1.1 Breast cancer screening (% women aged 50-69 years) (P-6, P-7)

1.1.1 Documentation sheet

Description	**Primary indicators** Proportion of women aged 50-69 years having received at least one bilateral mammogram within the last two years 1. Within the context of the organised screening programme (mammogram with a specific billing code for screening) 2. Within or outside the context of the organised screening programme (all mammograms) **Secondary indicators** (OECD definition) Proportion of women aged 50-69 years having received at least one bilateral mammogram within the last two years with medical exclusions 3. Within the context of the organised screening programme 4. Within or outside the context of the organised screening programme (all mammograms)
Calculation	**Primary indicators** Numerator 1 (P-6): number of women in the denominator, having received a bilateral mammogram (via an organised programme) within that year or the preceding year Numerator 2 (P-7): number of women in the denominator, having received a bilateral mammogram (organised programme + opportunistic screening) within that year or the preceding year Denominator: Number of women aged 50-69 years affiliated to a sickness fund in a given year **Secondary indicators** (OECD definition) Numerator 3 (P-6): number of women in the denominator, having received a bilateral mammogram (via an organised programme) within that year or the preceding year Numerator 4 (P-7): number of women in the denominator, having received a bilateral mammogram (organised programme + opportunistic screening) within that year or the preceding year Denominator: Number of women aged 50-69 years during the reference period minus women excluded for medical reasons

Rationale	In Belgium, breast cancer is by far the first female cancer in incidence (11 319 cases in 2021)[a], and is also one of the leading cause of death in females (age-adjusted: 31.6 deaths per 100 000 population in 2019)[b]. Mammographic screening is considered an efficient mean to improve the prognosis and a recent article reported that in Flanders mammography screening program substantially reduced breast cancer deaths.[1] Regional breast cancer screening programmes exist for women aged 50-69 years[c] since 2001 in Flanders and 2002 in Brussels and Wallonia. Each eligible woman aged 50 to 69 years receives every two years an invitation to participate in the screening programme. The mammograms realised in the programme follow a specific procedure to insure the quality and effectiveness, and have their own RIZIV – INAMI billing codes. The examination is free of charge for women. Primary and secondary indicators for P-6 measure the proportion of women aged 50-69 years undergoing a mammogram in the framework of the organised screening, whereas indicators for P-7 measure the proportion of women aged 50-69 years undergoing a mammogram within or outside the organised programme (all mammograms). Indicators for P-6 attempt to measure the success of the organised programme, while indicators for P-7 measure the whole coverage of mammographic screening in Belgium. The European guidelines recommend that 70% (acceptable) to 75% (desirable) of invited women attend screening. The Europe's Beating Cancer Plan set an ambitious goal of having 90% of the EU population who qualify for breast cancer screenings offered screening by 2025.[2]
Data sources	**Primary indicators**: IMA – AIM data (for years 2016-2021); IMA – AIM atlas (for years 2010-2015) **Secondary indicators**: multiple data sources were used, including: - Centre Communautaire de Référence (CCR), Centrum voor Kankeropsporing (CvKO), Bruprev: data on the target population and data on the screening in the programs. - Central cyto-histopathological register of the Belgian Cancer Registry (CHP): cyto-histopathological data from the laboratories. - Cancer database of the Belgian Cancer Registry (CIB): data of the cancer registration. - Intermutualist Agency (IMA – AIM): data of the reimbursed care and medicines.
Technical definitions	**Primary and secondary indicators** RIZIV – INAMI billing codes:

a http://www.kankerregister.org/Statistiques_tableaux%20annuelle (last access: 11 May 2023)
b https://www.healthybelgium.be/en/health-status/mortality-and-causes-of-death/general-mortality-by-cause (last access: 11 May 2023)
c http://www.zorg-en-gezondheid.be/Ziektes/Vlaams-bevolkingsonderzoek-naar-borstkanker/ and http://www.sante.cfwb.be/index.php?id=cancerdusein0 (last access: 21 October 2021)

	Numerators 1 and 3 (P-6): 450192 – 450203: mammogram of both breasts (first reading) within the screening programme: organised screening mammograms. Numerators 2 and 4 (P-7): 450096 (mammogram per breast, including any axillary films); 450192 – 450203 (mammogram of both breasts within the screening programme); 450354 – 450365 (mammogram of both breasts as part of breast cancer screening in asymptomatic women with a very high risk profile) ; 459830 – 459841 (MRI of both breasts as part of breast cancer screening in asymptomatic women with a very high risk profile, as defined in Article 17, § 1, 1°bis); 461090 (mammogram per breast, including any axillary films); 461134 – 461145 (ultrasound of both breasts as part of breast cancer screening in asymptomatic women at very high risk as defined in Article 17, § 1, 1°): other mammograms per breast including any axillary images. In the IMA – AIM database only the year of birth is available and not the exact date of birth. The age is the difference between the calendar year and the year of birth (snapshot on the 30th of June or the 31st of December). If the woman's age falls between 50 and 69 years, she enters the denominator. **Secondary indicators** Women excluded for medical reasons: women from the target population of the program who are not eligible for screening due to their medical history. - Permanent exclusion: history of bilateral mastectomy - Temporary exclusion: (1) History of diagnosis of primary breast cancer — invasive or in situ — no invitation for 10 years from the date of breast cancer incidence. (2) History of diagnosis of breast cancer — invasive or in situ — registered only in the CHP: no invitation for 4 years. Only one mammogram is taken into account for each woman per two-year period. A mammogram performed in the program is prioritised over bilateral mammography outside the program.
Limitations	It is impossible to distinguish opportunistic screening mammograms (i.e. mammogram made for screening purposes but outside the organised programme) from diagnostic mammograms (i.e. mammogram made for diagnostic reasons, e.g. in women with symptoms or at high risk). Since the fraction of diagnostic mammograms among all mammograms is quite low, the rate of mammograms outside the screening is an acceptable proxy of the opportunistic screening.[3] Considering insurers can reimburse a medical service up to two years after the date of the service, that a certain period of time is required for administrative processing, and that the database closure is completed quarterly, the IMA – AIM database for a given calendar year will not be complete until 30 months after that year. This applies to the years 2020 and 2021, but the impact is likely to be limited. For the primary indicators, data for the numerators (1 and 2) for the years 2010-2015 were based on a more limited set of RIZIV – INAMI billing codes: 450192-450203, 450096 and 461090, as the other codes for women with a very high risk profile did not yet exist.

	For the secondary indicators, the method to calculate breast cancer screening rate according to the OECD definition was only applied starting in 2020. Thus, data for the years before 2020 using the same methodology are not available. Data by socioeconomic status, province and district were not available for the secondary indicators.
International comparability	The OECD publishes the proportion of women aged 50-69 having had a bilateral mammography within the past two years (or according to the specific screening frequency recommended in each country) from programme (administrative billing) data and survey data. Only data from screening programmes were used for the international comparisons, as survey data may be affected by recall bias and lower availability. Programme data for Greece, Portugal and Spain were not available (only survey data). In some countries (Estonia before 2018, Ireland before 2021, Netherlands, Slovak Republic, and Sweden), the age group of women included in the screening programmes deviated from the age group used in the standard definition (50-69 years old), potentially limiting comparability. For Belgium, OECD results are available from IMA – AIM atlas data under the label "programme data" and exclude mammograms with the following RIZIV – INAMI billing codes: 450354 – 450365 ; 459830 – 459841 ; 461134 – 461145.[4]
Dimension	Accessibility of preventive care
Related indicators	Breast Cancer 5-year survival rate
Reviewer	Koen Van Herck (BCR)

1.1.2 Results

Belgium

The total breast cancer screening coverage (organised screening mammograms and other mammograms) was 59.0% in 2021. The organised breast cancer screening covered 31.5% of women aged 50-69 years in 2021 (see Table 1). The coverage of total and organised breast cancer screening have remained relatively stable since 2010, with a decrease during the COVID-19 pandemic, from 61% in 2019 to 57.7% in 2020 and from 32.3% to 30.3%, respectively. The overall coverage is still lower than the desirable 75% European target screening rate.[5]

When accounting for medical eligibility beyond the age range (secondary indicators), the total breast cancer screening coverage was 61.8% in 2021 (see Table 2). The coverage from the organised breast cancer screening program was 35.3% and the coverage from outside the program was 26.6%.

Analysis by demographic characteristics and socio-economic status

The total breast cancer screening coverage is higher for younger women (50-54 years) within the target age group (50-69 years) (see Table 1).

In both organised and total screening, vulnerable women (those entitled to increased reimbursement) have lower coverage than the remaining population (21.1% versus 33.9% and 43.1% versus 62.9% in 2021, respectively) (see Table 1). This is in line with evidence from other countries: several countries have income inequalities in breast cancer screening (e.g. Czech Republic, Denmark, France, New Zealand and Poland in 2009).[6] The breast cancer screening coverage by level of income is considered by the OECD as an indicator of access of care.

Based on the 2018 HISLINK, a recent study reported that low educated people participated less in breast cancer screening[d] (organised and opportunistic screening) than higher educated people (52.5% vs 69.2%) and that individuals in a low household income category had a lower probability of having received breast cancer screening (57.9% vs 74.3%) than those belonging to higher household income category.[7] However, after correction for participants characteristics, the association of educational attainment with breast cancer screening was no longer significant. No significant correlation was reported between health literacy and participation in breast cancer screening, and there was no evidence that health literacy served as a pathway by which socioeconomic status affected participation in breast cancer screening. This might indicate a possible influence of the universal health coverage in place.[7]

Regional comparison

As observed in previous performance reports, the organised screening coverage was still higher in Flanders (49.2%) than in Brussels (9.0%) and Wallonia (4.0%) in 2021 (see Table 1, Figure 1 and Figure 2). While the coverage continued to increase in Flanders between 2010 (47.1%) and 2019 (50.1%), the coverage was stable in Brussels and decreased in Wallonia from 7.3% in 2010 to 4.7% in 2019 (see Figure 1).

In Flanders, the total mammograms coverage has plateaued in 2012, then decreased slightly until 2015, and remained stable in 2016-2019. The high coverage by mammograms outside the organised screening coverage in Wallonia and Flanders is historically due to the early implantation of the opportunistic breast cancer screening.

When accounting for medical eligibility beyond the age range (secondary indicators), coverage rates by region were slightly higher than when not taking medical eligibility into account and only using IMA – AIM data (primary indicators).

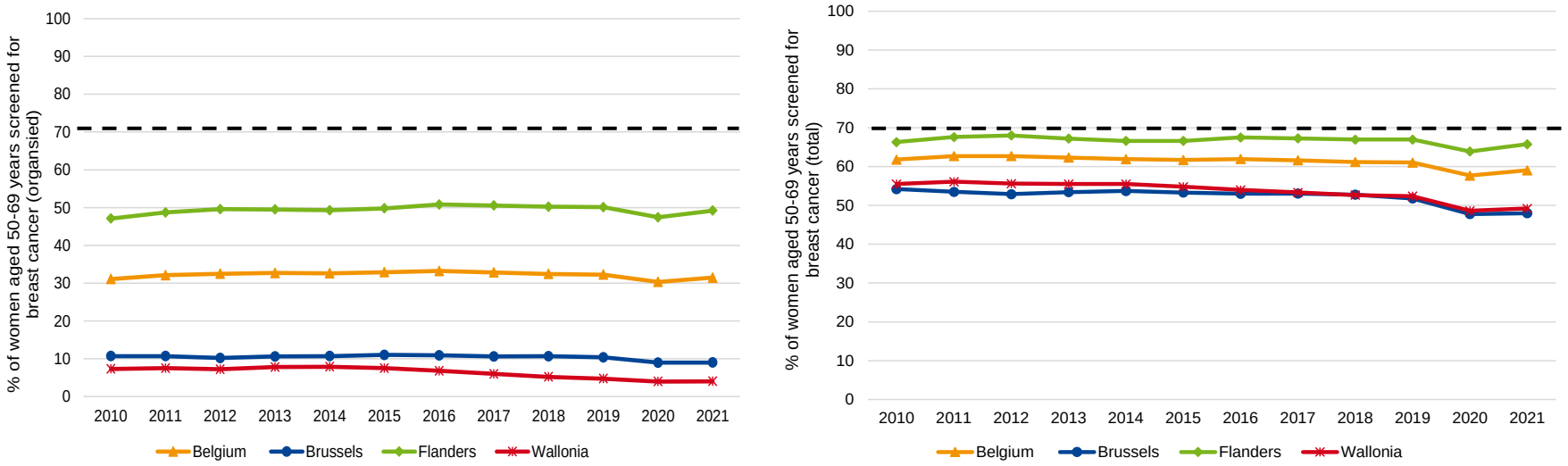
[d] The study used different nomenclature codes for the mammograms (450096, 450100, 450192, 450203, 461090, 461101) that the ones used in the analyses (see Technical definitions).

Table 1 – Coverage (in %) of breast cancer screening in women 50-69 years old in 2021 (primary indicators)

Variable	Category	Organised screening mammograms coverage	Total mammograms coverage
Age (years)	50-54	32.1	63.1
	55-59	28.9	56.0
	60-64	33.9	60.4
	65-69	31.1	56.4
	Total (50-69)	**31.5**	**59.0**
Entitlement to increased reimbursement	No	33.9	62.9
	Yes	21.1	43.1
Region of residence	Brussels	9.0	48.0
	Flanders	49.2	65.8
	Wallonia	4.0	49.2
Province of residence	Brussels	9.0	48.0
	Antwerp	48.1	65.7
	Limburg	57.6	67.9
	East Flanders	51.1	67.1
	Flemish Brabant	39.5	63.6
	West Flanders	51.3	64.7
	Walloon Brabant	5.7	56.2
	Hainaut	3.8	49.7
	Liège	3.0	47.2
	Luxembourg	7.5	43.5
	Namur	3.8	49.2

Source: IMA – AIM data

Figure 1 – Coverage of organised (left-hand side) and total (right-hand side) breast cancer screening in women 50-69 years old in 2010-2021, by region (primary indicators)



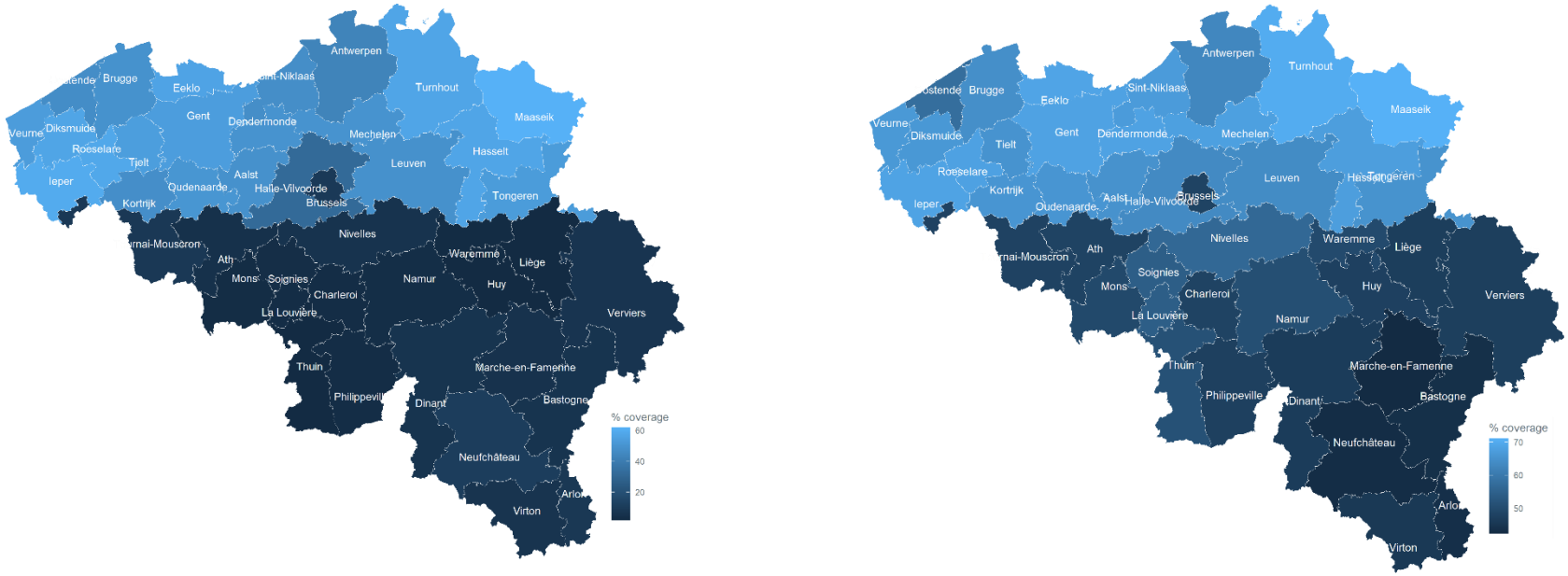
Note: mammogram = organised + opportunistic screening + diagnostic test; Dashed line= European target screening rate. Source: IMA – AIM data (2016-2021); IMA – AIM atlas (2010-2015)

Table 2 – Coverage (in %) of breast cancer screening in women 50-69 years with medical exclusions in 2020 and 2021 (secondary indicators)

	Total coverage		Coverage from the organised screening program		Coverage from outside the program	
	2020	2021	2020	2021	2020	2021
Belgium	55.37	61.84	35.38	35.27	19.99	26.57
Brussels	42.45	48.86	11.94	10.71	30.51	38.15
Flanders	63.60	68.29	53.59	54.05	10.01	14.24
Walloon region	42.36	52.55	5.51	5.26	36.85	47.29

Source: CCR, CvKO, Bruprev, CHP, CIB, IMA – AIM

Figure 2 – Coverage of organised (left-hand side) and total (right-hand side) breast cancer screening in women 50-69 years old in 2021, by district (primary indicators)



Source: IMA – AIM data

Impact of the COVID-19 pandemic

The coverage of total and organised breast cancer screening decreased during the COVID-19 pandemic, from 61.0% in 2019 to 57.7% in 2020 and from 32.3% to 30.3%, respectively. In 2021, the coverage of total and organised breast cancer screening rebounded to reach 59.0% and 31.5%, respectively (see Figure 1).

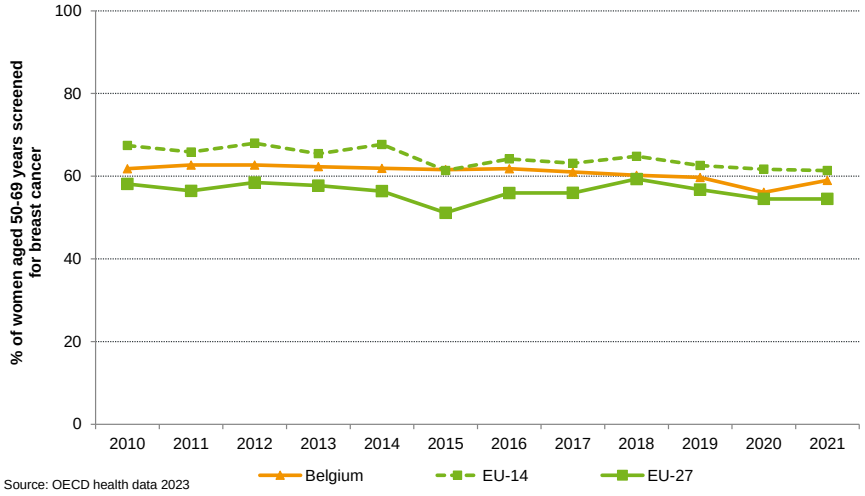
Indeed, on the 17th of March 2020 the different levels of Belgian government temporarily suspended all elective medical procedures and treatments, including cancer screening programs. Moreover, many women also delayed seeking health care to reduce the risk of COVID-19 transmission which led to a decline in breast cancer screening uptake. In mid-May 2020, restrictions eased and non-urgent health services, such as elective surgeries and the cancer screening programs, resumed.[8] In April 2020, female breast cancer diagnoses in the screening population declined by 56%. Breast cancer diagnoses rebounded, with only 6% of diagnoses missing by the end of 2020 in the screening population.[8] The number of new breast cancer diagnoses in Belgium decreased by 50% between April 2020 and April 2019, by 5% between the year 2020 and 2019, and by 2% between the period January 2020- December 2021 and the same period in 2019. [9] During the COVID-19 pandemic, the breast cancer screening program invitation coverage went down from 97.5% in 2019 to 88.7% in 2020, which may have influenced screening coverage. The backlog of invitations was largely resolved in the first six months of 2021.[10]

International comparison

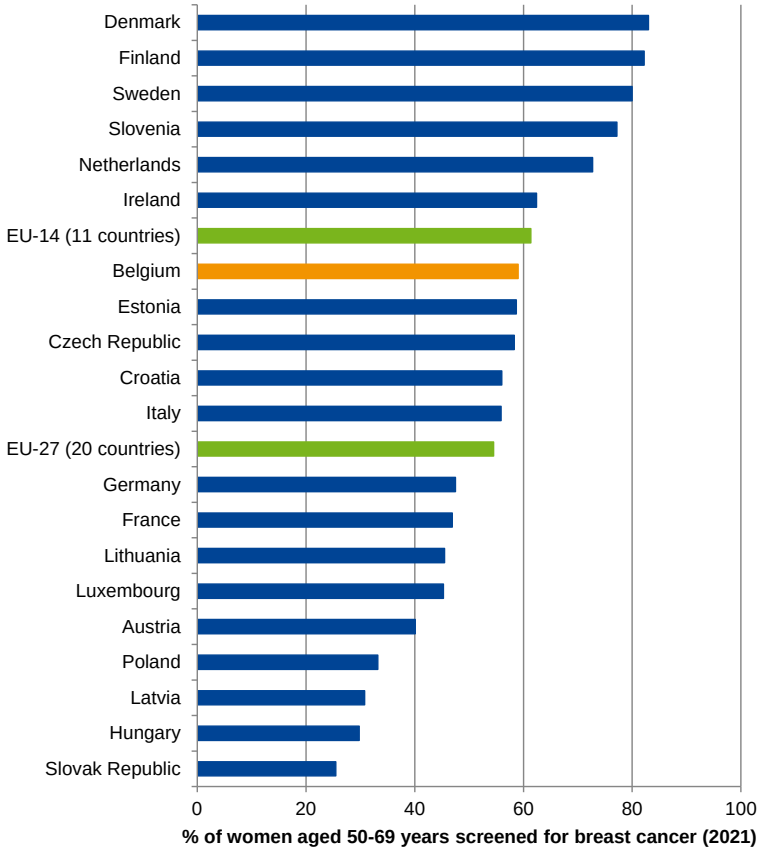
Only the total mammogram coverage can be compared with other countries. Between 2010 and 2021, the Belgian coverage is below the EU-14 average (2021: 59.0% vs 61.4%) and above the EU-27 average (2021: 59.0% vs 54.5%). However, the total coverage in Flanders (2021: 65.8%) is above the EU-14 average.

In 2021, four countries reached the desirable 75% target coverage: Denmark, Finland, Sweden and Slovenia (Figure 3). Breast cancer screening rates also dropped in most countries in 2020, but more in countries that had lower pre-pandemic screening rates.[11]

Figure 3 – Coverage of breast cancer screening: international comparison (2010-2021)



Source: OECD health data 2023



Source: OECD health data 2023

Source: OECD Health statistics 2023, for Belgium IMA – AIM atlas. Luxembourg: rate for 2020 is preliminary

Key points

- **The total coverage of breast cancer screening was 59% in 2021. In 2021, Flanders reached the highest rate at 65.8% while the lowest rate of 48.0% was achieved in Brussels (49.2% in Wallonia).**
- **The coverage of the organised breast cancer screening stagnates at a national level around 31.5% in 2021, with very large differences in participation between Regions: Flanders: 49.2%, Brussels 9%, Wallonia 4%.**
- **There are indications of socio-economic inequalities in the access to breast cancer screening: women with a lower socio-economic status have a lower participation rate in the screening procedures than other women.**
- **The COVID-19 pandemic led to a decrease in the total coverage of breast cancer screening in Belgium (from 61% in 2019 to 57.7% in 2020) and across all regions.**
- **The breast cancer screening coverage in Belgium fails to achieve the commonly accepted target of 75%, which was reached in Denmark, Finland, Sweden and Slovenia in 2021. The national coverage level is also lower than the EU-14 average (61.4%), but the coverage in Flanders is higher than the EU-14 average.**

References

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