10 years
Belgian Cancer Registry

TRENDS
INCIDENCE
SURVIVAL
PREVALENCE
MORTALITY
PROJECTIONS

# **Cancer Burden** in Belgium

| | |
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| 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 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.

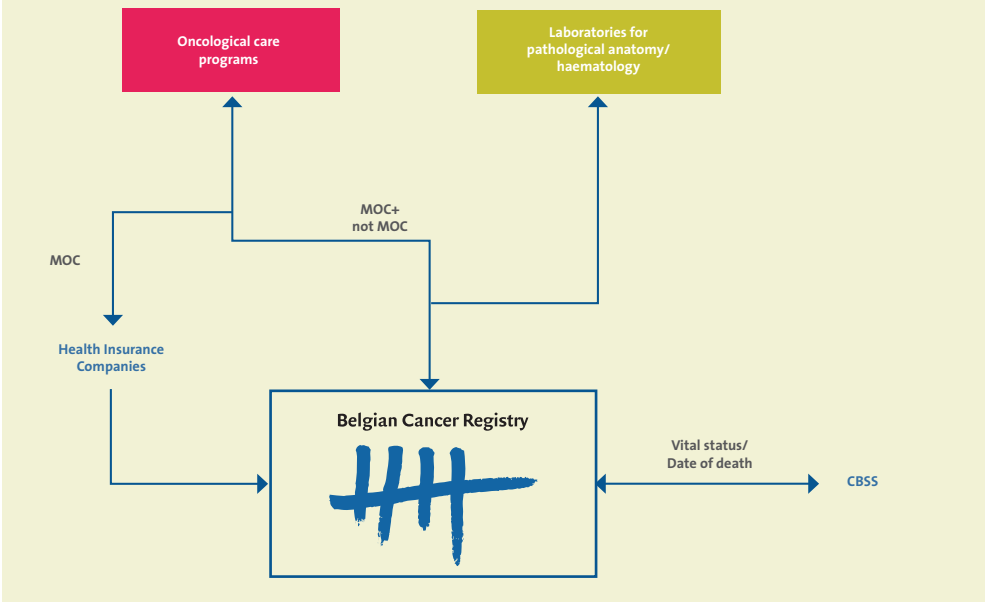
*Dr. Liesbet Van Eycken*
*Director*

# 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.

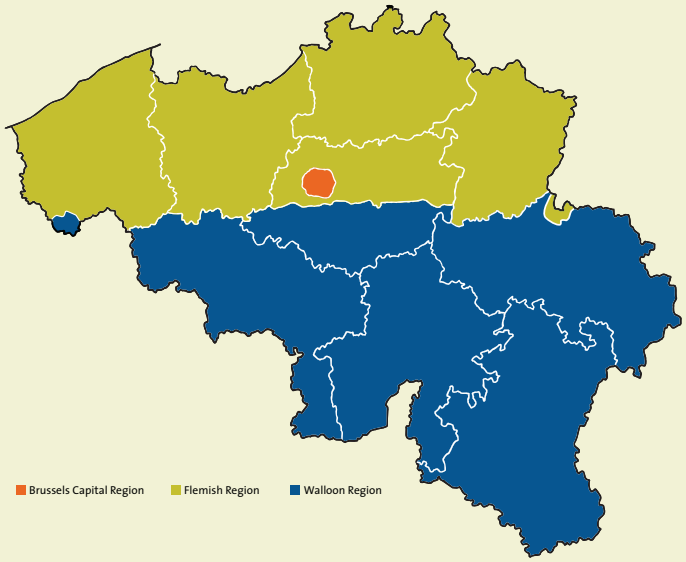
## 1.2 Population and region

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].

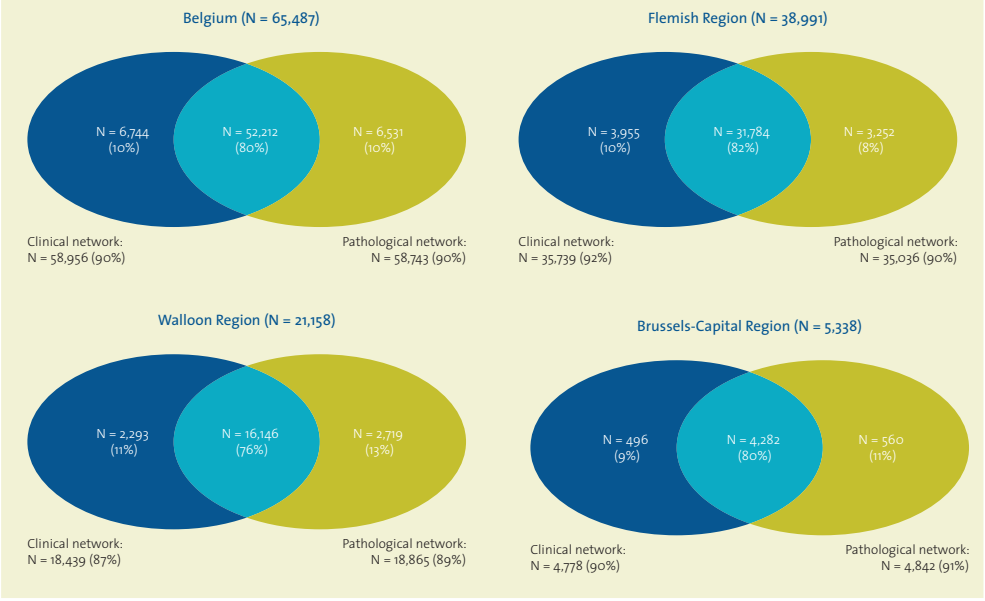
Overall completeness is routinely evaluated using the independent data set method. Record linkage with datasets for rectal, breast, head and neck and prostate cancer resulted in an overlap between 98.6% and 100%[1]. A more recent evaluation, using data from a multicentre prospective registration project 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.

**Figure 3** Invasive tumours, excl. non melanoma skin cancer: combination of notifications by source type and region, 2013




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-C55 | 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% | 91.8% | 91.4% |
| 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

| | | cTNM | | pTNM | | Combined TNM stage | |
|---|---|---|---|---|---|---|---|
| Tumour localisation | Total | N | % | N | % | N | % |
| C00 Lip | 56 | 23 | 41.1% | 35 | 62.5% | 44 | 78.6% |
| C01 Base of tongue | 157 | 138 | 87.9% | 36 | 22.9% | 147 | 93.6% |
| C02 Tongue | 243 | 163 | 67.1% | 168 | 69.1% | 219 | 90.1% |
| C03-C06 Oral cavity | 433 | 312 | 72.1% | 251 | 58.0% | 382 | 88.2% |
| 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 | 93.3% |
| C13 Hypopharynx | 104 | 93 | 89.4% | 20 | 19.2% | 97 | 93.3% |
| C15 Oesophagus | 963 | 707 | 73.4% | 256 | 26.6% | 763 | 79.2% |
| C16 Stomach | 1,306 | 846 | 64.8% | 702 | 53.8% | 1,080 | 82.7% |
| C17 Small intestine | 270 | 98 | 36.3% | 166 | 61.5% | 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% | 1,586 | 65.1% | 2,166 | 88.8% |
| C22-C24 Liver, galbladder and bile ducts | 1,052 | 529 | 50.3% | 282 | 26.8% | 706 | 67.1% |
| 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 | 87.3% |
| 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 | 81.6% | 10,175 | 94.6% |
| 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 | 51.5% | 493 | 78.9% |
| C54 Corpus uteri | 1,321 | 567 | 42.9% | 1,105 | 83.6% | 1,193 | 90.3% |
| C56 Ovary | 753 | 335 | 44.5% | 521 | 69.2% | 657 | 87.3% |
| 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 | 96.2% | 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 | 94.5% |
| 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.ncri.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[1]. 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[5]. 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 km$^2$) 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 | | |
|---|---|---|---|---|---|---|
| Incidence, 2013 | N | CR | WSR | N | CR | WSR |
| 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 | N | CR | WSR | N | CR | WSR |
| 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 | N | CR | WSR | N | CR | WSR |
| 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 | N | CR | WSR | N | CR | WSR |
| 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] |

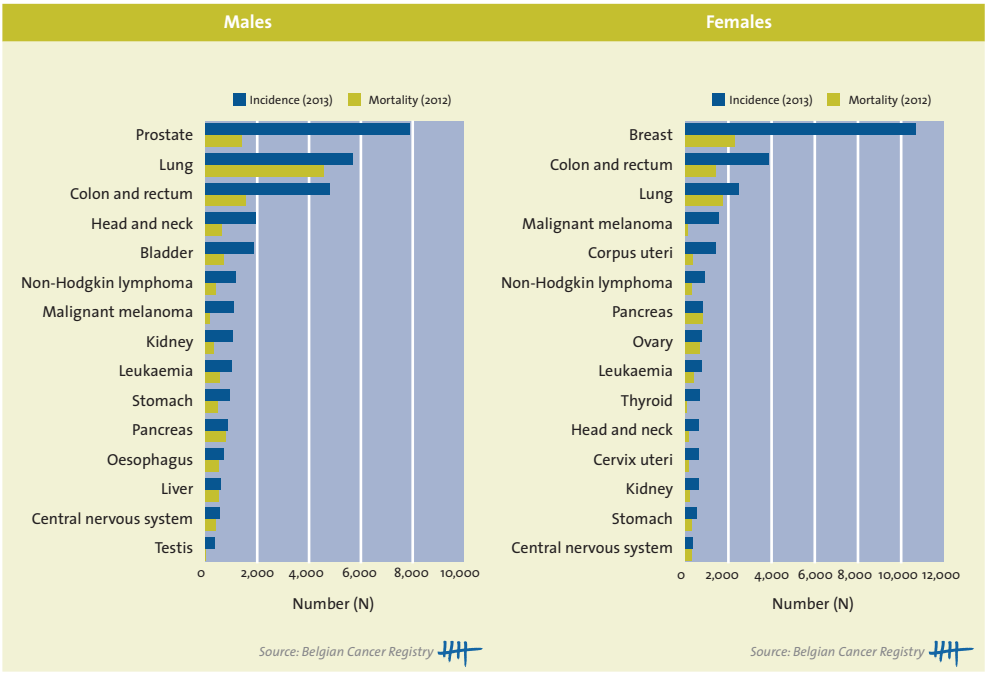
*CR, crude (all ages) rate (N/100,000 person years)*
*WSR, age-standardised rate using the World Standard Population (N/100,000 person years)*

- 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.

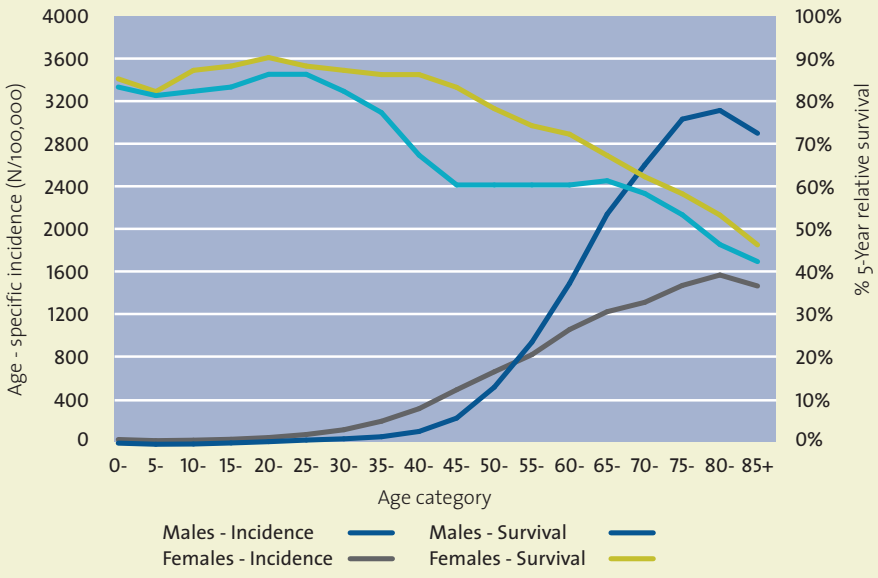
- Males and females show a different risk pattern with age (**Figure 2 and Table 2**).
  - Children and adolescents (0-19 years of age):
    - Cancer is very rare in this age category, they represent less than 1% of the total cancer burden.
    - All sites combined, more childhood cancer cases are registered 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 (C16.0)'. 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 occuring tumours by sex and age group in Belgium

| Boys (0-19y) | N (2013) | 5y-RS(%) | Girls (0-19y) | N (2013) | 5y-RS(%) |
|---|---|---|---|---|---|
| Invasive tumours | 259 | 83.9 | Invasive tumours | 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 | 607 | 86.7 | Invasive tumours | 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 | 1,806 | 69.0 | Invasive tumours | 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 | 15,685 | 61.7 | Invasive tumours | 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 | 16,185 | 53.3 | Invasive tumours | 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

| | Incidence | | | | | | Mortality | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males | | | Females | | | Males | | | Females | | |
| Region | 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 |
| | 1.6 | [0.9:2.2] | 1999-2005 | | | | -2.7 | [-3.0:-2.3] | 1999-2004 | -1.7 | [-2.3:-1.1] | 1999-2004 |
| | -0.8 | [-1.2:-0.3] | 2005-2013 | | | | -1.7 | [-1.9:-1.5] | 2004-2012 | -0.4 | [-0.8:-0.1] | 2004-2012 |
| Brussels-Capital Region | 0.1 | [-0.6:0.8] | 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 |
| | -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 occured, 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

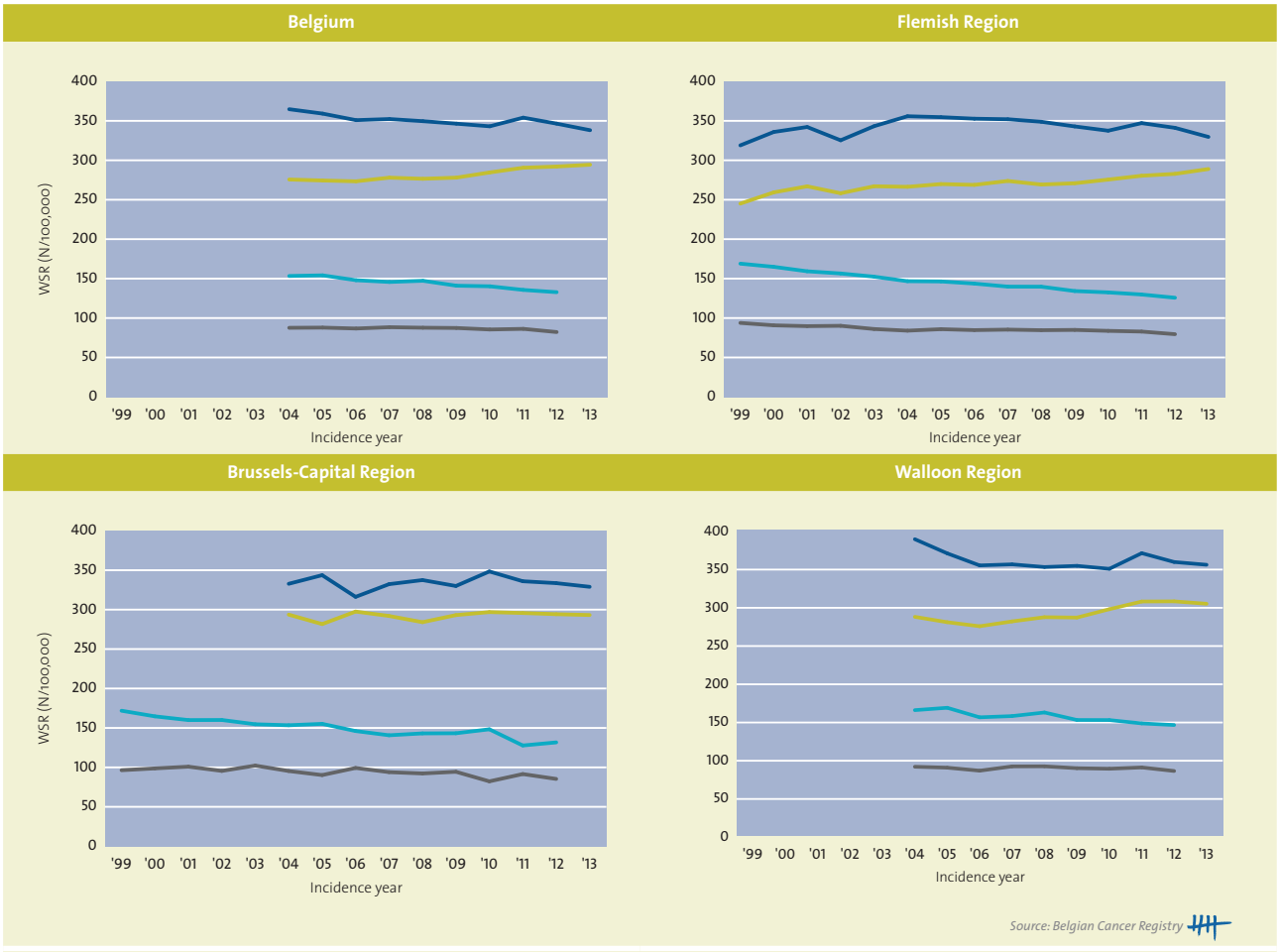
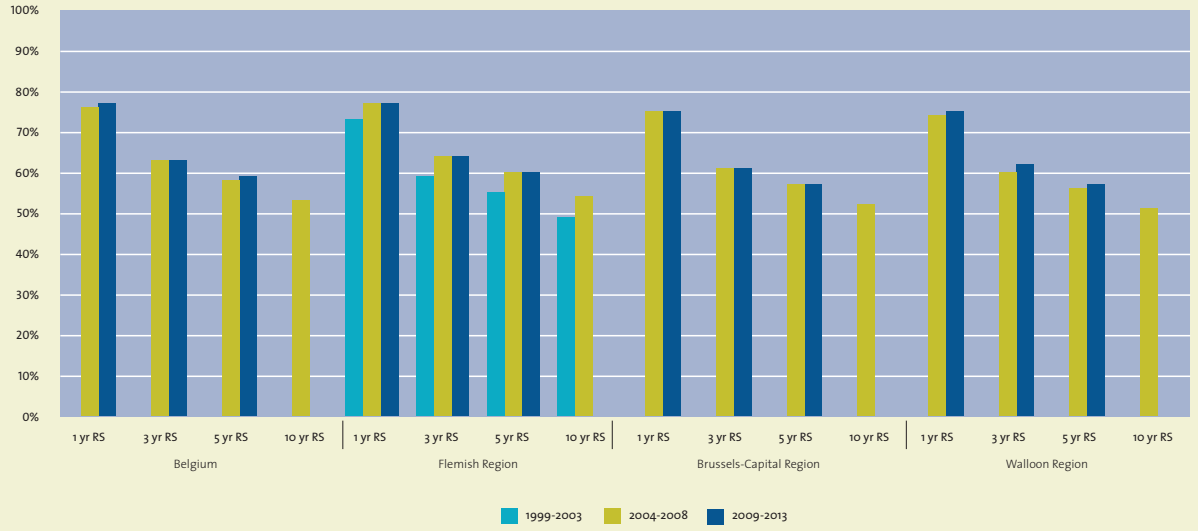


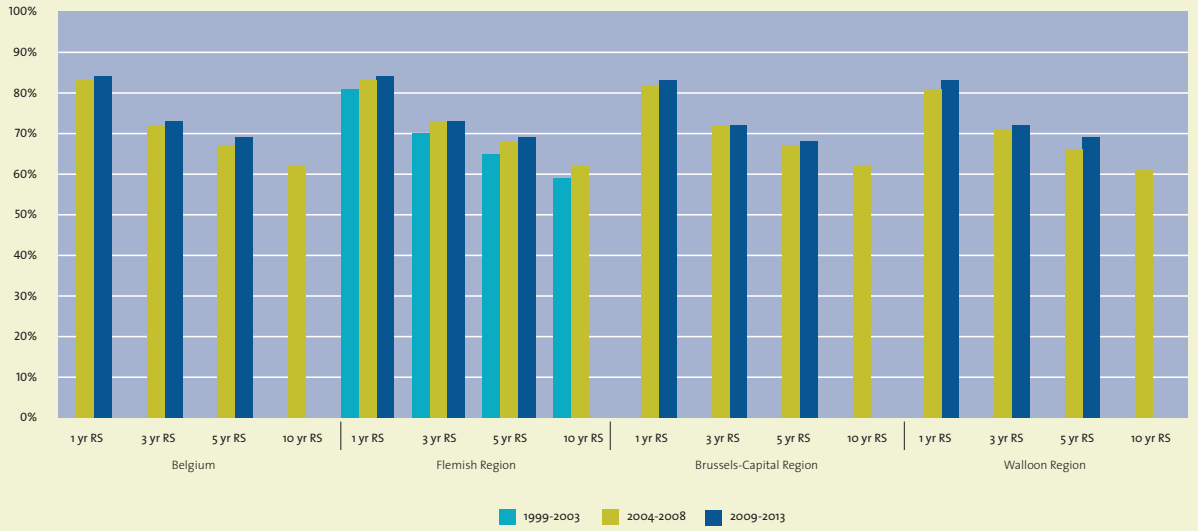
**Figure 4** Invasive tumours (excl. non-melanoma skin cancer): 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

**Males**



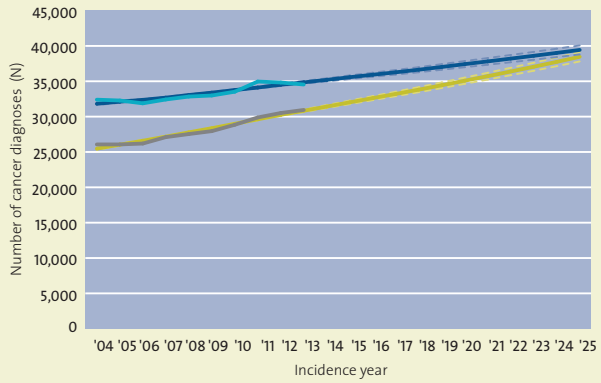

*Source: Belgian Cancer Registry*

**Females**



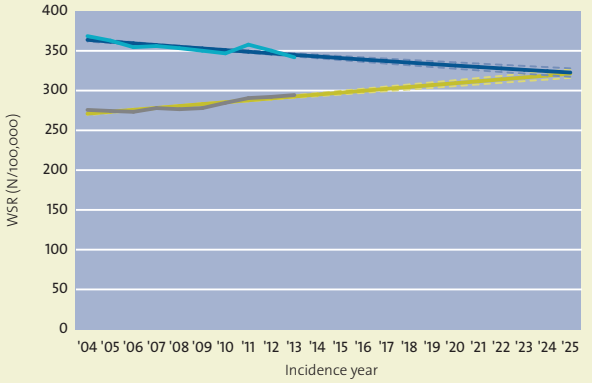

*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

## 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, Strojan 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, Strojan 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

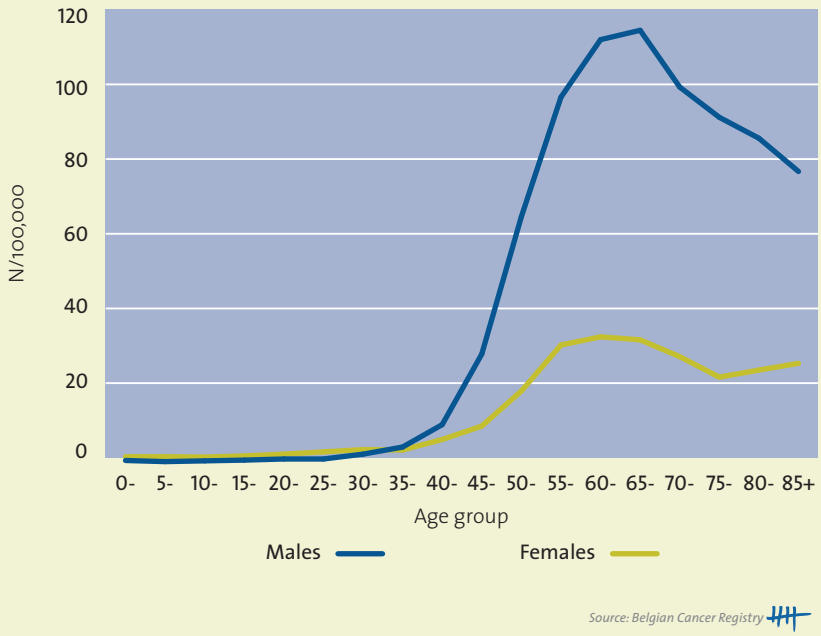
| Head and neck cancer | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Incidence, 2013 | N | CR | WSR | N | CR | WSR |
| Belgium | 1,966 | 36.1 | 21.4 | 642 | 11.4 | 6.3 |
| Flemish Region | 1,108 | 35.2 | 19.5 | 356 | 11.0 | 6.0 |
| Brussels-Capital Region | 159 | 28.3 | 21.7 | 53 | 8.9 | 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 [1] (**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.**




*Source: Belgian Cancer Registry*

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

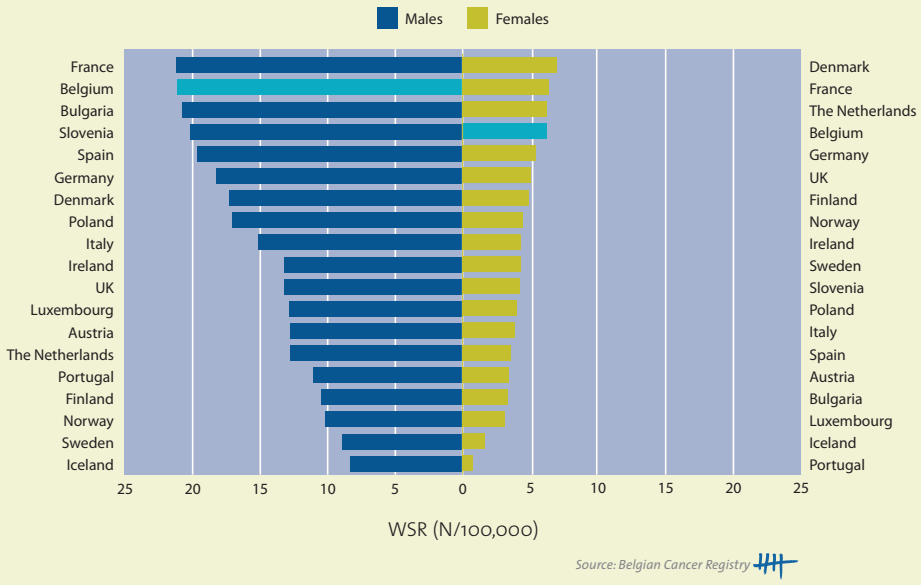



**Figure 3** Head and Neck cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

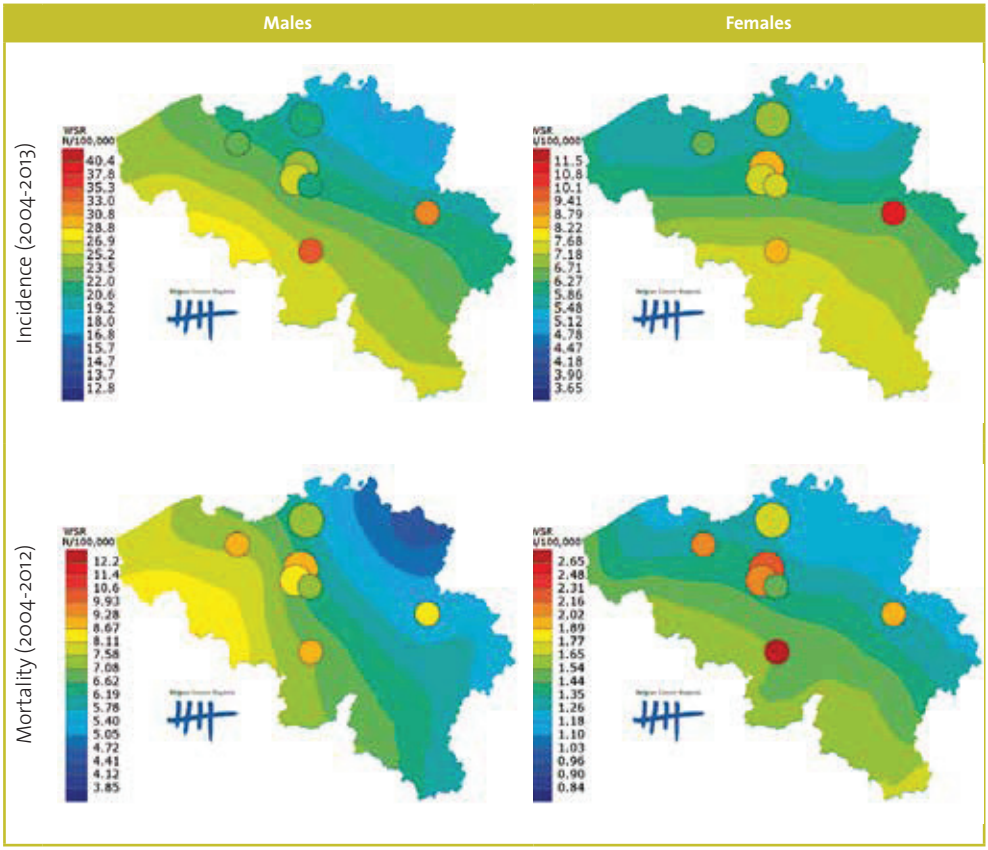
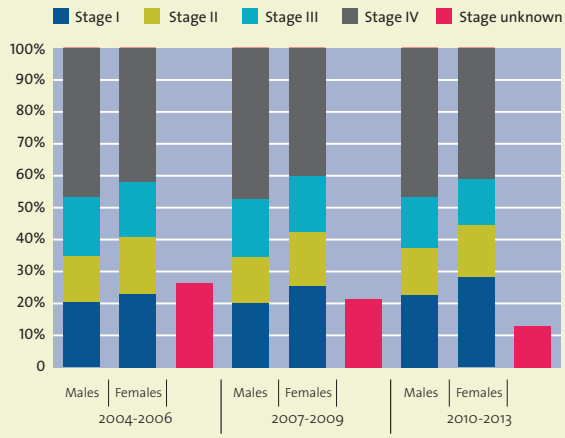


**Table 2** Head and neck cancer: incidence by primary site and sex, Belgium 2013

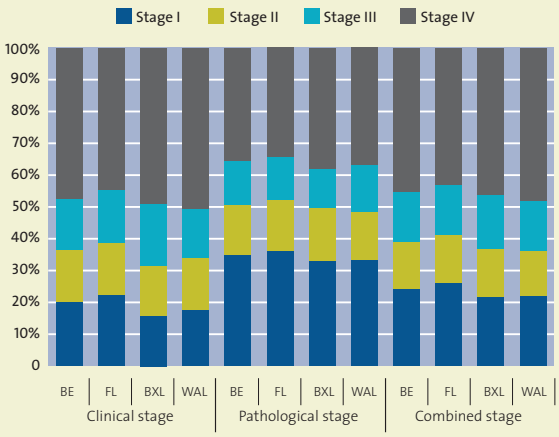
| Belgium 2013 | Total | | Males | | Females | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Lip (C00) | 58 | 2.2% | 37 | 1.9% | 21 | 3.3% |
| Oral cavity (C02-C050,C06) | 590 | 22.6% | 394 | 20.0% | 196 | 30.5% |
| Tongue (C02) | 245 | 9.4% | 158 | 8.0% | 87 | 13.6% |
| Gum (C03) | 69 | 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



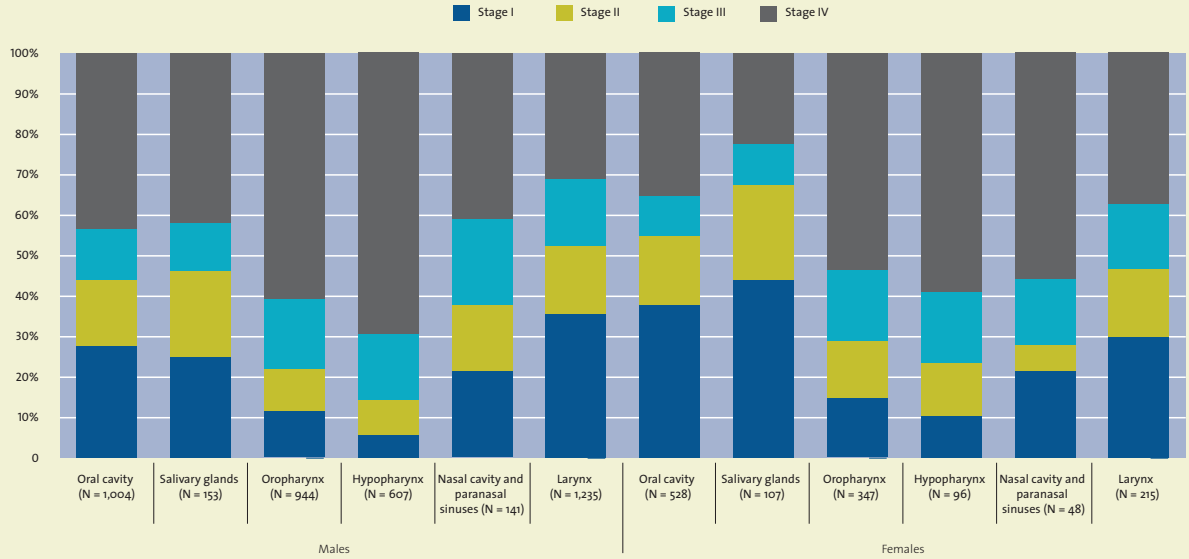

Source: Belgian Cancer Registry

**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

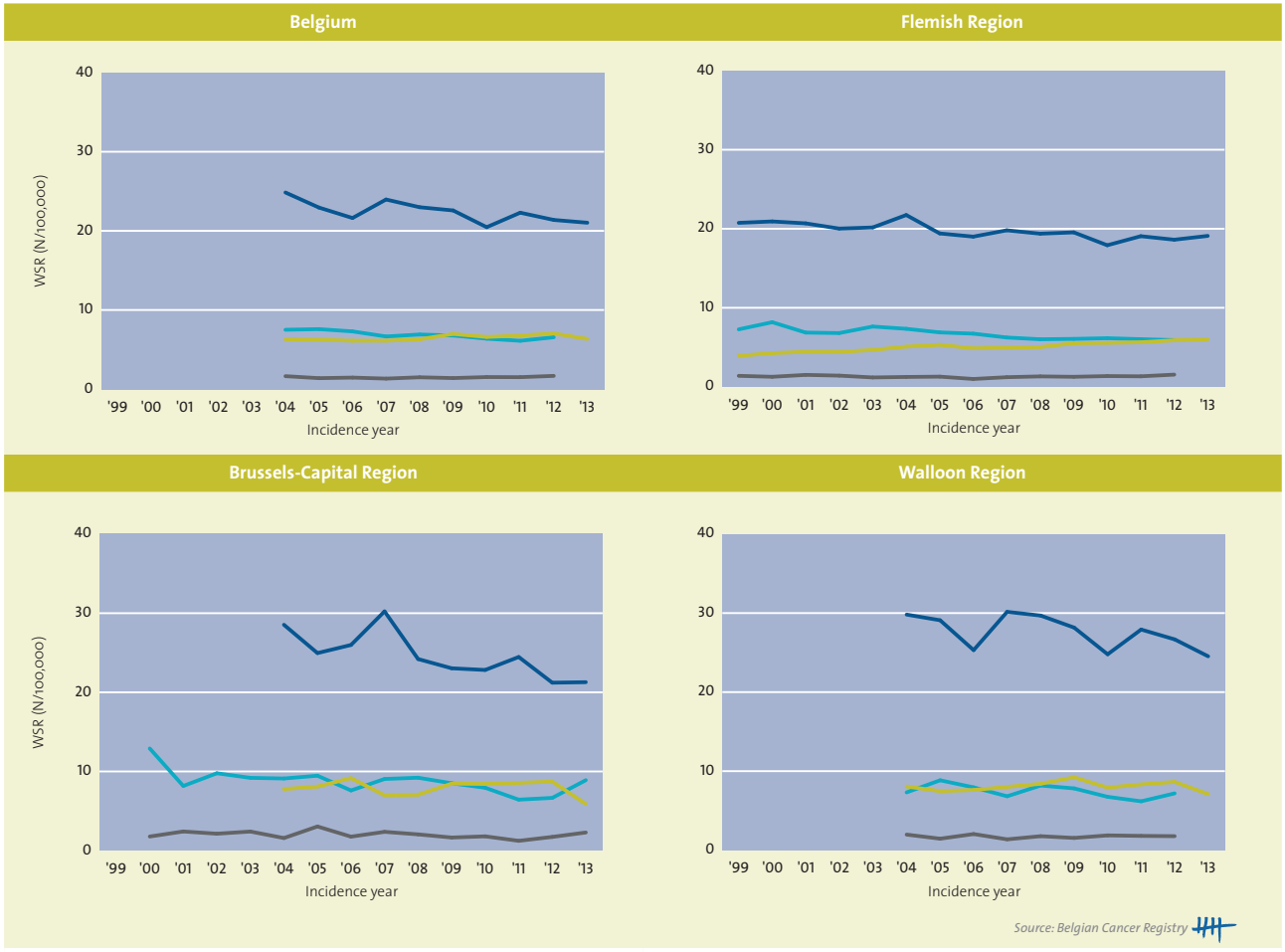



**Figure 8** Head and Neck cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

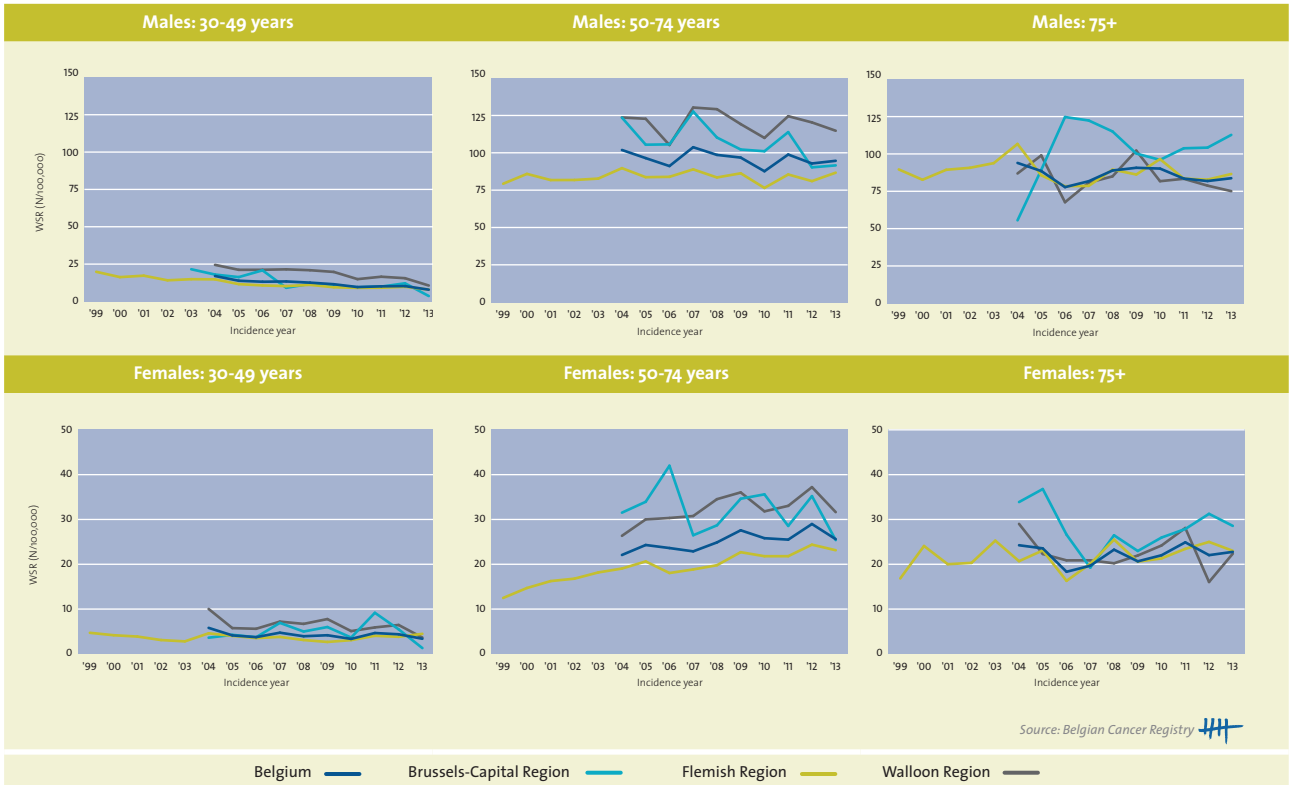


**Figure 9** Head and Neck cancer: Trends in age-standardised incidence (WSR) by localisation and sex, Belgium 2004-2013

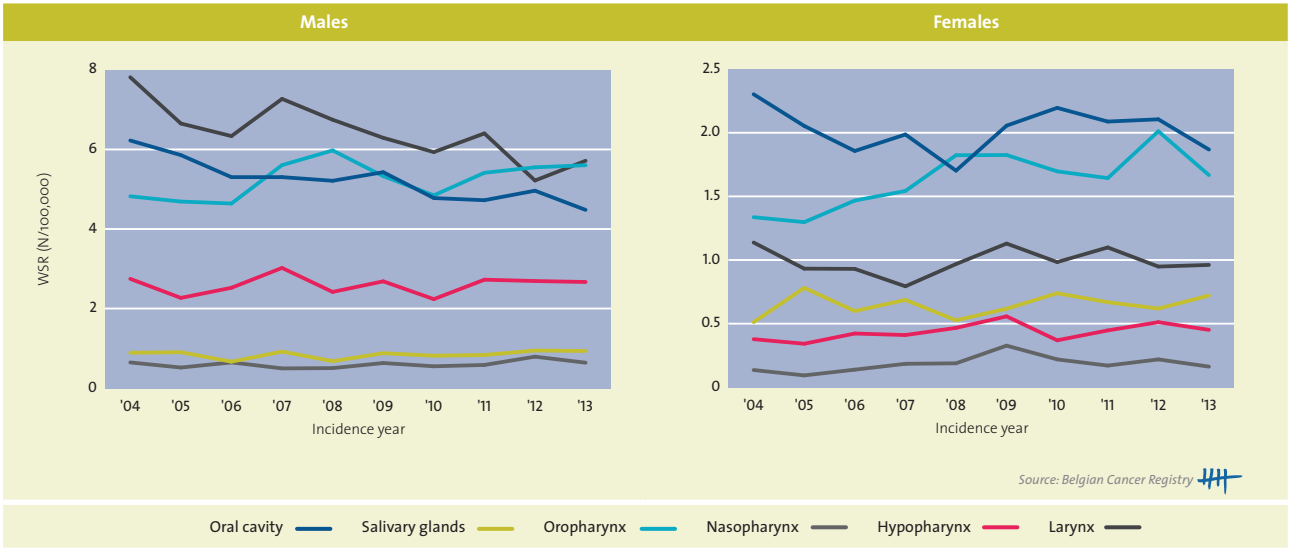



**Table 3** Head and Neck cancer: AAPC(%) by sex, region, age group and localisation in Belgium

| 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 AAPC(%) | Males 95%CI | Males period | Females AAPC(%) | Females 95%CI | Females 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 occured, 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

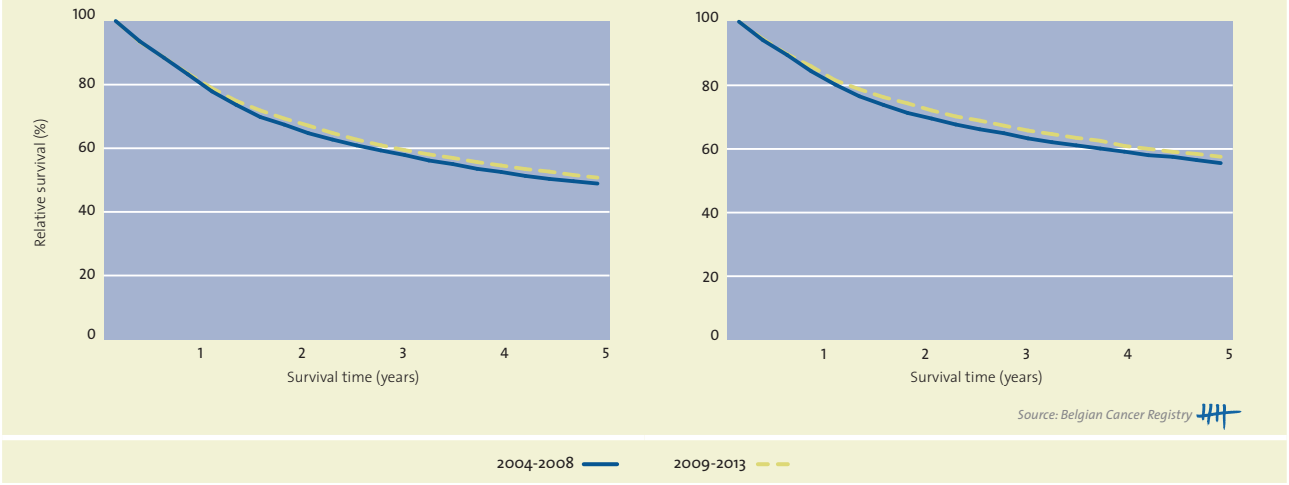
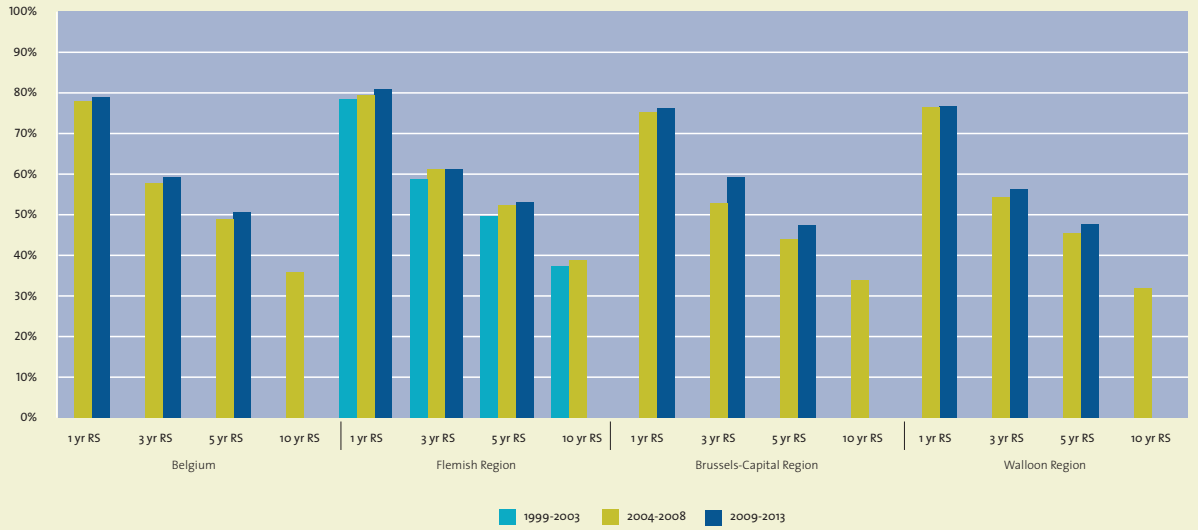


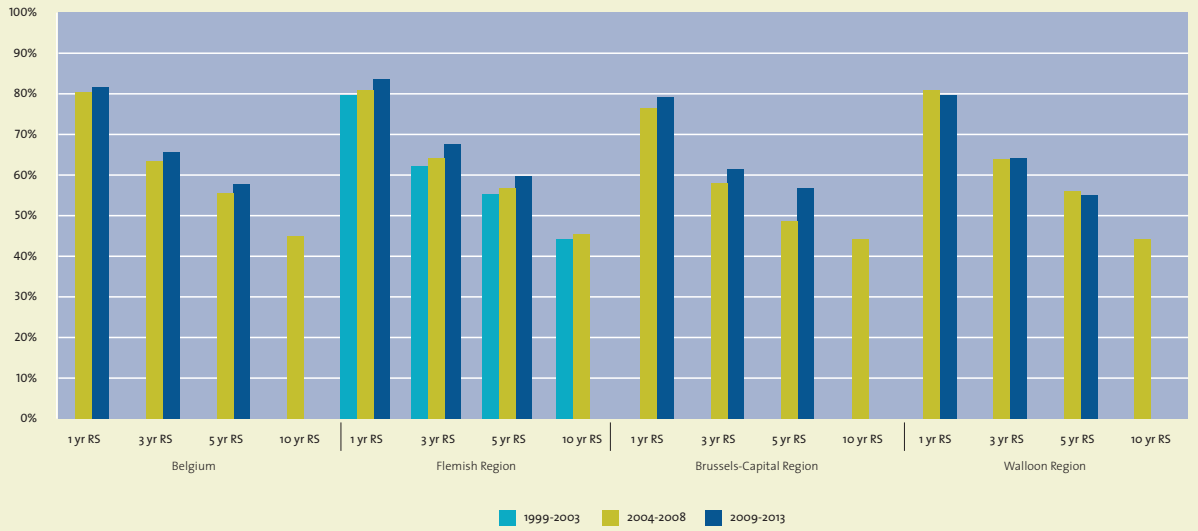
**Figure 11** Head and Neck cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

## Males



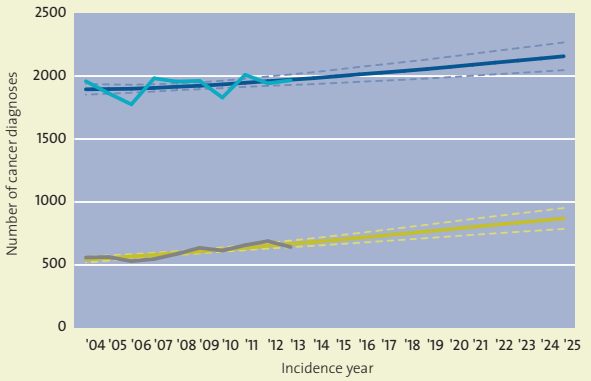

*Source: Belgian Cancer Registry*

## Females



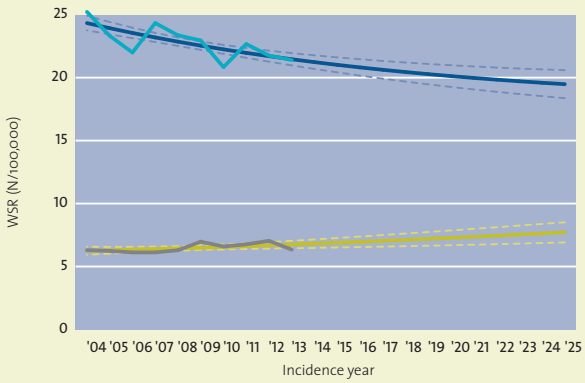

*Source: Belgian Cancer Registry*

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




Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

## 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 (C07.9), the submandibular (C08.0) and the sublingual gland (C08.1) are considered as **major** salivary glands.

**Minor** salivary glands are coded in the organ of origin:

- e.g. Salivary gland of the soft palate: C05.1 (Soft palate)
- e.g. Salivary gland without specification of the site of origin: code C06.9 (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

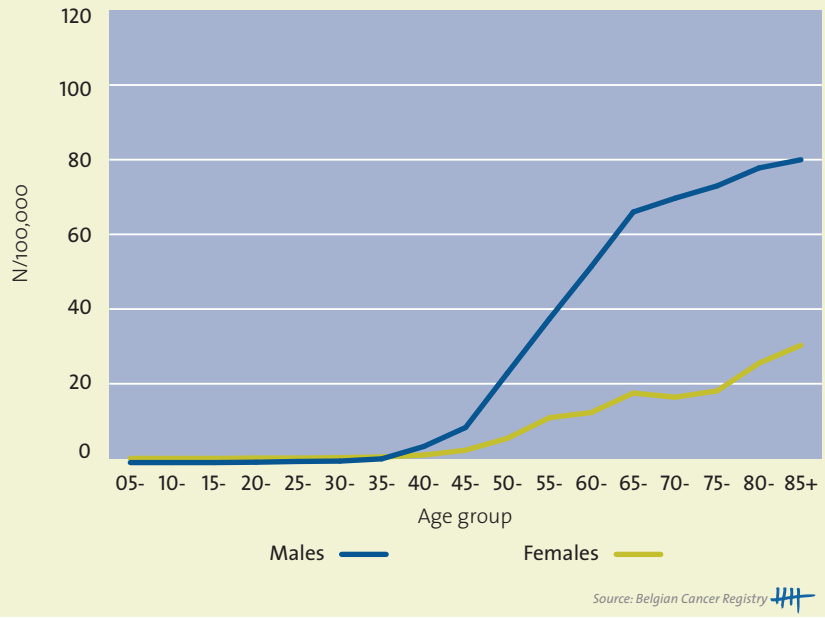
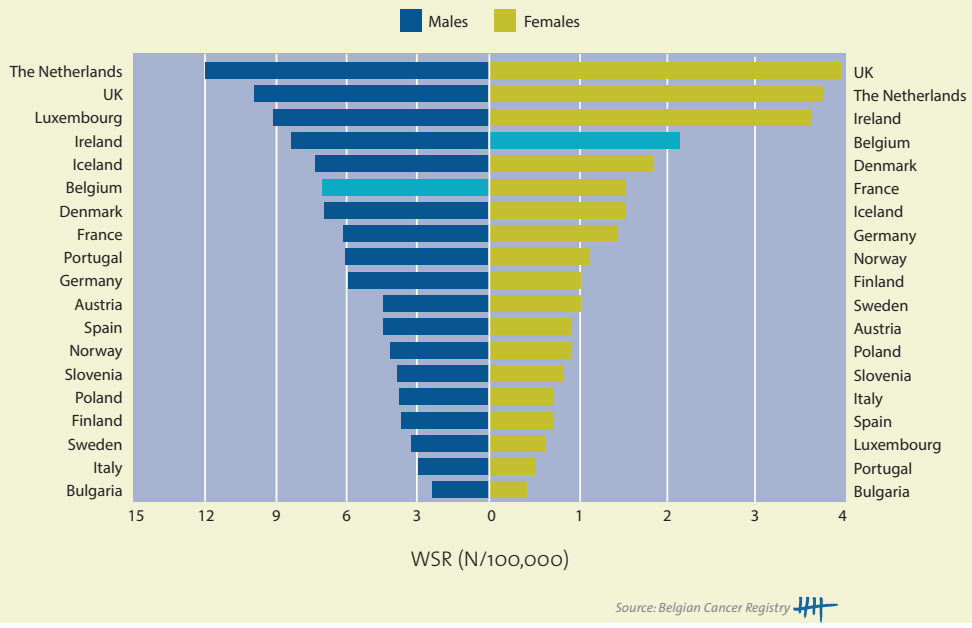


**Figure 2** Oesophageal cancer (C15): Comparison of age-standardised incidence rates (WSR)
*(Selection of European registry data)*




*Source: Belgian Cancer Registry*

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

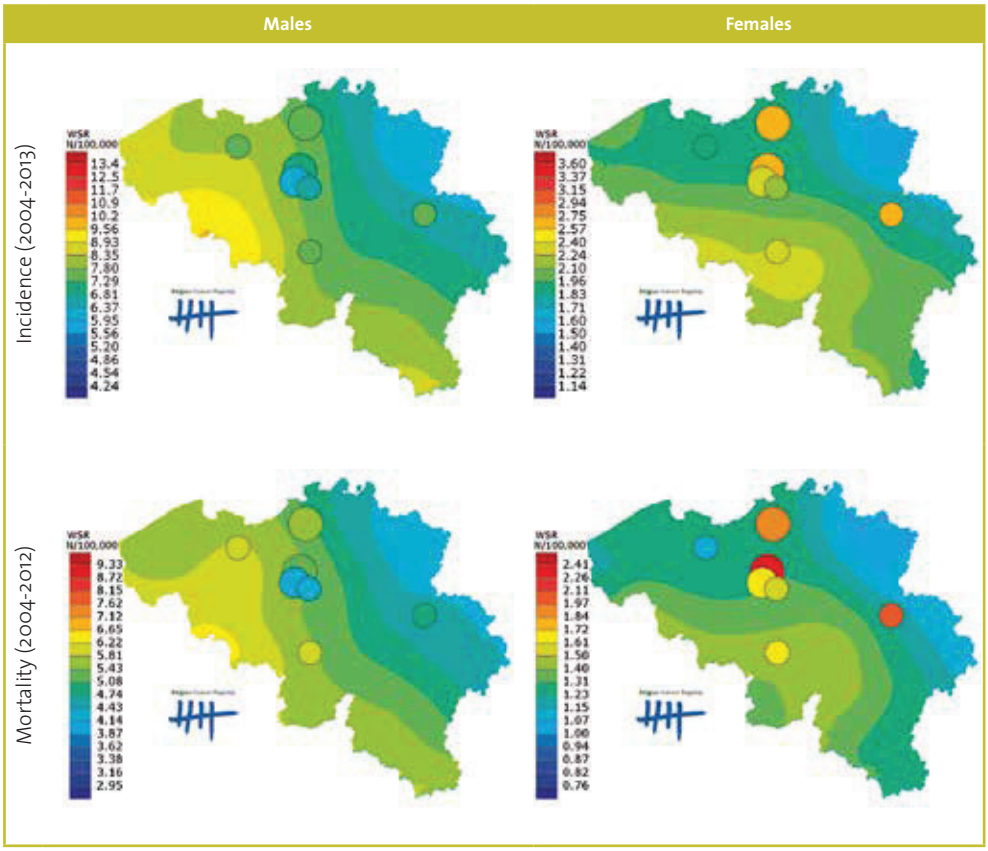
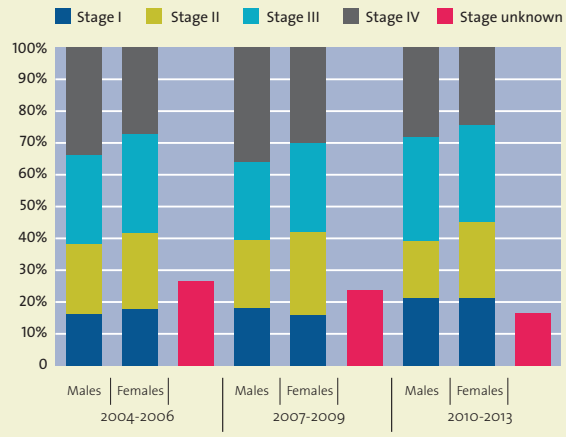
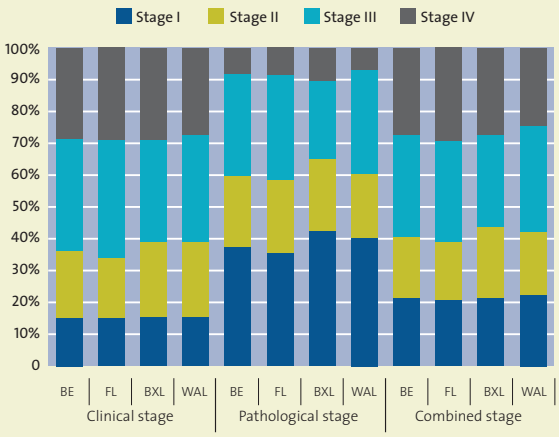


**Figure 4** Oesophageal cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



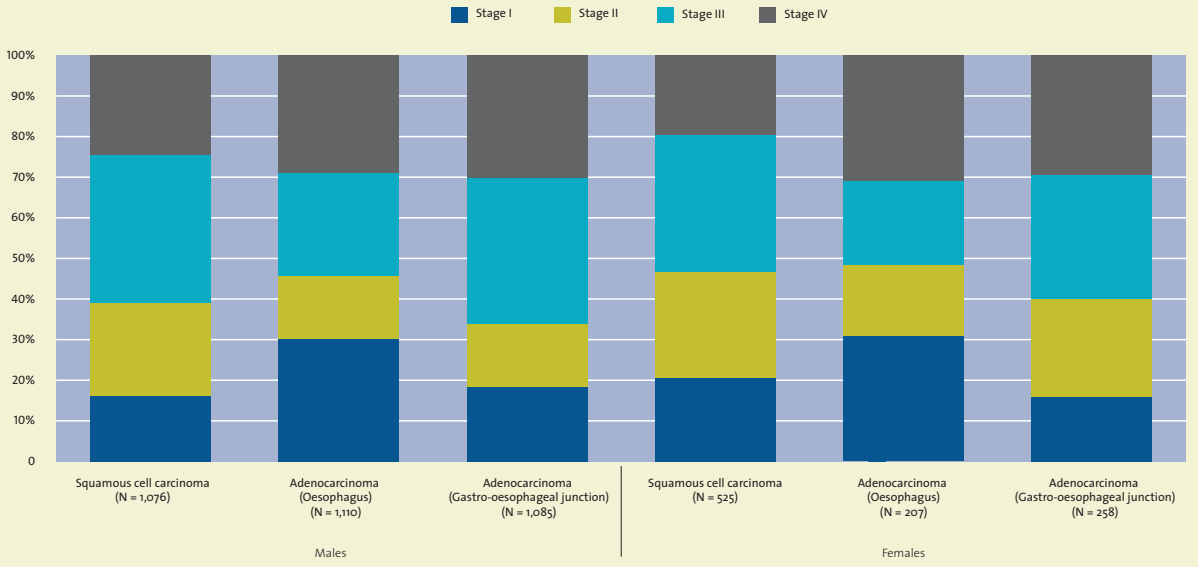

Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

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

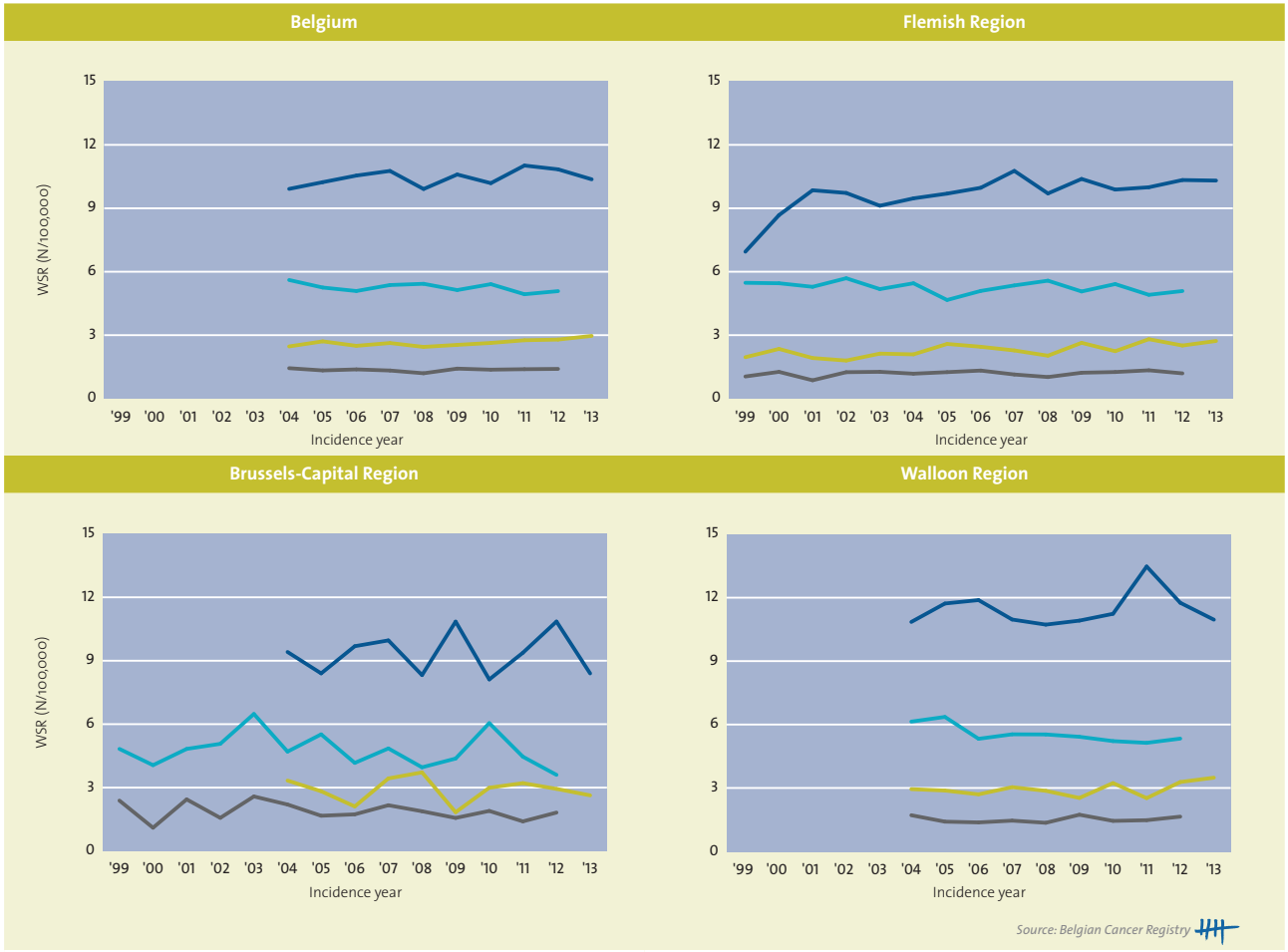



**Figure 8** Oesophageal cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

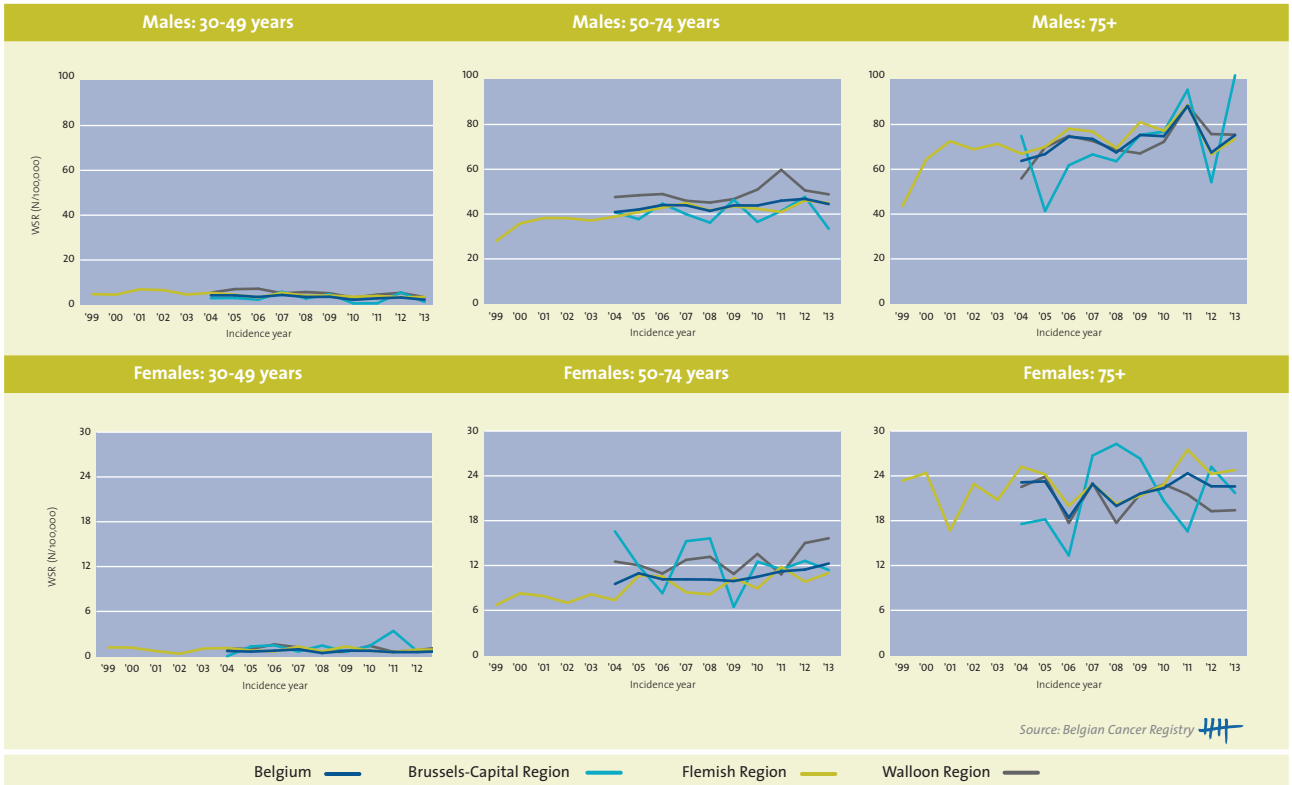


**Figure 9** Oesophageal cancer: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013

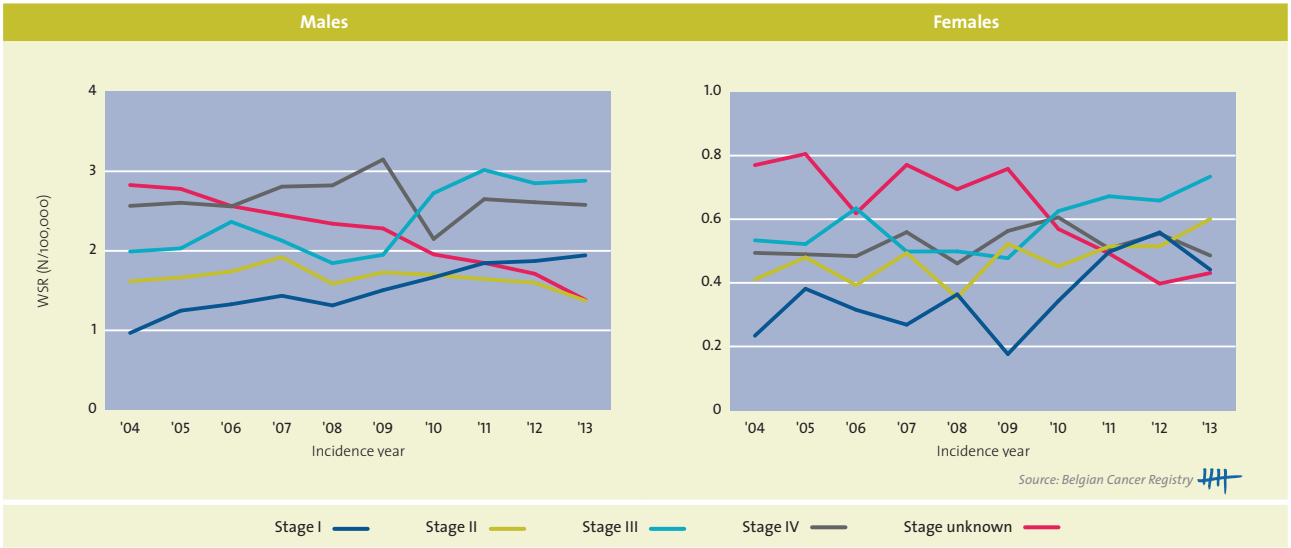



**Figure 10** Oesophageal cancer: Trends in age-standardised incidence (WSR) by histology and sex, Belgium 2004-2013

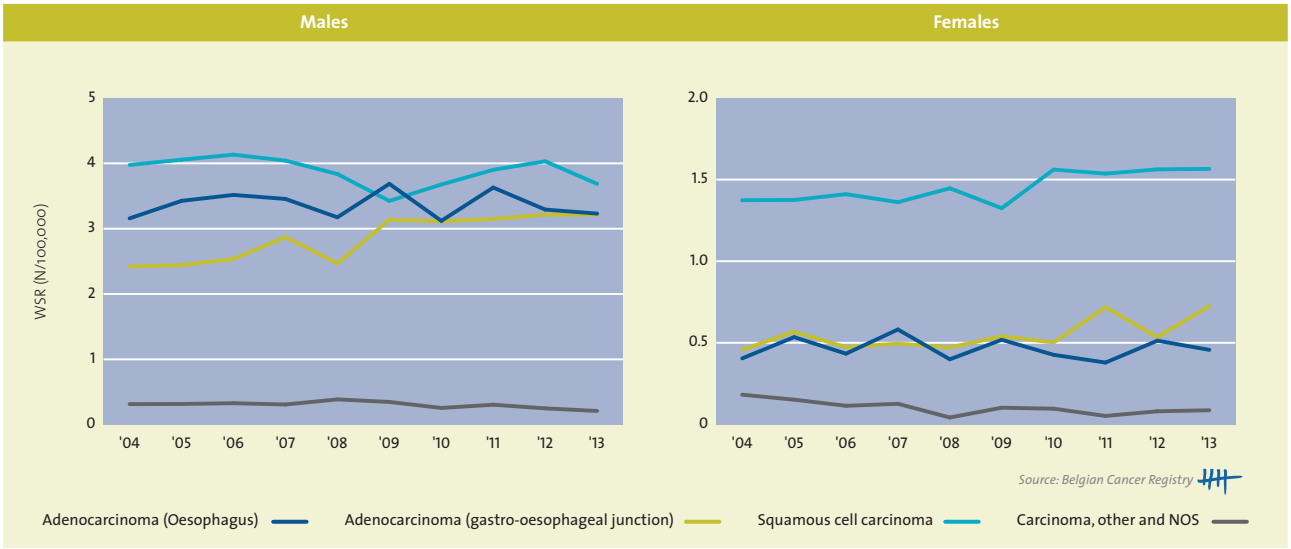


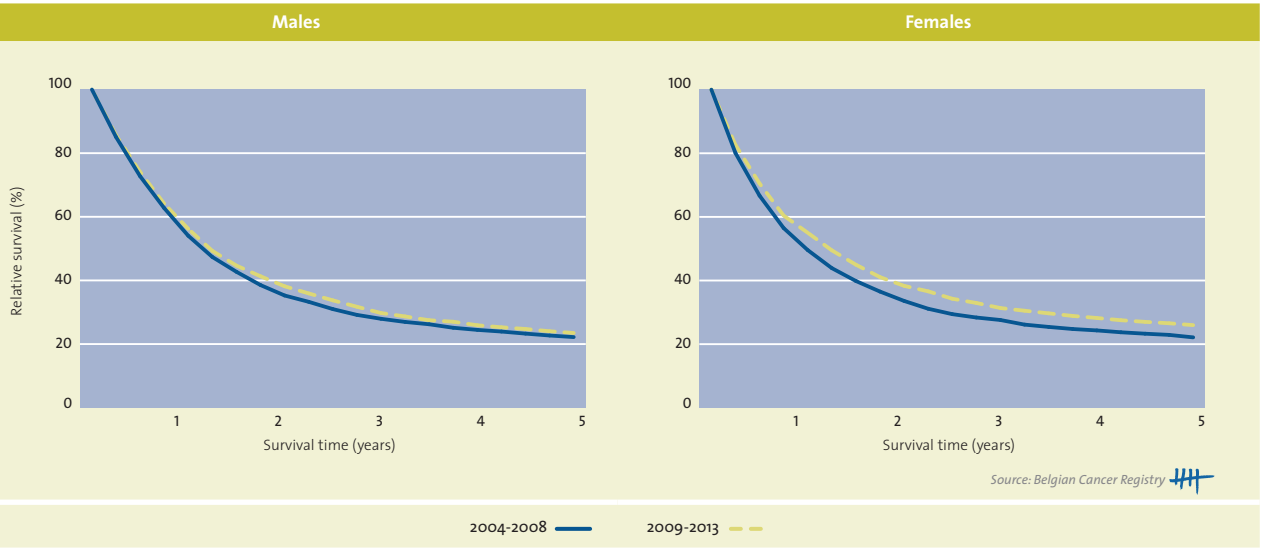
**Table 2** Oesophageal cancer: AAPC(%) by sex, region, stage, age group and histology in Belgium

| 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*

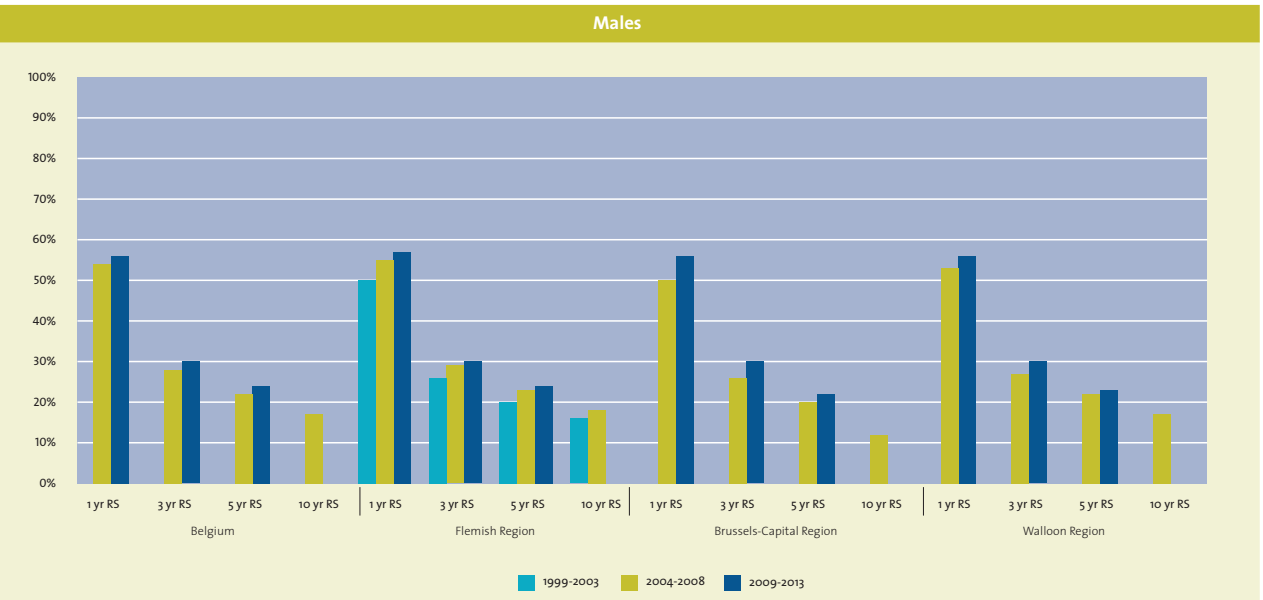
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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

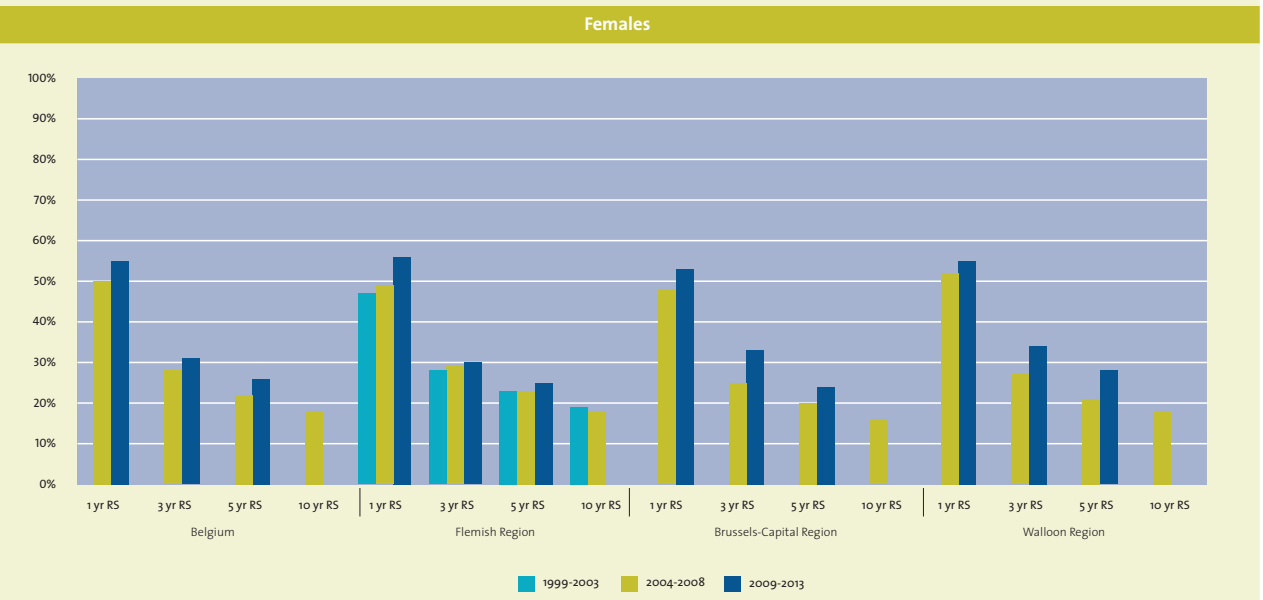



Source: Belgian Cancer Registry

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

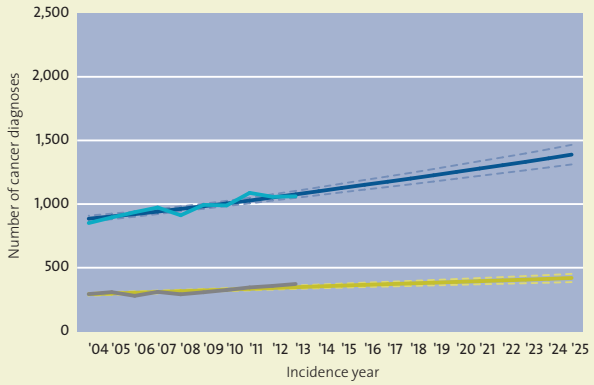



Source: Belgian Cancer Registry



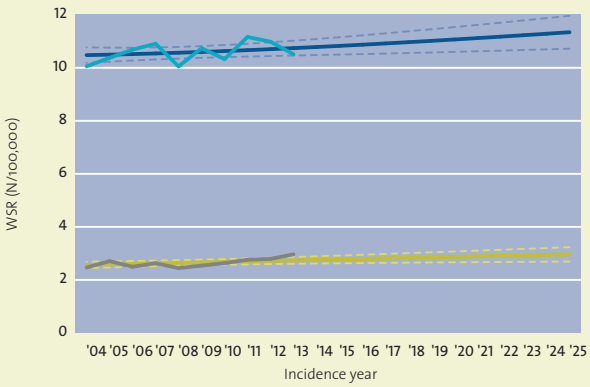

Source: Belgian Cancer Registry

**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 (Projected) — Females (Observed) — Females (Projected)

## 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 C16.0.
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] |

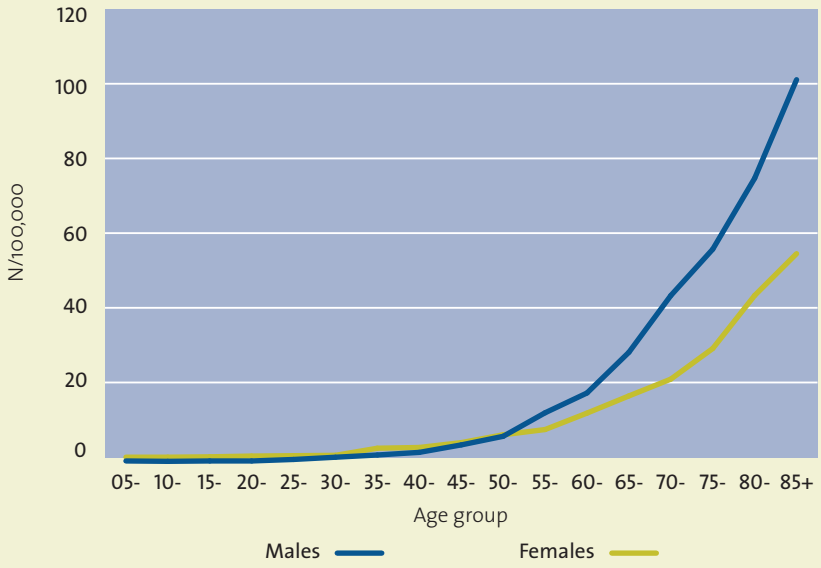
*CR, crude (all ages) rate (N/100,000 person years)*
*WSR, age-standardised rate using the World Standard Population (N/100,000 person years)*

- 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.*

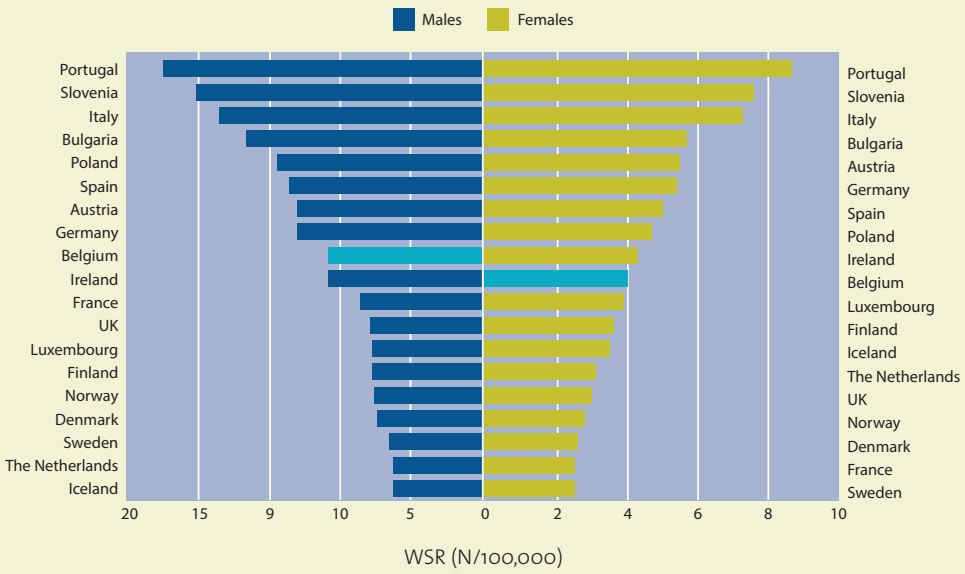
- Age group 75+:
  - Males have a twofold higher risk than females (M/F ratio = 1.9).
  - The incidence rates are decreasing in both sexes.
- More than half of all stomach cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4 and Figure 5**).
  - 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

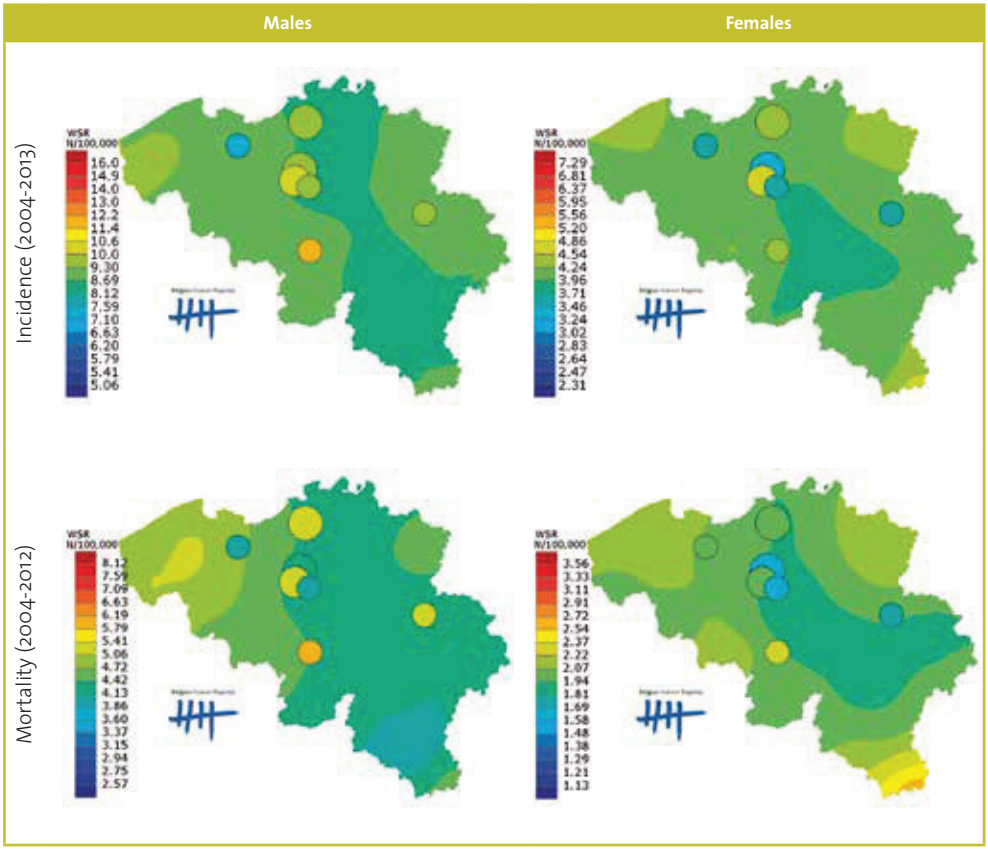
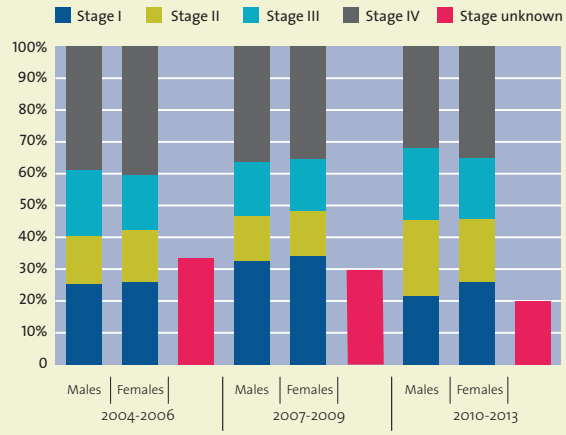
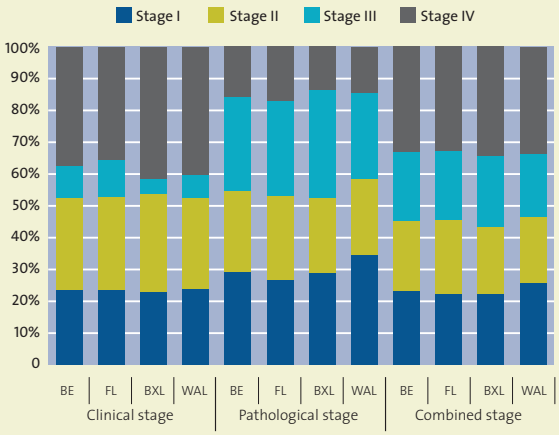



**Figure 4** Stomach cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013




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

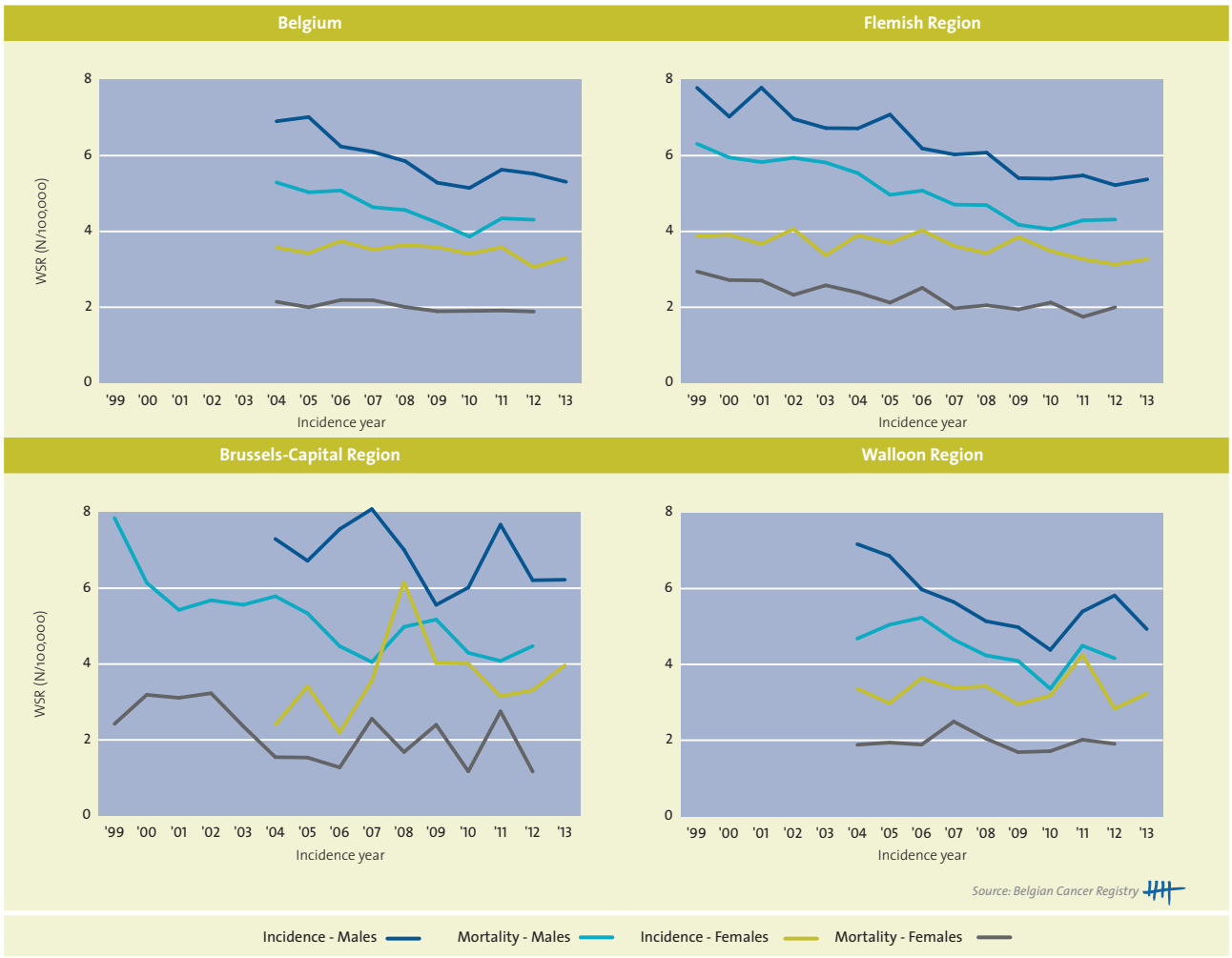



**Figure 7** Stomach cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

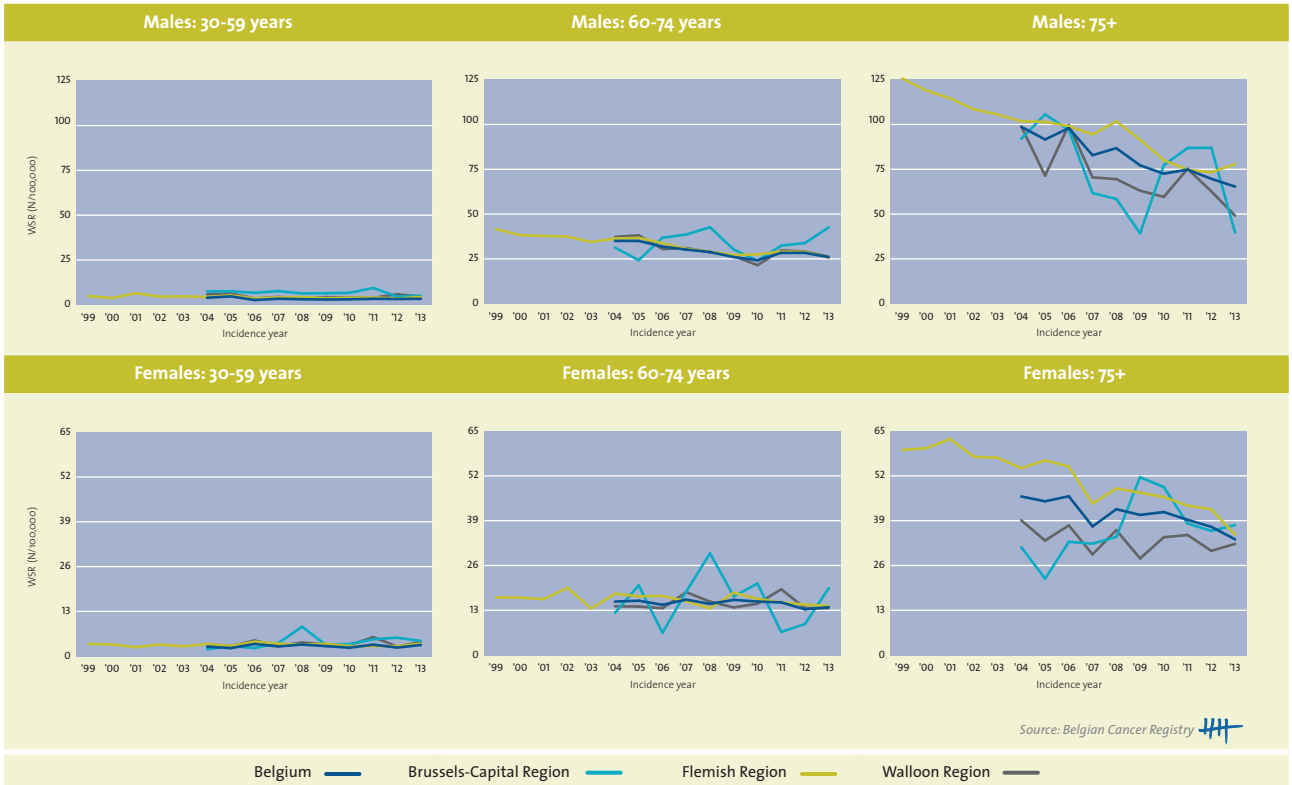


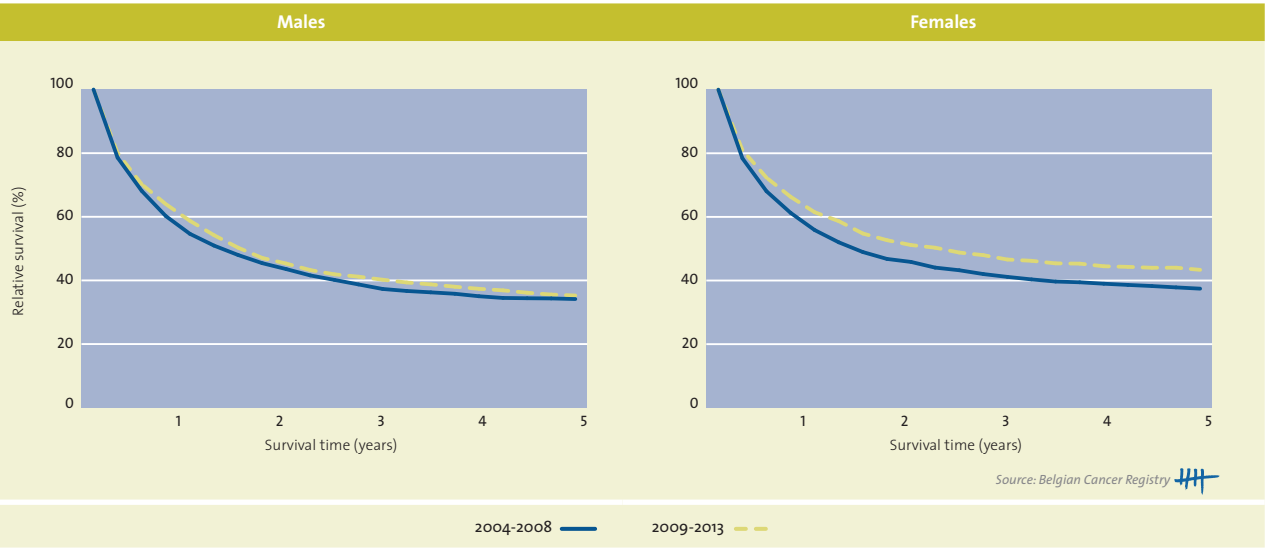
**Table 2** Stomach cancer: AAPC(%) by sex, region and age group in Belgium

| 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*

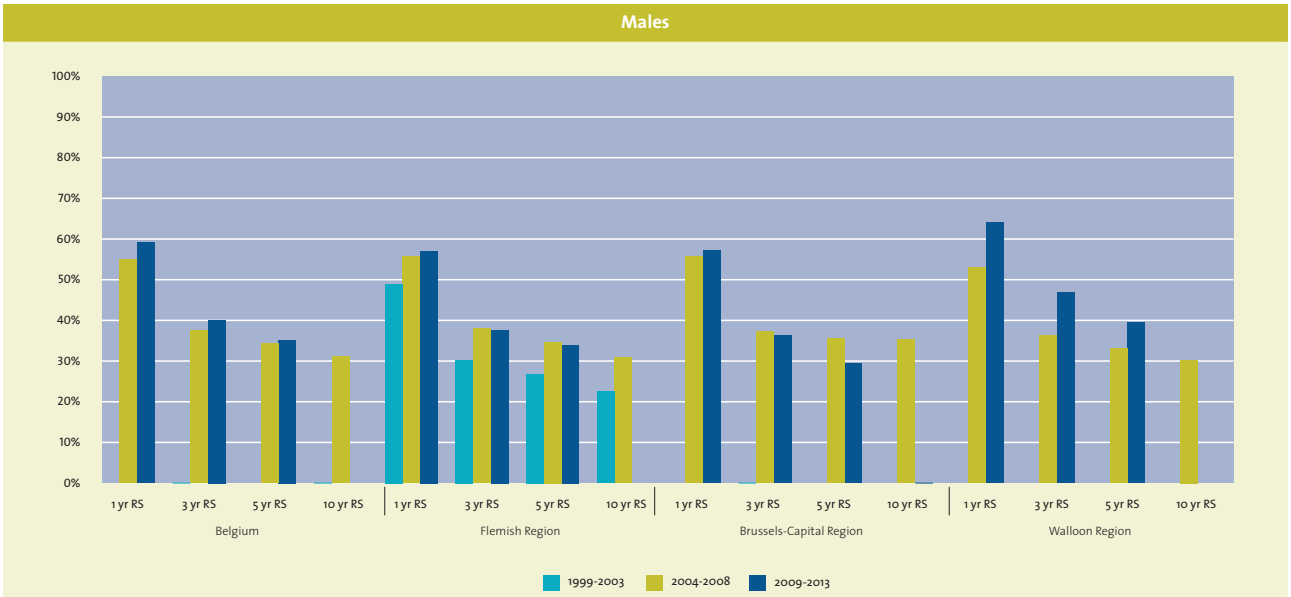
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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

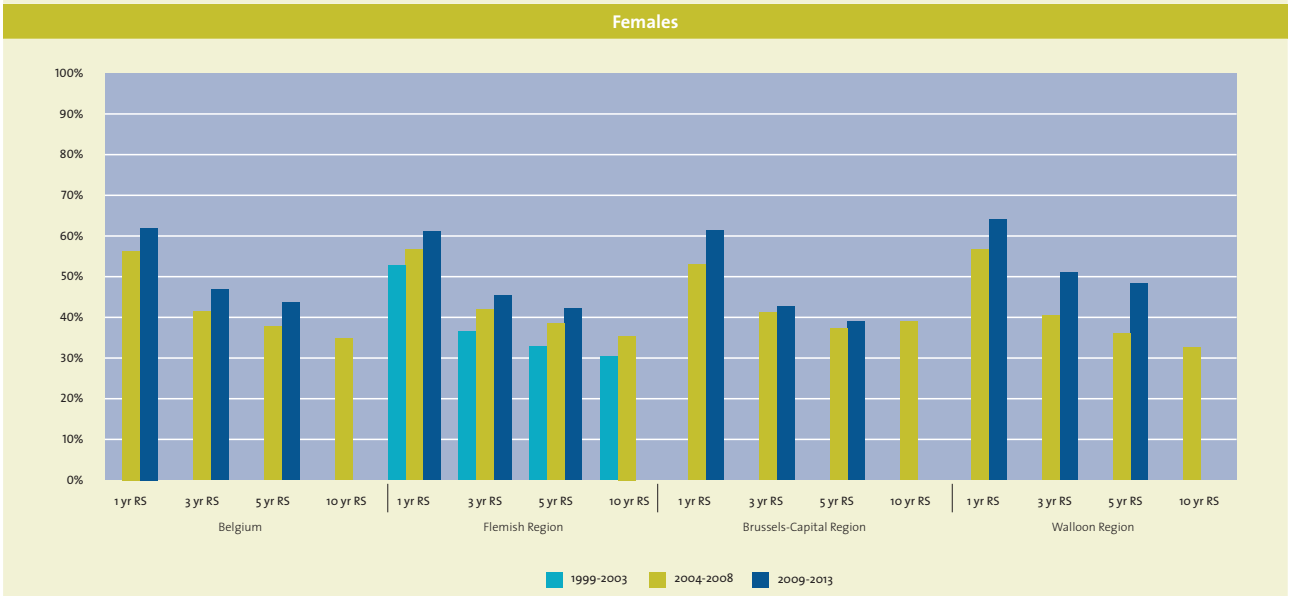



Source: Belgian Cancer Registry

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

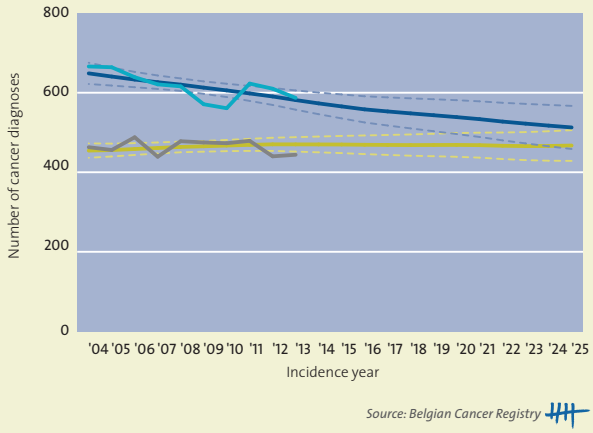



Source: Belgian Cancer Registry



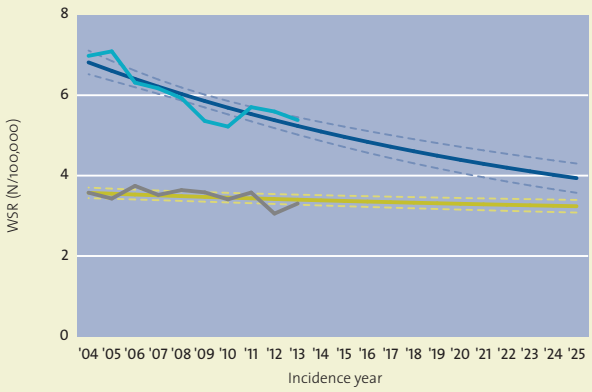

Source: Belgian Cancer Registry

**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 (Projected) — Females (Observed) — Females (Projected)

## 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 (http://www.encr.eu/images/docs/Conference_2014/oral_presentations/12_11_2014_1st_Session_Geert_SILVERSMIT.pdf).

## !!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 oesophagogastric 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

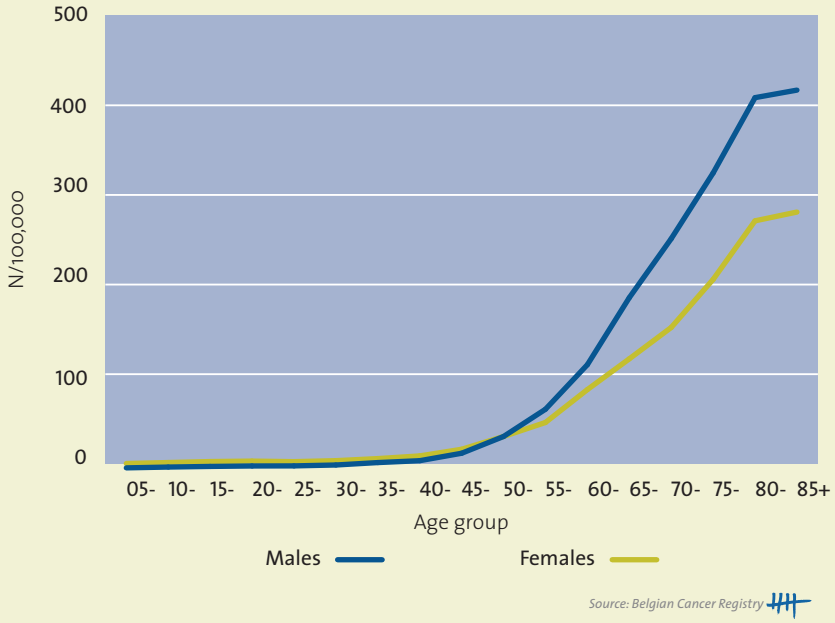



**Figure 2** Colorectal cancer (C18-C20): Comparison of age-standardised incidence rates (WSR). *(Selection of European registry data)*

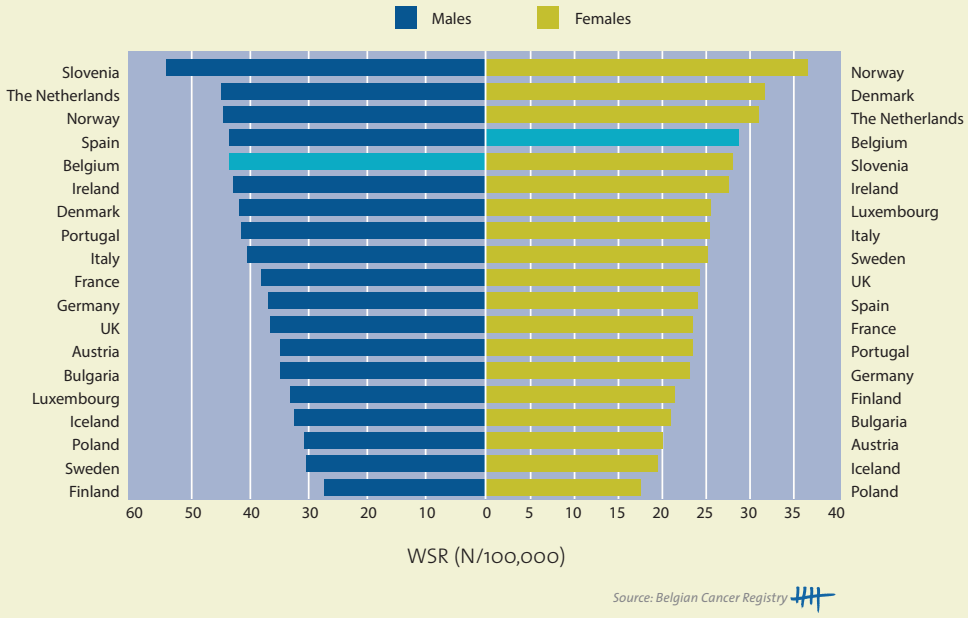


**Figure 3** Colorectal cancer (C18-C20): Age-standardised incidence and mortality (WSR) by sex in Belgium

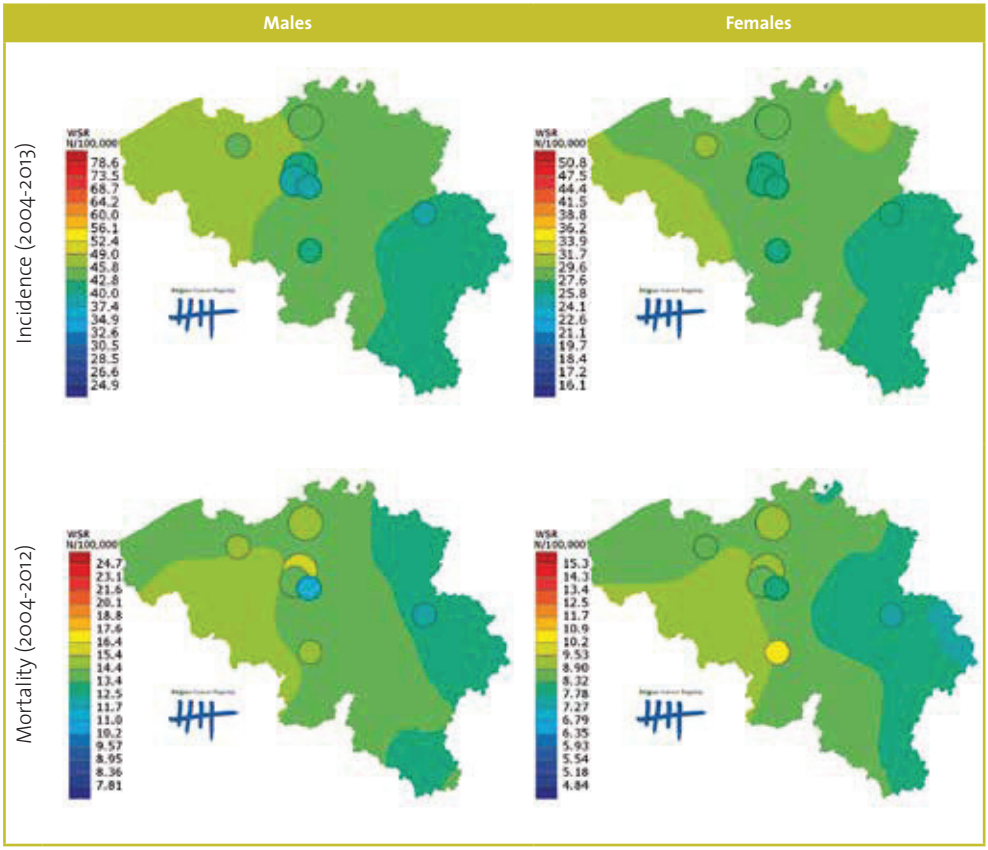
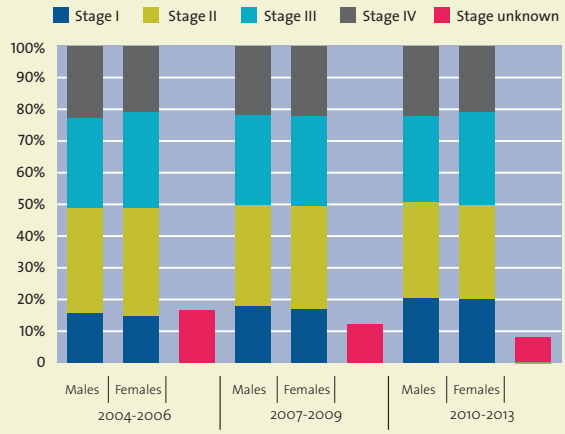
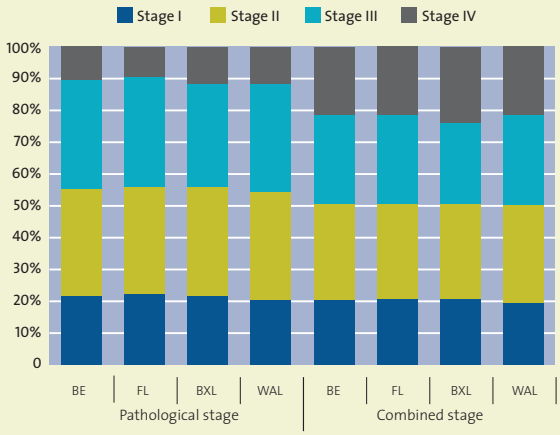



**Figure 4** Colon cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



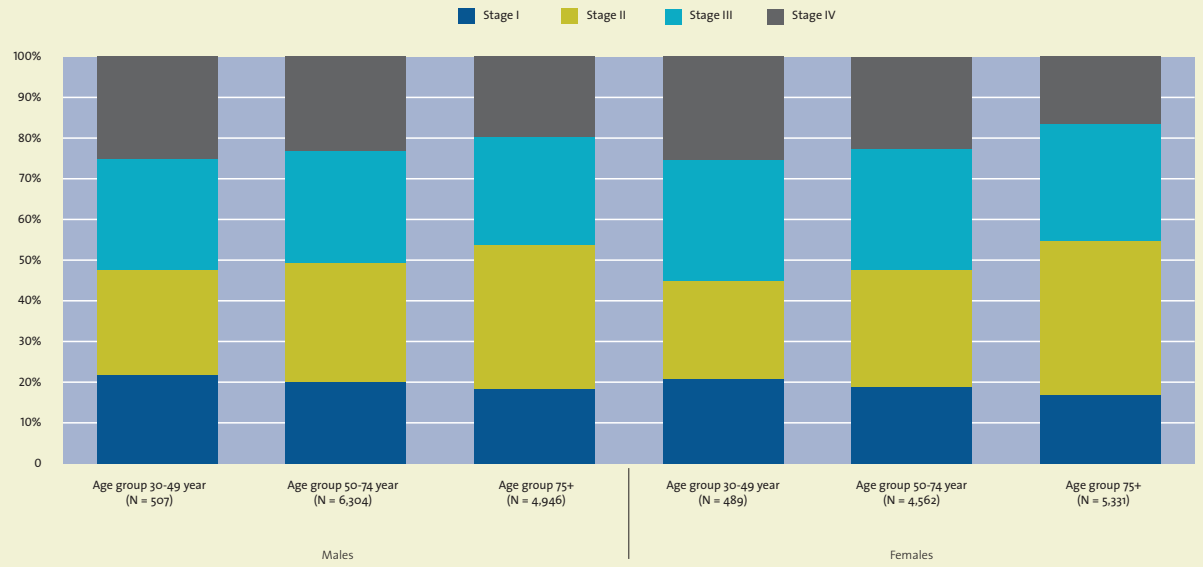

Source: Belgian Cancer Registry

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



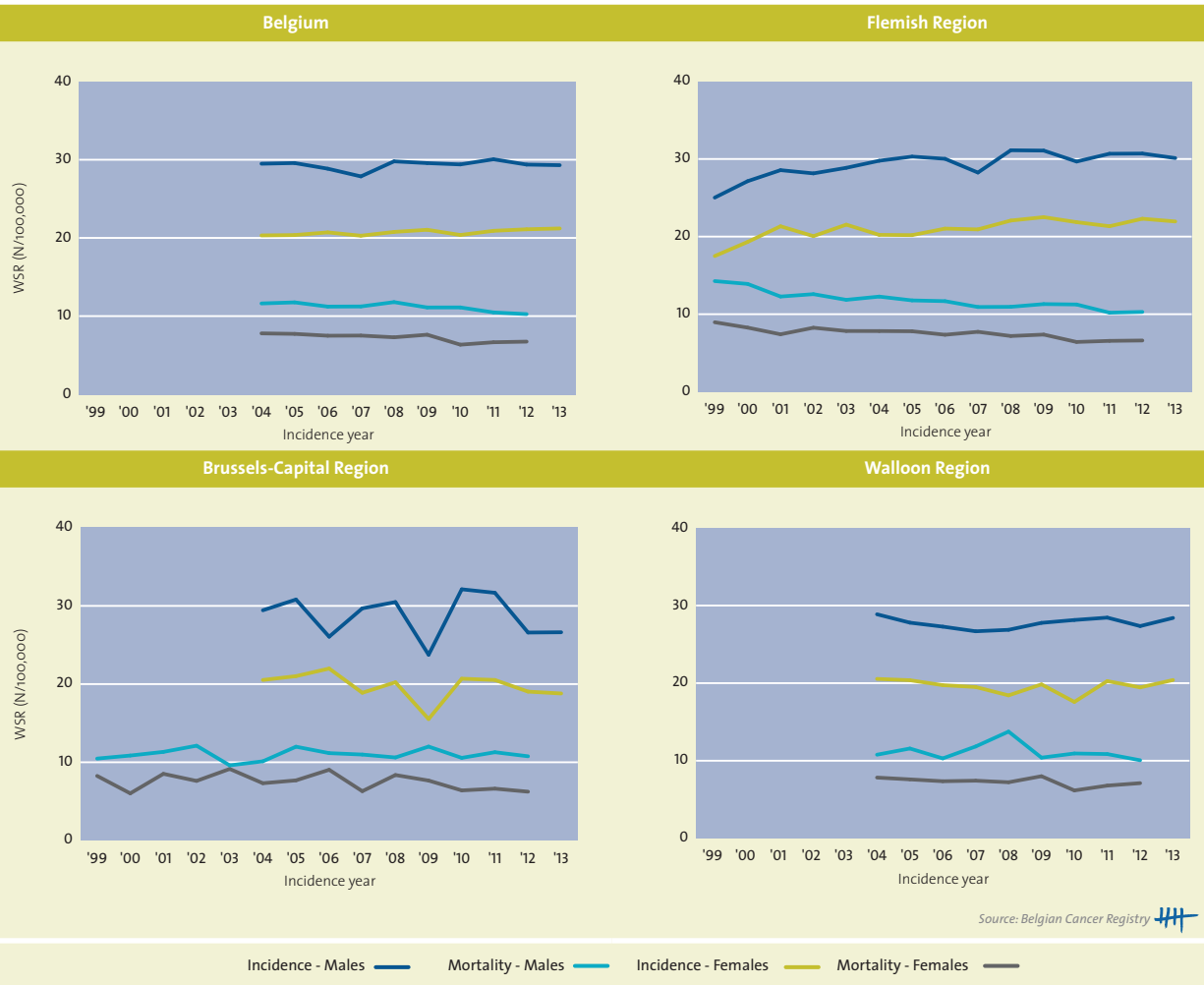

Source: Belgian Cancer Registry

**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

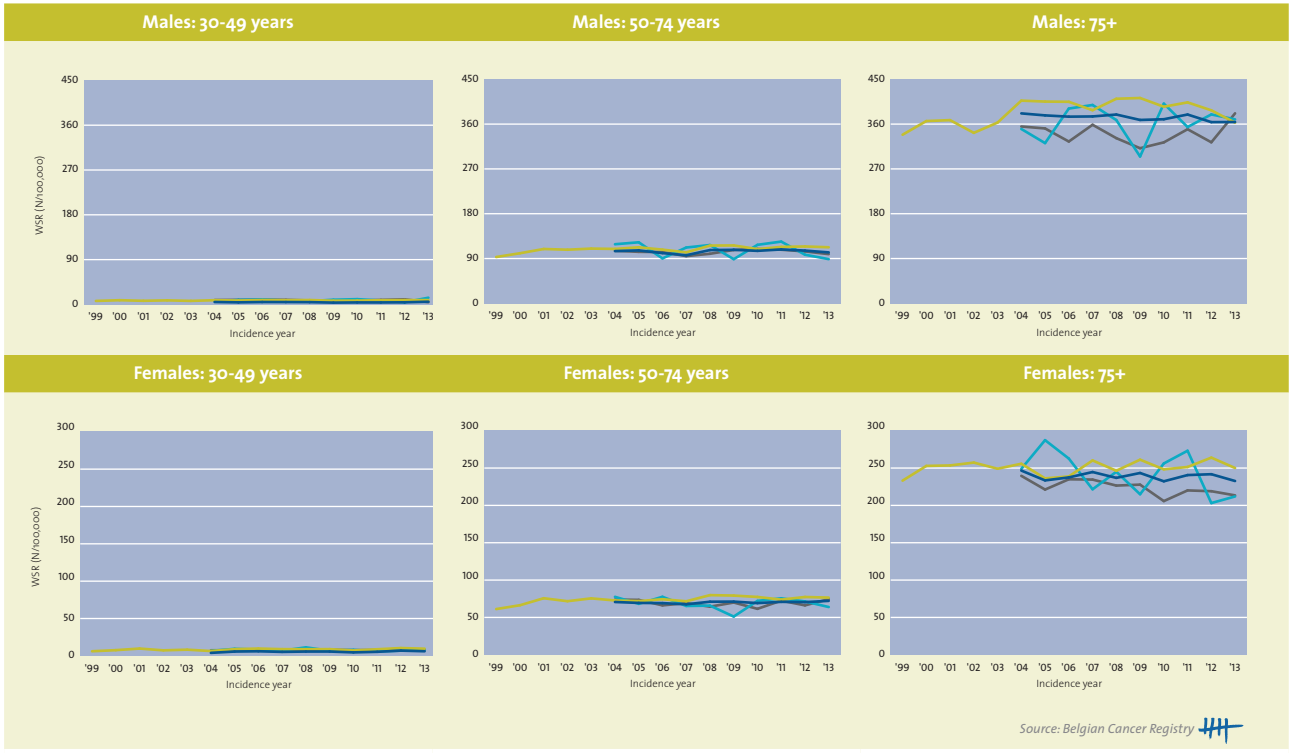



**Figure 9** Colon cancer: Trends in age-standardised incidence (WSR) by sex and stage, Belgium 2004-2013

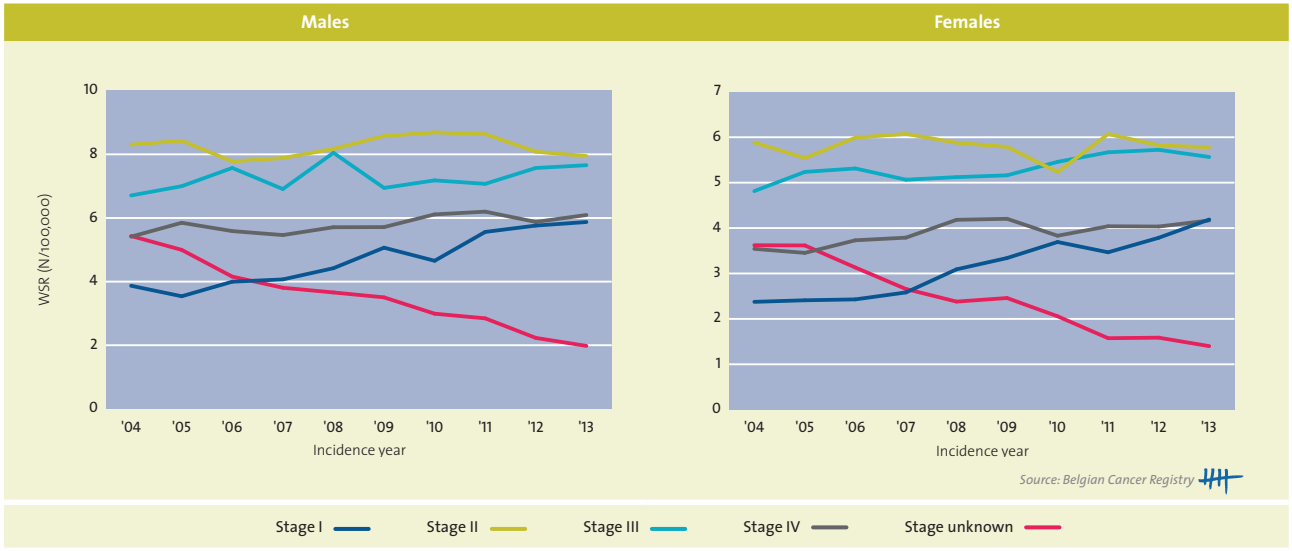


**Figure 10** Colon cancer: Trends in age-standardised incidence (WSR) by sex, stage and age group, Belgium 2004-2013

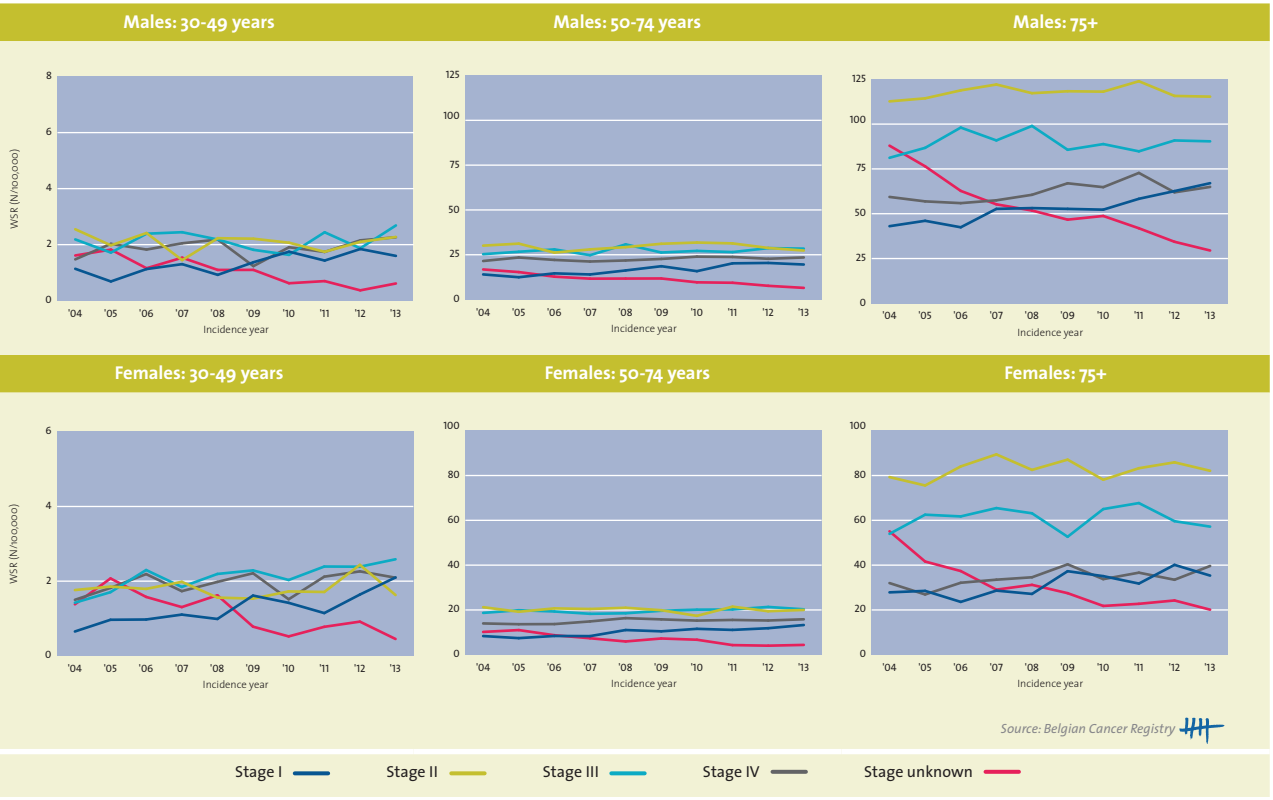


**Table 2** Colon cancer: AAPC(%) by sex, region, age group and stage in Belgium

| 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 | -12.3 | [-15.5; -8.8] | 2004-2010 |
| | -9.4 | [-11.6; -7.2] | 2006-2013 | -1.7 | [-9.3; 6.7] | 2010-2013 |

*AAPC: average annual percentage change*

*Period: When a joinpoint occured, 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

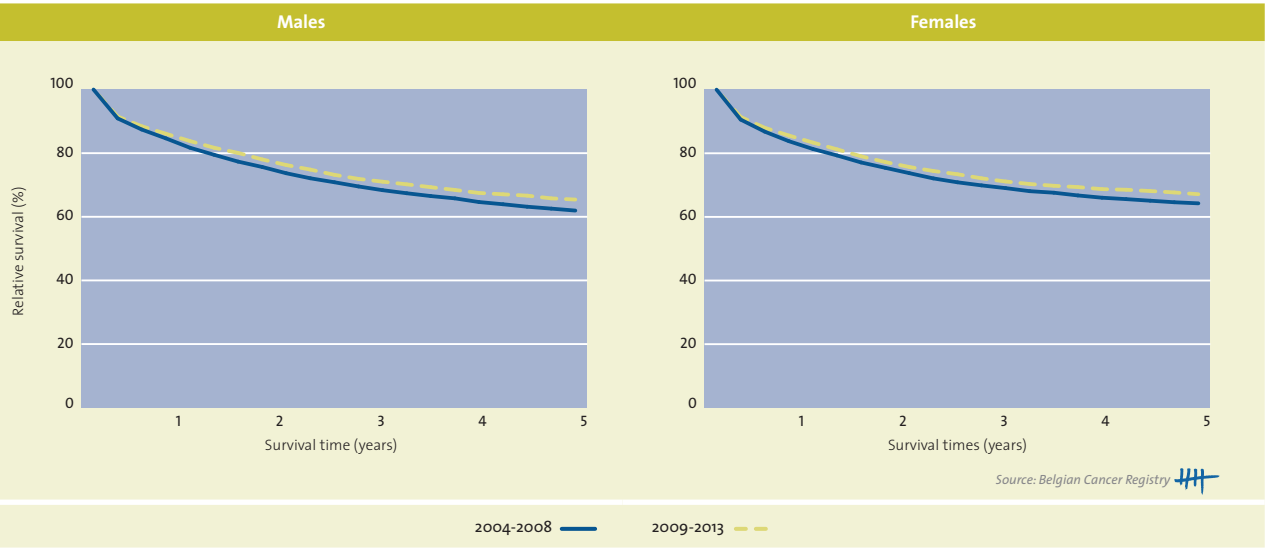
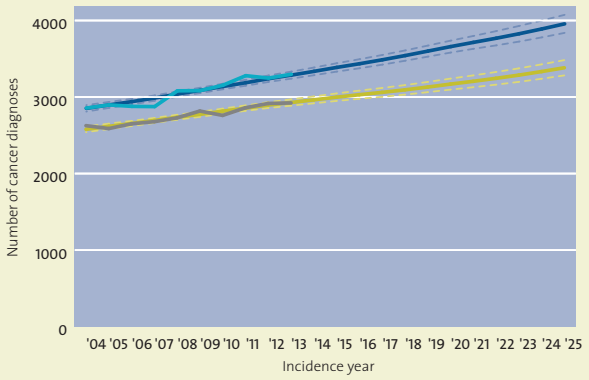


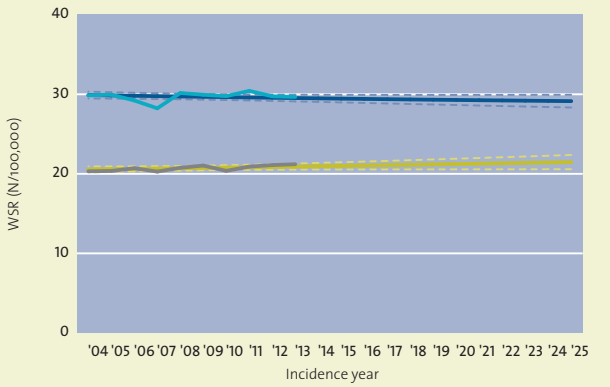

**Figure 12** Colon cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

**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 (Projected) — Females (Observed) — Females (Projected)

## 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 (https://www.european-cancercongress.org/Scientific-Programme/Abstract-search?abstractid=20711).

## !!Key note for registration:

**NEURO-ENDOCRINE TUMOURS/CARCINOMAS OF THE GASTRO-INTESTINAL TRACT**

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 OF COLORECTAL CARCINOMAS**

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.

**SUBLOCALISATION IN THE COLORECTUM**

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

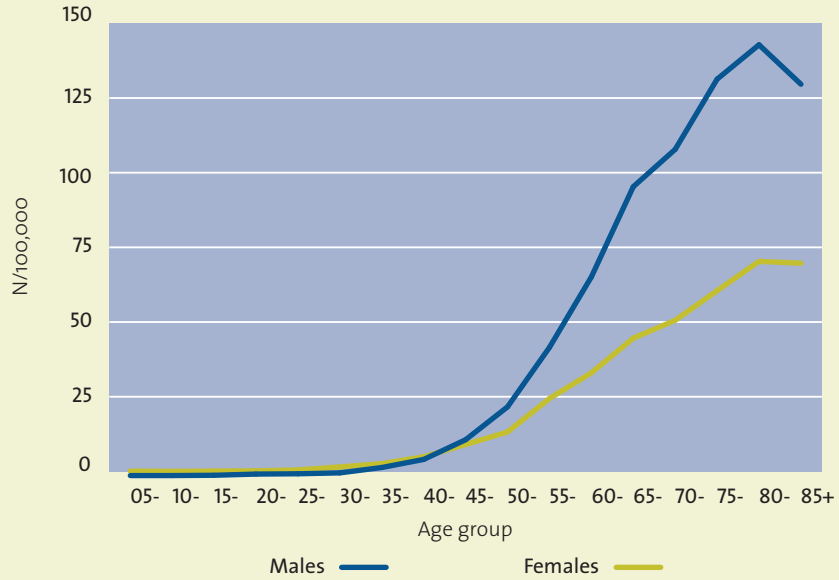
| Rectal cancer | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Incidence, 2013 | N | CR | WSR | N | CR | WSR |
| Belgium | 1,489 | 27.3 | 14.2 | 960 | 17.0 | 7.7 |
| Flemish Region | 963 | 30.6 | 14.7 | 599 | 18.5 | 8.1 |
| Brussels-Capital Region | 78 | 13.9 | 10.0 | 72 | 12.1 | 6.7 |
| 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).

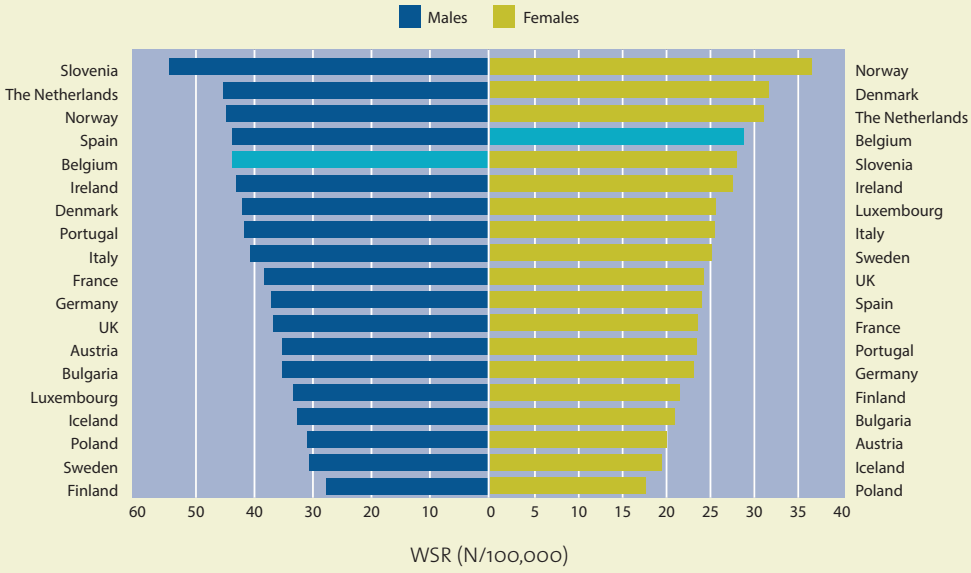
- Among cases with a known stage, about half of all rectal cancers are diagnosed in advanced stages (stage III or IV), in both males and females (**Figure 4, 5 and 6**).
  - Availability of information on stage was always quite high (87% in 2004-2006), and improved even further to 92% in 2010-2013.
  - 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

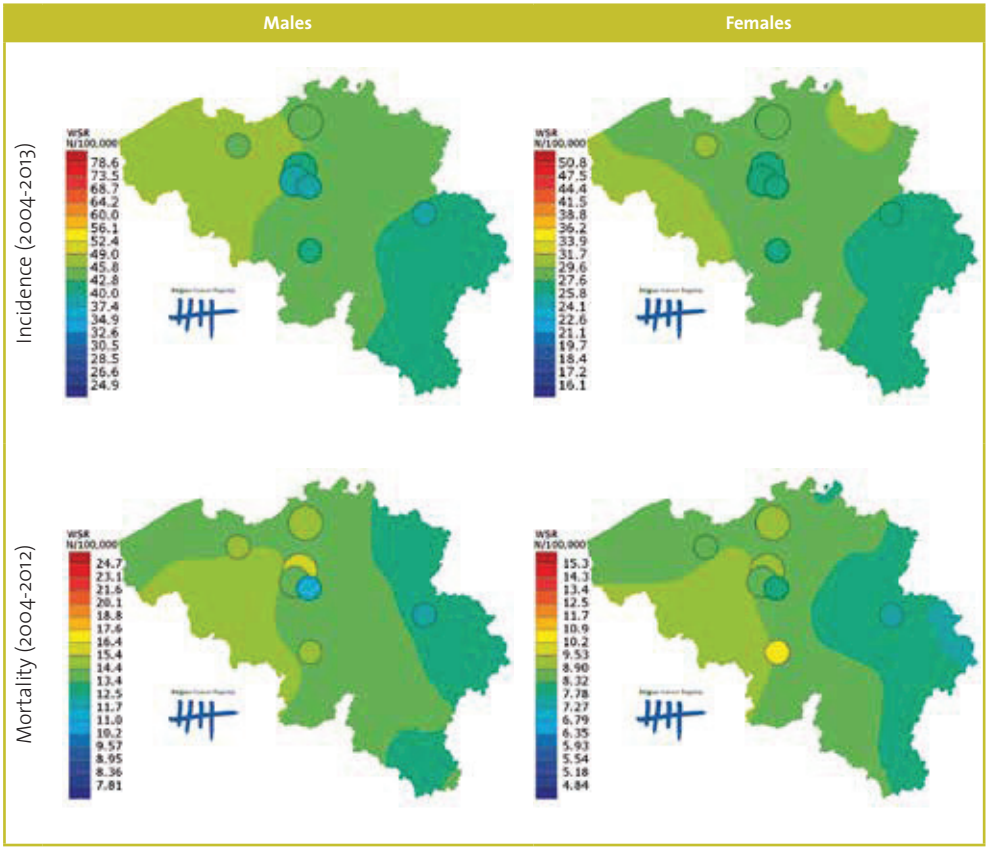
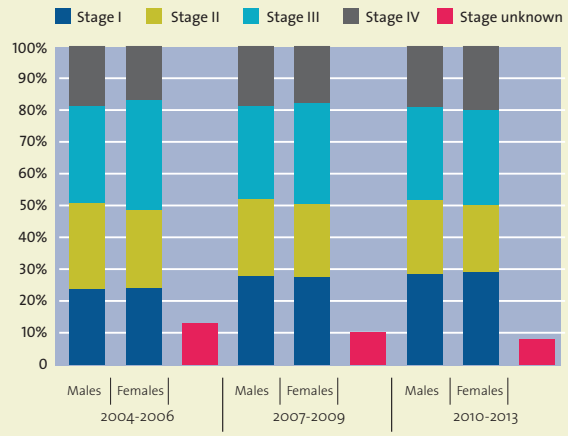
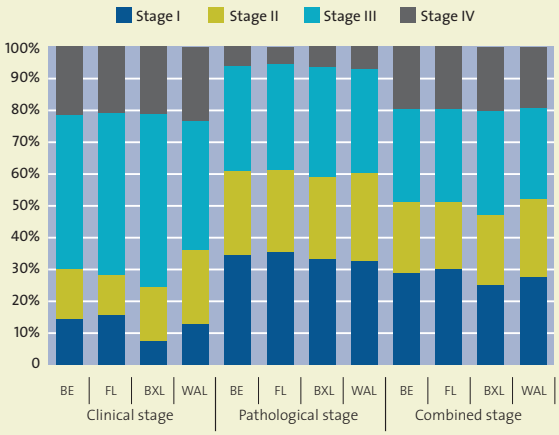



**Figure 4** Rectal cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



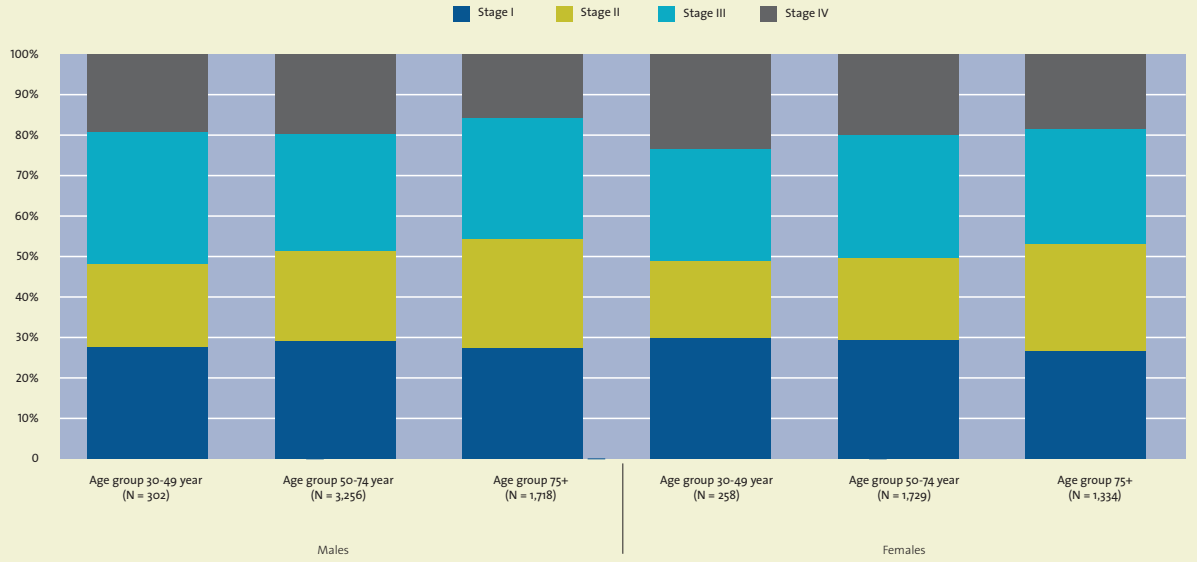

Source: Belgian Cancer Registry

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



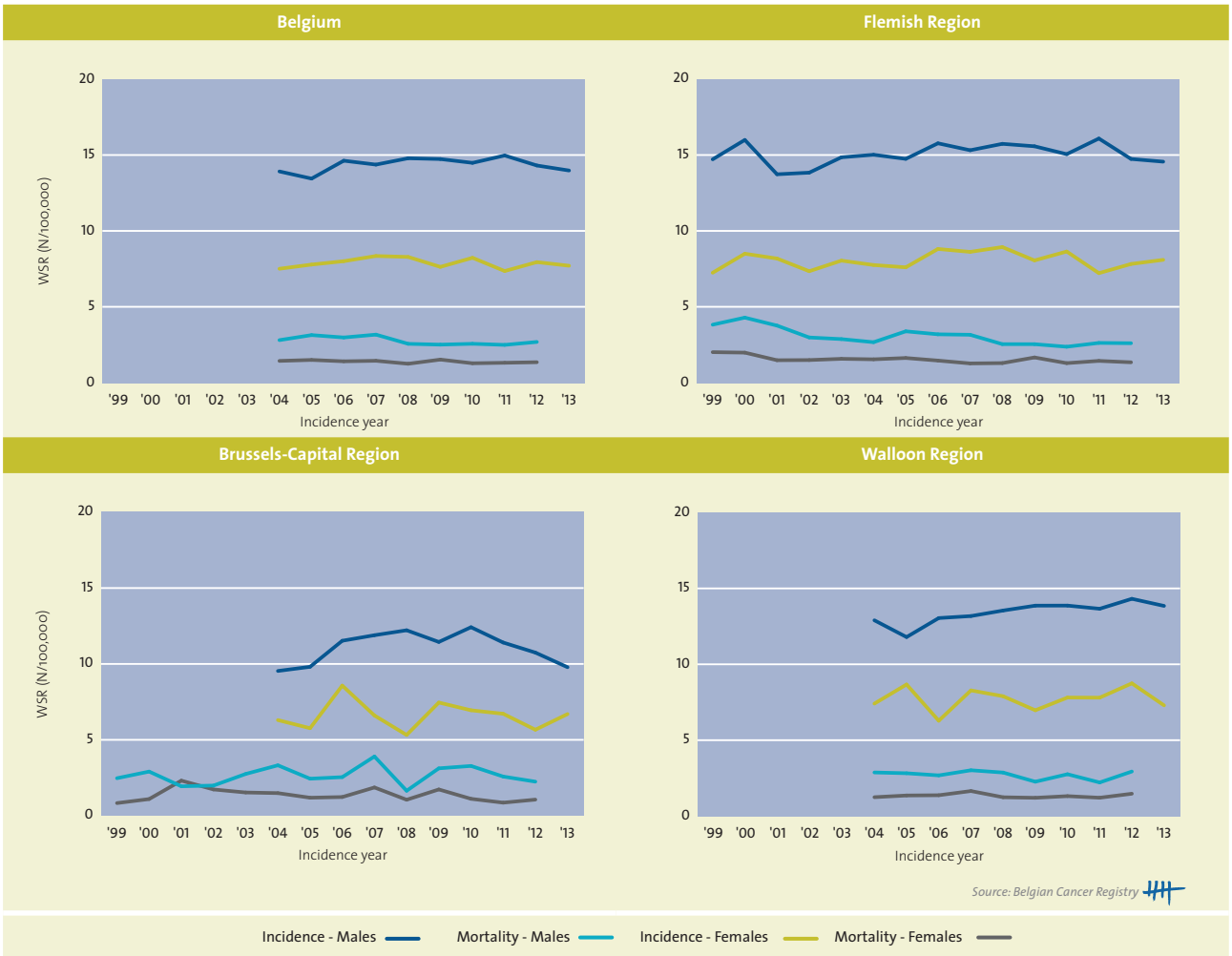

Source: Belgian Cancer Registry

**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

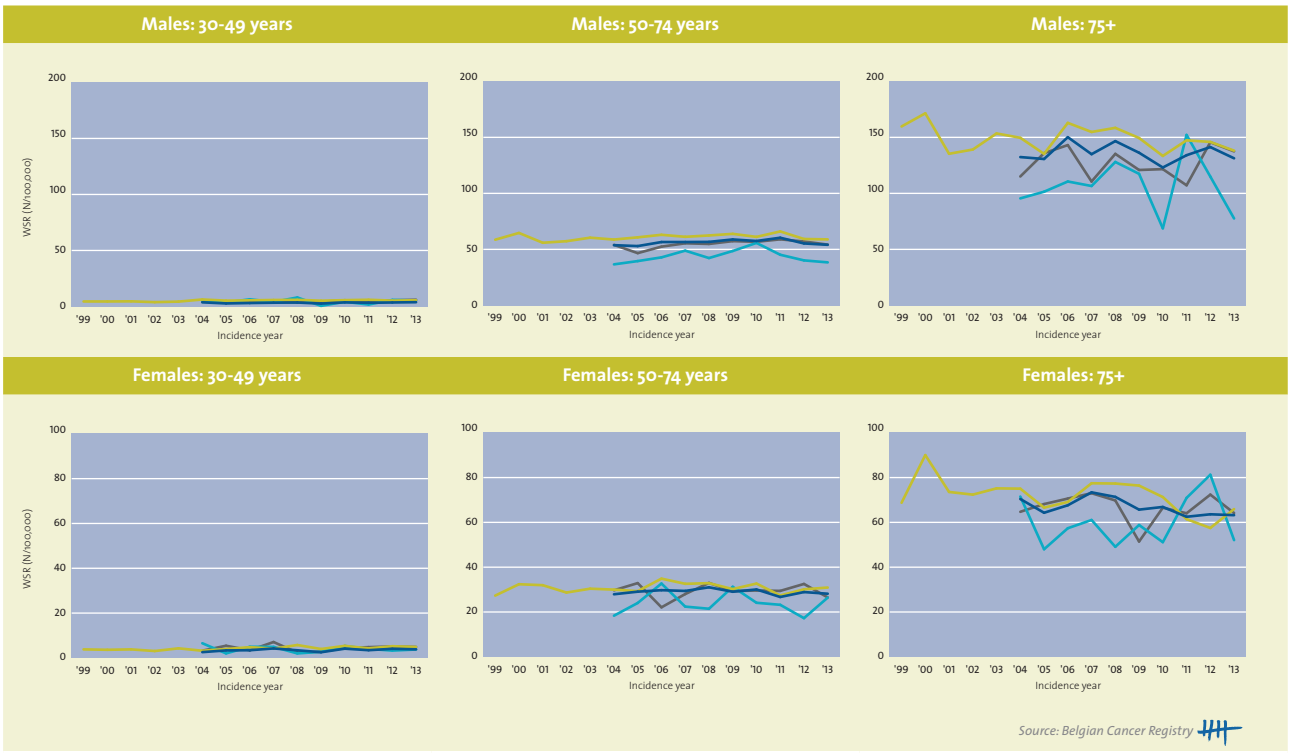



**Figure 9** Rectal cancer: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013

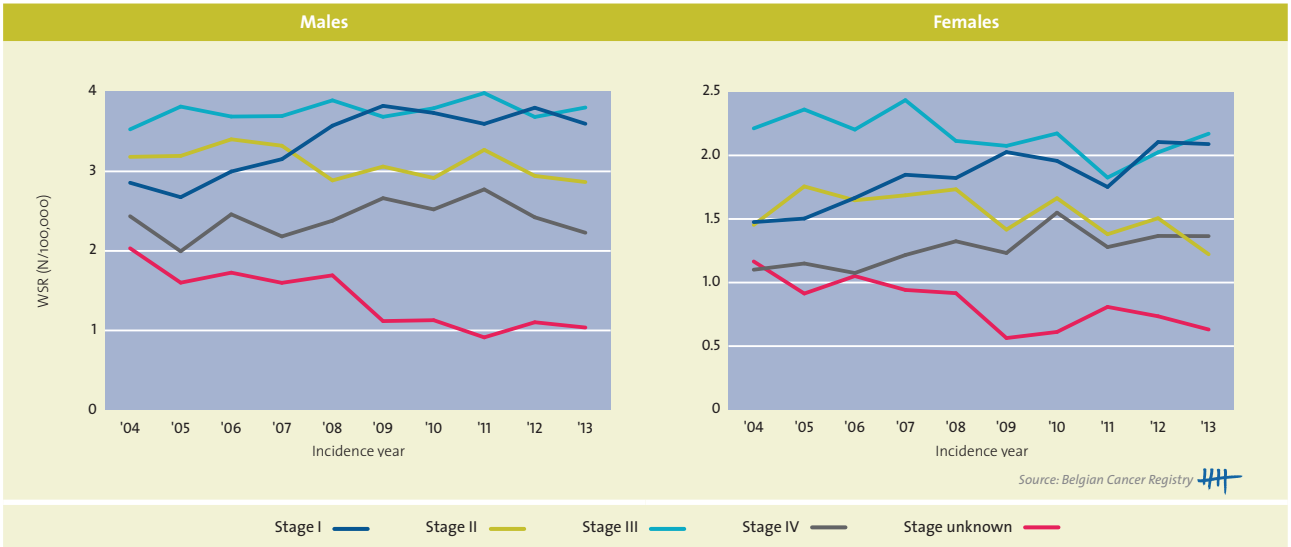


**Figure 10** Rectal cancer: Trends in age-standardised incidence (WSR) by stage, age group and sex, Belgium 2004-2013

**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 |

| | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Incidence by stage | 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 occured, 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

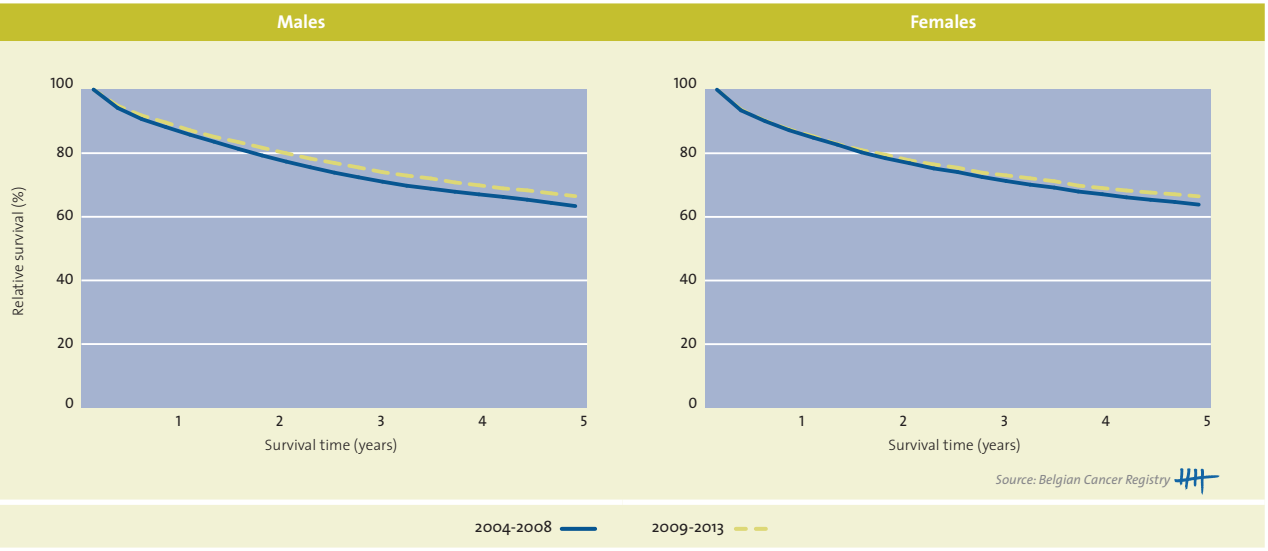
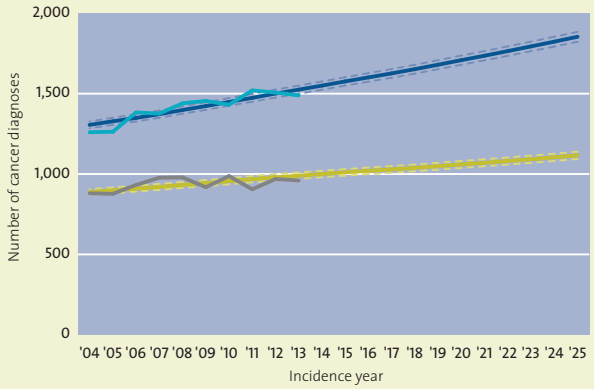


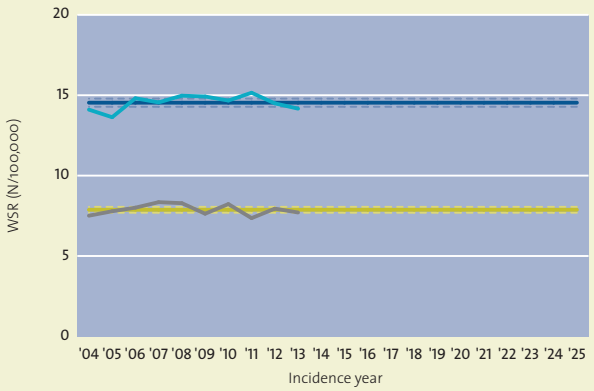

**Figure 12** Rectal cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

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




Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

## 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[1]) 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 (**Figure 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

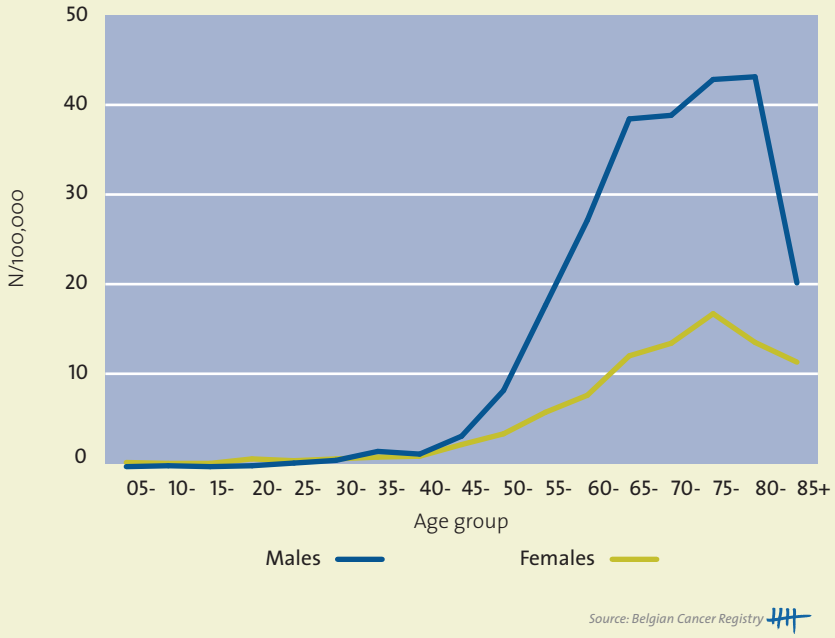



**Figure 2** Liver cancer: Comparison of age-standardised incidence rates (WSR). *(Selection of European registry data)*

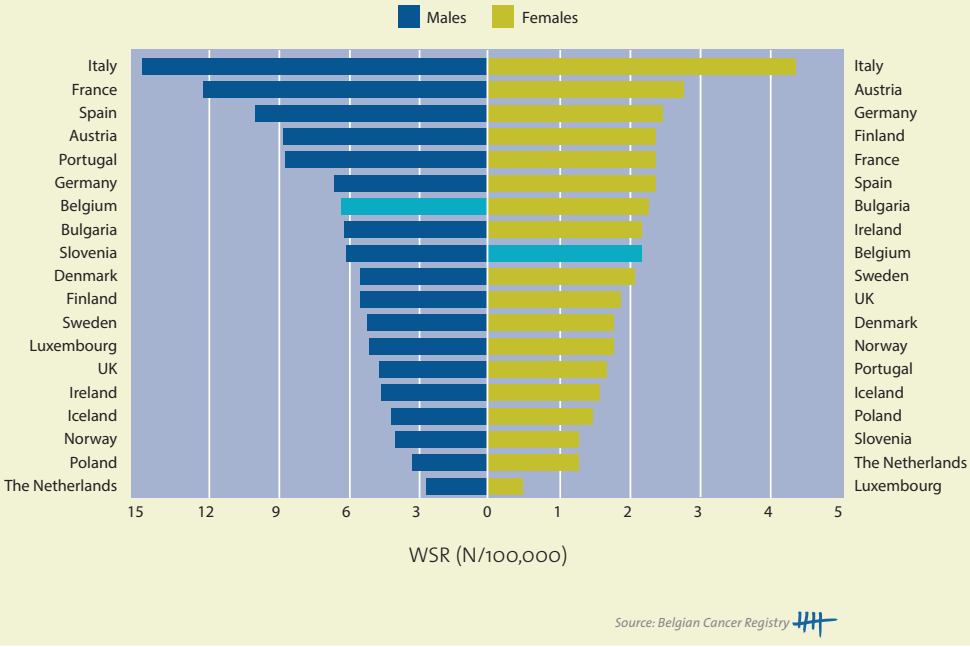


**Figure 3** Liver cancer: Age-standardised incidence and mortality (WSR) by sex in Belgium

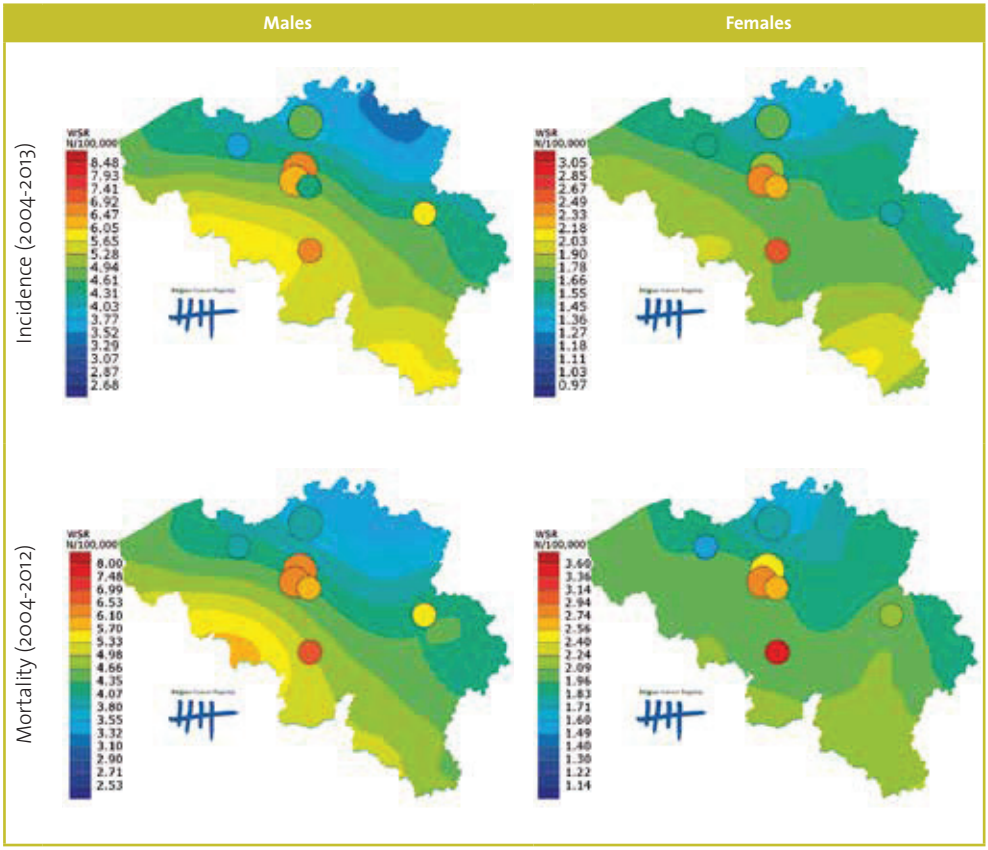
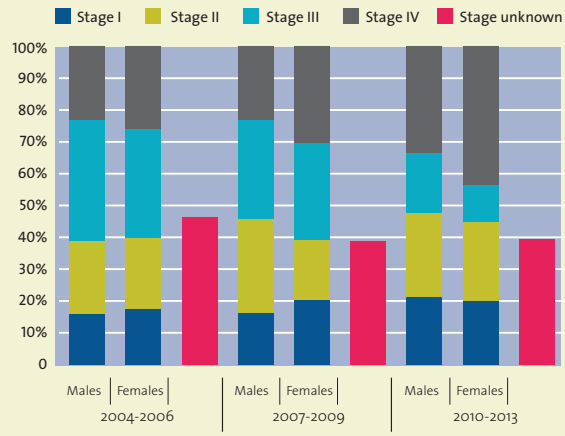
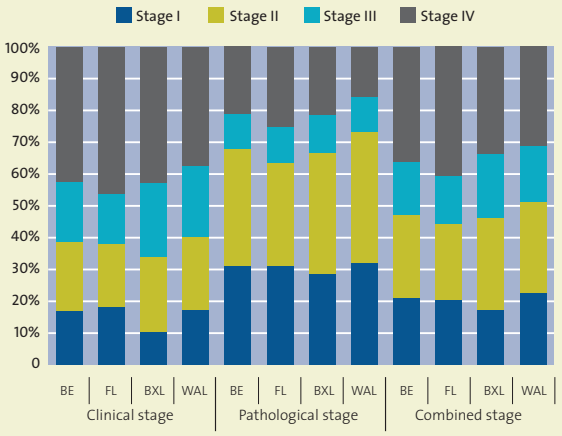



**Figure 4** Liver cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



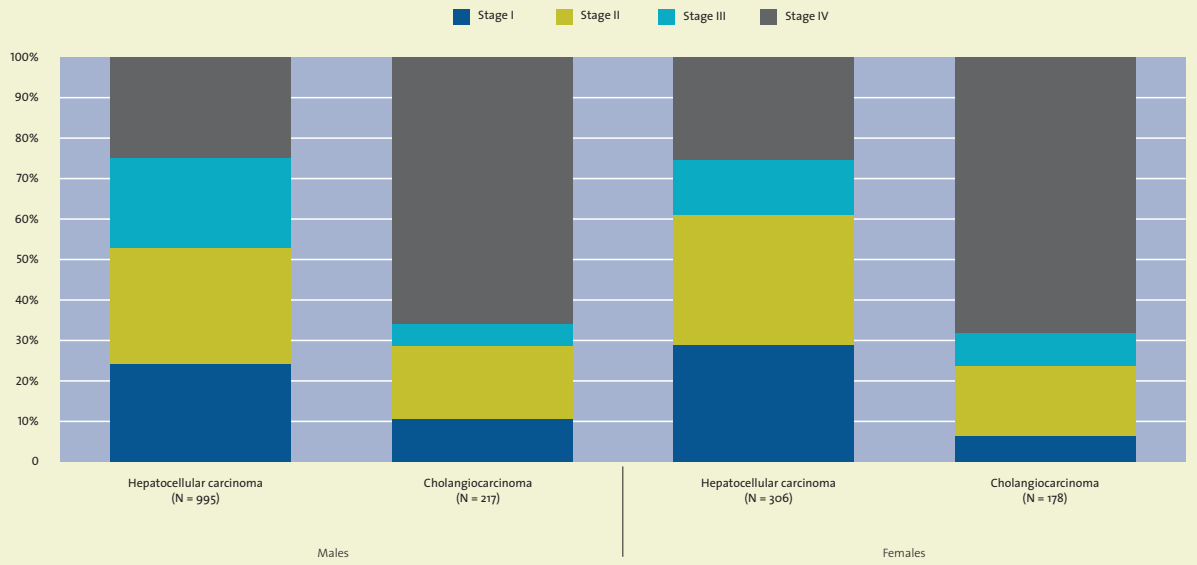

Source: Belgian Cancer Registry

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



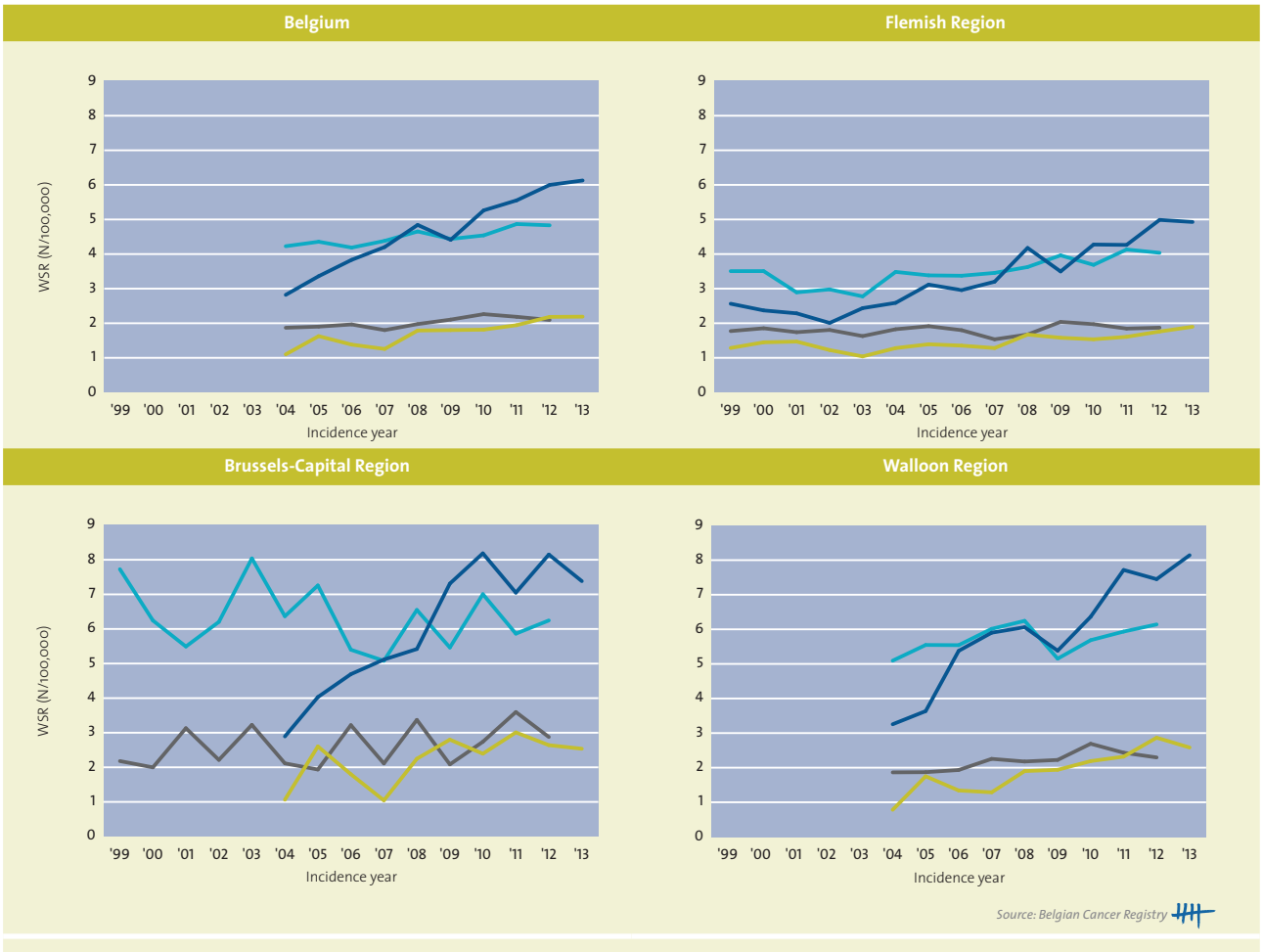

Source: Belgian Cancer Registry

**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*

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

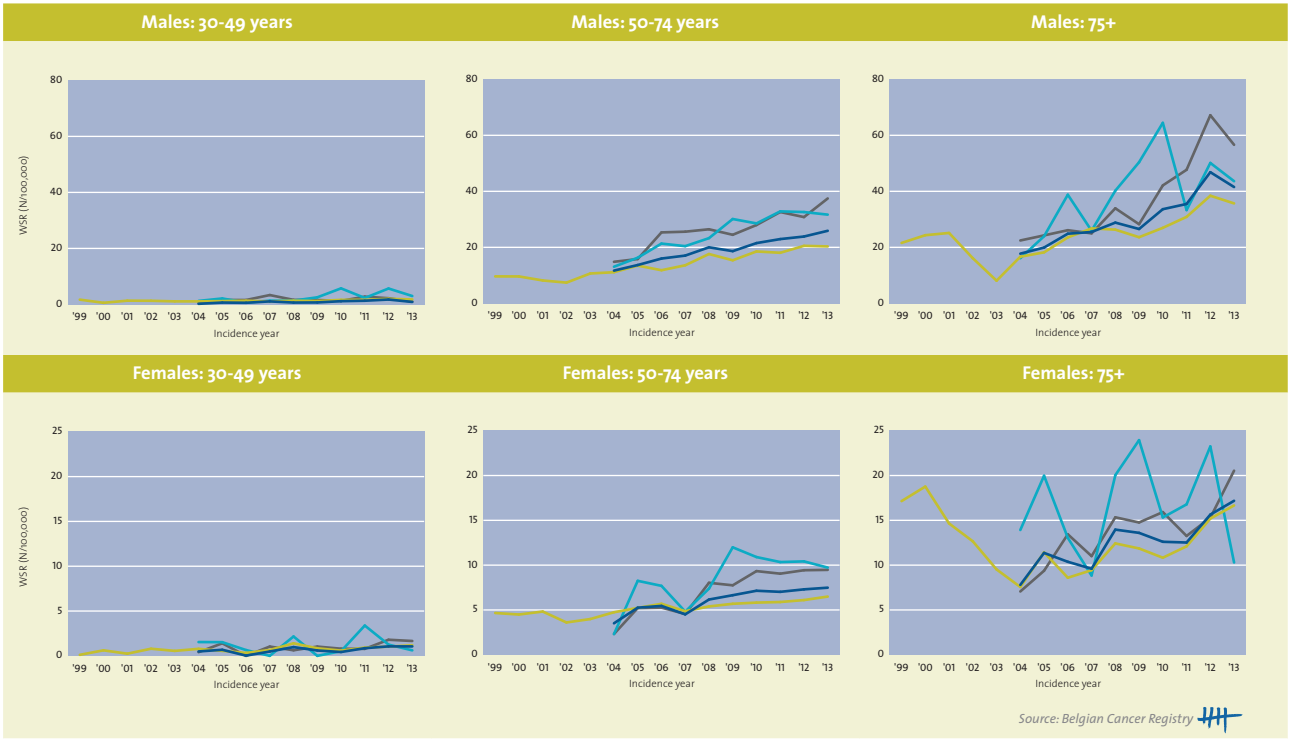



**Figure 9** Liver cancer: Trends in age-standardised incidence (WSR) by sex and histology, Belgium 2004-2013

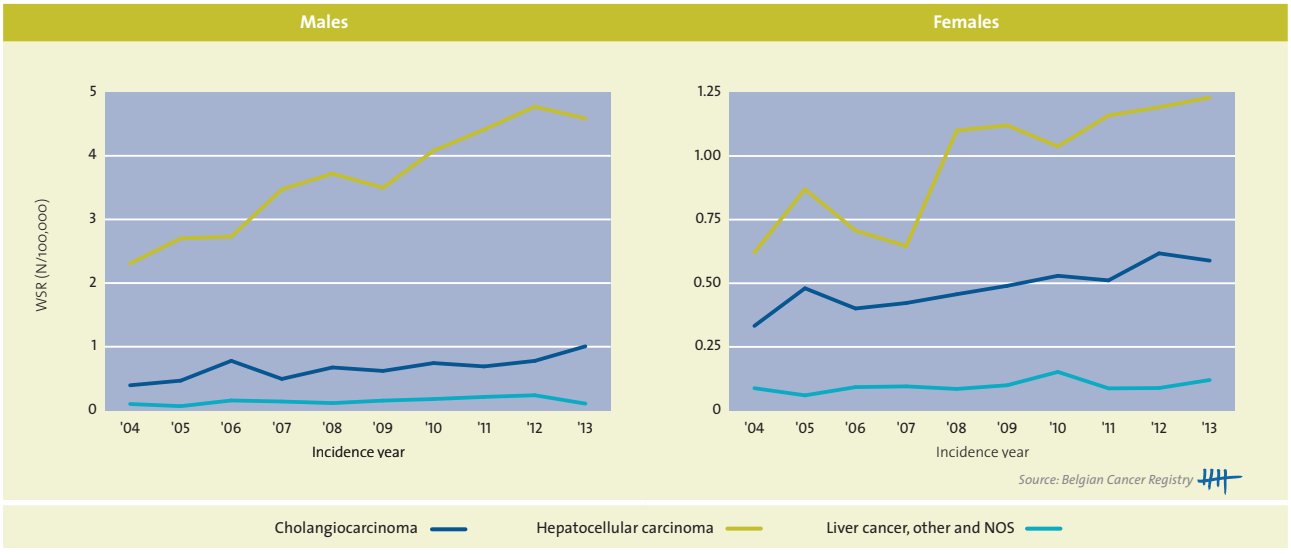


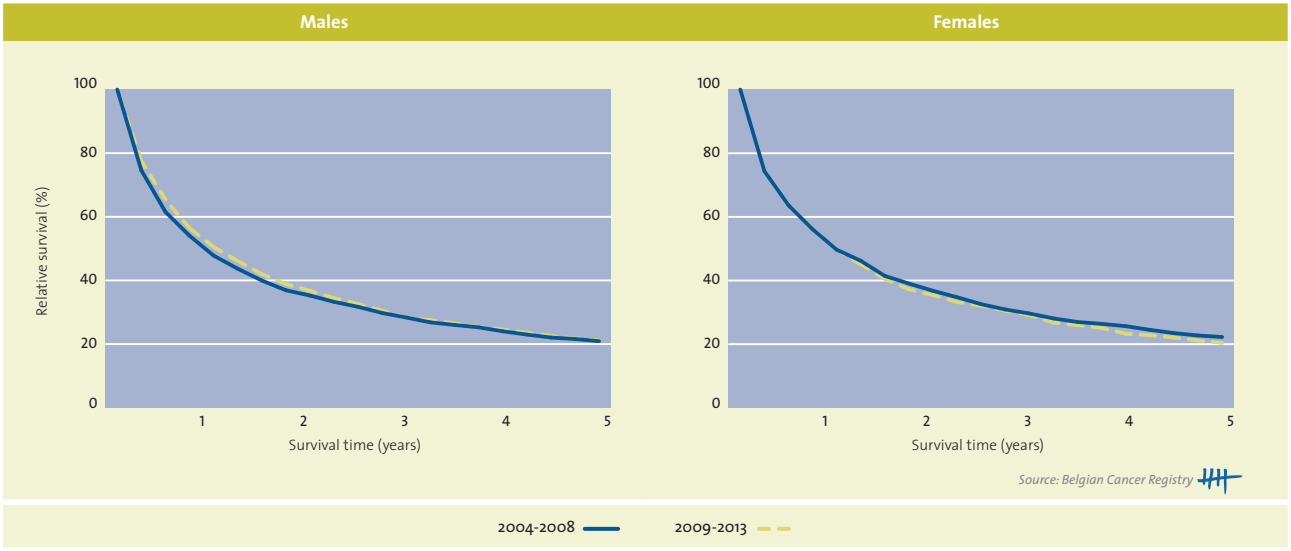
**Table 2** Liver cancer: AAPC(%) by sex, region, histology and age group in Belgium

| 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*

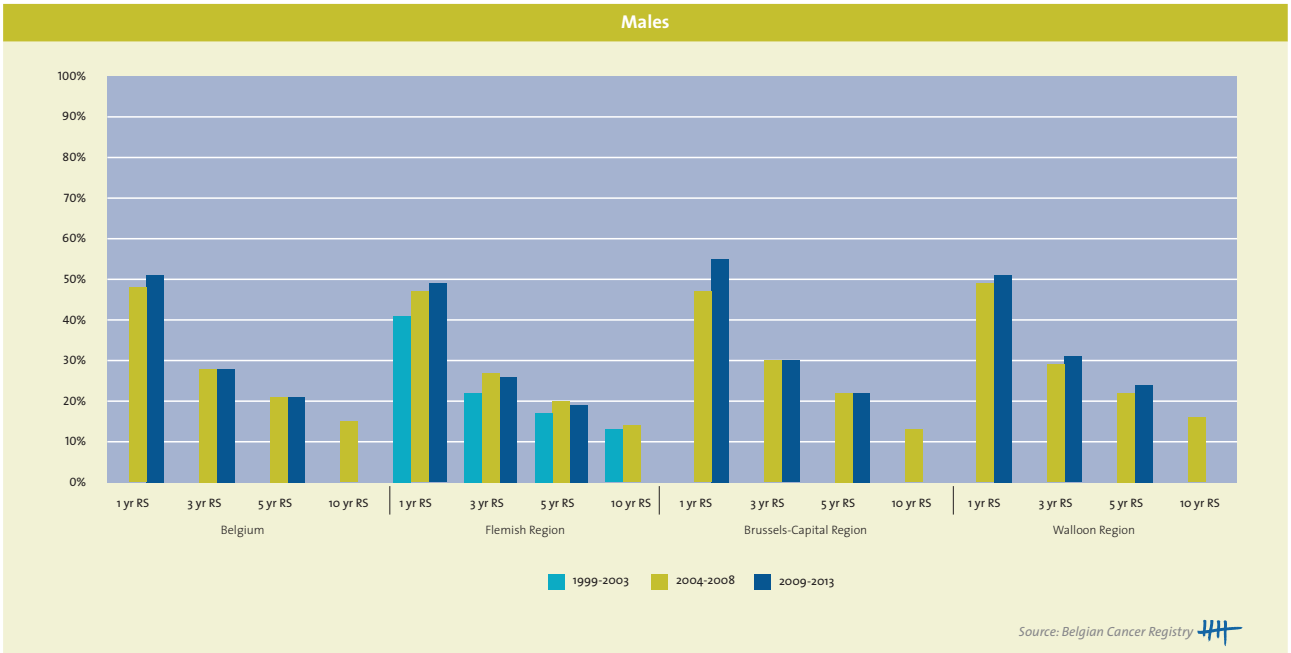
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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

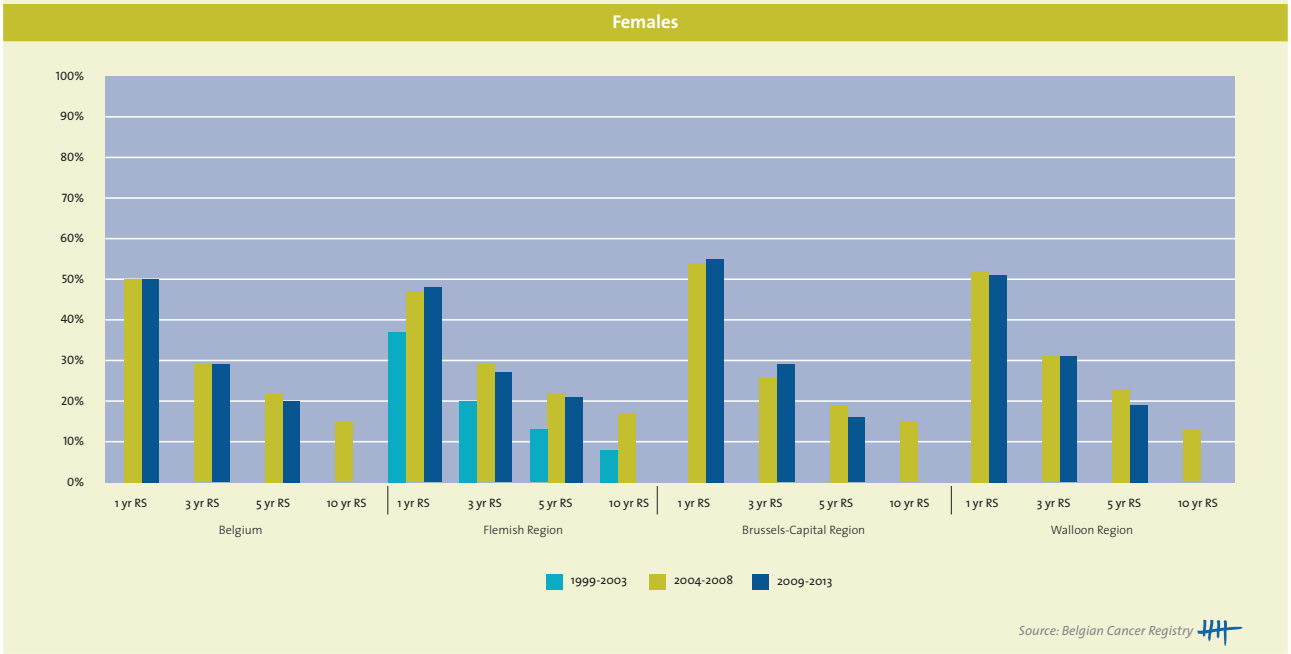



Source: Belgian Cancer Registry

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

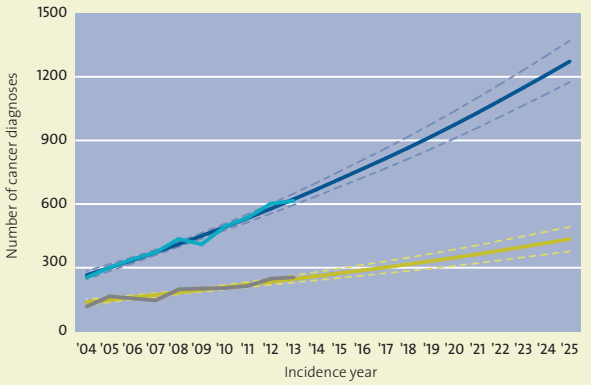



Source: Belgian Cancer Registry



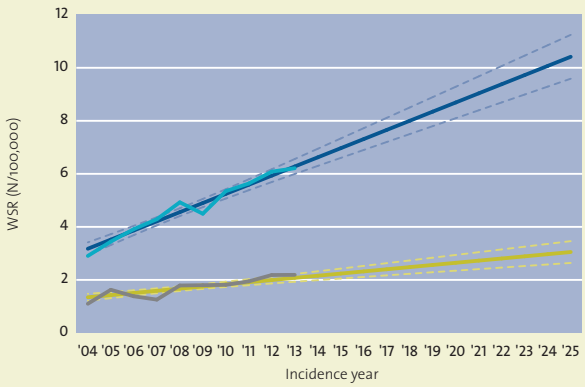

Source: Belgian Cancer Registry

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




*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

### !!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 end 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**

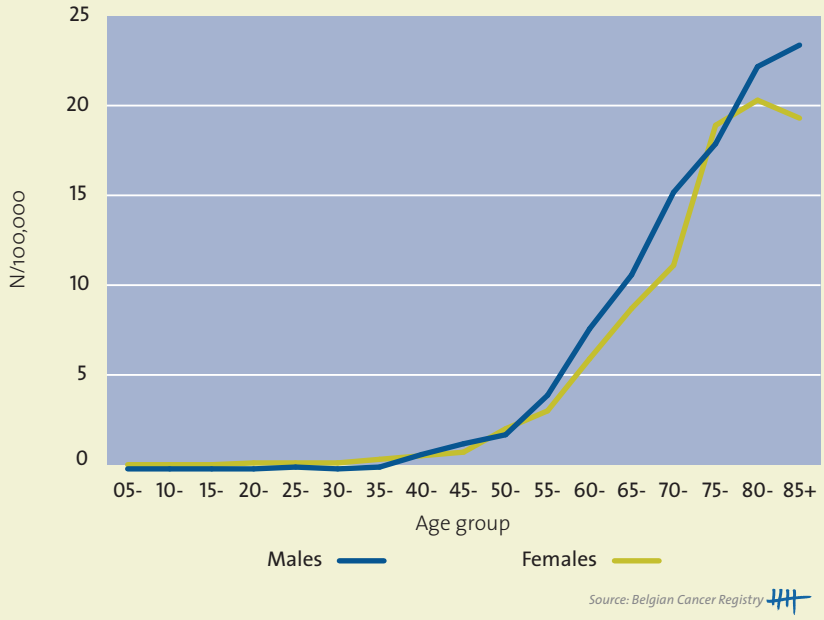



**Figure 2** **Cancer of the gallbladder and biliary tract: Comparison of age-standardised incidence rates (WSR)** ***(Selection of European registry data)***

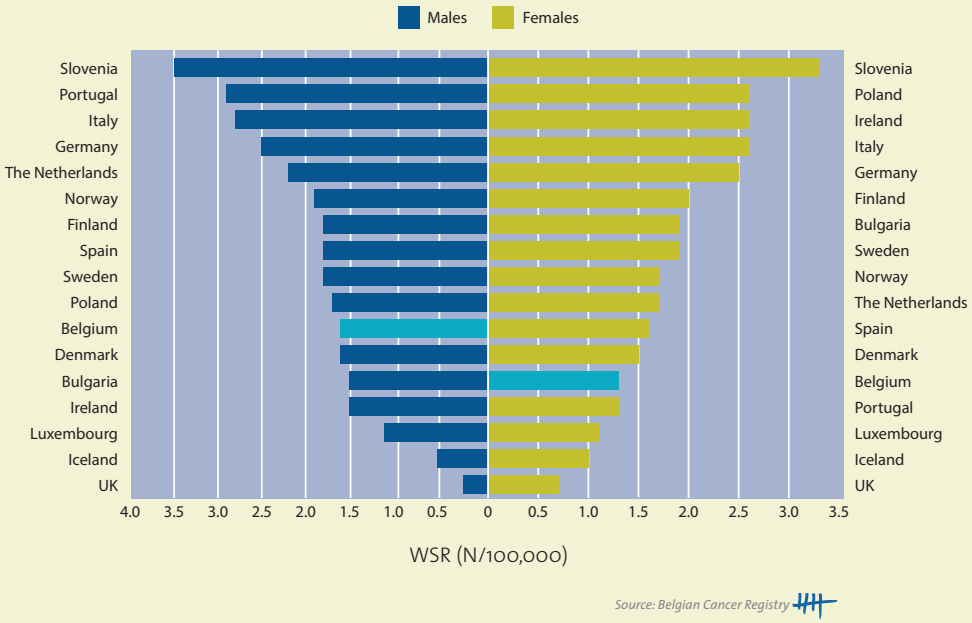


**Figure 3** Cancer of the gallbladder and biliary tract: Age-standardised incidence (WSR) by sex in Belgium

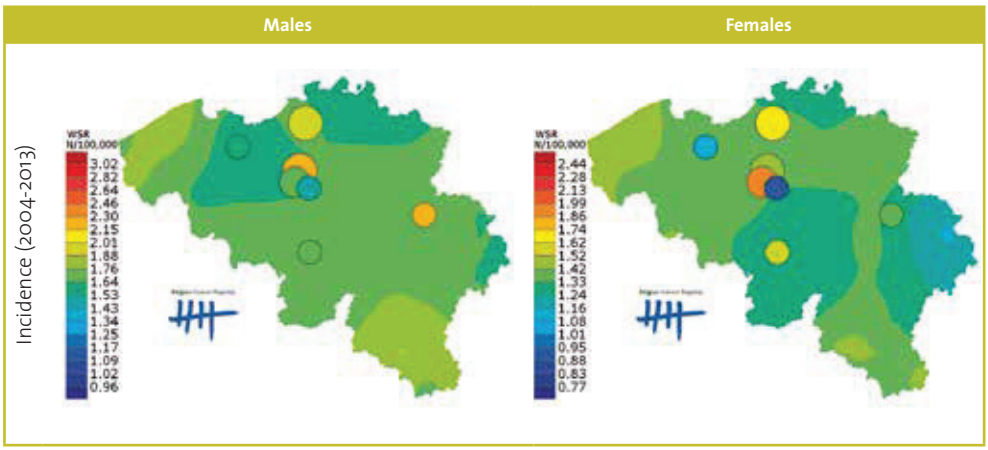
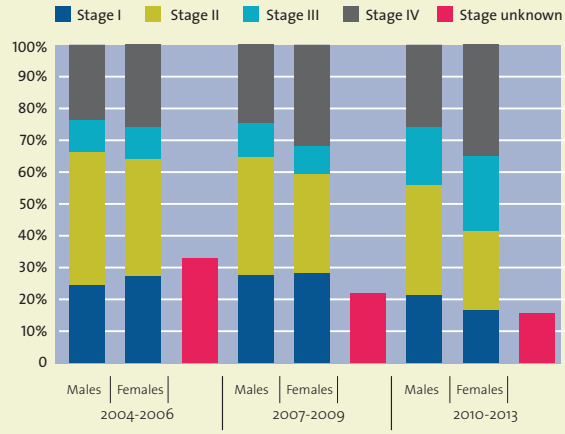
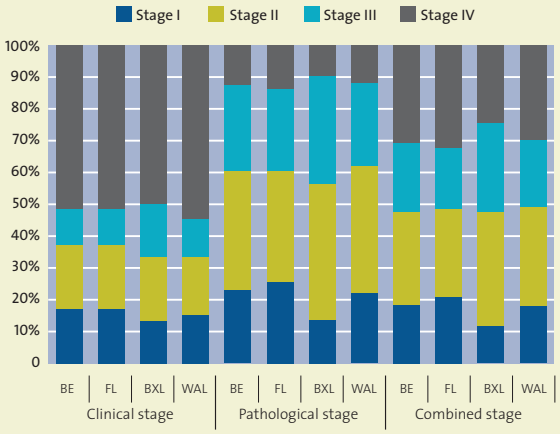



**Figure 4** Cancer of the gallbladder and biliary tract: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013




*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

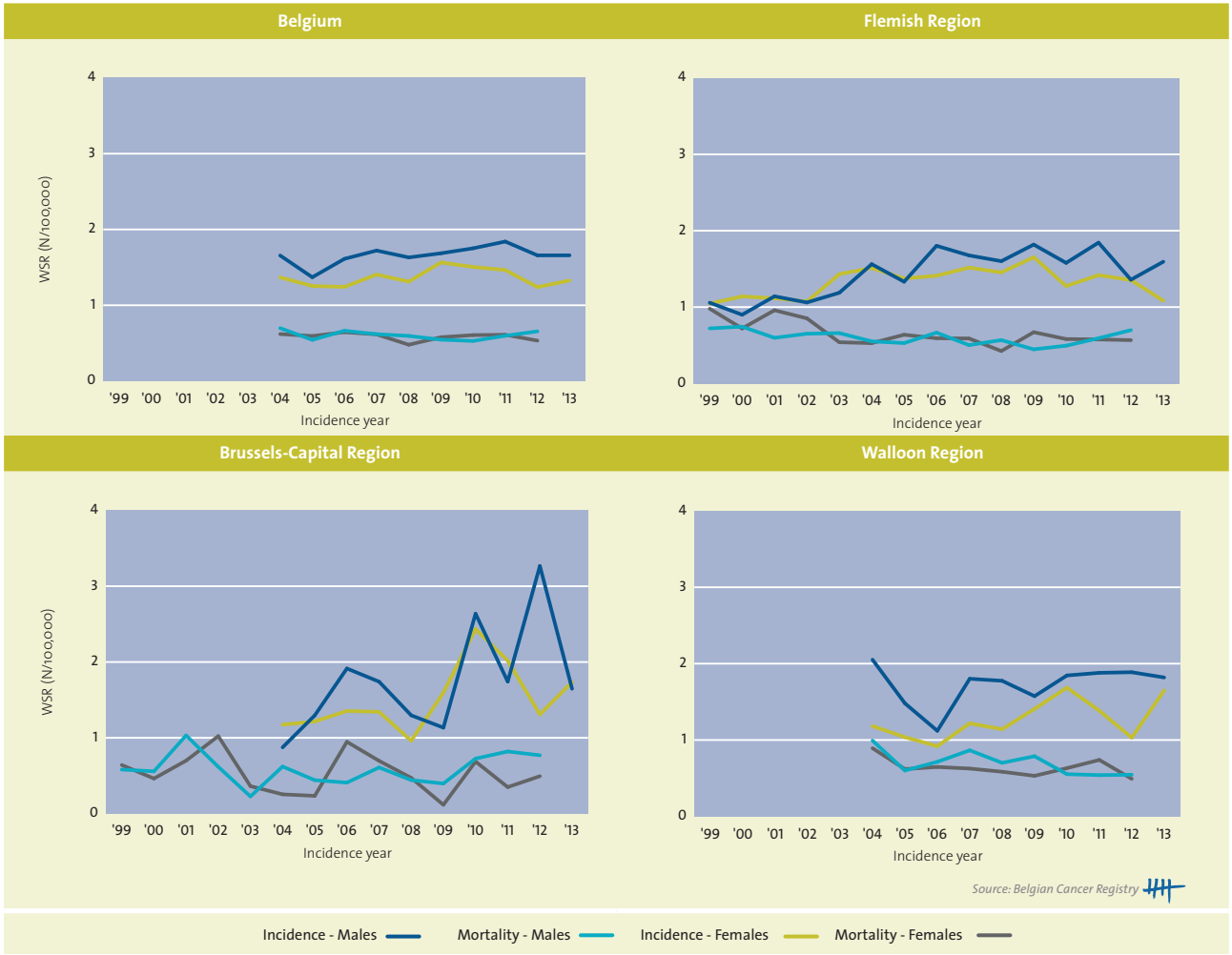



**Figure 7** Cancer of the gallbladder and biliary tract: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

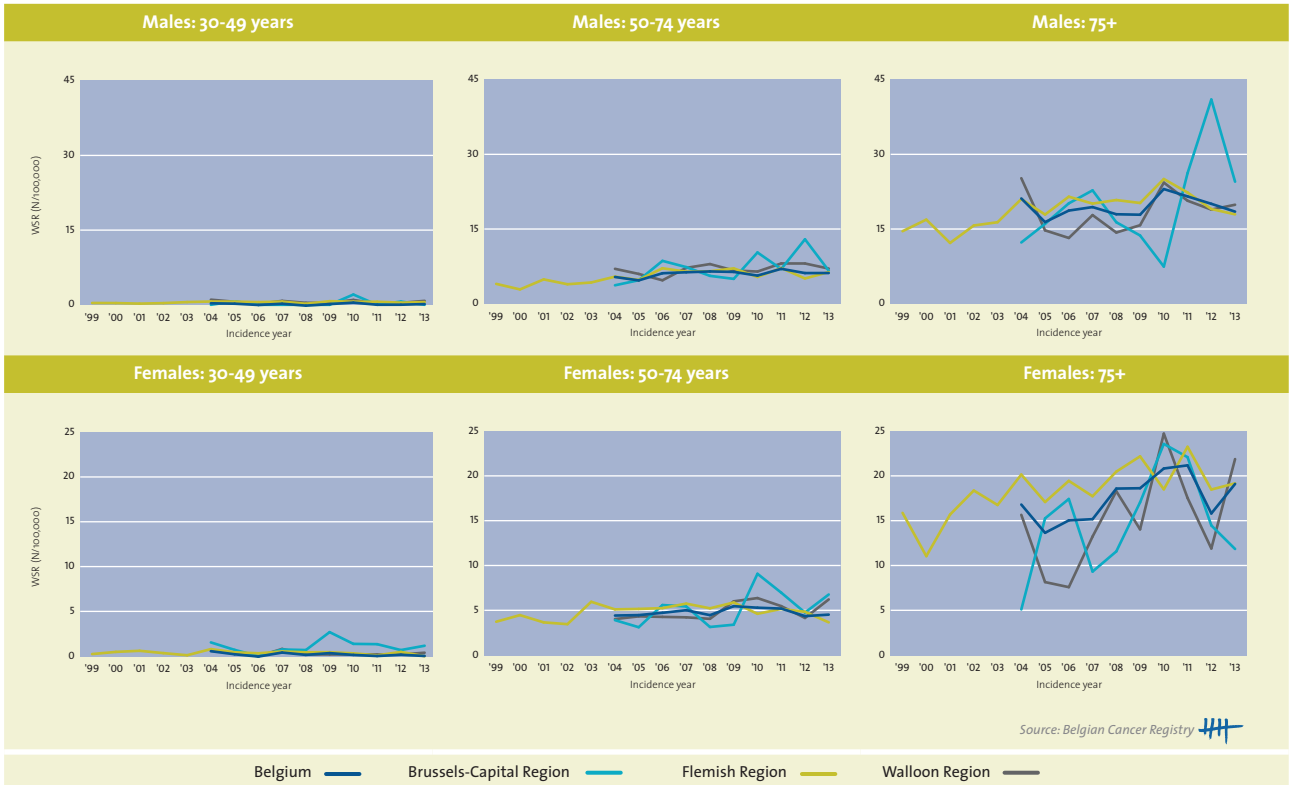


**Table 2** Cancer of the gallbladder and biliary tract: AAPC(%) by sex, region and age group in Belgium

| 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 occured, 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

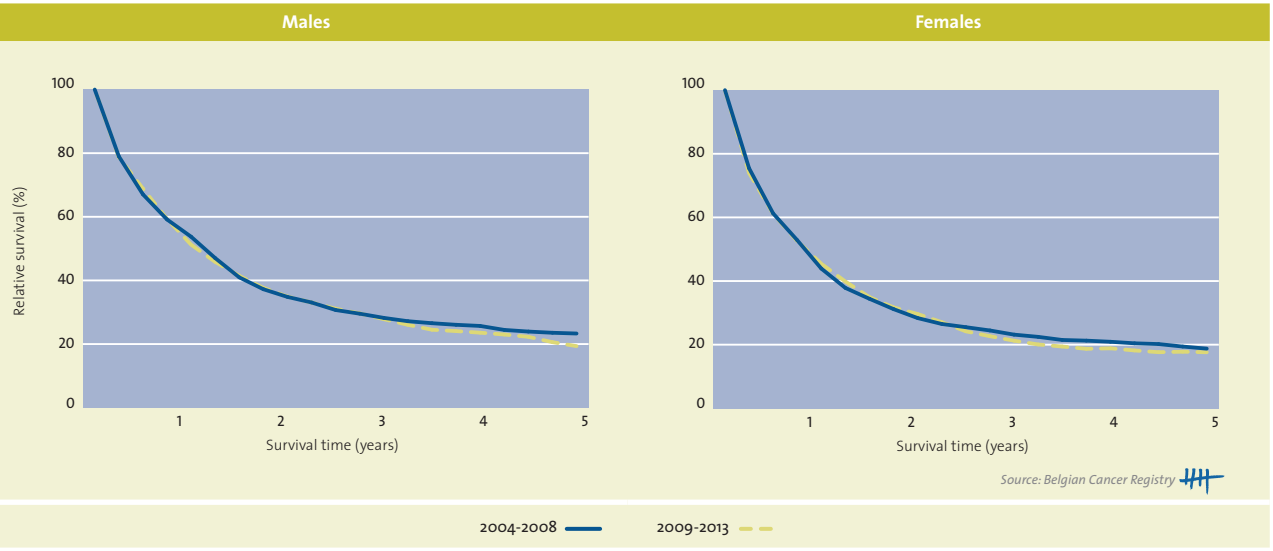
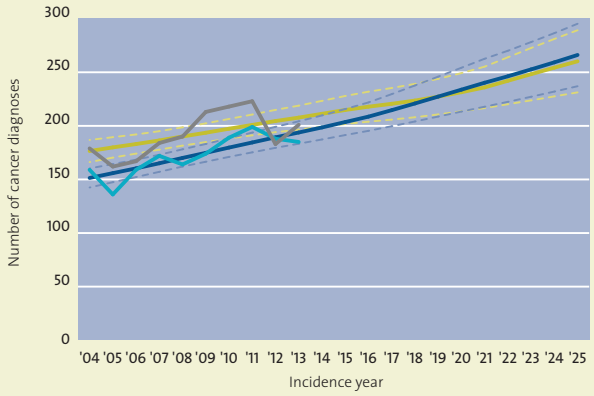


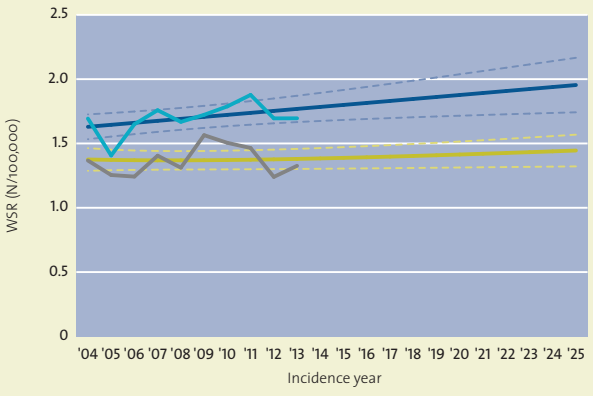

**Figure 9** Cancer of the gallbladder and biliary tract: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

**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 (Projected) — Females (Observed) — Females (Projected)

## !!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

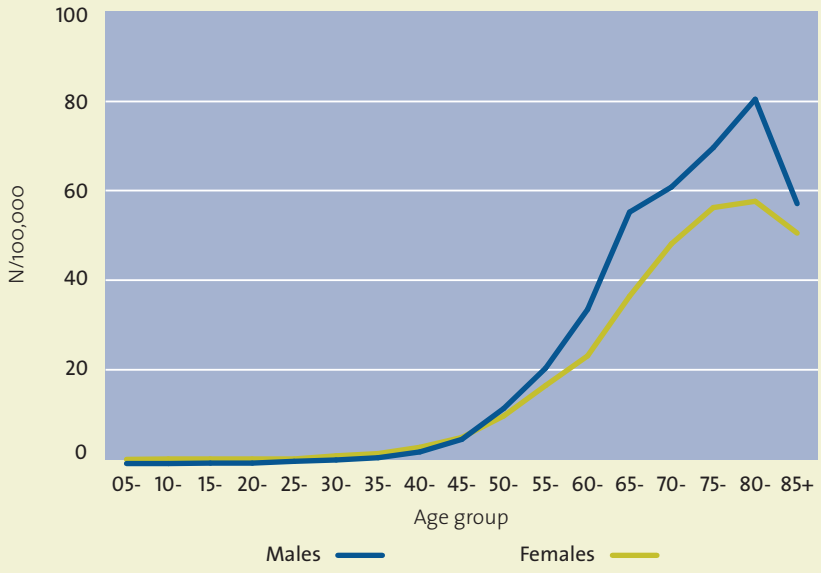
| Pancreatic cancer | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Incidence, 2013 | N | CR | WSR | N | CR | WSR |
| Belgium | 858 | 15.8 | 8.1 | 818 | 14.5 | 6.3 |
| Flemish Region | 495 | 15.7 | 7.5 | 463 | 14.3 | 5.9 |
| Brussels-Capital Region | 63 | 11.2 | 7.8 | 69 | 11.6 | 6.0 |
| 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 31/21/2013) 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.

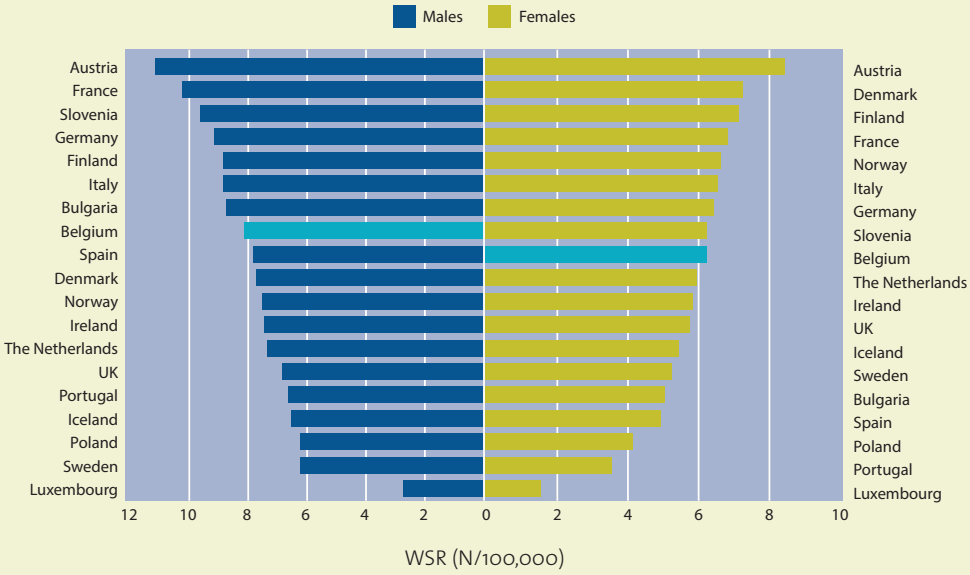
- Age group 75+:
  - Males have higher incidence rates than females (M/F ratio = 1.2).
  - The incidence rates increase with 4-5% annually in males and 5% annually in females.
- 60% of all pancreatic cancers with known stage are diagnosed in advanced stages (stage III or IV), in both males and females (**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

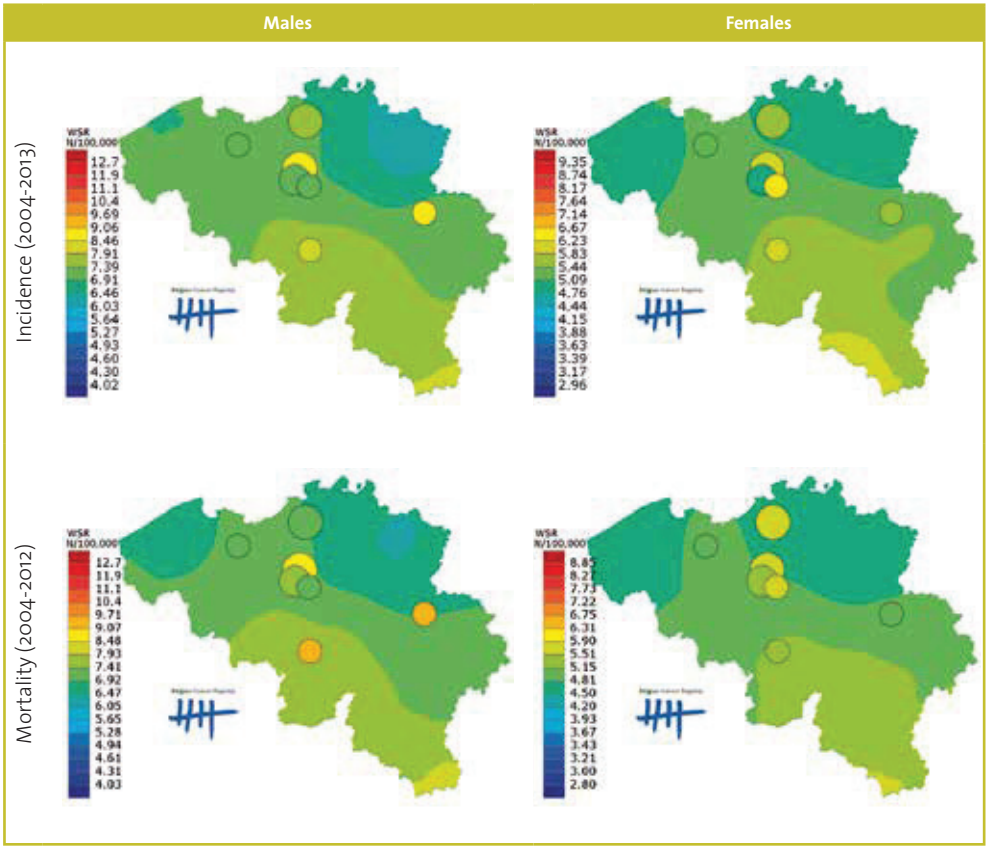
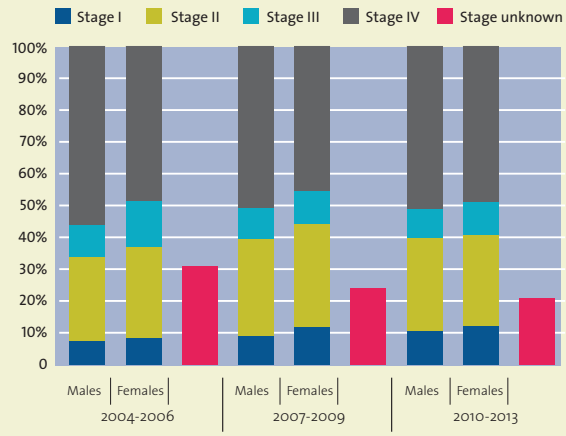
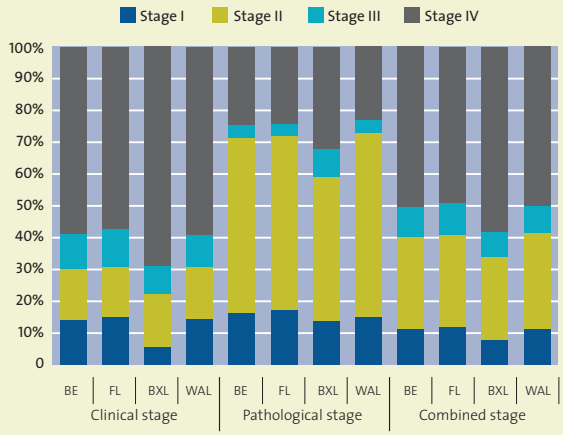



**Figure 4** Pancreatic cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013




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

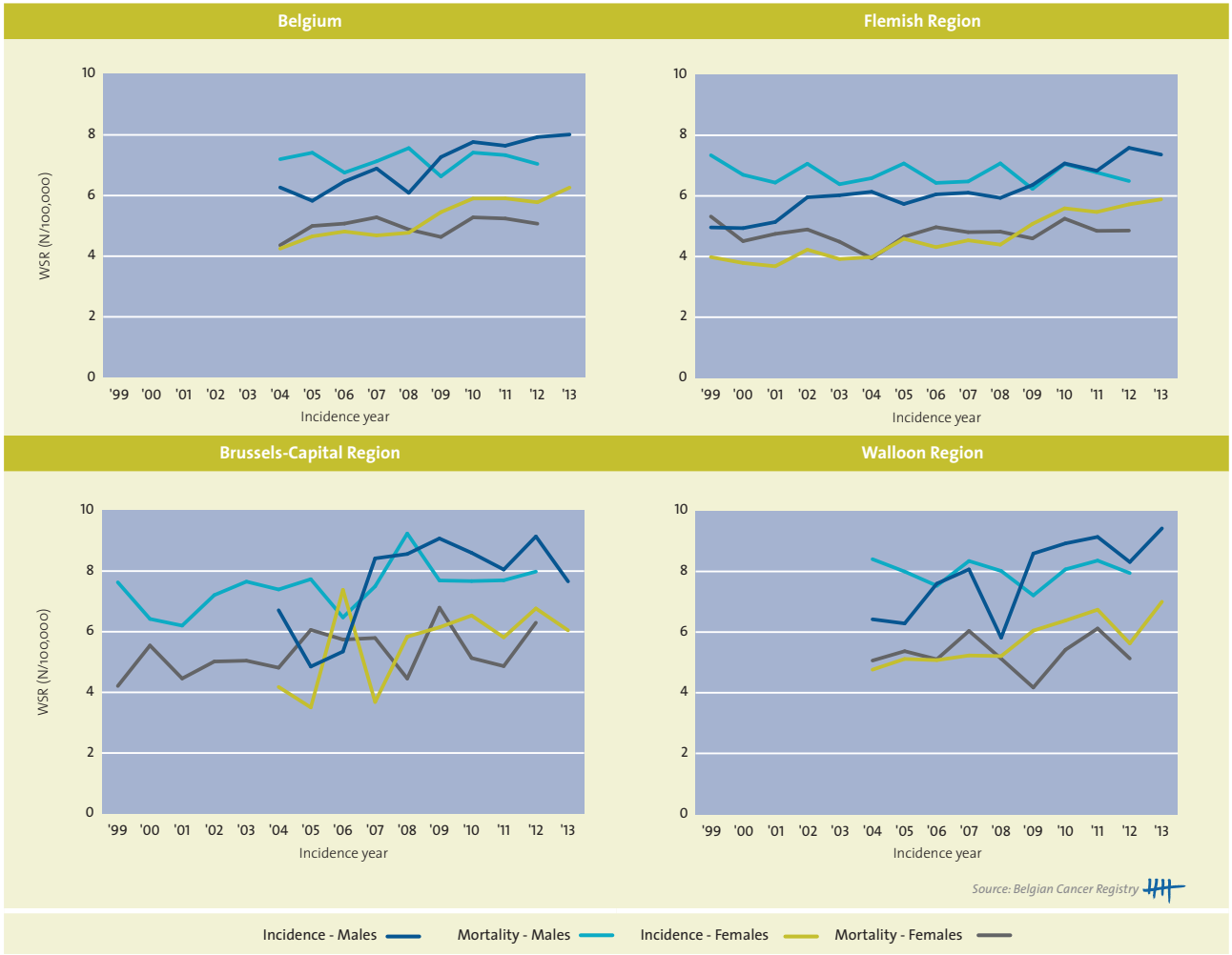



**Figure 7** Pancreatic cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2003

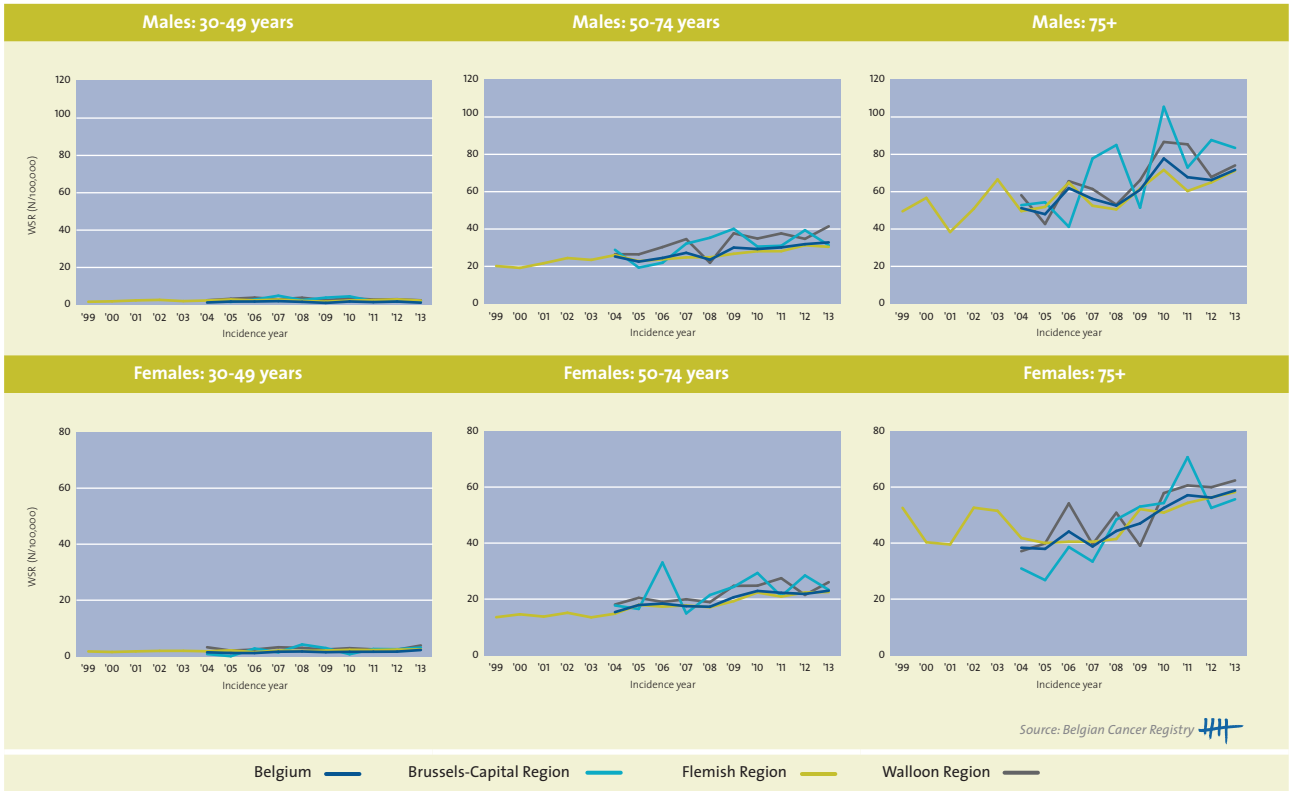


**Figure 8** Pancreatic cancer: Trends in age-standardised incidence (WSR) by sex and stage, Belgium 2004-2013

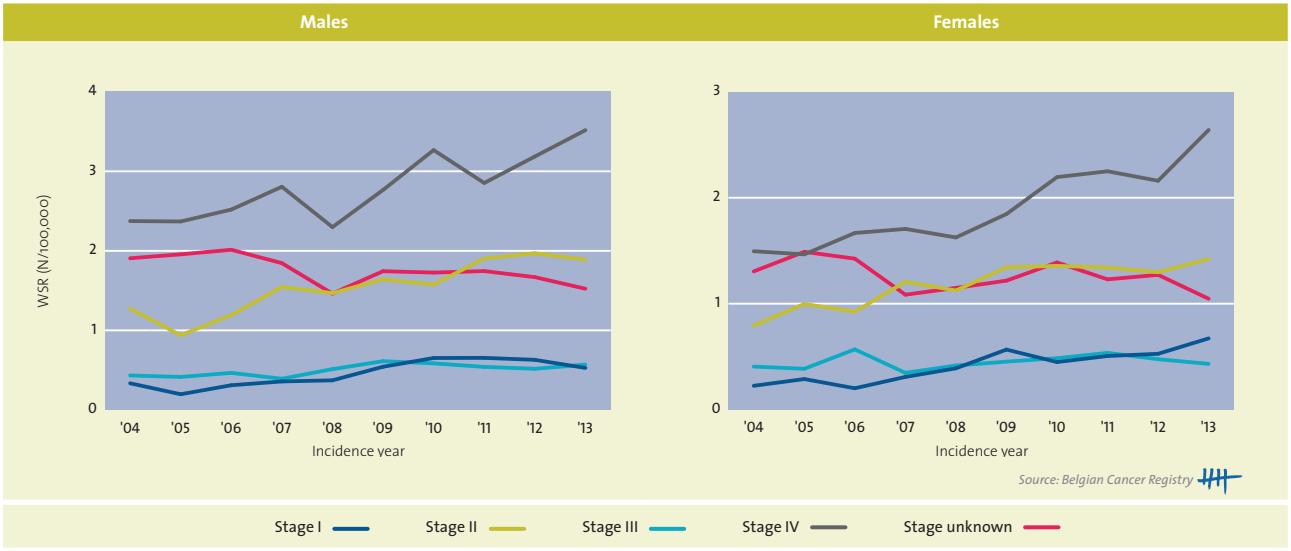


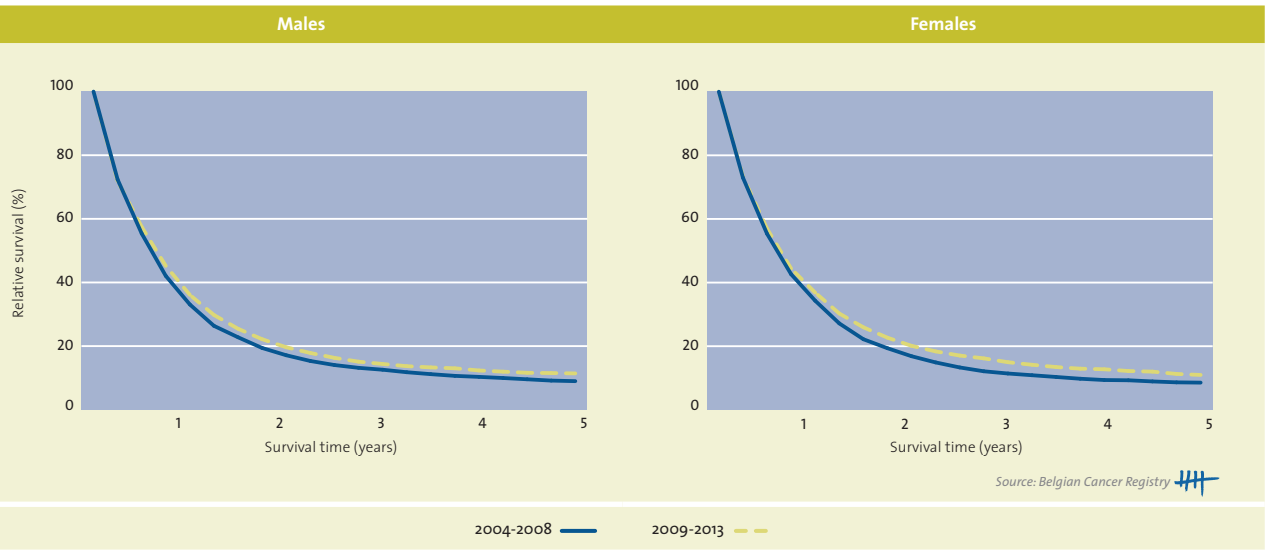

**Table 2** Pancreatic cancer: AAPC(%) by sex, region, stage and age group in Belgium

| 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*

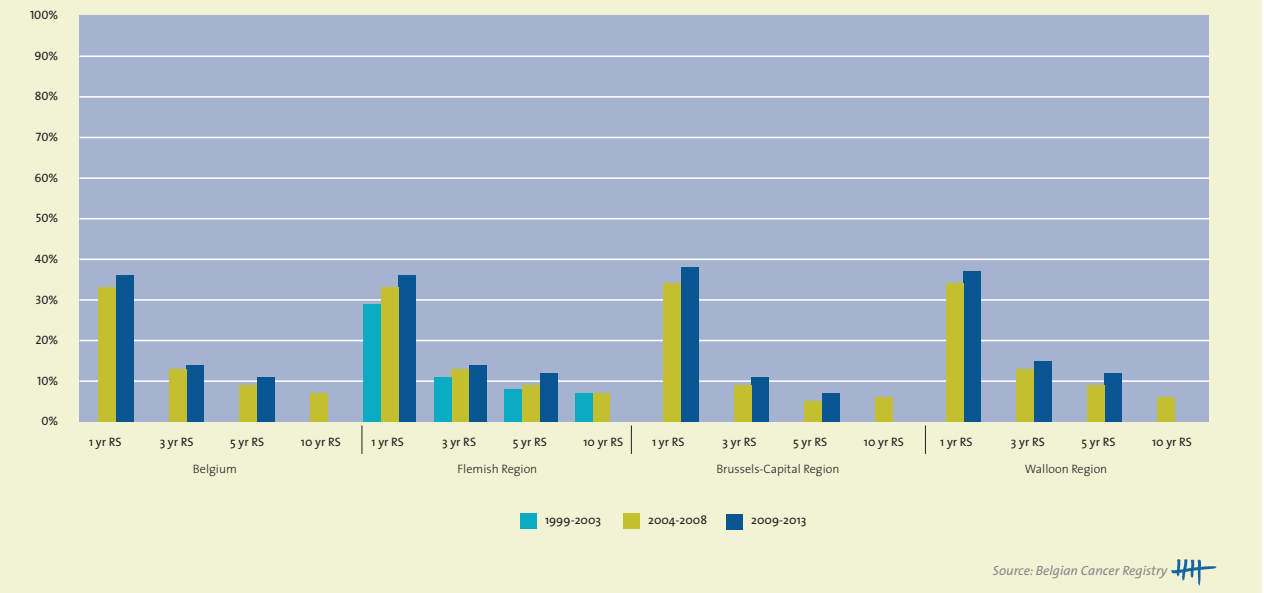
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

**Figure 9** Pancreatic cancer: Relative survival by cohort and sex, Belgium 2004-2013

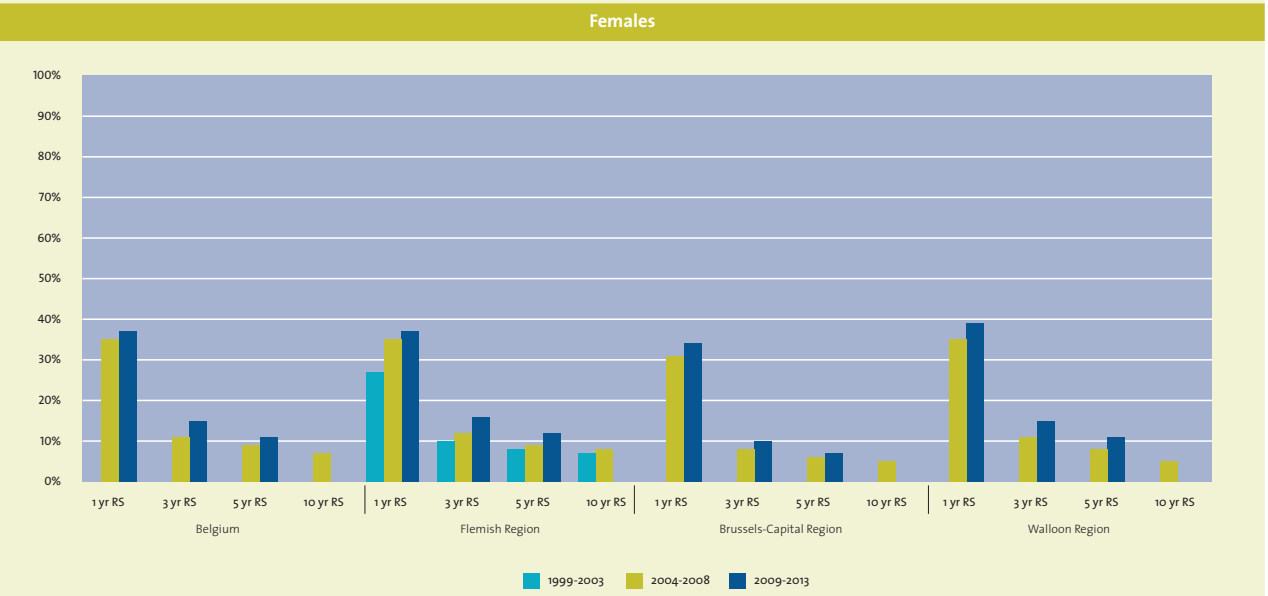



Source: Belgian Cancer Registry

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

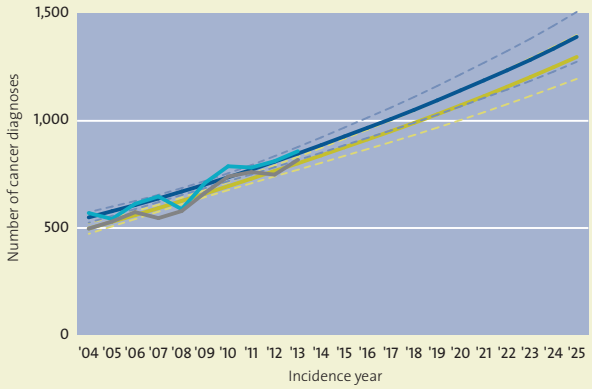



Source: Belgian Cancer Registry



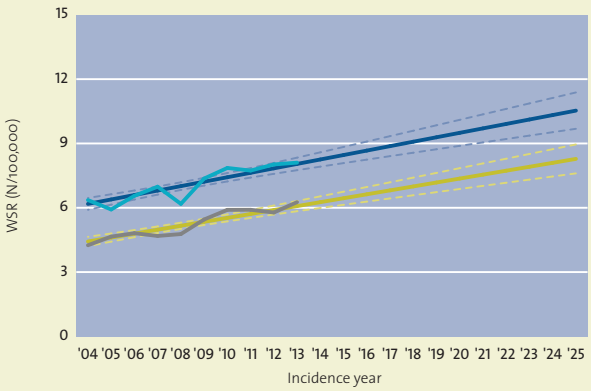

Source: Belgian Cancer Registry

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




*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

## 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 |
| mixed exocrine-(neuro)endocrine carcinoma of the pancreas | | 8154/3 |
| | mixed islet cell and exocrine adenocarcinoma of the pancreas | 8154/3 |
| | 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[1]. 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.

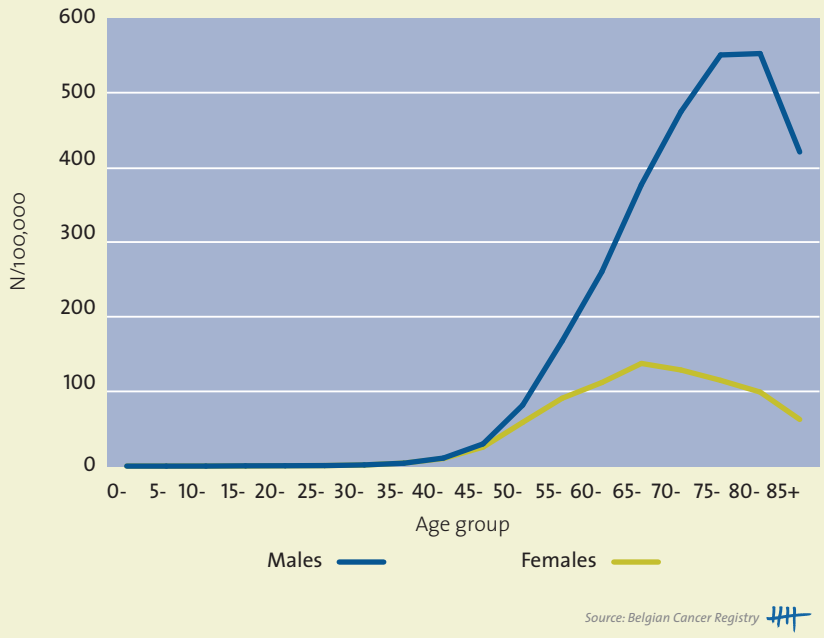
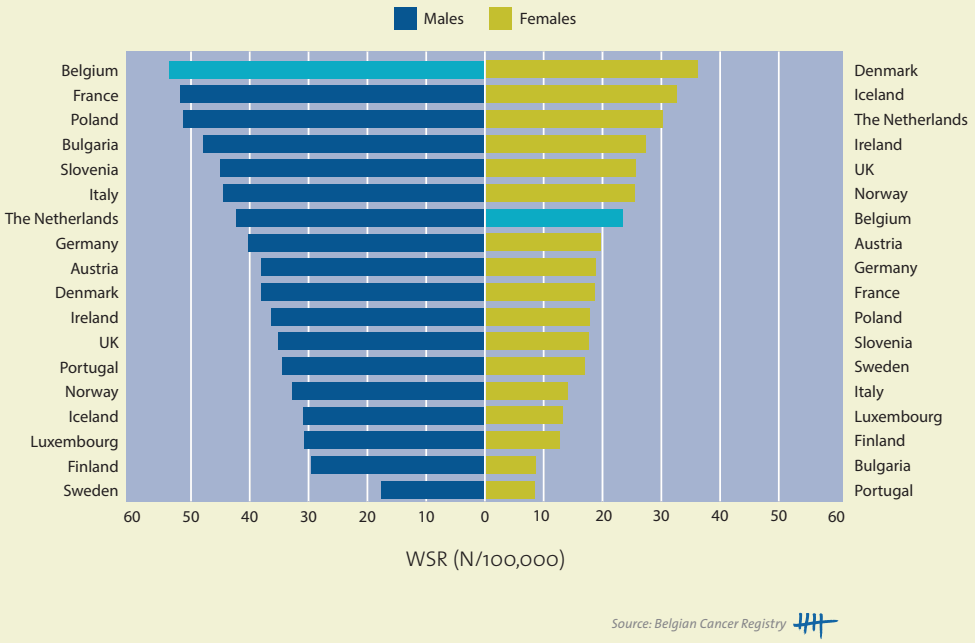


**Figure 2** Lung cancer: Comparison of age-standardised incidence rates (WSR). *(Selection of European registry data.)*




*Source: Belgian Cancer Registry*

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

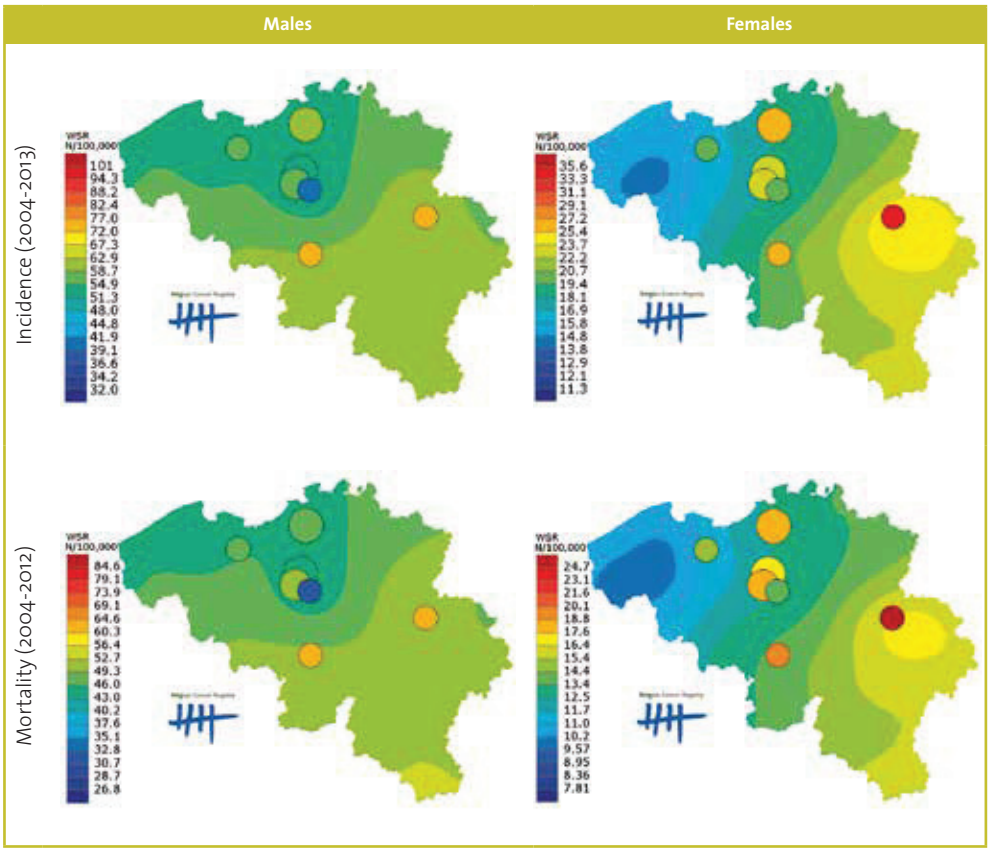
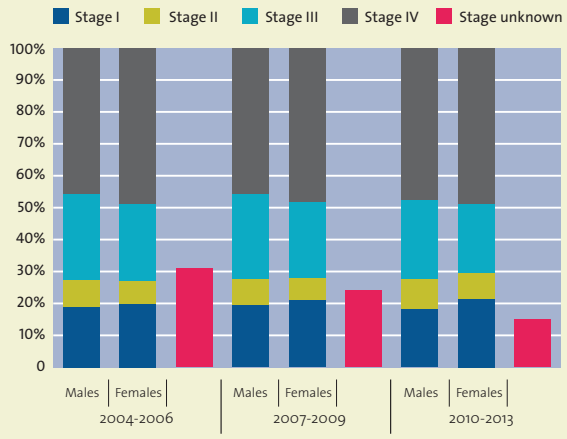
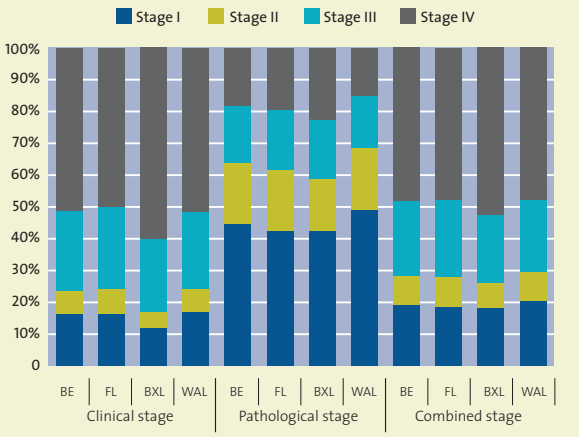


**Figure 4** Lung cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



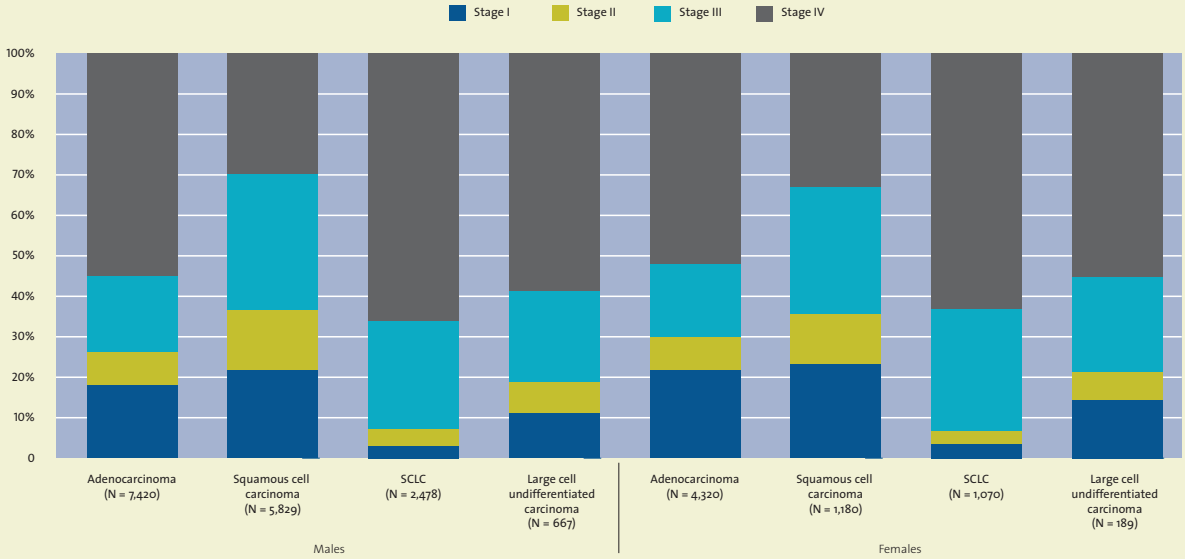

Source: Belgian Cancer Registry

**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

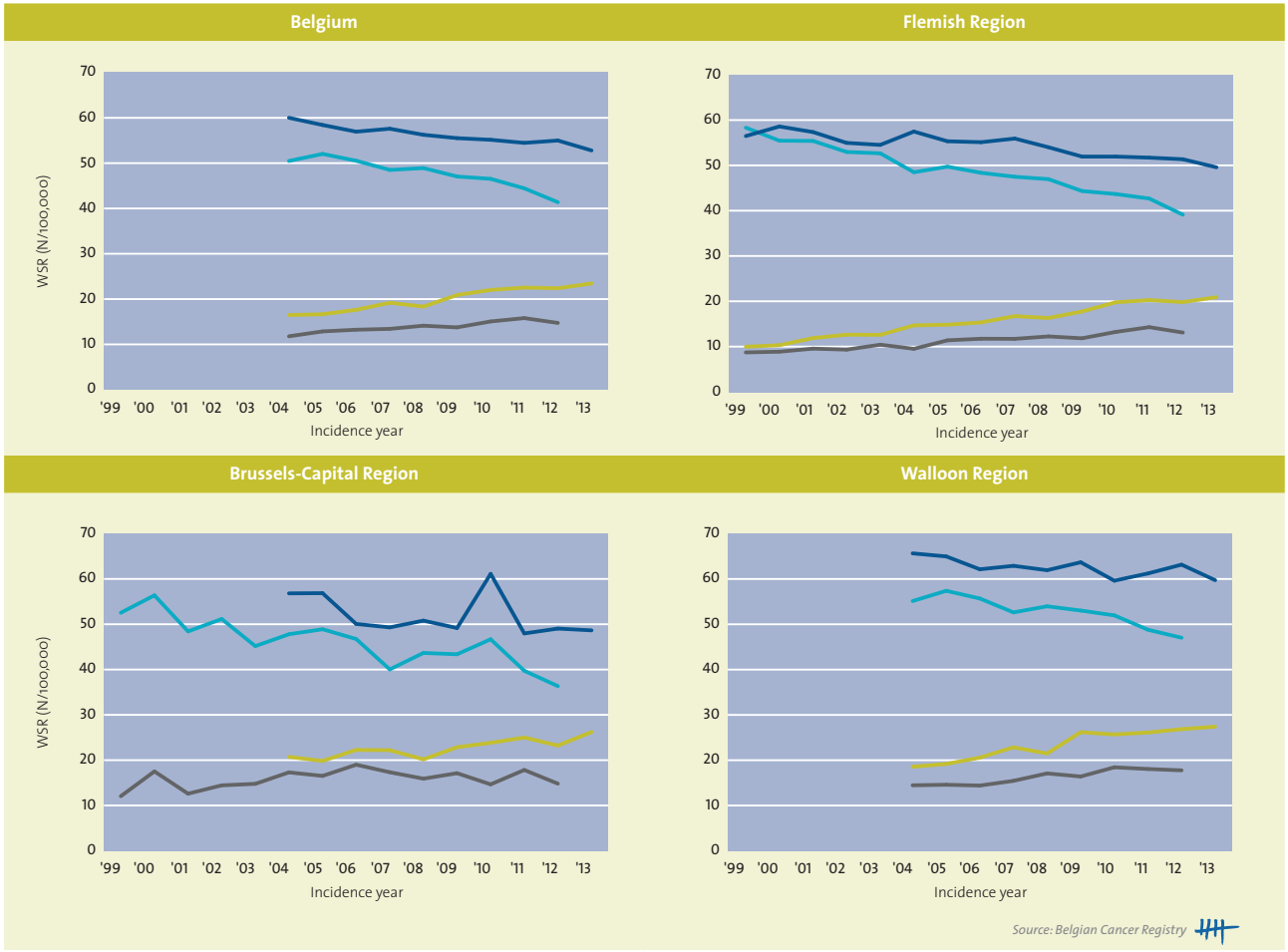



**Figure 8** Lung cancer: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

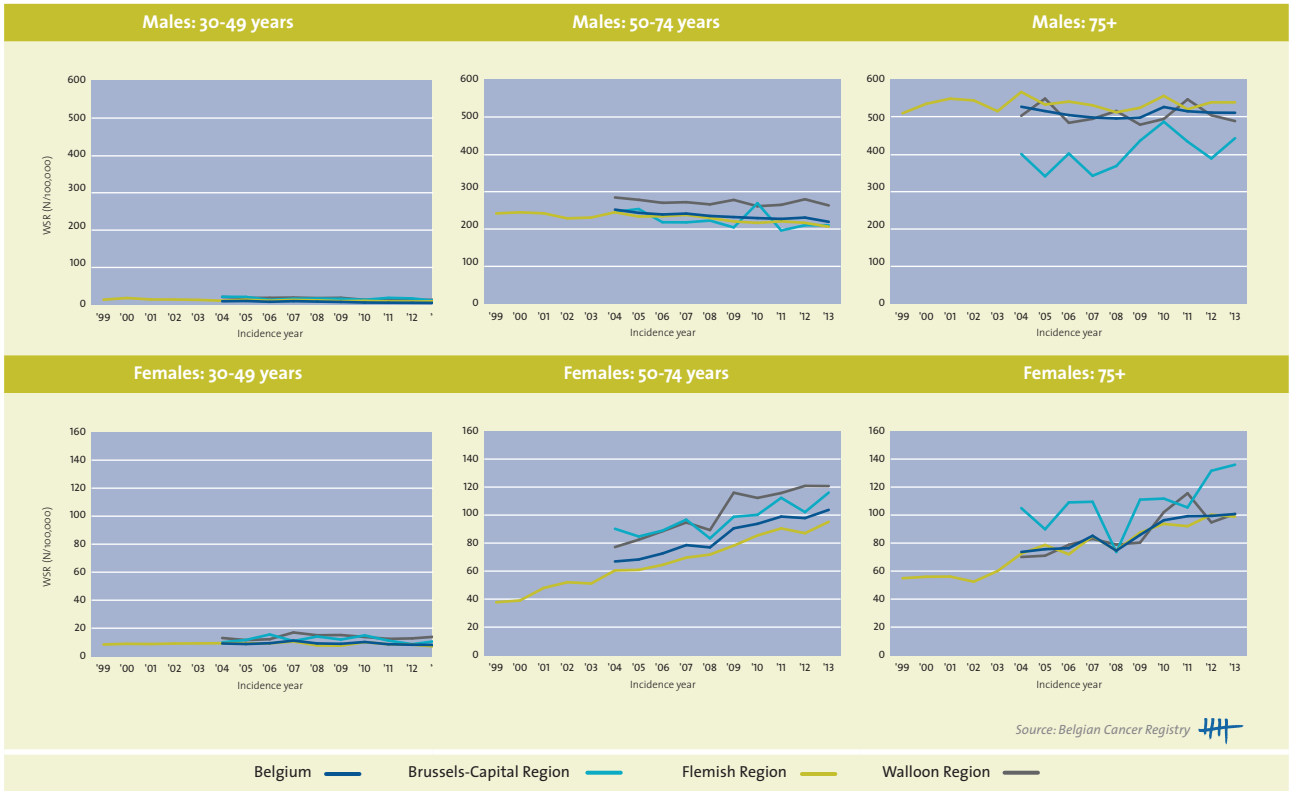


**Figure 9** Lung cancer: Trends in age-standardised incidence (WSR) by histology and sex in Belgium 2004-2013

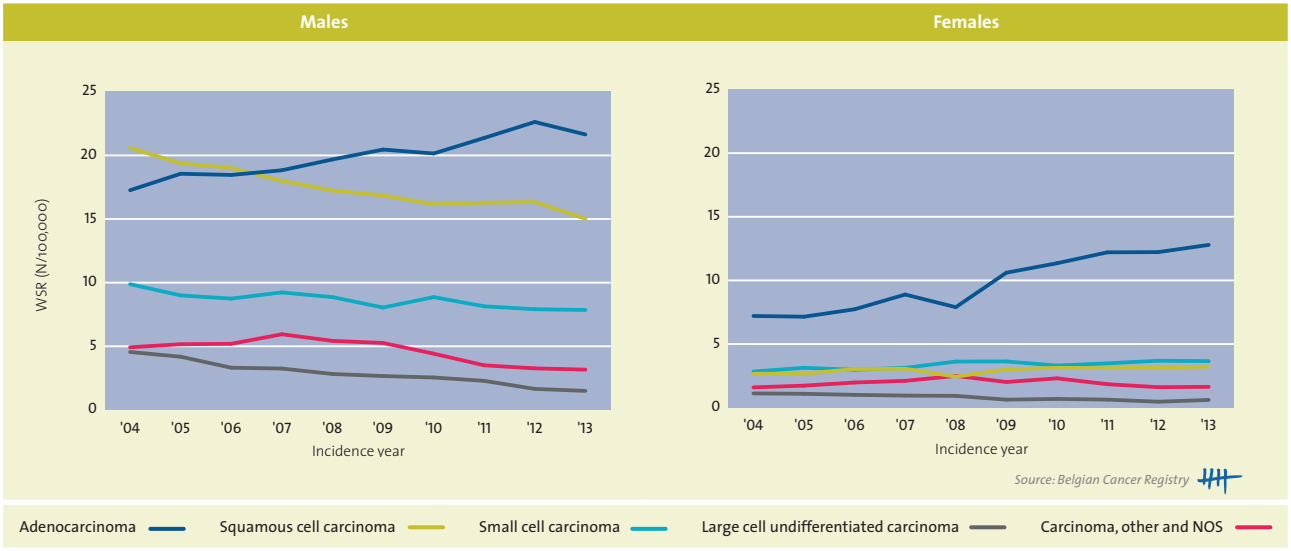


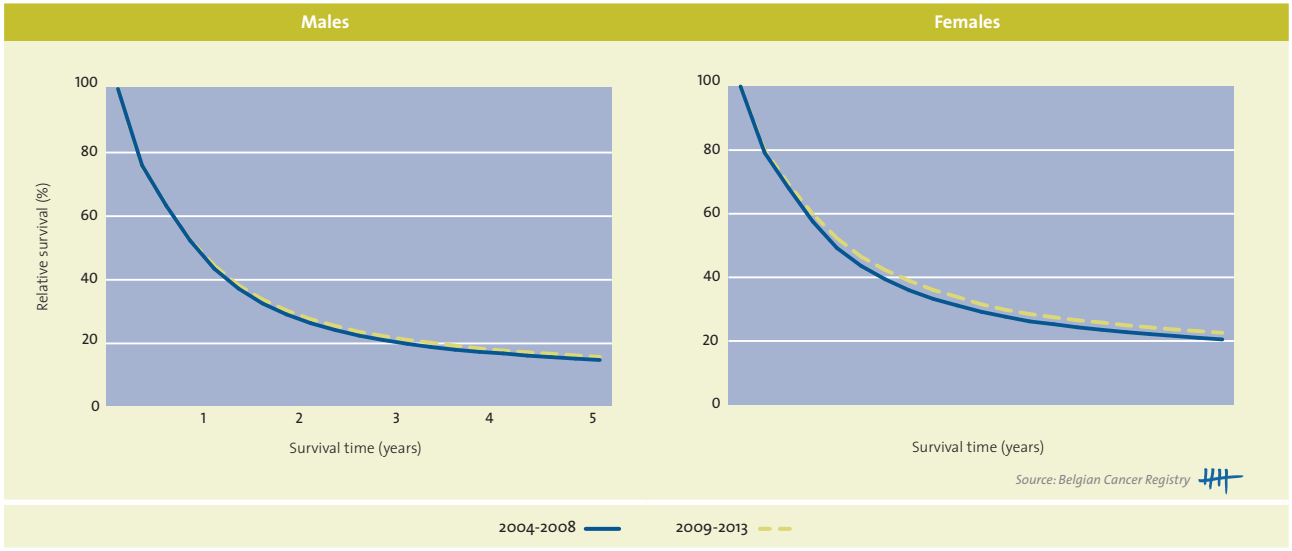
**Table 2** Lung cancer: AAPC(%) by sex, region, age group and histology in Belgium

| 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 occured, 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



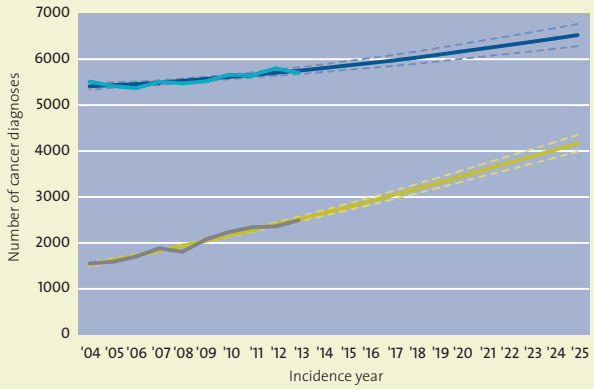

*Source: Belgian Cancer Registry*

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


*Source: Belgian Cancer Registry*

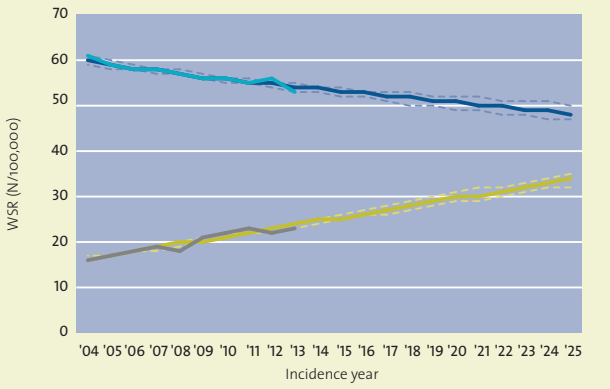

*Source: Belgian Cancer Registry*

**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 (Projected) — Females (Observed) — Females (Projected)

## 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 then the 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)

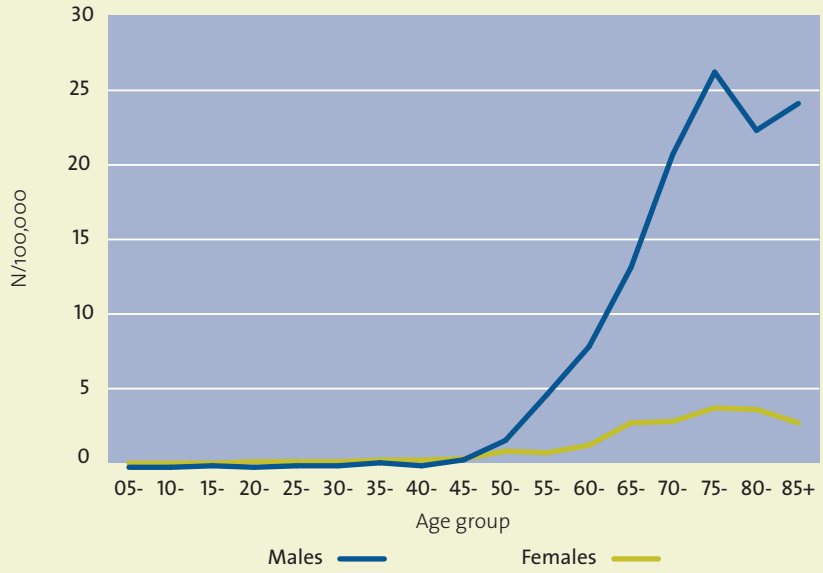
**Table 1** Mesothelioma: Overview of incidence, mortality, prevalence, survival and projection by sex and region

| 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)*

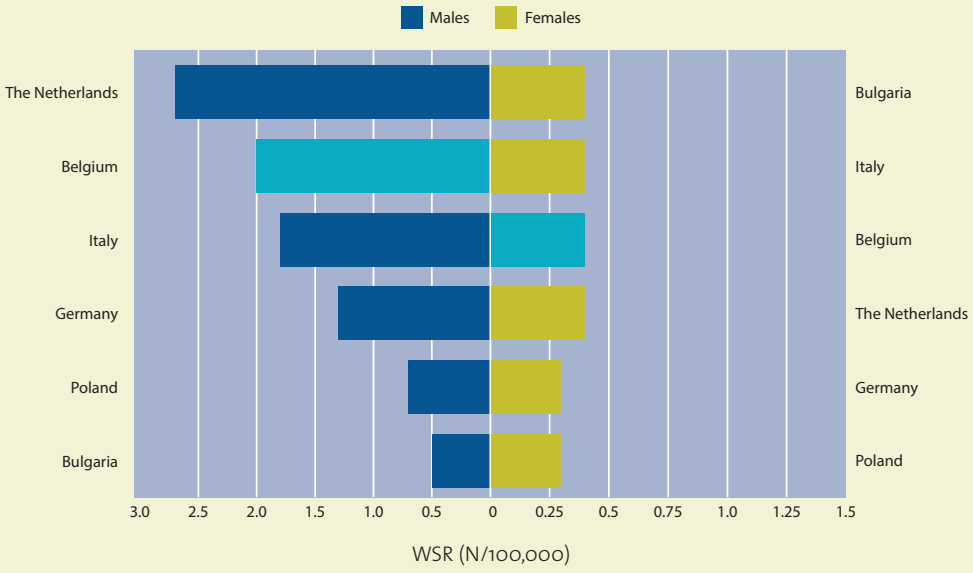
- Mesothelioma burden in Belgium (**Table 1**):
  - 273 new diagnoses of cancer in 2013, 84% males and 16% females.
  - 222 deaths are due to mesothelioma in 2012, 85% males and 15% females.
  - 389 persons (<0.01% of the total Belgian population) are alive (on 31/12/2013) after being diagnosed with 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 2009-2013**




*Source: 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

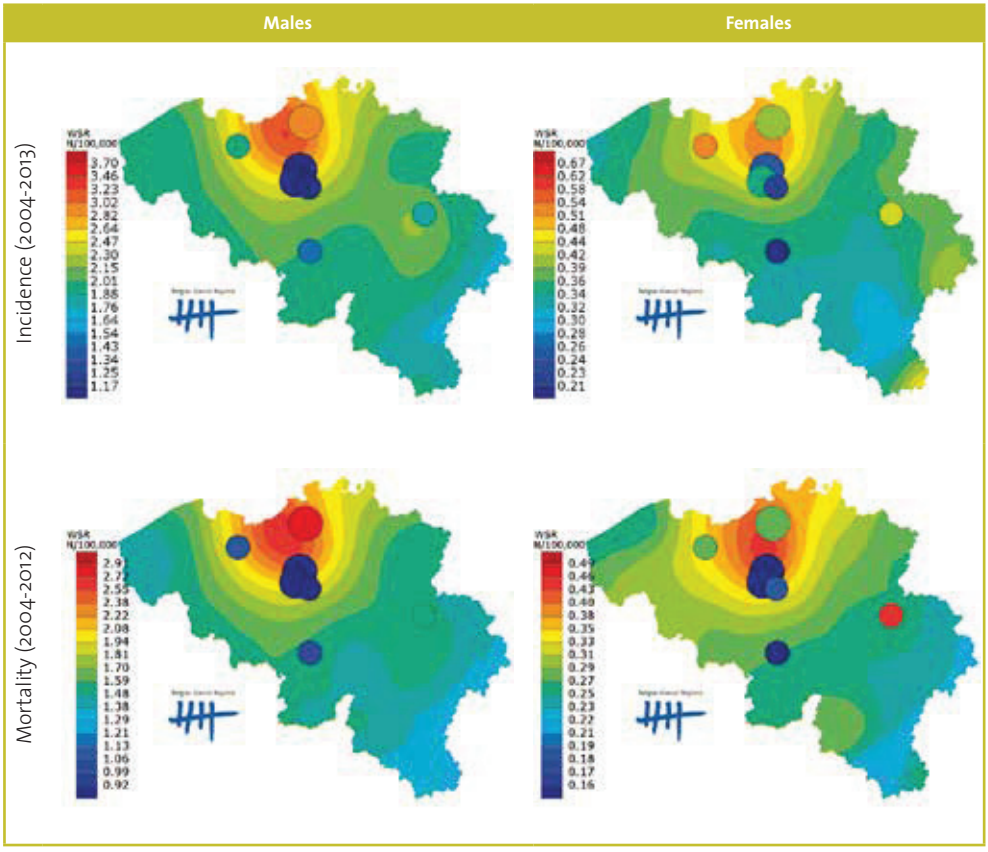
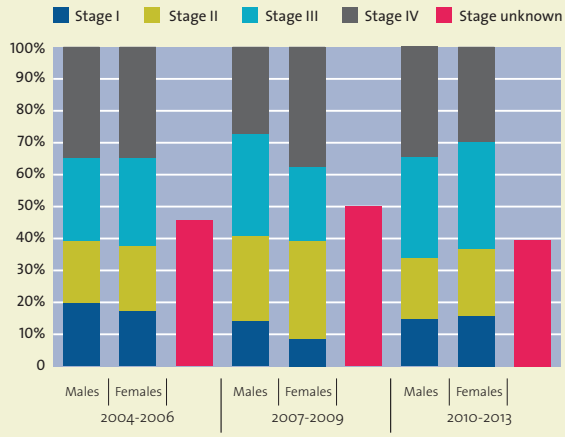
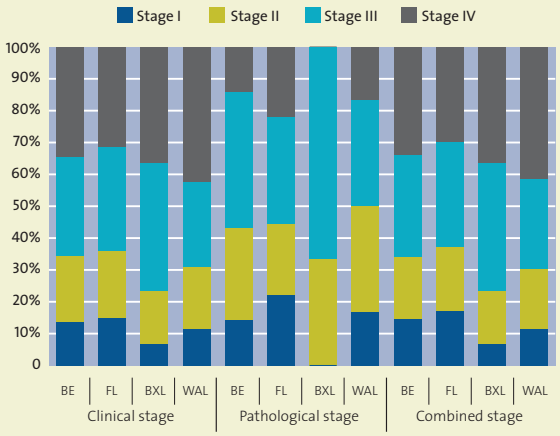



**Figure 4** Mesothelioma: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013




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

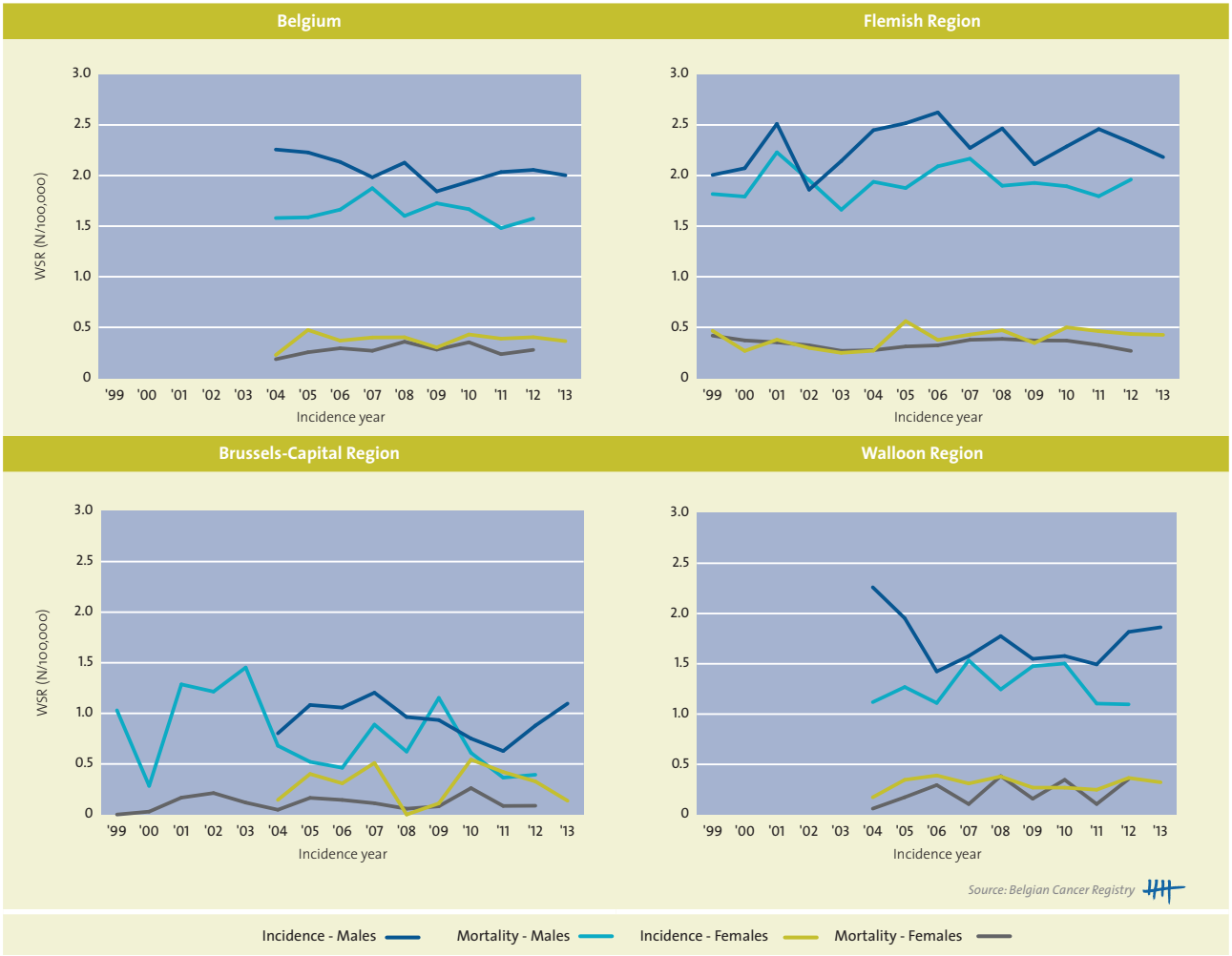


**Table 2** Mesothelioma: AAPC(%) by sex and region in Belgium

| 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 | | | |
| | 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 | 9.4 | [0.0; 19.7] | 2004-2009 |
| | -4.3 | [-9.8; 1.5] | 2009-2012 | -8.7 | [-21.8; 6.7] | 2009-2012 |
| Flemish Region | 0.1 | [-1.0; 1.3] | 1999-2012 | -3.0 | [-4.0; -2.0] | 1999-2012 |
| | | | | -11.0 | [-13.9; -7.9] | 1999-2003 |
| | | | | 8.3 | [5.7; 10.9] | 2003-2008 |
| | | | | -7.8 | [-10.8; -4.6] | 2008-2012 |
| Brussels-Capital Region | -4.4 | [-11.1; 2.8] | 1999-2012 | | | |
| 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 occured, 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

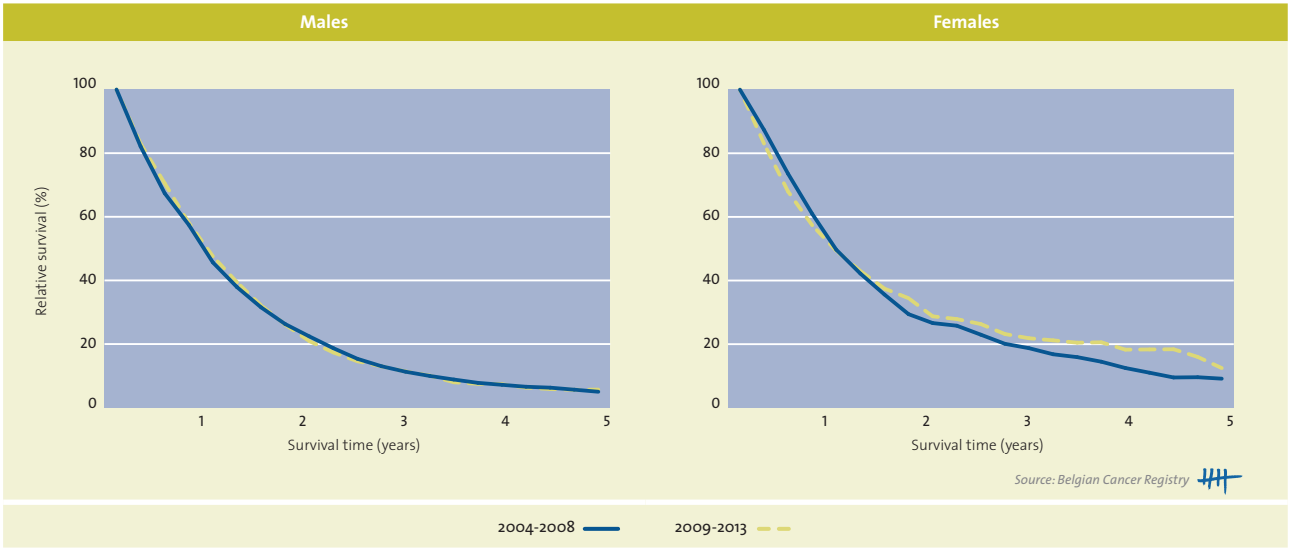



**Figure 8** Mesothelioma: 1-, 3-, 5- and 10-year relative survival (RS) for males by region

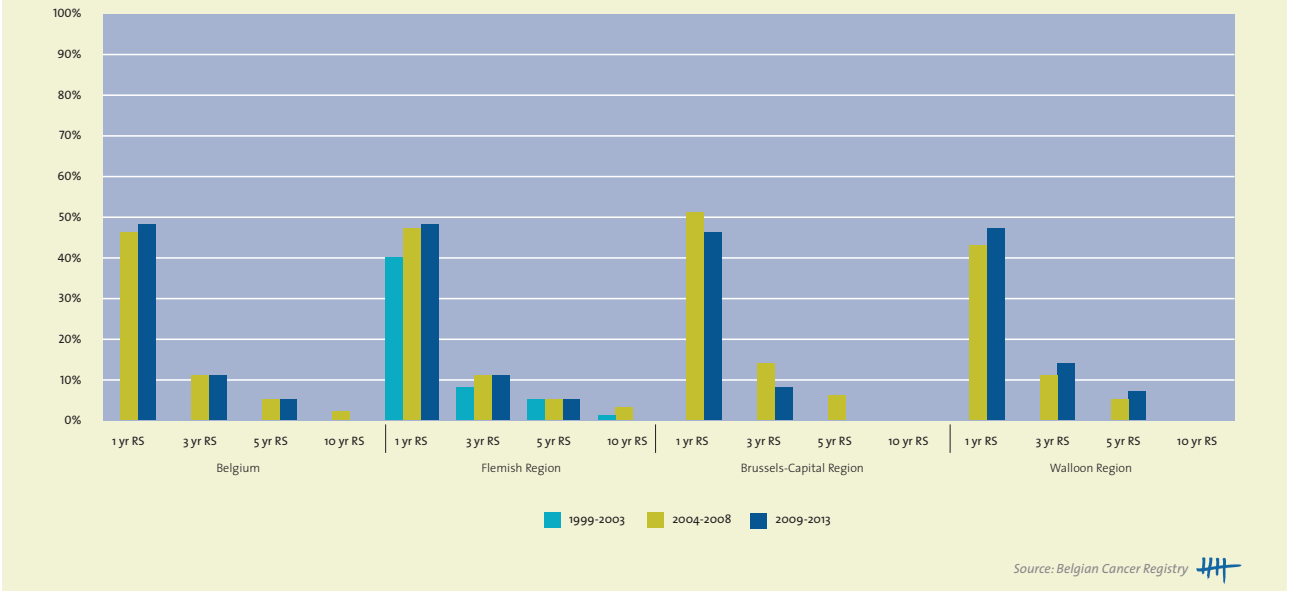



**Figure 9** Mesothelioma: Observed and projected number of new diagnoses (N) by sex, Belgium 2004-2025

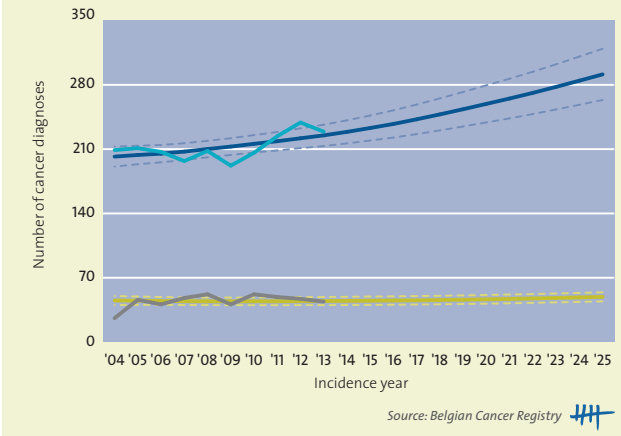
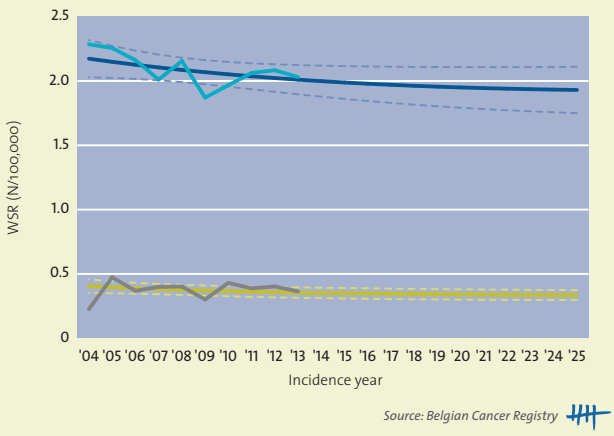
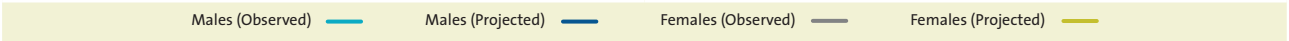



**Figure 10** Mesothelioma: Observed and projected incidence (WSR) by sex, Belgium 2004-2025



## 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 (2004-2012).
  - 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

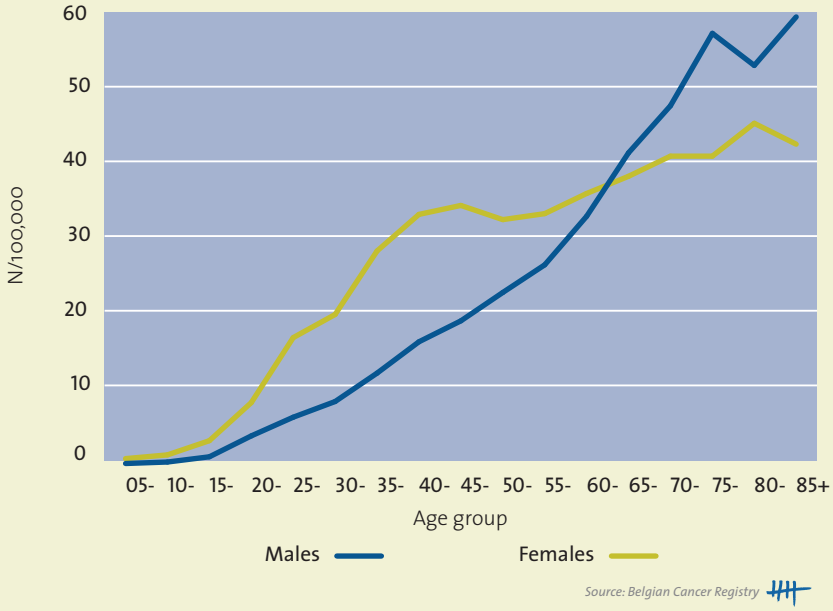



**Figure 2** Malignant melanoma: Comparison of age-standardised incidence rates (WSR). *(Selection of European registry data)*

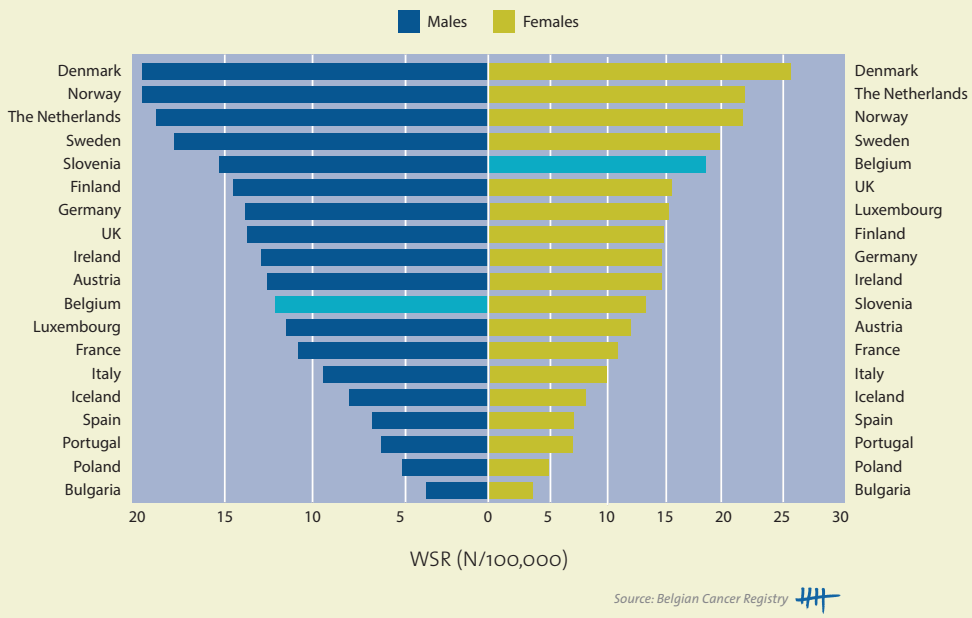


**Figure 3** Malignant melanoma: Age-standardised incidence and mortality (WSR) by sex in Belgium

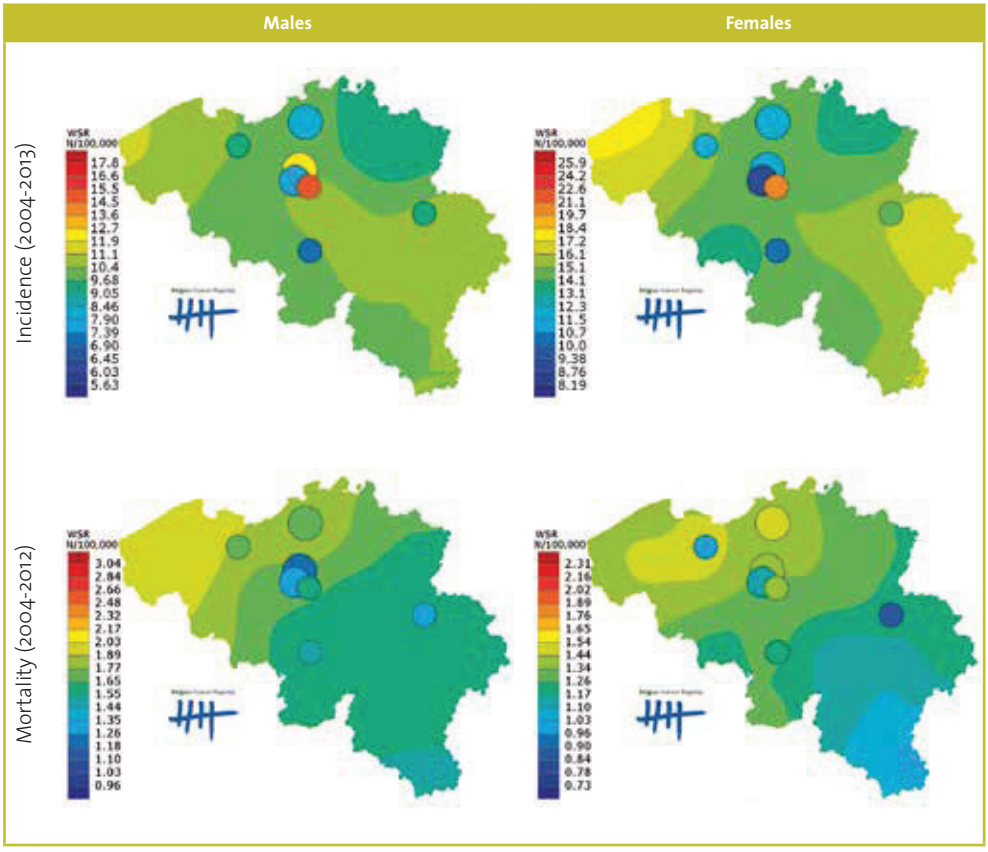
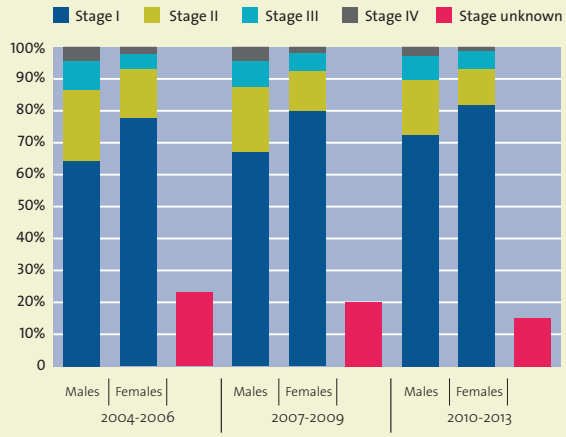
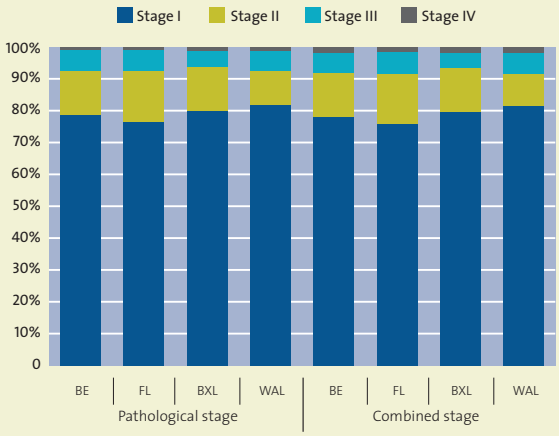



**Figure 4** Malignant melanoma: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



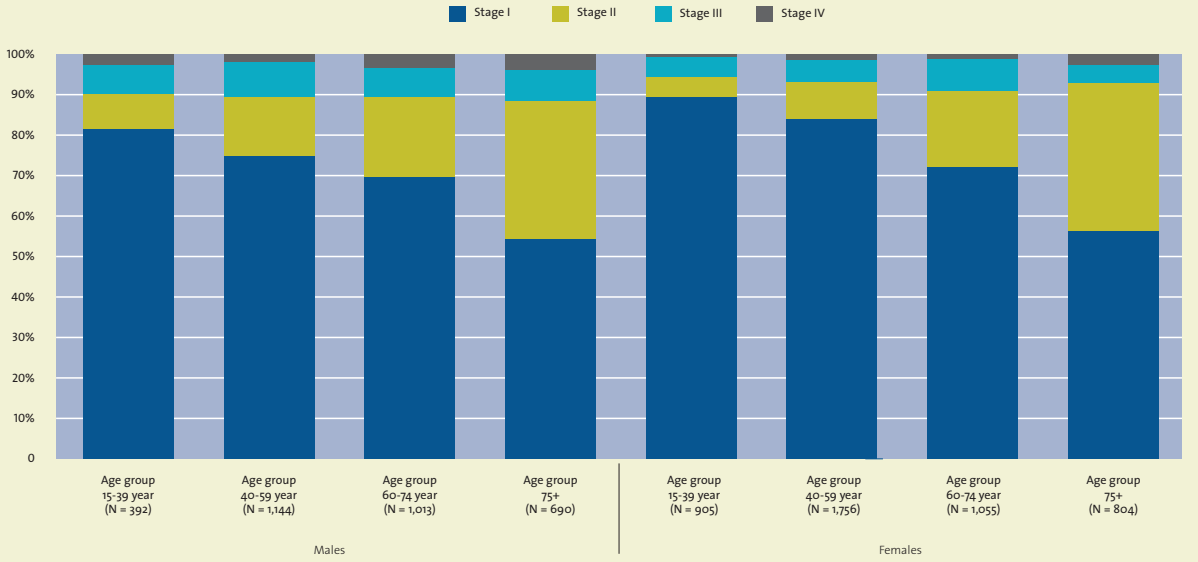

Source: Belgian Cancer Registry

**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 thicknes (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/mm²) | 1,384 | 4.4 | 219 | 2.8 | 550 | 8.7 | 408 | 13.3 | 204 | 14.0 |
| pT1b (with ulceration or mitosis ≥ 1/mm²) | 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 thicknes (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/mm²) | 2,123 | 7.2 | 531 | 6.9 | 944 | 15.4 | 409 | 12.3 | 231 | 10.0 |
| pT1b (with ulceration or mitosis ≥ 1/mm²) | 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

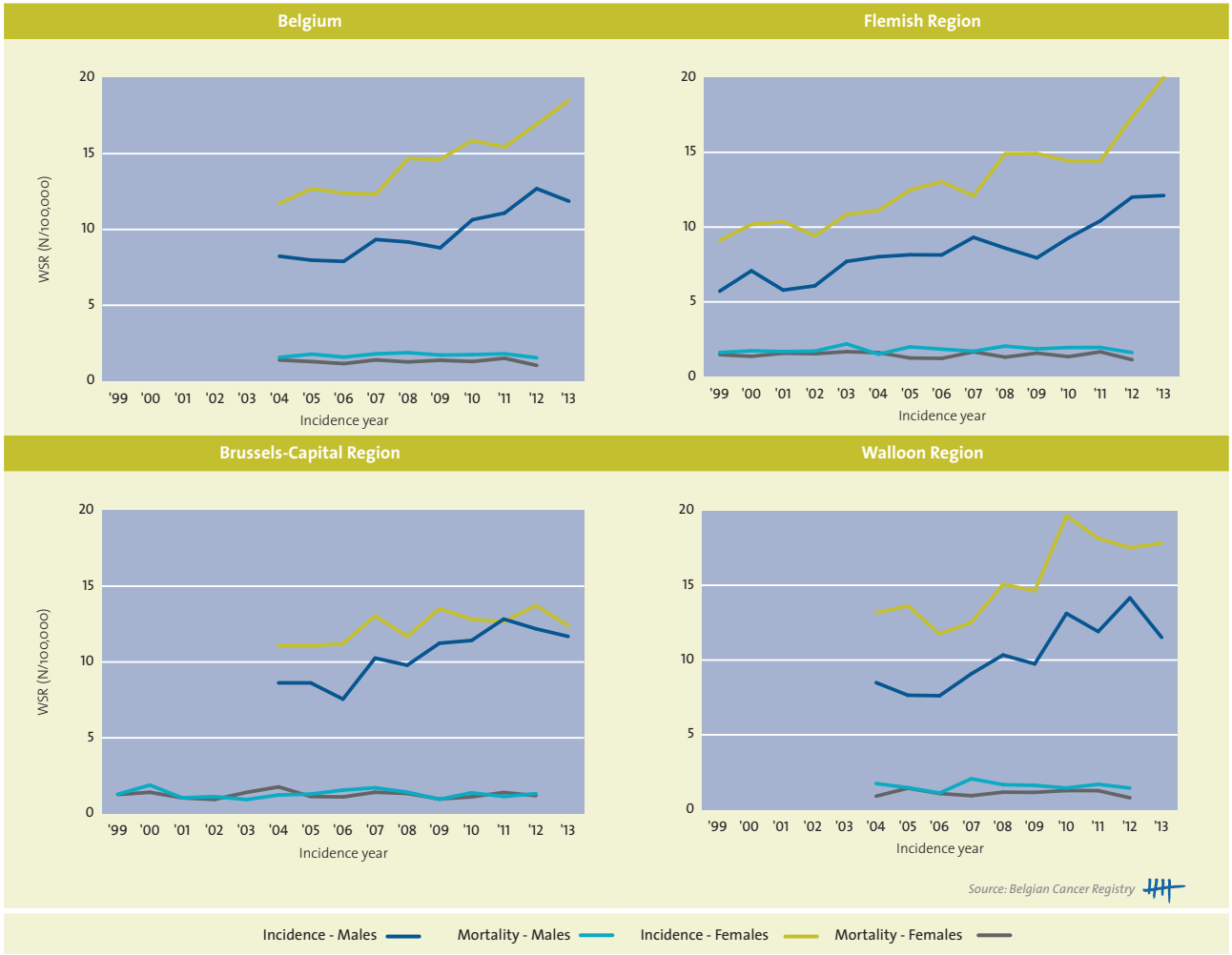


**Figure 8** Malignant melanoma: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013

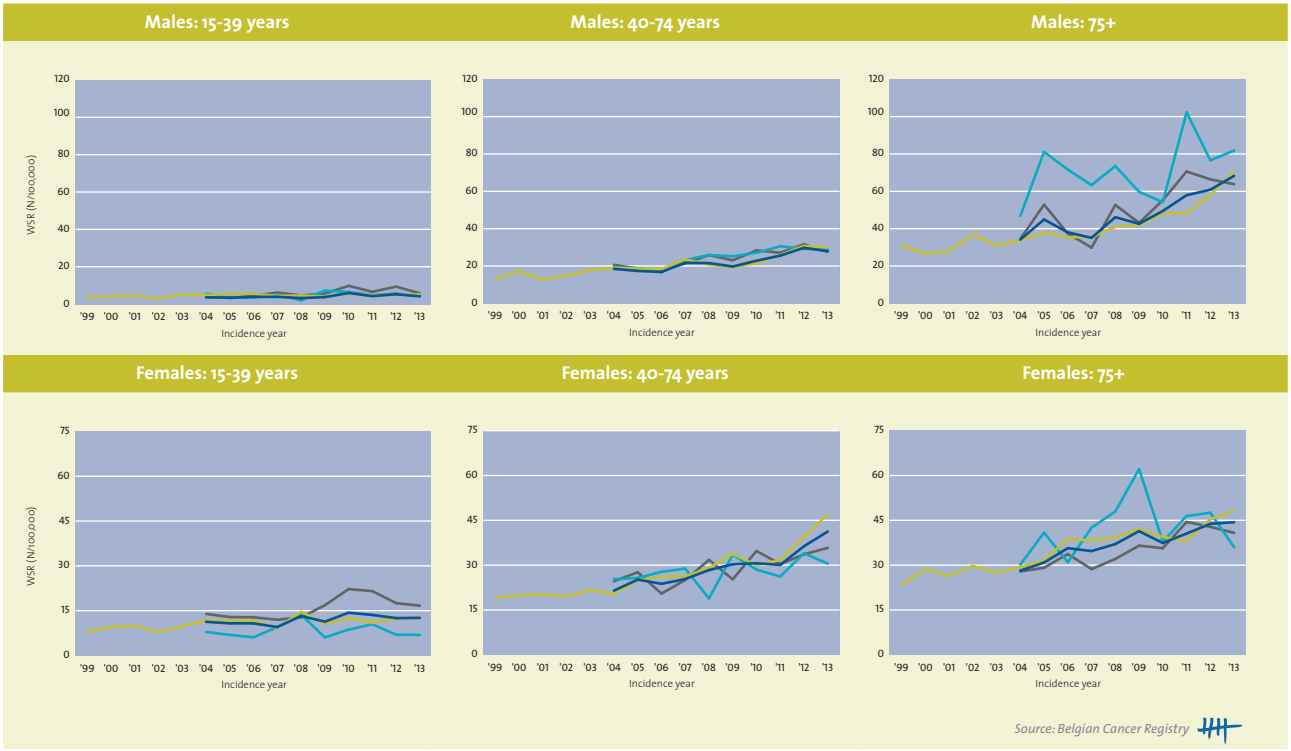



**Figure 9** Malignant melanoma: Trends in age-standardised incidence (WSR) by localisation and sex, Belgium 2004-2013

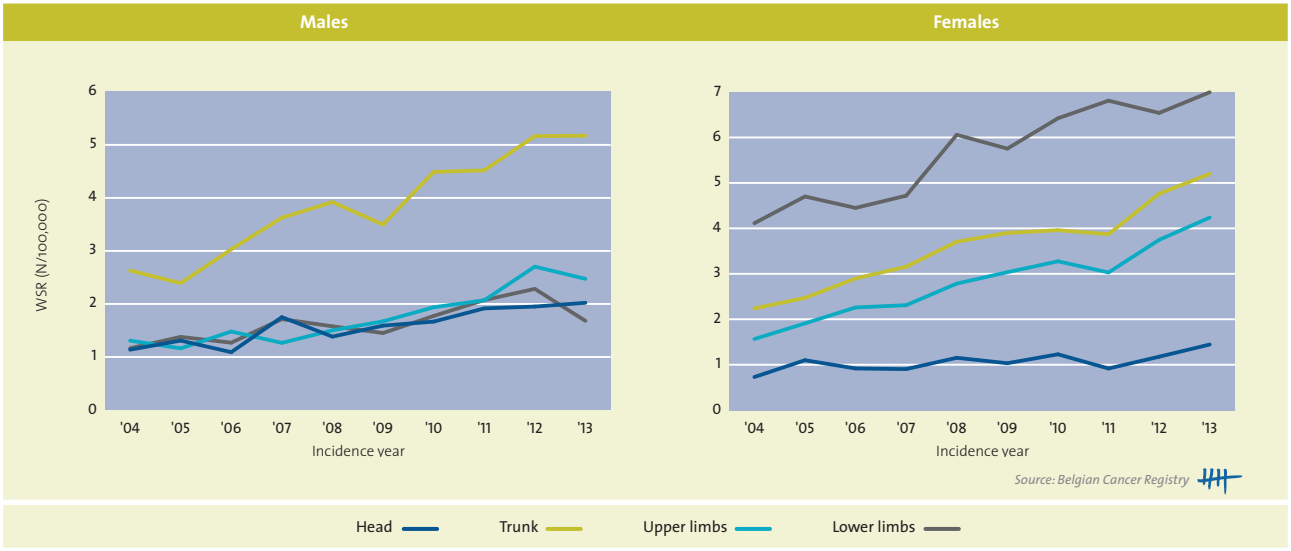


**Figure 10** Malignant melanoma: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013

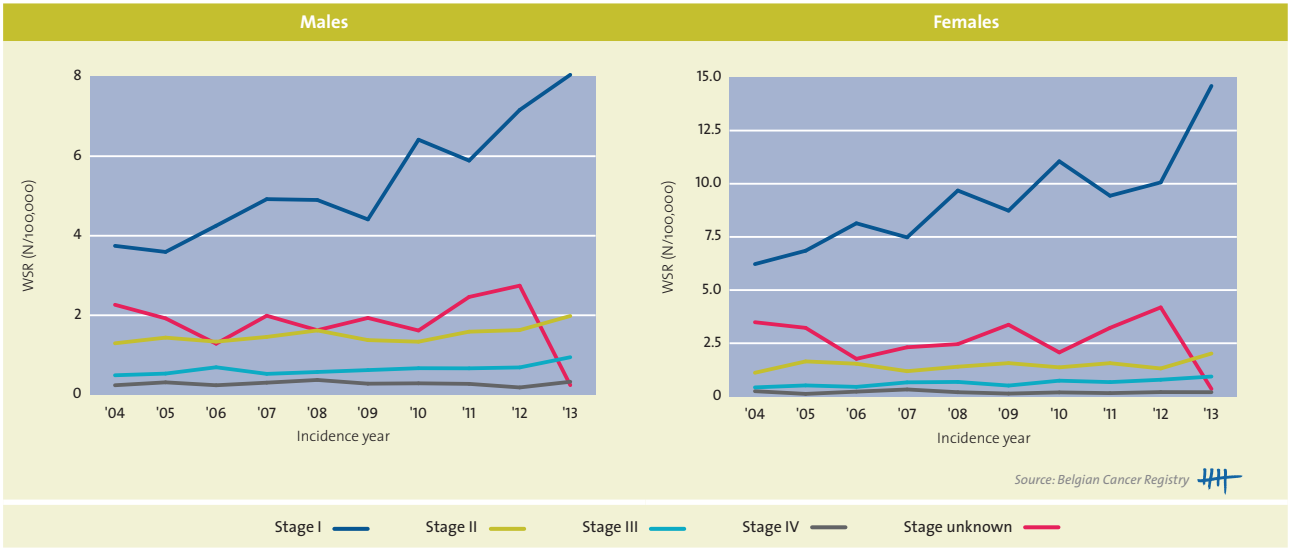


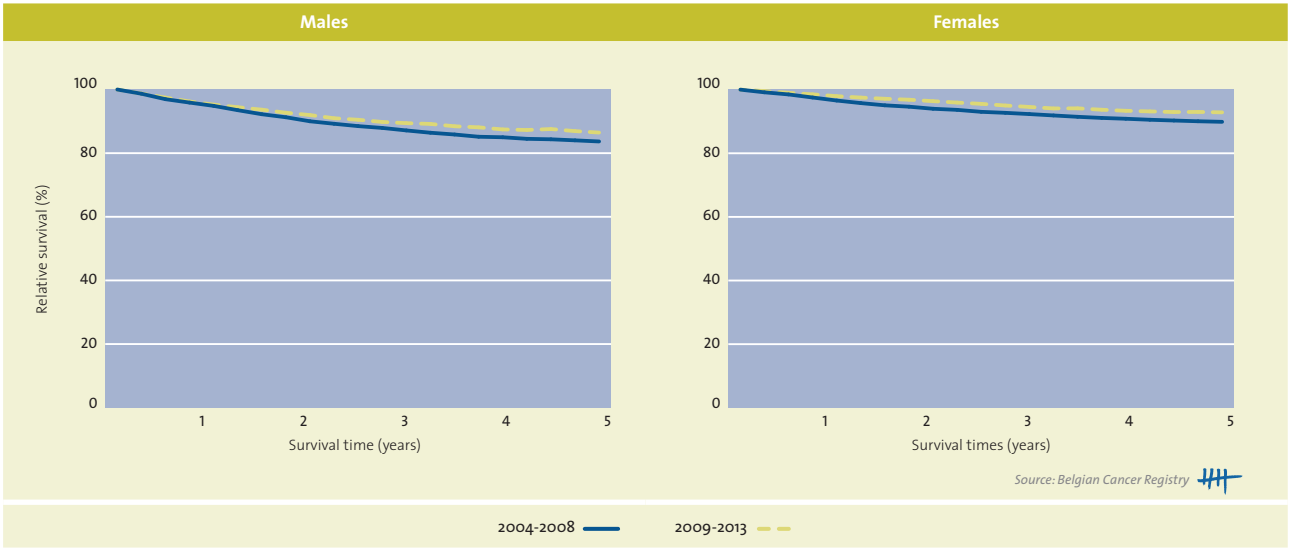
**Table 3** Malignant melanoma: AAPC(%) by sex, region, localisation, stage and age group in Belgium

| 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*

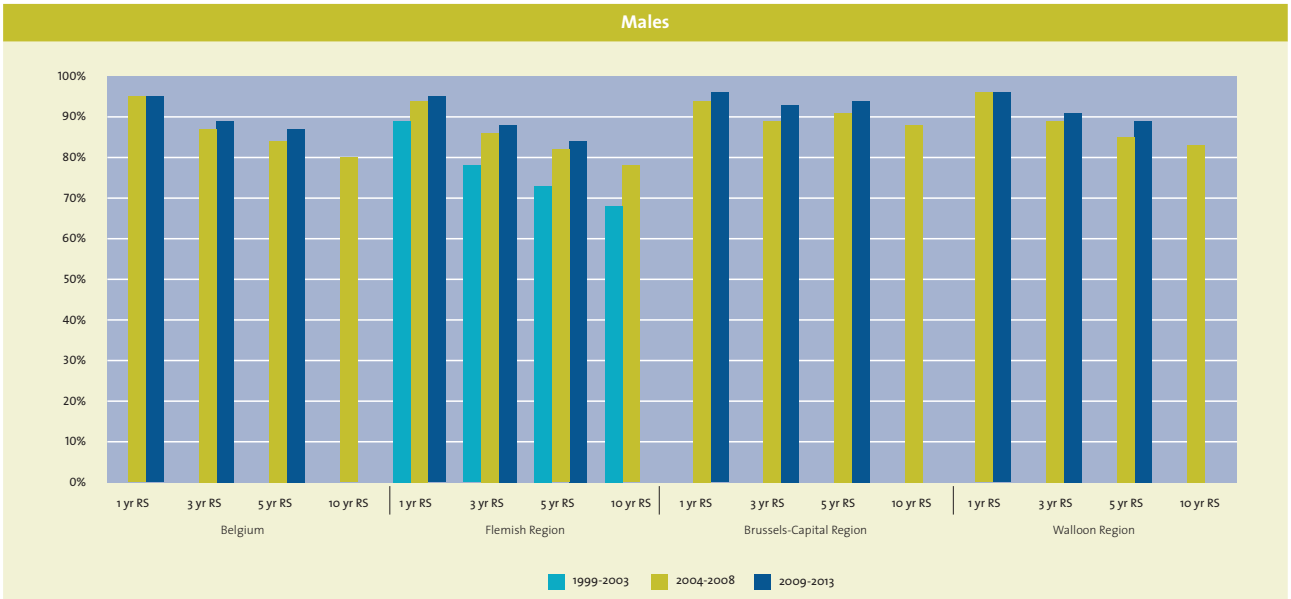
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

**Figure 11** Malignant melanoma: Relative survival by cohort and sex, Belgium 2004-2013

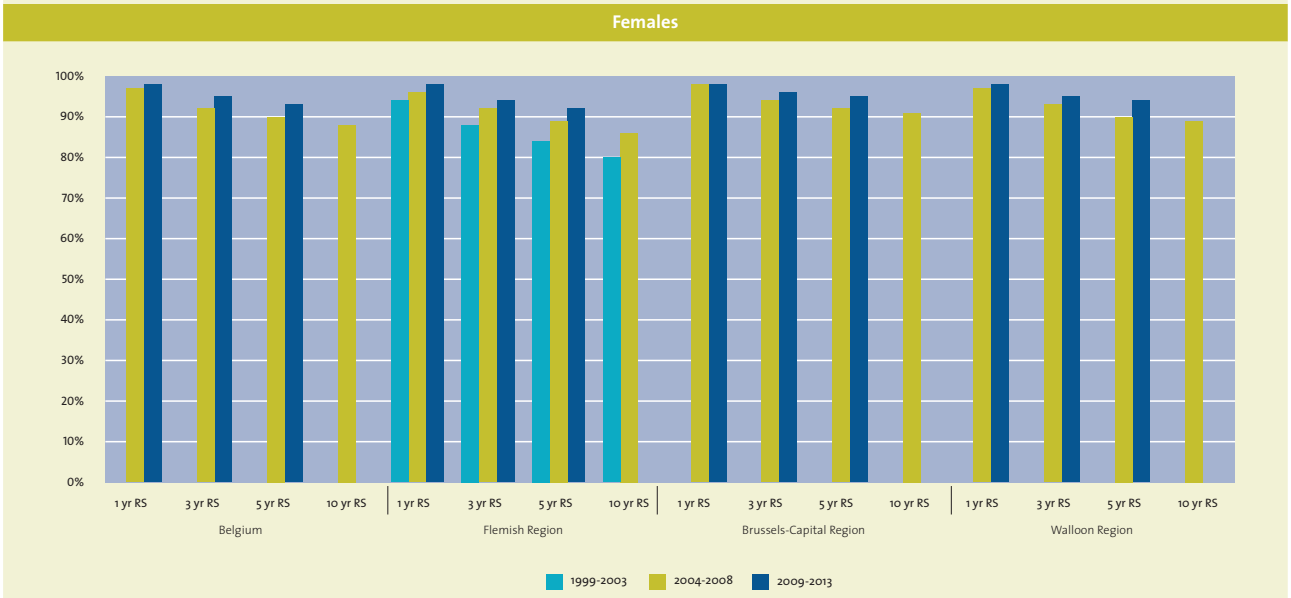



*Source: Belgian Cancer Registry*

**Figure 12** Malignant melanoma: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

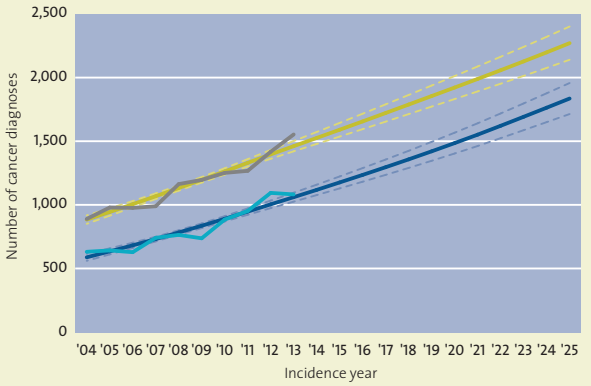



*Source: Belgian Cancer Registry*



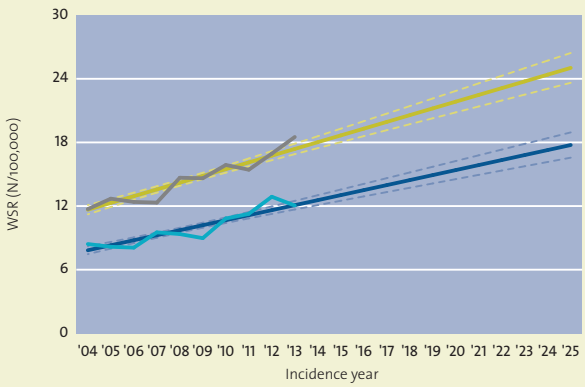

*Source: Belgian Cancer Registry*

**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 (Projected) — Females (Observed) — Females (Projected)

## 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

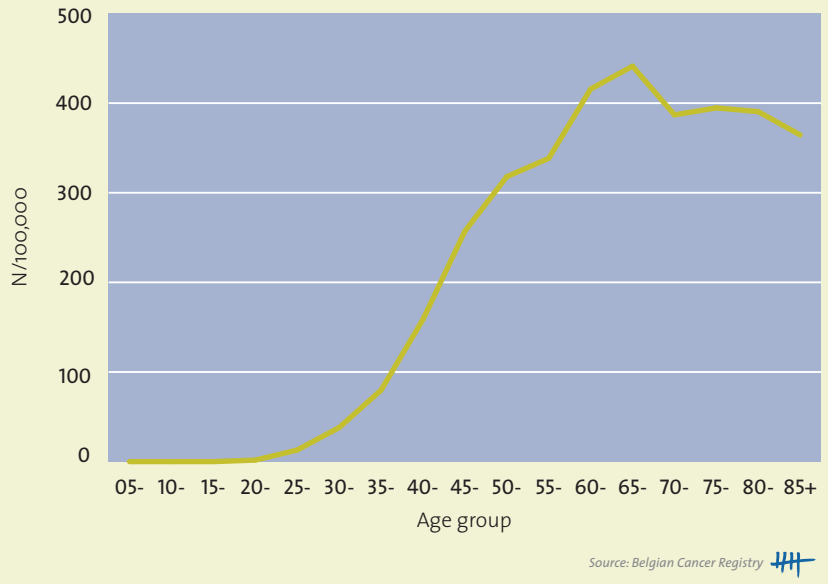
| Breast cancer | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Incidence, 2013 | N | CR | WSR | N | CR | WSR |
| Belgium | 83 | 1.5 | 0.8 | 10,695 | 189.2 | 109.8 |
| Flemish Region | 48 | 1.5 | 0.7 | 6,191 | 191.6 | 108.5 |
| Brussels-Capital Region | 6 | 1.1 | 0.6 | 948 | 159.9 | 109.1 |
| 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)

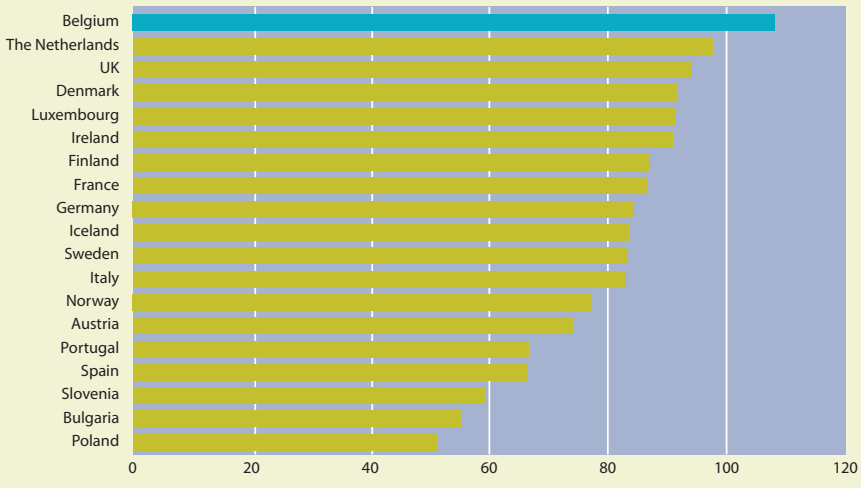
and then slightly decreased to remain stable over time.
    - In this eligible population for the screening, the breast cancers have a prognostic more favourable stage distribution when compared to older and younger females.
  - Age group 70+:
    - The incidence rates increase with 2% annually.
    - 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

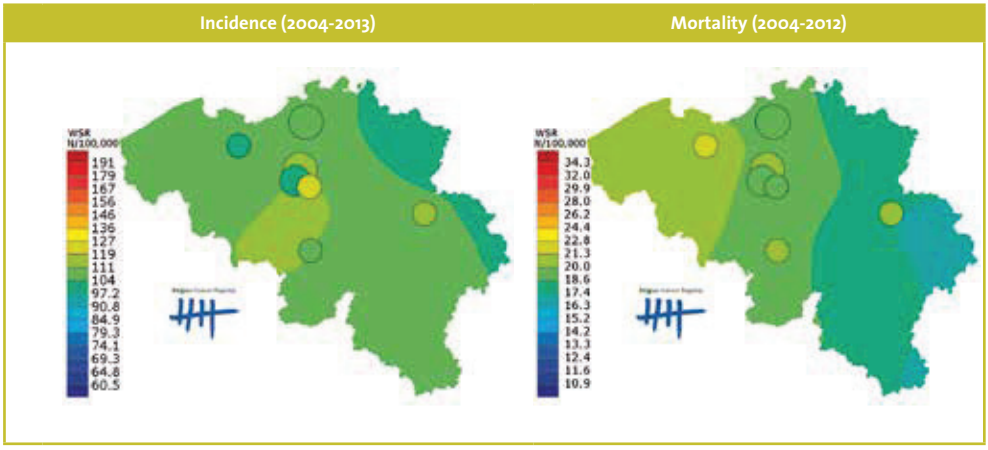
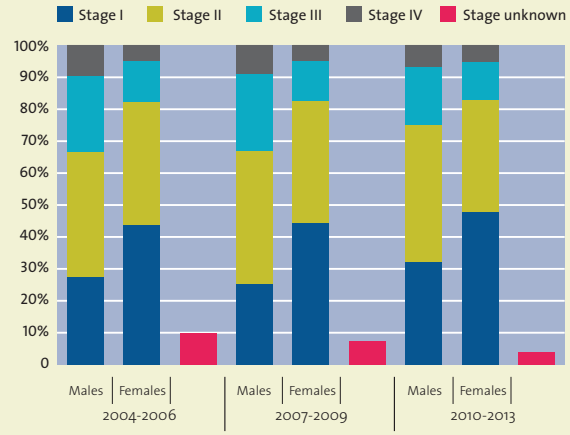
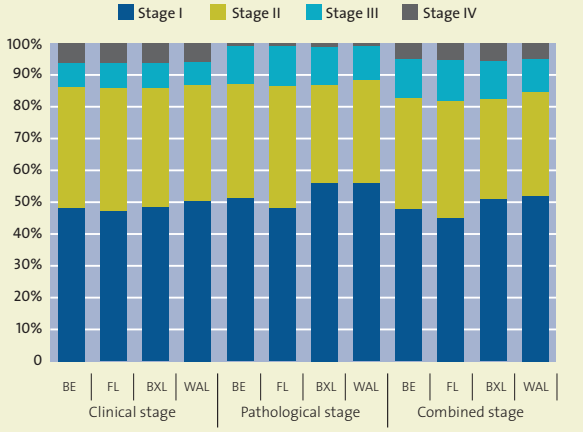



**Figure 4** Breast cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



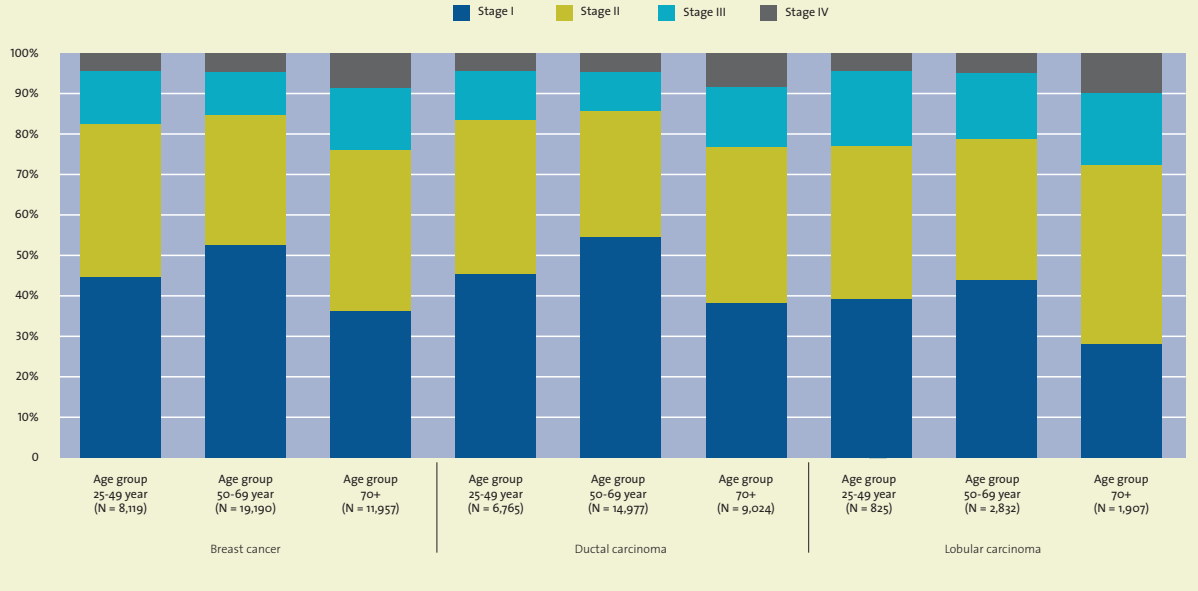

Source: Belgian Cancer Registry

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



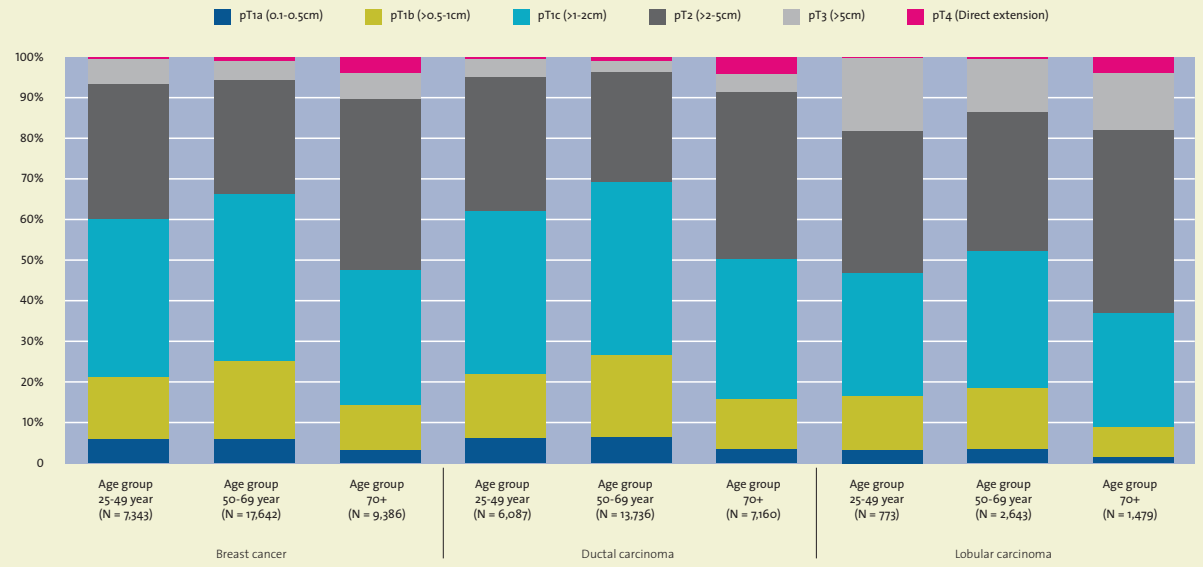

Source: Belgian Cancer Registry

**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: pathological T-stage (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

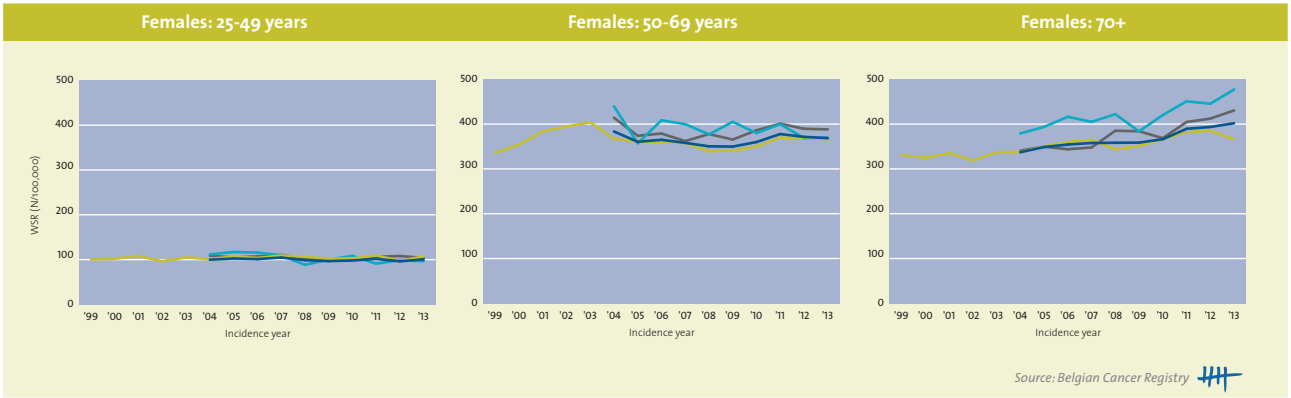



**Figure 10** Breast cancer in females: Trends in age-standardised incidence (WSR) by age group and stage, Belgium 2004-2013

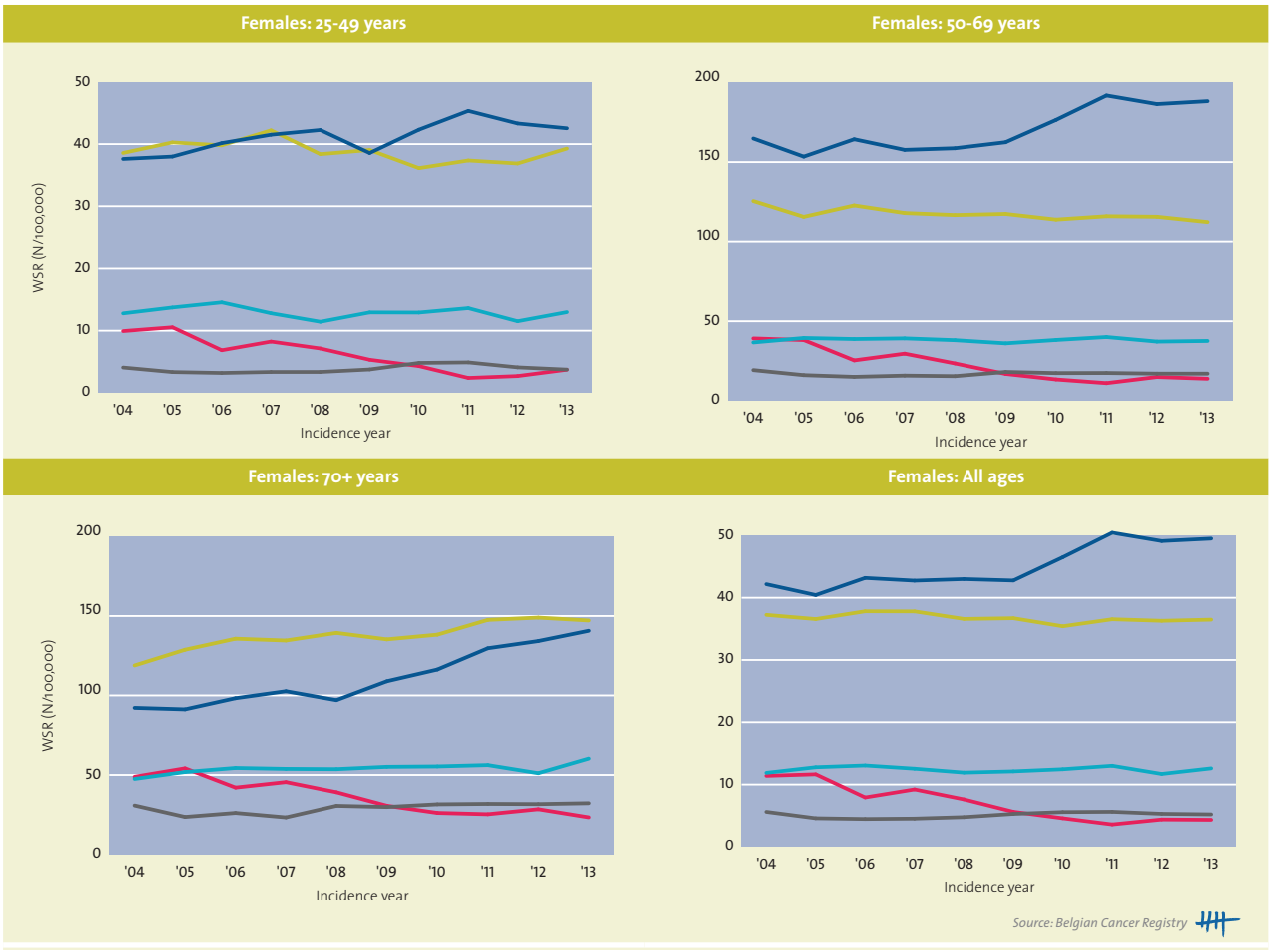
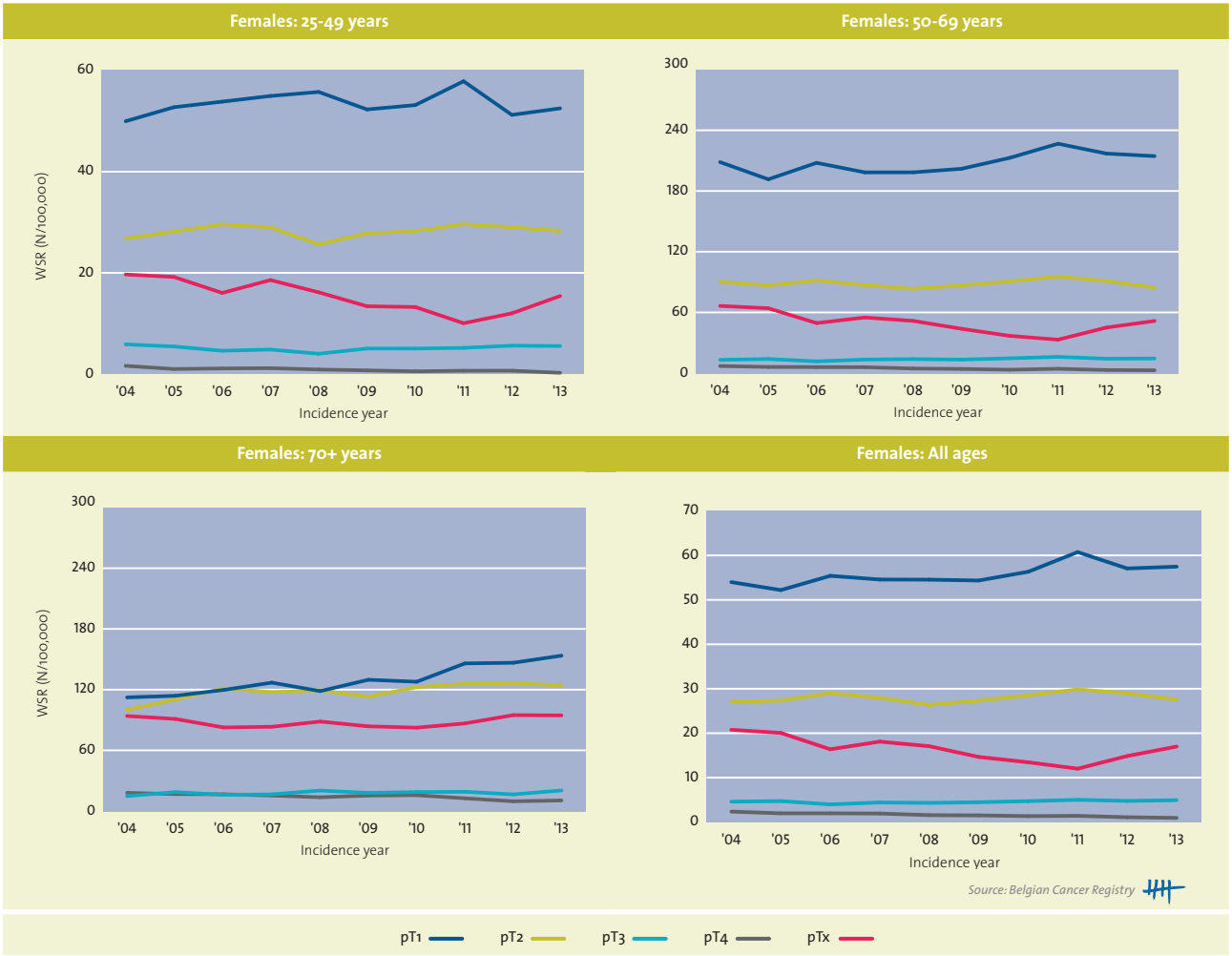
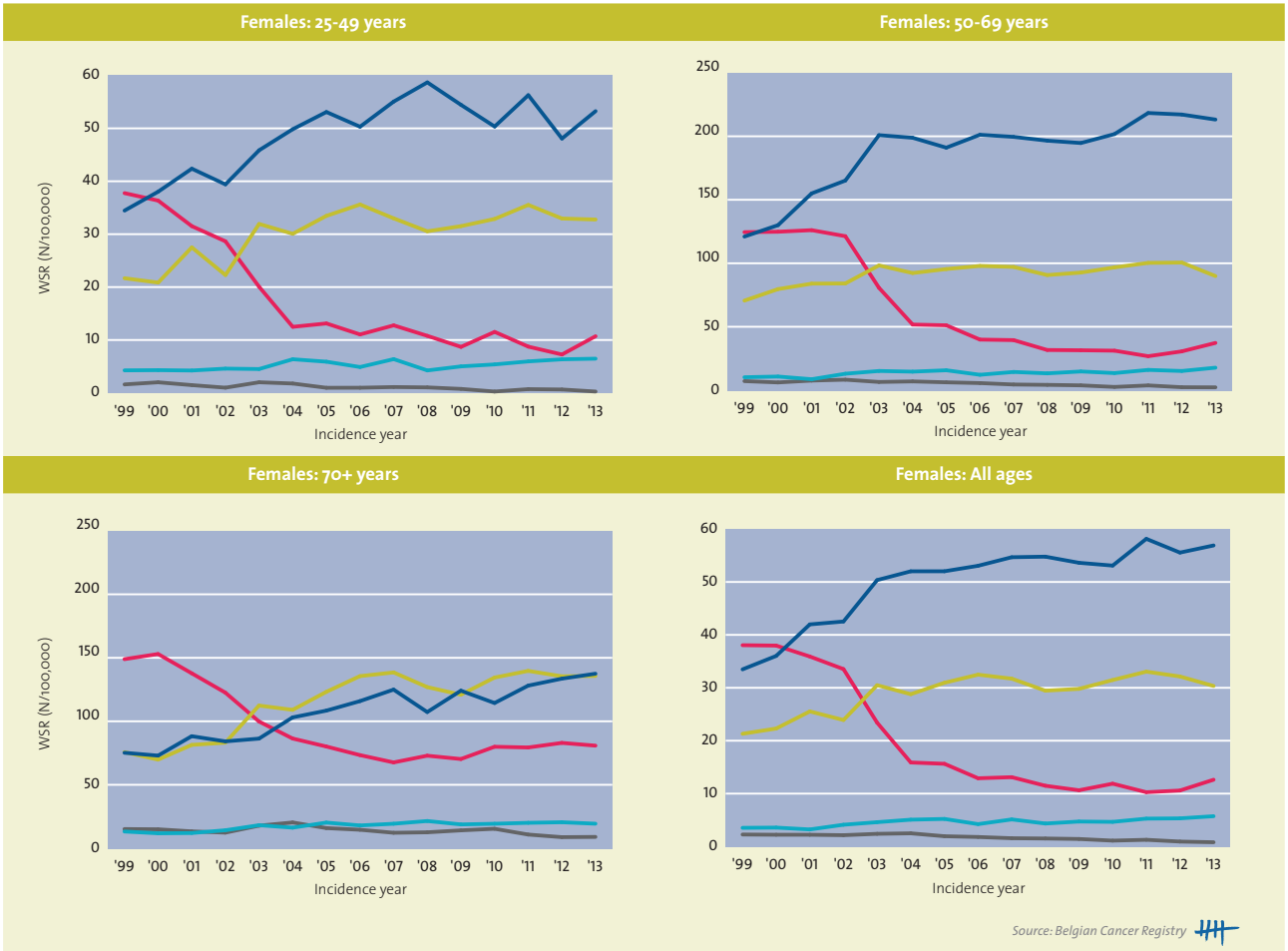


**Figure 11** Breast cancer in females: Trends in age-standardised incidence (WSR) by age group and pT-stage, Belgium 2004-2013




Source: Belgian Cancer Registry

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




*Source: Belgian Cancer Registry*

**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 | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pT-stage | | | All ages | | | 25-49 Year | | | 50-69 Year | | | 70+ |
| 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** | **AAPC(%)** | **95%CI** | **period** | **AAPC(%)** | **95%CI** | **period** | **AAPC(%)** | **95%CI** | **period** | **AAPC(%)** | **95%CI** | **period** |
| pT-stage | | | 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 | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Region | | | All ages | | | 25-49 Year | | | 50-69 Year | | | 70+ |
| Belgium | 0,2 | [-0.2, 0.6] | 2004-2013 | -0,3 | [-0.9, 0.3] | 2004-2013 | 0,0 | [-0.6, 0.5] | 2004-2013 | 1,8 | [1.5, 2.2] | 2004-2013 |
| | -0,8 | [-1.5, 0.0] | 2004-2009 | | | | -1,8 | [-3.1, -0.5] | 2004-2008 | 1,1 | [0.4, 1.8] | 2004-2009 |
| | 1,4 | [0.4, 2.4] | 2009-2013 | | | | 1,4 | [0.4, 2.4] | 2008-2013 | 2,7 | [1.9, 3.6] | 2009-2013 |
| Flemish Region | 0,6 | [0.2, 1.0] | 1999-2013 | 0,2 | [-0.3, 0.7] | 1999-2013 | 0,7 | [0.4, 1.1] | 1999-2013 | 1,3 | [0.9, 1.6] | 1999-2013 |
| | 2,2 | [0.8, 3.5] | 1999-2003 | | | | 5,9 | [4.0, 7.9] | 1999-2002 | | | |
| | -1,2 | [-2.0, -0.4] | 2003-2009 | | | | -2,6 | [-3.4, -1.9] | 2002-2008 | | | |
| | 1,7 | [0.4, 3.1] | 2009-2013 | | | | 1,8 | [0.8, 2.9] | 2008-2013 | | | |
| Brussels-Capital Region | -0,9 | [-1.7, 0.0] | 2004-2013 | -2,2 | [-4.0, -0.2] | 2004-2013 | -0,9 | [-2.4, 0.5] | 2004-2013 | 2,0 | [1.0, 3.2] | 2004-2013 |
| Walloon Region | 0,3 | [-0.3, 1.0] | 2004-2013 | -0,3 | [-1.2, 0.5] | 2004-2013 | -0,4 | [-1.2, 0.5] | 2004-2013 | 2,6 | [1.8, 3.4] | 2004-2013 |
| | -0,8 | [-2.0, 0.4] | 2004-2009 | | | | -5,2 | [-8.9, -1.3] | 2004-2006 | | | |
| | 1,8 | [0.3, 3.4] | 2009-2013 | | | | 1,1 | [0.0, 2.1] | 2006-2013 | | | |

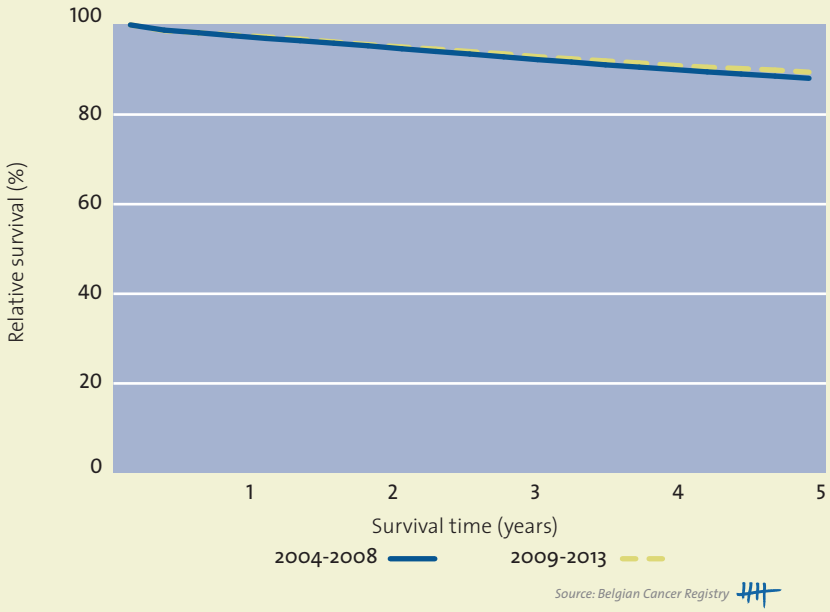
| Incidence by age group and stage, Belgium 2004-2013 | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period | AAPC(%) | 95%CI | period |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stage | | | All ages | | | 25-49 Year | | | 50-69 Year | | | 70+ |
| Stage I | 2,3 | [1.4, 3.3] | 2004-2013 | 1,6 | [0.5, 2.6] | 2004-2013 | 2,2 | [1.2, 3.2] | 2004-2013 | 5,0 | [4.2, 5.9] | 2004-2013 |
| | | | | | | | -0,1 | [-2.5, 2.3] | 2004-2008 | 2,5 | [0.5, 4.5] | 2004-2008 |
| | | | | | | | 4,0 | [2.1, 6.0] | 2008-2013 | 7,1 | [5.5, 8.8] | 2008-2013 |
| Stage II | -0,4 | [-0.8, 0.1] | 2004-2013 | -0,7 | [-1.8, 0.3] | 2004-2013 | -0,8 | [-1.4, -0.3] | 2004-2013 | 2,1 | [1.3, 2.9] | 2004-2013 |
| Stage III | -0,1 | [-1.1, 1.0] | 2004-2013 | -0,8 | [-2.6, 1.1] | 2004-2013 | -0,1 | [-1.0, 0.8] | 2004-2013 | 1,4 | [0.2, 2.7] | 2004-2013 |
| Stage IV | -0,5 | [-1.7, 0.7] | 2004-2013 | 1,5 | [-2.2, 5.4] | 2004-2013 | -0,1 | [-1.9, 1.8] | 2004-2013 | 2,7 | [0.0, 5.4] | 2004-2013 |
| | -11,7 | [-16.3, -6.9] | 2004-2006 | -8,6 | [-23.8, 9.6] | 2004-2006 | -4,6 | [-10.3, 1.5] | 2004-2007 | | | |
| | 7,1 | [4.6, 9.7] | 2006-2010 | 4,6 | [-0.2, 9.6] | 2006-2013 | 2,3 | [-0.7, 5.3] | 2007-2013 | | | |
| | -2,4 | [-5.6, 1.0] | 2010-2013 | | | | | | | | | |
| Stage unknown | -12,5 | [-15.9, -8.9] | 2004-2013 | -14,6 | [-19.4, -9.4] | 2004-2013 | -13,5 | [-18.2, -8.5] | 2004-2013 | -9,1 | [-11.5, -6.5] | 2004-2013 |
| | | | | | | | -18,8 | [-38.1, 6.6] | 2004-2006 | | | |
| | | | | | | | -11,9 | [-17.9, -5.5] | 2006-2013 | | | |

| Mortality by region | AAPC(%) | 95%CI | period |
|---|---|---|---|
| Belgium | -1,8 | [-2.5, -1.2] | 2004-2012 |
| Flemish Region | -2,1 | [-2.6, -1.7] | 1999-2012 |
| Brussels-Capital Region | -1,9 | [-3.3, -0.5] | 1999-2012 |
| Walloon Region | -1,8 | [-3.2, -0.3] | 2004-2012 |

*AAPC: average annual percentage change*

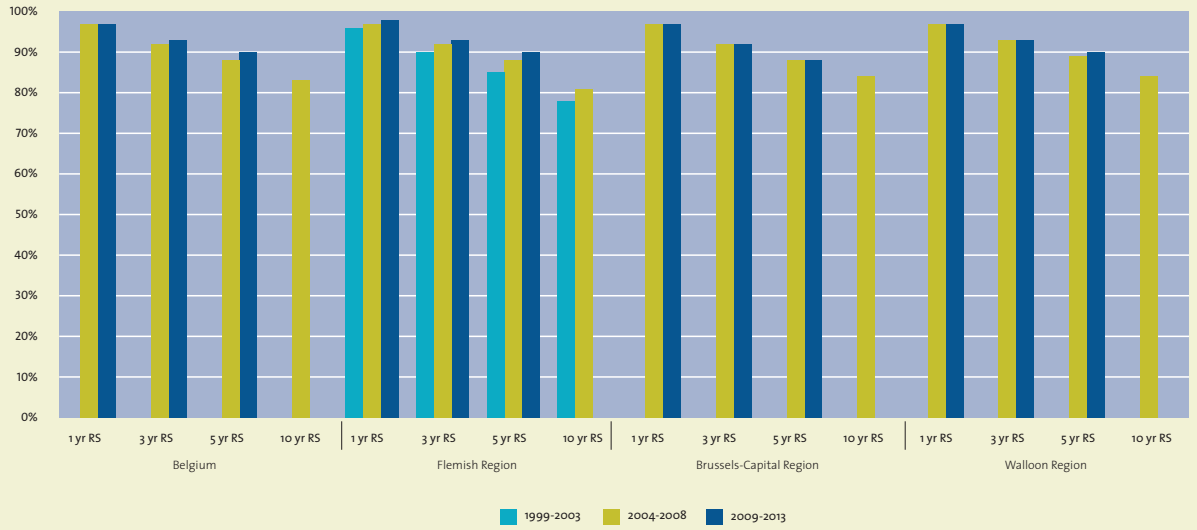
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



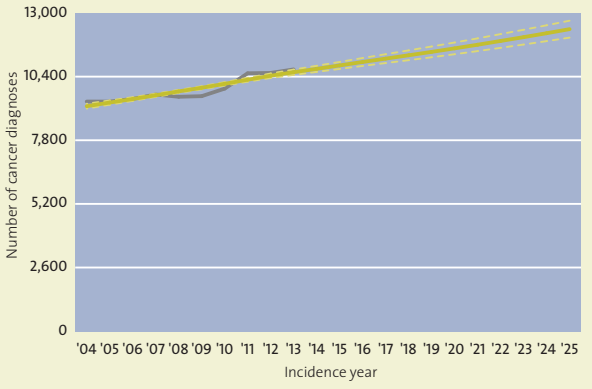

Source: Belgian Cancer Registry

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



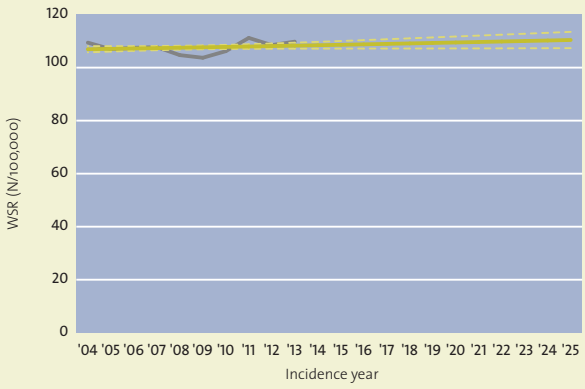

Source: Belgian Cancer Registry

**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

Observed — Projected

## 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, Borras 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] |

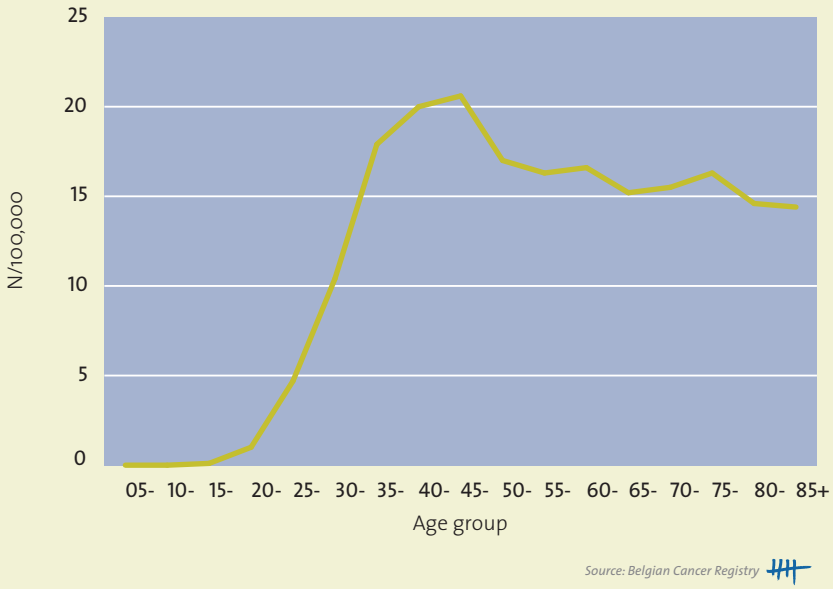
*CR, crude rate (n/100,000 person years)*
*WSR, age-standardised rate using the World Standard Population (N/100,000 person years)*

- 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.

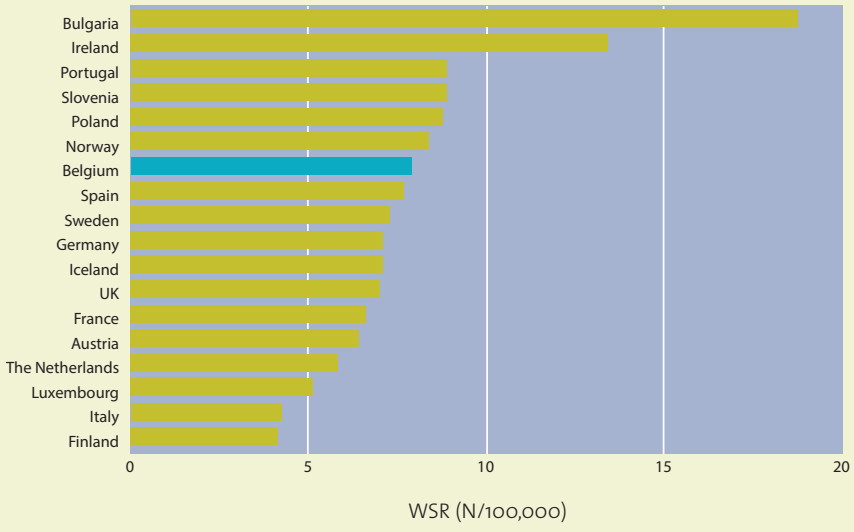
- In the eligible population for screening (age group 25-64 years) in the Flemish Region from 1999 to 2013, an increase in incidence of in situ cervical cancer is observed while the incidence of invasive cervical cancer slightly decreased (**Figure 10**). From 2010, the incidence of in situ cervical 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




Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

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

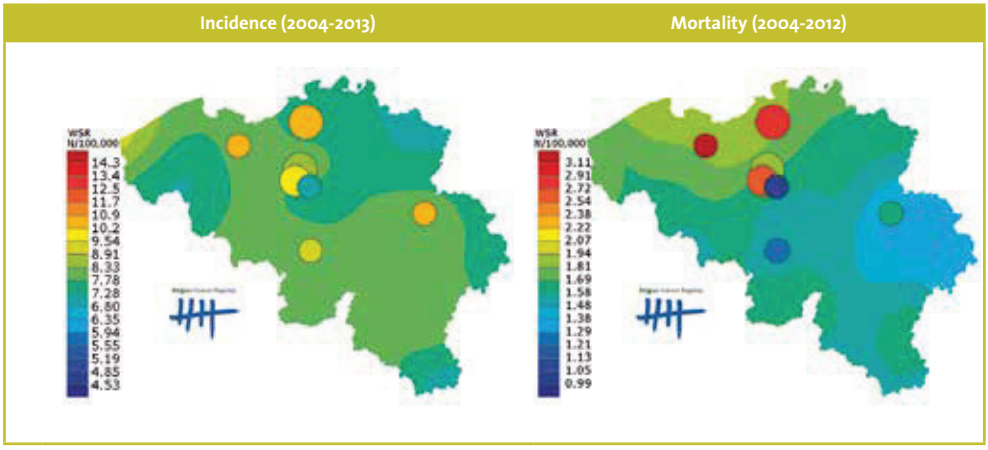
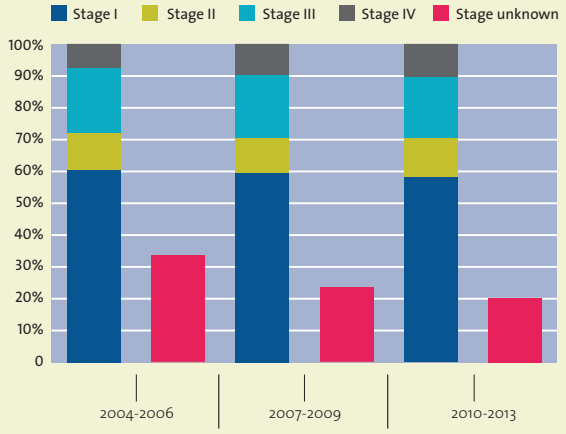
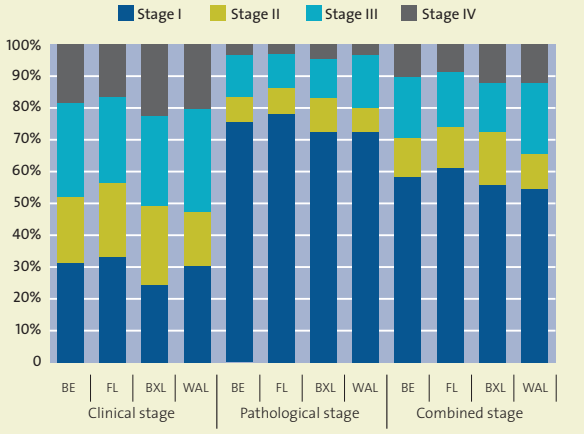



**Figure 4** Cervical cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



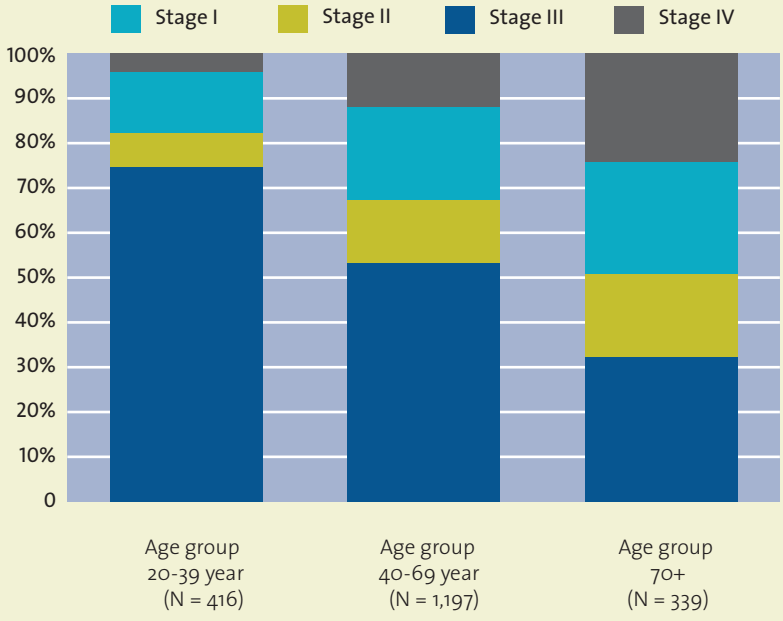

*Source: Belgian Cancer Registry*

**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

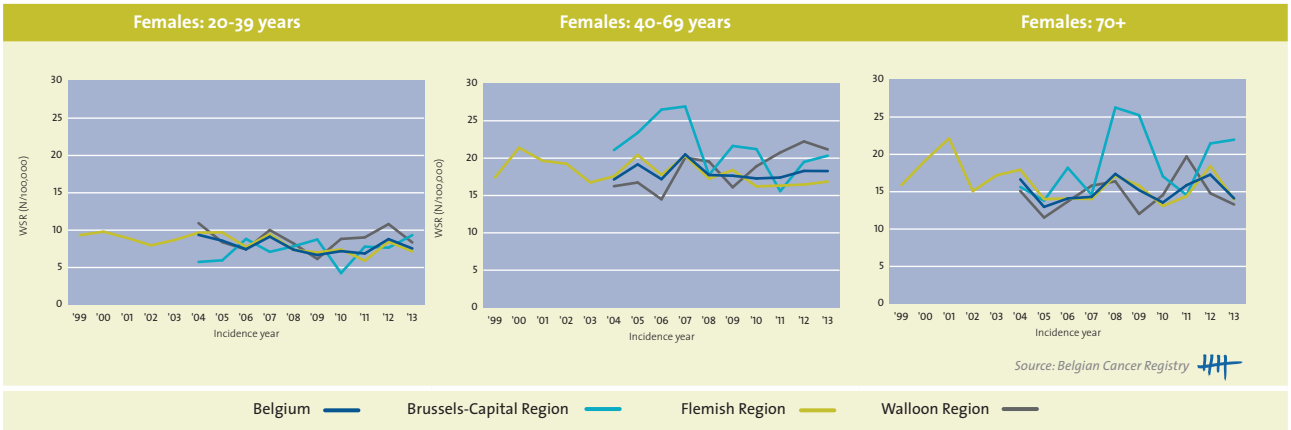


**Figure 9** Cervical cancer: Trends in age-standardised incidence (WSR) by stage, Belgium 2004-2013


**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

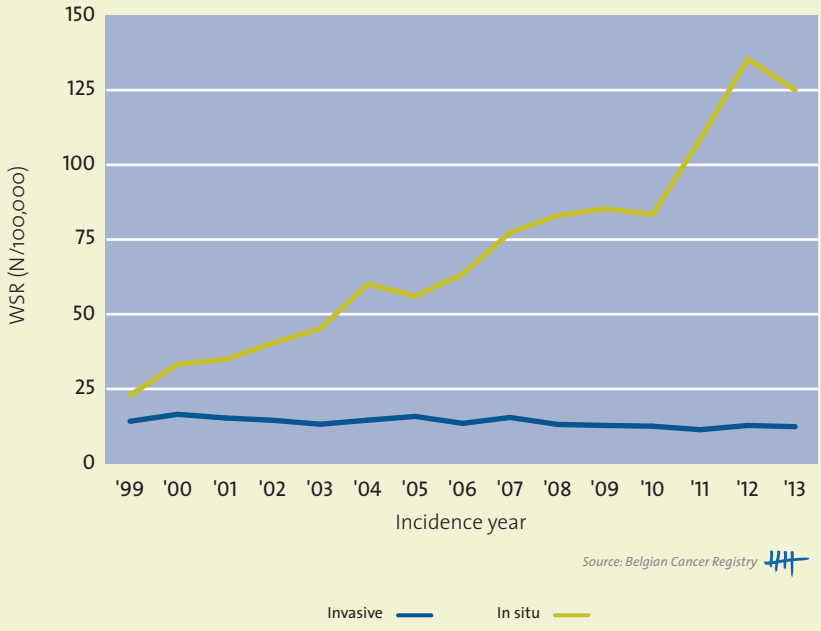


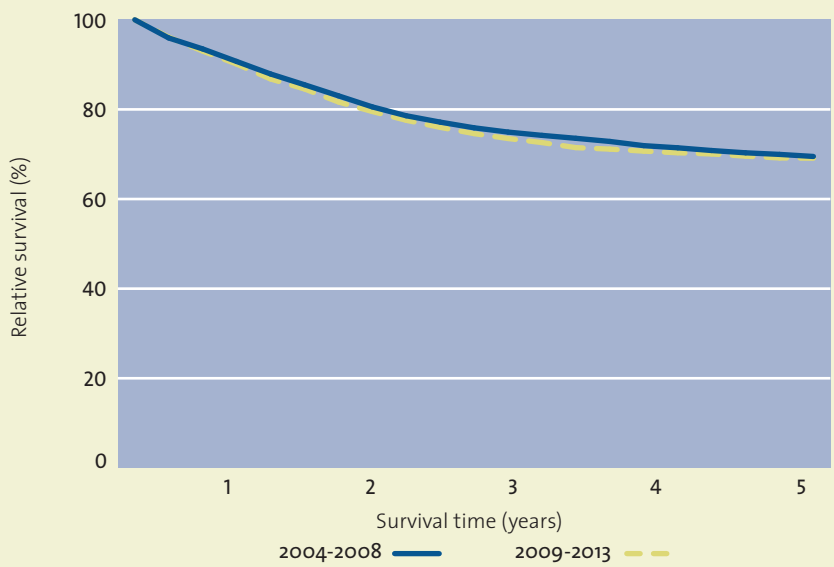
**Table 2** Cervical cancer: AAPC(%) by region, stage and age group in Belgium

| 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*

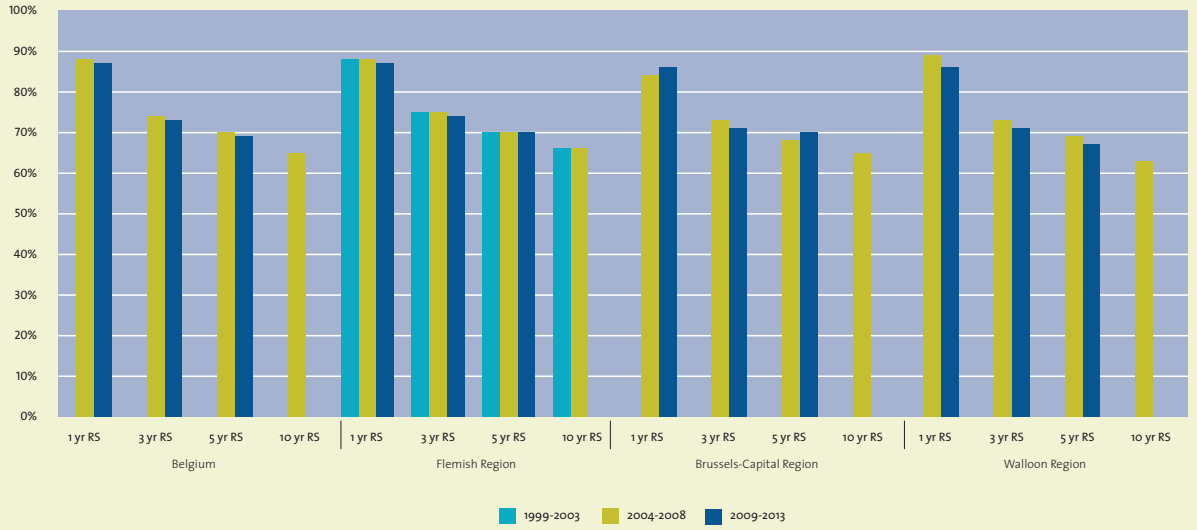
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



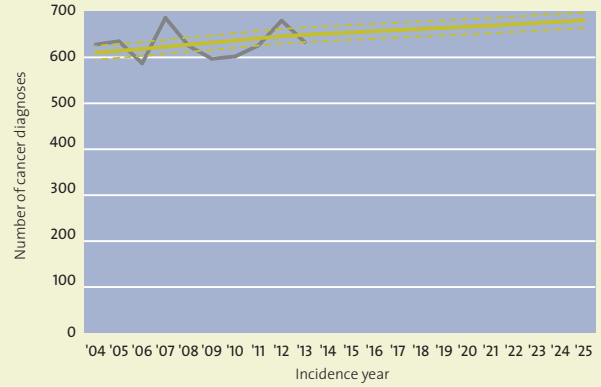

Source: Belgian Cancer Registry

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



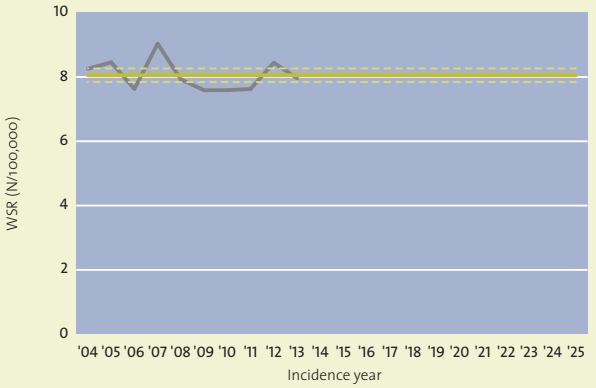

Source: Belgian Cancer Registry

**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 Projected

## 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)*

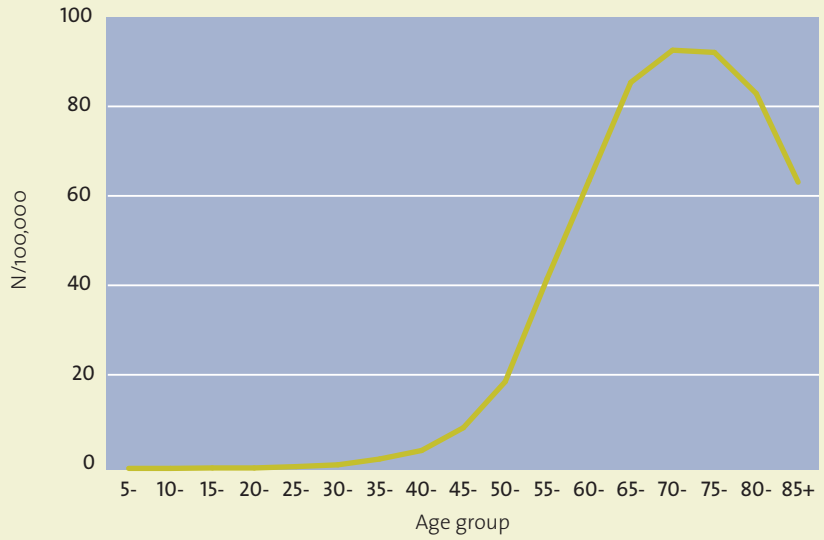
- Corpus uteri cancer burden in Belgium (**Table 1**):
  - 1,395 new diagnoses in 2013.
  - Corpus uteri cancer is the 5th most frequent tumour in females (5% of all malignancies).
  - 188 deaths are due to corpus uteri cancer (C54) in 2012. This is probably underestimated because deaths due to cancer 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 (**Figure 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 (**Figure 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**).

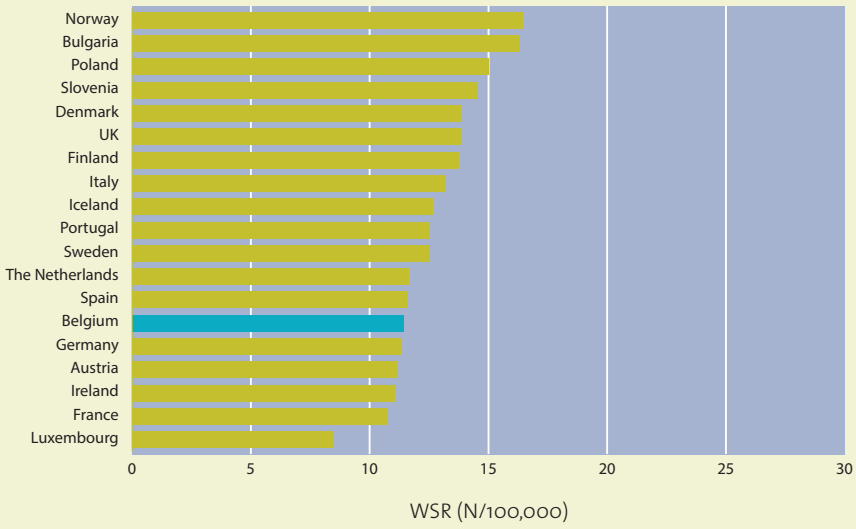
- Availability of information on stage has improved from 71% in 2004-2006 to 88% in 2010-2013.
  - In the elderly, slightly fewer tumours are diagnosed as stage I.
- A decrease in incidence rates is observed for endometrioid carcinoma, the most frequent histological type (**Figure 9 and Table 2**).

**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

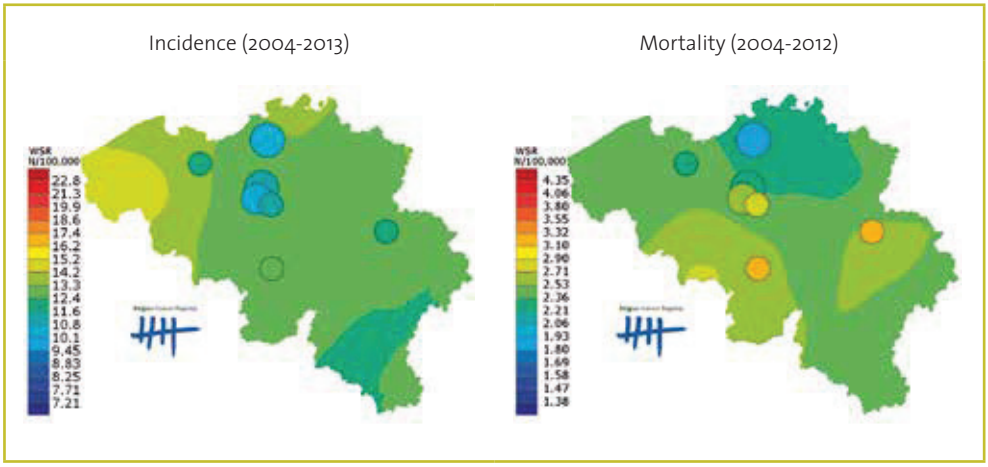
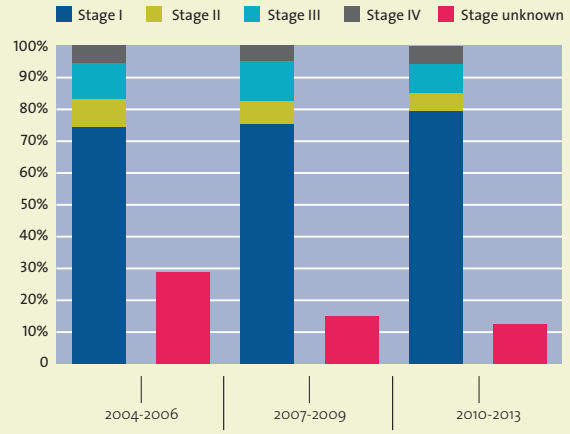
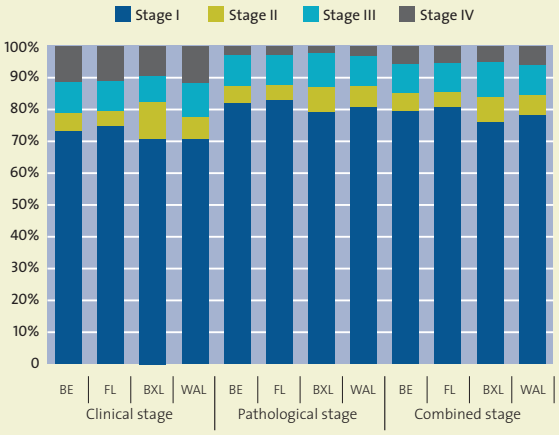



**Figure 4** Corpus uteri cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



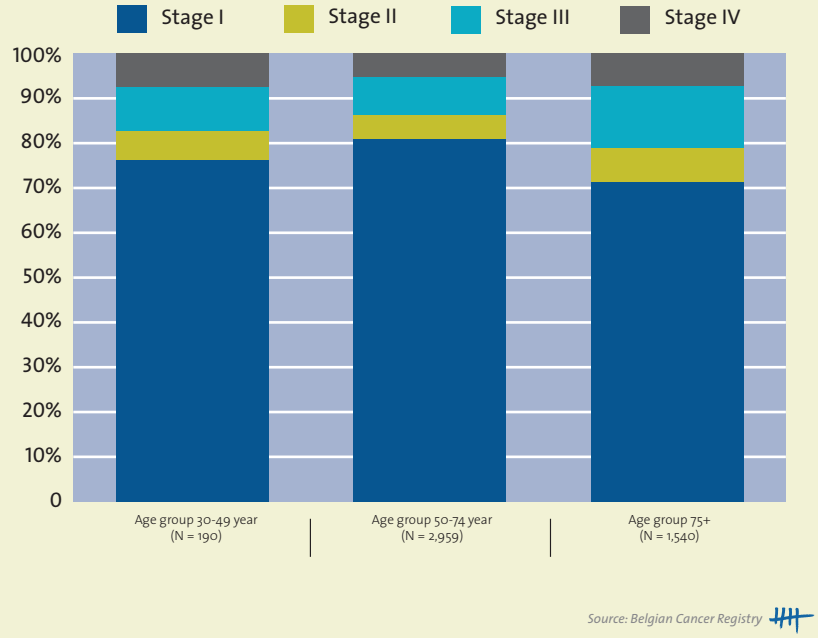

*Source: Belgian Cancer Registry*

**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

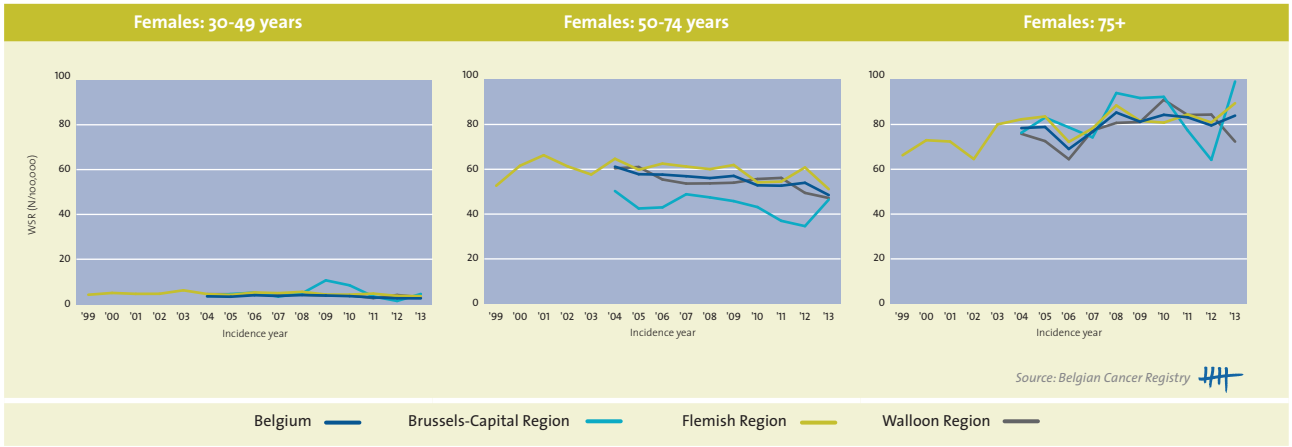
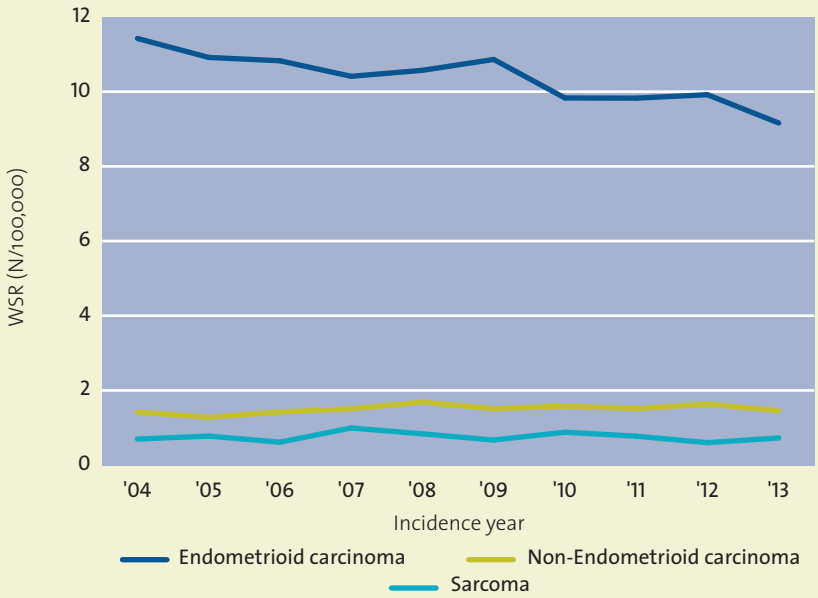


**Figure 9** Corpus uteri cancer: Trends in age-standardised incidence (WSR) by histology, Belgium 2004-2013




*Source: Belgian Cancer Registry*

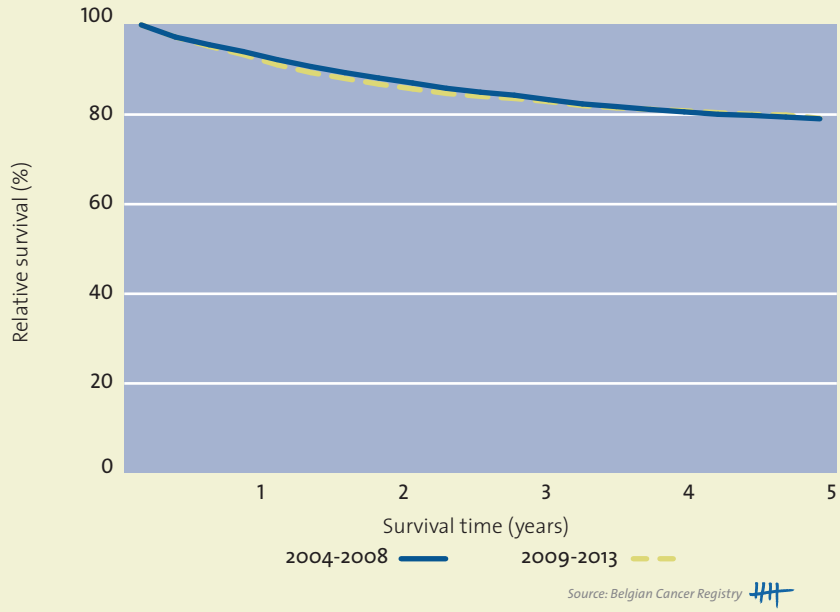
**Table 2** Corpus uteri cancer: AAPC(%) by region, age group and histology in Belgium

| 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*

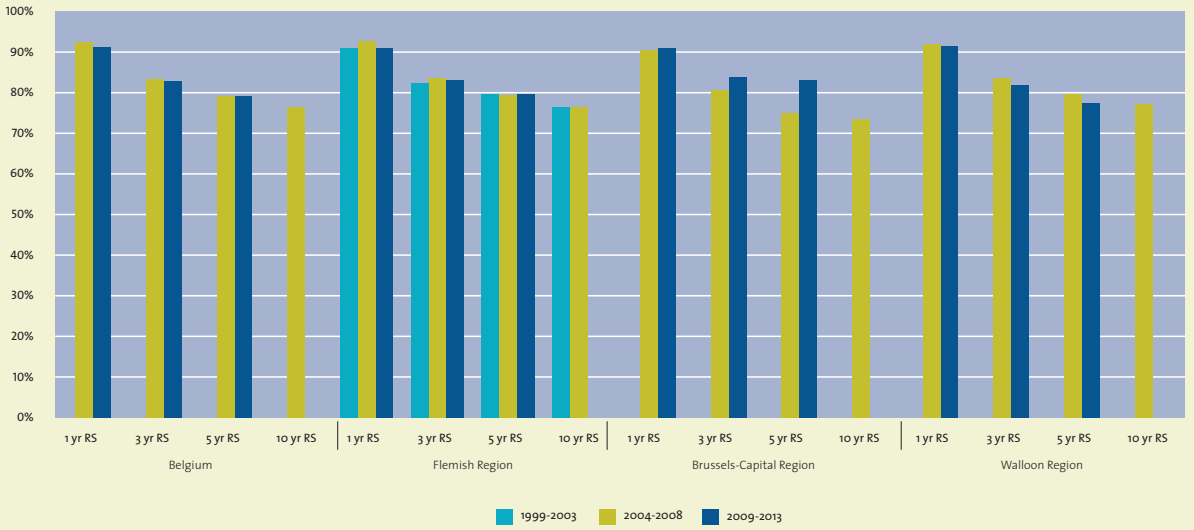
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



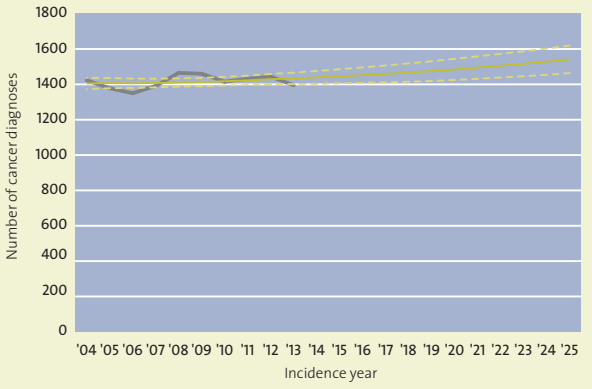

Source: Belgian Cancer Registry

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



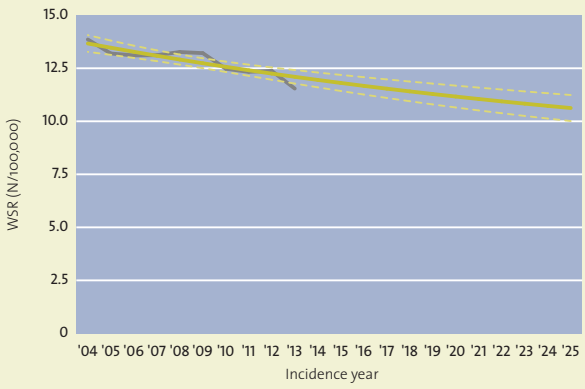

Source: Belgian Cancer Registry

**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

Observed — Projected —

## 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)

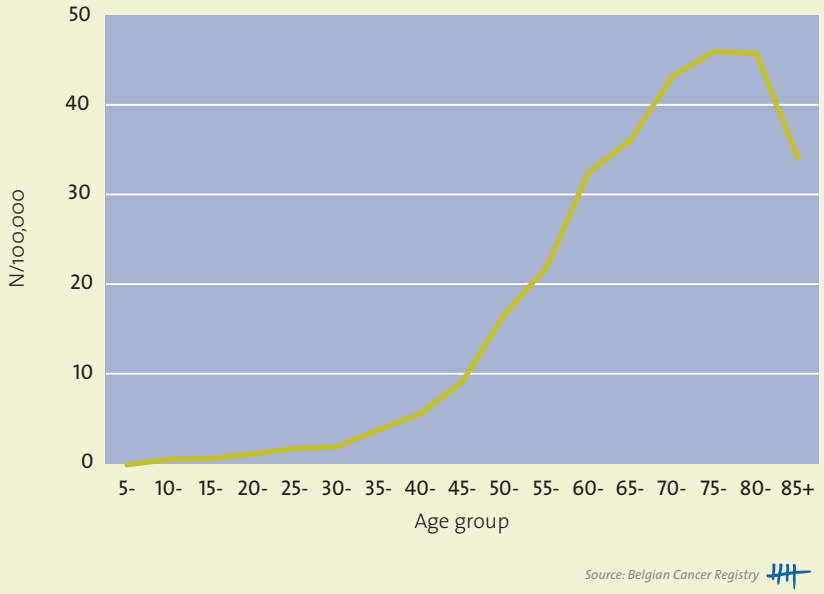
**Table 1** Ovarian cancer: Overview of incidence, mortality, prevalence, survival and projection by region

| 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)*

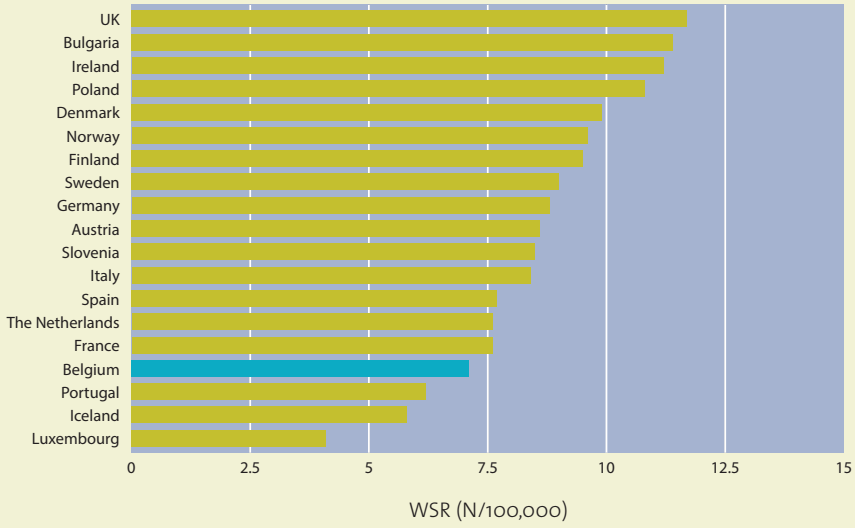
- Ovarian cancer burden in Belgium (**Table 1**):
  - 766 new diagnoses in 2013.
  - Ovarian cancer is the 8th most frequent tumour in females (2% of all malignancies).
  - 678 deaths due to ovarian cancer in 2012.
  - Ovarian cancer is the 5th most important cause of cancer death in females (6% of all 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

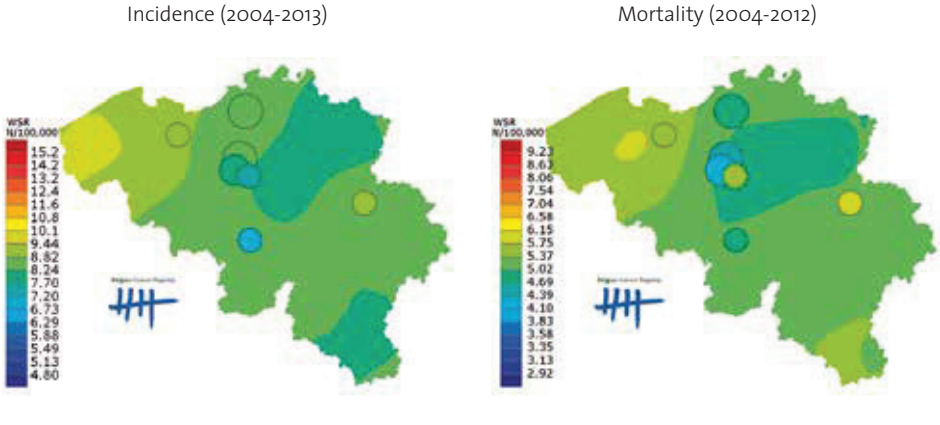
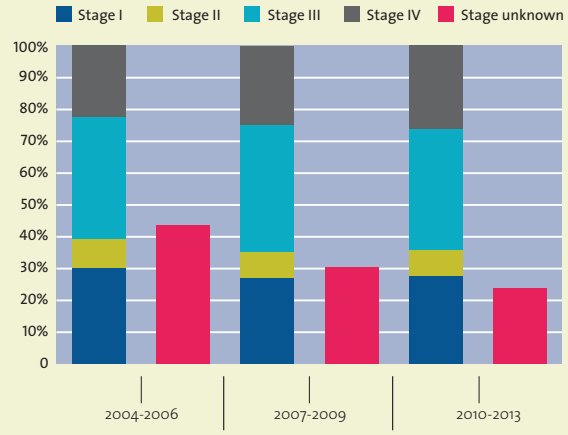
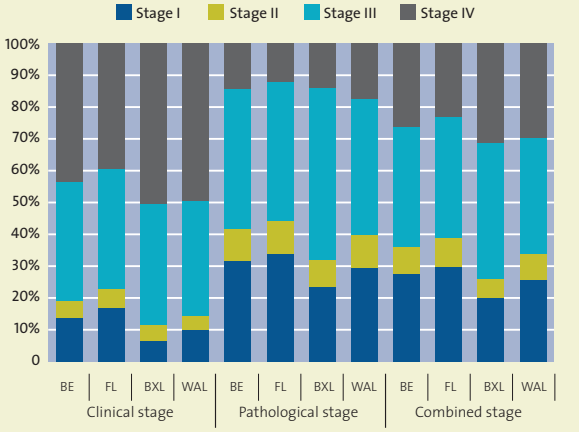


**Figure 4** Ovarian cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



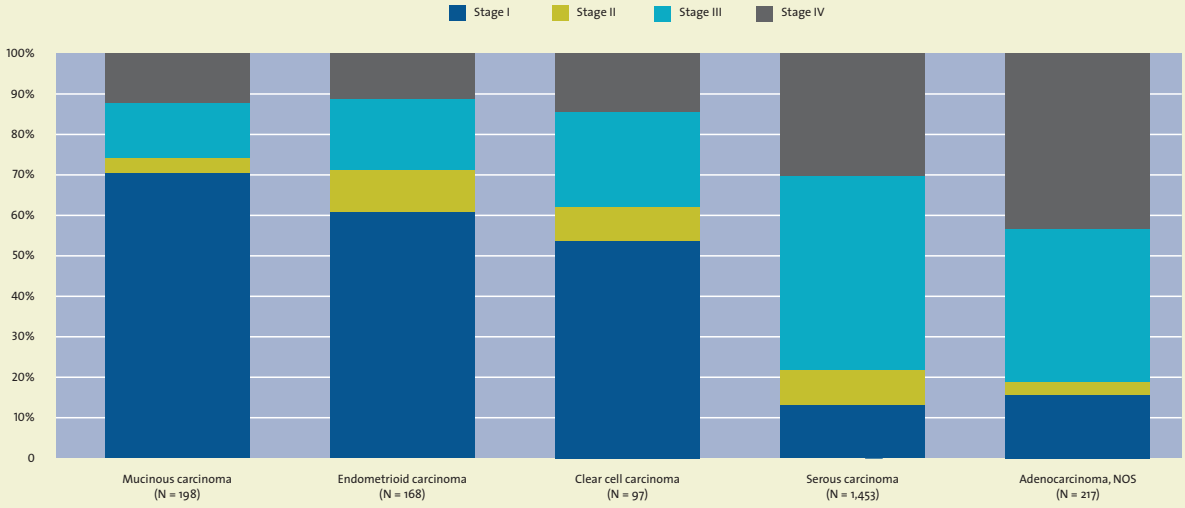

Source: Belgian Cancer Registry

**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

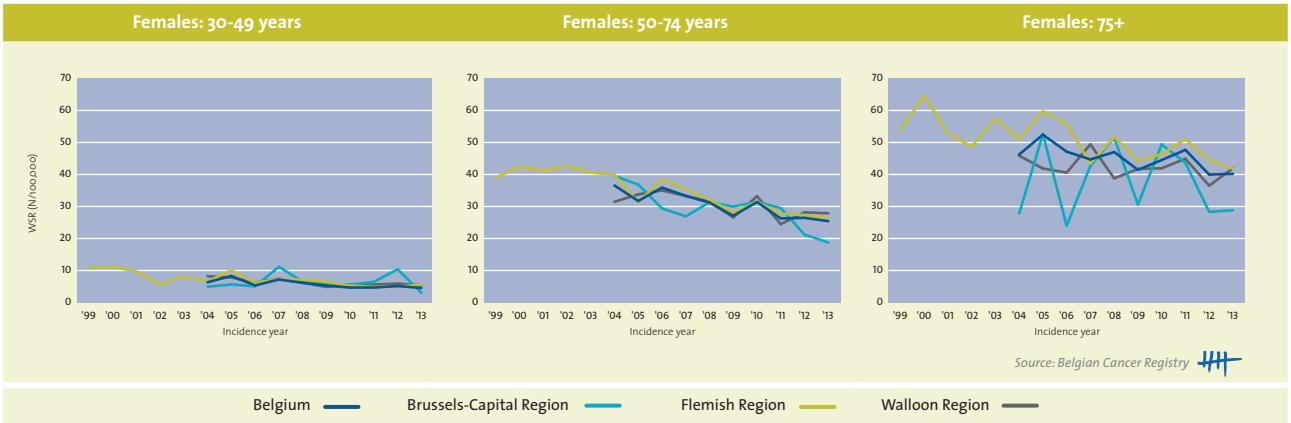
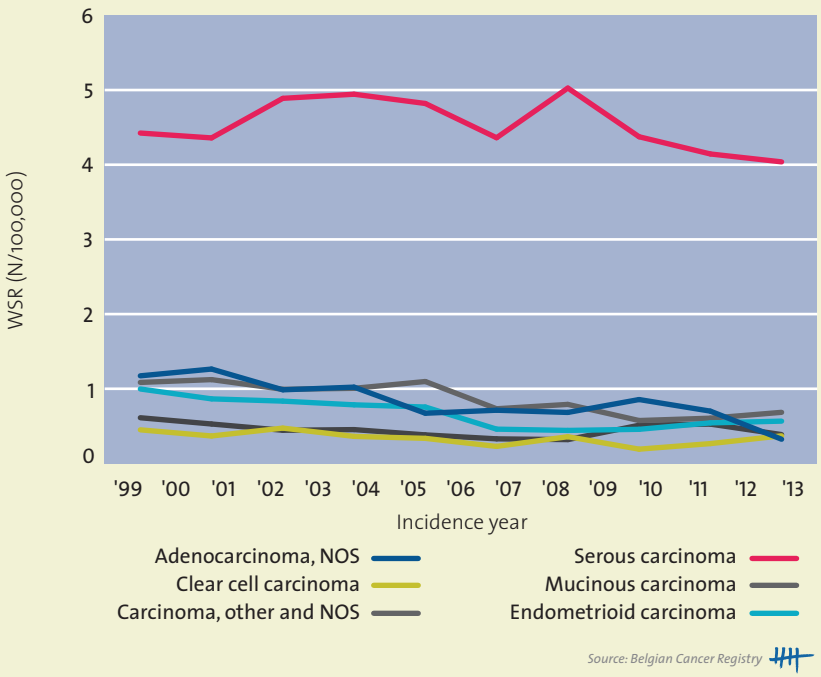


**Figure 9** Ovarian cancer: Trends in age-standardised incidence (WSR) by histology, Belgium 2004-2013.




*Source: Belgian Cancer Registry*

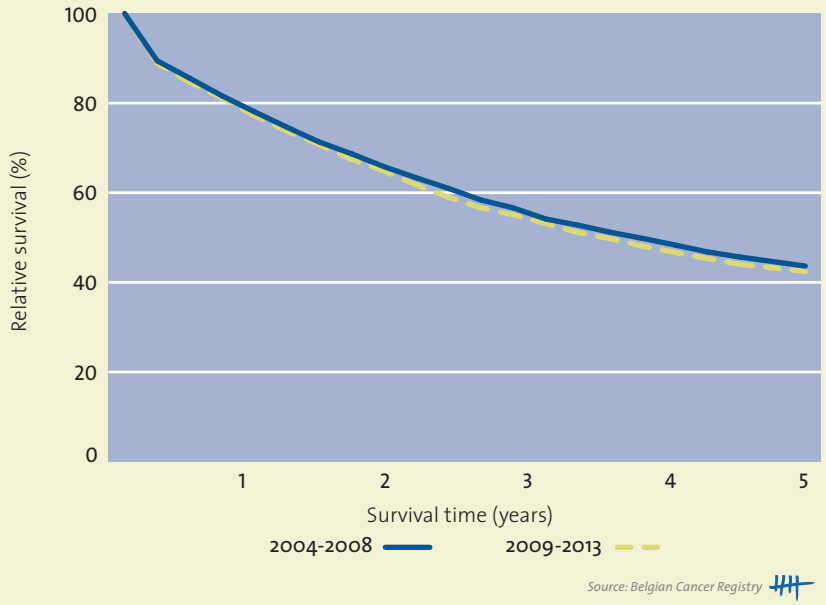
**Table 2** Ovarian cancer: AAPC(%) by region, histology and age group in Belgium

| 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*

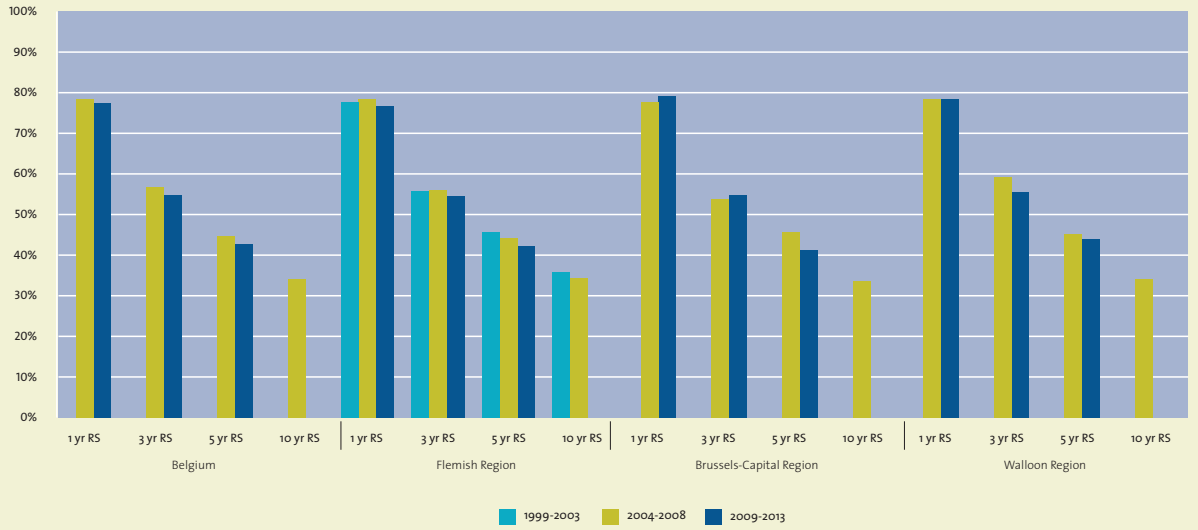
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



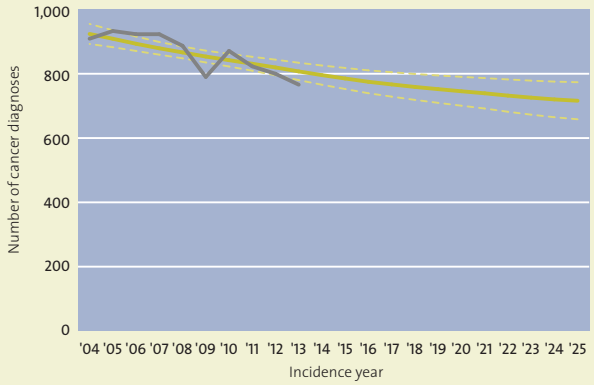

*Source: Belgian Cancer Registry*

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



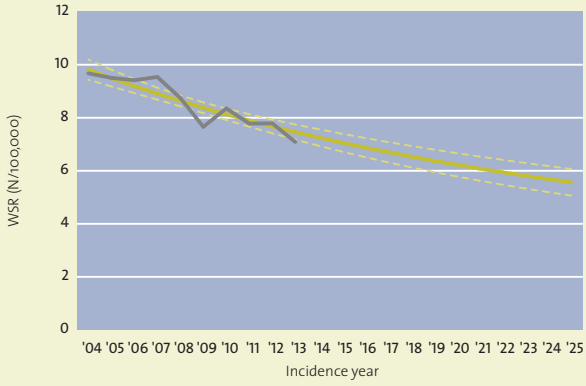

*Source: Belgian Cancer Registry*

**Figure 12** Ovarian Cancer: Observed and projected number of new diagnoses (N), Belgium 2004-2025




*Source: Belgian Cancer Registry*

**Figure 13** Ovarian Cancer: Observed and projected incidence (WSR), Belgium 2004-2025




*Source: Belgian Cancer Registry*

Projected — 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)

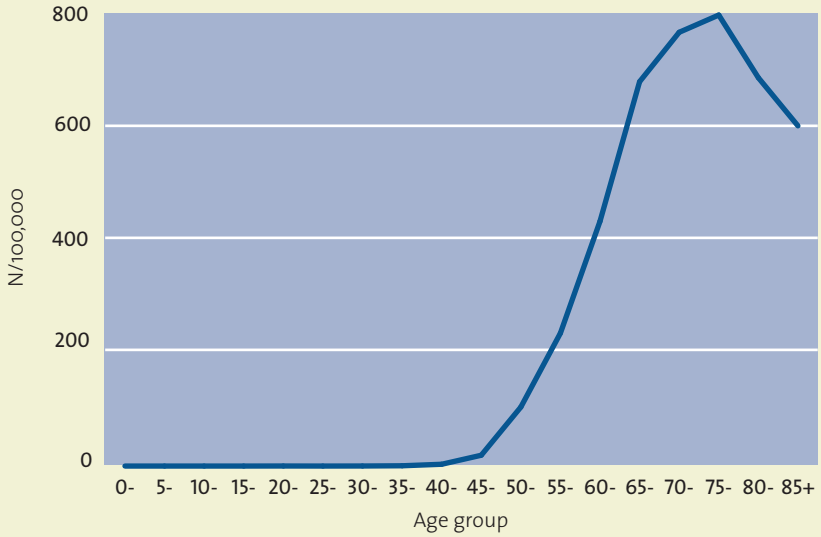
**Table 1** Prostate cancer: Overview of incidence, mortality, prevalence, survival and projection by region

| 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)*

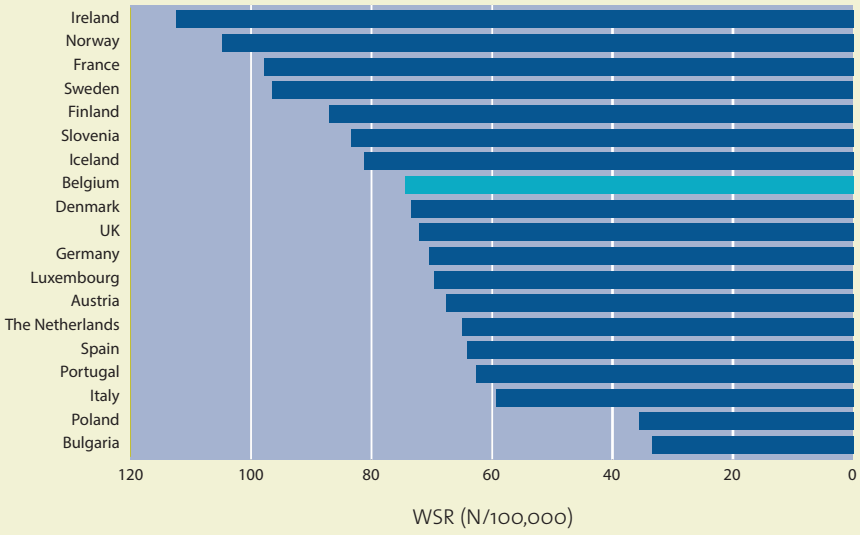
- Prostate cancer burden in Belgium (**Table 1**):
  - 7,909 new diagnoses in 2013.
  - Prostate cancer is the most frequent tumour in males (23% of all malignancies).
  - 1,394 deaths are due to prostate cancer in 2012.
  - Prostate cancer is the 3rd most important cause of cancer death in males (9% 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

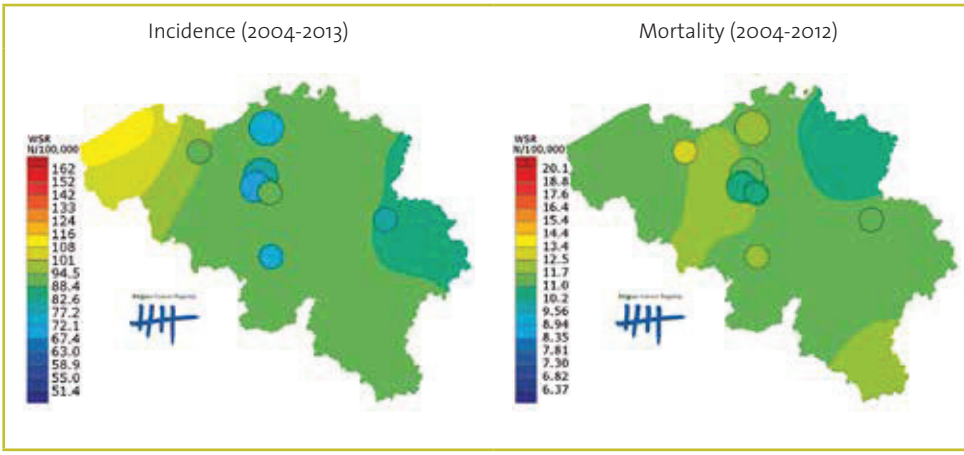
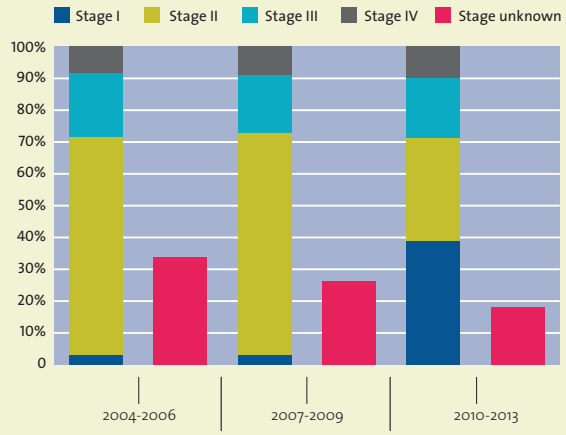
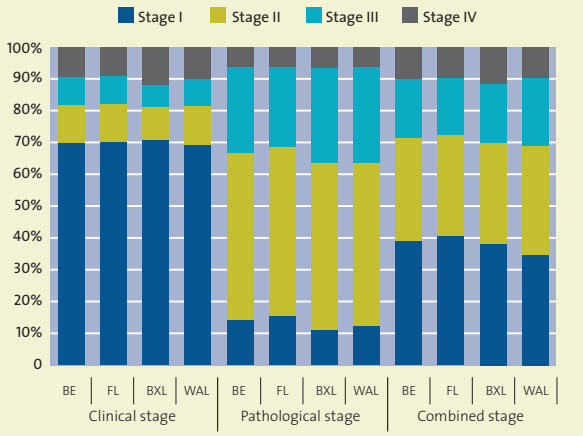


**Figure 4** Prostate cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



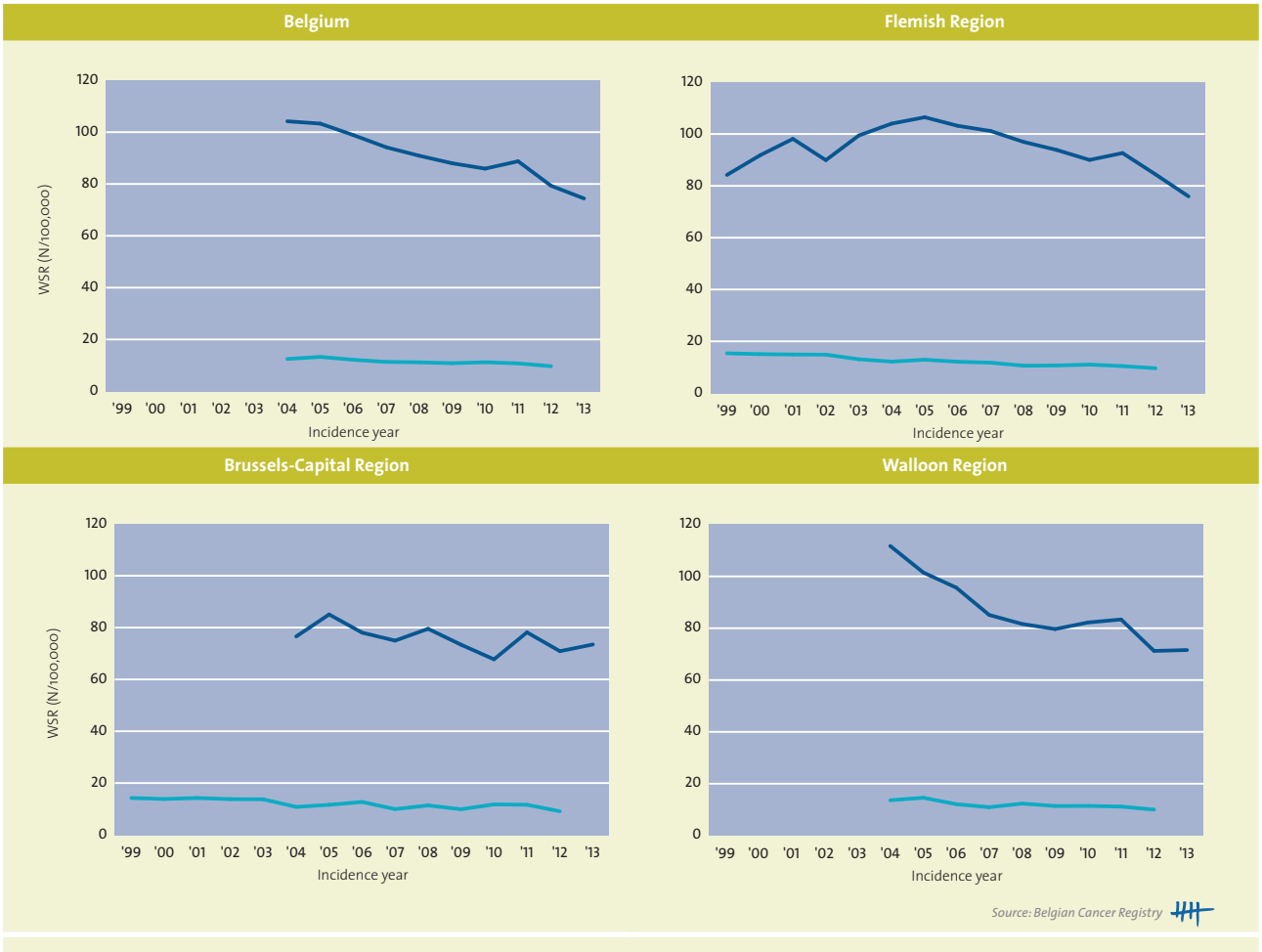

Source: Belgian Cancer Registry

**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

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

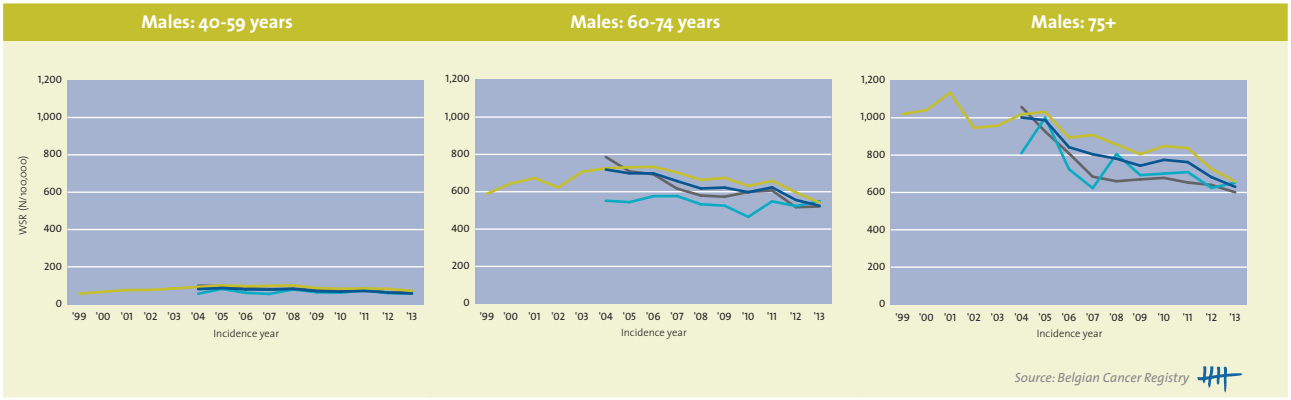


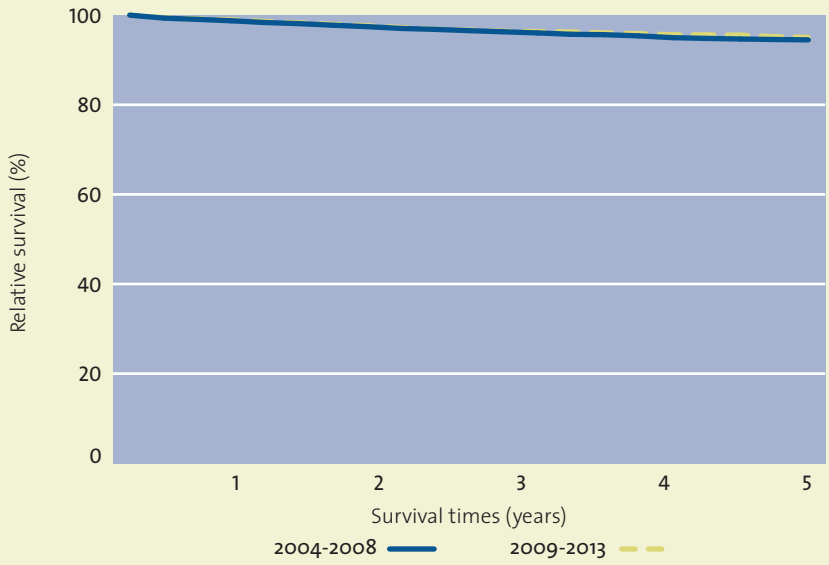

**Table 2** Prostate cancer: AAPC(%) by region and age group in Belgium

| 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 |
| | -3.5 | [-4.4; -2.6] | 2005-2013 |
| Brussels-Capital Region | -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*

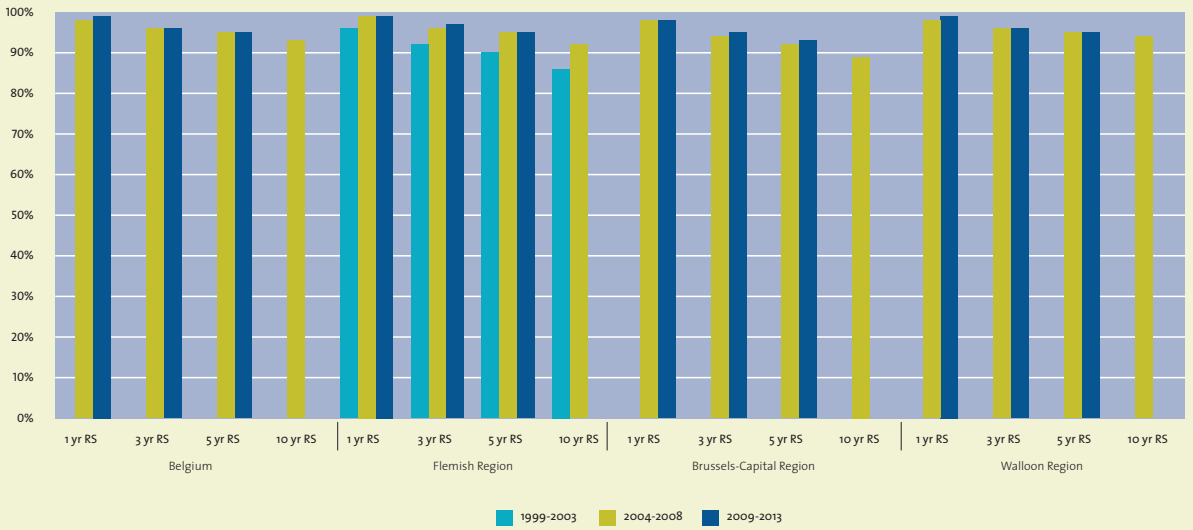
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



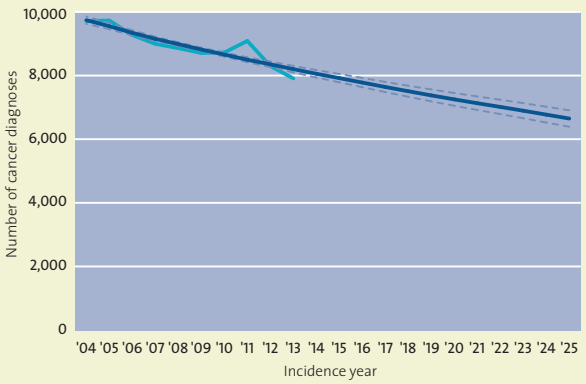

Source: Belgian Cancer Registry

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



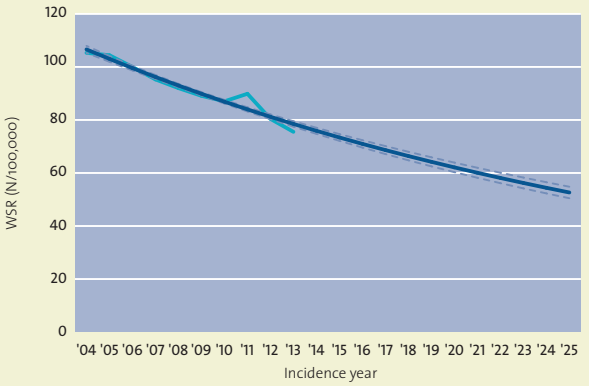

Source: Belgian Cancer Registry

**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

Projected — 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

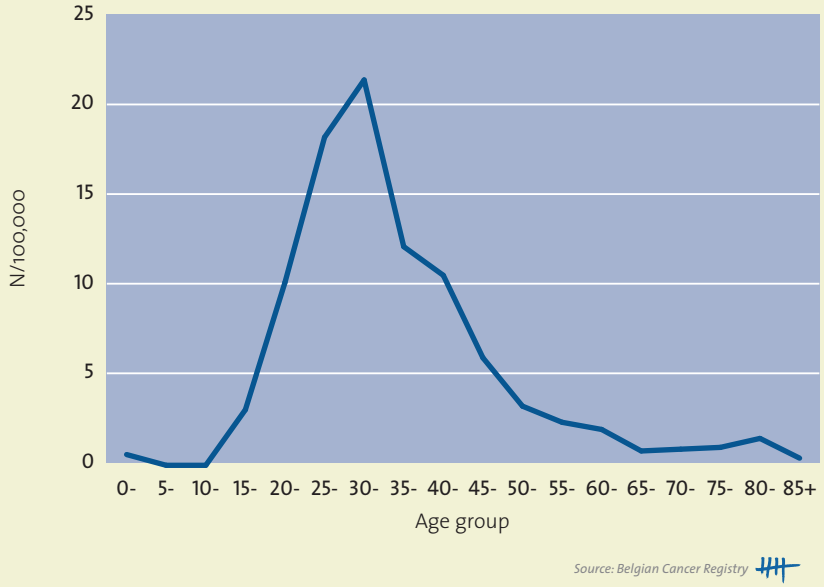
| Testicular cancer | Males | | |
|---|---|---|---|
| Incidence, 2013 | N | CR | WSR |
| Belgium | 353 | 6.5 | 6.3 |
| Flemish Region | 196 | 6.2 | 6.3 |
| Brussels-Capital Region | 19 | 3.4 | 3.0 |
| Walloon Region | 138 | 8.0 | 7.8 |
| Mortality, 2012 | N | CR | WSR |
| Belgium | 14 | 0.3 | 0.2 |
| 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.

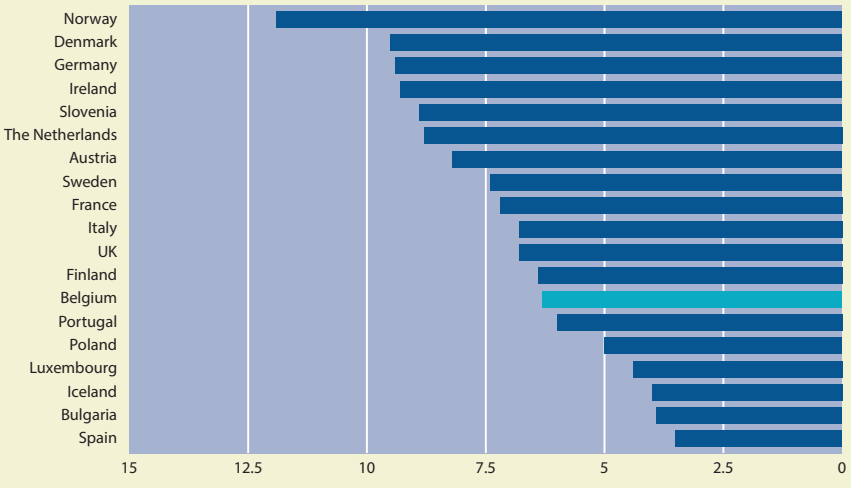
- 90% of all testicular cancers with known stage are diagnosed as stage I (**Figure 4, 5 and 6**).
  - Availability of information on stage has improved from 82% in 2004-2006 to 96% in 2010-2013.
  - There are no major regional differences in stage distribution.
  - Older males have a less favourable 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

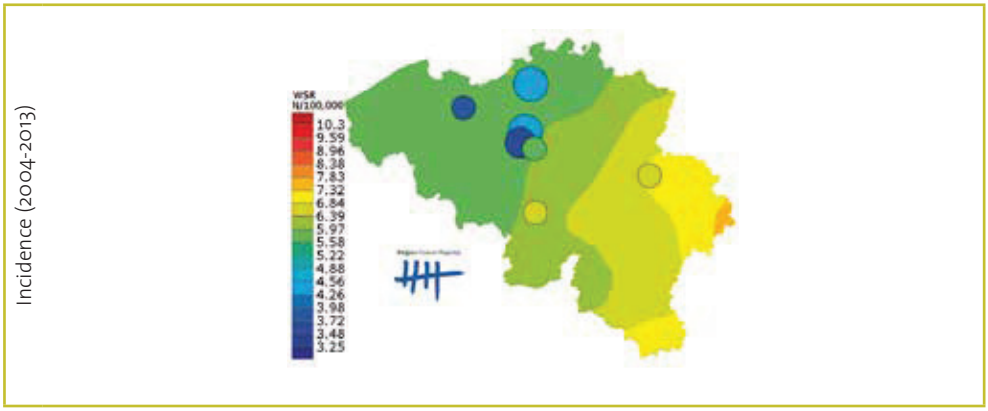
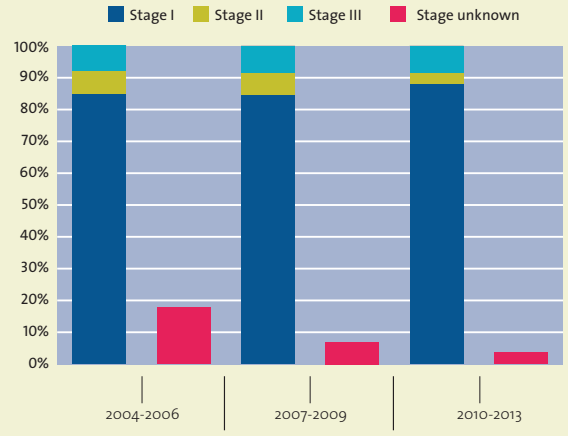
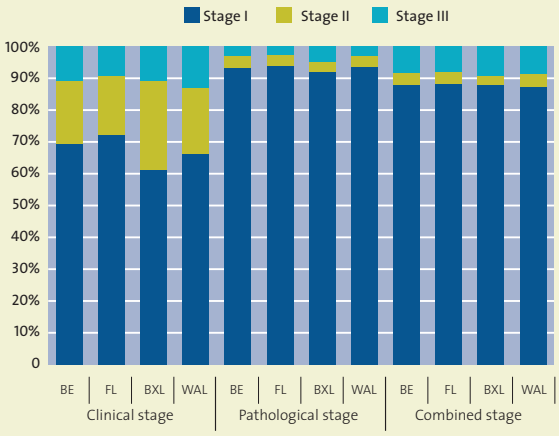



**Figure 4** Testicular cancer: stage distribution, Belgium 2004-2006, 2007-2009 and 2010-2013



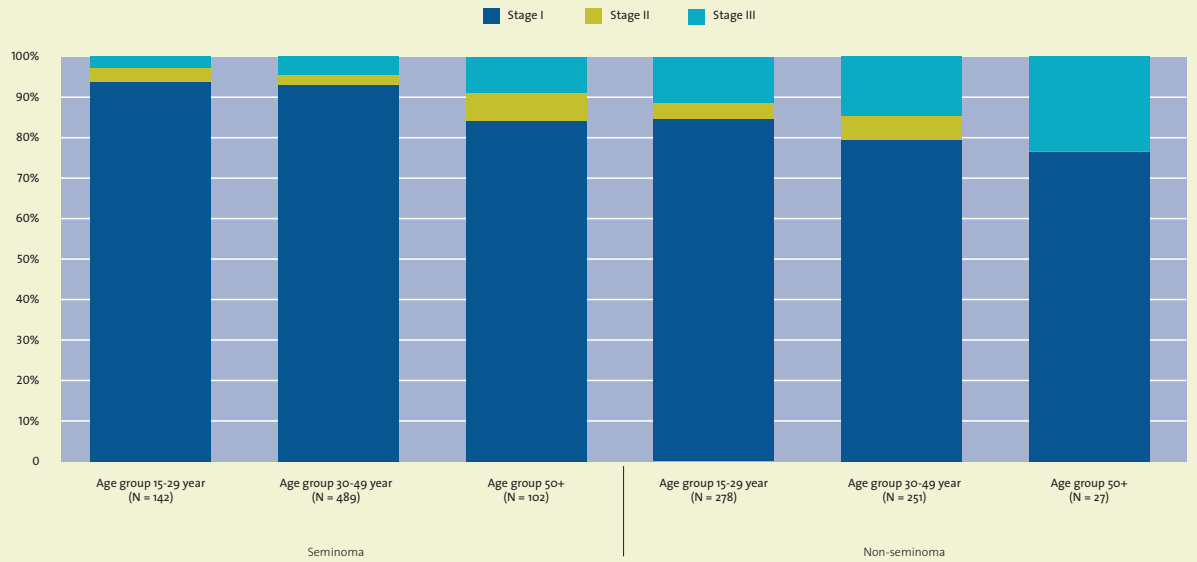

Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

**Figure 6** Testicular cancer: stage distribution by histology and age group, Belgium 2010-2013




Source: Belgian Cancer Registry

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

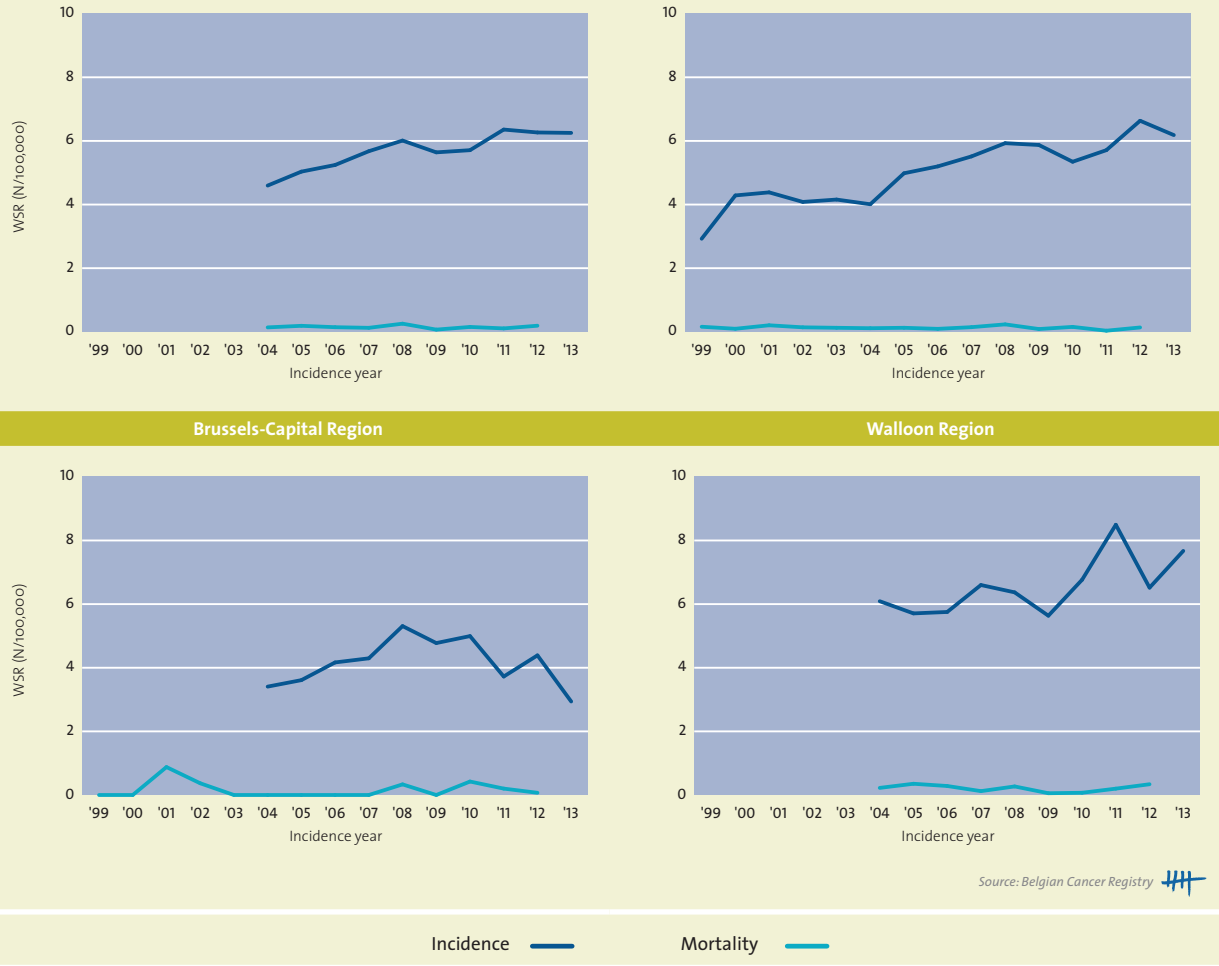



**Figure 8** Testicular cancer: Trends in age-standardised incidence (WSR) by age group and region, 1999-2013

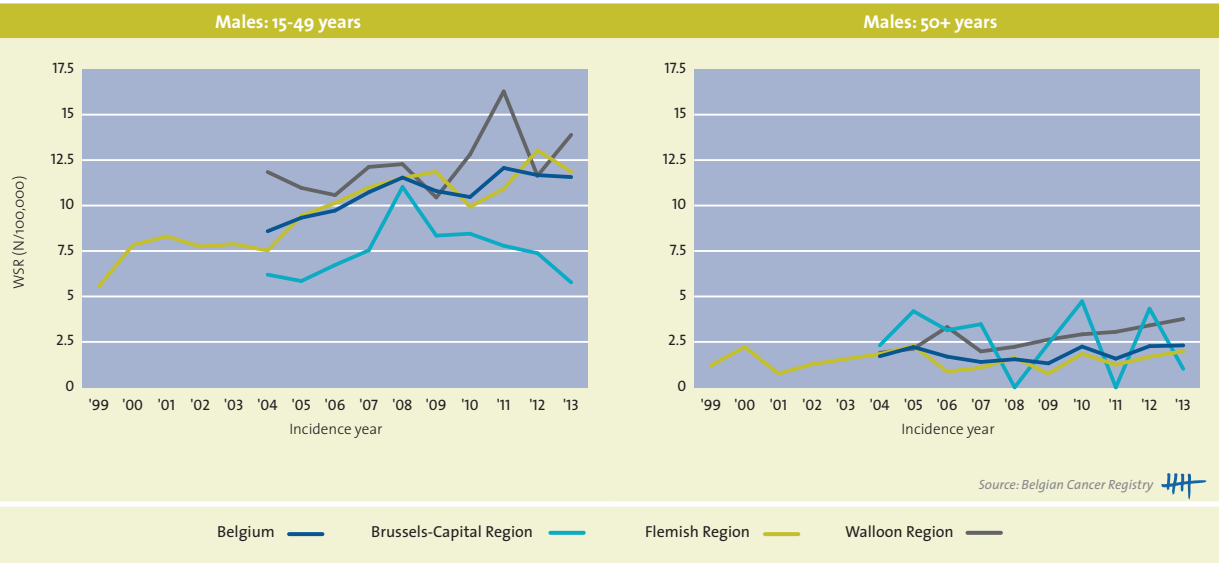
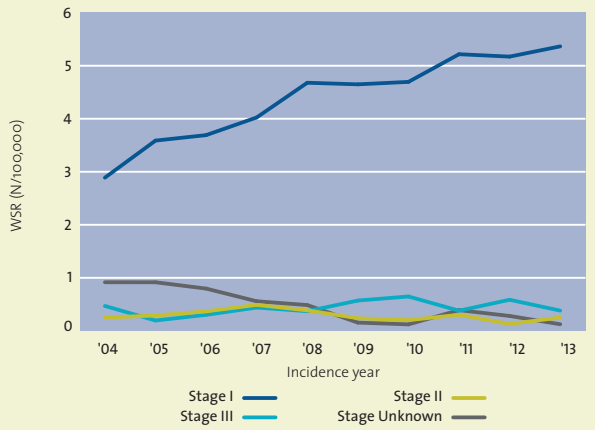
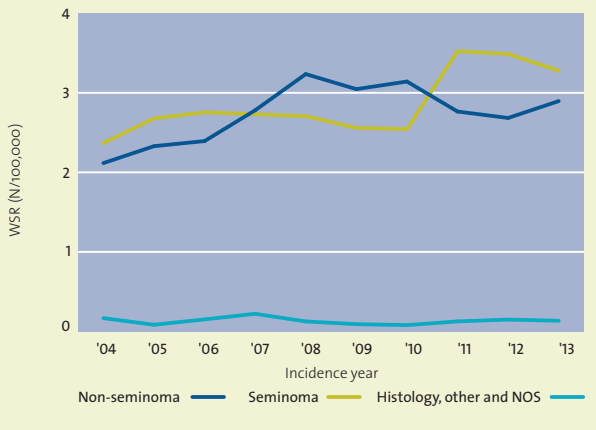


**Figure 9** Testicular cancer: Trends in age-standardised incidence by stage, 2004-2013




Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

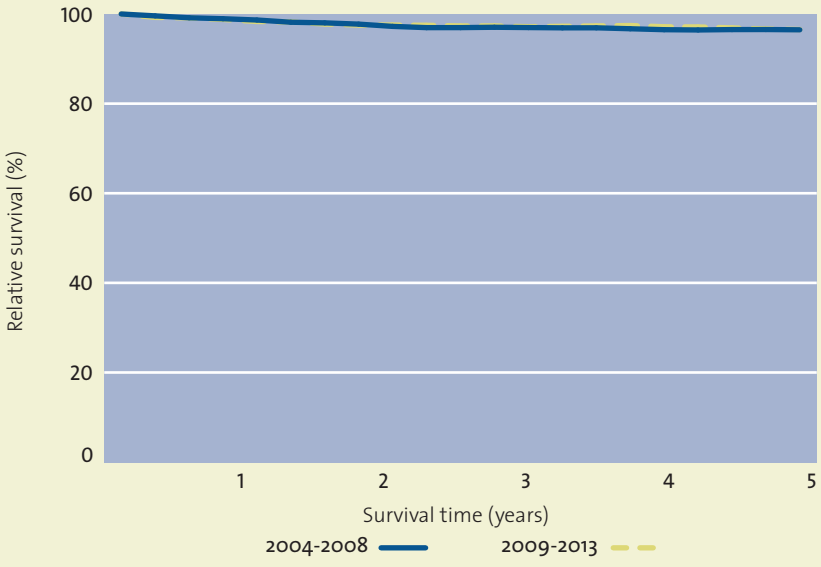
**Table 2** Testicular cancer: AAPC(%) by region, histology and age group in Belgium

| 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*

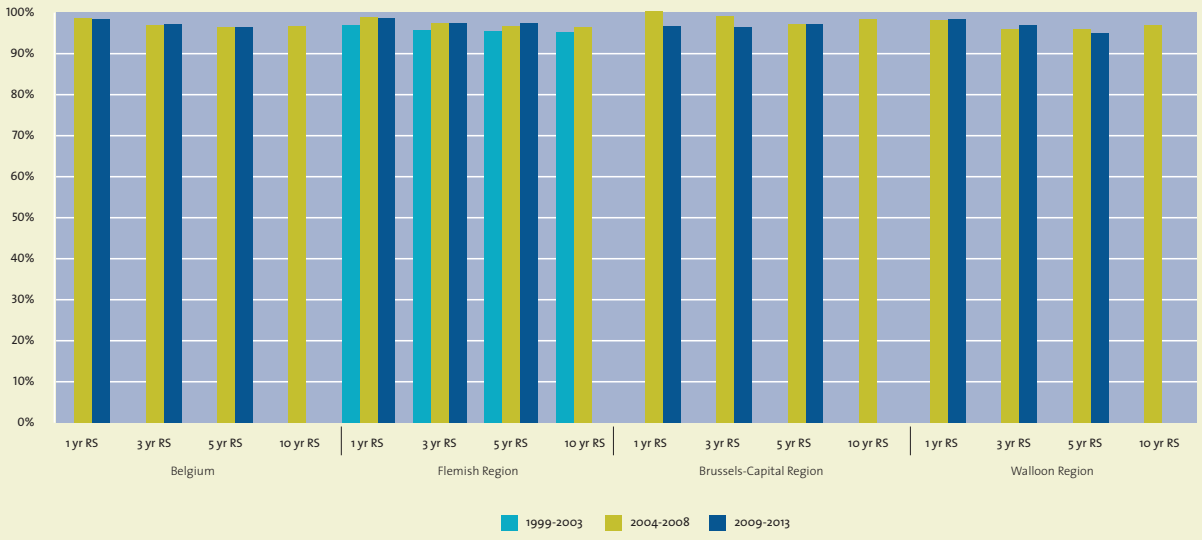
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



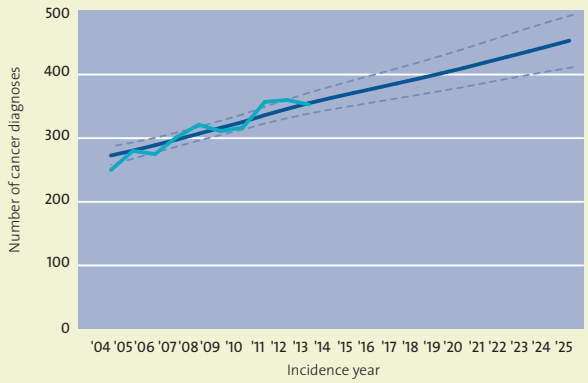

Source: Belgian Cancer Registry

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



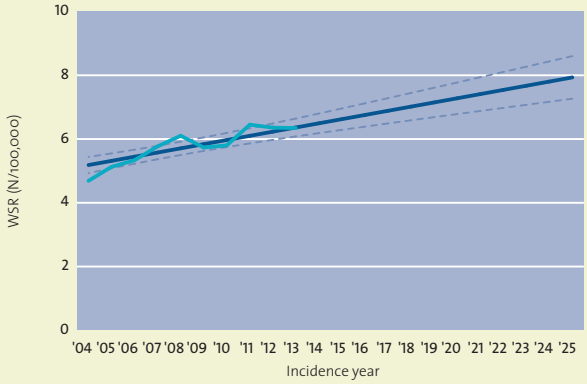

Source: Belgian Cancer Registry

**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

Projected 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:

Due to recent changes in *the WHO classification of Tumours of the Urinary System and Male Genital Organs, edition **2016***, coding guidelines have to be changed :

**MIXED TUMOURS OF THE TESTIS**

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).

**TESTICULAR TERATOMA**

- A testicular **teratoma, prepubertal type,** is considered benign (9084/0). This tumour is usually seen in the prepubertal testis but can be seen at all ages. No registration needed.
- A testicular **teratoma, postpubertal type,** is considered malignant (9080/3), *regardless mature or immature characteristics ;* registration is obligatory.

**IMPORTANT :** in the ovaries, coding remains dependent of the presence of immature/mature elements.

**OVARIAN/TUBAL TERATOMA**

- An extratesticular **immature** teratoma is considered malignant (9080/3)
- An extratesticular **mature** teratoma is considered benign (9080/0)
- An extratesticular teratoma NOS is considered borderline (9080/1)

# 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] |

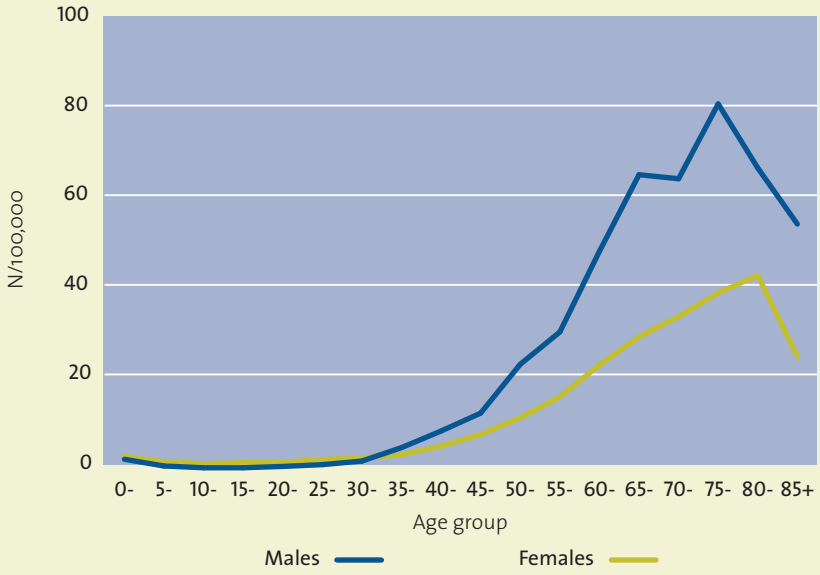
*CR, crude rate (N/100,000 person years)*
*WSR, age-standardised rate using the World Standard Population (N/100,000 person years)*

- 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.

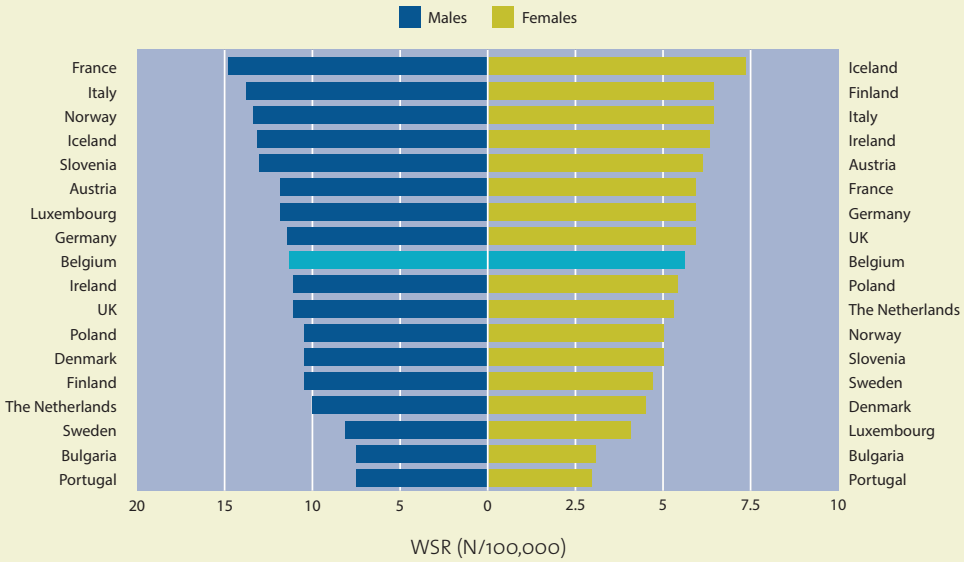
- 70% of all renal cancers with a known stage are diagnosed as stage I or stage II in both males and females (**Figure 4, 5 and 6**).
  - Availability of information on stage has improved from 80% in 2004-2006 to 92% in 2010-2013.
  - There are no major regional differences in stage distribution.
  - 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




Source: Belgian Cancer Registry

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




Source: Belgian Cancer Registry

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

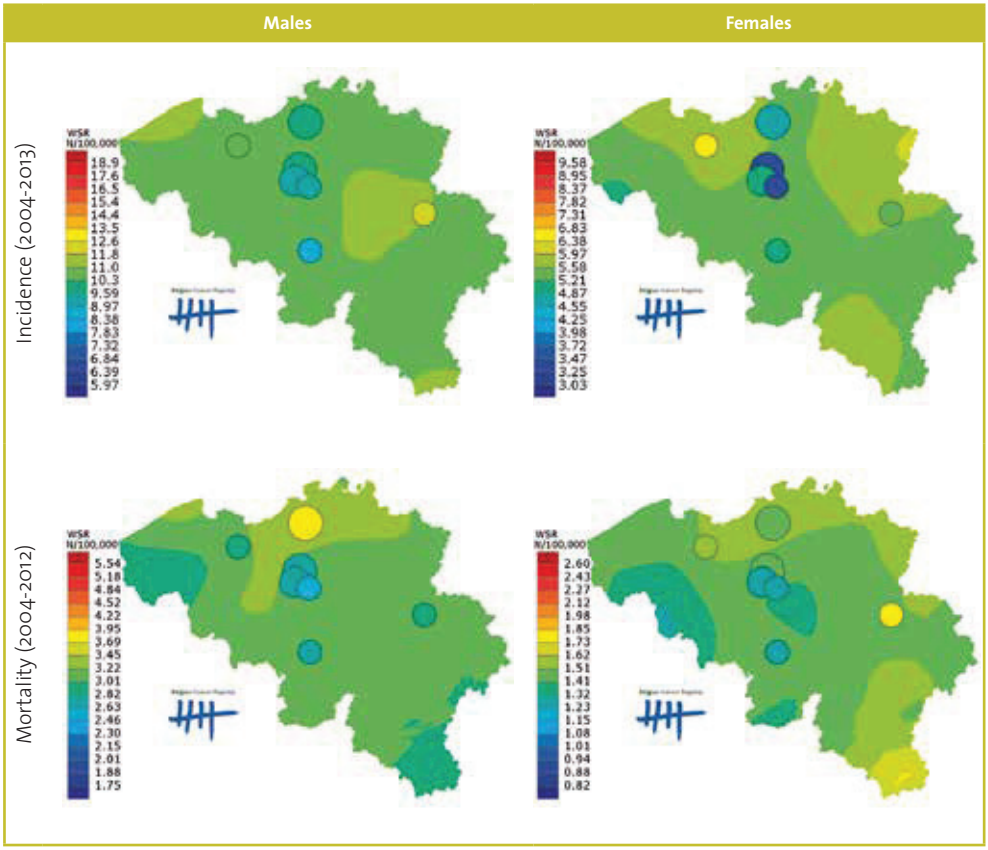
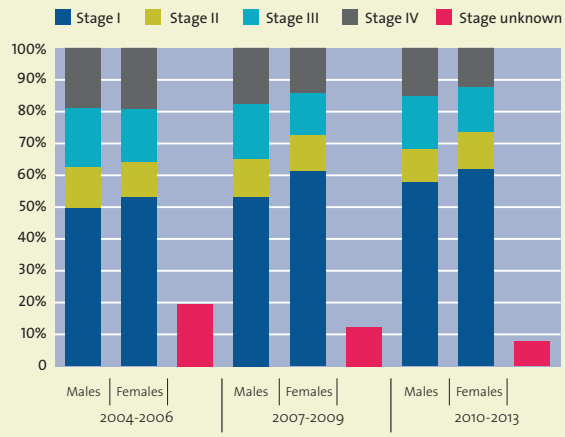
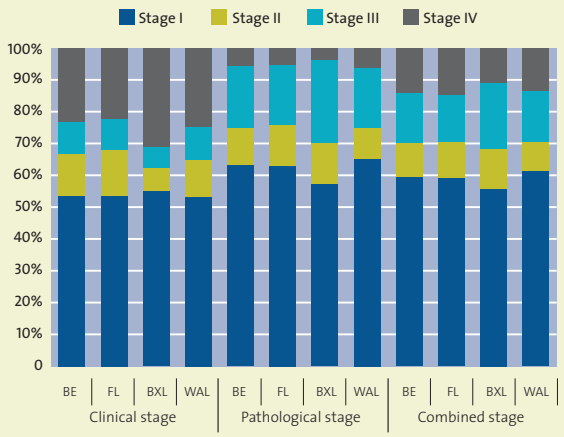



**Figure 4** Kidney cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



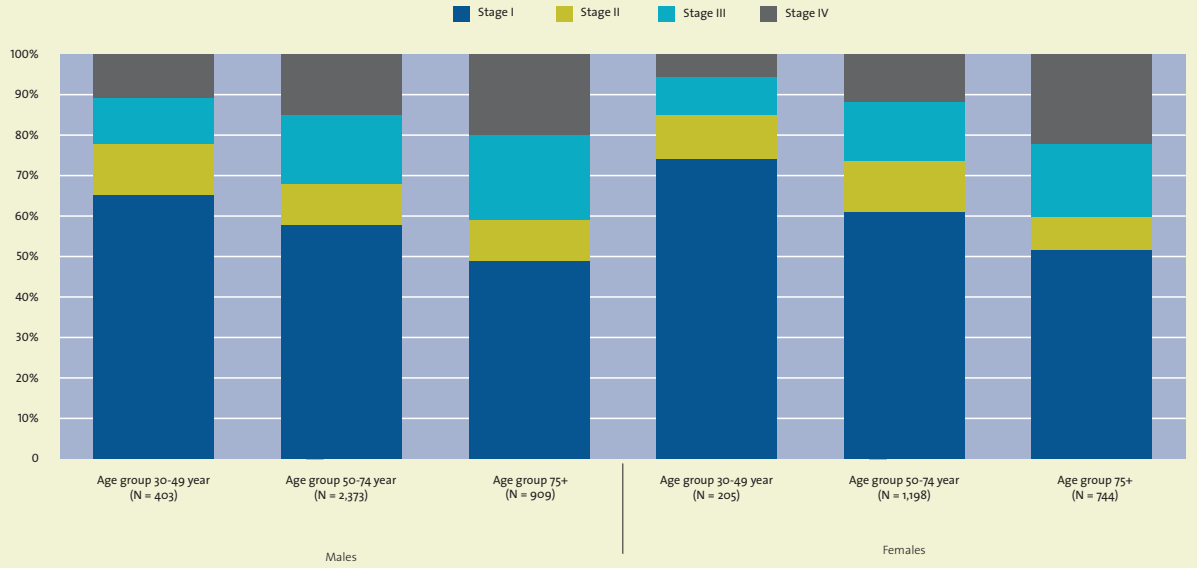

Source: Belgian Cancer Registry

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



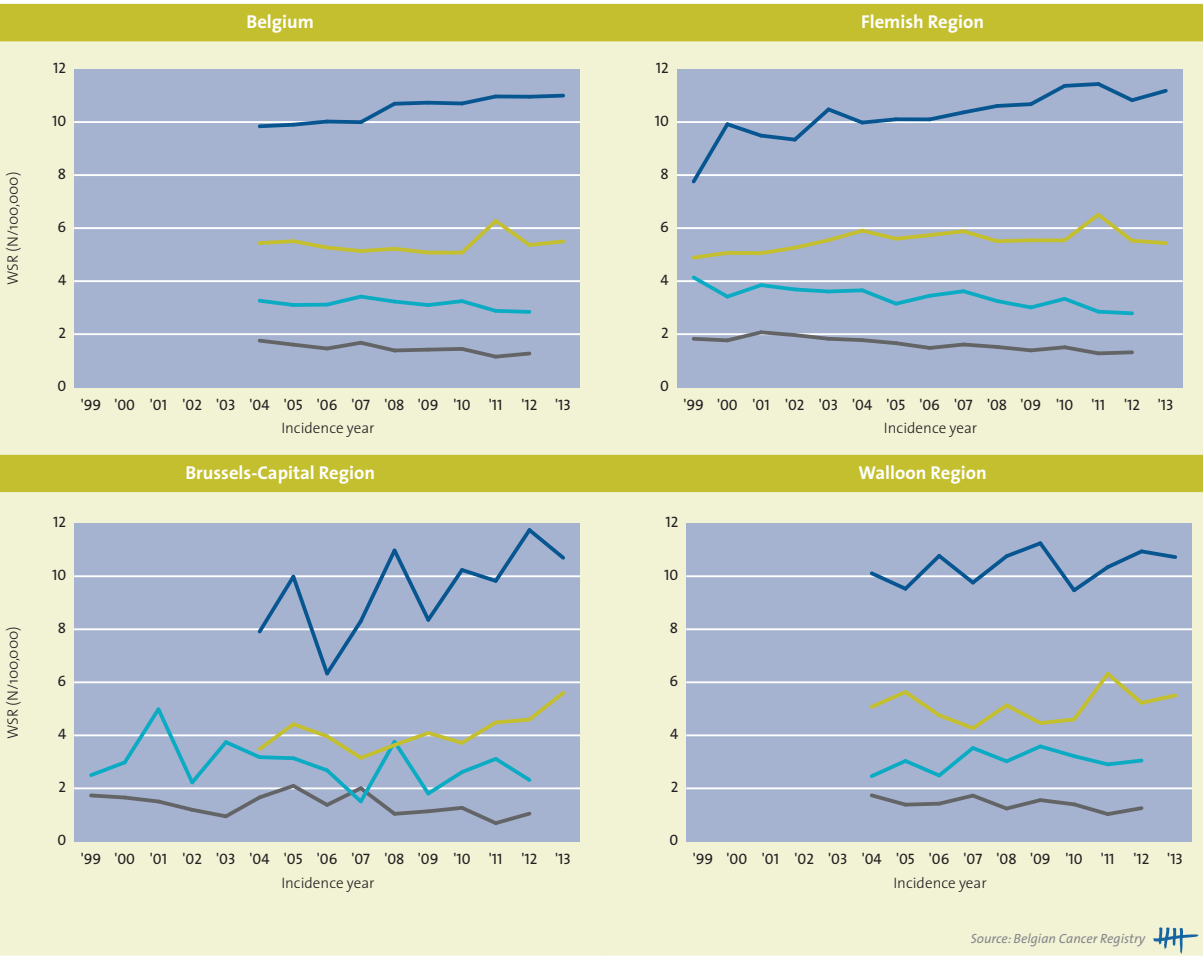

Source: Belgian Cancer Registry

**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*

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

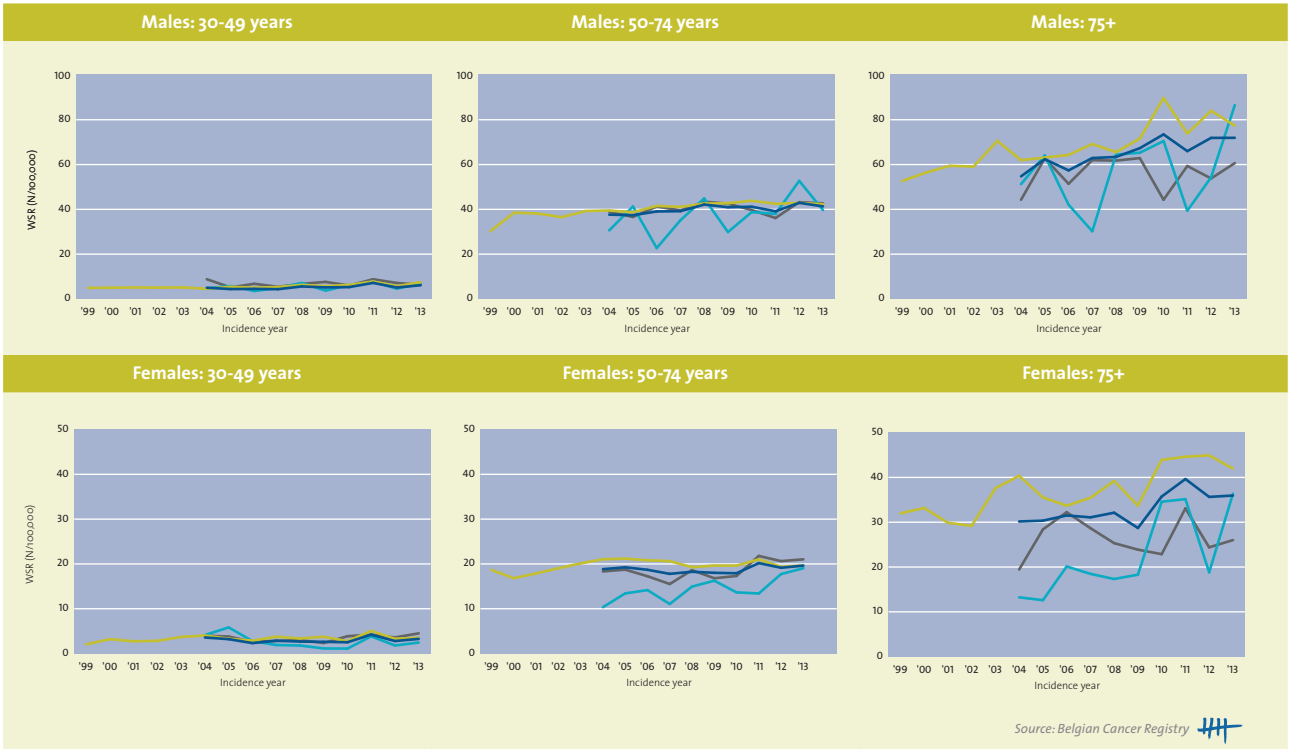



**Figure 9** Kidney cancer: Trends in age-standardised incidence (WSR) by stage and sex, Belgium 2004-2013

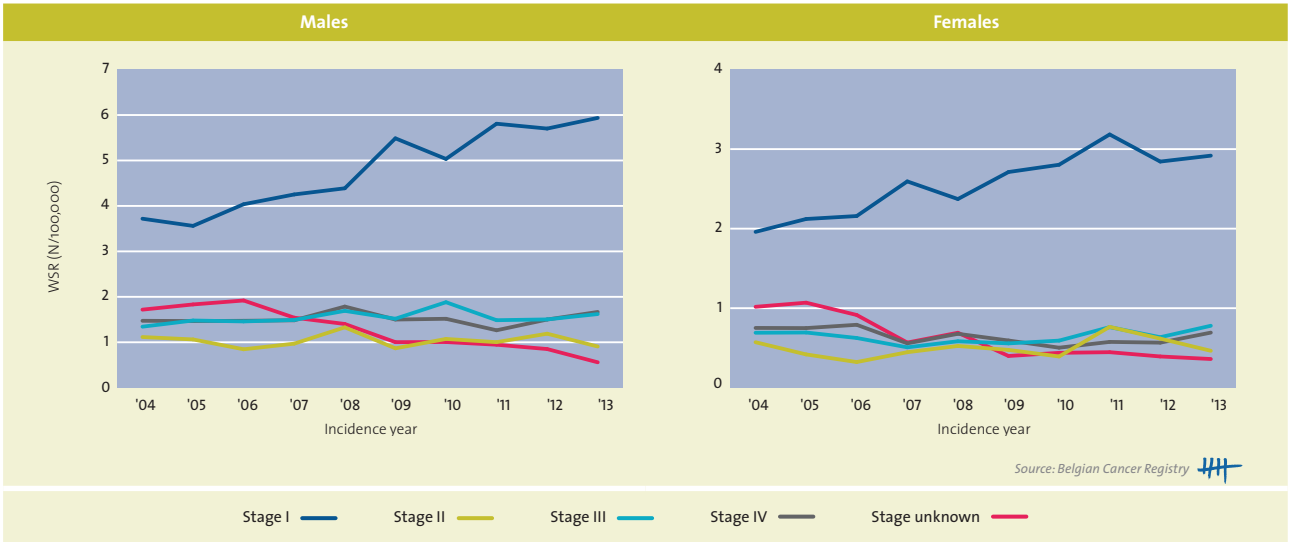


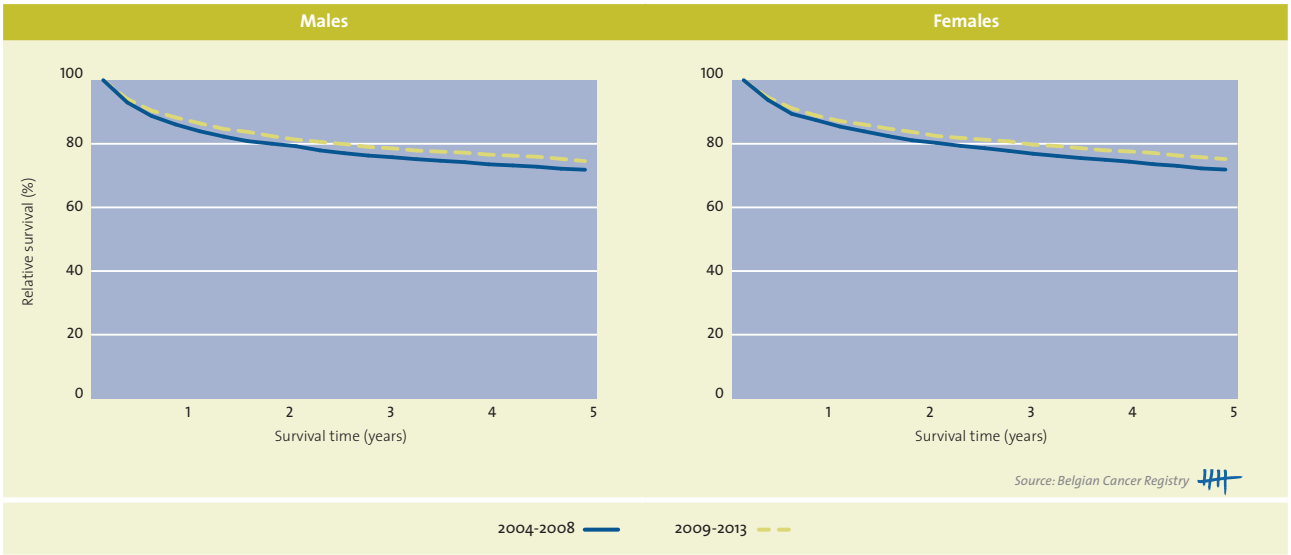
**Table 2** Kidney cancer: AAPC(%) by sex, region, stage and age group in Belgium

| 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 occured, 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.*

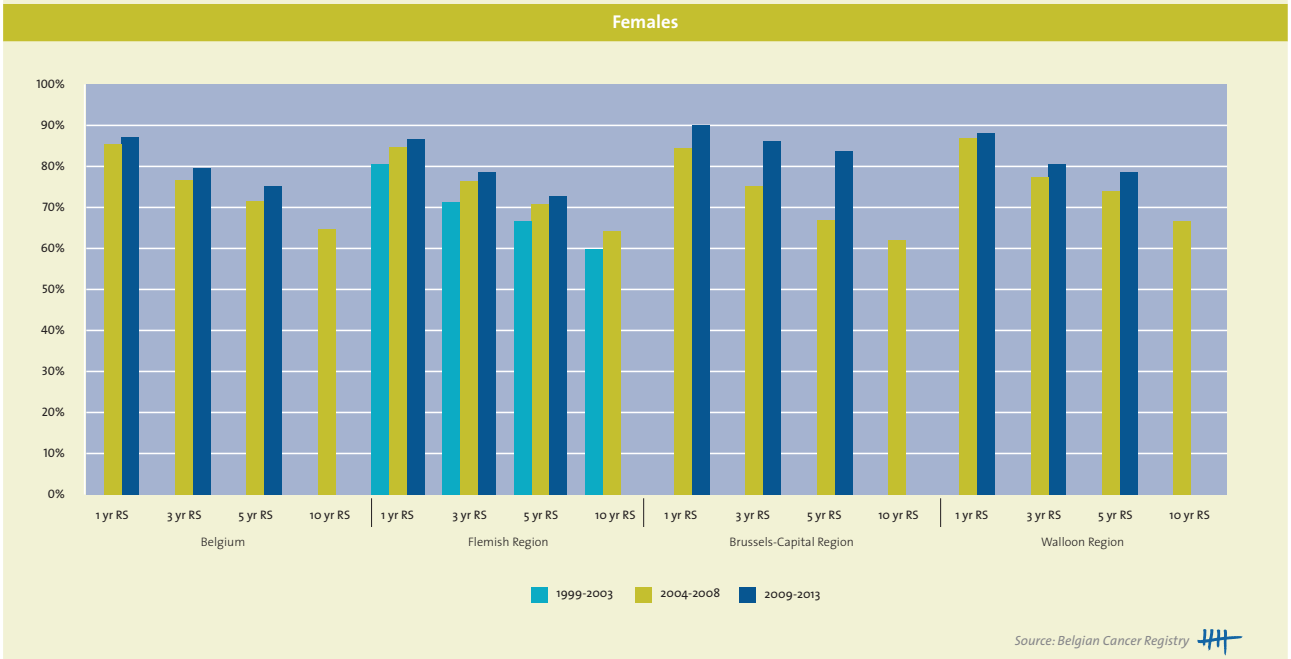
**Figure 10** Kidney cancer: Relative survival by cohort and sex, Belgium 2004-2013




Source: Belgian Cancer Registry

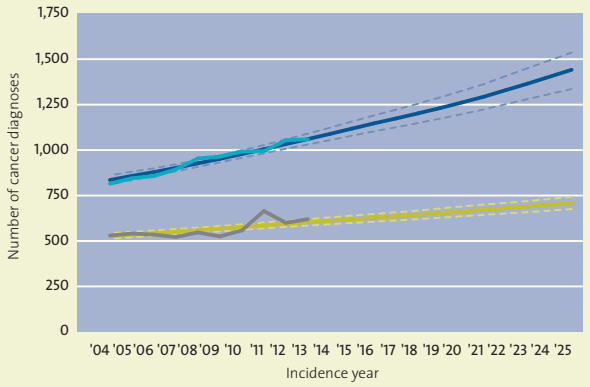
**Figure 11** Kidney cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region


Source: Belgian Cancer Registry



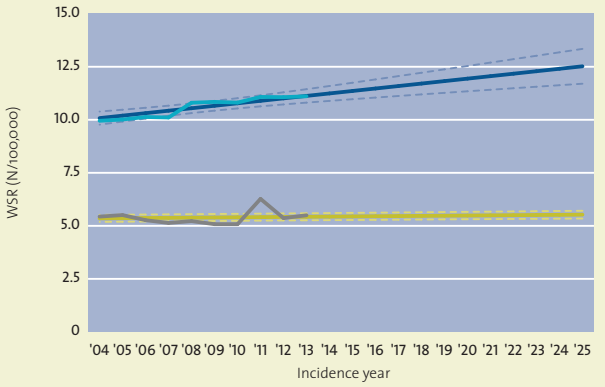

Source: Belgian Cancer Registry

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




*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

## !!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)

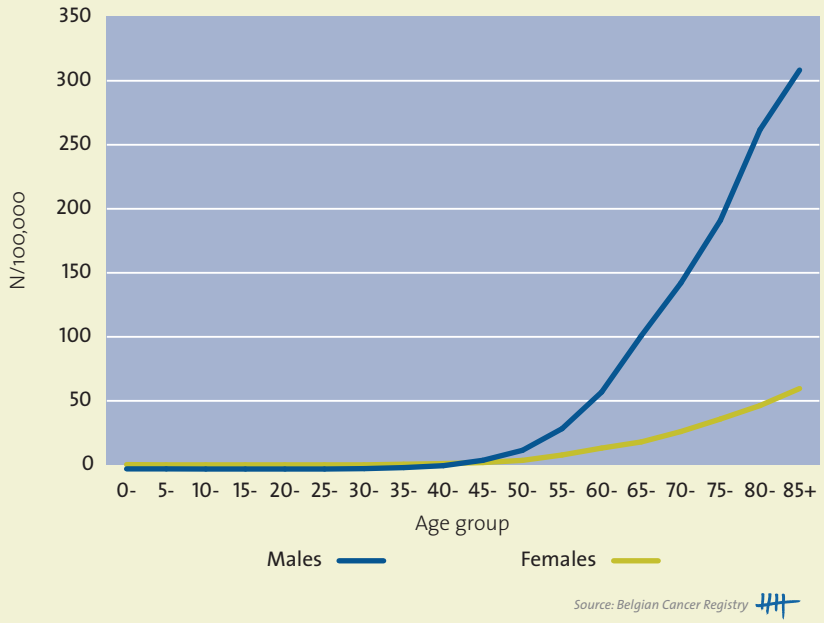
**Table 1** Bladder cancer: Overview of incidence, mortality, prevalence, survival and projection by sex and region

| 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)*

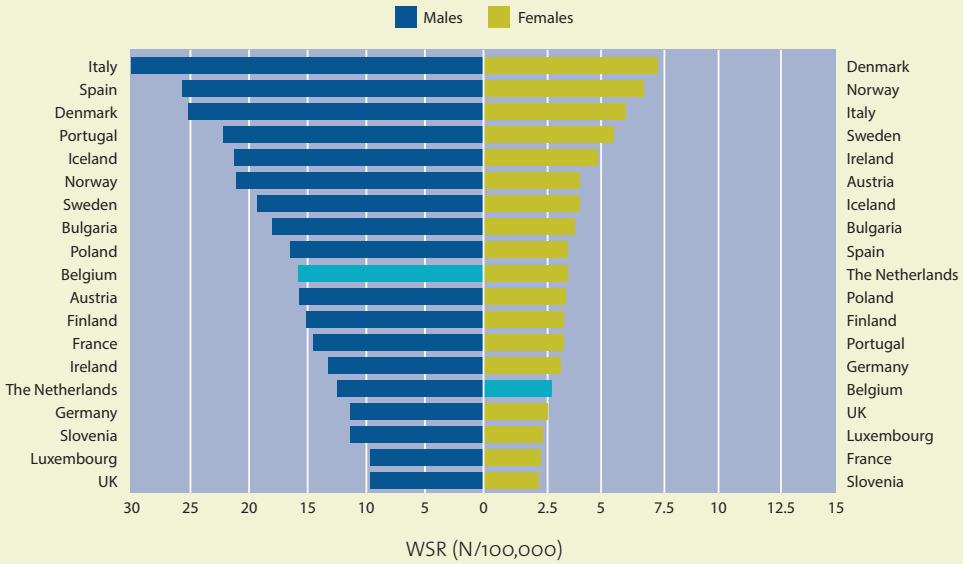
- Bladder cancer burden in Belgium (**Table 1**):
  - 2,364 new diagnoses of cancer in 2013, 80% males and 20% females.
  - Bladder cancer is the 5th most frequent tumour in males (5% of all malignancies).
  - 950 deaths are due to bladder cancer in 2012, 76% males and 24% females.
  - Bladder cancer 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

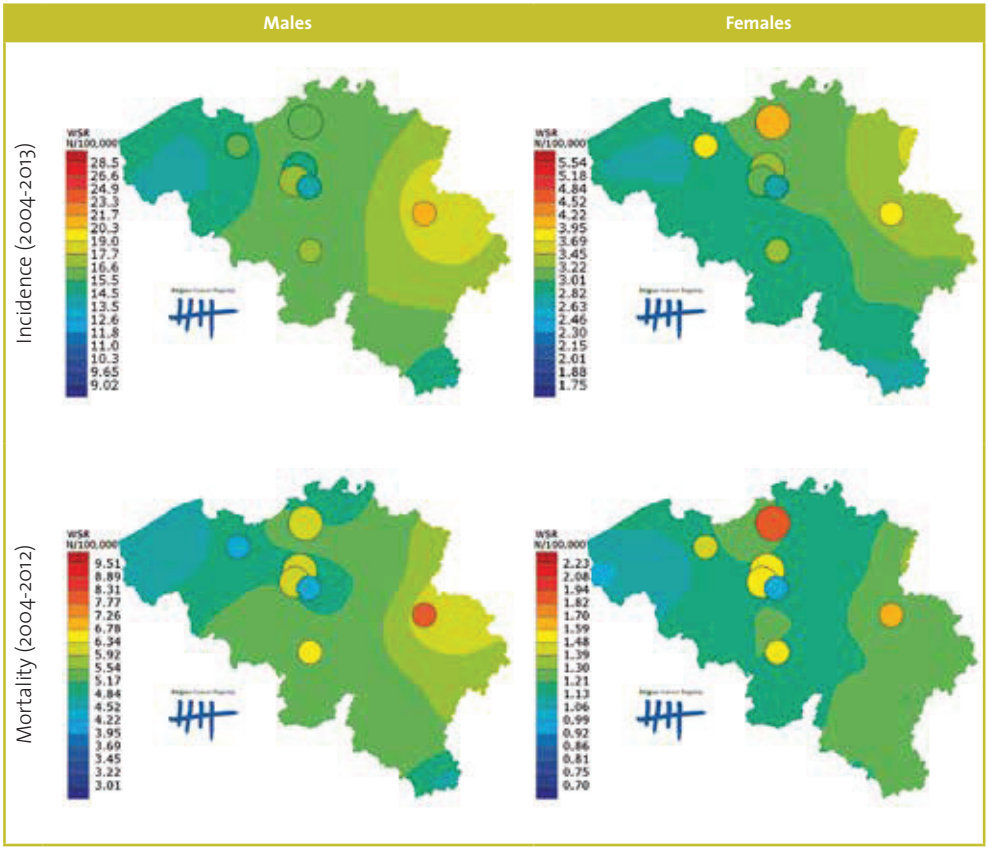
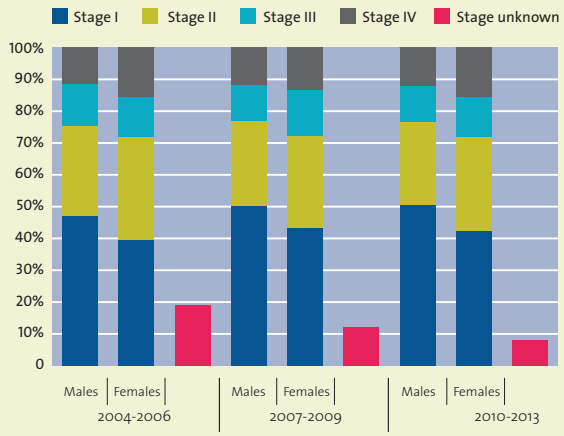
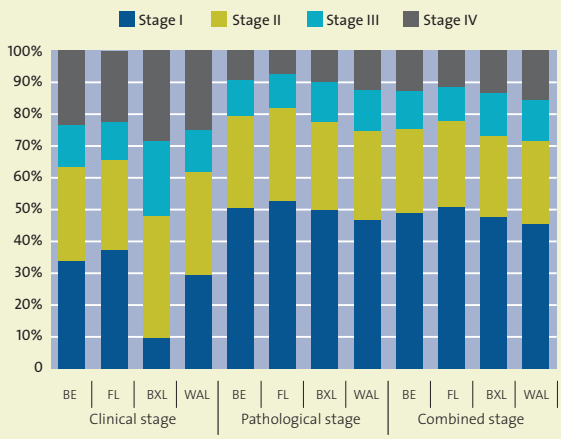



**Figure 4** Bladder cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



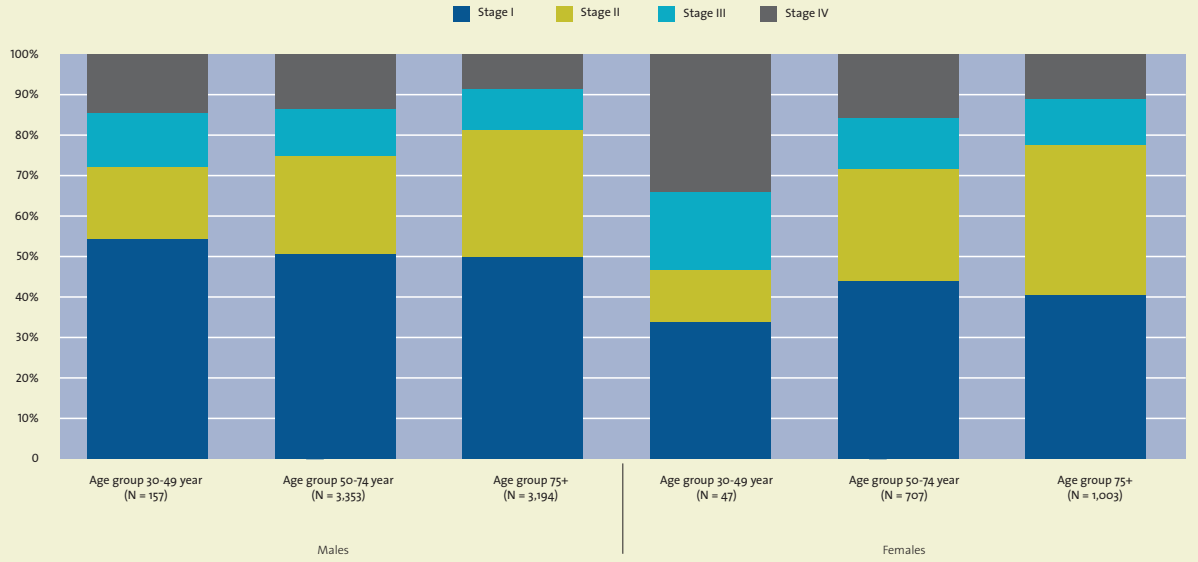

Source: Belgian Cancer Registry

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



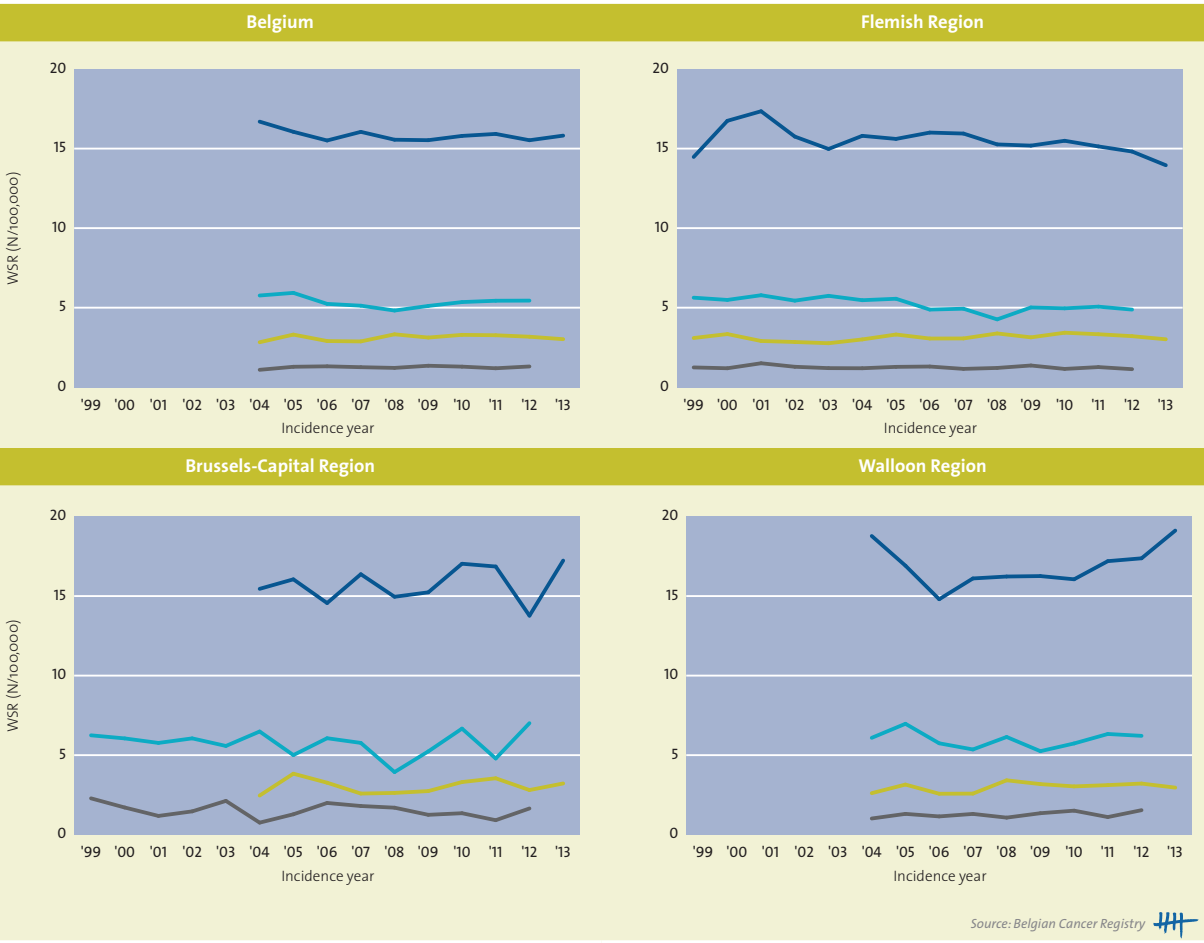

Source: Belgian Cancer Registry

**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

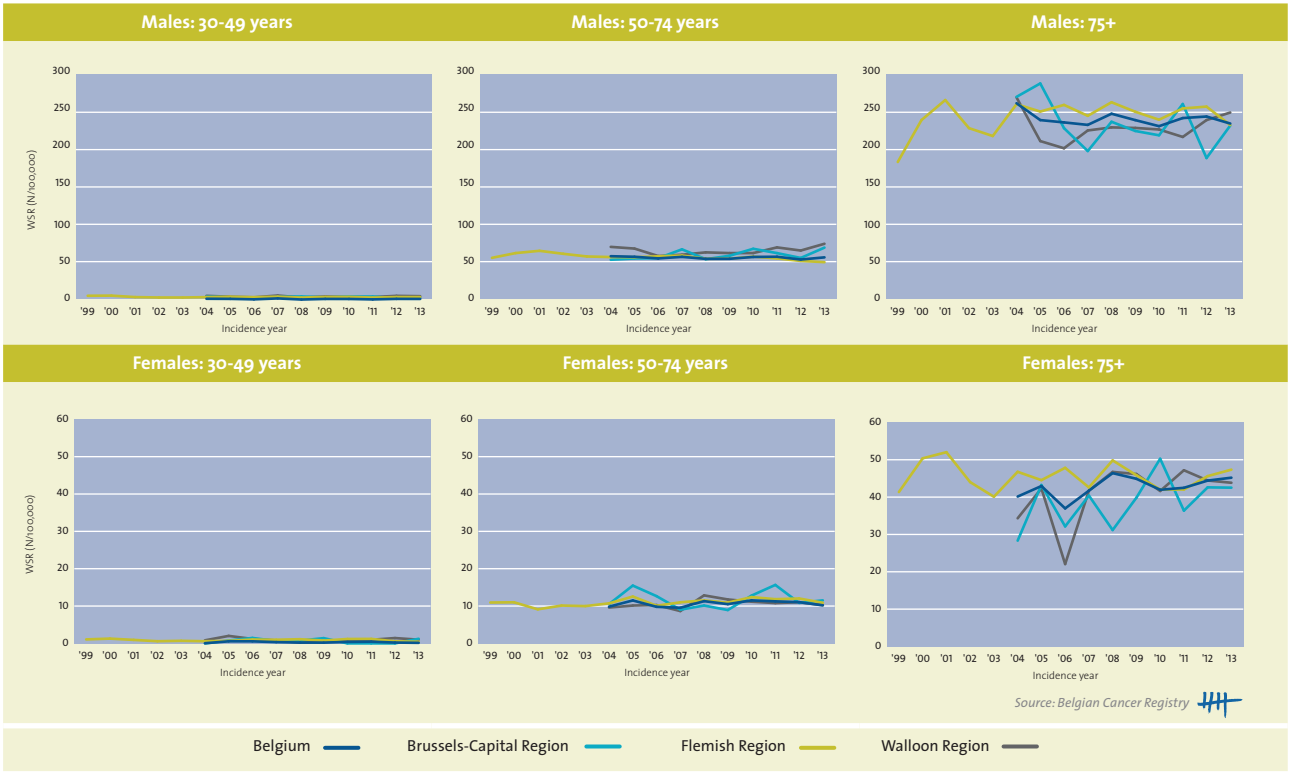



**Figure 9** Bladder cancer: Trends in age-standardised incidence (WSR) by pT-stage and sex, Belgium 2004-2013

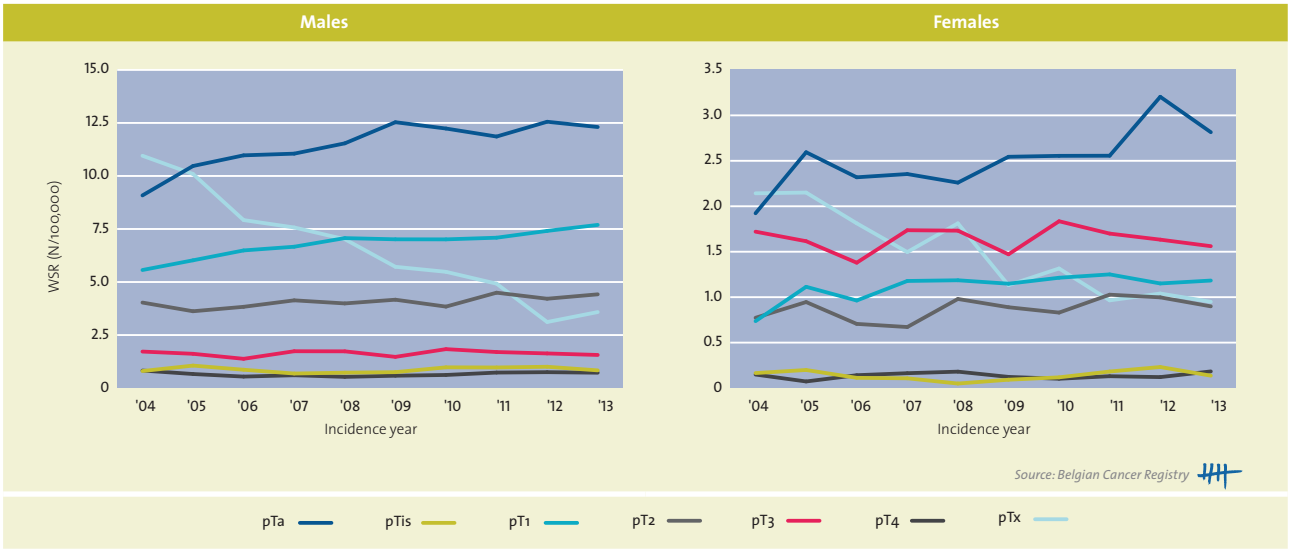


**Table 2** Bladder cancer: AAPC(%) by sex, region, pT-stage and age group in Belgium

| | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Incidence | 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 |

| | Males | | | Females | | |
|---|---|---|---|---|---|---|
| Mortality | 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 occured, 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

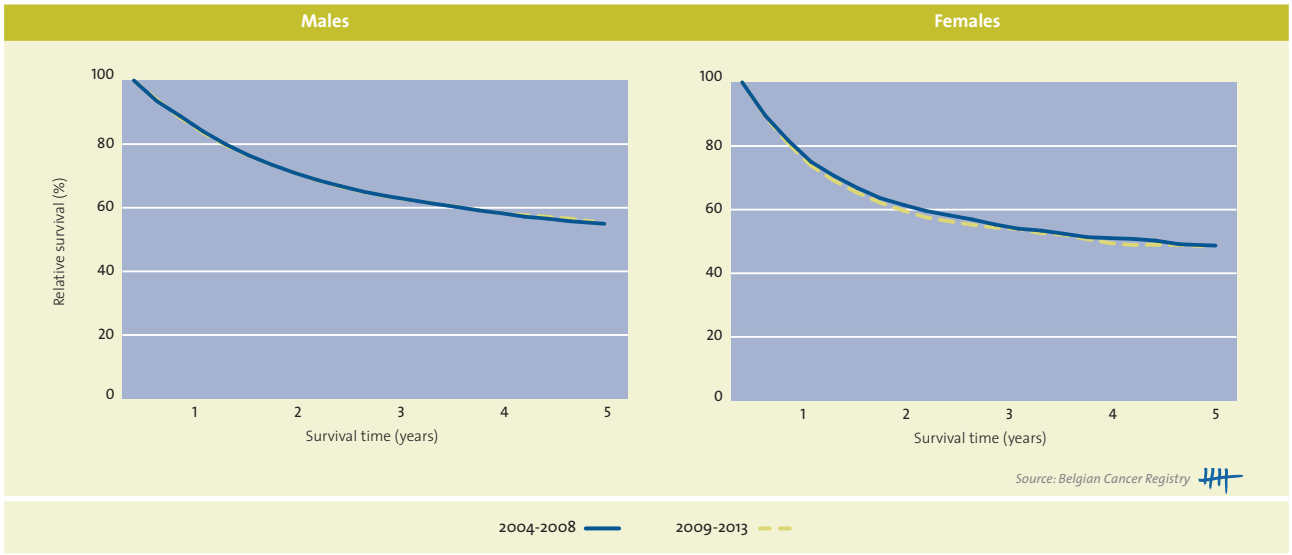
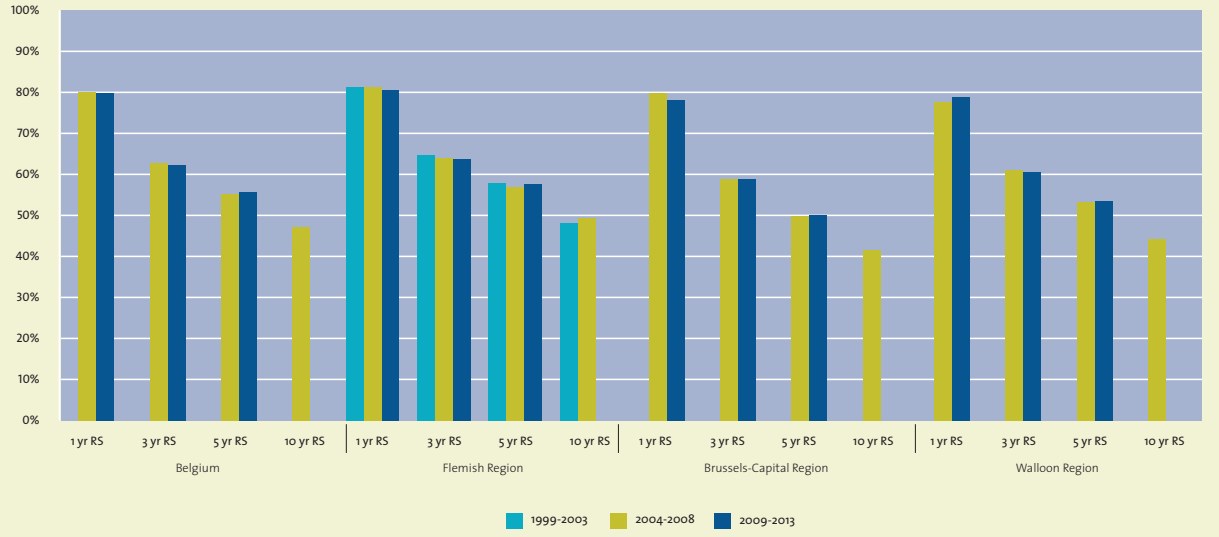


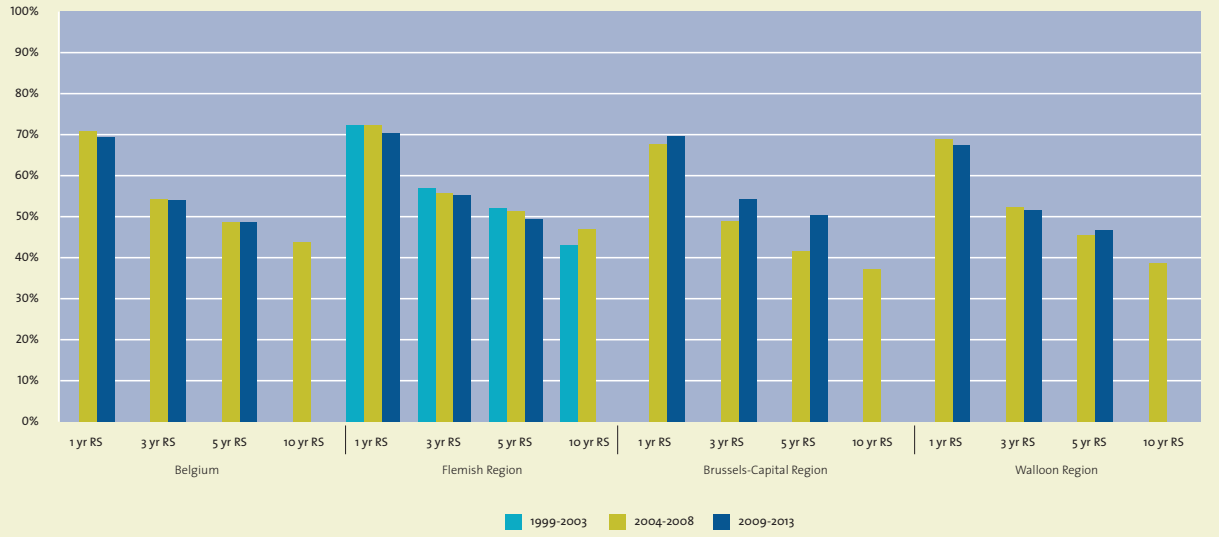
**Figure 11** Bladder cancer: 1-, 3-, 5- and 10-year relative survival (RS) by sex and region

## Males



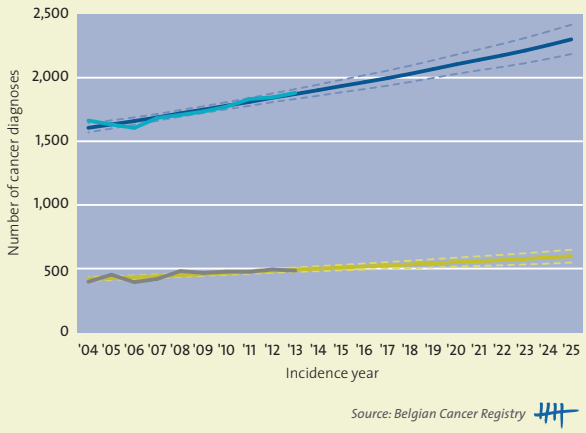

*Source: Belgian Cancer Registry*

## Females



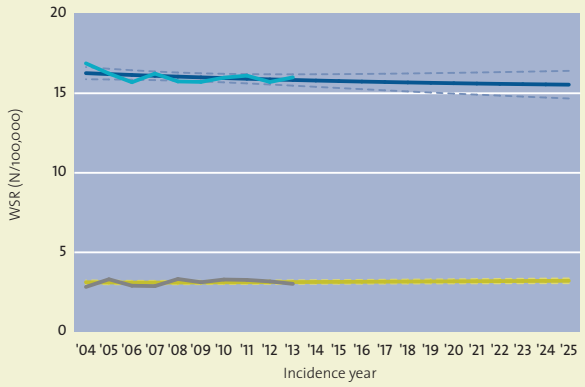

*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

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




*Source: Belgian Cancer Registry*

Males (Observed) — Males (Projected) — Females (Observed) — Females (Projected)

## !!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)

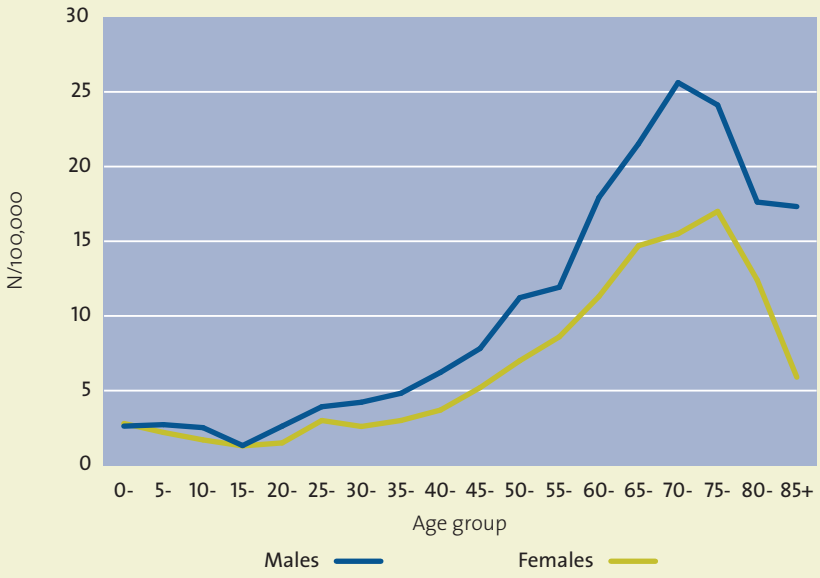
**Table 1** Tumours of the central nervous system: Overview of incidence, mortality, prevalence, survival and projection by sex and region

| 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)*

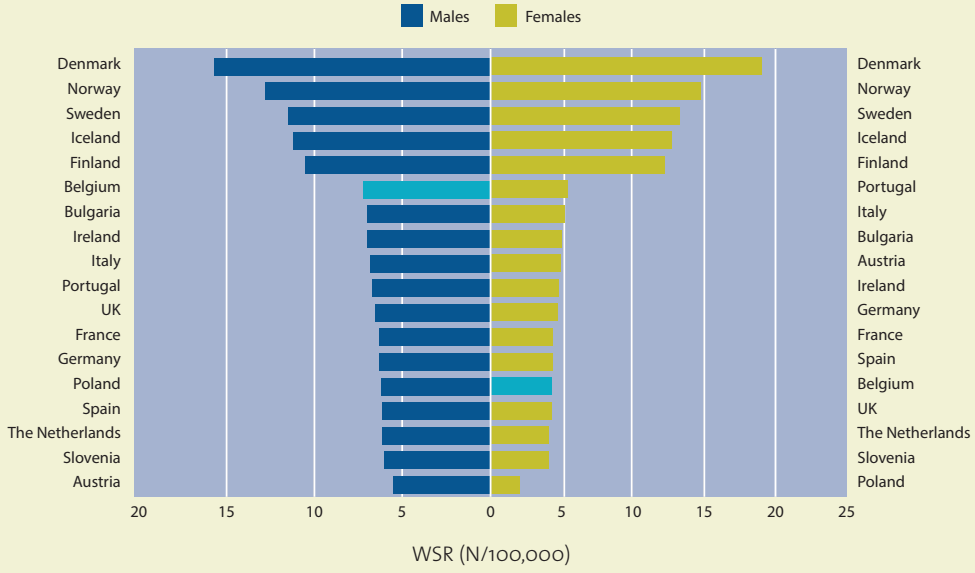
- Burden of malignant central nervous system (CNS) tumours in Belgium (**Table 1**):
  - 858 new diagnoses of cancer in 2013, 63% males and 37% females.
  - 686 deaths due to malignant CNS tumours in 2012, 58% males and 42% females.
  - In 2013 malignant CNS tumours are the 9th most important cause of 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

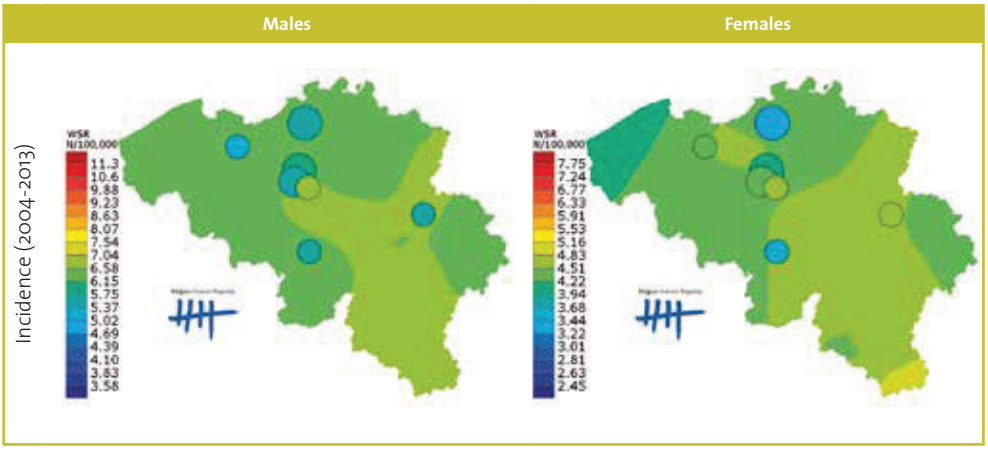


**Figure 4** Tumours of the central nervous system: Trends in age-standardised incidence and mortality (WSR) by sex and region, 1999-2013

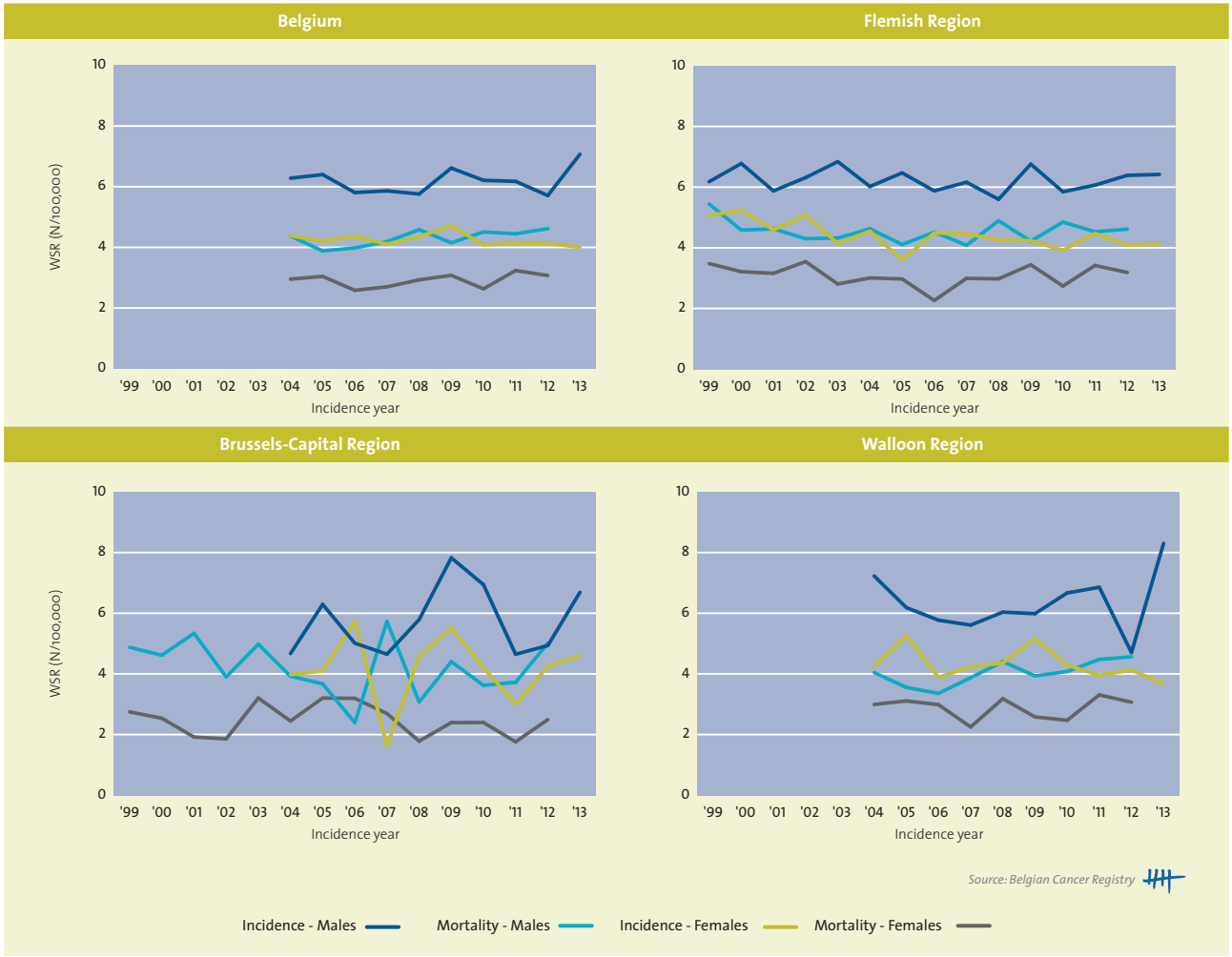


**Figure 5** Tumours of the central nervous system: Trends in age-standardised incidence (WSR) by sex, age group and region, 1999-2013


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

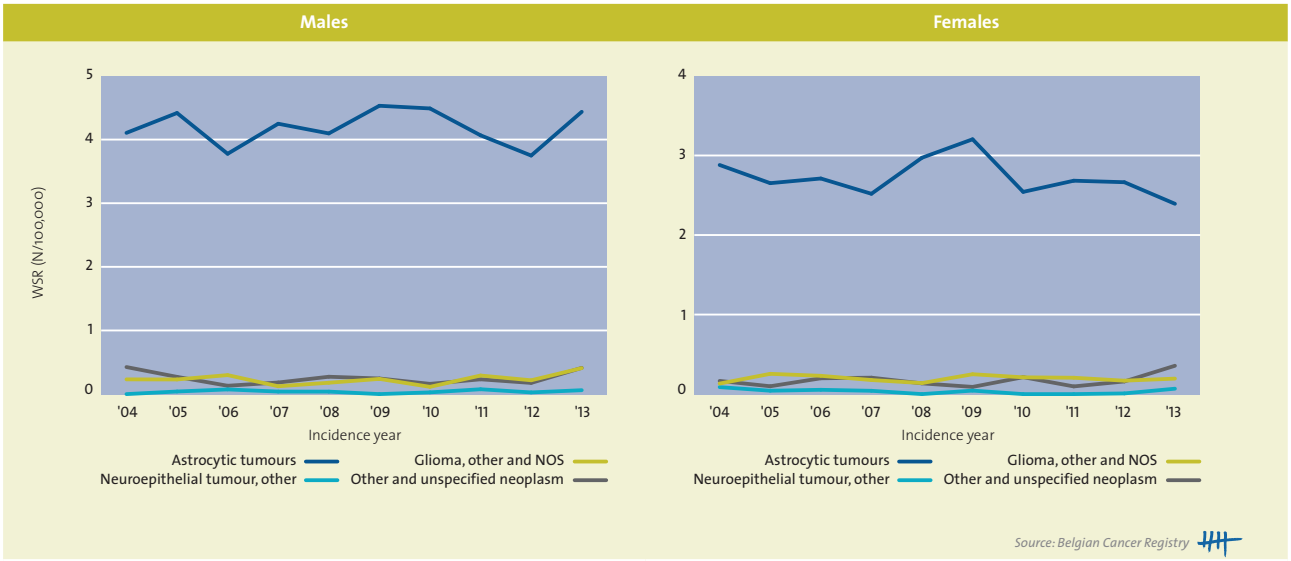


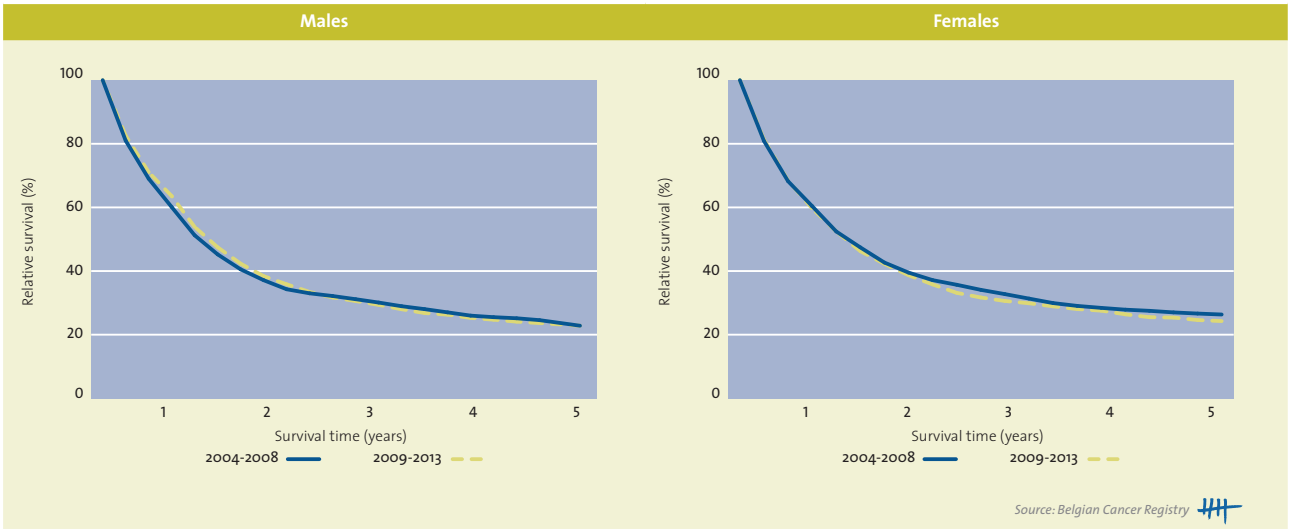
**Table 2** Tumours of the central nervous system: AAPC(%) by sex, region, histology and age group in Belgium

| 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*

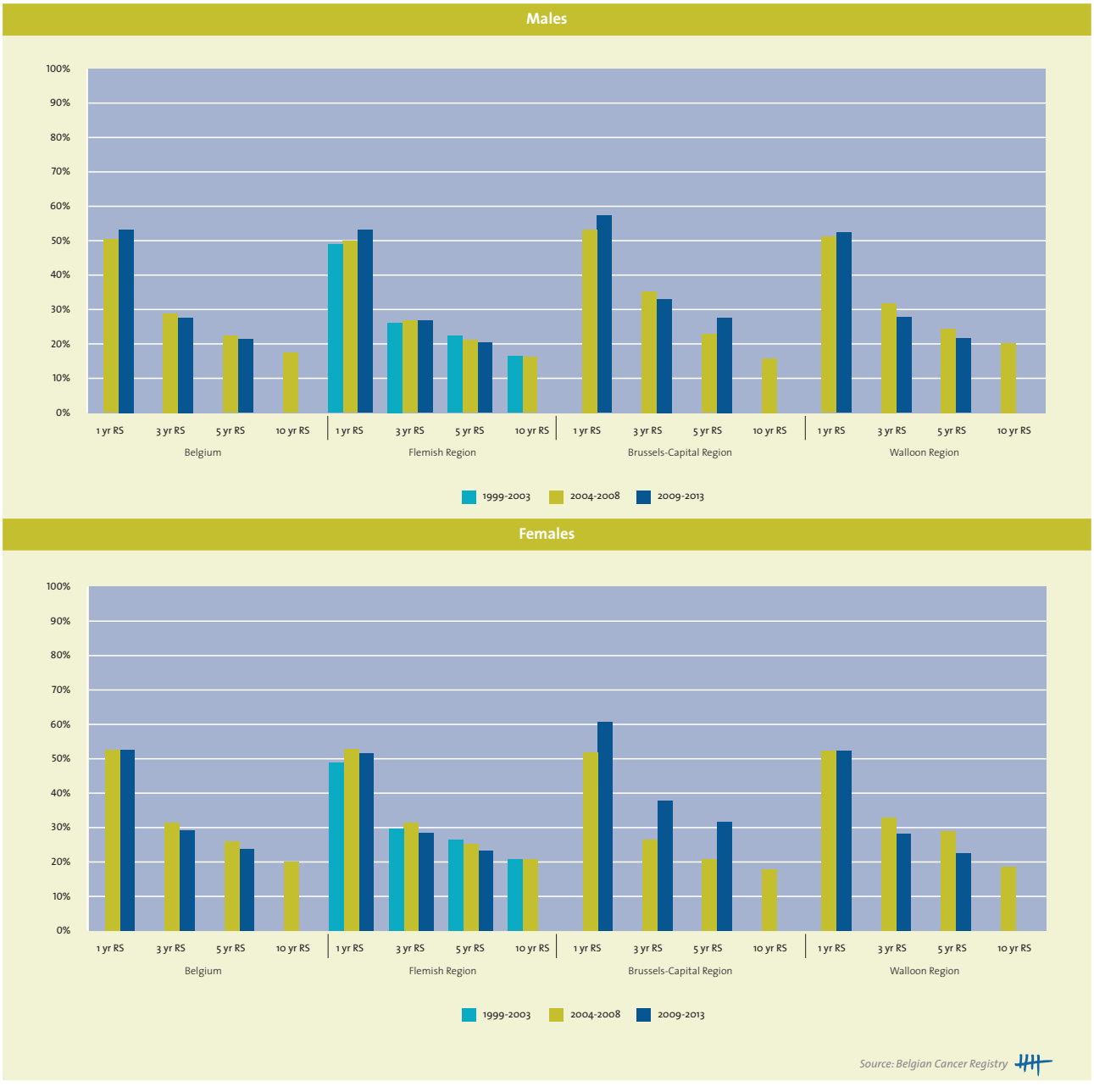
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



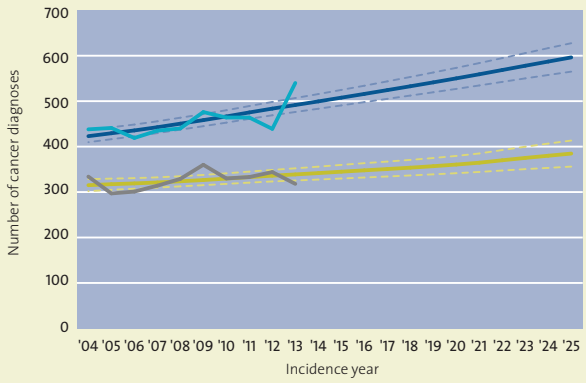

Source: Belgian Cancer Registry

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



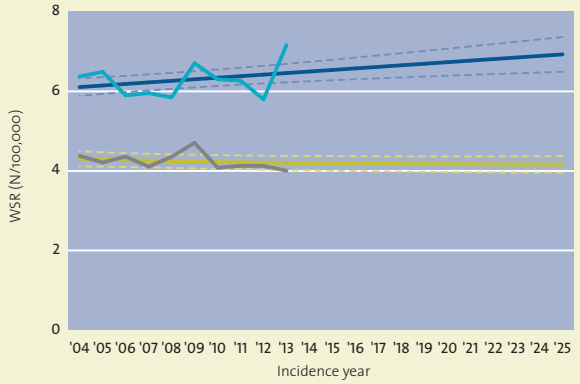

Source: Belgian Cancer Registry

**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 (Projected) — Females (Observed) — Females (Projected)

## !!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 8272/0 (not 8140/0!) 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] |

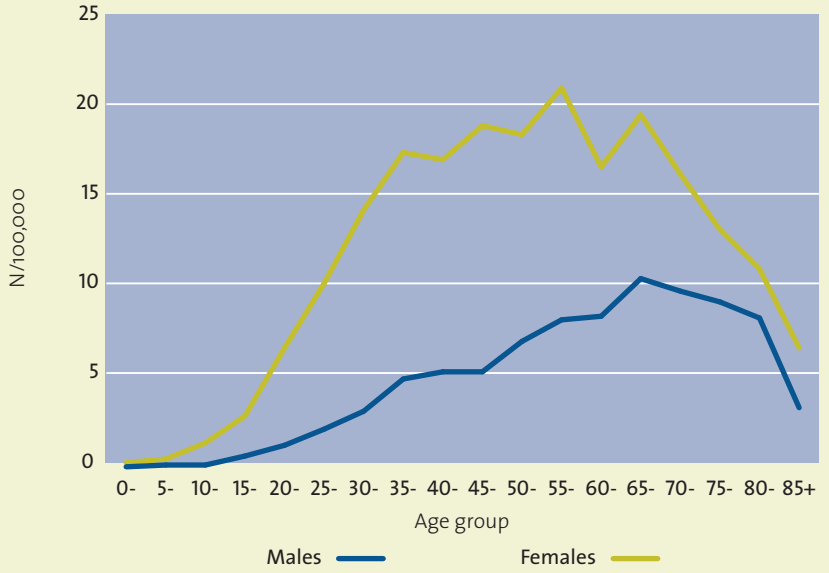
*CR, crude rate (N/100,000 person years)*
*WSR, age-standardised rate using the World Standard Population (N/100,000 person years)*

- 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 toa 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).

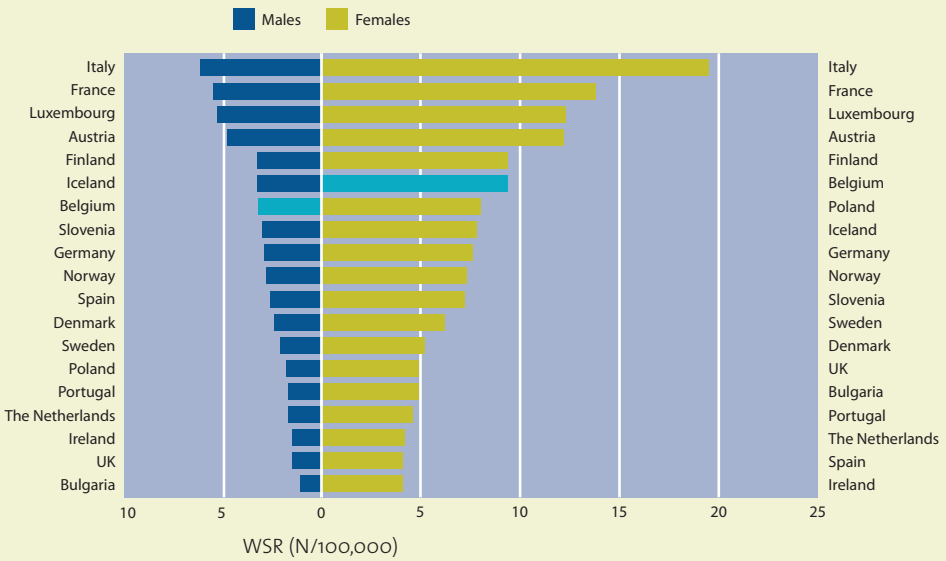
- Females have a prognostic more favourable stage distribution than males (**Figure 4, 5 and 6**).
  - Availability of information on stage has improved from 61% in 2004-2006 to 86% in 2010-2013.
  - Papillary carcinoma, the most frequently diagnosed subtype, is very often diagnosed in a prognostic favourable 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

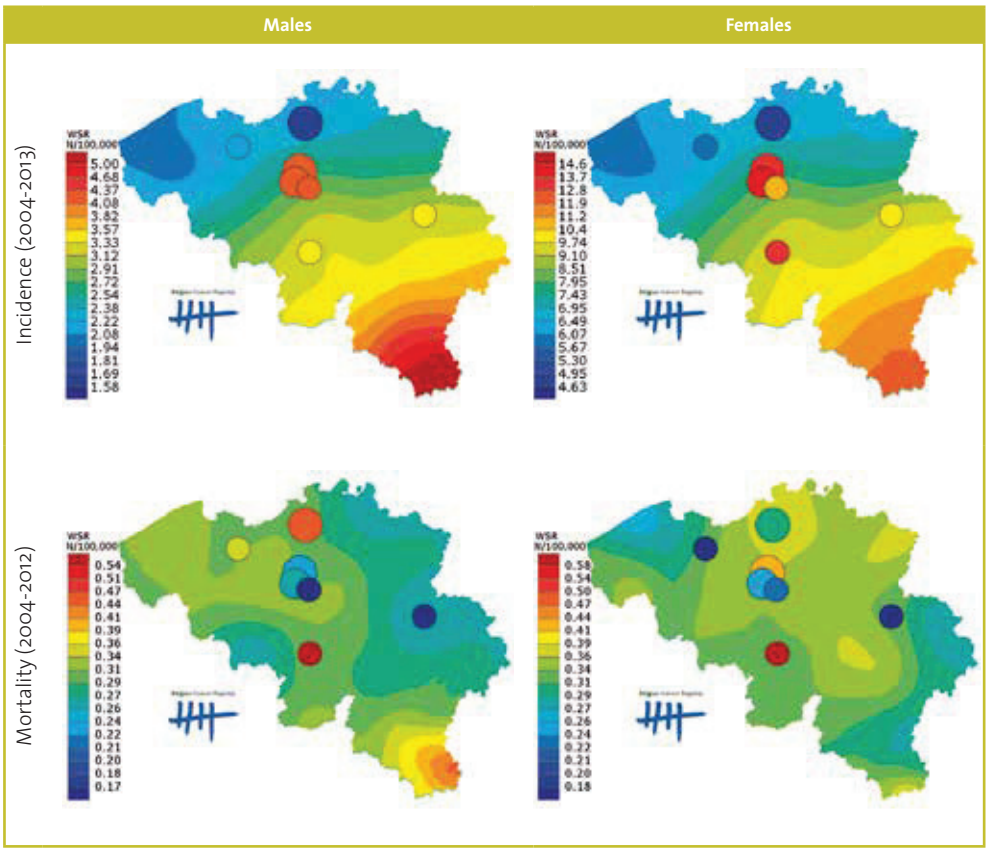
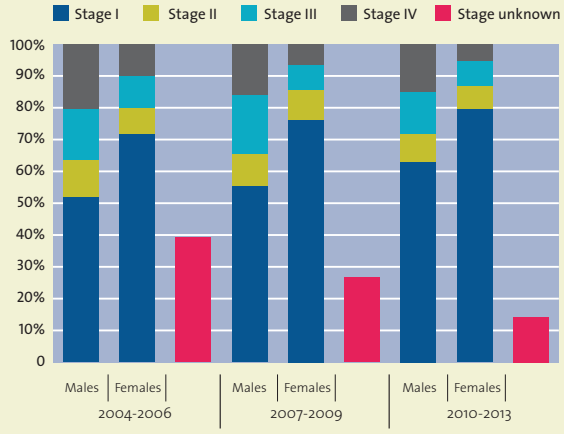
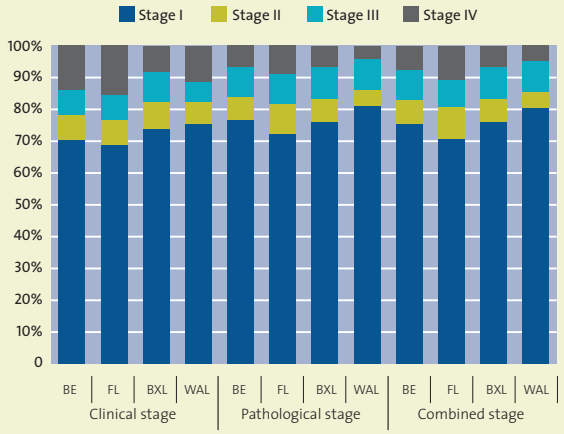



**Figure 4** Thyroid cancer: stage distribution by sex, Belgium 2004-2006, 2007-2009 and 2010-2013



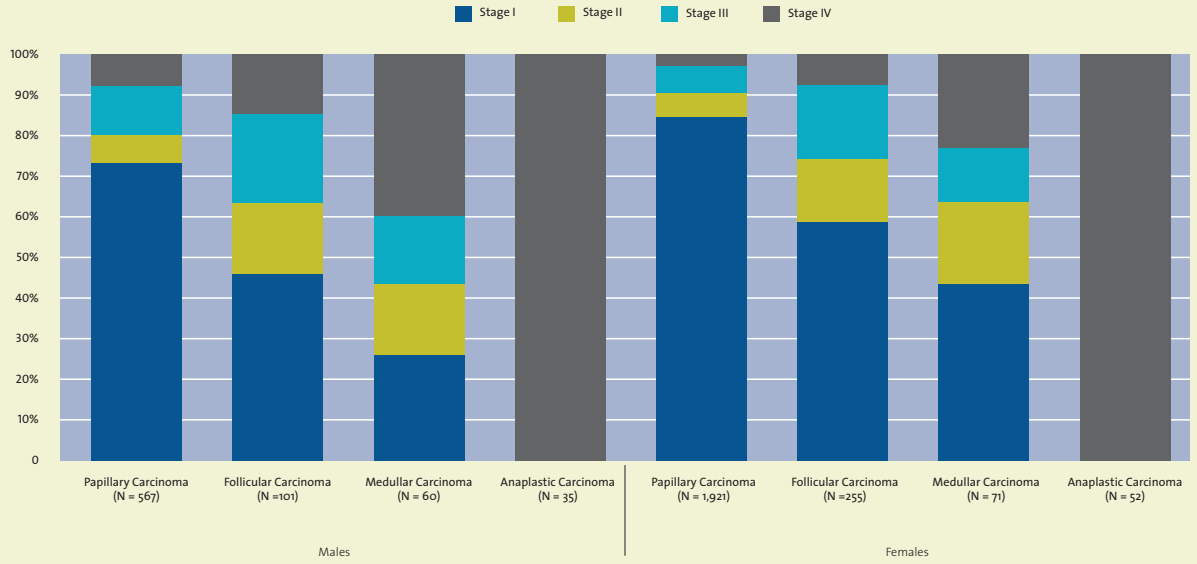

Source: Belgian Cancer Registry

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



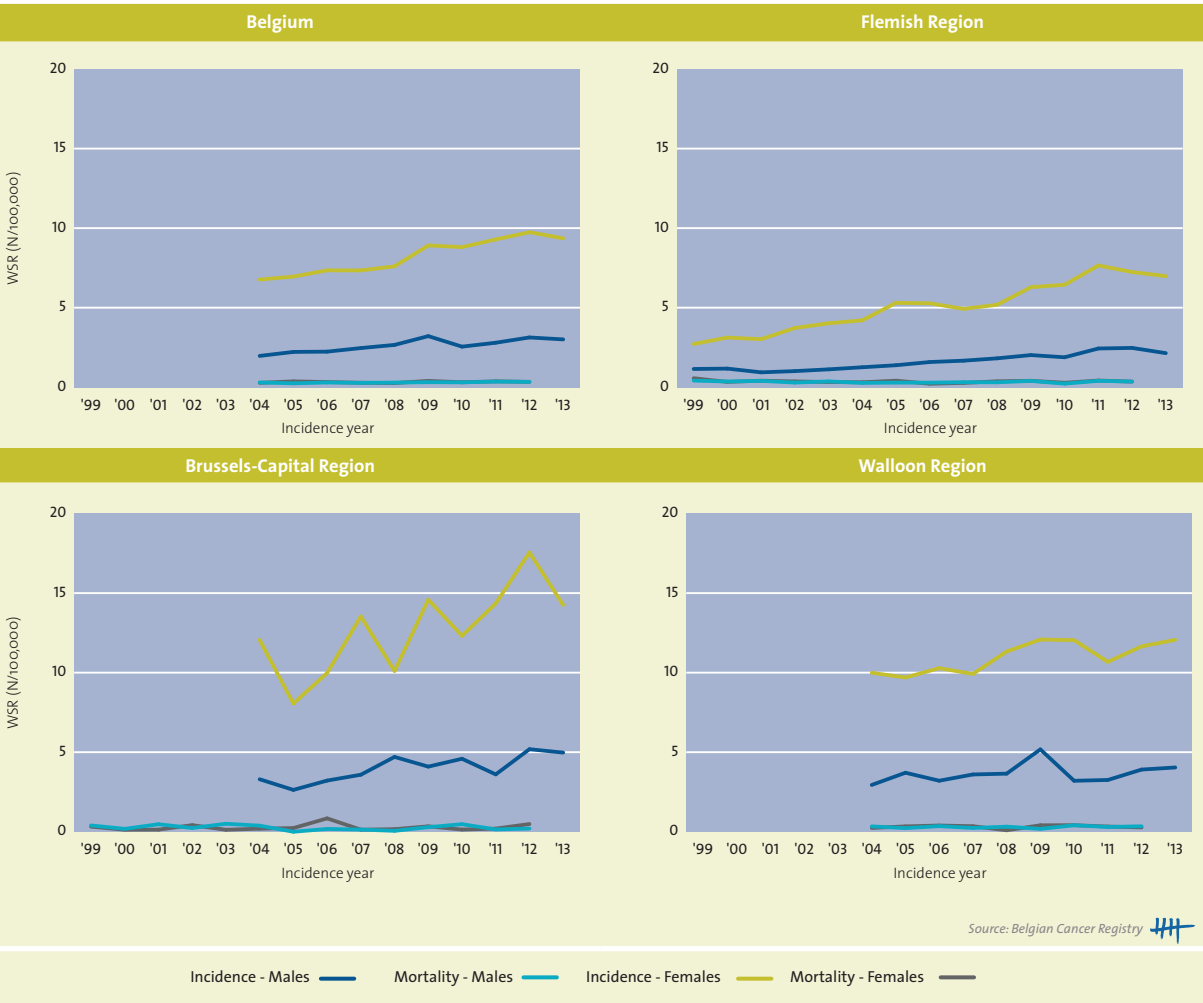

Source: Belgian Cancer Registry

**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

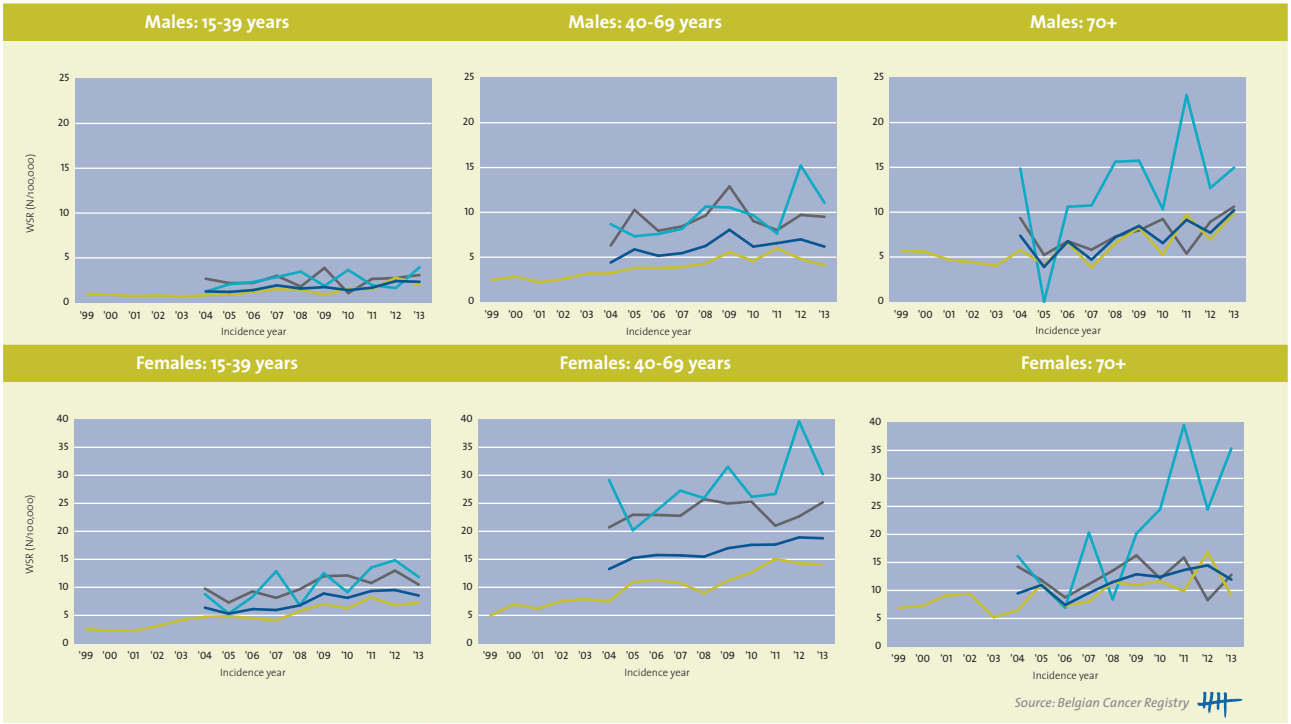



**Figure 9** Thyroid cancer: Trends in age-standardised incidence (WSR) by histology and sex, Belgium 2004-2013

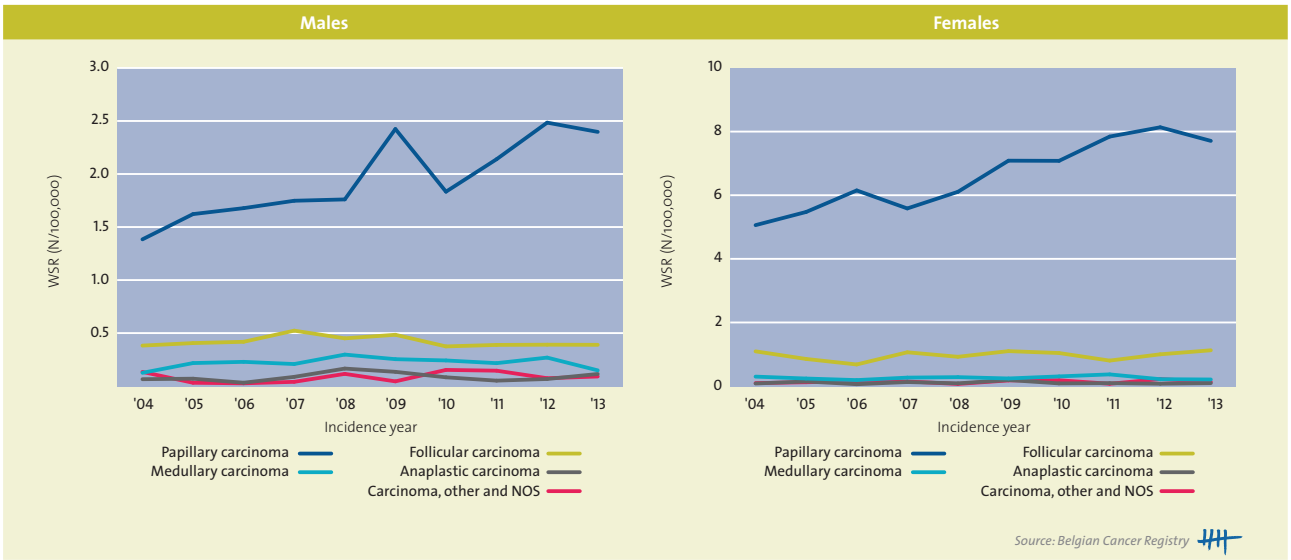


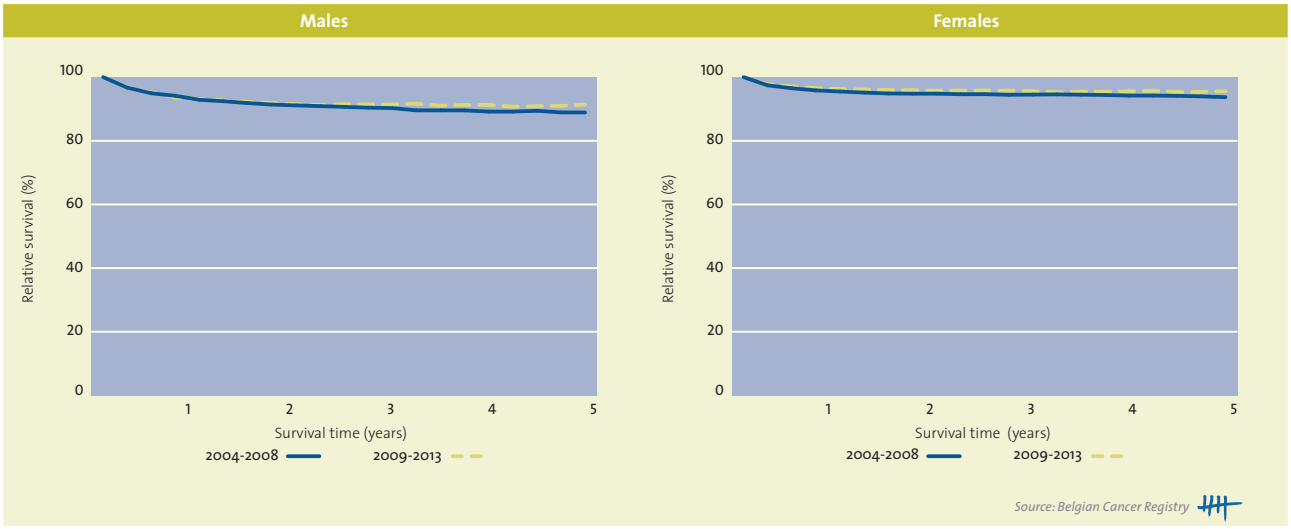
**Table 2** Thyroid cancer: AAAP(%) by sex, region, histology and age group in Belgium

| 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*

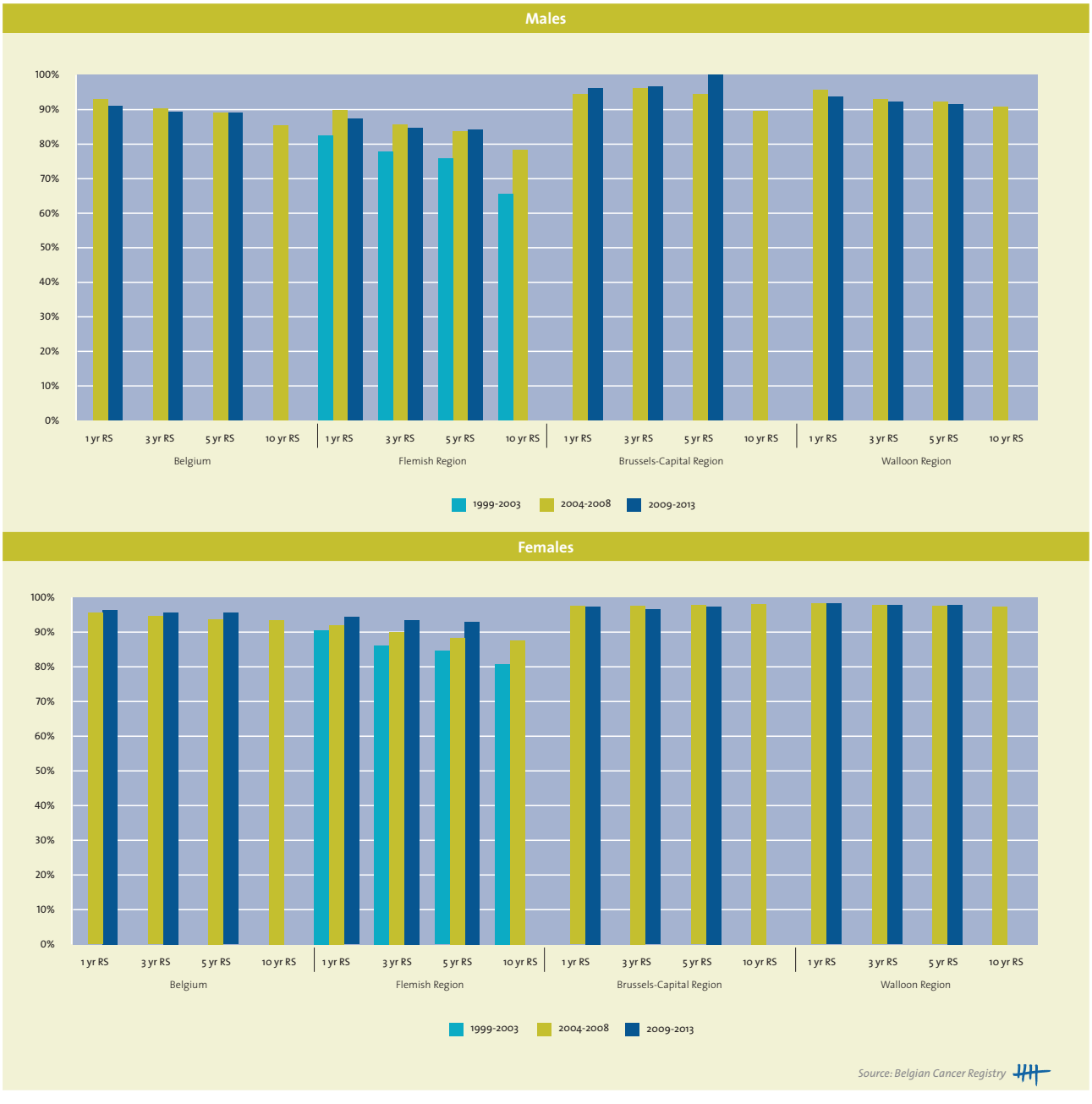
*Period: When a joinpoint occured, APC's are calculated for the period before and after the joinpoint. This column represents the corresponding time interval. AAPC's are always calculated over the entire study-period.*

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



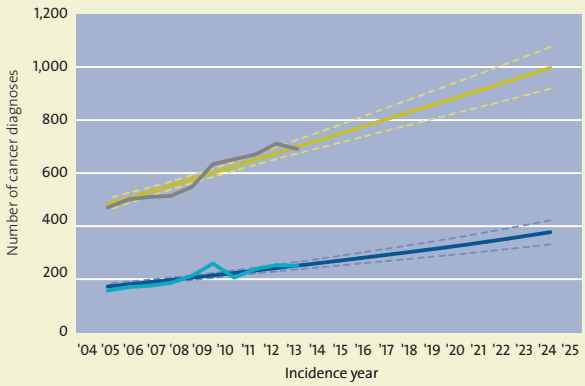

Source: Belgian Cancer Registry

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



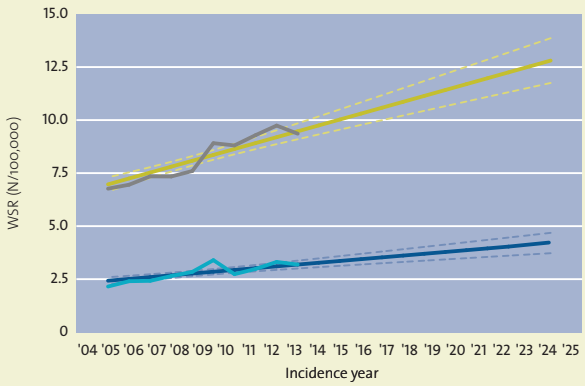

Source: Belgian Cancer Registry

**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 (Projected) — Females (Observed) — Females (Projected)

## 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 Bruel 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 Bruel 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 (/0) 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 2009-2013

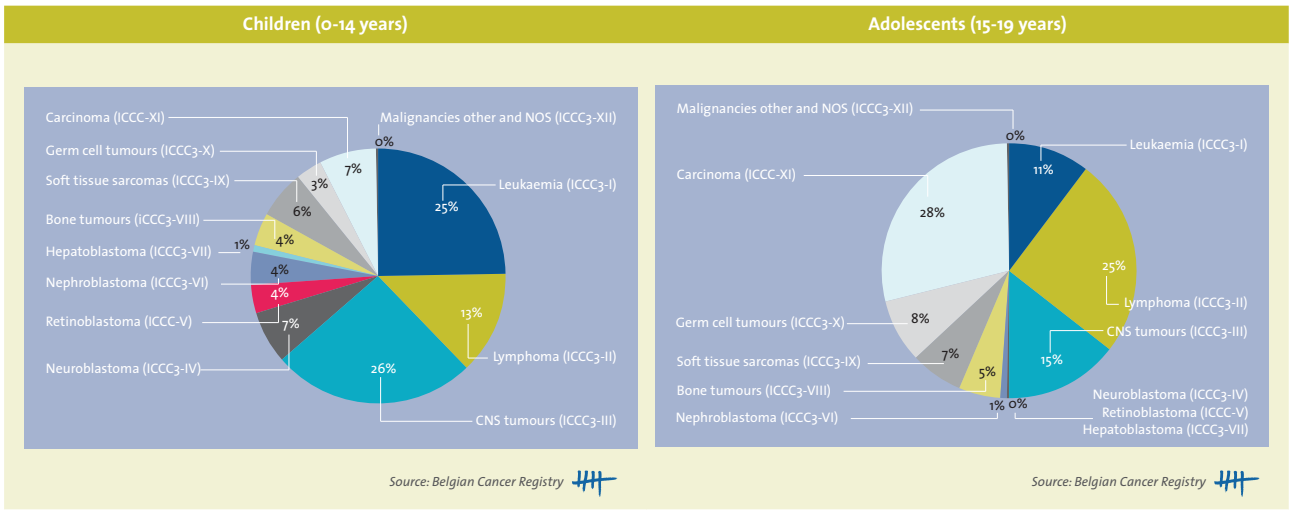
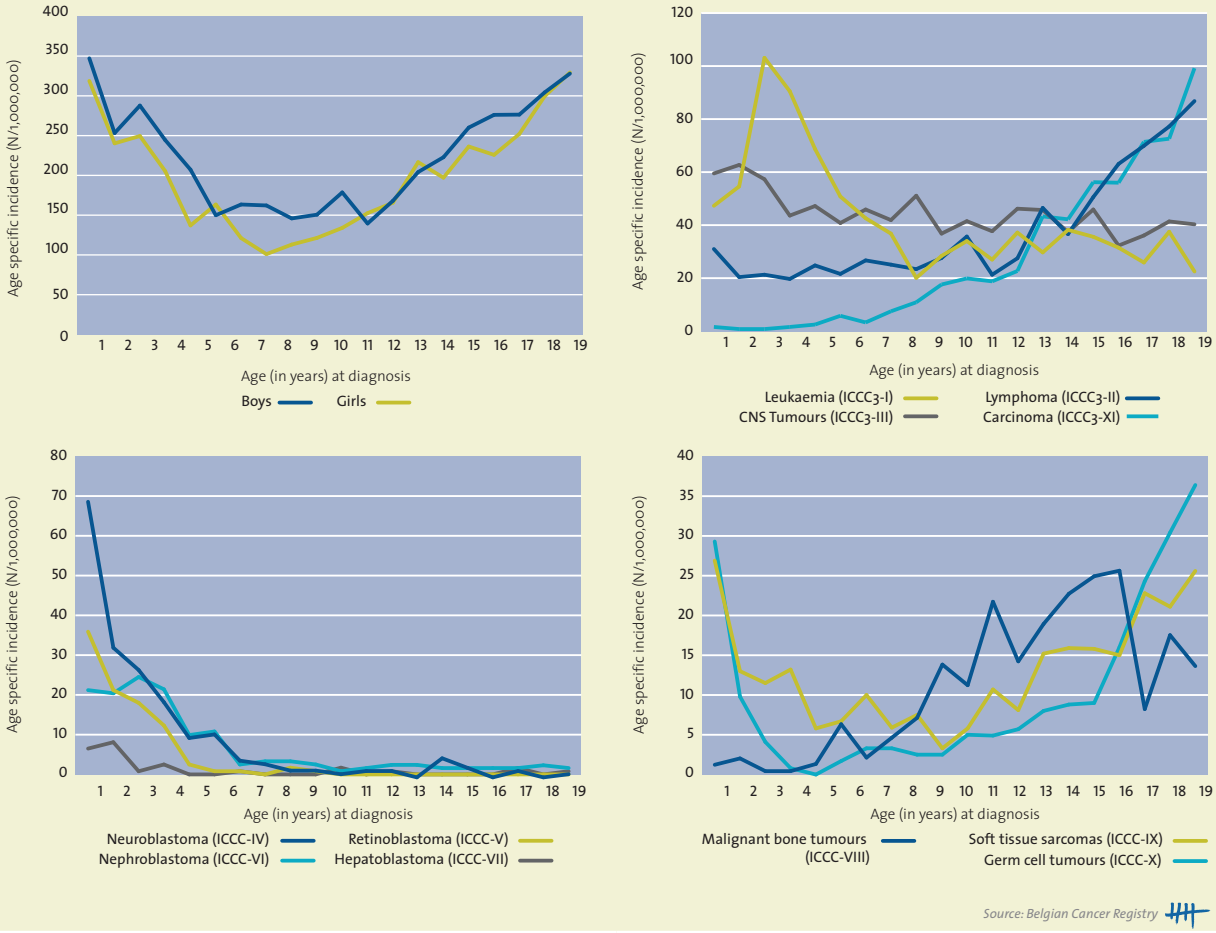
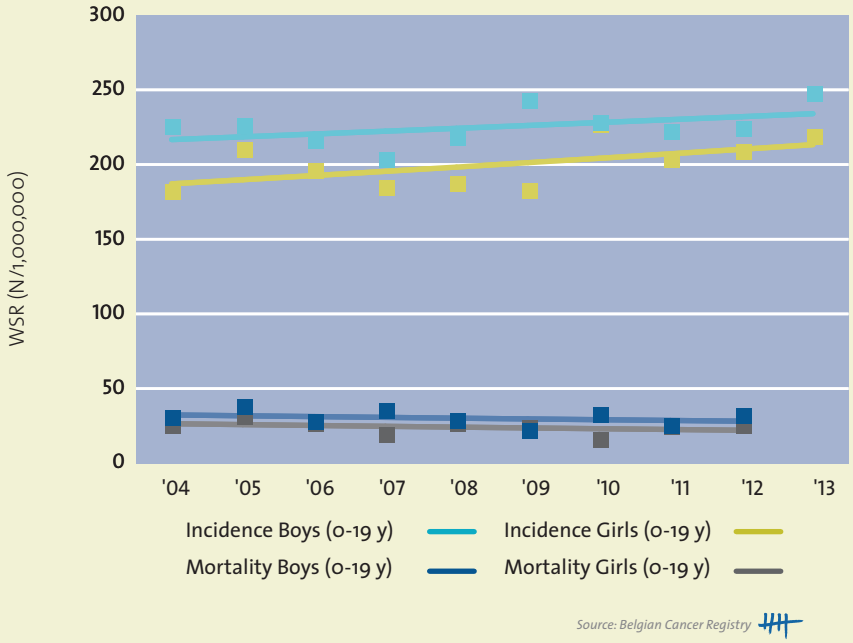


**Figure 2** Cancer in children and adolescents: age-specific incidence rates by tumour type, Belgium 2004-2013



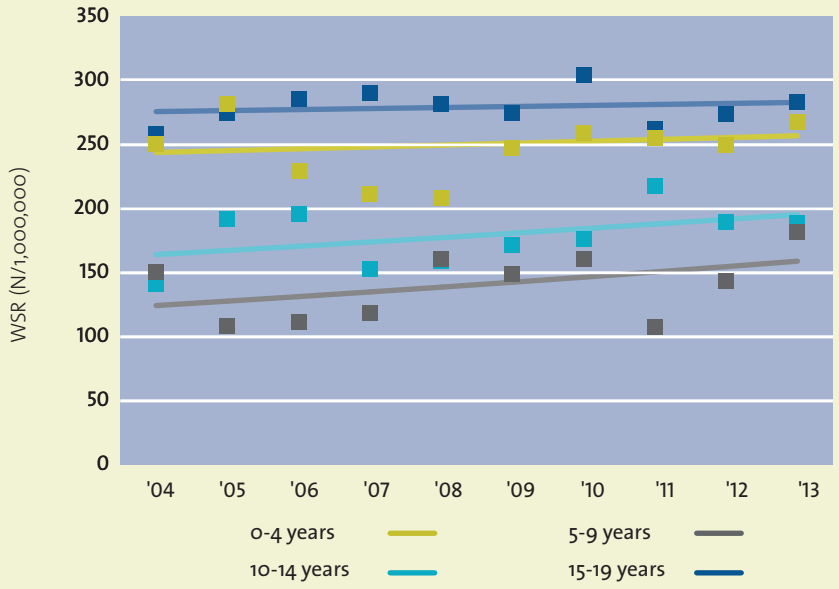

Source: Belgian Cancer Registry

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



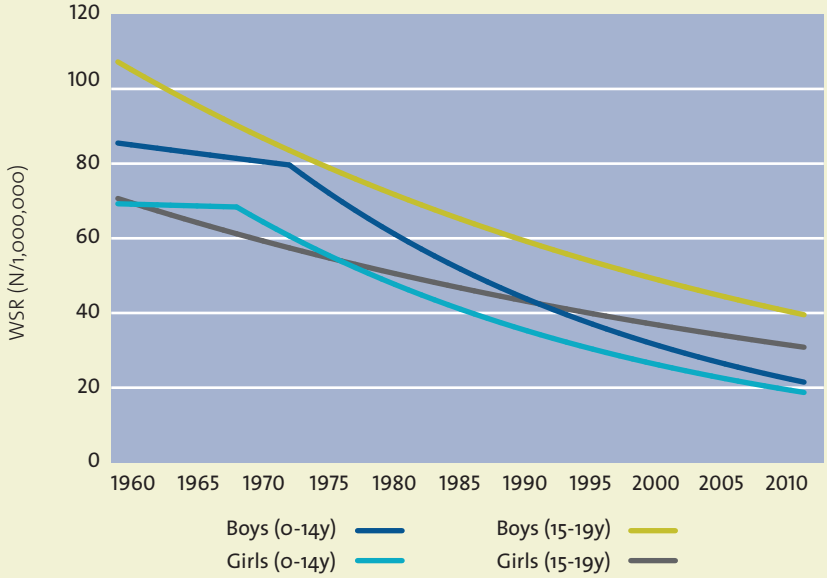

Source: Belgian Cancer Registry

**Figure 4** Cancer in children and adolescents: incidence by age group, Belgium 2004-2013.



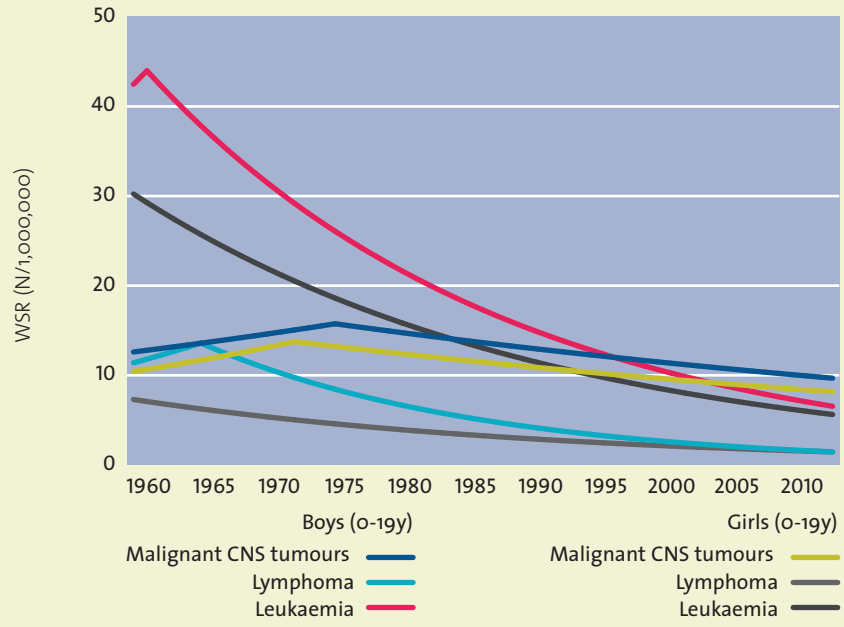

Source: Belgian Cancer Registry

**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.



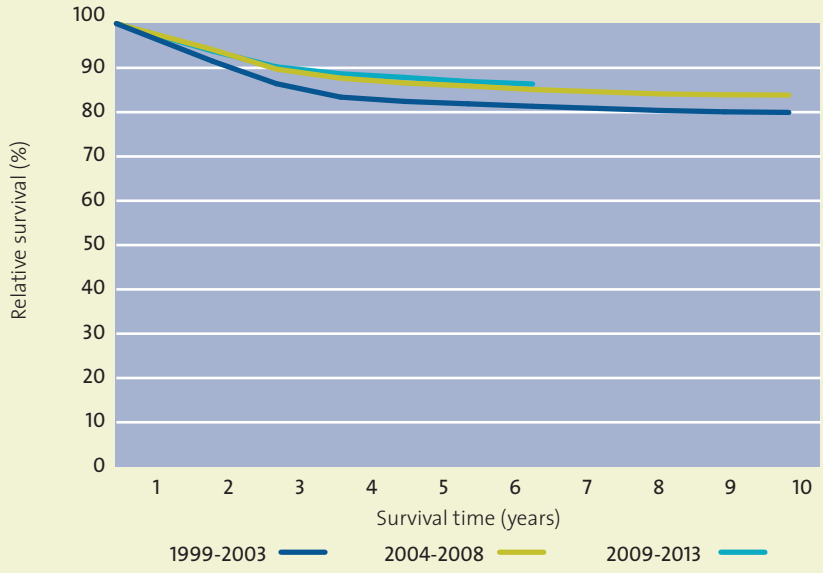

*Source: Belgian Cancer Registry*

**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] |

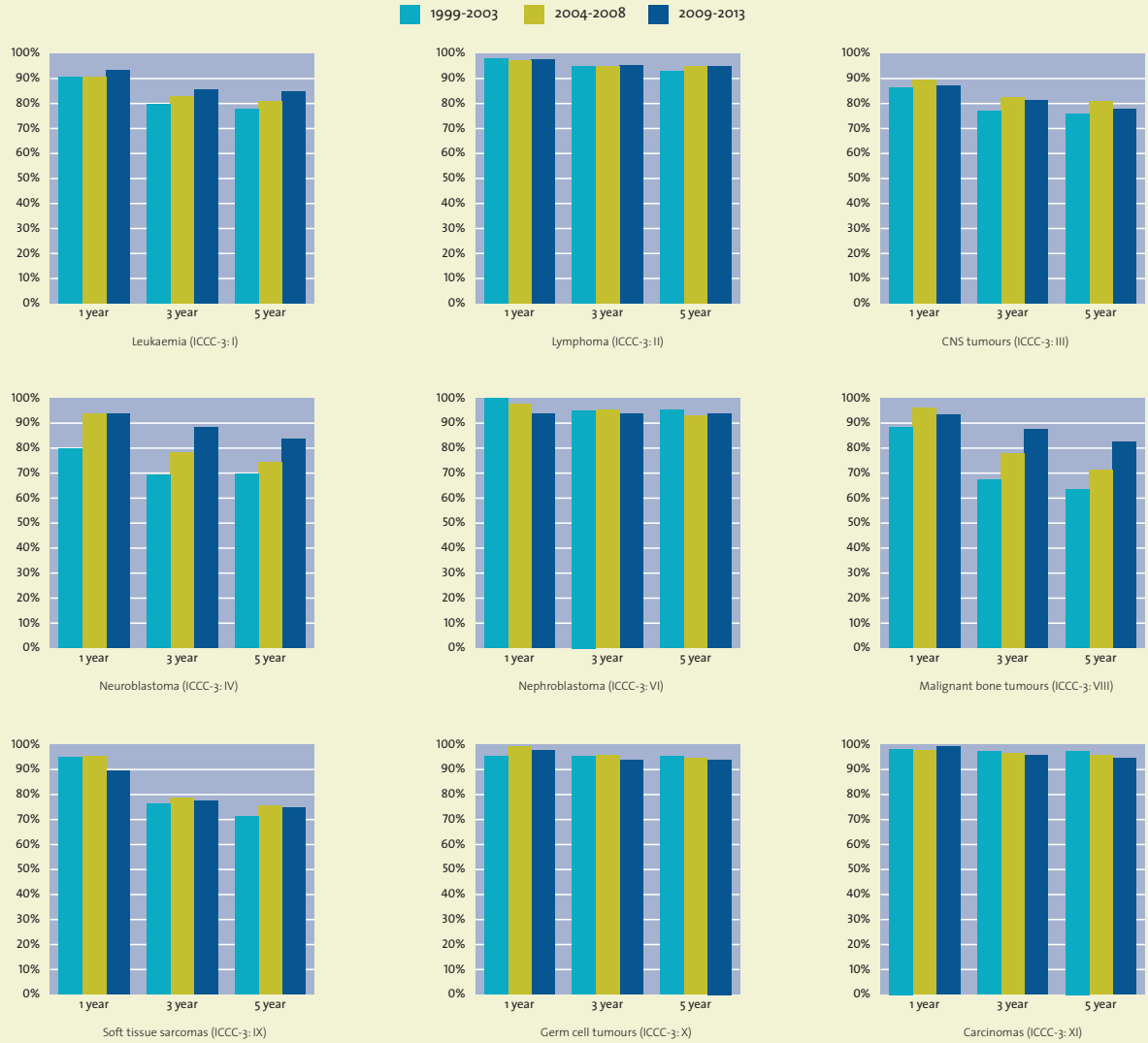
*AAPC: average annual percentage change*

**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, Geraerts 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 (25).

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 |

| Label | Layer | | Belgium (2009-2013) | | Flemish Region (2009-2013) | | Brussels Capital Region (2009-2013) | | Walloon Region (2009-2013) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Digestive tract | Layer | R=rare | N | CR | N | CR | N | CR | N | CR |
| 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 |

| Label | Layer | | Belgium (2009-2013) | | Flemish Region (2009-2013) | | Brussels Capital Region (2009-2013) | | Walloon Region (2009-2013) | |
|---|---|---|---|---|---|---|---|---|---|---|
| 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 |

| Label | Layer | | Belgium (2009-2013) | | Flemish Region (2009-2013) | | Brussels Capital Region (2009-2013) | | Walloon Region (2009-2013) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Urinary tract | Layer | R=rare | N | CR | N | CR | N | CR | N | CR |
| 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 | - | - |

| Label | Layer | | Belgium (2009-2013) | | Flemish Region (2009-2013) | | Brussels Capital Region (2009-2013) | | Walloon Region (2009-2013) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Extragonadal 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 |
| MYELODYSPLASTIC SYNDROME AND MYELODYSPLASTIC/ 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 entitities (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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