

TRENDS
INCIDENCE
SURVIVAL
PREVALENCE
MORTALITY
PROJECTIONS

Cancer Burden in Belgium

Belgium	2004-2013
Flemish Region	1999-2013
Brussels-Capital Region	2004-2013
Walloon Region	2004-2013

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FOREWORD

This publication is ready at the eve of our tenth anniversary and represents the final piece of a fruitful and agreeable collaboration between numerous parties.

Within 10 years, the Belgian Cancer Registry progressively achieved more results on population based cancer statistics and gradually obtained more insight into cancer incidence trends and geographic variation in Belgium. Even in this ten or fifteen year period, patterns have been changing due to many and interacting causes such as early detection, screening programs, changing exposure to risk factors or life style and advances in cancer care. The cancer burden is the result of a subtle interplay between incidence, mortality and survival and hence also experiences a major impact from cancer prevalence.

Cancer incidence, prevalence and survival, considered as the classic triad for a cancer registry, are presented and briefly commented for Belgium (2004-2013) and the three regions (Flemish Region as from 1999-2013) for a selection of tumour sites. Data on mortality, kindly provided by the three regions and The Directorate General Statistics Belgium, are added since they are an essential part of the cancer burden and to interpret evolution. Moreover, projections are made for the year 2025 ...

The chapters can be read one after the other or can be read on itself. Results should be carefully interpreted, facilitated by the chapter on the methodologies used.

However, as stated by the EUROCOURSE FP7 project, cancer registration should never be a goal on itself. Its role in cancer surveillance should not only be to serve public health but also to serve oncology by studying access and variation in quality of care and outcomes, including the patient perspective. In this way, joint venture research and the use of the cancer registry data by researchers and public authorities have shown that the efforts are successful and should be continued. Frames with a short description of completed or ongoing research activities are presented at the end of each chapter, illustrating that our cancer registry stands for more than figures ... We are grateful for all our close collaborations with the KCE, IMA-AIM, WIV-ISP and the Cancer Centre, Universities, Scientific Medical Associations, European partners, Patients Associations, ... and look forward to continue.

We owe many thanks to all the physicians, pathologists and data managers in the hospitals for their intensive registration commitment. We cannot emphasize enough their importance at each occasion. Besides the research frames, also key recommendations for registration are integrated in this publication.

We are very proud of our Cancer Registry staff and we want to dedicate this book to all the persons that are and have been working in our organization. Starting with 4 full time equivalents in 2005, we now end up with 49 heads of which every single person is a crucial part of the chain.

We sincerely hope that this information will be useful in your daily professional practice and will stimulate new initiatives for future population based research in order to make things better for our patients.

Dr. Liesbet Van Eycken

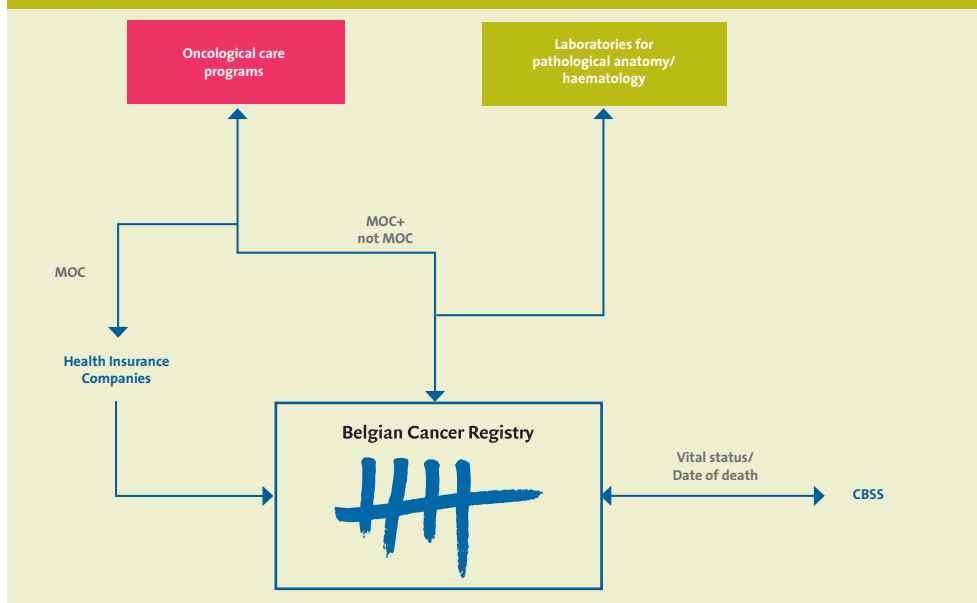
Director

1 INTRODUCTION

1.1 THE BELGIAN CANCER REGISTRY

The Belgian Cancer Registry is a national population based cancer registry, collecting data on a national level since the incidence year 2004⁽¹⁾. Cancer registration in Belgium has a firm legal basis. In 2003 the Royal Decree on the oncological care programs⁽²⁾ describing the reimbursement of the multidisciplinary oncological consult (MOC) was enacted. Later on, in 2006, the specific law on the Cancer Registry⁽³⁾ was created, making cancer registration compulsory for the oncological care programs and for the laboratories for pathological anatomy. Furthermore, the law authorizes the use of the national Social Security Identification Number (SSIN) as the unique identifier of the patient. The SSIN enables linkage with other medical and/or administrative data. Additionally, through linkage with the Crossroads Bank for Social Security (CBSS), the SSIN enables the Registry to perform active follow-up on vital status and date of death of the patients.

Figure 1 Belgian Cancer Registry: dataflow



MOC: Multidisciplinary Oncological Consult
CBSS: Crossroads Bank for Social Security

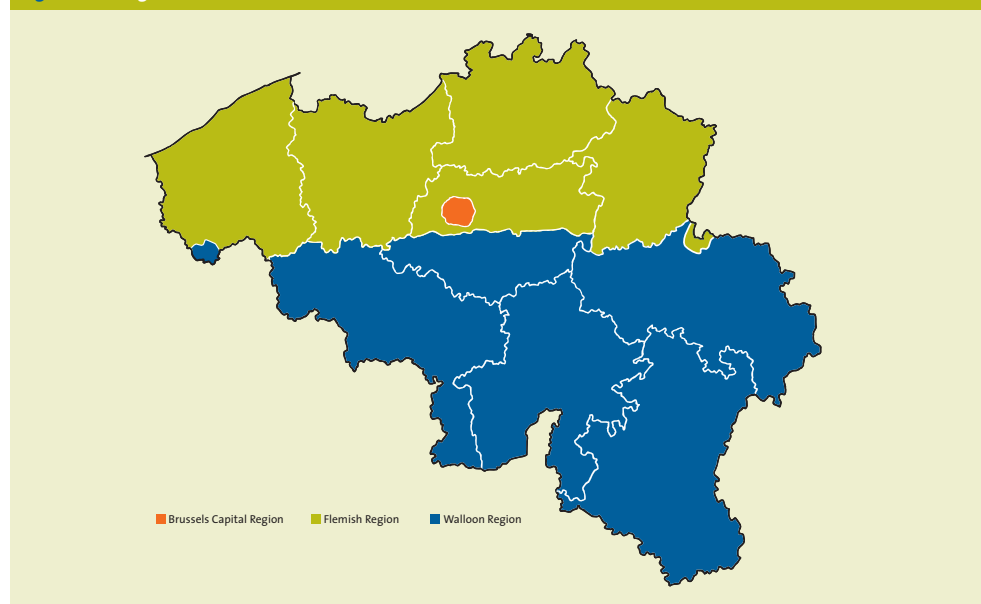
A complete description of the role, the objectives and data flow of the Cancer Registry was reported in several publications^(1; 4; 5; 6; 7). The general data flow (**Figure 1**) relies on all information (notifications) coming from the oncological care programs (clinical network) and from the laboratories for pathological anatomy (pathological network). The authorities involved and several other organisations contribute financially to ensure the continuity of cancer registration in Belgium.

1.2 POPULATION AND REGION

Belgium (**Figure 2**) comprises an area of 30,528 square kilometres. On January 1st 2013, Belgium had a population of 11,099,554 including 5,447,488 males and 5,652,066 females. The population is divided in the Flemish Region (6,381,859), the Walloon Region (3,563,060) and the Brussels Capital Region (1,154,635).

The population density is 364 inhabitants per square kilometre for Belgium, 472 for the Flemish Region and 212 and 7,155 for the Walloon Region and the Brussels Capital Region, respectively.

17.7% of the population is 65 years of age or older and 5.3% is 80 years of age or older. According to the Directorate-general Statistics Belgium⁽⁸⁾, life expectancy at birth is 82.9 years in females and 77.9 years in males.

Figure 2 Belgium

1.3 QUALITY OF INCIDENCE DATA

1.3.1 COMPLETENESS OF THE CANCER REGISTRY

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 the case-finding procedures can be achieved.

The Cancer Registry validates its completeness on a regular basis. We estimate the database of the BCR to be more than 95% complete⁽¹⁾, incompleteness being more likely due to elderly patients with a very poor prognosis at diagnosis and outpatients with a clinical diagnosis only.

Independent data set method

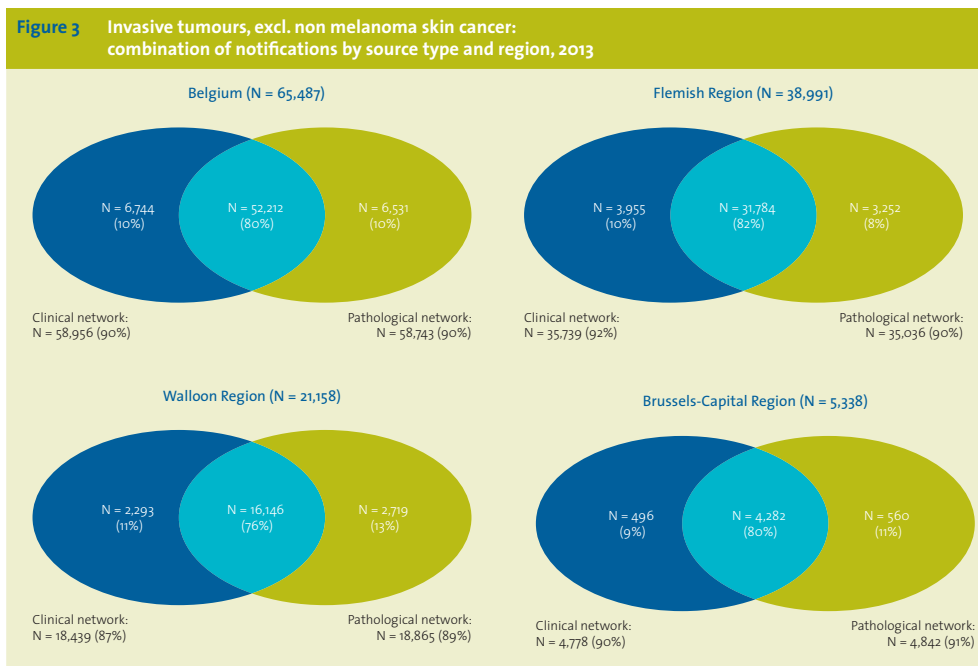
The independent data set method is a technique to check the completeness of cancer registration by validating the presence at the cancer registry of cancer cases recorded in an independent, project specific database⁽⁹⁾.

Overall completeness is routinely evaluated using the independent data set method. Record linkage with datasets for rectal, breast, head and neck and prostate cancer resulted in an overlap between 98.6% and 100%⁽¹⁾. A more recent evaluation, using data from a multicentre prospective registration project on endometrial carcinoma (EFFECT-EFFectiveness of Endometrial Cancer Treatment), revealed that 561 out of 562 cases (99.8%) diagnosed in 2012, were present in the cancer registry database.

Death certificates have only recently been made available to the registry. A pilot study linking the mesothelioma death statistics (2009-2010) showed that 416 out of 440 deaths (94.5%) mentioned in the death certificates were also known by the BCR⁽¹⁾. Further investigations are ongoing to trace back the remaining 5% and validate the diagnosis of mesothelioma. Other tumours will be evaluated as well.

Overlap between clinical and pathological network

Linkage of data from different sources and source types leads to information that is more complete, precise and reliable.



When considering the two main groups of source types (**Figure 3**), laboratories for pathological anatomy (pathological network) versus the oncological care programs (clinical network), 80% of all malignancies were notified by both groups (Belgium 2013). The overlap in the Flemish Region (82%) was somewhat higher than in the Walloon (76%) and Brussels-Capital Region (80%).

Mortality/Incidence ratios

Mortality/Incidence ratios (M/I ratios) reflect the relationship between the number of deaths (from the mortality statistics) and the number of new cancer cases, both from a specific type of cancer and from the same period (**Table 1**). These cancer cases and deaths do not necessarily refer to the same cases, but rather to the same diagnosis. M/I ratios greater than 1 reflect either under reporting of incident cancer cases and/or inaccurate mortality statistics. Frequently, death certificates are not filled in by the treating physician, which can partly explain inaccuracies in the mortality statistics. Liver cancer is an example where it might be possible that mortality statistics include cases of liver metastases, whereas the cancer registry has information on the real primary site. In case of pancreatic cancer, an under registration of new cases at the cancer registry can be assumed (likely to be elderly patients and/or patients with a very poor prognosis).

Table 1 Mortality (2004-2012) / incidence (2004-2013) ratio by region and tumour type.

		Belgium			Flemish Region			Walloon Region			Brussels-Capital Region		
ICD10	Label	Incidence	Mortality	M/I ratio	Incidence	Mortality	M/I ratio	Incidence	Mortality	M/I ratio	Incidence	Mortality	M/I ratio
C00-C14; C30-C32	Head and neck	25,268	6,902	27%	13,327	3,856	29%	9,629	2,350	24%	2,312	696	30%
C15	Oesophagus	9,279	6,109	66%	5,418	3,614	67%	3,147	2,001	64%	714	494	69%
C16	Stomach	14,457	7,192	50%	8,919	4,527	51%	4,315	2,105	49%	1,223	560	46%
C18-C19	Colon	58,197	21,889	38%	36,250	13,038	36%	17,150	6,946	41%	4,797	1,905	40%
C20	Rectum	23,508	4,617	20%	14,906	2,844	19%	7,025	1,395	20%	1,577	378	24%
C22	Liver	6,264	6,854	109%	3,224	3,550	110%	2,382	2,553	107%	658	751	114%
C23-C24	Gallbladder and biliary tract	3,645	1,548	42%	2,233	896	40%	1,106	528	48%	306	124	41%
C25	Pancreas	13,368	13,446	101%	7,617	7,691	101%	4,579	4,528	99%	1,172	1,227	105%
C34	Lung	75,662	58,170	77%	43,884	33,681	77%	25,916	19,894	77%	5,862	4,595	78%
C43	Malignant melanoma	19,835	2,718	14%	11,596	1,745	15%	6,459	768	12%	1,780	205	12%
C45	Mesothelioma	2,568	1,890	74%	1,796	1,354	75%	665	471	71%	107	65	61%
C50	Breast	99,616	21,151	21%	57,508	12,497	22%	32,883	6,708	20%	9,225	1,946	21%
C53	Cervix uteri	6,299	1,606	25%	3,558	1,067	30%	2,071	384	19%	670	155	23%
C54	Corpus uteri	14,366	3,236	23%	8,745	1,767	20%	4,529	1,162	26%	1,092	307	28%
C56	Ovary	8,625	6,106	71%	5,224	3,649	70%	2,697	1,961	73%	704	496	70%
C61	Prostate	89,309	12,960	15%	57,653	7,845	14%	25,796	4,064	16%	5,860	1,051	18%
C62	Testis	3,126	95	3%	1,707	47	3%	1,166	40	3%	253	8	3%
C64	Kidney	15,073	4,943	33%	9,575	3,072	32%	4,462	1,498	34%	1,036	373	36%
C67	Bladder	21,889	7,746	35%	13,250	4,487	34%	6,902	2,560	37%	1,737	699	40%
C71-C72	Central nervous system	7,816	5,571	71%	4,715	3,427	73%	2,444	1,710	70%	657	434	66%
C73	Thyroid	8,008	717	9%	3,475	452	13%	3,380	214	6%	1,153	51	4%

1.3.2 VALIDITY

Validity or accuracy refers to the proportion of cases in a dataset with a given characteristic (e.g. cancer site, histology, age at diagnosis, ...) which truly has the attribute. The validity of the data depends strongly on the quality offered by the sources. All data that enters the Registry is submitted to an extended set of automated and manual validation procedures based on the IARC guidelines⁽¹⁰⁾ to ensure validity and quality of the data. The data source is consulted to provide additional details for cases with an uncertain diagnosis, insufficient, erroneous or conflicting information.

Microscopically verified tumours

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 MV% for all malignancies (excl. non melanoma skin cancer) is 96.9% in Belgium. Compared to other registries, the results for Belgium are rather high⁽¹¹⁾. MV% is lower for cancer of the liver (70%), gallbladder and biliary tract (87%) and pancreas (85%).

Table 2 Microscopic verification (MV%) by region and tumour type, 2013

ICD10	Tumour type	Belgium	Flemish Region	Walloon Region	Brussels-Capital Region
C00-C43.C45-C97. MDS and MPN	Invasive tumours (excl. non melanoma skin cancer)	96.9%	96.4%	97.6%	97.7%
C00-C14.C30-C32	Head and neck	99.2%	99.0%	99.4%	99.1%
C15-C16.0	Oesophagus	99.3%	99.3%	99.4%	99.0%
C16.1-C16.9	Stomach	99.2%	99.2%	99.0%	100.0%
C18-C19	Colon	98.8%	98.6%	98.9%	99.1%
C20	Rectum	99.6%	99.6%	99.6%	100.0%
C22	Liver	70.2%	69.6%	72.6%	62.8%
C23-C24	Gallbladder and biliary tract	87.3%	83.7%	90.6%	96.9%
C25	Pancreas	84.6%	81.1%	89.1%	90.2%
C34	Lung	91.4%	88.8%	95.1%	94.4%
C43	Malignant melanoma	100.0%	100.0%	100.0%	99.5%
C45	Mesothelioma *	100.0%	100.0%	100.0%	100.0%
C50	Breast	99.7%	99.6%	99.9%	99.8%
C53	Cervix uteri	99.4%	98.8%	100.0%	100.0%
C54	Corpus uteri	99.4%	99.2%	99.5%	100.0%
C56	Ovary	96.3%	96.7%	95.0%	100.0%
C61	Prostate	99.0%	99.1%	98.8%	98.8%
C62	Testis	100.0%	100.0%	100.0%	100.0%
C64	Kidney	89.9%	88.2%	91.9%	95.5%
C67	Bladder	99.2%	99.0%	99.6%	99.5%
C70-C72	Central nervous system	90.1%	89.0%	91.7%	91.3%
C73	Thyroid	100.0%	100.0%	100.0%	100.0%

MDS: Myelodysplastic syndrome

MPN: Myeloproliferative neoplasms

* Due to registration guidelines is a diagnosis of mesothelioma only possible after microscopic confirmation

Availability of information on stage

The proportion of cases with known values is also an indicator of data quality. Table 3 shows the percentage of registered cases with known values for stage. Information on clinical and pathological stage is provided separately. Both staging systems are (sometimes) merged into a 'Combined TNM stage' at the Cancer Registry for reporting reasons. To determine the combined stage, the pathological stage prevails over the clinical, except for cases diagnosed with clinical stage IV or category M1 for most cases. The availability of clinical TNM data strongly depends on the primary tumour and should clearly be better reported to the Cancer Registry through the clinical pathway. With some exceptions, pathological TNM data should always be available for tumours where surgery was performed. Hence, for sites (e.g. pancreas, lung, ...) with little surgical treatment, the availability of pathological TNM data should be low. Data and figures on stage distribution must be interpreted with caution for two reasons. The proportion of unknown stages may (slightly) differ between the categories that are compared (the regions, histology and age) and the use of different TNM versions over time (5th, 6th and 7th edition).

Table 3 Availability of information on basis of stage (clinical, pathological and combined), only for stageable tumours, Belgium 2013

Tumour localisation	Total	cTNM		pTNM		Combined TNM stage	
		N	%	N	%	N	%
C00 Lip	56	23	41.1%	35	62.5%	44	78.6%
C01 Base of tongue	157	138	87.9%	36	23.1%	147	94.2%
C02 Tongue	243	163	67.1%	168	69.1%	219	90.1%
C03-C06 Oral cavity	433	312	72.1%	251	58.1%	382	88.4%
C07-C08 Salivary glands	135	55	40.7%	83	61.5%	101	74.8%
C09 Tonsil	228	197	86.4%	70	30.7%	214	93.9%
C10 Oropharynx	59	53	89.8%	12	20.3%	53	89.8%
C11 Nasopharynx	61	53	86.9%	4	6.6%	56	91.8%
C12 Pyriform sinus	178	160	89.9%	30	16.9%	166	93.8%
C13 Hypopharynx	104	93	89.4%	20	19.2%	97	93.3%
C15 Oesophagus	963	704	73.4%	256	27.3%	763	81.4%
C16 Stomach	1,306	846	64.8%	702	54.3%	1,080	83.5%
C17 Small intestine	270	98	36.3%	166	61.7%	212	78.5%
C18-C19 Colon	6,214	2,589	41.7%	5,214	83.9%	5,773	92.9%
C20 Rectum	2,438	1,763	72.3%	1,659	68.0%	2,236	91.7%
C22-C24 Liver, gallbladder and bile ducts	1,052	529	50.3%	282	26.8%	706	67.2%
C25 Pancreas	1,671	1,154	69.1%	447	26.8%	1,348	80.7%
C30-C31 Nasal cavity, middle ear and sinuses	89	58	65.2%	32	36.0%	65	73.0%
C32 Larynx	639	535	83.7%	206	32.2%	586	91.7%
C34 Bronchus and lung	8,177	6,703	82.0%	1,769	21.6%	7,140	87.4%
C40-C41 Bone and articular cartilage	85	27	31.8%	17	20.0%	32	37.6%
C43 Malignant melanoma of skin	2,568	738	28.7%	2,504	97.5%	2,513	97.9%
C50 Breast	10,753	7,916	73.6%	8,773	82.2%	10,175	95.2%
C51 Vulva	217	79	36.4%	149	68.7%	174	80.2%
C52 Vagina	38	21	55.3%	9	23.7%	26	68.4%
C53 Cervix uteri	625	286	45.8%	322	51.6%	493	79.0%
C54 Corpus uteri	1,321	567	42.9%	1,105	83.7%	1,193	90.4%
C56 Ovary	753	335	44.5%	521	69.4%	657	87.4%
C60 Penis	101	45	44.6%	82	81.2%	88	87.1%
C61 Prostate	7,905	6,232	78.8%	2,799	35.4%	7,114	90.0%
C62 Testis	342	194	56.7%	329	96.5%	335	98.0%
C64 Kidney	1,653	892	54.0%	1,298	78.5%	1,544	93.4%
C67 Bladder	2,358	797	33.8%	2,112	89.6%	2,228	94.6%
C69 Eye and adnexa	98	55	56.1%	18	18.4%	67	68.4%

Stability of incidence data over time

As a result of delays in notification or by recovering additional information not available at time of registration, the number of cases registered for a given year will change over time. Due to the continuous and thorough data cleaning, this data is incorporated at a later date resulting in small changes over time in the number of new diagnoses for the same incidence year. Very often, the number of cases in the first year after publication will increase due to the inclusion of 'late arrivals', while later on, the number of cases decreases a little due to the data cleaning that results in for example the exclusion of cases that after additional investigations were confirmed as non-malignant.

The number of new diagnoses for all invasive tumours (**Table 4**) remains fairly stable and rarely exceeds 1% change between 2 consecutive publication years.

Table 4 All invasive tumours (ICD10 (12): C00-C97, MDS and MPN): stability of incidence data (N) over time, 2004-2013

Belgium		Incidence year									
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Publication year	2004	60,047									
	2005	59,976	59,478								
	2006	60,740	60,618	60,046							
	2008	61,480	61,482	61,246	63,170	63,738					
	2009	61,507	61,482	61,266	63,189	64,096	64,526				
	2010	61,496	61,416	61,252	63,236	64,087	64,720	66,331			
	2011	61,424	61,363	61,202	63,183	64,041	64,770	66,667	69,062		
	2012	61,293	61,265	61,090	63,090	63,966	64,768	66,664	69,719	70,992	
	2013	61,299	61,317	61,183	63,214	64,127	64,904	66,692	69,761	71,068	71,536

2 METHODS AND CALCULATIONS

2.1 INCIDENCE AND MORTALITY

Incidence is the number of new cases occurring in a given time period in a specific 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 person years.
- 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 person years.
- 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 is used for standardisation and consequently World Standardised incidence Rates (WSR) are reported. These are expressed as the number of new cases per 100,000 person years.
- **Male/Female (M/F) ratios** are calculated by dividing the corresponding age-standardised incidence rates (WSR).

The same principles are applied to calculate mortality data. Mortality represents the number of persons who died due to a malignancy in a given time period in a specific population.

Mortality statistics in Belgium are collected and treated by the three regions (Flemish Region: Agentschap Zorg en Gezondheid (www.zorg-en-gezondheid.be), Brussels-Capital Region: Observatorium voor Gezondheid en Welzijn van Brussel-Hoofdstad / l'Observatoire de la Santé et du Social de Bruxelles-Capitale (www.observatbru.be), Walloon Region: Direction générale de la Santé de la Fédération Wallonie-Bruxelles-Cellule des statistiques des naissances et des décès (www.sante.cfwb.be). The Directorate General Statistics Belgium (www.statbel.fgov.be) is responsible to collect and merge the data coming from the regional agencies. Mortality data for 2004-2012 used in this publications is collected from the Directorate General Statistics Belgium. The data for 1999-2003 (Flemish and Brussels-Capital Region only) comes from the respective regional agencies.

A comparison of our Belgian incidence data with a selection of European countries is included. Whenever possible, recent incidence data has been retrieved from the websites of the country-specific cancer registries. If no such (recent) data was available, we used the result from the GLOBOCAN-2012 project.

Selection of European registry data:

- Austria: 2011 (www.statistik.at)
- Bulgaria: 2011 (www.sbaloncology.bg)
- Croatia: 2013 (www.hzjz.hr)
- Denmark: 2013 (www-dep.iarc.fr/NORDCAN/english/frame.asp)
- Finland: 2013 (www-dep.iarc.fr/NORDCAN/english/frame.asp)
- France: 2012 (www.invs.sante.fr)
- Germany: 2011 (www.krebsdaten.de)
- Iceland: 2013 (www-dep.iarc.fr/NORDCAN/english/frame.asp)
- Ireland: 2012 (www.ncr.ie)
- Italy: 2012 (<http://globocan.iarc.fr>)
- Luxembourg: 2012 (www.cancer-registry.lu)

- Norway: 2013 (www-dep.iarc.fr/NORDCAN/english/frame.asp)
- Poland: 2012 (www.onkologia.org.pl)
- Portugal: 2012 (<http://globocan.iarc.fr>)
- Slovenia: 2011 (www.onko-i.si)
- Spain: 2012 (<http://globocan.iarc.fr>)
- Sweden: 2013 (www-dep.iarc.fr/NORDCAN/english/frame.asp)
- The Netherlands: 2013 (www.cijfersoverkanker.nl)
- United Kingdom (UK): 2012 (<http://globocan.iarc.fr>)

For selected tumour sites, a brief overview is presented of the incidence of stage at diagnosis (by sex, histology, age group, ...). Unless otherwise stated, the results are always based on combining information from the clinical and the pathological stage. Additional information can always be requested at the Cancer Registry.

2.2 RELATIVE SURVIVAL

The relative survival ratio gives an estimate of the net survival which is the survival when causes of death not related to the cancer have been eliminated. The relative survival is calculated as the ratio of the observed survival and the expected survival for a comparable group of the general population matched on age, sex, region and calendar period. The expected survival was obtained with the Ederer II method.

In this publication, mainly 5-year relative survival ratios are reported stratified by age group, sex and tumour type. Unless otherwise stated, survival rates or prognosis always refer to 5-year relative survival ratios. The methodology was described in detail in our publication 'Cancer Survival in Belgium'⁽⁶⁾.

The empirical life tables (by sex-, age, region- and calendar-year)⁽⁸⁾, used in the calculation for expected survival, vary considerably by year of age for young (<30 year) and old ages (>90 year). To reduce the variability due to random effect and to ensure that death probabilities evolve consistently from one age to another, the life tables were smoothed using the LOESS-method^(13; 14; 15; 16). The variability of the probability of dying at older ages from one year to the next remains substantial after smoothing. Therefore patients older than 99 years of age at time of diagnosis were excluded for the 5-year relative survival calculations. Furthermore, survival analyses for any interval were not published when less than 10 patients entered the interval alive, because of instability of the resulting estimates⁽¹⁷⁾.

Relative survival between the cohorts 2004-2008 and 2009-2013 has been compared. Remark that the follow-up period for both cohorts is not the same, as with a last date of follow up at the 1st of July 2015, the follow-up for the 2009-2013 period is not complete. For the Flemish region, the earlier cohort 1999-2003 is also available and added to the comparison.

2.3 PREVALENCE

Five-year prevalence data⁽¹⁸⁾ were estimated with an index date of 31st December 2013, representing people living in Belgium who were diagnosed with at least one invasive malignancy in the period from 1st January 2009 to 31st December 2013 and who were still alive at the end of 2013 (index date). Persons with more than one malignancy were included as prevalent cases in each cancer type, but were counted only once in analysis regrouping multiple tumour sites.

2.4 INCIDENCE TRENDS

Trends in age-standardised incidence and mortality rate (WSR) were quantified by the Annual Percentage Change (APC), which expresses a mean multiplicative change per year. Trends and APC calculations are given for different regions, sex and age groups. Stratification by stage, localisation or morphology is given for some selected cancer sites. The APC is estimated from a least squares regression on the logarithm of the age-standardised rate (WSR) versus incidence year. Due to the log transformation, no APC can be obtained if the WSR is zero for at least one year. In cases where the relation of the WSR with incidence year cannot be adequately fit with a log-linear model (i.e. a constant APC for the full data range cannot be assumed), a piecewise log-linear model was estimated in which the different linear segments are connected at certain joinpoints. This model results in an estimated APC per time segment of which an Average Annual Percentage Change (AAPC)⁽¹⁹⁾ is calculated as the average of the APC estimates per segment weighted by the corresponding segment length.

The model building process on the logarithm of the WSR was fully automated in SAS and consists of the following steps:

1. The simple linear regression model, assuming a normal error structure, was compared with a non-parametric smoother fit (PROC REG and PROC LOESS resp.) using an F-test on the residual sets for both models. When the linear regression model was not significantly different from the smoother at the 5% level, the linear model was accepted as final model and a single APC value resulted to quantify the trend over the full time range.
2. When the linear model at the log scale was rejected, a piecewise model with one joinpoint was fitted. The optimal position of the joinpoint was determined using a non-linear optimisation procedure (PROC NLIN). Joinpoints were not allowed to be the first or second time point or the before last and last time point, as those endpoints can be influential points and induce spurious segments. The estimated joinpoint position was rounded to the nearest integer value and fixed in a re-estimation of the piecewise model with PROC GENMOD. As in the previous step, an F-test was used to accept or reject the piecewise model against the smoother. When the regression model was accepted, the final model consisted of a piecewise model with 2 connected linear segments each quantified by their own APC and a weighted overall AAPC.
3. When the piecewise model with one joinpoint was not accepted, the process continues to evaluate two joinpoints in the same way as described in step 2. As an additional restriction, the difference in position between the two joinpoints should be at least 3 years. If the two joinpoints were closer, the piecewise model with only one joinpoint from the previous step was retained.

A 95% confidence interval (CI) and p-value for the individual segments and the overall AAPC were calculated from the final regression model. When the 95% CI for the AAPC contains the value zero, no significant trend with incidence year is observed. The loss in degrees of freedom due to the optimisation of the joinpoint position(s) was not taken into account for the construction of the CI and final p-values.

2.5 INCIDENCE PROJECTIONS

The incidence projections for the period 2015-2025 were obtained from linear and log-linear Poisson regression models by extrapolating the observed incidence trends for the period 2004-2013. As the observed number of cancer diagnoses represent a counting process, Poisson models were used to model the relation between the crude incidence rate and the incidence year. The population size at the start of the calendar year was taken as the (log-) offset in the Poisson rate models and the number of observed cancer diagnoses as dependent variable. The modelling process consisted of 2 main steps. First a log-linear Poisson model was estimated. If a significant slope at the 5% level was obtained, the estimated log-linear Poisson model was selected as final model in case of a decreasing time trend (this to avoid projections that end up with a negative number of cancer cases) while a new linear Poisson model was estimated in case of an increasing time trend (to avoid exponential extrapolation). When the slope coefficient of the initial log-linear Poisson model was found to be non-significant, the mean yearly crude rate was estimated over the available time period.

Evolutions in the population size and age distribution were taken into account using the projections of potential population growth as published by Statistics Belgium. Gender specific incidence projections were performed per 5-year age category (0-4, 5-9, ..., 80-84, 85+) to obtain projected sex and age specific crude rates. These projected rates were then applied to the projected population to obtain age-sex specific projected incidence counts. Finally these age-sex cancer incidence counts were summed and overall projected numbers of cancer diagnoses and crude incidence rates were obtained. Age-standardised rates (WSR) were directly calculated based on the age-sex specific projected cancer incidence rates.

All projections were performed using SAS software version 9.3 (SAS Institute, Cary, NC, USA), p-values below 0.05 were considered statistically significant.

2.6 CANCER MAPS

Incidence and mortality maps for Belgium were created using the methodology developed at the Finnish Cancer Registry⁽ⁱ⁾. The algorithm for this methodology was incorporated into an in house developed software application of the BCR. The geographic representations use municipality specific age standardised rates (WSR). Cities with at least 100,000 inhabitants are directly represented on the map as circles with a diameter relative to the population size and a colour shading indicating the actual calculated WSR in that city. The 19 municipalities of the Brussels Capital Region (more than 1,000,000 inhabitants) were divided in three separate circles. This division was based on socio-economic parameters^(s). The socio-economic status is lowest in the westernmost circle and highest in the easternmost circle.

Rates (WSR) from the remaining municipalities were smoothed. For each grid (0.25 km²) on the map, a rate was calculated as a weighted average of the WSR in all neighbouring municipalities within 150 km from the centre of the grid. The weights were inversely associated with the distance, the weight being halved at a distance of 25 km. In addition, the weights were directly proportional to the sizes of populations of the municipalities within the radius of 150 km. A relative scale was applied. A change in colour level corresponds to a 1.07 fold change in the WSR.



3 CANCER BURDEN IN BELGIUM

3.1 INVASIVE TUMOURS (EXCL. NON-MELANOMA SKIN CANCER)

Table 1 Invasive tumours (excl. non-melanoma skin cancer): Overview of incidence, mortality, prevalence and survival by sex and region

Invasive tumours (excl. non-melanoma skin cancer)	Males			Females		
	N	CR	WSR	N	CR	WSR
Incidence, 2013						
Belgium	34,542	634.1	341.8	30,945	547.5	294.4
Flemish Region	20,971	665.4	333.3	18,020	557.8	288.9
Brussels-Capital Region	2,602	463.3	332.6	2,736	461.4	293.1
Walloon Region	10,969	632.5	360.0	10,189	557.2	305.3
Mortality, 2012						
Belgium	15,146	279.8	132.8	11,777	209.5	82.2
Flemish Region	8,995	286.9	125.7	6,715	208.9	79.5
Brussels-Capital Region	1,159	209.6	131.7	1,070	182.6	85.3
Walloon Region	4,992	289.3	146.7	3,992	219.2	86.6
Prevalence (5 years), 2009-2013						
Belgium	101,807	1,868.9	1,012.8	104,299	1,845.3	1,020.4
Flemish Region	63,455	2,013.5	1,014.5	60,986	1,887.9	1,001.9
Brussels-Capital Region	7,199	1,281.7	915.9	8,909	1,502.4	981.0
Walloon Region	31,153	1,796.2	1,032.6	34,404	1,881.3	1,067.5
Prevalence (10 years), 2004-2013						
Belgium	161,166	2,958.5	1,566.1	170,610	3,018.5	1,642.6
Flemish Region	100,990	3,204.5	1,575.3	99,968	3,094.6	1,618.4
Brussels-Capital Region	11,049	1,967.2	1,373.9	14,491	2,443.8	1,571.6
Walloon Region	49,127	2,832.6	1,595.2	56,151	3,070.5	1,711.7
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	169,105	58.7	[58.4;59.1]	146,819	68.6	[68.3;69.0]
Flemish Region	103,721	60.0	[59.6;60.5]	85,074	68.9	[68.5;69.3]
Brussels-Capital Region	12,531	56.6	[55.3;57.8]	13,114	68.5	[67.4;69.6]
Walloon Region	52,853	56.7	[56.1;57.3]	48,631	68.2	[67.7;68.8]
Projection, 2025	N [95%CI]		WSR [95%CI]	N [95%CI]		WSR [95%CI]
Belgium	39,432 [38,797;40,066]		322.7 [317.3;328.0]	38,462 [37,805;39,118]		321.3 [316.0;326.6]

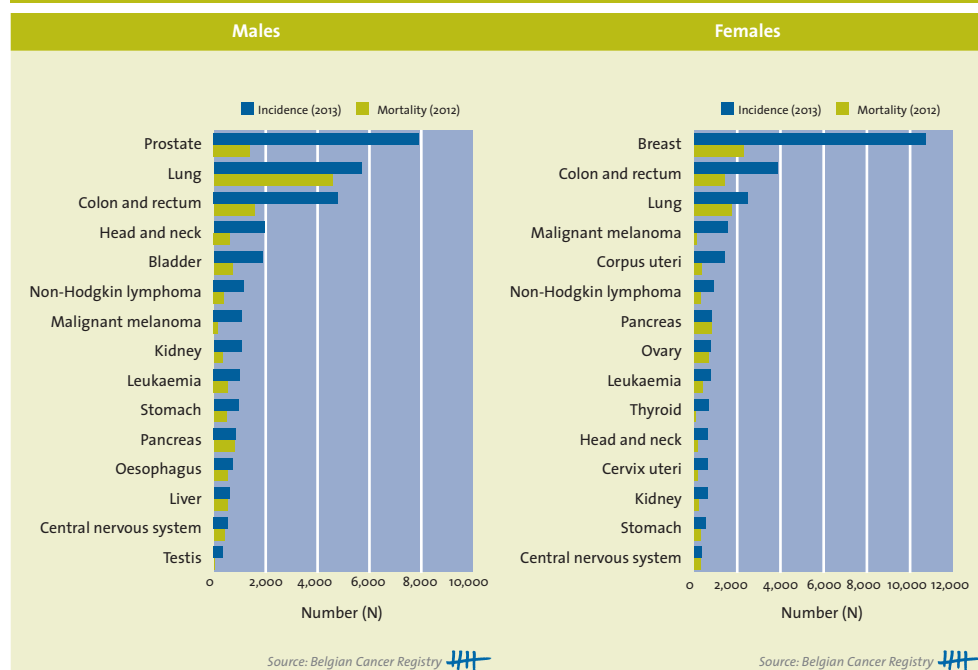
CR, crude (all ages) rate (N/100,000 person years)

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

- Cancer burden in Belgium (**Table 1**):
 - 65,487 new diagnoses of cancer in 2013, 53% males and 47% females.
 - 26,923 deaths due to cancer in 2012, 56% males and 44% females.
 - 331,776 persons (3% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with cancer between 2004 and 2013.
 - Incidence rates are decreasing in males (0.6% annually), while the risk for females increased with 1% annually, mainly due to differences in the trends for smoking related cancers (**Figure 3**).
 - Mortality rates are decreasing three times faster in males (-1.6% annually) than in females (-0.5% annually) (**Figure 3**).
 - The 5-year relative survival proportions are 59% in males and 69% in females. A slight increase in the relative survival proportion is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 4**).
 - By 2025, the number of patients diagnosed with cancer is expected to increase to almost 78,000. In males, the increase is mainly due to the ageing and growth of the population, while in females, we expect an additional increase since the risk in females is increasing over time. The male/female ratio will be close to 1.0 in 2025 (**Figure 5 and 6**).
- Breast, colorectal, lung and prostate cancer account for more than 54% of all new cancer diagnoses in Belgium (**Figure 1**).
 - Prostate cancer and breast cancer are the most frequently occurring tumours in males and females respectively.
 - Combined data for males and females reveals that colorectal cancer is the second most frequently diagnosed cancer in Belgium, followed by lung cancer.

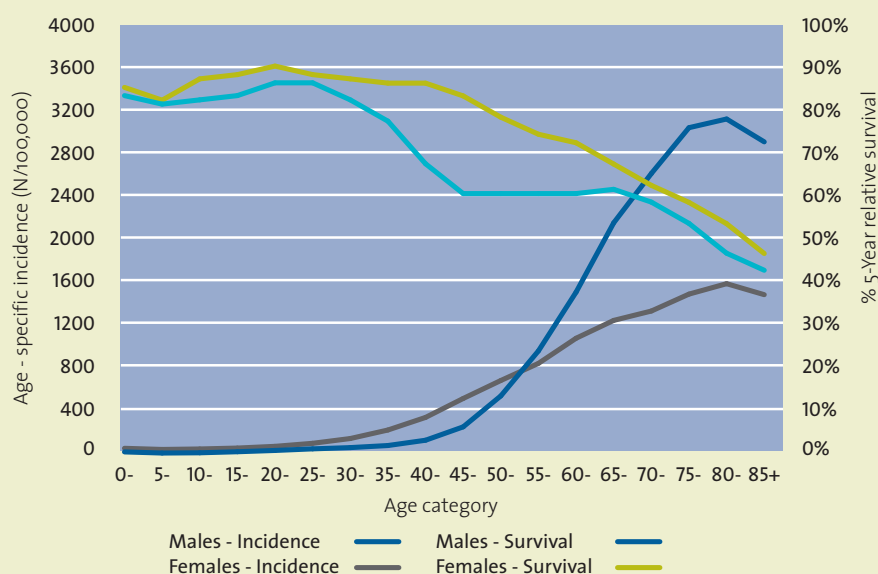
- Lung cancer and breast cancer are the most frequent cause of death from cancer in males and females respectively.
- When all cancers for males and females are combined, lung cancer is by far the most important cause of death from cancer, followed by colorectal cancer.
- Males and females show a different risk pattern with age (**Figure 2 and Table 2**).
 - Children and adolescents (0-19 years of age):
 - Cancer is very rare in this age category, they represent less than 1% of the total cancer burden.
 - All sites combined, more childhood cancer cases are registered in boys (M/F ratio = 1.1).
 - The 5-year relative survival rates (all sites combined) are higher in girls than in boys.
 - Young adults (20-49 years of age):
 - The high female incidence rates of breast cancer, malignant melanoma, cervical and thyroid cancer result in a twofold higher risk for females than males (M/F ratio = 0.5).
 - The 5-year relative survival rates remain high for females, while the rates in males decline with age due to the increasing incidence at an early age of male lung and head-and-neck cancer, subtypes with a poor 5-year relative survival rate.
 - Adults (50-69 years of age):
 - The increasing age-specific incidence rates for prostate cancer from the age of 50 years result in a higher overall cancer incidence rate in males than in females. The difference between both sexes increases until the age of 70 years (M/F ratio = 1.2 and 1.8 for the age group 55-59 years and 65-69 years, respectively).
 - The high survival rate for prostate cancer causes the 5-year relative age-specific survival rates (all sites combined) to remain stable in males. In females, the age-specific survival rates are decreasing with increasing age.
 - Adults (70+ years of age):
 - The highest incidence rates are observed in the elderly. Males have a twofold higher risk than females (M/F ratio = 1.8).
 - The 5-year relative survival rates are decreasing with age in both sexes.

Figure 1 Incidence (N) and mortality (N) for the 15 most frequently diagnosed malignancies (excl. non-melanoma skin cancer) by sex in Belgium



* Oesophagus (C15) is defined without 'gastro-oesophageal junction (C16.o)'. The latter is included with stomach (C16). The results for corpus uteri (C54-C55) include the data for uterus, NOS. Central nervous system is defined as C70-C72 (meningioma included).

Figure 2 Invasive tumours (excl. non-melanoma skin cancer): Age-specific incidence rates (N/100,000) and age-specific 5-year relative survival (%) by sex, Belgium 2009-2013



Source: Belgian Cancer Registry

Table 2 Incidence (N, 2013) and 5-year relative survival (5y-RS(%), 2009-2013) of the five most frequently occurring tumours by sex and age group in Belgium

Boys (0-19y)	N (2013)	5y-RS(%)	Girls (0-19y)	N (2013)	5y-RS(%)
Invasive tumours (excl. non-melanoma skin cancer)	259	83.9	Invasive tumours (excl. non-melanoma skin cancer)	223	86.7
1) Leukaemia	64	85.3	1) Leukaemia	50	83.3
2) Central nervous system tumours	41	60.3	2) Central nervous system tumours	27	51.9
3) Non-Hodgkin lymphoma	30	88.4	3) Hodgkin lymphoma	19	97.9
4) Hodgkin lymphoma	24	99.0	4) Malignant bone tumours	16	94.7
5) Malignant bone tumours	13	71.1	5) Thyroid cancer	15	100.1
Males (20-34y)	N (2013)	5y-RS(%)	Females (20-34y)	N (2013)	5y-RS(%)
Invasive tumours (excl. non-melanoma skin cancer)	607	86.7	Invasive tumours (excl. non-melanoma skin cancer)	817	89.5
1) Testicular cancer	184	97.2	1) Breast cancer	190	87.1
2) Hodgkin lymphoma	62	94.6	2) Malignant melanoma	148	97.4
3) Malignant melanoma	59	94.2	3) Thyroid cancer	102	100.0
4) Central nervous system tumours	55	63.7	4) Cervix uteri cancer	60	90.9
5) Colorectal cancer	47	85.5	5) Hodgkin lymphoma	47	99.4
Males (35-49y)	N (2013)	5y-RS(%)	Females (35-49y)	N (2013)	5y-RS(%)
Invasive tumours (excl. non-melanoma skin cancer)	1,806	69.0	Invasive tumours (excl. non-melanoma skin cancer)	3,919	85.2
1) Colorectal cancer	225	73.7	1) Breast cancer	1,978	93.4
2) Malignant melanoma	187	89.4	2) Malignant melanoma	428	95.0
3) Lung cancer	167	23.4	3) Cervix uteri cancer	219	80.5
4) Head and neck cancer	143	58.1	4) Thyroid cancer	203	98.9
5) Testicular cancer	116	96.9	5) Colorectal cancer	190	76.2
Males (50-69y)	N (2013)	5y-RS(%)	Females (50-69y)	N (2013)	5y-RS(%)
Invasive tumours (excl. non-melanoma skin cancer)	15,685	61.7	Invasive tumours (excl. non-melanoma skin cancer)	13,141	72.9
1) Prostate cancer	4,055	97.3	1) Breast cancer	5,193	92.5
2) Lung cancer	2,672	17.9	2) Lung cancer	1,393	25.5
3) Colorectal cancer	1,841	70.4	3) Colorectal cancer	1,272	71.5
4) Head and neck cancer	1,293	49.1	4) Corpus uteri cancer	634	85.2
5) Bladder cancer	663	64.9	5) Malignant melanoma	569	92.5
Males (70+)	N (2013)	5y-RS(%)	Females (70+)	N (2013)	5y-RS(%)
Invasive tumours (excl. non-melanoma skin cancer)	16,185	53.3	Invasive tumours (excl. non-melanoma skin cancer)	12,845	57.0
1) Prostate cancer	3,757	92.9	1) Breast cancer	3,334	82.2
2) Lung cancer	2,859	13.0	2) Colorectal cancer	2,364	63.6
3) Colorectal cancer	2,665	61.5	3) Lung cancer	942	16.4
4) Bladder cancer	1,171	49.9	4) Corpus uteri cancer	702	72.1
5) Non-Hodgkin lymphoma	523	53.7	5) Non-Hodgkin lymphoma	494	61.2

Table 3 Invasive tumours (excl. non-melanoma skin cancer): AAPC(%) by sex and region in Belgium

Region	Incidence						Mortality					
	Males			Females			Males			Females		
	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.6	[-0.9;-0.3]	2004-2013	0.8	[0.7;1.0]	2004-2013	-1.6	[-1.9;-1.2]	2004-2012	-0.5	[-0.8;-0.1]	2004-2012
				0.2	[-0.3;0.6]	2004-2008				0.1	[-0.6;0.7]	2004-2009
				1.4	[1.0;1.7]	2008-2013				-1.4	[-2.5;-0.2]	2009-2012
Flemish Region	0.2	[-0.0;0.5]	1999-2013	0.8	[0.6;1.0]	1999-2013	-2.1	[-2.2;-2.0]	1999-2012	-0.9	[-1.1;-0.7]	1999-2012
Brussels-Capital Region	1.6	[0.9;2.2]	1999-2005	-0.8	[-1.2;-0.3]	2005-2013	-2.7	[-3.0;-2.3]	1999-2004	-1.7	[-2.3;-1.1]	1999-2004
Walloon Region	-0.8	[-1.2;-0.3]	2004-2013	0.2	[-0.2;0.7]	2004-2013	-1.7	[-2.2;-1.3]	1999-2012	-1.0	[-1.6;-0.3]	1999-2012
Walloon Region	-0.9	[-1.3;-0.4]	2004-2013	1.0	[0.6;1.5]	2004-2013	-1.3	[-2.0;-0.7]	2004-2012	-0.1	[-0.9;0.6]	2004-2012
Walloon Region	-4.6	[-6.7;-2.4]	2004-2006	-0.5	[-2.0;1.0]	2004-2007	0.2	[-0.3;0.8]	2006-2013	1.8	[1.1;2.5]	2007-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

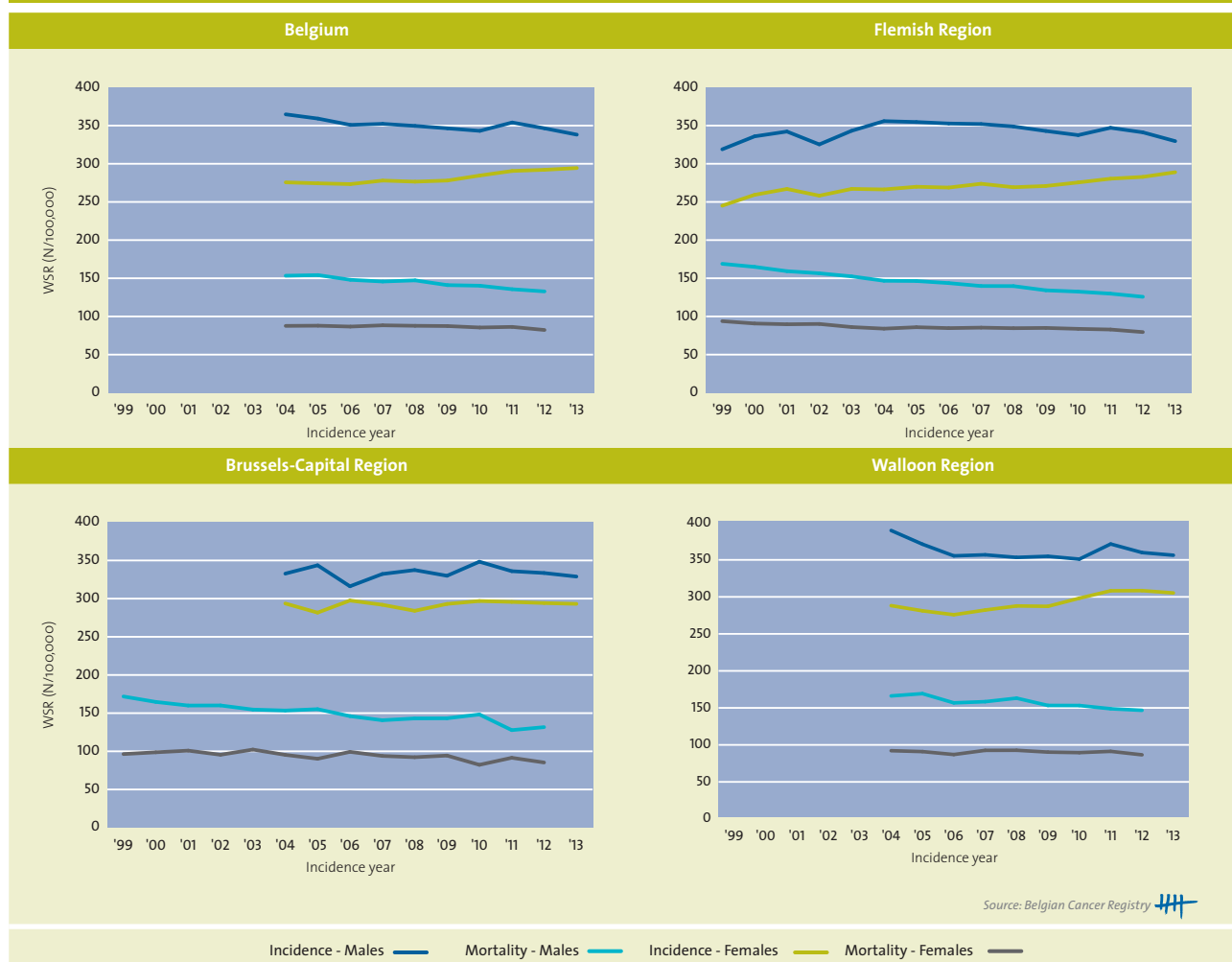
Figure 3 Invasive tumours (excl. non-melanoma skin cancer): Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Figure 4 Invasive tumours (excl. non-melanoma skin cancer): 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 5 Invasive tumours (excl. non-melanoma skin cancer): Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025

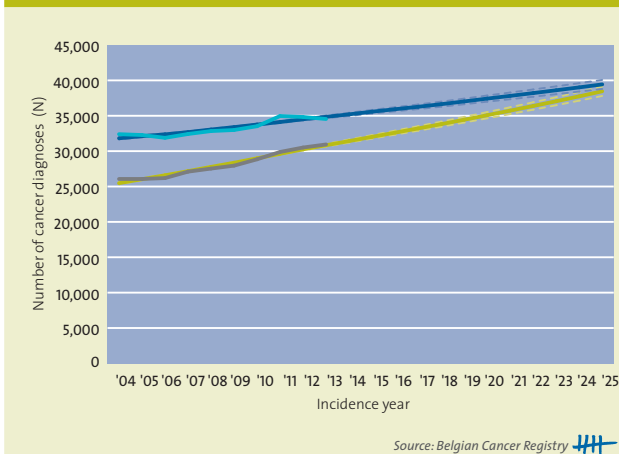
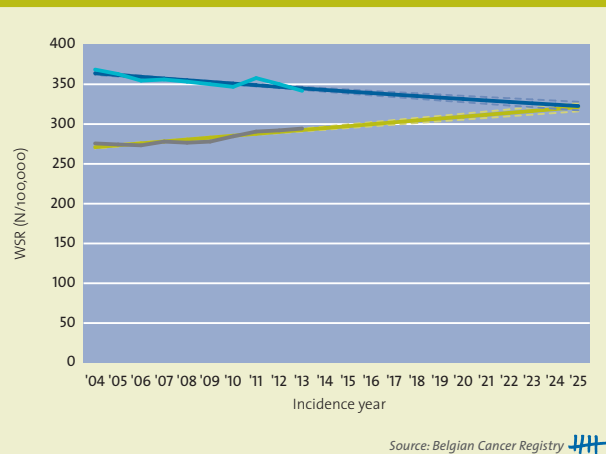


Figure 6 Invasive tumours (excl. non-melanoma skin cancer): Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also ...

- Participated in the HERO project (Health Economics in Radiation Oncology) where the optimal utilization proportion (OUP) was assessed of patients who should receive external beam radiotherapy. Those studies showed that the actual utilization of radiotherapy is significantly lower than the optimal use predicted from the evidence based estimates in the literature. The BCR was one of the five population-based cancer registries for whom the impact of cancer incidence and stages on the overall OUP (53.3% for Belgium) was evaluated.

Further reading see:

- Borras JM, Lievens Y, Dunscombe P, Coffey M, Malicki J, Corral J, Gasparotto C, Defourny N, Barton M, Verhoeven R, **Van Eycken L**, Primic-Zakelj M, Trojanowski M, Strojanc P, Grau C. The optimal utilization proportion of external beam radiotherapy in European countries: an ESTRO-HERO analysis. *Radiother Oncol* 2015; 116(1): 38-44.
- Borras JM, Barton M, Grau C, Corral J, Verhoeven R, Lemmens V, **Van Eycken L**, Henau K, Primic-Zakelj, Strojanc P, Trojanowski M, Dyzmann-Sroka A, Kubiak A, Gasparotto C, Defourny N, Malicki J, Dunscombe P, Coffey M, Lievens Y. The impact of cancer incidence and stage on optimal utilization of radiotherapy: methodology of a population based analysis by the ESTRO-HERO project. *Radiother Oncol* 2015; 116(1): 45-50.
- Coordinates and manages the Belgian Virtual Tumourbank (BVT) project since 2008. The network consists of 11 Belgian university hospitals. Two applications have been developed and are up and running to meet the project's goals: a registration module (BVTr) to centralise the data via a secure way, and a catalogue module (BVTc) to query the availability of tumour material in Belgium for scientific research.
- Manages the coordination office of the Belgian Biobanking and Molecular Research Infrastructures of Belgium (BBRMI.be) and plays an important role in the communication with BBMRI-ERIC headquarter members and BBRMI.be members from the three Belgian biobank networks (i.e. Belgian Virtual Tumourbank, Biothèque de la Fédération Wallonie-Bruxelles-BWB and the Center for Medical Innovation-CMI).

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

Table 1 Head and Neck cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Head and neck cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	1,966	36.1	21.4	642	11.4	6.3
Flemish Region	1,108	35.2	19.5	356	11.0	6.0
Brussels-Capital Region	159	28.3	21.7	53	8.9	5.9
Walloon Region	699	40.3	24.9	233	12.7	7.1
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	624	11.5	6.6	183	3.3	1.7
Flemish Region	348	11.1	5.9	98	3.0	1.5
Brussels-Capital Region	65	11.8	8.9	20	3.4	2.3
Walloon Region	211	12.2	7.2	65	3.6	1.8
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	6,027	110.6	64.7	2,206	39.0	22.2
Flemish Region	3,408	108.1	59.2	1,165	36.1	19.5
Brussels-Capital Region	454	80.8	62.3	208	35.1	24.9
Walloon Region	2,165	124.8	75.8	833	45.6	26.4
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	9,170	168.3	96.6	3,356	59.4	33.4
Flemish Region	5,210	165.3	88.4	1,747	54.1	29.0
Brussels-Capital Region	686	122.1	91.8	314	53.0	36.1
Walloon Region	3,274	188.8	113.5	1,295	70.8	40.5
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	9,668	50.7%	[49.3; 52.0]	3,214	57.6%	[55.4; 59.9]
Flemish Region	5,246	53.2%	[51.3; 55.0]	1,651	59.7%	[56.5; 62.8]
Brussels-Capital Region	793	47.5%	[42.7; 52.2]	317	56.8%	[50.0; 63.2]
Walloon Region	3,629	47.8%	[45.6; 49.9]	1,246	55.1%	[51.5; 58.7]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	2,157 [2,047; 2,267]	19.5 [18.4; 20.6]		869 [786; 952]	7.7 [6.9; 8.5]	

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

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

- Head and neck cancer burden in Belgium (**Table 1**):
 - 2,608 new diagnoses of cancer in 2013, 75% males and 25% females.
 - Head and neck cancer is the 4th most frequent tumour in males (6% of all malignancies) and the 11th most frequent in females (2%).
- Compared to other European countries, Belgium has a very high incidence rate for head and neck cancer (**Figure 2**).
 - 807 deaths are due to head and neck cancer in 2012, 77% males and 23% females.
 - Head and neck cancer is the 6th most important cause of cancer death in males (4% of all cancer deaths).
 - 12,526 persons (0.1% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with head and neck cancer between 2004 and 2013.
 - Incidence and mortality rates for head and neck cancer increase from the north-north-east towards the south-southwest of Belgium in both sexes ⁽ⁱ⁾ (**Figure 3**).
 - Over time, incidence and mortality rates of male head and neck cancer are decreasing, while in females both rates are increasing (**Figure 7 and Table 3**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 51% in males and 58% in females. A slight increase in the relative survival proportion for head and neck cancer is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 10 and 11**).
 - By 2025, the number of patients diagnosed with head and neck cancer is expected to rise to more than 3,000. In males, the increase is mainly due to the ageing and growth of the population, while in females, an additional increase is expected since the risk in females is increasing over time (**Table 1, Figure 12 and 13**).
- Males and females show a different risk pattern with age (**Figure 1 and 8**).
 - Age group 30-49 years:
 - Males have a more than twofold higher risk than females (M/F ratio = 2.4).

- The incidence rates in males and females are decreasing with respectively 6% and 2% annually.
- Age group 50-74 years of age:
 - Males almost have a fourfold higher risk than females (M/F ratio = 3.7).
 - The incidence rates in males remain stable, while the rates in females are increasing.
- Age group 75+:
 - Males have almost a fourfold higher risk than females (M/F ratio = 3.7).
 - The incidence rates in both males and females remain stable
- The incidence rates for head and neck cancer substantially differ according to the tumour localisation (**Table 3 and Figure 9**):
 - The incidence rates for oropharyngeal cancer, the most common subtype of head and neck cancer, increase in both sexes but mainly in females for whom they explain at least part of the observed general increase in head and neck cancer incidence.
 - Although tobacco and alcohol remain important risk factors, several studies have identified increasing incidence rates of HPV-related oropharyngeal carcinomas.
 - In males, a decrease is observed for cancer of the oral cavity and larynx, while the rates in females remain more stable.
- More than 60% of all head and neck cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 74% in 2004-2006 to 87% in 2010-2013.
 - Males have a somewhat less favourable stage distribution than females.
 - Oro- and hypopharyngeal cancers are more often diagnosed as stage IV.

Figure 1 Head and Neck cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013.

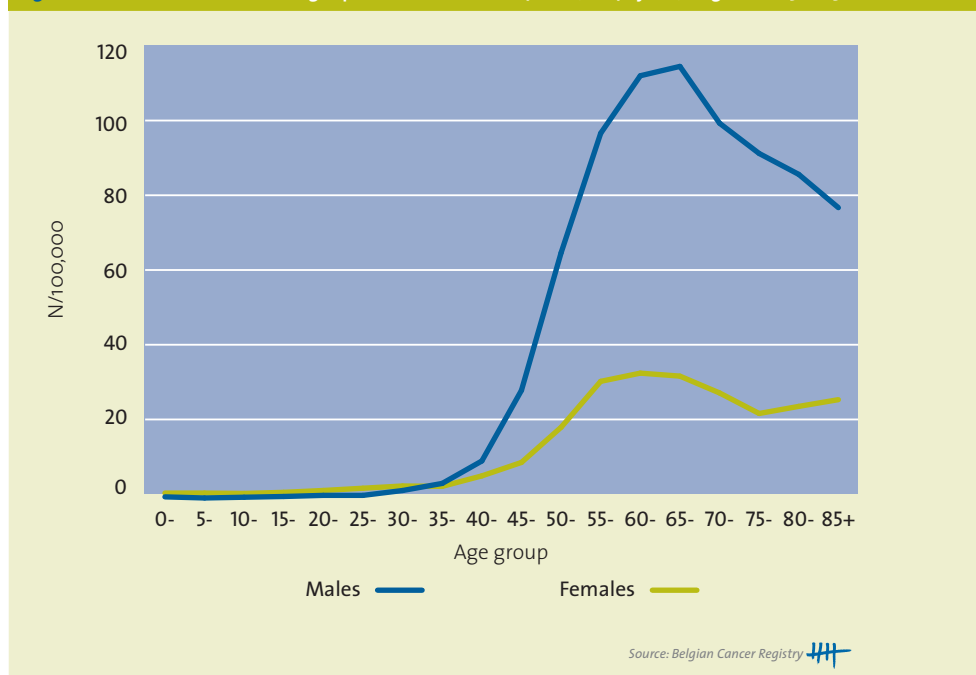
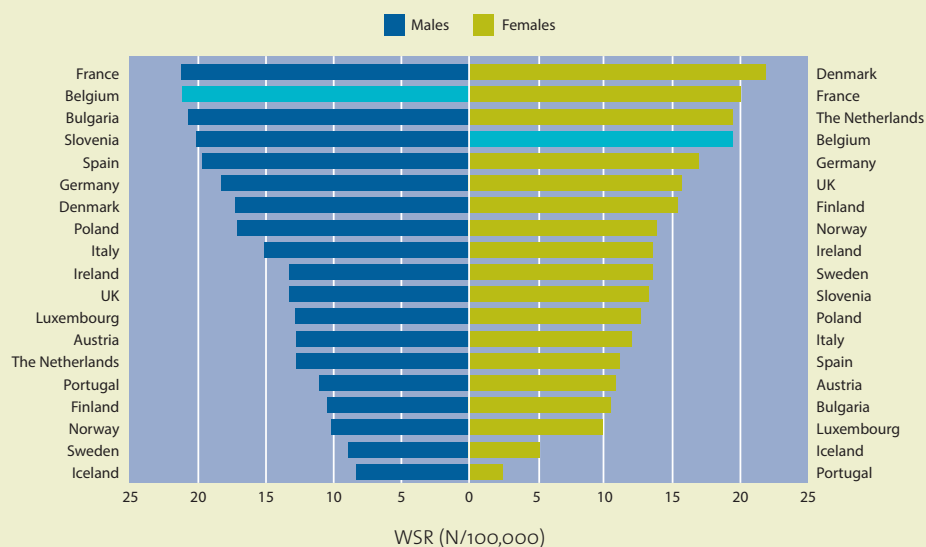


Figure 2 Head and Neck cancer: Comparison of age-standardised incidence rates (WSR) (Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Head and Neck cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

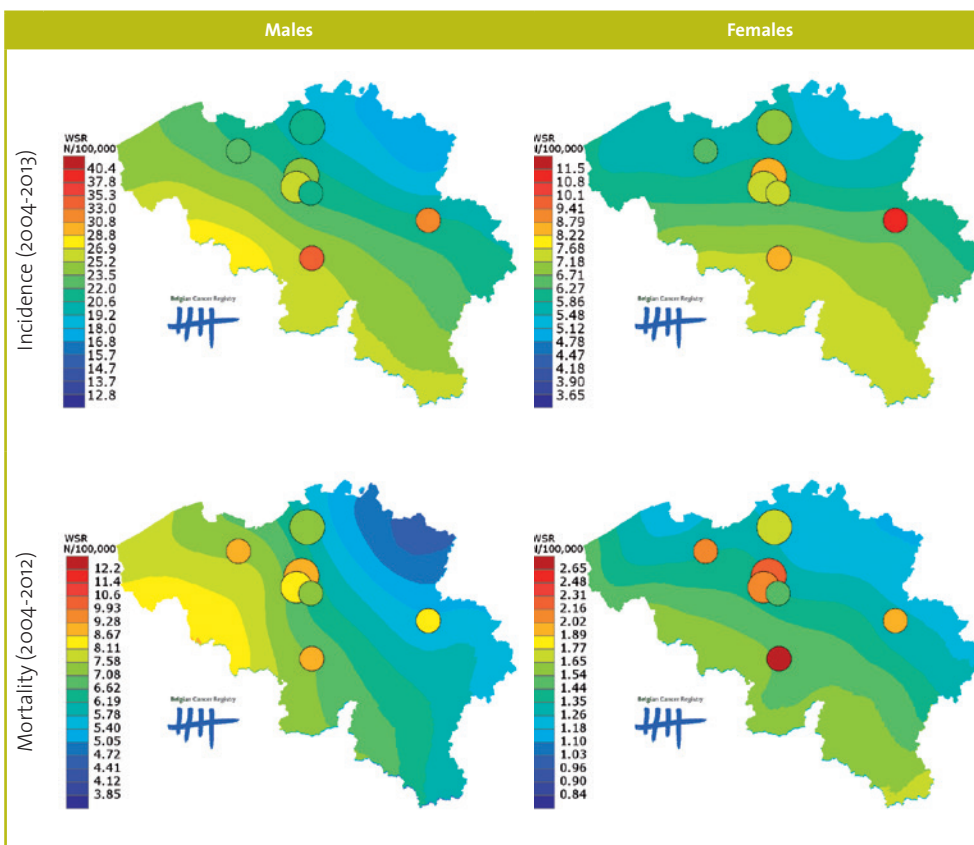
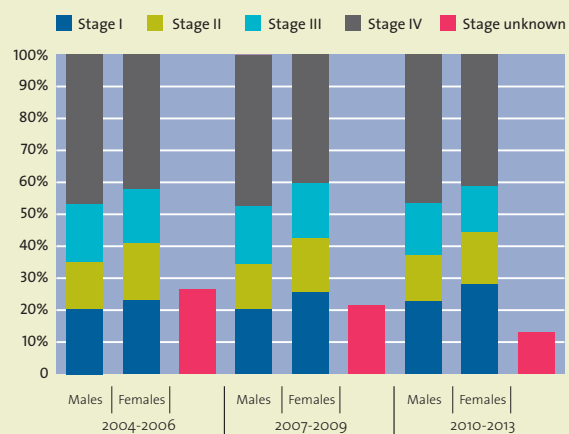


Table 2 Head and neck cancer: incidence by primary site and sex, Belgium 2013

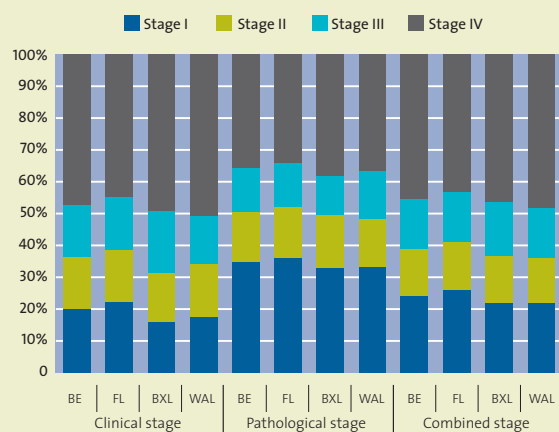
Belgium 2013	Total		Males		Females	
	N	%	N	%	N	%
Lip (C00)	58	2.2%	37	1.9%	21	3.3%
Oral cavity (C02-C050,C06)	590	22.6%	394	20.0%	196	30.5%
Tongue (C02)	245	9.4%	158	8.0%	87	13.6%
Gum (C03)	69	2.6%	36	1.8%	33	5.1%
Floor of mouth (C04)	192	7.4%	148	7.5%	44	6.9%
Hard palate (C050)	11	0.4%	9	0.5%	2	0.3%
Mouth, NOS (C06)	73	2.8%	43	2.2%	30	4.7%
Pharynx (C01;C051-C059;C09-C13)	1,033	39.6%	803	40.8%	230	35.8%
Oropharynx (C01;C051-C059;C09-C10)	688	26.4%	512	26.0%	176	27.4%
Base of tongue (C01)	157	6.0%	125	6.4%	32	5.0%
Soft palate, uvula and palate NOS (C051-C059)	89	3.4%	61	3.1%	28	4.4%
Tonsil (C09)	228	8.7%	158	8.0%	70	10.9%
Oropharynx, other and NOS (C10)	214	8.2%	168	8.5%	46	7.2%
Nasopharynx (C11)	63	2.4%	51	2.6%	12	1.9%
Hypopharynx (C12-C13)	282	10.8%	240	12.2%	42	6.5%
Pyriformis sinus (C12)	178	6.8%	148	7.5%	30	4.7%
Hypopharynx, other and NOS (C13)	104	4.0%	92	4.7%	12	1.9%
Larynx (C32)	648	24.8%	552	28.1%	96	15.0%
Glottis (C320)	388	14.9%	341	17.3%	47	7.3%
Supraglottis (C321)	200	7.7%	161	8.2%	39	6.1%
Larynx, other and NOS (C322-C329)	60	2.3%	50	2.5%	10	1.6%
Nasal cavity and paranasal sinuses (C30-C31)	108	4.1%	78	4.0%	30	4.7%
Nasal cavity and middle ear (C30)	41	1.6%	28	1.4%	13	2.0%
Accessory sinuses (C31)	67	2.6%	50	2.5%	17	2.6%
Salivary glands (C07-C08)	154	5.9%	89	4.5%	65	10.1%
Parotid gland (C07)	120	4.6%	73	3.7%	47	7.3%
Salivary glands, NOS (C08)	34	1.3%	16	0.8%	18	2.8%
Lip, oral cavity and pharynx, NOS (C14)	17	0.7%	13	0.7%	4	0.6%
Head and neck (C00-C14;C30-C32)	2,608	100.0%	1,966	100.0%	642	100.0%

Figure 4 Head and Neck cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



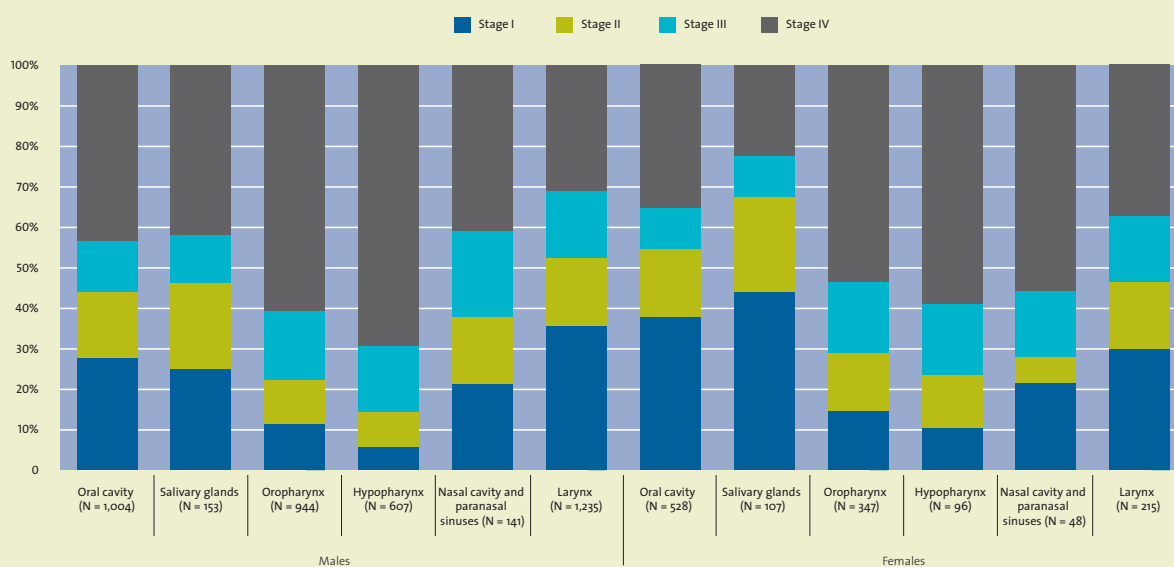
Source: Belgian Cancer Registry

Figure 5 Head and Neck cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Head and Neck cancer: stage distribution by sex and localisation, Belgium 2010-2013



Source: Belgian Cancer Registry

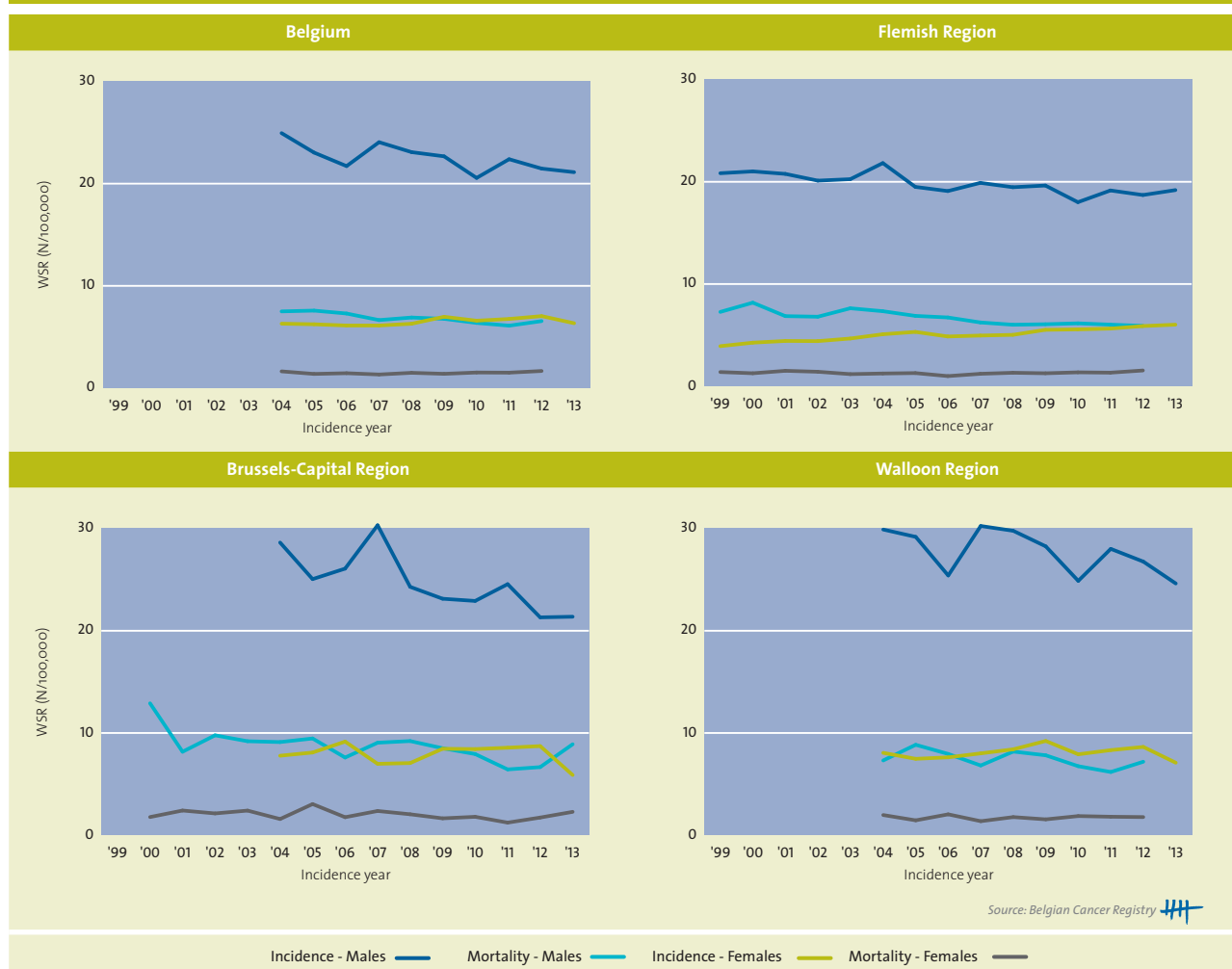
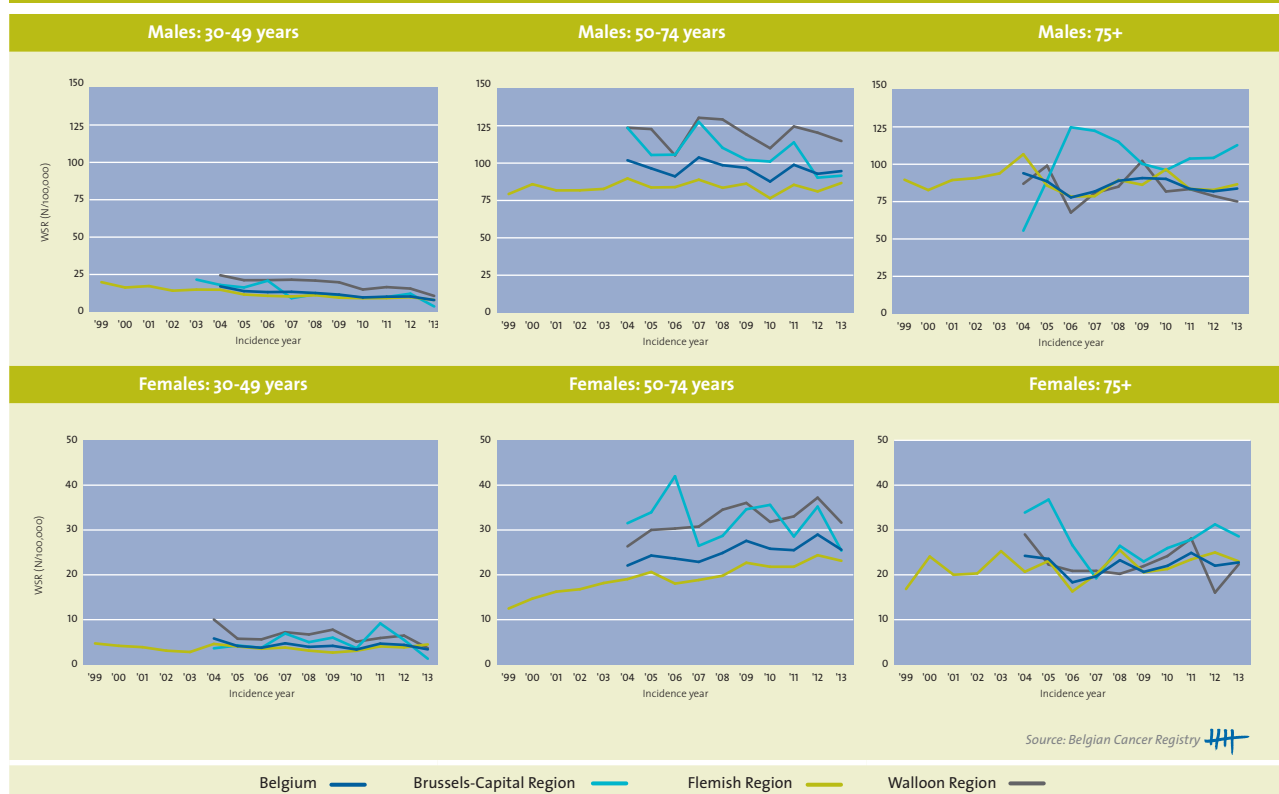
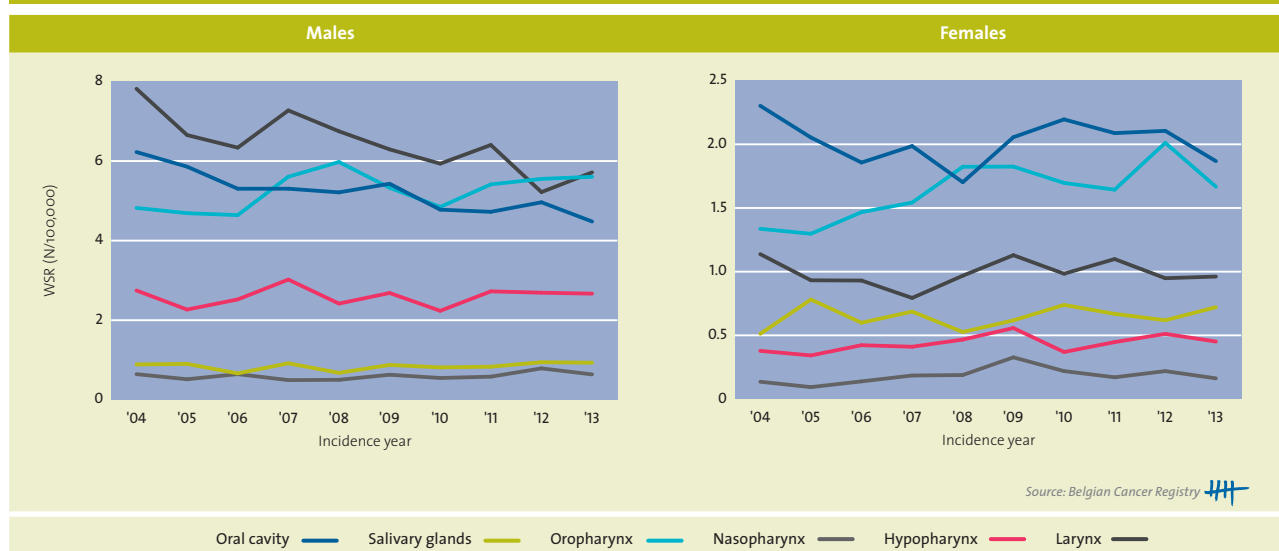
Figure 7 Head and Neck cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013**Figure 8** Head and Neck cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

Figure 9 Head and Neck cancer: Trends in age-standardised incidence (WSR) by localisation and sex, Belgium 2004-2013**Table 3** Head and Neck cancer: AAPC(%) by sex, region, age group and localisation in Belgium

Head and Neck cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-1.4	[-2.4; -0.3]	2004-2013	1.1	[-0.0; 2.2]	2004-2013
Flemish Region	-0.9	[-1.3; -0.4]	1999-2013	2.8	[2.3; 3.3]	1999-2013
				4.1	[2.5; 5.7]	1999-2004
				2.1	[1.3; 2.9]	2004-2013
Brussels-Capital Region	-2.9	[-4.7; -1.1]	2004-2013	-1.0	[-4.3; 2.5]	2004-2013
Walloon Region	-1.5	[-3.1; 0.2]	2004-2013	0.1	[-1.6; 1.8]	2004-2013
				3.0	[-0.4; 6.5]	2004-2009
				-3.4	[-7.4; 0.8]	2009-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-2.4	[-3.4; -1.3]	2004-2012	1.1	[-0.9; 3.2]	2004-2012
				-1.7	[-5.0; 1.7]	2004-2009
				6.0	[-0.0; 12.5]	2009-2012
Flemish Region	-2.1	[-2.8; -1.3]	1999-2012	0.2	[-1.0; 1.4]	1999-2012
				-3.3	[-5.6; -0.9]	1999-2006
				4.4	[1.5; 7.5]	2006-2012
Brussels-Capital Region	-2.6	[-4.5; -0.7]	1999-2012	-1.8	[-4.9; 1.5]	1999-2012
Walloon Region	-2.2	[-5.0; 0.7]	2004-2012	0.3	[-4.0; 4.8]	2004-2012
Incidence by tumour localisation	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Oral cavity	-2.9	[-4.0; -1.9]	2004-2013	-0.4	[-2.6; 1.9]	2004-2013
Salivary glands	1.1	[-2.1; 4.4]	2004-2013	1.5	[-2.1; 5.1]	2004-2013
Oropharynx	1.7	[-0.3; 3.7]	2004-2013	3.8	[1.8; 5.8]	2004-2013
				8.5	[3.4; 13.9]	2004-2008
				0.2	[-3.5; 4.1]	2008-2013
Nasopharynx	2.3	[-1.4; 6.1]	2004-2013	5.4	[-0.1; 11.3]	2004-2013
	-0.8	[-6.4; 5.1]	2004-2010	20.0	[7.8; 33.5]	2004-2009
	8.8	[-3.8; 23.0]	2010-2013	-10.3	[-21.7; 2.8]	2009-2013
Hypopharynx	0.3	[-2.1; 2.8]	2004-2013	2.8	[-0.5; 6.2]	2004-2013
Larynx	-3.1	[-4.8; -1.3]	2004-2013	0.1	[-2.7; 3.1]	2004-2013

Incidence by age group and region	Males			Females		
	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	-6.0	[-7.5; -4.5]	2004-2013	-2.4	[-5.7; 1.1]	2004-2013
Flemish Region	-5.7	[-6.6; -4.8]	1999-2013	0.3	[-1.8; 2.5]	1999-2013
	-7.5	[-9.4; -5.5]	1999-2006	-3.2	[-6.1; -0.3]	1999-2009
	-3.9	[-5.9; -1.8]	2006-2013	9.7	[0.9; 19.3]	2009-2013
Brussels-Capital Region	-8.0	[-13.0; -2.7]	2004-2013	-8.5	[-17.0; 0.9]	2004-2013
				10.6	[-2.1; 25.0]	2004-2011
				-52.9	[-70.7; -24.2]	2011-2013
Walloon Region	-7.2	[-9.6; -4.7]	2004-2013	-5.3	[-10.5; 0.2]	2004-2013
	-3.5	[-8.3; 1.5]	2004-2009			
	-11.6	[-17.2; -5.7]	2009-2013			
50-74 Year						
Belgium	-0.6	[-1.8; 0.6]	2004-2013	2.1	[0.7; 3.5]	2004-2013
Flemish Region	0.1	[-0.5; 0.7]	1999-2013	4.7	[3.8; 5.5]	1999-2013
				15.4	[8.6; 22.6]	1999-2001
				3.0	[2.2; 3.8]	2001-2013
Brussels-Capital Region	-2.5	[-4.6; -0.3]	2004-2013	-1.5	[-5.3; 2.4]	2004-2013
Walloon Region	-0.3	[-2.1; 1.5]	2004-2013	2.0	[0.0; 3.9]	2004-2013
				3.9	[0.8; 7.1]	2004-2010
				-1.8	[-7.8; 4.7]	2010-2013
75+						
Belgium	-0.6	[-2.3; 1.0]	2004-2013	0.4	[-2.0; 2.9]	2004-2013
	0.0	[-2.6; 2.6]	2004-2010			
	-1.9	[-7.2; 3.7]	2010-2013			
Flemish Region	-0.4	[-1.4; 0.7]	1999-2013	1.1	[-0.6; 2.8]	1999-2013
Brussels-Capital Region	6.4	[3.9; 9.0]	2004-2013	-2.3	[-5.1; 0.7]	2004-2013
	44.4	[28.7; 62.1]	2004-2006	-16.4	[-24.2; -7.7]	2004-2007
	-2.5	[-5.3; 0.5]	2006-2013	5.6	[0.8; 10.7]	2007-2013
Walloon Region	-1.0	[-4.0; 2.1]	2004-2013	-1.6	[-5.7; 2.7]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Head and Neck cancer: Relative survival by cohort and sex, Belgium 2004-2013

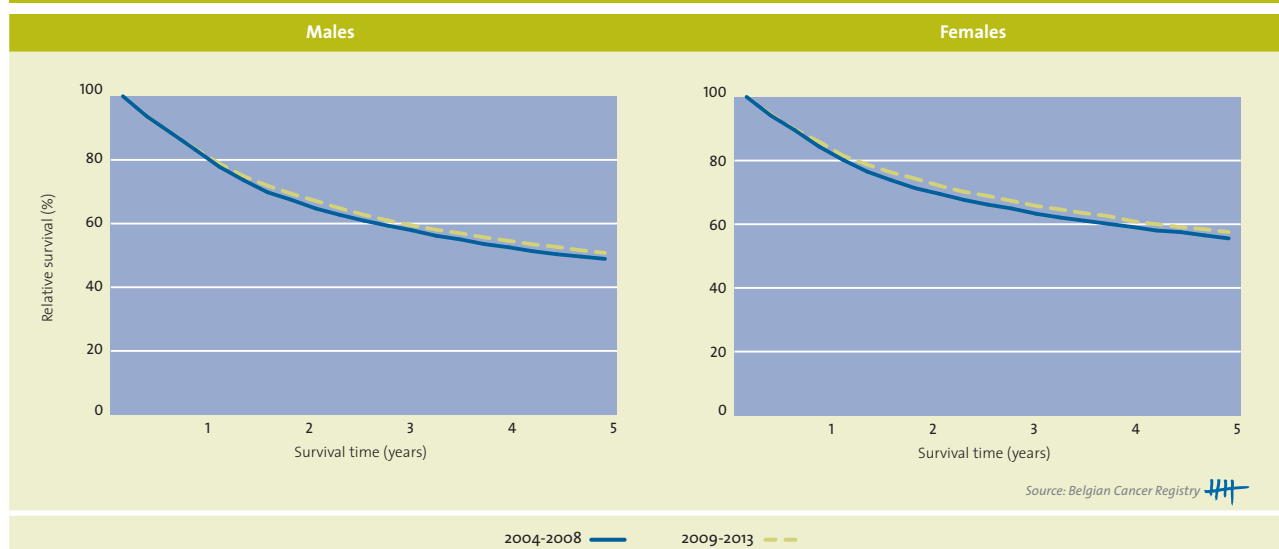
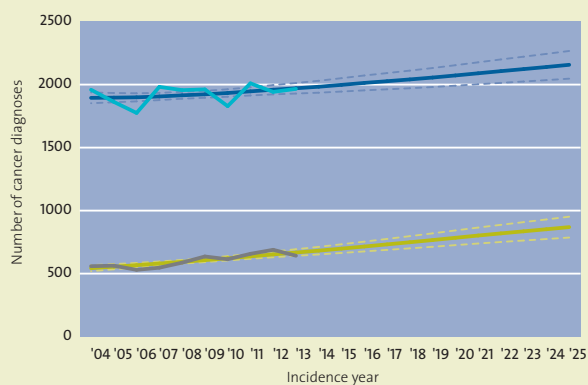

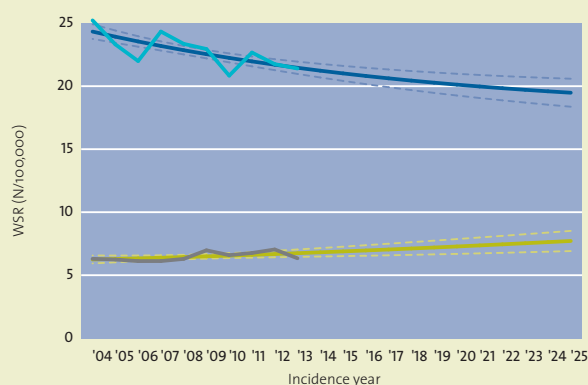


Figure 11 Head and Neck cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 12 Head and Neck cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025Source: Belgian Cancer Registry **Figure 13** Head and Neck cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025Source: Belgian Cancer Registry 

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also ...

- Realised the TNM international e-learning module for the general introduction, cancers of lip and oral cavity and breast cancer (see www.uicc.org/resources/tnm/publications-resources).
- Has elaborated a registration project for oropharyngeal carcinomas, in collaboration with the 'Vlaamse Werkgroep voor Hoofd- en Halstumoren (VWHHT)' and the French speaking working group. For almost 1,300 patients with oropharyngeal carcinomas detailed clinical information was registered in order to describe treatment patterns and to compare outcome.
- Is participating in the European Rarecarenet project (see www.rarecarenet.eu/).
- Collaborated with the Université Libre de Bruxelles for a master thesis studying the HPV/p16 status availability in the pathology reports. Among HPV/p16 positive subjects, the hazard for death by any cause is 3 to 7 times lower than in HPV/p16 negative subjects, depending on the type of diagnostic test used (HPV or p16).
- Published in the International Journal of Cancer Epidemiology that cancers of the oral cavity and pharynx show a steep incidence gradient from the northeast towards the southwest for both sexes related to smoking and alcohol consumption habits. Further reading see:
 - **Henau K, Van Eycken E, Silversmit G**, Pukkala E. Regional variation in incidence for smoking and alcohol related cancers in Belgium. *Cancer Epidemiol.* 2015; 39(1): 55-65.

!!Key note for registration:

The parotid gland (Co7.9), the submandibular (Co8.0) and the sublingual gland (Co8.1) are considered as **major** salivary glands.

Minor salivary glands are coded in the organ of origin:

- e.g. Salivary gland of the soft palate: Co5.1 (Soft palate)
- e.g. Salivary gland without specification of the site of origin: code Co6.9 (Mouth, NOS)

Morphology code 8070/3 (Squamous cell carcinoma) is most frequent but 8140/3 (Adenocarcinoma) is possible in salivary glands.

8144/3 Adenocarcinoma, intestinal type, is possible in nose and sinuses.

Specify as much as possible the localisation of the primary tumour.

Specify as much as possible 'larynx' (C32.9):

- C32.0 Glottis/Vocal cord
- C32.1 Supraglottis
- C32.2 Subglottis
- C32.3 Laryngeal cartilage

3.3 DIGESTIVE TRACT

3.3.1 OESOPHAGUS (ICD10: C15-C16.0)

Table 1 Oesophageal cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Oesophageal cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	1,061	19.5	10.5	372	6.6	3.0
Flemish Region	647	20.5	10.5	211	6.5	2.7
Brussels-Capital Region	72	12.8	8.5	30	5.1	2.6
Walloon Region	342	19.7	11.1	131	7.2	3.5
Mortality (C15), 2012	N	CR	WSR	N	CR	WSR
Belgium	514	9.5	5.1	201	3.6	1.4
Flemish Region	324	10.3	5.1	110	3.4	1.2
Brussels-Capital Region	26	4.7	3.6	23	3.9	1.8
Walloon Region	164	9.5	5.3	68	3.7	1.6
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	2,037	37.4	20.9	680	12.0	5.8
Flemish Region	1,225	38.9	20.4	388	12.0	5.5
Brussels-Capital Region	143	25.5	18.3	53	8.9	5.1
Walloon Region	669	38.6	22.5	239	13.1	6.6
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	2,742	50.3	27.7	910	16.1	7.6
Flemish Region	1,656	52.5	27.0	524	16.2	7.2
Brussels-Capital Region	180	32.0	22.7	72	12.1	6.7
Walloon Region	906	52.2	30.3	314	17.2	8.4
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	5,175	23.5%	[22.0; 25.0]	1,696	26.0%	[23.3; 28.8]
Flemish Region	3,084	23.8%	[21.9; 25.8]	973	25.2%	[21.8; 28.8]
Brussels-Capital Region	361	22.2%	[16.7; 28.5]	147	24.0%	[15.0; 34.8]
Walloon Region	1,730	23.2%	[20.6; 25.9]	576	27.7%	[22.8; 32.9]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	1,389 [1,311; 1,466]	11.3 [10.7; 12.0]		419 [387; 452]	3.0 [2.7; 3.2]	

CR, crude rate (N/100,000 person years)

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

- Oesophageal cancer burden in Belgium (**Table 1**):
 - 1,433 new diagnoses of cancer in 2013, 74% males and 26% females.
 - 715 deaths* due to oesophageal cancer in 2012, 72% males and 28% females.
 - 3,652 persons (0.03% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with oesophageal cancer between 2004 and 2013.
 - Incidence (especially for squamous cell carcinoma⁽¹⁾) and mortality rates for male and female oesophageal cancer increase from the north-northeast towards the south-south-west of Belgium (**Figure 3**).
 - Over time, incidence and mortality rates of male oesophageal cancer remain stable. In females the incidence rates are increasing (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 24% in males and 26% in females. A slight increase in the relative survival proportion for oesophageal cancer is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 11 and 12**).
 - By 2025, the number of patients diagnosed with oesophageal cancer is expected to rise to more than 1,800. The increase is mainly due to the ageing and growth of the population (**Table 1, Figure 13 and 14**).
- In all age groups, the risk for males is more than three times higher than the risk for females (**Table 2, Figure 1 and 8**).
 - Age group 30-49 years:
 - Males have a threefold higher risk than females (M/F ratio = 3.4).
 - The incidence rates in males are decreasing with 4% to 5% annually.

* Mortality statistics: deaths due to gastro-oesophageal junction carcinoma are not included. They are included in the number of deaths related to stomach cancer.

- Age group 50-74 years:
 - Males have a threefold higher risk than females (M/F ratio = 3.6).
 - The incidence rates are increasing in males and females.
- Age group 75+:
 - Males have a threefold higher risk than females (M/F ratio = 3.3).
 - The incidence rates are increasing in males, while the rates in females remain rather stable.
- About 60% of all oesophageal cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 73% in 2004-2006 to 84% in 2010-2013.
 - Males have a slightly less favourable stage distribution than females.
- Squamous cell carcinoma is the most frequently diagnosed subtype (**Figure 10**).
 - In females, squamous cell carcinoma represents more than half of all oesophageal cancer cases.
 - Female oesophageal squamous cell carcinoma is increasing (related to smoking habits), and is mainly responsible for the increase in oesophageal cancer incidence
 - Male oesophageal cancer is more evenly distributed amongst squamous cell carcinoma, oesophageal adenocarcinoma and adenocarcinoma of the gastro-oesophageal junction.

Figure 1 Oesophageal cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013

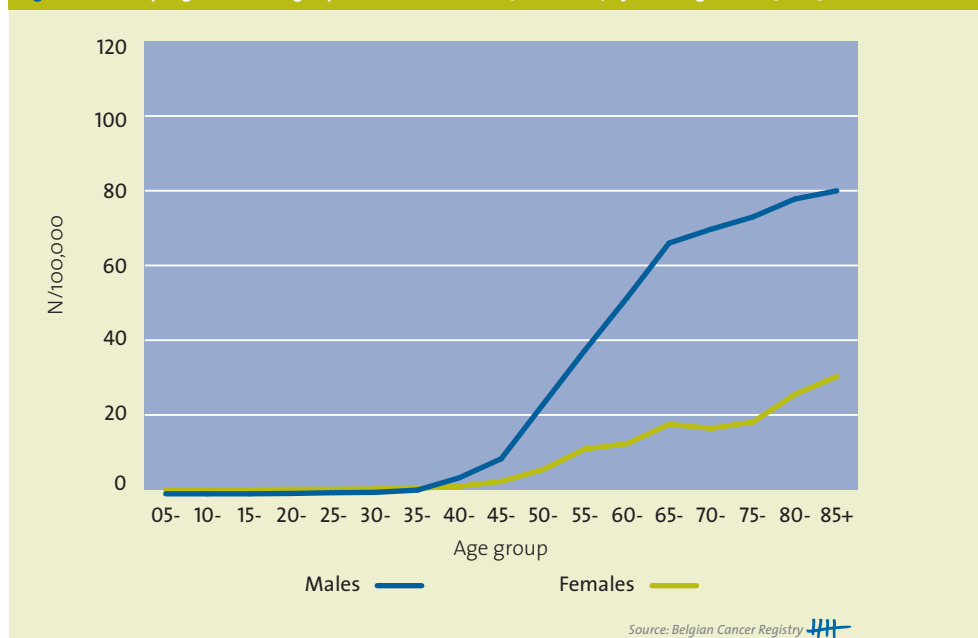


Figure 2 Oesophageal cancer (C15): Comparison of age-standardised incidence rates (WSR) (Selection of European registry data)

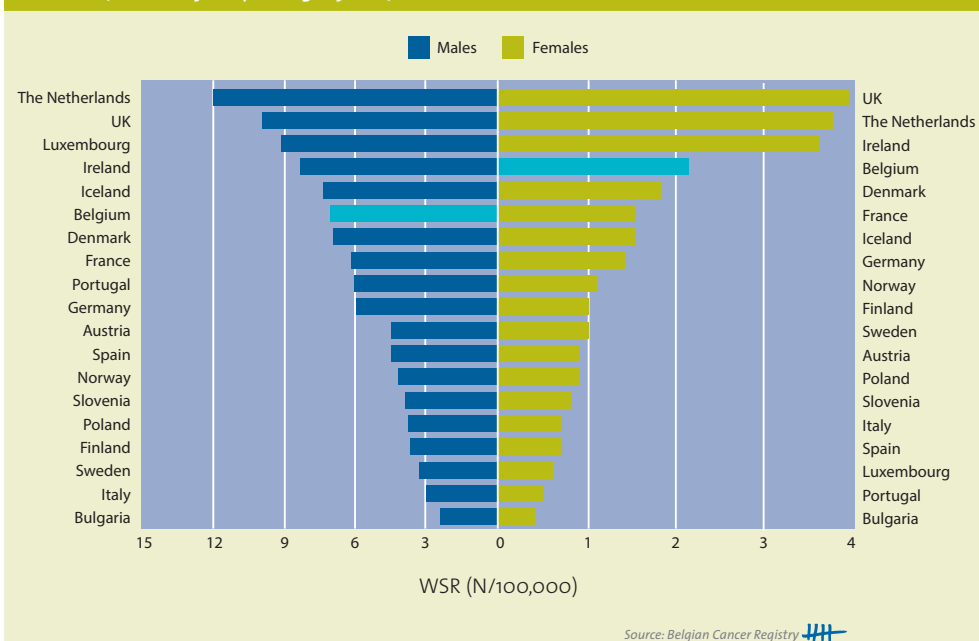


Figure 3 Oesophageal cancer (C15): Age-standardised incidence and mortality (WSR) by sex in Belgium

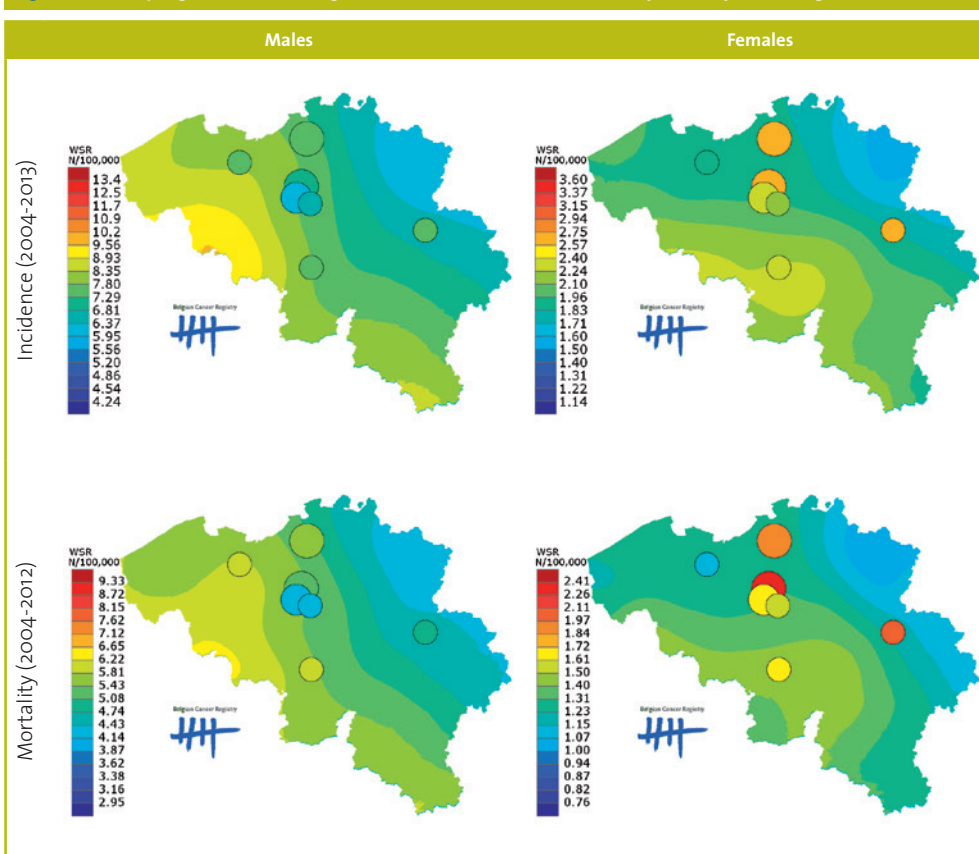


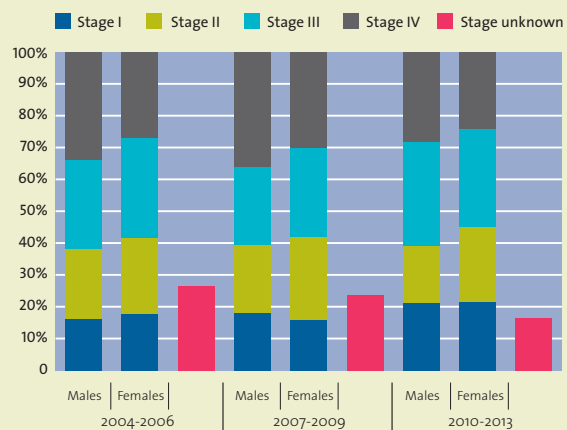

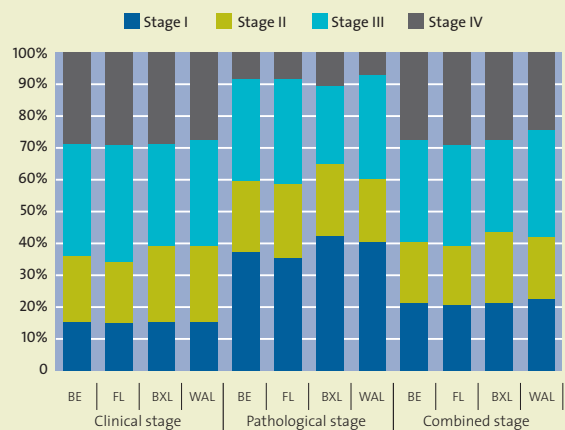
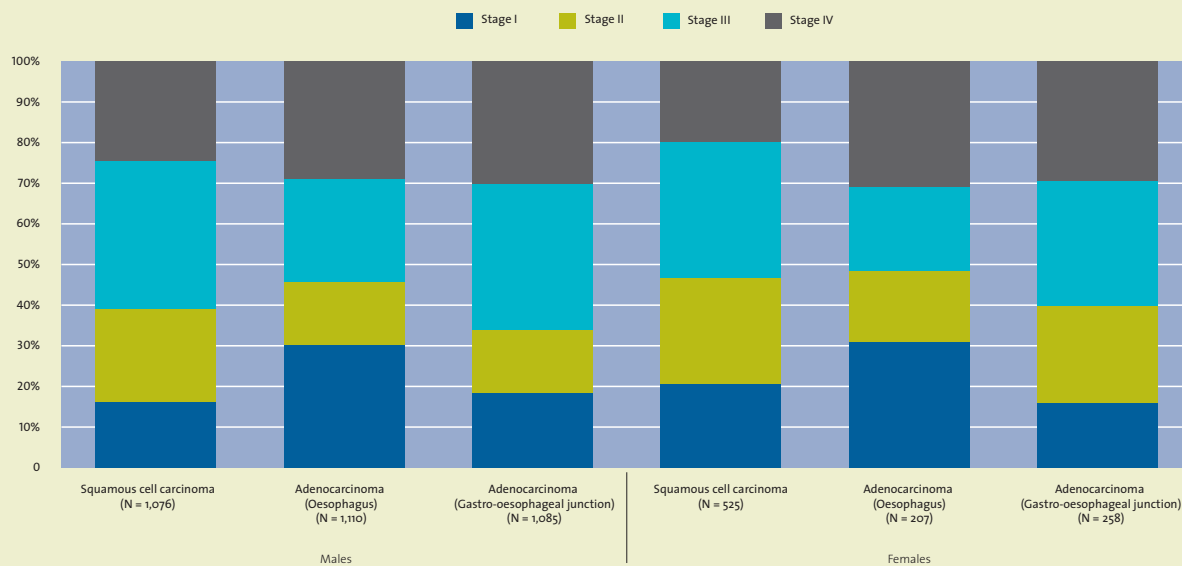

Figure 4 Oesophageal cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013Source: Belgian Cancer Registry **Figure 5** Oesophageal cancer: stage distribution by region, 2010-2013Source: Belgian Cancer Registry **Figure 6** Oesophageal cancer: stage distribution by sex and histology, Belgium 2010-2013Source: Belgian Cancer Registry 

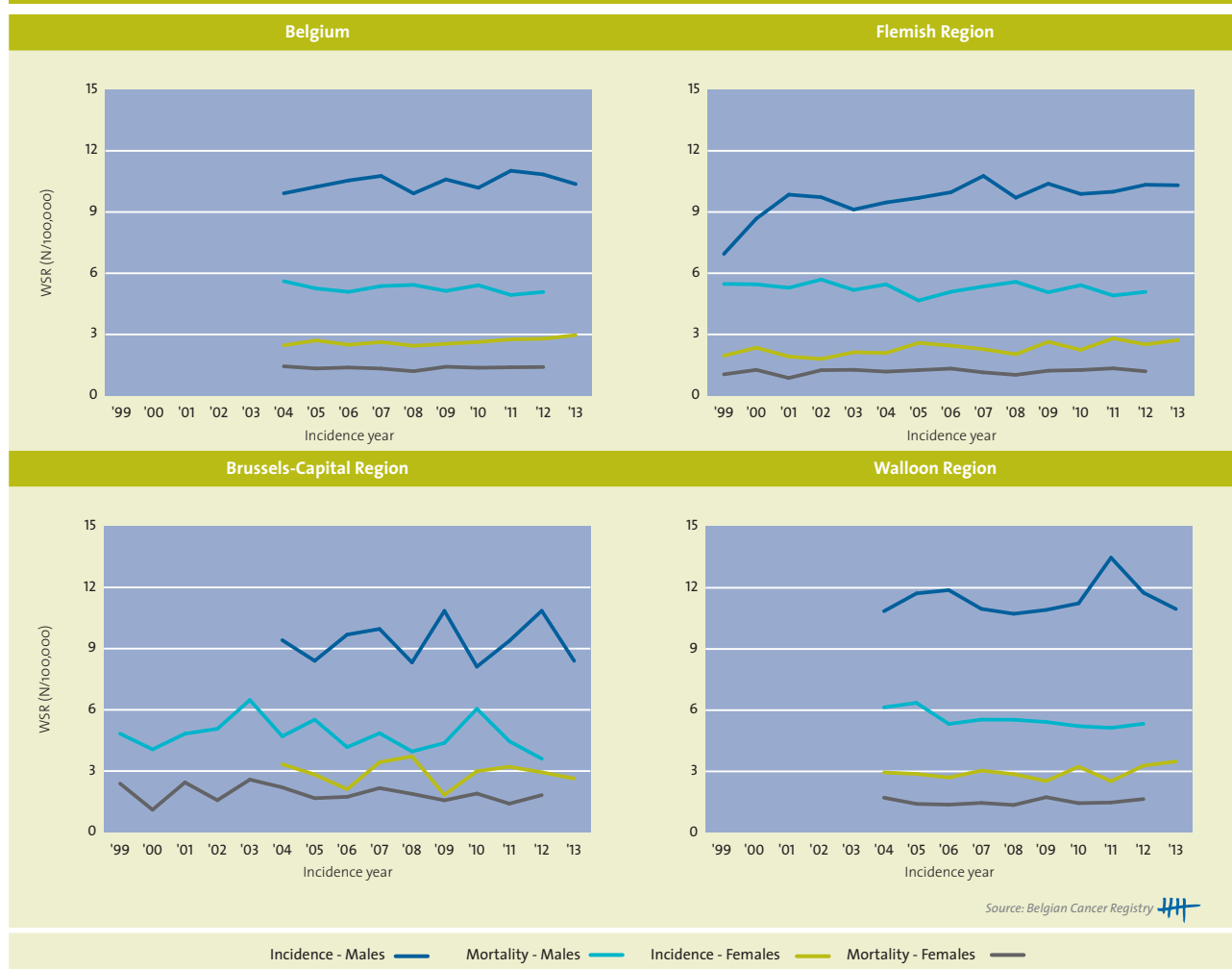
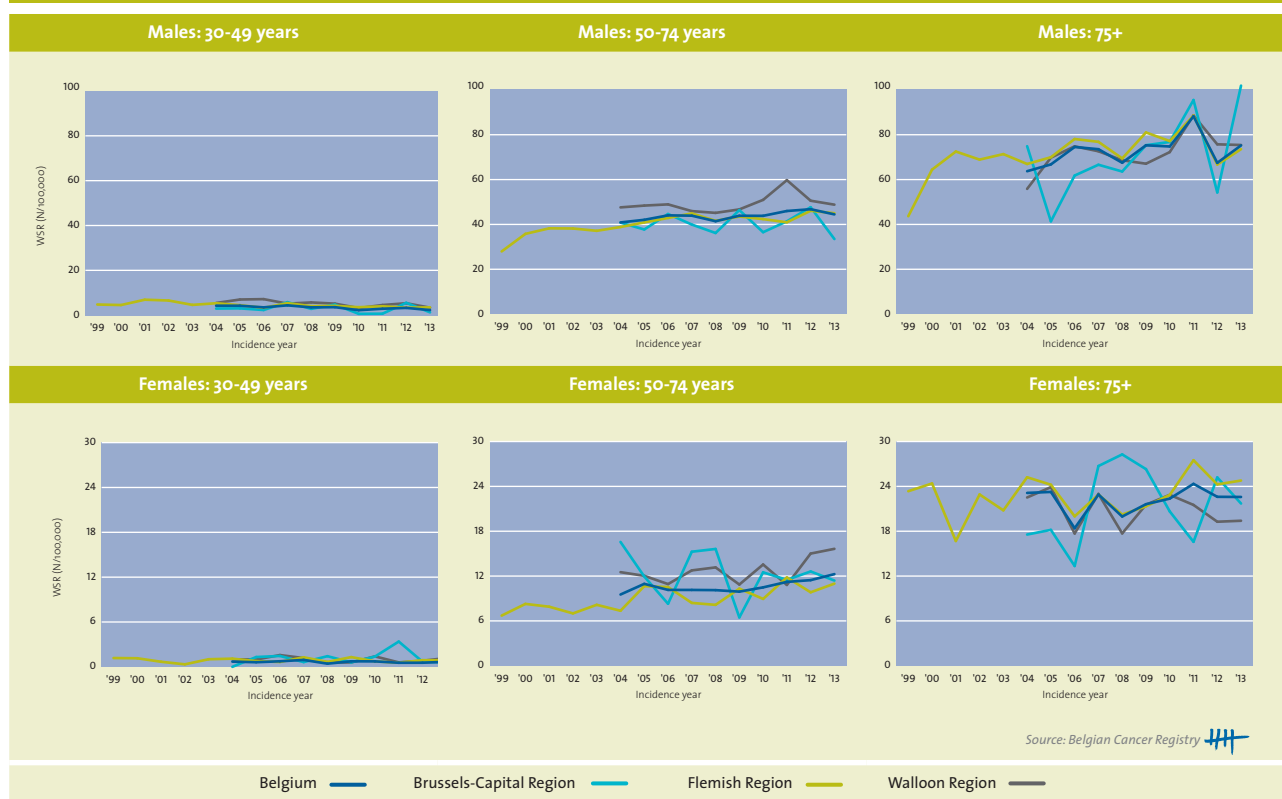
Figure 7 Oesophageal cancer: Trends in age-standardised incidence and mortality (C15) (WSR) by sex and region, 1999-2013**Figure 8** Oesophageal cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

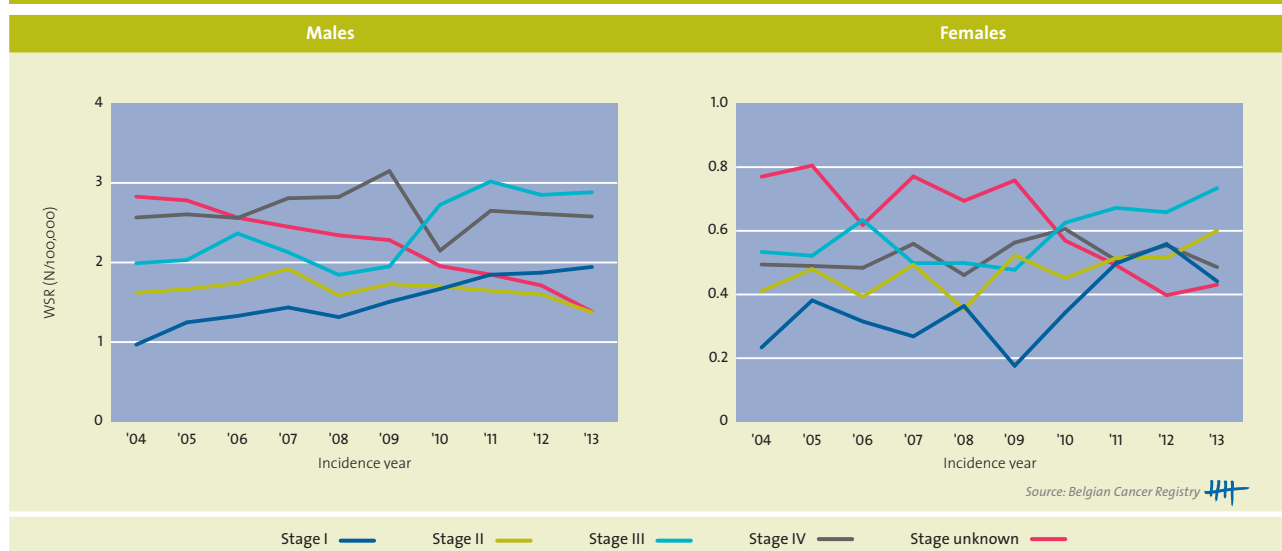
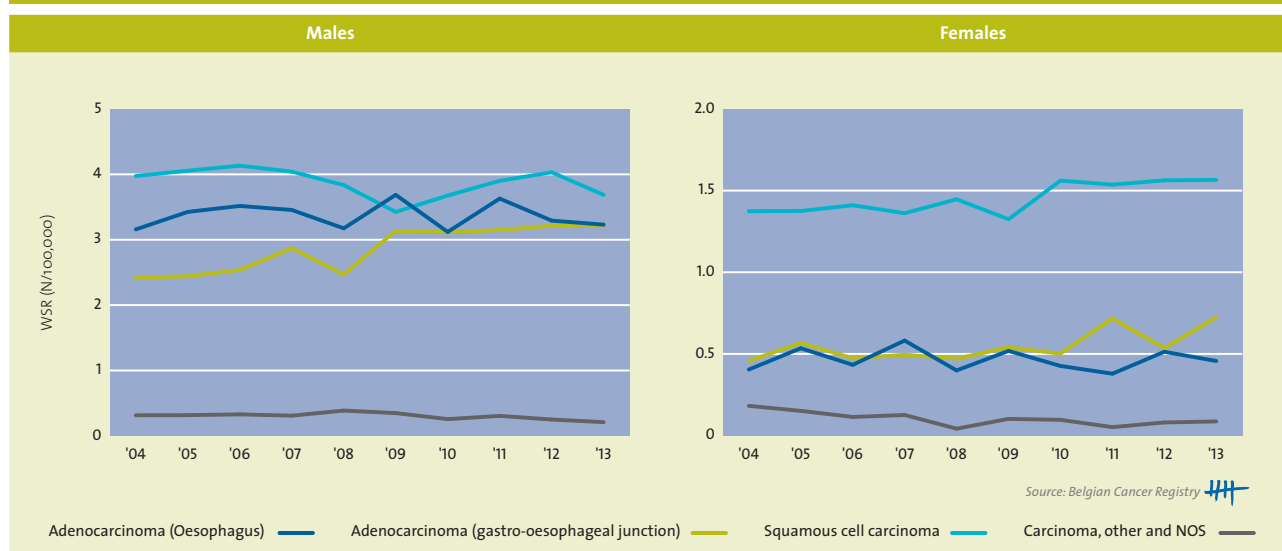
Figure 9 Oesophageal cancer: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013**Figure 10** Oesophageal cancer: Trends in age-standardised incidence (WSR) by histology and sex, Belgium 2004-2013

Table 2 Oesophageal cancer: AAPC(%) by sex, region, stage, age group and histology in Belgium

Oesophageal cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	0.6	[-0.3; 1.4]	2004-2013	1.6	[0.7; 2.5]	2004-2013
				-0.3	[-2.0; 1.5]	2004-2009
				3.9	[1.6; 6.2]	2009-2013
Flemish Region	2.6	[2.0; 3.3]	1999-2013	2.2	[0.8; 3.5]	1999-2013
	16.0	[10.8; 21.3]	1999-2001			
	0.6	[-0.0; 1.2]	2001-2013			
Brussels-Capital Region	0.2	[-2.6; 3.0]	2004-2013	-0.5	[-6.1; 5.4]	2004-2013
Walloon Region	0.5	[-1.3; 2.3]	2004-2013	1.3	[-1.4; 4.1]	2004-2013
Incidence by age group and region	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	-4.8	[-7.6; -1.9]	2004-2013	-1.2	[-4.9; 2.7]	2004-2013
Flemish Region	-3.5	[-5.6; -1.3]	1999-2013	-0.5	[-5.2; 4.6]	1999-2013
Brussels-Capital Region	-9.2	[-25.8; 11.1]	2004-2013	.	.	
Walloon Region	-5.9	[-10.6; -1.0]	2004-2013	-2.5	[-11.3; 7.1]	2004-2013
50-74 Year						
Belgium	1.1	[0.3; 1.8]	2004-2013	2.0	[1.0; 3.0]	2004-2013
				-0.2	[-2.1; 1.8]	2004-2009
				4.7	[2.1; 7.4]	2009-2013
Flemish Region	2.4	[1.6; 3.2]	1999-2013	3.0	[1.4; 4.6]	1999-2013
	4.8	[2.6; 7.1]	1999-2005			
	0.6	[-0.9; 2.2]	2005-2013			
Brussels-Capital Region	-0.3	[-3.3; 2.7]	2004-2013	-1.7	[-8.8; 6.0]	2004-2013
Walloon Region	1.1	[-0.7; 3.1]	2004-2013	2.1	[-0.9; 5.2]	2004-2013
75+						
Belgium	1.5	[-0.5; 3.7]	2004-2013	0.6	[-1.5; 2.7]	2004-2013
Flemish Region	2.1	[0.6; 3.7]	1999-2013	0.9	[-0.6; 2.4]	1999-2013
	5.0	[1.5; 8.7]	1999-2006			
	-0.7	[-4.0; 2.7]	2006-2013			
Brussels-Capital Region	4.6	[-1.4; 11.0]	2004-2013	2.7	[-3.4; 9.2]	2004-2013
Walloon Region	2.5	[0.1; 4.9]	2004-2013	-1.0	[-3.8; 1.8]	2004-2013
Mortality (C15)	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.8	[-1.9; 0.2]	2004-2012	0.1	[-1.3; 1.6]	2004-2012
				-2.5	[-5.6; 0.7]	2004-2008
				2.8	[-0.4; 6.2]	2008-2012
Flemish Region	-0.5	[-1.2; 0.2]	1999-2012	1.0	[-0.7; 2.7]	1999-2012
Brussels-Capital Region	-1.0	[-3.3; 1.4]	1999-2012	-1.0	[-4.4; 2.4]	1999-2012
Walloon Region	-2.1	[-3.5; -0.7]	2004-2012	0.4	[-2.5; 3.5]	2004-2012
Incidence by stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Stage I	6.9	[5.1; 8.8]	2004-2013	6.5	[-1.1; 14.8]	2004-2013
Stage II	-2.1	[-3.8; -0.4]	2004-2013	3.3	[0.0; 6.7]	2004-2013
	0.1	[-2.0; 2.3]	2004-2011			
	-9.6	[-16.9; -1.7]	2011-2013			
Stage III	4.8	[1.5; 8.2]	2004-2013	3.6	[1.1; 6.1]	2004-2013
				-1.3	[-5.8; 3.5]	2004-2009
				9.9	[3.5; 16.8]	2009-2013
Stage IV	-0.3	[-2.8; 2.3]	2004-2013	0.9	[1.4; 3.1]	2004-2013
Stage unknown	-7.2	[-8.0; -6.4]	2004-2013	-7.3	[-9.8; -4.7]	2004-2013
	-4.5	[-6.2; -2.9]	2004-2009	-2.0	[-7.2; 3.4]	2004-2009
	-10.5	[-12.4; -8.5]	2009-2013	-13.6	[-19.3; -7.4]	2009-2013
Incidence by histology	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Adenocarcinoma (oesophagus)	0.0	[-1.6; 1.5]	2004-2013	-0.3	[-3.9; 3.4]	2004-2013
Adenocarcinoma (gastro-oesophageal junction)	3.7	[2.2; 5.3]	2004-2013	3.7	[0.4; 7.2]	2004-2013
Squamous cell carcinoma	-0.8	[-2.2; 0.5]	2004-2013	1.7	[0.6; 2.8]	2004-2013
Carcinoma, other and NOS	-5.0	[-8.0; -1.8]	2004-2013	-8.7	[-16.9; 0.3]	2004-2013
	-1.1	[-5.0; 3.0]	2004-2011			
	-17.5	[-29.6; -3.3]	2011-2013			

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 11 Oesophageal cancer: Relative survival by cohort and sex, Belgium 2004-2013

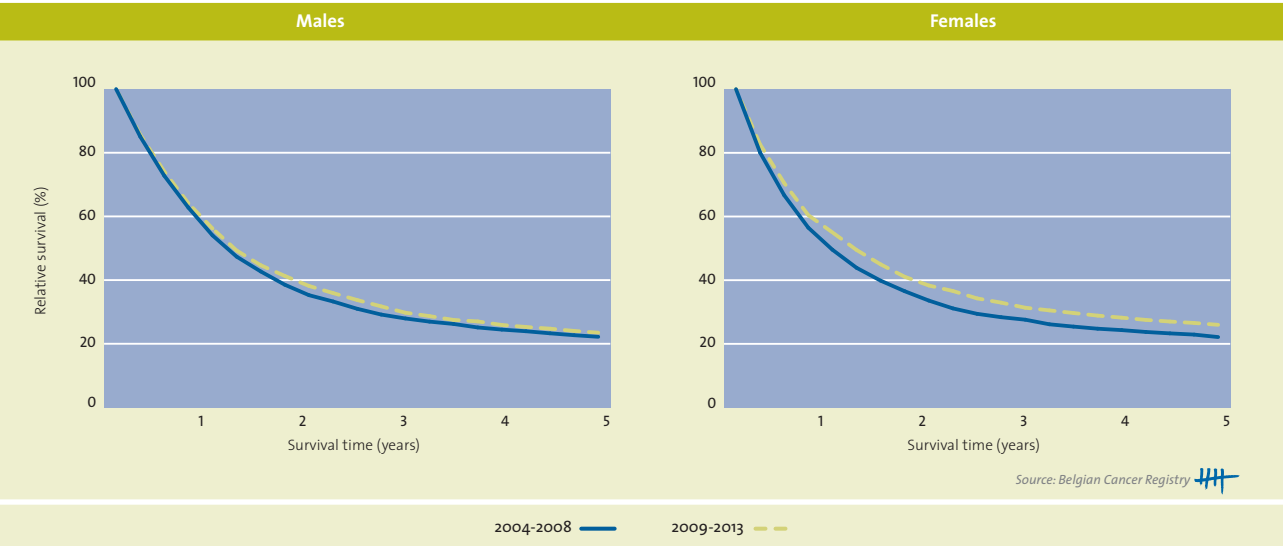
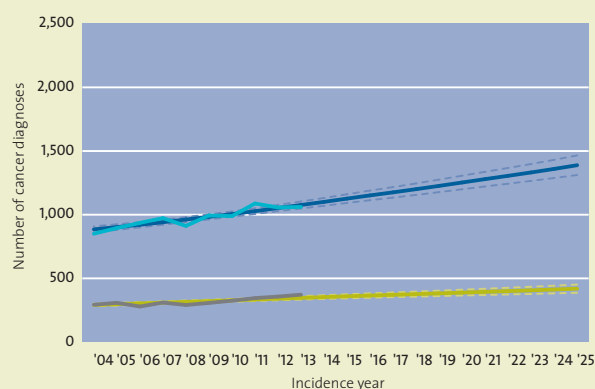


Figure 12 Oesophageal cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

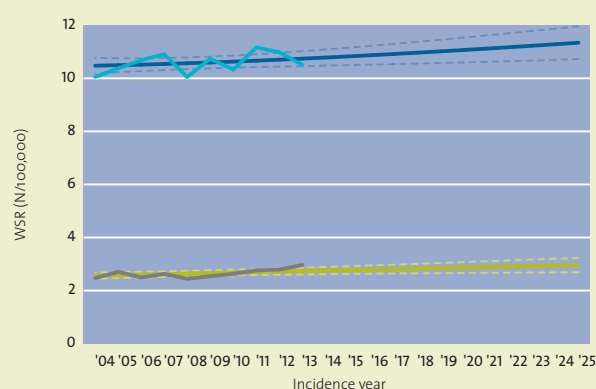


Figure 13 Oesophageal Cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Figure 14 Oesophageal Cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also ...

- Had a partnership in the KCE-project (Belgian Health Care Knowledge Centre) on the measurement of quality indicators for the management of oesophageal cancer. Five-year survival in Belgium (around 22%) appears to be higher than in neighbouring countries. Conversely, post-operative mortality appears to be worse; a 30-day mortality of 4.8% and a 90-day mortality of 9.9% was observed. Age and hospital volume were found to be independent risk factors for 30-day mortality, while age, histological type, combined stage and hospital volume were predictive for 90-day mortality.
- Sent individual feedbacks to the hospitals in July 2013, containing centre-specific results of quality indicators for the management of oesophageal cancer.
- Further reading see:
 - Vlayen J, **De Gendt C**, Stordeur S, **Schillemans V**, Camberlin C, Vrijens F, **Van Eycken E**, Lerut T. Quality indicators for the management of upper gastrointestinal cancer. Good Clinical Practice (GCP) Brussels: Belgian Health Care Knowledge Centre (KCE). 2013. KCE reports 200. D/2013/10.273/15.
 - Stordeur S, Vlayen J, Vrijens F, Camberlin C, **De Gendt C**, **Van Eycken E**, Lerut T. Quality indicators for oesophageal and gastric cancer: a population-based study in Belgium 2004-2008. Eur J Cancer Care 2015; 24(3): 376-386.

!!Key note for registration:

Code Gastro-oesophageal junction as C16.o.

Barrett-oesophagus only to be coded if severe or high grade dysplasia: 8148/2.

TNM staging:

A tumour of which the epicentre is within 5 cm of the oesophagogastric junction and also extends into the oesophagus is classified and staged according to the oesophageal scheme.

Intramucosal tumour with invasion of lamina propria or muscularis mucosae is a T1a tumour and must be coded with behaviour/3.

3.3.2 STOMACH (ICD-10: C16.1-C16.9)

Table 1 Stomach cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Stomach cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	587	10.8	5.4	444	7.9	3.3
Flemish Region	383	12.2	5.4	263	8.1	3.3
Brussels-Capital Region	49	8.7	6.3	43	7.3	4.0
Walloon Region	155	8.9	5.0	138	7.5	3.2
Mortality (C16), 2012	N	CR	WSR	N	CR	WSR
Belgium	496	9.2	4.3	311	5.5	1.9
Flemish Region	314	10.0	4.3	199	6.2	2.0
Brussels-Capital Region	43	7.8	4.5	18	3.1	1.2
Walloon Region	139	8.1	4.2	94	5.2	1.9
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	1,272	23.4	11.8	1,114	19.7	8.7
Flemish Region	773	24.5	11.4	668	20.7	8.6
Brussels-Capital Region	92	16.4	11.6	103	17.4	9.5
Walloon Region	407	23.5	12.7	343	18.8	8.7
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	1,977	36.3	18.1	1,713	30.3	13.1
Flemish Region	1,217	38.6	17.5	1,054	32.6	13.1
Brussels-Capital Region	156	27.8	19.3	152	25.6	13.9
Walloon Region	604	34.8	18.6	507	27.7	12.7
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	2,924	35.2%	[32.8; 37.6]	2,296	43.7%	[41.0; 46.4]
Flemish Region	1,849	34.0%	[31.0; 36.9]	1,405	42.3%	[38.9; 45.7]
Brussels-Capital Region	250	29.3%	[21.7; 37.6]	215	39.1%	[30.6; 47.8]
Walloon Region	825	39.4%	[34.7; 44.3]	676	48.3%	[43.2; 53.3]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	513 [458; 567]	3.9 [3.6; 4.3]		467 [429; 506]	3.2 [3.1; 3.4]	

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

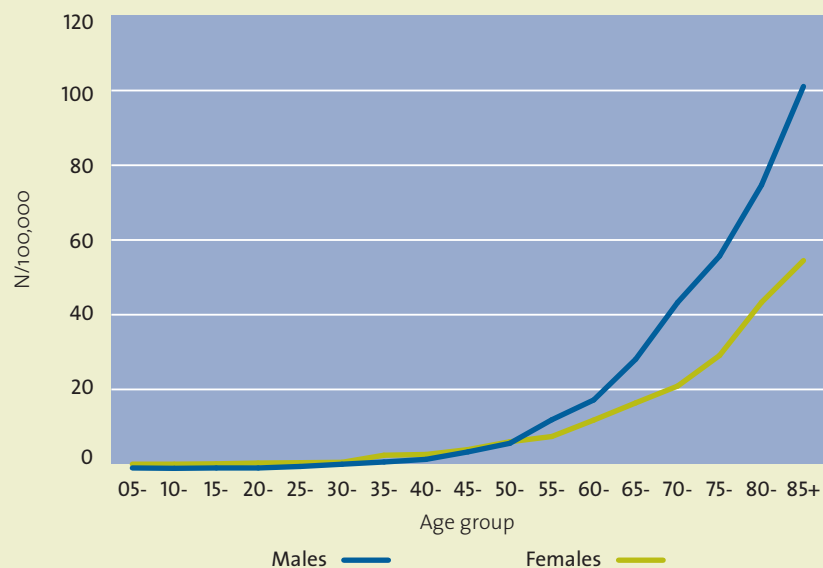
WSR, age-standardised rate using the World Standard Population (N/100,000 person years)

- Stomach cancer burden in Belgium (**Table 1**):
 - 1,031 new diagnoses of cancer in 2013, 57% males and 43% females.
 - Stomach cancer is the 10th most frequent tumour in males (2% of all malignancies).
 - 807 deaths^(*) due to stomach cancer in 2012, 61% males and 39% females.
 - Stomach cancer is the 10th most important cause of cancer death in males (3% of all cancer deaths) and the 8th most important cause of cancer death in females (3%).
 - 3,690 persons (0.03% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with stomach cancer between 2004 and 2013.
 - Over time, incidence and mortality rates of stomach cancer are decreasing in males and females (**Figure 6 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 35% in males and 44% in females. An increase in the relative survival proportion for stomach cancer is observed over time (**Figure 8 and 9**).
 - By 2025, the number of patients diagnosed with stomach cancer is expected to decrease to 980 cases. The decrease is mainly expected due to the decreasing risk in both sexes over time (**Table 1, Figure 10 and 11**).
- Males and females show a different risk pattern with age (**Table 2 and Figure 7**).
 - Age group 30-59 years:
 - Males and females have comparable incidence rates (M/F ratio = 0.9).
 - The incidence rates in males are decreasing. In females, the incidence rates remain more stable.
 - Age group 60-74 years:
 - Males have a higher risk than females (M/F ratio = 1.7).
 - The incidence rates are decreasing in both sexes.

^{*} Mortality statistics: deaths due to gastro-oesophageal junction carcinoma are included in the number of deaths related to stomach cancer.

- Age group 75+:
 - Males have a twofold higher risk than females (M/F ratio = 1.9).
 - The incidence rates are decreasing in both sexes.
- More than half of all stomach cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4 and Figure 5**).
- Availability of information on stage has improved from 67% in 2004-2006 to 80% in 2010-2013.
- Stage distribution in males and females is comparable.

Figure 1 Stomach cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013




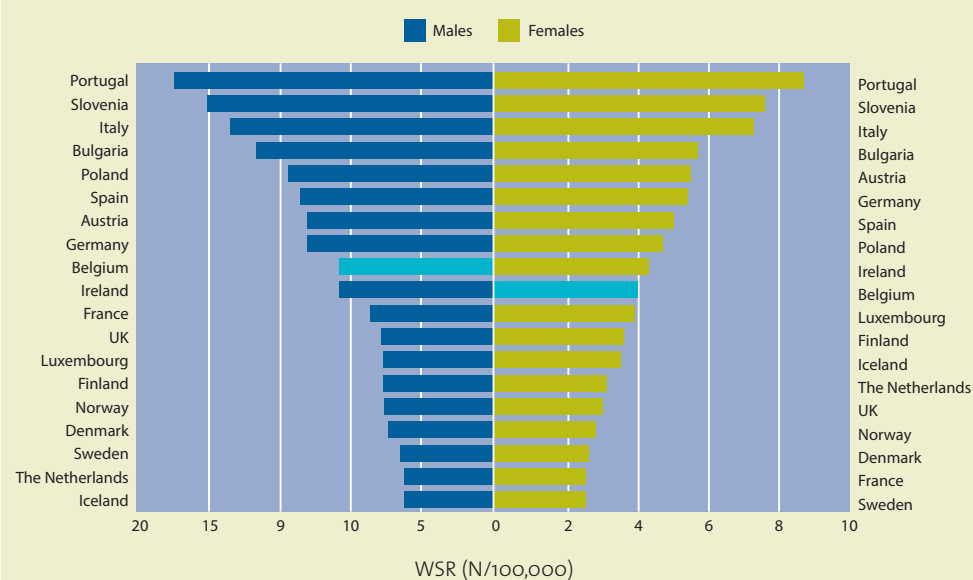
Source: Belgian Cancer Registry 

Figure 2 Stomach cancer (C16): Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)



Source: Belgian Cancer Registry 

Figure 3 Stomach cancer (C16): Age-standardised incidence and mortality (WSR) by sex in Belgium

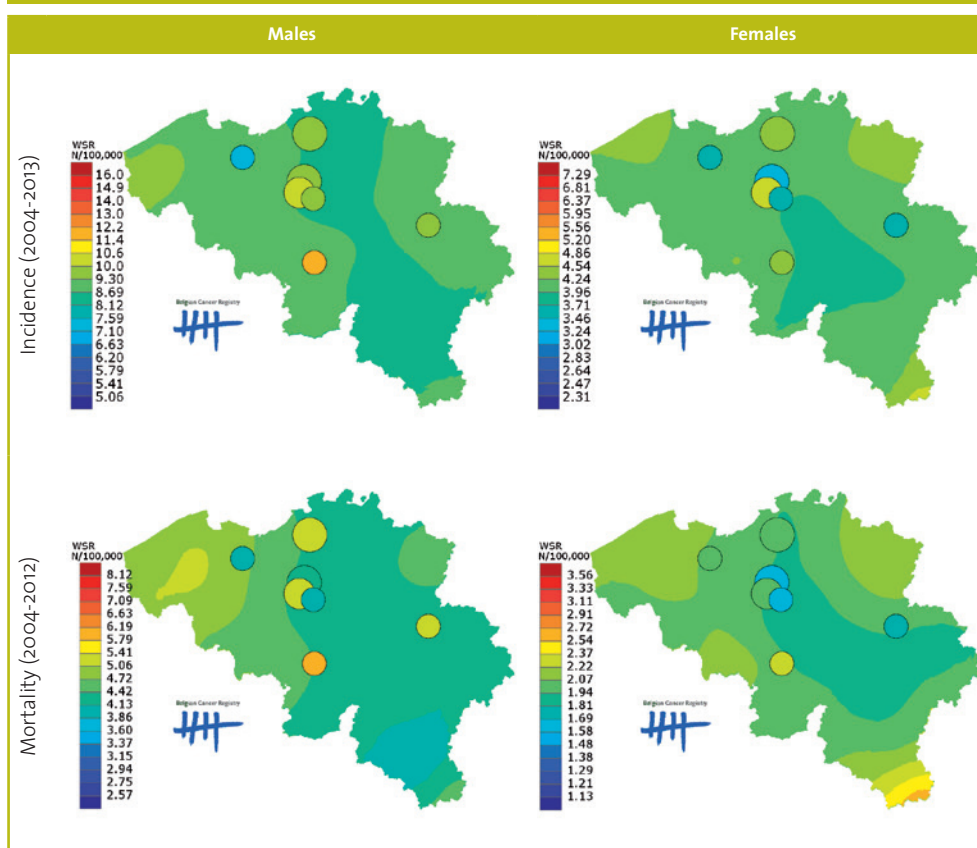
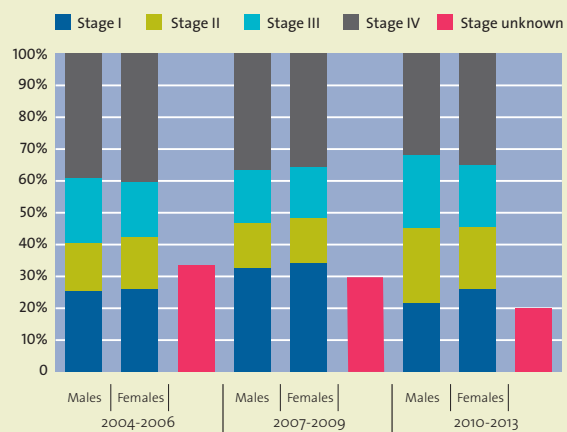
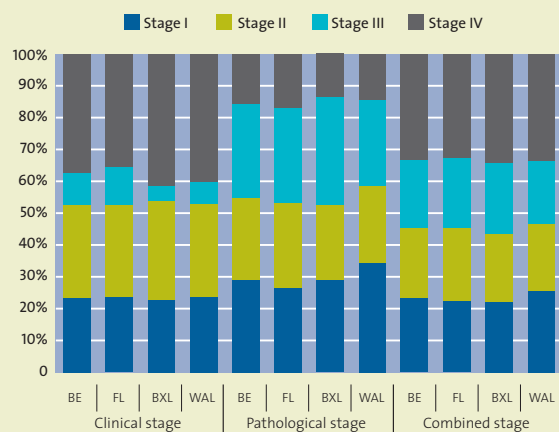


Figure 4 Stomach cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



Source: Belgian Cancer Registry

Figure 5 Stomach cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

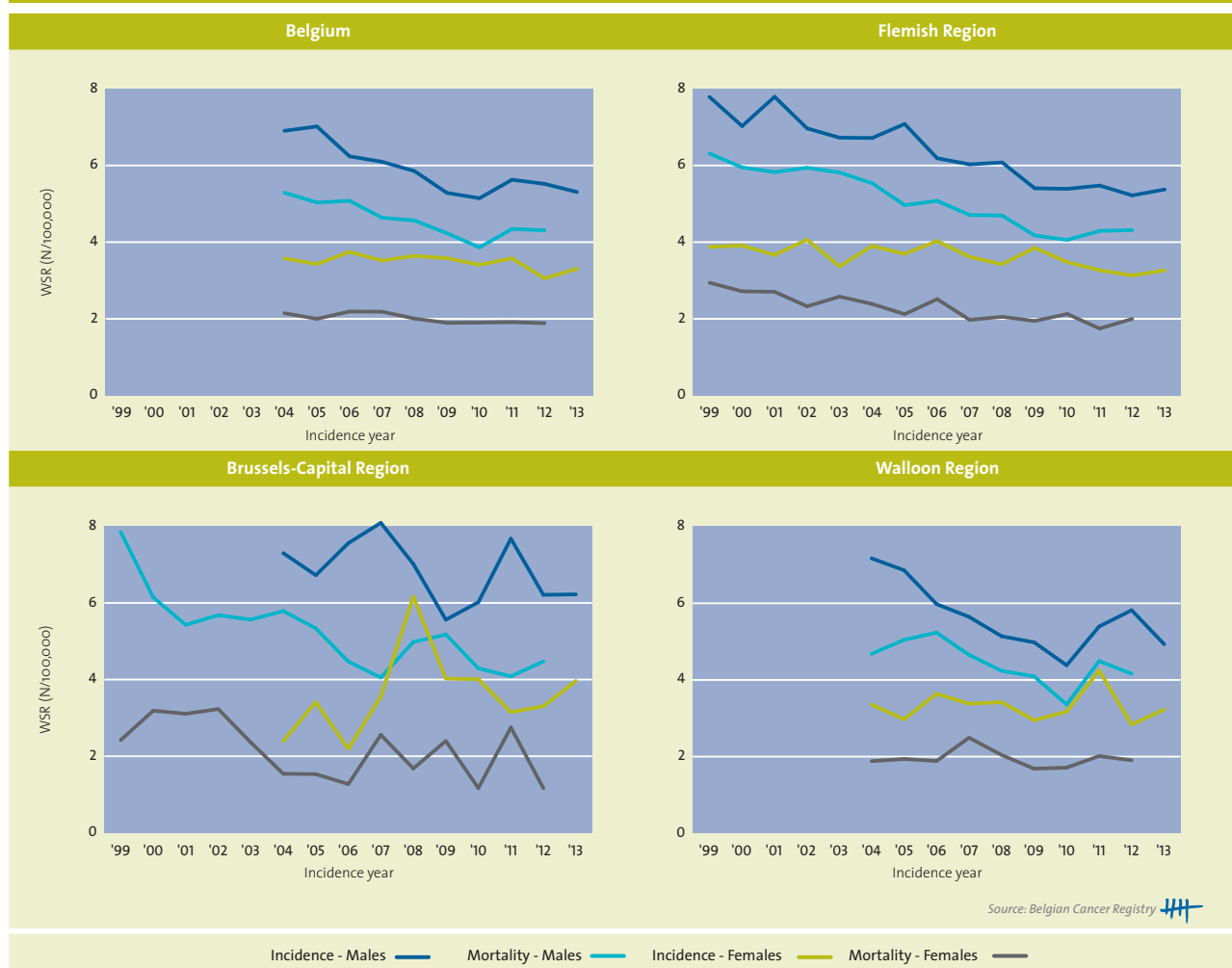
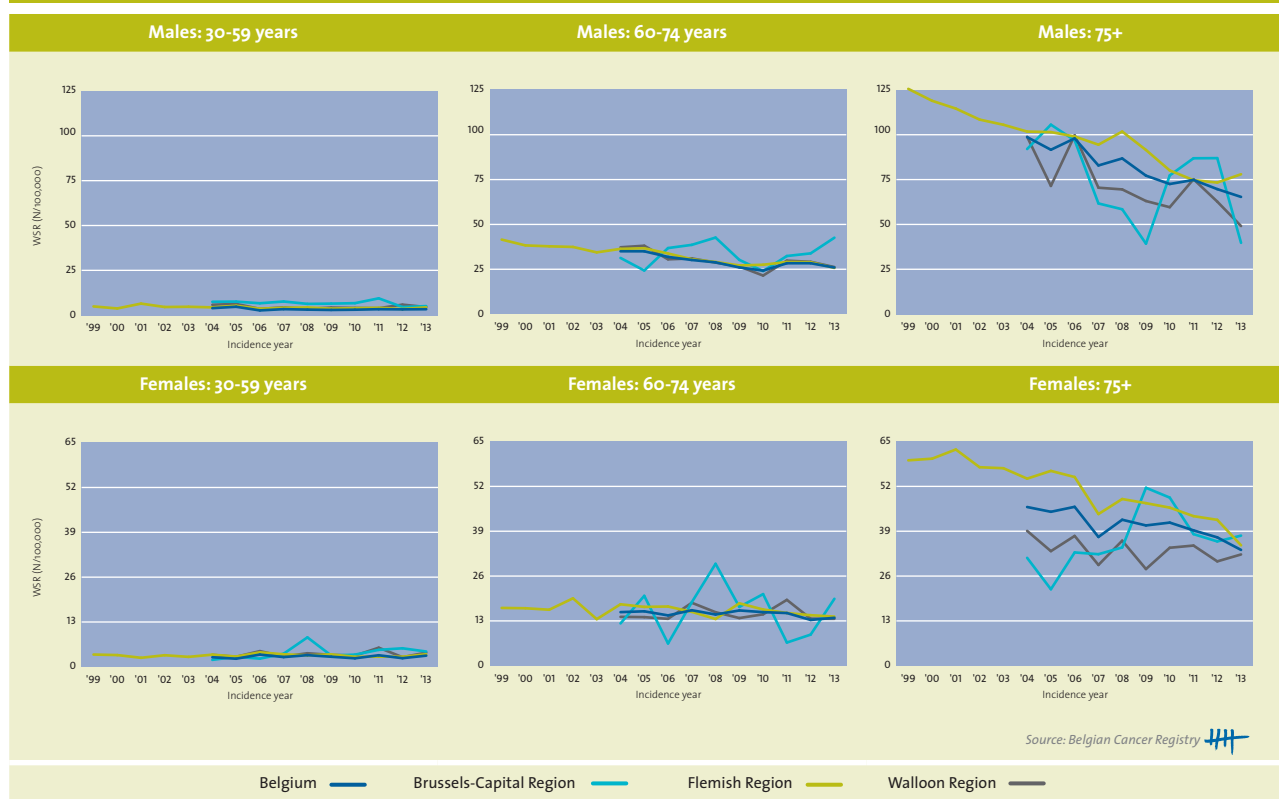
Figure 6 Stomach cancer: Trends in age-standardised incidence and mortality (C16) (WSR) by sex and region, 1999-2013**Figure 7** Stomach cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

Table 2 Stomach cancer: AAPC(%) by sex, region and age group in Belgium

Stomach cancer	Males			Females		
Incidence (C16.1-C16.9)	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-2.9	[-3.8; -2.0]	2004-2013	-1.1	[-2.3; 0.1]	2004-2013
	-5.4	[-7.1; -3.6]	2004-2009			
	0.2	[-2.1; 2.5]	2009-2013			
Flemish Region	-2.8	[-3.4; -2.3]	1999-2013	-1.3	[-2.0; -0.5]	1999-2013
				-0.1	[-1.8; 1.6]	1999-2006
				-2.4	[-4.1; -0.8]	2006-2013
Brussels-Capital Region	-1.8	[-4.5; 1.0]	2004-2013	4.2	[-1.9; 10.7]	2004-2013
				18.3	[1.8; 37.5]	2004-2008
				-5.8	[-16.3; 6.0]	2008-2013
Walloon Region	-3.2	[-5.1; -1.3]	2004-2013	-0.2	[-3.2; 3.0]	2004-2013
	-7.8	[-11.3; -4.2]	2004-2009			
	2.9	[-2.0; 8.0]	2009-2013			
Mortality (C16)	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-3.1	[-4.7; -1.5]	2004-2012	-1.8	[-3.0; -0.5]	2004-2012
Flemish Region	-3.4	[-4.0; -2.8]	1999-2012	-3.2	[-4.2; -2.2]	1999-2012
Brussels-Capital Region	-3.5	[-5.0; -2.1]	1999-2012	-4.8	[-9.2; -0.2]	1999-2012
Walloon Region	-3.0	[-6.1; 0.2]	2004-2012	-0.7	[-4.2; 2.9]	2004-2012
Incidence by age group	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-59 Year						
Belgium	-1.7	[-4.3; 0.9]	2004-2013	0.5	[-2.6; 3.7]	2004-2013
	-6.1	[-12.2; 0.3]	2004-2008			
	2.0	[-3.2; 7.5]	2008-2013			
Flemish Region	-1.8	[-3.6; 0.0]	1999-2013	0.0	[-1.6; 1.7]	1999-2013
Brussels-Capital Region	-3.4	[-7.9; 1.3]	2004-2013	8.8	[-0.4; 18.8]	2004-2013
Walloon Region	-1.7	[-6.0; 2.7]	2004-2013	1.4	[-4.1; 7.3]	2004-2013
	-11.7	[-21.0; -1.4]	2004-2008			
	7.1	[-1.8; 16.8]	2008-2013			
60-74 Year						
Belgium	-2.7	[-4.0; -1.4]	2004-2013	-1.2	[-2.4; 0.1]	2004-2013
	-5.3	[-7.3; -3.3]	2004-2010			
	2.6	[-1.8; 7.2]	2010-2013			
Flemish Region	-2.7	[-3.3; -2.0]	1999-2013	-1.0	[-2.2; 0.3]	1999-2013
	-2.4	[-3.7; -1.1]	1999-2006			
	-6.6	[-9.4; -3.7]	2006-2009			
	-0.1	[-2.8; 2.7]	2009-2013			
Brussels-Capital Region	1.6	[-3.5; 7.1]	2004-2013	-0.9	[-13.6; 13.6]	2004-2013
Walloon Region	-3.1	[-5.5; -0.6]	2004-2013	0.2	[-3.0; 3.6]	2004-2013
	-7.2	[-10.8; -3.14]	2004-2010			
	5.6	[-3.0; 14.9]	2010-2013			
75+						
Belgium	-4.4	[-5.4; -3.4]	2004-2013	-2.7	[-4.2; -1.3]	2004-2013
Flemish Region	-3.5	[-4.2; -2.9]	1999-2013	-3.9	[-4.8; -3.1]	1999-2013
				-2.9	[-3.7; -2.0]	1999-2011
				-10.1	[-15.7; -4.1]	2011-2013
Brussels-Capital Region	-5.4	[-13.0; 2.8]	2004-2013	3.5	[-0.8; 8.1]	2004-2013
				10.5	[3.3; 18.2]	2004-2010
				-9.1	[-21.3; 4.9]	2010-2013
Walloon Region	-5.4	[-8.8; -2.0]	2004-2013	-1.5	[-4.1; 1.1]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 8 Stomach cancer: Relative survival by cohort and sex, Belgium 2004-2013

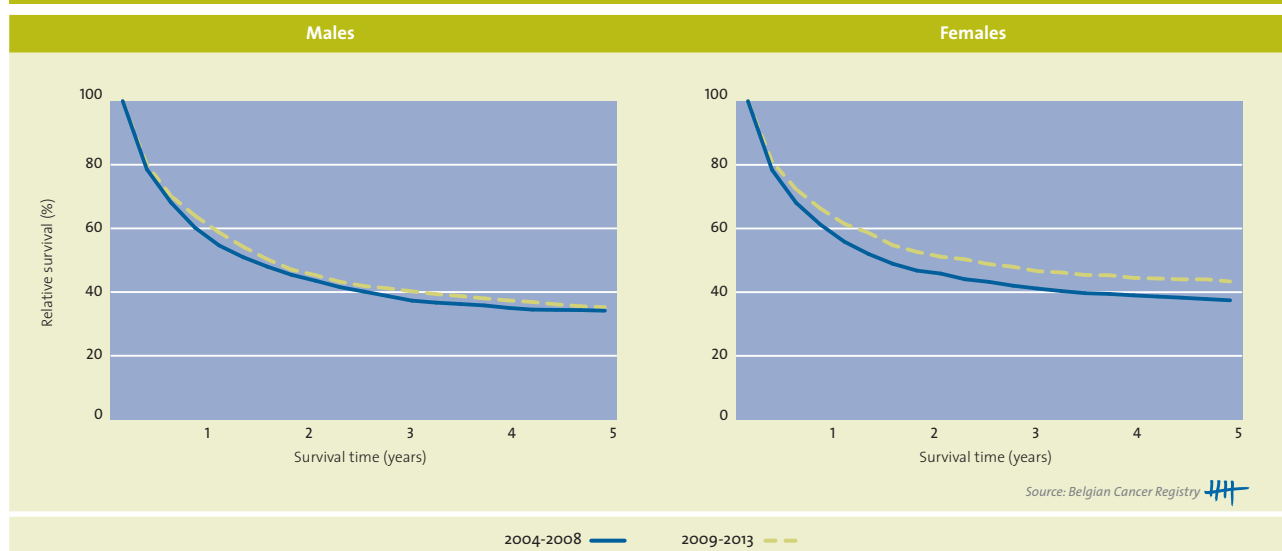
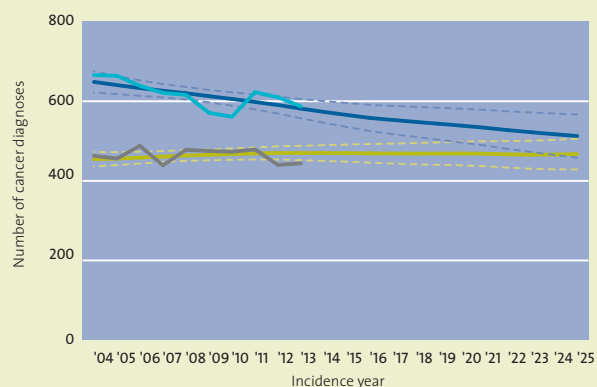


Figure 9 Stomach cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 10 Stomach cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025




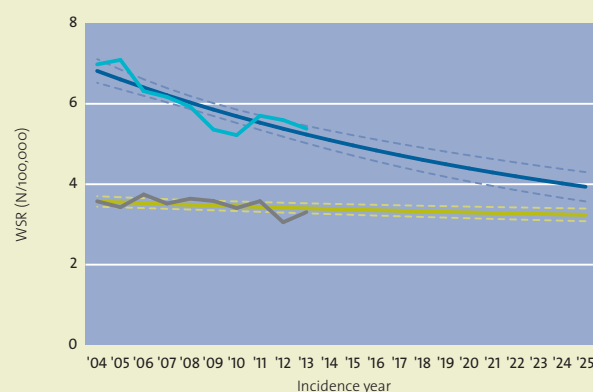
Source: Belgian Cancer Registry 

Figure 11 Stomach cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry 

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also ...

- Had a partnership in the KCE-project on the measurement of quality indicators for the management of stomach cancer.
- Sent individual feedbacks to the hospitals in July 2013, providing centre-specific results of quality indicators for the management of stomach cancer (for further reading: see oesophageal cancer). The results of stomach cancer were less commented by the expert physicians and scientific organisations and less documented and reported in the press. In contrast to oesophageal cancer, hospital volume was not an independent risk factor for both 30-day and 90-day mortality.
- Is co-promotor of a PhD student of the Université catholique de Louvain investigating the impact of the use of non-oncological drugs on stomach cancer survival.
- Has implemented mixture cure model analysis to quantify cure of cancer in the Flemish Region for a selection of cancer sites? The estimated overall cured fraction for cancer of the stomach in Flanders is 25%. Our first results on cure of cancer were presented orally at the 2014 ENCR Scientific Meeting and General Assembly (November 2014). Further reading see:
 - **Silversmit G, Jegou D, Van Hoof E, Van Eycken L.** Mixture cure models applied to cancer sites diagnosed in the Flemish Region of Belgium.

!!Key note for registration:

8140/3: Adenocarcinoma, NOS

8144/3: Adenocarcinoma, intestinal type (Lauren Classification)

8145/3: Adenocarcinoma, diffuse type (Lauren Classification)

8490/3: Signet ring cell adenocarcinoma (>50% of the tumour are signet ring cells)

8480/3: Mucinous adenocarcinoma (>50% of the tumour contains extracellular mucus)

8481/3: Adenocarcinoma with mucinous differentiation/mucine production (<50 % of extracellular mucus)

8142/3: Linitis plastica: is a clinical diagnosis (rigid stomach wall: "leather bottle stomach"); if 'linitis plastica' is used by pathologist, code 8145/3

TNM staging:

A tumour of which the epicentre is in the stomach at a distance > 5 cm from the oesophago-gastric junction OR a tumour of which the epicentre is within 5 cm of the oesophagogastric junction without extension into the oesophagus, is staged using the gastric carcinoma scheme.

Intramucosal tumour with invasion of lamina propria or muscularis mucosae is a T1a tumour and must be coded with behaviour/3.

Gastrointestinal Stromal Tumour (GIST)

GISTs are coded with 8936/3.

Always behaviour/3 since all GISTs have a metastatic potential, also the small ones.

GISTs may occur anywhere along the gastro-intestinal tract (C15-C20) or elsewhere in the abdomen (C48.1-2) or retroperitoneum (C48.0)! They occur most frequently in the stomach.

It is recommended to stage all GISTs by TNM (specific chapter for all GIST-tumours).

3.3.3 COLON (ICD-10: C18-C19)

Table 1 Colon cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Colon cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	3,298	60.5	29.7	2,923	51.7	21.2
Flemish Region	2,088	66.3	30.5	1,813	56.1	22.0
Brussels-Capital Region	236	42.0	27.0	225	37.9	18.8
Walloon Region	974	56.2	28.8	885	48.4	20.4
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	1,249	23.1	10.3	1,170	20.8	6.7
Flemish Region	785	25.0	10.3	677	21.1	6.6
Brussels-Capital Region	100	18.1	10.8	104	17.7	6.2
Walloon Region	364	21.1	10.1	389	21.4	7.1
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	10,547	193.6	94.6	9,587	169.6	69.4
Flemish Region	6,842	217.1	98.3	6,091	188.6	73.7
Brussels-Capital Region	715	127.3	83.5	727	122.6	59.9
Walloon Region	2,990	172.4	89.7	2,769	151.4	64.1
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	16,177	297.0	141.7	15,193	268.8	106.2
Flemish Region	10,460	331.9	146.8	9,508	294.3	111.4
Brussels-Capital Region	1,107	197.1	126.2	1,178	198.7	92.7
Walloon Region	4,610	265.8	135.4	4,507	246.5	100.6
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	15,992	65.5%	[64.3; 66.7]	14,195	67.2%	[66.0; 68.4]
Flemish Region	10,252	66.8%	[65.4; 68.3]	8,830	67.7%	[66.1; 69.2]
Brussels-Capital Region	1,169	59.6%	[55.0; 64.1]	1,155	68.1%	[63.8; 72.2]
Walloon Region	4,571	64.0%	[61.7; 66.2]	4,210	65.9%	[63.7; 68.2]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	3,956 [3,838; 4,074]	29.1 [28.3; 29.9]		3,382 [3,283; 3,482]	21.5 [20.6; 22.4]	

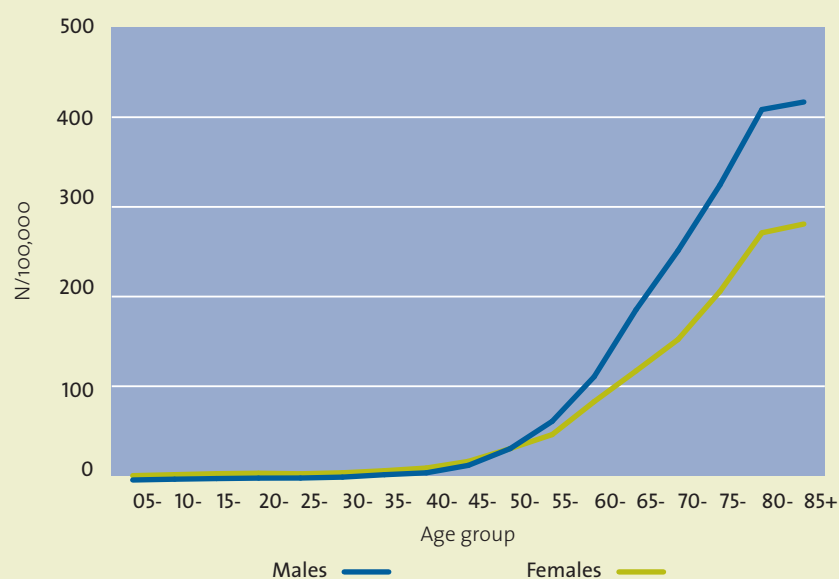
CR, crude rate (N/100,000 person years)

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

- Colon cancer burden in Belgium (**Table 1**):
 - 6,221 new diagnoses of colon cancer in 2013, 53% males and 47% females.
 - Colorectal cancer is the 3rd most frequent tumour in males (10% of all malignancies) and the 2nd most frequent in females (9%).
 - 2,419 deaths due to colon cancer in 2012, 52% males and 48% females.
 - Colorectal cancer is the 2nd most important cause of cancer death in males (10% of all cancer deaths) and the 3rd most important cause of cancer death in females (12%).
 - 31,370 persons (0.3% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with colon cancer between 2004 and 2013.
 - Over time, mortality rates for colon cancer are decreasing in males and females (**Figure 7 and Table 2**), while incidence rates remain stable.
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 66% in males and 67% in females. An increase in the relative survival proportion for colon cancer is observed over time in Belgium (2004-2013) and the Flemish region (1999-2013) (**Table 1 and Figure 12**).
 - By 2025, the number of patients diagnosed with colon cancer is expected to rise to more than 7,300. The increase is mainly due to the ageing and growth of the population (**Figure 13 and 14**). The evolution of the screening programmes on colon cancer, launched in 2009 in Wallonia and Brussels, and in 2013 in Flanders, will also have an influence on the number of actual cases diagnosed by 2025.
- Males and females show a different risk pattern with age. The incidence rates remain stable over time in the different age groups but the risk in males and females is different (**Figure 1 and 8, Table 2**).

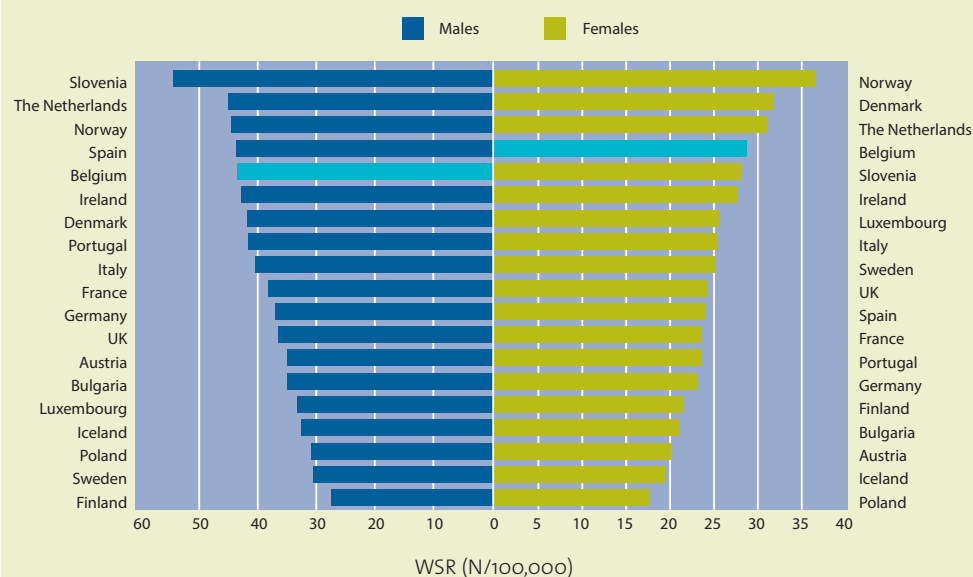
- Age group 30-49 years:
 - Males and females have comparable incidence rates (M/F ratio = 1.1).
- Age group 50-74 years:
 - Males have a higher risk than females (M/F ratio = 1.4).
- Age group 75+:
 - Males have a higher risk than females (M/F ratio = 1.6).
- About half of all colon cancers with known stage are diagnosed in advanced stages (stage III or IV) in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage was always quite high (82% in 2004-2006), and improved even further to 92% in 2010-2013.
 - There are no major regional differences in stage distribution.
 - There is no difference in stage distribution between males and females.
 - Even in younger patients, half of all cancer diagnoses are stage III or IV.

Figure 1 Colon cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013



Source: Belgian Cancer Registry

Figure 2 Colorectal cancer (C18-C20): Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Colorectal cancer (C18-C20): Age-standardised incidence and mortality (WSR) by sex in Belgium

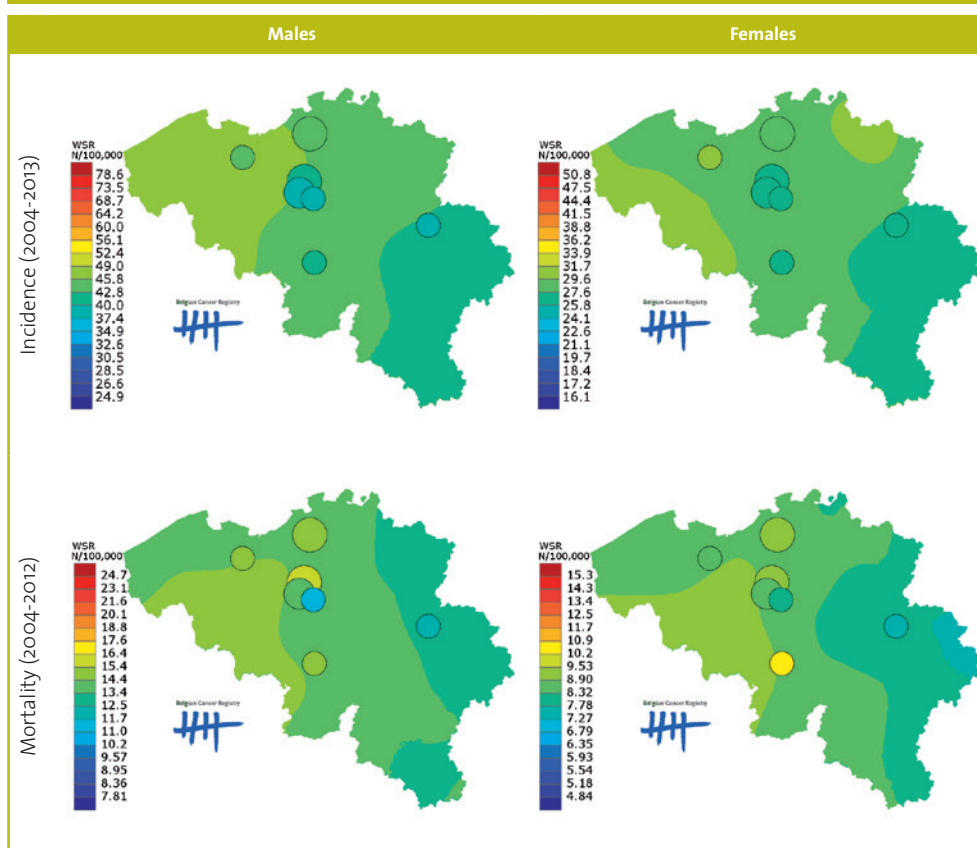
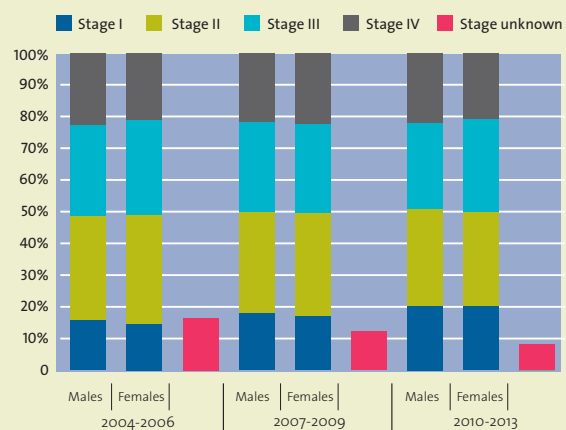
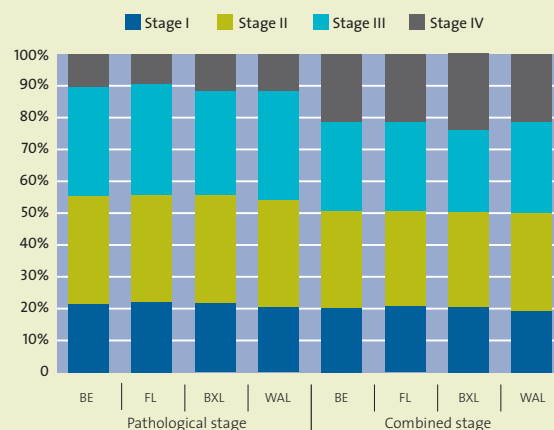


Figure 4 Colon cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

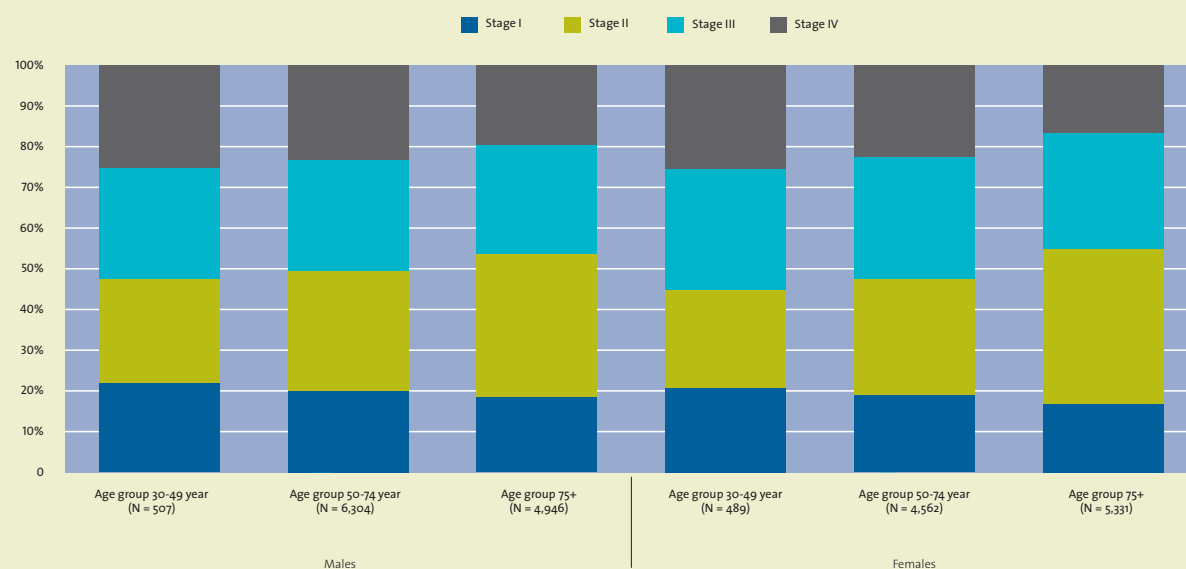


Source: Belgian Cancer Registry

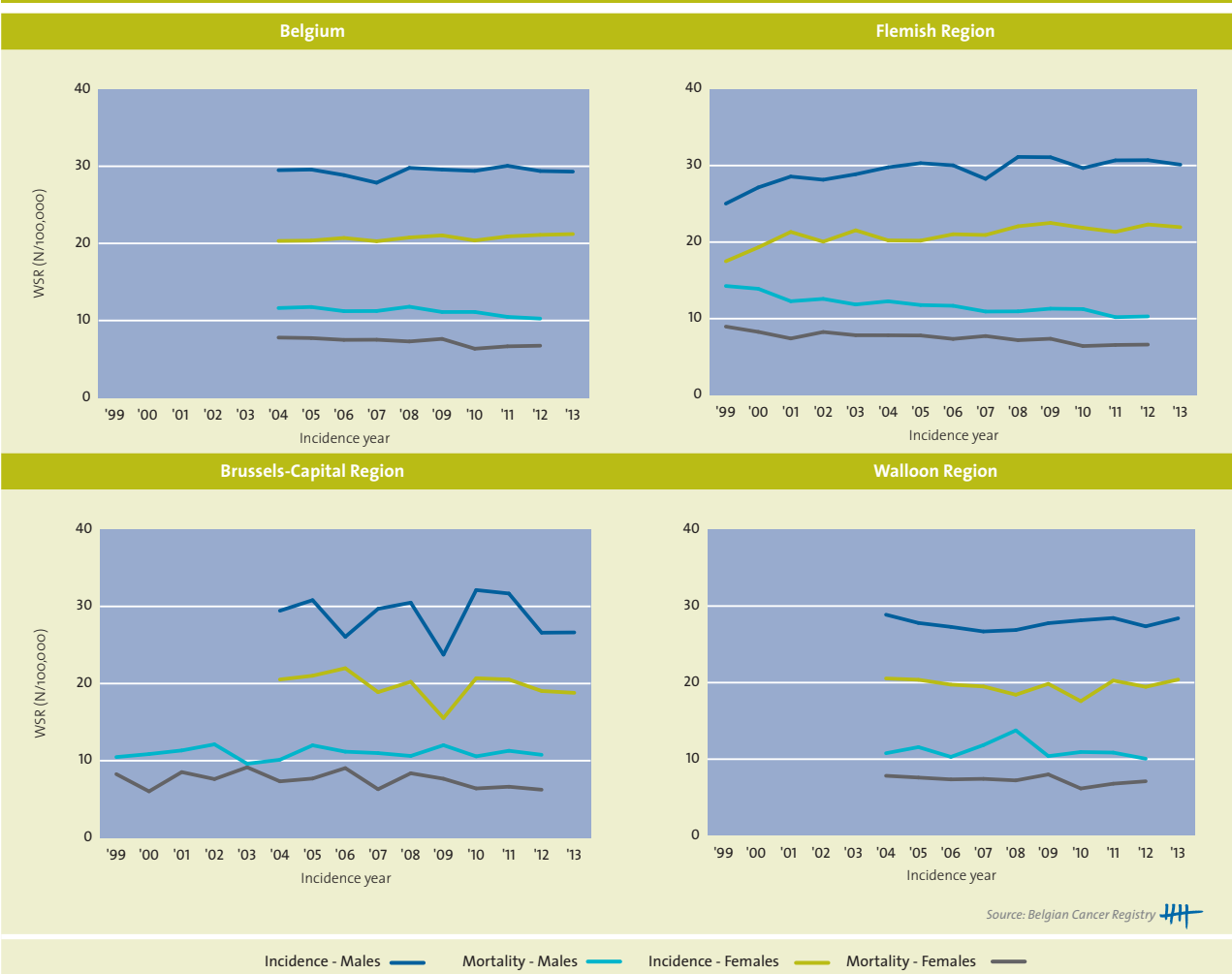
Figure 5 Colon cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Colon cancer: stage distribution by sex and age group, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Colon cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Source: Belgian Cancer Registry

Figure 8 Colon cancer: Trends in age-standardised incidence (WSR) by sex, age group, and region, 1999-2013



Figure 9 Colon cancer: Trends in age-standardised incidence (WSR) by sex and stage, Belgium 2004-2013

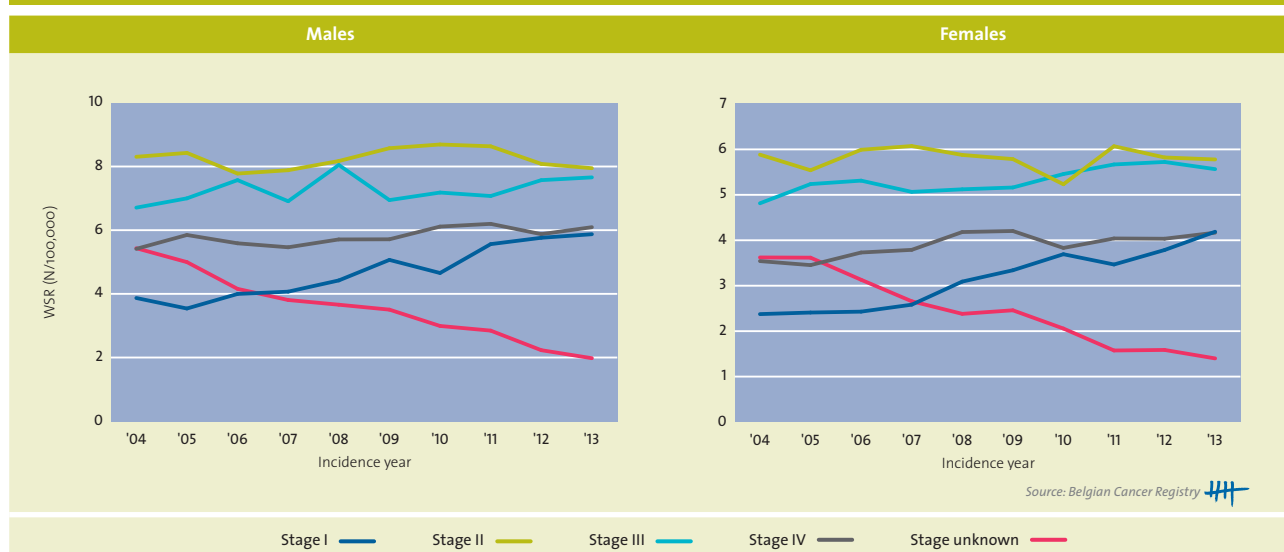


Figure 10 Colon cancer: Trends in age-standardised incidence (WSR) by sex, stage and age group, Belgium 2004-2013

Table 2 Colon cancer: AAPC(%) by sex, region, age group and stage in Belgium

Colon cancer	Males			Females		
Incidence by region	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	0.2	[-0.4; 0.7]	2004-2013	0.4	[0.1; 0.7]	2004-2013
Flemish Region	0.9	[0.4; 1.4]	1999-2013	1.1	[0.6; 1.7]	1999-2013
	1.6	[0.9; 2.4]	1999-2008			
	-0.4	[-1.8; 1.0]	2008-2013			
Brussels-Capital Region	-0.6	[-3.1; 2.0]	2004-2013	-1.1	[-3.4; 1.3]	2004-2013
Walloon Region	-0.1	[-0.5; 0.4]	2004-2013	-0.0	[-1.1; 1.0]	2004-2013
	-2.1	[-3.6; -0.6]	2004-2007	-1.8	[-3.3; -0.1]	2004-2010
	0.9	[0.2; 1.7]	2007-2013	3.6	[0.0; 7.2]	2010-2013
Incidence by age group and region	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	0.6	[-0.7; 1.8]	2004-2013	1.7	[-0.7; 4.1]	2004-2013
	-1.6	[-3.1; -0.1]	2004-2011			
	8.7	[2.3; 15.5]	2011-2013			
Flemish Region	0.9	[-0.1; 1.8]	1999-2013	1.9	[0.1; 3.7]	1999-2013
Brussels-Capital Region	1.4	[-6.7; 10.3]	2004-2013	-1.2	[-5.9; 3.7]	2004-2013
Walloon Region	0.1	[-1.7; 2.0]	2004-2013	1.9	[0.1; 3.7]	2004-2013
	-3.7	[-5.9; -1.5]	2004-2011			
	15.0	[5.1; 25.8]	2011-2013			
50-74 Year						
Belgium	0.2	[-0.7; 1.1]	2004-2013	0.3	[-0.1; 0.7]	2004-2013
Flemish Region	0.9	[0.3; 1.5]	1999-2013	1.7	[1.2; 2.2]	1999-2013
				9.5	[5.3; 13.9]	1999-2001
				0.5	[-0.1; 1.0]	2001-2013
Brussels-Capital Region	-1.7	[-5.0; 1.8]	2004-2013	-0.9	[-4.0; 2.3]	2004-2013
Walloon Region	-0.8	[-1.4; -0.1]	2004-2013	0.1	[-1.4; 1.6]	2004-2013
	-3.3	[-5.2; -1.4]	2004-2007	-2.1	[-4.3; 0.2]	2004-2010
	4.7	[2.8; 6.6]	2007-2010	4.5	[-0.6; 9.7]	2010-2013
	-3.4	[-5.3; -1.5]	2010-2013			
75+						
Belgium	-0.4	[-0.7; -0.1]	2004-2013	-0.2	[-0.7; 0.3]	2004-2013
Flemish Region	0.8	[0.3; 1.3]	1999-2013	0.3	[-0.2; 0.7]	1999-2013
	2.7	[1.4; 3.9]	1999-2006			
	-1.0	[-2.2; 0.2]	2006-2013			
Brussels-Capital Region	0.6	[-2.0; 3.2]	2004-2013	-2.0	[-4.6; 0.6]	2004-2013
Walloon Region	0.4	[-1.0; 1.8]	2004-2013	-1.1	[-2.0; -0.2]	2004-2013
	-1.7	[-3.9; 0.4]	2004-2010			
	4.8	[0.1; 9.7]	2010-2013			
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-1.5	[-2.1; -0.8]	2004-2012	-2.2	[-3.5; -0.9]	2004-2012
	-0.1	[-1.6; 1.5]	2004-2008			
	-2.8	[-4.3; -1.3]	2008-2012			
Flemish Region	-2.2	[-2.7; -1.6]	1999-2012	-2.0	[-2.6; -1.3]	1999-2012
Brussels-Capital Region	0.2	[-0.8; 1.2]	1999-2012	-1.3	[-3.2; 0.7]	1999-2012
Walloon Region	-0.8	[-3.7; 2.2]	2004-2012	-1.6	[-3.6; 0.4]	2004-2012

	Males			Females		
Incidence by stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Stage I	5.7	[4.3; 7.2]	2004-2013	6.9	[5.4; 8.4]	2004-2013
Stage II	-0.6	[-1.3; 0.0]	2004-2013	-0.1	[-1.3; 1.1]	2004-2013
	-2.2	[-4.2; -0.1]	2004-2007			
	4.0	[2.0; 6.0]	2007-2010			
	-3.5	[-5.5; -1.5]	2010-2013			
Stage III	0.8	[-0.5; 2.2]	2004-2013	1.5	[0.7; 2.3]	2004-2013
Stage IV	1.2	[0.4; 2.0]	2004-2013	1.9	[1.0; 2.9]	2004-2013
				4.2	[1.8; 6.7]	2004-2008
				0.1	[-1.7; 2.0]	2008-2013
Stage unknown	-10.5	[-11.6; -9.4]	2004-2013	-10.6	[-12.1; -9.1]	2004-2013
	-8.8	[-10.2; -7.4]	2004-2011			
	-16.2	[-21.1; -11.1]	2011-2013			
Incidence by age group and stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Stage I	7.4	[2.2; 12.7]	2004-2013	9.9	[5.5; 14.4]	2004-2013
Stage II	-0.7	[-4.9; 3.7]	2004-2013	0.3	[-3.2; 3.9]	2004-2013
Stage III	0.7	[-3.7; 5.3]	2004-2013	5.1	[2.3; 8.1]	2004-2013
Stage IV	2.0	[-2.8; 7.0]	2004-2013	2.5	[-1.1; 6.2]	2004-2013
Stage unknown	-14.1	[-19.1; -8.8]	2004-2013	-12.9	[-19.3; -6.0]	2004-2013
50-74 Year						
Stage I	5.0	[3.0; 7.0]	2004-2013	5.6	[3.7; 7.5]	2004-2013
Stage II	-0.3	[-2.3; 1.7]	2004-2013	-0.5	[-2.1; 1.1]	2004-2013
	-3.6	[-12.5; 6.3]	2004-2006			
	0.6	[-1.9; 3.2]	2006-2013			
Stage III	0.8	[-0.7; 2.4]	2004-2013	1.1	[0.2; 2.0]	2004-2013
Stage IV	0.8	[-0.1; 1.8]	2004-2013	1.7	[0.7; 2.6]	2004-2013
				3.9	[1.6; 6.4]	2004-2008
				-0.1	[-1.9; 1.7]	2008-2013
Stage unknown	-9.0	[-10.6; -7.3]	2004-2013	-10.4	[-13.4; -7.4]	2004-2013
75+						
Stage I	4.7	[3.3; 6.1]	2004-2013	4.2	[1.3; 7.1]	2004-2013
Stage II	0.3	[-0.4; 1.0]	2004-2013	0.5	[-0.8; 1.8]	2004-2013
	1.5	[-0.2; 3.2]	2004-2008			
	-0.7	[-2.0; 0.7]	2008-2013			
Stage III	0.2	[-1.4; 1.9]	2004-2013	0.3	[-1.9; 2.5]	2004-2013
Stage IV	1.9	[0.4; 3.5]	2004-2013	2.6	[0.4; 5.0]	2004-2013
Stage unknown	-10.7	[-12.4; -9.0]	2004-2013	-8.9	[-11.1; -6.6]	2004-2013
	-15.1	[-22.6; -6.9]	2004-2006			
	-9.4	[-11.6; -7.2]	2006-2013			

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 11 Colon cancer: Relative survival by cohort and sex, Belgium 2004-2013

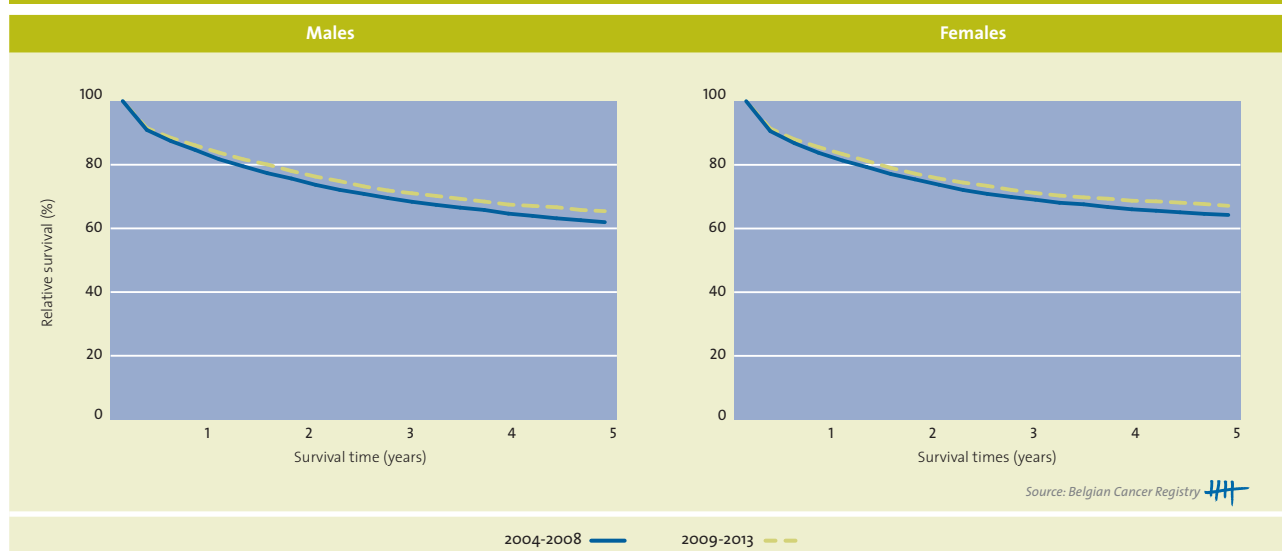
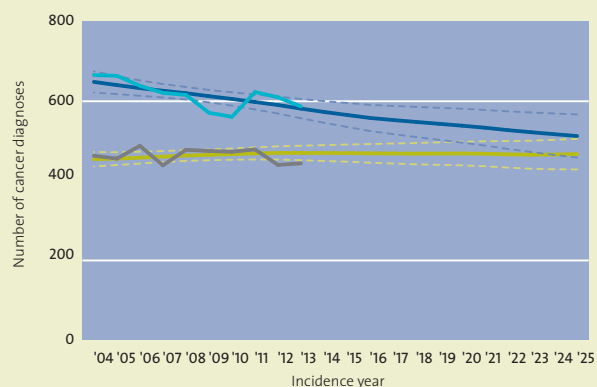


Figure 12 Colon cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 13 Colon cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025




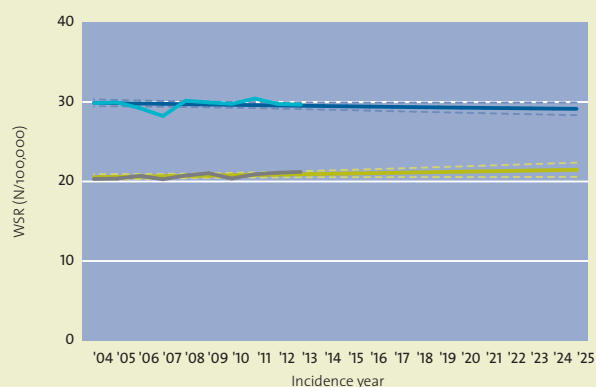
Source: Belgian Cancer Registry 

Figure 14 Colon cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry 

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also ...

- Collects information of all colorectal samples in the cyto-histopathological registry, enriched with reimbursement data relevant for colorectal cancer screening, which are obtained from the Intermutualistic Agency (IMA/AIM).
 - Based on this joined information, 363,384 (26.5%) persons of the eligible population in 2014 did not receive an unnecessary screening invitation for the Flemish screening program.
 - In 2013, 79.3% of the participants in the Flemish screening program with a positive stool test underwent a colonoscopy within the subsequent year. In 46.4% of these patients, an adenoma with low grade dysplasia was found during the colonoscopy, in 7% an in situ cancer and in 8.2% an invasive cancer.
 - Further reading see: newsletter coding colorectal lesions (www.kankerregister.org/Statistieken_publicaties - www.registreducancer.org/Statistiques_publications) and annual report Flemish screening program (<https://www.bevolkingsonderzoek.be/>).
- Is a partner in the Transcan Eranet Highcare study, financed by the Research Foundation – Flanders (FWO) and in collaboration with the Katholieke Universiteit Leuven.
- Participates in EURECCA (European Registration of Cancer Care) on colorectal cancer. The proportion of adjuvant chemotherapy for stage III colon cancer patients of 80 years and older varied between 0.9% (Sweden), 5.4% (Netherlands), 6.0% (Germany), 10.7% (Denmark) and 23.4% (Belgium); however, a treatment strategy with a higher proportion of chemotherapy did not result in a better relative survival. Further reading see:
 - Bastiaannet E, Breugom A, Kiderlen M, Iversen L, Martling A, Johansson R, **Van Eycken E**, **Vandendael T**, Mroczkowski P, Lippert H, Rutten H, Liefers GJ, Lemmens V, Boelens P, Van de Velde C. EURECCA international comparison of treatment and survival in patients over the age of 80 years with stage III colon cancer. Poster presentation on The European Cancer Congress 2015 (September 2015); Abstract number 2005.

!!Key note for registration:

8240/3: Carcinoid; low grade/ well-differentiated neuroendocrine tumour/carcinoma.

Always behaviour/3 (exception for carcinoid less than 0,5 mm, confined to mucosa in stomach: behaviour/2 and Tis).

Carcinoid tumours occur most frequently (50 %) in the small intestine, appendix or proximal colon. 25 % arise in lung, thymus, stomach or duodenum. Another 15 % arise in the distal colon or rectum. Other sites of origin include the gallbladder, kidney, liver, pancreas, ovary and testis.

TNM OF NEURO-ENDOCRINE TUMOURS/CARCINOMAS

- Lung and pancreas: according to the criteria used for carcinomas at these sites
- Gastrointestinal: separate site specific TNM-classifications, only for carcinoid and atypical carcinoid; high grade neuro-endocrine carcinomas should be classified according to criteria for classifying carcinomas at the respective site.

TNM:

Intramucosal carcinoma (even with rupture of the basal membrane hence with invasive characteristics) – only in COLORECTUM - is still considered to be pTis, behaviour/2.

pT1 and behaviour/3 if invasion of **sub**mucosa.

Tumours in a different colon segment are considered multiple tumours, each with their own TNM and treatment.

Try to find and specify the exact localisation (the code for the exact localisation of the primary tumour does not necessarily correspond to the code according to the surgical procedure).

E.g. Right hemicolectomy (C18.2) is possible for a tumour in caecum (C18.0), appendix (C18.1), colon ascendens (C18.2), hepatic flexure (C18.3) or the right part of the colon transversum (C18.4).

C19.9 for rectosigmoid (15-17 cm measured from the anal verge) has to be used sparingly: try to know if the recto-sigmoidectomy was meant to remove either a low sigmoidal tumour (C18.7) or a high rectal tumour (C20).

3.3.4 RECTUM (ICD-10: C20)

Table 1 Rectal cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Rectal cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	1,489	27.3	14.2	960	17.0	7.7
Flemish Region	963	30.6	14.7	599	18.5	8.1
Brussels-Capital Region	78	13.9	10.0	72	12.1	6.7
Walloon Region	448	25.8	14.0	289	15.8	7.3
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	323	6.0	2.7	231	4.1	1.3
Flemish Region	199	6.3	2.6	139	4.3	1.3
Brussels-Capital Region	20	3.6	2.2	17	2.9	1.1
Walloon Region	104	6.0	2.9	75	4.1	1.5
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	5,326	97.8	50.8	3,356	59.4	27.3
Flemish Region	3,504	111.2	53.7	2,092	64.8	28.6
Brussels-Capital Region	292	52.0	36.5	228	38.5	21.1
Walloon Region	1,530	88.2	48.4	1,036	56.7	26.8
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	8,219	150.9	76.3	5,520	97.7	43.2
Flemish Region	5,505	174.7	82.2	3,483	107.8	45.4
Brussels-Capital Region	436	77.6	52.8	359	60.5	32.4
Walloon Region	2,278	131.3	70.0	1,678	91.8	41.9
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	7,380	66.8%	[65.1; 68.4]	4,719	66.7%	[64.7; 68.7]
Flemish Region	4,791	67.9%	[65.8; 69.9]	2,860	68.0%	[65.4; 70.5]
Brussels-Capital Region	436	64.8%	[57.7; 71.4]	360	62.4%	[55.1; 69.3]
Walloon Region	2,153	64.7%	[61.5; 67.8]	1,499	65.3%	[61.7; 68.8]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	1,854 [1,823; 1,885]	14.5 [14.3; 14.8]		1,116 [1,093; 1,139]	7.9 [7.7; 8.1]	

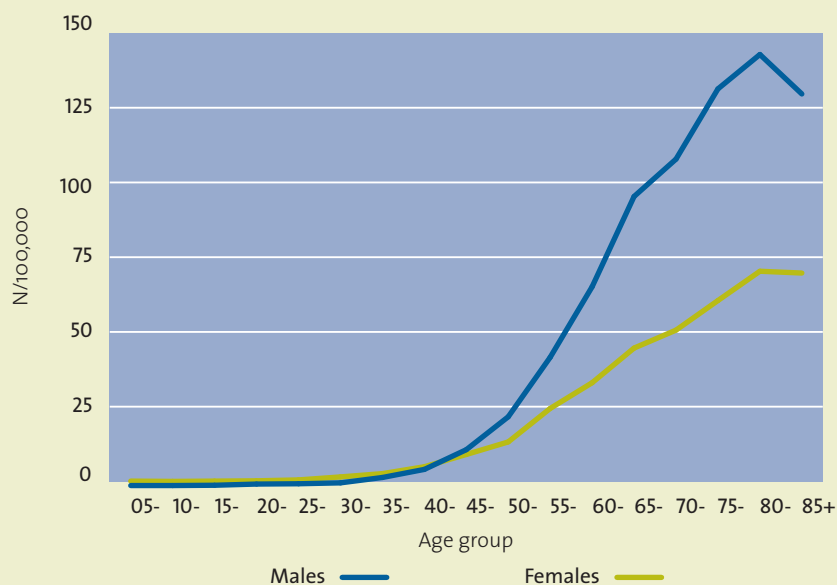
CR, crude rate (N/100,000 person years)

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

- Rectal cancer burden in Belgium (**Table 1**):
 - 2,449 new diagnoses of rectal cancer in 2013, 61% males and 39% females.
 - 554 deaths due to rectal cancer in 2012, 58% males and 42% females.
 - 13,739 persons (0.12% of the total Belgian population) are alive on 31/12/2013 after being diagnosed with rectal cancer between 2004 and 2013.
 - Over time, mortality rates are decreasing in both sexes (**Figure 7 and Table 2**), while incidence remains stable
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 67% in males and females. An increase in the relative survival proportion for rectal cancer is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Table 1, Figure 11**).
 - By 2025, the number of patients diagnosed with rectal cancer is expected to rise to more than 2,900. The increase is mainly due to the ageing and growth of the population (**Table 1, Figure 13 and 14**). The evolution of the screening programmes on colon cancer, launched in 2009 in Wallonia and Brussels, and in 2013 in Flanders, will also have an influence on the number of actual cases diagnosed by 2025.
- Males and females show a different risk pattern with age. The incidence rates remain stable over time in the different age groups but the risk in males and females is different (**Figure 1 and 8 and Table 2**).
 - Age group 30-49 years:
 - Males have a higher risk than females (M/F ratio = 1.2).
 - Age group 50-74 years:
 - Males have a twofold higher risk than females (M/F ratio = 1.9).
 - Age group 75+:
 - Males have a twofold higher risk than females (M/F ratio = 2.1).

- Among cases with a known stage, about half of all rectal cancers are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage was always quite high (87% in 2004-2006), and improved even further to 92% in 2010-2013.
 - There are no major regional differences in stage distribution.
 - There is no difference in stage distribution between males and females.
 - Even in younger patients, half of all cancer diagnoses are stage III or IV.

Figure 1 Rectal cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013.




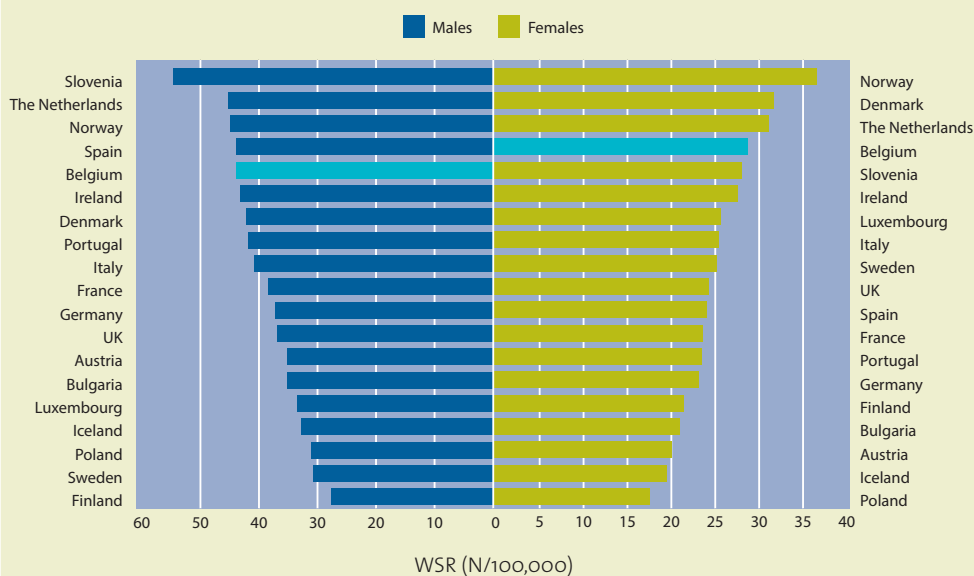
Source: Belgian Cancer Registry 

Figure 2 Colorectal cancer (C18-C20): Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)




Source: Belgian Cancer Registry 

Figure 3 Colorectal cancer (C18-C20): Age-standardised incidence and mortality (WSR) by sex in Belgium

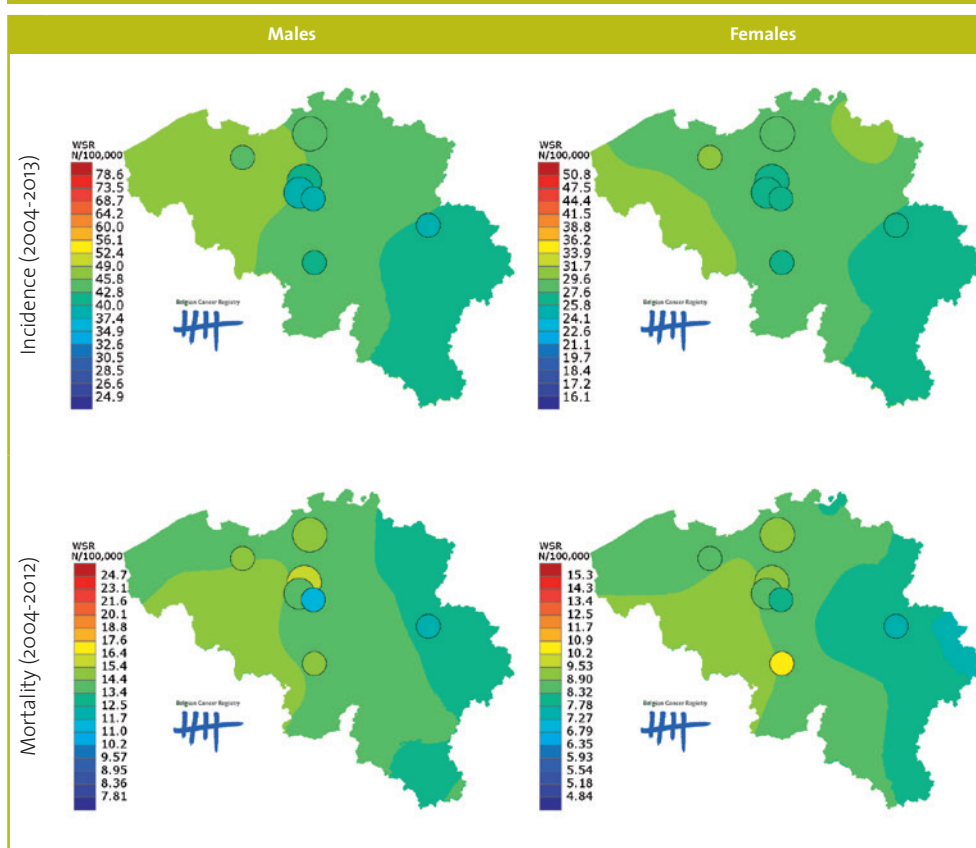
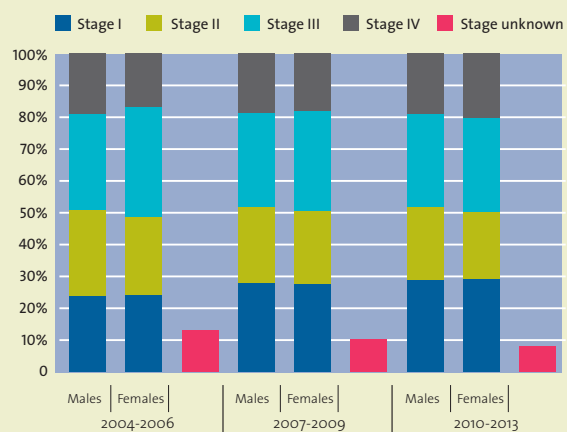
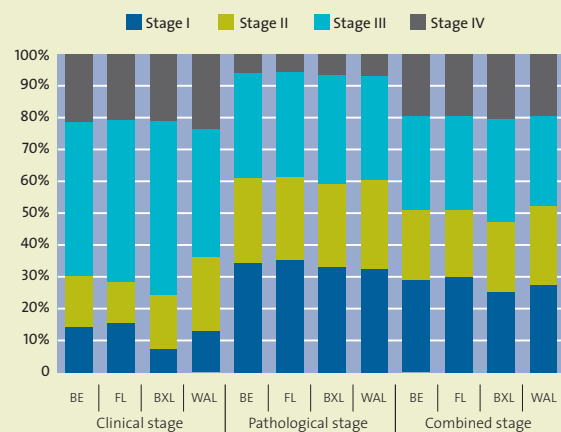


Figure 4 Rectal cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

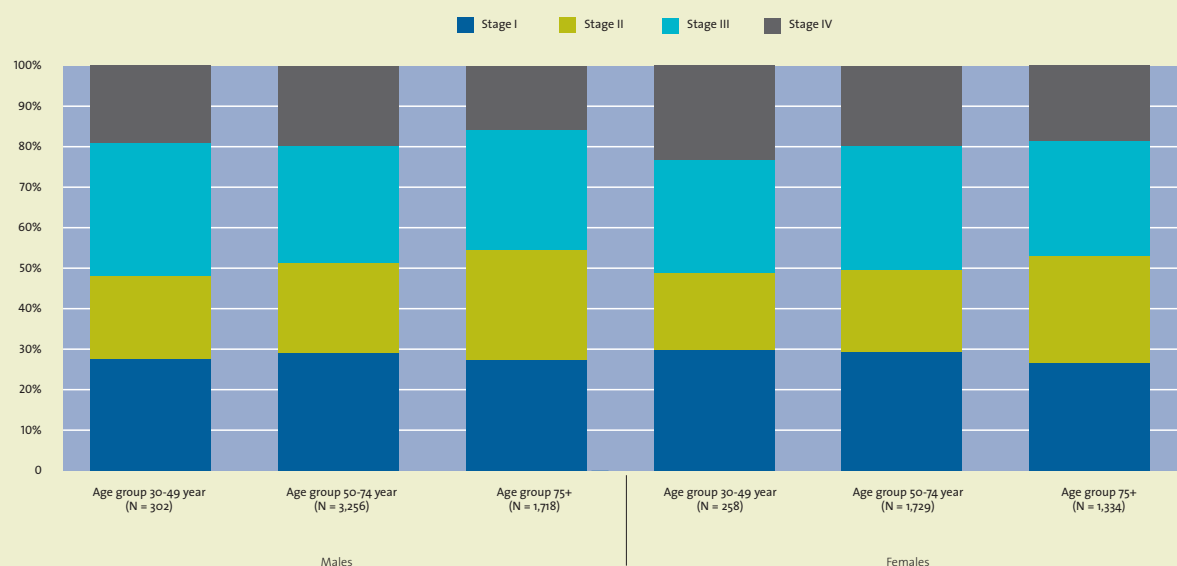


Source: Belgian Cancer Registry

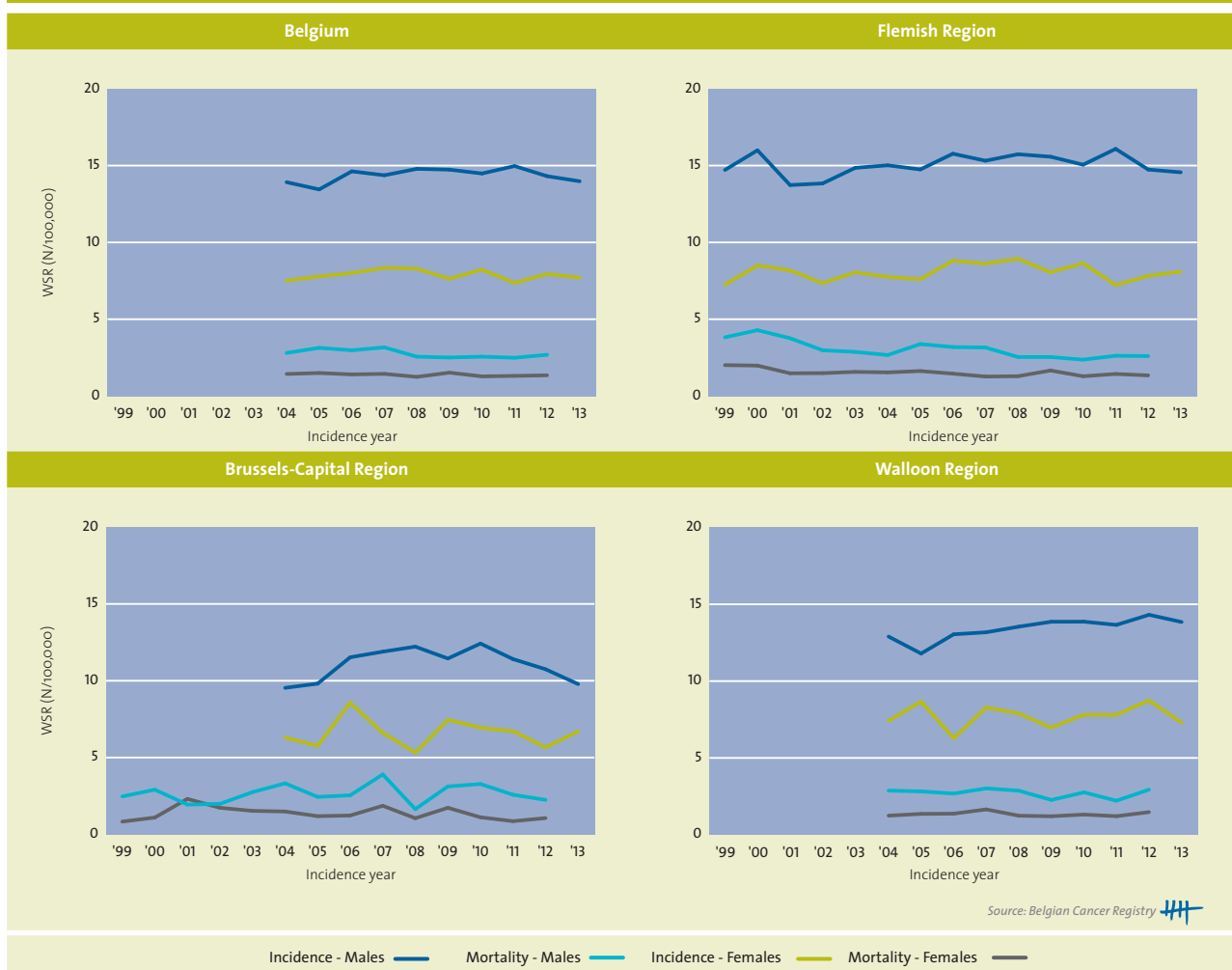
Figure 5 Rectal cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Rectal cancer: stage distribution by sex and age group, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Rectal cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Source: Belgian Cancer Registry

Figure 8 Rectal cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

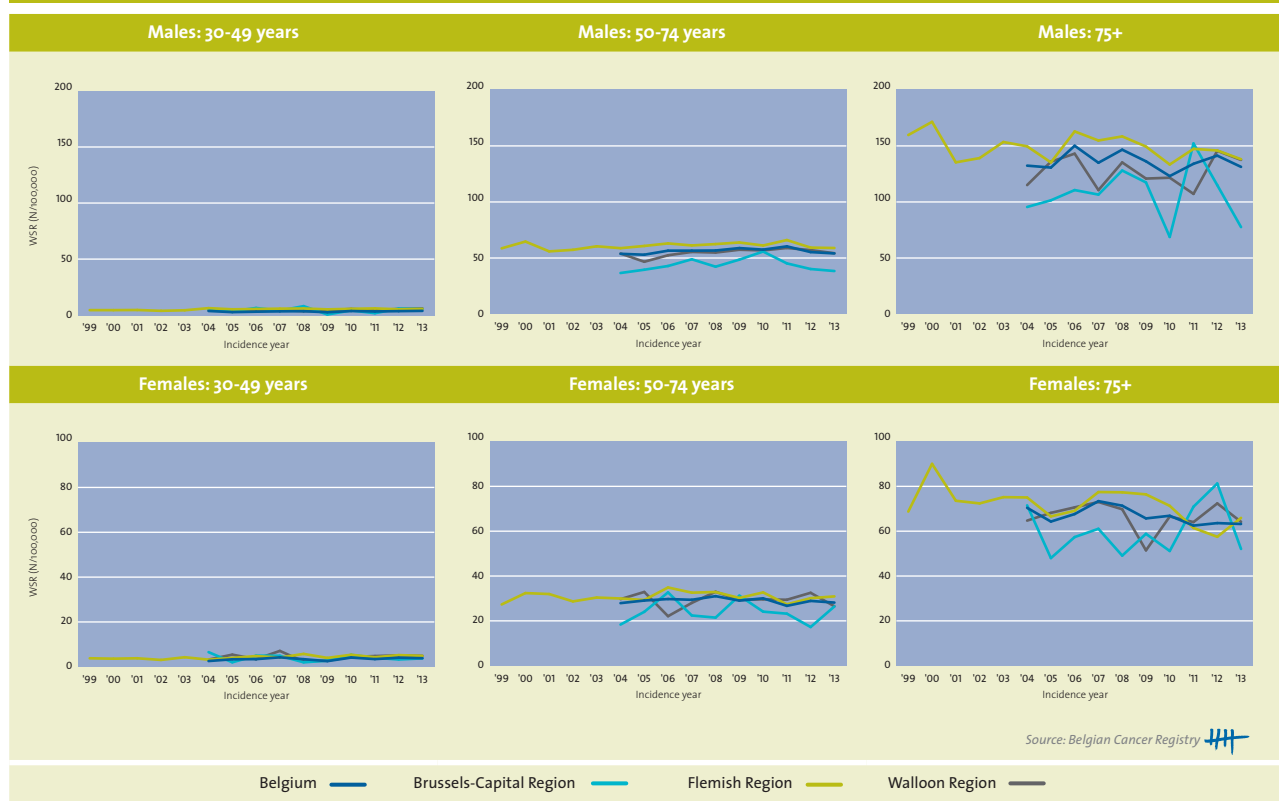


Figure 9 Rectal cancer: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013

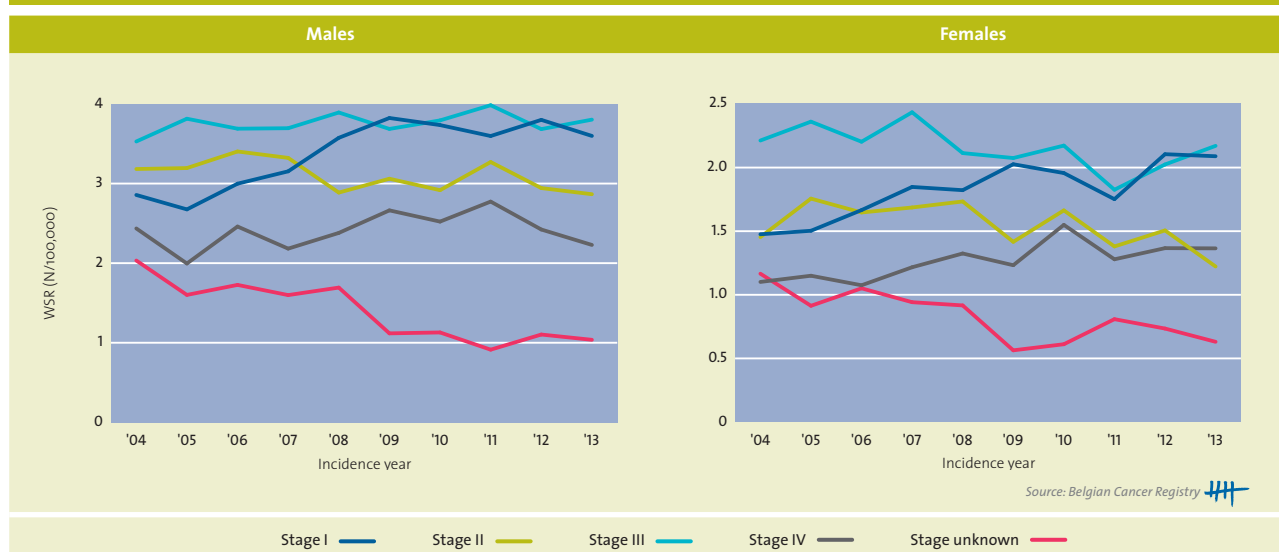


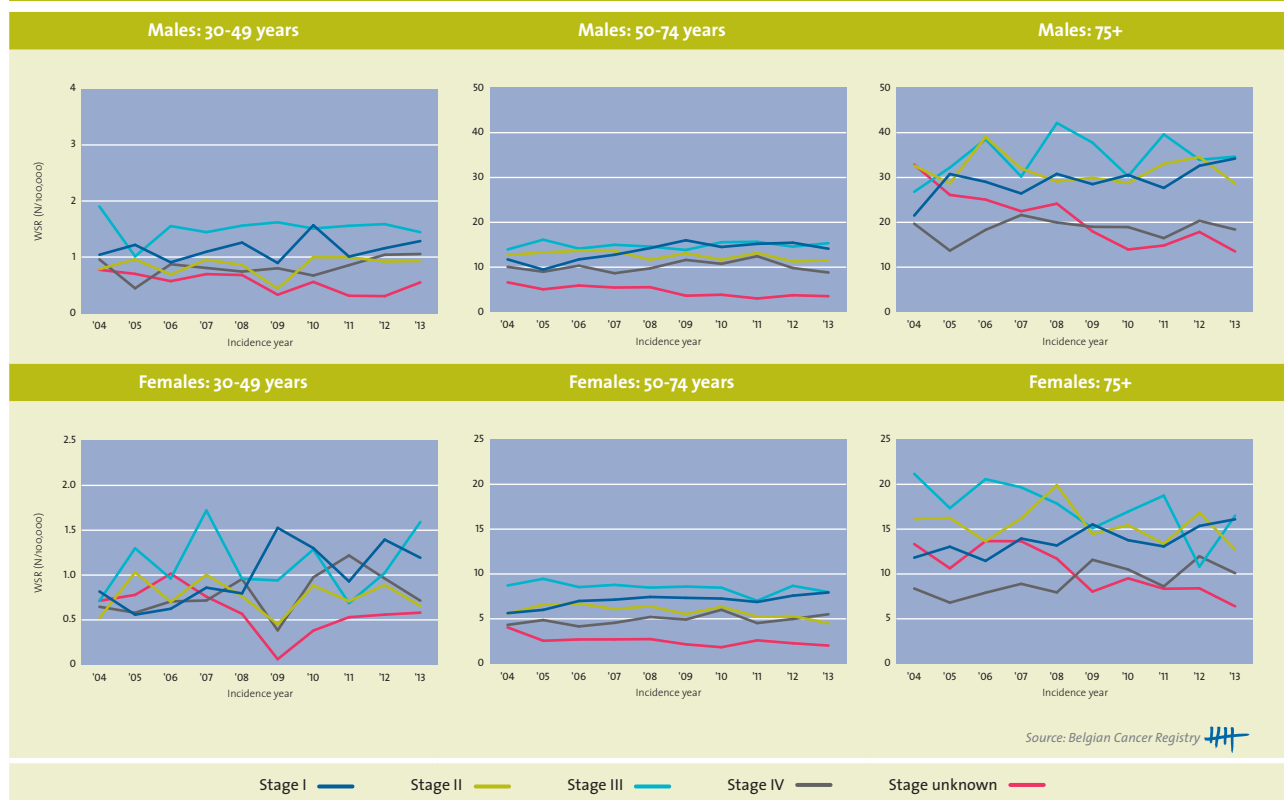
Figure 10 Rectal cancer: Trends in age-standardised incidence (WSR) by stage, age group and sex, Belgium 2004-2013

Table 2 Rectal cancer: AAPC(%) by sex, region, age group and stage in Belgium

Rectal cancer	Males			Females		
Incidence by region	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	0.3	[-0.3; 0.9]	2004-2013	-0.1	[-1.2; 1.0]	2004-2013
	1.6	[0.4; 2.9]	2004-2009			
	-1.3	[-2.8; 0.2]	2009-2013			
Flemish Region	0.3	[-0.3; 0.9]	1999-2013	0.3	[-0.7; 1.2]	1999-2013
Brussels-Capital Region	0.8	[-0.5; 2.0]	2004-2013	-0.2	[-3.8; 3.6]	2004-2013
	7.2	[4.0; 10.5]	2004-2008			
	-4.1	[-6.4; -1.8]	2008-2013			
Walloon Region	1.4	[0.6; 2.3]	2004-2013	0.4	[-2.2; 3.1]	2004-2013
Incidence by age group and region	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	0.9	[-1.2; 3.1]	2004-2013	2.2	[-1.1; 5.6]	2004-2013
Flemish Region	2.0	[0.7; 3.3]	1999-2013	2.8	[1.0; 4.7]	1999-2013
	4.0	[1.4; 6.6]	1999-2007			
	-0.6	[-4.0; 2.8]	2007-2013			
Brussels-Capital Region	-3.0	[-21.1; 19.2]	2004-2013	-1.3	[-11.3; 9.9]	2004-2013
Walloon Region	4.8	[1.2; 8.5]	2004-2013	2.3	[-6.3; 11.7]	2004-2013
50-74 Year						
Belgium	0.2	[-0.5; 0.9]	2004-2013	-0.2	[-1.1; 0.7]	2004-2013
	1.7	[0.6; 2.8]	2004-2010	1.7	[-0.6; 4.0]	2004-2008
	-2.8	[-4.9; -0.5]	2010-2013	-1.7	[-3.4; 0.0]	2008-2013
Flemish Region	0.3	[-0.3; 0.9]	1999-2013	0.2	[-0.8; 1.1]	1999-2013
Brussels-Capital Region	1.6	[-1.2; 4.4]	2004-2013	-0.1	[-5.3; 5.4]	2004-2013
	11.0	[1.3; 21.7]	2004-2007			
	-2.9	[-7.0; 1.4]	2007-2013			
Walloon Region	1.3	[-0.1; 2.7]	2004-2013	0.2	[-2.9; 3.5]	2004-2013
75+						
Belgium	-0.3	[-1.8; 1.2]	2004-2013	-1.1	[-2.2; 0.1]	2004-2013
Flemish Region	-0.6	[-1.5; 0.4]	1999-2013	-1.3	[-2.5; -0.1]	1999-2013
Brussels-Capital Region	-0.5	[-6.4; 5.8]	2004-2013	0.9	[-3.7; 5.8]	2004-2013
Walloon Region	0.5	[-2.4; 3.4]	2004-2013	-0.4	[-3.0; 2.2]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-2.3	[-4.5; -0.1]	2004-2012	-1.3	[-3.2; 0.6]	2004-2012
Flemish Region	-3.4	[-4.9; -1.9]	1999-2012	-2.4	[-3.9; -0.9]	1999-2012
Brussels-Capital Region	0.7	[-2.7; 4.3]	1999-2012	-1.6	[-5.8; 2.8]	1999-2012
Walloon Region	-1.4	[-4.7; 1.9]	2004-2012	-0.1	[-3.4; 3.2]	2004-2012

Incidence by stage	Males			Females		
	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Stage I	3.5	[2.3; 4.7]	2004-2013	3.7	[1.9; 5.4]	2004-2013
	6.9	[4.6; 9.3]	2004-2009			
	-0.6	[-3.4; 2.3]	2009-2013			
Stage II	-1.2	[-2.5; 0.1]	2004-2013	-1.8	[-4.0; 0.5]	2004-2013
				4.3	[-3.4; 12.6]	2004-2007
				-4.7	[-8.0; -1.2]	2007-2013
Stage III	0.5	[-0.3; 1.3]	2004-2013	-1.5	[-3.2; 0.2]	2004-2013
Stage IV	1.0	[-1.4; 3.5]	2004-2013	2.9	[0.9; 4.8]	2004-2013
Stage unknown	-7.8	[-10.6; -4.8]	2004-2013	-6.0	[-9.8; -2.0]	2004-2013
Incidence by age group and stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Stage I	1.7	[-2.5; 6.0]	2004-2013	8.4	[2.2; 15.1]	2004-2013
Stage II	1.6	[-4.9; 8.5]	2004-2013	0.1	[-6.8; 7.5]	2004-2013
Stage III	0.5	[-3.6; 4.8]	2004-2013	1.8	[-6.0; 10.3]	2004-2013
Stage IV	3.9	[-2.1; 10.3]	2004-2013	4.5	[-3.5; 13.1]	2004-2013
Stage unknown	-7.8	[-14.1; -1.0]	2004-2013	-6.8	[-23.6; 13.6]	2004-2013
50-74 Year						
Stage I	3.9	[1.7; 6.2]	2004-2013	3.9	[2.9; 4.8]	2004-2013
	8.1	[3.6; 12.8]	2004-2009	9.4	[6.5; 12.3]	2004-2007
	-1.1	[-6.3; 4.5]	2009-2013	-1.1	[-3.0; 0.8]	2007-2011
				6.0	[1.7; 10.5]	2011-2013
Stage II	-1.5	[-3.1; -0.0]	2004-2013	-2.7	[-4.6; -0.6]	2004-2013
				1.7	[-3.4; 7.1]	2004-2008
				-6.0	[-9.8; -2.1]	2008-2013
Stage III	0.4	[-0.9; 1.8]	2004-2013	-1.5	[-3.1; 0.2]	2004-2013
Stage IV	0.7	[-2.3; 3.9]	2004-2013	2.2	[-0.3; 4.7]	2004-2013
Stage unknown	-7.4	[-10.5; -4.0]	2004-2013	-5.1	[-8.8; -1.3]	2004-2013
75+						
Stage I	2.8	[0.3; 5.5]	2004-2013	2.8	[0.9; 4.8]	2004-2013
Stage II	-0.6	[-3.2; 2.1]	2004-2013	-1.5	[-4.6; 1.8]	2004-2013
Stage III	1.7	[-1.9; 5.3]	2004-2013	-3.9	[-7.7; -0.1]	2004-2013
Stage IV	0.7	[-2.6; 4.1]	2004-2013	4.3	[0.8; 7.9]	2004-2013
Stage unknown	-8.7	[-11.6; -5.7]	2004-2013	-7.1	[-10.4; -3.7]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 11 Rectal cancer: Relative survival by cohort and sex, Belgium 2004-2013

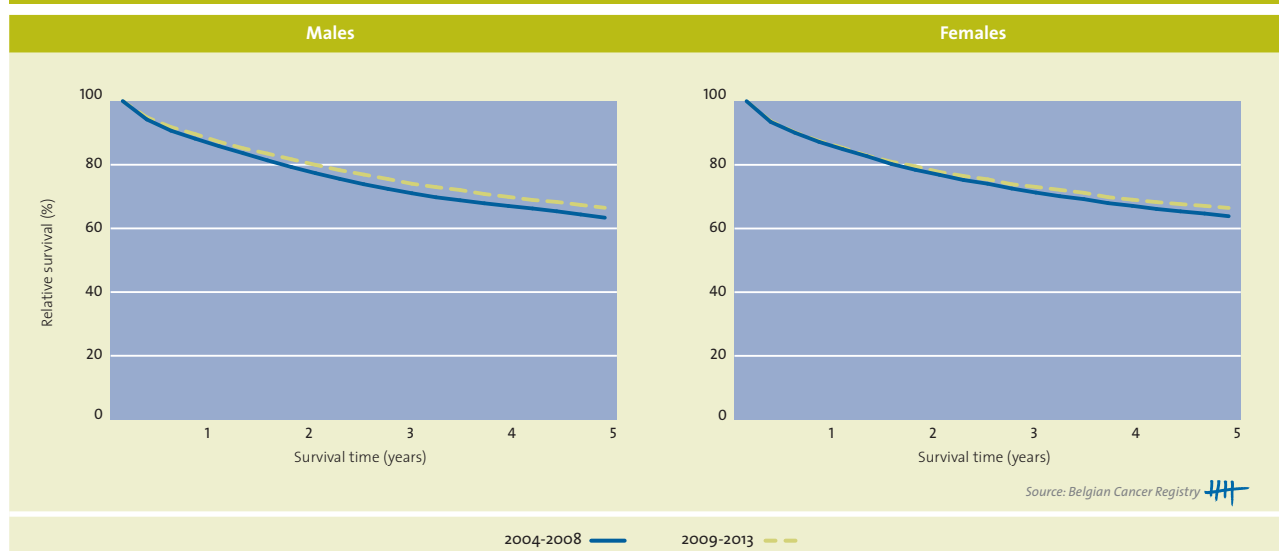
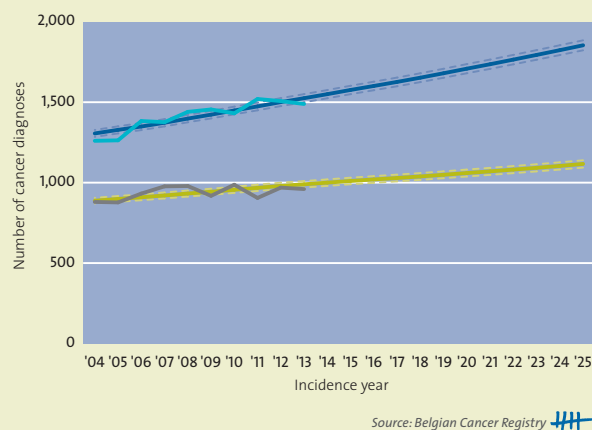
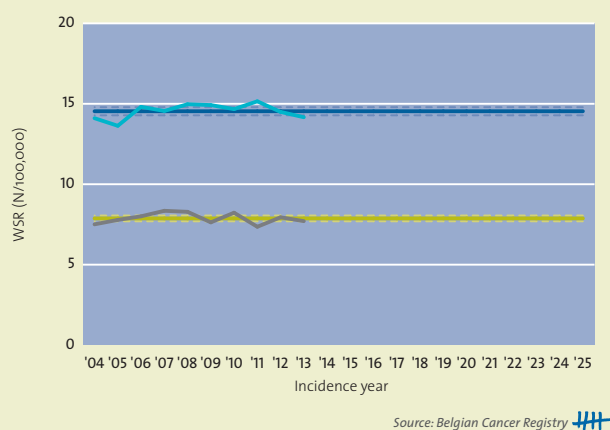


Figure 12 Rectal cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 13 Rectal cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025**Figure 14** Rectal cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025

Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

Did you know that the BCR also ...

- Conducts in collaboration with Kom op Tegen Kanker and 7 Flemish hospitals, a study in which Patient Reported Outcome Measures (PROMS) are used as a new methodology for the BCR. Of the 1,220 (ex-)colorectal patients who were invited to fill in a survey on quality of life, a total of 571 individuals returned the completed questionnaires (47%). Preliminary results were presented at the 3th Congress of Psychosocial Oncology – December 2015 (poster presentation): **Vandendael T, Van Hoof E, Van Damme N, Vande Look K**, Rommel W, Neefs H, Verhaegen H, **Emmerechts K, Van Eycken L**. Onderzoek naar levenskwaliteit bij colorectale (ex-)kankerpatiënten aan de hand van schriftelijke vragenlijsten.
- Was involved in PROCARE (PROject on Cancer of the REctum), a multidisciplinary project on rectal cancer. After 10 successful years and more than 7,600 registrations, the project ended in 2015. A final feedback was sent to all participating centres and revealed an unadjusted 5-year relative survival of 75.3 % for patients with radical resection for Belgium. Further reading see <http://procare.kankerregister.be/procare.aspx?url=Procare>.
- Demonstrated in the European Journal of Cancer that voluntary registration leads to biased results which gives a unique opportunity to have a national and compulsory registration for rectal cancer - further reading see:
 - **Jegou D, Penninckx F, Vandendael T, Bertrand C, Van Eycken E**; PROCARE. Completeness and registration bias in PROCARE, a Belgian multidisciplinary project on cancer of the rectum with participation on a voluntary basis. *Eur J Cancer* 2015; 51(9): 1099-1108.
- Developed a minimal dataset for the registration of rectal cancer in collaboration with the PROCARE steering group, enabling and promoting the transition from a project to a structural basis for registration.
- Is involved in the “Vlaams Indicatoren Project (VIP2)”, which aims to evaluate and to monitor the quality of care for rectal cancer in the Flemish hospitals. BCR is responsible for the calculation of the quality indicators both at the Flemish and at the hospital level.
- Is also evaluating the quality of care for rectal cancer in the Brussels Capital Region and in the Walloon Region. This initiative is launched together with the Foundation against Cancer.

!!Key note for registration:

TNM:

ypTNM is very frequent applicable (neo-adjuvant therapy before planned surgery); add “ypTNM” in a remark.

Rectum is 4-15 cm measured from the anal verge.

3.3.5 LIVER (ICD-10: C22)

Table 1 Liver cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Liver cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	615	11.3	6.2	255	4.5	2.2
Flemish Region	307	9.7	5.0	134	4.1	1.9
Brussels-Capital Region	55	9.8	7.5	23	3.9	2.5
Walloon Region	253	14.6	8.2	98	5.4	2.6
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	525	9.7	4.8	320	5.7	2.1
Flemish Region	270	8.6	4.0	158	4.9	1.9
Brussels-Capital Region	50	9.0	6.2	42	7.2	2.9
Walloon Region	205	11.9	6.1	120	6.6	2.3
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	1,013	18.6	10.4	409	7.2	3.9
Flemish Region	495	15.7	8.3	210	6.5	3.4
Brussels-Capital Region	114	20.3	15.0	41	6.9	4.2
Walloon Region	404	23.3	13.5	158	8.6	4.9
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	1,264	23.2	13.1	534	9.4	5.2
Flemish Region	622	19.7	10.5	281	8.7	4.6
Brussels-Capital Region	132	23.5	17.5	56	9.4	6.0
Walloon Region	510	29.4	17.1	197	10.8	6.2
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	2,617	21.0%	[18.9; 23.2]	1,103	19.9%	[16.8; 23.3]
Flemish Region	1,314	18.8%	[16.0; 21.8]	567	21.4%	[17.1; 26.0]
Brussels-Capital Region	275	21.8%	[15.6; 28.8]	124	16.0%	[7.3; 28.1]
Walloon Region	1,028	23.8%	[20.2; 27.5]	412	19.1%	[14.2; 24.6]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	1,272 [1,175; 1,370]	10.4 [9.6; 11.2]		435 [377; 492]	3.1 [2.6; 3.5]	

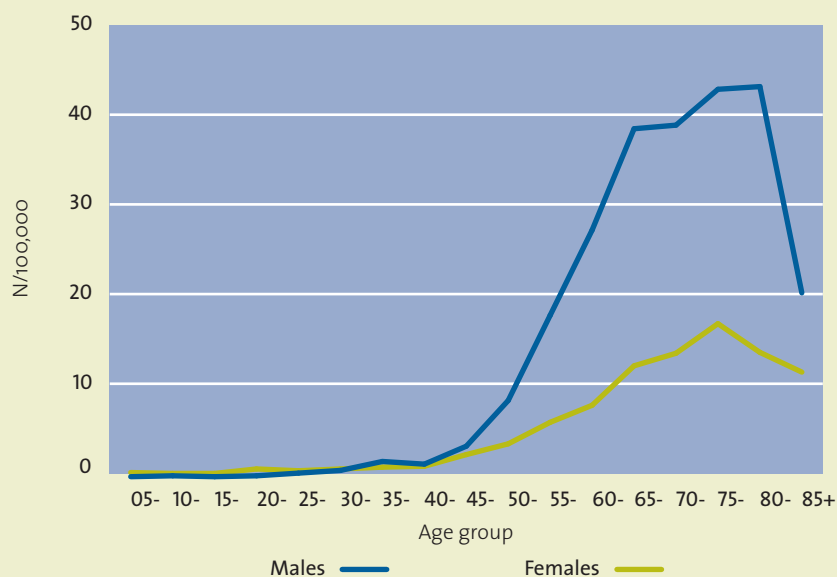
CR, crude rate (N/100,000 person years)

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

- Liver cancer burden in Belgium (**Table 1**):
 - 870 new diagnoses of cancer in 2013, 71% males and 29% females.
 - 845 deaths due to liver cancer in 2012, 62% males and 38% females.
 - 1,798 persons (0.02% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with liver cancer between 2004 and 2013.
 - Incidence (especially for hepatocellular carcinoma⁽ⁱ⁾) and mortality rates for male and female liver cancer increase from the north-northeast towards the south-southwest of Belgium (**Figure 3**).
 - Over time, incidence and mortality rates of liver cancer are increasing in males and females (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 21% in males and 20% in females. No clear trend in relative survival proportion over time can be observed for males. For females, the data suggest an increase in relative survival proportion in the more recent years in the Flemish Region (**Figure 10 and 11**).
 - By 2025, the number of patients diagnosed with liver cancer is expected to almost double to more than 1,700. The increase is due to a combination of the ageing and growth of the population and to the increasing risk over time in males and females (12 and 13).
- Males and females show a different risk pattern with age (**Figure 1 and 8 and Table 2**).
 - Age group 30-49 years:
 - Males have a higher risk than females (M/F ratio = 1.3).
 - The incidence rates in males and females are increasing.
 - Age group 50-74 years:
 - Males have a more than threefold higher risk than females (M/F ratio = 3.5).
 - The incidence rates in males and females are increasing.
 - Age group 75+:
 - Males have a more than twofold higher risk than females (M/F ratio = 2.6).
 - The incidence rates in males and females are increasing.

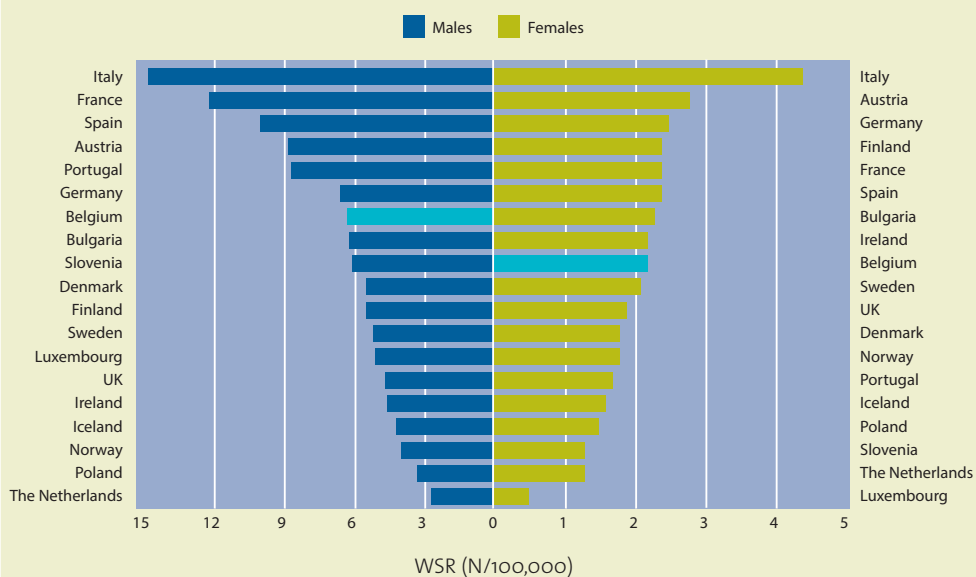
- More than half of all liver cancers with a known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage is low (60% in 2010-2013).
 - The higher amount of stage IV liver cancer in 2010-2013 compared to the previous incidence years is due to stage migration, related to changes between the 6th and 7th edition of the UICC-TNM classification.
 - Almost 70% of cholangiocarcinoma are diagnosed as stage IV.
 - The higher amount of stage IV liver cancer in females is related to the higher relative number of female cholangiocarcinoma. This subtype represents 28% of female liver cancer and only 14% of all male liver cancers.

Figure 1 Liver cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013



Source: Belgian Cancer Registry

Figure 2 Liver cancer: Comparison of age-standardised incidence rates (WSR).
(Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Liver cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

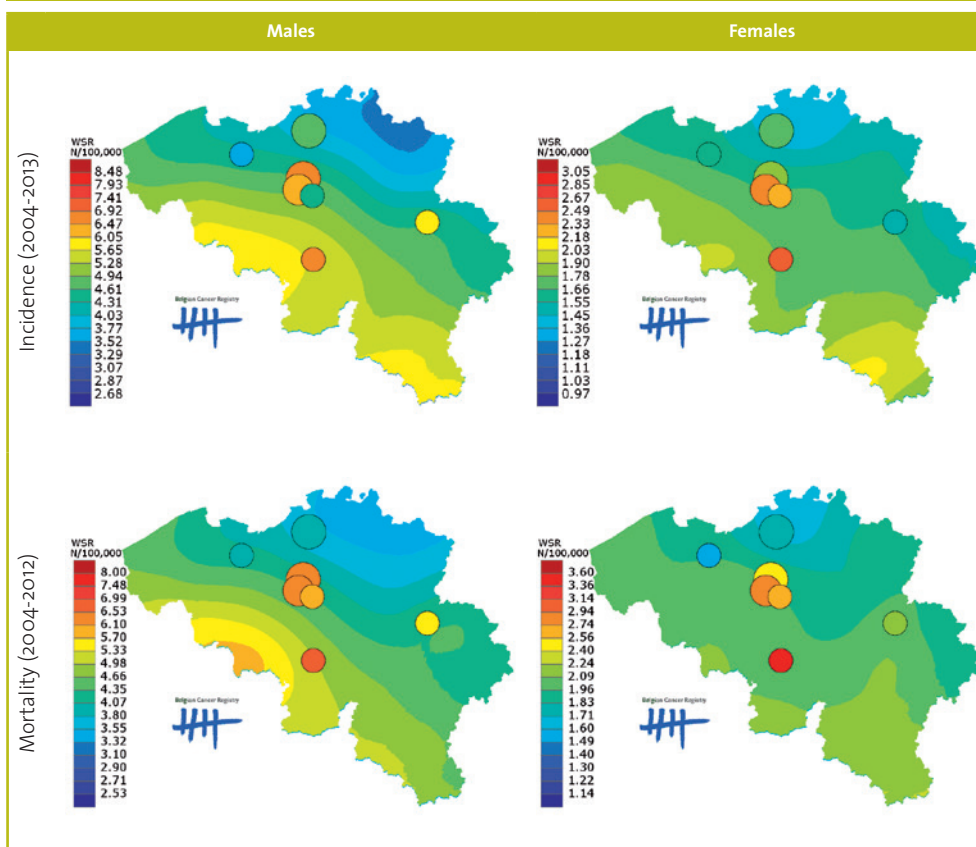
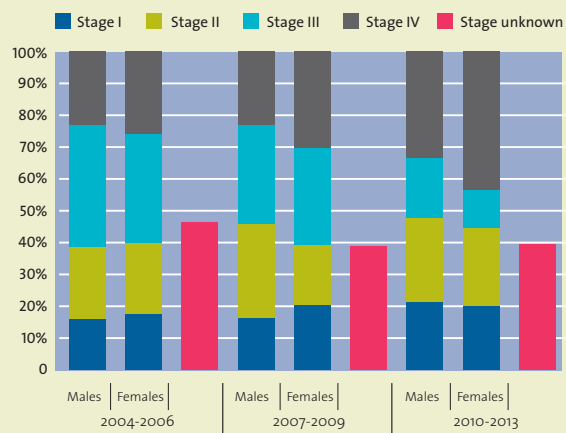
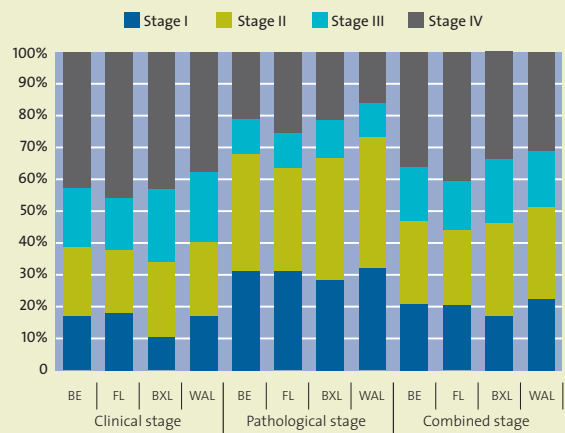


Figure 4 Liver cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

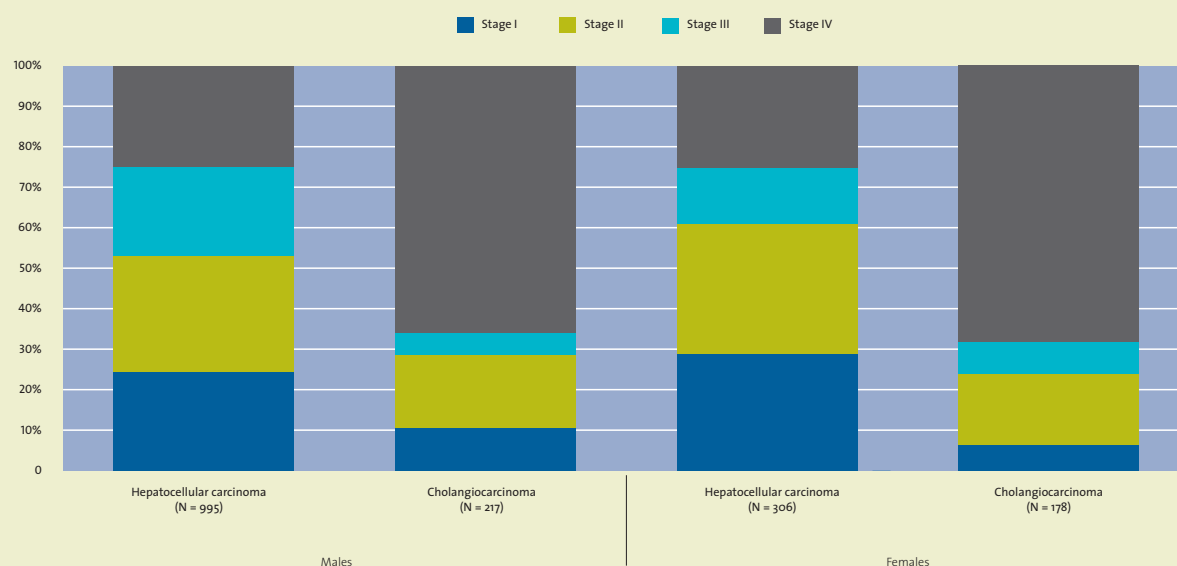


Source: Belgian Cancer Registry

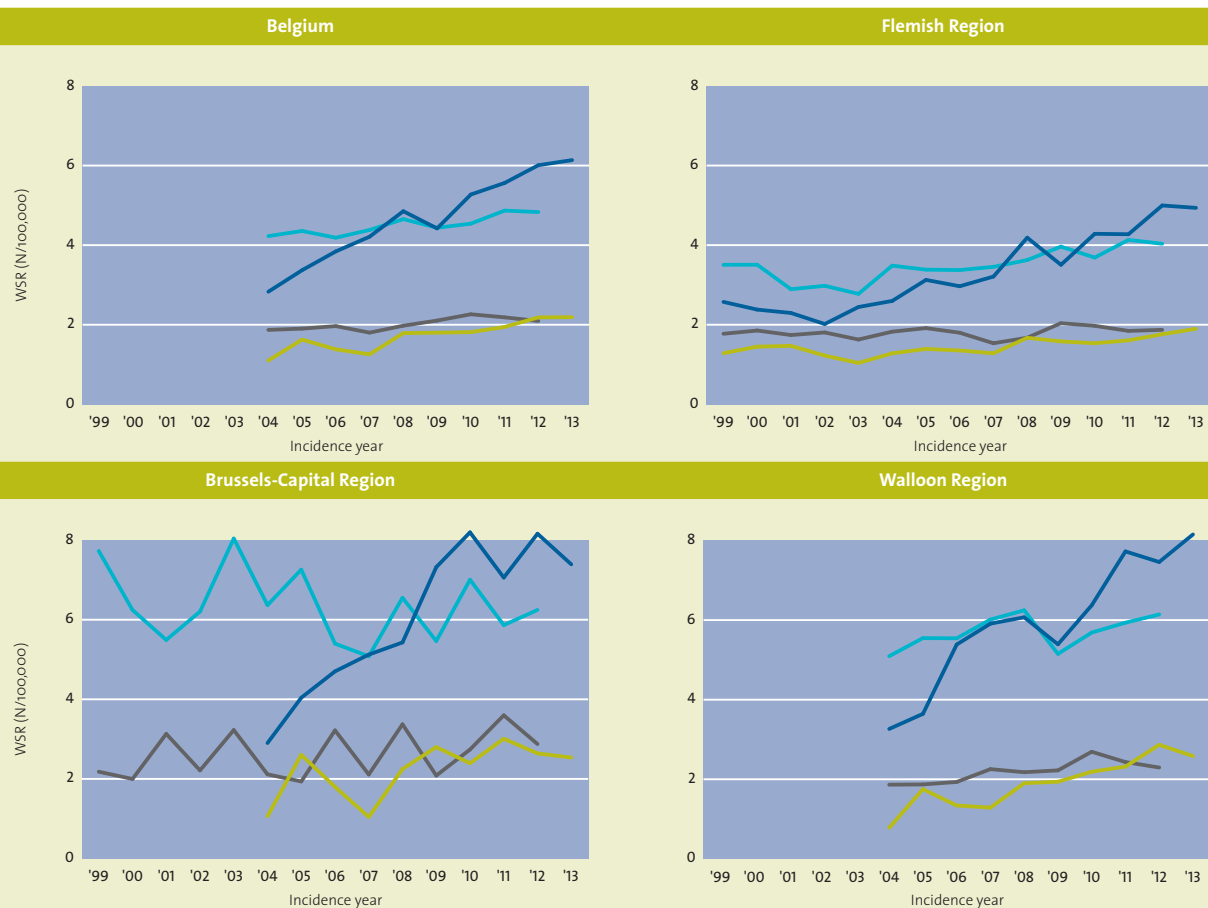
Figure 5 Liver cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Liver cancer: stage distribution by sex and histology, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Liver cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Source: Belgian Cancer Registry

Incidence - Males — Mortality - Males — Incidence - Females — Mortality - Females —

Figure 8 Liver cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013



Figure 9 Liver cancer: Trends in age-standardised incidence (WSR) by sex and histology, Belgium 2004-2013

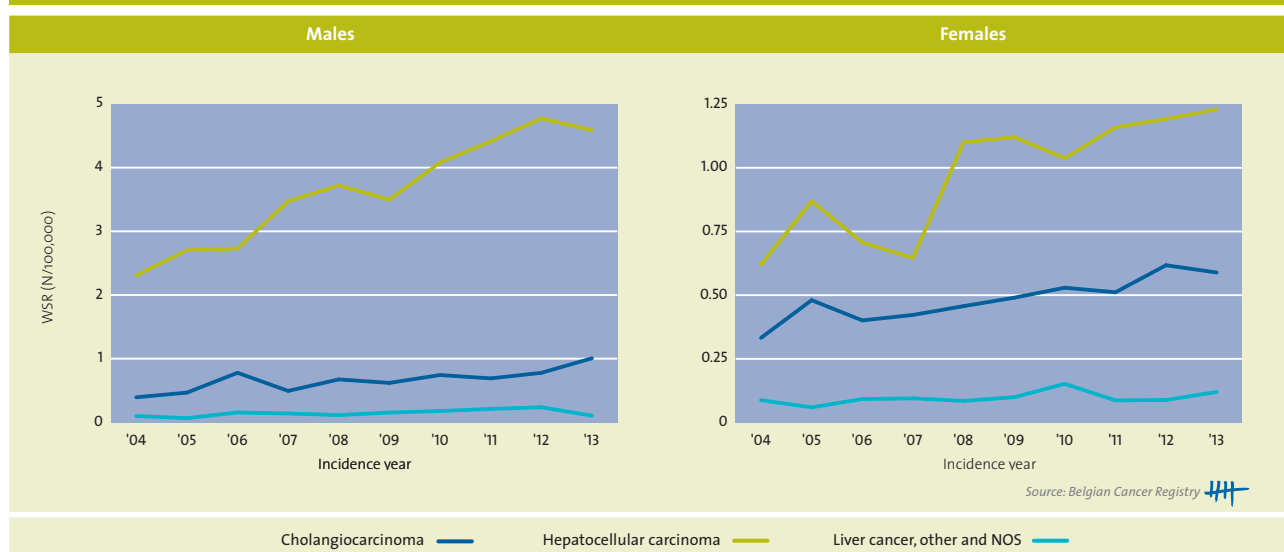


Table 2 Liver cancer: AAPC(%) by sex, region, histology and age group in Belgium

Liver cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	8.5	[7.1; 9.9]	2004-2013	6.9	[3.9; 10.1]	2004-2013
	12.0	[8.4; 15.7]	2004-2008			
	5.7	[3.1; 8.5]	2008-2013			
Flemish Region	5.2	[4.1; 6.3]	1999-2013	1.9	[0.7; 3.1]	1999-2013
	-4.1	[-9.2; 1.2]	1999-2002	-4.5	[-8.7; 0.0]	1999-2003
	7.9	[6.5; 9.3]	2002-2013	4.5	[2.8; 6.2]	2003-2013
Brussels-Capital Region	11.0	[7.9; 14.3]	2004-2013	8.3	[0.0; 17.3]	2004-2013
	19.3	[11.0; 28.2]	2004-2008			
	4.8	[-0.9; 10.9]	2008-2013			
Walloon Region	9.5	[6.1; 13.0]	2004-2013	11.9	[6.6; 17.5]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	1.8	[0.9; 2.6]	2004-2012	2.2	[0.7; 3.7]	2004-2012
Flemish Region	1.5	[0.6; 2.5]	1999-2012	0.5	[-0.6; 1.6]	1999-2012
	-3.3	[-6.7; 0.2]	1999-2003			
	3.8	[2.3; 5.3]	2003-2012			
Brussels-Capital Region	-0.9	[-2.9; 1.1]	1999-2012	2.0	[-1.1; 5.3]	1999-2012
Walloon Region	1.4	[-0.6; 3.4]	2004-2012	3.9	[1.6; 6.1]	2004-2012
Incidence by histology	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Cholangiocarcinoma	7.3	[3.1; 11.7]	2004-2013	5.4	[3.1; 7.7]	2004-2013
Hepatocellular carcinoma	8.6	[6.9; 10.3]	2004-2013	7.7	[3.8; 11.8]	2004-2013
	13.4	[7.7; 19.4]	2004-2007			
	6.2	[3.7; 8.8]	2007-2013			
Liver cancer, other and NOS	7.6	[-1.0; 16.9]	2004-2013	4.3	[-1.3; 10.1]	2004-2013
Incidence by age group	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	7.0	[2.2; 12.0]	2004-2013	9.0	[-2.0; 21.2]	2004-2013
Flemish Region	3.7	[0.4; 7.2]	1999-2013	10.4	[3.5; 17.6]	1999-2013
Brussels-Capital Region	17.1	[3.0; 33.0]	2004-2013	.	.	
Walloon Region	4.2	[-8.2; 18.3]	2004-2013	.	.	
50-74 Year						
Belgium	8.3	[7.1; 9.5]	2004-2013	7.1	[4.0; 10.3]	2004-2013
	11.7	[8.7; 14.8]	2004-2008			
	5.6	[3.4; 7.9]	2008-2013			
Flemish Region	7.2	[5.5; 8.9]	1999-2013	2.0	[0.5; 3.5]	1999-2013
				-5.2	[-11.2; 1.3]	1999-2002
				5.1	[2.6; 7.6]	2002-2009
				2.2	[-2.5; 7.1]	2009-2013
Brussels-Capital Region	10.1	[7.9; 12.3]	2004-2013	12.2	[2.2; 23.3]	2004-2013
	16.0	[11.6; 20.6]	2004-2009			
	3.1	[-1.9; 8.3]	2009-2013			
Walloon Region	9.2	[5.6; 12.8]	2004-2013	14.5	[8.7; 20.5]	2004-2013
				27.3	[11.9; 44.9]	2004-2008
				5.2	[-5.0; 16.4]	2008-2013
75+						
Belgium	10.0	[7.7; 12.4]	2004-2013	6.8	[3.6; 10.2]	2004-2013
Flemish Region	3.1	[0.0; 6.3]	1999-2013	-1.8	[-3.4; -0.1]	1999-2013
	-14.8	[-24.3; -4.1]	1999-2003	-15.6	[-19.9; -10.9]	1999-2004
	11.3	[6.7; 16.1]	2003-2013	6.8	[3.9; 9.7]	2004-2013
Brussels-Capital Region	9.8	[3.1; 17.1]	2004-2013	0.9	[-7.6; 10.2]	2004-2013
	22.7	[8.3; 39.0]	2004-2009			
	-4.4	[-18.4; 12.1]	2009-2013			
Walloon Region	12.8	[8.8; 16.9]	2004-2013	9.1	[4.9; 13.5]	2004-2013
				16.5	[5.6; 28.6]	2004-2008
				3.6	[-4.2; 11.9]	2008-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Liver cancer: Relative survival by cohort and sex, Belgium 2004-2013

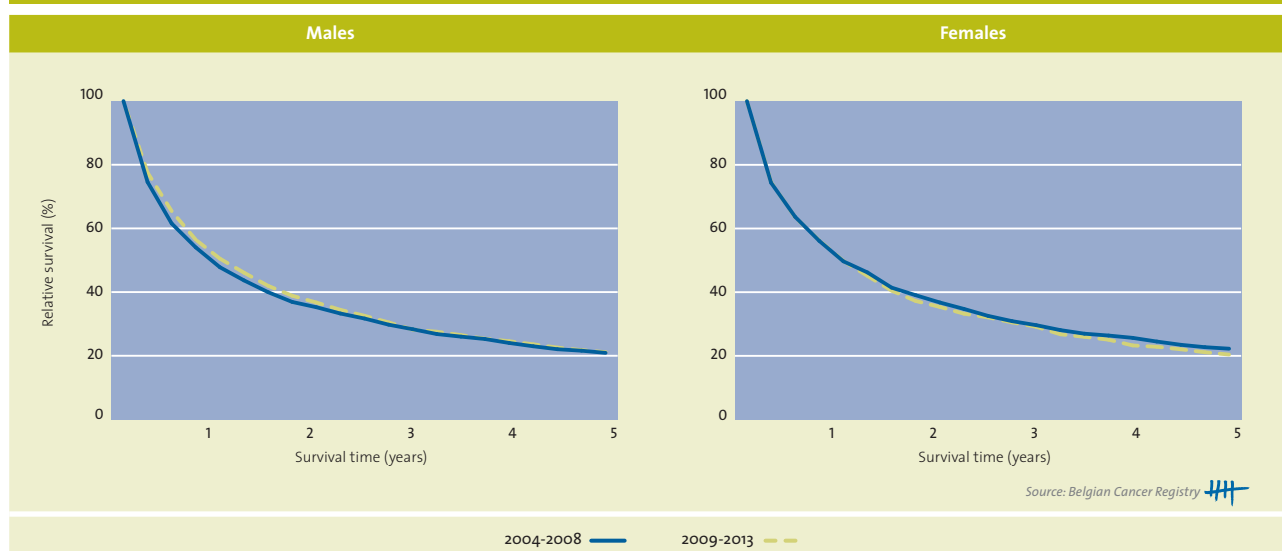
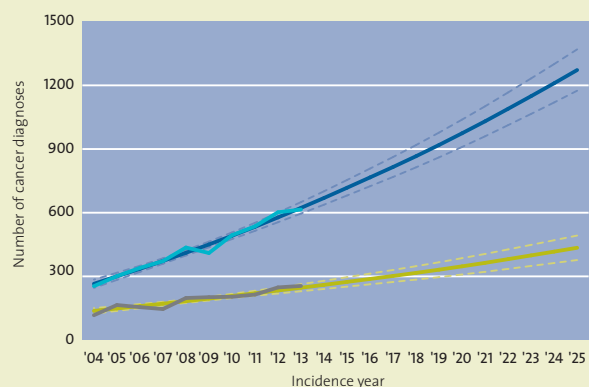
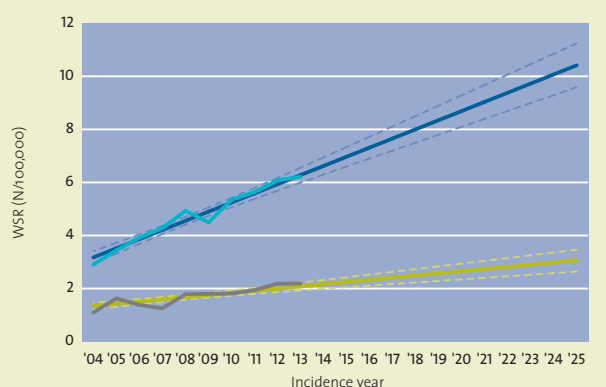


Figure 11 Liver cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 12 Liver cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025**Figure 13** Liver cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025

Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

!!Key note for registration:

Mainly Hepatocellular carcinoma 8170/3 (HCC) in C22.0.

8170/3 can be coded after microscopic examination but also based on the following clinical diagnostic procedures only (without microscopic examination):

- CT/MRI/angiography
- Alpha fetoprotein > 400 ng/ml

TNM:

Separate TNM-chapters for HCC (C22.0) and Intrahepatic Bile Duct tumours (C22.1)

!!Key note for registration:

8160/3: Cholangiocarcinoma, preferably used in INTRA-hepatic bile duct tumours (C22.1)

8180/3: Combined hepatocellular carcinoma and cholangiocarcinoma

8170/2: HGDN: High Grade Dysplastic Nodule (in Liver)

!!Key note for registration:

Malignant neoplasms from extrahepatic primary tumours often metastasize to the liver. Do not code them in the liver but in the organ of origin (if organ of origin unknown: use C80.9).

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

Table 1 Cancer of the gallbladder and biliary tract: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Cancer of the gallbladder and biliary tract	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	185	3.4	1.7	201	3.6	1.3
Flemish Region	109	3.5	1.6	106	3.3	1.1
Brussels-Capital Region	15	2.7	1.7	17	2.9	1.7
Walloon Region	61	3.5	1.9	78	4.3	1.6
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	73	1.3	0.7	104	1.8	0.5
Flemish Region	48	1.5	0.7	63	2.0	0.6
Brussels-Capital Region	6	1.1	0.8	10	1.7	0.5
Walloon Region	19	1.1	0.5	31	1.7	0.5
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	325	6.0	3.0	291	5.1	2.2
Flemish Region	188	6.0	2.8	164	5.1	2.0
Brussels-Capital Region	33	5.9	3.8	28	4.7	3.2
Walloon Region	104	6.0	3.2	99	5.4	2.2
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	455	8.4	4.1	410	7.3	3.0
Flemish Region	274	8.7	4.0	247	7.6	3.0
Brussels-Capital Region	41	7.3	4.9	34	5.7	3.6
Walloon Region	140	8.1	4.3	129	7.1	2.7
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	929	19.6%	[16.2; 23.3]	1,032	17.3%	[14.5; 20.3]
Flemish Region	552	20.5%	[16.0; 25.5]	605	16.3%	[12.9; 20.2]
Brussels-Capital Region	82	15.9%	[6.5; 29.7]	96	24.6%	[15.3; 35.3]
Walloon Region	295	18.6%	[13.1; 25.1]	331	17.4%	[12.6; 23.1]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	266 [237; 295]	2.0 [1.7; 2.2]		260 [231; 289]	1.4 [1.3; 1.6]	

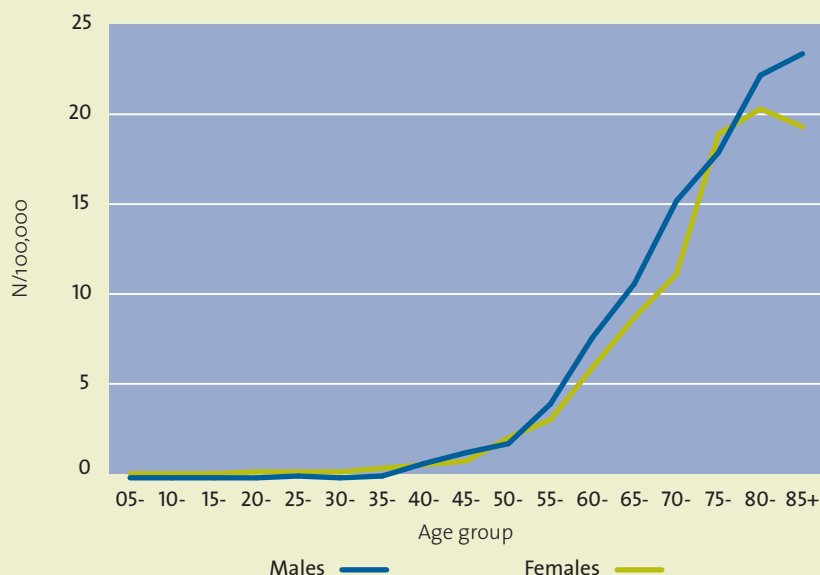
CR, crude rate (N/100,000 person years)

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

- Cancer of the gallbladder and biliary tract burden in Belgium (**Table 1**):
 - 386 new diagnoses of cancer in 2013, 48% males and 52% females.
 - 177 deaths due to cancer of the gallbladder and biliary tract in 2012, 41% males and 59% females.
 - 865 persons (0.008% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with cancer of the gallbladder and biliary tract between 2004 and 2013.
 - Over time, mortality rates are decreasing with 1% annually in males and females (**Figure 6 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 20% in males and 17% in females. No clear trend in relative survival proportion over time is observed. (**Figure 8 and 9**).
 - By 2025, the number of patients diagnosed with cancer of the gallbladder and biliary tract is expected to rise to more than 500. The increase is mainly due to the ageing and growth of the population (**Figure 10 and 11**).
- Males and females show a different risk pattern with age (**Figure 1 and 7**).
 - Age group 30-49 years:
 - Males have a twofold higher risk than females (M/F ratio = 2.2).
 - The incidence rates are decreasing in males and females.
 - Age group 50-74 years:
 - Males have a higher risk than females (M/F ratio = 1.4).
 - The incidence rates are increasing in males.
 - Age group 75+:
 - Males and females have comparable incidence rates (M/F ratio = 1.0).
 - The incidence rates are increasing in males and females.

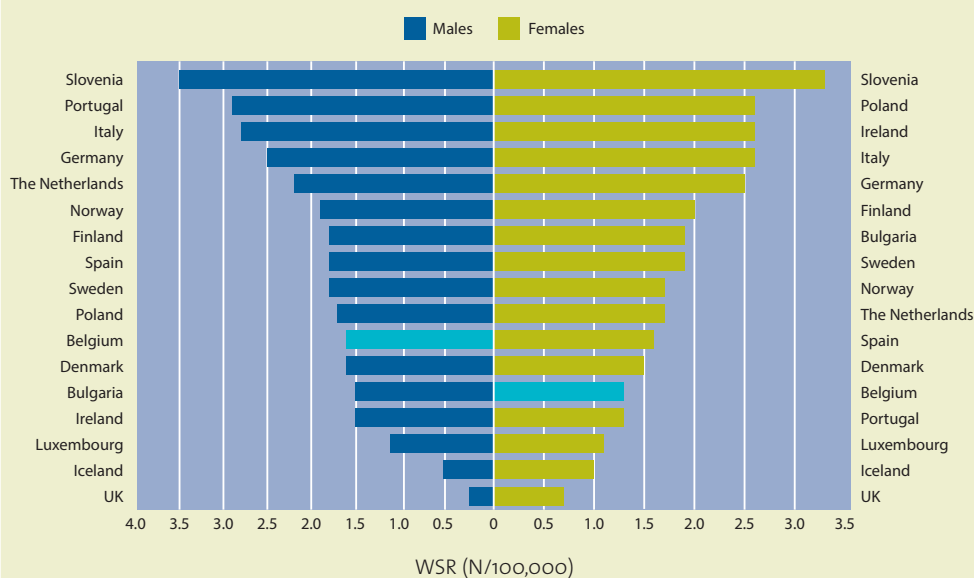
- The higher amount of stage III and IV cancers of the bladder and biliary tract in 2010-2013 compared to the previous incidence years are due to stage migration, related to changes between the 6th and 7th edition of the UICC-TNM classification (**Figure 4 and 5**).
 - Availability of information on stage has improved from 67% in 2004-2006 to 85% in 2010-2013.

Figure 1 Cancer of the gallbladder and biliary tract: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013

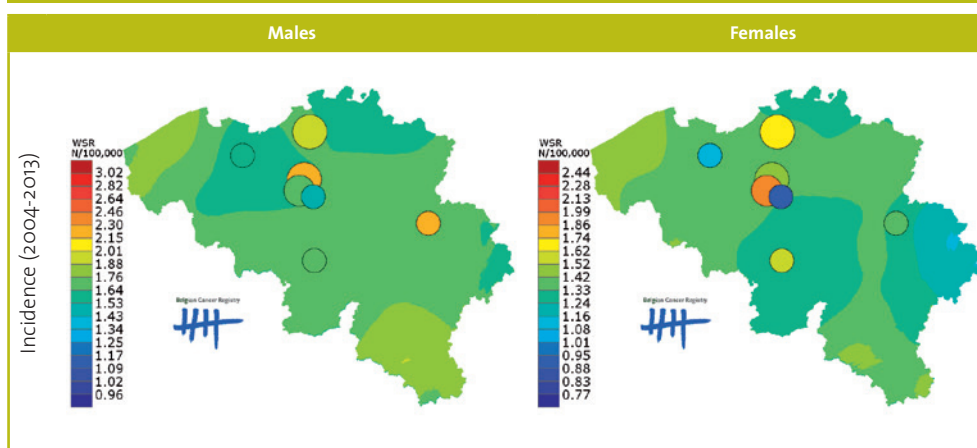
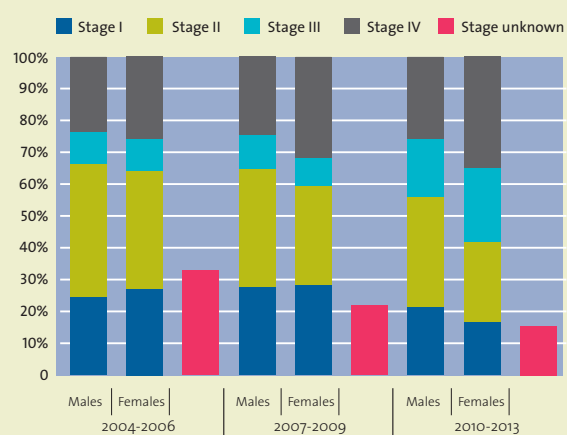


Source: Belgian Cancer Registry

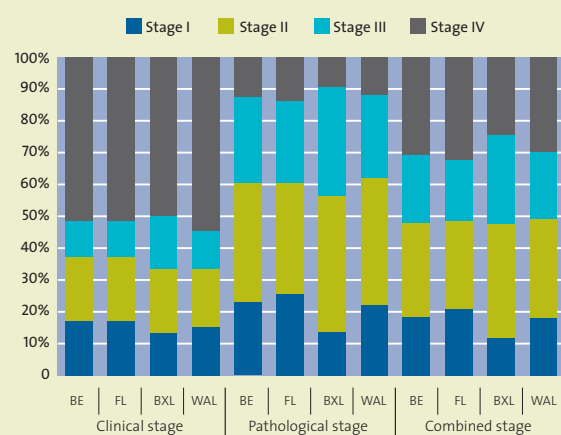
Figure 2 Cancer of the gallbladder and biliary tract: Comparison of age-standardised incidence rates (WSR) (Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Cancer of the gallbladder and biliary tract: Age-standardised incidence (WSR) by sex in Belgium**Figure 4** Cancer of the gallbladder and biliary tract: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

Source: Belgian Cancer Registry

Figure 5 Cancer of the gallbladder and biliary tract: stage distribution by region, 2010-2013

Source: Belgian Cancer Registry

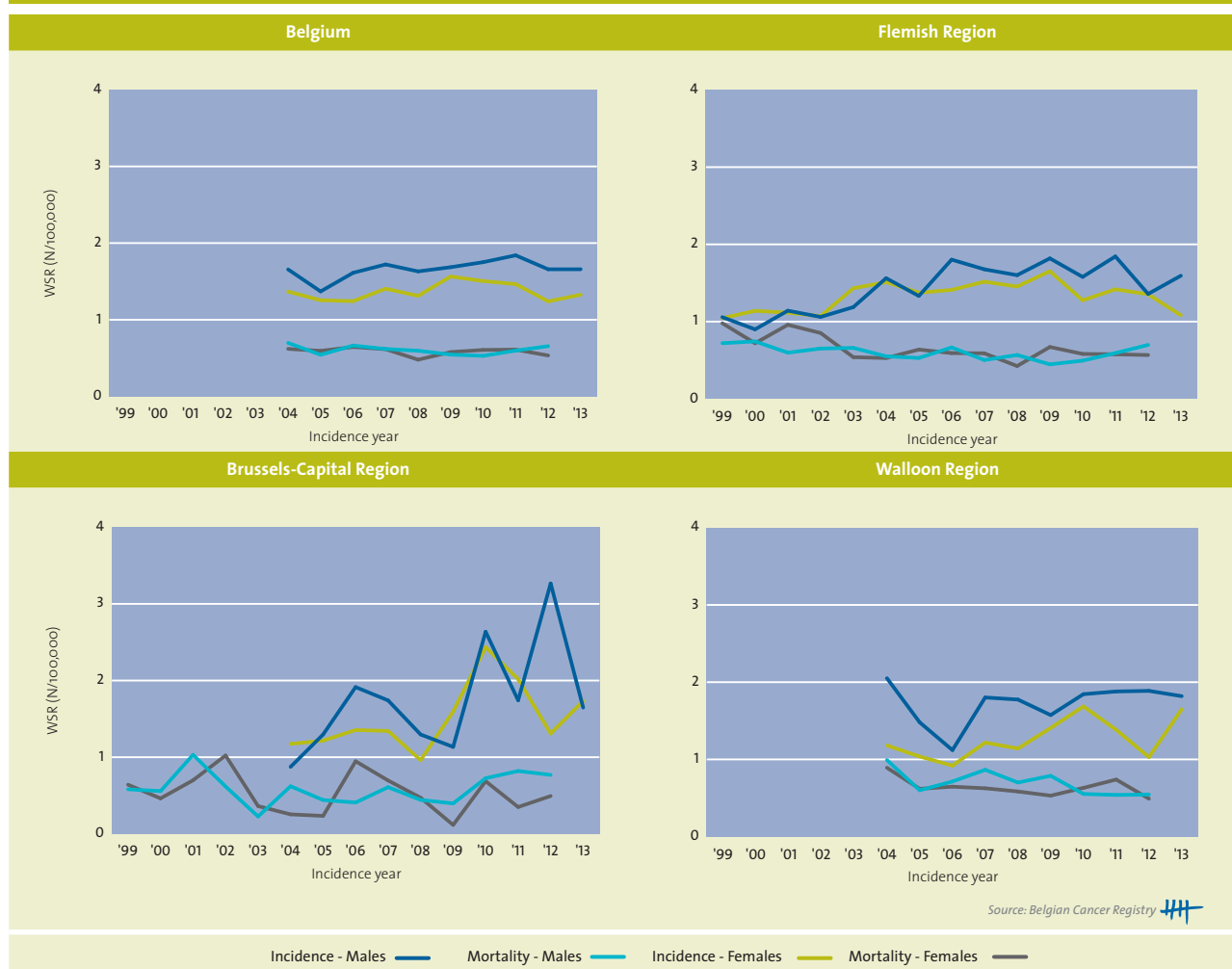
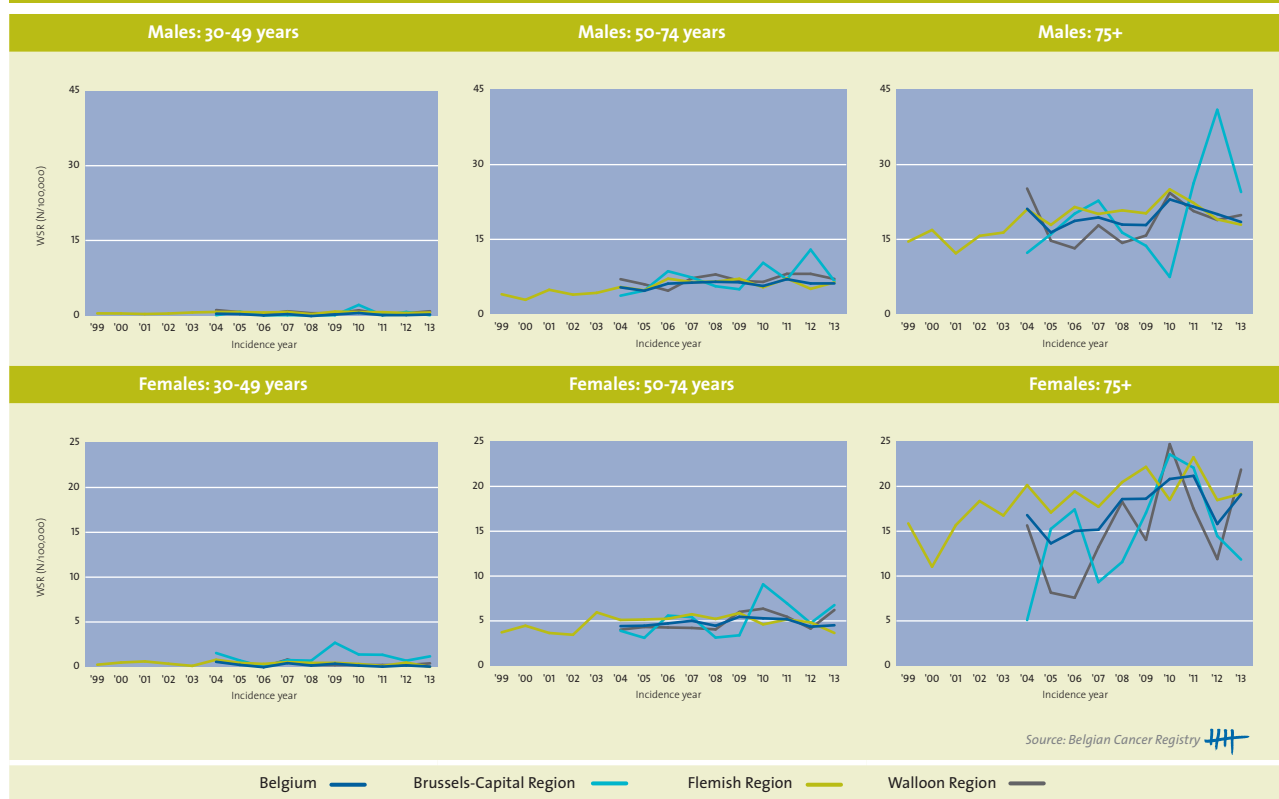
Figure 6 Cancer of the gallbladder and biliary tract: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013**Figure 7** Cancer of the gallbladder and biliary tract: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

Table 2 Cancer of the gallbladder and biliary tract: AAPC(%) by sex, region and age group in Belgium

Cancer of the gallbladder and biliary tract	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	1.2	[-0.5; 3.0]	2004-2013	0.1	[-1.8; 1.9]	2004-2013
				2.8	[-0.1; 5.8]	2004-2010
				-5.2	[-10.8; 0.9]	2010-2013
Flemish Region	3.6	[2.1; 5.0]	1999-2013	0.7	[-0.5; 1.9]	1999-2013
	7.8	[5.0; 10.8]	1999-2007	4.6	[2.6; 6.7]	1999-2008
	-1.9	[-5.4; 1.8]	2007-2013	-5.9	[-9.4; -2.3]	2008-2013
Brussels-Capital Region	7.9	[-0.5; 16.9]	2004-2013	5.2	[-1.0; 11.7]	2004-2013
Walloon Region	1.9	[-2.3; 6.3]	2004-2013	3.8	[-0.7; 8.5]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.9	[-3.8; 2.1]	2004-2012	-1.2	[-3.8; 1.6]	2004-2012
Flemish Region	-0.1	[-1.7; 1.5]	1999-2012	-3.5	[-5.8; -1.1]	1999-2012
	-3.5	[-5.1; -1.9]	1999-2010	-7.4	[-11.9; -2.7]	1999-2006
	20.9	[8.1; 35.1]	2010-2012	1.4	[-4.4; 7.5]	2006-2012
Brussels-Capital Region	1.3	[-3.7; 6.7]	1999-2012	-3.5	[-11.4; 5.2]	1999-2012
	-6.8	[-16.1; 3.6]	1999-2006			
	11.7	[-1.4; 26.6]	2006-2012			
Walloon Region	-5.4	[-10.0; -0.5]	2004-2012	-3.4	[-7.8; 1.2]	2004-2012
Incidence by age group	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	-1.6	[-10.5; 8.1]	2004-2013	-6.3	[-15.7; 4.1]	2004-2013
Flemish Region	3.6	[-1.2; 8.7]	1999-2013	.	.	
Brussels-Capital Region	
Walloon Region	-2.9	[-17.1; 13.7]	2004-2013	.	.	
50-74 Year						
Belgium	2.0	[-0.3; 4.4]	2004-2013	-0.0	[-1.5; 1.5]	2004-2013
				3.1	[0.7; 5.6]	2004-2010
				-6.0	[-10.7; -1.0]	2010-2013
Flemish Region	4.1	[2.0; 6.3]	1999-2013	0.9	[-0.9; 2.7]	1999-2013
	8.8	[4.6; 13.1]	1999-2007	5.9	[2.5; 9.5]	1999-2007
	-1.8	[-7.0; 3.7]	2007-2013	-5.5	[-9.7; -1.1]	2007-2013
Brussels-Capital Region	7.7	[-0.7; 16.7]	2004-2013	6.7	[-1.8; 15.9]	2004-2013
Walloon Region	2.7	[-1.2; 6.7]	2004-2013	4.0	[-0.1; 8.3]	2004-2013
75+						
Belgium	0.8	[-1.7; 3.5]	2004-2013	2.9	[-0.2; 6.2]	2004-2013
Flemish Region	1.7	[0.1; 3.3]	1999-2013	2.6	[0.9; 4.4]	1999-2013
	4.8	[2.9; 6.8]	1999-2010	5.2	[1.3; 9.2]	1999-2006
	-8.9	[-15.9; -1.3]	2010-2013	0.2	[-3.5; 4.0]	2006-2013
Brussels-Capital Region	6.6	[-4.8; 19.4]	2004-2013	7.3	[-3.4; 19.1]	2004-2013
Walloon Region	1.8	[-3.9; 7.7]	2004-2013	7.2	[-1.6; 16.8]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

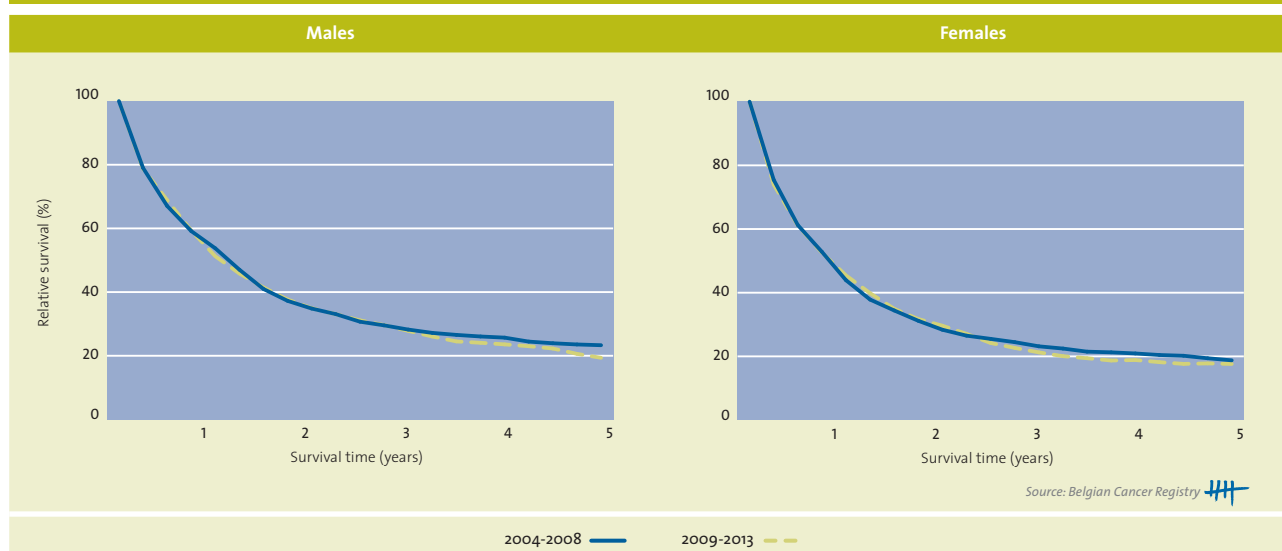
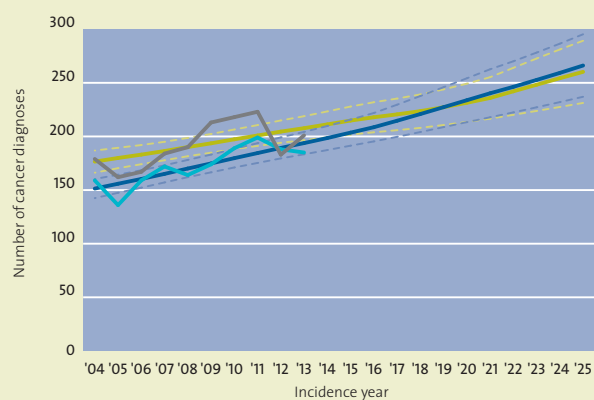
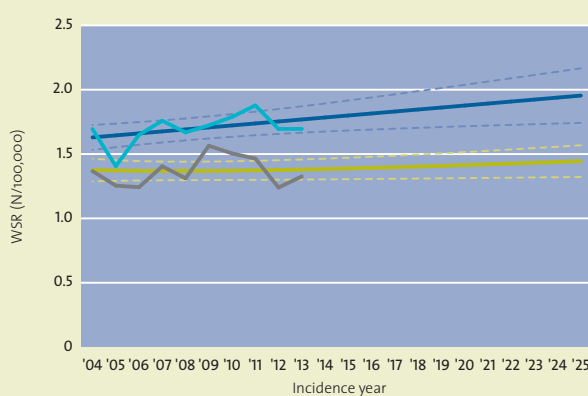
Figure 8 Cancer of the gallbladder and biliary tract: Relative survival by cohort and sex, Belgium 2004-2013**Figure 9** Cancer of the gallbladder and biliary tract: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

Figure 10 Cancer of the gallbladder and biliary tract: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 11 Cancer of the gallbladder and biliary tract: Observed and projected incidence (WSR) by sex, Belgium 2004-2025

Source: Belgian Cancer Registry

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

!!Key note for registration:

Topography:

Please try to specify the exact localisation of the lesions and avoid the use of the non-specific code C24.9 (biliary tract, NOS).

Precursor lesions:

8148/2 Biliary intraepithelial neoplasia, high grade (BilIN-3)

8503/2 Intracystic (gallbladder) or intraductal (bile ducts) papillary neoplasm, high grade

Invasive lesions: since the therapeutic options and the prognosis of intra- and extrahepatic lesions are quite different, IARC recommends the use of different codes to distinguish both types.

- 8140/3 adenocarcinoma, mainly (can be used for cholangiocarcinoma of the EXTRA-hepatic bile duct) (C24)
- 8160/3 cholangiocarcinoma, preferably (only) used for INTRA-hepatic bile duct tumours (C22.1)

!!Key note for registration:

TNM:

Since the topography code is not enough to know which TNM-classification has to be chosen, try to specify the specific localisation of the bile duct tumour within the biliary tract different chapters for tumours of

- Gallbladder and cystic duct (C23.9 – C24.0)
- Extrahepatic bile duct - perihilar (KLATSKIN tumour) (C24.0)
- Extrahepatic bile duct - distal (C24.0)
- Intrahepatic bile ducts (C22.1)

3.3.7 PANCREAS (ICD-10: C25)

Table 1 Pancreatic cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Pancreatic cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	858	15.8	8.1	818	14.5	6.3
Flemish Region	495	15.7	7.5	463	14.3	5.9
Brussels-Capital Region	63	11.2	7.8	69	11.6	6.0
Walloon Region	300	17.3	9.5	286	15.6	7.0
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	788	14.6	7.0	799	14.2	5.1
Flemish Region	452	14.4	6.5	456	14.2	4.9
Brussels-Capital Region	68	12.3	8.0	85	14.5	6.3
Walloon Region	268	15.5	7.9	258	14.2	5.1
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	981	18.0	10.0	970	17.2	8.6
Flemish Region	570	18.1	9.4	565	17.5	8.3
Brussels-Capital Region	62	11.0	8.4	71	12.0	7.0
Walloon Region	349	20.1	11.6	334	18.3	9.5
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	1,168	21.4	11.9	1,134	20.1	10.2
Flemish Region	687	21.8	11.3	666	20.6	9.9
Brussels-Capital Region	72	12.8	9.8	82	13.8	8.4
Walloon Region	409	23.6	13.5	386	21.1	11.2
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	3,917	11.3%	[10.0; 12.6]	3,708	11.0%	[9.7; 12.3]
Flemish Region	2,233	11.5%	[9.9; 13.3]	2,111	11.6%	[9.9; 13.5]
Brussels-Capital Region	319	7.2%	[4.2; 11.5]	334	6.9%	[3.8; 11.4]
Walloon Region	1,365	11.8%	[9.7; 14.1]	1,263	10.9%	[8.9; 13.2]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	1,392 [1,275; 1,508]	10.5 [9.7; 11.4]		1,298 [1,196; 1,400]	8.3 [7.6; 9.0]	

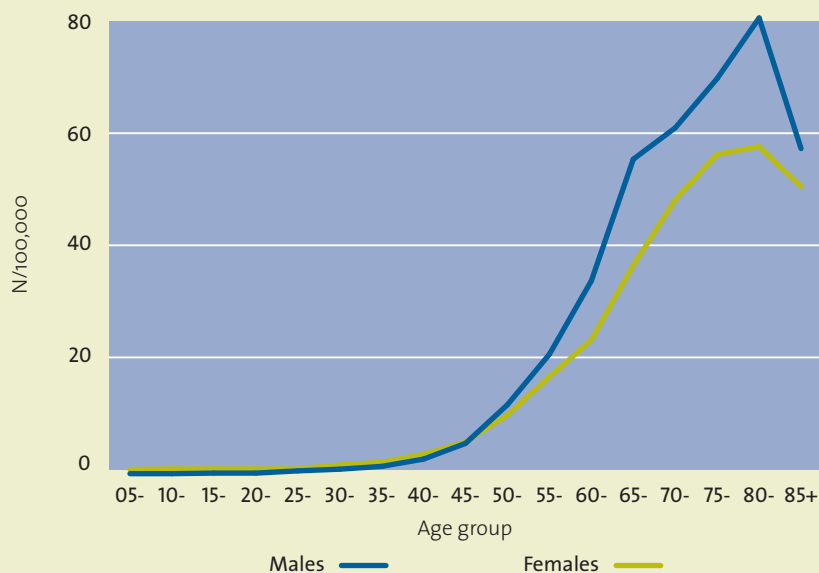
CR, crude rate (N/100,000 person years)

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

- Pancreatic cancer burden in Belgium (**Table 1**):
 - 1,676 new diagnoses of cancer in 2013, 51% males and 49% females.
 - Pancreatic cancer is the 7th most frequent tumour in females (3% of all malignancies).
 - 1,587 deaths are due to pancreatic cancer in 2012, 50% males and 50% females.
 - Pancreatic cancer is the 4th most important cause of cancer death in males (5% of all cancer deaths) and in females (7%).
 - 2,302 persons (0.02% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with pancreatic cancer between 2004 and 2013.
 - Over time, incidence rates increase with 4% annually in both sexes. These results must be interpreted with caution. Special efforts to optimize the completeness of pancreatic cancer registration could have contributed to this increase. Mortality rates remain more stable (**Figure 6 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 11% in males and females. A slight increase in the relative survival proportion for pancreatic cancer is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 9 and 10**).
 - By 2025, the number of patients diagnosed with pancreatic cancer is expected to rise to more than 2,600. The increase is due to a combination of the ageing and growth of the population and an increase in cancer risk over time in males and females (**Figure 11 and 12**).
- Males and females show a different risk pattern with age (**Figure 1 and 7**).
 - Age group 30-49 years:
 - Males have lower incidence rates than females (M/F ratio = 0.8).
 - The incidence rates are increasing with 3% annually in females.
 - Age group 50-74 years:
 - Males have higher incidence rates than females (M/F ratio = 1.4).
 - The incidence rates increase with 4% annually in males and females.

- Age group 75+:
 - Males have higher incidence rates than females (M/F ratio = 1.2).
 - The incidence rates increase with 4-5% annually in males and 5% annually in females.
- 60% of all pancreatic cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 8**).
- Availability of information on stage has improved from 69% in 2004-2006 to 79% in 2010-2013.
- Stage distribution in males and females is comparable.

Figure 1 Pancreatic cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013.




Source: Belgian Cancer Registry 

Figure 2 Pancreatic cancer: Comparison of age-standardised incidence rates (WSR).
(Selection of European registry data)




Source: Belgian Cancer Registry 

Figure 3 Pancreatic cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

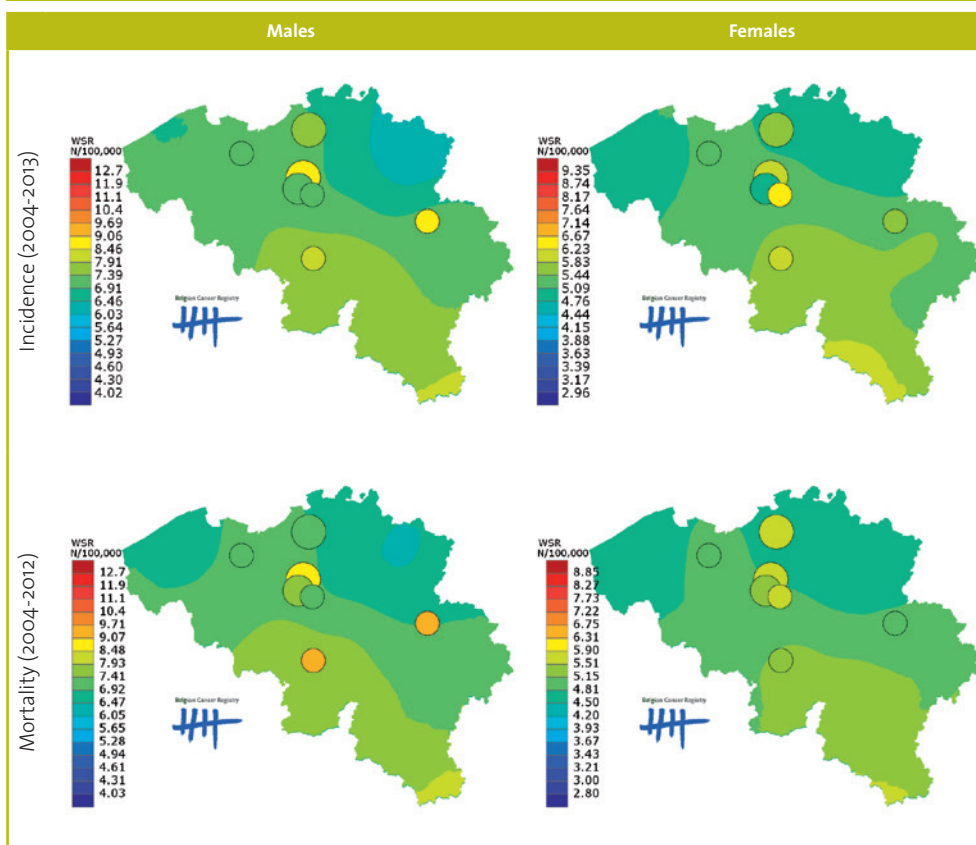
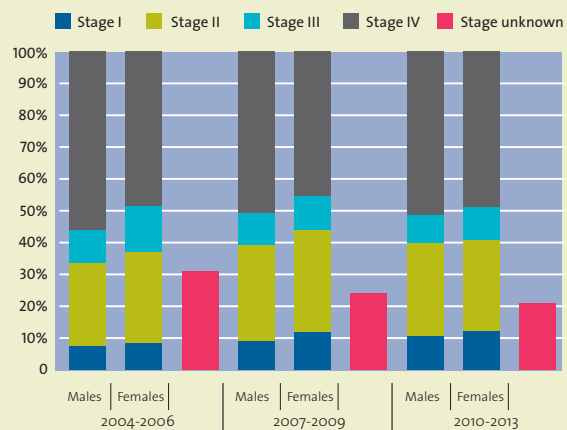
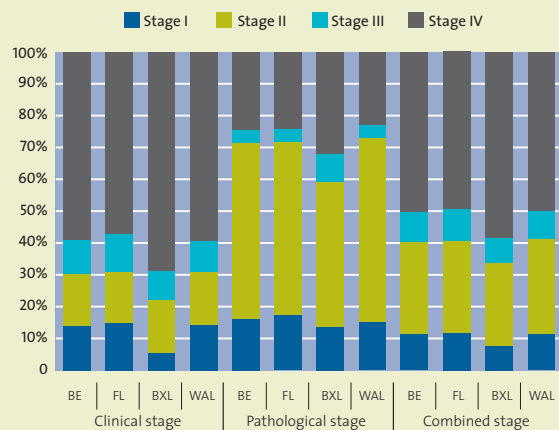


Figure 4 Pancreatic cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



Source: Belgian Cancer Registry

Figure 5 Pancreatic cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

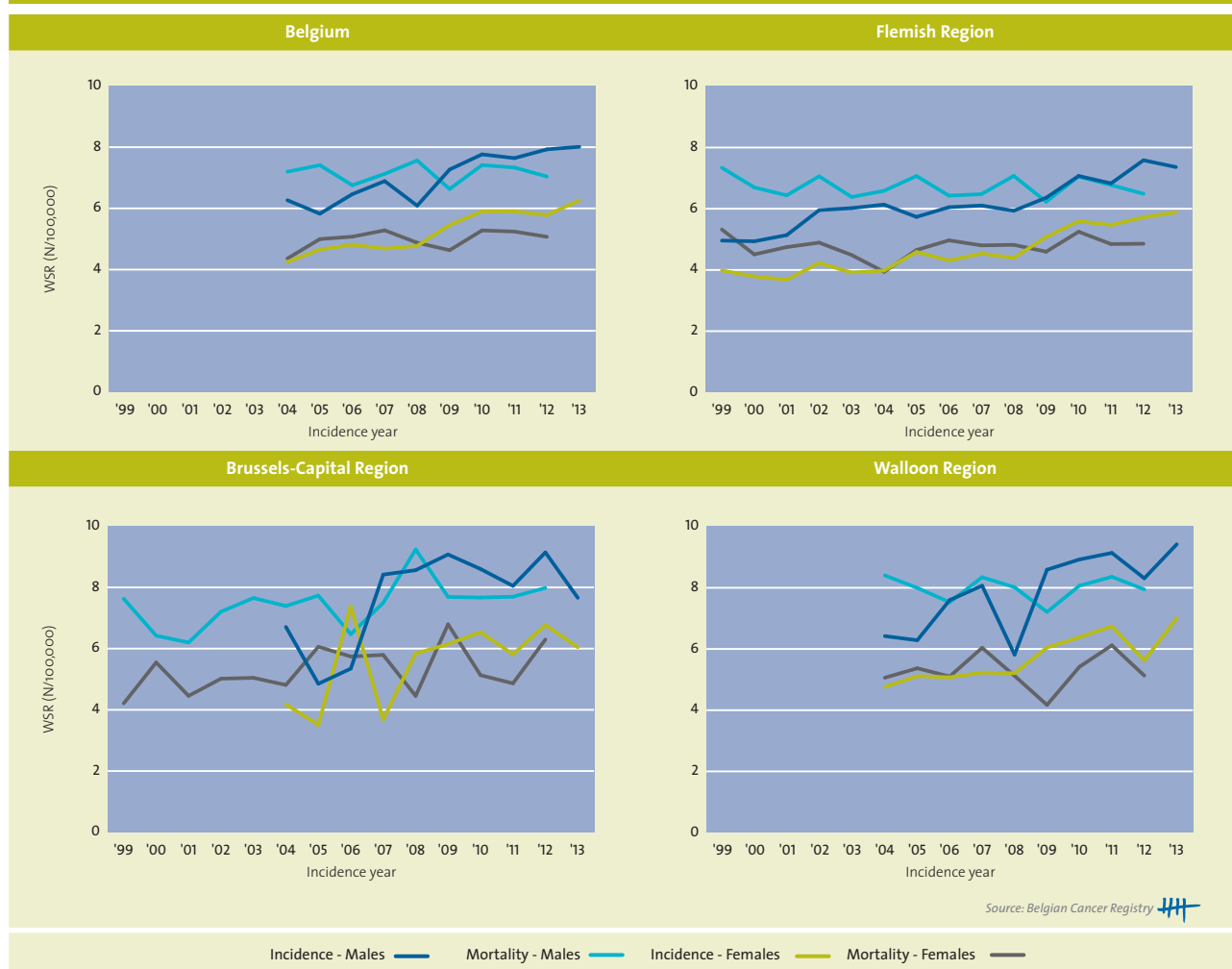
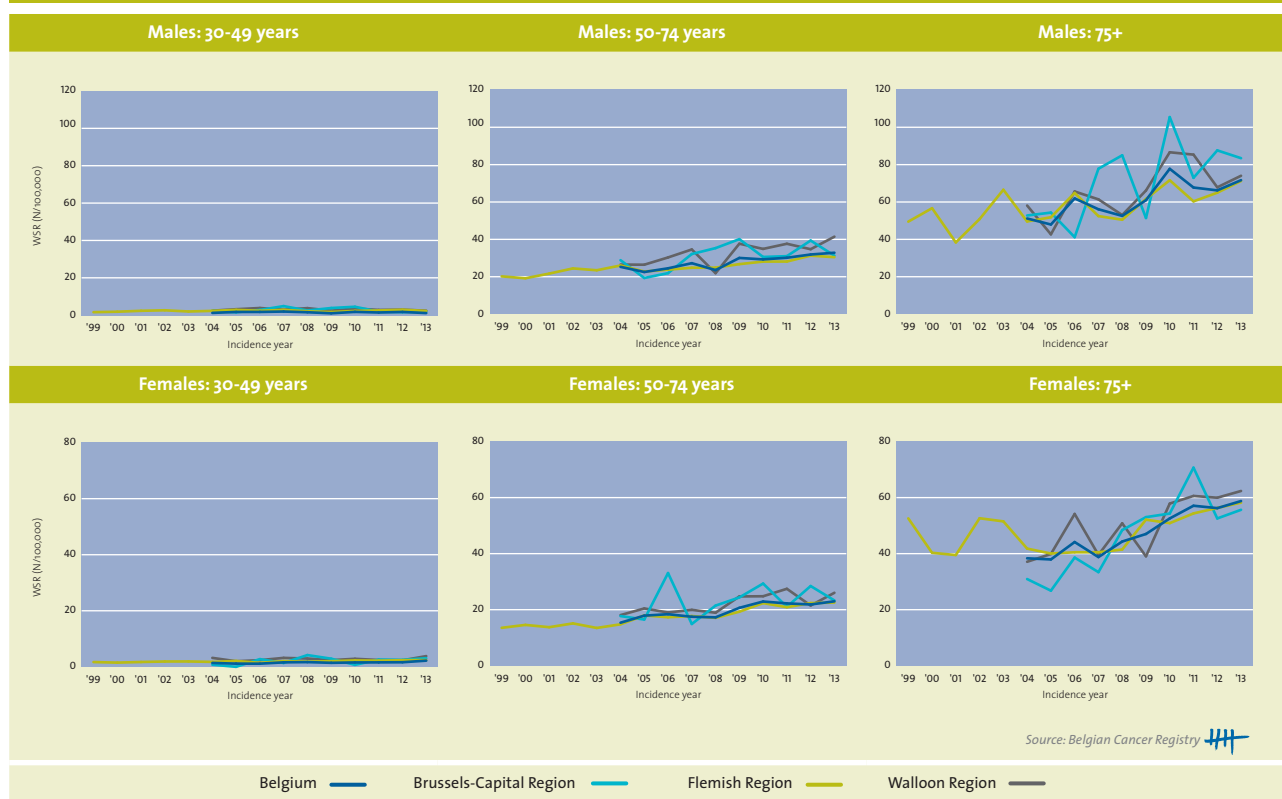
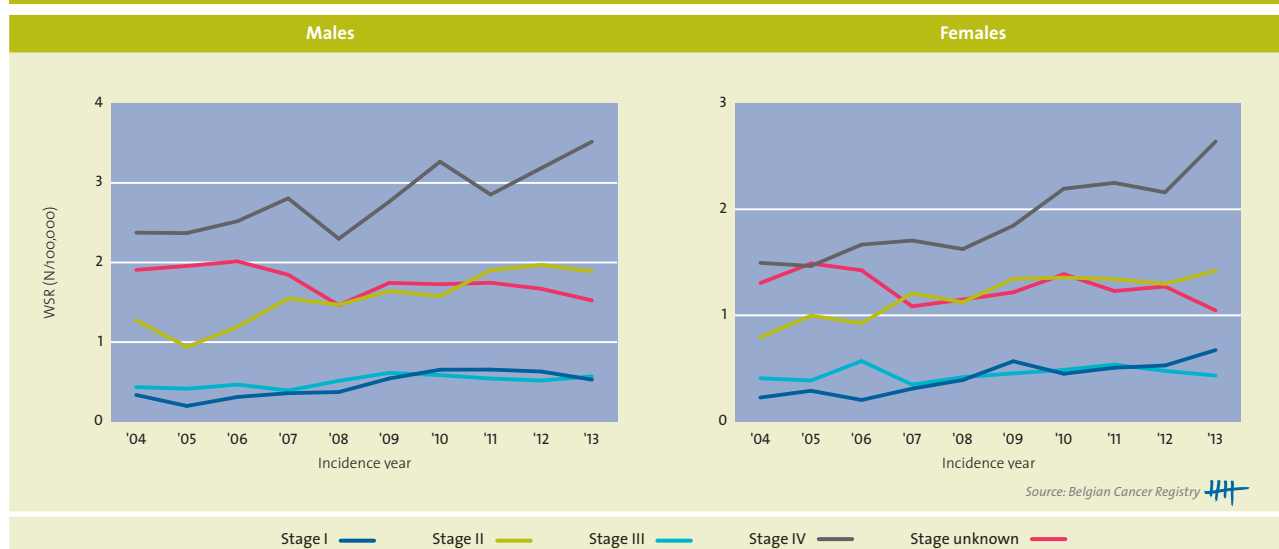
Figure 6 Pancreatic cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013**Figure 7** Pancreatic cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2003

Figure 8 Pancreatic cancer: Trends in age-standardised incidence (WSR) by sex and stage, Belgium 2004-2013**Table 2** Pancreatic cancer: AAPC(%) by sex, region, stage and age group in Belgium

Pancreatic cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	3.5	[2.1; 4.9]	2004-2013	4.2	[3.1; 5.4]	2004-2013
Flemish Region	2.8	[2.1; 3.6]	1999-2013	3.5	[2.8; 4.2]	1999-2013
	4.2	[1.4; 7.1]	1999-2003	2.2	[0.9; 3.5]	1999-2007
	2.3	[1.3; 3.3]	2003-2013	5.2	[3.4; 7.1]	2007-2013
Brussels-Capital Region	4.8	[0.2; 9.5]	2004-2013	5.3	[-0.5; 11.4]	2004-2013
Walloon Region	4.3	[1.3; 7.4]	2004-2013	3.9	[2.1; 5.7]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.0	[-1.4; 1.4]	2004-2012	1.2	[-0.6; 3.0]	2004-2012
Flemish Region	-0.3	[-1.0; 0.5]	1999-2012	0.1	[-0.9; 1.0]	1999-2012
				-2.6	[-5.2; 0.2]	1999-2004
				1.7	[0.1; 3.4]	2004-2012
Brussels-Capital Region	1.3	[-0.0; 2.6]	1999-2012	1.6	[-0.3; 3.5]	1999-2012
Walloon Region	-0.2	[-1.8; 1.5]	2004-2012	0.3	[-3.2; 4.0]	2004-2012
Incidence by stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Stage I	10.5	[5.0; 16.4]	2004-2013	12.0	[7.5; 16.8]	2004-2013
Stage II	7.1	[4.0; 10.3]	2004-2013	5.7	[3.8; 7.7]	2004-2013
				9.8	[5.9; 13.8]	2004-2009
				0.9	[-3.6; 5.7]	2009-2013
Stage III	3.8	[1.0; 6.7]	2004-2013	1.7	[-2.0; 5.6]	2004-2013
Stage IV	4.3	[2.1; 6.4]	2004-2013	6.4	[4.7; 8.1]	2004-2013
Stage unknown	-2.3	[-4.2; -0.4]	2004-2013	-1.8	[-4.4; 0.9]	2004-2013
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	-0.8	[-3.9; 2.4]	2004-2013	3.4	[1.1; 5.8]	2004-2013
Flemish Region	1.6	[-0.7; 3.9]	1999-2013	2.7	[1.3; 4.1]	1999-2013
Brussels-Capital Region	0.4	[-8.2; 9.9]	2004-2013	.	.	
	32.8	[-1.6; 79.3]	2004-2007			
	-12.7	[-24.2; 0.6]	2007-2013			
Walloon Region	-1.2	[-5.8; 3.6]	2004-2013	1.4	[-3.6; 6.6]	2004-2013
50-74 Year						
Belgium	3.7	[2.0; 5.5]	2004-2013	4.2	[2.5; 5.8]	2004-2013
Flemish Region	2.9	[2.2; 3.7]	1999-2013	4.1	[3.2; 4.9]	1999-2013
Brussels-Capital Region	4.6	[-0.5; 9.9]	2004-2013	3.8	[-2.4; 10.4]	2004-2013
Walloon Region	4.7	[0.8; 8.7]	2004-2013	4.0	[1.4; 6.6]	2004-2013
75+						
Belgium	4.2	[1.7; 6.7]	2004-2013	5.4	[4.0; 6.9]	2004-2013
Flemish Region	2.5	[0.7; 4.3]	1999-2013	1.8	[0.4; 3.1]	1999-2013
				-1.8	[-4.3; 0.8]	1999-2007
				6.7	[3.0; 10.5]	2007-2013
Brussels-Capital Region	6.7	[0.5; 13.3]	2004-2013	9.2	[4.8; 13.8]	2004-2013
Walloon Region	5.0	[0.8; 9.3]	2004-2013	5.6	[2.0; 9.3]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

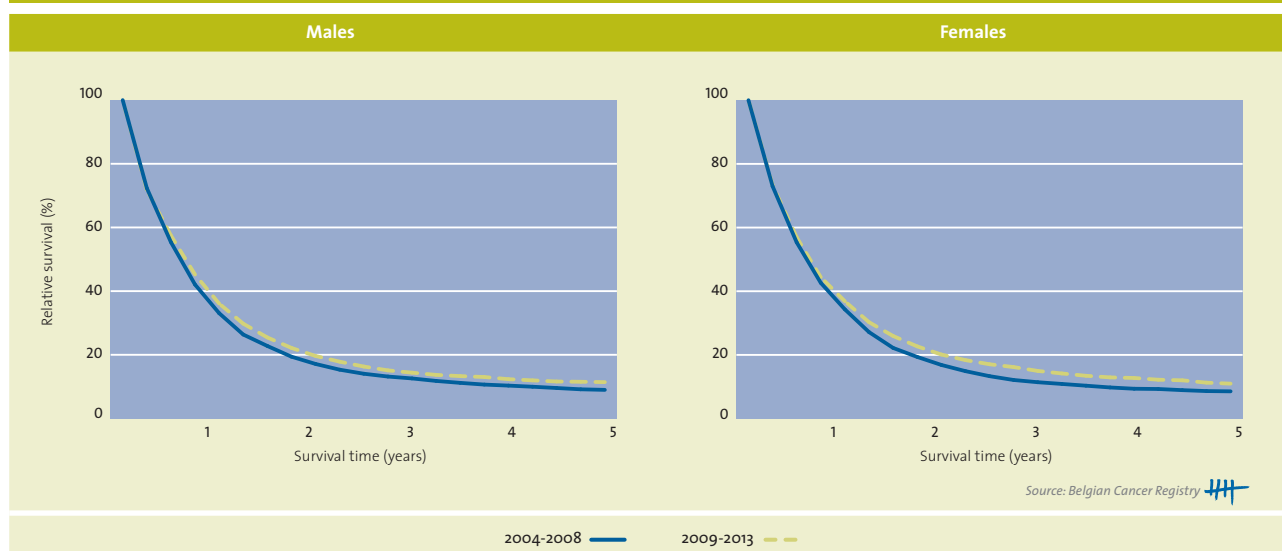
Figure 9 Pancreatic cancer: Relative survival by cohort and sex, Belgium 2004-2013**Figure 10** Pancreatic cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

Figure 11 Pancreatic cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025

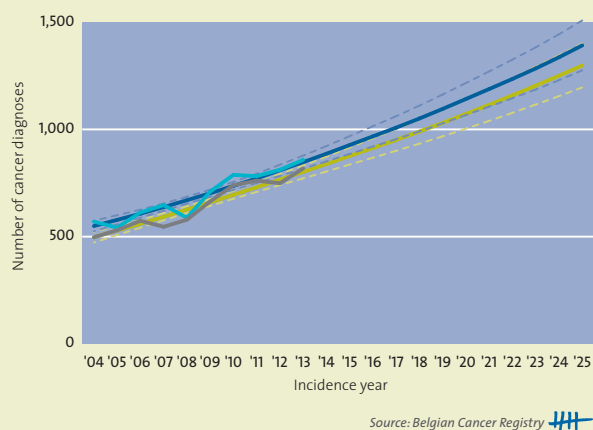
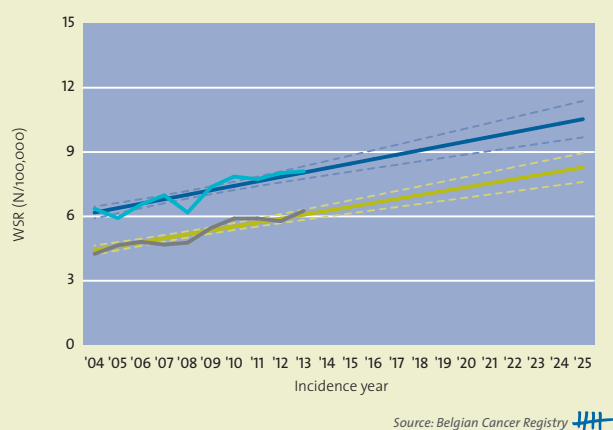


Figure 12 Pancreatic cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

Did you know that the BCR also ...

- Puts special efforts in optimizing the completeness of pancreatic cancer registration. The somewhat higher Mortality/Incidence ratio and 5-year survival result suggested an under registration of mainly those pancreatic cancer cases with a less favourable prognosis. Therefore, the BCR started up a pilot project aiming to recover pancreatic cancer diagnoses through a trace back system based on death certificates.
- Collaborated in the KCE study exploring the management of patients with rare cancers and cancers that require complex care such as pancreatic cancer. Further reading see:
 - Stordeur S, Vrijens F, **Henau K, Schillemans V, De Gendt C**, Leroy R. Organisation of care for adults with a rare or complex cancer – Synthesis. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2014. KCE Reports 219Cs. D/2014/10.273/20.

!!Key note for registration:

There is an important difference between (ductal) adenocarcinomas (8500/3; 8140/3) and (neuro)endocrine neoplasms (all with behaviour/3!) in terms of therapy and prognosis.

Mixed exocrine-(neuro)endocrine tumours of the pancreas are very rare.

The functional neuroendocrine tumours with hormonal syndrome (ex. glucagonoma, gastrinoma ...) can be diagnosed based on clinical findings without microscopic proof, which allows the use of a specific code according to these findings.

Neuroendocrine tumours of the pancreas – overview of the most frequent tumours		
Neuroendocrine microadenoma		8150/0
Neuroendocrine tumour (NET)	NET G1 (carcinoid)	8240/3
	NET G2 (atypical carcinoid)	8249/3
	Nonfunctional pancreatic NET, G1, G2	8150/3
Neuroendocrine carcinoma (NEC)		8246/3
	Large cell NEC (poorly differentiated/ high grade)	8013/3
	Small cell NEC (undifferentiated)	8041/3
Functional neuroendocrine pancreatic tumour/carcinoma with hormonal syndrome	Insulin-producing (insulinoma)	8151/3
	Glucagon-producing (glucagonoma)	8152/3
	Somatostatin-producing (somatostatinoma)	8156/3
	Gastrin-producing (gastrinoma)	8153/3
	VIP-producing (VIPoma)	8155/3
	Serotonin producing with carcinoid syndrome	8241/3
	Enterochromaffin cell (EC), serotonin producing neuroendocrine tumour	8241/3
	ACTH and other ectopic hormone producing tumours	8158/3
		8154/3
	mixed islet cell and exocrine adenocarcinoma of the pancreas	8154/3
mixed exocrine-(neuro)endocrine carcinoma of the pancreas	mixed acinar-endocrine-ductal carcinoma of the pancreas (MANEC)	8154/3

3.4 RESPIRATORY TRACT

3.4.1 LUNG (ICD-10: C34)

Table 1 Lung cancer: Overview of incidence, mortality, prevalence and survival by sex and region

Lung cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	5,705	104.7	53.5	2,491	44.1	23.4
Flemish Region	3,413	108.3	50.2	1,344	41.6	20.9
Brussels-Capital Region	386	68.7	49.3	238	40.1	26.2
Walloon Region	1,906	109.9	60.4	909	49.7	27.4
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	4,577	84.5	41.4	1,729	30.8	14.7
Flemish Region	2,715	86.6	39.1	888	27.6	13.1
Brussels-Capital Region	301	54.4	36.3	165	28.2	14.8
Walloon Region	1,561	90.5	47.0	676	37.1	17.8
Prevalence (5 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	8,443	155.0	80.7	4,371	77.3	42.2
Flemish Region	5,034	159.7	76.0	2,346	72.6	37.5
Brussels-Capital Region	546	97.2	71.5	383	64.6	44.4
Walloon Region	2,863	165.1	91.7	1,642	89.8	50.2
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	10,930	200.6	103.5	5,631	99.6	53.6
Flemish Region	6,535	207.4	97.7	2,986	92.4	47.1
Brussels-Capital Region	713	126.9	92.0	513	86.5	57.6
Walloon Region	3,682	212.3	117.2	2,132	116.6	64.3
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	28,207	15.8%	[15.3; 16.4]	11,461	22.6%	[21.6; 23.5]
Flemish Region	16,803	15.6%	[14.9; 16.4]	6,129	22.3%	[21.0; 23.6]
Brussels-Capital Region	1,946	14.8%	[12.8; 16.9]	1,075	19.9%	[17.0; 23.1]
Walloon Region	9,458	16.4%	[15.4; 17.4]	4,257	23.6%	[22.0; 25.2]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	6,525 [6,284; 6,765]	48.5 [46.8; 50.2]		4,168 [3,987; 4,349]	33.7 [32.3; 35.2]	

CR: crude rate (N/100,000 person years)

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

- Lung cancer burden in Belgium (**Table 1**):
 - 8,196 new diagnoses of cancer in 2013, 70% males and 30% females.
 - Lung cancer is the 2nd most frequent tumour in males (17% of all malignancies) and the 3rd most frequent in females (8%).
 - Compared to other European countries, Belgium has a very high incidence rate for male lung cancer (**Figure 2**).
 - 6,306 deaths are due to lung cancer in 2012, 73% males and 27% females.
 - Lung cancer is the most important cause of cancer death in males (30% of all cancer deaths) and the 2nd most important cause of cancer death in females (15%).
 - 16,561 persons (0.15% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with lung cancer between 2004 and 2013.
 - Incidence and mortality rates for male lung cancer increase slightly from the west-northwest towards the south-southeast of Belgium⁽ⁱ⁾. For female lung cancer there is a strong increasing trend from west to east (**Figure 3**).
 - Over time, incidence and mortality rates of male lung cancer are decreasing, while in females the incidence and mortality rates are increasing (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 16% in males and 23% in females. A slight increase in the relative survival proportion for lung cancer is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 10 and 11**).
 - By 2025, the number of patients diagnosed with lung cancer is expected to rise to more than 10,600. Although the lung cancer incidence risk is decreasing over time for males, the number of projected cancer diagnoses still increases due to the ageing and growth of the population. The cancer incidence risk in females is increasing over time, together

- with an ageing and growing population resulting in a much stronger increase in the projected number of lung cancer diagnoses compared to males (**Figure 12 and 13**).
- Males and females show a different risk pattern with age (**Figure 1 and Figure 8**).
 - Age group 30-49 years:
 - Males and females have comparable incidence rates (M/F ratio = 1.1).
 - The incidence rates in males are decreasing with 4% to 5% annually. In females, a decrease can only be observed in the more recent years.
 - Age group 50-74 years:
 - Males have a twofold higher risk than females (M/F ratio = 2.1).
 - The incidence rates are decreasing by about 1% in males, while the rates in females are increasing with about 5% annually.
 - Age group 75+:
 - Males have a fivefold higher risk than females (M/F ratio = 5.0).
 - The incidence rates in males remain stable over time, while the rates in females are annually increasing with about 4%.
- 70% of all lung cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 70% in 2004 to 87% in 2013.
 - There are no major regional differences in stage distribution.
 - Stage distribution in males and females is comparable.
 - More than 90% of small cell lung cancer (SCLC) cases with known stage are diagnosed in an advanced stage (stage III+IV).
- In 2007, adenocarcinoma has replaced squamous cell carcinoma as the dominant histological subtype in males (**Figure 9**).
 - Adenocarcinoma is the only histological subtype of lung cancer that is increasing in males.
 - In females, the incidence rates of adenocarcinoma, squamous cell carcinoma and SCLC are increasing.
 - As a result of improvements and changes in diagnostic precision and registration, a decrease over time is especially observed in the incidence of large cell undifferentiated carcinoma and other (unspecified) carcinomas.

Figure 1 Lung cancer: age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013.

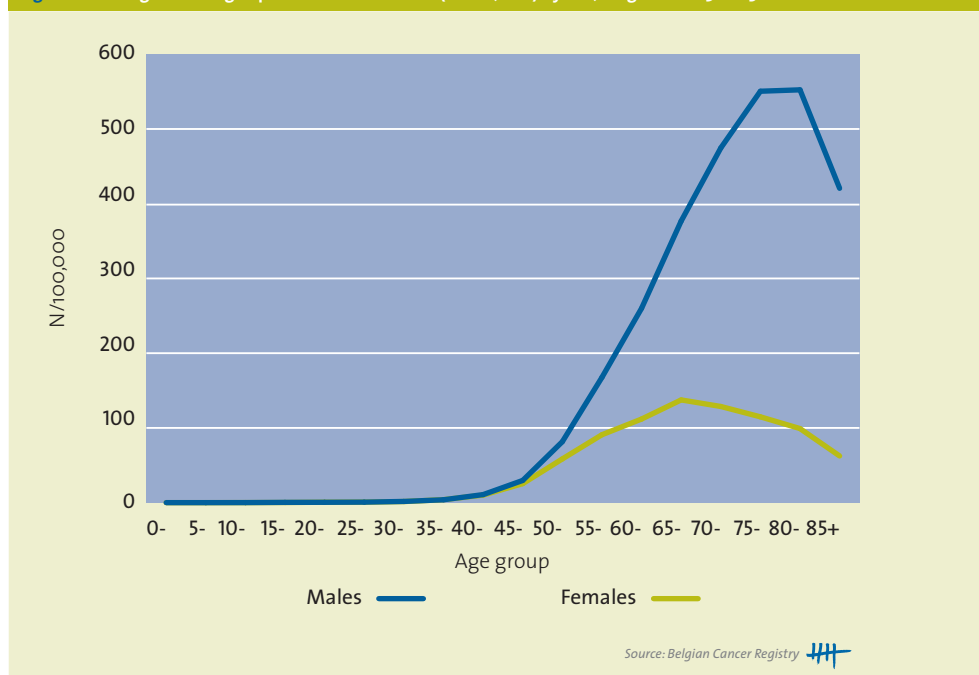


Figure 2 Lung cancer: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data.)

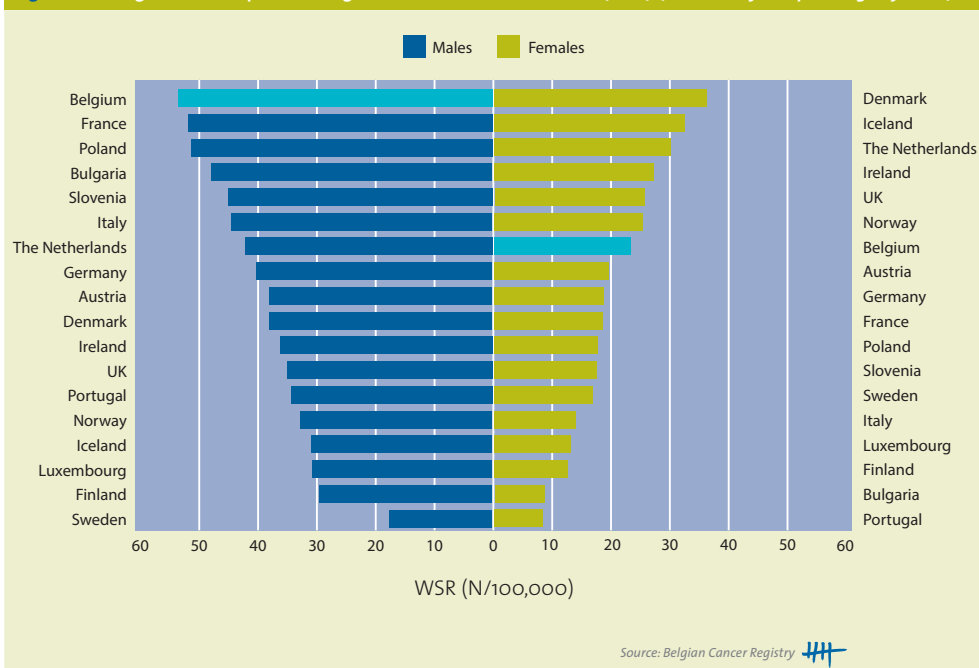


Figure 3 Lung cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

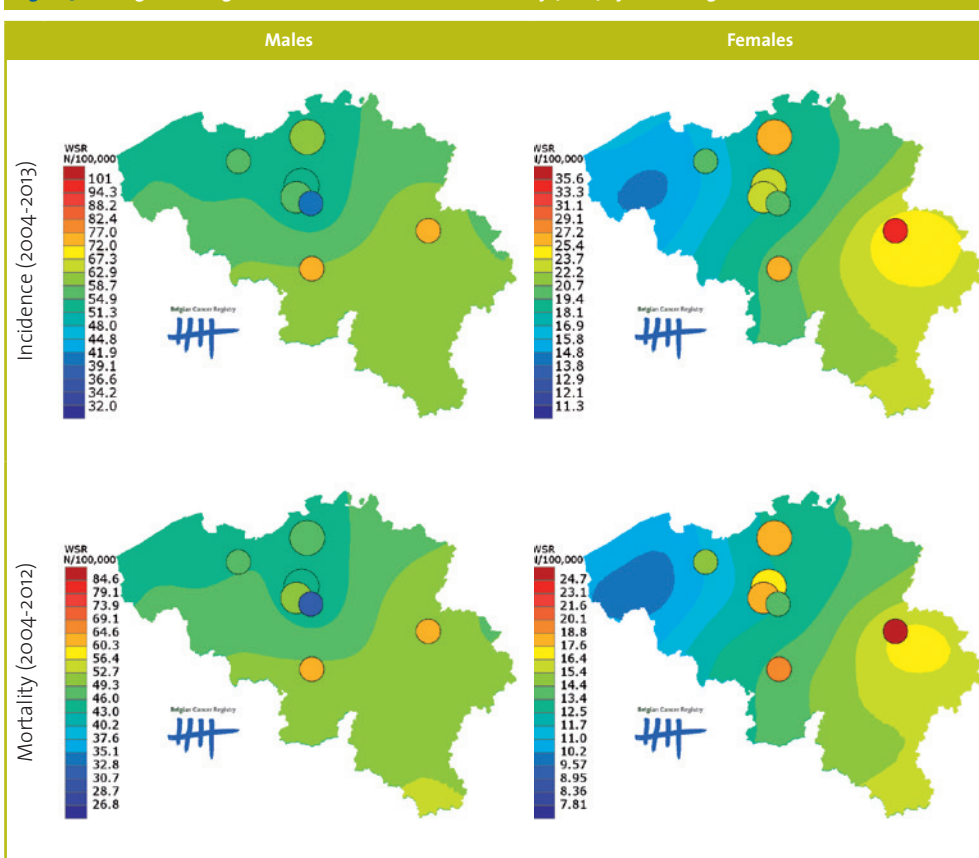
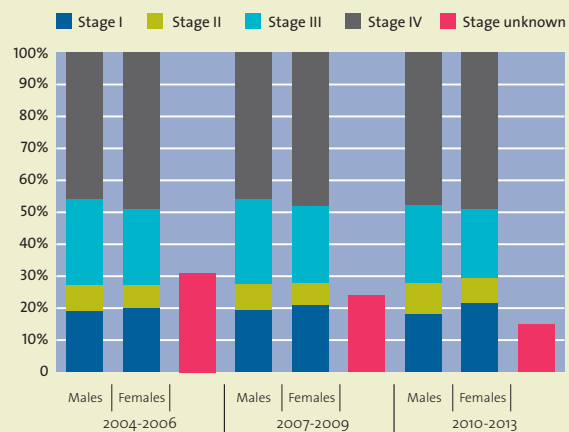
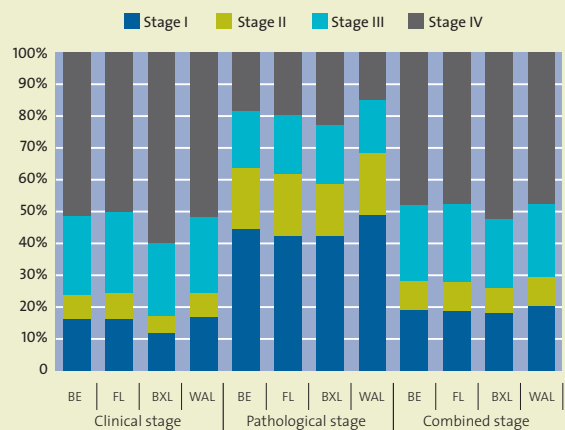


Figure 4 Lung cancer: stage distribution by sex, Belgium
2004-2006, 2007-2009 and 2010-2013



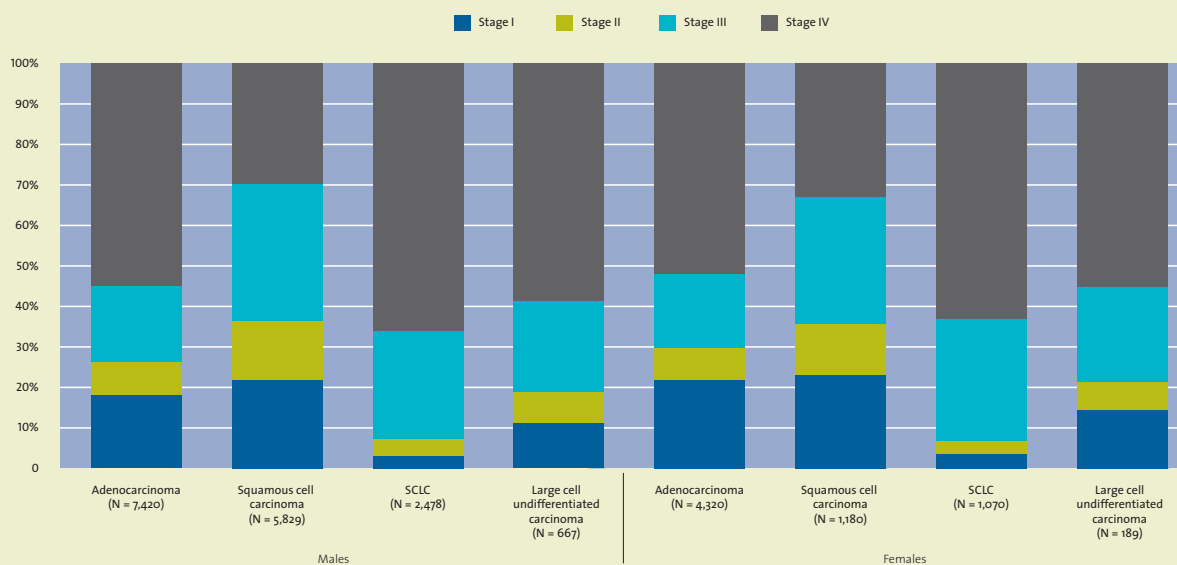
Source: Belgian Cancer Registry

Figure 5 Lung cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Lung cancer: stage distribution by histology and sex, Belgium 2010-2013



Source: Belgian Cancer Registry

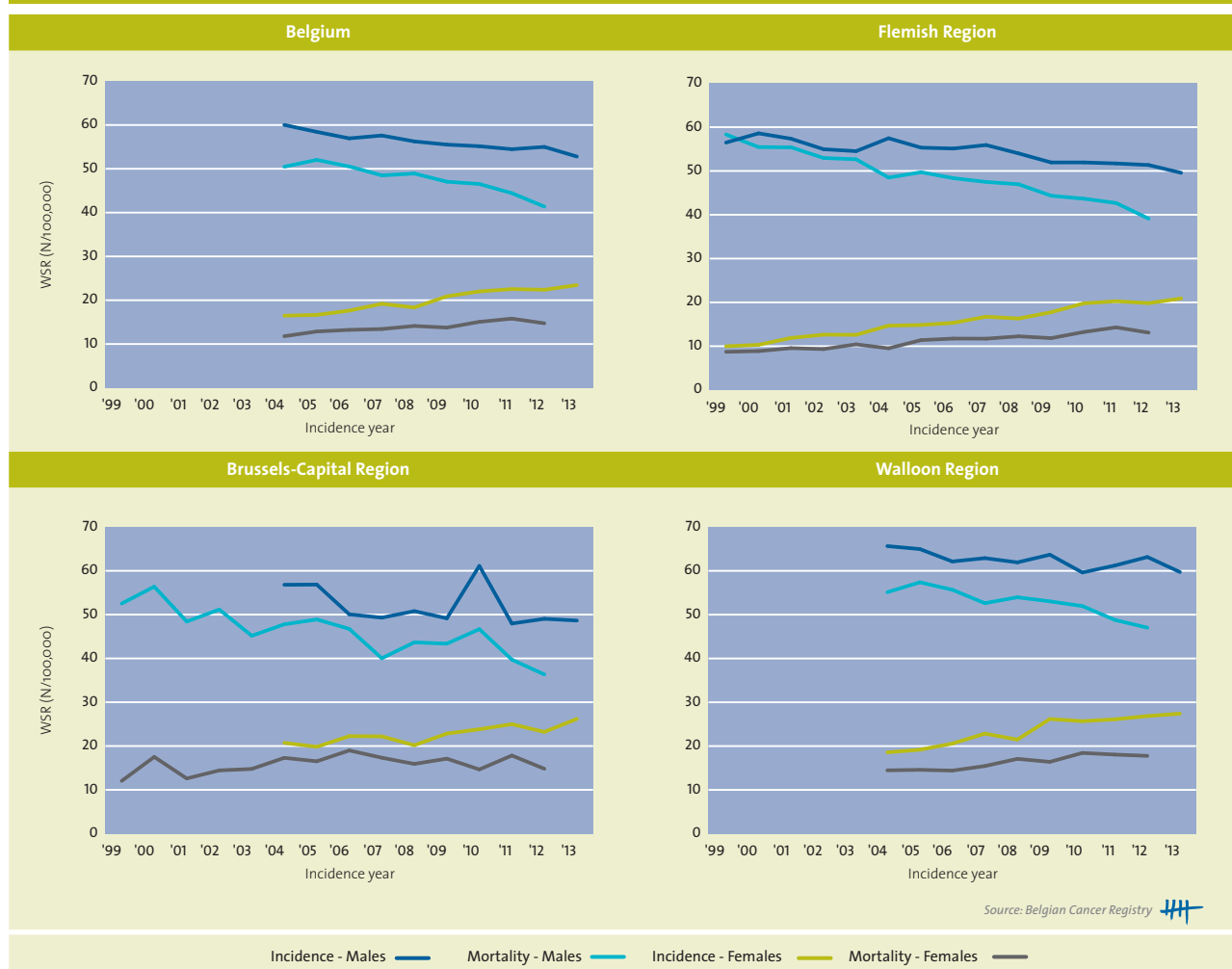
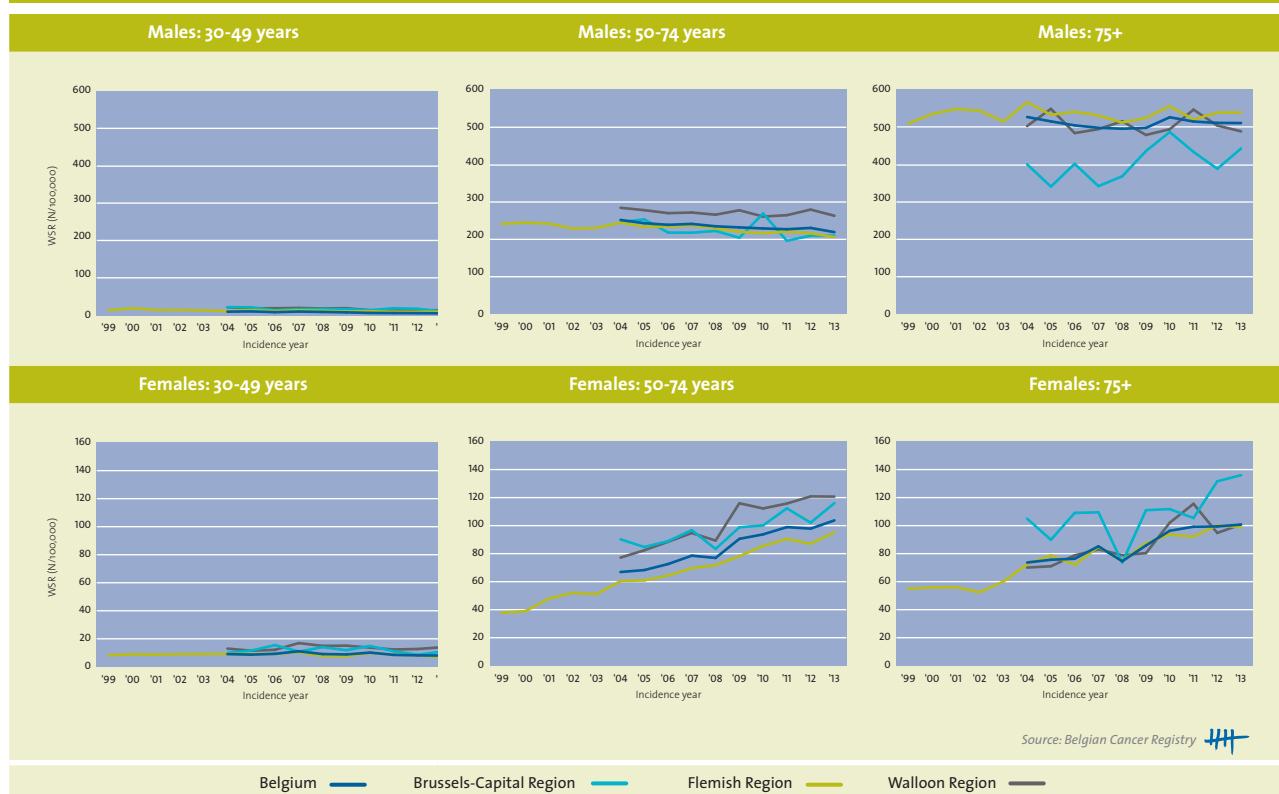
Figure 7 Lung cancer: Age-standardised incidence and mortality (WSR) by sex and region, 1999-2013**Figure 8** Lung cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

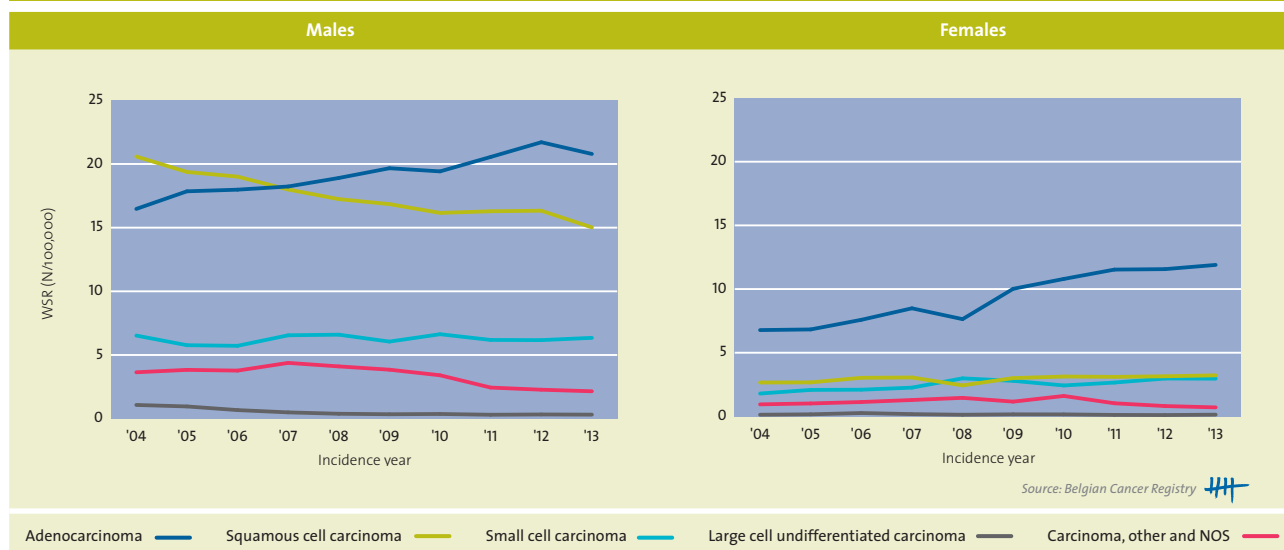
Figure 9 Lung cancer: Trends in age-standardised incidence (WSR) by histology and sex in Belgium 2004-2013

Table 2 Lung cancer: AAPC(%) by sex, region, age group and histology in Belgium

Lung cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-1.2	[-1.4,-0.9]	2004-2013	4.3	[3.5,5.2]	2004-2013
Flemish Region	-1.0	[-1.2,-0.7]	1999-2013	5.6	[5.1,6.1]	1999-2013
	-0.5	[-1.0,-0.0]	1999-2007	7.6	[6.0,9.2]	1999-2004
	-1.6	[-2.3,-0.9]	2007-2013	4.6	[3.7,5.4]	2004-2013
Brussels-Capital Region	-1.2	[-3.1,0.8]	2004-2013	2.5	[1.2,3.9]	2004-2013
Walloon Region	-0.8	[-1.3,-0.2]	2004-2013	4.7	[3.4,6.0]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-2.5	[-3.1,-1.9]	2004-2012	3.0	[1.9,4.2]	2004-2012
	-1.4	[-2.5,-0.4]	2004-2009			
	-4.3	[-6.1,-2.5]	2009-2012			
Flemish Region	-2.6	[-2.9,-2.3]	1999-2012	3.7	[3.0,4.4]	1999-2012
Brussels-Capital Region	-2.4	[-3.3,-1.4]	1999-2012	1.2	[-0.4,2.8]	1999-2012
				4.4	[1.1,7.8]	1999-2006
				-2.4	[-6.1,1.4]	2006-2012
Walloon Region	-2.3	[-3.0,-1.6]	2004-2012	3.4	[2.1,4.7]	2004-2012
	-1.4	[-2.3,-0.4]	2004-2010			
	-5.2	[-8.1,-2.1]	2010-2012			
Incidence by histology	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Adenocarcinoma	2.7	[2.1,3.3]	2004-2013	7.5	[5.6,9.4]	2004-2013
Small cell carcinoma	-2.1	[-3.1,-1.1]	2004-2013	2.7	[1.3,4.1]	2004-2013
Large cell undifferentiated carcinoma	-11.0	[-12.7,-9.2]	2004-2013	-8.8	[-11.4,-6.0]	2004-2013
Squamous cell carcinoma	-3.1	[-3.6,-2.6]	2004-2013	2.0	[0.1,3.9]	2004-2013
	-4.2	[-5.5,-3.0]	2004-2008			
	-2.2	[-3.2,-1.2]	2008-2013			
Carcinoma, other and NOS	-5.0	[-6.5,-3.4]	2004-2013	0.1	[-1.7,1.8]	2004-2013
	7.7	[1.9,13.8]	2004-2007	11.1	[6.3,16.2]	2004-2008
	-10.7	[-13.0,-8.4]	2007-2013	-8.0	[-11.2,-4.7]	2008-2013
30-49 Year						
Belgium	-4.5	[-5.8,-3.1]	2004-2013	-0.7	[-2.4,0.9]	2004-2013
				4.6	[-1.1,10.6]	2004-2007
				-3.3	[-5.8,-0.7]	2007-2013
Flemish Region	-4.0	[-5.2,-2.7]	1999-2013	-1.0	[-2.2,0.3]	1999-2013
				1.1	[-1.3,3.5]	1999-2007
				-3.7	[-6.7,-0.5]	2007-2013
Brussels-Capital Region	-4.2	[-8.7,0.5]	2004-2013	-1.1	[-5.4,3.3]	2004-2013
				6.6	[-4.5,19.0]	2004-2008
				-6.9	[-14.6,1.5]	2008-2013
Walloon Region	-5.5	[-7.7,-3.3]	2004-2013	0.5	[-2.6,3.7]	2004-2013
50-74 Year						
Belgium	-1.2	[-1.5,-0.9]	2004-2013	5.3	[4.4,6.3]	2004-2013
Flemish Region	-1.0	[-1.3,-0.7]	1999-2013	6.9	[6.3,7.5]	1999-2013
	-0.4	[-1.0,0.2]	1999-2007	9.3	[7.4,11.3]	1999-2004
	-1.8	[-2.6,-1.1]	2007-2013	5.6	[4.6,6.6]	2004-2013
Brussels-Capital Region	-1.6	[-3.9,0.7]	2004-2013	3.1	[1.4,4.8]	2004-2013
Walloon Region	-0.5	[-1.2,0.2]	2004-2013	5.5	[4.0,7.0]	2004-2013
75+						
Belgium	-0.2	[-0.6,0.3]	2004-2013	4.0	[2.6,5.4]	2004-2013
	-1.8	[-3.2,-0.3]	2004-2007			
	0.6	[-0.0,1.3]	2007-2013			
Flemish Region	0.0	[-0.4,0.4]	1999-2013	5.0	[4.0,6.0]	1999-2013
Brussels-Capital Region	2.1	[-0.5,4.7]	2004-2013	3.0	[-0.4,6.6]	2004-2013
				-3.4	[-11.4,5.2]	2004-2008
				8.5	[1.4,16.0]	2008-2013
Walloon Region	-0.2	[-1.4,1.1]	2004-2013	4.9	[2.6,7.2]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Lung cancer: Relative survival by cohort and sex in Belgium 2004-2013

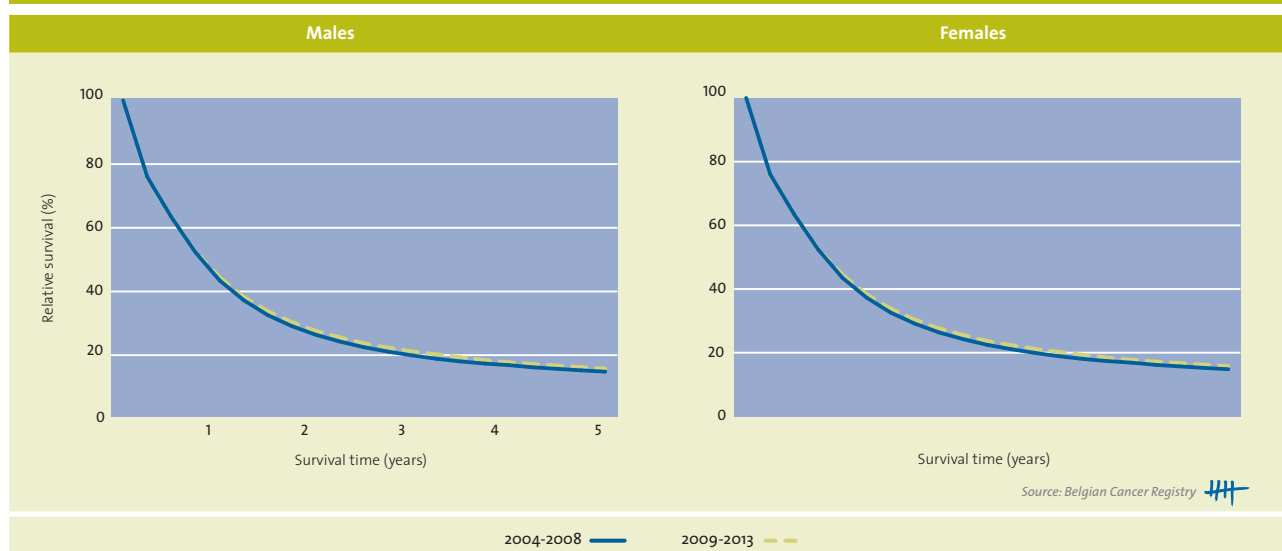
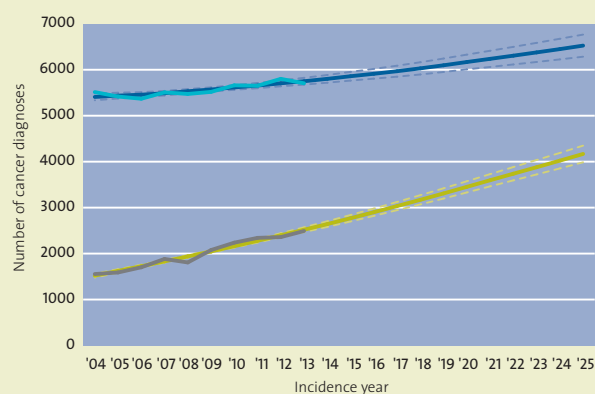


Figure 11 Lung cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

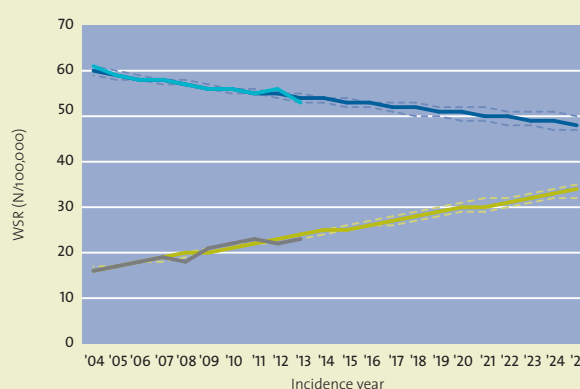


Figure 12 Lung cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Figure 13 Lung cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

Did you know that the BCR also...

- Is involved in an international collaboration project, financed by KWF Kankerbestrijding, aiming to describe the variation in use of concurrent versus sequential chemoradiation for stage III non-small cell lung cancer patients. This study will also examine which patient and technical factors are related to treatment variability and survival.
- Has a partnership in the registration project for patients that are treated with Stereotactic Body Radiation Therapy. This project is carried out in a convention with the RIZIV/INAMI and the radiotherapy centres, and in collaboration with the College of Radiotherapy. Of the 1,062 registration already received, 633 are for primary lung lesions (59.6%) and 275 for lung metastases (25.9%).
- Has a partnership in the ongoing KCE-project on the measurement of quality indicators for the management of lung cancer and is responsible for the calculation of the results at both the national and hospital level. Dissemination of the results is foreseen for the spring of 2016.

!!Key note for registration:

Code lung (C34.x) only if it is the primary tumour localisation: malignant neoplasms originating in many primary tumour localisations often metastasize to the lung. Do not code them in the lung but in the organ of origin (if organ of origin unknown: use C80.9).

Lung is a pair organ. In case of bilateral lung tumour however, if identical histology on both sides OR in case the histology of the contralateral nodule is unknown tumour is registered only once and the contralateral nodule is considered to be a metastasis (c/pM1a).

Bronchiolo-alveolar carcinoma (BAC): changed terminology since the use of the term BAC will be discontinued.

- Adenocarcinoma, NOS: 8140/3
- Lepidic (predominant) adenocarcinoma, NOS (formerly BAC, NOS): 8250/3
- Lepidic non-mucinous adenocarcinoma (formerly non-mucinous BAC): 8252/3
- (Lepidic) mucinous adenocarcinoma (formerly mucinous BAC): 8253/3
- Mixed mucinous and non-mucinous adenocarcinoma (formerly mixed mucinous and non-mucinous BAC): 8254/3
- Adenocarcinoma in situ (formerly BAC in situ): 8250/2
- Non-mucinous adenocarcinoma in situ: 8252/2
- Mucinous adenocarcinoma in situ: 8253/2

3.4.2 MESOTHELIOMA (ICD-10: C45)

Table 1 Mesothelioma: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Mesothelioma	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	229	4.2	2.0	44	0.8	0.4
Flemish Region	157	5.0	2.2	29	0.9	0.4
Brussels-Capital Region	10	1.8	1.1	2	0.3	0.1
Walloon Region	62	3.6	1.9	13	0.7	0.3
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	189	3.5	1.6	33	0.6	0.3
Flemish Region	141	4.5	2.0	20	0.6	0.3
Brussels-Capital Region	5	0.9	0.4	2	0.3	0.1
Walloon Region	43	2.5	1.1	11	0.6	0.4
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	278	5.1	2.6	72	1.3	0.6
Flemish Region	192	6.1	2.9	47	1.5	0.7
Brussels-Capital Region	12	2.1	1.4	6	1.0	0.6
Walloon Region	74	4.3	2.3	19	1.0	0.5
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	304	5.6	2.8	85	1.5	0.7
Flemish Region	211	6.7	3.2	55	1.7	0.8
Brussels-Capital Region	13	2.3	1.5	7	1.2	0.7
Walloon Region	80	4.6	2.4	23	1.3	0.6
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	1,084	5.3%	[3.6; 7.4]	233	15.1%	[9.0; 22.8]
Flemish Region	771	4.6%	[2.9; 7.0]	162	16.6%	[9.7; 25.1]
Brussels-Capital Region	36	-	-	17	-	-
Walloon Region	277	7.1%	[3.3; 12.9]	54	-	-
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	291 [263; 319]	1.9 [1.8; 2.1]		49 [44; 54]	0.3 [0.3; 0.4]	

CR, crude rate (N/100,000 person years)

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

- Mesothelioma burden in Belgium (**Table 1**):
 - 273 new diagnoses of cancer in 2013, 84% males and 16% females.
 - 222 deaths are due to mesothelioma in 2012, 85% males and 15% females.
 - 389 persons (<0.01% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with mesothelioma between 2004 and 2013.
 - The majority of mesothelioma cases and deaths are situated in the area of Antwerp - Sint-Niklaas - Kapelle-op-den-Bos, a region with a well known history of asbestos industry (**Figure 3**).
 - Over time, incidence rates are decreasing in males (1% per year). (**Figure 6 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 5% in males and 15% in females. No clear trend in relative survival proportion over time is observed (**Figure 7 and 8**).
 - Using the available data, the number of patients diagnosed with mesothelioma is expected to rise to about 340 cases. However, this number will be largely dependent on changes in (occupational) asbestos exposure during the last decades (**Figure 9 and 10**).
- 70% of all mesotheliomas with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4 and 5**).
 - Information on stage is available for 60% of all mesothelioma. Over time the availability has not improved much.
 - Stage distribution in males and females is comparable.

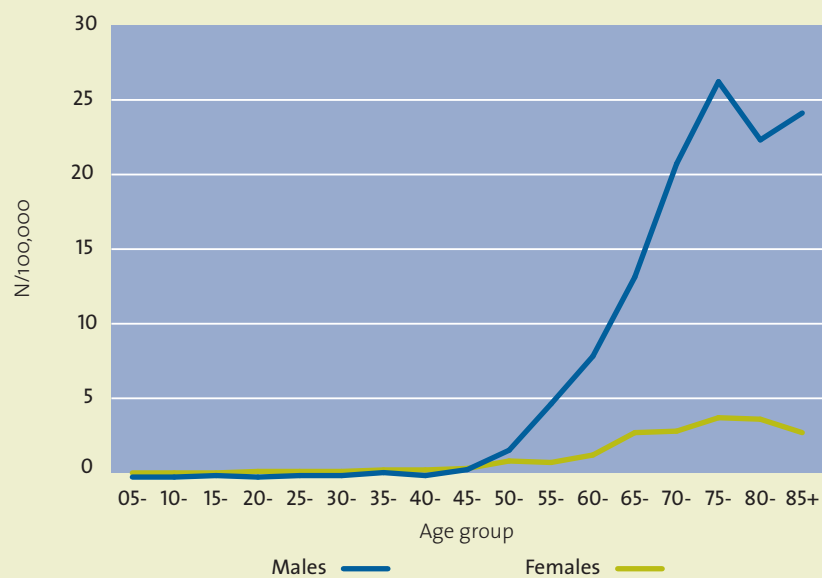

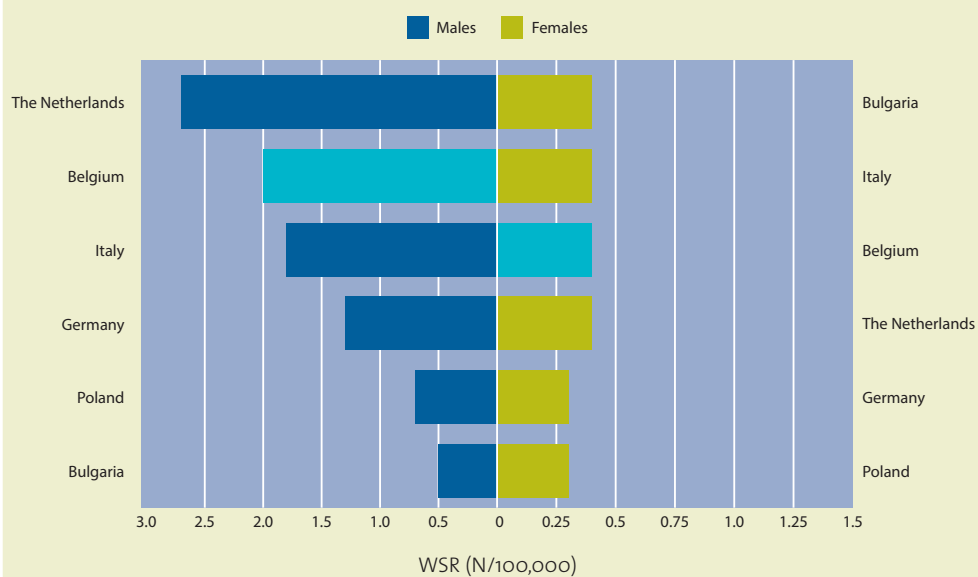

Figure 1 Mesothelioma: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013Source: Belgian Cancer Registry **Figure 2** Mesothelioma: Comparison of age-standardised incidence rates (WSR) (Selection of European registry data)Source: Belgian Cancer Registry 

Figure 3 Mesothelioma: Age-standardised incidence and mortality (WSR) by sex in Belgium

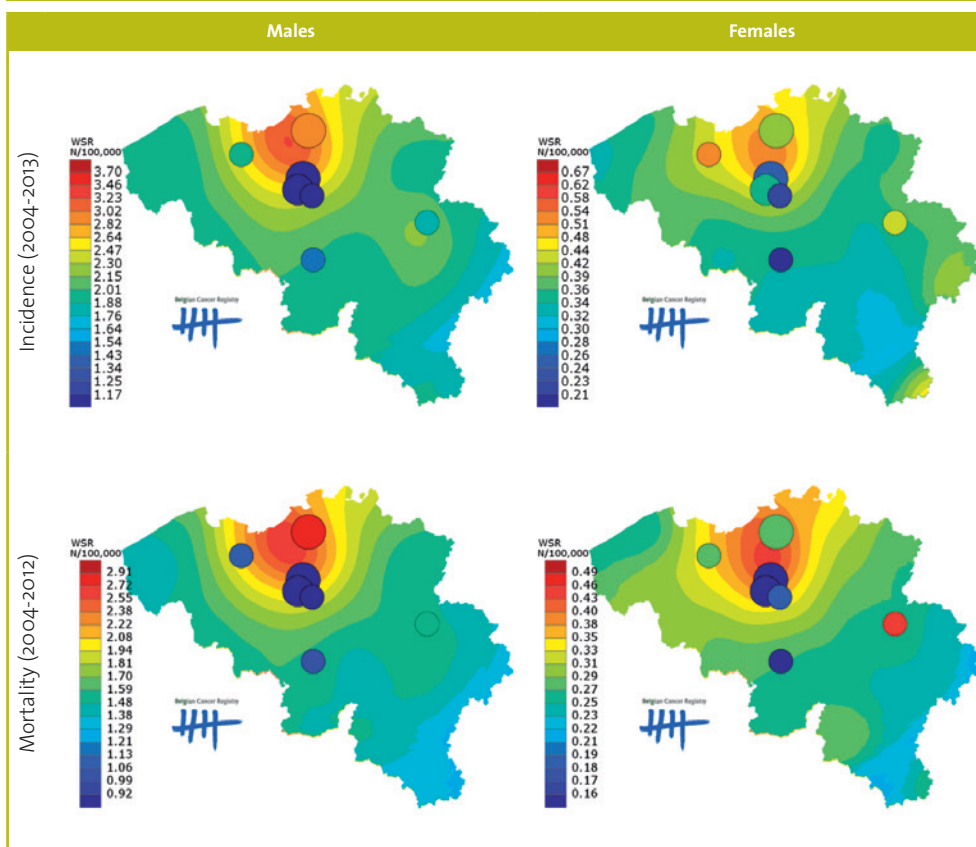
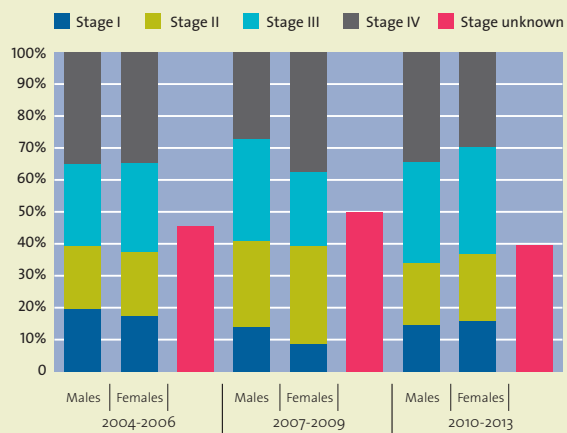
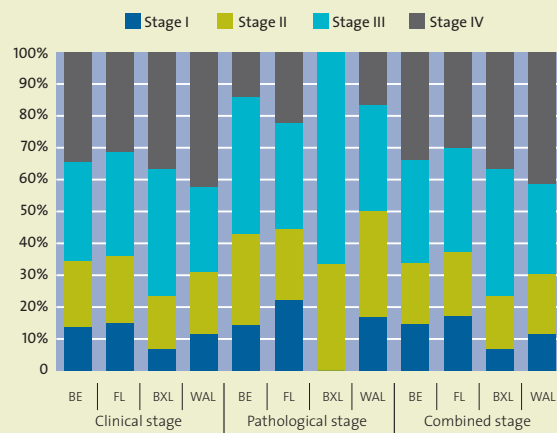


Figure 4 Mesothelioma: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



Source: Belgian Cancer Registry

Figure 5 Mesothelioma: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

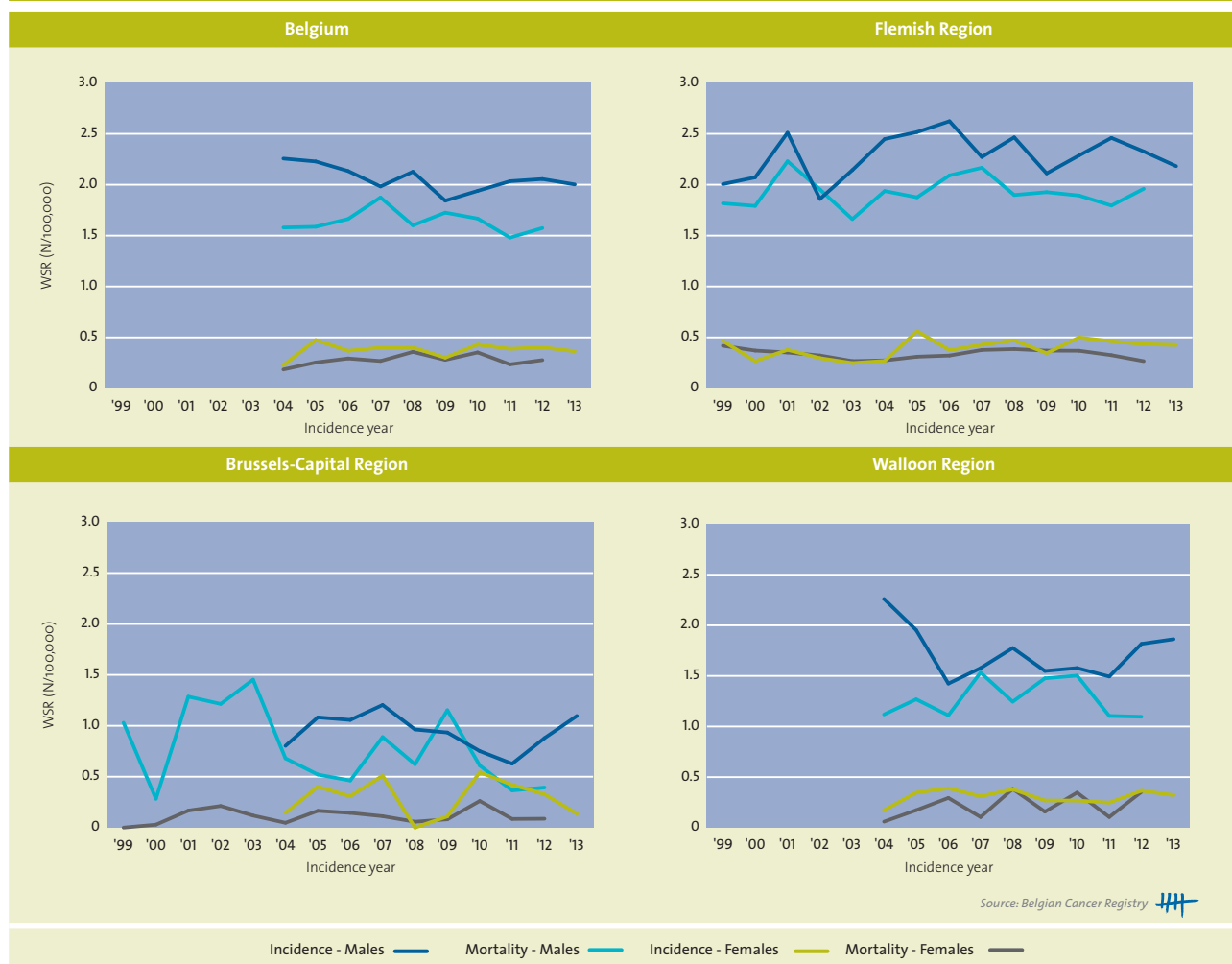
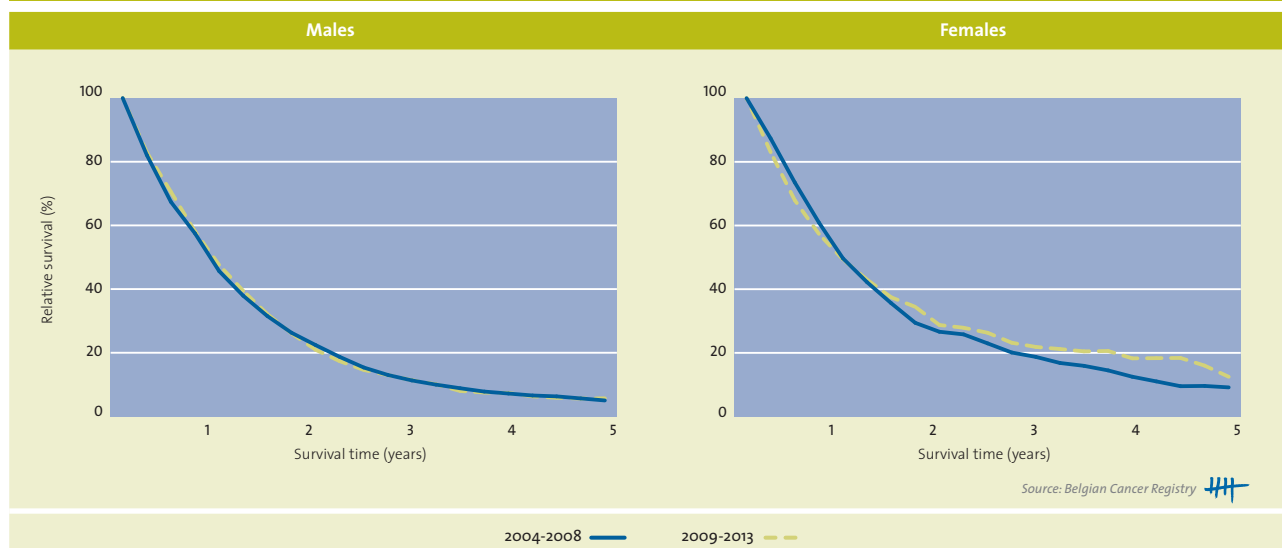
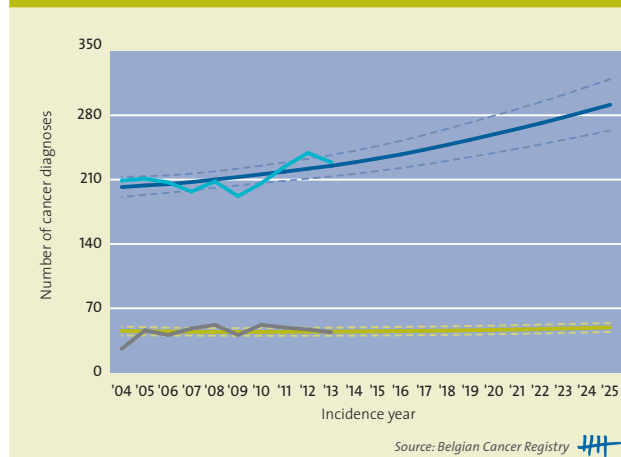
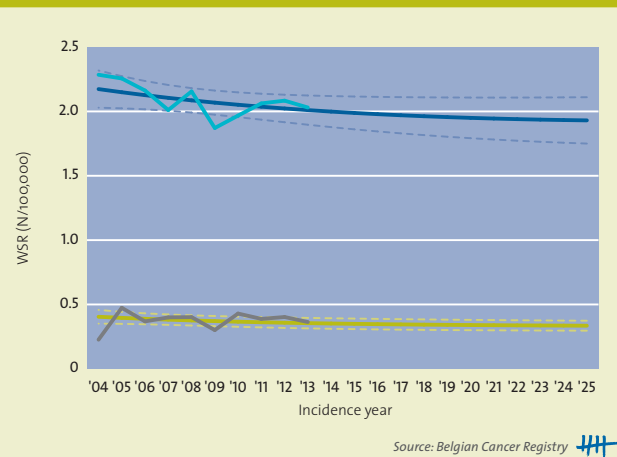
Figure 6 Mesothelioma: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Table 2 Mesothelioma: AAPC(%) by sex and region in Belgium

Mesothelioma	Males			Females		
Incidence by region	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-1.1	[-2.1; -0.2]	2004-2013	2.0	[-3.2; 7.5]	2004-2013
	-3.3	[-5.0; -1.4]	2004-2009			
	1.6	[-0.8; 4.0]	2009-2013			
Flemish Region	0.7	[-0.5; 1.8]	1999-2013	2.6	[-0.4; 5.7]	1999-2013
	2.8	[0.3; 5.4]	1999-2006			
	-1.4	[-3.8; 1.0]	2006-2013			
Brussels-Capital Region	-0.6	[-6.0; 5.1]	2004-2013	1.8	[-4.5; 8.5]	2004-2013
	11.2	[-15.2; 45.8]	2004-2006			
	-3.7	[-10.2; 3.3]	2006-2013			
Walloon Region	-1.0	[-4.0; 2.0]	2004-2013	1.8	[-4.5; 8.5]	2004-2013
	-6.0	[-11.4; -0.3]	2004-2009			
	5.6	[-2.1; 13.9]	2009-2013			
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.7	[-2.7; 1.3]	2004-2012	2.3	[-3.0; 7.8]	2004-2012
	1.5	[-1.9; 5.0]	2004-2009			
	-4.3	[-9.8; 1.5]	2009-2012			
Flemish Region	0.1	[-1.0; 1.3]	1999-2012	-3.0	[-4.0; -2.0]	1999-2012
Brussels-Capital Region				-11.0	[-13.9; -7.9]	1999-2003
Walloon Region				8.3	[5.7; 10.9]	2003-2008
Brussels-Capital Region	-4.4	[-11.1; 2.8]	1999-2012	-7.8	[-10.8; -4.6]	2008-2012
Walloon Region	-1.3	[-4.8; 2.4]	2004-2012	11.2	[-8.0; 34.4]	2004-2012
	4.1	[-0.8; 9.3]	2004-2010			
	-16.0	[-28.2; -1.7]	2010-2012			

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period

Figure 7 Mesothelioma: Relative survival by cohort and sex, Belgium 2004-2013**Figure 8** Mesothelioma: 1-, 3-, 5- and 10-year relative survival (RS) for males by region**Figure 9** Mesothelioma: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025**Figure 10** Mesothelioma: Observed and projected incidence (WSR) by sex, Belgium 2004-2025

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also ...

- Is doing specific research, financed by the Foundation against Cancer, in which additional databases such as the Belgian mesothelioma registry are consulted to assess the completeness and validity of the mesothelioma registration. The aim is to describe real-life treatment practices for this disease and to determine the clinical and pathological characteristics of long-term mesothelioma survivors. Conclusive results of this project, performed in collaboration with Belgian mesothelioma experts, are to be expected by the end of 2016.
- Collaborated in an international study indicating that the use of chemotherapy decreased with increasing age but was more often used in Belgium than in the other countries. Further reading see:
 - Damhuis RA, Khakwani A, **De Schutter H**, Rich AL, Burgers JA, van Meerbeeck JP. Treatment patterns and survival analysis in 9014 patients with malignant pleural mesothelioma from Belgium, the Netherlands and England. Lung Cancer 2015; 89(2): 212-217

!!Key note for registration:

Primary localisation possible in pleura (C38.4), pericardium (C38.0), peritoneum (C48) and tunica vaginalis (C63.7).

TNM is only available for pleural mesothelioma.

3.5 MALIGNANT MELANOMA (ICD-10: C43)

Table 1 Malignant melanoma: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Malignant melanoma	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	1,082	19.9	12.1	1,553	27.5	18.5
Flemish Region	669	21.2	12.3	984	30.5	20.0
Brussels-Capital Region	93	16.6	11.9	106	17.9	12.4
Walloon Region	320	18.5	11.7	463	25.3	17.8
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	155	2.9	1.5	136	2.4	1.0
Flemish Region	100	3.2	1.6	86	2.7	1.1
Brussels-Capital Region	11	2.0	1.3	13	2.2	1.2
Walloon Region	44	2.6	1.4	37	2.0	0.8
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	3,980	73.1	45.2	6,041	106.9	71.0
Flemish Region	2,262	71.8	42.4	3,574	110.6	71.0
Brussels-Capital Region	373	66.4	47.1	473	79.8	53.7
Walloon Region	1,345	77.6	50.5	1,994	109.0	77.3
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	6,124	112.4	69.0	9,797	173.3	113.1
Flemish Region	3,536	112.2	66.1	5,781	179.0	113.5
Brussels-Capital Region	557	99.2	69.9	777	131.0	86.9
Walloon Region	2,031	117.1	74.9	3,239	177.1	122.0
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	4,723	86.6%	[84.8; 88.3]	6,648	92.8%	[91.6; 93.9]
Flemish Region	2,704	83.8%	[81.4; 86.2]	3,931	91.9%	[90.3; 93.4]
Brussels-Capital Region	447	93.9%	[88.5; 98.4]	539	95.5%	[90.7; 99.3]
Walloon Region	1,572	89.0%	[86.0; 91.8]	2,178	93.8%	[91.8; 95.6]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	1,835 [1,714; 1,957]	17.8 [16.6; 18.9]		2,271 [2,140; 2,401]	25 [23.6; 26.4]	

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

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

- Malignant melanoma burden in Belgium (**Table 1**):
 - 2,635 new diagnoses of cancer in 2013, 41% males and 59% females.
 - Malignant melanoma is the 7th most frequent tumour in males (3% of all malignancies) and the 4th most frequent in females (5%).
 - 291 deaths are due to malignant melanoma in 2012, 53% males and 47% females.
 - 15,921 persons (0.14% of the total Belgian population) are alive (on 01/01/2014) after being diagnosed with malignant melanoma between 2004 and 2013.
 - The highest incidence and mortality rates are observed in our coastal province in the western part of Belgium (**Figure 3**).
 - Over time, incidence rates are increasing with 5% annually in males and females (**Figure 7 and Table 3**). Mortality rates remained rather stable (2004-2013).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 87% in males and 93% in females. A slight increase in the relative survival proportion for malignant melanoma is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 11 and 12**).
 - By 2025, the number of patients diagnosed with malignant melanoma is expected to rise to more than 4,100. The increase is due to a combination of the ageing and growth of the population and an increasing risk over time in both males and females (**Figure 13 and 14**).
- Males and females show a different risk pattern with age (**Figure 1 and 8**).
 - Age group 15-39 years:
 - Females have a more than twofold higher risk than males (M/F ratio = 0.4).
 - The incidence rates show an annual increase of 3% in both sexes.
 - More than 80% of cases is diagnosed as stage I melanoma (**Figure 6**).
 - Age group 40-74 years:
 - Males and females have comparable incidence rates (M/F ratio = 0.9).
 - The incidence rates increase with 6% annually in both sexes.

- Age group 75+:
 - Males have a higher risk than females (M/F ratio = 1.5).
 - The incidence rates increase with 7% annually in males and 5% annually in females.
 - Only about half of all melanoma in the elderly are diagnosed as stage I.
- 90% of all malignant melanomas with known stage are diagnosed in prognostic favourable stages (stage I or II), in both males and females (**Figure 4, 5 and 6**).
- Availability of information on stage has improved from 77% in 2004-2006 to 85% in 2010-2013. In 2013, information on stage is available for 95% of all malignant melanoma cases.
- There are no major regional differences in stage distribution.
- Stage distribution in males is less favourable than in females.
- With age, more cases are diagnosed with thicker (>4mm) melanomas. In the elderly almost 1 out of every 5 malignant melanomas is thicker than 4mm (**Table 2**).
- The majority of malignant melanoma in males is diagnosed on the trunk; in females the majority of cases are located on the legs.
 - In males and females, the incidence rates seem to increase more rapidly for melanomas diagnosed on the trunk and on the arms (**Figure 9**).

Figure 1 Malignant melanoma: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013

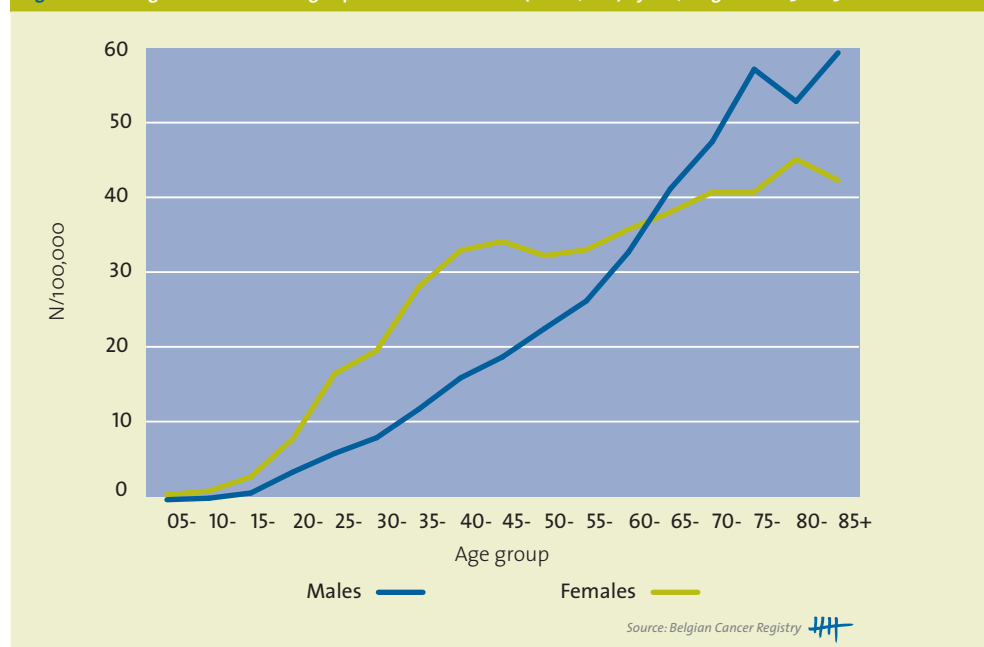


Figure 2 Malignant melanoma: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)

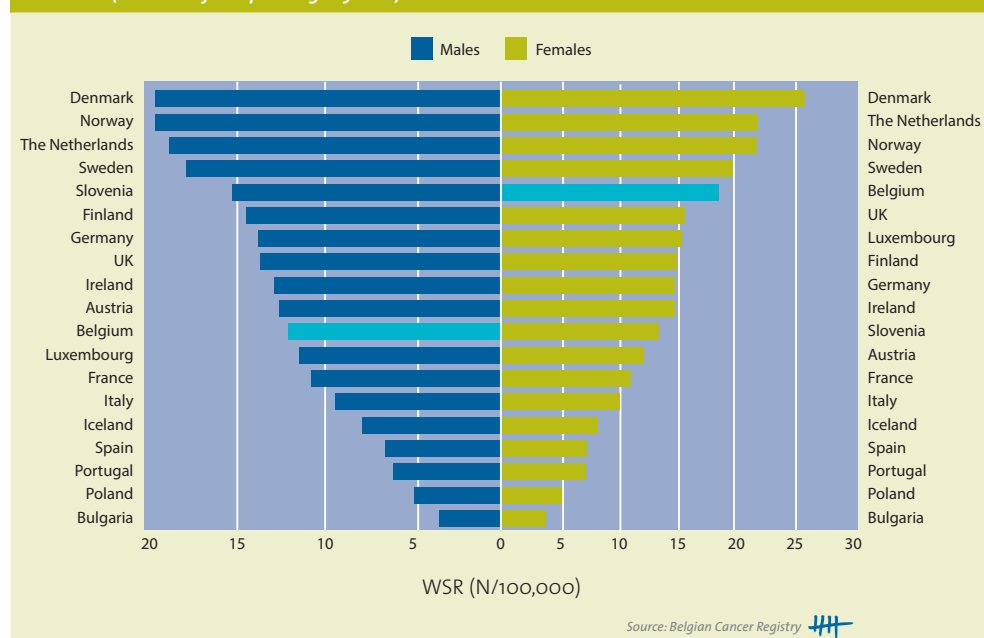


Figure 3 Malignant melanoma: Age-standardised incidence and mortality (WSR) by sex in Belgium

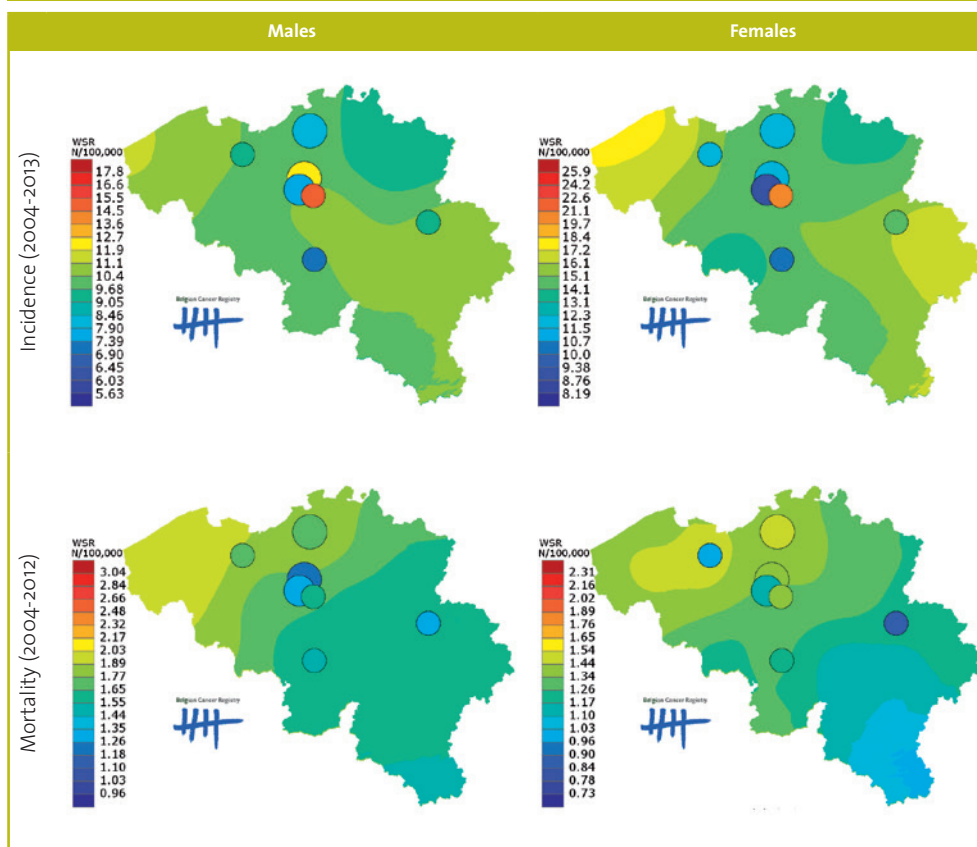
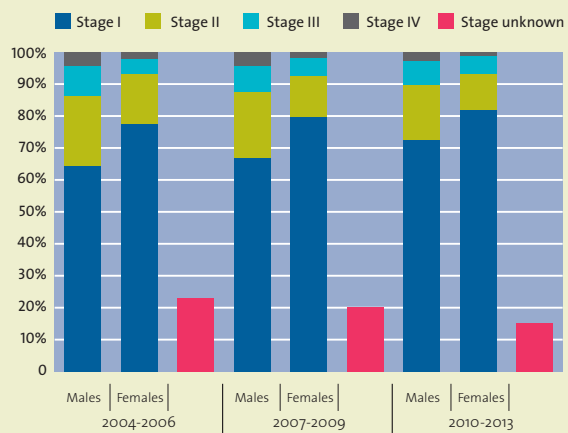
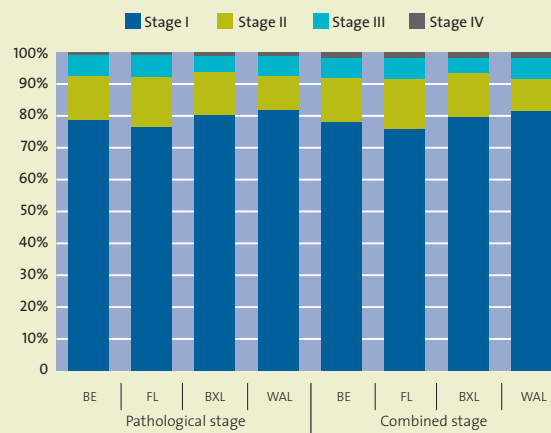


Figure 4 Malignant melanoma: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



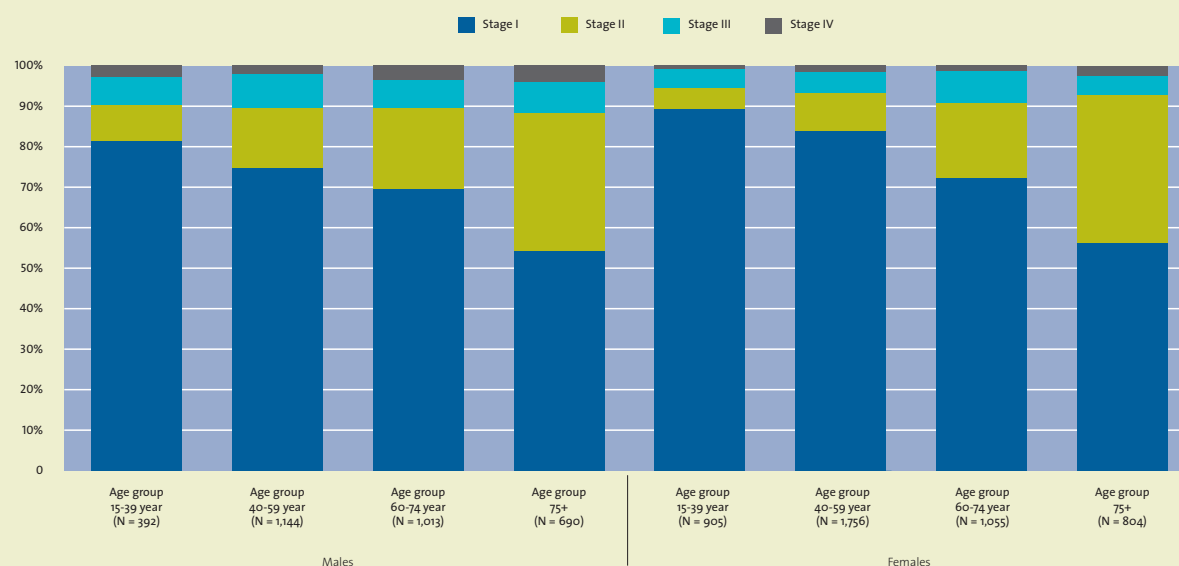
Source: Belgian Cancer Registry

Figure 5 Malignant melanoma: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Malignant melanoma: stage distribution by histology and sex, Belgium 2010-2013




Source: Belgian Cancer Registry 

Table 2 Malignant melanoma: pathological T-stage by sex and age group, Belgium 2010-2013

Males										
Malignant melanoma	All ages		15-39 years		40-59 years		60-74 years		75+	
Tumour thickness (pT)	N	WSR	N	WSR	N	WSR	N	WSR	N	WSR
pT1 (0-1mm)	1,895	5.9	279	3.6	734	11.6	572	18.6	307	20.9
pT1a (no ulceration and mitosis < 1/mm ²)	1,384	4.4	219	2.8	550	8.7	408	13.3	204	14.0
pT1b (with ulceration or mitosis ≥ 1/mm ²)	279	0.8	29	0.4	104	1.7	89	2.8	57	3.9
pT1, NOS (no info on ulceration nor mitosis)	232	0.7	31	0.4	80	1.3	75	2.4	46	3.0
pT2 (>1-2mm)	550	1.6	59	0.7	194	3.1	183	5.9	114	7.9
pT2a (no ulceration)	383	1.1	44	0.5	132	2.1	134	4.3	73	5.1
pT2b (with ulceration)	95	0.3	6	0.1	37	0.6	29	1.0	23	1.6
pT2, NOS (no info on ulceration)	72	0.2	9	0.1	25	0.4	20	0.6	18	1.2
pT3 (>2-4mm)	405	1.1	27	0.3	115	1.8	134	4.4	129	9.0
pT3a (no ulceration)	196	0.5	16	0.2	57	0.9	68	2.3	55	3.8
pT3b (with ulceration)	156	0.4	10	0.1	38	0.6	53	1.7	55	3.9
pT3, NOS (no info on ulceration)	53	0.1	1	0.0	20	0.3	13	0.4	19	1.4
pT4 (>4mm)	335	0.8	19	0.2	88	1.4	102	3.3	126	8.7
pT4a (no ulceration)	82	0.2	3	0.0	19	0.3	33	1.0	27	1.8
pT4b (with ulceration)	211	0.5	13	0.2	54	0.9	62	2.0	82	5.7
pT4, NOS (no info on ulceration)	42	0.1	3	0.0	15	0.2	7	0.2	17	1.2
Females										
Malignant melanoma	All ages		15-39 years		40-59 years		60-74 years		75+	
Tumour thickness (pT)	N	WSR	N	WSR	N	WSR	N	WSR	N	WSR
pT1 (0-1mm)	2,906	9.7	712	9.2	1,248	20.4	608	18.3	328	14.1
pT1a (no ulceration and mitosis < 1/mm ²)	2,123	7.2	531	6.9	944	15.4	409	12.3	231	10.0
pT1b (with ulceration or mitosis ≥ 1/mm ²)	410	1.3	82	1.1	179	2.9	108	3.3	40	1.7
pT1, NOS (no info on ulceration nor mitosis)	373	1.2	99	1.3	125	2.1	91	2.7	57	2.5
pT2 (>1-2mm)	805	2.4	127	1.7	308	4.9	216	6.5	154	6.6
pT2a (no ulceration)	535	1.6	83	1.1	227	3.6	131	3.9	94	4.1
pT2b (with ulceration)	136	0.4	15	0.2	44	0.7	48	1.4	29	1.1
pT2, NOS (no info on ulceration)	134	0.4	29	0.4	37	0.6	37	1.1	31	1.3
pT3 (>2-4mm)	481	1.1	45	0.6	119	1.9	141	4.1	175	7.2
pT3a (no ulceration)	232	0.6	24	0.3	65	1.0	68	2.0	75	3.1
pT3b (with ulceration)	176	0.4	17	0.2	43	0.7	52	1.5	64	2.6
pT3, NOS (no info on ulceration)	73	0.1	4	0.0	11	0.2	21	0.6	36	1.4
pT4 (>4mm)	297	0.6	16	0.2	61	1.0	80	2.3	140	5.4
pT4a (no ulceration)	87	0.2	7	0.1	15	0.2	28	0.8	37	1.4
pT4b (with ulceration)	161	0.3	5	0.1	30	0.5	42	1.2	84	3.3
pT4, NOS (no info on ulceration)	49	0.1	4	0.1	16	0.2	10	0.3	19	0.7

Figure 7 Malignant melanoma: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

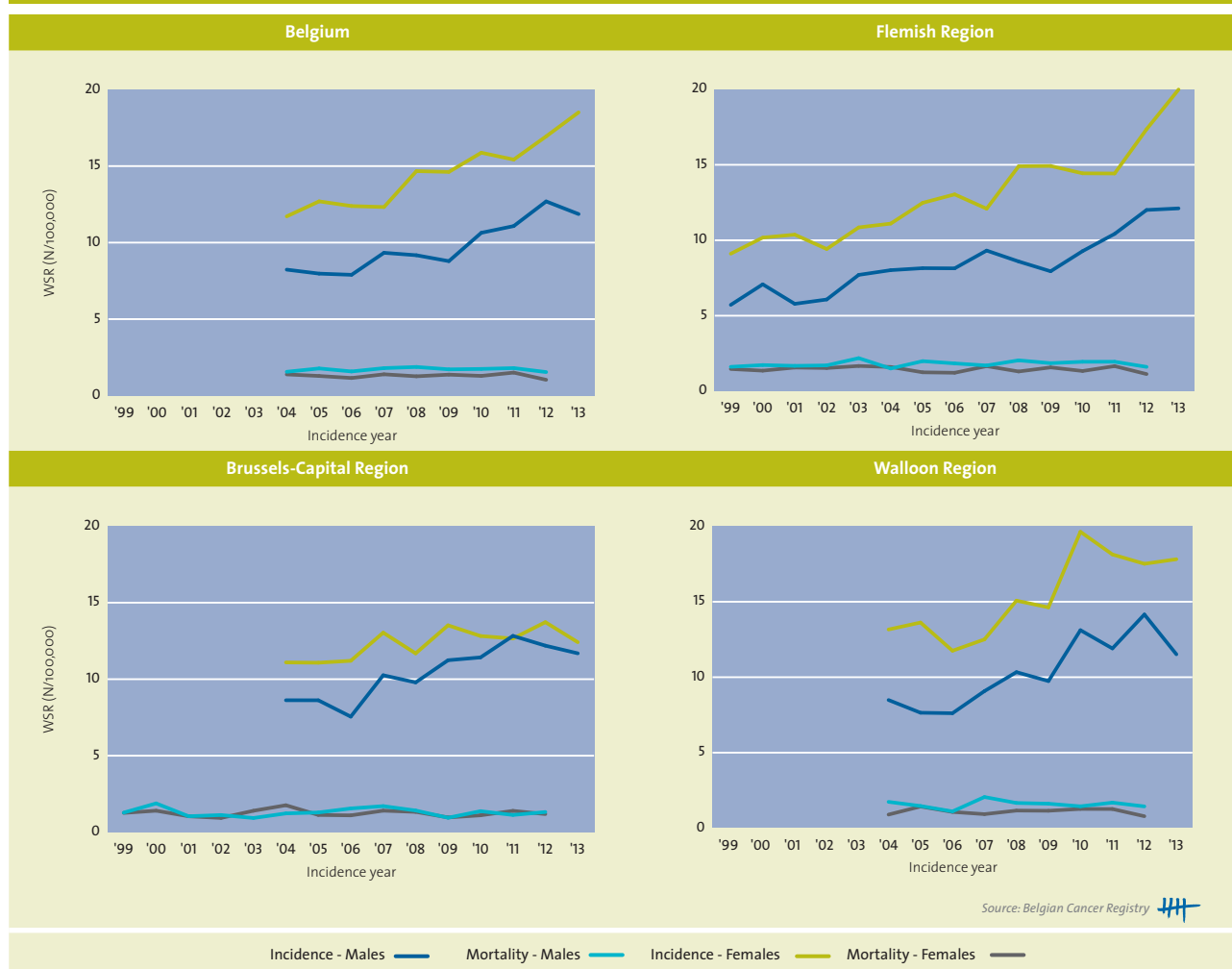


Figure 8 Malignant melanoma: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

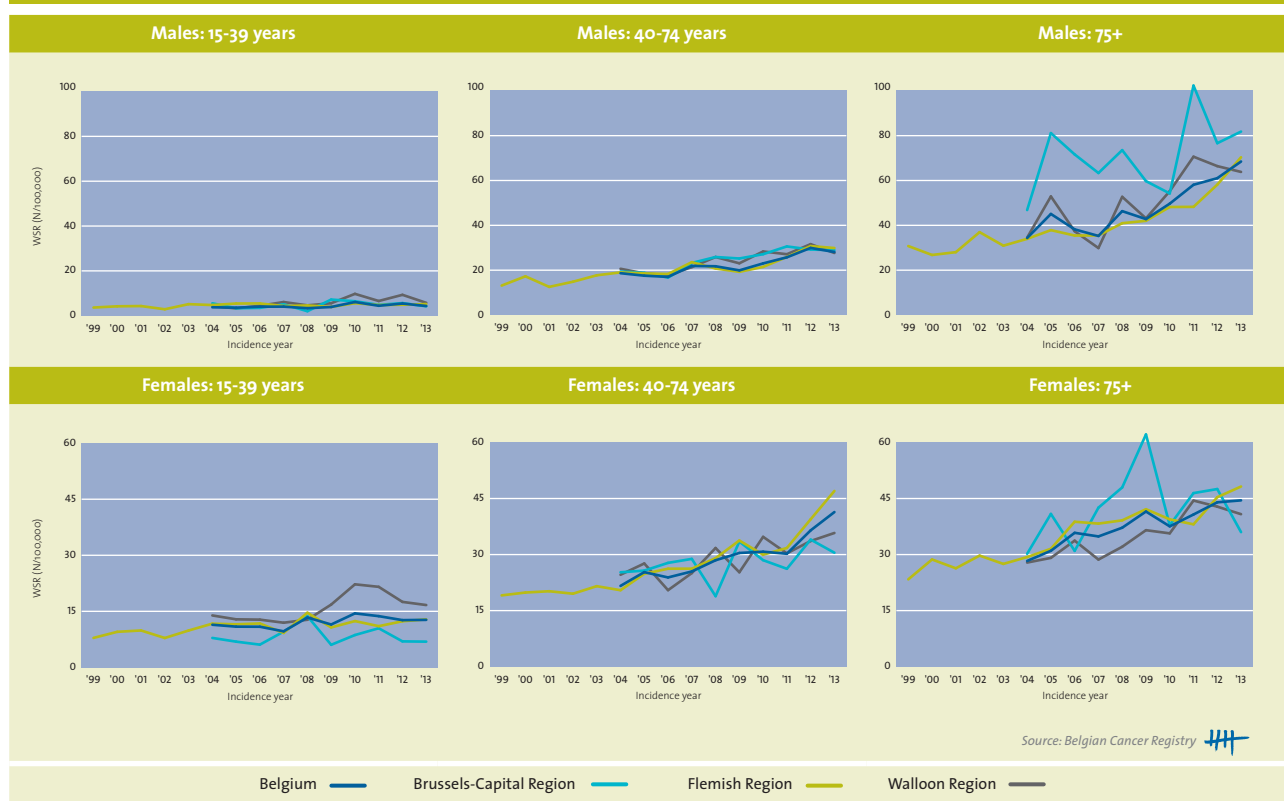


Figure 9 Malignant melanoma: Trends in age-standardised incidence (WSR) by localisation and sex, 2004-2013

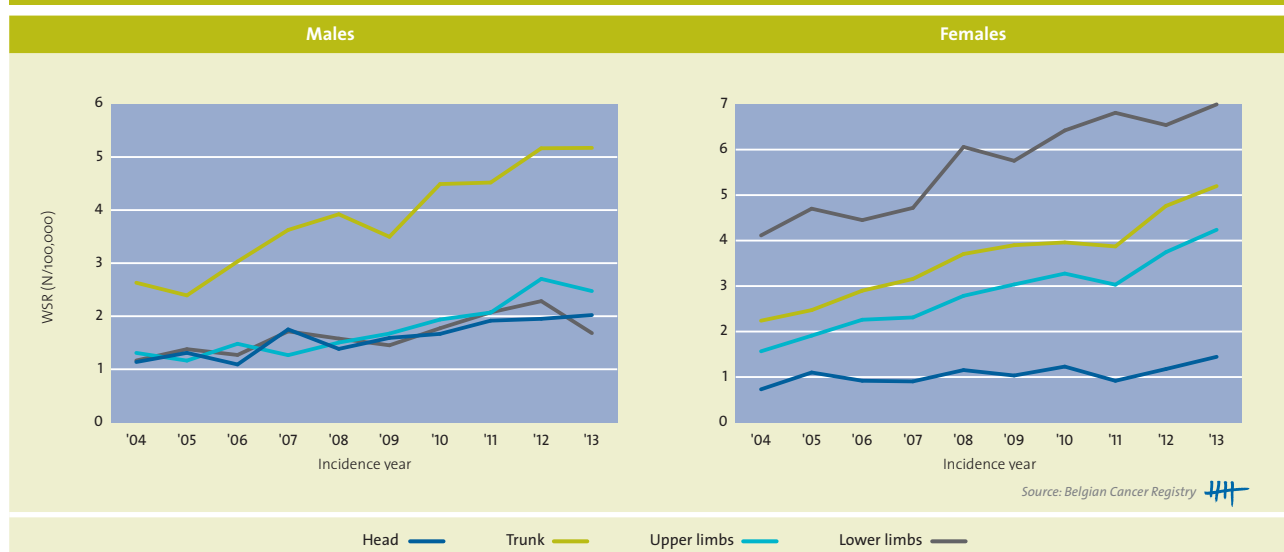


Figure 10 Malignant melanoma: Trends in age-standardised incidence (WSR) by stage and sex, 2004-2013

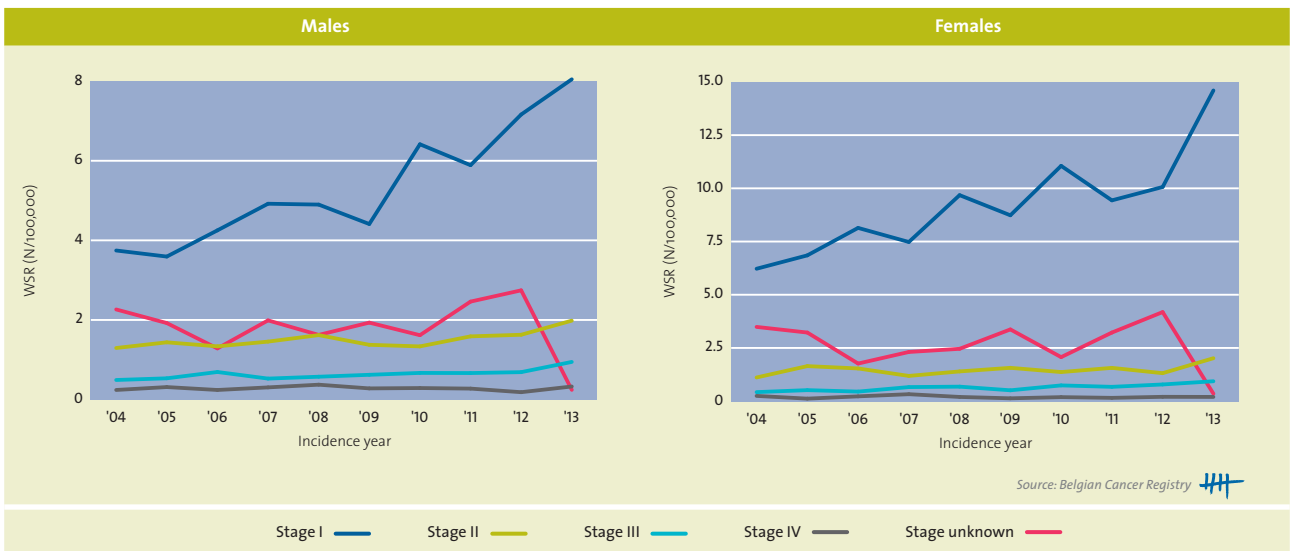


Table 3 Malignant melanoma: AAPC(%) by sex, region, localisation, stage and age group in Belgium

Malignant melanoma	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	5.2	[3.5; 7.0]	2004-2013	5.0	[3.8; 6.1]	2004-2013
Flemish Region	4.8	[3.6; 6.0]	1999-2013	5.0	[4.0; 5.9]	1999-2013
Brussels-Capital Region	5.0	[2.7; 7.4]	2004-2013	2.0	[0.5; 3.5]	2004-2013
Walloon Region	6.3	[3.4; 9.3]	2004-2013	5.0	[2.3; 7.7]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	0.2	[-1.7; 2.2]	2004-2012	-0.8	[-4.2; 2.7]	2004-2012
	3.8	[-0.5; 8.3]	2004-2008			
	-3.2	[-7.2; 1.0]	2008-2012			
Flemish Region	0.7	[-0.8; 2.3]	1999-2012	-0.8	[-2.6; 1.1]	1999-2012
Brussels-Capital Region	-0.2	[-3.2; 3.0]	1999-2012	-0.2	[-2.8; 2.4]	1999-2012
Walloon Region	-0.1	[-5.4; 5.5]	2004-2012	-0.6	[-6.5; 5.7]	2004-2012
Incidence by tumour localisation	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Head	6.5	[3.7; 9.4]	2004-2013	4.3	[0.8; 8.0]	2004-2013
Trunk	8.9	[6.5; 11.2]	2004-2013	9.2	[7.7; 10.7]	2004-2013
				12.5	[8.6; 16.5]	2004-2008
				6.7	[3.8; 9.6]	2008-2013
Upper limbs	8.7	[6.2; 11.3]	2004-2013	10.5	[8.6; 12.4]	2004-2013
	1.8	[-5.8; 10.0]	2004-2007	14.0	[9.2; 18.9]	2004-2008
	12.4	[8.4; 16.5]	2007-2013	7.8	[4.3; 11.4]	2008-2013
Lower limbs	5.8	[2.4; 9.3]	2004-2013	6.3	[4.5; 8.1]	2004-2013
Incidence by stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Stage I	8.7	[6.2; 11.3]	2004-2013	7.5	[4.6; 10.6]	2004-2013
Stage II	3.2	[0.8; 5.6]	2004-2013	2.7	[-1.3; 6.9]	2004-2013
Stage III	5.1	[2.1; 8.3]	2004-2013	7.6	[4.0; 11.3]	2004-2013
Stage IV	-0.4	[-5.4; 4.9]	2004-2013	-1.2	[-8.6; 6.7]	2004-2013
Stage unknown	-8.6	[-22.7; 8.2]	2004-2013	-9.2	[-23.5; 7.8]	2004-2013
15-39 Year						
Belgium	3.1	[-0.2; 6.5]	2004-2013	2.5	[-0.0; 5.0]	2004-2013
Flemish Region	1.9	[-0.1; 4.1]	1999-2013	2.8	[1.1; 4.5]	1999-2013
Brussels-Capital Region	2.9	[-6.5; 13.4]	2004-2013	0.3	[-6.4; 7.5]	2004-2013
Walloon Region	8.5	[2.0; 15.5]	2004-2013	4.0	[-0.4; 8.7]	2004-2013
				8.2	[2.4; 14.2]	2004-2011
				-9.2	[-26.5; 12.2]	2011-2013
40-74 Year						
Belgium	5.7	[3.6; 7.9]	2004-2013	6.3	[4.7; 7.9]	2004-2013
Flemish Region	5.5	[3.9; 7.1]	1999-2013	6.2	[5.1; 7.3]	1999-2013
				4.4	[2.4; 6.4]	1999-2007
				8.7	[5.9; 11.6]	2007-2013
Brussels-Capital Region	6.3	[3.7; 9.0]	2004-2013	2.4	[-1.6; 6.6]	2004-2013
Walloon Region	5.7	[3.1; 8.4]	2004-2013	4.6	[1.4; 8.0]	2004-2013
75+						
Belgium	7.0	[4.1; 10.0]	2004-2013	4.6	[1.4; 8.0]	2004-2013
Flemish Region	6.1	[5.0; 7.2]	1999-2013	4.7	[3.7; 5.7]	1999-2013
	3.3	[1.5; 5.2]	1999-2008			
	11.2	[7.5; 15.1]	2008-2013			
Brussels-Capital Region	3.5	[-1.8; 9.2]	2004-2013	1.2	[-4.2; 6.9]	2004-2013
				6.3	[-0.8; 13.8]	2004-2011
				-14.6	[-34.6; 11.4]	2011-2013
Walloon Region	7.5	[2.1; 13.2]	2004-2013	5.2	[3.1; 7.2]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

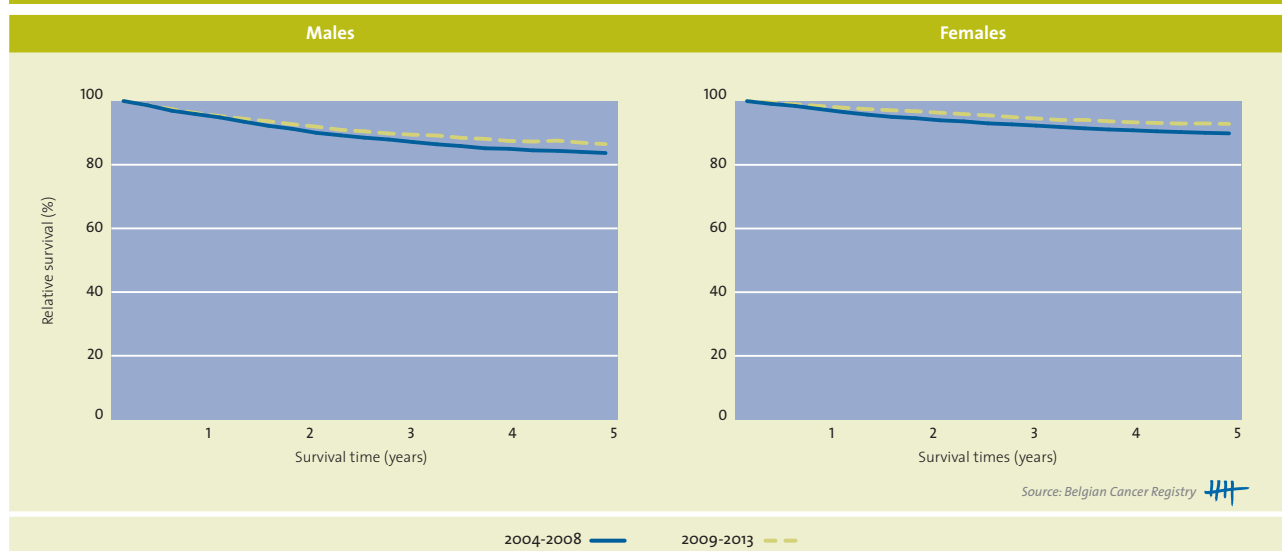
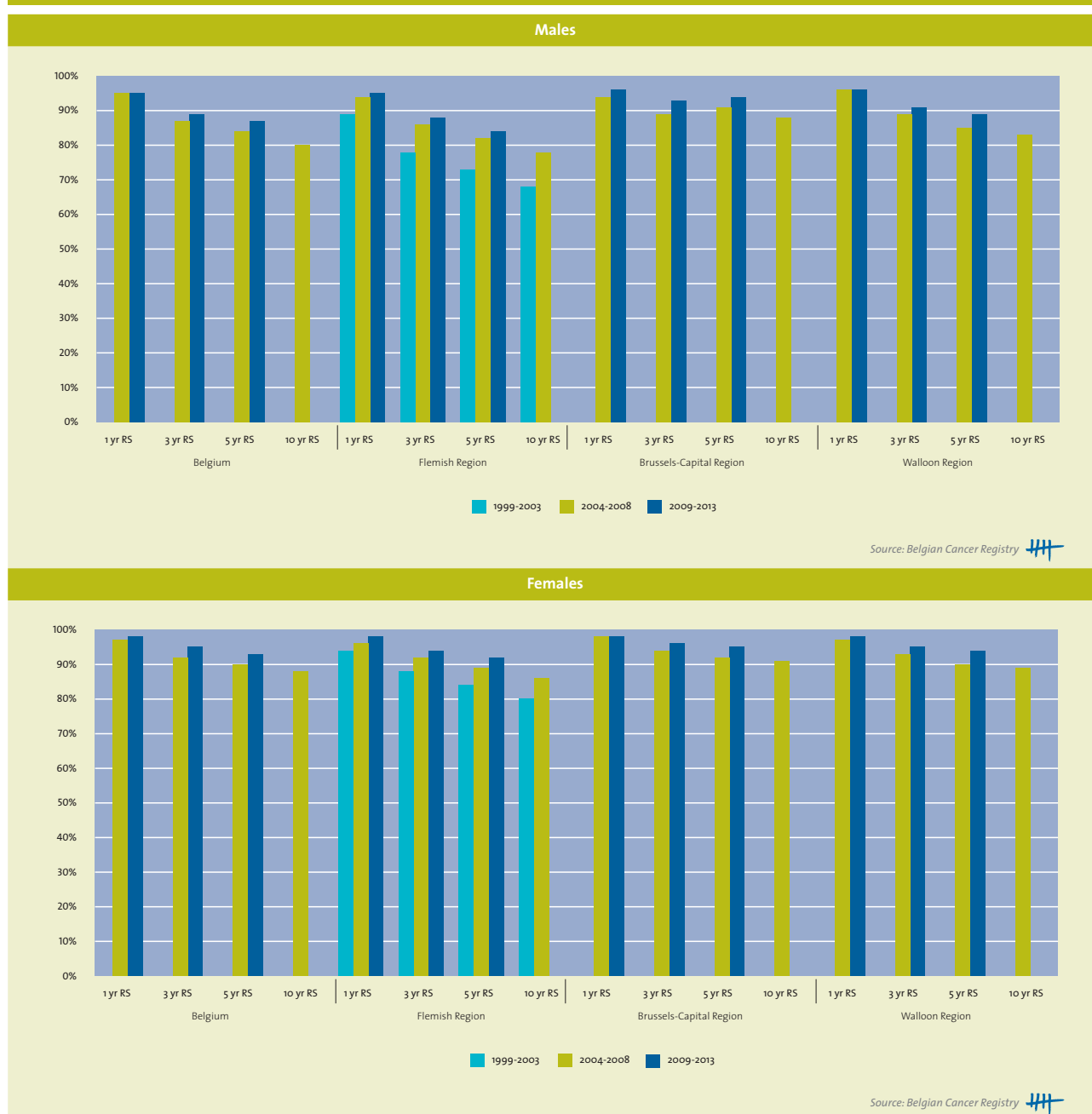
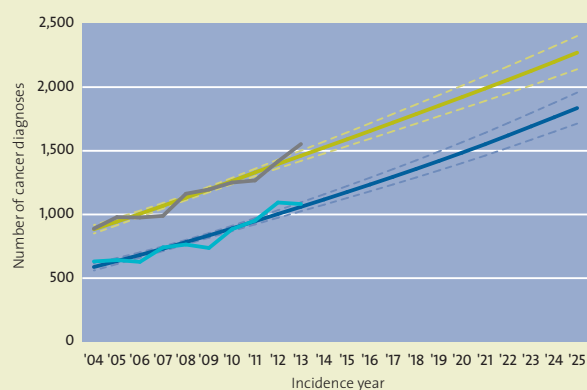
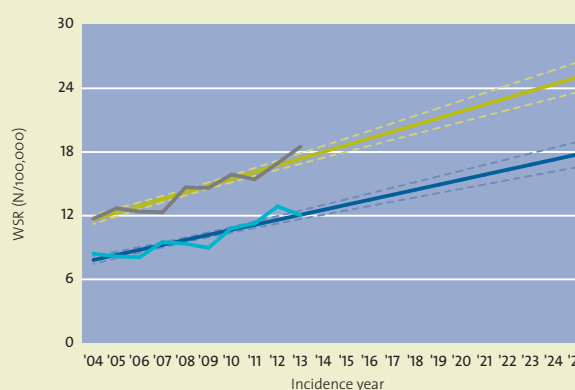
Figure 11 Malignant melanoma: Relative survival by cohort and sex, Belgium 2004-2013**Figure 12** Malignant melanoma: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

Figure 13 Malignant melanoma: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Figure 14 Malignant melanoma: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

Did you know that the BCR also...

- Collaborated with the Université Libre de Bruxelles and Universiteit Antwerpen for a master thesis studying seasonal variation in melanoma incidence and survival. The results were not in support of an influence of the season of diagnosis on survival. Further reading see:
 - Savoye I, **Jegou D**, Kvaskoff M, Rommens K, Boutron-Ruault MC, Coppieters Y, **Francart J**. Is melanoma survival influenced by month of diagnosis? *Cancer Epidemiol* 2015; 39(5): 727-733.
 - Rommens K, **Jegou D**, De Backer H, Weyler J. Seasonal variation in the incidence of cutaneous melanoma: link with recent UV exposure. A Belgian population-based study.
 - Poster presentation on GRELL (Groupe des Registres et des Epidémiologistes du cancer des pays de Langue Latine) (May 2015).
 - Poster presentation on the European Congress of Epidemiology (June 2015).
- Performed a special quality assurance initiative for the incidence year 2013: pTNM was manually recovered in the pathology reports, resulting in a reduction of missing pStage from 18 % to 5 %.
- Is besides skin melanoma, also doing research on non-melanoma skin cancer:
 - Poster presentation on 11th EADO Congress and 8th World meeting of interdisciplinary melanoma/skin cancer centres (October 2015); Callens J, **Van Eycken L**, **Henau K**, Garmyn M. Epidemiology of non-melanoma skin cancer in Belgium: the need for a uniform and compulsory registration.
 - Further reading see: Callens J, **Van Eycken L**, **Henau K**, Garmyn M. Epidemiology on non-melanoma skin cancer in Belgium: the need for a uniform and compulsory registration. Submitted.

!!Key note for registration:

Exact tumour localisation and laterality are required.

Please specify specific type of the melanoma if possible since prognosis can be different.

Melanomas mostly occur in the skin but are also possible in other primary localisations such as the gastro-intestinal tract, the brain, eye, urinary system, ...

TNM:

TNM is preferred to Clark or Breslow. Breslow is preferred above Clark.

Be careful: a melanoma Clark Level I is still an in situ lesion (behaviour/2).

Only pT possible (cT not existing): extent of the tumour is classified after excision.

Different TNM-chapters for melanomas of the skin, mucosal malignant melanomas of the upper aero-digestive tract and melanomas of the eye (conjunctiva – uvea).

3.6 BREAST CANCER (ICD-10: C50)

Table 1 Breast cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Breast cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	83	1.5	0.8	10,695	189.2	109.8
Flemish Region	48	1.5	0.7	6,191	191.6	108.5
Brussels-Capital Region	6	1.1	0.6	948	159.9	109.1
Walloon Region	29	1.7	0.9	3,556	194.5	112.7
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	22	0.4	0.2	2,312	41.1	17.3
Flemish Region	13	0.4	0.2	1,366	42.5	17.5
Brussels-Capital Region	2	0.4	0.3	191	32.6	18.1
Walloon Region	7	0.4	0.2	755	41.5	16.7
Prevalence (5 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	336	6.2	3.1	45,766	809.7	460.3
Flemish Region	199	6.3	2.9	26,640	824.7	453.7
Brussels-Capital Region	31	5.5	3.8	3,908	659.0	446.5
Walloon Region	106	6.1	3.3	15,218	832.2	477.4
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	544	10.0	5.0	80,099	1,417.2	785.2
Flemish Region	322	10.2	4.7	46,546	1,440.9	772.8
Brussels-Capital Region	47	8.4	5.6	6,902	1,164.0	769.3
Walloon Region	175	10.1	5.3	26,651	1,457.4	814.7
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	417	83.1%	[76.0; 89.5]	51,153	89.6%	[89.1; 90.1]
Flemish Region	237	83.0%	[73.3; 91.2]	29,597	89.6%	[89.0; 90.2]
Brussels-Capital Region	37	101.9%	[82.7; 111.1]	4,584	88.5%	[86.8; 90.0]
Walloon Region	143	79.4%	[66.5; 90.4]	16,972	89.9%	[89.0; 90.7]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	.	.		12,340 [11,995; 12,686]	110.4 [107.3; 113.5]	

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

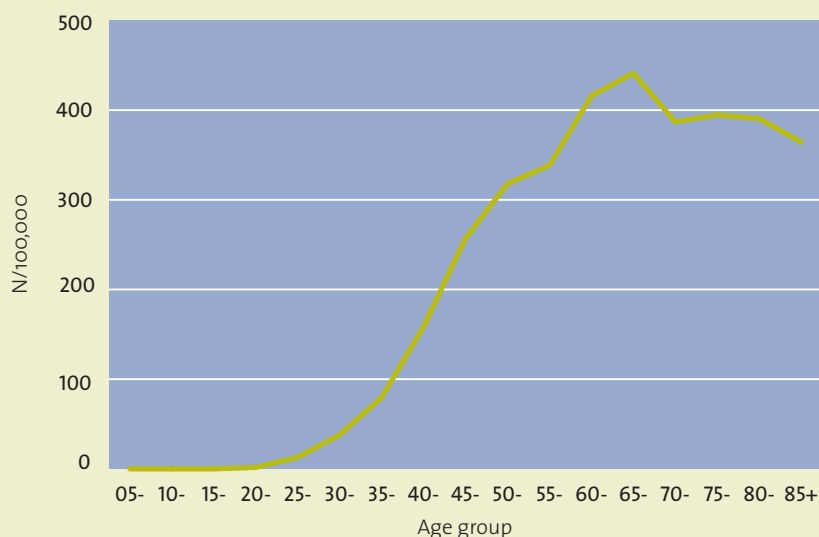
WSR, age-standardised rate using the World Standard Population (N/100,000 person years)

- Breast cancer burden in Belgium (**Table 1**):
 - 10,695 new diagnoses of breast cancer in females, and 83 in males in 2013.
 - Breast cancer is the most frequent tumour in females (35% of all malignancies).
 - Compared to other European countries, Belgium has a very high incidence rate for female breast cancer (**Figure 2**).
 - 2,312 deaths due to female breast cancer in 2012.
 - Breast cancer is the most important cause of cancer death in females (20% of all cancer deaths).
 - 80,099 females (1.4% of the total female population in Belgium) are alive (on 31/12/2013) after being diagnosed with breast cancer between 2004 and 2013.
 - Over time, incidence rates for female breast cancer remain stable while mortality rates are decreasing with 2% annually (**Figure 8 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 83% in males and 90% in females. A slight increase in the relative survival proportion for female breast cancer is observed over time in Belgium (2004-2013) and in the Flemish Region (1999-2013) (**Figure 13 and 14**).
 - In 2025, about 12,340 females are expected to receive a diagnosis of breast cancer. The increase is mainly due to the ageing and growth of the population (**Figure 15 and 16**). Changes in the participation rate or enlargement of eligible population for the breast screening programme could have an important impact on the actual number of cases diagnosed in 2025.
- There is a different risk pattern with age (**Figure 1 and 9**).
 - Age group 25-49 years:
 - The incidence rates remain stable, and are fourfold lower than in older women.
 - Age group 50-69 years:
 - The incidence rates remain stable over 2004-2013. In the Flemish Region, a slight increase in incidence was observed few years after the launch of the screening programme (in 2001)

and then slightly decreased to remain stable over time.

- In this eligible population for the screening, the breast cancers have a prognostic more favourable stage distribution when compared to older and younger females.
- Age group 70+:
 - The incidence rates increase with 2% annually.
 - Breast cancers diagnosed in patients older than 70 years of age are often larger than the tumours found in younger patients. However, the increase in incidence is more pronounced for stage I than for more advanced stages (stage III-IV).
- More than 80% of female breast cancer with known stage is diagnosed in the prognostic more favourable stage I and stage II (**Figure 4, 5, 6 and 10**).
 - Information on stage was always readily available. In 2010-2013, stage information is available for up to 96% of all breast cancer cases.
 - There are no major regional differences in stage distribution.
 - Males, where breast cancer is very rare, have a less favourable stage distribution when compared to females.
 - Ductal breast carcinoma tends to be more often diagnosed as a smaller tumour when compared to lobular breast carcinoma.

Figure 1 Breast cancer in females: Age-specific incidence rates (N/100,000), Belgium 2009-2013




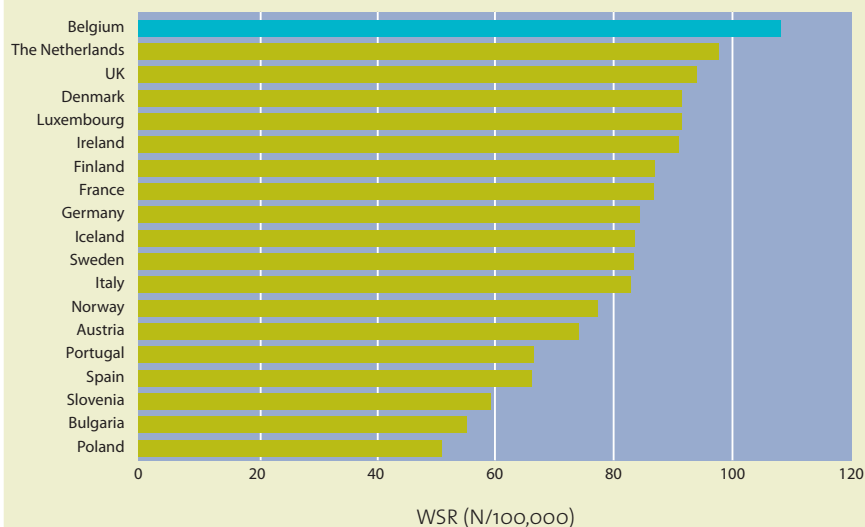
Source: Belgian Cancer Registry 

Figure 2 Breast cancer in females: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)




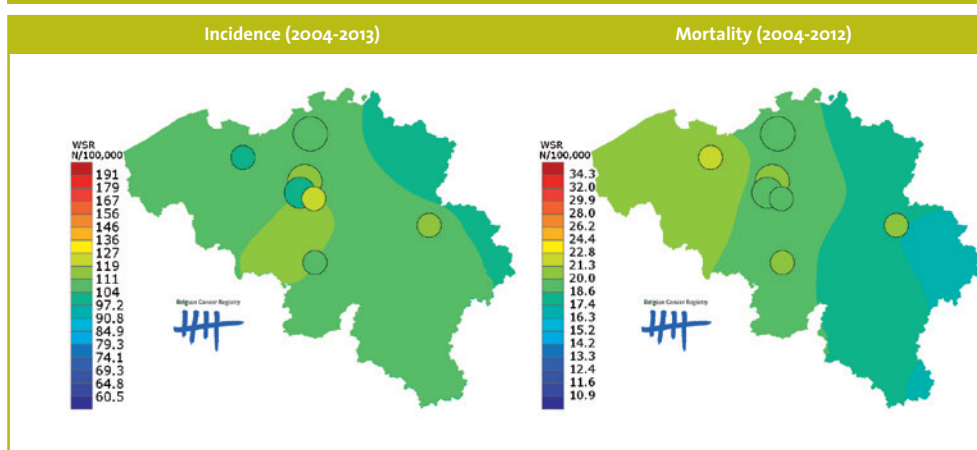
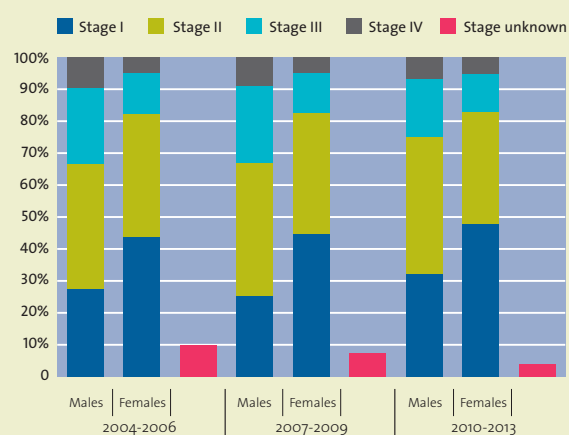
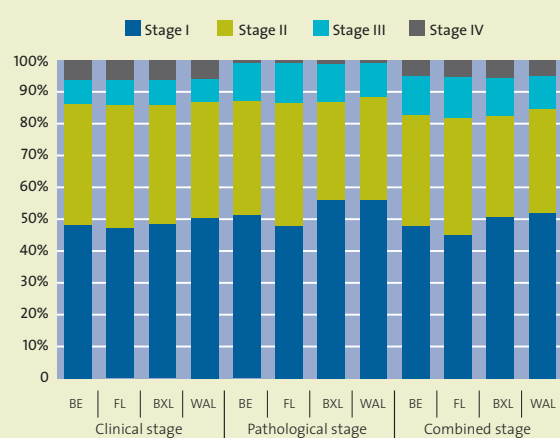
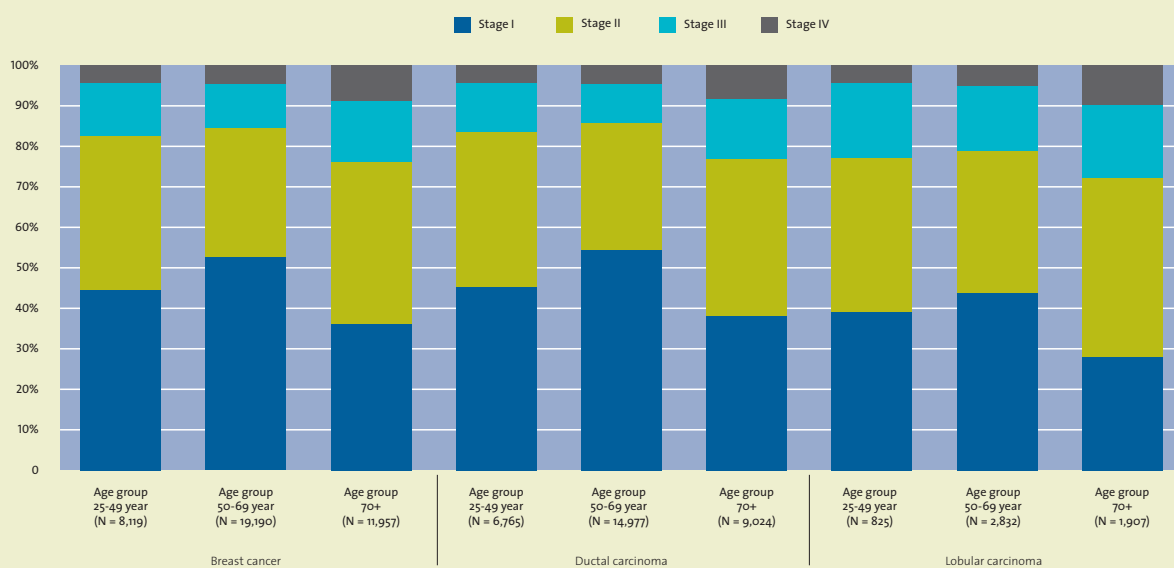
Source: Belgian Cancer Registry 

Figure 3 Breast cancer in females: Age-standardised incidence and mortality (WSR) in Belgium**Figure 4** Breast cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

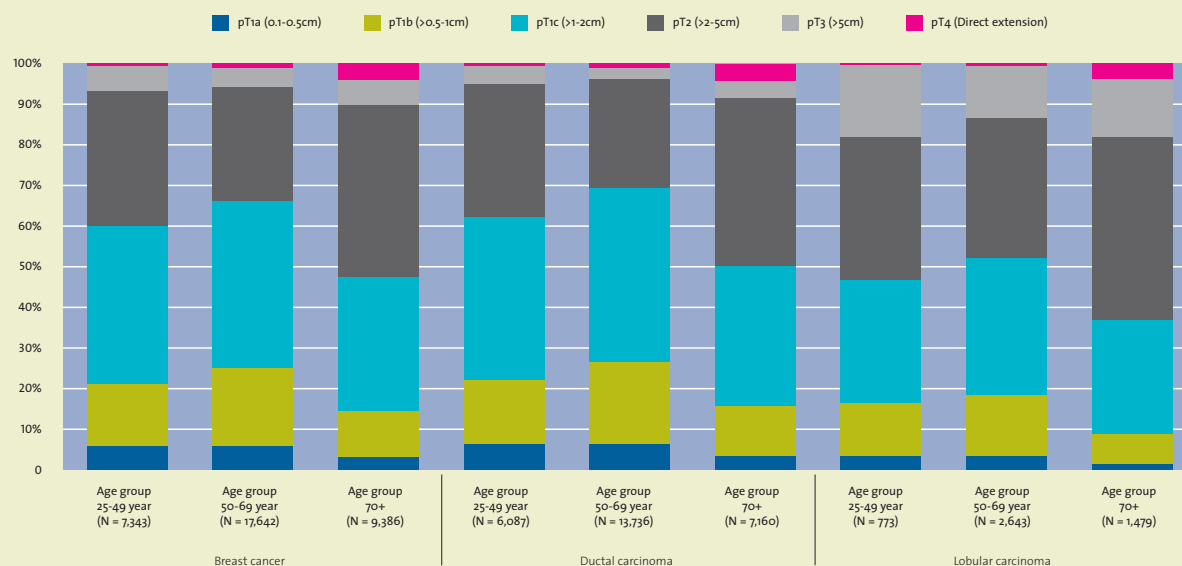
Source: Belgian Cancer Registry

Figure 5 Breast cancer in females: stage distribution by region, 2010-2013

Source: Belgian Cancer Registry

Figure 6 Breast cancer in females: stage distribution by histology and age group, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Breast cancer in females: pT distribution by histology and age group, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 8 Breast cancer in females: Trends in age-standardised incidence and mortality (WSR) by region, 1999-2013

Source: Belgian Cancer Registry

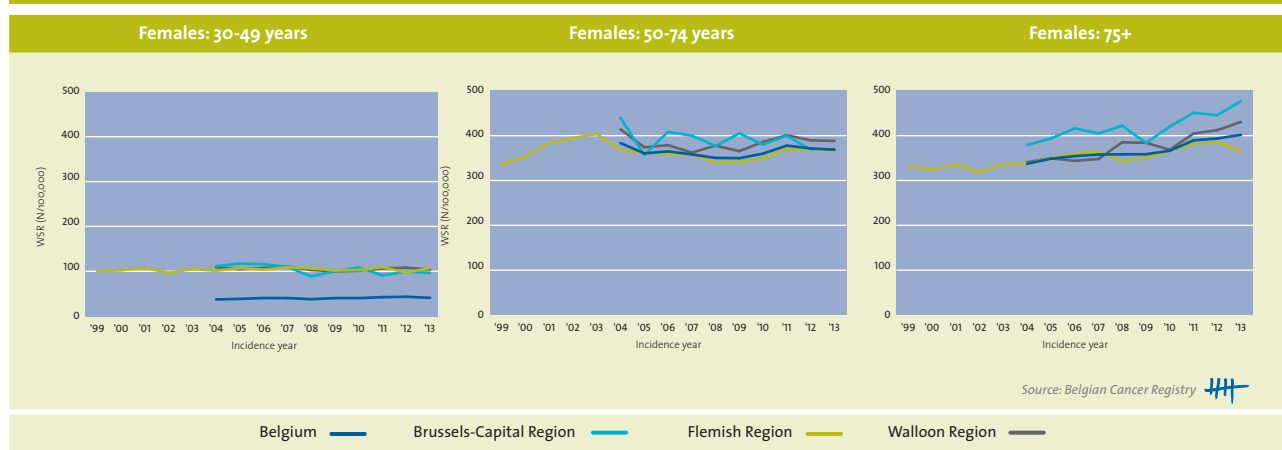
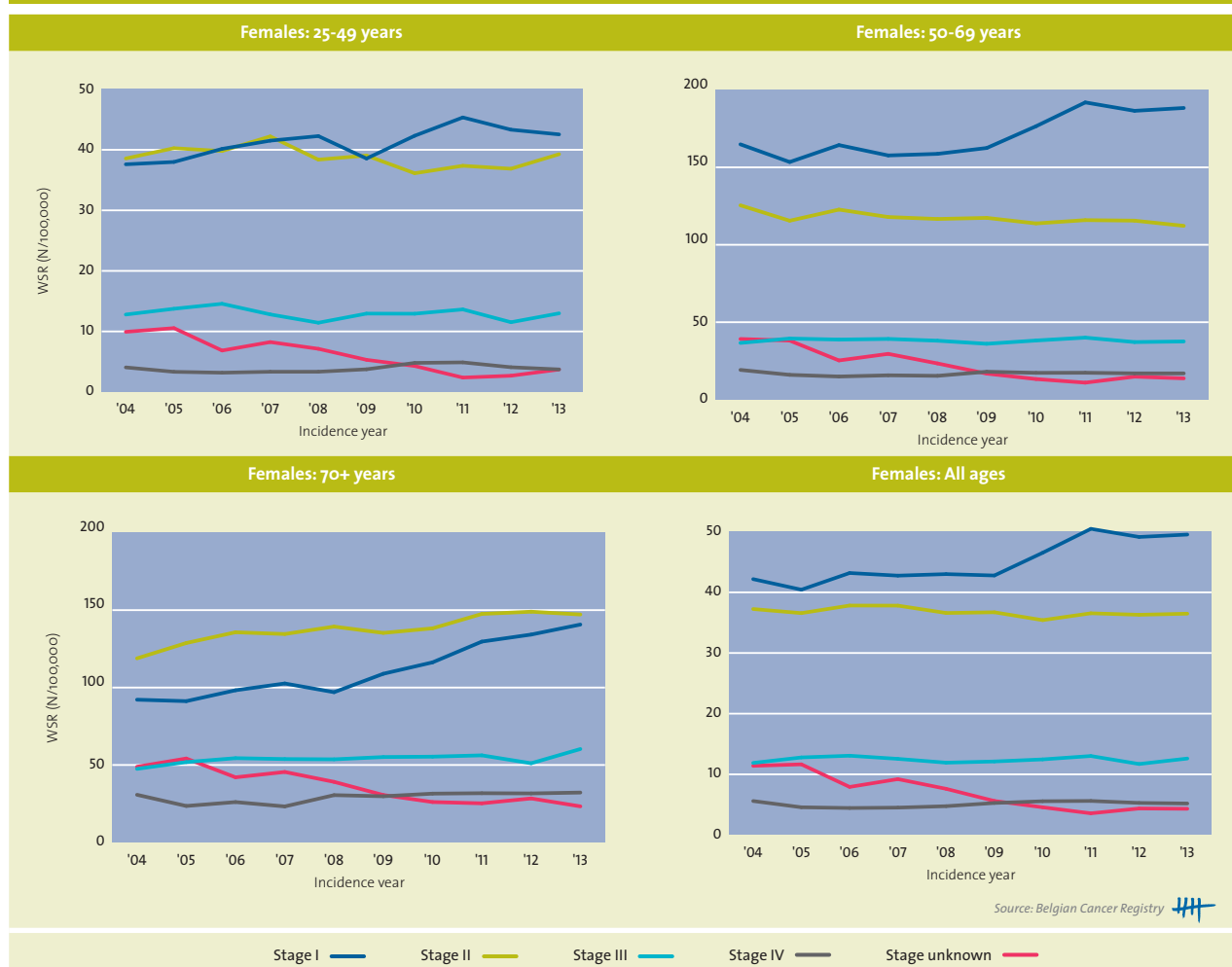
Figure 9 Breast cancer in females: Trends in age-standardised incidence (WSR) by age group and region, 1999-2013**Figure 10** Breast cancer in females: Trends in age-standardised incidence (WSR) by age group and stage, Belgium 2004-2013

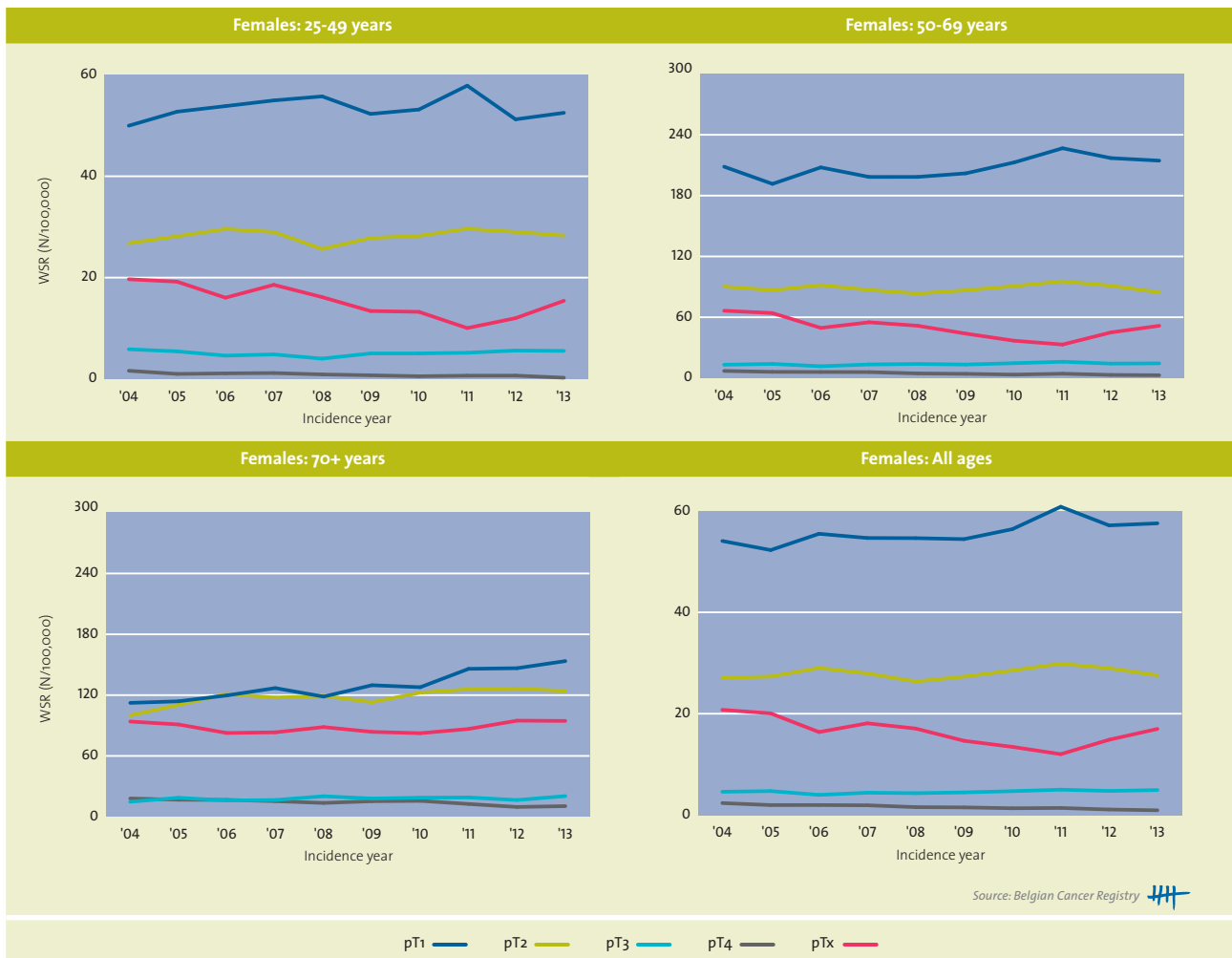
Figure 11 Breast cancer in females: Trends in age-standardised incidence (WSR) by age group and pT-stage, Belgium 2004-2013

Figure 12 Breast cancer in females: Trends in age-standardised incidence (WSR) by age group and pT-stage, Flemish Region 1999-2013

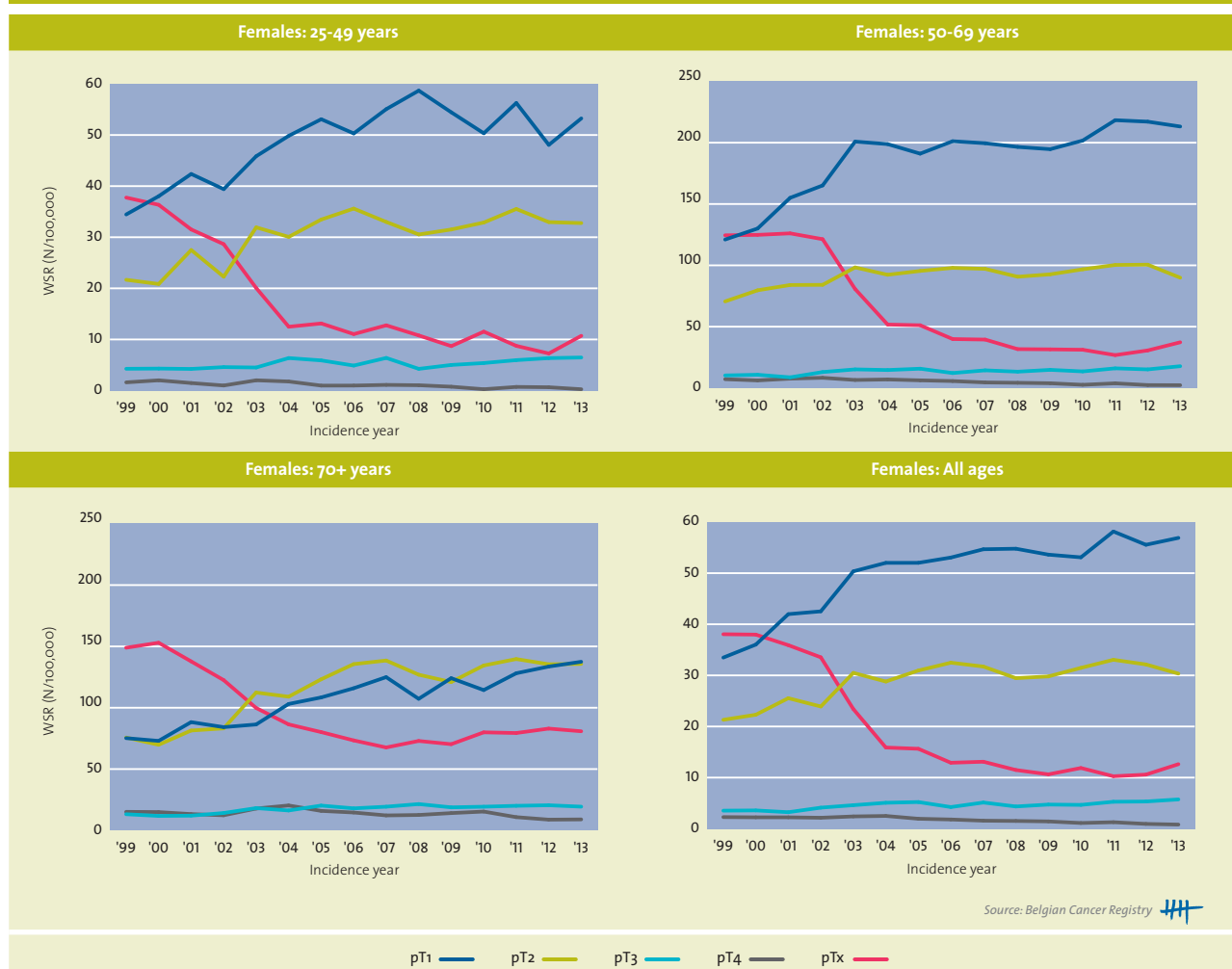


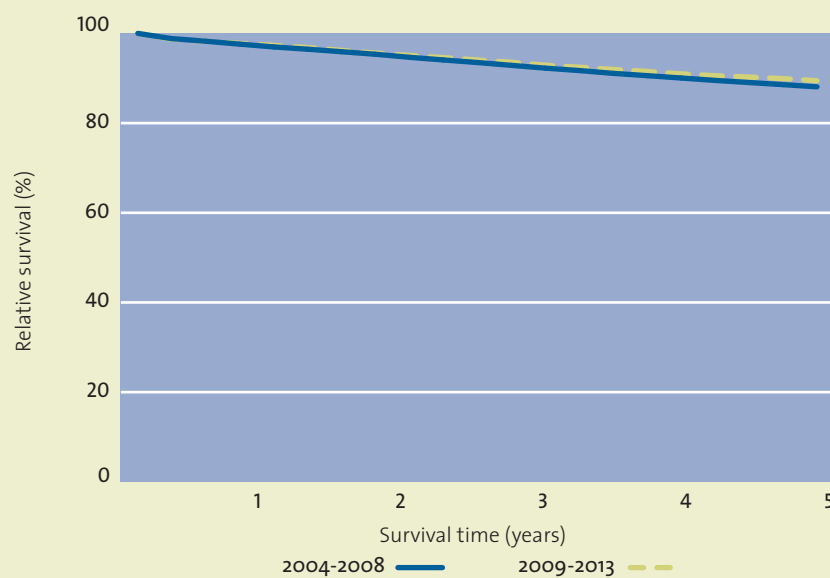
Table 2 Breast cancer in females: AAPC(%) by region, age group, stage and pT-stage in Belgium

Incidence by age group and pT-stage. Belgium 2004-2013		All ages			25-49 Year			50-69 Year			70+		
pT-stage		AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
pT1 (0-2cm)		1,0	[0,3;1,8]	2004-2013	0,5	[-0,5;1,5]	2004-2013	1,1	[0,1;2,1]	2004-2013	3,4	[2,5;4,4]	2004-2013
					3,1	[-0,3;6,5]	2004-2007						
					-0,8	[-2,3;0,8]	2007-2013						
pT2 (>2-5cm)		0,5	[-0,4;1,4]	2004-2013	0,4	[-0,7;1,6]	2004-2013	0,1	[-1,0;1,2]	2004-2013	1,9	[0,8;3,1]	2004-2013
pT3 (>5 cm)		0,6	[-0,6;1,8]	2004-2013	0,1	[-1,5;1,8]	2004-2013	1,8	[-0,0;3,5]	2004-2013	1,9	[-0,5;4,3]	2004-2013
		-6,0	[-11,3;-0,5]	2004-2006	-6,7	[-10,4;-2,8]	2004-2008						
		2,6	[1,1;4,2]	2006-2013	5,9	[2,6;9,3]	2008-2013						
pT4 (Direct extension)		-8,8	[-10,4;-7,2]	2004-2013	-14,0	[-19,4;-8,3]	2004-2013	-9,5	[-11,8;-7,2]	1999-2013	-5,8	[-8,3;-3,4]	2004-2013
pTx (Unknown)		-4,5	[-8,0;-1,0]	2004-2013	-5,3	[-8,8;-1,7]	2004-2013	-5,7	[-10,1;-1,0]	2004-2013	0,7	[-0,3;1,7]	2004-2013
		-11,5	[-25,9;5,8]	2004-2006				-14,6	[-32,4;7,8]	2004-2006	-1,6	[-3,2;-0,1]	2004-2010
		-2,4	[-6,8;2,2]	2006-2013				-2,9	[-8,6;3,1]	2006-2013	5,5	[2,0;9,1]	2010-2013
Incidence by age group and pT-stage. Flemish Region 1999-2013		All ages			25-49 Year			50-69 Year			70+		
pT1 (0-2cm)		3,7	[3,3;4,1]	1999-2013	2,5	[1,8;3,3]	1999-2013	4,2	[3,7;4,7]	1999-2013	4,4	[3,6;5,2]	1999-2013
		9,2	[7,9;10,6]	1999-2004	5,9	[4,4;7,4]	1999-2007	12,6	[10,6;14,6]	1999-2003	6,4	[4,6;8,2]	1999-2006
		0,8	[0,2;1,5]	2004-2013	-1,7	[-3,6;0,2]	2007-2013	1,0	[0,4;1,7]	2003-2013	2,4	[0,6;4,2]	2006-2013
pT2 (>2-5cm)		2,7	[2,0;3,4]	1999-2013	3,3	[2,2;4,4]	1999-2013	2,1	[1,5;2,6]	1999-2013	4,9	[4,0;5,8]	1999-2013
		6,6	[4,7;8,5]	1999-2005	8,1	[5,0;11,2]	1999-2005	7,2	[4,8;9,6]	1999-2003	9,8	[7,6;11,9]	1999-2006
		-0,1	[-1,4;1,2]	2005-2013	-0,1	[-2,2;2,0]	2005-2013	0,1	[-0,7;0,9]	2003-2013	0,2	[-1,7;2,2]	2006-2013
pT3 (>5 cm)		3,4	[2,1;4,7]	1999-2013	2,6	[0,9;4,3]	1999-2013	3,2	[1,4;5,0]	1999-2013	3,8	[2,6;4,9]	1999-2013
		7,2	[3,0;11,4]	1999-2004							7,6	[4,9;10,3]	1999-2006
		1,3	[-0,7;3,4]	2004-2013							0,1	[-2,3;2,7]	2006-2013
pT4 (Direct extension)		-6,5	[-7,4;-5,6]	1999-2013	-11,0	[-15,3;-6,4]	1999-2013	-7,8	[-9,4;-6,2]	1999-2013	-3,7	[-5,8;-1,5]	1999-2013
		0,9	[-2,2;4,0]	1999-2004				-0,1	[-5,4;5,5]	1999-2004	-0,2	[-3,7;3,4]	1999-2008
		-10,4	[-11,8;-8,9]	2004-2013				-11,9	[-14,3;-9,3]	2004-2013	-9,6	[-15,6;-3,1]	2008-2013
pTx (Unknown)		-9,2	[-10,9;-7,5]	1999-2013	-11,0	[-12,8;-9,2]	1999-2013	-9,7	[-11,9;-7,4]	1999-2013	-4,5	[-5,1;-3,8]	1999-2013
		-15,9	[-19,1;-12,7]	1999-2006	-19,0	[-23,3;-14,5]	1999-2005	-16,0	[-18,7;-13,1]	1999-2008	-10,4	[-11,6;-9,2]	1999-2007
		-7,1	[-14,7;1,2]	2006-2009	-4,5	[-8,1;-0,7]	2005-2013	-4,3	[-14,1;6,6]	2008-2011	4,0	[2,1;6,0]	2007-2013
		2,1	[-5,5;10,2]	2009-2013				14,5	[-6,6;40,4]	2011-2013			

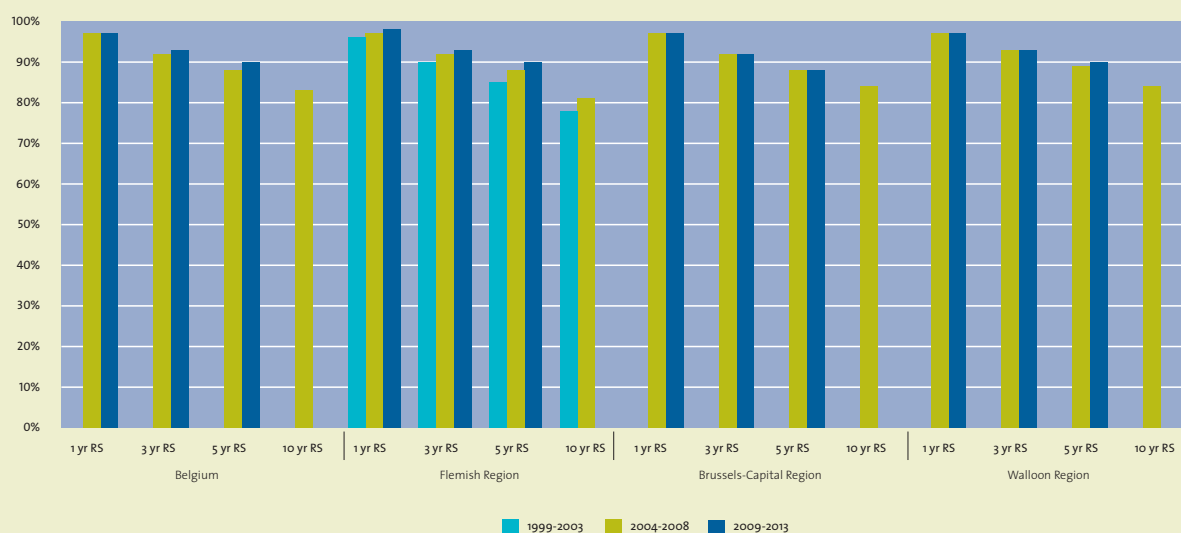
Incidence by age group and region		All ages		25-49 Year		50-69 Year		70+	
Region	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI
Belgium	2004-2013	0,2	[-0,2,0,6]	2004-2013	-0,3	[-0,9,0,3]	2004-2013	1,8	[1,5,2,2]
	2004-2009	-0,8	[-1,5,0,0]				2004-2008	1,1	[0,4,1,8]
Flemish Region	2009-2013	1,4	[0,4,2,4]	2009-2013			2008-2013	2,7	[1,9,3,6]
	1999-2013	0,6	[0,2,1,0]	1999-2013	0,2	[-0,3,0,7]	1999-2013	1,3	[0,9,1,6]
	1999-2003	2,2	[0,8,3,5]				1999-2002		
	2003-2009	-1,2	[-2,0,-0,4]				2002-2008		
Brussels-Capital Region	2009-2013	1,7	[0,4,3,1]	2009-2013			2008-2013		
	2004-2013	-0,9	[-1,7,0,0]	2004-2013	-2,2	[-4,0,-0,2]	2004-2013	2,0	[1,0,3,2]
Walloon Region	2004-2013	0,3	[-0,3,1,0]	2004-2013	-0,3	[-1,2,0,5]	2004-2013	2,6	[1,8,3,4]
	2004-2009	-0,8	[-2,0,0,4]				2004-2006		
	2009-2013	1,8	[0,3,3,4]				2006-2013		
Incidence by age group and stage, Belgium 2004-2013		All ages		25-49 Year		50-69 Year		70+	
Stage	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI
Stage I	2004-2013	2,3	[1,4,3,3]	2004-2013	1,6	[0,5,2,6]	2004-2013	5,0	[4,2,5,9]
Stage II	2004-2013	-0,4	[-0,8,0,1]				2004-2008	2,5	[0,5,4,5]
Stage III	2004-2013	-0,1	[-1,1,1,0]				2008-2013	7,1	[5,5,8,8]
Stage IV	2004-2013	-0,5	[-1,7,0,7]	2004-2013	-0,7	[-1,8,0,3]	2004-2013	2,1	[1,3,2,9]
	2004-2006	-11,7	[-16,3,-6,9]	2004-2013	1,5	[-2,2,5,4]	2004-2013	1,4	[0,2,2,7]
	2006-2010	7,1	[4,6,9,7]	2004-2006	-8,6	[-23,8,9,6]	2004-2007	2,7	[0,0,5,4]
	2010-2013	-2,4	[-5,6,1,0]	2006-2013	4,6	[-0,2,9,6]	2007-2013		
Stage unknown	2004-2013	-12,5	[-15,9,-8,9]	2004-2013	-14,6	[-19,4,-9,4]	2004-2013	-9,1	[-11,5,-6,5]
Mortality by region		All ages		25-49 Year		50-69 Year		70+	
Region	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period	AAPC(%)	95%CI
Belgium	2004-2013	-1,8	[-2,5,-1,2]	2004-2013	-1,8	[-2,5,-1,2]	2004-2013		
Flemish Region	2004-2013	-2,1	[-2,6,-1,7]				2004-2008		
Brussels-Capital Region	2004-2013	-1,9	[-3,3,-0,5]				2008-2013		
Walloon Region	2004-2013	-1,8	[-3,2,-0,3]				2004-2013		

AAPC: average annual percentage change

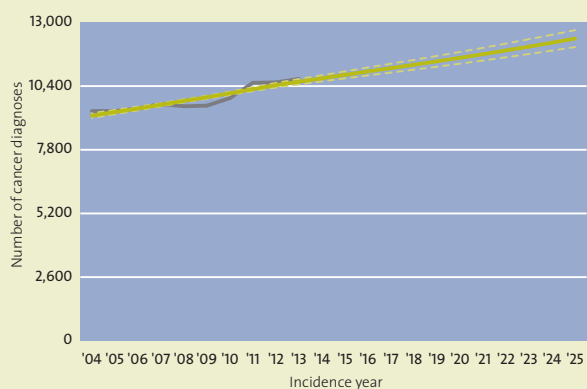
Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 13 Breast cancer in females: Relative survival by cohort, Belgium 2004-2013

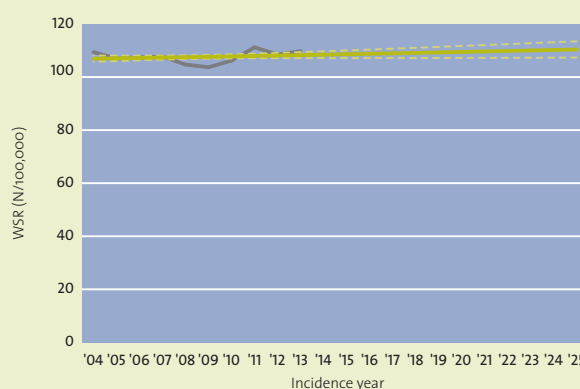
Source: Belgian Cancer Registry

Figure 14 Breast cancer in females: 1-, 3-, 5- and 10-year relative survival (RS) by region

Source: Belgian Cancer Registry

Figure 15 Breast cancer in females: Observed and projected number of new diagnoses (N), Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 16 Breast cancer in females: Observed and projected incidence (WSR), Belgium 2004-2025

Source: Belgian Cancer Registry

Did you know that the BCR also...

- Collects the test results of all breast samples in a central breast cyto-histopathological registry.
- Retrieves from IMA/AIM reimbursement data of clinical acts which are relevant for the detection, monitoring and treatment of breast cancer.
- Is heavily involved in the organization of the Flemish screening program, with a close collaboration between BCR and the Centrum voor Kankeropsporing (CvKO). BCR compiles an exclusion list that consists of all women for which a screening examination is not required for the next invitation round. As a result, CvKO can avoid that about 36 % of the total target population of 843,000 women will receive a useless invitation.
- Is also closely involved in the evaluation of the Flemish breast cancer screening program by calculating quality indicators. Those results are published in the annual reports of the Flemish cancer screening programs (www.bevolkingsonderzoek.be).
- Some key indicators calculated by BCR:
 - Coverage: 65.7 % (2013) and 64.5 % (2014)
 - Breast cancer detection rate 0.6 %
 - Chance for an interval cancer: 0.3 %
 - Analysis of tumour characteristics of screen detected, interval cancers and cancers in non-participants
 - Sensitivity of the screening program: 67 %
 - Specificity of the screening program: 97 %
 - 97% of all abnormal mammotests had a follow-up within one year
- Has a key role in the evaluation and comparison of all national breast cancer screening programs by the identification and analysis of screen detected cancers and interval cancers. Results of this analysis are annually reported. In addition to cancer detection rates, tumour characteristics were evaluated showing that breast cancer patients who did not participate at the screening programs tend to be diagnosed with a more advanced disease stage compared to participants. This was seen in all regions, although less pronounced in Wallonia and Brussels due to a larger amount of individual screening in non-participants in these regions.
- Created in collaboration with the Belgian Working Group for Breast Pathology (BWGBP) a newsletter with coding-guidelines for breast lesions. This newsletter was distributed to all pathologists to facilitate and support coding of different breast lesions and to obtain highly qualitative breast pathology data. Further reading see: www.kankerregister.org/Statistieken_publicaties – www.registreducancer.org/Statistiques_publications
- Participates in EURECCA on breast cancer. Preliminary results showed that the adjusted 5-year relative survival in patients aged 70 years and older with non-metastatic breast cancer was higher in Belgium (65%) compared to The Netherlands (56%). Further reading see:
 - Derks M, Kiderlen M, Hilling DE, Bastiaannet E, Boelens PG, Siesling S, **Van Eycken E**, Walsh P, Borrás JM, Audisio RA, Poortmans P, Van de Velde CJH. Treatment patterns for older patients with non-metastatic breast cancer in four European countries – preliminary data from a EURECCA international comparison. Poster presentation at The European Cancer Congress 2015 (September 2015); Abstract number 1808.
- Performed in collaboration with experts of the BWGBP a retrospective study in which all available pathology protocols for breast cancer patients diagnosed in 2008 were manually reviewed to investigate the quality and variability of pathology reporting in Belgium. The 10,033 studied breast cancer cases could be subdivided into the following molecular subtypes: Luminal A-like (44.3%), Luminal B-like (12.8%), Luminal HER2 Like (9.7%), HER2 Like (3.8%), Basal Like (8.2%) and unknown subtype (21.3%). Further reading see:
 - **De Schutter H, Van Damme N**, Colpaert C, Galant C, Lambein K, Cornelis A, Neven P, **Van Eycken E**. Quality of pathology reporting is crucial for cancer care and registration: a baseline assessment for breast cancers diagnosed in Belgium in 2008. *Breast* 2015; 24(2): 143-152.

- Had a partnership in the KCE-project on quality indicators in breast cancer. Further reading see:
 - Stordeur S, Vrijens F, **Beirens K**, Vlayen J, Devriese S, **Van Eycken E**. Quality indicators in oncology: breast cancer. Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE). 2010. KCE Reports 150C. D2010/10.273/101
 - Stordeur S, Vrijens F, Devriese S, **Beirens K**, **Van Eycken E**, Vlayen J. Developing and measuring a set of process and outcome indicators for breast cancer. *Breast*. 2012; 21(3): 253-260.
 - Vrijens F, Stordeur S, **Beirens K**, Devriese S, **Van Eycken E**, Vlayen J. Effect of hospital volume on processes of care and 5-year survival after breast cancer: a population-based study on 25000 women. *Breast*. 2012; 21(3): 261-266.
- Is involved in the “Vlaams Indicatoren Project (VIP2)”, which aims to evaluate and to monitor the quality of care for breast cancer in the Flemish hospitals. BCR is responsible for the calculation of the quality indicators at both the Flemish and the hospital level. As VIP² envisions total transparency, the results of the quality indicators for each individual hospital are published on the website www.zorgkwaliteit.be.
- Sent individual feedbacks to the hospitals for breast cancer in December 2013 (incidence years 2007-2008) and in April 2015 (incidence years 2009-2011).
- Is also evaluating the quality of care for breast cancer in the Brussels Capital Region and in the Walloon Region. This initiative is enabled by financing of the Foundation against Cancer. Individual feedbacks were sent in December 2014 (incidence years 2007-2008) and December 2015 (incidence years 2009-2011).

!!Key note for registration:

Laterality is required. Bilateral breast cancer (simultaneously or not) asks for two distinct registrations.

Paget disease of the nipple not associated with invasive carcinoma is Tis (behaviour/2).

- 8540/2 Paget disease, mammary (NOS)
- 8543/2 Paget disease and intraductal carcinoma of the breast
- 8541/3 Paget disease and infiltrating duct carcinoma of the breast

3.7 FEMALE GENITAL ORGANS

3.7.1 CERVIX (ICD-10: C53)

Table 1 Cervical cancer: Overview of incidence, mortality, prevalence, survival and projection by region

Cervical cancer	Females		
Incidence, 2013	N	CR	WSR
Belgium	633	11.2	8.0
Flemish Region	336	10.4	7.3
Brussels-Capital Region	73	12.3	9.2
Walloon Region	224	12.2	8.8
Mortality, 2012	N	CR	WSR
Belgium	179	3.2	1.6
Flemish Region	129	4.0	1.9
Brussels-Capital Region	11	1.9	1.1
Walloon Region	39	2.1	1.2
Prevalence (5 years), 2009-2013	N	CR	WSR
Belgium	2,337	41.3	29.7
Flemish Region	1,294	40.1	28.2
Brussels-Capital Region	228	38.5	29.0
Walloon Region	815	44.6	32.7
Prevalence (10 years), 2004-2013	N	CR	WSR
Belgium	4,248	75.2	53.2
Flemish Region	2,452	75.9	52.7
Brussels-Capital Region	394	66.4	50.6
Walloon Region	1,402	76.7	55.2
5-year Relative survival, 2009-2013	N at risk	%	95%CI
Belgium	3,120	69.0%	[67.0; 70.9]
Flemish Region	1,706	70.3%	[67.6; 72.9]
Brussels-Capital Region	328	69.8%	[63.4; 75.5]
Walloon Region	1,086	66.6%	[63.0; 70.0]
Projection, 2025	N [95%CI]	WSR [95%CI]	
Belgium	681 [664; 698]	8.1 [7.8; 8.3]	

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

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

- Cervical cancer burden in Belgium (**Table 1**):
 - 633 new diagnoses of cervical cancer in 2013.
 - 179 deaths due to cervical cancer in 2012.
 - 4,248 females (0.07% of the total female population in Belgium) are alive (on 31/12/2013) after being diagnosed with cervical cancer between 2004 and 2013.
 - Over time, incidence and mortality rates remain stable in Belgium (**Figure 7 and Table 2**). Incidence rate is slowly decreasing in the Flemish Region for all age groups, but most pronounced in the youngest age category (20-39 years) (**Figure 8**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 69%. No clear trend in relative survival proportion over time is observed. (**Figure 11 and 12**).
 - In 2025, about 681 females are expected to receive a diagnosis of cervical cancer. The increase is mainly due to the ageing and growth of the population (**Figure 13 and 14**). Currently, the screening for cervical cancer covers 60% of the eligible population in Belgium (i.e. women aged 25-64 years) (20). Changes in this coverage due to the implementation of screening programmes could have an important impact on the actual number of cases to be diagnosed in 2025.
- The age specific incidence rate sharply increases at the age of 20 with the highest incidence rates between the age of 40 and 49 years (**Figure 1**).
- The incidence rates remain stable for Belgium in the different age groups. However, there are some differences in the stage distribution (**Figure 6, 8 and Table 2**).
 - Age group 20-39 years: three out of four cases are diagnosed as stage I.
 - Age group 40-69 years: about half of all diagnoses is stage I cervical cancer.
 - Age group 70+: one out of four patients with cervical cancer is diagnosed in stage IV.
- 60% of cervical cancers with known stage are diagnosed as stage I (**Figure 4, 5 and 6**).

- Availability of information on stage has improved from 66% in 2004-2006 to 80% in 2010-2013.
- The higher the age, the less favourable stage distribution (**Figure 6**). It could be partially explained by the fact that the older women are less screened.
- In the eligible population for screening (age group 25-64 years) in the Flemish Region from 1999 to 2013, an increase in incidence of in situ cervical cancer is observed while the incidence of invasive cervical cancer slightly decreased (**Figure 10**). From 2010, the incidence of in situ cervical cancer shows a steep increase mostly due to a better registration of non-invasive lesions.

Figure 1 Cervical cancer: Age-specific incidence rates (N/100,000), Belgium 2009-2013

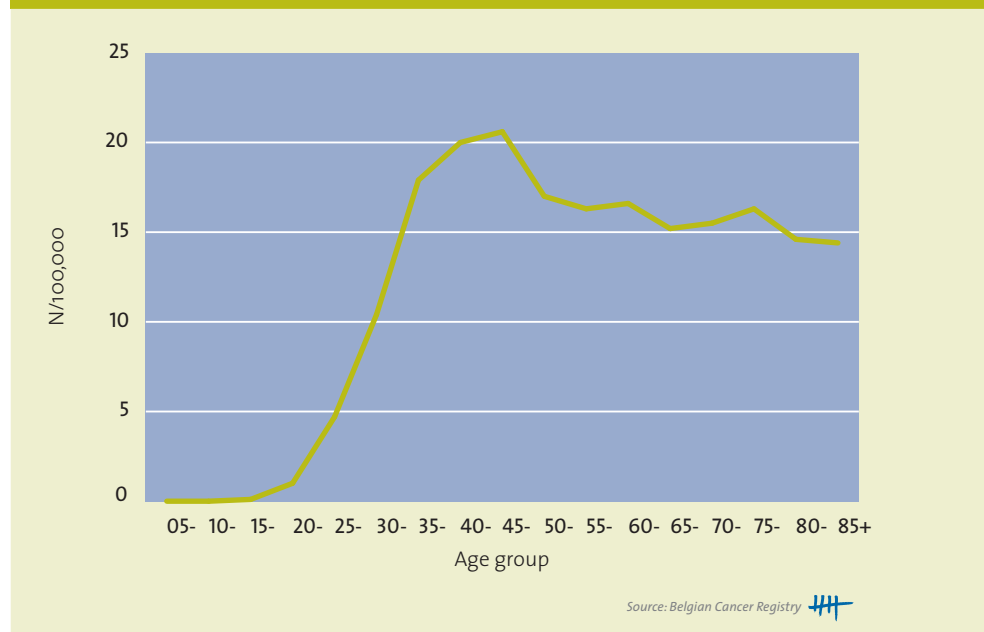


Figure 2 Cervical cancer: Comparison of age-standardised incidence rates (WSR).
(Selection of European registry data)

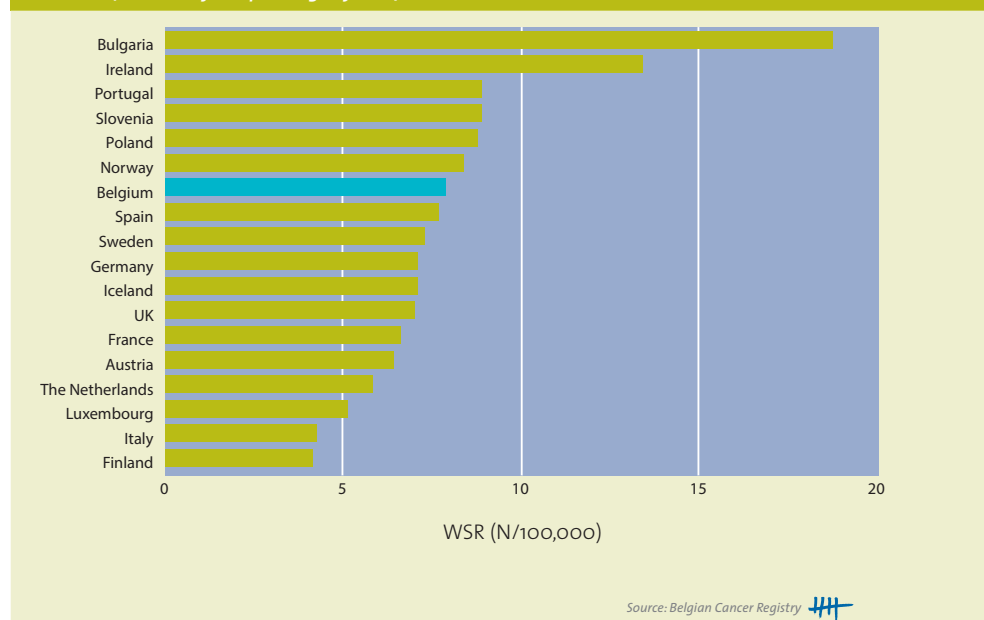


Figure 3 Cervical cancer: Age-standardised incidence and mortality (WSR) in Belgium

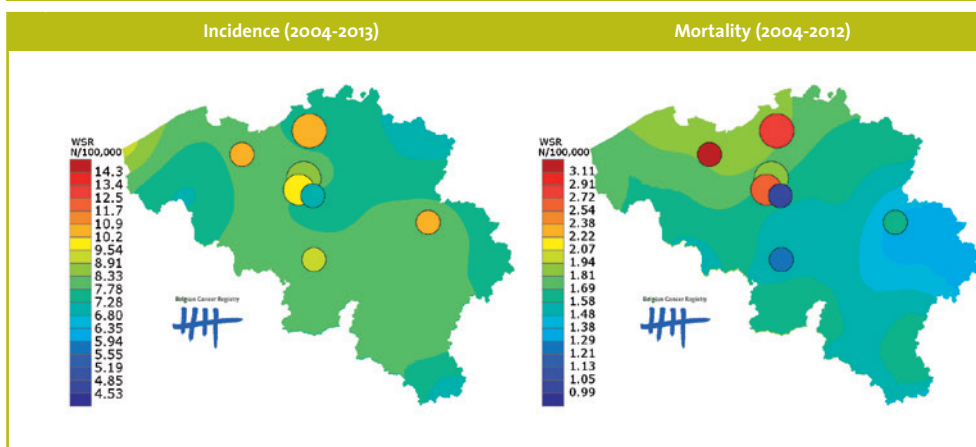
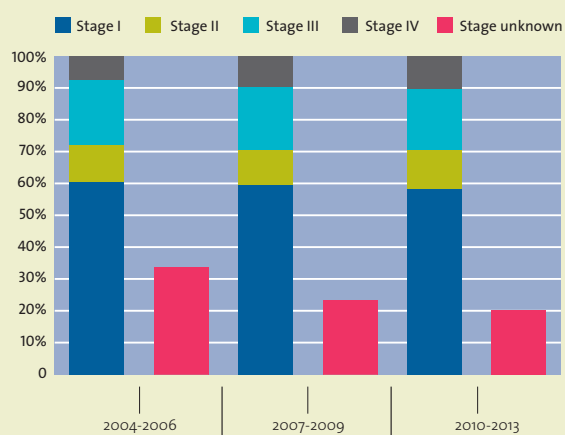
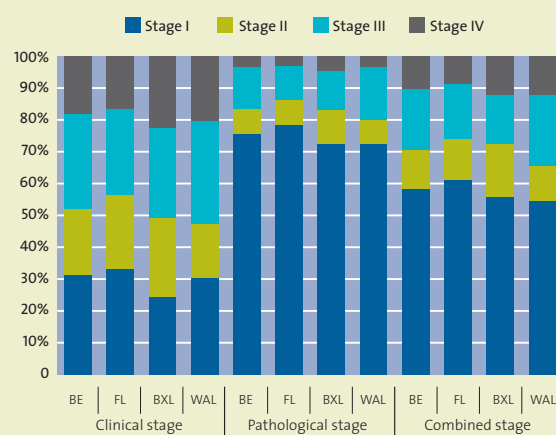


Figure 4 Cervical cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



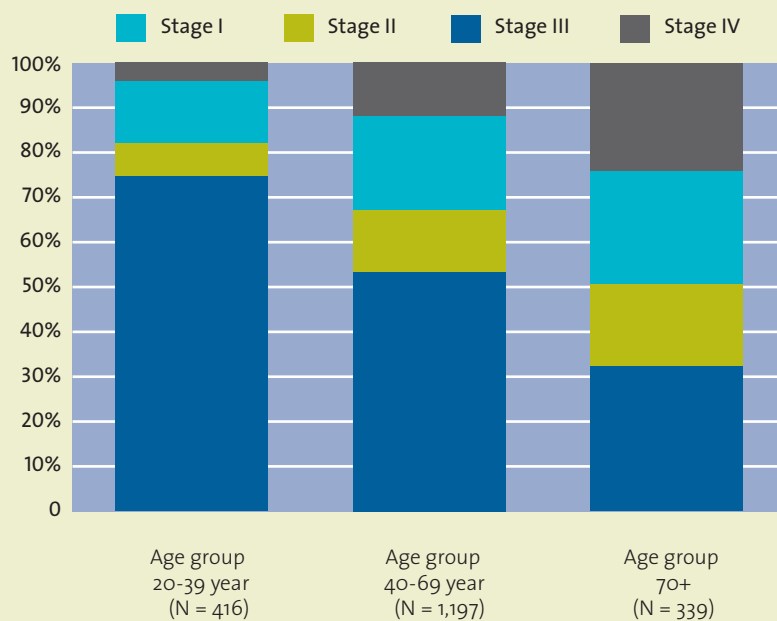
Source: Belgian Cancer Registry

Figure 5 Cervical cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Cervical cancer: stage distribution by age group, Belgium 2010-2013



Source: Belgian Cancer Registry

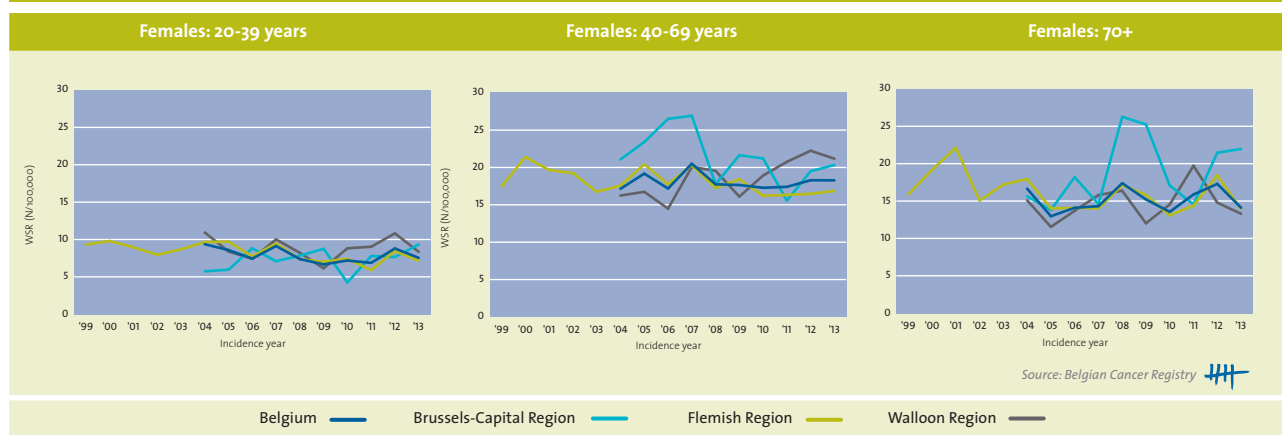
Figure 7 Cervical cancer: Age-standardised incidence and mortality (WSR) by region, 1999-2013**Figure 8** Cervical cancer: Trends in age-standardised incidence (WSR) by age group and region, 1999-2013

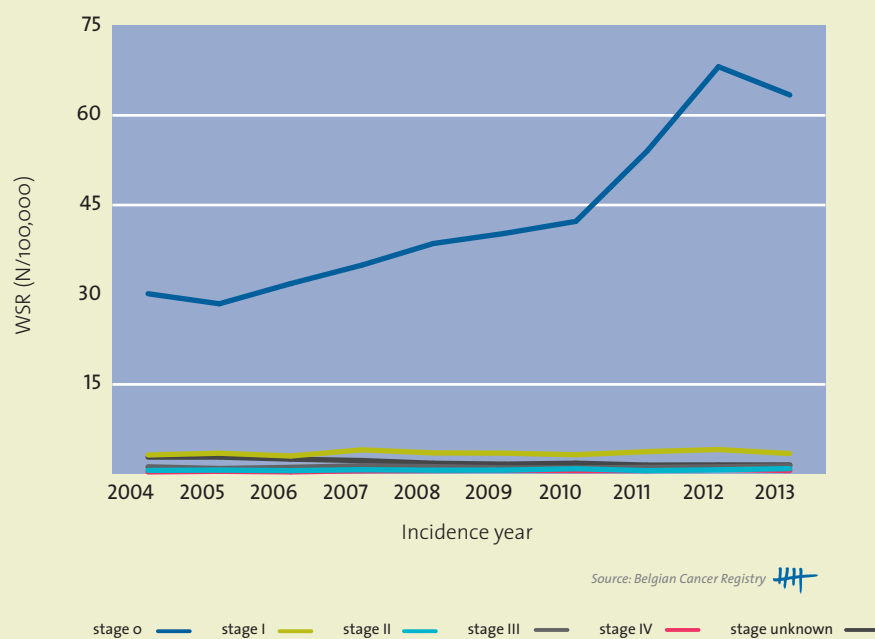
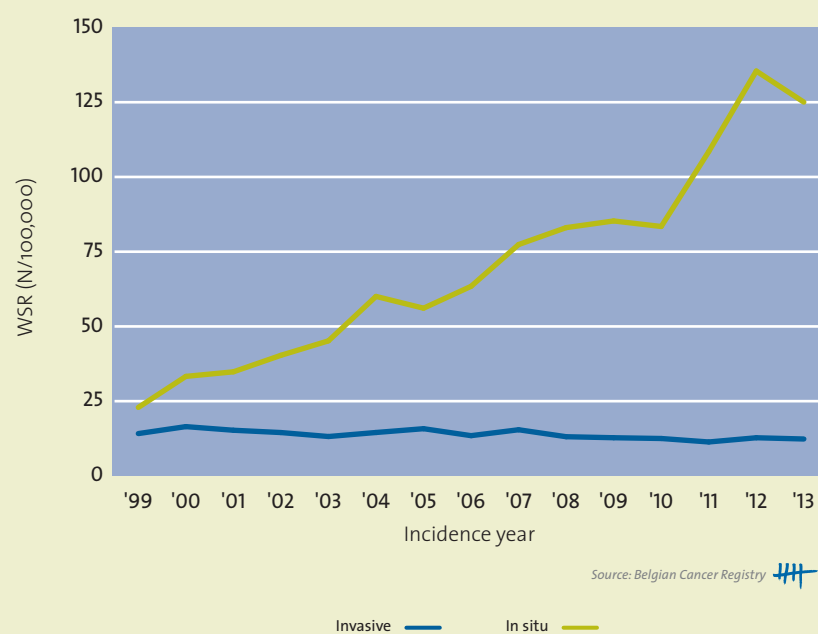
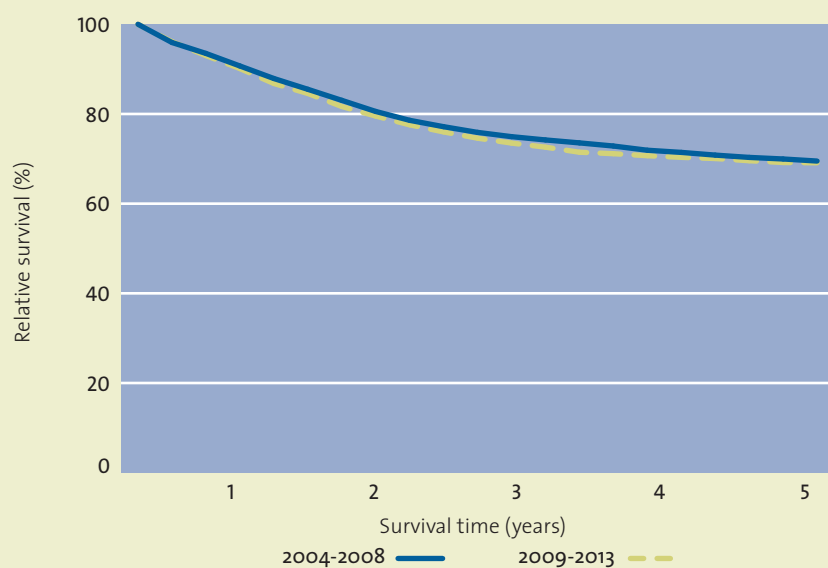
Figure 9 Cervical cancer: Trends in age-standardised incidence (WSR) by stage, Belgium 2004-2013**Figure 10** Cervical cancer: Trends in age-standardised incidence (WSR) for invasive and in situ carcinomas, age group 25-64 years, Flemish Region 1999-2013

Table 2 Cervical cancer: AAPC(%) by region, stage and age group in Belgium

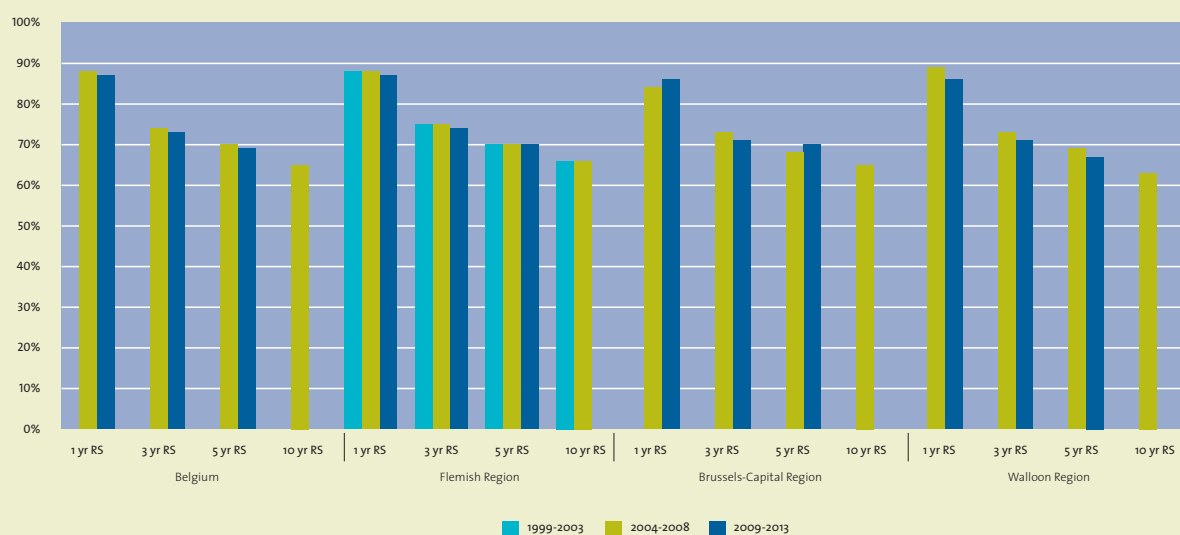
Cervical cancer	Females		
Incidence	AAPC(%)	95%CI	period
Belgium	-0.5	[-2.0; 1.0]	2004-2013
Flemish Region	-1.5	[-2.3; -0.6]	1999-2013
Brussels-Capital Region	-1.1	[-4.1; 2.0]	2004-2013
Walloon Region	2.2	[-0.7; 5.3]	2004-2013
Mortality	AAPC(%)	95%CI	period
Belgium	-0.5	[-3.6; 2.6]	2004-2012
Flemish Region	-0.8	[-2.3; 0.7]	1999-2012
Brussels-Capital Region	-1.7	[-6.3; 3.2]	1999-2012
Walloon Region	1.1	[-2.2; 4.5]	2004-2012
Belgium			
Incidence by stage	AAPC(%)	95%CI	period
"Stage 0 (carcinoma in situ)"	6.9	[2.9; 11.0]	2004-2013
	6.9	[2.9; 11.0]	2004-2009
	14.5	[9.1; 20.2]	2009-2013
Stage I	1.3	[-1.1; 3.8]	2004-2013
Stage II	2.9	[-0.8; 6.7]	2004-2013
Stage III	1.2	[-2.0; 4.6]	2004-2013
Stage IV	6.8	[2.7; 11.1]	2004-2013
Stage unknown	-7.6	[-9.1; -6.0]	2004-2013
	-10.7	[-13.6; -7.8]	2004-2009
	-3.4	[-7.4; 0.7]	2009-2013
Flemish Region - age group 25-64 year			
Incidence	AAPC(%)	95%CI	period
"Cervical carcinoma in situ"	12.7	[11.2; 14.2]	1999-2013
	15.3	[12.1; 18.7]	1999-2006
	10.1	[7.0; 13.3]	2006-2013
Invasive cervical cancer	-1.5	[-2.3; -0.6]	1999-2013
Incidence by age group	AAPC(%)	95%CI	period
20-39 Year			
Belgium	-1.6	[-3.9; 0.9]	2004-2013
	-5.4	[-9.8; -0.7]	2004-2009
	3.4	[-2.7; 9.9]	2009-2013
Flemish Region	-2.2	[-3.6; -0.8]	1999-2013
Brussels-Capital Region	2.5	[-3.6; 8.9]	2004-2013
Walloon Region	-0.2	[-4.7; 4.5]	2004-2013
40-69 Year			
Belgium	-0.1	[-1.6; 1.4]	2004-2013
Flemish Region	-1.1	[-2.1; -0.1]	1999-2013
Brussels-Capital Region	-2.9	[-6.4; 0.9]	2004-2013
Walloon Region	3.6	[1.0; 6.2]	2004-2013
70+			
Belgium	0.5	[-2.2; 3.2]	2004-2013
Flemish Region	-1.5	[-3.2; 0.3]	1999-2013
Brussels-Capital Region	3.4	[-2.3; 9.4]	2004-2013
Walloon Region	1.1	[-2.8; 5.3]	2004-2013

AAPC: average annual percentage change

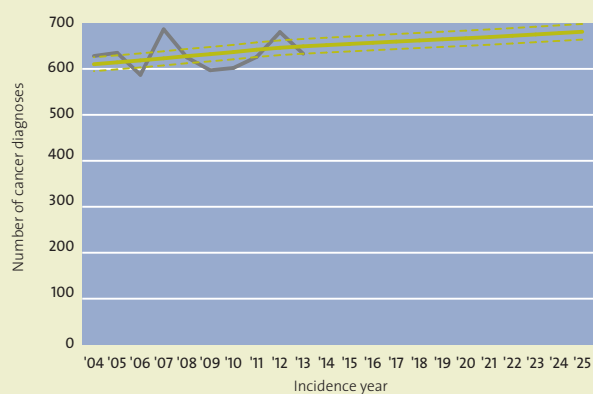
Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 11 Cervical cancer: Relative survival by cohort in Belgium 2004-2013

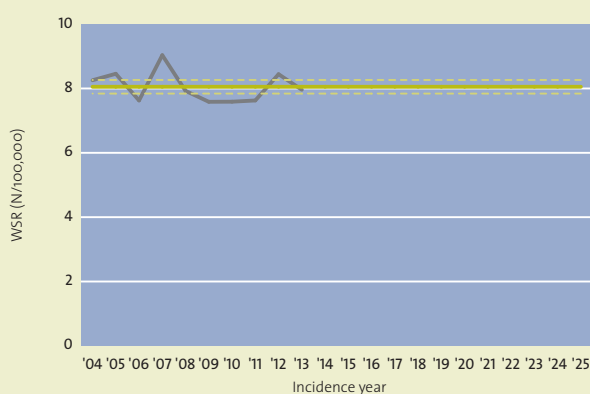
Source: Belgian Cancer Registry

Figure 12 Cervical cancer: 1-, 3-, 5- and 10-year relative survival (RS) by region

Source: Belgian Cancer Registry

Figure 13 Cervical cancer: Observed and projected number of new diagnoses (N), Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 14 Cervical cancer: Observed and projected incidence (WSR), Belgium 2004-2025

Source: Belgian Cancer Registry

Observed — Predicted —

Did you know that the BCR also...

- Collects the test results of all cervical samples in a central cyto-histopathological registry.
- Retrieves from the IMA/AIM reimbursement data of clinical acts which are relevant for the detection, monitoring and treatment of cervical cancer.
- Is heavily involved in the organization of the Flemish screening program. BCR compiles an exclusion list that consists of all women for which a screening examination is not required for the next invitation round. By doing so, CvKO can avoid that about 50 % of the total target population of 1,690,000 women will receive a useless invitation.
- Is also closely involved in the evaluation of the Flemish cervical cancer screening program through the calculation of quality indicators. Those results are published in the annual reports of the Flemish cancer screening programs (<https://www.bevolkingsonderzoek.be/>).
- Some key results calculated by the BCR:
 - Coverage: 62.7 % (2013) and 61.2 % (2014)
 - About 6 % of the screening smears are abnormal
 - 30 to 40 % of all smears taken in 2014 and 2015 are overconsumption
 - 82 % of all HPV test performed on smears are overconsumption
 - Specificity of screening smear 94.2%
 - Positive predictive value for a screening smear with diagnosis of high-grade squamous intraepithelial lesion for the detection of CIN 1+ is 85 %
 - 75 % of abnormal screening smears had a follow-up within one year
- Sent to each Flemish laboratory an individual comprehensive feedback concerning the data of the cervical samples taken in 2013.
- Is a partner in a pilot project 'ZEHUV' set up by CvKO. This is a randomized controlled study to test a new strategy to improve the coverage of cervical cancer screening in Flanders. In this study, a self-sampling kit for HPV testing is sent to women which have never been screened so far.
- Was co-author in the KCE rapport Cervical cancer screening program and human papillomavirus (HPV) testing, part II: update on HPV primary screening. Arbyn M, **Haelens A**, Desomer A, Verdoodt F, Thiry N, **Francart J**, Hanquet G, Robays J. Assessment (HTA) Brussels: Belgian Health Care Knowledge Centre (KCE). 2015. KCE Reports 238. D/2015/10.273/17.

!!Key note for registration:

Always try to specify the localisation of a uterine lesion: cervix (C53.9) or corpus uteri (C54). Avoid the non-specific code for uterus, NOS (C55.9).

8077/2 for CIN3 but also for CIN2 from January 2014 on.

ONLY FOR C53.9: Registration cannot be based on cytology alone: results from biopsy or resection are required.

Adenocarcinoma can originate in the endocervix (C53.0).

- 8384/3: adenocarcinoma, endocervical type or endocervical adenocarcinoma, usual type
- 8480/3: mucinous adenocarcinoma, NOS
- 8482/3: mucinous adenocarcinoma, endocervical type
- 8144/3: mucinous adenocarcinoma, intestinal type

3.7.2 CORPUS UTERI (ICD-10: C54)

Table 1 Corpus uteri cancer: Overview of incidence, mortality, prevalence, survival and projection by region

Corpus uteri cancer		Females		
Incidence, 2013		N	CR	WSR
Belgium		1,395	24.7	11.5
Flemish Region		859	26.6	11.9
Brussels-Capital Region		124	20.9	11.6
Walloon Region		412	22.5	10.8
Mortality, 2012		N	CR	WSR
Belgium		188	3.3	1.2
Flemish Region		130	4.0	1.4
Brussels-Capital Region		17	2.9	1.0
Walloon Region		41	2.3	0.8
Prevalence (5 years), 2009-2013		N	CR	WSR
Belgium		5,729	101.4	46.8
Flemish Region		3,543	109.7	49.0
Brussels-Capital Region		422	71.2	39.6
Walloon Region		1,764	96.5	44.4
Prevalence (10 years), 2004-2013		N	CR	WSR
Belgium		10,085	178.4	79.2
Flemish Region		6,284	194.5	83.3
Brussels-Capital Region		697	117.5	63.3
Walloon Region		3,104	169.7	75.6
5-year Relative survival, 2009-2013		N at risk	%	95%CI
Belgium		7,127	79.2%	[77.7; 80.6]
Flemish Region		4,345	79.6%	[77.7; 81.3;]
Brussels-Capital Region		531	83.0%	[77.4; 88.0]
Walloon Region		2,251	77.4%	[74.7; 80.1]
Projection, 2025		N [95%CI]	WSR [95%CI]	
Belgium		1,541 [1,464; 1,619]	10.6 [10.0; 11.2]	

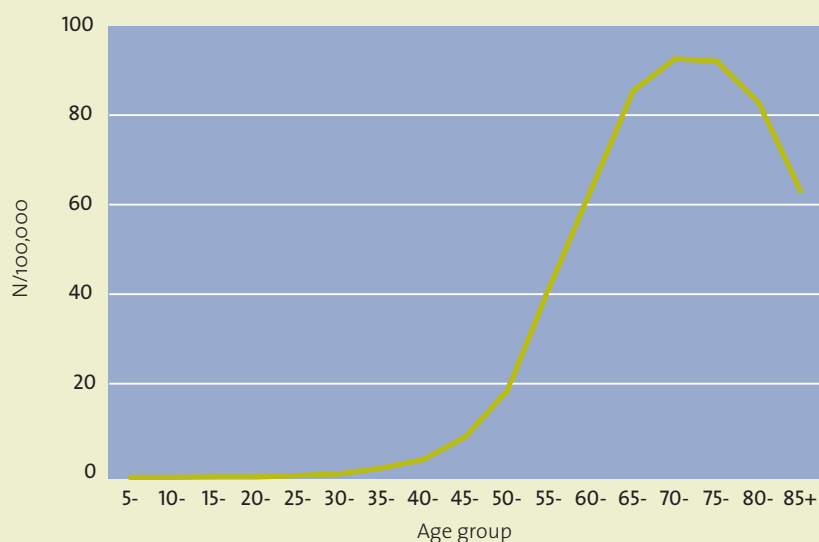
CR, crude rate (n/100,000 person years)

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

- Corpus uteri cancer burden in Belgium (**Table 1**):
 - 1,395 new diagnoses in 2013.
 - Corpus uteri cancer is the 5th most frequent tumour in females (5% of all malignancies).
 - 188 deaths are due to corpus uteri cancer (C54) in 2012. This is probably underestimated because deaths due to cancer of the uterus NOS (C55) might also include an important number of deaths due to corpus uteri cancers.
 - Corpus uteri cancer (C54-C55) is the 7th most important cause of cancer death in females (3% of all cancer deaths).
 - 10,085 females (0.2% of the total female population in Belgium) are alive (on 31/12/2013) after being diagnosed with corpus uteri cancer between 2004 and 2013.
 - Over time, incidence and mortality are slightly decreasing (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 79%. No improvement is observed over time (**Table 10 and 11**).
 - In 2025, about 1,541 females are expected to receive a diagnosis of corpus uteri cancer. The increase is mainly due to the ageing and growth of the population (**Table 12 and 13**).
- A different risk pattern is observed with age (**Figure 1, 8 and Table 2**).
 - Age group 30-49 years:
 - The incidence rates are decreasing with 7.5% annually between 2008 and 2013. In this age group the incidence rates are very low in comparison with the older women (more than six fold lower).
 - Age group 50-74 years:
 - The incidence rates are decreasing (1.9% annually).
 - Age group 75+:
 - The incidence rates remain stable.

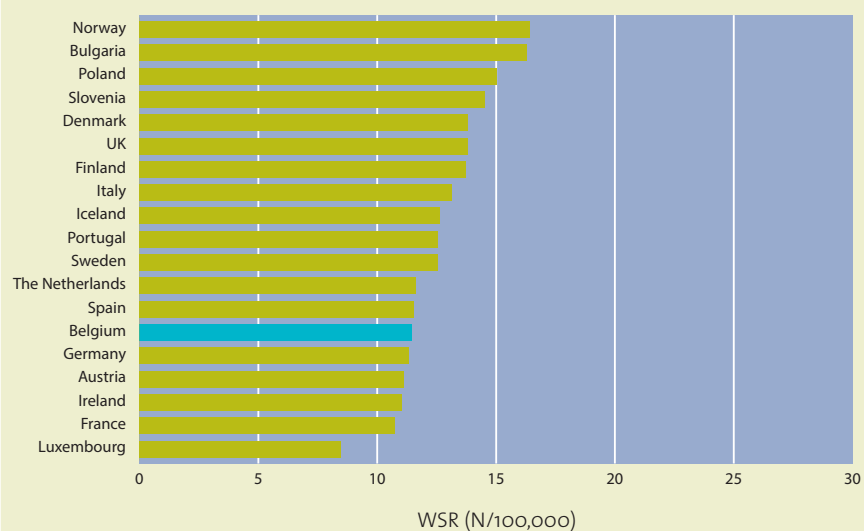
- 80% of all corpus uteri cancers with known stage are diagnosed as stage I (**Figure 4, 5 and 6**).
- Availability of information on stage has improved from 71% in 2004-2006 to 88% in 2010-2013.
 - In the elderly, slightly fewer tumours are diagnosed as stage I.
- A decrease in incidence rates is observed for endometrioid carcinoma, the most frequent histological type (**Figure 9 and Table 2**).

Figure 1 Corpus uteri cancer: Age-specific incidence rates (N/100,000), Belgium 2009-2013



Source: Belgian Cancer Registry

Figure 2 Corpus uteri cancer: Comparison of age-standardised incidence rates (WSR).
(Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Corpus uteri cancer: Age-standardised incidence and mortality (WSR) in Belgium

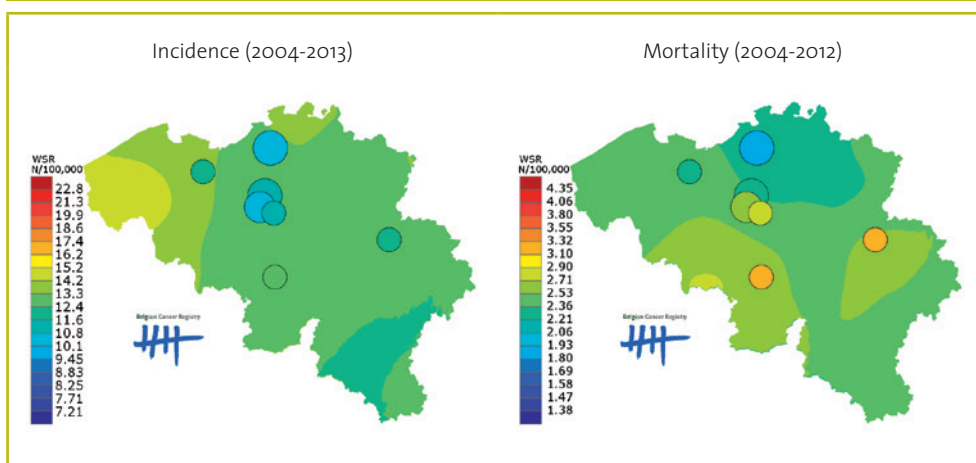
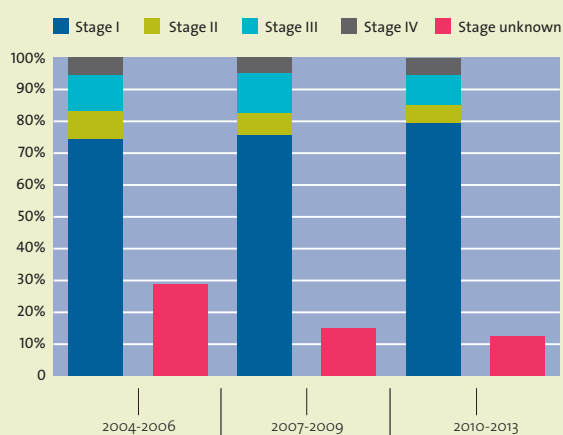
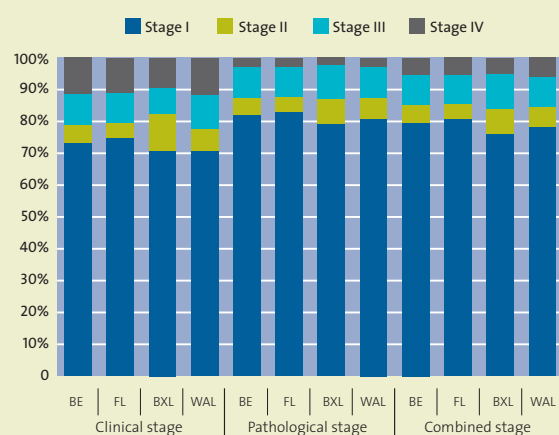


Figure 4 Corpus uteri cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



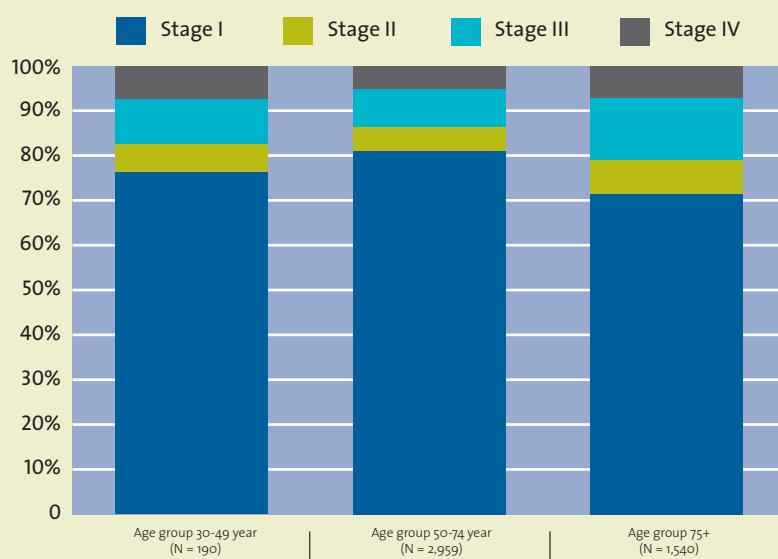
Source: Belgian Cancer Registry

Figure 5 Corpus uteri cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Corpus uteri cancer: stage distribution by age group, Belgium 2010-2013



Source: Belgian Cancer Registry

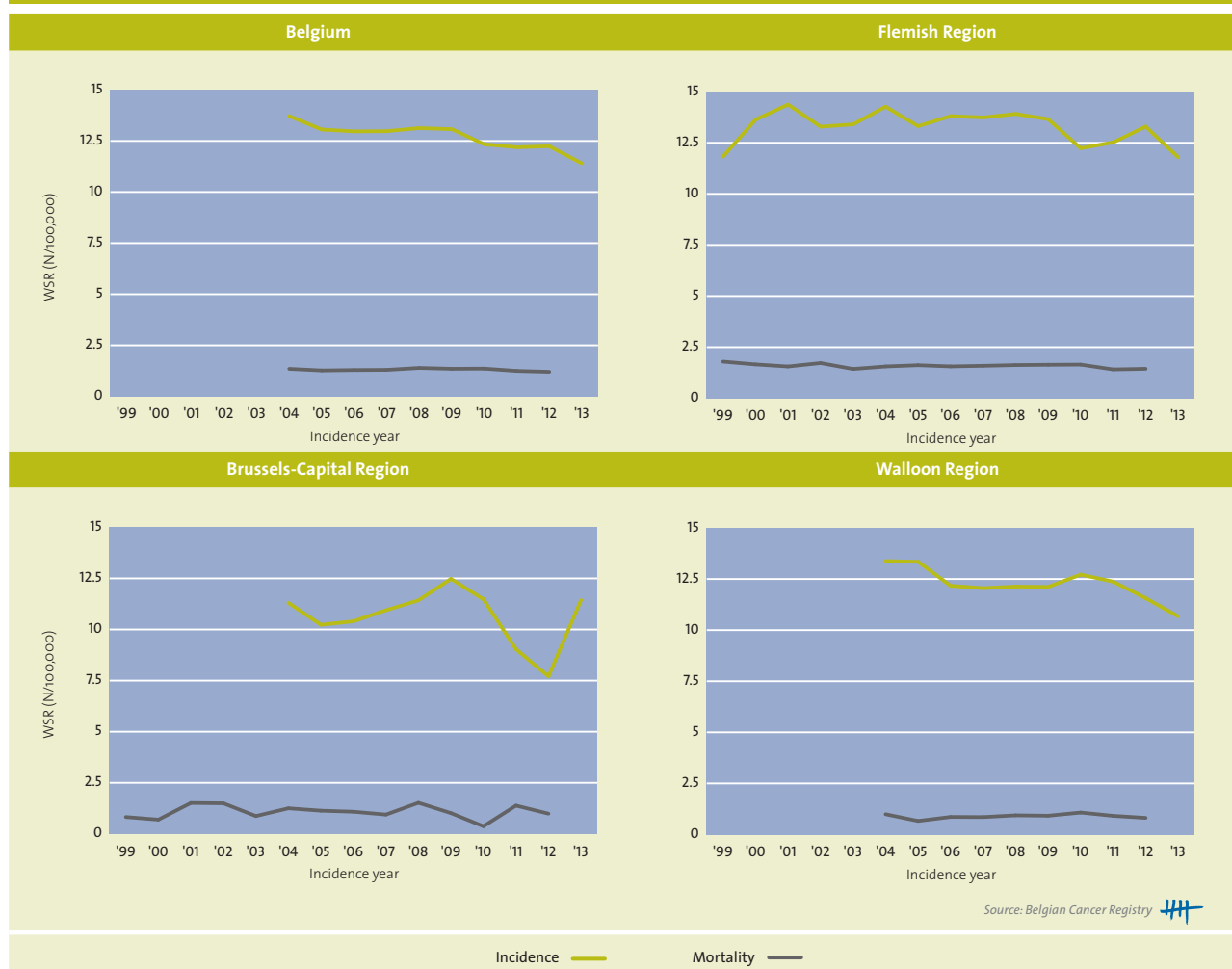
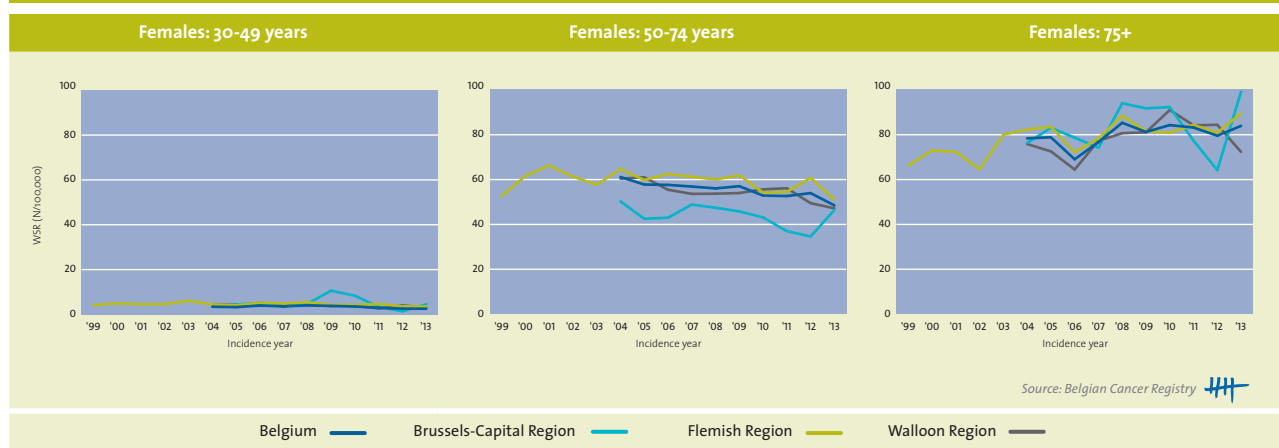
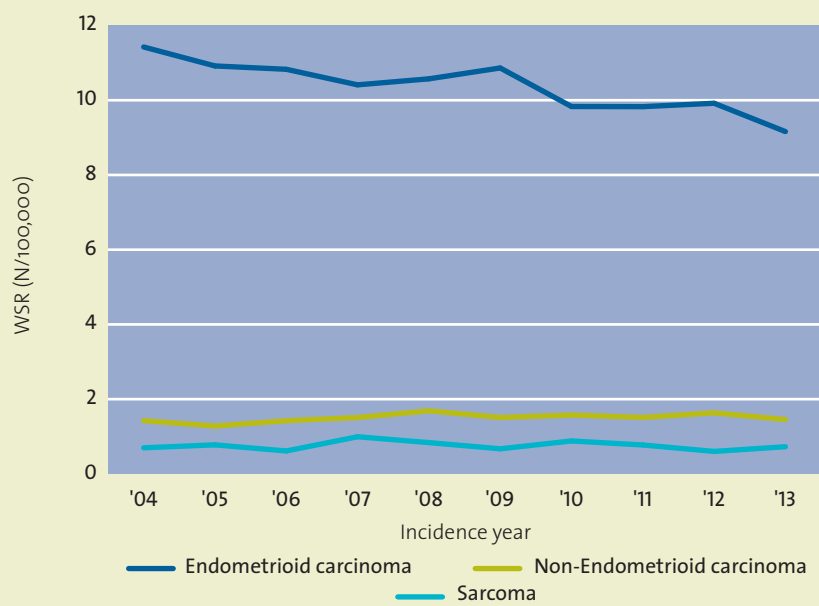
Figure 7 Corpus uteri cancer: Trends in age-standardised incidence and mortality (WSR) by region, 1999-2013**Figure 8** Corpus uteri cancer: Trends in age-standardised incidence (WSR) by age group and region, 1999-2013

Figure 9 Corpus uteri cancer: Trends in age-standardised incidence (WSR) by histology, Belgium 2004-2013




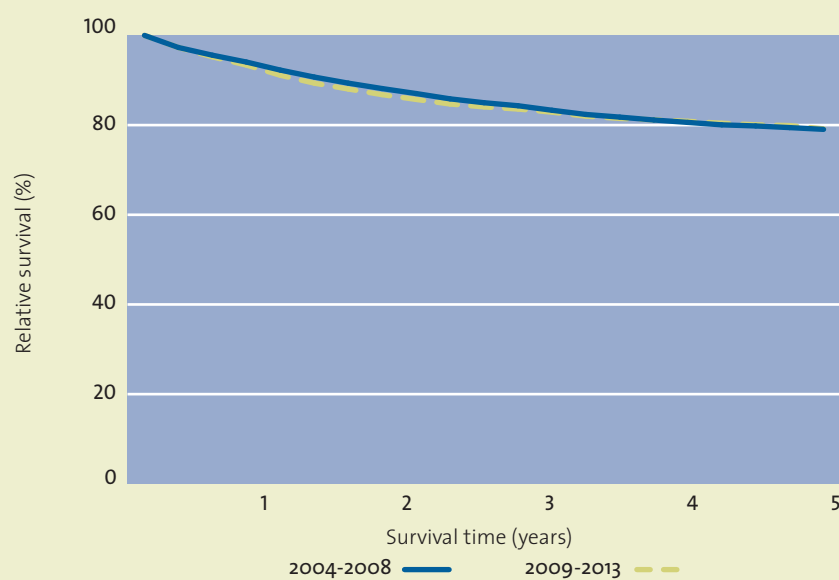
Source: Belgian Cancer Registry 

Table 2 Corpus uteri cancer: AAPC(%) by region, age group and histology in Belgium

Corpus uteri cancer		Females		
Incidence	AAPC(%)	95%CI	period	
Belgium	-1.5	[-2.1; -0.9]	2004-2013	
Flemish Region	-0.4	[-1.1; 0.2]	1999-2013	
	1.2	[-0.2; 2.7]	1999-2006	
	-2.0	[-3.4; -0.6]	2006-2013	
Brussels-Capital Region	-1.4	[-4.8; 2.1]	2004-2013	
Walloon Region	-2.6	[-3.2; -1.9]	2004-2013	
	-3.9	[-5.7; -2.0]	2004-2007	
	1.1	[-0.3; 2.5]	2007-2011	
	-7.7	[-10.4; -4.8]	2011-2013	
Mortality	AAPC(%)	95%CI	period	
Belgium	-1.1	[-2.1; -0.1]	2004-2012	
	0.7	[-0.6; 2.1]	2004-2010	
	-6.2	[-10.2; -2.0]	2010-2012	
Flemish Region	-0.8	[-1.7; 0.1]	1999-2012	
Brussels-Capital Region	-0.8	[-6.2; 4.9]	1999-2012	
Walloon Region	1.1	[-3.0; 5.5]	2004-2012	
Incidence by histology	AAPC(%)	95%CI	period	
Carcinoma Endometrioid	-2.0	[-2.7; -1.2]	2004-2013	
Carcinoma Non-Endometrioid	1.5	[-0.1; 3.0]	2004-2013	
	4.7	[0.8; 8.8]	2004-2008	
	-1.0	[-4.0; 2.0]	2008-2013	
Sarcoma	-0.5	[-4.6; 3.7]	2004-2013	
Incidence by age group	AAPC(%)	95%CI	period	
30-49 Year				
Belgium	-2.5	[-3.7; -1.3]	2004-2013	
	4.1	[0.9; 7.3]	2004-2008	
	-7.5	[-9.7; -5.2]	2008-2013	
Flemish Region	-1.8	[-3.3; -0.2]	1999-2013	
	1.1	[-1.4; 3.7]	1999-2008	
	-6.7	[-11.1; -2.1]	2008-2013	
Brussels-Capital Region	-2.8	[-15.9; 12.2]	2004-2013	
Walloon Region	-3.9	[-6.8; -0.9]	2004-2013	
50-74 Year				
Belgium	-1.9	[-2.6; -1.2]	2004-2013	
Flemish Region	-0.6	[-1.4; 0.3]	1999-2013	
	1.1	[-0.8; 3.0]	1999-2006	
	-2.3	[-4.1; -0.4]	2006-2013	
Brussels-Capital Region	-2.0	[-4.6; 0.7]	2004-2013	
Walloon Region	-2.1	[-3.3; -0.9]	2004-2013	
75+				
Belgium	1.1	[-0.3; 2.5]	2004-2013	
Flemish Region	1.6	[0.8; 2.5]	1999-2013	
Brussels-Capital Region	0.7	[-2.8; 4.3]	2004-2013	
Walloon Region	0.7	[-1.4; 2.8]	2004-2013	
	3.3	[0.7; 6.1]	2004-2011	
	-8.2	[-17.0; 1.5]	2011-2013	

AAPC: average annual percentage change

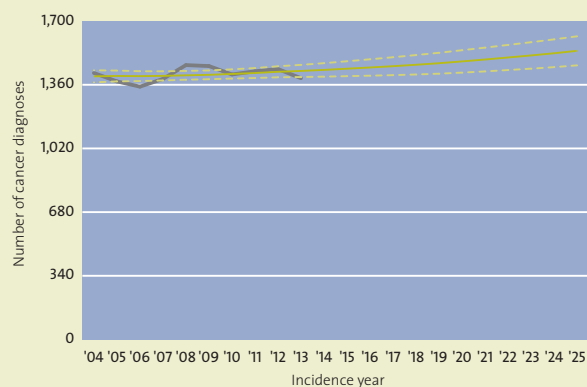
Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Corpus uteri cancer: Relative survival by cohort, Belgium 2004-2013

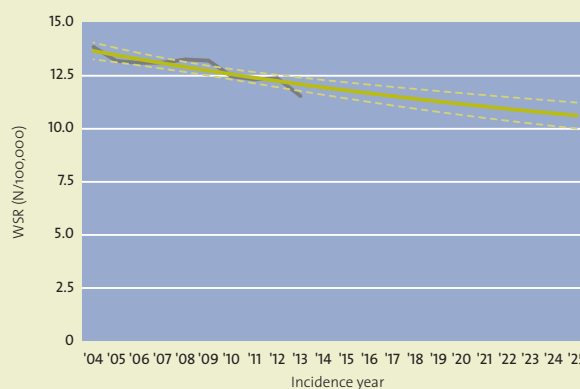
Source: Belgian Cancer Registry

Figure 11 Corpus uteri cancer: 1-, 3-, 5- and 10-year relative survival (RS) by region

Source: Belgian Cancer Registry

Figure 12 Corpus uteri cancer: Observed and projected number of new diagnoses (N), Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 13 Corpus uteri cancer: Observed and projected incidence (WSR), Belgium 2004-2025

Source: Belgian Cancer Registry

Did you know that the BCR...

- Has established a registration project for corpus uteri cancer – EFFECT (EFFectiveness of Endometrial Cancer Treatment) in collaboration with representatives of the Belgian association of gynaecologists and the financial support of the Anticancer Fund.
 - Established relevant quality indicators for the management of corpus uteri cancer – Further reading see: **Werbrouck J**, Bouche G, de Jonge E, Jacomen G, D'Hondt V, Denys H, Van Limbergen E, Vandermeersch B, **De Schutter H**, **Van Eycken E**, Goffin F, Amant F. Evaluation of the quality of the management of cancer of the corpus uteri--selection of relevant quality indicators and implementation in Belgium. *Gynecol Oncol.* 2013; 131(3): 512-519.
 - 64% of the Belgian hospitals agreed to participate in the EFFECT registration project and 57% of all hospitals already is actively participating.
 - Preliminary results show that 86% of the operated patients had a pre-operative biopsy.
 - The working group promotes a national registration for corpus uteri cancer.

!!Key note for registration:

Always try to specify the localisation of a uterine lesion: cervix (C53.9) or corpus uteri (C54).
Avoid the non-specific code for uterus, NOS (C55.9).

8441/3: serous (papillary) (adeno)carcinoma

8380/2: EIN (Endometrial Intraepithelial Neoplasia): to register from January 2014 on.

8441/2: (S)EIC ((Serous) Endometrial Intraepithelial Carcinoma)

3.7.3 OVARY (ICD-10: C56)

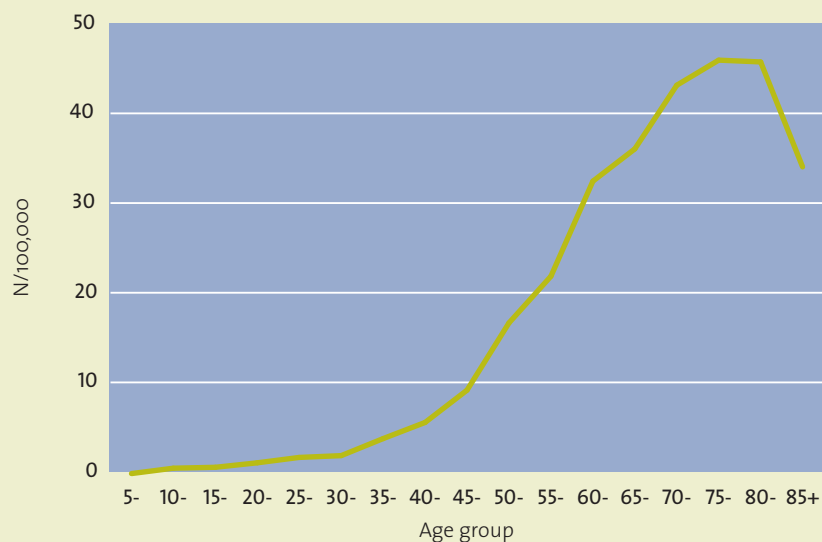
Table 1 Ovarian cancer: Overview of incidence, mortality, prevalence, survival and projection by region

Ovarian cancer	Females		
Incidence, 2013	N	CR	WSR
Belgium	766	13.6	7.1
Flemish Region	461	14.3	7.2
Brussels-Capital Region	47	7.9	4.7
Walloon Region	258	14.1	7.5
Mortality, 2012	N	CR	WSR
Belgium	678	12.1	4.6
Flemish Region	394	12.3	4.5
Brussels-Capital Region	56	9.6	4.3
Walloon Region	228	12.5	4.9
Prevalence (5 years), 2009-2013	N	CR	WSR
Belgium	2,389	42.3	24.2
Flemish Region	1,449	44.9	24.8
Brussels-Capital Region	172	29.0	20.2
Walloon Region	768	42.0	24.3
Prevalence (10 years), 2004-2013	N	CR	WSR
Belgium	3,881	68.7	38.6
Flemish Region	2,368	73.3	39.9
Brussels-Capital Region	285	48.1	32.5
Walloon Region	1,228	67.2	38.1
5-year Relative survival, 2009-2013	N at risk	%	95%CI
Belgium	4,009	42.7%	[40.7; 44.7]
Flemish Region	2,416	42.2%	[39.7; 44.8]
Brussels-Capital Region	320	41.2%	[34.0; 48.4]
Walloon Region	1,273	43.9%	[40.2; 47.5]
Projection, 2025	N [95%CI]	WSR [95%CI]	
Belgium	716 [658; 774]	5.6 [5.1; 6.1]	

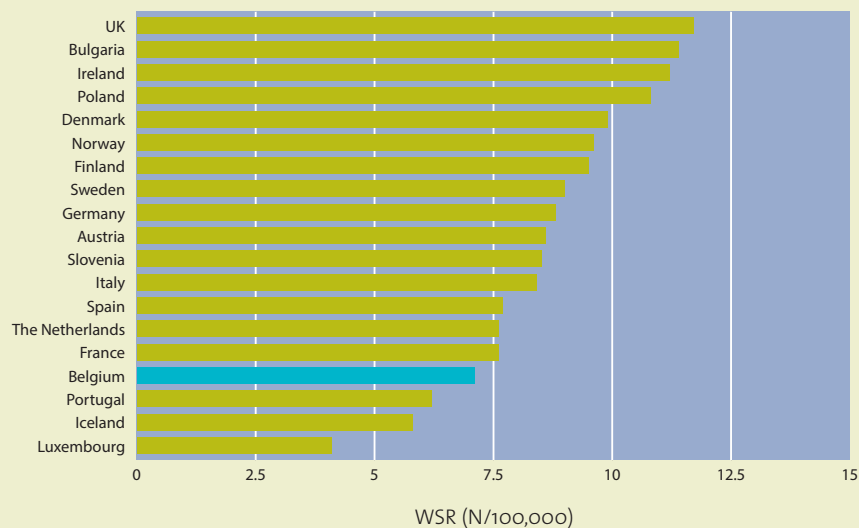
CR, crude rate (N/100,000 person years)

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

- Ovarian cancer burden in Belgium (**Table 1**):
 - 766 new diagnoses in 2013.
 - Ovarian cancer is the 8th most frequent tumour in females (2% of all malignancies).
 - 678 deaths due to ovarian cancer in 2012.
 - Ovarian cancer is the 5th most important cause of cancer death in females (6% of all cancer deaths).
 - 3,881 females (0.07% of the total female population in Belgium) are alive (on 31/12/2013) after being diagnosed with ovarian cancer between 2004 and 2013.
 - Over time, incidence and mortality rates are decreasing. The decrease in incidence rates can be observed through all age groups (**Figure 7, 8 and Table 2**). Note: borderline malignant tumours are not included.
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 43%. No improvement in relative survival proportion is observed over time (**Figure 10 and 11**).
 - In 2025, about 716 females are expected to receive a diagnosis of ovarian cancer. The decrease in the risk for ovarian cancer is expected to be strong enough to overcome the expected increase due to the ageing and growth of the population (**Figure 12 and 13**).
- More than 60% of all ovarian cancers with known stage are diagnosed in an advanced stage (stage III or IV) (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 56% in 2004-2006 to 76% in 2010-2013.
 - 80% of serous carcinoma (about 70% of all ovarian cancers) and adenocarcinoma NOS, are diagnosed as stage III or stage IV.

Figure 1 Ovarian cancer: Age-specific incidence rates (N/100,000), Belgium 2009-2013.

Source: Belgian Cancer Registry

Figure 2 Ovarian cancer: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)

Source: Belgian Cancer Registry

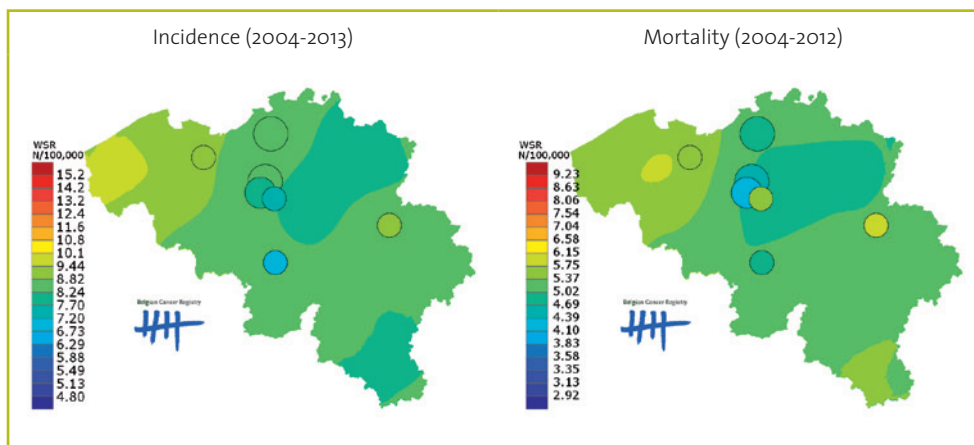
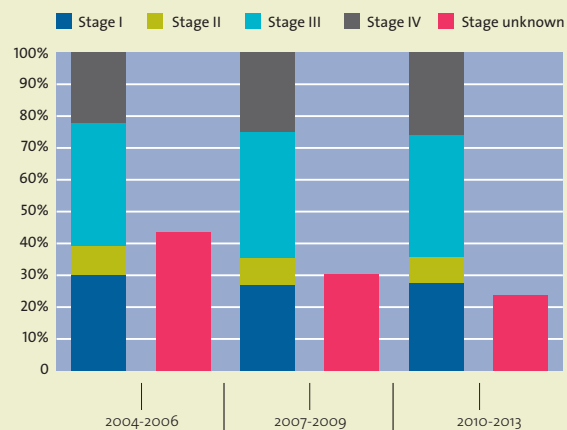
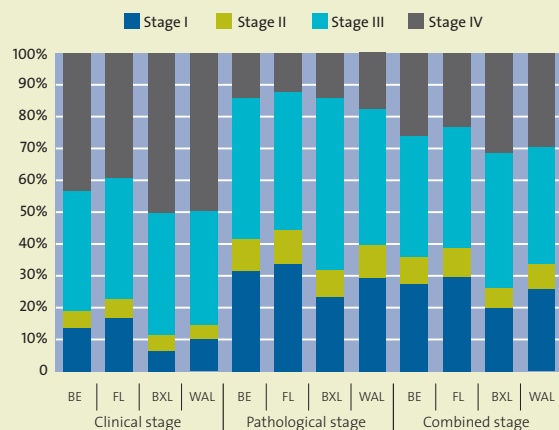
Figure 3 Ovarian cancer: Age-standardised incidence and mortality (WSR) in Belgium

Figure 4 Ovarian cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



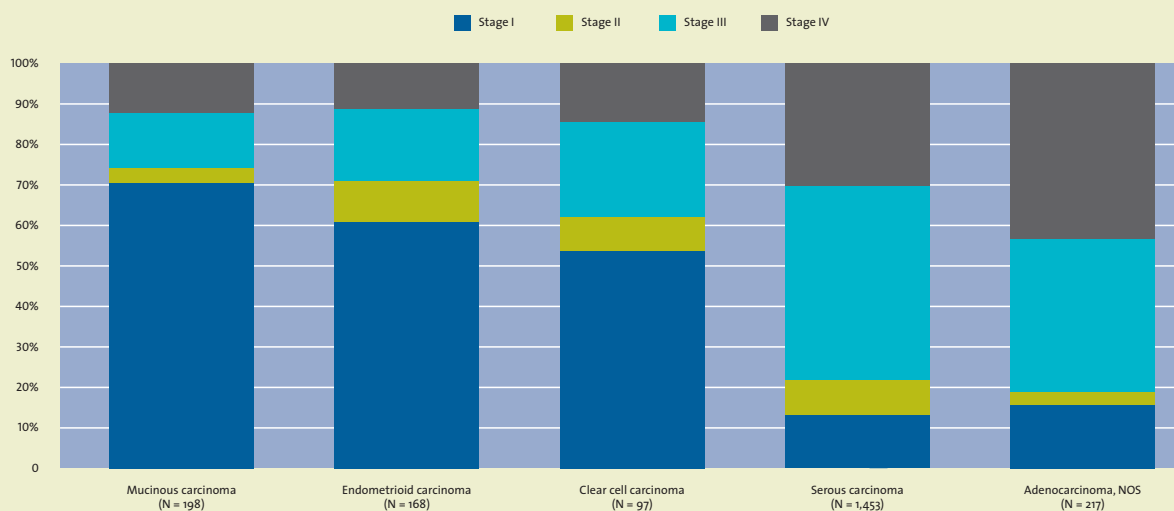
Source: Belgian Cancer Registry

Figure 5 Ovarian cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Ovarian cancer: stage distribution by histology, Belgium 2010-2013



Source: Belgian Cancer Registry

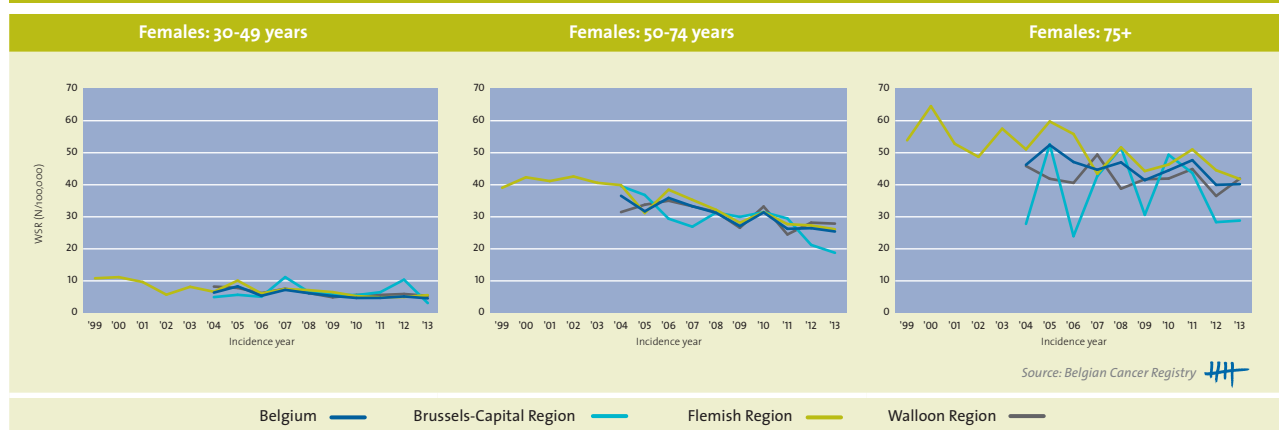
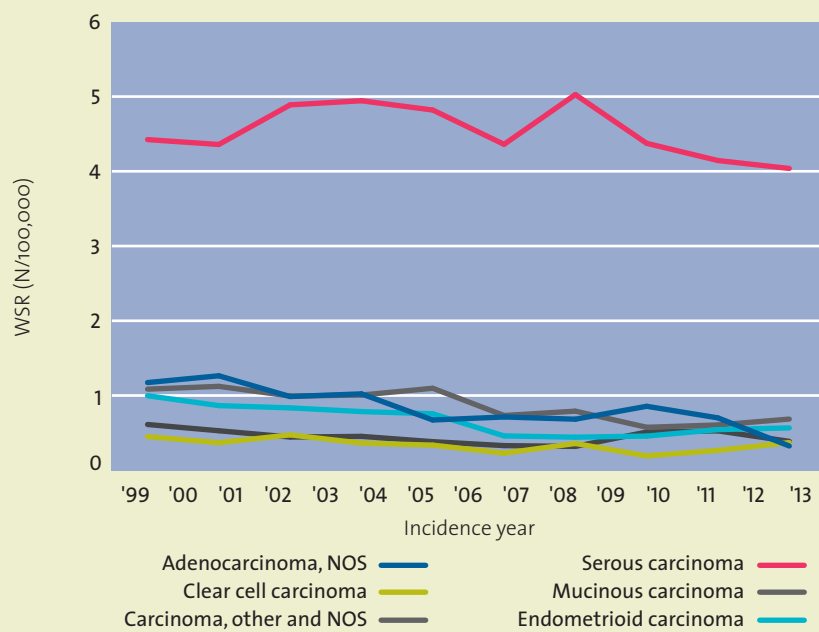
Figure 7 Ovarian cancer: Trends in age-standardised incidence and mortality (WSR) by region, 1999-2013**Figure 8** Ovarian cancer: Trends in age-standardised incidence (WSR) by age group and region, 1999-2013

Figure 9 Ovarian cancer: Trends in age-standardised incidence (WSR) by histology, Belgium 2004-2013.



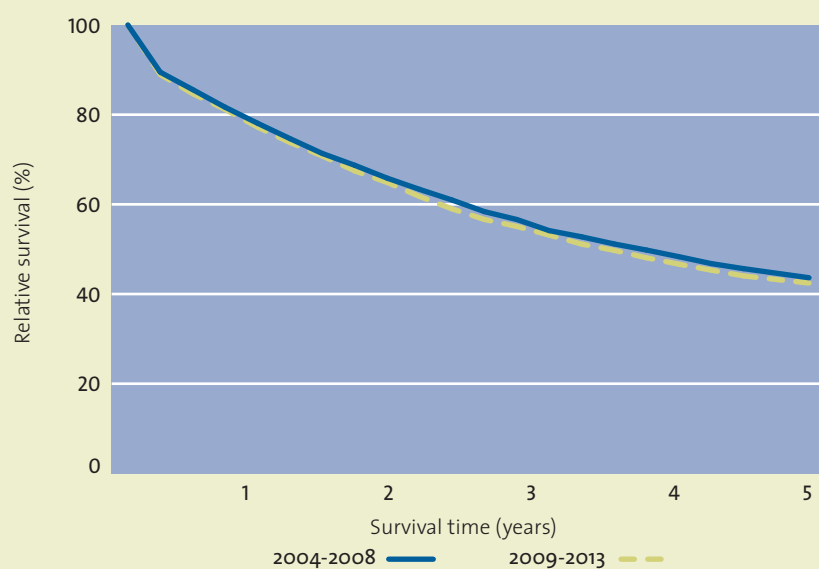
Source: Belgian Cancer Registry

Table 2 Ovarian cancer: AAPC(%) by region, histology and age group in Belgium

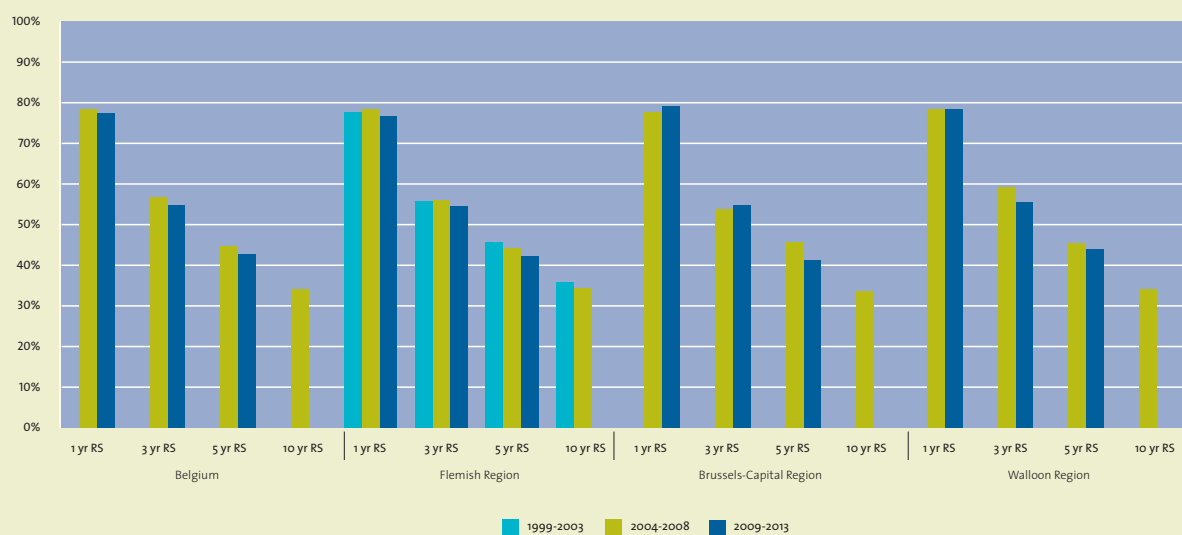
Ovarian cancer	Females		
Incidence	AAPC(%)	95%CI	period
Belgium	-3.4	[-4.4; -2.3]	2004-2013
Flemish Region	-3.5	[-4.0; -3.0]	1999-2013
Brussels-Capital Region	-4.6	[-8.2; -0.9]	2004-2013
Walloon Region	-2.6	[-4.2; -0.9]	2004-2013
Mortality	AAPC(%)	95%CI	period
Belgium	-1.9	[-3.0; -0.8]	2004-2012
	0.0	[-2.4; 2.5]	2004-2008
	-3.8	[-6.1; -1.4]	2008-2012
Flemish Region	-2.0	[-2.8; -1.2]	1999-2012
Brussels-Capital Region	-1.5	[-4.7; 1.8]	1999-2012
Walloon Region	-1.4	[-2.9; 0.0]	2004-2012
Incidence by age group	AAPC(%)	95%CI	period
30-49 Year			
Belgium	-4.5	[-7.3; -1.5]	2004-2013
Flemish Region	-4.9	[-7.1; -2.7]	1999-2013
Brussels-Capital Region	-0.6	[-9.8; 9.6]	2004-2013
Walloon Region	-4.4	[-7.1; -1.6]	2004-2013
50-74 Year			
Belgium	-3.7	[-5.3; -2.2]	2004-2013
Flemish Region	-3.5	[-4.5; -2.6]	1999-2013
Brussels-Capital Region	-8.4	[-10.6; -6.2]	2004-2013
	-10.6	[-16.7; -4.0]	2004-2007
	1.7	[-3.3; 6.9]	2007-2011
	-23.1	[-31.2; -14.1]	2011-2013
Walloon Region	-2.6	[-4.8; -0.3]	2004-2013
75+			
Belgium	-1.9	[-3.5; -0.3]	2004-2013
Flemish Region	-1.9	[-3.1; -0.7]	1999-2013
Brussels-Capital Region	-0.7	[-8.2; 7.5]	2004-2013
Walloon Region	-1.0	[-3.1; 1.1]	2004-2013
Incidence by histology	AAPC(%)	95%CI	period
Adenocarcinoma, NOS	-9.4	[-14.0; -4.5]	2004-2013
Clear cell carcinoma	-5.3	[-11.0; 0.8]	2004-2013
Endometrioid carcinoma	-6.8	[-9.8; -3.8]	2004-2013
	-13.1	[-17.3; -8.6]	2004-2010
	7.0	[-3.8; 18.9]	2010-2013
Mucinous carcinoma	-7.2	[-10.2; -4.1]	2004-2013
Serous carcinoma	-0.6	[-2.0; 0.8]	2004-2013
	4.7	[-0.1; 9.8]	2004-2007
	-3.2	[-5.4; -1.1]	2007-2013
Carcinoma, other and NOS	-2.4	[-6.3; 1.6]	2004-2013
	-10.4	[-17.2; -3.0]	2004-2009
	8.5	[-1.9; 20.1]	2009-2013

AAPC: average annual percentage change

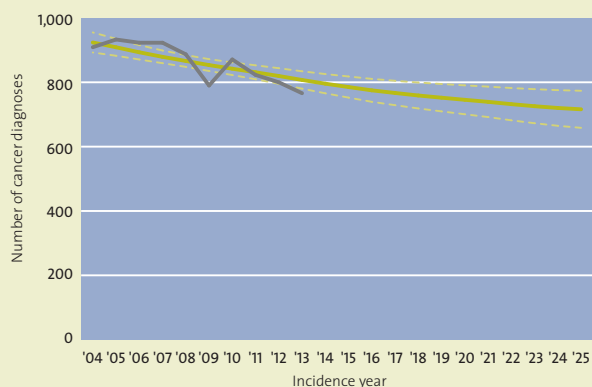

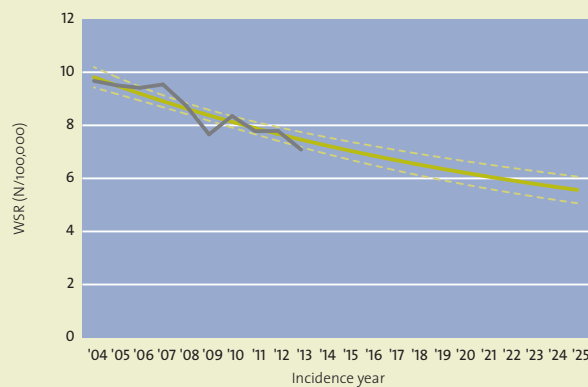

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Ovarian cancer: Relative survival by cohort, Belgium 2004-2013

Source: Belgian Cancer Registry

Figure 11 Ovarian cancer: 1-, 3-, 5- and 10-year relative survival (RS) by region

Source: Belgian Cancer Registry

Figure 12 Ovarian Cancer: Observed and projected number of new diagnoses (N), Belgium 2004-2025Source: Belgian Cancer Registry **Figure 13** Ovarian Cancer: Observed and projected incidence (WSR), Belgium 2004-2025Source: Belgian Cancer Registry 

Predicted — Observed

Did you know that the BCR also...

- Is co-promotor of a PhD student of the Université catholique de Louvain investigating the impact of the use of non-oncological drugs on female genital tract cancers e.g. ovary cancer.

!!Key note for registration:

Is considered as an unpaired organ for registration purposes.

Also borderline tumours (behaviour/1) of the ovary are registered.

An adult granulosa cell tumour *without metastasis* is coded with behaviour/1; but a *metastasising* adult granulosa cell tumour is considered to be malignant, hence behaviour/3.

TNM is also applicable for the borderline tumours.

3.8 MALE GENITAL ORGANS

3.8.1 PROSTATE (ICD10:C61)

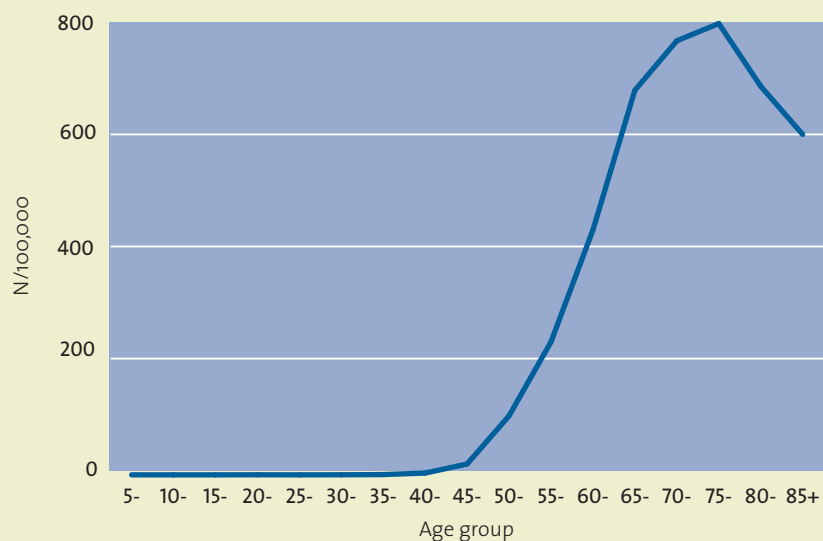
Table 1 Prostate cancer: Overview of incidence, mortality, prevalence, survival and projection by region

Prostate cancer	Males		
Incidence, 2013	N	CR	WSR
Belgium	7,909	145.2	75.5
Flemish Region	5,010	159.0	77.0
Brussels-Capital Region	582	103.6	74.6
Walloon Region	2,317	133.6	72.7
Mortality, 2012	N	CR	WSR
Belgium	1,394	25.7	9.7
Flemish Region	863	27.5	9.6
Brussels-Capital Region	110	19.9	9.1
Walloon Region	421	24.4	10.0
Prevalence (5 years), 2009-2013	N	CR	WSR
Belgium	37,271	684.2	339.6
Flemish Region	24,501	777.4	357.7
Brussels-Capital Region	2,352	418.8	287.3
Walloon Region	10,418	600.7	315.6
Prevalence (10 years), 2004-2013	N	CR	WSR
Belgium	67,892	1,246.3	589.7
Flemish Region	44,503	1,412.1	618.2
Brussels-Capital Region	4,078	726.1	473.6
Walloon Region	19,311	1,113.4	560.0
5-year Relative survival, 2009-2013	N at risk	%	95%CI
Belgium	42,564	95.2%	[94.6; 95.8]
Flemish Region	27,754	95.5%	[94.7; 96.2]
Brussels-Capital Region	2,789	92.5%	[89.9; 95.0]
Walloon Region	12,021	95.2%	[94.0; 96.3]
Projection, 2025	N [95%CI]	WSR [95%CI]	
Belgium	6,649 [6,390; 6,908]	52.6 [50.5; 54.8]	

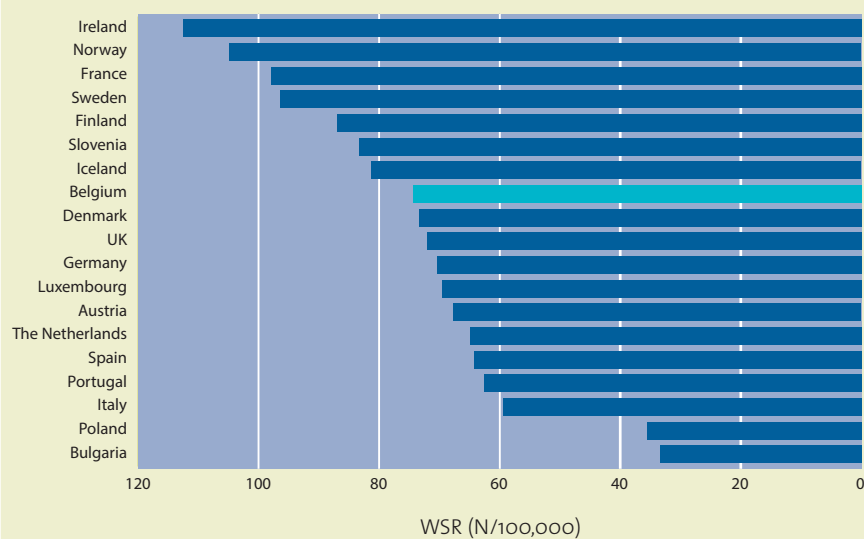
CR, crude rate (n/100,000 person years)

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

- Prostate cancer burden in Belgium (**Table 1**):
 - 7,909 new diagnoses in 2013.
 - Prostate cancer is the most frequent tumour in males (23% of all malignancies).
 - 1,394 deaths are due to prostate cancer in 2012.
 - Prostate cancer is the 3rd most important cause of cancer death in males (9% of all cancer deaths).
 - 67,892 males (1.2% of the total male population in Belgium) are alive (on 31/12/2013) after being diagnosed with prostate cancer between 2004 and 2013.
 - Over time, incidence and mortality rates are decreasing (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 95%. A slight increase in the relative survival proportion for prostate cancer is observed over time in the Flemish Region (1999-2013) (**Figure 10 and 11**).
 - In 2025, about 6,649 males are expected to receive a diagnosis of prostate cancer. The decrease in the risk for prostate cancer is expected to be strong enough to overcome the expected increase due to the ageing and growth of the population (**Figure 11 and 12**). Changes in the use of prostate-specific antigen (PSA) and diagnostic procedures could further influence these estimates.
- Changes in the definition between the 6th and 7th edition of the TNM lead in 2010 to a stage migration for a large number of stage II prostate cancers towards stage I (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 66% in 2004-2006 to 82% in 2010-2013.

Figure 1 Prostate cancer: Age-specific incidence rates (N/100,000), Belgium 2009-2013

Source: Belgian Cancer Registry

Figure 2 Prostate cancer: Comparison of age-standardised incidence rates (WSR).
(Selection of European registry data)

Source: Belgian Cancer Registry

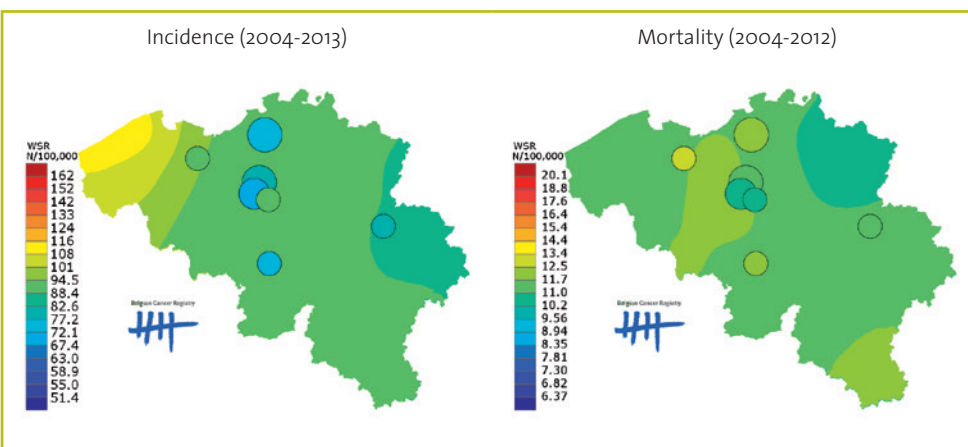
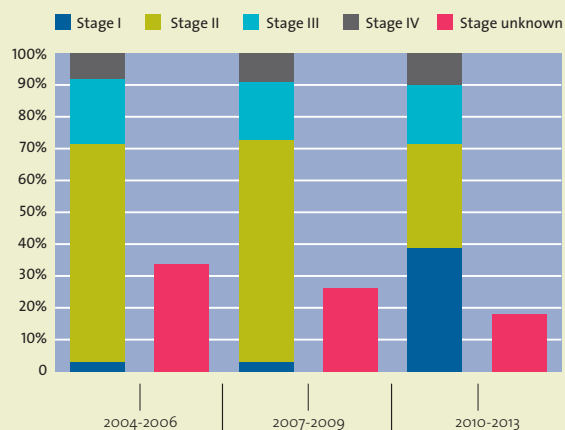
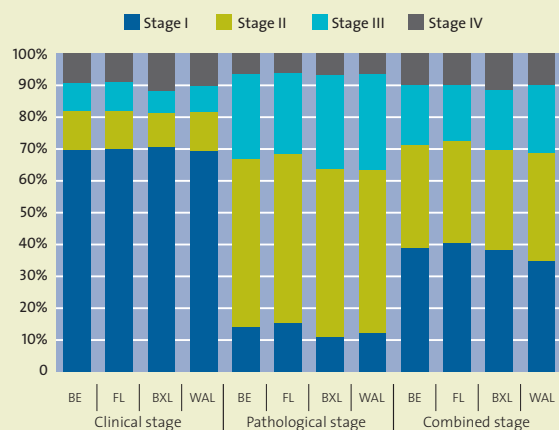
Figure 3 Prostate cancer: Age-standardised incidence and mortality (WSR) in Belgium

Figure 4 Prostate cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



Source: Belgian Cancer Registry

Figure 5 Prostate cancer: stage distribution by region, 2010-2013



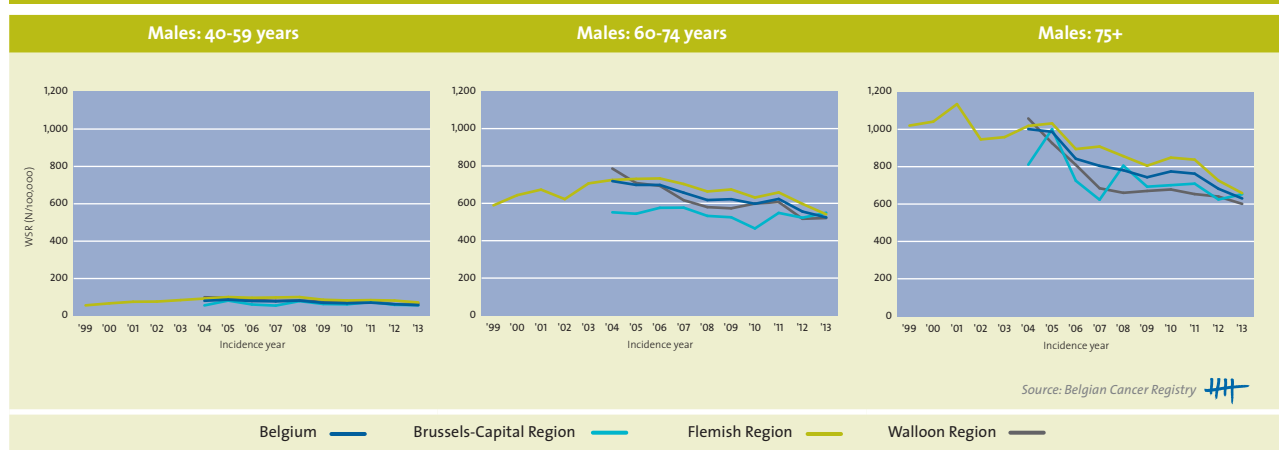
Source: Belgian Cancer Registry

Figure 6 Prostate cancer: Trends in age-standardised incidence and mortality (WSR) by region, 1999-2013



Source: Belgian Cancer Registry

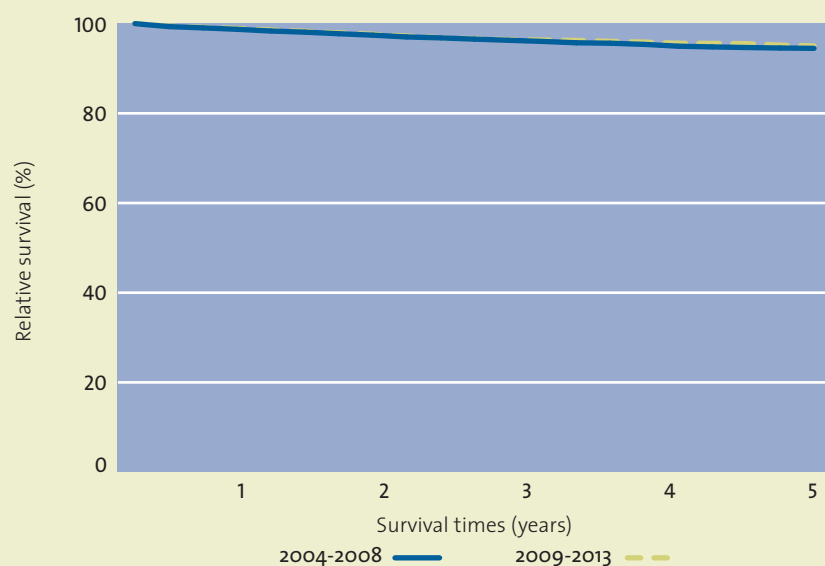
Incidence — Mortality —

Figure 7 Prostate cancer: Trends in age-standardised incidence (WSR) by age group and region, 1999-2013**Table 2** Prostate cancer: AAPC(%) by region and age group in Belgium

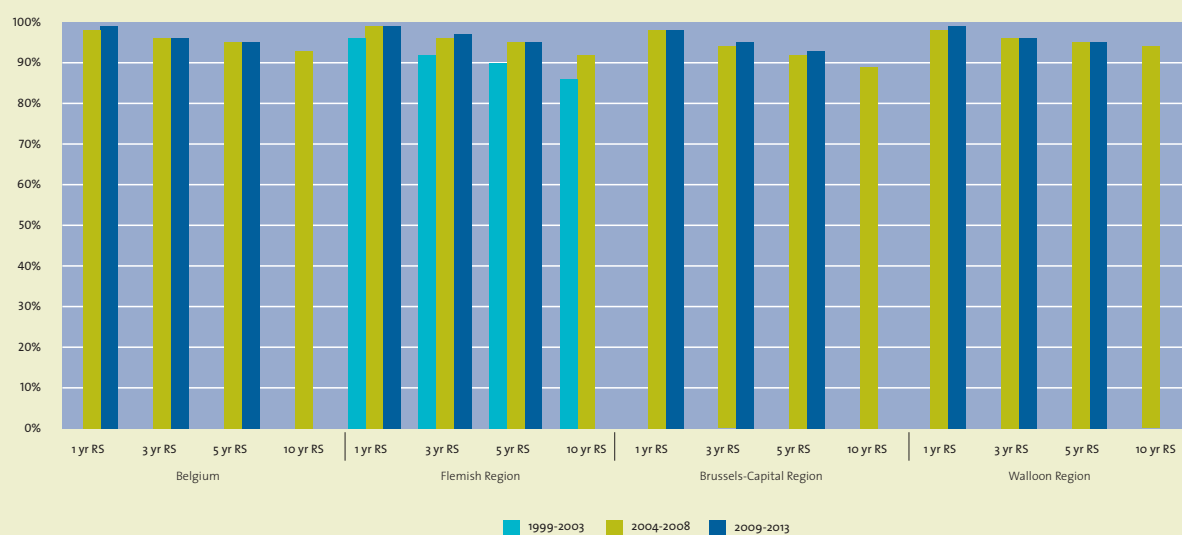
Prostate cancer:	Males		
Incidence	AAPC(%)	95%CI	period
Belgium	-3.4	[-4.1; -2.7]	2004-2013
Flemish Region	-0.5	[-0.9; 0.0]	1999-2013
	3.7	[2.4; 5.1]	1999-2005
Brussels-Capital Region	-3.5	[-4.4; -2.6]	2005-2013
	-1.2	[-2.5; 0.1]	2004-2013
Walloon Region	-4.6	[-5.6; -3.5]	2004-2013
	-8.3	[-11.6; -4.8]	2004-2007
	-2.7	[-4.4; -1.0]	2007-2013
Mortality	AAPC(%)	95%CI	period
Belgium	-3.0	[-4.2; -1.9]	2004-2012
Flemish Region	-3.5	[-4.1; -3.0]	1999-2012
Brussels-Capital Region	-2.8	[-4.1; -1.5]	1999-2012
Walloon Region	-3.4	[-5.4; -1.5]	2004-2012
Incidence by age group	AAPC(%)	95%CI	period
40-59 Year			
Belgium	-3.4	[-4.6; -2.2]	2004-2013
Flemish Region	1.8	[1.2; 2.4]	1999-2013
	9.8	[8.1; 11.5]	1999-2005
	-3.8	[-4.9; -2.7]	2005-2013
Brussels-Capital Region	-0.6	[-4.3; 3.3]	2004-2013
Walloon Region	-4.5	[-6.0; -3.0]	2004-2013
60-74 Year			
Belgium	-3.1	[-3.9; -2.3]	2004-2013
Flemish Region	-0.3	[-0.8; 0.2]	1999-2013
	3.7	[2.3; 5.2]	1999-2005
	-3.2	[-4.2; -2.3]	2005-2013
Brussels-Capital Region	-0.7	[-2.2; 0.8]	2004-2013
Walloon Region	-4.0	[-5.3; -2.6]	2004-2013
75+			
Belgium	-4.5	[-5.7; -3.4]	2004-2013
	-7.1	[-10.8; -3.2]	2004-2007
	-3.3	[-5.1; -1.4]	2007-2013
Flemish Region	-2.9	[-3.6; -2.1]	1999-2013
	-1.4	[-3.2; 0.3]	1999-2006
	-4.3	[-6.0; -2.6]	2006-2013
Brussels-Capital Region	-3.1	[-5.8; -0.3]	2004-2013
Walloon Region	-5.8	[-6.4; -5.2]	2004-2013
	-13.4	[-15.2; -11.6]	2004-2007
	-1.8	[-2.7; -0.8]	2007-2013

AAPC: average annual percentage change

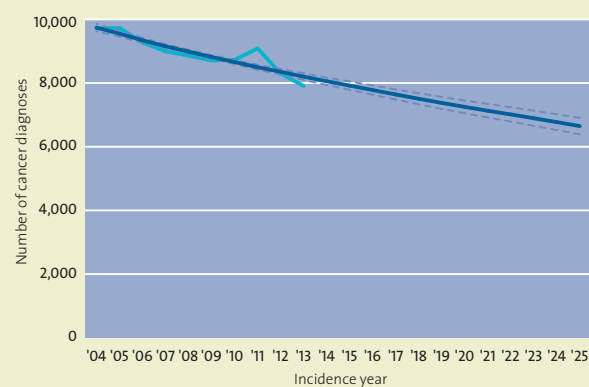
Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 8 Prostate cancer: Relative survival by cohort, Belgium 2004-2013

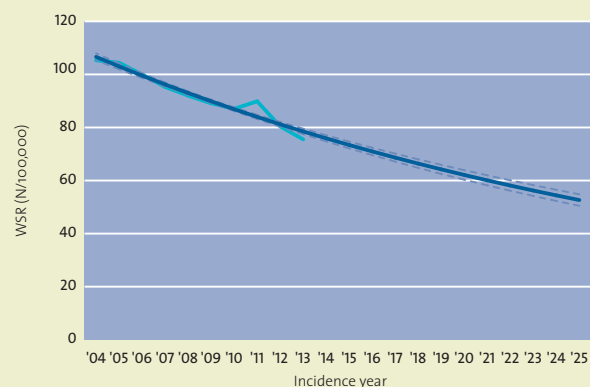
Source: Belgian Cancer Registry

Figure 9 Prostate cancer: 1-, 3-, 5- and 10-year relative survival (RS) by region

Source: Belgian Cancer Registry

Figure 10 Prostate cancer: Observed and projected number of new diagnoses (N), Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 11 Prostate cancer: Observed and projected incidence (WSR), Belgium 2004-2025

Source: Belgian Cancer Registry

Predicted — Observed

Did you know that the BCR also...

- Collaborated with the Belgian Association of Urology (BAU) and the College of Radiotherapy in a prospective and central data registration concerning the brachytherapy treatment for prostate cancer. The module is closed since October 2013 and individual feedback was sent in April 2015.
- In collaboration with the BAU and in convention with the RIZIV/INAMI evaluates the outcome and Quality of Care of robot-assisted laparoscopic prostatectomy (RALP). The RALP registry, which started in October 2009, is a quite unique database with longitudinal PROMS to evaluate the evolution of quality of life including urinary and erectile function following a RALP procedure. The majority of the cases are cT1-2 with a Gleason score 6 or 7, but an increased reporting of clinically more aggressive diseases is observed during the last years.
- Is involved in different research projects with the urologists evaluating country specific nomograms to predict postoperative staging after RALP, the current trends in patient enrolment for RALP, the concordance between biopsy and radical prostatectomy Gleason score, the effect of case-load on outcome of RALP and the oncological outcome of T3b prostate cancer patients treated by RALP.
- Was co-author for 2 abstracts presented as posters at the American Urological Association (AUA) May 2015
 - Tosco L, Ameye F, **Jegou D**, Dekuyper P, Quackels T, Roumeguere T, Van Cleynenbreugel B, **Van Damme N, Van Eycken L**, Joniau S, for the BE-RALP registry. Baseline clinical characteristics and pathological outcomes following robotic-assisted laparoscopic radical prostatectomy (RALP): a population based prospective series.
 - Tosco L, Ameye F, **Jegou D**, Dekuyper P, Quackels T, Roumeguere T, Van Cleynenbreugel B, **Van Damme N, Van Eycken L**, Joniau S, for the BE-RALP registry. Quality of life and functional results after robotic assisted laparoscopic radical prostatectomy (RALP): a prospective population-based series.
- Further reading see: **Van Damme N, Van Eycken L**, Joniau S, Ameye F. Robotgeassisteerde radicale laparoscopische prostatectomie in België/La prostatectomie radicale laparoscopique robot-assistée en Belgique. *Andrologic*. 2013; 9(2): 29-31.
- Is involved in the "Vlaams Indicatoren Project (VIP2)," which aims to evaluate and to monitor the quality of care in the Flemish hospitals for prostate cancer. BCR is responsible for the calculation of the quality indicators at both the Flemish and the hospital level.

!!Key note for registration:

Gleason 2-6: well differentiated

Gleason 7: moderately differentiated

Gleason 8-10: poorly differentiated/ undifferentiated

TNM

pT1 does not exist.

cT1: clinically not apparent tumour, neither palpable nor visible by imaging ('incidental' finding by Trans Urethral Resection or puncture); avoid clinical understaging of the prostatic tumours by registering cT1c in case of positive punctures of palpable/visible lesions.

3.8.2 TESTIS (ICD-10: C62)

Table 1 Testicular cancer: Overview of incidence, mortality, prevalence, survival and projection by region

Testicular cancer	Males		
Incidence, 2013	N	CR	WSR
Belgium	353	6.5	6.3
Flemish Region	196	6.2	6.3
Brussels-Capital Region	19	3.4	3.0
Walloon Region	138	8.0	7.8
Mortality, 2012	N	CR	WSR
Belgium	14	0.3	0.2
Flemish Region	5	0.2	0.1
Brussels-Capital Region	1	0.2	0.1
Walloon Region	8	0.5	0.3
Prevalence (5 years), 2009-2013	N	CR	WSR
Belgium	1,595	29.3	27.2
Flemish Region	881	28.0	27.2
Brussels-Capital Region	116	20.7	17.1
Walloon Region	598	34.5	31.8
Prevalence (10 years), 2004-2013	N	CR	WSR
Belgium	2,867	52.6	47.2
Flemish Region	1,572	49.9	46.5
Brussels-Capital Region	203	36.1	29.4
Walloon Region	1,092	63.0	56.0
5-year Relative survival, 2009-2013	N at risk	%	95%CI
Belgium	1,670	96.5%	[95.1; 97.7]
Flemish Region	917	97.4%	[95.7; 98.5]
Brussels-Capital Region	132	97.2%	[91.8; 99.8]
Walloon Region	621	95.1%	[91.9; 97.3]
Projection, 2025	N [95%CI]	WSR [95%CI]	
Belgium	453 [412; 494]	7.9 [7.3; 8.6]	

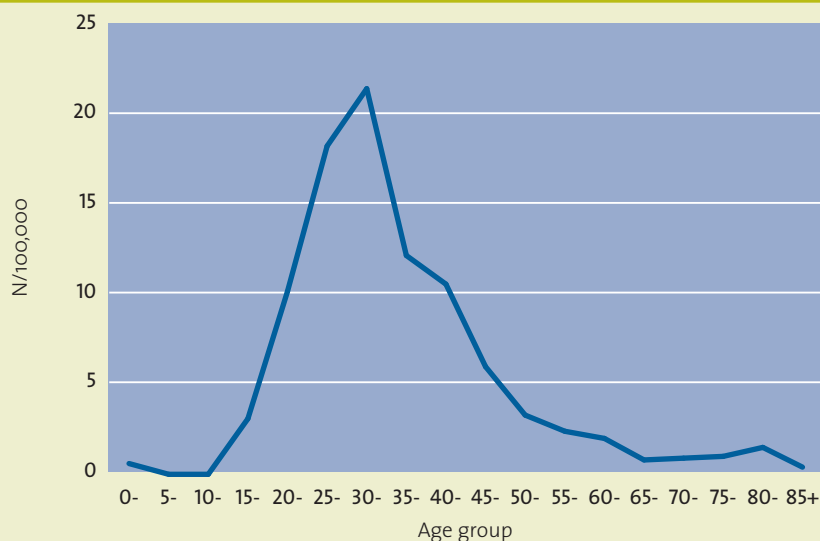
CR, crude rate (N/100,000 person years)

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

- Testicular cancer burden in Belgium (**Table 1**):
 - 353 new diagnoses in 2013.
 - 14 deaths are due to testicular cancer in 2012.
 - 2,867 males (0.05% of the total male population in Belgium) are alive (on 31/12/2013) after being diagnosed with testicular cancer between 2004 and 2013.
 - The highest incidence rates are observed in the German-speaking communities along the border with Germany (**Figure 3**).
 - Over time, incidence rates are increasing with 3% annually, while mortality rates decrease with 2% annually (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is very high and approaches 97%. No clear trend in relative survival proportion over time is observed (**Figure 11 and 12**).
 - In 2025, about 453 males are expected to receive a diagnosis of testicular cancer. The increase is due to a combination of the ageing and growth of the population and an increase due to the increasing risk over time (**Figure 13 and 14**).
- Incidence rates increase in younger and older males (**Figure 1 and 8**).
 - Age group 15-49 years:
 - The majority of cases are diagnosed around the age of 30 years.
 - The incidence rates are increasing with 3% annually.
 - Age group 50+:
 - The incidence rates are increasing with 2% annually.

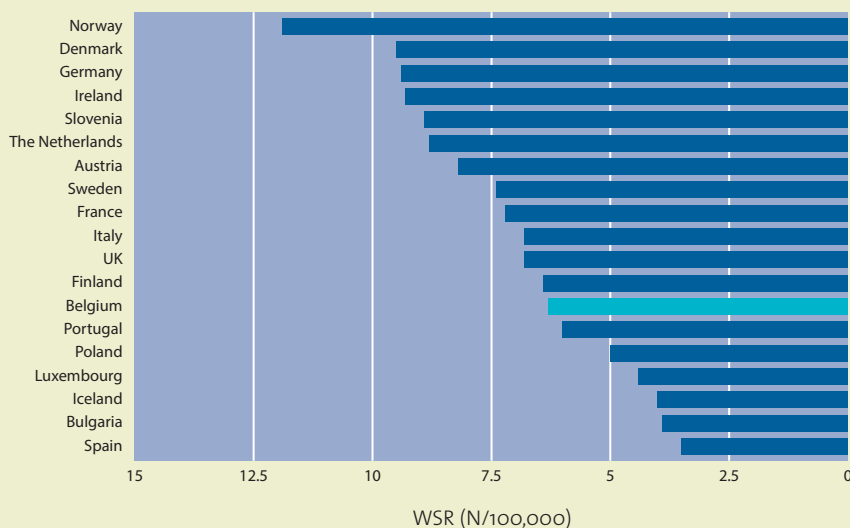
- 90% of all testicular cancers with known stage are diagnosed as stage I (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 82% in 2004-2006 to 96% in 2010-2013.
 - There are no major regional differences in stage distribution.
 - Older males have a less favourable stage distribution although the majority of cases are still diagnosed as stage I (>80%).
 - Patients with non-seminoma are somewhat more often diagnosed as stage II or III when compared to patients with seminoma.

Figure 1 Testicular cancer: Age-specific incidence rates (N/100,000), Belgium 2009-2013



Source: Belgian Cancer Registry

Figure 2 Testicular cancer: Comparison of age-standardised incidence rates (WSR).
(Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Testicular cancer: Age-standardised incidence (WSR) in Belgium

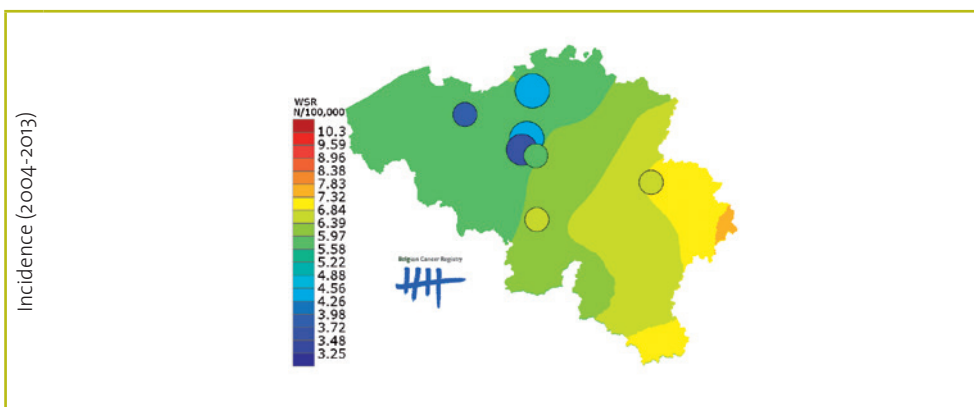
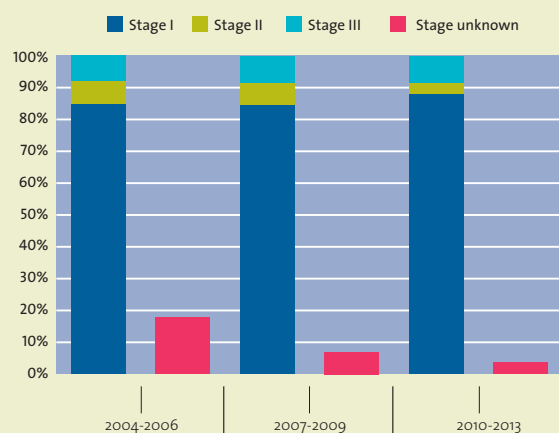
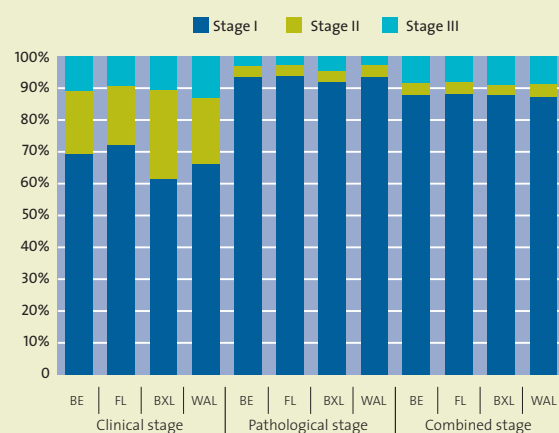


Figure 4 Testicular cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



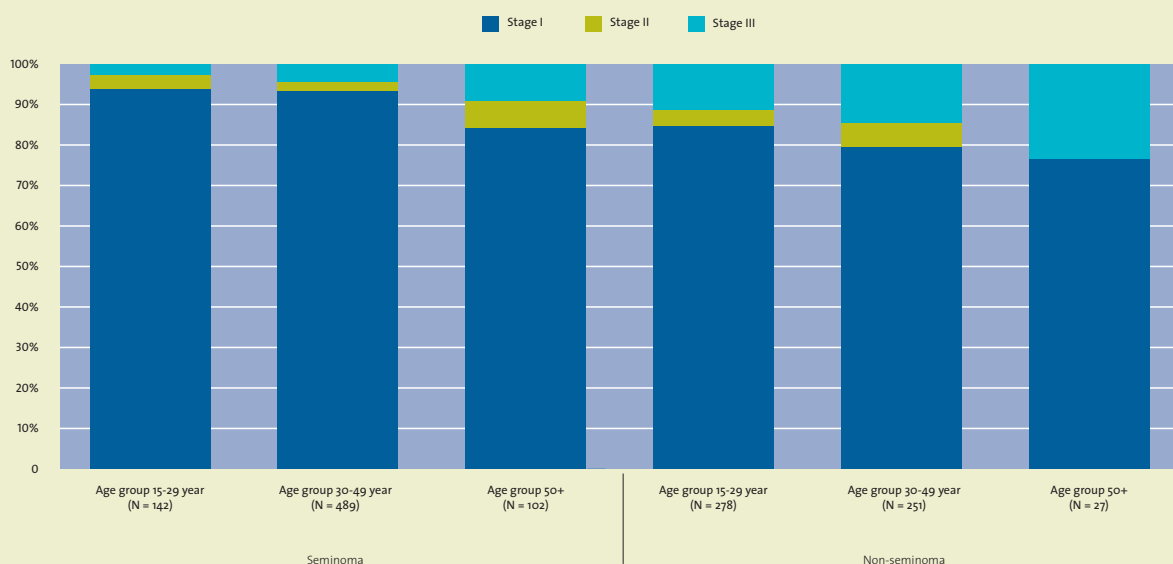
Source: Belgian Cancer Registry

Figure 5 Testicular cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Testicular cancer: stage distribution by histology, Belgium 2010-2013



Source: Belgian Cancer Registry

Figure 7 Testicular cancer: Trends in age-standardised incidence and mortality (WSR) by region, 1999-2013

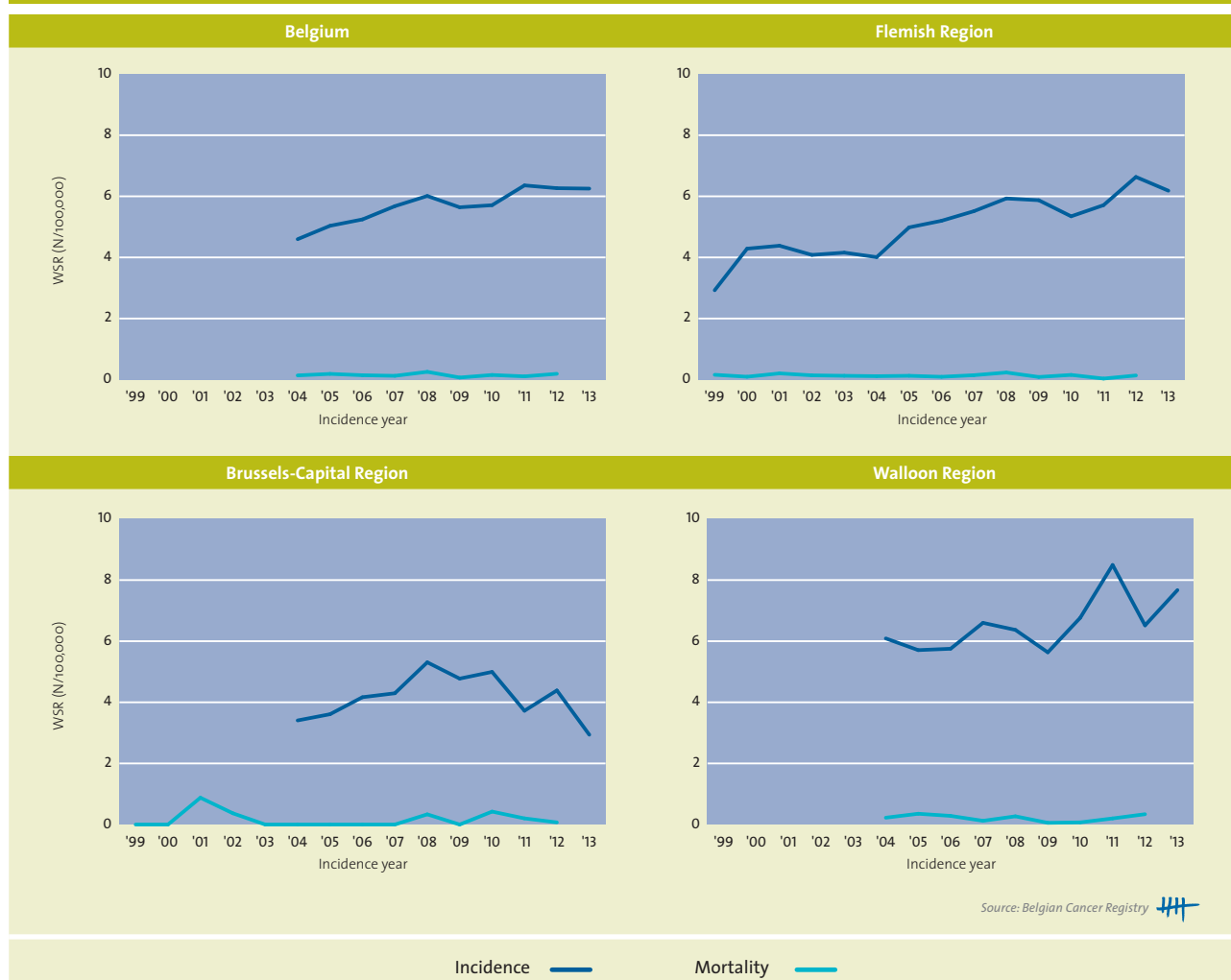


Figure 8 Testicular cancer: Trends in age-standardised incidence (WSR) by age group, and region, 1999-2013

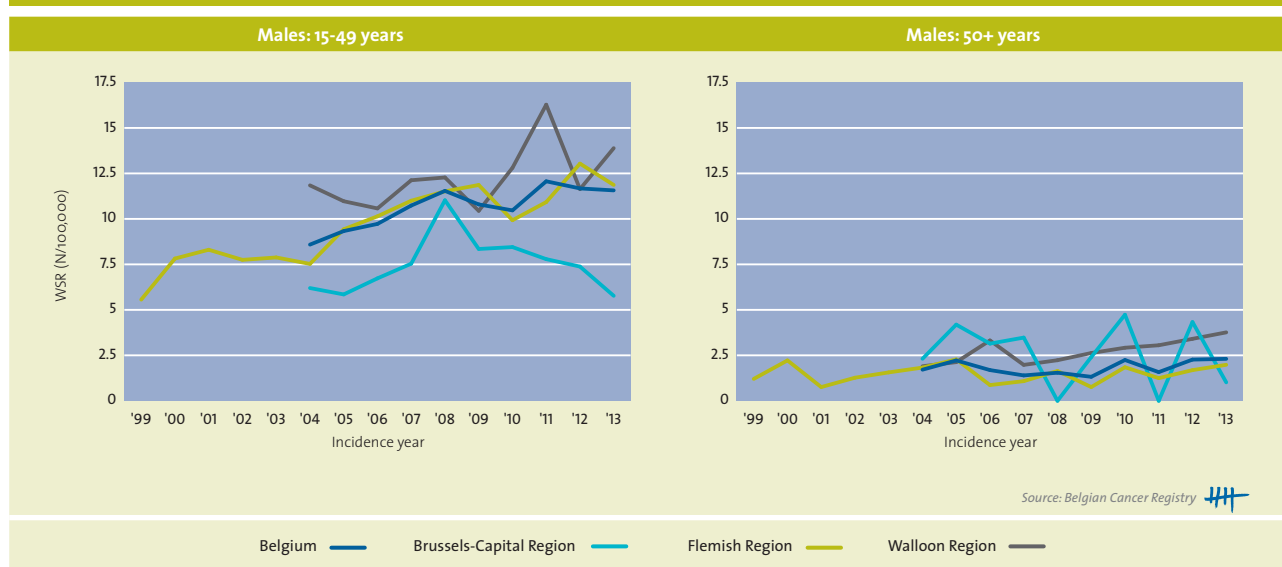
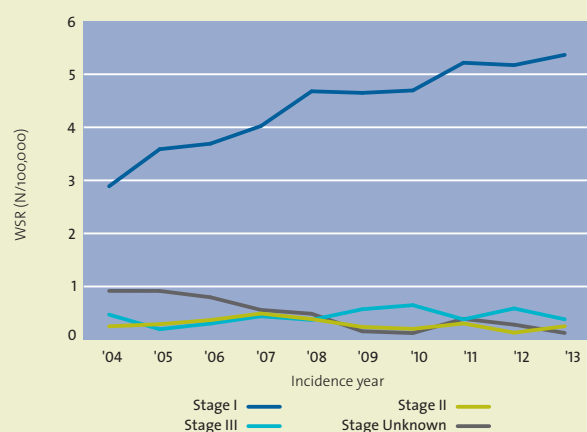
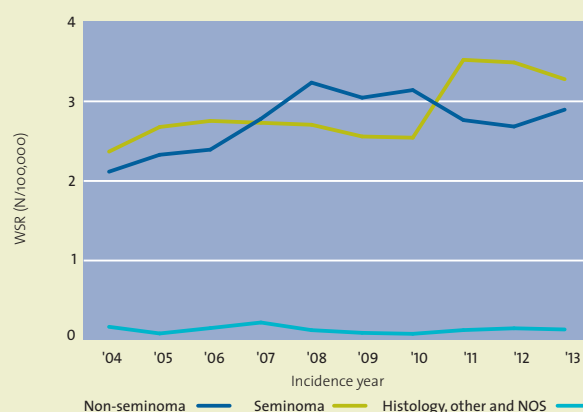


Figure 9 Testicular cancer: Trends in age-standardised incidence by stage, 2004-2013

Source: Belgian Cancer Registry

Figure 10 Testicular cancer: Trends in age-standardised incidence by histology, 2004-2013

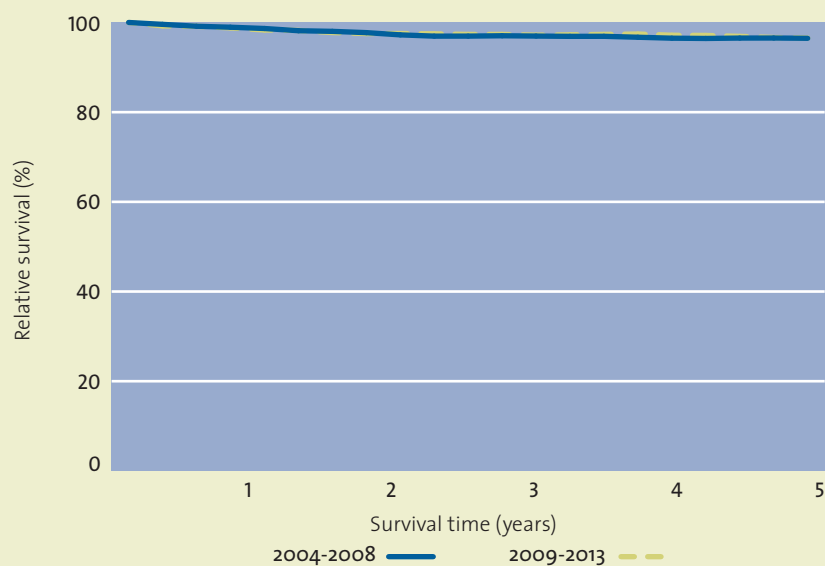
Source: Belgian Cancer Registry

Table 2 Testicular cancer: AAPC(%) by region, histology and age group in Belgium

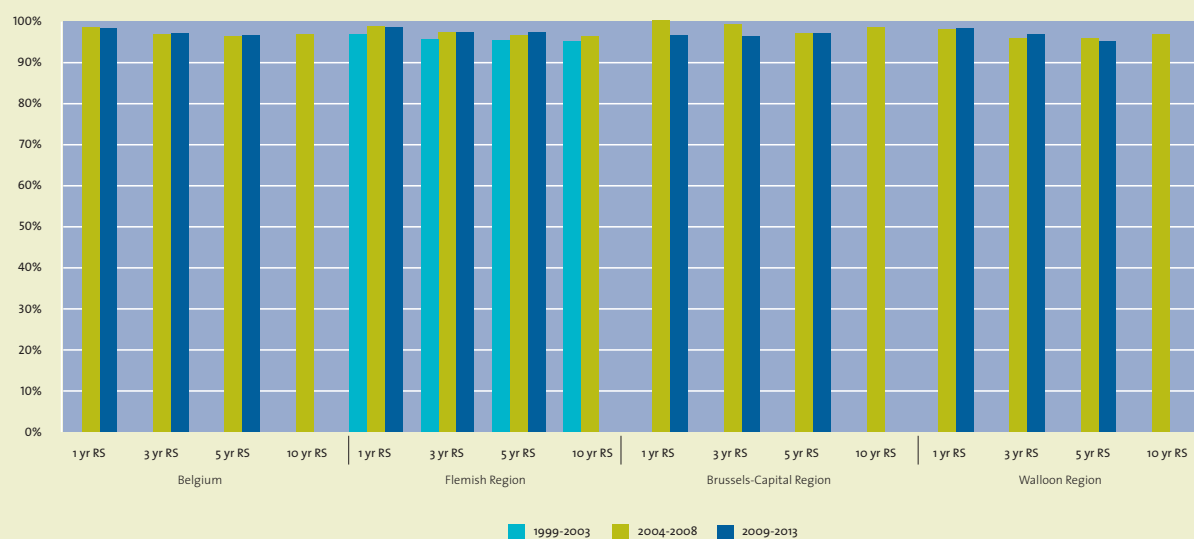
Testicular cancer	Males		
Incidence	AAPC(%)	95%CI	period
Belgium	3.4	[2.5; 4.4]	2004-2013
	6.9	[3.7; 10.1]	2004-2007
	1.8	[0.4; 3.2]	2007-2013
Flemish Region	4.4	[3.1; 5.7]	1999-2013
Brussels-Capital Region	-0.5	[-3.2; 2.2]	2004-2013
	9.0	[3.3; 15.0]	2004-2009
	-11.2	[-17.1; -5.0]	2009-2013
Walloon Region	3.0	[0.4; 5.6]	2004-2013
Incidence by histology	AAPC(%)	95%CI	period
Non-seminoma	3.2	[1.9; 4.5]	2004-2013
	10.7	[7.3; 14.2]	2004-2008
	-2.4	[-4.8; -0.0]	2008-2013
Seminoma	3.5	[1.1; 6.0]	2004-2013
Histology, other and NOS	-1.4	[-9.4; 7.4]	2004-2013
Incidence by stage	AAPC(%)	95%CI	period
Stage I	6.5	[5.4; 7.6]	2004-2013
	10.8	[8.0; 13.6]	2004-2008
	3.2	[1.2; 5.3]	2008-2013
Stage II	-5.7	[-13.5; 2.8]	2004-2013
Stage III	5.3	[-3.2; 14.6]	2004-2013
Stage unknown	-19.4	[-28.6; -9.0]	2004-2013
Mortality	AAPC(%)	95%CI	period
Belgium	-1.5	[-12.6; 11.0]	2004-2012
Flemish Region	-3.3	[-9.4; 3.1]	1999-2012
Brussels-Capital Region	.	.	
Walloon Region	-5.9	[-23.7; 16.1]	2004-2012
Incidence by age group	AAPC(%)	95%CI	period
15-49 Year			
Belgium	3.3	[2.1; 4.4]	2004-2013
	6.3	[3.4; 9.4]	2004-2008
	0.9	[-1.3; 3.1]	2008-2013
Flemish Region	4.7	[3.3; 6.2]	1999-2013
Brussels-Capital Region	1.5	[-1.2; 4.3]	2004-2013
	15.2	[7.6; 23.3]	2004-2008
	-8.2	[-13.0; -3.2]	2008-2013
Walloon Region	2.5	[-0.5; 5.5]	2004-2013
50+			
Belgium	1.8	[-2.4; 6.2]	2004-2013
	-6.8	[-16.1; 3.5]	2004-2008
	9.3	[0.6; 18.7]	2008-2013
Flemish Region	1.0	[-3.8; 6.0]	1999-2013
Brussels-Capital Region	.	.	
Walloon Region	6.5	[2.2; 10.9]	2004-2013

AAPC: average annual percentage change

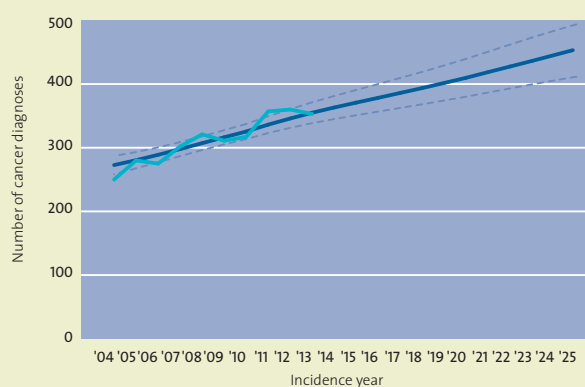
Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 11 Testicular cancer: Relative survival by cohort in Belgium, 2004-2013.

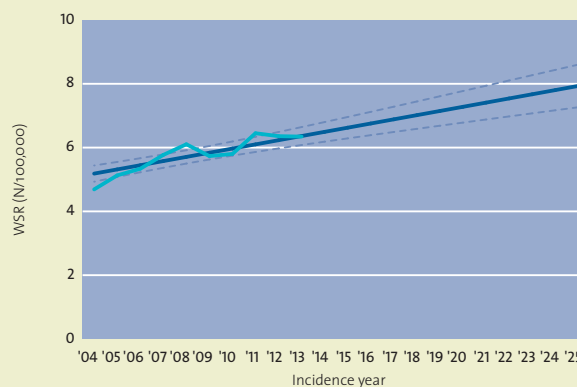
Source: Belgian Cancer Registry

Figure 12 Testicular cancer: 1-, 3-, 5- and 10-year relative survival (RS) by region

Source: Belgian Cancer Registry

Figure 13 Testicular cancer: Observed and projected number of new diagnoses (N), Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 14 Testicular cancer: Observed and projected incidence (WSR), Belgium 2004-2025

Source: Belgian Cancer Registry

Predicted — Observed

Did you know that the BCR also...

- Had a partnership in the KCE-project on quality indicators in testis cancer. Further reading see:
 - Vlayen J, Vrijens F, **Beirens K**, Stordeur S, Devriese S, **Van Eycken E**. Quality indicators in oncology: testis cancer. Good Clinical Practice (GCP). Brussels: Belgian Health Care Knowledge Centre (KCE). 2010. KCE Reports 149. D2010/10.273/96.
 - Vlayen J, Vrijens F, Devriese S, **Beirens K**, **Van Eycken E**, Stordeur S. Quality indicators for testicular cancer: a population-based study. Eur J Cancer. 2012; 48(8): 1133-1140.
- Participated in the High resolution study on Centers of Expertise for rare cancers (RARECAREnet) e.g. Testicular germ cell tumours (2009-2010): 615 new diagnoses were manually coded and
 - A low percentage of 36% of stage I non-seminoma had active surveillance.
 - 41% of stage I seminoma and 60% of stage I non-seminoma received adjuvant chemotherapy after orchiectomy.

!!Key note for registration:

A teratoma with only **mature** elements cannot be invasive nor metastasize and is considered benign (9080/0; no registration needed).

A teratoma with atypical cells, malignant cells or immature elements is to be considered malignant (9080/3).

More than half of the tumours of the testis contain more than one tumour type. When no specific mixed code exists, apply code 9085/3 (mixed germ cell tumour).

3.9 URINARY TRACT

3.9.1 KIDNEY (ICD-10: C64)

Table 1 Kidney cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Kidney cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	1,060	19.5	11.1	620	11.0	5.5
Flemish Region	665	21.1	11.3	386	11.9	5.4
Brussels-Capital Region	83	14.8	10.8	50	8.4	5.6
Walloon Region	312	18.0	10.8	184	10.1	5.5
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	335	6.2	2.8	207	3.7	1.3
Flemish Region	205	6.5	2.8	131	4.1	1.3
Brussels-Capital Region	20	3.6	2.3	14	2.4	1.0
Walloon Region	110	6.4	3.1	62	3.4	1.3
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	3,767	69.2	39.0	2,301	40.7	20.4
Flemish Region	2,409	76.4	40.0	1,446	44.8	21.0
Brussels-Capital Region	263	46.8	34.4	163	27.5	17.0
Walloon Region	1,095	63.1	38.2	692	37.8	20.2
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	6,018	110.5	60.9	3,746	66.3	32.5
Flemish Region	3,781	120.0	61.5	2,359	73.0	33.8
Brussels-Capital Region	428	76.2	55.1	243	41.0	24.7
Walloon Region	1,809	104.3	61.3	1,144	62.6	32.1
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	4,987	74.6%	[72.7; 76.4]	2,919	75.2%	[72.8; 77.5]
Flemish Region	3,198	73.9%	[71.5; 76.2]	1,877	72.7%	[69.7; 75.6]
Brussels-Capital Region	348	74.8%	[67.7; 81.2]	200	83.9%	[74.2; 91.7]
Walloon Region	1,441	76.0%	[72.5; 79.3]	842	78.7%	[74.4; 82.7]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	1,436 [1,336; 1,537]	12.5 [11.7; 13.3]		710 [676; 744]	5.5 [5.3; 5.7]	

CR, crude rate (N/100,000 person years)

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

- Renal cancer burden in Belgium (**Table 1**):
 - 1,680 new diagnoses of cancer in 2013, 63% males and 37% females.
 - In 2013, renal cancer is the 8th most frequent tumour in males (3% of all malignancies)
 - 542 deaths due to renal cancer in 2012, 62% males and 38% females.
 - 9,764 persons (0.09% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with renal cancer between 2004 and 2013.
 - Over time, incidence rates of renal cancer in males increase with 1% annually, while the rates in females remain more stable. Mortality rates are decreasing in both sexes (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 75% in males and females. An increase in the relative survival proportion for renal cancer is observed over time in Belgium (2004-2013) and the Flemish Region (1999-2013) (**Figure 10 and 11**). This is mainly due to an increased number of incidental diagnoses of small cancers during abdominal imaging and the introduction of new therapeutic options as laparoscopic and robotic nephron sparing surgical techniques and other minimal invasive procedures.
 - By 2025, the number of patients diagnosed with renal cancer will rise to more than 2,100. In females, the increase is mainly due to the ageing and growth of the population, while in males, an additional increase is expected since the risk in males is increasing over time (**Figure 12 and 13**).
- In all age groups, the risk for males is more than three times higher than the risk for females (**Figure 1 and 8**).
 - Age group 30-49 years:
 - Males have a twofold higher risk than females (M/F ratio = 1.9).
 - The incidence rates in males are increasing with 3% annually; the rates in females remain more stable.

- Age group 50-74 years:
 - Males have a twofold higher risk than females (M/F ratio = 2.1).
 - The incidence rates in males are increasing with 1% annually; the rates in females remain more stable.
- Age group 75+:
 - Males have a twofold higher risk than females (M/F ratio = 2.0).
 - The incidence rates are increasing with 3% annually in males and females.
- 70% of all renal cancers with a known stage are diagnosed as stage I or stage II in both males and females (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 80% in 2004-2006 to 92% in 2010-2013.
 - There are no major regional differences in stage distribution.
 - Stage distribution in males and females is comparable.
 - The proportion of stage I renal carcinoma decreases with age.
 - Over time, more and more stage I renal carcinomas are diagnosed, mostly as an incidental finding during abdominal imaging, which can partially explain the raise in (incidence and) survival rates for renal cancer.

Figure 1 Kidney cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013

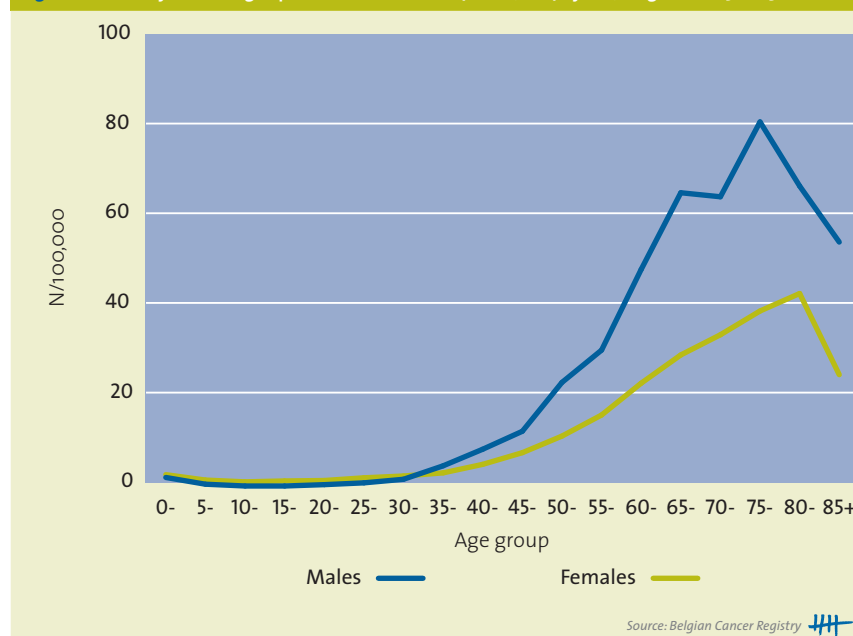


Figure 2 Kidney cancer: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)

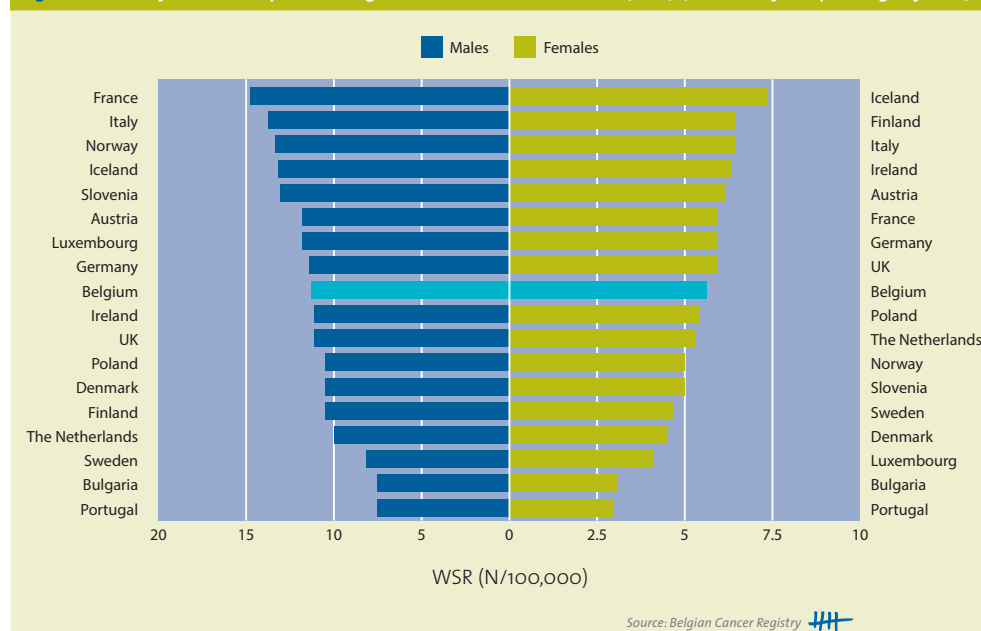


Figure 3 Kidney cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

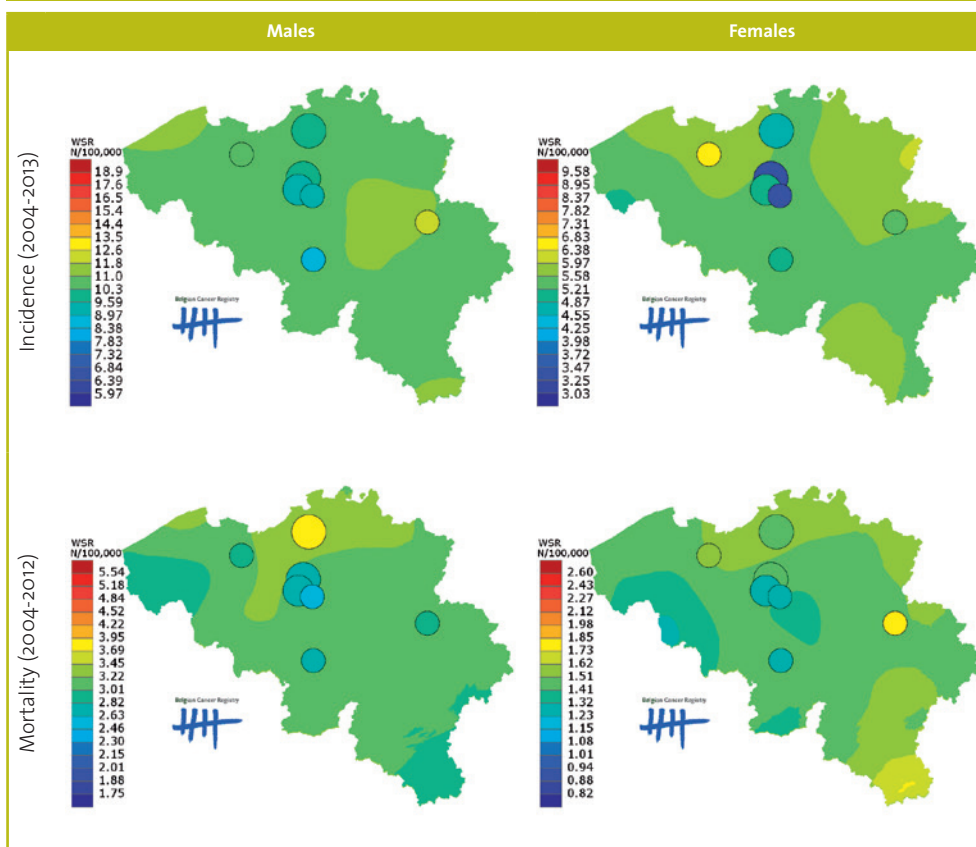
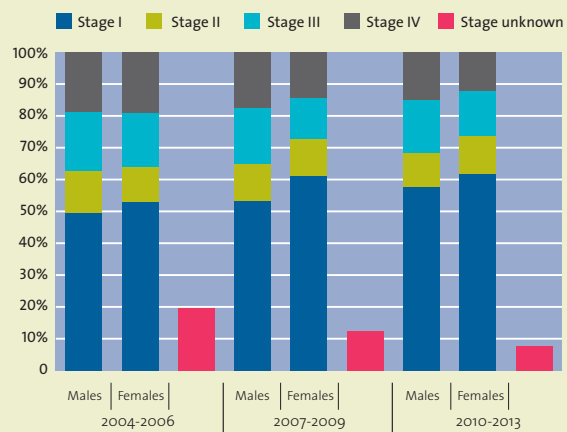
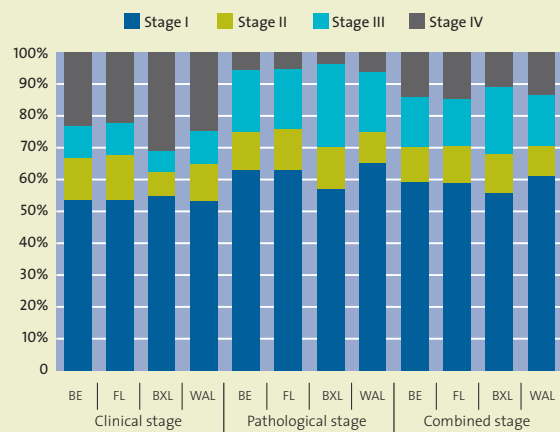


Figure 4 Kidney cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

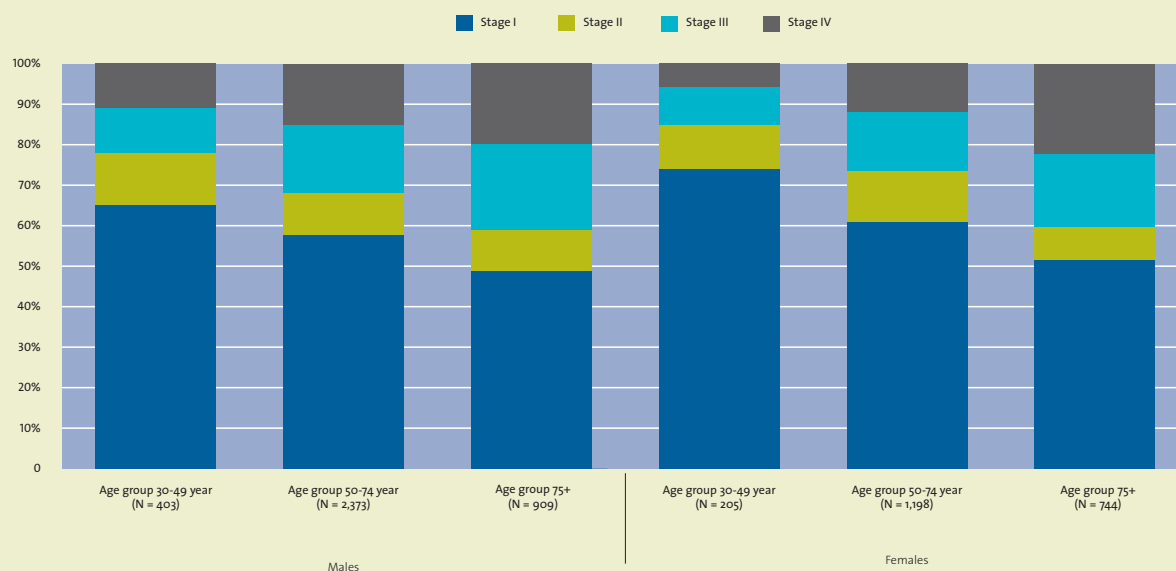


Source: Belgian Cancer Registry

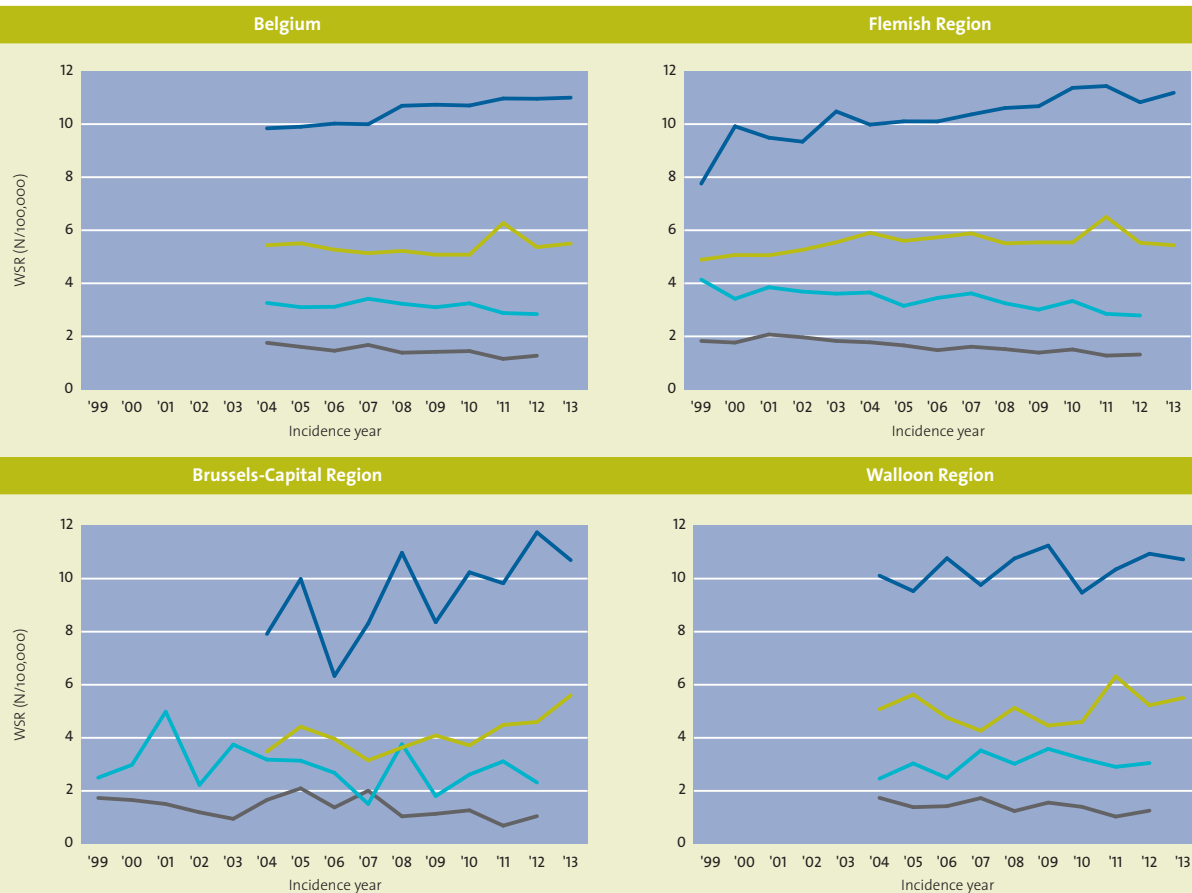
Figure 5 Kidney cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Kidney cancer: stage distribution by age group and sex, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Kidney cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Source: Belgian Cancer Registry

Incidence - Males — Mortality - Males — Incidence - Females — Mortality - Females —

Figure 8 Kidney cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

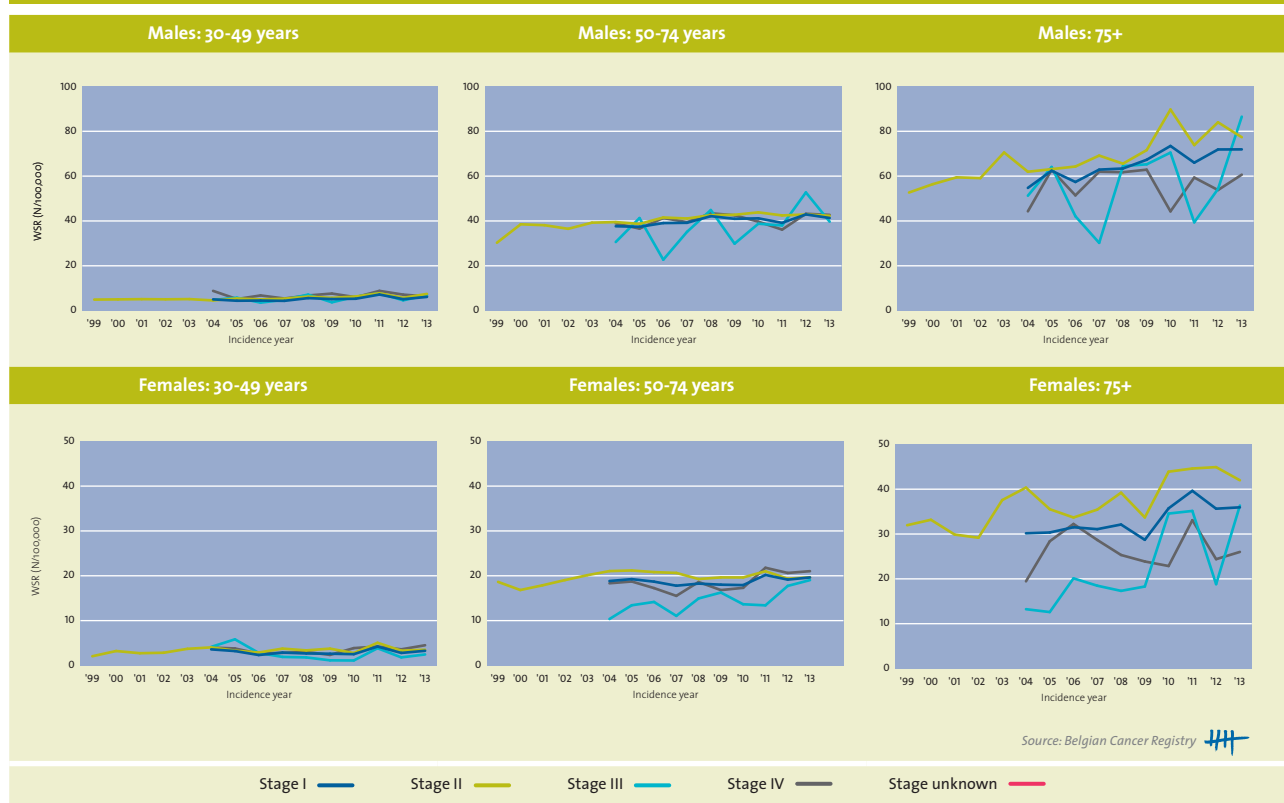


Figure 9 Kidney cancer: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013

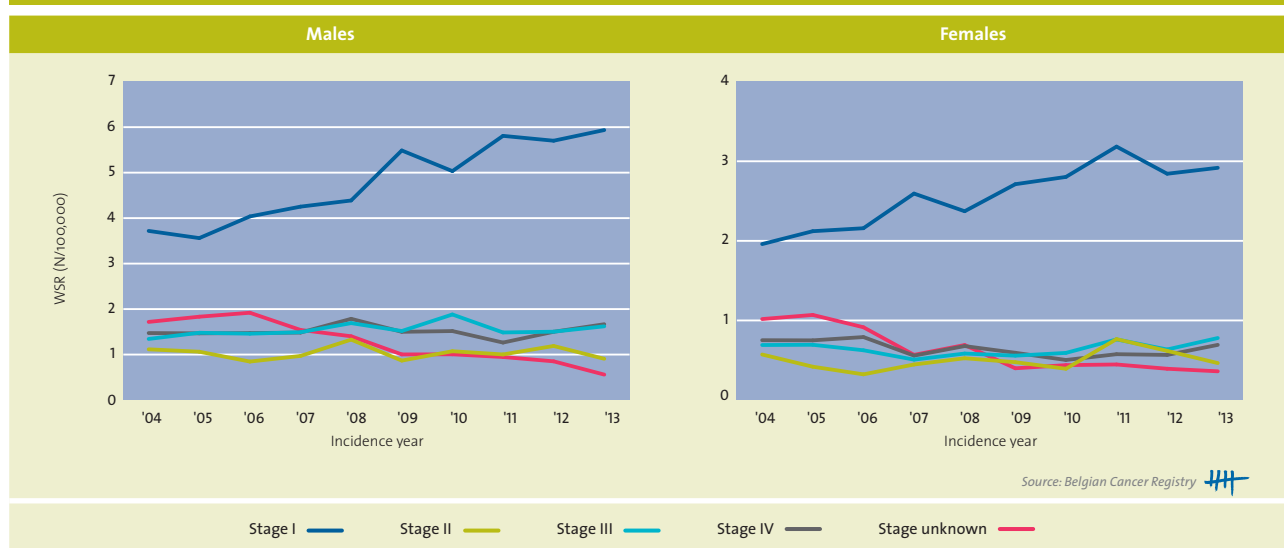


Table 2 Kidney cancer: AAPC(%) by sex, region, stage and age group in Belgium

Kidney cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	1.4	[1.0; 1.8]	2004-2013	0.4	[-1.2; 2.1]	2004-2013
Flemish Region	1.8	[1.1; 2.5]	1999-2013	1.1	[0.5; 1.8]	1999-2013
				3.5	[1.4; 5.6]	1999-2004
				-0.1	[-1.2; 0.9]	2004-2013
Brussels-Capital Region	3.9	[0.0; 7.9]	2004-2013	4.3	[1.3; 7.3]	2004-2013
				0.0	[-4.4; 4.6]	2004-2010
				13.4	[3.1; 24.8]	2010-2013
Walloon Region	0.8	[-0.7; 2.2]	2004-2013	1.0	[-2.0; 4.1]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-1.3	[-2.6; -0.0]	2004-2012	-4.0	[-6.2; -1.9]	2004-2012
	0.9	[-2.0; 3.9]	2004-2008			
	-3.5	[-6.2; -0.6]	2008-2012			
Flemish Region	-2.2	[-3.1; -1.3]	1999-2012	-3.1	[-4.1; -2.2]	1999-2012
Brussels-Capital Region	-2.2	[-6.4; 2.2]	1999-2012	-3.8	[-7.5; 0.1]	1999-2012
Walloon Region	2.1	[-1.6; 6.0]	2004-2012	-3.8	[-7.7; 0.2]	2004-2012
Incidence by stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Stage I	6.2	[4.6; 7.8]	2004-2013	4.9	[3.1; 6.6]	2004-2013
Stage II	-0.2	[-3.9; 3.6]	2004-2013	2.9	[-3.2; 9.3]	2004-2013
Stage III	1.5	[-0.6; 3.7]	2004-2013	0.9	[-1.6; 3.3]	2004-2013
				-6.6	[-12.1; -0.7]	2004-2008
				7.2	[2.2; 12.5]	2008-2013
Stage IV	0.2	[-2.1; 2.6]	2004-2013	-2.1	[-4.7; 0.6]	2004-2013
				-6.5	[-10.3; -2.5]	2004-2010
				7.4	[-1.7; 17.4]	2010-2013
Stage unknown	-11.7	[-14.7; -8.7]	2004-2013	-12.1	[-15.7; -8.3]	2004-2013
				-4.5	[-9.0; 0.1]	2004-2013
Incidence by age group	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	3.0	[0.3; 5.7]	2004-2013	0.4	[-3.7; 4.6]	2004-2013
Flemish Region	2.6	[1.4; 3.8]	1999-2013	2.4	[0.0; 4.9]	1999-2013
	0.1	[-2.9; 3.3]	1999-2005			
	4.5	[2.2; 6.9]	2005-2013			
Brussels-Capital Region	3.6	[-3.0; 10.7]	2004-2013	-6.9	[-15.4; 2.5]	2004-2013
				-24.9	[-37.8; -9.3]	2004-2009
				21.8	[-4.2; 54.8]	2009-2013
Walloon Region	0.6	[-4.1; 5.6]	2004-2013	2.7	[-1.5; 7.2]	2004-2013
				-6.1	[-13.5; 2.1]	2004-2009
				14.9	[3.4; 27.7]	2009-2013
50-74 Year						
Belgium	1.2	[0.4; 2.0]	2004-2013	0.5	[-0.3; 1.3]	2004-2013
				-1.1	[-2.7; 0.5]	2004-2009
				2.5	[0.5; 4.7]	2009-2013
Flemish Region	1.7	[1.0; 2.4]	1999-2013	0.9	[0.4; 1.5]	1999-2013
	3.0	[1.5; 4.5]	1999-2006	3.7	[2.0; 5.5]	1999-2004
	0.4	[-1.0; 1.9]	2006-2013	-0.6	[-1.5; 0.2]	2004-2013
Brussels-Capital Region	4.0	[-1.4; 9.8]	2004-2013	4.9	[1.5; 8.4]	2004-2013
Walloon Region	0.8	[-0.8; 2.5]	2004-2013	2.2	[0.2; 4.2]	2004-2013
				-1.3	[-5.1; 2.7]	2004-2009
				6.7	[1.4; 12.1]	2009-2013
75+						
Belgium	2.8	[1.6; 4.1]	2004-2013	2.5	[0.7; 4.4]	2004-2013
Flemish Region	2.9	[2.0; 3.9]	1999-2013	2.5	[1.3; 3.7]	1999-2013
Brussels-Capital Region	3.6	[-4.2; 12.0]	2004-2013	10.6	[3.7; 18.0]	2004-2013
Walloon Region	0.9	[-2.7; 4.6]	2004-2013	0.6	[-3.6; 4.9]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Kidney cancer: Relative survival by cohort and sex, Belgium 2004-2013

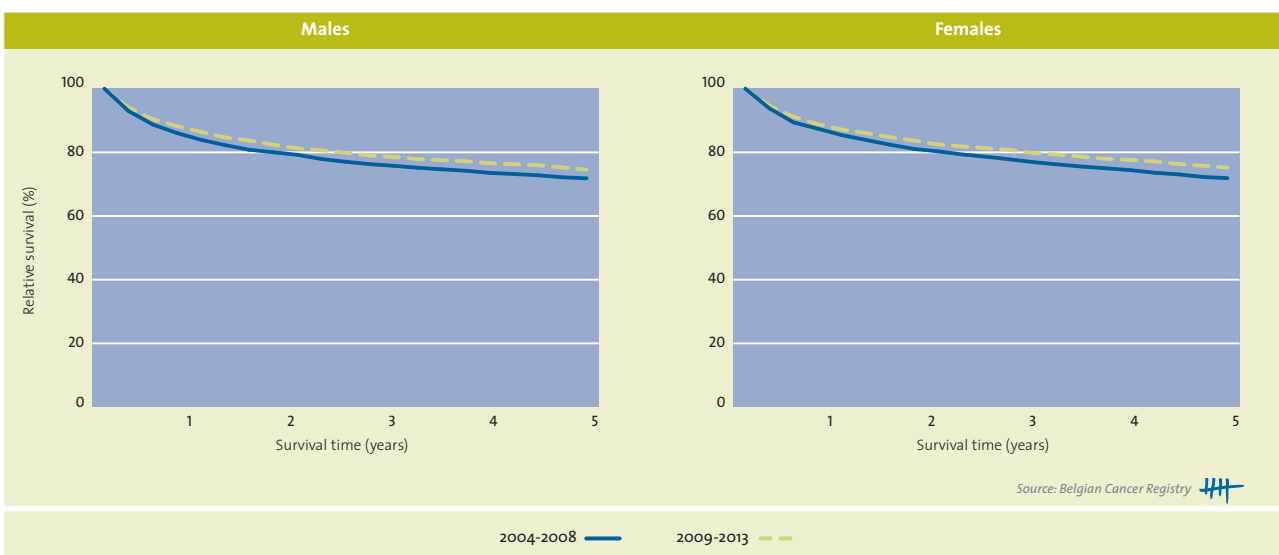
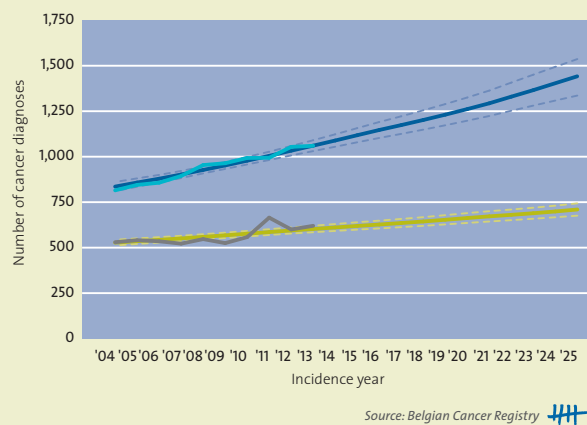
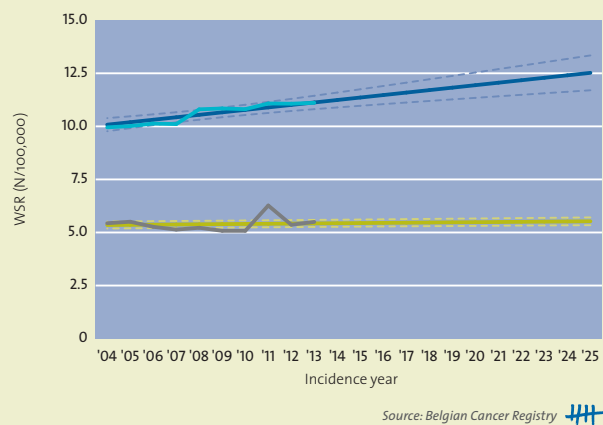


Figure 11 Kidney cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 12 Kidney cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025**Figure 13** Kidney cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025

Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

!!Key note for registration:

Make a clear distinction between tumours of the renal parenchyma/cortex (C64.9) and the renal pelvis (C65.9). Tumour type varies depending on the precise tumour localisation:

- In the renal cortex: mainly adenocarcinoma.
- In the renal pelvis: mainly (papillary) transitional cell carcinoma.

8310/3: renal clear cell adenocarcinoma

8260/3: papillary adenocarcinoma

3.9.2 BLADDER (ICD-10: C67)

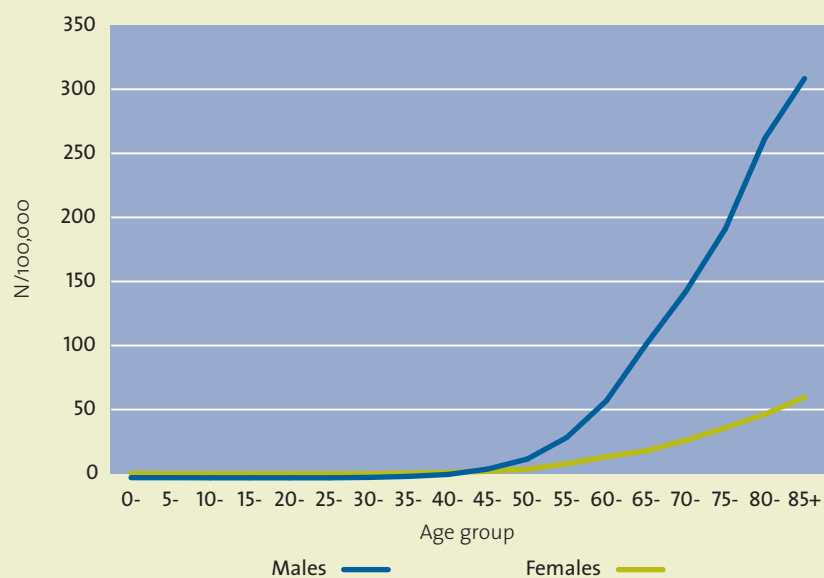
Table 1 Bladder cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Bladder cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	1,881	34.5	16.0	483	8.5	3.0
Flemish Region	1,068	33.9	14.1	290	9.0	3.0
Brussels-Capital Region	151	26.9	17.4	43	7.3	3.2
Walloon Region	662	38.2	19.3	150	8.2	3.0
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	718	13.3	5.4	232	4.1	1.3
Flemish Region	407	13.0	4.9	122	3.8	1.1
Brussels-Capital Region	67	12.1	7.0	24	4.1	1.6
Walloon Region	244	14.1	6.2	86	4.7	1.5
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	5,517	101.3	46.7	1,273	22.5	8.5
Flemish Region	3,384	107.4	44.8	777	24.1	8.8
Brussels-Capital Region	395	70.3	44.8	108	18.2	8.1
Walloon Region	1,738	100.2	50.7	388	21.2	8.0
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	8,297	152.3	69.2	1,954	34.6	12.7
Flemish Region	5,155	163.6	67.5	1,226	38.0	13.4
Brussels-Capital Region	577	102.7	64.5	155	26.1	11.1
Walloon Region	2,565	147.9	73.6	573	31.3	11.7
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	9,034	55.8%	[54.2; 57.4]	2,377	48.6%	[45.7; 51.4]
Flemish Region	5,443	57.7%	[55.6; 59.8]	1,415	49.3%	[45.7; 53.0]
Brussels-Capital Region	686	50.2%	[44.4; 55.9]	202	50.3%	[40.3; 60.1]
Walloon Region	2,905	53.5%	[50.7; 56.4]	760	46.7%	[41.6; 51.8]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	2,301 [2,185; 2,416]	15.5 [14.7; 16.4]		597 [547; 648]	3.2 [3.1; 3.4]	

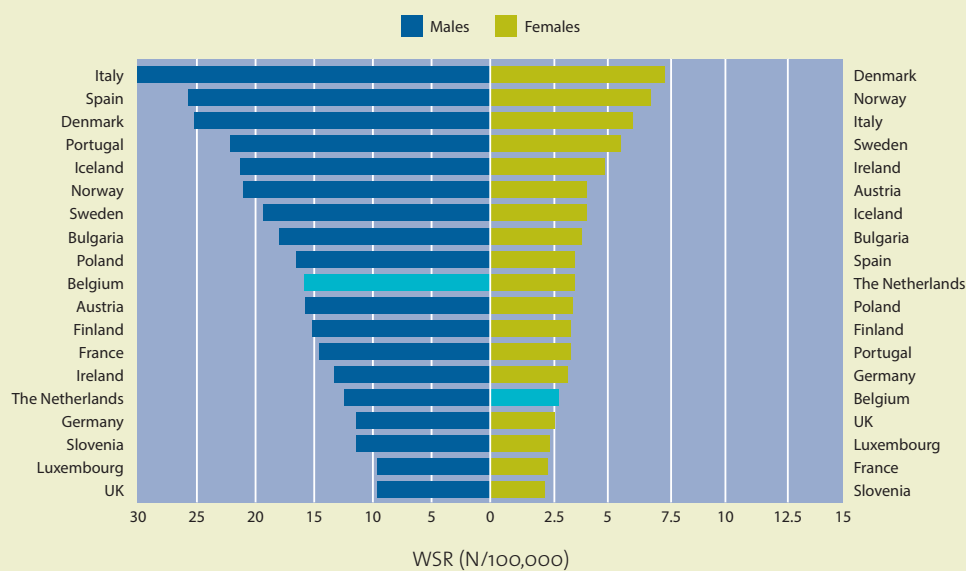
CR, crude rate (N/100,000 person years)

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

- Bladder cancer burden in Belgium (**Table 1**):
 - 2,364 new diagnoses of cancer in 2013, 80% males and 20% females.
 - Bladder cancer is the 5th most frequent tumour in males (5% of all malignancies).
 - 950 deaths are due to bladder cancer in 2012, 76% males and 24% females.
 - Bladder cancer is the 5th most important cause of cancer death in males (5% of all cancer deaths)
 - 10,251 persons (0.1% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with bladder cancer between 2004 and 2013.
 - Over time, incidence and mortality rates remain rather stable (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 56% in males and 49% in females. No clear trend in relative survival proportion over time is observed (**Figure 10 and 11**).
 - By 2025, the number of patients diagnosed with bladder cancer will rise to 2,900. The increase is mainly due to the ageing and growth of the population (**Figure 12 and 13**).
- Females are more often diagnosed in an advanced stage (**Figure 4, 5 and 6**).
 - Especially younger females are more frequently diagnosed with stage IV bladder cancer when compared to males in the same age group. This could partially be due to misinterpretation of the most basic symptom of bladder cancer (blood in urine, associated with menstruation or peri-menopausal spotting) leading to a delay in diagnosis and hence more advanced stages in females (21).
 - Availability of information on stage has improved from 81% in 2004-2006 to 92% in 2010-2013.

Figure 1 Bladder cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013

Source: Belgian Cancer Registry

**Figure 2** Bladder cancer: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)

Source: Belgian Cancer Registry



Figure 3 Bladder cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

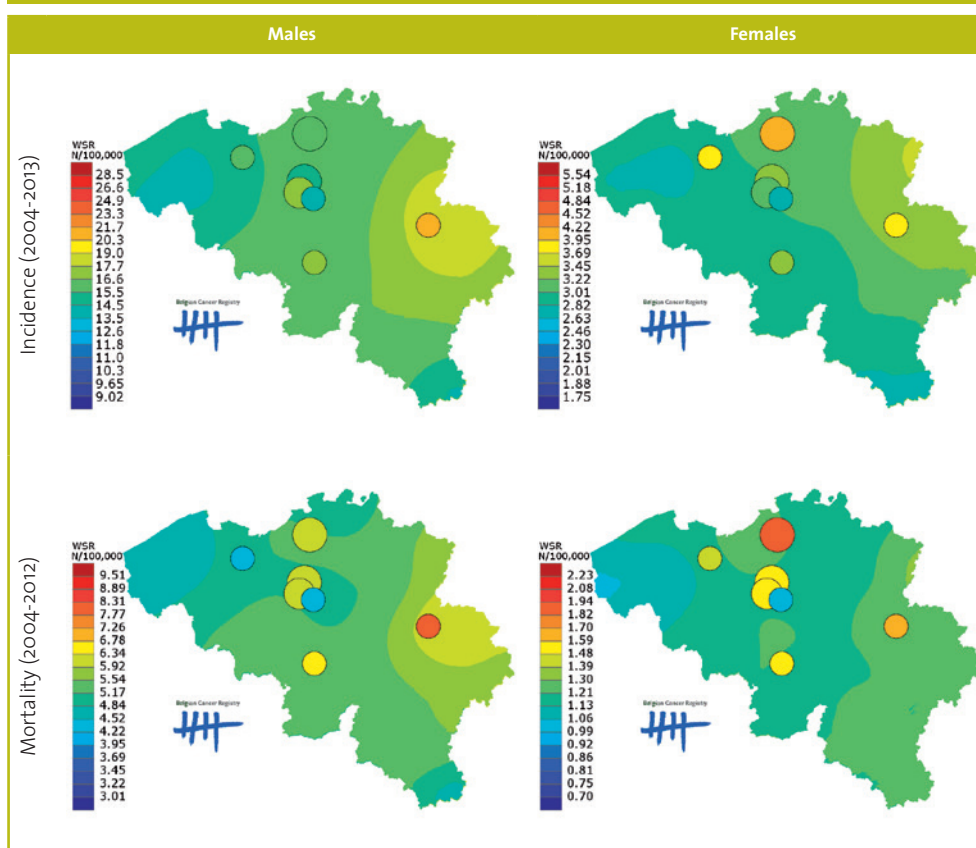
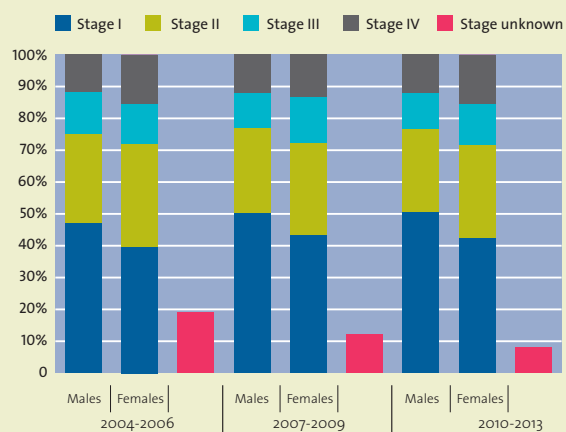
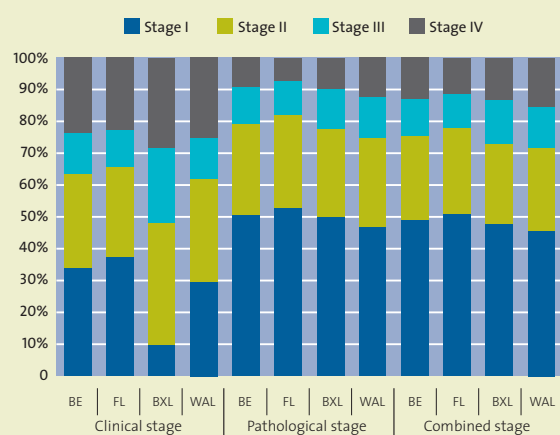


Figure 4 Bladder cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013

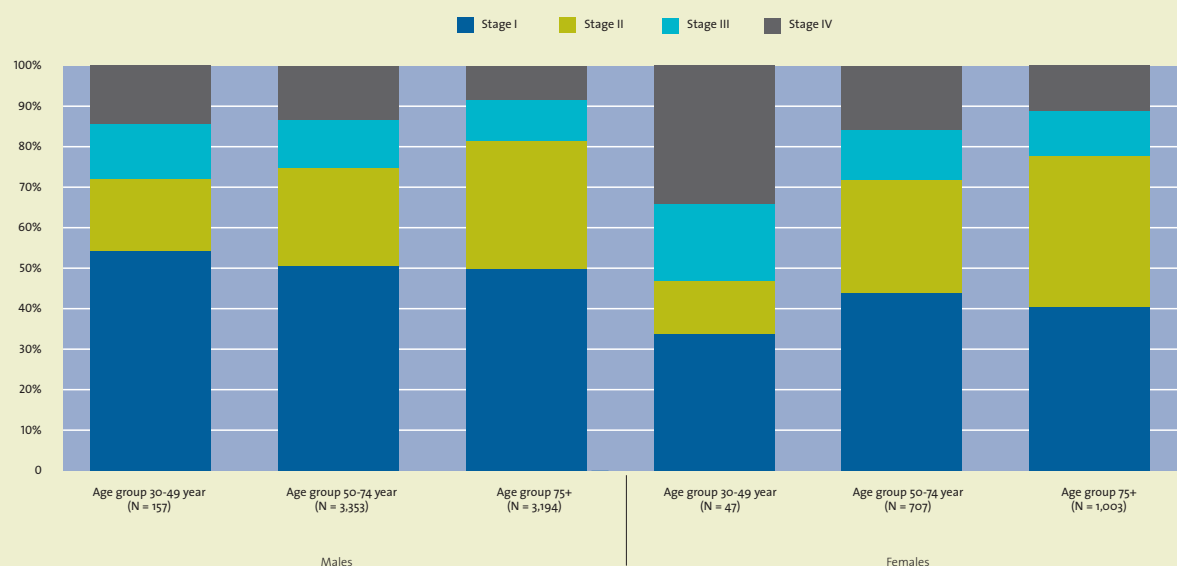


Source: Belgian Cancer Registry

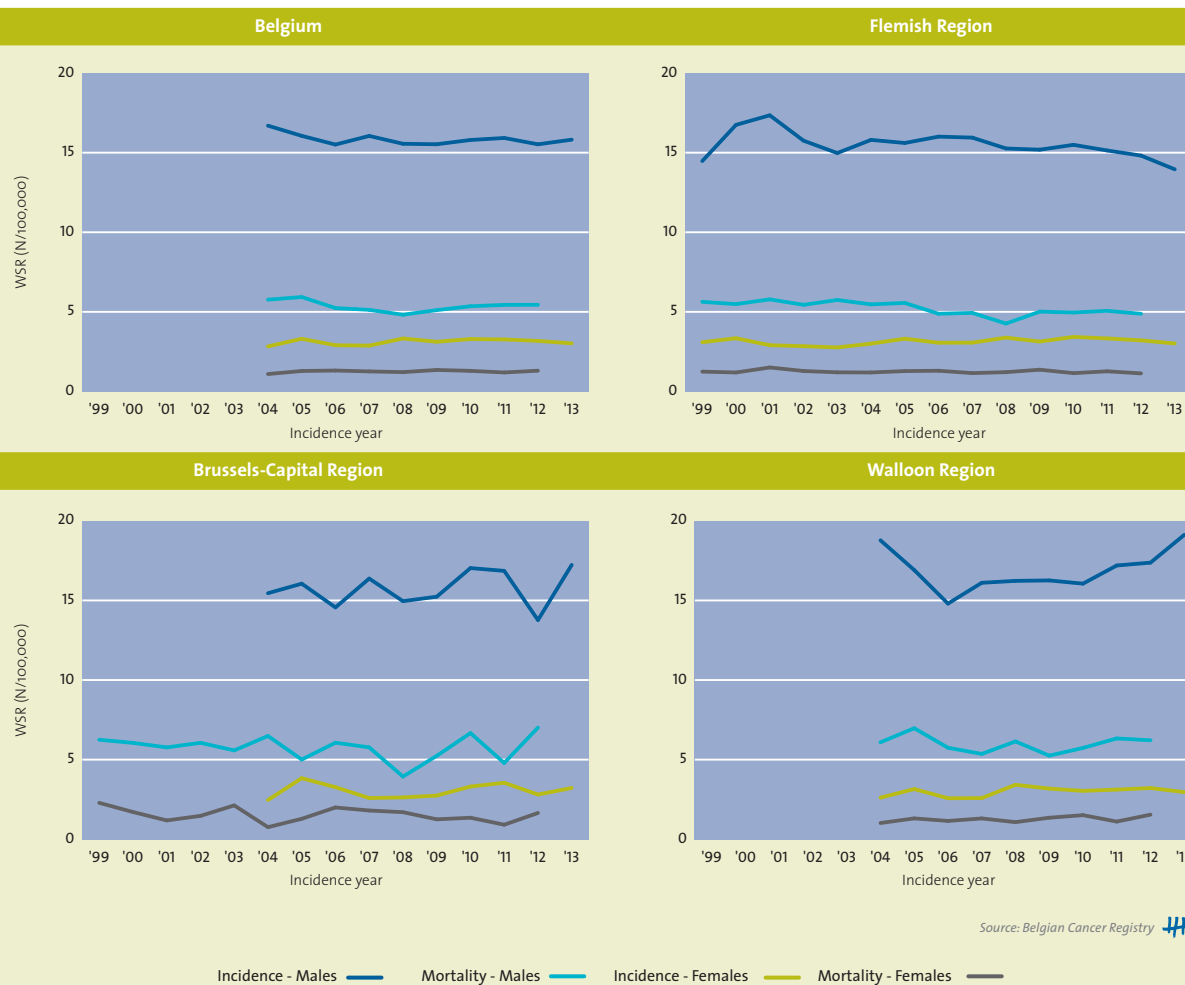
Figure 5 Bladder cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry

Figure 6 Bladder cancer: stage distribution by age group and sex, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Bladder cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Source: Belgian Cancer Registry

Figure 8 Bladder cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

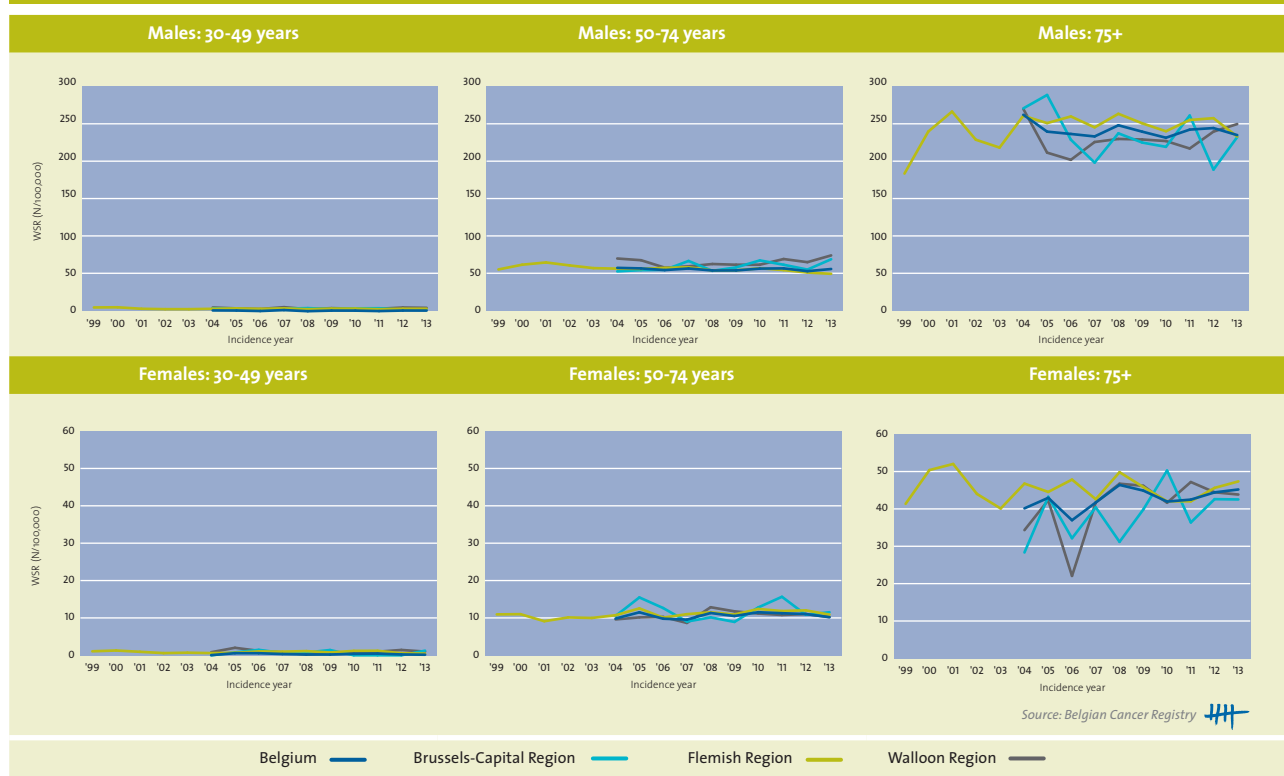


Figure 9 Bladder cancer: Trends in age-standardised incidence (WSR) by pT-stage and sex, Belgium 2004-2013

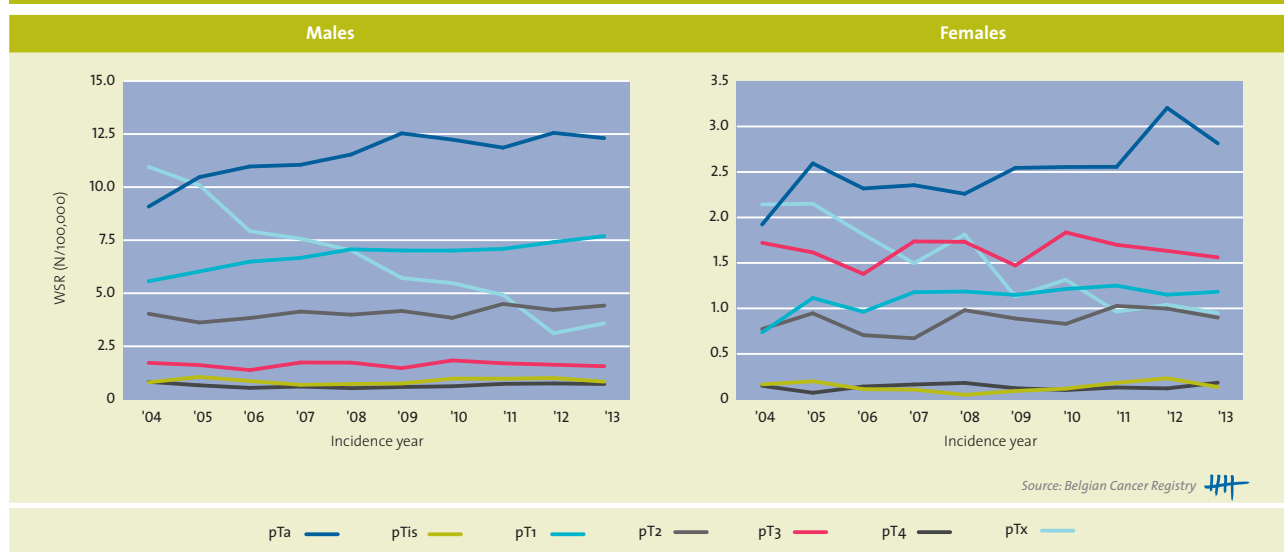


Table 2 Bladder cancer: AAPC(%) by sex, region, pT-stage and age group in Belgium

Incidence	Males			Females		
	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.6	[-1.0; -0.2]	2004-2013	0.7	[-0.8; 2.3]	2004-2013
	-3.0	[-4.8; -1.2]	2004-2006			
	0.1	[-0.4; 0.6]	2006-2013			
Flemish Region	-0.6	[-1.2; -0.0]	1999-2013	0.6	[-0.3; 1.4]	1999-2013
Brussels-Capital Region	0.5	[-1.4; 2.4]	2004-2013	0.9	[-3.0; 4.9]	2004-2013
Walloon Region	0.8	[-0.7; 2.3]	2004-2013	1.6	[-0.8; 4.1]	2004-2013
	-2.3	[-5.1; 0.6]	2004-2009			
	4.8	[1.0; 8.8]	2009-2013			
Incidence by age group	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
30-49 Year						
Belgium	-0.7	[-5.0; 3.7]	2004-2013	-0.8	[-6.0; 4.7]	2004-2013
Flemish Region	-2.4	[-5.4; 0.8]	1999-2013	-6.0	[-9.9; -1.9]	1999-2013
				-16.5	[-28.0; -3.2]	1999-2003
				11.9	[2.5; 22.1]	2003-2009
				-18.6	[-29.8; -5.6]	2009-2013
Brussels-Capital Region	-3.5	[-12.1; 5.9]	2004-2013	.	.	
Walloon Region	0.5	[-7.0; 8.6]	2004-2013	0.6	[-13.2; 16.7]	2004-2013
				-18.9	[-39.4; 8.5]	2004-2009
				31.9	[-9.0; 91.3]	2009-2013
50-74 Year						
Belgium	-0.3	[-1.0; 0.4]	2004-2013	0.7	[-1.0; 2.5]	2004-2013
Flemish Region	-1.1	[-1.7; -0.5]	1999-2013	1.0	[0.0; 2.0]	1999-2013
Brussels-Capital Region	2.0	[-0.3; 4.3]	2004-2013	0.2	[-4.9; 5.6]	2004-2013
Walloon Region	0.6	[-0.9; 2.1]	2004-2013	1.3	[-1.4; 4.1]	2004-2013
	-3.6	[-7.1; 0.0]	2004-2008			
	4.1	[1.1; 7.2]	2008-2013			
75+						
Belgium	-0.5	[-1.3; 0.4]	2004-2013	1.2	[-0.3; 2.7]	2004-2013
Flemish Region	1.0	[-0.1; 2.1]	1999-2013	-0.1	[-1.2; 0.9]	1999-2013
	3.4	[0.5; 6.3]	1999-2005			
	-0.7	[-2.7; 1.3]	2005-2013			
Brussels-Capital Region	-2.1	[-5.0; 1.0]	2004-2013	3.1	[-0.9; 7.3]	2004-2013
Walloon Region	0.3	[-1.8; 2.5]	2004-2013	3.9	[-1.4; 9.5]	2004-2013

Mortality	Males			Females		
	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	-0.7	[-1.7; 0.2]	2004-2012	0.9	[-1.0; 2.8]	2004-2012
	-4.5	[-6.5; -2.5]	2004-2008			
	3.2	[1.0; 5.3]	2008-2012			
Flemish Region	-0.7	[-1.5; 0.1]	1999-2012	-0.6	[-1.6; 0.5]	1999-2012
	0.1	[-2.0; 2.2]	1999-2004			
	-4.9	[-7.2; -2.6]	2004-2008			
	2.7	[-0.1; 5.6]	2008-2012			
Brussels-Capital Region	-0.6	[-2.8; 1.6]	1999-2012	-2.0	[-6.3; 2.6]	1999-2012
Walloon Region	-0.4	[-3.1; 2.4]	2004-2012	3.0	[-1.1; 7.2]	2004-2012
Incidence by pT-stage	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Non-invasive bladder tumour						
pTa (Non-invasive papillary carcinoma)	2.8	[1.9; 3.7]	2004-2013	3.5	[1.2; 5.8]	2004-2013
	5.3	[3.5; 7.1]	2004-2009			
	-0.2	[-2.3; 2.0]	2009-2013			
pTis (Carcinoma in situ: "Flat tumour")	1.0	[-2.8; 5.0]	2004-2013	2.4	[-7.0; 12.8]	2004-2013
				-14.2	[-29.0; 3.7]	2004-2009
				27.8	[0.4; 62.7]	2009-2013
Invasive bladder cancer						
pT1 (Tumour invades subepithelial connective tissue)	3.5	[3.0; 4.0]	2004-2013	4.3	[1.8; 6.9]	2004-2013
	5.8	[4.8; 6.8]	2004-2008	13.4	[4.6; 23.0]	2004-2007
	-0.2	[-1.4; 1.1]	2008-2011	0.0	[-3.7; 3.9]	2007-2013
	4.6	[2.3; 6.9]	2011-2013			
pT2 (Tumour invades muscle)	1.5	[0.2; 2.8]	2004-2013	2.5	[-0.8; 6.0]	2004-2013
pT3 (Tumour invades perivesical tissue)	0.1	[-2.1; 2.4]	2004-2013	2.7	[-0.8; 6.2]	2004-2013
pT4 (Tumour directly invades surrounding tissue)	-0.2	[-2.5; 2.1]	2004-2013	2.0	[-5.1; 9.6]	2004-2013
	-12.1	[-18.5; -5.3]	2004-2007			
	6.3	[2.6; 10.2]	2007-2013			
pTx (Primary tumour cannot be assessed)	-12.4	[-14.6; -10.2]	2004-2013	-9.5	[-12.1; -6.8]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Bladder cancer: Relative survival by cohort and sex, Belgium 2004-2013

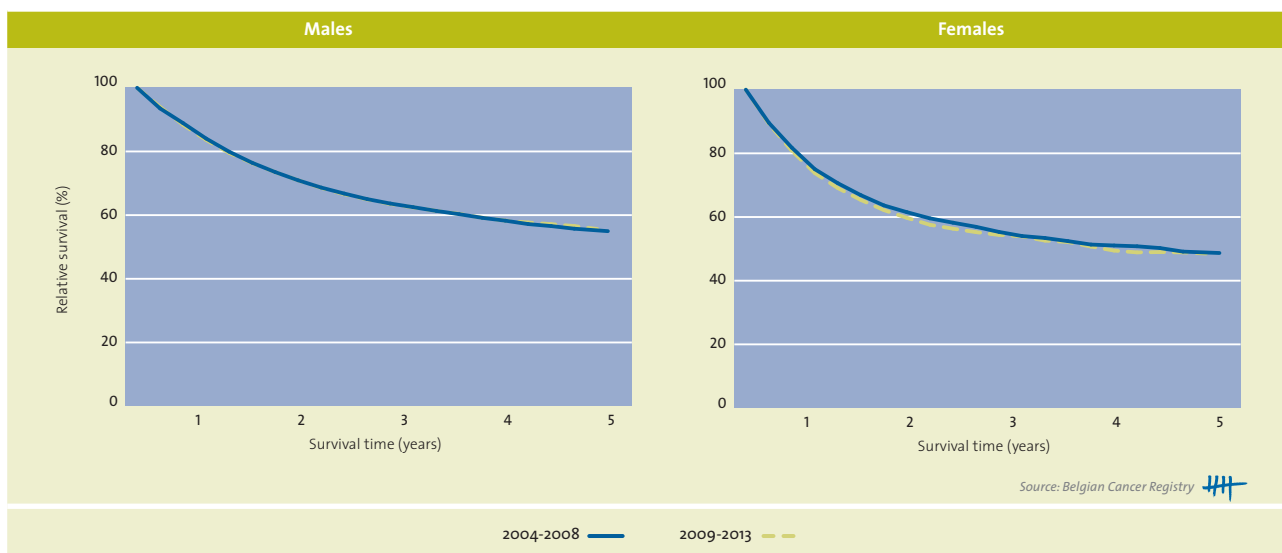


Figure 11 Bladder cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region



Figure 12 Bladder cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025

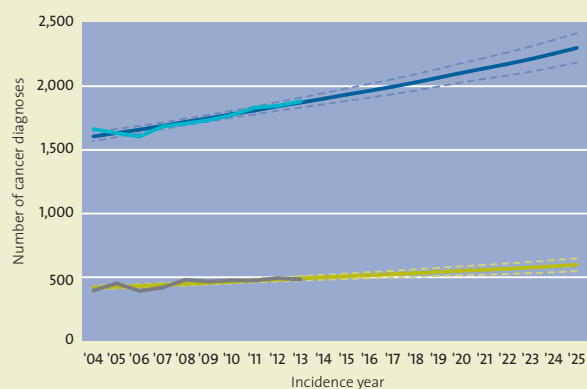
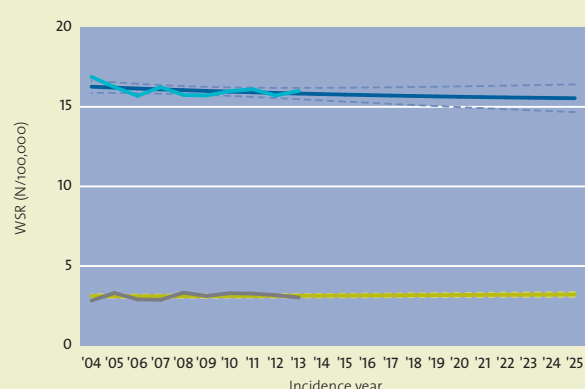


Figure 13 Bladder cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

!!Key note for registration:

Registration of all tumours with behaviour 1, 2 and 3.

No conclusion on behaviour possible on urine or bladder wash: no registration based on urine cytology only!

If invasive tumour presents together with non-invasive: register the invasive one.

If a flat carcinoma in situ (pTis) presents together with a non-invasive papillary lesion (pTa): register the pTis (worse prognosis)

3.10 CENTRAL NERVOUS SYSTEM (ICD-10: C71-C72)

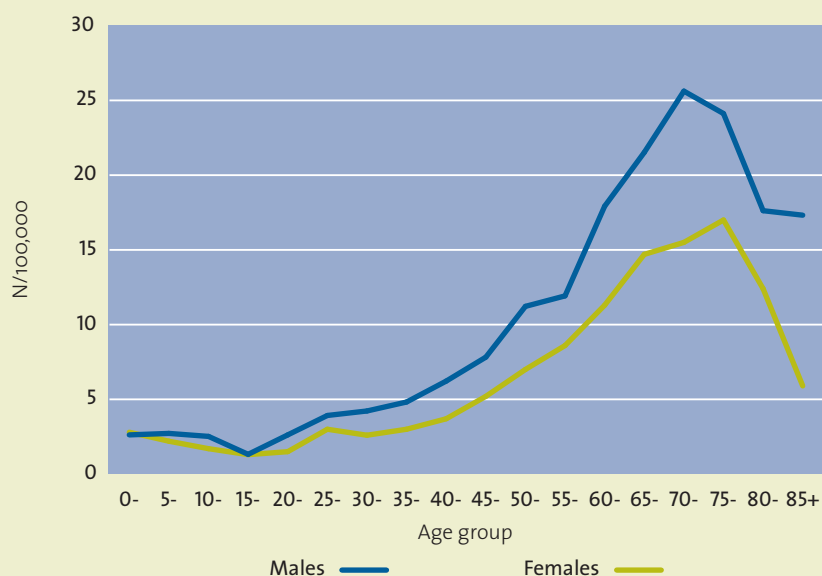
Table 1 Tumours of the central nervous system: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Tumours of the central nervous system	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	540	9.9	7.2	318	5.6	4.0
Flemish Region	307	9.7	6.5	194	6.0	4.1
Brussels-Capital Region	43	7.7	6.8	37	6.2	4.6
Walloon Region	190	11.0	8.4	87	4.8	3.7
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	399	7.4	4.6	287	5.1	3.1
Flemish Region	236	7.5	4.6	169	5.3	3.2
Brussels-Capital Region	39	7.1	5.0	21	3.6	2.5
Walloon Region	124	7.2	4.6	97	5.3	3.1
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	946	17.4	14.6	677	12.0	10.0
Flemish Region	571	18.1	14.8	410	12.7	10.2
Brussels-Capital Region	77	13.7	12.0	62	10.5	9.2
Walloon Region	298	17.2	15.0	205	11.2	10.0
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	1,370	25.1	21.4	1,041	18.4	15.8
Flemish Region	812	25.8	21.3	625	19.3	16.0
Brussels-Capital Region	112	19.9	17.9	88	14.8	13.4
Walloon Region	446	25.7	22.8	328	17.9	16.1
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	2,216	20.7%	[18.7; 22.8]	1,566	22.3%	[19.9; 24.8]
Flemish Region	1,359	19.9%	[17.4; 22.5]	954	21.7%	[18.7; 24.9]
Brussels-Capital Region	184	26.4%	[19.3; 34.2]	135	31.3%	[22.2; 40.8]
Walloon Region	673	20.7%	[17.1; 24.6]	477	21.2%	[17.0; 25.6]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	596 [565; 627]	6.9 [6.5; 7.4]		385 [356; 413]	4.2 [4.0; 4.4]	

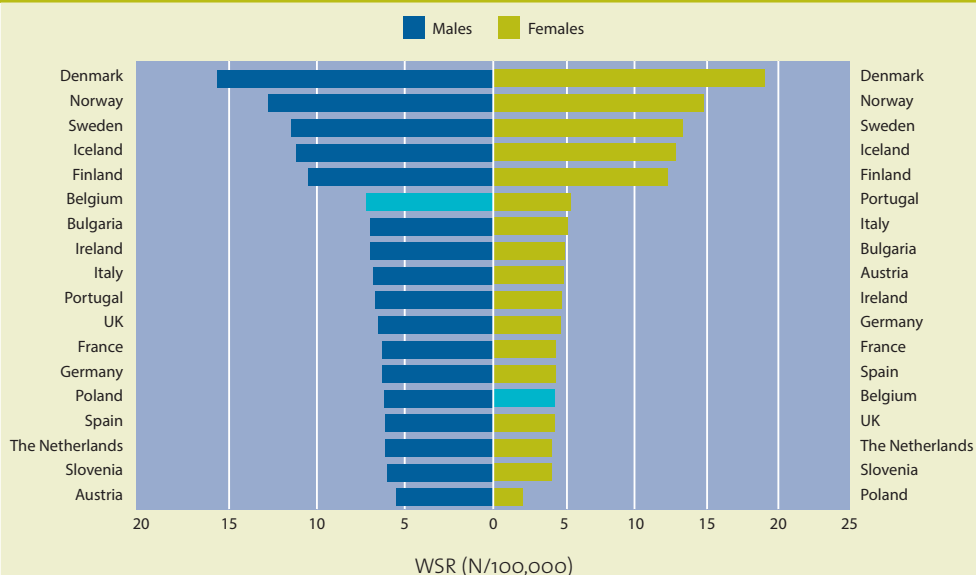
CR, crude rate (N/100,000 person years)

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

- Burden of malignant central nervous system (CNS) tumours in Belgium (**Table 1**):
 - 858 new diagnoses of cancer in 2013, 63% males and 37% females.
 - 686 deaths due to malignant CNS tumours in 2012, 58% males and 42% females.
 - In 2013 malignant CNS tumours are the 9th most important cause of cancer death in females (2% of all cancer deaths).
 - 2,411 persons (0.02% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with a malignant CNS tumour between 2004 and 2013.
 - Over time, incidence rates and mortality remain rather stable (**Figure 4 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is about 21% in males and 22% in females. No clear trend in relative survival proportion over time is observed (**Figure 7 and 8**).
 - By 2025, the number of patients diagnosed with malignant CNS tumours will reach almost 1,000 new cases. The increase is mainly due to the ageing and growth of the population (**Figure 9 and 10**).
- Males and females show a different risk pattern with age (**Figure 1 and 5**).
 - Age group 0-24 years:
 - Males have a higher risk than females (M/F ratio = 1.6).
 - No clear trend in incidence rate can be observed.
 - Age group 25-59 years:
 - Males have a twofold higher risk than females (M/F ratio = 2.0).
 - No clear trend in incidence rate can be observed.
 - Age group 60+:
 - Males have a twofold higher risk than females (M/F ratio = 2.1).
 - No clear trend in incidence rate can be observed.

Figure 1 Tumours of the central nervous system: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013

Source: Belgian Cancer Registry

Figure 2 Tumours of the central nervous system: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)

Source: Belgian Cancer Registry

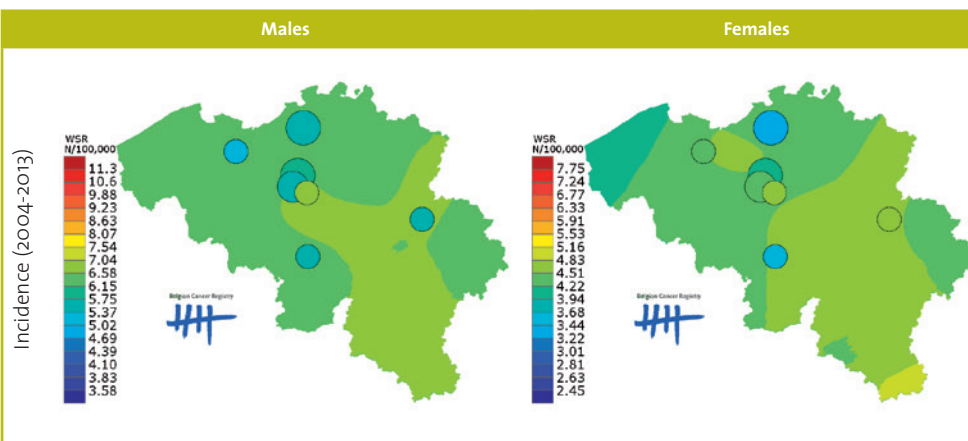
Figure 3 Tumours of the central nervous system (C70-C72): Age-standardised incidence (WSR) by sex in Belgium

Figure 4 Tumours of the central nervous system: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

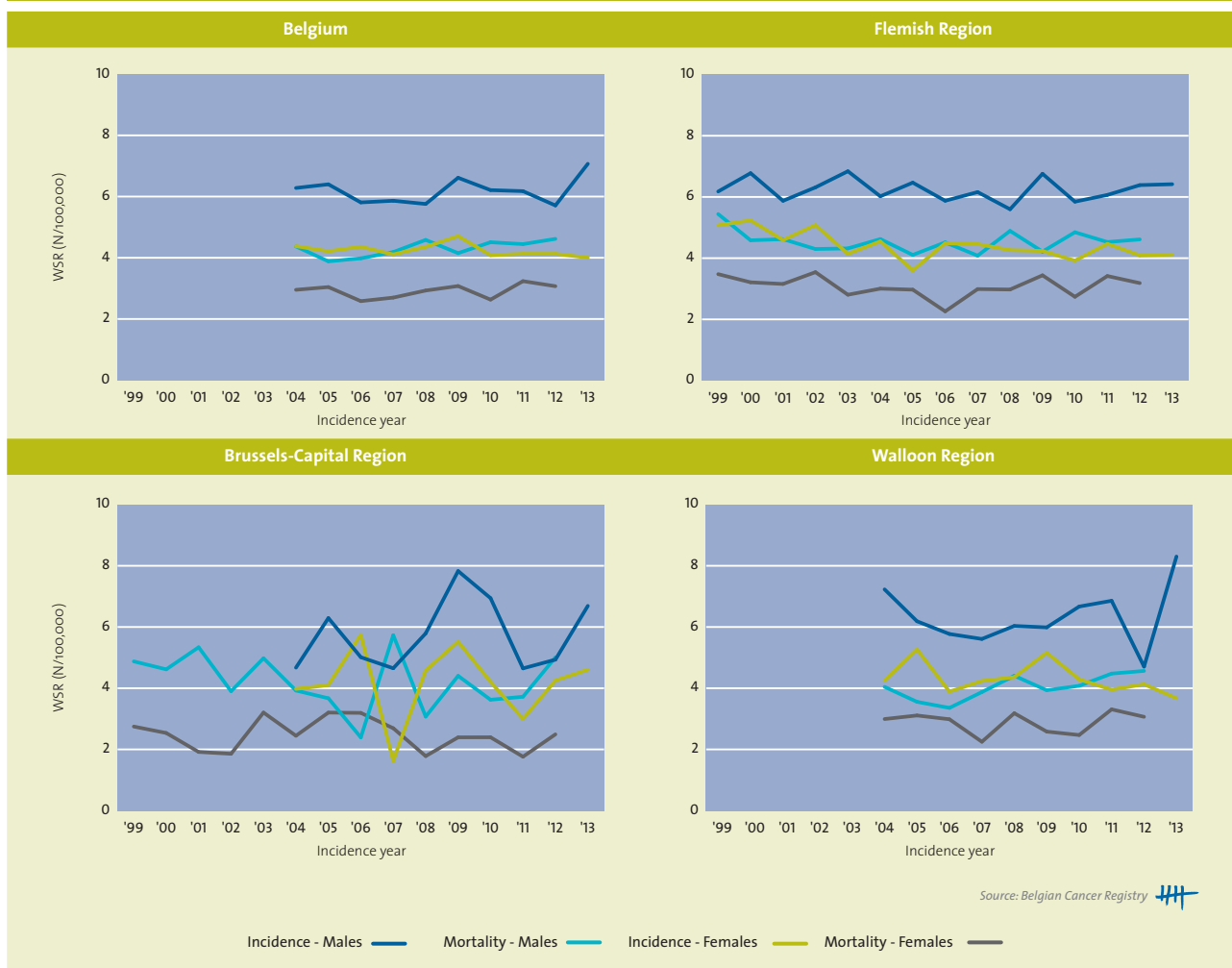


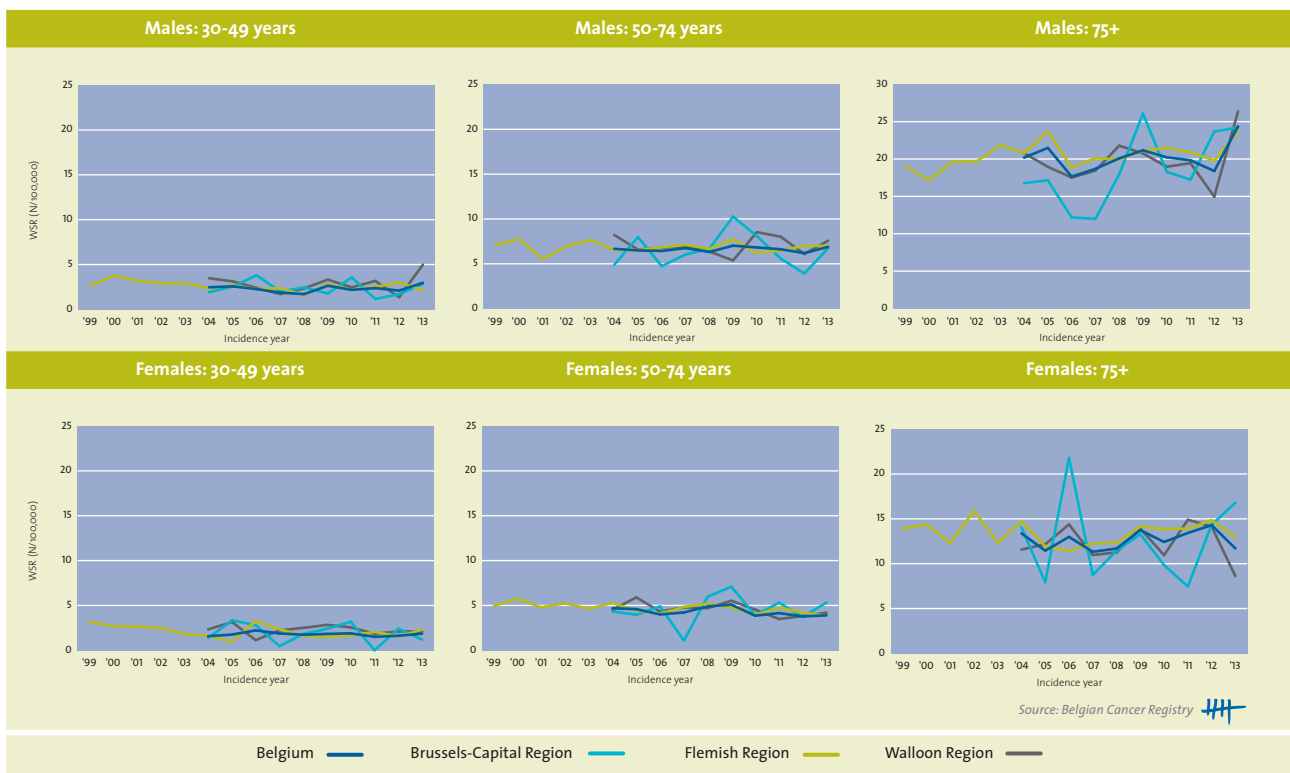
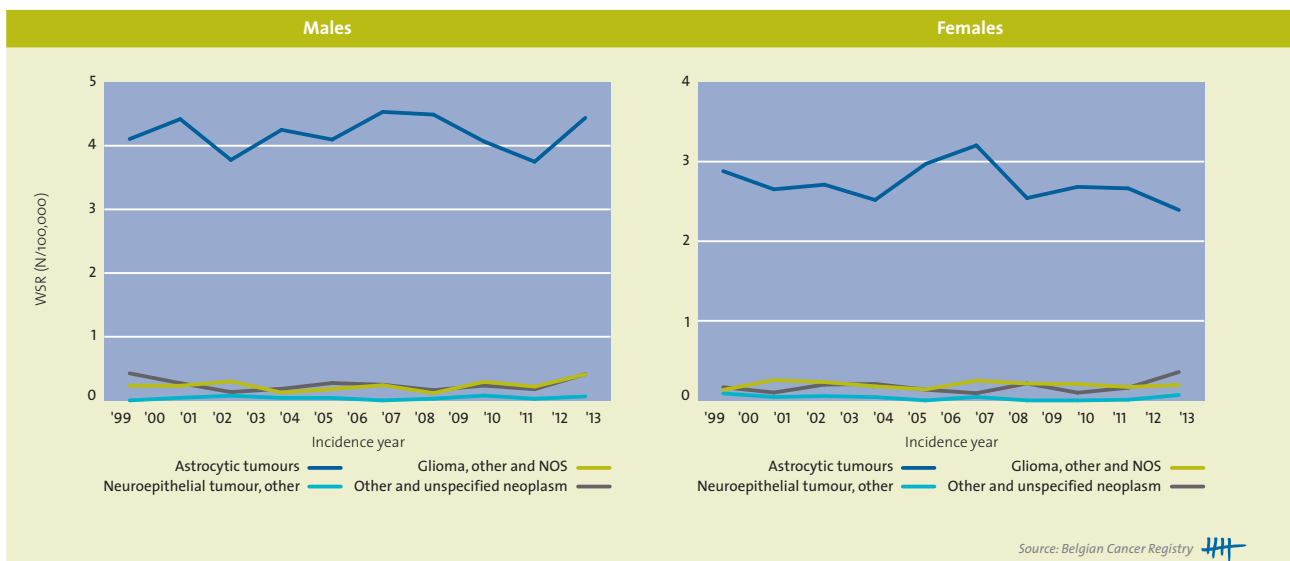
Figure 5 Tumours of the central nervous system: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013**Figure 6** Tumours of the central nervous system: Trends in age-standardised incidence (WSR) by histology and sex, Belgium 2004-2013

Table 2 Tumours of the central nervous system: AAPC(%) by sex, region, histology and age group in Belgium

Tumours of the central nervous system	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	0.5	[-1.2; 2.3]	2004-2013	-0.7	[-1.8; 0.4]	2004-2013
Flemish Region	-0.2	[-0.9; 0.6]	1999-2013	-1.5	[-2.4; -0.6]	1999-2013
				-3.7	[-6.1; -1.2]	1999-2005
				0.1	[-1.6; 2.0]	2005-2013
Brussels-Capital Region	1.6	[-3.2; 6.6]	2004-2013	0.8	[-8.3; 10.9]	2004-2013
Walloon Region	0.4	[-3.5; 4.5]	2004-2013	-1.6	[-4.3; 1.1]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	1.5	[-0.1; 3.0]	2004-2012	0.9	[-1.5; 3.3]	2004-2012
Flemish Region	-0.9	[-1.9; 0.0]	1999-2012	-0.3	[-1.7; 1.1]	1999-2012
	-6.6	[-10.7; -2.2]	1999-2002	-3.6	[-6.3; -0.7]	1999-2006
	0.8	[-0.4; 2.0]	2002-2012	3.6	[0.1; 7.3]	2006-2012
Brussels-Capital Region	-1.4	[-4.7; 2.0]	1999-2012	-0.9	[-3.9; 2.2]	1999-2012
Walloon Region	2.7	[0.3; 5.1]	2004-2012	0.1	[-4.0; 4.3]	2004-2012
Incidence by histology	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Astrocytic tumours	0.1	[-1.7; 1.9]	2004-2013	-0.9	[-3.0; 1.2]	2004-2013
Glioma, other and NOS	5.0	[-3.8; 14.6]	2004-2013	0.7	[-5.1; 6.9]	2004-2013
	-7.4	[-19.2; 6.1]	2004-2010			
	35.0	[1.0; 80.5]	2010-2013			
Neuroepithelial tumour, other	
Other and unspecified neoplasm	-0.6	[-10.2; 10.1]	2004-2013	3.9	[-6.9; 15.9]	2004-2013
Incidence by age group	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
0-24 Year						
Belgium	1.3	[-2.6; 5.4]	2004-2013	-0.5	[-3.0; 2.1]	2004-2013
	-2.1	[-8.1; 4.2]	2004-2010			
	8.6	[-4.8; 24.0]	2010-2013			
Flemish Region	-1.7	[-3.9; 0.5]	1999-2013	-2.9	[-6.7; 1.1]	1999-2013
	-4.8	[-8.2; -1.3]	1999-2008			
	4.1	[-2.9; 11.7]	2008-2013			
Brussels-Capital Region	-2.3	[-11.1; 7.3]	2004-2013	.	.	
Walloon Region	0.2	[-9.2; 10.5]	2004-2013	-0.5	[-7.6; 7.2]	2004-2013
25-59 Year						
Belgium	0.1	[-0.9; 1.2]	2004-2013	-1.7	[-4.0; 0.5]	2004-2013
Flemish Region	-0.1	[-1.2; 1.1]	1999-2013	-1.7	[-2.8; -0.5]	1999-2013
Brussels-Capital Region	0.0	[-7.3; 8.0]	2004-2013	3.6	[-9.3; 18.3]	2004-2013
Walloon Region	-0.0	[-3.8; 3.9]	2004-2013	-2.9	[-6.1; 0.5]	2004-2013
60+						
Belgium	0.9	[-1.4; 3.2]	2004-2013	0.6	[-1.6; 2.7]	2004-2013
Flemish Region	1.0	[-0.0; 1.9]	1999-2013	-0.0	[-1.2; 1.1]	1999-2013
				-2.2	[-4.7; 0.3]	1999-2006
				2.2	[-0.4; 4.8]	2006-2013
Brussels-Capital Region	5.6	[-0.0; 11.5]	2004-2013	0.5	[-8.2; 10.2]	2004-2013
Walloon Region	0.6	[-3.2; 4.6]	2004-2013	-0.7	[-5.0; 3.8]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 7 Tumours of the central nervous system: Relative survival by cohort and sex, Belgium 2004-2013

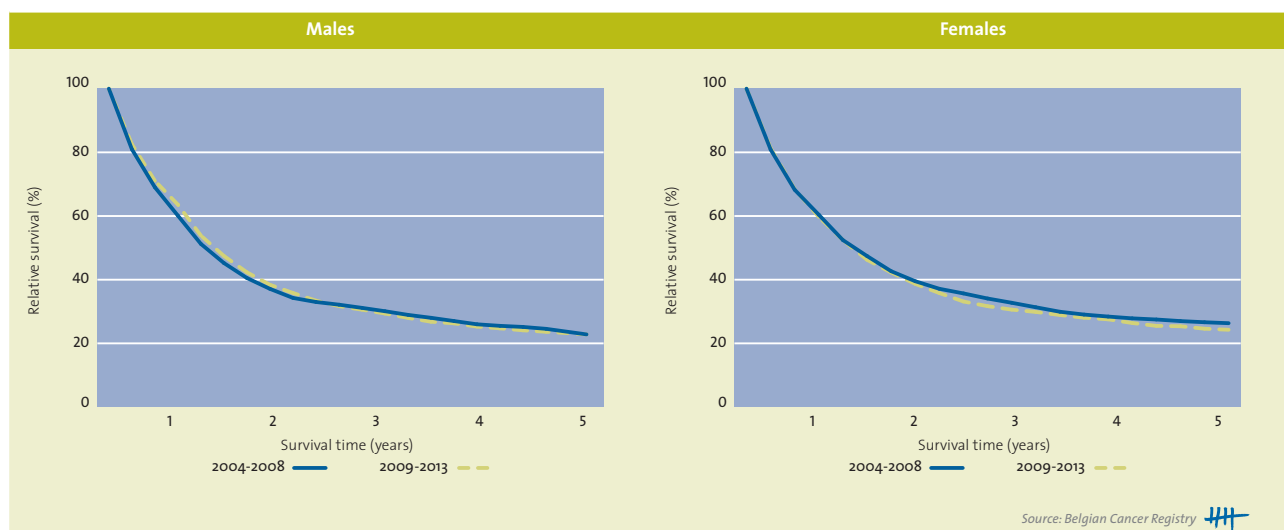
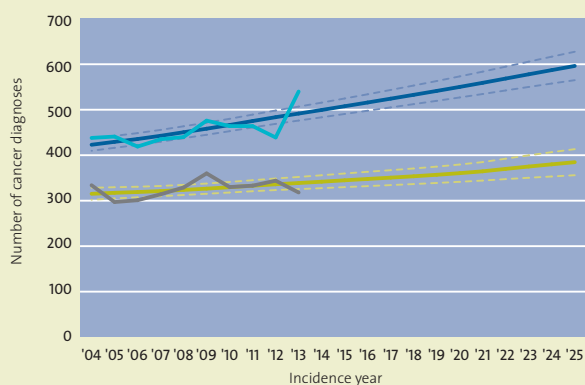


Figure 8 Tumours of the central nervous system: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

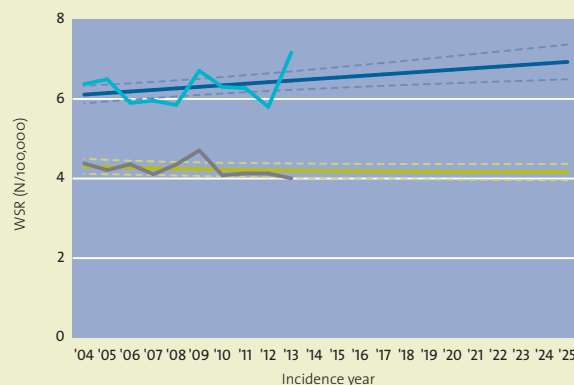


Figure 9 Tumours of the central nervous system: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Figure 10 Tumours of the central nervous system: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



Source: Belgian Cancer Registry

Males (Observed) Males (Predicted) Females (Observed) Females (Predicted)

!!Key note for registration:

ALL CNS tumours (irrespective of behaviour) should be registered.

Must not be registered: cysts, haemangioma, and hamartoma.

Pituitary adenoma is coded 8272/o (not 8140/o!) in combination with C75.1.

Meningiomas originate in the meninges and are coded with topocode C70, Meninges.

3.11 THYROID (ICD-10: C73)

Table 1 Thyroid cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

Thyroid cancer	Males			Females		
Incidence, 2013	N	CR	WSR	N	CR	WSR
Belgium	250	4.6	3.2	691	12.2	9.4
Flemish Region	111	3.5	2.3	303	9.4	7.0
Brussels-Capital Region	36	6.4	5.2	108	18.2	14.3
Walloon Region	103	5.9	4.2	280	15.3	12.1
Mortality, 2012	N	CR	WSR	N	CR	WSR
Belgium	40	0.7	0.3	54	1.0	0.3
Flemish Region	26	0.8	0.4	37	1.2	0.4
Brussels-Capital Region	2	0.4	0.2	5	0.9	0.5
Walloon Region	12	0.7	0.3	12	0.7	0.3
Prevalence (5 years), 2009-2013	N	CR	WSR	N	CR	WSR
Belgium	1,038	19.1	13.1	3,132	55.4	41.4
Flemish Region	460	14.6	9.6	1,381	42.8	31.2
Brussels-Capital Region	135	24.0	19.1	482	81.3	63.3
Walloon Region	443	25.5	18.1	1,269	69.4	53.0
Prevalence (10 years), 2004-2013	N	CR	WSR	N	CR	WSR
Belgium	1,708	31.4	21.3	5,305	93.9	67.7
Flemish Region	730	23.2	15.1	2,231	69.1	49.2
Brussels-Capital Region	214	38.1	29.8	759	128.0	98.6
Walloon Region	764	44.1	30.7	2,315	126.6	92.1
5-year Relative survival, 2009-2013	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	1,182	91.3%	[88.6; 93.7]	3,328	95.6%	[94.4; 96.6]
Flemish Region	551	86.3%	[81.7; 90.2]	1,488	93.0%	[90.9; 94.7]
Brussels-Capital Region	149	102.4%	[97.0; 105.1]	522	97.3%	[94.3; 99.4]
Walloon Region	482	93.8%	[89.6; 97.1]	1,318	97.8%	[96.0; 99.2]
Projection, 2025	N [95%CI]	WSR [95%CI]		N [95%CI]	WSR [95%CI]	
Belgium	376 [331; 422]	4.2 [3.7; 4.7]		997 [918; 1,075]	12.8 [11.8; 13.9]	

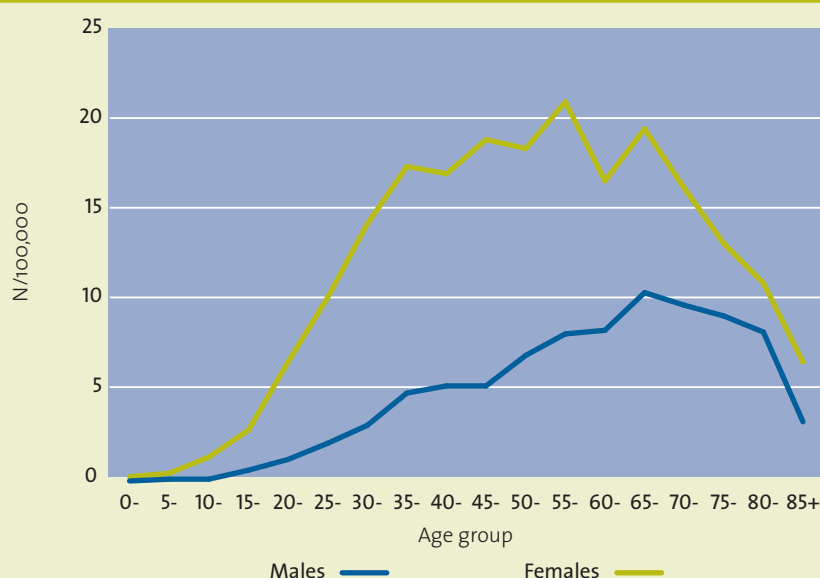
CR, crude rate (N/100,000 person years)

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

- Thyroid cancer burden in Belgium (**Table 1**):
 - 941 new diagnoses of cancer in 2013, 27% males and 73% females.
 - Thyroid cancer is the 10th most frequent tumour in females (2% of all malignancies).
 - 94 deaths due to thyroid cancer in 2012, 43% males and 57% females.
 - 7,013 persons (0.06% of the total Belgian population) are alive on 31/12/2013 after being diagnosed with thyroid cancer between 2004 and 2013.
 - Incidence of thyroid cancer is twofold higher in the Walloon and in the Brussels-Capital Region in comparison with the Flemish Region. The regional variation, most marked for low-risk disease (micropapillary carcinoma), is associated with variation in thyroid imaging and thyroid disease management⁽²²⁾ (**Figure 3**).
 - Over time, incidence rates are increasing in the three Belgian Regions (**Figure 7 and Table 2**).
 - The 5-year relative survival proportion for the Belgian 2009-2013 cohort is high and approaches 91% in males and 96% in females. In the Flemish Region, a slight increase in relative survival proportion over time is observed (**Figure 10 and 11**).
 - By 2025, the number of patients diagnosed with thyroid cancer will rise to more than 1,300. The increase is due to a combination of the ageing and growth of the population, and the increasing risk over time in males and females (**Figure 12 and 13**).
- Males and females show a different risk pattern with age. The incidence rates increase over time in the different age groups but the risk in males and females is different (**Figure 1 and 8**).
 - Age group 15-39 years:
 - Females have an almost fourfold higher risk than males (M/F ratio = 0.3).
 - Age group 40-69 years:
 - Females have a twofold higher risk than males (M/F ratio = 0.5).

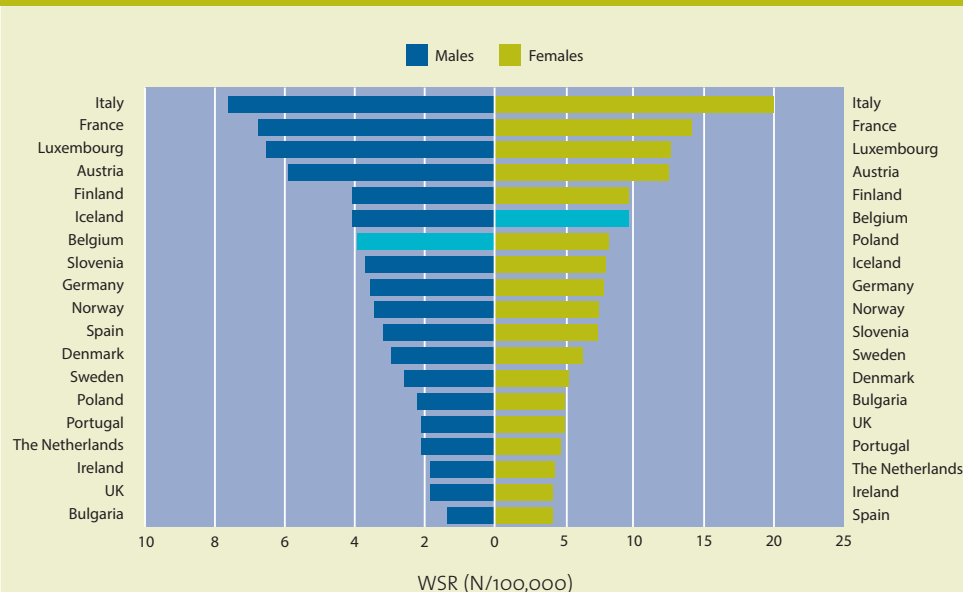
- Age group 70+:
 - Females have a higher risk than males (M/F ratio = 0.7).
 - Females have a prognostic more favourable stage distribution than males (**Figure 4, 5 and 6**).
 - Availability of information on stage has improved from 61% in 2004-2006 to 86% in 2010-2013.
 - Papillary carcinoma, the most frequently diagnosed subtype, is very often diagnosed in a prognostic favourable stage. Anaplastic carcinoma is stage IV by definition.
 - The anaplastic carcinoma is more frequent in males (4.5% of all thyroid cancers) than in females (2%).
 - In 2004-2006, 20% of thyroid cancers with known stage are diagnosed as stage IV in males and 10% in females. The amount of stage IV tumours seems to decrease over time.
- Note: As anaplastic carcinoma only represents a small percentage of all thyroid cancers, this histologic subtype is not the only one figuring in the stage IV category.

Figure 1 Thyroid cancer: Age-specific incidence rates (N/100,000) by sex, Belgium 2009-2013



Source: Belgian Cancer Registry

Figure 2 Thyroid cancer: Comparison of age-standardised incidence rates (WSR). (Selection of European registry data)



Source: Belgian Cancer Registry

Figure 3 Thyroid cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

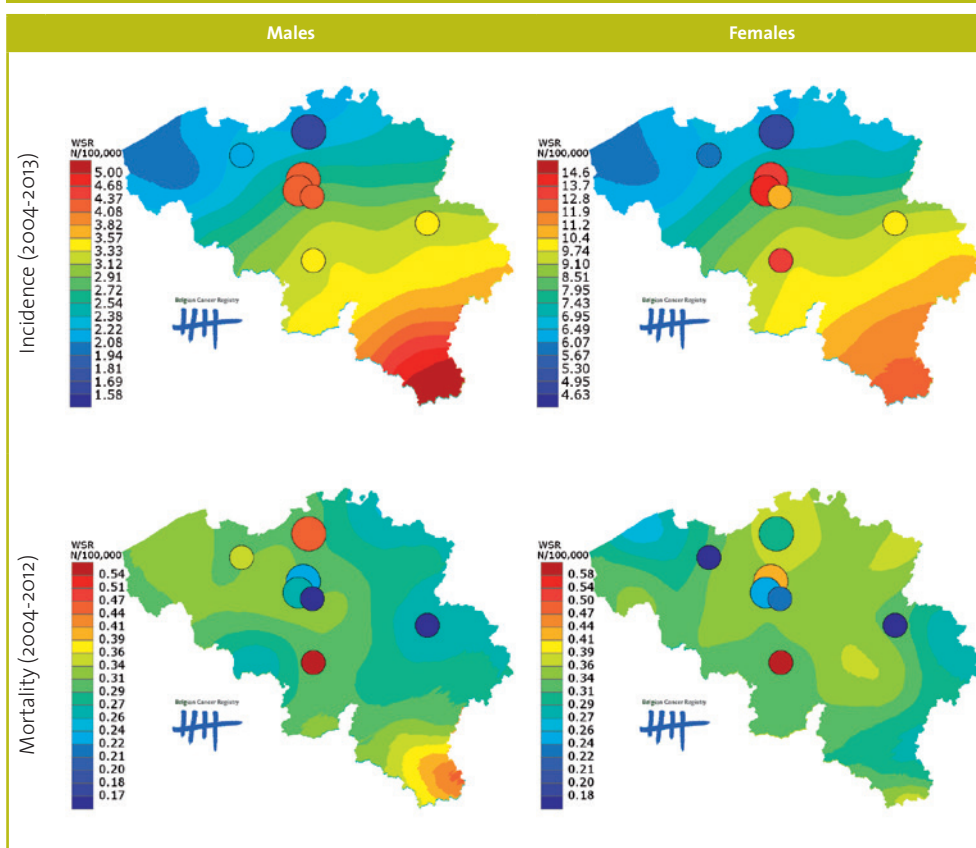
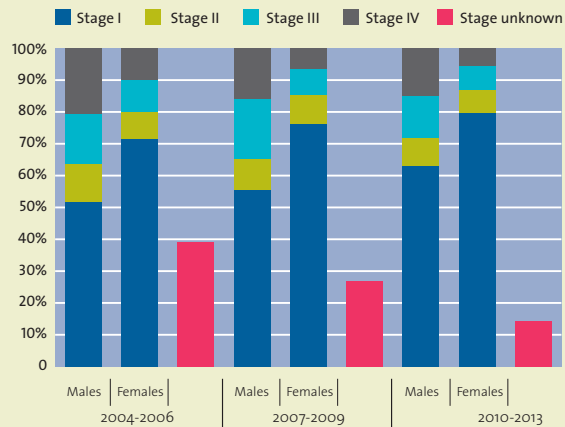


Figure 4 Thyroid cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013




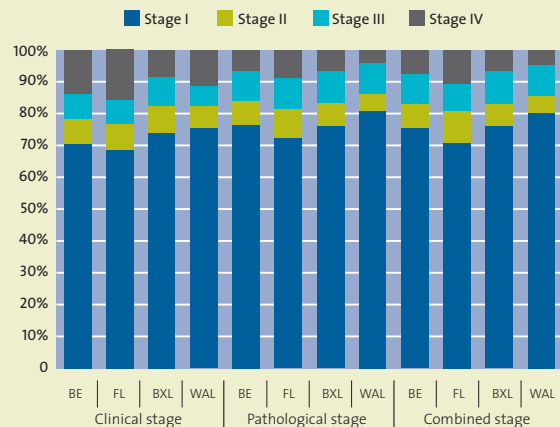
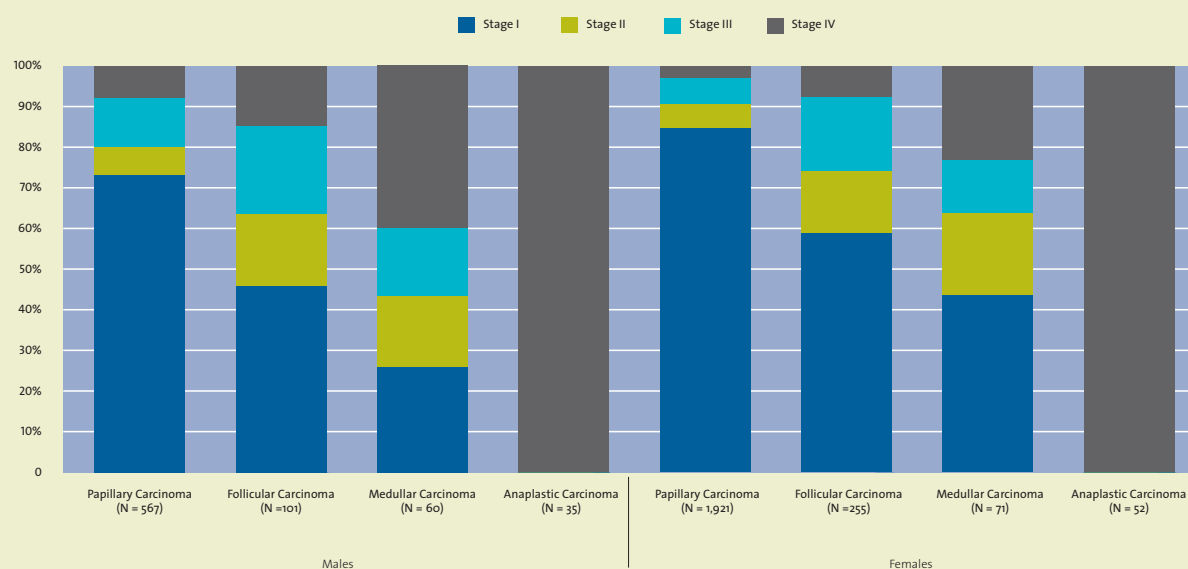
Source: Belgian Cancer Registry 

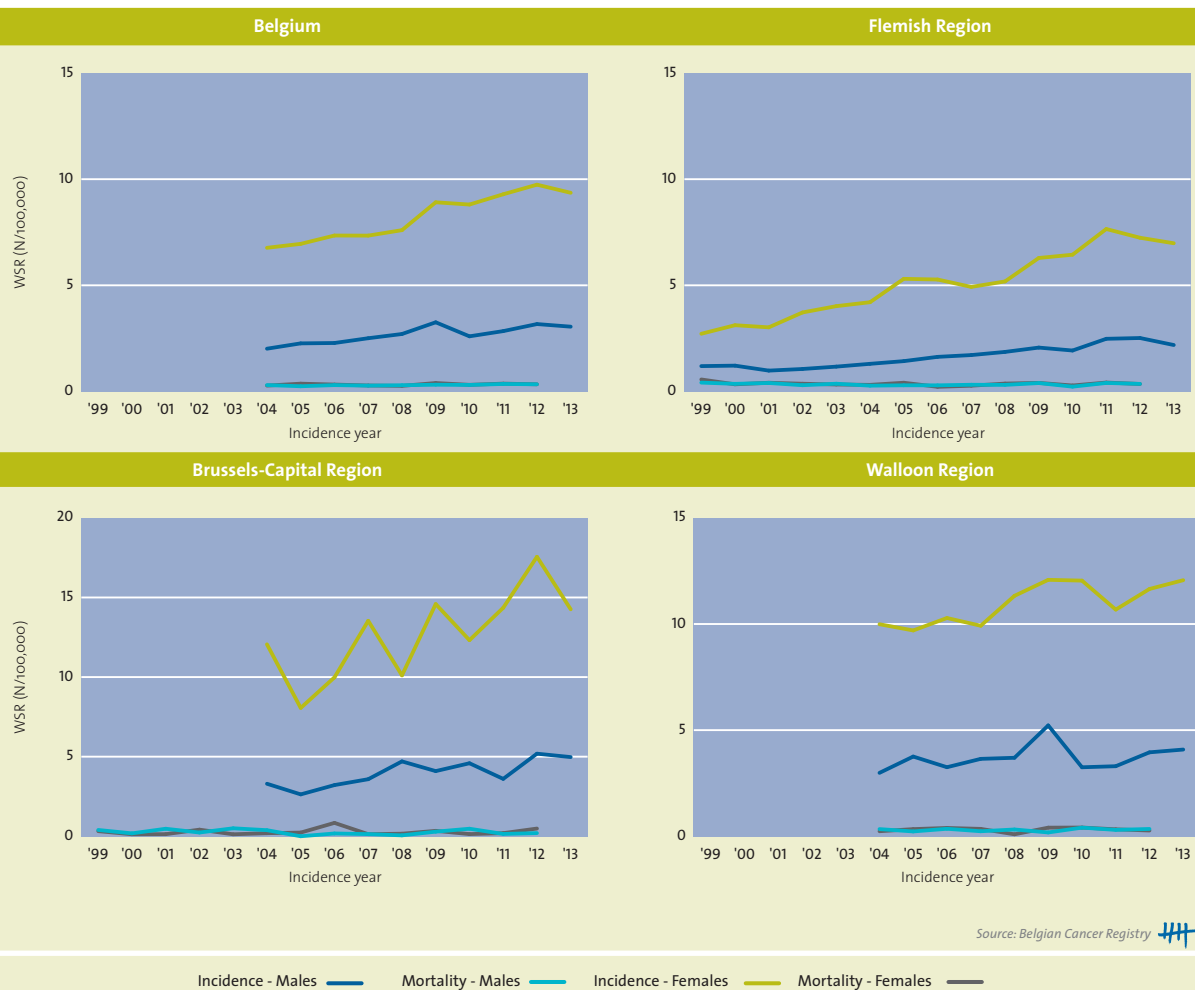
Figure 5 Thyroid cancer: stage distribution by region, 2010-2013



Source: Belgian Cancer Registry 

Figure 6 Thyroid cancer: stage distribution by histology and sex, Belgium 2010-2013

Source: Belgian Cancer Registry

Figure 7 Thyroid cancer: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

Source: Belgian Cancer Registry

Figure 8 Thyroid cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

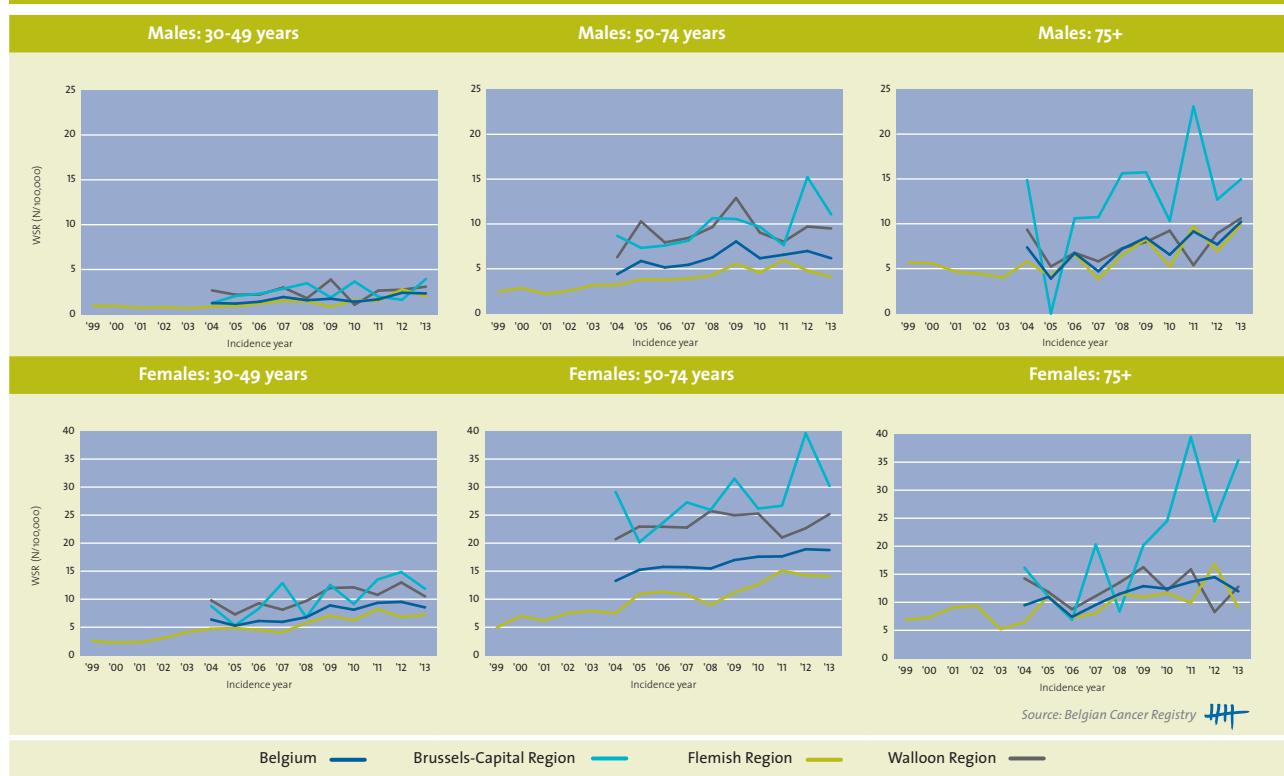


Figure 9 Thyroid cancer: Trends in age-standardised incidence (WSR) by histology and sex, Belgium 2004-2013

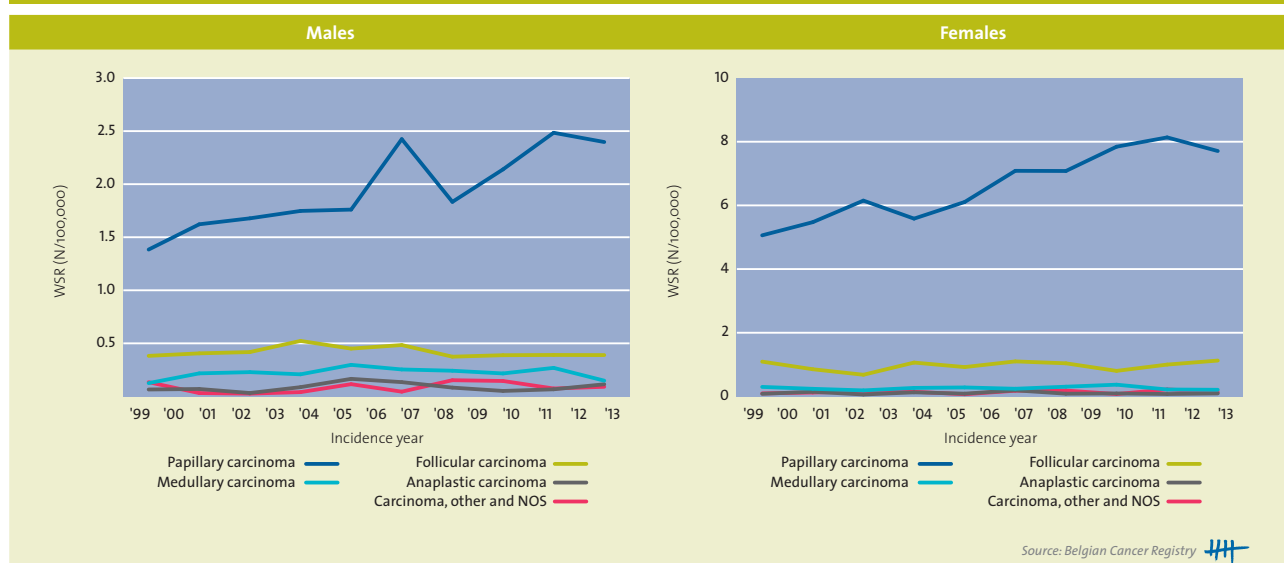


Table 2 Thyroid cancer: AAPC(%) by sex, region, histology and age group in Belgium

Thyroid cancer	Males			Females		
Incidence	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	4.4	[2.4; 6.5]	2004-2013	4.4	[3.4; 5.5]	2004-2013
Flemish Region	4.5	[3.3; 5.7]	1999-2013	7.6	[6.6; 8.6]	1999-2013
	-10.0	[-17.1; -2.3]	1999-2001	10.3	[7.5; 13.1]	1999-2005
	8.9	[6.9; 11.0]	2001-2008	5.7	[3.8; 7.6]	2005-2013
	4.7	[1.7; 7.7]	2008-2013			
Brussels-Capital Region	5.7	[2.3; 9.3]	2004-2013	5.5	[1.1; 10.1]	2004-2013
Walloon Region	1.9	[-1.8; 5.8]	2004-2013	2.3	[0.9; 3.8]	2004-2013
Mortality	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Belgium	3.0	[0.6; 5.4]	2004-2012	1.8	[-2.5; 6.3]	2004-2012
Flemish Region	-1.4	[-3.7; 1.0]	1999-2012	-2.0	[-4.9; 1.0]	1999-2012
	-7.1	[-13.3; -0.4]	1999-2004	-9.0	[-16.8; -0.5]	1999-2004
	2.4	[-1.7; 6.7]	2004-2012	2.6	[-2.6; 8.2]	2004-2012
Brussels-Capital Region	.	.	.	2.4	[-6.3; 11.8]	1999-2012
Walloon Region	1.5	[-6.5; 10.2]	2004-2012	1.2	[-12.9; 17.4]	2004-2012
Incidence by histology	AAPC(%)	95%CI	period	AAPC(%)	95%CI	period
Papillary carcinoma	5.9	[3.4; 8.4]	2004-2013	5.3	[3.9; 6.8]	2004-2013
Follicular carcinoma	-0.1	[-2.1; 1.9]	2004-2013	1.4	[-2.8; 5.8]	2004-2013
	9.0	[2.1; 16.5]	2004-2007			
	-4.4	[-7.3; -1.4]	2007-2013			
Medullary carcinoma	2.4	[-2.5; 7.5]	2004-2013	-0.2	[-5.4; 5.3]	2004-2013
	18.6	[5.0; 33.9]	2004-2008			
	-8.9	[-17.2; 0.2]	2008-2013			
Anaplastic carcinoma	4.2	[-7.8; 17.7]	2004-2013	-1.0	[-9.5; 8.3]	2004-2013
Carcinoma, other and NOS	8.9	[-7.3; 28.1]	2004-2013	3.2	[-6.7; 14.1]	2004-2013
15-39 Year						
Belgium	5.7	[2.2; 9.3]	2004-2013	6.0	[3.2; 8.8]	2004-2013
Flemish Region	7.4	[4.0; 11.0]	1999-2013	9.3	[7.1; 11.6]	1999-2013
Brussels-Capital Region	5.0	[-4.2; 15.2]	2004-2013	7.5	[0.6; 14.9]	2004-2013
Walloon Region	0.9	[-8.1; 10.8]	2004-2013	4.2	[0.7; 7.9]	2004-2013
40-69 Year						
Belgium	3.4	[0.8; 6.1]	2004-2013	3.4	[2.5; 4.3]	2004-2013
	8.4	[3.0; 14.0]	2004-2009			
	-2.5	[-8.6; 4.0]	2009-2013			
Flemish Region	4.3	[2.6; 6.0]	1999-2013	7.2	[5.5; 8.9]	1999-2013
	7.8	[6.0; 9.5]	1999-2011			
	-14.3	[-24.1; -3.2]	2011-2013			
Brussels-Capital Region	4.9	[0.1; 9.9]	2004-2013	3.5	[-0.4; 7.6]	2004-2013
Walloon Region	2.4	[-2.3; 7.2]	2004-2013	0.9	[-1.0; 2.9]	2004-2013
70+						
Belgium	6.3	[0.4; 12.4]	2004-2013	4.8	[1.2; 8.6]	2004-2013
Flemish Region	4.7	[1.7; 7.8]	1999-2013	4.1	[1.0; 7.3]	1999-2013
	-0.2	[-5.5; 5.5]	1999-2007			
	11.5	[3.3; 20.3]	2007-2013			
Brussels-Capital Region	.	.	.	14.8	[3.2; 27.7]	2004-2013
Walloon Region	3.2	[-2.9; 9.7]	2004-2013	-0.0	[-5.8; 6.1]	2004-2013

AAPC: average annual percentage change

Period: When a joinpoint occurred, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.

Figure 10 Thyroid cancer: Relative survival by cohort and sex, Belgium 2004-2013

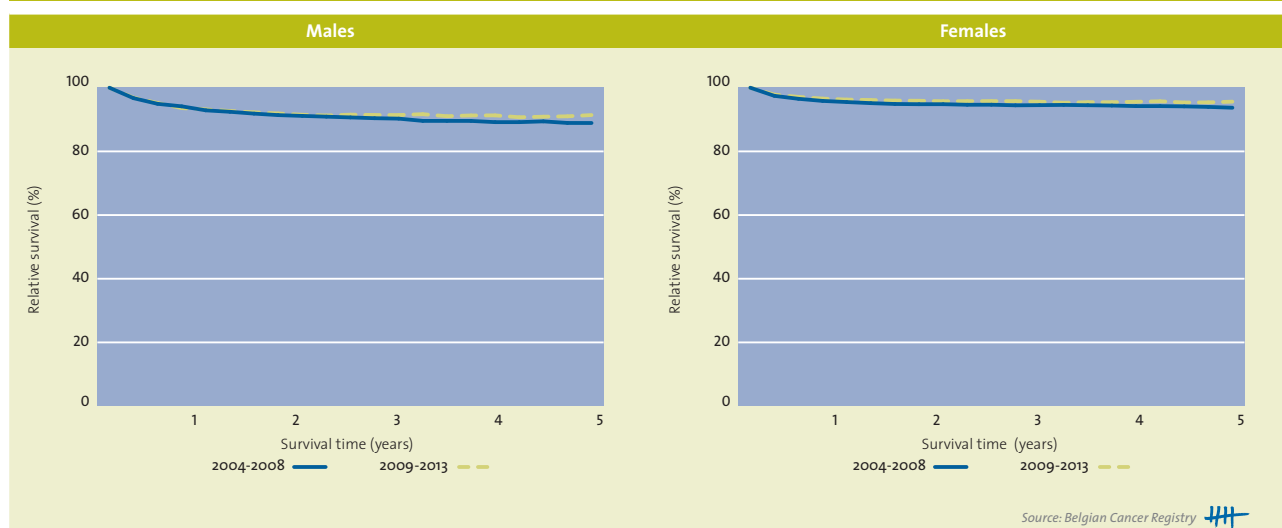


Figure 11 Thyroid cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

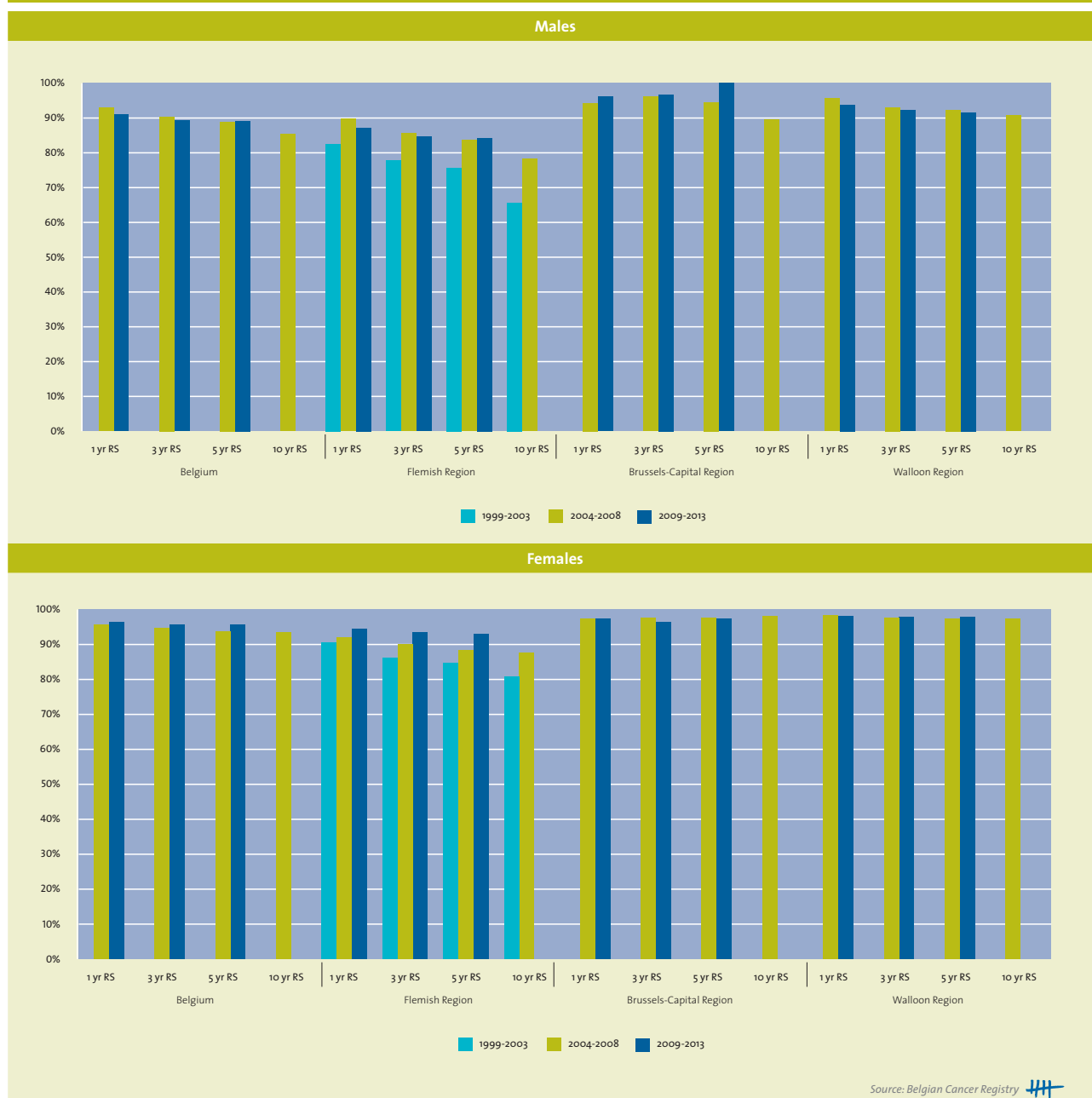
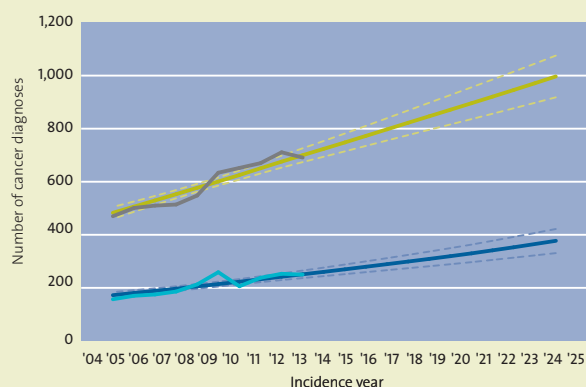
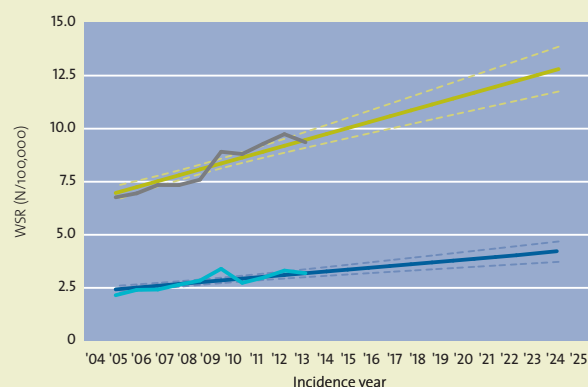


Figure 12 Thyroid Cancer: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025

Source: Belgian Cancer Registry

Figure 13 Thyroid Cancer: Observed and projected incidence (WSR) by sex, Belgium 2004-2025

Source: Belgian Cancer Registry

Males (Observed) — Males (Predicted) — Females (Observed) — Females (Predicted) —

Did you know that the BCR also...

- Participated in a study exploring the regional differences in thyroid cancer incidence in Belgium (2004-2006): the Walloon Region showed the highest incidence rate of thyroid cancer (particularly T1 thyroid papillary carcinomas) as compared to the Flemish Region.
- Is involved in a new initiative as part of which a master thesis student of the Katholieke Universiteit Leuven is investigating in-depth the temporal and geographical variation in the clinical management of thyroid cancer, comparing the first studied cohort (2004-2006) with a more recent cohort (2009-2011). This research work is realised by the financial support of the Rondou fund.
- Further reading see:
 - **Francart J**, Van Den Briel A, Decallonne B, **Adam M**, Dubois C, **De Schutter H**, Vlayen J, Stordeur S. Regional differences in thyroid cancer incidence in Belgium: role of diagnostic and therapeutic strategies for thyroid disease – Appendix. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE). 2012. KCE Report 177C. D/2012/10.273/25.
 - Van den Briel A, **Francart J**, Dubois C, **Adam M**, Vlayen J, **De Schutter H**, Stordeur S, Decallonne B. Regional variation in thyroid cancer incidence in Belgium is associated with variation in thyroid imaging and thyroid disease management. J Clin Endocrinol Metab. 2013; 98(10): 4063-4071.

!!Key note for registration:

Papillary carcinoma 8260/3 can be diagnosed by cytology only.

Follicular adenocarcinoma 8330/3: biopsy/resection necessary to know if tumour is malignant (diagnosis of malignancy NOT possible on cytological examination only).

Medullary carcinoma 8345/3: diagnosis possible by cytology, biopsy and specific blood tests.

Micropapillary adenocarcinoma = papillary microcarcinoma (tumour size < 1 cm → T1a-lesions) = 8341/3.

Hürthle cell tumour (8290/x) can be benign. The difference between Hürthle cell adenoma (/o) and a Hürthle cell carcinoma (/3) cannot reliably be made without surgery! So without histological evidence, no registration of 8290/3 possible.

3.12 CANCER IN CHILDREN AND ADOLESCENTS

Table 1 Cancer in children and adolescents (ICCC-3(23): I-XII): Overview of incidence, mortality, prevalence and survival by sex and region

Cancer in children and adolescents	Boys (0-14y)			Girls (0-14y)			Boys (15-19y)			Girls (15-19y)		
Incidence	N	CR	WSR	N	CR	WSR	N	CR	WSR	N	CR	WSR
Belgium	224	232.5	237.9	181	196.5	198.0	90	279.3	279.3	89	287.8	287.8
Flemish Region	111	210.2	214.8	99	196.3	196.2	61	335.8	335.8	56	321.2	321.2
Brussels-Capital Region	24	209.1	207.1	23	209.7	209.1	9	288.5	288.5	8	266.4	266.4
Walloon Region	89	277.4	284.4	59	192.0	195.4	20	182.8	182.8	25	238.5	238.5
Mortality	N	CR	WSR	N	CR	WSR	N	CR	WSR	N	CR	WSR
Belgium	24	25.1	25.0	21	22.9	23.0	18	55.3	55.3	10	32.0	32.0
Flemish Region	10	19.0	18.5	13	25.9	25.8	12	65.3	65.3	6	34.0	34.0
Brussels-Capital Region	4	35.6	35.9	3	27.9	28.0	2	64.9	64.9	0	0.0	0.0
Walloon Region	10	31.2	33.0	5	16.3	16.8	4	36.1	36.1	4	37.7	37.7
Prevalence (5 years)	N	CR	WSR	N	CR	WSR	N	CR	WSR	N	CR	WSR
Belgium	722	749.3	746.0	593	643.7	639.4	342	1,061.0	1,061.0	318	1,028.0	1,028.0
Flemish Region	385	729.2	722.0	316	626.7	619.5	206	1,134.0	1,134.0	180	1,032.0	1,032.0
Brussels-Capital Region	65	566.3	564.1	70	638.1	637.5	25	801.0	801.0	22	732.0	732.0
Walloon Region	272	847.9	850.8	207	673.6	671.1	111	1,014.0	1,014.0	116	1,106.0	1,106.0
Prevalence (10 years)	N	CR	WSR	N	CR	WSR	N	CR	WSR	N	CR	WSR
Belgium	1,112	1,154.1	1,122.6	921	999.7	969.3	530	1,645.0	1,645.0	472	1,526.0	1,526.0
Flemish Region	580	1,098.6	1,065.4	512	1,015.3	979.3	310	1,706.0	1,706.0	262	1,503.0	1,503.0
Brussels-Capital Region	108	941.0	943.4	102	929.9	933.0	45	1,442.0	1,442.0	36	1,199.0	1,199.0
Walloon Region	424	1,321.7	1,279.5	307	999.1	964.1	175	1,599.0	1,599.0	174	1,660.0	1,660.0
5-year Relative survival	N at risk	%	95%CI	N at risk	%	95%CI	N at risk	%	95%CI	N at risk	%	95%CI
Belgium	837	83.1	[80.0;85.8]	684	85.6	[82.5;88.2]	395	85.5	[81.1;89.0]	350	88.9	[84.6;92.1]
Flemish Region	433	83.9	[79.5;87.5]	370	86.3	[82.2;89.5]	235	86.9	[81.0;91.2]	189	91.4	[86.1;94.8]
Brussels-Capital Region	83	79.4	[67.0;87.6]	83	80.8	[68.8;88.6]	40	82.0	[65.8;91.1]	26	87.9	[67.0;96.0]
Walloon Region	321	82.9	[77.8;86.9]	231	86.3	[80.3;90.6]	120	83.9	[75.3;89.8]	135	86.1	[77.6;91.6]

CR: crude rate (N/1,000,000 person years)

WSR: age standardised rate using the World Standard Population (N/1,000,000 person years)

- Cancer burden in children and adolescents (**Table 1**):
 - Cancer is a rare disease in children and adolescents and comprises less than 1% of the total cancer burden.
 - In 2013, a total of 405 children (0-14 years) and 179 adolescents (15-19 years) are diagnosed with cancer.
 - All sites combined, more diagnoses during childhood are registered in boys (M/F ratio = 1.2).
 - In adolescents, the male/female ratio is 1.0.
 - The 5-year relative survival rates range from 83% in boys (0-14 years) to 89% in adolescent girls (15-19 years).
 - In 2012, 45 children and 28 adolescents died due to cancer.
 - 2,033 children and 1,002 adolescents (0.1% of the total Belgian population under the age of 20 years) are alive (on 1/1/2014) after being diagnosed with cancer between 2004 and 2013.
- Leukaemias (I), central nervous system (CNS) tumours (III), lymphomas (II) and carcinomas (XI) are the most frequent malignancies in children and adolescents (**Figure 1**), but the incidence varies with age (**Figure 2**).
 - Age-specific incidence rates, in boys and girls, are higher for the youngest and oldest age groups.
 - Leukaemia (I) is characterised by a distinctive peak in the incidence rates around the age of 3 years. After this age, the incidence rates for leukaemia decreases.
 - The highest incidence rates for central nervous system tumours (III) are observed under the age of 3 years. The age-specific incidence rates for central nervous system tumours remain rather stable after the age of 3 years.

- The age-specific incidence rates for lymphoma (II) are stable under the age of 10 years, but increase afterwards.
- Carcinomas (XI) are rare in young children but they are the most frequently diagnosed tumours in adolescents (mainly skin tumours, carcinoids of the appendix and thyroid carcinomas).
- Neuroblastomas (IV), retinoblastomas (V), nephroblastomas (VI) and hepatoblastomas (VII) are most frequently diagnosed in infants (age <1 year).
- Germ cell tumours (X) and soft tissue sarcomas (IX) are more frequent in patients younger than 5 years of age and in adolescents. They are less frequently diagnosed in young children and teens between 5 and 15 years of age.
- Malignant bone tumours (VIII) are less frequent under the age of 10 years.
- Analyses from the ACCIS-project⁽²³⁾, have shown an annual increase of 1.1% in childhood cancer incidence in Europe. The data for Belgium reveal a similar result (**Figure 3 and Table 2**).
- Trends by age group (**Figure 4**) reveal no significant trend, however, the annual increase in incidence rates seems to be higher between the age of 5 and 14 year when compared to the other age groups.
 - Since the nineteen sixties, mortality rates have dramatically declined for most cancers (**Figure 5**). The latest decades, the rates decrease annually with 3% in children.
 - The largest decrease in mortality rates is observed for leukaemias and lymphomas (**Figure 6**).
 - In the early sixties, leukaemia accounted for half of all cancer deaths in children and adolescents.
 - In the nineties, malignant central nervous system tumours have become the leading cause of death by cancer in children.
- The last decade, survival rates for cancer in children and adolescents seem to improve slightly (**Figure 7**).
 - A clear increase in survival rates can be observed for leukaemia, neuroblastoma and malignant bone tumours (**Figure 8**).
 - The survival rates for the other cancer types are rather stable over time.

Figure 1 Cancer in children and adolescents by tumour type, Belgium 2004-2013

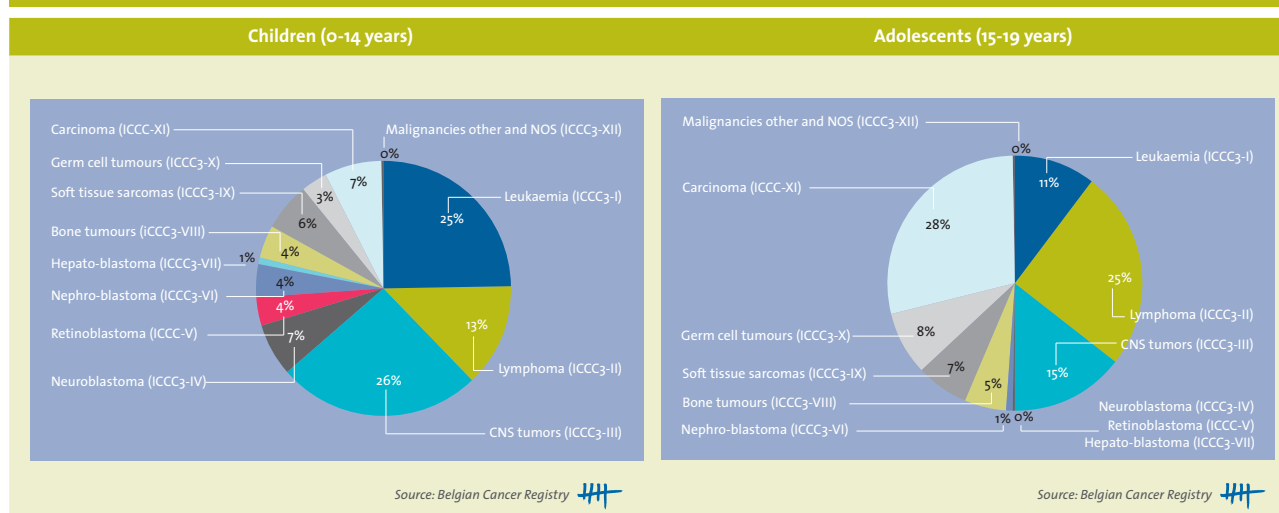


Figure 2 Cancer in children and adolescents: age-specific incidence rates by tumour type, Belgium 2004-2013

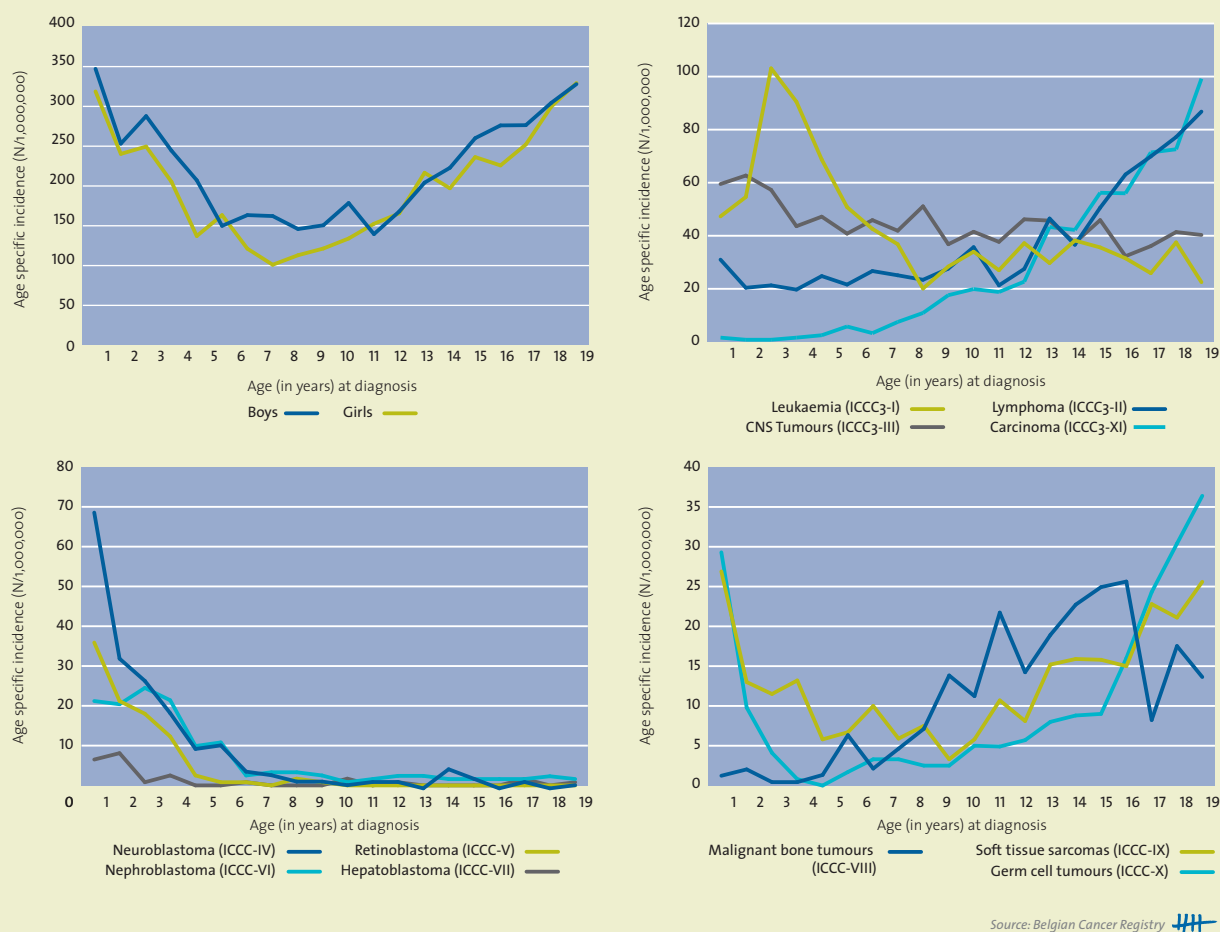


Figure 3 Cancer in children and adolescents: incidence and mortality by sex, Belgium 2004-2013.

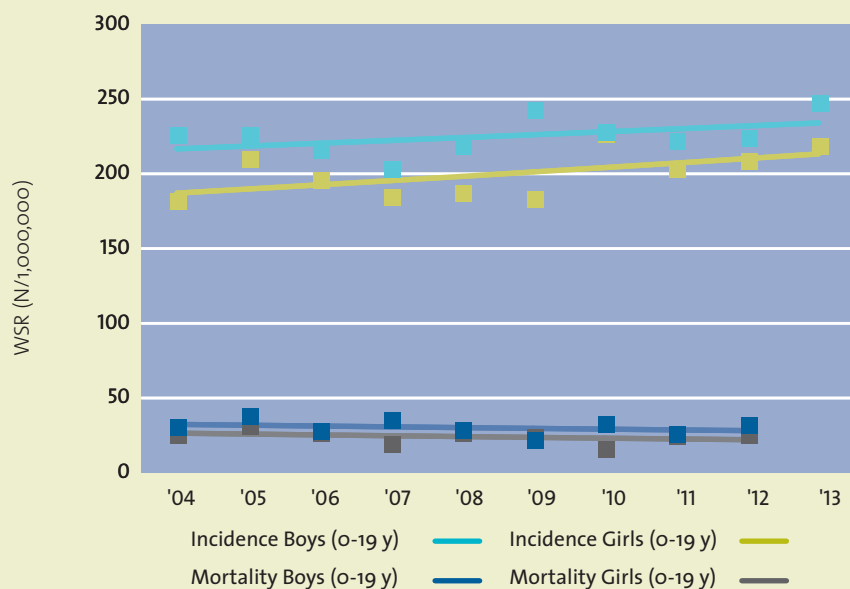


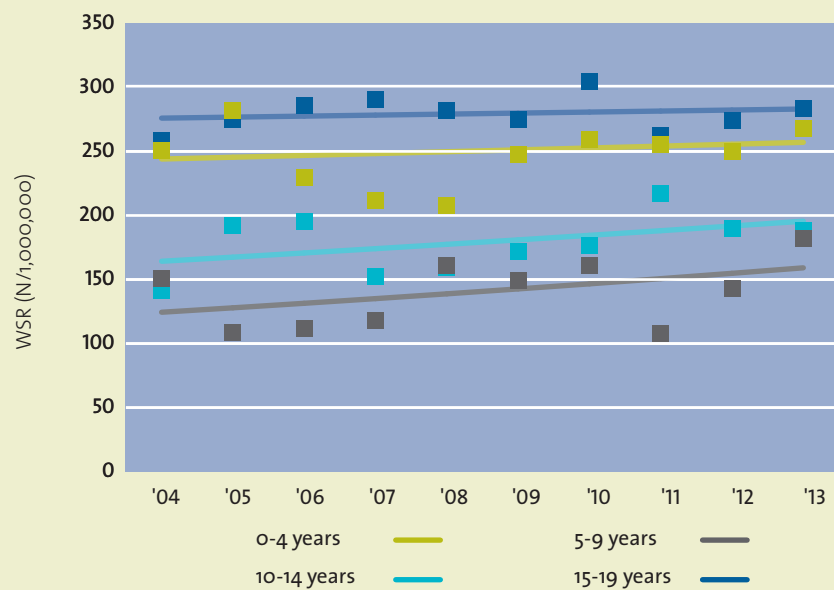
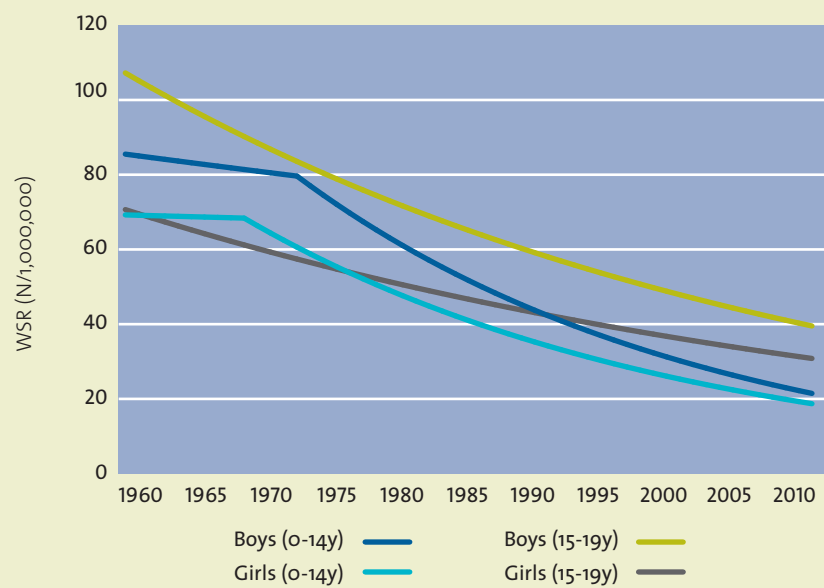

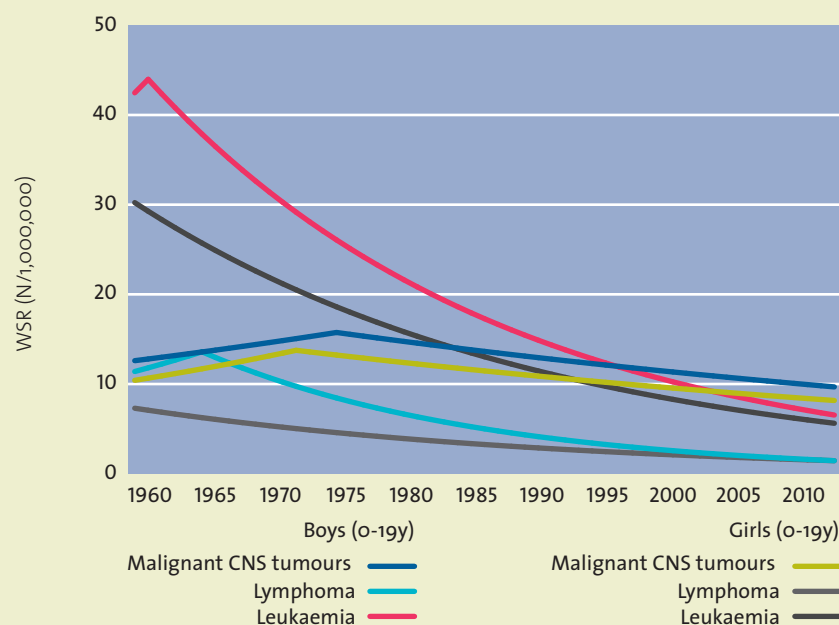
Figure 4 Cancer in children and adolescents: incidence by age group, Belgium 2004-2013.Source: Belgian Cancer Registry **Figure 5** Cancer in children and adolescents: mortality by sex and age group, Belgium 1960-2012.Source: Belgian Cancer Registry 

Figure 6 Cancer in children and adolescents: mortality by sex and histology, Belgium 1960-2012.

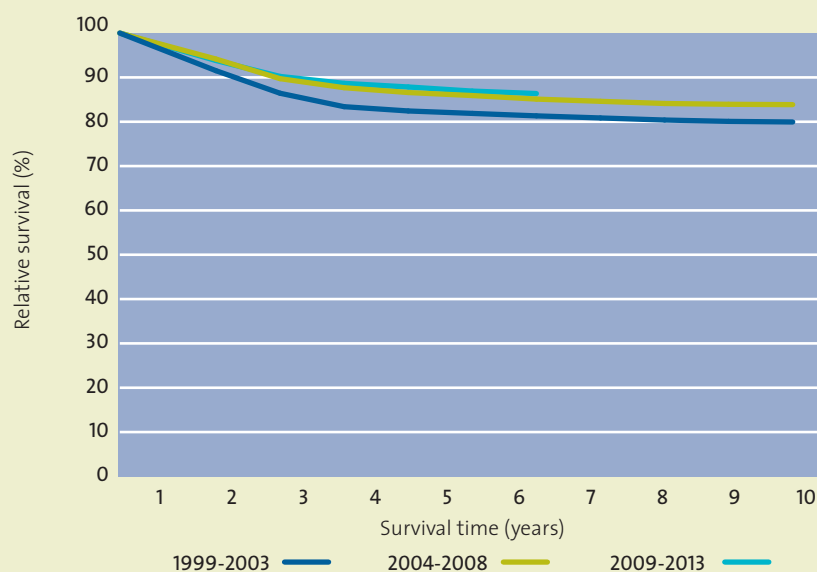
Source: Belgian Cancer Registry

Table 2 Cancer in children and adolescents: AAPC(%) by sex, histology and age group in Belgium

Incidence (2004-2013)	AAPC(%)	95%CI
Boys	0.9	[-0.5;2.2]
Girls	1.5	[-0.3;3.3]
Age group	AAPC(%)	95%CI
0-4 years	0.6	[-1.8;3.0]
5-9 years	2.8	[-1.7;7.4]
10-14 years	1.1	[-1.1;5.1]
15-19 years	0.3	[-1.0;1.6]
Mortality (2003-2012)	AAPC(%)	95%CI
Boys	-1.7	[.6.5;3.4]
Girls	-2.2	[-7.2;3.1]
Mortality (1960-2012)	AAPC(%)	95%CI
Children (0-14 year)		
Boys	-3.2	[-3.7;-2.8]
Girls	-3.0	[-3.4;-2.5]
Adolescents (15-19 year)		
Boys	-1.9	[-2.3;-1.5]
Girls	-1.6	[-2.0;-1.2]
Histology (all ages 0-19 years)		
Leukaemia - Boys	-3.7	[-4.1;-3.3]
Leukaemia - Girls	-3.2	[-3.6;-2.8]
Lymphoma - Boys	-4.7	[-5.6;-3.7]
Lymphoma - Girls	-3.1	[-3.8;-2.3]
Malignant CNS tumours - Boys	-1.3	[-2.0;-0.5]
Malignant CNS tumours - Girls	-1.3	[-2.1;-0.5]

AAPC: average annual percentage change

Figure 7 Cancer in children and adolescents: relative survival in Flemish Region 1999-2003 and Belgium 2004-2008, 2009-2013.




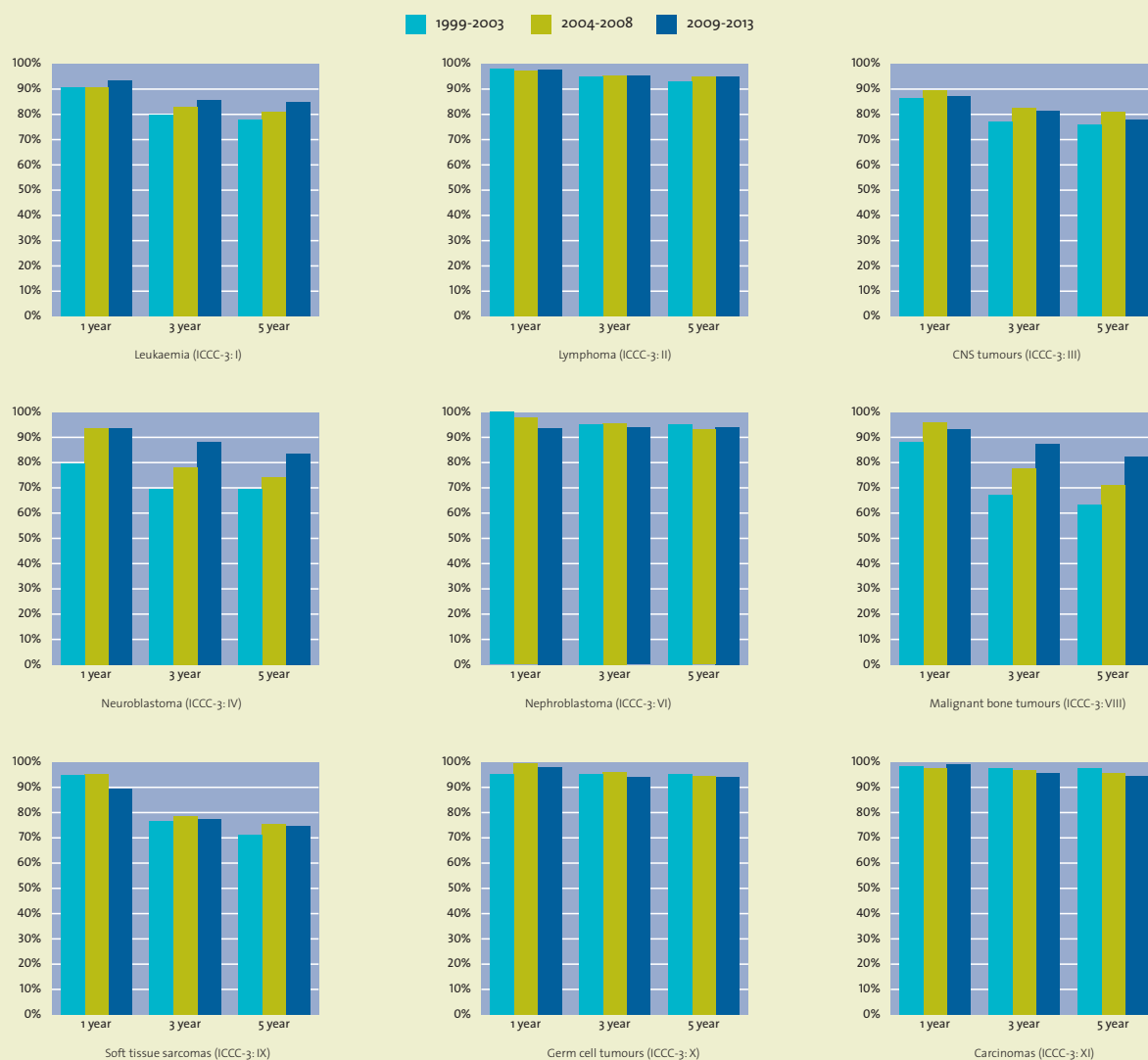

Source: Belgian Cancer Registry 

Figure 8 Cancer in children and adolescents: 1-, 3-, and 5-year relative survival by cancer type, in Flemish Region 1999-2003 and Belgium 2004-2008, 2009-2013.



Source: Belgian Cancer Registry 

Did you know that the BCR also...

- Participates in a project on late effects in childhood cancer survivors funded by Kom op tegen Kanker. In collaboration with pediatric hemato-oncologists and radiation oncologists a registration document was developed. Besides acute and late side effects, information on pathology of the tumour and pre-existing diseases or conditions and received treatment(s) will be collected. The registration of late effects will be repeated every 5 years in an online system.
- Was co-author in the KCE-project on Hadron therapy in children – an update of the scientific evidence for 15 paediatric cancers. Leroy R, Benahmed N, Hulstaert F, Mambourg F, Fairon N, **Van Eycken L**, De Ruysscher D. Health Technology Assessment (HTA) – Brussels: Belgian Health Care Knowledge Centre (KCE). 2015. KCE Reports 235. D/2015/10.273/04. Although there is no doubt that proton therapy reduces the radiation dose to normal tissues and organs, even now, the critical clinical data on the long-term effectiveness and harm associated with the use of proton therapy is lacking. Further reading see:
 - Leroy R, Benahmed N, Hulstaert F, **Van Damme N**, De Ruysscher D. Proton therapy in children – a systematic review of clinical effectiveness in 15 pediatric cancers. International Journal of Radiation Oncology – Biology - Physics – Accepted for publication.
- Collaborates with the WIV/ISP who investigates the possible relationships between the incidence of specific cancer and the vicinity of nuclear sites, with a special attention for the childhood leukaemia. Further reading see:
 - Bollaerts K, Sonck M, Simons K, Fierens S, Poffijn A, Van Bladel L, Geraets D, Gosselin P, Van Oyen H, **Francart J**, Van Nieuwenhuyse A. Thyroid cancer incidence around the Belgian nuclear sites: surrogate exposure modelling. Cancer Epidemiol 2015; 39(1): 48-54.
 - Bollaerts K, Fierens S, Van Bladel L, Simons K, Sonck M, Poffijn A, Geraets D, Gosselin P, Van Oyen H, **Francart J**, Van Nieuwenhuyse A. Thyroid cancer incidence in the vicinity of nuclear sites in Belgium, 2000-2008. Thyroid 2014; 24 (5): 906-917.

!!Key note for registration:

Try to specify as much as possible

- **Leukaemia, myeloproliferative and myelodysplastic syndromes**
 - Most frequent is ALL (Acute Lymphatic Leukaemia) for which a lot of new codes are introduced in 2011 (update ICD-O-3) to specify the different entities.
 - AML (Acute Myeloid Leukaemia) is less frequent (specific codes to obtain by using the FAB classification e.g. AML FAB M1= 9873/3).
- **Langerhans cell histiocytosis**
 - To be coded with 9751/3 for all types: 9751/3 replaces the former 9751/1 through 9754/3 codes.
- **Lymphoma**
 - Hodgkin lymphoma is the most frequent lymphoma-subtype in children and adolescents; try to indicate the specific type of Hodgkin's disease by using a more specific code since prognosis depends on the morphological subtype.
- **Central nervous system**
 - Specification can result in another behaviour. E.g. Astrocytoma, NOS 9400/3; Pilocytic astrocytoma 9421/1.
- **Sympathetic nerve tumours**
 - Neuroblastoma (9500/3) is the most frequent tumour of the Sympathetic Nerve System.
 - Pheochromocytoma 8700/3, always behaviour/3.
 - Paraganglioma 8680/3, always behaviour/3.
- **Retinoblastoma**
 - Laterality is important; bilateral retinoblastomas (e.g. in case of inheritable form of retinoblastoma) ask for two distinct registrations.
- **Renal tumours**
 - Mainly Nephroblastoma (Wilms tumour) 8960/3.
- **Hepatic tumours**
 - In essence Hepatoblastoma 8970/3.
- **Soft tissue**
 - Before the age of 10 years, mostly Rhabdomyosarcoma 8900/3 which can be further specified e.g. 8910/3 for embryonal rhabdomyosarcoma, 8920/3 for alveolar rhabdomyosarcoma,...
- **Germ cell tumours**
 - The germ cell tumours of the infant can be found in any organ, not only in the gonads.
- **Skin tumours**
 - Basal cell carcinomas 8090/3 of children are to be registered.
- **Small round blue cell tumours**
 - 8803/3: use this code, meaning "small cell sarcoma OR round cell sarcoma" if the diagnosis cannot be more specified (frequent differential diagnostic problem due to undifferentiated or primitive character of these tumours)
 - 9260/3: skeletal Ewing sarcoma or Ewing sarcoma of the bone
 - 9364/3: extraskeletal Ewing sarcoma or PPNET (Peripheral Primitive Neuro Ectodermal Tumour)
 - 9473/3: central PNET (central Primitive Neuro Ectodermal Tumour) or PNET of the brain

3.13 RARE CANCERS

The project Surveillance of Rare Cancers in Europe (RARECARE) estimated that around 4 million people in the European Union (EU) are affected by rare cancers. Despite the rarity of each of the 186 identified rare cancers, they represent all together about 22% of all cancer cases diagnosed in the EU27 each year (23).

This chapter provides an up to date overview of the rare cancer burden in Belgium. To identify rare cancers, we used the disease entities as defined by RARECARE. For more information on rare cancers and the ICD-O definitions used to identify the different disease entities, the reader is referred to the website of RareCareNet (www.rarecarenet.eu).

Label	Layer		Belgium (2009-2013)		Flemish Region (2009-2013)		Brussels Capital Region (2009-2013)		Walloon Region (2009-2013)	
Head and neck	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF NASAL CAVITY AND SINUSES	1	R	346	0.63	208	0.66	35	0.63	103	0.58
Squamous cell carcinoma with variants of nasal cavity and sinuses	2	R	220	0.40	117	0.37	31	0.56	72	0.41
Lymphoepithelial carcinoma of nasal cavity and sinuses	2	R	5	0.01	4	0.01	1	0.02	-	-
Undifferentiated carcinoma of nasal cavity and sinuses	2	R	26	0.05	18	0.06	1	0.02	7	0.04
Intestinal type adenocarcinoma of nasal cavity and sinuses	2	R	80	0.15	58	0.18	2	0.04	20	0.11
EPITHELIAL TUMOURS OF NASOPHARYNX	1	R	303	0.55	146	0.46	62	1.11	95	0.54
Squamous cell carcinoma with variants of nasopharynx	2	R	290	0.53	144	0.46	57	1.02	89	0.51
Papillary adenocarcinoma of nasopharynx	2	R	2	0.00	-	-	1	0.02	1	0.01
EPITHELIAL TUMOURS OF MAJOR SALIVARY GLANDS AND SALIVARY-GLAND TYPE TUMOURS	1	R	1,016	1.86	644	2.04	81	1.45	291	1.65
Epithelial tumours of major salivary glands	2	R	702	1.28	430	1.37	56	1.01	216	1.23
Salivary gland type tumours of head and neck	2	R	314	0.57	214	0.68	25	0.45	75	0.43
EPITHELIAL TUMOURS OF HYPOPHARYNX AND LARYNX	1		4,522	8.27	2,378	7.55	357	6.41	1,787	10.15
Squamous cell carcinoma with variants of hypopharynx	2	R	1,310	2.40	612	1.94	101	1.81	597	3.39
Squamous cell carcinoma with variants of larynx	2	R	3,150	5.76	1,727	5.48	252	4.52	1,171	6.65
EPITHELIAL TUMOURS OF OROPHARYNX	1	R	3,175	5.81	1,612	5.12	291	5.22	1,272	7.22
Squamous cell carcinoma with variants of oropharynx	2	R	3,139	5.74	1,590	5.05	289	5.19	1,260	7.16
EPITHELIAL TUMOURS OF ORAL CAVITY AND LIP	1	R	3,317	6.07	1,813	5.76	280	5.03	1,224	6.95
Squamous cell carcinoma with variants of oral cavity	2	R	2,955	5.40	1,551	4.92	250	4.49	1,154	6.55
Squamous cell carcinoma with variants of lip	2	R	347	0.63	252	0.80	29	0.52	66	0.37
EPITHELIAL TUMOURS OF MIDDLE EAR	1	R	15	0.03	9	0.03	1	0.02	5	0.03
Squamous cell carcinoma with variants of middle ear	2	R	11	0.02	6	0.02	1	0.02	4	0.02
Adenocarcinoma with variants of middle ear	2	R	4	0.01	3	0.01	-	-	1	0.01
Digestive tract	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF OESOPHAGUS	1		4,710	8.61	2,730	8.67	345	6.19	1,635	9.29
Squamous cell carcinoma with variants of oesophagus	2	R	2,522	4.61	1,257	3.99	236	4.24	1,029	5.84
Adenocarcinoma with variants of oesophagus	2	R	2,103	3.85	1,422	4.51	105	1.88	576	3.27
Salivary gland type tumours of oesophagus	2	R	4	0.01	1	0.00	-	-	3	0.02
Undifferentiated carcinoma of oesophagus	2	R	14	0.03	7	0.02	1	0.02	6	0.03
EPITHELIAL TUMOURS OF STOMACH	1		6,325	11.57	3,945	12.52	562	10.09	1,818	10.32
Adenocarcinoma with variants of stomach	2		6,164	11.27	3,839	12.19	554	9.94	1,771	10.06
Squamous cell carcinoma with variants of stomach	2	R	65	0.12	35	0.11	4	0.07	26	0.15
Salivary gland-type tumours of stomach	2	R	8	0.01	8	0.03	-	-	-	-
Undifferentiated carcinoma of stomach	2	R	16	0.03	10	0.03	1	0.02	5	0.03
EPITHELIAL TUMOURS OF SMALL INTESTINE	1	R	564	1.03	317	1.01	40	0.72	207	1.18
Adenocarcinoma with variants of small intestine	2	R	540	0.99	303	0.96	40	0.72	197	1.12
Squamous cell carcinoma with variants of small intestine	2	R	4	0.01	3	0.01	-	-	1	0.01
EPITHELIAL TUMOURS OF COLON	1		29,408	53.78	18,535	58.84	2,294	41.18	8,579	48.72
Adenocarcinoma with variants of colon	2		28,870	52.80	18,161	57.65	2,253	40.44	8,456	48.02
Squamous cell carcinoma with variants of colon	2	R	3	0.01	3	0.01	-	-	-	-
Fibromyxoma and low grade mucinous adenocarcinoma (pseudomixoma peritonei) of the appendix	2	R	152	0.28	103	0.33	21	0.38	28	0.16
EPITHELIAL TUMOURS OF RECTUM	1		11,757	21.50	7,431	23.59	776	13.93	3,550	20.16
Adenocarcinoma with variants of rectum	2		11,669	21.34	7,381	23.43	764	13.71	3,524	20.01
Squamous cell carcinoma with variants of rectum	2	R	36	0.07	15	0.05	10	0.18	11	0.06

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EPITHELIAL TUMOURS OF ANAL CANAL	1	R	789	1.44	388	1.23	105	1.88	296	1.68
Squamous cell carcinoma with variants of anal canal	2	R	635	1.16	290	0.92	92	1.65	253	1.44
Adenocarcinoma with variants of anal canal	2	R	143	0.26	91	0.29	11	0.20	41	0.23
Paget's disease of anal canal	2	R	-	-	-	-	-	-	-	-
EPITHELIAL TUMOURS OF PANCREAS	1		7,056	12.90	4,001	12.70	624	11.20	2,431	13.81
Adenocarcinoma with variants of pancreas	2		5,865	10.73	3,162	10.04	554	9.94	2,149	12.20
Squamous cell carcinoma with variants of pancreas	2	R	12	0.02	4	0.01	1	0.02	7	0.04
Acinar cell carcinoma of pancreas	2	R	35	0.06	20	0.06	-	-	15	0.09
Mucinous cystadenocarcinoma of pancreas	2	R	21	0.04	12	0.04	-	-	9	0.05
Invasive intraductal papillary mucinous carcinoma of pancreas	2	R	52	0.10	27	0.09	6	0.11	19	0.11
Solid pseudopapillary carcinoma of pancreas	2	R	10	0.02	4	0.01	-	-	6	0.03
Serous cystadenocarcinoma of pancreas	2	R	-	-	-	-	-	-	-	-
Carcinoma with osteoclast-like giant cells of pancreas	2	R	7	0.01	3	0.01	-	-	4	0.02
EPITHELIAL TUMOURS OF LIVER AND INTRAHEPATIC BILE TRACT (IBT)	1		3,704	6.77	1,857	5.90	407	7.31	1,440	8.18
Hepatocellular carcinoma of Liver and IBT	2	R	2,755	5.04	1,308	4.15	338	6.07	1,109	6.30
Hepatocellular carcinoma;fibrolamellar	2	R	21	0.04	16	0.05	1	0.02	4	0.02
Cholangiocarcinoma of IBT	2	R	685	1.25	375	1.19	59	1.06	251	1.43
Adenocarcinoma with variants of liver and IBT	2	R	60	0.11	45	0.14	4	0.07	11	0.06
Undifferentiated carcinoma of liver and IBT	2	R	-	-	-	-	-	-	-	-
Squamous cell carcinoma with variants of liver and IBT	2	R	-	-	-	-	-	-	-	-
Bile duct cystadenocarcinoma of IBT	2	R	3	0.01	2	0.01	-	-	1	0.01
EPITHELIAL TUMOURS OF GALLBLADDER AND EXTRAHEPATIC BILIARY TRACT (EBT)	1	R	1,918	3.51	1,127	3.58	178	3.20	613	3.48
Adenocarcinoma with variants of gallbladder	2	R	489	0.89	297	0.94	46	0.83	146	0.83
Adenocarcinoma with variants of EBT	2	R	1,188	2.17	649	2.06	123	2.21	416	2.36
Squamous cell carcinoma of gallbladder and EBT	2	R	15	0.03	10	0.03	-	-	5	0.03
Intrathoracic tumours	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOUR OF TRACHEA	1	R	55	0.10	28	0.09	6	0.11	21	0.12
Squamous cell carcinoma with variants of trachea	2	R	45	0.08	23	0.07	4	0.07	18	0.10
Adenocarcinoma with variants of trachea	2	R	4	0.01	2	0.01	1	0.02	1	0.01
Salivary gland type tumours of trachea	2	R	6	0.01	3	0.01	1	0.02	2	0.01
EPITHELIAL TUMOUR OF LUNG	1		39,326	71.92	22,702	72.07	3,025	54.30	13,599	77.23
Squamous cell carcinoma with variants of lung	2		9,502	17.38	5,664	17.98	650	11.67	3,188	18.10
Adenocarcinoma with variants of lung	2		16,511	30.20	9,047	28.72	1,554	27.90	5,910	33.56
Adenosquamous carcinoma of lung	2	R	271	0.50	159	0.50	12	0.22	100	0.57
Large cell carcinoma of lung	2	R	1,732	3.17	1,085	3.44	115	2.06	532	3.02
Poorly differentiated endocrine carcinoma of lung	2		6,200	11.34	3,617	11.48	442	7.93	2,141	12.16
Salivary gland type tumours of lung	2	R	45	0.08	33	0.10	4	0.07	8	0.05
Sarcomatoid carcinoma of lung	2	R	148	0.27	66	0.21	13	0.23	69	0.39
EPITHELIAL TUMOURS OF THYMUS	1	R	172	0.31	109	0.35	17	0.31	46	0.26
Malignant thymoma	2	R	139	0.25	87	0.28	15	0.27	37	0.21
Squamous cell carcinoma of thymus	2	R	22	0.04	13	0.04	2	0.04	7	0.04
Undifferentiated carcinoma of thymus	2	R	1	0.00	1	0.00	-	-	-	-
Lymphoepithelial carcinoma of thymus	2	R	-	-	-	-	-	-	-	-
Adenocarcinoma with variants of thymus	2	R	1	0.00	1	0.00	-	-	-	-
MALIGNANT MESOTHELIOMA	1	R	1,323	2.42	936	2.97	53	0.95	334	1.90
Mesothelioma of pleura and pericardium	2	R	1,205	2.20	848	2.69	47	0.84	310	1.76
Mesothelioma of peritoneum and tunica vaginalis	2	R	5	0.01	3	0.01	-	-	2	0.01
Breast	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF BREAST	1		51,472	94.13	29,734	94.39	4,653	83.53	17,085	97.02
Invasive ductal carcinoma of breast	2		40,184	144.20	23,173	145.28	3,578	124.64	13,433	148.49
Invasive lobular carcinoma of breast	2		7,038	25.26	4,041	25.34	693	24.14	2,304	25.47
Mammary Paget's disease of breast	2	R	167	0.60	91	0.57	15	0.52	61	0.67
Special types of adenocarcinoma of breast	2	R	931	3.34	579	3.63	73	2.54	279	3.08
Metaplastic carcinoma of breast	2	R	187	0.67	126	0.79	12	0.42	49	0.54
Salivary gland type tumours of breast	2	R	32	0.11	22	0.14	1	0.03	9	0.10
Epithelial tumour of male breast	2	R	417	1.56	238	1.53	36	1.33	143	1.67

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Female genital organs	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF CORPUS UTERI	1		6,838	24.54	4,173	26.16	511	17.80	2,154	23.81
Adenocarcinoma with variants of corpus uteri	2		5,835	20.94	3,530	22.13	447	15.57	1,858	20.54
Squamous cell carcinoma with variants of corpus uteri	2	R	15	0.05	7	0.04	1	0.03	7	0.08
Adenoid cystic carcinoma of corpus uteri	2	R	-	-	-	-	-	-	-	-
Clear cell adenocarcinoma, NOS	2	R	117	0.42	86	0.54	5	0.17	26	0.29
Serous (papillary) carcinoma	2	R	453	1.63	284	1.78	33	1.15	136	1.50
Mullerian mixed tumour	2	R	315	1.13	200	1.25	17	0.59	98	1.08
Small cell carcinoma ≠ NET	2		New morphology. ICD-O code not available							
EPITHELIAL TUMOURS OF CERVIX UTERI	1		3,101	11.13	1,686	10.57	327	11.39	1,088	12.03
Squamous cell carcinoma with variants of cervix uteri	2	R	2,436	8.74	1,329	8.33	268	9.34	839	9.27
Adenocarcinoma with variants of cervix uteri	2	R	540	1.94	286	1.79	44	1.53	210	2.32
Undifferentiated carcinoma of cervix uteri	2	R	7	0.03	2	0.01	1	0.03	4	0.04
Mullerian mixed tumour of cervix uteri	2	R	8	0.03	6	0.04	-	-	2	0.02
Small cell carcinoma ≠ NET	2		New morphology. ICD-O code not available							
EPITHELIAL TUMOURS OF OVARY AND FALLOPIAN TUBE	1		4,194	15.05	2,508	15.72	328	11.43	1,358	15.01
Adenocarcinoma with variants of ovary	2	R	3,138	11.26	1,850	11.60	264	9.20	1,024	11.32
Mucinous adenocarcinoma of ovary	2	R	301	1.08	189	1.18	25	0.87	87	0.96
Clear cell adenocarcinoma of ovary	2	R	134	0.48	100	0.63	8	0.28	26	0.29
Primary peritoneal serous/papillary carcinoma	2	R	112	0.40	53	0.33	10	0.35	49	0.54
Mullerian mixed tumour of ovary	2	R	78	0.28	47	0.29	7	0.24	24	0.27
Small cell ≠ NET	2		New morphology. ICD-O code not available							
Adenocarcinoma with variants of fallopian tube	2	R	193	0.69	119	0.75	8	0.28	66	0.73
NON EPITHELIAL TUMOURS OF OVARY	1	R	107	0.38	61	0.38	14	0.49	32	0.35
Sex cord tumours of ovary	2	R	25	0.09	13	0.08	5	0.17	7	0.08
Malignant/Immature teratomas of ovary	2	R	38	0.14	21	0.13	6	0.21	11	0.12
Germ cell tumour of ovary	2	R	44	0.16	27	0.17	3	0.10	14	0.15
EPITHELIAL TUMOURS OF VULVA AND VAGINA	1	R	1,283	4.60	755	4.73	113	3.94	415	4.59
Squamous cell carcinoma with variants of vulva and vagina	2	R	1,183	4.25	692	4.34	104	3.62	387	4.28
Adenocarcinoma with variants of vulva and vagina	2	R	43	0.15	33	0.21	3	0.10	7	0.08
Paget's disease of vulva and vagina	2	R	34	0.12	14	0.09	4	0.14	16	0.18
Undifferentiated carcinoma of vulva and vagina	2	R	1	0.00	1	0.01	-	-	-	-
TROPHOBLASTIC TUMOUR OF PLACENTA	1	R	37	0.13	21	0.13	5	0.17	11	0.12
Choriocarcinoma of placenta	2	R	35	0.13	20	0.13	5	0.17	10	0.11
Male genital organs	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF PROSTATE	1		42,687	159.21	27,786	178.69	2,843	105.30	12,058	140.82
Adenocarcinoma with variants of prostate	2		42,271	157.65	27,482	176.73	2,819	104.41	11,970	139.79
Squamous cell carcinoma with variants of prostate	2	R	3	0.01	1	0.01	-	-	2	0.02
Infiltrating duct carcinoma of prostate	2	R	134	0.50	109	0.70	4	0.15	21	0.25
Transitional cell carcinoma of prostate	2	R	-	-	-	-	-	-	-	-
Salivary gland type tumours of prostate	2	R	3	0.01	2	0.01	-	-	1	0.01
TESTICULAR AND PARATESTICULAR CANCERS	1	R	1,682	6.27	923	5.94	133	4.93	626	7.31
Paratesticular adenocarcinoma with variants	2	R	4	0.01	3	0.02	-	-	1	0.01
Non seminomatous testicular cancer	2	R	730	2.72	426	2.74	60	2.22	244	2.85
Seminomatous testicular cancer	2	R	892	3.33	469	3.02	68	2.52	355	4.15
Spermatocytic seminoma	2	R	22	0.08	8	0.05	4	0.15	10	0.12
Teratoma with malignant transformation	2	R	3	0.01	2	0.01	-	-	1	0.01
Testicular sex cord cancer	2	R	17	0.06	7	0.05	1	0.04	9	0.11
EPITHELIAL TUMOURS OF PENIS	1	R	431	1.61	247	1.59	34	1.26	150	1.75
Squamous cell carcinoma with variants of penis	2	R	429	1.60	246	1.58	34	1.26	149	1.74
Adenocarcinoma with variants of penis	2	R	2	0.01	1	0.01	-	-	1	0.01
Urinary tract	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF KIDNEY	1		7,891	14.43	5,053	16.04	562	10.09	2,276	12.93
Renal cell carcinoma with variants	2		7,205	13.18	4,540	14.41	534	9.59	2,131	12.10
Squamous cell carcinoma spindle cell type of kidney	2	R	3	0.01	-	-	1	0.02	2	0.01

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Squamous cell carcinoma with variants of kidney	2	R	22	0.04	12	0.04	1	0.02	9	0.05
EPITHELIAL TUMOURS OF PELVIS AND URETER	1	R	1,887	3.45	1,201	3.81	128	2.30	558	3.17
Transitional cell carcinoma of pelvis and ureter	2	R	1,756	3.21	1,101	3.50	121	2.17	534	3.03
Squamous cell carcinoma with variants of pelvis and ureter	2	R	23	0.04	12	0.04	2	0.04	9	0.05
Adenocarcinoma with variants of pelvis and ureter	2	R	12	0.02	7	0.02	1	0.02	4	0.02
EPITHELIAL TUMOURS OF URETHRA	1	R	244	0.45	154	0.49	20	0.36	70	0.40
Transitional cell carcinoma of urethra	2	R	216	0.40	135	0.43	18	0.32	63	0.36
Squamous cell carcinoma with variants of urethra	2	R	17	0.03	12	0.04	1	0.02	4	0.02
Adenocarcinoma with variants of urethra	2	R	10	0.02	7	0.02	1	0.02	2	0.01
EPITHELIAL TUMOURS OF BLADDER	1		11,295	20.66	6,776	21.51	879	15.78	3,640	20.67
Transitional cell carcinoma of bladder	2		10,857	19.86	6,537	20.75	829	14.88	3,491	19.83
Squamous cell carcinoma with variants of bladder	2	R	192	0.35	87	0.28	30	0.54	75	0.43
Adenocarcinoma with variants of bladder	2	R	136	0.25	80	0.25	11	0.20	45	0.26
Salivary gland type tumours of bladder	2	R	-	-	-	-	-	-	-	-
Central nervous system	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF EYE AND ADNEXA	1	R	24	0.04	18	0.06	1	0.02	5	0.03
Squamous cell carcinoma with variants of eye and adnexa	2	R	19	0.03	13	0.04	1	0.02	5	0.03
Adenocarcinoma with variants of eye and adnexa	2	R	5	0.01	5	0.02	-	-	-	-
TUMOURS OF CENTRAL NERVOUS SYSTEM (CNS)	1		3,934	7.19	2,398	7.61	337	6.05	1,199	6.81
Astrocytic tumours of CNS	2	R	3,275	5.99	1,991	6.32	269	4.83	1,015	5.76
Oligodendroglial tumours of CNS	2	R	312	0.57	190	0.60	34	0.61	88	0.50
Ependymal tumours of CNS	2	R	171	0.31	106	0.34	19	0.34	46	0.26
Neuronal and mixed neuronal-glial tumors	2	R	5	0.01	4	0.01	-	-	1	0.01
Choroid plexus carcinoma of CNS	2	R	5	0.01	1	0.00	1	0.02	3	0.02
Malignant meningiomas	2	R	58	0.11	31	0.10	4	0.07	23	0.13
EMBRYONAL TUMORS OF CNS	1	R	176	0.32	89	0.28	26	0.47	61	0.35
Embryonal tumors of CNS	2	R	176	0.32	89	0.28	26	0.47	61	0.35
Malignant melanoma	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
MALIGNANT SKIN MELANOMA	1		11,203	20.49	6,521	20.70	975	17.50	3,707	21.05
Malignant skin melanoma	2		11,203	20.49	6,521	20.70	975	17.50	3,707	21.05
MALIGNANT MELANOMA OF MUCOSA AND EXTRACUTANEOUS	1	R	118	0.22	81	0.26	6	0.11	31	0.18
Malignant melanoma of mucosa and extracutaneous	2	R	118	0.22	81	0.26	6	0.11	31	0.18
MALIGNANT MELANOMA OF UVEA	1	R	425	0.78	266	0.84	31	0.56	128	0.73
Malignant melanoma of uvea	2	R	425	0.78	266	0.84	31	0.56	128	0.73
Non-melanoma skin cancer	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EPITHELIAL TUMOURS OF SKIN	1		111,567	204.04	74,030	235.01	8,828	158.47	28,709	163.04
Basal cell carcinoma of skin	2		87,841	160.65	58,903	186.99	6,836	122.71	22,102	125.52
Squamous cell carcinoma with variants of skin	2		23,726	43.39	15,127	48.02	1,992	35.76	6,607	37.52
ADNEXAL CARCINOMA OF SKIN	1	R	426	0.78	248	0.79	46	0.83	132	0.75
Adnexal carcinoma of skin	2	R	426	0.78	248	0.79	46	0.83	132	0.75
Embryonal tumours	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
NEUROBLASTOMA AND GANGLIONEUROBLASTOMA	1	R	103	0.19	57	0.18	15	0.27	31	0.18
Neuroblastoma and ganglioneuroblastoma	2	R	103	0.19	57	0.18	15	0.27	31	0.18
NEPHROBLASTOMA	1	R	75	0.14	38	0.12	12	0.22	25	0.14
Nephroblastoma	2	R	75	0.14	38	0.12	12	0.22	25	0.14
RETINOBLASTOMA	1	R	66	0.12	39	0.12	10	0.18	17	0.10
Retinoblastoma	2	R	66	0.12	39	0.12	10	0.18	17	0.10
HEPATOBLASTOMA	1	R	17	0.03	5	0.02	2	0.04	10	0.06
Hepatoblastoma	2	R	17	0.03	5	0.02	2	0.04	10	0.06
PLEUROPULMONARY BLASTOMA	1	R	-	-	-	-	-	-	-	-
Pleuropulmonary blastoma	2	R	-	-	-	-	-	-	-	-
PANCREATOBLASTOMA	1	R	-	-	-	-	-	-	-	-
Pancreatoblastoma	2	R	-	-	-	-	-	-	-	-
OLFACTORY NEUROBLASTOMA	1	R	14	0.03	6	0.02	2	0.04	6	0.03
Olfactory neuroblastoma	2	R	14	0.03	6	0.02	2	0.04	6	0.03
ODONTOGENIC MALIGNANT TUMORS	1	R	1	0.00	-	-	1	0.02	-	-
Odontogenic malignant tumours	2	R	1	0.00	-	-	1	0.02	-	-

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	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
Extragenital germ cell	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
EXTRAGONADAL GERM CELL TUMOURS	1	R	83	0.15	44	0.14	8	0.14	31	0.18
Non seminomatous germ cell tumours	2	R	43	0.08	29	0.09	3	0.05	11	0.06
Seminomatous germ cell tumors	2	R	8	0.01	3	0.01	1	0.02	4	0.02
Germ cell tumors of Central Nervous System (CNS)	2	R	30	0.05	11	0.03	3	0.05	16	0.09
Sarcoma	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
SOFT TISSUE SARCOMA	1	R	3,013	5.51	1,823	5.79	282	5.06	908	5.16
Soft tissue sarcoma of head and neck	2	R	115	0.21	58	0.18	13	0.23	44	0.25
Soft tissue sarcoma of limbs	2	R	657	1.20	422	1.34	53	0.95	182	1.03
Soft tissue sarcoma of superficial trunk	2	R	312	0.57	215	0.68	26	0.47	71	0.40
Soft tissue sarcoma of mediastinum	2	R	25	0.05	17	0.05	2	0.04	6	0.03
Soft tissue sarcoma of heart	2	R	10	0.02	9	0.03	1	0.02	-	-
Soft tissue sarcoma of breast	2	R	119	0.22	60	0.19	12	0.22	47	0.27
Soft tissue sarcoma of uterus	2	R	324	0.59	185	0.59	32	0.57	107	0.61
Soft tissue sarcoma of paratestis	2	R	21	0.04	10	0.03	4	0.07	7	0.04
Soft tissue sarcomas of other genitourinary tract (vulva, vagina, ovary, penis, prostate, testis, kidney, renal pelvis, ureter, bladder, urethra)	2	R	125	0.23	72	0.23	12	0.22	41	0.23
Soft tissue sarcoma of viscera	2	R	205	0.37	125	0.40	16	0.29	64	0.36
Soft tissue sarcoma of retroperitoneum and peritoneum	2	R	156	0.29	93	0.30	17	0.31	46	0.26
Soft tissue sarcoma of pelvis	2	R	123	0.22	74	0.23	9	0.16	40	0.23
Soft tissue sarcoma of skin	2	R	505	0.92	305	0.97	54	0.97	146	0.83
Soft tissue sarcoma of paraorbit	2	R	3	0.01	2	0.01	-	-	1	0.01
Soft tissue sarcoma of brain and other parts of the nervous system	2	R	92	0.17	44	0.14	12	0.22	36	0.20
Embryonal rhabdomyosarcoma of soft tissue	2	R	43	0.08	26	0.08	3	0.05	14	0.08
Alveolar rhabdomyosarcoma of soft tissue	2	R	25	0.05	14	0.04	7	0.13	4	0.02
Ewing's sarcoma of soft tissue	2	R	51	0.09	32	0.10	3	0.05	16	0.09
BONE SARCOMA	1	R	541	0.99	328	1.04	67	1.20	146	0.83
Osteogenic sarcoma	2	R	129	0.24	77	0.24	16	0.29	36	0.20
Chondrogenic sarcomas	2	R	195	0.36	119	0.38	22	0.39	54	0.31
Notochordal sarcomas, chordoma	2	R	34	0.06	22	0.07	4	0.07	8	0.05
Vascular sarcomas	2	R	2	0.00	1	0.00	-	-	1	0.01
Ewing's sarcoma	2	R	75	0.14	40	0.13	13	0.23	22	0.12
Epithelial tumours, adamantinoma	2	R	7	0.01	7	0.02	-	-	-	-
Other high grade sarcomas (fibrosarcoma, malignant fibrous histiocytoma)	2	R	7	0.01	5	0.02	1	0.02	1	0.01
GASTROINTESTINAL STROMAL SARCOMA	1	R	1,148	2.10	711	2.26	83	1.49	354	2.01
Gastrointestinal stromal sarcoma	2	R	1,148	2.10	711	2.26	83	1.49	354	2.01
KAPOSI'S SARCOMA	1	R	229	0.42	93	0.30	87	1.56	49	0.28
Kaposi's sarcoma	2	R	229	0.42	93	0.30	87	1.56	49	0.28
Endocrine tumours	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
NEUROENDOCRINE TUMOURS	1	R	4,852	8.87	2,878	9.14	400	7.18	1,574	8.94
Well differentiated not functioning endocrine carcinoma of pancreas and digestive tract	2	R	2,257	4.13	1,342	4.26	157	2.82	758	4.30
Well differentiated functioning endocrine carcinoma of pancreas and digestive tract	2	R	42	0.08	32	0.10	-	-	10	0.06
Poorly differentiated endocrine carcinoma of pancreas and digestive tract	2	R	458	0.84	276	0.88	41	0.74	141	0.80
Mixed endocrine-exocrine carcinoma of pancreas and digestive tract	2	R	9	0.02	6	0.02	-	-	3	0.02
Endocrine carcinoma of thyroid gland	2	R	205	0.37	97	0.31	20	0.36	88	0.50
Neuroendocrine carcinoma of skin	2	R	372	0.68	235	0.75	35	0.63	102	0.58
Typical and atypical carcinoid of the lung	2	R	456	0.83	269	0.85	36	0.65	151	0.86
Neuroendocrine carcinoma of other sites	2	R	816	1.49	478	1.52	90	1.62	248	1.41
Pheochromocytoma, malignant	2	R	150	0.27	97	0.31	14	0.25	39	0.22
Paraganglioma	2	R	80	0.15	40	0.13	7	0.13	33	0.19
CARCINOMAS OF PITUITARY GLAND	1	R	8	0.01	8	0.03	-	-	-	-
Carcinoma of pituitary gland	2	R	8	0.01	8	0.03	-	-	-	-
CARCINOMAS OF THYROID GLAND	1	R	4,350	7.96	1,957	6.21	668	11.99	1,725	9.80
Carcinoma of thyroid gland	2	R	4,350	7.96	1,957	6.21	668	11.99	1,725	9.80
CARCINOMAS OF PARATHYROID GLAND	1	R	13	0.02	7	0.02	1	0.02	5	0.03
Carcinomas of parathyroid gland	2	R	13	0.02	7	0.02	1	0.02	5	0.03
CARCINOMA OF ADRENAL CORTEX	1	R	101	0.18	54	0.17	9	0.16	38	0.22
Carcinoma of adrenal cortex	2	R	101	0.18	54	0.17	9	0.16	38	0.22

Label	Layer		Belgium (2009-2013)		Flemish Region (2009-2013)		Brussels Capital Region (2009-2013)		Walloon Region (2009-2013)	
Haematological malignancies	Layer	R=rare	N	CR	N	CR	N	CR	N	CR
LYMPHOID DISEASES	1		20,578	37.63	12,166	38.62	1,870	33.57	6,542	37.15
Hodgkin lymphoma, classical	2	R	1,480	2.71	821	2.61	175	3.14	484	2.75
Hodgkin lymphoma nodular lymphocyte predominance	2	R	123	0.22	73	0.23	12	0.22	38	0.22
Precursor B/T lymphoblastic leukaemia/ lymphoblastic lymphoma (and Burkitt leukemia/lymphoma)	2	R	810	1.48	446	1.42	90	1.62	274	1.56
T cutaneous lymphoma (Sezary syn, Mycosis fung)	2	R	542	0.99	249	0.79	55	0.99	238	1.35
Other T cell lymphomas and NK cell neoplasms	2	R	749	1.37	459	1.46	77	1.38	213	1.21
Diffuse B lymphoma	2	R	3,861	7.06	2,369	7.52	352	6.32	1,140	6.47
Follicular B lymphoma	2	R	1,831	3.35	1,051	3.34	151	2.71	629	3.57
Hairy cell leukaemia	2	R	217	0.40	142	0.45	16	0.29	59	0.34
Plasmacytoma/Multiple Myeloma (and Heavy chain diseases)	2	R	3,774	6.90	2,247	7.13	342	6.14	1,185	6.73
Other non Hodgkin, Mature B cell lymphoma	2		5,887	10.77	3,500	11.11	488	8.76	1,899	10.78
Mantle cell lymphoma	2	R	622	1.14	385	1.22	47	0.84	190	1.08
Prolymphocytic leukaemia, B cell	2	R	20	0.04	11	0.03	2	0.04	7	0.04
ACUTE MYELOID LEUKEMIA AND RELATED PRECURSOR NEOPLASMS	1	R	2,552	4.67	1,481	4.70	217	3.90	854	4.85
Acute promyelocytic leukemia (AML with t(15;17) with variants	2	R	105	0.19	59	0.19	13	0.23	33	0.19
AML	2	R	2,428	4.44	1,410	4.48	202	3.63	816	4.63
MYELOPROLIFERATIVE NEOPLASMS	1	R	3,433	6.28	2,047	6.50	322	5.78	1,064	6.04
Chronic myeloid leukemia	2	R	796	1.46	412	1.31	99	1.78	285	1.62
Other myeloproliferative neoplasms	2	R	2,610	4.77	1,616	5.13	221	3.97	773	4.39
Mast cell tumour	2	R	27	0.05	19	0.06	2	0.04	6	0.03
MYELOYDYSPLASTIC SYNDROME AND MYELOYDYSPLASTIC/ MYELOPROLIFERATIVE DISEASES	1	R	3,994	7.30	2,238	7.10	321	5.76	1,435	8.15
Myelodysplastic syndrome with 5q syndrome	2	R	61	0.11	34	0.11	6	0.11	21	0.12
Other myelodysplastic syndrome	2	R	3,210	5.87	1,756	5.57	254	4.56	1,200	6.81
Chronic Myelomonocytic leukemia	2	R	426	0.78	236	0.75	42	0.75	148	0.84
Atypical chronic myeloid leukemia BCR/ABL negative	2	R	53	0.10	38	0.12	2	0.04	13	0.07
HISTIOCYTIC AND DENDRITIC CELL NEOPLASMS	1	R	176	0.32	114	0.36	21	0.38	41	0.23
Histiocytic malignancies	2	R	156	0.29	101	0.32	21	0.38	34	0.19
Lymph node accessory cell tumors	2	R	20	0.04	13	0.04	-	-	7	0.04

CR: Crude rate (N/100,000 person years)

Definition of a rare cancer (R): Rare cancers are those with an incidence (CR) < 6/100,000 based on the rarecarenet database (data based on 70 participating European cancer registries, data for 2000-2007). There were 198 rare cancer entities (considering layer 2 only).

This list used here is hierarchically structured in three layers, based on various combinations of ICD-O morphology and topography (see tabblad 'Definitions').

- Layer 1: families of tumours: The first layer denotes the main families of tumours identified according to a consensus-based clinical perspective. This partitioning should be mainly useful for patient referral purposes i.e. it is relevant under the health care organization perspective. A family of tumours generally finds its own referral pattern.
- Layer 2: clinically meaningful tumours: The second layer denotes tumours as relevant from the clinical basically the therapeutic, decision-making perspective. This partitioning should be mainly useful for clinical purposes, e.g. for clinical studies, etc.
- Layer 3: tumour entities (not included in this presentation). The third layer enlists the separate WHO (blue book) entities.
- Reference: www.rarecarenet.eu/rarecarenet/index.php/cancerlist

Did you know that the BCR also...

- Investigated 11 selected rare cancers with the financial support of Kom op tegen Kanker. This resulted in a report 'Rare cancers in the Flemish Region' – Editorial team: **Schillemans V, Kris Henau, De Schutter H, Calay F, Vande Putte P, Delbar J, Vandeven J, Silversmit G, De Gendt C, Francart J, Emmerechts E, Van Eycken L** - Further reading see http://www.kankerregister.org/Zeldzame_tumoren - www.registreducancer.org/Tumeurs_rares.

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