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

1.1.1. 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)

1.1.2. Results – at least one inpatient hospitalisation

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

Table 1 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 1 – 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 1[a] 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).

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[a]   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 1 – Evolution (2012-2021) of the probability to have at least one inpatient hospitalisation for different subgroups and population groups at risk
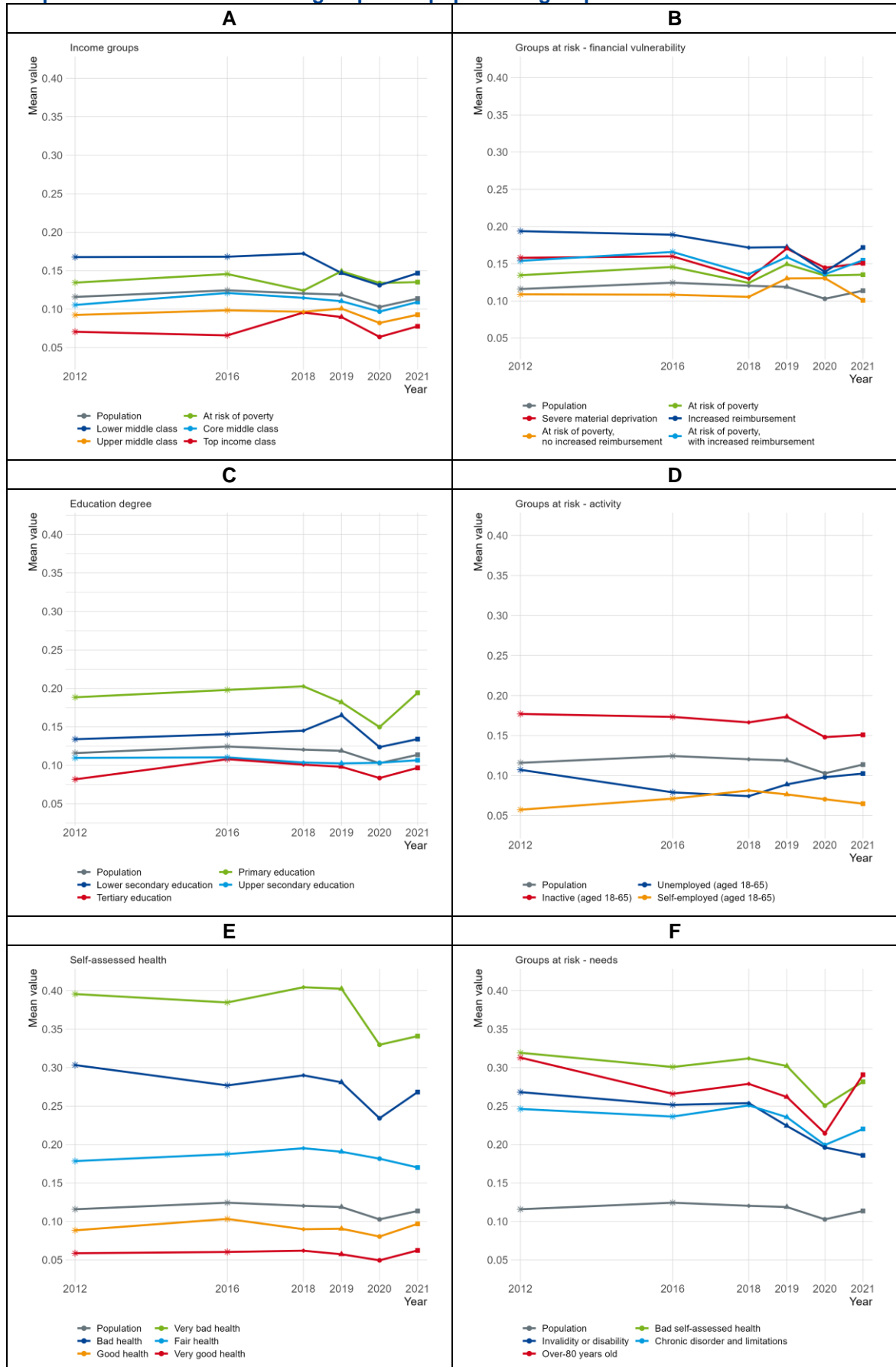
Overview inequity over time for different population subgroups

Figure 2 and Figure 3 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.[b] In Figure 2, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 3, 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 2 and Figure 3, 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 4 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 4 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.

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

Figure 2 – 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
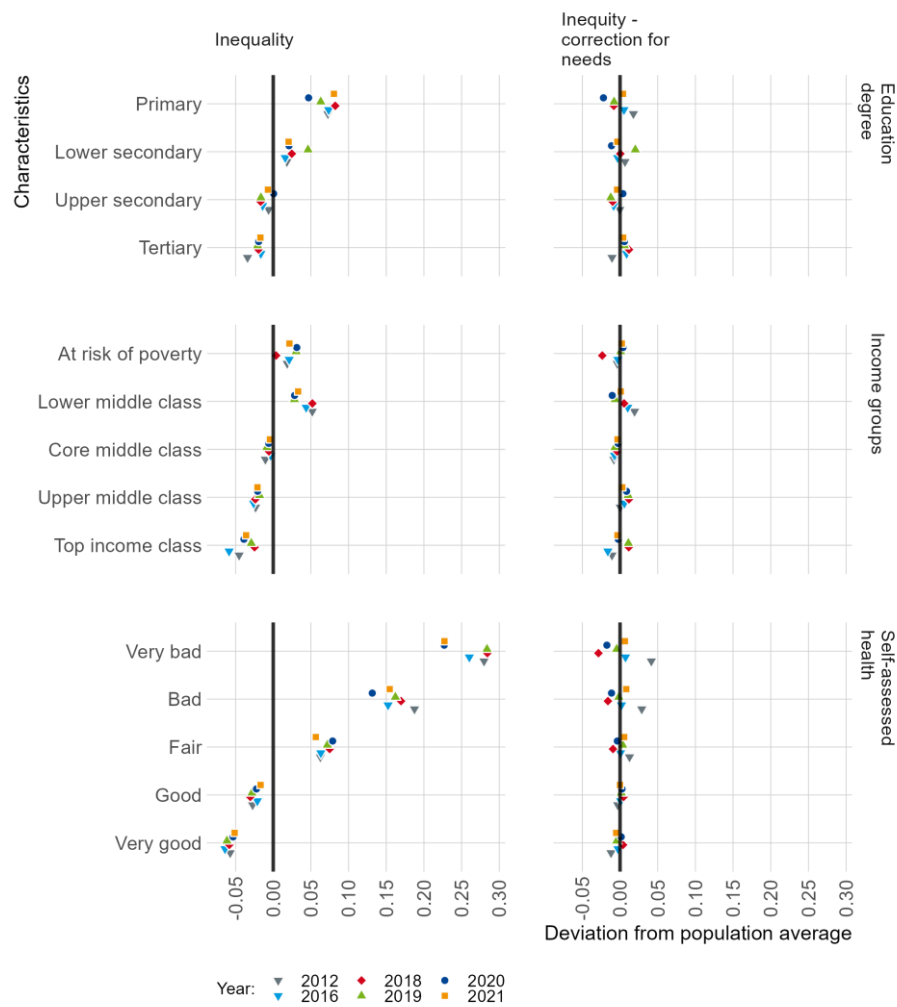

Figure 3 – Inequality and inequity in the probability to have an inpatient hospitalisation in the past year: difference between the general population and specific vulnerable population subgroups
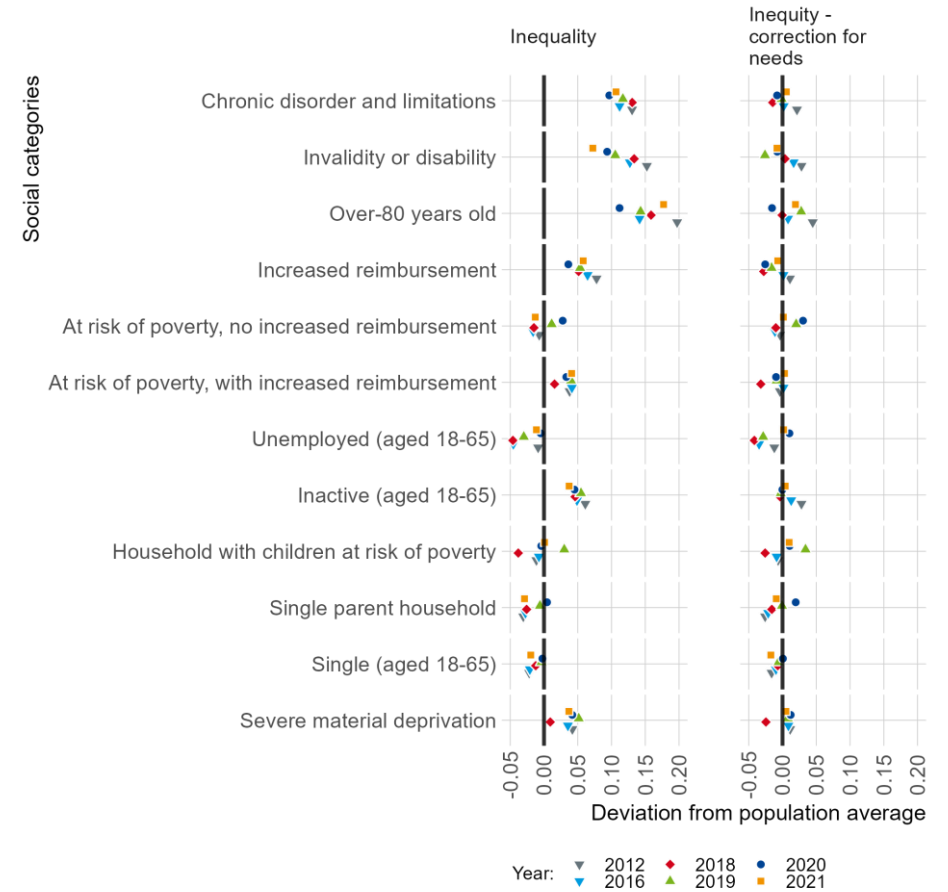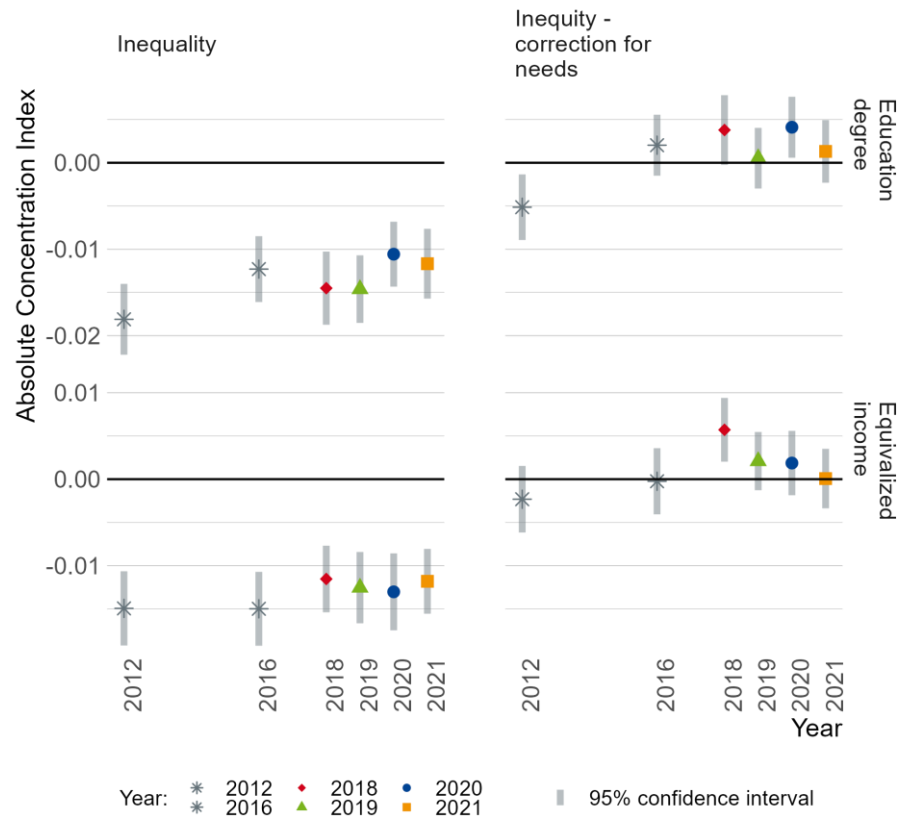
Figure 4 – Evolution (2012-2021) of socioeconomic inequality and inequity in the probability to have an inpatient hospitalisation in the past year as measured by the absolute concentration index for subgroups based on education and income

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.**

1.1.3. Results – number of inpatient hospitalisations

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

Table 2 and Figure 5 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 2 – 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 5[c] 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).

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[c] 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 5 – Evolution (2012-2021) in the number of inpatient hospitalisations in the past year for different subgroups and population groups at risk
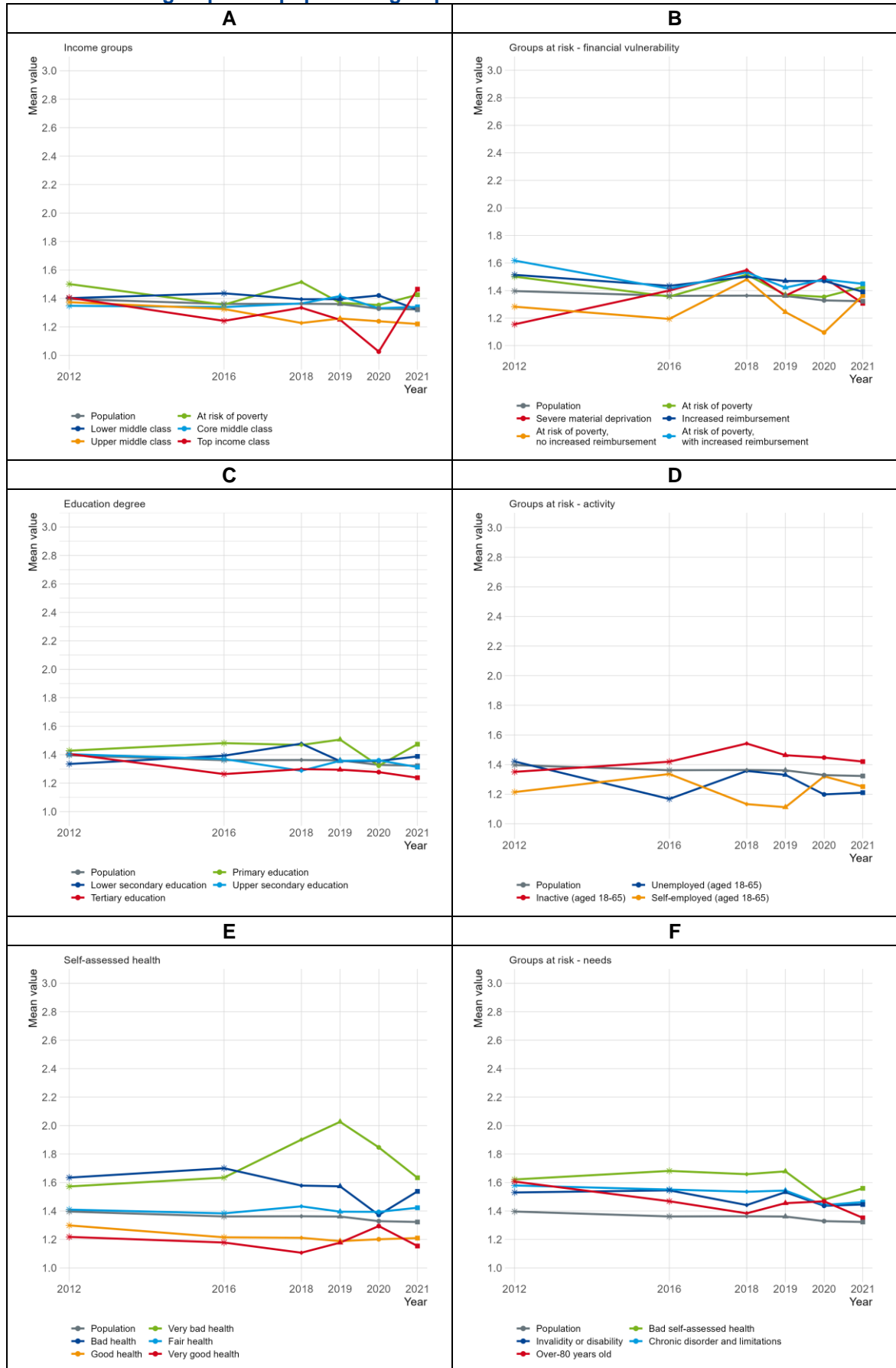
Overview inequity over time for different population subgroups

Figure 6 and Figure 7 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.[d] In Figure 6, population groups are defined based on categories of equivalized income, categories of educational attainment, and categories of self-assessed health. In Figure 7, 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 6 and Figure 7, 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 8 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 8 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.

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

Figure 6 – 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
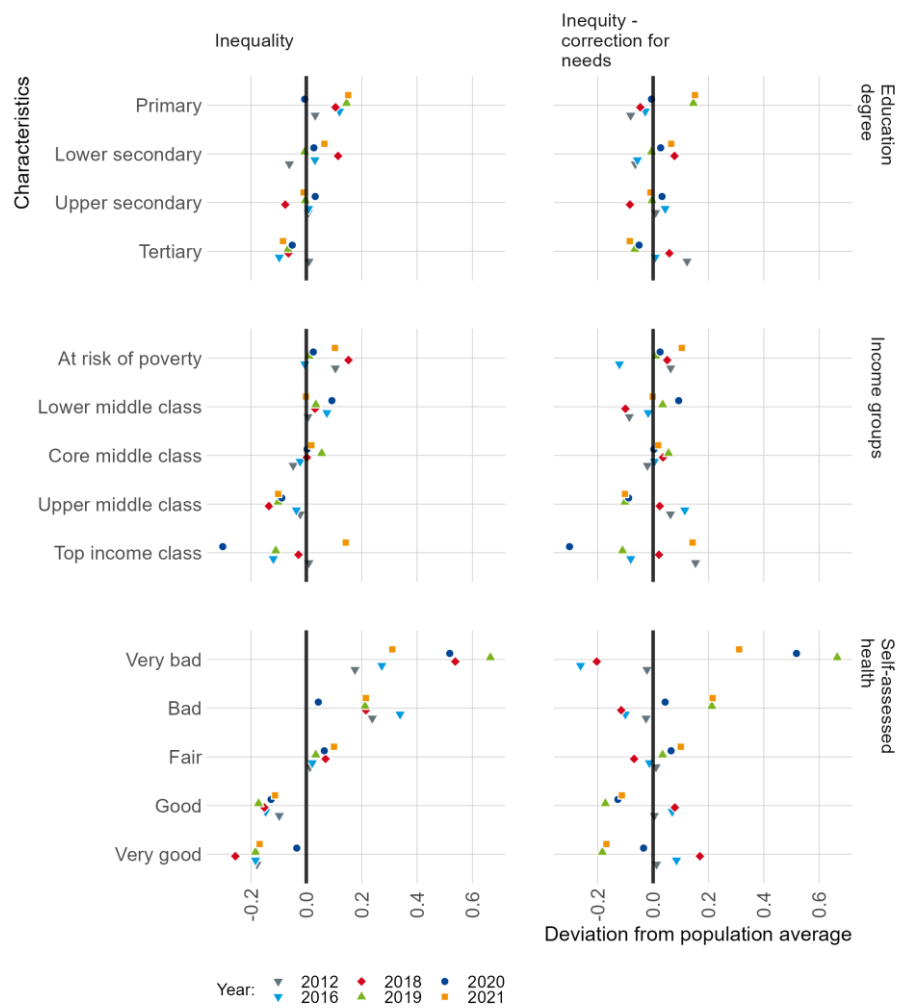

Figure 7 – Inequality and inequity in the number of inpatient hospitalisations in the past year: difference between the general population and specific vulnerable population subgroups
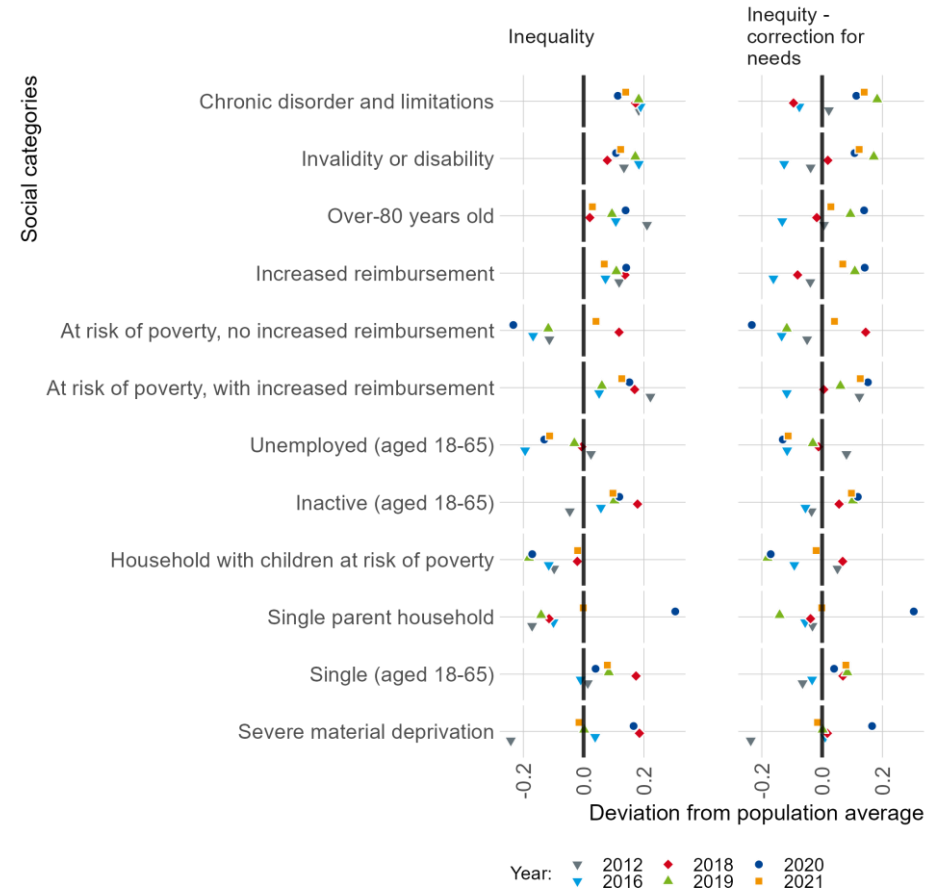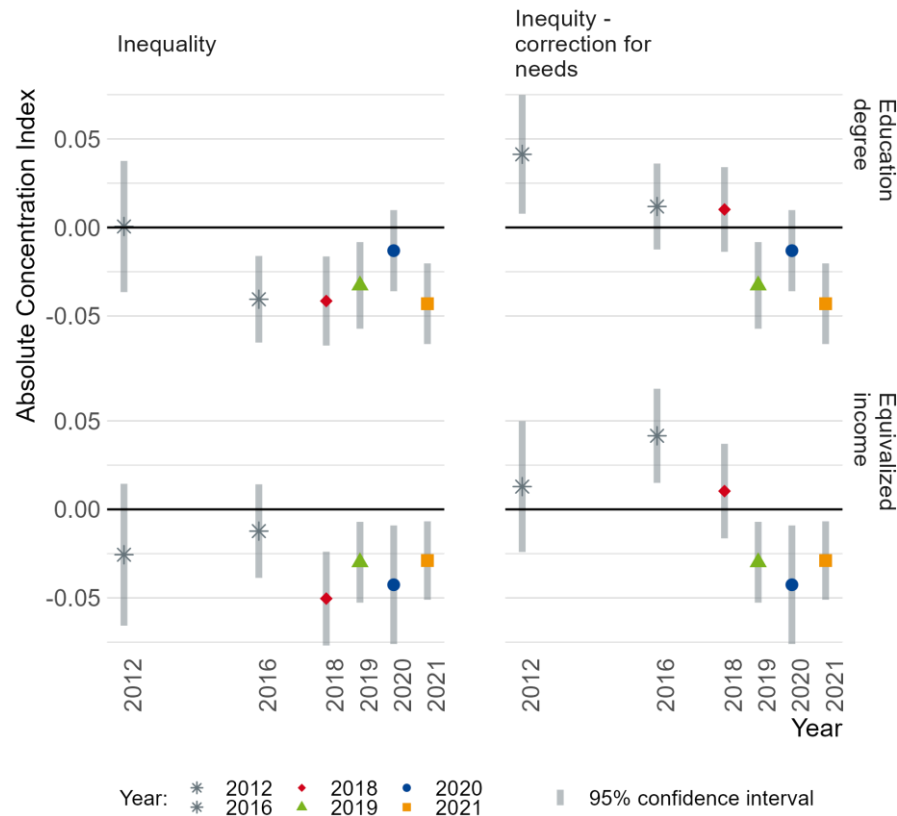
Figure 8 – Evolution (2012-2021) of socioeconomic inequality and inequity in the number of inpatient hospitalisations in the past year as measured by the absolute concentration index for subgroups based on education and income

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