Key points

- **The relative rates of hospital admission for asthma and diabetes are often used as a measure of the extent to which people can access primary care and preventive care, and the quality of this care.**
- **For both indicators on avoidable hospital admissions, trends over time report a reduction in admission rates over recent years, which may represent an improvement in the quality of primary care. These decreasing trends are also observed in other European countries.**
- **Belgium is situated around the EU-15 average for both indicators, but this is not very informative, as differences between countries can be due to many other factors than quality of care. Trends over time are more informative in this case.**

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1.2. 5 year relative survival after breast cancer (QE-3) and after colorectal cancer (QE-4)

1.2.1. Documentation sheet

Description	5-year relative survival by stage after a diagnosis of breast or colorectal cancer.
Rationale	In Belgium, breast cancer is the most frequent cancer type in females, and also the leading cause of death by cancer in females. Colorectal cancer is the third and second most frequent cancer type in males and females respectively. [1] In Belgium, for these two types of cancer, well-developed screening programmes exist, and evidence-based treatment strategies have been recommended in the national guidelines. [2-4] An increase in cancer survival reflects advances in public health interventions, such as greater awareness of the disease, successful screening programmes, and improved treatments.
Calculation	The 5-year relative survival is computed as the 5-year observed survival for the population diagnosed with the specified type of cancer (=proportion of people surviving 5 years after the diagnosis), divided by the 5-year expected survival of a comparable group from the general population residing in Belgium. The relative survival is expressed as a percentage, and estimates the excess mortality that can be attributed to the cancer. A 100% 5-year relative survival indicates that patients who were diagnosed with cancer had a mortality rate similar to the general population of the same age, sex and region.
Data source	Belgian Cancer Registry (BCR): incidence years 2004-2015.

	Kruispuntbank - Banque Carrefour for mortality data (vital status of patients diagnosed with cancer): 2004- July 1st, 2017. Therefore, to allow 5 year follow-up, 5-year survival rates can be calculated for patients diagnosed between January 1st, 2004 and July 1st, 2012.
Technical definition	Selection of patients: new diagnoses of cancer registered in the BCR, with the following ICD-10 codes: • Breast cancer (for women only): C50 • Colorectal cancer: C18-C20 The following exclusion criteria have been applied: • If the cancer is a subsequent cancer (only the first cancer for each patient is taken into account) • If for a patient, the date of death or the date of lost to follow-up equalled the day of incidence • If the patient had an unknown social security number (INSZ – NISS) • If the patient was younger than 15 years old • If the patient has no Belgian residence The relative survival is computed using the Ederer II method. [5] The Region corresponds to the region of the place of residence of the patients at time of their diagnosis.
International comparability	OECD study for international comparisons. Belgian survival rates published in the OECD Health Statistics may be different from those published by the Belgium Cancer Registry, [6] because in the OECD data relative survival rates are age standardized to allow comparison across countries, while in alignment with most of the data presented by the BCR, this standardization was not carried out for the present analyses. The impact of the standardisation on the estimate (increase or decrease) is hard to predict, and depends of the age distribution, within a country. Moreover, the comparison of survival estimates between countries often remains challenging in case of cancer types for which screening is organised. Between-countries differences in screening coverage will tend to bias the survival comparisons considering that screening artificially increases the survival time (by advancing the date of diagnosis, i.e. lead time bias, and by discovering not evolving tumours, i.e. overdiagnosis). The solution to this bias is to include a comparison of the stage-distributions and a comparison of survival by stage, but this is currently not possible with the OECD data.
Limitation	5-year relative survival can only be computed for patients diagnosed from 2004 to 2012, because follow-up is available until July 1st, 2017. The specific impact of screening or treatment on the survival can hardly be disentangled. Evolution of survival by stage reflects better the impact of treatment alone.
Dimension	Quality, Effectiveness of care
Related indicators	Coverage of target group for breast cancer screening and colorectal cancer screening. Percentage of patients with cancer discussed at the multidisciplinary team meeting (MDT)

1.2.2. Results

An overview of the 1-year, 3-year and 5-year relative survival is provided in the following tables, for breast cancer (Table 1) and colorectal cancer (Table 2). Survival data are presented by year of incidence, combined stage[a], Region (or residence of the patient at diagnosis) and sex (when appropriate).

1.2.2.1. Breast

Belgium

For female breast cancer patients diagnosed between 2004 and 2012, 5-year relative survival is relatively stable over the years: 89.8% for the whole cohort, and 89.9% for patients diagnosed in 2012 (Table 1). The majority of patients is diagnosed at early stages (I (40.3%) or II (34.7%)), and for those groups relative survival at 5-year is the same as in the general (i.e. not having breast cancer) population (stage I, 100.5%), or slightly lower (stage II, 94.3%). For the women diagnosed at stage III, 12% of the breast cancer population, a notable increase of survival was observed over the years (72.0% in 2004 to 77.3% in 2012, see Figure 29). For the small group of patients diagnosed at stage IV (6%), 5-year relative survival only reaches 32.5% on the whole cohort, and increased from 32.2% in 2004 to 34.6% in 2012. A large decrease in survival is observed for patients for which stage at diagnosis was unknown in the BCR database, from 76.9% in 2004 to 71.7% in 2012. This can partially be explained by the fact that in earlier incidence years there were % proportionally more unknown stages (11.7% in 2004 vs 6.0% in 2012), but this group was more heterogeneous in earlier years whereas the cancers for whom stage remains unknown nowadays, probably reflect more advanced diseases explaining the decrease in survival for this special category of patients.

On the whole cohort, differences of maximum 1 percentage point are observed between regions: Wallonia (90.3%), Flanders (89.6%) and Brussels Capital Region (89.6%).

International Comparison

Results from the international comparisons (Figure 6), show lower 5-year survival rates for Belgium than displayed in Table 1: in this study, 5-year relative survival for Belgium is only 86.4% (compared to 89.8% in Table 1), and place Belgium just above the European average of EU-15 countries (86.2%, Figure 6). Explanations for this difference are provided in the technical fiche, under heading international comparison.

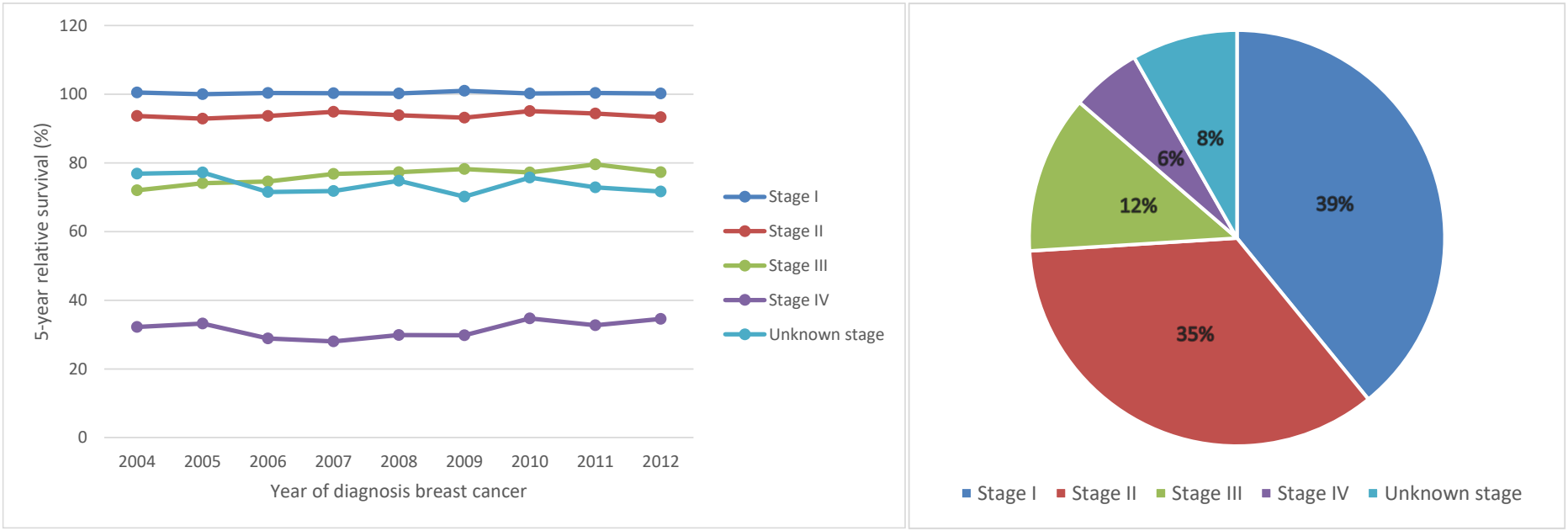
[a] Combined stage: because the clinical stage and/or pathological stage is lacking for some patients, a combined stage is defined. To determine this combined stage, a known pathological stage prevails over known clinical stage, except when there is clinical proof of distant metastasis. When only pathological stage or clinical stage is known, the available stage is considered as the combined stage. Otherwise, when pathological stage and clinical stage are unknown, the combined stage also remains unknown.

Table 1 – One-, 3- and 5-year relative survival for breast cancer, by year of incidence, stage and Region (2004-2015)

		Relative survival (%)					
	N at risk	1-year		3-year		5-year	
Characteristic		**1-y RS**	**95% CI**	**3-y RS**	**95% CI**	**5-y RS**	**95% CI**
Overall	114 499	97.6	[97.4, 97.7]	93.5	[93.2, 93.7]	89.8	[89.6, 90.1]
Incidence year							
2004	9135	96.9	[96.5, 97.4]	92.4	[91.6, 93.1]	88.3	[87.3, 89.1]
2005	9084	97.6	[97.2, 98.0]	92.8	[92.1, 93.5]	88.4	[87.5, 89.3]
2006	9155	97.3	[96.9, 97.7]	93	[92.2, 93.6]	88.9	[88.0, 89.8]
2007	9292	97.1	[96.6, 97.5]	93.1	[92.4, 93.8]	89.5	[88.6, 90.3]
2008	9198	97.5	[97.0, 97.9]	93	[92.3, 93.7]	89.4	[88.5, 90.2]
2009	9179	97.5	[97.1, 97.9]	93	[92.3, 93.7]	89.2	[88.3, 90.1]
2010	9465	97.5	[97.1, 97.9]	93.3	[92.6, 94.0]	90.3	[89.5, 91.2]
2011	10 064	97.5	[97.1, 97.9]	93.7	[93.0, 94.4]	90.6	[89.8, 91.5]
2012	10 049	97.7	[97.3, 98.1]	93.9	[93.2, 94.6]	89.9	[89.0, 90.8]
2013	10 165	97.9	[97.5, 98.3]	94.2	[93.5, 94.8]		
2014	9916	97.8	[97.3, 98.1]	94.1	[93.4, 94.8]		
2015	9797	98.1	[97.7, 98.5]				
Stage							
I	46 112	100.5	[100.4, 100.6]	100.7	[100.5, 100.9]	100.5	[100.3, 100.8]
II	39 701	99.6	[99.5, 99.8]	97	[96.7, 97.3]	94.3	[93.8, 94.7]
III	13 855	96.3	[95.9, 96.7]	85.9	[85.2, 86.6]	76.8	[75.9, 77.7]
IV	6369	76.3	[75.1, 77.4]	50.8	[49.5, 52.2]	32.5	[31.1, 33.9]
Unknown	8462	89.4	[88.7, 90.2]	80.6	[79.6, 81.7]	73.9	[72.6, 75.1]
Region							
Brussels-Capital Region	10 447	97.3	[96.9, 97.7]	93.1	[92.4, 93.8]	89.6	[88.7, 90.5]
Flemish Region	66 199	97.7	[97.5, 97.8]	93.4	[93.1, 93.6]	89.6	[89.3, 90.0]
Walloon Region	37 853	97.4	[97.2, 97.6]	93.7	[93.3, 94.0]	90.3	[89.8, 90.7]

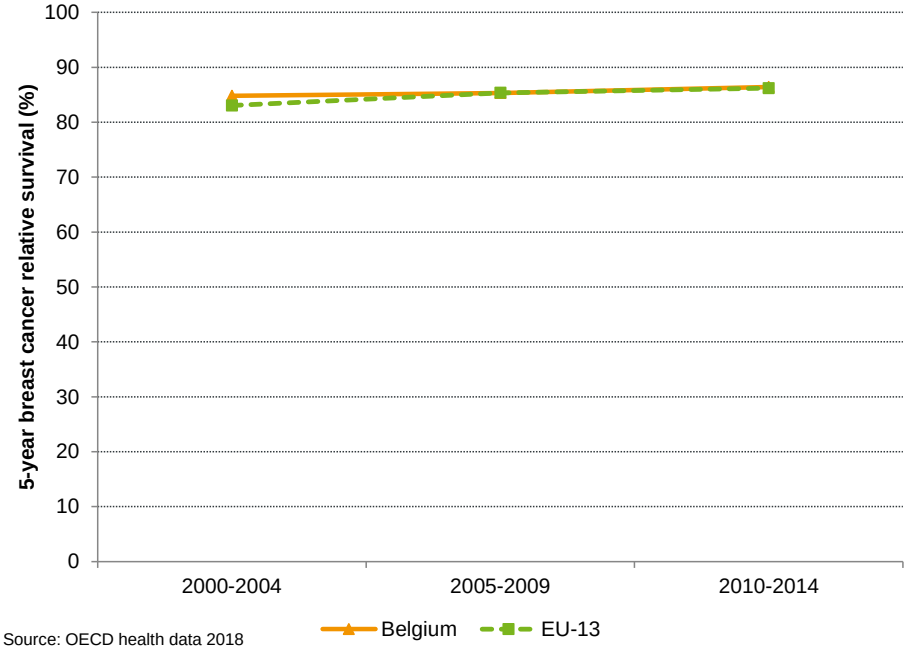
Source: Belgian Cancer Registry; CI confidence interval, RS relative survival

Figure 5 – Five-year relative survival for breast cancer, by stage and year of incidence and distribution of patients across stages (2004-2012)

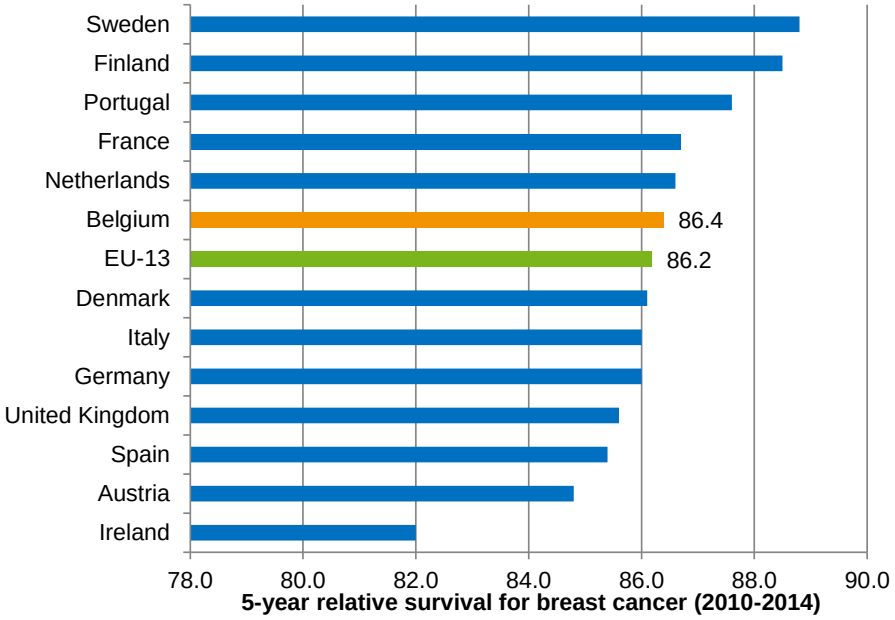


Source: Belgian Cancer Registry

Figure 6 – Five-year relative survival for breast cancer: international comparison (%, 2000-2014)



Source: OECD health data 2018



Source: OECD health data 2018

Source : OECD Health Statistics 2018

1.2.2.2. Colorectal cancer

Belgium

For patients diagnosed with colorectal cancer between 2004 and 2012, overall 5-year relative survival slightly increases from 63.7% for patients diagnosed in 2004 to 67.5% for patients diagnosed in 2012 (Table 2). Survival is highly dependent on the stage, with 95.5% 5-year relative survival for patients diagnosed at stage I and 17.5% for patients diagnosed at stage IV. The majority of patients is diagnosed either at stage II (27%) or III (26%). For stage II, the 5-year relative survival decreases slightly from 2004 to 2012 (from 84.3% to 83.4%) while for stage III the 5-year relative survival increases notably (61.2% to 71.9%) over the same period, see Figure 7.

Small regional differences are observed for the 5-year relative survival for colorectal cancer: survival is 3 percentage points higher in Flanders (68.6%) than in the Wallonia (65.6%), with even lower rates in the Brussels-Capital Region (64.2%). In all three regions overall survival rates improved between 2004 and 2012, with the most impressive improvement observed in Flanders (64.3% in 2004 versus 69.0% in 2012).

International Comparison

Results from the international comparisons (OECD Health Statistics) are presented for colon cancer (Figure 8) and rectal cancer (Figure 9) separately, and show slightly lower 5-year survival rates for Belgium than displayed in Table 2 (67.8% for colon cancer, 66.6% for rectal cancer). Differences between OECD Health Statistics and results published in Table 2 are explained in the technical fiche, under the heading international comparison. Keeping in mind these limitations, the OECD places Belgium at the highest survival rate of EU-15 countries.

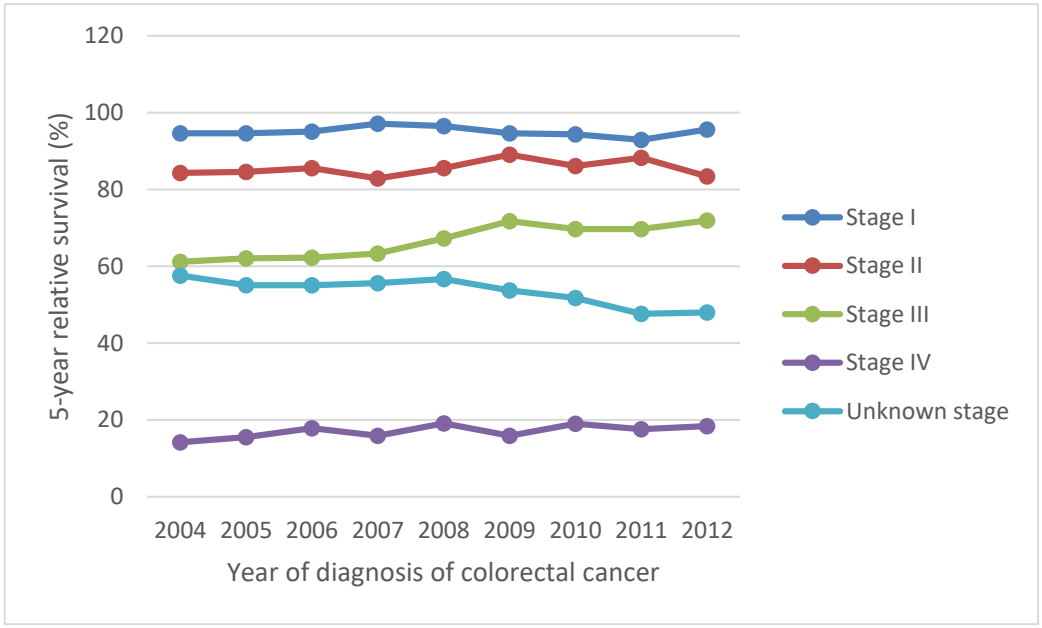
Table 2 – One-, 3- and 5-year relative survival for colorectal cancer, by year of incidence, stage and Region (2004-2015)

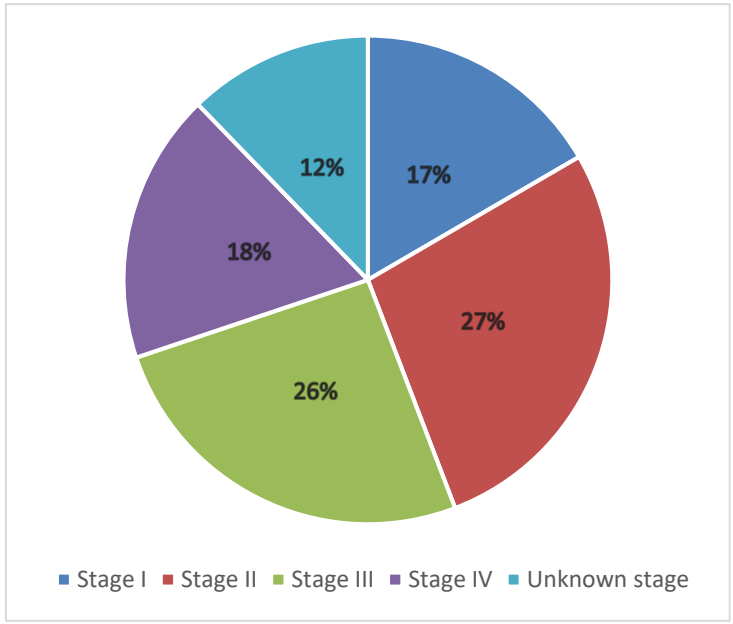
		Relative survival (%)					
	N at risk	1-year		3-year		5-year	
Characteristic		1-y RS	95% CI	3-y RS	95% CI	5-y RS	95% CI
Overall	86381	85.1	[84.8, 85.3]	73.1	[72.7, 73.4]	67.4	[66.9, 67.8]
Incidence year							
2004	6939	82.8	[81.8, 83.8]	69.5	[68.2, 70.8]	63.7	[62.2, 65.2]
2005	6837	83.5	[82.5, 84.5]	70.5	[69.2, 71.8]	64	[62.5, 65.4]
2006	6916	83.2	[82.2, 84.2]	70.8	[69.4, 72.0]	64.8	[63.3, 66.3]
2007	6901	83.6	[82.6, 84.6]	70.3	[69.0, 71.6]	64.8	[63.3, 66.3]
2008	7177	84.1	[83.1, 85.0]	72.4	[71.2, 73.7]	66.6	[65.1, 68.0]
2009	7102	84.8	[83.8, 85.7]	73.3	[72.0, 74.5]	67.9	[66.4, 69.3]
2010	7211	85.2	[84.3, 86.1]	72.5	[71.2, 73.7]	66.9	[65.5, 68.3]
2011	7283	84.5	[83.6, 85.5]	72.6	[71.3, 73.8]	66.9	[65.5, 68.3]
2012	7240	85.6	[84.6, 86.5]	73.9	[72.6, 75.1]	67.5	[66.0, 68.9]
2013	7308	86.3	[85.4, 87.2]	74.7	[73.5, 75.9]		
2014	8189	88.8	[88.0, 89.6]	78.4	[77.2, 79.5]		
2015	7278	87.5	[86.6, 88.3]				
Stage							
I	16 097	97.7	[97.3, 98.0]	97.2	[96.6, 97.8]	95.5	[94.6, 96.3]
II	23 407	93.5	[93.1, 94.0]	89.9	[89.3, 90.5]	86.8	[86.0, 87.6]
III	22 021	89	[88.5, 89.5]	75.8	[75.1, 76.5]	67.9	[67.1, 68.8]
IV	15 545	62.9	[62.1, 63.7]	28.9	[28.1, 29.7]	17.5	[16.8, 18.3]
Unknown	9311	69.7	[68.6, 70.7]	57.9	[56.7, 59.1]	54.9	[53.6, 56.2]
Region							
Brussels-Capital Region	6550	82.5	[81.4, 83.5]	69.5	[68.1, 70.9]	64.2	[62.5, 65.8]
Flemish Region	54 365	86	[85.6, 86.3]	74.3	[73.9, 74.8]	68.6	[68.0, 69.1]

Walloon Region	25 466	83.8	[83.3, 84.3]	71.3	[70.6, 72.0]	65.6	[64.7, 66.4]
Sex							
Males	46 880	85.8	[85.5, 86.2]	73.7	[73.2, 74.2]	67.2	[66.6, 67.8]
Females	39 501	84.2	[83.8, 84.6]	72.4	[71.8, 72.9]	67.6	[66.9, 68.2]

Source: Belgian Cancer Registry; CI confidence interval, RS relative survival

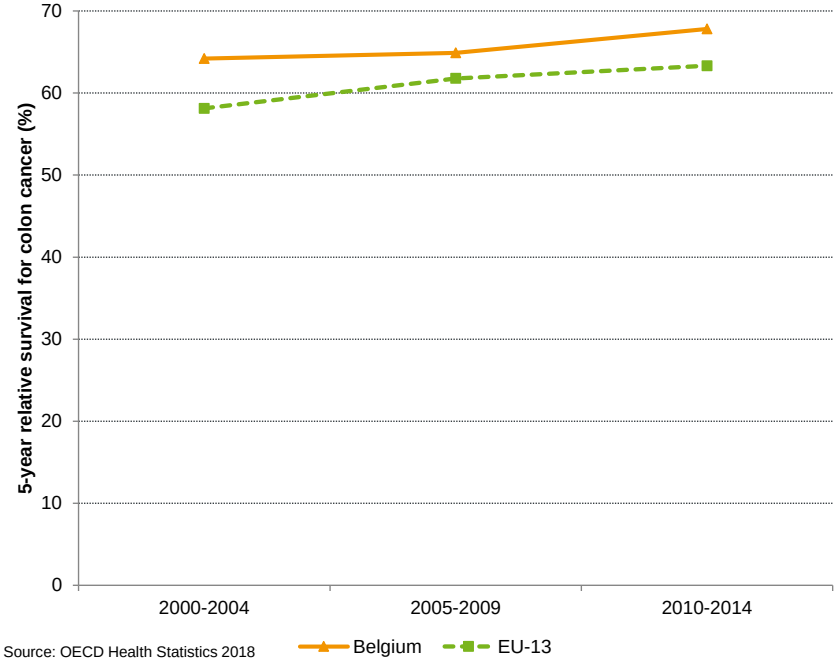
Figure 7 – Five-year relative survival for colorectal cancer, by stage and incidence year and distribution of patients across stages (2004-2012)



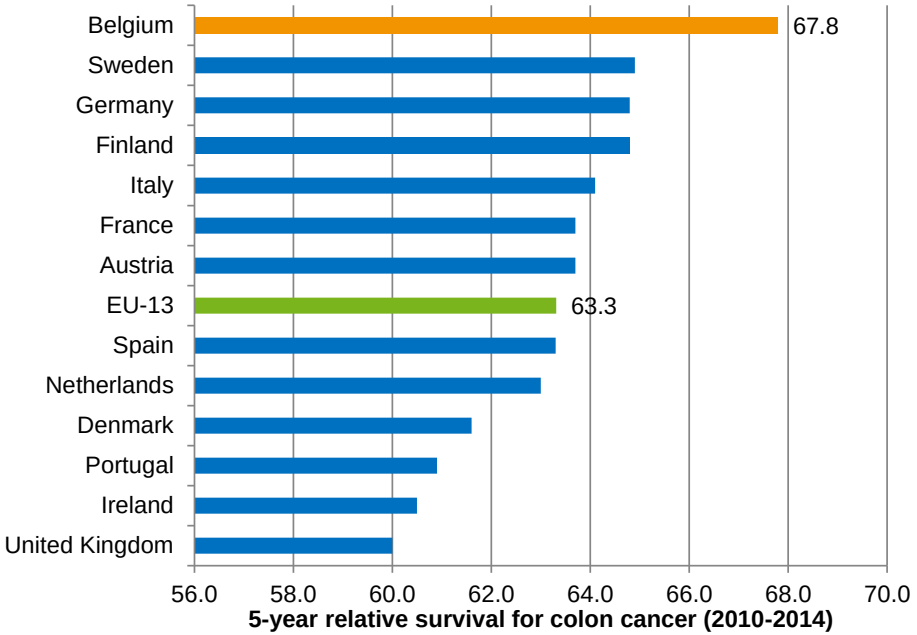


Source: Belgian Cancer Registry

Figure 8 – Five-year relative survival for colon cancer: international comparison



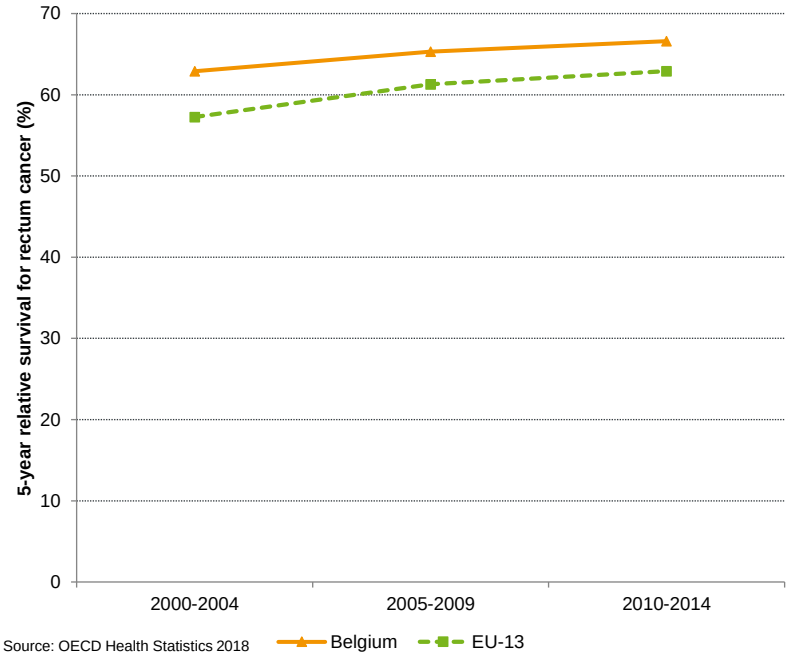
Source: OECD Health Statistics 2018



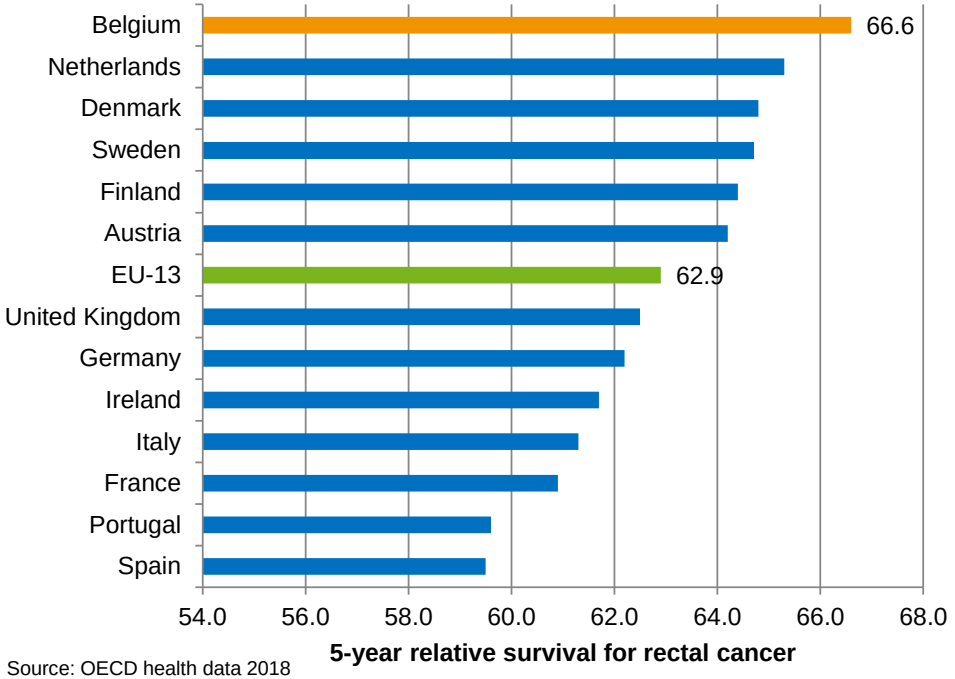
Source: OECD health data 2018

Source: OECD Health Statistics 2018

Figure 9 – Five-year relative survival for rectal cancer: international comparison



Source: OECD Health Statistics 2018



Source: OECD health data 2018

Source: OECD Health Statistics 2018

Key points

- **The relative survival 5 years after the diagnosis of breast cancer and colorectal cancer is respectively 89.9% and 67.5%, based on the cohort of patients diagnosed in 2012. For both cancers, survival is mainly determined by the extent of disease at diagnosis (i.e. the stage). For breast cancer, the majority of patients (75%) are diagnosed at early stages (i.e. stage I or II), while for colorectal cancer diagnosis mainly (53%) occurs at later stages (i.e. II or III), this information is indispensable when interpreting the difference in prognosis between these two cancers.**
- **Trends over time (period 2004-2012) show stable relative survival rates for breast cancer patients, and an increase for colorectal cancer patients. A notable increase is particularly observed for stage III patients with colorectal cancer.**
- **No regional differences in relative survival rates are observed for breast cancer. Colorectal cancer survival shows lower survival rates in Brussels and Wallonia compared to Flanders, but this requires further analysis (taking into account possible differences in patient populations) before drawing conclusions on regional differences in quality of care.**
- **Comparison of Belgian survival results with other European countries is complicated by several data and methodological limitations, and thus should be interpreted with caution. In the most recent data from OECD Health Statistics, Belgium has outstanding 5-year survival rates for colon and rectal cancer, 67.8% for colon cancer and 66.6% for rectal cancer, compared to the European average of 63.3% and 62.9%. Belgian results for breast cancer survival are 86.4%, very close to the average European results for breast cancer patients (86.2%). These results are based on a cohort of patients diagnosed between 2010 and 2014.**

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