Santé publique
Sécurité de la Chaîne alimentaire
Environnement

Volksgezondheid
Veiligheid van de Voedselketen
Leefmilieu

sciensano

INAMI-RIZIV

KCE

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

KCE REPORT 376S2

PERFORMANCE OF THE BELGIAN HEALTH SYSTEM: REPORT 2024

SUPPLEMENT: TECHNICAL SHEETS FOR INDICATORS – TRANSVERSAL DIMENSIONS





KCE REPORT 376S2
HEALTH SERVICES RESEARCH

Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

PERFORMANCE OF THE BELGIAN HEALTH SYSTEM: REPORT 2024

SUPPLEMENT: TECHNICAL SHEETS FOR INDICATORS – TRANSVERSAL DIMENSIONS

SOPHIE GERKENS, MÉLANIE LEFÈVRE, NICOLAS BOUCKAERT, MURIEL LEVY, CHARLINE MAERTENS DE NOORDHOUT, CAROLINE OBYN, CARL DEVOS, ALINE SCOHY, ANNEMIE VLAYEN, HARUN YARAS, CHRISTOPHE JANSSENS, PASCAL MEEUS

2024 www.kce.fgov.be

COLOPHON

Title:	Performance of the Belgian health system: Report 2024 – Supplement: technical sheets for indicators – transversal dimensions
Authors:	Sophie Gerkens (KCE), Mélanie Lefèvre (KCE), Nicolas Bouckaert (KCE), Muriel Levy (KCE), Charline Maertens de Noordhout (KCE), Caroline Obyn (KCE), Carl Devos (KCE), Aline Scohy (Sciensano), Annemie Vlayen (FOD Volksgezondheid – SPF Santé Publique), Harun Yaras (SPF Santé Publique – FOD Volksgezondheid), Christophe Janssens (KCE), Pascal Meeus (INAMI – RIZIV – Institut national d'assurance maladie-invalidité – Rijksinstituut voor ziekte- en invaliditeitsverzekering)
Project facilitator:	Nathalie Swartenbroekx (KCE)
Senior supervisor:	Sophie Gerkens (KCE)
Internal reviewers:	Emily Van Coolput (KCE), Kelly Sabbe (KCE)
Experts consulted for the validation of definitions, indicators, and results:	El Maâti Allaoui (IMA – InterMutualistisch Agentschap), Wouter Arrazola de Oñate (VRGT – Vlaamse Vereniging voor respiratoire Gezondheidszorg en Tuberculosebestrijding), Delphine Beauport (RIZIV – INAMI - Rijksinstituut voor ziekte- en invaliditeitsverzekering – Institut national d'assurance maladie-invalidité), Nadia Benahmed (KCE – Centre fédéral d'expertise des soins de santé), Finaba Berete (Sciensano), Nicolas Bouckaert (KCE), Sophie Bruneel (FAGG – AFMPS – Federaal agentschap voor geneesmiddelen en gezondheidsproducten – Agence fédérale des medicaments et des produits de santé), Cécile Camberlin (KCE), Lucy Catteau (Sciensano), Rana Charafeddine (Sciensano), Heidi Cloots (Departement Zorg), Laura Cornelissen (Sciensano), Kasso Daïnou (RIZIV– INAMI), Christophe De Block (UZ Antwerpen), Marc De Falleur (INAMI – RIZIV), Cindy De Gendt (Stichting Kankerregister), Stijn De Kesel (SPF Santé Publique – FOD Volksgezondheid), Jan De Lepeleire (KU Leuven), Hélène De Pauw (Sciensano), Françoise De Wolf (IMA), Stephan Devriese (KCE), Christelle Durand (SPF Santé Publique - FOD Volksgezondheid), Nicole Fasquelle (Bureau fédéral du Plan), Dalia Fele (Observatoire de la Santé et du Social de Bruxelles-Capitale), Sarah François (RIZIV – INAMI), Joanna Geerts (Federaal Planbureau), Karen Geurts (Federaal Planbureau), Tine Grammens (Sciensano), Pascale Jonckheer (KCE), Moira Kelly (Sciensano), Antoine Khalil (RIZIV – INAMI), Kira Koch (WHO – World Health Organization), Gaetan Lafortune (OECD – Organisation for Economic Co-operation and Development), Katrien Latour (Sciensano), Astrid Lavens (Sciensano), Kathleen Leemans (VIKZ – Vlaams Instituut voor Kwaliteit van Zorg), Roos Leroy (KCE), Koen Lowet (CM – Christelijke Mutualiteit), Timothée Mahieu (SPF Santé Publique – FOD Volksgezondheid), Chantal Mathieu (UZ Leuven), Pascal Meeus (RIZIV – INAMI), Dirk Moens (FOD Sociale Zekerheid – SPF Sécurité sociale), Dorothée Nevens (RIZIV – INAMI), Irina Odnoletkova (KCE), Martina Otavova (Sciensano), Johan Pauwels (Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique –, AFMPS), Bart Peeters (Sciensano), Gert Peeters (UPC KU Leuven), Chris Rogier (Departement Zorg), Kathleen Sierens (RIZIV – INAMI), Vinciane Sizaire (FARES – Fonds des Affections Respiratoires), Sabine Stordeur (Taskforce

Vaccination COVID-19), Benjamin Swine (INAMI – RIZIV – Institut national d'assurance maladie-invalidité – Rijksinstituut voor ziekte- en invaliditeitsverzekering), Nathalie Terryn (SPF Santé Publique – FOD Volksgezondheid), Joos Tielemans (RIZIV – INAMI), Thibault Troch (RIZIV – INAMI), Dieter Van Cauteren (Sciensano), Rudi Van Dam (FOD Sociale Zekerheid – SPF Sécurité sociale), Carine Van de Voorde (KCE), Ann Van Den Broucke (FAGG – AFMPS), Koen Van den Heede (KCE), Stefaan Van Der Borght (FOD Volksgezondheid – SPF Santé Publique), Johan Van der Heyden (Sciensano), Koen Van Herck (Stichting Kankerregister), Joris Van Loenhout (Sciensano), Amélie Van Vyve (Sciensano), Lien van Walle (Belgian Cancer Registry), Annick Vandenhooft (IWEPS), Nathalie Vanderniepen (AVIQ), Els Vanlinthout (Departement Zorg), Johan Vanoverloop (IMA), Julie Verbeeck (Stichting Kankerregister), Annemie Vlayen (SPF Santé Publique – FOD Volksgezondheid), Machteld Wauters (Departement Zorg), Laurent Weekers (CHU Liège), Lara Wellens (FAGG – AFMPS), Guillaume Westenbohm (DGOV Ministerium der Deutschsprachigen Gemeinschaft), Martin Wissing (UZ Brussel), Yves Wuyts (Zorgnet-Icuro)

Stakeholders:

The following administrations and public institutions have been consulted throughout the duration of the project (inter-administration working group):

At the federal level:

- Representative of Minister of Health: Bernard Lange
- INAMI – RIZIV: Hans Nagels, Benjamin Swine, Benoit Collin, Mickael Daubie
- KCE: Christophe Janssens
- SPF Santé Publique – FOD Volksgezondheid: Pol Gerits, Peter Jouck, Timmy Van Dijck, Sofie Waebens
- Sciensano: Brecht Devleeschauwer
- SPF Sécurité Sociale – FOD Sociale Zekerheid: Dirk Moens, Rudi Van Dam

At the regional level:

- Vlaamse Gemeenschap (Departement Zorg): Mathieu Roelants
- Région Wallonne (Agence wallonne de la santé, de la protection sociale, du handicap et des familles (AVIQ)): Dominique Dubourg, Maud Dujeu, Carine Van Malderen
- Fédération Wallonie-Bruxelles (Direction générale de la Santé): Elvire Mfueni Bikundi
- Deutschsprachige Gemeinschaft (DGOV Ministerium der Deutschsprachigen Gemeinschaft): Emilie Braun, Karin Cormann
- Région Bruxelles Capitale (Observatoire de la Santé et du Social): Olivier Gillis, Elise Mendes da Costa

External validators:

Jon Cylus (European Observatory on health systems and policies), Gaetan Lafortune (OECD - Organisation for Economic Co-operation and Development, with the help of Federico Pratellesi and Michael van den Berg), and Dheepa Rajan (WHO – World Health Organization)

Acknowledgements: Koen Beullens (Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS), Robrecht De Schreye (Sciensano), Frederic Denauw (SPF Santé Publique – FOD Volksgezondheid), Tonio Di Zinno (AIM – Agence InterMutualiste), Dominique Dicker (SPF Santé Publique – FOD Volksgezondheid), Inge Franki (Sciensano), Régine Goemas (SPE – Studiecentrum voor Perinatale Epidemiologie), Iris Grant (IMA), Evelyne Moyse (SPF Santé Publique – FOD Volksgezondheid), Kristof Neven (SPF Santé Publique – FOD Volksgezondheid), Johan Peetermans (RIZIV – INAMI), Karen Raeymaekers (RIZIV – INAMI), Xavier Rygaert (IMA), Pascale Steinberg (SPF Santé Publique – FOD Volksgezondheid), Frédéric Swaelens (POD Maatschappelijke Integratie – SPP Intégration Sociale), Vicky Truwant (Statbel – Belgisch statistiekbureau), Montse Urbina (IMA), Xavier Van Aubel (RIZIV – INAMI), Marcel Van Der Auwera (SPF Santé Publique – FOD Volksgezondheid), Virginie Van Leeuw (CEpiP – Centre d'Epidemiologie Perinatale), Lien Van Opstal (RIZIV – INAMI), Tom Van Renterghem (SPF Santé Publique – FOD Volksgezondheid), Leen Verleye (KCE), Robin Willems (Statbel), Renate Zeevaert (KCE)

Reported interests KCE members: KCE is a federal institution funded by INAMI/RIZIV, by the Federal Public Service of Health, Food chain Safety and Environment, and by the Federal Public Service of Social Security. KCE's mission is to advise policymakers on decisions relating to health care and health insurance on the basis of scientific and objective research. It is expected to identify and shed light on the best possible solutions, in the context of an accessible, high-quality health care system with due regard for growing demand and budgetary constraints.

KCE has no interest in companies (commercial or non-commercial, i.e. hospitals and universities), associations (e.g. professional associations, unions), individuals or organisations (e.g. lobby groups) that could be positively or negatively affected (financially or in any other way) by the implementation of the recommendations. All experts involved in the writing of the report or the peer-review process completed a declaration of interest form. Information on potential conflicts of interest is published in the colophon of this report. All members of the KCE Expert Team make yearly declarations of interest and further details of these are available upon request.

Reported interests: All experts and stakeholders consulted within this report were selected because of their involvement in the topic of health system performance assessment. Therefore, by definition, each of them might have a certain degree of conflict of interest to the main topic of this report.

Layout: Joyce Grijseels, Ine Verhulst

Disclaimer:

- **The external experts were consulted about a (preliminary) version of the scientific report. Their comments were discussed during meetings. They did not co-author the scientific report and did not necessarily agree with its content.**
- **Subsequently, a (final) version was submitted to the validators. The validation of the report results from a consensus or a voting process between the validators. The validators did not co-author the scientific report and did not necessarily all three agree with its content.**
- **Finally, this report has been approved by common assent by the Executive Board.**

	• **Only the KCE is responsible for errors or omissions that could persist. The policy recommendations are also under the full responsibility of the KCE.**
Publication date:	01 February 2024
Domain:	Health Services Research (HSR)
Project number:	2019-17-HSR
MeSH:	Delivery of Health Care, Health Services Accessibility, Quality of Health Care, Efficiency, Healthcare Disparities, Learning Health System, Benchmarking, Belgium
NLM Classification:	W84
Language:	English
Format:	Adobe® PDF™ (A4)
Legal depot:	D/2024/10.273/46
ISSN:	2466-6459
Copyright:	KCE reports are published under a “by/nc/nd” Creative Commons Licence http://kce.fgov.be/content/about-copyrights-for-kce-publications. https://doi.org/10.57598/R376S2 
How to refer to this document?	S Gerkens, M Lefèvre, N Bouckaert, M Levy, C Maertens de Noordhout, C Obyn, C Devos, A Scohy, A Vlayen, H Yaras, C Janssens, P Meeus. Performance of the Belgian health system: Report 2024 – Supplement: technical sheets for indicators – transversal dimensions. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2024. KCE Reports 376. D/2024/10.273/46. This document is available on the website of the Belgian Health Care Knowledge Centre.

TABLE OF CONTENTS

LIST OF FIGURES **6**
LIST OF TABLES **16**
APPENDIX REPORT **18**
APPENDIX 1. LIST OF INDICATORS **18**
APPENDIX 2. TECHNICAL SHEETS **20**
1 EFFICIENCY **20**
1.1 ONE-DAY SURGICAL ADMISSIONS (E-1) 20
1.1.1 Documentation sheet 20
1.1.2 Results 21
1.2 AVERAGE LENGTH OF STAY FOR A NORMAL DELIVERY (E-2) 26
1.2.1 Documentation sheet 26
1.2.2 Results 27
1.3 USE OF LOW-COST MEDICATION (E-3) 31
1.3.1 Documentation sheet 31
1.3.2 Results 32
1.4 USE OF BIOSIMILAR TREATMENTS (E-4) 34
1.4.1 Documentation sheet 34
1.4.2 Results 34
1.5 LOW-CARE DIALYSIS (E-5) 41
1.5.1 Documentation sheet 41
1.5.2 Results 42
2 EQUITY **46**
2.1 METHODOLOGICAL NOTE ON EQUITY IN HEALTHCARE USE 46
2.1.1 Documentation sheet 46

2.2 CONTACTS WITH THE HEALTHCARE SYSTEM (NUMBER OF CONTACTS AND AT LEAST ONE CONTACT): GENERAL PRACTITIONER, MEDICAL SPECIALIST, EMERGENCY DEPARTMENT (POPULATION AGED 18+) (EQ-1) 53
2.2.1 Documentation sheet 53
2.2.2 Results – at least one contact with the healthcare system (GP, medical specialist, ED) 55
2.2.3 Results – number of contacts with the healthcare system (GP, medical specialist, ED) 62
2.3 CONTACTS WITH THE HEALTHCARE SYSTEM (NUMBER OF CONTACTS AND AT LEAST ONE CONTACT): GENERAL PRACTITIONER (POPULATION AGED 18+) (EQ-2) 70
2.3.1 Documentation sheet 70
2.3.2 Results – at least one GP contact 72
2.3.3 Results – number of GP contacts 80
2.4 CONTACTS WITH THE HEALTHCARE SYSTEM (NUMBER OF CONTACTS AND AT LEAST ONE CONTACT): MEDICAL SPECIALIST (POPULATION AGED 18+) (EQ-3) 87
2.4.1 Documentation sheet 87
2.4.2 Results – at least one contact with a medical specialist 89
2.4.3 Results – number of contacts with a medical specialist 97
2.5 CONTACTS WITH THE HEALTHCARE SYSTEM (NUMBER OF CONTACTS AND AT LEAST ONE CONTACT): EMERGENCY DEPARTMENT (POPULATION AGED 18+) (EQ-4) 104
2.5.1 Documentation sheet 104
2.5.2 Results – at least one emergency department (ED) contact 106
2.5.3 Results – number of ED contacts 114
2.6 CONTACTS WITH THE HEALTHCARE SYSTEM (NUMBER OF CONTACTS AND AT LEAST ONE CONTACT): INPATIENT HOSPITALISATION (POPULATION AGED 18+) (EQ-5) 121
2.6.1 Documentation sheet 121
2.6.2 Results – at least one inpatient hospitalisation 123
2.6.3 Results – number of inpatient hospitalisations 130
2.7 REGULAR CONTACTS WITH A DENTIST (POPULATION AGED 18+) (EQ-6) 137

2.7.1 Documentation sheet ... 137
2.7.2 Results ... 139
2.8 REGULAR PREVENTIVE CONTACTS WITH A DENTIST (POPULATION AGED 18+; POPULATION AGED BELOW 18 YEARS) (EQ-7) ... 147
2.8.1 Documentation sheet ... 147
2.8.2 Results – Regular preventive contacts with a dentist (population aged 18+) ... 149
2.8.3 Results – Regular preventive contacts with a dentist (population aged between 3 and 17 years) ... 157
3 RESILIENCE ... 165
3.1 HEALTHCARE PROFESSIONALS WHO CONSIDER LEAVING THE PROFESSION (% OF RESPONDENTS, POWER TO CARE) (R-1) ... 165
3.1.1 Documentation sheet ... 165
3.1.2 Results ... 166
3.2 NUMBER OF HOSPITAL BED CLOSURES DUE TO STAFF ABSENTEEISM OR FORCE MAJEURE (R-2) ... 172
3.2.1 Documentation sheet ... 172
3.2.2 Results ... 174
3.3 NUMBER OF NURSING VACANCIES IN HOSPITALS (R-3) ... 180
3.3.1 Documentation sheet ... 180
3.3.2 Results ... 181
3.4 REGULAR ESSENTIAL SURGICAL HOSPITAL ACTIVITIES (% OF EXPECTED ACTIVITIES THAT IS MAINTAINED) (R-4) ... 184
3.4.1 Documentation sheet ... 184
3.4.2 Results ... 189
3.5 NUMBER OF NEW INVASIVE CANCER DIAGNOSES (R-5) ... 203
3.5.1 Documentation sheet ... 203

3.5.2 Results 205
3.6 HOSPITALS WITH OCCUPANCY RATE FOR COVID-19 PATIENTS IN ICU LICENSED BEDS ABOVE 60% (% OF GENERAL HOSPITALS WITH ICU LICENSED BEDS) (R-6) 215
3.6.1 Documentation sheet 215
3.6.2 Results 217
3.7 NUMBER OF CONTACTS (INCLUDING TELECONSULTATIONS) WITH A GP (R-7) 231
3.7.1 Documentation sheet 231
3.7.2 Results 233
3.8 AVERAGE DURATION BETWEEN SAMPLING OF A COVID-19 TEST AND TEST RESULT (R-8) 241
3.8.1 Documentation sheet 241
3.8.2 Results 243
3.9 AVERAGE DURATION BETWEEN POSITIVE COVID-19 TEST RESULT AND CONTACT TRACING INITIATION (R-9) 250
3.9.1 Documentation sheet 250
3.9.2 Results 252
3.10 COVID VACCINATION IN THE LAST SIX MONTHS (AT LEAST ONE DOSE, % OF THE POPULATION) (R-10); COVID VACCINATION IN THE LAST SIX MONTHS (AT LEAST ONE DOSE, % OF THE POPULATION AGED 65+) (R-11) 259
3.10.1 Documentation sheet 259
3.10.2 Results 262
3.11 WORKFORCE RESERVE (R-12) 275
3.11.1 Documentation sheet 275
3.11.2 Results 276
3.12 PEOPLE WHO PERCEIVED THAT THE GOVERNMENT IS LIKELY TO BE PREPARED FOR THE NEXT PANDEMIC (% OF RESPONDENTS, TRUST) (R-13) 279
3.12.1 Documentation sheet 279

3.12.2 Results 280
3.13 COUNTRY PREPAREDNESS TO PUBLIC HEALTH RISKS AND ACUTE EVENTS (AVERAGE SCORE ON A 1-100 SCALE) (R-14) 282
3.13.1 Documentation sheet 282
3.13.2 Results 284

LIST OF FIGURES

Figure 1 – Percentage of surgical day cases amongst all surgical hospitalisations by region (2010-2021) 23
Figure 2 – Average length of stay for a normal delivery by hospital region (2010-2021) 28
Figure 3 – Average length of stay for normal delivery: international comparison (2010-2021) 29
Figure 4 – Percentage of low-cost DDDs and total DDDs delivered in ambulatory setting 32
Figure 5 – Percentage of low-cost DDDs by region 33
Figure 6 – Shares of biosimilars in volume for available Belgian biological pharmaceuticals 35
Figure 7 – Shares of biosimilars in expenditures for available Belgian biological pharmaceuticals 36
Figure 8 – Market share in volume of biosimilar in ambulatory setting by region 37
Figure 9 – Market shares (value and volume) of biosimilars in the European hospital setting 38
Figure 10 – Proportion in volume of biosimilar by molecule in the European hospital setting 39
Figure 11 – Proportion of hospitals having signed the agreement with at least 40% of low-care dialysis 43
Figure 12 – Dialysis in Belgium by type (2017-2021) 44
Figure 13 – Low-care dialysis per region (proportion of number of dialysis, 2021) 45
Figure 14 – Evolution (2012-2021) of the probability to have at least one healthcare contact for different subgroups and population groups at risk 56
Figure 15 – Inequality and inequity in the probability to have a healthcare contact in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 60
Figure 16 – Inequality and inequity in the probability to have a healthcare contact in the past year: difference between the general population and specific vulnerable population subgroups 60
Figure 17 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have a healthcare contact in the past year as measured by the absolute concentration index for subgroups based on education and income 61
Figure 18 – Evolution (2012-2021) in the number of healthcare contacts in the past year for different subgroups and population groups at risk 64

Figure 19 – Inequality and inequity in the number of healthcare contacts in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 68

Figure 20 – Inequality and inequity in the number of healthcare contacts in the past year: difference between the general population and specific vulnerable population subgroups 68

Figure 21 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of healthcare contacts in the past year as measured by the absolute concentration index for subgroups based on education and income 69

Figure 22 – Evolution (2012-2021) of the probability to have at least one GP contact for different subgroups and population groups at risk..... 73

Figure 23 – Inequality and inequity in the probability to have a GP contact in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 77

Figure 24 – Inequality and inequity in the probability to have a GP contact in the past year: difference between the general population and specific vulnerable population subgroups 77

Figure 25 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have a GP contact in the past year as measured by the absolute concentration index for subgroups based on education and income 78

Figure 26 – Evolution (2012-2021) in the number of GP contacts in the past year for different subgroups and population groups at risk..... 81

Figure 27 – Inequality and inequity in the number of GP contacts in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 85

Figure 28 – Inequality and inequity in the number of GP contacts in the past year: difference between the general population and specific vulnerable population subgroups..... 85

Figure 29 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of GP contacts in the past year as measured by the absolute concentration index for subgroups based on education and income 86

Figure 30 – Evolution (2012-2021) of the probability to have at least one specialist contact for different subgroups and population groups at risk..... 90

Figure 31 – Inequality and inequity in the probability to have a contact with a medical specialist in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 94

Figure 32 – Inequality and inequity in the probability to have a contact with a medical specialist in the past year: difference between the general population and specific vulnerable population subgroups 94

Figure 33 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have a contact with a medical specialist in the past year as measured by the absolute concentration index for subgroups based on education and income 95

Figure 34 – Evolution (2012-2021) in the number of specialist contacts in the past year for different subgroups and population groups at risk 98

Figure 35 – Inequality and inequity in the number of contacts with a medical specialist in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 102

Figure 36 – Inequality and inequity in the number of contacts with a medical specialist in the past year: difference between the general population and specific vulnerable population subgroups 102

Figure 37 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of contacts with a medical specialist in the past year as measured by the absolute concentration index for subgroups based on education and income 103

Figure 38 – Evolution (2012-2021) of the probability to have at least one ED contact for different subgroups and population groups at risk 107

Figure 39 – Inequality and inequity in the probability to have an ED contact in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 111

Figure 40 – Inequality and inequity in the probability to have an ED contact in the past year: difference between the general population and specific vulnerable population subgroups 111

Figure 41 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have an ED contact in the past year as measured by the absolute concentration index for subgroups based on education and income 112

Figure 42 – Evolution (2012-2021) in the number of ED contacts in the past year for different subgroups and population groups at risk 115

Figure 43 – Inequality and inequity in the number of ED contacts in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 119

Figure 44 – Inequality and inequity in the number of ED contacts in the past year: difference between the general population and specific vulnerable population subgroups 119

Figure 45 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of ED contacts in the past year as measured by the absolute concentration index for subgroups based on education and income 120

Figure 46 – Evolution (2012-2021) of the probability to have at least one inpatient hospitalisation for different subgroups and population groups at risk 124

Figure 47 – Inequality and inequity in the probability to have an inpatient hospitalisation in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 128

Figure 48 – Inequality and inequity in the probability to have an inpatient hospitalisation in the past year: difference between the general population and specific vulnerable population subgroups 128

Figure 49 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have an inpatient hospitalisation in the past year as measured by the absolute concentration index for subgroups based on education and income 129

Figure 50 – Evolution (2012-2021) in the number of inpatient hospitalisations in the past year for different subgroups and population groups at risk 131

Figure 51 – Inequality and inequity in the number of inpatient hospitalisations in the past year: difference between the general population and population subgroups based on education, income and self-assessed health 135

Figure 52 – Inequality and inequity in the number of inpatient hospitalisations in the past year: difference between the general population and specific vulnerable population subgroups 135

Figure 53 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of inpatient hospitalisations in the past year as measured by the absolute concentration index for subgroups based on education and income 136

Figure 54 – Evolution (2012-2021) of the probability to have regular dental visits for different subgroups and population groups at risk 140

Figure 55 – Inequality and inequity in the probability to have regular dental visits in the past 3 years: difference between the general population and population subgroups based on education, income, and self-assessed health 144

Figure 56 – Inequality and inequity in the probability to have regular dental visits in the past 3 years: difference between the general population and specific vulnerable population subgroups 144

Figure 57 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have regular dental visits in the past 3 years as measured by the absolute concentration index for subgroups based on education and income 145

Figure 58 – Evolution (2012-2021) of the probability to have regular preventive dental visits for different subgroups and population groups at risk 150

Figure 59 – Inequality and inequity in the probability to have regular preventive dental visits in the past 3 years: difference between the general population and population subgroups based on education, income, and self-assessed health 154

Figure 60 – Inequality and inequity in the probability to have regular preventive dental visits in the past 3 years: difference between the general population and specific vulnerable population subgroups 154

Figure 61 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have regular preventive dental visits in the past 3 years as measured by the absolute concentration index for subgroups based on education and income 155

Figure 62 – Evolution (2018-2021) of the probability to have regular preventive dental visits for different subgroups and population groups at risk 159

Figure 63 – Inequality and inequity in the probability to have regular preventive dental visits in the past 3 years: difference between the general population and population subgroups based on education, income, and specific vulnerable population subgroups 162

Figure 64 – Evolution (2018-2021) of socioeconomic inequality and inequity in the probability to have regular preventive dental visits in the past 3 years as measured by the absolute concentration index for subgroups based on education and income 163

Figure 65 – Share of respondents with a high score for “considering leaving the profession”, Belgium (rounds 1-4 limited to Flanders and Brussels) 167

Figure 66 – Share of respondents with a high score for “considering leaving the profession”, Belgium and its three regions 167

Figure 67 – Share of respondents with a high score for five chronic stress symptoms, Belgium (rounds 1-4 limited to Flanders and Brussels) 169
Figure 68 – Share of respondents with a high score for two acute stress symptoms, Belgium (rounds 1-4 limited to Flanders and Brussels) 169
Figure 69 – Share of respondents with a high score for four other personal symptoms, Belgium (rounds 1-4 limited to Flanders and Brussels) 170
Figure 70 – Share of respondents with a high score for three negative symptoms on a professional level, Belgium (rounds 1-4 limited to Flanders and Brussels) 170
Figure 71 – Number of hospital bed closures due to staff absenteeism or force majeure, Belgium 174
Figure 72 – Number of ICU bed closures due to staff absenteeism or force majeure, Belgium 174
Figure 73 – Share of hospital beds and share of ICU beds that are closed due to staff absenteeism or force majeure 175
Figure 74 – Share of hospital beds that are closed due to staff absenteeism or force majeure, Belgium and regions 175
Figure 75 – Share of ICU beds that are closed due to staff absenteeism or force majeure, Belgium and regions 176
Figure 76 – Number of hospital bed closures due to staff absenteeism or force majeure, regions 176
Figure 77 – Number of ICU bed closures due to staff absenteeism or force majeure, regions 177
Figure 78 – Share of hospital beds that are closed due to staff absenteeism or force majeure, by province 177
Figure 79 – Share of ICU beds that are closed due to staff absenteeism or force majeure, by province 178
Figure 80 – Number of nurses vacancies in hospitals (in FTE), per diploma level, evolution 2014-2021 (2020 data not available) 182
Figure 81 – Number of nursing vacancies in hospitals (in FTE), Belgium and per region, evolution 2014-2021 (2020 data not available) 182
Figure 82 – Share of expected (based on 2018 and 2019 data) regular surgical hospital activities that was maintained, Belgium 190
Figure 83 – Percentage change in expenditures for a selection of urgent hospital activities with respect to the same month in 2019 191

Figure 84 – Percentage change in expenditures for a selection of non-urgent hospital activities with respect to the same month in 2019 191

Figure 85 – Share of expected (based on 2018 and 2019 data) regular essential surgical hospital activities that was maintained, regions 193

Figure 86 – Share of expected (based on 2018 and 2019 data) regular non-essential surgical hospital activities that was maintained, regions 194

Figure 87 – Share of expected (based on 2018 and 2019 data) regular mixed surgical hospital activities that was maintained, regions 195

Figure 88 – Standardised number of emergency room admissions per 100 000 insured persons 196

Figure 89 – Trends in the total number of admissions in psychiatric hospital wards between 2017 and 2021, by region 198

Figure 90 – Trends in the number of full-time admissions in psychiatric hospital wards between 2017 and 2021, by region 199

Figure 91 – Trends in the number of part-time admissions in psychiatric hospital wards between 2017 and 2021, by region 200

Figure 92 – Percentage of change in the number of new invasive cancer diagnoses during 2020-2021 compared to 2017-2019, Belgium and regions 205

Figure 93 – Percentage of change in the number of new invasive cancer diagnoses during 2020-2021 compared to 2017-2019, by age groups 206

Figure 94 – Percentage of change in the number of new thyroid cancer diagnoses during 2020-2021 compared to 2017-2019 207

Figure 95 – Percentage of change in the number of new central nervous system cancer diagnoses during 2020-2021 compared to 2017-2019 208

Figure 96 – Percentage of change in the number of new stomach cancer diagnoses during 2020-2021 compared to 2017-2019 208

Figure 97 – Percentage of change in the number of new colorectal cancer diagnoses during 2020-2021 compared to 2017-2019 209

Figure 98 – Percentage of change in the number of new haematological malignancy diagnoses during 2020-2021 compared to 2017-2019 209

Figure 99 – Percentage of change in the number of new sarcoma cancer diagnoses during 2020-2021 compared to 2017-2019 210
Figure 100 – Percentage of change in the number of new melanoma skin cancer diagnoses during 2020-2021 compared to 2017-2019 210
Figure 101 – Percentage of change in the number of new breast cancer diagnoses (women) during 2020-2021 compared to 2017-2019 211
Figure 102 – Percentage of change in the number of new lung cancer diagnoses during 2020-2021 compared to 2017-2019 211
Figure 103 – Percentage of change in the number of new testicular cancer diagnoses during 2020-2021 compared to 2017-2019 212
Figure 104 – Percentage of change in the number of new ovarian cancer diagnoses during 2020-2021 compared to 2017-2019 212
Figure 105 – Occupancy rate of COVID-19 patients in ICU beds, Belgium 218
Figure 106 – Occupancy rate of COVID-19 patients in licensed ICU beds, Belgium and regions 220
Figure 107 – Occupancy rate of COVID-19 patients in operational COVID-19 ICU beds, Belgium and regions 221
Figure 108 – Occupancy rate of COVID-19 patients in ICU beds, Flemish provinces 222
Figure 109 – Occupancy rate of COVID-19 patients in ICU beds, Walloon provinces 223
Figure 110 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Belgium 225
Figure 111 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Belgium and regions 226
Figure 112 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Flemish provinces 227
Figure 113 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Walloon provinces 228
Figure 114 – Total number of contacts with a GP, Belgium 234
Figure 115 – Total number of contacts with a GP (as a percentage of the total number of contact with a GP in the same month of 2019), Belgium 235

Figure 116 – Total number of contacts (including teleconsultations) with a GP, Belgium and its three regions 236
Figure 117 – Total number of contacts (including teleconsultations) with a GP (as a percentage of the total number of contact with a GP in the same month of 2019), Belgium and its three regions 237
Figure 118 – Total number of contacts (excluding teleconsultations) with a GP (as a percentage of the total number of contact with a GP in the same month of 2019), Belgium and its three regions 238
Figure 119 – Share of teleconsultations among contacts with a GP (as a percentage of the total number of contact with a GP in the same month of 2019) 239
Figure 120 – Average duration between sampling and test result (in days) 244
Figure 121 – Proportion of tests with result within 24 hours after sampling 245
Figure 122– Average duration between prescription and sampling (in days) 247
Figure 123 – Average duration between symptoms onset and prescription (in days) 248
Figure 124 – Average duration between result and contact tracing initiation (in days) 252
Figure 125 – Proportion of individuals with positive test result contacted within 24 hours after the test result 253
Figure 126 – Proportion of individuals with positive test result contacted within 48 hours after the test result 253
Figure 127 – Proportion of contacted individuals who have installed the Coronalert app 254
Figure 128 – Proportion of contacted individuals who reported using the Coronalert app to alert contacts after the positive test 255
Figure 129 – Proportion of contacted individuals who have installed the Coronalert app, by age groups 256
Figure 130 – Proportion of contacted individuals who reported using the Coronalert app to alert contacts after the positive test, by age groups 256
Figure 131 – Percentage of the population who is vaccinated (primary course) 262
Figure 132 – Percentage of the population who is vaccinated (primary course + first booster) 263
Figure 133 – Percentage of the population (aged 18+, 65+, 85+ years) who received at least one COVID-19 vaccine dose in the last six months, Belgium 265

Figure 134 – Percentage of the population aged 18+ years who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions 267

Figure 135 – Percentage of the population aged 65+ years who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions 268

Figure 136 – Percentage of the population aged 85+ years who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions 269

Figure 137 – Percentage of the healthcare professionals who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions 270

Figure 138 – Primary COVID-19 vaccination course completion among all adults (18+ years) in EU countries, 2021 Q2 271

Figure 139 – Primary COVID-19 vaccination course completion among all adults (18+ years) in EU countries, 2021 Q4 272

Figure 140 – Uptake first booster among all adults (18+ years) in EU countries, 16 June 2023 272

Figure 141 – Share of respondents reporting different levels of perceived likelihood that government would be prepared for the next pandemic (2021) 280

Figure 142 – All-capacity average IHR score: international comparison 288

LIST OF TABLES

Table 1 – List of indicators 18
Table 2 – Surgical day cases amongst all surgical hospitalisations by year and region (2021) 22
Table 3 – Proportion of day care cases for selected surgeries (2010-2021, %) 24
Table 4 – Average length of stay for a normal delivery, by year and hospital region (2021) 27
Table 5 – Proportion of general hospitals that have signed the agreement with at least 40% of low-care dialysis 42
Table 6 – Evolution (2012-2021) of the probability to have one or more healthcare contacts in the past year 55
Table 7 – Evolution (2012-2021) of the number of healthcare contacts in the past year 62
Table 8 – Evolution (2012-2021) of the probability to have one or more GP contacts in the past year 72
Table 9 – Evolution (2012-2021) of the number of GP contacts in the past year 80
Table 10 – Evolution (2012-2021) of the probability to have one or more contacts with a medical specialist in the past year 89
Table 11 – Evolution (2012-2021) of the number of contacts with a medical specialist in the past year 97
Table 12 – Evolution (2012-2021) of the probability to have one or more ED contacts in the past year 106
Table 13 – Evolution (2012-2021) of the number of ED contacts in the past year 114
Table 14 – Evolution (2012-2021) of the probability to have one or more inpatient hospitalisations in the past year 123
Table 15 – Evolution (2012-2021) of the number of inpatient hospitalisations in the past year 130
Table 16 – Evolution (2012-2021) of the probability to have regular dental visits in the past 3 years 139
Table 17 – Evolution (2012-2021) of the probability to have regular preventive dental visits in the past 3 years 149
Table 18 – Evolution (2012-2021) of the probability to have regular preventive dental visits in the past 3 years 157
Table 19 – Share of respondents with a score 7 or above for “considering leaving the profession” 168
Table 20 – Number of nursing vacancies in hospitals, per diploma level, Belgium and per region, December 31, 2021 181

Table 21 – Nurses vacancies in hospitals, impact of the COVID-19 pandemic, % increase 2019-2021, per trimester 182

Table 22 – Percentage changes (%) in the number of admissions in psychiatric hospital wards during and after the COVID-19 pandemic compared to 2017-2019 197

Table 23 – Predominant COVID-19 variant in Belgium, February 2021 –February 2023 266

Table 24 Health professionals that registered as volunteer on reserve list during the COVID-19 pandemic 277

Table 25 – Scores for IHR capacities, indicators and attributes in Belgium and the EU in 2022 (1-100 scale or %) 285

Table 26 – Scores for IHR capacities and indicators in Belgium (2010-2022) 287

APPENDIX REPORT

APPENDIX 1. LIST OF INDICATORS

Table 1 list the indicators of the Belgian performance report 2024 related to the transversal dimensions of efficiency, equity and resilience. This table also allows to identify indicators for which analyses according to socio-economic characteristics or gender are done in the technical sheets.

Table 1 – List of indicators

ID	Indicator	Socio-economic characteristics	Gender analyses
Efficiency			
E-1	One day surgical admissions (%)		
E-2	Length of stay, normal delivery (days, mean)		
E-3	Use of low-cost medication (%, ambulatory care)		
E-4	Biosimilar treatments (%)		
E-5	Low-care dialysis (% hospitals with ≥ 40% of)		
Equity			
EQ-1	Contacts with the healthcare system: general practitioner, medical specialist, emergency department (population aged 18+)	x	
EQ-2	Contacts with the healthcare system: general practitioner (population aged 18+)	x	
EQ-3	Contacts with the healthcare system: medical specialist (population aged 18+)	x	
EQ-4	Contacts with the healthcare system: emergency department (population aged 18+)	x	
EQ-5	Contacts with the healthcare system: inpatient hospitalisation (population aged 18+)	x	
EQ-6	Regular contacts with a dentist (population aged 18+)	x	
EQ-7	Regular preventive contacts with a dentist (population aged 18+; population aged below 18 years)	x	
Resilience			
R-1 ***New***	Healthcare professionals who consider leaving the profession (% of respondents, Power to Care)		
R-2 ***New***	Share of hospital beds that are closed due to absence of staff or force majeure		

R-3	Number of nursing vacancies in hospitals
R-4 ***New***	Number of essential surgical hospital acts (base 2019 = 100)
R-5 ***New***	Number of new invasive cancer diagnoses (per month) (as a percentage of number of new invasive cancer diagnoses in the pre-COVID period)
R-6 ***New***	Hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60% (% of general hospitals with ICU licensed beds)
R-7 ***New***	Number of contacts (including teleconsultations) with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period)
R-8 ***New***	Average duration between COVID-19 sampling and test result (days)
R-9 ***New***	Average duration between positive COVID-19 test result and contact tracing initiation (days)
R-10 ***New***	COVID vaccination in the last six months (at least one dose, % of the population)
R-11 ***New***	COVID vaccination in the last six months (at least one dose, % of the population 65+)
R-12 ***New***	Number of health professionals registered in workforce reserve
R-13 ***New***	People who perceived that the government is likely to be prepared for the next pandemic (% of respondents, Trust)
R-14 ***New***	Country preparedness to public health risks and acute events (average score on a 1-100 scale)

APPENDIX 2. TECHNICAL SHEETS

1 EFFICIENCY

1.1 One-day surgical admissions (E-1)

1.1.1 Documentation sheet

Description	Surgical day care admissions as a percentage of all hospital admissions for surgery
Calculation	**Numerator**: number of stays in surgical day care ('one day surgery') **Denominator**: number of surgical stays
Rationale	Carrying out elective procedures as day cases where clinical circumstances allow (e.g. inguinal hernia repair, circumcision, cataract surgery, etc.) saves money on bed occupancy and nursing care. It is therefore considered an indicator of efficiency. Since the surgical day case rate has an influence on the system's capacity to provide and maintain infrastructure, it is also considered an indicator of sustainability. The majority of Belgian hospitals (97 out of 103 in September 2022, source : FPS Public Health) have a dedicated one-day surgical unit. The recognition of these units is regulated by the Royal Decree of 25 November 1997[a]. Two KCE reports examined the financing of one-day surgical units, and proposed some recommendations, specifically for one-day surgery[1] and more generally for the financing system of hospitals.[2]
Data source	RHM – MZG (FPS Public Health); OECD
Technical definitions	**Numerator**: Surgical day care were selected using the type of hospitalisation. Before 2008, HOSPTYP1 (file STAYHOSP) = 'D' (for Day care) and the flag for surgical stay in APR-DRG, RPOFM (file STAYXTRA) = 'P' (for procedure). From 2008, A2_HOSPTYPE_FAC (file STAYHOSP) = 'D' or 'C' and MorS_15 (file STAYXTRA) = 'P' **Denominator**: Stays with a surgical APR-DRG were selected with the flag for surgical APR-DRG. **Day surgery patient**: A patient having an elective surgical intervention that requires a full operating theatre facility, excluding an office intervention, Who is admitted and discharged on the same day. **Inpatient**: A patient admitted into a hospital, public or private, who is not discharged on the day of admission. **Outpatient**: A patient having an intervention in a doctor's consulting room or office (i.e. not in a full operating theatre facility), which can be outside or inside the hospital premises.[3]
International comparability	None (see limitations section below).

[a] Royal decree of 25 November 1997 establishing the standards that the "surgical day hospitalisation" function must meet in order to be recognised, Belgian official journal 5 December 1997

Limitations	Change from ICD-9 to ICD-10 classification has resulted in a break in the series of RHM – MZG data from 2016 on (and no 2015 data available). OECD presents the % of day care cases for a selection of surgical interventions.[4] Caution is needed when comparing results across countries, as there is no single international classification of procedures, different methods are used to count surgical procedures, there are differences in data coverage across countries, reporting is not the same in various facilities and there are differences in perspectives.[3] RHM – MZG data only include inpatient and day surgery stays. OECD data include outpatient surgery when available.
Dimension	Efficiency, Sustainability
Related indicators	Number of acute care bed days per inhabitant
Reviewers	Nathalie Terryn (SPF Santé Publique – FOD Volksgezondheid), Roos Leroy (KCE)

1.1.2 Results

Belgium

The Belgian surgical day care admission percentage grew from 47.7% in 2010 to 49.5% in 2021 (Table 2).

There is a large variability across the interventions: Table 3 shows a selection of surgical interventions whose day care admission percentage is reported to OECD[b]. The decrease in cataract from 2017 on is due to a switch to outpatient cases, the proportion of inpatient cases is still slowly decreasing (from 4% in 2017 to 3% in 2021). For appendectomy, there are no inpatient cases recorded, the other cases are outpatient cases (slowly rising from 0.7% in 2010 to 2% in 2021).

While some interventions reach a high (80% and over) percentage of cases performed in day surgery (appendectomy and cataract), some other interventions remain relatively low, i.e. under 20% (compared to other countries, for instance laparoscopic cholecystectomy have ca. 50% in UK and France). The proportion of interventions performed in day surgery is highly dependent on whether the intervention is included in the "list A" and hence benefits from a one day lump sum.[1, 3] The "list A" includes procedures (selected by billing codes) that are subject to a supplementary financing; this list has been reviewed in 2022[c] and changes have been published and are effective since 1 January 2023[d]. Other factors can also influence on the setting of the surgery (inpatient or day-surgery patient) such as age of the patient or comorbidities.

Regional comparison

Wallonia shows lower rates (45.1% in 2021), compared to Flanders (52.0%) and Brussels (46.7%), see Figure 1.

[b] https://stats.oecd.org/Index.aspx?ThemeTreeId=9

[c] https://organesdeconcertation.sante.belgique.be/fr/documents/cfehd562-2-avis-du-cfeh-sur-le-financement-de-hopital-de-jour-annexe-proposition-de-liste

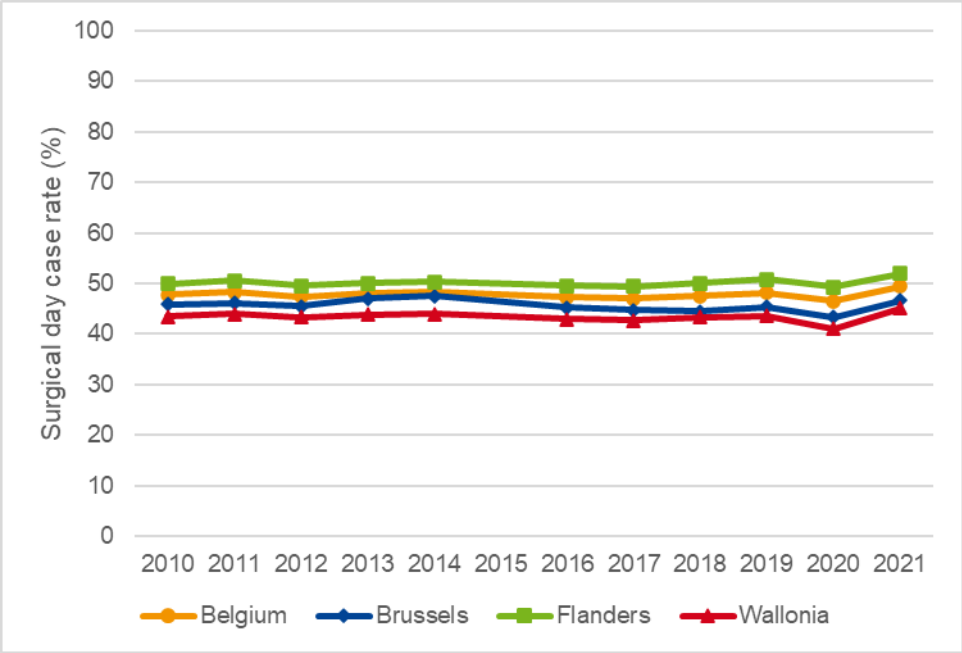
[d] List from 01/01/2023 available at https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/lijst_a_vanaf_1_januari_2023_-_liste_a_a_partir_du_1er_janvier_2023.xlsx

Table 2 – Surgical day cases amongst all surgical hospitalisations by year and region (2021)

Variable	Category	Numerator: all surgical day cases	Denominator: all surgical cases	Percentage
Year	2010	613 926	1 286 543	47.7%
	2011	631 249	1 308 576	48.2%
	2012	601 797	1 269 177	47.4%
	2013	611 626	1 272 910	48.0%
	2014	618 126	1 278 633	48.3%
	2015			
	2016	622 599	1 318 561	47.2%
	2017	620 496	1 318 449	47.1%
	2018	633 544	1 331 691	47.6%
	2019	654 250	1 357 213	48.2%
	2020	484 453	1 042 480	46.5%
	2021	619 496	1 251 993	49.5%
Data 2021 by region				
Region	Brussels	74 919	160 488	46.7%
	Flanders	396 173	762 311	52.0%
	Wallonia	14 404	329 194	45.1%

Source: RHM – MZG (FPS Public Health)

Figure 1 – Percentage of surgical day cases amongst all surgical hospitalisations by region (2010-2021)



Source: RHM – MZG (FPS Public Health)

Table 3 – Proportion of day care cases for selected surgeries (2010-2021, %)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Cataract surgery	94.2	94.4	94.6	95.0	95.4		95.7	89.8	90.0	89.4	96.3	86.9
Tonsillectomy	70.8	70.8	70.6	70.4	70.8		69.7	70.9	69.4	70.5	71.1	75.4
Transluminal coronary angioplasty	8.7	9.0	9.0	9.0	8.1		8.0	7.7	8.6	9.6	11.1	15.0
Coronary artery bypass graft	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.1
Stem cell transplantation	2.1	2.9	1.6	2.9	1.6		1.4	1.2	0.5	1.6	0.9	1.2
Appendectomy	99.3	99.3	99.3	99.2	99.2		99.1	98.8	98.8	98.4	98.3	98.0
- Laparoscopic appendectomy	0.8	0.8	0.8	1.0	0.9		1.0	1.3	1.3	1.6	1.8	2.1
Cholecystectomy	3.0	3.0	3.5	4.3	4.6		5.7	6.7	7.6	8.5	9.7	11.2
- Laparoscopic cholecystectomy	3.3	3.3	3.8	4.7	4.9		5.3	6.4	7.5	9.0	10.3	11.8
Repair of inguinal hernia	29.6	30.4	33.7	36.0	38.1		41.1	43.5	45.4	47.1	49.8	52.2
- Laparoscopic repair of inguinal hernia	28.6	29.2	34.0	36.8	39.9		44.5	46.4	48.5	51.3	54.0	56.5
Open prostatectomy	0.5	0.4	0.6	0.8	0.6		0.1	0.1	0.2	0.1	0.0	0.1
Transurethral prostatectomy	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.1	0.2	0.2
Hysterectomy	0.2	0.2	0.4	0.5	0.4		1.6	2.1	2	2.1	3.0	3.5(1)
- Laparoscopic hysterectomy	0.1	0.3	0.7	0.8	0.7		1.2	0.8	0.4	0.5	0.7	0.9(1)
Caesarean section	0.2	0.2	0.2	0.2	0.2		0.4	0.4	0.4	0.4	0.4	0.5
Hip replacement	0.1	0.0	0.0	0.0	0.0		0.1	0.1	0.1	0.1	0.2	0.2
Total knee replacement	0.1	0.0	0.0	0.0	0.0		0.1	0.1	0.1	0.1	0.2	0.1
Partial excision of mammary gland	29.2	28.3	27.2	28.2	27.8		23.3	24.4	25.3	24.9	25.7	27.2
Total mastectomy	2.8	3.8	3.1	3.3	3.9		9.9	10.3	10.0	10.0	10.3	12.4(1)

Source: OECD Health statistics 2023

(1) There is a break in the series from 2016 on following the transition from ICD-9 to ICD-10; some mappings still need to be improved.

Key points

- **The percentage of surgical hospitalisations that were performed in one day hospital grew from 47.7% in 2010 to 49.5% in 2021.**
- **Depending on the type of surgery, the rate can be high (i.e. 98% for appendectomy) or low (e.g. 0.1% for total knee replacement); this depends in part on how they are financed in day surgery.**

References

1. Van de Sande S, Swartenbroekx N, Van de Voorde C, Devos C, Devriese S. Evolution of day care: impact of financing and regulations. Health Services Research (HSR). Brussels: Blegium Health Care Knowledge Center (KCE; 2013. KCE Reports 192 Available from: https://kce.fgov.be/publication/report/evolution-of-day-care-impact-of-financing-and-regulations
2. Van de Voorde C. VdHK, Obyn C., Quentin W., Geissler A., Wittenbecher F., Busse R., Magnussen J., Camaly O., Devriese S., Gerkens S., Misplon S., Neyt M., Mertens R. Conceptual framework for the reform of the Belgian hospital payment system. . Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE); 2014.
3. Leroy R, Camberlin C, Lefèvre M, Mistiaen P, Van den Heede K, Van de Sande S, Van de Voorde C, Beguin C. Proposals for a further expansion of day surgery in Belgium. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2017. KCE Reports 282. D/2017/10.273/09.
4. OECD. OECD Health Statistics 2023 [Web page]. [updated 30 July 2023; cited 3 October 2023]. Available from: https://www.oecd.org/health/health-data.htm

1.2 Average length of stay for a normal delivery (E-2)

1.2.1 Documentation sheet

Description	Average length of stay for normal delivery (single spontaneous delivery)
Calculation	**Numerator**: total length of stay of all hospitalisations for single spontaneous delivery. **Denominator**: total number of discharges for single spontaneous delivery.
Rationale	The length of stay (LOS) after a normal delivery is determined in a large part by factors of organisation and care provider characteristics and in a lesser extent by clinical patient characteristics (95% of the vaginal deliveries [APR-DRG=560] have a minor or moderate severity in 2020, TCT data). A KCE report proposed a new model of integrated care for the mother and the new-born, in which the postpartum care would occur mostly at home and hence would reduce the length of hospitalisation.[1] An average length of stay trend analysis has been published in another KCE report: the LOS is expected to drop further.[2] Budgetary decisions have automatically shortened the LOS by half a day in 2015, while 7 pilot projects have been launched to test the feasibility of home postpartum care.[3,4] Average length of stay after normal delivery is an indicator to benchmark efficiency of health care systems, and is reported by the OECD.[5]
Data source	RHM – MZG (FPS Health, Food Chain Safety and Environment)
Technical definitions	Average length of stay (ALOS) is calculated by dividing the number of days stayed (from the date of admission in an in-patient institution) by the number of discharges. Diagnostic chapters (using principal diagnosis) have been defined according to the International Classification of Diseases, 9th revision and 10th revision. The OECD website offers a mapping list between both classifications.[6,e] The OECD uses the ICD-9-CM code 650 'Normal Delivery' and the ICD-10-CM code O80 'Encounter for full-term uncomplicated delivery' ("Delivery requiring minimal or no assistance, with or without episiotomy, without foetal manipulation [e.g., rotation version] or instrumentation [forceps] of a spontaneous, cephalic, vaginal, full-term, single, live-born infant.").
International comparability	The OECD definition of single spontaneous delivery was adopted. Several countries included in the OECD comparison use different methodologies to calculate the average length of stay. Some countries may include same day separations (counted either as 0 or 1 day), thereby resulting in an under-estimation of average length of stay compared with countries that exclude them. Also, some countries may only include data related to general hospitals, while others might include data also for specialised hospitals (generally involving higher length of stays than in general hospitals). Caution should be exercised when making international comparisons due to the possibility that countries may provide data for different types of institutions.
Limitations	Change from ICD-9 to ICD-10 classification has resulted in a break in the series of RHM – MZG data from 2016 on (and no 2015 data available).
Dimension	Efficiency; variability of care
Related indicators	Caesarean section rate (QA-8)
Reviewers	Nathalie Terryn (SPF SPSCAE – FOD VVVL), Nadia Benahmed (KCE)

e https://stats.oecd.org/fileview2.aspx?IDFile=e477970b-3024-4188-8dc6-13f3db201846

1.2.2 Results

Belgium

The average length of stay (ALOS) for a normal delivery decreased from 4.09 days in 2010 to 2.69 days in 2021 (see Table 4). In 2000, the national ALOS was 4.96.7 Change of classification (from ICD-9 to ICD-10) resulted in the absence of data in 2015 and a break in the series between 2014 and 2016.

Regional comparison

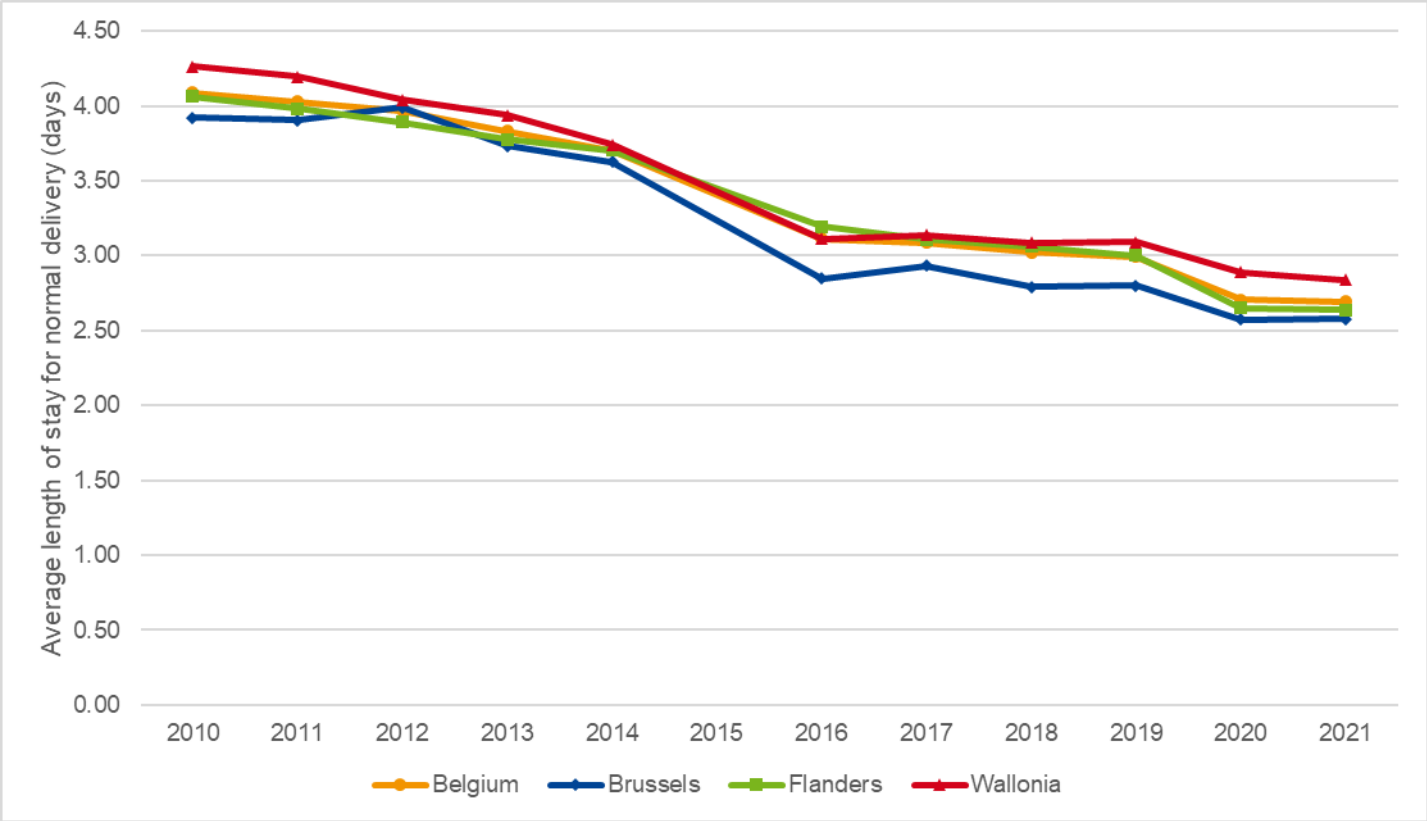
Regional results are similar, Brussels having the shortest average length of stay (in 2021: Brussels: 2.58 days, Flanders: 2.64 days and Wallonia 2.84 days). The difference between Flanders and Brussels has decreased in 2020 (see Figure 2).

Table 4 – Average length of stay for a normal delivery, by year and hospital region (2021)

Variable	Category	Average length of stay (days)
Year	2010	4.09
	2011	4.03
	2012	3.97
	2013	3.83
	2014	3.70
	2015	
	2016	3.11
	2017	3.09
	2018	3.02
	2019	2.99
	2020	2.71
	2021	2.69
Data 2021 by region		
Region	Brussels	2.58
	Flanders	2.64
	Wallonia	2.84

Source: RHM – MZG (FPS Public health)

Figure 2 – Average length of stay for a normal delivery by hospital region (2010-2021)

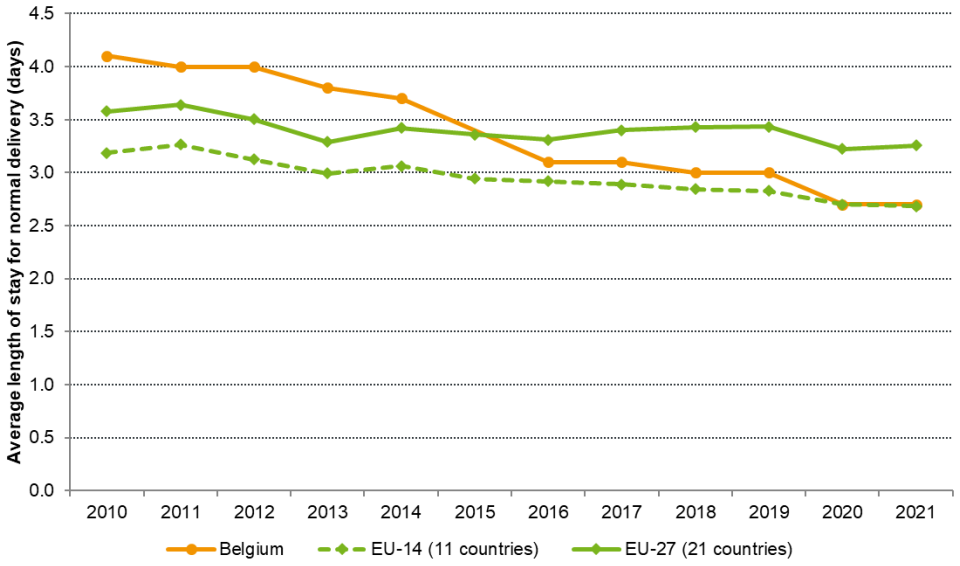


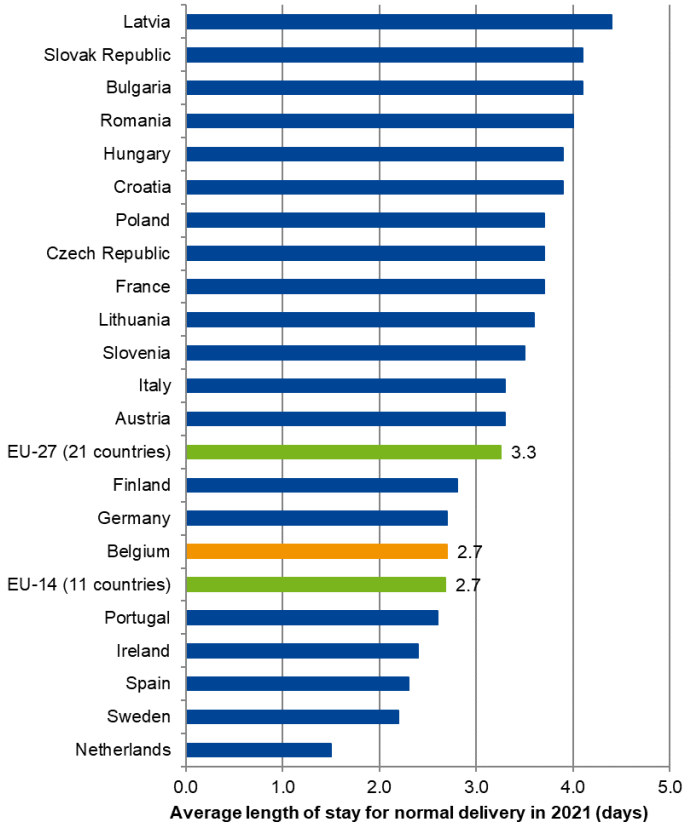
Source: RHM – MZG (FPS Public health)

International comparison

Belgium average length of stay for normal delivery had decreased faster than other European countries until 2020: ALOS in Belgium is now the same as the average in Europe-11 (2.7 days, see Figure 3).

Figure 3 – Average length of stay for normal delivery: international comparison (2010-2021)





Source: OECD Health data 2023

Impact of COVID-19 pandemic

The average length of stay fell from 2019 (2.99 days) to 2020 (2.71 days) and has remained stable in 2021 (2.69 days). This can at least partially be explained by the measures taken during the Covid-19 pandemic, such as early discharge or restricted visits.[8]

Key points

- **The length of stay for a normal delivery decreased from 5 days in 2000 to 2.7 days in 2021, with small differences between regions: Brussels has the lowest average length of stay (2.58 days) compared to Flanders (2.64 days) and Wallonia (2.84 days).**
- **The average is almost the same as the EU-11 average in 2021 (2.7 days), while it was 1 day longer than the EU average in 2012 (but caution is needed with this comparison, as the method to calculate length of stay may differ between countries).**

References

1. Benahmed N, Devos C, San Miguel L, Vinck I, Vankelst L, Lauwerier E, *et al.* Caring for mothers and newborns after uncomplicated delivery: towards integrated postnatal care. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2014 21/10/2014. KCE Reports 232
2. Van de Voorde C, Van den Heede K, Beguin C, Bouckaert N, Camberlin C, de Bekker P, *et al.* Required hospital capacity in 2025 and criteria for rationalisation of complex cancer surgery, radiotherapy and maternity services. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2017 06/2017. KCE Reports 289 (D/2017/10.273/45)
3. RIZIV-INAMI. Dienst Geneeskundige Verzorging: Verslag Algemene Raad, Begroting 2015. 2014.
4. Beleidscel van de minister van Sociale Zaken en Volksgezondheid. Verblijfsduur in het ziekenhuis bij een bevalling. December 2016.
5. OECD/EU Health at a Glance: Europe 2018: State of Health in the EU Cycle. Paris: OECD; 2018.
6. OECD. OECD Health Statistics 2023 [Web page]. [cited 5 October 2023]. Available from: http://www.oecd.org/els/health-systems/health-data.htm
7. Devos C, Cordon A, Lefèvre M, Obyn C, Renard F, Bouckaert N, Gerkens S, Maertens de Noordhout C, Devleesschauwer B, Haelterman M, Léonard C, Meeus P. Performance of the Belgian health system – report 2019. Health Services Research (HSR) Brussels: Belgian Health Care Knowledge Centre (KCE). 2019. KCE Reports 313. D/2019/10.273/34.
8. Semaan A, Dey T, Kikula A, Asefa A, Delvaux T, Langlois EV, et al. (2022) "*Separated during the first hours*"—Postnatal care for women and newborns during the COVID-19 pandemic: A mixed-methods cross-sectional study from a global online survey of maternal and newborn healthcare providers. PLOS Glob Public Health 2(4): e0000214. https://doi.org/10.1371/journal.pgph.0000214

1.3 Use of low-cost medication (E-3)

1.3.1 Documentation sheet

Description	Proportion of low-cost drugs (DDD) delivered in ambulatory setting
Calculation	**Numerator**: total DDD of low cost drugs delivered in ambulatory setting **Denominator**: total DDD delivered in ambulatory care
Rationale	Low-cost drugs are defined since 1 January 2015 as one of the three cheapest drugs available on the market for reimbursed drugs, or any available that is not 5% more expensive than the cheapest (exception: for patients with chronic conditions, the practitioner can opt for a more expensive drug for justifiable reasons). Before 2015, low-cost drugs were at minimal 31% less expensive that original drugs and drugs prescribed under INN (International Non-proprietary Name) were considered as low-cost; biosimilar treatments were not included in the calculations for 2005-2015 period; they have been added since 2016 (biosimilars have been included in the reference price system since July 2012). Since 1 April 2021, there is no need for three cheapest drugs available: drugs whose price is within 5% of the cheapest are considered low-cost. Promoting the prescription of low-costs drugs is a good way to limit health expenditures, both for the third-party payer and for the patient. In Belgium, a reference price system has been implemented in 2001 and extended in 2005. With that system, patients have to pay a supplement when they are prescribed original drugs for which a generic alternative exists. As a consequence, several companies lowered the price of original drugs so that patients did not have to incur the financial penalty.[1] These drugs are thus also considered low cost. Depending on their specialty, physicians and dentists are required to prescribe a certain minimum percentage of low-cost drugs, the so-called “quotas” since 2006; these quotas have been revised in January 2011, January 2017 (GPs), January 2018 (specialists).[2]
Data source	Pharmanet (RIZIV – INAMI)
Technical definitions	Low cost prescriptions were defined before 2015 as (1) generic drugs and copies (2) original drugs for which a generic alternative exists and which have lowered their public retail price to the reimbursement basis so that there is no supplement to be paid by the patient (3) drugs prescribed under the International Non-proprietary Name (INN or ICD: International Common Denomination ICD) because the pharmacists delivers a low cost drug in priority: only for drugs within the reference price system. Since January 2015:[2] 1. One of the 3 cheapest drugs on the market 2. Or any drug which is not 5% more expensive than the cheapest drug as long as there are more than 3 different drugs that meet this condition Exception: for patients with a chronic condition, the usual treatment still can be prescribed if a change could cause confusion or lead to problems Since April 2021,[3] the first condition has been dropped (one of the 3 cheapest drugs on the market).
International comparability	Comparison with other countries is difficult since international comparison are based on the use of generic drugs (and not use of low costs drugs in general).[4]

Limitations	There has been a change in calculations (series break) in 2015.
Dimension	Efficiency
Related indicators	Use of biosimilar treatments
Reviewers	Marc De Falleur (INAMI – RIZIV)

1.3.2 Results

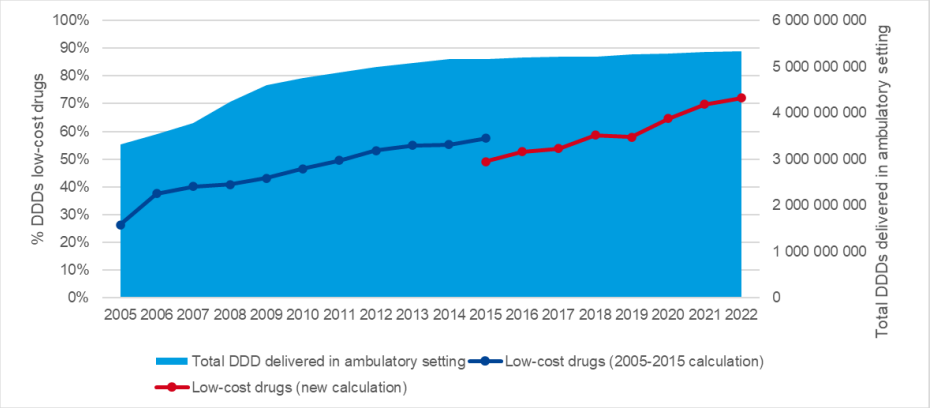
Belgium

Between 2005 and 2021, the total number of DDDs delivered in ambulatory setting increased from 3.32 billion per year to 5.32 billion. The proportion of low-cost DDDs rose from 49.1% in 2015 to 69.7% in 2021 (Figure 4), with a steep rise the last two years, which is partly due to the removal of 'supplements' (extra fees) in July 2020, allowing some medications to fall into the low-cost category.

Regions

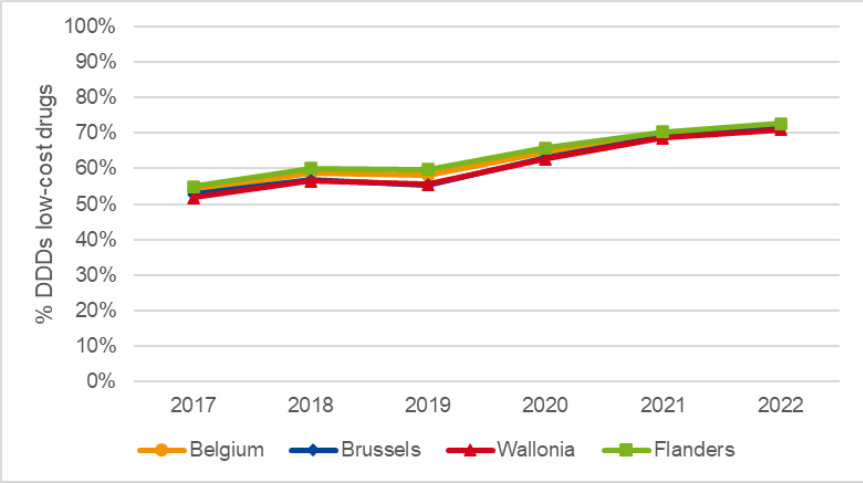
At the regional level, there are no significant differences: in 2021, Flanders had 70.4% of low-cost DDDs, Brussels 69.1% and Wallonia 68.6%.

Figure 4 – Percentage of low-cost DDDs and total DDDs delivered in ambulatory setting



Source : INAMI – RIZIV

Figure 5 – Percentage of low-cost DDDs by region



Source : INAMI – RIZIV

Impact of COVID-19 pandemic

Probably none.

Key points

- **The percentage of low-cost drugs in ambulatory setting (in DDDs) has increased significantly the two most recent years to reach 72.1% in 2022.**
- **Differences by region are small: in 2022, Brussels has 71.6% of low-cost medication (in DDDs), Wallonia 71.0% and Flanders 72.7%.**

References

1. Vrijens F, Van de Voorde C, Farfan-Portet M-I, le Polain M, Lohest O. The reference price system and socioeconomic differences in the use of low cost drugs. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2010 02/04/2010. KCE Reports 126C (D/2010/10.273/20) Available from: https://kce.fgov.be/sites/default/files/page_documents/d20101027320.pdf
2. INAMI – RIZIV. Prescrire « bon marché » : nouvelle définition au 1er janvier 2015 [Web page]. 2015. Available from: http://www.inami.fgov.be/fr/professionnels/sante/medecins/soins/Pages/prescrire-bon-marche-20150101.aspx#.VfajNvmUd8F
3. INAMI – RIZIV. Remboursement de médicaments : quels sont les changements au 1er avril 2021 ? [Web page]. 2021. Available from: https://www.inami.fgov.be/fr/professionnels/autres/industrie-pharmaceutique/Pages/remboursement-medicaments-01042021.aspx
4. WHO Collaborating Centre for Pharmaceutical Pricing and Reimbursement Policies. Pharmaceutical Health Information system database. In: World Health Organization; 2012.

1.4 Use of biosimilar treatments (E-4)

1.4.1 Documentation sheet

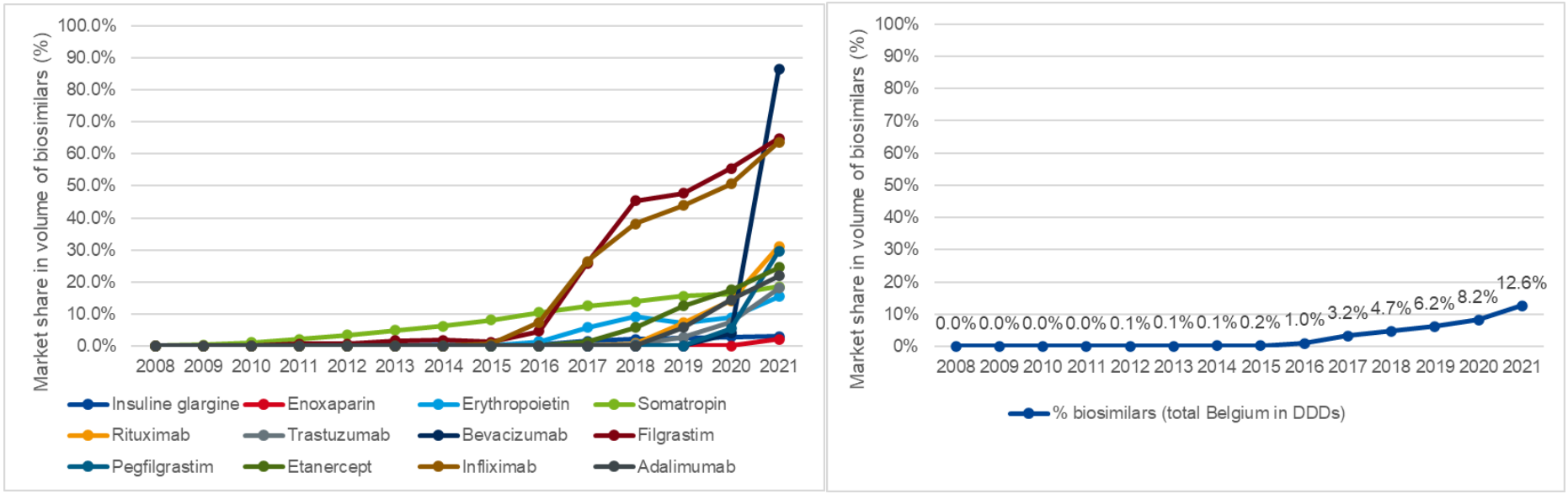
Description	Proportion of biosimilars (DDDs) delivered in biologicals
Calculation	**Numerator**: total DDDs of biosimilar drugs delivered **Denominator**: total DDDs biologicals delivered for the 6 therapeutic classes with reimbursed biosimilars on the Belgian market.[1]
Rationale	A biological medicinal product or biological is a product that contains a biological substance, a substance produced by or derived from a living organism. The expiration of patents of first biologics opened new hopes for affordable copies and increased competition, in the same way that generics are produced from medicines once the patent has expired. Nevertheless, replicate versions of biologicals are not identical, but similar to their original counterparts, hence the name *biosimilars*. Biosimilars have been used in clinical practice in Europe since 2006, some are reimbursed in Belgium since 2008.[2] Promoting the prescription of biosimilars is a way to reduce expenditures, for the patient as well as for the authorities. Currently, biosimilars are not included in the reference price system (cf. E-3 use of low-cost drugs in ambulatory setting).
Data source	Doc PH, Pharmanet (RIZIV – INAMI)
Technical definitions	Reference files from RIZIV – INAMI have a variable for biologicals (unique key = CNK) that defines whether a product is a biosimilar or not
International comparability	Comparison with other countries is possible, but sources are scarce
Limitations	The region of the patient is unknown for the inpatient consumption
Dimension	Efficiency
Related indicators	E-3 prescription of low-cost drugs in ambulatory setting
Reviewer	Joos Tielemans (RIZIV – INAMI)

1.4.2 Results

Belgium

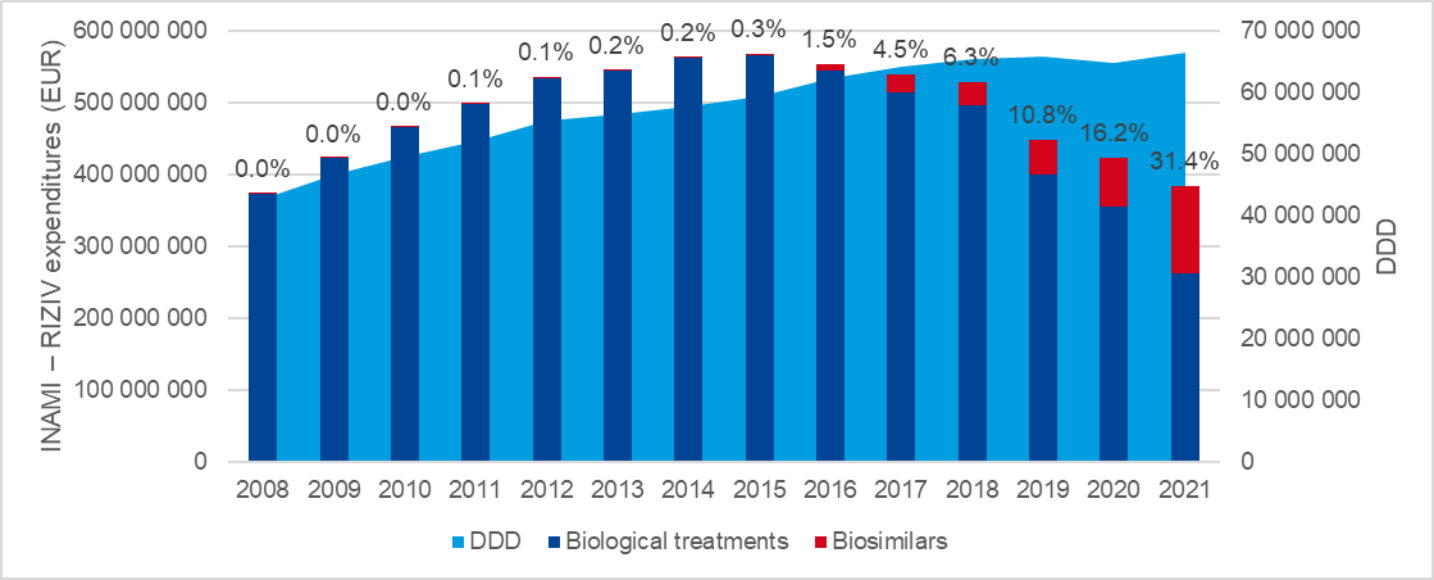
Biosimilars are available for 12 molecules in 2021 in Belgium, with the market share in volume growing steadily since 2016 to reach 12.6% in 2021 (Figure 6). This has allowed RIZIV – INAMI to decrease its expenses in biological treatments while the volume has been very slow since 2017 (3.7% between 2017 and 2021) (Figure 7).

Figure 6 – Shares of biosimilars in volume for available Belgian biological pharmaceuticals



Source: INAMI – RIZIV

Figure 7 – Shares of biosimilars in expenditures for available Belgian biological pharmaceuticals

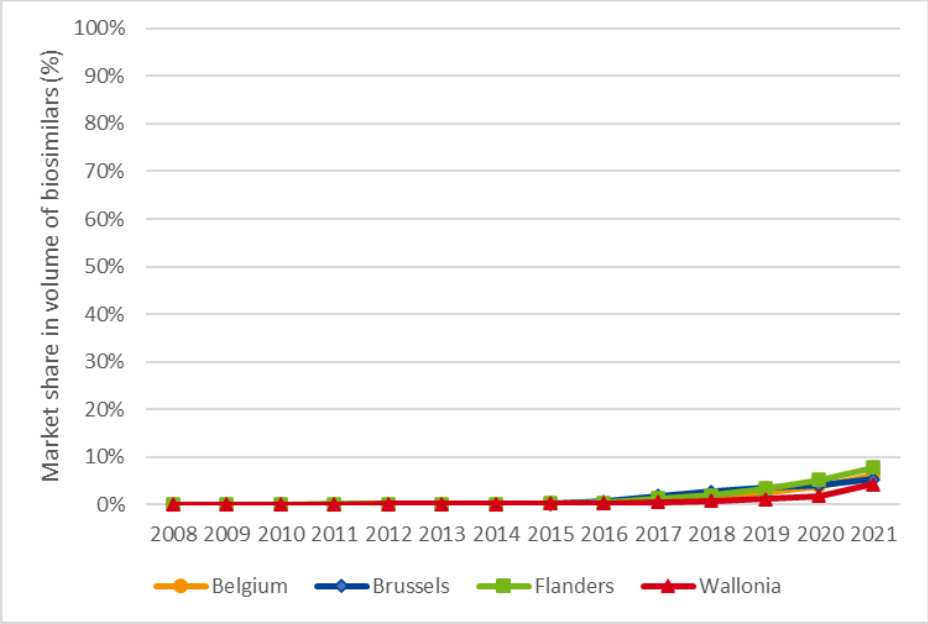


Source: INAMI – RIZIV

Regional comparison

Regional comparison is currently only available for ambulatory prescriptions. Figure 8 shows that while Flanders patients have more biosimilars prescribed in 2021 (7.8%) than Brussels and Wallonia (5.3% and 4.2% respectively), it is well below the 27.6% reached in inpatient setting at the Belgian level the same year.

Figure 8 – Market share in volume of biosimilar in ambulatory setting by region

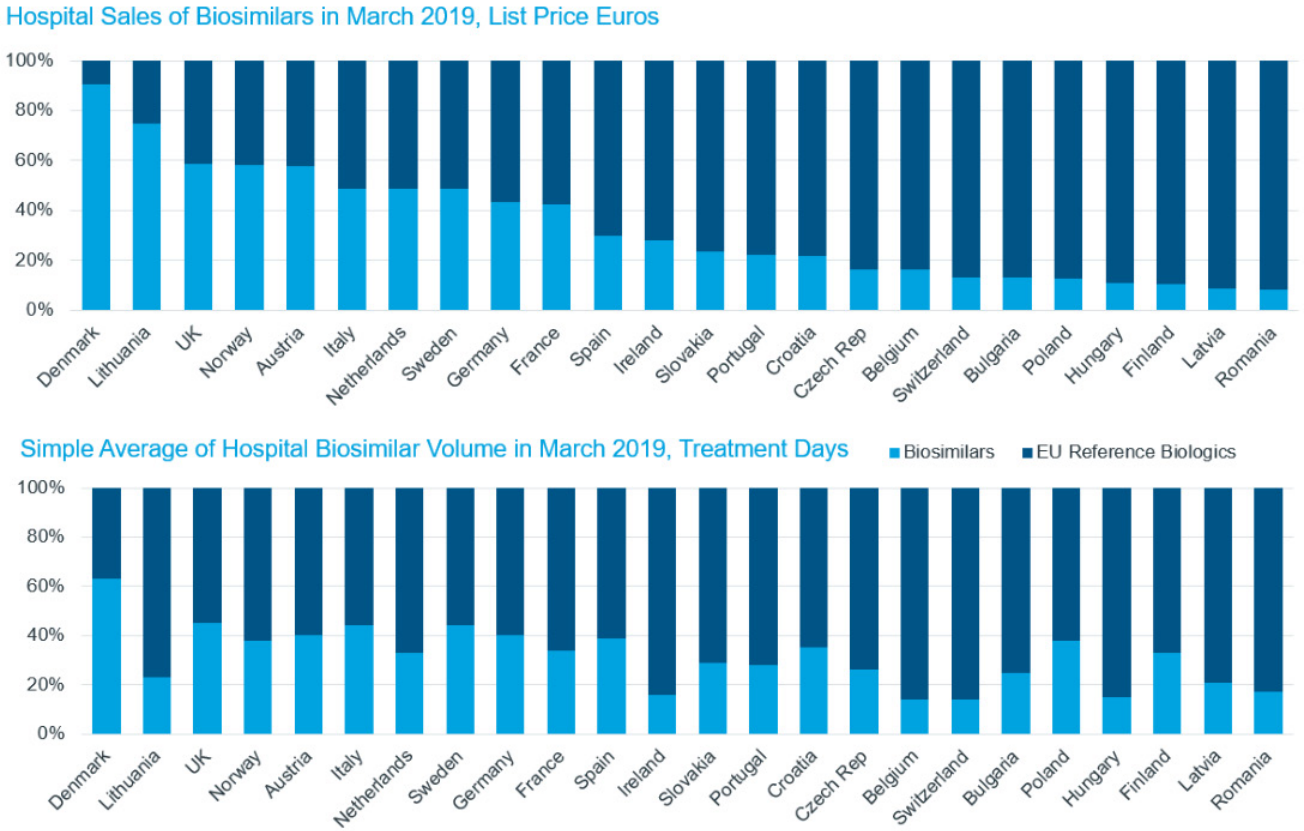


Source: INAMI – RIZIV

International comparison

Based on 2018 figures, Belgium has a low proportion of biosimilars compared to other European countries in hospital setting (Figure 9 and Figure 10):[3] less than 20% in expenses and 14% in volume (compared to >90% and 63% for Denmark, respectively).

Figure 9 – Market shares (value and volume) of biosimilars in the European hospital setting



Hospital sales and volume of biosimilars and biologics in 2018, expressed in Euros (list price) and treatment days, respectively. These analyses are based on list prices and therefore do not take into account the (often confidential) discounts that manufacturers give to hospitals and other buying entities.
Source: IQVIA European Thought Leadership, IQVIA MIDAS MTH March 2019, cited in [3].

Figure 10 – Proportion in volume of biosimilar by molecule in the European hospital setting

	Simple Average*	Adalimumab	Enoxaparin Sodium	Epoetin	Etanercept	Filgrastim	Follitropin Alfa	Infliximab	Insulin Glargine	Insulin Lispro	Pegfilgrastim	Rituximab	Rituximab IV only	Somatropin	Trastuzumab	Trastuzumab IV only
EU Weighting		6%	48%	9%	3%	0.5%	0.3%	12%	12%	2%	0.5%	2%		2%	2%	
Denmark	63%	96%	0%	53%	89%	93%	26%	97%	8%	0%	100%	78%	93%	78%	98%	99%
UK	45%	39%	53%	6%	81%	96%	52%	93%	16%	0%	12%	79%	90%	22%	32%	81%
Italy	44%	25%	35%	84%	48%	97%	26%	84%	16%	21%	1%	70%	88%	25%	42%	66%
Sweden	44%	55%	0%	81%	65%	99%	16%	81%	33%	50%	21%	22%	58%	2%	43%	90%
Germany	40%	81%	3%	80%	96%	94%	0%	24%	23%	0%	3%	71%	77%	2%	47%	58%
Austria	40%	9%	12%	80%	52%	99%	0%	91%	0%	0%	22%	83%	95%	0%	67%	89%
Spain	39%	12%	41%	77%	39%	94%	85%	59%	24%	0%	2%	43%	59%	20%	17%	40%
Poland	38%	1%	0%	100%	40%	86%	0%	97%	21%	35%	8%	0%	0%	100%	11%	50%
Norway	38%	0%	0%	100%	100%	86%	0%	98%	4%	0%	15%	80%	94%	0%	7%	76%
Croatia	35%	8%	0%	100%	24%	100%	64%	67%	10%	0%	28%	30%	62%	25%	5%	12%
France	34%	28%	0%	42%	49%	99%	0%	61%	47%	0%	13%	62%	76%	0%	36%	80%
Netherlands	33%	25%	0%	19%	22%	39%	0%	82%	30%	0%	15%	95%	97%	16%	80%	99%
Finland	33%	10%	0%	100%	14%	91%	0%	11%	29%	10%	0%	43%	54%	100%	19%	88%
Slovakia	29%	0%	0%	100%	0%	100%	0%	33%	25%	0%	67%	29%	40%	0%	26%	80%
Portugal	28%	4%	0%	96%	29%	93%	0%	61%	0%	0%	3%	51%	78%	12%	13%	35%
Czech Rep.	26%	8%	0%	85%	22%	100%	4%	60%	8%	0%	27%	21%	31%	7%	1%	7%
Bulgaria	25%	0%	0%	100%	0%	100%	0%	100%	0%	0%	0%	19%	21%	0%	0%	1%
Lithuania	23%	0%	0%	0%	0%	100%	92%	0%	2%	0%	0%	0%	0%	0%	100%	100%
Latvia	21%	0%	0%	0%	0%	100%	74%	0%	0%	100%	0%	0%	0%	0%	0%	0%
Romania	17%	0%	0%	100%	0%	100%	0%	0%	17%	0%	2%	7%	7%	0%	0%	0%
Ireland	16%	0%	0%	100%	0%	41%	0%	47%	0%	0%	0%	23%	23%	0%	2%	3%
Hungary	15%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	73%	87%	0%	27%	78%
Belgium	14%	0%	0%	14%	0%	32%	47%	33%	6%	0%	0%	2%	4%	40%	2%	5%
Switzerland	14%	0%	0%	21%	23%	83%	0%	24%	1%	0%	0%	14%	15%	11%	0%	0%

*Hospital volume of biosimilars and biologics in 2018, expressed in treatment days. * Simple average calculated including subcutaneous formulation for rituximab and trastuzumab.*
Source: IQVIA European Thought Leadership, IQVIA MIDAS MTH March 2019, cited in [3].

Impact of COVID-19 pandemic

Unknown.

Key points

- **Improvements in the share in biosimilars have been sharp in recent years concerning bevacizumab, infliximab and filgrastim**
- **Thanks to the increase in biosimilars market shares, the expenses have been reducd while the volume has been stable**
- **Substitution in biological treatments from orginal drugs to biosimilars in hospital setting has a low uptake in Belgium compared to other European countries; measures have been taken in October 2023 to improve the uptake[f], there will be an assessement every two year**
- **At the regional level, biosimilars market share in ambulatory setting is as follows in 2021 (in volume): Flanders 7.8%, Brussels 5.3% and Wallonia 4.2%**

References

1. INAMI – RIZIV. Analyse de l'utilisation des médicaments biosimilaires dans le cadre de la "convention sur la relance des médicaments biosimilaires en Belgique". RIZIV - INAMI; 2018.
2. Lepage-Nefkens I, Gerkens S, Vinck I, Piérart J, Hulstaert F, Farfan-Portet M-I. Barriers and opportunities for the uptake of biosimilar medicines in Belgium. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2013. KCE Reports 199 (D/2013/10.273/13)
3. KPMG Advisory N.V. Improving healthcare delivery in hospitals by optimized utilization of medicines; 2019

f https://www.ejustice.just.fgov.be/eli/arrete/2023/09/13/2023045282/moniteur

1.5 Low-care dialysis (E-5)

1.5.1 Documentation sheet

Description	Proportion of low-care renal dialysis for general hospitals that have signed the agreement (% of dialysis)
Calculation	**Numerator**: ((number of self-care haemodialysis lump sums + number of overnight haemodialysis lump sums + number of home haemodialysis lump sums + number of self-care haemodialysis lump sums)/156) + (number of peritoneal dialysis lump sums/number of days in the year) + number of transplants during the calendar year covered by the annual report care lump sums)/156) + (number of peritoneal dialysis lump sums/number of days in the year) + number of transplants during the calendar year to which the annual report relates/2 + number of transplants during the two previous calendar years **Denominator**: (number of self-dialysis lump sums + number of night-time haemodialysis lump sums + number of home haemodialysis lump sums + number of self care)/156) + (number of peritoneal dialysis lump sums)/number of days in the year) + number of transplants during the calendar year to which the annual report relates/2 + number of transplants in the two previous calendar years + (lump sums for chronic haemodialysis in hospital/156)
Rationale	General hospitals have been asked since 2018 to reach at least 40% of "low-care" dialysis[1]
Data source	INAMI – RIZIV
Technical definitions	Selection of the following INAMI – RIZIV billing codes (nomenclature)[g]: "low-care": home dialysis (767734), collective self-dialysis centre (767756, 767782, 767804), ambulatory peritoneal dialysis centre (767815, 767826, 767830, 767841), self-care (767955, 767966) "high-care": chronic haemodialysis centre (767594, 767616, 767664, 767701), paediatric chronic haemodialysis centre (767631, 767686, 767723)
International comparability	None
Limitations	Administrative data; dialysis that could not be identified as taking place in a general hospital were excluded. Concerns only the part of the population covered by the compulsory health insurance (*assurance soins de santé obligatoire – verplichte ziekteverzekering*, see A-1).
Dimension	Efficiency
Related indicators	N/A
Reviewers	Benjamin Swine (INAMI – RIZIV), Karl Martin Wissing (UZ Brussel)

[g] Only lump sums have been accounted; medical fees (with the following billing codes: 470315, 470326, 470330, 470341, 470352, 470875, 470912, 470934, 470945, 470293, 470304, 470890, 470901) have not been taken into account to avoid double counting.

1.5.2 Results

Since 1 August 2016, there has been a new convention between INAMI – RIZIV and general hospitals with dialysis centres. Hospitals have been asked to have at least 40% of their dialyses in a "low-care" setting: home dialysis, collective self-dialysis (in a centre), ambulatory peritoneal dialysis or (since 1 January 2018) self-dialysis (see the calculation in the document sheet). If the hospital does not reach the threshold, this has financial consequences (since 2018). Patients never pay anything unless they damage equipment due to negligence. Table 5 show the results over time (2017-2021[h]) for Belgium and by region, as well as by type of hospital. A great majority of general hospital manage to reach the threshold in 2021 (48 out 52). Evolution by region is also shown on Figure 11.

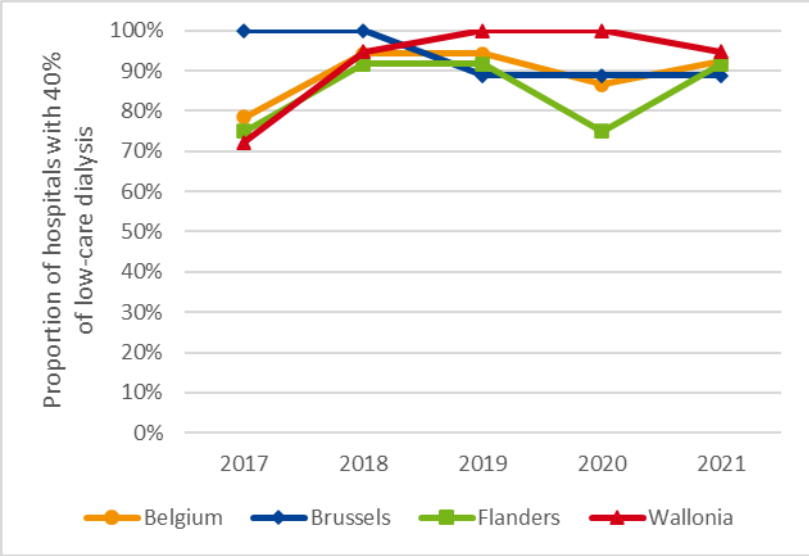
Table 5 – Proportion of general hospitals that have signed the agreement with at least 40% of low-care dialysis

Hospitals with at least 40% of low care dialysis	2017			2018			2019			2020			2021		
	total	n	%	total	n	%	total	n	%	total	n	%	total	n	%
Belgium	51	40	78.4%	52	49	94.2%	52	49	94.2%	52	45	86.5%	52	48	92.3%
Region															
Brussels	9	9	100.0%	9	9	100.0%	9	8	88.9%	9	8	88.9%	9	8	88.9%
Flanders	24	18	75.0%	24	22	91.7%	24	22	91.7%	24	18	75.0%	24	22	91.7%
Wallonia	18	13	72.2%	19	18	94.7%	19	19	100.0%	19	19	100.0%	19	18	94.7%
Hospital type															
Academic hospitals	7	7	100.0%	7	7	100.0%	7	7	100.0%	7	6	85.7%	7	7	100.0%
Non-academic general hospitals with academic character	11	9	81.8%	12	12	100.0%	12	12	100.0%	12	11	91.7%	12	10	83.3%
General hospital	33	24	72.7%	33	30	90.9%	32	20	62.5%	33	28	84.8%	33	31	93.9%

Source: INAMI – RIZIV

[h] Since 2016 was not a complete year with the new agreement, the period studied start on 1 January 2017.

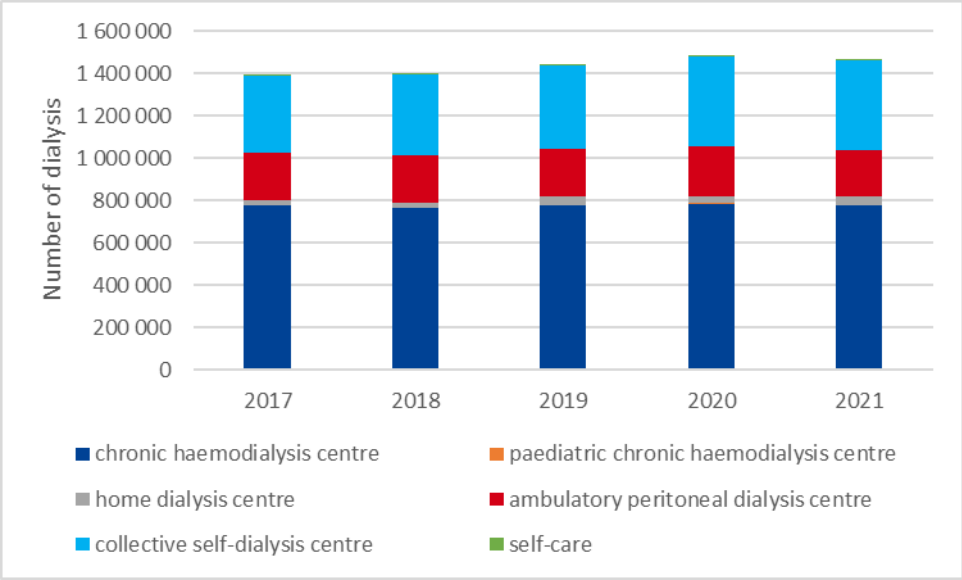
Figure 11 – Proportion of hospitals having signed the agreement with at least 40% of low-care dialysis



Source: INAMI – RIZIV

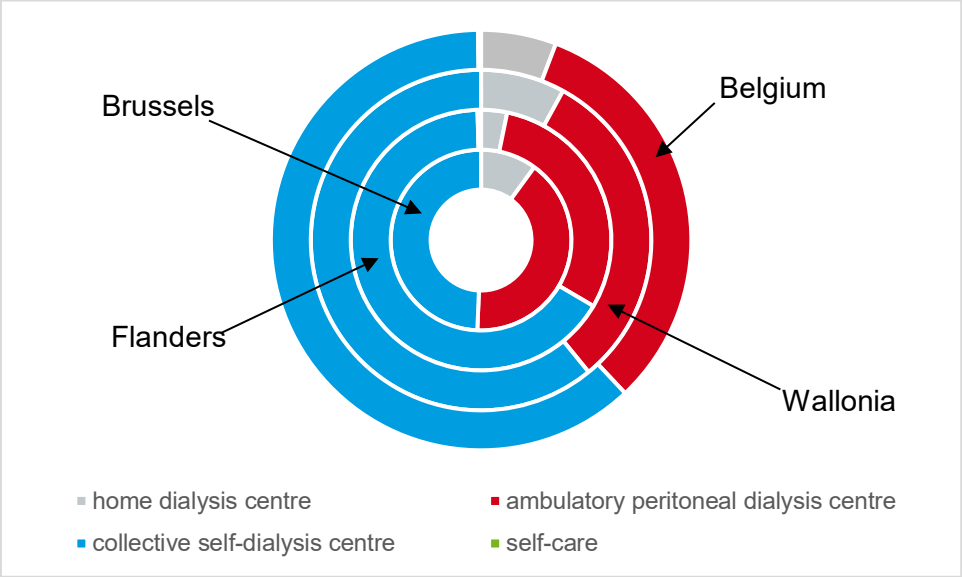
When looking at raw figures (Figure 12), high-care dialysis (chronic haemodialysis + paediatric chronic haemodialysis) is still quite important compared to low-care dialysis (home dialysis, collective self-dialysis, ambulatory peritoneal dialysis and self-dialysis). Except for a rise for collective dialyses in centre (+16.6% between 2017 and 2021), the situation is quite stable over time. When looking at the regional level (Figure 13 shows data from 2021), Flanders has been favouring collective self-dialyses in centre while Brussels and Wallonia have more home dialyses and ambulatory peritoneal dialyses in centre.

Figure 12 – Dialysis in Belgium by type (2017-2021)



Source: INAMI – RIZIV

Figure 13 – Low-care dialysis per region (proportion of number of dialysis, 2021)



Source: INAMI – RIZIV

Impact of COVID-19 pandemic

Unknown (less hospitals in Flanders reached the 40% threshold in 2020, then back to the previous situation in 2021).

Key points

- Since 2018, hospitals who have signed the agreement on the financing of dialysis are requested to reach a rate of at least 40% of low-care dialysis (INAMI – RIZIV agreement).
- This rate is reached at the Belgian level and at the regional level, but not all individual hospitals manage to reach it. In 2021, among the 52 hospitals in the agreement, 48 have reached the required rate (8 out of 9 in Brussels, 22 out of 24 in Flanders and 18 out of 19 in Wallonia).
- The situation remains stable in terms of treatment modalities; in addition, the number of dialysis treatments remains stable over the last 5 year.

References

1. INAMI-RIZIV, agreement on the financing of dialysis, http://www.inami.fgov.be/SiteCollectionDocuments/convention_financement_dialyse.docx

2 EQUITY

2.1 Methodological note on equity in healthcare use

2.1.1 Documentation sheet

Description	Equity in healthcare use - EQ-1 – Contacts with the healthcare system (Number of contacts and at least one contact): GP, medical specialists, ER (population aged 18+) - EQ-2 – Contacts with the healthcare system (Number of contacts and at least one contact): GP (population aged 18+) - EQ-3 – Contacts with the healthcare system (Number of contacts and at least one contact): Medical specialists (population aged 18+) - EQ-4 – Contacts with the healthcare system (Number of contacts and at least one contact): ER (population aged 18+) - EQ-5 – Contacts with the healthcare system (Number of contacts and at least one contact): Inpatient hospitalisation (population aged 18+) - EQ-6 – Regular contacts with a dentist (population aged 18+) - EQ-7 – Regular preventive contacts with a dentist (adults and children)
Calculation	Equity in healthcare use is evaluated by the **horizontal equity principle** which is defined as equal treatment of people with the same health needs, irrespective of other characteristics such as income, race, education level, place of residence, etc.[1] **The fairness gap** This principle is evaluated using the ***fairness gap***. The fairness gap is the difference between the actual healthcare use of an individual (e.g. GP or specialist consultation) and a needs-adjusted norm. This norm is not the same for each individual, but adjusted to the individual's healthcare needs (or more generally to all characteristics that are considered to lead to fair differences in healthcare use), but it is blind to the individual's socioeconomic position (or more generally to all characteristics that are considered to lead to unfair differences in healthcare use). Hence, the same norm of healthcare use applies to two individuals with the same health needs, but a different income or education level. The needs-adjusted norm is determined using regression analysis (see technical definitions). **Socioeconomic inequities** Systematic differences in the fairness gap are in violation of the horizontal equity principle and indicate that healthcare use is not equitably distributed. Systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	Belgium has made a commitment to universal health coverage (UHC), i.e. everyone should be able to obtain the health services that they need, of high quality, without risk of financial hardship in doing so.[1, 2] Ensuring affordable access to healthcare is at the heart of universal health coverage,

	and was reaffirmed numerous times as main objective of the Belgian healthcare system.[1] In this respect, health policy in Western European countries has not only been concerned with an equitable distribution of healthcare payments (see indicators on financial accessibility), but also with equity in healthcare use. Both are of course related as healthcare financing arrangements create, reduce or break down potential financial barriers in the use of healthcare.[3, 4] **Equity versus equality in health and healthcare** It is important to note that there is a difference between equality and equity in healthcare use. While equality describes the situation in which something is distributed in the same quantity for each individual across society, equity concerns the fair distribution of it. Inequalities as such or the absence thereof are not by definition bad or good. It depends on what is driving the disparities and on a normative judgement of fairness. For example: Are the inequalities the result of a difference in resources and lack of affordability? Or is a chronic health condition the underlying cause? Are the different levels of received care appropriate to each person's health condition or not? **Horizontal and vertical equity** There are two widely applied equity principles: (1) the **horizontal equity principle** defined as equal treatment of people with the same health needs, irrespective of other characteristics such as income, race, place of residence, etc.; and (2) the **vertical equity principle** denoting appropriate unequal treatment of people with different needs. Note that with respect to preventive care, one could argue that differences in health needs are irrelevant, as prevention is important and valuable irrespective of needs in order to preserve one's health status. That is partly true, but certain types of prevention are particularly recommended for individuals with specific health conditions or for individuals of high age, e.g. influenza vaccination.
Data source	Linked micro-data was used from - **EU statistics on income and living conditions (EU-SILC)** from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) (annual waves 2018 – 2021)[5]: socioeconomic, sociodemographic and health status information - **IMA – AIM** micro data: socioeconomic, sociodemographic and healthcare use information - **RIZIV – INAMI**: healthcare supply information per NIS – INS code Results from 2012 and 2016 were obtained from KCE report 334.[1] IMA – AIM atlas[6]: average population information on healthcare use.
Technical definitions	For a detailed description of the methodology, we refer the interested reader to KCE report 334, section 2.4 and 2.5 and the Supplement of KCE report 334, section 1.1.[1] **Calculation of the fairness gap** The methodology to evaluate (in)equity in healthcare use, is based on the **fairness gap** as proposed by Fleurbaey and Schokkaert (2009, 2011)[7, 8] which is a generalization of the evaluation of horizontal inequity in healthcare as studied amongst other by the OECD.[9, 10] First, we **estimate the relation between healthcare use and a range of variables that potentially affect healthcare use**, such as health status (self-reported health, age, gender, etc.); socioeconomic and sociodemographic features (education, activity status, income, material deprivation, increased reimbursement status, household composition etc.); (place of) residence; and supply-side factors (density of doctors, distance to

hospital). This relation is empirically estimated by a parametric regression model based on the explanatory model proposed by Fleurbaey and Schokkaert (2009)[7]:

$$HC_i = F(\alpha + \beta N_i + \gamma SES_i + \delta R_i + \theta z_i) + \varepsilon_i$$

in which HC_i refers to the individual's value for the healthcare indicator, N_i to health status, SES_i to the socioeconomic/sociodemographic characteristics, R_i to the (place of) residence, z_i to the supply-side factors, ε_i is the residual term and $\alpha, \beta, \gamma, \delta, \theta$ are parameters and $\mathrm{F}(.)$ is the functional form of the empirical model, which is a probit for binary indicators (such as having at least one GP consultation in the past year or not) and a truncated negative binomial for count variables (such as the number of GP consultations in the past year given at least one consultation). The output of the regression analysis is available upon request.

Second, we calculate a **needs-adjusted norm value of healthcare use.** For this, we calculate the predicted value of the regression model using the individual characteristics for variables that are considered to lead to fair differences in healthcare use (e.g. health status or age) and reference values for variables that are considered to lead to unfair differences in healthcare use (e.g. income or education). A reference (socioeconomic) profile was defined to neutralize disparities that are considered to be unfair. The chosen reference profile reflects a person having all the opportunities (time, resources, cognitive ability, availability of care, etc.) to make an appropriate decision with respect to healthcare use. The need-adjusted norm value in healthcare can be considered as the average healthcare use of individuals whose socioeconomic profile perfectly matches the reference profile, and differs only in function of differences in healthcare needs. The reference person (for a full list of reference values, we refer to the Supplement of KCE report 334, section 1.1.4.2).[1]

- has a high income (household equivalized net disposable income at 200% of the median, the boundary between the upper and top middle class) – hence not at risk of poverty, without material deprivation and no beneficiary of increased reimbursement
- has obtained the highest educational degree (tertiary education)
- is working as full-time employee.

Third, once the **needs-adjusted norm value** $\widehat{HC_i}$ is calculated, we can calculate the fairness gap as the difference between actual healthcare use and the needs-adjusted norm (for individual i):

$$FG_i = HC_i - \widehat{HC_i}$$

The fairness gap can be positive or negative, implying that an individual has, respectively, a higher or lower healthcare use than the norm. Given that the needs-adjusted norm value reflects the healthcare use of an individual with the same health status, but the reference socioeconomic profile, any deviation is a violation of the horizontal equity principle – equal treatment for equal needs – and is to be considered as inequitable.

Separate analysis for use of care and intensity of care

For the indicators on contacts with healthcare providers in the past year, e.g. GP consultations, specialist consultations, contact with the emergency department (ED), inpatient admissions, two different relations are estimated: (1) the probability of use, i.e. the probability to have at least one such contact in the past year, and (2) the intensity of use, i.e. the number of contacts in the past year given at least one contact. The arguments in favour of such two-stage process are discussed in the Supplement of KCE report 334 (section 1.1.4.2).[1] The probability of use is estimated using a Probit regression model, while the intensity of use is estimated using a truncated negative binomial model.

Differences in the fairness gap for a population subgroup

After calculating the fairness gap at the individual level, average values are calculated for different subgroups and compared to the overall population average.

$$DIF_{SG} = \frac{\sum_{i\ in\ SG} FG_i}{N_{SG}} - \frac{\sum_{i\ in\ POP} FG_i}{N_{POP}}$$

in which FG_i refers to the fairness gap of individual i, SG refers to a subgroup, N_{SG} to the number of individuals in the population subgroup, POP refers to the general population, N_{POP} to the number of individuals in the population and DIF_{SG} is the absolute difference in average fairness gap in the population subgroup and the general population. For binary indicators on whether the individual has used a certain health service, the difference is expressed in percentage points, for indicators on the number of contacts/consultations, the difference is expressed in number of contacts/consultations.

The following **population subgroups** are considered in the analysis:

- **Income subgroups** are defined based on the equivalized[i] household income (based on EU-SILC data)
  - At risk of poverty (less than 60% of median equivalized household income)
  - Lower middle class (60% to 80% of median equivalized household income)
  - Core middle class (80% to 120% of median equivalized household income)
  - Upper middle class (120% to 200% of median equivalized household income)
  - Top middle class (200% or more of median equivalized household income)
- **Education subgroups** are defined based on the highest degree obtained (for children it refers to the highest degree obtained by the parent(s)) (based on EU-SILC data)
  - Primary education or no degree
  - Lower secondary education
  - Upper secondary education and post-secondary education
  - Tertiary education
- Subgroups based on **self-assessed health status** (based on EU-SILC data)
  - Very bad health status
  - Bad health status
  - Fair health status
  - Good health status
  - Very good health status

[i] The modified OECD equivalence scale is used (1 for the first adult, 0.5 for individuals aged 14 or more, 0.3 for individuals aged 13 or less). This scale is the default choice for the analysis of the EU-SILC by Eurostat.

- **Specific vulnerable population subgroups**, based on the annual reports on social protection in Belgium by the Federal Public Service Social Security[11] and protection measures in the public health insurance. There is partial overlap with some categories listed above
  - Individuals who report a chronic disorder and limitation to daily activities (based on EU-SILC data)
  - Individuals with (very) bad self-assessed health status (combination of categories very bad and bad self-assessed health) (based on EU-SILC data)
  - Individuals aged 80 years or more (based on EU-SILC data)
  - Individuals who receive invalidity or disability allowance (based on IMA – AIM data)
  - Unemployed individuals (aged 18-65) (based on EU-SILC data): individual who is not employed and is seeking employment
  - Inactive individuals (aged 18-65) (based on EU-SILC data): individual who is not employed and not seeking employment, and is not in education
  - Single (aged 18-65) (based on EU-SILC data)
  - Living in single parent household (based on EU-SILC data)
  - Living in household with children, at risk of poverty (less than 60% of median equivalized household income) (based on EU-SILC data)
  - Beneficiary of increased reimbursement (based on IMA – AIM data)
  - At risk of poverty and beneficiary of increased reimbursement (based on EU-SILC and IMA – AIM data)
  - At risk of poverty, but no beneficiary of increased reimbursement (based on EU-SILC and IMA – AIM data)
  - Severe material deprivation (based on EU-SILC data). Material deprivation refers to a state of economic strain. It reflects the enforced inability (rather than the choice not to do so) to afford one or more of the following nine items: (1) to pay rent or utility bills; (2) to keep the home adequately warm; (3) to face unexpected expenses; (4) to eat meat, fish or a protein equivalent every second day; (5) a week's holiday away from home; (6) a car; (7) a washing machine; (8) a colour TV; (9) a telephone. Severe material deprivation indicates the inability to afford at least 4 out of the 9 items.
  - For children:
    - All parents at work
    - None of the parent at work (unemployed, inactive, retired, student)
    - 1 of 2 parents at work

Concentration index

The concentration index is a standard disparity measure for assessing socioeconomic inequalities and inequities in the economics literature.[10, 12, 13] It is related to the Gini coefficient and summarizes the observed inequity in one single score, which makes it easy to grasp the evolution over time. The concentration index measures the extent to which the healthcare indicator, e.g. having a contact with a GP or specialist in the past year, is concentrated among individuals when those individuals are ranked by socioeconomic status, i.e. from a low income to a high income or from a low educational attainment to a high educational attainment. The concentration index does not single out one specific income or education subgroup, but uses the entire distribution of income and education levels to summarize the disparity in a single score.

The summary score can be positive or negative. Positive values indicate higher concentrations of the evaluated indicator in the upper middle or top of the (income or education) distribution, while negative values imply a higher concentration of the evaluated indicator in the bottom/lower middle of the (income or education) distribution. A zero value indicates the absence of systematic inequity by socioeconomic status.

	We use the generalized or absolute version of the concentration index. Most of the indicators evaluated in this report are binary in nature, meaning that you can have two outcomes (e.g. participation or not in preventive care, contact or not with a dentist, use or not of antidepressants etc.). This means that the same indicator can be expressed in terms of attainments (i.e. participation, contact, use, etc.) or reverse, as shortfalls (non-participation, absence of contact, non-use, etc.). While absolute inequity is the same in either definition, it has been shown that the framing as shortfall or attainment might lead to different conclusions with respect to equity when using a relative disparity measure (an example thereof can be found in the Supplement of KCE report 334 (section 1.1.5.1)).[1] The generalized or absolute version of the concentration index is used, because it is unaffected by the definition of the indicators in terms of attainments or shortfalls.
Limitations	The presented methodology allows for a robust quantitative analysis of (in)equity in healthcare use. There are, however, two important limitations. First, no information is available on the quality of the provided healthcare services. Even if individuals with the same health needs use the same amount of care, healthcare use might not be equitable if there are systematic differences between individuals in the quality or appropriateness of the provided care. Second, our empirical strategy does not allow to identify causal relations. All results should be interpreted as associations.
Dimensions	Equity
Related indicators	A-4 – Households facing catastrophic out-of-pocket payments (% of respondents, HBS) A-6 – People with self-reported unmet needs for medical examination due to financial reasons (% of respondents 16+, EU-SILC) A-7 – People with self-reported unmet needs for dental examination due to financial reasons (% of respondents 16+, EU-SILC)
Reviewers	Carine Van de Voorde (KCE)

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C
2. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Can people afford to pay for health care? New evidence on financial protection in Belgium. Copenhagen: WHO Regional Offce for Europe; 2023. Available from: https://apps.who.int/iris/handle/10665/365978
3. van Doorslaer E, Wagstaff A, van der Burg H, Christiansen T, Citoni G, Di Biase R, et al. The redistributive effect of health care finance in twelve OECD countries. Journal of Health Economics. 1999;18(3):291-313.
4. De Graeve D, Van Ourti T. The Distributional Impact of Health Financing in Europe: A Review. World Economy. 2003;26(10):1459-79.
5. STATBEL. Statistics on Income and Living Conditions [Web page].Brussels: Statistics Belgium;2023. Available from: https://statbel.fgov.be/en/themes/households/poverty-and-living-conditions/risk-poverty-or-social-exclusion
6. IMA-AIM Atlas.2023. Available from: https://atlas.ima-aim.be/databanken/
7. Fleurbaey M, Schokkaert E. Unfair inequalities in health and health care. Journal of Health Economics. 2009;28(1):73-90.
8. Fleurbaey M, Schokkaert E. Equity in Health and Health Care. In: Pauly MV, McGuire TG, Barros PP, editors. Handbook of Health Economics: Elsevier; 2011. p. 1003-92. Available from: http://www.sciencedirect.com/science/article/pii/B9780444535924000165
9. van Doorslaer E, Masseria C. Income-Related Inequality in the Use of Medical Care in 21 OECD Countries. OECD Publishing; 2004 May. OECD Health Working Papers (14) Available from: https://ideas.repec.org/p/oec/elsaad/14-en.html
10. Devaux M. Income-related inequalities and inequities in health care services utilisation in 18 selected OECD countries. The European Journal of Health Economics. 2015;16(1):21-33.
11. Van Dam R, Bastaits S, Laenen S. The evolution of the social situation and social protection in Belgium 2020. Monitoring the social situation in Belgium and the progress towards the social objectives and the priorities of the National Reform Programme. Brussels: Federal Public Service Social Security; 2021.
12. van Doorslaer E, Masseria C, Koolman X, for the OHERG. Inequalities in access to medical care by income in developed countries. CMAJ : Canadian Medical Association Journal. 2006;174(2):177-83.
13. van Doorslaer E, Van Ourti T. Measuring inequality and Inequity in Health and Health Care. In: Glied S, Smith PC, editors. The Oxford Handbook of Health Economics New York: Oxford University Press; 2011. Available from: http://www.oxfordhandbooks.com/10.1093/oxfordhb/9780199238828.001.0001/oxfordhb-9780199238828-e-35

2.2 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner, medical specialist, emergency department (population aged 18+) (EQ-1)

2.2.1 Documentation sheet

Description	EQ-1 At least one contact with the healthcare system (general practitioner, medical specialist, emergency department) (population aged 18+) Number of contacts with the healthcare system (general practitioner, medical specialist, emergency department) (population aged 18+)
Calculation	We analyse inequity in contacts with the healthcare system over the past 12 months. A contact with the healthcare system refers to a consultation of a GP or a specialist or a contact with the emergency department. Two types of utilisation are examined consecutively: the probability of a contact and the number of contacts given at least one contact. Individuals who are registered in a community health centre are excluded from the analysis as no registration in the IMA – AIM database is made for a GP consultation. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use. **Definition of types of healthcare** - A contact with a general practitioner (GP) is defined as: - the qualification of the healthcare provider (variable ss00065B in IMA – AIM GZSS database) equal to 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9 - one of the following nomenclature codes (variable ss00020 in IMA – AIM GZSS database): 101010, 101032, 101076, 103110, 103132, 103213, 103235, 103412, 103434, 103913, 104112, 104215, 104230, 104252, 104355, 104510, 104532, 104554, 104650, 101135, 109012 - A contact with a medical specialist is defined as:

	- the qualification of the healthcare provider (variable ss00065B in IMA – AIM GZSS database) not equal to 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9 - one of the following nomenclature codes (variable ss00020 in IMA – AIM GZSS database): 101275, 101290, 101592, 101614, 101636, 101651, 101835, 101872, 101990, 102012, 102034, 102071, 102093, 102115, 102130, 102152, 102174, 102196, 102211, 102233, 102255, 102270, 102292, 102314, 102336, 102351, 102373, 102535, 102550, 102572, 102594, 102616, 102631, 102653, 102675, 102690, 102712, 102734, 102756, 102815, 102830, 102874, 102896, 102911, 102933, 102955, 102970, 102992, 103014, 103051, 103073, 103250, 103456, 103471, 103493, 103504, 103736, 103751, 103773, 103795, 103810, 103832, 104812, 104834, 104856, 104871, 105372, 105394, 105416, 105431, 105453, 105475, 105490, 105512, 105534, 105556, 105571, 105593, 105615, 105630, 105652, 105674, 105696, 105711, 105733, 105755, 105770, 105792, 105814, 105836, 105851, 105873, 105895, 105910, 105932, 105954, 105976, 105991, 106293, 106315, 106330, 106352, 106374, 106396, 106411, 106433, 106455, 106470, 109336, 109351, 109410, 109513, 109535, 109550, 109572, 109631, 109653, 109675, 101135, 109012 - A contact with the emergency department (ED) is defined as: - one of the following nomenclature codes (variable ss00020 in IMA – AIM GZSS database): 590516, 590531, 590553, 590575, 590590, 590612, 590634, 590656, 590671, 590693, 590715, 590730, 590752, 590774, 590796, 590811 **Exclusion criteria:** Persons registered in a community health centre. Individuals with a registration of nomenclature code 109616 at any point throughout the year are considered to be enrolled in a community health centre and excluded from the analysis.
International comparability	No
Limitations	See methodological note on equity in healthcare use
Dimension	Equity
Related indicators	EQ-2 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner (population aged 18+) EQ-3 Contacts with the healthcare system (number of contacts and at least one contact): medical specialist (population aged 18+) EQ-4 Contacts with the healthcare system (number of contacts and at least one contact): emergency department (population aged 18+) EQ-5 Contacts with the healthcare system (number of contacts and at least one contact): inpatient hospitalisation (population aged 18+) A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS) A-6 People with self-reported unmet needs for medical examination due to financial reasons (% of respondents 16+, EU-SILC)
Reviewers	Carine Van de Voorde (KCE)

2.2.2 *Results – at least one contact with the healthcare system (GP, medical specialist, ED)*

Evolution over time in the probability to have at least one healthcare contact

Table 6 shows the evolution over time of the probability to have one or more healthcare contacts in the past year. There was no aggregate population value of this indicator, hence only the probability in the EU-SILC/IMA-AIM survey sample is reported, both for the entire sample and the sample restricted to adults. Over 90% of the population has visited the ED or consulted a GP or medical specialist in the past year. This high fraction is relatively stable over time and increased with a few percentage points between 2012 and 2021, going from 90.2% in 2012 to 92.7% in 2021. The probability is highly similar when restricting the sample to the adult population (aged 18 or more), which is used in the regression and inequity analysis.

Table 6 – Evolution (2012-2021) of the probability to have one or more healthcare contacts in the past year

Sample	2012	2016	2018	2019	2020	2021
Survey (all)	90.2%	91.1%	91.3%	91.4%	90.6%	92.7%
Survey (18+)	90.6%	91.6%	91.6%	91.6%	91.1%	92.5%

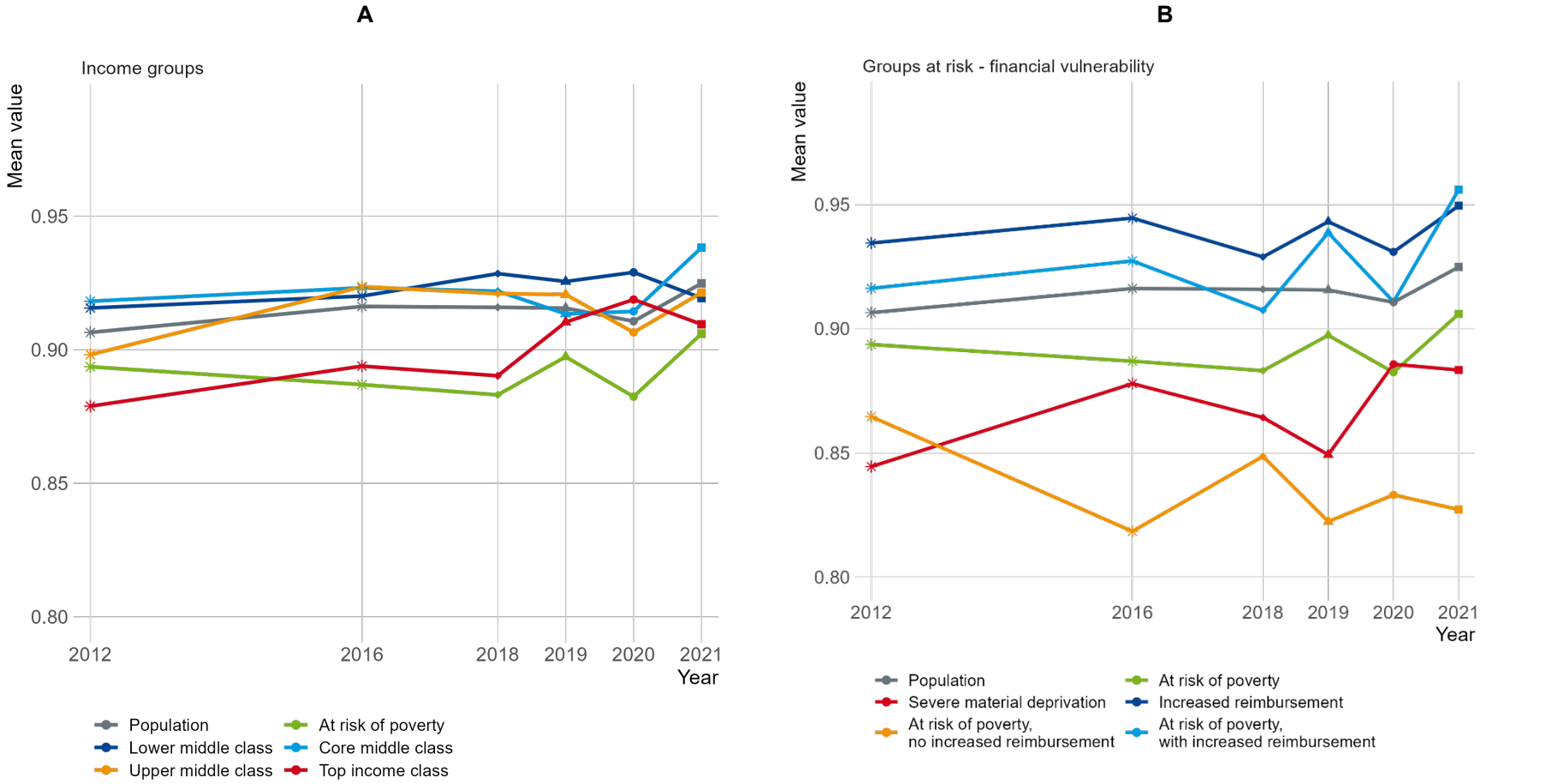
Figure 14[j] shows the evolution of the probability to have one or more healthcare contacts in the past year for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

Figure 14 indicates that for most population subgroup, there is a stable or slightly upward trend over time. There is a notable increase for individuals with severe material deprivation, individuals at risk of poverty but beneficiary of increased reimbursement, and individuals in very good health (particularly in 2021) (panels B & E). On the other hand, there is a slight decrease among individuals at risk of poverty but without increased reimbursement (panel B). A particular u-shaped pattern was found among self-employed and unemployed individuals (aged 18-65) with a decrease in probability between 2016 and 2019, followed by a steep rise in 2020 and 2021 (panel D).

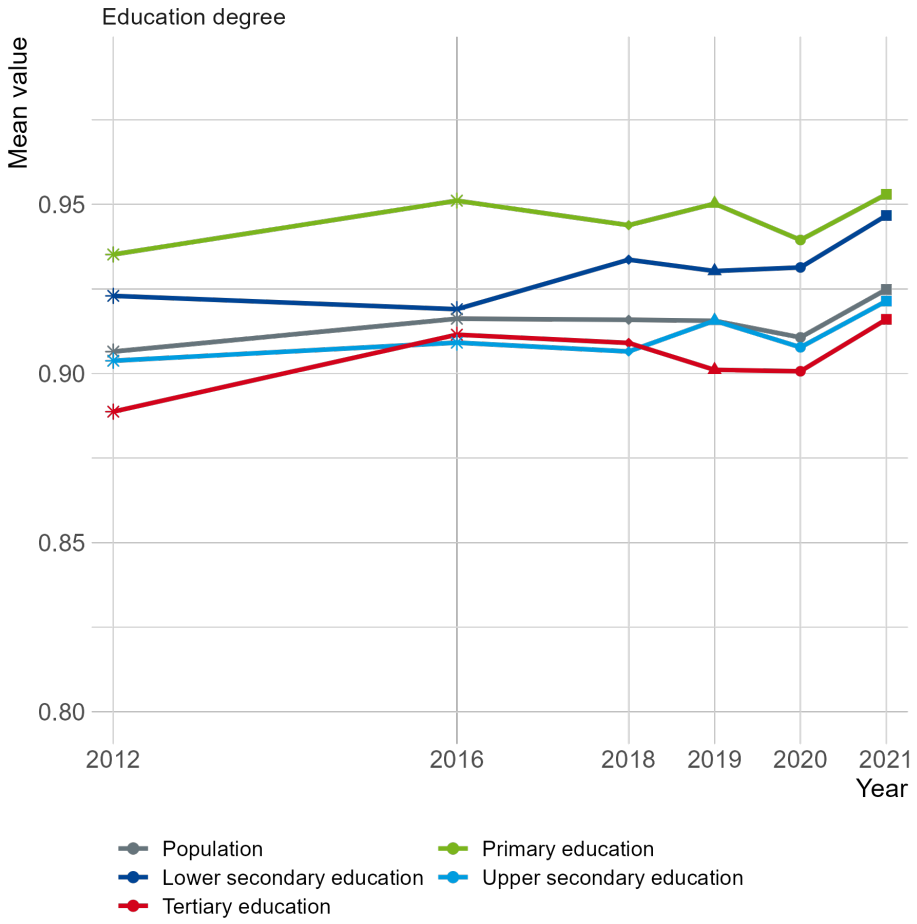
There is relatively little variation in probability by income level or educational attainment (panels A & B). However, individuals in unemployment, self-employed individuals, individuals with severe material deprivation and individuals at risk of poverty but without increased reimbursement have a substantially lower probability to have a healthcare contact in the past year (panels B & D). Individuals with high care needs, i.e. those in bad health, with chronic disorder and limitations, invalidity or disability have the highest probability to have a healthcare contact (over 95%) (panel F). Moreover, individuals who benefit from increased reimbursement are more likely to have a healthcare contact than other financially vulnerable groups (panel B).

j Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

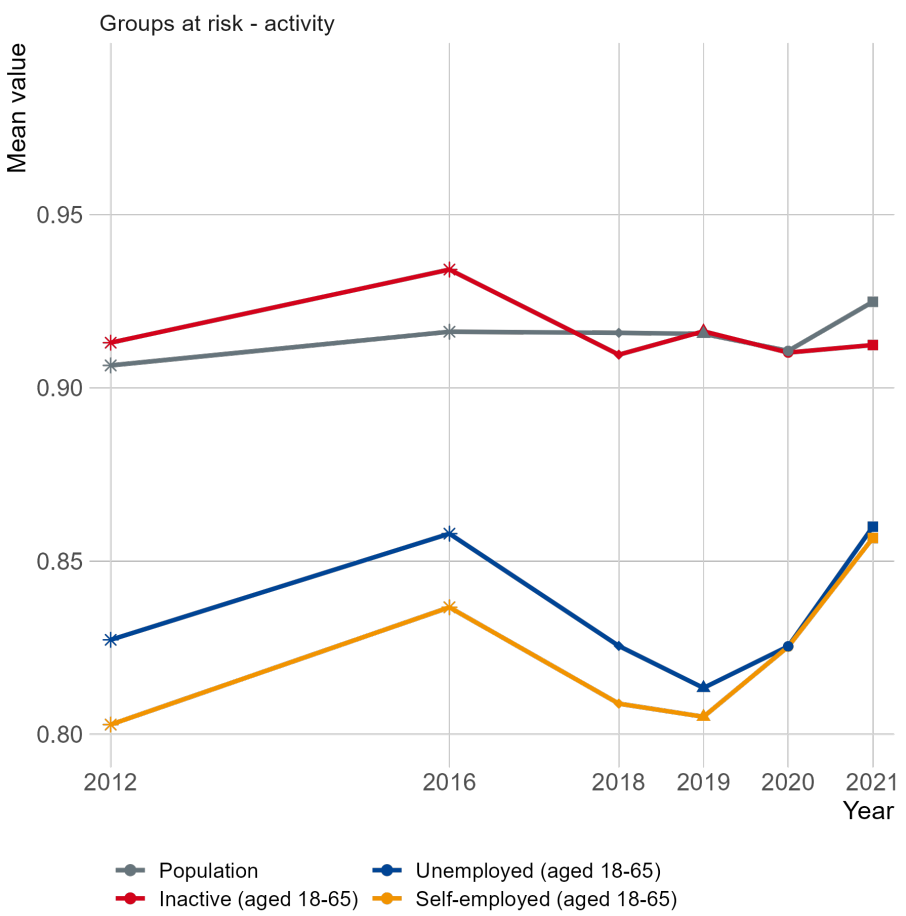
Figure 14 – Evolution (2012-2021) of the probability to have at least one healthcare contact for different subgroups and population groups at risk



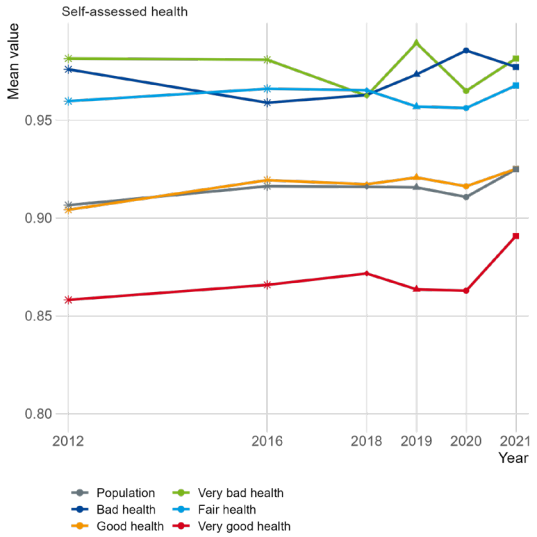
C


Education degree
Mean value
0.95
0.90
0.85
0.80
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

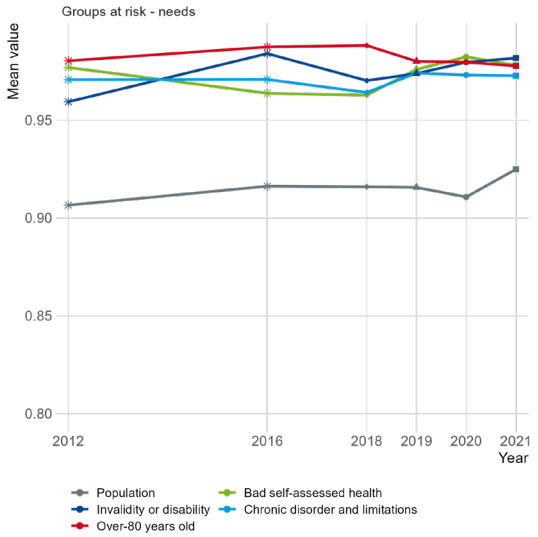
D


Groups at risk - activity
Mean value
0.95
0.90
0.85
0.80
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
0.95
0.90
0.85
0.80
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
0.95
0.90
0.85
0.80
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 15 and Figure 16 show how the probability to have a healthcare contact in the past year in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[k] In Figure 15, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 16, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having a healthcare contact than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 15 and Figure 16, we find that, for most population subgroups, disparities are less pronounced once a correction is made for healthcare needs, i.e. the deviations from the population average are lower in the inequity scenario compared to inequality. This is especially true for subgroups based on age and (self-assessed) health status.

The inequity pattern is rather similar as for GP contacts (EQ-2). We conclude

- **w.r.t. education:** there is a higher probability to have a healthcare contact for individuals with primary education (column inequality), this is no longer the case after correcting for healthcare needs (column inequity).
- **w.r.t. income group:** after correcting for needs, we observe a gradient by income group, with lower contact rates in lower income groups. In particular the probability to have a healthcare contact of individuals at risk of poverty is lower than the population average.
- **w.r.t. self-assessed health**: individuals in fair, bad and very bad self-reported health have a higher probability of having a healthcare contact (column inequality), while the opposite is true for individuals with very good health. Such differences are nearly absent when a correction for healthcare needs is made (column inequity).
- **w.r.t. specific vulnerable groups:** there is a lower probability of having a healthcare contact in the past year among individuals who are unemployed, inactive, single (between 18 and 65), individuals at risk of poverty but without increased reimbursement, and individuals in households with severe material deprivation (column inequity). In some cases there is a positive evolution, i.e. the average is evolving towards the population average (e.g. unemployed individuals), but in other cases the situation is deteriorating, i.e. the difference is increasing over time (e.g. individuals at risk of poverty but without increased reimbursement). Individuals who benefit from increased reimbursement have a probability to have a healthcare contact in line with the population average after correcting for needs, even in households at risk of poverty.

[k] The output of the regression analysis on which the correction is based is available upon request.

Figure 15 – Inequality and inequity in the probability to have a healthcare contact in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

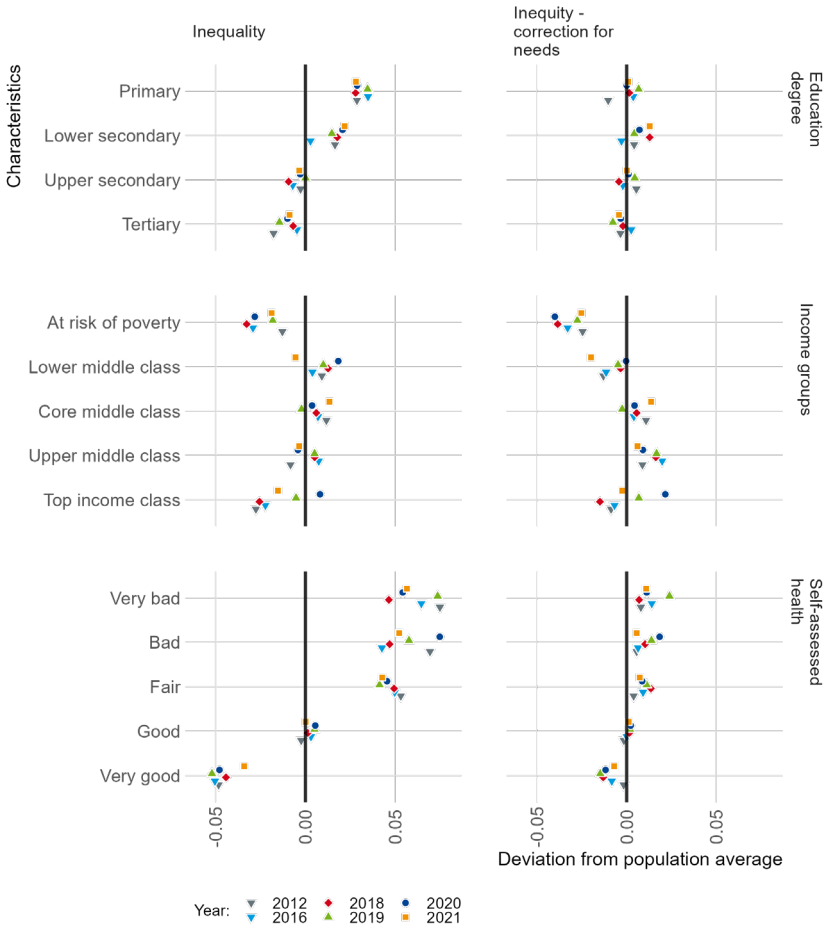
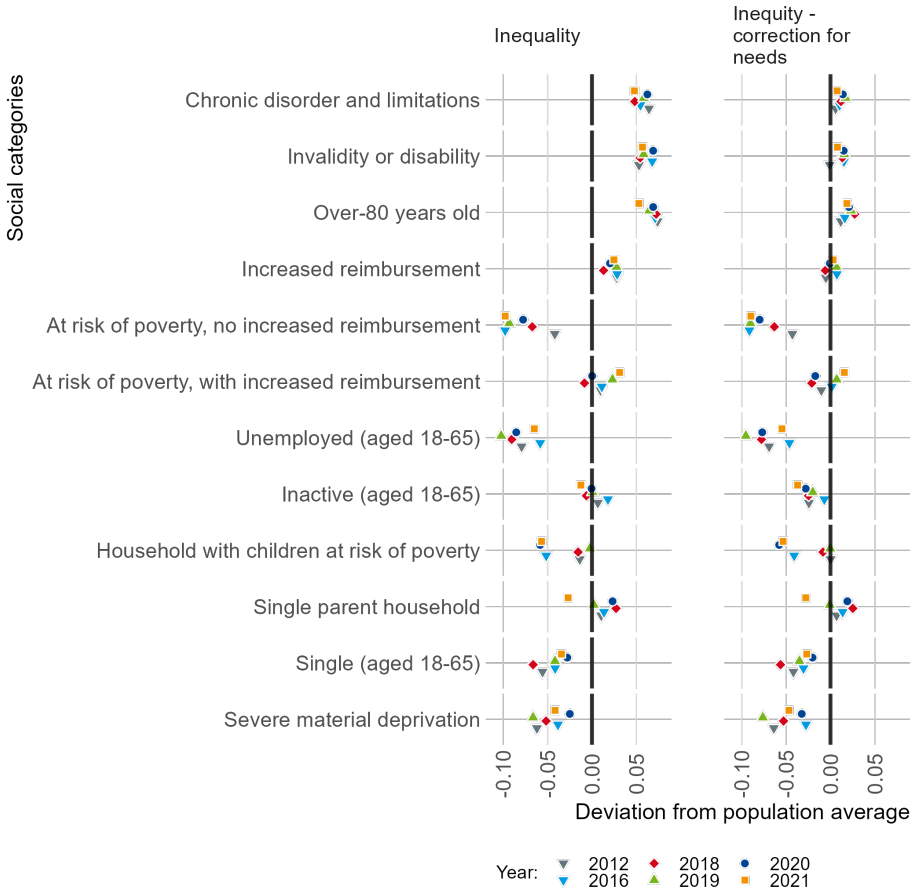


Figure 16 – Inequality and inequity in the probability to have a healthcare contact in the past year: difference between the general population and specific vulnerable population subgroups

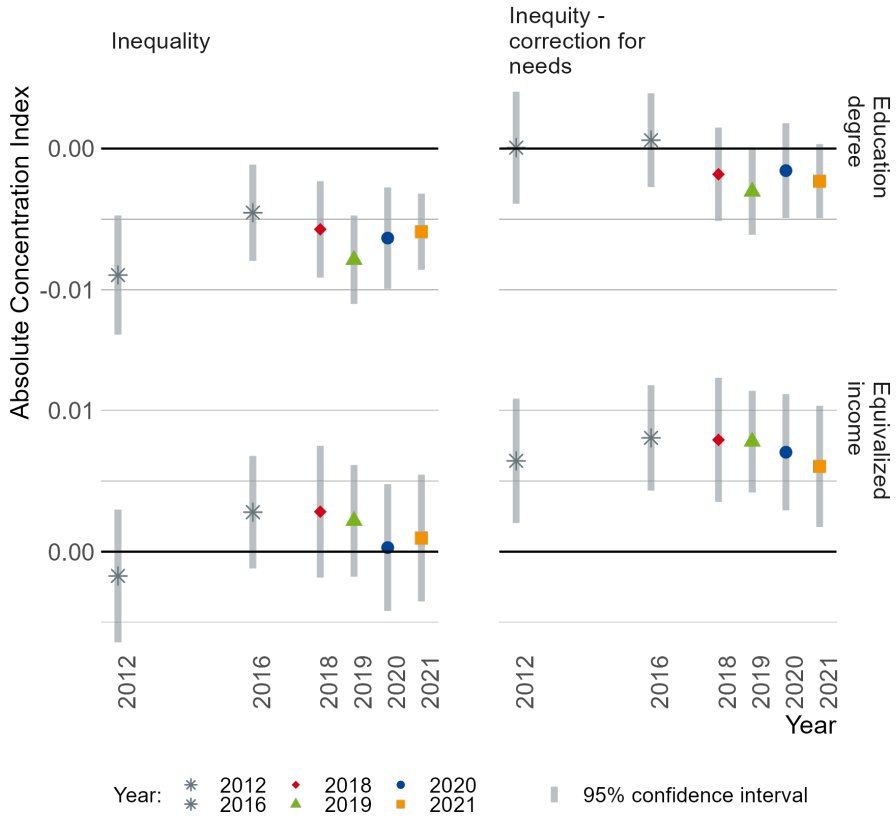


Systematic socioeconomic inequity as measured by the concentration index

Figure 17 shows the absolute concentration index of the needs-corrected probability to have a healthcare contact in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having a healthcare contact concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 17 show that there are systematic inequalities in the probability to have a healthcare contact in the past year, with a higher use among low-educated individuals. No inequalities are found by income level. After correcting for needs, an analysis of inequity indicates the opposite, there are no significant inequities related to educational attainment. However, there are significant inequities with regard to income in favour of more affluent individuals after needs are taken into account. The inequities with respect to income are relatively stable over time.

Figure 17 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have a healthcare contact in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **Over 90% of the population had at least one healthcare contact in the past year; above 95% among high care groups (over-80 year olds, in (very) bad health, with chronic disorder and limitations, in invalidity). Individuals in unemployment, individuals with severe material deprivation and individuals at risk of poverty but without increased reimbursement have a substantially lower probability to have a healthcare contact in the past year.**
- **After correction for needs, inequities in the probability to have a healthcare contact remain. Lower probabilities are found for individuals at risk of poverty, unemployed individuals, inactive individuals, singles between 18 and 65 years old, individuals at risk of poverty but without increased reimbursement, and individuals in households with severe material deprivation. Both improving (e.g. unemployed individuals) and deteriorating (e.g. individuals at risk of poverty but without increased reimbursement) trends over time are observed.**
- **No inequities are found for beneficiaries of increased reimbursement, even if they are at risk of poverty. This suggests an improved accessibility for this group, that does not extend to other financially vulnerable groups.**
- **The concentration index demonstrates no systematic inequities by educational attainment and significant inequities by income (pro-rich: higher contact rates among richer individuals).**

2.2.3 Results – number of contacts with the healthcare system (GP, medical specialist, ED)

Evolution over time in the number of healthcare contacts in the past year

Table 7 and Figure 18 show the evolution over time of the number of healthcare contacts in the past year for individuals with at least one contact. There was no population average number of contacts that could be used as benchmark, hence only the number of contacts in the EU-SILC/IMA-AIM sample is reported, both for the entire sample and the sample restricted to adults. From Table 6 and Figure 14, we concluded that the probability of having at least one contact was high, over 90%, and increased with a few percentage points between 2012 and 2021. Table 7 and Figure 18 additionally indicate that conditional on having at least one contact in the past year, the average number of contacts per individual remained more or less stable over time between 8.4 and 8.9 contacts per year, but had a substantial increase in 2021 to 9.2 contacts. The number of contacts is higher when restricting the sample to the adult population (+0.6/0.7 contacts per year), but follows the same time pattern.

Table 7 – Evolution (2012-2021) of the number of healthcare contacts in the past year

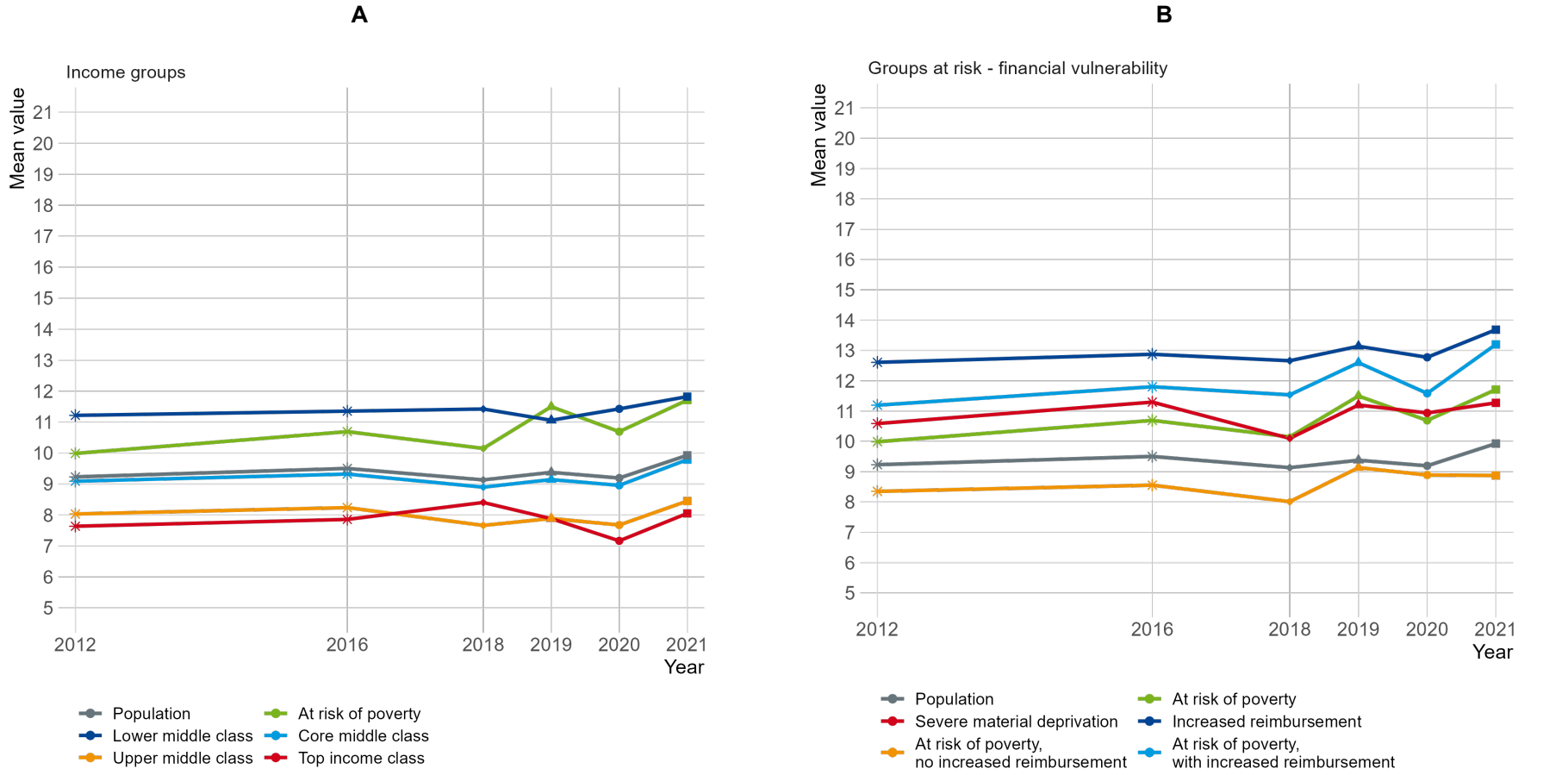
Sample	2012	2016	2018	2019	2020	2021
Survey (all)	8.59	8.87	8.44	8.62	8.39	9.23
Survey (18+)	9.23	9.50	9.13	9.38	9.19	9.93

Figure 18[l] shows the evolution of the number of healthcare contacts conditional on having at least one contact for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

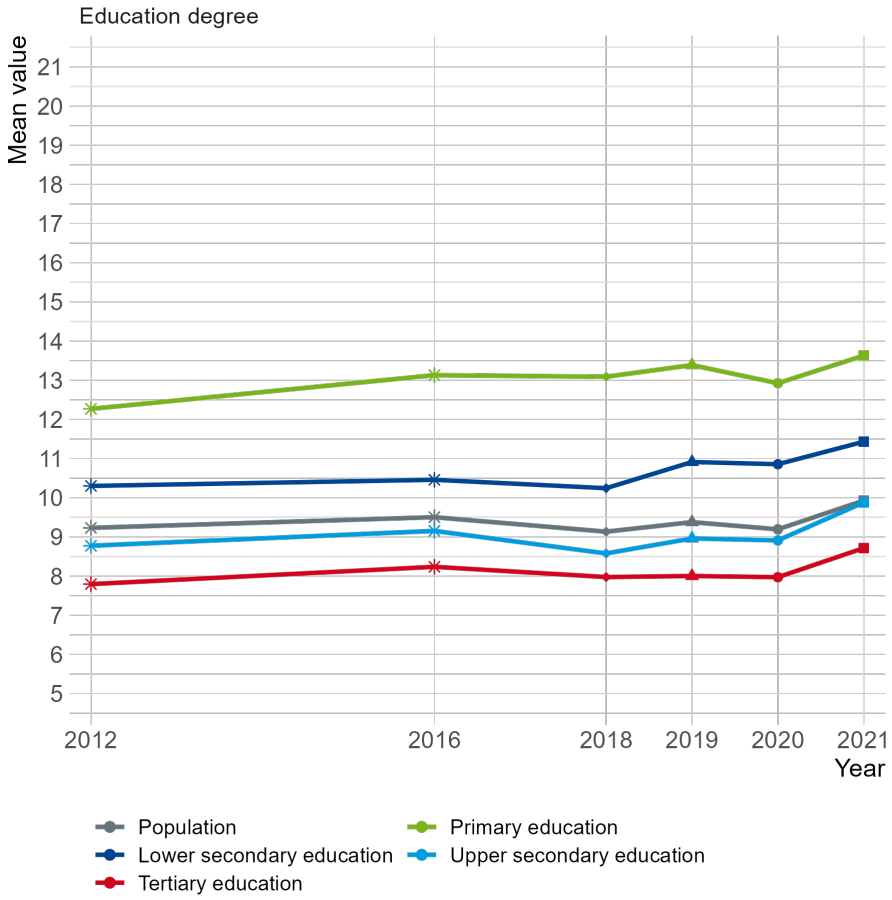
First, we find that for most population groups the 2021 number of healthcare contacts is similar or higher compared to the 2012 value. Second, a higher number of healthcare contacts (annually between 14 and 18 on average, see panel F) is observed for individuals with high care needs, i.e. those in (very) bad health, with chronic disorder and limitations to daily activities, over-80 year olds and individuals with invalidity/disability. Third, while individuals who qualify their health status as fair and (very) bad have a similar probability to have a healthcare contact (see Table 6), there is a divergence in the average number of consultations (panel E). In general, there is a large difference in the number of contacts by self-assessed health status (less than 7 contacts on average in 2021 for individuals with very good health to more than 19 for individuals with very bad health). Fourth, there appears to be some financial issues related to the frequency at which a doctor is consulted. Individuals who experience severe material deprivation, have a number of contacts only slightly above the population average, while individuals at risk of poverty but without increased reimbursement have a number of contacts below the population average (panel B). It is striking in that sense that individuals at risk of poverty have in most years a lower number of contacts than individuals in the lower middle class, although this seems to have improved more recently (panel A). Finally, the subgroup of individuals with increased reimbursement, who benefit from reduced co-payments and for GP care from the mandatory third-party payer system, have a significantly higher number of contacts than the average number among individuals in a financial precarious situation (panel B).

[l] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

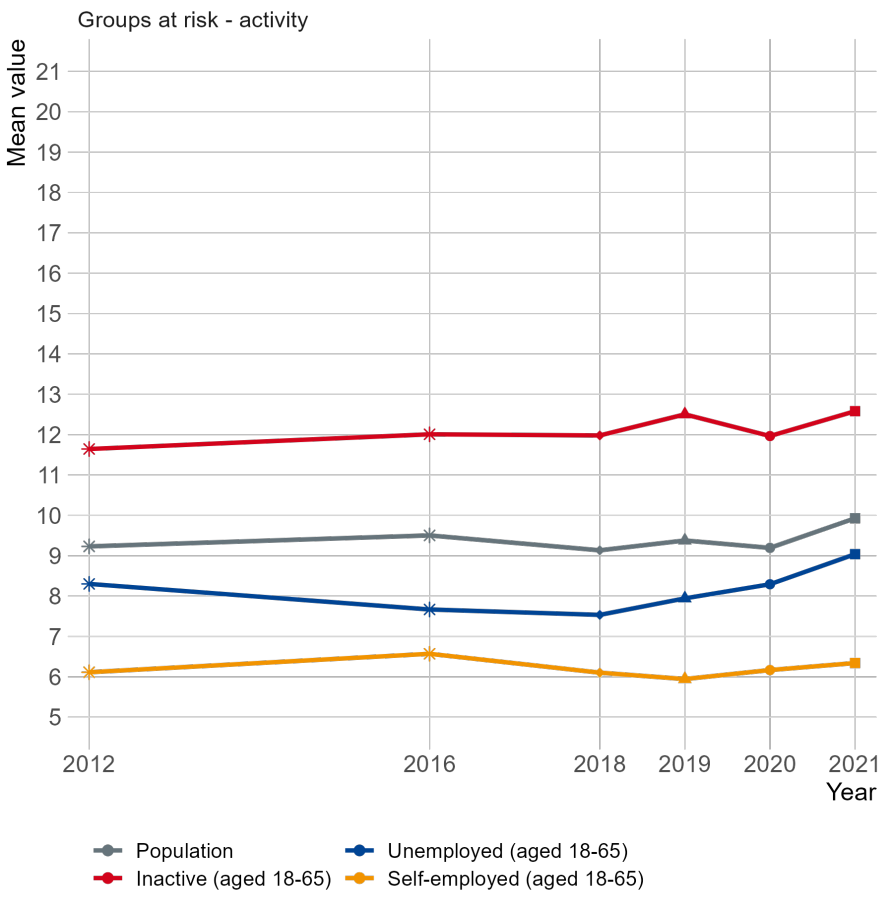
Figure 18 – Evolution (2012-2021) in the number of healthcare contacts in the past year for different subgroups and population groups at risk



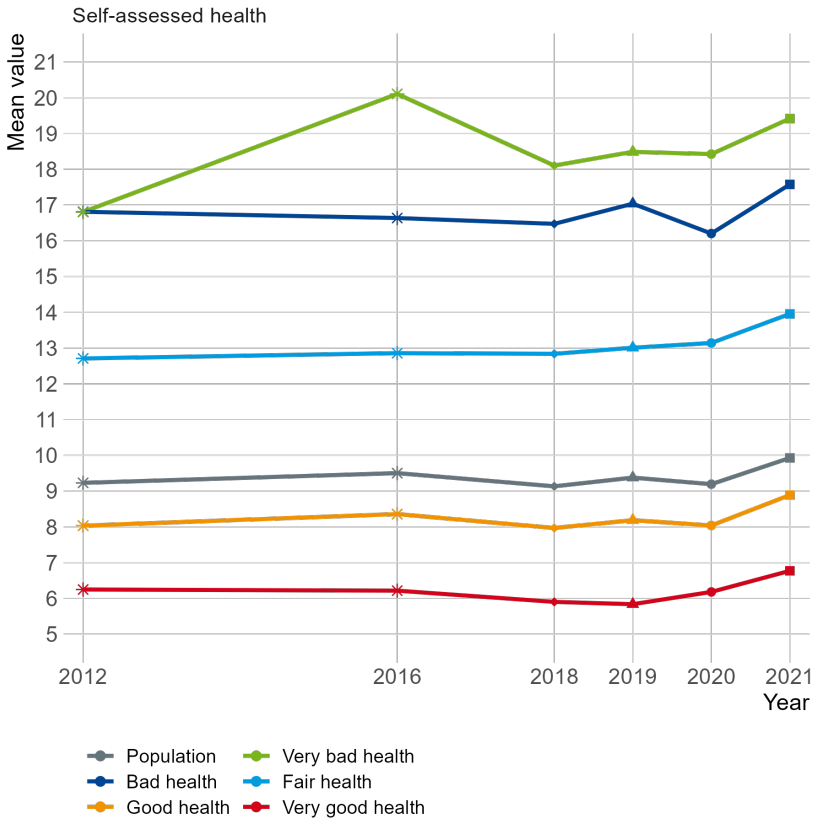
C


Education degree
Mean value
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

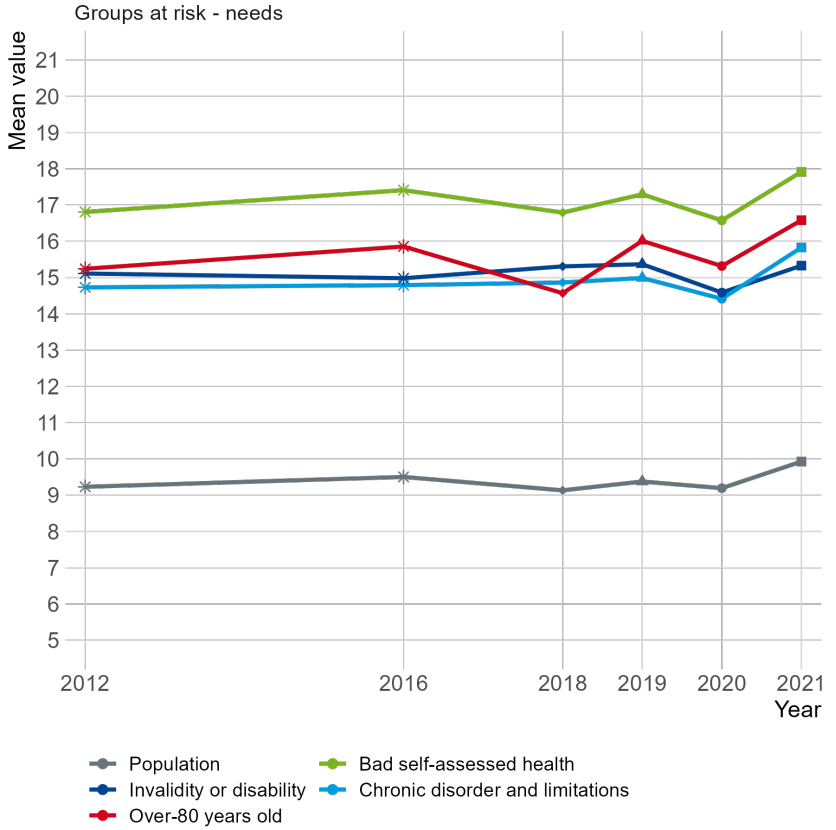
D


Groups at risk - activity
Mean value
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 19 and Figure 20 show how the number of healthcare contacts in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[m] In Figure 19, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 20, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower number of healthcare contacts than the population average. Values to the right of the vertical line, on the other hand, indicate a higher number of contacts than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 19 and Figure 20, we find that inequalities in the number of healthcare contacts can be important (range between -4 and +10 contacts) and in favour of individuals with worse health status, with low educational attainment, in inactivity, in invalidity, with low income, with increased reimbursement, and over-80 year olds. After correcting for healthcare needs, disparities are much less pronounced, i.e. the deviations from the population average are generally small or have disappeared (range between -2 and 1). The conditional number of healthcare contacts is below the population average for the unemployed, for individuals in invalidity, individuals in households with severe material deprivation and individuals at risk of poverty but without increased reimbursement, although for the latter group the situation is improving over time. On the other hand, for over-80 year olds, and individuals with increased reimbursement, we find that the number of healthcare contacts is above the population average even when accounting for healthcare needs.

Systematic socioeconomic inequity as measured by the concentration index

Figure 21 shows the absolute concentration index of the needs-corrected number of healthcare contacts in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as a higher needs-corrected number of healthcare contacts concentrated among individuals with lower educational attainment or lower income. Positive values indicate a higher needs-corrected number of healthcare contacts for individuals with higher educational attainment and higher income.

The results in Figure 21 reveal the presence of socioeconomic inequalities in the number of healthcare contacts both with respect to educational attainment (in favour of lower educated individuals) and income (in favour of low-income individuals). After correction for healthcare needs, disparities are much smaller and generally not significant, implying that there are no systematic inequities in the conditional number of healthcare contacts in the past year. Although not significant, the sign of the absolute concentration index for income has, however, reversed over time from positive (pro-rich) to negative (pro-poor).

[m] The output of the regression analysis on which the correction is based is available upon request.

Figure 19 – Inequality and inequity in the number of healthcare contacts in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

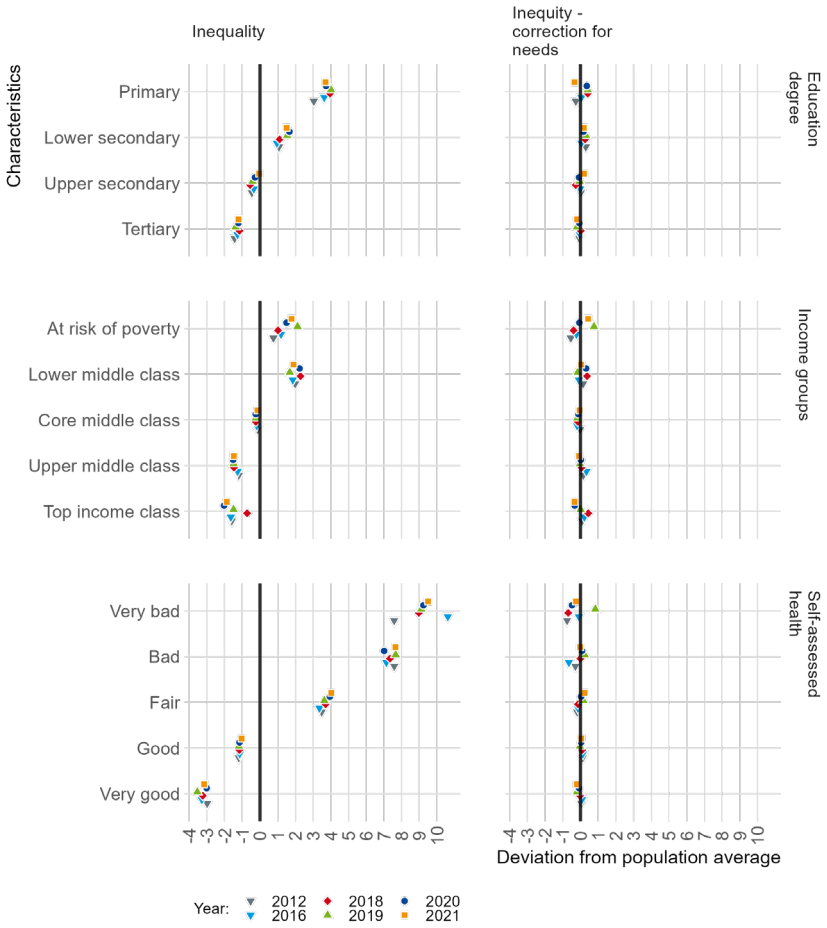


Figure 20 – Inequality and inequity in the number of healthcare contacts in the past year: difference between the general population and specific vulnerable population subgroups

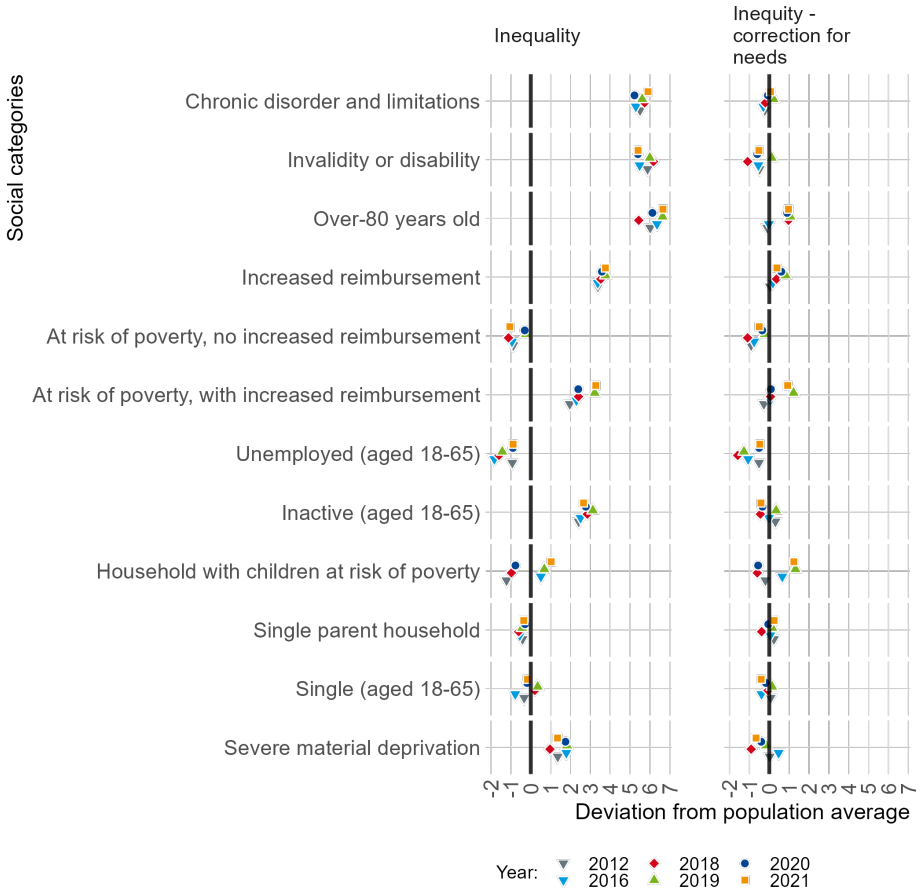
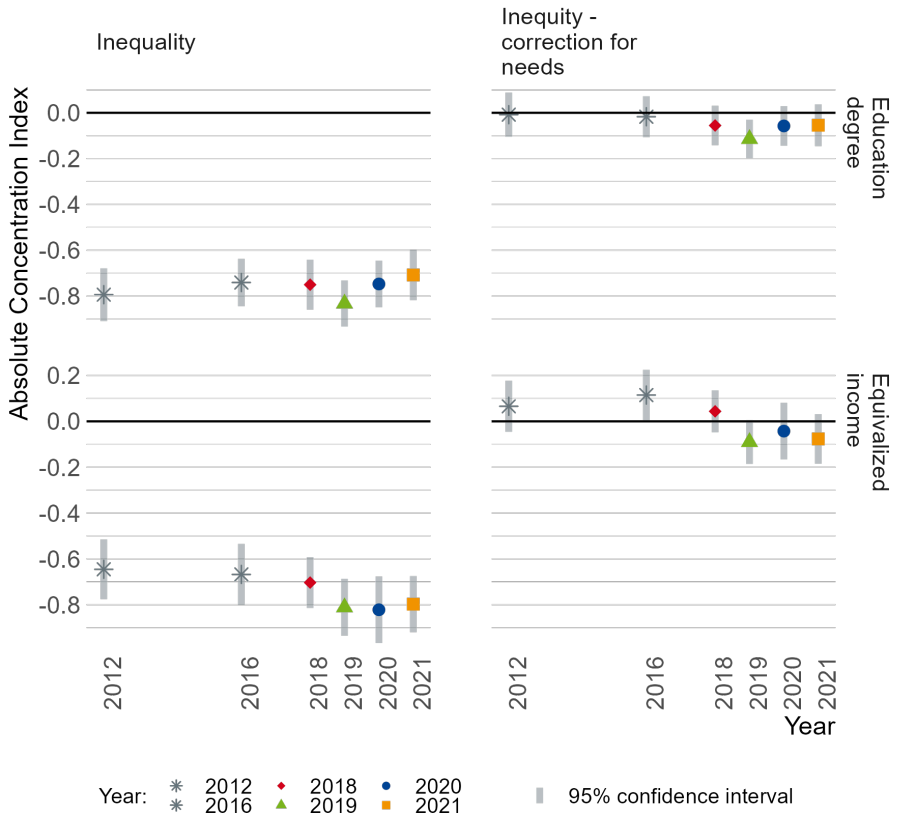


Figure 21 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of healthcare contacts in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **The average annual number of healthcare contacts (among those with at least one contact) increased from 9.2 in 2012 to 9.9 in 2021 among the survey sample (18+), with a particularly substantial rise in 2021. There is large variation in the average annual number of healthcare contacts between population subgroups, but little variation over time within each subgroup. The number of contacts is strongly associated with health status and to a lesser extent with the financial situation.**
- **After correction for needs, inequities in the conditional number of healthcare contacts are small (generally less than 1 contact per year on average). A lower number of contacts is found for the unemployed, for individuals in invalidity, individuals in households with severe material deprivation and individuals at risk of poverty but without increased reimbursement, although for the latter group the situation is improving over time.**
- **No inequities are found for beneficiaries of increased reimbursement, even if they are at risk of poverty.**
- **The concentration index demonstrates no systematic inequities by educational attainment or income. Although not significant, the sign of the absolute concentration index for income has, however, reversed over time from positive (pro-rich) to negative (pro-poor).**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C

2.3 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner (population aged 18+) (EQ-2)

2.3.1 Documentation sheet

Description	EQ-2 At least one contact with the healthcare system (general practitioner) (population aged 18+) Number of contacts with the healthcare system (general practitioner) (population aged 18+)
Calculation	We analyse inequity in contacts with a general practitioner (GP) over the past 12 months. Two types of utilisation are examined consecutively: the probability of a GP contact and the number of GP contacts given at least one contact. Individuals who are registered in a community health centre are excluded from the analysis as no registration in the IMA – AIM database is made for a GP consultation. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use. **Definition of GP contacts** - the qualification of the healthcare provider (variable ss00065B in IMA – AIM GZSS database) equal to 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9 - one of the following nomenclature codes (variable ss00020 in IMA – AIM GZSS database): 101010, 101032, 101076, 103110, 103132, 103213, 103235, 103412, 103434, 103913, 104112, 104215, 104230, 104252, 104355, 104510, 104532, 104554, 104650, 101135, 109012 **Exclusion criteria:** Persons registered in a community health centre. Individuals with a registration of nomenclature code 109616 at any point throughout the year were considered to be enrolled in a community health centre and excluded from the analysis.

International comparability	No
Limitations	See methodological note on equity in healthcare use
Dimension	Equity
Related indicators	EQ-1 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner, medical specialist, emergency department (population aged 18+) EQ-3 Contacts with the healthcare system (number of contacts and at least one contact): medical specialist (population aged 18+) EQ-4 Contacts with the healthcare system (number of contacts and at least one contact): emergency department (population aged 18+) EQ-5 Contacts with the healthcare system (number of contacts and at least one contact): inpatient hospitalisation (population aged 18+) A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS) A-6 People with self-reported unmet needs for medical examination due to financial reasons (% of respondents 16+, EU-SILC)
Reviewers	Carine Van de Voorde (KCE)

2.3.2 *Results – at least one GP contact*

Evolution over time in the probability to have at least one GP contact

Table 8 shows the evolution over time of the probability to have one or more GP contacts in the past year. According to IMA – AIM population data, 78.5% in 2012 up to 82.0% in 2020 of the insured population has had at least one GP contact over the past 12 months.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, the fraction of interviewed individuals who have consulted a GP at least once in the past year is higher but with a similar increasing trend, going from 81.2% in 2012 up to 83.7% in 2020 and climbing to 86.9% in 2021. Note that this probability is less than 10 percentage points lower than the probability to have a healthcare contact (GP, medical specialist and ED combined; EQ-1), implying that the overwhelming majority of individuals who had a healthcare contact has in fact consulted a GP (possibly in combination with a specialist consultation or ED visit) The probability to consult a GP is higher when restricting the sample to the adult population aged 18 or more, which is used in the regression and inequity analysis, going from 83.9% to 86.1% and 88.5% of the sample with at least one GP consultation in the past year in 2012, 2020 and 2021, respectively.

Table 8 – Evolution (2012-2021) of the probability to have one or more GP contacts in the past year

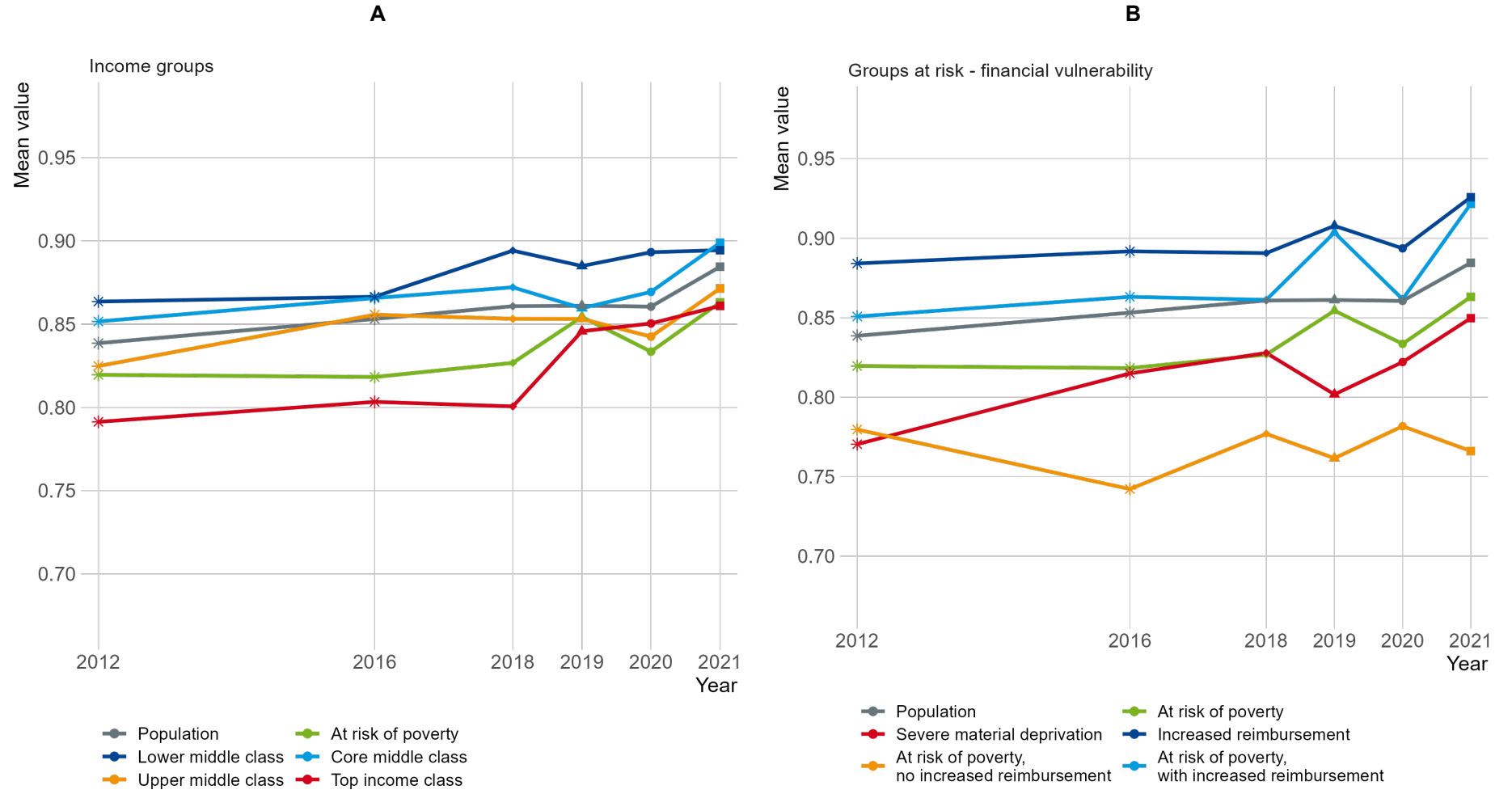
Sample	2012	2016	2018	2019	2020	2021
Population	78.5%	80.1%	81.0%	82.0%	82.0%	
Survey (all)	81.2%	83.0%	84.0%	83.7%	83.7%	86.9%
Survey (18+)	83.9%	85.3%	86.1%	86.1%	86.1%	88.5%

Figure 22[n] shows the evolution of the probability to have one or more GP contacts in the past year for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

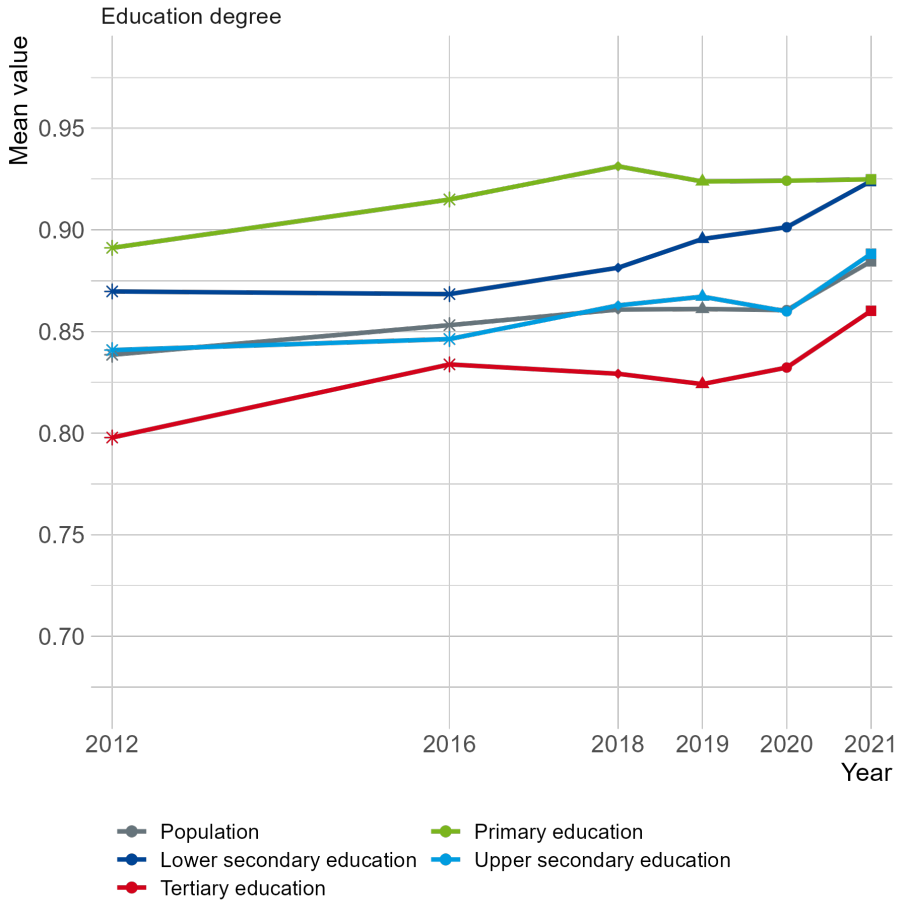
Figure 22 indicates that for most population subgroups, there is a stable or slightly upward trend over time. There is, however, a notable increase for individuals with severe material deprivation, individuals in the top income class, individuals in very good health (in particular in 2021), self-employed individuals and individuals in unemployment (panels A, B, D & E). For the latter two groups, the rise was interrupted by a decrease in 2018/2019. Second, the group of individuals at risk of poverty but without increased reimbursement is one of the few groups without an increase over time in the contact rate with a GP (panel B). Third, there is relatively little variation in the probability to consult a GP by income level (panel A). However, among individuals at risk of poverty, there is a wide and increasing gap between beneficiaries of increased reimbursement and those without increased reimbursement of about 7 percentage points in 2012 and 15 percentage points in 2021 (panel B). Fourth, individuals with high care needs, i.e. those in bad health, with chronic disorder and limitations, invalidity or disability have the highest probability to have a GP contact (over 93%) (panel F). In addition, individuals who benefit from increased reimbursement are also more likely to have a GP contact than other financially vulnerable groups (panel B).

[n] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

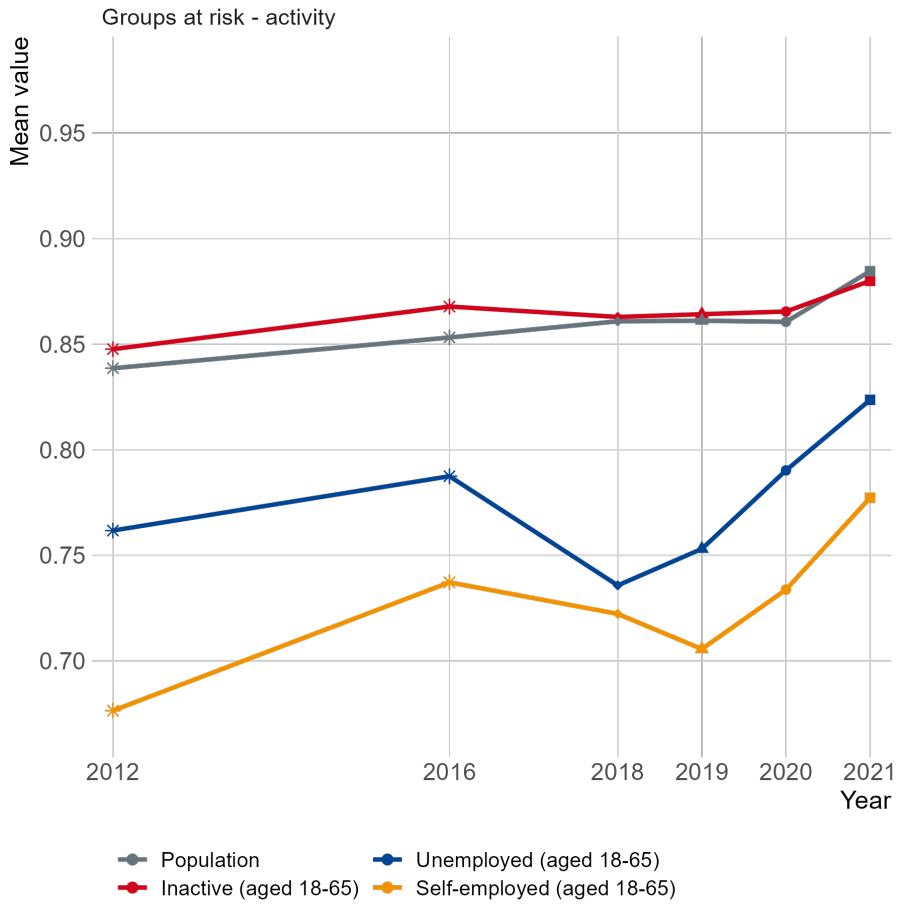
Figure 22 – Evolution (2012-2021) of the probability to have at least one GP contact for different subgroups and population groups at risk

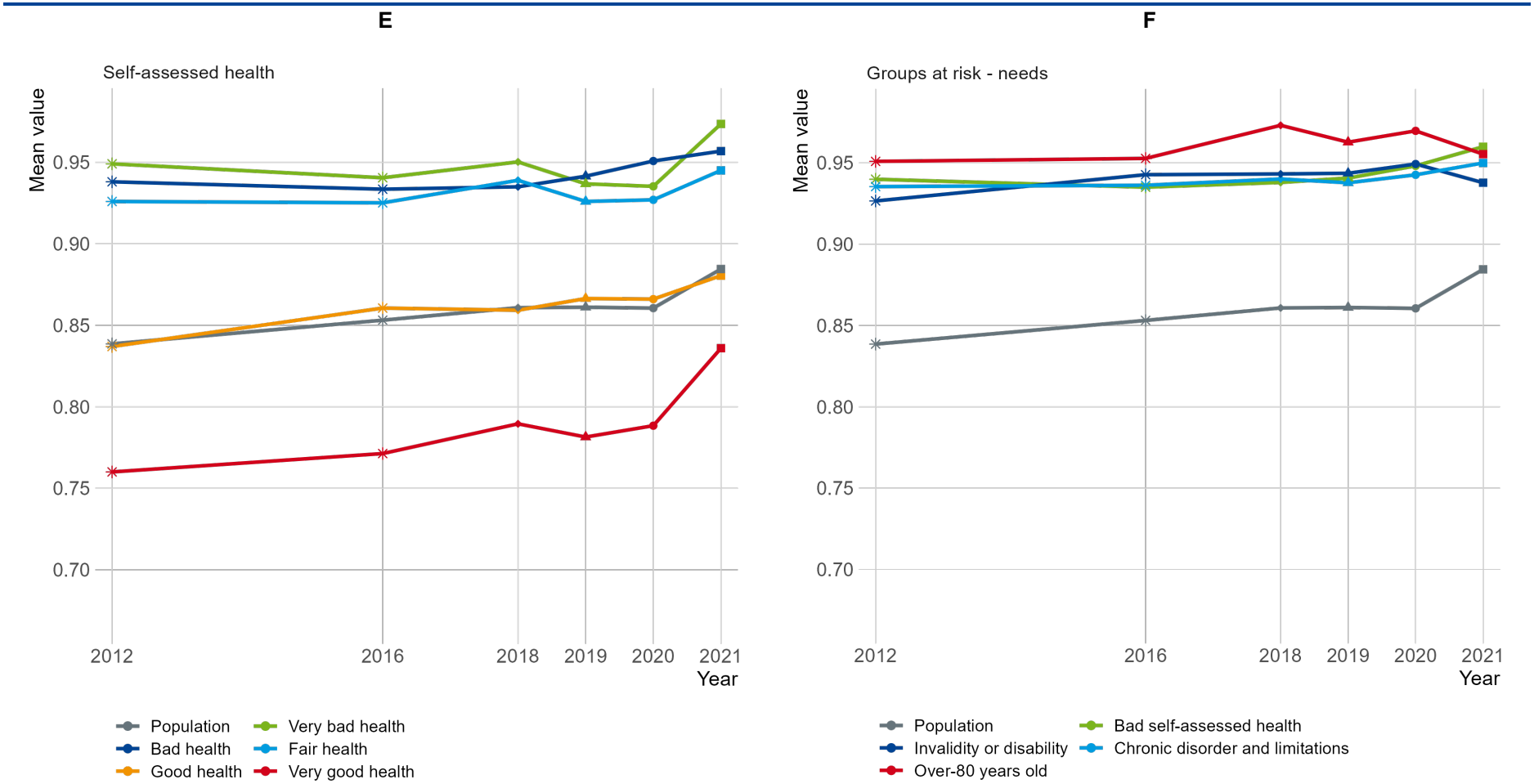


C


Education degree
Mean value
0.95
0.90
0.85
0.80
0.75
0.70
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

D


Groups at risk - activity
Mean value
0.95
0.90
0.85
0.80
0.75
0.70
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)


E
Self-assessed health
Mean value
0.95
0.90
0.85
0.80
0.75
0.70
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health
F
Groups at risk - needs
Mean value
0.95
0.90
0.85
0.80
0.75
0.70
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 23 and Figure 24 show how the probability to have a GP contact in the past year in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[o] In Figure 23, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 24, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having a GP contact than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 23 and Figure 24, we find that, for most population subgroups, disparities are less pronounced once a correction is made for healthcare needs, i.e. the deviations from the population average are lower in the inequity scenario compared to inequality. This is especially true for subgroups based on age and (self-assessed) health status.

The inequity pattern is rather similar as for healthcare contacts (EQ-1). We conclude

- **w.r.t. education:** there is a clear social gradient in the probability to have a GP contact with higher/lower contact rates among individuals with lower/higher educational attainment (column inequality). After correction for healthcare needs, the social gradient is less pronounced, but has not disappeared (column inequity).
- **w.r.t. income group:** after correcting for needs, we observe lower contact rates among individuals at risk of poverty and in the top income class.
- **w.r.t. self-assessed health**: individuals in fair, bad and very bad self-reported health have a higher probability of having a GP contact (column inequality), while the opposite is true for individuals with very good health. Such differences are nearly absent when a correction for healthcare needs is made (column inequity).
- **w.r.t. specific vulnerable groups:** there is a lower probability of having a GP contact in the past year among individuals who are unemployed, inactive, single (between 18 and 65 years old), individuals in households with severe material deprivation, individuals at risk of poverty but without increased reimbursement, and individuals in households with children at risk of poverty (column inequity). In some cases there is a positive evolution over time, i.e. the average is evolving towards the population average (e.g. unemployed individuals), but in other cases the situation is deteriorating, i.e. the difference is increasing over time (e.g. individuals at risk of poverty but without increased reimbursement). Individuals who benefit from increased reimbursement have a probability to have a GP contact in line with the population average after correcting for needs, even in households at risk of poverty.

[o] The output of the regression analysis on which the correction is based is available upon request.

Figure 23 – Inequality and inequity in the probability to have a GP contact in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

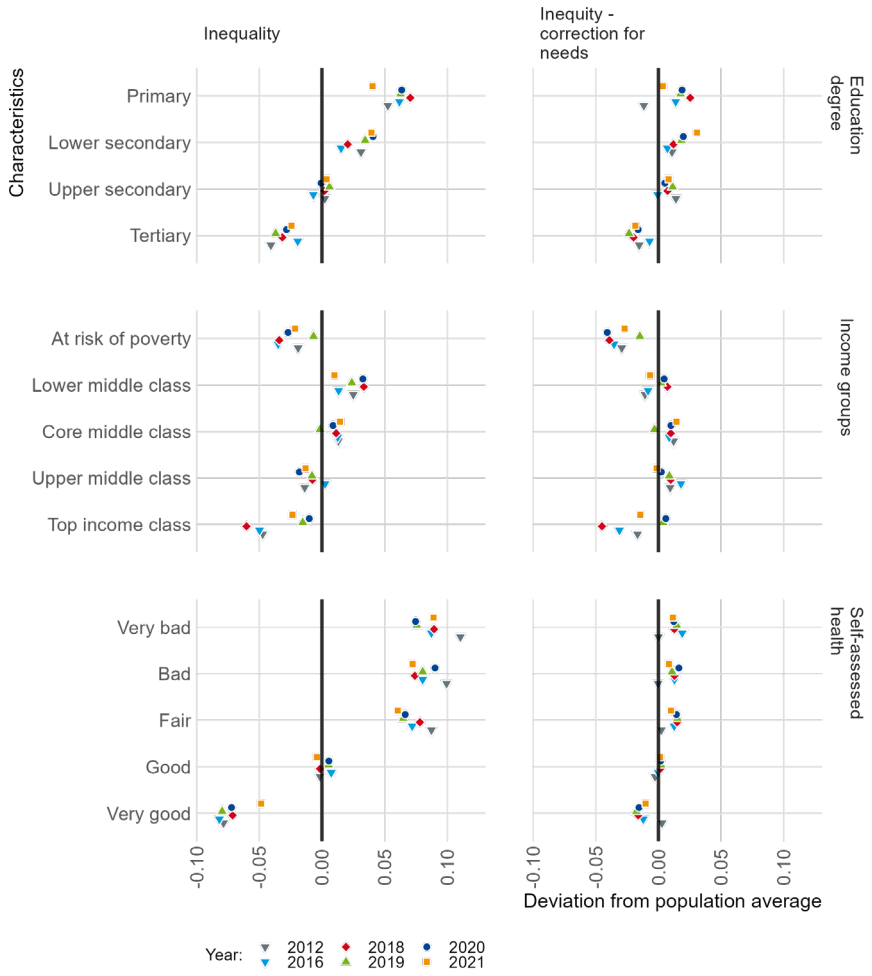
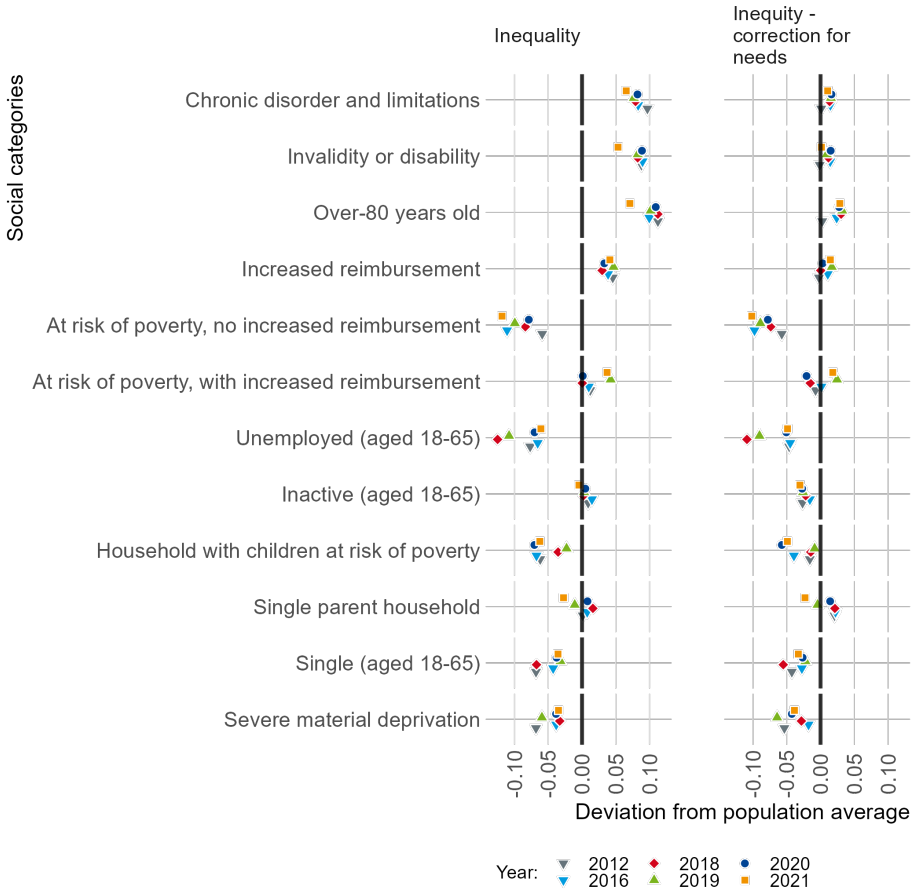


Figure 24 – Inequality and inequity in the probability to have a GP contact in the past year: difference between the general population and specific vulnerable population subgroups

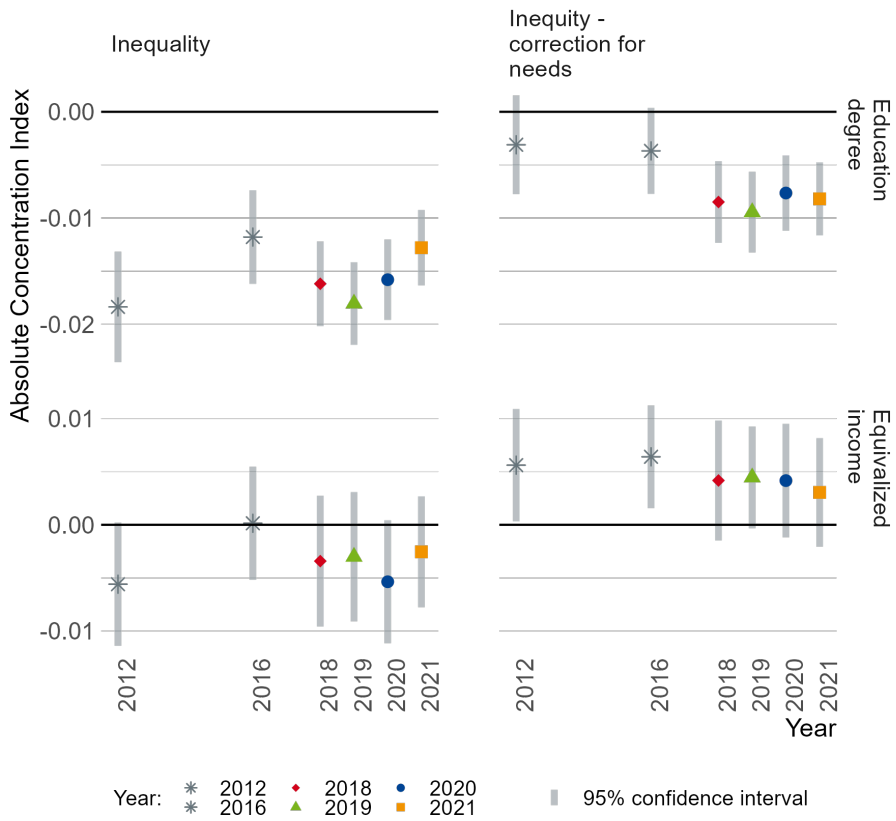


Systematic socioeconomic inequity as measured by the concentration index

Figure 25 shows the absolute concentration index of the needs-corrected probability to have a GP contact in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having a GP contact concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 25 show that there are socioeconomic inequalities in the probability to have a GP contact in the past year regarding educational attainment, with a higher use among low-educated individuals. No inequalities are found by income level. After correcting for needs, a similar picture emerges, with no inequities related to income and small but significant inequities related to educational attainment in favour of low-educated individuals.

Figure 25 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have a GP contact in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **GPs are fairly accessible. More than 80% of the population consulted a GP in the past year; over 93% among subgroups with high care needs. EU-SILC/IMA-AIM survey contact rates are slightly higher than population averages, but follow the same upward trend and additionally show a strong increase in 2021. Among individuals at risk of poverty, there is a wide and increasing gap between individuals with and without increased reimbursement. The latter group is one of the few population groups without an increase in GP contact rate over time.**
- **After correction for needs, inequities in the probability to have a GP contact remain. Lower probabilities are found for individuals at risk of poverty, individuals in the top income class, unemployed individuals, inactive individuals, singles between 18 and 65 years old, individuals in households with children at risk of poverty, individuals at risk of poverty but without increased reimbursement, and individuals in households with severe material deprivation. Both improving (e.g. unemployed individuals) and deteriorating (e.g. individuals at risk of poverty but without increased reimbursement) trends over time are observed.**
- **No inequities are found for beneficiaries of increased reimbursement, even when at risk of poverty. This suggests an improved accessibility for this group, that does not extend to other financially vulnerable groups.**
- **The concentration index demonstrates no systematic inequities by income and small but significant inequities by educational attainment (higher contact rates among low-educated individuals).**

2.3.3 *Results – number of GP contacts*

Evolution over time in the number of GP contacts in the past year

From Table 8 and Figure 22, we concluded that the probability of having at least one GP contact was high, between 79% and 89%, depending on year and sample, and has increased over time. Table 9 and Figure 26 additionally show the evolution over time of the number of GP contacts in the past year for individuals with at least one contact. For 2019 and 2020, there was a population benchmark available indicating an average of 5.5 and 5.8 GP contacts per year among individuals with at least one contact.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, we find an annual number of contacts of the same magnitude. Conditional on having at least one GP contact in the past year, the average number of contacts per individual fluctuated between 5.3 and 6.1 GP contacts per year, with a notable decrease between 2016 and 2018. The number of GP contacts is higher when restricting the sample to the adult population (+0.3/0.5 contacts per year), but follows the same time pattern.

Note that the number of GP contacts amounts to about two thirds of the number of healthcare contacts (EQ-1).

Table 9 – Evolution (2012-2021) of the number of GP contacts in the past year

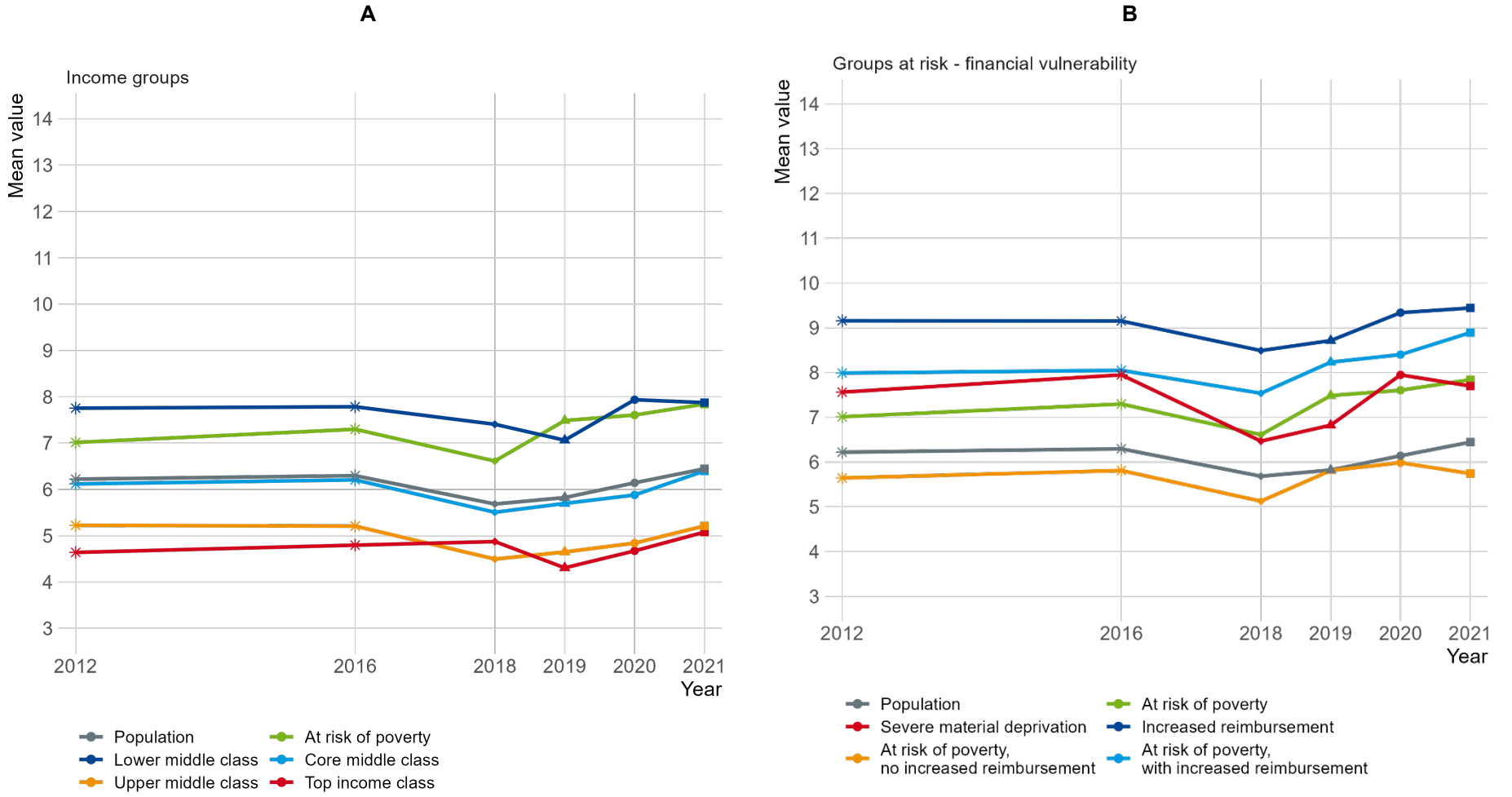
Sample	2012	2016	2018	2019	2020	2021
Population				5.50	5.80	
Survey (all)	5.87	5.97	5.33	5.45	5.65	6.05
Survey (18+)	6.22	6.30	5.68	5.82	6.14	6.45

Figure 26[p] shows the evolution of the number of GP contacts conditional on having at least one contact for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

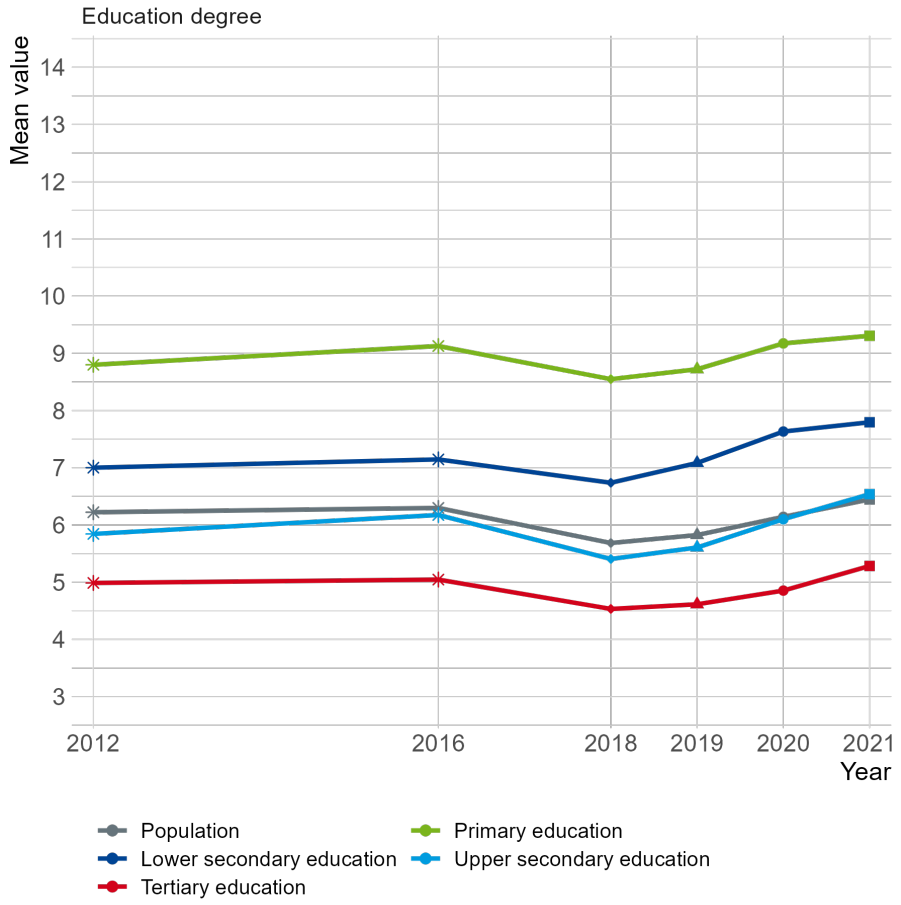
First, we find that most population groups follow a similar trend as the population, with a decrease in 2018 followed by a gradual increase up to 2021. Second, a higher number of GP contacts (annually between 8 and 12 on average, see panel F) is observed for individuals with high care needs, i.e. those in (very) bad health, with chronic disorder and limitations to daily activities, over-80 year olds and individuals with invalidity/disability. Third, while individuals who qualify their health status as fair and (very) bad have a similar probability to have a GP contact (see Table 8), there is a divergence in the average number of consultations (panel E). In general, there is a large difference in the number of contacts by self-assessed health status (less than 5 contacts on average in 2021 for individuals with very good health to more than 15 for individuals with very bad health). Fourth, there appears to be some financial issues related to the frequency at which a doctor is consulted. Individuals who experience severe material deprivation or are at risk of poverty, have a number of contacts only slightly above the population average, while individuals at risk of poverty but without increased reimbursement have a number of contacts below the population average (see panel B). It is striking in that sense that individuals at risk of poverty have in most years a lower number of contacts than individuals in the lower middle class, although this seems to have improved more recently (panel A). Finally, the subgroup of individuals with increased reimbursement, who benefit from reduced co-payments and for GP care from the mandatory third payer system, have a significantly higher number of contacts than the average number among individuals in a financial precarious situation (panel B).

[p] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

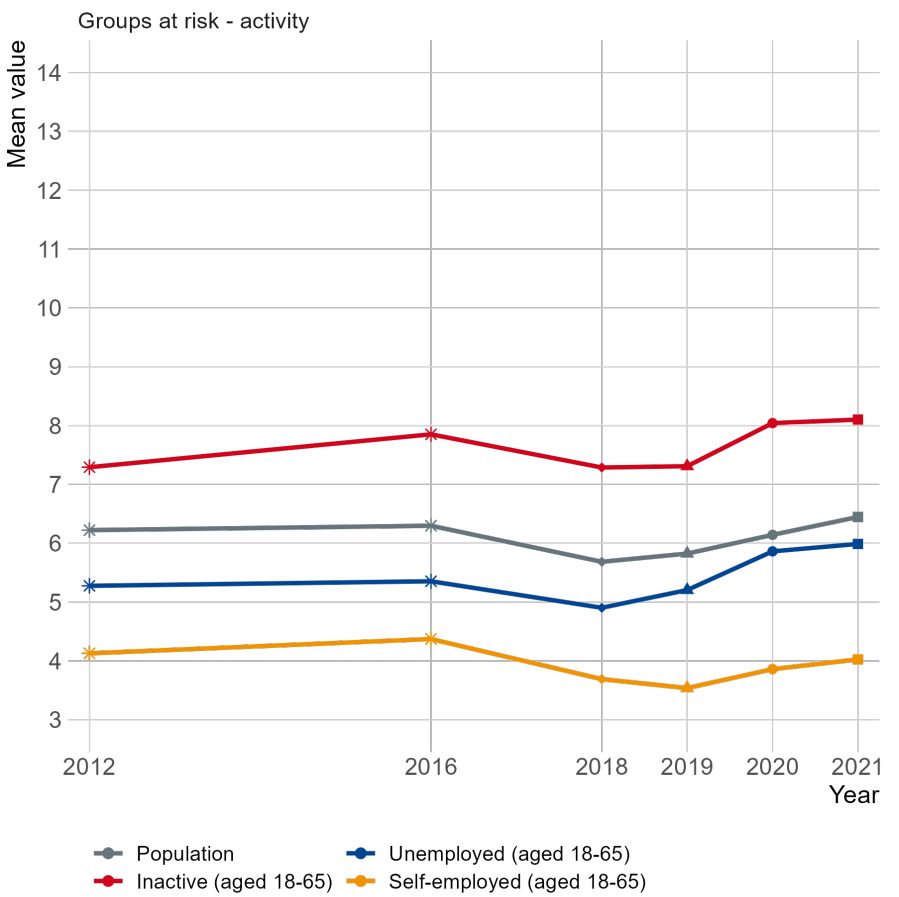
Figure 26 – Evolution (2012-2021) in the number of GP contacts in the past year for different subgroups and population groups at risk



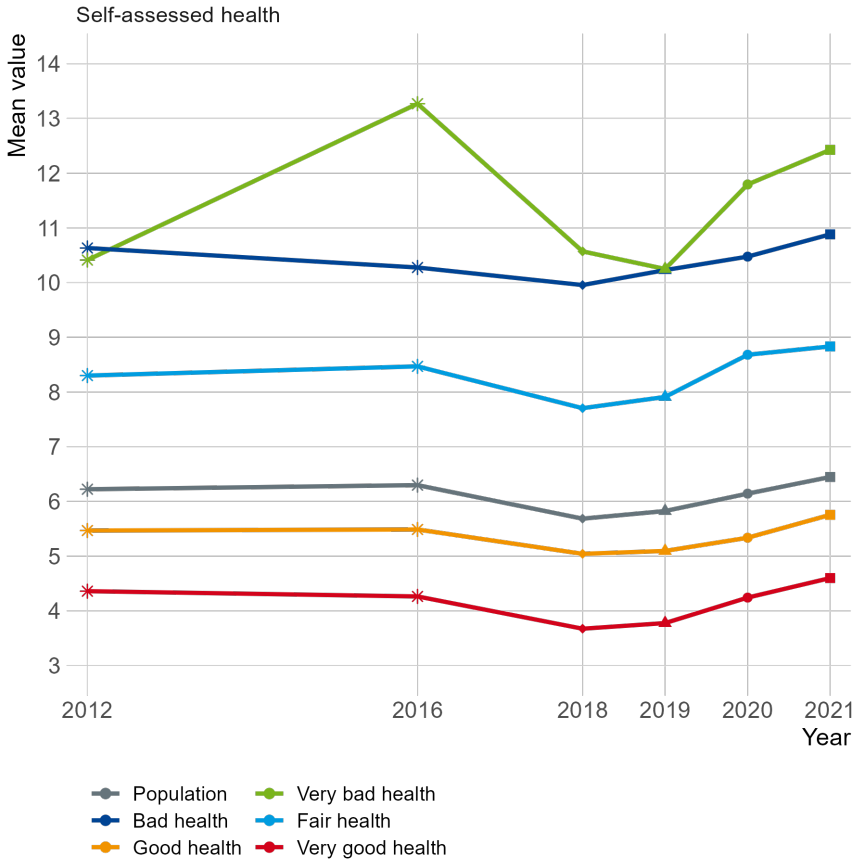
C


Education degree
Mean value
14
13
12
11
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Lower secondary education
Tertiary education
Primary education
Upper secondary education

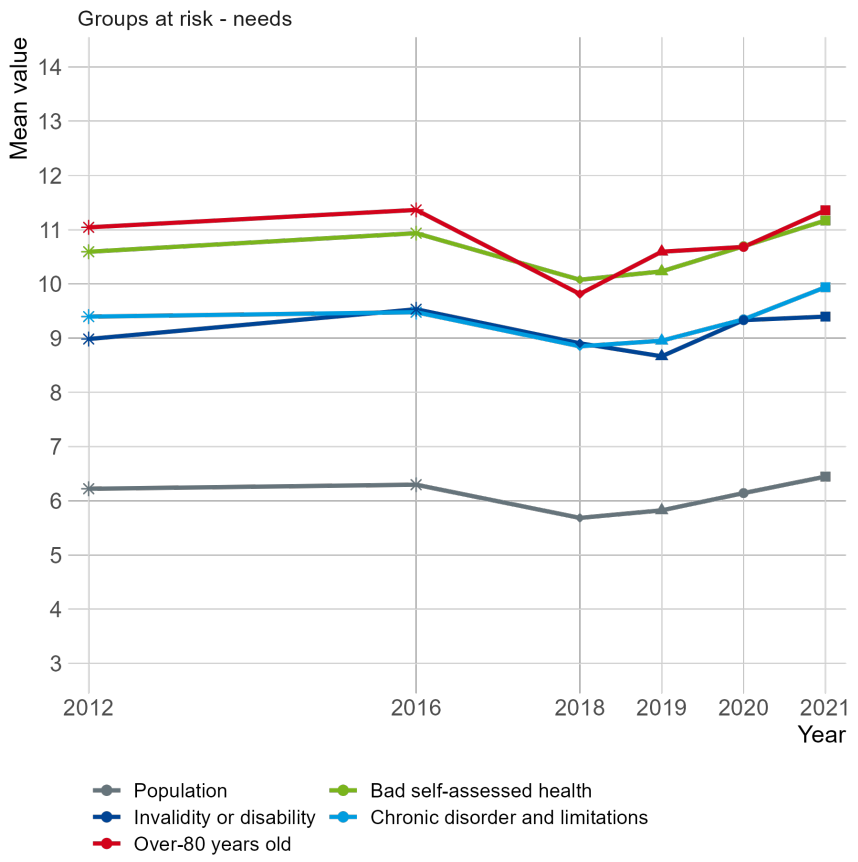
D


Groups at risk - activity
Mean value
14
13
12
11
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Inactive (aged 18-65)
Unemployed (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
14
13
12
11
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
14
13
12
11
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 27 and Figure 28 show how the number of GP contacts in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[q] In Figure 27, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 28, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower number of GP contacts than the population average. Values to the right of the vertical line, on the other hand, indicate a higher number of contacts than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 27 and Figure 28, we find that inequalities in the number of GP contacts can be important (range between -2 and +7 contacts) and in favour of individuals with worse health status, with low educational attainment, with low income, in inactivity, in invalidity, with increased reimbursement, with material deprivation and over-80 year olds. After correcting for healthcare needs, disparities are much less pronounced, i.e. the deviations from the population average are generally small or have disappeared (range between -1 and 2). The conditional number of GP contacts is below the population average for the unemployed, for individuals at risk of poverty but without increased reimbursement, for higher educated individuals and individuals in the upper middle and top income class. On the other hand, the number of GP contacts is above the population average after accounting for healthcare needs for individuals at risk of poverty, low-educated individuals, beneficiaries of increased reimbursement, individuals in households at risk of poverty, and over-80 year olds.

Systematic socioeconomic inequity as measured by the concentration index

Figure 29 shows the absolute concentration index of the needs-corrected number of GP contacts in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as a higher needs-corrected number of GP contacts concentrated among individuals with lower educational attainment or lower income. Positive values indicate a higher needs-corrected number of GP contacts for individuals with higher educational attainment and higher income.

The results in Figure 29 reveal the presence of socioeconomic inequalities and inequities in the number of GP contacts both with respect to educational attainment (in favour of lower educated individuals) and income (pro-poor: in favour of low-income individuals). The found inequities are of similar magnitude and have increased somewhat between 2016 and 2020.

[q] The output of the regression analysis on which the correction is based is available upon request.

Figure 27 – Inequality and inequity in the number of GP contacts in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

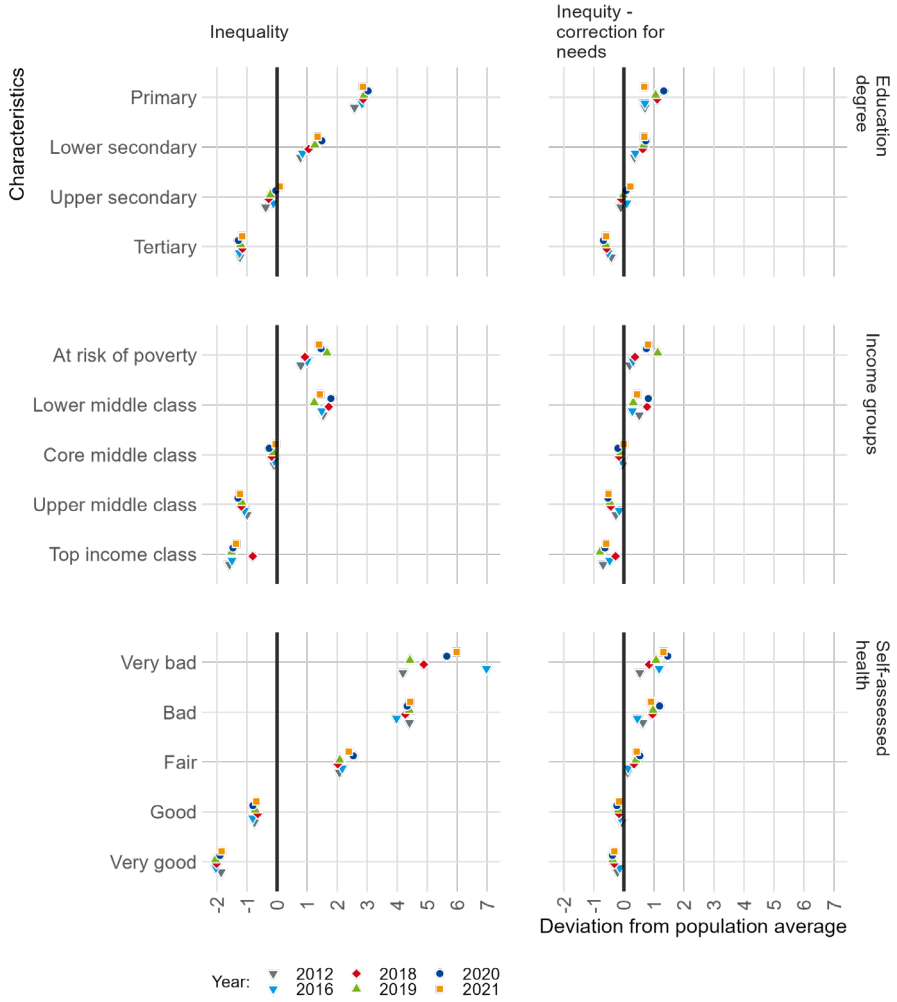


Figure 28 – Inequality and inequity in the number of GP contacts in the past year: difference between the general population and specific vulnerable population subgroups

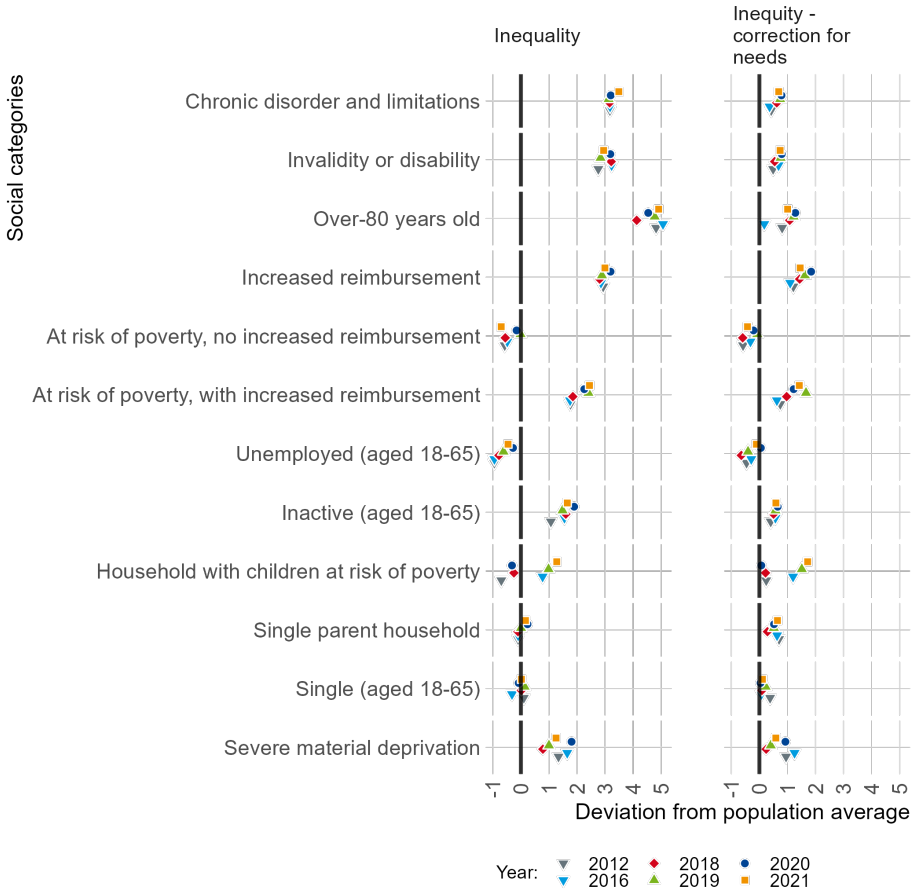
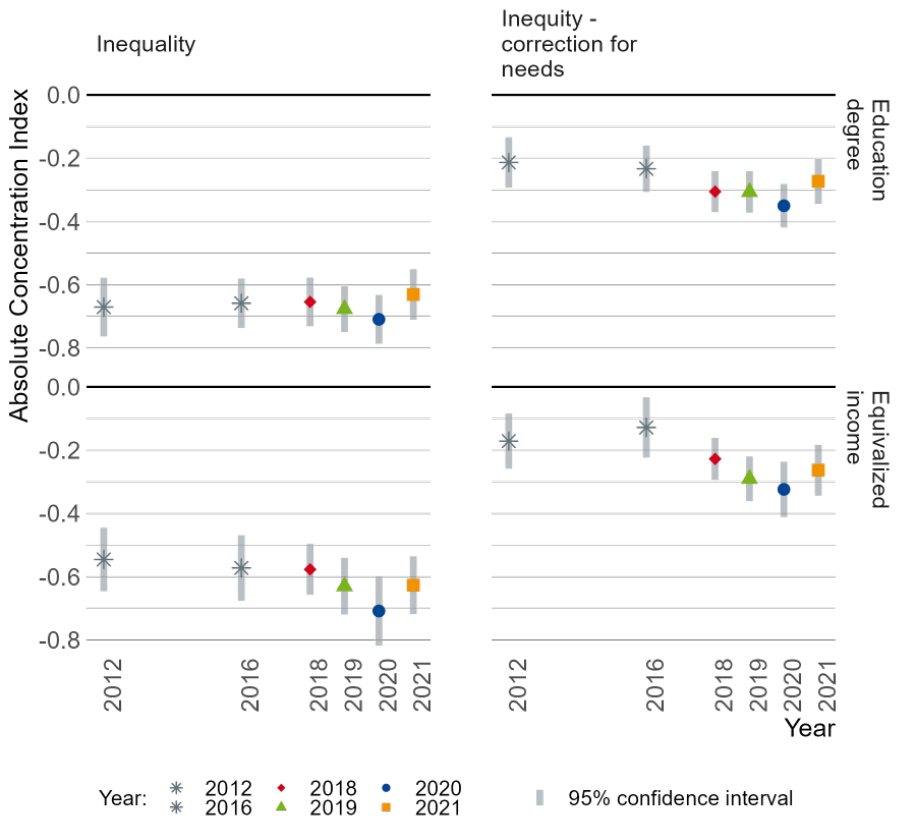


Figure 29 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of GP contacts in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **The average annual number of GP contacts (among those with at least one GP contact) increased from 6.2 in 2012 to 6.5 in 2021 among the survey sample (18+), with a drop between 2016 and 2018. There is large variation in the average annual number of GP contacts between population subgroups, but much little variation over time within each subgroup. The number of contacts is strongly associated with health status and to a lesser extent with the financial situation.**
- **After correction for needs, inequities in the conditional number of GP contacts are found (with deviation between -1 and +2 GP contacts on average per year). A lower number of contacts is found for the unemployed, for individuals at risk of poverty but without increased reimbursement, and for high-educated and high-income individuals. A higher number of GP contacts is found for individuals at risk of poverty, low-educated individuals, beneficiaries of increased reimbursement, individuals in households at risk of poverty, and over-80 year olds.**
- **The concentration index demonstrates systematic inequities both with respect to educational attainment (in favour of lower educated individuals) and income (pro-poor: in favour of low-income individuals). Inequities increased somewhat between 2016 and 2020.**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C

2. IMA-AIM Atlas.2023. Available from: https://atlas.ima-aim.be/databanken/

2.4 Contacts with the healthcare system (number of contacts and at least one contact): medical specialist (population aged 18+) (EQ-3)

2.4.1 Documentation sheet

Description	EQ-3 At least one contact with the healthcare system (medical specialist) (population aged 18+) Number of contacts with the healthcare system (medical specialist) (population aged 18+)
Calculation	We analyse inequity in contacts with a medical specialist over the past 12 months. Two types of utilisation are examined consecutively: the probability of a contact with a medical specialist and the number of contacts with a medical specialist given at least one contact. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use. **Definition of contacts with a medical specialist** - the qualification of the healthcare provider (variable ss00065B in IMA – AIM GZSS database) not equal to 0, 1, 2, 3, 4, 5, 6, 7, 8 or 9 - one of the following nomenclature codes (variable ss00020 in IMA – AIM GZSS database): 101275, 101290, 101592, 101614, 101636, 101651, 101835, 101872, 101990, 102012, 102034, 102071, 102093, 102115, 102130, 102152, 102174, 102196, 102211, 102233, 102255, 102270, 102292, 102314, 102336, 102351, 102373, 102535, 102550, 102572, 102594, 102616, 102631, 102653, 102675, 102690, 102712, 102734, 102756, 102815, 102830, 102874, 102896, 102911, 102933, 102955, 102970, 102992, 103014, 103051, 103073, 103250, 103456, 103471, 103493, 103504, 103736, 103751, 103773, 103795, 103810, 103832, 104812, 104834, 104856, 104871, 105372, 105394, 105416, 105431, 105453, 105475, 105490, 105512, 105534, 105556, 105571, 105593, 105615, 105630, 105652, 105674, 105696, 105711, 105733, 105755, 105770, 105792, 105814, 105836, 105851, 105873, 105895, 105910, 105932, 105954, 105976, 105991, 106293, 106315, 106330, 106352, 106374, 106396, 106411, 106433, 106455, 106470, 109336, 109351, 109410, 109513, 109535, 109550, 109572, 109631, 109653, 109675, 101135, 109012

International comparability	No
Limitations	See methodological note on equity in healthcare use
Dimension	Equity
Related indicators	EQ-1 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner, medical specialist, emergency department (population aged 18+) EQ-2 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner (population aged 18+) EQ-4 Contacts with the healthcare system (number of contacts and at least one contact): emergency department (population aged 18+) EQ-5 Contacts with the healthcare system (number of contacts and at least one contact): inpatient hospitalisation (population aged 18+) A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS) A-6 People with self-reported unmet needs for medical examination due to financial reasons (% of respondents 16+, EU-SILC)
Reviewers	Carine Van de Voorde (KCE)

2.4.2 *Results – at least one contact with a medical specialist*

Evolution over time in the probability to have at least one contact with a medical specialist

Table 10 shows the evolution over time of the probability to have one or more contacts with a medical specialist in the past year. According to IMA – AIM population data, between 61% and 63% of the insured population has had at least one contact with a medical specialist over the past 12 months, with a substantial drop to 58.3% in COVID-19 year 2020.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, the fraction of interviewed individuals who have consulted a medical specialist at least once in the past year is somewhat higher (by 2 to 3 percentage points), but shows the same drop in 2020. The probability to consult a medical specialist is higher (by 2 to 3 percentage points) when restricting the sample to the adult population aged 18 or more, which is used in the regression and inequity analysis.

Table 10 – Evolution (2012-2021) of the probability to have one or more contacts with a medical specialist in the past year

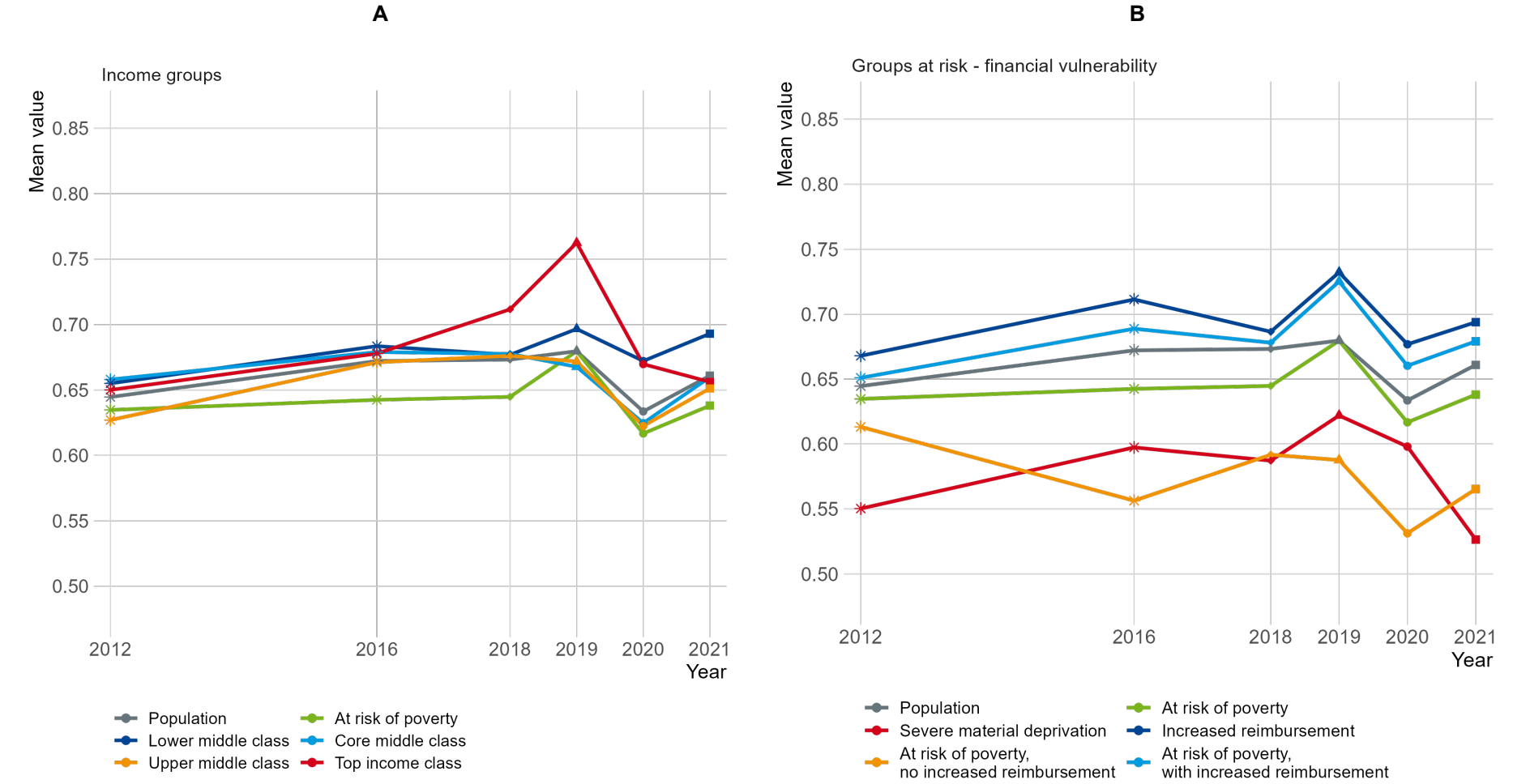
Sample	2012	2016	2018	2019	2020	2021
Population	61.9%	62.9%	62.4%	62.5%	58.3%	61.3%
Survey (all)	63.6%	65.4%	65.0%	66.1%	61.1%	64.3%
Survey (18+)	64.5%	67.2%	67.3%	68.0%	63.4%	66.1%

Figure 30[r] shows the evolution of the probability to have one or more contacts with a medical specialist in the past year for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

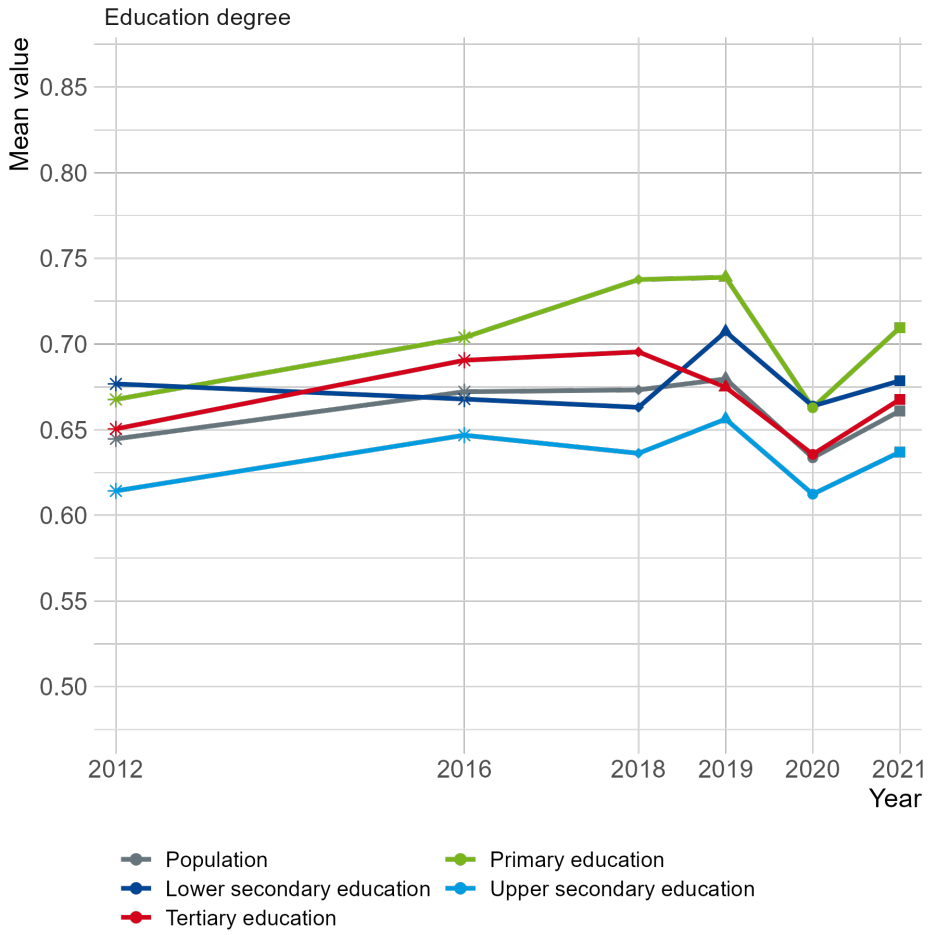
Figure 30 indicates that most population subgroups follow the general trend in the adult population with an slight increase up to 2019 and a drop in 2020. There are, however, some exceptions. We find a decrease over time in the probability to consult a medical specialist for individuals at risk of poverty but without increased reimbursement, individuals with severe material deprivation, self-employed individuals and individuals with (very) bad self-assessed health (panels B, D & E). Second, while we found that individuals in the top income class or with a tertiary degree had the lowest probabilities to consult a GP compared to individuals in other income classes or other education degrees (EQ-2), these groups have relatively higher probabilities to consult a medical specialist (panels A & C). Third, there is relatively little variation in the probability to consult a medical specialist by income level (panel A). However, among individuals at risk of poverty, there is a wide and increasing gap between individuals with and without increased reimbursement of less than 5 percentage points in 2012 and more than 10 percentage points in 2021 (panel B). Fourth, individuals with high care needs, i.e. those in bad health with chronic disorder and limitations, invalidity or disability have the highest probability to have a contact with a medical specialist (over 77%) (panel F). In addition, individuals who benefit from increased reimbursement are also more likely to have a contact with a medical specialist than other financially vulnerable groups (panel B). In particular individuals at risk of poverty but without increased reimbursement, individuals with severe material deprivation, self-employed individuals and unemployed individuals have low contact rates (panels B & D).

[r] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

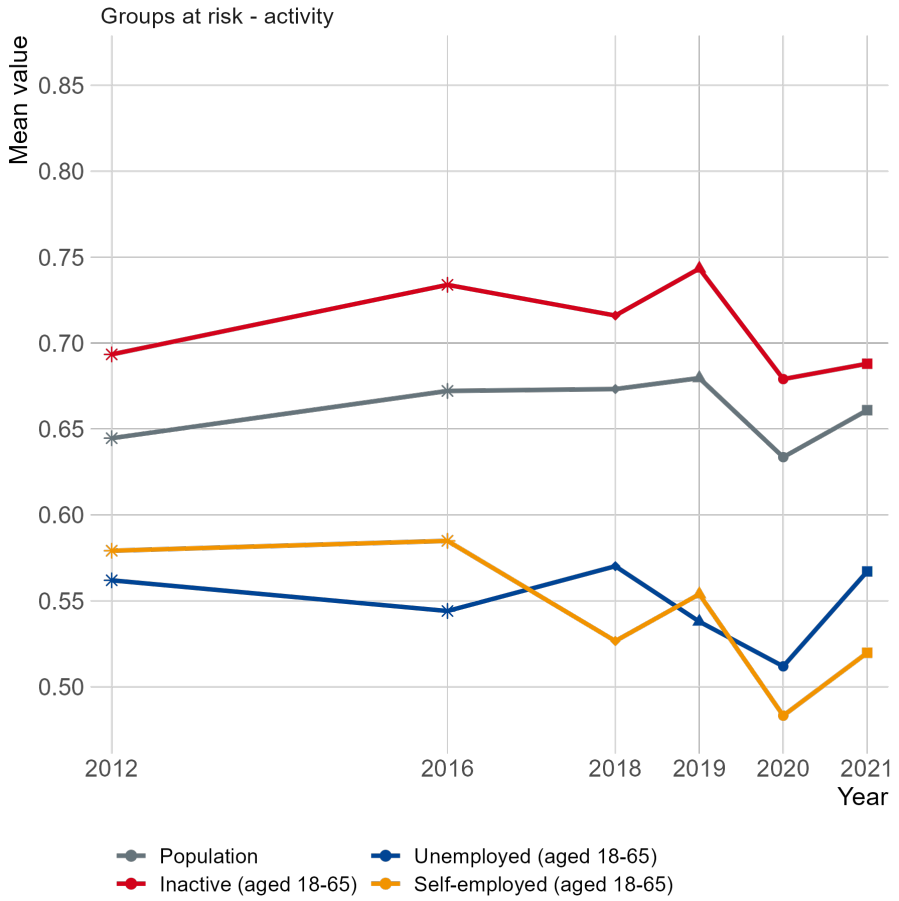
Figure 30 – Evolution (2012-2021) of the probability to have at least one specialist contact for different subgroups and population groups at risk

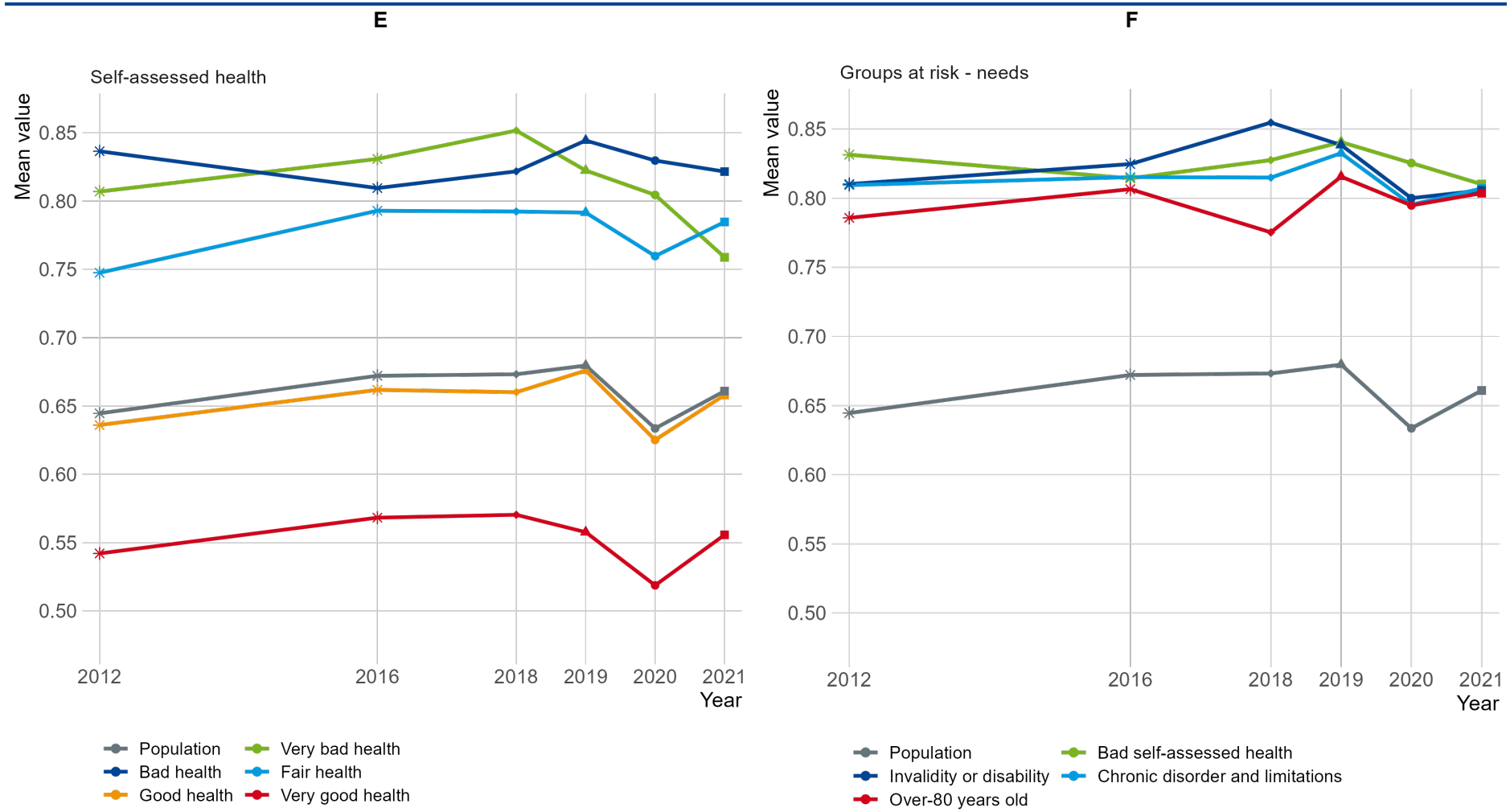


C


Education degree
Mean value
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
2012
2016
2018
2019
2020
2021
Year
Population
Lower secondary education
Tertiary education
Primary education
Upper secondary education

D


Groups at risk - activity
Mean value
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
2012
2016
2018
2019
2020
2021
Year
Population
Inactive (aged 18-65)
Unemployed (aged 18-65)
Self-employed (aged 18-65)


E
Self-assessed health
Mean value
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
2012
2016
2018
2019
2020
2021
Year
Population
Bad health
Good health
Very bad health
Fair health
Very good health
F
Groups at risk - needs
Mean value
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
2012
2016
2018
2019
2020
2021
Year
Population
Invalidity or disability
Over-80 years old
Bad self-assessed health
Chronic disorder and limitations

Overview inequity over time for different population subgroups

Figure 31 and Figure 32 show how the probability to have a contact with a medical specialist in the past year in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[s] In Figure 31, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 32, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having a contact with a medical specialist than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

Contrary to the assessment of inequities of GP care (EQ-2) or healthcare contacts in general (EQ-1), we find in Figure 31 and Figure 32 that socioeconomic disparities are often more pronounced once a correction is made for healthcare needs, i.e. the deviations from the population average are larger in the inequity scenario compared to inequality. This is especially true for subgroups based on income and educational attainment. Also the value of the socioeconomic inequities is larger than for GP care (EQ-2) or healthcare contacts in general (EQ-1).

We conclude

- **w.r.t. education:** after correction for healthcare needs, there is a clear social gradient in the probability to have a contact with a medical specialist with lower/higher contact rates among individuals with lower/higher educational attainment (column inequity). Simply looking at inequalities paints a different picture with higher contact rates among low-educated individuals.
- **w.r.t. income group:** after correction for healthcare needs, we observe a clear social gradient with contact rates increasing with income (column inequity). Inequalities on the other hand were minor.
- **w.r.t. self-assessed health**: individuals in fair, bad and very bad self-reported health have a higher probability of having a contact with a medical specialist, while the opposite is true for individuals with very good health (column inequality). Such differences are nearly absent when a correction for healthcare needs is made (column inequity).
- **w.r.t. specific vulnerable groups:** after correction for healthcare needs, there is a lower probability of having a contact with a medical specialist in the past year in nearly all financially vulnerable population groups (column inequity). The lower probability is particularly pronounced for individuals who are unemployed, individuals in households with severe material deprivation, individuals at risk of poverty but without increased reimbursement, and individuals in households with children at risk of poverty (column inequity). In some cases there is a positive evolution over time, i.e. the average is evolving towards the population average (e.g. unemployed individuals), but in other cases the situation is deteriorating, i.e. the difference is increasing over time (e.g. individuals with severe material deprivation). Beneficiaries of increased reimbursement also have a probability to have a contact with a medical specialist below the population average after correcting for needs. The latter is striking, as the probability to consult a GP or have a healthcare contact in general for this group was in line with the population average (EQ-1, EQ-2).

[s] The output of the regression analysis on which the correction is based is available upon request.

Figure 31 – Inequality and inequity in the probability to have a contact with a medical specialist in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

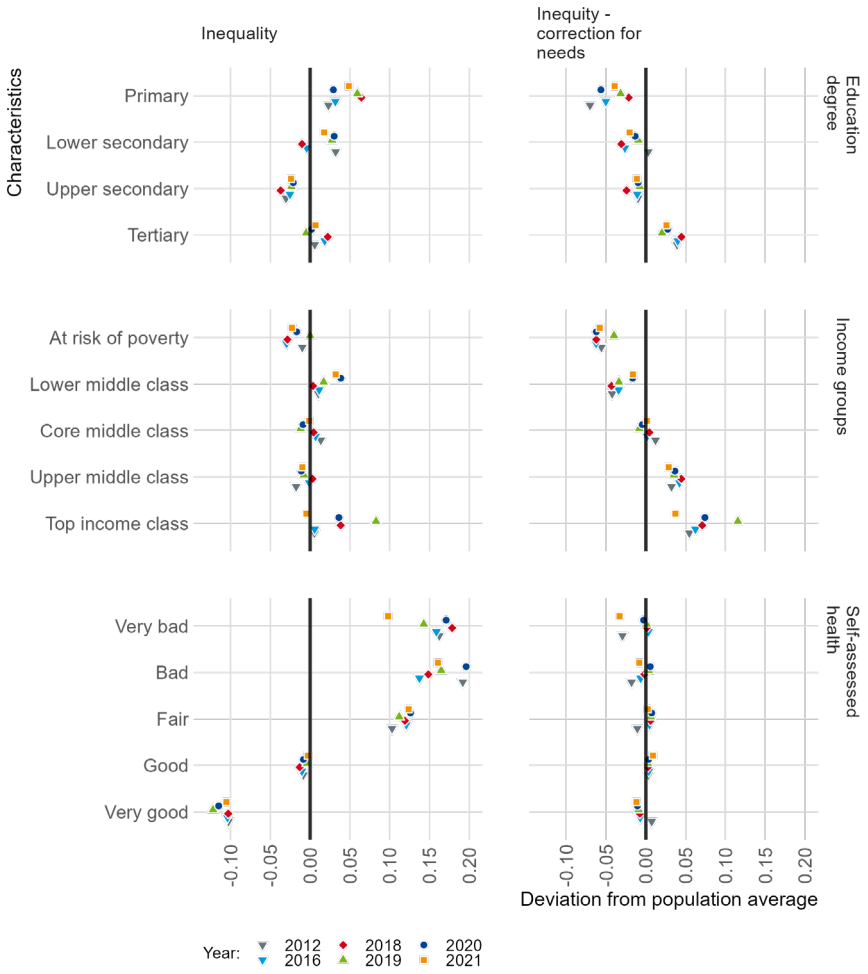
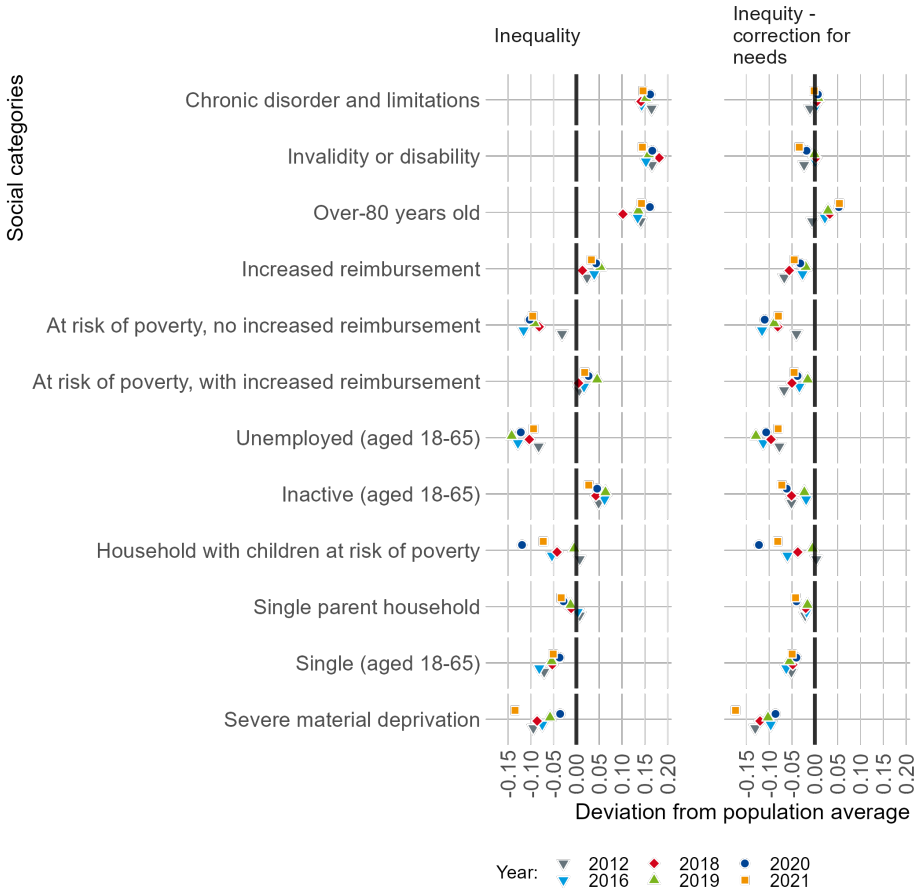


Figure 32 – Inequality and inequity in the probability to have a contact with a medical specialist in the past year: difference between the general population and specific vulnerable population subgroups

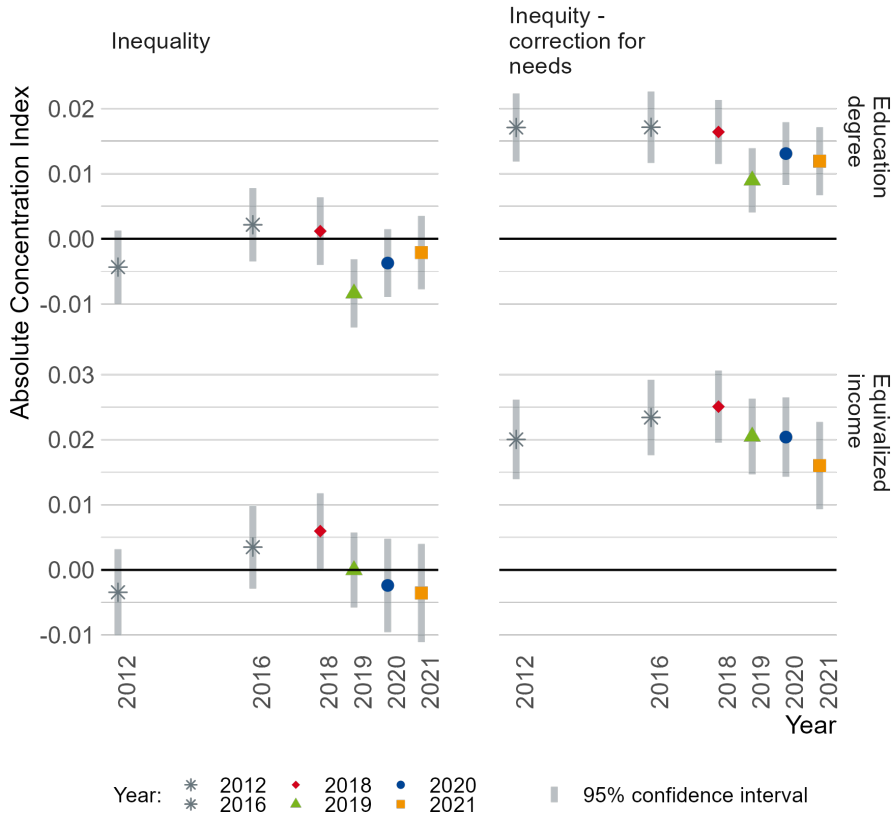


Systematic socioeconomic inequity as measured by the concentration index

Figure 33 shows the absolute concentration index of the needs-corrected probability to have a contact with a medical specialist in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having a contact with a medical specialist concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 33 show that there are no socioeconomic inequalities in the probability to have a contact with a medical specialist in the past year regarding educational attainment or income. After correction for needs, systematic socioeconomic inequities are found with regard to both income (pro-rich: in favour of more affluent individuals) and educational attainment (in favour of high-educated individuals). The inequities have decreased somewhat between 2018 and 2021.

Figure 33 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have a contact with a medical specialist in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **Over 60% of the population consulted a medical specialist in the past year; over 77% among high care groups. There was a substantial drop in contact rates in 2020. EU-SILC/IMA-AIM survey contact rates are somewhat higher than population averages. Among individuals at risk of poverty, there is a wide and increasing gap between individuals with and without increased reimbursement. The latter group is one of the few population groups with decreasing contact rates over time, together with individuals in households with severe material deprivation and self-employed individuals.**
- **After correction for needs, there are important socioeconomic inequities in the probability to have a contact with a medical specialist. Clear social gradients are found with regard to income class and educational attainment with contact rates increasing with income and level of education. Inequities in the probability to consult a specialist are also found for individuals who are unemployed, individuals in households with severe material deprivation, individuals at risk of poverty but without increased reimbursement, and individuals in households with children at risk of poverty. Both improving (e.g. unemployed individuals) and deteriorating (e.g. individuals with severe material deprivation) trends over time are observed.**
- **After correction for needs, we also found a lower contact rate for beneficiaries of increased reimbursement. Hence, access to specialist care is less equitably distributed than access to GP care.**
- **While no socioeconomic inequalities are found, the concentration index clearly demonstrates systematic inequities by educational attainment (in favour of high-educated individuals) and income (pro-rich: higher contact rates among richer individuals).**

2.4.3 Results – number of contacts with a medical specialist

Evolution over time in the number of contacts with a medical specialist in the past year

From Table 10 and Figure 30, we concluded that a high share of the population (between 58% and 68%, depending on year and sample) had at least one contact with a medical specialist in the past year. Table 11 and Figure 34 additionally show the evolution over time of the number of contacts with a medical specialist in the past year for individuals with at least one contact. IMA – AIM population data indicate that for individuals with at least one contact, the average number of contacts fluctuated between 4.3 and 4.7 on average, without a substantial drop in 2020.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, we find a highly similar average annual number of contacts. Conditional on having at least one specialist consultation in the past year, the average number of contacts per individual fluctuated between 4.3 and 4.8 annual contacts per year. The number of contacts is higher when restricting the sample to the adult population (+0.2/0.3 contacts per year), but follows the same time pattern.

Note that the average number of contacts with a medical specialist amounts to about half of the number of healthcare contacts (EQ-1).

Table 11 – Evolution (2012-2021) of the number of contacts with a medical specialist in the past year

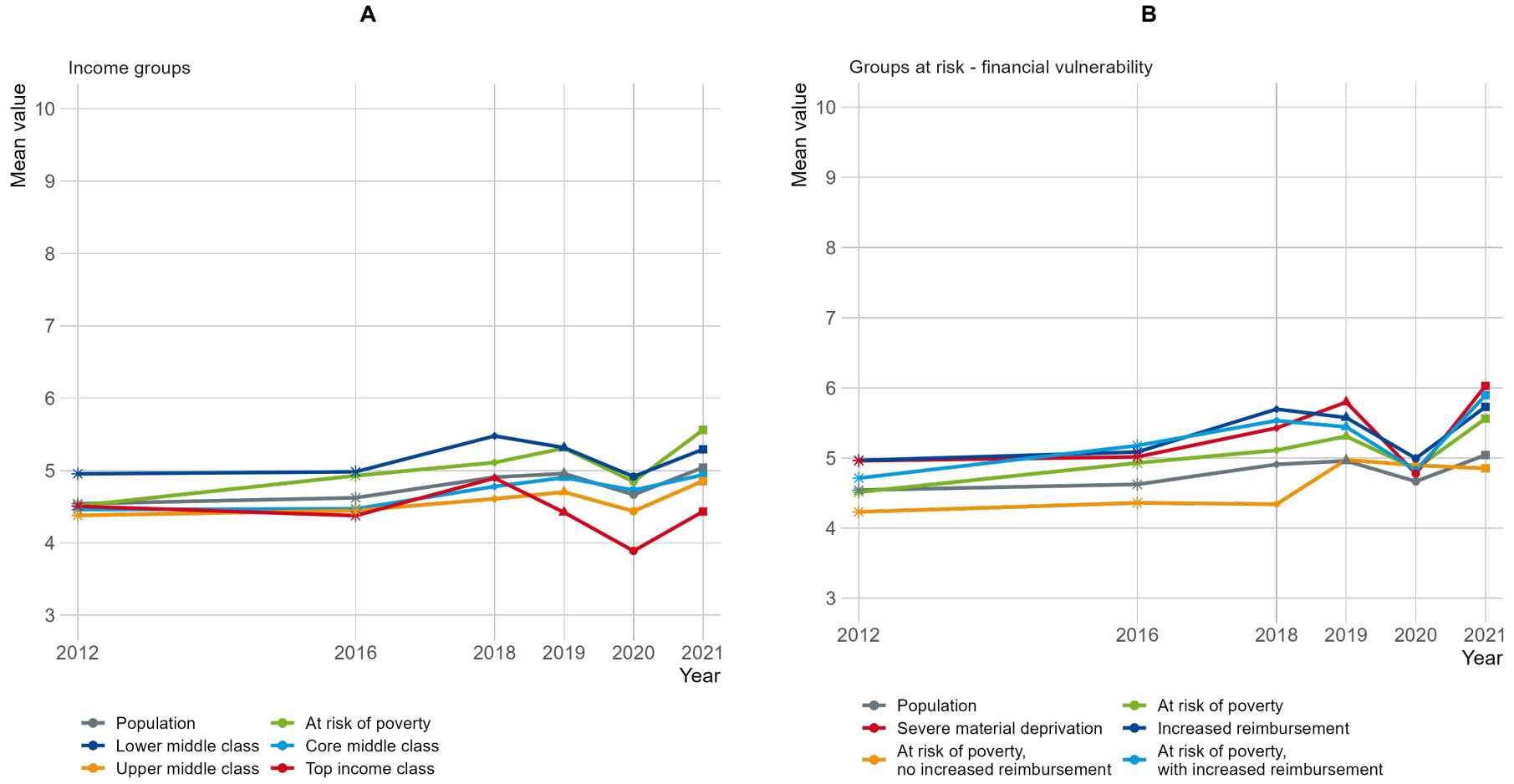
Sample	2012	2016	2018	2019	2020	2021
Population	4.30	4.50	4.50	4.50	4.30	4.70
Survey (all)	4.34	4.43	4.61	4.68	4.41	4.79
Survey (18+)	4.54	4.62	4.91	4.96	4.67	5.04

Figure 34[t] shows the evolution of the number of contacts with a medical specialist conditional on having at least one contact for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

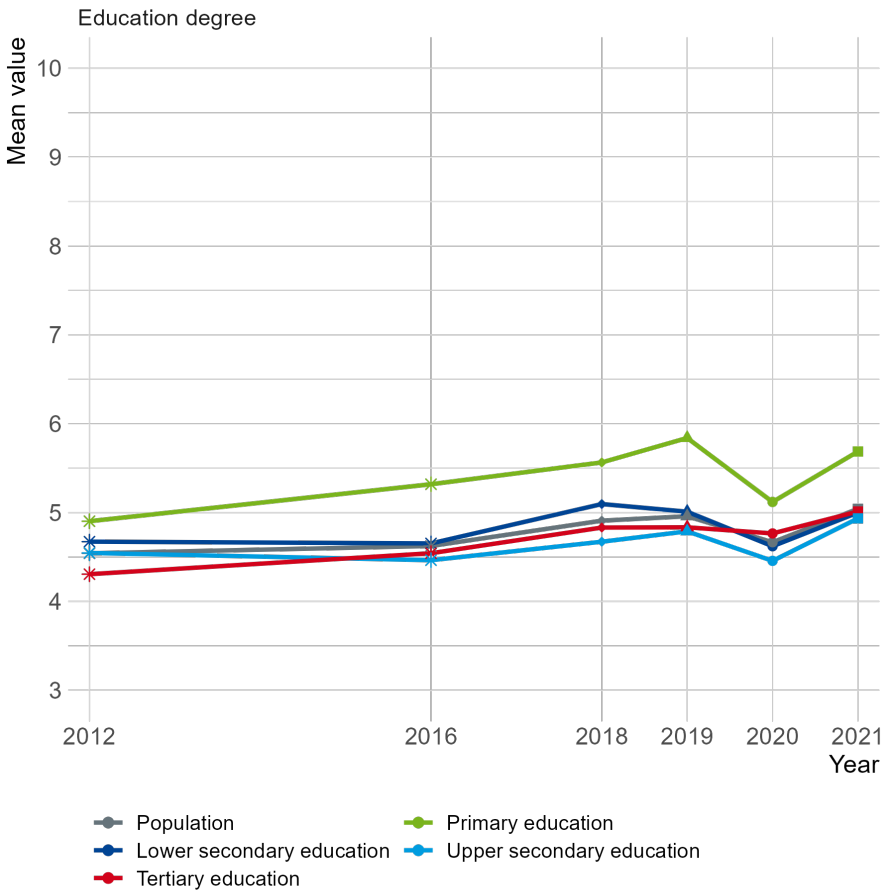
First, we find that most population groups follow a similar trend as the population. Second, there is little variation between groups based on income, educational attainment or even financial vulnerability (panels A, B & C). Beneficiaries of increased reimbursement do not have a higher number of specialist consultations compared to other individuals in a difficult financial situation (panel B). There is, however, important variation by self-assessed health status and between population subgroups with high care needs (panels E & F). Age is less of a determinant of the number of contacts with a medical specialist than of GP contacts (panel F). Third, while individuals who qualify their health status as fair and (very) bad have a similar probability to have a contact with a medical specialist (see Table 10), there is a divergence in the average number of consultations (panel E). Fourth, the number of contacts with a medical specialist is below average for the self-employed, but increasing at a more rapid pace (panel D).

[t] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

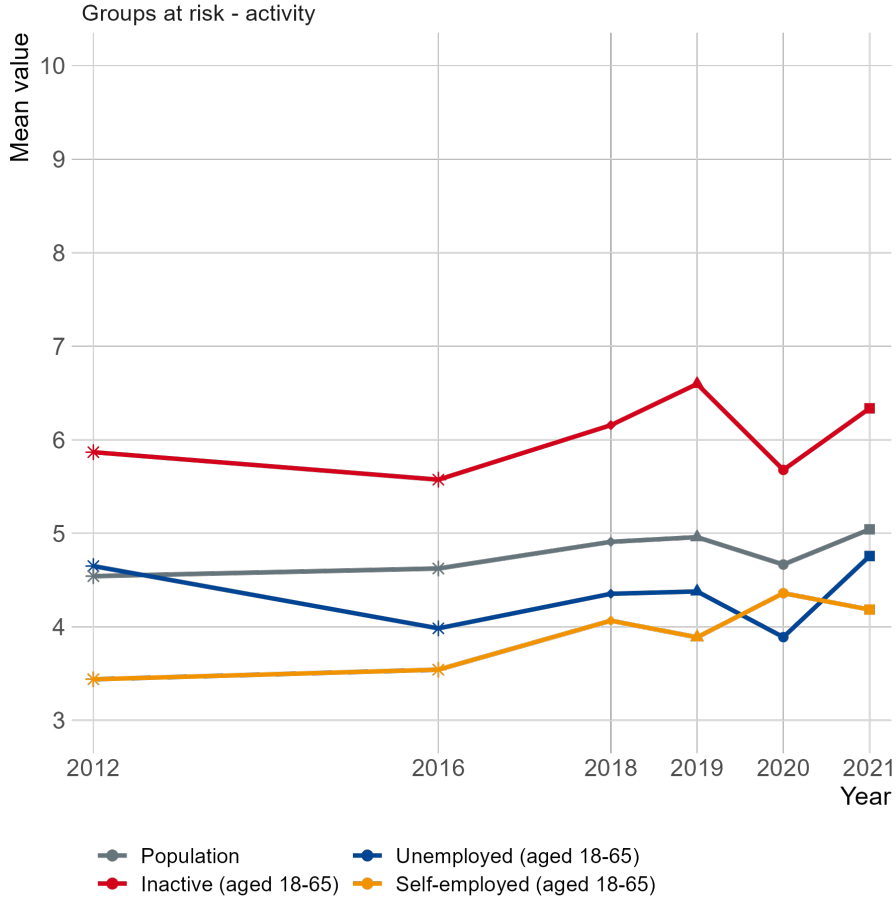
Figure 34 – Evolution (2012-2021) in the number of specialist contacts in the past year for different subgroups and population groups at risk



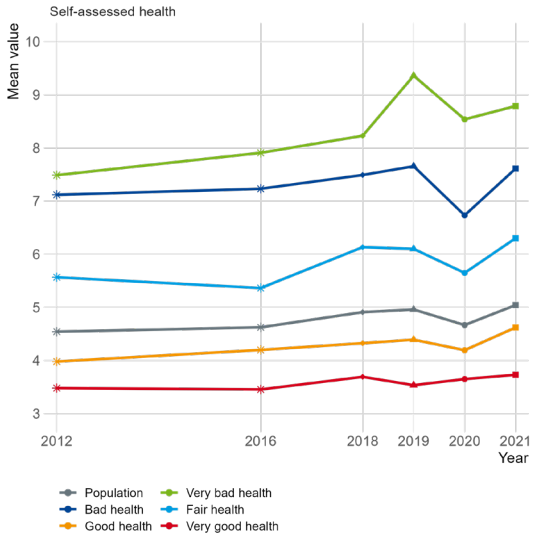
C


Education degree
Mean value
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

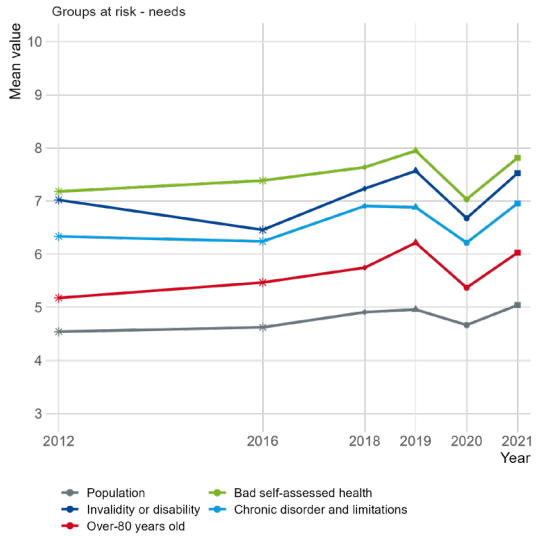
D


Groups at risk - activity
Mean value
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
10
9
8
7
6
5
4
3
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 35 and Figure 36 show how the number of contacts with a medical specialist in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[u] In Figure 35, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 36, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower number of contacts with a medical specialist than the population average. Values to the right of the vertical line, on the other hand, indicate a higher number of contacts than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 35 and Figure 36, we find that inequalities in the number of contacts with a medical specialist can be important (range between -1.5 and +4 contacts) and in favour of individuals with worse health status and in inactivity. For other population groups inequalities are smaller, generally less than 1 contact, in favour of low-educated and low-income individuals, beneficiaries of increased reimbursement and individuals in households with severe material deprivation.

After correction for healthcare needs, disparities are of similar magnitude, but opposite sign. There are social gradients for education and income groups with the number of contacts increasing with income and obtained education degree. Almost all financially vulnerable population subgroups have a lower average number of specialist consultations than expected based on their health status, without a particular group being more disadvantaged. There is no systematic improving or deteriorating time pattern.

Systematic socioeconomic inequity as measured by the concentration index

Figure 37 shows the absolute concentration index of the needs-corrected number of contacts with a medical specialist in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as a higher needs-corrected number of contacts with a medical specialist concentrated among individuals with lower educational attainment or lower income. Positive values indicate a higher needs-corrected number of contacts with a medical specialist for individuals with higher educational attainment and higher income.

The results in Figure 37 reveal the presence of small socioeconomic inequalities and larger inequities in the number of contacts with a medical specialist. While the socioeconomic inequalities indicate that specialist contacts are more concentrated among low-educated and low-income individuals, the found inequities are of opposite sign and give evidence of an inequitable distribution in favour of high-educated individuals high-income individuals. Inequities with respect to educational attainment have increased over time.

[u] The output of the regression analysis on which the correction is based is available upon request.

Figure 35 – Inequality and inequity in the number of contacts with a medical specialist in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

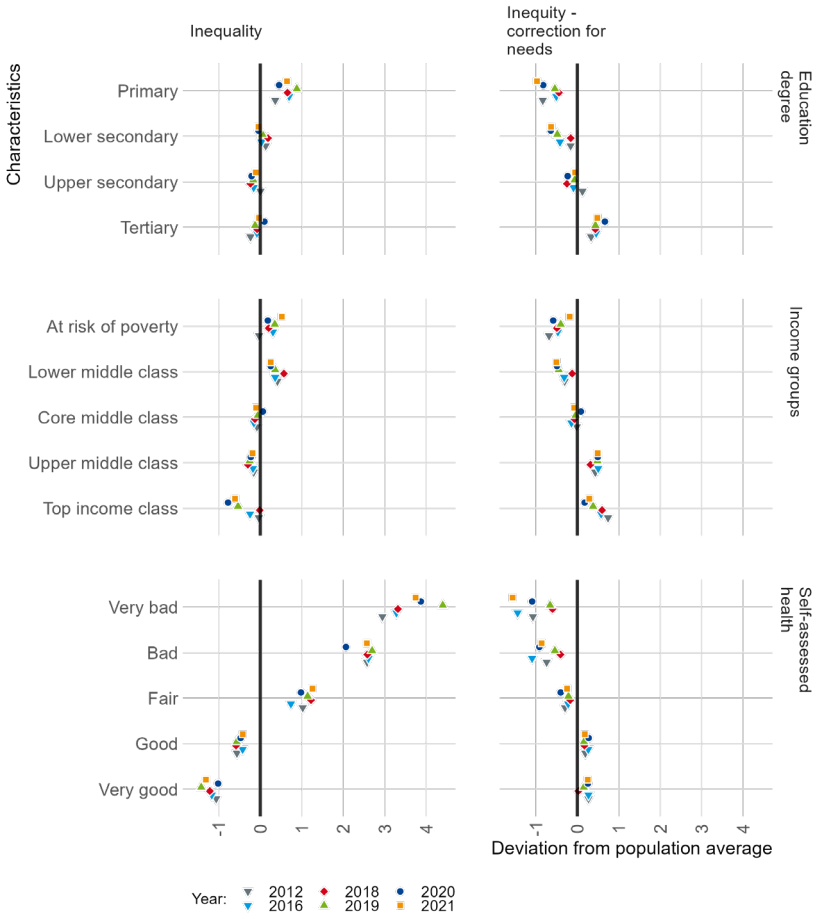


Figure 36 – Inequality and inequity in the number of contacts with a medical specialist in the past year: difference between the general population and specific vulnerable population subgroups

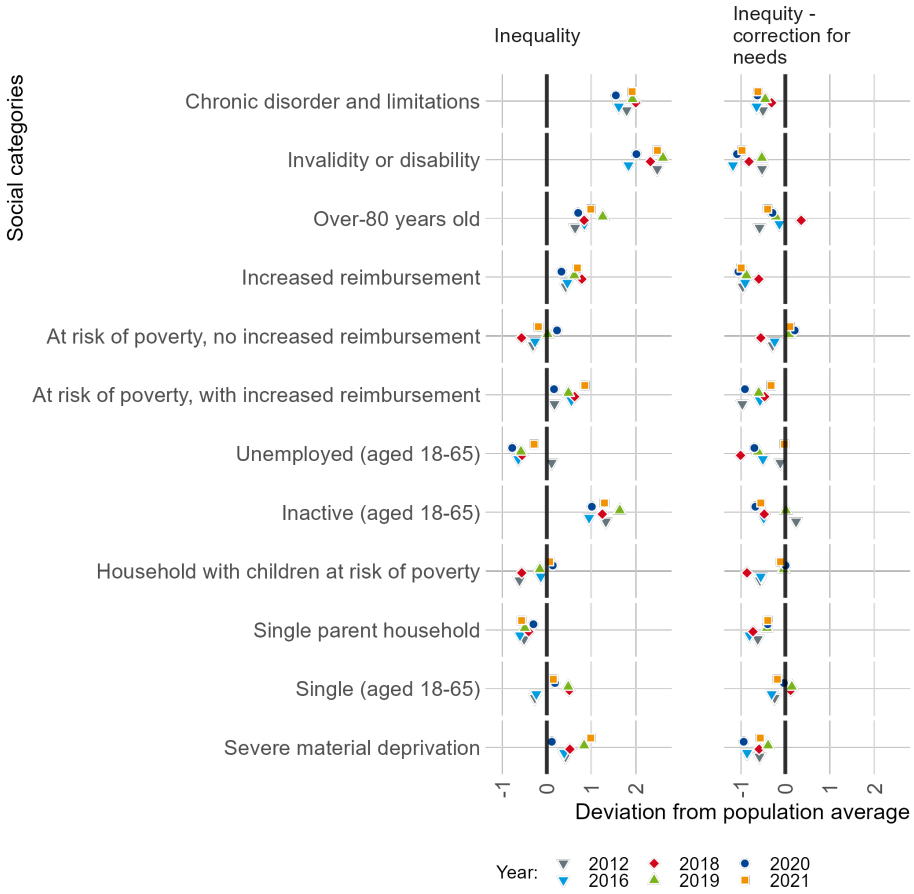
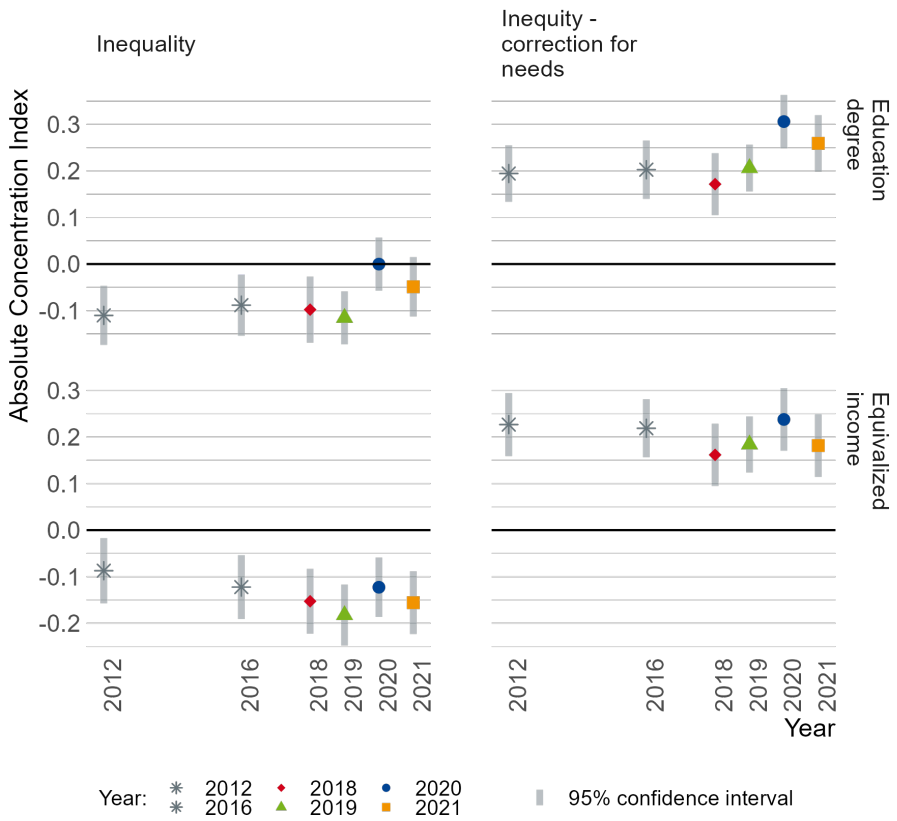


Figure 37 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of contacts with a medical specialist in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **The average annual number of contacts with a medical specialist (among those with at least one specialist contact) increased from 4.3 in 2012 to 4.7 in 2021 and had the same evolution in the survey sample. There is little variation in the annual number of contacts and the evolution over time between groups based on income, educational attainment or financial vulnerability. There is important variation by self-assessed health status and between population subgroups with high care needs. Age is less of a determinant of the number of contacts with a medical specialist than of GP contacts.**
- **Socioeconomic inequalities and inequities contradict each other, emphasizing the importance of a correction for healthcare needs.**
- **After correction for needs, social gradients are found for education and income with the number of contacts increasing with income and obtained education degree. Almost all financially vulnerable population subgroups have a lower average number of specialist consultations than expected based on their health status.**
- **The concentration index demonstrates systematic socioeconomic inequities both with respect to educational attainment (in favour of high-educated individuals) and income (pro-rich: in favour of high-income individuals). Inequities with respect to educational attainment have increased over time.**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C

2. IMA-AIM Atlas.2023. Available from: https://atlas.ima-aim.be/databanken/

2.5 Contacts with the healthcare system (number of contacts and at least one contact): emergency department (population aged 18+) (EQ-4)

2.5.1 Documentation sheet

Description	EQ-4 At least one contact with the healthcare system (emergency department) (population aged 18+) Number of contacts with the healthcare system (emergency department) (population aged 18+)
Calculation	We analyse inequity in emergency department (ED) contacts over the past 12 months. Two types of utilisation are examined consecutively: the probability of an ED contact and the number of ED contacts given at least one contact. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use **Definition of ED contacts** - one of the following nomenclature codes (variable ss00020 in IMA – AIM GZSS database): 590516, 590531, 590553, 590575, 590590, 590612, 590634, 590656, 590671, 590693, 590715, 590730, 590752, 590774, 590796, 590811
International comparability	No
Limitations	See methodological note on equity in healthcare use
Dimension	Equity
Related indicators	EQ-1 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner, medical specialist, emergency department (population aged 18+)

	EQ-2 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner (population aged 18+)
	EQ-3 Contacts with the healthcare system (number of contacts and at least one contact): medical specialist (population aged 18+)
	EQ-5 Contacts with the healthcare system (number of contacts and at least one contact): inpatient hospitalisation (population aged 18+)
	A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS)
	A-6 People with self-reported unmet needs for medical examination due to financial reasons (% of respondents 16+, EU-SILC)
Reviewers	Carine Van de Voorde (KCE)

2.5.2 *Results – at least one emergency department (ED) contact*

Evolution over time in the probability to have at least one ED contact

Table 12 shows the evolution over time of the probability to have one or more ED contacts in the past year. There was no information available on the share of the population that has visited the ED, hence only the probability of an ED visit among individuals in the EU-SILC/IMA-AIM sample is reported, both for the entire sample and the sample restricted to adults. We find that about the same share of the population visited an ED in 2012 (15.6%) and 2021 (15.2%), with a higher contact rate in 2016-2019 and a lower rate in 2020. This value is lower when restricting the sample to the population aged 18 or more, which is used in the regression and inequity analysis, fluctuating between 13.9% and 16.2%.

Table 12 – Evolution (2012-2021) of the probability to have one or more ED contacts in the past year

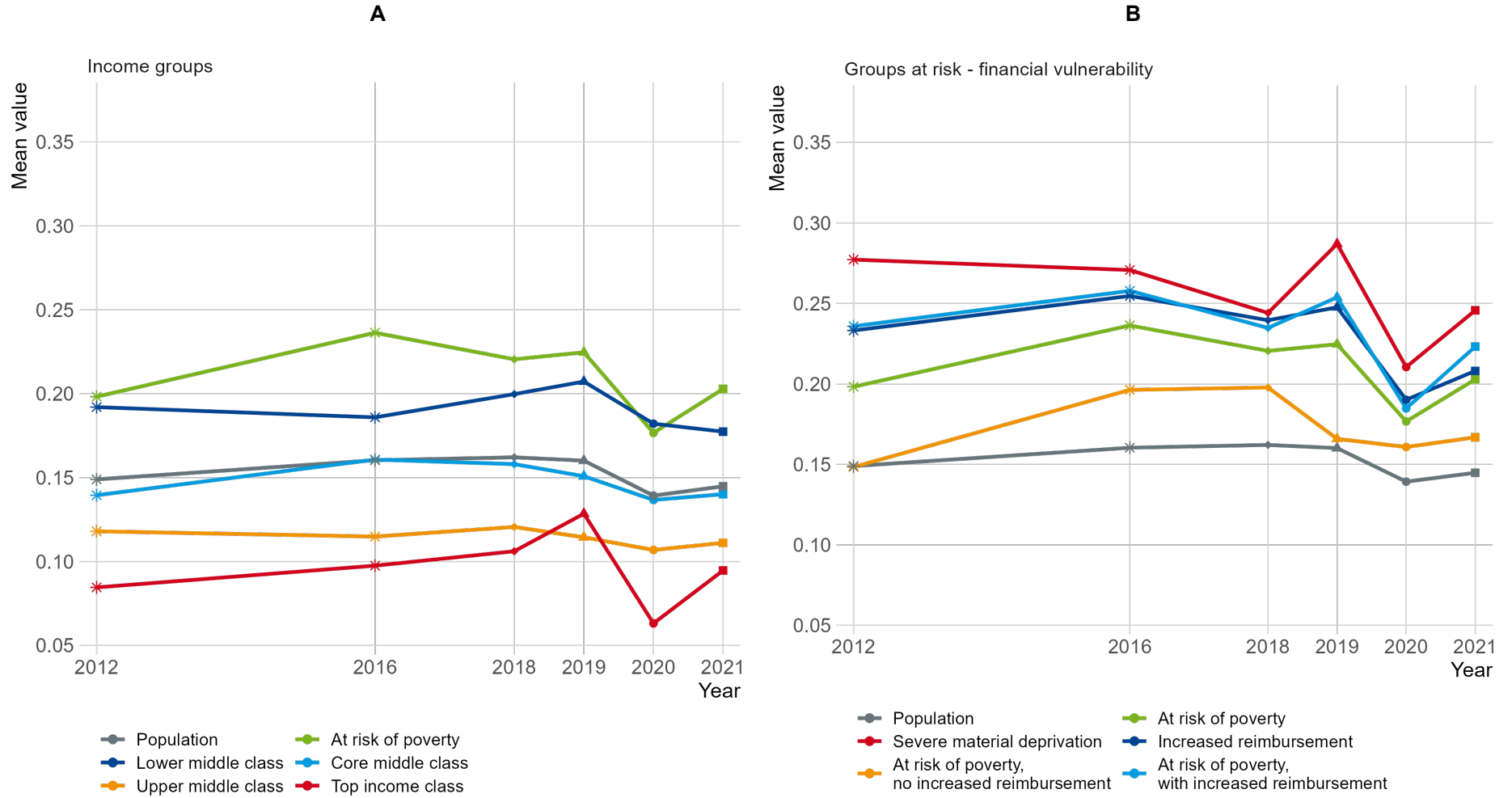
Sample	2012	2016	2018	2019	2020	2021
Survey (all)	15.6%	17.4%	17.2%	17.0%	14.2%	15.2%
Survey (18+)	14.9%	16.0%	16.2%	16.0%	13.9%	14.5%

Amounting to 15% of the population, the group of individuals with at least one ED contact is limited. When zooming in on particular subgroups, there might be some random variation that interferes with the observed trends. This should be borne in mind when analysing the results in Figure 38[v] presenting the evolution of the probability to have one or more ED contacts in the past year for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

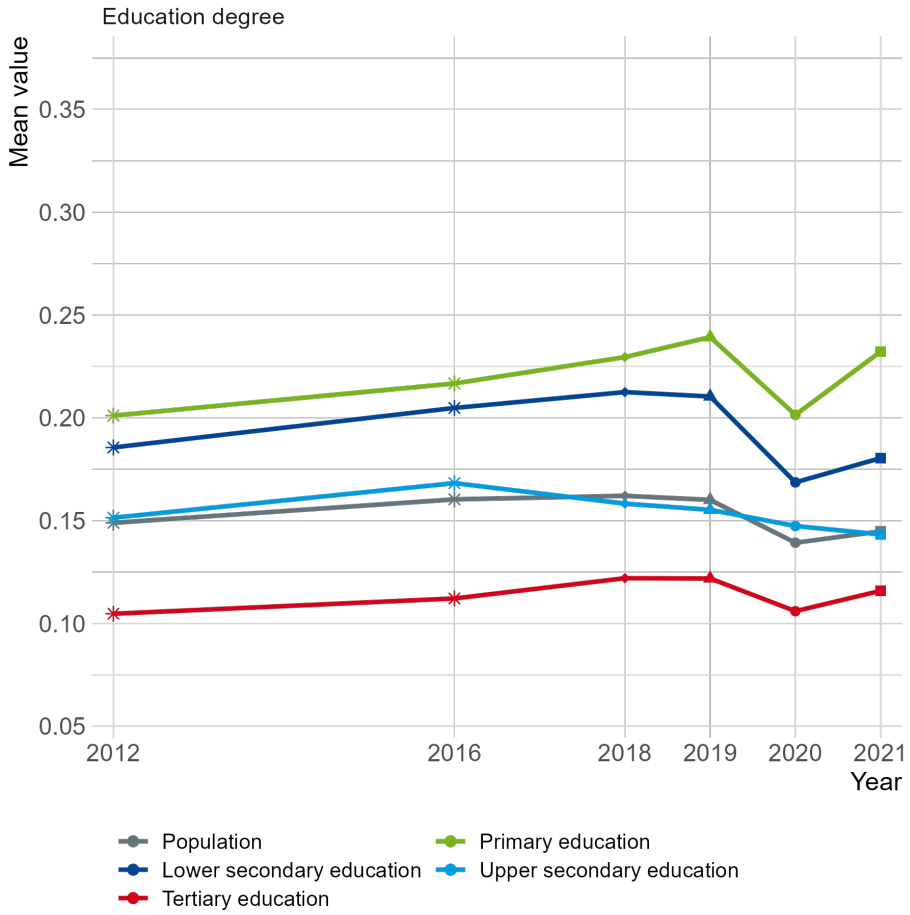
First, we find that most population subgroups follow the general trend in the adult population. Second, we find important variation by groups of income and educational attainment, with the contact rates in the lowest income/education group twice as high as in the highest income/education group (panels A & C). Third, a high probability of having an ED contact in the past year (over 20%) is not only associated with high care needs, but also with financial vulnerability (panels A, B, F). One of the highest probabilities is observed for individuals in households with severe material deprivation, a group with a relatively lower probability to have a healthcare contact (GP, medical specialist or ED) in the past year (panel B, see EQ-1). Material deprivation appears to be more strongly associated with the probability of an ED contact than being at risk of poverty. Also, unemployed individuals have a contact rate above the population average (panel D).

[v] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

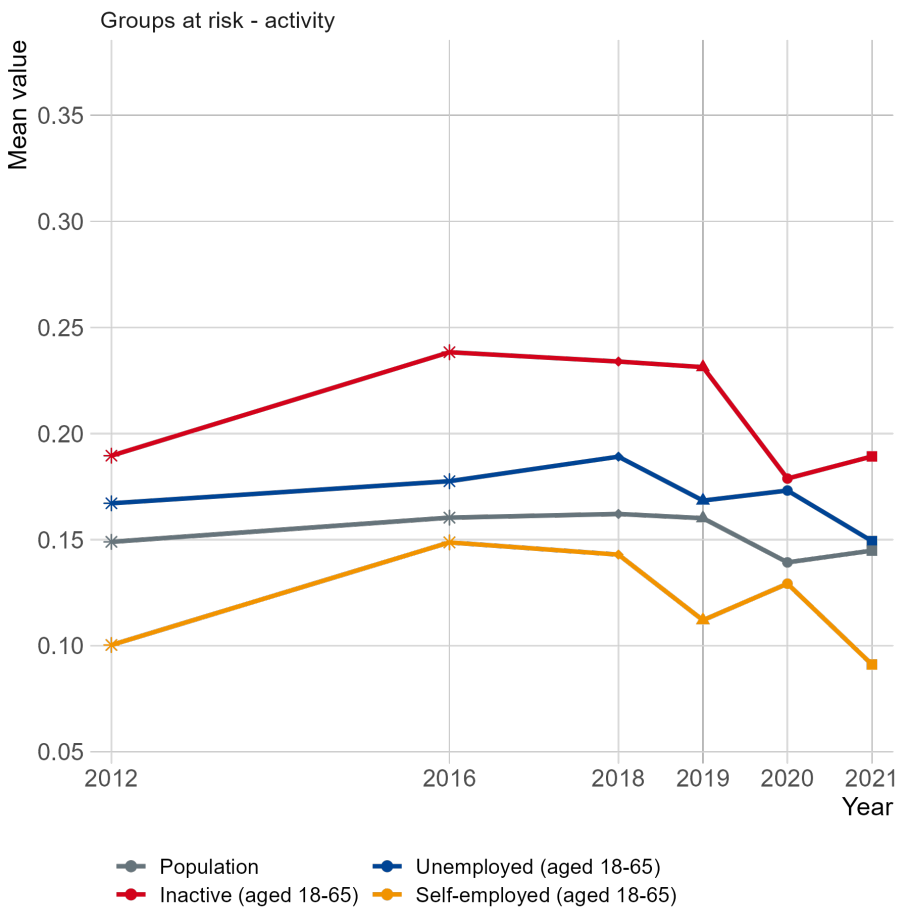
Figure 38 – Evolution (2012-2021) of the probability to have at least one ED contact for different subgroups and population groups at risk



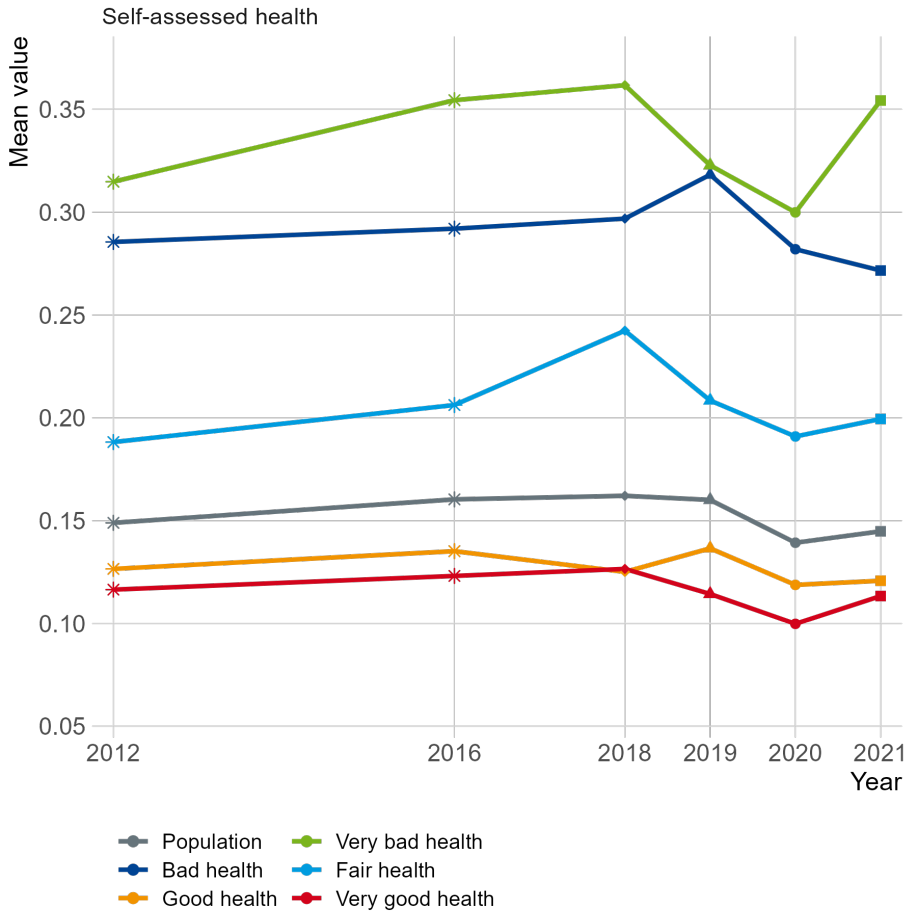
C


Education degree
Mean value
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

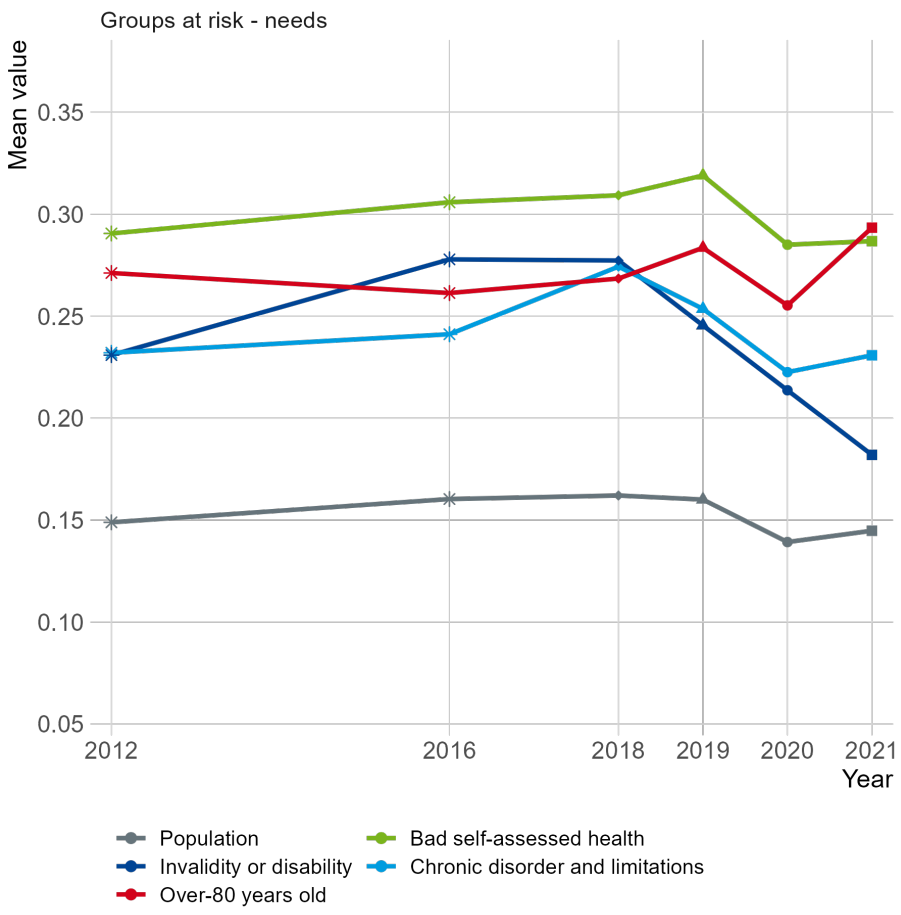
D


Groups at risk - activity
Mean value
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 39 and Figure 40 show how the probability to have an ED contact in the past year in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[w] In Figure 39, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 40, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having an ED contact than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 39 and Figure 40, we find that, for most population subgroups, disparities are less pronounced once a correction is made for healthcare needs, i.e. the deviations from the population average are lower in the inequity scenario compared to inequality. This is especially true for subgroups based on age and (self-assessed) health status.

We conclude

- **w.r.t. education:** there is a social gradient in the probability to have an ED contact with higher/lower contact rates among individuals with lower/higher educational attainment that remains after correction for healthcare needs (column inequality and inequity).
- **w.r.t. income group:** there is a social gradient in the probability to have an ED contact with contact rates increasing with income that remains after correction for healthcare needs (column inequality and inequity).
- **w.r.t. self-assessed health**: individuals in fair, bad and very bad self-reported health have a higher probability of having an ED contact, while the opposite is true for individuals with very good health (column inequality). Such differences are strongly reduced when a correction for healthcare needs is made (column inequity).
- **w.r.t. specific vulnerable groups:** after correction for healthcare needs, there is a higher probability of having an ED contact in the past year in nearly all financially vulnerable population groups (column inequity). The higher probability is particularly pronounced for individuals in households with severe material deprivation, beneficiaries of increased reimbursement, individuals in single parent households and individuals in households with children at risk of poverty (column inequity). For the majority of population groups, the trend is improving over time.

[w] The output of the regression analysis on which the correction is based is available upon request.

Figure 39 – Inequality and inequity in the probability to have an ED contact in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

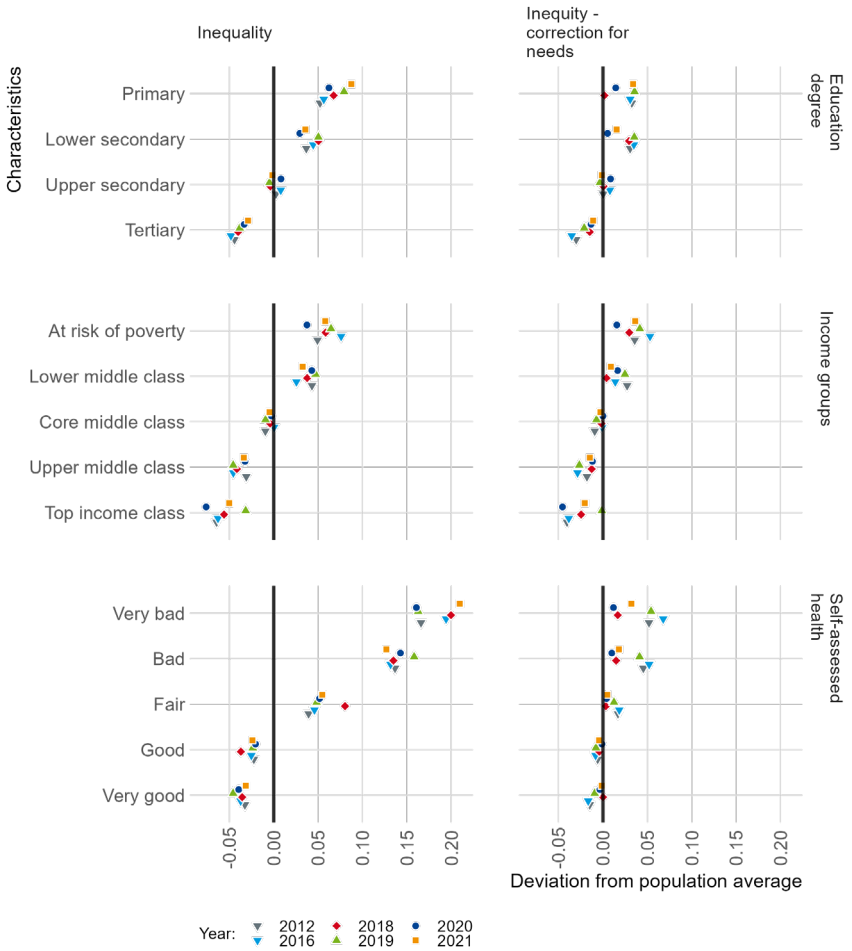
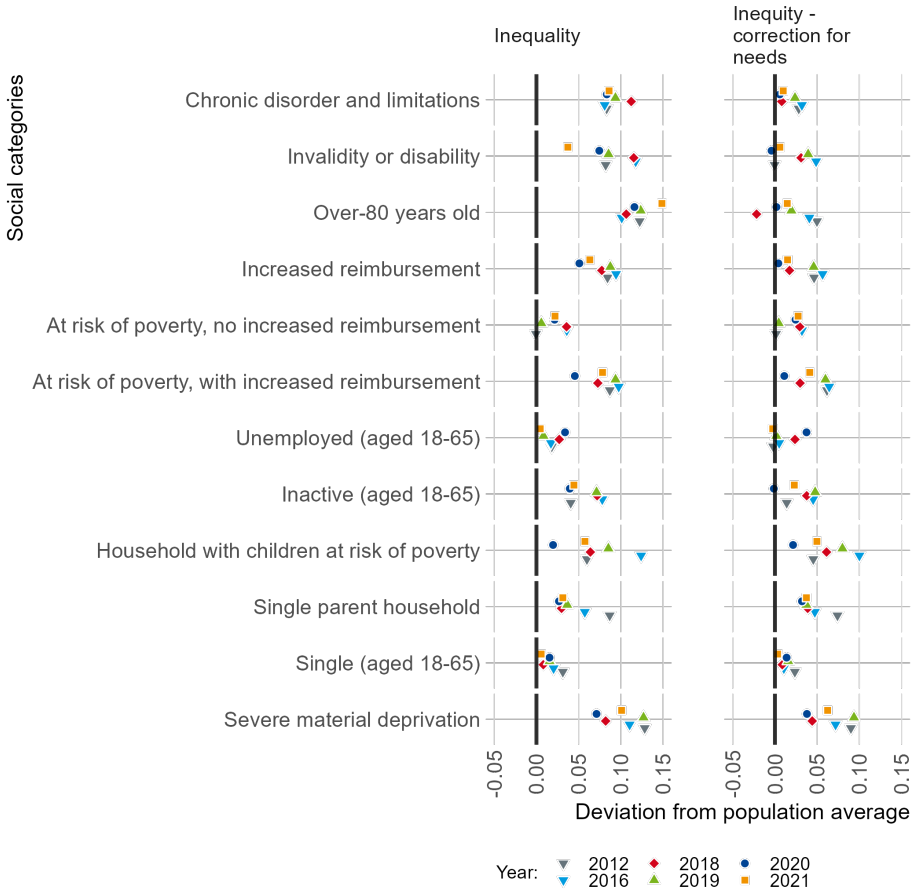


Figure 40 – Inequality and inequity in the probability to have an ED contact in the past year: difference between the general population and specific vulnerable population subgroups

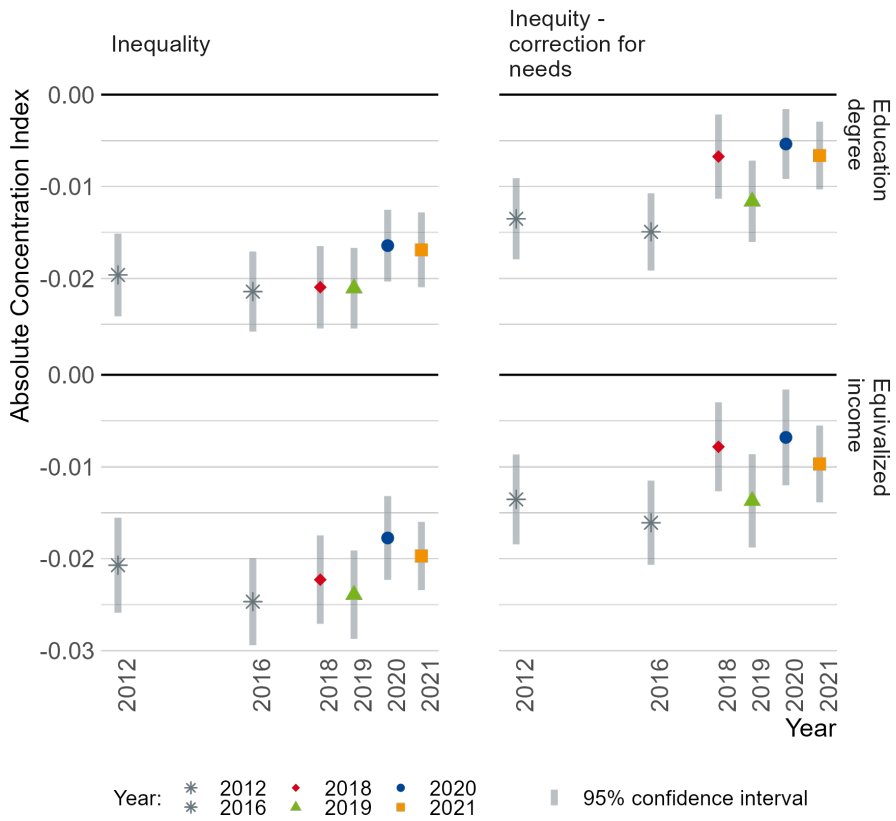


Systematic socioeconomic inequity as measured by the concentration index

Figure 41 shows the absolute concentration index of the needs-corrected probability to have an ED contact in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having an ED contact concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 41 show that there are both socioeconomic inequalities and inequities in the probability to have an ED contact in the past year regarding income (pro-poor: in favour of low-income individuals) and educational attainment (in favour of low-educated individuals). After correction for healthcare needs, the measured inequities are smaller than the inequalities, but go in the same direction. The inequities have reduced over time.

Figure 41 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have an ED contact in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **Around 15% of the population visited the emergency department in the past 12 months, with a higher contact rate in 2016-2019 and a lower rate in 2020. A high probability of having an ED contact in the past year (over 20%) is not only associated with high care needs, but also with financial vulnerability and in particular material deprivation. Contact rates in the lowest income/education group are twice as high as in the highest income/education group.**
- **After correction for needs, inequities in the probability to have an ED contact remain. Social gradients are found with respect to income and educational attainment with contact rates inversely related to income and obtained education degree. A higher probability of having an ED contact in the past year is found in nearly all financially vulnerable population groups, but is particularly pronounced for individuals in households with severe material deprivation, beneficiaries of increased reimbursement, individuals in single parent households and individuals in households with children at risk of poverty. For the majority of population groups, the trend is improving over time.**
- **The concentration index demonstrates systematic inequities by educational attainment (in favour of low-educated individuals) and income (pro-poor: higher contact rates among low-income individuals). The inequities have reduced over time.**

2.5.3 Results – number of ED contacts

Evolution over time in the number of ED contacts in the past year

Table 13 and Figure 42 show the evolution over time of the number of ED contacts in the past year for individuals with at least one contact. No population benchmark was available, so only survey estimates are reported. Among the individuals included in the EU-SILC/IMA-AIM sample, we find an average annual number of contacts of around 1.3-1.4. Between 74% (2016) and 79% (2020) of the individuals with an ED contact had only one such contact and another 15% to 17% had two contacts. The number of ED contacts is similar when restricting the sample to the adult population.

Table 13 – Evolution (2012-2021) of the number of ED contacts in the past year

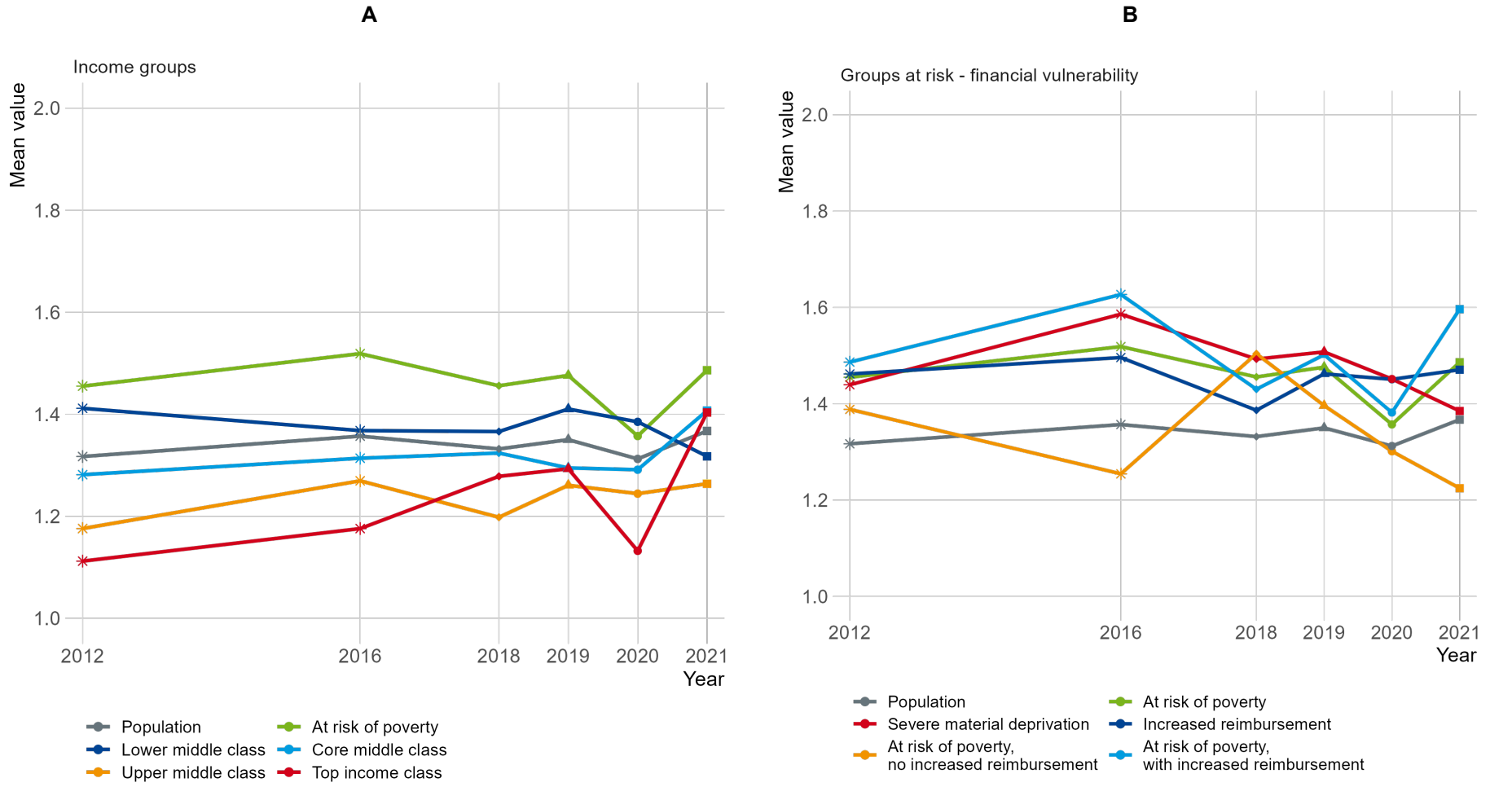
Sample	2012	2016	2018	2019	2020	2021
Survey (all)	1.33	1.38	1.37	1.37	1.32	1.38
Survey (18+)	1.32	1.36	1.33	1.35	1.31	1.37

Amounting to 15% of the population, the group of individuals with ED contacts is limited. When zooming in on particular subgroups, there might be some random variation that interferes with the observed trends. Figure 42[x] shows the evolution of the number of ED contacts conditional on having at least one contact for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

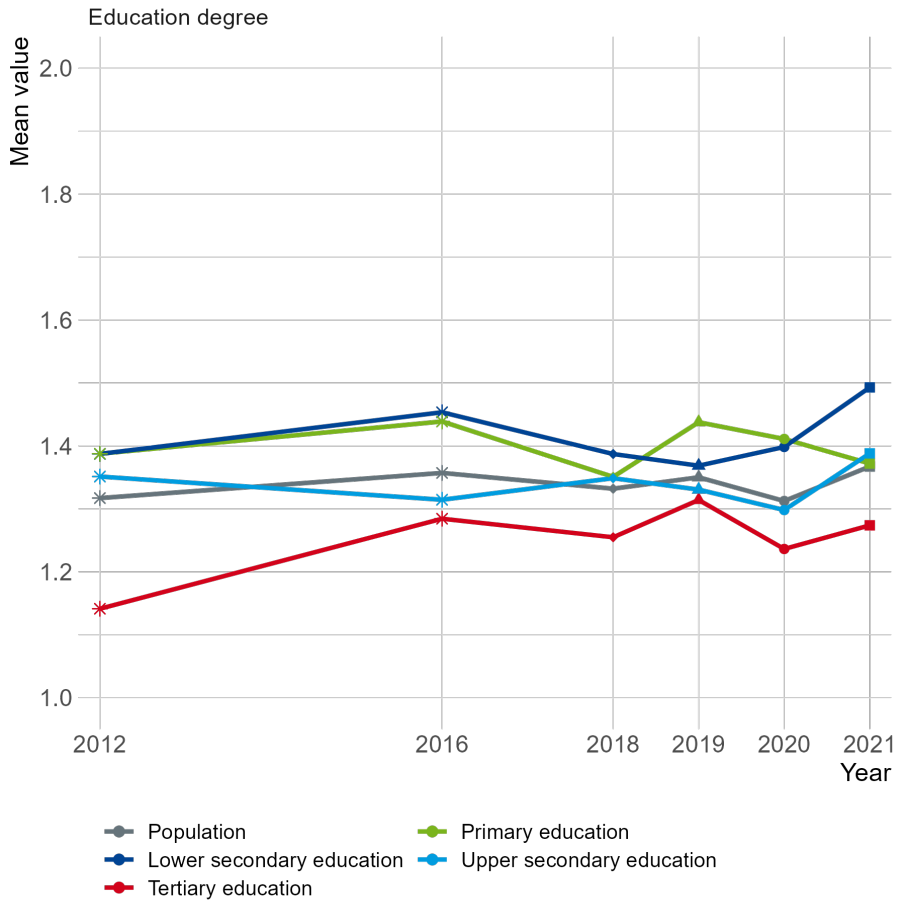
The population groups which have a higher probability of going to an ED (Figure 38) generally also have a higher number of ED contacts. A higher number of ED contacts is observed for individuals with a bad health status (panels E & F), individuals at risk of poverty (panels A & B) and material deprivation (panel B), individuals with low educational attainment (panel C) and individuals in inactivity or unemployment (panel D). Individuals aged 80 or more have a higher probability of going to an ED, but do not have a higher number of ED contacts on average (panel F).

[x] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

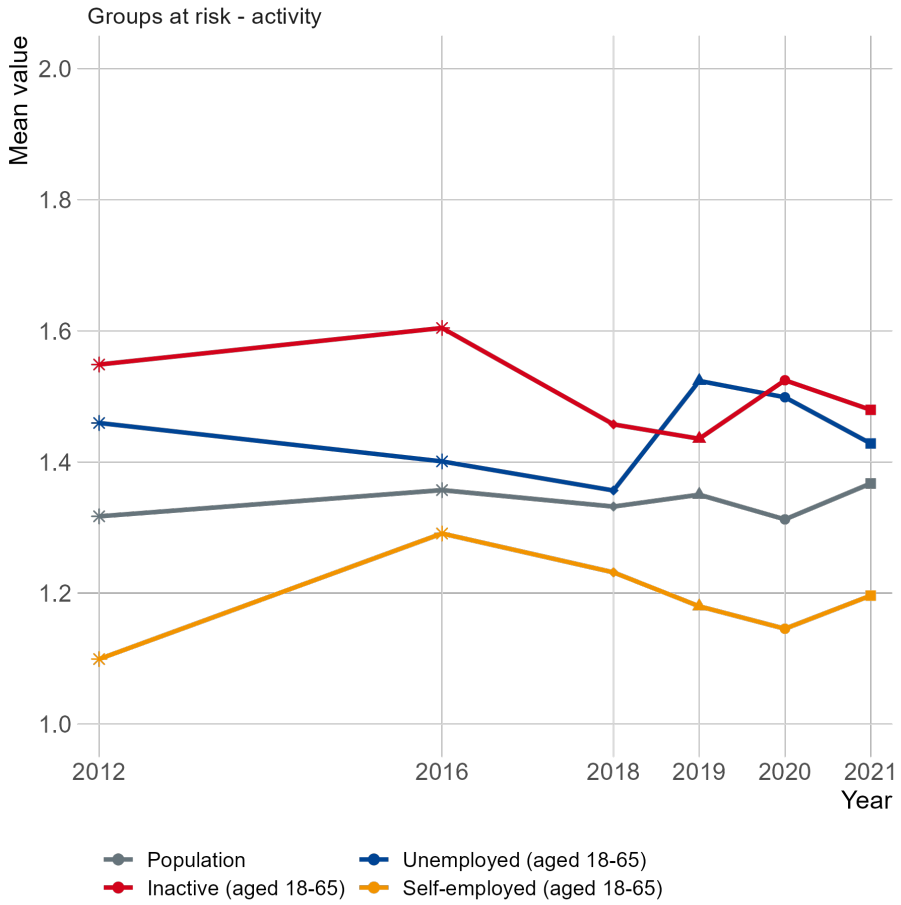
Figure 42 – Evolution (2012-2021) in the number of ED contacts in the past year for different subgroups and population groups at risk



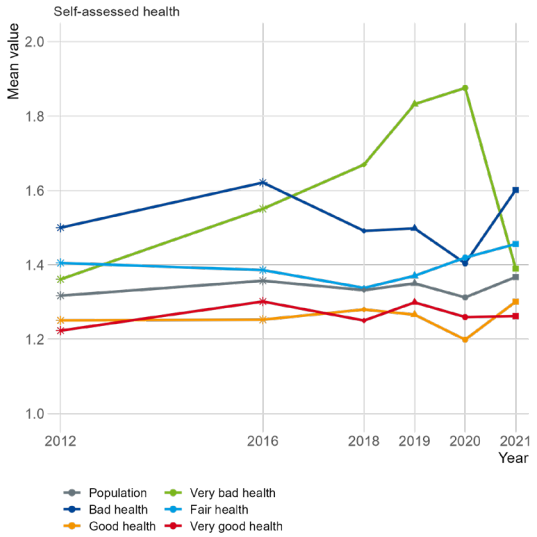
C


Education degree
Mean value
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Lower secondary education
Tertiary education
Primary education
Upper secondary education

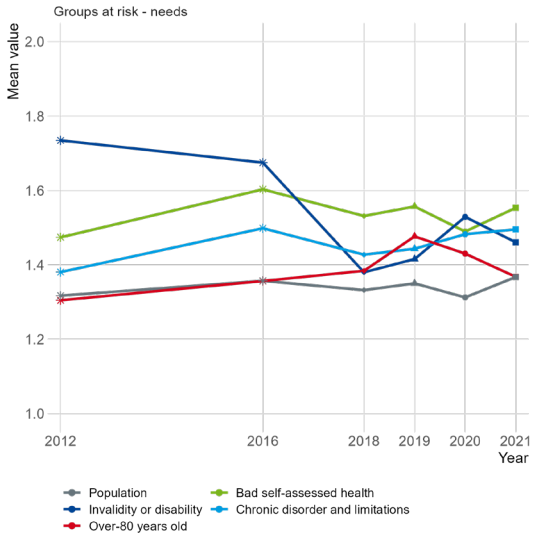
D


Groups at risk - activity
Mean value
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Inactive (aged 18-65)
Unemployed (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 43 and Figure 44 show how the number of ED contacts in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[y] In Figure 43, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 44, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower number of ED contacts than the population average. Values to the right of the vertical line, on the other hand, indicate a higher number of contacts than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 43 and Figure 44, we conclude that there are only small differences between inequalities and inequities in the number of ED contacts, implying that there is relatively little variation (as already mentioned, about 75% of individuals with an ED contact had only one such contact) and that the variation is less associated with health status than other determinants. We conclude, however, that there are inequities with respect to education and income groups in that lower income groups and low-educated individuals have a higher number of contacts. Nearly all financially vulnerable population groups have a higher number of contacts than can be explained by their health status alone. In some cases there is a positive evolution over time, i.e. the average is evolving towards the population average (e.g. individuals with severe material deprivation), but in others the situation is deteriorating (e.g. individuals at risk of poverty with increased reimbursement).

Systematic socioeconomic inequity as measured by the concentration index

Figure 45 shows the absolute concentration index of the needs-corrected number of ED contacts in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as a higher needs-corrected number of ED contacts concentrated among individuals with lower educational attainment or lower income. Positive values indicate a higher needs-corrected number of ED contacts for individuals with higher educational attainment and higher income.

The results in Figure 45 reveal the presence of small, but significant, socioeconomic inequalities and inequities in the number of ED contacts both with respect to educational attainment (in favour of lower educated individuals) and income (pro-poor: in favour of low-income individuals).

[y] The output of the regression analysis on which the correction is based is available upon request.

Figure 43 – Inequality and inequity in the number of ED contacts in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

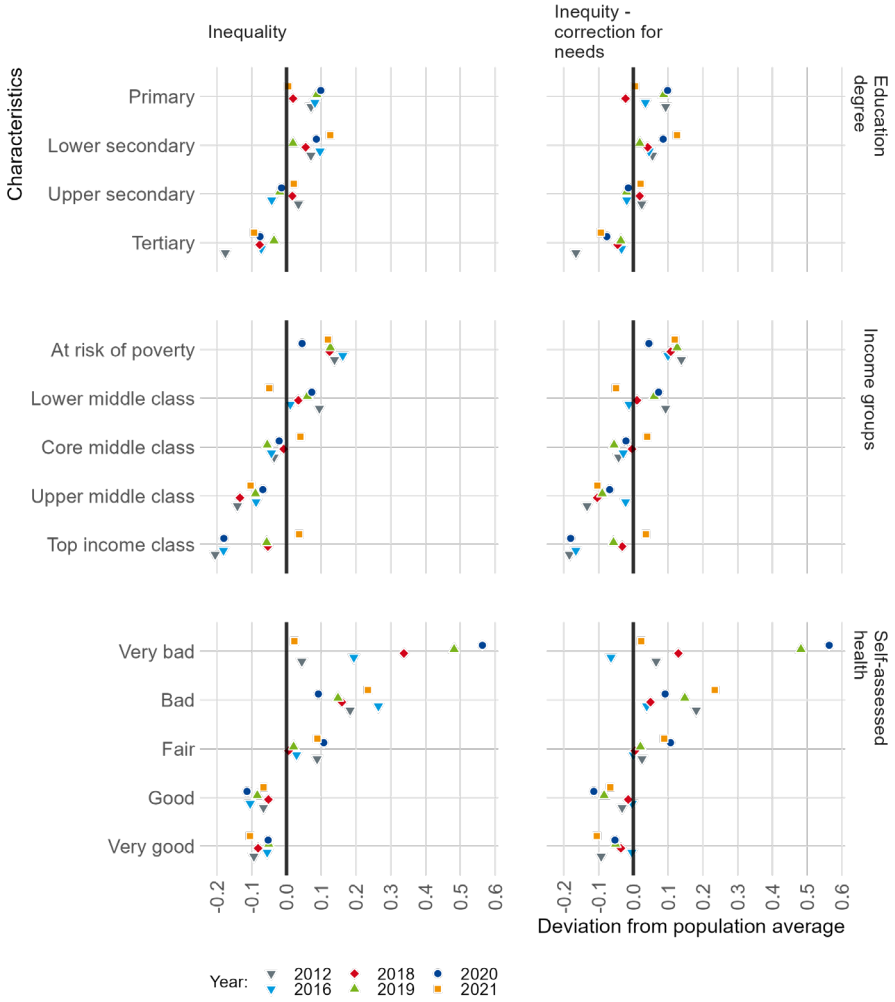


Figure 44 – Inequality and inequity in the number of ED contacts in the past year: difference between the general population and specific vulnerable population subgroups

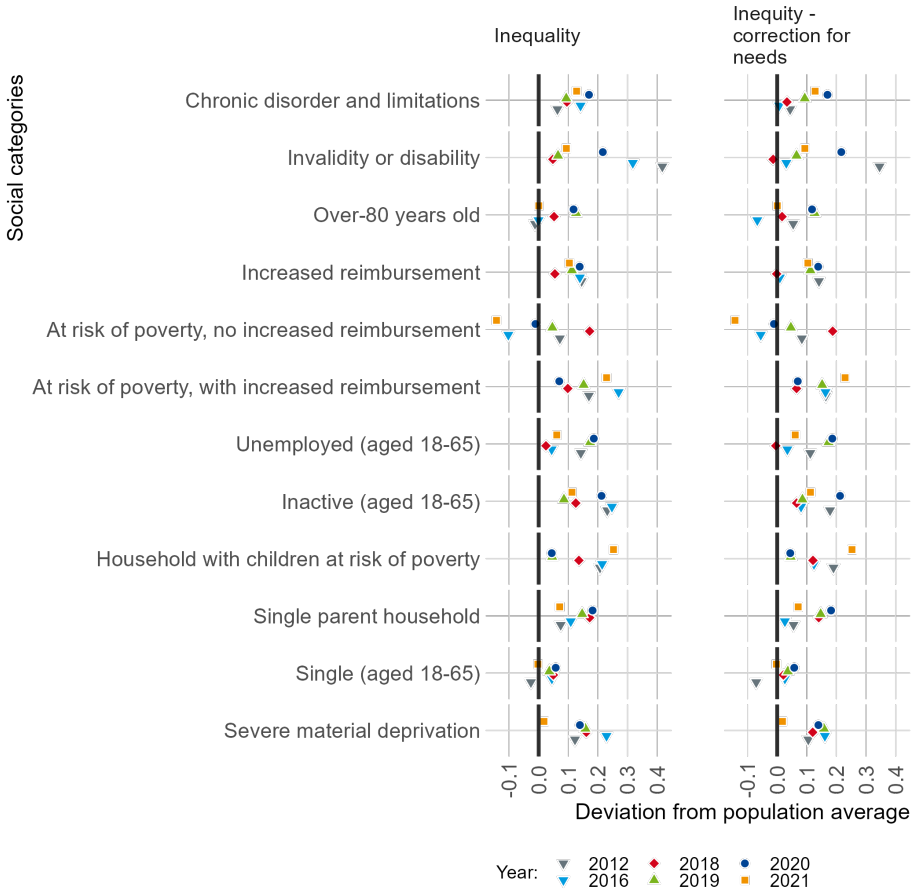
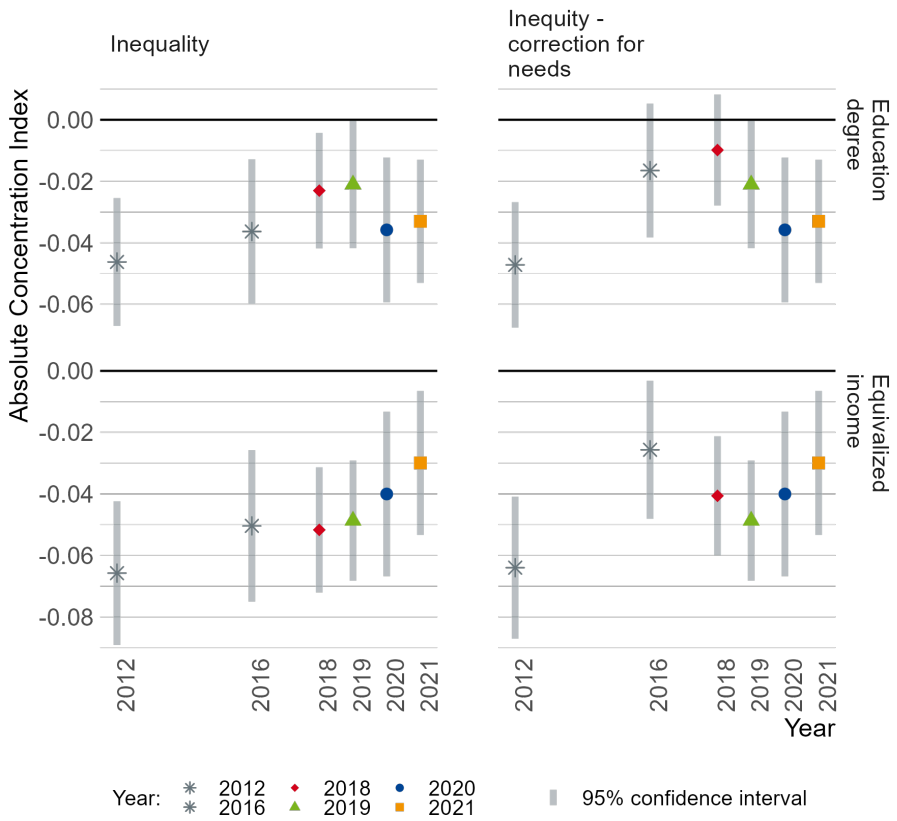


Figure 45 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of ED contacts in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **The average number of ED contacts (among those with at least one ED contact) was around 1.3-1.4 per year with about 75% of the individuals turning to the ED for care having one contact and an additional 15% two contacts. The population groups that have a higher probability of going to an ED generally also have a higher number of ED contacts.**
- **Only small differences between inequalities and inequities are found, implying that there is relatively little variation in the number of ED contacts and that the variation is only to a limited extent associated with health status.**
- **The concentration index demonstrates small, but significant, socioeconomic inequities in the number of ED contacts both with respect to educational attainment (in favour of lower educated individuals) and income (pro-poor: in favour of low-income individuals).**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C

2.6 Contacts with the healthcare system (number of contacts and at least one contact): inpatient hospitalisation (population aged 18+) (EQ-5)

2.6.1 Documentation sheet

Description	EQ-5 At least one contact with the healthcare system (inpatient hospitalisation) (population aged 18+) Number of contacts with the healthcare system (inpatient hospitalisation) (population aged 18+)
Calculation	We analyse inequity in inpatient hospitalisations over the past 12 months. Two types of utilisation are examined consecutively: the probability of an inpatient hospitalisation and the number of inpatient hospitalisations given at least one admission. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use**.** **Definition of inpatient hospitalisation** - Inpatient admissions are hospital admissions (included in IMA – AIM HOSP database) with admission type inpatient with overnight stay (variable stay_cat in IMA – AIM HOSP database equals (“ADM”)).
International comparability	No
Limitations	See methodological note on equity in healthcare use
Dimension	Equity
Related indicators	EQ-1 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner, medical specialist, emergency department (population aged 18+)

	EQ-2 Contacts with the healthcare system (number of contacts and at least one contact): general practitioner (population aged 18+)
	EQ-3 Contacts with the healthcare system (number of contacts and at least one contact): medical specialist (population aged 18+)
	EQ-4 Contacts with the healthcare system (number of contacts and at least one contact): emergency department (population aged 18+)
	A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS)
	A-6 People with self-reported unmet needs for medical examination due to financial reasons (% of respondents 16+, EU-SILC)
Reviewers	Carine Van de Voorde (KCE)

2.6.2 *Results – at least one inpatient hospitalisation*

Evolution over time in the probability to have at least one inpatient hospitalisation

Table 14 shows the evolution over time of the probability to have one or more inpatient hospitalisations in the past year. There was no information available on the share of the population that had an inpatient admission, hence only the probability of an inpatient admission among individuals in the EU-SILC/IMA-AIM sample is reported, both for the entire sample and the sample restricted to adults. We find that about the same share of the population was hospitalised in 2012 (10.4%) and 2021 (10.0%), with a higher admission rate in 2016 and a drop in 2020. This value is higher (about 1 percentage points) but follows the same evolution over time when restricting the sample to the population aged 18 or more, which is used in the regression and inequity analysis.

Table 14 – Evolution (2012-2021) of the probability to have one or more inpatient hospitalisations in the past year

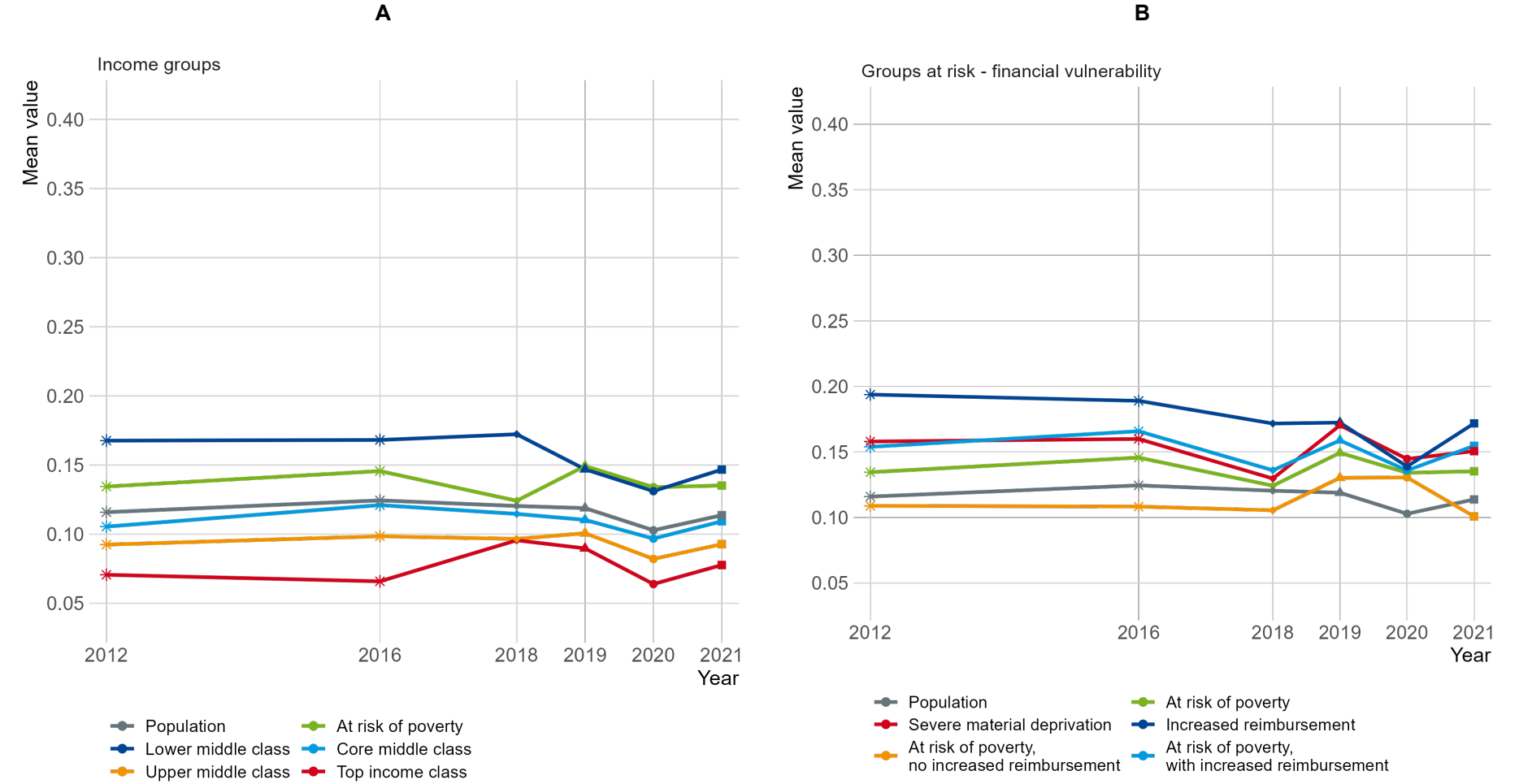
Sample	2012	2016	2018	2019	2020	2021
Survey (all)	10.4%	11.2%	10.6%	10.4%	9.0%	10.0%
Survey (18+)	11.6%	12.4%	12.0%	11.9%	10.3%	11.4%

Amounting to 10% of the population, the group of individuals with at least one inpatient admission is limited. When zooming in on particular subgroups, there might be some random variation that interferes with the observed trends. This should be borne in mind when analysing the results in Figure 46[z] presenting the evolution of the probability to have one or more inpatient hospitalisations in the past year for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

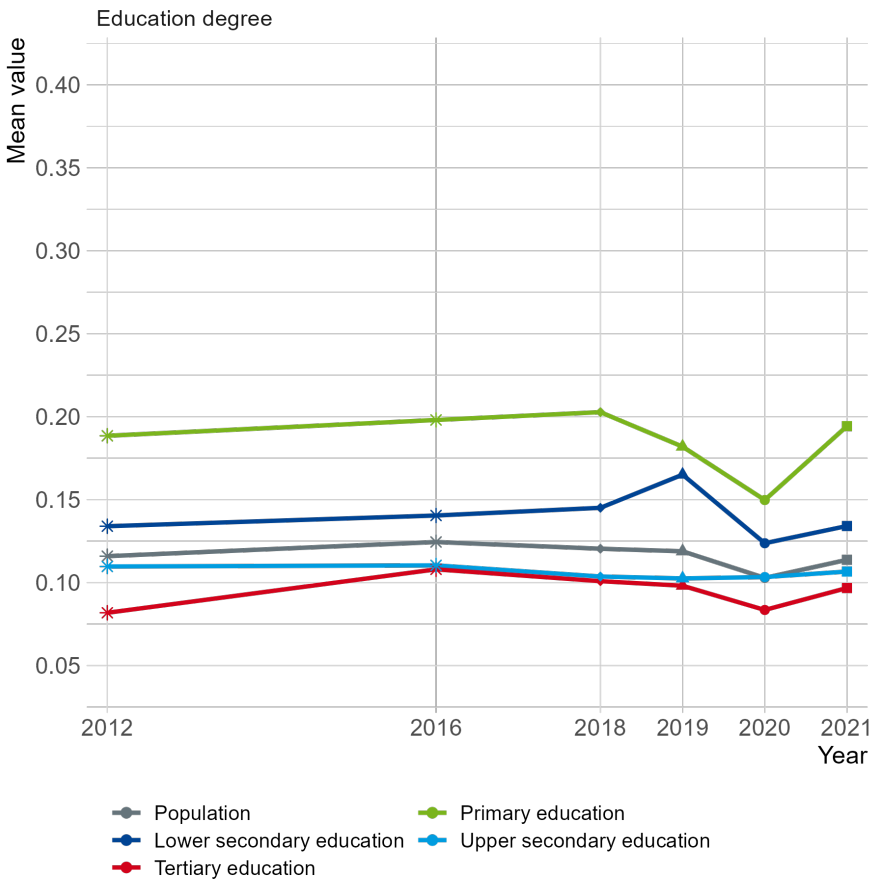
First, the results indicate that for most population subgroups, there is a stable trend over time, but with important variation between population subgroups. For example, the admission rates in the lowest income/education group are twice as high as in the highest income/education group (panels A & C). Second, the probability to have an inpatient admission is strongly associated with health status (panel E). Moreover, individuals with high care needs, i.e. those in bad health, with chronic disorder and limitations, invalidity or disability have a high probability to have an inpatient admission (over 20%, even up to 30% for some groups) (panel F). Third, individuals who are unemployed and self-employed have a lower probability to have an inpatient admission (panel D).

[z] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

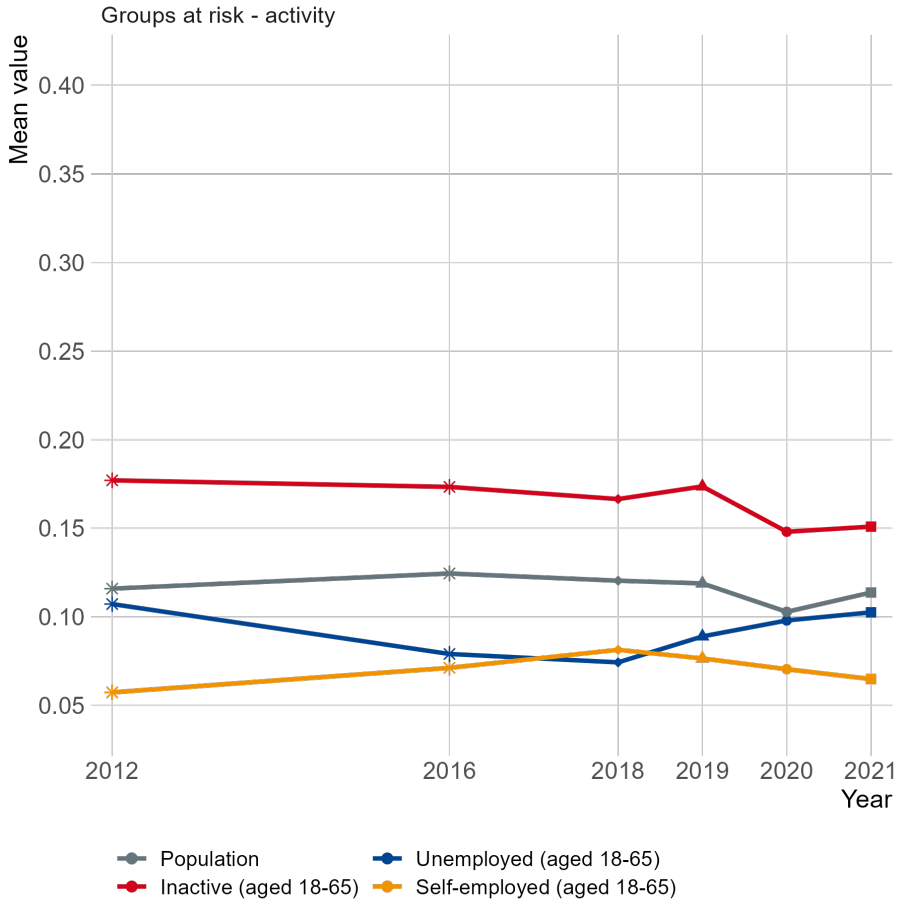
Figure 46 – Evolution (2012-2021) of the probability to have at least one inpatient hospitalisation for different subgroups and population groups at risk



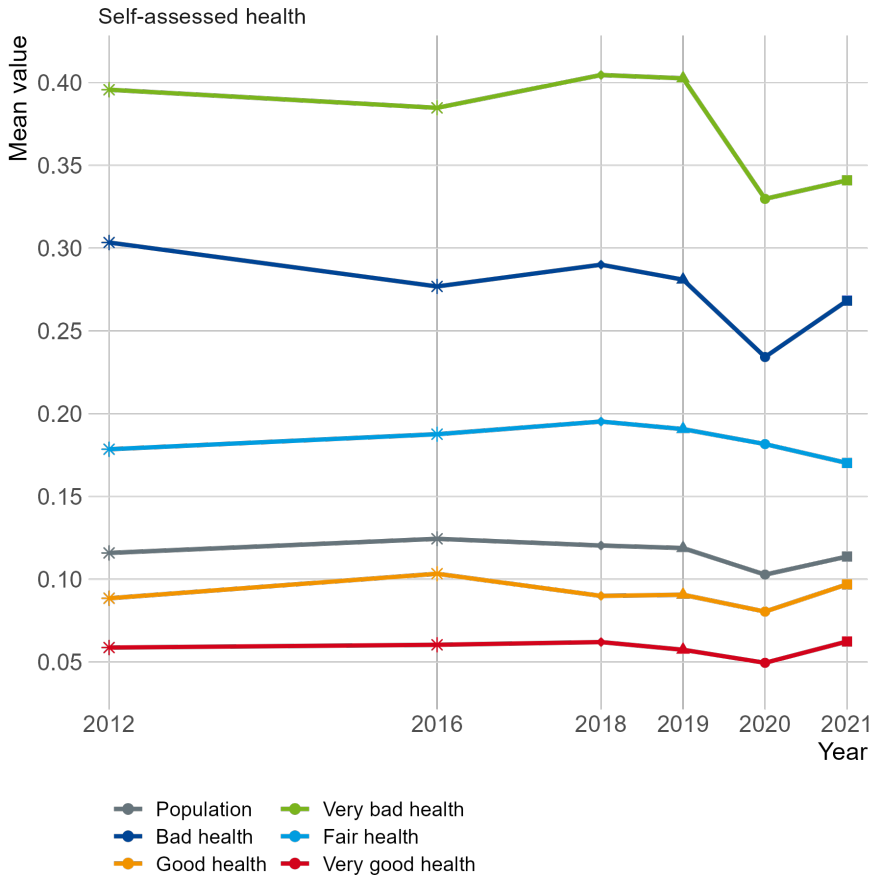
C


Education degree
Mean value
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

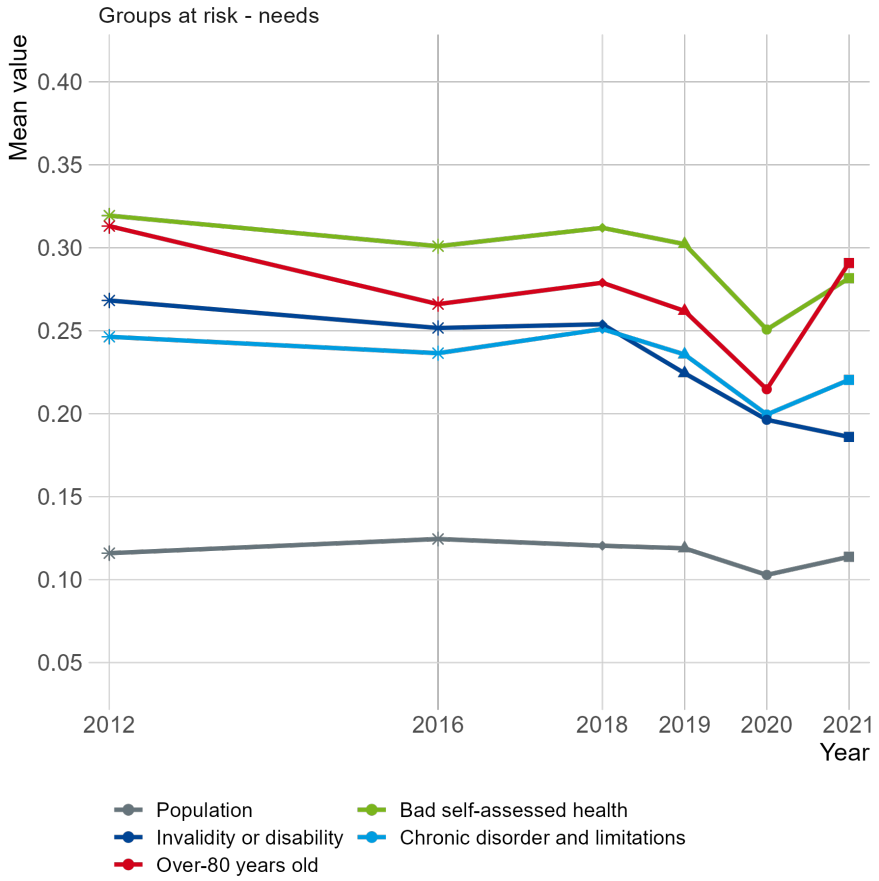
D


Groups at risk - activity
Mean value
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 47 and Figure 48 show how the probability to have an inpatient hospitalisation in the past year in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[aa] In Figure 47, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 48, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having an inpatient hospitalisation than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 47 and Figure 48, we find that, for most population subgroups, disparities are less pronounced once a correction is made for healthcare needs, i.e. the deviations from the population average are lower in the inequity scenario compared to inequality. In fact, there are almost no substantial inequities. This suggests that most of the explained variation is related to healthcare needs, which is a positive finding and means that access barriers to inpatient care are limited.

Systematic socioeconomic inequity as measured by the concentration index

Figure 49 shows the absolute concentration index of the needs-corrected probability to have an inpatient hospitalisation in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having an inpatient hospitalisation concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 49 show that there are socioeconomic inequalities (in favour of low-educated and low-income individuals), but no systematic inequities in the probability to have an inpatient hospitalisation in the past year.

[aa] The output of the regression analysis on which the correction is based is available upon request.

Figure 47 – Inequality and inequity in the probability to have an inpatient hospitalisation in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

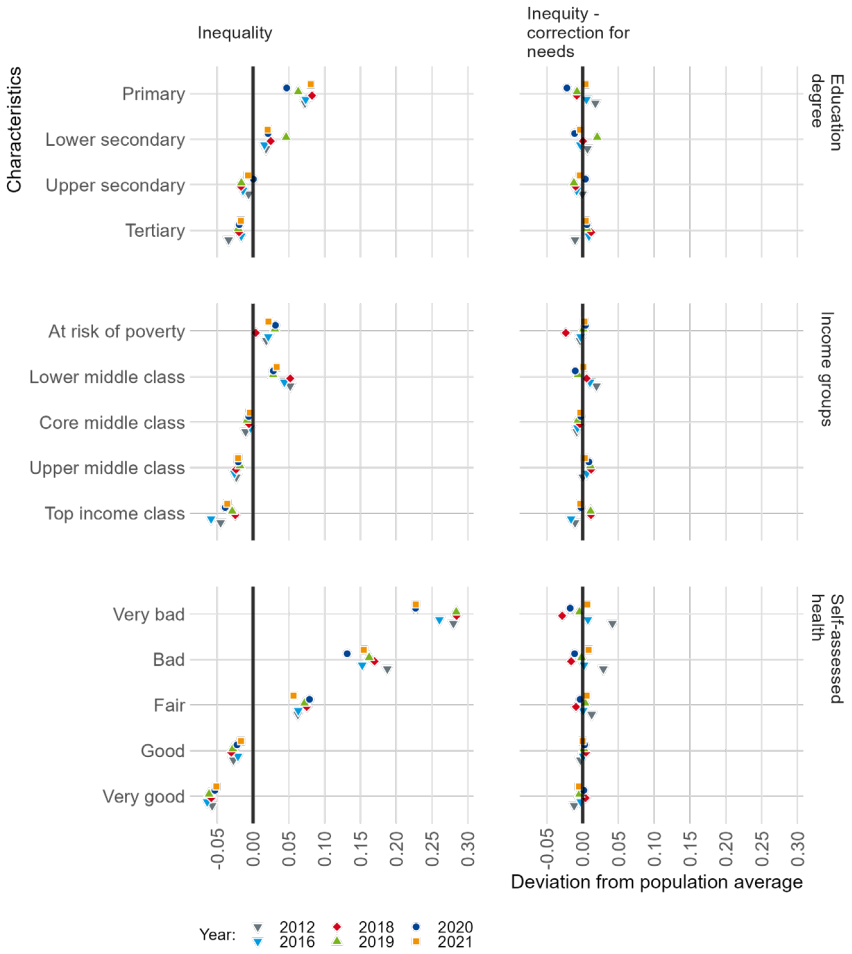


Figure 48 – Inequality and inequity in the probability to have an inpatient hospitalisation in the past year: difference between the general population and specific vulnerable population subgroups

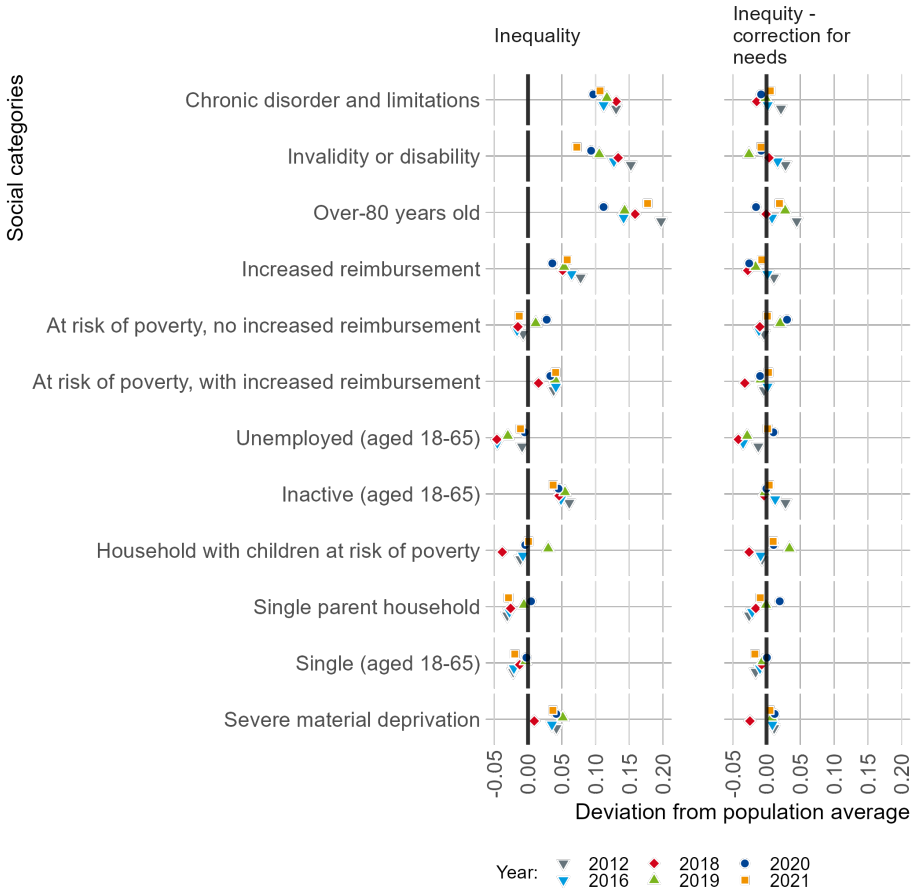
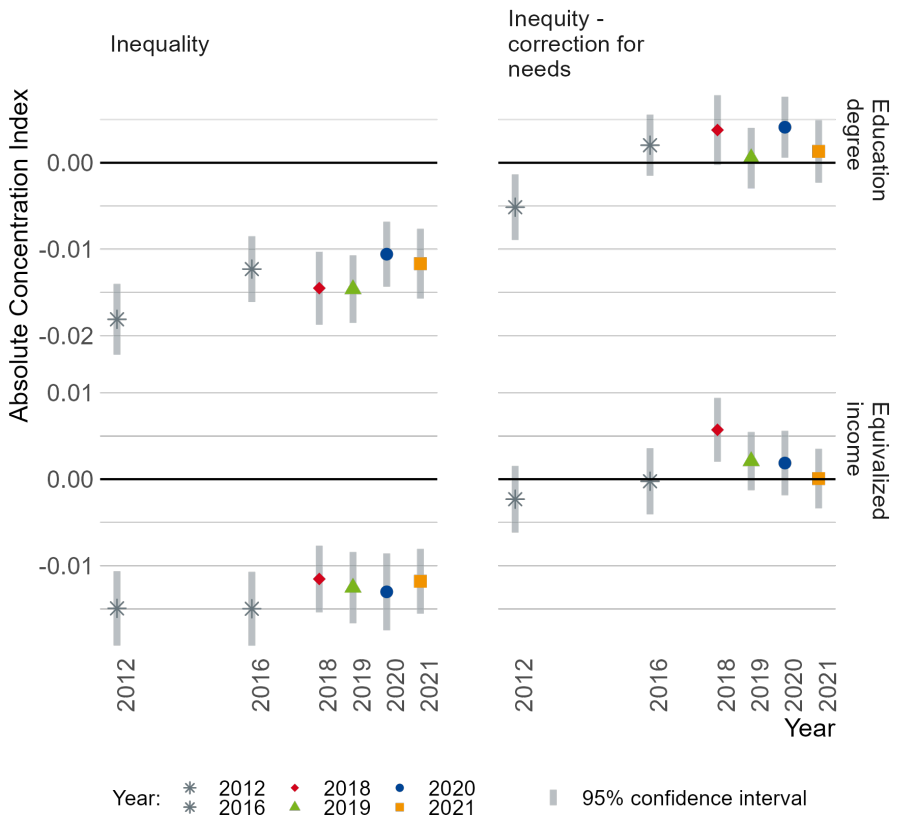


Figure 49 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have an inpatient hospitalisation in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **About 10% of the population had an inpatient admission in the past 12 months, with a stable trend over time; over 20% and up to 30% among high care groups. Admission rates in the lowest income/education group are twice as high as in the highest income/education group.**
- **After correction for needs, there are no substantial inequities. This suggests that most of the explained variation is related to healthcare needs, which is a positive finding and means that access barriers to inpatient care are limited.**
- **The concentration index demonstrates no systematic inequities by educational attainment or income.**

2.6.3 *Results – number of inpatient hospitalisations*

Evolution over time in the number of inpatient hospitalisations in the past year

Table 15 and Figure 50 show the evolution over time of the number of inpatient hospitalisations in the past year for individuals with at least one admission. No population benchmark was available, so only survey estimates are reported. Among the individuals included in the EU-SILC/IMA-AIM sample, we find an average annual number of admissions of around 1.3-1.4. Between 75% (2018) and 79% (2020) of the individuals with an inpatient hospitalisation had only one admission, and another 14% to 17% had two admissions. The number of inpatient hospitalisations is similar when restricting the sample to the adult population.

Table 15 – Evolution (2012-2021) of the number of inpatient hospitalisations in the past year

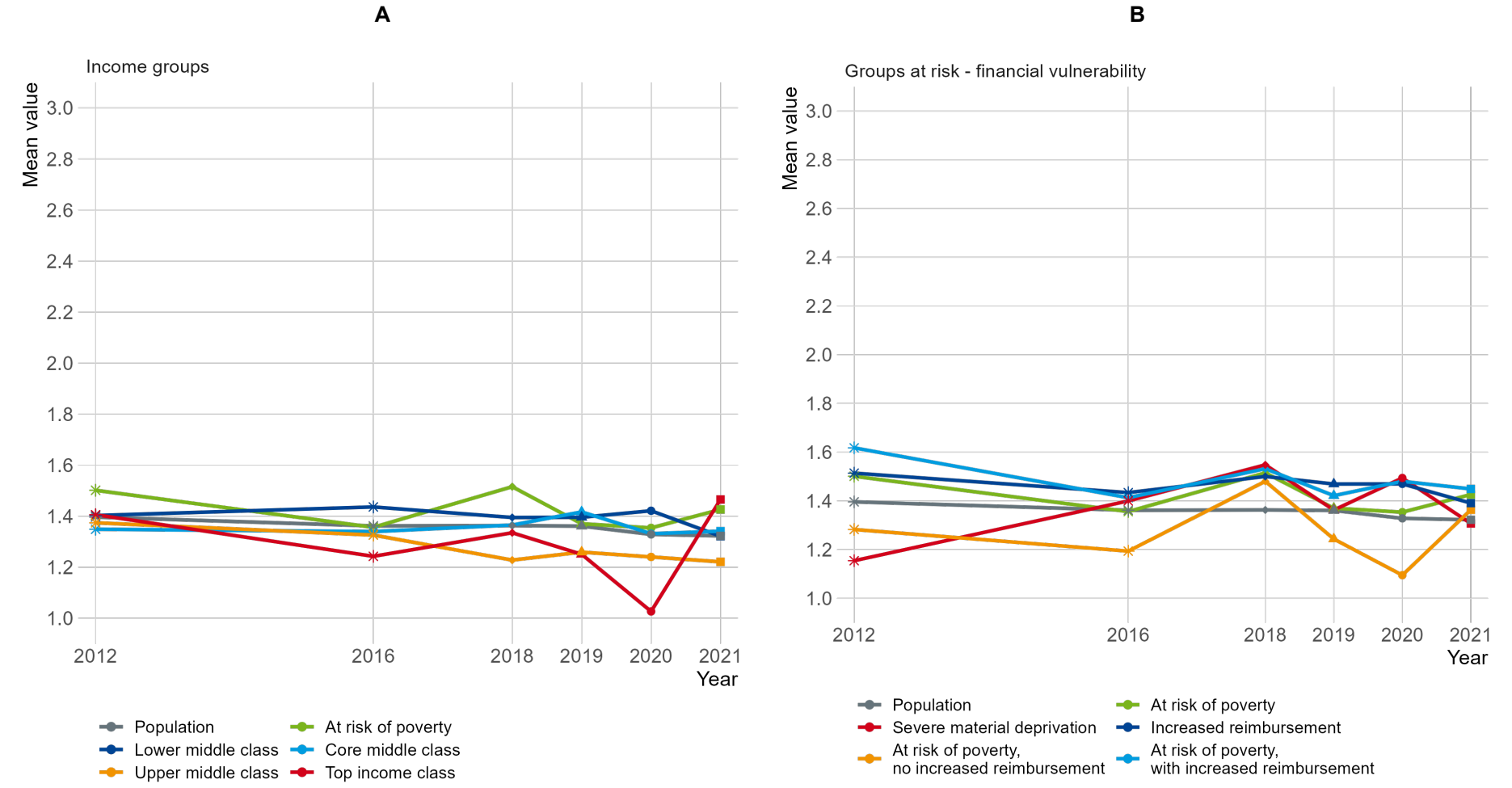
Sample	2012	2016	2018	2019	2020	2021
Survey (all)	1.40	1.36	1.37	1.35	1.33	1.34
Survey (18+)	1.40	1.36	1.36	1.36	1.33	1.32

Amounting to 10% of the population, the group of individuals with inpatient admissions is limited. When zooming in on particular subgroups, there might be some random variation that interferes with the observed trends. Figure 50[bb] shows the evolution of the number of inpatient hospitalisations conditional on having at least one admission for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

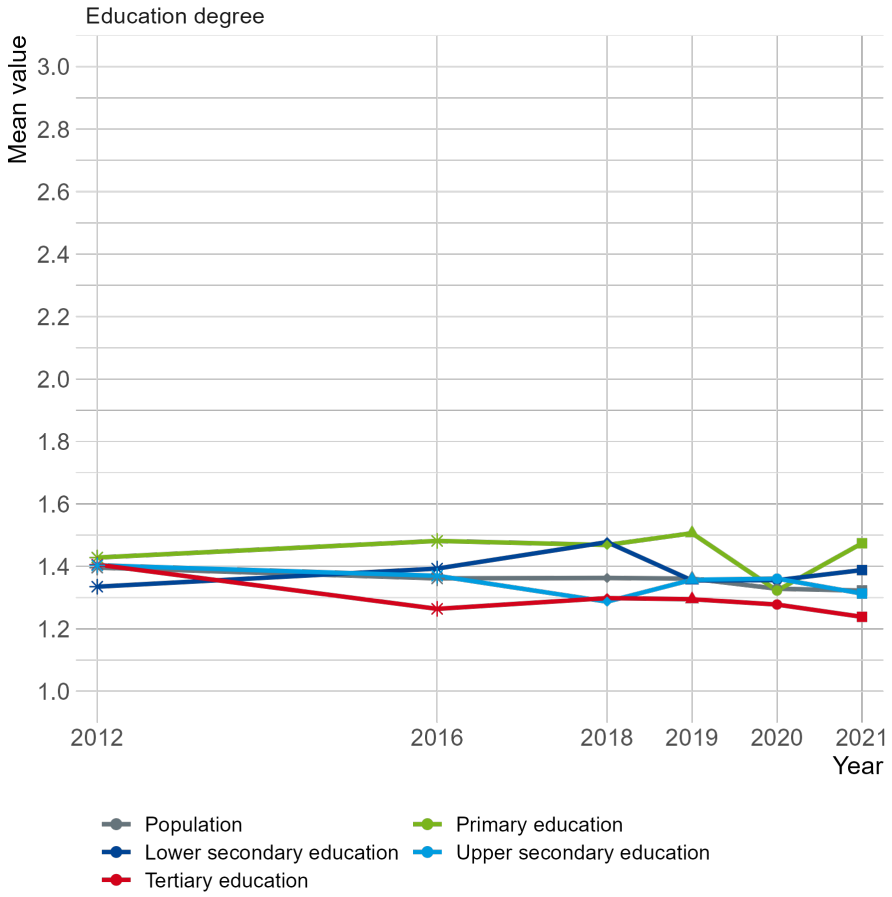
We find little variation over time for most population subgroups. There is some association between the number of inpatient hospitalisations and self-assessed health status (panel E).

[bb] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

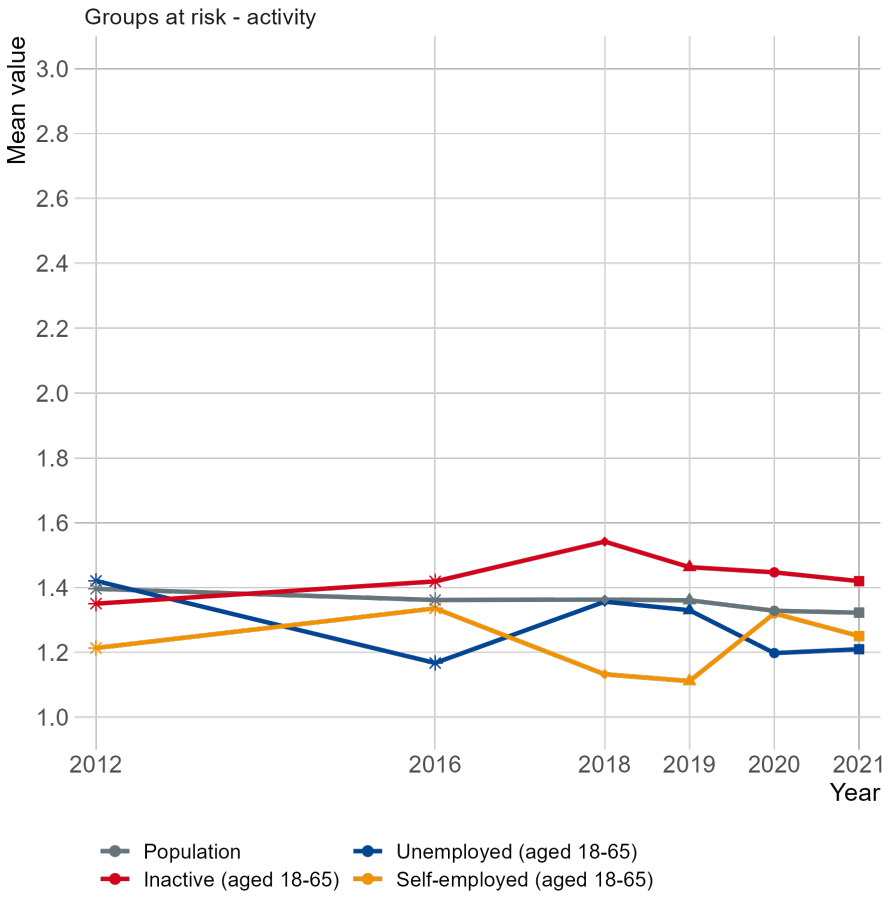
Figure 50 – Evolution (2012-2021) in the number of inpatient hospitalisations in the past year for different subgroups and population groups at risk



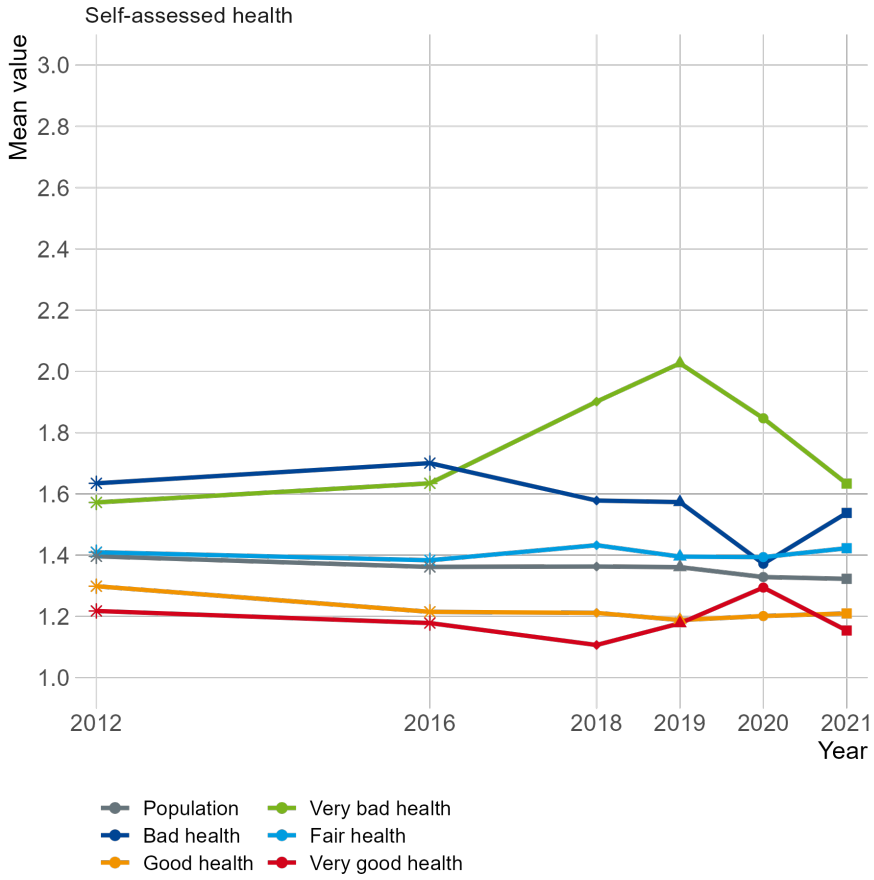
C


Education degree
Mean value
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

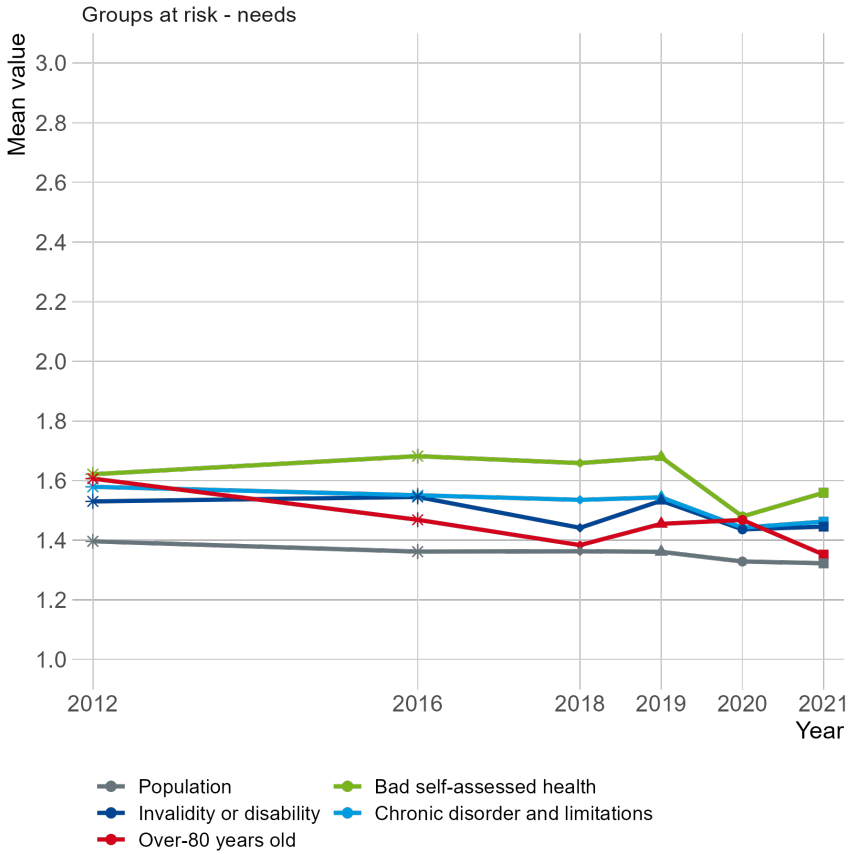
D


Groups at risk - activity
Mean value
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
3.0
2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 51 and Figure 52 show how the number of inpatient hospitalisations in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[cc] In Figure 51, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 52, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower number of inpatient hospitalisations than the population average. Values to the right of the vertical line, on the other hand, indicate a higher number of admissions than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

In both Figure 51 and Figure 52, we conclude that there are only small inequalities, with the exception of health status (more admissions in case of worse health status) and increased reimbursement. After correction for needs, we find no systematic inequities. Most effects are small and range between -0.2 and +0.2 inpatient admissions, they might be partly related to random variation.

Systematic socioeconomic inequity as measured by the concentration index

Figure 53 shows the absolute concentration index of the needs-corrected number of inpatient hospitalisations in the past year to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as a higher needs-corrected number of inpatient hospitalisations concentrated among individuals with lower educational attainment or lower income. Positive values indicate a higher needs-corrected number of inpatient hospitalisations for individuals with higher educational attainment and higher income.

The results in Figure 53 reveal the presence of inequities since 2019 in the number of inpatient hospitalisations both with respect to educational attainment (in favour of lower educated individuals) and income (pro-poor: in favour of low-income individuals). The effects are, however, small and borderline significant.

[cc] The output of the regression analysis on which the correction is based is available upon request.

Figure 51 – Inequality and inequity in the number of inpatient hospitalisations in the past year: difference between the general population and population subgroups based on education, income and self-assessed health

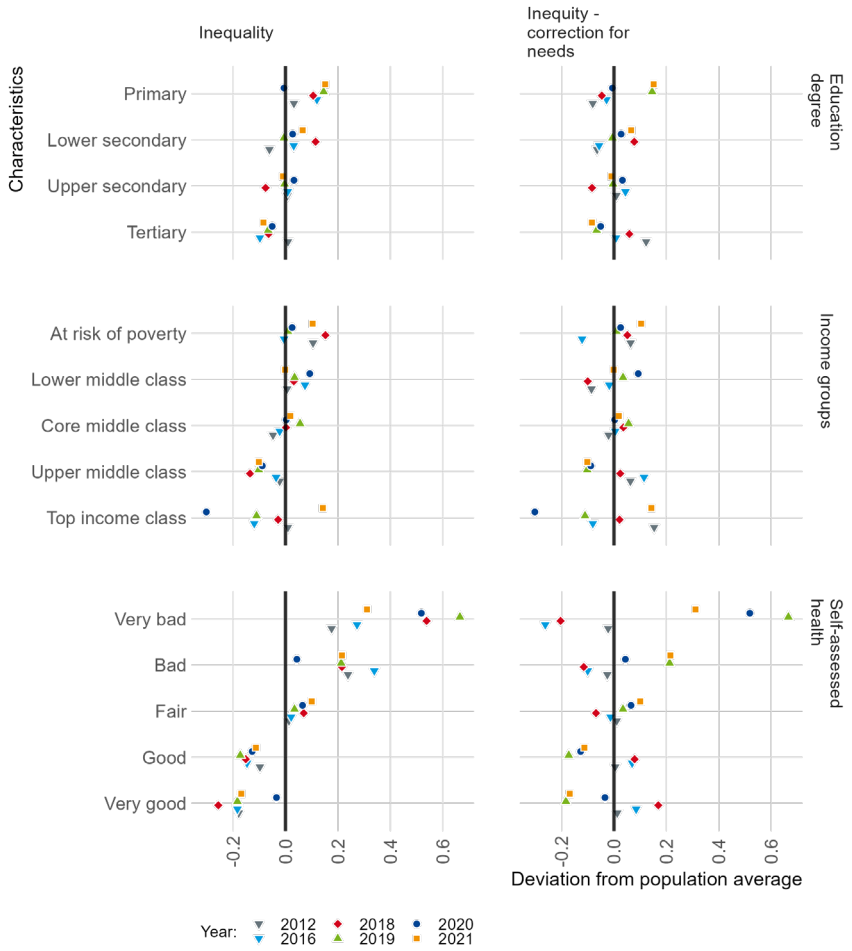


Figure 52 – Inequality and inequity in the number of inpatient hospitalisations in the past year: difference between the general population and specific vulnerable population subgroups

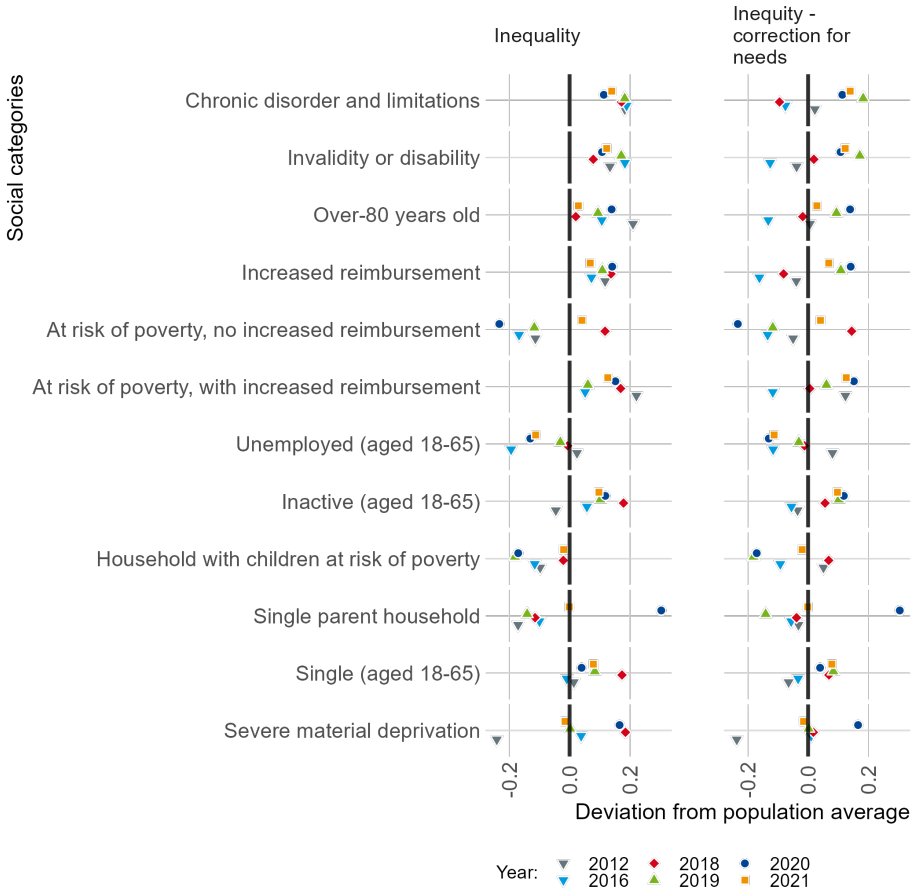
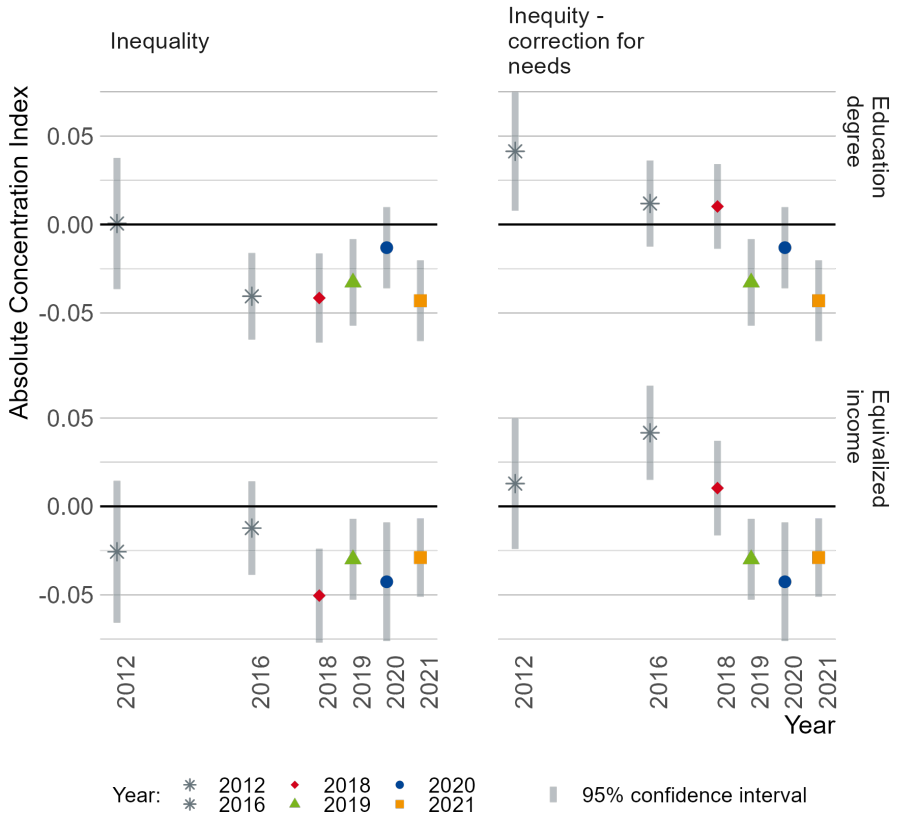


Figure 53 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of inpatient hospitalisations in the past year as measured by the absolute concentration index for subgroups based on education and income



Key points

- **The average number of inpatient hospitalisations (among those with at least one inpatient hospitalisation) was around 1.3-1.4 per year with about 75% of the hospitalised individuals having one admission and an additional 15% two admissions. There is some association between the number of inpatient hospitalisations and self-assessed health status.**
- **After correction for needs, we find no systematic inequities.**
- **The concentration index demonstrates small (borderline significant) socioeconomic inequities in the number of inpatient hospitalisations both with respect to educational attainment (in favour of low-educated individuals) and income (pro-poor: in favour of low-income individuals).**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C

2.7 Regular contacts with a dentist (population aged 18+) (EQ-6)

2.7.1 Documentation sheet

Description	EQ-6 Regular contacts with a dentist (population aged 18+)
Calculation	We analyse inequity in regular contacts with a dentist in the past 3 years (defined as dental visits in two different years during the last three years), see P-11. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use See indicator P-11
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use. **Definition of regular contacts with a dentist** - A contact with a dentist is identified through the professional code of the provider: ○ The first two digits of the professional code (variable practitioner_cat in IMA – AIM GZSS database) greater or equal to 30 and lower or equal to 39, or ○ The first two digits of the professional code (variable practitioner_cat in IMA – AIM GZSS database) greater or equal to 10 and lower or equal to 19 and the qualification of the healthcare provider (variable ss00065B in IMA – AIM GZSS database) equal to 52, 520, 152, 222, 422, 521.
International comparability	No
Limitations	See methodological note on equity in healthcare use
Dimension	Equity

Related indicators	EQ-7 Regular preventive contacts with a dentist (population aged 18+; population aged below 18) A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS) A-7 People with self-reported unmet needs for dental examination due to financial reasons (% of respondents 16+, EU-SILC) P-11 Regular contacts with dentist (% pop aged ≥3 years)
Reviewers	Roos Leroy (KCE); Carine Van de Voorde (KCE)

2.7.2 Results

Evolution over time in the probability to have regular dental visits

Table 16 reports the evolution over time of the probability to have regular dental visits (visits in at least 2 of the past 3 years). For the insured population aged 3 years or more, the fraction of individuals with regular dental visits increased from 49.2% in 2012 to 55.5% in 2018 and remained more or less stable since.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, we find a higher share of respondents with regular dental visits (52.5% in 2012 up to 60.4% in 2021), but a similar evolution over time. The fraction of individuals with regular dental visits is lower (1 to 2 percentage points) when restricting the sample to the population aged 18 or more, which is used in the regression and inequity analysis.

Table 16 – Evolution (2012-2021) of the probability to have regular dental visits in the past 3 years

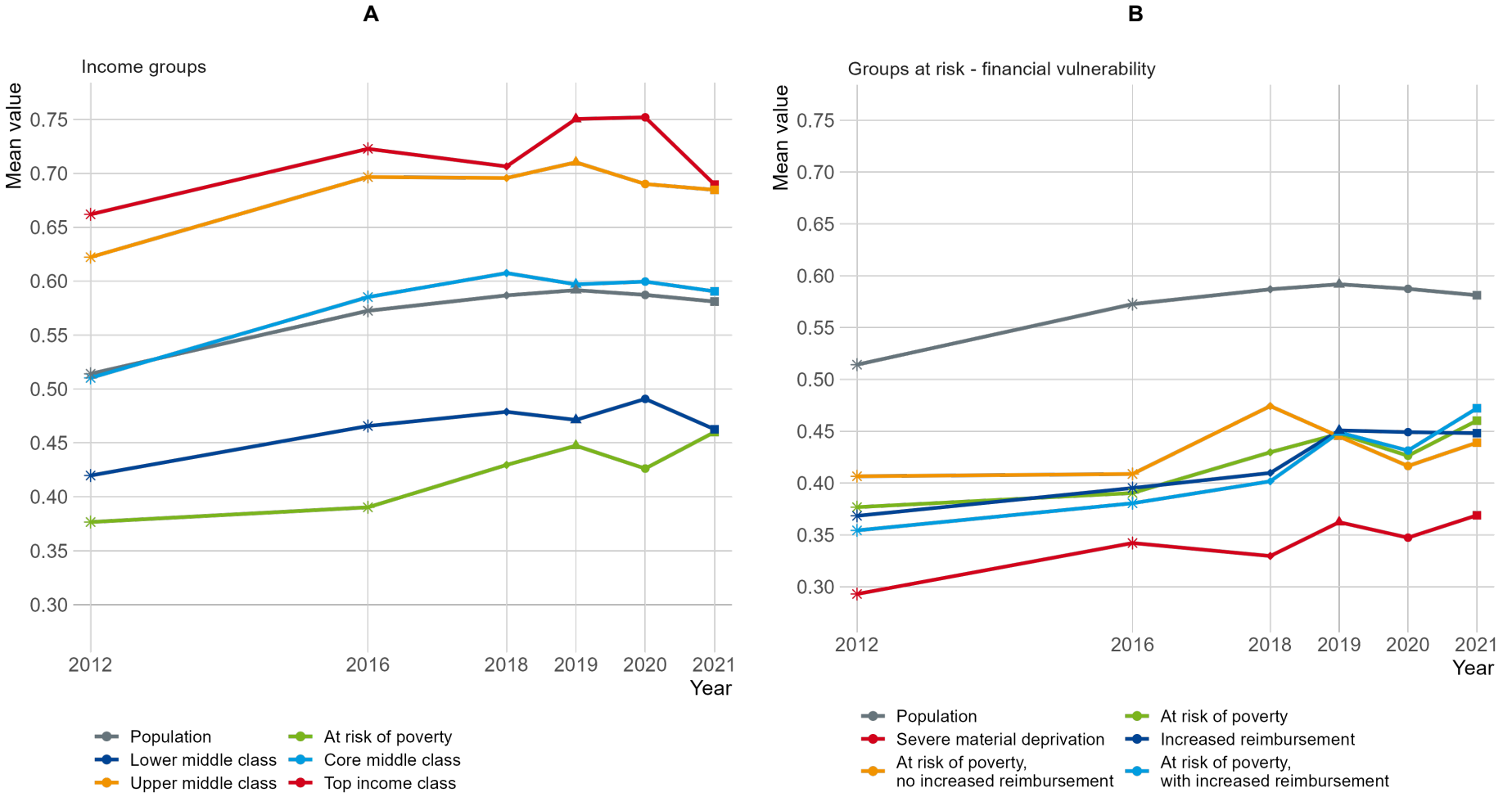
Sample	2012	2016	2018	2019	2020	2021
Population (3+)	49.2%	54.1%	55.5%	55.7%	54.4%	53.8%
Survey (3+)	52.5%	58.1%	60.3%	61.3%	60.8%	60.4%
Survey (18+)	51.4%	57.3%	58.7%	59.2%	58.7%	58.1%

Figure 54[dd] shows the evolution of the probability to have regular dental visits in the past 3 years for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.

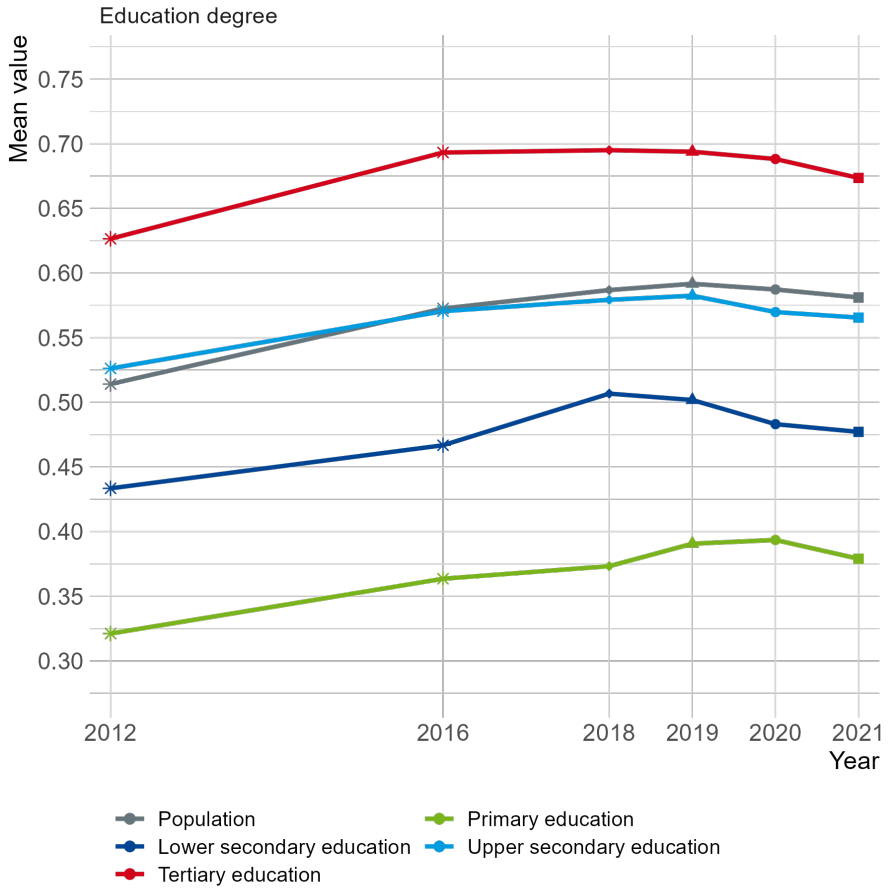
Figure 54 indicates that most population subgroups follow the general trend in the adult population with an increase up to 2018 and stable thereafter. There are, however, some exceptions. We find a decrease over time in the probability to have regular dental visits among the unemployed (aged 18-65) and individuals with very bad self-assessed health (panels D & E). Second, there is an important socioeconomic gradient with respect to income (panel A) and education (panel C). Individuals with high income (upper middle and top income class) and high educational attainment (tertiary education) have a probability to have regular dental visits well above the population mean. The opposite is true for individuals with low income (at risk of poverty and lower middle class) and low educational attainment (primary and lower secondary education). Other financially vulnerable population subgroups (individuals with increased reimbursement, with severe material deprivation, in unemployment or inactivity, see panels B and D) also have a probability well below the population average, in particular individuals with severe material deprivation. The middle income and educational groups (core middle class and upper secondary education) have a probability in line with the population mean. Third, the fraction of individuals with regular dental visits is below average for individuals with high care needs, i.e. those with fair, bad and very bad self-reported health, with chronic disorder and limitations, invalidity or disability (panels E and F). The fraction is particularly low among over-80 year olds.

[dd] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

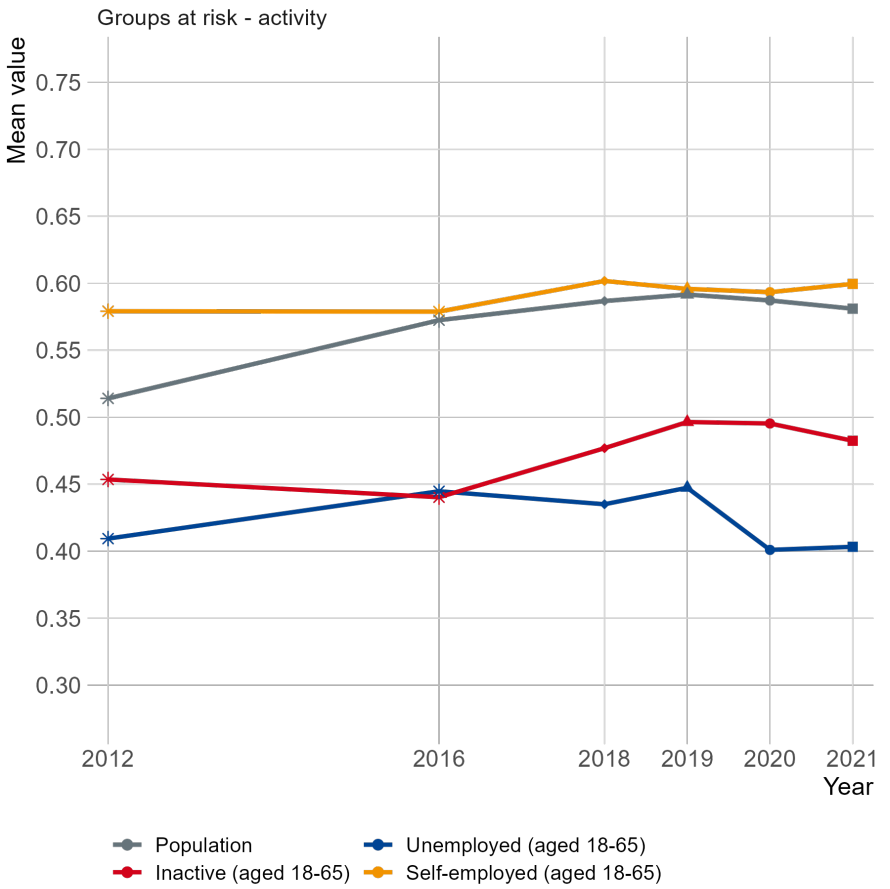
Figure 54 – Evolution (2012-2021) of the probability to have regular dental visits for different subgroups and population groups at risk



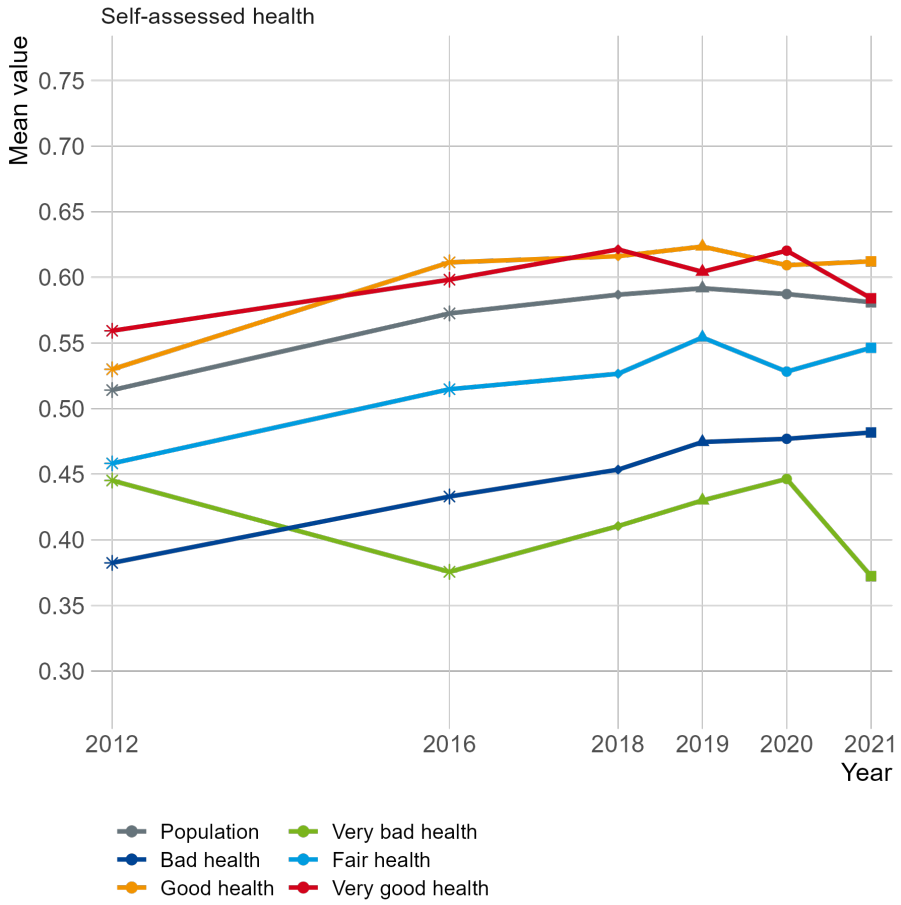
C


Education degree
Mean value
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

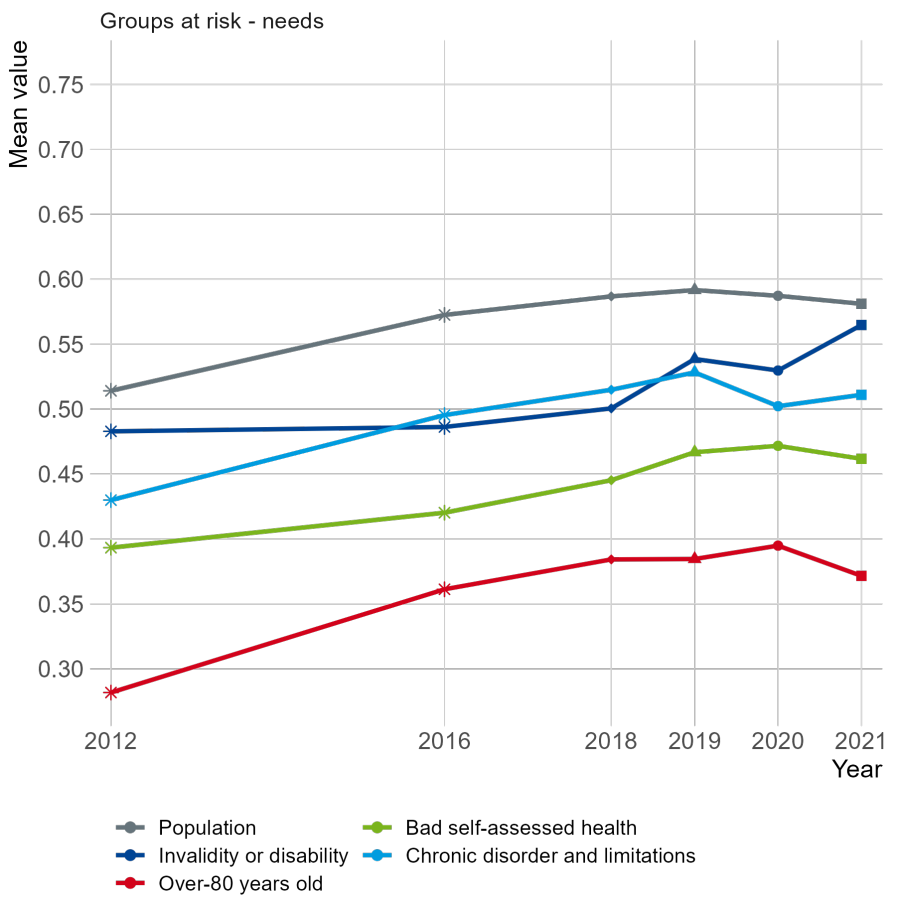
D


Groups at risk - activity
Mean value
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
2012
2016
2018
2019
2020
2021
Year
Population
Bad health
Good health
Very bad health
Fair health
Very good health

F


Groups at risk - needs
Mean value
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
2012
2016
2018
2019
2020
2021
Year
Population
Invalidity or disability
Over-80 years old
Bad self-assessed health
Chronic disorder and limitations

Overview inequity over time for different population subgroups

Figure 55 and Figure 56 show how the probability to have regular dental visits in the past 3 years in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[ee] Contrary to other types of care (see EQ-1 to EQ-5), the correction for healthcare needs in case of dental care is limited to differences by age and gender as there are no variables available in the EU-SILC/IMA-AIM database that are specifically related to dental care needs. Moreover, one could argue that regular dental care and in particular regular preventive dental care is recommended regardless of health status.

Figure 54 reveals a substantial gradient in regular dental visits by self-assessed health and other proxies for high care needs, with lower contact rates among individuals in worse health. In our opinion, it would be incorrect to label these differences as fair and justified and adjust dental care use accordingly.

In Figure 55, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 56, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having regular dental visits than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

Given the minor correction for healthcare needs (only age and gender, see above), the results with respect to inequalities and inequities in Figure 55 and Figure 56 are quite similar. The disparities in having regular dental visits are quite large compared to other types of healthcare and range between -20 and +15 percentage points.

We conclude that, first, there are important gradients in the probability to have regular dental visits with respect to income, self-assessed health and education. The probability to have regular visits is markedly lower for individuals with primary and lower secondary education; individuals at risk of poverty and in the lower middle class; and individuals with fair, bad and very bad self-assessed health status. A probability above the population mean is found for individuals with tertiary education, in the upper and top middle class and, to a lesser extent, for individuals with good and very good self-assessed health.

Second, for all vulnerable population subgroups the probability to have regular dental visits is below the population average. This is particularly the case for financially vulnerable population subgroups (i.e. at risk of poverty, beneficiary of increased reimbursement, unemployed, inactive, severe material deprivation). In some cases there is a positive evolution over time, i.e. the average is evolving towards the population average (e.g. individuals at risk of poverty with increased reimbursement), but in other cases the situation is deteriorating, i.e. the difference is increasing over time (e.g. individuals in unemployment). It is important to note that although increased reimbursement does not sufficiently increase accessibility to the dentist, the situation of this subgroup is improving over time.

[ee] The output of the regression analysis on which the correction is based is available upon request.

Figure 55 – Inequality and inequity in the probability to have regular dental visits in the past 3 years: difference between the general population and population subgroups based on education, income, and self-assessed health

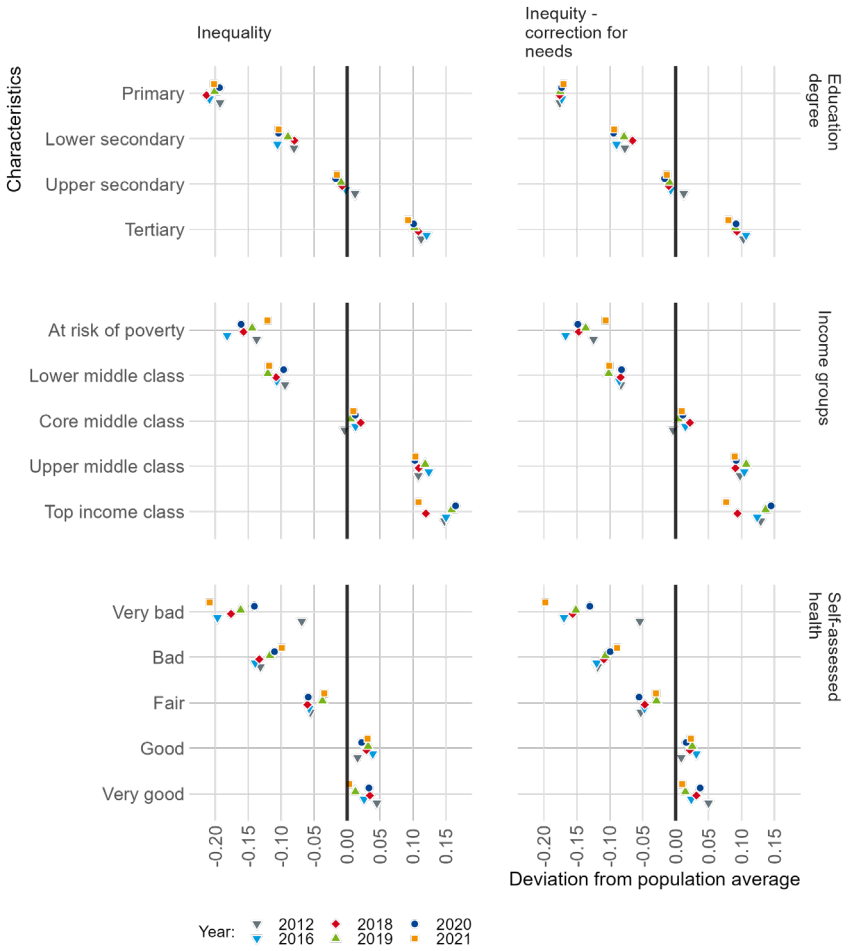
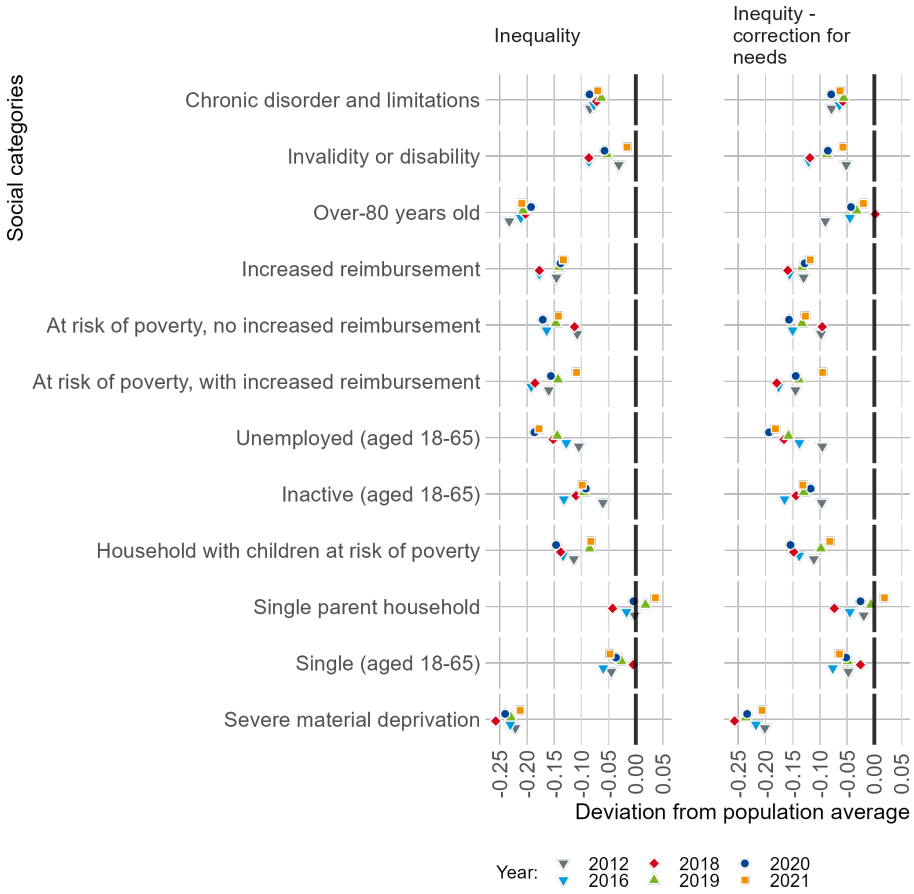


Figure 56 – Inequality and inequity in the probability to have regular dental visits in the past 3 years: difference between the general population and specific vulnerable population subgroups

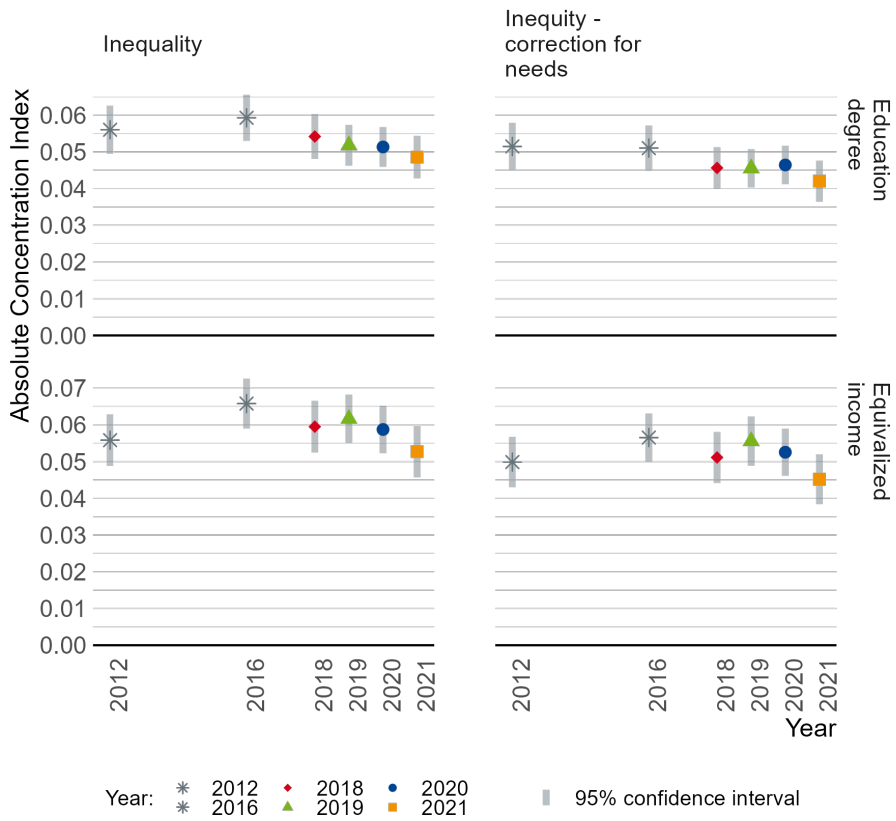


Systematic socioeconomic inequity as measured by the concentration index

Figure 57 shows the absolute concentration index of the needs-corrected probability to have regular dental visits in the past 3 years to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having regular dental visits concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 57 indicate systematic and substantial socioeconomic inequalities and inequities in the probability to have regular dental visits, with higher probabilities concentrated among high-educated individuals and high-income individuals. Inequalities and inequities as measured by the concentration index are of similar magnitude have slightly decreased between 2016 and 2021.

Figure 57 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have regular dental visits in the past 3 years as measured by the absolute concentration index for subgroups based on education and income



Key points

- **Only half of the Belgian population had regular dental contacts in the past 3 years. The EU-SILC/IMA-AIM survey value is higher, but follows the same upward trend over time. Higher contact rates are found among individuals with higher income, higher educational attainment and better health status.**
- **No specific variables are available to correct for dental care needs, hence only a correction is made for age and gender. Moreover, one could argue that regular dental care and in particular regular preventive dental care is recommended regardless of health status.**
- **After correction for age and gender, there are important socioeconomic inequities in the probability to have regular dental visits. Clear social gradients are found with regard to income class and educational attainment with contact rates increasing with income and level of education. Inequities in the probability to have regular dental visits are found for all financially vulnerable population subgroups and in particular for individuals in households with severe material deprivation. Both improving (e.g. individuals at risk of poverty with increased reimbursement) and deteriorating (e.g. unemployed persons) trends over time are observed.**
- **After correction for age and sex, lower contact rates are found for beneficiaries of increased reimbursement.**
- **The concentration index demonstrates systematic and substantial inequities by income (pro-rich: in favour of high-income individuals) and educational attainment (in favour of high-educated individuals). Inequities slightly decreased over time.**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C
2. IMA-AIM Atlas.2023. Available from: https://atlas.ima-aim.be/databanken/

2.8 Regular preventive contacts with a dentist (population aged 18+; population aged below 18 years) (EQ-7)

2.8.1 Documentation sheet

Description	EQ-7 Regular preventive contacts with a dentist (population aged 18+) Regular preventive contacts with a dentist (children aged between 3 and 17 years)
Calculation	We analyse inequity in regular preventive contacts with a dentist in the past 3 years (defined as contacts for preventive dental care in two different years during the last three years), see P-11. The **fairness gap** of each individual (aged 18+) in the EU-SILC survey is calculated (see methodological note on equity in healthcare use). Next, systematic differences in the fairness gap by socioeconomic group are evaluated by: - Differences in the fairness gap by socioeconomic status, e.g. income or educational attainment, in comparison to the general population. - Differences in the fairness gap for specific (vulnerable) population subgroups (e.g. single parents, beneficiaries of increased reimbursement, individuals with severe material deprivation), in comparison to the general population. - The (absolute) concentration index, which is a summary score of the inequity in the distribution of the fairness gap along a socioeconomic dimension (e.g. income distribution, educational attainment).
Rationale	See methodological note on equity in healthcare use See indicator P-11
Data source	Linked micro-data: EU-SILC & IMA – AIM & RIZIV – INAMI, years 2018, 2019, 2020, 2021. This is individual level data from respondents of the EU-SILC data from Statbel (Algemene Directie Statistiek – Direction générale Statistique – Statistics Belgium) enriched with their healthcare consumption data from IMA – AIM and municipality level data on healthcare supply from RIZIV – INAMI. KCE report 334 for years 2012, 2016[1]
Technical definitions	The calculation of the **fairness gap** and definition of socioeconomic and other population groups are described in the methodological note on equity in healthcare use**.** **Definition of regular preventive contacts with a dentist** - A contact with a dentist is identified through the professional code of the provider: ○ The first two digits of the professional code (variable practitioner_cat in IMA – AIM GZSS database) greater or equal to 30 and lower or equal to 39, or ○ The first two digits of the professional code (variable practitioner_cat in IMA – AIM GZSS database) greater or equal to 10 and lower or equal to 19 and the qualification of the healthcare provider (variable ss00065B in IMA – AIM GZSS database) equal to 52, 520, 152, 222, 422, 521. - A dental contact is considered preventive if one of the following nomenclature codes is used (variable ss00020 in IMA – AIM GZSS database): nomenclature code between 301394 to 302540, 371394 to 372540.
International comparability	No

Limitations	See methodological note on equity in healthcare use
Dimension	Equity
Related indicators	EQ-6 Regular contacts with a dentist (population aged 18+) A-4 Households facing catastrophic out-of-pocket payments (% of respondents, HBS) A-7 People with self-reported unmet needs for dental examination due to financial reasons (% of respondents 16+, EU-SILC) P-11 Regular contacts with dentist (% pop aged ≥3 years)
Reviewers	Roos Leroy (KCE); Carine Van de Voorde (KCE)

2.8.2 *Results – Regular preventive contacts with a dentist (population aged 18+)*

Evolution over time in the probability to have regular preventive dental visits

Table 17 reports the evolution over time of the probability to have regular preventive dental visits (visits for preventive dental care in at least 2 of the past 3 years). For the insured population aged 3 years or more, the fraction of individuals with regular preventive dental visits increased from 24.3% in 2012 to 33.4% in 2018 and remained more or less stable since.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, we find a higher share of respondents with regular preventive dental visits (26.8% in 2012 up to 40.0% in 2021), and an upward time trend over the whole period. The fraction of individuals with regular preventive dental visits is lower (1 to 2 percentage points) when restricting the sample to the population aged 18 or more, which is used in the regression and inequity analysis.

Table 17 – Evolution (2012-2021) of the probability to have regular preventive dental visits in the past 3 years

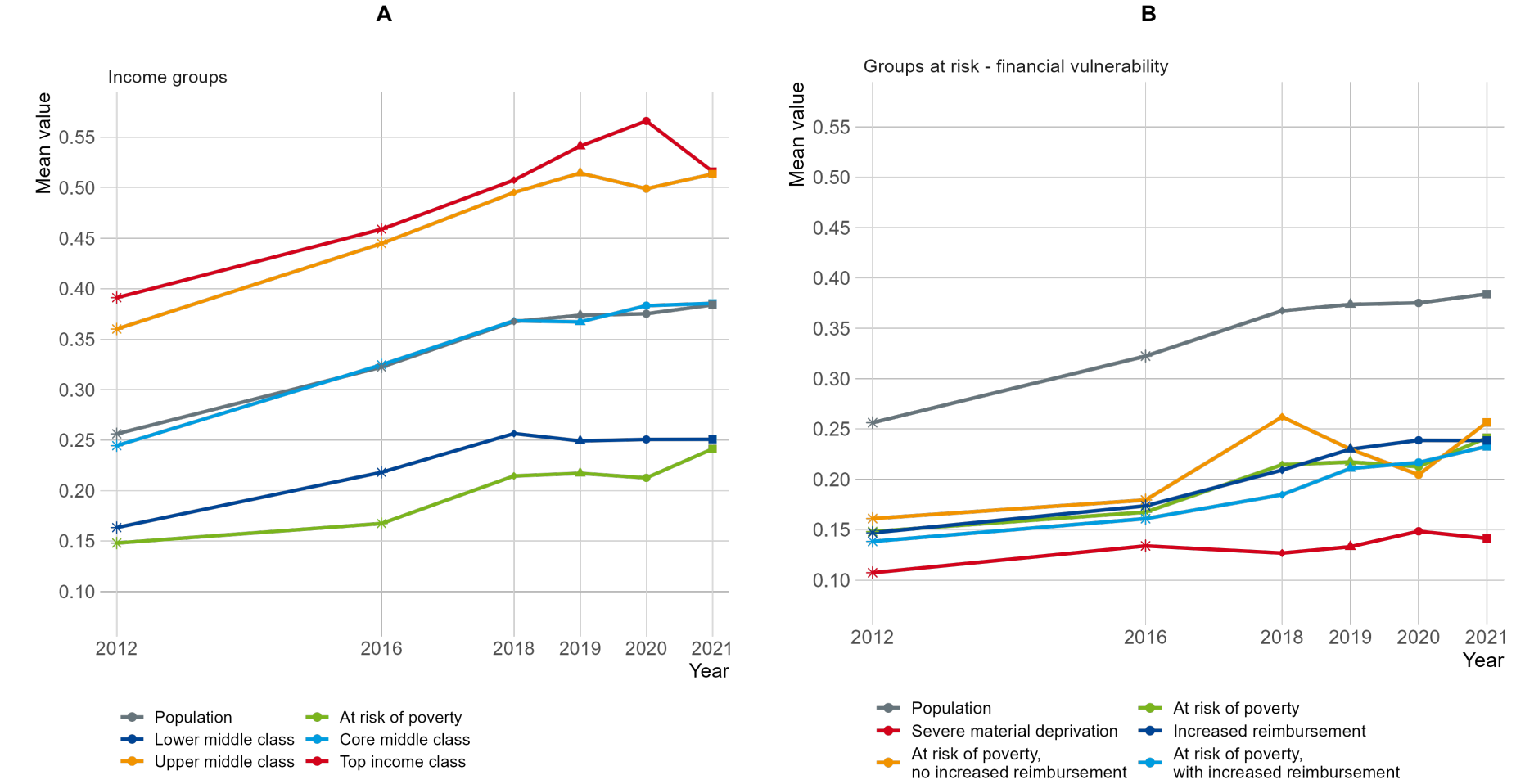
Sample	2012	2016	2018	2019	2020	2021
Population (3+)	24.3%	30.2%	33.4%	34.4%	33.6%	34.2%
Survey (3+)	26.8%	33.4%	37.6%	38.6%	38.9%	40.0%
Survey (18+)	25.6%	32.2%	36.7%	37.4%	37.5%	38.4%

Figure 58[ff] shows the evolution of the probability to have regular preventive dental visits in the past 3 years for a variety of population subgroups (adult population). These are the crude trends, without a correction for healthcare needs.[1]

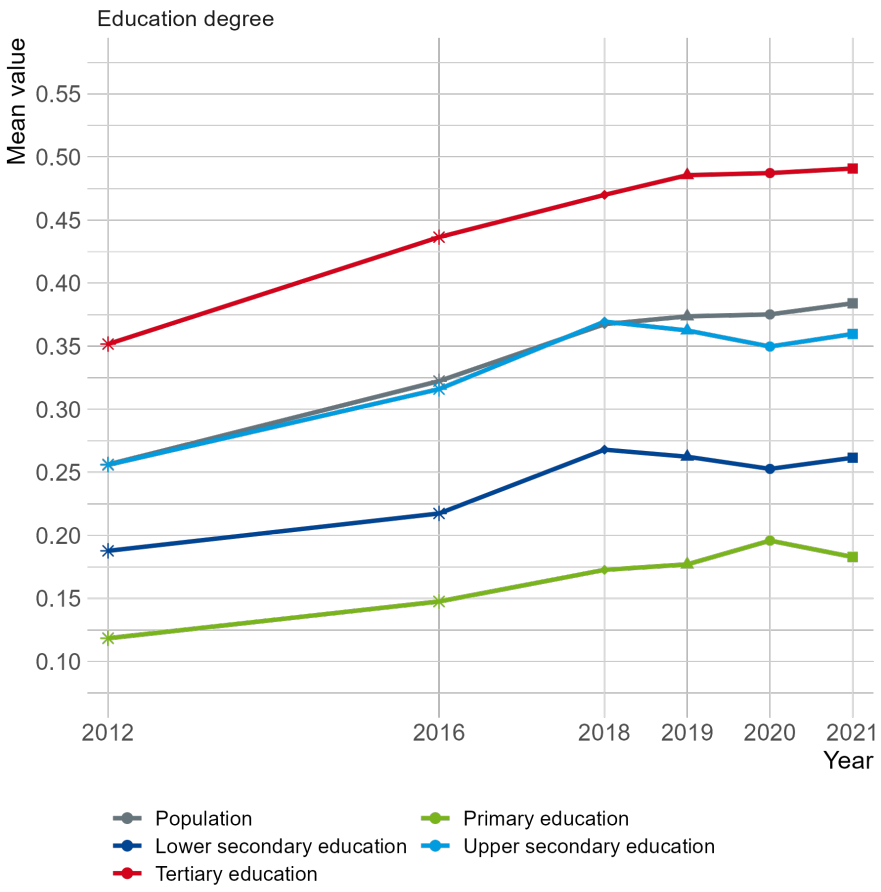
Figure 58 indicates that most population subgroups follow the upward trend over time in the adult population. There are, however, some exceptions. We find a decreasing or stable trend since 2018 in the probability to have regular preventive dental visits among the unemployed (aged 18-65), individuals with an upper/lower secondary education degree, individuals with (very) bad self-assessed health and individuals with a chronic disorder and limitations (panels C, D & E). Second, there is an important socioeconomic gradient with respect to income (panel A) and education (panel C). Individuals with high-income (upper middle and top income class) and high educational attainment (tertiary education) have a probability to have regular preventive dental visits well above the population mean. The opposite is true for individuals with low income (at risk of poverty and lower middle class) and low educational attainment (primary and lower secondary education). Other financially vulnerable population subgroups (individuals with increased reimbursement, with severe material deprivation, in unemployment or inactivity, see panels B and D) also have a probability well below the population average, in particular individuals with severe material deprivation. The middle income and educational groups (core middle class and upper secondary education) have a probability in line with the population mean. Third, the fraction of individuals with regular preventive dental visits is below average for individuals with high care needs, i.e. those with fair, bad and very bad self-reported health, with chronic disorder and limitations, invalidity or disability (panels E and F). The fraction is particularly low among over-80 year olds (panel F).

[ff] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

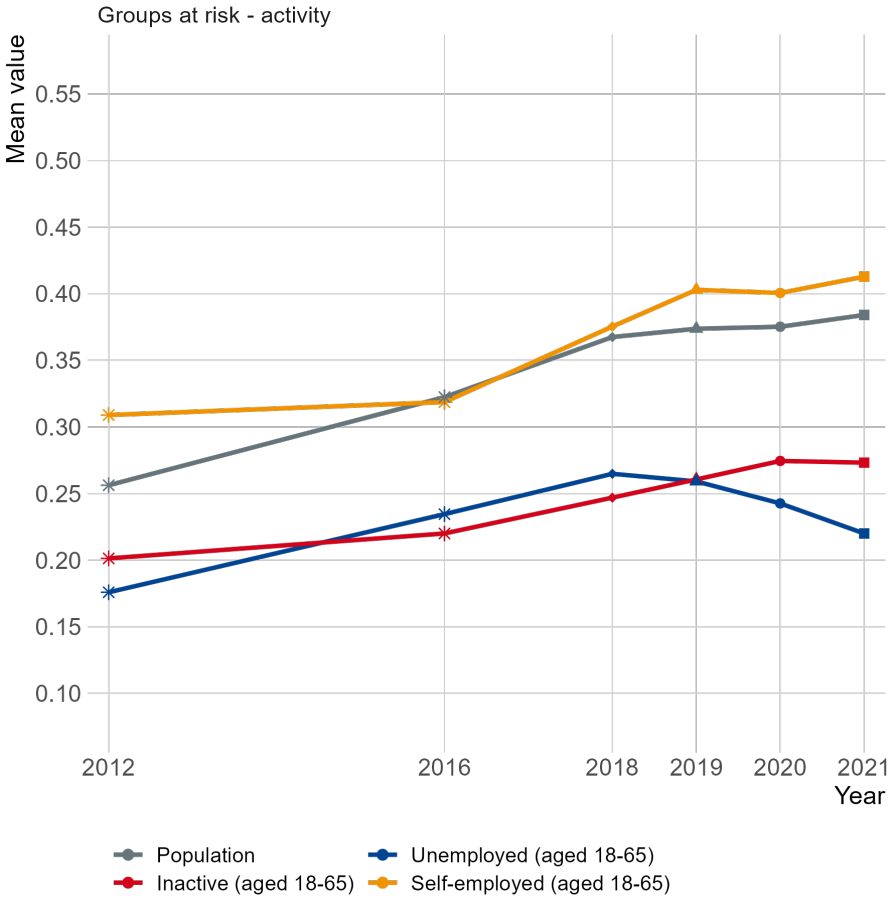
Figure 58 – Evolution (2012-2021) of the probability to have regular preventive dental visits for different subgroups and population groups at risk



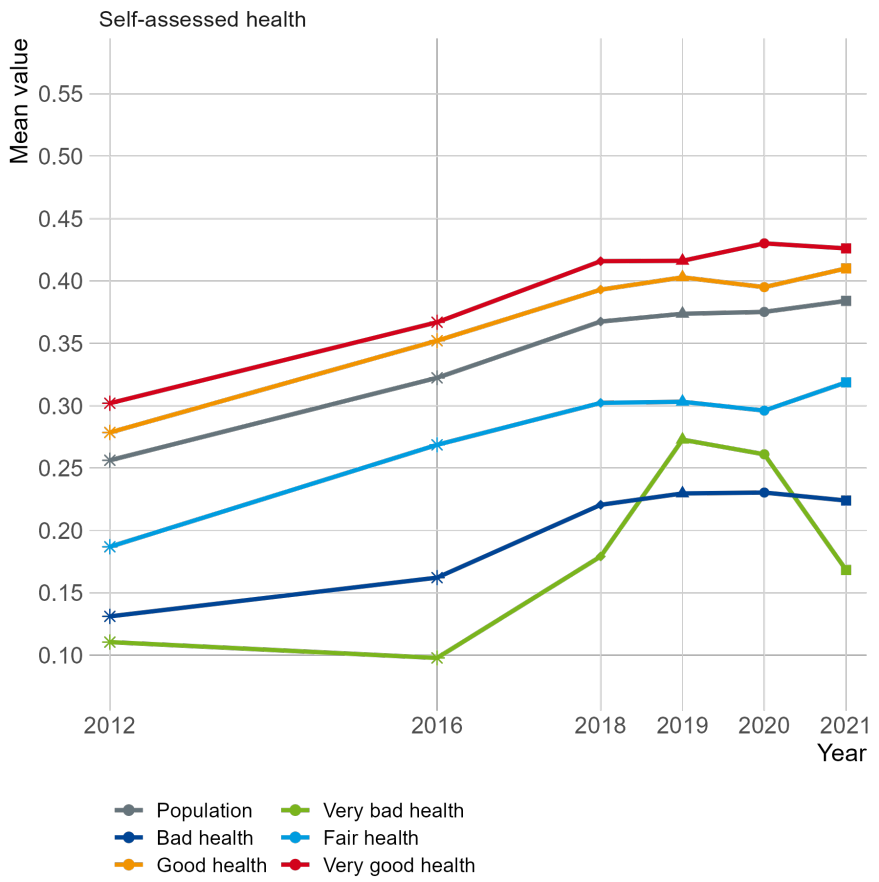
C


Education degree
Mean value
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
2012
2016
2018
2019
2020
2021
Year
Population
Primary education
Lower secondary education
Upper secondary education
Tertiary education

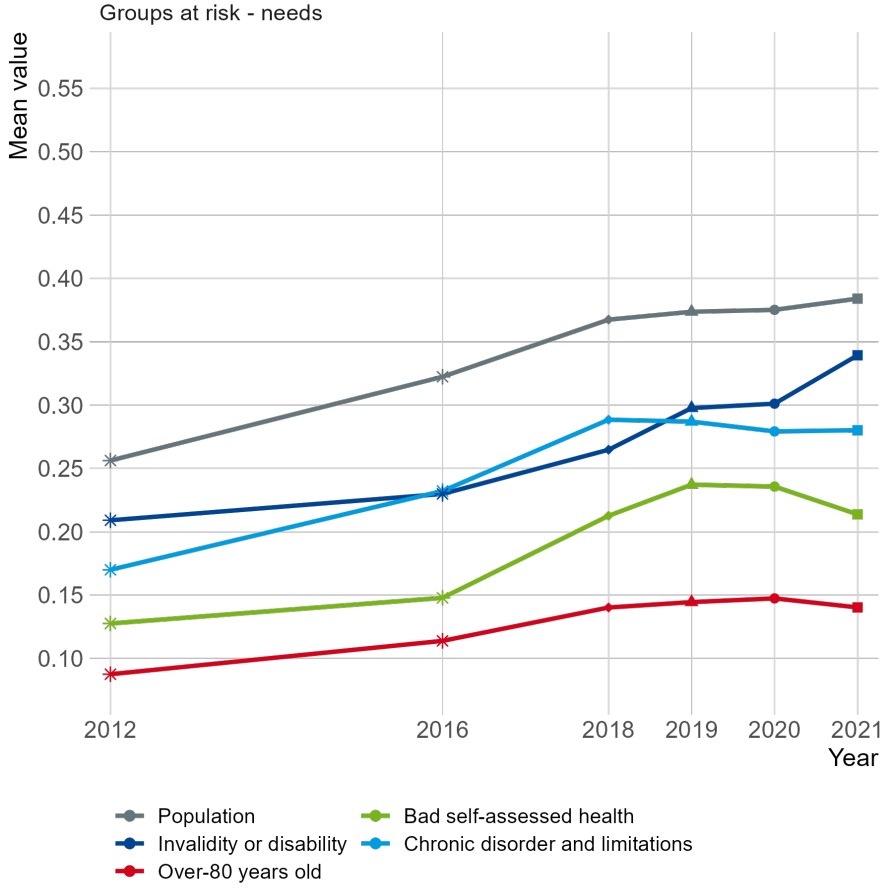
D


Groups at risk - activity
Mean value
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
2012
2016
2018
2019
2020
2021
Year
Population
Unemployed (aged 18-65)
Inactive (aged 18-65)
Self-employed (aged 18-65)

E


Self-assessed health
Mean value
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
2012
2016
2018
2019
2020
2021
Year
Population
Very bad health
Bad health
Fair health
Good health
Very good health

F


Groups at risk - needs
Mean value
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
2012
2016
2018
2019
2020
2021
Year
Population
Bad self-assessed health
Invalidity or disability
Chronic disorder and limitations
Over-80 years old

Overview inequity over time for different population subgroups

Figure 59 and Figure 60 show how the probability to have regular preventive dental visits in the past 3 years in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[gg] Contrary to other types of care (see EQ-1 to EQ-5), the correction for healthcare needs in case of preventive dental care is limited to differences by age and gender as there are no variables available in the EU-SILC/IMA-AIM database that are specifically related to dental care needs. Moreover, one could argue that regular dental care and in particular regular preventive dental care is recommended regardless of health status.

Figure 58 reveals a substantial gradient in regular preventive dental visits by self-assessed health and other proxies for high care needs, with lower contact rates among individuals in worse health. In our opinion, it would be incorrect to label these differences as fair and justified and adjust preventive dental care use accordingly.

In Figure 59, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 60, specific vulnerable population subgroups are considered.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having regular preventive dental visits than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

Given the minor correction for healthcare needs (only age and gender, see above), the results with respect to inequalities and inequities in Figure 59 and Figure 60 are quite similar. The disparities in having regular preventive dental visits are quite large compared to other types of healthcare and range between -25 and +15 percentage points.

We conclude that, first, there are important gradients in the probability to have regular preventive dental visits with respect to income, self-assessed health and education. The probability to have regular visits is markedly lower for individuals with primary and lower secondary education; individuals at risk of poverty and in the lower middle class; and individuals with fair, bad and very bad self-assessed health status. A probability above the population mean is found for individuals with tertiary education, in the upper middle and top income class and, to a lesser extent, for individuals with good and very good self-assessed health.

Second, for most vulnerable population subgroups the probability to have regular preventive dental visits is below the population average. This is particularly the case for financially vulnerable population subgroups (i.e. at risk of poverty, beneficiary of increased reimbursement, unemployed, inactive, severe material deprivation). In some cases there is a positive evolution over time, i.e. the average is evolving towards the population average (e.g. individuals at risk of poverty with increased reimbursement), but in other cases the situation is deteriorating, i.e. the difference is increasing over time (e.g. individuals in unemployment). It is important to note that increased reimbursement does not sufficiently increase access to the dentist for preventive dental care.

[gg] The output of the regression analysis on which the correction is based is available upon request.

Figure 59 – Inequality and inequity in the probability to have regular preventive dental visits in the past 3 years: difference between the general population and population subgroups based on education, income, and self-assessed health

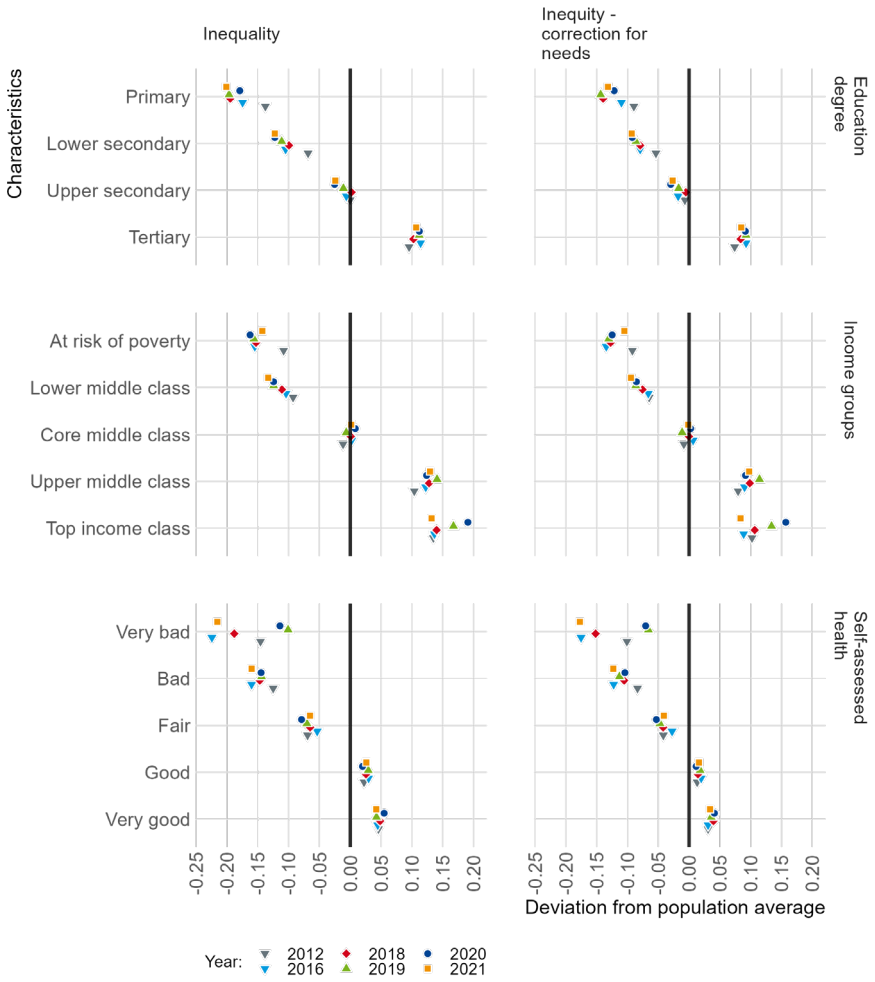
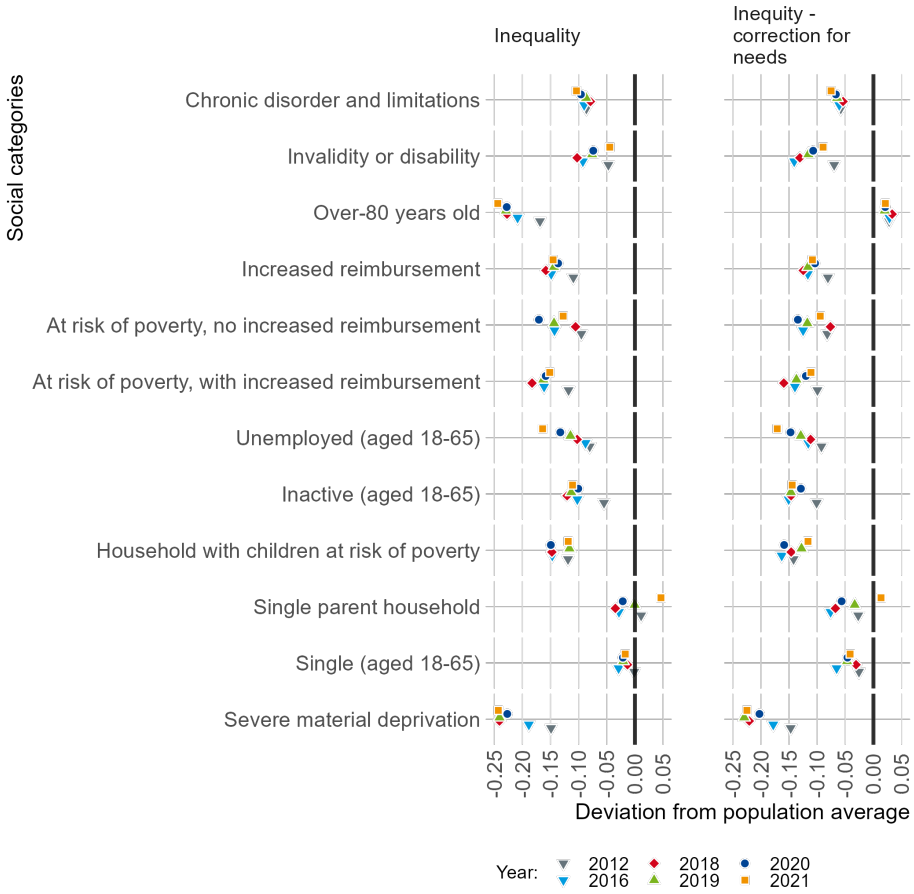


Figure 60 – Inequality and inequity in the probability to have regular preventive dental visits in the past 3 years: difference between the general population and specific vulnerable population subgroups

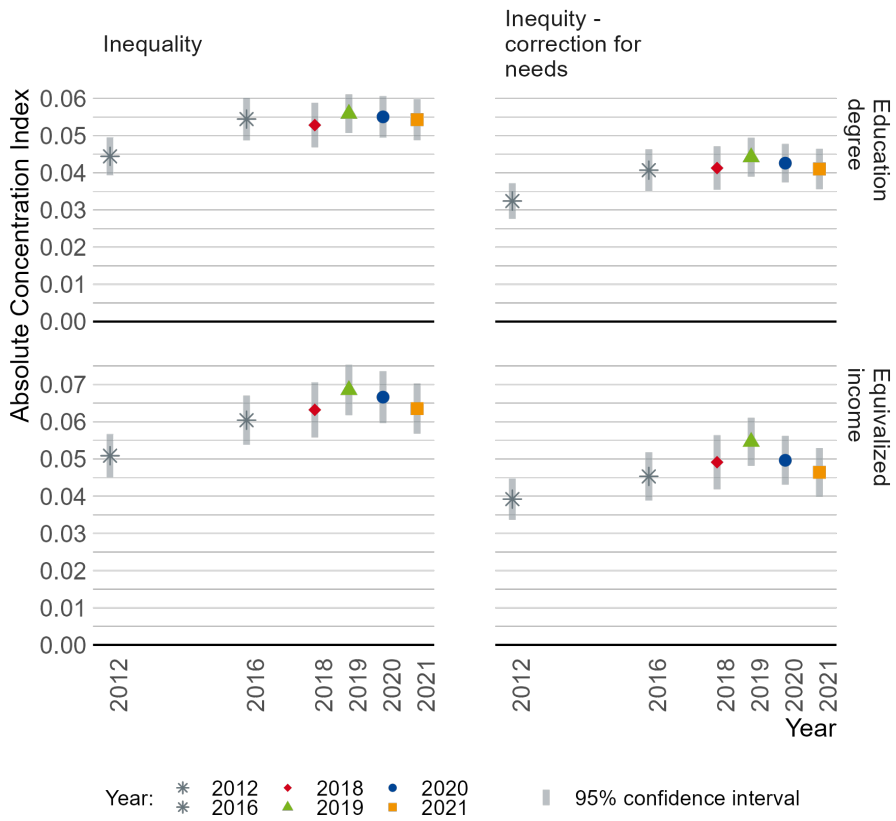


Systematic socioeconomic inequity as measured by the concentration index

Figure 61 shows the absolute concentration index of the needs-corrected probability to have regular preventive dental visits in the past 3 years to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having regular preventive dental visits concentrated among individuals with lower educational attainment or lower income. Positive values indicate higher needs-corrected probabilities for individuals with higher educational attainment and higher income.

The results in Figure 61 reveal systematic and substantial socioeconomic inequalities and inequities in the probability to have regular preventive dental visits, with higher probabilities concentrated among high-educated individuals and high-income individuals. The inequities as measured by the concentration index have slightly increased over time.

Figure 61 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have regular preventive dental visits in the past 3 years as measured by the absolute concentration index for subgroups based on education and income



Key points

- **The population adhering to regular preventive dental care has increased over time from one quarter of the population in 2012 to one third since 2018. The EU-SILC/IMA-AIM survey value is slightly higher and shows an upward trend over time. Higher preventive contact rates are found among individuals with higher income, higher educational attainment and better health status.**
- **No specific variables are available to correct for dental care needs, hence only a correction is made for age and gender. Moreover, one could argue that regular dental care and in particular regular preventive dental care is recommended regardless of health status.**
- **After correction for age and sex, there are important socioeconomic inequities in the probability to have regular preventive dental visits. Clear social gradients are found with regard to income class and educational attainment with contact rates increasing with income and level of education. Inequities in the probability to have regular preventive dental visits are found for all financially vulnerable population subgroups and in particular for individuals in households with severe material deprivation. Both improving (e.g. individuals at risk of poverty with increased reimbursement) and deteriorating (e.g. individuals with severe material deprivation) trends over time are observed.**
- **After correction for age and sex, lower contact rates are found for beneficiaries of increased reimbursement.**
- **The concentration index demonstrates systematic and substantial inequities by income (pro-rich: in favour of high-income individuals) and educational attainment (in favour of high-educated individuals). Inequities are slightly increasing over time.**

2.8.3 *Results – Regular preventive contacts with a dentist (population aged between 3 and 17 years)*

Evolution over time in the probability to have regular preventive dental visits

Table 18 reports the evolution over time of the probability to have regular preventive dental visits (visits for preventive dental care in at least 2 of the past 3 years). For the insured population aged 3 years or more, the fraction of individuals with regular preventive dental visits increased from 24.3% in 2012 to 33.4% in 2018 and remained more or less stable since.[2] Among the individuals included in the EU-SILC/IMA-AIM sample, we find a higher share of respondents with regular preventive dental visits (26.8% in 2012 up to 40.0% in 2021), and an upward time trend over the whole period.

In addition, we have information on preventive contact rates in children by age group. Low rates were found in the youngest children (age 3-4) increasing from 6.7% in 2012 to 11.3% in 2021. Children are recommended to go to a dentist from the age of two to three years, hence at the age of three to four years they may not yet have a history of regular dental contacts. Higher rates were observed in children aged between 5 and 14 years (increasing from 35.5% in 2012 to 44.5% in 2021), and in adolescents aged 15 to 17 years (increasing from 30.9% in 2012 to 39.4% in 2021). Among children included in the EU-SILC/IMA-AIM sample, a markedly larger share has regularly visited a dentist for preventive dental care, in particularly among the youngest children.

In this section, we analyse preventive dental care for children, which is a small group. When zooming in on particular subgroups, subgroups become very small and there might be random variation that interferes with the observed trends. Figure 62[hh] shows the evolution of the probability to have regular preventive dental visits in the past 3 years for a variety of population subgroups (children aged between 3 and 17 years). These are the crude trends, without a correction for healthcare needs. We focus on the period 2018 to 2021 as no earlier results for this indicator are available in KCE report 334.[1] Note that no information was available on the self-assessed health status of children, so that no subdivision by health status could be made.

Table 18 – Evolution (2012-2021) of the probability to have regular preventive dental visits in the past 3 years

Sample	2012	2016	2018	2019	2020	2021
Population (3+)	24.3%	30.2%	33.4%	34.4%	33.6%	34.2%
Survey (3+)	26.8%	33.4%	37.6%	38.6%	38.9%	40.0%
Survey (3+, < 18 years)	33.6%	40.7%	42.6%	44.6%	44.8%	47.2%
Population (3-4 years)	6.7%	9.6%	10.3%	10.7%	10.5%	11.3%
Survey (3-4 years)	12.6%	19.3%	23.5%	26.8%	28.6%	25.0%
Population (5-14 years)	35.5%	41.0%	43.3%	43.9%	42.8%	44.5%
Survey (5-14 years)	37.3%	45.7%	47.6%	49.4%	49.1%	52.0%
Population (15-17 years)	30.9%	36.9%	38.9%	39.3%	38.2%	39.4%
Survey (15-17 years)	36.1%	39.6%	36.9%	39.4%	39.9%	41.5%

Figure 62 indicates that most population subgroups follow the slight upward trend between 2018 and 2021 in children. There are, however, some exceptions. We find a decreasing or stable trend since 2018 in the probability to have regular preventive dental visits in children with low-educated parents (panel C). Second, there is an important socioeconomic gradient with respect to income (panel A) and education (panel C). Children

[hh] Note the analysis is based on a survey sample and that results for some population subgroups are based on a small number of observations (e.g. over-80 years old, very bad self-assessed health, at risk of poverty without increased reimbursement, etc.). This may lead to fluctuations over time due random variation that interferes with the observed trends.

in high-income households (core, upper middle and top income class) and high educational attainment of the parent(s) (tertiary education) have a probability to have regular preventive dental visits well above the population mean. The opposite is true for children in households with low income (at risk of poverty and lower middle class) and low educational attainment of the parent(s) (primary, lower and upper secondary education). Other financially vulnerable population subgroups (children with increased reimbursement, in households with severe material deprivation, in households with no parent at work, in single parent households, see panels B, D & E) also have a probability well below the population average.

Overview inequity over time for different population subgroups

Figure 63 shows how the probability to have regular preventive dental visits in the past 3 years in various population subgroups differs from the population average when looking at inequality as well as inequity. When analysing inequity, a correction is made for healthcare needs.[ii] Contrary to other types of care (see EQ-1 to EQ-5), the correction for healthcare needs in case of preventive dental care is limited to differences by age and gender as there are no variables available in the EU-SILC/IMA-AIM database that are specifically related to dental care needs. Moreover, one could argue that regular dental care and in particular regular preventive dental care is recommended regardless of health status.

In Figure 63, population groups are defined based on categories of equivalized income, categories of educational attainment of the parent, and specific vulnerable population subgroups.

The figures can be read as follows. Values to the left of the vertical line indicate that the population subgroup has a lower probability of having regular preventive dental visits than the population average. Values to the right of the vertical line, on the other hand, indicate a higher probability than the population average. In addition to an evaluation in terms of the population average, it is possible to make a comparison over time for a specific population subgroup or a comparison of different subgroups.

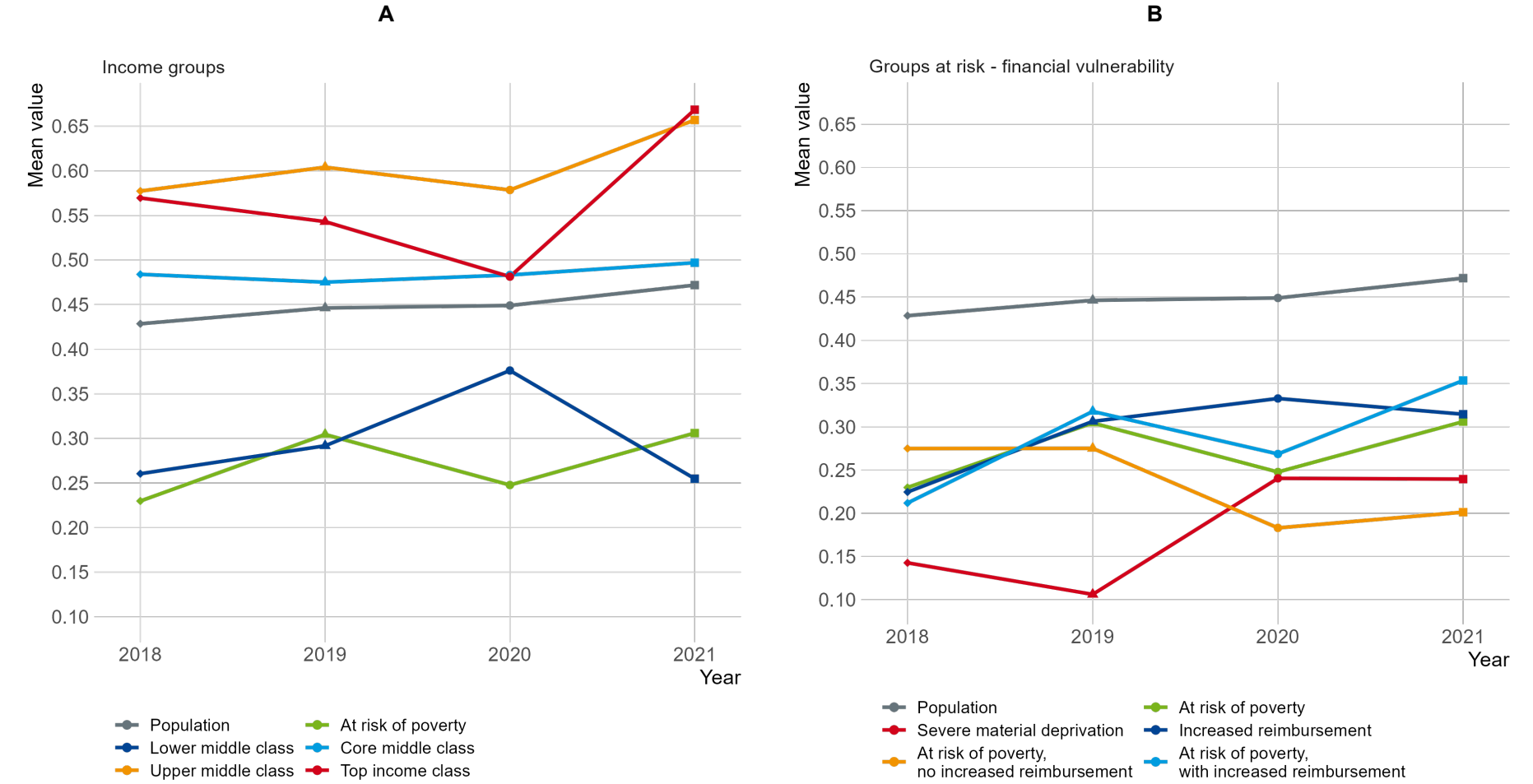
[ii] The output of the regression analysis on which the correction is based is available upon request.

Given the minor correction for healthcare needs (only age and gender, see above), the results with respect to inequalities and inequities in Figure 63 are quite similar. The disparities in having regular preventive dental visits are quite large compared to other types of healthcare and range between -30 and +20 percentage points.

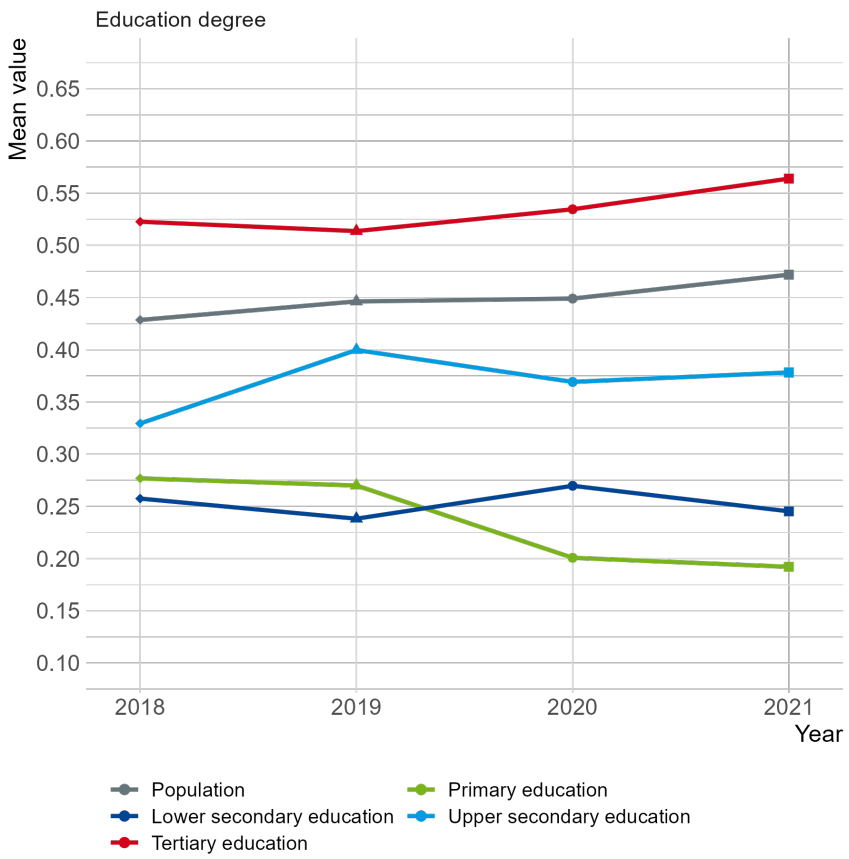
We conclude that, first, there are important gradients in the probability to have regular preventive dental visits with respect to income and education. The probability to have regular preventive dental care is markedly lower for children whose parents have no tertiary degree, children in households at risk of poverty or in the lower middle class. A probability above the population mean is found for children whose parents have a degree of tertiary education, and children in households in the upper middle and top income class.

Second, for most vulnerable population subgroups the probability to have regular preventive dental visits is below the population average. This is particularly the case for financially vulnerable population subgroups, and is particularly pronounced among children in households with severe material deprivation or in households at risk of poverty, but without increased reimbursement. In some cases there is a positive evolution over time, i.e. the average is evolving towards the population average (e.g. children in households at risk of poverty with increased reimbursement), but in other cases the situation is deteriorating, i.e. the difference is increasing over time (e.g. children in households at risk of poverty without increased reimbursement). It is important to note that increased reimbursement does not sufficiently increase accessibility to the dentist for preventive dental care in children.

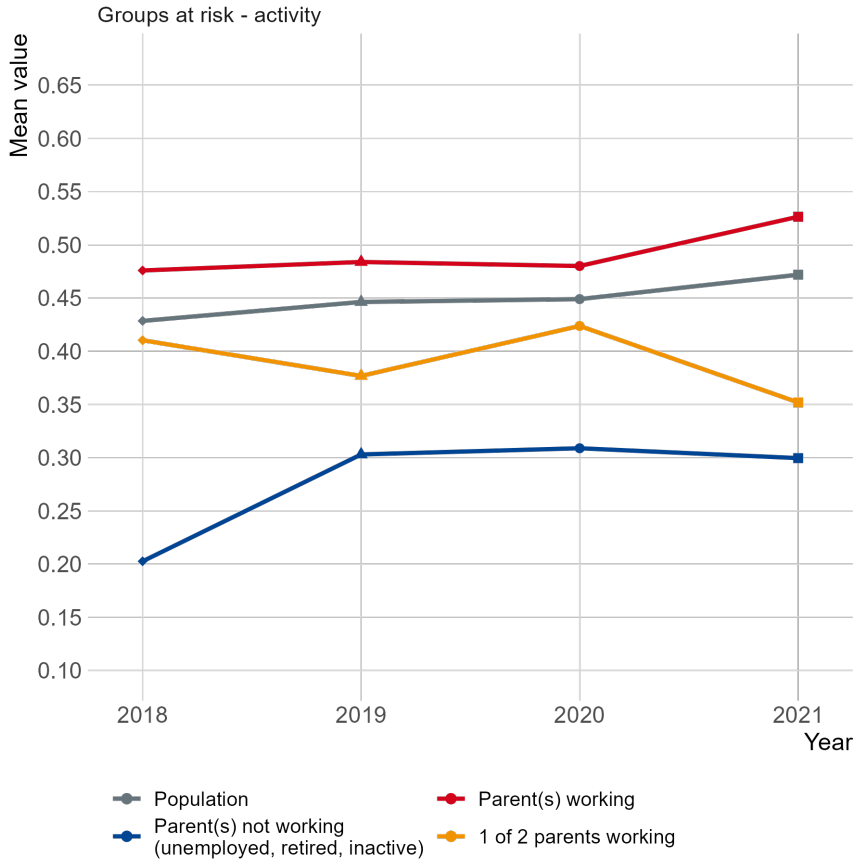
Figure 62 – Evolution (2018-2021) of the probability to have regular preventive dental visits for different subgroups and population groups at risk

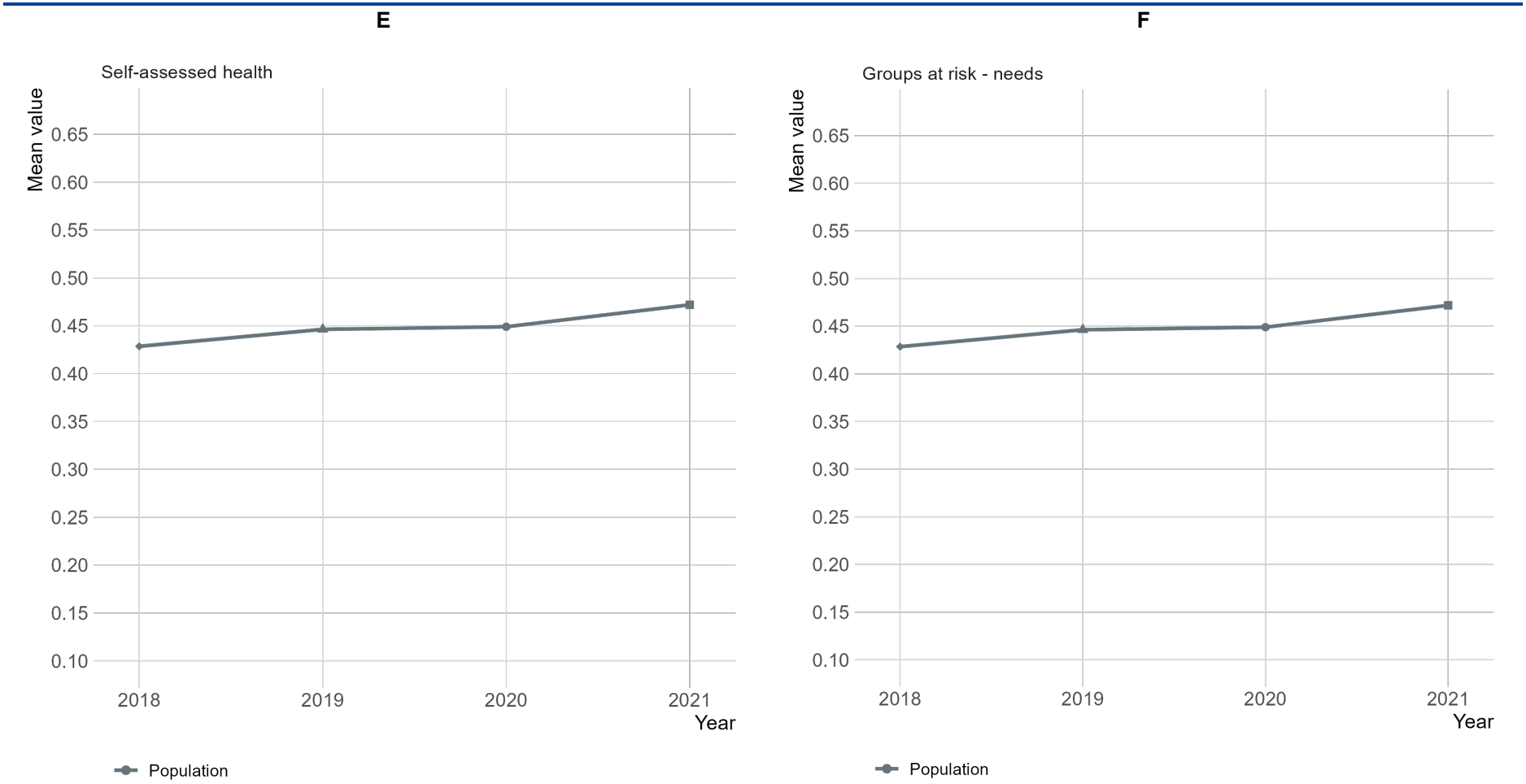


C


Education degree
Mean value
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
2018
2019
2020
2021
Year
Population
Lower secondary education
Tertiary education
Primary education
Upper secondary education

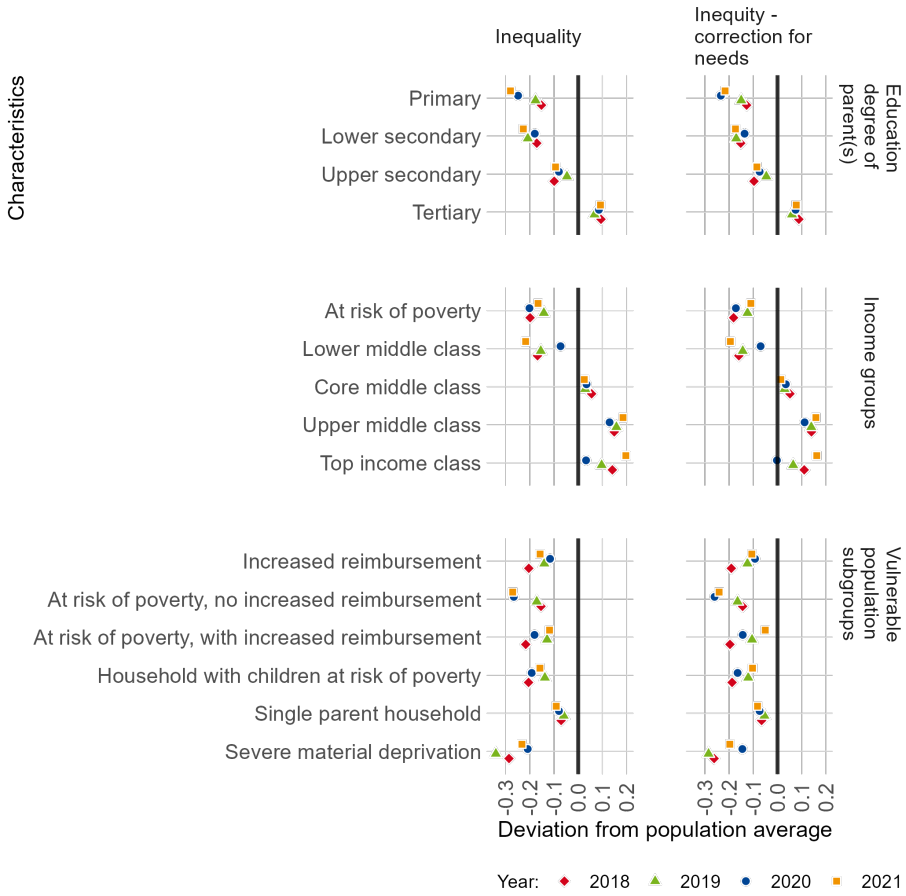
D


Groups at risk - activity
Mean value
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
2018
2019
2020
2021
Year
Population
Parent(s) not working
(unemployed, retired, inactive)
Parent(s) working
1 of 2 parents working



Note: education degree refers to the highest education degree obtained by one of the child's parents.

Figure 63 – Inequality and inequity in the probability to have regular preventive dental visits in the past 3 years: difference between the general population and population subgroups based on education, income, and specific vulnerable population subgroups

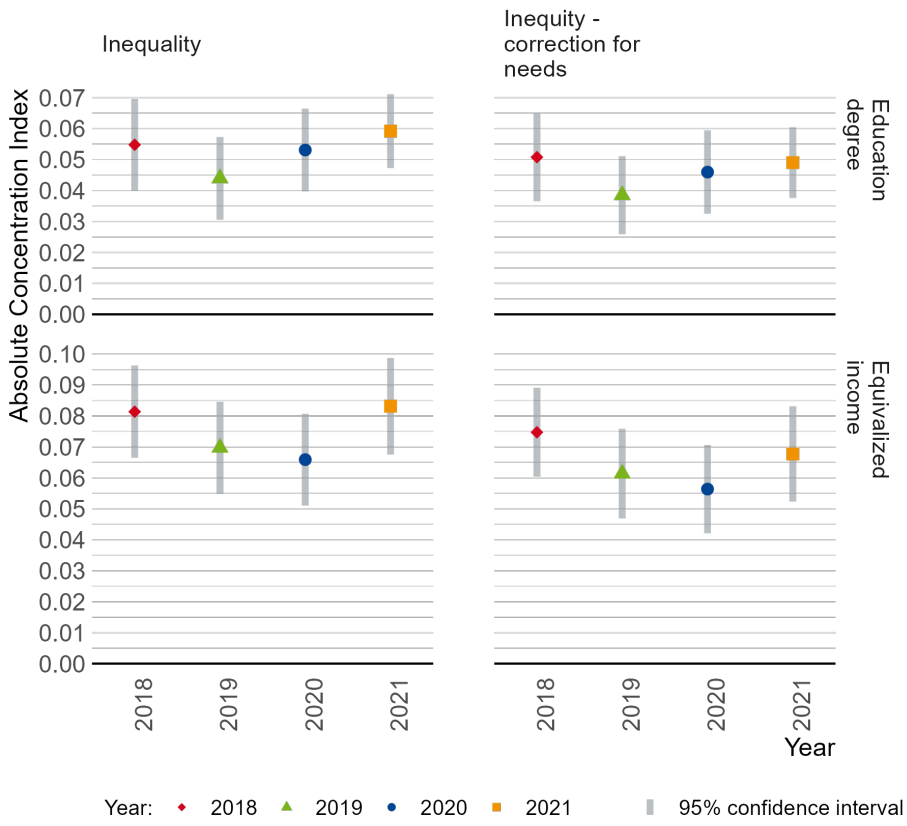


Systematic socioeconomic inequity as measured by the concentration index

Figure 64 shows the absolute concentration index of the needs-corrected probability to have regular preventive dental visits in the past 3 years to education and (equivalized) income. The absolute concentration index takes into account the entire distribution of care use in a similar way as the Gini index. Negative values of the concentration index should be interpreted as higher needs-corrected probabilities of having regular preventive dental visits concentrated among children whose parents are lower educated or live in households with lower income. Positive values indicate higher needs-corrected probabilities for children whose parents are higher educated or live in high-income households.

The results in Figure 64 reveal systematic and substantial socioeconomic inequalities and inequities in the probability to have regular preventive dental visits, with higher probabilities concentrated in children with high-educated parents and in high-income households. The inequities as measured by the concentration index were relatively stable over time.

Figure 64 – Evolution (2018-2021) of socioeconomic inequality and inequity in the probability to have regular preventive dental visits in the past 3 years as measured by the absolute concentration index for subgroups based on education and income



Key points

- **Preventive contact rates are low among the youngest children aged 3 to 4 years (6.7% in 2012 increasing to 11.3% in 2021), and higher in children aged 5 to 14 years (35.5% in 2012 increasing to 44.5% in 2021), and in adolescents aged 15 to 17 years (30.9% in 2012 increasing to 39.4% in 2021). Among children included in the EU-SILC/IMA-AIM sample, a markedly larger share has regularly visited a dentist for preventive dental care, in particularly among the youngest children. Higher preventive contact rates are observed in children in high-income households, and with high-educated parents.**
- **No specific variables are available to correct for dental care needs, hence only a correction is made for age and gender. Moreover, one could argue that regular dental care and in particular regular preventive dental care is recommended regardless of health status.**
- **After correction for age and gender, there are important socioeconomic inequities in the probability to have regular preventive dental visits. Clear social gradients are found with regard to income class and educational attainment with contact rates increasing with income and level of education of the parents. Inequities in the probability to have regular preventive dental visits are found for all financially vulnerable population subgroups and in particular for children in households with severe material deprivation and in households at risk of poverty without increased reimbursement.**
- **After correction for age and gender, lower contact rates are also found for beneficiaries of increased reimbursement.**
- **The concentration index demonstrates systematic and substantial inequities by income (pro-rich: in favour of children in high-income households) and educational attainment (in favour of children of high-educated parents). Inequities are relatively stable over time.**

References

1. Bouckaert N, Maertens de Noordhout C, Van de Voorde C. Health System Performance Assessment: how equitable is the Belgian health system? Health Services Research (HSR). Brussel: Belgian Health Care Knowledge Centre (KCE); 2020. KCE Reports 334 Available from: https://doi.org/10.57598/R334C

2. IMA-AIM Atlas.2023. Available from: https://atlas.ima-aim.be/databanken/

3 RESILIENCE

3.1 Healthcare professionals who consider leaving the profession (% of respondents, Power to Care) (R-1)

3.1.1 Documentation sheet

Description	**Primary indicator** Share of respondents to the Power to Care survey who have a high score for "considering leaving the profession". **Secondary indicators** Share of respondents to the Power to Care survey who have a high score for chronic stress symptoms (feeling tired, being under pressure/stress, not being able to relax, lack of sleeping/waking up, difficulty concentrating). Share of respondents to the Power to Care survey who have a high score for acute stress symptoms (hyperalertness/increased alertness, feelings of anxiety). Share of respondents to the Power to Care survey who have a high score for other personal symptoms (reliving events at work outside of work, insufficient regularity in life, feeling unhappy and depressed, not recognising one's own emotional reactions). Share of respondents to the Power to Care survey who have a high score for negative symptoms (feeling alone, doubting one's own abilities, feeling insecure in the team).
Calculation	Numerator: number of respondents to the considered round of the Power to Care survey who have a score 7 or above (out of 10) for the considered item (e.g. "considering quitting the profession"). Denominator: number of respondents to the considered round of the Power to Care survey.
Rationale	It is largely acknowledged that the COVID-19 period exerted considerable pressure on healthcare professionals, in terms of increased workload, but also in terms of physical and psychological symptoms.[1-4] To counter that, countries have implemented various schemes to support the mental health of healthcare professionals and to offer financial and practical assistance.[5] To measure Belgian health system resilience regarding the wellbeing of healthcare professionals, we use data from the Power to Care survey carried out by Sciensano and LIGB – KU Leuven. This survey counts eight rounds (of which the first four do not include professionals from Wallonia) between April 2020 and September 2021. Respondents (ranging from around 700 to 2 800 depending on the round) were asked to self-assess their chronic stress symptoms (feeling tired, being under pressure/stress, not being able to relax, lack of sleeping/waking up, difficulty concentrating), acute stress symptoms (hyperalertness/increased alertness, feelings of anxiety), other personal symptoms (reliving events at work outside of work, insufficient regularity in life, feeling unhappy and depressed, not recognising one's own emotional reactions) and negative symptoms on a professional level (considering leaving the profession, feeling alone, doubting one's own abilities, feeling insecure in the team). Participation was on a voluntary basis and anonymous. Each round was publicly announced via social media and the communication of Sciensano, ZorgSamen and partner organisations.
Data source	Sciensano

Technical definitions	For each considered symptom (item), respondent were asked to give a score from 0 (never present) to 10 (always present) for the past week. A score of 7 or above is considered a "high score". Round 1 = April 2020, Round 2 = May 2020, Round 3 = June 2020, Round 4 = October 2020, Round 5 = December 2020, Round 6 = March 2021, Round 7 = June 2021, Round 8 = September 2021.
International comparability	Similar, but not identical, surveys were carried out in different OECD countries in 2020 and 2021. Results are summarised in OECD (2023).[6]
Limitations	Due to the absence of a number of important population data (e.g. number of people employed in the social protection sector, etc.), the representativeness of the sample cannot be guaranteed by applying statistical weighting methods. The sample is therefore not necessarily representative. The Power to Care survey is not a longitudinal study: the population studied in successive waves of the study differ from each other on a number of important characteristics. Therefore, evolution across time must be interpreted with caution. As none of the questions required a mandatory response, the number of respondents vary per symptom (item) considered. No interpretation can be given for missing values. The four first rounds of the survey were carried out by ZorgSamen, an initiative of Zorgnet-Icuro, the Flemish umbrella organisation of hospitals and other healthcare organisations, in cooperation with Te Gek!?, a Flemish organisation for promoting mental well-being. Responses are therefore limited to Flanders (and some respondents in Brussels). From the fifth round, the survey was carried out by Sciensano at the national level.
Dimension	Resilience
Related indicators	R-2 Number of hospital bed closures due to staff absenteeism or force majeure R-3 Number of nurses vacancies in hospitals
Reviewers	Bart Peeters (Sciensano)

3.1.2 Results

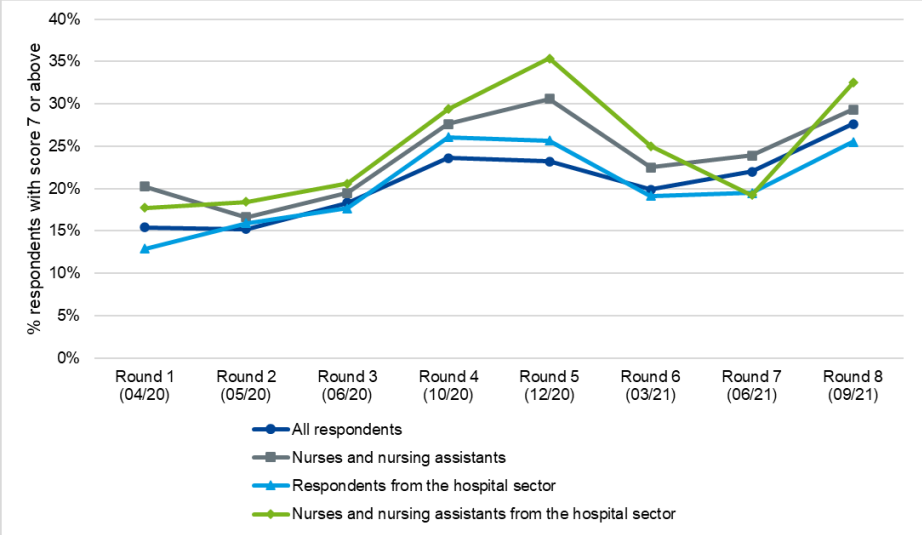
Belgium

During the first round of the survey (April 2020), 15.4% of the respondents had a score 7 or above for the item “considering leaving the profession” (Figure 65 and Figure 66). This share increased to 23.6% in October 2020 (round 4). In these four rounds only respondents from Flanders (and some from Brussels) were considered. From round 5 (December 2020), the survey became national. The share of respondents considering leaving the profession was still 23.2%. This share slightly decreased during rounds 6 and 7, but increased again in round 8 (September 2021) to reach 27.6%.

Nurses and nursing assistants working in hospitals

Compared to this, during the peaks (rounds 4-5 and round 8), the share of respondents considering leaving the profession was higher among the group of nurses and nursing assistants, the group of respondents from the hospital sector and in particular among the group of nurses and nursing assistants from the hospital sector (Figure 65). In the latter, the share of the respondents who had a score 7 or above for the item “considering leaving the profession” reached 35.4% in round 5 (December 2020) and 32.5% in round 8 (September 2021). However, one should note that only 80 respondents belonged to this specific group in round 8.

Figure 65 – Share of respondents with a high score for "considering leaving the profession", Belgium (rounds 1-4 limited to Flanders and Brussels)



Number of respondents: N = 2115 (round 1), 2612 (round 2), 1642 (round 3), 957 (round 4), 2561 (round 5), 2209 (round 6), 814 (round 7), 684 (round 8). Number of nurses and nursing assistants respondents: N = 810 (round 1), 800 (round 2), 483 (round 3), 380 (round 4), 696 (round 5), 516 (round 6), 209 (round 7), 201 (round 8). Number of respondents from the hospital sector: N = 898 (round 1), 503 (round 2), 605 (round 3), 487 (round 4), 920 (round 5), 497 (round 6), 200 (round 7), 204 (round 8). Number of nurses and nursing assistants respondents from the hospital sector: N = 384 (round 1), 255 (round 2), 306 (round 3), 228 (round 4), 373 (round 5), 228 (round 6), 78 (round 7), 80 (round 8). Source: Sciensano, calculations: KCE.

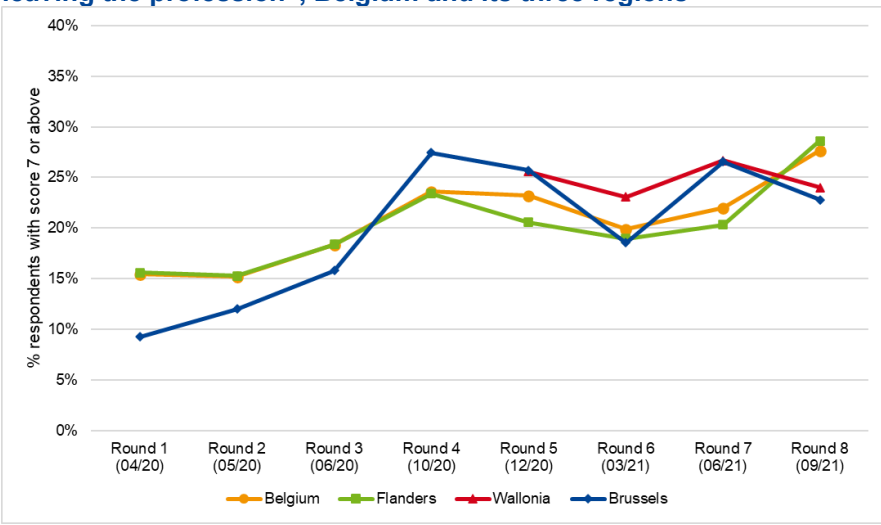
ICU nursing staff

In a survey carried out between December 2021 and February 2022 among 2 183 nurses working in intensive care units (1 161 in Flanders, 747 in Wallonia and 275 in Brussels), Van den Heede et al. (2022)[7] found that 43.9% of them had the intention to leave their job and 26.5% had the intention of leaving the nursing profession. This percentage was higher in Wallonia (37.5%) and Brussels (34.9%) than in Flanders (17.4%).

Regional comparison

As rounds 1 to 4 only includes respondents from Flanders (and some from Brussels), national results shown in Figure 66 and Table 19 are largely driven by the results in Flanders. From round 5 regional comparison is possible. The share of respondents considering leaving the profession was constantly higher in Wallonia and lower in Flanders, compared to national results, except in the last round. Due to the small number of respondents, results for Brussels should be interpreted with caution.

Figure 66 – Share of respondents with a high score for "considering leaving the profession", Belgium and its three regions



Belgium: N = 2115 (round 1), 2612 (round 2), 1642 (round 3), 957 (round 4), 2561 (round 5), 2209 (round 6), 814 (round 7), 684 (round 8). Flanders: N = 2061 (round 1), 2562 (round 2), 1604 (round 3), 906 (round 4), 1225 (round 5), 1531 (round 6), 600 (round 7), 552 (round 8). Wallonia: N = 1087 (round 5),511 (round 6), 150 (round 7), 75 (round 8). Brussels: N = 54 (round 1), 50 (round 2), 38 (round 3), 51 (round 4), 249 (round 5), 167 (round 6), 64 (round 7), 57 (round 8). Source: Sciensano, calculations: KCE.

Table 19 – Share of respondents with a score 7 or above for "considering leaving the profession"

	Belgium*	Flanders	Wallonia	Brussels
Round 1 (04/20)	15.4%	15.6%		9.3%
Round 2 (05/20)	15.2%	15.3%		12.0%
Round 3 (06/20)	18.3%	18.4%		15.8%
Round 4 (10/20)	23.6%	23.4%		27.5%
Round 5 (12/20)	23.2%	20.6%	25.6%	25.7%
Round 6 (03/21)	19.9%	18.9%	23.1%	18.6%
Round 7 (06/21)	22.0%	20.3%	26.7%	26.6%
Round 8 (09/21)	27.6%	28.6%	24.0%	22.8%

** Rounds 1-4 limited to Flanders and Brussels. Belgium: N = 2115 (round 1), 2612 (round 2), 1642 (round 3), 957 (round 4), 2561 (round 5), 2209 (round 6), 814 (round 7), 684 (round 8). Flanders: N = 2061 (round 1), 2562 (round 2), 1604 (round 3), 906 (round 4), 1225 (round 5), 1531 (round 6), 600 (round 7), 552 (round 8). Wallonia: N = 1087 (round 5),511 (round 6), 150 (round 7), 75 (round 8). Brussels: N = 54 (round 1), 50 (round 2), 38 (round 3), 51 (round 4), 249 (round 5), 167 (round 6), 64 (round 7), 57 (round 8). Source: Sciensano, calculations: KCE.*

The regional differences may be driven by differences in age, gender, profession or sector in the respondents groups. In June 2021 for instance, the regional difference was not significant after adjustment for these elements.[8]

International comparison

Similar, but not identical, surveys were carried out in different OECD countries in 2020 and 2021. Results are summarised in OECD (2023).[6] In particular, in Canada, 50% of the 4 467 nurses who responded to a survey carried out in November-December 2021 reported that they were considering leaving their job over the coming year and 20% that they were considering leaving the profession altogether. In France, 40% of 30 000 nurses reported in April-May 2021 that the pandemic had made them consider changing their profession. In a more recent survey from December 2021 on 60 000 nurses, 15% of them said they wish to change professions over the coming year. In October 2021 in the United Kingdom during a survey where 9 577 members of the Royal College of Nursing responded, 57% of nurses reported considering or planning to leave their job in the coming year. This percentage was 36% a year earlier. In the United States in 2021 (survey of 5 000 nurses and nurse managers), 11% of nurses and nurse managers reported their intention to leave their job, while another 20% reported being undecided about keeping their job. In another survey (400 frontline nurses), 22% of frontline nurses indicated they may leave their current positions and 60% reported they were more likely to leave since the pandemic began,

Other symptoms

Figure 67, Figure 68, Figure 69 and Figure 70 present the share of respondents to the Power to Care survey who had a high score for other symptoms than "considering leaving the professions".

Feeling of stress and tiredness were common chronic symptoms among Belgian respondents (Figure 67). In April 2020, 62.3% and 55.7% of the respondents had a high score for these symptoms, respectively. Globally, the share of respondents experiencing these symptoms stayed high during the pandemic. In the first round 38.7% of the respondents experienced an inability to relax, but this share increased to 46.5% and 48.6% in round 5 and 6 (December 2020 – March 2021).

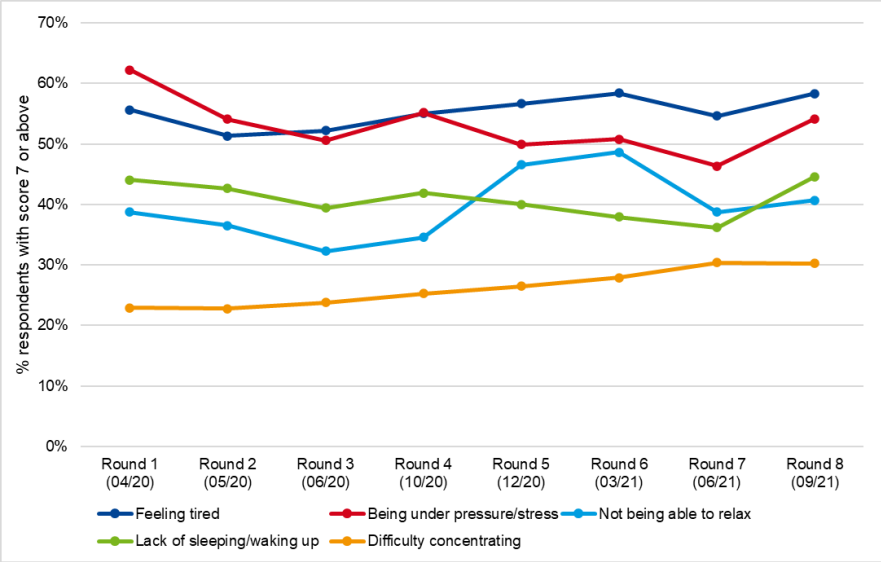
The share of respondents experiencing difficulty concentrating increased from 22.9% in April 2020 to 30.3% in September 2021. The share of respondents with high score for the symptom "lack of sleeping/waking-up" decreased over time (from 44.1% in April 2020 to 36.2% in June 2021), but increased again in September 2021 (44.6%).

Acute stress symptoms (Figure 68) were prevalent at the beginning of the pandemic (62.5% of the respondents had high score for hyperalertness/increased alertness in round 1), but decreased over time. Although it also decreased over time, the share of respondent feeling anxiety increased again in round 5 (December 2020).

The personal symptom "insufficient regularity of life" (Figure 69) also decreased overtime despite a rebound in December 2020. Overall the share of respondents with a hight score for other personal symptoms (reliving

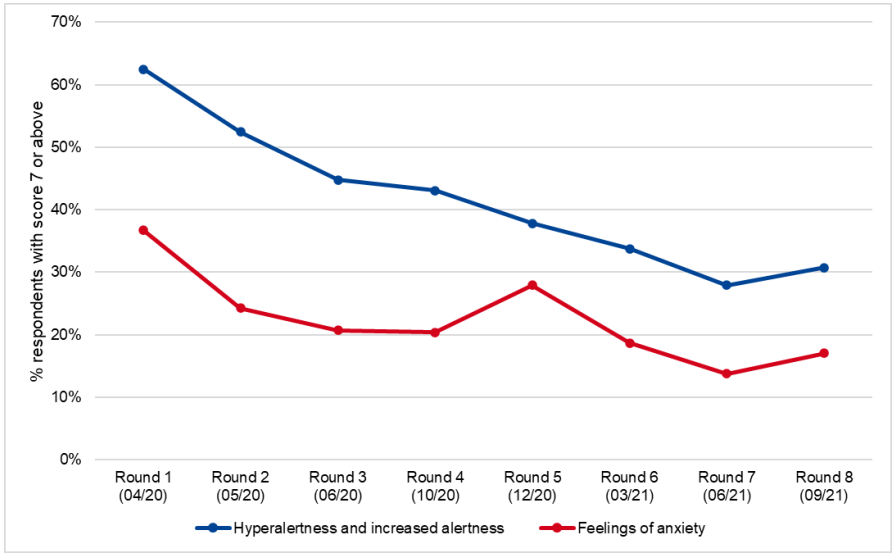
events at work outside of work, feeling unhappy and depressed, not recognising one's own emotional reactions) remained more stable over the period, and stayed below 30%. The same applies to negative symptoms on a professional level (feeling alone, doubting its own abilities, feeling insecure in the team) (Figure 70)

Figure 67 – Share of respondents with a high score for five chronic stress symptoms, Belgium (rounds 1-4 limited to Flanders and Brussels)



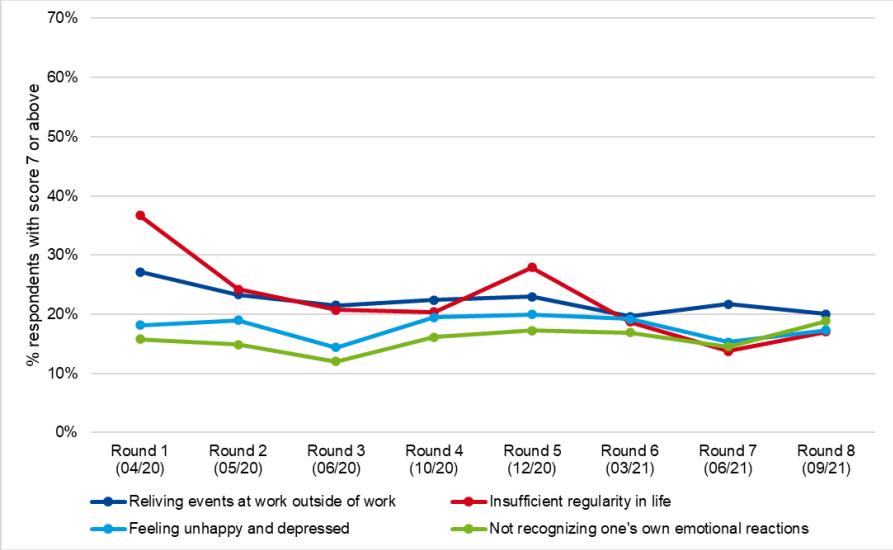
Source: Sciensano, calculations: KCE.

Figure 68 – Share of respondents with a high score for two acute stress symptoms, Belgium (rounds 1-4 limited to Flanders and Brussels)



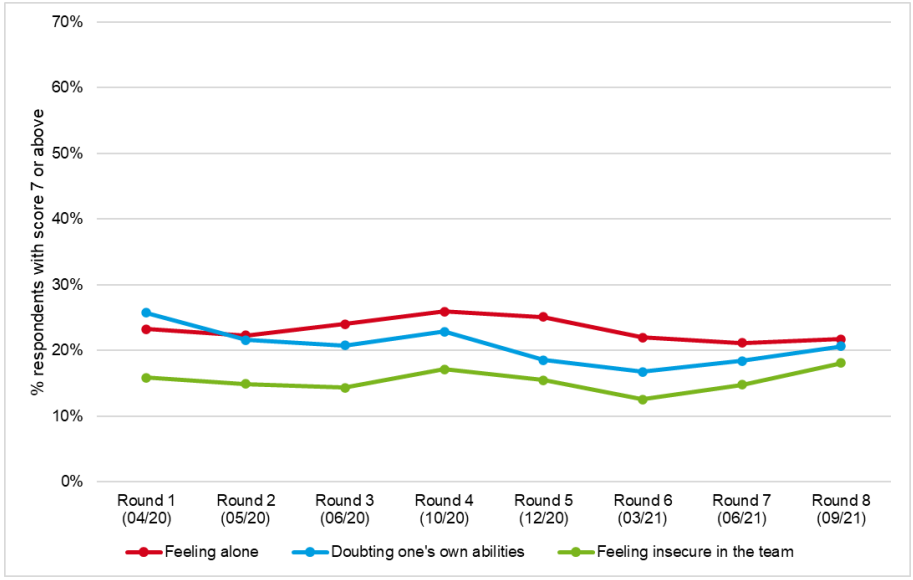
Source: Sciensano, calculations: KCE.

Figure 69 – Share of respondents with a high score for four other personal symptoms, Belgium (rounds 1-4 limited to Flanders and Brussels)



Source: Sciensano, calculations: KCE.

Figure 70 – Share of respondents with a high score for three negative symptoms on a professional level, Belgium (rounds 1-4 limited to Flanders and Brussels)



Source: Sciensano, calculations: KCE.

Key points

- **The share of healthcare professionals with a high score for the item "considering leaving the profession" increased from 15.4% in April 2020 to 23.6% in October 2020. This share was still 23.2% in December 2020, then slightly decreased but increased again to reach 27.6% in September 2021.**
- **Among nurses and nursing assistants working in hospitals, the share of healthcare professionals with a high score for the item "considering leaving the profession" reached 35.4% in December 2020 and remained important in September 2021 (32.5%, last round available).**
- **The share of healthcare professionals with a high score for the item "considering leaving the profession" was constantly higher in Wallonia and lower in Flanders, compared to national results, except in the last round.**
- **In a survey carried out between December 2021 and February 2022 among 2 183 nurses working in intensive care units 43.9% of them had the intention to leave their job and 26.5% had the intention of leaving the nursing profession. This percentage was higher in Wallonia (37.5%) and Brussels (34.9%) than in Flanders (17.4%).**
- **The share of healthcare professionals with a high score for specific chronic stress symptoms (in particular being under pressure and feeling tired) stayed high between April 2020 and September 2021.**
- **The share of healthcare professionals with a high score for the item "not being able to relax" was higher in December 2020 and March 2021 than in other periods of the pandemic.**
- **The share of healthcare professionals with a high score for acute stress symptoms (hyperalertness/increased alertness and feeling of anxiety) was quite high at the beginning of the crisis but then largely decreased between April 2020 and June 2021 (although the feeling of anxiety increased in December 2020).**

References

1. Shaukat N, Ali DM, Razzak J. Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. International journal of emergency medicine. 2020;13(1):1-8.
2. Kramer V, Papazova I, Thoma A, Kunz M, Falkai P, Schneider-Axmann T, et al. Subjective burden and perspectives of German healthcare workers during the COVID-19 pandemic. European archives of psychiatry and clinical neuroscience. 2021;271(2):271-81.
3. Fiest KM, Parsons Leigh J, Krewulak KD, Plotnikoff KM, Kemp LG, Ng-Kamstra J, et al. Experiences and management of physician psychological symptoms during infectious disease outbreaks: a rapid review. BMC psychiatry. 2021;21(1):1-14.
4. De Kock JH, Latham HA, Leslie SJ, Grindle M, Munoz S-A, Ellis L, et al. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. BMC public health. 2021;21(1):1-18.
5. Winkelmann J, Webb E, Williams GA, Hernández-Quevedo C, Maier CB, Panteli D. European countries' responses in ensuring sufficient physical infrastructure and workforce capacity during the first COVID-19 wave. Health Policy. 2022;126(5):362-72.
6. OECD. Ready for the Next Crisis? Investing in Health System Resilience. 2023.
7. Van den Heede K, Bouckaert N, Detollenaere J, Kohn L, Maertens de Noordhout C, Vanhooreweghe J, et al. Nurse staffing on Belgian intensive care units: the impact of two years of COVID-19 pandemic. Health Services Research (HSR). Brussels: Belgian Health Care Knowledge Centre (KCE); 2022 05/2022. KCE Reports 353 Available from: https://kce.fgov.be/sites/default/files/2022-05/KCE_353_Nurse_Staffing_Intensive_Care_Report.pdf
8. Peeters B, Doggen K, De Schreye R, Demarest S, Drieskens S, Seys D, et al. Power to Care. L'enquête sur le bien-être des personnes et professionnels d'aide et de soin. Principaux résultats de la troisième enquête nationale, juin 2021. Sciensano; 2022. Available from: https://www.sciensano.be/fr/biblio/power-care-lenquete-sur-le-bien-etre-des-personnes-et-professionnels-daide-et-de-soin-principaux-0

3.2 Number of hospital bed closures due to staff absenteeism or force majeure (R-2)

3.2.1 Documentation sheet

Description	**Primary indicator** Share of hospital beds that are closed due to staff absenteeism or force majeure **Secondary indicators** Number of hospital bed closures due to staff absenteeism or force majeure Number of ICU bed closures due to staff absenteeism or force majeure Share of ICU beds that are closed due to staff absenteeism or force majeure
Calculation	Number of hospital bed closures due to staff absenteeism or force majeure: sum of the number of ICU beds and non ICU beds that are closed due to staff absenteeism or force majeure and not available for the hospitalisation of (COVID-19 or non COVID-19) patients, as registered daily by hospitals. Number of ICU bed closures due to staff absenteeism or force majeure: number of ICU beds that are closed due to staff absenteeism or force majeure and not available for the hospitalisation of (COVID-19 or non COVID-19) patients, as registered daily by hospitals. Share of hospital beds that are closed due to staff absenteeism or force majeure: numerator = number of hospital bed closures due to staff absenteeism or force majeure; denominator = total number of licensed beds in general hospitals. Share of ICU beds that are closed due to staff absenteeism or force majeure: numerator = number of ICU bed closures due to staff absenteeism or force majeure; denominator = total number of ICU beds in general hospitals.
Rationale	Shortage of staff resulting from absenteeism of healthcare professionals, in particular nurses working in hospital services, is known to be both a consequence of the COVID-19 crisis and an obstacle to quality of care in COVID-19 times.[1, 2] Although nursing shortages were reported in most industrialised countries before the crisis, the COVID-19 pandemic amplified the issue. In Belgium, absences of health professionals have been quantified in limited contexts but no administrative comprehensive are available.[3] To quantify the hospital staff absences and their evolution during the COVID-19 pandemic, the number of hospital bed closures due to staff absenteeism or force majeure is used as a proxy.
Data source	FPS Public Health (Incident Crisis Management System (ICMS))[4]
Technical definitions	Number of hospital bed closures: since October 2021, as part of the daily data registered in the context of surge capacity plans, hospitals must register the number of (ICU and non ICU) hospital beds (except bed types A, a, Sp, M, MIC, N, n, NIC) that are “closed due to staff absenteeism or force majeure and not available for the hospitalisation of (COVID-19 or non COVID-19) patients”. Data are available from 22 November 2021 to 31 December 2022. Total number of ICU beds: the total number of ICU beds corresponds to the number of licensed ICU beds in November 2020.[5] This includes both ICU beds for COVID-19 patients and ICU beds for other patients. Although this number slightly varies overtime, it is here maintained constant at its level of November 2020 (Belgium = 1 992; Brussels = 269; Flanders = 1 071; Wallonia = 652). Total number of beds: the total number of hospital beds corresponds to the number of licensed beds (except bed-indices A, A1, A2, M, NIC, S1, S2, S3, S4, S5 and S6) in general hospitals in November 2021 (data FPS Public Health). Although this number slightly varies overtime, it is here maintained constant at its level of November 2021 (Belgium = 39 643; Brussels = 5 414; Flanders = 21 916; Wallonia = 12 313).

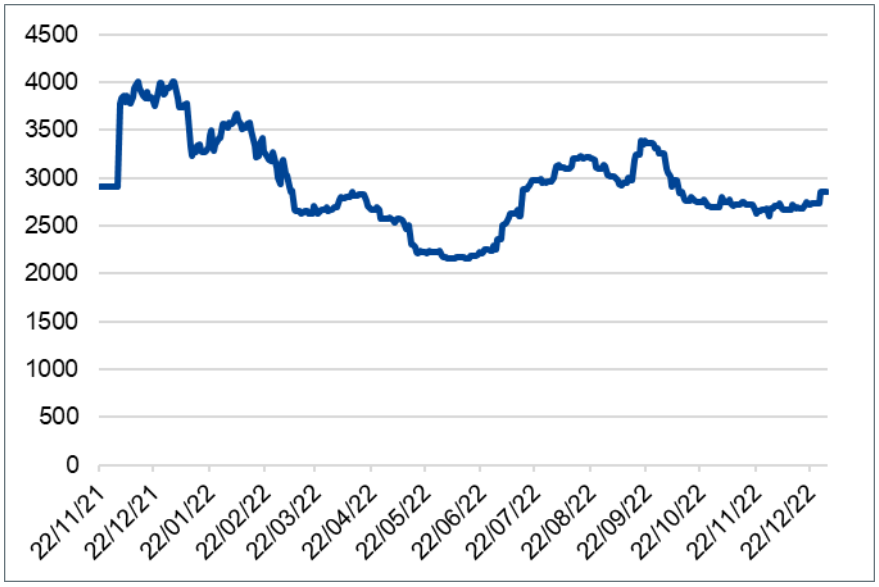
International comparability	N.A.
Limitations	Data on closed beds are not available before November 2021. Since 28 June 2021, ICMS data are no longer registered on weekends and public holidays. The last available data are imputed to replace the missing data. Therefore, the number of beds closed are systematically the same on Friday, Saturday and Sunday. From 14 May 2022 to 14 September 2022, due to a cyber-attack, data are missing for all hospitals of one province. Flawed or biased recording of closure of both ICU and non-ICU beds by hospitals in ICMS cannot be ruled out.
Dimension	Resilience; Sustainability
Related indicators	R-3 Number of nursing vacancies in hospitals
Reviewers	Stijn De Kesel (FPS Public Health)

3.2.2 Results

Belgium

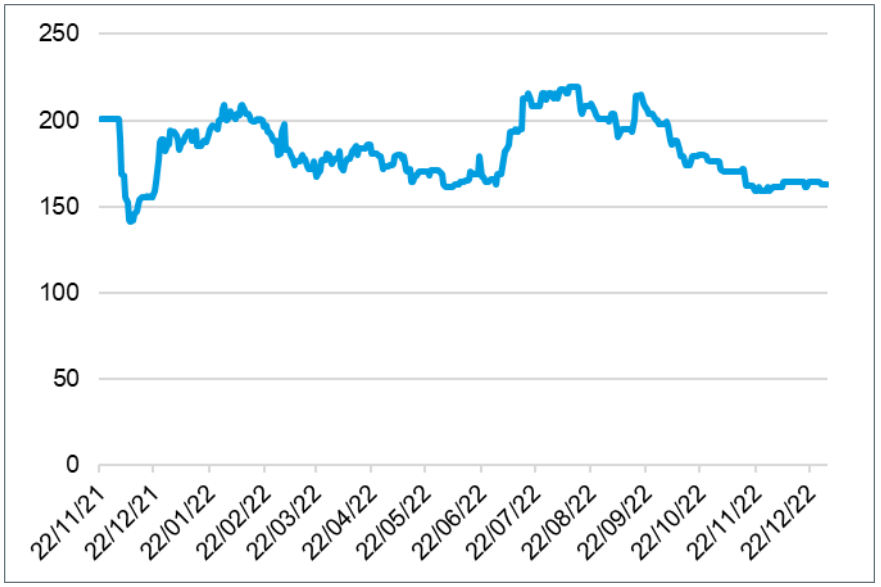
In January 2022, more than 4 000 hospital beds were closed in Belgium due to staff absences or force majeure (Figure 71). This number decreased over time and reached a minimum of 2 153 in June 2022. After that, the number of closed beds increased, up to 3 396 in September 2022 and then stabilised around 2 700 closed beds.

Figure 71 – Number of hospital bed closures due to staff absenteeism or force majeure, Belgium



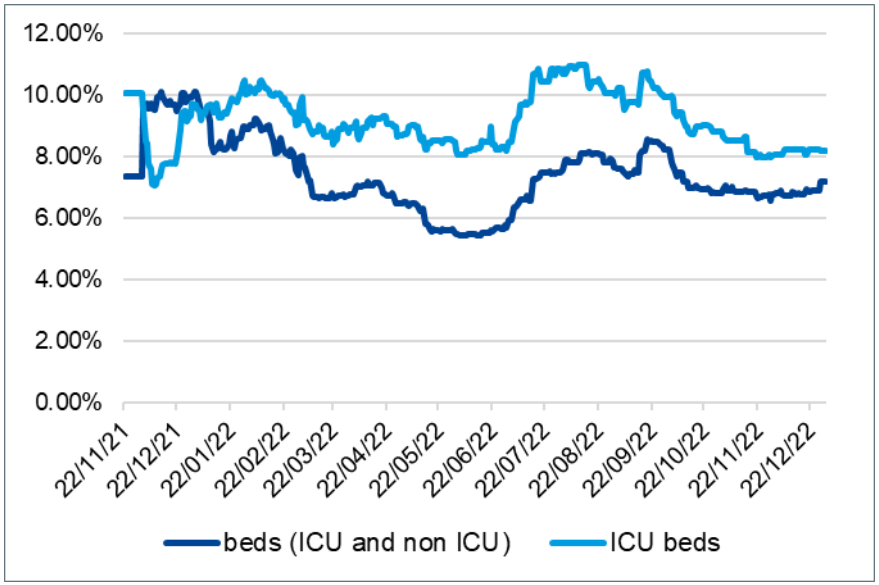
The number of closed ICU beds (Figure 72) followed a similar evolution. From 193 closed ICU beds on 1 January 2022, it decreased to 161 in June 2022 before increasing again, with a maximum of 215 ICU beds closed in September 2022. It stabilised around 160 ICU closed beds at the end of 2022.

Figure 72 – Number of ICU bed closures due to staff absenteeism or force majeure, Belgium



In relative terms, more ICU beds were closed than other beds (Figure 73). Although they followed a similar trend, the share of ICU beds closed due to absenteeism or force majeure was systematically higher than the share of all hospital beds (ICU and non ICU) closed for the same reasons (except at the beginning of the registration period, but this can be attributed to registration difficulties). In September 2022, more than 10% of the licensed ICU beds were closed. This percentage was around 8% during the same period, when all types of beds are considered.

Figure 73 – Share of hospital beds and share of ICU beds that are closed due to staff absenteeism or force majeure



Regional comparison

At the regional level, the share of ICU beds that were closed due to staff absenteeism or force majeure was larger in Brussels than in the other regions (Figure 75). In January 2022 in Brussels, more than one out of five ICU beds was closed due to staff absenteeism or force majeure. This share was never smaller than 14% during the entire year 2022.

Except during the Summer 2022, the share of closed ICU beds was the smallest in Flanders. In that region, the share of closed beds ranged between 4.8 % and 10.5% over the period (22 November 2021 to 31 December 2022). In Wallonia, it ranged between 5.2% and 12.9%.

For hospital beds in general (Figure 74), we do not observe such a regional difference.

The number of closed beds due to staff absenteeism or force majeure was more stable over time in Brussels and Wallonia than in Flanders (Figure 76). This is also true for ICU beds (Figure 77): in September 2022, the number of closed ICU beds almost doubled in Flanders, while it remained largely unchanged in Brussels and Wallonia.

Figure 74 – Share of hospital beds that are closed due to staff absenteeism or force majeure, Belgium and regions

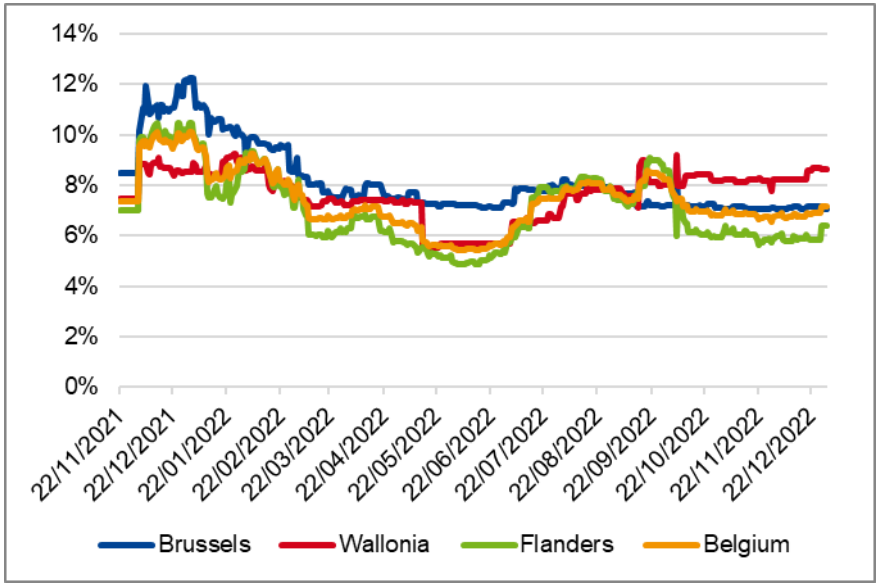


Figure 75 – Share of ICU beds that are closed due to staff absenteeism or force majeure, Belgium and regions

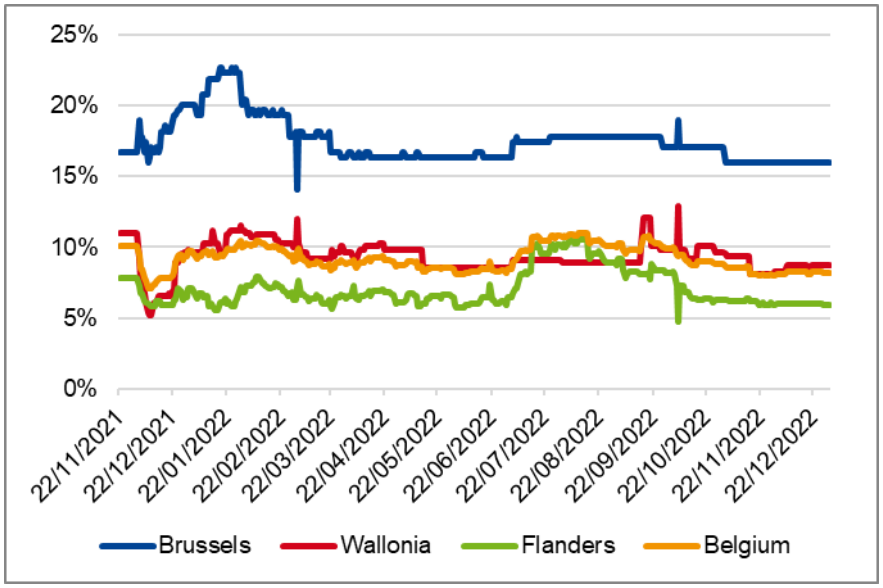


Figure 76 – Number of hospital bed closures due to staff absenteeism or force majeure, regions

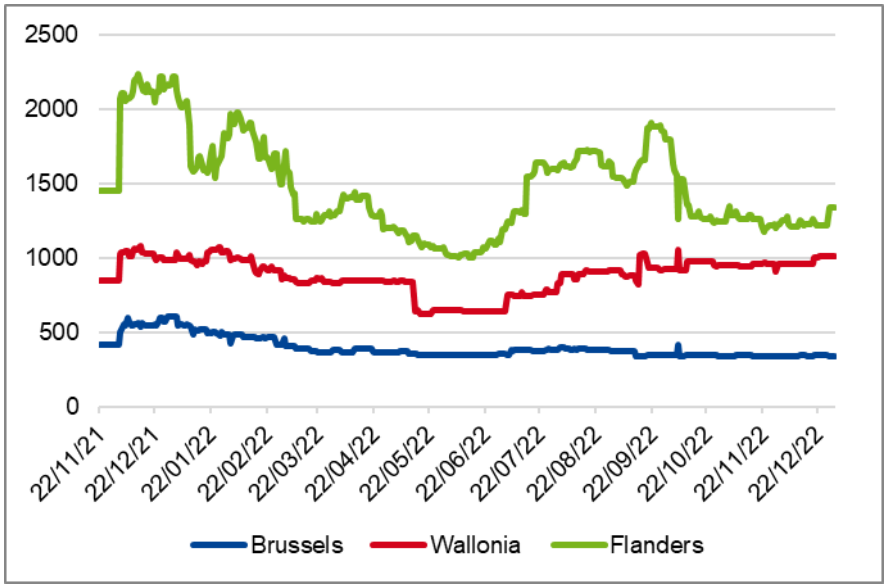


Figure 77 – Number of ICU bed closures due to staff absenteeism or force majeure, regions

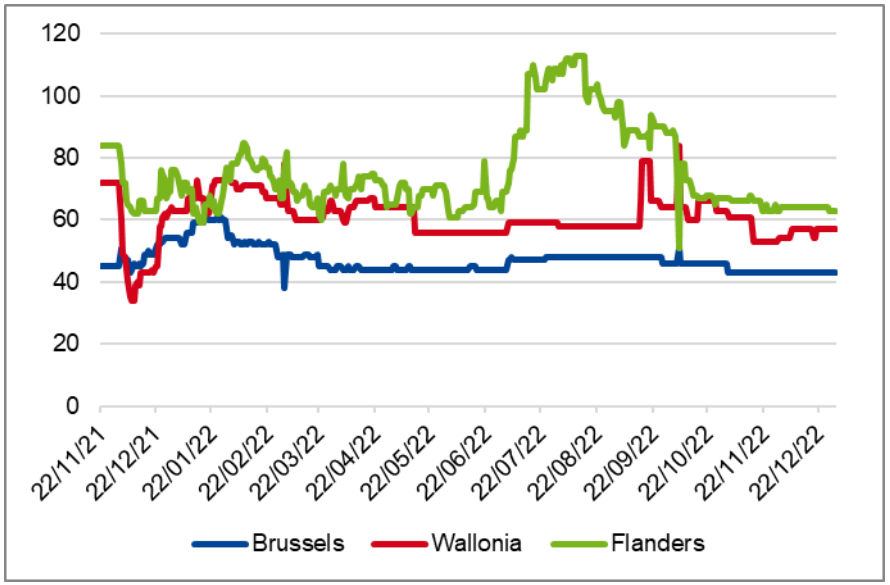
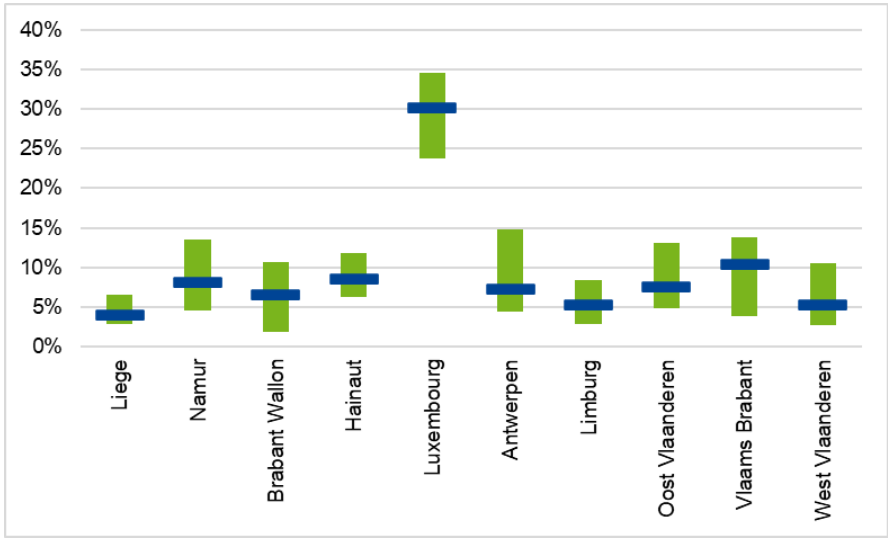


Figure 78 – Share of hospital beds that are closed due to staff absenteeism or force majeure, by province



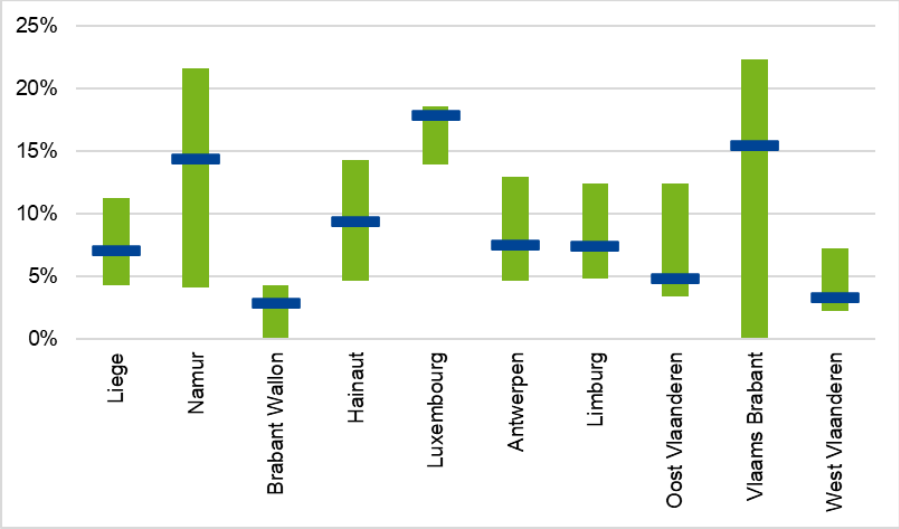
Period 22 November 2021 – 31 December 2022. Blue line = average of the period. Green bar = min and max over the period. Data are missing for the province of Luxembourg over the period 14 May 2022 – 14 September 2022. In addition, one data point (49.4% on 6 October 2022) was removed in that province, due to potential recording error.

Provincial comparison

Within Wallonia and Flanders, strong differences appear at the provincial level. Figure 78 shows the share of hospital beds that are closed due to staff absenteeism or force majeure in each province. The average over the period (22 November 2021 – 31 December 2022) is shown by the blue line. The green bar shows the minimum and the maximum share over the period in each province. In Wallonia, the average share of closed hospital beds was 30.2% (min 23.8% - max 34.6%) in the province of Luxembourg compared to 4.0% (min 2.9% - max 6.6%) in the province of Liège. In Flanders, it was 10.4% (min 3.8% - max 13.8%) in the province of Vlaams Brabant, compared to 5.2% (min 2.7% - max 10.5%) in West Vlaanderen.

Figure 79 shows the same information for the share of ICU beds that are closed due to staff absenteeism or force majeure. In the province of Luxembourg, on average one fifth (17.9%) of ICU beds were closed, with a minimum over the period of 14.0% and a maximum of 18.6%. In Vlaams Brabant, the average was 15.4% (min 0.0% - max 22.3%).

Figure 79 – Share of ICU beds that are closed due to staff absenteeism or force majeure, by province



Period 22 November 2021 – 31 December 2022. Blue line = average of the period. Green bar = min and max over the period. Data are missing for the province of Luxembourg over the period 14 May 2022 – 14 September 2022. In addition, one data point (65.1% on 6 October 2022) was removed in that province, due to potential recording error.

Key points

- **The number of hospitals beds (ICU or other) closed due to staff absenteeism or force majeure evolved over time: it decreased between January and August 2022, then increased in September, before decreasing again and stabilising at the end of the year.**
- **In relative terms, more ICU beds were closed than other beds. In September 2022, more than 10% of the licensed ICU beds were closed. This percentage was around 8% during the same period, when all types of hospital beds are considered.**
- **The share of hospitals beds closed due to staff absenteeism or force majeure ranged between 5.4% and 10.1% over the studied period (22 November 2021 to 31 December 2022). The share of ICU beds closed due to staff absenteeism or force majeure ranged between 7.1% and 11.0% over the studied period.**
- **The share of hospital beds closed due to staff absenteeism of force majeure followed a similar pattern in the three Belgian regions.**
- **The share of ICU beds closed due to staff absenteeism or force majeure was the largest in Brussels (ranging between 14.1% and 22.7%) and the smallest in Flanders (except during the Summer 2022). In Flanders, the share ranged between 4.8 % and 10.5%. In Wallonia, it ranged between 5.2% and 12.9%.**
- **Strong provincial differences appear both for the share of hospitals beds closed as for the share of ICU beds closed. In the province of Luxembourg an average of 30.2% of hospital beds and an average of 17.9% of ICU beds were closed over the studied period (22 November 2021 to 31 December 2022).**

References

1. Tujjar O, Simonelli M. Absenteeism of frontline healthcare workers during Covid-19: the need for a framework of support. SN Comprehensive Clinical Medicine. 2020;2(12):2715-7.
2. Gohar B, Larivière M, Nowrouzi-Kia B. Sickness absence in healthcare workers during the COVID-19 pandemic. Oxford University Press UK; 2020. p. 338-42.
3. Van Grunderbeek E. L'absentéisme pour cause de maladie diminue, mais pas dans le secteur des soins de santé [Web page]. 2021 [cited January 2023]. Available from: https://www.acerta.be/fr/insights/blog/employeurs/labsenteisme-pour-cause-de-maladie-diminue-mais-pas-dans-le-secteur-des-soins-de-sante
4. Arrêté royal du 30 avril 2020 concernant un flux d'information correct et en temps voulu sur les chiffres de patients COVID−19, la capacité de traitement dans les hôpitaux et les stocks de matériel de protection individuelle, M.B. 6 mai 2020.
5. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (19 novembre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211119%20-%20FR.pdf

3.3 Number of nursing vacancies in hospitals (R-3)

3.3.1 Documentation sheet

Description	Number of nursing vacancies in hospitals
Calculation	Absolute number of vacancies for hospital nurses (Master's degree, Bachelor's degree (A1) and Diploma degree (A2)): head count and Full-time equivalents (FTE)
Rationale	For more than two decades nursing shortages are reported in most industrialised countries, a problem that will only accelerate by the ageing population (and the ageing nursing workforce) and the recent COVID-19 pandemic.[1, 2] In Belgium, the nursing profession is labelled as a profession for which it is difficult to fill vacancies, especially in hospitals. Monitoring nursing shortages via the number of unfilled vacancies is therefore important in light of the sustainability of the healthcare system. Moreover, the nursing workforce is the largest healthcare profession,[3] for which shortages can cause problems with the accessibility (e.g. waiting lists) or quality (e.g. to high patient-to-nurse ratios) of healthcare services.
Data source	Survey of 'hospital statistics' performed by the FPS Health, Food Chain Safety and Environment (FPS Public Health)[4]
Technical definitions	The yearly survey of 'hospital statistics'[4] performed by the FPS Public Health contains, since 2013, a question about the number of unfilled vacancies. The number of vacancies is defined as 'the number of vacancies for which a call (intern/extern) is launched'. Hospitals are asked to complete this question for 4 moments in time: 31/03; 30/06; 30/09; 31/12. Data are collected by level of education: Master's degree; Bachelor's degree; Diploma degree.
International comparability	There is no international benchmark available.
Limitations	In 2013, coding problems encountered for Wallonia, 2013 data are therefore not reported. During 2020, data were not reported by hospitals (to reduce their administrative workload). It is therefore not possible to precisely determine the magnitude of the disruption during the COVID-19 pandemic. The number of vacancies may also reflect higher turnover and not necessarily vacancies that remain unfilled. It would have been better to have data on hard-to-fill vacancies, but unfortunately this data is not available.
Dimension	Resilience and sustainability
Related performance indicators	A-11 Practising nurses; S-8 Nursing graduates; R-1 Healthcare professionals who consider leaving the profession; R-2 Number of hospital bed closures due to staff absenteeism or force majeure
Reviewer	Nadia Benahmed

3.3.2 Results

Belgium

Table 20 shows the number of nursing vacancies reported by Belgian hospitals on December 31, 2021. There was a total of 2 735 nurses vacancies (2 572 in full-time equivalent (FTE)). Around three quarter of nursing vacancies concerned nurses with bachelor's degree (A1) followed by diploma A2 (around 18%) and master's degree (around 6%) (both in head count and in FTE). Figure 80 shows that the number (in FTE) of nursing vacancies in hospitals in Belgium increased progressively up to 2019 (+62.7% between December, 31 2014 and December 31, 2019), with a higher increase for nurses with a bachelor's degree (+74.5%, vs +34.9% and +38.6% for master's degree and diploma degree (A2) respectively). An important increase was then observed in 2021 (see also below, the impact of the COVID-19 pandemic)

Regional comparison

In 2021, there were a total of 1 391 (1 293.6 in FTE) nurses vacancies in hospitals in the Flemish region, 757 (704.6 in FTE) in the Walloon region, and 587 (573.9 in FTE) in the region of Brussels Capital. Figure 81 shows that the 2014-2019 increase was less important in Brussels (+34.0%) than in Flanders (+68.0%) or Wallonia (+83.7%).

Impact of COVID-19 pandemic

As shown in Figure 80 and Figure 81, an increase in the number of nurses vacancies in hospitals (in FTE) can be observed during the COVID-19 pandemic, with a peak of +68.2% in September 2021 (compared to September 2019, Belgium vacancies).

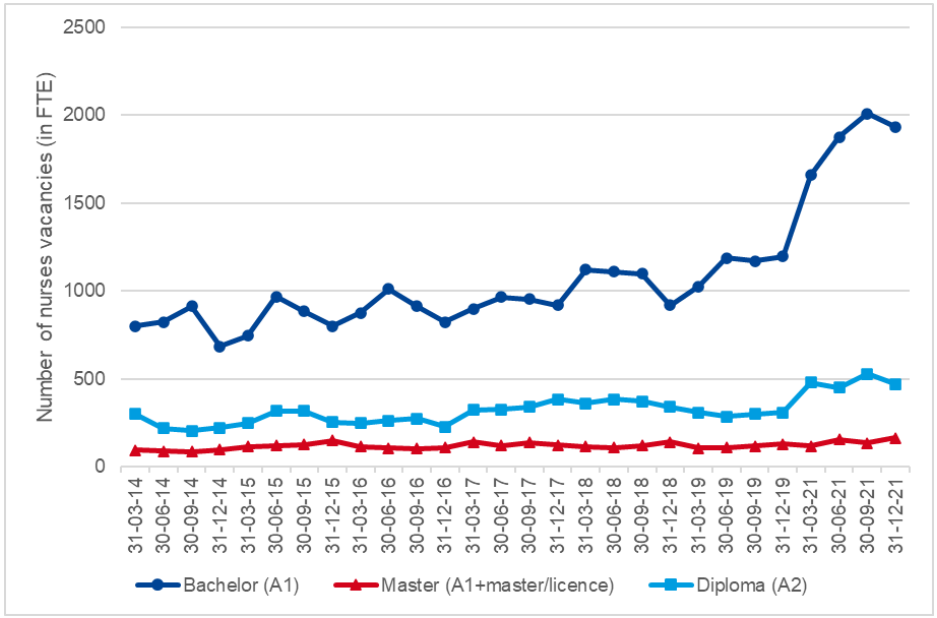
The most important increase was observed in Wallonia, with a peak in September 2021 (+100.3% compared to September 2019), followed by Flanders with a peak in September 2021 of +62.4% compared to September 2019. In Brussels, the peak was observed in December 2021 (+68.3% compared to December 2019).

The increase in the number of vacancies during the pandemic shows how difficult it is for hospitals to recruit and retain nurses, especially since the COVID-19 pandemic. The lack of more recent data does not permit to determine if (and when) this will return to pre-pandemic levels.

Table 20 – Number of nursing vacancies in hospitals, per diploma level, Belgium and per region, December 31, 2021

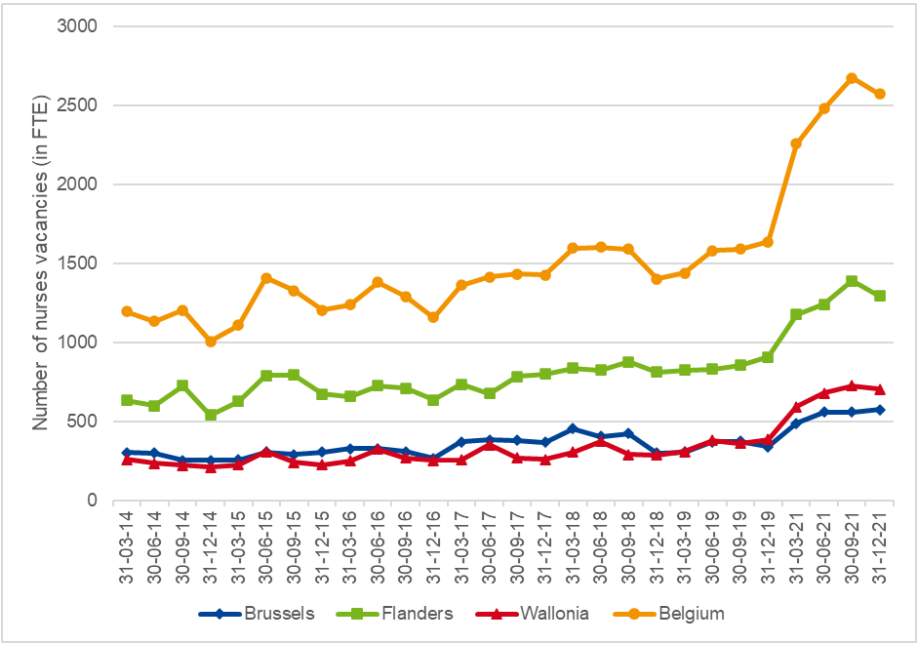
		N	%	FTE	%
Flanders	Bachelor (A1)	908.5	65.3%	836.96	64.7%
	Master (A1+master/licence)	83	6.0%	79.33	6.1%
	Diploma (A2)	399.5	28.7%	377.3	29.2%
	Total	1391	100.0%	1293.59	100.0%
Wallonia*	Bachelor (A1)	635	83.9%	588.78	83.6%
	Master (A1+master/licence)	48	6.3%	43.25	6.1%
	Diploma (A2)	74	9.8%	72.57	10.3%
	Total	757	100.0%	704.6	100.0%
Brussels	Bachelor (A1)	525	89.4%	509.77	88.8%
	Master (A1+master/licence)	43	7.3%	43	7.5%
	Diploma (A2)	19	3.2%	21.12	3.7%
	Total	587	100.0%	573.89	100.0%
Belgium	Bachelor (A1)	2068.5	75.6%	1935.51	75.3%
	Master (A1+master/licence)	174	6.4%	165.58	6.4%
	Diploma (A2)	492.5	18.0%	470.99	18.3%
	Total	2735	100.0%	2572.08	100.0%

Figure 80 – Number of nurses vacancies in hospitals (in FTE), per diploma level, evolution 2014-2021 (2020 data not available)



Source: FPS Public Health; KCE calculations.

Figure 81 – Number of nursing vacancies in hospitals (in FTE), Belgium and per region, evolution 2014-2021 (2020 data not available)



Source: FPS Public Health; KCE calculations.

Table 21 – Nurses vacancies in hospitals, impact of the COVID-19 pandemic, % increase 2019-2021, per trimester

	March 2019-March 2021	June 2019 - June 2021	September 2019 - September 2021	December 2019 - December 2021
Flanders	+42.7%	+49.5%	+62.4%	+42.4%
Wallonia	+91.5%	+77.8%	+100.3%	+81.8%
Brussels	+59.1%	+51.2%	+50.3%	+68.3%
Belgium	+56.7%	+56.7%	+68.2%	+57.1%

Key points

- **The yearly survey of 'hospital statistics' contains a question about the number of unfilled vacancies. In 2021, 2 572 nurses vacancies in FTE were reported in the Belgian hospitals.**
- **Most nurse vacancies in hospitals were reported in Flanders (1 293.6 FTE), followed by Wallonia (704.6 FTE) and Brussels (573.9 FTE) and concerned especially nurses with bachelor's degree (A1).**
- **The number of nurses vacancies in hospitals, which reflect the capacity of hospitals to recruit and to retain nurses, was impacted by the COVID-19 pandemic. The highest disruption was observed in Wallonia in September 2021 (+100.3% compared to September 2019), followed by Flanders (+62.4% compared to September 2019). In Brussels, the peak was observed in December 2021 (+68.3% compared to December 2019).**
- **It is nevertheless not possible to determine the exact magnitude of the disruption due to the lack of data for 2020. The peaks observed in 2021 may be lower than what's happened in 2020.**
- **It is also not yet possible to determine the duration of the disruption or the magnitude of the rebund (if any) as more recent data is not yet available.**

References

1. OECD. Health at a Glance 2017: OECD Indicators. Paris: 2017. Available from: http://dx.doi.org/10.1787/health_glance-2017-en
2. WHO. WHO and partners call for urgent investment in nurses [Web page].Geneva: World Health Organization;2020 [cited July 2023]. Available from: https://www.who.int/news/item/07-04-2020-who-and-partners-call-for-urgent-investment-in-nurses
3. FPS Public Health. For a healthy Belgium: Key Data in Healthcare, Healthcare Professionals, Introduction [Web page].Brussels: FPS Public Health;2023 [cited March 2023]. Available from: https://www.healthybelgium.be/en/key-data-in-healthcare/healthcare-professionals/introduction-en
4. FPS Public Health. Annual hospital statistics (STATHOSP) [Web page].Brussels: Federal Public Service Health - Food Chain Safety and Environment;2023 [cited July 2023]. Available from: https://www.health.belgium.be/fr/sante/organisation-des-soins-de-sante/hopitaux/systemes-denregistrement/stathosp

3.4 Regular essential surgical hospital activities (% of expected activities that is maintained) (R-4)

3.4.1 Documentation sheet

Description	**Primary indicator** **(1)** Share of expected (based on 2018-2019 data) regular essential surgical hospital activities that is maintained **Secondary indicators** **(2)** Share of expected (based on 2018-2019 data) regular non-essential surgical hospital activities that is maintained **(3)** Share of expected (based on 2018-2019 data) regular mixed (i.e. essential or not depending on the context) surgical hospital activities that is maintained **(4)** Change in expenditures for a selection of urgent and non-urgent hospital activities with respect to the same month in 2019 **(5)** Standardised number of emergency room admissions per 100 000 insured persons **(6)** Number of admissions in psychiatric hospital wards per 10 000 population (in general or psychiatric hospitals)
Calculation	**(1,2,3)** The following generalized linear mixed model, using negative binomial distribution and log-link is fit for essential, non-essential and mixed bundles of interventions separately: $\log(n) = \alpha + \beta_1 Time + \beta_2 Month + \beta_3 DevPeak + \beta_4 Covid + HCI_i + PREST_k$ where *Time* indicates the time since January 2018 until January 2023 and accounts for long-term changes, *Month* (January, February, …, December) accounts for seasonal effects, *DevPeaks* (-1, 0 or 1) addresses the potential bias due to fluctuations in the data flow between hospital and insurance institutions. *Covid* represents the rank order of the month since March 2020, allowing the model to estimate how strong a specific month during the COVID-19 crisis deviates from the situation where the COVID-19 crisis did not take place. α is a constant and HCI_i allows health care institutions to deviate from the constant. Similarly, $PREST_k$ allows a specific type of intervention (billing code) to deviate. These two latter parameters allow for an interpretation of a hospital care decrease (or increase), given an average hospital and an average intervention. The parameters of interest are to be found in β_4: for each month during the COVID-19 crisis, a deviation from the expected (non-covid situation) is estimated. For instance, if this parameter for April 2020 = -2.303, it means that in April 2020, hospital activity falls to exp(-2.303) = 10%, a reduction of 90% as compared to pre-covid times. Hospital surgical activities are categorised in three groups (essential, non-essential and mixed), based on billing codes (see technical definitions hereafter). **(4)** Numerator = differences between expenditures for a specific hospital activity performed during the month and the expenditures for the same activity performed during the same month of 2019; denominator = expenditures for the considered activity performed during the considered month of 2019. **(5)** Numerator = number of emergency room admissions standardised per year (based on population in 2022), based on age, sex and preferential regime per arrondissement, province and region x 100 000; denominator = all insured persons residing in Belgium for which the district, the gender, age and reimbursement scheme are known or estimated in 2022. **(6)** Numerator = number of admissions in psychiatric hospital wards x 10 000; denominator = total mid-year Belgian population. Change in the number of admissions in psychiatric hospital wards between the pre-pandemic period (monthly average for the years 2017 to 2019) and the pandemic period (April 2020 and April 2021).

Rationale	Mid-March 2020, Belgian hospital were asked by the Hospital & Transport Surge Capacity (HTSC) committee to stop all elective consultations, investigations and procedures in order to free up equipment, nurses and physicians for the treatment of COVID-19 patients. It was however specified that essential care could continue. Nevertheless, no concrete formal definition of essential and non-essential care was provided. Hospital were allowed to resume regular hospital care in a stepwise manner from 4 May 2020. During this first wave of the COVID-19 pandemic, several analyses show indications of a decrease of non-essential care in Belgian hospitals, but also some decrease in essential regular care.[1-3] During subsequent waves of COVID-19, hospitals were asked to discontinue non-essential activities wherever this could impact the ICU capacity that was reserved for COVID-19 patients. To assess the ability of hospitals to maintain essential activities, we use the change in hospital regular essential surgical hospital activities with respect to what was expected based on 2019 data following the methodology of the Hospital Audit Unit within RIZIV – INAMI, FPS Public Health and FAGG – AFMPS.[4] Change in hospital regular non-essential surgical hospital activities will be presented as a secondary indicator. Only surgical interventions are considered here. The interested reader can find insights on reported hospital care in internal medicine, oncology, psychiatry, medical imagery, etc. in the reports of the Hospital Audit Unit.[5] The results will also be complemented by additional analyses on the evolution of the number of hospital admissions and of a selection of urgent and non-urgent hospital activities using alternative sources.[1, 2] Also, the ability to maintain activity in emergency department will be analysed, using the evolution in the number of emergency room admissions as secondary indicator, based on RIZIV – INAMI billing data. The capacity of hospitals to maintain mental healthcare activities was also essential. This can be measured using changes in the number of admissions in psychiatric hospital wards over time, as well as changes in the number of hospitalisation days and the number of stays in psychiatric hospital wards using FPS Public Health (MPG – RPM) data. This indicator also provides contextual information on the utilisation of mental healthcare services outside ambulatory setting. Changes in the number of admissions in psychiatric hospital wards may reflect changes in the mental health of the population, or changes in the delivery and organisation of mental healthcare in hospitals. Several European countries (Malta, Portugal, Romania, Italy) reported a reduction in the total number of admissions in psychiatric hospital wards during the COVID-19 pandemic compared to pre-pandemic period.[6-9]
Data source	**(1,2,3)** Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS **(4)** RIZIV – INAMI (StatMD) **(5)** RIZIV – IMAMI (Appropriate Care Unit) **(6)** RPM – MPG from FPS Public Health
Technical definitions	Selection of billing codes for the different indicators are given hereafter: **(1)** Essential surgical interventions: arteriovenous fistula creation <12y (238254; 238265); removal of uterine cervix (432110; 432121); amputation (275052; 275063; 275074; 275085; 275096; 275100; 275111; 275122; 277572; 277583; 277594; 277605; 277616; 277620; 277631; 277642; 278390; 278401); appendectomy and partial caecum resection (244871; 244882); appendectomy (243154; 243165); surgical treatment of femur fracture (276570; 276581); surgical reduction or osteosynthesis (311054; 311065); breast-conserving tumour resection (227732; 227743); breast-conserving tumour resection and axillary lymph node dissection (227813; 227824); breast-conserving tumour resection and sentinel node resection with intraoperative pathological examination (227791; 227802); breast-conserving tumour resection and axillary lymph node dissection (227835; 227846); breast-conserving tumour resection and sentinel node resection (227776; 227780); surgical treatment of deep phlegmon (220253; 220264); conization of the cervix (432294; 432305); myocardial revascularisation (229574; 229585); curettage of the uterine cavity (220290; 220301); trepanation for decompression or drainage (230355; 230366); surgery for deep expansive tumours or lesions of the face or lips, including plastic surgery (220334; 220345); surgical removal of foreign bodies from deep tissue (220231; 220242); embolectomy or thrombectomy through the arteries of the limbs or neck (235130; 235141); total cure of bladder tumour (261391; 261402); plaster boot or Delbet apparatus (299176;

299180); elbow plaster (297172; 297183); forearm plaster (297150; 297161); hand or wrist plaster (297135; 297146); surgical evacuation of one or more extracerebral intracranial haematomas (230414; 230425); heart or heart-lung transplantation (318054; 318065); hemicolectomy (243051; 243062); surgical repair of an osteomeningeal breach (232713; 232724); intervention for intestinal obstruction (243331; 243342); internal drainage of hydrocephalus (230591; 230602); surgery on the heart or large intrathoracic vessels with extracorporeal circulation (229515; 229526); laser photocoagulation of retinal vasculopathy (248172; 248183); removal of the lung with lymphadenectomy (227216; 227220); incisional biopsy of the mammary gland (227091; 227102); mastectomy and sentinel node resection with intraoperative pathological examination of the sentinel node (227673; 227684); mastectomy and sentinel node resection (227651; 227662); mastectomy with axillary lymphadenectomy (227695; 227706); mastectomy (227636; 227640); colposcopy (431955; 431966); kidney transplantation (318010; 318021); surgical reduction of fracture or dislocation-fracture of the head or neck of the humerus (275376; 275380); surgery on the heart or large intrathoracic vessels with extracorporeal circulation (229596; 229600); osteosynthesis for lower jaw fracture (311113; 311124); computer-assisted intraoperative navigation (232315; 232326); pleurotomy (227496; 227500); finger fracture, closed reduction (296973; 296984); fractures of the distal end of one or both bones of the forearm, closed reduction (296936; 296940); breast-conserving resection of a non-palpable malignant tumour (227754; 227765); complete resection of the endometrium (432456; 432460); revascularisation of carotid or vertebral artery (235071; 235082); revascularisation of a limb artery (235093; 235104); salpingotomy or partial salpingectomy (432574; 432585); stereotaxy of intracranial areas with fixation of markers (232971; 232982); surgery for intracranial supratentorial expansive lesion via craniotomy (230473; 230484); ureteroscopy or therapeutic ureterorenoscopy (262371; 262382); total hepatectomy followed by orthotopic liver transplantation (318076; 318080); total prostatectomy (261796; 261800); trepanation of the maxilla for tumour, osteitis, sequestration or foreign body finding (311135; 311146); replacement of suprapubic catheter (262452; 262463); removal of a malignant skin or mucous membrane tumour with wound closure (251775; 251786); treatment of fracture of a bone of the face (312130; 312141); thoracotomy or thoracoscopy with biopsy (227452; 227463). In updated versions of the model, the following billing codes are also used: 227264; 227345; 227441; 227603; 228163; 229622; 231011; 235023; 240483; 243600; 243622; 243644; 243762; 244042; 244064; 251322; 251344; 256830; 261682; 261822; 262441; 275041; 275424; 275505; 275520; 275531; 275542; 275656; 275671; 276684; 277465; 283485; 283861; 287490; 290544; 290640; 290662; 290684; 295024; 295050; 296015; 296096; 296612; 296671; 296811; 296892; 296914; 296951; 297116; 297194; 297205; 298631; 298723; 298896; 298970; 298992; 299154; 299165; 299191; 317306; 23522; 237182; 243180; 243202; 243246; 244436; 260293; 260304; 260680; 280556; 294302.

(2) Non-essential surgical interventions: corrective ear surgery (253551; 253562); amygdalectomy (257390; 257401); circumcision (260934; 260945); corrective surgery on both ears (253573; 253584); total or bilateral subtotal thyroidectomy (257036; 257040); complete bilateral resection of a truncal varicose vein (238276; 238280); surgery for paradental cysts (311334; 311345); embryo placement after in vitro fertilisation (432714; 432725); total removal of the small saphenous vein (238136; 238140); extraction of impacted or retained tooth (317236; 317240); extracapsular extraction of the eye lens (246912; 246923); knee arthroplasty with total prosthesis (290275; 290286); follicular aspiration (432434; 432445); frenulum frenulectomy/frenuloplasty of the penis (261575; 261586); osteotomy hallux valgus (277115; 277126); radical haemorrhoid treatment (244554; 244565); surgical treatment of three or four sinuses (254855; 254866); surgical treatment of urinary incontinence with transvaginal sling (432751; 432762); surgical treatment of a primary abdominal wall hernia (241916; 241920); radical total hysterectomy with pelvic lymphadenectomy (431351; 431362); intrauterine insemination (432773; 432784); kymographic insufflation of salpinx, hysterosalpingography (431410; 431421); laser treatment of cataract (248275; 248286); meniscectomy of the knee (276636; 276640); ligation of more than 3 varicose veins (238114; 238125); ligation of one varicose vein (238070; 238081); ligation of 2 or 3 varicose veins (238092; 238103); ligation of vas deferens, vasectomy (260794; 260805); osteotomy with tooth germ extraction (312432; 312443); osteotomy with displacement of jawbone pieces or reconstruction surgery (311415; 311426); osteotomy for retained tooth with pericocoronary bone resection (312410; 312421); breast reconstruction with insertion of a breast implant or breast tissue expander (252593; 252604); breast reduction for hypertrophy (251613; 251624); reduction gastroplasty Mason/Sleeve (241776; 241780); plastic surgery of the heterolateral breast (252512; 252523); resection of the saphenofemoral junction and total removal of both saphenous veins (238210; 238221); resection of the saphenofemoral junction and ligations, fulguration or resection of varicose veins (238195; 238206); resection of the saphenofemoral junction and total removal of one of the two saphenous veins

(238173; 238184); resection of abdominal fat tissue with skin plasty and transposition of the navel (241275; 241286); reduction gastroplasty Scopinaro (241835; 241846); subtotal hysterectomy (432655; 432666); subfacial ligation of perforating veins of the lower limb (238291; 238302); total hysterectomy by vaginal route (431314; 431325); total hysterectomy by abdominal route (431270; 431281); transtympanic drainage (257471; 257482); excision of scars (221196; 221200); urodynamic examination with five or more channels (261995; 262006); vaginal hysterectomy 432670; 432681); complete resection of a benign breast lesion (227850; 227861); complete resection of a non-palpable benign breast lesion (227872; 227883); carpal tunnel release (287836; 287840); removal of breast prosthesis (251591; 251602); endoscopic prostate resection (261553; 261564); trepanation of the maxilla for cystic tumour or osteitis (310951; 310962); surgical removal of dermal vegetations (220113; 220124). In updated versions of the model, the following billing codes are also used: 245733; 245814; 245851; 247575; 248835; 248846; 248953; 249255; 254752; 254763; 254833; 254844; 255021; 255065; 255146; 255323; 255894; 255905; 256103; 256513; 257644; 257736; 257740; 257806; 257891; 257902; 258300; 258650; 258661; 258683; 258812; 258823; 258834; 258845; 260643; 260875; 261914; 261925; 262150; 275192; 244160; 275306; 275634; 275645; 276216; 276220; 276231; 276242; 276474; 277200; 277222; 277270; 277281; 277325; 280151; 281702; 2287696; 287733; 287792; 287814; 290264; 292364; 293344; 311371; 312281; 312314; 317170; 317251; 431756; 431863; 432412; 432692.

(3) Mixed surgical interventions; essential or not depending on the context: hip arthroplasty (289074; 289085); autoplastic closure of bucconasal or buccosinusal fistula (311452; 311463); creation of arteriovenous fistula (235174; 235185); cystoscopy in men (260271; 260282); cystoscopy in women (260330; 260341); surgery for deep tumours or lesions of the face or lips (220312; 220323); removal of expansive subfascial soft tissue tumour (220275; 220286); surgical treatment of an incisional hernia of the abdominal wall (241931; 241942); surgical treatment of bilateral inguinal, femoral or obturator hernia (241894; 241905); surgical treatment of inguinal, femoral or obturator unilateral hernia (241872; 241883); skin or fascia-cutaneous flap in one operation, larger than 100 cm² (250213; 250224); skin or fascia-cutaneous flap (250176; 250180); diagnostic hysteroscopy (432390; 432401); intravitreal injection (248334; 248345); surgery for benign tumours of face or lips (220150; 220161); revascularisation of a limb artery, with saphenous vein graft (235115; 235126); sacrococcygeal cyst resection (221152; 221163); musculocutaneous flap (251893; 251904); removal of a skin tumour with plasty and/or grafting (251731; 251742); cholecystectomy with intraoperative cholangiography (242476; 242480); cholecystectomy (242454; 242465); curettage of inflammatory osteitis of the jaw (310914; 310925); curettage for alveolar osteitis (317052; 317063); lumbar laminectomy (232794; 232805); laparoscopic hysterectomy (432736; 432740); treatment of fractures of the lower jaw and facial bones without osteosynthesis (310995; 311006); trans pars plana vitrectomy (246654; 246665). In updated versions of the model, the following billing codes are also used: 244440; 248290; 248301; 248636; 248640; 248684; 248975; 248986; 249233; 249244; 257084; 260326; 260352; 260956; 260960; 432353; 432644; 220231; 220242; 230252; 241043; 244742; 246573; 249222; 257025; 258075; 258086; 258731; 260481; 260890; 276076; 276080; 276102; 276124; 276146; 277362; 278596; 278810; 279020; 280033; 280055; 280066; 280070; 280092; 280103; 281105; 281120; 281665; 281680; 281783; 286624; 287011; 287022; 287291; 289041; 293440; 293462; 294125; 296133; 297511; 299515; 299526; 432596; 432600; 432633.

(4) Urgent hospital activities: infarcts (589013; 589024; 589153; 589164); acute (cerebral) stroke (477724; 477746); treatment of cardiac arrhythmias (475952; 475963; 476210; 476221; 476254; 476265).

(4) Non-urgent hospital activities: sleep study (477374; 477385); male and female sterilisations (260794; 260805; 432692; 432703)

(5) Emergency room admissions: 590516; 590531; 590553; 590575; 590590; 590612; 590634; 590656; 590671; 590693; 590715; 590730; 590752; 590774; 590796; 590811; 590833

(6) Number of admissions in psychiatric hospital wards corresponds to the number of full-time and part-time stays started in the month in psychiatric wards of general or psychiatric hospitals. Based on the bed indexed at admission, part-time and full-time hospitalisation can be differentiated. During a full-time admission, patients cannot go home either during the day or at night, whereas during a part-time admission patients can. This

	distinction is made because new mental healthcare reforms aim to de-institutionalise patients as much as possible.[10] Regional data is reported based on the region of the patient's residence.
International comparability	N.A.
Limitations	In Belgium, no official list or guideline exists that divide hospital care into essential and non-essential activities, nor an official definition of these terms. Therefore, the following arbitrary method was used. The most frequently billed codes of article 14 of the nomenclature for surgical activities were assessed by six physicians belonging to the hospital audit team, with the assistance of internal and external specialists in the discipline. Taking notably into account international recommendations,[11-14] they classified them into (grossly) essential care, (grossly) non-essential care, or a mix of both. The following types of care were considered as essential: urgent care (e.g. a large proportion of fractures), (chronic) care that is vital (e.g. dialysis) or care that determines the prognosis if it is delayed (e.g. mastectomy). Nevertheless, such classification is somewhat arbitrary and can be subject to discussion. No ex-post validation of the classification was performed, nor comparison with other existing lists that are relevant in the Belgian context (such as the VBS – GBS list of degrees of urgency by specialty[15] or the classification between urgent and non-urgent care used in the RIZIV – INAMI monitoring of billing data[1]). Trends for a selection of urgent and non-urgent care based on the RIZIV – INAMI monitoring of billing data[1] classification are presented as secondary indicators, but this classification is also somewhat arbitrary. In addition, one cannot assess to what extend the care that was cancelled would have led to an over-use.[16, 17] The cancellation of care may actually reflect some efficiency gain thanks to a stricter use of evidence-based guidelines. Also part of the cancelled care may not be needed afterwards (symptoms that spontaneously disappear, successful treatments in another setting, patient death, etc.) which may explain that not all cancelled care is reported. The change in habits during COVID-19 times (for instance a reduction of the number of accidents during lockdown periods, a general improvement of hygienic protective measures, etc.) may also reduce the need for some types of hospital care. On the other hand, one cannot assess to what extend COVID-19 led to an increased need of some types of hospital regular care (for instance pulmonary care). Regarding admissions in psychiatric hospital wards, data were not available by age groups, diagnosis at discharge or voluntary vs involuntary status. Based on the analyses for this indicator it was not possible to assess if changes in the number of admissions were due to changes in mental health services in hospitals, in the mental health of the population or in the population's healthcare seeking behaviours. Changes from full-time to part-time admissions or vice versa were not taken into account, as the type of admission (full-time or part-time) is only identified at the time of admission. Therefore, these results must be interpreted with caution.
Dimension	Resilience; Accessibility; Quality (Appropriateness)
Reviewers	**(1,2,3)** Johan Pauwels on behalf of Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS team. **(6)** Gert Peeters (UPC KU Leuven), Nathalie Terryn (FPS Public Health) and Yves Wuyts (Zorgnet-Icuro).

3.4.2 Results

Hospital activities – Belgium

Figure 82 shows the share of expected (based on 2018 and 2019 data) regular surgical hospital activities that was maintained in 2020, 2021 and 2022.

In March 2020, non-essential hospital surgical activities were at 52.3% of their expected level based on 2018 and 2019 data. This means that non-essential hospital surgical activities dropped by 47.7% in March 2020 compared to pre-COVID-19 times. During the same period, also essential and mixed activities dropped. In March 2020, only 78.3% of essential hospital surgical activities were maintained. For mixed activities, that can be essential or not depending on the context, the share of maintained care was 63.0%.

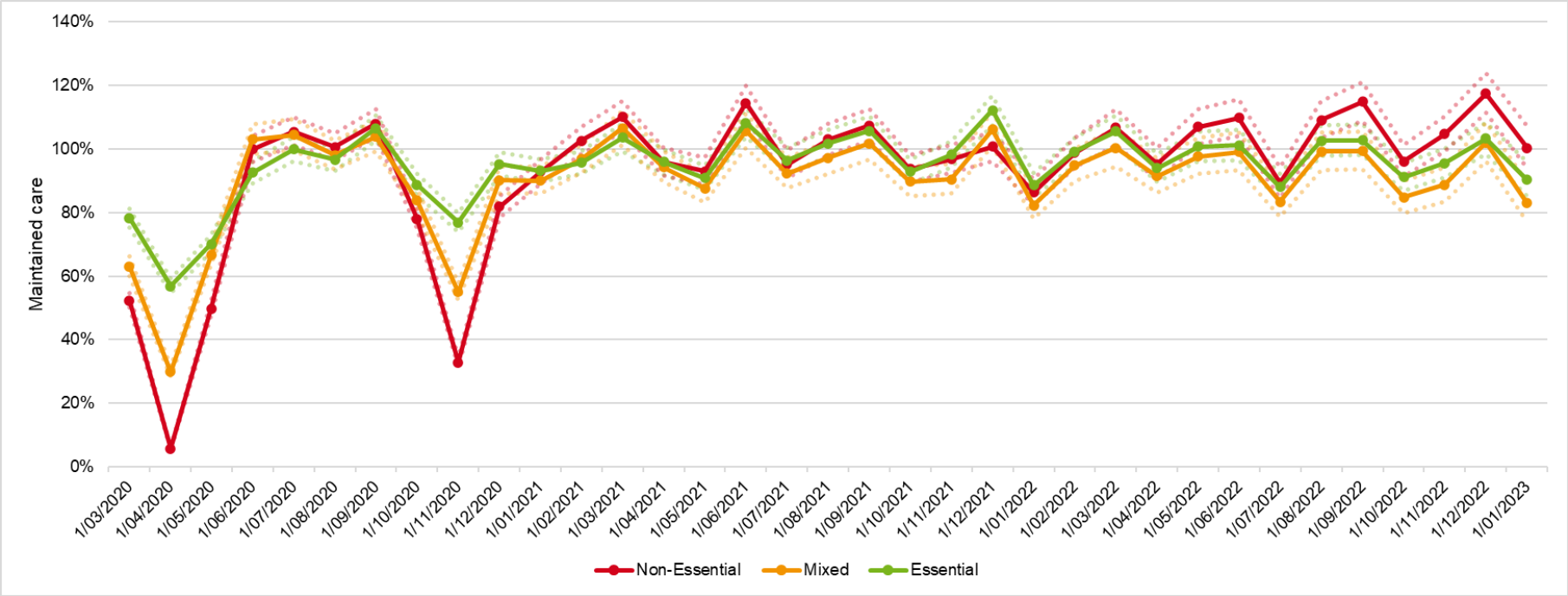
The largest decline in regular surgical hospital activities was observed in April 2020. Only 5.7% of non-essential hospital surgical activities were maintained. This is consistent with the request made to hospitals to cancel non-essential care. For mixed activities, the share of maintained care was 29.8% and for essential activities it was 56.9%. It means that, although considered essential, almost half of these surgical activities were suspended in April 2020.

A small catch-up effect was observed during the summer 2020, when it occurred that the share of maintained regular care was above 100% (i.e. more surgical activities were performed that what was expected based on 2018 and 2019 data).

During the second COVID-19 wave, staring in September 2020, non-essential, mixed and essential regular hospital care dropped again, but less than during the first wave. In November 2020, the number of non-essential surgical activities fell to 32.8% of the expected level based on 2018 and 2019 data. This was again in line with the instruction to give priority to COVID-19 patients. But the number of essential and mixed surgical activities also fell to 76.8% and 55.0% of the expected levels, respectively.

In 2021 and 2022, the declines were much less marked. The number of essential activities never fell below 88.0% of the expected level based on 2018 and 2019 data. For non-essential activities this minimum share was 86.3% and for mixed activities it was 82.3%. However, the catch-up effects were slightly stronger. In December 2021, the number of essential surgical activities was 112.1% of its expected level based on 2018 and 2019 data (106.2% for mixed surgical activities and 100.7% for non-essential surgical activities). In December 2022, the catch-up was the highest for non-essential surgical activities (117.4%, compared to 102.0% for mixed surgical activities and 103.3% for essential surgical activities).

Figure 82 – Share of expected (based on 2018 and 2019 data) regular surgical hospital activities that was maintained, Belgium

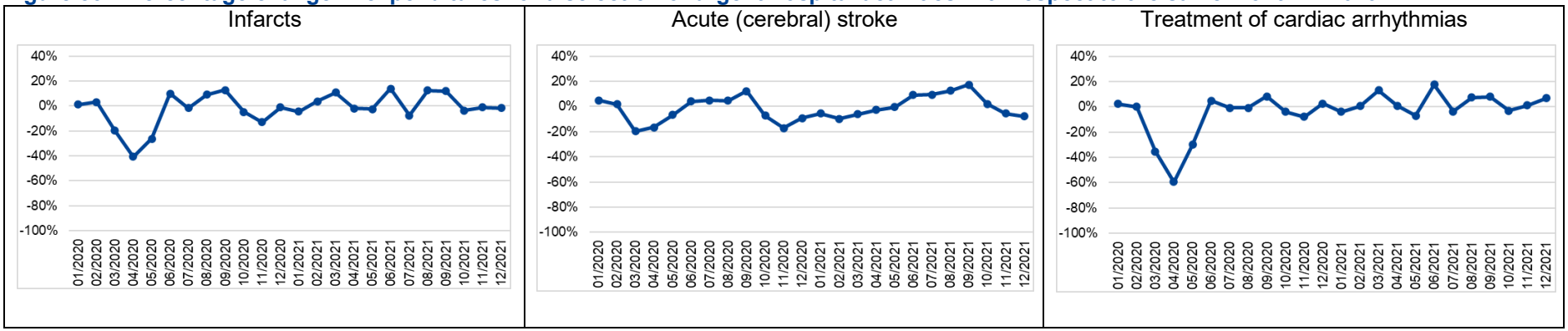


Confidence intervals are given by the dotted lines.
Source: Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS

Similar results were observed for a selection of urgent and non-urgent hospital activities. Figure 83 and Figure 84 show the percentage change in expenditures for specific hospital activities performed during the month with respect to the expenditure for the same activity performed during the same month of 2019. Figure 83 shows activities that can be considered as urgent while Figure 84 focuses on activities that are considered as non-urgent.

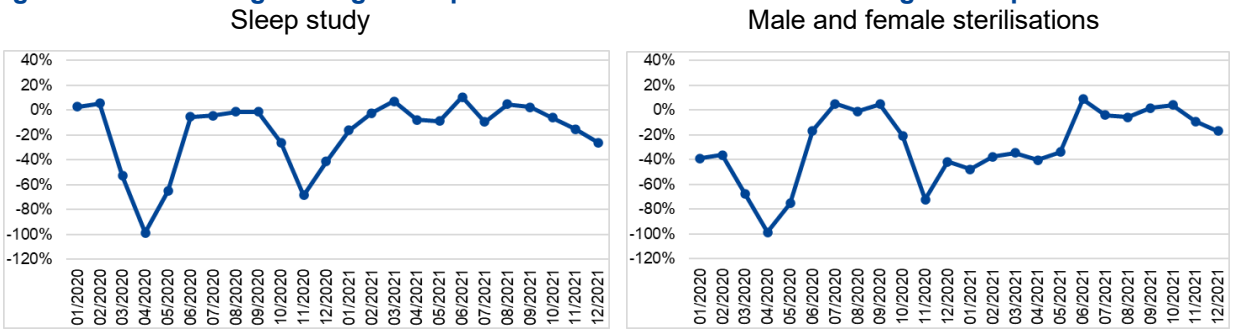
A decline in activity was observed in April 2020 for urgent and non-urgent care, but the effect was stronger for non-urgent care. In April 2020, expenditures for sleep studies and sterilisations declined by 98.8% and 98.6% respectively compared to their level in April 2019. For urgent care, the declines were 16.4% (stroke), 40.6% (infarcts) and 59.4% (cardiac arrhythmias). For infarcts and for arrhythmias, after a large decline during the first COVID-19 wave, changes were less marked during the following periods. For acute (cerebral) stroke, changes were less marked, although care was overall reduced compared to 2019. For non-urgent care (sleep study and sterilisation), a second large drop was observed in November 2020.

Figure 83 – Percentage change in expenditures for a selection of urgent hospital activities with respect to the same month in 2019



Source: RIZIV-INAMI.

Figure 84 – Percentage change in expenditures for a selection of non-urgent hospital activities with respect to the same month in 2019



Source: RIZIV-INAMI.

These results are in line with a previous IMA-AIM study that followed the evolution of hospital admissions during the COVID-19 pandemic (inpatient admissions in general hospitals).[2] Although, this analysis also presented a number of limitations (no distinction between COVID-19 and non-COVID-19 patients, no analysis of bed occupancy or length of stay, no distinction between pathology groups, etc.), the IMA-AIM study provided a first indication of the impact of the crisis on hospital activity. Admissions were identified using the admission documents (721bis) sent to the sickness funds.

During the lock-down period (16 March 2020 – 4 May 2020), the number of inpatient admissions in general hospitals in Belgium was 47% lower than during the corresponding weeks of 2019. Then, during the period between 4 May 2020 and 29 June 2020 the number of admissions increased again (by 75%) and was 23% lower than the level of 2019. During the summer 2020, the number of admissions stayed 10% lower than the 2019 level. During the second COVID-19 wave (5 October 2020 – 31 December 2020), the number of admissions was 26% lower than the level of 2019. Overall, from 16 March 2020 to the end of the year, the number of admissions was 26% lower than the corresponding level in 2019. In 2021, the number of admissions was 11% lower than the corresponding level in 2019. In the first half of 2022, it was still 9% lower than the corresponding level in 2019.

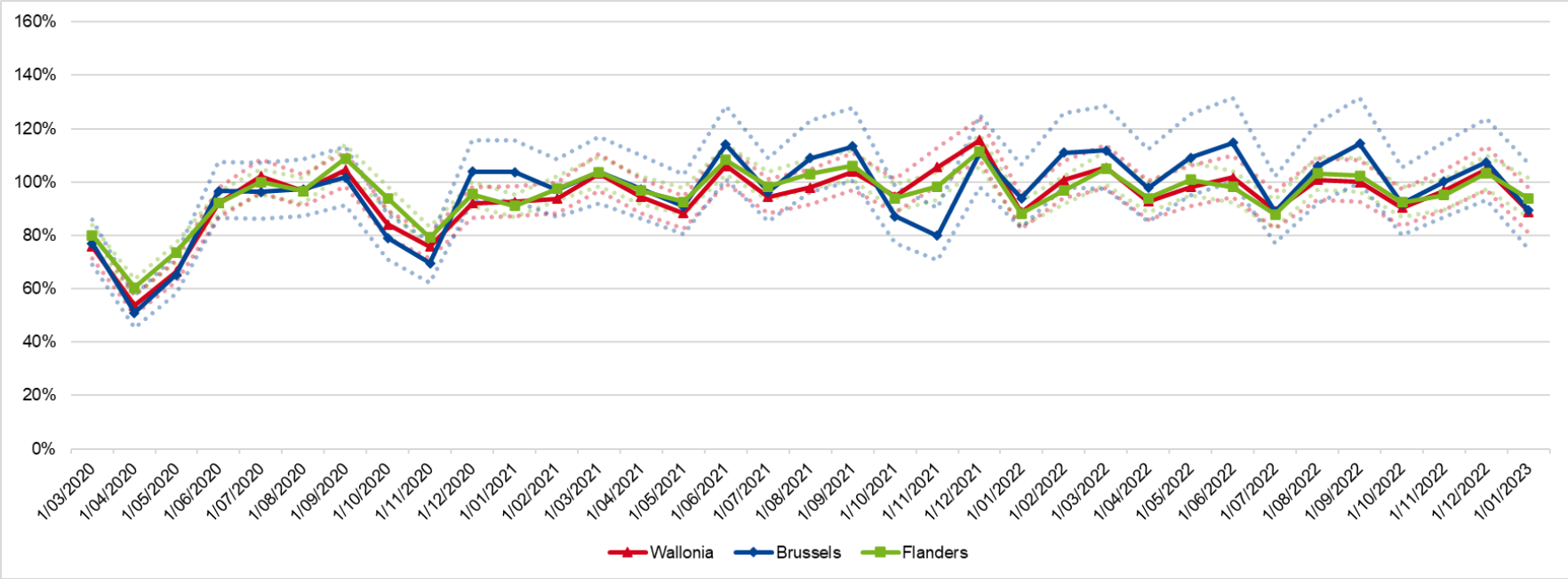
Hospital activities – Regional comparison

Figure 85 to Figure 87 show the same results as Figure 82 but divided by region. The evolution of the number of essential (Figure 85), non-essential (Figure 86) and mixed (Figure 87) surgical hospital activities followed a similar pattern in the three regions, although more variability was observed in Brussels than in Flanders and Wallonia.

In particular for non-essential surgical activities, the level of activity was above what was expected based on 2018 and 2019 data from January 2021 onwards (except a small decrease in November 2021). In June 2021, the number of non-essential surgical activities in the Brussels region was even 36.1% above what was expected based on 2018 and 2019 data. Overall, the increase in the number of non-essential surgical activities (compared to what was expected based on 2018 and 2019 data) was higher in Brussels than in the other regions (except for one month).

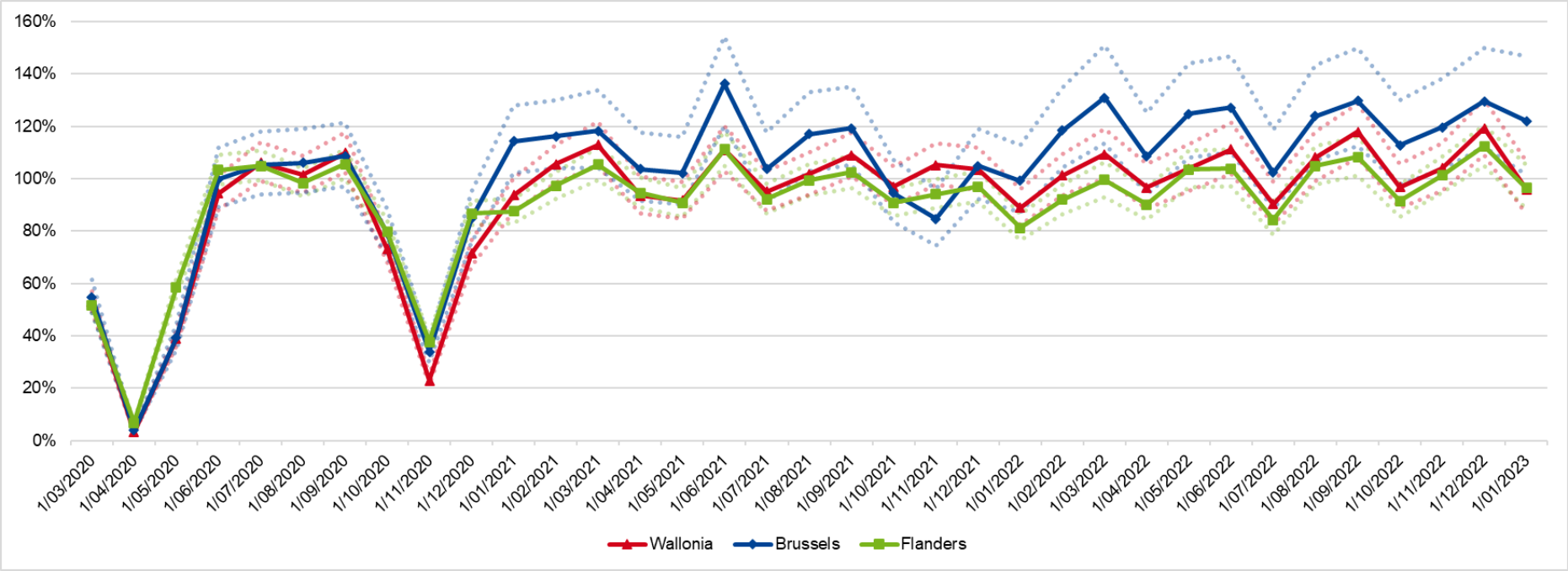
The decrease observed in April 2020 was important in the three regions of the country for all categories of activities, although slightly less marked in Flanders. In Flanders, 60.5% of essential surgical activities were maintained while these percentages were 53.7% in Wallonia and 51.1% in Brussels (Figure 85). Regarding non-essential activities, only 6.9% were maintained in Flanders, 3.3% in Wallonia and 3.9% in Brussels (Figure 86). For mixed activities, the percentages of maintained care were 33.5% in Flanders, 26.4% in Wallonia and 24.6% in Brussels (Figure 87).

Figure 85 – Share of expected (based on 2018 and 2019 data) regular essential surgical hospital activities that was maintained, regions



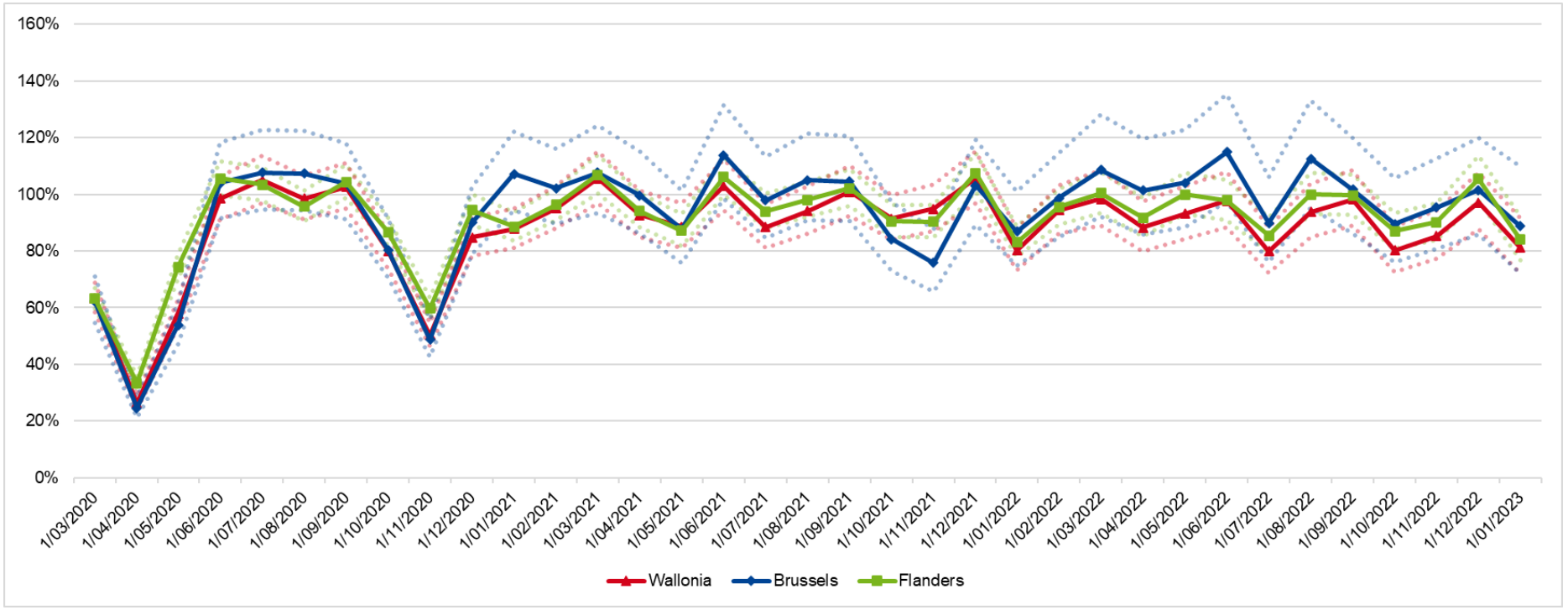
Confidence intervals are given by the dotted lines.
Source: Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS

Figure 86 – Share of expected (based on 2018 and 2019 data) regular non-essential surgical hospital activities that was maintained, regions



Confidence intervals are given by the dotted lines.
Source: Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS

Figure 87 – Share of expected (based on 2018 and 2019 data) regular mixed surgical hospital activities that was maintained, regions



Confidence intervals are given by the dotted lines.
Source: Audit Ziekenhuizen RIZIV – FOD Volksgezondheid – FAGG / Audit Hôpitaux INAMI – SPF Santé Publique – AFMPS

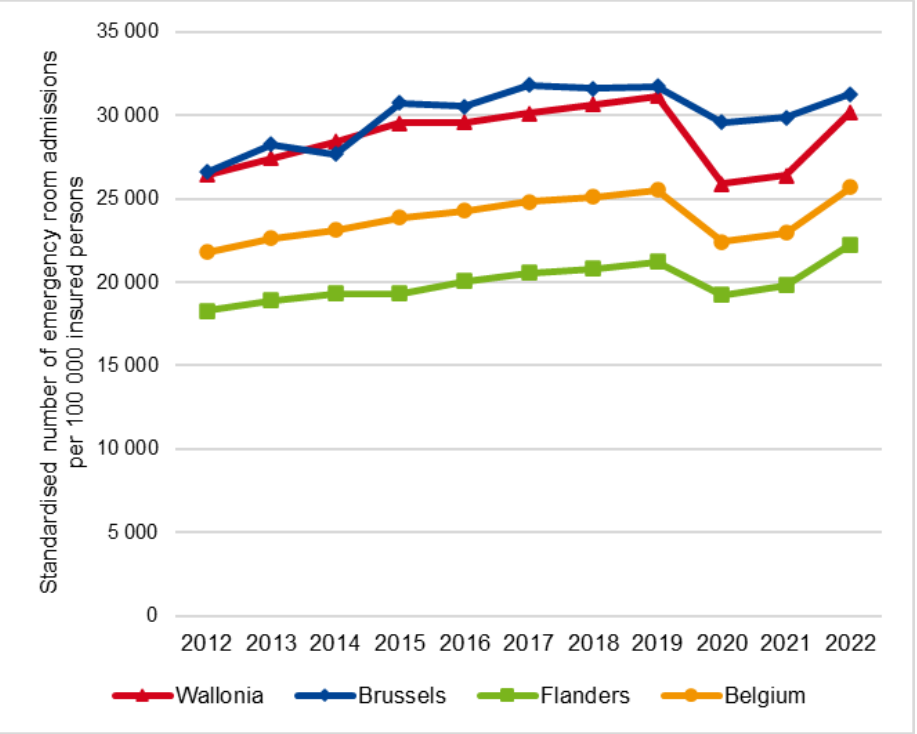
Emergency room admissions – Belgium

Figure 88 shows the evolution of the (standardised) number of emergency room admissions per 100 000 insured persons between 2012 and 2022. While an upward trend is globally observed a disruption appears in 2020. Overall, the average annual growth rate was 1.65% between 2012 and 2022, but was 2.27% during the period 2012-2019 and only 0.24% during the period 2020-2022. Also for emergency room admissions, a decrease of activity due to the pandemic is observed, followed by a catch-up effect. In 2020 and 2021, the standardised number of emergency room admissions per 100 000 insured persons was below its 2019 level, and only in 2022 it reached its 2019 level.

Emergency room admissions – Regional comparison

Figure 88 also shows the evolution of the (standardised) number of emergency room admissions per 100 000 insured persons in the three regions of the country. It can be seen that the evolution was similar in Flanders and Wallonia (upward trend with a disruption in 2020), although the disruption was more marked in Wallonia than in Flanders. In Brussels, both the upward trend before 2020 and the disruption in 2020 were less marked.

Figure 88 – Standardised number of emergency room admissions per 100 000 insured persons



Source: RIZIV – INAMI

Admissions in psychiatric hospital wards – Belgium

Compared to the monthly average number of admissions in psychiatric hospital wards in 2017-2019, the total number of new admissions was 29.7% lower in April 2020, which was driven by a decrease of 34.9% in full-time admissions and 20.2% in part-time admissions (see Table 22). This sharp decline in the number of admissions in psychiatric hospital wards during the first wave of COVID-19 pandemic was potentially due to the saturation of services, the absence of care staff, changes in criteria for psychiatric admissions and/or the population's fear of going to hospital.

In April 2021, the total number of admissions in psychiatric hospital wards was 2.1% lower than the 2017-2019 monthly average number of admissions, which consisted of a 3.6% decrease for full-time admissions and a 6.7% increase for part-time admissions.

Table 22 – Percentage changes (%) in the number of admissions in psychiatric hospital wards during and after the COVID-19 pandemic compared to 2017-2019

	Total admissions		Full-time admissions		Part-time admissions	
	2017-2019 vs 04/2020	2017-2019 vs 04/2021	2017-2019 vs 04/2020	2017-2019 vs 04/2021	2017-2019 vs 04/2020	2017-2019 vs 04/2021
Belgium	-29.7	-2.1	-34.9	-3.6	-20.2	6.7
Brussels	-25.0	16.9	-24.5	10.9	-27.2	45.9
Flanders	-2.9	-7.2	-0.7	-8.4	-16.9	1.0
Wallonia	-43.9	1.8	-48.2	1.7	-23.1	2.4

Figure 89 – Trends in the total number of admissions in psychiatric hospital wards between 2017 and 2021, by region

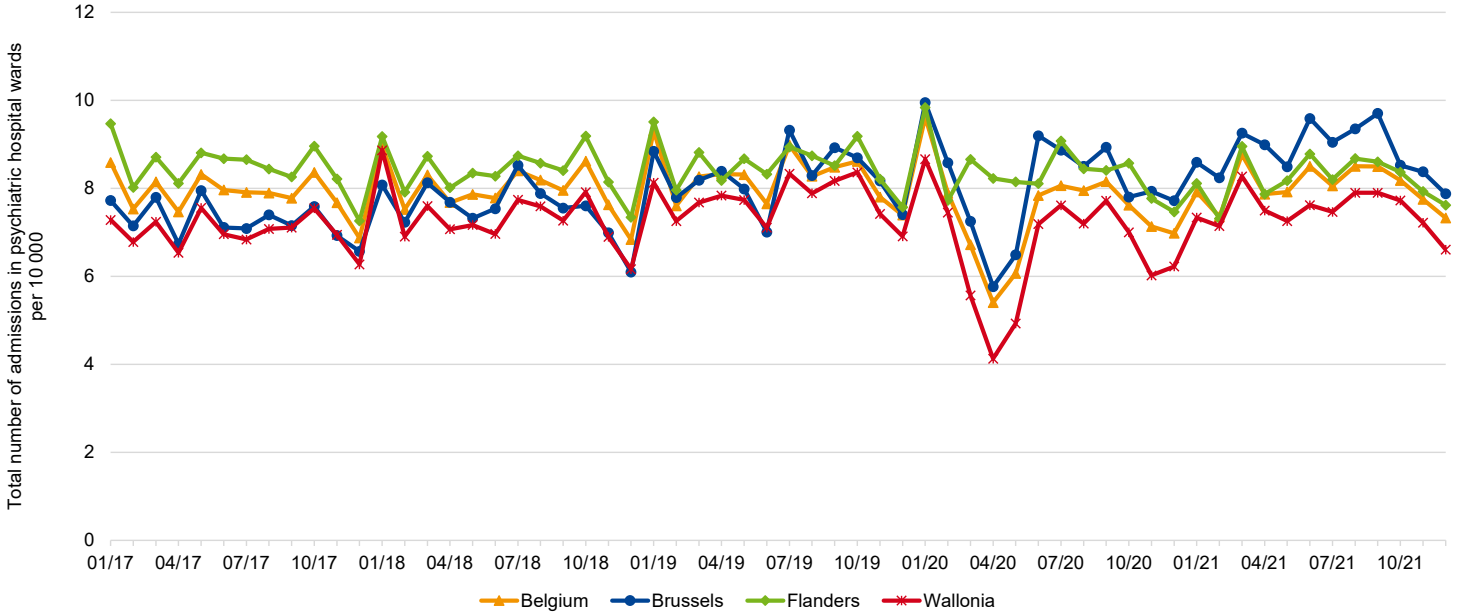


Figure 90 – Trends in the number of full-time admissions in psychiatric hospital wards between 2017 and 2021, by region

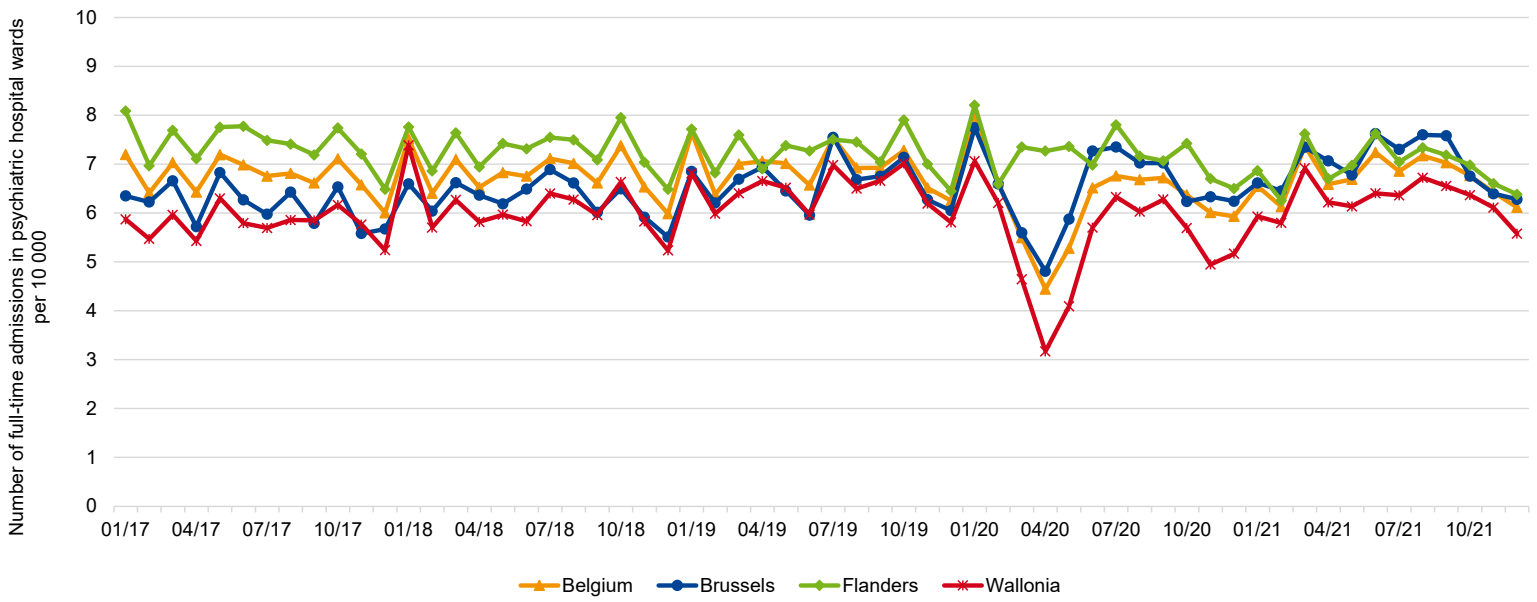
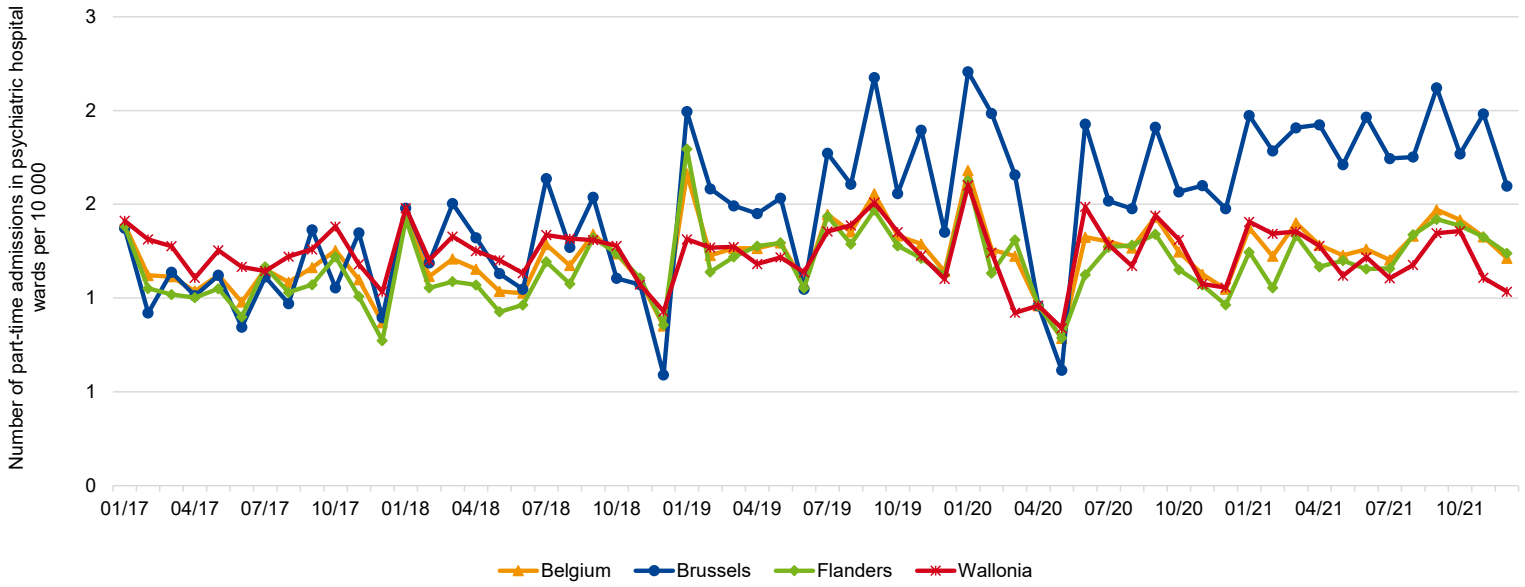


Figure 91 – Trends in the number of part-time admissions in psychiatric hospital wards between 2017 and 2021, by region



Admissions in psychiatric hospital wards – Regional comparison

The total number of admissions in psychiatric hospital wards declined in all regions in April 2020 compared to the monthly average in 2017-2019, but to different degrees. The decrease was highest in Wallonia (-43.9%), then Brussels (-25.0%) and Flanders (-2.9%) (see Figure 89). The smaller decrease in psychiatric admissions in Flanders might be related to the fact that Flemish hospitals implemented alternative stays very quickly (e.g. part-time stay of 3 hours instead of 7 hours, hospital at home and digital follow-up). In Brussels and Flanders, the decrease in the number of part-time admissions was higher than the decrease in the number of full-time admissions (see Figure 90 and Figure 91).

In April 2021, the total number of admissions in Brussels and Wallonia was higher than the 2017-2019 monthly average (+16.9% and +1.8%, respectively), indicating signs of recovery after the large reductions in admissions in April 2020. In Flanders, the total number of admissions remained 7.2% lower than the 2017-2019 monthly average, which was due to a lower number of full-time admissions. The number of part-time admissions increased in all regions and especially in Brussels (+45.9%).

Key points

- **In April 2020, 5.7% of non-essential hospital surgical activities were maintained, 29.8% of mixed activities (that can be essential or not depending on the context) and 56.9% of essential activities. This means that, although considered essential, almost half of these surgical activities were suspended in April 2020. These decreases were slightly less marked in Flanders than in the other regions.**
- **A second drop was observed in November 2020 but was less important. During this second wave, 32.8% of non-essential hospital surgical activities, 55.0% of mixed activities and 76.8% of essential activities were maintained.**
- **In 2021 and 2022, variations were much less marked. A minimum of 86.3% of non-essential hospital surgical activities were maintained, 82.3% of mixed activities and 88.0% of essential activities. In Brussels, overall, a larger share of non-essential activities was maintained than in the other regions.**
- **For a selection of urgent hospital care, a large decrease in expenditure was observed in April 2020 compared to April 2019 (stroke: -16.4%, infarcts: -40.6%, cardiac arrhythmias: -59.4%). After that, expenditures went back to a level close to the 2019 level.**
- **For a selection of non-urgent hospital care, a large decrease in expenditures was observed in April 2020 compared to April 2019 (sleep studies: -98.8%, sterilisations: -98.6%) and again in November 2020 compared to November 2019. After that expenditures went back to a level close to the 2019 level.**
- **The standardised number of emergency room admissions per 100 000 insured persons followed a upward trend between 2012 and 2022, with a disruption (more marked in Wallonia than in Flanders) in 2020. In Brussels, both the upward trend before 2020 and the disruption in 2020 were less marked.**
- **In April 2020, the total number of new admissions in psychiatric hospital wards was 29.7% lower than the 2017-2019 monthly average. The decrease in the total number of admissions was higher in Wallonia (-43.9%) than in Brussels (-25.0%) and Flanders (-2.9%).**
- **In April 2021, the total number of admissions in psychiatric hospital wards was 2.1% lower than the 2017-2019 monthly average, illustrating potential signs of recovery in admissions following the first waves of the COVID-19 pandemic. The total number of admissions in April 2021 was higher than the 2017-2019 monthly average in Brussels (+16.9%) and Wallonia (+1.8%), and lower in Flanders (-7.2%).**

References

1. RIZIV-INAMI. Monitoring COVID-19. L'impact de la COVID-19 sur le remboursement des soins de santé. Rapport 2021. Update Février 2022. 2022. Available from: https://www.inami.fgov.be/SiteCollectionDocuments/monitoring_COVID19_update_fevrier_2022.pdf
2. De Wolf F. Statistiques COVID19. Admissions hôpitaux. 2022 20 August 2022. Available from: https://aim-ima.be/IMG/pdf/ima-covid19-admissions_hopitaux-202206b.pdf
3. Van de Voorde C, Lefèvre M, Mistiaen P, Detollenaere J, Kohn L, Van den Heede K. Assessing the management of hospital surge capacity in the first wave of the COVID-19 pandemic in Belgium. Brussels: Belgian Health Care Knowledge Centre (KCE); 2020 12/2020. KCE Reports 335 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_335_Surge_capacity_during_COVID-19_Belgium_Report.pdf
4. RIZIV - INAMI, FOD - SPF, FAGG - AFMPS. Rapport de synthèse COVID-19. Volet 1: Recul des soins médicaux (données jusqu'à mai 2022 inclus). Audit des Hôpitaux. 2022. Available from: https://www.inami.fgov.be/fr/themes/qualite-soins/Pages/Covid5L2FR/Covid5L2FR.html

5. RIZIV-INAMI. Améliorer la surveillance des hôpitaux, pour améliorer l'efficacité des soins [Web page]. [cited July 2023]. Available from: https://www.riziv.fgov.be/fr/themes/qualite-soins/Pages/ameliorer-surveillance-hopitaux-efficacite-soins.aspx

6. Bonello F, Zammit D, Grech A, Camilleri V, Cremona R. Effect of COVID-19 pandemic on mental health hospital admissions: comparative population-based study. BJPsych Open. 2021;7(5):e141.

7. Rodrigues CA, Rodrigues N, Nascimento M, Oliveira-Silva J. Patterns of adult and youth inpatient admissions before and after the COVID-19 pandemic in a psychiatric ward: an observational study. BMC Health Services Research. 2022;22(1):1048.

8. Dionisie V, Ciobanu AM, Moisa E, Manea MC, Puiu MG. The Impact of the COVID-19 Pandemic on Inpatient Admissions for Psychotic and Affective Disorders: The Experience of a Large Psychiatric Teaching Hospital in Romania. Healthcare (Basel). 2022;10(8).

9. Clerici M, Durbano F, Spinogatti F, Vita A, de Girolamo G, Micciolo R. Psychiatric hospitalization rates in Italy before and during COVID-19: did they change? An analysis of register data. Irish Journal of Psychological Medicine. 2020;37(4):283-90.

10. SPF santé publique - Sécurité de la chaine alimentaire et Environnement. Activité de soins au sein des établissement psychiatriques en 2020. Bruxelles: 2020.

11. American College of Surgeons. COVID-19: Guidance for Triage of Non-Emergent Surgical Procedures. 2020. Available from: https://www.facs.org/for-medical-professionals/covid-19/clinical-guidance/triage/

12. NSW Health. Emergency Surgery Guidelines. 2009. Available from: https://www1.health.nsw.gov.au/pds/ArchivePDSDocuments/GL2009_009.pdf

13. Al-Omar K, Bakkar S, Khasawneh L, Donatini G, Miccoli P. Resuming elective surgery in the time of COVID-19: a safe and comprehensive strategy. Updates in surgery. 2020;72:291-5.

14. Stahel PF. How to risk-stratify elective surgery during the COVID-19 pandemic? : BioMed Central; 2020. p. 1-4.

15. VBS-GBS. Liste des degrés d'urgence par spécialité. 2020. Available from: https://www.vbs-gbs.org/index.php?id=covid-19&l=608&L=0

16. Ellen ME, Wilson MG, Vélez M, Shach R, Lavis JN, Grimshaw JM, et al. Addressing overuse of health services in health systems: a critical interpretive synthesis. Health research policy and systems. 2018;16:1-14.

17. Brownlee S, Chalkidou K, Doust J, Elshaug AG, Glasziou P, Heath I, et al. Evidence for overuse of medical services around the world. The Lancet. 2017;390(10090):156-68.

3.5 Number of new invasive cancer diagnoses (R-5)

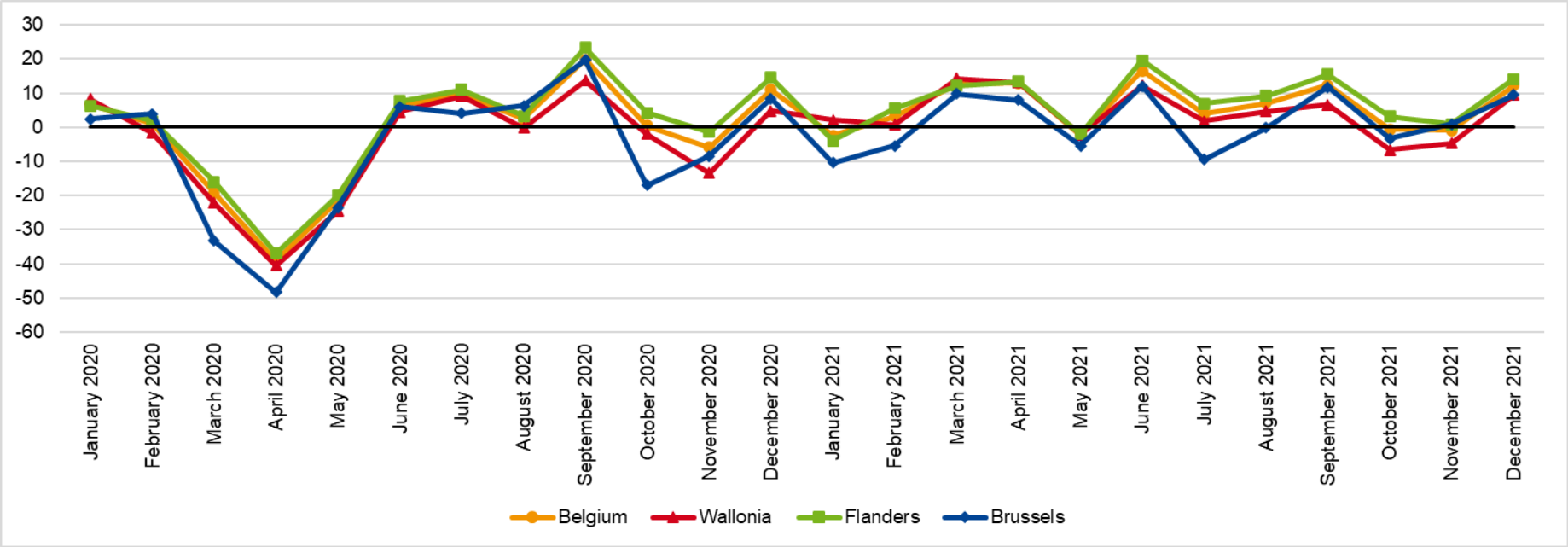
3.5.1 Documentation sheet

Description	Percentage of change in the number of new invasive cancer diagnoses during 2020-2021 compared to pre-COVID period.
Calculation	Percentage of change in new invasive cancer diagnoses per month, from January 2020 to December 2021 relative to the same month in 2017-2019. For each month of the year, the mean number of new cancer diagnoses of the respective months during the period 2017-2019 was calculated. Then, the ratio was calculated between the observed number of new diagnoses in each month of 2020-2021 and the respective monthly mean of 2017-2019. This ratio was multiplied by 100 to have a % of new cancers diagnosed in 2020-2021 compared to the reference period 2017-2019, by month. Then 100 was subtracted from this value to have a % of change of new cancer diagnoses in 2020-2021 compared to the reference period. Results are presented for Belgium, and for each Region separately (based on the patient's official residency at the time of diagnose). New cancer diagnoses are identified from the Belgian Cancer Registry's incidence database, that contains data from the obligatory registration by oncological care programmes in the hospitals as well as from laboratories for pathological anatomy. Analyses include all invasive cancers together, excluding non-melanoma skin cancer (incomplete registration because non-melanoma of the skin are rarely life-threatening and may also be managed outside the hospital context). In addition, results are presented separately for a selection of tumour types.
Rationale	The first wave of the COVID-19 pandemic forced the Belgian hospitals to free up space to prepare for the surge of COVID patients. Belgian hospitals were instructed to stop all elective consultations, investigations and procedures by 14 March 2020.[1] In addition, organised population screening programmes for female breast cancer, cervical cancer, and colorectal cancer were suspended in the week of 16 March 2020.[2] Regular hospital care could be resumed in a stepwise manner starting 4 May 2020, organised population screening programmes resumed mid-May 2020.[1,2] Thanks to the data from the laboratories for pathological anatomy (for which the delivery of data was accelerated due to the crisis), the Belgian Cancer Registry was rapidly able to estimate the newly diagnosed cancers during the COVID-19 pandemic, and compare the incidence to what was expected based on the previous incidence year 2019.[2] An important decrease in the absolute number of new cancer diagnoses was documented during the first wave of the pandemic. Similar results have been documented in other European countries, for instance in Denmark and in The Netherlands.[3, 4] The delayed diagnoses are expected to impact the stage of the cancer at the time of diagnosis and therefore also the prognosis.[5-7] This might increase the burden for both patients and the healthcare system, particularly the cancers that progress more rapidly to a higher stage. These more advanced cancers, harbouring a worse prognosis, may require more extensive treatment, more paramedical care, more psychological guidance, etc.
Data source	Belgian Cancer Registry
Technical definitions	Incidence years: 2017-2021 (of which 2017-2019 as reference period). The incidence date is defined as the date of first microscopic confirmation of malignancy, and if not available, the incidence date is determined in decreasing priority by 1) first hospitalisation for cancer, 2) first consultation because of malignancy, 3) initial clinical or technical diagnosis, 4) start of treatment for cancer and 5) death. Tumour type selection: ICD-10 C00-C43; C45-C96. Specific analyses for some tumour types: Thyroid (C73), Central Nervous System (C70-C72), Stomach (C16), Colorectal (C18-C20), Haematological malignancies (selection based on ICD-O-3 classification available upon request), Sarcomas (selection based on ICD-O-3 classification available upon request), Melanoma of the skin (C43), Breast (women) (C50), Lung (C34), Testis (C62), Ovary (C56).

	Exclusion criterion: patients without a Belgian residence at time of diagnosis. When a patient was included in an organ specific location and within the “sarcoma” group, the patient was excluded from the sarcoma group. New cancer diagnoses are identified from data from laboratories for pathological anatomy and from oncological care programmes in the hospitals. This differs from the study of Peacock et al. (2021) that used accelerated delivery of data from laboratories for pathological anatomy only.[2]
International comparability	This indicator is not included in standardised international indicator sets, but anecdotal evidence from other countries is presented.
Limitations	The analysis of the percentage of change in the number of new invasive cancer diagnoses compared to pre-COVID period does not allow to identify at which point the effect of the “missing” diagnoses has been recovered. In particular, an increase in the number of new invasive cancer diagnoses that follows a similar decrease does not necessarily compensate for the decrease. Indeed, first there is no way to identify if the new diagnoses concern the same persons whose diagnoses were “missing”. Second, even if the new diagnoses indeed concern persons whose diagnoses were “missing”, the delays in the diagnose are expected to impact the stage of the cancer at the time of diagnosis and therefore also the prognosis. More recent information (after December 2021) is not yet available. Data on the stage of the cancer were not included.
Dimension	Resilience
Related indicators	P-6 Breast cancer screening (% women aged 50-69); P-7 Breast cancer screening – organised programme (% women aged 50-69); P-8 Cervical cancer screening (% women aged 20-69 years); P-9 Colorectal cancer screening (% pop aged 50-74 years)
Reviewers	Cindy De Gendt (Belgian Cancer Registry); Julie Verbeeck (Belgian Cancer Registry)

3.5.2 Results

Figure 92 – Percentage of change in the number of new invasive cancer diagnoses during 2020-2021 compared to 2017-2019, Belgium and regions



Belgium

Figure 92 shows the percentage of change in the number of new invasive cancer diagnoses per month from January 2020 to December 2021, compared to the average of the same month in 2017-2019. In Belgium, in March 2020, the number of new invasive cancer diagnoses was 19.3% lower than the average of March 2017-2019. This corresponds to a number of 1 222 “missing” cancer diagnoses in March 2020.

In April 2020, the number of new invasive cancer diagnoses was 39.0% lower than the average of April 2017-2019, corresponding to 2 181 cancer diagnoses. In May 2020, the number of diagnoses increased compared to April, but it was still lower (by 21.7%) than in May 2017-2019.

Only in June 2020, the number of new invasive cancer diagnoses reached back its level of 2017-2019. In September 2020, it was higher (by 19.9%) than its level of 2017-2019. After that, the number of new invasive cancer diagnoses decreased and increased following COVID-19 waves, but remained within the range -5.8%; +16.6% compared to its level of 2017-2019.

Regional comparison

On Figure 92, it can be seen that the percentage of change in the number of new invasive cancer diagnoses followed a similar trend in the three regions of the country. However, the decreases were stronger in Brussels than in the other regions. In particular, in April 2020, the number of new diagnoses was 48.3% smaller than in April 2017-2019 (compared to 40.6% in Wallonia and 36.8% in Flanders). Also in October 2020, the number of new diagnoses in Brussels was 17.1% smaller than its average level of October 2017-2019. During the same period, this number was only 2.0% below its average 2017-2019 level in Wallonia, and was 4.1% above its average 2017-2019 level in Flanders. These strong reductions in Brussels were not compensated by larger increases in other periods.

International comparison

Similar results were also evidenced in other countries. In the Netherlands, the number of cancer diagnoses per week after the start of the pandemic was compared to the average weekly number of cancer diagnoses the first weeks of 2020.[3, 4] It was estimated that in the week of 30 March 2020, the number of cancer diagnoses (excluding skin cancers) was 75% of its pre-pandemic level. A more important effect was noted for skin cancer (excluding basal cell carcinoma) (39% of its pre-pandemic level). In Demark, reduction in new cancer diagnoses of 19% was observed in April 2020 compared to April 2019. The reduction was 23% in May 2020 compared to May 2019 and a slight increase of 9% was observed in December 2020 compared to December 2019.[3, 4] In one large hospital group in France (Paris), it was estimated that new cancer cases were 33% lower in March-May 2020 than in 2018-2019 and 19% lower in June-September 2020.[8] In the United States, a study including 278 778 patients (including 20 180 during the COVID-19 period), found a decrease in the weekly number of newly identified patients of 46.4% for six cancer types combined (breast cancer, colorectal cancer, lung cancer, pancreatic cancer, gastric cancer, and oesophageal cancer), ranging from 24.7% for pancreatic cancer to 51.8% for breast cancer.[9] In Northern Ireland, the number of pathology samples indicating cancer in 2020 fell by 21% compared to the annual average in 2017-2019.[10] The strongest decrease was observed during the week of 18 April 2020.

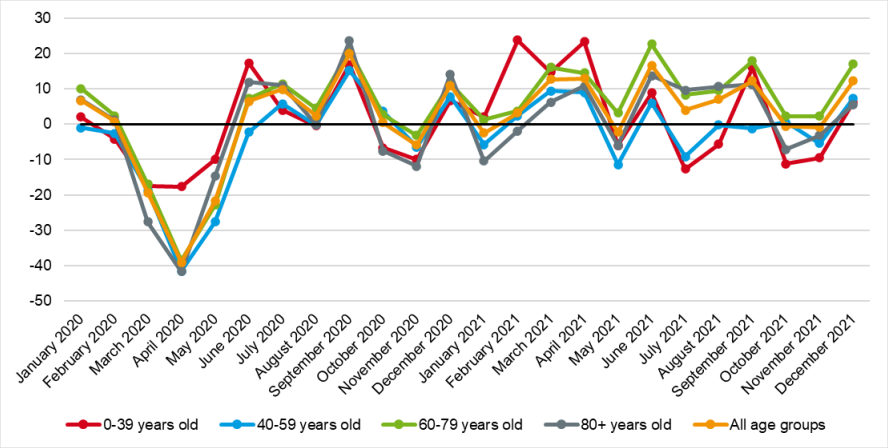
Analysis by age group

When analysed by age group (Figure 93), it can be seen that in April 2020 a stronger decrease was observed for persons aged 40 and above compared to the group of 0-39 years old.

In October-November 2020 however, the decrease was relatively stronger for the youngest group (0-39 years old) and the oldest group (80 years old or more). This was compensated by larger increases in February-April 2021 for the youngest group, but not for the oldest.

From December 2020 onwards, the number of cancer diagnoses for persons aged 60-79 years old was systematically above its 2017-2019 level. This was not the case for other age groups. In particular, the number of cancer diagnoses for persons aged 40-59 years old was repeatedly below its 2017-2019 level.

Figure 93 – Percentage of change in the number of new invasive cancer diagnoses during 2020-2021 compared to 2017-2019, by age groups



Analysis by type of cancer

Figure 94 to Figure 104 show the percentage of change in the number of new diagnoses for specific types of cancer (compared to all types of cancers as in Figure 92). Most cancers follow the same evolution over time, however some differences appear.

The number of new thyroid cancer diagnoses (Figure 94) dropped by 56.7% in April 2020 compared to April 2017-2019 (compared to a decrease of 39.0% when all types of cancer are considered). For colorectal cancer (Figure 97), this gap was 50.0%. Melanoma (Figure 100) and female breast cancer (Figure 101) diagnoses also decreased more in April 2020 than other cancer diagnoses: respectively -47.6% and -45.8% compared to the level of April 2017-2019. On the other hand, ovarian (Figure 104) and central nervous system (Figure 95) cancer diagnoses only decreased by respectively 16.3% and 16.5% compared to their level of April 2017-2019. The number of testicular cancer diagnoses (Figure 103) even increased by 10.1% in April 2020 compared to April 2017-2019. However, the latter should be interpreted with caution because it corresponds to a very small number of diagnoses (29 diagnoses in April 2020, compared to 26 on average in April 2017-2019).

Although during the second half of 2020, the number of other cancer diagnoses was close or above their 2017-2019 level, the number of thyroid cancer diagnoses (Figure 94) remained largely below its 2017-2019 level.

Figure 94 – Percentage of change in the number of new thyroid cancer diagnoses during 2020-2021 compared to 2017-2019

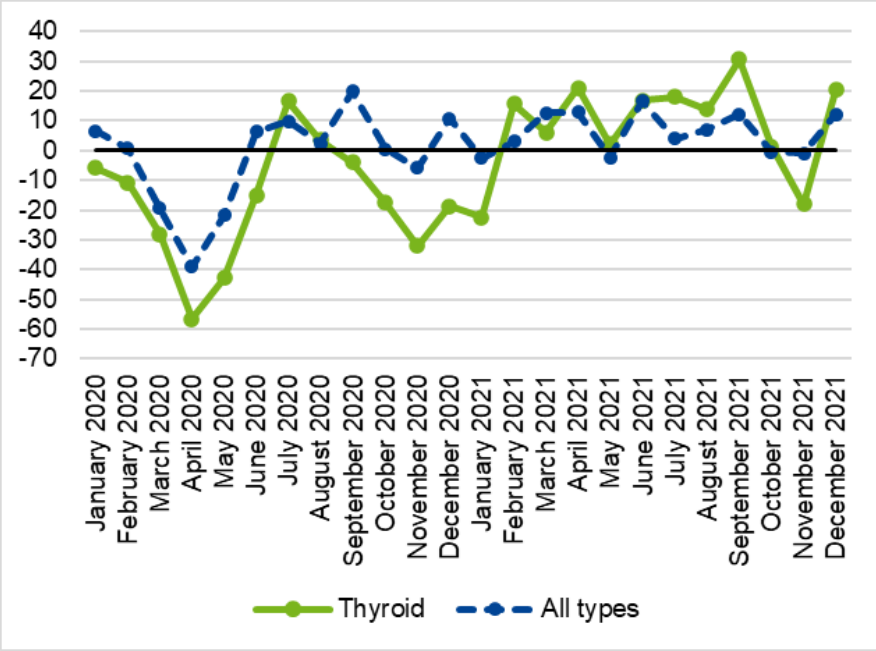


Figure 95 – Percentage of change in the number of new central nervous system cancer diagnoses during 2020-2021 compared to 2017-2019

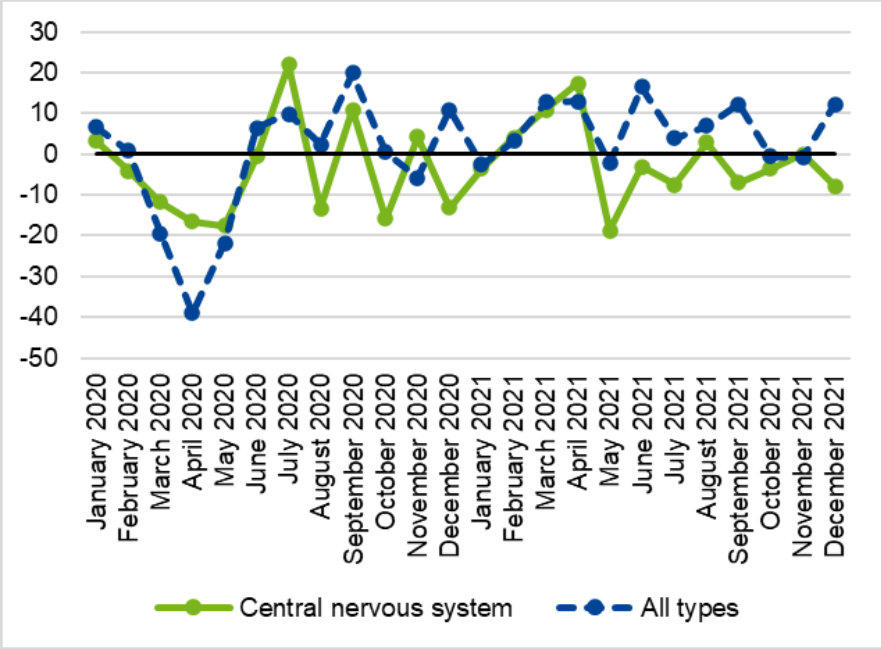


Figure 96 – Percentage of change in the number of new stomach cancer diagnoses during 2020-2021 compared to 2017-2019

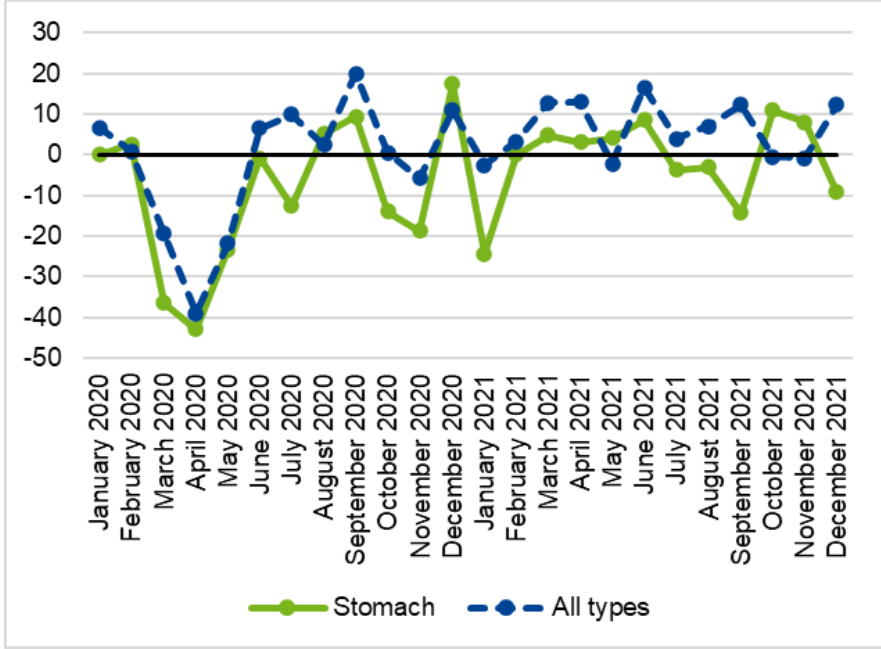


Figure 97 – Percentage of change in the number of new colorectal cancer diagnoses during 2020-2021 compared to 2017-2019

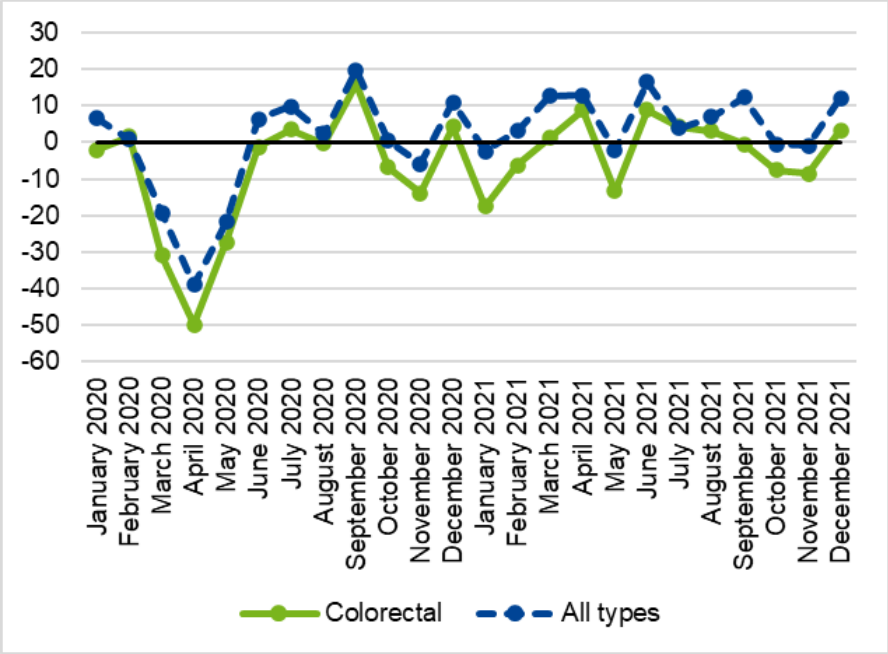


Figure 98 – Percentage of change in the number of new haematological malignancy diagnoses during 2020-2021 compared to 2017-2019

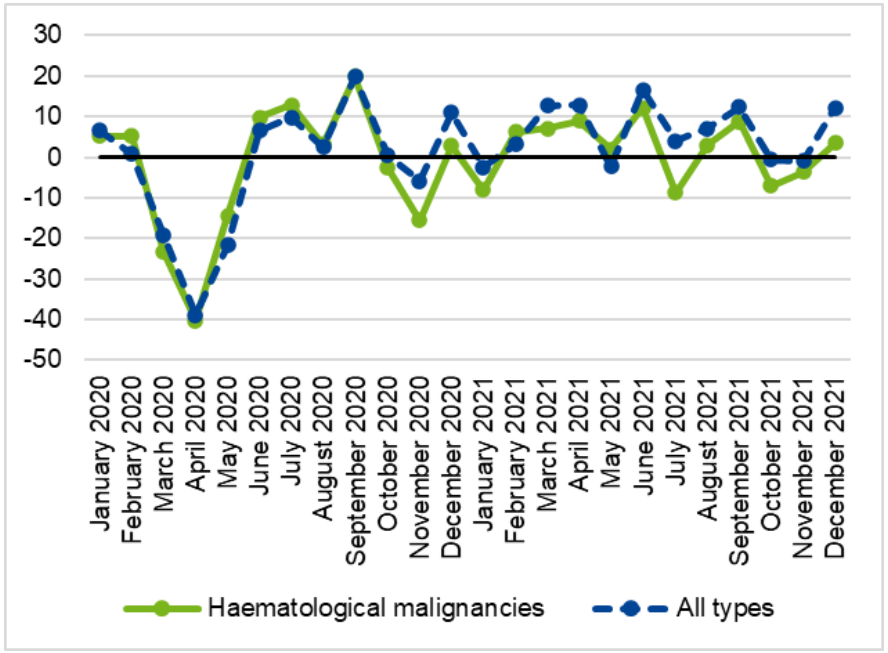


Figure 99 – Percentage of change in the number of new sarcoma cancer diagnoses during 2020-2021 compared to 2017-2019

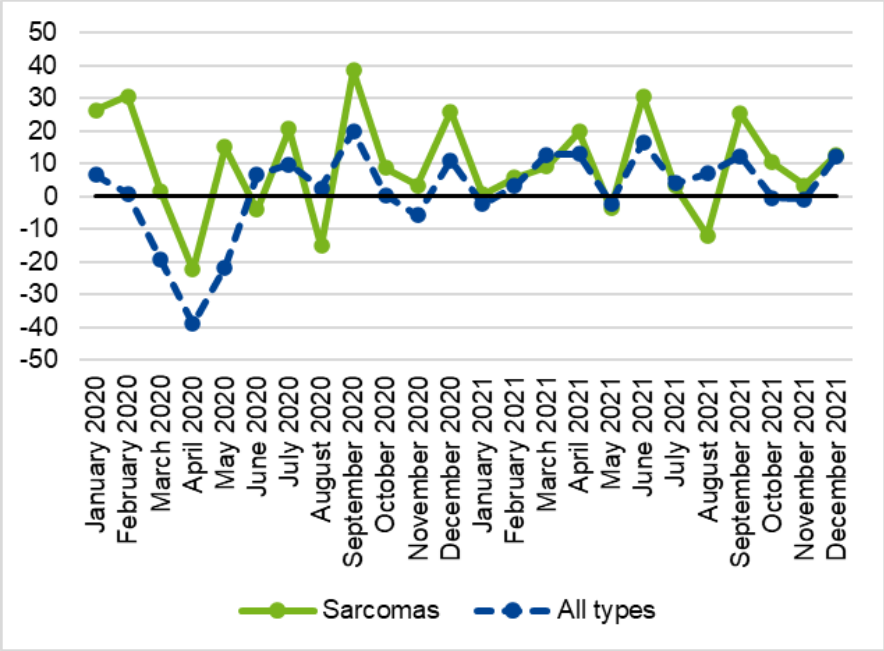


Figure 100 – Percentage of change in the number of new melanoma skin cancer diagnoses during 2020-2021 compared to 2017-2019

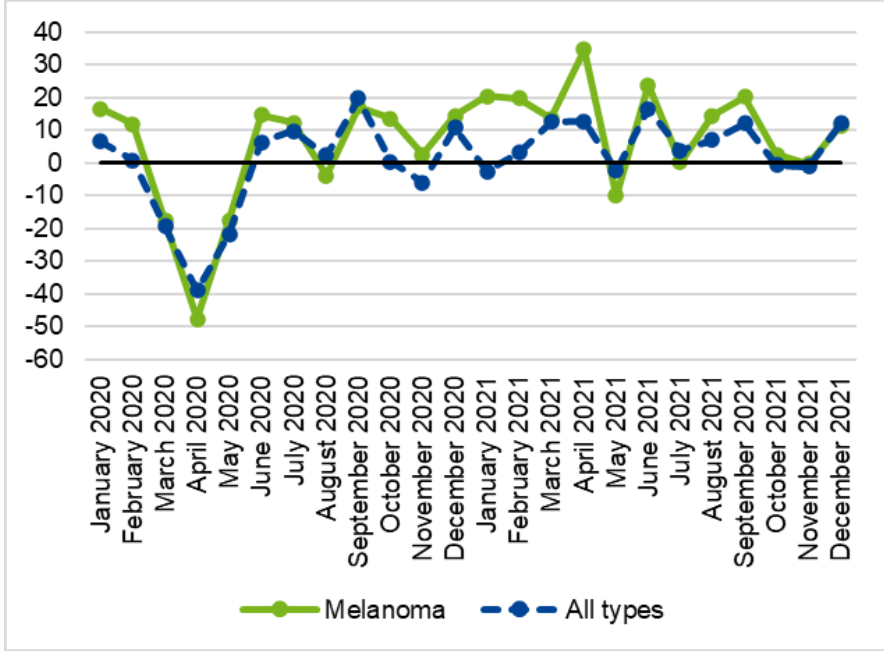


Figure 101 – Percentage of change in the number of new breast cancer diagnoses (women) during 2020-2021 compared to 2017-2019

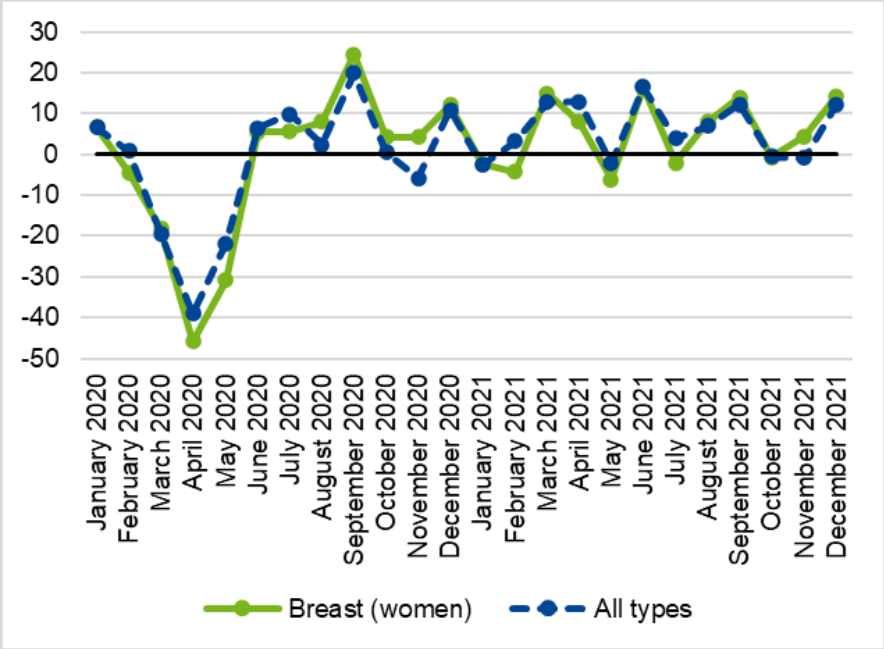


Figure 102 – Percentage of change in the number of new lung cancer diagnoses during 2020-2021 compared to 2017-2019

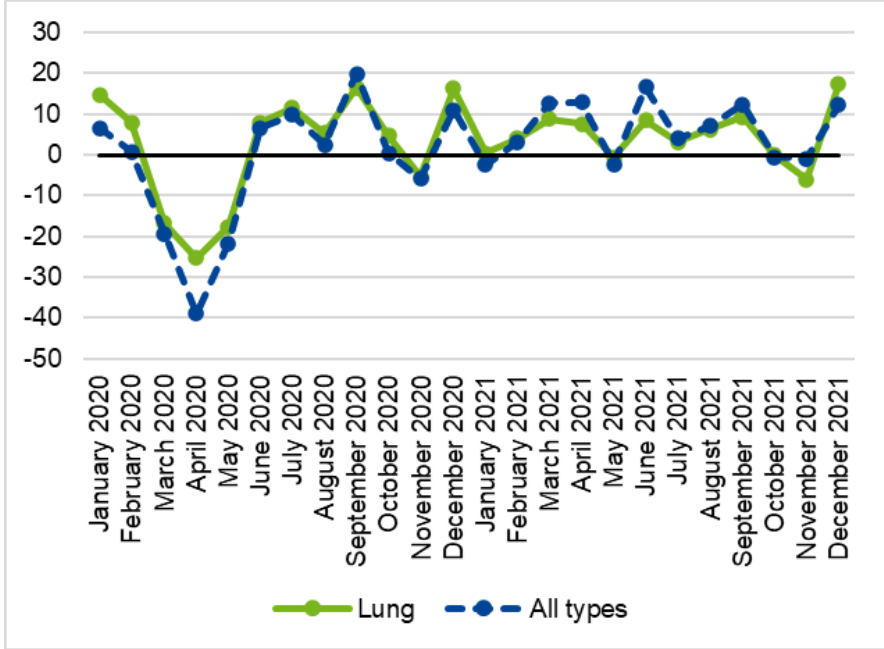


Figure 103 – Percentage of change in the number of new testicular cancer diagnoses during 2020-2021 compared to 2017-2019

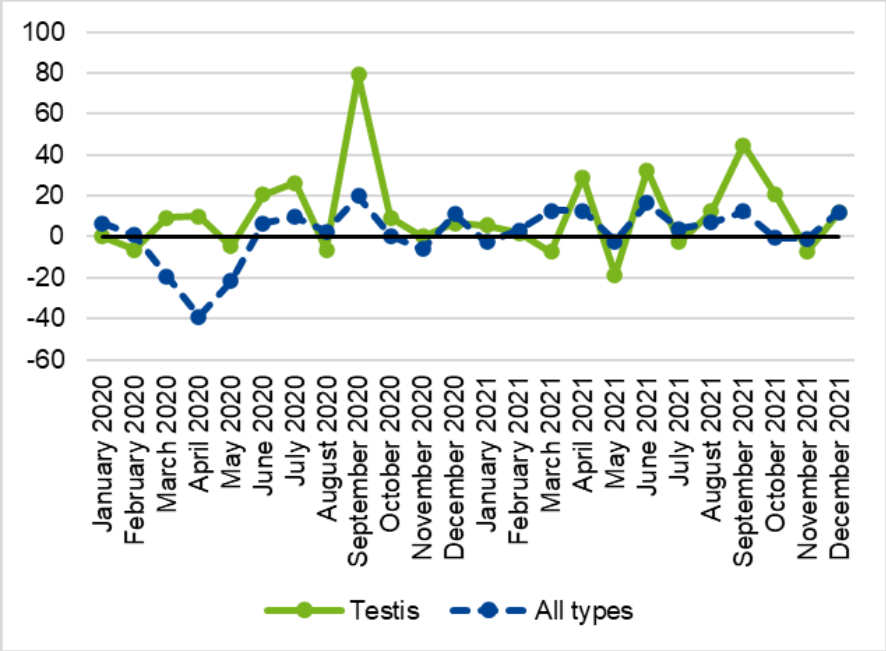
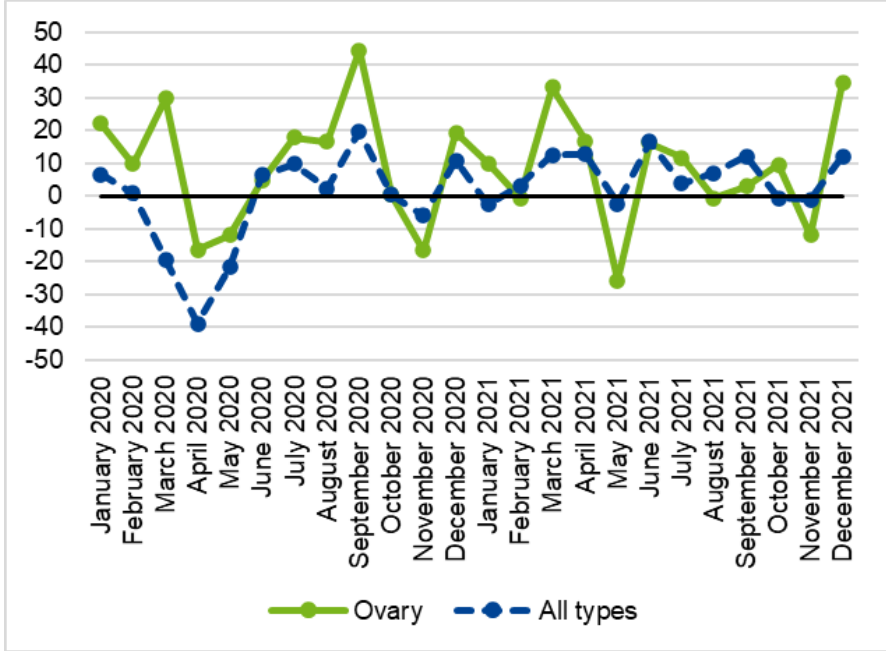


Figure 104 – Percentage of change in the number of new ovarian cancer diagnoses during 2020-2021 compared to 2017-2019



Key points

- **In Belgium, in March 2020, the number of new invasive cancer diagnoses was 19.3% lower than the average of March 2017-2019. This corresponds to a number of 1 222 "missing" cancer diagnoses in March 2020.**
- **In April 2020, the number of new invasive cancer diagnoses was 39.0% lower than the average of April 2017-2019, corresponding to 2 181 "missing" cancer diagnoses.**
- **In May 2020, the number of diagnoses increased compared to April, but it was still lower (by 21.7%) than in May 2017-2019, corresponding to 1 366 "missing" cancer diagnoses.**
- **In June 2020, the number of new invasive cancer diagnoses reached back its level of 2017-2019. In September 2020, it was higher (by 19.9%) than its level of 2017-2019. After that, it remained within the range -5.8%; +16.6% compared to its level of 2017-2019.**
- **The percentage of change in the number of new invasive cancer diagnoses followed a similar trend in the three regions of the country. However, the decreases were stronger in Brussels than in the other regions. This was not compensated by larger subsequent increases.**
- **The decrease in the number of new invasive cancer diagnoses that occurred in April 2020 was stronger for persons aged 40 and above compared to the group of 0-39 years old**
- **All types of cancer diagnoses followed similar trends, although some diffences appear. The decrease in the number of new invasive cancer diagnoses that occurred in April 2020 was stronger for thyroid cancer, colorectal cancer, melanoma of the skin and female breast cancer, compared to other types of cancers. The decrease was the smallest for testicular, ovarian and central nervous system cancer, compared to other types of cancer. Also, the number of thyroid cancer diagnoses remained low during the second half of 2020, while it was no longer the case of other types of cancer.**

References

1. Van de Voorde C, Lefèvre M, Mistiaen P, Detollenaere J, Kohn L, Van den Heede K. Assessing the management of hospital surge capacity in the first wave of the COVID-19 pandemic in Belgium. Brussels: Belgian Health Care Knowledge Centre (KCE); 2020 12/2020. KCE Reports 335 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_335_Surge_capacity_during_COVID-19_Belgium_Report.pdf
2. Peacock HM, Tambuyzer T, Verdoodt F, Calay F, Poirel HA, De Schutter H, et al. Decline and incomplete recovery in cancer diagnoses during the COVID-19 pandemic in Belgium: a year-long, population-level analysis. ESMO open. 2021;6(4):100197.
3. Skovlund CW, Friis S, Dehlendorff C, Nilbert MC, Mørch LS. Hidden morbidities: drop in cancer diagnoses during the COVID-19 pandemic in Denmark. Acta oncologica. 2021;60(1):20-3.
4. Dinmohamed AG, Visser O, Verhoeven RH, Louwman MW, Van Nederveen FH, Willems SM, et al. Fewer cancer diagnoses during the COVID-19 epidemic in the Netherlands. The Lancet Oncology. 2020;21(6):750-1.
5. Maringe C, Spicer J, Morris M, Purushotham A, Nolte E, Sullivan R, et al. The impact of the COVID-19 pandemic on cancer deaths due to delays in diagnosis in England, UK: a national, population-based, modelling study. The lancet oncology. 2020;21(8):1023-34.
6. Hanna TP, King WD, Thibodeau S, Jalink M, Paulin GA, Harvey-Jones E, et al. Mortality due to cancer treatment delay: systematic review and meta-analysis. bmj. 2020;371.
7. Richards M, Westcombe A, Love S, Littlejohns P, Ramirez A. Influence of delay on survival in patients with breast cancer: a systematic review. The Lancet. 1999;353(9159):1119-26.

8. Kempf E, Lamé G, Layese R, Priou S, Chatellier G, Chaieb H, et al. New cancer cases at the time of SARS-Cov2 pandemic and related public health policies: a persistent and concerning decrease long after the end of the national lockdown. European Journal of Cancer. 2021;150:260-7.

9. Kaufman HW, Chen Z, Niles J, Fesko Y. Changes in the number of US patients with newly identified cancer before and during the coronavirus disease 2019 (COVID-19) pandemic. JAMA network open. 2020;3(8):e2017267-e.

10. Northern Ireland Cancer Registry. Recent trends in the number of pathology samples indicating cancer in Northern Ireland. 2020. Available from: https://www.qub.ac.uk/research-centres/nicr/FileStore/PDF/Covid19/Filetoupload,986705,en.pdf

3.6 Hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60% (% of general hospitals with ICU licensed beds) (R-6)

3.6.1 Documentation sheet

Description	**Primary indicator** Share of hospitals with occupancy rate for COVID-19 patients in ICU (intensive care unit) licensed beds above 60% **Secondary indicators** Occupancy rate for COVID-19 patients in licensed ICU beds Occupancy rate for COVID-19 patients in open licensed ICU beds Occupancy rate for COVID-19 patients in operational COVID-19 ICU beds
Calculation	**Secondary indicators** Occupancy rate for COVID-19 patients in licensed ICU beds: numerator = number of COVID-19 patients hospitalised in ICU; denominator = number of licensed ICU beds. Occupancy rate for COVID-19 patients in open licensed ICU beds: numerator = number of COVID-19 patients hospitalised in ICU; denominator = number of licensed ICU beds – number of closed ICU beds due to staff absenteeism or force majeure. Occupancy rate for COVID-19 patients in operational COVID-19 ICU beds: numerator = number of COVID-19 patients hospitalised in ICU; denominator = number of COVID-19 patients hospitalised in ICU + number of available ICU beds for COVID-19 patients (available ICU beds for COVID patients can be licensed ICU beds (except closed ones) or surge ICU beds). **Primary indicator** Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%: numerator = number of hospitals where occupancy rate for COVID-19 patients in (open) licensed beds > 60%; denominator = number of general hospitals with ICU licensed beds.
Rationale	Intensive care resources faced enormous pressure during the pandemic, resulting in some places in intensive care demand exceeding available supply.[1] Increasing occupancy rates in intensive care units have been associated with increasing mortality.[2] In response, many countries increased their ICU capacity, creating "surge" capacity. From mid-March 2020, all Belgian hospitals were urged to create extra bed capacity ("surge capacity"), notably in ICU units. In particular, on 17 March 2020, hospitals were required to "do everything possible to create extra capacity in ICU".[3] On 1 April 2020, hospitals registered a maximum total of 1 182 extra ICU beds, on top of the 1 993 licensed ICU beds, increasing total capacity by almost 60%. Later on, more concrete instructions were given regarding required number of surge beds, depending on the stage of the pandemic. For instance from 17 June 2020, hospital were required to create 15% extra capacity in the so-called phase 2A and an additional 25% in phase 2B. Belgium has been praised for its ability to quickly increase its beds capacity.[4, 5] However, it was rapidly noted that the increase in ICU bed capacity was difficult to manage due to a lack of nurses with ICU expertise.[6-8] An analysis of in-hospital mortality of COVID-19 patients treated in ICU in Belgium during the first wave has shown evidence that the "ICU overflow" (when the number of ICU beds occupied by COVID-19 patients exceeds the number of licensed ICU beds reserved for COVID-19 patients) was an explanatory variable of in-hospital mortality of COVID-19 patients.[9] From 30 September 2020, hospitals have been encouraged to search for a better distribution of COVID-19 patients between hospitals, rather than using extra ICU bed capacity.[8] The Patient Evacuation Coordination Center (PECC) was also mandated to help hospitals in the distribution of COVID-19 patients.[10] However, hospitals faced many challenges in organising

	interhospital transport, both within and outside the province or region, and no data are available on the number of inter-hospital transports via the PECC.[8, 11] Occupancy rate in ICU beds in Belgium is used here as a secondary indicator to give an indication of Belgium's ability to absorb the surge of COVID-19 patients (i.e. the ability to manage inflow of patients, keep occupancy rates under control and to limit overflows). However, an analysis at the national level does not allow to identify whether some hospitals were overloaded while others still had free capacity. Therefore, the principal indicator measures occupancy rates at the hospital level in order to capture variation between hospitals and provide insights on whether patients were distributed in a way that reduced mortality risks associated with overflow. The principal indicator is defined as the share of hospitals with a high occupancy rate for COVID-19 patients in ICU licensed beds. Indeed, although national occupancy rate could stay high, a better distribution of patients across hospitals will lead to a reduction in the share of "overflowed" hospitals. As reliable data on non-COVID-19 patients in ICU are not yet available, we follow Taccone et al. (2021)[9] and divide the number of COVID-19 patients by the number of licensed ICU beds reserved for COVID-19 patients that was set in March 2020 at 60% of the total number of licensed ICU beds.
Data source	FPS Public Health (Incident Crisis Management System (ICMS))[12] and Sciensano (Hospital Surge Capacity Survey)[13]
Technical definitions	Number of COVID-19 patients hospitalised in ICU: COVID-19 patients in ICU include both confirmed COVID-19 patients in ICU and suspected COVID-19 patients in ICU. Data are available from 20 March 2020 to 31 December 2022. Number of ICU closed beds: since October 2021, as part of the daily data registered in the context of surge capacity plans, hospitals must register the number of (ICU and non ICU) hospital beds that are "closed due to staff absenteeism or force majeure and not available for the hospitalisation of (COVID-19 or non COVID-19) patients". Data are available from 22 November 2021 to 31 December 2022. Number of operational COVID-19 ICU beds: number of COVID-19 patients hospitalised in ICU + number of available ICU beds for COVID-19 patients. Data are available from 20 March 2020 to 31 December 2022.
International comparability	No international comparison is available for the principal indicator. Based on a study by Berger et al. (2022)[4, 5], results on occupancy rates of COVID-19 patients in ICU during the first wave of the pandemic across Europe are presented.
Limitations	It is not possible to distinguish in the data the patients who are admitted in a surge ICU bed from those admitted in a licensed ICU beds. Similarly no information is available on the possible triage for admission in a licensed bed or a surge bed. Finally, no distinction can be made between different types of surge ICU beds, such as those created in general units, in operating rooms, or in former ICUs. A plausible assumption is that, at the hospital level, licensed beds were used in priority, so that surge beds were used only when all available licensed bed were occupied. However, no data are available on the number of non-COVID-19 patients admitted in an ICU bed, so that one cannot estimate when all licensed beds are occupied. We therefore defined an overflow as an occupancy rate for COVID-19 patients in licensed beds above 60%, because in the first Belgian Surge Capacity plans, 60% of licensed beds where reserved for COVID-19 patients. However, this cut-off is somewhat arbitrary. In order to keep occupancy rate under control, a strategy may have been not to admit COVID-19 patients in hospitals (or in ICU) although an admission was appropriate. The data do not allow to assess if COVID-19 patients that should have been admitted were refused. Five Belgian hospitals that may have admitted COVID-19 patients are not included in the analyses because they do not have licensed ICU beds. Since 28 June 2021, ICMS data are no longer registered on weekends and public holidays. The last available data were imputed to replace the missing data. Therefore, the occupancy rates are systematically the same on Friday, Saturday and Sunday. From 14 May 2022 to 14 September 2022, due to a cyber-attack, data are missing for all hospitals of one province. Consequently, the licensed beds of these hospitals were not taken into account in the overall calculations for the region and Belgium on these dates.
Dimension	Resilience

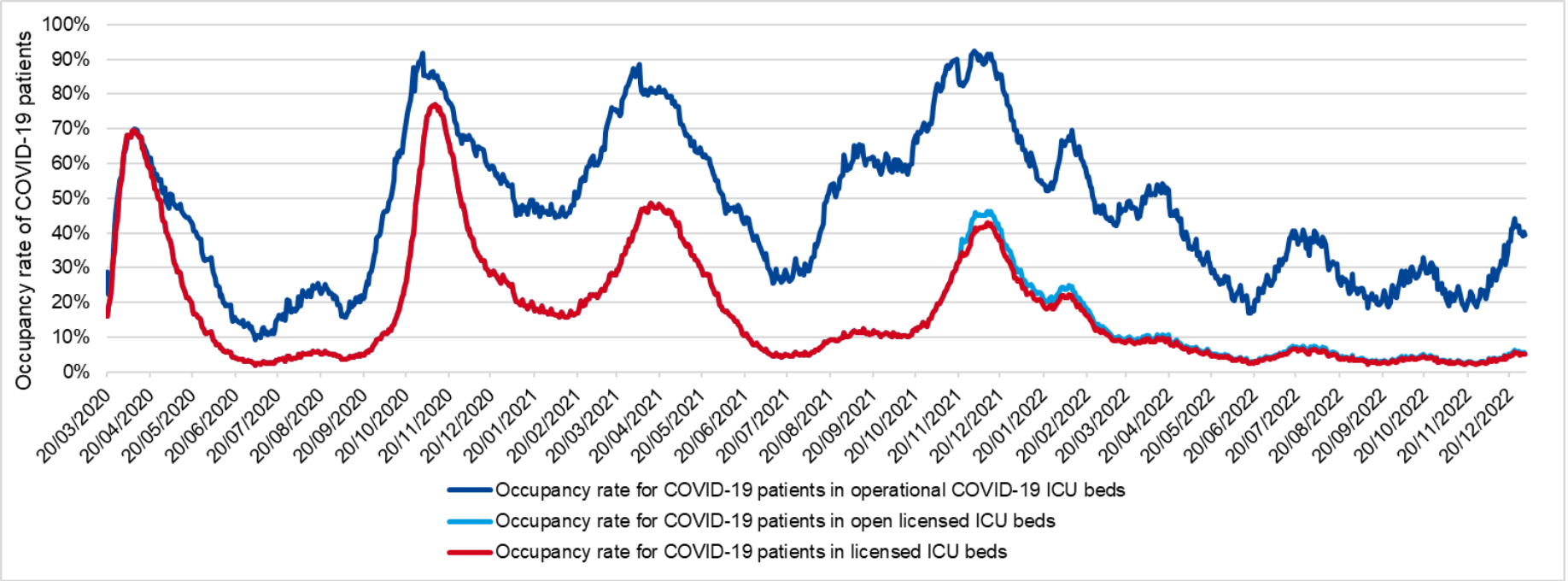
Related indicators	R-2 Number of hospital bed closures due to staff absenteeism or force majeure; R-4 Number of essential surgical hospital acts
Reviewers	Stijn De Kesel (FPS Public Health)

3.6.2 Results

Occupancy rates – Belgium

Figure 105 shows the evolution of the occupancy rate for COVID-19 patients in ICU beds in Belgium, according to different definitions of an ICU bed. The red line shows the occupancy rate for COVID-19 patients in licensed ICU beds. It can be seen that the occupancy rate in Belgium was very high during the two first waves of COVID-19. During the first wave, up to 69.7% of licensed ICU beds in Belgium were occupied by COVID-19 patients (on 8 April 2020). During the second wave, this rate reached 76.7% on 8 November 2020, meaning that only 23.3% of licensed ICU beds were available for non-COVID-19 patients. In the following COVID-19 waves, the occupancy rate of COVID-19 patients in licensed ICU beds increased again, but did not reach its previous maximum: it reached 46.8% on 7 April 2021 and 42.8% on 11 December 2021.

Figure 105 – Occupancy rate of COVID-19 patients in ICU beds, Belgium



From end November 2021 onwards, hospitals were asked to also register the number of ICU beds that were closed due to staff absences or force majeure and therefore not available for the treatment of patients. The light blue line on Figure 105 shows the evolution of the occupancy rate for COVID-19 patients in open licensed ICU beds in Belgium, that is in licensed ICU beds that are not closed as previously defined. Correcting for these closed beds does not largely affect the conclusions regarding the evolution of the occupancy rate for COVID-19 in licensed ICU beds.

In the daily data they register, hospitals must also register the number of ICU beds that are available for the treatment of COVID-19 patients. The number of operational COVID-19 ICU beds is calculated as the sum of occupied beds (i.e. the number of COVID-19 patients) and available beds. Contrarily to licensed ICU beds, the number of operational beds can change more frequently, depending on the number of licensed beds that are reserved for COVID-19 patients, the creation of surge ICU beds on top of the licensed ones, the intensity of non-COVID-19 hospital activity, etc. Contrarily to licensed ICU beds, these beds are dedicated to the treatment of COVID-19 patients only, therefore the occupancy rate in these beds does not provide any information on the availability of beds for non-COVID-19 patients. The dark blue line in Figure 105 shows that the occupancy rate for COVID-19 patients in operational COVID-19 ICU beds tended to follow the evolution of the COVID-19 waves. During the first wave it reached 70.0% on

8 April 2020. During the following waves, it reached 91.7% on 1 November 2020, 88.5% on 5 April 2021 and 92.4% on 1 December 2021.

The fact that the occupancy rate for COVID-19 patients in operational COVID-19 ICU beds approached 100% without reaching it shows the ability of the Belgian hospitals system to appropriately adapt its COVID-19 ICU capacity to the pandemic waves.

Occupancy rate – International comparison

In a country-level analysis comparing hospital capacity and utilisation during the first COVID-19 wave across Europe, Berger et al. (2022)[4, 5] showed that the occupancy rate for COVID-19 patients in ICU beds existing before the pandemic was above 100% in the Netherlands, Sweden, and the Lombardy region and close to 100% in Belgium and Italy. The shortage lasted approximately five weeks in Lombardy and Sweden and two weeks in the Netherlands. However, in all the countries studied, except in the Lombardy region, the surge capacity was sufficient to meet the increased demand.

Occupancy rates – Regional comparison

Figure 106 shows the evolution of the occupancy rate for COVID-19 patients in licensed ICU beds in the three regions of the country, compared to the national level (similar to the red line of Figure 105). Also at the regional level, the occupancy rate for COVID-19 patients in licensed ICU beds followed the COVID-19 waves and was higher during the first two waves than during the following waves.

Nevertheless, some regional differences appear. In particular, the occupancy rate for COVID-19 patients in licensed ICU beds was repeatedly higher in Brussels than in the other regions. During the first wave, it reached 86.9% in Brussels, compared to 67.6% in Wallonia and 68.8% in Flanders. Also, between waves, the occupancy rate for COVID-19 patients in licensed ICU beds remained higher than in the other regions.

Although the occupancy rates for COVID-19 patients in licensed ICU beds were quite similar in Wallonia and Flanders, during the second wave, this rate reached a maximum of 94.2% in Wallonia, compared to a maximum of 67.6% in Flanders and 79.2% in Brussels.

Figure 107 shows the evolution of the occupancy rate of COVID-19 patients in operational COVID-19 ICU beds in the three regions of the country, compared to the national level (similar to the dark blue line of Figure 105). The evolution over time is similar in Flanders and Wallonia although Wallonia often faced higher occupancy rates than Flanders. In Brussels, the evolution of occupancy rate for COVID-19 patients in operational COVID-19 ICU beds was different. In particular, the occupancy rate did not decrease as much as in the other regions during the first two waves. This occupancy rate was not inferior to 30% before July 2021 (this level was reached in other regions already in May 2020). Also, on several occasions in Brussels, the occupancy rate for COVID-19 patients in operational COVID-19 ICU beds reached 100%. This did not occur in the other regions.

Occupancy rates – Provincial comparison

Figure 108 and Figure 109 show the same occupancy rates as Figure 105 for each province. Due to the small number of ICU beds in some provinces (in particular Brabant Wallon and Luxembourg), the results must be interpreted with more caution. Overall, the evolution of occupancy rates of COVID-19 patients in ICU beds was similar in all the provinces. Nevertheless, some differences can be observed. In particular, in contrast to the trend at the national level, the occupancy rate of COVID-19 patients in operational COVID-19 ICU beds (dark blue line) reached 100% in several provinces. Also, while the correction for closed ICU beds (light blue line) did not play a large role at the national level, a larger impact was observed in some provinces (in particular in Vlaams Brabant and Luxembourg). This is also true for the region of Brussels (result not shown).

Figure 106 – Occupancy rate of COVID-19 patients in licensed ICU beds, Belgium and regions

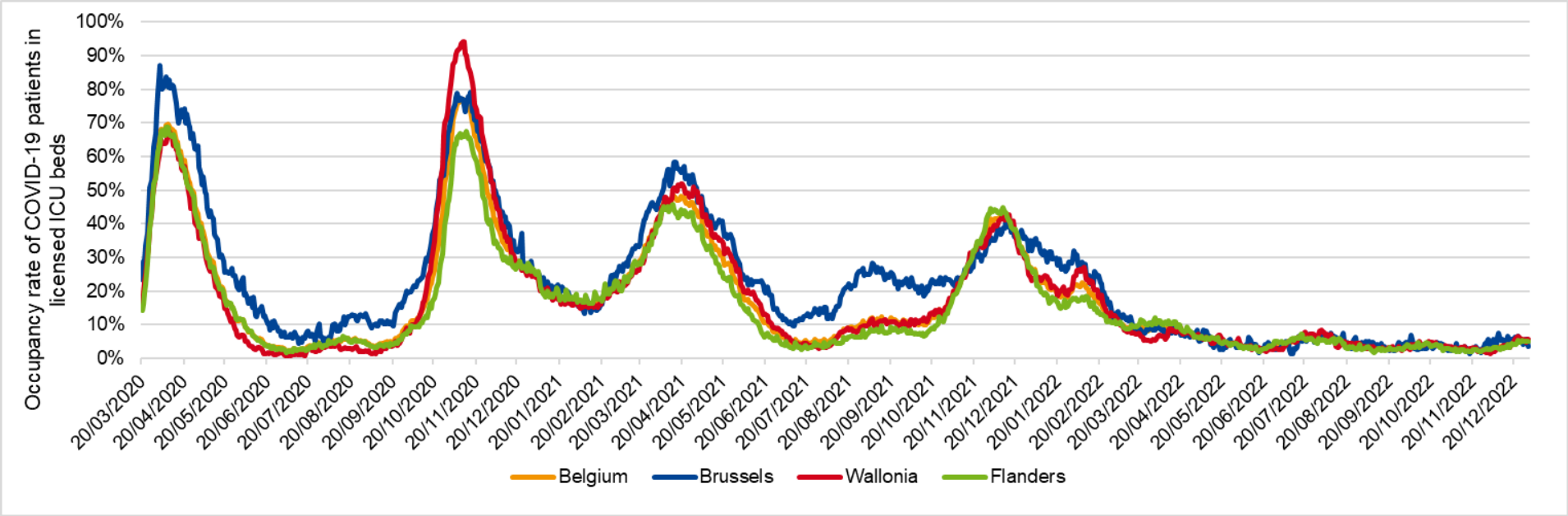


Figure 107 – Occupancy rate of COVID-19 patients in operational COVID-19 ICU beds, Belgium and regions

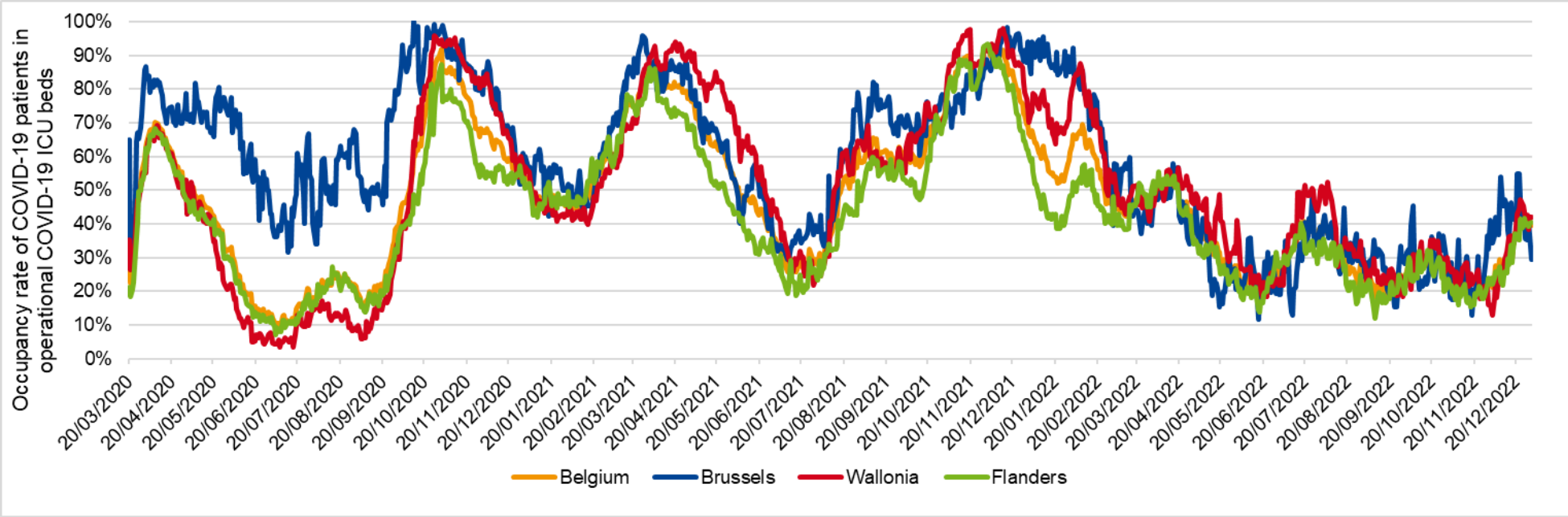


Figure 108 – Occupancy rate of COVID-19 patients in ICU beds, Flemish provinces

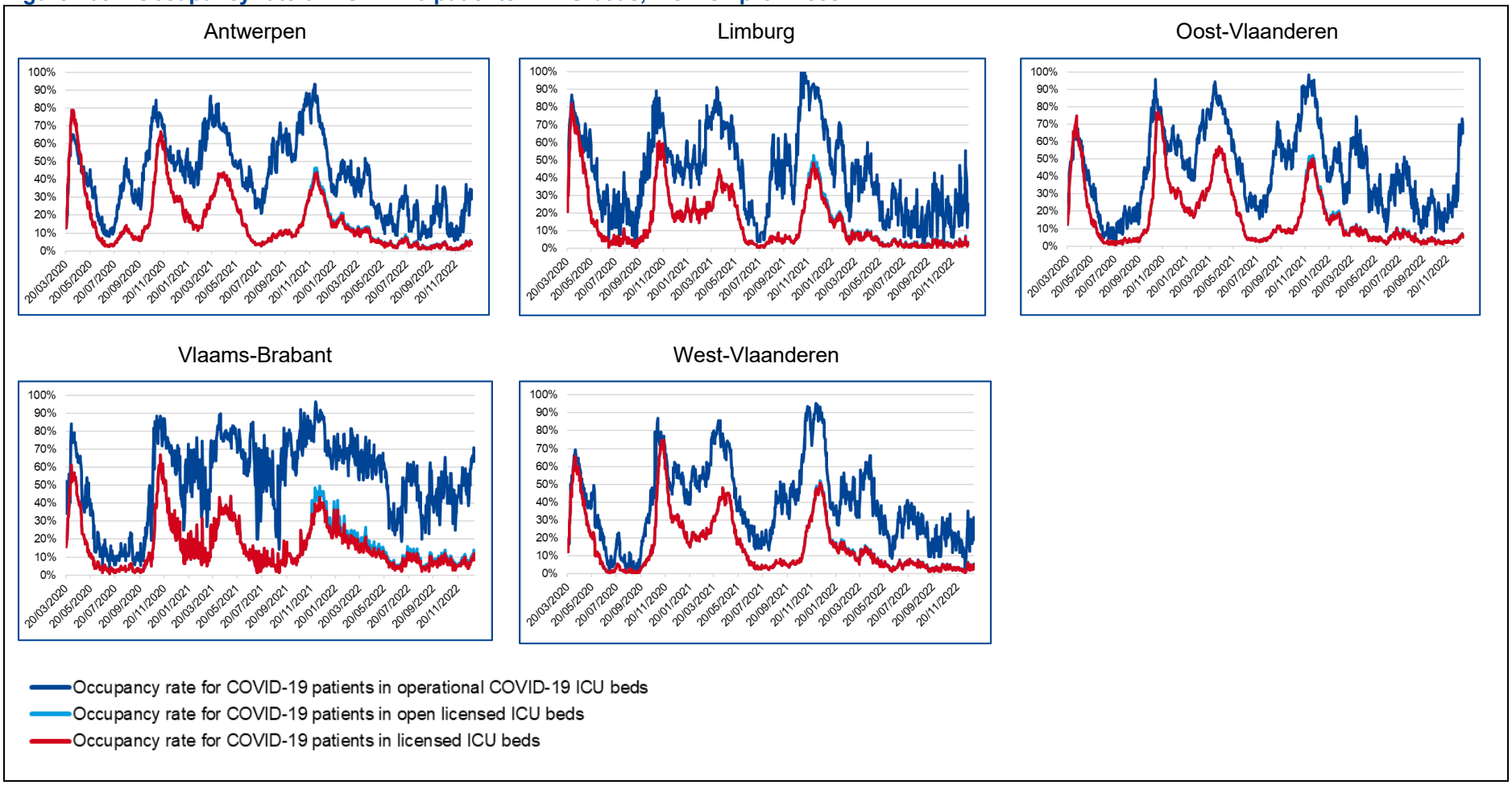
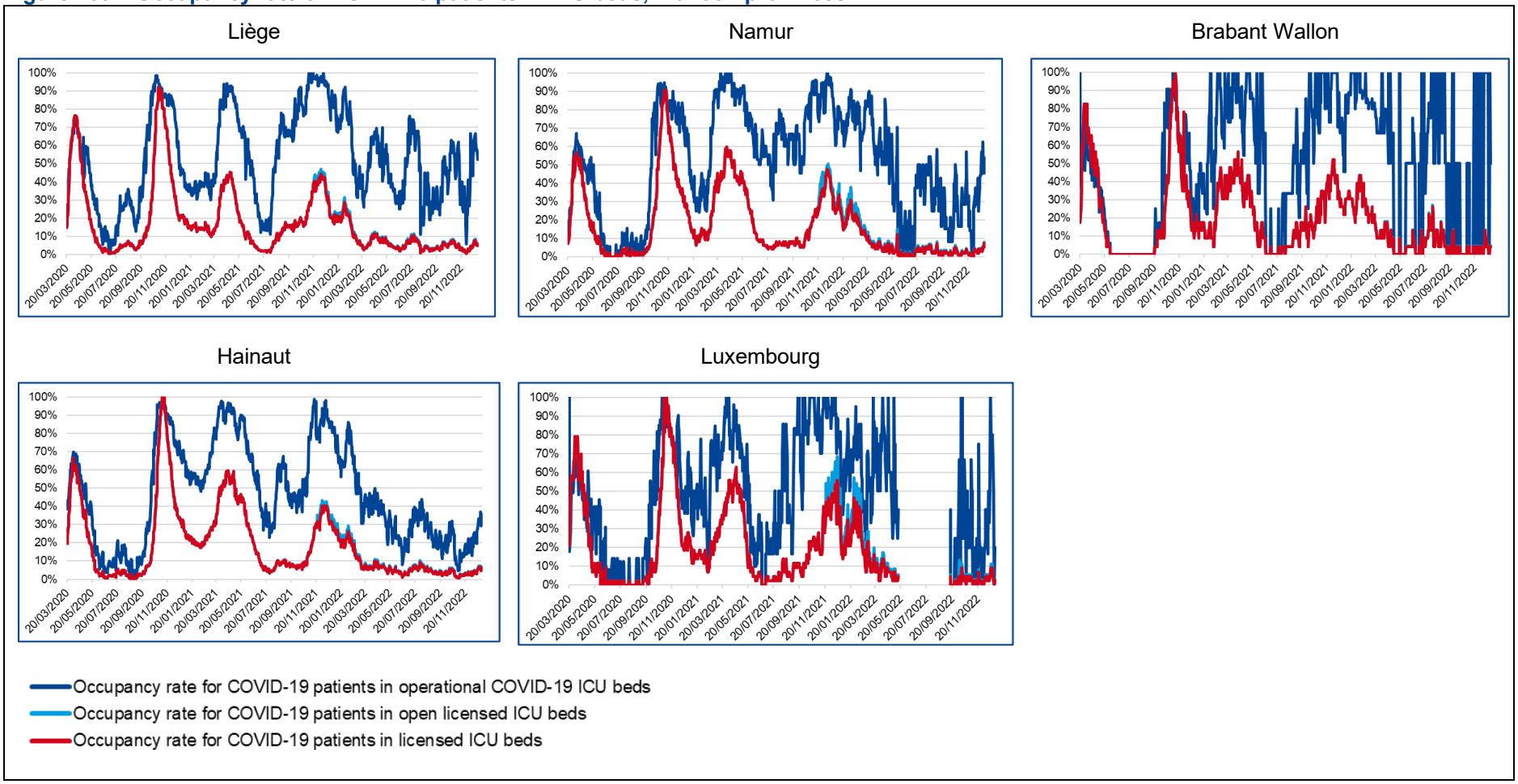


Figure 109 – Occupancy rate of COVID-19 patients in ICU beds, Walloon provinces



Hospitals overflow – Belgium

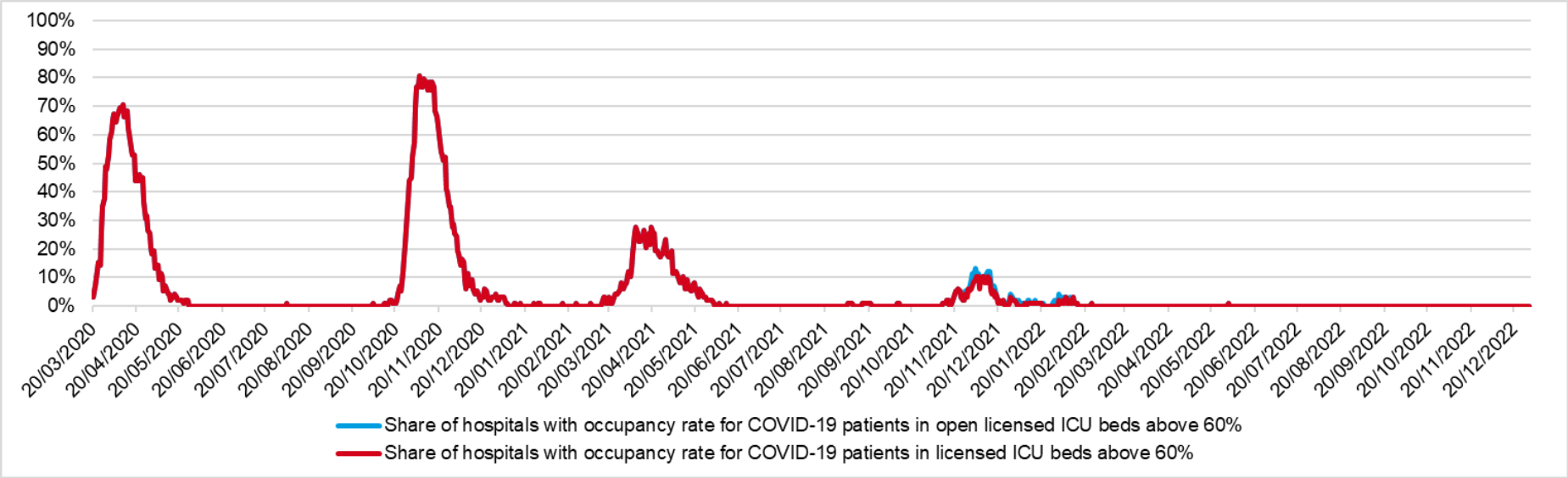
The previous analysis does not show how patients were distributed between hospitals. Also it does not indicate whether COVID-19 patients were treated in existing ICU beds or in surge ICU beds. Nevertheless, there are indications that it was more appropriate to treat COVID-19 patients in existing ICU beds (with existing ICU staff expertise) rather than in surge beds. Therefore a situation where some hospitals are overloaded and rely on their surge capacity, while other still have regular ICU beds available, should be avoided. An analysis of in-hospital mortality of COVID-19 patients treated in ICU in Belgium during the first wave has shown that the "ICU overflow" (when the number of ICU beds occupied by COVID-19 patients exceeds the number of licensed ICU beds reserved for COVID-19 patients) was an explanatory variable of in-hospital mortality of COVID-19 patients.[9]

Figure 110 shows the share of Belgian hospitals experiencing such an ICU overflow. The ICU overflow as defined by Taccone et al. (2021)[9] (an occupancy rate for COVID-19 patients in licensed ICU beds above 60%) is shown in red. In addition, the light blue line shows the impact of correcting for beds that are closed due to staff absenteeism or force majeure, once this information was available (from end November 2021 onwards).

During the first wave, a maximum of 70.4% of hospitals in Belgium faced an overflow in the ICU (i.e. an occupation rate above 60% of the licensed ICU beds). This share reached 80.6% during the second wave. However, after that, hospitals have searched for a better distribution of COVID-19 patients between hospitals, instead of using extra ICU bed capacity.

In April 2021, while the occupancy rate for COVID-19 patients in licensed ICU beds was still close to 50% at the national level (see Figure 105), only 30% of the hospitals presented an ICU overflow. And in December 2021, when the occupancy rate for COVID-19 patients in licensed ICU beds was again above 40% at the national level, only 10% of the hospitals presented an ICU overflow.

Figure 110 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Belgium



Hospitals overflow – Regional comparison

Figure 111 shows the same information (share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%) at the regional level. During the first wave, a larger share of hospitals were overloaded in Brussels than in the other regions. During the second wave, this share is the highest in Wallonia (with at some point all hospitals in the region having more than 60% of their licensed ICU beds occupied by COVID-19 patients). These regional differences are in line with regional differences observed in the occupancy rates (Figure 106).

In April 2021 however, the occupancy rate for COVID-19 patients in licensed ICU beds was still close to 50% in the three regions of the country, but only 21.6% of the hospitals in Flanders faced ICU overflow, compared to 41.7% in Wallonia and 54.5% in Brussels. Later on, these regional differences disappeared.

Hospitals overflow – Provincial comparison

Figure 112 and Figure 113 show the same analysis at the provincial level, with results consistent with the regional analysis.

Figure 111 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Belgium and regions

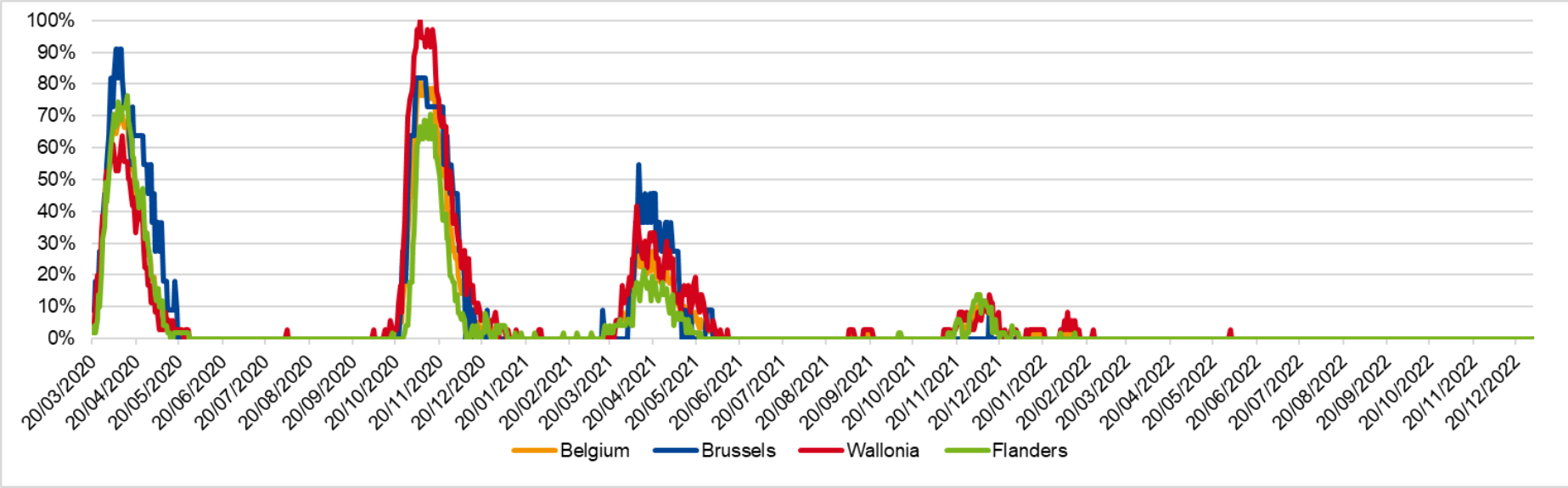


Figure 112 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Flemish provinces

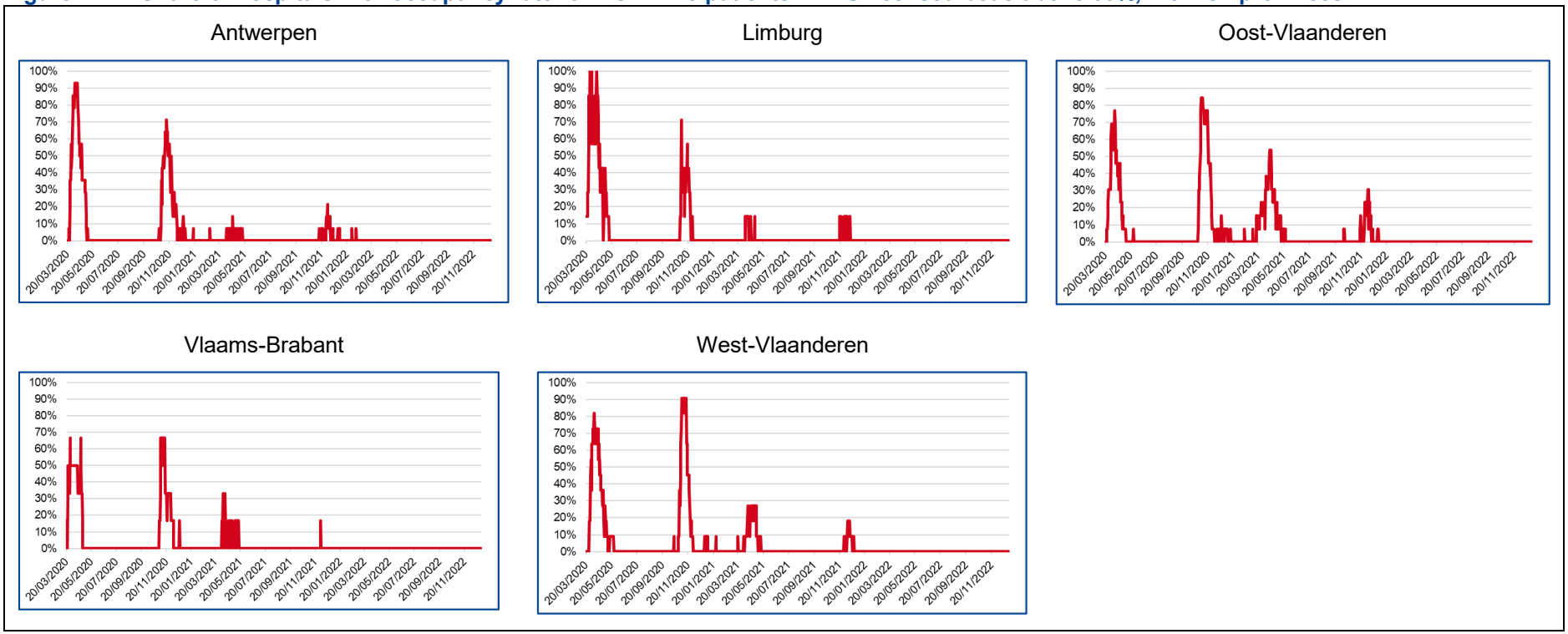
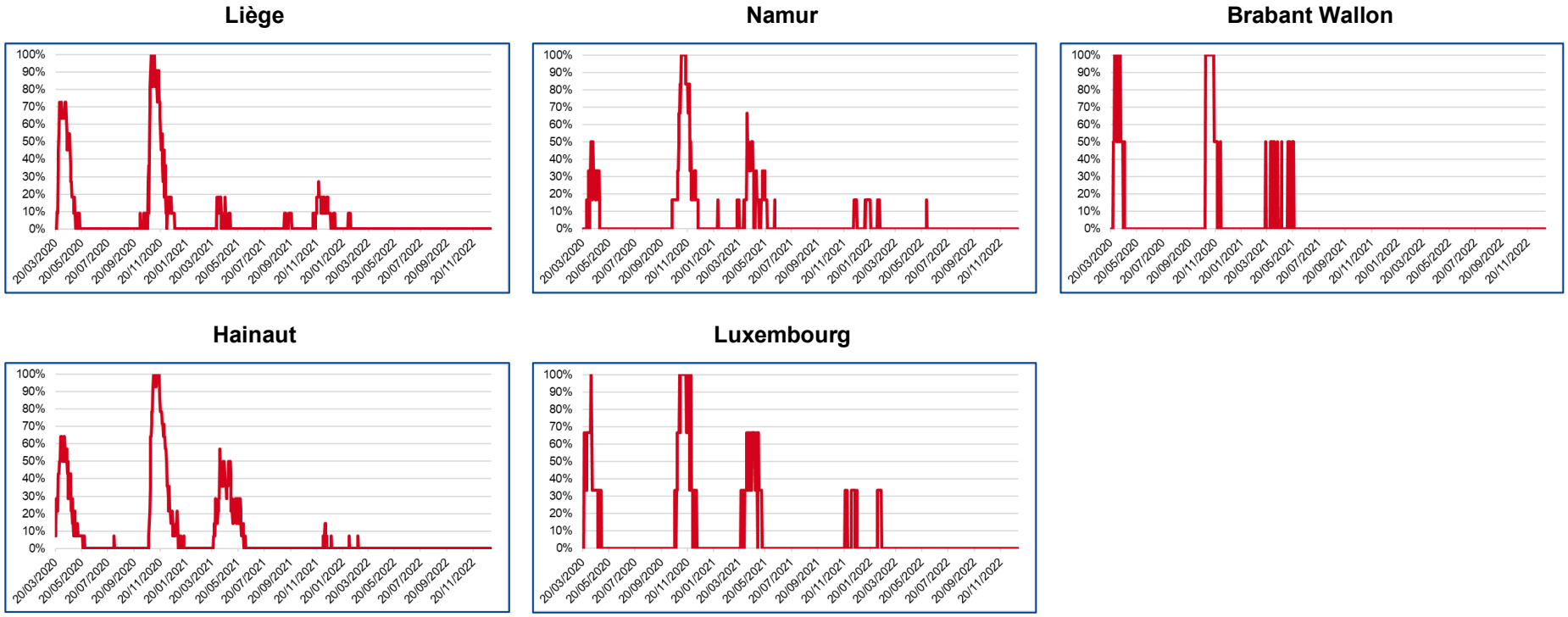


Figure 113 – Share of hospitals with occupancy rate for COVID-19 patients in ICU licensed beds above 60%, Walloon provinces



Key points

- **During the first wave, up to 69.7% of licensed ICU beds in Belgium were occupied by COVID-19 patients. During the second wave, this rate reached 76.7%. In the following waves it increased again, but did not reach its previous maximum: it reached 46.8% in April 2021 and 42.8% in December 2021.**
- **The occupancy rate for COVID-19 patients in operational COVID-19 ICU beds reached 70.0% during the first wave and 91.7% during the second. Then it reached 88.5% in April 2021 and 92.4% in December 2021.**
- **The fact that the occupancy rate for COVID-19 patients in operational COVID-19 ICU beds approached 100% without reaching it shows the Belgium's ability to appropriately adapt its COVID-19 ICU capacity to the pandemic waves.**
- **The occupancy rate for COVID-19 patients in licensed ICU beds was repeatedly higher in Brussels than in the other regions. During the first wave, it reached 86.9% in Brussels, compared to 67.6% in Wallonia and 68.8% in Flanders. Also, between waves, the occupancy rate for COVID-19 patients in licensed ICU beds remained higher in Brussels than in the other regions.**
- **During the second wave, the occupancy rates for COVID-19 patients in licensed ICU beds reached a maximum of 94.2% in Wallonia, compared to a maximum of 79.2% in Brussels and 67.6% in Flanders.**
- **The occupancy rate for COVID-19 patients in operational COVID-19 ICU did not decrease as much between waves in Brussels than in the other regions. Also, at several occasion in Brussels, the occupancy rate for COVID-19 patients in operational COVID-19 ICU beds reached 100%. This did not occur in the other regions.**
- **During the first wave, a maximum of 70.4% of hospitals in Belgium faced an overflow in the ICU (i.e. an occupation rate above 60% of the licensed ICU beds). This share reached 80.6% during the second wave. In April 2021, while the occupancy rate for COVID-19 patients in licensed ICU beds was still close to 50%, only 30% of the hospitals presented an ICU overflow. In December 2021, when the occupancy rate for COVID-19 patients in licensed ICU beds was again above 40% at the national level, only 10% of the hospitals presented an ICU overflow.**
- **During the first wave, a larger share of hospitals were overloaded in Brussels than in the other regions. During the second wave, this share was the highest in Wallonia. In April 2021, while the occupancy rate for COVID-19 patients in licensed ICU beds was still close to 50% in the three regions of the country, only 21.6% of the hospitals in Flanders faced ICU overflow, compared to 41.7% in Wallonia and 54.5% in Flanders. Later on, these regional differences disappeared.**

References

1. OECD/EU. Health at a Glance: Europe 2022. State of Health in the EU Cycle. Paris: Organisation for Economic Co-operation and Development; 2022. Available from: https://doi.org/10.1787/82129230-en
2. Bravata DM, Perkins AJ, Myers LJ, Arling G, Zhang Y, Zillich AJ, et al. Association of intensive care unit patient load and demand with mortality rates in US Department of Veterans Affairs hospitals during the COVID-19 pandemic. JAMA network open. 2021;4(1):e2034266-e.
3. HTSC Committee. Covid-19 – Hospital & transport surge capacity: intensieve zorg + outbreak. 17 March 2020. Available from: https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/200317_-_intensieve_zorg_outbreak.pdf
4. Winkelmann J, Webb E, Williams GA, Hernández-Quevedo C, Maier CB, Panteli D. European countries' responses in ensuring sufficient physical infrastructure and workforce capacity during the first COVID-19 wave. Health Policy. 2022;126(5):362-72.

5. Berger E, Winkelmann J, Eckhardt H, Nimptsch U, Panteli D, Reichebner C, et al. A country-level analysis comparing hospital capacity and utilisation during the first COVID-19 wave across Europe. Health Policy. 2022;126(5):373-81.

6. Beutels P, Verelst F. Ceci n'est pas un lit. Base capacity healthcare matters in a pandemic. The Lancet Regional Health–Europe. 2021;2.

7. Winkelmann J, Panteli D, Berger E, Busse R. Have we learnt the right lessons? Intensive care capacities during the COVID-19 pandemic in Europe. Eurohealth. 2022;28(1):41-5.

8. Van de Voorde C, Lefèvre M, Mistiaen P, Detollenaere J, Kohn L, Van den Heede K. Assessing the management of hospital surge capacity in the first wave of the COVID-19 pandemic in Belgium. Brussels: Belgian Health Care Knowledge Centre (KCE); 2020 12/2020. KCE Reports 335 Available from: https://kce.fgov.be/sites/default/files/atoms/files/KCE_335_Surge_capacity_during_COVID-19_Belgium_Report.pdf

9. Taccone FS, Van Goethem N, De Pauw R, Wittebole X, Blot K, Van Oyen H, et al. The role of organizational characteristics on the outcome of COVID-19 patients admitted to the ICU in Belgium. The Lancet Regional Health-Europe. 2021;2:100019.

10. HTSC Committee. Covid-19 – Communication : Évolution épidémiologique, PECC, clusters au sein des hôpitaux et plan Surge Capacity. 26 January 2021. Available from: https://organesdeconcertation.sante.belgique.be/sites/default/files/documents/2021_01_26_circ_htsc_passage_1a_pecc_cluster.pdf

11. FPS Public Health. For a healthy Belgium, Key data in healthcare, COVID 19, Care activity, Impact of the pandemic on emergency assistance [Web page].Brussels: FPS Health, Food chain safety and Environment;2022. Available from: https://www.healthybelgium.be/en/key-data-in-healthcare/covid-19-old/care-activity/impact-of-the-pandemic-on-emergency-assistance/inter-hospital-transport

12. Arrêté royal du 30 avril 2020 concernant un flux d'information correct et en temps voulu sur les chiffres de patients COVID-19, la capacité de traitement dans les hôpitaux et les stocks de matériel de protection individuelle, M.B. 20 septembre 2021.

13. Van Goethem N, Vilain A, Wyndham-Thomas C, Deblonde J, Bossuyt N, Lernout T, et al. Rapid establishment of a national surveillance of COVID-19 hospitalizations in Belgium. Archives of Public Health. 2020;78:1-10.

3.7 Number of contacts (including teleconsultations) with a GP (R-7)

3.7.1 Documentation sheet

Description	**Primary indicator** Total number of contacts (including teleconsultations) with a GP **Secondary indicators** Total number of contacts (excluding teleconsultations) with a GP Total number of contacts (including teleconsultations) with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period) Total number of contacts (excluding teleconsultations) with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period) Share of teleconsultations among contacts with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period)
Calculation	Total number of contacts (including teleconsultations) with a GP = sum of consultations with a GP, visits of a GP and teleconsultations with a GP performed during the considered month. Total number of contacts (excluding teleconsultations) with a GP = sum of consultations with a GP and visits of a GP performed during the considered month. Total number of contacts (including teleconsultations) with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period): Numerator = sum of consultations with a GP, visits of a GP and teleconsultations with a GP performed during the considered month; Denominator = sum of consultations with a GP and visits of a GP performed during the same month of 2019. Total number of contacts (excluding teleconsultations) with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period): Numerator = sum of consultations with a GP and visits of a GP performed during the considered month; Denominator = sum of consultations with a GP and visits of a GP performed during the same month of 2019. Share of teleconsultations among contacts with a GP (as a percentage of the total number of contacts with a GP in the pre-COVID period): Numerator = sum of teleconsultations with a GP performed during the considered month; Denominator = sum of consultations with a GP and visits of a GP performed during the same month of 2019.
Rationale	In March 2020, teleconsultations in primary care were initiated in Belgium (by the creation of three nomenclature codes) in order to ensure access to essential care while preventing the spread of the virus by avoiding direct contact between patients and health professionals. These teleconsultations were free of charge for the patient. Since August 2022, this temporary system has been replaced by a permanent one that implies a small co-payment for the patient.[1] The ability to transform the way services are delivered (from in-person contact to teleconsultations) is a characteristic of the resilience of the healthcare system. However, this ability cannot simply be assessed by the share of teleconsultations among all contacts with a GP for a given month. Indeed, it is likely that the total number of contacts with a GP has changed compared to the pre-COVID period. If this is the case, the

	percentage of teleconsultations among all contacts with a GP would not correctly document how teleconsultations did *replace* in-person contacts. To overcome this bias, we compare the number of teleconsultations with a GP on a given month with the total number of contacts with a GP in the *same month of 2019*.
Data source	RIZIV – INAMI (DocN)
Technical definitions	Teleconsultations are identified by nomenclature codes 101 135, 101 791, 101 835 and 101 990. It is estimated (using docP data) that around 90% of these nomenclature codes are billed by GPs, while 10% are billed by medical specialists. Therefore the total number of teleconsultations with GPs is calculated as 90% of the total number of teleconsultations performed during the considered month. Other contacts with a GP are identified by nomenclature codes 101 010, 101 032, 101 054, 101 076 (consultations), 103 110, 103 132 (visits)
International comparability	Total number of contacts (including teleconsultations) with a GP is not included in standardised international indicator sets. However, international results concerning the total number of face-to-face contacts (i.e. excluding teleconsultations) with primary care providers are presented.[2]
Limitations	It is not possible to distinguish whether a change in the total number of contacts with a GP is due to changes in needs (e.g. increase needs of GP care to the spreading of COVID-19, decrease needs of GP care due to reduction of other communicable diseases) or to changes in the healthcare system (e.g. restriction of face-to-face contacts, availability of teleconsultations). Therefore a decrease in the total number of contacts with a GP does not necessarily mean that more needs are unmet for the patient. On the other hand, an increase in the total number of contacts with a GP does not necessarily imply an overuse of GP care. The data used do not allow to distinguish teleconsultations performed by GPs from those performed by other physicians. The total number of teleconsultations with GPs is estimated to be 90% of the total number of teleconsultations performed during the considered month. However, as the share of teleconsultations performed by other physician may vary over time, this estimation is not precise.
Dimension	Resilience
Related indicators	
Reviewers	Thibault Troch (RIZIV – INAMI)

3.7.2 Results

Belgium

During the first wave of COVID-19, Belgium experienced a large drop in the number of face-to-face contacts with GPs (Figure 114). Between February and April 2020, the total number of face-to-face contacts with GP decrease by more than 50% (from 3 971 103 to 1 773 840 contacts). In April 2020, the number of face-to-face contacts with GPs represented 38% of the contacts in April 2019 (Figure 115).

However, the development of teleconsultations compensated the decrease in face-to-face contacts. Indeed, when teleconsultations are included, the number of contacts with GPs only decreased by 13% between February and April 2020 (Figure 114) and the number of contacts in April 2020 represented 92% of the contacts in April 2019 (Figure 115). In May 2020, the number of face-to-face contacts represented 49% of its level in 2019. Including teleconsultation, the number of contacts in May 2020 represented 85% of the number of contacts in May 2019.

Between June 2020 and February 2021, the number of face-to-face contacts with GPs stayed below its level in the same month of 2019 (ranging from 70% to 86% of its level in the same month of 2019). When taking into account teleconsultations however, until December 2020 there were more contacts with GPs than during the same month of 2019. In January and February 2021 February 2021, the number of contacts with GP (including teleconsultations) was below, but very close to its level in the same month of 2019.

From March 2021 onward, the number of face-to-face contacts with GPs returned close to its level in the same month of 2019. When including teleconsultations, the number of contacts was between 7% and 33% above its level in the same month of 2019.

Figure 114 – Total number of contacts with a GP, Belgium

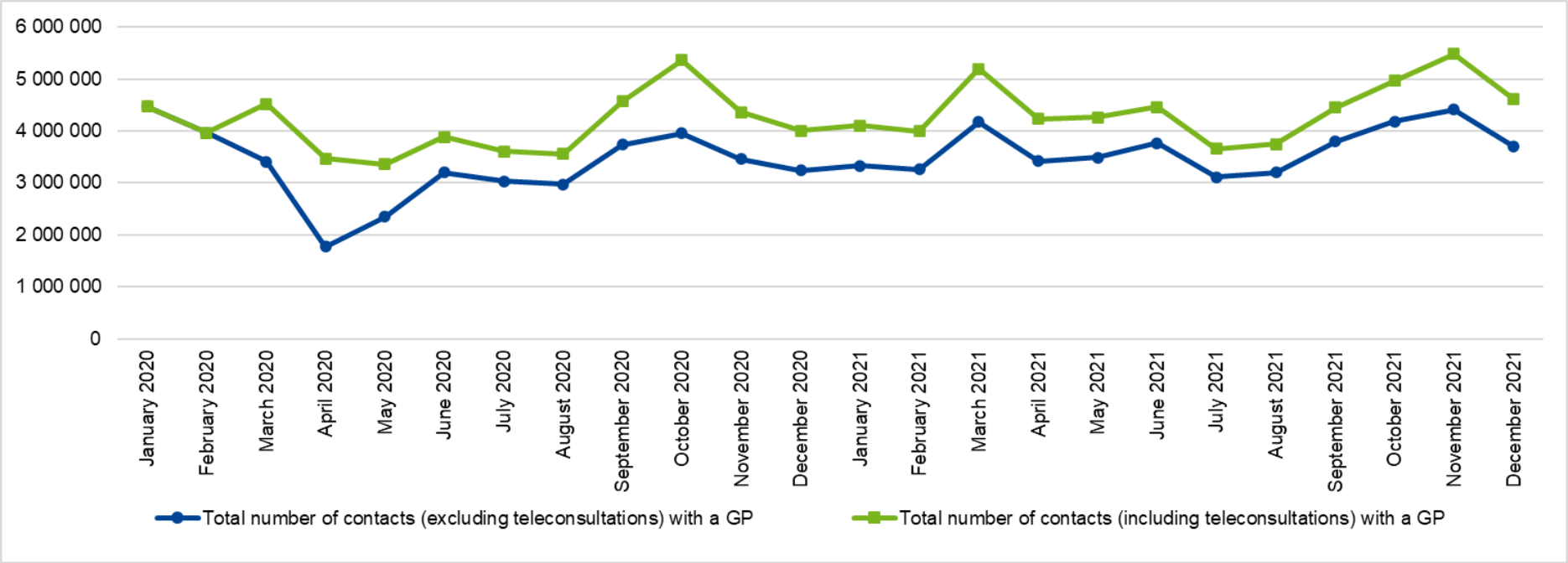
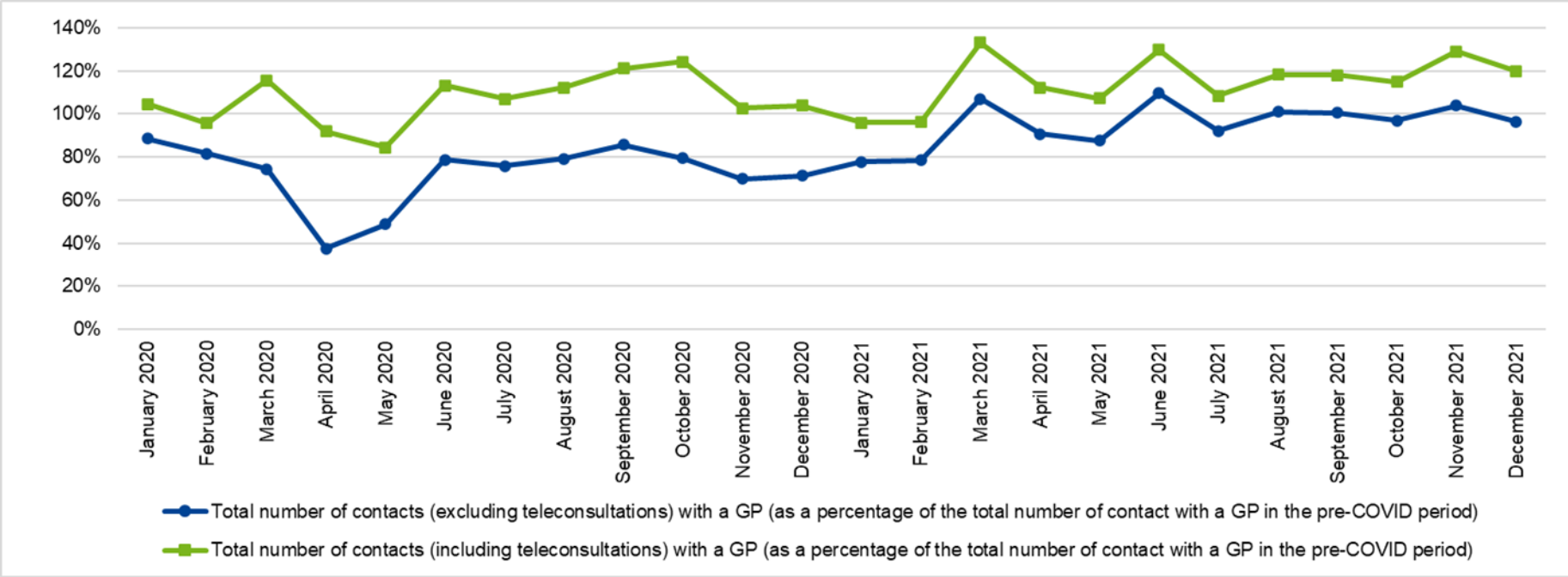


Figure 115 – Total number of contacts with a GP (as a percentage of the total number of contact with a GP in the same month of 2019), Belgium



Regional comparison

From Figure 116, Figure 117 and Figure 118, it can be seen that the total number of contacts with GPs followed a similar evolution in the three regions of the country: an increase in March 2020 followed by a decrease in April-May 2020. From there, the number of face-to-face contacts remained below its level of 2019 up to February 2021. A the same time, when including teleconsultations, the number of contacts was at or above the level of 2019.

The share of teleconsultations in the total number of contacts (Figure 119) was different in the three regions of the countries, although it follows a similar evolution over time. Overall teleconsultations represented a larger share of the total number of contacts in Wallonia and in Brussels than in Flanders. In April 2020, teleconsultations represented more than 60% of the contacts with a GP in Wallonia and Brussels while it only represented 36% of the contacts in Flanders. On average, between May 2020 and December 2021, the monthly share of teleconsultations vary between was 19% and 46% in Wallonia, between 21% and 42% in Brussels and between 14% and 25% in Flanders.

International comparison

Results from other countries also show a decrease in face-to-face primary care consultations (that may, at least partly be offset by an expansion of telehealth services).[2] The number of consultations with GP fell by 66% in Portugal, about 40% in Australia, 18% in Austria and 7% in Norway in May 2020, compared with the same month in 2019. In seven OECD countries (Israel, Australia, Spain, Norway, Chile, Costa Rica an Mexico) the number of face-to-face doctor consultations per person fell in 2020 compared to 2019. In Denmark, an increase is observed between 2019 and 2020. Data for other OECD countries are not yet available.

Figure 116 – Total number of contacts (including teleconsultations) with a GP, Belgium and its three regions

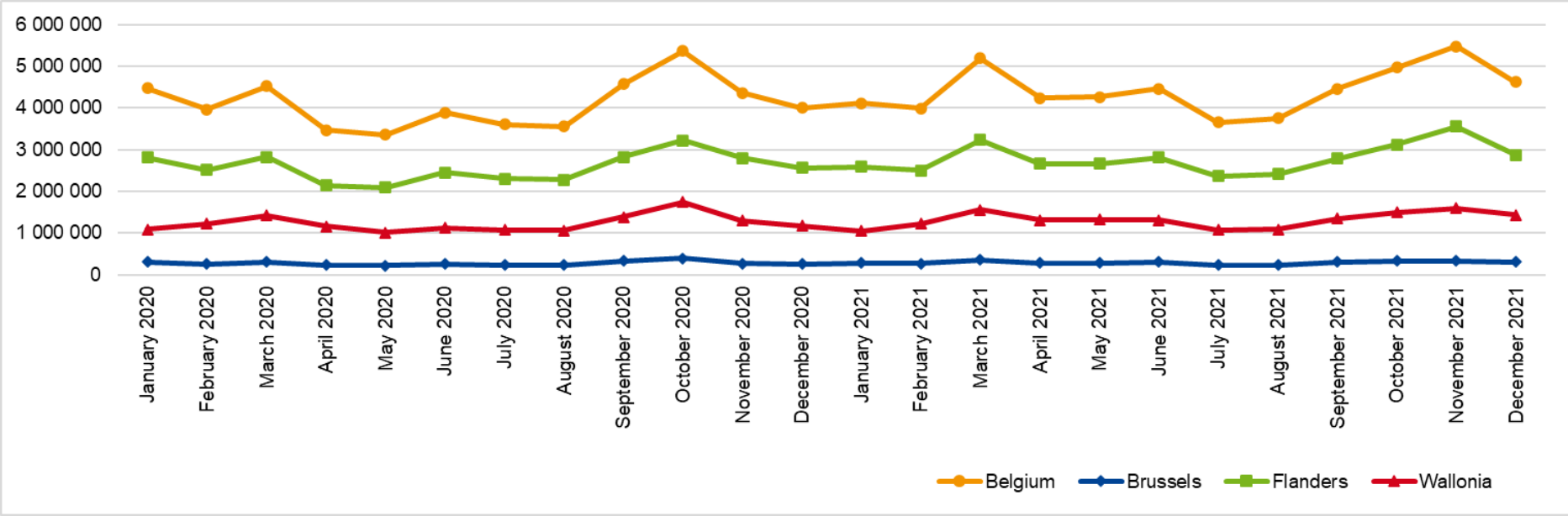


Figure 117 – Total number of contacts (including teleconsultations) with a GP (as a percentage of the total number of contact with a GP in the same month of 2019), Belgium and its three regions

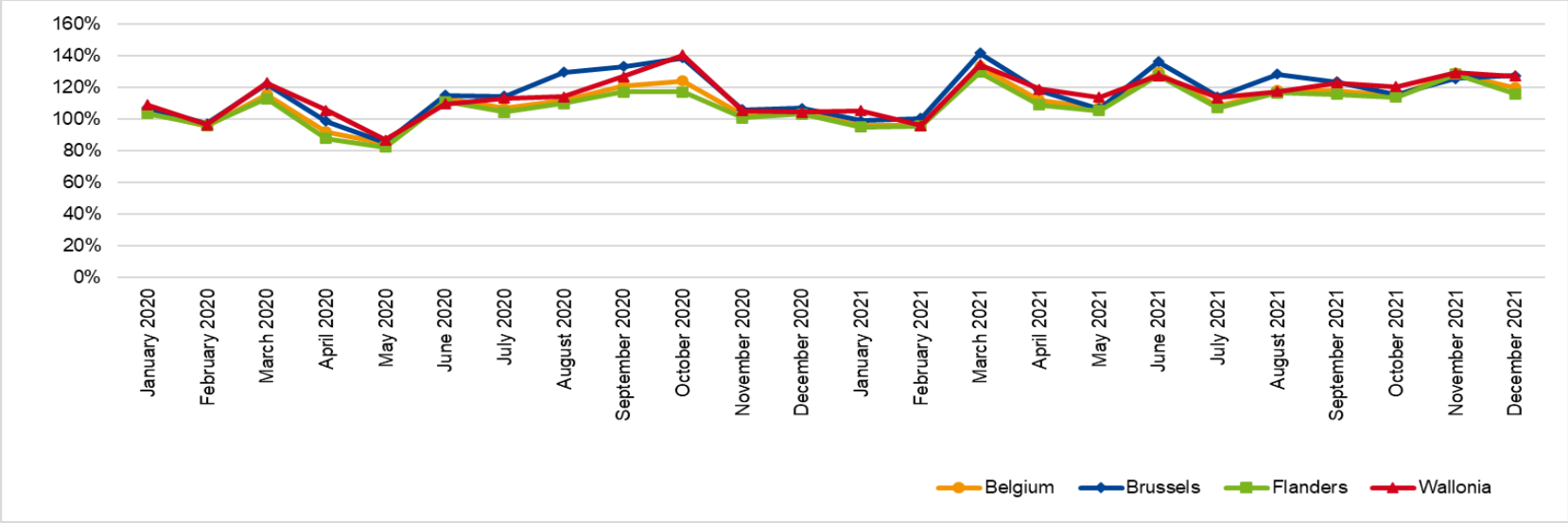


Figure 118 – Total number of contacts (excluding teleconsultations) with a GP (as a percentage of the total number of contact with a GP in the same month of 2019), Belgium and its three regions

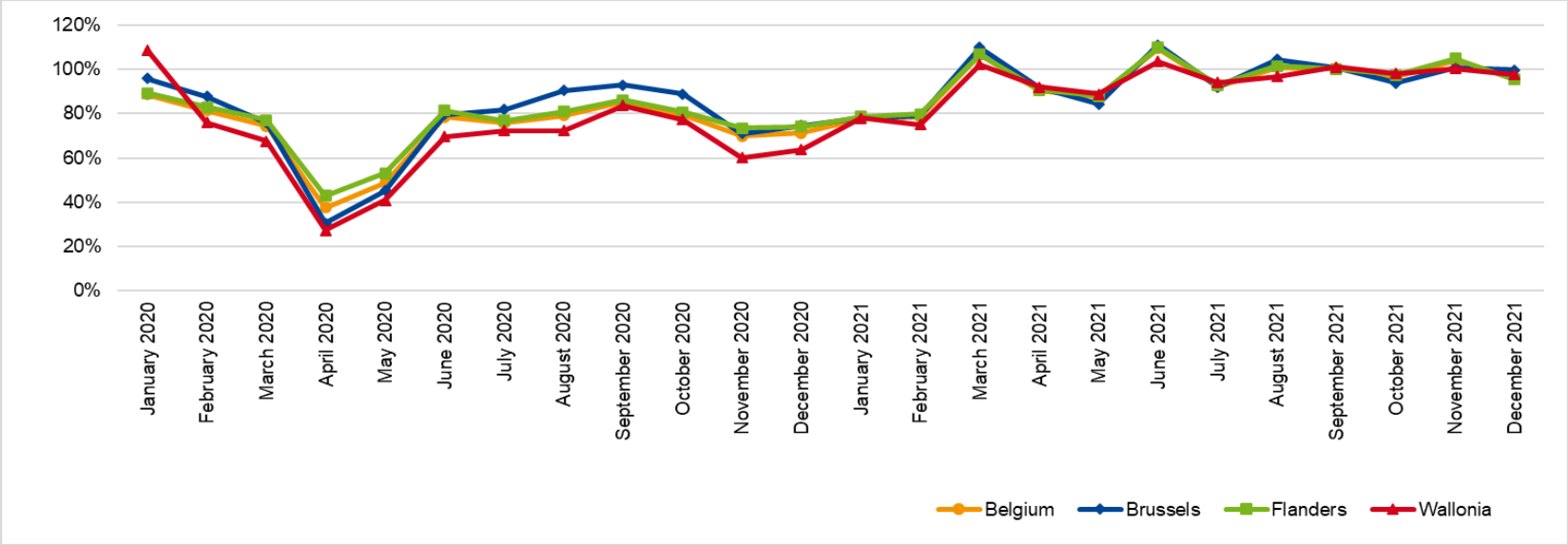
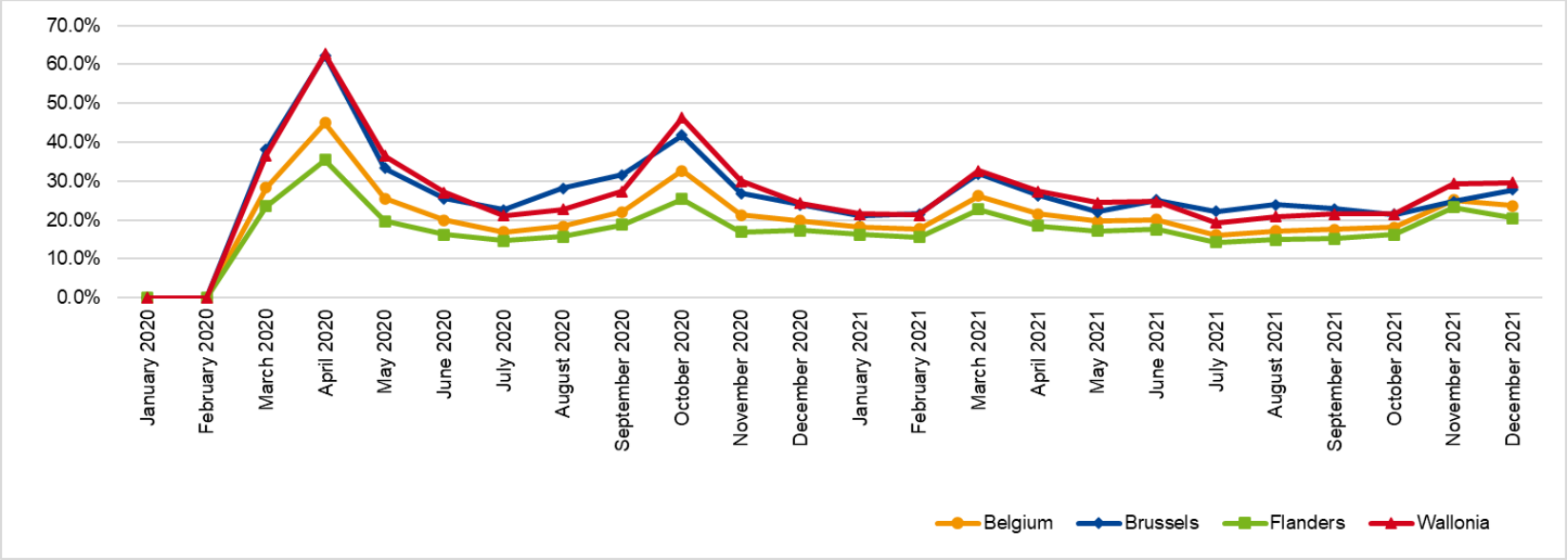


Figure 119 – Share of teleconsultations among contacts with a GP (as a percentage of the total number of contact with a GP in the same month of 2019)



Key points

- **During the first wave of COVID-19, a large drop of face-to-face contacts with GPs was experienced in the three regions of the country.**
- **This drop was largely compensated by the development of teleconsultations.**
- **Nevertheless, a small disruption was observed in April and May 2020. In April 2020 the number of contacts including teleconsultations only represented 92% of the contacts in April 2019. In May 2020, they only represented 85% of the number of contacts in May 2019.**
- **A bouncing back was already observed from June 2020 onward. The number of contacts with GPs including teleconsultations was constatly above or close to its level for the same month of 2019.**
- **There is little variation in the evolution of the number of contacts with GPs in the three regions of the country.**
- **However, the share of teleconsultations among the total contacts with GPs was systematically higher in Wallonia and in Brussels than in Flanders.**

References

1. RIZIV-INAMI. Remboursement des consultations médicales à distance [Web page].2023 [cited August 2023]. Available from: https://www.inami.fgov.be/fr/themes/cout-remboursement/par-mutualite/prestations-distance-medecins/Pages/default.aspx
2. OECD. Health at a Glance 2021. 2021.

3.8 Average duration between sampling of a COVID-19 test and test result (R-8)

3.8.1 Documentation sheet

Description	**Primary indicator** 1. Average duration between sampling of a COVID-19 test and test result **Secondary indicators** 2. Average duration between onset of symptoms and COVID-19 test prescription 3. Average duration between prescription and sampling of a COVID-19 test 4. Proportion of COVID-19 tests with result communicated within 24 hours after sampling
Calculation	**Primary indicator** 1. Average duration between sampling of a COVID-19 test and test result: numerator = sum of durations (in days) between sampling and communication of test result; denominator = number of tests reported by laboratories during the considered week. **Secondary indicators** 2. Average duration between onset of symptoms and COVID-19 test prescription: numerator = sum of durations (in days) between onset of symptoms (self-reported) and test prescription; denominator = number of tests prescribed by a physician during the considered week for which symptom information is available. 3. Average duration between prescription and sampling of a COVID-19 test: numerator = sum of durations (in days) between test prescription and sampling; denominator = number of tests reported by laboratories during the considered week that were prescribed by a physician. 4. Proportion of COVID-19 tests with result communicated within 24 hours after sampling: numerator = number of tests for which result was communicated within 24 hours after sampling; denominator = number of tests reported by laboratories during the considered week.
Rationale	Large-scale population testing is one of the essential means to control COVID-19 outbreaks.[1] At the start of the COVID-19 pandemic in Belgium, diagnostic testing was exclusively performed by one reference centre.[2] From March 2020, clinical microbiology laboratories also started to implement routine COVID-19 diagnostic testing and a certification process was implemented (73 laboratories were certified between 1 March and 1 May 2020). In April 2020, a federal testing platform (consortium of university hospitals, biotechnology and pharmaceutical companies) was set-up to increase the test capacity and to partially compensate the overflow encountered by clinical microbiology laboratories. In November 2020, this platform evolved to a new one composed of eight university laboratories linked to clinical microbiology laboratories.[2] The federal platform was responsible for supplying test equipment, collecting and transporting the tests to the laboratories and forwarding the test results.[3] Around half of the testing centres used this platform. Other testing centres worked with a hospital laboratory or a private laboratory, which were themselves responsible for supplying test equipment, transporting the tests performed and forwarding the results. A testing centre could switch to the federal platform if the laboratory's capacity was exceeded. The testing Turn-Around-Time (TAT) plays an important role to ensure efficient isolation and proper contact tracing. The EU health preparedness plan recommends that countries aim to have a TAT of 24 hours (from request to be tested to communication of the test result) as a target.[4] TAT

	can be split up in two different phases: the time required from the prescription of a test to taking the sample, and the time between the sampling and the communication of the test result. However, all tests are not prescribed by a physician as some of them are voluntary. Therefore, the second phase of TAT (average duration between sampling and test result) is more representative of testing capacity in Belgium and is used as primary indicator. The other phase (average duration between prescription and sampling) is an indicator of sampling capacity and is presented as secondary indicator. The delay between symptoms onset and test prescription is equivalent to the delay between symptoms onset and the consultation with a physician. This is dependent on population behaviour as well as on efficient public health communication and information. Although the definition of symptoms onset depends on patients and physicians' interpretation, the duration between onset of symptoms and test prescription is also presented as a secondary indicator.
Data source	Sciensano (test database)
Technical definitions	In Belgium, test results are reported daily to Sciensano.[2] The test database includes test prescriptions and results reported by laboratories (molecular or antigen tests), physicians (molecular or antigen tests), and pharmacies (antigen tests).[5] Data are reported weekly, from week 36 of 2020 (week of 31 August 2020) to week 8 of 2022 (week of 21 February 2022).
International comparability	Belgian results are compared to answers submitted to a questionnaire circulated among the Health Security Committee (HSC) members on testing strategies and capacities in early September 2020.[4] The questionnaire was completed by 21 EU countries (AT, BE, CY, CZ, DE, DK, EE, ES, FI, FR, HR, HU, IE, IT, LT, LU, LV, NL, PT, SE, SK) as well as by Norway, Switzerland, the UK, Bosnia and Herzegovina and Ukraine.
Limitations	Rapid diagnostic tools such as antigenic tests were inexistent at the beginning of the pandemic but have been increasingly used later on. As this mode of sampling was characterised by an almost immediate communication of the result, their use decreased the average duration between sampling and result. Nevertheless, these tools did not represent a large proportion of the samplings performed. Data are only available from September 2020 onwards. Therefore, the indicators cannot be measured during the first wave of the COVID-19 pandemic in Belgium. International comparison is limited to September 2020 and is not performed for the entire study period (week 36 of 2020 to week 8 of 2022).
Dimension	Resilience
Related indicators	R-9 Average duration between positive COVID-19 test result and contact tracing initiation
Reviewers	Dieter Van Cauteren (Sciensano)

3.8.2 Results

Duration between sampling and result

In September 2020 (no data available before), the average duration between sampling and result was between one and two days in all the regions of the country (see Figure 120). This average duration reached a peak of 1.5 days in October 2020 (1.7 days in Wallonia and Brussels and 1.5 days in Flanders). This peak roughly corresponds to the peak in the number of person tested, because of the second COVID-19 wave.

At the time, eight European countries (EE, FR, HU, HR, NL, ES, UK, NO) reported that the time required between the sampling and test result was less than 24 hours and seven countries (BE, BG, CZ, LV, MT, RO, SK) reported that the test result after sampling was available between 24-28 hours.[4]

Following this peak, the average duration between sampling and result decreased and remained shorter than one day in the three regions after November 2020. Even when a very large number of tests was performed (at the end of the study period), the average duration between sampling and test result remained below one day.

Figure 121 shows the proportion of tests with result communicated within 24 hours after sampling. In September-October 2020, this proportion dropped in all three regions to around 50-60% because of the second COVID-19 wave. After that, the proportion of tests with result communicated within 24 hours after sampling increased and stayed close to 100% during the entire study period (with exceptions in Brussels at the beginning of 2021 and in Flanders at the end of 2021).

Figure 120 – Average duration between sampling and test result (in days)

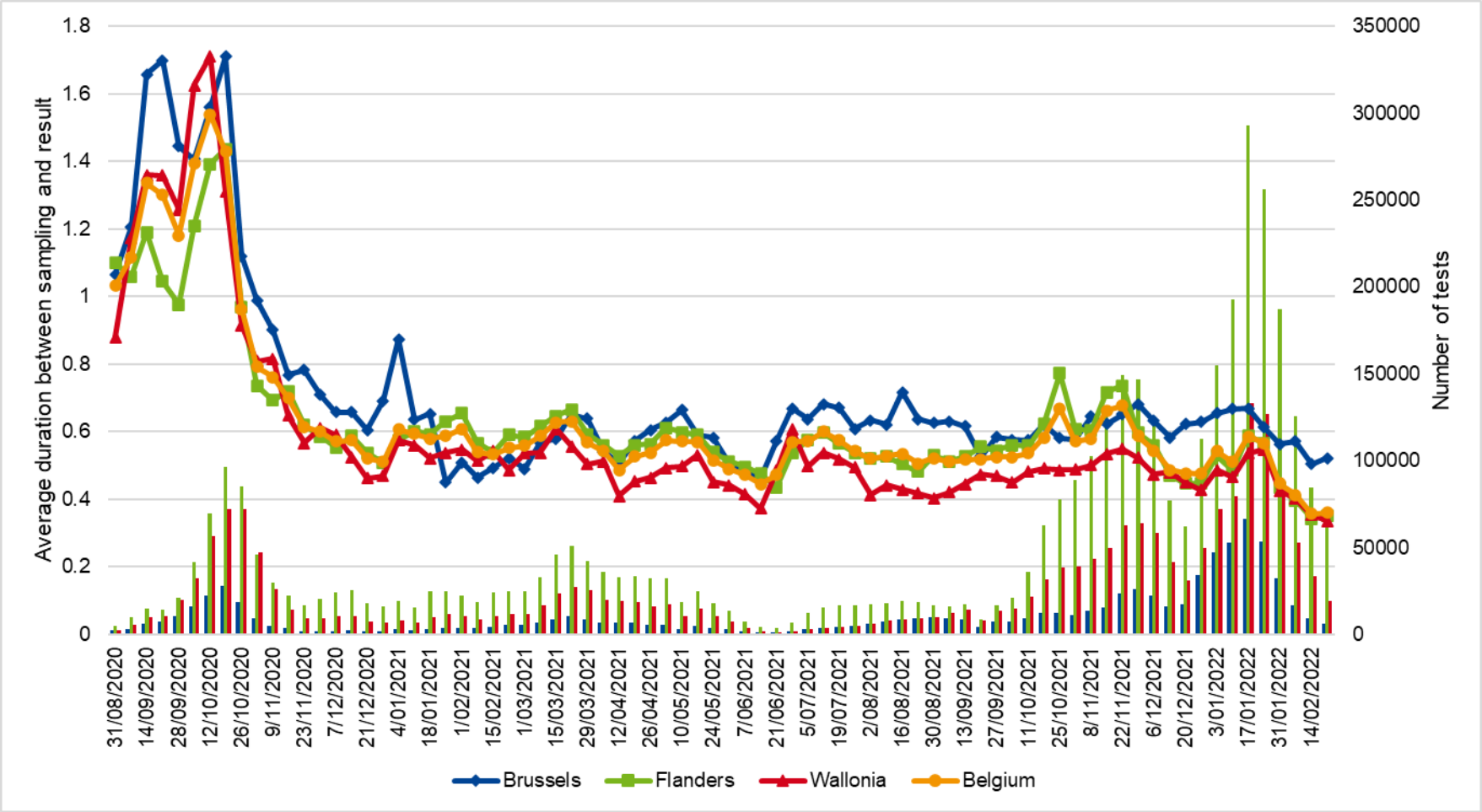
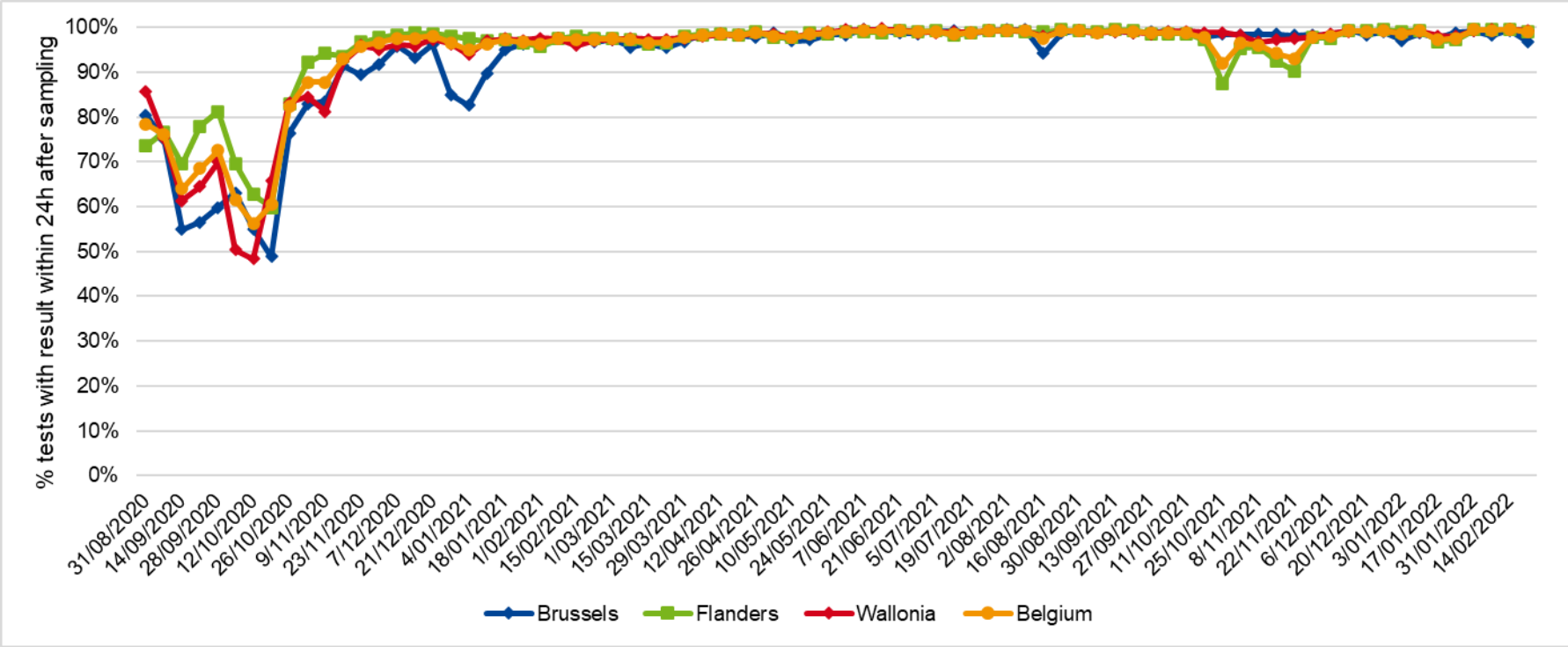


Figure 121 – Proportion of tests with result within 24 hours after sampling



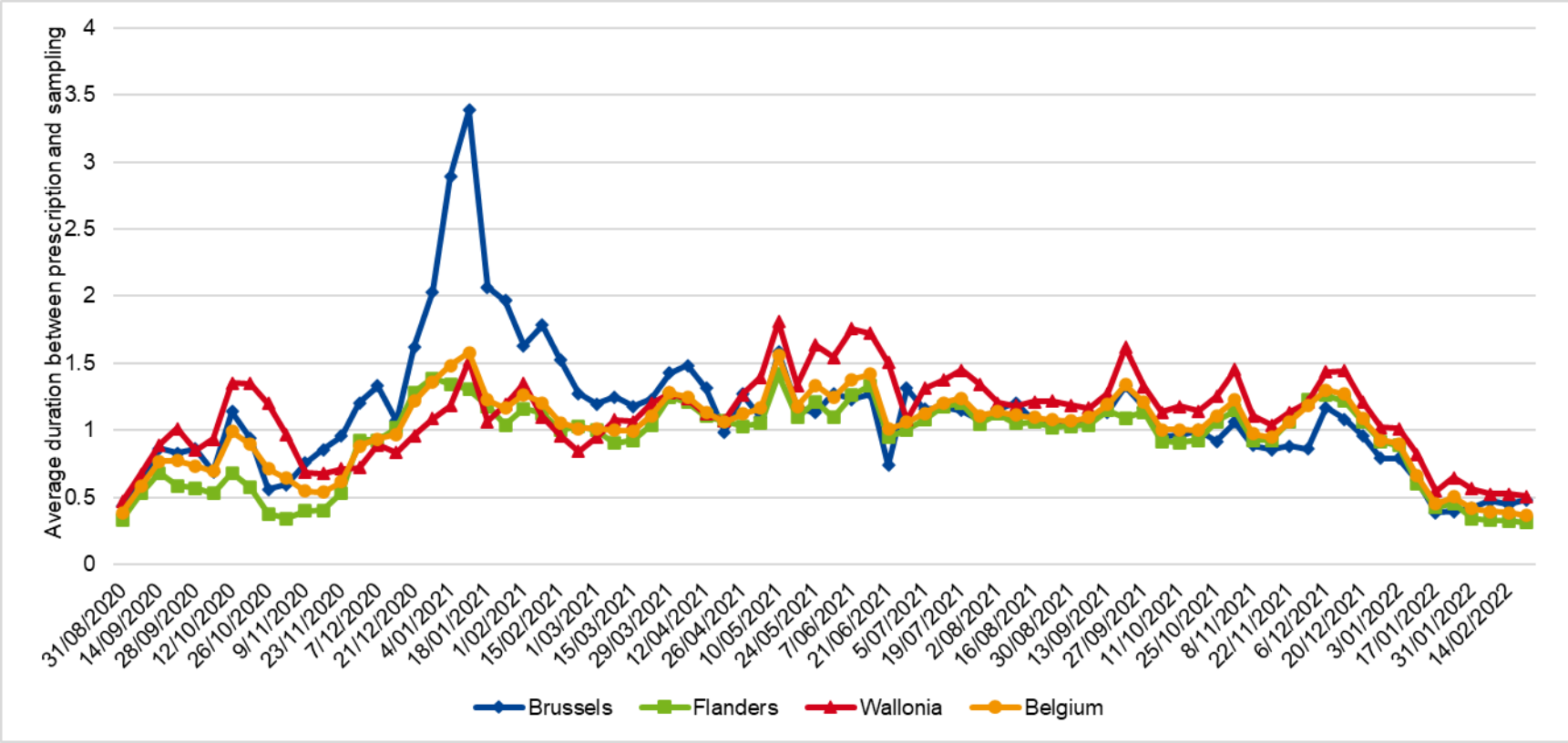
Duration between prescription and sampling of a COVID-19 test

The average duration between prescription and sampling of a COVID-19 test remained below two days during the entire study period (Figure 122), except in Brussels around the turn of the year 2020-2021 when the average duration between prescription and sampling reached 3.5 days.

Overall, we observe an increase in the average duration between prescription and sampling of test between the end of 2020 and 2021. From the end of 2021, this average duration sharply decreased and was overall close to half a day in the eighth week of 2022. Also, the difference between regions decreased over time.

In September 2020, seven European countries (CY, DK, EE, LU, LT, PL, SE) reported a full testing turn-around-time (from the prescription to the result) of up to two days.[4]

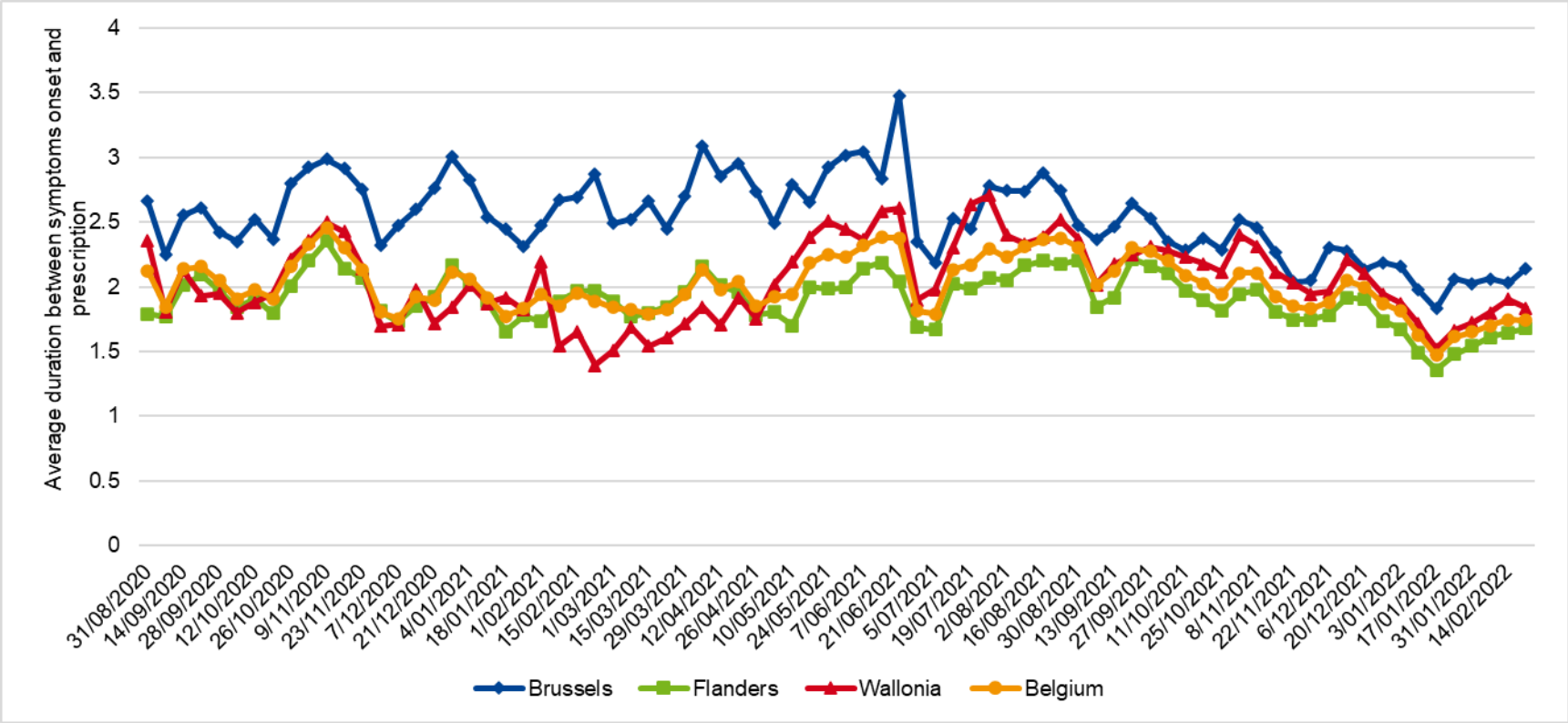
Figure 122– Average duration between prescription and sampling (in days)



Duration between symptoms onset and prescription (= consultation)

The average duration between symptoms onset and test prescription (or consultation with a physician) (Figure 123) remained stable over the entire study period with a slightly higher duration in Brussels (weekly average = 2.5 days) than in Wallonia (2.0 days) and Flanders (1.9 days). Overall, there was little evolution over time, except for a slowly decreasing duration starting in September 2021. In addition, differences between regions decreased over time.

Figure 123 – Average duration between symptoms onset and prescription (in days)



Key points

- **Average duration between sampling and test result was highest in September-October 2020, reaching 1.5 days (1.7 in Brussels and Wallonia). This resulted in a drop in the proportion of persons receiving their test result within 24 hours after sampling. No data are available before September 2020.**
- **From November 2020 onwards, the average duration between sampling and test result remained below one day in all three regions, even when a very large number of tests was performed. With only few exceptions, the proportion of persons receiving their test result with 24 hours remained therefore close to 100%.**
- **The average duration between prescription and sampling of a COVID-19 test remained below two days during the entire study period, except in Brussels around the turn of the year 2020-2021. This duration further decreased to 0.5 days from 2022 onwards.**
- **The duration from onset of illness to consultation with a healthcare provider was the longest delay over the entire study period and remained stable around 2 days.**

References

1. OECD/EU. Health at a Glance: Europe 2020. State of Health in the EU Cycle. Paris: Organisation for Economic Co-operation and Development; 2020. Available from: https://doi.org/10.1787/82129230-en
2. Meurisse M, Lajot A, Dupont Y, Lesenfants M, Klamer S, Rebolledo J, et al. One year of laboratory-based COVID-19 surveillance system in Belgium: main indicators and performance of the laboratories (March 2020–21). Archives of Public Health. 2021;79:1-9.
3. FPS Health - Food Chain Safety and Environment. Key data in Healthcare. COVID-19: period March 2020-October 2022. 2022. Available from: https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/blikvanger_covid-ii_en_23.02.02.pdf
4. European Commission. EU health preparedness: Recommendations for a common EU testing approach for COVID-19 2020. Available from: https://health.ec.europa.eu/system/files/2020-09/common_testingapproach_covid-19_en_0.pdf
5. Proesmans K, Hancart S, Braeye T, Klamer S, Robesyn E, Djiena A, et al. COVID-19 contact tracing in Belgium: main indicators and performance, January–September 2021. Archives of Public Health. 2022;80(1):1-10.

3.9 Average duration between positive COVID-19 test result and contact tracing initiation (R-9)

3.9.1 Documentation sheet

Description	**Primary indicator** 1. Average duration between positive test result and contact tracing initiation. **Secondary indicators** 2. Proportion of individuals with positive test result contacted within 24 hours after the test result. 3. Proportion of individuals with positive test result contacted within 48 hours after the test result. 4. Proportion of contacted individuals who have installed the Coronalert app. 5. Proportion of contacted individuals who reported using the Coronalert app to alert contacts after the positive test.
Calculation	**Primary indicator** 1. Average duration between positive test result and contact tracing initiation: numerator = sum of durations (in days) between positive test result and contact tracing initiation; denominator = number of contacted index cases during the considered week. **Secondary indicators** 2. Proportion of individuals with positive test result contacted within 24 hours after the test result: numerator = number of index cases contacted within 24 hours of positive test result; denominator = number of contacted index cases during the considered week. 3. Proportion of individuals with positive test result contacted within 48 hours after the test result: numerator = number of index cases contacted within 48 hours of positive test result; denominator = number of contacted index cases during the considered week. 4. Proportion of contacted individuals who have installed the Coronalert app: numerator = number of contacted index cases during the considered week who reported having installed the Coronalert app; denominator = number of contacted index cases during the considered week who accepted to answer additional questions on the use of the Coronalert app. 5. Proportion of contacted individuals who reported using the Coronalert app to alert contacts after the positive test: numerator = number of contacted index cases during the considered week who reported using the Coronalert app to alert contacts after the positive test; denominator = number of contacted index cases during the considered week who accepted to answer additional questions on the use of the Coronalert app.
Rationale	Contact tracing is one of the major public health tools that has been developed to control the spread of COVID-19. However, many countries failed to implement it effectively.[1] Delays may occur at every stage of the process: between onset of symptoms and testing, between testing and results, and between a positive test result and the initiation of contact tracing. To interrupt the transmission of COVID-19, the ECDC recommended that "contact tracing should be done for as many cases as possible as fast as possible".[2] To monitor COVID-19 cases investigation, the ECDC recommended notably to measure the proportion of cases where contact tracing is initiated within 24 hours of diagnosis. In addition, many countries in Europe have developed and implemented contact tracing apps, but their impact and the willingness of the population to participate is not clear.[3] It was suggested that to be effective alongside other interventions, around half the total population should use the app.[4] However, it was highlighted that, despite some willingness to install contact tracing apps, the (correct) usage of them might have been lower.[5-8] In Belgium, the Coronalert app was launched in September 2020.
Data source	Sciensano (Laboratory test database and contact tracing database)

Technical definitions	In Belgium, test results are reported daily to Sciensano.[9] The test database includes test prescriptions and results reported by laboratories (molecular or antigen tests), physicians (molecular or antigen tests), and pharmacies (antigen tests).[10] The test database was linked with the contact tracing database via the unique pseudonymized national registry number.[10] A COVID-19 "index case" is defined as a person with a positive diagnostic test (molecular or antigen test), yet contact tracing could also be requested by a physician for a patient without a test result. In order to take into account only new infectious episodes and to avoid re-contacting the same person during one episode, persons with a previous infection in the past 56 days (until 1 April 2021) or 90 days (since 1 April 2021) are excluded. The duration between positive test result and contact tracing initiation is only calculated for index cases that were effectively contacted. Overall, between January and September 2021, 91.2% of the index cases could be reached.[10] Data are reported weekly, from week 36 of 2020 (week of 31 August 2020) to week 41 of 2021 (week of 11 October 2021). Among the contacted index cases, around half accepted to answer additional questions on the use of the Coronalert app.[10] Data regarding the Coronalert app are reported monthly, from November 2020 to March 2022.
International comparability	N.A.
Limitations	The duration between positive test result and contact tracing initiation is only calculated for index cases that were effectively contacted. Overall, between January and September 2021, 8.8% of the index cases could not be reached.[10] This percentage stayed almost the same until mid-October 2021 (8.0% during the week of 27 September, 7.5% the week during the week of 4 October and 8.1%, during the week of 11 October).[11-13] However, this percentage was higher at the end of 2021 and the beginning of 2022 (delta and omicron variant) because of a very high number of index cases. For instance, it was 17.2% during the week of 18 October 2021, 45.8% during the week of 29 November 2021, and reached 67.0% during the week of 15 November 2022.[14-16] During this period several strategies have been used to prioritize the index cases that should be contacted (according for instance to the age, the virus load, the date of sampling, or the COVID-19 incidence in the area) and alternative methods to contact index cases via SMS and an online tool were deployed. As a result, measuring the average duration between positive test result and contact tracing initiation is less relevant, and results could not be compared with the results obtained before October 2021. For that reason, the indicator is only calculated from week 36 of 2020 (week of 31 August 2020) to week 41 of 2021 (week of 11 October 2021). Measuring the usage of the Coronalert app does not assess its efficiency in preventing the spreading of COVID-19. Also, reported usage does not necessarily represent the correct use of the app. In addition, the number of contacted index cases who accepted to answer additional questions on the use of the Coronalert app largely varies over time (4 889 in May 2021 – 80 994 in January 2022), which implies that percentages should be interpreted with caution.
Dimension	Resilience
Related indicators	R-8 Average duration between COVID-19 testing and test result
Reviewers	Dieter Van Cauteren (Sciensano)

3.9.2 Results

Duration between test result and contact tracing initiation

The average duration between test result and contact tracing initiation was highest in the beginning of the study period (September/October 2020) as a high number of cases had to be contacted because of the second COVID-19 wave (Figure 124). It was highest in Wallonia reaching 2 days. From December 2020 onwards, the average duration stayed mainly below one day in all three regions of the country throughout the rest of the study period. (ending the week of 11 October 2021).

The proportion of individuals with positive test result contacted within 24 hours (Figure 125) follows a similar pattern with a lower proportion during the of the second COVID-19 wave in September/October 2020. There is a more marked drop in Wallonia in the proportion contacted within 24 hours but most of the individuals with positive test result were still contacted within 48 hours (Figure 126). From November 2020 onwards, most individuals (generally more than 80%) were contacted within 24 hours in all regions in Belgium, with close to 100% contacted within 48 hours.

Figure 124 – Average duration between result and contact tracing initiation (in days)

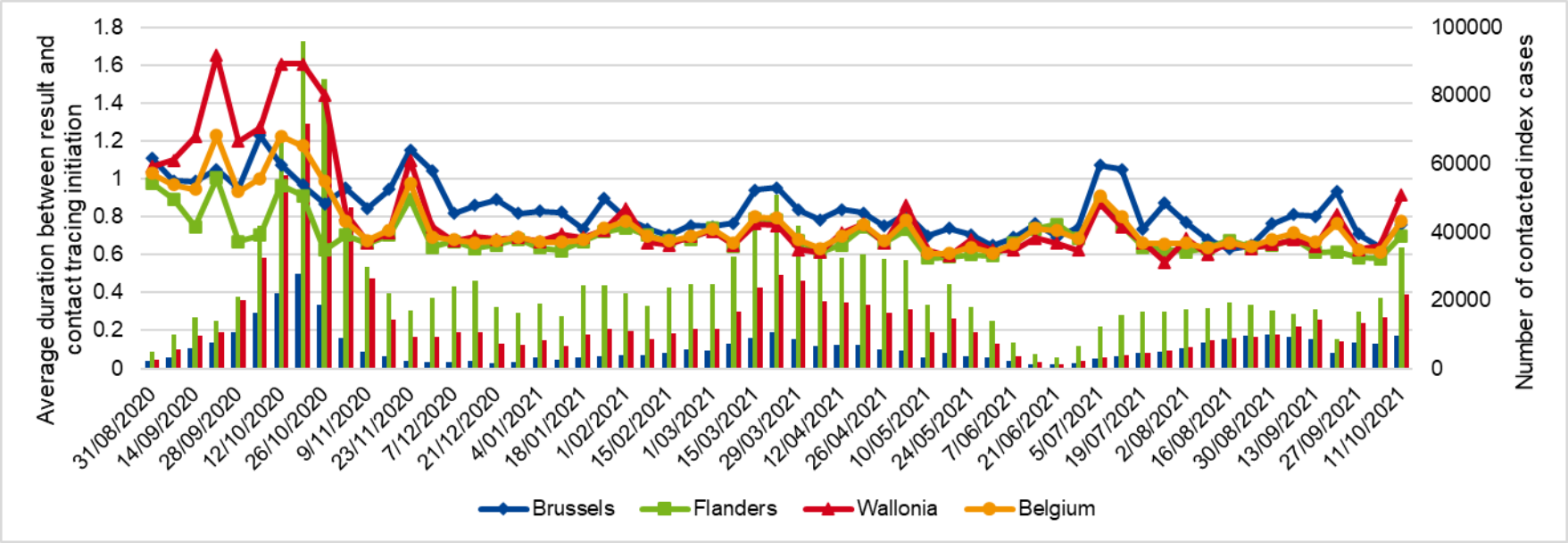


Figure 125 – Proportion of individuals with positive test result contacted within 24 hours after the test result

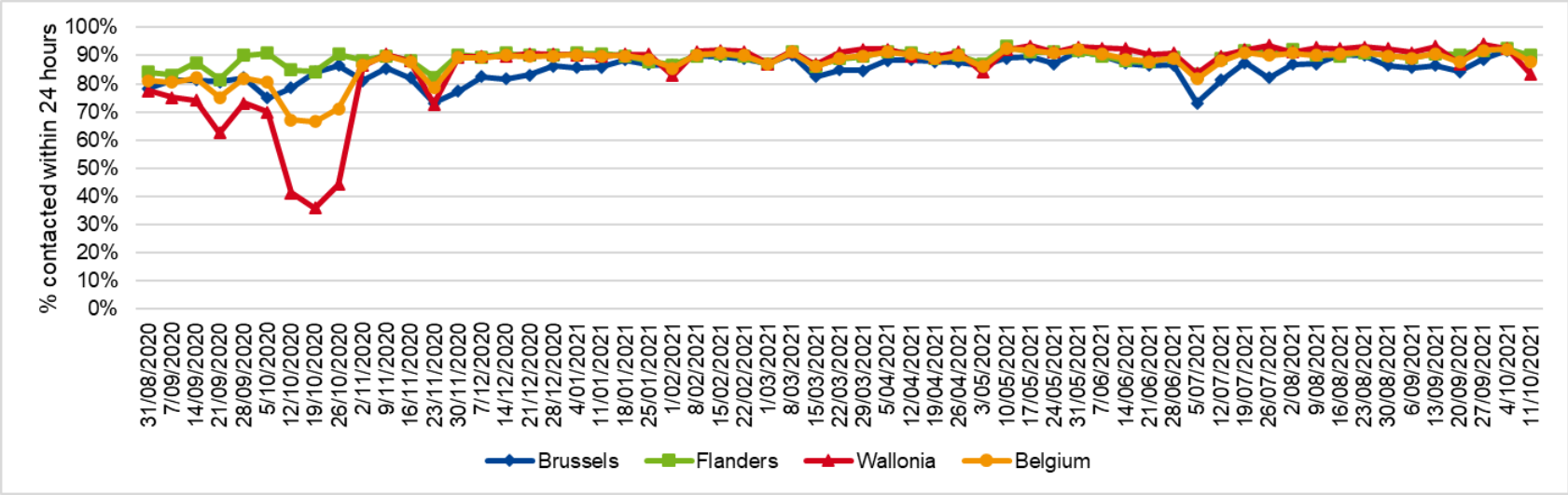
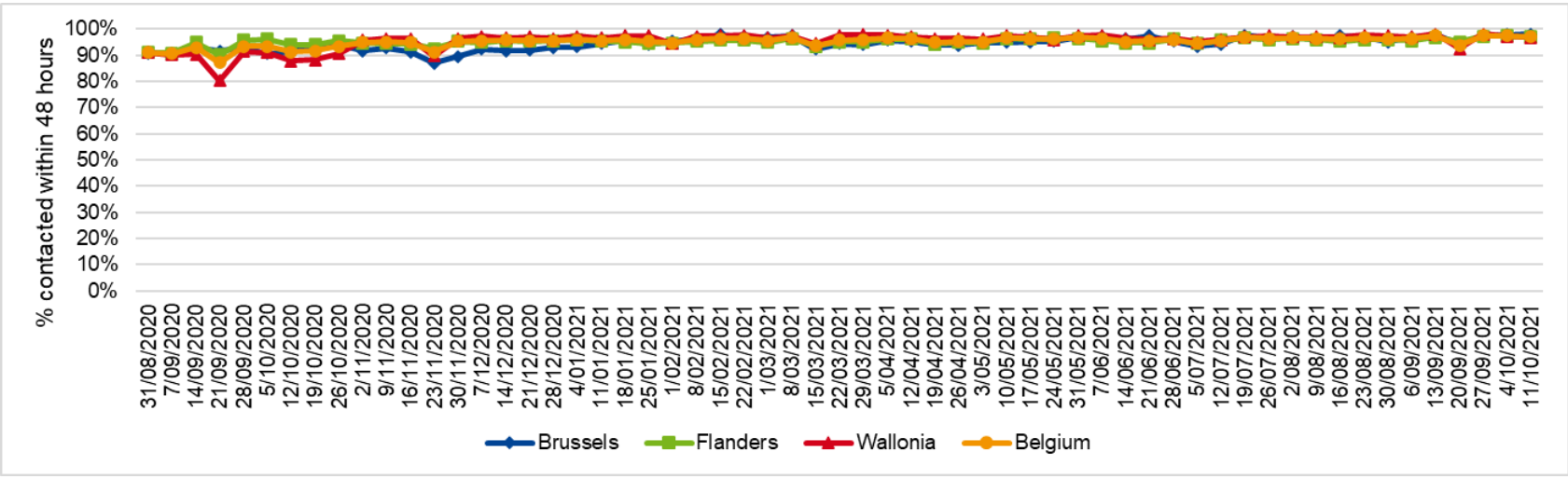


Figure 126 – Proportion of individuals with positive test result contacted within 48 hours after the test result



Coronalert app

In November 2020, 36.3% of contacted individuals (who accepted to answer additional questions) had installed the Coronalert app (Figure 127). This percentage decreased over time until June 2021 to reach 24.1%. After some variation during the summer 2021, the proportion of contacted individuals who had installed the app remained constant at around 30% until February 2022. Even at its maximum (36.9% in March 2022), this proportion never reached 50%, which is seen as the threshold for such an application to be effective.

Trends by region were similar (decrease until June 2021, increase from September 2021). Overall proportions were higher in Flanders than in Wallonia and Brussels. A possible explanation for the decrease in the first half of 2021 may be less use of the app as the population was more widely vaccinated. A possible explanation for the increase from September 2021 onwards may be a confusion of the respondents where they mix up the different “COVID-19 apps” (Coronalert, CovidSafe, CovidScan).

Figure 127 – Proportion of contacted individuals who have installed the Coronalert app

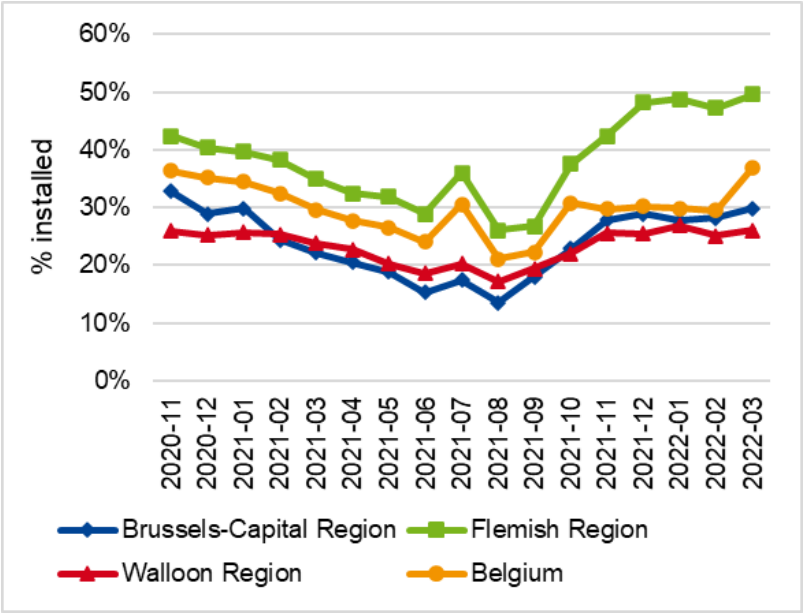
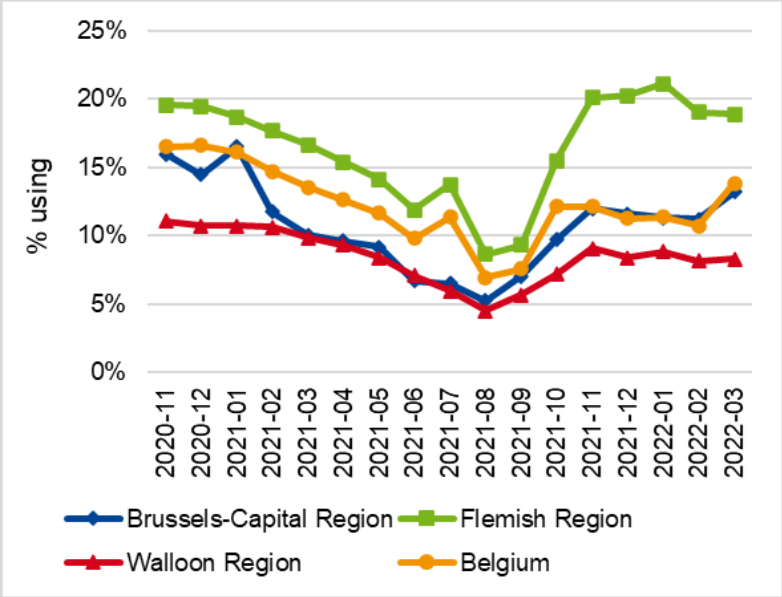


Figure 128 – Proportion of contacted individuals who reported using the Coronalert app to alert contacts after the positive test



A similar trend was noticed in the proportion of contacted individuals (who accepted to answer additional questions) who reported using the application to alert contacts after the positive test (Figure 128). This proportion was 16.5% in November 2021, reached a minimum of 6.9% in August 2021 and was 13.9% in March 2022. This percentage was also higher in Flanders (close to 20% at the end of the study period) than in Wallonia (maximum 11.1%) and Brussels (maximum 15.9%).

The Coronalert app was mainly installed (Figure 129) and used (Figure 130) by persons aged between 18 and 66 years. However, even in that group, the installation rate did not reach the threshold of 50%. and less than 20% used it to alert contacts in case of a positive test.

Figure 129 – Proportion of contacted individuals who have installed the Coronalert app, by age groups

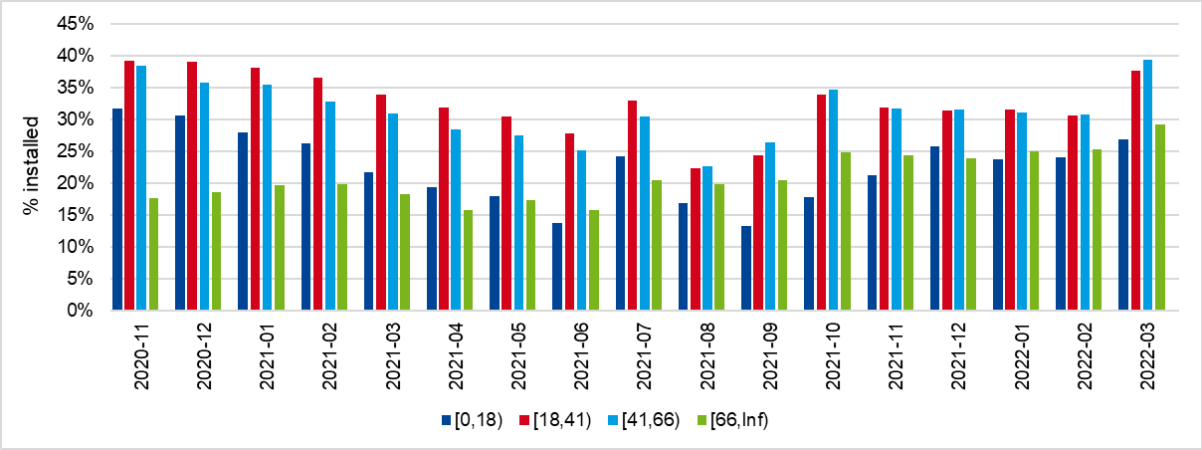
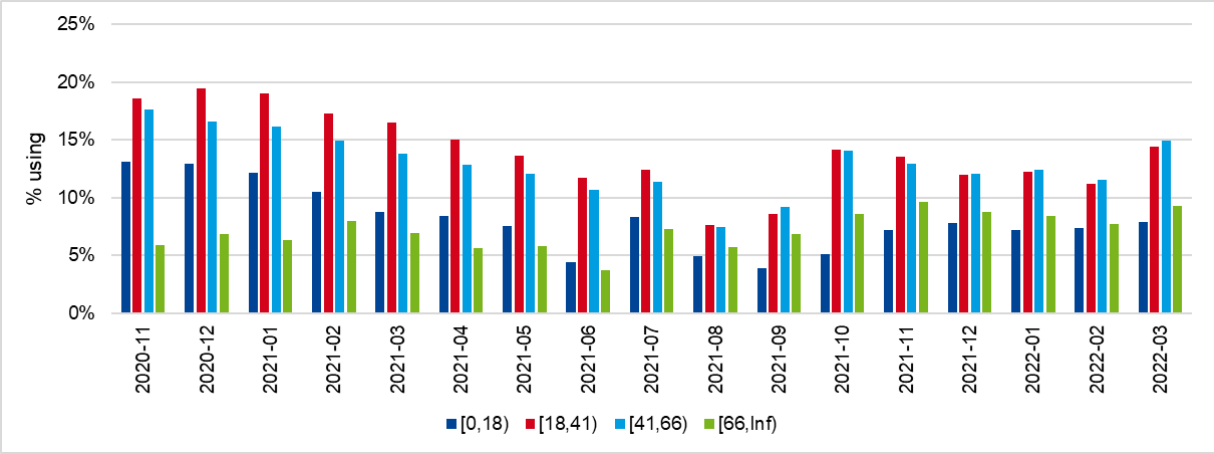


Figure 130 – Proportion of contacted individuals who reported using the Coronalert app to alert contacts after the positive test, by age groups



Key points

- **During most of the study period (September 2020 – October 2021) the average duration between result and contact tracing initiation was shorter than 1 day in all three regions of Belgium. No data were available before September 2020.**
- **The duration between result and contact tracing was highest at the beginning of the study period (September-October 2020), when a high number of persons needed to be to be contacted (second COVID-19 wave).**
- **Overall, the proportion of individuals with positive test result contacted within 24 and 48 hours after the test result were high for long periods of time (above 80% and close to 100% respectively).**
- **The proportion of contacted persons (who accepted to answer additional questions) who had installed the Coronalert app was below 50% in all regions.**
- **The proportion of contacted individuals (who accepted to answer additional questions) who reported using the application to alert contacts after the positive varied between 7% and 17% in Belgium.**

References

1. Lewis D. Why many countries failed at COVID contact-tracing--but some got it right. Nature. 2020;588(7838):384-8.
2. ECDC. Monitoring and evaluation framework for COVID-19 response activities in the EU/EEA and the UK. 2020. Available from: https://www.ecdc.europa.eu/sites/default/files/documents/covid-19-framework-monitor-responses.pdf
3. Sagan A, Webb E, Azzopardi-Muscat N, de la Mata I, McKee M, Figueras J. Health systems resilience during COVID-19. Lessons for building back better. Health Policy Series. European Observatory on Health Systems and Policies. World Health Organization. Regional Office for Europe. 2021;56.
4. University of Oxford. Digital contact tracing can slow or even stop coronavirus transmission and ease us out of lockdown. 2020. Available from: https://www.research.ox.ac.uk/article/2020-04-16-digital-contact-tracing-can-slow-or-even-stop-coronavirus-transmission-and-ease-us-out-of-lockdown
5. Prodan A, Birov S, von Wyl V, Ebbers W, Schulz C, Hentges M, et al. Digital Contact Tracing Study. Study on lessons learned, best practices and epidemiological impact of the common European approach on digital contact tracing to combat and exit the COVID-19 pandemic. 2022. Available from: https://digital-strategy.ec.europa.eu/en/library/covid-19-digital-contact-tracing-study
6. Machida M, Nakamura I, Saito R, Nakaya T, Hanibuchi T, Takamiya T, et al. Survey on usage and concerns of a COVID-19 contact tracing application in Japan. Public Health in Practice. 2021;2:100125.
7. Blom AG, Wenz A, Cornesse C, Rettig T, Fikel M, Friedel S, et al. Barriers to the large-scale adoption of a COVID-19 contact tracing app in Germany: survey study. Journal of medical Internet research. 2021;23(3):e23362.

8. Horvath L, Banducci S, Blamire J, Degnen C, James O, Jones A, et al. Adoption and continued use of mobile contact tracing technology: multilevel explanations from a three-wave panel survey and linked data. BMJ open. 2022;12(1):e053327.

9. Meurisse M, Lajot A, Dupont Y, Lesenfants M, Klamer S, Rebolledo J, et al. One year of laboratory-based COVID-19 surveillance system in Belgium: main indicators and performance of the laboratories (March 2020–21). Archives of Public Health. 2021;79:1-9.

10. Proesmans K, Hancart S, Braeye T, Klamer S, Robesyn E, Djiena A, et al. COVID-19 contact tracing in Belgium: main indicators and performance, January–September 2021. Archives of Public Health. 2022;80(1):1-10.

11. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (22 octobre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211022%20-%20FR.pdf

12. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (15 octobre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211015%20-%20FR.pdf

13. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (8 octobre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211008%20-%20FR.pdf

14. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (26 novembre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211126%20-%20FR.pdf

15. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (10 décembre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211210%20-%20FR.pdf

16. Sciensano. COVID-19 Bulletin épidémiologique hebdomadaire (29 octobre 2021). 2021. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_Weekly%20report_20211029%20-%20FR.pdf

3.10 COVID vaccination in the last six months (at least one dose, % of the population) (R-10); COVID vaccination in the last six months (at least one dose, % of the population aged 65+) (R-11)

3.10.1 Documentation sheet

Description	**Principal indicators** Percentage of the adult population who received at least one COVID-19 vaccine dose in the last six months (R-10) Percentage of the population aged 65 years or more who received at least one COVID-19 vaccine dose in the last six months (R-11) **Secondary indicators** Percentage of the healthcare professionals who received at least one COVID-19 vaccine dose in the last six months Percentage of the population aged 85 years or more who received at least one COVID-19 vaccine dose in the last six months Percentage of the considered population (18+, 65+, 85+, healthcare professionals) who is vaccinated (primary course) Percentage of the considered population (18+, 65+, 85+, healthcare professionals) who is vaccinated (primary course + first booster)
Calculation	Percentage of the adult population (resp. aged 65+, 85+ years) who received at least one COVID-19 vaccine dose in the last six months: Numerator: number of Belgian adult residents (resp. persons aged 65 years or more, persons aged 85 years or more, on the 1st January of the considered year) having received a COVID-19 vaccine dose in the last six months, calculated per two weeks; Denominator: total adult population (resp. aged 65 years or more, aged 85 years or more) on the 1st January of the considered year. Percentage of the healthcare professionals who received at least one COVID-19 vaccine dose in the last six months: Numerator: number of healthcare professionals having received a COVID-19 vaccine dose in the last six months, calculated per two weeks; Denominator: total number of healthcare professionals alive and active in Belgium at the start of the vaccination campaign. Percentage of the targeted population (aged 18+, 65+, 85+ years) who is vaccinated (primary course) (resp. primary course + first booster): Numerator: number of Belgian adults (resp. persons aged 65 years or more, persons aged 85 years or more, on the 1st January of the considered year) having received the full primary vaccination course (resp. primary vaccination course and first booster) of the COVID-19 vaccine, calculated per week; Denominator: total adult resident population (resp. aged 65 years or more, aged 85 years or more) on the 1st January of the considered year. Percentage of the healthcare professionals who is vaccinated (primary course) (resp. primary course + first booster): Numerator: number of healthcare professionals alive and active in Belgium at the start of the vaccination campaign having received the primary schedule (resp. primary schedule and first booster) of the COVID-19 vaccine, calculated per week; Denominator: total number of healthcare professionals alive and active in Belgium at the start of the vaccination campaign.
Rationale	The rapid development and deployment of vaccines were important elements contributing to pandemic management.[1] Coverage of COVID-19 vaccination in the adult population and among specific groups (aged 65+, 85+ years, etc.) have been widely monitored using indicators such as the percentage of the population who received primary course vaccination, or primary course and booster vaccinations.[2] However, as time passes and a large share of the population is vaccinated, continuing to monitor these indicators appears to be less relevant. The selected main indicators (percentage of the population, and of the population aged ≥65 years, who received at least one vaccine dose in the last six months) allow a meaningful analysis both in the first stages of deployment of the vaccine as well as when a large coverage is already achieved. In Belgium, the primary course vaccination campaign started at the end of 2020 in several phases according to pre-defined priority target groups:[3] (1) residents and staff of nursing homes and community care institutions, (2) healthcare professionals in hospitals and working on the front line, (3) other hospital and health service staff, (4) people aged ≥65 years, (5) people aged 18-64 years with specific underlying health conditions. The

	campaign was operationalised by the federated entities (Brussels, Flanders, Wallonia and the German-speaking community Ostbelgien), with practical implementation differences. The vaccination campaign for the overall non-elderly population (first adults, then children) started in June 2021. The first booster campaign started in September 2021 following similar priority criteria (although only people with immunocompromising conditions were in a priority group, instead of people with underlying health conditions).[4] In December 2021, the first booster campaign extended to the overall population. A second booster campaign in Flanders started during the spring 2022 targeting persons with a weakened immune system, residents of nursing homes and persons aged 80 years or over. In the fall of 2022, the following campaign was organised. Persons aged 50 years or more, nursing home residents, healthcare professionals and persons with a weakened immune system were formally invited on a national level, while all adults were formally invited in Flanders. Booster vaccination was available on a voluntary basis for the overall adult population.
Data source	Sciensano (Vaccinnet+)
Technical definitions	Weekly data, from the week of 28 December 2020 to the week of 26 December 2022. Primary vaccination course is defined as 1 vaccine dose for Janssen (Johnson & Johnson) or 2 vaccine doses for Comirnaty (Pfizer/BioNTech), Spikevax (Moderna), Vaxzevria (AstraZeneca), Nuvaxovid (Novavax) and other WHO or EMA approved vaccines. Population data are based on the Belgian population structure on 1 January of the considered year released by Statbel. The age of vaccinated persons is defined as their age on 1 January of the considered year and may differ from their age at the date of vaccination. This impacts the repartition of vaccinated people by age groups. For healthcare professionals, estimates are based on the linkage between the national COVID-19 vaccine registry (Vaccinnet+) and the Common Base Registry for HealthCare Actor (CoBRHA). These data only include healthcare professionals residing in Belgium listed as alive at the start of the vaccination campaign and as active in the CoBRHA database. The active/inactive status was determined on the basis of RIZIV – INAMI numbers and data from the FPS Public Health. Regional distribution is based on place of residence and not place of vaccination, nor place of practice for healthcare professionals. Results for Ostbelgien are presented separately and are excluded from Wallonia data.
International comparability	No international comparison is available for the principal indicators. Comparison with OECD countries is provided for primary course vaccination and first booster vaccination of adults.
Limitations	The relevance of the principal indicator is highly dependent on stage of the epidemics and the type of variants that are prevalent. In particular, at the beginning of the vaccination campaign, it was advised to have a short delay between doses, in order to ensure a fast protection of the population. The first booster was advised for the whole adult population, and was mainly given during winter. Once the acute phase was passed, an annual booster, before each winter, was advised for at-risk populations.[5, 6] Therefore, the 6-month interval is relevant to analyse during the winter, but is less relevant during summer. On the contrary, the number of persons receiving a vaccine dose during summer should be reduced, because these persons would face decreased vaccine effectiveness during the winter. In addition, vaccination is particularly advised to ensure protection against aggressive variants, and should be performed at the adequate moment to ensure it is adapted to the concerned variant. Due to that, the interpretation of the principal indicator must be nuanced, taking into account both the period of the year and the predominant type of variant. In the analysed data, it is not possible to distinguish the type of vaccine that has been received (adapted vaccine or not). The share of the at-risk population who received at least one COVID-19 vaccine dose is not analysed despite the fact that specific groups (immunocompromised, etc.) were targeted in early vaccination campaigns in Belgium. Interested readers are referred to Stouven et al. (2023).[7] Regarding estimates for healthcare professionals, the CoBRHA includes healthcare professionals with a Belgian "license to practice" even if they have shifted careers to another sector. Retired professionals are not excluded from the database. In contrast, administrative staff or students

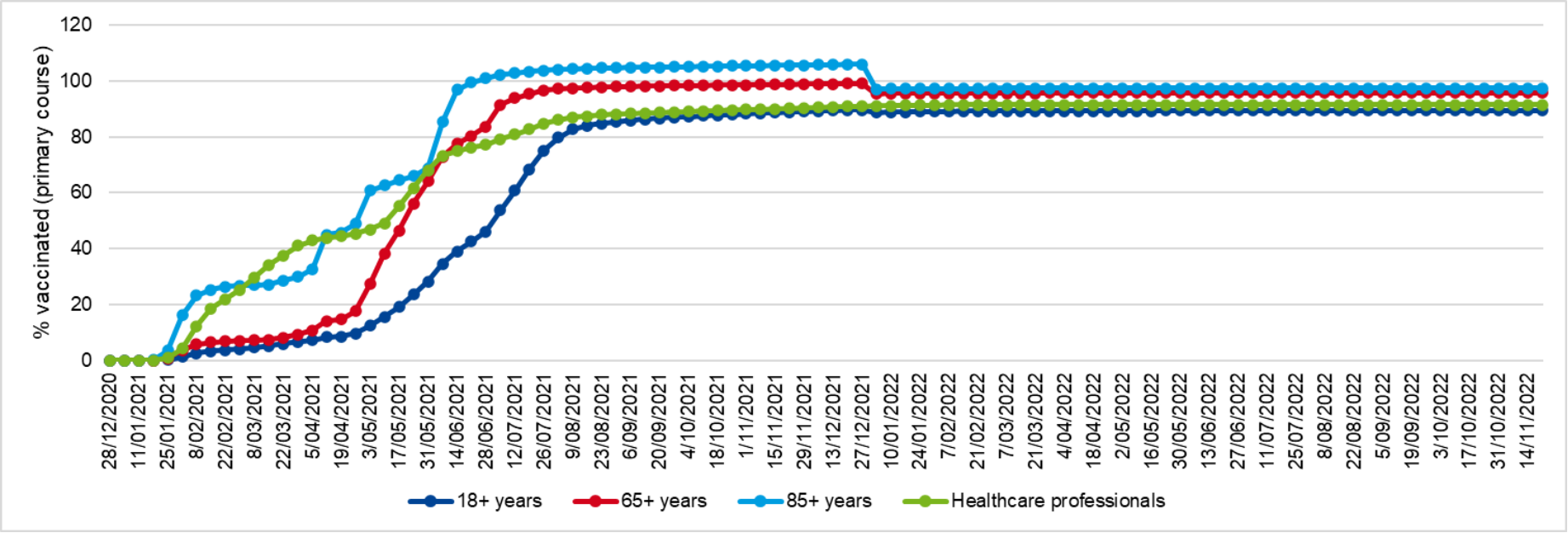
	working in a healthcare facility are not identifiable in the CoBRHA database. Cross-border healthcare workers vaccinated at their workplace in a neighbouring country are also not systematically included. The measured indicators do not allow to measure vaccine effectiveness.[8]
Dimension	Resilience
Related indicators	
Reviewers	Sabine Stordeur (Taskforce Vaccination COVID-19), Joris van Loenhout (Sciensano)

3.10.2 Results

Belgium

The primary course vaccination campaign started in December 2020, focusing first on vulnerable target groups. By May 2021, 60% of the persons aged 85 years or more finished their primary course (Figure 131). From the week of 21 June 2021, virtually all (>97%) persons aged 85 years or more finished their primary course. Note that this percentage can appear to be larger than 100% due to the fact that age categories are defined by the age on 1st January of the considered year, not by the age at the vaccination date. By June 2021, 60% of the persons aged 65 years or more were also vaccinated and in August 2021, virtually all of them (>97%) finished their primary course. At the Belgian level, 60% of the adults (aged 18 or more) finished their primary course by mid-July 2021. This share reached 88% in November 2021 and did not evolve much after that date (the maximum was 89.4%).

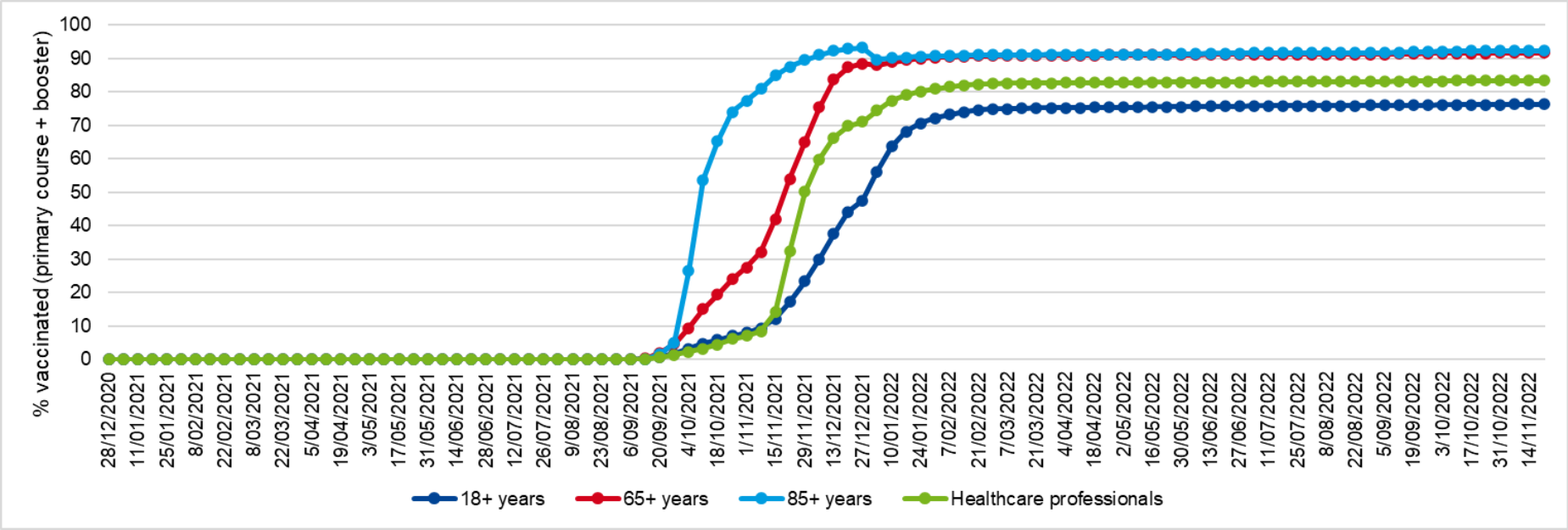
Figure 131 – Percentage of the population who is vaccinated (primary course)



Note: a decline is observed on 1st January because of a change in the population groups. As age groups are based on the age on 1st January of the considered year, on 1st January each person in the population is considered to be one year older. In addition, people who died during the previous year are removed.

The first booster campaign started in September 2021, and the share of vaccinated persons increased faster than during the primary course campaign (Figure 132). Within 6-7 weeks (before 18 October 2021), 60% of the persons aged 85 years or more were fully vaccinated (primary course + first booster) and 90% of them were fully vaccinated within 3 months (before 6 December 2021). At the end of November 2021, more than 60% of the persons aged 65 years or more were fully vaccinated and this share was 90% at the end of January 2022. At the Belgian level, 60% of the adults (aged 18 years or more) were vaccinated by mid-January 2022. This share reached 75% in March 2022 and did not evolve much after that date (the maximum was 76.3%)

Figure 132 – Percentage of the population who is vaccinated (primary course + first booster)



Note: a decline is observed on 1st January because of a change in the population groups. As age groups are based on the age on 1st January of the considered year, on 1st January each person in the population is considered to be one year older. In addition, people who died during the previous year are removed.

At the beginning of the vaccination campaign, the percentage of the population who received at least one COVID-19 vaccine dose in the last six months (Figure 133) was obviously equivalent to the percentage of the population who was vaccinated (Figure 131). As the delay between the start of the primary course campaign (December 2020) and the start of the booster campaign (September 2021) was longer than six months, the share of the population who received at least one dose in the last six months decreased for the group aged 85 years or more from August 2021 onwards. After the start of the booster campaign this share increased again from October 2021 onwards, to reach 90% at the end of November 2021. The same pattern was observed for the age group 65+ years but at a later time, as they had received their primary course vaccination later: the share of the population aged 65 years or more who received at least one dose in the last six months decreased slowly from end July 2021, but more importantly from November 2021, and increased again in December 2021, to reach 88% in January 2022. Such a decrease was not as clearly observed between the two campaigns among the population aged 18 years and over, because, as a result of increased vaccine availability, there was less time in between younger and older people for the administration of the booster dose, compared to the primary course.

Six months after the start of the booster campaign (from March 2022 onwards), a sharp decrease is observed in the share of the population aged 85 years or more who received at least one dose in the last six months, reaching a minimum of 15.7% during the week of 30 May 2022. It should be noted that the decreases shown in Figure 133 occurred in a period were a less aggressive variant (Omicron) was dominant (see Table 23) and treatments against COVID-19 were increasingly available.

Due to the second and third booster campaigns, this share increased later on, but stayed largely below its previous level (a maximum of 70% was reached in November 2022).

The same evolution is observed for the age groups 65+ and 18+ years, with a delay in time. During the week of 5 September 2002, 16.3% of the persons aged 65 years or more, and 5.7% of the adults had received a vaccine dose in the last six months. These shares increased later on, but stayed largely below their previous levels (with a maximum of 68.1% for the 65+ age group and 38.0% for the 18+ age group).

Figure 133 – Percentage of the population (aged 18+, 65+, 85+ years) who received at least one COVID-19 vaccine dose in the last six months, Belgium

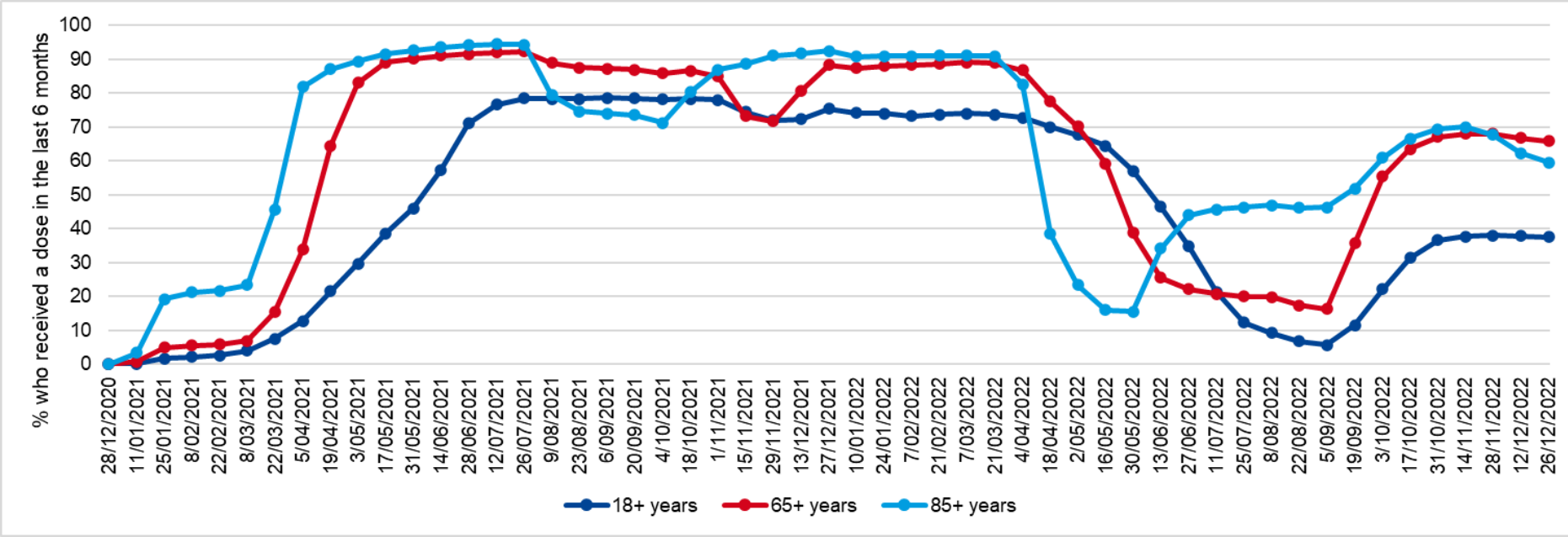


Table 23 – Predominant COVID-19 variant in Belgium, February 2021 – February 2023

Period	Predominant variant
15 February 2021 – 28 June 2021	Alpha (B.1.1.7)
29 June 2021 – 30 December 2021	Delta (B.1.617.2)
31 December 2021 – 3 March 2022	Omicron (B.1.1.529)
4 March 2021 – 15 June 2022	Omicron BA.2 (B.1.1.529.2 or BA.2)
16 June 2022 – 7 November 2022	Omicron BA.5/BF (B.1.1.529.5 or BA.5 or B.1.1.529.5.2.1 or BA.5.2.1)
8 November 2022 – 23 February 2023	Omicron BQ (B.1.1.529.5.3.1.1.1.1 or BA.5.3.1.1.1.1 or BE.1.1.1)

Predominant variant is defined as the most identified variant (14-day forward moving average) in a sequence of 400-500 positive samples diagnosed in Belgium per week. Source: Sciensano.

Regional comparison

Figure 134 and Figure 135 show that the percentage of the population, aged 18+ and 65+ years respectively, who received at least one COVID-19 vaccine dose in the last six months followed a similar evolution in all regions of the country. However, these shares were almost always the lowest in Brussels and the largest in Flanders. The maximum reached in Flanders for adults (Figure 134) was 83.8%, compared to 78.7% at the national level, 73.0% in Wallonia, 70.1% in Ostbelgien and 62.2% in Brussels. For the group aged 65 years or more (Figure 135), the maxima were 95.5% in Flanders, 92.3% at the national level, 88.0% in Ostbelgien, 87.8% in Wallonia and 78.6% in Brussels.

The difference between regions was stronger from September 2022 onwards, showing a better success of the second and third booster campaigns in Flanders than in the other regions. At the end of 2022, the share of the adult population who had received at least one dose in the last six months (Figure 134) was 48.6% in Flanders, 37.6% at the national level, 23.6% in Wallonia, 21.9% on Ostbelgien and 17.0% in Brussels. For the age group 65+ years (Figure 135), the shares were 73.8% in Flanders, 65.8% at the national level, 54.5% in Wallonia, 45.8% in Brussels and 41.3% in Ostbelgien.

For the age group 85+ years (Figure 136), the share of the population who received at least one vaccine dose in the last six months also followed a similar evolution in all regions of the country during the primary course and booster campaigns. Also for this group, the share was almost always the highest in Flanders. From June 2022 however, strong regional differences appeared. In Flanders, the percentage of the population aged 85 years or more who received at least one vaccine dose in the last six months rapidly increased during the second booster campaign, to reach 70% in August 2022. During the same period, this percentage was only 5.5% in Wallonia, 10.3% in Brussels and 25.4% in Ostbelgien. The increase occurred later (around September 2022) in other parts of the country. At the end of the year 2022, the percentage of the population aged 85 or more who received at least one vaccine dose in the last six months was almost similar in all regions (ranging between 53.2% and 61.7%) except in Ostbelgien (36.8%).

Figure 134 – Percentage of the population aged 18+ years who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions

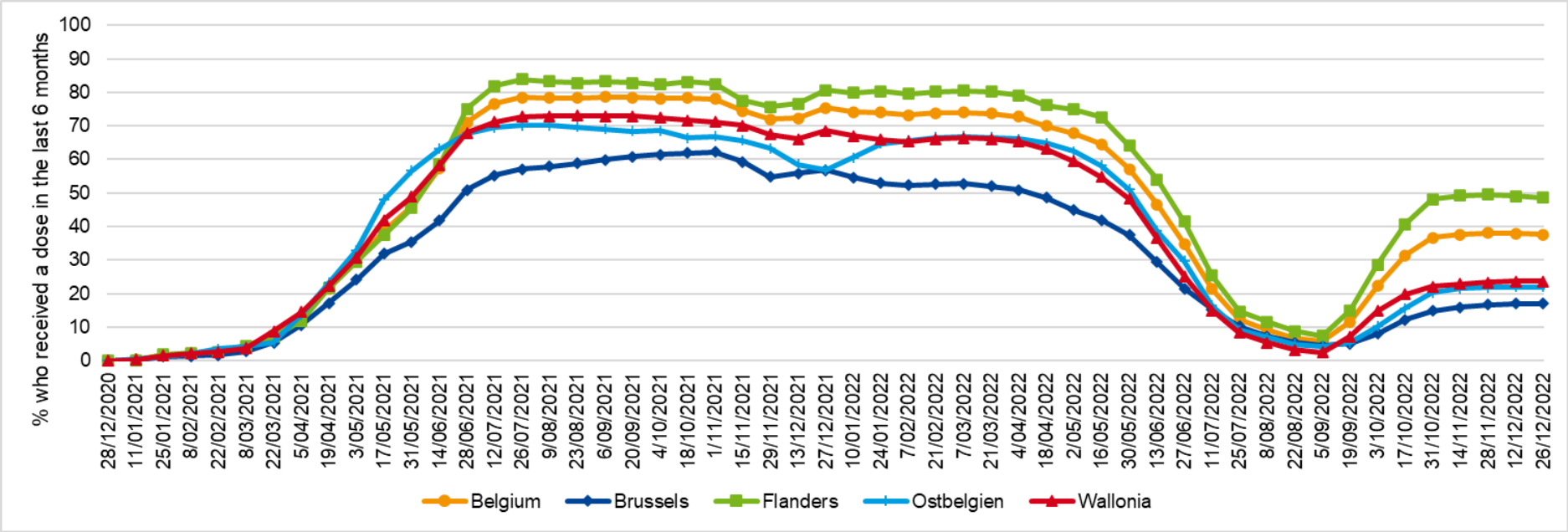


Figure 135 – Percentage of the population aged 65+ years who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions

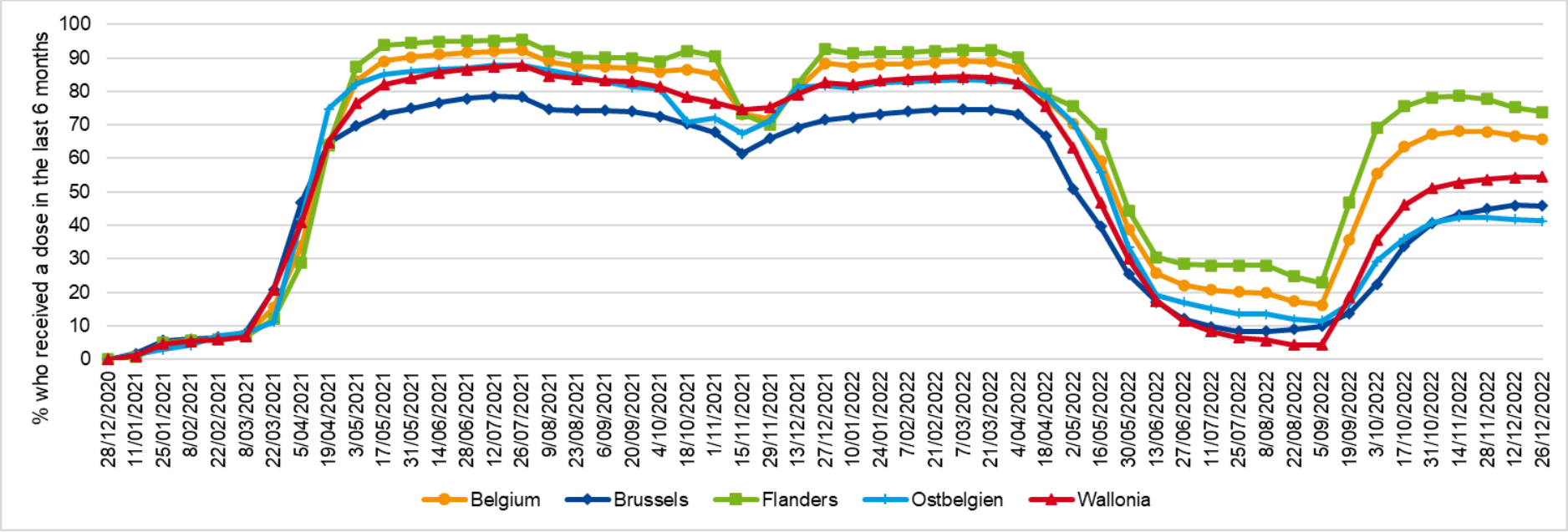
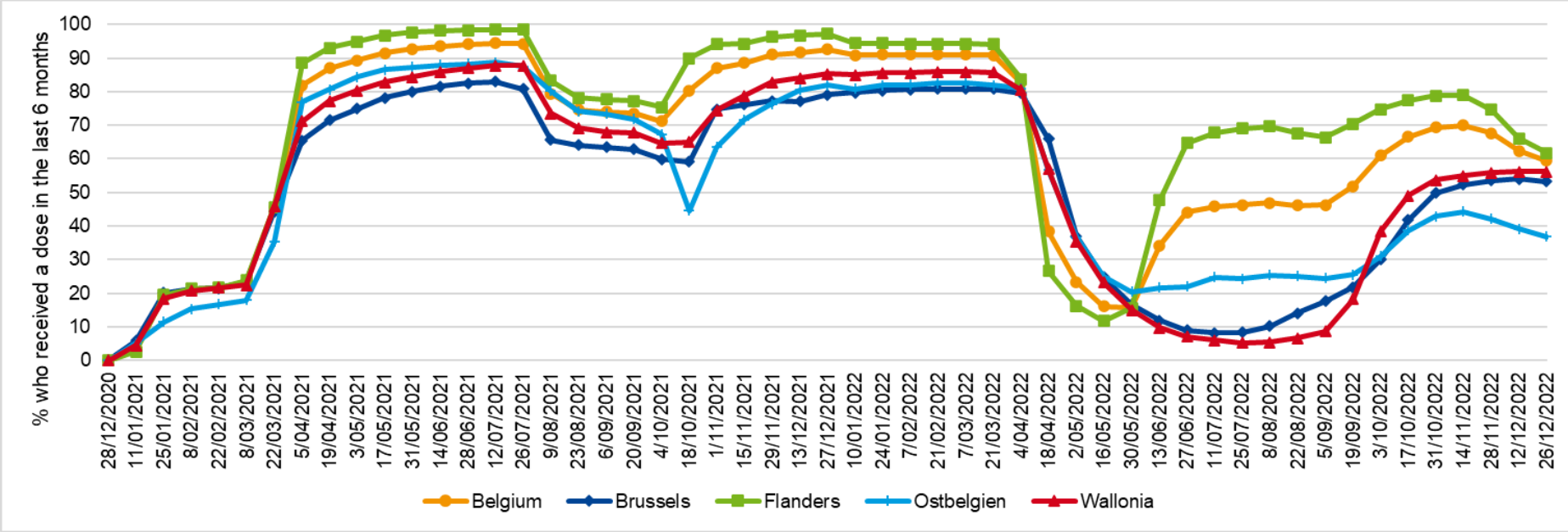


Figure 136 – Percentage of the population aged 85+ years who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions



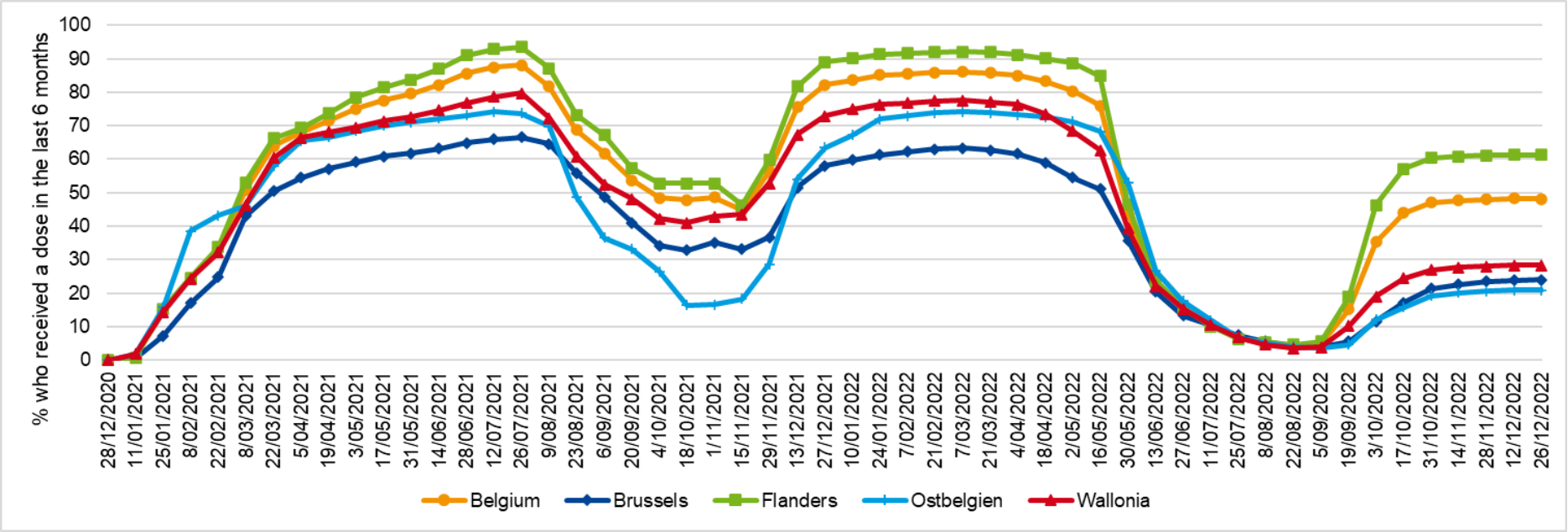
Healthcare professionals

Figure 131 and Figure 132 also show the percentage of healthcare professionals who were vaccinated (primary course or primary course + booster respectively) at the national level. As groups of healthcare professions were targeted in priority early in the primary course campaign, the percentage of vaccinated healthcare professionals increased steadily from January 2021 onwards. By the end of May 2021, 60% of them were vaccinated and this proportion was 90% mid-November 2021 (and reached 91.5%). Regarding the first booster campaign, most healthcare professionals were vaccinated between mid-November 2021 and mid-December 2021 (where the proportion of healthcare professionals fully vaccinated increased from 8.5% to 66.4%). The share of healthcare professionals vaccinated with primary course and a first booster reached a maximum of 83.4% (compared to 76.3% for the adult population in general).

Figure 137 shows the share of healthcare professionals who received at least one COVID-19 vaccine dose in the last six months in Belgium and in the different regions. Overall, the evolution over time was similar in all regions but systematic differences appeared in the proportion. The percentage of healthcare professionals who received at least one dose in the last six months was most of the time the highest in Flanders. There, it reached 93.5%, compared to a maximum of 79.7% in Wallonia, 74.2% in Ostbelgien and 66.6% in Brussels (88.1% at the national level). The regional differences were also more marked after September 2022. At the end of the

year 2022, 61.3 % of healthcare professionals in Flanders had received at least one dose in the last six months, while this proportion was only 28.4% in Wallonia, 24.0% in Brussels and 21.0% in Ostbelgien (48.2% at the national level).

Figure 137 – Percentage of the healthcare professionals who received at least one COVID-19 vaccine dose in the last six months, Belgium and regions

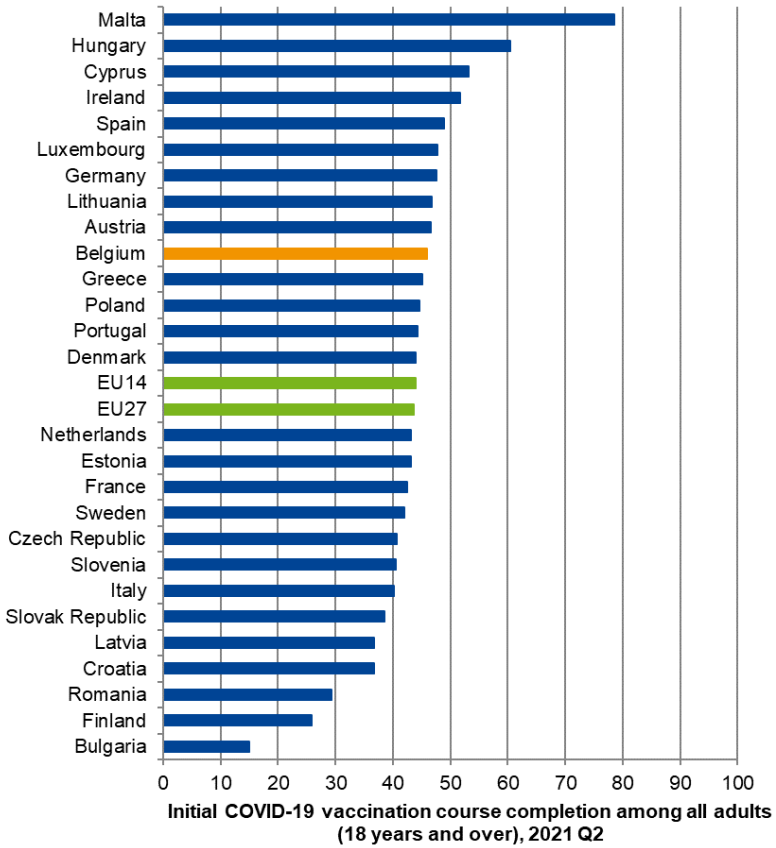


International comparison

In mid-2021, EU-27 countries had vaccinated (primary course) an (unweighted) average of 43.7% of the population aged 18 years or more (see Figure 138). The (unweighted) average among EU-14 countries was 44.0%. Belgium completion rate (45.9%) was close to the EU-27 and EU-14 averages. The share of vaccinated adults increased in all countries during the second half of 2021 so that, by the end of 2021, in UE-27 countries an (unweighted) average of 77.0% of the population aged 18 years or more was vaccinated (primary course), but with large differences between countries (see Figure 139). The (unweighted) average among EU-14 countries was 88.5%. Belgium achieved one of the highest completion rate (89.2%). Also, based on survey data, Belgium showed higher acceptance of COVID-19 vaccines than the EU-27 average.[9]

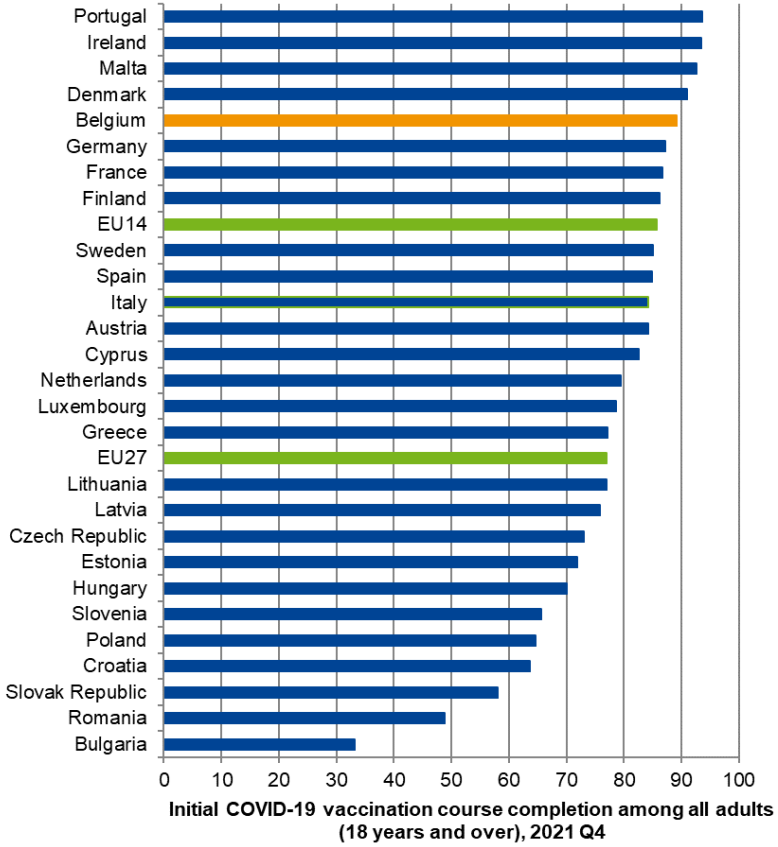
Figure 140 shows the percentage of adults who received the first booster vaccination in EU countries (data of 16 June 2023). This percentage reached 76.7% in Belgium, which is above the average in the EU-27 countries (65.4%) and in the EU-14 countries (73.1%).

Figure 138 – Primary COVID-19 vaccination course completion among all adults (18+ years) in EU countries, 2021 Q2



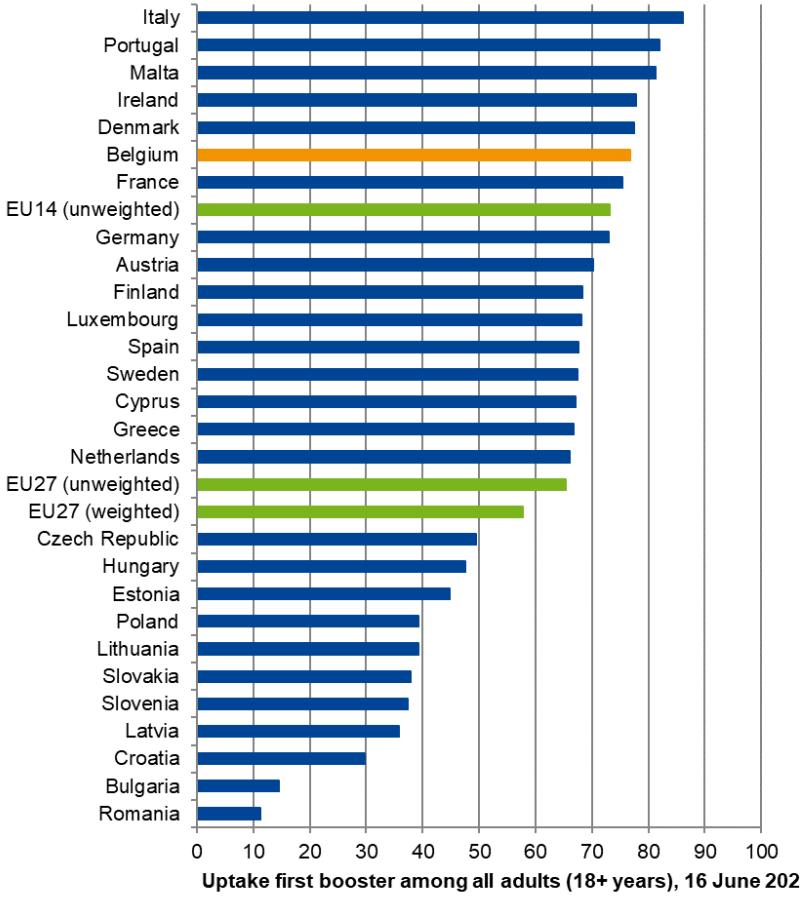
Source: OECD/EU (2022)[1]

Figure 139 – Primary COVID-19 vaccination course completion among all adults (18+ years) in EU countries, 2021 Q4



Source: OECD/EU (2022)[1]

Figure 140 – Uptake first booster among all adults (18+ years) in EU countries, 16 June 2023



Source: ECDC (2023)[10]

Key points

- In Belgium, the overall majority (>97%) of persons aged 85 years or more and aged 65 years or more were vaccinated with primary course vaccination. The share reached 89.3% for the overall adult population (aged 18 years or more).
- The share of vaccinated adults (primary course) in Belgium was above the average in the EU-27 countries (77.0%) and in the EU-14 countries (88.5%).
- In Belgium, more than 90% of the persons aged 85 years or more and aged 65 years or more were vaccinated with primary course and first booster. The share reached 76.3% for the adult population. This was above the average in the EU-27 countries (65.4%) and in the EU-14 countries (73.1%).
- After the first booster campaign a decrease was observed in the share of the population who received at least one dose in the last six months. Owing the second and third booster campaigns, this share increased later on, but stayed largely below its previous level (a maximum of 70.1% was reached for the age group 85+ years, 68.1% for the age group 65+ years and 38.0% for the adult population).
- The second and third booster campaigns showed better success in Flanders than in the other regions, so that the proportion of the population who received at least one dose in the last six months increased more in Flanders than in the other regions. Also, for the age group 85+ years, it increased sooner in Flanders than in the other regions, due to an earlier second booster campaign organised in Flanders for the population aged 80 years and over.
- At the end of 2022, 37.6% of the adults (18 years or more) in Belgium had received at least one dose in the last six months. This proportion was 48.6% in Flanders, 23.6% in Wallonia, 21.9% in Ostbelgien and 17.0% in Brussels.
- At the end of 2022, 65.8% of the persons aged 65 years or more in Belgium had received at least one dose in the last six months. This proportion was 73.8% in Flanders, 54.5% in Wallonia, 45.8% in Brussels and 41.3% in Ostbelgien.
- Healthcare professionals were targeted in priority in the vaccination campaign, so that by the end of May 2021, 60% of them were vaccinated and this proportion was 90% during mid-November 2021 (and reached a maximum of 91.5%). The share of healthcare professionals vaccinated with primary course and a first booster reached a maximum of 83.4% (compared to 76.3% for the adult population in general).
- At the end of 2022, 48.2% of healthcare professionals in Belgium had received at least one dose in the last six months. This proportion was 61.3% in Flanders, 28.4% in Wallonia, 24.0% in Brussels and 21.0% in Ostbelgien.

References

1. OECD/EU. Health at a Glance: Europe 2022. State of Health in the EU Cycle. Paris: Organisation for Economic Co-operation and Development; 2022. Available from: https://doi.org/10.1787/82129230-en
2. Sciensano. COVID-19 - Situation épidémiologique [Web page]. [cited January 2023]. Available from: https://covid-19.sciensano.be/fr/covid-19-situation-epidemiologique
3. Taskforce opérationnalisation de la Stratégie de vaccination. Avis pour l'opérationnalisation de la Stratégie de vaccination COVID-19 pour la Belgique. 2020. Available from: https://d34j62pglfm3rr.cloudfront.net/downloads/Note_TF_Strategy_Vaccination_FR_0312_post_press.pdf
4. Commissariat Corona du Gouvernement. Note sur l'administration d'une dose de rappel d'un vaccin Covid-19 pour compléter le schéma vaccinal de la population générale. 2021. Available from: https://fdn01.fed.be/documents/7a0245e7bcbacb375393373bb5b4d017/Note%20sur%20l%27administration%20d%27une%20dose%20de%20rappel_final_FR%20%281%29.pdf
5. Conseil Supérieur de la Santé. Vaccination contre la COVID-19 : Saison automne/hiver 2022 – 2023. Recommandations préliminaires. 2022. Avis n° 9721 Available from: https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/20230214_css-9721_covid-19_booster_automne_2022_avec_annexe_vweb.pdf
6. Conseil Supérieur de la Santé. Vaccination contre la COVID-19 - Stratégie de vaccination de la population belge pour 2023-2024. 2023. Avis n° 9766 Available from: https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/20230711_css-9766_covid-19_vaccination_2023-2024_vweb.pdf
7. Stouten V., Billuart M., Van Evercooren I., Hubin P., Nasiadka L., Catteau L., et al. Rapport thématique : Couverture vaccinale et impact épidémiologique de la campagne de vaccination COVID-19 chez les personnes présentant des maladies sous-jacentes en Belgique. Sciensano; 2023. Available from: https://covid-19.sciensano.be/sites/default/files/Covid19/COVID-19_THEMATIC_REPORT_Vaccination%20des%20personnes%20pr%C3%A9sentant%20des%20maladies%20sous-jacentes%20_FR.pdf
8. Braeye T, Cornelissen L, Catteau L, Haarhuis F, Proesmans K, De Ridder K, et al. Vaccine effectiveness against infection and onwards transmission of COVID-19: Analysis of Belgian contact tracing data, January-June 2021. Vaccine. 2021;39(39):5456-60.
9. European Commission. Flash Eurobarometer 505. Attitudes on vaccination against COVID-19. February 2022. 2022. Available from: https://europa.eu/eurobarometer/surveys/detail/2692
10. ECDC. European Centre for Disease Prevention and Control COVID-19 Vaccine Tracker [Web page]. [cited August 2023]. Available from: https://vaccinetracker.ecdc.europa.eu/public/extensions/COVID-19/vaccine-tracker.html#uptake-tab

3.11 Workforce reserve (R-12)

3.11.1 Documentation sheet

Description	Number of health professionals registered in workforce reserve.
Calculation	Number of health professionals registered in workforce reserve in each of the Federated entities.
Rationale	In response to the COVID-19 pandemic, countries had to expand their workforce capacity and mobilising additional staff from reserve lists (often created during the crisis) was one of the strategies implemented by various countries including Belgium.[1] At the level of Federated entities, list of reserves have been organised to provide assistance in the health services under their competences (nursing homes, vaccination, etc.) in cases where additional support was required. People could register via the respective platforms created by Iriscare (Brussels), the Flemish Agency for Care and Health (Agentschap Zorg en Gezondheid), the Walloon Agency for a quality life (AViQ), and the German-speaking Community (Ostbelgienlive).[2-5]
Data source	Flemish Agency for Care and Health (Agentschap Zorg en Gezondheid), the Walloon Agency for a quality life (AViQ), IrisCare, and the German-speaking Community (Ostbelgienlive).[2-5]
Technical definitions	Data from the German-speaking Community include the following professions: physicians, nurses, midwives, first aid/ambulance workers, pharmacists and nursing assistants. No time period is given, but data were provided in February 2023. Data from Flanders refer to persons with a health background registered on the list on 28 April 2021 (no further breakdown by profession available). Data from Wallonia concern both the year of registration (new registrations in 2020, 2021, 2022 (until September 2022)) and the number of people still available in September 2022 (always available or no end date given) for the following professions: physicians, nurses, pharmacists, physiotherapists, dentists, occupational therapists, psychologists, nursing assistants and other health professionals. Data from Brussels refer to health professionals (nursing assistants, nurses, or other health professionals) registered between August 2020 and December 2020. People with double registrations were excluded (when identified). It should be noted that people with professions other than a health-related profession or without profession could also register on these reserve lists (e.g. to help with administrative or logistic tasks), but only data on health professionals are used here.
International comparability	No data available in international databases
Limitations	As these reserve lists were hastily created during the COVID-19 pandemic to provide rapid support to the health workforce but without the objective of measuring such an aspect, the quality of the data is very limited. The format and definition of the data vary greatly between the Federated entities (period, professions, etc.). Comparison and generalisations of data for Belgium should therefore be used with caution. People working in the public sector were also invited to register on reserve lists (both at the Federal, Federated and Local level), but these data are not included below. A lot of local initiatives were also taken but are not included here. Moreover, because the reserve lists mentioned below were dedicated to health services under the competences of Federated entities and not to all health services, and because the total number of practising health professionals was unknown, it was not possible to precisely determine the share of people registered in these reserve list in relation with the current practising health workforce.

	It should also be noted that it is possible for people to be on two different reserve lists (e.g. both for the German-speaking Community and for Wallonia). Such double registrations could not be excluded from the data. Finally, no data was available on the use of these people, except for the German-speaking Community and no data are expressed in full-time-equivalent (FTE).
Dimension	Resilience
Related indicators	A-10 Practising physicians and A-11 Practising nurses
Reviewers	Guillaume Westenbohm, Nathalie Vanderniepen, Wauters Machteld

3.11.2 Results

Although the quality of the data is very low, Flanders seems to have the largest number of health professionals on its reserve list (12 779 on 28 April 2021, no breakdown by profession available) (see Table 24).

Wallonia had 2 945 health professionals available on its reserve list in September 2022, mostly nurses (41%). The largest number of registrations took place in 2021, with 4 228 new registrations of health professionals. Between 2020 and 2022, a total of 5 865 new registrations were done.

In Brussels, 133 health professionals registered in 2020 (and 30.8% were nurses).

In the German-speaking community, 37 people were registered as health professionals on their reserve lists (mostly nurses, 43.2%) and about two (2/37) of them were actually used.

According to the FPS Public Health, Belgium counts around 670 000 health professionals licensed to practice in 2022 (no data available on the total number of practising health professionals).[6] By assuming that all people registered in the reserve lists are licensed to practice, their number (18 937) represent 2.8% of this total.

Table 24 Health professionals that registered as volunteer on reserve list during the COVID-19 pandemic

	Wallonia New 2020	Wallonia New 2021	Wallonia New 2022	Wallonia Yet available on September 2022	Flanders Situation on 28 April 2021	Brussels	German - speaking Community
Physicians	125 (8.4 %)	616 (14.6 %)	14 (9.5 %)	327 (11.1 %)			6 (16.2 %)
Nurses	236 (15.8 %)	2203 (52.1 %)	100 (68 %)	1210 (41.1 %)		41 (30.8%)	16 (43.2 %)
Nursing assistants	381 (25.6 %)	210 (5 %)	10 (6.8 %)	370 (12.6 %)		20 (15.0%)	9 (24.3 %)
Pharmacists	7 (0.5 %)	589 (13.9 %)	12 (8.2 %)	294 (10 %)			2 (5.4 %)
Physiotherapists	161 (10.8 %)	55 (1.3 %)	(0 %)	119 (4 %)			(0 %)
Dentists	16 (1.1 %)	49 (1.2 %)	(0 %)	24 (0.8 %)			(0 %)
Occupational therapists	41 (2.8 %)	20 (0.5 %)	1 (0.7 %)	37 (1.3 %)			(0 %)
Psychologists	202 (13.6 %)	52 (1.2 %)	2 (1.4 %)	153 (5.2 %)			(0 %)
Midwifes	(0 %)	(0 %)	(0 %)	(0 %)			1 (2.7 %)
First aid/ambulance workers	(0 %)	(0 %)	(0 %)	(0 %)			3 (8.1 %)
Other health professionals	321 (21.5 %)	434 (10.3 %)	8 (5.4 %)	411 (14 %)			(0 %)
Total	1490	4228	147	2945	12 779	133	37

Key points

- **Belgium has set up reserve lists to support the actual practising health workforce during the COVID-19 pandemic, with registration possible via dedicated platforms.**
- **Based on data from the Federated entities, it appears that almost about 19 000 health professionals have registered on their platforms: 12 779 were registered in Flanders on 28 April 2021, 5 865 new registrations were done in Wallonia between 2020 and 2022, 133 registrations were done in Brussels between August 2020 and December 2020 and 37 registrations were done for the German-speaking Community (no reference period given).**
- **Some people who were not health professionals also registered, but these figures are not presented here. Other initiatives also took place and are not taken into account here.**
- **These numbers can be seen as additional health workers brought on the top of those already practising in the health sector. Furthermore, assuming that all people registered in these reserve lists are licensed to practise, these numbers represent about 2.8% of all health professionals licensed to practise in 2022.**
- **However, due to many methodological weaknesses, these data should not be compared or generalised for Belgium.**

References

1. 1. OECD. Ready for the Next Crisis? Investing in Health System Resilience. 2023.
2. Agentschap Zorg en Gezondheid. Aanmelding medische reserve COVID-19 [Web page].Brussel: Agentschap Zorg en Gezondheid;2020 [cited March 2020]. Available from: https://www.zorg-en-gezondheid.be/aanmelding-medische-reserve-covid-19
3. AVIQ. Plateforme solidaire wallonne [Web page].Charleroi: Agence pour une Vie de Qualité;2023. Available from: https://solidaire.aviq.be/
4. Iriscare. Coronavirus : appel en vue de la constitution d'une réserve de volontaires [Web page].Bruxelles: Iriscare;2023 [cited June 2023]. Available from: http://www.iriscare.brussels/fr/2020/03/19/coronavirus-appel-en-vue-de-la-constitution-dune-reserve-de-volontaires/
5. Ostbelgienlive. Unterstützen Sie Ihre Kolleginnen und Kollegen im Gesundheitsbereich! [Web page].Eupen: Ostbelgienlive;2020 [cited March 2020]. Available from: http://www.ostbelgienlive.be/desktopdefault.aspx/tabid-71/211_read-59699/
6. FPS Public Health. For a healthy Belgium: Key Data in Healthcare, Healthcare Professionals, Introduction [Web page].Brussels: FPS Public Health;2023 [cited March 2023]. Available from: https://www.healthybelgium.be/en/key-data-in-healthcare/healthcare-professionals/introduction-en

3.12 People who perceived that the government is likely to be prepared for the next pandemic (% of respondents, Trust) (R-13)

3.12.1 Documentation sheet

Description	People who perceived that the government is likely to be prepared for the next pandemic
Calculation	**Primary indicator** Numerator: Number of respondents who perceive that the government is likely to be prepared to protect people's lives in the event of a new serious contagious illness Denominator: Total number of respondents to the survey **Secondary indicator** Numerator: Number of respondents who reported: neutral, unlikely, or don't know for the percived likelihood that the government is prepared to protect people's lives in the event of a new serious contagious illness Denominator: Total number of respondents to the survey
Rationale	The population's perceived likelihood that government would be prepared for the next pandemic can reflect a health system's resilience to public health crisis. Trust in the national government is closely related to perceptions of preparedness for a future pandemic. Indeed, countries where a majority of people think their government learned from the pandemic are also the countries where more people are likely to trust that government.[1] Recent studies highlight the importance of trust during a pandemic, as higher levels of trust in government were associated with lower standardised infection rates, lower numbers of deaths and lower excess mortality.[2] [3] [4] Countries where citizens have higher confidence in government, science, the rule of law and each other are more likely to comply with government guidance, such as mask wearing, physical distancing or vaccination programmes.[5]
Primary data source	OECD Survey on Drivers of Trust in Public Institutions ("Trust Survey"), 2021
Technical definitions	The OECD Trust Survey took place in November-December 2021 in most countries (26 Nov - 7 Dec 2021 in Belgium), with a few surveys taking place in 2020 and January-March 2022. Questionnaires were sent out online to a representative sample of citizens, which was ensured through the use of quotas (gender, age, region, education). The sample size in Belgium was 2 036 and the response rate to the total number of questionnaires sent was 67%.[6] Participants were asked to answer to the following question: "If a new serious contagious disease spreads, how likely or unlikely do you think is it that government institutions will be prepared to protect people's life?" using a 0-10 scale (0: unlikely, 10: likely). The "likely" proportion is the aggregation of responses from 6-10 on the scale; "neutral" is equal to a response of 5; "unlikely" is the aggregation of responses from 1-4; and "Don't know" was a separate answer choice.
Limitations	Data for this indicator was only available at one point in time and it is uncertain whether this data will available for future Belgium HSPA reports. Responses to this survey may be affected to a certain extent by pandemic fatigue, as the survey was conducted around the time of the introduction of some new COVID-19 restrictions in Europe. Data was only available at the national level, which might not reflect the regional variability in perceived likelihood that that government would be prepared for the next pandemic.
International comparability	The OECD Trust Survey was carried across 22 OECD countries, including 12 EU countries.

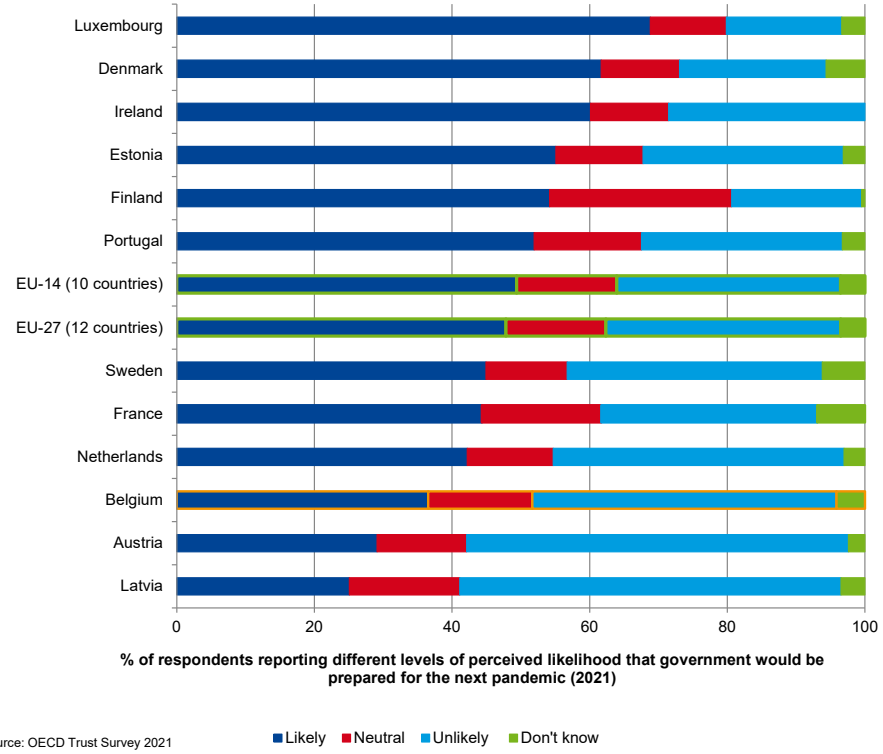
Performance dimensions	Sustainability
Related indicators	Trust in the healthcare system (S-30); Preparedness to public health risks and acute events (R-14)
Reviewer	Stefaan Van Der Borght (FPS Public Health)

3.12.2 Results

In 2021, approximately 37% of respondents in Belgium expressed confidence that the government would be prepared to protect people's lives in the event of a new pandemic, 15% were neutral, and 44% reported that the government is unlikely to be prepared for the next pandemic (see Figure 141, below). Combining the respondents with a positive view on government preparedness with the respondents with a "neutral" view on government preparedness represents a majority of respondents (52%).

The share of respondents with a positive view on government preparedness was lower in Belgium than the EU-14 (49%) and EU-27 (48%) average shares. Belgium was one of the countries with the lowest share of respondents expressing confidence that the government would be prepared for the pandemic.

Figure 141 – Share of respondents reporting different levels of perceived likelihood that government would be prepared for the next pandemic (2021)



Source: OECD Trust Survey 2021

Key points

- **In 2021, approximately 37% of Belgian respondents expressed confidence that the government would be prepared for the next pandemic, which was lower than in the EU-14 (49%) and EU-27 (48%) countries.**

References

1. OECD. Building Trust to Reinforce Democracy. 2022.
2. Bollyky TJ, Angelino O, Wigley S, Dieleman JL. Trust made the difference for democracies in COVID-19. The Lancet. 2022;400(10353):657.
3. Zaki BL, Nicoli F, Wayenberg E, Verschuere B. In trust we trust: The impact of trust in government on excess mortality during the COVID-19 pandemic. Public Policy and Administration. 2022;37(2):226-52.
4. Bosancianu CM, Hilbig, H., Humphreys, M., KC, S., Lieber, N., & Scacco, A. Political and Social Correlates of Covid-19 Mortality. 2020.
5. OECD. Ready for the Next Crisis? Investing in Health System Resilience. 2023.
6. Nguyen D, Frey V, González S, Brezzi M. Survey design and technical documentation supporting the 2021 OECD Survey on Drivers of Trust in Government Institutions. 2022.

3.13 Country preparedness to public health risks and acute events (average score on a 1-100 scale) (R-14)

3.13.1 Documentation sheet

Description	**Primary indicators** • All-capacity average International Health Regulations (IHR) score **Secondary indicators** • International Health Regulations (IHR) capacity scores: ○ C.1 Policy, Legal and normative Instruments to implement IHR ○ C.2 IHR Coordination, National IHR Focal Point functions and advocacy ○ C.3 Financing ○ C.4 Laboratory ○ C.5 Surveillance ○ C.6 Human resources ○ C.7 Health emergency management ○ C.8 Health services provision ○ C.9 Infection prevention and control (IPC) ○ C.10 Risk communication and community engagement (RCCE) ○ C.11 Points of entry (PoEs) and border health ○ C.12 Zoonotic diseases ○ C.13 Food safety ○ C.14 Chemical events ○ C.15 Radiation emergencies
Calculation	**Primary indicator** • Average of the scores for each IHR capacity **Secondary indicators**

	• Average of the indicator scores for each IHR capacity
Rationale	The all-capacity average International Health Regulations (IHR) score provides information about a country's preparedness capacity to public health risks and acute events.[1] The IHR (2005) represent an agreement between all World Health Organisation (WHO) Member States, to work together for global health security. More precisely, the IHR are a set of legal instruments designed to ensure and improve countries' capacity to prevent, detect, access, notify and respond to public health risks and acute events of domestic and international concern, while avoiding unnecessary interference with international traffic and trade. Under the IHR, countries are obliged to develop and maintain minimum core capacities for surveillance and response to any potential public health events of international concern. The success of the IHR in ensuring global public health security depends on their full application, implementation, and compliance by all countries. The State Party Self-Assessment Annual Reporting (SPAR) tool is used on an annual basis by countries to report on the implementation of the IHR. The SPAR requires a multisectoral approach to obtain information from all sectors involved in implementing IHR capacities. At the middle of the year, countries initiate the process of self-assessment and reporting to the World Health Assembly. Reporting on a minimum set of 'core capacities' is required from the countries, including the capacity to detect and assess events through surveillance systems and laboratories; notify and reports event to WHO; and verify and respond immediately and appropriately to public health risks and emergencies..[2]
Primary data source	State Parties Self-Assessment Annual Reporting Tool (SPAR), WHO
Technical definitions	The second edition of the SPAR (2021) tool includes 35 indicators covering the 15 IHR capacities. The previous version included 24 indicators and 13 capacities. One or more indicators are used to measure the status of each capacity. Indicators are further broken down in several attributes. For each indicator, the reporting country has to select which of the five levels best describes the country's current status: • Level 1: Policies and strategies to support and facilitate the development and implementation of IHR capacities are not in place or under elaboration or available on an ad hoc basis. • Level 2: Policies and strategies to support and facilitate the development and implementation of IHR capacities are in place at the national level. • Level 3: Policies and strategies to support and facilitate the development and implementation of IHR capacities are in place in all relevant sectors. • Level 4: Policies and strategies to support and facilitate the development and implementation of IHR capacities are in place at the national, intermediate and local levels by all relevant sectors. • Level 5: Policies and strategies to support and facilitate the development and implementation of IHR capacities are revised and updated on a regular basis. The score of each indicator level is classified as a percentage of performance along a 1-5 scale. The level of the capacity will be expressed as the average of all indicators. A color-code is also associated with each capacity level: • Red: indicator Level 1 (score range 0-20%) • Yellow: indicator Level 2 (score range 21-40%) or Level 3 (score range 41-60%) • Green: indicator Level 4 (score range 61-80%) or Level 5 (score range 81-100%) A detailed description of the different capacities and indicators can be find in the "IHR (2005): guidance document for the State Party self-assessment annual reporting tool".[3]
Limitations	IHR scores are based on self-reported key informant data. The process of completion of individual survey sections might present some limitations compared to coordinated and validated responses across survey sections. The type and mix of key informants providing information varied over time. In 2018 and 2021, the number of IHR capacities and indicators was changed, some of the scores might not be directly

	comparable over time. Before 2021, capacities C.1 and C.3 were combined ("C.1 Legislation and Financing") and capacity C.9 did not exist. In 2018, the numbering and naming of capacities were modified, and new indicators were added to capacities C.1, C.5, C.8 and C.9, and one indicator was removed from capacity C.11.
International comparability	The SPAR tool is conducted across the world. For the EU-27 and EU-14 all-capacity average IHR scores over time, data for some countries were missing. In 2010, data for Bulgaria, Malta, the Netherlands, Portugal were missing. In 2011, data for Greece were missing. In 2012, data for Cyprus, Bulgaria, Croatia, Denmark, Greece, Italy, Portugal, and Romania were missing. In 2013, data for Bulgaria, Germany, Greece, Ireland, Italy, Latvia, and Portugal were missing. In 2014, data for Greece and Italy were missing. In 2015, data for Cyprus, Bulgaria, Germany, Greece, Ireland, Italy, Malta and Poland were missing. In 201, data for Bulgaria, Republic, Finland, Germany, Greece, and Ireland were missing. In 2017, data for Bulgaria, Finland, Greece, Ireland and Italy were missing. In 2018, data for Greece and Poland were missing. In 2020, data for Czech Republic and Slovenia were missing.
Performance dimensions	Resilience, Sustainability
Related indicators	People who perceived that the government is likely to be prepared for the next pandemic (R-13)
Reviewer	Stefaan Van Der Borght (FPS Public Health)

3.13.2 Results

Belgium

In Belgium, the all-capacity average IHR score remained stable at approximately 81% (Level 5) between 2010 and 2020, but decreased to 67% in 2021 and 63% in 2022 (Level 4; Table 25 and Table 26). This decrease in the all-capacity average IHR score was mainly due to low (Level 1 or 2) scores for three capacities: "C.1 Policy, legal and normative instruments to implement IHR" (2022: 20%), "C.2 IHR Coordination, National IHR Focal Point functions and advocacy" (2022: 27%), "C.12 Zoonotic diseases" (20%) and C.13 (2022: 20%). Food safety. Belgium scored Levels 4 or 5 for nine capacities (C.4, C.5, C.8-C.11, C13-C.15), Levels 2 or 3 for three capacities (C.2, C.3 and C.6), and Level 1 for two capacities (C.1 and C.12).

Impact of COVID-19 pandemic

A decrease in the all-capacity average IHR score was observed in 2021, which was due to lower capacity scores for: Legislation and Financing (C.1), IHR Coordination and National IHR Focal Point Functions (C.2), Zoonotic Events and the Human–animal Interface (C.3), and National Health Emergency Framework (C.8) (see Table 26). These lower IHR capacity scores potentially resulted from the COVID-19 pandemic.

International comparison

Between 2010 and 2020, Belgium's all-capacity average IHR scores were similar to the EU-14 or EU-27 average scores (see Figure 142). Even if both Belgium and EU-14 or EU-27 countries had a Level 4 all-capacity average IHR score in 2022, Belgium scored lower than the EU-14 (77%) and EU-27 (76%) averages. Belgium performed better than the EU-14 average for four capacities: C.9, C.10, C.11, and C.14 (see Figure 142).

Table 25 – Scores for IHR capacities, indicators and attributes in Belgium and the EU in 2022 (1-100 scale or %)

			Belgium	EU-14	EU-27
All-capacity average			**63**	**77**	**76**
C.1 Policy, Legal and normative Instruments to implement IHR			**20**	**60**	**62**
	C.1.1	Policy, legal and normative instruments	20	67	70
	C.1.2	Gender Equality in health emergencies	20	53	53
C.2 IHR Coordination, National IHR Focal Point functions and advocacy			**27**	**74**	**73**
	C.2.1	National IHR Focal Point functions	20	73	70
	C.2.2	Multisectoral IHR coordination mechanisms	40	77	79
	C.2.3	Advocacy for IHR implementation	20	71	71
C.3 Financing			**60**	**72**	**69**
	C.3.1	Financing for IHR implementation	40	63	59
	C.3.2	Financing for Public Health Emergency Response	80	81	80
C.4 Laboratory			**68**	**85**	**85**
	C.4.1	Specimen referral and transport system	60	81	84
	C.4.2	Implementation of a laboratory biosafety and biosecurity regime	80	84	81
	C.4.3	Laboratory quality system	100	83	87
	C.4.4	Laboratory testing capacity modalities	100	96	90
	C.4.5	Effective national diagnostic network	0	83	84
C.5 Surveillance			**80**	**84**	**85**
	C.5.1	Early warning surveillance function	80	83	84
	C.5.2	Event management (i.e., verification, investigation, analysis, and dissemination of information)	80	86	86
C.6 Human resources			**50**	**67**	**66**
	C.6.1	Human resources for implementation of IHR	60	70	69
	C.6.2	Workforce surge during a public health event	40	64	64
C.7 Health emergency management			**60**	**72**	**73**
	C.7.1	Planning for health emergencies	80	67	70
	C.7.2	Management of health emergency response	20	74	74
	C.7.3	Emergency logistic and supply chain management	80	76	76
C.8 Health services provision			**80**	**87**	**83**
	C.8.1	Case management	80	89	84
	C.8.2	Utilization of health services	80	96	92
	C.8.3	Continuity of essential health services (EHS)	80	77	73
C.9 Infection prevention and control (IPC)			**87**	**81**	**78**
	C.9.1	IPC programmes	100	80	73
	C.9.2	Health care-associated infections (HCAI) surveillance	80	77	76
	C.9.3	Safe environment in health facilities	80	86	84
C.10 Risk communication and community engagement (RCCE)			**93**	**76**	**68**
	C.10.1	RCCE system for emergencies	100	73	67

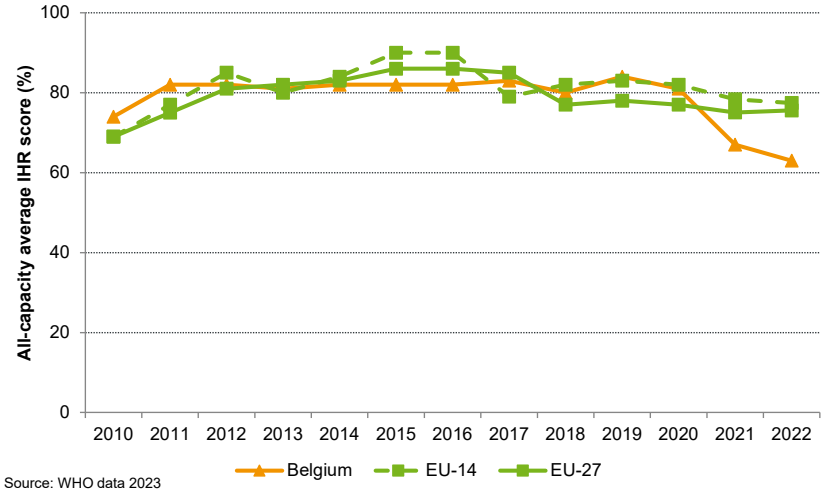
	C.10.2	Risk communication	80	76	73
	C.10.3	Community engagement	100	79	64
C.11 Points of entry (PoEs) and border health			**93**	**71**	**69**
	C.11.1	Core capacity requirements at all times for PoEs (airports, ports and ground crossings)	100	69	65
	C.11.2	Public health response at points of entry	80	64	63
	C.11.3	Risk-based approach to international travel-related measures	100	81	78
C.12 Zoonotic diseases			**20**	**80**	**78**
	C.12.1	One Health collaborative efforts across sectors on activities to address zoonoses	20	80	78
C.13 Food safety			**20**	**84**	**84**
	C.13.1	Multisectoral collaboration mechanism for food safety events	20	84	84
C.14 Chemical events			**100**	**83**	**74**
	C.14.1	Resources for detection and alert	100	83	74
C.15 Radiation emergencies			**80**	**83**	**84**
	C.15.1	Capacity and resources	80	83	84

Table 26 – Scores for IHR capacities and indicators in Belgium (2010-2022)

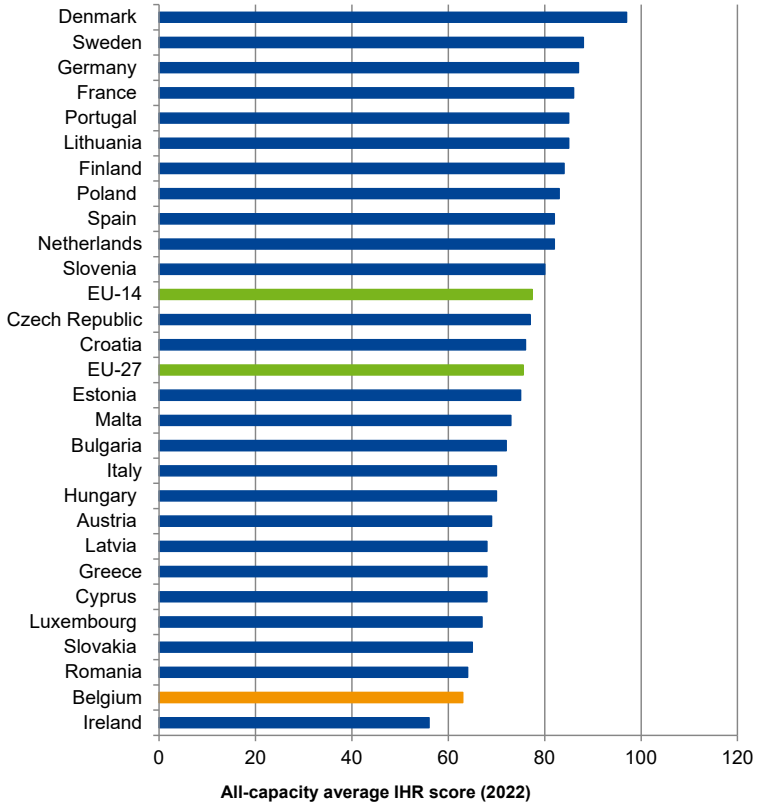
Year	All-capacity average	C.1 Legislation and Financing*	C.2 IHR Coordination and National IHR Focal Point Functions	C.3 Zoonotic Events and the Human–animal Interface	C.4 Food Safety	C.5 Laboratory	C.6 Surveillance	C.7 Human Resources	C.8 National Health Emergency Framework	C.9 Health Service Provision	C.10 Risk Communication	C.11 Points of Entry	C.12 Chemical Events	C.13 Radiation Emergencies
2010	**74**	100	75	53	93	80	51	50	78	88	70	77	64	86
2011	**82**	100	80	89	100	91	65	60	50	72	100	70	92	100
2012	**82**	100	80	89	100	91	65	60	50	72	100	50	92	100
2013	**81**	100	63	89	100	91	65	60	46	72	100	70	92	100
2014	**82**	100	63	89	100	91	85	60	46	72	100	70	92	100
2015	**82**	100	63	89	100	92	85	60	47	72	100	69	92	100
2016	**82**	100	63	89	100	92	85	60	47	72	100	69	92	100
2017	**83**	100	63	100	100	92	85	60	47	72	100	74	85	100
2018	**80**	47	80	100	100	100	90	40	87	80	80	70	60	100
2019	**84**	60	80	100	100	100	90	40	87	80	80	90	80	100
2020	**81**	47	80	100	100	100	90	40	87	80	80	90	60	100
2021	**67**	40	27	20	80	76	80	50	60	80	93	93	100	80
2022	**63**	40	27	20	20	68	80	50	60	80	93	93	100	80

*For the years 2021 and 2022, the average score of “C.1 Policy, legal and normative Instruments to implement IHR” and “C.3 Financing” was used.

Figure 142 – All-capacity average IHR score: international comparison



Source: WHO data 2023



Source: WHO 2023

Key points

- **In Belgium, the all-capacity average IHR score remained stable at Level 5 (range 81-100%) between 2010 and 2020, but decreased to Level 4 (range 61-80%) in 2021 and 2022.**
- **Belgium's lowest IHR capacity scores (Levels 1 or 2) were for "Policy, legal and normative instruments to implement IHR" (C.1), "IHR Coordination, National IHR Focal Point functions and advocacy" (C.2), "Zoonotic diseases" (C.12) and "Food safety" (C.13).**
- **Belgium's all-capacity average IHR score (63%) was lower than both the EU-14 (77%) and EU-27 (76%) average scores in 2022.**

References

1. WHO. e-SPAR State Party Annual Report [Web page].Geneva;2022 [cited 23/02/2023]. Available from: https://extranet.who.int/e-spar/#submission-details
2. Kluge H, Martín-Moreno JM, Emiroglu N, Rodier G, Kelley E, Vujnovic M, et al. Strengthening global health security by embedding the International Health Regulations requirements into national health systems. BMJ Glob Health. 2018;3(Suppl 1):e000656.
3. WHO. International Health Regulations (2005): State Party Self-assessment annual reporting tool, second edition. Geneva: World Health Organisation; 2021.