA	NA	33	17	51.5	7	21.2	20	60.6
C53	Cervix uteri	643	637	99.1	NA	NA	637	248	38.9	314	49.3	448	70.3
C54	Corpus uteri	1,450	1,436	99.0	NA	NA	1,329	274	20.6	1,019	76.7	1,068	80.4
C56	Ovary	870	866	99.5	NA	NA	862	238	27.6	505	58.6	590	68.4
C60	Penis	68	68	100.0	NA	NA	67	19	28.4	50	74.6	54	80.6
C61	Prostate	8,810	8,714	98.9	NA	NA	8,809	4,114	46.7	3,686	41.8	5,830	66.2
C62	Testis	318	317	99.7	273	85.8	310	174	56.1	273	88.1	280	90.3
C64	Kidney	1,487	1,469	98.8	1,278	85.9	1,468	624	42.5	1,129	76.9	1,265	86.2
C67	Bladder	2,159	2,137	99.0	NA	NA	2,151	700	32.5	1,788	83.1	1,867	86.8
C69	Eye and adnexa	97	95	97.9	74	76.3	63	37	58.7	44	69.8	47	74.6
C81-C96	Haematological malignancies	4,473	4,446	99.4	NA	NA	NA	NA	NA	NA	NA	NA	NA

\* Only pair organs  
NA: not applicable

## Stability of incidence data over time

As a result of delays in notification, the number of cases registered for a given year will generally increase over time. Table 4 shows the number of cases reported for a given year, and the number available in the subsequent years. For example, when closing the dataset of 2001 48,090 cases appeared in Belgium, while 48,404 cases were available for the same year when the dataset of 2003 was closed. The slight changes in absolute numbers are the result of a thorough data cleaning which revealed for example incorrect registration of multiple primary tumours.

**Table 4. Stability of incidence data (invasive tumours, N) over time, 2001-2008**

Publication year	Incidence year							
Belgium	2001	2002	2003	2004	2005	2006	2007	2008
2001	48,090							
2003	48,404	49,208	51,879					
2004	48,558	49,426	52,204	60,047				
2005	48,539	49,411	52,487	59,976	59,478			
2006	48,585	49,472	52,562	60,740	60,618	60,046		
2008	48,707	49,940	53,190	61,480	61,482	61,246	63,170	63,738
Flemish Region	2001	2002	2003	2004	2005	2006	2007	2008
2001	33,168							
2003	33,267	32,327	34,081					
2004	33,300	32,395	34,202	35,650				
2005	33,258	32,354	34,151	35,570	35,966			
2006	33,248	32,313	34,139	35,543	36,018	36,289		
2008	33,280	32,556	34,484	36,013	36,595	36,974	38,093	38,386
Brussels Capital Region	2001	2002	2003	2004	2005	2006	2007	2008
2001	3,423							
2003	3,476	3,672	3,950					
2004	3,496	3,685	4,038	5,195				
2005	3,505	3,689	4,035	5,187	5,247			
2006	3,498	3,696	4,027	5,175	5,205	5,062		
2008	3,498	3,731	4,053	5,200	5,253	5,129	5,358	5,398
Walloon Region	2001	2002	2003	2004	2005	2006	2007	2008
2001	11,499							
2003	11,661	13,209	13,848					
2004	11,762	13,345	14,264	19,202				
2005	11,776	13,368	14,301	19,219	18,265			
2006	11,839	13,463	14,396	20,022	19,395	18,695		
2008	11,929	13,653	14,653	20,267	19,634	19,143	19,719	19,954

## 1.6 CALCULATION OF INCIDENCE RATES, RISK AND TRENDS

The incidence data presented in this report are based on the data that were available at the Belgian Cancer Registry in January 2011. Incidence rates reported previously may differ slightly from the present data owing to the dynamic nature of the Cancer Registry (*see chapter 1.5 Stability of incidence data over time*). Population data were obtained from the Directorate-general Statistics Belgium<sup>(4)</sup>.

**Incidence** is the number of new cases occurring in a given time period in a specified population. It provides a direct estimate of the probability or risk of illness, and can be expressed in different ways:

The **crude incidence rate** is calculated by dividing the number of new cases observed during a given time period by the corresponding number of people in the population at risk. The crude rate is expressed as the number of new cases per 100,000 persons per year.

The **age-specific incidence rate** is the number of newly diagnosed cases in a particular 5-year age group over a specified time period and expressed per 100,000 persons per year.

The **age-standardised incidence rate** is a weighted average of the individual age-specific rates using an external standard population. It is the incidence that would be observed if the population had the age structure of the standard population (European or World Standard Population). Since age has a powerful influence on the risk of cancer, this standardisation is necessary when comparing several populations that differ with respect to their age structure. In this publication, the World Standard Population was used for standardisation and consequently World Standardised incidence Rates (WSR) were reported. These are expressed as the number of new cases per 100,000 persons per year except in childhood cancer where the denominator was expressed per 1,000,000 person years.

The same principles are applied to calculate mortality data.

The Cumulative Risk (CRi) is the probability or risk of individuals getting a disease during a specified period. For cancer, it is expressed as the percentage of new born children who, based on the rates currently observed, would be expected to develop a particular cancer before the age of 75 years<sup>(26)(27)</sup>.

In this publication, general results of the incidence year 2008, were reported. They concern Belgian data unless otherwise specified. The maps were created using the incidence for the 5-year period 2004-2008. Since these maps were based on the municipality-specific incidence, it was necessary to aggregate several years in order to have a relevant number of cases by municipality (see chapter 1.7).

For the analysis of **trends**, the Belgian Cancer Registry disposes of 10 years registry data for cancer incidence in the Flemish Region and for cancer deaths in the Flemish Region and the Brussels Capital Region. This extended time period makes it possible to estimate trends over the years by calculating the Estimated Annual Percentage Change (EAPC). In this method, a regression line is fitted to the natural logarithm of the rates using calendar year as a regressor variable, i.e.  $y = mx + b$  where  $y = \ln(\text{rate})$  and  $x = \text{calendar year}$ . Then the  $EAPC = 100 * (e^m - 1)$ . Testing the hypothesis that the EAPC is equal to zero is equivalent to testing the hypothesis that the slope of the line in the above equation is equal to zero. The latter hypothesis is tested using the t-distribution of  $m/SEm$ , with the number of degrees of freedom equal to the number of calendar years minus two. The standard error of  $m$ , i.e.  $SEm$ , is obtained from the fit of the regression line. This calculation assumes that the rates increased/decreased at a constant rate over the entire period, although the accuracy of this assumption has not been tested<sup>(28)</sup>. Corresponding to the available data, for this publication, EAPC calculations for the 10-year period 1999-2008 were only made for the Flemish Region for both cancer incidence and mortality, and for the Brussels Capital Region for cancer mortality.

Data on tumour stage (TNM classification<sup>(29)(9)</sup>) is presented for some tumour types. Due to improvements in registration practices, the proportion of diagnoses with an unknown stage decreased between 1999 and 2008. To minimise the influence of this decrease, trends by stage are calculated after reallocation of missing values (stage unknown) according to the relative proportions of stage I to stage IV tumours by age group. The same methodology was used to calculate the trend for breast cancer by cancer size (T category of the TNM classification).

## 1.7 MAPPING CANCER INCIDENCE IN BELGIUM

Maps on cancer incidence data for Belgium 2004-2008 have been produced for a number of common cancer types. These maps are based on the municipality-specific incidence rates adjusted for age using the World Standard Population.

The methodology for the creation of these maps has been developed by the Finnish Cancer Registry and uses the smoothing method<sup>(30)(31)(32)(33)</sup>. The methodology was adjusted to the Belgian situation and characteristics<sup>(34)</sup>.

Age-adjusted incidence rates for cities with at least 80,000 inhabitants are shown as circles with a diameter relative to the population size and a colour shading indicating the actual calculated age-standardised incidence rate in that city. The capital of Limburg, Hasselt (71,543 inhabitants in 2008), was additionally included as a city to be represented as a circle on the map. Because lifestyle can vary greatly between different areas of the large cities, sometimes they need to be divided into smaller parts when presenting the city's incidence rates<sup>(35)</sup>. Consequently, the Brussels Capital Region (more than 1,000,000 inhabitants) was divided in three different zones, each represented by a separate circle. This division was based on socio-economic parameters defined in collaboration with the 'Observatorium voor Gezondheid en Welzijn – Brussel Hoofdstad / Observatoire de la Santé et du Social – Bruxelles Capitale' (Table 5).

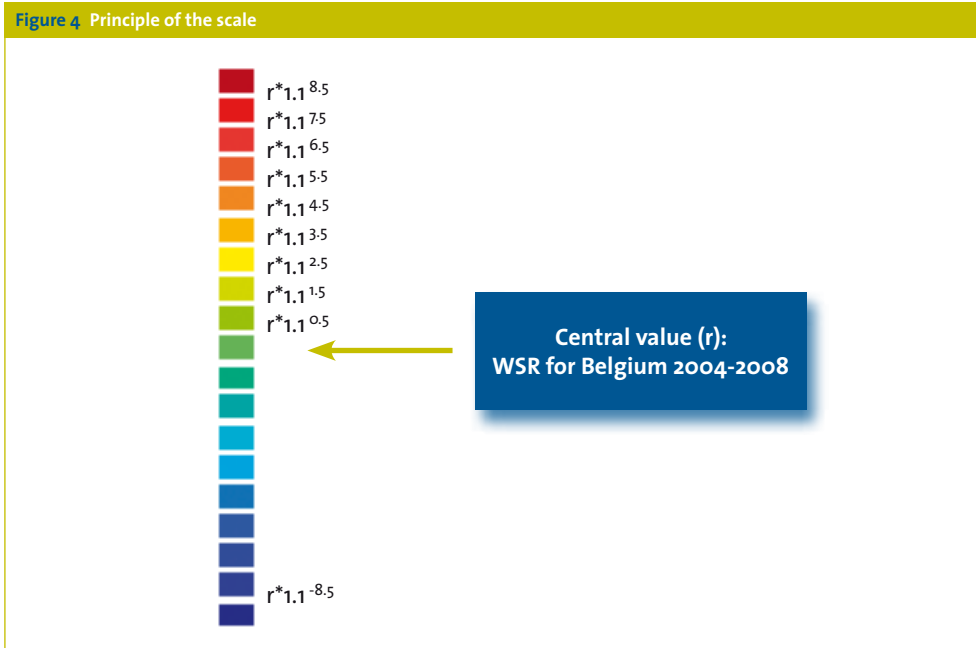
**Table 5** Three subdivisions of the Brussels Capital Region

West (n=357,049)	Middle (n=481,999)	East (n=218,864)
Anderlecht	Schaerbeek/Schaerbeek	Ukkel/Uccle
Koekelberg	Evere	Watermaal-Bosvoorde/ Watermael-Boisfort
Sint-Jans-Molenbeek/ Molenbeek-Saint-Jean	Etterbeek	Sint-Lambrechts-Woluwe/ Woluwe-Saint-Lambert
Sint-Gillis / Saint-Gilles	Vorst/Forest	Sint-Pieters-Woluwe/Woluwe-Saint-Pierre
Sint-Joost-Ten-Node	Elsene/Ixelles	Oudergem/Auderghem
Brussel/Bruxelles	Jette	
	Sint-Agatha-Berchem/Berchem-Saint-Agathe	
	Ganshoren	
	Laken/Laeken	
	Neder-Over-Heembeek	
	Haren	

Smoothing geographical incidence data allows capturing a global overall pattern of cancer in Belgium. However, smoothing may hide some exceptionally high rates in areas with small populations. If there is some underlying knowledge or suspicion of an association between an exposure and disease, other methodologies should be applied for further investigation and analysis.

## Scale

A relative scale is used in all maps, with 19 colours, ranging from blue and green shadings depicting low rates, to red and violet depicting high rates (Figure 4). One step change from one colour level to another corresponds to a 10% or 1.1-fold relative change in the incidence rate. The lower limit of the highest category is therefore always 5.05 times ( $1.1^{17}$ ) the upper limit of the lowest category. If the geographical variation for a given cancer is smaller than 5.05, the extreme colours are not used in the maps. The reference rate giving the mid-point for each scale is the median of interpolated values in Belgium (2004-2008) for the specific cancer site and sex.





## 2 CANCER INCIDENCE AND MORTALITY

### 2.1 CANCER OF ALL SITES\*

#### General results, 2008

**Table 6** Invasive tumours (excl. non-melanoma): incidence and mortality by sex and region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	32,508	622.2	350.3	34.5	15,095	288.9	144.6
Flemish Region	20,185	664.0	350.6	34.5	8,998	296.0	139.4
Brussels Capital Region	2,500	494.1	341.9	33.5	1,170	231.2	141.2
Walloon Region	9,823	585.3	350.9	34.6	4,927	293.6	155.8
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	27,488	505.1	276.5	26.7	11,552	212.3	85.8
Flemish Region	15,906	509.5	269.3	26.0	6,656	213.2	84.3
Brussels Capital Region	2,567	473.2	289.8	27.9	1,083	199.6	90.3
Walloon Region	9,015	506.9	286.0	27.7	3,813	214.4	87.7

CR: crude (all ages) rate (n/100,000 person years)

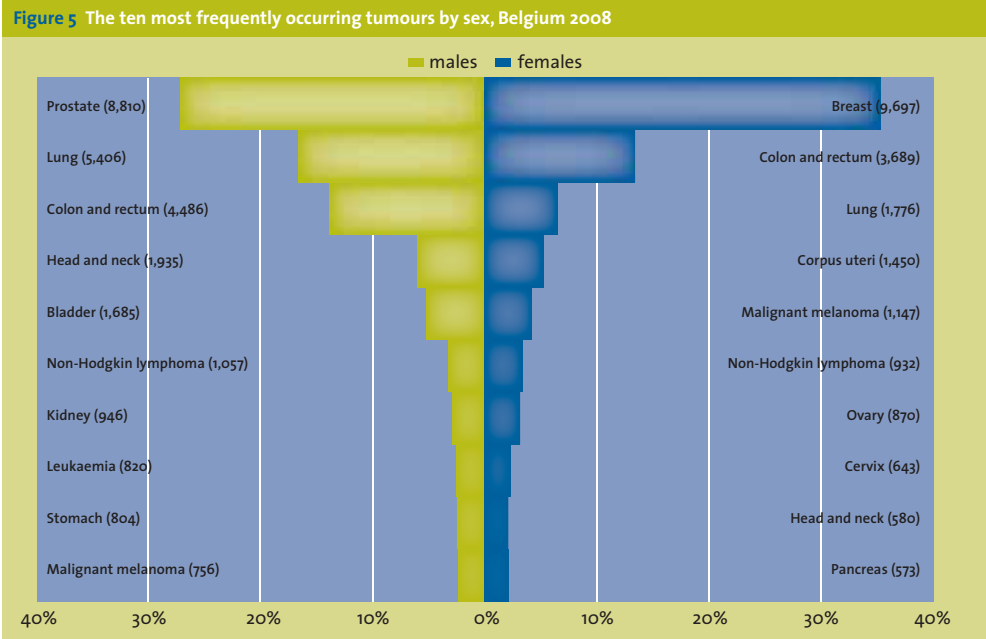
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

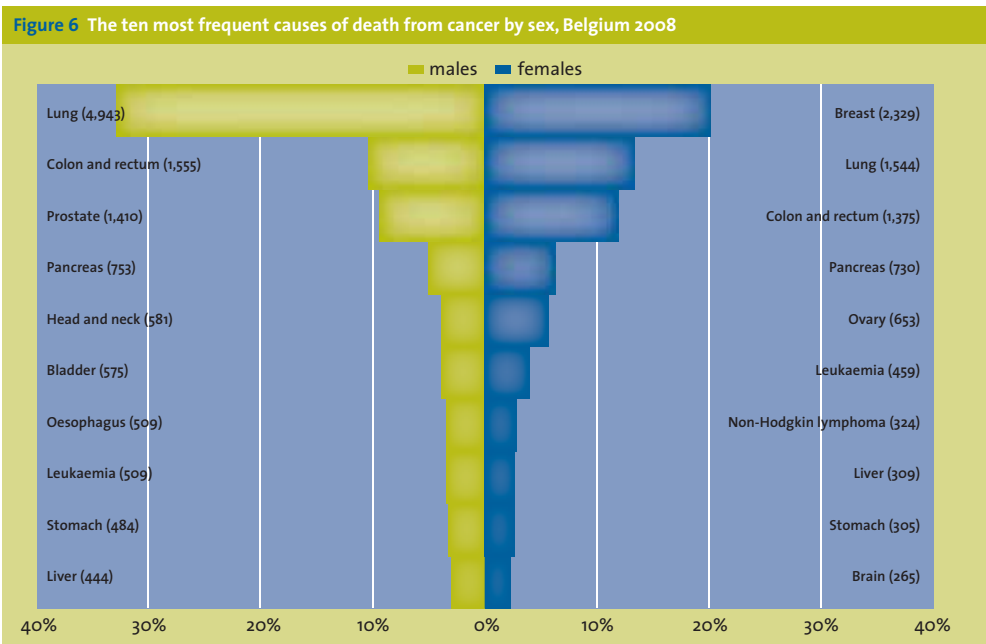
- A total number of 59,996 new diagnoses of cancer are registered in Belgium, 54% in males and 46% in females.
- One in three males and one in four females will develop cancer under the age of 75 years.
- Mean age at diagnosis is 67 years in males and 65 years in females.
- The male/female ratio in Belgium is 1.3.
- Males and females show a different risk pattern for developing cancer.
  - The risk for developing cancer starts to increase at a much younger age in females (30 years of age) than in males. This is mainly due to the occurrence of malignant melanoma, breast and cervical cancer.
  - The male/female ratio under the age of 50 years is 0.6.
  - At the age of 50 years the risk in males starts to increase. At 65 years of age, cancer incidence in males is twice as high as in females. This is mainly due to the occurrence of lung and prostate cancer.
  - The male/female ratio in patients older than 50 years is 1.6.
- Between the three Belgian regions, there are no major differences in incidence rates when all cancers are combined.
- Differences are observed for some cancer types and they are reported in the corresponding chapter.

\* Results reported in this chapter include all diagnoses of cancer excluding non-melanoma skin cancer.





- Breast (16%), prostate (15%), colorectal (14%) and lung cancer (12%) cover more than 56% of all newly diagnosed malignant tumours in Belgium.
- The three most frequently occurring tumours in males are prostate, lung and colorectal cancer, and breast, colorectal and lung cancer in females.



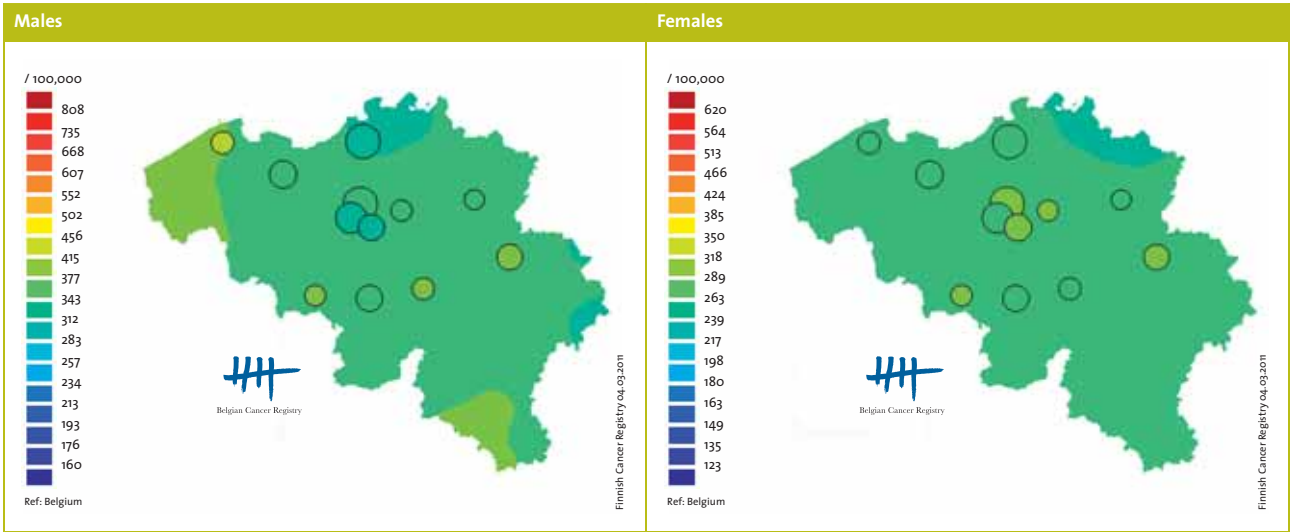
- A total number of 26,647 cancer deaths are registered in Belgium, 57% in males and 43% in females.
- Between the three Belgian regions, there are no major differences observed when all cancers are combined.
- In terms of number of deaths, lung cancer ranks first in males (about one third of all male cancer deaths) and breast cancer in females. Colorectal cancer is the 2<sup>nd</sup> most important cause of cancer death in males and the 3<sup>rd</sup> most frequent cause of cancer death in females.

**Table 7** The five most frequently occurring tumours and causes of death from cancer by sex and age group, Belgium 2008

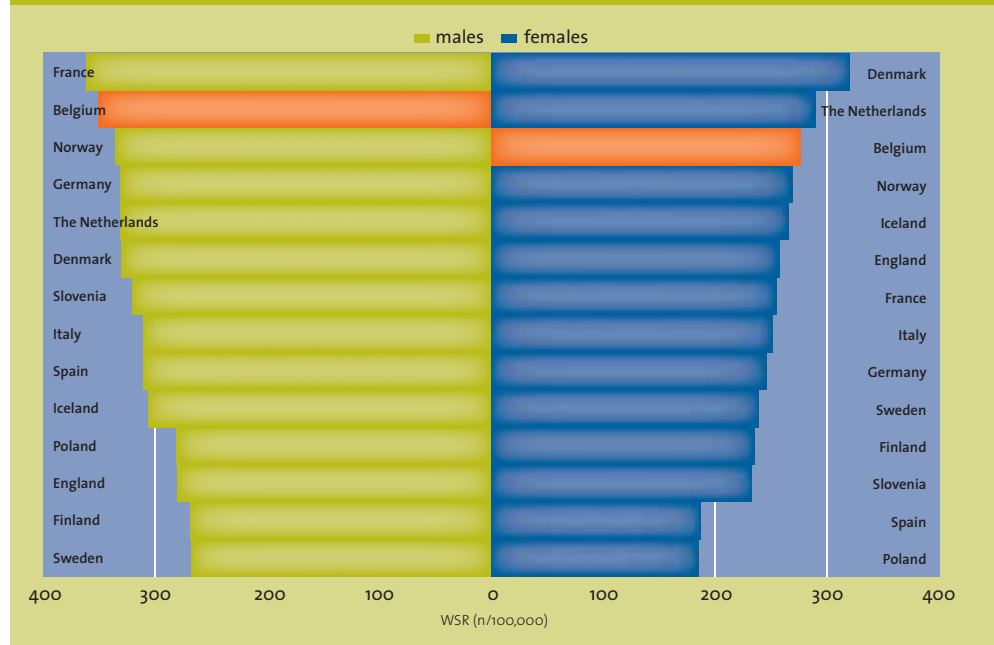
	Incidence						Mortality					
	Boys		Girls		Males		Boys		Girls		Females	
	N	%	N	%	N	%	N	%	N	%	N	%
0-14 years	1 Leukaemia	45	29	1 Leukaemia	31	26	1 Leukaemia	8	40	1 Brain	8	50
	2 Brain	24	16	2 Brain	20	17	2 Brain	6	30	2 Leukaemia	3	19
	3 Non-Hodgkin	19	12	3 Bone	12	10	3 Bone	2	10	3 Head and neck	1	6
	4 Soft tissue	9	6	4 Kidney	10	8	4 Adrenal gland	2	10	4 Kidney	1	6
	5 Adrenal gland	9	6	5 Non-Hodgkin	8	7	5 Unknown primary	1	5	5 Soft tissue	1	6
15-29 years	1 Testis	128	32	1 Melanoma	78	20	1 Bone	11	22	1 Leukaemia	7	14
	2 Hodgkin	49	12	2 Hodgkin	40	10	2 Brain	9	18	2 Brain	7	14
	3 Non-Hodgkin	36	9	3 Breast	40	10	3 Leukaemia	7	14	3 Non-Hodgkin	6	12
	4 Brain	32	8	4 Thyroid	39	10	4 Non-Hodgkin	5	10	4 Ovary	5	10
	5 Leukaemia	26	7	5 Non-Hodgkin	25	6	5 Colon and rectum	5	10	5 Hodgkin	4	8
30-44 years	1 Testis	132	13	1 Breast	1,075	45	1 Brain	38	15	1 Breast	104	35
	2 Melanoma	126	12	2 Melanoma	283	12	2 Lung	35	14	2 Lung	29	10
	3 Non-Hodgkin	84	8	3 Cervix	199	8	3 Melanoma	23	9	3 Cervix	22	7
	4 Colon and rectum	84	8	4 Thyroid	154	6	4 Colon and rectum	22	9	4 Brain	22	7
	5 Lung	68	7	5 Colon and rectum	105	4	5 Leukaemia	17	7	5 Colon and rectum	15	5
45-59 years	1 Prostate	1,534	24	1 Breast	3,382	48	1 Lung	776	35	1 Breast	472	29
	2 Lung	1,094	17	2 Colon and rectum	523	7	2 Head and neck	221	10	2 Lung	347	21
	3 Head and neck	777	12	3 Lung	507	7	3 Colon and rectum	152	7	3 Colon and rectum	123	8
	4 Colon and rectum	749	11	4 Melanoma	312	4	4 Oesophagus	148	7	4 Ovary	101	6
	5 Kidney	250	4	5 Corpus uteri	286	4	5 Pancreas	118	5	5 Brain	57	4
60-74 years	1 Prostate	4,603	32	1 Breast	3,087	34	1 Lung	2,086	38	1 Breast	705	21
	2 Lung	2,540	18	2 Colon and rectum	1,245	14	2 Colon and rectum	534	10	2 Lung	624	18
	3 Colon and rectum	1,875	13	3 Lung	782	9	3 Prostate	323	6	3 Colon and rectum	328	10
	4 Head and neck	782	5	4 Corpus uteri	642	7	4 Pancreas	310	6	4 Ovary	220	6
	5 Bladder	659	5	5 Non-Hodgkin	326	4	5 Head and neck	240	4	5 Pancreas	213	6
75+ years	1 Prostate	2,661	26	1 Breast	2,113	25	1 Lung	2,046	29	1 Breast	1,045	17
	2 Colon and rectum	1,757	17	2 Colon and rectum	1,797	21	2 Prostate	1,044	15	2 Colon and rectum	907	15
	3 Lung	1,698	17	3 Corpus uteri	479	6	3 Colon and rectum	842	12	3 Lung	543	9
	4 Bladder	837	8	4 Lung	418	5	4 Bladder	375	5	4 Pancreas	456	7
	5 Stomach	345	3	5 Non-Hodgkin	348	4	5 Pancreas	312	4	5 Ovary	316	5

- The distribution of cancer incidence by primary site varies with age.
  - In children, leukaemia and brain tumours are the most frequently occurring malignancies.
  - Invasive tumours of the genital organs, haematological malignancies and melanoma are the most frequent malignancies in adolescents and young adults.
  - Prostate, breast, lung and colorectal cancer are the most common cancers diagnosed in patients older than 45 years of age.
- The distribution of cancer mortality by primary site varies with age.
  - Leukaemia, brain and bone tumours cause the most cancer deaths among children and young adults.
  - Around the age of 30 years, breast and lung cancer are becoming the leading causes of cancer death.
  - From the age of 45 years, lung cancer causes 1 out of every 3 male cancer deaths while breast cancer is responsible for 1 out of every 5 female cancer deaths.

**Figure 7** Invasive tumours (excl. non-melanoma) in Belgium, 2004-2008



**Figure 8** Invasive tumours (excl. non-melanoma): comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>56)</sup>



## Trends

**Table 8 Invasive tumours (excl. non-melanoma): incidence and mortality by sex and region, 1999-2008**

Invasive tumours (excl. non-melanoma): number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						32,417	32,269	31,844	32,354	32,508
Flemish Region	15,975	17,099	17,769	17,151	18,287	19,394	19,530	19,767	20,066	20,185
Brussels Capital Region						2,424	2,525	2,328	2,437	2,500
Walloon Region						10,599	10,214	9,749	9,851	9,823
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						26,208	26,161	26,244	27,126	27,488
Flemish Region	12,838	13,766	14,263	14,112	14,728	14,957	15,253	15,230	15,832	15,906
Brussels Capital Region						2,518	2,435	2,526	2,541	2,567
Walloon Region						8,733	8,473	8,488	8,753	9,015

Invasive tumours (excl. non-melanoma): age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						368.8	362.9	354.3	355.6	350.3
Flemish Region	322.9	339.8	346.6	329.9	347.2	359.6	358.3	356.7	355.9	350.6
Brussels Capital Region						338.2	348.2	321.1	340.0	341.9
Walloon Region						394.0	374.7	357.1	357.9	350.9
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						277.7	275.6	274.1	278.5	276.5
Flemish Region	245.5	260.1	268.2	259.8	268.7	268.4	271.7	269.9	274.6	269.3
Brussels Capital Region						294.7	283.8	298.2	292.8	289.8
Walloon Region						290.4	281.2	276.2	282.2	286.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Invasive tumours (excl. non-melanoma): number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						14,659	14,788			15,095
Flemish Region	8,906	8,886	8,755	8,782	8,749	8,570	8,782	8,828	8,806	8,998
Brussels Capital Region	1,314	1,281	1,252	1,265	1,185	1,167	1,198	1,159	1,123	1,170
Walloon Region						4,922	4,808			4,927
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						11,034	10,912			11,552
Flemish Region	6,382	6,227	6,218	6,366	6,263	6,112	6,338	6,401	6,527	6,656
Brussels Capital Region	1,180	1,157	1,193	1,141	1,174	1,162	1,035	1,129	1,090	1,083
Walloon Region						3,760	3,539			3,813

Invasive tumours (excl. non-melanoma): age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						153.0	151.0			144.6
Flemish Region	169.0	164.9	159.3	156.5	152.4	146.4	146.1	143.3	139.4	139.4
Brussels Capital Region	171.8	164.7	160.0	160.1	154.7	150.5	151.8	142.9	138.3	141.2
Walloon Region						166.6	160.9			155.8
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						87.4	85.8			85.8
Flemish Region	93.8	90.7	89.7	90.1	86.1	83.7	85.6	84.5	85.1	84.3
Brussels Capital Region	96.4	98.7	100.9	95.5	102.3	94.1	88.8	96.7	91.8	90.3
Walloon Region						92.3	85.3			87.7

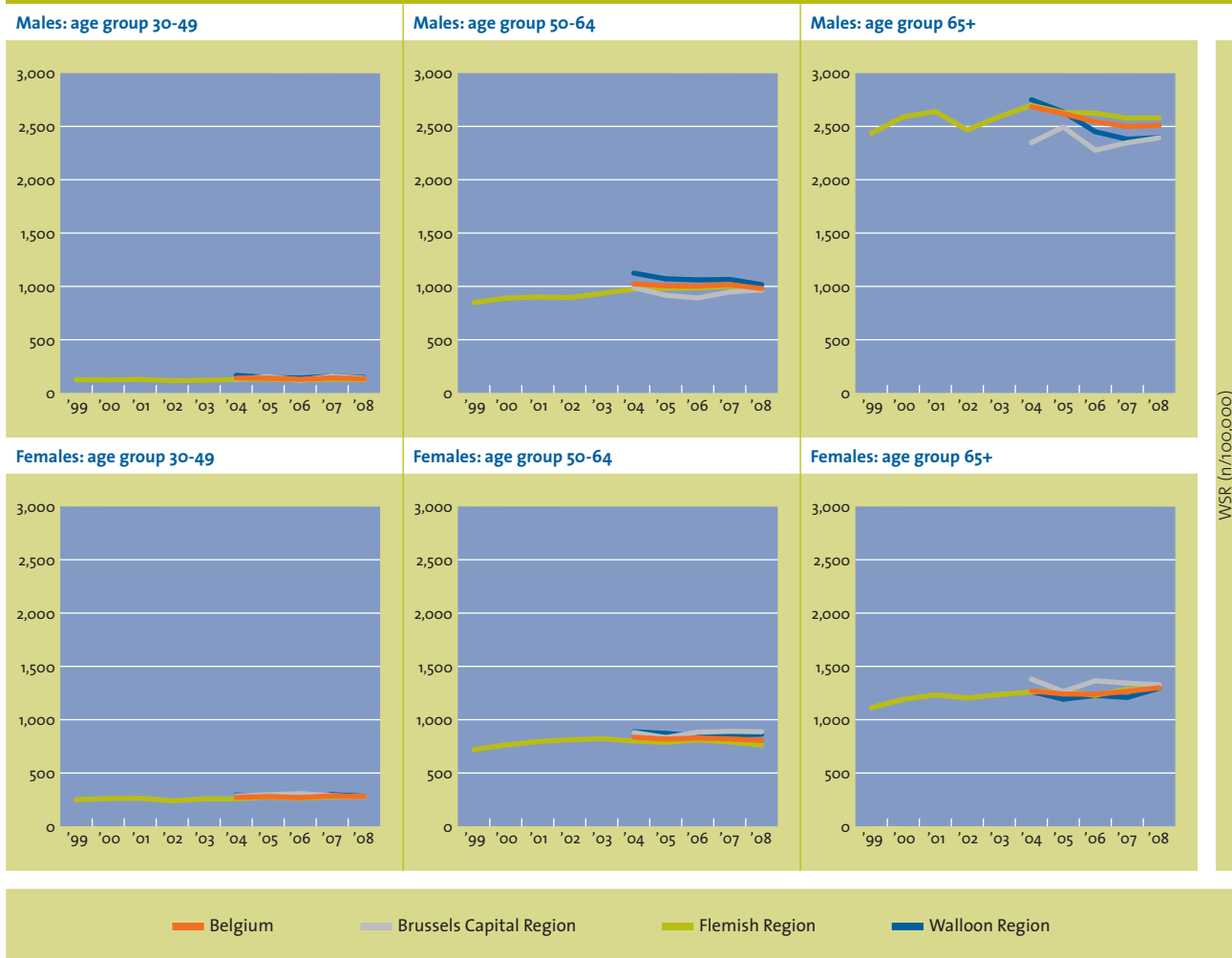
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 9 Invasive tumours (excl. non-melanoma): incidence and mortality by sex and region, 1999-2008



- In the Flemish Region, a yearly increase of about 1% in age-standardised incidence rates in males and females is observed between 1999 and 2008 (males: EAPC = 0.9% [p = 0.01], females: EAPC = 0.8% [p = 0.01]).
- In the same period, mortality in the Flemish Region decreases in males (EAPC = -2.2% [p = 0.00]) and females (EAPC = -1.1% [p = 0.00]).
- A similar trend is observed for mortality in the Brussels Capital Region (males: EAPC = 2.2% [p = 0.00], females: EAPC = -1.0% [p = 0.05]).
- The decrease in incidence in the Walloon Region is partly explained by the inclusion of prevalent cases in the first registration years. This is a known and common phenomenon in the start-up phase of a cancer registry<sup>(37)</sup>.

**Figure 10** Invasive tumours (excl. non-melanoma): incidence by age group, sex and region, 1999-2008



- Under the age of 30 years (data not shown), the incidence rates between males and females are comparable (male/female ratio is 1.1).
- In the age group 30-49 years, the incidence rate in females is 2 times higher than the incidence rate in males.
  - No regional differences are observed.
  - In the Flemish Region, a significant increase is observed in females (EAPC = 1.1% [p = 0.02]), while the rate in males remains more stable (EAPC = 0.5% [p = 0.31]).
- In the age group 50-64 years, the male/female incidence ratio is 1.2.
  - No regional differences are observed.
  - In the Flemish Region, an increasing trend is observed in males (EAPC = 1.7% [p = 0.00]). No significant trend is observed in females (EAPC = 0.4% [p = 0.34]).
  - The incidence is 7 times higher than in the age group 30-49 years in males and 3 times higher in females.
- In the age group 65 years and older, the incidence rates in males is 2 times higher than in females.
  - The incidence rate in males is higher in the Flemish Region when compared to the other regions.
  - In the Flemish Region, a significant increase is observed in females (EAPC = 1.3% [p = 0.00]). In males, no significant trend is observed (EAPC = 0.4% [p = 0.24]).
  - The incidence is 2.6 times higher than in the age group 50-64 years in males and 1.6 times higher in females.
  - When compared to the age group 30-49 years, the incidence rate in males in the age group 65 years and older is 19 times higher, in females the incidence rate is 5 times higher.

## 2.2 HEAD AND NECK (ICD-10: C00-C14, C30-C32)

### General results, 2008

**Table 9** Head and neck cancer: incidence and mortality by sex and region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	1,935	37.0	23.1	2.7	581	11.1	6.8
Flemish Region	1,013	33.3	19.6	2.3	317	10.4	6.0
Brussels Capital Region	163	32.2	24.3	2.9	56	11.1	8.5
Walloon Region	759	45.2	29.6	3.5	208	12.4	7.8
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	580	10.7	6.2	0.7	162	3.0	1.5
Flemish Region	290	9.3	5.0	0.6	87	2.8	1.3
Brussels Capital Region	57	10.5	7.2	0.9	15	2.8	1.6
Walloon Region	233	13.1	8.2	1.0	60	3.4	1.7

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Head and neck cancer is the 4<sup>th</sup> most frequent tumour in males (6.0%) and the 9<sup>th</sup> most frequent in females (2.1%).
- Head and neck cancer is the 5<sup>th</sup> most frequent cause of cancer death in males (3.8%). In females, head and neck cancer is a less frequent cause of cancer death (1.4%).
- When comparing incidence rates between the three Belgian regions, the highest incidence rates in both sexes are observed in the Walloon Region and the lowest in the Flemish Region.
- Mean age at diagnosis is 62 years in males and 63 years in females.

Figure 11 Head and neck cancer incidence in Belgium, 2004-2008

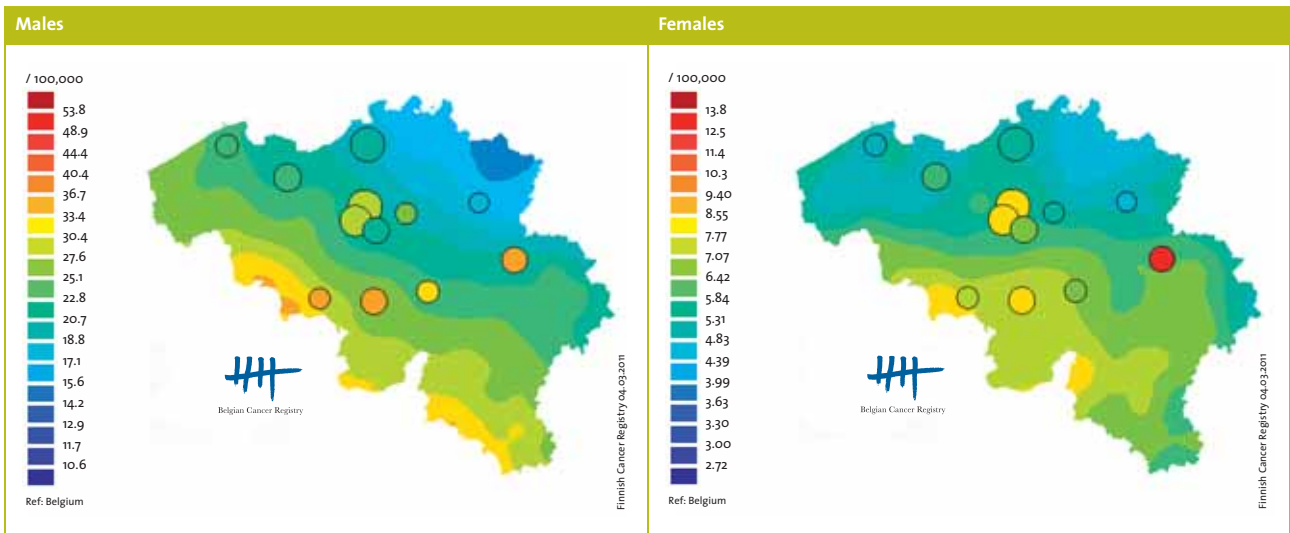
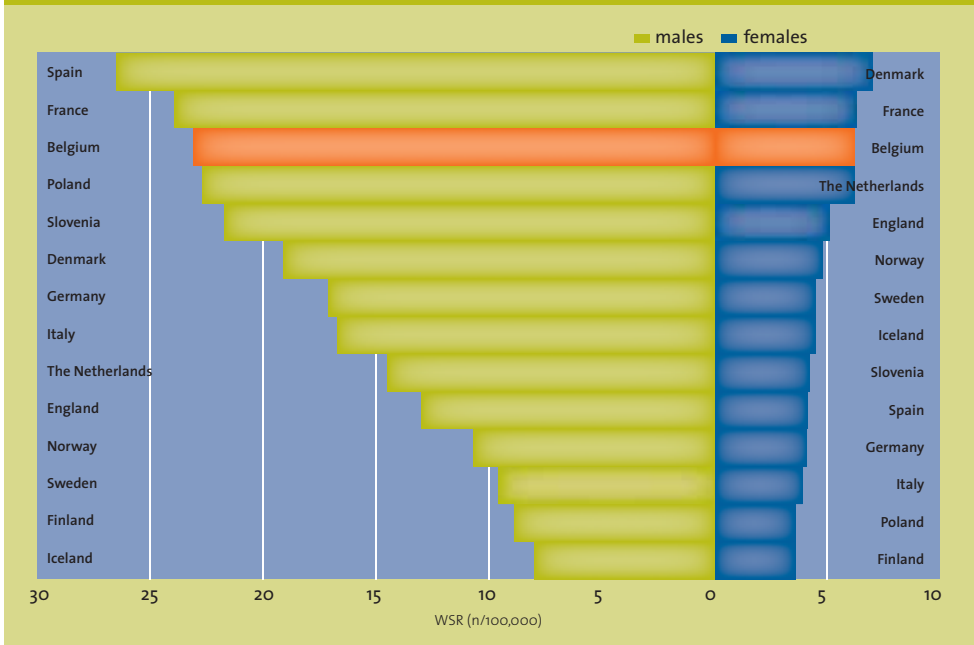


Figure 12 Head and neck cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>





## Trends

**Table 10** Head and neck cancer: incidence and mortality by sex and region, 1999-2008

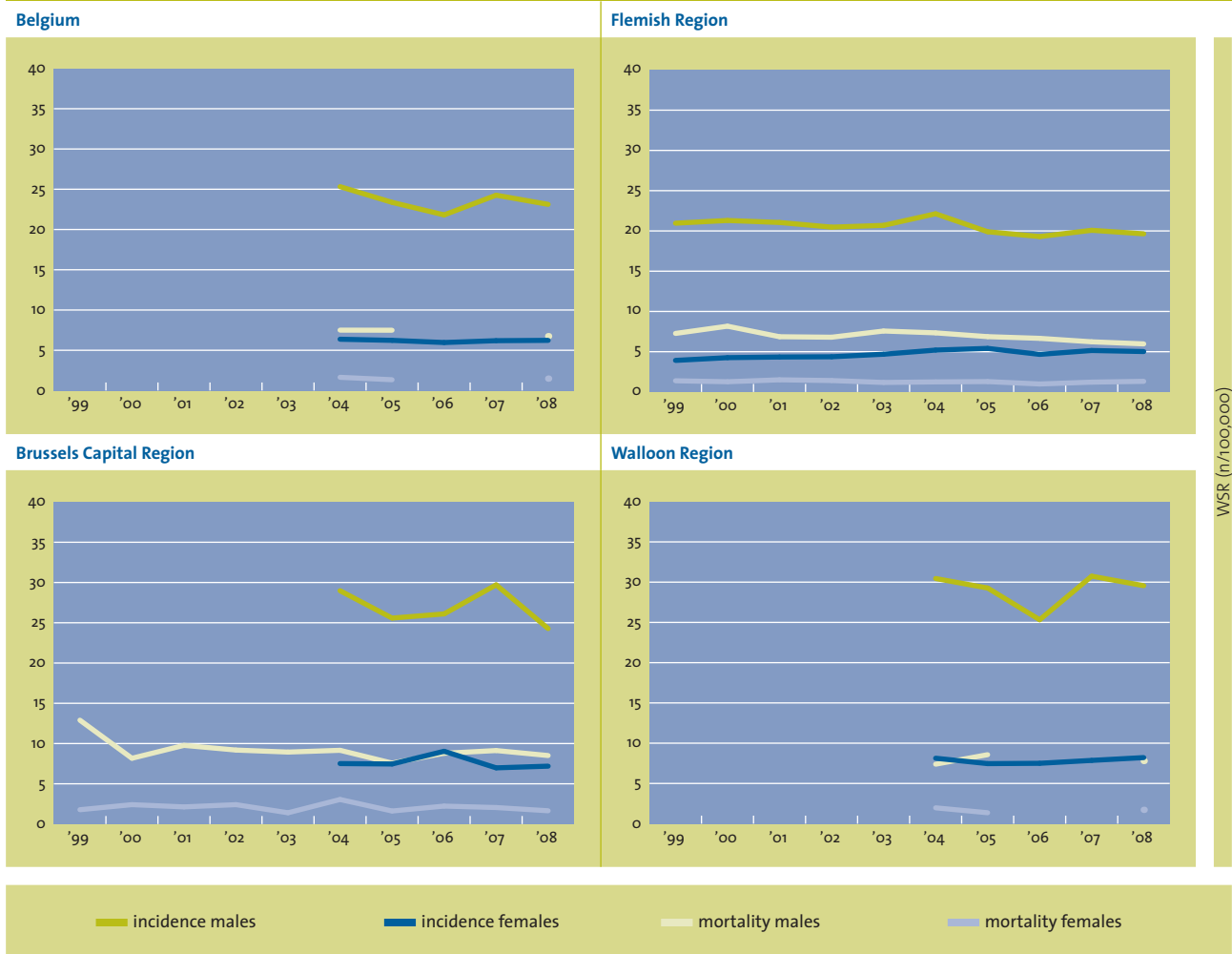
Head and neck cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,965	1,865	1,762	1,975	1,935
Flemish Region	933	960	959	949	981	1,059	977	969	1,008	1,013
Brussels Capital Region						175	162	171	196	163
Walloon Region						731	726	622	771	759
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						562	564	520	553	580
Flemish Region	192	227	228	231	258	271	292	241	278	290
Brussels Capital Region						60	63	70	51	57
Walloon Region						231	209	209	224	233
Head and neck cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						25.3	23.4	21.8	24.3	23.1
Flemish Region	21.0	21.3	21.1	20.5	20.7	22.1	19.9	19.3	20.1	19.6
Brussels Capital Region						29.0	25.6	26.1	29.7	24.3
Walloon Region						30.4	29.3	25.3	30.7	29.6
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						6.4	6.2	6.0	6.2	6.2
Flemish Region	3.9	4.3	4.3	4.4	4.7	5.2	5.4	4.7	5.1	5.0
Brussels Capital Region						7.5	7.5	9.0	7.0	7.2
Walloon Region						8.1	7.5	7.5	7.9	8.2

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Head and neck cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						601	629			581
Flemish Region	338	385	323	329	367	365	352	347	327	317
Brussels Capital Region	79	54	66	60	56	58	52	59	60	56
Walloon Region						178	225			208
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						176	152			162
Flemish Region	80	74	85	84	76	78	81	68	85	87
Brussels Capital Region	14	22	18	24	15	29	22	20	20	15
Walloon Region						69	49			60
Head and neck cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						7.5	7.5			6.8
Flemish Region	7.3	8.2	6.9	6.8	7.6	7.3	6.9	6.7	6.2	6.0
Brussels Capital Region	12.9	8.2	9.8	9.2	8.9	9.2	7.6	8.8	9.1	8.5
Walloon Region						7.4	8.6			7.8
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.6	1.3			1.5
Flemish Region	1.4	1.3	1.5	1.4	1.2	1.2	1.3	1.0	1.2	1.3
Brussels Capital Region	1.8	2.4	2.1	2.4	1.4	3.0	1.6	2.2	2.0	1.6
Walloon Region						2.0	1.4			1.7

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 13 Head and neck cancer: incidence and mortality by sex and region, 1999-2008



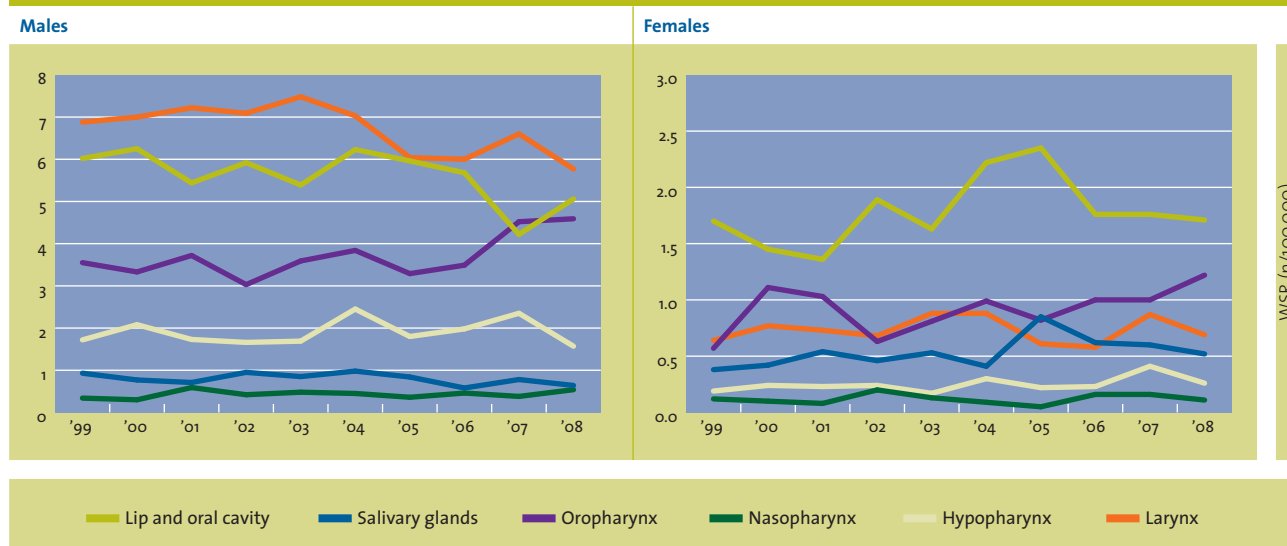
- In the Flemish Region, head and neck cancer incidence significantly decreases in males (EAPC = 0.9% [p = 0.04], while the trend in females increases (EAPC = 2.9% [p = 0.00]).
- In the same period, mortality in the Flemish Region decreases significantly in males (EAPC = 2.3% [p = 0.01]). The observed decrease in females is not significant (EAPC = -1.9% [p = 0.15]).
- In the Brussels Capital Region, no significant trend in mortality is observed.

Figure 14 Head and neck cancer: incidence by age group, sex and region, 1999-2008



- Under the age of 35 years, head and neck cancer is very rare and therefore not included in the figure.
- In the age group 35-49 years, the incidence rate in males is 3.3 times higher than the incidence rate in females.
  - In this age group, the highest incidence rate is observed in the Walloon Region.
  - A significant decrease is observed in males in the Flemish Region (EAPC = -6.6% [p = 0.00]). In females, a non-significant decrease is observed (EAPC = -2.3% [p = 0.24]).
- In the age group 50-74 years, the male/female ratio is 4.0.
  - Higher incidence rates in males and females are observed in the Brussels Capital and Walloon Region when compared to the Flemish Region.
  - In the Flemish Region, a significant increasing trend is observed in females in this age group (EAPC = 4.5% [p = 0.00]). In males, the incidence rate in the Flemish Region remains stable.
  - The incidence rates in the age group 50-74 years are 4 times higher than in the age group 35-49 years.
- In the age group 75 years and older, the male/female ratio is 3.8. No differences are observed over time and between the regions.

**Figure 15** Head and neck: incidence by tumour localisation and sex, Flemish Region 1999-2008



- In males, the most frequently occurring head and neck tumours are laryngeal tumours, whereas in females tumours of the lip and oral cavity are the most frequent.
- In males, a significant decrease is observed for laryngeal cancer (EAPC = -2.1% [p = 0.02]).

**Table 11** Head and neck cancer: incidence by primary site and sex, Belgium 2008

	Total		Males		Females	
	N	%	N	%	N	%
Lip and oral cavity	667	26.5	473	24.4	194	33.4
Lip	55	2.2	40	2.1	15	2.6
Tongue	238	9.5	165	8.5	73	12.6
Gum	70	2.8	36	1.9	34	5.9
Floor of mouth	183	7.3	153	7.9	30	5.2
Hard palate and palate unspecified	34	1.4	22	1.1	12	2.1
Mouth, NOS	87	3.5	57	2.9	30	5.2
Pharynx	897	35.7	693	35.8	204	35.2
- Oropharynx	620	24.7	467	24.1	153	26.4
Base of tongue	126	5.0	100	5.2	26	4.5
Soft palate and uvula	61	2.4	39	2.0	22	3.8
Tonsil	265	10.5	192	9.9	73	12.6
Oropharynx, other and unspecified	168	6.7	136	7.0	32	5.5
- Nasopharynx	55	2.2	41	2.1	14	2.4
- Hypopharynx	222	8.8	185	9.6	37	6.4
Pyriform sinus	141	5.6	120	6.2	21	3.6
Hypopharynx	81	3.2	65	3.4	16	2.8
Larynx	676	26.9	590	30.5	86	14.8
Glottis	366	14.6	333	17.2	33	5.7
Supraglottis	200	8.0	168	8.7	32	5.5
Larynx other and unspecified	110	4.4	89	4.6	21	3.6
Nasal Cavity and Paranasal Sinuses	129	5.1	91	4.7	38	6.6
Nasal cavity and middle ear	44	1.7	30	1.6	14	2.4
Accessory sinuses	85	3.4	61	3.2	24	4.1
Salivary Glands	107	4.3	60	3.1	47	8.1
Parotid gland	88	3.5	50	2.6	38	6.6
Salivary glands, NOS	19	0.8	10	0.5	9	1.6
Lip, oral cavity and pharynx, NOS	39	1.6	28	1.4	11	1.9
<b>Head and neck cancer</b>	<b>2,515</b>	<b>100.0</b>	<b>1,935</b>	<b>100.0</b>	<b>580</b>	<b>100.0</b>

## 2.3 DIGESTIVE TRACT

### 2.3.1 OESOPHAGUS (ICD-10: C15)

#### General results, 2008

**Table 12** Oesophageal cancer: incidence and mortality by sex and region, 2008

	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
<b>Males</b>							
Belgium	664	12.7	7.4	0.9	509	9.7	5.4
Flemish Region	389	12.8	7.1	0.9	322	10.6	5.5
Brussels Capital Region	44	8.7	6.1	0.8	33	6.5	4.0
Walloon Region	231	13.8	8.4	1.0	154	9.2	5.4
<b>Females</b>							
Belgium	228	4.2	1.9	0.2	165	3.0	1.2
Flemish Region	115	3.7	1.6	0.2	86	2.8	1.0
Brussels Capital Region	32	5.9	2.9	0.3	23	4.2	1.9
Walloon Region	81	4.6	2.4	0.3	56	3.1	1.3

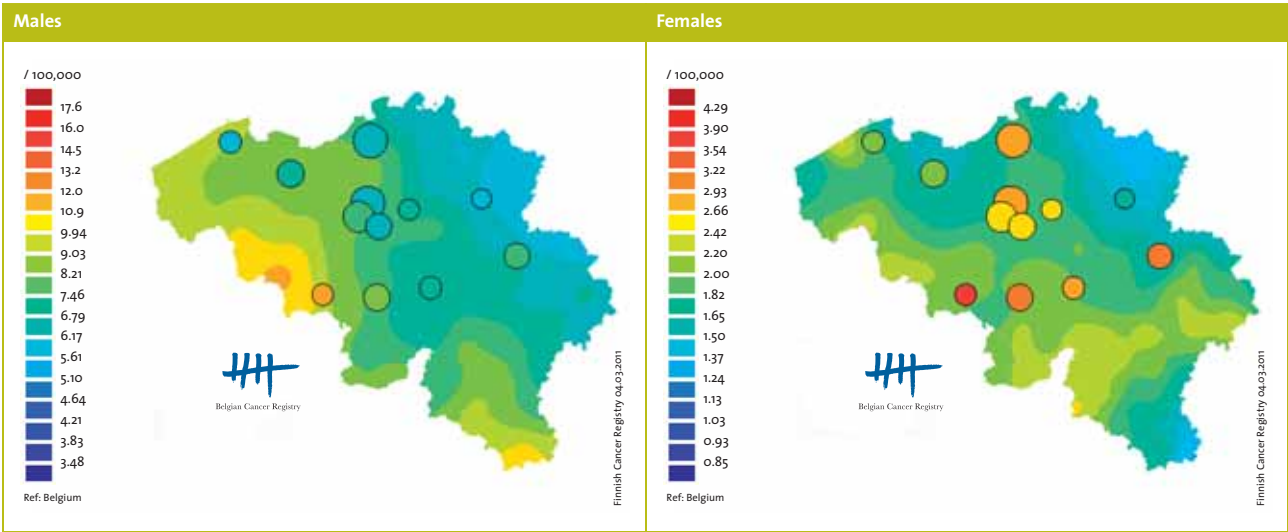
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

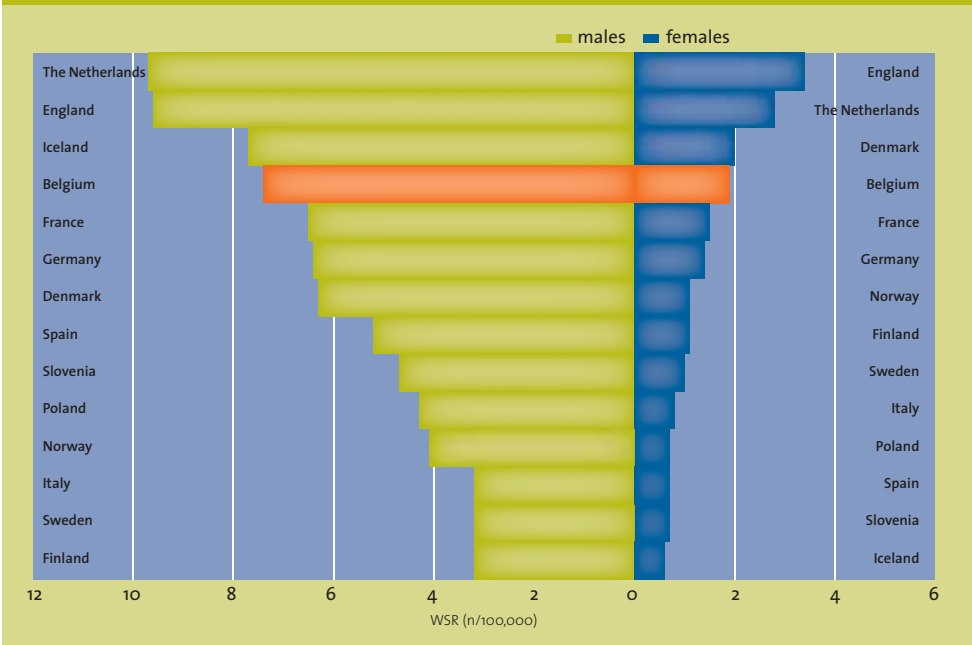
CRi: cumulative risk 0-74 years (%)

- Oesophageal cancer is the 11<sup>th</sup> most frequent tumour in males (2.0%). In females, oesophageal cancer is less frequent (0.8%).
- Oesophageal cancer is the 7<sup>th</sup> most frequent cause of cancer death in males (3.4%). In females, oesophageal cancer is a less frequent cause of cancer death (1.4%).
- When comparing incidence rates between the three Belgian regions, the highest rate is observed in males in the Walloon Region. The highest rate in females is observed in the Brussels Capital Region.
- Mean age at diagnosis is 66 years in males and 70 years in females.

**Figure 16** Oesophageal cancer incidence in Belgium 2004-2008



**Figure 17** Oesophageal cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(64)</sup>



## Trends

**Table 13** Oesophageal cancer: incidence and mortality by sex and region, 1999-2008

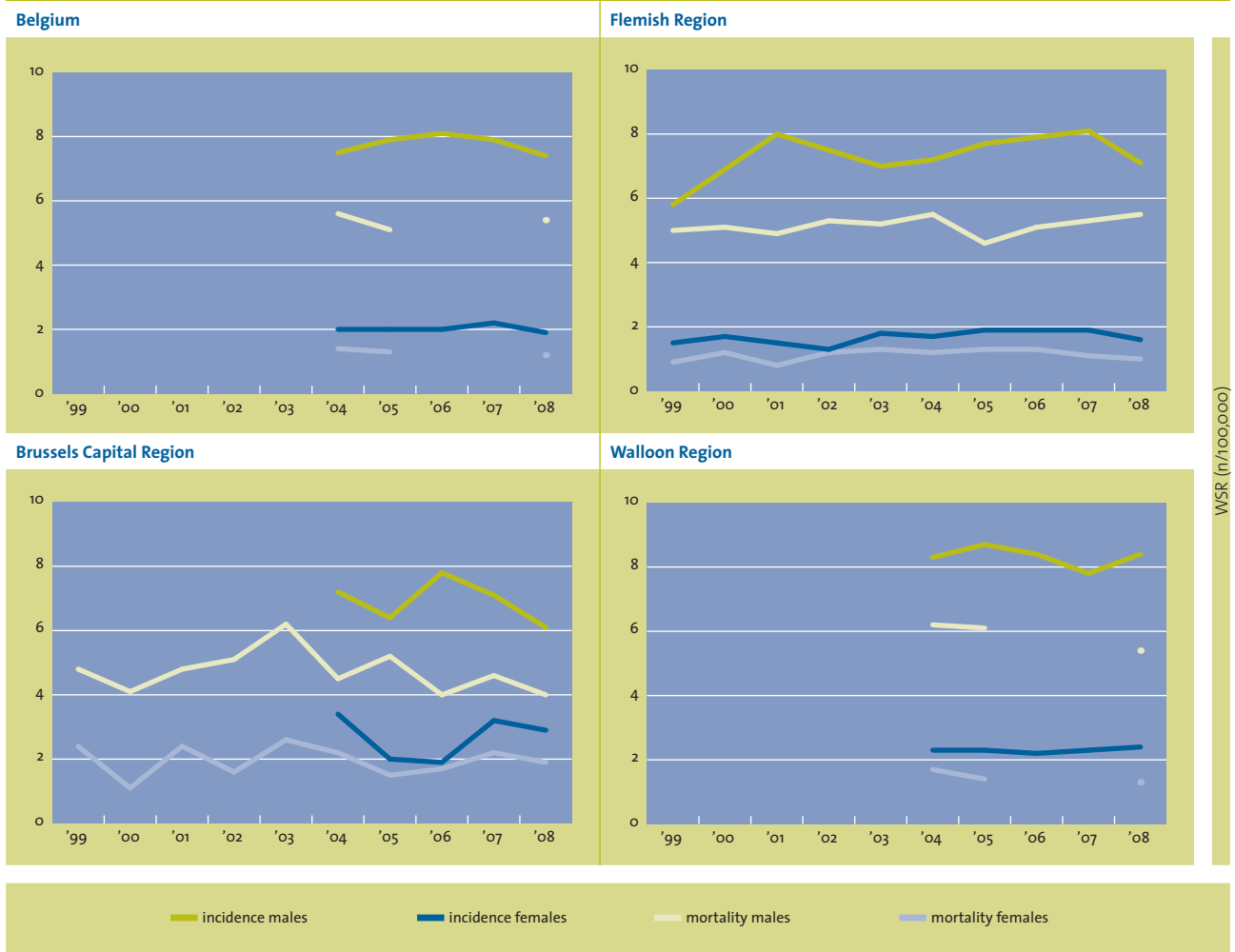
Oesophageal cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						627	669	697	692	664
Flemish Region	272	329	385	366	351	364	398	426	437	389
Brussels Capital Region						48	44	52	48	44
Walloon Region						215	227	219	207	231
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						235	230	220	253	228
Flemish Region	95	109	93	89	116	123	130	131	139	115
Brussels Capital Region						28	20	16	32	32
Walloon Region						84	80	73	82	81
Oesophageal cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						7.5	7.9	8.1	7.9	7.4
Flemish Region	5.8	6.9	8.0	7.5	7.0	7.2	7.7	7.9	8.1	7.1
Brussels Capital Region						7.2	6.4	7.8	7.1	6.1
Walloon Region						8.3	8.7	8.4	7.8	8.4
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.0	2.0	2.0	2.2	1.9
Flemish Region	1.5	1.7	1.5	1.3	1.8	1.7	1.9	1.9	1.9	1.6
Brussels Capital Region						3.4	2.0	1.9	3.2	2.9
Walloon Region						2.3	2.3	2.2	2.3	2.4

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Oesophageal cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						487	453			509
Flemish Region	243	250	244	268	269	294	253	281	300	322
Brussels Capital Region	34	27	32	43	44	33	37	32	31	33
Walloon Region						160	163			154
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						171	171			165
Flemish Region	68	81	63	84	93	82	99	99	103	86
Brussels Capital Region	25	14	25	24	24	24	16	17	23	23
Walloon Region						65	56			56
Oesophageal cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						5.6	5.1			5.4
Flemish Region	5.0	5.1	4.9	5.3	5.2	5.5	4.6	5.1	5.3	5.5
Brussels Capital Region	4.8	4.1	4.8	5.1	6.2	4.5	5.2	4.0	4.6	4.0
Walloon Region						6.2	6.1			5.4
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.4	1.3			1.2
Flemish Region	0.9	1.2	0.8	1.2	1.3	1.2	1.3	1.3	1.1	1.0
Brussels Capital Region	2.4	1.1	2.4	1.6	2.6	2.2	1.5	1.7	2.2	1.9
Walloon Region						1.7	1.4			1.3

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

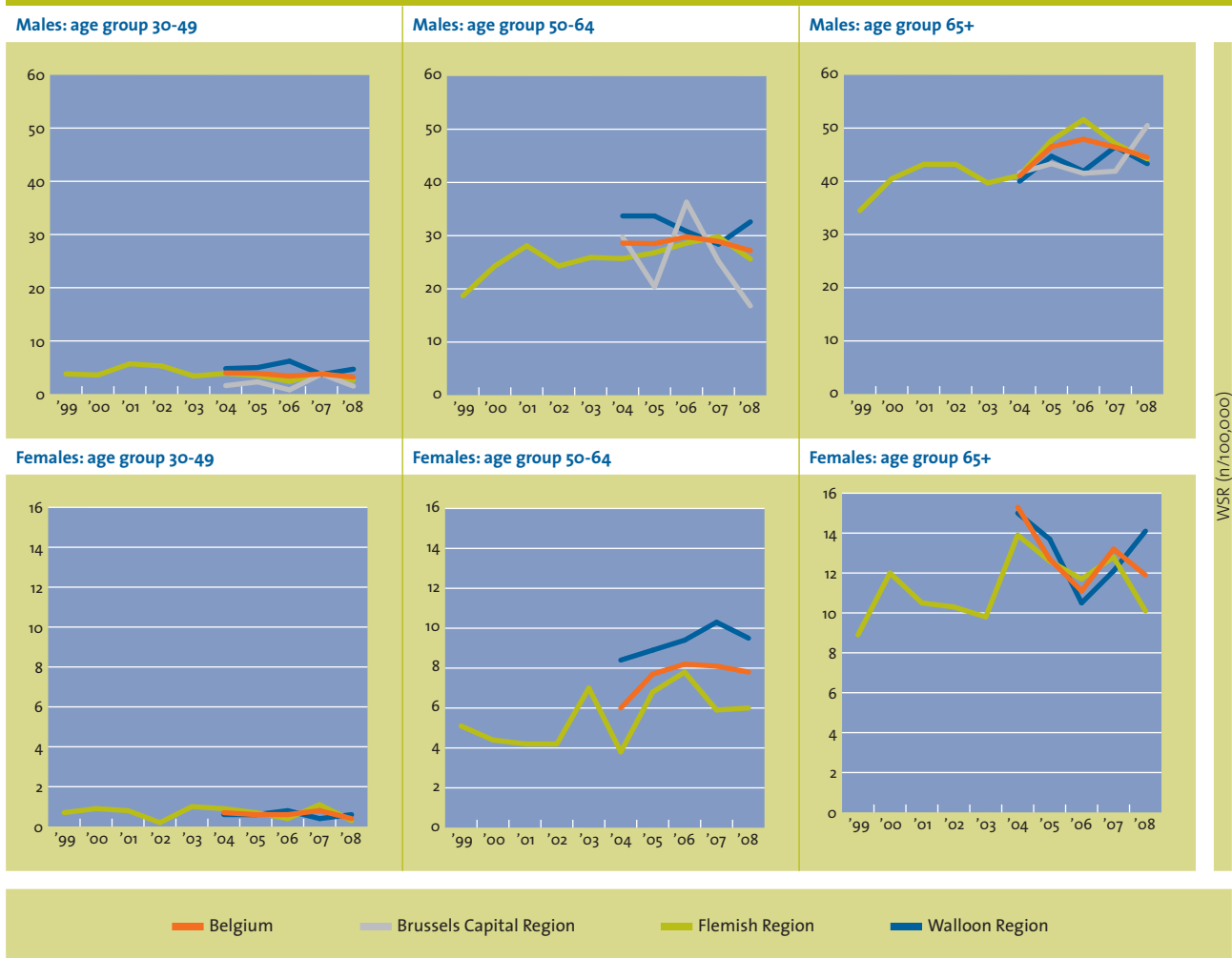
Figure 18 Oesophageal cancer: incidence and mortality by sex and region, 1999-2008



- In the Flemish Region, non-significant increases in incidence are observed in both sexes (males: EAPC = 1.8%  $p = [0.10]$ , females: EAPC = 2.4%  $[p = 0.11]$ ).
- No significant trends are observed in mortality in the Flemish Region and Brussels Capital Region.

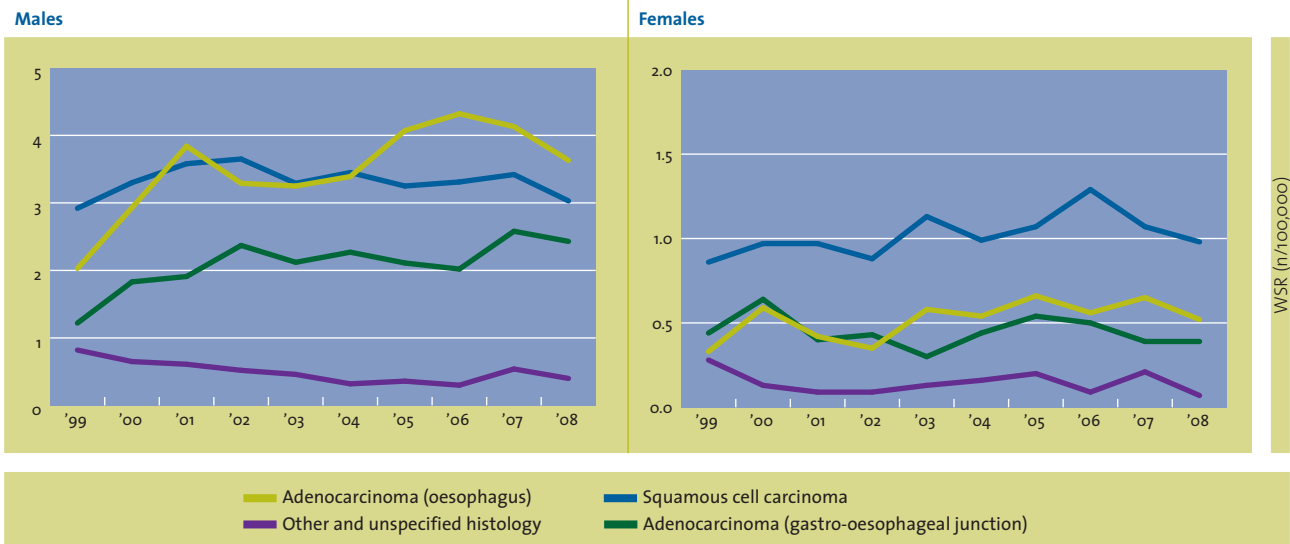


Figure 19 Oesophageal cancer: incidence by age group, sex and region, 1999-2008



- Oesophageal cancer is extremely rare under the age of 30 years and therefore not included in the figure.
- Data from the Brussels Capital Region in females are not represented in the figure due to the large annual variations in incidence rates.
- In the age group 30-49 years, oesophageal cancer is rare; no differences are observed over time and between the regions.
- In the age group 50-64 years, the incidence in males is more than 3 times higher when compared to females (male/female ratio is 3.4).
  - In females, the highest incidence rate is observed in the Walloon Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 2.8% [p = 0.04]). The observed increase in females is non-significant (EAPC = 4.7% [p = 0.10]).
- In the age group of 65 years and older, the male/female ratio is 3.5.
  - No regional differences are observed.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 2.8% [p = 0.02]). In females, the observed increase is non-significant (EAPC = 1.9% [p = 0.25]).
  - In the age group 65 years and older, the incidence is 1.5 times higher than in the age group 50-64 years.

Figure 20 Oesophageal cancer: incidence by histology and sex, Flemish Region 1999-2008



- In males, the incidence of squamous cell carcinoma remains stable (EAPC = -0.07% [p = 0.93]) while the incidence in adenocarcinoma increases (EAPC = 5.6% [p = 0.01]) and becomes the most frequent histology in 2004.
- The dominant histology in females is squamous cell carcinoma, with an incidence rate almost twice as high as adenocarcinoma. In females, a non-significant increase is observed for these histological subtypes (adenocarcinoma: EAPC = 5.1% [p = 0.06], squamous cell carcinoma: EAPC = 2.3% [p = 0.08]).
- The rates for adenocarcinoma of the oesophagus and the gastro-oesophageal junction show a similar pattern in males (EAPC = 5.4% [p = 0.01]). In females, no significant trend is observed (EAPC = -1.41% [p = 0.56]).

## 2.3.2 STOMACH (ICD-10: C16)

### General results, 2008

**Table 14** Stomach cancer: incidence and mortality by sex and region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	804	15.4	7.9	0.9	484	9.3	4.5
Flemish Region	530	17.4	8.4	0.9	311	10.2	4.7
Brussels Capital Region	63	12.5	8.4	1.0	36	7.1	4.7
Walloon Region	211	12.6	7.0	0.8	137	8.2	4.1
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	499	9.2	3.8	0.4	305	5.6	2.0
Flemish Region	288	9.2	3.6	0.4	188	6.0	2.1
Brussels Capital Region	59	10.9	6.6	0.8	23	4.2	1.7
Walloon Region	152	8.5	3.6	0.4	94	5.3	1.9

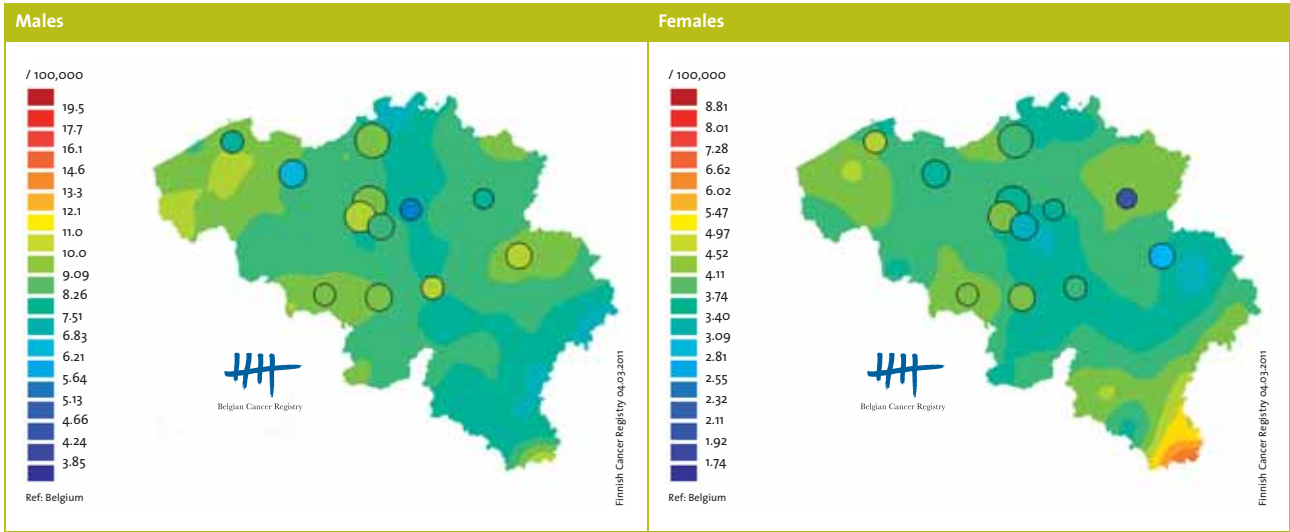
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

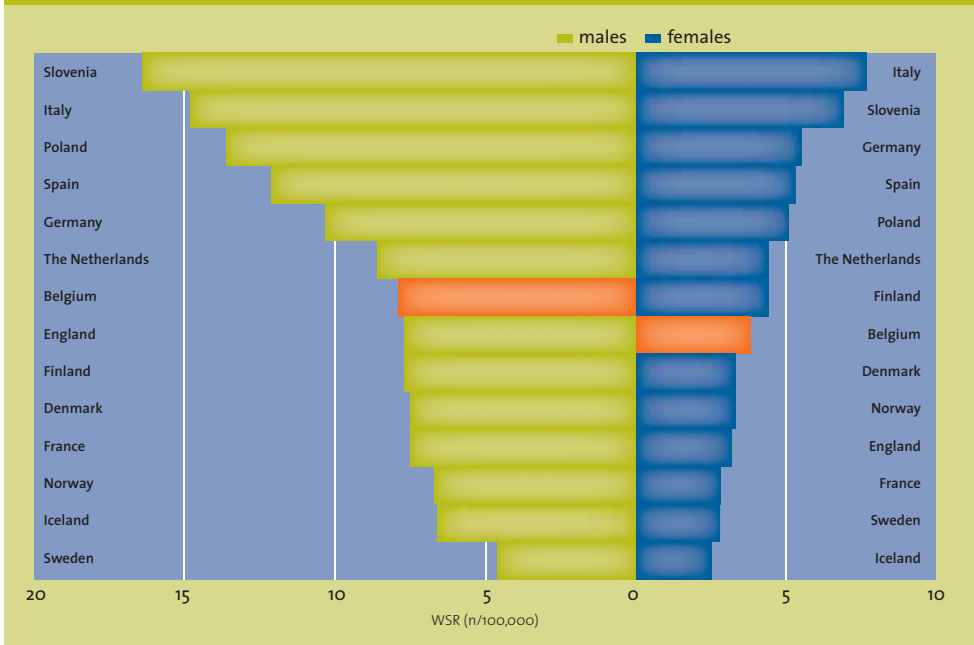
CRi: cumulative risk 0-74 years (%)

- Stomach cancer is the 9<sup>th</sup> most frequent tumour in males (2.5%) and the 15<sup>th</sup> most frequent in females (1.8%).
- Stomach cancer is the 9<sup>th</sup> most frequent cause of cancer death in males (3.2%) and females (2.6%).
- The lowest incidence rates are observed in the Walloon Region. In females, higher incidence rates are observed in the Brussels Capital Region.
- Mean age at diagnosis is 70 years in males and 72 years in females.

**Figure 21** Stomach cancer incidence in Belgium, 2004-2008



**Figure 22** Stomach cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(96)</sup>



## Trends

**Table 15** Stomach cancer: incidence and mortality by sex and region, 1999-2008

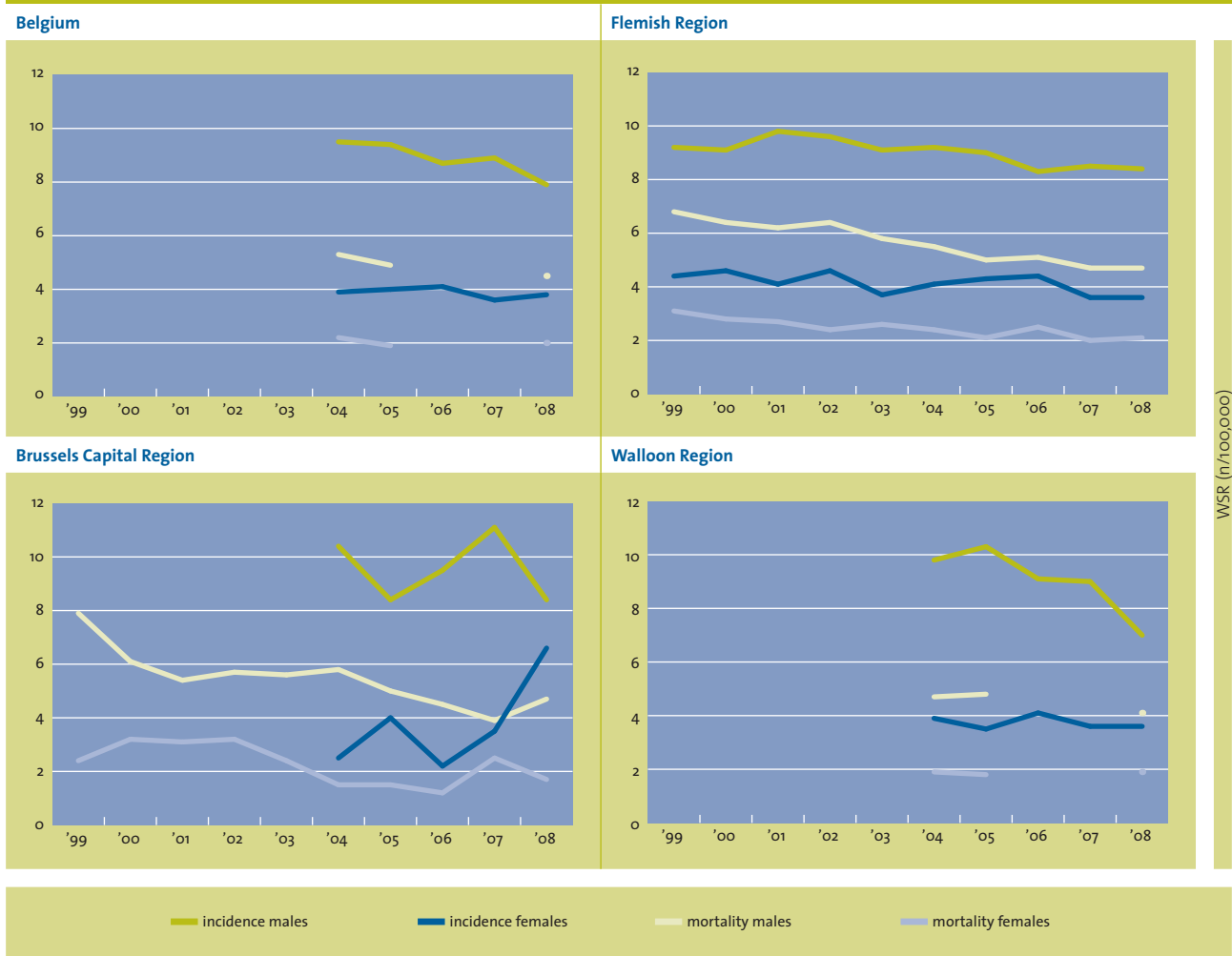
Stomach cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						885	875	857	872	804
Flemish Region	486	492	533	526	513	533	522	511	525	530
Brussels Capital Region						76	68	74	80	63
Walloon Region						276	285	272	267	211
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						513	525	528	458	499
Flemish Region	323	334	325	353	307	328	339	335	275	288
Brussels Capital Region						34	40	29	40	59
Walloon Region						151	146	164	143	152
Stomach cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						9.5	9.4	8.7	8.9	7.9
Flemish Region	9.2	9.1	9.8	9.6	9.1	9.2	9.0	8.3	8.5	8.4
Brussels Capital Region						10.4	8.4	9.5	11.1	8.4
Walloon Region						9.8	10.3	9.1	9.0	7.0
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						3.9	4.0	4.1	3.6	3.8
Flemish Region	4.4	4.6	4.1	4.6	3.7	4.1	4.3	4.4	3.6	3.6
Brussels Capital Region						2.5	4.0	2.2	3.5	6.6
Walloon Region						3.9	3.5	4.1	3.6	3.6

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Stomach cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						506	501			484
Flemish Region	364	354	358	365	340	328	307	311	294	311
Brussels Capital Region	62	44	47	44	44	44	41	34	31	36
Walloon Region						134	153			137
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						337	309			305
Flemish Region	267	247	250	227	227	217	204	221	181	188
Brussels Capital Region	36	40	39	46	27	26	20	14	28	23
Walloon Region						94	85			94
Stomach cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						5.3	4.9			4.5
Flemish Region	6.8	6.4	6.2	6.4	5.8	5.5	5.0	5.1	4.7	4.7
Brussels Capital Region	7.9	6.1	5.4	5.7	5.6	5.8	5.0	4.5	3.9	4.7
Walloon Region						4.7	4.8			4.1
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.2	1.9			2.0
Flemish Region	3.1	2.8	2.7	2.4	2.6	2.4	2.1	2.5	2.0	2.1
Brussels Capital Region	2.4	3.2	3.1	3.2	2.4	1.5	1.5	1.2	2.5	1.7
Walloon Region						1.9	1.8			1.9

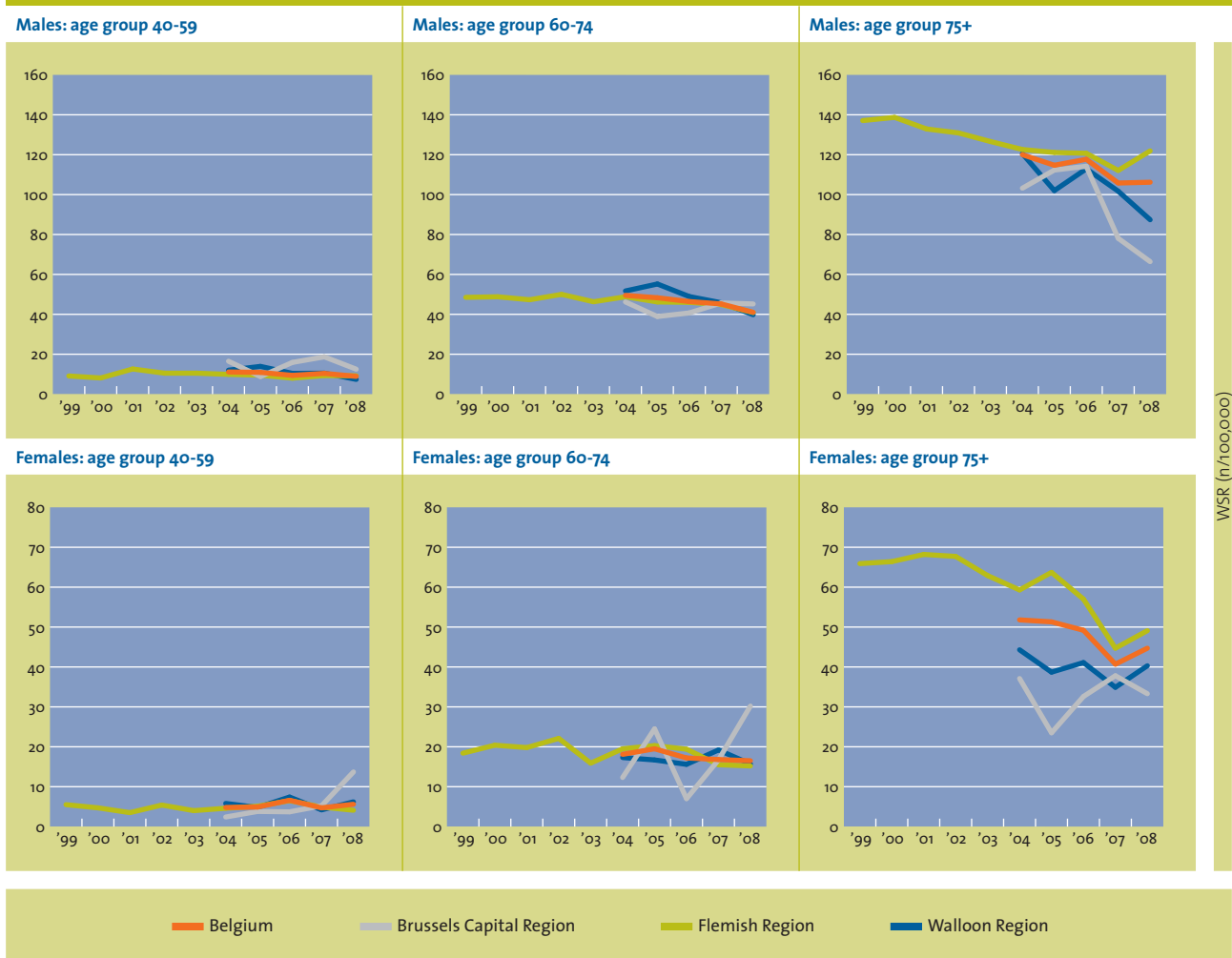
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

**Figure 23** Stomach cancer: incidence and mortality by sex and region, 1999-2008



- In the Flemish Region, a significant decrease is observed in stomach cancer incidence in males (EAPC = -1.4% [p = 0.01]) and females (EAPC = -1.9% [p = 0.05]).
- Mortality rates in the Flemish and Brussels Capital Region decrease significantly.
  - Flemish Region:
    - Males: EAPC = -4.3% (p = 0.00).
    - Females: EAPC = -4.1% (p = 0.00).
  - Brussels Capital Region :
    - Males: EAPC = -5.4% (p = 0.00).
    - Females: EAPC = -7.3% (p = 0.04).

Figure 24 Stomach cancer: incidence by age group, sex and region, 1999-2008



- Stomach cancer is rare under the age of 40 years and therefore not included in the figure.
- In the age group 40-59 years, the male/female ratio is 1.6. No differences are observed over time and between the regions.
- In the age group 60-74 years, the incidence rates in males are more than twice as high when compared to females (male/female ratio is 2.5).
  - No differences are observed between the regions.
  - In the Flemish Region, a significant decrease is observed in males (EAPC = -1.5% [p = 0.01]) and a non-significant decrease is observed in females (EAPC = -2.3% [p = 0.11]).
- In the age group 75 years and older, the male/female ratio is 2.4.
  - In the Walloon and Brussels Capital Region, lower incidence rates are observed when compared to the Flemish Region.
  - In the Flemish Region, a significant decrease is observed in both sexes (males: EAPC = -2.0% [p = 0.00], females: EAPC = 3.9% [0.00]).
  - The incidence rates in the age group 75 years and older are 2 to 3 times higher when compared to the age group 60-74 years.

## 2.3.3 COLON AND RECTUM (ICD-10: C18-C20)

### General results, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	4,486	85.9	44.8	5.2	1,555	29.8	14.1
Flemish Region	2,922	96.1	47.2	5.4	913	30.0	13.5
Brussels Capital Region	331	65.4	42.3	4.9	106	21.0	12.2
Walloon Region	1,233	73.5	40.6	4.6	536	31.9	16.0
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	3,689	67.8	28.8	3.3	1,375	25.3	8.4
Flemish Region	2,285	73.2	30.7	3.5	804	25.8	8.5
Brussels Capital Region	303	55.8	25.7	2.8	127	23.4	9.3
Walloon Region	1,101	61.9	26.0	2.9	444	25.0	8.0

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Colorectal cancer is the 3<sup>rd</sup> most frequent tumour in males (13.8%) and the 2<sup>nd</sup> most frequent in females (13.4%).
- Colorectal cancer is the 2<sup>nd</sup> most frequent cause of cancer death in males (10.3%) and the 3<sup>rd</sup> most frequent cause of cancer death in females (11.9%).
- The highest incidence rates in both sexes are observed in the Flemish Region.
- Mean age at diagnosis is 70 years in males and 72 years in females.



Figure 25 Colorectal cancer incidence in Belgium, 2004-2008

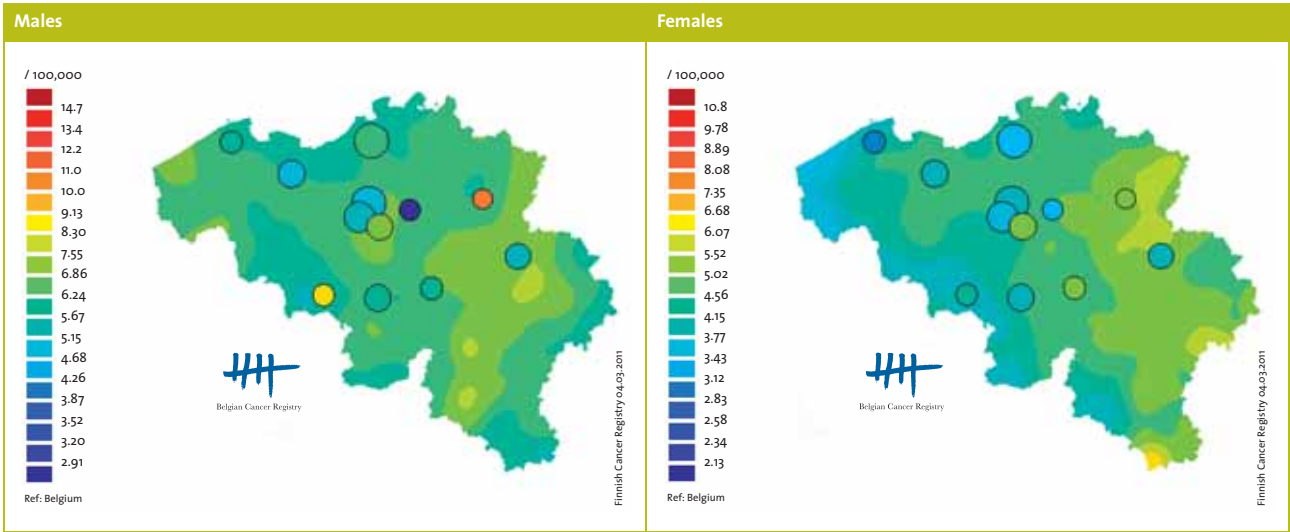
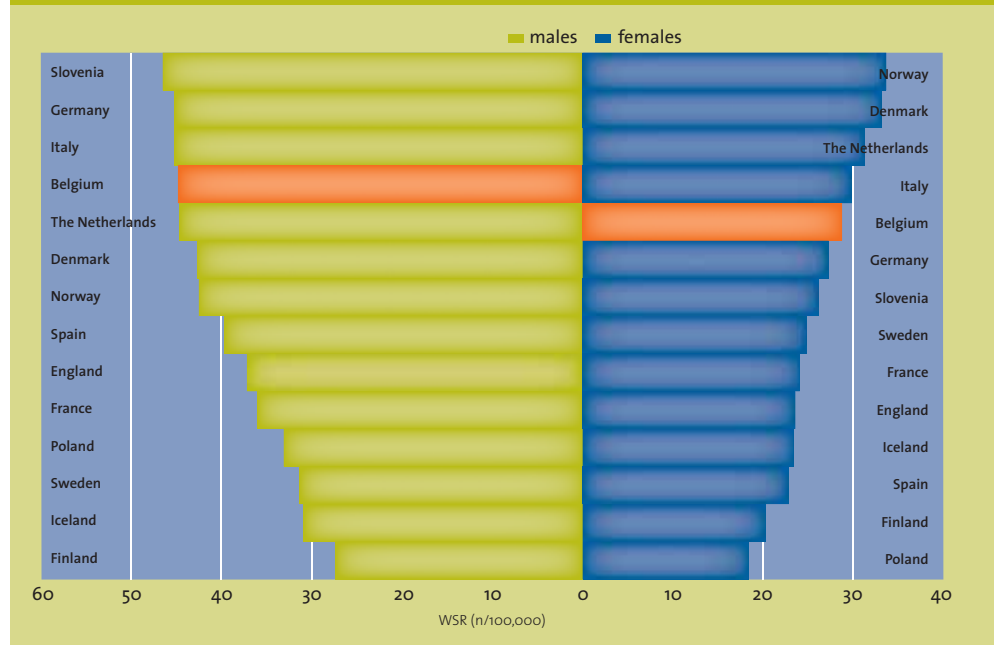


Figure 26 Colorectal cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>



## Trends

**Table 17** Colorectal cancer: incidence and mortality by sex and region, 1999-2008

Colorectal cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4,113	4,174	4,257	4,251	4,486
Flemish Region	2,100	2,326	2,298	2,346	2,477	2,617	2,648	2,746	2,695	2,922
Brussels Capital Region						295	323	306	349	331
Walloon Region						1,201	1,203	1,205	1,207	1,233
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						3,514	3,479	3,585	3,645	3,689
Flemish Region	1,685	1,920	2,017	1,965	2,081	2,055	2,009	2,137	2,219	2,285
Brussels Capital Region						326	332	347	292	303
Walloon Region						1,133	1,138	1,101	1,134	1,101

Colorectal cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						43.9	43.7	44.0	42.8	44.8
Flemish Region	40.5	43.8	42.9	42.8	44.2	45.5	45.7	46.3	44.1	47.2
Brussels Capital Region						39.1	41.9	37.2	43.5	42.3
Walloon Region						41.9	40.3	41.0	40.1	40.6
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						27.9	28.3	28.7	28.5	28.8
Flemish Region	24.8	27.9	29.5	27.4	29.7	28.2	27.8	29.8	29.5	30.7
Brussels Capital Region						26.4	27.9	30.2	25.3	25.7
Walloon Region						28.0	29.1	26.3	27.4	26.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Colorectal cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,453	1,504			1,555
Flemish Region	984	1,005	905	915	865	926	945	956	927	913
Brussels Capital Region	105	123	111	115	102	111	127	114	130	106
Walloon Region						416	432			536
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,388	1,378			1,375
Flemish Region	906	851	771	841	838	789	807	820	818	804
Brussels Capital Region	151	125	168	137	159	133	133	144	112	127
Walloon Region						466	438			444

Colorectal cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						14.4	14.6			14.1
Flemish Region	18.1	18.2	16.0	15.6	14.6	14.9	15.1	14.9	14.1	13.5
Brussels Capital Region	12.9	13.8	13.3	14.1	11.9	13.2	14.3	13.1	14.9	12.2
Walloon Region						13.6	13.5			16.0
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						9.2	9.1			8.4
Flemish Region	11.0	10.3	8.9	9.7	9.4	9.3	9.4	8.8	9.0	8.5
Brussels Capital Region	9.1	7.1	10.8	9.3	10.4	8.6	8.8	9.9	7.6	9.3
Walloon Region						9.1	8.6			8.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 27 Colorectal cancer: incidence and mortality by sex and region, 1999-2008



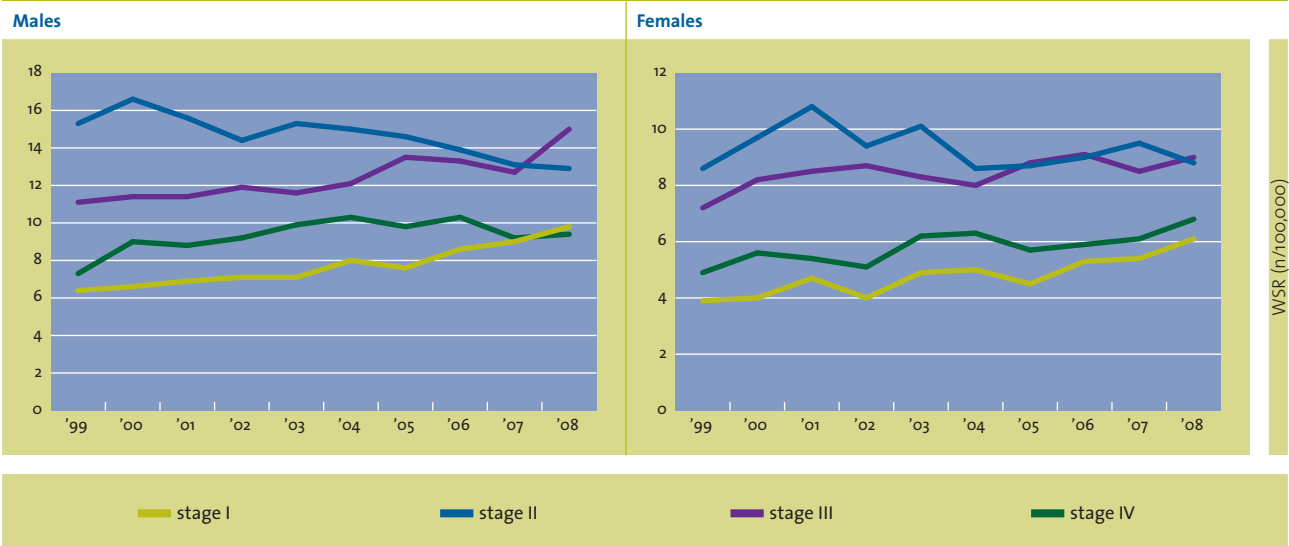
- In the Flemish Region, a significant increase is observed in incidence rates in both sexes (males: EAPC = 1.2% [p = 0.00], females: EAPC = 1.5% [p = 0.02]) and a significant decrease is observed in mortality rates (males: EAPC = -2.9% [p = 0.00], females: EAPC = -2.1% [p = 0.00]).
- In the Brussels Capital Region, no significant trend in mortality is observed.

**Figure 28** Colorectal cancer: incidence by age group, sex and region, 1999-2008



- Under the age of 35 years, colorectal cancer is very rare (data not shown).
- In the age group 35-49 years, no difference in incidence is observed between the sexes (male/female ratio is 1.1).
  - The incidence rates in the three Belgian regions are comparable.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 2.5% [p = 0.02]) and females (EAPC = 3.4% [p = 0.04]).
- In the age group 50-64 years, the incidence in males is 1.5 times higher than in females.
  - No differences are observed in incidence rates between the regions.
  - A significant increase is observed in incidence rates in the Flemish Region in both sexes (males: EAPC = 1.2% [p = 0.01], females: EAPC = 1.5% [p = 0.03]).
  - When compared with the age group 35-49 years, the incidence rates in the age group 50-64 years are 6 times higher in males and 5 times higher in females.
- In the age group 65 years and older, the male/female ratio is 1.7.
  - The highest incidence rates are observed in the Flemish Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 1.0% [p = 0.047]) and a non-significant increase in females (EAPC = 0.9% [p = 0.13]).
  - The incidence rates in the age group 65 years and older are 3 times higher than the incidence rates in the age group 50-64 years.

Figure 29 Colorectal cancer: incidence by stage and sex, Flemish Region 1999-2008



- Incidence rates in stage I tumours show a significant yearly increase of about 4.5% in males and females (males: EAPC = 4.6% [p = 0.00], females: EAPC = 4.3% [p = 0.00]).
- A significant decrease is observed in incidence rate in stage II tumours in males (EAPC = -2.3% [p = 0.00]). In females, no significant trend is observed (EAPC = -0.8% [p = 0.40]).
- Incidence rates in stage III tumour increase significantly in males and females. The increase in males (EAPC = 2.9% [p = 0.00]) is twice as high as the increase in females (EAPC = 1.6% [p = 0.03]).
- A significant increase in incidence rates in stage IV tumours is observed in females (EAPC = 2.6% [p = 0.01]). In males, a non-significant increase is observed (EAPC = 2.0% [p = 0.06]).

## 2.3.4 LIVER (ICD-10: C22)

### General results, 2008

**Table 18** Liver cancer: incidence and mortality by sex and region, 2008

	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
<b>Males</b>							
Belgium	413	7.9	4.7	0.6	444	8.5	4.5
Flemish Region	226	7.4	4.2	0.5	229	7.5	3.6
Brussels Capital Region	35	6.9	4.8	0.6	48	9.5	6.6
Walloon Region	152	9.1	5.6	0.8	167	10.0	5.6
<b>Females</b>							
Belgium	192	3.5	1.7	0.2	309	5.7	1.9
Flemish Region	105	3.4	1.7	0.2	161	5.2	1.7
Brussels Capital Region	21	3.9	2.2	0.2	44	8.1	3.2
Walloon Region	66	3.7	1.7	0.2	104	5.8	2.1

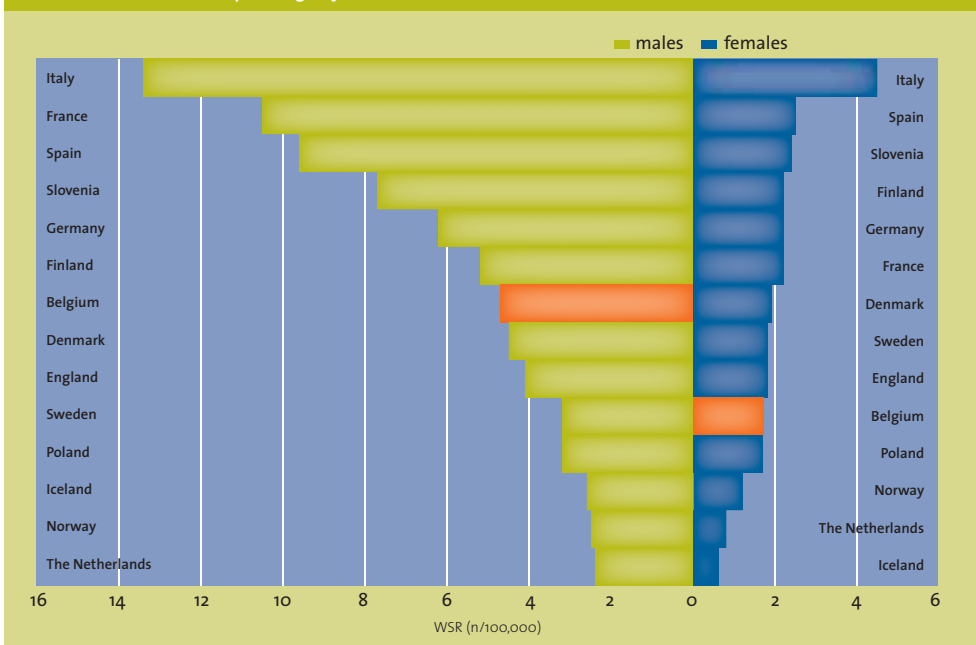
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Liver cancer is a rare disease in males (1.3%) and females (0.7%).
- Liver cancer is the 10<sup>th</sup> most frequent cause of cancer death in males (2.9%) and the 8<sup>th</sup> most frequent cause of cancer death in females (2.7%). Mortality/incidence ratios are above 1 in both sexes (males: 1.08, females: 1.61). This is probably due to an overreporting of liver cancer (misclassification) in mortality statistics. The liver is known to be a frequent site of metastasis and some registered deaths by liver cancer are in fact metastasised cancers from other primary localisations.
- The incidence rates are comparable between the regions.
- Mean age at diagnosis is 66 years in males and 68 years in females.

**Figure 30** Liver cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(56)</sup>



## Trends

**Table 19** Liver cancer: incidence and mortality by sex and region, 1999-2008

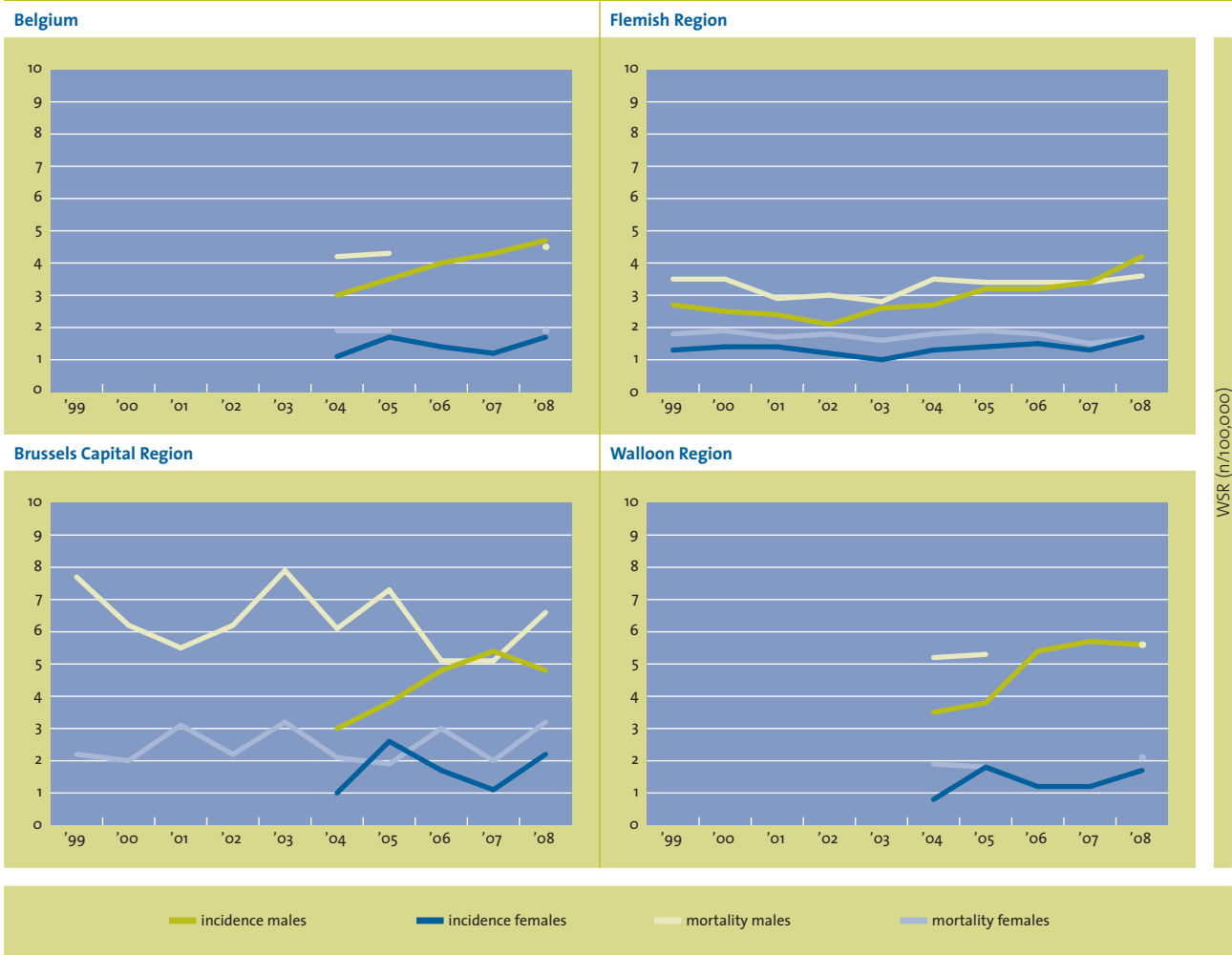
Liver cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						261	303	346	370	413
Flemish Region	126	125	123	106	120	142	169	169	185	226
Brussels Capital Region						20	29	35	36	35
Walloon Region						99	105	142	149	152
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						116	169	156	140	192
Flemish Region	91	98	90	76	71	75	92	90	82	105
Brussels Capital Region						13	23	17	12	21
Walloon Region						28	54	49	46	66
Liver cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						3.0	3.5	4.0	4.3	4.7
Flemish Region	2.7	2.5	2.4	2.1	2.6	2.7	3.2	3.2	3.4	4.2
Brussels Capital Region						3.0	3.8	4.8	5.4	4.8
Walloon Region						3.5	3.8	5.4	5.7	5.6
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.1	1.7	1.4	1.2	1.7
Flemish Region	1.3	1.4	1.4	1.2	1.0	1.3	1.4	1.5	1.3	1.7
Brussels Capital Region						1.0	2.6	1.7	1.1	2.2
Walloon Region						0.8	1.8	1.2	1.2	1.7

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Liver cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						400	401			444
Flemish Region	183	187	161	166	158	202	190	203	213	229
Brussels Capital Region	54	44	44	52	62	41	56	40	43	48
Walloon Region						157	155			167
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						270	271			309
Flemish Region	140	143	139	144	131	148	157	155	145	161
Brussels Capital Region	34	27	37	36	44	29	27	43	25	44
Walloon Region						93	87			104
Liver cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4.2	4.3			4.5
Flemish Region	3.5	3.5	2.9	3.0	2.8	3.5	3.4	3.4	3.4	3.6
Brussels Capital Region	7.7	6.2	5.5	6.2	7.9	6.1	7.3	5.1	5.1	6.6
Walloon Region						5.2	5.3			5.6
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.9	1.9			1.9
Flemish Region	1.8	1.9	1.7	1.8	1.6	1.8	1.9	1.8	1.5	1.7
Brussels Capital Region	2.2	2.0	3.1	2.2	3.2	2.1	1.9	3.0	2.0	3.2
Walloon Region						1.9	1.8			2.1

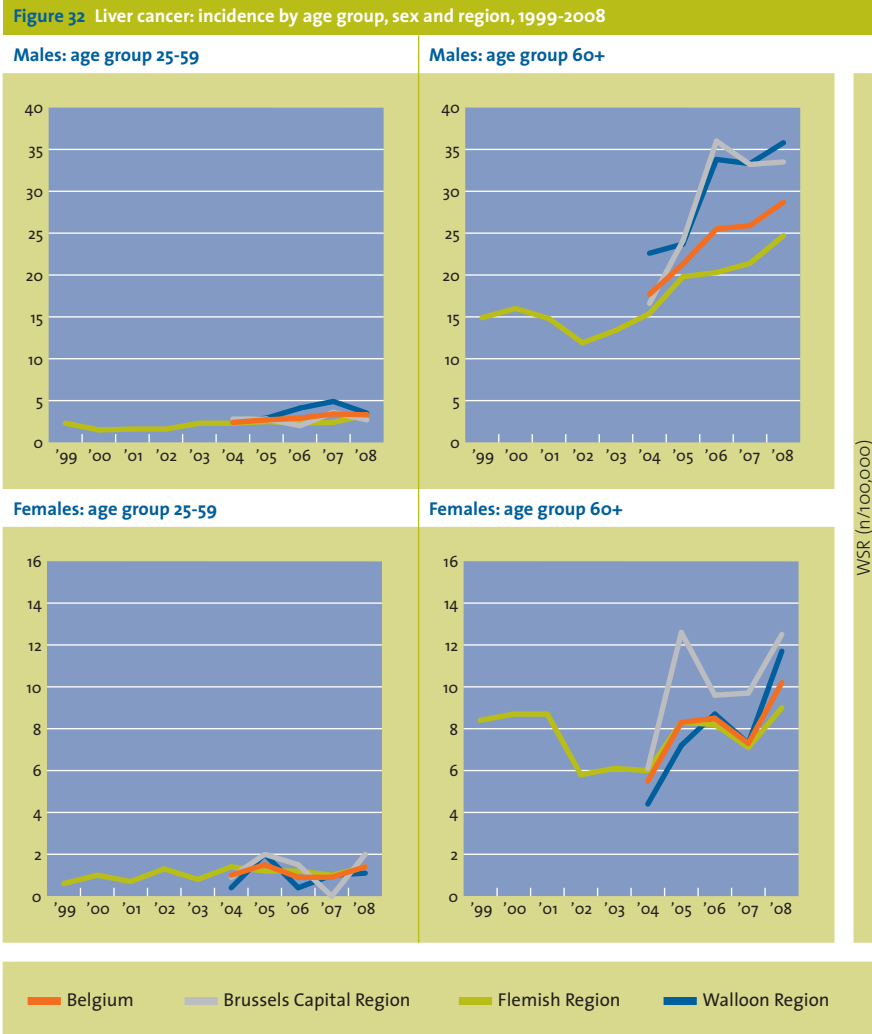
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 31 Liver cancer: incidence and mortality by sex and region, 1999-2008



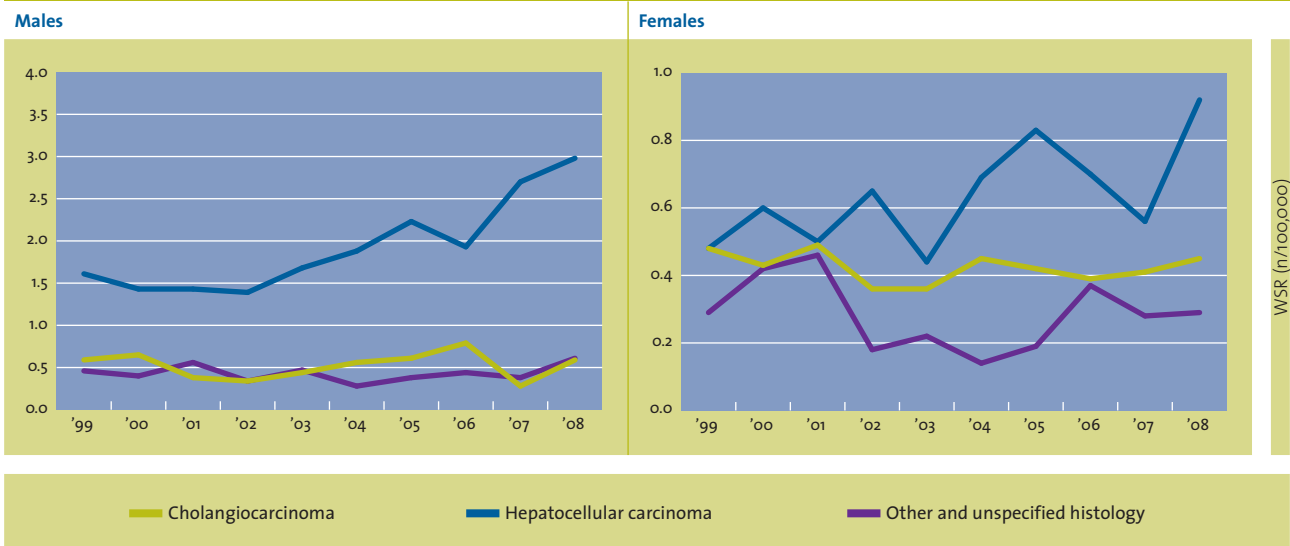
- In the Flemish Region, a yearly increase in liver cancer incidence (EAPC = 5.6% [p = 0.00]) is observed in males. In females, a non-significant increase is observed (EAPC = 1.4% [p = 0.38]).
- No significant changes are observed in mortality rates for liver cancer in the Flemish and Brussels Capital Region.





- Under the age of 25 years (data not shown), liver cancer is very rare. Almost all diagnoses under the age of 25 years are sarcoma or hepatoblastoma in newborns and young children.
- In the age group 25-59 years, the incidence rates in males are 2.4 times higher than in females.
  - The incidence rates are comparable between the regions.
  - In the Flemish Region, a significant increase is observed in both sexes (males: EAPC = 6.0% [p = 0.02], females: EAPC = 6.4% [p = 0.04]).
- In the age group 60 years and older, the male/female ratio is 2.8.
  - In this age group, the highest incidence rates are observed in the Brussels Capital and Walloon Region when compared to the Flemish Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 6.1% [p = 0.01]), while the rate in females remains stable (EAPC = 0.0% [p = 1.00]).

Figure 33 Liver cancer: incidence by histology and sex, Flemish Region 1999-2008



- The predominant histology is hepatocellular carcinoma.
- Hepatocellular carcinoma shows a significant increase in incidence rates in both sexes.
  - Males: EAPC = 8.2% (p = 0.00).
  - Females: EAPC = 5.1% (p = 0.05).
- The incidence rates for cholangiocarcinoma of the liver remain more stable.
  - Males: EAPC = -0.1% (p = 0.98).
  - Females: EAPC = -0.8% (p = 0.50).

## 2.3.5 GALLBLADDER AND BILIARY TRACT (ICD-10: C23-C24)

### General results, 2008

**Table 20** Cancer of the gallbladder and biliary tract: incidence and mortality by sex and region, 2008

	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
<b>Males</b>							
Belgium	157	3.0	1.6	0.2	71	1.4	0.6
Flemish Region	96	3.2	1.5	0.2	43	1.4	0.6
Brussels Capital Region	11	2.2	1.3	0.2	4	0.8	0.4
Walloon Region	50	3.0	1.7	0.2	24	1.4	0.7
<b>Females</b>							
Belgium	185	3.4	1.3	0.1	88	1.6	0.5
Flemish Region	122	3.9	1.4	0.2	44	1.4	0.4
Brussels Capital Region	9	1.7	0.9	0.1	8	1.5	0.5
Walloon Region	54	3.0	1.1	0.1	36	2.0	0.5

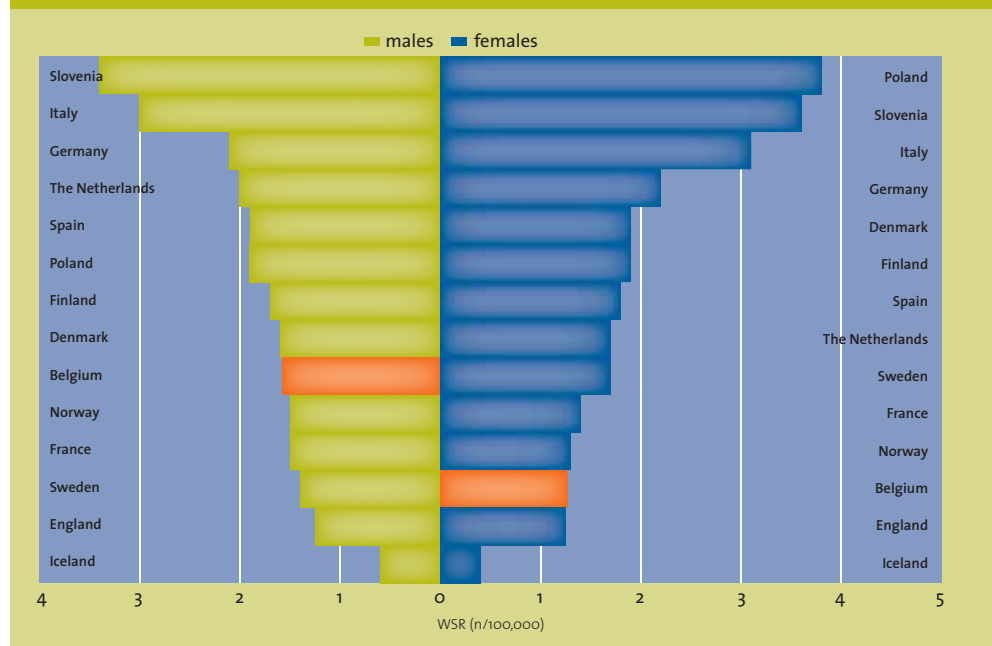
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Cancer of the gallbladder and biliary tract is uncommon in males (0.5%) and females (0.7%).
- Cancer of the gallbladder and biliary tract is a rare cause of cancer death in males (0.5%) and females (0.8%).
- Between the regions, no differences in incidence rates are observed.
- Mean age at diagnosis is 70 years in males and 74 years in females.

**Figure 34** Cancer of the gallbladder and biliary tract: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>



## Trends

**Table 21** Cancer of the gallbladder and biliary tract: incidence and mortality by sex and region, 1999-2008

Cancer of the gallbladder and biliary tract: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						157	135	156	171	157
Flemish Region	59	51	63	65	69	93	80	107	105	96
Brussels Capital Region						6	12	14	13	11
Walloon Region						58	43	35	53	50
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						181	162	169	184	185
Flemish Region	80	75	83	88	103	116	107	116	115	122
Brussels Capital Region						12	14	18	13	9
Walloon Region						53	41	35	56	54
Cancer of the gallbladder and biliary tract: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.7	1.4	1.6	1.8	1.6
Flemish Region	1.1	0.9	1.2	1.1	1.2	1.6	1.3	1.8	1.7	1.5
Brussels Capital Region						0.7	1.6	2.0	1.6	1.3
Walloon Region						2.1	1.5	1.2	1.8	1.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.4	1.3	1.3	1.4	1.3
Flemish Region	1.1	1.1	1.1	1.1	1.4	1.5	1.4	1.4	1.5	1.4
Brussels Capital Region						1.4	1.1	1.5	1.2	0.9
Walloon Region						1.2	1.1	0.9	1.3	1.1

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Cancer of the gallbladder and biliary tract: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						75	60			71
Flemish Region	41	40	40	36	42	38	37	46	33	43
Brussels Capital Region	5	6	7	6	3	6	4	4	6	4
Walloon Region						31	19			24
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						104	97			88
Flemish Region	84	61	84	69	57	50	63	56	56	44
Brussels Capital Region	11	8	9	17	7	6	6	12	11	8
Walloon Region						48	28			36
Cancer of the gallbladder and biliary tract: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.7	0.5			0.6
Flemish Region	0.7	0.7	0.6	0.7	0.7	0.6	0.5	0.7	0.5	0.6
Brussels Capital Region	0.6	0.6	1.0	0.6	0.2	0.6	0.4	0.4	0.6	0.4
Walloon Region						1.0	0.6			0.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.6	0.6			0.5
Flemish Region	1.0	0.7	1.0	0.9	0.5	0.5	0.6	0.6	0.6	0.4
Brussels Capital Region	0.6	0.5	0.7	1.0	0.4	0.3	0.2	0.9	0.7	0.5
Walloon Region						0.9	0.5			0.5

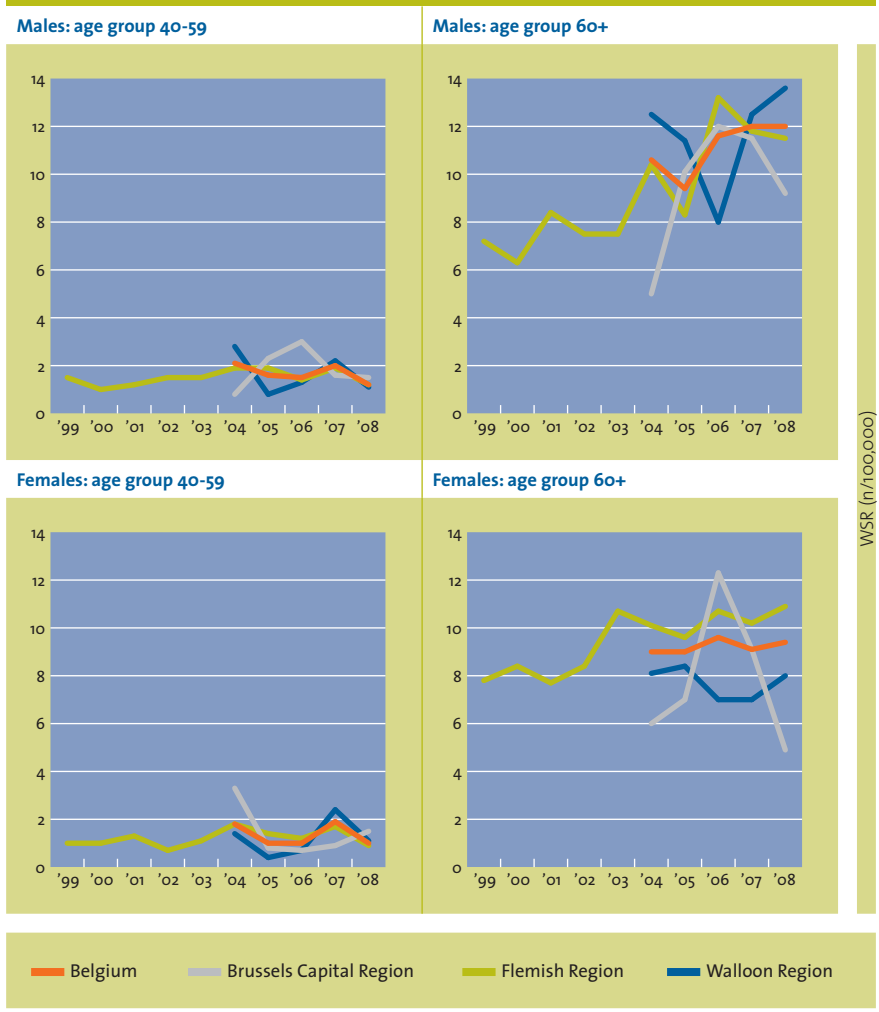
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 35 Cancer of the gallbladder and biliary tract: incidence and mortality by sex and region, 1999-2008



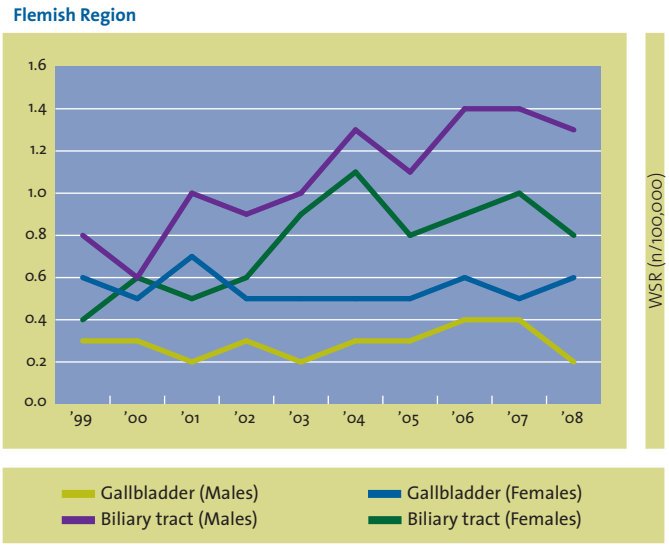
- In the Flemish Region, a significant yearly increase in cancer of the gallbladder and biliary tracts is observed in males (EAPC = 6.4% [p = 0.00]) and females (EAPC = 3.9% [p = 0.00]).
- Mortality rates in the Flemish Region show a significant decrease in males (EAPC = -3.1% [p = 0.02]) and females (EAPC = -7.1% [p = 0.00]).
- Mortality in the Brussels Capital Region shows a non-significant decreasing trend in both sexes (males: EAPC = -3.8% [p = 0.39], females: -2.1% [p = 0.73]).

**Figure 36** Cancer of the gallbladder and biliary tract: incidence by age group, sex and region, 1999-2008



- Under the age of 40 years, cancer of the gallbladder and biliary tract is very rare and therefore not included in the figure.
- In the age group 40-59 years, the incidence of cancer of the gallbladder and biliary tract is rare. No significant trends are observed for this age group.
- In the age group 60 years and older, the male/female ratio is 1.3.
  - The incidence rates in males between the regions are comparable. In females, a lower incidence rate is observed in the Walloon Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 7.3% [p = 0.00]) and females (EAPC = 4.0% [p = 0.00]).
  - In the age group 60 years and older, the incidence rates are 10 times higher than in the age group 40-59 years.

**Figure 37** Cancer of the gallbladder and biliary tract: incidence by tumour localisation and sex, Flemish Region 1999-2008



- While tumours of the gallbladder are predominantly found in females, tumours of the biliary tract are more frequent in males.
- Tumours of the gallbladder show no significant changes in males and females.
  - Males: EAPC = 2.6% (p = 0.38).
  - Females: EAPC = -1.3% (p = 0.33).
- The incidence rates for tumours of the biliary tract show an increasing trend in both sexes.
  - Males: EAPC = 7.6% (p = 0.00).
  - Females: EAPC = 8.9% (p = 0.01).

## General results, 2008

Table 22 Pancreatic cancer: incidence and mortality by sex and region, 2008							
Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	582	11.1	6.1	0.8	753	14.4	7.4
Flemish Region	354	11.6	6.1	0.8	446	14.7	7.1
Brussels Capital Region	63	12.5	8.2	1.0	78	15.4	9.0
Walloon Region	165	9.8	5.7	0.7	229	13.6	7.7
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	573	10.5	4.7	0.6	730	13.4	4.7
Flemish Region	315	10.1	4.5	0.5	432	13.8	4.8
Brussels Capital Region	62	11.4	6.0	0.7	59	10.9	4.2
Walloon Region	196	11.0	5.0	0.6	239	13.4	4.8

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Pancreatic cancer is the 13<sup>th</sup> most frequent tumour in males (1.8%) and the 10<sup>th</sup> most frequent in females (2.1%).
- Cancer of the pancreas is the 4<sup>th</sup> most frequent cause of cancer death in males (5.0%) and females (6.3%). The mortality/incidence ratios are higher than 1, most probably due to an underregistration of clinically diagnosed pancreatic cancers.
- In both sexes, the highest incidence rates are observed in the Brussels Capital Region.
- Mean age at diagnosis is 68 years in males and 70 years in females.



Figure 38 Pancreatic cancer incidence in Belgium, 2004-2008

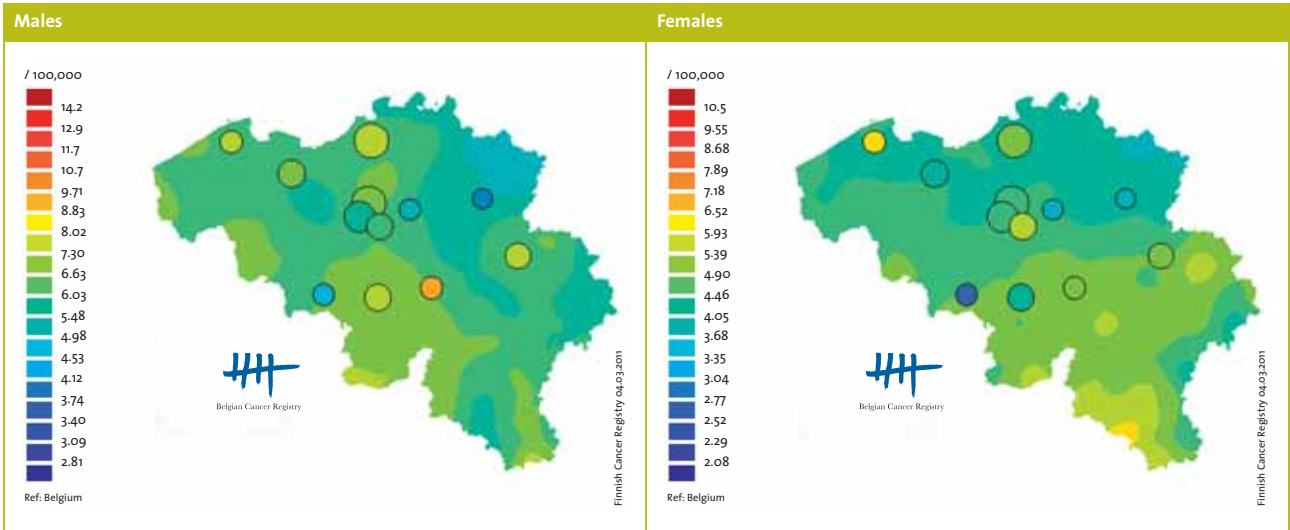
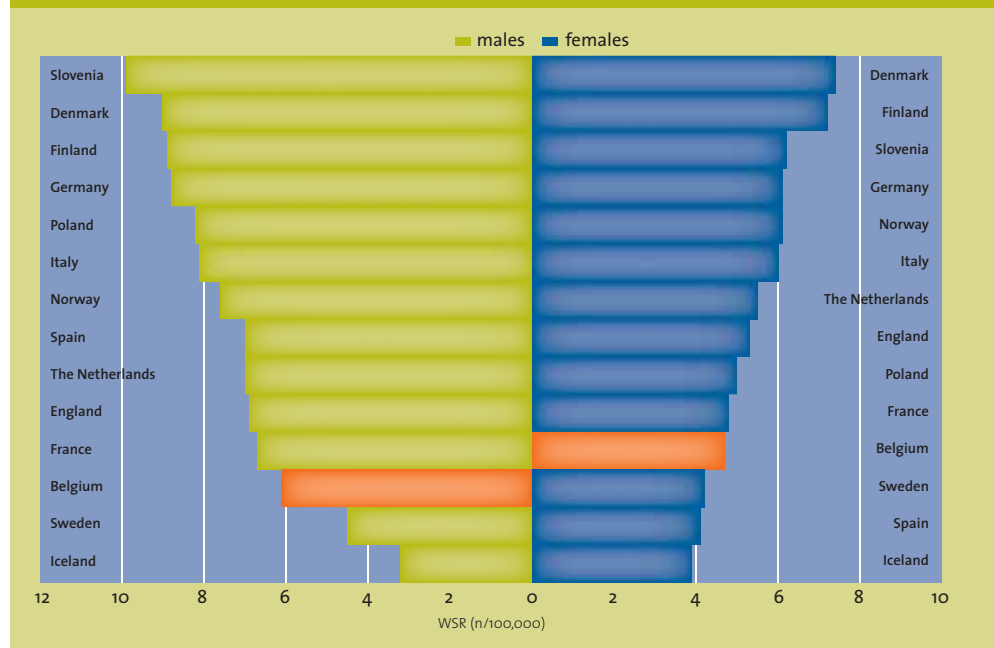


Figure 39 Pancreatic cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(56)</sup>



## Trends

**Table 23** Pancreatic cancer: incidence and mortality by sex and region, 1999-2008

Pancreatic cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						589	546	613	644	582
Flemish Region	257	258	266	310	337	348	327	359	350	354
Brussels Capital Region						51	38	39	61	63
Walloon Region						190	181	215	233	165
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						501	534	577	542	573
Flemish Region	281	254	251	310	298	286	312	305	318	315
Brussels Capital Region						41	35	67	39	62
Walloon Region						174	187	205	185	196

Pancreatic cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						6.6	6.0	6.5	6.9	6.1
Flemish Region	5.1	5.0	5.2	6.0	6.1	6.5	5.9	6.2	6.1	6.1
Brussels Capital Region						6.9	4.8	5.2	8.3	8.2
Walloon Region						6.7	6.5	7.6	8.3	5.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4.3	4.7	4.9	4.7	4.7
Flemish Region	4.0	3.8	3.7	4.2	4.0	4.0	4.6	4.4	4.6	4.5
Brussels Capital Region						4.0	3.5	7.2	3.7	6.0
Walloon Region						4.8	5.3	5.2	5.1	5.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Pancreatic cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						674	708			753
Flemish Region	385	357	350	375	359	373	421	402	406	446
Brussels Capital Region	59	49	48	53	60	53	58	57	64	78
Walloon Region						248	229			229
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						627	715			730
Flemish Region	398	371	362	395	382	343	407	413	408	432
Brussels Capital Region	59	66	69	68	75	61	71	79	64	59
Walloon Region						223	237			239

Pancreatic cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						7.1	7.3			7.4
Flemish Region	7.3	6.7	6.4	7.1	6.4	6.5	7.1	6.4	6.5	7.1
Brussels Capital Region	7.6	6.4	6.2	7.2	7.5	7.1	7.8	6.3	7.3	9.0
Walloon Region						8.4	7.5			7.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4.3	4.9			4.7
Flemish Region	5.3	4.5	4.7	4.9	4.5	3.9	4.7	5.0	4.8	4.8
Brussels Capital Region	4.2	5.5	4.5	5.0	4.9	4.8	5.9	5.7	5.7	4.2
Walloon Region						5.1	5.0			4.8

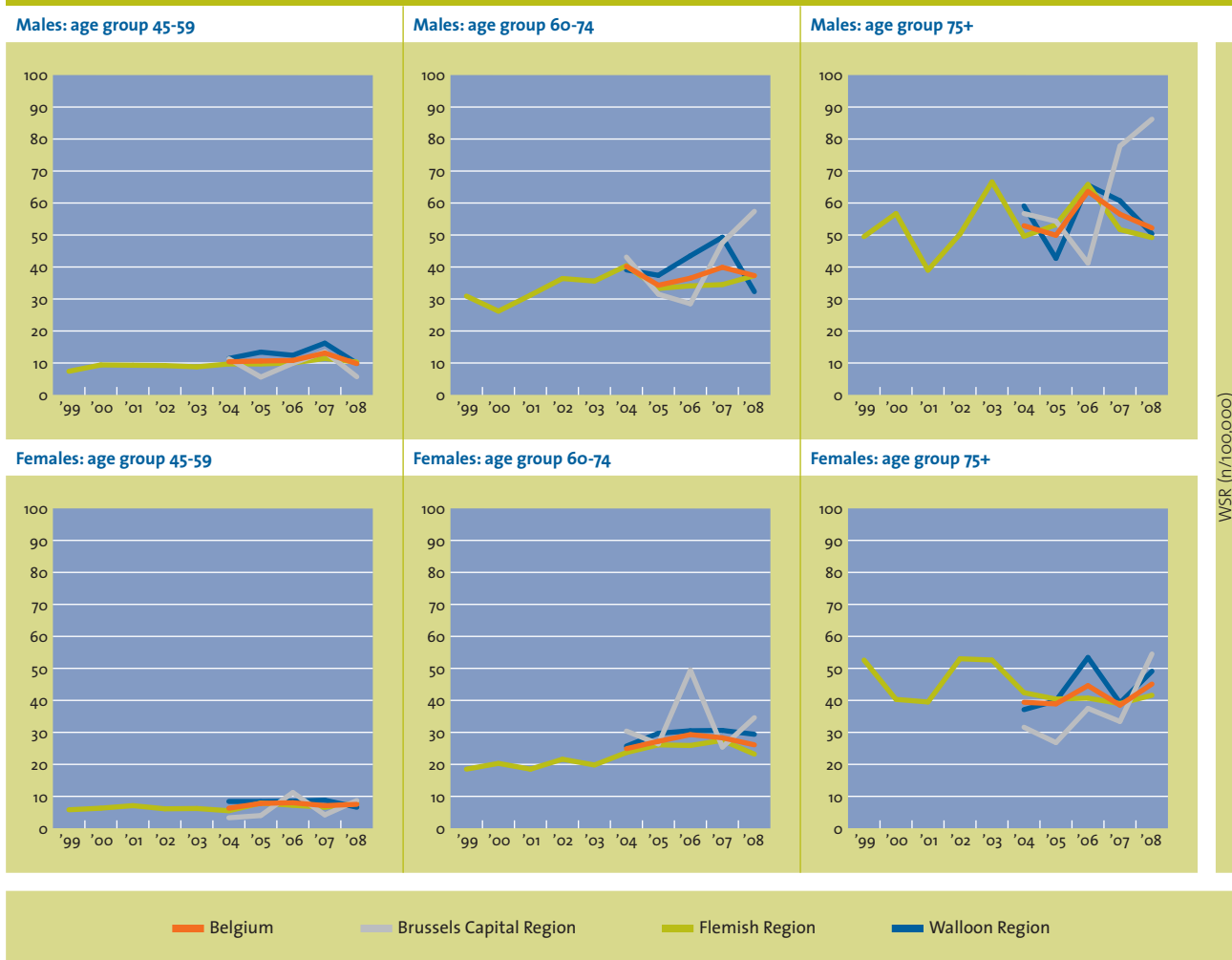
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 40 Pancreatic cancer: incidence and mortality by sex and region, 1999-2008



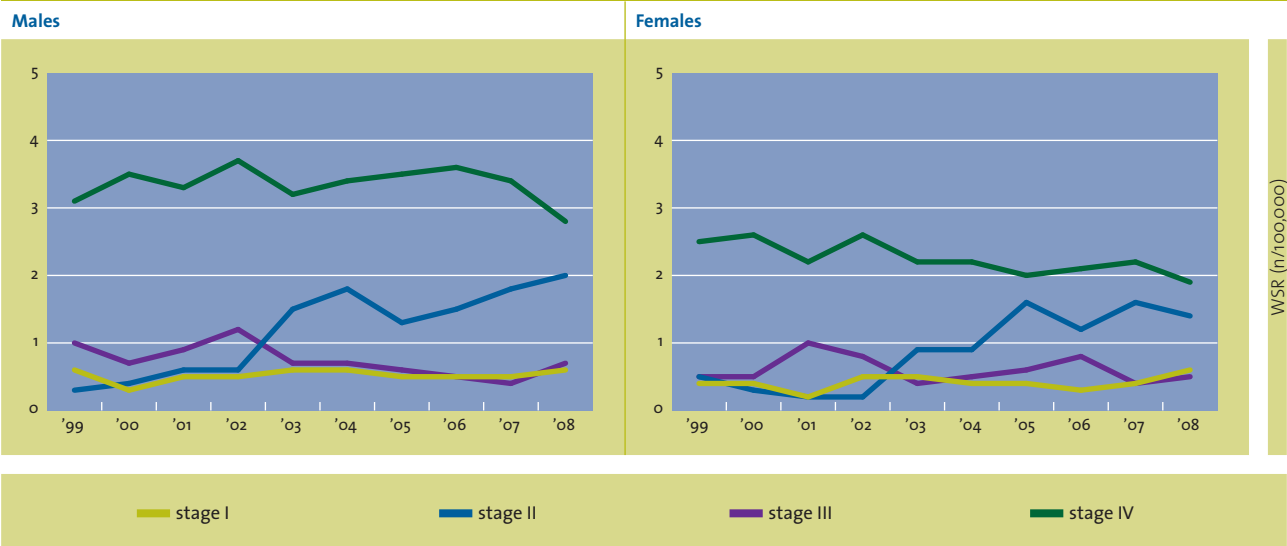
- In the Flemish Region, a significant increase is observed in incidence rates of pancreatic cancer. Yearly, about 2% more cancers are diagnosed between 1999 and 2008. At least part of this increase is attributed to improved registration practices.
  - Males: EAPC = 2.4% (p = 0.01).
  - Females: EAPC = 2.1% (p = 0.00).
- Mortality rates in the Flemish and Brussels Capital Region show no significant changes over time.

Figure 41 Pancreatic cancer: incidence by age group, sex and region, 1999-2008



- Under the age of 45 years, pancreatic cancer is very rare and therefore not included in the figure.
- In the age group 45-59 years, pancreatic cancer is uncommon in males and females (male/female ratio is 1.3).
  - No regional differences are observed.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 3.0% [p = 0.00]) and a non-significant increase in females (EAPC = 2.3% [p = 0.09]).
- In the age group 60-74 years, the male/female ratio is 1.4.
  - No important regional differences are observed.
  - In the Flemish Region, increasing incidence rates in both sexes are observed. In females, a significant increase is observed (EAPC = 4.1% [p = 0.00]), in males, this increase is non-significant (EAPC = 2.4% [p = 0.07]).
- In the age group 75 years and older, the male/female ratio is 0.7.

Figure 42 Pancreatic cancer: incidence by stage and sex, Flemish Region 1999-2008



- A large increase is observed in stage II tumours. In the period 1999-2008, the incidence rate of stage II pancreatic tumours increases yearly about 23% in males (EAPC = 22.9% [p = 0.00]) and females (EAPC = 23.7% [p = 0.00]).
- Pancreatic cancer is very often diagnosed in an advanced stage (stage IV). In females, a decrease is observed in the incidence rate of stage IV tumours (EAPC = -2.7% [p = 0.01]); in males, the incidence remains stable (EAPC = -0.6% [p = 0.57]).

## 2.4 RESPIRATORY TRACT

### 2.4.1 LUNG (ICD-10: C34)

#### General results, 2008

**Table 24** Lung cancer: incidence and mortality by sex and region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	5,406	103.5	56.3	6.9	4,943	94.6	48.2
Flemish Region	3,239	106.5	54.0	6.6	2,993	98.5	46.9
Brussels Capital Region	371	73.3	52.2	6.5	344	68.0	43.1
Walloon Region	1,796	107.0	61.7	7.5	1,606	95.7	52.0
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	1,776	32.6	18.1	2.3	1,544	28.4	13.9
Flemish Region	957	30.7	16.1	2.0	820	26.3	12.2
Brussels Capital Region	167	30.8	19.8	2.5	157	28.9	15.6
Walloon Region	652	36.7	21.1	2.6	567	31.9	16.5

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Lung cancer is the 2<sup>nd</sup> most frequent tumour in males (16.6%) and the 3<sup>rd</sup> most frequent in females (6.5%).
- Lung cancer is the most important cause of cancer death in males (32.7%) and the 2<sup>nd</sup> most important cause of cancer death in females (13.4%).
- When comparing the three Belgian regions, higher incidence rates in males are observed in the Walloon Region. In females, lower incidence rates are observed in the Flemish Region when compared to the Brussels Capital and Walloon Region.
- Mean age at diagnosis is 68 years in males and 65 years in females.

Figure 43 Lung cancer incidence in Belgium, 2004-2008

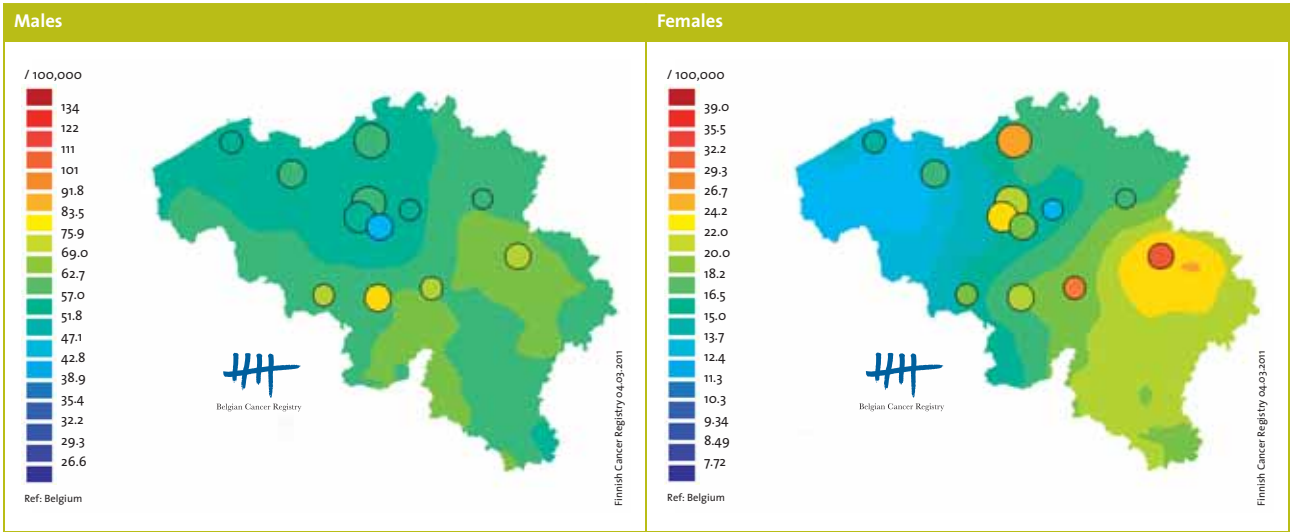
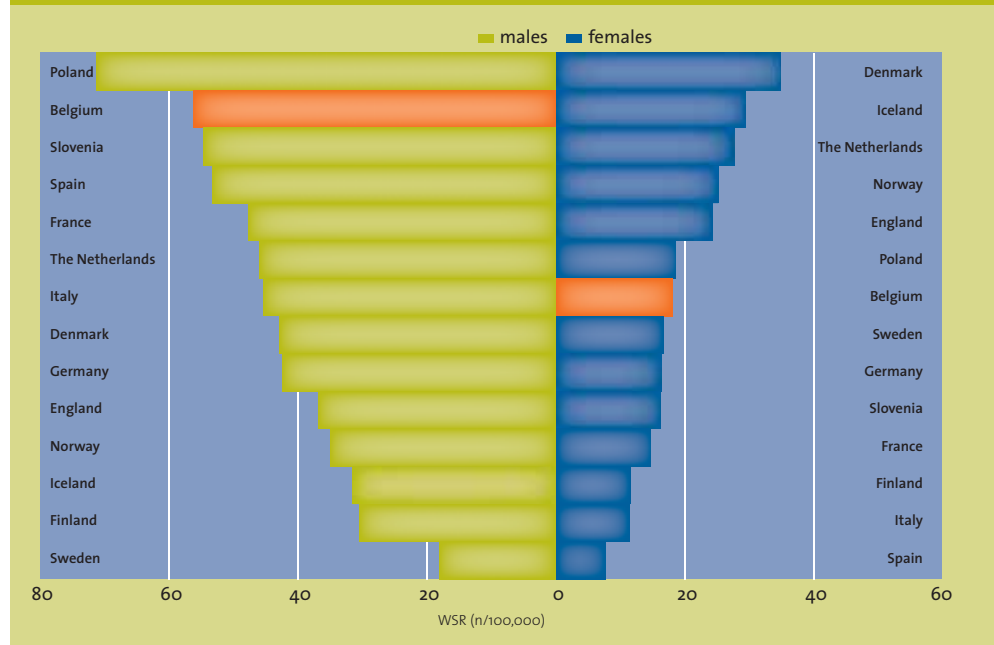


Figure 44 Lung cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>



## Trends

**Table 25 Lung cancer: incidence and mortality by sex and region, 1999-2008**

Lung cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						5,518	5,415	5,367	5,493	5,406
Flemish Region	2,914	3,065	3,067	3,006	3,045	3,264	3,189	3,245	3,335	3,239
Brussels Capital Region						410	392	363	365	371
Walloon Region						1,844	1,834	1,759	1,793	1,796
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,562	1,599	1,710	1,878	1,776
Flemish Region	543	561	659	680	692	830	865	886	995	957
Brussels Capital Region						181	168	187	193	167
Walloon Region						551	566	637	690	652
Lung cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						60.7	59.0	57.6	58.1	56.3
Flemish Region	57.4	59.5	58.1	55.6	55.2	58.0	56.0	55.7	56.3	54.0
Brussels Capital Region						58.2	57.1	49.9	51.2	52.2
Walloon Region						66.6	65.5	63.1	63.2	61.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						16.5	16.7	17.6	19.1	18.1
Flemish Region	10.0	10.4	11.9	12.7	12.7	14.8	14.9	15.2	16.7	16.1
Brussels Capital Region						20.3	20.6	22.1	21.9	19.8
Walloon Region						18.8	19.2	20.9	22.8	21.1

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Lung cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4,828	4,965			4,943
Flemish Region	3,079	2,979	3,033	2,994	3,024	2,831	2,998	2,975	2,976	2,993
Brussels Capital Region	395	418	359	369	324	354	361	349	305	344
Walloon Region						1,643	1,606			1,606
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,274	1,358			1,544
Flemish Region	526	555	564	574	649	616	714	772	789	820
Brussels Capital Region	124	167	129	152	143	178	157	176	174	157
Walloon Region						480	487			567
Lung cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						50.4	51.3			48.2
Flemish Region	58.3	55.5	55.4	53.0	52.5	48.4	49.6	48.3	47.2	46.9
Brussels Capital Region	52.5	56.4	48.4	51.2	44.2	47.3	48.3	46.3	39.4	43.1
Walloon Region						55.2	55.3			52.0
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						11.7	12.6			13.9
Flemish Region	8.7	8.9	9.6	9.3	10.4	9.5	11.3	11.7	11.7	12.2
Brussels Capital Region	12.0	17.5	12.6	14.4	14.5	17.2	16.3	18.7	17.1	15.6
Walloon Region						14.4	14.0			16.5

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

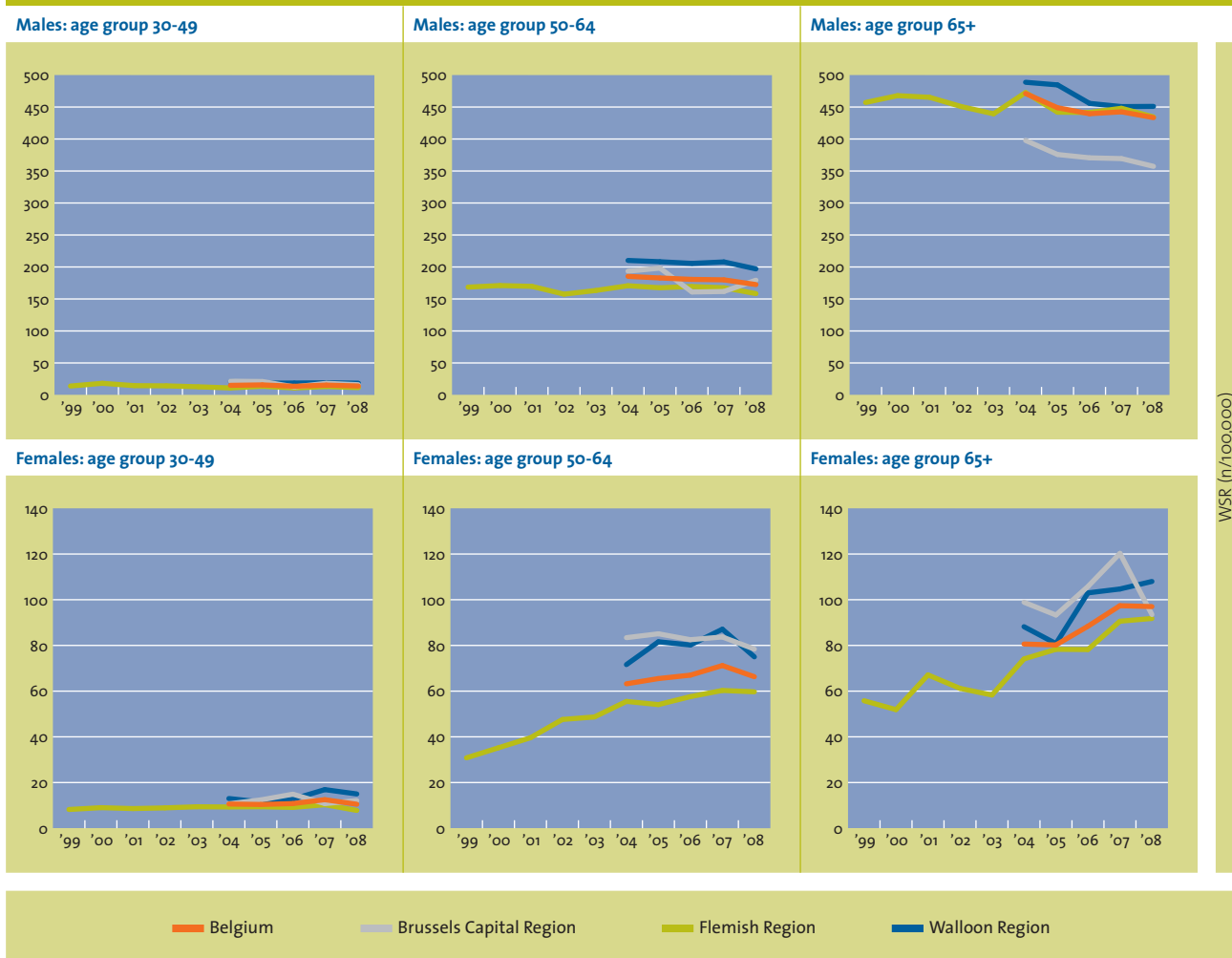


Figure 45 Lung cancer: incidence and mortality by sex and region, 1999-2008



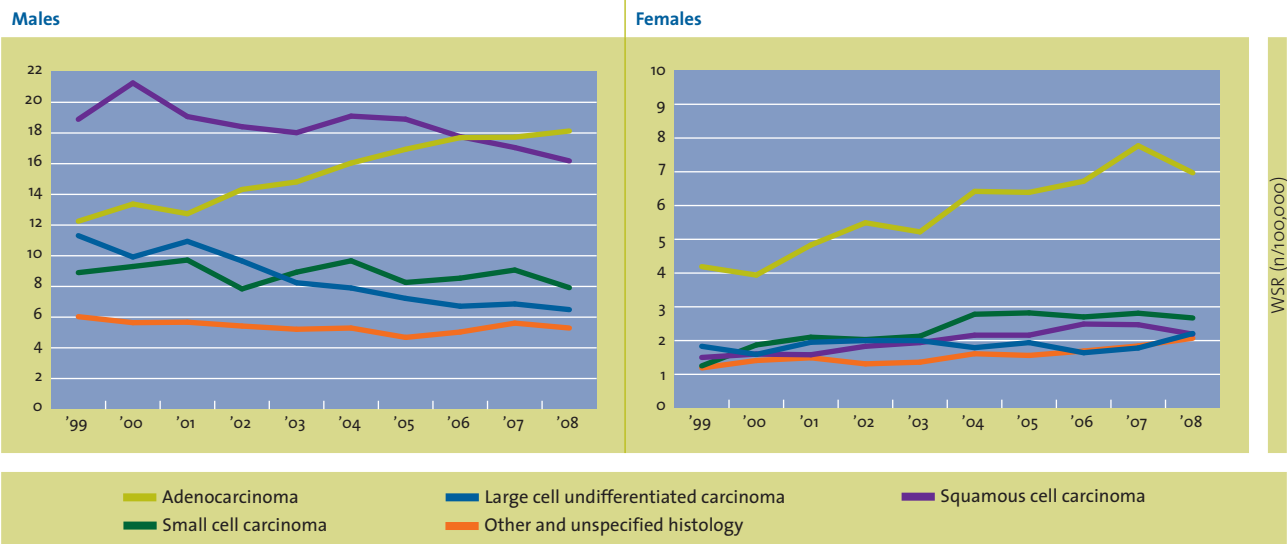
- In the Flemish Region, a significant decrease is observed in lung cancer incidence in males (EAPC = 0.6% [p = 0.03]), while the rate in females shows a large significant increase (EAPC = 5.9% [p = 0.00]).
- Mortality in the Flemish Region in males decreases significantly (EAPC = -2.4% [p = 0.00]), while mortality in females increases (EAPC = 4.0% [p = 0.00]).
- In the Brussels Capital Region, the trends in mortality are the same as those observed in the Flemish Region: a significant decrease in males (EAPC = -2.8% [p = 0.00]) and increase in females (EAPC = 2.9% [p = 0.00]).

Figure 46 Lung cancer: incidence by age group, sex and region, 1999-2008



- Under the age of 30 years, lung cancer is very rare and therefore not included in the figure.
- In the age group 30-49 years, the male/female ratio is 1.3.
  - The highest incidence rates are observed in the Walloon Region.
  - In the Flemish Region, a significant decrease is observed in males (EAPC = -3.5% [p = 0.03]). The incidence rate in females remains stable (EAPC = 0.6% [p = 0.52]).
- In the age group 50-64 years, the male/female ratio is 2.6.
  - In males and females, the lowest incidence rates are observed in the Flemish Region.
  - In the Flemish Region, a large and significant increase is observed in incidence rate in females (EAPC = 7.6% ([0.00]). The incidence rate in males remains stable (EAPC = -0.3% [p = 0.41]).
  - The incidence rate in 2008 in males is 12 times higher in the age group 50-64 years than the age group 30-49 years. In females, the rates are 6 times higher.
- In the age group 65 years and older, the incidence rates in males are 4.5 times higher than in females.
  - In males, the lowest incidence rate is observed in the Brussels Capital Region. The lowest incidence rate in females is observed in the Flemish Region.
  - In the Flemish Region, a small decrease is observed in males (EAPC = -0.6% [p = 0.05]). In females, a large increase is observed (EAPC = 6.3% [p = 0.00]).
  - In 2008 in the age group 65 years and older, the incidence is 2.5 times higher in males and 1.5 times higher in females when compared to the age group 50-64 years.

Figure 47 Lung cancer: incidence by histology and sex, Flemish Region 1999-2008



- In males, a change in the histological type of lung cancer is observed.
  - A significant increase in adenocarcinoma (EAPC = 4.8% [p = 0.00]) is observed in combination with a significant decrease in squamous cell carcinoma (EAPC = -1.9% [p = 0.01]).
  - These changes make adenocarcinoma the most frequent occurring lung cancer type in males since 2007.
  - Large cell undifferentiated carcinoma shows a large significant decrease (EAPC = -6.4% [p = 0.00]).
  - No significant trend is observed in small cell carcinoma (EAPC = -0.99% [p = 0.26]).
- In females, an increase in adenocarcinoma, squamous cell carcinoma and small cell carcinoma is observed. No significant trend is observed in large cell undifferentiated carcinoma.
  - Adenocarcinoma (EAPC = 7.3% [p = 0.00]).
  - Squamous cell carcinoma (EAPC = 5.8% [p = 0.00]).
  - Small cell carcinoma (EAPC = 7.7% [p = 0.00]).
  - Large cell undifferentiated carcinoma (EAPC = 0.87% [p = 0.46]).

## 2.4.2 MESOTHELIOMA (ICD-10: C45)

### General results, 2008

**Table 26** Mesothelioma: incidence and mortality by sex and region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	206	3.9	2.1	0.3	169	3.2	1.6
Flemish Region	146	4.8	2.5	0.3	126	4.1	1.9
Brussels Capital Region	6	1.2	1.0	0.2	4	0.8	0.6
Walloon Region	54	3.2	1.8	0.3	39	2.3	1.2
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	52	1.0	0.4	0.1	44	0.8	0.3
Flemish Region	38	1.2	0.5	0.1	29	0.9	0.4
Brussels Capital Region	0	0.0	0.0	0.0	1	0.2	0.0
Walloon Region	14	0.8	0.4	0.0	14	0.8	0.3

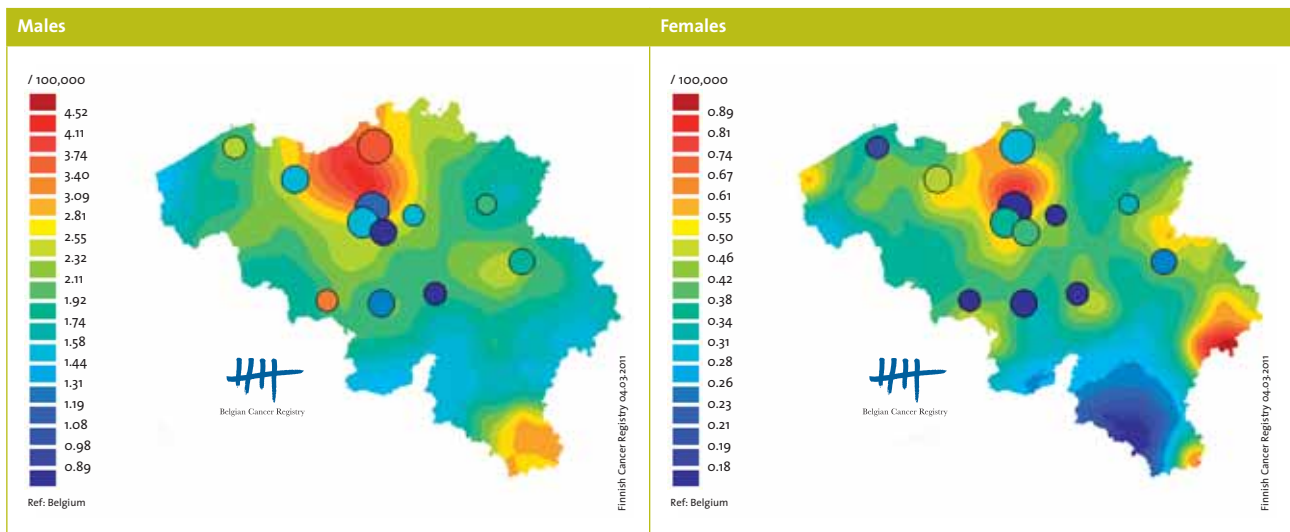
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Mesothelioma is a rare cancer in males (0.6%) and females (0.2%).
- Mesothelioma is a rare cause of cancer death in males (1.1%) and females (0.4%).
- When comparing the incidence rates in the three Belgian regions, higher incidence rates in males are observed in the Flemish Region.
- Mean age at diagnosis is 69 years in males and 71 years in females.

**Figure 48** Mesothelioma incidence in Belgium, 2004-2008



## Trends

**Table 27** Mesothelioma: incidence and mortality by sex and region, 1999-2008

Mesothelioma: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						209	210	206	197	206
Flemish Region	101	111	129	98	119	137	141	149	136	146
Brussels Capital Region						6	9	9	13	6
Walloon Region						66	60	48	48	54
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						26	47	41	48	52
Flemish Region	25	15	21	21	14	19	34	24	32	38
Brussels Capital Region						1	3	2	5	0
Walloon Region						6	10	15	11	14
Mesothelioma: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.3	2.3	2.1	2.0	2.1
Flemish Region	2.0	2.1	2.5	1.9	2.2	2.5	2.5	2.6	2.3	2.5
Brussels Capital Region						0.7	1.1	1.2	1.4	1.0
Walloon Region						2.4	2.0	1.4	1.6	1.8
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.2	0.5	0.4	0.4	0.4
Flemish Region	0.5	0.3	0.4	0.3	0.3	0.3	0.6	0.4	0.4	0.5
Brussels Capital Region						0.1	0.4	0.3	0.5	0.0
Walloon Region						0.2	0.3	0.4	0.3	0.4

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Mesothelioma: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						155	148			169
Flemish Region	92	95	121	102	93	117	106	126	132	126
Brussels Capital Region	7	2	10	10	11	4	3	3	7	4
Walloon Region						34	39			39
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						23	29			44
Flemish Region	23	21	22	20	18	20	20	20	30	29
Brussels Capital Region	0	1	1	2	2	1	1	1	3	1
Walloon Region						2	8			14
Mesothelioma: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.6	1.6			1.6
Flemish Region	1.8	1.8	2.2	2.0	1.7	1.9	1.9	2.1	2.2	1.9
Brussels Capital Region	1.0	0.3	1.3	1.2	1.5	0.7	0.4	0.4	0.9	0.6
Walloon Region						1.1	1.2			1.2
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.2	0.3			0.3
Flemish Region	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4
Brussels Capital Region	0.0	0.0	0.2	0.2	0.1	0.0	0.2	0.1	0.1	0.0
Walloon Region						0.1	0.2			0.3

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 49 Mesothelioma: incidence and mortality by sex and region, 1999-2008



- In the Flemish Region, no significant trends are observed in incidence.
  - Males: EAPC = 2.3% ( $p = 0.07$ ).
  - Females: EAPC = 3.4% ( $p = 0.31$ ).
- No significant trends are observed in mortality rates in the Flemish and Brussels Capital Region.

## 2.5 MALIGNANT MELANOMA (ICD-10: C43)

### General results, 2008

**Table 28** Malignant melanoma: incidence and mortality by sex and region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	756	14.5	9.3	1.0	164	3.1	1.8
Flemish Region	425	14.0	8.8	0.9	112	3.7	2.0
Brussels Capital Region	76	15.0	10.4	1.1	10	2.0	1.4
Walloon Region	255	15.2	10.2	1.1	42	2.5	1.5
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	1,147	21.1	14.4	1.4	147	2.7	1.2
Flemish Region	679	21.8	14.6	1.4	95	3.0	1.3
Brussels Capital Region	99	18.2	12.0	1.2	11	2.0	1.3
Walloon Region	369	20.7	14.6	1.4	41	2.3	1.0

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Malignant melanoma is the 10<sup>th</sup> most frequent tumour in males (2.3%) and the 5<sup>th</sup> most frequent in females (4.2%).
- Malignant melanoma is an uncommon cause of cancer death in males (1.1%) and females (1.3%).
- No major differences in incidence rates are observed between the regions.
- Mean age at diagnosis is 60 years in males and 55 years in females.

Figure 50 Malignant melanoma incidence in Belgium, 2004-2008

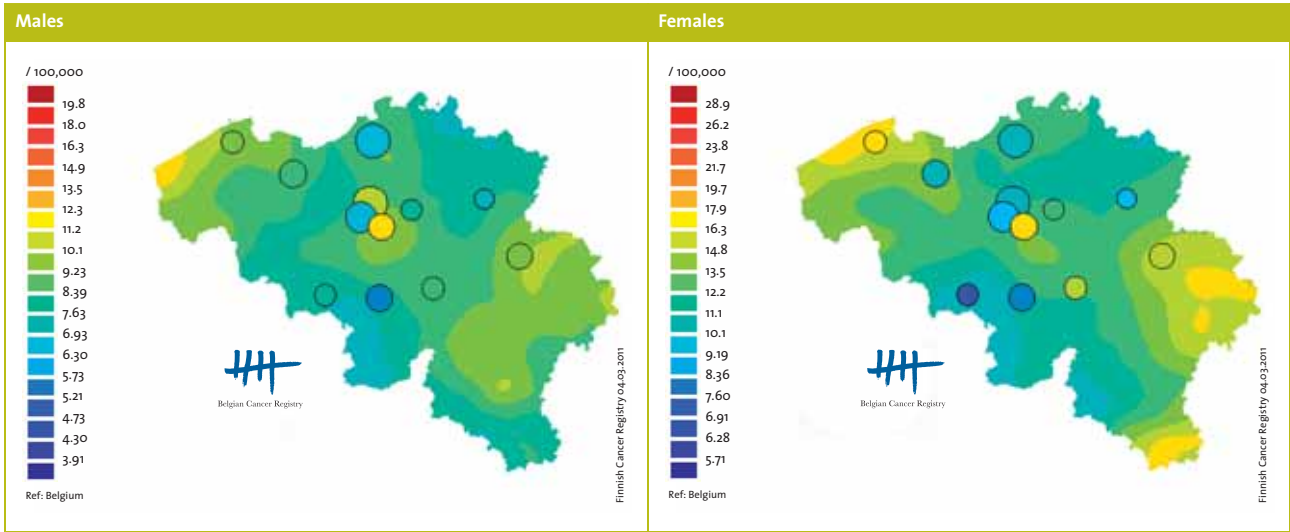
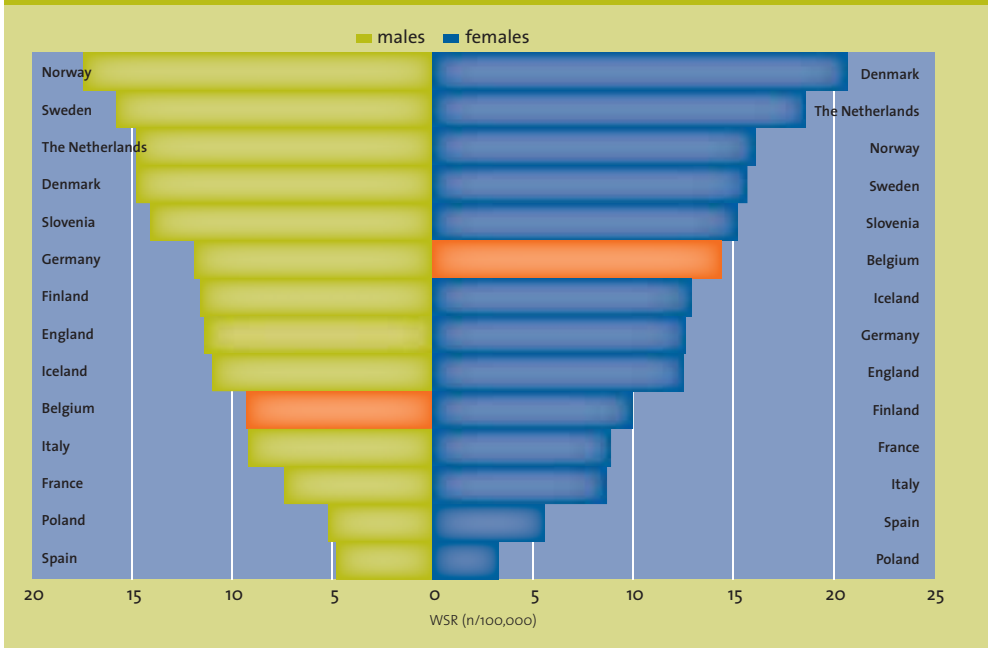


Figure 51 Malignant melanoma: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>





## Trends

**Table 29** Malignant melanoma: incidence and mortality by sex and region, 1999-2008

Malignant melanoma: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						627	638	621	734	756
Flemish Region	245	305	255	283	341	365	375	380	444	425
Brussels Capital Region						59	65	56	71	76
Walloon Region						203	198	185	219	255
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						888	971	970	981	1.147
Flemish Region	383	439	444	437	480	494	558	599	571	679
Brussels Capital Region						84	86	89	99	99
Walloon Region						310	327	282	311	369
Malignant melanoma: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						8.4	8.1	8.0	9.4	9.3
Flemish Region	5.8	7.1	5.9	6.1	7.9	8.1	8.2	8.2	9.4	8.8
Brussels Capital Region						8.8	8.7	7.7	10.3	10.4
Walloon Region						8.7	7.9	7.7	9.2	10.2
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						11.7	12.6	12.4	12.2	14.4
Flemish Region	9.1	10.3	10.3	9.5	10.8	11.2	12.4	13.1	11.9	14.6
Brussels Capital Region						10.8	11.2	11.4	12.5	12.0
Walloon Region						13.2	13.5	11.5	12.5	14.6

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Malignant melanoma: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						130	144			164
Flemish Region	78	83	78	82	101	72	100	103	86	112
Brussels Capital Region	9	13	7	9	7	9	10	11	13	10
Walloon Region						49	34			42
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						145	126			147
Flemish Region	88	78	82	92	102	95	77	71	102	95
Brussels Capital Region	11	13	12	8	16	17	8	11	12	11
Walloon Region						33	41			41
Malignant melanoma: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.6	1.7			1.8
Flemish Region	1.6	1.7	1.7	1.7	2.2	1.5	2.0	1.8	1.7	2.0
Brussels Capital Region	1.3	1.9	1.0	1.1	0.9	1.2	1.3	1.6	1.7	1.4
Walloon Region						1.7	1.3			1.5
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.4	1.2			1.2
Flemish Region	1.5	1.4	1.6	1.5	1.7	1.6	1.2	1.2	1.7	1.3
Brussels Capital Region	1.3	1.4	1.0	0.9	1.4	1.6	1.1	1.0	1.4	1.3
Walloon Region						0.9	1.2			1.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 52 Malignant melanoma: incidence and mortality by sex and region, 1999-2008



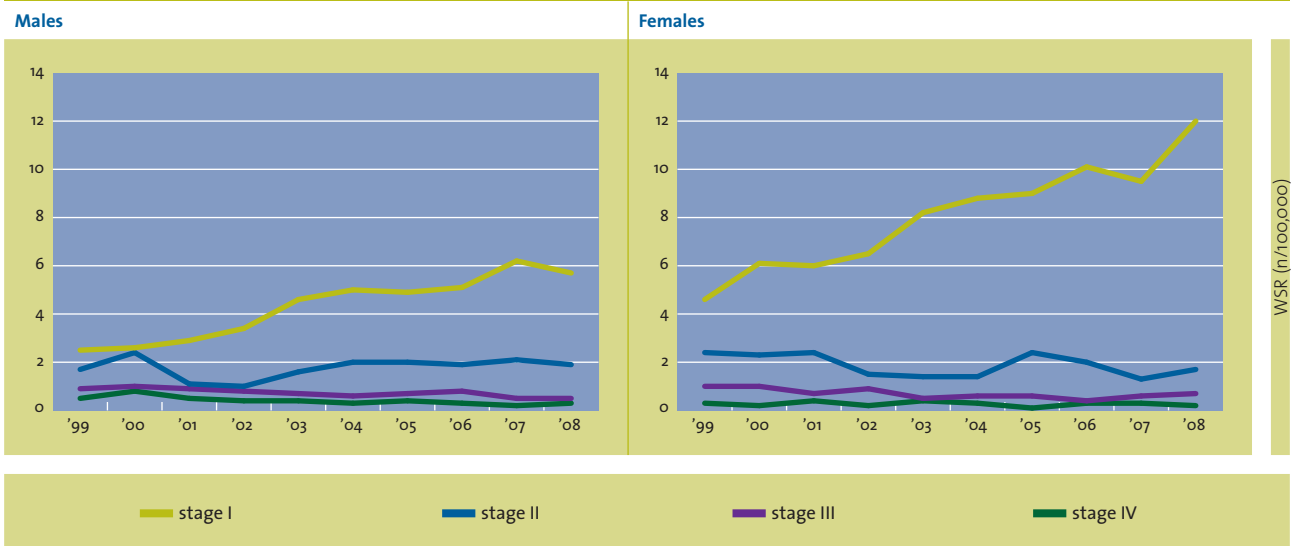
- In the Flemish Region, a significant increase in incidence rates is observed in males (EAPC = 5.1% [p = 0.00]) and females (EAPC = 4.6% [p = 0.00]).
- In the same period, mortality rates in the Flemish Region are stable in males (EAPC = 1.5% [p = 0.26]) and females (EAPC = -1.0% [p = 0.49]).
- Mortality rates in the Brussels Capital Region show no significant changes (males: EAPC = 1.8% [p = 0.50]; females: EAPC = 0.5% [p = 0.83]).

Figure 53 Malignant melanoma: incidence by age group, sex and region, 1999-2008



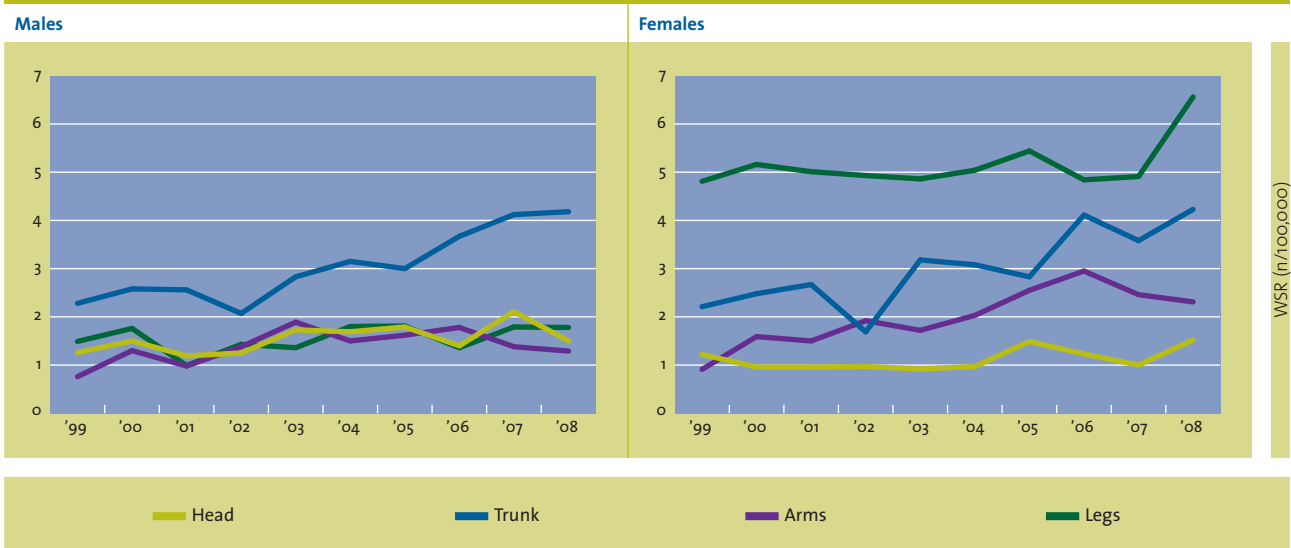
- In children (age 0-14 years), malignant melanoma is very rare and therefore not included in the figure.
- In the age group 15-34 years, the incidence rate in females is 3.4 times higher than in males.
  - No regional differences are observed.
  - In the Flemish Region, a non-significant increase is observed in males (EAPC = 2.5% [p = 0.37]) and females (EAPC = 1.1% [p = 0.57]).
- In the age group 35-64 years, the male/female ratio is 0.6.
  - No regional differences are observed.
  - In the Flemish Region, a significant increase is observed in incidence rate in males (EAPC = 5.2% [p = 0.00]) and females (EAPC = 6.1% [p = 0.00]).
  - In the age group 35-64 years, the incidence rates in 2008 are 6 times higher in males and 3 times higher in females than in the age group 15-34 years.
- In the age group 65 years and older, the male/female ratio is 1.2.
  - In males, a lower incidence rate is observed in the Flemish Region when compared to the Brussels Capital and Walloon Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 5.8% [p = 0.00]) and females (EAPC = 4.1% [p = 0.00]).
  - In males, the incidence rates in the age group 65 years and older are 2.3 times higher than in the age group 35-64 years. In females, the incidence rates in 2008 between both age groups are comparable.

Figure 54 Malignant melanoma: incidence by stage and sex, Flemish Region 1999-2008



- Since international guidelines for TNM staging have changed significantly between the 5<sup>th</sup> and 6<sup>th</sup> TNM edition<sup>(29)(9)</sup>, comparing trends by stage over time has to be done cautiously. However, despite these changes in staging guidelines, a clear and rapid increase in incidence rates in stage I tumours can be observed between 1999 and 2008.

Figure 55 Malignant melanoma: incidence by skin localisation and sex, Flemish Region 1999-2008



- In males, more than half of all malignant melanoma are diagnosed on the trunk. A significant increase is observed for the incidence rates of malignant melanoma at this skin localisation (EAPC = 7.3% [p = 0.00]). The trend in other skin localisations is not significant.
- Although the majority of the malignant melanoma in females are diagnosed on the legs, a significant increase is only observed for malignant melanoma diagnosed on the trunk (EAPC = 7.5% [p = 0.01]) and on the arms (EAPC = 10.1% [p = 0.00]).

## 2.6 BREAST (ICD-10: C50)

### General results, 2008

**Table 30** Breast cancer: incidence and mortality by sex and region, 2008

	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
<b>Males</b>							
Belgium	85	1.6	0.9	0.1	26	0.5	0.2
Flemish Region	49	1.6	0.8	0.1	19	0.6	0.3
Brussels Capital Region	7	1.4	0.8	0.1	2	0.4	0.3
Walloon Region	29	1.7	1.0	0.1	5	0.3	0.1
<b>Females</b>							
Belgium	9,697	178.2	106.0	11.3	2,329	42.8	19.4
Flemish Region	5,528	177.1	103.2	10.9	1,361	43.6	19.9
Brussels Capital Region	895	165.0	109.8	12.0	209	38.5	19.3
Walloon Region	3,274	184.1	110.4	11.8	759	42.7	18.4

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Breast cancer is the most frequent tumour in females (35.3%), while breast cancer in males is very rare (0.3%).
- Breast cancer is the leading cause of cancer death in females (20.2%). In males, breast cancer is a very uncommon cause of cancer death (0.2%).
- The incidence rate for breast cancer in females in the Flemish Region is lower when compared to the other regions.
- Mean age at diagnosis is 68 years in males and 62 years in females.

Figure 56 Breast cancer incidence in females in Belgium, 2004-2008

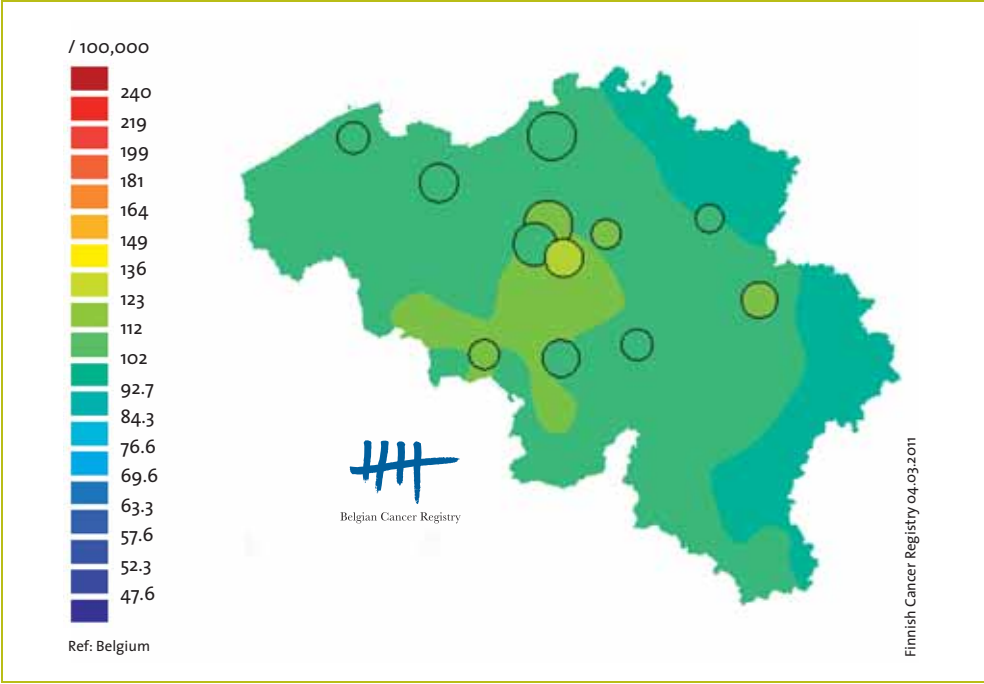
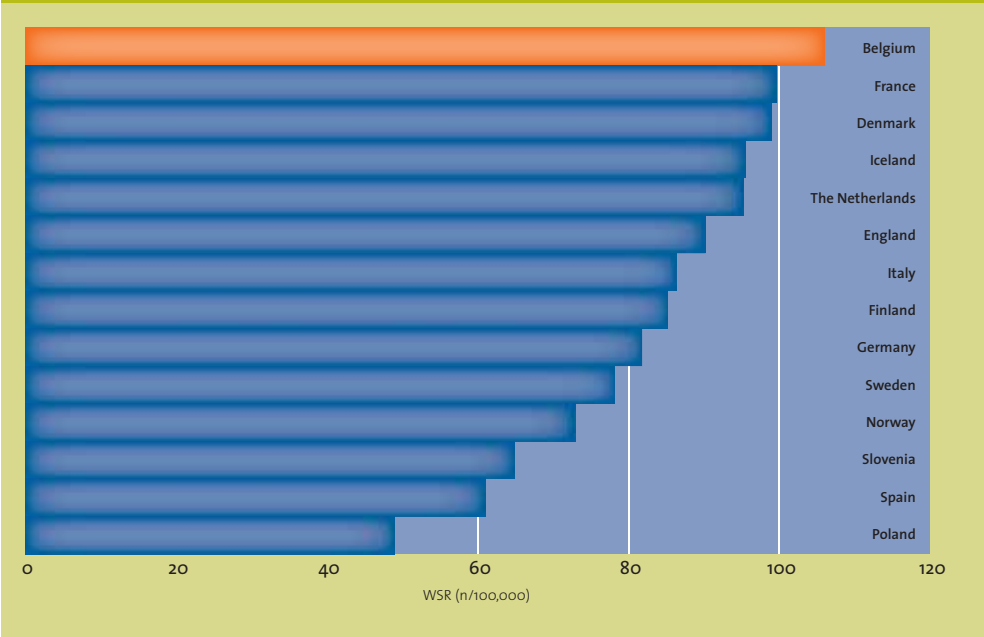


Figure 57 Breast cancer in females: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>[56]</sup>



## Trends

**Table 31** Breast cancer: incidence and mortality by sex and region, 1999-2008

Breast cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						87	83	66	82	85
Flemish Region	50	54	54	50	54	57	50	37	54	49
Brussels Capital Region						7	8	8	8	7
Walloon Region						23	25	21	20	29
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						9,442	9,430	9,526	9,722	9,697
Flemish Region	4,672	4,912	5,335	5,276	5,563	5,335	5,501	5,517	5,694	5,528
Brussels Capital Region						925	873	933	923	895
Walloon Region						3,182	3,056	3,076	3,105	3,274
Breast cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.0	0.9	0.7	1.0	0.9
Flemish Region	1.0	1.1	1.0	0.9	1.0	1.0	1.0	0.6	1.1	0.8
Brussels Capital Region						1.1	1.0	1.2	1.1	0.8
Walloon Region						1.0	0.8	0.7	0.7	1.0
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						110.1	107.5	108.0	108.4	106.0
Flemish Region	98.8	103.0	110.7	107.9	113.0	105.8	107.0	105.7	107.5	103.2
Brussels Capital Region						121.5	110.4	119.9	116.4	109.8
Walloon Region						115.1	107.8	109.2	108.0	110.4

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Breast cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						23	17			26
Flemish Region	14	13	12	18	15	13	12	15	8	19
Brussels Capital Region	2	3	4	1	0	1	2	2	2	2
Walloon Region						9	3			5
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2,286	2,235			2,329
Flemish Region	1,396	1,372	1,391	1,366	1,298	1,356	1,321	1,352	1,406	1,361
Brussels Capital Region	227	247	235	228	243	228	199	198	209	209
Walloon Region						702	715			759
Breast cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.2	0.2			0.2
Flemish Region	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.3
Brussels Capital Region	0.3	0.3	0.6	0.2	0.0	0.2	0.1	0.2	0.2	0.3
Walloon Region						0.3	0.1			0.1
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						20.6	20.1			19.4
Flemish Region	24.3	23.9	23.2	22.0	20.5	21.1	20.9	20.3	20.6	19.9
Brussels Capital Region	22.1	24.2	23.8	23.1	26.0	20.9	18.4	18.7	18.8	19.3
Walloon Region						19.6	19.1			18.4

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

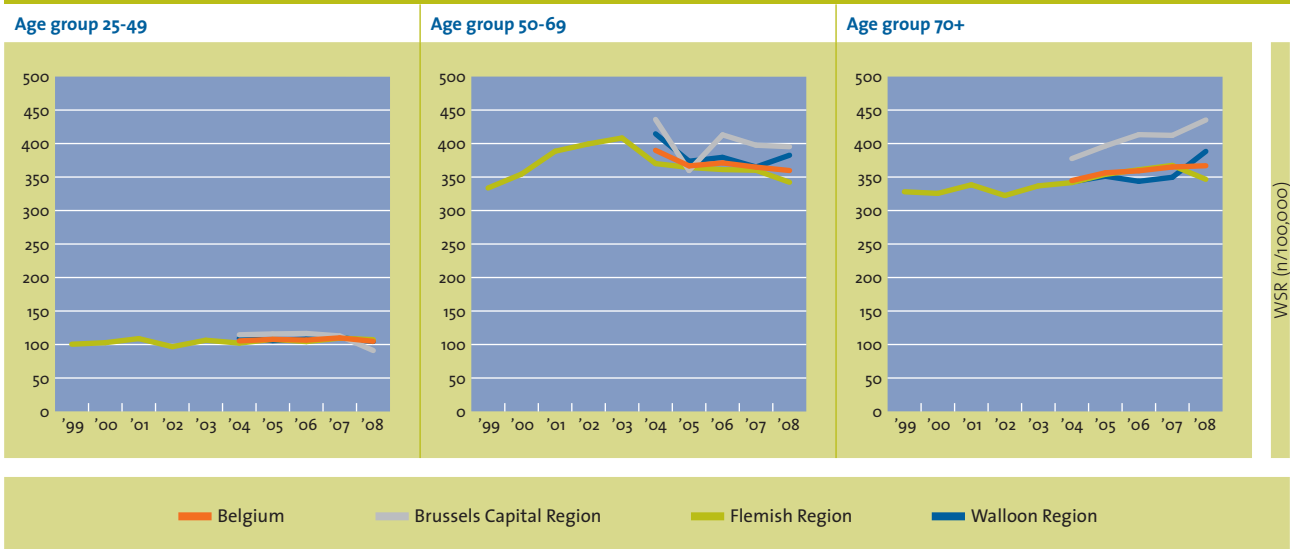
Figure 58 Breast cancer in females: incidence and mortality by region, 1999-2008



- Female breast cancer incidence in the Flemish Region shows no significant trend (EAPC = 0.2% [0.61]).
- A significant decreasing trend is observed in mortality in the Flemish (EAPC = -2.2% [p = 0.00] and Brussels Capital Region (EAPC = -3.0% [p = 0.01]).

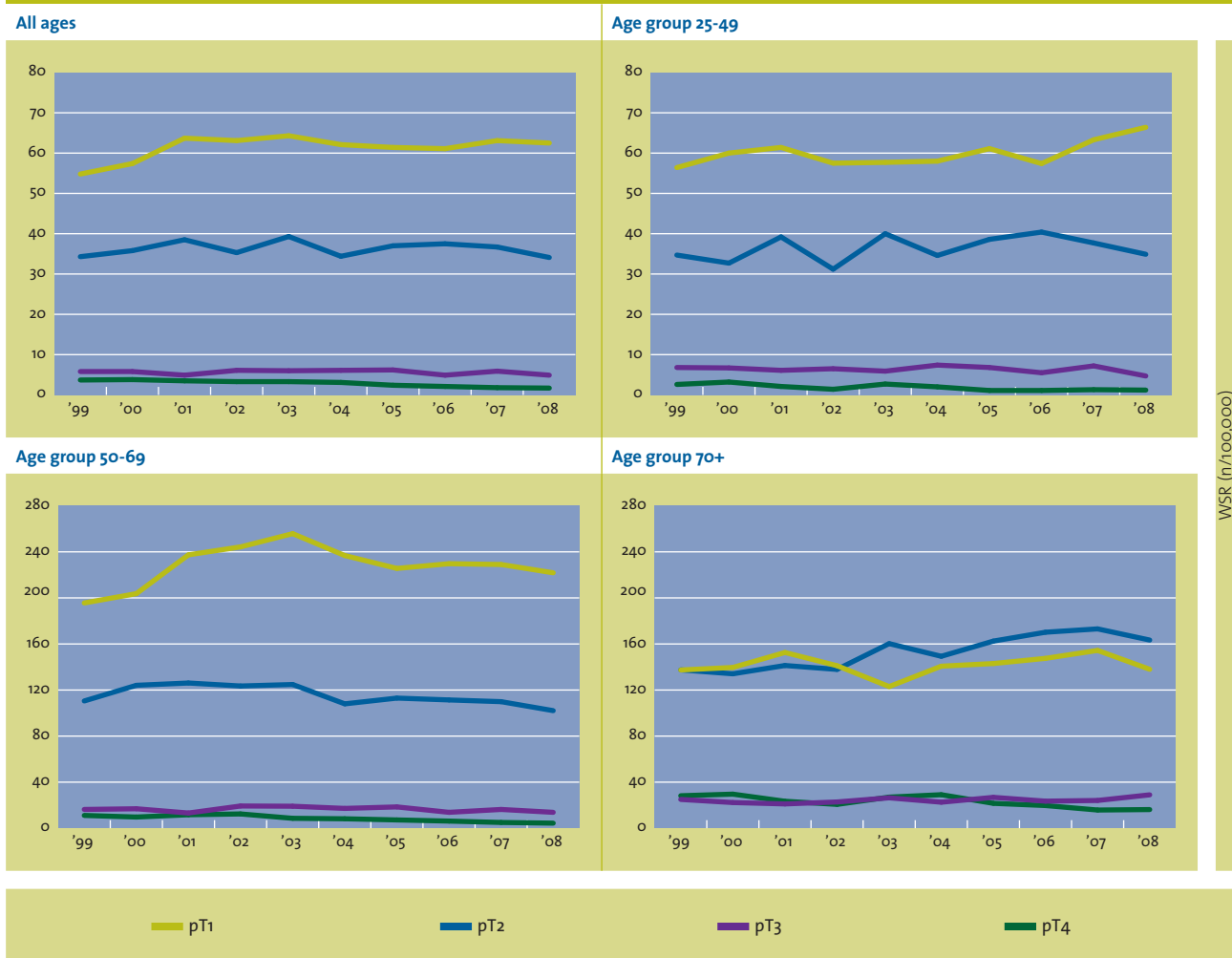


Figure 59 Breast cancer in females: incidence by age group and region, 1999-2008



- Under the age of 25 years, breast cancer is very rare and therefore not included in the figure.
- In the age group 25-49 years, no differences are observed over time and between the regions.
- In the age group 50-69 years, the incidence rates are 3 times higher than in the age group 25-49 years.
  - The highest incidence rates are observed in the Walloon and Brussels Capital Region.
  - In the Flemish Region, a large annual increase (5.4%) observed between 1999 and 2003, is followed by an annual decrease of 2.7% between 2003 and 2008. This pattern could partly be explained by the introduction of the screening program in 2001; screening leads to earlier detection of cancers and is responsible for a transient increase in incidence. Moreover, the administration of hormone substitution therapy (HST) at menopausal age could be responsible for a real increase of hormone dependent tumours; the decrease of incidence in this age group after 2003 could be related to a decrease of HST use<sup>(68)</sup>.
- In the age group 70 years and older, the incidence rates are comparable with the age group 50-69 years.
  - The highest incidence rate is observed in the Brussels Capital Region.
  - In the Flemish Region, a significant increase is observed (EAPC = 1.2% [p = 0.00]).

Figure 6o Breast cancer in females: incidence by pT-stage and age group, Flemish Region 1999-2008



- Most breast cancers are diagnosed as pT1 (diameter of 20mm or less) or pT2 (diameter more than 20mm but less than 50mm). Breast cancers diagnosed as pT3 (diameter more than 50mm) or pT4 (tumour of any size with direct extension to chest wall and/or skin) are less frequent.
- In the age group 50-69 years, the incidence rate of pT1 tumours increases until 2003. Between 2003 and 2008, a decrease is observed in incidence rate. This trend is expected for pT1 tumours due to the combined influence of the screening programs and the administration of hormone substitution therapy (HST) at menopausal age<sup>(38)</sup>. In the other age groups, no significant trends are observed for pT1 tumours.
- The incidence rates for pT2 tumours show a significant increase in the age group 70 years and older (EAPC = 2.9% [p = 0.00]). In this age group, breast cancers are most frequently diagnosed as pT2. No significant trends are observed in the other age groups.
- No significant changes are observed for pT3 tumours.
- In all age groups, a significant decrease is observed for pT4 tumours (age group 25-49 years: EAPC = 10.2% [p = 0.01]; age group 50-69 years: EAPC = 10.2% [p = 0.00]; age group 70 years and older: EAPC = 5.9% [p = 0.01]).

## 2.7 FEMALE GENITAL ORGANS

### 2.7.1 CERVIX (ICD-10: C53)

#### General results, 2008

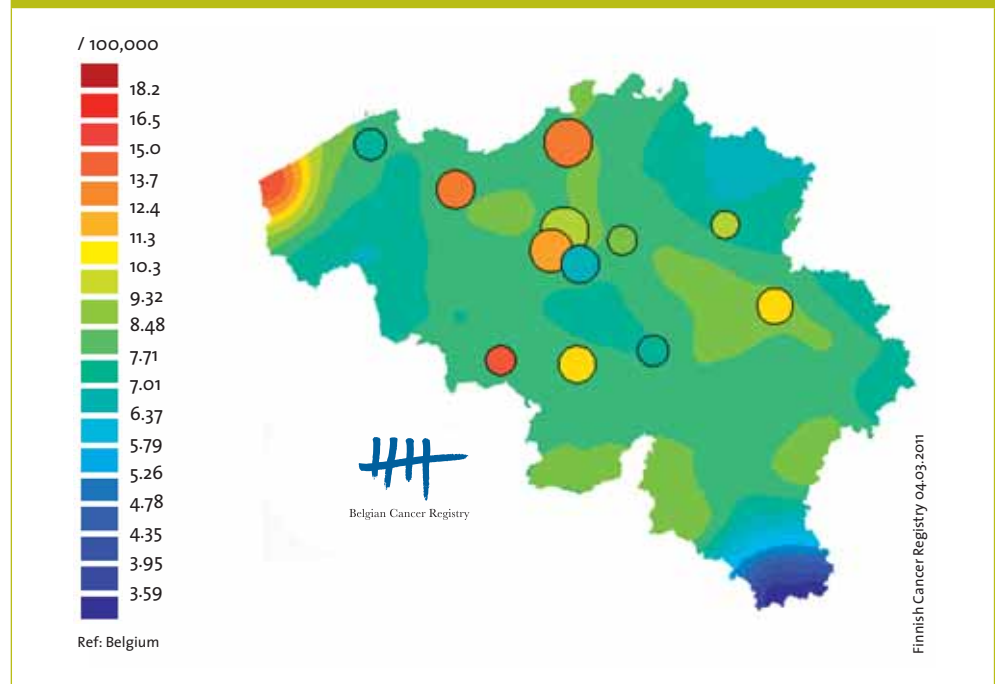
**Table 32** Cervical cancer: incidence and mortality by region, 2008

Females	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	643	11.8	8.2	0.8	186	3.4	1.8
Flemish Region	360	11.5	7.8	0.8	129	4.1	2.1
Brussels Capital Region	72	13.3	9.5	1.0	16	2.9	1.8
Walloon Region	211	11.9	8.6	0.8	41	2.3	1.2

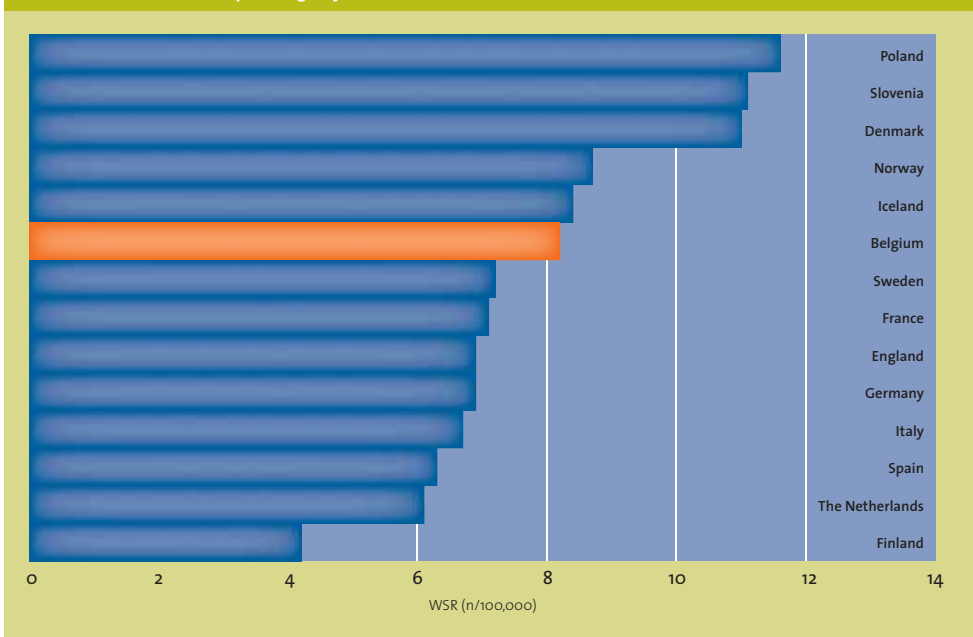
CR: crude (all ages) rate (n/100,000 person years)  
 WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)  
 CRi: cumulative risk 0-74 years (%)

- Cervical cancer is the 8<sup>th</sup> most frequent tumour in females (2.3%). Cancer of the cervix is the 3<sup>rd</sup> most frequently occurring gynaecological tumour.
- Cervical cancer is a rare cause of cancer death (1.6%).
- The highest incidence rates are observed in the Brussels Capital Region.
- Mean age at diagnosis is 54 years.

**Figure 61** Cervical cancer incidence in Belgium, 2004-2008



**Figure 62** Cervical cancer: comparison of age-standardised incidence rates (WSR), 2008.  
Selection of European registry data<sup>(36)</sup>



## Trends

**Table 33** Cervical cancer: incidence and mortality by region, 1999-2008

Cervical cancer: number of invasive tumours by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						653	656	612	704	643
Flemish Region	350	412	391	363	353	372	405	360	402	360
Brussels Capital Region						62	62	85	73	72
Walloon Region						219	189	167	229	211
Cervical cancer: age-standardised incidence (WSR) by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						8.5	8.8	7.9	9.2	8.2
Flemish Region	8.2	9.6	8.9	8.4	7.9	8.4	9.4	8.1	9.1	7.8
Brussels Capital Region						8.3	8.6	11.7	10.6	9.5
Walloon Region						8.9	7.8	6.7	9.2	8.6
Cervical cancer: number of deaths by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						189	167			186
Flemish Region	126	104	103	120	103	127	116	110	103	129
Brussels Capital Region	25	14	16	16	18	22	10	15	18	16
Walloon Region						40	41			41
Cervical cancer: age-standardised mortality (WSR) by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.0	1.7			1.8
Flemish Region	2.4	1.9	1.8	2.1	1.7	2.3	2.0	1.8	1.6	2.1
Brussels Capital Region	2.7	1.6	2.1	1.8	2.4	2.9	1.3	1.5	2.2	1.8
Walloon Region						1.3	1.3			1.2

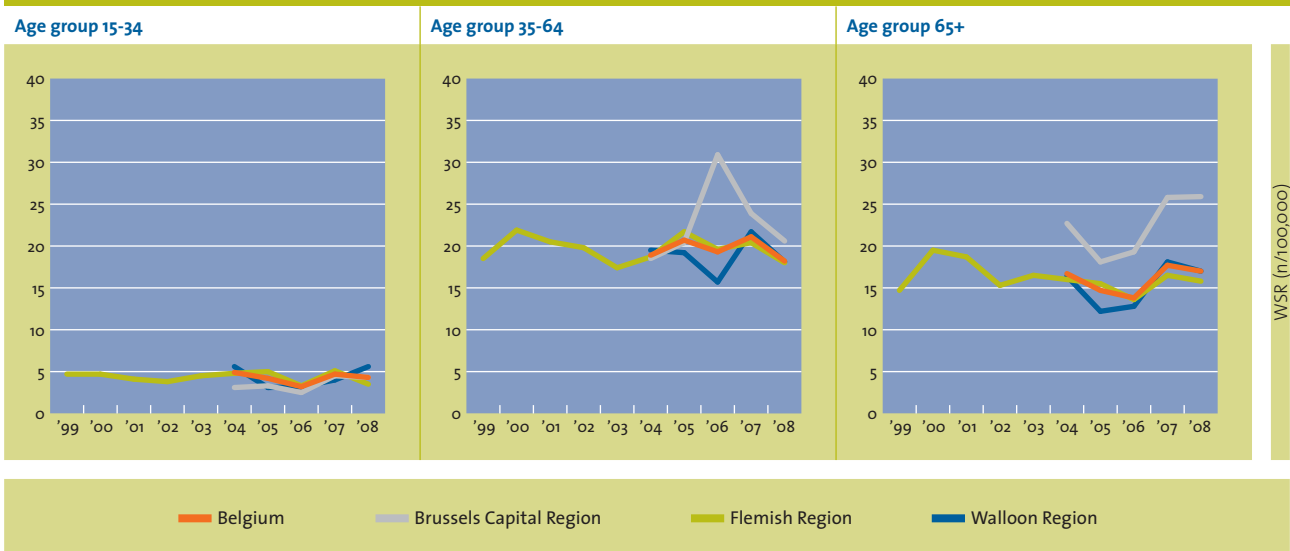
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 63 Cervical cancer: incidence and mortality by region, 1999-2008



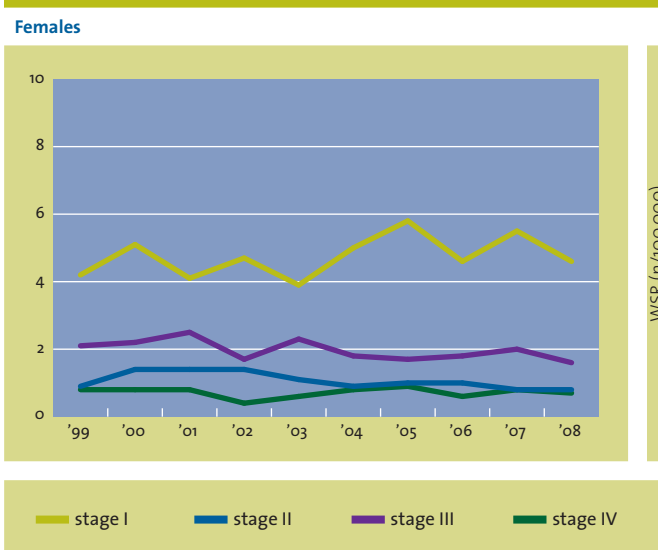
- No significant trend is observed for cervical cancer in incidence rate in the Flemish Region, nor in mortality rates in the Flemish and Brussels Capital Region.

**Figure 64** Cervical cancer: incidence by age group and region, 1999-2008



- In children (age 0-14 years), cervical cancer is rare and therefore not represented in the figure.
- In the age group 15-34 years, no significant trends are observed over time or between the regions.
- In the age group 35-64 years, the incidence rates are 4 times higher when compared to the age group 15-34 years. No significant trend is observed over time or between the regions.
- In the age group 65 years and older, the highest incidence rate is observed in the Brussels Capital Region. No significant trend is observed over time.

**Figure 65** Cervical cancer: incidence by stage, Flemish Region 1999-2008



- The majority of cervical tumours are diagnosed in stage I, but no significant trend is observed for these tumours over time.
- In the Flemish Region, a significant decrease is observed in stage III tumours (EAPC = -3.1% [ $p = 0.04$ ]).
- No significant trends are observed in stage II and stage IV tumours.

## 2.7.2 CORPUS UTERI (ICD-10: C54)

### General results, 2008

**Table 34** Corpus uteri cancer: incidence and mortality by region, 2008

Females	Incidence			Mortality			
	N	CR	WSR	CRi	N	CR	WSR
Belgium	1,450	26.6	13.1	1.7	214	3.9	1.4
Flemish Region	908	29.1	14.0	1.8	154	4.9	1.6
Brussels Capital Region	114	21.0	11.3	1.3	21	3.9	1.5
Walloon Region	428	24.1	12.0	1.6	39	2.2	0.8

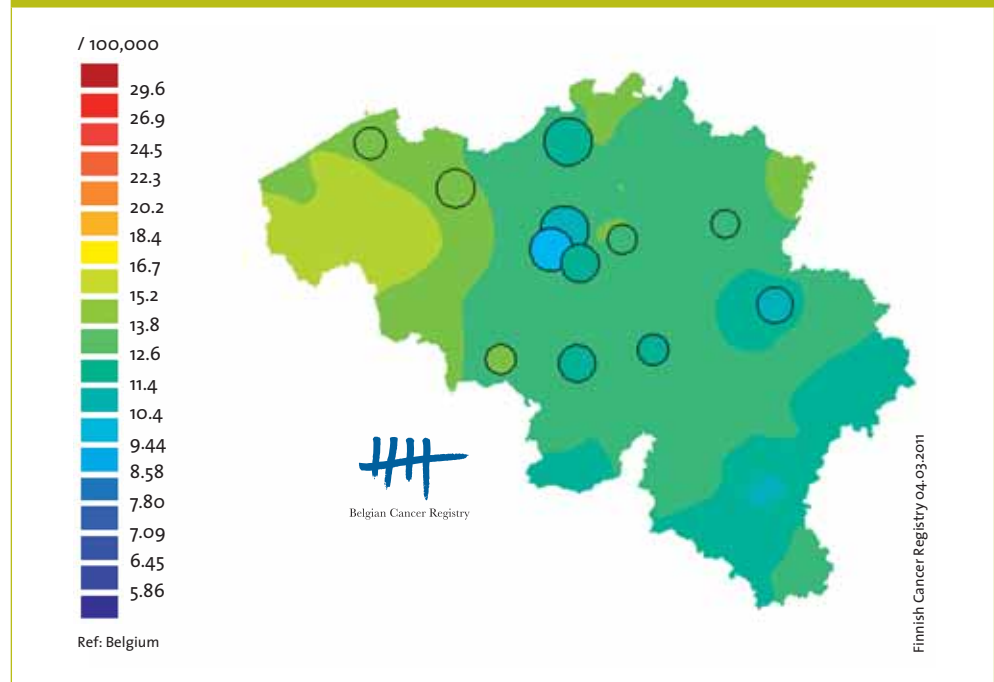
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

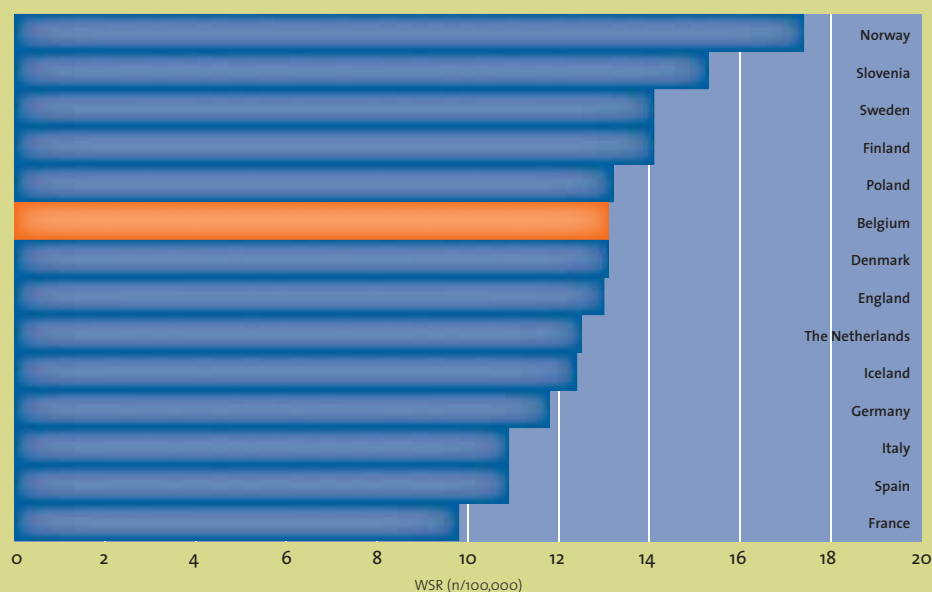
CRi: cumulative risk 0-74 years (%)

- Corpus uteri cancer is the 4<sup>th</sup> most frequent tumour in females (5.3%). It is the most frequent gynaecological cancer.
- Corpus uteri cancer is the 14<sup>th</sup> most frequent cause of cancer death in females (1.9%).
- The highest incidence rate is observed in the Flemish Region.
- Mean age at diagnosis is 68 years.

**Figure 66** Corpus uteri cancer incidence in Belgium, 2004-2008



**Figure 67** Corpus uteri cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>36)</sup>



## Trends

**Table 35** Corpus uteri cancer: incidence and mortality by region, 1999-2008

Corpus uteri cancer: number of invasive tumours by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,412	1,370	1,340	1,394	1,450
Flemish Region	672	766	808	769	796	855	831	834	858	908
Brussels Capital Region						109	101	102	105	114
Walloon Region						448	438	404	431	428
Corpus uteri cancer: age-standardised incidence (WSR) by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						13.7	13.1	13.0	13.2	13.1
Flemish Region	12.0	13.7	14.5	13.5	13.5	14.3	13.5	13.9	13.9	14.0
Brussels Capital Region						11.1	10.2	10.4	11.1	11.3
Walloon Region						13.4	13.2	12.2	12.3	12.0
Corpus uteri cancer: number of deaths by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						180	182			214
Flemish Region	124	134	121	130	112	118	132	129	136	154
Brussels Capital Region	12	9	23	16	10	18	13	13	17	21
Walloon Region						44	37			39
Corpus uteri cancer: age-standardised mortality (WSR) by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.3	1.2			1.4
Flemish Region	1.8	1.7	1.6	1.7	1.4	1.6	1.6	1.6	1.6	1.6
Brussels Capital Region	0.8	0.7	1.5	1.5	0.7	1.3	1.0	1.1	0.9	1.5
Walloon Region						1.0	0.6			0.8

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

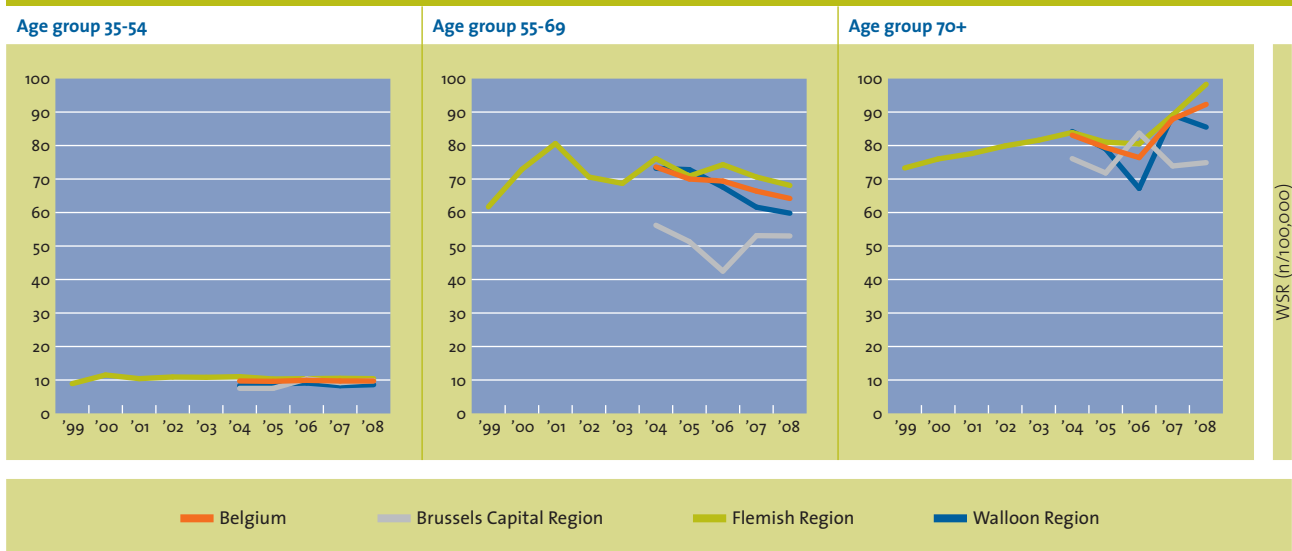


Figure 68 Corpus uteri cancer: incidence and mortality by region, 1999-2008



- No significant trend in incidence rate in the Flemish Region is observed, nor in mortality rates in the Flemish and Brussels Capital Region.

Figure 69 Corpus uteri cancer: incidence by age group and region, 1999-2008



- Corpus uteri cancer is rare under the age of 35 years and is therefore not included in the figure.
- In the age group 35-54 years, no trend is observed over time and between the regions.
- In the age group 55-69 years, the incidence rate is almost 7 times higher than in the age group 35-54 years.
  - The lowest incidence rate is observed in the Brussels Capital Region.
  - In the Flemish Region, the incidence rate remains stable between 1999 and 2008.
- In the age group 70 years and older, the incidence rate is 1.4 times higher than in the age group 55-69 years.
  - No regional differences are observed.
  - In the Flemish Region, a significant increase is observed (EAPC = 2.5% [p = 0.00]).

## 2.7.3 OVARY (ICD-10: C56)

### General results, 2008

**Table 36** Ovarian cancer: incidence and mortality by region, 2008

Females	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	870	16.0	8.7	1.0	653	12.0	5.0
Flemish Region	533	17.1	8.8	1.0	397	12.7	5.1
Brussels Capital Region	74	13.6	8.3	0.9	58	10.7	5.1
Walloon Region	263	14.8	8.6	1.0	198	11.1	5.0

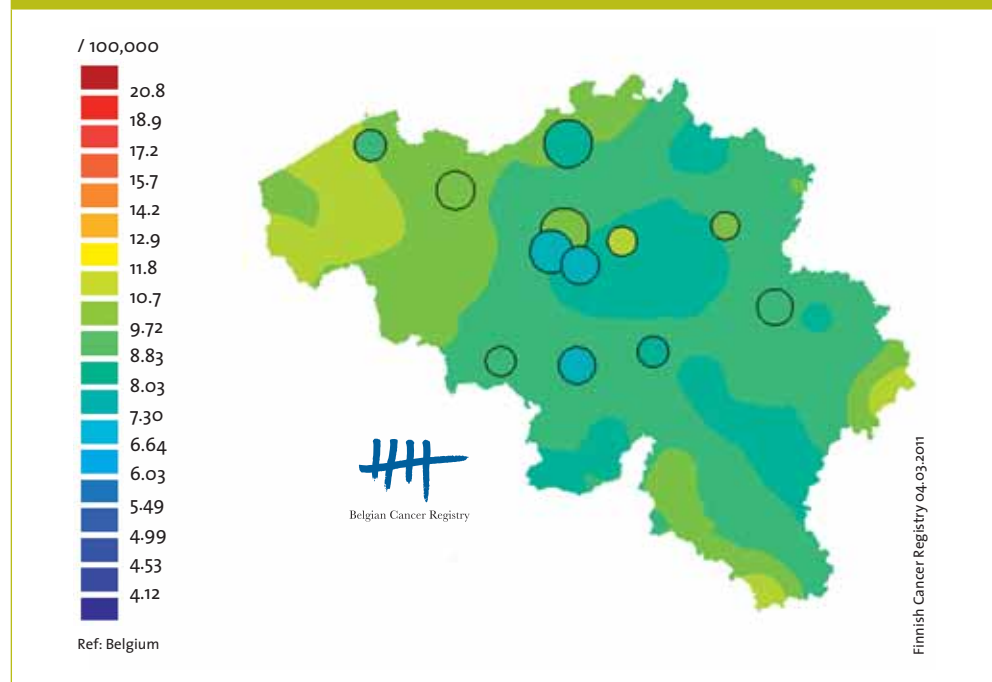
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

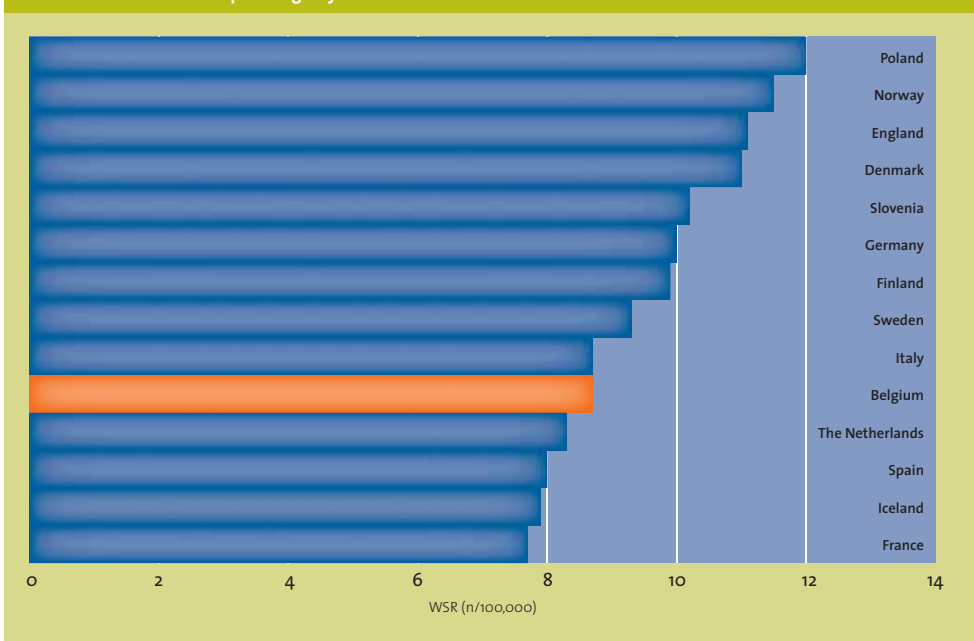
CRi: cumulative risk 0-74 years (%)

- Ovarian cancer is the 7<sup>th</sup> most frequent tumour in females (3.2%). It is the 2<sup>nd</sup> most frequent gynaecological tumour.
- Ovarian cancer is the 5<sup>th</sup> most frequent cause of cancer death in females (5.7%).
- The incidence rates are comparable between the three Belgian regions.
- Mean age at diagnosis is 65 years.

**Figure 70** Ovarian cancer incidence in Belgium, 2004-2008



**Figure 71** Ovarian cancer: comparison of age-standardised incidence rates (WSR), 2008.  
Selection of European registry data<sup>(98)</sup>



## Trends

**Table 37** Ovarian cancer: incidence and mortality by region, 1999-2008

Ovarian cancer: number of invasive tumours by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						918	933	928	920	870
Flemish Region	583	652	598	568	607	570	561	583	546	533
Brussels Capital Region						74	84	65	75	74
Walloon Region						274	288	280	299	263
Ovarian cancer: age-standardised incidence (WSR) by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						9.8	9.5	9.5	9.5	8.7
Flemish Region	11.5	12.4	11.3	10.5	10.9	10.2	9.8	10.0	9.8	8.8
Brussels Capital Region						9.8	9.3	7.7	8.3	8.3
Walloon Region						8.9	9.2	8.9	9.5	8.6
Ovarian cancer: number of deaths by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						679	653			653
Flemish Region	405	410	422	399	398	385	428	396	425	397
Brussels Capital Region	61	70	78	43	54	64	38	54	51	58
Walloon Region						230	187			198
Ovarian cancer: age-standardised mortality (WSR) by region, 1999-2008										
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						5.4	5.1			5.0
Flemish Region	5.8	6.3	6.5	5.9	5.7	5.3	5.8	5.6	6.1	5.1
Brussels Capital Region	5.7	5.5	7.0	3.1	5.6	4.7	3.0	5.0	4.9	5.1
Walloon Region						5.8	4.5			5.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

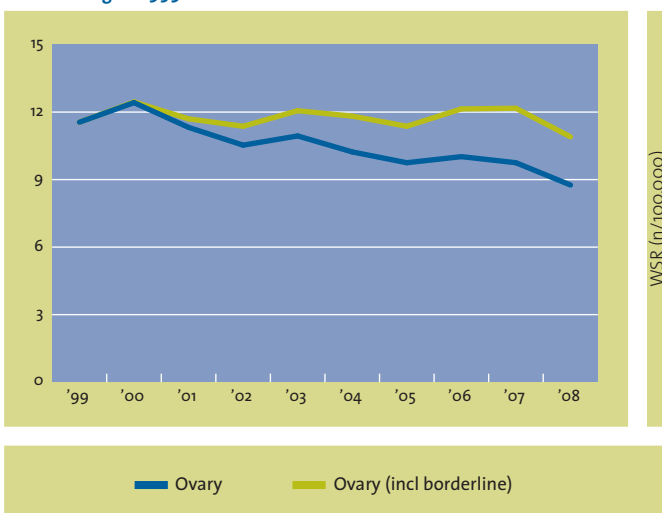
Figure 72 Ovarian cancer: incidence and mortality by region, 1999-2008



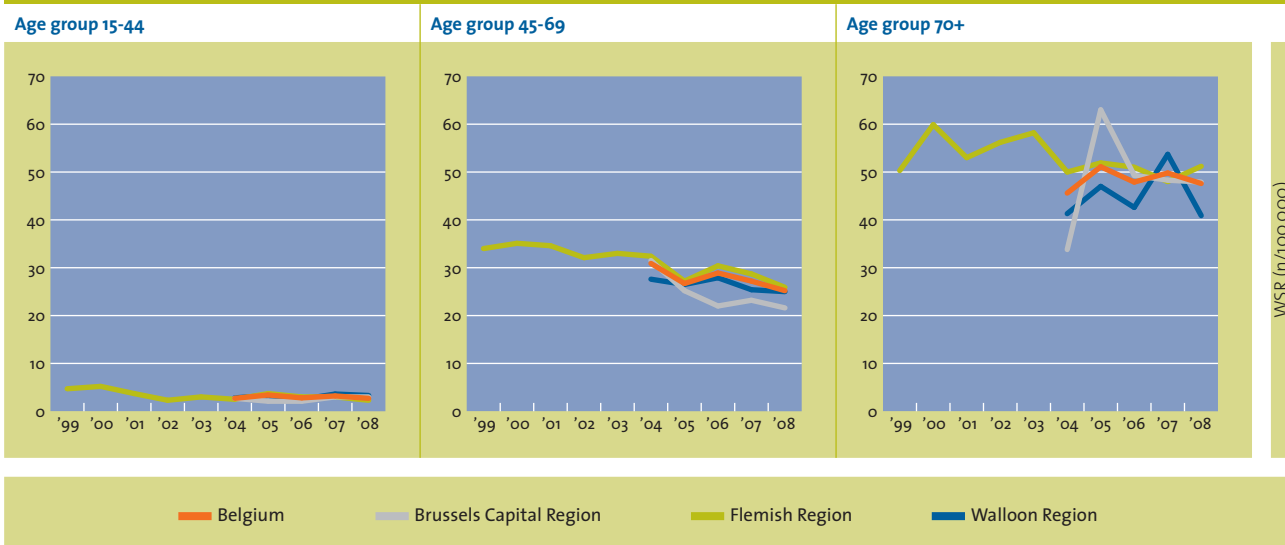
- The observed decrease in incidence rate of ovarian cancer (EAPC = -3.0% [p = 0.00]) in the Flemish Region is an artefact due to a change in disease classification. Five types of neoplasms of the ovary considered as malignant in the 2<sup>nd</sup> edition of the International Classification of Diseases for Oncology<sup>(6)</sup> (used until 2002) are reverted to borderline malignant status in the 3<sup>rd</sup> edition<sup>(7)</sup> (used from 2002 onwards). Therefore, since 2002, these neoplasms are no longer included in reports of cancer incidence data. This modification in classification rules explains the observed decrease (Figure 73).

**Figure 73** Ovarian Cancer: age-standardised incidence (WSR), Influence of changes in classification of borderline malignant ovarian tumours

Flemish Region 1999-2008



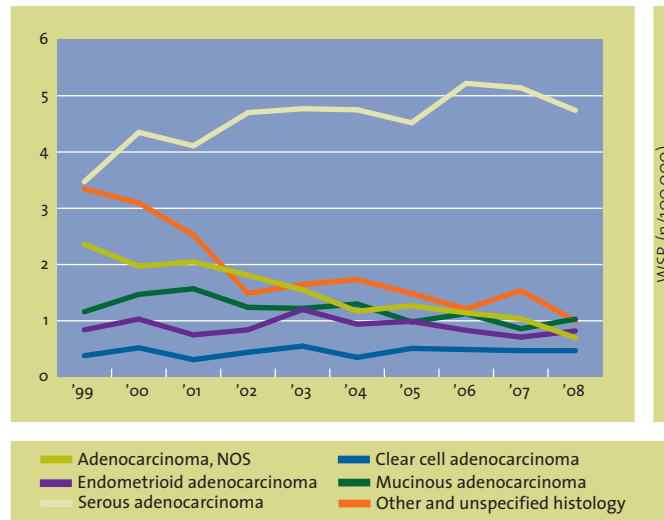
**Figure 74** Ovarian cancer: incidence by age group and region, 1999-2008



- In children (0-14 years), ovarian cancer is rare and therefore not included in the figure.
- In the age group 15-44 years, the incidence rates between the regions are comparable.
  - In the Flemish Region, a significant decrease is observed (EAPC = -5.7% [p = 0.05]). After correction for changes in disease classification (Figure 73), no significant trend is observed (EAPC = 1.5% [p = 0.49]).
- In the age group 45-69 years, the incidence rates are 9 times higher when compared to the age group 15-44 years.
  - The lowest incidence rate is observed in the Brussels Capital Region.
  - In the Flemish Region, a significant decrease is observed (EAPC = 3.0% [p = 0.00]). After correcting for changes in classification (Figure 73), this significant decrease is no longer observed (EAPC = -1.0% [p = 0.12]).
- In the age group 70 years and older, no regional differences are observed.
  - In the Flemish Region, a non-significant decrease in ovarian cancer incidence rate is observed (EAPC = -1.2% [p = 0.13]).

Figure 75 Ovarian cancer: incidence by histology

Flemish Region 1999-2008



- Most ovarian tumours are adenocarcinoma. However, some typical adenocarcinoma subtypes can be distinguished in ovarian tumours. Care must be taken in the interpretation of these trends since in the period 1999-2008 a significant decrease is observed in unspecified adenocarcinoma (EAPC = -11.2% [p = 0.00]) and in unspecified tumours (EAPC = -11.1% [p = 0.00]), reflecting important improvements in registration methodology (more accurate description of histological diagnosis).
  - Serous adenocarcinoma are the most important subtype. A significant increase is observed in these tumours (EAPC = 3.1% [p = 0.01]).
  - The incidence rate of mucinous adenocarcinoma in the Flemish Region decreases significantly between 1999 and 2008 (EAPC = -4.2% [p = 0.02]).
  - Endometrioid adenocarcinoma shows no significant change (EAPC = -1.2% [p = 0.52]).
  - No significant trend is observed for clear cell adenocarcinoma (EAPC = 2.1% [0.34]).

## 2.8 MALE GENITAL ORGANS

### 2.8.1 PROSTATE (ICD-10: C61)

#### General results, 2008

**Table 38** Prostate cancer: incidence and mortality by region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	8,810	168.6	91.5	11.6	1,410	27.0	11.0
Flemish Region	5,796	190.7	97.3	12.2	831	27.3	10.6
Brussels Capital Region	629	124.3	83.3	10.2	121	23.9	11.2
Walloon Region	2,385	142.1	82.0	10.5	458	27.3	11.9

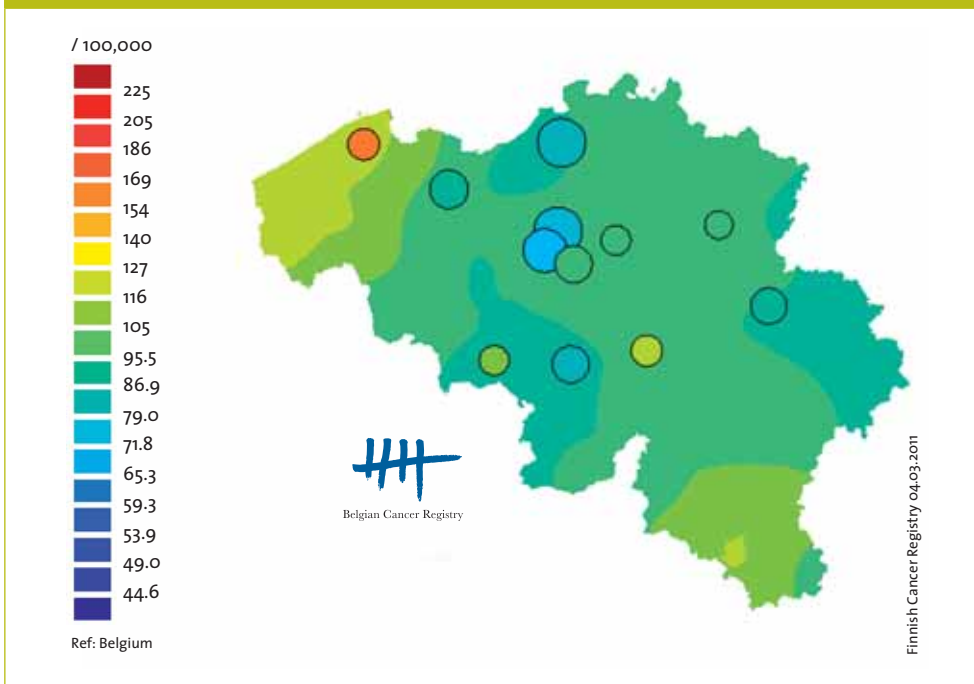
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

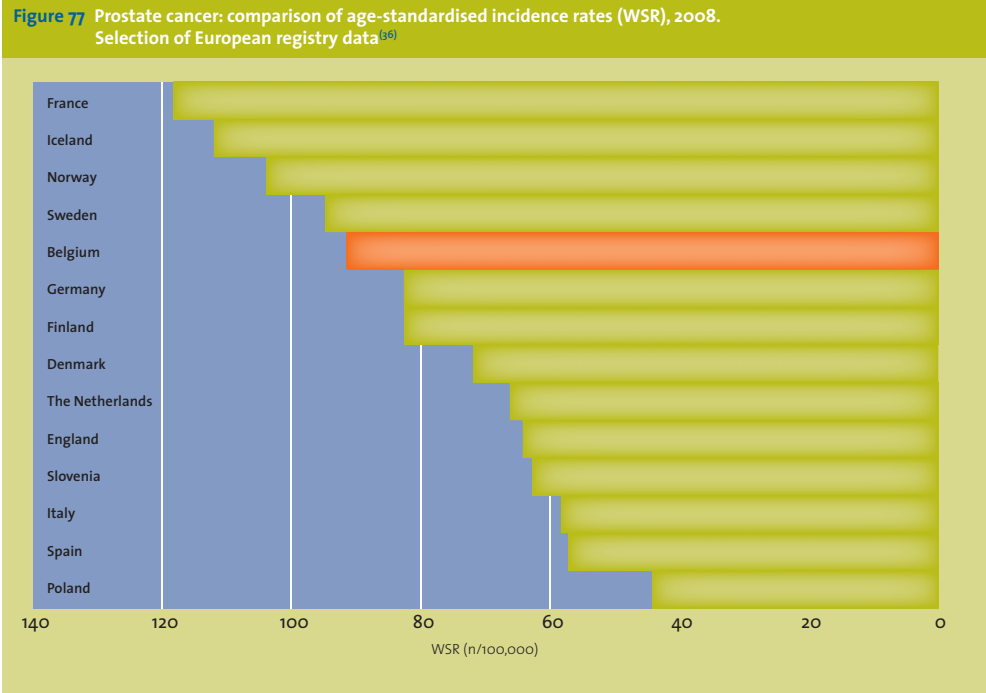
CRi: cumulative risk 0-74 years (%)

- Prostate cancer is the most frequent tumour in males (27%).
- Prostate cancer is the 3<sup>rd</sup> most important cause of cancer death (9.3%).
- The highest incidence rate for prostate cancer is observed in the Flemish Region.
- Mean age at diagnosis is 69 years.

**Figure 76** Prostate cancer incidence in Belgium, 2004-2008







### Trends

**Table 39** Prostate cancer: incidence and mortality by region, 1999-2008

Prostate cancer: number of invasive tumours by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						9,728	9,719	9,273	8,976	8,810
Flemish Region	4,498	4,944	5,432	5,008	5,573	5,923	6,132	5,938	5,968	5,796
Brussels Capital Region						604	665	604	551	629
Walloon Region						3,201	2,922	2,731	2,457	2,385

Prostate cancer: age-standardised incidence (WSR) by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						105.4	104.3	100.0	95.1	91.5
Flemish Region	85.0	92.6	99.4	91.4	100.5	105.1	107.5	104.0	102.1	97.3
Brussels Capital Region						78.9	85.3	81.6	75.8	83.3
Walloon Region						113.0	102.6	96.6	85.9	82.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Prostate cancer: number of deaths by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,377	1,504			1,410
Flemish Region	922	918	949	952	854	807	901	857	869	831
Brussels Capital Region	137	141	144	141	131	105	116	127	100	121
Walloon Region						465	487			458

Prostate cancer: age-standardised mortality (WSR) by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						12.5	13.1			11.0
Flemish Region	15.4	15.1	14.9	14.9	13.1	12.2	12.9	12.0	11.7	10.6
Brussels Capital Region	14.2	13.8	14.2	13.8	13.6	10.4	11.5	12.3	9.8	11.2
Walloon Region						13.8	14.0			11.9

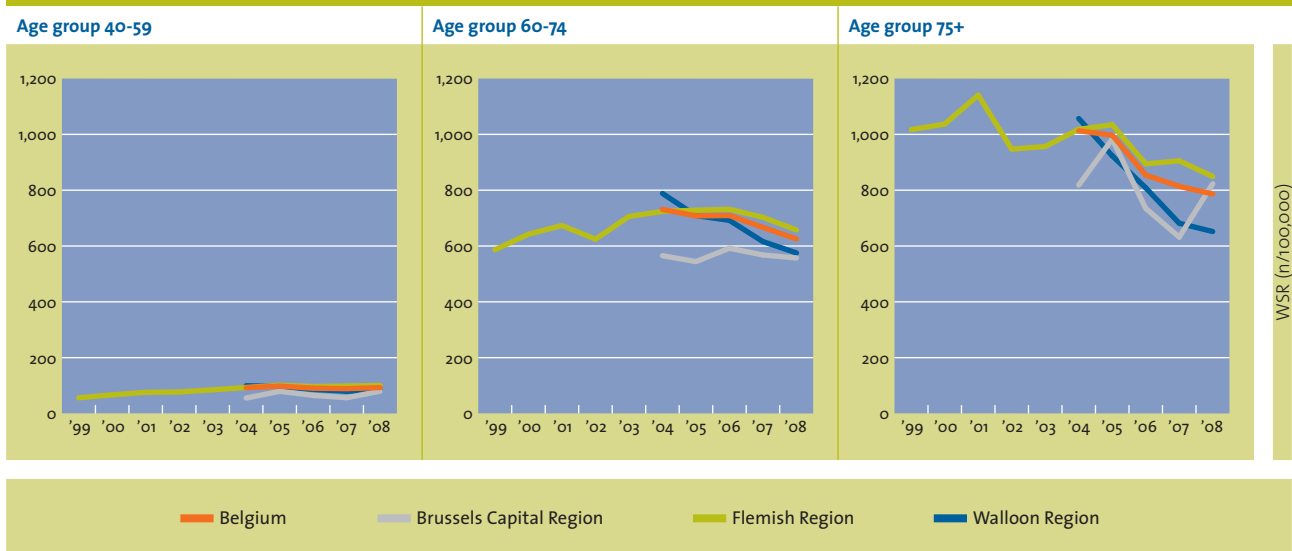
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 78 Prostate cancer: incidence and mortality by region, 1999-2008



- Between 1999 and 2005, an increase (3.5%) is observed in incidence rates in the Flemish Region. After 2005, the incidence rate decreases (3.2%).
- Between 1999 and 2008, mortality rate in the Flemish Region decreases (EAPC = 4.0% [p = 0.00]).
- A similar decrease is observed in the Brussels Capital Region (EAPC = -3.6% [p = 0.00]).
- In the Walloon Region, the incidence rate shows a significant drop. The reason is most likely the inclusion of prevalent cases, a known problem in cancer registration in the first years of complete coverage<sup>(37)</sup>.

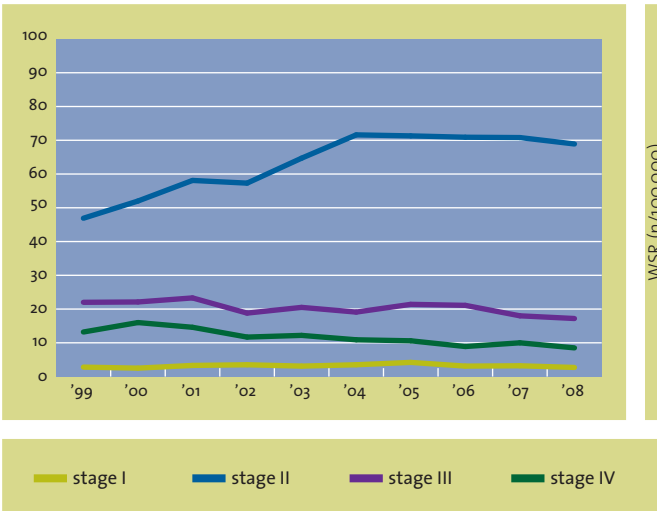
Figure 79 Prostate cancer: incidence by age group and region, 1999-2008



- Under the age of 40 years, prostate cancer is very rare and therefore not included in the figure.
- In the age group 40-59 years, higher incidence rates are observed in the Flemish Region when compared to the Brussels Capital and Walloon Region.
  - In the Flemish Region, an increase (9.5%) is observed between 1999 and 2005. Between 2005 and 2008, the incidence rate remains stable and a plateau is observed.
- In the age group 60-74, the incidence rate observed in the Flemish Region is higher than in the Brussels Capital and Walloon Region.
  - In the Flemish Region, an increase (3.4%) is observed between 1999 and 2005, followed by a decrease (-3.4%) between 2005 and 2008.
  - The incidence rates in the age group 60-74 years are 6.7 times higher than the age group 40-59 years.
- In the age group 75 years and older, the highest incidence rate is observed in the Flemish Region.
  - In the Flemish Region, a significant decrease is observed between 1999 and 2008 (EAPC = 2.1% [p = 0.02]).
  - The incidence rates in the age group 75 years and older are 1.3 times higher than in the age group 60-74 years.

Figure 8o Prostate cancer: incidence by stage, Flemish Region 1999-2008

Males



- Stage I tumours are rare, since every prostate cancer that is pathologically staged, is minimum a stage II tumour due to TNM classification rules<sup>(6)(7)</sup>.
- Until 2004, a rapid increase (8.2%) is observed in stage II tumours. After 2004 a plateau is reached.
- A significant decrease is observed in stage III (EAPC = -2.3% [p = 0.02]) and stage IV (EAPC = -6.0% [p = 0.00]) tumours.

## 2.8.2 TESTIS (ICD-10: C62)

### General results, 2008

**Table 40** Testicular cancer: incidence and mortality by region, 2008

Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	318	6.1	6.0	0.4	16	0.3	0.3
Flemish Region	174	5.7	5.9	0.4	9	0.3	0.2
Brussels Capital Region	30	5.9	5.3	0.4	2	0.4	0.3
Walloon Region	114	6.8	6.5	0.5	5	0.3	0.3

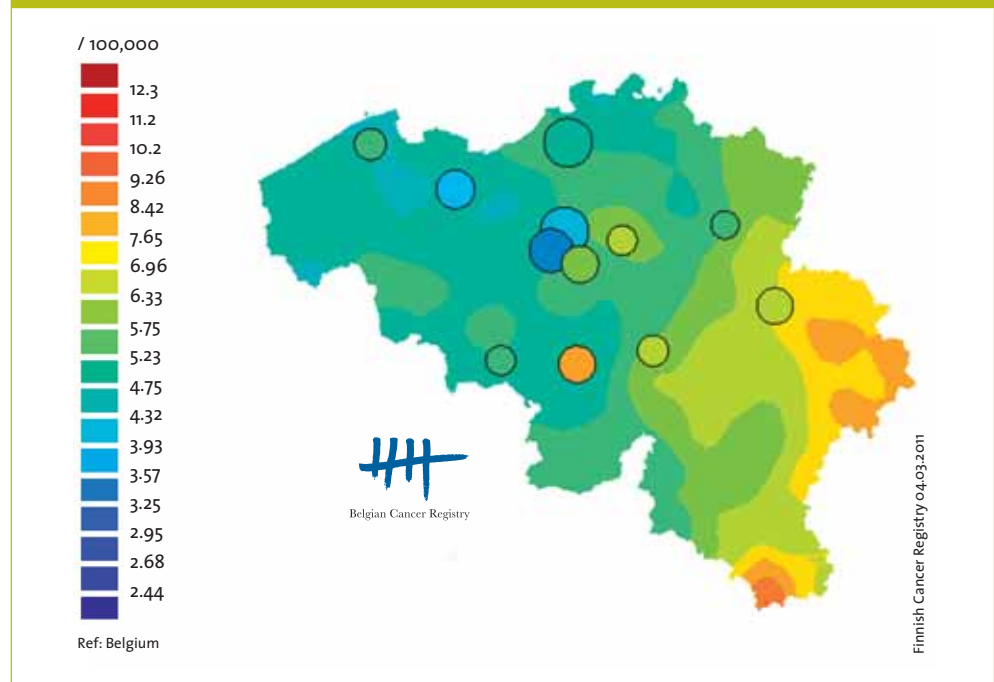
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

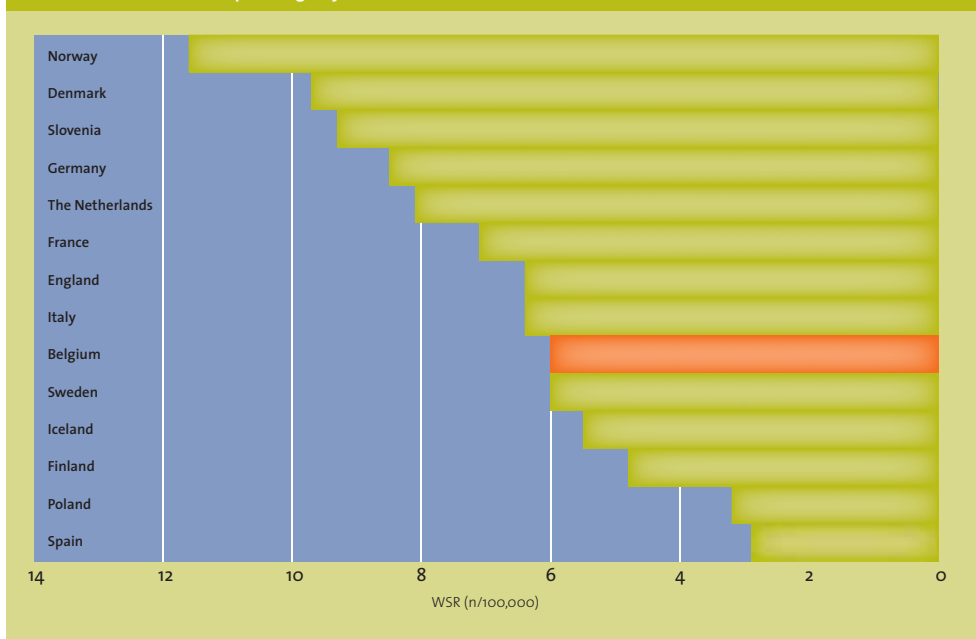
CRi: cumulative risk 0-74 years (%)

- Testicular cancer is rare in males (1.0%).
- Testicular cancer is a very uncommon cause of cancer death in males (0.1%).
- No differences are observed between the regions.
- Mean age at diagnosis is 34 years.

**Figure 81** Testicular cancer incidence in Belgium, 2004-2008



**Figure 82** Testicular cancer: comparison of age-standardised incidence rates (WSR), 2008.  
Selection of European registry data<sup>(86)</sup>



## Trends

**Table 41** Testicular cancer: incidence and mortality by region, 1999-2008

Testicular cancer: number of invasive tumours by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						252	288	273	306	318
Flemish Region	96	132	133	128	129	128	159	149	171	174
Brussels Capital Region						18	26	23	25	30
Walloon Region						106	103	101	110	114

Testicular cancer: age-standardised incidence (WSR) by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4.7	5.2	5.3	5.8	6.0
Flemish Region	3.0	4.3	4.4	4.3	4.2	4.2	5.1	5.3	5.7	5.9
Brussels Capital Region						3.3	4.5	4.2	4.6	5.3
Walloon Region						6.3	6.0	5.8	6.6	6.5

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Testicular cancer: number of deaths by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						10	11			16
Flemish Region	5	4	7	6	5	5	5	5	7	9
Brussels Capital Region	0	0	5	3	0	0	0	0	0	2
Walloon Region						5	6			5

Testicular cancer: age-standardised mortality (WSR) by region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.2	0.2			0.3
Flemish Region	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Brussels Capital Region	0.0	0.0	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.3
Walloon Region						0.3	0.3			0.3

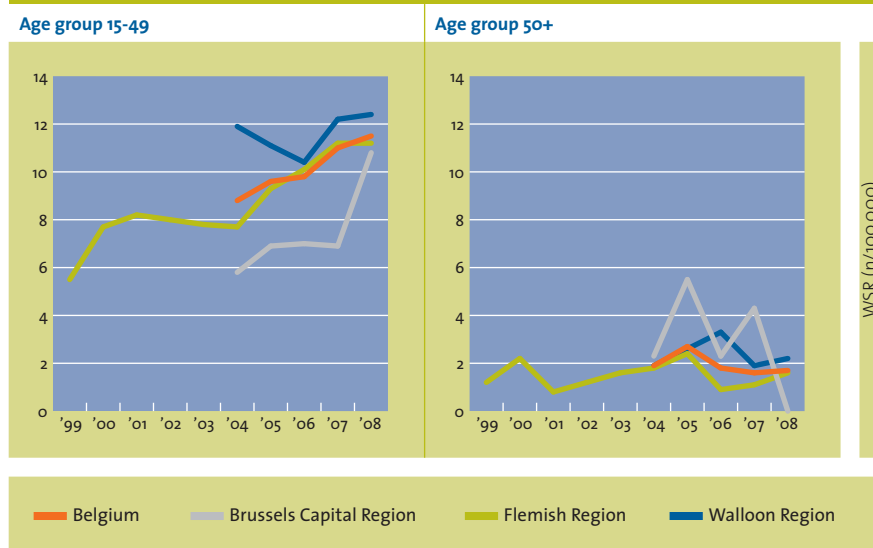
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

**Figure 83** Testicular cancer: incidence and mortality by region, 1999-2008



- Under the age of 15 years, testicular cancer is very rare and therefore not included in the figure.
- A yearly increase of 5.8% ( $p = 0.00$ ) in incidence rate for testicular cancer is observed in the Flemish Region.
- Mortality rates are very low in all regions and no specific trend is observed.

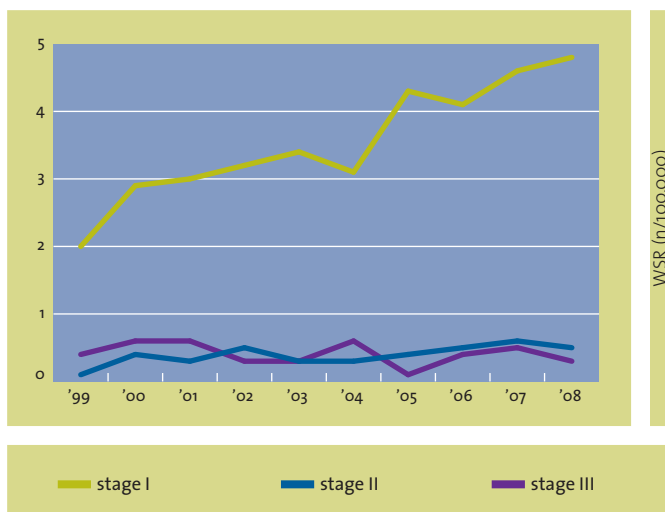
**Figure 84** Testicular cancer: incidence by age group and region, 1999-2008



- In males under 50 years, an increase is observed in incidence rates (EAPC = 6.6% [ $p = 0.00$ ]).
- The incidence rate in males of 50 years and older are very low (7 times lower when compared to the age group 15-49 years). Over time, the incidence rate in this age group is stable (EAPC = 0.4% [ $p = 0.93$ ]).

**Figure 85** Testicular cancer: incidence by stage, Flemish Region 1999-2008

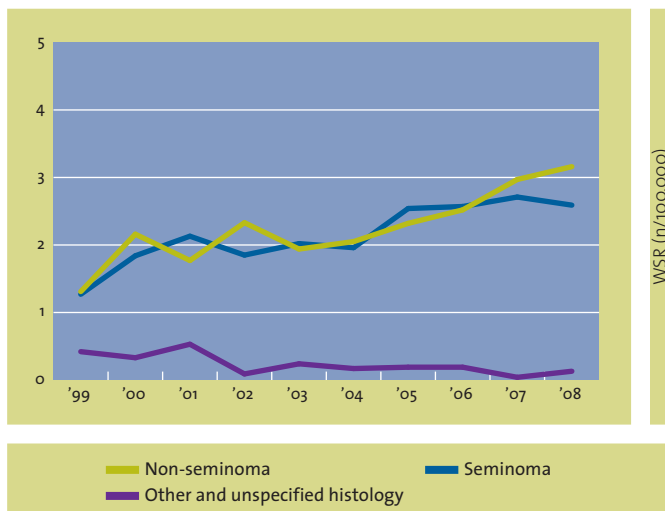
Males



- Most testis tumours are diagnosed as stage I.
- In stage I tumours, a significant increase is observed (EAPC = 8.4% [p = 0.00]).
- In stage II tumours, a significant increase is observed (EAPC = 10.6% [p = 0.03]). However, the incidence rate in stage II tumours remains very low.
- The incidence rate of stage III tumours is low and no significant trend is observed (EAPC = -4.8% [p = 0.35]).

**Figure 86** Testicular cancer: incidence by histology, Flemish Region 1999-2008

Males



- A significant increase is observed for seminoma (EAPC = 6.9% [p = 0.00]) and non-seminoma testicular cancer (EAPC = 7.5% [p = 0.00]). The incidence rates in both tumour types are comparable.



## 2.9 URINARY TRACT

### 2.9.1 KIDNEY (ICD-10: C64)

#### General results, 2008

**Table 42** Kidney cancer: incidence and mortality by sex and region, 2008

	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
<b>Males</b>							
Belgium	946	18.1	10.7	1.3	344	6.6	3.2
Flemish Region	584	19.2	10.7	1.3	217	7.1	3.2
Brussels Capital Region	73	14.4	10.4	1.3	32	6.3	3.8
Walloon Region	289	17.2	10.7	1.3	95	5.7	3.0
<b>Females</b>							
Belgium	541	9.9	5.3	0.6	219	4.0	1.4
Flemish Region	350	11.2	5.5	0.6	135	4.3	1.5
Brussels Capital Region	32	5.9	4.0	0.5	16	2.9	1.0
Walloon Region	159	8.9	5.2	0.6	68	3.8	1.2

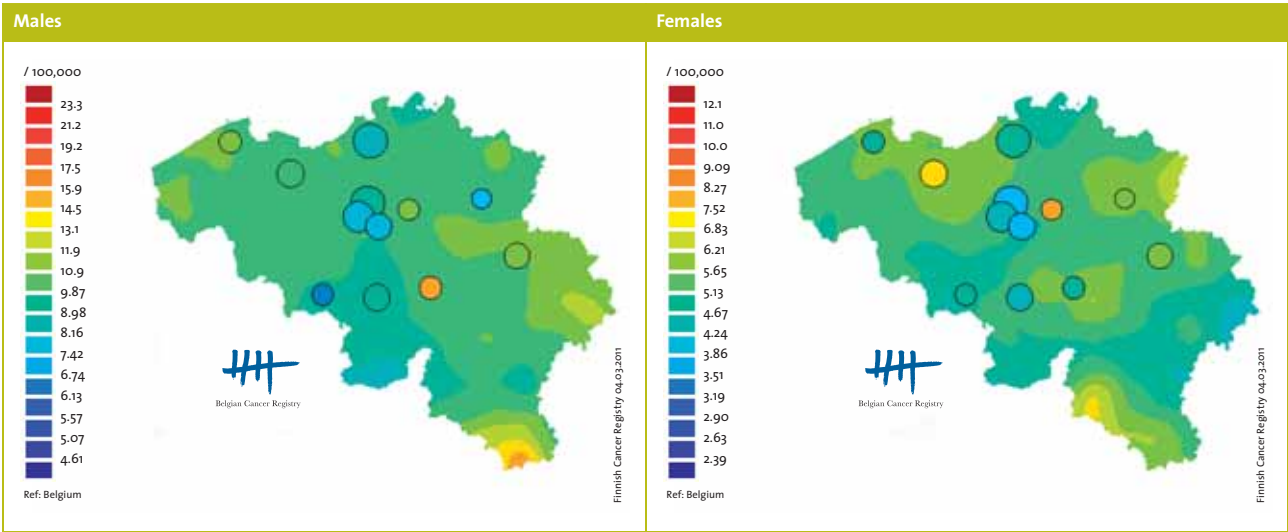
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

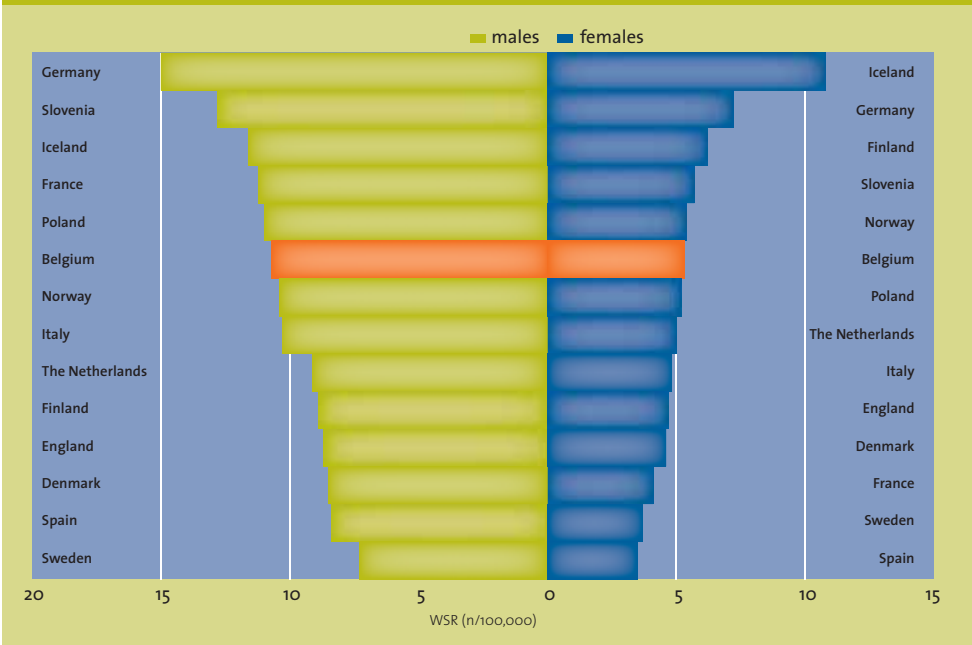
CRi: cumulative risk 0-74 years (%)

- Kidney cancer is the 7<sup>th</sup> most frequent tumour in males (2.9%) and the 14<sup>th</sup> most frequent in females (2.0%).
- Kidney cancer is the 12<sup>th</sup> most frequent cause of cancer death in males (2.3%) and the 13<sup>th</sup> most frequent cause of cancer death in females (1.9%).
- The incidence rates in the three regions are comparable.
- Mean age at diagnosis is 64 years in males and 66 years in females.

**Figure 87** Kidney cancer incidence in Belgium, 2004-2008



**Figure 88** Kidney cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>



## Trends

**Table 43** Kidney cancer: incidence and mortality by sex and region, 1999-2008

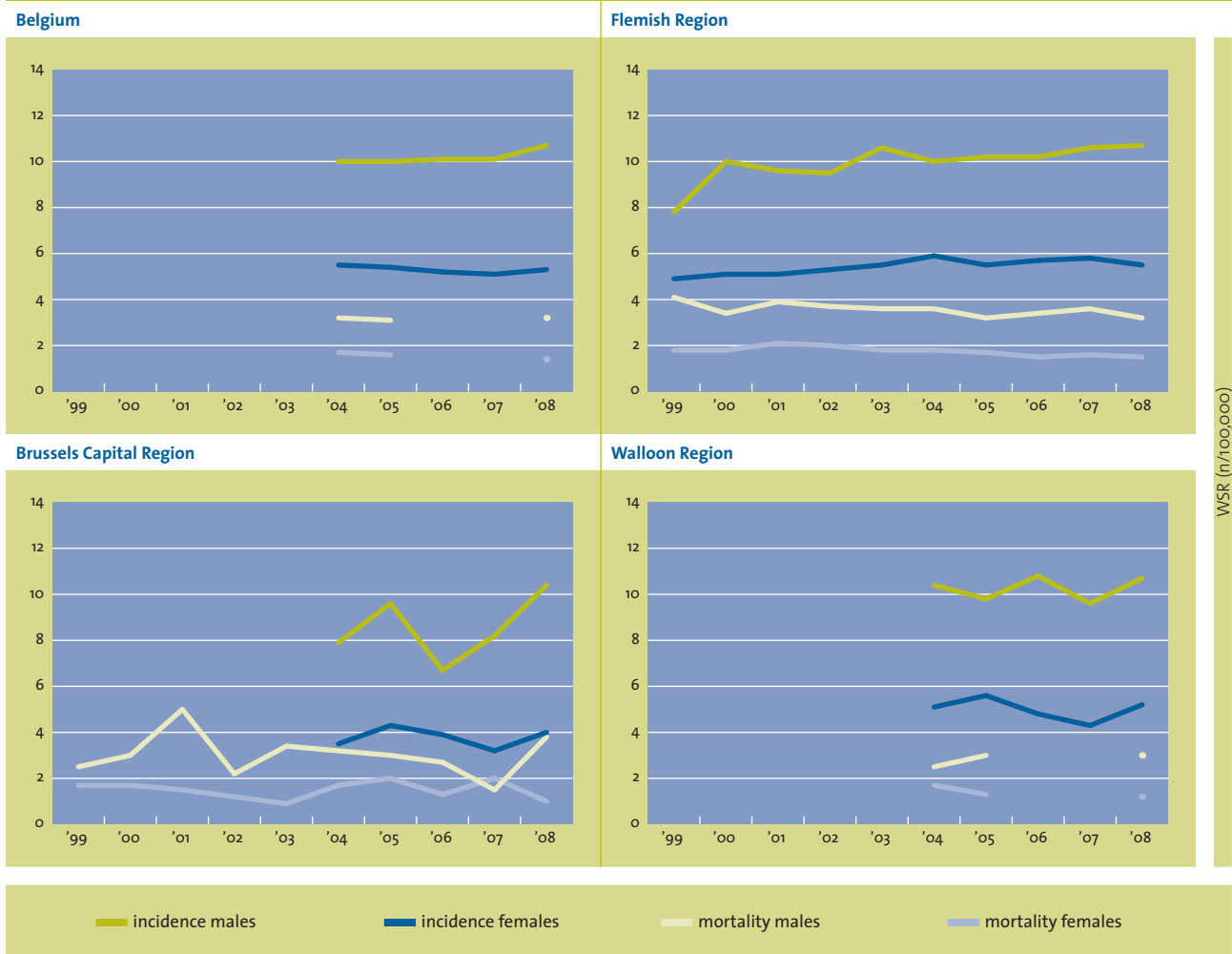
Kidney cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						815	842	852	890	946
Flemish Region	370	458	471	458	518	501	519	537	575	584
Brussels Capital Region						55	67	43	54	73
Walloon Region						259	256	272	261	289
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						530	536	532	517	541
Flemish Region	268	276	272	288	330	352	335	335	347	350
Brussels Capital Region						28	33	36	27	32
Walloon Region						150	168	161	143	159
Kidney cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						10.0	10.0	10.1	10.1	10.7
Flemish Region	7.8	10.0	9.6	9.5	10.6	10.0	10.2	10.2	10.6	10.7
Brussels Capital Region						7.9	9.6	6.7	8.2	10.4
Walloon Region						10.4	9.8	10.8	9.6	10.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						5.5	5.4	5.2	5.1	5.3
Flemish Region	4.9	5.1	5.1	5.3	5.5	5.9	5.5	5.7	5.8	5.5
Brussels Capital Region						3.5	4.3	3.9	3.2	4.0
Walloon Region						5.1	5.6	4.8	4.3	5.2

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Kidney cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						311	310			344
Flemish Region	211	186	203	200	199	217	195	206	221	217
Brussels Capital Region	20	25	36	18	26	26	27	21	14	32
Walloon Region						68	88			95
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						246	214			219
Flemish Region	132	127	156	155	144	143	130	127	129	135
Brussels Capital Region	24	24	18	15	15	27	21	18	24	16
Walloon Region						76	63			68
Kidney cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						3.2	3.1			3.2
Flemish Region	4.1	3.4	3.9	3.7	3.6	3.6	3.2	3.4	3.6	3.2
Brussels Capital Region	2.5	3.0	5.0	2.2	3.4	3.2	3.0	2.7	1.5	3.8
Walloon Region						2.5	3.0			3.0
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.7	1.6			1.4
Flemish Region	1.8	1.8	2.1	2.0	1.8	1.8	1.7	1.5	1.6	1.5
Brussels Capital Region	1.7	1.7	1.5	1.2	0.9	1.7	2.0	1.3	2.0	1.0
Walloon Region						1.7	1.3			1.2

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

**Figure 89** Kidney cancer: incidence and mortality by sex and region, 1999-2008



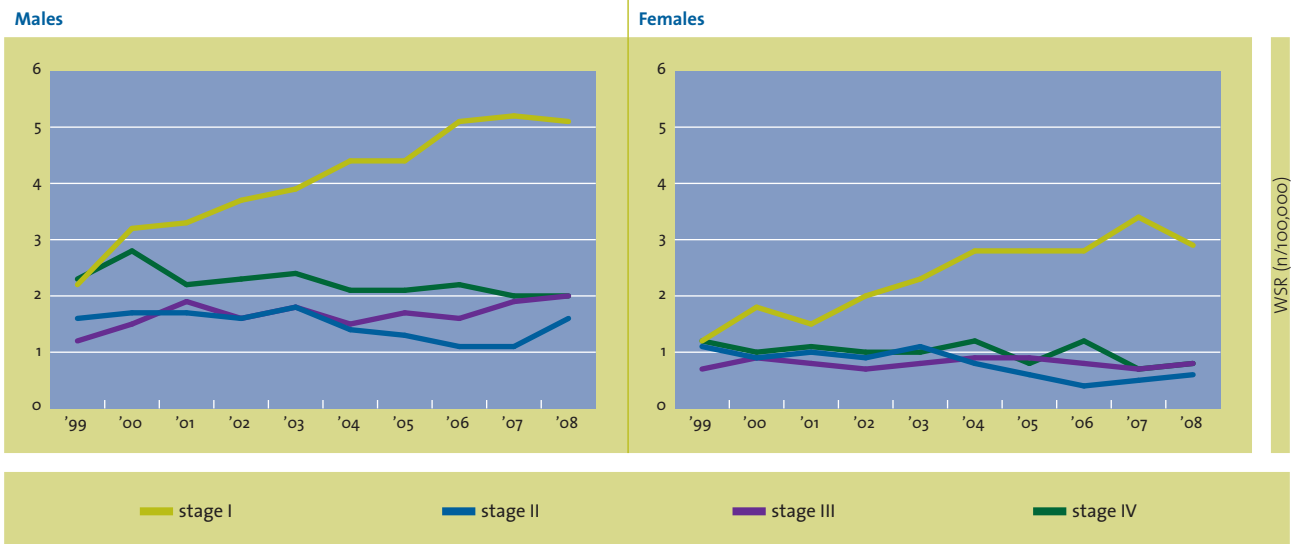
- In the Flemish Region, a significant increase in incidence rates is observed in males (EAPC 2.2% [p = 0.01]) and females (EAPC = 1.7% [p = 0.00]).
- In the same period, a decrease in mortality in the Flemish Region is observed in males (EAPC = -1.7% [p = 0.04]) and females (EAPC = -2.7% [p = 0.01]).
- A similar pattern is observed in mortality in the Brussels Capital Region (males: EAPC = 2.0% [p = 0.59], females: EAPC = -1.2% [p = 0.69]).

Figure 90 Kidney cancer: incidence by age group, sex and region, 1999-2008



- Under the age of 30 years (data not shown), kidney cancer is very rare. Most diagnoses in patients under the age of 30 years are nephroblastoma in young children.
- In the age group 30-44 years, the male/female ratio is 1.6.
  - No regional differences are observed.
  - In the Flemish Region, a non-significant increase is observed in males (EAPC = 5.0% [p = 0.09]) and females (EAPC = 1.8% [p = 0.16]).
- In the age group 45-64 years, the male/female ratio is 2.5.
  - In females, the lowest incidence rate is observed in the Brussels Capital Region, in males, the rates are more comparable.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 2.0% [p = 0.05]). In females, the incidence remains stable (EAPC = 0.7% [p = 0.47]).
  - The incidence rates in this age group are almost 7 times higher in males and 4 times higher in females when compared to the age group 30-44 years.
- In the age group 65 years and older, the incidence in males is twice the incidence in females.
  - In females, the highest incidence rate is observed in the Flemish Region; in males, the rates are more comparable.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 2.6% [p = 0.01]) and females (EAPC = 3.3% [p = 0.00]).
  - The incidence rates in the age group 65 years and older are 2 times higher in males and 3 times higher in females than in the age group 45-64 years.

Figure 91 Kidney cancer: incidence by stage and sex, Flemish Region 1999-2008



- When comparing the different stages at diagnosis in the Flemish Region between 1999 and 2008, a large significant increase is observed in stage I tumours in both sexes (males: EAPC = 8.6% [p = 0.00], females: EAPC = 10.4% [p = 0.00]).
- The incidence rate in stage II tumours decreases, but only in females a significant trend is observed (males: EAPC = -3.6% [p = 0.053], females: EAPC = -7.8% [p = 0.00]).
- No significant trend is observed in stage III tumours (males: EAPC = 2.9% [p = 0.07], females: EAPC = 0.1% [p = 0.96]).
- A significant decrease in stage IV tumours is observed in males (EAPC = -2.6% [p = 0.01]). In females, a non-significant decrease is observed (EAPC = -3.5% [p = 0.07]).

## 2.9.2 BLADDER (ICD-10: C67)

### General results, 2008

**Table 44** Bladder cancer: incidence and mortality by sex and region, 2008

	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
<b>Males</b>							
Belgium	1,685	32.3	15.5	1.7	575	11.0	4.7
Flemish Region	1,044	34.3	15.4	1.7	330	10.9	4.3
Brussels Capital Region	127	25.1	14.8	1.6	38	7.5	3.9
Walloon Region	514	30.6	15.9	1.8	207	12.3	5.9
<b>Females</b>							
Belgium	474	8.7	3.3	0.4	225	4.1	1.2
Flemish Region	288	9.2	3.4	0.4	132	4.2	1.2
Brussels Capital Region	32	5.9	2.6	0.3	25	4.6	1.7
Walloon Region	154	8.7	3.3	0.3	68	3.8	1.0

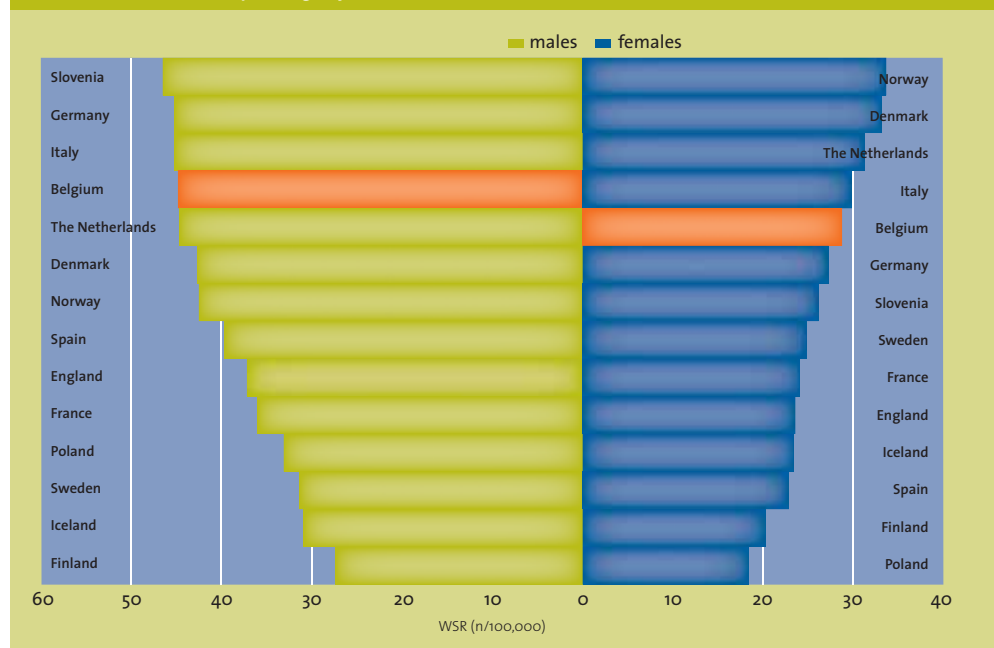
CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Bladder cancer is the 5<sup>th</sup> most frequent tumour in males (5.2%). In females, bladder cancer is less frequent (1.7%).
- Bladder cancer is the 6<sup>th</sup> most frequent cause of cancer death in males (3.8%) and the 12<sup>th</sup> most frequent cause of cancer death in females (1.9%).
- No differences are observed between the regions.
- Mean age at diagnosis is 73 years in males and 74 years in females.

**Figure 92** Bladder cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(56)</sup>



- Remark: it is well-known that international differences in registration and coding practices vary considerably between countries. This can lead to a bias when age-standardised incidence rates are compared.

## Trends

**Table 45** Bladder cancer: incidence and mortality by sex and region, 1999-2008

Bladder cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1,661	1,629	1,604	1,682	1,685
Flemish Region	777	930	1,002	927	887	954	977	1,025	1,046	1,044
Brussels Capital Region						137	140	120	130	127
Walloon Region						570	512	459	506	514
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						395	452	392	417	474
Flemish Region	223	252	249	225	217	245	271	254	256	288
Brussels Capital Region						34	46	39	37	32
Walloon Region						116	135	99	124	154
Bladder cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						16.9	16.2	15.7	16.2	15.5
Flemish Region	14.7	17.0	17.6	16.0	15.1	15.9	15.8	16.3	16.1	15.4
Brussels Capital Region						16.1	15.8	14.5	16.7	14.8
Walloon Region						19.0	17.0	14.9	16.2	15.9
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.8	3.3	2.9	2.9	3.3
Flemish Region	3.1	3.3	3.0	2.8	2.7	3.0	3.4	3.0	3.1	3.4
Brussels Capital Region						2.8	3.9	3.3	2.5	2.6
Walloon Region						2.6	3.0	2.6	2.5	3.3

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Bladder cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						600	615			575
Flemish Region	328	321	340	326	359	344	357	332	355	330
Brussels Capital Region	55	53	55	55	49	54	48	52	57	38
Walloon Region						202	210			207
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						199	210			225
Flemish Region	119	106	136	122	111	123	129	133	117	132
Brussels Capital Region	31	29	20	21	27	18	19	30	28	25
Walloon Region						58	62			68
Bladder cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						5.7	5.9			4.7
Flemish Region	5.6	5.5	5.8	5.4	5.7	5.5	5.6	4.9	4.9	4.3
Brussels Capital Region	6.2	6.1	5.8	6.1	5.5	6.3	5.0	5.5	5.8	3.9
Walloon Region						6.1	6.7			5.9
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						1.1	1.3			1.2
Flemish Region	1.2	1.2	1.5	1.3	1.2	1.2	1.3	1.3	1.1	1.2
Brussels Capital Region	2.3	1.7	1.2	1.5	1.9	0.8	1.3	1.8	1.8	1.7
Walloon Region						1.0	1.2			1.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)



Figure 93 Bladder cancer: incidence and mortality by sex and region, 1999-2008



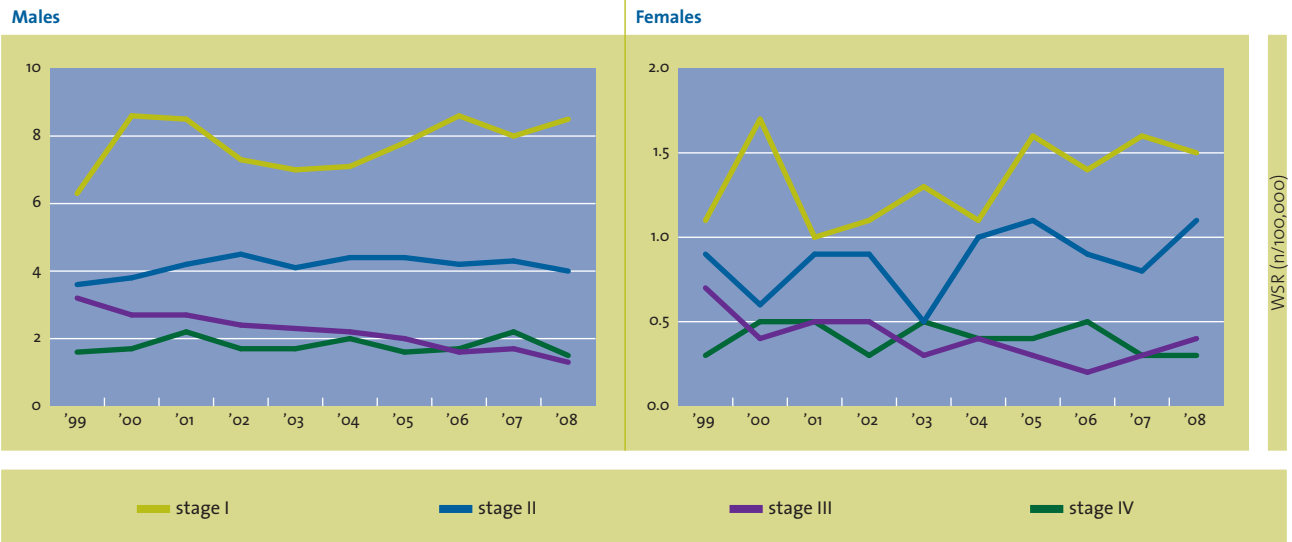
- The incidence rates in the Flemish Region show no significant changes in males (EAPC = -0.2% [p = 0.73]) and females (EAPC = 0.4% [p = 0.61]).
- Over the same period, mortality decreases in males (EAPC = -2.5% [p = 0.01]). In females, mortality rates show no significant change (EAPC = -0.9% [p = 0.34]).
- Mortality rates in the Brussels Capital Region also show a significant decrease in males (EAPC = -3.1% [p = 0.03]) and no significant change in females (EAPC = -0.8% [p = 0.34]).

Figure 94 Bladder cancer: incidence by age group, sex and region, 1999-2008



- Under the age of 45 years, bladder cancer is very rare and therefore not included in the figure.
- In the age group 45-59 years, the male/female ratio is 3.3. No differences are observed over time and between the regions.
- In the age group 60-74 years, the incidence rates in males are more than 5 times higher than the rates in females.
  - No regional differences are observed.
  - No significant trends over time are observed in the Flemish Region.
  - The incidence rates in the age group 60-74 years are 6 times higher in males and 4 times higher in females when compared to the age group 45-59 years.
- In the age group 75 years and older, the male/female ratio is 5.4.
  - The highest incidence rates are observed in the Flemish Region.
  - No significant trend over time is observed in the Flemish Region.
  - The incidence rate in both sexes is 3 times higher than the rates in the age group 60-74 years.

Figure 95 Bladder cancer: incidence by stage and sex, Flemish Region 1999-2008



- In both sexes, a significant decrease is observed for bladder cancer diagnosed in stage III (males: EAPC = -8.8% [p = 0.00], females: EAPC = -7.9% [p = 0.01]).
- No significant trends are observed in incidence rates for bladder cancer diagnosed in the other stages.

## 2.10 CENTRAL NERVOUS SYSTEM (ICD-10: C71-C72)

### General results, 2008

Table 46 Tumours of the central nervous system: incidence and mortality by sex and region, 2008							
Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	451	8.6	6.2	0.6	366	7.0	4.5
Flemish Region	278	9.1	6.0	0.6	242	8.0	4.9
Brussels Capital Region	38	7.5	6.1	0.6	21	4.2	2.9
Walloon Region	135	8.0	6.6	0.6	103	6.1	4.1
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	336	6.2	4.6	0.4	265	4.9	2.8
Flemish Region	202	6.5	4.5	0.5	162	5.2	3.0
Brussels Capital Region	33	6.1	4.5	0.4	17	3.1	1.7
Walloon Region	101	5.7	4.6	0.4	86	4.8	2.9

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Tumours of the central nervous system are an uncommon cancer in males (1.4%) and females (1.2%).
- Tumours of the central nervous system are the 11<sup>th</sup> most frequent cause of cancer death in both males (2.4%) and females (2.3%).
- No differences are observed between the regions.
- Mean age at diagnosis is 56 years in males and 54 years in females.

Figure 96 Tumours of the central nervous system incidence in Belgium, 2004-2008

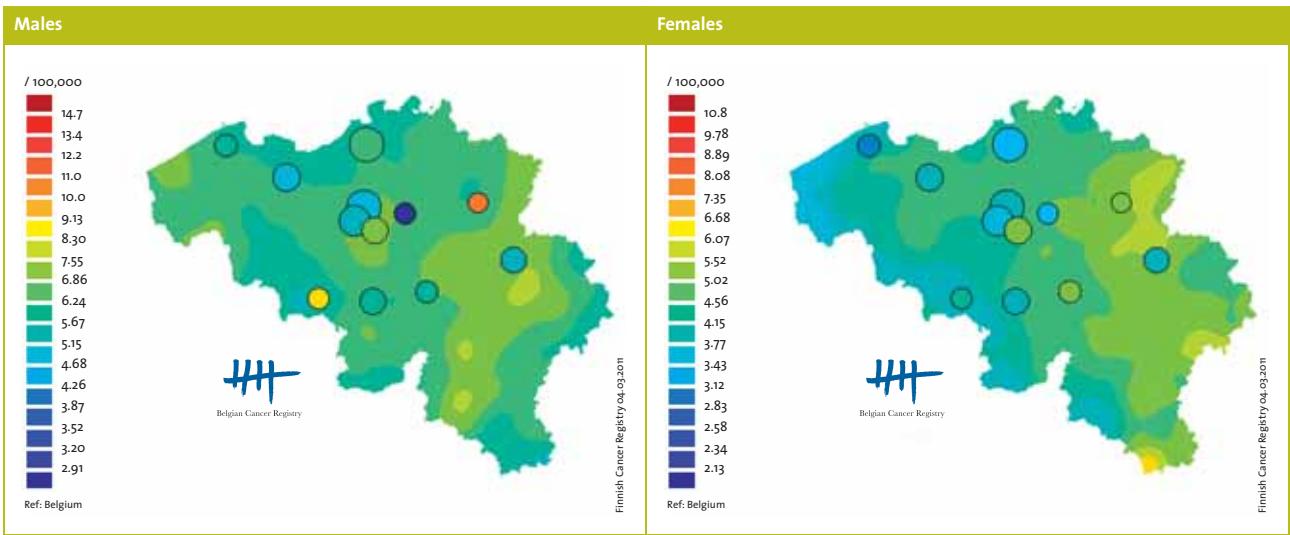
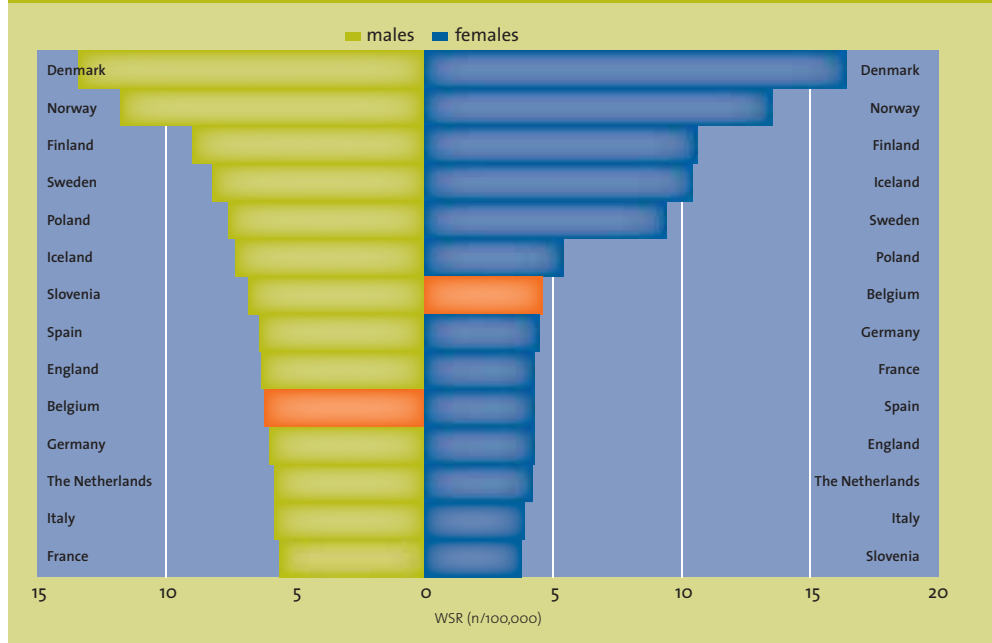


Figure 97 Tumours of the central nervous system: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>(36)</sup>



## Trends

**Table 47** Tumours of the central nervous system: incidence and mortality by sex and region, 1999-2008

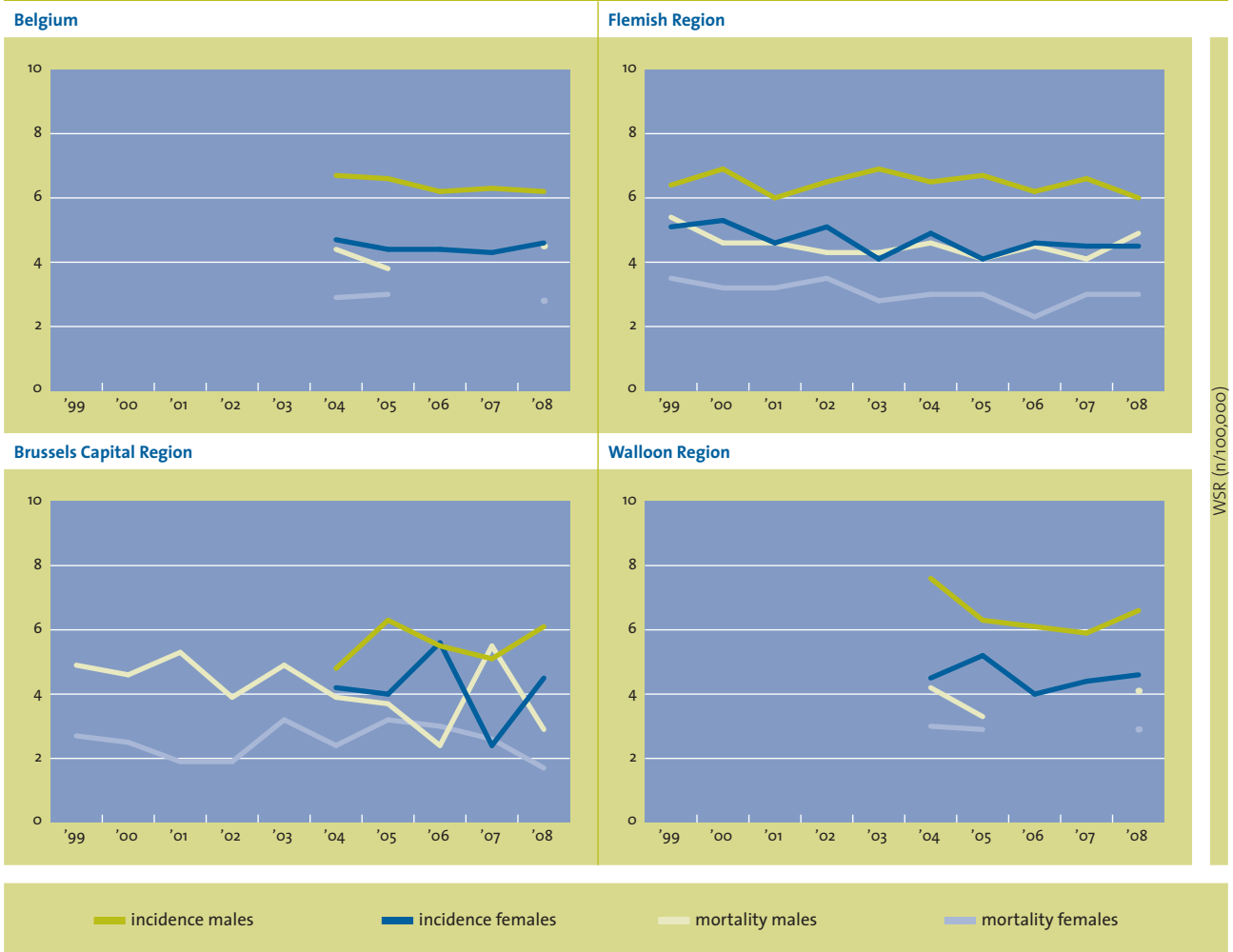
Tumours of the central nervous system: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						451	443	428	447	451
Flemish Region	243	245	228	257	276	267	271	264	285	278
Brussels Capital Region						30	37	31	31	38
Walloon Region						154	135	133	131	135
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						345	306	305	323	336
Flemish Region	201	206	185	219	176	216	171	167	200	202
Brussels Capital Region						28	23	34	18	33
Walloon Region						101	112	104	105	101
Tumours of the central nervous system: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						6.7	6.6	6.2	6.3	6.2
Flemish Region	6.4	6.9	6.0	6.5	6.9	6.5	6.7	6.2	6.6	6.0
Brussels Capital Region						4.8	6.3	5.5	5.1	6.1
Walloon Region						7.6	6.3	6.1	5.9	6.6
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4.7	4.4	4.4	4.3	4.6
Flemish Region	5.1	5.3	4.6	5.1	4.1	4.9	4.1	4.6	4.5	4.5
Brussels Capital Region						4.2	4.0	5.6	2.4	4.5
Walloon Region						4.5	5.2	4.0	4.4	4.6

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Tumours of the central nervous system: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						321	298			366
Flemish Region	234	203	200	192	202	201	191	218	198	242
Brussels Capital Region	33	29	34	26	27	25	23	16	35	21
Walloon Region						95	84			103
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						260	258			265
Flemish Region	186	158	170	174	138	152	156	119	159	162
Brussels Capital Region	28	25	17	17	21	18	21	24	23	17
Walloon Region						90	81			86
Tumours of the central nervous system: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						4.4	3.8			4.5
Flemish Region	5.4	4.6	4.6	4.3	4.3	4.6	4.1	4.5	4.1	4.9
Brussels Capital Region	4.9	4.6	5.3	3.9	4.9	3.9	3.7	2.4	5.5	2.9
Walloon Region						4.2	3.3			4.1
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.9	3.0			2.8
Flemish Region	3.5	3.2	3.2	3.5	2.8	3.0	3.0	2.3	3.0	3.0
Brussels Capital Region	2.7	2.5	1.9	1.9	3.2	2.4	3.2	3.0	2.6	1.7
Walloon Region						3.0	2.9			2.9

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 98 Tumours of the central nervous system: incidence and mortality by sex and region, 1999-2008



- In the Flemish Region, no significant trends are observed in incidence rates (males: EAPC = -0.4% p = [0.56], females: EAPC = -1.7% [p = 0.09]).
- In the same period, mortality in the Flemish Region decreases non-significantly in both sexes (males: EAPC = -1.2% [p = 0.21], females: EAPC = -2.5% [p = 0.07]).
- In the Brussels Capital Region, a non-significant decrease is observed in males (EAPC = -4.6% [p = 0.11]). In females (EAPC = -0.5% [p = 0.86]), the rates are more stable.

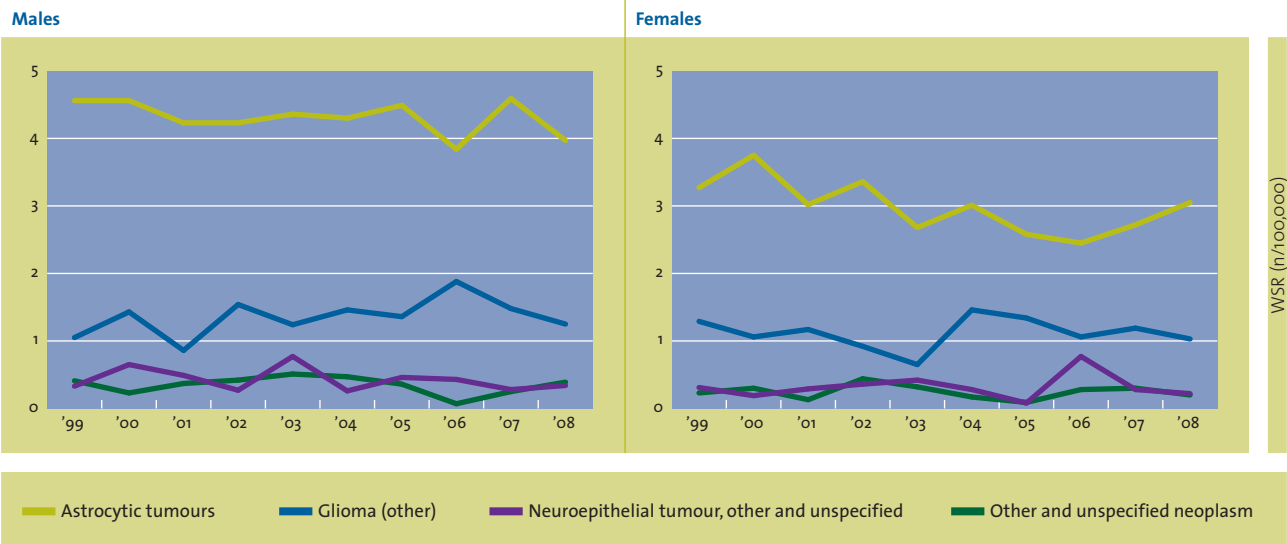
Figure 99 Tumours of the central nervous system: incidence by age group, sex and region, 1999-2008



- In the age group 0-24 years, no differences are observed between males and females (male/female ratio in 2008 in Belgium is 1.1).
  - No regional differences are observed.
  - In the Flemish Region, a significant decrease is observed in males (EAPC = 4.0% [p = 0.045]) and a non-significant decrease in females (EAPC = -3.2% [p = 0.20]).
- In the age group 25-59 years, the male/female ratio is 1.2. No changes are observed over time and between the regions.
- In the age group 60 years and older, the male/female ratio is 1.8.
  - No regional differences are observed.
  - In the Flemish Region, a non-significant increase is observed in males (EAPC = 1.3% [p = 0.22]) and a non-significant decrease in females (EAPC = -2.0% [p = 0.09]).
  - The incidence rates in this age group are 8 times higher in males and 5 times higher in females when compared to the age group 0-24 years.



Figure 100 Tumours of the central nervous system: incidence by histology and sex, Flemish Region 1999-2008



- The majority of the tumours of the central nervous system in the Flemish Region are astrocytic tumours (75%). The incidence rate for this tumour type decreases significantly in females (EAPC = -2.7% [p = 0.04]), the rate in males remains stable (EAPC = -0.9% [p = 0.19]).
- No significant trends are observed for the other histological subtypes.

## 2.11 THYROID (ICD-10: C73)

### General results, 2008

Table 48 Thyroid cancer: incidence and mortality by sex and region, 2008							
Males	Incidence				Mortality		
	N	CR	WSR	CRi	N	CR	WSR
Belgium	209	4.0	2.8	0.3	32	0.6	0.3
Flemish Region	90	3.0	2.0	0.2	20	0.7	0.3
Brussels Capital Region	33	6.5	4.9	0.5	1	0.2	0.1
Walloon Region	86	5.1	3.7	0.4	11	0.7	0.3
Females	N	CR	WSR	CRi	N	CR	WSR
Belgium	546	10.0	7.6	0.8	45	0.8	0.3
Flemish Region	223	7.1	5.2	0.5	34	1.1	0.4
Brussels Capital Region	67	12.3	10.4	1.0	3	0.6	0.2
Walloon Region	256	14.4	11.0	1.1	8	0.4	0.1

CR: crude (all ages) rate (n/100,000 person years)

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

CRi: cumulative risk 0-74 years (%)

- Thyroid cancer is an uncommon cancer diagnosis in males (0.6%) while in females thyroid cancer is the 13<sup>th</sup> most frequent cancer (2.0%).
- Thyroid cancer is a very rare cause of cancer death in males (0.2%) and females (0.4%).
- In both sexes, a 2 times higher incidence rate for thyroid cancer is observed in the Walloon and Brussels Capital Region when compared to the Flemish rates.

Figure 101 Thyroid cancer incidence in Belgium, 2004-2008

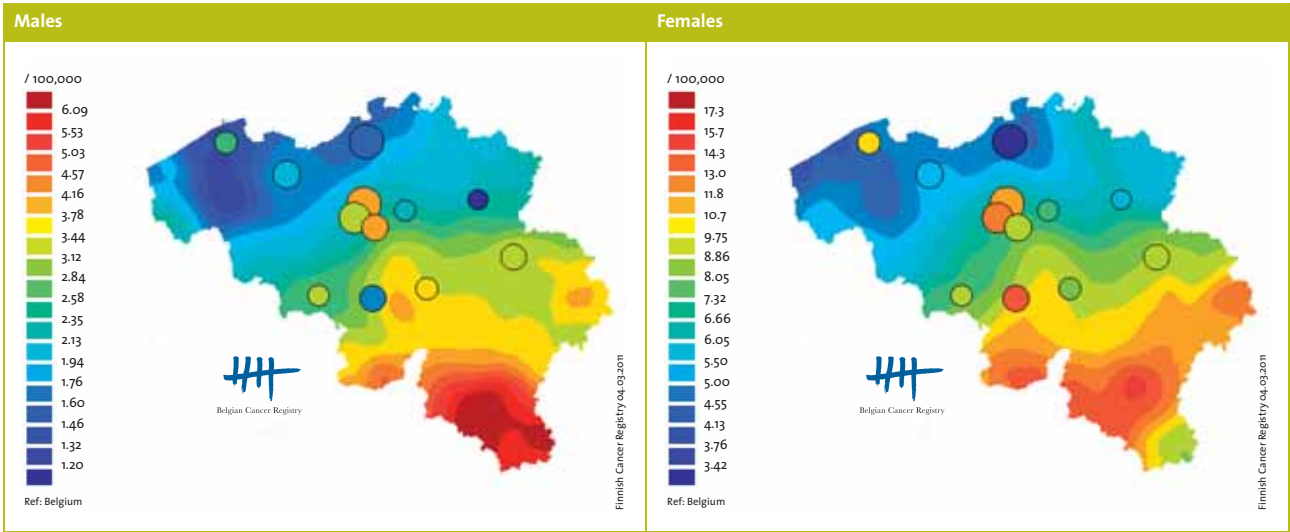
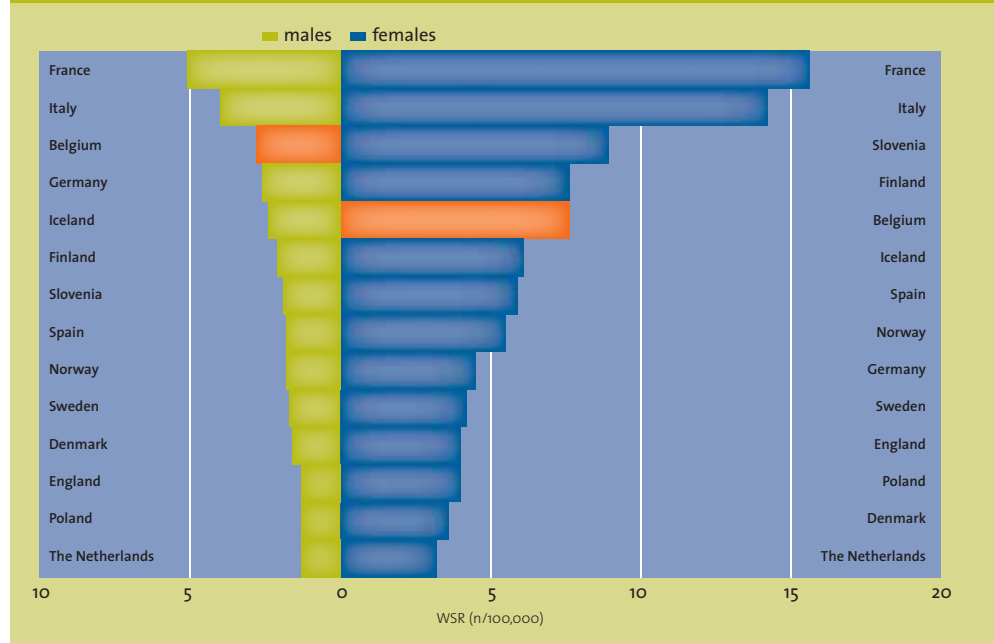


Figure 102 Thyroid cancer: comparison of age-standardised incidence rates (WSR), 2008. Selection of European registry data<sup>[36]</sup>



## Trends

**Table 49** Thyroid cancer: incidence and mortality by sex and region, 1999-2008

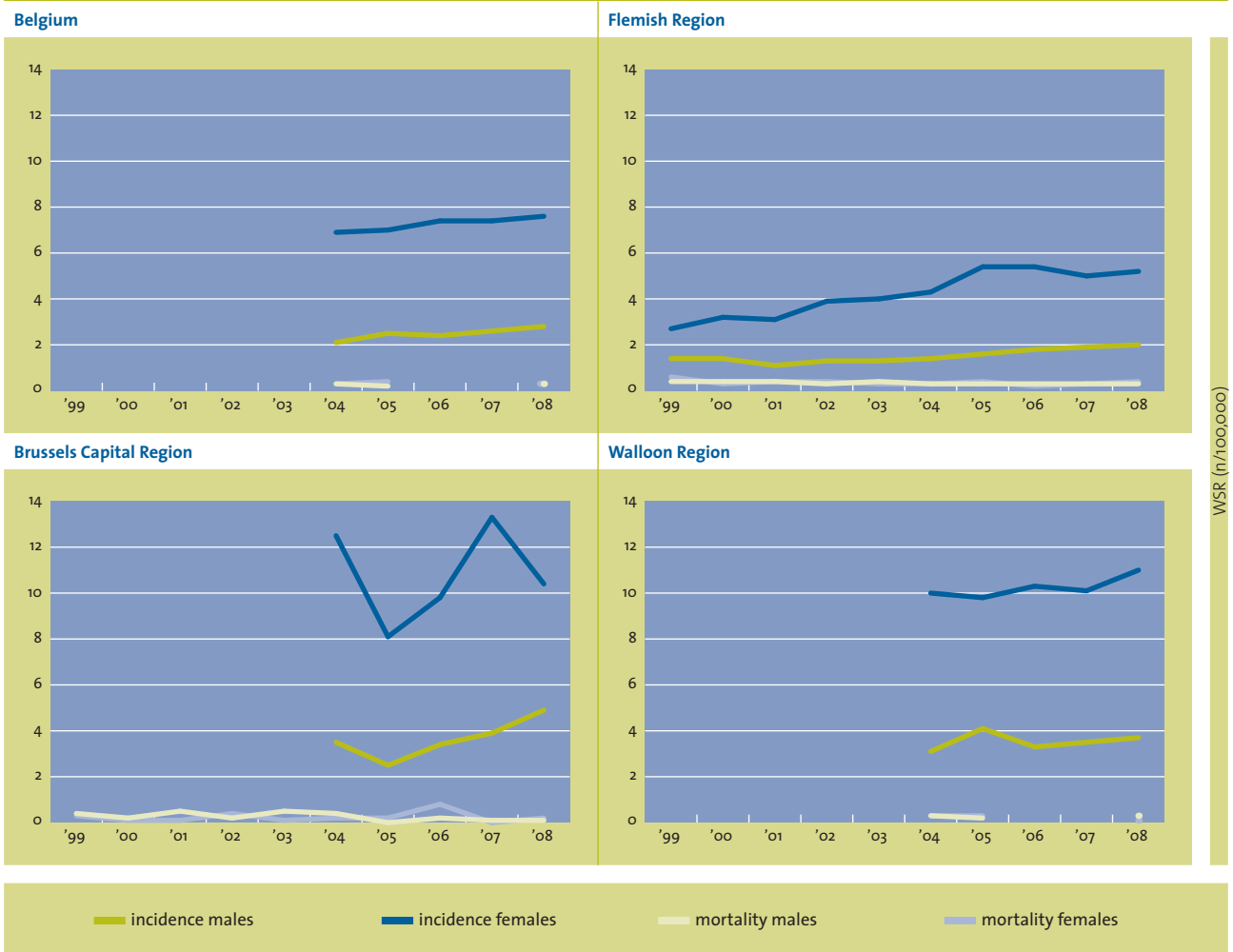
Thyroid cancer: number of invasive tumours by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						155	173	176	182	209
Flemish Region	58	57	48	55	56	63	71	80	77	90
Brussels Capital Region						23	15	21	26	33
Walloon Region						69	87	75	79	86
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						476	507	515	517	546
Flemish Region	113	135	136	166	159	169	231	222	209	223
Brussels Capital Region						79	54	63	86	67
Walloon Region						228	222	230	222	256
Thyroid cancer: age-standardised incidence (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						2.1	2.5	2.4	2.6	2.8
Flemish Region	1.4	1.4	1.1	1.3	1.3	1.4	1.6	1.8	1.9	2.0
Brussels Capital Region						3.5	2.5	3.4	3.9	4.9
Walloon Region						3.1	4.1	3.3	3.5	3.7
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						6.9	7.0	7.4	7.4	7.6
Flemish Region	2.7	3.2	3.1	3.9	4.0	4.3	5.4	5.4	5.0	5.2
Brussels Capital Region						12.5	8.1	9.8	13.3	10.4
Walloon Region						10.0	9.8	10.3	10.1	11.0

WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Thyroid cancer: number of deaths by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						28	25			32
Flemish Region	20	19	19	14	17	16	19	16	17	20
Brussels Capital Region	3	1	3	2	4	3	0	1	1	1
Walloon Region						9	6			11
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						49	49			45
Flemish Region	39	26	30	30	25	27	34	20	27	34
Brussels Capital Region	3	2	4	3	3	4	3	8	0	3
Walloon Region						18	12			8
Thyroid cancer: age-standardised mortality (WSR) by sex and region, 1999-2008										
Males	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.3	0.2			0.3
Flemish Region	0.4	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3
Brussels Capital Region	0.4	0.2	0.5	0.2	0.5	0.4	0.0	0.2	0.1	0.1
Walloon Region						0.3	0.2			0.3
Females	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Belgium						0.3	0.4			0.3
Flemish Region	0.6	0.3	0.4	0.4	0.3	0.3	0.4	0.2	0.3	0.4
Brussels Capital Region	0.3	0.1	0.1	0.4	0.1	0.2	0.2	0.8	0.0	0.2
Walloon Region						0.3	0.3			0.1

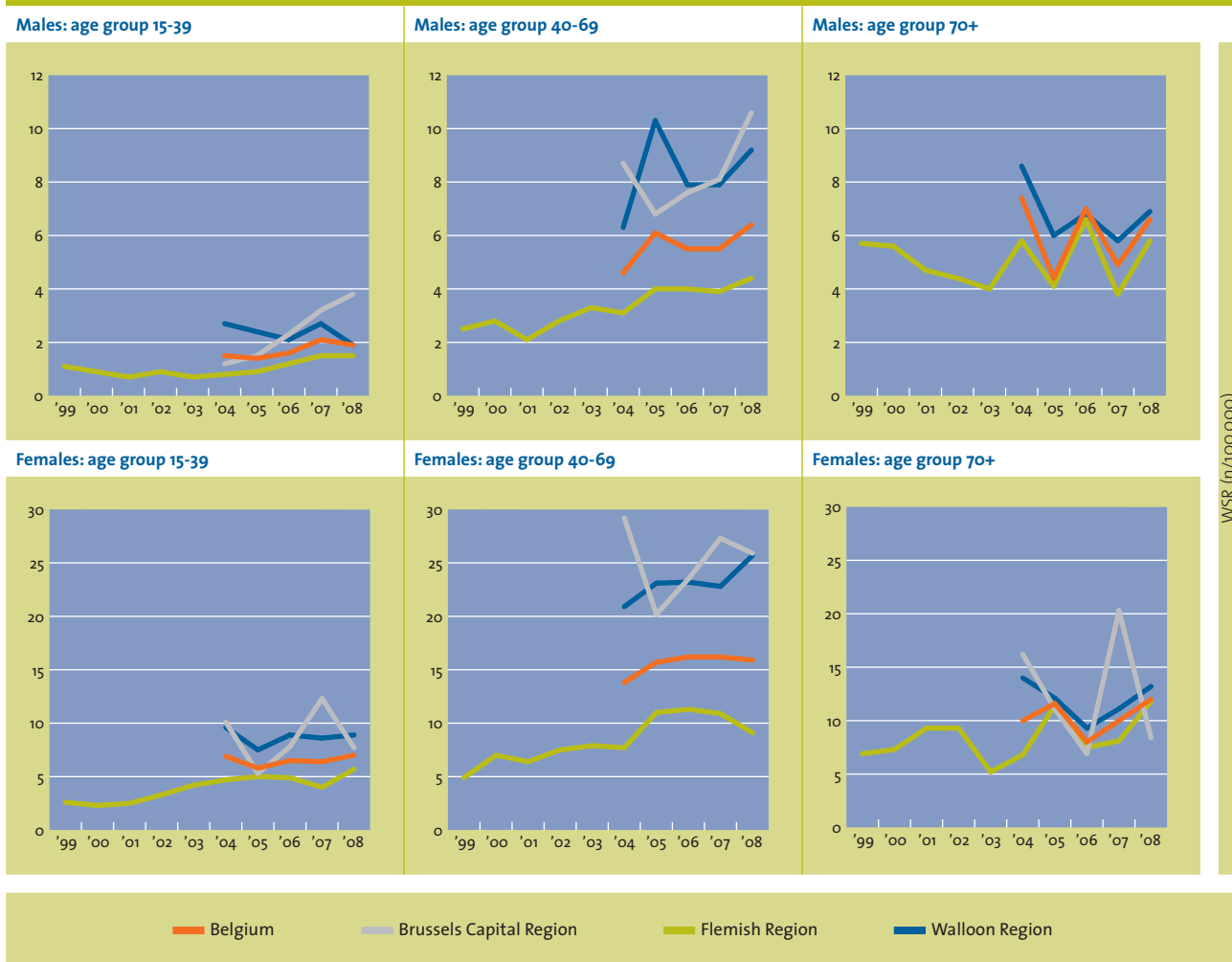
WSR: age-standardised rate, using the World Standard Population (n/100,000 person years)

Figure 103 Thyroid cancer: incidence and mortality by sex and region, 1999-2008



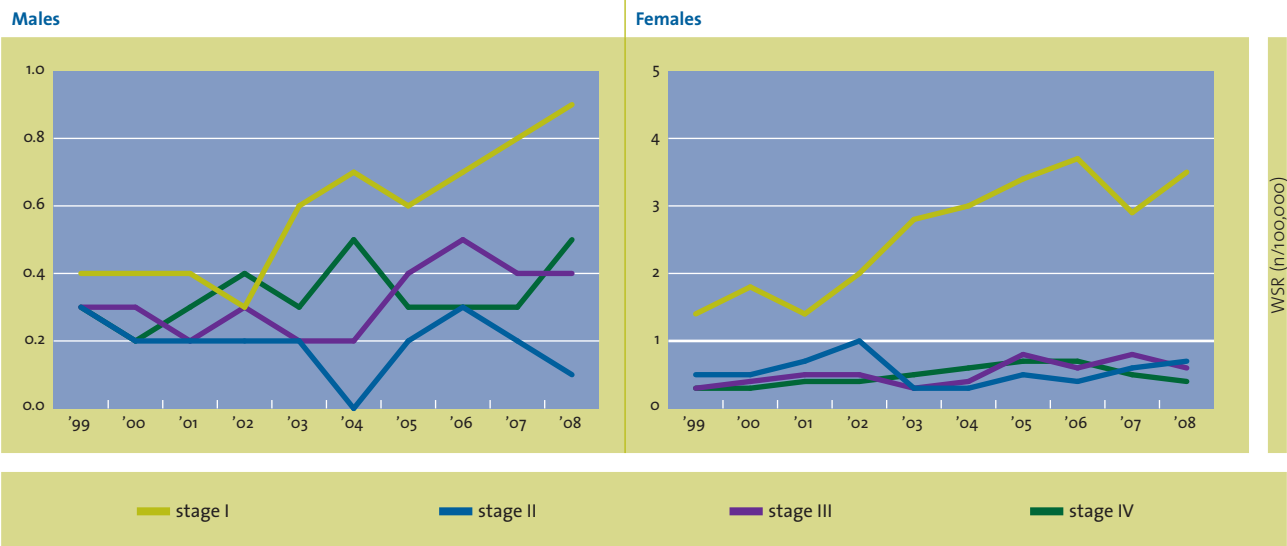
- In the Flemish Region, a significant increasing trend in incidence rate is observed in both sexes (males: EAPC = 5.5% [p = 0.00], females: EAPC = 8.1% [p = 0.00]).
- In the same period, mortality in the Flemish Region decreases in both sexes (males: EAPC = -3.3% [p = 0.03], females: EAPC = -4.9% [p = 0.07]).

Figure 104 Thyroid cancer: incidence by age group, sex and region, 1999-2008



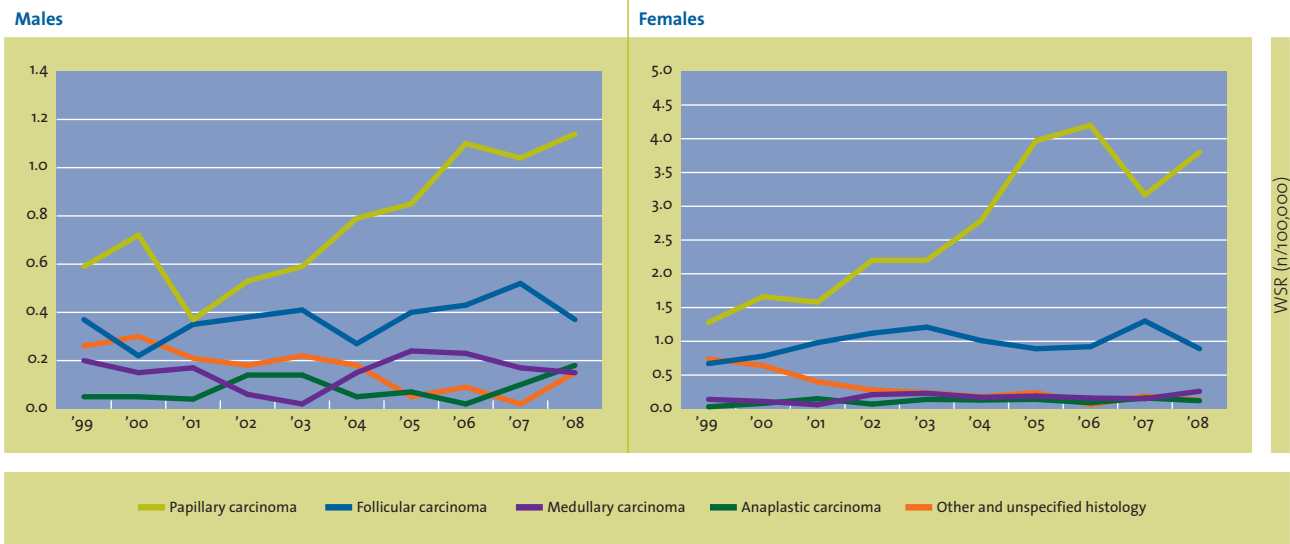
- Thyroid cancer in children (age 0-14 years) is very rare and therefore not included in the figure.
- Data for the Brussels Capital Region in males in the age group 70 years and older are not represented in the figure due to the large annual variations of incidence rates.
- In the age group 15-39 years, the male/female ratio is 0.3.
  - Higher incidence rates are observed in the Walloon and Brussels Capital Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 6.1% [p = 0.05]) and females (EAPC = 10.0% [p = 0.00]).
- In the age group 40-69 years, the male/female ratio is 0.4.
  - The incidence rates in the Brussels Capital and Walloon Region are 2.5 times higher than in the Flemish Region.
  - In the Flemish Region, a significant increase is observed in males (EAPC = 7.1% [p=0.00]) and females (EAPC = 7.9% [p=0.00]).
  - When compared to the age group 15-39 years, the incidence rates are 3.4 times higher in males and 2.3 times higher in females.
- In the age group 70 years and older, the male/female ratio is 0.8.
  - In this age group, no differences are observed between the regions.
  - In the Flemish Region, a non-significant increase is observed in females (EAPC = 3.3% [p = 0.26]), while the rate in males remains stable (EAPC = -0.3% [p = 0.88]).
  - When compared to the age group 40-69 years, no differences are observed in the incidence rates in the Flemish Region, while the rates in the Walloon and Brussels Capital Region are almost 2 times lower.

Figure 105 Thyroid cancer: incidence by stage and sex, Flemish Region 1999-2008



- In the Flemish Region, a significant increase is observed in the stage I tumours in males (EAPC = 10.2% [p = 0.00]). In males, no significant trend is observed in the other stages.
- The female incidence rates show a significant increase for all stages, except for stage II tumours.
  - Stage I: EAPC = 11.4% (p = 0.00).
  - Stage II: EAPC = -0.9% (p = 0.84).
  - Stage III: EAPC = 8.0% (p = 0.03).
  - Stage IV: EAPC = 7.2% (p = 0.03).

Figure 106 Thyroid cancer: incidence by histology and sex, Flemish Region 1999-2008



- Papillary carcinoma show a large significant increase between 1999 and 2008 in the Flemish Region.
- The other main histological subtypes increase as well, but no significant trend is observed. Due to improved registration practices, a significant decrease is observed in unspecified tumours.
- Males:
  - Papillary carcinoma: EAPC = 10.1% (p = 0.01).
  - Follicular carcinoma: EAPC = 4.1% (p = 0.13).
  - Medullary carcinoma: EAPC = 3.2% (p = 0.70).
  - Anaplastic carcinoma: EAPC = 5.2% (p = 0.57).
  - Other and unspecified: EAPC = -15.1% (p = 0.05).
- Females:
  - Papillary carcinoma: EAPC = 13.7% (p = 0.00).
  - Follicular carcinoma: EAPC = 3.0% (p = 0.18).
  - Medullary carcinoma: EAPC = 7.0% (p = 0.13).
  - Anaplastic carcinoma: EAPC = 9.7% (p = 0.07).
  - Other and unspecified: EAPC = -17.0% (p = 0.00).





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In 2008, a total number of 59,996 new cases of cancer were diagnosed in Belgium, 32,508 in males and 27,488 in females. About one in three males and one in four females will develop cancer before the age of 75 years. Childhood cancer forms less than 1% of all malignant tumours, this corresponds to 319 new cancer diagnoses in 2008.

The most frequently occurring tumour in males is prostate cancer, followed by lung cancer and colorectal cancer. In females, the most frequently occurring tumours are breast cancer, colorectal cancer and lung cancer.

A total number of 26,647 patients died from cancer in 2008 in Belgium, 15,095 males and 11,552 females. The major cause of cancer death is lung cancer in males and breast cancer in females.

For the first time, incidence data for a 10-year period are available for the Flemish Region which makes it possible to report on trends in cancer incidence.

In addition to standard tables and graphs, a geographical representation of the Belgian cancer incidence is included for the more common malignancies.