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A comparative analysis of deprivation among the elderly in Belgium

July 2019

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Executive summary

The objective of this paper is to identify the individual and household characteristics that explain severe material deprivation in Belgium, while making a distinction between people aged below 65 and those aged 65 or above. It provides a detailed description of this Europe 2020 deprivation indicator, its evolution over time compared to the evolution of the at risk of poverty indicator, as well as an analysis of its components. The results show that severe material deprivation has decreased for both age groups since 2005. They also indicate that young people are more impacted by severe material deprivation than the elderly. Capacity to face unexpected financial resources, to pay a one-week annual holiday, to buy a car and to keep the home adequately warm were the four items most often lacked by both age groups in 2017. Conversely, during most years young people suffered less from income poverty, though since 2016 this difference has disappeared. The relationship between income and severe deprivation is analysed in more detail in section 4. The findings are consistent with those of previous international research. Although there is a clear link between income and deprivation, the overlap between individuals identified as at risk of poverty and those as severely deprived is far from perfect. The correlation between income poverty and deprivation is weaker for the old group than for the young.

The impact of various characteristics on material deprivation is estimated using a logistic regression model. The results for the young group show that although income is an important determinant of severe material deprivation, other characteristics such as tenure status, health, age, education, working status as well as region of residence have an important impact on deprivation. Focusing on individuals in couples, it was clear that the partner's level of education and health matter in explaining the risk of deprivation. Home tenure status and income are the major determinants of deprivation among the young population, followed by region of residence and the head's working status. Tenure status is a very important driver of deprivation for the elderly as well. Controlling for home ownership and other variables, the impact of household income on deprivation among the elderly is at least as high, if not higher, than among the younger population. The lower bivariate correlation between income and deprivation among the elderly, compared to the young, seems to be driven by the fact that elderly people with low incomes are much more likely to be homeowners without a mortgage than younger people with similar incomes. Homeownership appears to be a guarantee against severe deprivation among both age groups. Finally, the financial capital of the individual has an important impact on its risk of deprivation. This applies to both age groups.

Samenvatting

Het doel van dit document is om de individuele en huishoudelijke kenmerken te identificeren die ernstige materiële deprivatie in België verklaren, waarbij steeds een onderscheid wordt gemaakt tussen mensen beneden 65 jaar en 65-plussers. Het geeft een gedetailleerde beschrijving van deze Europa 2020-indicator van deprivatie, de evolutie in vergelijking met de indicator van het risico op armoede, en een analyse van zijn componenten. De resultaten laten zien dat ernstige materiële deprivatie sinds 2005 voor beide leeftijdsgroepen is afgenomen. Ze geven ook aan dat jongeren meer worden getroffen door ernstige materiële deprivatie dan ouderen. De capaciteit om onverwachte financiële uitgaven aan te kunnen, om een jaarlijkse vakantie van een week te betalen, om een auto te kopen en om de woning voldoende te kunnen verwarmen, waren de vier items die het vaakst ontbraken voor beide leeftijdsgroepen in 2017. Gedurende de meeste jaren werden jongeren minder vaak getroffen door inkomensarmoede, hoewel dit verschil sinds 2016 is verdwenen. De relatie tussen inkomen en ernstige deprivatie wordt nader geanalyseerd. De bevindingen komen overeen met die van eerder internationaal onderzoek. Hoewel er een duidelijk verband is tussen inkomen en deprivatie, is de overlap tussen individuen met een risico op armoede en degenen in materiële deprivatie, verre van perfect. De correlatie tussen inkomensarmoede en deprivatie is zwakker voor de ouderen dan voor de jongeren.

De impact van diverse kenmerken op materiële deprivatie wordt geschat met behulp van een logistisch regressiemodel. De resultaten voor de groep beneden 65 laten zien dat, hoewel inkomen een belangrijke bepalende factor is voor ernstige materiële deprivatie, andere kenmerken zoals de eigendomsstatus, gezondheid, leeftijd, opleiding, werkstatus en woonregio een belangrijke impact hebben op deprivatie. Voor personen in koppels zijn ook het opleidingsniveau en de gezondheid van de partner van belang voor het verklaren van het risico op deprivatie. De eigendomsstatus en het inkomen zijn de belangrijkste determinanten van deprivatie onder de jonge bevolking, gevolgd door de regio en de werkstatus van het gezinshoofd. Eigendomsstatus is ook een zeer belangrijke oorzaak van deprivatie voor ouderen. Onder controle van het eigenwoningbezit en andere variabelen, is de impact van het inkomen van het huishouden op deprivatie onder ouderen minstens zo hoog, zo niet hoger, dan onder de jongere bevolking. De lagere bivariate correlatie tussen inkomen en deprivatie bij ouderen, vergeleken met jongeren, lijkt te worden veroorzaakt door het feit dat ouderen met een laag inkomen veel vaker huiseigenaar zonder hypotheek zijn dan jongere mensen met vergelijkbare inkomens. Eigenwoningbezit lijkt een garantie te zijn tegen ernstige deprivatie voor beide leeftijdsgroepen. Ten slotte heeft het financiële kapitaal van het individu een belangrijke impact op het risico van deprivatie. Dit geldt voor beide leeftijdsgroepen.

Synthèse

Ce document vise à identifier les caractéristiques des individus et des ménages qui expliquent la privation matérielle sévère en Belgique, en distinguant systématiquement les personnes de moins et de plus de 65 ans. Il fournit une description détaillée de cet indicateur de privation utilisé dans le cadre de la stratégie Europe 2020, présente son évolution par rapport à l'indicateur de risque de pauvreté et analyse ses composantes. Les résultats montrent que la privation matérielle sévère a diminué depuis 2005 dans les deux groupes d'âge. Ils révèlent aussi que les jeunes sont davantage touchés par la privation matérielle sévère que les personnes âgées. La capacité à faire face à des dépenses imprévues, à s'offrir une semaine de vacances par an, à acheter une voiture et à chauffer en suffisance son habitation sont les quatre éléments qui faisaient le plus souvent défaut dans les deux groupes d'âge en 2017. Dans la plupart des années, les jeunes ont été moins souvent touchés par la pauvreté monétaire, bien que cette différence n'existe plus depuis 2016. Le lien entre revenus et privation sévère est analysé plus avant. Les résultats correspondent à ceux d'études internationales antérieures. Bien qu'il existe un lien évident entre les revenus et la privation, il apparaît que le groupe des personnes exposées à un risque de pauvreté ne correspond pas parfaitement à celui des personnes en situation de privation matérielle. La corrélation entre pauvreté monétaire et privation est moins marquée pour les personnes âgées que pour les plus jeunes.

L'impact de différentes caractéristiques sur la privation matérielle est estimé au moyen d'un modèle de régression logistique. Les résultats pour le groupe des moins de 65 ans indiquent que, bien que les revenus soient un facteur déterminant de la privation matérielle sévère, d'autres caractéristiques comme le statut de propriétaire, la santé, l'âge, l'éducation, le statut d'emploi et la région habitée ont également un impact important sur la privation. Pour les personnes en couple, le niveau de formation et la santé du partenaire contribuent également à expliquer le risque de privation. Le statut de propriétaire et les revenus sont les principaux déterminants de la privation chez les jeunes, suivis de la région habitée et du statut d'emploi du chef de famille. Le fait d'être propriétaire ou pas de son logement influe fortement sur la privation des personnes âgées. Lorsque l'on contrôle pour cette variable de propriété et d'autres variables, l'impact des revenus du ménage sur la privation des personnes âgées est au moins aussi élevé, voire plus élevé, que sur celle des plus jeunes. La corrélation bivariée plus faible entre les revenus et la privation chez les personnes âgées par rapport aux plus jeunes semble être due au fait que les personnes âgées disposant de faibles revenus sont beaucoup plus souvent propriétaires de leur logement, hors emprunt hypothécaire, que les personnes plus jeunes ayant des revenus comparables. Dans les deux groupes d'âge, le fait d'être propriétaire de son logement semble être une garantie contre la privation sévère. Enfin, le patrimoine financier de l'individu a une incidence importante sur le risque de privation, et ce dans les deux groupes d'âge.

1. Introduction

In developed countries, poverty is often thought of as a one-dimensional concept using income as the yardstick (Nolan & Whelan, 1996). This represents the monetary approach to poverty (Boarini & Mira d'Ercole, 2006). However, people with an equal level of income may experience different living conditions and thus different levels of deprivation (Bárcena-Martín, Lacomba, Moro-Egido, & Pérez-Moreno, 2014). The income approach does not fully account for a major aspect of poverty: social exclusion (Nolan & Whelan, 1996). Social exclusion refers to a situation in which individuals cannot afford certain goods and services and therefore do not have access to a normal social life (e.g. do not have access to normal activities and relations) (Cambir, 2015). This concept of social exclusion is related to people's living conditions and to the notion of material deprivation which is the focus of this report. As mentioned by Israel and Spannagel (2013), the concept of material deprivation was first developed by Peter Townsend who defined this notion as "a lack of the material standards of diet, clothing, housing, household facilities, working, environmental and locational conditions and facilities which are orderly available in society" (p. 4). He added that it also refers to individuals who "do not participate in or have access to the forms of employment, occupation, education, recreation and family or social activities and relationships which are commonly experienced or accepted" (Israel & Spannagel, 2013, p. 4). Material deprivation is the non-monetary approach of poverty and focuses on people's standard of living rather than on the means needed to attain this standard of living (Boarini & Mira d'Ercole, 2006; Guio, 2009). The multidimensional nature of poverty is now widely recognized and both monetary and non-monetary measures are required in order to evaluate people's quality of life (Boarini & Mira d'Ercole, 2006; Israel & Spannagel, 2013).

Material deprivation is a key element of the Europe 2020 strategy concerning the reduction of poverty and social exclusion in Europe. As mentioned by Frère (2016), this strategy was implemented in 2010 with the aim of reducing the number of people in a situation of poverty or social exclusion by 20 million by 2020. He explains that each member state of the EU took part in this project by adopting a national target of poverty reduction. Belgium fixed the objective at reducing this group by 380000 individuals between 2008 and 2018, which represents a reduction of 17.3% (Frère, 2016). People are considered at risk of poverty or social exclusion when they are in a situation of income poverty, or in a situation of severe material deprivation, or in a situation of low work intensity (Kis, Ozdemir, & Ward, 2015). These components are three distinct indicators. A complete and detailed description of each of them is provided by Atkinson et al. (2017). The first one is called the at-risk of poverty rate, or AROP and refers to the monetary approach of poverty. People are considered at risk of poverty when their equivalised disposable household income falls below a threshold set at 60% of the national median. It is thus a relative measure of poverty and it may not reflect individuals' actual standard of living. By contrast, the severe material deprivation indicator, or SMD is an absolute measure of poverty and it depicts individuals' living conditions (Kis et al., 2015). It is based on the inability of households to afford a combination of items considered necessary for a decent life by a majority (Atkinson, Guio, & Marlier, 2017).

In Belgium, the Study Committee on Ageing responsible for assessing the budgetary sustainability of pensions each year publishes a report that provides a detailed analysis of poverty among the elderly. They briefly analyse the evolution of the old age population in severe deprivation. This report is

therefore complementary to their work in focusing on severe material deprivation among the elderly in Belgium. The population is therefore divided into two age groups. The first group is composed of people aged below 65 and the second group of people aged 65 or more. These groups are respectively referred to in this report as the young group or the young population and the old group or the old population or the elderly. A comparison between old and young people is made at each step of the following analysis. The overall purpose is to determine the individual and household characteristics that affect the risk of deprivation in Belgium, focusing on the differences between old people and the rest of the population. The data used in this analysis are the European Union Statistics on Income and Living Conditions (EU-SILC) cross-sectional data for the years 2004 to 2017. Since this analysis of material deprivation is based on the official severe material deprivation indicator, the term "material deprivation", which is often used in the following sections, refers to severe material deprivation. The EU-SILC survey covers only private households, so people in collective households, and in particular old persons in care homes are not included in the results presented below.

2. Material deprivation among the elderly

2.1. Definition of severe material deprivation

Material deprivation indicators are used in order to determine whether individuals are living in social exclusion or not within the society. Guio (2009) details the three issues that needed to be addressed in order to construct these indicators. These issues are the following: the selection of items measuring deprivation; the multidimensional aspect of deprivation; and the aggregation of the selected items. A short summary of her comments is presented in this section.

Townsend was the first to develop a list of items considered necessary to live a decent life. Mack and Lansley later introduced the concept of 'enforced lack' used in the EU-SILC survey questions in order to determine whether people are deprived or not. This concept enables to focus on individuals who cannot afford items because of limited financial resources. In this way it controls for individuals' preferences and constraints. However, measurement errors related to psychological phenomena (e.g. shame in admitting not being capable to afford buying an item) or other measurement problems are not excluded. Once selected, the items are grouped into the following three categories to account for the multidimensional aspect of deprivation: economic strain[1]; enforced lack of durables[2]; and housing[3]. For simplicity, the first two were combined into one category. The severe material deprivation indicator of the Europe 2020 strategy is composed of the items in this category. The EU decided to adopt unweighted indicators (each item has the same weight in all countries) and chose a 4+ threshold for the severe material deprivation indicator.

As mentioned by Kis, Ozdemir and Ward (2015), people are considered severely deprived if they cannot afford at least 4 of the 9 following items:

- pay mortgage or rent payments, or utility bills, or hire purchase instalments or other loan payments;
- pay one week annual holiday;
- face unexpected financial expenses;
- keep the home adequately warm;
- eat meat or equivalent on a regular basis;
- a telephone;
- a television;
- a washing machine;
- a car.

1 Including the following items: pay mortgage or rent payments, utility bills or hire purchase instalments; one week annual holiday; face unexpected financial expenses; eat meat regularly; keep home adequately warm.
2 Including the following items: a telephone; a television; a washing machine; a car.
3 Including the following items: leaking roof, damp walls/ floors/foundations, or rot in window frames or floor; lack of bath or shower; lack of indoor flushing toilet for sole use of the household; dwelling too dark.

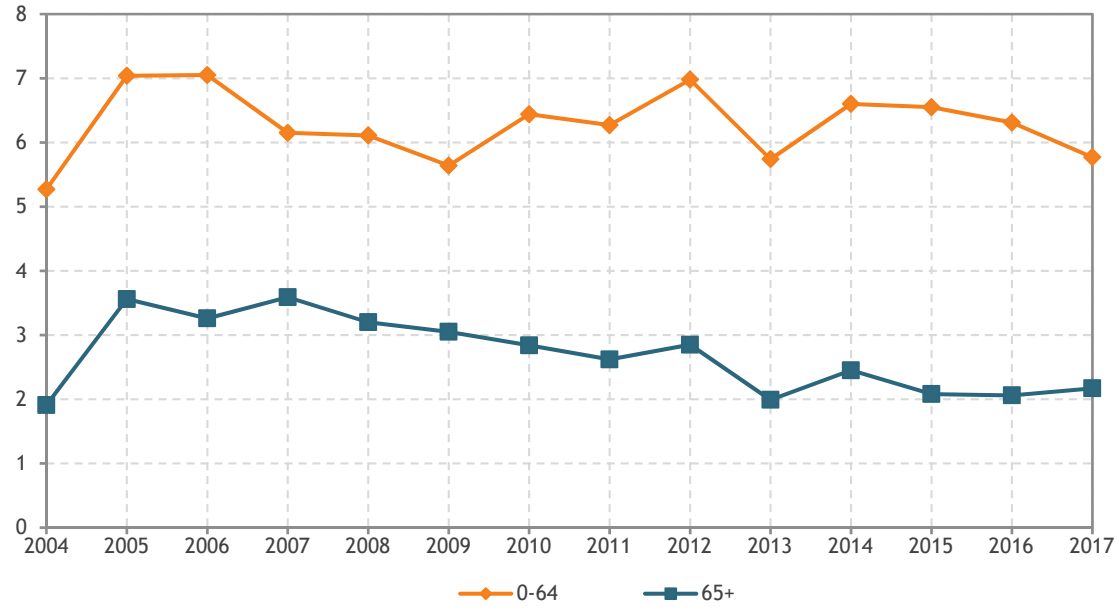
From 2019 on this indicator of severe material deprivation will be replaced by a new indicator of "material and social deprivation". This new deprivation indicator is based on 13 items whose selection results from a systematic item by item robustness analysis (see Guio et al, 2012 and Guio et al, 2017). Compared with the existing indicator of material deprivation, the new deprivation indicator also includes items related to social activities (leisure, internet, get together with friends/family, pocket money), while some of the items in the current indicator (e.g. a telephone) are dropped.

2.2. Evolution and comparison with AROP population

This section analyses the evolution of young and old people considered severely deprived between 2004 and 2017. It then examines the evolution of both age groups considered at risk of poverty during the same time period. Finally, it studies the evolution of those who are materially deprived among the population at risk of poverty.

Graphs 1 and 2 respectively show the evolution of the deprived population and the population at risk of poverty. Graph 3 depicts the evolution of those who are deprived among the population at risk of poverty. Table 5 in the Annex provides detailed information regarding these three graphs.

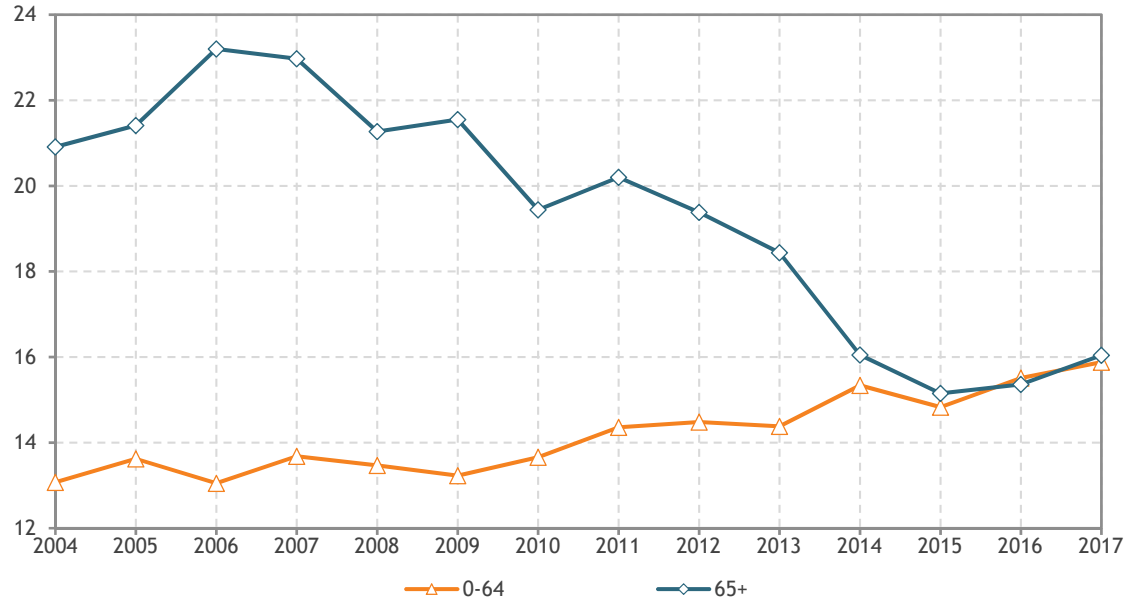
Graph 1 **Material deprivation by age groups, 2004-2017**
in %



Source: EU-SILC 2004-2017 cross-sectional data, the author's own calculations using STATA.
Note: Results identical to those of Eurostat in table [ilc mddd11] and table [ilc li02].

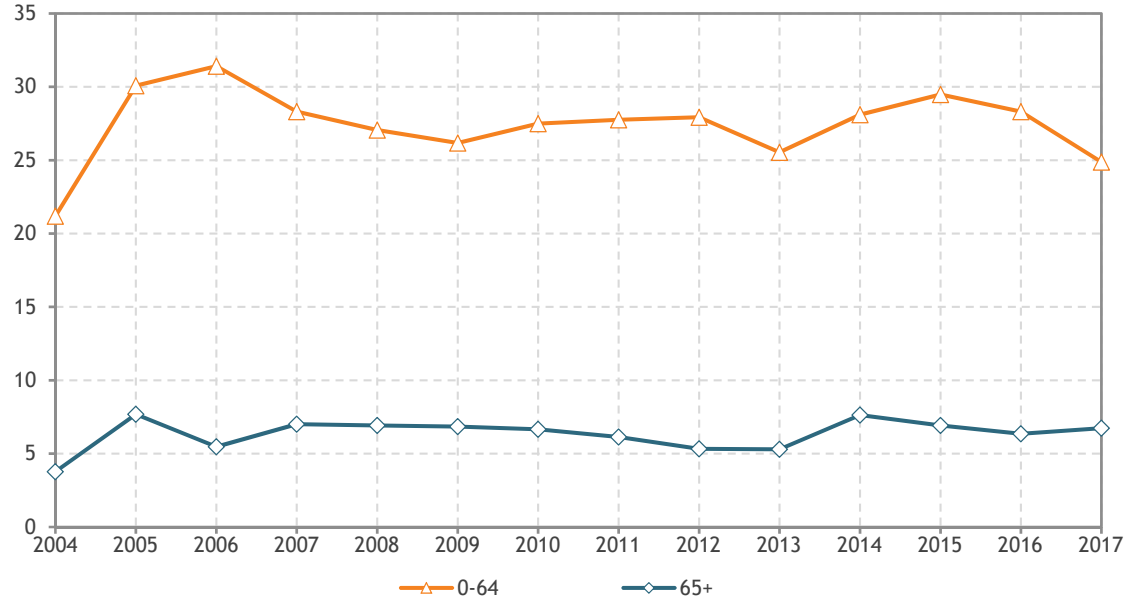
Firstly, graph 1 shows clearly the gap between the old and the young population concerning material deprivation. The elderly are less impacted by material deprivation. This gap is the largest in 2015 with a 4.5% difference between the two categories. Material deprivation has decreased for both age groups since 2005. The percentage of elderly that are materially deprived decreases from 3.6% to 2.0% between 2005 and 2013. It then rises slightly to 2.2% in 2017. It had reached a peak in 2007 (3.6%). The rate of deprivation among the young population declines from 7.0% to 5.6% between 2005 and 2009. After fluctuating in the five-year period 2010-2014, this rate slowly decreases to 5.8% in 2017. It had reached its highest point in 2006 (7.1%).

Graph 2 **At-risk-of-poverty rate by age groups, 2004-2017**
in %



Source: EU-SILC 2004-2017 cross-sectional data, the author's own calculations using STATA.
Note: Results identical to those of Eurostat in table [ilc mddd11] and table [ilc li02].

Graph 3 **Material deprivation among population at-risk-of-poverty, by age groups, 2004-2017 -**
in %



Source: EU-SILC 2004-2017 cross-sectional data, the author's own calculations using STATA.

Graph 2 depicts two different trends concerning income poverty. While figures for the young group display a clear upward trend, the proportion of elderly being at risk of poverty declines over time. This proportion decreases from 23.2% to 16.0% between 2006 and 2017. It reaches its lowest point (15.2%) in 2015. In contrast, the percentage of young people in a situation of poverty increases from 13.1% to 15.9% during the same time period. These opposite trends reduce the initially large gap between old and

young. This gap has shrunk from 10.2% in 2006 to almost nothing in 2017. The evolution of the minimum pension levels and the income guarantee for old people (IGO), relative to the at-risk-of-poverty line, plays an important role in the reduction of monetary poverty among the elderly. The minima and the IGO with respect to the poverty line increased significantly between 2005 and 2011 before stabilizing (Comité d'étude sur le vieillissement, 2018).

These results show that material deprivation has decreased for both age groups since 2005 and that young people are more severely hit by deprivation than old people. They also reveal that income poverty had been higher among the elderly for many years. However, the gap between old and young has shrunk to almost nothing in the last years. These results suggest that income is not the only variable impacting material deprivation. Other individual and household characteristics, such as gender, level of education, health, tenure status, household structure and region of residence can have a direct or indirect impact on the risk of deprivation. The impact of the above-mentioned variables is analysed in the last section.

Graph 3 shows that old people being at risk of poverty are less likely to be materially deprived than young people in the same situation. The percentage of elderly being at risk of deprivation when facing a risk of poverty is at its highest point (7.7%) in 2005. It then declines to 6.73% in 2017. The rate of deprivation among the young population at risk of poverty decreases from 30.1% to 24.9%, between 2005 and 2017. The gap between young and old is large and reaches a peak in 2006 (25.94%). It then reduces to 18.15% in 2017. These results suggest that the correlation between deprivation and financial resources is stronger for the young than for the old population.

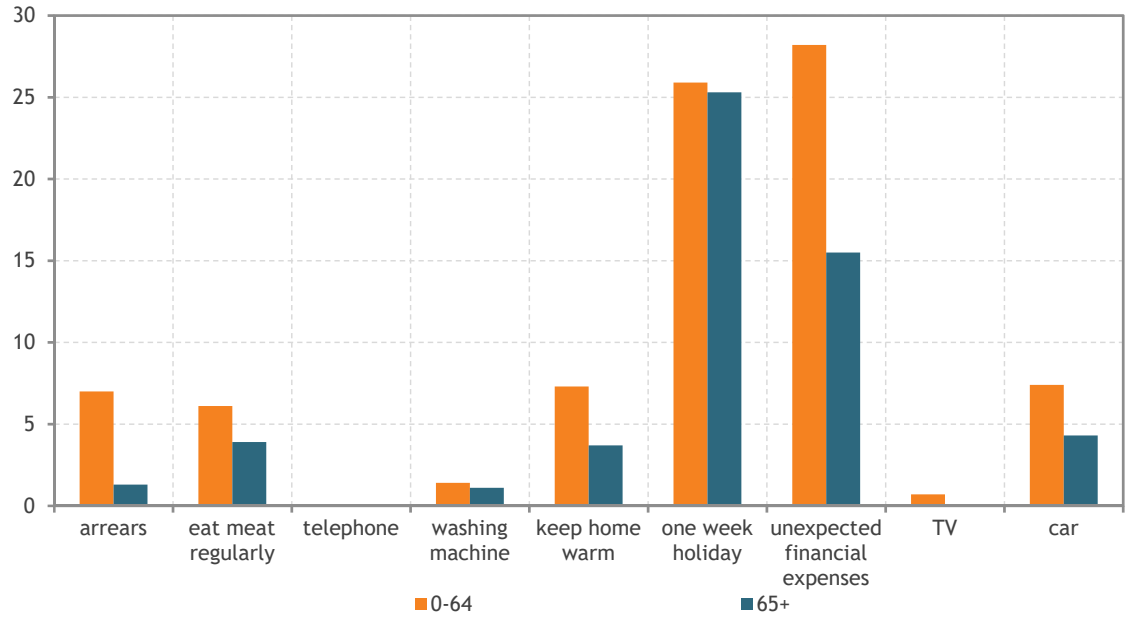
3. Inability to fulfil basic needs

This section examines the various items[4] constituting the severe material deprivation indicator. It studies the percentage of old and young population lacking each item in 2017. A distinction is made between the complete sample and the sample in severe deprivation. The objective is to evaluate which items the elderly lack most often compared to the young group.

3.1. Analysis of lacked items among the whole and deprived population

Graphs 4 and 5 show the proportion of people that cannot afford each of the nine items in 2017. Graph 4 and 5 respectively depict the situation for the whole and the deprived population. A distinction between people aged below 65 and people aged 65 or more is again made. The two graphs show a similar but not identical pattern. Firstly, the proportion of people that cannot afford each item is greater for the young group than for the elderly for almost all items. This is not the case for the deprived population (graph 5). The four items that are most often lacked among both age groups also differ when looking at the entire or at the deprived population.

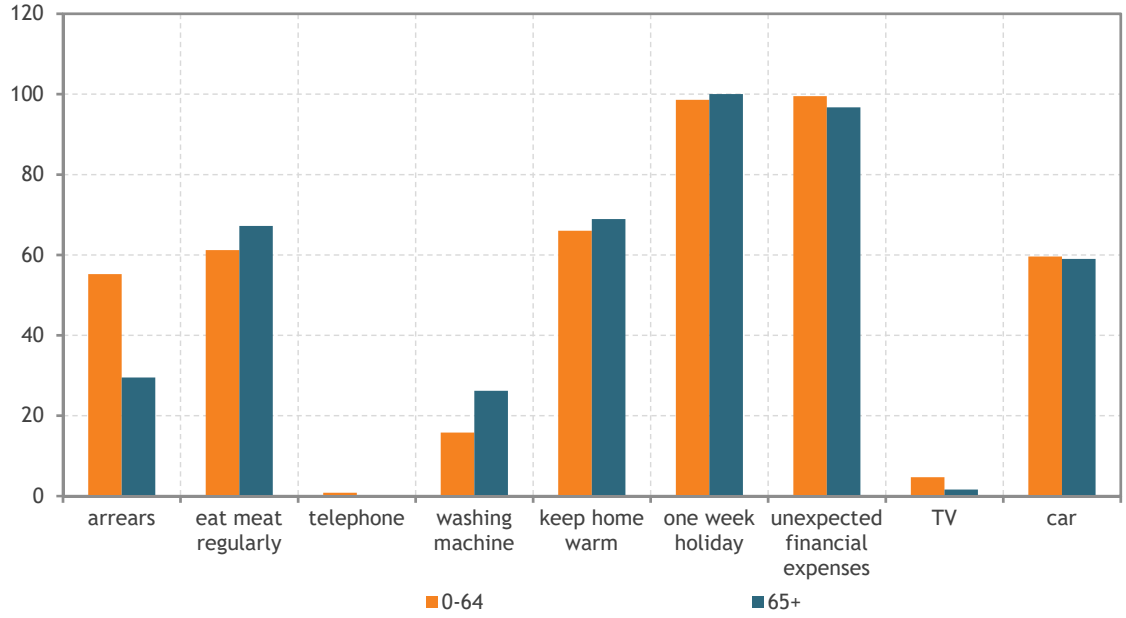
Graph 4 **Inability to afford each item by age groups, 2017 - Results for overall population**
in %



Note: See definition of severe material deprivation in section 2.1 for detailed descriptions of the items.
Source: EU-SILC 2017 crosssectional data, the author's own calculations using STATA.

[4] See definition of severe material deprivation in section 2.1.

Graph 5 **Inability to afford each item by age groups, 2017 - Results for population in deprivation**
in %



Note: See definition of severe material deprivation in section 2.1 for detailed descriptions of the items.
Source: EU-SILC 2017 crosssectional data, the author's own calculations using STATA.

The two items that are most often lacked among both age groups are the capacity to afford a one-week annual holiday away from home and the capacity to face unexpected financial expenses. Almost everyone among the deprived population cannot afford them. The next two most lacked items differ for the overall and the deprived population. When looking at the entire population, buying a car and being able to keep the home warm are respectively the third and fourth most lacked item for both age categories. About 7% of the young population cannot afford each of both. This figure is lower for the elderly. About 4% of them cannot afford a car or keep their home adequately warm. Concerning the deprived population, keeping the home warm and eating meat (or equivalent) on a regular basis constitute the next two most lacked items for both age groups. About 60 to 70% of the deprived population cannot afford each of them. The percentage of young people being in arrears is quite important compared to the elderly. This might be explained partly by the fact that most people aged 65 or above are outright owners[5]. This item is analysed in the next subsection. Concerning basic items such as a telephone, a TV and a washing machine, only a small part of the population cannot afford those.

3.2. Analysis of types of arrears

One of these underlying indicators is "arrears". The SILC survey has some questions that allow us to look more specifically into this indicator. This is relevant especially seeing that the rate among deprived people below 65 is quite high.

Arrears are composed of:

– arrears on mortgage or rent payments;

– arrears on utility bills;

[5] Outright owners are those that own a house and do not have a mortgage.

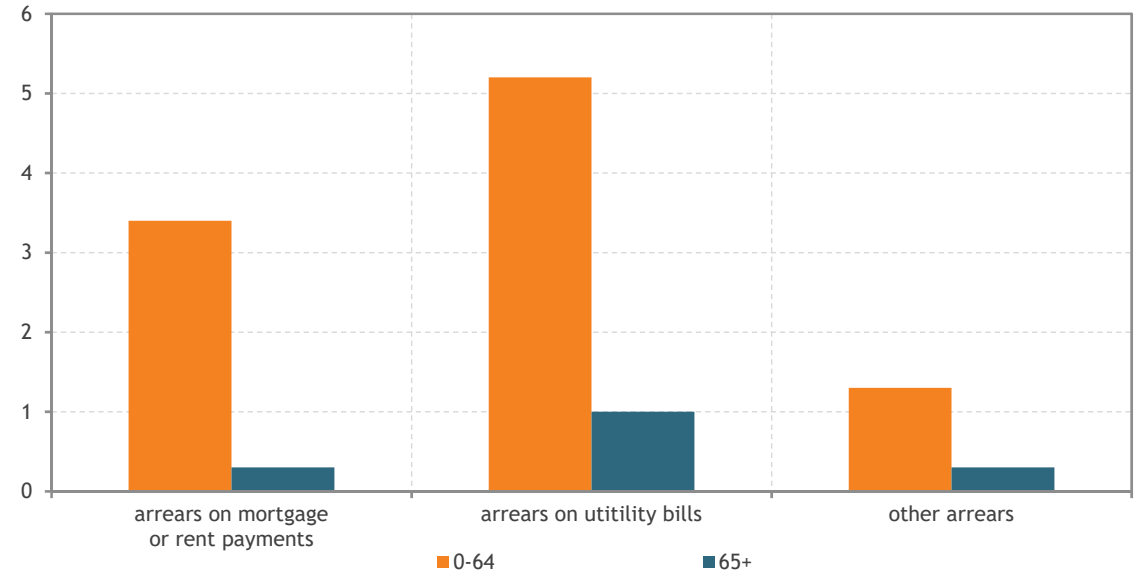
– arrears on hire purchase instalments or other loan payments.

The three response alternatives to the question "Has the household been in arrears in the last twelve months" are: no; yes, once; yes, twice or more. A household is considered in arrears if it answered 'yes, once', or' yes, twice or more'.

It is worth mentioning that people owning their home outright cannot have arrears on mortgage or rent payments.

As shown on graphs 6 and 7, paying utility bills on time presents difficulties for both age groups most often. Arrears on mortgage or rent payments come next, followed by arrears on hire purchase instalments or other loan payments. A second observation is that young people have more difficulties in paying on time compared to the elderly. About 43% of the young people within the deprived population is unable to pay for utility bills compared to 26% for the elderly. The gap between old and young is even greater for arrears on mortgage or rent payments (22.3%). Only 9.8% of the elderly are in arrears on mortgage or rent payments compared to 32.1% for the young group. When looking at the overall population, this proportion is so low that it equalizes the percentage of old people being in arrears on hire purchase instalments (0.3%). The explanation lies in the fact that most of the elderly are outright owners and thus cannot have arrears on mortgage or rent payments[6]. The last type of arrears, related to hire purchase instalments or other loan payments, is less discriminatory. The percentage of deprived people being in arrears is 10.8% for the young group and 3.3% for the old group.

Graph 6 **Arrears by kind of payment and by age groups, 2017 - Results for overall population**
in %

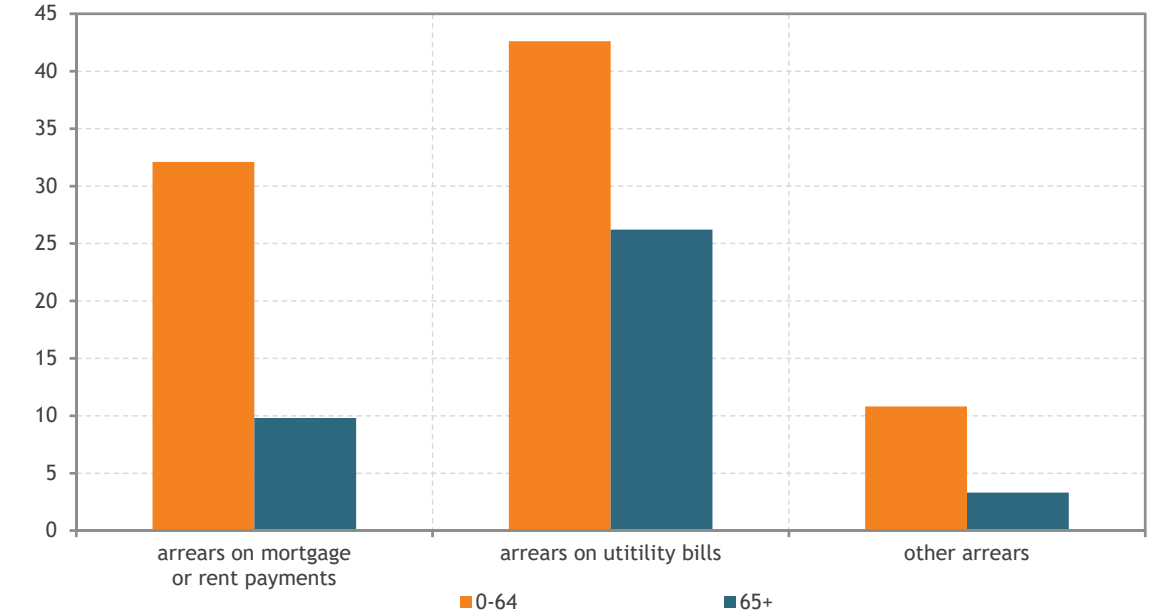


Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

[6] Table 6 provides frequency table of tenure status by age groups.

Graph 7 **Arrears by kind of payment and by age groups, 2017 - Results for deprived population**

in %



Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

4. Relationship between material deprivation and income poverty

Several cross-sectional and longitudinal studies have shown that although there exists a clear correlation between income poverty and material deprivation, there is no perfect overlap between them (Nolan & Whelan, 1996; Whelan, Layte, & Maître, 2001; Perry, 2002; Maître, Whelan, & Layte, 2004; Muffels & Fouarge, 2004; Berthoud & Bryan, 2011; Fusco, Guio, & Marlier, 2011; Figari, 2012). Perry (2002) reports that poverty research has found a significant mismatch, varying between 50 to 60%. Muffles and Fouarge (2004) show that the correlation between income and deprivation is stronger for countries belonging to the Southern regime, such as Greece and Spain, than for those belonging to Corporatist regime, such as Belgium and Germany. Figari (2012) adds that people with the lowest income are not necessarily those who are the most deprived and that the relationship between income and deprivation is thus not always monotonic. The above cited authors all agree that income poverty indicators are not sufficient to evaluate individuals' living standards and that income and deprivation have to be considered as complementary concepts. As explained by Fusco, Guio and Marlier (2011), the mismatch between individuals identified as income poor and those identified as deprived can be explained by different factors. The first one is related to the fact that EU-SILC use disposable income as measurement of household available resources. However, these two notions are not equal. Household resources are also influenced by accumulated savings, loans, debts, past investments, financial support from family or others. These elements are not included in disposable income which only reflect individuals' current income. Fusco et al. (2011) explain that the correlation between deprivation and disposable income may be lower than between deprivation and household resources, which might partly explain the mismatch. Furthermore, income changes may not be instantly reflected in deprivation. Another issue is related to EU-SILC income data. Data of the year prior to the survey are in fact used to construct disposable income, meaning "that the reference year for measuring income deprivation is not the same as the reference year for measuring material deprivation" (Fusco et al., 2011, p. 11). The three co-authors further explain that individuals living standards and thus levels of deprivation are impacted by their environmental, socioeconomic and individual characteristics. Monetary indicators do not take these elements into account, causing a mismatch between deprivation and income poverty. Furthermore, the AROP is based on a largely arbitrary threshold of 60% of the median, which makes the AROP a relative indicator. Another problem arises due to the fact that deprivation measures might capture individuals' tastes. Indeed, people whose tastes correspond to the items included in the indicator have a lower probability of being deprived than those whose tastes completely differ from the list of items. Finally, measurement errors (e.g. miscoding and reporting errors, psychological phenomena) for both indicators can also explain the mismatch between those who are at risk of poverty and those considered materially deprived. The mismatch in the lower tail of the income distribution can partly be due to negative reported incomes. These negative incomes may be due to "payment of taxes on incomes received in an earlier year or inter-household transfers" (Fusco et al., 2011, p.12).

Results

This subsection examines in detail the relationship between income and material deprivation in 2017. A comparison between the young and the old population is again made. The tables and graphs constructed are like those constructed by Fusco, Guio and Marlier (2011) in their analysis for year 2007.

Table 7 in Annex shows the level of severe material deprivation by equivalent disposable income[7] quintiles. Just as in Fusco et al. (2011), the level of deprivation of the whole population increases when moving to the lower quintiles of the income distribution. This is true for both both age groups. 23.9% of the young population among the lowest quintile is materially deprived compared to 6.1% for the old group. Moreover, the gap between the two lowest quintiles is much larger for the young people than for the elderly. Two conclusions can be drawn from the results. First, deprivation and income are negatively correlated. Second, this correlation is stronger for the young than for the old population. This last point is consistent with Muffels and Fouarge's (2004) results and is due to a more favourable situation of the elderly in terms of home ownership (in the EU, a large part of the old population is outright owner) and in terms of financial wealth (old people have accumulated wealth throughout their working life) (European Commission and Social Protection Committee, 2018). Moreover, Dewilde (2008) reports that it may also be due to the fact that the elderly have "better budgeting skills (age effect) and that they grew up in an era when people had less material demands (cohort effect)" (p. 237).

Table 8 in Annex lists the level of severe material deprivation by fractions of the median equivalent disposable income. Individuals in the first three columns are those who are considered at risk of poverty since their equivalised income is less than the 60% threshold. When looking at both the entire and the young population, people in the second group are more deprived than those who have the lowest income. Concerning the elderly, individuals with the lowest income are also those who are the most deprived. Fusco et al. (2011) found that "negative income components" (p. 15) were the reasons why people with the lowest income were not necessarily those who were deprived. They found that in Belgium these negative components were due to tax payments[8] and transfers to other households.

Graph 8 presents in greater detail the results of tables 7 and 8 in Annex. Following the method of Fusco et al. (2011), individuals are divided into 20 groups according to their level of equivalised disposable income expressed as a fraction of the national median equivalised income. The y-axis represents the mean severe material deprivation rate for the 20 groups. Graph 8 clearly shows that while being negative, the relationship between income and severe material deprivation is neither linear nor monotonic (people with the lowest income are not necessarily those who are the most deprived).

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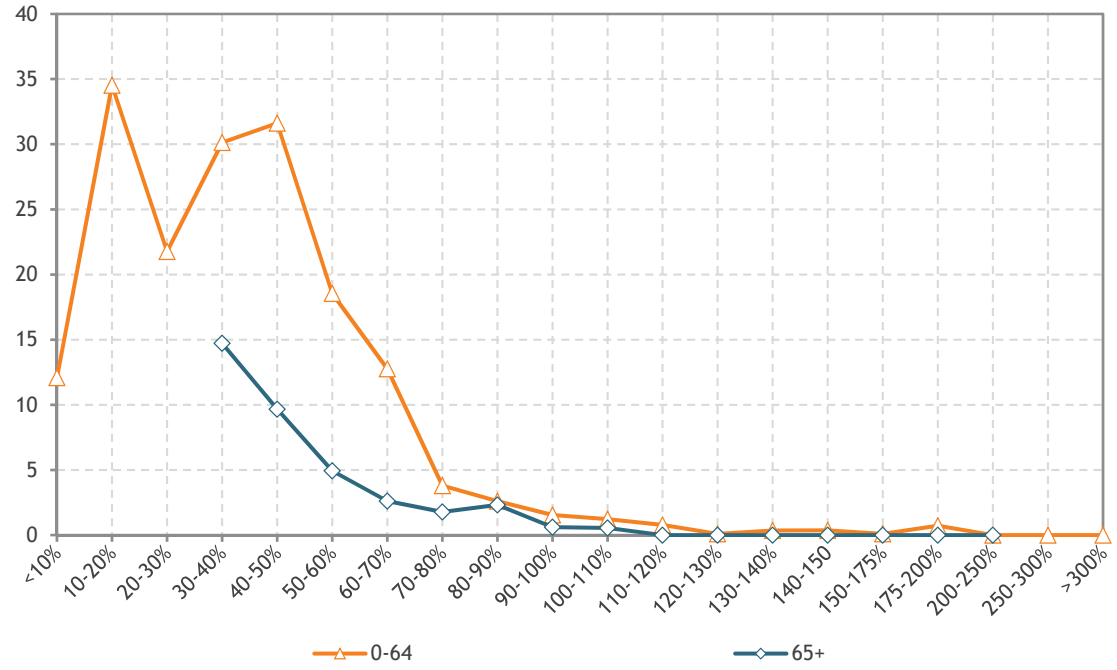
7 Equivalent disposable income is obtained by adjusting total disposable household income so as to take account of the household composition. This is done by using the OECD-modified equivalence scale, which assigns the value of 1 to the first adult of the household, 0.5 to each other adults aged above 13, and 0.3 to children aged below 14.

8 In SILC, tax payments and reimbursements made or received in the income reference year (the year before the time of the survey), which generally refer to a earlier year, are deducted or added to total net household income. The motivation of this procedure is that at the time of the survey, most respondents cannot know the final tax for the previous year.

Graph 8 **Severe material deprivation by fractions of median equivalised income and age groups, 2017**
in %



Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.
Note: based on graph 6 constructed by Fusco, Guio and Marlier (2011). Individuals are divided into 20 groups according to their level of equivalised income expressed as a fraction of the median equivalised income. Data points with less than 25 observations are not shown.

Finally, table 1 provides the percentage of people who are: (1) neither at risk of poverty nor materially deprived; (2) only at risk of poverty; (3) only materially deprived; (4) both at risk of poverty and deprived.

Table 1 **Joint distributions of the at-risk-of-poverty (AROP) rate and severe material deprivation by age groups, 2017**
in %

Age groups	Neither AROP nor deprived	AROP only	Deprived only	AROP and deprived	Consistently identified
	(1)	(2)	(3)	(4)	(1)+(4)
0-64	82.3	11.93	1.82	3.95	86.25
65+	82.85	14.98	1.09	1.08	83.93
total	82.41	12.49	1.69	3.42	85.83

Notes: Personal cross-sectional weights are used. Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA, based on Table 2 constructed by Fusco, Guio and Marlier (2011).

The proportion of individuals who are neither at risk of poverty nor deprived is almost similar for both age groups. Testing for differences between age groups for (2), (3) and (4), the results show that there are also no significant differences between the proportions from the two groups. About 15% of both age groups are not consistently identified (i.e. are identified either as "AROP only" or as "Deprived only").

The results obtained in this section show that there is a clear relationship between severe material deprivation and income poverty but that this relation is not necessarily linear. Furthermore, there are important groups who are not consistently identified. Income is thus not enough to identify those people who are materially deprived. This is even more true for people aged 65 or above. As already said, an individual's level of deprivation is influenced by their personal and socioeconomic characteristics (Fusco et al., 2011). The impact of some of these factors on severe material deprivation is analysed in the next section.

5. The determinants of material deprivation

This section analyses the micro-level determinants that affect the risk of deprivation in Belgium with a focus on the differences between people aged 65 or above and people below that age. The objective is to identify the most important characteristics that relate to material deprivation in the two sub-populations. This section first provides a brief overview of the most commonly used individual and household characteristics in the related literature. It then specifies the explanatory variables and the model used to perform the analysis for this study. Finally, it presents and discusses the obtained results.

5.1. Results of previous studies

A large literature describes people's socioeconomic and personal determinants of deprivation. Most of the related studies perform a multivariate analysis to determine those characteristics. Although using different control variables, they offer consistent findings (Boarini & Mira d'Ercole, 2006). The most cited characteristics are summarized below.

a. Gender

Controlling for other variables, such as household reference person's age, working status, education, health, spouse's working status, household's composition, tenure status, income and country differences, several studies demonstrate that women are generally more impacted by deprivation than men (Layte, Whelan, Maître, & Nolan, 2001; Muffels & Fouarge, 2004; Halleröd, Larsson, Gordon, & Ritakallio, 2006; Figari, 2012). Figari (2012) also controls for past income when analysing deprivation in European countries. He finds that Belgium has the greatest gender gap. As explained by the European Commission and Social Protection Committee (2018), old women tend to live longer and are more likely to live alone than old men while having a lower pension due to earlier retirement. They report that this might explain the gender gap in deprivation for the elderly.

b. Age

As shown in the previous sections, the old population is less likely to be materially deprived than the young population. Moreover, the correlation between income and deprivation is weaker for people aged above 65. Layte et al. (2001) have shown that, after controlling for country differences, gender, education, working status, household composition, precarity level and income, people aged below 65 are more likely to be deprived than those aged 65 and over.

c. Educational level

Controlling for other variables including income, studies find that people with a low level of education are more likely to experience material deprivation (Layte et al., 2001; Muffels & Fouarge, 2004; Berthoud & Bryan, 2011). Highly educated people are generally healthier than lower educated people which has a positive effect on employment and income (European Commission and Social Protection Committee, 2018).

d. Working status

Controlling for other variables, it has been demonstrated that unemployed and other inactive individuals have a high probability of being materially deprived (Layte et al., 2001; Maître et al., 2004; Muffels & Fouarge, 2004; Boarini & Mira d'Ercole, 2006; Hallero¨d et al., 2006; Dewilde, 2008; Figari, 2012; Bárcena-Martín et al., 2014). This is also the case for people working only a few hours (Boarini & Mira d'Ercole, 2006). Compared to these results, self-employed or employed people are less often hit by deprivation (Berthoud & Bryan, 2011; Bárcena-Martín et al., 2014). Smallholder farmers and manual workers are more likely to experience deprivation than non-manual workers (Layte et al., 2001). However, after controlling for gender, age and other household characteristics (income not included), Fusco et al (2011) found that working status has no significant impact on deprivation in Belgium. These results are consistent with those obtained by Figari (2012) after controlling for net current and past income, other sources of income, and other household and personal characteristics.

e. Health

McKay (2008) reports that health is an important factor of deprivation, particularly for the old population. He adds that individuals' level of deprivation is also affected by their spouse's health. Controlling for other variables (income not included), Fusco et al. (2011) finds that Belgian individuals living in a household where at least one member is in bad health are more likely to be deprived than those living with only healthy members. Using other control variables, among which net income, net past income (earned during the last two years) and other sources of income (e.g. unemployment benefits, invalidity benefits, etc.), Figari (2012) finds that in Belgium the household reference person's health and the other members' health have no significant impact on deprivation. As reported by the European Commission and Social Protection Committee (2018), education, health and employment are positively correlated. Individuals with a high education tend to have a better health and this in turn affects positively the employment rate (European Commission and Social Protection Committee, 2018). Some results concerning people approaching pensionable age, reported by the European Commission and Social Protection Committee (2018), indicate that the general level of health among the population aged between 50 and 64 has improved since 2005. It is shown that men tend to report better health than women among this age group. Moreover, employed individuals also tend to report better health than the unemployed group. When looking at Belgium, the number of people aged 55-64 that are inactive due to own illness increases between 2006 and 2016 (European Commission and Social Protection Committee, 2018).

f. Tenure status

Studies have shown that, in Europe, home ownership reduces the probability of experiencing material deprivation (Boarini & Mira d'Ercole, 2006; Berthoud & Bryan, 2011; Fusco et al., 2011; Figari, 2012; Bárcena-Martín et al., 2014). Households paying a mortgage are more likely to experience material deprivation than outright owners (Berthoud & Bryan, 2011; Fusco et al., 2011; Figari, 2012). Renters are more likely to experience deprivation than outright owners and than households still paying a mortgage (Boarini & Mira d'Ercole, 2006; Berthoud & Bryan, 2011; Fusco et al., 2011; Figari, 2012; Bárcena-Martín et al., 2014). The European Commission and Social Protection Committee (2018) reports that in the EU most elderly are homeowners. It is shown that, in 2016, 77% of the older households are homeowners in Belgium. This represents an advantage for the elderly compared to households aged below 65 who

are generally in a less favourable position in terms of home ownership (European Commission and Social Protection Committee, 2018).

g. Household structure

In Europe, people living alone with or without children have a higher probability of experiencing deprivation compared to other types of households (Layte et al., 2001; Boarini & Mira d'Ercole, 2006; Fusco et al., 2011; Bárcena-Martín et al., 2014). Widowed, divorced/separated and single individuals are thus disadvantaged compared to married couples (Boarini & Mira d'Ercole, 2006). This might be explained by the fact that "two working adults living together may pool their resources and better protect themselves and their children against [material deprivation than] ... lone-parent families [who] have only one income to rely on" (Poverty, gender and lone parents in the EU: Review of the implementation of the Beijing Platform for Action, 2016, p. 1).

h. Income

Although people with low income are more likely to experience deprivation than those with higher income, the correlation between income and deprivation is weaker than expected (Layte et al., 2001; Muffels & Fouarge, 2004; Fusco et al., 2011; Figari, 2012). Some studies report that people experiencing a temporary situation of low income (maybe due to job loss) will not suffer from deprivation immediately since adjusting their lifestyle to the new financial situation is a slow process (Gordon et al., 2000; Berthoud, Bardasi, Bryan, & Britain, 2004; Dewilde, 2008). However, they add that if the situation persists over time, low income may lead to higher deprivation. As indicated by the European Commission and Social Protection Committee (2018), pensions represent the main source of income for the elderly. However, other factors – such as tenure and wealth – are reported to play a significant role in supporting their living standards. A detailed analysis of the relationship between income and severe material deprivation in Belgium has been performed for year 2017 in the previous section. The obtained results show that the correlation between income and deprivation is weaker among the elderly than among the young population.

5.2. Data and Explanatory variables

The analysis of this section is based on the the EU-SILC cross-sectional data for Belgium and for year 2017. Data from a sample of 14028 individuals from 6053 households had been collected for that time period. Most of the above cited studies use the household as the unit of measurement and the individual as the unit of analysis (Whelan et al., 2001; Maître et al., 2004; Figari, 2012; Bárcena-Martín et al., 2014). This is motivated by the fact that severe material deprivation is a household-level variable and that, in general, "each individual in a household has the same standard of living" (Cantillon & Nolan, 1998, p. 151). The analysis performed in this section therefore "focuses on the characteristics of the household reference person" (Bárcena-Martín et al., 2014, p. 809). "The household reference person is the person responsible for the accommodation, or if it involves more than one person, the oldest person with responsibility" (Maître et al., 2004, p. 294). The variables chosen in order to evaluate the determinants of severe material deprivation are in accordance with the literature used in this paper and described in the previous subsection. This analysis includes the following personal characteristics: age of the household

reference person, his/her gender (RB090), level of education (PE040), self-defined current economic status (PL031), self-perceived general health (PH010), potential limitation in activities due to health problems (PH030) and migration status. A dummy variable is created in order to represent the migration status of the individuals[9]. This variable takes the value of one if the individual has immigrated and 0 otherwise. The analysis also includes information on the household itself, such as: its structure, tenure status (HH021), region of the residence (DB040) and equivalised disposable income[10]. Following Berthoud and Bryan's (2011) methodology, equivalent disposable income is expressed as a fraction of the national median income[11] and as logarithms. They report that its logarithmic form allows to capture the relationship between deprivation and income as shown in graph 8. It also lessens the impact of exceptionally high incomes (Layte et al., 2001). Since Berthoud and Bryan (2011) recommend "to omit very low incomes... [that cause a] twist in the tail of the income distribution" (pp. 143-144), individuals with 0 and negative incomes are dropped from the analysis. A categorical variable is created in order to represent the household structure of the individuals[12]. This variable has five categories: single; single with children; single living with at least one other adult; married couples and registered partners living in the same household; and" de facto" partners living in the same household. Individuals aged below 18 are regarded as children and those aged 18 or above are regarded as adults.

5.3. The model

The impact of the above cited explanatory variables on the binary variable severe material deprivation is computed using a logit regression model. The binary dependent variable takes the value of 1 if the household reference person (HRP) is considered materially deprived, and 0 otherwise. A distinction between people aged below 65 (young population) and people aged above 64 (old population) is again made. Following recommendations by Goedemé (2013), standard errors are adjusted for household clustering (DB030). The goal of this study is to determine the individual and household characteristics that explain material deprivation, focusing on the differences between old and young group.

5.4. Results

Table 2 presents the estimation results of the logit models for the young population[13]. Two models have been estimated. Model 1 is the basic model. It includes the personal and household characteristics of the household reference person (see above). Model 2 contains information on the household reference person's partner. This model focuses on couples.

The results of model 1 show that the relationship between severe material deprivation and the HRP age is not linear. Deprivation first increases with the age before starting to fall. The results also suggest that people living in a female headed household are more often observed in a situation of SMD than those living in a male-headed household. Deprivation tends to decrease with the level of education. However,

9 Constructed by using EU-SILC variable RB031.

10 Obtained by adjusting total disposable household income (HY020) so as to take account of the household composition. This is done by using the OECD-modified equivalence scale, which assigns the value of 1 to the first adult of the household, 0.5 to each other adults aged above 13, and 0.3 to children aged below 14.

11 See graph 8 in section 4 for details on its construction.

12 Constructed by using EU-SILC variable PB200.

13 See frequency table 9.

the result is only significant for those having an upper or post-secondary diploma. Self-employed HRP are less likely to be severely deprived than employees. By contrast, unemployed and other inactive HRP have a higher likelihood of being deprived. This effect is larger for the unemployed than for the non-active persons. Level of general health appears to be an important factor of deprivation. HRP in ill health are more likely to experience deprivation than those in good health. Another important factor is the tenure status. Tenants have a higher probability of being deprived than outright owners. Compared to Brussels, HRP living in Flanders are less likely to experience material deprivation. Concerning the household structure, single people living alone have a higher likelihood of being deprived compared to married couples and registered partners. As demonstrated in section 4, deprivation decreases when standardised equivalent income increases. Income, together with tenure status, level of general health, age, level of education, working status, region of residence and household structure are the most important factors affecting risk of severe deprivation. The results from model 1 are consistent with previous findings summarized at the beginning of this section.

When focusing on HRPs in couples, the personal characteristics of the partner may also affect individuals' level of deprivation. Model 2 contains all variables of model 1 as well as the partner's level of education, his/her working status, level of general health and migration status. The HRP's health has a lesser impact on deprivation compared to model 1. The estimated effect of being 'unemployed' is now significant at a 5% level. Retired HRPs have a higher likelihood of being severely deprived compared to working HRP. Except for tenants paying a reduced rent (or paying no rent), the impact of tenure status is greater compared to model 1. Those with de facto partners are more likely to be materially deprived than those with married or registered partners. The partner's level of education (lower and post-secondary) and health (fair) have a small significant effect on deprivation. The partner's working status and migration status have no significant effect on deprivation. Tenure status and income are the most important factors affecting the risk of severe deprivation, followed by region of residence and the head's working status.

Table 2 Logistic regression models for severe material deprivation, young population, 2017, odds ratios

Independent variables	Model 1	Model 2[14]
Constant	0.021* (0.042)	3.702 (14.002)
Age	1.271*** (0.086)	1.121 (0.141)
Age^2	0.997*** (0.001)	0.998 (0.001)
Gender		
Male	ref.category	
Female	1.516** (0.274)	0.828 (0.361)
Level of education		
Less than secondary	ref.category	
Lower secondary	0.978 (0.249)	0.354 (0.275)
Upper secondary	0.492*** (0.127)	2.015 (1.653)
Post-secondary	0.374*** (0.111)	0.972 (0.845)
Current economic status		
Employee	ref. category	
Self-employed	0.308** (0.172)	
Unemployed	3.384*** (0.873)	
Retired/Has given up business	1.574 (0.738)	
Permanently disabled or/and unfit to work	1.28 (0.415)	
Other inactive person/fulfilling domestic task/student	2.93*** (0.938)	

[14] Estimated only on couples.

Independent variables	Model 1	Model 2[14]
Level of general health		
(Very) good	ref.category	
Fair	3.05** (1.454)	3.928 (3.605)
(Very) bad	4.606*** (2.153)	6.426** (5.175)
Limitation in activities due to health problems		
Yes	ref.category	
No	1.418 (0.579)	1.299 (0.802)
Interaction b/w health and limitation in activities		
Fair*Not limited	0.559 (0.314)	1.501 (1.424))
(Very) bad*Not limited	0.586 (0.398)	0.793 (1.025)
Migration status		
No migrant	ref. category	
Migrant	1.062 (0.218)	0.731 (0.549)
Tenure status		
Outright owner	ref. category	
Owner paying mortgage	1.433 (0.544)	19.745*** (22.016)
Tenant	3.897*** (1.353)	44.022*** (48.63)
Migration status		
Tenant reduced/free rent	2.791*** (1.031)	18.905** (23.301)
Region		
Brussels	ref.category	
Flanders	0.342*** (0.085)	0.101*** (0.052)
Wallonia	1.195 (0.256)	0.756 (0.321)
Log standardised equivalent income	0.313*** (0.104)	0.099*** (0.045)
Household structure		
Married/Registered partners	ref.category	
De facto partners	1.783* (0.555)	
Single	2.531*** (0.575)	
Single with children	1.639 (0.531)	
Single living with at least one other adult	1.143 (0.389)	
Consensual union		
Married/Registered partners		ref. category
De facto partners		2.822** (1.331)
Head's working status		
Working		ref. category
Unemployed		5.002** (3.161)
Retired		15.757*** (14.594)
Other inactive		0.476 (0.401)
Partner's education		
Less than secondary	ref.category	
Lower secondary	3.642* (2.426)	
Upper secondary	0.345 (0.403)	
Post-secondary	12.355** (15.191)	
Interaction b/w head's and partner's educ		
Head mow sec*Partner low-sec		0.53
Head low sec*Partner upper _sec		12.536* (17.475)
Head low sec*Partner post sec		0.061* (0.091)
Head upper _sec∗Partner low _sec		0.137* (0.148)
Head upper _sec∗Partner upper sec		0.971 (1.292)
Head upper _sec∗Partner post sec		0.012*** (0.02)
Head post sec∗Partner low sec		0.052** (0.066)
Head post sec∗Partner upper sec		0.339 (0.567)
Head post sec∗Partner post sec		0.026** (0.04)
Partner's working status		
Working		ref.category
Unemployed		1.768 (1.316)
Retired		0.259 (0.364)
Other inactive		1.421 (0.772)
Interaction b/w Head's and partner's working status		
Head unemp*Partner unemp		0.269 (0.432)

Independent variables		Model 1	Model 2[14]
Head unemp*Partner retired			-
Head unemp*Partner inactive			0.484 (0.44)
Head retired*Partner unemp			2.138 (3.524)
Head retired*Partner retired			-
Head retired*Partner inactive			0.057** (0.069)
Head inactive*Partner unemp			0.685 (0.578)
Head inactive*Partner retired			-
Head inactive*Partner inactive			2.585 (2.393)
Partner's health			
(Very) good			ref.category
Fair			3.8** (2.304)
(Very) bad			0.433 (0.467)
Interaction b/w head's and partner's health			
Head fair*Partner fair			0.462 (0.414)
Head fair*Partner bad			5.37 (8.023)
Head bad*Partner fair			1.288 (1.294)
Head bad*Partner bad			7.181 (10.127)
Partner's migration status			
No migrant			ref.category
Migrant			1.144 (0.479)
Interaction b/w head's and partner's migration status			
Head Migrant*Partner Migrant			0.693
Observations	4127		
Wald Chi-square		402.53	222.66
D.f.		27	51
Pr<Chi-square		<0.0000	<0.0000
Nagelkerke R^2		0.3804	5154

Notes: *p<0.10, **p<0.05, ***p<0.01. Personal cross-sectional weights are used. Robust standard errors within brackets are adjusted for clustering by households.

Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

The same two models have been estimated for the old population. The explanatory variable working status is no more relevant since nearly all individuals aged above 64 are retired. The results of the two models are presented in table 3[15].

The results (Model 3) show that tenure status, region of residence and income are the only variables that have a significant impact on deprivation. Tenants are more likely to experience material deprivation than outright owners. This is also the case for owners still paying a mortgage, but this result is not significant. HRPs living in Brussels are the likeliest to be severely deprived. In contrast, those living in Flanders are the least likely to suffer from deprivation. Finally, deprivation decreases when standardised equivalent income rises. Tenure status, together with region of residence and income, are the most important determinants of deprivation. As reported by Fusco et. al (2011), "for elderly people, the lack of life cycle information (such as length and type of career, major life events) does not allow a relevant analysis of their current living conditions" (p. 23). Hence, information on individuals' previous working status might have increased the explanatory power of the model.

Model 4 focuses on couples and contains information on the level of education, working status, health and migration status of the HRP partner. Compared to model 3, the findings here suggest that HRPs having a fair health status are more likely to suffer from deprivation than those with good or very good health. This is also the case for owners still paying a mortgage, compared to outright owners. The partner's level of education and working status have no significant impact on deprivation. However, HRPs

[15] See frequency table 10 in Annex for descriptive statistics of the variables.

whose partner has a bad health have a higher likelihood of being severely deprived. Adding the partner's characteristics to the model reduces the impact of income on deprivation and increases substantially the explanatory power of the model. The obtained results show that tenure status has a great impact on deprivation. Together with income it is the most important determinant of severe material deprivation for the old population.

Table 3 Logistic regression models for severe material deprivation, old population, 2017, odds ratios

Independent variables	Model 3	Model 4[16]
Constant	3.10e-08 (6.60e-07)	1.86e+09 (9.71e+10)
Age	1.952 (1.093)	0.659 (0.884)
Age^2	0.995 (0.004)	1.003 (0.009)
Gender		
Male	ref.category	
Female	1.054 (0.417)	4.879* (4.345)
Level of education		
Less than secondary	ref.category	
Lower secondary	1.049 (0.452)	0.397 (0.354)
Upper secondary	0.877 (0.376)	0.577 (0.815)
Post-secondary	1.26 (1.007)	1.383 (1.534)
Level of general health		
(Very) good	ref.category	
Fair	2.563 (2.399)	14.073** (15.389)
(Very) bad	3.05 (2.638)	0.63 (0.975)
Limitation in activities because of health problems		
Yes	ref.category	
No	1.118 (1.029)	1.322 (1.262)
Interaction b/w health and limitation in activities		
Fair*Not limited	0.43 (0.521)	
(Very) bad*Not limited	-	
Migration status		
No migrant	ref. category	
Migrant	1.221 (0.463)	1.312 (1.768)
Tenure status		
Outright owner	ref. category	
Owner paying mortgage	3.488 (3.878)	32.888*** (42.788)
Tenant	8.089*** (5.013)	13.995*** (13.93)
Tenant reduced/free rent	7.042*** (3.77)	1.015 (1.004)
Region		
Brussels	ref.category	
Flanders	0.264*** (0.13)	0.126 (0.165)
Wallonia	0.395** (0.174)	0.286 (0.039)
Log standardised equivalent income	0.071*** (0.032)	0.025** (0.039)
Household structure		
Married/Registered partners/De facto partners	ref.category	
Single	1.172 (0.732)	
Single living with at least one other adult	2.411 (1.775)	
Partner's education		
Less than secondary		ref.category
Lower secondary		1.108 (0.987)
Upper secondary		0.665 (0.771)
Post-secondary		2.491 (3.629)
Partner's working status		
Retired		ref.category
Working		3.261 (5.14)
Other inactive		0.208 (0.25)
Partner's health		
(Very) good		ref.category

[16] Estimated only on couples.

Independent variables		Model 3	Model 4[16]
Fair			7.525 (9.529)
(Very) bad			15.107** (16.097)
Partner's migration status			
No migrant			ref.category
Migrant			1.514
Observations	1573		
Wald Chi-square		145.82	69.42
D.f.		19	24
Pr<Chi-square		<0.0000	<0.0000
Nagelkerke R^2		0.2784	0.4844

Notes: *p<0.10, **p<0.05, ***p<0.01. Personal cross-sectional weights are used. Robust standard errors within brackets are adjusted for clustering by households.

Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

6. Relationship between material deprivation and financial capital

This last section focuses on the analysis of the relationship between deprivation and financial capital, controlling for income and tenure status, which were shown to be the most important determinants of deprivation. The impact of these three variables on severe material deprivation is computed using a logit regression model. In SILC financial capital is itself not measured, but a proxy for this can be derived from variable HY090G (interest, dividends, profit from capital investments in unincorporated business). A categorical variable is created in order to represent the financial capital of the individuals. This variable has three categories: little capital[17]; some capital[18]; and great deal of capital[19]. A categorical variable was preferred over the original continuous variable, because many respondents provide the answers to questions about income from financial capital in brackets, instead of amounts, while many data had to be imputed due to non-response.

The results of the logit models are presented in table 4[20]. The results suggest that HRP with some or higher capital are less likely to suffer from material deprivation compared to those with little capital. This applies to both age groups. As shown in section 5, tenants have a higher probability of being deprived than outright owners for both age groups, and individuals with a low income are more likely to experience material deprivation than those with high income.

Table 4 Logistic regression model for severe material deprivation by age groups, 2017, odds ratios

Independent variables	Young population	Old population
Constant	38.171*** (37.541)	56.761* (134.658)
Tenure status		
Outright owner	ref. category	
Owner paying mortgage	1.239 (0.471)	2.56 (2.747)
Tenant	6.227*** (2.082)	9.082*** (4.073)
Tenant reduced/free rent	4.547*** (1.645)	6.608*** (2.913)
Log standardised equivalent income	0.203*** (0.044)	0.143*** (0.079)
Financial capital		
Little capital	ref. category	
Some capital	0.428*** (0.093)	0.321*** (0.137)
Great deal of capital	0.045*** (0.033)	0.045*** (0.047)
Observations	4343	1687
Wald Chi-square	233.86	79.07
D.f.	6	6
Pr<Chi-square	<0.0000	<0.0000
Nagelkerke R^2	0.2865	0.2394

Notes: *p<0.10, **p<0.05, ***p<0.01. Personal cross-sectional weights are used. Robust standard errors within brackets are adjusted for clustering by households. Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

17 HY090G<15

18 HY090G=[15;30[

19 HY090G>29

20 See frequency table 11 in Annex.

7. Conclusions

The objective of this paper was to identify the individual and household characteristics that explain severe material deprivation in Belgium, while making a distinction between people aged below 65 and those aged 65 or above. A detailed description of the Europe 2020 Strategy deprivation indicator, its evolution over time compared to the evolution of the at risk of poverty indicator, as well as an analysis of its components were first provided in section 2 and 3. The results obtained showed that severe material deprivation has decreased for both age groups since 2005. They also indicated that young people were more impacted by severe material deprivation than the elderly. Capacity to face unexpected financial resources, to pay a one-week annual holiday, to buy a car and to keep home adequately warm were the four items most often lacked for both age groups when looking at the whole population in 2017. Conversely, in the recent past young people suffered less from income poverty, though since 2016 this difference has disappeared. Moreover, the results suggested that there was a stronger correlation between income poverty and deprivation for the young than for the old group. The relationship between income and severe deprivation was analysed in more detail in section 4. The findings were consistent with those of previous research. Although there was a clear link between income and deprivation, the overlap between individuals identified as at risk of poverty and those as severely deprived was not perfect. This mismatch applied even more to the elderly than to the population below 65. Income was therefore not enough to determine people's risk of deprivation.

Using an econometric approach, the impact of other characteristics was estimated in section 5. The results for the young group show that although income is an important determinant of severe material deprivation, other characteristics such as tenure status, health, age, education, working status as well as region of residence have an important impact on deprivation. Focusing on couples, it was clear that the partner's level of education and health matter in explaining the risk of deprivation of the household head. The effect of tenure status increases and that of income decreases. Home tenure status and income are the major determinants of deprivation, followed by region of residence and the head's working status.

Tenure status is a very important driver of deprivation for the elderly. Controlling for home ownership and other variables, the impact of household income on deprivation among the elderly is at least as high, if not higher, than among the younger population. The lower bivariate correlation between income and deprivation among the elderly, compared to the young, seems to be driven by the fact that elderly people with low incomes are much more likely to be homeowners without a mortgage than younger people with similar incomes. Homeownership appears to be a guarantee against severe deprivation among both age groups. Looking at couples and adding the partner's characteristics reduces the impact of income and increases that of tenure status. Information concerning previous working status could have greatly improved the analysis for the elderly.

Finally, the financial capital of the individual has an important impact on its risk of deprivation. This applies to both age groups.

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9. Annex

Table 5 Material deprivation and at risk of poverty by age groups, 2004-2017
in %

Age groups	Years													
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Materially deprived[21]														
0-64	5.27	7.04	7.05	6.15	6.11	5.64	6.44	6.27	6.98	5.74	6.6	6.55	6.31	5.77
65+	1.91	3.56	3.26	3.59	3.2	3.05	2.84	2.62	2.85	1.99	2.45	2.08	2.06	2.17
total	4.75	6.5	6.44	5.74	5.64	5.22	5.86	5.68	6.3	5.11	5.9	5.78	5.53	5.11
At risk of poverty[22]														
0-64	13.07	13.62	13.05	13.68	13.47	13.23	13.66	14.36	14.48	14.38	15.34	14.83	15.51	15.88
65+	20.91	21.41	23.2	22.97	21.27	21.55	19.44	20.2	19.38	18.44	16.05	15.15	15.36	16.04
total	14.3	14.83	14.69	15.17	14.72	14.57	14.59	15.3	15.29	15.06	15.46	14.89	15.48	15.91
Materially deprived among those at risk of poverty														
0-64	21.19	30.08	31.41	28.31	27.06	26.17	27.49	27.76	27.93	25.54	28.1	29.48	28.31	24.88
65+	3.77	7.68	5.47	7.01	6.92	6.84	6.66	6.13	5.33	5.3	7.63	6.92	6.35	6.73
total	17.19	25.07	24.82	23.16	22.38	21.57	23.01	23.12	23.22	21.4	24.51	25.54	24.32	21.49

Notes: Personal cross-sectional weights are used.
Source: EU-SILC 2004-2017 cross-sectional data, the author's own calculations using STATA.

Table 6 Tenure status by age groups, 2017

Tenure status	Overall population		Deprived population	
	0-64	65+	0-64	65+
Outright owners	19.9%	72.8%	3.6%	21.8%
Owner paying mortgage	51.6%	5.4%	16.6%	6.7%
Tenant	20.1%	12.6%	60.1%	44.6%
Rent reduced	7.2%	6.7%	18.5%	20.0%
Rent free	1.2%	2.5%	1.3%	6.9%
Total	100%	100%	100%	100%

Notes: Personal cross-sectional weights are used.
Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

Table 7 Material deprivation by income quintile groups and age groups, 2017
in %

Age groups	Income quintile groups				
	1	2	3	4	5
0-64	23.91	5.4	1.77	0.43	0.23
65+	6.1	2.47	0.45	0	0
total	20.35	4.46	1.49	0.38	0.22

Notes: Personal cross-sectional weights are used.
Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA, based on Table 9 constructed by Fusco, Guio and Marlier (2011).

Table 8 Material deprivation by income group relative ot the median and age groups, 2017
in %

Age groups	Median income levels					
	<40% median	40-<50%	50-<60%	60-100%	100-<150%	>150%
0-64	27.12	31.62	18.55	5.27	0.61	0.2
65+	11.34	9.66	4.94	1.96	0.19	0
total	25.41	28.81	15	4.31	0.55	0.18

Notes: Personal cross-sectional weights are used.
Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA, based on table 10 constructed by Fusco, Guio and Marlier (2011). How to read: 25.41% of the population whose equivalised disposable income is below 40% of the national median equivalised income is deprived.

[21] Results identical to those of Eurostat in table [ilc mddd11].
[22] Results identical to those of Eurostat in table [ilc li02].

Table 9 Frequency table of individual and household characteristics, young population, 2017

	Young population
Gender	
male	2784
female	1560
Level of education	
Less than secondary	312
Lower secondary	630
Upper secondary	1444
Post-secondary	1832
Current economic status	
Employee	2660
Self-employed	413
Unemployed	365
In retirement or in early retirement or has given up business	397
Permanently disabled or/and unfit to work	293
Other inactive person/fulfilling domestic tasks/student	211
Level of general health	
(Very) good	3313
Fair	651
(Very) bad	375
Limitations in activities due to health problems	
Yes	991
No	3347
Interaction b/w health and limitation in activities	
(Very) good*Limitation	260
(Very) good*No limitation	3052
Fair*Limitation	384
Fair*No limitation	267
(Very) bad*Limitation	347
(Very) bad*No limitation	28
Migration status	
No migrant	3387
Migrant	957
Tenure status	
Outright owner	885
Owner paying mortgage	1892
Tenant	1125
Tenant reduced/free rent	441
Region	
Brussels	863
Flanders	2180
Wallonia	1301
Household structure	
Single	1091
Single with children	298
Single living with at least one other adult	392
Married/Registered partners	2070
De facto partners	403

Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

Table 10 Frequency table of individual and household characteristics, old population, 2017

	Old group
Gender	
male	1046
female	641
Level of education	
Less than secondary	378
Lower secondary	332
Upper secondary	464
Post-secondary	474
Level of general health	
(Very) good	932
Fair	506
(Very) bad	246
Limitations in activities due to health problems	
Yes	733
No	951
Interaction b/w health and limitation in activities	
(Very) good*Limitation	159
(Very) good*No limitation	773
Fair*Limitation	334
Fair*No limitation	172
(Very) bad*Limitation	240
(Very) bad*No limitation	6
Migration status	
No migrant	1488
Migrant	199
Tenure status	
Outright owner	1196
Owner paying mortgage	64
Tenant	234
Tenant reduced/free rent	193
Region	
Brussels	204
Flanders	944
Wallonia	539
Household structure	
Single with/without children	724
Single living with at least one other adult	89
Married/Registered/De facto partners	806

Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.

Table 11 Frequency table of tenure status and financial capital by age groups, 2017

	Young group	Old group
Tenure status		
Outright owner	885	1196
Owner paying mortgage	1892	64
Tenant	1125	234
Tenant reduced/free rent	441	193
Financial capital		
Little capital	2232	741
Some capital	1042	430
Great deal of capital	1070	516

Source: EU-SILC 2017 cross-sectional data, the author's own calculations using STATA.