



European  
Commission

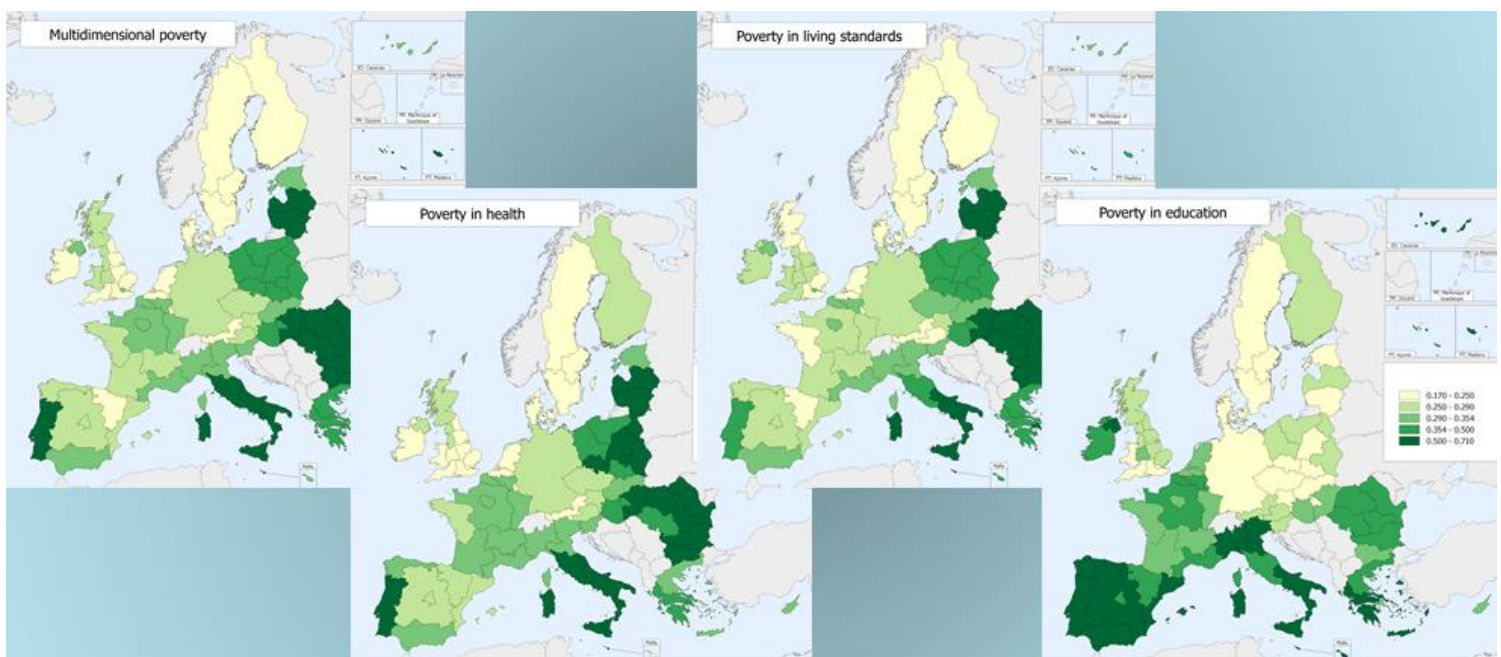
JRC SCIENCE AND POLICY REPORTS

# Monitoring multidimensional poverty in the regions of the European Union

Dorota Weziak-Bialowolska

Lewis Dijkstra

2014



Report EUR 26627 EN

European Commission  
Joint Research Centre

Contact information

Dorota Weziak-Bialowolska  
Address: Joint Research Centre, Via Enrico Fermi 2749, TP 361, 21027 Ispra (VA), ITALY  
E-mail: dorota.bialowolska@jrc.ec.europa.eu  
Tel. +39 0332789760  
Fax +39 0332785733

Lewis Dijkstra  
Address: Directorate-General for Regional and Urban Policy, BU-1 Room 03/001, 1049 Brussels, BELGIUM  
E-mail: Lewis.DIJKSTRA@ec.europa.eu  
Tel. +32 22962923

<https://ec.europa.eu/jrc/en/institutes/ipsc>  
<http://www.jrc.ec.europa.eu/>

This publication is a Science and Policy Report by the Joint Research Centre of the European Commission.

Legal Notice

This publication is a Science and Policy Report by the Joint Research Centre, the European Commission's in-house science service. It aims to provide evidence-based scientific support to the European policy-making process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

JRC89430

EUR 26627 EN

ISBN 978-92-79-37944-4

ISSN 1831-9424

10.2788/68686

Luxembourg: Publications Office of the European Union, 2014

© European Union, 2014

Reproduction is authorised provided the source is acknowledged.

*Printed in Luxembourg*

## Contents

1.	Executive summary .....	4
2.	Introduction .....	8
3.	The Multidimensional Poverty Index applied by the United Nations.....	13
3.2.1.	Framework of the UN-MPI .....	13
3.2.2.	UN-MPI Methodology.....	14
4.	The EU Multidimensional Poverty Index — sub-national perspective (MPI-reg) .....	16
4.1.	Data.....	16
4.2.	Conceptualisation of MPI-reg .....	20
4.2.1.	Framework of MPI-reg .....	20
4.2.2.	Sub-indexes of MPI-reg .....	22
4.2.3.	Calculation of the MPI-reg .....	25
5.	The EU MPI-reg — Results .....	29
5.1.	Degree of urbanisation .....	29
5.1.1.	Multidimensional Poverty Index.....	29
5.1.2.	Poverty in education .....	37
5.1.3.	Poverty in health.....	42
5.1.4.	Poverty in living standards.....	49
5.2.	Poverty in the EU NUTS in 2005–07 and 2009–11 .....	55
5.2.1.	Multidimensional Poverty Index.....	55
5.2.2.	Poverty in education .....	61
5.2.3.	Poverty in health.....	65
5.2.4.	Poverty in living standards.....	71
6.	Conclusions .....	78
	References.....	81
	List of figures.....	84
	Appendix.....	86

## 1. Executive summary

In 2010, the Europe 2020 strategy was introduced in the European Union (EU). This initiative describes the EU's strategy for smart, sustainable and inclusive growth. It enumerates five objectives to be reached, namely on employment, innovation, education, social inclusion and climate/energy. To fulfil the aim related to social inclusion, first, the European platform against poverty and social exclusion was launched with the aim of helping the EU countries reach the headline target of lifting 20 million people out of poverty and social exclusion. Second, considerable funds were earmarked: among them, the Fund for European Aid to the Most Deprived has recently been accepted for implementation, under which a range of non-financial material assistance including food, clothing and other essential goods for personal use such as shoes, soap and shampoo, to the most materially-deprived people will be provided.

Then, in 2012, 124.5 million people, or 24.8 % of the population, in the EU-28 were at risk of poverty or social exclusion, compared with 24.3 % in 2011 <sup>(1)</sup>. These numbers change considerably when poverty is analysed between countries, age groups or genders. It can also be assumed that the same reasoning applies when poverty is analysed between sub-national regions. Unfortunately, information about the distribution of poverty at the sub-national level is very limited, which is surprising as the EU regions, not countries, are the key elements of the European Union's regional policy (Becker, Egger, & von Ehrlich 2010) and local differences in poverty are essential to properly target the policies to alleviate the causes and consequences of poverty.

With this in view, it seems reasonable to provide a measure of non-income poverty that, next to the 'at-risk-of-poverty or social exclusion' (AROPE) rate, which combines both income and non-income indicators, will enable: (i) better assessment of who requires such aid the most; (ii) the assessment with respect to broadly understood non-income poverty (e.g. poverty in education, poverty in health, poverty in environment of good quality, poverty in social security); (iii) the assessment at sub-national level (e.g. taking into account areas differing with respect to density of population). In this paper, we attempt to propose such a measure.

Therefore, in this study, we measure the area-specific poverty in the EU. To this end, we propose to:

---

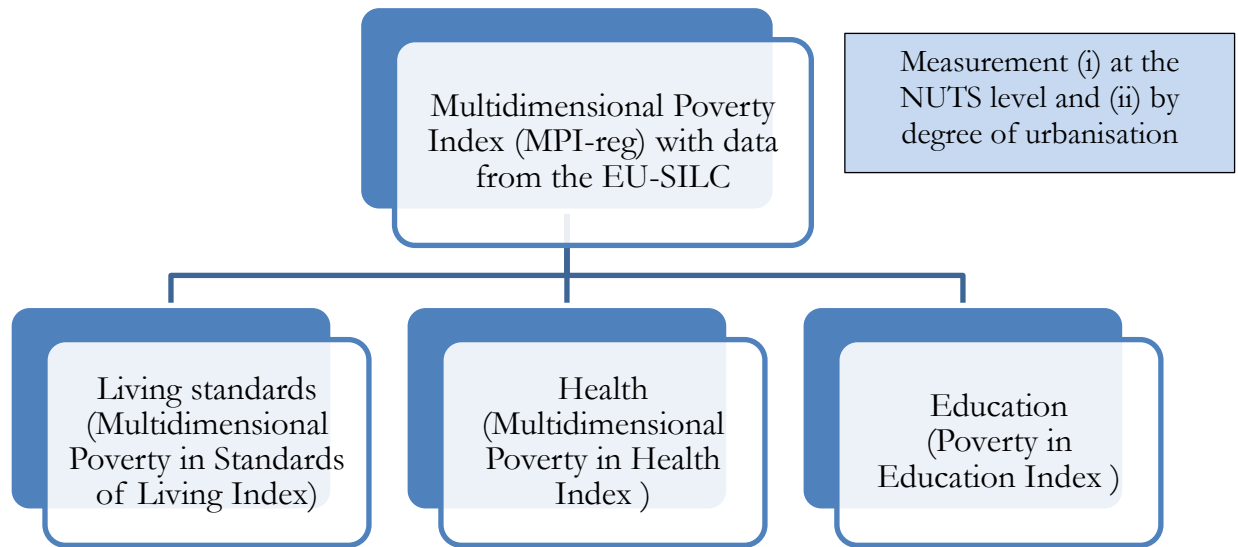
<sup>1</sup> 'People at risk of poverty or social exclusion', *Statistics Explained* (2014/1/3) ([http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/People\\_at\\_risk\\_of\\_poverty\\_or\\_social\\_exclusion](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/People_at_risk_of_poverty_or_social_exclusion)).

1. base the measurement of poverty on the approach currently used by the United Nations (UN), namely the Multidimensional Poverty Index (UN-MPI) by Alkire and Santos (2010, 2013); and
2. measure poverty at the sub-national level in two ways:
  - i. using the EU nomenclature of territorial units (mostly NUTS 1 but also NUTS 2);
  - ii. using different with respect to the degree of urbanisation areas within countries.

As mentioned above, the measurement of poverty is based on the Multidimensional Poverty Index (UN-MPI) by Alkire and Santos (2010, 2013). This measure, contrary to the headcount ratio used traditionally by, for example, Eurostat in a form of at-risk-of-poverty rate, enables not only a level but also a composition of poverty experienced to be shown. With the data from the European Union Survey on Income and Living Conditions (EU-SILC), we formulate the index of multidimensional poverty at the regional level, namely the Multidimensional Poverty Index (MPI-reg). The MPI-reg simultaneously evaluates poverty with respect to the fraction of people who live in poverty and poverty intensity.

Although, originally, the MPI-reg was an aggregate measure of poverty, meaning that the index shows poverty in three dimensions (i.e. standard of living, health and education), by one number, we opt to calculate not only the fully aggregated MPI-reg but also the indexes for all three conceptualised dimensions of poverty. In making this decision, we follow the reasoning that in order to prioritise policies for fighting poverty in a given country (or other geographic area), it is necessary to look at the country's attainments in various dimensions, rather than focusing on its performance with respect to a single composite index.

Thus, in the approach we apply, the MPI-reg framework comprises three dimensions — health, education and standard of living — quantified by three sub-indexes: Multidimensional Poverty in Health Index (MPI-H), Poverty in Education Index (MPI-E) and Multidimensional Poverty in Living Standards Index (MPI-L), respectively. The results with respect to each of them, as well as with respect to the MPI-reg are presented.



**Figure 1:** Framework of the analysis

To the best of our knowledge, studies on multidimensional poverty distribution between both different types of urbanisation areas in the EU countries and sub-national entities of the EU countries are considerably limited. Thus, the aim of this report is to address this gap by investigating multidimensional non-income poverty. Another innovative point of this project is the use of the European Union Survey on Income and Living Conditions (EU-SILC) as the data source.

The MPI-reg has two useful properties. First, it provides information about the absolute magnitude of poverty experienced by Europeans in a given country and provides information about the relative standing of the country. Second, due to its disaggregation properties, the MPI-reg shows the variability of poverty within a country with respect to (i) the degree of urbanisation and (ii) the NUTS level.

The developed measure of poverty (MPI-reg) has some limitations. First, the conceptual model of the MPI-reg relies largely on the available data. Although research on poverty has developed rapidly in recent years, it has failed to guide us in establishing aggregation weights or a commonly accepted poverty threshold. This failure led us to formulate certain a priori assumptions. Specifically, we applied a particular weighting scheme and particular poverty thresholds. These assumptions, if biased, could have led us to incorrect results: to minimise this risk, we formulated our conceptual

model on the basis of a literature review, which was both comprehensive and inclusive of the most recent studies. Unfortunately, due to large sample sizes we were not able to perform an uncertainty analysis to show the possible range of volatility of the MPI-reg scores.

The MPI-reg was computed for 23 EU countries in 2010, 24 EU countries in 2007 and 2011, and 25 countries in 2008 and 2009. Our results show that the level of poverty in the EU ranges from 2–3 % to 15–25 %, with Denmark and Sweden being unequivocally the countries with the lowest levels of poverty and Latvia, Bulgaria and Romania, the countries with the highest levels of poverty. We also see that there is a positive relationship between the stratification level and all adjusted headcount ratios, headcount ratios and intensity of poverty scores. This positive relationship implies that there are countries where there is small stratification with respect to poverty (e.g. Sweden, Denmark, the Czech Republic and Finland) and countries, usually poor ones (e.g. Romania, Bulgaria and Lithuania, but also Belgium and Italy), where considerable stratification with respect to poverty occurs. In general, in the lowest and moderately low scoring countries, the worst situation with respect to poverty is observed in sparsely populated areas, and the best situation occurs in densely populated areas. On the other hand, in the best scoring countries, poverty is relatively higher in the densely populated areas compared to the less well-populated areas. Additionally, our analysis showed that between 2005–07 and 2009–11, changes in regional inequality with respect to poverty occurred. We demonstrated that a decrease in regional inequality most often occurred in Poland and Spain, whereas Belgium and Italy were most often spotted as countries with growing regional differences.

The results indicate that the European Union regions are strongly diversified with respect to poverty. This implies that regardless of the spatial location of the region and the definition of the region, considerable within-country differences are indicated if only sub-national levels are available. Therefore, relying only on countrywide estimates may be misleading when properly assessing the relative standing of a region with respect to poverty.

## 2. Introduction

In 2010, the Europe 2020 strategy was introduced in the European Union (EU). This initiative describes the EU's strategy for smart, sustainable and inclusive growth. It enumerates five objectives to be reached, namely on employment, innovation, education, social inclusion and climate/energy. To fulfil the aim related to social inclusion, first, the European platform against poverty and social exclusion was launched with the aim of helping the EU countries reach the headline target of lifting 20 million people out of poverty and social exclusion. Second, considerable funds were earmarked: among them, the Fund for European Aid to the Most Deprived, under which a range of non-financial material assistance including food, clothing and other essential goods for personal use such as shoes, soap and shampoo, to the most materially-deprived people will be provided.

Then, in 2012, 124.5 million people, or 24.8 % of the population, in the EU-28 were at risk of poverty or social exclusion, compared with 24.3 % in 2011 <sup>(2)</sup>. These numbers change considerably when poverty is analysed between countries, age groups or genders. It can also be assumed that the same reasoning applies when poverty is analysed between sub-national regions. Unfortunately, information about the distribution of poverty at the sub-national level is very limited, which is surprising as the EU regions, not the countries, are the key elements of the European Union's regional policy (Becker et al. 2010) and local differences in poverty are essential to properly target the policies to determine the causes and alleviate consequences of poverty.

With this in view, it seems reasonable to provide a measure of multidimensional non-income poverty that, next to the 'at-risk-of-poverty or social exclusion' (AROPE) rate, which combines both income and non-income indicators, will enable: (i) better assessment for whom such aid is needed the most; (ii) the assessment with respect to broadly understood non-income poverty (e.g. poverty in education, poverty in health, poverty in environment of good quality, poverty in social security); (iii) the assessment at the sub-national level (e.g. taking into regard areas differing with respect to density of population). In this paper, we attempt to propose such a measure.

---

<sup>2</sup> 'People at risk of poverty or social exclusion', *Statistics Explained* (2014/1/3) ([http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/People\\_at\\_risk\\_of\\_poverty\\_or\\_social\\_exclusion](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/People_at_risk_of_poverty_or_social_exclusion)).



### ***Concept of poverty***

The standard of people's lives both in relative terms, as compared to other people in society, and in absolute terms, whether they enjoy life's basic necessities, is a reflection of whether or not people are in poverty. However, the notion of poverty is understood differently in different contexts (Callander, Schofield, & Shrestha 2012). According to Wagle (2008) and Saunders (2005), there are three main approaches in the conceptualisation and operationalisation of poverty: (i) economic well-being, (ii) capability and (iii) social inclusion.

The **economic well-being concept** links poverty to the economic deprivation that, in turn, relates to material aspects and/or standards of living. According to Wagle (2008) and Boulanger et al. (2009), the notion of economic well-being relates to the physical quality of life or welfare, for which consumption of food, clothing, shelter and other basic necessities — such as being able to afford adequate healthcare and being in good health, are crucial. Therefore, the perfect measure of poverty in terms of economic well-being should be a combination of not only income, but also consumption and welfare. It must be noted, however, that although the measurement of income is not a problematic issue, at least to some extent, the measurement of consumption level and welfare is not straightforward.

The **capability approach** proposed by Sen (1993) expands the notion of poverty from welfare, consumption and income to broader concepts like freedom and well-being. Poverty is understood as the deprivation of 'capabilities' and 'functionings': 'capabilities' are things a person is able to do or which enable them to lead the life they currently have and 'functionings' represent achievements that a person is capable of realising. Later on, Sen (2002) modified the capability approach relating it to the opportunities and the 'process aspect of freedom'. In this extension, opportunities correspond to the ability to make outcomes happen and the process of achieving the outcomes is valuable in itself.

The third approach, based on **social inclusion**, is the opposite of social exclusion. Social exclusion relates to a state or situation and stems from the process of systematic isolation, rejection, humiliation, lack of social support, and denial of participation (Wagle, 2008); it focuses on deficiencies while the capability approach focuses on possibilities and abilities. The last two approaches expand the notion of poverty from purely economic perspective to a more sociological point of view.

Hagenaars and de Vos (1988) report that three types of poverty can be distinguished:

- absolute — implying that poverty is having less than an objectively defined, absolute minimum;
- relative — meaning that poverty is having less than others in society;
- self-assessed — poverty is feeling that you do not have enough to get along.

Each of these types has two dimensions: material and non-material. Furthermore, the first two can be described as objective, whilst the last is subjective.

**Absolute poverty** measures the individual capacity to afford basic needs such as being adequately nourished, making ends meet, having decent housing, affording adequate healthcare and being in good health (Boulanger et al. 2009). On the one hand, its measures can be based on non-monetary indicators describing the ability to acquire a minimum level of food calorie intake, a minimum basket of consumption goods, a level of individual welfare or utility, such as access to adequate food, clothing, housing and the affordability of health and dental care needed to live a basic life (Boulanger et al. 2009; Hagenaars & de Vos 1988). On the other hand, it can be based on monetary measures such as ratios of food expenditures, fixed costs or total expenditures related to income (Hagenaars & de Vos 1988).

**Relative poverty** captures the condition of the individual compared to the situation of other people. People may feel worse off not because they are poor but because they are poorer compared to other people. Relative measures of poverty are then of key relevance for measuring the actual level of material satisfaction. They can also be treated as approximate measures of income inequality as a society with a more equal income distribution will have low relative poverty.

**Self-assessed poverty** is based on the subjective opinions of a person who can decide whether or not they are in a difficult financial situation (Betti et al. 2001). It is operationalised through the survey-based questions in which the respondent/household states either the minimum level of income, consumption or welfare necessary to assure non-poor life or the level of satisfaction with income/standard of living (Wagle 2008).

Depending on the type of definition, different indicators are chosen. They can be generally classified into income and non-income related. Fortunately, and contrary to what Hagenaars and de Vos (1988) stated several years ago, economic or social policy research (although just one definition is generally used, disregarding the others), tries to measure poverty in multidimensional way (Ravallion, 2011). The only example where poverty assessment is based on one indicator only is income

poverty. However, even in this case, the available measures of poverty are sufficient to show it from different perspectives (see Foster, Greer, & Thorbecke 1984, 2010).

Since the choice of the definition and thus the indicators affect the results, the multidimensional approach to poverty conceptualisation and operationalisation seems to be reasonable. There are numerous proponents of such an approach, for example Alkire and Foster (2011a, 2011b), Alkire and Santos (2013), Antony and Visweswara Rao (2007), Bellani (2012), Betti et al. (2012), Callander et al. (2012), Ravallion (2011) and Wagle (2008). In their studies, the poverty concept not only has numerous dimensions but its measurement instrument comprises monetary and non-monetary indices.

In this report, we focus on poverty understood as economic well-being, or economic deprivation. We provide a multidimensional measure of poverty at the sub-national level. Poverty measurement comprises three dimensions: poverty in education, poverty in health and poverty in living standards. Not only do we provide an aggregated measure of multidimensional poverty but also for each individual poverty dimension, namely poverty in education, poverty in health and poverty in living standards. To be in line with the variety of poverty definitions used to assess poverty, we use non-monetary indicators representing both objective and subjective measures of absolute poverty. No direct measure of perceived poverty level is included in the analysis due to the lack of reliable data at the sub-national level.

To the best of our knowledge, our approach simultaneously features the following innovative points.

1. We focus on regional variability because the EU regions, not the countries, are the key elements in the European Union's regional policy (Becker et al. 2010) and local differences in poverty are essential to properly target the policies to alleviate the causes and consequences of poverty.
2. We measure poverty between different types of urbanisation areas in the European Union (EU) countries.

Both approaches, although present in the literature, are often limited to one country only. For example, McNamara et al. (2006), Miranti et al. (2011) and Tanton et al. (2010) conducted analyses of Australia. Hutto et al. (2011), Jolliffe (2006) and Ziliak (2010) analysed poverty in the US states. Pittau et al. (2011) were interested in poverty distribution between Italian regions, and Kemeny and Storper (2012) investigated poverty within US cities.

The aim of this report is to address this gap by investigating non-income poverty following the approach proposed by Alkire and Foster (2011a, 2011b) and Alkire and Santos (2010, 2013).

The MPI-reg has two useful properties. First, it provides information about the absolute magnitude of poverty experienced by the Europeans in a given country and provides information about the relative standing of the country. Second, due to its disaggregation properties, the MPI-reg shows the variability of poverty within a country with respect to the degree of urbanisation and NUTS.

The developed measure of poverty (MPI-reg) has also some limitations. First, the conceptual model of the MPI-reg relies largely on the available data. Although research on poverty has developed rapidly in recent years, it has failed to guide us in establishing aggregation weights or a commonly accepted poverty threshold. This failure led us to formulate certain a priori assumptions. Specifically, we applied a particular weighting scheme and particular poverty thresholds. These assumptions, if biased, could have led us to incorrect results. To minimise this risk, we formulated our conceptual model on the basis of a literature review, which was both comprehensive and inclusive of the most recent studies. Unfortunately, due to very large sample sizes we were not able to perform an uncertainty analysis to show the possible volatility of the MPI-reg scores.

Our study has clear implications for future research. First, this study calls the MPI-reg to be calculated for a longer time period and to consider all EU countries with a degree of urbanisation as a breakdown variable. Further, an in-depth empirical research, most likely employing individual-level data and multi-level modelling, is necessary to test the usefulness of the MPI-reg.

This report comprises six sections. First, we present the concept of poverty with the focus on the multidimensional measurement. Second, we briefly describe the approaches to poverty measurement applied by the United Nations, namely the Multidimensional Poverty Index. Third, in two subsequent sections, the approaches to poverty measurement at the sub-national level are discussed. In these sections, we present data and conceptualisations and the following section presents the results. The final section concludes.

### **3. The Multidimensional Poverty Index applied by the United Nations**

There is a vast amount of literature on multidimensional poverty measurement (e.g. Ravallion 2011). Among all available approaches, we chose the approach adopted by the United Nations (UN) because it was requested by the Directorate-General for Regional and Urban Policy and it was in line with what had been done in the past by the Directorate-General for Regional and Urban Policy (see Bubbico & Dijkstra 2011). Additionally, we decided to base the MPI-reg on the UN approach because, by checking if a person is deprived with respect to one or more poverty dimensions, it ensures multidimensional poverty measurement.

Starting from 2010, the UN has measured poverty using the Multidimensional Poverty Index (UN-MPI) developed by the Oxford Poverty & Human Development Initiative and the United Nations Development Programme (Alkire et al. 2011; Alkire & Santos 2010). The UN-MPI is an index of acute multidimensional poverty in developing countries. It shows the number of people who are multidimensionally poor (suffering deprivations in at least 33 % of weighted poverty indicators) and the number of deprivations with which poor people typically contend. It reflects deprivations in very rudimentary services and core human functioning for people across 104 countries. Although deeply constrained by data limitations, the UN-MPI reveals a different pattern of poverty than income poverty, as it illuminates a different set of deprivations.

#### ***3.1. Framework of the UN-MPI***

The UN-MPI has three equally weighted dimensions — standard of living, health and education — and identifies the proportion of people that are multidimensionally poor. The multidimensionally poor person is a person who belongs to a household that is deprived in some combination of poverty indicators whose weighted sum exceeds 33 % of deprivations.

**Table 1:** The dimensions, indicators, deprivation thresholds and weights of the UN-MPI

Dimension	Indicator	Deprived if...	Related to...	Relative Weight
Education	Years of Schooling	No household member has completed five years of schooling	MDG2	16.7%
	Child Enrolment	Any school-aged child is not attending school in years 1 to 8	MDG2	16.7%
Health	Mortality	Any child has died in the family	MDG4	16.7%
	Nutrition	Any adult or child for whom there is nutritional information is malnourished*	MDG1	16.7%
Standard of Living	Electricity	The household has no electricity		5.6%
	Sanitation	The household's sanitation facility is not improved (according to the MDG guidelines), or it is improved but shared with other households	MDG7	5.6%
	Water	The household does not have access to clean drinking water (according to the MDG guidelines) or clean water is more than 30 minutes walking from home.	MDG7 MDG7	5.6%
	Floor	The household has dirt, sand or dung floor		5.6%
	Cooking Fuel	The household cooks with dung, wood or charcoal.	MDG7	5.6%
	Assets	The household does not own more than one of: radio, TV, telephone, bike, or motorbike, and do not own a car or tractor	MDG7	5.6%

Note: MDG1 is *Eradicate Extreme Poverty and Hunger*, MDG2 is *Achieve Universal Primary Education*, MDG4 is *Reduce Child Mortality*, MDG7 is *Ensure Environmental Sustainability*.

\* Adults are considered malnourished if their BMI is below 18.5. Children are considered malnourished if their z-score of weight-for-age is below minus two standard deviations from the median of the reference population.

Source: Alkire and Santos (2010).

All poverty estimates come from the Demographic and Health Surveys, the United Nations Children's Fund Multiple Indicator Cluster Surveys and the World Health Organisation World Health Surveys conducted between 2000 and 2010. A full list of surveys used for 2012 MPI estimations can be found in UNDP (2013).

### 3.2. UN-MPI Methodology

The UN-MPI belongs to a family of multidimensional poverty measures proposed by Alkire and Foster (2011a, 2011b). This measure corresponds to Adjusted Headcount Ratio and is used whenever one or more of the indicators are of ordinal nature. The UN-MPI is a measure of poverty at the individual level; however, it uses data at the household level (Alkire et al. 2011; Alkire & Santos 2010). Thus, a methodology to define the poverty status of an individual is the following:

1. for each household, it is decided if the household is poor or not with respect to each dimension;
2. the calculation of the deprivation score for each household is made — this is a weighted sum of the deprivations experienced and lies between 0 (when a household is not deprived in any indicator) and 1 (when a household is deprived in all 10 indicators);

3. for each deprived/poor household, it is decided if it is multidimensionally poor — to establish this, the poverty cut-off (the share of weighted deprivations a household must have in order to be considered poor) of 33 % is set: then, a household is considered multidimensionally poor if its deprivation score is equal to or greater than the poverty cut-off;
4. all members of households defined as multidimensionally poor are also defined as multidimensionally poor.

By changing the cut-off, it is possible to distinguish not only poor households but also those vulnerable to poverty (cut-offs of 20 % and 33 %, indicating a deprivation score between 20 % and 33 %) and those in severe poverty (cut-off greater than 50 %, indicating a deprivation score of more than 50 %).

As stated previously, the UN-MPI is a weighted sum of the deprivations the multidimensionally poor people (not households) experience divided by the total number of people. It may also be expressed as the product of two measures: the multidimensional headcount ratio ( $H$ ) and the average deprivation share among the poor ( $A$ ).  $H$  is simply the proportion or incidence of people (not households) that are multidimensionally poor.  $A$  is the intensity or breadth of the poverty and relates to the average deprivation score of multidimensionally poor people (not households).

The UN-MPI is a single societal poverty measure, which can further be:

- broken down by population group (e.g. geographic area, ethnicity, or other) to show the composition of poverty within and among the groups;
- broken down by dimension/indicator to show which deprivations are driving poverty within and among groups;
- compared across time to monitor changes in poverty and the composition of poverty using time series or panel data;
- used to target the poorest groups and beneficiaries of conditional cash transfers, district interventions or public programmes;
- used to complement other metrics, such as income poverty.

#### 4. The EU Multidimensional Poverty Index — sub-national perspective (MPI-reg)

In order to measure poverty in the EU from a multivariate perspective and at the sub-national level, we build an index that captures poverty in three dimensions (education, health and living standards) and measures multidimensional non-income poverty at the individual level. The index we propose is an aggregate measure of poverty. This means that the index not only shows poverty in three dimensions by one number but also assess poverty in each of the dimensions.

In the following sections, we present data used to estimate poverty levels and details of calculations, meaning framework and aggregation methods.

##### 4.1. Data

To measure poverty in the EU, we used data from the European Survey on Income and Living Conditions (EU-SILC). To calculate the poverty estimates, we used waves 2005–11. The measurement of poverty distribution at the sub-national level was assessed in two ways:

- i. using the EU nomenclature of territorial units (NUTS 1 and NUTS 2);
- ii. using different with respect to the degree of urbanisation areas within countries (densely populated, intermediately populated and sparsely populated areas).

As regards (i), being aware of only country-level representativeness of the EU-SILC data, we tried to make the best use of currently available data. Among numerous methodological approaches to increase the sub-national reliability of data designed to be representative at the national level (Fabrizi et al. 2009; Lelkes & Zolyomi 2008; Longford et al. 2012; Verma, Betti, & Gagliardi 2010; Ward 2009), we adopted a very pragmatic approach (a similar approach was applied by Annoni et al. (2012) and Ward et al. (2009)): namely, to reduce the impact of sample sizes and, in order to improve the precision of the poverty measurement, before deriving indicators, the pooled data set was constructed by appending three subsequent waves (following the suggestion by Verma et al. (2010)). There were waves in:

- i. 2005, 2006 and 2007 to assess poverty in the pre-crisis period; and
- ii. 2009, 2010 and 2011 to monitor situation after the crises.

We kept NUTS 1 (if available) as the final level even if it was not available in each of three appended waves. The only exception was the Czech Republic for which giving up NUTS 2 level would mean ending with country-level estimates only. Thus, finally, we investigated:



- i. NUTS 2 for the Czech Republic and Finland (but only for waves 2005–07);
- ii. NUTS 1 for Austria, Belgium, Bulgaria, Finland (but only for waves 2009–11), France, Germany (but only for waves 2005–07), Greece, Hungary, Italy, Poland, Romania, Spain, Sweden and the United Kingdom (but only for waves 2009–11);
- iii. for Cyprus, Denmark, Germany (but only for waves 2009–11), Estonia, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and the United Kingdom (but only for waves 2005–07) only the country level.

As regards the last group, country-level analysis is a natural solution only for Cyprus, Estonia, Latvia, Lithuania, Luxembourg and Malta as they are small countries with no administrative regions at NUTS 1 and NUTS 2. However, the remaining countries from the last group, namely Denmark, Germany, Ireland, the Netherlands, Portugal, Slovakia, Slovenia and the United Kingdom, must have been analysed from the country-level perspective only because in the publically available EU-SILC data, regional identifiers for those countries are not available, hindering sub-national disaggregation.

In summary, to discern the poor regions we analysed 69 and 77 geographical units from different levels (NUTS 0 — country, NUTS 1 and NUTS 2) of NUTS classification for 2005–07 and 2009–11 waves, respectively (Table 2).

**Table 2:** NUTS level applied in the EU–SILC 2005–06–07 and in the EU–SILC 2009–10–11

Country	NUTS in 2005–07	NUTS in 2009–11
Austria Belgium Bulgaria Spain France Greece Hungary Italy Poland Romania Sweden	NUTS 1	
Cyprus Denmark Estonia Ireland Lithuania Luxembourg Latvia Malta Netherlands Portugal Slovenia Slovakia	NUTS 0	
Czech Republic	NUTS 2	NUTS 0
Germany	NUTS 1	NUTS 0
Finland	NUTS 2	NUTS 1
United Kingdom	NUTS 0	NUTS 1

As regards option (ii), to calculate poverty estimates by degree of urbanisation, we used the five most recent waves (i.e. 2007–11). Because we aim to present poverty distribution with respect to the density of population by applying the ‘degree of urbanisation’ variable from the EU–SILC for each of the EU countries, we identify three types of areas (EC 2010a; EC 2010b).

1. Densely populated area — a contiguous set of local areas, each of which has a density greater than 500 inhabitants per square kilometre and where the total population for the set is at least 50 000 inhabitants.
2. Intermediately populated area — a contiguous set of local areas not belonging to a densely populated area, each of which has a density greater than 100 inhabitants per square

kilometre, and either with a total population for the set of at least 50 000 inhabitants or adjacent to a densely populated area.

3. Sparsely populated area — a contiguous set of local areas belonging neither to a densely populated area nor to an intermediately populated area.

As Slovenia and the Netherlands do not provide information on the degree of urbanisation, they are not included in the analysis. For Estonia, Latvia and Lithuania, the intermediate level of urbanisation is merged with the level related to the densely populated areas; for Malta, intermediately populated areas are merged with thinly populated ones. Data from 2007 and 2008 for Malta are not available.

The measurement of poverty conducted with respect to the sub-national units or degree of urbanisation raises the issue of sample size. In our study, the sample size related to each type of degree of urbanisation within each country is mostly considerably above 1 000 (Table A1 in the Appendix). The five exceptions (of 71 entities being measured) are intermediately populated areas in Bulgaria, Malta (only in 2009 and 2010), Romania and sparsely populated areas in Belgium and the United Kingdom (only in 2007–09). The lowest sample sizes are observed for intermediately populated areas in Romania (always below 200) and for thinly populated areas in Belgium (about 500). In all other cases mentioned above, the sample sizes were close to 1 000. Nevertheless, poverty estimates related to the areas mentioned above should be treated with caution as their reliability may be questioned.

As regards the measurement taking into account NUTS level, again the sample size related to each measured territorial unit is mostly considerably above 1 000. The only exceptions relate to the NUTS 1 in the United Kingdom, specifically to North East (UKC), Wales (UKL) and Northern Ireland (UKN) for which the sample sizes are 702, 823 and 230, respectively. Other territorial units with relatively small, but still above 1 000, sample sizes are NUTS in the Czech Republic. The reason for such a situation is that we decided to keep NUTS 2 as a unit of measurement in the Czech Republic. As the NUTS 2 in the Czech Republic were available in only one EU–SILC wave, namely in 2007, it resulted in limited sample sizes. The same reasoning applies to the NUTS 2 in the United Kingdom. In this case, they were measured in 2011 only. In all other EU–SILC waves, the regional identifier was not revealed.

## ***4.2. Conceptualisation of MPI-reg***

### **4.2.1. Framework of MPI-reg**

Since our aim was to keep the framework of the MPI-reg as similar as possible to the UN's MPI, the MPI-reg comprises three dimensions —living standards, health and education. This approach is also in line with that presented by Callander et al. (2012) and Whelan et al. (2012) who also proposed to distinguish such dimensions of poverty. We tried to populate each of the dimensions with the EU-SILC indicators following the suggestions of Nolan and Whelan (2010) and Whelan et al. (2012) with this respect. The MPI-reg framework and chosen indicators are presented in Table 3.

The finally chosen indicators are different from those proposed by Alkire and Santos (2013) (Section 3.2.1.) mainly because we applied the index to the European NUTS, which means that the poverty measurement relates to sub-national administrative units. Furthermore, our approach related to the developed, instead of developing, as in the approach of Alkire and Santos (2013), countries. Finally, in both approaches, the set of indicators were driven by the data availability.

**Table 3:** Conceptualisation of MPI-reg

Dimension	Health (Multidimensional Poverty in Health Index MPI-H) (2 out of 3)			Education (Poverty in Education Index MPI-E)	Living Standards (Multidimensional Poverty in Standard of Living Index MPI-L) (1 out of 3)		
Component	General health	Unmet medical need due to lack of affordability and accessibility	Unmet dental need due to lack of affordability and accessibility	Educational attainment	Material deprivation (Material Deprivation Index — MDI) (3 out of 9)	Housing problems (Multidimensional Poverty in Housing Index — MPHoI) (2 out of 5)	Environment (Multidimensional Poverty in Environment Index — MPEnI) (2 out of 3)
Indicator	Reporting bad or very bad health conditions (PH010)	Unmet need for medical examination or treatment because of it was not affordable, there was a waiting list or it was too far to travel/no means of transportation (PH040 and PH050)	Unmet need for dental examination or treatment because of it was not affordable, there was a waiting list or it was too far to travel/no means of transportation (PH060 and PH070)	A person:  of more than 24 years not having at least upper secondary education  in the age range 16–24 years who has finished no more than lower secondary education and is not involved in further education (based on early school leaver definition) (PE010 and PE040)	Household cannot afford: a telephone (including a mobile phone) (HS070), a computer (HS090), a washing machine (HS100), a car (HS110)  Households with arrears on mortgage or rent payments (HS010/HS011) or utility bills (HS020/HS021)  Lack of capacity to face unexpected financial expenses (HS060)  Lack of capacity in a household to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day (HS050)  Lack of capacity in a household to afford paying for one-week annual holiday away from home (HS040)  Household without ability to keep home adequately warm (HH050)	Crowding index (average number of people per room available to the household) > 2 (HH030)  Problems with dwelling: — leaking roof, damp walls/floors/foundation, or rotten window frames or floor (HH040) — too dark, not enough light (HS160) — without bath or shower for sole use in dwelling (HH080/HH081)	Household experiences: — noise from neighbours or from the street (HS170) — pollution, grime or other environmental problems (HS180) — crime violence or vandalism in the area (HS190)

Most of the indicators selected are available at the household level. The only exceptions are the indicators of educational status and the three indicators of health dimension, namely PH010 (General health), PH040/PH050 (Unmet medical need) and PH060/PH070 (Unmet dental need), which are available at the individual level. Although the vast amount of literature on poverty does not conclude what the most suitable unit of analysis should be, we propose measuring poverty among individuals, namely at the highest resolution. In such an approach, since the indicators of the Living standards dimension are measured at the household level, we assume that if a household is multidimensionally poor, then all its members are multidimensionally poor.

#### **4.2.2. Sub-indexes of MPI-reg**

The MPI-reg framework comprises three dimensions — health, education and living standards — quantified by three sub-indexes: the Multidimensional Poverty in Health Index (MPI-H), the Poverty in Education Index (MPI-E) and the Multidimensional Poverty in Living Standards Index (MPI-L), respectively (Table 3). The structure of the first two dimensions, and thus sub-indexes MPI-H and MPI-E, is simple, whereas the structure of the MPI-L is more complex.

##### **4.2.2.1. The sub-index MPI-H**

The sub-index MPI-H is directly computed from the indicators derived from the EU-SILC according to the following rule: A person is considered multidimensionally poor with respect to health if they are deprived in at least two out of three health indicators (if their deprivation score is equal to or greater than  $2/3$ ).

**Hypothetical example of calculation of the MPI-H (adjusted headcount ratio), headcount ratio ( $H_{MPI-H}$ ) and intensity ( $A_{MPI-H}$ )**

Assume that in the country there are only four persons.

**Step 1:** For each person, it is decided if they are poor or not with respect to each health component. For person 1, we have: General health — Yes; Unmet medical need due to lack of affordability and accessibility — Yes; Unmet dental need due to lack of affordability and accessibility — No.

Component	Person 1	Person 2	Person 3	Person 4
General health	1	0	0	1
Unmet medical need due to lack of affordability and accessibility	1	0	1	1
Unmet dental need due to lack of affordability and accessibility	0	0	1	0

**Step 2:** For each person, the deprivation score with respect to health poverty, which is a weighted sum of the deprivations experienced, is calculated according to the formula:

$$depriv_{score-MPI-H} = \frac{1}{3} * GH + \frac{1}{3} * MD + \frac{1}{3} * DD$$

where GH is general health; MD is unmet medical need; DD is unmet dental need.

For person 1, we have:

$$depriv_{score-MPI-H-1} = \frac{1}{3} * 1 + \frac{1}{3} * 1 + \frac{1}{3} * 0 = \frac{2}{3} = 0.667$$

For person 2, we have:

$$depriv_{score-MPI-H-2} = \frac{1}{3} * 0 + \frac{1}{3} * 0 + \frac{1}{3} * 0 = 0$$

**Step 3:** For each person, it is decided if they are multidimensionally poor with respect to health — to establish this, the poverty cut-off (the share of weighted deprivations a person must experience in order to be considered poor with respect to health) of 2/3 is set and a person is considered multidimensionally poor with respect to health if their deprivation score is equal or greater than the poverty cutoff of 2/3.

	Person 1	Person 2	Person 3	Person 4
Deprivation score	0.667	0	0.667	0.667
If deprivation score $\geq 2/3$ implying that a person is multidimensionally poor with respect to health	Yes	No	Yes	Yes

**Step 4:** Calculation of the  $MPI-H$ ,  $H_{MPI-H}$  and  $A_{MPI-H}$

The  $MPI-H$  is a weighted sum of the deprivations the multidimensionally poor with respect to health people experience divided by the total number of people  $MPI_{reg} = \frac{0.667+0.667+0.667}{4} = 0.5$

$H_{MPI-H}$  is the proportion or incidence of people who are multidimensionally poor with respect to health

$$H = \frac{1+1+1}{4} = 0.75$$

$A_{MPI-H}$  relates to the average deprivation score of multidimensionally poor with respect to health people

$$A = \frac{0.667+0.667+0.667}{3} = 0.667$$

The  $MPI-H$  may be also expressed as the product of the headcount ratio ( $H$ ) and the average deprivation share among the poor ( $A$ )  $MPI-H = H_{MPI-H} * A_{MPI-H}$

$$0.5 = 0.667 * 0.75$$

#### 4.2.2.2. The sub-index MPI-E

As regards the education dimension, since there is only one education indicator calculated differently with respect to age, there is no need and no possibility to calculate the MPI-E. Therefore, a person is defined to be poor with respect to education if they are deprived with respect to educational attainment indicator described in Table 3.

#### 4.2.2.3. The sub-index MPI-L

As stated previously, the structure of the MPI-L is more complex. Not only does the MPI-L comprise lower-level sub-indexes (the Material Deprivation Index (MDI), the Multidimensional Poverty in Housing Index (MPHoI) and the Multidimensional Poverty in Environment Index (MPEnI)) but also all of them are multidimensional in nature. All lower-level indexes are directly computed from the indicators derived from the EU-SILC (all of them referring to households) according to the following rules.

- As regards the MDI, a household is defined to be materially deprived if it is deprived of at least three out of nine indicators (if its deprivation score is equal to or greater than  $1/3$ )<sup>3</sup>.
- As regards the MPHoI, a household is defined to be poor with respect to housing if it is deprived of at least two out of five housing indicators (if its deprivation score is greater than  $1/3$ ).
- As regards the MPEnI, a household is defined to be poor with respect to environment if it is deprived of at least two out of three environment indicators (if its deprivation score is greater than  $1/3$ ).

Then the household-level estimate of poverty in living standards is assigned to all household members.

The MPI-L is computed as a composite of its three lower-level sub-indexes. Each of these sub-indexes is associated with equal weight (i.e.  $1/3$ ). Thus, a person is defined to be multidimensionally poor with respect to living standards, if they are deprived of at least one of three living standards sub-indexes (if their deprivation score is at least equal to  $1/3$ ).

---

<sup>3</sup> 'Glossary: Material deprivation rate', *Statistics Explained* (2013/8/4) ([http://epp.eurostat.ec.europa.eu/statistics\\_explained/index.php?title=Glossary:Material\\_deprivation\\_rate&redirect=no](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=Glossary:Material_deprivation_rate&redirect=no)).



Finally, each of the sub-indexes, namely the Multidimensional Poverty in Health Index (MPI-H), the Poverty in Education Index (MPI-E) and the Multidimensional Poverty in Living Standards Index (MPI-L), are also presented as a product of headcount ratio/poverty incidence and average deprivation share among poor (i.e. poverty intensity).

#### 4.2.3. Calculation of the MPI-reg

Although MPI-reg has a three-dimensional structure, in its computation, the component level is also taken into account. More precisely, the formula aiming at defining a multidimensionally poor person comprises lower-level sub-indexes: this is a consequence of our desire to give importance to components of the dimensions. Therefore, a person is defined to be multidimensionally poor if their overall deprivation score is greater than 1/3. The overall deprivation score is computed taking into consideration the following weighting scheme:

- (i) Health dimension (2/6):
  - General health (1/9 = 2/6\*1/3);
  - Unmet medical need due to lack of affordability and accessibility (1/9);
  - Unmet dental need due to lack of affordability and accessibility (1/9);
- (ii) Education dimension (1/6):
  - Educational attainment (1/6);
- (iii) Living standards dimension (3/6):
  - MDI (1/6=1/3\*3/6);
  - MPHoI (1/6);
  - MPEnI (1/6).

Accordingly, the deprivation score for each individual with respect to multidimensional poverty is computed according to the formula:

$$depriv_{score} = \frac{1}{9} * GH + \frac{1}{9} * MD + \frac{1}{9} * DD + \frac{1}{6} * EA + \frac{1}{6} * MDI + \frac{1}{6} * MPHoI + \frac{1}{6} * MPEnI,$$

where GH is General health; MD is Unmet medical need; DD is Unmet dental need; EA is Educational attainment.

The MPI-reg is computed as the adjusted headcount ratio (i.e. as a weighted sum of the deprivations of the multidimensionally poor persons, all members of poor households) divided

by the total number of persons in the region (all members of all households). It is also expressed as a product of multidimensional headcount ratio ( $H$ ) and the average deprivation share among the poor ( $A$ ).

Although, the MPI-reg was an aggregate measure of poverty, meaning that the index shows poverty in three dimensions (i.e. living standards, health and education), by one number, we opt to calculate not only the fully aggregated MPI-reg but also indexes for all three conceptualised dimensions of poverty. In this decision, we follow the reasoning of Ravallion (2011, p. 237), who noticed that in order to prioritise policies for fighting poverty in a given country (or other geographic area), it is necessary to look at the country's attainments in various dimensions, rather than focusing on its performance with respect to a single composite index. He also adds that 'such an approach does not deny that poverty is "multidimensional"'. Rather, it says that 'forming a single (unidimensional) index may not be particularly useful for sound development policymaking.'

**Hypothetical example of calculation of the adjusted headcount ratio (MPI-reg), headcount ratio (H) and intensity (A)**

Assume that in the country there are only four persons.

**Step 1:** For each person, it is decided if they are poor or not with respect to each component. For person 1, we have: General health — Yes; Unmet medical need due to lack of affordability and accessibility — Yes; Unmet dental need due to lack of affordability and accessibility — No; Educational attainment — Yes; MDI —Yes; MPHoI — No; MPEnI — Yes.

Component	Person 1	Person 2	Person 3	Person 4
General health	1	0	0	1
Unmet medical need due to lack of affordability and accessibility	1	0	1	1
Unmet dental need due to lack of affordability and accessibility	0	0	1	0
Educational attainment	1	1	0	0
MDI	1	1	0	0
MPHoI	0	0	0	0
MPEnI	1	0	1	0

**Step 2:** For each person, the deprivation score, which is a weighted sum of the deprivations experienced, is calculated according to the formula:

$$depriv_{score} = \frac{1}{9} * GH + \frac{1}{9} * MD + \frac{1}{9} * DD + \frac{1}{6} * EA + \frac{1}{6} * MDI + \frac{1}{6} * MPHoI + \frac{1}{6} * MPEnI$$

where GH is General health; MD is Unmet medical need; DD is Unmet dental need; EA is Educational attainment.

For person 1, we have:

$$depriv_{score1} = \frac{1}{9} * 1 + \frac{1}{9} * 1 + \frac{1}{9} * 0 + \frac{1}{6} * 1 + \frac{1}{6} * 1 + \frac{1}{6} * 0 + \frac{1}{6} * 1 = \frac{13}{18} = 0.722$$

For person 4, we have:

$$depriv_{score4} = \frac{1}{9} * 1 + \frac{1}{9} * 1 + \frac{1}{9} * 0 + \frac{1}{6} * 0 + \frac{1}{6} * 0 + \frac{1}{6} * 0 + \frac{1}{6} * 0 = \frac{2}{9} = 0.222$$

**Step 3:** For each person, it is decided if they are multidimensionally poor — to establish this, the poverty cut-off (the share of weighted deprivations a person must experience in order to be considered poor) of 1/3 is set and a person is considered multidimensionally poor if their deprivation score is greater than the poverty cut-off of 1/3.

	Person 1	Person 2	Person 3	Person 4
Deprivation score	0.722	0.333	0.389	0.222
Is deprivation score > 1/3 implying that a person is multidimensionally poor?	Yes	No	Yes	No

**Step 4:** Calculation of the *MPI-reg*, *H* and *A*

The *MPI-reg* is a weighted sum of the deprivations the multidimensionally poor people experience divided by the total number of people  $MPI_{reg} = \frac{0.722+0.389}{4} = 0.278$

*H* is the proportion or incidence of people who are multidimensionally poor  $H = \frac{1+1}{4} = 0.5$

*A* relates to the average deprivation score of multidimensionally poor  $A = \frac{0.722+0.389}{2} = 0.556$

The *MPI-reg* may be also expressed as the product of the headcount ratio (*H*) and the average deprivation share among the poor (*A*)  $MPI_{reg} = H * A$

$$0.278 = 0.5 * 0.556$$

$$MPI_{reg} = H * A$$

**Hypothetical example of interpretation of the adjusted headcount ratio (MPI-reg), headcount ratio ( $H$ ) and intensity ( $A$ )**

Interpreting the results from the box above:

*Headcount ratio:*  $H = 0.5$  implies that 50 % of people in the country are multidimensionally poor. But to ascertain if they are all equally poor the intensity of poverty ( $A$ ) has to be examined.

*Intensity of poverty:*  $A = 0.556$  implies that, on average, people who are multidimensionally poor are deprived in 55.6 % of the weighted components.

*Adjusted headcount ratio:*  $MPI\text{-reg} = 0.278$  reflects the proportion of weighted deprivations that the poor experience in a society out of all potential deprivations that the society could experience; the value 0.278 implies that the society is deprived in 27.8 % of the total potential deprivations it could experience overall.

## 5. The EU MPI-reg — Results

In this section, we present the results showing the distribution of poverty across the EU regions over the last decade. We took into account two perspectives, both focusing on the sub-national distribution.

1. We assessed poverty in areas differing with respect to population density, namely according to the degree of urbanisation <sup>(4)</sup>. The measurement was conducted for five waves of the EU-SILC (i.e. 2007–11).
2. We focused on the territorial distribution of poverty. To this end, we used available data in the EU-SILC regional identifier related to the NUTS classification and compared the situation with respect to poverty in different NUTS at two time points (i.e. 2005–07 and 2009–11).

Each of the subsequent sections is organised as follows. First, the situation with respect to the ‘general’ poverty measured by the MPI-reg is presented. Then, poverty with respect to its dimensions, namely education, health and living standards, is described. In each case, the distribution of the adjusted headcount ratio, the poverty incidence (headcount ratio  $H$ ) and incidence of poverty (poverty intensity  $A$ ) is shown.

### 5.1. Degree of urbanisation

#### 5.1.1. Multidimensional Poverty Index

As regards the country-level distribution of poverty, the situation in the EU in the period 2007–11 was relatively stable (Figures 2–7). The best countries with respect to simultaneously analysed poverty incidence and poverty intensity were Sweden, Denmark and Luxembourg with the MPI-reg never exceeding the level of 1.5 %: this implies that the Swedish, Dutch and Luxembourgish societies are deprived in, at most, 1.5 % (on average) of the total potential deprivations they could experience overall. The poorest countries were Bulgaria, Romania and Latvia with the MPI-reg ranging from about 12 % in Latvia, in 2009, or Romania, in 2007, to almost 19 % in Bulgaria in 2008. These numbers show that in these societies, people experienced poverty of 12–19 % with respect to the total possible deprivations.

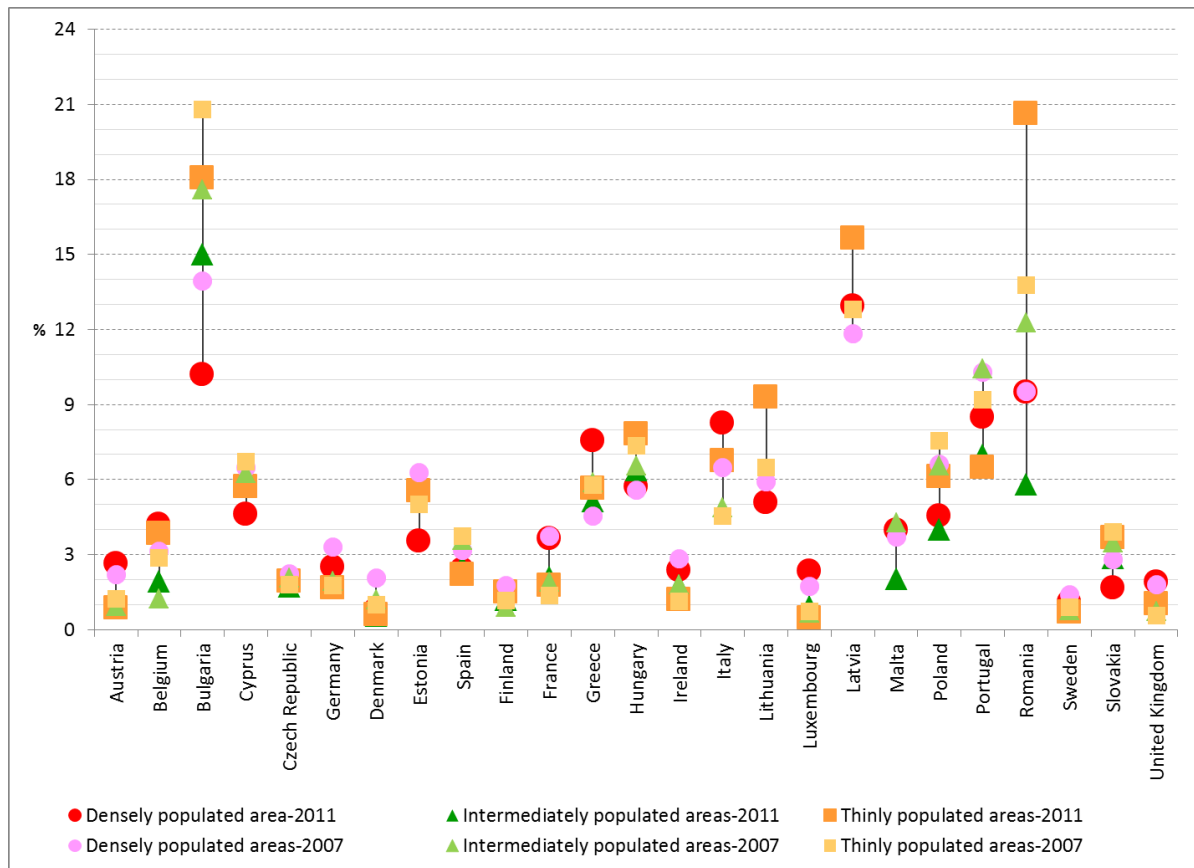
---

<sup>4</sup> Because our data relates to the period 2005–11, we used the ‘old’ classification of the degree of urbanisation as presented in Section 4.1.

Additionally, the tendency of higher poverty in densely populated areas in the affluent countries was spotted. Considerably higher poverty in thinly populated areas was observed in the Central and Eastern European (CEE) countries with the highest differences spotted in Romania and Bulgaria. It was also observed that, in general, a higher incidence of poverty coexists with a higher intensity of poverty (Figures 7–11, Table 4). This implies that in countries with higher numbers of multidimensionally poor people, the number of deprivations experienced is higher.

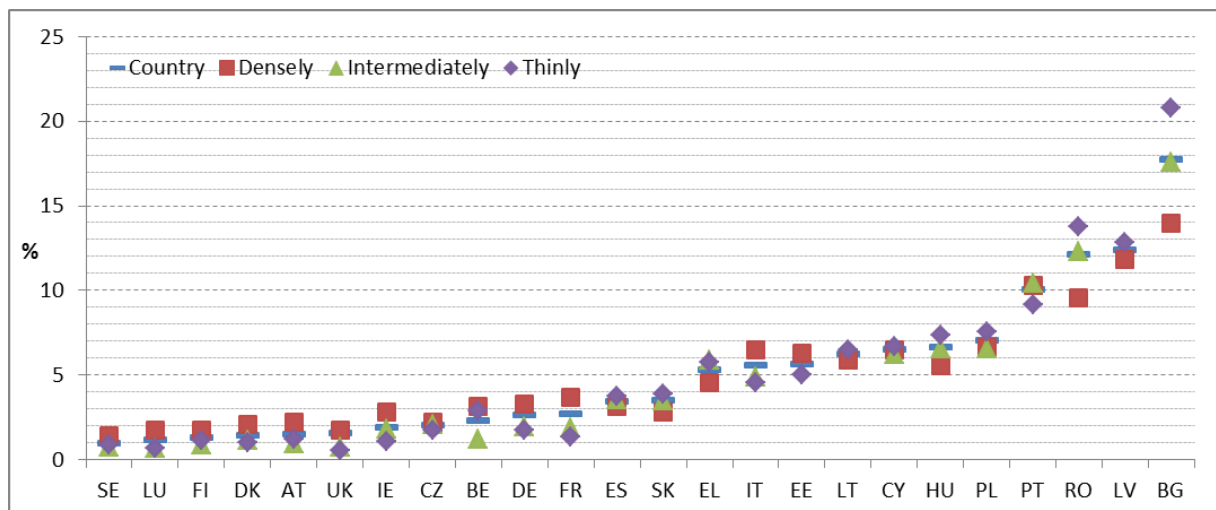
It is also worth noting that, in 2009, the average intensity of poverty as well as the maximum value with this respect was lower than in other years but the average poverty incidence was higher. This implies that, in 2009, the number of multidimensionally poor people was higher than in the other years but those who were poor suffered deprivation in fewer poverty dimensions.

In 2007, a noticeable stratification or inequality with respect to poverty was spotted only for Romania and Bulgaria. But, in 2008, compared to 2007, the differences between different types of areas with respect to the density of population considerably increased in the least affluent countries (i.e. in Hungary, Poland, Lithuania, Portugal, Latvia, Romania and Bulgaria). Later on, such a phenomenon was also observed for less poor countries. In general, the highest differences between thinly and densely populated areas were observed in Bulgaria and Romania, which are the poorest countries. This supports the finding that there is a strong link between the level of poverty and the stratification (difference in poverty level between the areas with the highest and the lowest MPI-reg) (Table 4 and Figures 12–16).



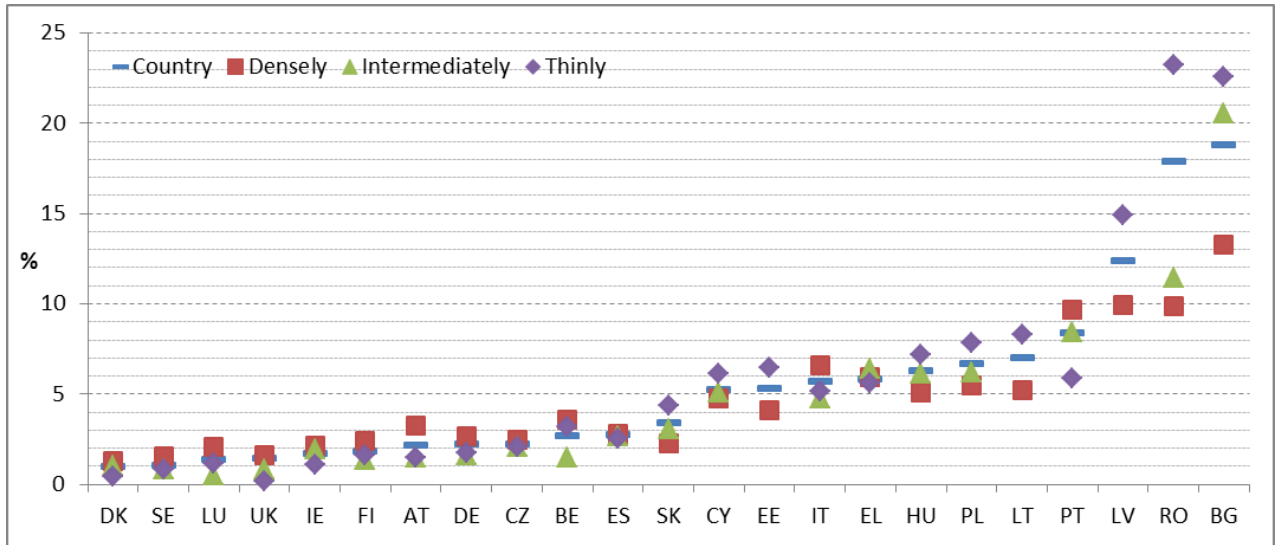
**Figure 2:** The MPI-reg in 2007 and 2011

Note: For Malta, data are from 2009 instead of 2007; for Ireland, data are from 2010 instead of 2011.



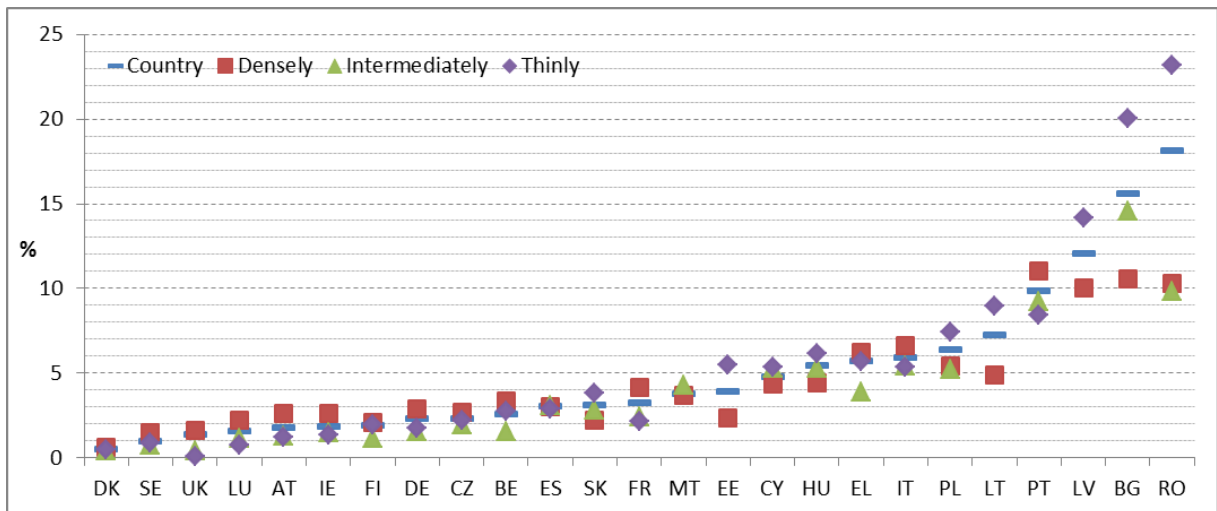
**Figure 3:** The MPI-reg in 2007 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



**Figure 4:** The MPI-reg in 2008 — estimates at country level and by degree of urbanisation

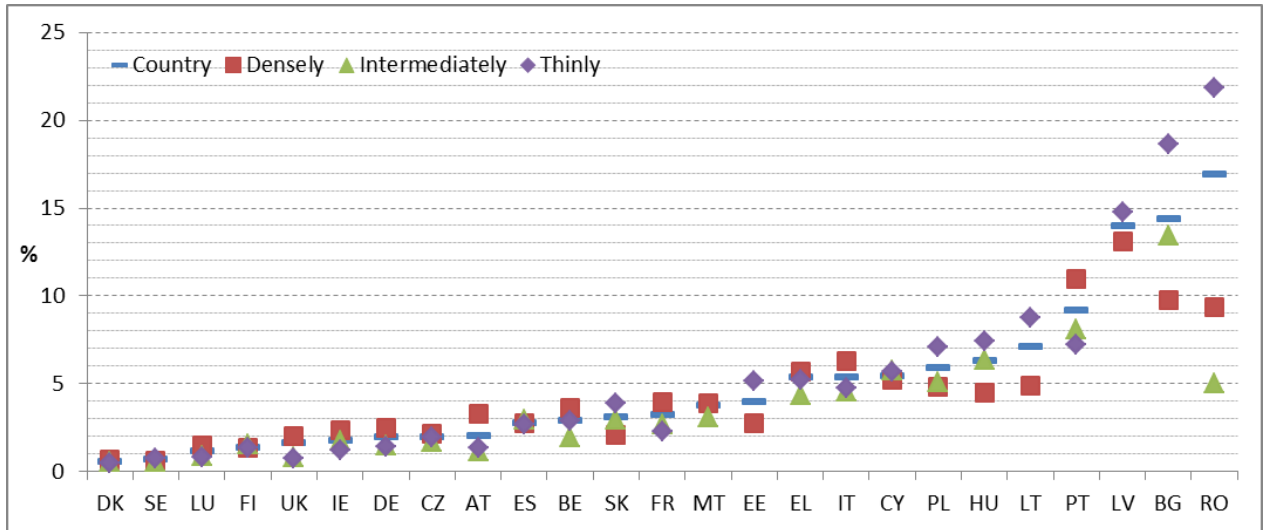
Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



**Figure 5:** The MPI-reg in 2009 — estimates at country level and by degree of urbanisation

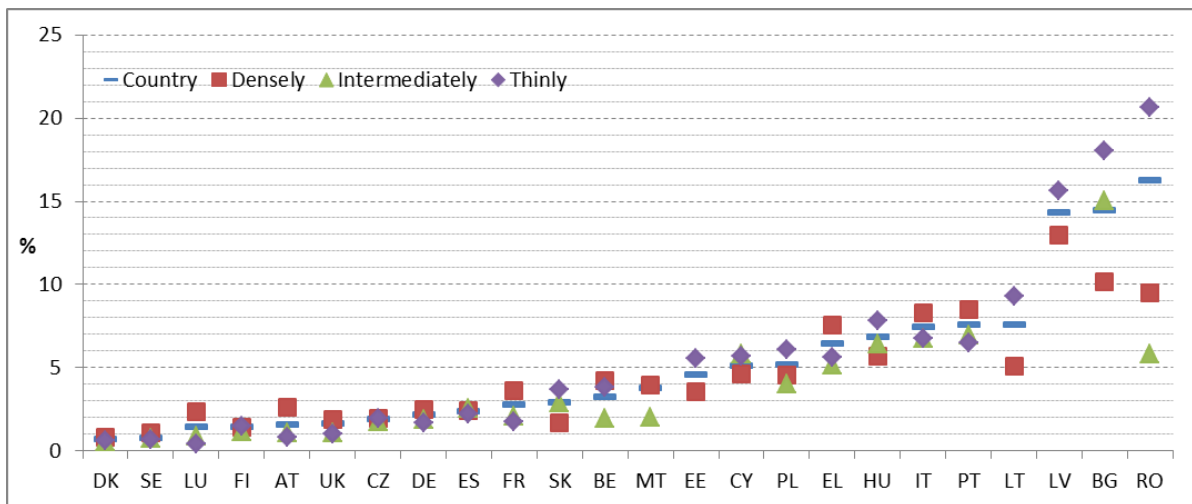
Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.





**Figure 6:** The MPI-reg in 2010 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



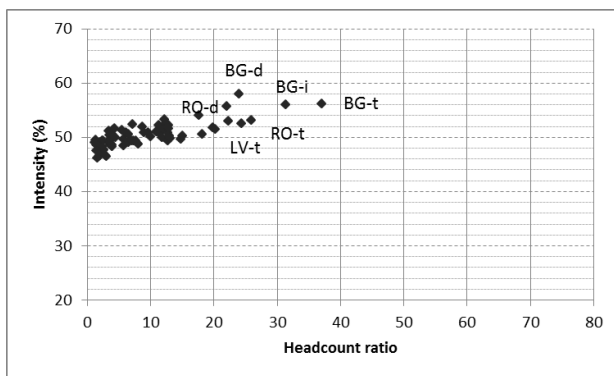
**Figure 7:** The MPI-reg in 2011 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.

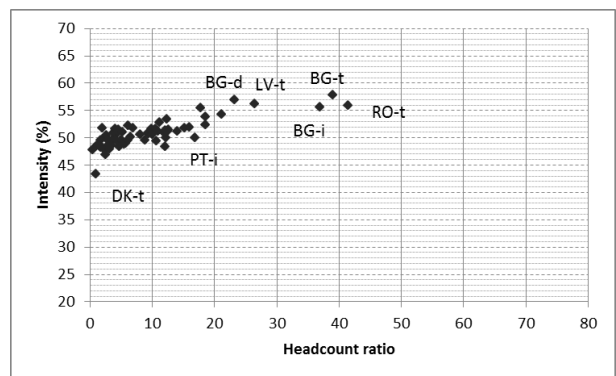
**Table 4:** Correlation between the level of multidimensional poverty and the level of stratification with respect to multidimensional poverty and between multidimensional poverty incidence and intensity

Year	2007	2008	2009	2010	2011
<b>Multidimensional poverty and the level of stratification</b>	0.666 (24)	0.914 (25)	0.894 (25)	0.798 (23)	0.793 (24)
<b>Multidimensional poverty incidence and intensity</b>	0.802 (69)	0.814 (66)	0.778 (71)	0.801 (71)	0.836 (68)

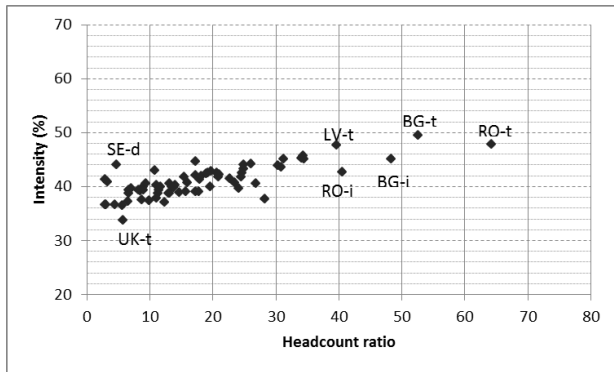
Note: The number of cases is given in brackets.



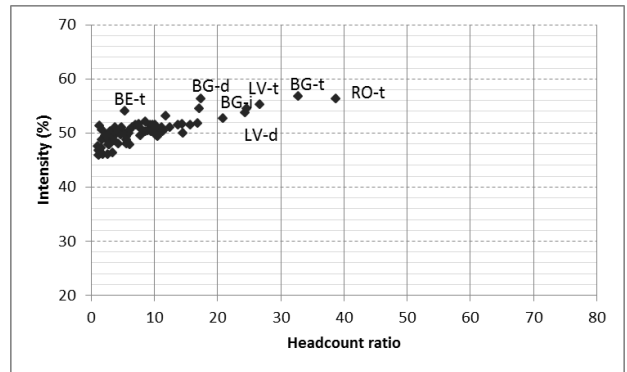
**Figure 8:** Multidimensional poverty in the EU: Incidence v Intensity — 2007



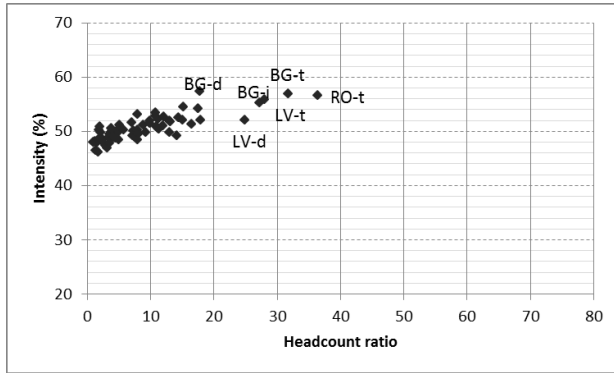
**Figure 9:** Multidimensional poverty in the EU: Incidence v Intensity — 2008



**Figure 10:** Multidimensional poverty in the EU: Incidence v Intensity — 2009

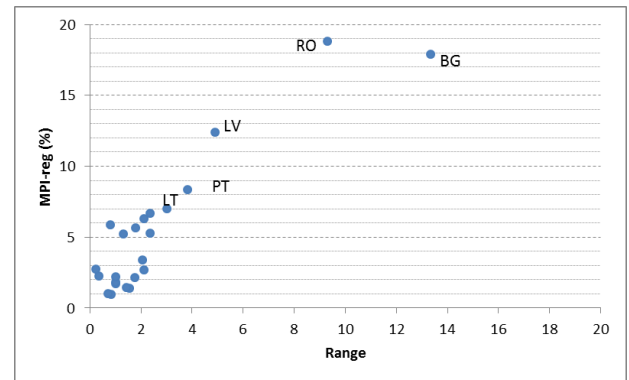
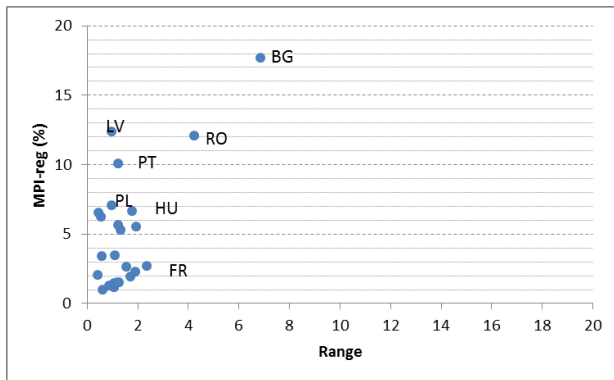


**Figure 11:** Multidimensional poverty in the EU: Incidence v Intensity — 2010



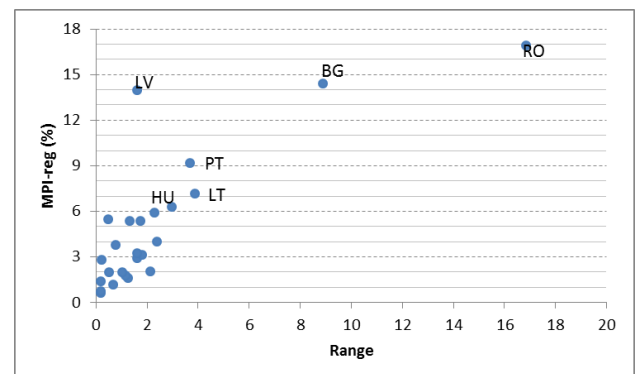
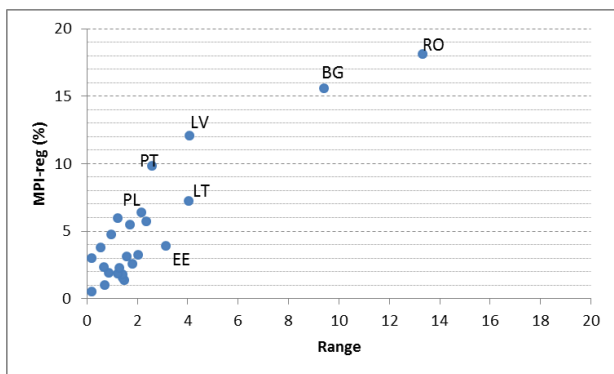
Note: -d = densely populated area; -i = intermediately populated area; -t = thinly populated area.

**Figure 12:** Multidimensional poverty in the EU: Incidence v Intensity — 2011



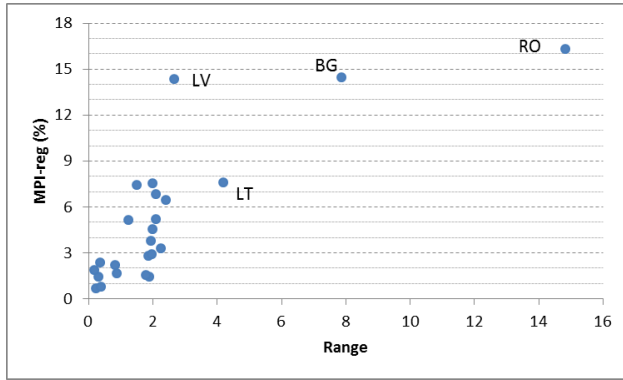
**Figure 13:** Multidimensional poverty in the EU v Stratification — 2007

**Figure 14:** Multidimensional poverty in the EU v Stratification — 2008



**Figure 15:** Multidimensional poverty in the EU v Stratification — 2009

**Figure 16:** Multidimensional poverty in the EU v Stratification — 2010



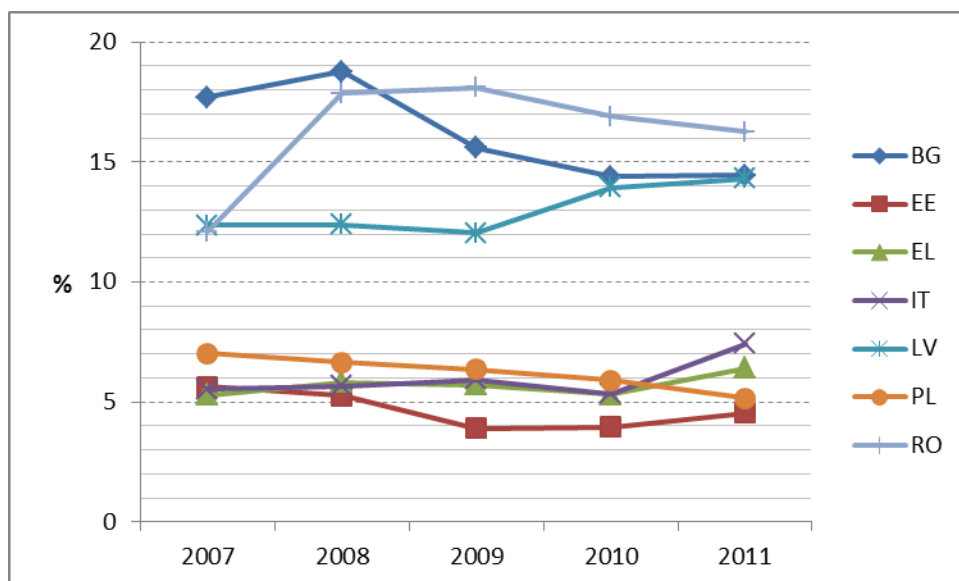
Note: Range = difference between the areas with the highest and the lowest values of the MPI-reg

**Figure 17:** Multidimensional poverty in the EU v Stratification — 2011

In Figure 18, we present the changes in the level of the MPI-reg recorded for seven chosen countries. The countries we chose are examples of countries characterised by either the highest changes (Bulgaria and Romania) or a particular direction of changes (Greece, Italy Estonia, Latvia, Poland, Bulgaria and Romania).

As mentioned above, the highest changes in the MPI-reg were recorded in Romania and Bulgaria. In Romania, an increase of more than 5 percentage points (from about 12 % to almost 18 %) was observed between 2007 and 2008 and then a decrease was observed — to about 16 %. In Bulgaria, between 2007 and 2008, an upward trend in the level of the MPI-reg was also spotted but it was of lower magnitude (by less than 2 percentage points) and settled at MPI-reg 19 %. Then a constant downward trend was observed to the level of about 14 % in 2011.

As regards the direction of changes, Poland constitutes an interesting case. In this country, in all analysed periods, a constant decrease in the MPI-reg was spotted whereas in Italy, Greece, Estonia and Latvia a turning point in the trends in 2009 or 2010 was observed.



**Figure 18:** Multidimensional poverty in selected EU countries — 2007–11

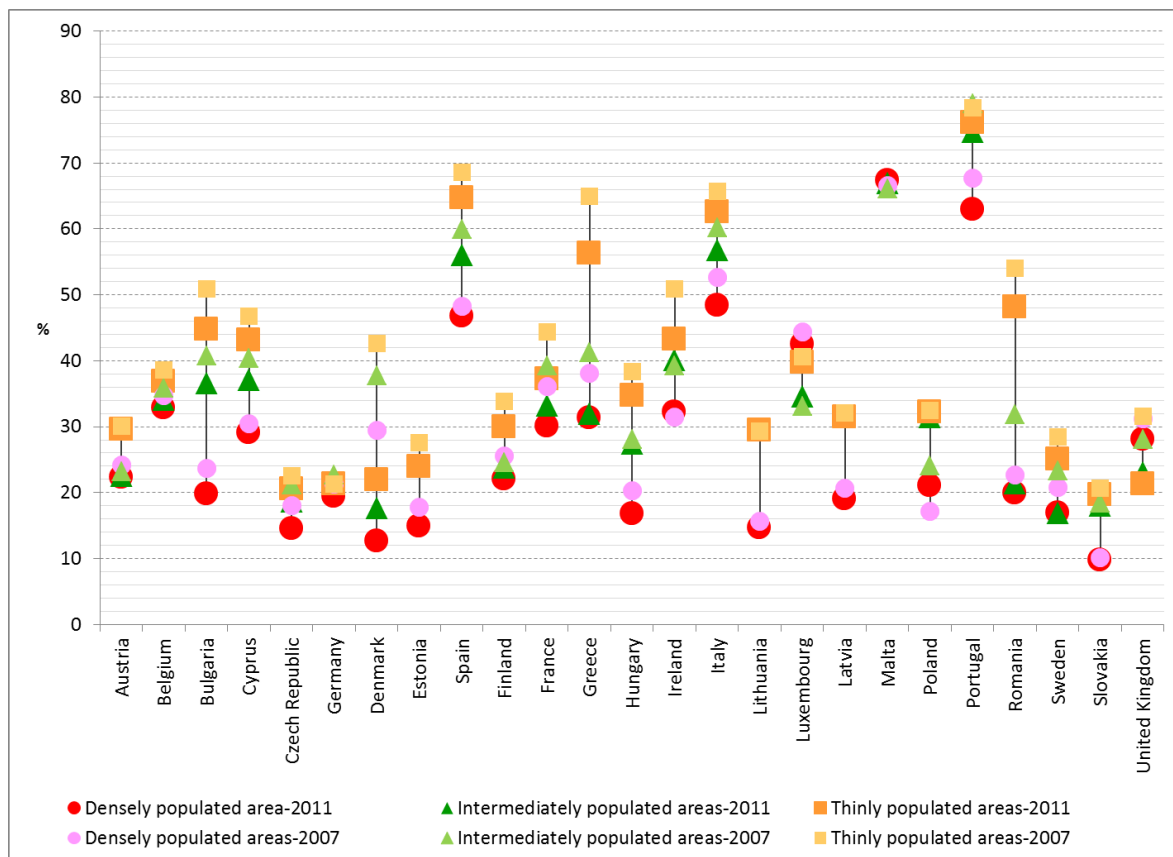
### 5.1.2. Poverty in education

As regards the country-level distribution of poverty in education, the situation in the EU in the period 2007–11 was moderately stable (Figures 19–24). The same conclusion can be drawn with respect to multidimensional poverty measured by the MPI-reg, which was stated in the previous section. The best countries with respect to poverty in education incidence ( $\bar{\sigma}$ ) were Slovakia, the Czech Republic and Estonia — all belonging to the CEE countries — and all scoring below 25 % with respect to the poverty in education headcount ratio. The worst situation with respect to poverty in education was recorded in the Southern European countries (i.e. Greece, Spain, Italy, Portugal and Malta). In all these countries, the poverty in education headcount ratio accounted for more than 40 % in the case of Greece and reaching even 75 % in the case of Portugal.

A considerable stratification with respect to the educational attainment was spotted for all countries. Additionally, the tendency of higher poverty in education in thinly populated areas was spotted in all countries where the differences were present. The only exception was Luxembourg, where higher poverty with respect to education was recorded in the densely populated areas.

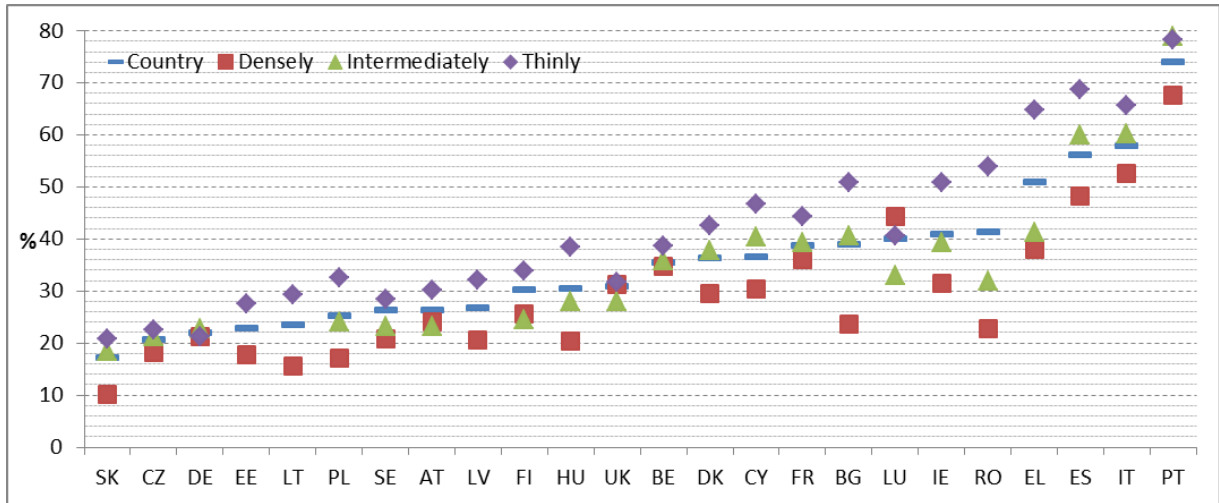
<sup>5</sup> Poverty in education incidence is described because poverty in education is measured by one indicator only, which hinders the possibility to measure both poverty incidence and poverty intensity. This was also mentioned in Section 4.2.2.

The highest differences between thinly and densely populated areas were observed in Bulgaria, Romania and Greece. Contrary to what we observed for multidimensional poverty, these countries were not among the lowest scoring with respect to the educational dimension. This finding was supported by the low values of the correlation coefficient between the level of poverty in education and the stratification (difference between the areas with the highest and the lowest values of MPI-E) (Table 5 and Figures 25–29). This implies that there is not a strong link between the level of poverty in education and the stratification with this respect.



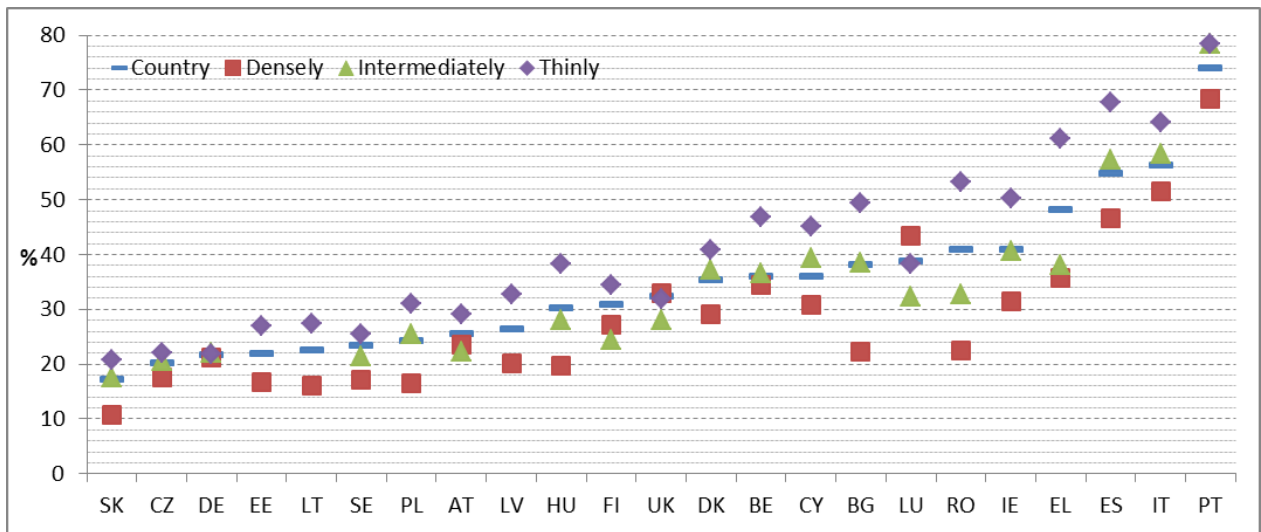
**Figure 19:** Poverty in education in 2007 and 2011

Note: For Malta, data are from 2009 instead of 2007; for Ireland, data are from 2010 instead of 2011.



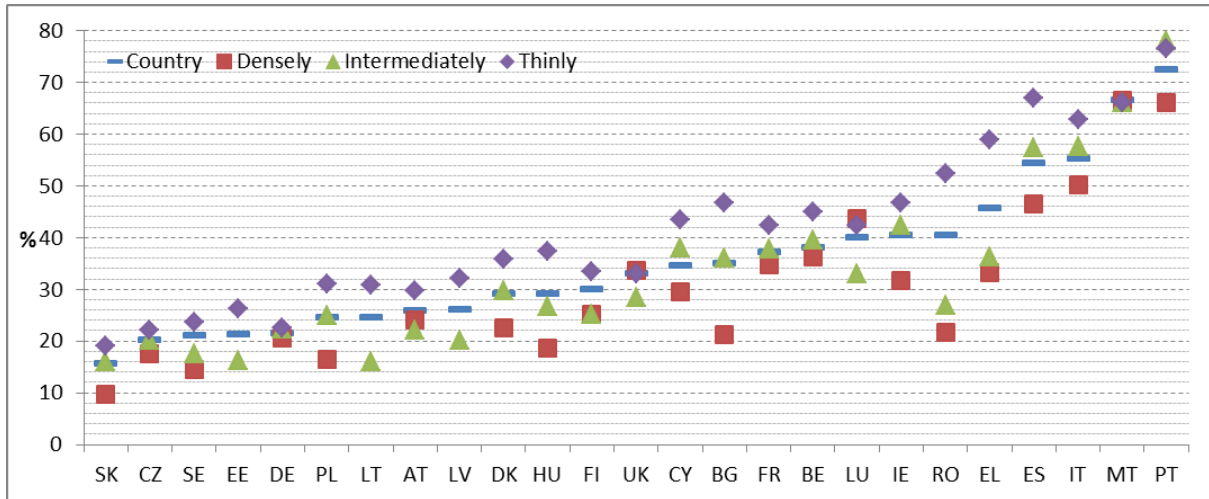
**Figure 20:** Poverty in education in 2007 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



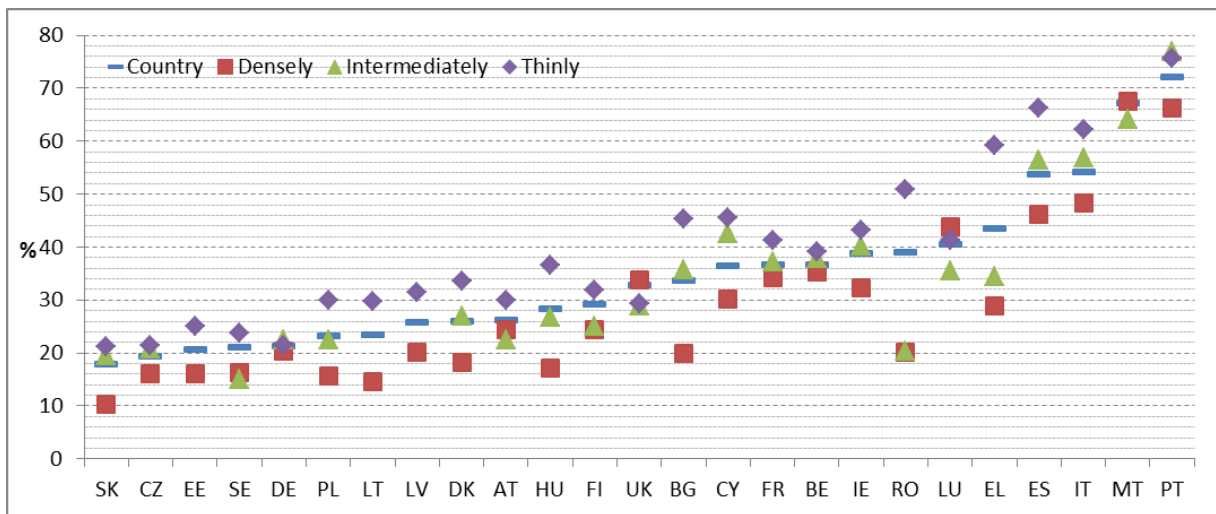
**Figure 21:** Poverty in education in 2008 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



**Figure 22:** Poverty in education in 2009 — estimates at country level and by degree of urbanisation

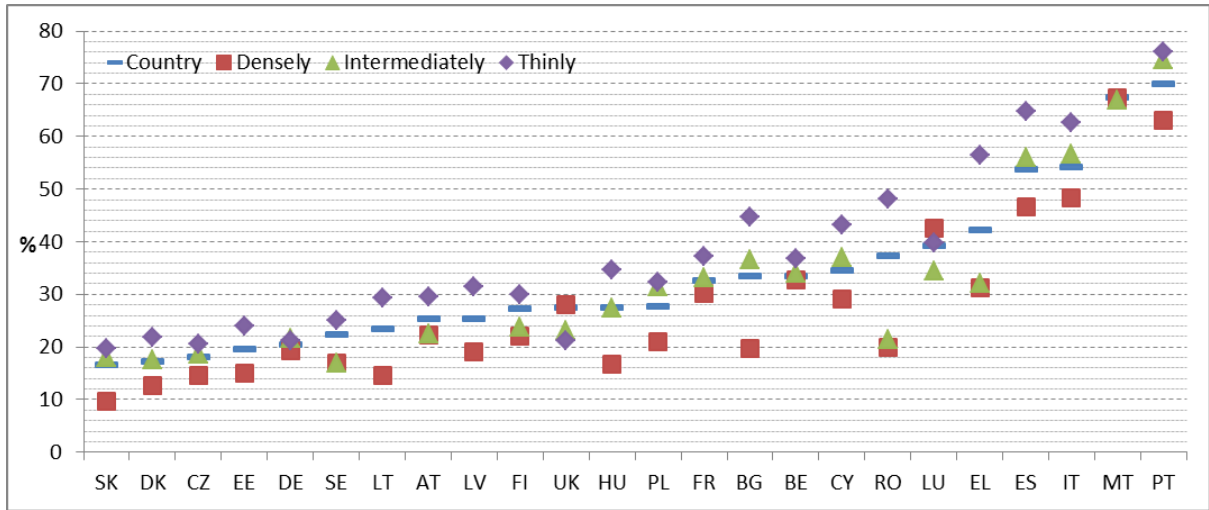
Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



**Figure 23:** Poverty in education in 2010— estimates at country level and by degree of urbanisation

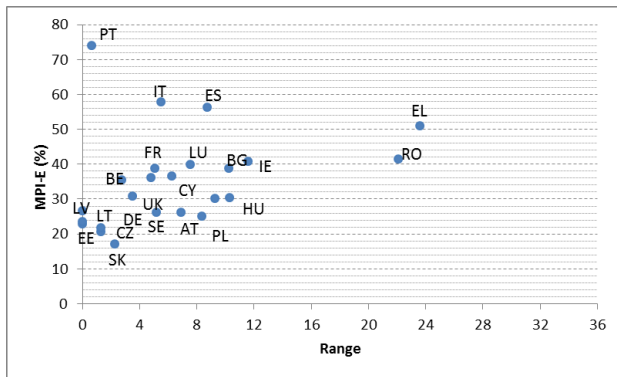
Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



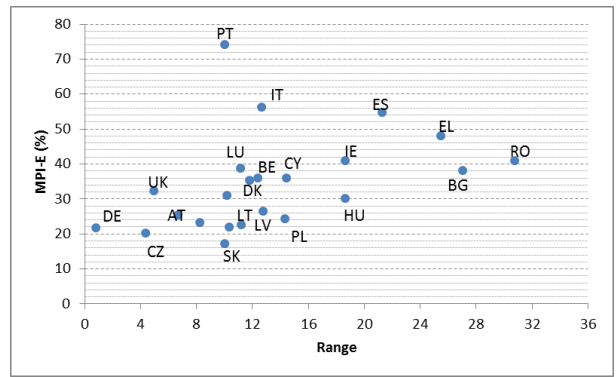


**Figure 24:** Poverty in education in 2011 — estimates at country level and by degree of urbanisation

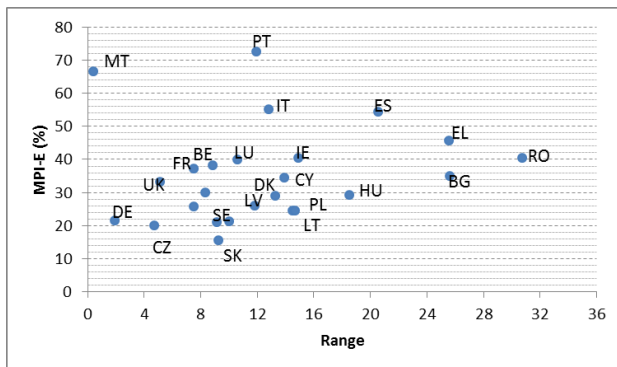
Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



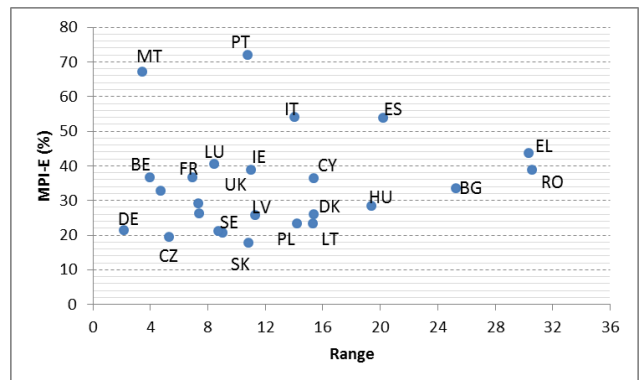
**Figure 25:** Poverty in education in the EU v Stratification — 2007



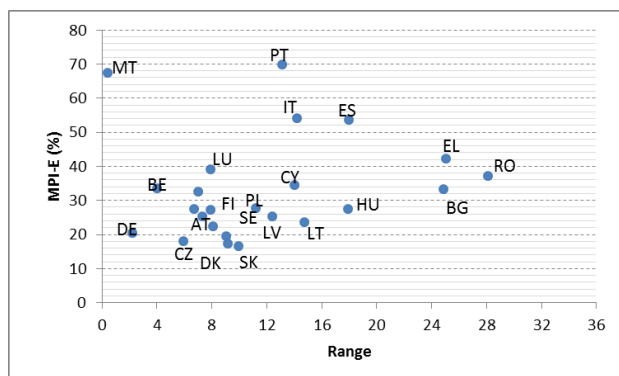
**Figure 26:** Poverty in education in the EU v Stratification — 2008



**Figure 27:** Poverty in education in the EU v Stratification — 2009



**Figure 28:** Poverty in education in the EU v Stratification — 2010



Note: Range = difference between the areas with the highest and the lowest values of the MPI-E.

**Figure 29:** Poverty in education in the EU v Stratification — 2011

**Table 5:** Correlation between the level of poverty in education and the level of stratification with respect to poverty in education

Year	2007	2008	2009	2010	2011
<b>Correlation coefficient</b>	0.316 (24)	0.402 (25)	0.151 (25)	0.127 (23)	0.161 (24)

Note: The number of cases is given in brackets.

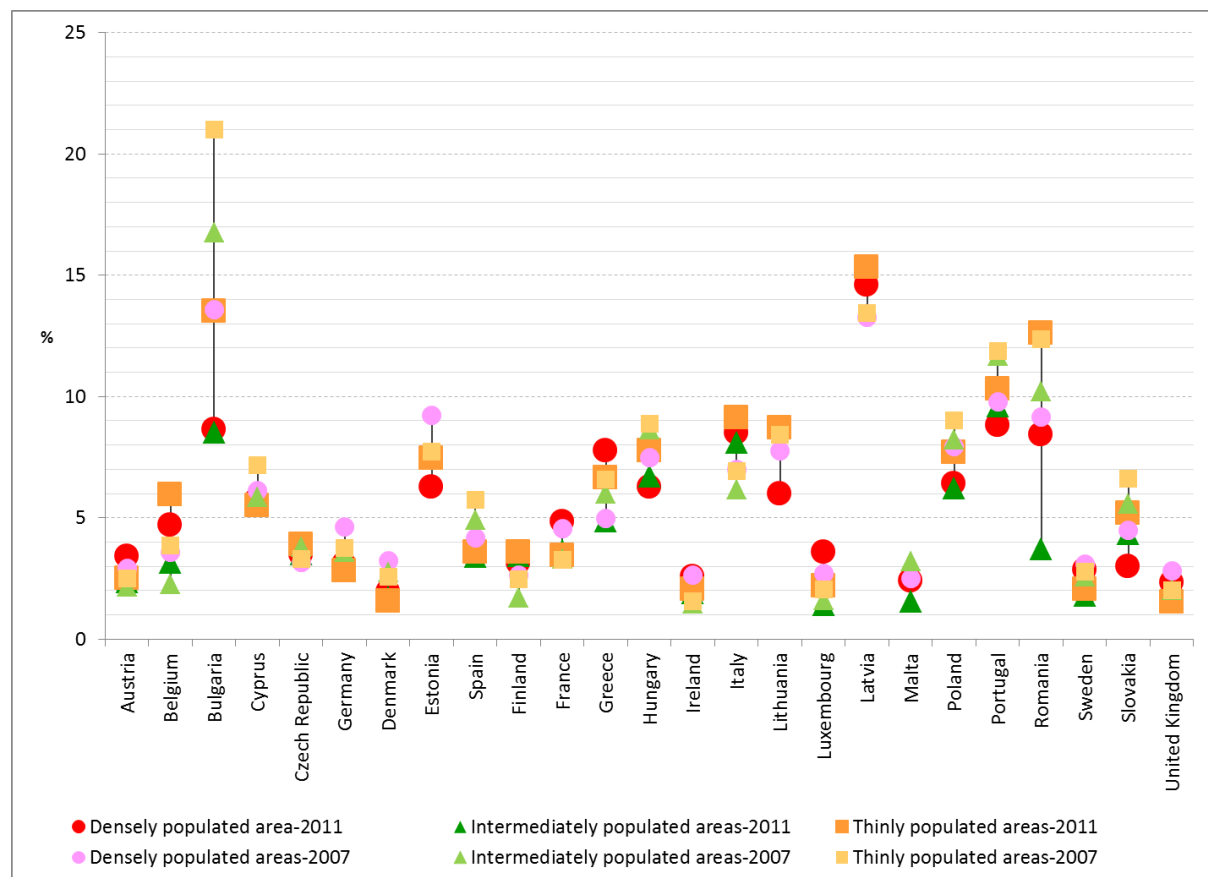
### 5.1.3. Poverty in health

Concerning poverty in health, as for poverty in education, the country-level distribution of this phenomenon was mostly stable in the EU. However, this conclusion applies to the period 2008–11. In 2007, the situation was slightly different. The country-level estimates of the least affluent with respect to poverty in health countries were higher than in the following years (Figures 30–35). The best countries with respect to simultaneously analysed poverty in health incidence and poverty in health intensity were Sweden, Denmark, Luxembourg and the United Kingdom. And, in the last two analysed years, Malta also belonged to this group. The worst countries in this respect were Bulgaria, Romania, Latvia and Portugal.

Very little stratification with respect to poverty in health was spotted. Nevertheless, there is a positive correlation between the level of poverty with respect to health and the stratification with this respect (Table 6 and Figures 41–45). This correlation, however, decreased between 2007 and 2011.

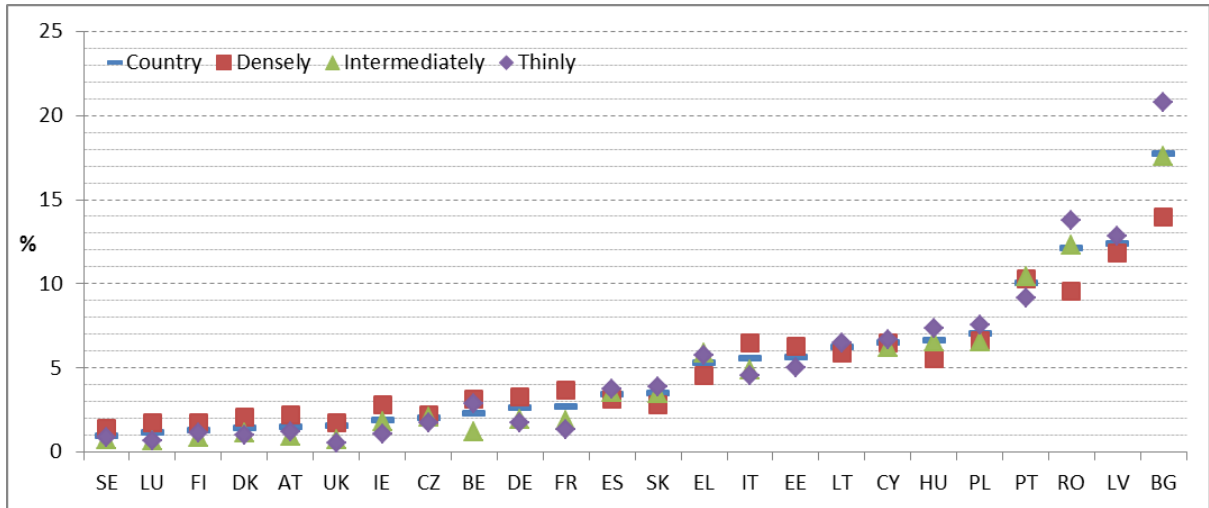
The highest differences between thinly and densely populated areas were noticed in Bulgaria and Romania, with considerably higher poverty in health in thinly populated areas and lower — in densely or intermediately populated areas.

It was also observed that a higher incidence of poverty in health coexists with a higher intensity of poverty in health but this relationship slightly decreased between 2007 and 2011 (Figures 36–40 and Table 6). It is also worth noting that, in 2008 and 2009, the average incidence of poverty was lower than in other years, whereas the average poverty intensity remained almost the same, apart from the year 2007 when it was slightly lower compared to other years. This implies that although in 2008 and 2009 the number of multidimensionally poor people was higher than in the other years, those who were poor suffered, on average, deprivation of almost the same breadth.



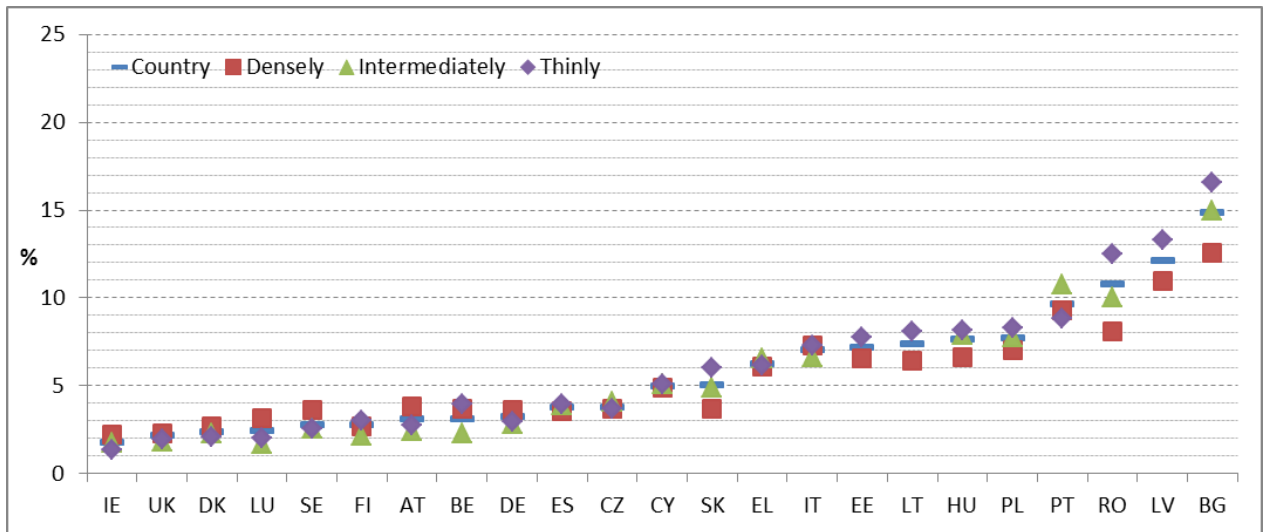
**Figure 30:** Poverty in health in 2007 and 2011

Note: For Malta, data are from 2009 instead of 2007; for Ireland, data are from 2010 instead of 2011.



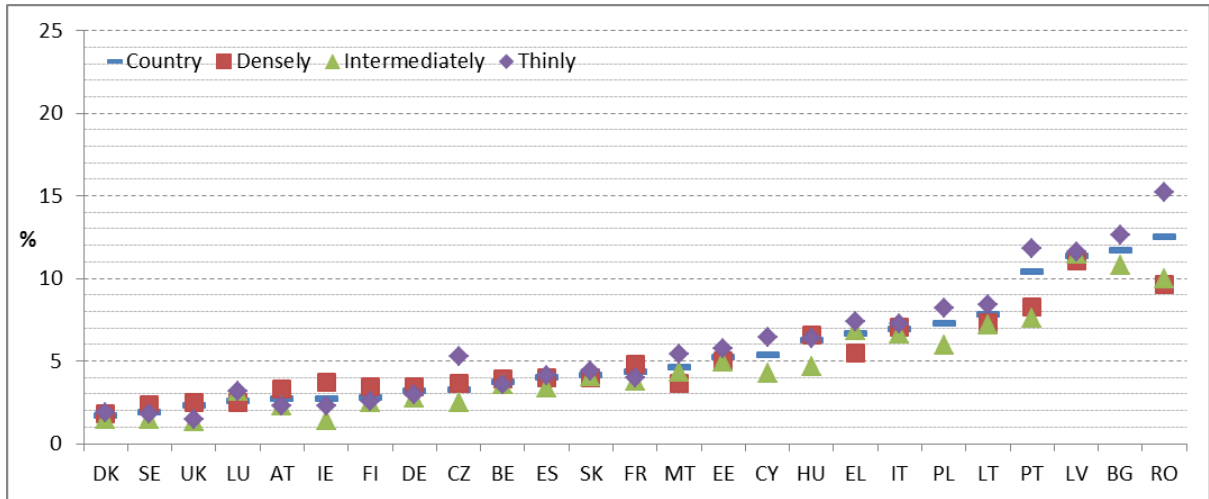
**Figure 31:** Poverty in health in 2007 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



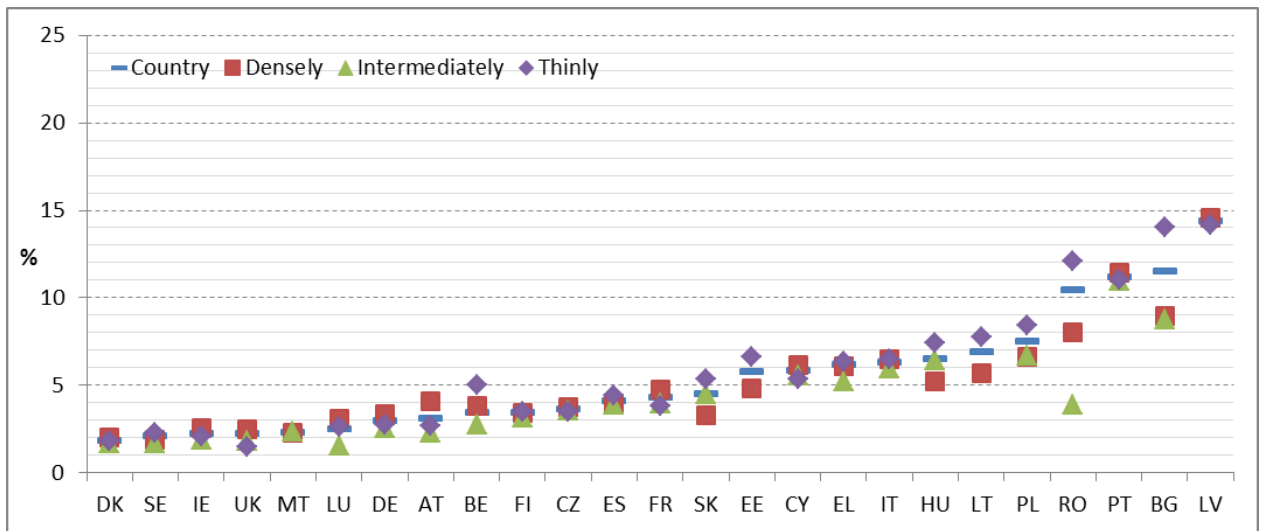
**Figure 32:** Poverty in health in 2008 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



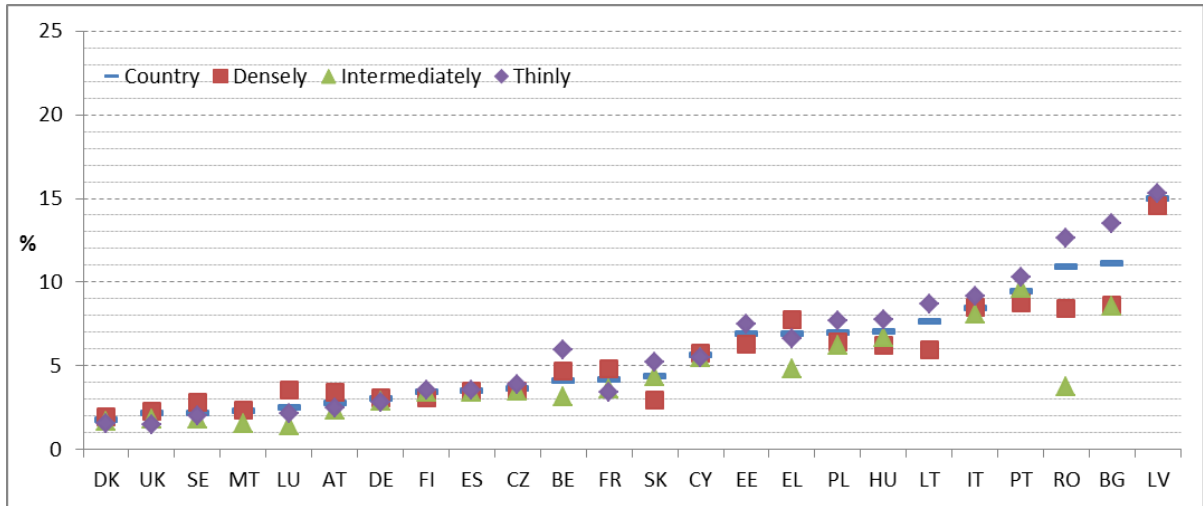
**Figure 33:** Poverty in health in 2009 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



**Figure 34:** Poverty in health in 2010 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



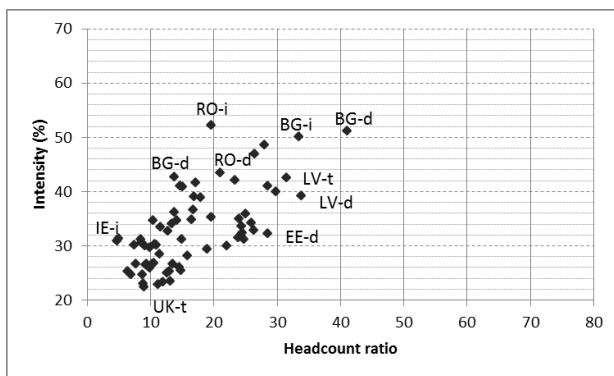
**Figure 35:** Poverty in health in 2011 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.

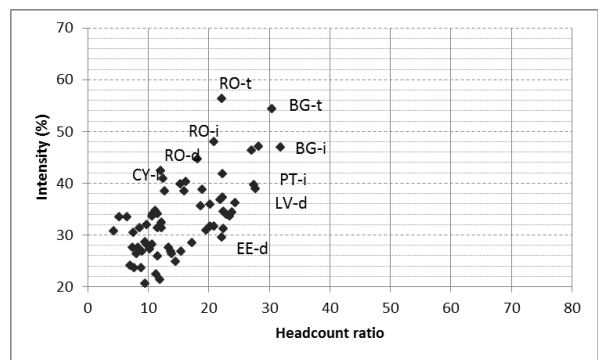
**Table 6:** Correlation between the level of health poverty and the level of stratification with respect to health poverty and between poverty in health incidence and intensity

Year	2007	2008	2009	2010	2011
<b>Health poverty and the level of stratification</b>	0.649 (24)	0.735 (25)	0.552 (25)	0.443 (23)	0.475 (24)
<b>Poverty in health incidence and intensity</b>	0.669 (69)	0.647 (66)	0.620 (71)	0.621 (71)	0.607 (68)

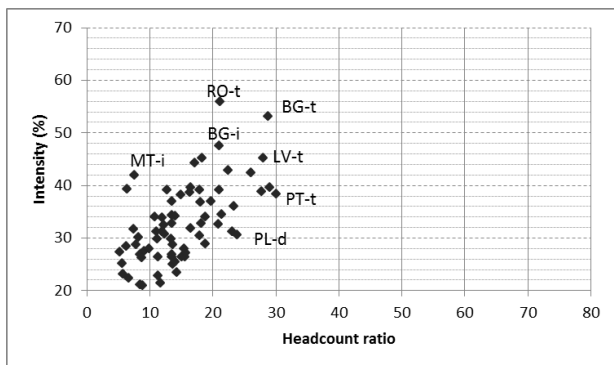
Note: The number of cases is given in brackets.



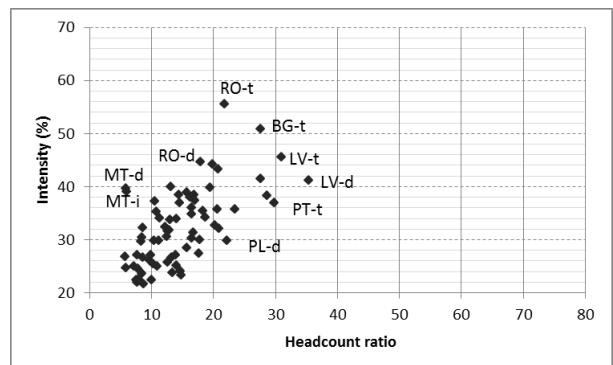
**Figure 36:** Health poverty in the EU: Incidence v Intensity — 2007



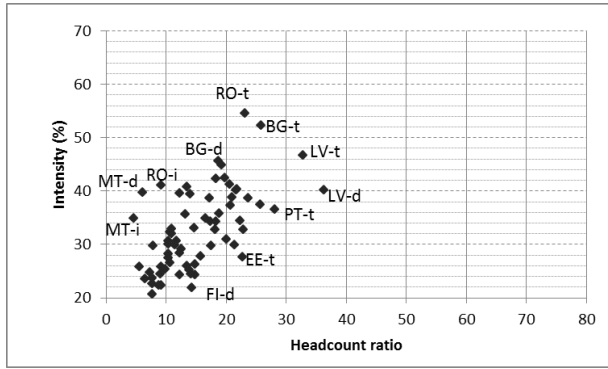
**Figure 37:** Health poverty in the EU: Incidence v Intensity — 2008



**Figure 38:** Health poverty in the EU: Incidence v Intensity — 2009

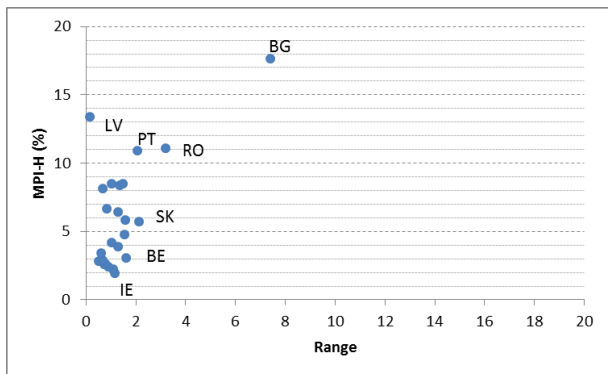


**Figure 39:** Health poverty in the EU: Incidence v Intensity — 2010

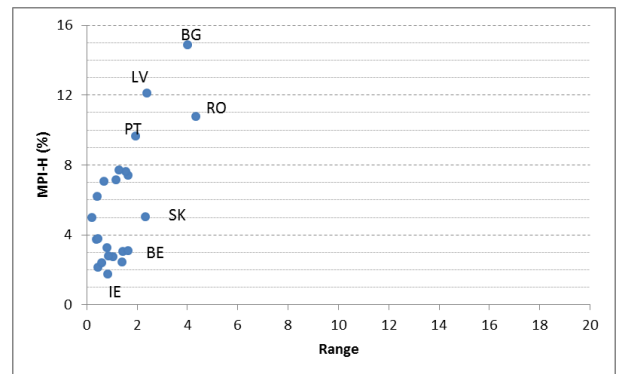


Note: -d = densely populated area; -i = intermediately populated area; -t = thinly populated area.

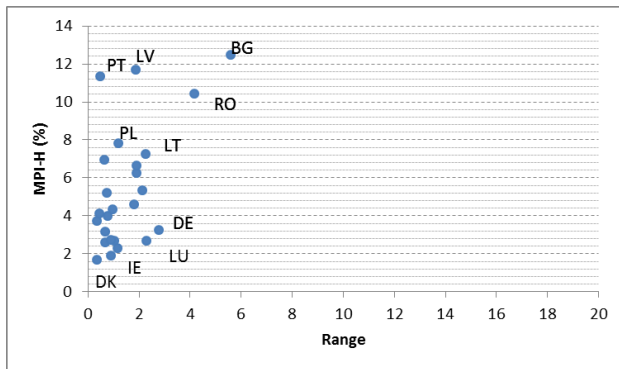
**Figure 40:** Health poverty in the EU: Incidence v Intensity — 2011



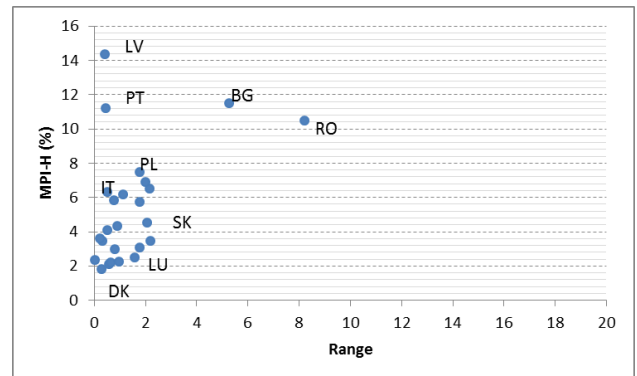
**Figure 41:** Poverty in health in the EU v Stratification — 2007



**Figure 42:** Poverty in health in the EU v Stratification — 2008

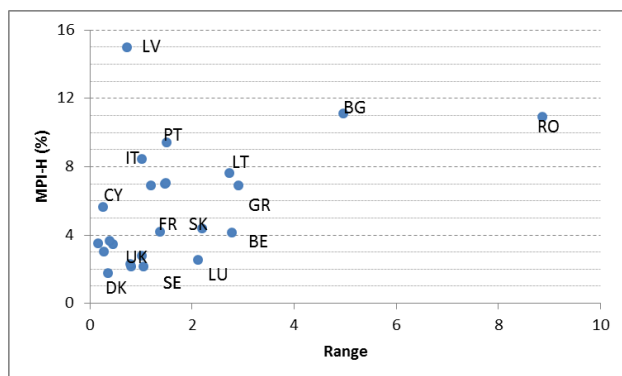


**Figure 43:** Poverty in health in the EU v Stratification — 2009



**Figure 44:** Poverty in health in the EU v Stratification — 2010





Note: Range = difference between the areas with the highest and the lowest values of the MPI-H.

**Figure 45:** Poverty in health in the EU v Stratification — 2011

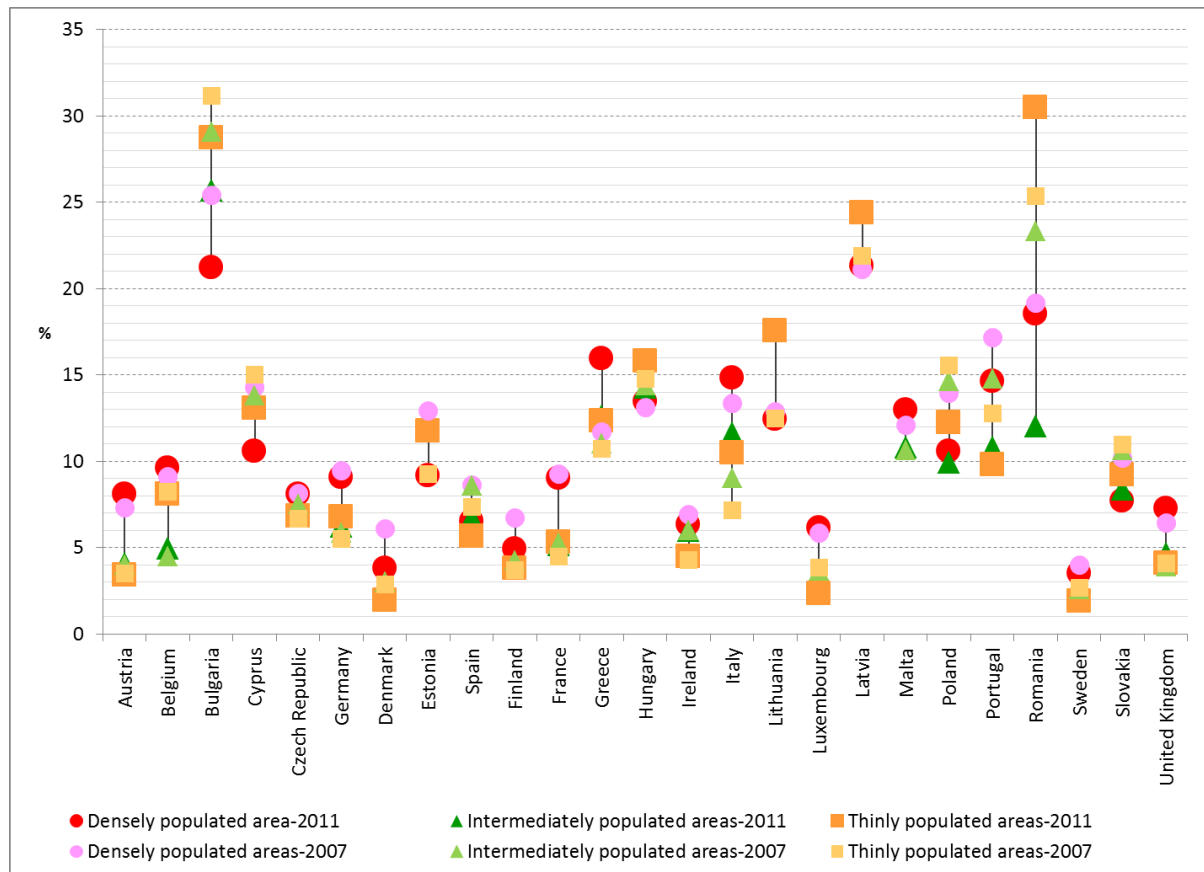
#### 5.1.4. Poverty in living standards

As regards the country-level distribution of poverty in living standards, the situation in the EU in the period 2007–11 was relatively stable (Figures 46–51). The only exception was the year 2009, when the country-level MPI-L was considerably lower. Regardless of this change in trend, in all analysed periods, the best countries with respect to simultaneously analysed poverty in living standards incidence and poverty in living standards intensity were Sweden, Denmark, Finland and Luxembourg with the MPI-L at the country level mostly below 5 % in all analysed periods. The most disadvantaged countries, with this respect, were, in turn, Bulgaria, Romania, Latvia and Portugal in 2007–09 and Bulgaria, Romania, Latvia and Lithuania in 2010–11. In these countries, the poverty in living standards estimates exceeded 15 % reaching even about 28 % in the case of Bulgaria and Romania.

Additionally, the tendency of higher poverty in living standards in densely populated areas in the affluent, with respect to poverty in living standards, countries and in thinly populated areas in poor countries were spotted. Considerably higher poverty in thinly populated areas was observed in Romania and Bulgaria in all analysed periods. It was also noted that there is a link between the level of poverty with respect to living standards and the stratification (difference between the area with the highest and the lowest poverty in health). This relationship was the strongest in 2008 and 2009 (Table 7 and Figures 57–61).

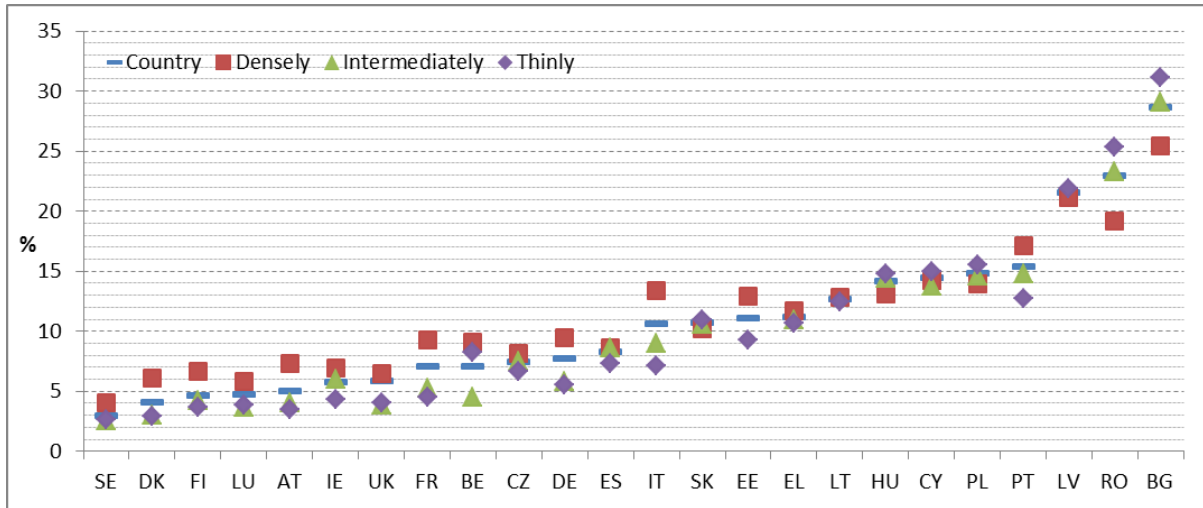
An analysis of Figures 52–56 and Table 8 leads to the conclusion that higher incidence of poverty in living standards coexists with higher intensity of poverty in living standards. It is also

worth noting that the average intensity of poverty in living standards as well as the average poverty in living standards incidence remained stable in the analysed period.



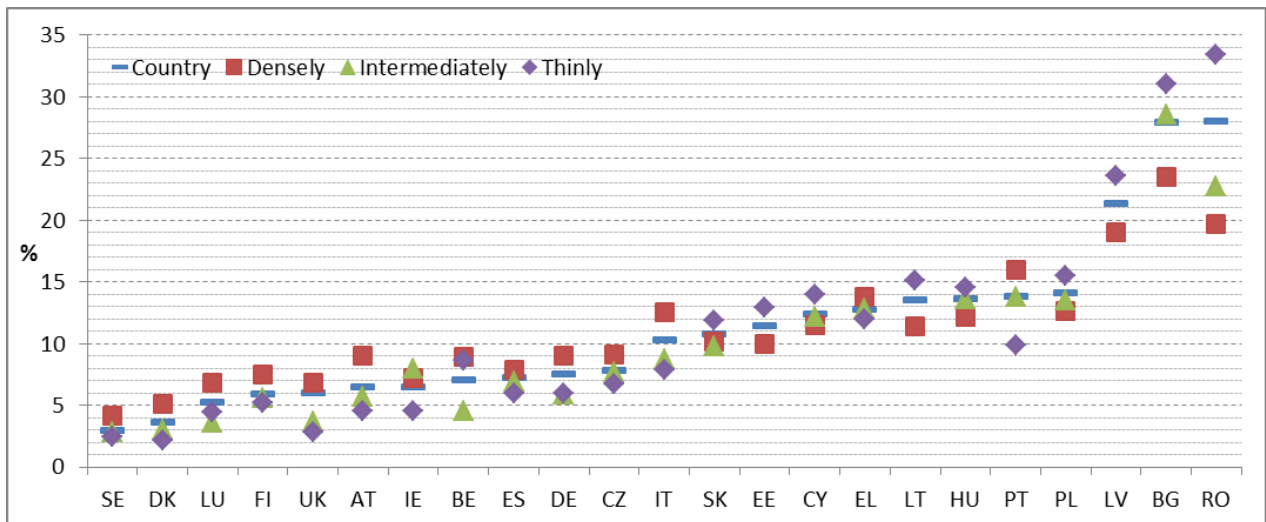
**Figure 46:** Poverty in living standards in 2007 and 2011

Note: For Malta, data are from 2009 instead of 2007; for Ireland, data are from 2010 instead of 2011.



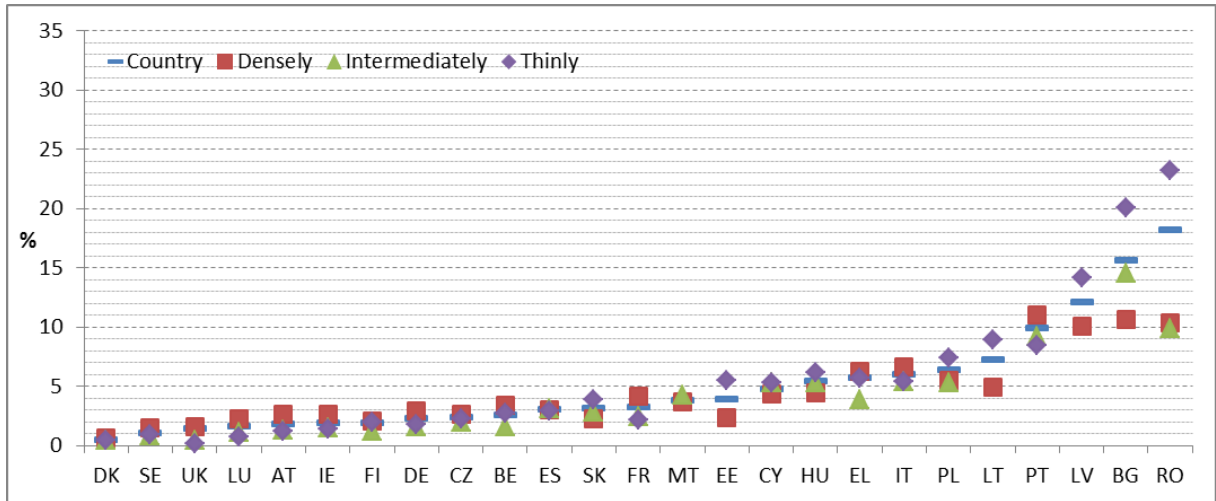
**Figure 47:** Poverty in living standards in 2007 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



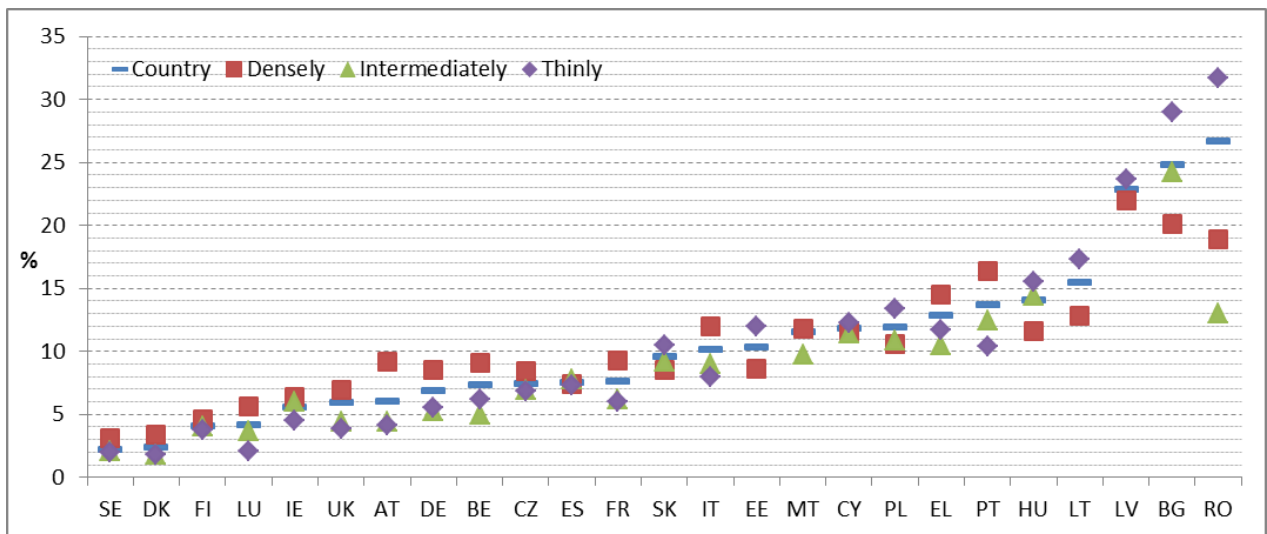
**Figure 48:** Poverty in living standards in 2008 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



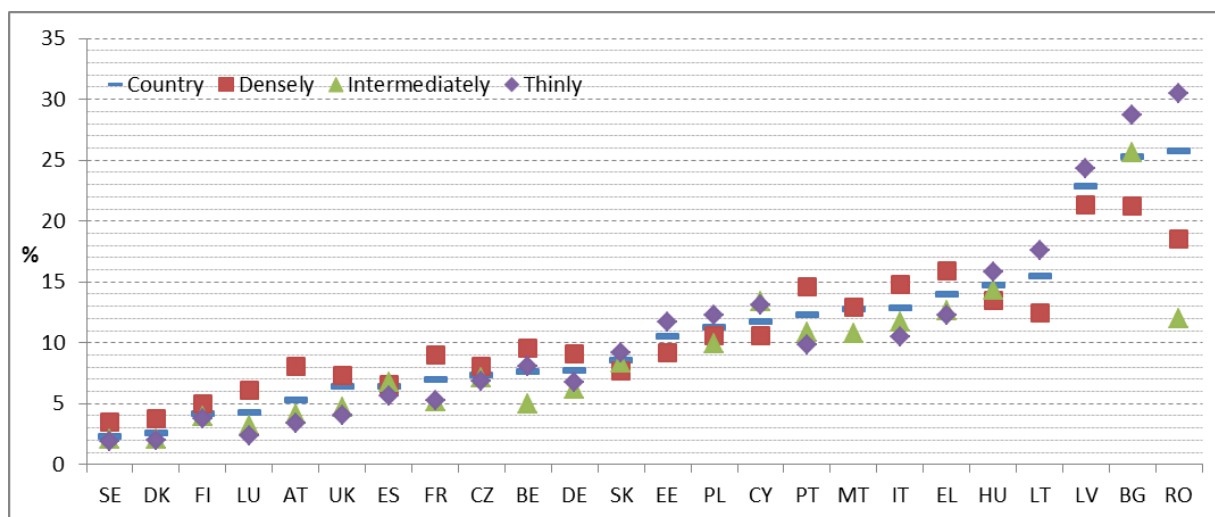
**Figure 49:** Poverty in living standards in 2009 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



**Figure 50:** Poverty in living standards in 2010 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.



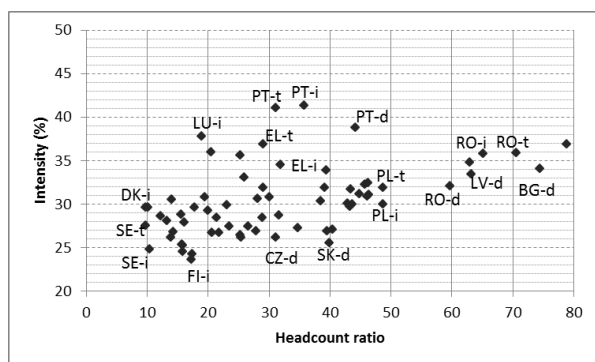
**Figure 51:** Poverty in living standards in 2011 — estimates at country level and by degree of urbanisation

Note: Country = estimate at country level; Densely = densely populated area; Intermediately = intermediately populated area; Thinly = thinly populated area.

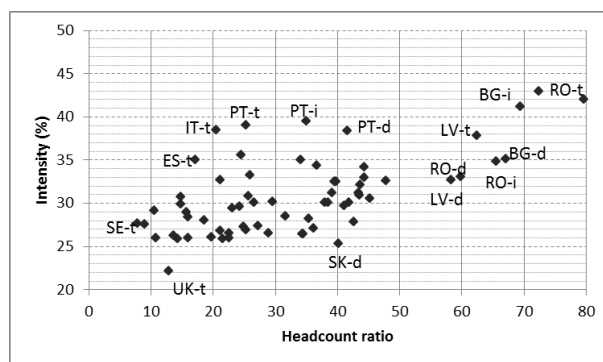
**Table 7:** Correlation between the level of poverty in living standards and the level of stratification with respect to poverty in living standards and between poverty in living standards incidence and intensity

Year	2007	2008	2009	2010	2011
<b>Poverty in living standards and the level of stratification</b>	0.535 (24)	0.623 (25)	0.573 (25)	0.537 (23)	0.595 (24)
<b>Poverty in living standards incidence and intensity</b>	0.211 (69)	0.721 (66)	0.729 (71)	0.673 (71)	0.644 (68)

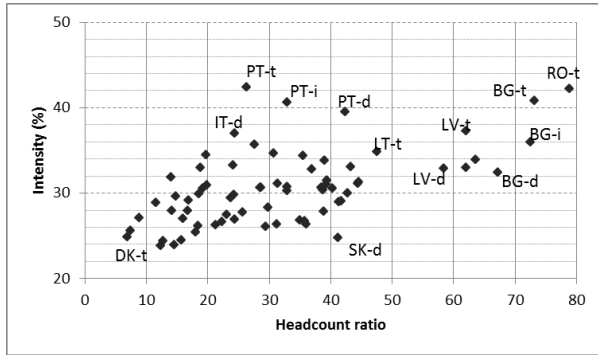
Note: The number of cases is given in brackets.



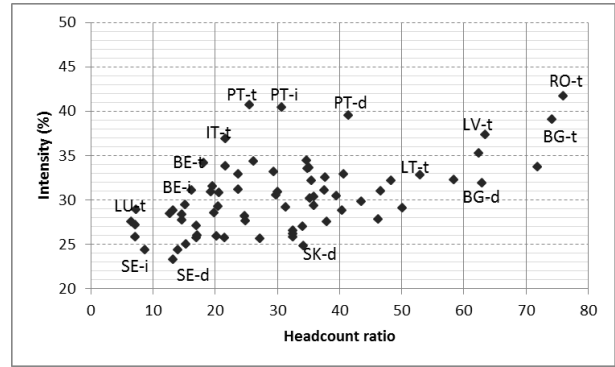
**Figure 52:** Poverty in living standards in the EU: Incidence v Intensity — 2007



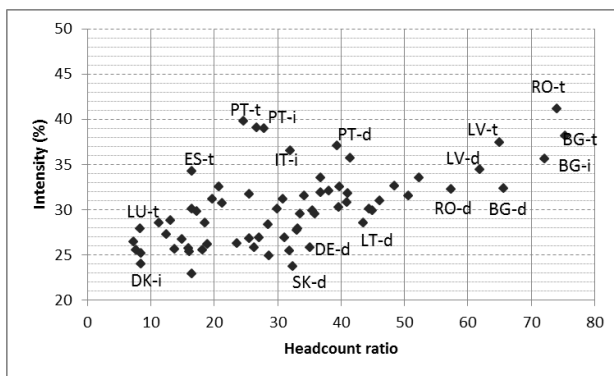
**Figure 53:** Poverty in living standards in the EU: Incidence v Intensity — 2008



**Figure 54:** Poverty in living standards in the EU: Incidence v Intensity — 2009

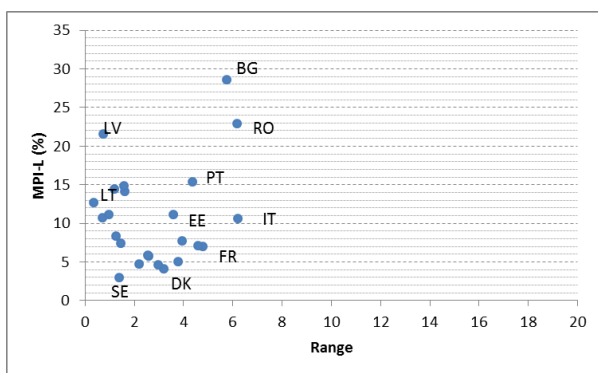


**Figure 55:** Poverty in living standards in the EU: Incidence v Intensity — 2010

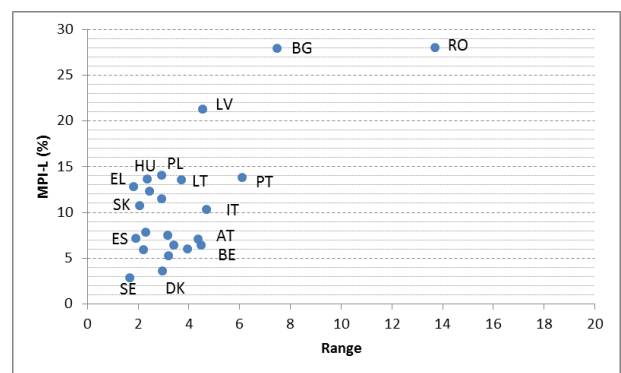


**Figure 56:** Poverty in living standards in the EU: Incidence v Intensity — 2011

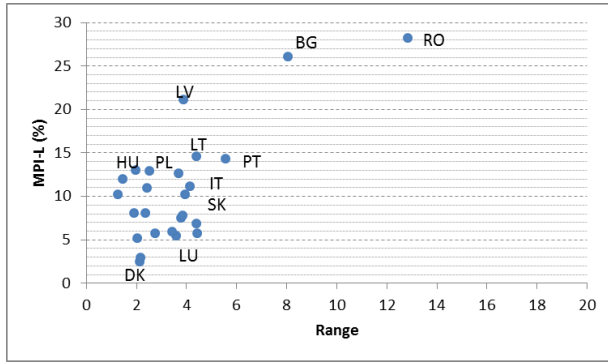
Note: -d = densely populated area; -i = intermediately populated area; -t = thinly populated area.



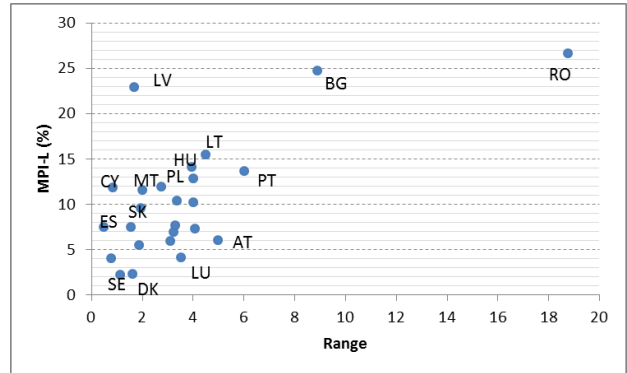
**Figure 57:** Poverty in living standards in the EU v Stratification — 2007



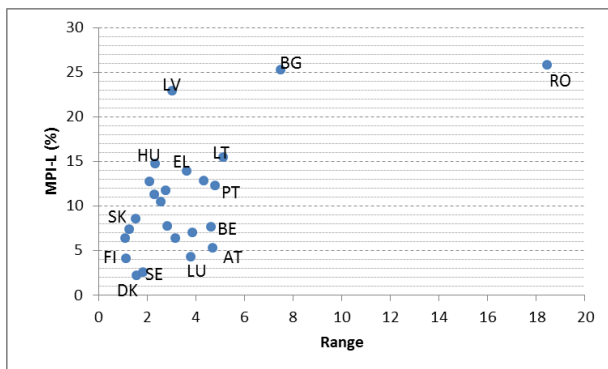
**Figure 58:** Poverty in living standards in the EU v Stratification — 2008



**Figure 59:** Poverty in living standards in the EU v Stratification — 2009



**Figure 60:** Poverty in living standards in the EU v Stratification — 2010



**Figure 61:** Poverty in living standards in the EU v Stratification — 2011

Note: Range = difference between the areas with the highest and the lowest values of the MPI-L

## 5.2. Poverty in the EU NUTS in 2005–07 and 2009–11

### 5.2.1. Multidimensional Poverty Index

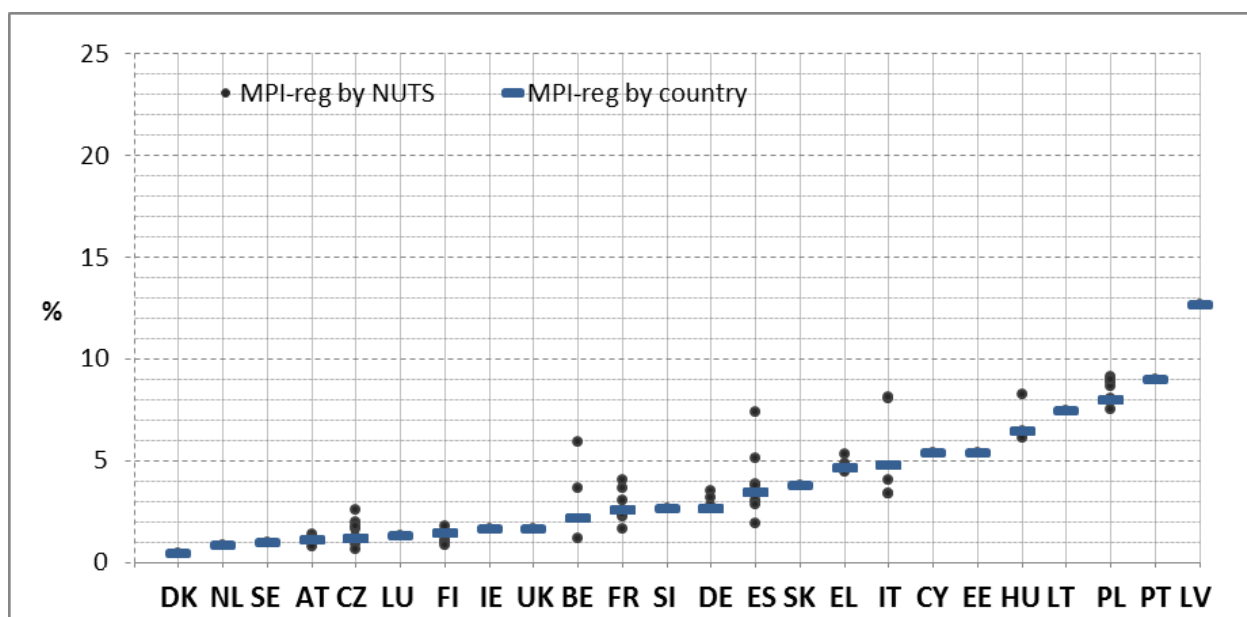
As regards the country-level estimates of poverty in the EU, in both analysed periods<sup>6</sup> (Figures 62 and 63), the best scoring countries as well as the worst scoring countries remained the same. These were:

- the best scoring countries: Denmark, Sweden and the Netherlands;
- the worst scoring countries: Portugal, Latvia and Lithuania.

<sup>6</sup> The two analysed periods are 2005–07 and 2009–11; in both, time-point estimates were based on the three-wave average.

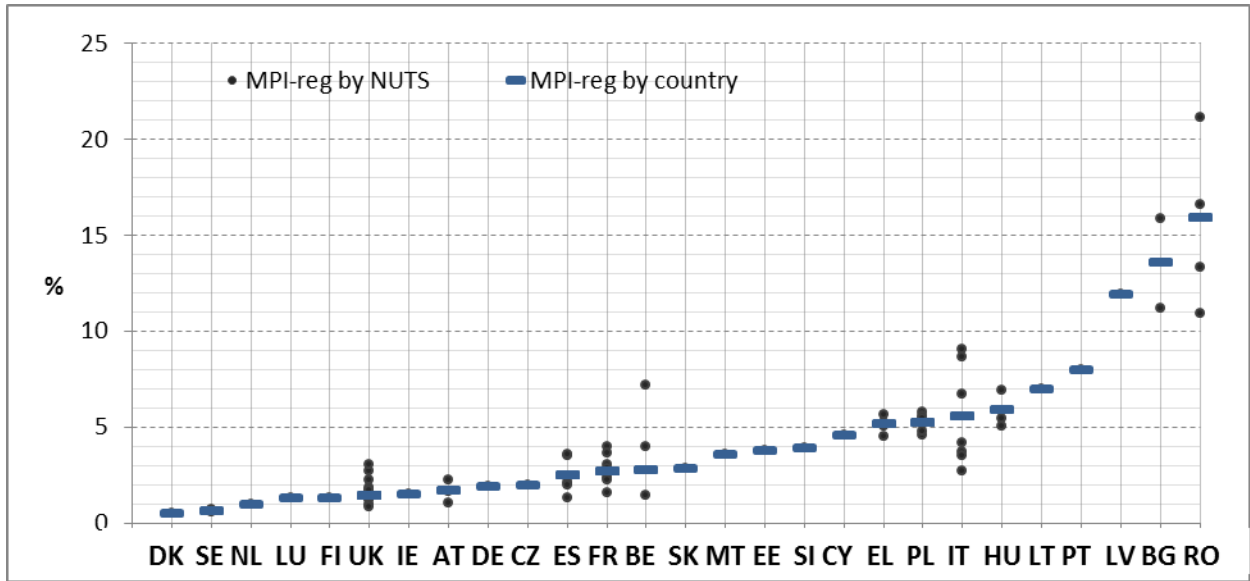
It must be noted, however, that in the period 2009–11, the worst scoring countries were Bulgaria and Romania, which were not included in the ranking relating to the period 2005–07 because, at that time, they had not joined the EU. Additionally, it is worth noting that in the period 2005–07, Poland was the third worst country with respect to poverty, but then its ranking improved as a result of a reduction of about 2.8 percentage points (the highest observed) in the multidimensional poverty measured by the MPI-reg between 2005–07 and 2009–11. The second best reduction in poverty level was experienced by Estonia (1.6 percentage points) and the third best (1 percentage point) by Portugal. On the other hand, the highest increase in multidimensional poverty measured by the MPI-reg between 2005–07 and 2009–11 was observed in Slovenia (1.3 percentage points), the Czech Republic and Italy (both 0.8 percentage points).

Mainly because of the accession of Bulgaria and Romania to the EU, the average poverty incidence and the maximum poverty incidence increased between 2005–07 and 2009–11 (Figures 64 and 65 and Table 8). The average and maximum intensity of poverty also increased in this period but that increase was not as high as in the case of poverty incidence. Nevertheless, in both analysed time points, the positive and considerable correlation between poverty intensity and poverty incidence was observed. It was stronger in 2009–11. This implies that, in the regions with higher numbers of multidimensionally poor people, poor people were poor with respect to a higher number of poverty dimensions.

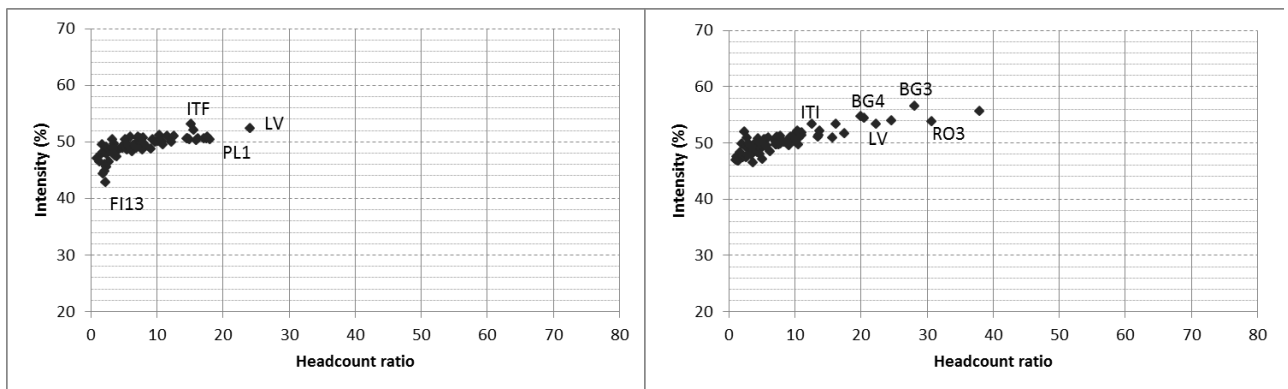


**Figure 62:** The MPI-reg in 2005–07 — estimates at country and NUTS level





**Figure 63:** The MPI-reg in 2009–11 — estimates at country and NUTS level

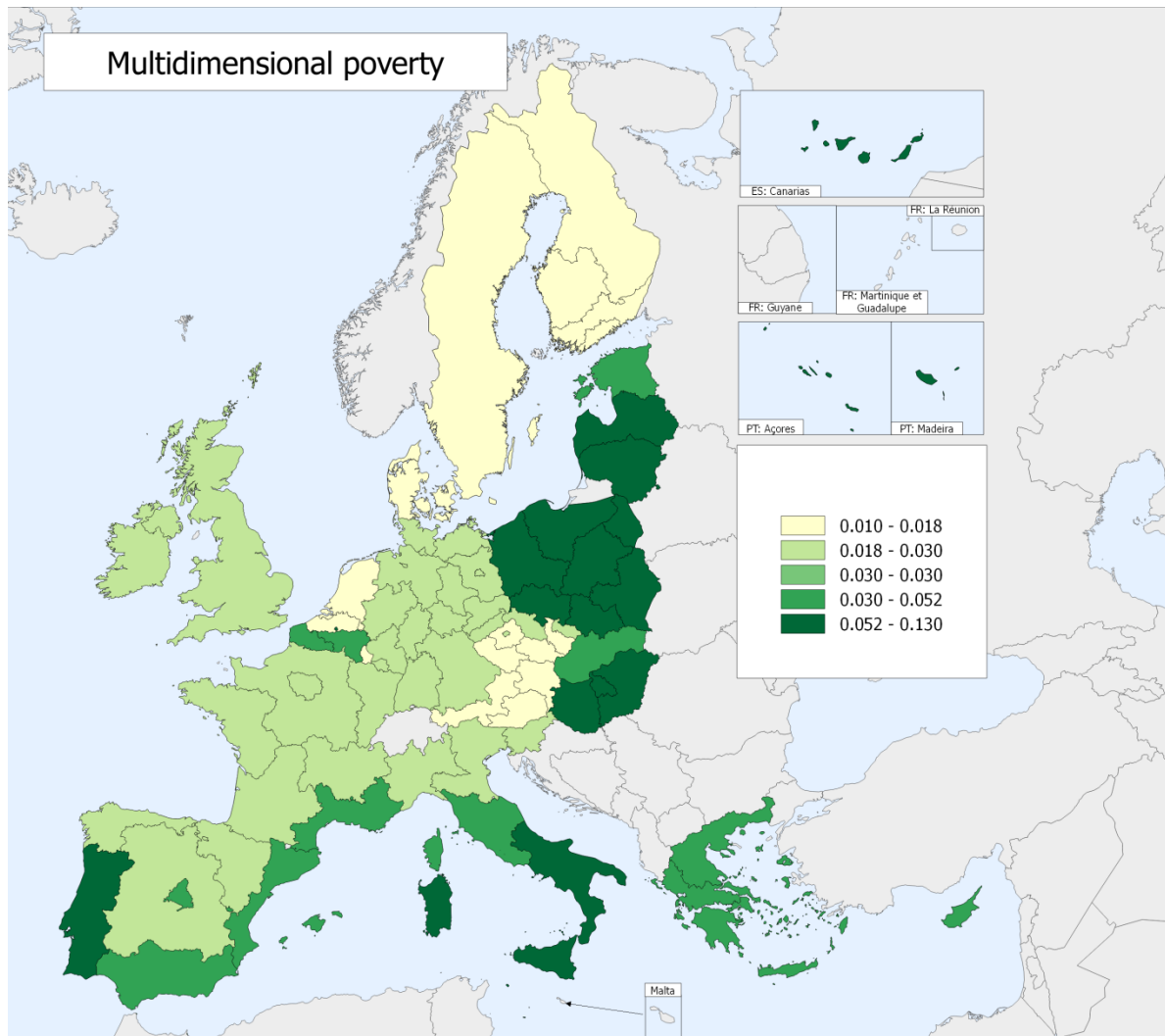


**Figure 64:** Multidimensional poverty in the EU: Incidence v Intensity — 2005–07

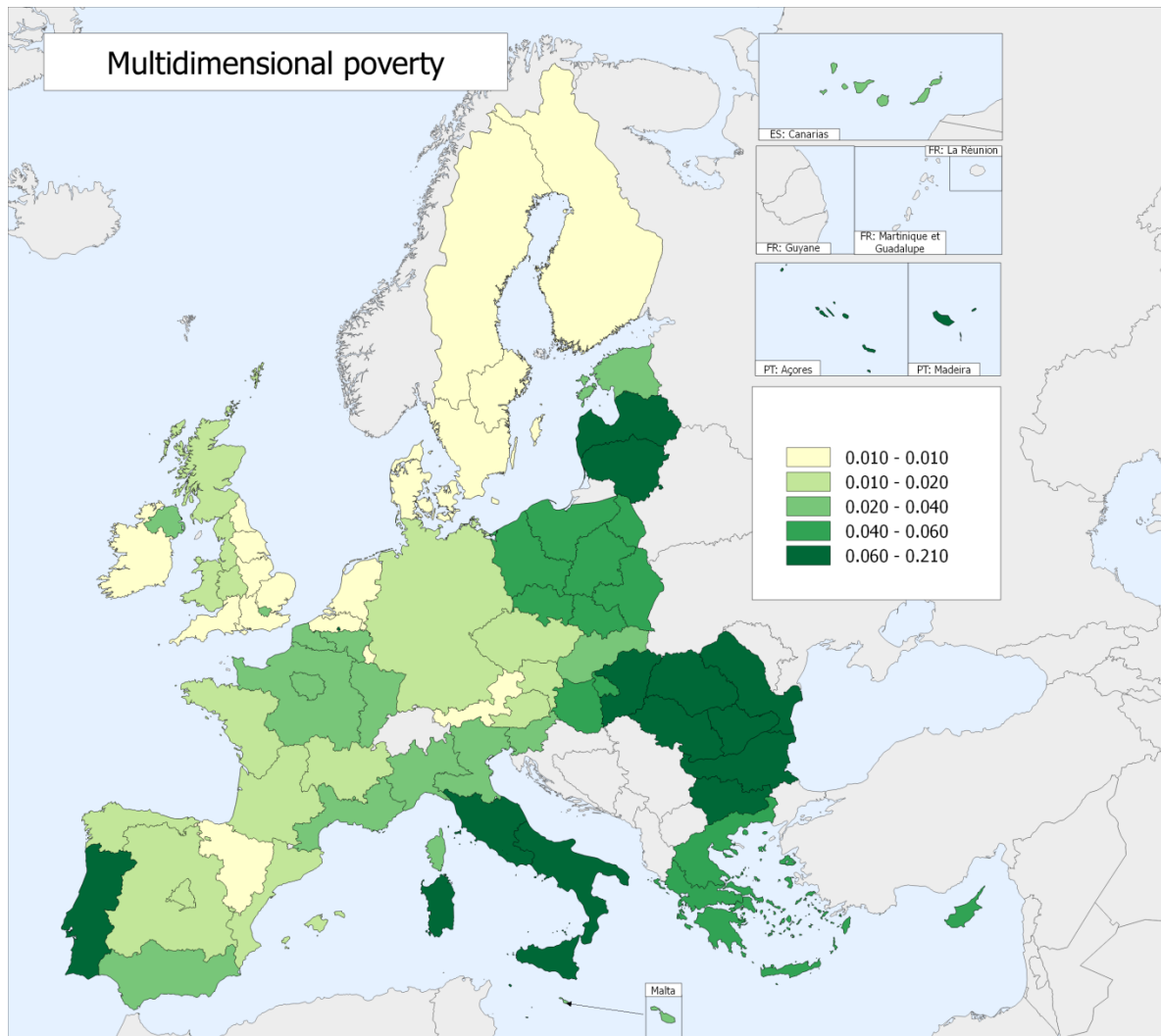
**Figure 65:** Multidimensional poverty in the EU: Incidence v Intensity — 2009–11

**Table 8:** Correlation between multidimensional poverty incidence and multidimensional poverty intensity — periods 2005–07 and 2009–11

Years	Correlation coefficient
2005–07	0.701
2009–11	0.843



**Map 1:** Multidimensional poverty in the EU — 2005–07



**Map 2:** Multidimensional poverty in the EU — 2009–11

As regards poverty inequality or stratification, it is easily seen (Figures 62 and 63) that wherever the sub-national estimates were available, differences between country-level and sub-national-level poverty estimates were observed. In 2009–11, the highest differences with respect to poverty estimates within a country were observed in Romania (7.8 percentage points), Italy (6.3 percentage points), Belgium (5.7 percentage points) and Bulgaria (4.7 percentage points). The lowest differences (where estimates were available) were recorded in Sweden (0.15 percentage points), Greece (1.1 percentage points), Austria (1.2 percentage points) and Poland (1.2 percentage points). In turn, in 2005–07, the highest differences with respect to poverty estimates within a country were observed in Spain (5.5 percentage points), Italy (4.8 percentage points) and Belgium (4.7 percentage points). The lowest differences (where estimates were available) were recorded in Austria (0.6 percentage points), Greece (0.9 percentage points) and Poland (1.6 percentage points).

From the above comparison, it is easily seen that the regional inequality with respect to the MPI-reg in Italy and Belgium, already being some of the highest, increased between 2005–07 and 2009–11. On the other hand, the regional inequality with respect to the MPI-reg was reduced the most in Spain, from 5.5 percentage points in 2005–07 to 2.3 percentage points in 2009–11 (7).

Comparing the changes in multidimensional poverty at the NUTS level, it is seen that there are regions in which poverty was reduced between 2005–07 and 2009–11 (Figure 66). The regions where the reductions were the highest are Malta, FI1, ITH, PL3, ES7, PL6, PL2, PL5, PL1 and PL4 (names of NUTS are presented in the Appendix). On the other hand, there are regions in which poverty increased: Slovenia, BE1, AT2, ITG, AT1 and ITF. Nevertheless, in most regions the level of poverty was stable.

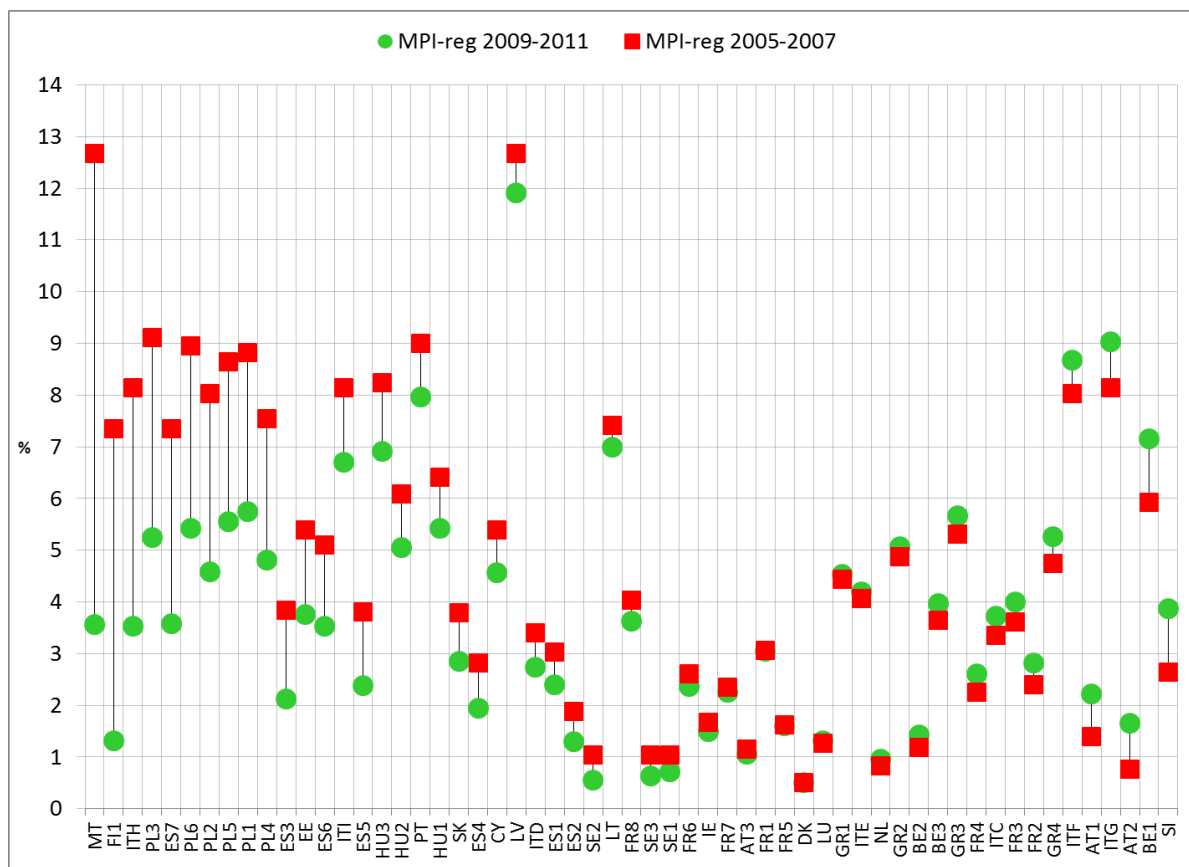


Figure 66: The MPI-reg in 2005–07 and 2009–11 — estimates at NUTS level

7 With exactly the same NUTS compared.

### 5.2.2. Poverty in education

The country-level estimates of poverty in education <sup>(8)</sup> in the EU were lower (considerably or slightly) in 2009–11 than in 2005–07 (Figures 67 and 68). Nevertheless, in both analysed periods, the best scoring countries as well as the worst scoring countries remained the same. These were:

- the least poor with respect to poverty in education — Slovakia, Germany, Estonia, the Czech Republic, Sweden and Lithuania;
- the most poor with respect to poverty in education — Greece, Spain, Italy and Portugal (all being Southern European countries).

It must be noted also that, often scoring the worst, Bulgaria and Romania, with respect to poverty in education, ranked relatively well.

Additionally, it is worth noting that Greece (8.3 percentage points), the United Kingdom (6.9 percentage points), Hungary (6.0 percentage points) and France (5.3 percentage points) recorded the highest reduction in poverty with respect to education. On the other hand, in Germany, poverty in education increased slightly — by 0.9 percentage point. This was the only country where an upturn in poverty in education was recorded.

As regards the regional inequality with respect to poverty in education, it is again easily noticeable that — wherever the sub-national estimates are available — not only were differences between country-level and sub-national-level estimates observed but also considerable differences among NUTS-level estimates within a country occurred. In 2009–11, the highest differences with respect to poverty in education estimates within a country were observed in Greece (24.7 percentage points), Spain (18.9 percentage points), Hungary (10.9 percentage points) and Italy (9.3 percentage points). The estimate for Northern Ireland (UKN NUTS 1 region) was treated as an outlier due to an insufficient sample size and, therefore, not taken into account in the inequality assessment. The lowest differences (where estimates were available) were recorded in Austria (1.8 percentage points), Belgium (3.8 percentage points) and Poland (3.9 percentage points).

In turn, in 2005–07, the highest differences with respect to poverty estimates within a country were observed in Spain (17.4 percentage points), Greece (17.3 percentage points) and Hungary (10.7 percentage points). The lowest differences (where estimates were available) were recorded

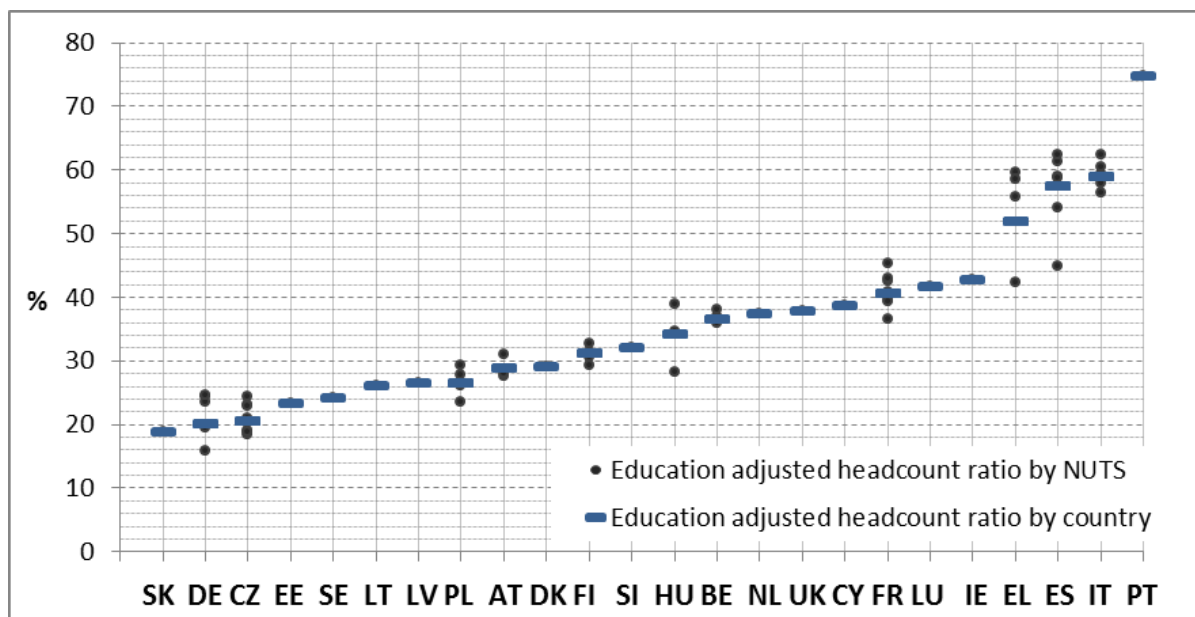
---

<sup>8</sup> Estimates of poverty in education are based on the poverty incidence measures only; this is due to the fact that poverty dimension is populated by only one indicator, which was described in Section 4.2.

in Belgium (2.2 percentage points), Austria (3.4 percentage points), Italy (4.6 percentage points) and Poland (5.7 percentage points).

From the above comparison, it is easily seen that the regional inequality with respect to poverty in education in the most unequal with respect to poverty in education countries increased between 2005–07 and 2009–11. However, this increase was considerable only in Greece, which together with Hungary, recorded the highest rises in inequality with respect to poverty in education by 7.4 percentage points (from 17.3 percentage points to 24.7 percentage points) and 4.7 percentage points (from 4.6 percentage points to 9.3 percentage points), respectively.

The regional inequality with respect to poverty in education was reduced in only two EU countries, namely in Poland and Austria, by 1.8 percentage points (from 5.7 percentage points to 3.9 percentage points) and 1.6 percentage points (from 3.4 percentage points to 1.6 percentage points) respectively.



**Figure 67:** Poverty in education in 2005–07 — estimates at country and NUTS level

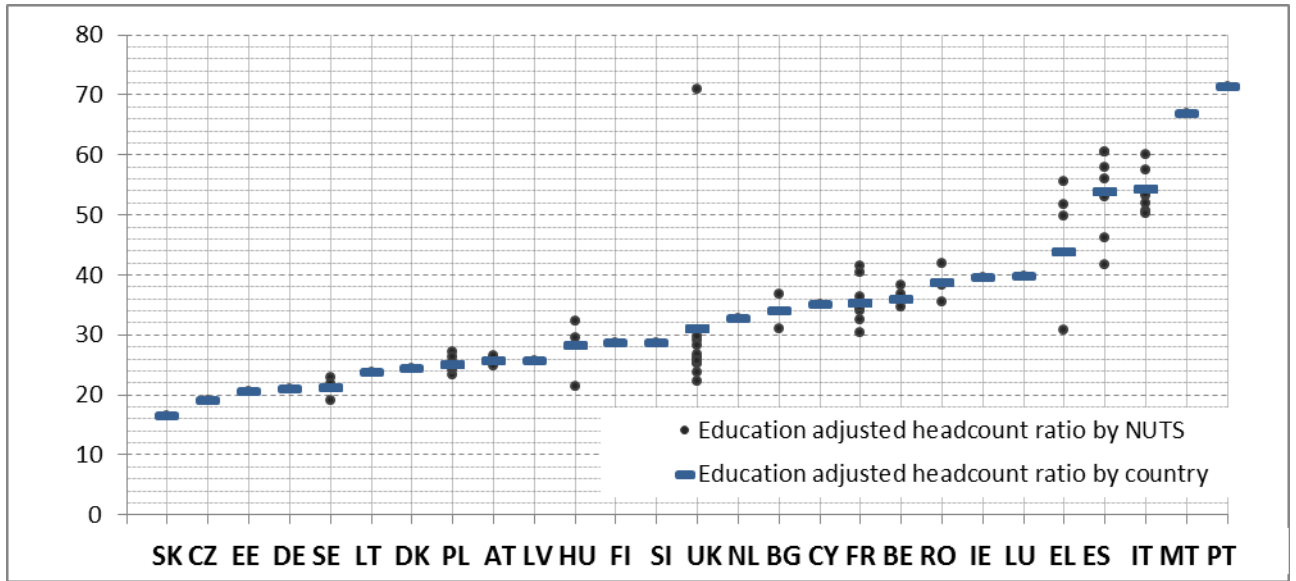
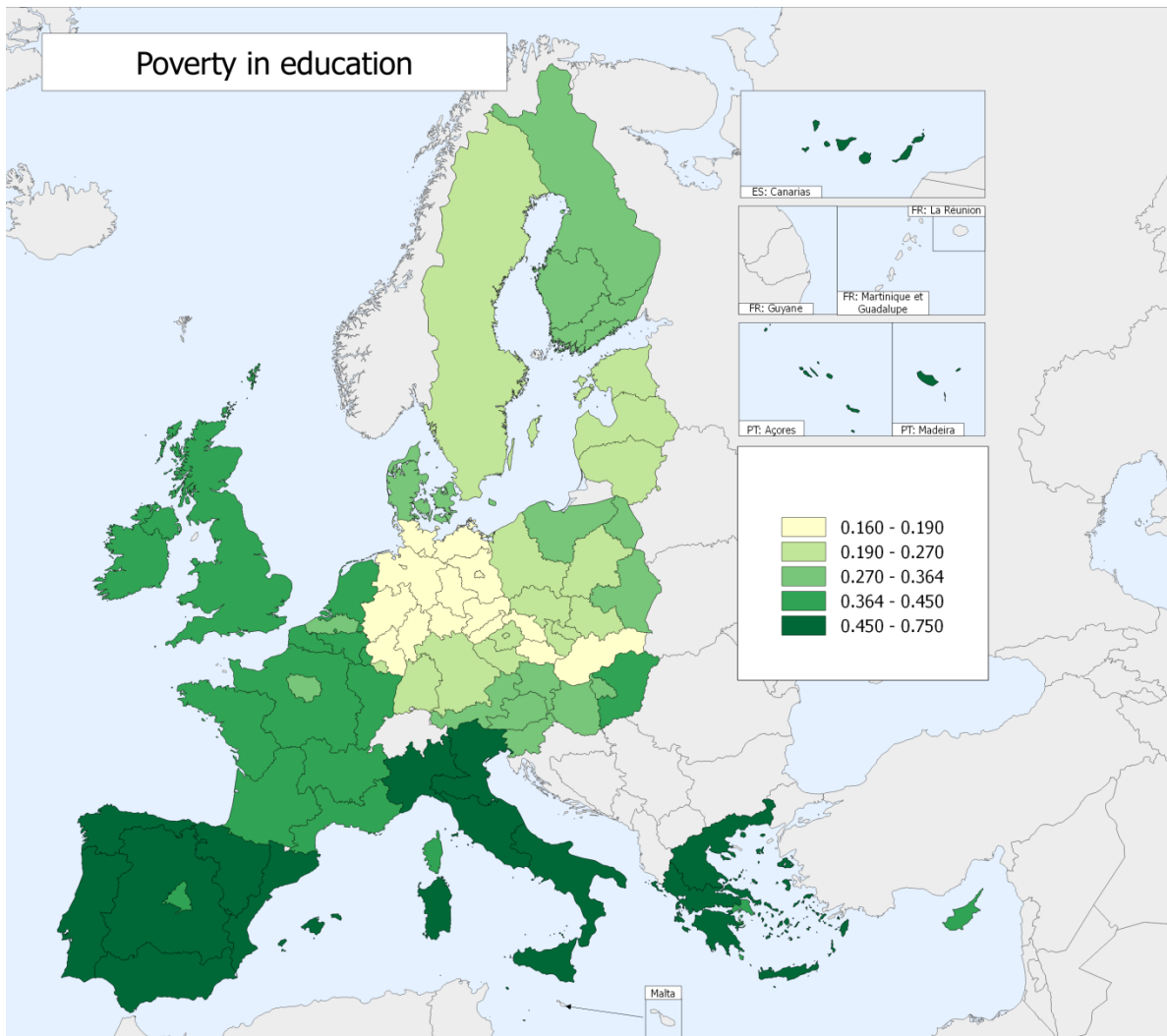
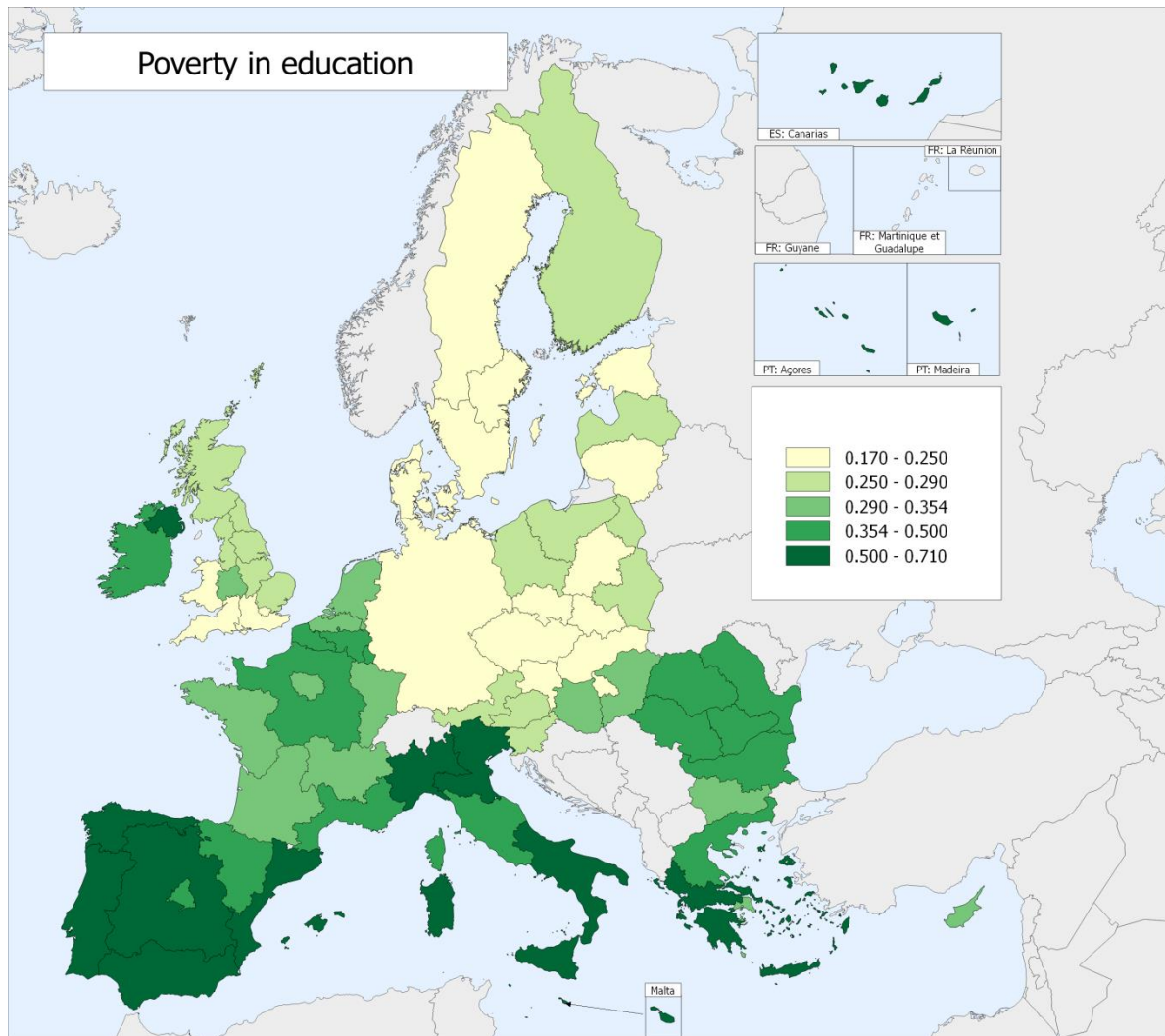


Figure 68: Poverty in education in 2009–11 — estimates at country and NUTS level



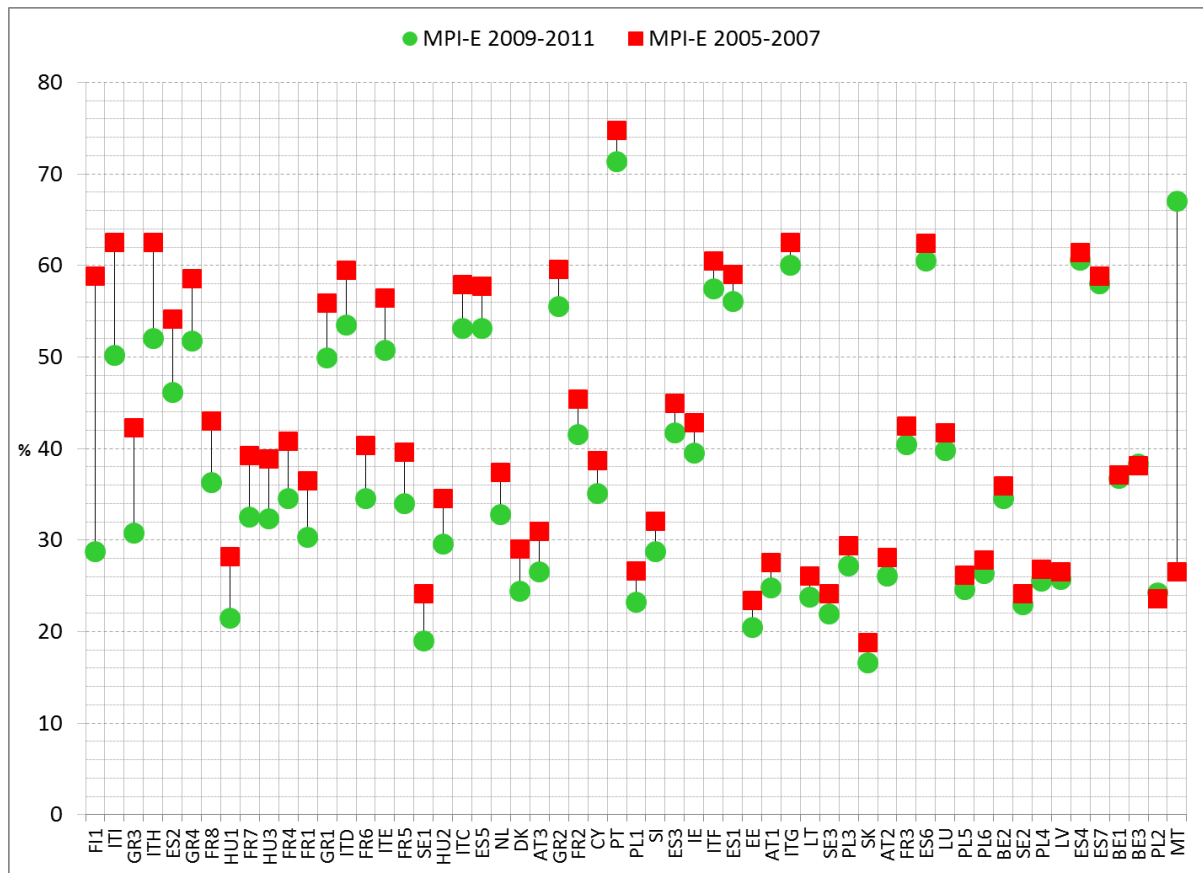
Map 3: Poverty in education in the EU — 2005–07



**Map 4:** Poverty in education in the EU — 2009–11

Comparing the changes in poverty in education between 2005–07 and 2009–11 at the NUTS level, it is seen that, in general, the situation improved (Figure 69). In the analysed regions, poverty in education either decreased (i.e. in FI1, ITI, GR3, ITH, ES2, GR4) or was stable: the only exception to this situation was Malta, where an increase was seen.





**Figure 69:** Poverty in education in 2005–07 and in 2009–11 — estimates at NUTS level

### 5.2.3. Poverty in health

As regards the country-level estimates of poverty in health the EU, in both analysed periods, the best scoring countries as well as the worst scoring countries remained the same (Figures 70 and 71). The best scoring were Denmark and Ireland, and the poorest Portugal and Latvia. It must be noted, however, that in the period 2008–11, Bulgaria and Romania also belonged to the least affluent with respect to poverty in health countries.

Additionally, it is worth noting that between the periods 2005–07 and 2009–11, the highest reductions in poverty in health were recorded in the CEE countries that ranked in the bottom part of the country ranking with respect to poverty in health. Specifically, the biggest reductions occurred in Poland (3.2 percentage points), Estonia and Lithuania (both 2.8 percentage points), Latvia (2.5 percentage points) and Slovakia and Hungary (both 2 percentage points). On the other hand, there were countries where an increase in poverty was recorded, but the highest recorded rise amounted to 0.6 percentage points.

Between 2005–07 and 2009–11 (Figures 72 and 73 and Table 9), the range of intensity of poverty in health increased by about 13 percentage points: on the other hand, the range of poverty in health incidence went down slightly (by about 4 percentage points). This implies that, in the analysed periods, the total number of poor with respect to healthy people decreased, but those who were poor, were poor more intensely (i.e. with respect to more health dimensions).

Furthermore, in both analysed time points, the positive and considerable correlation between poverty in health intensity and poverty in health incidence was observed: this was stronger in 2009–11.

As regards poverty in health inequality or stratification (Figures 64 and 65), it is easily seen that wherever the sub-national estimates were available, differences both between country-level and sub-national-level poverty estimates and among sub-national estimates within a country were observed. In 2009–11, the highest differences with respect to poverty in health estimates within a country were observed in Romania (5.9 percentage points), Italy (5.2 percentage points), Belgium (3.4 percentage points) and Bulgaria (3.1 percentage points). The lowest difference (where estimates were available) were recorded in Poland (0.9 percentage points), Greece (0.9 percentage points) and Austria (1.1 percentage points). In turn, in 2005–07, the highest differences with respect to poverty estimates within a country were observed in Italy (3.3 percentage points), Spain (3.1 percentage points) and Belgium (2.6 percentage points). The lowest differences (where estimates were available) were recorded in Austria (0.1 percentage points) and Greece (0.2 percentage points).

From the above comparison, it is easily seen that the regional inequality with respect to poverty in health in Italy and Belgium, already being some of the highest, increased between 2005–07 and 2009–11 and these increases were the highest among all observed. On the other hand, the regional inequality with respect to poverty in health was reduced most in Spain, from 5.2 percentage points in 2005–07 to 3.3 percentage points in 2009–11 and in Poland, from 1.8 percentage points to 0.9 percentage points.

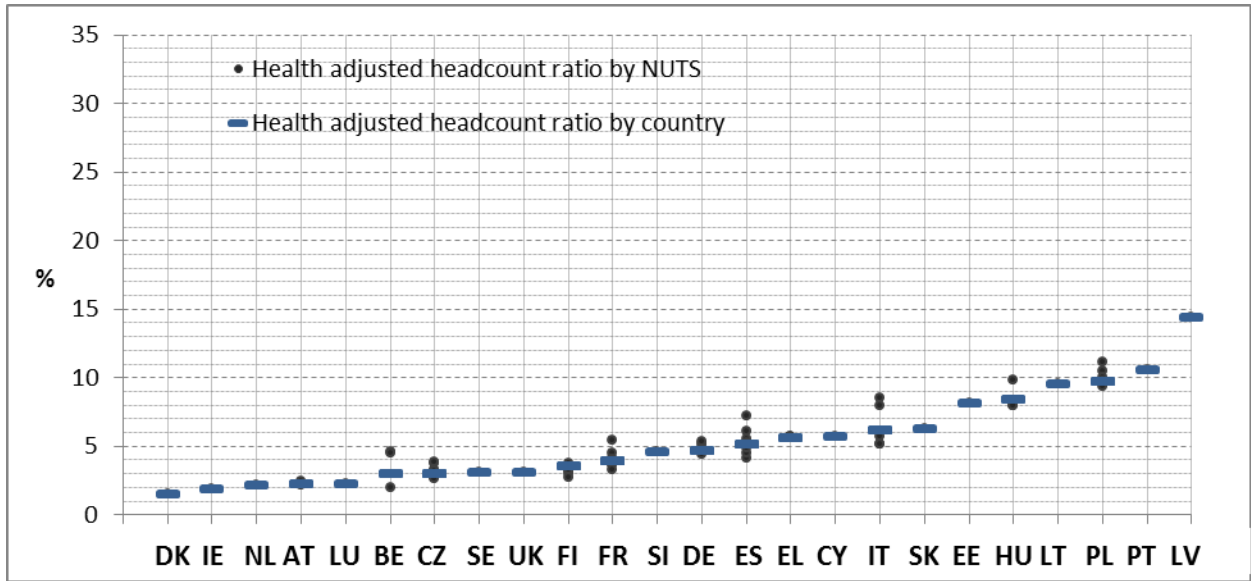


Figure 70: Poverty in health in 2005–07 — estimates at country and NUTS level

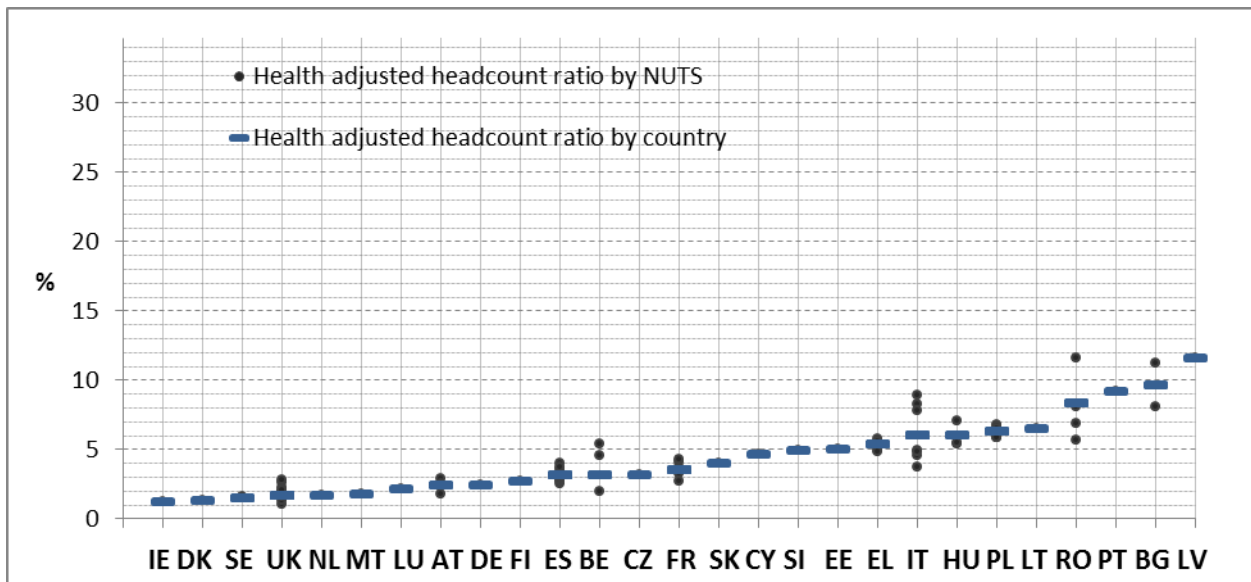
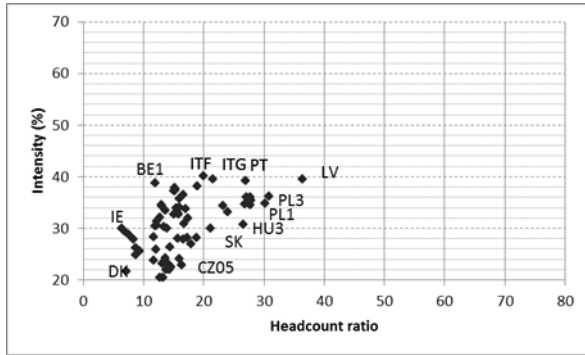
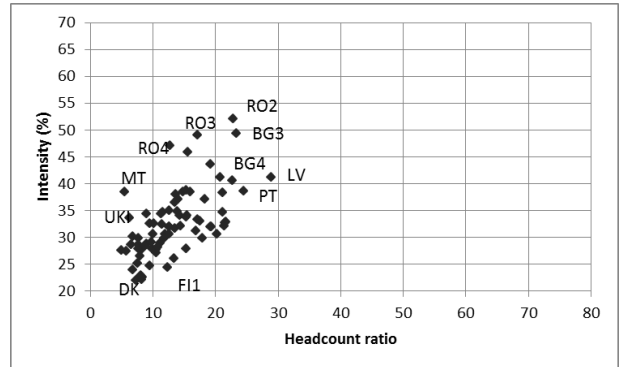


Figure 71: Poverty in health in 2009–11 — estimates at country and NUTS level



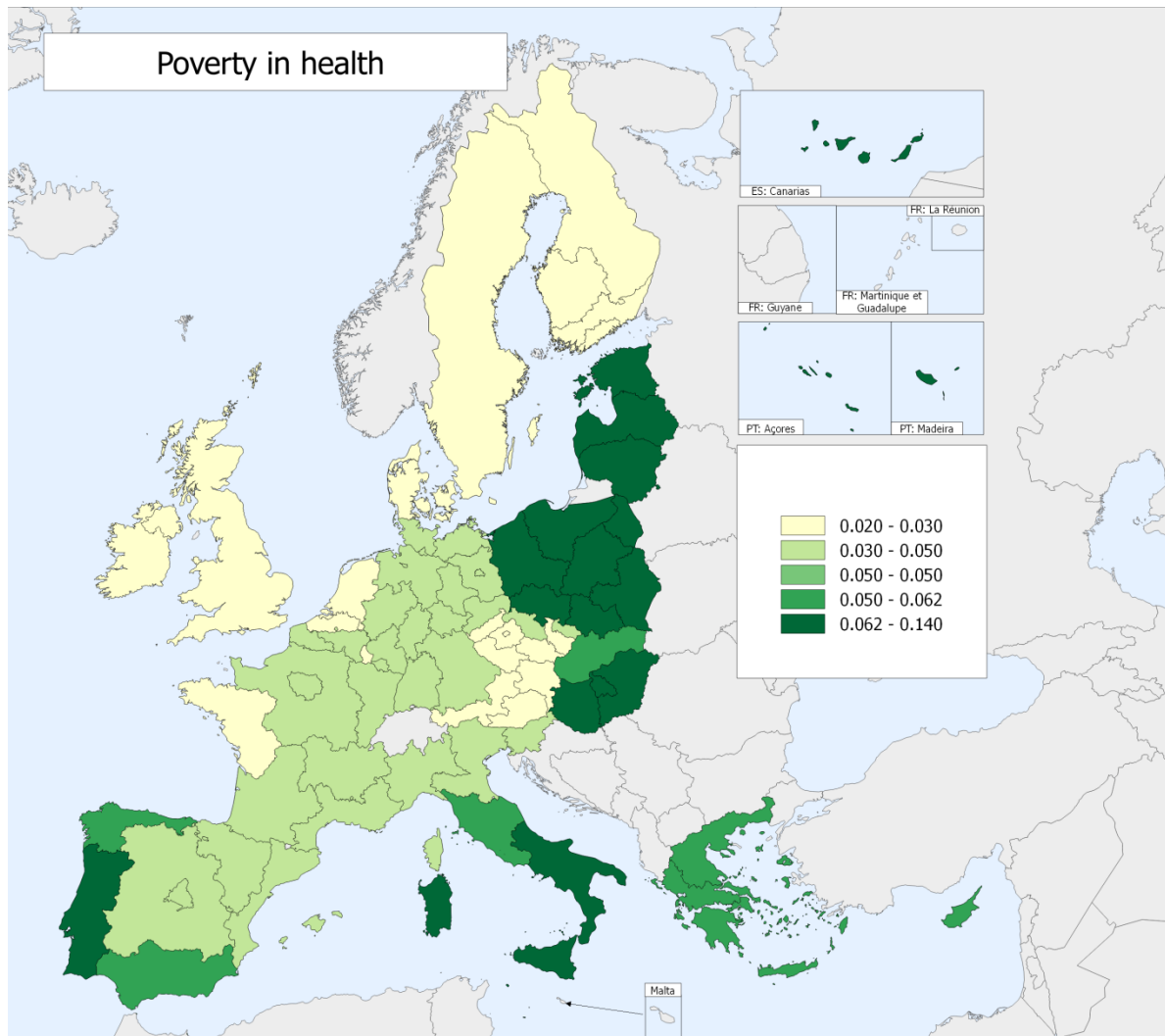
**Figure 72:** Poverty in health in the EU: Incidence v Intensity — 2005–07



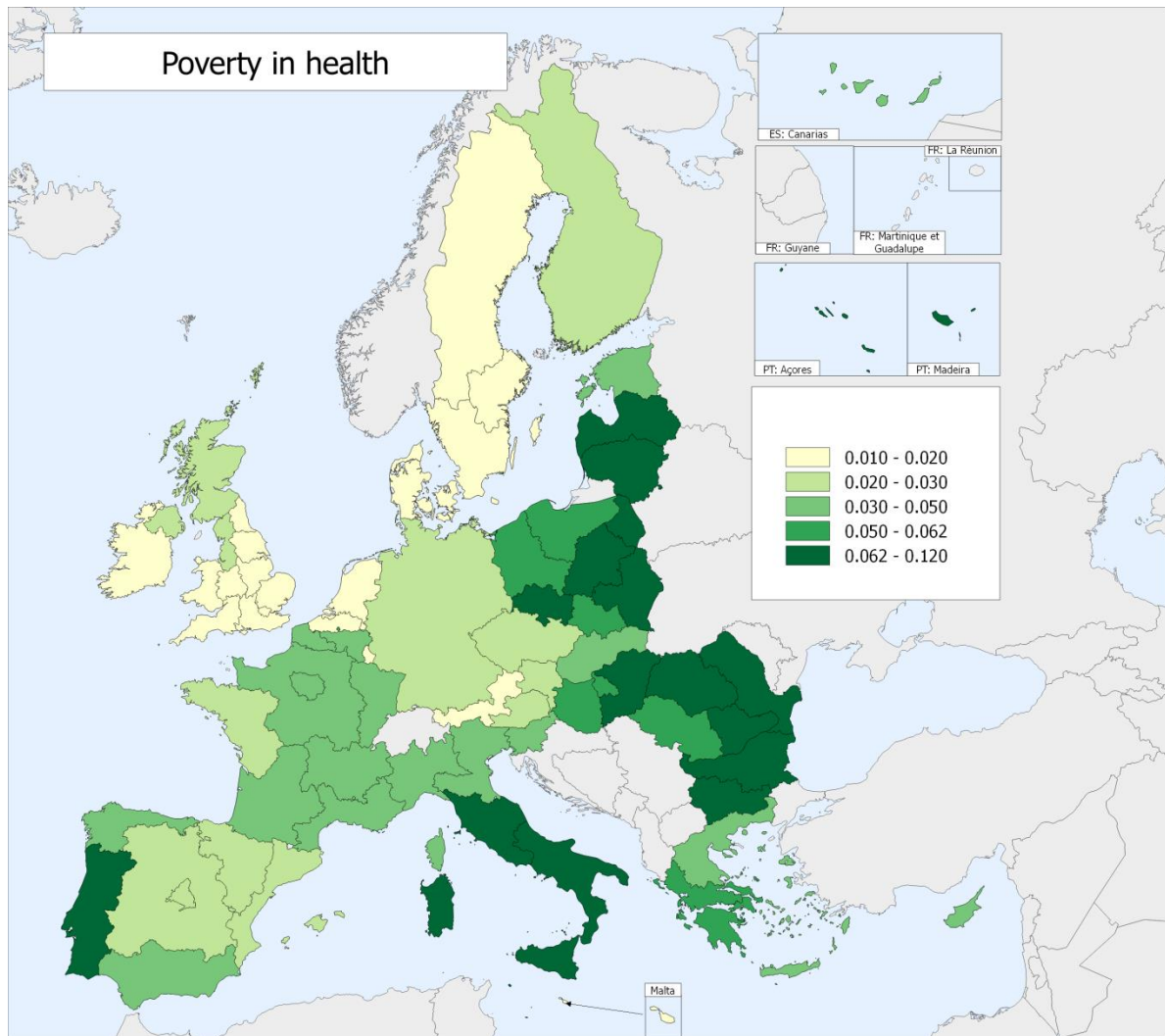
**Figure 73:** Poverty in health in the EU: Incidence v Intensity — 2009–11

**Table 9:** Correlation between incidence of poverty in health and intensity of poverty in health — 2005–07 and 2009–11

Years	Correlation coefficient
2005–07	0.527
2009–11	0.614

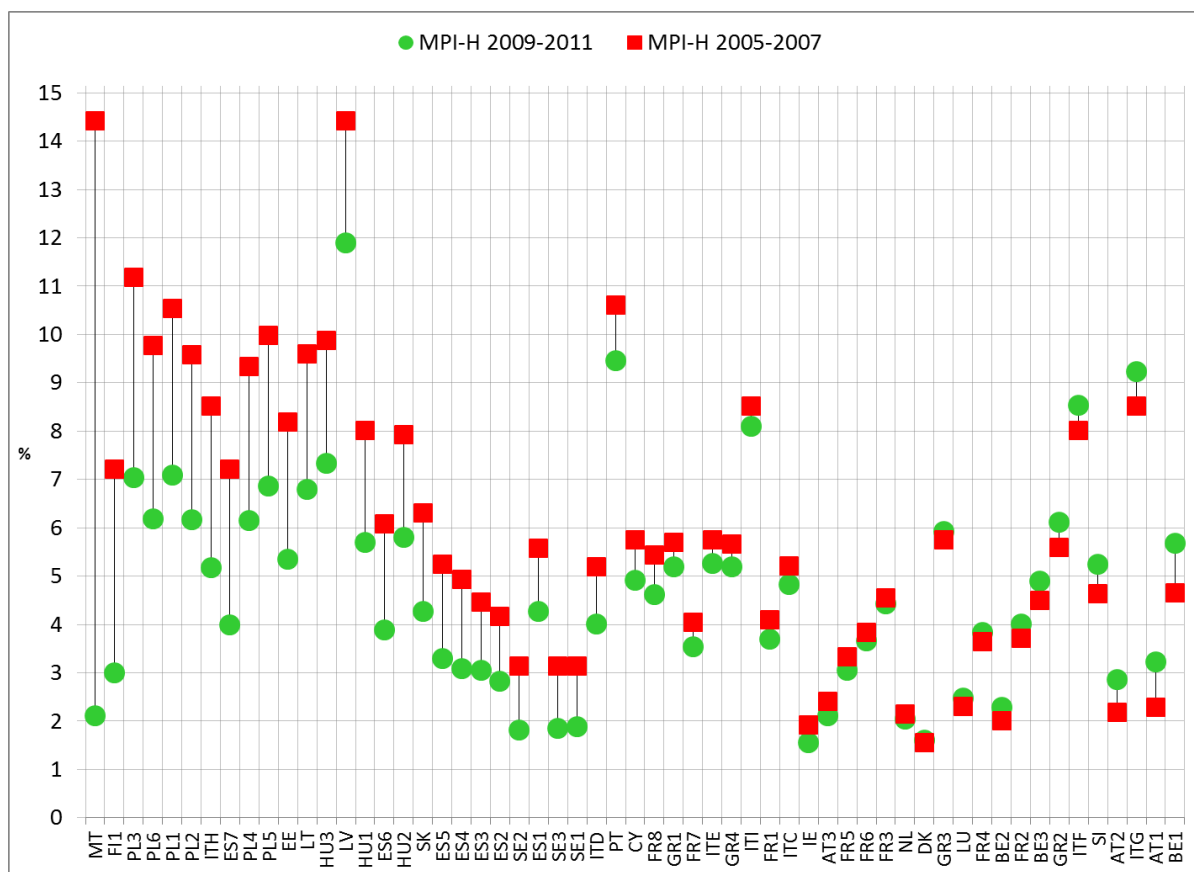


**Map 5:** Poverty in health in the EU — 2005–07



**Map 6:** Poverty in health in the EU — 2009–11

Comparing the changes in poverty in health at the NUTS level between 2005–07 and 2009–11, a positive picture arises (Figure 74). It is seen that most regions improved their situation (e.g. Malta, FI1, PL3, PL6, PL1, PL2, ITH, PL4 and PL5). There are regions in which poverty in health increased (e.g. BE1, AT1, ITG and AT2) but the increase can be perceived as negligible.



**Figure 74:** Poverty in health in 2005–07 and 2009–11 — estimates at NUTS level

#### 5.2.4. Poverty in living standards

As regards the country-level estimates of poverty in living standards in the EU, a comparison of the country rankings in both analysed periods show that the lower end of the rankings remained stable, whereas the set of top-scoring countries changed. Among the five best scoring countries in the two periods there were Denmark, the Netherlands and Luxembourg. The group of the worst scoring countries remained the same and comprised Hungary, Lithuania and Latvia in both analysed periods; in 2009–11, Bulgaria and Romania were also included in this group (Figures 75 and 76).

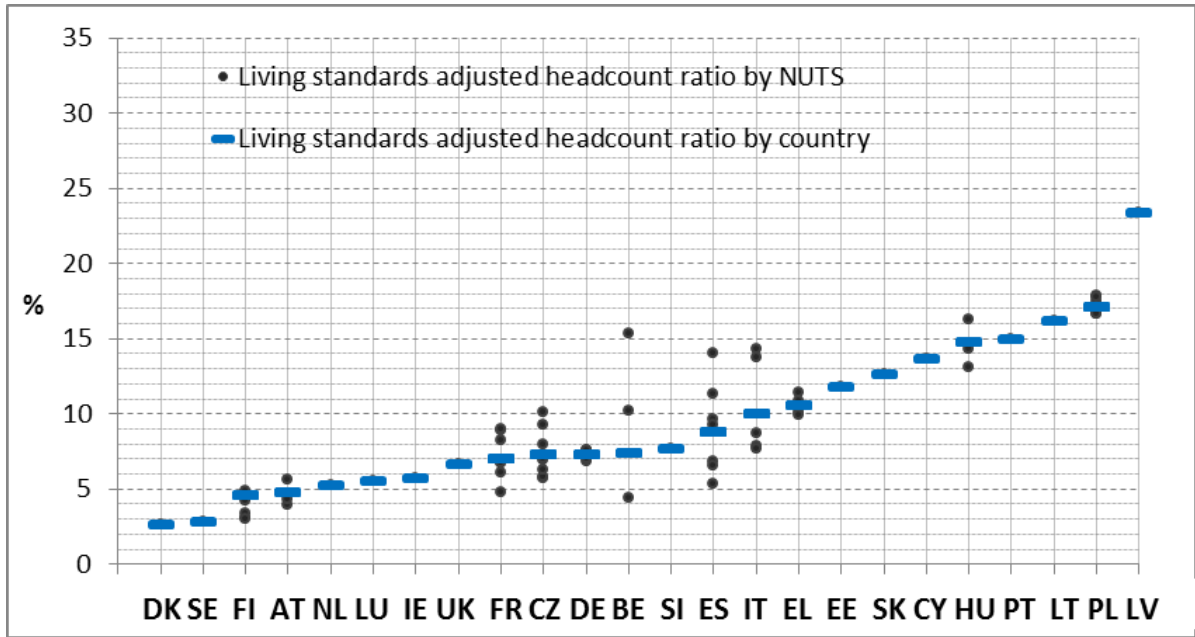
It is also worth noting that the best improvement in terms of poverty in living standards was recorded in Poland (by 5.5 percentage points). In Slovakia, Cyprus and Latvia, the percentage of people poor with respect to living standards went down by 3.3, 2.4 and 2 percentage points respectively. On the other hand, the highest increases in poverty with respect to living standards between 2005–07 and 2009–11 were observed in Greece (2.2 percentage points), Slovenia (1.8 percentage points) and Italy (1.1 percentage points).

The range of poverty in living standards incidence between 2005–07 and 2009–11 (Figures 77 and 78) remained stable, which means that the number of poor with respect to living standards decreased. But, in both analysed time points, a positive and considerable correlation between poverty intensity and poverty incidence was observed: this being stronger in 2009–11 (Table 10). This implies that, in both time points, in the regions with higher numbers of people poor with respect to living standards, poor people are poor with respect to higher numbers of poverty in living standards dimensions.

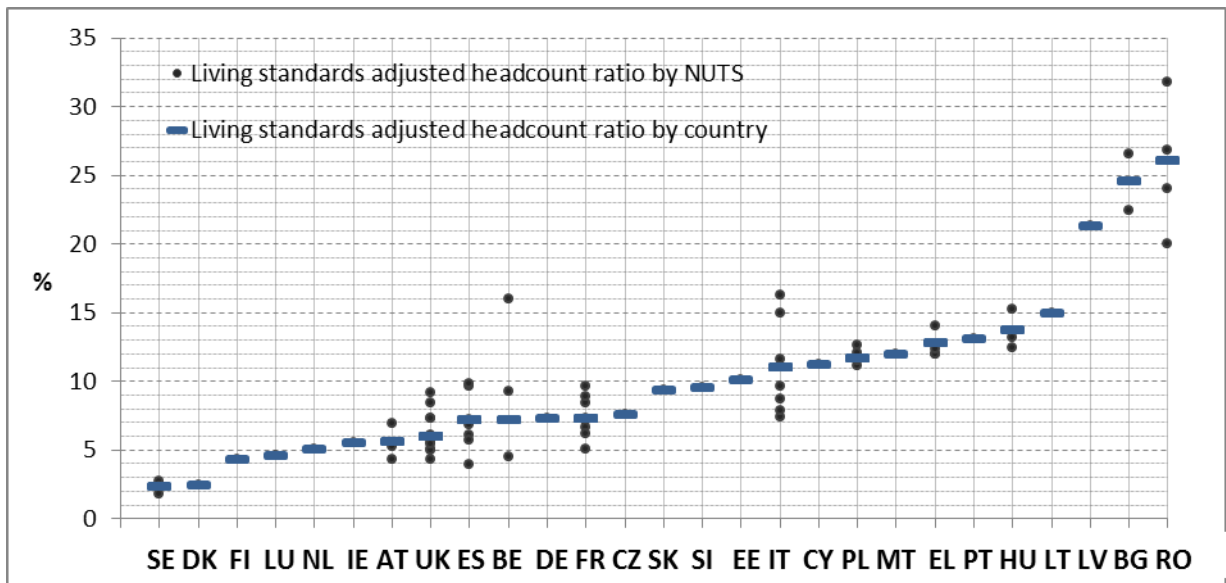
As regards inequality with respect to poverty in living standards, it is again easily seen that wherever the sub-national estimates were available, differences between country-level and sub-national-level poverty estimates were observed (Figures 75 and 76). In 2009–11, the highest differences with respect to poverty in living standards estimates within a country were observed in Romania (11.8 percentage points), Belgium (11.5 percentage points) and Italy (8.9 percentage points). The lowest differences (where estimates were available) were recorded in Sweden (1 percentage point), Poland (1.5 percentage points) and Austria (2.6 percentage points). In turn, in 2005–07, the highest differences with respect to poverty estimates within a country were observed in Belgium (11 percentage points), Spain (8.6 percentage points) and Italy (6.7 percentage points). The lowest differences (where estimates were available) were recorded in Poland (1.3 percentage points), Greece (1.5 percentage points) and Austria (1.7 percentage points).

The level of regional inequality with respect to poverty in living standards in the two compared time periods generally remained similar. The highest differences were recorded in Spain, where a decrease in poverty in living standards of about 2.7 percentage points was recorded, and in Italy, where an increase of 2.2 percentage points was spotted. In all other analysed regions, the differences were very small, at most 0.6 percentage points.

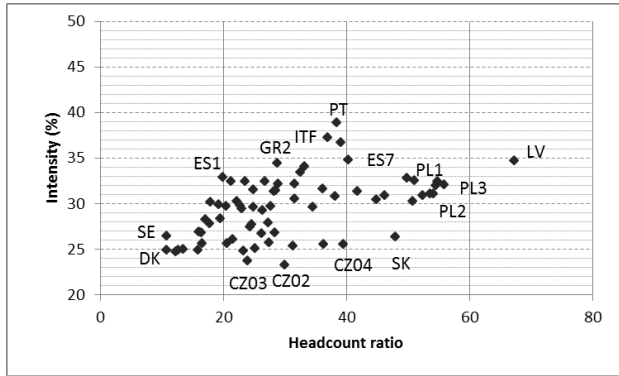




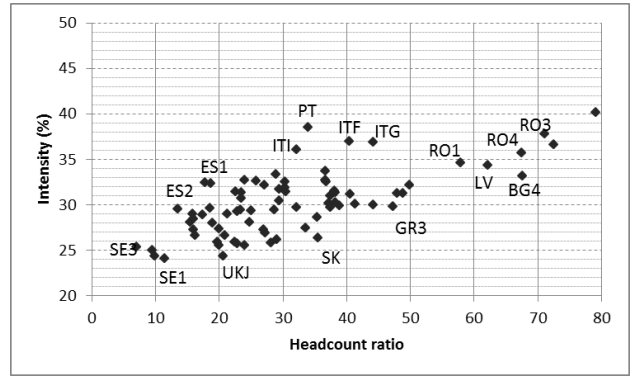
**Figure 75:** Poverty in living standards in 2005–07 — estimates at country and NUTS level



**Figure 76:** Poverty in living standards in 2009–11 — estimates at country and NUTS level



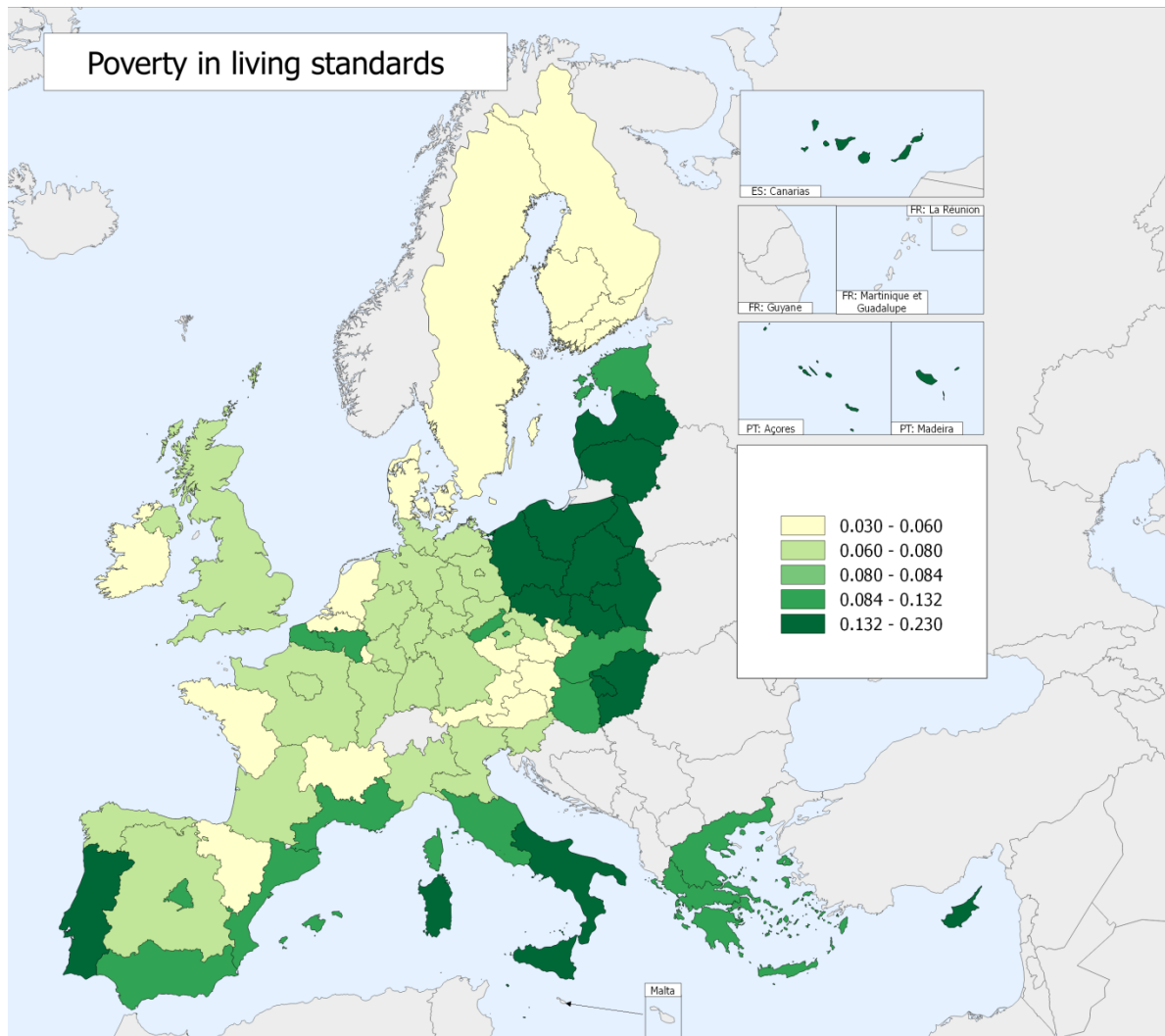
**Figure 77:** Poverty in living standards in the EU: Incidence v Intensity — 2005–07



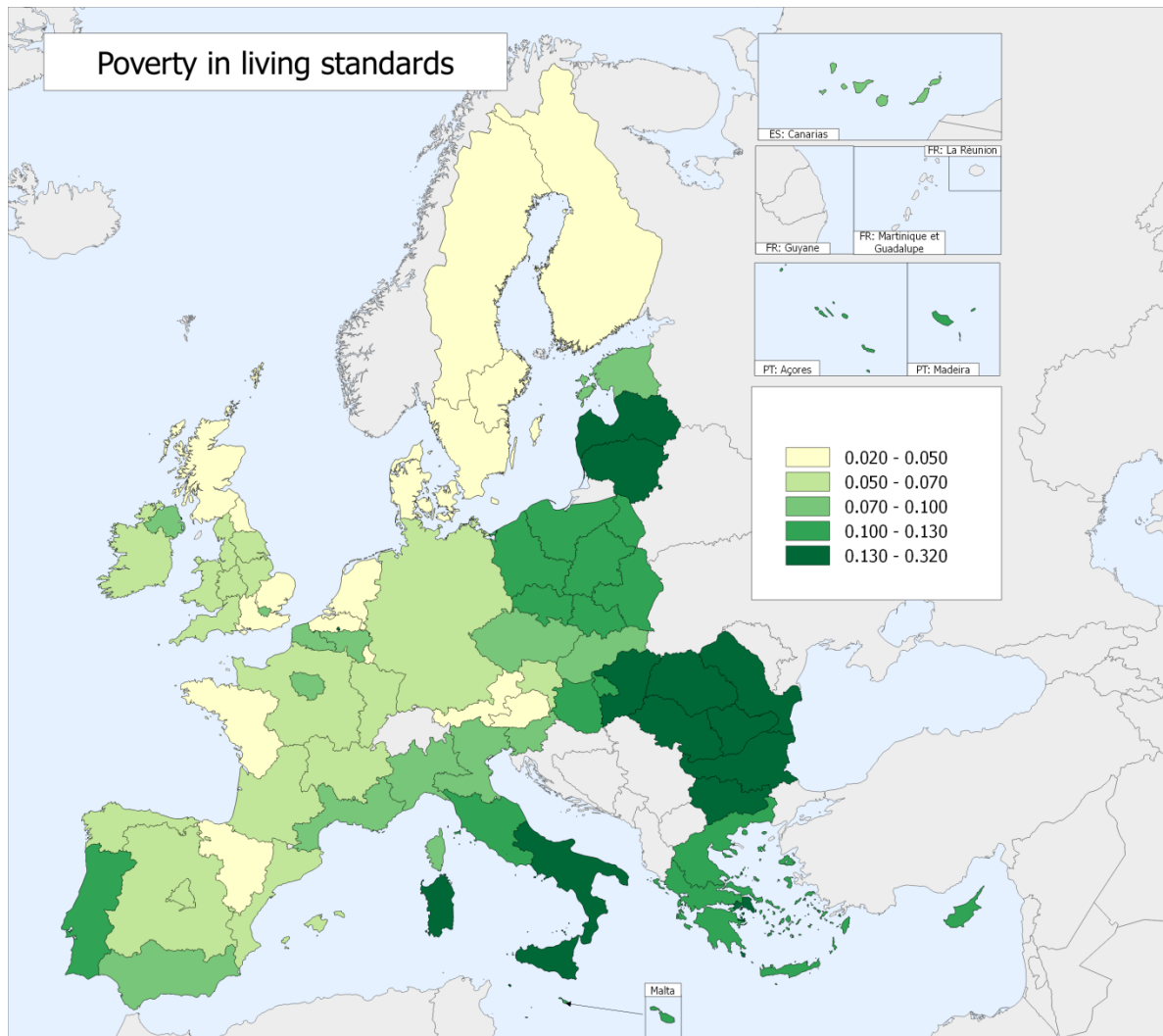
**Figure 78:** Poverty in living standards in the EU: Incidence v Intensity — 2009–11

**Table 10:** Correlation between incidence of poverty in living standards and intensity of poverty in living standards — 2005–07 and 2009–11

Years	Correlation coefficient
2005–07	0.527
2009–11	0.700



**Map 7:** Poverty in living standards in the EU — 2005–07



**Map 8:** Poverty in living standards in the EU — 2009–11

Comparing the changes in poverty in living standards at the NUTS level between 2005–07 and 2009–11, a rather positive picture arises again (Figure 79). In most regions, the situation with respect to poverty in living standards either improved or was stable. Regions with the highest decline in poverty with respect to living standards were again Malta, FI1, ITH, PL3, PL6, PL2, PL4, PL5, PL1 and ES7. There were, however, regions in which poverty in living standards increased: these were all the Greek regions, Slovakia and ITG.

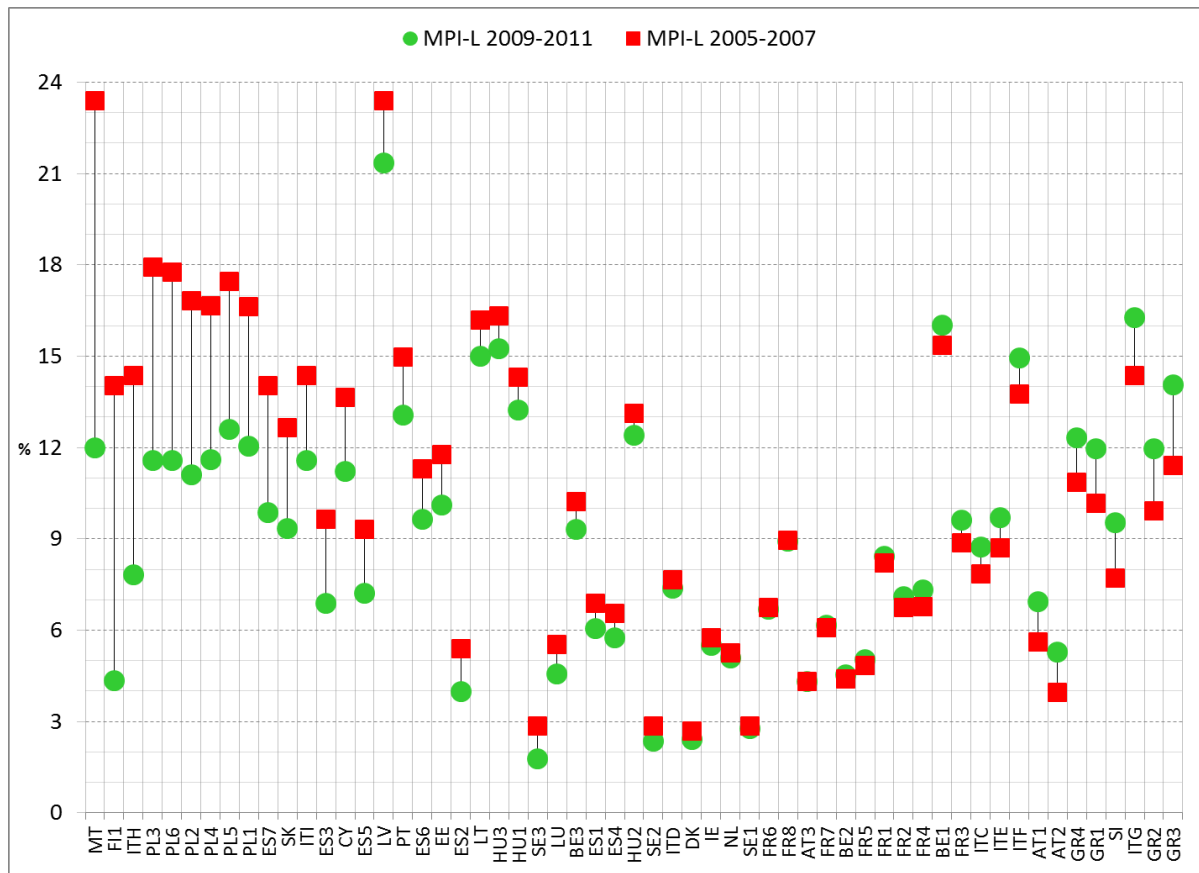


Figure 79: Poverty in living standards in 2005–07 and 2009–11 — estimates at NUTS level

## 6. Conclusions

The European Union (EU) provides grants to regions lagging behind the other Member States to allow them to catch up with the EU average. In order to correctly address the funds, regions most in need should be identified. To conform to the regional dimension in the EU policy, we measured poverty, understood as economic non-financial deprivation, across the EU at the sub-national level. To this end we proposed to:

1. base the measurement of poverty on the approach currently used by the United Nations (UN), namely the Multidimensional Poverty Index (UN-MPI) by Alkire and Santos (2010, 2013); and
2. measure poverty at the sub-national level in two ways:
  - i. using the EU nomenclature of territorial units (mainly NUTS 1);
  - ii. using different with respect to the degree of urbanisation areas within countries.

In this report, we presented the composite indicator on poverty, namely the Index of Multidimensional Poverty at the regional level (MPI-reg) that is applicable to the European context and takes the region (where possible) instead of the country as the basic unit of analysis. With this index and with the data from the European Union Survey on Income and Living Conditions (EU-SILC), we assessed poverty distribution in the sub-national areas in the European Union. Poverty was simultaneously evaluated with respect to the fraction of people who live in poverty and also with respect to the poverty intensity that was experienced by them. It was also assessed with respect to each of the dimensions distinguished, namely living standards, health and education, in order to look at the country's attainments in various dimensions, rather than focusing on its performance with respect to a single composite index.

The MPI-reg was computed for 23 EU countries in 2010, 24 EU countries in 2007 and 2011, and 25 countries in 2008 and 2009. Our results show that the level of poverty in the EU ranges from 2–3 % to 15–25 %, with Denmark and Sweden being unequivocally the least poor countries and Latvia, Bulgaria and Romania, the poorest countries. We also indicate that there is a positive relationship between the stratification level and all adjusted headcount ratios, headcount ratios and intensity of poverty scores. This positive relationship implies that there are countries where there is no stratification with respect to poverty (e.g. Sweden, Denmark, the Czech Republic and Finland) and countries, usually poor ones, such as Romania, Bulgaria and Lithuania, but also Belgium and Italy, where considerable stratification with respect to poverty occurs. In general, in poor and moderately poor countries, the worst situation with respect to poverty is observed in sparsely populated areas, and the best situation occurs in densely

populated areas. On the other hand, in the best scoring countries, poverty is relatively higher in the densely populated areas compared to the less well-populated areas. Additionally, our analysis showed that between 2005–07 and 2009–11, changes in inequality with respect to poverty occurred. We demonstrated that a decrease in inequality most often occurred in Poland and Spain, whereas Belgium and Italy were most often spotted as countries with growing regional differences.

The results indicated that the European Union regions are strongly diversified with respect to poverty. This implies that regardless of the spatial location of the region and the definition of the region, considerable within-country differences are indicated if only sub-national levels are available. Therefore, relying only on countrywide estimates may be misleading when properly assessing the relative standing of a region with respect to poverty.

This study has clear implications for future research. First, this study calls for the MPI-reg to be calculated over a longer time period and to consider all EU countries with a degree of urbanisation as a breakdown variable, which will be done when the new EU–SILC data is available. Second, to achieve more accurate poverty estimates at the NUTS level, we advocate for enlarging the sample sizes at the country level and taking into account the NUTS structure in the sampling procedure. Further, an in-depth empirical research, most likely employing individual-level data and multi-level modelling, is necessary to test the usefulness of the MPI-reg.

### **Data citation and disclaimer**

This study is based on data from Eurostat, EU Statistics on Income and Living Conditions (2005–11). The responsibility for all conclusions drawn from the data lies entirely with the authors.

### **Acknowledgments**

The author would like to express thanks to Michaela Saisana from the Directorate-General Joint Research Centre for helpful comments. The author is also greatly indebted to Miriam Barattoni for drawing the maps.



## References

- Alkire, S., & Foster, J. (2011a). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7-8), 476–487.
- Alkire, S., & Foster, J. (2011b). Understandings and Misunderstandings of Multidimensional Poverty Measurement. *Journal of Economic Inequality*, 9(2), 289–314.
- Alkire, S., Roche, J. M., Santos, M. E., & Seth, S. (2011). Multidimensional Poverty Index 2011: Brief Methodological Note, 1–14.
- Alkire, S., & Santos, M. E. (2010). Acute Multidimensional Poverty: A New Index for Developing Countries. *Human Development Research Paper*, 11.
- Alkire, S., & Santos, M. E. (2013). A Multidimensional Approach: Poverty Measurement & Beyond. *Social Indicators Research*, 112(2), 239–257. doi:10.1007/s11205-013-0257-3
- Annoni, P., & Weziak-Bialowolska, D. (2012). Quality of Life at the sub-national level: an operational example for the EU. *JRC Scientific and Policy Reports*, EUR 25630. doi:10.2788/70967
- Antony, G. M., & Visweswara Rao, K. (2007). A composite index to explain variations in poverty, health, nutritional status and standard of living: use of multivariate statistical methods. *Public Health*, 121(8), 578–587. doi:10.1016/j.puhe.2006.10.018
- Becker, S. O., Egger, P. H., & von Ehrlich, M. (2010). Going NUTS: The effect of EU Structural Funds on regional performance. *Journal of Public Economics*, 94(9-10), 578–590. doi:10.1016/j.jpubeco.2010.06.006
- Bellani, L. (2012). Multidimensional indices of deprivation: the introduction of reference groups weights. *The Journal of Economic Inequality*, (3). doi:10.1007/s10888-012-9231-6
- Betti, G., Dourmachkin, N., Rossi, M., Verma, V., & Yin, Y. (2001). *Study of the Problem of Consumer Indebtedness: Statistical Aspects Final Report*. London: ORC Macro.
- Betti, G., Gagliardi, F., Lemmi, A., & Verma, V. (2012). Subnational indicators of poverty and deprivation in Europe: methodology and applications. *Cambridge Journal of Regions, Economy and Society*, 5, 129–147.
- Boulanger, P.-M., Lefin, A.-L., Bauler, T., & Prignot, N. (2009). Aspirations, Life-chances and functionings: a dynamic conception of well-being. *Contribution to the 2009 ESEE Conference in Ljubljana*, 1–19.
- Bubbico, R., & Dijkstra, L. (2011). The European regional Human Development and Human Poverty Indices. *Regional Focus*, 02, 1–10.
- Callander, E., Schofield, D., & Shrestha, R. (2012). Towards a holistic understanding of poverty: A new multidimensional measure of poverty for Australia. *Health Society Review*, 21(2), 141–155.

- EC. (2010a). *Description of target variables: Cross-sectional and Longitudinal*.
- EC. (2010b). Cross-sectional data. Differences between data collected (as described in the guidelines) and anonymised user database.
- Fabrizi, E., Ferrante, M. R., Pacei, S., & Trivisano, C. (2009). Small Domain Estimation of Poverty Rates Based on EU Survey on Income and Living Conditions.
- Foster, J., Greer, J., & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica*, 52(3), 761–765.
- Foster, J., Greer, J., & Thorbecke, E. (2010). The Foster–Greer–Thorbecke (FGT) poverty measures: 25 years later. *The Journal of Economic Inequality*, 8(4), 491–524. doi:10.1007/s10888-010-9136-1
- Hagenaars, A., & de Vos, K. (1988). The Definition and Measurement of Poverty. *The Journal of Human Resources*, 23(2), 211–221.
- Hutto, N., Waldfogel, J., Kaushal, N., & Garfinkel, I. (2011). Improving the Measurement of Poverty. *Social Service Review*, 85(1), 39–74.
- Jolliffe, D. (2006). Poverty, prices, and place: how sensitive is the spatial distribution of poverty to cost of living adjustments? *Economic Inquiry*, 44(2), 296–310.
- Kemeny, T., & Storper, M. (2012). The sources of urban development: wages, housing and amenity gaps across american cities. *Journal of Regional Science*, 52(1), 85–108.
- Lelkes, O., & Zolyomi, E. (2008). Poverty Across Europe: The Latest Evidence Using the EU-SILC Survey. *Policy Brief*.
- Longford, N. T., Pittau, M. G., Zelli, R., & Massari, R. (2012). Measures of poverty and inequality in the countries and regions of EU. *Journal of Applied Statistics*, 39(7), 1557–1576.
- McNamara, J., Tanton, R., & Phillips, B. (2006). The regional impact of housing costs and assistance on financial disadvantage. *Australian Housing and Urban Research Institute Positioning Paper*, (90), 1–41.
- Miranti, R., McNamara, J., Tanton, R., & Harding, A. (2011). Poverty at the Local Level: National and Small Area Poverty Estimates by Family Type for Australia in 2006. *Applied Spatial Analysis and Policy*, 4(3), 145–171. doi:10.1007/s12061-010-9049-1
- Nolan, B., & Whelan, C. T. (2010). Using non-monetary deprivation indicators to analyze poverty and social exclusion: Lessons from Europe? *Journal of Policy Analysis and Management*, 29(2), 305–325.
- Pittau, M. G., Zelli, R., & Massari, R. (2011). Do Spatial Price Indices Reshuffle the Italian Income Distribution? *Modern Economy*, 2, 259–265. doi:10.4236/me.2011.23029
- Ravallion, M. (2011). On multidimensional indices of poverty. *Journal of Economic Inequality*, 9, 235–248.

- Saunders, P. (2005). *The Poverty Wars: Reconnecting Research with Reality*. Sydney: UNSW Press.
- Sen, A. (1993). Capability and Well-being. In A. Sen & M. Nussbaum (Eds.), *The Quality of Life* (pp. 30–53). Helsinki: United Nations University.
- Sen, A. (2002). *Rationality and Freedom*. Cambridge (MA): Harvard University Press.
- Tanton, R., Harding, A., & Mcnamara, J. (2010). Urban and Rural Estimates of Poverty: Recent Advances in Spatial Microsimulation in Australia. *Geographical Research*, 48(1), 52–64. doi:10.1111/j.1745-5871.2009.00615.x
- UNDP. (2013). *Human Development Report 2013. The Rise of the South: Human Progress in a Diverse World*.
- Verma, V., Betti, G., & Gagliardi, F. (2010). Robustness of some EU-SILC based indicators at regional level. *Eurostat Methodologies and Working Papers*, (2010 edition). doi:10.2785/5605
- Wagle, U. (2008). *Multidimensional Poverty Measurement. Concepts and Applications. Multidimensional Poverty Measurement. Concepts and Applications*. New York, NY: Springer US. doi:10.1007/978-0-387-75875-6
- Ward, T. (2009). The risk of poverty and income distribution at the regional level. In T. Ward, O. Lelkes, H. Sutherland, & I. G. Toth (Eds.), *European Inequalities. Social Inclusion and Income Distribution in the European Union* (pp. 103–115). Budapest: TARKI Social Research Institute Inc.
- Ward, T., Lelkes, O., Sutherland, H., & Toth, I. G. (2009). *European Inequalities: Social Inclusion and Income Distribution in the European Union*. (H. S. I. G. T. T. Ward O. Lelkes, Ed.). Taraki: Social Research Institute Inc.
- Whelan, C. T., Nolan, B., & Maitre, B. (2012). Multidimensional Poverty Measurement in Europe: An Application of the Adjusted Headcount Approach. *ALAS, GINI Discussion Paper 40*.
- Ziliak, J. P. (2010). *Alternative Poverty Measures and the Geographic Distribution of Poverty in the United States. A Report prepared for the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services* (pp. 1–63).

## List of figures

Figure 1: Framework of the analysis .....	6
Figure 2: The MPI-reg in 2007 and 2011 .....	31
Figure 3: The MPI-reg in 2007 — estimates at country level and by degree of urbanisation.....	31
Figure 4: The MPI-reg in 2008 — estimates at country level and by degree of urbanisation.....	32
Figure 5: The MPI-reg in 2009 — estimates at country level and by degree of urbanisation.....	32
Figure 6: The MPI-reg in 2010 — estimates at country level and by degree of urbanisation.....	33
Figure 7: The MPI-reg in 2011 — estimates at country level and by degree of urbanisation.....	33
Figure 8: Multidimensional poverty in the EU: Incidence v Intensity — 2007 .....	34
Figure 9: Multidimensional poverty in the EU: Incidence v Intensity — 2008 .....	34
Figure 10: Multidimensional poverty in the EU: Incidence v Intensity — 2009 .....	34
Figure 11: Multidimensional poverty in the EU: Incidence v Intensity — 2010 .....	34
Figure 12: Multidimensional poverty in the EU: Incidence v Intensity — 2011 .....	35
Figure 13: Multidimensional poverty in the EU v Stratification — 2007 .....	35
Figure 14: Multidimensional poverty in the EU v Stratification — 2008 .....	35
Figure 15: Multidimensional poverty in the EU v Stratification — 2009 .....	35
Figure 16: Multidimensional poverty in the EU v Stratification — 2010 .....	35
Figure 17: Multidimensional poverty in the EU v Stratification — 2011 .....	36
Figure 18: Multidimensional poverty in selected EU countries — 2007–11 .....	37
Figure 19: Poverty in education in 2007 and 2011 .....	38
Figure 20: Poverty in education in 2007 — estimates at country level and by degree of urbanisation .....	39
Figure 21: Poverty in education in 2008 — estimates at country level and by degree of urbanisation .....	39
Figure 22: Poverty in education in 2009 — estimates at country level and by degree of urbanisation .....	40
Figure 23: Poverty in education in 2010— estimates at country level and by degree of urbanisation .....	40
Figure 24: Poverty in education in 2011 — estimates at country level and by degree of urbanisation .....	41
Figure 25: Poverty in education in the EU v Stratification — 2007.....	41
Figure 26: Poverty in education in the EU v Stratification — 2008.....	41
Figure 27: Poverty in education in the EU v Stratification — 2009.....	41
Figure 28: Poverty in education in the EU v Stratification — 2010.....	41
Figure 29: Poverty in education in the EU v Stratification — 2011.....	42
Figure 30: Poverty in health in 2007 and 2011 .....	43
Figure 31: Poverty in health in 2007 — estimates at country level and by degree of urbanisation.....	44
Figure 32: Poverty in health in 2008 — estimates at country level and by degree of urbanisation.....	44
Figure 33: Poverty in health in 2009 — estimates at country level and by degree of urbanisation.....	45
Figure 34: Poverty in health in 2010 — estimates at country level and by degree of urbanisation.....	45
Figure 35: Poverty in health in 2011 — estimates at country level and by degree of urbanisation.....	46
Figure 36: Health poverty in the EU: Incidence v Intensity — 2007.....	47
Figure 37: Health poverty in the EU: Incidence v Intensity — 2008.....	47
Figure 38: Health poverty in the EU: Incidence v Intensity — 2009.....	47
Figure 39: Health poverty in the EU: Incidence v Intensity — 2010.....	47
Figure 40: Health poverty in the EU: Incidence v Intensity — 2011.....	48
Figure 41: Poverty in health in the EU v Stratification — 2007 .....	48

Figure 42: Poverty in health in the EU v Stratification — 2008 .....	48
Figure 43: Poverty in health in the EU v Stratification — 2009 .....	48
Figure 44: Poverty in health in the EU v Stratification — 2010 .....	48
Figure 45: Poverty in health in the EU v Stratification — 2011 .....	49
Figure 46: Poverty in living standards in 2007 and 2011 .....	50
Figure 47: Poverty in living standards in 2007 — estimates at country level and by degree of urbanisation .....	51
Figure 48: Poverty in living standards in 2008 — estimates at country level and by degree of urbanisation .....	51
Figure 49: Poverty in living standards in 2009 — estimates at country level and by degree of urbanisation .....	52
Figure 50: Poverty in living standards in 2010 — estimates at country level and by degree of urbanisation .....	52
Figure 51: Poverty in living standards in 2011 — estimates at country level and by degree of urbanisation .....	53
Figure 52: Poverty in living standards in the EU: Incidence v Intensity — 2007 .....	53
Figure 53: Poverty in living standards in the EU: Incidence v Intensity — 2008 .....	53
Figure 54: Poverty in living standards in the EU: Incidence v Intensity — 2009 .....	54
Figure 55: Poverty in living standards in the EU: Incidence v Intensity — 2010 .....	54
Figure 56: Poverty in living standards in the EU: Incidence v Intensity — 2011 .....	54
Figure 57: Poverty in living standards in the EU v Stratification — 2007 .....	54
Figure 58: Poverty in living standards in the EU v Stratification — 2008 .....	54
Figure 59: Poverty in living standards in the EU v Stratification — 2009 .....	55
Figure 60: Poverty in living standards in the EU v Stratification — 2010 .....	55
Figure 61: Poverty in living standards in the EU v Stratification — 2011 .....	55
Figure 62: The MPI-reg in 2005–07 — estimates at country and NUTS level .....	56
Figure 63: The MPI-reg in 2009–11 — estimates at country and NUTS level .....	57
Figure 64: Multidimensional poverty in the EU: Incidence v Intensity — 2005–07 .....	57
Figure 65: Multidimensional poverty in the EU: Incidence v Intensity — 2009–11 .....	57
Figure 66: The MPI-reg in 2005–07 and 2009–11 — estimates at NUTS level .....	60
Figure 67: Poverty in education in 2005–07 — estimates at country and NUTS level .....	62
Figure 68: Poverty in education in 2009–11 — estimates at country and NUTS level .....	63
Figure 69: Poverty in education in 2005–07 and in 2009–11 — estimates at NUTS level .....	65
Figure 70: Poverty in health in 2005–07 — estimates at country and NUTS level .....	67
Figure 71: Poverty in health in 2009–11 — estimates at country and NUTS level .....	67
Figure 72: Poverty in health in the EU: Incidence v Intensity — 2005–07 .....	68
Figure 73: Poverty in health in the EU: Incidence v Intensity — 2009–11 .....	68
Figure 74: Poverty in health in 2005–07 and 2009–11 — estimates at NUTS level .....	71
Figure 75: Poverty in living standards in 2005–07 — estimates at country and NUTS level .....	73
Figure 76: Poverty in living standards in 2009–11 — estimates at country and NUTS level .....	73
Figure 77: Poverty in living standards in the EU: Incidence v Intensity — 2005–07 .....	74
Figure 78: Poverty in living standards in the EU: Incidence v Intensity — 2009–11 .....	74
Figure 79: Poverty in living standards in 2005–07 and 2009–11 — estimates at NUTS level .....	77

## Appendix

**Table A1:** Sample sizes in the computation of the  $MPI_{reg}$  by degree of urbanization in 2007-2011

Year	2007	2008	2009	2010	2011	Year	2007	2008	2009	2010	2011
DoU						DoU					
AT_1	4,075	3,488	3,593	3,852	3,923	HU_1	5,560	5,487	6,262	6,069	7,222
AT_2	3,485	2,854	2,837	2,989	3,013	HU_2	3,679	3,795	4,093	4,154	5,207
AT_3	5,831	4,613	4,632	4,652	4,539	HU_3	9,251	9,428	10,618	10,430	12,206
BE_1	6,422	6,233	6,076	6,223	5,983	IE_1	3,575	3,366	3,347	2,668	n.a.
BE_2	5,399	5,395	5,147	5,035	4,924	IE_2	3,201	2,845	2,819	2,537	n.a.
BE_3	501	526	544	558	557	IE_3	4,116	3,905	3,736	3,577	n.a.
BG_1	3,747	3,741	5,320	6,083	6,562	IT_1	15,435	15,902	15,606	14,652	15,193
BG_2	831	715	892	937	974	IT_2	18,450	17,879	17,265	16,048	16,045
BG_3	5,777	5,917	6,938	7,444	7,789	IT_3	10,744	10,505	10,225	9,662	9,258
CY_1	4,686	4,428	4,066	4,939	5,192	LT_1	4,735	4,554	4,866	5,119	4,448
CY_2	1,140	1,162	1,064	1,199	1,283	LT_3	6,178	5,919	6,348	6,487	6,582
CY_3	2,644	2,500	2,427	2,968	3,025	LU_1	3,845	3,747	4,074	4,443	4,832
CZ_1	5,920	6,676	5,870	5,528	5,527	LU_2	2,434	2,276	2,578	3,250	3,835
CZ_2	4,971	5,896	5,017	4,592	4,319	LU_3	1,634	1,615	1,973	2,545	2,784
CZ_3	8,493	9,895	8,878	8,089	7,766	LV_1	4,039	4,811	5,488	5,740	6,181
DE_1	13,169	12,279	11,737	11,357	11,613	LV_3	5,231	6,099	6,719	7,259	7,322
DE_2	9,251	8,546	8,471	8,575	8,930	MT_1	n.a.	n.a.	7,521	7,782	8,438
DE_3	3,871	3,511	3,624	3,599	3,677	MT_2	n.a.	n.a.	964	935	1,016
DK_1	1,924	1,879	1,915	1,924	1,777	PL_1	12,031	11,616	10,575	10,575	10,592
DK_2	2,425	2,420	2,476	2,468	2,175	PL_2	5,019	5,165	4,938	4,880	4,877
DK_3	1,434	1,479	1,475	1,475	1,370	PL_3	17,838	17,020	16,161	15,350	14,952
EE_1	3,720	3,419	3,443	3,499	3,363	PT_1	3,353	3,532	3,836	3,786	4,215
EE_3	8,251	7,432	7,865	7,720	7,808	PT_2	3,410	3,392	3,726	3,887	4,234
ES_1	13,356	14,010	14,602	14,831	14,022	PT_3	3,184	3,177	3,539	3,707	4,040
ES_2	6,029	6,400	6,516	6,380	5,954	RO_1	6,065	5,699	5,472	5,403	5,247
ES_3	9,271	9,672	9,718	9,742	9,235	RO_2	186	198	195	198	208
FI_1	2,426	2,485	2,485	2,508	2,132	RO_3	10,791	10,630	10,615	10,563	10,519
FI_2	1,596	1,614	1,587	1,508	1,285	SE_1	1,475	1,523	1,534	1,468	1,355
FI_3	6,602	6,373	6,065	6,973	5,934	SE_2	1,029	1,015	1,202	1,157	1,061
FR_1	9,002	n.a.	8,813	9,147	9,162	SE_3	4,679	4,914	4,808	4,548	4,301
FR_2	7,526	n.a.	7,544	7,836	8,120	SK_1	3,306	3,672	3,694	3,704	3,371
FR_3	3,829	n.a.	3,875	4,083	4,271	SK_2	4,209	4,666	4,488	4,552	4,295
GR_1	4,436	5,223	5,633	5,324	n.a.	SK_3	5,058	5,760	5,639	5,850	5,773
GR_2	1,443	1,632	1,667	1,661	n.a.	UK_1	12,630	12,133	11,789	9,198	9,035
GR_3	6,467	7,268	7,745	7,803	n.a.	UK_2	3,565	3,355	2,791	2,898	3,710
						UK_3	918	902	723	2,717	2,159

Note: \_1 – densely populated area, \_2 – intermediately populated area, \_3 – thinly populated area;

**Table A2:** Sample sizes in the computation of the  $MPI_{reg}$  in NUTS - 2005-2007 and 2009-2011

NUTS	2005-2007	NUTS	2009-2011	NUTS	2005-2007	NUTS	2009-2011
AT1	12,474	AT1	14,150	HU1	10,910	HU1	15,644
AT2	7,266	AT2	7,120	HU2	13,186	HU2	19,457
AT3	11,854	AT3	12,760	HU3	18,694	HU3	31,160
BE1	3,514	BE1	4,445	IE	31,306	IE	18,684
BE2	15,529	BE2	18,923	ITC	30,000	ITC	27,739
BE3	9,374	BE3	11,679	ITD	30,737	ITD	19,158
BG3	n.a.	BG3	22,115	ITE	31,160	ITE	19,485
BG4	n.a.	BG4	20,824	ITF	27,821	ITF	27,632
CY	25,530	CY	26,163	ITG	10,801	ITG	10,883
CZ01	1,133	CZ	55,586	ITH	n.a.	ITH	9,315
CZ02	1,246			ITI	n.a.	ITI	9,757
CZ03	1,389			LT	28,418	LT	33,850
CZ04	1,303			LU	20,293	LU	30,314
CZ05	1,739			LV	23,090	LV	38,709
CZ06	1,813			MT	n.a.	MT	26,656
CZ07	1,472			NL	49,462	NL	57,291
CZ08	1,733			PL1	20,433	PL1	18,821
DE1	6,351	DE	71,583	PL2	21,298	PL2	18,730
DE2	7,802			PL3	20,866	PL3	19,330
DEA	10,706			PL4	15,421	PL4	13,464
DEC	7,381			PL5	10,396	PL5	8,768
DEN	18,721			PL6	15,106	PL6	13,787
DK	15,011			DK	17,055	PT	28,383
EE	32,168	EE	33,698	RO1	n.a.	RO1	12,650
ES1	11,700	ES1	13,915	RO2	n.a.	RO2	13,748
ES2	12,366	ES2	14,617	RO3	n.a.	RO3	12,092
ES3	4,773	ES3	8,071	RO4	n.a.	RO4	9,930
ES4	12,958	ES4	14,392	SE	17,872	SE1	7,862
ES5	17,352	ES5	19,120			SE2	9,499
ES6	14,709	ES6	16,553			SE3	4,073
ES7	3,989	ES7	4,332	SI	24,358	SI	27,893
FI1	30,895	FI1	30,456	SK	36,002	SK	41,366
FR1	9,219	FR1	9,676	UK	51,067	UKC	702
FR2	10,264	FR2	11,471			UKD	1,755
FR3	4,064	FR3	4,597			UKE	1,502
FR4	5,401	FR4	6,304			UKF	1,216
FR5	8,250	FR5	9,796			UKG	1,322
FR6	5,983	FR6	7,476			UKH	1,486
FR7	5,536	FR7	6,629			UKI	1,371
FR8	6,052	FR8	6,902			UKJ	2,094
GR1	13,352	GR1	15,672			UKK	1,265
GR2	8,399	GR2	10,086			UKL	823
GR3	9,883	GR3	11,852			UKM	1,368

<b>GR4</b>	3,877	<b>GR4</b>	4,864			<b>UKN</b>	230
------------	-------	------------	-------	--	--	------------	-----



**Table A3: List of NUTS**

<b>NUTS</b>	<b>Country</b>	<b>Name</b>	<b>NUTS</b>	<b>Country</b>	<b>Name</b>
<b>AT1</b>	Austria	Ostösterreich	<b>GR1</b>	Grece	Voreia Ellada
<b>AT2</b>	Austria	Südösterreich	<b>GR2</b>	Grece	Kentriki Ellada
<b>AT3</b>	Austria	Westösterreich	<b>GR3</b>	Grece	Attiki
<b>BE1</b>	Belgium	Région de Bruxelles-Capitale	<b>GR4</b>	Grece	Nisia Aigaiou, Kriti
<b>BE2</b>	Belgium	Vlaams Gewest	<b>HU1</b>	Hungary	Közép-Magyarország
<b>BE3</b>	Belgium	Région wallonne	<b>HU2</b>	Hungary	Dunántúl
<b>ES1</b>	Spain	Noroeste	<b>HU3</b>	Hungary	Alföld és Észak
<b>ES2</b>	Spain	Noreste	<b>ITC</b>	Italy	Nord-Ovest
<b>ES3</b>	Spain	Comunidad de Madrid	<b>ITD</b>	Italy	Nord-Est
<b>ES4</b>	Spain	Centro	<b>ITE</b>	Italy	Centro
<b>ES5</b>	Spain	Este	<b>ITF</b>	Italy	Sud
<b>ES6</b>	Spain	Sur	<b>ITG</b>	Italy	Isole
<b>ES7</b>	Spain	Canarias	<b>PL1</b>	Poland	Region Centralny
<b>FI1</b>	Finland	Manner-Suomi	<b>PL2</b>	Poland	Region Poludniowy
<b>FR1</b>	France	Île de France	<b>PL3</b>	Poland	Region Wschodni
<b>FR2</b>	France	Bassin Parisien	<b>PL4</b>	Poland	Region Północno-Zachodni
<b>FR3</b>	France	Nord - Pas-de-Calais	<b>PL5</b>	Poland	Region Poludniowo-Zachodni
<b>FR4</b>	France	Est	<b>PL6</b>	Poland	Region Północny
<b>FR5</b>	France	Ouest	<b>SE1</b>	Sweden	Östra Sverige
<b>FR6</b>	France	Sud-Ouest	<b>SE2</b>	Sweden	Södra Sverige
<b>FR7</b>	France	Centre-Est	<b>SE3</b>	Sweden	Norra Sverige
<b>FR8</b>	France	Méditerranée			

**Table A4:** List of variables from the EU-SILC

<p><b>Dimension: Health</b></p>	<p><b>Component: General health</b></p> <p>PH010 “How is your health in general? Is it... very good, good, fair, bad, very bad”</p> <p>The measurement of self-perceived health (SPH) is, by its very nature, subjective. The notion is restricted to an assessment coming from the individual and not from anyone outside that individual, whether an interviewer, health care worker or relative. SPH is influenced by impressions or opinions from others, but is the result after these impressions have been processed by the individual relative to their own beliefs and attitudes. The reference is to health in general rather than the present state of health, as the question is not intended to measure temporary health problems. It is expected to include the different dimensions of health, i.e. physical, social and emotional function and biomedical signs and symptoms. It omits any reference to an age as respondents are not specifically asked to compare their health with others of the same age or with their own previous or future health state. It is not time limited.</p> <p>Five answers categories are proposed. Two (very good and good) are at the upper end of the scale and two (bad and very bad) are at the lower. It is also important to note that the intermediate category ‘fair’ should be translated into an appropriately neutral term (nor good, nor bad), as far as possible keeping in mind cultural interpretations, in the various languages.</p>
	<p><b>Component: Unmet medical need due to lack of affordability and accessibility which corresponds to the variable: “unmet need for medical examination or treatment because it was not affordable, there was a waiting list or it was too far to travel/no means of transportation”</b></p>
	<p>PH040 “Unmet need for medical examination or treatment during the last 12 months... when you really needed it:  1 - yes, there was at least one occasion when the person really needed examination or treatment but did not  2 - no, there was no occasion when the person really needed examination or treatment but did not”</p> <p>Concerning medical examination, the aim of the variable is to capture the person’s own assessment of whether he or she needed to consult a medical doctor, but was not able to. (...) Actually, the question is not aimed at assessing the access to specialists but in general to examination by medical doctors (GPs, specialists, etc.). (...) In addition the problems listed in PH050 refer to any doctor in numerous Member States. On the other hand, it should be clear that only real needs of medical examination are taken into account. As a summary, the question aims at covering "core" need as regard to medical care.</p> <p>Regarding the inclusion of other types of treatment, one strategy is to use a form of wording to make clear that we want to include what is regarded as mainstream medicine in the country, i.e. the kinds of things covered by medical insurance. The key concern is with restrictions in access to what would generally be regarded in the society as appropriate treatment for a health condition. Countries will differ in terms of the extent to which specialists such as chiropractors, specialists in acupuncture and so on, have become ‘mainstream’. This may be best accomplished by using an interviewer prompt.</p> <p>In order to ensure that only serious needs are taken into account, it is suggested adding in the question the term "when you really needed ...". The Working Group also suggests adding the word ‘on your own behalf’ to make sure that the consultation/treatment was on the person’s own behalf rather than on behalf of children, spouse, etc. If this is not clarified, any comparison between men and women or between parents and non-parents might be confounded.</p> <p>PH050 - Main reason for unmet need for medical examination or treatment:  1 - Could not afford to (too expensive)  2 - Waiting list  3 - Could not take time because of work, care for children or for others  4 - Too far to travel/no means of transportation</p>

	<p>5 - Fear of doctor/hospitals/examination/ treatment  6 - Wanted to wait and see if problem got better on its own  7 - Didn't know any good doctor or specialist  8 - Other reasons</p> <p>This is a follow-up question to the previous one. It aims capture the dimension of restricted access to health care by including not only formal health care coverage (by insurance or universal coverage), but also restrictions due to rationing, waiting lists, the ability to afford care, and other reasons.</p> <p>In the proposed classification for this item, option 2 (length of the waiting list) should be used for people who were actually on a waiting list and were not helped, for respondents who were discouraged from seeking care because of perceptions of the long waiting lists, as well as people who have 'applied' and are still waiting to see a medical specialist.</p> <p>'Not covered by insurance' should be coded as 'could not afford to' if the respondent could not afford to pay for the treatment/examination himself or herself. The issue on the perception of "Could not afford to (too expensive)" should be tackled in order to not include reaction about "too expensive" which are relative (more expensive than before, etc.) but relate only to the fact that the person could not pay the price, not having money enough for this. The fact that the price is not covered by an insurance fund is in particular an important element to be taken into account.</p> <p><b>Component: Unmet dental need due to lack of affordability and accessibility which corresponds to the variable “unmet need for dental examination or treatment because of it was not affordable, there was a waiting list or it was too far to travel/no means of transportation”</b></p> <p>PH060 - Unmet need for dental examination or treatment during the last 12 months, when you really needed it:  1 - yes, there was at least one occasion when the person really needed dental examination or treatment but did not  2 - no, there was no occasion when the person really needed dental examination or treatment but did not”</p> <p>The aim of the variable is to capture the person's own assessment of whether he or she needed to consult a dentist, but was not able to. The same comments as for PH040 (above) shall be considered.</p> <p>PH070: Main reason for unmet need for dental examination or treatment  1 - Could not afford to (too expensive)  2 - Waiting list  3 - Could not take time because of work, care for children or for others  4 - Too far to travel/no means of transportation  5 - Fear of doctor(dentist)/hospitals/examination/ treatment  6 - Wanted to wait and see if problem got better on its own  7 - Didn't know any good dentist  8 - Other reasons  The same comments as for PH050 (above) shall be considered.</p>
Dimension: Education	<p><b>Component: Educational Attainment</b></p> <p>A person:  - in the age of more than 24 years does not have at least upper secondary education  - in the age of 16-24 has finished no more than lower secondary education and is not involved in further education;  Based on variables PE010, PE040 and age</p> <p>PE010 - Current education activity (Education, including highest ISCED level attained)  1 - in education; 2 - not in education;  The concept is whether the person is currently participating in an educational program. An educational program, as defined under ISCED-97, is “an array or sequence of educational activities, which are organised to accomplish a pre-determined objective or a specified set of educational tasks” (UNESCO, 1999, p. 5).</p>

	<p>The person's participation in this programme may be on a full-time attendance basis, a part-time attendance basis or by correspondence course. This variable only covers the regular education system (formal education, including schools, colleges and universities).</p> <p>Formal education is defined as education and training with the following characteristics:  (1) purpose and format are predetermined; (2) provided in the system of schools; (3) colleges, universities and other educational institutions; (4) it normally constitutes a continuous ladder of education; (5) it is structured in terms of learning objectives, learning time and learning support; (6) it is normally intended to lead to a certification recognised by national authorities qualifying for a specific education/programme); (7) corresponds to the programmes covered by the UOE-questionnaires.</p> <p>The following adult programmes cannot be classified using ISCED-97: (1) vocational education organized by a firm without leading to an official award or certification; (2) any non-formal education without leading to an official award or certification individual cultural activities for leisure</p> <p>PE040: Highest ISCED level attained  0-pre-primary education, 1-primary education, 2-lower secondary education, 3-(upper) secondary education, 4-post-secondary non tertiary education, 5-first stage of tertiary education (not leading directly to an advanced research, qualification), 6-second stage of tertiary education (leading to an advanced research qualification)</p> <p>Educational attainment of a person is the highest level of an educational programme the person has successfully completed and the study field of this programme. The educational classification to be used is the International Standard Classification of Education (ISCED 1997) coded according to the seven ISCED-97 categories. The basic unit of classification in ISCED-1997 is the educational programme. Educational programmes are defined "on the basis of their educational content as an array or sequence of educational activities, which are organised to accomplish a pre-determined objective or a specified set of educational tasks".</p> <p>The expression 'level successfully completed' must be associated with obtaining a certificate or a diploma when there is a certification. In cases where there is no certification, successful completion must be associated with full attendance or acquired competences to access the upper level. When determining the highest level, both general and vocational education/training should be taken into consideration.</p>
Dimension: Living Standards	<p><b>Component: Material Deprivation</b></p> <p>Household cannot afford:  Do you have ... ? Does your household have ...?  If you do not have ..., (a) would you like to have it but cannot afford it, or (b) do you not have one for other reasons e.g. you do not want or need it. 1=yes, 2=no, cannot afford, 3=no, other reason;  HS070: a telephone (including mobile phone)  HS090: a computer  HS100: An automatic washing machine or a washer-dryer or a non-automatic 'twin-tub'.  HS110: a car/van for private use</p> <p>Households with arrears on mortgage or rent payments or utility bills  HS010/HS011: In the last twelve months, has the household been in arrears, i.e. has been unable to pay on time due to financial difficulties for: (a) rent, (b) mortgage repayment for the main dwelling? Values: 1=yes, once; 2=yes, twice or more; 3=no;  HS020/HS021: In the last twelve months, has the household been in arrears, i.e. has been unable to pay on time due to financial difficulties for utility bills (heating, electricity, gas, water, etc.) for the main dwelling? Values: 1=yes, once; 2=yes, twice or more; 3=no;</p> <p>Lack of capacity to face unexpected financial expenses  HS060: Can your household afford an unexpected required expense (amount to be filled) and pay through its own resources? Values: 1=yes; 2=no;</p>

	<p>"Own resources" means:</p> <ul style="list-style-type: none"> <li>- Your household does not ask for financial help from anybody</li> <li>- Your account has to be debited within the required period</li> <li>- Your situation regarding potential debts is not deteriorated.</li> </ul> <p>You do not pay through own resources if you pay in instalments (or by taking a loan) expenses that you previously used to pay in cash.</p> <p>"Required expenses" means: A required expense could be different across countries but examples are surgery, funeral, major repair in the house, replacement of durables like washing machine, car.</p> <p>For the calculation of the amount that should be filled in the questionnaire the national at-risk-of-poverty threshold has to be used per one consumption unit, that means it has to be used independently of the size and structure of the household.</p>
	<p>Lack of capacity in a household to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day</p> <p>HS050: Can your household afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day? Values: 1=yes, 2=no;</p>
	<p>Lack of capacity in a household to afford paying for one week annual holiday away from home</p> <p>HS040: Can your whole household afford to go for a week's annual holiday, away from home, including stays in second dwelling or with friends/relatives? Values: 1=yes, 2=no;</p> <p>This question focuses mainly on affordability of some aspects of living standards. The wording of the question refers to the affordability and to the actual meaning "ability to pay" i.e. "the household has the resources to afford..." regardless if the household wants it. The answer is 'YES' if, according to the household respondent, the whole household can afford to go for a week's annual holiday away from home. If the household can (only) afford holidays by using its "social network" (friends, etc.) or can afford subsidized holidays (government schemes), or its second dwelling the answer should be 'YES'. These cases are included in this particular variable as it is not possible to specify the amount that is needed for a household to have a week's holiday per year, in many cases, where the household makes use of its 2<sup>nd</sup> dwelling for holidays or staying with friends, it could still generate cost and also, the case of subsidized holidays is in fact considered as an "invisible" part of the household's income. The cases where the household cannot go e.g. because of "shortage of time" are not included (answer should be 'YES').</p> <p>If at least one household member cannot afford to go for holidays the answer should be 'NO' (e.g. in cases where parents can afford to send children to a summer camp but cannot afford to go for a holiday for themselves, or where a grown-up son or daughter can afford a holiday but other household members cannot).</p> <p>"Whole household" does not mean that the members of the household have to go all together and at the same time for holidays.</p> <p>If the household finances its holidays through borrowing (from bank, relatives or friends) it is considered in the same way as if the household manages to pay through own resources.</p>
	<p>Household without ability to keep home adequately warm</p> <p>HH050: Can your household afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day? Values: 1=yes, 2=no;</p>
<b>Component: Housing Problems</b>	
	<p>Crowding index &gt;2</p> <p>HH030: Number of rooms available to the household</p>
<p>Problems with dwelling:</p>	

	<p>– leaking roof, damp walls/floors/foundation, or rot window frames or floor;</p> <p>HH040: Do you have any of the following problems with your dwelling / accommodation? (1) a leaking roof, (2) damp walls/floors/foundation, (3) rot in window frames or floor; Values: 1-yes, 2-no;</p> <p>– too dark, not enough light;</p> <p>HS160: Is your dwelling too dark, meaning is there not enough day-light coming through the windows? Values: 1-yes, 2-no;</p> <p>It is recommended to consider the dwelling as ‘too dark, without enough day-light’ in the situation of a sunny day that means that artificial lighting is not to be taken into account.</p> <p>– without bath or shower for sole use in dwelling;</p> <p>HH080/HH081: Is there a shower unit or a bathtub in your dwelling? Values: 1-yes, for sole use of the household; 2-yes, shared; 3-no;</p> <p>A shower unit or bathtub outside the dwelling are not to be considered in this item. On the other hand, it is not required that the shower unit or the bath occupy a separate room.</p>
	<p><b>Component: Environment</b></p> <p>Household experiences:</p> <p>– noise from neighbors or from the street;</p> <p>HS170: Do you have any of the following problems related to the place where you live? Too much noise in your dwelling from neighbours or from outside (traffic, business, factory, etc.)? Values: 1-yes,2-no;</p> <p>The objective is to assess whether the respondent feels ‘noise from neighbours or from outside’ to be a problem for the household (not on the fact to be bothered by the problem).</p> <p>Noise from neighbours could be described as noise from neighbouring apartments, staircase or water pipe. Noise from outside should be described as noise linked to traffic (street or road, plane, railway), linked to business, factories, agricultural activities, clubs and yard.</p> <p>– pollution, grime or other environmental problems</p> <p>HS180: Do you have any of the following problems related to the place where you live? Pollution, grime or other environmental problems in the local area such as: smoke, dust, unpleasant smells or polluted water? Values: 1-yes, 2-no; The objective is to assess whether the respondent feels ‘pollution, grime,...’ to be a problem for the household (not on the fact to be bothered by the problem).</p> <p>– crime violence or vandalism in the area;</p> <p>HS190: Do you have any of the following problems related to the place where you live? Crime, violence and vandalism in the local area? Values: 1-yes, 2-no;</p> <p>Crime is to be defined as a deviant behaviour that violates prevailing norms, specifically, cultural standards prescribing how humans ought to behave normally. A legalistic approach is not to be used (this is not defined as any blameworthy act or oversight banned by law and penalized by the State).</p>

**Table A5: MPI-reg and MPI-H by degree of urbanisation**

country	degree of urbanisation	MPI-reg					MPI-H				
		2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
AT	AT_1	2.2%	3.3%	2.6%	3.3%	2.6%	2.9%	3.8%	3.3%	4.1%	3.4%
AT	AT_2	0.9%	1.5%	1.3%	1.1%	1.1%	2.2%	2.4%	2.3%	2.3%	2.4%
AT	AT_3	1.2%	1.5%	1.2%	1.4%	0.8%	2.5%	2.8%	2.3%	2.7%	2.5%
BE	BE_1	3.1%	3.6%	3.3%	3.6%	4.2%	3.6%	3.7%	3.7%	3.8%	4.7%
BE	BE_2	1.2%	1.5%	1.5%	2.0%	1.9%	2.3%	2.3%	2.5%	2.8%	3.2%
BE	BE_3	2.9%	3.2%	2.7%	2.9%	3.8%	3.9%	3.9%	5.3%	5.0%	5.9%
BG	BG_1	13.9%	13.3%	10.6%	9.7%	10.2%	13.6%	12.5%	9.6%	9.0%	8.6%
BG	BG_2	17.6%	20.5%	14.6%	13.4%	15.0%	16.7%	15.0%	10.0%	8.8%	8.5%
BG	BG_3	20.8%	22.6%	20.0%	18.7%	18.1%	21.0%	16.5%	15.2%	14.0%	13.5%
CY	CY_1	6.5%	4.8%	4.4%	5.2%	4.6%	6.1%	4.9%	5.0%	6.2%	5.8%
CY	CY_2	6.2%	5.1%	5.3%	5.7%	5.9%	5.9%	5.1%	5.0%	5.6%	5.5%
CY	CY_3	6.7%	6.1%	5.3%	5.7%	5.7%	7.2%	5.1%	5.7%	5.4%	5.5%
CZ	CZ_1	2.2%	2.4%	2.7%	2.2%	1.9%	3.2%	3.7%	3.9%	3.8%	3.5%
CZ	CZ_2	2.1%	2.1%	2.0%	1.7%	1.7%	3.8%	4.1%	3.6%	3.5%	3.5%
CZ	CZ_3	1.8%	2.1%	2.2%	2.0%	1.9%	3.3%	3.7%	3.6%	3.5%	3.9%
DE	DE_1	3.3%	2.7%	2.9%	2.5%	2.5%	4.6%	3.6%	3.5%	3.3%	3.1%
DE	DE_2	1.9%	1.6%	1.6%	1.5%	1.9%	3.6%	2.8%	2.8%	2.5%	2.9%
DE	DE_3	1.8%	1.8%	1.7%	1.4%	1.7%	3.8%	3.0%	3.0%	2.7%	2.8%
DK	DK_1	2.1%	1.3%	0.6%	0.7%	0.8%	3.2%	2.7%	1.8%	2.0%	1.9%
DK	DK_2	1.2%	1.0%	0.4%	0.5%	0.6%	2.7%	2.3%	1.5%	1.7%	1.7%
DK	DK_3	1.0%	0.4%	0.5%	0.5%	0.6%	2.6%	2.1%	1.9%	1.8%	1.6%
EE	EE_1	6.3%	4.1%	2.3%	2.7%	3.5%	9.2%	6.6%	4.3%	4.8%	6.3%
EE	EE_3	5.0%	6.5%	5.5%	5.2%	5.5%	7.7%	7.7%	6.4%	6.6%	7.5%
ES	ES_1	3.2%	2.8%	3.0%	2.8%	2.4%	4.2%	3.6%	4.0%	4.0%	3.5%
ES	ES_2	3.6%	2.6%	3.1%	2.9%	2.6%	4.9%	3.9%	4.1%	3.9%	3.4%
ES	ES_3	3.8%	2.6%	2.9%	2.7%	2.2%	5.8%	4.0%	4.4%	4.4%	3.6%
FI	FI_1	1.8%	2.4%	2.1%	1.3%	1.4%	2.6%	2.7%	4.0%	3.5%	3.1%
FI	FI_2	0.9%	1.3%	1.2%	1.6%	1.2%	1.7%	2.1%	3.3%	3.2%	3.4%
FI	FI_3	1.2%	1.6%	2.0%	1.3%	1.5%	2.5%	3.0%	4.1%	3.5%	3.6%
FR	FR_1	3.7%	n.a.	4.2%	4.0%	3.6%	4.6%	n.a.	4.8%	4.8%	4.8%
FR	FR_2	1.9%	n.a.	2.4%	2.7%	2.1%	3.3%	n.a.	3.8%	4.0%	3.6%
FR	FR_3	1.4%	n.a.	2.1%	2.3%	1.8%	3.3%	n.a.	4.0%	3.8%	3.5%
GR	GR_1	4.6%	5.9%	6.3%	5.7%	7.6%	5.0%	6.1%	6.5%	6.1%	7.8%
GR	GR_2	5.9%	6.4%	3.9%	4.3%	5.1%	6.0%	6.6%	4.6%	5.2%	4.9%
GR	GR_3	5.8%	5.6%	5.7%	5.2%	5.6%	6.6%	6.2%	6.3%	6.4%	6.7%
HU	HU_1	5.6%	5.1%	4.5%	4.5%	5.7%	7.5%	6.6%	5.5%	5.2%	6.3%
HU	HU_2	6.6%	6.2%	5.3%	6.3%	6.4%	8.6%	7.9%	6.8%	6.4%	6.7%
HU	HU_3	7.4%	7.2%	6.2%	7.5%	7.8%	8.9%	8.2%	7.4%	7.4%	7.7%
IE	IE_1	2.8%	2.1%	2.6%	2.4%	n.a.	2.6%	2.2%	2.4%	2.6%	n.a.
IE	IE_2	1.8%	2.0%	1.5%	1.8%	n.a.	1.5%	1.8%	1.4%	1.9%	n.a.
IE	IE_3	1.1%	1.1%	1.4%	1.2%	n.a.	1.6%	1.3%	1.8%	2.1%	n.a.



<b>IT</b>	IT_1	6.5%	6.6%	6.6%	6.3%	8.3%	7.0%	7.3%	7.0%	6.5%	8.5%
<b>IT</b>	IT_2	4.9%	4.8%	5.4%	4.5%	6.8%	6.1%	6.6%	6.6%	6.0%	8.1%
<b>IT</b>	IT_3	4.6%	5.2%	5.4%	4.7%	6.8%	6.9%	7.3%	7.3%	6.5%	9.1%
<b>LT</b>	LT_1	5.9%	5.2%	4.9%	4.9%	5.1%	7.7%	6.4%	6.0%	5.7%	6.0%
<b>LT</b>	LT_3	6.5%	8.3%	9.0%	8.8%	9.3%	8.4%	8.1%	8.2%	7.7%	8.7%
<b>LU</b>	LU_1	1.7%	2.1%	2.2%	1.5%	2.3%	2.7%	3.1%	3.7%	3.1%	3.6%
<b>LU</b>	LU_2	0.7%	0.5%	1.1%	0.9%	0.9%	1.6%	1.7%	1.4%	1.5%	1.4%
<b>LU</b>	LU_3	0.7%	1.1%	0.8%	0.8%	0.4%	2.1%	2.1%	2.3%	2.6%	2.2%
<b>LV</b>	LV_1	11.8%	10.0%	10.0%	13.1%	12.9%	13.3%	10.9%	10.8%	14.6%	14.6%
<b>LV</b>	LV_3	12.8%	14.9%	14.1%	14.8%	15.6%	13.4%	13.3%	12.6%	14.1%	15.3%
<b>MT</b>	MT_1	3.7%	n.a.	3.7%	3.9%	4.0%	2.5%	n.a.	2.5%	2.3%	2.4%
<b>MT</b>	MT_2	4.3%	n.a.	4.3%	3.1%	2.0%	3.2%	n.a.	3.2%	2.4%	1.6%
<b>PL</b>	PL_1	6.6%	5.5%	5.4%	4.8%	4.5%	7.9%	7.0%	7.3%	6.6%	6.4%
<b>PL</b>	PL_2	6.6%	6.2%	5.2%	5.1%	4.0%	8.2%	7.8%	7.2%	6.7%	6.2%
<b>PL</b>	PL_3	7.5%	7.8%	7.4%	7.1%	6.1%	9.0%	8.3%	8.4%	8.4%	7.7%
<b>PT</b>	PT_1	10.3%	9.7%	11.0%	11.0%	8.5%	9.8%	9.3%	11.1%	11.4%	8.8%
<b>PT</b>	PT_2	10.4%	8.4%	9.2%	8.1%	7.0%	11.7%	10.8%	11.5%	11.0%	9.6%
<b>PT</b>	PT_3	9.2%	5.9%	8.4%	7.2%	6.5%	11.9%	8.8%	11.6%	11.0%	10.3%
<b>RO</b>	RO_1	9.5%	9.9%	10.3%	9.3%	9.5%	9.2%	8.1%	8.3%	8.0%	8.4%
<b>RO</b>	RO_2	12.3%	11.5%	9.8%	5.0%	5.8%	10.2%	10.0%	7.6%	3.9%	3.7%
<b>RO</b>	RO_3	13.8%	23.2%	23.2%	21.9%	20.6%	12.4%	12.5%	11.8%	12.1%	12.6%
<b>SE</b>	SE_1	1.4%	1.6%	1.5%	0.6%	1.1%	3.1%	3.6%	3.4%	1.9%	2.8%
<b>SE</b>	SE_2	0.7%	0.8%	0.8%	0.5%	0.7%	2.6%	2.5%	2.5%	1.7%	1.8%
<b>SE</b>	SE_3	0.9%	0.9%	0.9%	0.8%	0.7%	2.8%	2.5%	2.6%	2.3%	2.1%
<b>SK</b>	SK_1	2.8%	2.3%	2.3%	2.1%	1.7%	4.5%	3.7%	3.6%	3.3%	3.0%
<b>SK</b>	SK_2	3.5%	3.1%	2.9%	3.0%	2.9%	5.6%	4.9%	4.3%	4.5%	4.4%
<b>SK</b>	SK_3	3.9%	4.4%	3.8%	3.9%	3.7%	6.6%	6.0%	5.4%	5.3%	5.2%
<b>UK</b>	UK_1	1.8%	1.6%	1.6%	2.0%	1.9%	2.8%	2.3%	2.5%	2.5%	2.3%
<b>UK</b>	UK_2	0.7%	0.8%	0.4%	0.8%	1.1%	2.0%	1.8%	1.3%	1.8%	1.8%
<b>UK</b>	UK_3	0.6%	0.2%	0.1%	0.8%	1.0%	2.0%	2.0%	1.5%	1.5%	1.5%



**Table A6: MPI-E and MPI-L by degree of urbanisation**

country	degree of urbanisation	MPI-E					MPI-L				
		2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
AT	AT_1	24.2%	23.5%	24.0%	24.3%	22.3%	7.3%	9.0%	8.4%	9.2%	8.1%
AT	AT_2	23.1%	22.4%	22.1%	22.5%	22.5%	4.0%	5.6%	4.8%	4.4%	4.1%
AT	AT_3	30.1%	29.1%	29.7%	29.9%	29.6%	3.5%	4.5%	3.9%	4.2%	3.4%
BE	BE_1	34.7%	34.4%	36.2%	35.2%	32.8%	9.1%	8.9%	8.8%	9.1%	9.6%
BE	BE_2	35.9%	36.5%	39.6%	37.9%	34.1%	4.5%	4.5%	4.4%	5.0%	5.0%
BE	BE_3	38.6%	46.8%	45.0%	39.2%	36.8%	8.2%	8.6%	6.2%	6.2%	8.1%
BG	BG_1	23.7%	22.4%	21.2%	20.0%	19.8%	25.4%	23.5%	21.7%	20.1%	21.2%
BG	BG_2	40.7%	38.5%	36.1%	35.7%	36.7%	29.1%	28.5%	26.0%	24.2%	25.7%
BG	BG_3	51.0%	49.4%	46.8%	45.3%	44.7%	31.1%	31.0%	29.8%	29.0%	28.7%
CY	CY_1	30.4%	30.7%	29.6%	30.2%	29.1%	14.3%	11.5%	9.9%	11.6%	10.6%
CY	CY_2	40.4%	39.4%	37.9%	42.5%	37.0%	13.8%	12.1%	12.3%	11.4%	13.4%
CY	CY_3	46.7%	45.2%	43.5%	45.6%	43.1%	15.0%	14.0%	12.4%	12.3%	13.1%
CZ	CZ_1	18.1%	17.6%	17.5%	16.1%	14.5%	8.1%	9.1%	9.5%	8.4%	8.1%
CZ	CZ_2	21.2%	20.5%	20.2%	20.9%	18.7%	7.5%	7.7%	7.6%	7.0%	7.1%
CZ	CZ_3	22.5%	22.0%	22.2%	21.4%	20.5%	6.7%	6.8%	7.1%	6.8%	6.8%
DE	DE_1	21.3%	21.2%	20.5%	20.3%	19.4%	9.5%	9.1%	9.4%	8.5%	9.1%
DE	DE_2	22.7%	22.0%	22.2%	22.5%	21.6%	5.8%	5.9%	5.6%	5.3%	6.2%
DE	DE_3	21.3%	21.8%	22.5%	21.3%	21.3%	5.5%	6.0%	5.9%	5.5%	6.8%
DK	DK_1	29.5%	29.1%	22.4%	18.2%	12.7%	6.1%	5.1%	3.8%	3.4%	3.8%
DK	DK_2	37.8%	37.2%	29.8%	26.9%	17.7%	3.0%	3.0%	1.9%	1.8%	2.0%
DK	DK_3	42.6%	40.9%	35.7%	33.5%	21.9%	2.9%	2.2%	1.7%	1.8%	2.0%
EE	EE_1	17.8%	16.6%	16.3%	16.1%	14.9%	12.9%	9.9%	8.2%	8.6%	9.2%
EE	EE_3	27.6%	27.0%	26.3%	25.1%	24.0%	9.3%	12.9%	12.1%	12.0%	11.7%
ES	ES_1	48.2%	46.6%	46.5%	46.1%	46.7%	8.6%	7.9%	8.7%	7.4%	6.5%
ES	ES_2	59.9%	57.4%	57.4%	56.3%	56.1%	8.6%	6.9%	8.0%	7.8%	6.8%
ES	ES_3	68.6%	67.8%	67.0%	66.3%	64.7%	7.3%	6.0%	6.8%	7.3%	5.7%
FI	FI_1	25.6%	27.1%	25.3%	24.5%	22.0%	6.7%	7.4%	6.3%	4.6%	4.9%
FI	FI_2	24.6%	24.3%	25.2%	24.9%	23.9%	4.2%	5.6%	4.3%	4.1%	4.0%
FI	FI_3	33.9%	34.5%	33.5%	31.8%	30.0%	3.7%	5.2%	4.9%	3.8%	3.8%
FR	FR_1	36.1%	n.a.	34.8%	34.2%	30.1%	9.3%	n.a.	9.7%	9.3%	9.0%
FR	FR_2	39.2%	n.a.	37.9%	37.2%	33.2%	5.3%	n.a.	6.1%	6.2%	5.1%
FR	FR_3	44.3%	n.a.	42.3%	41.2%	37.2%	4.5%	n.a.	5.9%	6.0%	5.3%
GR	GR_1	38.1%	35.6%	33.2%	28.9%	31.3%	11.7%	13.8%	13.8%	14.5%	15.9%
GR	GR_2	41.3%	38.0%	36.2%	34.4%	32.0%	11.0%	12.8%	10.1%	10.5%	12.6%
GR	GR_3	64.9%	61.1%	58.8%	59.2%	56.3%	10.7%	11.9%	12.2%	11.7%	12.3%
HU	HU_1	20.3%	19.6%	18.7%	17.2%	16.8%	13.1%	12.2%	11.9%	11.6%	13.4%
HU	HU_2	28.0%	28.1%	26.6%	26.7%	27.5%	14.4%	13.5%	12.8%	14.5%	14.3%
HU	HU_3	38.3%	38.3%	37.3%	36.6%	34.7%	14.7%	14.6%	13.9%	15.6%	15.8%
IE	IE_1	31.5%	31.5%	31.7%	32.2%	n.a.	6.9%	7.2%	7.2%	6.3%	n.a.
IE	IE_2	39.3%	40.7%	42.3%	40.2%	n.a.	6.0%	7.9%	5.5%	6.0%	n.a.
IE	IE_3	50.9%	50.2%	46.7%	43.2%	n.a.	4.3%	4.5%	4.4%	4.5%	n.a.

<b>IT</b>	IT_1	52.6%	51.5%	50.1%	48.2%	48.3%	13.4%	12.6%	13.2%	12.0%	14.8%
<b>IT</b>	IT_2	60.2%	58.4%	57.5%	56.9%	56.7%	9.0%	8.7%	9.8%	9.0%	11.7%
<b>IT</b>	IT_3	65.8%	64.1%	62.9%	62.3%	62.6%	7.1%	7.9%	9.0%	8.0%	10.5%
<b>LT</b>	LT_1	15.7%	16.1%	16.1%	14.5%	14.6%	12.9%	11.4%	12.1%	12.8%	12.4%
<b>LT</b>	LT_3	29.4%	27.3%	30.8%	29.8%	29.4%	12.5%	15.1%	16.5%	17.4%	17.5%
<b>LU</b>	LU_1	44.4%	43.4%	43.6%	43.9%	42.5%	5.9%	6.8%	6.9%	5.6%	6.1%
<b>LU</b>	LU_2	33.1%	32.2%	33.0%	35.5%	34.5%	3.6%	3.6%	4.7%	3.6%	3.2%
<b>LU</b>	LU_3	40.7%	38.2%	42.4%	41.4%	39.8%	3.8%	4.4%	3.3%	2.1%	2.3%
<b>LV</b>	LV_1	20.7%	20.0%	20.2%	20.1%	19.0%	21.1%	19.0%	19.2%	22.0%	21.3%
<b>LV</b>	LV_3	32.0%	32.8%	32.0%	31.4%	31.4%	21.9%	23.6%	23.0%	23.7%	24.4%
<b>MT</b>	MT_1	66.5%	n.a.	66.5%	67.5%	67.4%	12.1%	n.a.	12.1%	11.8%	12.9%
<b>MT</b>	MT_2	66.1%	n.a.	66.1%	64.1%	66.9%	10.6%	n.a.	10.6%	9.8%	10.8%
<b>PL</b>	PL_1	17.2%	16.6%	16.5%	15.6%	21.0%	14.0%	12.6%	11.7%	10.6%	10.6%
<b>PL</b>	PL_2	24.1%	25.4%	24.9%	22.6%	31.5%	14.6%	13.4%	11.7%	10.9%	9.9%
<b>PL</b>	PL_3	32.5%	30.9%	31.0%	29.9%	32.2%	15.5%	15.5%	14.3%	13.4%	12.2%
<b>PT</b>	PT_1	67.7%	68.4%	66.0%	66.2%	63.0%	17.1%	16.0%	16.7%	16.4%	14.6%
<b>PT</b>	PT_2	79.0%	78.5%	78.0%	77.0%	74.7%	14.8%	13.8%	13.3%	12.4%	10.8%
<b>PT</b>	PT_3	78.3%	78.4%	76.5%	75.7%	76.1%	12.8%	9.8%	11.1%	10.4%	9.8%
<b>RO</b>	RO_1	22.7%	22.4%	21.6%	20.2%	19.9%	19.2%	19.7%	20.4%	18.9%	18.5%
<b>RO</b>	RO_2	31.9%	32.8%	26.9%	20.3%	21.4%	23.3%	22.7%	21.5%	13.0%	12.0%
<b>RO</b>	RO_3	54.0%	53.2%	52.4%	50.8%	48.1%	25.3%	33.4%	33.2%	31.7%	30.5%
<b>SE</b>	SE_1	20.8%	17.2%	14.5%	16.4%	16.9%	4.0%	4.1%	4.6%	3.1%	3.5%
<b>SE</b>	SE_2	23.3%	21.5%	17.5%	15.0%	17.0%	2.6%	2.8%	2.9%	2.1%	2.1%
<b>SE</b>	SE_3	28.5%	25.5%	23.7%	23.7%	25.0%	2.7%	2.5%	2.4%	2.0%	1.9%
<b>SK</b>	SK_1	10.2%	10.8%	9.8%	10.3%	9.8%	10.2%	10.1%	10.2%	8.5%	7.7%
<b>SK</b>	SK_2	18.4%	17.5%	15.9%	19.6%	18.0%	10.6%	9.8%	9.5%	9.2%	8.4%
<b>SK</b>	SK_3	20.7%	20.8%	19.1%	21.2%	19.7%	10.9%	11.9%	10.8%	10.5%	9.2%
<b>UK</b>	UK_1	31.2%	33.0%	33.5%	33.7%	28.0%	6.4%	6.8%	6.5%	7.0%	7.3%
<b>UK</b>	UK_2	28.1%	28.0%	28.4%	29.0%	23.1%	3.9%	3.7%	3.1%	4.4%	4.7%
<b>UK</b>	UK_3	31.6%	31.8%	32.9%	29.3%	21.3%	4.1%	2.8%	3.5%	3.8%	4.1%

**Table A7: MPI-reg, MPI-H by country**

country		MPI-reg					MPI-H				
		2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Austria	AT	1.5%	2.1%	1.7%	2.0%	1.6%	2.6%	3.1%	2.7%	3.1%	2.8%
Belgium	BE	2.3%	2.7%	2.5%	2.9%	3.3%	3.0%	3.1%	3.2%	3.4%	4.1%
Bulgaria	BG	17.7%	18.8%	15.6%	14.4%	14.4%	17.6%	14.9%	12.5%	11.5%	11.1%
Cyprus	CY	6.5%	5.2%	4.7%	5.4%	5.1%	6.4%	5.0%	5.2%	5.8%	5.6%
Czech Republic	CZ	2.0%	2.2%	2.3%	2.0%	1.9%	3.4%	3.8%	3.7%	3.6%	3.6%
Germany	DE	2.6%	2.2%	2.3%	2.0%	2.2%	4.2%	3.2%	3.2%	3.0%	3.0%
Denmark	DK	1.4%	1.0%	0.5%	0.6%	0.7%	2.9%	2.4%	1.7%	1.8%	1.8%
Estonia	EE	5.6%	5.3%	3.9%	4.0%	4.5%	8.5%	7.2%	5.3%	5.7%	6.9%
Greece	EL	5.3%	5.8%	5.7%	5.3%	6.4%	5.8%	6.2%	6.2%	6.1%	6.9%
Spain	ES	3.4%	2.7%	3.0%	2.8%	2.4%	4.8%	3.7%	4.1%	4.1%	3.5%
Finland	FI	1.3%	1.8%	1.9%	1.4%	1.4%	2.4%	2.8%	4.0%	3.4%	3.4%
France	FR	2.7%		3.2%	3.2%	2.8%	3.9%	n.a.	4.3%	4.3%	4.2%
Hungary	HU	6.6%	6.3%	5.4%	6.3%	6.8%	8.4%	7.6%	6.6%	6.5%	7.0%
Ireland	IE	1.9%	1.7%	1.8%	1.7%	n.a.	1.9%	1.8%	1.9%	2.2%	n.a.
Italy	IT	5.5%	5.7%	5.9%	5.3%	7.4%	6.6%	7.0%	6.9%	6.3%	8.4%
Lithuania	LT	6.2%	7.0%	7.2%	7.1%	7.6%	8.1%	7.4%	7.3%	6.9%	7.6%
Luxembourg	LU	1.2%	1.4%	1.5%	1.1%	1.4%	2.2%	2.4%	2.7%	2.5%	2.5%
Latvia	LV	12.4%	12.4%	12.1%	13.9%	14.3%	13.4%	12.1%	11.7%	14.4%	14.9%
Malta	MT			3.8%	3.8%	3.8%	n.a.	n.a.	2.6%	2.3%	2.3%
Netherlands	NL	1.0%	0.9%	0.9%	1.0%	1.1%	2.2%	2.1%	1.9%	2.2%	2.3%
Poland	PL	7.0%	6.6%	6.3%	5.9%	5.2%	8.5%	7.7%	7.8%	7.5%	7.0%
Portugal	PT	10.1%	8.4%	9.8%	9.1%	7.5%	10.9%	9.7%	11.3%	11.2%	9.4%
Romania	RO	12.1%	17.9%	18.1%	16.9%	16.3%	11.1%	10.8%	10.4%	10.5%	10.9%
Sweden	SE	1.0%	1.0%	1.0%	0.7%	0.8%	2.8%	2.8%	2.7%	2.1%	2.2%
Slovenia	SI	2.7%	3.8%	4.3%	3.9%	3.5%	4.2%	4.6%	5.5%	5.4%	4.9%
Slovakia	SK	3.5%	3.4%	3.1%	3.1%	2.9%	5.7%	5.0%	4.6%	4.5%	4.4%
United Kingdom	UK	1.5%	1.4%	1.4%	1.6%	1.7%	2.6%	2.1%	2.3%	2.2%	2.1%

**Table A8: MPI-reg, MPI-H by country**

country		MPI-E					MPI-L				
		2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Austria	AT	26.2%	25.4%	25.7%	26.1%	25.2%	5.0%	6.4%	5.8%	6.0%	5.3%
Belgium	BE	35.4%	35.8%	38.0%	36.5%	33.5%	7.1%	7.0%	6.8%	7.3%	7.6%
Bulgaria	BG	38.8%	38.1%	35.0%	33.5%	33.3%	28.6%	27.9%	26.0%	24.7%	25.3%
Cyprus	CY	36.5%	35.9%	34.5%	36.4%	34.3%	14.4%	12.3%	10.9%	11.8%	11.7%
Czech Republic	CZ	20.7%	20.2%	20.0%	19.4%	17.9%	7.4%	7.8%	8.1%	7.4%	7.4%
Germany	DE	21.8%	21.6%	21.4%	21.3%	20.4%	7.7%	7.5%	7.5%	6.9%	7.7%
Denmark	DK	36.2%	35.3%	29.0%	25.9%	17.1%	4.0%	3.5%	2.5%	2.3%	2.6%
Estonia	EE	22.7%	21.8%	21.3%	20.6%	19.5%	11.1%	11.4%	10.2%	10.3%	10.5%
Greece	EL	50.8%	48.0%	45.6%	43.5%	42.2%	11.1%	12.8%	12.6%	12.8%	13.9%
Spain	ES	56.1%	54.6%	54.3%	53.7%	53.6%	8.3%	7.2%	8.0%	7.5%	6.4%
Finland	FI	30.1%	30.9%	30.0%	29.0%	27.1%	4.6%	5.9%	5.2%	4.0%	4.1%
France	FR	38.7%	n.a.	37.2%	36.5%	32.5%	7.0%	n.a.	7.8%	7.6%	7.0%
Hungary	HU	30.4%	30.1%	29.1%	28.3%	27.4%	14.1%	13.6%	13.0%	14.1%	14.7%
Ireland	IE	40.8%	40.9%	40.3%	38.8%	n.a.	5.7%	6.4%	5.7%	5.5%	n.a.
Italy	IT	57.8%	56.3%	55.1%	54.0%	54.0%	10.6%	10.3%	11.2%	10.1%	12.8%
Lithuania	LT	23.5%	22.5%	24.5%	23.4%	23.4%	12.6%	13.5%	14.6%	15.4%	15.5%
Luxembourg	LU	39.9%	38.7%	39.9%	40.5%	39.1%	4.7%	5.2%	5.4%	4.1%	4.2%
Latvia	LV	26.6%	26.3%	26.0%	25.8%	25.3%	21.5%	21.3%	21.1%	22.8%	22.9%
Malta	MT	n.a.	n.a.	66.5%	67.2%	67.3%	n.a.	n.a.	11.9%	11.6%	12.7%
Netherlands	NL	36.4%	34.3%	33.5%	32.7%	32.1%	5.2%	5.1%	5.2%	5.0%	5.1%
Poland	PL	25.1%	24.3%	24.4%	23.2%	27.6%	14.8%	14.0%	12.9%	11.9%	11.2%
Portugal	PT	73.9%	74.0%	72.3%	71.9%	69.8%	15.3%	13.8%	14.3%	13.7%	12.3%
Romania	RO	41.4%	40.9%	40.4%	38.8%	37.2%	22.9%	28.0%	28.2%	26.6%	25.8%
Sweden	SE	26.1%	23.2%	20.9%	21.0%	22.3%	2.9%	2.9%	2.9%	2.2%	2.2%
Slovenia	SI	27.3%	26.4%	29.3%	29.7%	27.1%	7.3%	9.4%	10.2%	9.4%	9.0%
Slovakia	SK	17.1%	17.1%	15.5%	17.7%	16.6%	10.6%	10.7%	10.2%	9.5%	8.6%
United Kingdom	UK	30.9%	32.3%	33.1%	32.7%	27.3%	5.8%	6.0%	5.9%	5.9%	6.3%

## Europe Direct is a service to help you find answers to your questions about the European Union.

Freephone number (\*):

00 800 6 7 8 9 10 11

(\*) Certain mobile telephone operators do not allow access to 00 800 numbers or these calls may be billed.

A great deal of additional information on the European Union is available on the Internet.

It can be accessed through the Europa server (<http://europa.eu/>).

### HOW TO OBTAIN EU PUBLICATIONS

Our priced publications are available from EU Bookshop (<http://bookshop.europa.eu/>), where you can place an order with the sales agent of your choice.

The Publications Office has a worldwide network of sales agents.

You can obtain their contact details by sending a fax to +352 29 29-42758.

European Commission

EUR 26627 EN — Joint Research Centre — Institute for the Protection and Security of the Citizen

Title: Monitoring multidimensional poverty in the regions of the European Union

Author(s): Dorota Weziak-Bialowolska, Lewis Dijkstra

Luxembourg: Publications Office of the European Union

2014 — 100 pp. — 21.0 x 29.7 cm

EUR — Scientific and Technical Research series — ISSN 1831-9424

ISBN 978-92-79-37944-4

10.2788/68686

#### Abstract

In this study, we measure the area-specific poverty in the European Union (EU). To this end, we measure poverty at the sub-national level in two ways: (i) using the EU nomenclature of territorial units (NUTS 1 mostly); (ii) using different with respect to the degree of urbanisation areas within countries. The measurement of poverty is based on the Multidimensional Poverty Index (UN-MPI) by Alkire and Santos (2010, 2013). With the data from the European Union Survey on Income and Living Conditions (EU-SILC), we formulate the Index of Multidimensional Poverty at the regional level, namely the Multidimensional Poverty Index (MPI-reg). The MPI-reg framework comprises three dimensions — health, education, and standard of living — quantified by three sub-indices: Multidimensional Poverty in Health Index (MPI-H), Poverty in Education Index (MPI-E) and Multidimensional Poverty in Living Standards Index (MPI-L), respectively.

The MPI-reg was computed for 23 EU countries in 2010, 24 EU countries in 2007 and 2011, and 25 countries in 2008 and 2009. Our results show that the level of poverty in the EU ranges from 2–3 % to 15–25 %, with Denmark and Sweden being unequivocally the least poor countries and Latvia, Bulgaria and Romania, the poorest countries. We also indicate that there is a positive relationship between the stratification level and all adjusted headcount ratios, headcount ratios and intensity of poverty scores. This positive relationship implies that there are countries where there is no stratification with respect to poverty (e.g. Sweden, Denmark, the Czech Republic, and Finland) and countries, usually poor ones, such as Romania, Bulgaria and Lithuania, but also Belgium and Italy, where considerable stratification with respect to poverty occurs. In general, in poor and moderately poor countries, the worst situation with respect to poverty is observed in sparsely populated areas, and the best situation occurs in densely populated areas. On the other hand, in the best scoring countries, poverty is relatively higher in the densely populated areas compared to the less well-populated areas. Additionally, our analysis showed that between 2005–07 and 2009–11, changes in inequality with respect to poverty occurred. We demonstrated that a decrease in inequality most often occurred in Poland and Spain, whereas Belgium and Italy we most often spotted as countries with growing regional differences.

The results indicated that the European Union regions are strongly diversified with respect to poverty. This implies that regardless of the spatial location of the region and the definition of the region, considerable within-country differences are indicated if only sub-national levels are available. Therefore, relying only on countrywide estimates may be misleading when properly assessing the relative standing of a region with respect to poverty.

## JRC Mission

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new methods, tools and standards, and sharing its know-how with the Member States, the scientific community and international partners.

*Serving society  
Stimulating innovation  
Supporting legislation*

