

# Mobility in prioritised areas: mapping the field

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## Abstract

Deliverable D2.1 presents an extensive analysis of the social and spatial elements associated with transport poverty. In particular it assesses its characteristics in terms of spatial factors, demographics, and mobility patterns.

The deliverable is the outcome of an extensive desk research performed in the first step of the project. It offers a substantial contribution in the identification and definition of transport poverty and addresses mobility and accessibility needs of different social groups vulnerable to social exclusion: low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and deprived areas.

## About HiReach

HiReach aims at addressing the mobility needs of different groups vulnerable to transport poverty and social exclusion like people with temporarily or permanent reduced mobility, children, young and elderly people, women, migrants and ethnic minorities, low income and unemployed, to favour more inclusive and flexible mobility solutions. The project also analyses geographical and spatial elements affecting transport poverty to figure out mobility options that can simultaneously combine the needs of several groups in different target areas like urban-peripheral, peri-urban, rural, and remote or deprived territories.

By combining different attributes of available transport concepts and bottom-up initiatives with new operational schemes and IT applications, HiReach explores viable business models for small scale, modular and easily replicable mobility services that can be provided at affordable prices and/or with minimum subsidies. For the first time, community transport services, informal ridesharing and van pooling, innovative ride-hailing mobility services and on-demand public transport are assessed within the scope of a new collaborative and well-regulated business environment.

The HiReach mechanism for exploring, generating and testing inclusive mobility solutions is based on the creative work of startups and innovative entrepreneurs, but also on social innovation through the direct involvement of different social groups as developers, co-users and co-owners of the proposed solutions. HiReach is working in 6 EU study regions: Counties of Esslingen and Göppingen (Germany), Naxos and Small Cyclades (Greece), Inner Area Southern Salento (Italy), Guarda and Torres Vedras (Portugal), Buzau (Romania), North and South-East Luxembourg.

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## Executive summary

**HiReach is a Horizon 2020 project that aims to contribute to the eradication of transport poverty.** More in particular, HiReach fosters social innovation processes through an analysis of capabilities and attitudes of different social groups and their direct involvement as co-users and co-owners of the proposed solutions. This is implemented by triggering new mobility solutions sustained by products scaling up, backed by mobile information technologies and social innovations, using open tools, technology transfer and start-up development techniques to find and exploit new business ideas that reach low accessibility social groups and areas.

In its first stage, HiReach needs an identification and definition of transport poverty, addressing mobility and accessibility needs of different vulnerable social groups, keeping in mind the relevance of “prioritised areas” (such as rural, remote and deprived urban areas, as defined by the H2020 call).

An individual is **transport poor** if, in order to satisfy their daily basic activity needs, at least one of the following conditions apply:

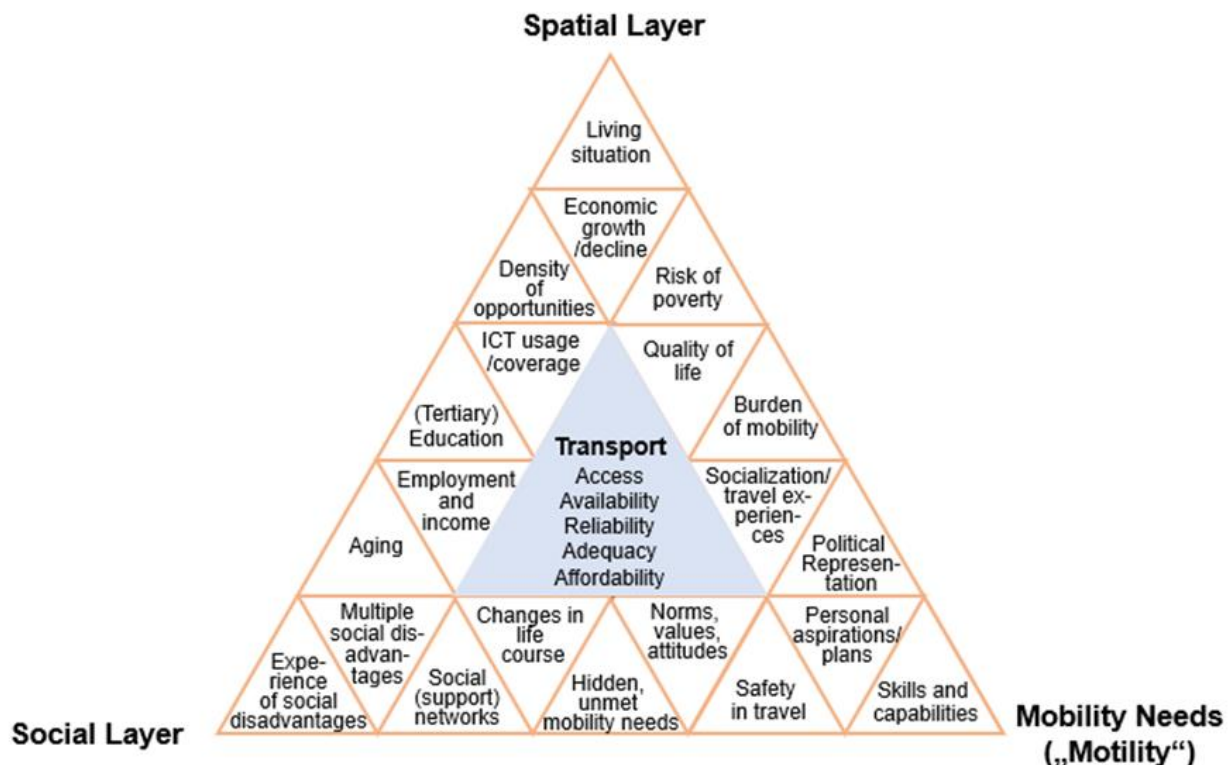
- There is no transport option available that is suited to the individual's physical condition and capabilities (**availability**),
- The existing transport options do not reach destinations where the individual can fulfil his/her daily activity needs, in order to maintain a reasonable quality of life (**accessibility**),
- The necessary weekly amount spent on transport leaves the household with a residual income below the official poverty line (**affordability**),
- The individual needs to spend an excessive amount of time travelling, leading to time poverty or social isolation (**time budget**),
- The prevailing travel conditions are dangerous, unsafe or unhealthy for the individual (**adequacy**).

**This report** is the outcome of the desk research performed in WP2 (Analysis of mobility needs and capabilities), which encompasses an appraisal of:

1. spatial specificities and common factors of mobility challenges in prioritised areas (Task 2.1);
2. mobility socio-economic landscape(s) (Task 2.2);
3. visible and hidden mobility needs and attitudes (Task 2.3).



Figure 0-1: Summary of topics related to transport poverty



Source: Own elaboration

The spatial specificities in prioritised areas (such as rural, remote or deprived urban areas) are at the centre of the **spatial analysis** in HiReach. This let us to define spatial clusters according to **common geographical elements** (high density, scattered development and urban sprawl, low density) and functional spatial relations (commuting relations, migration movements). Therefore, the spatial analysis in HiReach is conducted under the lens of three spatial layers, i) **the urban**, ii) **peri-urban** and iii) **rural areas**, considering geographic, geopolitical, transport service levels and regional disparities between different parts of the European Union.

In defining spatial differences, this part of the report deals with transport-related elements, as much as with more general factors that affect transport poverty indirectly (accessibility, economic trends, urbanization etc.), so to gain a more detailed understanding. In order to understand why (given similar characteristics) some European areas experience greater transport poverty than others, an in-depth investigation of the social and economic factors is offered.

Regarding key **socio-economic variables**, the deliverable offers a fine-grained picture of the social differences among the transport users, so to properly understand the socio-economic barriers to accessible mobility options. A more detailed analysis is implemented about some socio-economic layers, those more vulnerable in satisfying transport needs, such as low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and remote areas.

In the analysis, we depart from a classical account of social inequality and social disadvantage focusing on poverty, social strata and geographical layers, to define a more complex assessment of inequality and disadvantage. This takes into account the increasing variability of lifestyles, attitudes, opinions and values, but also how they shape - on a micro-societal level - people's mobility.

The report therefore investigates **mobility patterns and needs** as they are different for social groups, experienced in very specific forms. In putting substantial weight on i) the role of transport regimes (i.e. transport-related complex, socially and technological constructed arenas, formed by technological and management elements) and their social value as well as on ii) the social construction of individual's transport needs, this part of the report aims at exploring the gap between articulated and unarticulated needs, and actual travel patterns of individuals. In this work, we rely on the current literature on transport-related poverty, but we make free use of Pierre Bourdieu's and Vincent Kaufmann's concepts, respectively of "social capital" and "motility". Understanding this social construction of transport needs is crucial in seeking solutions.

Considering the number and the variety of elements related to transport poverty, the **conclusions** aim to wrap up the findings and to offer hints for the fieldwork in the selected HiReach study regions. They also outlines agenda-driven tools for the next stages of the project, beyond the fieldwork.

1. We need to understand the differences **among transportation-related disadvantage, social disadvantage and social exclusion, as much as their reciprocal relations**. Transport disadvantage and transport-related social exclusion are not synonymous with each other: it is possible to be socially excluded but still have good access to transport or to be transport disadvantaged but highly socially included. Social exclusion is determined by many more factors than just transport (transport may be even the least important factor).
2. **Spatial aspects are often only implicitly taken into account in the analysis of transport poverty** via the observation of social disadvantage and transportation-related disadvantages. Transport poverty is less understood from a spatial perspective – the urban, the peri-/suburban and the rural.
3. Transport poverty often results from **a combination of different social disadvantages** (hence the assessment done in this report). Most vulnerable to transport poverty are those experiencing material deprivation linked to physical impairment, migrant or ethnic minority background, single parenthood and different socio-demographic characteristics (being young, being old, gender aspects). Therefore, the impact of multiple social disadvantages in the experience of transport poverty will receive special attention in this study.
4. **Transport poverty is contextual and relational**. We can assume that transport poverty is experienced differently across European regions in urban, peri-urban and rural areas. Individual material poverty coupled with overall low quality of living, rural/urban deprivation and low quality of public transport services supposedly are strong indicators for an incidence of transport poverty; however, such a perspective may obscure pockets of transport poverty in well-developed, advantaged regions.
5. **Analysis of transport poverty mainly focuses on basic needs**. While this is by all means justified, it may miss important aspects that are considered crucial for a contemporary

meaningful life. This may be, e.g. the importance of social interaction and co-presence that are usually connected to leisure trips, so being beyond everyday life.

6. **We need to understand mobility needs by differentiating between “mobility” – the actual movement - and “motility” – the potential to move** (Kaufmann et al. 2004). Mobility needs are not just the outcome of an individual's social position and spatial location; mobility needs are also produced and altered according to an individual's biography as well as future aspirations and plans.
7. **Transport poverty needs to be understood in a dynamic relationship with high mobility.** Technological innovation in communication and transport is constantly creating new options for travelling and interaction. Mobility needs potentially grow with the growing availability of options and are interrelated with social, spatial and technological change.
8. **Virtual mobility needs to be analysed together with corporeal mobility.** A person's mobility patterns cannot be understood without understanding her or his use of communication tools. The use of communication tools may replace, supplement or create new needs of mobility. The interaction between virtual and physical mobility can differ from person to person, with very different outcomes.

This further offers some key discussion points for the work in HiReach: in the fieldwork, these aspects should not only be addressed according to the three layers, but in an overarching perspective, e.g. considering:

- the identified degree of deprivation of specific vulnerable groups due to transport poverty,
- keeping a solution-oriented approach.

# 1 Introduction

This chapter has the goal to present HiReach goals as well as the current debate on transport poverty. An indication of the content of the deliverable and the role of its findings in fuelling a fruitful work is defined. The chapter offers thus an at-large view of the literature and the debate regarding transport poverty, defining eventually a working characterisation of transport poverty.

## 1.1 Purpose and scope

### 1.1.1 Background

HiReach is a Horizon 2020 (H2020) project that aims **to contribute to the eradication of transport poverty**. The European Union and its Member States support the accessibility of their citizens, since good accessibility thrives the European economies, promotes inclusion and fosters the well-being of inhabitants. The European Union particularly focuses at improving accessibility of vulnerable social groups such as the elderly, the disabled and people living in remote or deprived regions, so to arrive at a state of affairs with a 'mobility for all'. HiReach assists the European Union in achieving this goal.

More in particular, HiReach fosters social innovation processes through an in depth (micro) analysis of capabilities and attitudes of different social groups and their direct involvement as co-users and co-owners of the proposed solutions. This is implemented by triggering new mobility solutions sustained by products scaling up, backed by mobile information technologies and social innovations, using open tools, technology transfer and start-up development techniques to find and exploit new business ideas that reach low accessibility social groups and areas.

In order to gain a better mobilization of social forces and to better frame the elements characterising transport poverty, HiReach developed a Work Package devoted to the understanding of these elements (WP2, Analysis of mobility needs and capabilities). This deliverable (D2.1) is the outcome of a desk research, which encompasses an appraisal of:

- i) spatial specificities and common factors of mobility challenges (Task 2.1);
- ii) mobility socio-economic landscape(s) (Task 2.2);
- iii) visible and hidden mobility needs and attitudes (Task 2.3).

This deliverable has the goal to map the definitions, concepts and backgrounds of transport poverty in the "prioritised areas", such as rural, remote and deprived urban areas, as defined by the H2020 MG-8-4-2017's call. This asks an analysis of the social and spatial elements regarding transport poverty, needs and exclusion, assessing its elements in terms of spatial factors, demographics and mobility patterns. The target here is thus to have a rich, useful and ready to use theoretical background which can fruitfully support the following stages of the project and can fuel its final achievements.



### 1.1.2 Structure of the document

This report offers a substantial contribution in the identification and definition of transport poverty and addresses mobility and accessibility needs of different social groups vulnerable to social exclusion.

**This introductory chapter** offer a first glance on the deliverable background and goals, presenting a first overview on transport poverty.

There is the need to analyse the spatial characters of transport poverty: **Chapter 2** of this document define clusters according to common geographical elements (high density, scattered development and urban sprawl, low density). This will let to gain a better grasp under the lens of its spatial landscape: urban, peri-urban and rural areas, considering geographic, geopolitical, transport service levels and regional disparities.

**Chapter 3** analyses transport poverty under the lens of social and demographic identity. Regarding key socio-economic variables, the deliverable offers a fine-grained picture of the social differences among the transport users, so to properly understand the socio-economic barriers to accessible mobility options.

Beyond socio-economic background and origin, **Chapter 4** investigates mobility patterns and needs as they are different for social groups, experienced in very specific forms. In putting substantial weight on the mobility needs and its social construction, this chapter aims at exploring the gap between articulated and unarticulated needs, and actual travel patterns of individuals.

As finally outlined in **Chapter 5**, this report offers also practical elements so to identify different varieties of transport poverty in a micro and macro perspective, from the personal and individual level to the systemic social, spatial and political level. This will allow a fruitful fieldwork as scheduled in the next stages of the project.

### 1.1.3 An analysis of transport poverty and HiReach problem-solving approach

HiReach aims at (first step) identifying and critically assessing sustainable and inclusive mobility options for European citizens. The results will (second step) deliver the groundwork for more nuanced policy instruments to tackle transport poverty. Finally (third step), HiReach will develop and research a series of effective, efficient and affordable mobility solutions which respond to the specific needs of individuals from vulnerable social groups, adapted to the specific spatial challenges of urban, peri-urban and rural areas in different regions of Europe.

Within the three-step process, this deliverable establishes the **theoretical foundation of the project**. It is setting the problem by analysing the spatial, demographic and socio-economic factors as well as wider cultural, geopolitical and systemic factors of transport poverty across Europe. It will explore in depth both the *travel patterns* including travel behaviour and habits of targeted vulnerable groups, and *travel demands and mobility needs* of such groups.

This deliverable has thus the double aim of grounding a critical understanding of the topic and to pave the way for the successive steps of the project. In other words, this analysis will fuel the work in the HiReach study regions so to better appraise mobility attitudes of social groups in prioritised areas as further assessed in Task 2.4 (Listening to the local

experts and users). This deliverable also feeds the other stages of the project implementation, laying the foundation for the development of effective, efficient and affordable mobility solutions. Particularly, the research undertaken for this deliverable will be continued in WP3 (Identification of new mobility options and business models).

This first working phase relies on a mix of methodologies. While desk research activities are necessary to outline and update our understanding of the field as done here, a handpicked number of local case studies regarding mobility exclusion/inclusion will be explored via **fieldwork in Task 2.4**, relying also on focus group discussions with users and stakeholders. In selected regions across Europe, the deeper lying attitudes, perspectives, value sets and even cultural aspects that take effect on group-specific mobility needs will be explored in detail. This endeavour aims at verifying the results presented in this deliverable, but also aims at delivering new insights that are yet un-investigated in existing literature.

The significance of end-user's knowledge and experiences for shaping better outcomes is gaining more and more momentum. Although largely ignored in the transport sector, there is evidence of gaining better transport services relying on users' experiences also in this field, and it can be even more relevant in the case of transport poverty. This task will analyse mobility attitudes and demands, focusing on the user's perspectives, aiming to gain a better bottom-up appraisal of mobility inclusion and exclusion. The outcomes of Task 2.4 will be reported in the subsequent Deliverable 2.2 (Mobility in prioritised areas: inputs from the final users).

## 1.2 State of the art

### 1.2.1 What is transport poverty?

Over the last couple of decades, the problem of **accessibility and mobility among the socially disadvantaged or vulnerable segments of the population** has gained interest among researchers and academics, professionals and policy makers (Lucas 2012). Without surprise, the body of literature has been growing in parallel. The topics of research are diverse including the:

- conceptualisation of social and economic issues (Lucas et al. 2016),
- links between transport poverty or deprivation, and social exclusion (Church et al. 2000; Kenyon et al. 2002; Stanley et al. 2011),
- accessibility and mobility needs, opportunities and barriers of various social segments,
- equity in public transport (Currie 2010; Delbosc and Currie 2011),
- association of mobility with social inequality and deprivation (Kwan 1999; Neutens et al. 2010),
- transport and wellbeing (Currie et al. 2009; Currie et al. 2010),
- psychological impacts of transport poverty (Currie and Delbosc 2010),
- relationship between transport and social capital (Currie and Stanley 2008),
- development of quantitative data for robust analysis (Moore et al. 2013), or
- designing of public policies to promote social fairness and justice (Lucas et al. 2016).

**In this context of growing interest** on such a relationship, including mobility-related vulnerability of some social groups, **the term “transport poverty” emerged**. Despite this

greater awareness, transport poverty has not been comprehensively described as a concept yet: academia, policy maker's circles and practitioners' milieus still have to define and understand the full implications of the phenomena.

Today, it is well accepted that inadequate transport facilities have negative effects on personal mobility and individual ability to fully participate in society, as well as negative macro- and micro-economic consequences. The availability of transport options is indeed considered vital for accessing employment opportunities and services of everyday life, and in more general terms, transport options are crucial for fulfilling social interactions well beyond basic needs as working and social reproduction.

Said so, transport-related deficiencies are naturally affecting individuals and groups differently according to different economic, social and cognitive parameters. The challenge of transport poverty is not limited to providing access to certain means of transport: the socio-economic position of the individual him/herself in the broad sense of the word (e.g. jobseekers, disabled, underprivileged, single-parent families, migrants and elderly people, etc.) and her/his skills are important factors to take into account for designing suitable solutions. Equally, gender is an important, and underestimated, element affecting transport poverty. To make the situation more complex, transport access and social inclusion are mutually interdependent. Various studies have shown that transport poverty can be at the root of exclusion on the labour market; and conversely this exclusion means lower opportunities of purchasing certain resources, including transport.

The genealogy of the term reveals itself an interesting research element. A major milestone for the recent debate on transport poverty was the implementation of the Social Exclusion Unit (hereafter SEU) in the UK and its explicit focus on the role of transport and mobility in processes of social exclusion. In its 2003 report, the SEU pointed out that access to transport options – both individual modes of transport and public transport – can be a result of i) previous personal experience of social exclusion, and ii) inadequate transport availability. Low accessibility to basic services can naturally reinforce social exclusion (Social Exclusion Unit 2003, p. 1). This constant production and reproduction of social disadvantage and unequal access to transport options can result in a downward spiral that indeed traps individuals, households and social groups in a state of immobility (irrespective of their geographical dwelling, urban, peri-urban and rural areas). Another achievement of the study was that it successfully directed the attention to the needs of individuals from vulnerable social groups as well as urban and rural spaces characterised by deprivation and neglect (Church et al. 2000; Lucas et al. 2001; Kenyon et al. 2002).

The 2003 Social Exclusion Unit report was thus a turning point in the awareness of the phenomenon, generating globally a growing policy and academic interest in transport-related social exclusion. It is acknowledged that dealing with transport poverty and social exclusion must depart from an observation of general poverty towards a contextual understanding of an individual's position within society (Lucas 2012, p. 106). There is however a continued confusion about the concepts, definitions and measures regarding the connection between transport and social disadvantage.

The term transport poverty appeared when it was emphasized in social exclusion literature (Lucas 2004, p. 1) and became further prominent when it was utilised as a campaigning instrument to shed light on affordability of car ownership, public transport costs, and lack of access to transport (Sustrans 2012). The term has been subsequently used to conceptually clarify the inter-linkages between transport-related disadvantage, social

disadvantage, (in)accessibility and social exclusion (Lucas 2012, p. 107; Titheridge et al. 2014, pp. 19–22). However, the recent academic progress in conceptualizations still miss a precise description of the phenomenon, and the discussion is often focusing on how transport poverty differs from poverty itself and who is affected.

### 1.2.2 Approaches to transport poverty

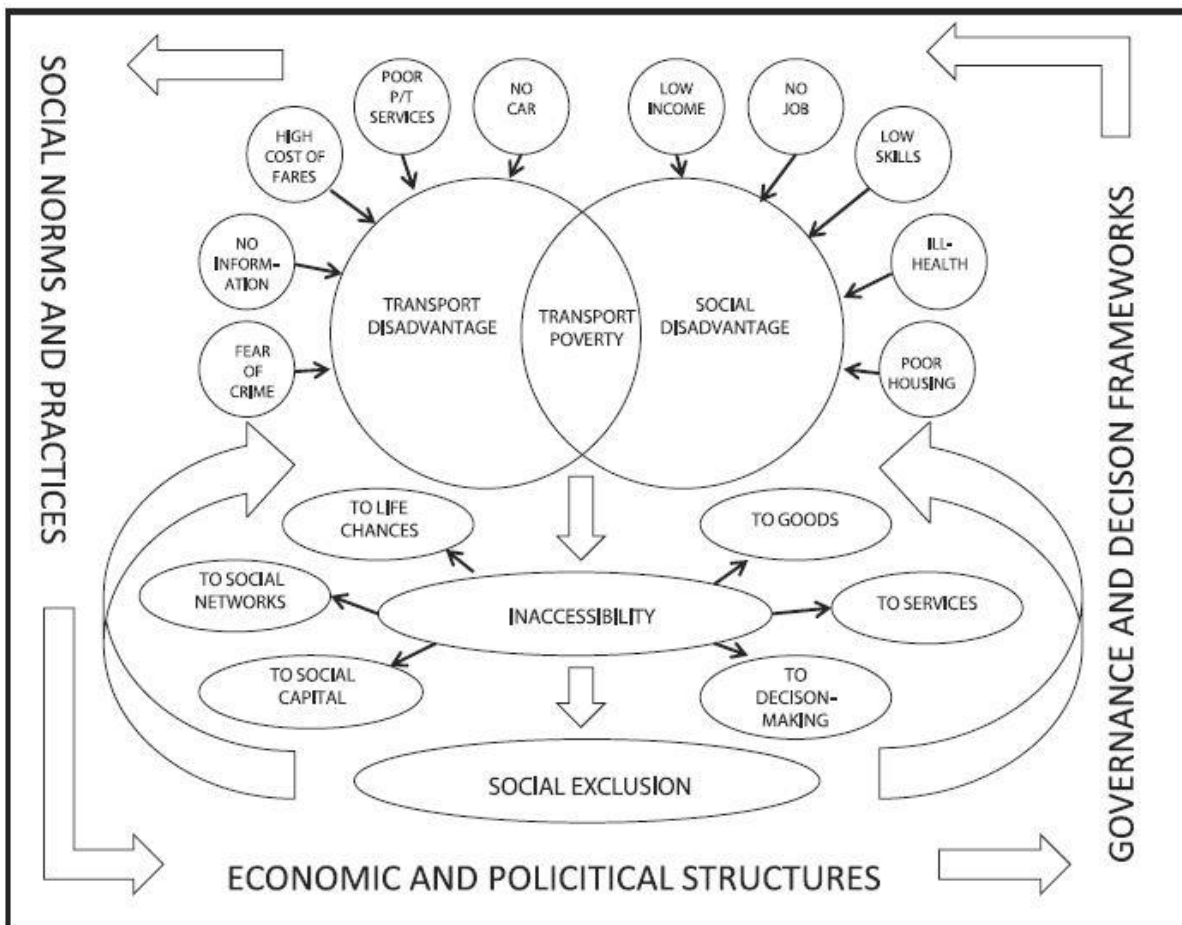
As described above, transport poverty first has been investigated - to a larger extent - in context of the debate on social exclusion, equality of access to opportunities and transport justice. This debate, ignited by the work of the Social Exclusion Unit, documents a considerable shift towards new approaches, those being people-centred and oriented towards the needs of individuals with different social, economic and demographic characteristics. In 2012, Karen Lucas made an influential attempt to locate the **transport poverty at the intersection of transport disadvantage and social disadvantage**, the consequences leading to inaccessibility and social exclusion<sup>1</sup> (see Figure 1-1).

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<sup>1</sup> Definition of social exclusion: "A process by which people are prevented from participating in the economic, political and social life of the community because of reduced accessibility to opportunities, services and social networks, due to whole or in part to insufficient mobility in a society and an environment built around the assumption of high mobility" (Kenyon et al. 2006, 210).



Figure 1-1: Relationship between transport disadvantage, social disadvantage and social exclusion



Source: Lucas 2012, p. 107

By bringing in relationship different phenomena, she thereby offers a useful differentiation: on the one side, we have the experience of disadvantage and its causes; on the other side, we have the social and economic outcomes of these experiences.

This statement explains the circular dynamic of production and reinforcement of the experience of disadvantage and social exclusion. This makes also clear that social / transport related disadvantage and social exclusion are not in a simple causal relationship nor are they synonymous. As Currie and Delbosc point out, when transport disadvantage is explored across high mobile and low-mobile groups, disadvantage is subjectively estimated very differently. Hence, it is important to realize that "it is possible to be socially excluded but still have good access to transport or to be transport disadvantaged but highly socially included" (Lucas 2012, p. 106).

### 1.2.3 Transport-related social exclusion and its conceptualisations

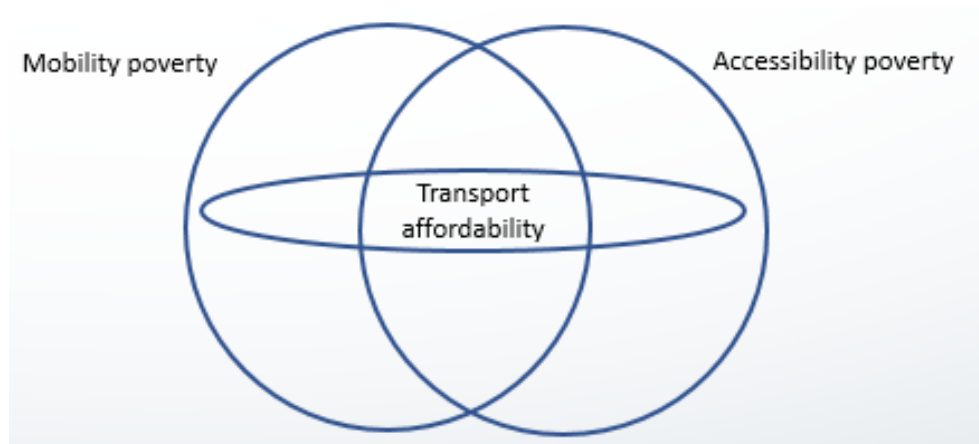
Although transport disadvantage and social exclusion has been studied for quite a while now, there are **important open questions that remain unsolved**:

- First, it is still insufficiently explored how exactly and to what degree transport and mobility related disadvantages contribute to social exclusion, reduced opportunities and well-being.
- Second, different phenomena of social disadvantage have been explored with unequal attention; while there is substantial empirical evidence on the link between material poverty and transport disadvantage, there is less knowledge on the role of other socio-demographic features that are experienced as disadvantage. This includes gender, disability, old age and young age. There is almost no attention on discrimination that ethnic minorities and migrants face while being mobile and accessing transport.
- Third, the relation between spatial and temporal organization in daily life and the experienced disadvantage is still explored insufficiently. The challenge of assessing this topic is related to the relational nature of high mobility and low mobility: increasing mobility levels overall - and instances of high mobility in certain sections of society - is in causal relationship to reduced mobility and accessibility of low mobile sections of society. Consequently, "what is necessary for full 'social' inclusion varies as the means and modes of mobility change and as the potential for 'access' develops" (Cass et al. 2005, p. 542).
- Fourth, in this ever more growing and complex field, there are many barriers that prevent from taking positive action, because it is difficult to identify the right level and scale of intervention. Owing to the large body of literature on the issue, we get the idea that everything is connected and any set of elements is related to the other. We know that there are limitations on the individual and household level, on the community and peer-group level, at the level of social strata, gender, race, age and so on. Transport-related inefficiencies on different spatial and systemic levels are well known.

However, this state of the art did not impede scholars to develop some in-depth analysis of the phenomenon. For instance the term transport poverty has been continuously employed in more recent years (Martens 2013, p. 24; Velaga et al. 2012, p. 110), but is often used interchangeably with other terms, such as 'mobility poverty' (*Mobilitätsarmut* as in the German debate (Dangschat 2011, p. 6; Ahrend et al. 2013, pp. 20–24; Stark 2017, pp. 97–98; Daubitz 2016, pp. 433–447)); but also 'accessibility poverty' or 'poverty of access' (Martens and Bastiaanssen 2014, pp. 6–7; Farrington and Farrington 2005, p. 3), or 'transport disadvantage' (e.g. Currie et al. 2009, pp. 97–98), 'transport-related' or 'transport-based social exclusion' (e.g. Preston and Rajé 2007, pp. 152–154; Schwanen et al. 2015, pp. 123–125), 'social equity', 'fairness' and 'justice in transport' (e.g. Jones and Lucas 2012, p. 9; Sheller 2015, p. 86; Martens 2009, pp. 4–6), and 'transport wealth' (Stokes and Lucas 2011, pp. 4–7).

Although these terminologies and the related concepts are defined differently, they also have substantial overlaps and sometimes are based on similar approaches and assumptions. In other words, **transport poverty can be approached from different, however interrelated perspectives** (Lucas et al. 2016, pp. 2–4). We can summarize these elements as following (Figure 1-2):

- **Transport affordability,**
- **Accessibility poverty,**
- **Mobility poverty.**

**Figure 1-2: Transport poverty and related sub-concepts**

Source: Lucas et al. 2016, p. 3

### 1.2.3.1 Transport affordability

Transport poverty can be approached from the perspective of **transport affordability**. The term refers to the “financial burden households bear in purchasing transportation services, particularly those required to access basic goods and activities such as healthcare, shopping, school, work and social activities” (Litman 2016, p. 5). This discourse is largely relevant for the industrialized countries, as it centres on ownership of a car as a basic household need.

Focusing on affordability to define transport poverty, Gleeson and Randolph (2002, p. 102) state that “transport poverty occurs when a household is forced to consume more travel costs than it can reasonably afford, especially costs relating to car ownership and usage”. Several authors have pointed out that **forced car ownership**<sup>2</sup> is a form of transport poverty that has been identified in the UK, US and Australia (e.g. Currie and Senbergs 2007, pp. 2–3).

### 1.2.3.2 Accessibility poverty

The second major strand of research on transport poverty focuses on accessibility, and **accessibility poverty**. Accessibility considers whether people can reach “key services at reasonable cost, in reasonable time and with reasonable ease” (Social Exclusion Unit 2003, p. 1) - key services being most importantly employment, education, health care and daily supply. Accordingly, Martens and Bastiaanssen define accessibility poverty in the following way: “Accessibility poverty refers to a situation of low accessibility that severely restricts a person's ability to participate in the activities deemed normal in a particular society”

<sup>2</sup> Central to the concept of forced car ownership are the low income of households, the need for travel in everyday life and the lack of alternatives to the car in form of public transport. In such a context, expenditures for the car are seen as essential and unavoidable in a household. Hence, there is an incidence of high car ownership, but at high cost to low income groups (see Currie and Senbergs 2007, 2).

(Martens and Bastiaanssen 2014, p. 5). It can be stated that the essential characteristics of the accessibility approach are its reference to the debate of fairness and justice in transport, and a priority on *basic* resources and *basic* or *key* needs.<sup>3</sup>

Accordingly, from a policy perspective, many authors stress that it is more important to improve people's accessibility than people's mobility. As largely known by any students of transport planning, mobility and accessibility are not the same, and greater mobility can even lead to less accessibility (Stopher and Stanley 2014). Hence not the ability to move, but the ability to participate in activities that take place outside the home are crucial (Pereira et al. 2017, p. 178; Martens et al. 2014, p. 2).

### 1.2.3.3 Mobility poverty

The third approach is **mobility poverty**. Mobility poverty focuses on barriers to people's ability and potential to move. Different from the accessibility perspective that aims foremost at basic needs, mobility poverty takes into perspective the effects of hypermobility and the development of highly-mobile societies. In such a context, due to the power relations involved, especially vulnerable groups experience reduced mobility options and accessibility levels (Massey 1994, p. 150; Kenyon et al. 2002, p. 210; Cass et al. 2005, p. 542; Hannam et al. 2006, p. 3). Mobility perspectives take factors on micro-, meso- and macro-level into account, such as status, wealth, prestige and power, and highlight that mobility is fundamentally linked to social, cultural, economic and political processes.

Key to the approach is the identification of the *systemic* lack of transportation and mobility options and *relational* nature of transport problems. The mobility framing is not only sensitive to questions of access, but also to the skills and capabilities of individuals as well as to personal ambitions and differentiated needs. By understanding mobility needs as socially constructed, it explores the gap between unrealized mobility needs and actual travel patterns. The key concept to such an in-depth appraisal of differentiated mobilities is the **motility** approach by Vincent Kaufmann (Kaufmann et al. 2004; Flamm and Kaufmann 2006).

Such elaborated analyses of mobility disadvantage pose a considerable challenge for investigating the phenomena both on a representative and comparable scale and poses a problem for national and local policy makers how to adequately address the issue.

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<sup>3</sup> From a theoretical standpoint, there are different approaches to "fairness" in transport that are helpful to understand transport poverty. Hence, a closer look at the main justice theories is necessary for the further analysis of accessibility and mobility in relation to transport poverty (Frankfurt 1987, Martens et al. 2014, Pereira et al. 2017, Casal 2007). We can list those approaches as:

- Utilitarianist,
- Libertarianist,
- Intuitionist,
- Egalitarian,
- Capability,
- Sufficientarian,
- Prioritarian.

### 1.2.4 Differentiation between mobility and transport poverty

While the new mobilities paradigm emphasizes mobilities over transportation and clarifies on the differences between the two, the terms “mobility poverty” and “transport poverty” are sometimes used interchangeably. In the current academic debate, “transport poverty” however is the more widely used term. Also, Karen Lucas, in her recent interim inventory of terms and concepts, summarizes different approaches under the term “transport poverty” (Lucas et al. 2016). Ahrend et al. (2013) stress the point that is not only the spatial delimitations that influence mobility behaviour, but also the “mental horizon” and the capacity to plan and shape one’s own life. Mobility therefore is also mental flexibility and agility, and the created personal sphere is one’s “space of opportunity” (Ahrend et al. 2013, p. 22).

These arguments, very much related to Kaufmann’s motility, call for an analysis of “mobility poverty” and not “transport poverty”. According to Ahrend et al. (2013, p. 21), transport poverty focuses too much on the availability of transport options, and that even in the most sophisticated and well-grounded works, the topic is mainly accessed from the perspective of transport provision.

Nevertheless, **in HiReach the term transport poverty will be used** for several reasons:

- First, this connects HiReach to the ongoing academic and policy debate over the last 20 years.
- Second, the international transport debate has made considerable progress in integrating aspects of mobility poverty into the debate of transport poverty.
- Third, the term transport poverty effectively separates the topic of everyday and regular corporeal movement in space from other forms such migration, which are not in the focus of this project.
- Fourth, the term transport poverty reminds all the involved actors (researchers, regulators and practitioners) that the joint objective must be the development of effective and applicable solutions, despite ever more differentiated mobility needs in a complex world. Or put in another way, in the face of “uneven mobility futures” (Sheller 2016, pp. 15–17), “glamorization” of hyper-mobility (Cohen and Gössling 2015, p. 180) and the every-growing importance of mobility for social status it is high time to improve mobility for the most vulnerable groups in society.

### 1.2.5 A working definition of transport poverty

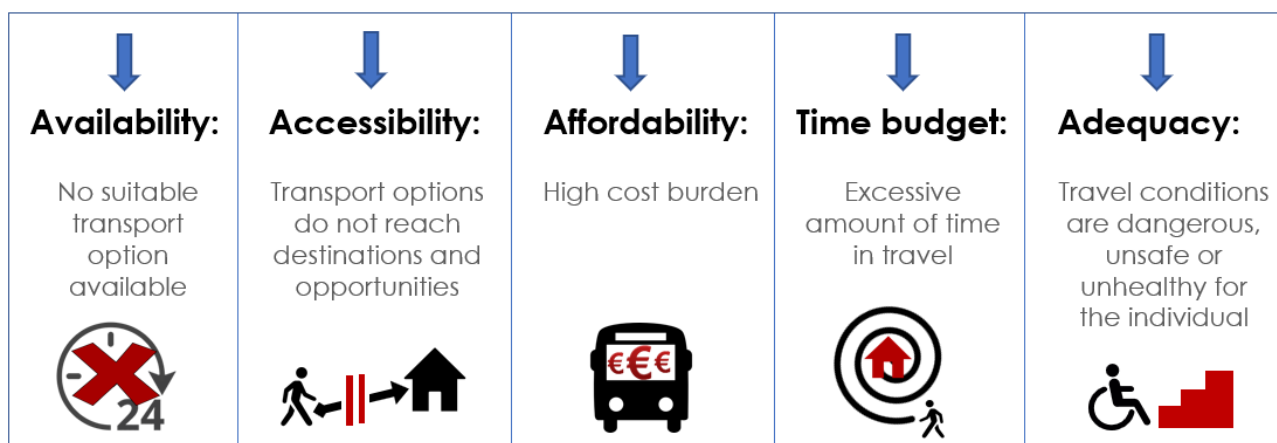
In a most recent review of terms and definitions on transport poverty, Lucas et al. (2016) made the following attempt to make a precise definition of the concept:

*An individual is transport poor if, in order to satisfy their daily basic activity needs, at least one of the following conditions apply:*

- *There is no transport option available that is suited to the individual’s physical condition and capabilities (**availability**).*
- *The existing transport options do not reach destinations where the individual can fulfil his/her daily activity needs, in order to maintain a reasonable quality of life (**accessibility**).*
- *The necessary weekly amount spent on transport leaves the household with a residual income below the official poverty line (**affordability**).*

- The individual needs to spend an excessive amount of time travelling, leading to time poverty or social isolation (**time budget**).
- The prevailing travel conditions are dangerous, unsafe or unhealthy for the individual (**adequacy**) (Lucas et al. 2016, p. 4).

**Figure 1-3: Conditions of transport poverty**



Source: Own elaboration, after Lucas et al. 2016

This definition makes a considerable contribution to the transport and mobility disciplines by offering an all-encompassing definition that reflect the current state of the art. It builds coherence in a scattered field of observation and it will be the starting point for all future discussions.



## 2 Analysis of mobility spatial specificities

This chapter aims to define the role of spatial human settlements in mobility, focusing on "prioritised areas" as defined by H2020 call. Here, the relationship among space, geography and mobility (with a focus on transport poverty) is assessed, keeping in mind the distinctive mobility patterns of urban, rural and peri-urban areas (being the latter not urban nor rural). The difference among those layers is very subtle. However, an understanding of the geographies of transport poverty is indispensable, so to better mobilize appropriate policies and solutions.

In defining spatial differences, this chapter deals with transport-related elements, as much as with more general factors (accessibility, economic trend, urbanization etc.), so to gain a more detailed understanding. This chapter also offers a classification of spatial settlements, largely based on Eurostat's Degree of urbanization (DEGURBA) and Functional Urban Areas (FUA). An in-depth investigation of the social and transport-related patterns is offered for the urban and rural milieus, as well as for the peri-urban areas.

### 2.1 Introduction

#### 2.1.1 The spatial dimension of transport poverty

The aim of this chapter is to identify and analyse the spatial specificities and characteristics of transport poverty, taking into consideration the geographic elements of dwelling and moving.

The spatial conditions of individual mobility needs are determined by several factors. Density, location in the rural-urban network and accessibility are those spatial factors that have a strong impact on individual mobility behaviour and needs. Hence, an analysis of spatial conditions of transport poverty needs to **distinguish between rural and urban areas**. Additionally, urban expansion and reconfiguration of the European spatial system have resulted in an **urban-rural transition zone, called here the peri-urban areas**. These areas are very dynamic and themselves in a process of constant transformation. They exhibit demographic, socio-economic and other characteristics that are different from purely rural and urban areas, with specific impacts on mobility needs and the mobility system. Hence, additionally to the i) urban and ii) rural layers, HiReach analyses transport poverty in iii) peri-urban areas.

Some regions of the northern and southern member countries are very sparsely populated; these regions display very different characteristics not only in contrast to the dense urban regions of central Europe, but also in contrast to urban areas of the same country. Different histories of centrally-planned vs. market-driven economic development have also forged spatial development European macro regions to a large extent. Although a rapid transformation process can be observed in eastern European Member States, characteristics of urban and rural areas in Eastern and Western Europe are often very different. The spatial analysis in HiReach compares urban, peri-urban and rural regions **across all European regions and EU Member States** and identifies the spatial

differences and similarities. In other words, we assess how within urban areas, all across Europe, parts of cities have experienced economic and social decline, leaving these parts of cities in a state of deprivation. Also, there are parts of European cities located in peripheral locations, difficult to reach especially by public transport. Both urban categories, the **deprived and the peripheral urban**, will be explored in detail.

Furthermore, other factors that directly influence personal mobility are the economic and employment situation of a region, as well as demographic and socio-economic factors, such as age and income. These factors determine where people chose to live and how they (need to) travel. Substantial deviations in age and income can be observed between urban, peri-urban and rural regions, with differences also between Member States. Furthermore, educational attainment and opportunities as well as perceptions of environmental conditions and other aspects related to quality of life can influence a person's decision. These decisions likely have a spatial component, such as choices and constraints for residential locations and mobility options. Here we explore how **different spatially additional (not transport related) factors** in urban, peri-urban and rural areas in different Member States have a **direct or indirect impact on people's mobility behaviour and needs**.

Finally, in contemporary digital and knowledge societies, **internet usage** plays a pivotal role. The differences in internet usage of people living in the three spatial categories need to be considered when thinking about the future of mobility for vulnerable groups, and especially when designing solutions for them.

### 2.1.2 Space, geography and mobility

Geography and mobility are linked to each other in myriad and complex ways. The spatial distribution of human activities, movement of people and goods between places and spatial characteristics interact with and inform each other. They form a system that is under constant transformation. Far from being direct causal relationships and determinants, the relationship between geography and mobility is often subtle and therefore not clearly understood. Too often, development projects - seemingly well-executed and based on the principles of integrated planning - have failed, challenging some of the fundamental assumptions on the interaction between space and mobility.

This introductory subchapter traces some of the interrelationships between human activity, spatial characteristics and movement that are important to the analysis of transport poverty in HiReach.

**Density is one of the concepts that is often employed in understanding the relationship between space and mobility** (Frey and Zimmer 2001). In the past, density of human activities in a certain location certainly has shaped evolution and the basic conditions of transport systems; vice versa, the system's conditions have influenced locational choices. High density of people, activities and opportunities justify highly developed transportation infrastructure and networks, as well as high frequency and speed of transport services. High capacity transport systems are a prerequisite to maintain and foster competitiveness of an economic location. Accessibility is thus highest in regions with high density of population and economic activity.

When living and working was still located in the same place or close to each other, the need for more elaborated modes of transport was not universal. The limits of the walking distance co-shaped early towns and settlements in Europe with its characteristic densities

and the associated benefits, but also negative ramifications. With sustainability having become the primary guiding principle for spatial development, reference to Europe spatial history is often employed when envisioning the ideal city in size and density. With the renaissance of non-motorized mobility in cities across Europe, dense and compact urban development is once again one of the primary objectives in spatial planning.

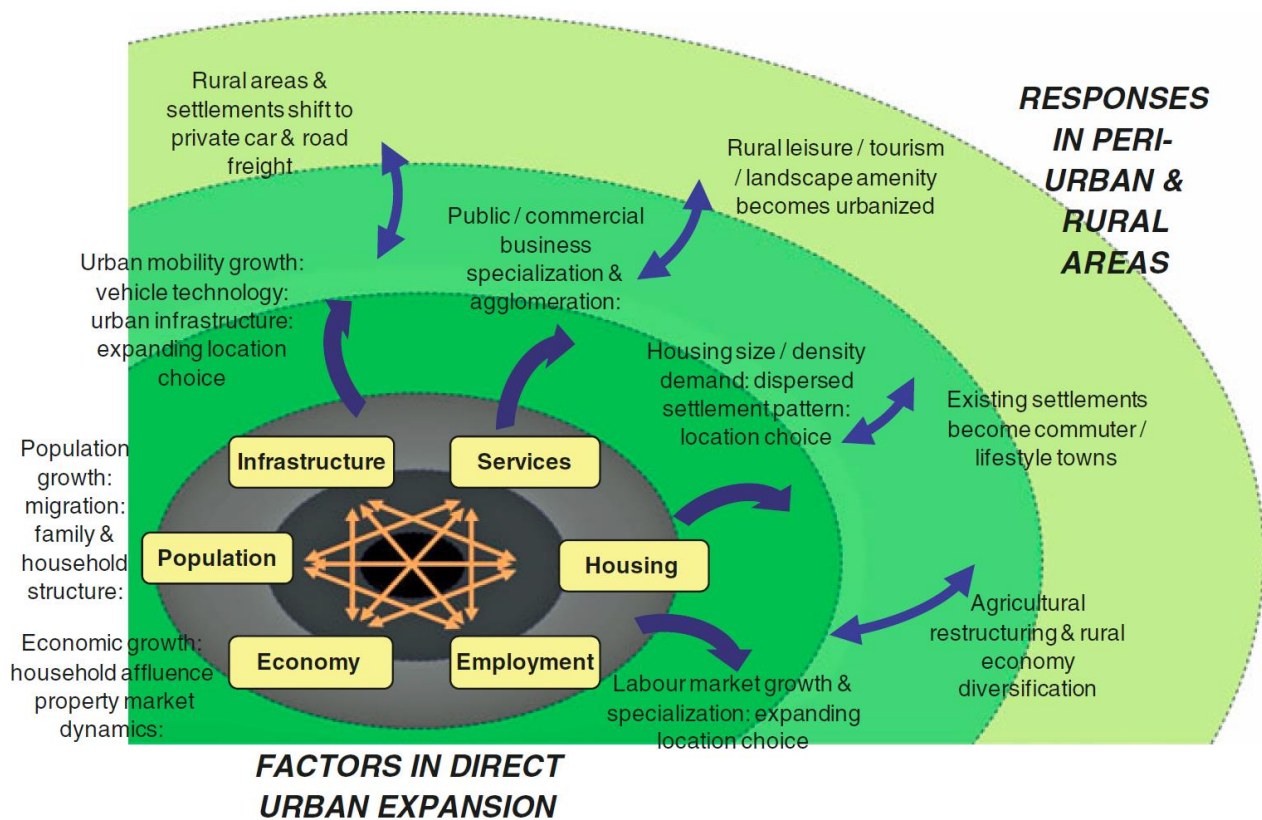
**Compact urban structure combined with a spatial system that is characterized by a hierarchical structure of equally developed main urban hubs with regional centres and smaller settlements is conducive for public and non-motorized transportation use.**

Residential suburbanization in Europe has resulted in a separation of workplaces and places of living and larger distances travelled on an everyday basis. However, the fact that the historic core cities remained major employment, supply and cultural centres, a substantial part of personal travel is still directed to the urban centres, supporting public transport use along main corridors. Different than in Europe, other parts of the world have seen a much more dispersed spatial patterns of suburbanization, as it was overwhelmingly car-based. Furthermore, in many places, residential suburbanization was followed by suburbanization of work places (Hall 2003; Hart 2001).

Nevertheless, **Europe's cities have grown substantially beyond their boundaries**, and suburbanization is only one of the processes that caused urban expansion. Ravetz et al. (2013, pp. 21–26) identified three different types of urban growth and dynamics that cause the city to grow beyond its boundaries:

- **Urban expansion** (Figure 2-1): this is mainly a result of population and economic growth, causing a higher demand for housing and commercial areas. Transport accessibility to employment and services, as well as attractiveness of the environment and land values, then determine the new locations for housing. Physical and political constraints also play a role. Housing demand is also affected by a decrease in average household size, but also a higher demand for dwelling. Economic and employment growth and changing employment patterns further drive urban expansion by an increase of the building stock and land-use conversion. More than in the USA than in Europe, urban expansion has been driven by the dependency on the automobile, creating built-up landscapes centred around cars.

**Figure 2-1: Urban expansion**

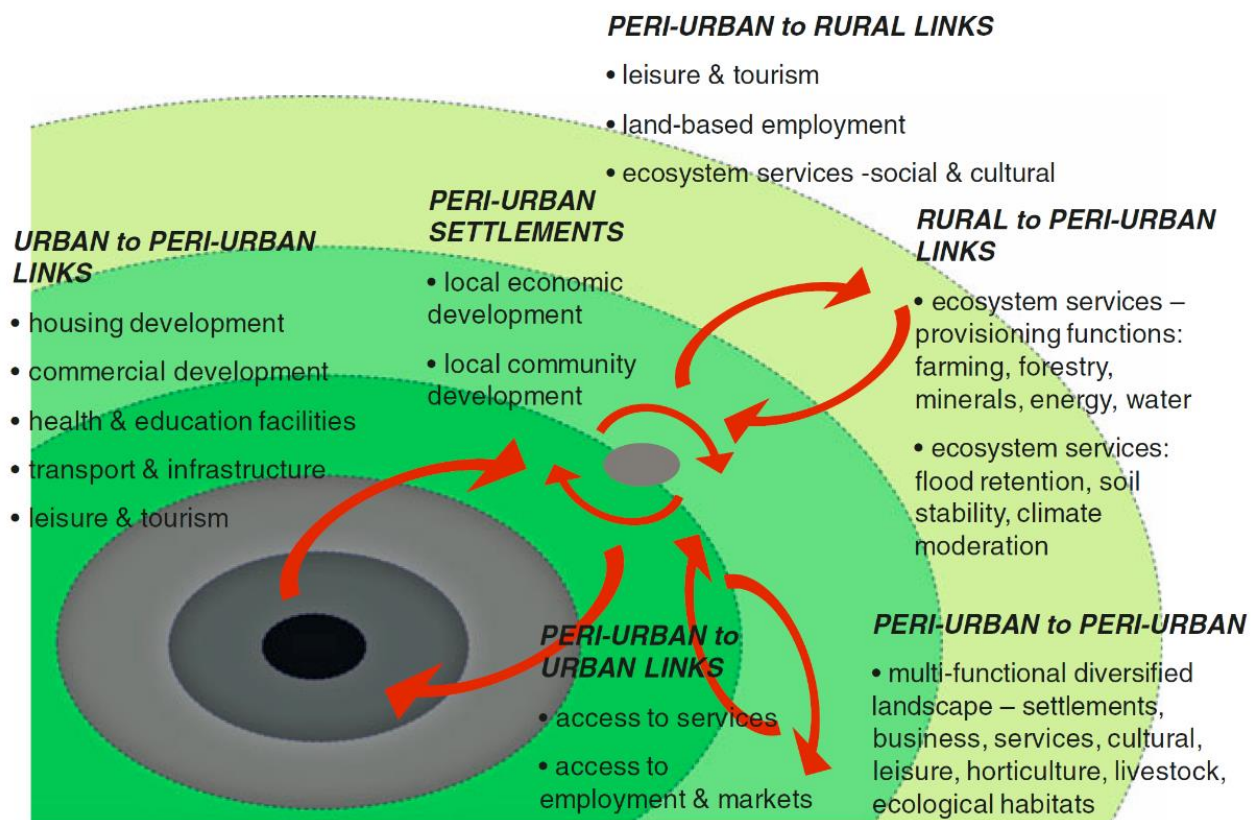


Source: Ravetz et al. 2013, p. 22

- Regional agglomeration and urban-rural linkages** (Figure 2-2): dynamics on the inter-urban and regional scale are constantly reshaping spatial relationships, resulting in inter-urban or regional agglomerations. Single cities are replaced by regional urban system of inter-connected and polycentric settlement forms. Process that occurs in rural areas, such as economic restructuring, land market changes and agricultural modernization, can also support agglomeration dynamics.



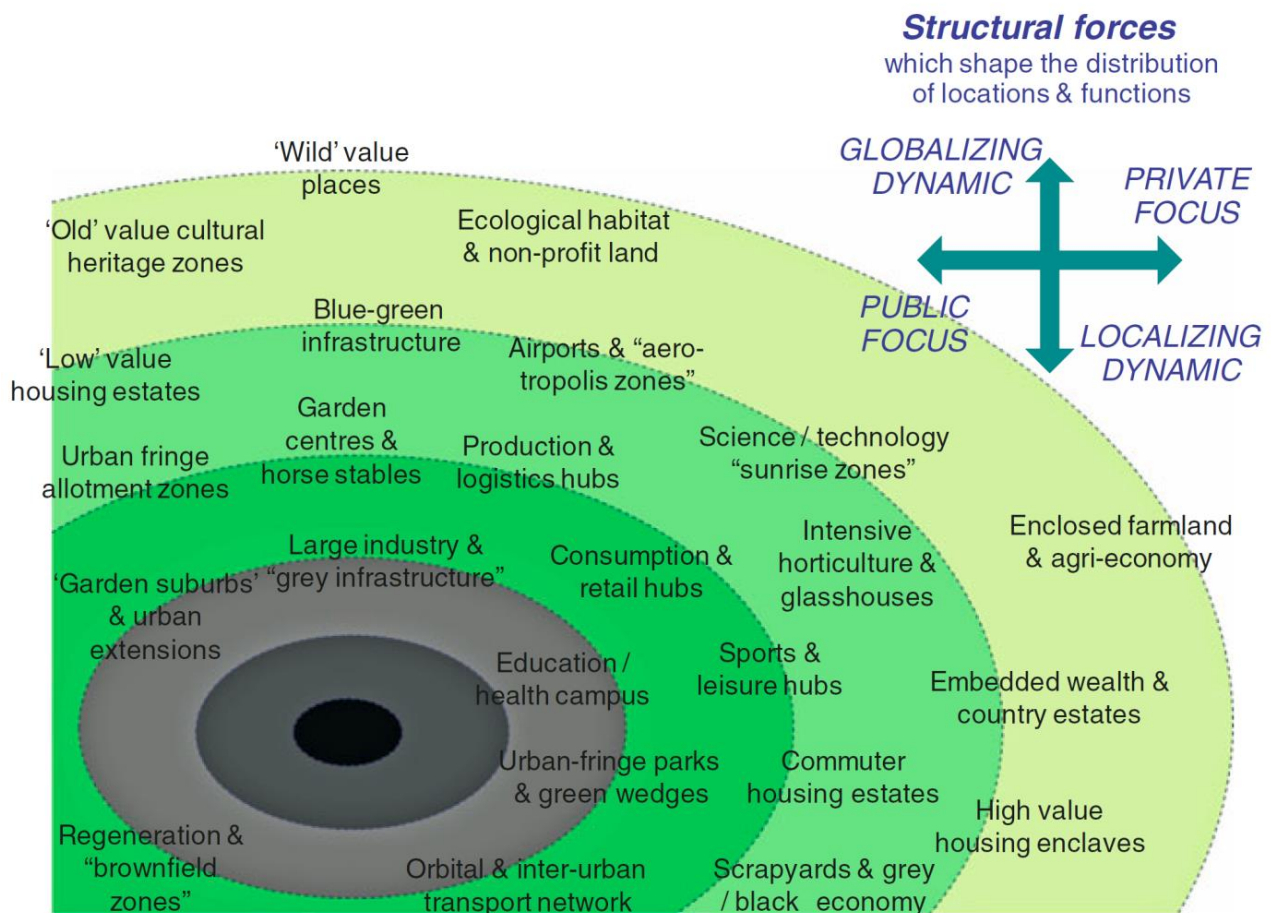
**Figure 2-2: Regional agglomeration and rural-urban linkages**



Source: Ravetz et al. 2013, p. 24

- **Global-local restructuring** (Figure 2-3): the main dynamic driving this process is globalization. Globalization has multiple effects, such as economic effects on business structures and finance. But it has also political effects on the urban systems and hierarchies of Member States and Europe as a whole. Finally, also cultural effects through the media and information and communications technology (ICT) can be observed. All these processes shape urban dynamics – growth as well as decline – in combination with the aforementioned forces. Associated processes such as privatization and franchising have far-reaching impacts on governance and public services. New forms of consumption, leisure and tourism have reshaped spaces far outside traditional urban areas. In contrast to globalization, there are also localization processes, resulting in new cultural identities, new forms of enterprises and diverse use of spaces.

Figure 2-3: Global-local restructuring



Source: Ravetz et al. 2013, p. 26

As this short overview shows, different spatial dynamics are proceeding in parallel, mutually enforcing each other, but leading to contradictory outcomes.

Additionally, the dominance of some urban centres in Europe has led to substantial negative agglomeration effects that fostered new town development across Europe. Such developments have resulted in metropolitan regions being more polycentric with new towns becoming hubs of employment themselves. For transport, this has resulted in the need for networks that allow tangential connectivity avoiding the central city.

### 2.1.3 Spatial distribution of accessibility in Europe

As outlined in Chapter 1, **accessibility is of crucial importance when analysing transport poverty**. Low income people and those experiencing social disadvantage often report below-average accessibility. This is a well-known phenomenon characterised by the provision of inadequate or low-quality public transport services in the areas populated by those parts of the population.

As already discussed, poor accessibility leads to fewer opportunities of social interaction and fulfilment (e.g., health of educational services), with a direct impact in a person's



quality of life and well-being. As a result, people living in such areas often need to resort to private car to fulfil their mobility needs. Páez et al. (2009) studied the transport accessibility limitations of three vulnerable segments – elderly, low income and single parents – regarding three activities – health, food services and jobs – respectively. The study recorded low accessibility for the three groups, even in the case of those persons owning (or using) a car. The study makes evidence that the regions where vulnerable segments live in exhibit lower density of relevant activities (compared with other areas), leading the people living here to travel longer or simply not accessing to such activities.

Such findings highlight the necessity to shed light on accessibility of different European regions, especially those regions that exhibit low population density and low density of opportunities that need to be accessed in everyday life. Opportunities for basic everyday needs are mostly concentrated in regional towns and cities, while locations that cater for specialized needs can be found in larger cities. There are substantial differences across Europe in terms of time needed to reach regional towns and cities, posing a disadvantage to those experiencing social disadvantages living in low-density, remote areas.

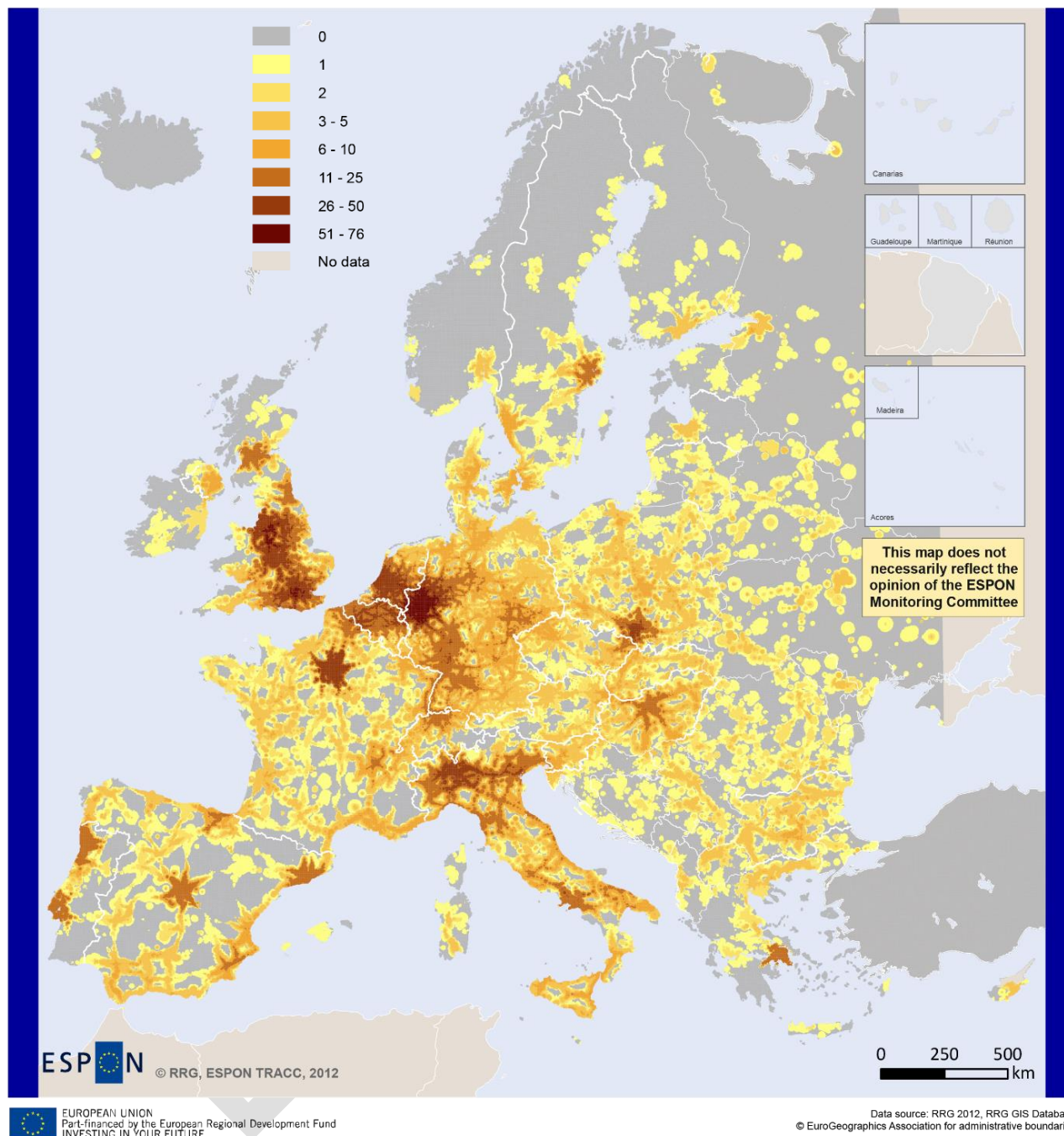
Figure 2-4 shows accessibility of cities larger than 50.000 inhabitants within 60 minutes road travel time, and Figure 2-5 shows the same for 60 minutes of rail travel time.<sup>4</sup> From most locations in Western and Central Europe, at least one regional city can be reached by road within 60 minutes, from many places even more than ten regional cities. Accessibility by road and rail is thus highest in the centre of the European Union. Highly urbanized parts of the UK, the Netherlands, Belgium and Germany have the best accessibility by road and rail in Europe. Also, in and around cities in western and eastern France, many parts of Germany, the north of Italy and some parts of Spain, accessibility by road and rail is still high.

The analysis of accessibility by road and rail highlights those regions in Europe that do not have access to urban functions at all in reasonable time. For rail the extent of these areas is even bigger in almost all countries (Spiekermann et al. 2013, pp. 113–116).

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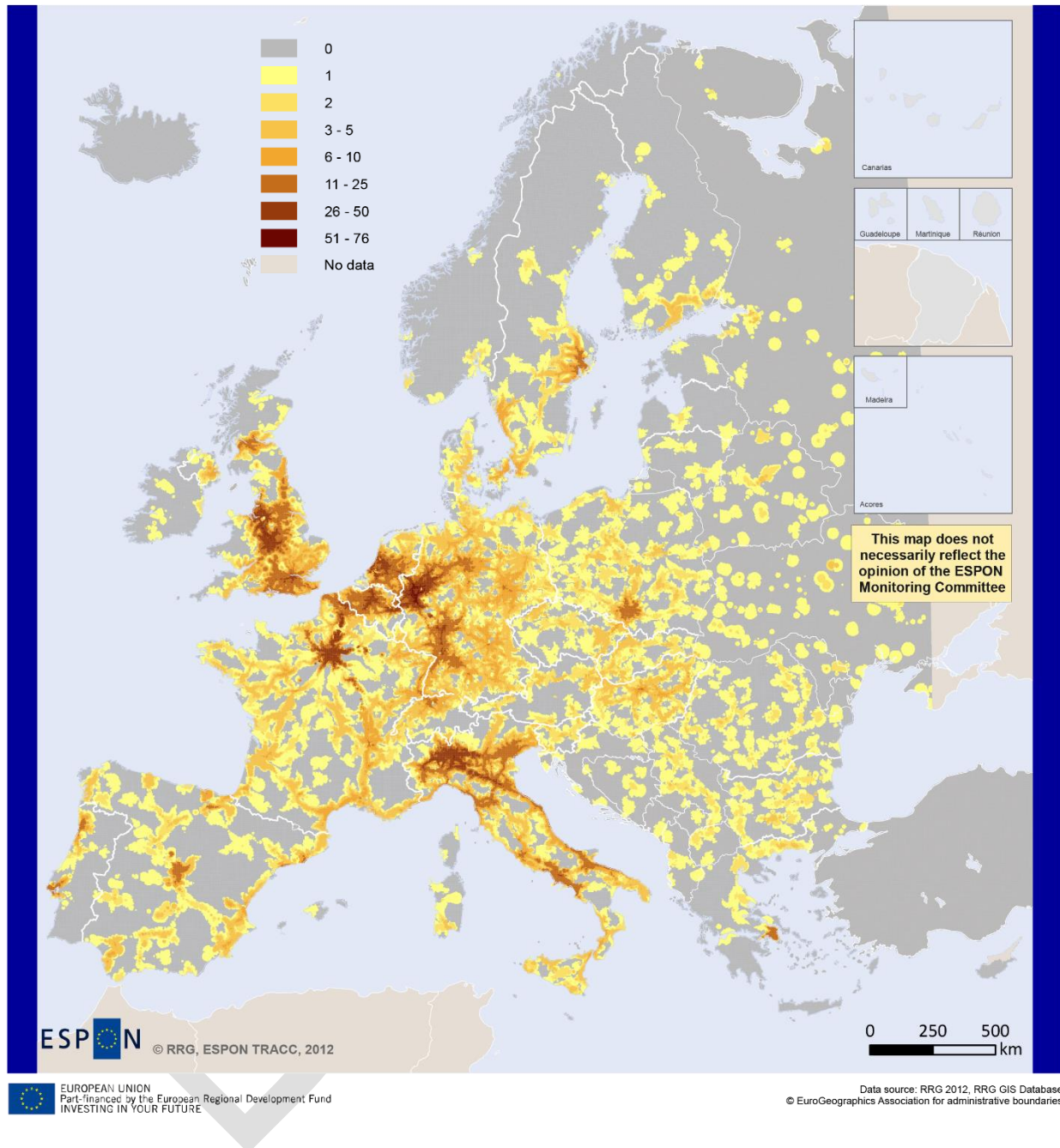
<sup>4</sup> Cities with at least 50,000 inhabitants are selected as destinations, assuming that only cities of that minimum size provide a full basket of public and private services and functions.

**Figure 2-4: Accessibility of urban functions (2011): number of cities > 50,000 inhabitants within 60 minutes road travel time**



Source: Spiekermann et al. 2013, p. 114

**Figure 2-5: Accessibility of urban functions (2011): number of cities > 50,000 inhabitants within 60 minutes rail travel time**



Source: Spiekermann et al. 2013, p. 115

To understand how regional accessibility and transport poverty are related to dynamics on the macro level, the **impact of globalization on European regions** needs to be addressed. This is also necessary, because concentration of economic activity, employment opportunities and other vital functions in larger cities is likely to continue in the future, while at the same time disconnection of peripheral regions is continuing, reducing economic activity, employment opportunities and quality of life in these regions (Martinez-Fernandez et al. 2012).

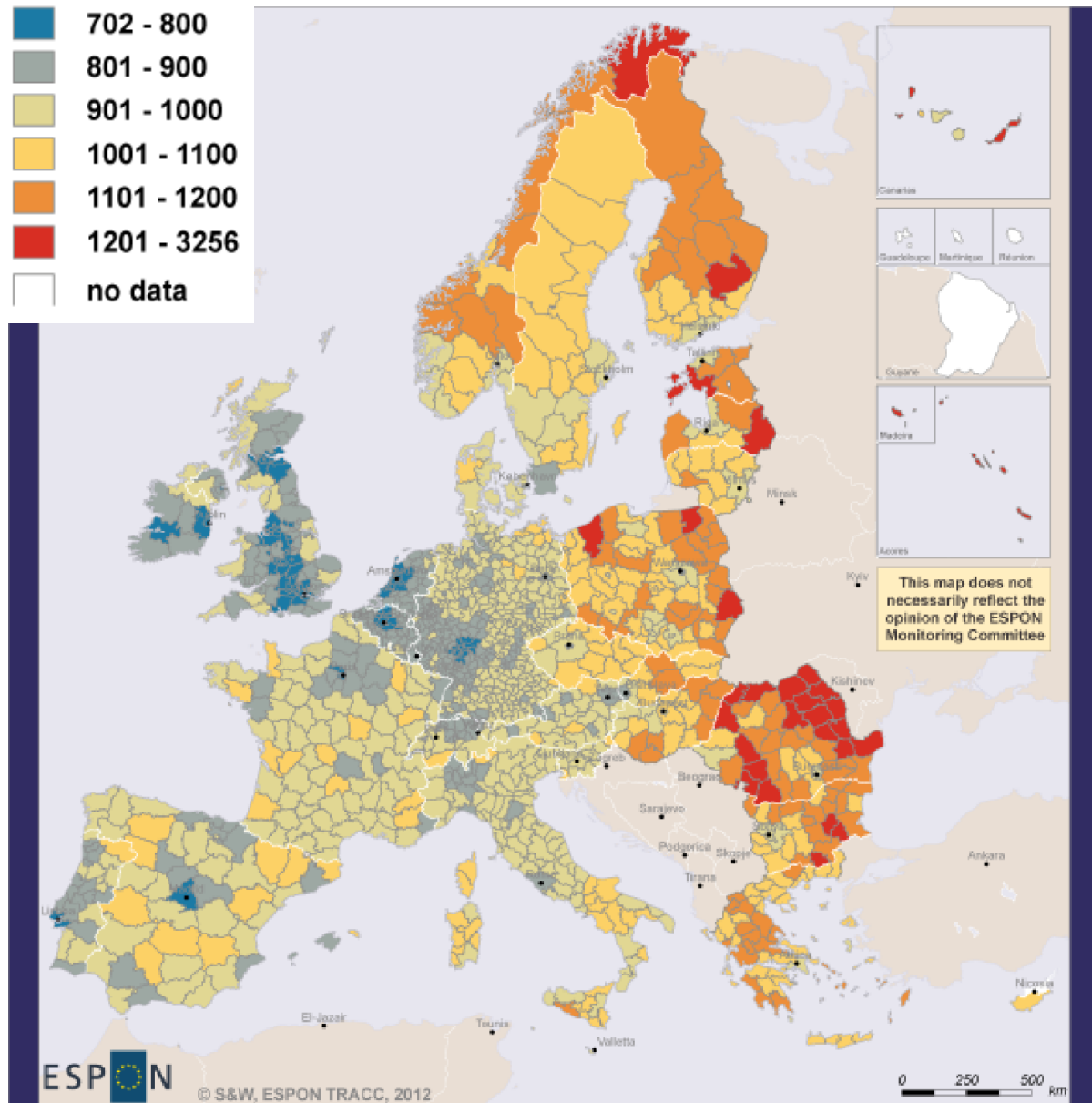
Globalization and the development of cities with Global City status have greatly impacted accessibility levels in Europe. Globally connected cities like London, Paris, Amsterdam and Frankfurt benefit from their well-developed urban transport systems, their integration into high-speed rail networks as well as their international airports allowing direct connections to other world cities. While these cities benefit from their above-average accessibility levels, smaller cities struggle to reach similar levels of global and inter-metropolitan connectivity (Spiekermann et al. 2013, pp. 77–80).

As an example for global accessibility, in Figure 2-6 travel times to New York from Europe are highlighted, providing a good impression about how different accessibility levels are in different European regions.

These figures show how Europe's spatial and transport systems have developed around an agglomeration of large cities in central Western Europe, and in contrast, how development in peripheral regions of Europe has taken place. However, Europe's spatial development cannot be simply described as a model of centres and peripheries. Also, with the eastern and southern extensions of the European Union, the historical spatial hierarchy is going to be challenged in the future.



**Figure 2-6: Global accessibility of European Regions on the example of travel times to New York, intermodal (minutes)**



Source: Spiekermann et al. 2013, p. 78

### 2.1.4 Spatial categories and challenges

HiReach is analysing transport poverty in urban, peri-urban and rural areas across all EU Member States. As outlined above, the challenges that individuals encounter while being mobile are directly connected to the characteristics of the space they move in. Furthermore, social disadvantages affect people differently in rural, peri-urban and urban areas. To add complexity, urban and rural are not two separate entities: they are linked to

each other in the form of peri-urban development. Additionally, not the least, by **movements** of any kind.

For the sake of clarity in the upcoming work of HiReach, these spatial categories needs to be defined. Therefore, **it is necessary to highlight the different ways how spatial categories can be established**, and accordingly the benefits and challenges associated with these categories.

In a first step, different approaches to define urban and rural spaces will be highlighted, in order to, in a second step, arrive at an understanding of the peri-urban and highlight the challenges of comparing different spatial categories.

#### **2.1.4.1 Towards a definition of the urban and the rural**

Spatial entities can be defined in different ways, according to the purpose the definition is used for. Spatial entities can be categorized in terms of administrative boundaries, or in terms of functional boundaries, or according to density and population size. Definitions also change over time with the notion of the urban and the rural changing.

Apart from density and population, the economic characteristics of a given area are often used for a definition of the urban and the rural. Under this perspective, the urban is identified along its economic activities being mostly non-agricultural, and accordingly the rural category mostly characterized by its agricultural activity. Moreover, the diversity of economic activities in services and production but also economic activities related to administrative, political, education, social and cultural functions are taken into account for urban areas. Further agglomeration economies like transportation, storage and banking that support other economic activities are also highly present in or near urban areas. Economic activities in rural areas are usually less heterogeneous.

Another way of separating the urban and the rural is to identify areas that are related to urban cores in a functional connection. These functional relations are often economic links. A functional definition that is related to a city's economy is the territory delimited by the commuting interrelations around a core city (Frey and Zimmer 2001). Definition of metropolitan areas takes a similar approach by identifying a contiguous area that is under primary influence of an urban core, which encompasses more and less dense areas. Lastly, urban areas can be differentiated from rural ones by the degree of "urbanism", meaning the social characteristics of a settlement. In this vein, it is usually argued that urban lifestyles differ from rural ones, and also that people's worldviews, values and behaviours (Frey and Zimmer 2001).

Definitions that are based on functional connections and social characteristics are however less useful when comparing urban and rural regions across different European member countries. It is difficult to divide population according to functional and social criteria in a simple dichotomy. Such criteria rather highlight that the urban and the rural exist as a continuum. For example, considering the territorial limits of functional links to and from a city, indeed it must be recognized that since long agricultural production in rural areas has served to sustain the increasing population living in cities. Seen from that functional perspective, most agricultural space is an extended urban space.

A similar conclusion can be drawn for approaches based on social characteristics and the estimation of a degree of urbanism. In industrialized countries, urban lifestyles have become prevalent in densely as well as thinly populated areas, not least due to the



opportunities of ICT. On the other hand, in the Global South, many rural migrants living in cities maintain traditional rural lifestyles. Consequently, several scholars have argued that there is no more anything outside the urban, declaring that the contemporary world is characterized by “planetary urbanism” (Brenner and Schmid 2015).

Spatial definitions and categories are further complicated by the observation that spatial relations increasingly do not follow a conventional centre-periphery model, and they never fully have in the past. In the contemporary globalized world, locations are linked to each other in ways that are territorially contiguous, by everyday movement of people and goods, and at the same time places are linked to others elsewhere in spatially non-contiguous ways through virtual mobility and long-distance travel. As Manuel Castells argued, the logic of these “spaces of flows” is dominant in contemporary life and is associated with political and economic power (Castells 1999).

#### 2.1.4.2 Defining the peri-urban

Peri-urban regions are the most dynamic regions of urbanized Europe. They exhibit a range of sometimes conflicting transport-related characteristics and mobility requirements that will be analysed in Chapter 2.2. Defining the urban and the rural is even less straightforward when the notion of the “peri-urban” needs to be identified. Usually there is much confusion about the geographical extent of the peri-urban. Often, the peri-urban is known as the peri-urban fringe (e.g. Errington 1994). Peri-urbanization is used in combination with other terms like urban sprawl, suburbanization, ex-urbanization and re-urbanization (Gant et al. 2011); also, in different academic traditions, these terms are used differently to describe similar processes, for example in Germany and France (Forum Mobile Lives 2013).

Authors generally agree that **the peri-urban, or the urban fringe, is the zone between the urban and the rural that is under transformation** (e.g. Bryant et al. 1982, p. 11; Council of Europe 2007). The relevance of the peri-urban is based on the observation that certain geographical areas experience urbanization, however in an incremental and incomplete way. The term peri-urban thus describes less a specific territory, but rather a process. Ravetz et al. (2013, p. 13) have highlighted that the peri-urban can be seen not just as a zone of transition, but rather “a new kind of multi-functional territory”.

One characteristic that often appears in peri-urban areas is a circle of wealthy rural communities around a core city, characterized by urban professionals living there and commuting to the urban core. This phenomenon is usually subsumed under the term suburbanization or ex-urbanization (Nelson and Sanchez 1999, p. 689). Apart from urban professionals, industries and services have been relocating to rural areas, especially in the second half of the 19<sup>th</sup> century, when there was a strong tendency towards urban de-concentration and counter-urbanization (Ravetz et al. 2013, p. 17). Ex-urban retirement settlements are another form of suburb that can be found for example in Spain (Zasada et al. 2010), also second and vacation homes.

Once the common elements of peri-urban areas are identified, the challenge remains how to define the peri-urban geographically. Ravetz et al. (2013) have suggested the term “rural-urban region” and an associated comprehensive methodology to define the

peri-urban geographically, based on an extensive literature review. This methodology has been used and implemented in the project PLUREL.<sup>5</sup>

According to this methodology, **peri-urban areas** contain settlements of each less than 20,000 people, with an average density of at least 40 persons per km<sup>2</sup>. They comprise two spatial types (Ravetz et al. 2013, pp. 18–19):

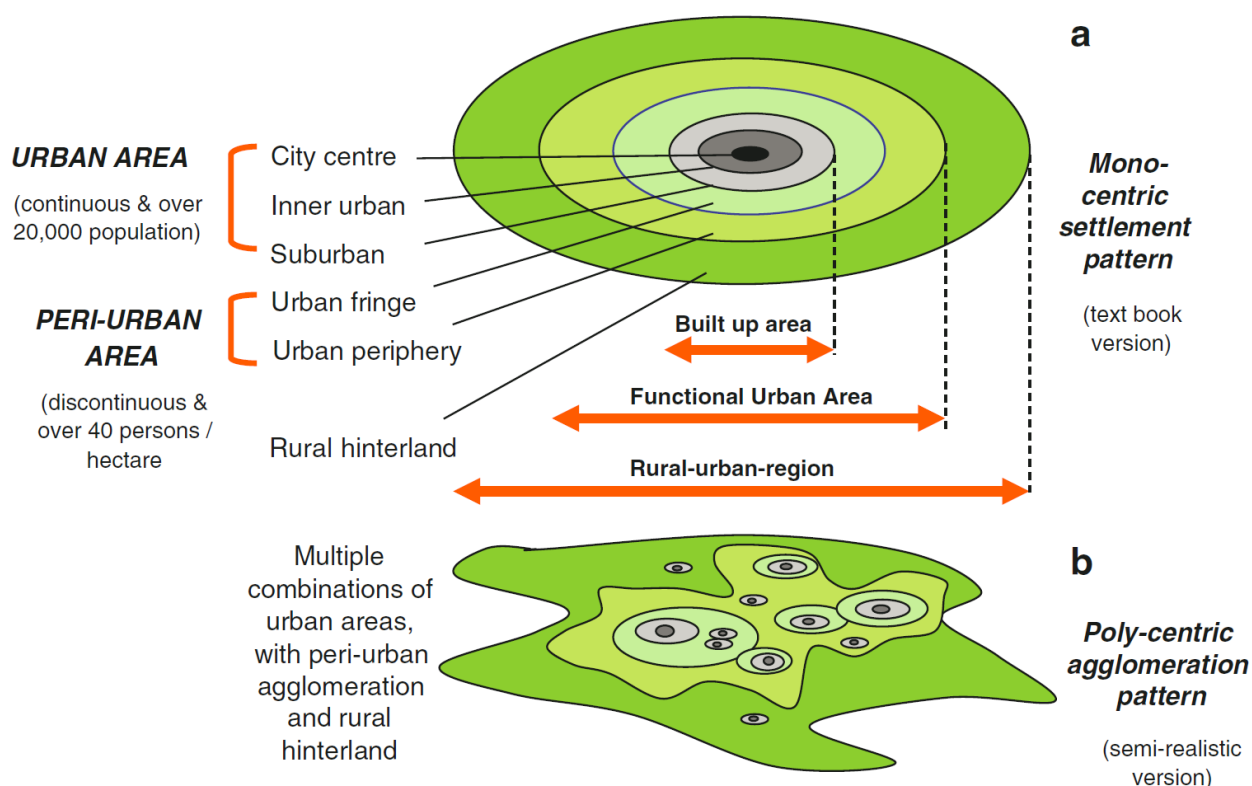
1. **Urban fringe:** a zone along the edges of the built-up areas, which comprises a scattered pattern of lower density settlement areas, urban concentrations around transport hubs, together with large green open spaces, such as urban woodlands, farmland, golf-courses and nature reserves.
2. **Urban periphery:** a zone surrounding the main built-up areas, with a lower population density, but belonging to the Functional Urban Area; this can include smaller settlements, industrial areas and other urban land uses within a matrix of functional agriculture.

Ravetz et al. (2013) use the concept of the Functional Urban Area, “an urban core and the area around it that is economically integrated with the centre, e.g. the local labour market”. Belonging to a commuter catchment area, FUAs represent common local labour and housing markets” (Nordregio 2005, p. 4).

The suburban areas in this classification are part of the urban, built-up area. Suburban areas are generally lower density contiguous built-up areas, which are attached to inner urban areas, and where houses are typically not more than 200m apart, with local shops and services, parks and gardens.

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<sup>5</sup> PLUREL - Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages (<http://www.peer.eu/projects/peer-flagship-projects/plurel/>). The PLUREL project aimed to achieve a deeper understanding of the changing relationships between urban and rural land use with an emphasis on the most dynamic portion, that of peri-urban areas.

**Figure 2-7: The peri-urban area as a part of the rural-urban region**

Source: Ravetz et al. 2013, p. 18

### 2.1.4.3 Comparing European urban, peri-urban and rural areas

What is summarized above needs to be boiled down to a practical and applicable instrument for the next stages of HiReach, so to identify and compare the spatial layers within and across different European Member States and recognize the role of spatial characteristics. In this regard, this paragraph aims at comparing spatial categories.

As shown in the above paragraph, the definition of urban and rural spaces can differ widely, and European countries historically have used different methodologies to classify their spaces and settlements. This diversity increases complexity when settlements and regions are to be compared across different Member States of the European Union. To illustrate that point, it is worthwhile considering definitions of settlements across EU Member States.

Official definitions for designated urban or rural areas differ widely, drawing on different methodologies, with the effect that a settlement that is called a city in one country would be regarded as a village in another country.

For example, in Denmark, a settlement is called a city when the population is above 200 inhabitants in a contiguous built up area with distances between houses not more than 200 meters (Statistics Denmark 2014). In Germany, the urban category is defined by population size and its position in the hierarchy of supply centres. The smallest urban

settlement is starting with a population of 5.000, given that this settlement is a basic supply centre to the region. However, in case a settlement has less than 5.000 inhabitants but is categorized as a basic supply centre, that settlement is a “rural town” (Bundesinstitut für Bau-, Stadt- und Raumforschung 2015). This example shows that, although both countries include population size as a measure to classify settlements, they can hardly be compared based on these definitions.

The European Union's statistical organization Eurostat developed comprehensive methodologies to understand and compare cities, peri-urban and rural areas in Europe. The territorial typologies and classifications react to the above-mentioned limitations and also consider the fact that cities have expanded beyond their boundaries far into peri-/suburban and rural areas, making traditional delimitations of urban and rural areas becoming less clear. Additionally, it incorporates the perspective that cities are increasingly interconnected and should be viewed in as parts of complex urban systems. The classifications developed allow institutions of the EU to implement regional development policies in a systematic and targeted manner.

For HiReach, **these territorial classifications are a useful instrument to analyse in a comparative manner the social and spatial determinants of transport poverty** across European regions.

### 2.1.5 The HiReach spatial classification

In HiReach, transport poverty is analysed according to **three spatial layers – urban, peri-urban and rural**.

Derived from the above discussion on urban, peri-urban and rural characteristics, the spatial classification in HiReach has the following requirements:

- First, the **HiReach spatial analysis must be sensitive to the local level**. As outlined in the introduction, the European spatial system is defined by hierarchy of relatively dense and equally distributed high-, medium and low-density settlements (with variations in different member countries). These settlements accommodate services and institutions for the needs of the population, with basic services being available in small and medium settlements, and specialized services usually in larger cities. For everyday life, opportunities are most accessible if they are close to the home location (assuming a transport option is available). Hence, the analysis of transport poverty in HiReach requires a spatially fine-grained analysis. This makes it necessary to compare the spatial layers on a municipal level whenever available. Where local statistics are not available, regional statistics need to be taken into account when comparing urban, peri-urban and rural areas.
- Second, the spatial classification system of **HiReach needs to fit the characteristics of public transport systems**, given that in Europe, vulnerable social groups heavily rely public transport. Coverage of public transport is mainly, although not exclusively, dependent on population density. Furthermore, regional and local public transport connectivity is heavily influenced by centre-periphery models and the layout of local and regional administrative units.
- The third requirement of the spatial classification system of HiReach is the **identification of the peri-urban layer** according to the definition presented by the PLUREL project, but including the suburban areas (Ravetz et al. 2013). In addition to the urban fringes, HiReach acknowledges the importance of small and medium

towns with medium densities, which are historically the backbone of the European spatial system.

A consistent Europe-wide territorial classification that fits the above requirements for an analysis of transport poverty does not exist. This is mainly due to the fact that the peri-urban layer is difficult to define in consistent manner, due to different understandings of the term “peri-urban” and the transformational, fluid character of peri-urban zones.

However, the European Union's statistical organization (Eurostat) provides several territorial typologies that allow comparison of urban and rural areas across European member countries. Eurostat uses a system of three spatial typologies that combines density measures with administrative units and functional interdependencies:

1. The first is the **Degree of Urbanization (DEGURBA)** typology and is based on statistics on the local, municipal level (Local Administrative Units - LAU).
2. The second one is the **Urban-rural typology. It is based on statistics on the regional level** (NUTS 3).
3. A third spatial classification, the **Functional urban areas (FUA)** considers functional interdependencies using density measures, administrative units and commuting relations as variables. Functional urban areas consist of a *city* and its *commuting zone*.

A detailed discussion of Eurostat's territorial classifications can be found in **Annex 1**.

For the analysis of spatial layers in HiReach, the DEGURBA typology in combination with the definition of Functional Urban Areas (FUAs) is used and adapted to compare the three spatial layers and different European regions. The benefit of the DEGURBA classification is that it provides the necessary spatial micro perspective for the analysis in HiReach. Furthermore, DEGURBA in combination with the definition of the commuting zones of FUAs allows identifying the peri-urban layer.

While for an approximation of the peri-urban layer, choosing the typology of Functional Urban Areas in combination with DEGURBA is scientifically adequate, it has detriments for the spatial analysis in HiReach. The commuting zone is usually much larger than the suburban zone itself, in some cases substantially larger, as the example of Berlin shows (compare Figure 2 8 and Figure 2 9). There is a risk of an estimation of the peri-urban zone that is too large and the HiReach spatial analysis needs to take these risks associated with the methodology into account<sup>6</sup>.

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<sup>6</sup> This potential overestimation results from the methodology of the FUA classification, which emphasizes the spatial interdependencies of the work commute, ignoring other aspects of everyday life such as education, health and supply. The result is an over- emphasis of the role of the work commute in the FUA spatial analysis, with the related result that the spatial impact of large cities is overrated in comparison to the significance of small and medium towns for everyday life of people. Furthermore, a focus on commuting relations ignores that many settlements in commuting zones are morphologically rural areas. Assuming that outward commuting from these areas is mostly car-based and not public transport-based, the functional spatial interdependency represented in this classification does not represent the reality of non-car owning individuals living in these areas.

The combination of these two spatial typologies does not only identify immediate suburbs, but also the urban fringes and peripheries farther away from core cities that are in direct functional relationship with larger cities (as outlined in Ravetz et al. 2013). In the DEGURBA typology, small and medium towns are identified, and included in the peri-urban layer of HiReach. Not always information and statistical analysis are available on the municipal level, which is the foundation of DEGURBA. Whenever this is the case, statistics on the regional level (NUTS 3) are used to describe urban-rural differences. In these cases, the Urban-rural typology will be used, with its differentiation of *predominantly urban*, *intermediate* and *predominantly rural regions*. Also, different *metropolitan regions*<sup>7</sup> will be compared. Also, e.g. when analysing macro-trends of urbanization in Europe, it is advisable to use regional statistics instead of statistics on the local level.

To sum up, the HiReach spatial classification is the following:

- **Urban Layer:** it comprises cities – including Greater Cities - according to the DEGURBA classification of Eurostat.
- **Peri-Urban Layer:** it comprises suburbs and towns according to the DEGURBA classification of Eurostat as well as the commuting zones of Functional Urban Areas (FUAs).
- **Rural Layer:** it comprises settlements in rural areas according to the DEGURBA classification of Eurostat.

Defining the peri-urban layer by a combination of two different spatial categories – that initially have two different purposes – poses a challenge for the analysis. Usually, Eurostat statistics about the relevant aspects for HiReach – e.g. demographics, economy, education – differentiate between cities, towns and suburbs and rural regions, but do not differentiate between cities and commuting zones (according to the FUA classification).

Hence, the observation of the peri-urban layer presented in the following analysis is mostly based on the DEGURBA category of *suburbs and towns*. As the *commuting zone* of a city is usually larger than the circle of suburbs around the cities, the observation of the DEGURBA category of towns and suburbs may underestimate the functional importance of core cities for the surrounding region.

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<sup>7</sup> See Annex 1 for the Eurostat definitions of predominantly urban, intermediate and predominantly rural regions and of metropolitan regions.

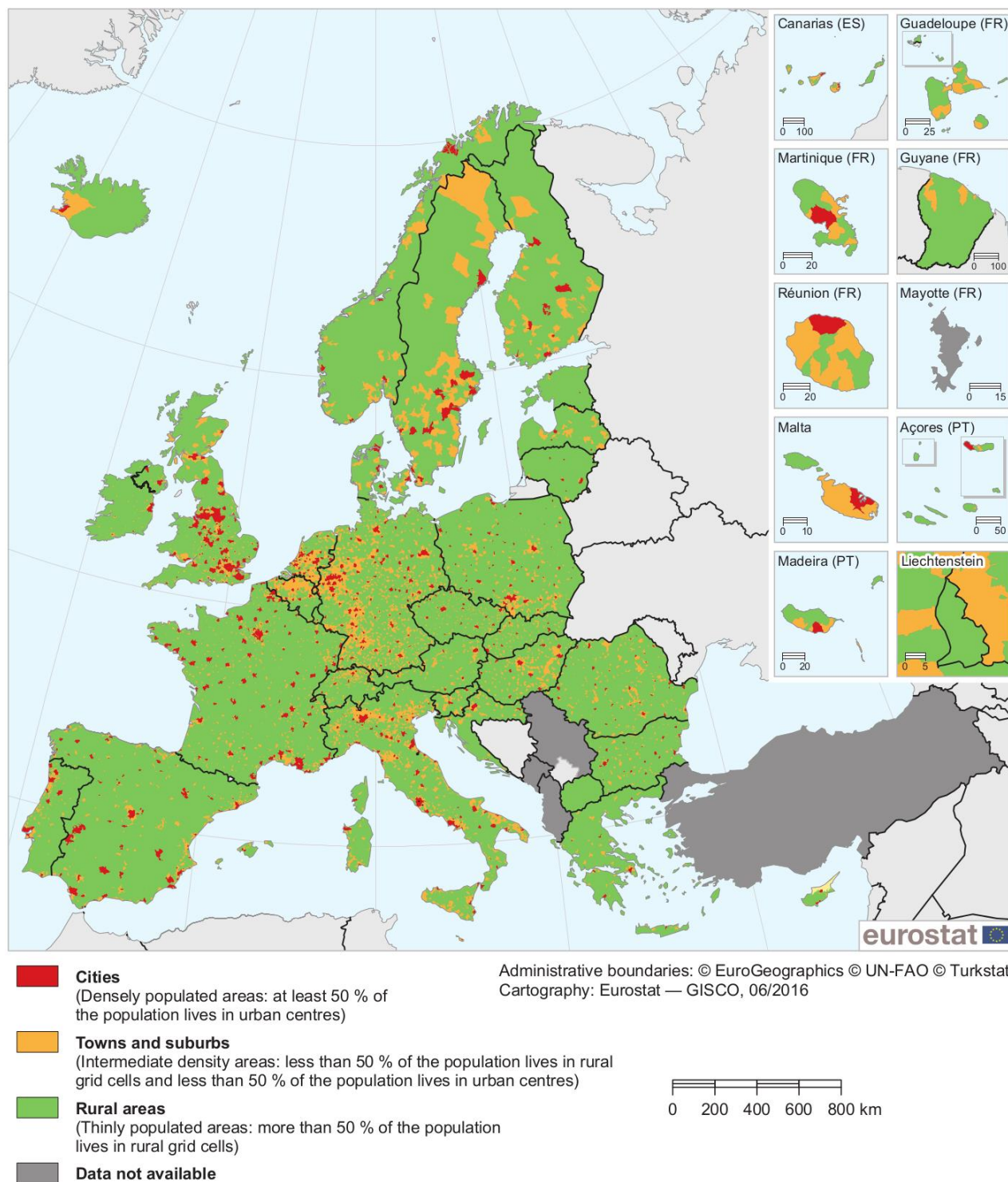


Table 2-1: HiReach spatial classification

LAYER	CORRESPONDING EUROSTAT CLASSIFICATION	CLUSTER TYPE	GRID CELL TYPE
Urban	DEGURBA City	All municipalities where at least 50% of the population live in high density <i>urban centres</i> .	Urban centre formed by contiguous grid cells without diagonals and with gap filling of 1 km <sup>2</sup> with a density of at least 1 500 inhabitants per km <sup>2</sup> and a minimum population of 50 000
	DEGURBA Greater City	Cities and all neighbouring municipalities where at least half of the population live in a contiguous <i>urban centre</i> .	
Peri-Urban	DEGURBA Towns and suburbs	Municipalities where at least 50% of the population lives in <i>urban clusters</i> but is not classified as a <i>city</i> . This also means that in these municipalities, less than 50% of the population lives in rural grid cells and less than 50% live in <i>urban centres</i> .	Urban cluster formed by contiguous grid cells including diagonals of 1 km <sup>2</sup> with a density of at least 300 inhabitants per km <sup>2</sup> and a minimum population of 5 000
	FUA Commuting Zone	Municipalities around a certain <i>city</i> with at least 15% of their employed residents working in that <i>city</i> . Core of the commuting zone is a <i>city</i> with a share of outward-commuting employed residents of 15% or less.	Complete FUA Commuting Zone that includes immediate suburbs with a population of more than 20,000, and further municipalities in the commuting zones of less than 20,000 people, with an average density of at least 40 persons per km <sup>2</sup> (Ravetz et al. 2013, pp. 18–19)
Rural	DEGURBA Rural area	Thinly populated areas, with at least 50% of the population living in rural grid cells.	Remaining grid cells outside <i>urban centres</i> and <i>urban clusters</i>

Source: Own elaboration, based on European Union 2017b

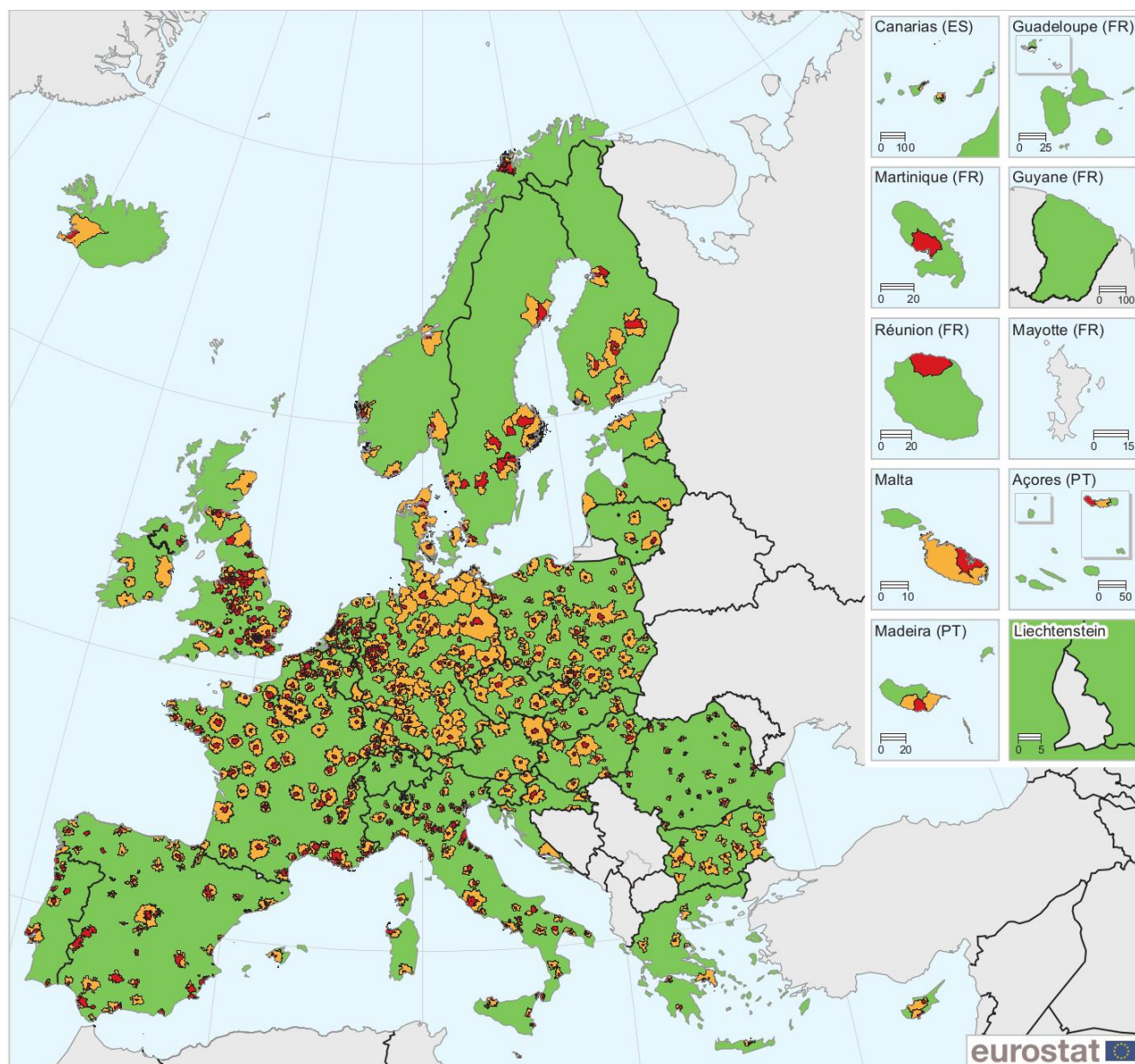
**Figure 2-8: Degree of urbanisation for local administrative units level 2 (LAU2)**



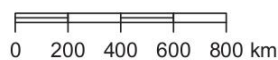
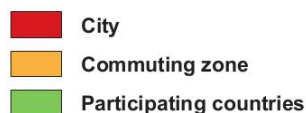
(\*) Based on population grid from 2006 and LAU 2011.

Source: Eurostat, JRC and European Commission Directorate-General for Regional Policy

Source: European Union 2016

**Figure 2-9 : Functional Urban areas (FUA), 2011**


Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat  
Cartography: Eurostat — GISCO, 03/2016



(<sup>1</sup>) Definitions: The functional urban area (FUA) consists of a city plus its commuting zone. A city is a local administrative unit (LAU) where the majority of the population lives in an urban centre of at least 50 000 inhabitants and a commuting zone contains the surrounding travel-to-work areas of a city where at least 15 % of their employed residents are working in this city. This map is based on population grid and local administrative units (LAU) from 2011.

Source: Eurostat, JRC and European Commission Directorate-General for Regional Policy

Source: European Union 2016



## 2.2 Characteristics of urban, peri-urban and rural areas in Europe

### 2.2.1 European macro perspective

The world is becoming increasingly urbanized, with now half of the urban population living in urban areas. In Europe, the **share of the population living in cities and peri-urban areas, by 2016, is almost 75%**. Due to this already high level, the rate of urbanization in Europe is lower than in other parts of the world. Thus, the share of the population living in cities and peri-urban areas is projected to rise to just over 80% by 2050 (European Union 2016).

Viewed on a macro level across the whole of the European Union, some general similarities and differences between urban and rural areas can be observed that will be described first. The average population density for the whole of the European Union was 116.4 inhabitants per km<sup>2</sup>. Only 44% of the EU's total area is inhabited. On about 10% of the inhabited area of the EU, more than three quarters (77.2%) of the population of EU-28 were at home. The average population density in these areas is almost 2.400 inhabitants per km<sup>2</sup> (that is 17.5 times higher than the EU average). The majority of European areas is however characterized by low population density: in 81% of the inhabited area of the EU, only around 12% of the EU's population is living, with a population density of one fifth of the EU average (European Union 2016, p. 57).

**European urban areas are the centres of economic growth.** Commonly, cities of the European Union are characterized by high economic activity, high employment levels and wealth and thus are hubs of innovation and consumption. It is especially the European capital cities and their metropolitan regions that are centres for education and science and are characterized by a high social and cultural diversity. They are thus the primary centres for innovation and economic growth.

The largest metropolitan regions<sup>8</sup> in the EU, being those with at least one million inhabitants, are home to 39% of the population of the EU. These large metropolitan regions provide employment to more than 41% of the total workforce and contributed to more than 47% of the total GDP of the European Union. A little above 15% of the total area is metropolitan regions with a population between 500 000 and 999 999 inhabitants, almost 5% of the total area consists of metropolitan regions with less than 500 000 inhabitants. 41% of the total area belongs to non-metropolitan regions (European Union 2016, p. 61).

**Income levels in European cities are usually higher than in rural areas**, in some cases they are significantly higher. Almost one quarter of the population of the EU-28 living in cities has an income of 150% or higher of the national median level, while in rural areas it is only 14.5%. However, the unemployment rate of the EU is slightly higher (10.9%) for people living in cities, compared with those living in peri-urban areas or in rural areas (9.8%). This may partially be explained by a substantial share of employees commuting from rural and peri-urban regions into cities (European Union 2016, p. 40).

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<sup>8</sup>Metropolitan regions are approximations of functional urban areas composed of a city and its commuting zones, with at least 250 thousand inhabitants, as covered by one or more NUTS level 3 regions. See Chapter 2.1.5 and Annex 1 for further explanations.

**People living in cities more often have obtained at least an upper secondary and post-secondary (non-tertiary) education level than in rural areas, and the same can be observed for tertiary degrees of education.** 77.2% of people living in cities reached at least an upper secondary and post-secondary education level, while it is 73.3% in peri-urban regions, and 69.7% in rural areas (2016, aged 18-74). For tertiary education, people living in cities in the EU28 (aged 18-74), 34.6% of the urban population received this level, compared to only 24.4% in peri-urban regions and 19.4% in rural areas (2016) (Eurostat 2016a).

**While cities in the EU are characterized by high economic growth and wealth, at the same time they exhibit a range of social inequalities.** These inequalities resulting from the polarization between economic opportunities and challenges have developed in such a way that they often are more widely observed in cities than for countries as a whole. Furthermore, urban dwellers have to live with negative externalities and challenges that are less prevalent in rural areas.

**One of these challenges in European cities is housing.** The observation of the housing markets is crucial when describing urban-rural differences and the impact on mobility. Availability of affordable housing increases the attractiveness of cities, motivating rural and peri-urban dwellers to move to cities in search for better employment and education opportunities. This is especially the case for low-income and other socially disadvantaged populations due to, among others, higher availability of public transport and better accessibility. On the opposite, low availability of affordable housing can force low-income populations to remain in rural or peri-urban areas or move out of cities into less attractive peri-urban areas, usually with fewer public transport options and lower accessibility to employment.

**A further aspect that determines the attractiveness of cities (or failure to attract) is the quality of life and the perceived level of safety.** Especially the level of safety can be a substantial burden for urban dwellers. In European cities, it is 2.7 times more likely that dwellers live in an area with problems that relate to crime, violence and vandalism than in rural regions (European Union 2016, p. 46). This situation has a negative impact on vulnerable social groups, as it fosters concentration of marginalized groups in these urban areas due to higher-income populations leaving these parts of cities. This can lead to a downward spiral of urban deprivation, creating or contributing to an individual's experience of transport poverty (see also Chapter 2.2.8).

## 2.2.2 Urbanization and population structure

Within the European Union, there are significant differences in the spatial distribution of urbanization and population structure. These differences are highlighted in this subchapter.

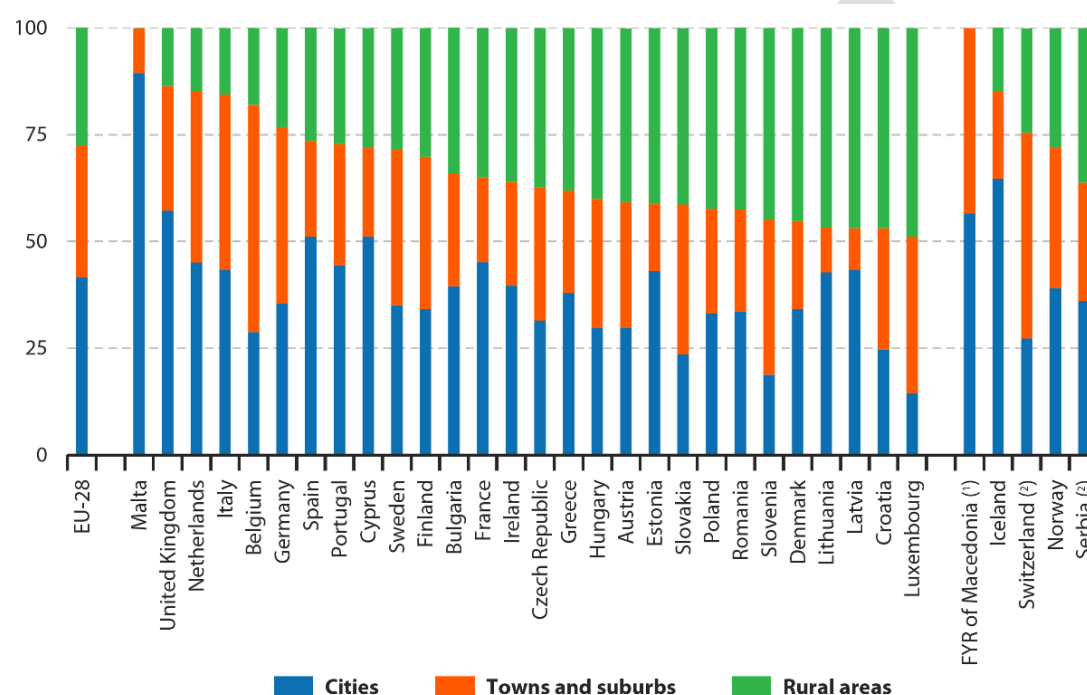
Differences in urbanization levels in the EU are owed to different histories of territorial and economic development. The centrally-planned economies of eastern and Baltic Member States shaped compact urban development, while most of the other market-driven economies are characterized by spreading cities and suburbanization since the middle of the 20<sup>th</sup> century.

**Western European countries thus show a much higher level of urbanization than eastern Member States.** The densest areas of urban development are located in south-east

England, in the Flanders region of Belgium, the Netherlands and the German region of North Rhine-Westphalia, forming a more or less continuous urban belt.

When analysed through the lens of the rural-urban typology, the most concentrated urban regions of the EU are located in the Netherlands (44.1% predominantly urban in 2014), Belgium and the United Kingdom (European Union 2016, pp. 35–36). Besides high population density, these regions are characterized by dynamic economic activity and dense transportation infrastructure. In the UK and the Netherlands, almost 75% of the workforce is living in predominantly urban areas.

**Figure 2-10: Distribution of population by degree of urbanisation, 2014 (% of total population)**



(1) 2011. Rural areas: low reliability.

(2) 2013.

Source: Eurostat (online data code: ilc\_lvho01)

Source: European Union 2016, p. 11

High concentration of population in a small number of urban areas becomes apparent when looking at large metropolitan regions in some of these countries: metropolitan regions with at least one million inhabitants provided a home to around half of the total number of inhabitants in Spain (55.5%) and Sweden (52.4%), but also Czech Republic and Greece (around 45%) (European Union 2016, p. 62).

In the urban structure and hierarchy of different Member States, also the political and administrative structures of these countries become visible. Federal states like Germany are characterized by high numbers of medium-sized cities across the entire territories of these states. Hence Germany is characterised by a polycentric distribution of major cities and a number of larger cities spread across the entire territory.

Comparing different cities in Europe according to population density, Paris stands out as one of the densest regions in Europe with a population density of 21 264 inhabitants/km<sup>2</sup>



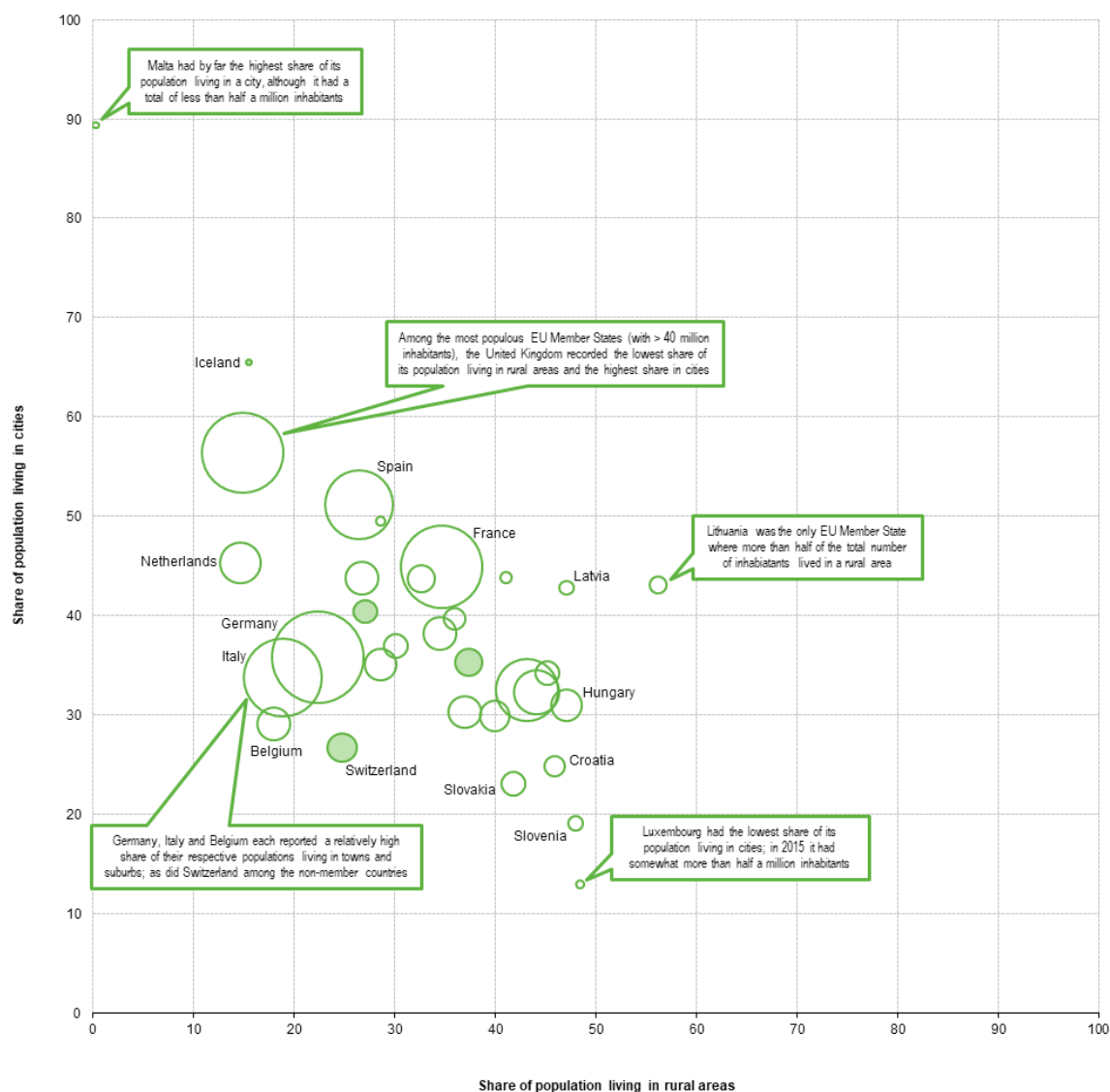
(2013), followed by parts of east and west inner London. Especially in some of the industrial cities/agglomerations in Europe have low levels of available land areas per inhabitant (below 200) (European Union 2016, pp. 157–159). Such high densities and low available space for residents impact quality of life in these cities negatively.

Having analysed *different urbanization levels* across Europe, attention needs to be directed towards differences in *population structure*.

There are **considerable differences between the EU Member States** concerning the relative **size of their rural populations** (see Figure 2-11). Apart for Lithuania, the only country where a majority (56.2 %) of the population lived in rural areas, there are countries very close to 50% (Denmark, Croatia, Latvia, Hungary, Slovenia and Luxembourg) but in several Member States this share is quite low: Germany (22.4 %), Italy (18.9 %), Belgium (18.0 %), the United Kingdom (14.9 %) and the Netherlands (14.7 %) (Eurostat 2017j).

Over 21% of the European population is employed in rural areas, which illustrates the importance of these regions for the European economy (European Commission 2013b).

**Figure 2-11: Distribution of the population by degree of urbanization, 2015**



Source: Eurostat 2017j

Europe is characterized by rapidly ageing populations and low fertility rates, considerably shaping current and future transport needs in urban, peri-urban and rural areas. In 2016, it was commonplace to find that the **elderly accounted for a high share of the population in rural regions**. The majority of the regions with high shares of elderly persons were in rural and sometimes quite remote regions, although this pattern was reversed in some of the eastern EU Member States.

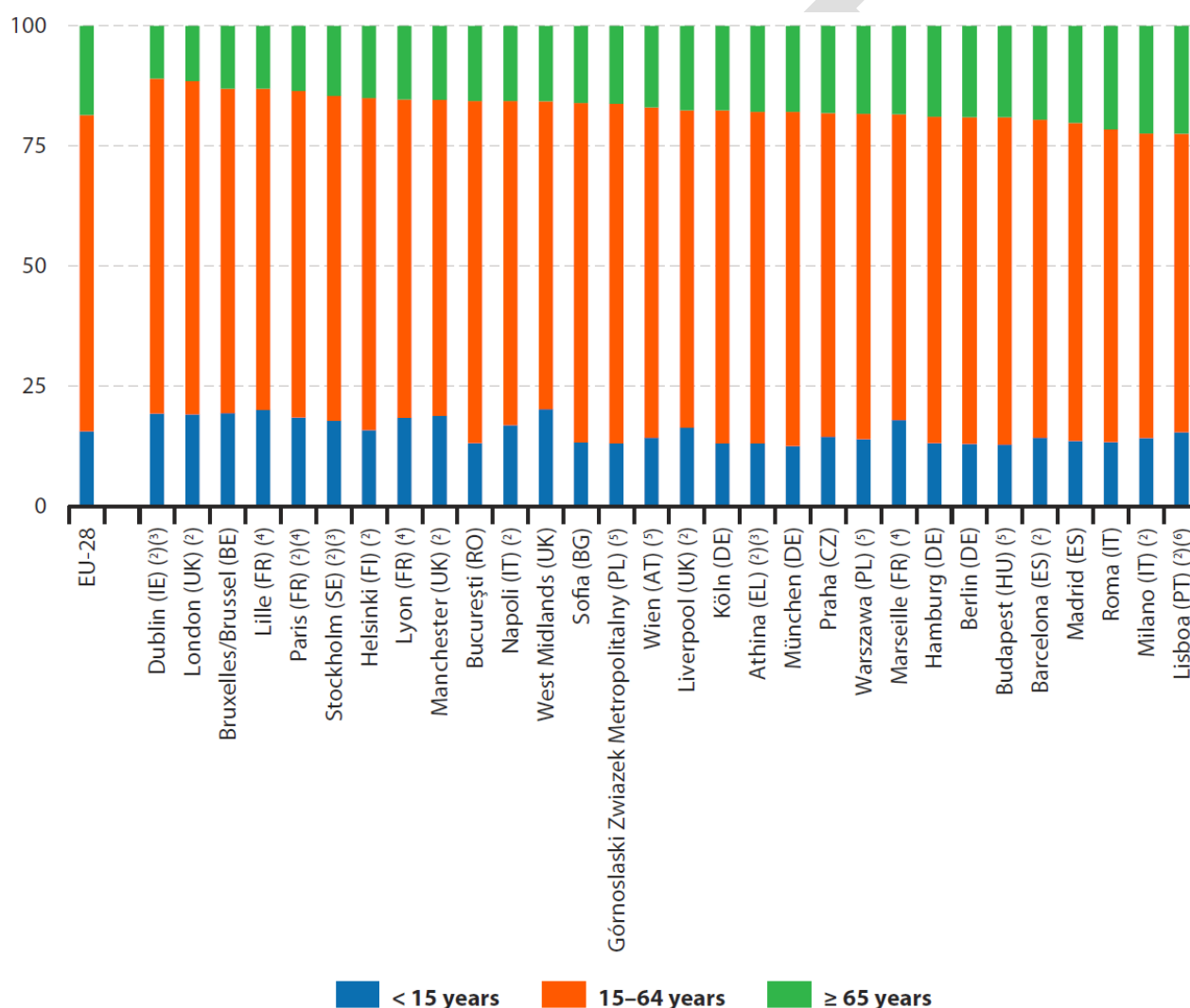
Although the absolute number of elderly living in rural remote areas is overall small, it is important to consider the needs of this part of the population. Living in remote rural areas as an elderly person can lead to extreme forms of transport poverty and social exclusion, when transport options are inadequate and when health, supply and other essential infrastructure is only available in cities (Shucksmith 2003; Manthorpe et al. 2008) (see also Chapter 3.2.2).

**Also cities are characterized by large shares of elderly populations** (see Figure 2-12). In terms of ageing, the demographic patterns of cities reflect national demographic

patterns. In southern Europe, many of the largest cities are characterised by a high proportion of elderly persons, for example in Madrid, Lisbon, Milan and Rome, where in 2014 more than 20% of inhabitants aged 65 years or more (Eurostat 2017f).

Although public transport and other services are usually better accessible in urban areas, the particular transport needs of elderly in urban areas need to be considered. Inadequate and unsafe walking environments and missing special services for seniors with mobility impairments (e.g. door-to-door services) can leave elderly in urban areas facing transport poverty and social exclusion (Hine 2004; Buffel et al. 2012).

**Figure 2-12: Population structure for the largest cities in the EU, 1 January 2014 (%)**



Source: European Union 2016, p. 160

## 2.2.3 Population change in urban, peri-urban and rural areas

### 2.2.3.1 Current trends and drivers

Population change in a specific region is a result of natural population change and migration. In this subchapter, development of the population in urban, peri-urban and rural areas in different parts of the European Union will be traced over the last decade. Furthermore, current and future trends of population dynamics on these three spatial levels will be identified.

**Overall, high population growth was experienced in peri-urban areas (+4.7%)** between 2010- 2015 in the EU-28. Also, **a gradual increase in the number of people living in rural areas was experienced** across the EU-28 in the same time period, with their relative share rising by 1.7%. Overall, this was reflected in a corresponding decline of the share of people living in cities.

It is important to interpret these overall trends correctly. First, they are expression of continuous attraction of population towards cities, *although* the share of people living in cities is declining. While workplaces are still concentrated in the city centres, people often decide to live in peri-urban and even rural areas and commute to the city centres. Common push factors that lead to outmigration from cities to the surroundings of cities are difficult living conditions in the city – among them high stress levels, poor housing, high crime levels, housing costs and poor public transport (Bell et al. 2010, pp. 5–10).

Second, the overall picture presented above hides that there are varying dynamics of growth and decline on the regional level. Analysing urban-rural demographic dynamics at a regional level, it becomes clear that there are parallel and contradicting population trends in European Union Member States, between different Member States and within the States themselves.

There are many reasons and drivers for such differentiated regional development. Unemployment and low wages due to declining significance of heavy industries, mining and agriculture is often a push factor for young and people in working age to leave old industrial areas and move to other cities and regions. Not only the cities in these regions experience decline, but also the peri-urban and rural hinterlands of these cities. This development can be observed in many industrial regions of Europe that missed to diversify their economic base. Demographic change contributes to ageing of populations in these regions.

Opposite these declining regions, there are cities that attract population not only from the immediate region, but also from the whole country and well beyond that. These are usually the capital cities, with a high diversity of educational and cultural institutions. These cities attract especially younger and highly-skilled people. Also secondary cities that are specialized in innovative technologies and knowledge-based economies attract highly skilled professionals. These cities are the future growth centres of Europe. Also, the peri-urban and rural areas surrounding these cities benefit from the economic success of the core cities.

Additionally, there are dynamics that affect certain regions of Europe in a specific way. A pull factor for many coastal regions in Spain, Portugal, and Italy are affordable housing and the warm climate, attracting retirees from all over Europe to these regions. In Ireland and Estonia, an economic upward trend made many young people decide to move to

the cities, while at the same time, increasing rents in inner cities had resulted in urban outmigration of elderly people and families (Bell et al. 2010, pp. 10–19). Incorporation of many eastern European countries into the EU has spurred labour migration from these countries to western European countries, in form of temporary migration to rural regions - e.g. for seasonal harvesting work - or permanently to cities (Findlay and McCollum 2013).

### 2.2.3.2 Population dynamics in different Member States

Some European member countries recorded a **high population growth in cities and peri-urban regions**, such as Sweden, Ireland, the Czech Republic, Finland and Spain, with more than 10% population growth between 2004 and 2014.<sup>9</sup> There are differences between the Member States in terms of the causes for urban growth: in Ireland, France, the Netherlands and the United Kingdom, growth of urban population is mostly attributed to natural population change, while in Italy, Hungary and Austria, growth is attributed to rapid migration into urban areas (European Union 2016, p. 66).

The largest absolute population change appeared in some of the EU's largest metropolitan regions between 2004 and 2014, such as London (gain of an additional 1.5 million inhabitants), Paris (655 thousand), Madrid (612 thousand) and Roma (581 thousand). Between 2004 and 2014, some of the **most rapid increases were registered in peri-urban regions of large cities**, for example in northern Italy around Milan, eastern Austria around Vienna and the surroundings of Bucharest (Romania). The London commuter belt also experienced high population growth. (European Union 2016, p. 74).

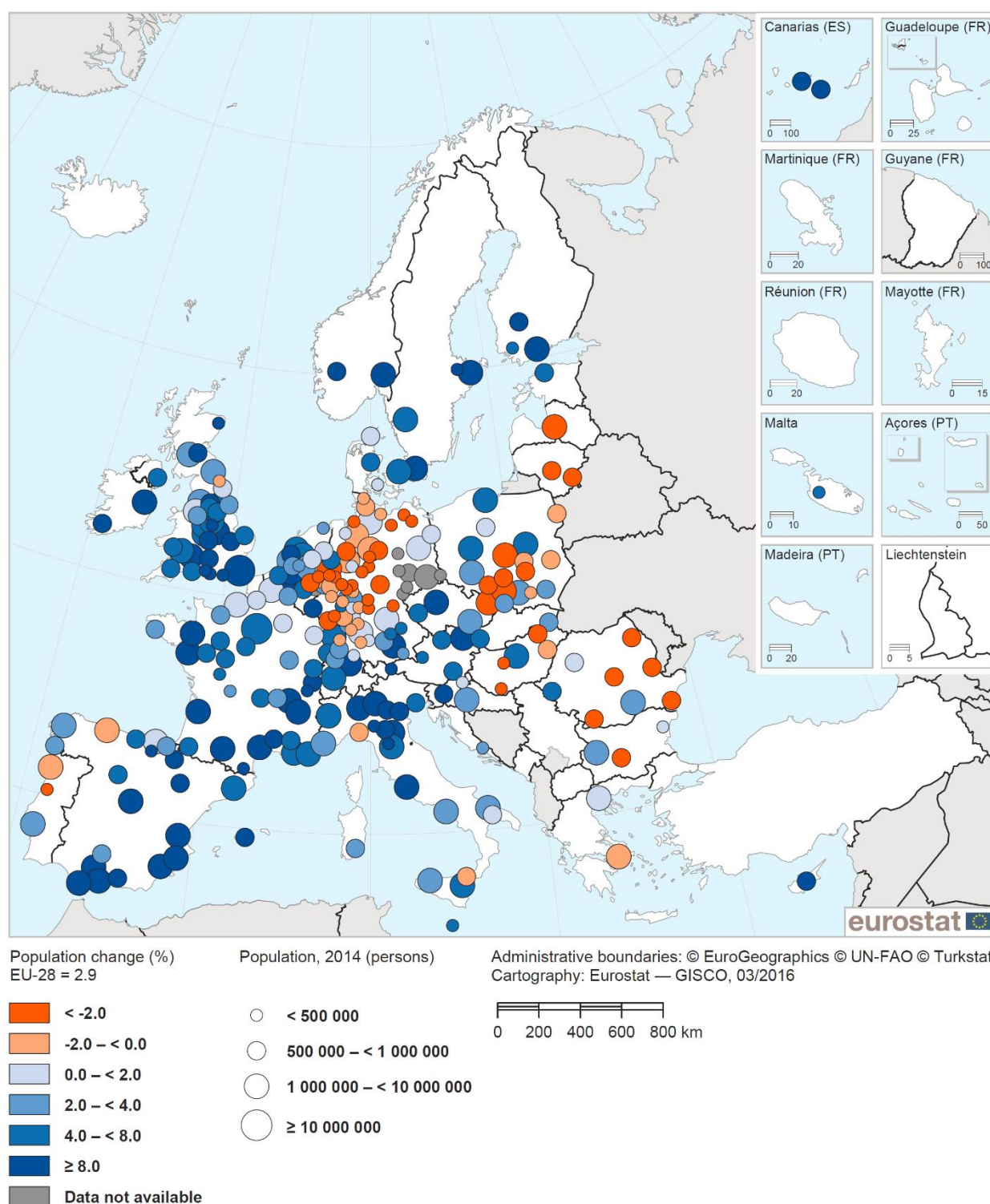
However, also **outward processes could be observed in some member countries. A number of metropolitan regions lost population** between 2004 and 2014 (see Figure 2-13). Absolut population loss was experienced in the centres with a historic industrial base on coal and steel, e.g. the Ruhr area in Germany and Katowice in Poland). But also other industrial metropolitan regions saw significant decline in population, foremost centres of heavy industries (European Union 2016, pp. 66–69). These regions already face substantial challenges in maintaining a reasonable standard of public infrastructure and services, including public transportation (Reckien and Martinez-Fernandez 2011). In case of continued economic and population decline, especially the most vulnerable parts of the population will be negatively affected by poor quality infrastructure and services, including transportation services.

**The economic and financial crisis also had an impact on population dynamics**, especially in those countries that were severely affected. In the year 2013, in Portugal, Spain and Greece, more people left metropolitan regions than settling in these areas in that year.

<sup>9</sup> These figures are reported on the regional level (NUTS 3), using the urban-rural typology, instead of the local administrative level (LAU), using the Degree of urbanization typology. See Annex 1 for more details.



Figure 2-13: Population change by metropolitan region, 2004–14 (%)



(<sup>1</sup>) Metropolitan regions in Belgium, Germany, Luxembourg, Hungary, Poland, Romania, Slovenia and Switzerland: breaks in series. Metropolitan regions in Ireland and France: provisional. Metropolitan regions in Portugal, Romania and the United Kingdom: estimates. Metropolitan regions in Denmark: 2007–14. Metropolitan regions in Norway: 2005–14.

Source: Eurostat (online data codes: [met\\_pjanaggr3](#) and [demo\\_pjan](#))

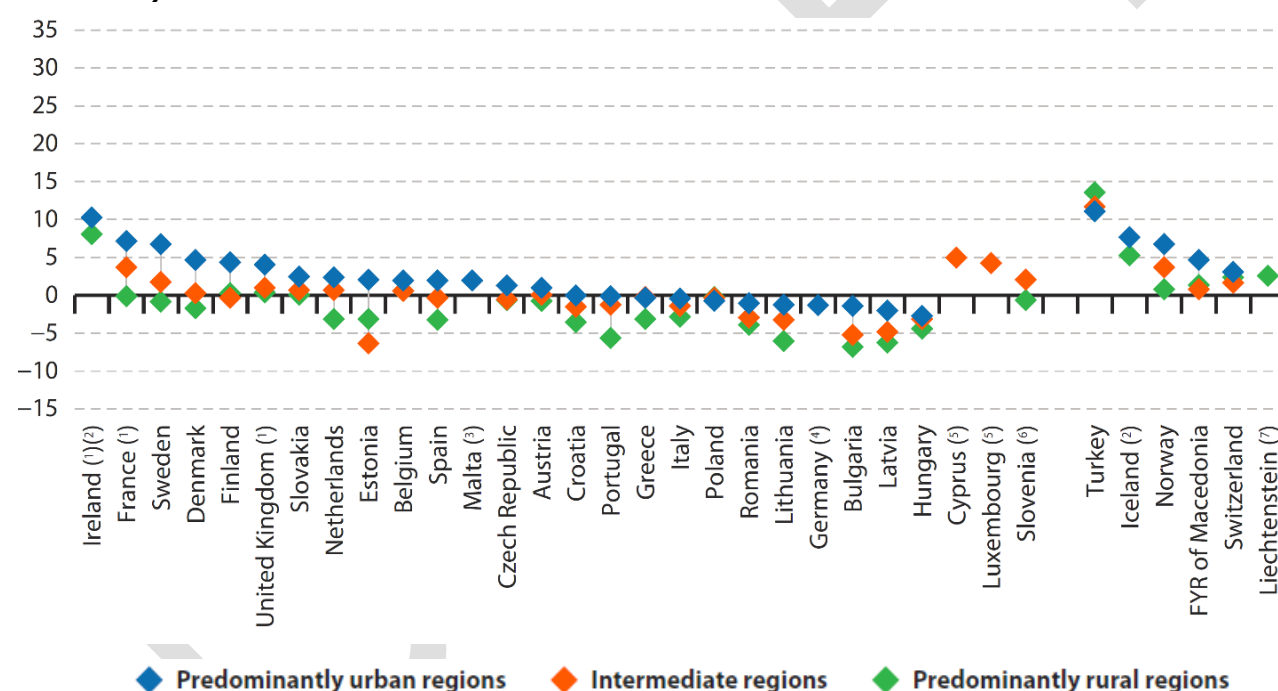
Source: European Union 2016, p. 69

The most rapid reductions in population were registered in some of the rural and/or sparsely populated eastern and southernmost regions of the EU. There were 81 regions where the crude rate<sup>10</sup> of total population changes in 2015 was -10 per 1 000 inhabitants or less.

Despite the overall increase of the population in rural areas in the EU, **most Member States experienced lower population growth in rural areas than in cities and peri-urban regions** (2013), or reported higher population losses in rural areas than in other areas<sup>11</sup> (see Figure 2-14 and Figure 2-15) (European Union 2016, p. 67).

At a more detailed national level, there were contrasting developments in most Member States in 2011 and 2012. In almost all member countries, except for Belgium, there are regions that experience declining population, but also regions that reported population growth. Not only in rural areas is the population declining, but also in urban areas with an industrial base. In contrast, in some countries there are several rural regions that experience population growth, for example in Greece (Eurostat 2016b).

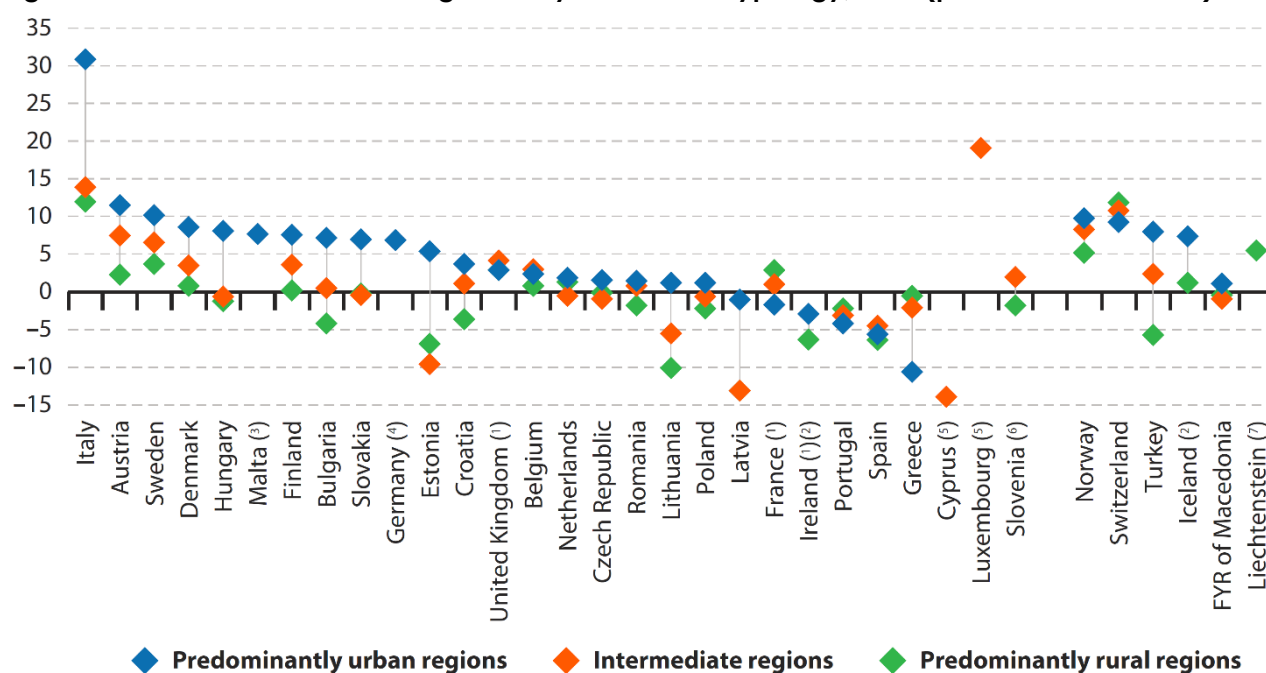
**Figure 2-14: Crude rates of natural population change by urban-rural typology, 2013 (per 1 000 inhabitants)**



Source: European Union 2016, p. 67

<sup>10</sup> The crude rate of total change is the ratio of the population change during the year (the difference between the population sizes on 1 January of two consecutive years) to the average population in that year. The value is expressed per 1 000 persons.

<sup>11</sup> These included 7 out of the 11 regions in Lithuania (the other four also recorded negative rates), four out of six regions in Latvia (the other two also recorded negative rates), slightly more than half of the Bulgarian (16 out of 28) and Croatian (11 out of 21) regions, as well as 11 regions from Romania, 10 regions from Spain, seven regions each from Greece and Portugal, four regions from Hungary, two regions from Estonia, and a single region each from Finland (Kainuu) and the United Kingdom (Blackpool) Eurostat 2017j.

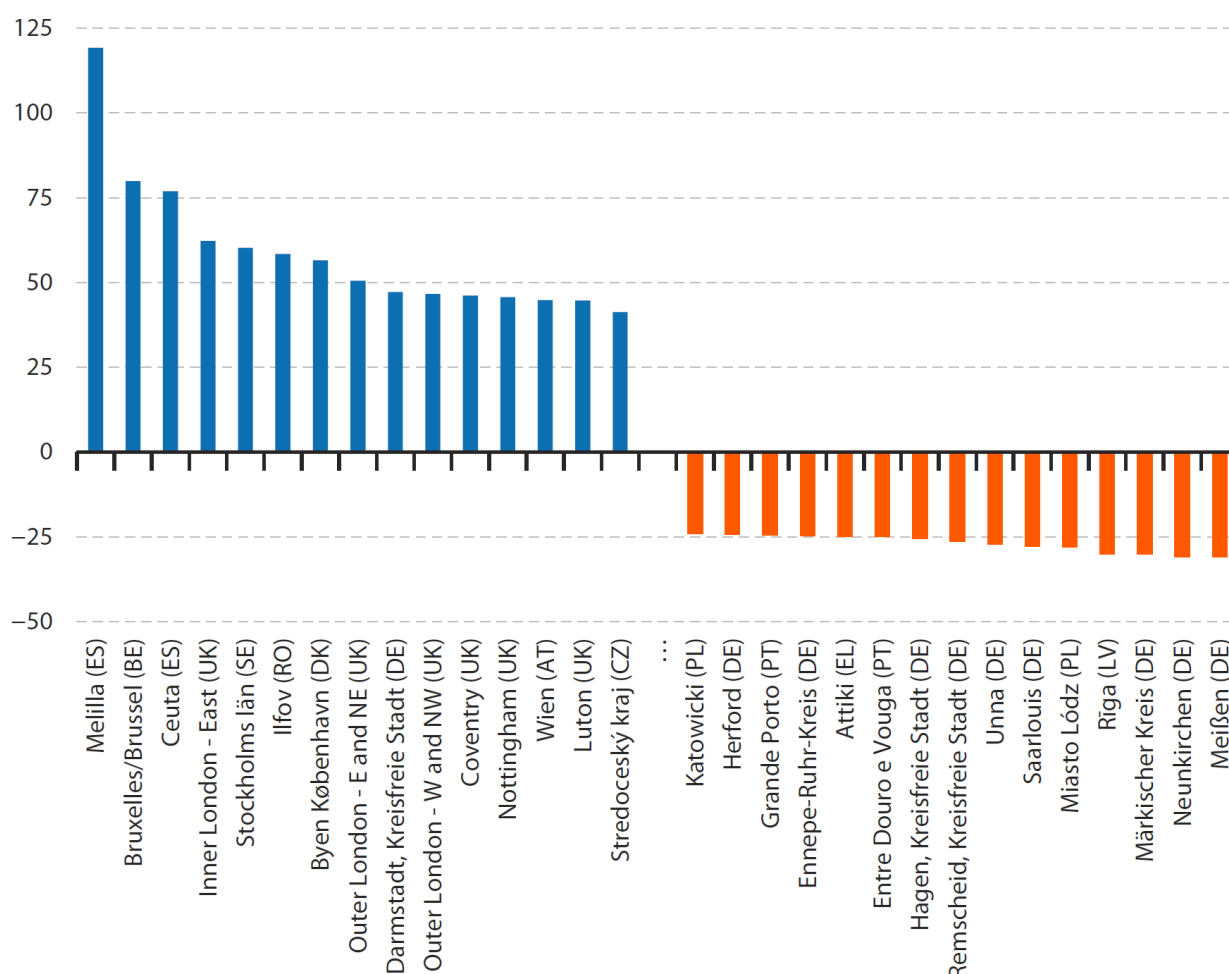
**Figure 2-15 : Crude rates of net migration by urban-rural typology, 2013 (per 1 000 inhabitants)**


Source: European Union 2016, p. 67

### 2.2.3.3 Future trends

Overall, cities and peri-urban regions will grow further in the future. **The population of cities and peri-urban areas in the EU-28 is projected to rise by 24.1 million people**, which means that these regions would be home to almost half (45.8%) of the EU-28 population (see Figure 2-16).<sup>12</sup> In the period 2015–50, rapid increases are expected in capital cities and the surrounding urban regions, most notably the capital regions of Brussels, London, Stockholm, Bucharest, Wien and Prague (European Union 2016, pp. 80–81).

<sup>12</sup> These figures are reported on the regional level (NUTS 3), using the urban-rural typology, instead of the local administrative level (LAU), using the Degree of urbanization typology. See Annex 1 for more details.

**Figure 2-16: Projected population changes for predominantly urban regions in the EU, 2015–50 (%)**


(<sup>1</sup>) The figure shows (subject to data availability) the 15 predominantly urban regions in the EU-28 with the highest/lowest projected rates of change for their respective number of inhabitants during the period 2015–50.

Source: Eurostat (online data code: [proj\\_13rpms3](#))

Source: European Union 2016, p. 81

The analysis of fertility rates provides an indication about the **future demographics of urban and rural regions in Europe**, and therefore an outlook on future transport needs in these areas. Fertility rates have been declining in the second half of the twentieth century and is at a level of 1.6 live births per woman in Europe (2010-2015). However, fertility rate is expected to rise to nearly 1.8 in 2045- 2050 (United Nations 2017).

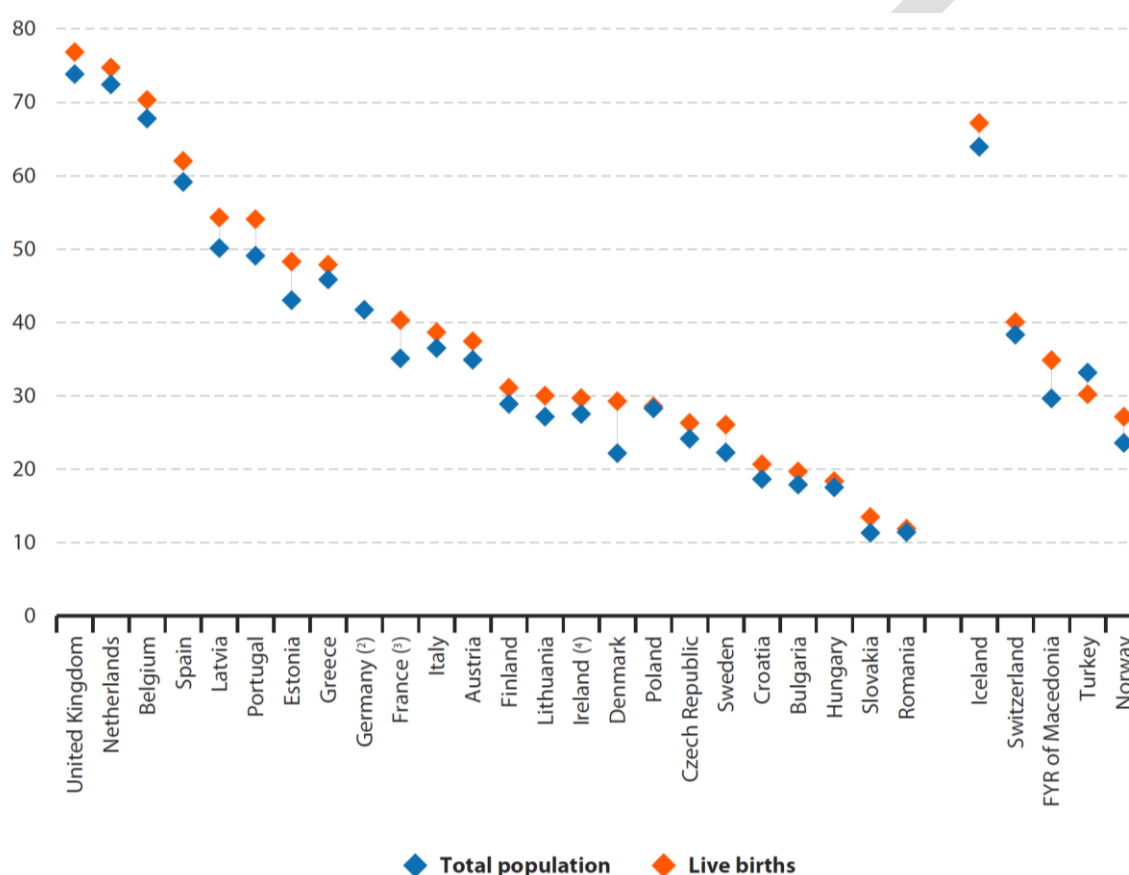
Figure 2-17 shows that that the share of live births in cities and peri-urban areas in 2013 is systematically higher than the share of the total population living in these regions.<sup>13</sup> This

<sup>13</sup> These figures are reported on the regional level (NUTS 3), using the urban-rural typology, instead of the local administrative level (LAU), using the Degree of urbanization typology. See Annex 1 for more details.

suggests that, in the EU-28, people living in cities and peri-urban areas is probably younger than in rural regions.

A particular difference could be observed in Denmark, Estonia, France, Portugal, Latvia and Sweden, where shares of new-born children in urban regions were 5-8 percentage points higher than the share of the total population living in these countries (European Union 2016, p. 165).

**Figure 2-17: Proportion of live births and total population in predominantly urban regions, 2013 (% of national total)**



Source: European Union 2016, p. 165

## 2.2.4 Economic development

### 2.2.4.1 Economic performance

Many eastern regions of the EU were less adversely affected by the medium and long-term effects of the global financial and economic crisis and saw their relative living standards improve at a rapid pace; this was particularly the case for regions in Poland, Romania and Slovakia. By contrast, the impact of the crisis continues to be apparent across many southern regions of the EU.

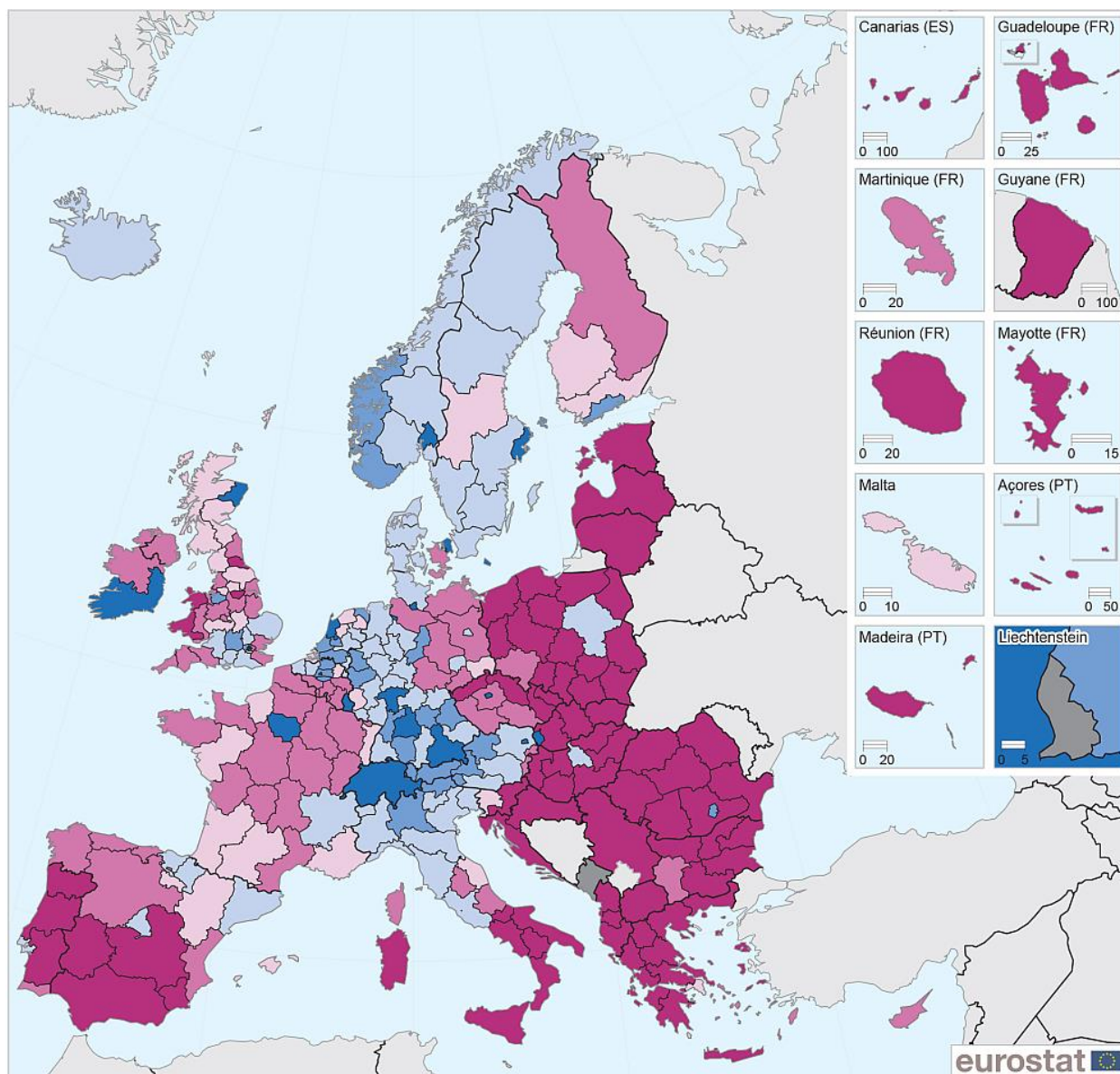
Comparing economic performance of Member States, it becomes apparent that all western and northern EU countries performed above EU average, while all eastern,



southern and Baltic countries performed below EU average in 2017 (see Figure 2-18). Luxembourg recorded the highest level of GDP per capita, followed by Ireland, the Netherlands and Austria. Bulgaria reported the lowest GDP per capita, followed by Croatia, Romania, Latvia and Greece (Eurostat 2017a). However, except for Ireland, the eastern European and Baltic member countries show the highest growth in real GDP between 2006 and 2016, especially Poland, Bulgaria, Romania and Slovakia. Except for Croatia and Slovenia, Eastern European and Baltic countries reported an increase in GDP per capita in this period, while GDP per capita in many southern member countries fell substantially (Eurostat 2017e).

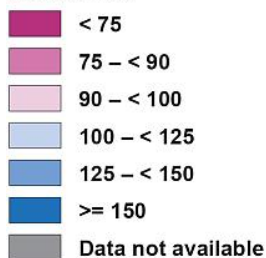
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**Figure 2-18: Gross domestic product (GDP) per inhabitant in purchasing power standards (PPS) in relation to the EU-28 average, by NUTS 2 regions, 2015**



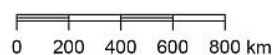
(% of the EU-28 average, EU-28 = 100)

EU-28 = 100



Administrative boundaries: © EuroGeographics © UN-FAO © INSTAT  
© Turkstat

Cartography: Eurostat - GISCO, 07/2017



Source: Eurostat 2015c

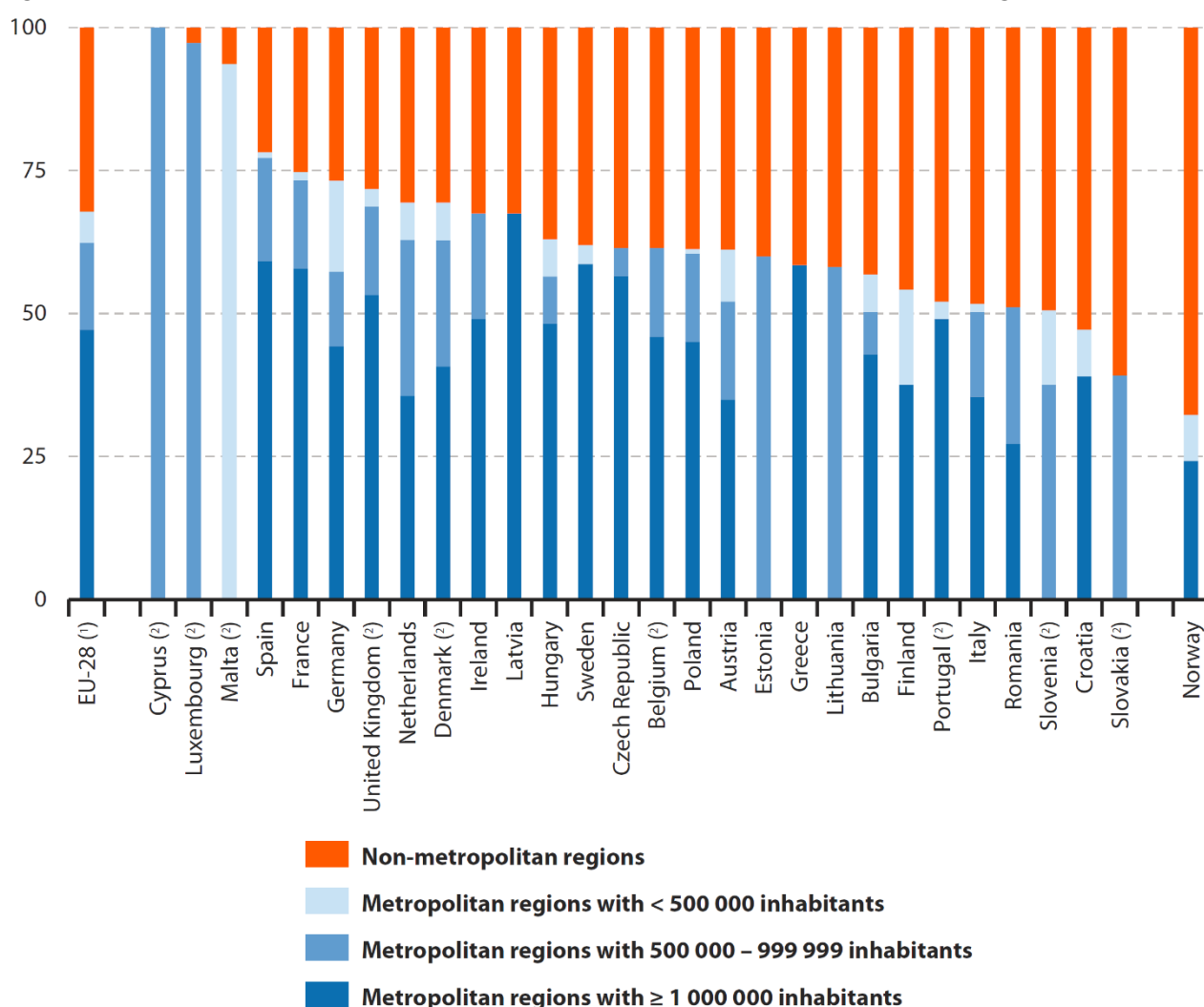
Statistics from 2010, based on the rural-urban typology, allow a comparison between urban and rural areas. In 2010, predominantly urban regions accounted for approximately 54.3 % of GDP within the EU-27, while intermediate regions contributed around 29.2 % and predominantly rural regions the remaining 15.3 %.<sup>14</sup> Compared with 10 years earlier this gap between predominantly rural regions and predominantly urban regions closed slightly, as the share accounted for by predominantly urban regions fell 1.2 percentage points while the shares of the two other types of regions increased by 0.6 percentage points each (Eurostat 2016b).

In all European Member States, **economic activity is concentrated in urban regions** to a substantial part. In nine European Member States, more than half of the GDP of these countries is produced in predominantly urban regions. At the level of metropolitan regions, substantial differences between member countries can be observed (Figure 2-19). In Spain and France, more than 75% of the GDP is produced in metropolitan regions, while in most western, northern and some eastern European member countries, the share is between 50 and 75 percent. In Italy, Romania, Slovenia, Croatia and Slovakia the share is close to 50 percent (European Union 2016, pp. 61–63).

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<sup>14</sup> The economic position of EU countries today is observed mainly on the NUTS 2 level, not on NUTS 3 or on the level of Local Administrative Units. NUTS 2 does not allow comparison between urban, peri-urban and rural regions, hence older data on NUTS 3 and LAU levels is used instead.

**Figure 2-19: Distribution of GDP at current market prices by size of metropolitan regions, 2012 (%)**


(1) Sum of latest available data for each of the EU Member States.

(2) 2013.

Source: Eurostat (online data codes: [met\\_pjanagr3](#), [met\\_10r\\_3gdp](#), and [nama\\_10\\_gdp](#))

Source: European Union 2016, p. 63

Between 2010 and 2013, **the majority of European metropolitan regions experienced economic growth, except for some of the southern and eastern European Member States.** The highest growth rates in GDP per inhabitant were recorded in parts of the Baltic Member States.). High growth rates were also recorded in centres of the car industry in the UK and Germany or in metropolitan regions that could be characterized as engines of growth due their leading roles as technological innovators, such as Uppsala in Sweden, specialized in medical research and biotechnology.

In the same period, some metropolitan regions experienced an economic recession as an effect of the financial and economic crisis. GDP per inhabitant fell in all of the metropolitan regions of Greece, Spain, Croatia, Italy, Cyprus, Portugal and Slovenia. Apart

from that, only in five Dutch regions the GDP per inhabitant in the EU fell (European Union 2016, pp. 69–72).

Generally, **GDP in rural regions is lagging behind the EU average**. Around 81% of rural regions reported a GDP per inhabitant in PPS that was below the EU average. This is in contrast to only 41% of the predominantly urban regions and 63% of the intermediate regions reported a GDP per inhabitant below the EU average. Differences between the countries can be observed. In Austria, 9 out of the 23 rural regions recorded a GDP above the EU average. In Denmark, 3 out of the 5 rural regions recorded a GDP that was higher than the EU average, as did all of the urban regions and half of the intermediate regions.

In Portugal, all of the rural and intermediate regions and 67% of the urban regions recorded a GDP that was lower than the EU average (Eurostat 2012, pp. 2–3).

#### 2.2.4.2 Employment and income distribution

Unemployment and limited financial resources can limit personal mobility substantially. At the same time, available transport options and individual mobility aptitudes have an impact on access to employment. Material deprivation is hence one of the crucial influencing factors of transport poverty (see Chapter 3.2.1).

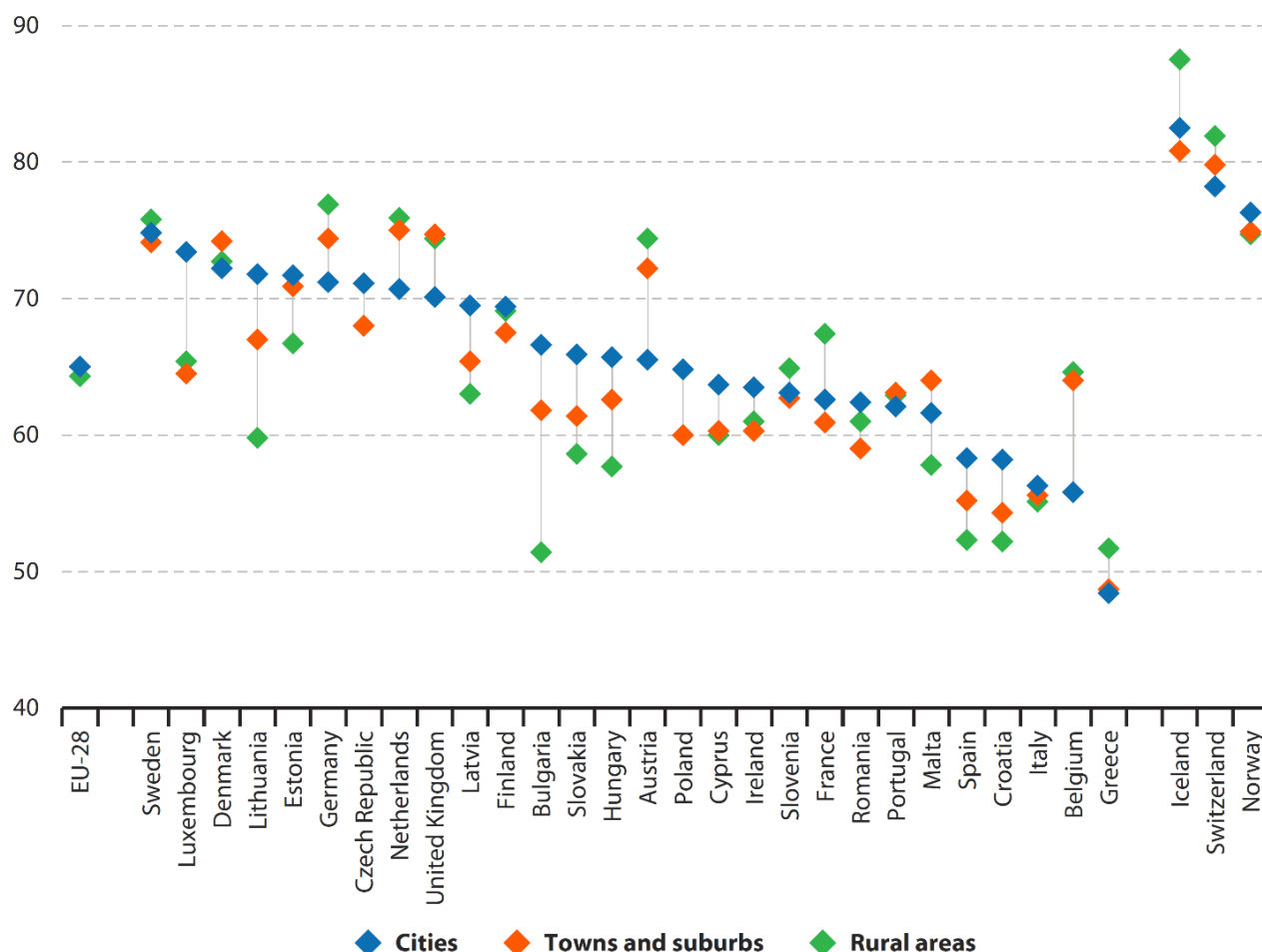
Access to employment and levels of income differ substantially between European Member States, and also between urban, peri-urban and rural areas and thus shape prospects of people living in these areas differently.

Almost 210 million persons aged 20–64 were employed in the EU- 28 in 2014, this is 69.2% of the total population of the EU in that age group. Some of **the lowest employment rates are recorded in the southern and eastern EU Member States**. The lowest rate was recorded for cities in Greece (59.2%), while male employment rates were in the range of 65–70% for those living in the cities of Spain, Croatia, Italy, Portugal and Slovenia, as well as Belgium (European Union 2016, p. 180). For the total employed population, as well as for the male workforce, there are no substantial differences between urban and rural areas. However, for the female workforce, it can be observed that a higher proportion of women aged 20–64 is employed in cities than in rural areas (64.2% against 62.3%) (European Union 2016, p. 179).

Looking at the urban-rural differences in employment, considerable variation can be observed between the western and eastern Member States (see Figure 2-20).<sup>15</sup> Nevertheless, as outlined above, due to very high densities around three quarters of employed people live in cities and peri-urban areas in the Netherlands and UK. Apart from that, only in Belgium, Spain and Latvia, more than 50% of the workforce lived in cities and peri-urban areas. Also, while cities create economic wealth, several western and southern EU Member States also exhibit high levels of unemployment in predominantly urban regions (European Union 2016, pp. 255–258).

<sup>15</sup> These figures are reported on the regional level (NUTS 3), using the urban-rural typology, instead of the local administrative level (LAU), using the Degree of urbanization typology. See Annex 1 for more details.



**Figure 2-20: Employment rates among people aged 15–64 by degree of urbanisation, 2014 (%)**


(<sup>1</sup>) Note the y-axis starts at 40.

Source: Eurostat (online data code: [lfst\\_r\\_ergau](#))

Source: European Union 2016, p. 38

In the EU, 75% of the male population aged 20–64 is employed, while only 64% of the female population. **There is a substantial variation in the proportion of women being employed in different Member States.** In most northern and several western EU Member States, high shares of women in the age of 20–64 are employed. The highest share is recorded in Sweden where almost 80% of women in this age group are employed, followed by Lithuania, Denmark, Germany, the UK, Finland and Estonia, with shares above 70%.

In most of the southern and eastern Member States the proportion of women in work was a relatively low. Employment rate of women is particularly low in Greece (below 45%), followed by Italy, Malta, Spain, Croatia and Romania, with shares between 45 and 60%.

## 2.2.5 Housing and cost of living

An **indicator for the quality of life in cities is the cost of living.** In capital cities of western and northern Member States, cost of living is the highest in EU-28. On top of the list is

London, followed by Copenhagen, Stockholm, Helsinki, Dublin and Paris. Among these cities, London and Stockholm experienced a substantial rise of living costs between 2005 and 2015. Cost of living is lowest in eastern and Baltic Member States. Lowest cost of living is reported from Sofia, followed by Bucharest, Budapest, Vilnius, Warsaw and Prague (European Union 2016, p. 173).

The **housing costs** in cities of Western Europe, are considerably higher than in its rural areas, while in some eastern states (Bulgaria, Slovakia, Croatia, Romania) the housing costs in rural areas is higher than in cities. It is also in some of the western European states – more precisely Luxembourg, Poland, Germany and Austria – that the average size of dwellings is considerably lower than in rural areas, on average 60–70% of average rural dwellings.

Observing economic dynamics of cities together with their housing markets, it is evident that very dynamic cities exhibit a tense situation on the housing market. A comparison between Athens and Munich highlights this pattern: 61% of respondents in a survey could find good housing at reasonable price in Athens, this was only the case for 3% of respondents in Munich. The same respondents agreed that it was relatively easy to find a job in Munich, but difficult in Athens (European Union 2016, pp. 47–48).

Nevertheless, a survey about the perception on the quality of life in 79 European cities for 2015 shows that some of the cities with high cost of living also have the highest levels of satisfaction concerning the financial situation of households, such as Stockholm and Copenhagen. Furthermore, high levels were recorded in Antwerp (Belgium), Aalborg (Denmark) and Malmö (Sweden). The lowest levels of satisfaction were reported from southern and eastern European cities in Greece, Croatia, Italy, Hungary and Portugal (European Union 2016, p. 175).

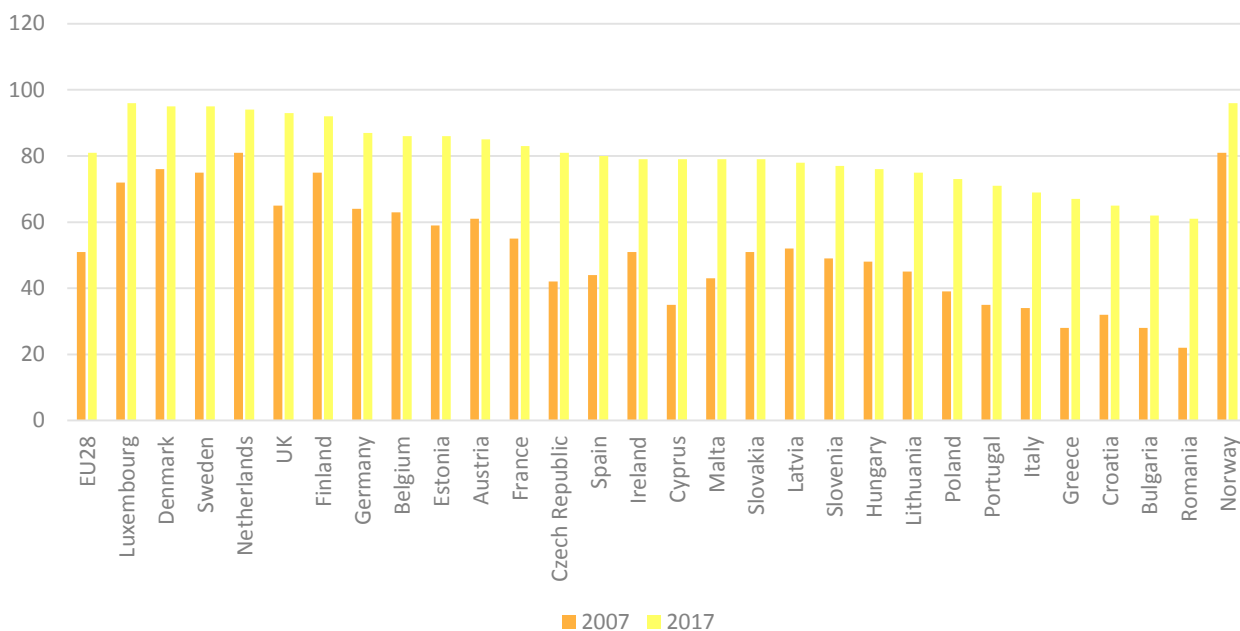
### 2.2.6 Internet usage

The availability of digital technology is fundamental for competitiveness of cities and regions. However, access to such technology differs among European regions, and also between cities, peri-urban and rural areas. Capital regions and major metropolitan regions often benefit first from advances in technology, as new infrastructure is often initially rolled out in areas where there is a considerable customer base in a relatively small area. Rural regions, instead, often lag behind in digital infrastructure development. This digital divide is of major importance for the transportation industry and needs to be considered when developing new mobility solutions.

**Frequency of internet usage developed substantially between 2007 and 2017.** EU-wide, internet usage is around 25 percentage points higher in 2017 than in 2007 (see Figure 2-21). Especially southern and eastern Member States reported substantial increases in internet usage, e.g. up to almost 40% as in Romania (Eurostat 2017b).

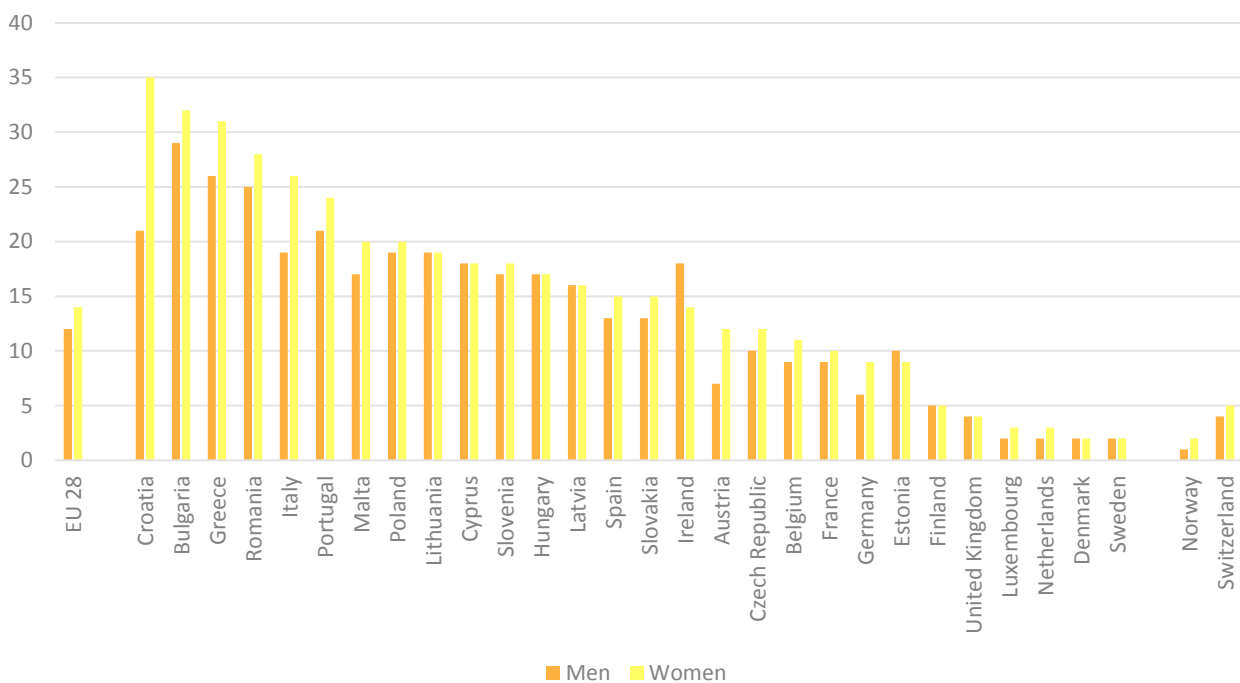
However, there are substantial parts of the population in countries such as Croatia, Bulgaria, Greece, Romania and Italy that never use internet. This can be particularly observed for women in these countries (see Figure 2-22).

**Figure 2-21: Frequency of internet use at least once a week, 2007 - 2017**



Source: Eurostat 2017b

**Figure 2-22: Individuals never using Internet (16 to 74 years old), 2017**



Source: Eurostat 2017c

Information about mobility services is often accessed while being out of home or work, and also booking of services is increasingly managed via smartphone devices. The share of mobile internet users therefore is an **indication about the current potential of inclusive ICT applications in mobility**.

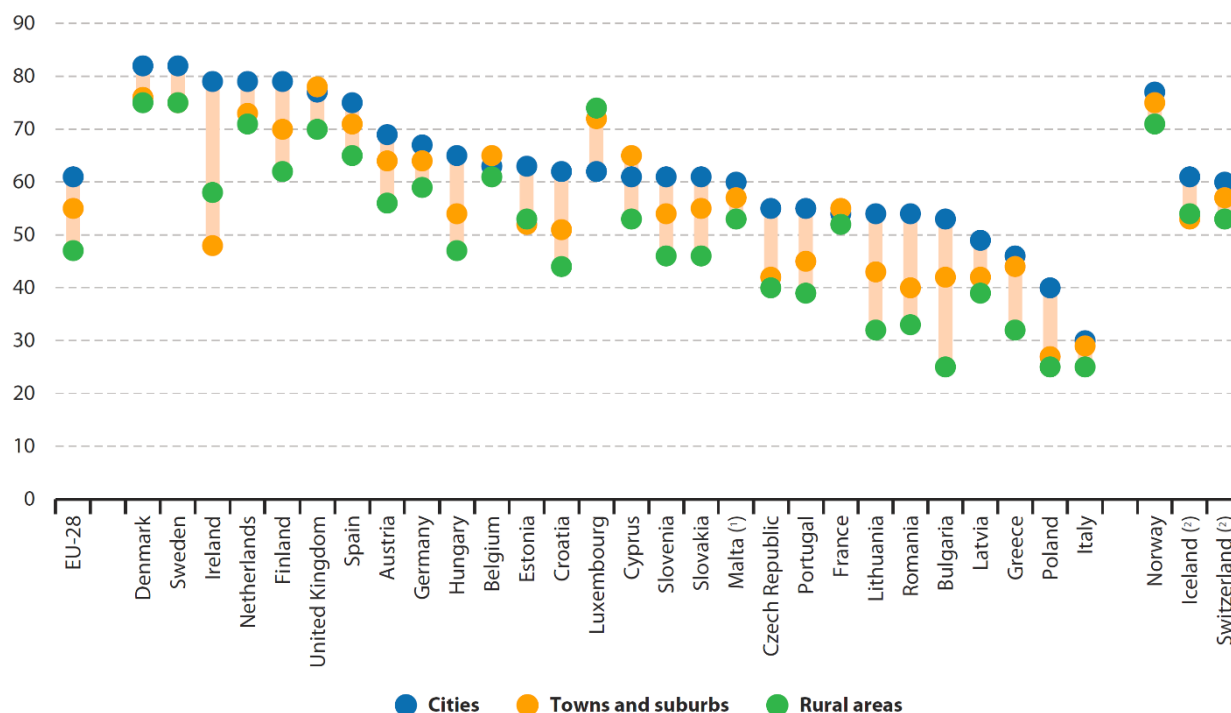
Using internet while being on the move has become common in Europe. In 2017, 65% of Europeans used portable computers or handheld devices to access internet when away from home or work. EU-wide, the share of mobile internet users has almost doubled between 2012 and 2017.

However, mobile internet usage is different in the EU member countries (see Figure 2-23).

). Denmark and Sweden reported the highest shares of mobile internet users (75% to above 80%), followed by the Netherlands, Ireland, Finland, UK and Luxembourg. At the lower end, is located Italy (below 30%) (European Union 2017a, p. 172). In countries with very low levels of mobile internet usage in 2012, usage was four (in Bulgaria) to seven times (Romania) higher in 2017. In both countries, today more than half of the population use mobile devices to access the internet. This in contrast to Italy, that had a relatively low level of mobile internet usage in 2012 (16%), which only doubled until 2017 (around 30%). Overall, Italy shows the most severe backlog in internet usage in the European Union. Judging from the slow development in usage in the last five years, the shortfall cannot be easily compensated within the upcoming years (Eurostat 2017d; European Union 2017a).

In almost all member countries, the highest share of mobile internet usage is in cities, followed by peri-urban regions. In some countries, a high difference in usage between cities and rural areas can be observed, for example in Ireland (around 80% in cities compared to below 50% in rural areas), Finland, Hungary, Croatia, Lithuania, Romania and Bulgaria (difference between 20-30 percentage points) (European Union 2017a, p. 172).

**Figure 2-23: Proportion of individuals who used a mobile phone or smart phone to access the internet when away from home or work in the three months prior to the survey, by degree of urbanisation, 2016 (% of all individuals)**



Source: European Union 2017a, p. 172

In general, **people more often use the internet on a regular basis – defined here as once a week - in cities and peri-urban areas than in rural areas.** The same accounts for internet shopping and online-interaction with authorities.<sup>16</sup>

Across the whole of the EU- 28, on average 81% of people living in cities used the internet at least once a week in 2015, compared to 69% in rural areas. Internet shopping (at least once a year) is done by 58% in cities, and 45% in rural areas. 52% of people living in cities used the internet to interact with public authorities, compared to 39% in rural areas.

**The digital divide between urban and rural areas** was highest in Croatia, Greece, Romania and Bulgaria. These are the states where overall internet usage is relatively low (see Figure 2-24). In contrast, in the Benelux countries, Denmark and France there was almost no difference in internet usage between those living in cities, those living peri-urban areas and those living in rural areas. The share of those never using internet is particularly high in rural areas of Bulgaria, Greece, Romania, Croatia and Portugal (see Figure 2-25).

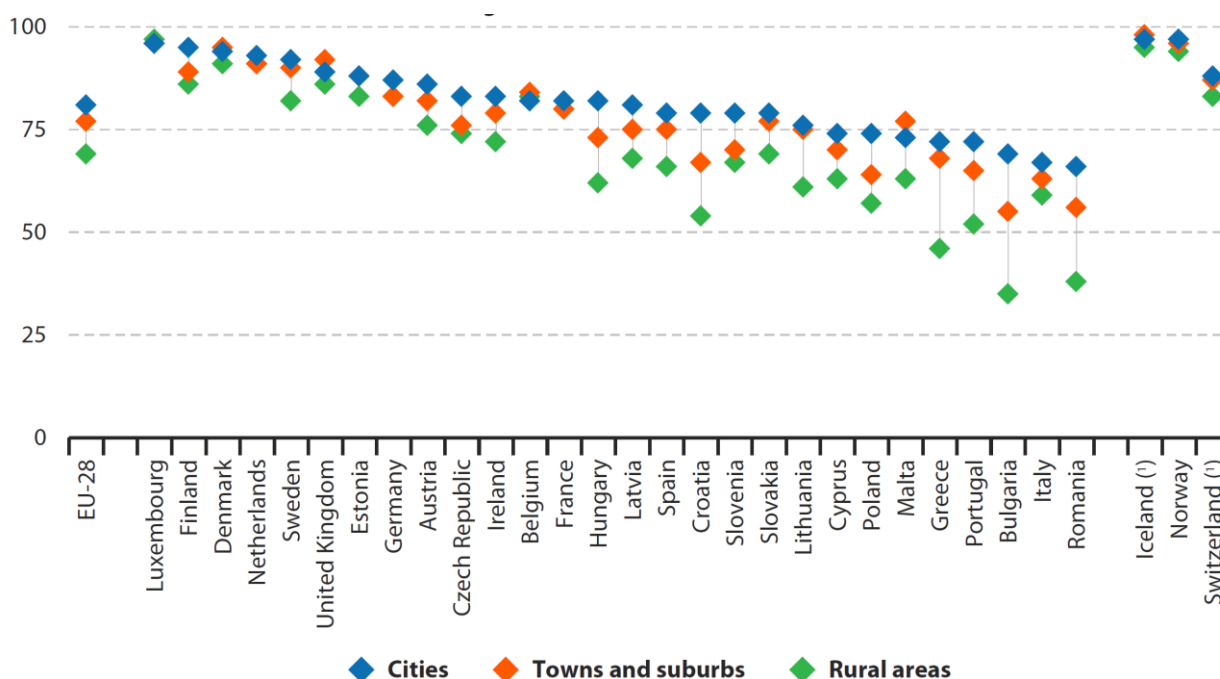
The disparities between European regions are drastic in regard to internet shopping behaviour: at least 80% of the population living in the cities of Luxembourg, Denmark and the United Kingdom made an online purchase once a year (2015), while just 16% of those

<sup>16</sup> Interaction with public authorities includes obtaining information from public administration websites; downloading official forms through the internet; sending filled in forms through the internet.



living in cities in Romania, around 25% in Bulgaria and Cyprus, and 28% in Italy made online purchases (European Union 2016, pp. 111–112).

**Figure 2-24: Proportion of people aged 16–74 making use of the internet by degree of urbanization**

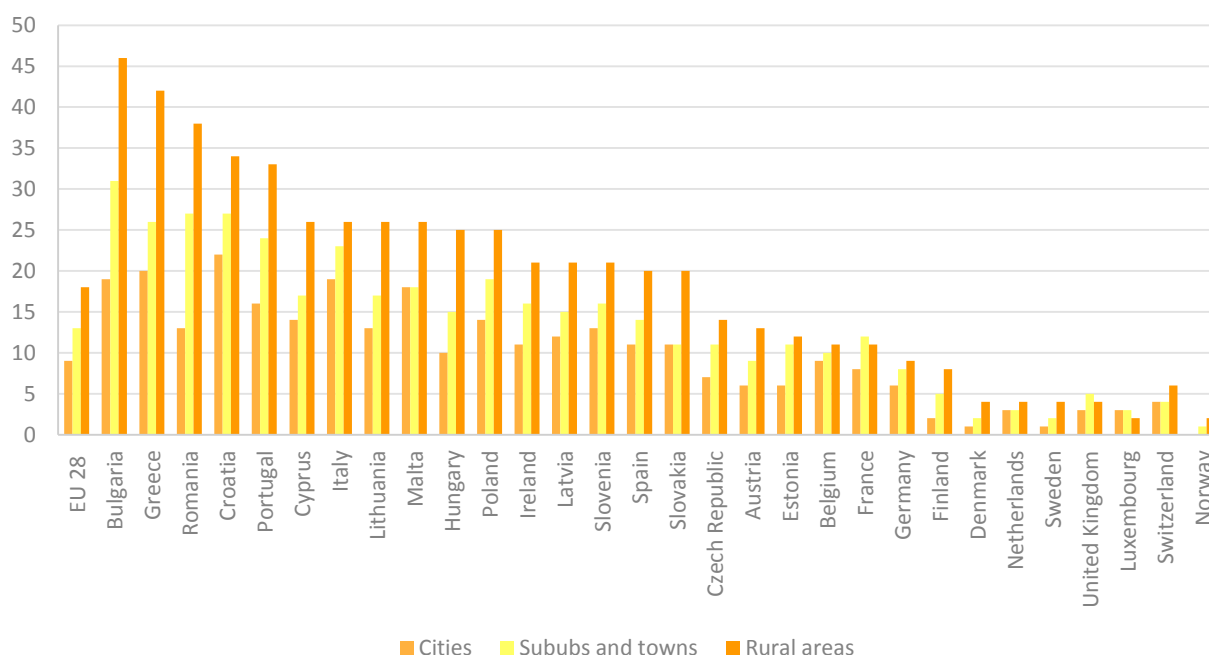


(¹) 2014.

Source: Eurostat (online data codes: [isoc\\_bdek\\_di](#), [isoc\\_bde15cbc](#) and [isoc\\_bdek\\_ps](#))

Source: European Union 2016, p. 112

**Figure 2-25: Individuals never using internet (urban-rural comparison)**



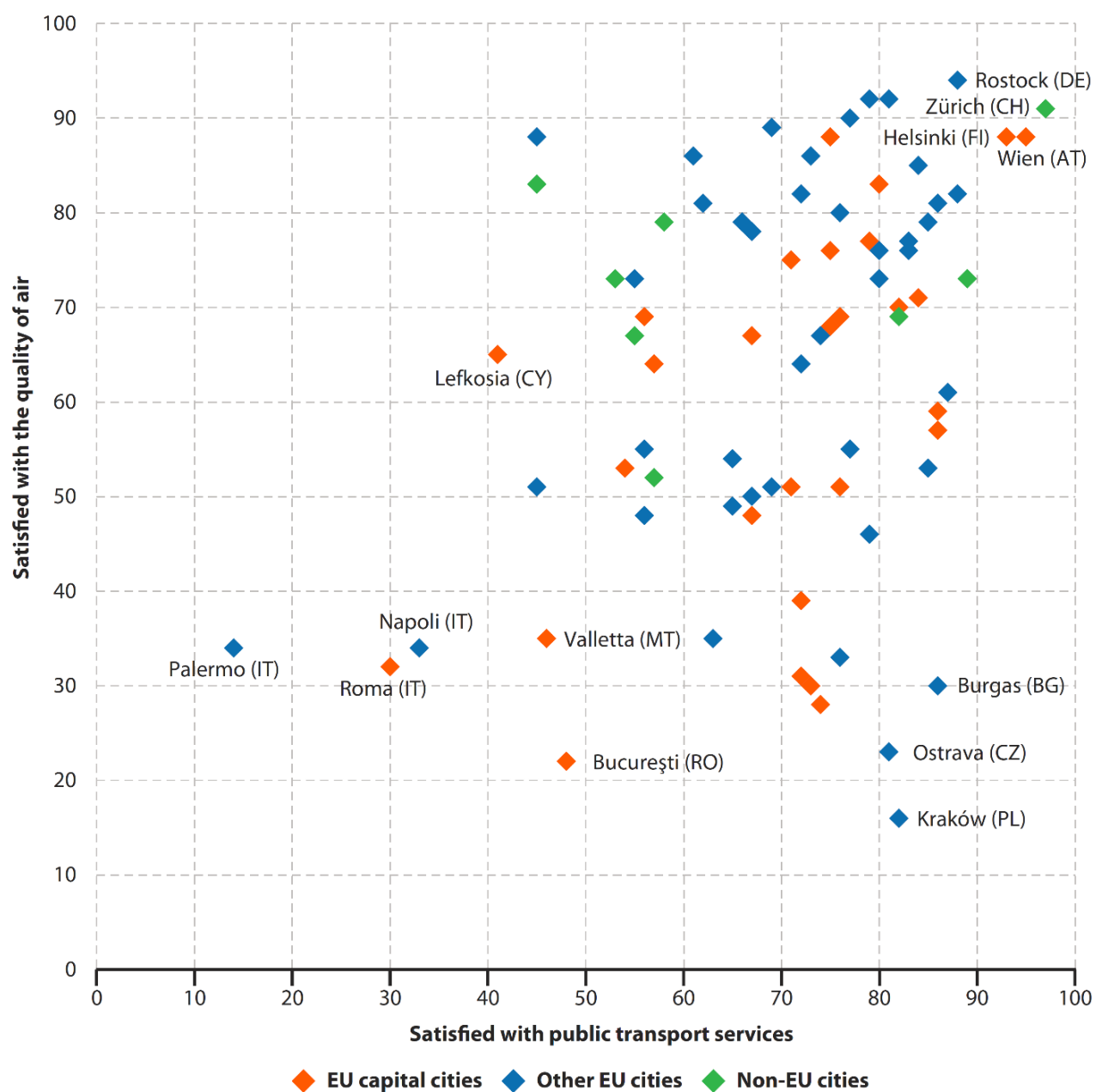
Source: Eurostat 2017c

### **2.2.7 Satisfaction with public transport and air quality**

Satisfaction with public transport differs substantially between different cities in the European Union (see Figure 2-26).

In several Italian cities, satisfaction with public transport is low. The lowest is Palermo (around 14% of respondents reported satisfaction with public transport), followed by Rome (30%) and Naples (33%). Satisfaction with air quality is also low in these cities (between 30-40% of respondents). Satisfaction with air quality is lowest in Bucharest (about 22% of respondents), but the satisfaction with public transport is higher (about 48%). Vienna und Helsinki showed the highest satisfaction with public transport in the EU, followed by the German cities of Dresden and Rostock (above 90%), where respondents are also equally high satisfied with air quality (just below 90%) (European Union 2016, 50, 115).

**Figure 2-26: Proportion of people satisfied with public transport services and the quality of air in their city, 2015 (%)**



(<sup>1</sup>) Athina (Greece), Paris (France), Lisboa (Portugal), London, Manchester and Tyneside conurbation (all United Kingdom): greater city.

Source: Eurostat (online data code: [urb\\_percep](#))

Source: European Union 2016, p. 50

## 2.2.8 Deprivation in urban areas

All across Europe, parts of cities have experienced economic and social decline, leaving these districts and neighbourhoods in a state of deprivation. Also, there are parts of European urban regions located in peripheral locations, difficult to reach by public transport. Often residential areas outside the administrative limits of core cities have lower public transport coverage and less frequent connections to these core cities.

Socio-economic disparities and other form of inequalities are major issues in the cities of Europe, impeding the achievement of a decent quality of life for urban citizens. Also, the latest economic and financial crisis has further intensified the concentration of poverty and social exclusion in cities.

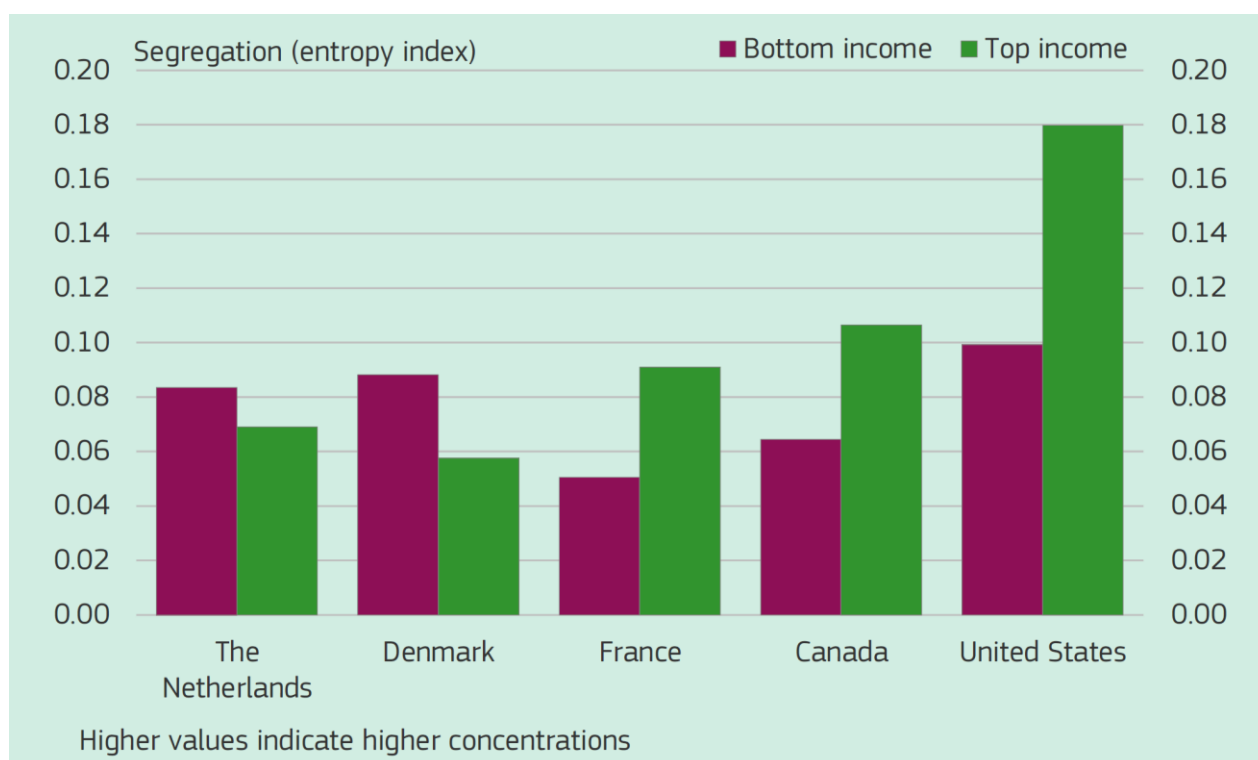
### 2.2.8.1 Increasing spatial segregation in Europe

The challenges encountered in many cities are multi-fold. Increase of poverty, low levels of education, lack of investment in child and youth development and increasing gaps between rich and poor citizens are not only phenomena observed in cities, but they often appear in cities in a concentrated form. Spatial segregation along social, economic and ethnic lines is increasing in European cities. **Poverty tends to cluster in certain urban neighbourhoods; furthermore, poor citizens are living at increasing distance from wealthier citizens.** The results can be disastrous in term of increasing transport poverty, both on the individual and societal level. Varying living conditions in different parts of a city can potentially have negative effects on social mobility, since the quality of schools, access to services and decent living conditions are important for people to prosper and fulfil their potential. For the wider society, social and economic polarization can be severe for the social fabric and the economic competitiveness.

This phenomenon is much more evident in other continents, e.g. North America, while neighbourhoods of European cities are historically characterized by a strong social mix. However, this social mix is under threat by different parallel processes. Increasing income polarization since the 1980s, decreasing security of employment, deregulation of housing markets and shrinking welfare states are some of the economic changes that have contributed to increasing social and economic polarization and segregation in cities. In many western European countries, suburbanization of wealthier residents occurred – also fostered by tax incentives as in the case of Germany (Rohrbach 2003) - while low-income residents often remained in the urban core. Due to migration within European states and from outside Europe, parts of cities have become characterized by strong ethnic concentration (Colini et al. 2013, p. 8).

The pattern of segregation differs across the EU. In Denmark and the Netherlands, for example, the poorest households show the highest level of spatial concentration, while in France, as in the US and Canada, it is the most affluent who tend to concentrate most in specific areas of a city. Hence, in these countries, segregation is relatively more driven by the most affluent than by the poor (see Figure 2-27).

This development draws attention to the functioning of the housing sector. Land-use regulations can have exclusionary effects for low-income households in certain neighbourhoods (Arbaci 2007, pp. 420–422). The rise of private communities (condominiums, housing co-operatives and “gated communities”) may also have contributed to the segregation of the wealthier citizens within cities and metropolitan areas (Musterd 2017, pp. 251–253).

**Figure 2-27: Income concentration in cities by income group, 2014 or latest available year**

Source: European Commission 2017b, p. 78

Generally, **there is an increase in the level of segregation in European cities**. Levels of socio-economic segregation were higher in 2011 on average than those in 2001. This is evident e.g. when observing 12 European capital cities by income, type of occupation or educational attainment by using a “Dissimilarity Index” as a measure of segregation (see Figure 2-28).

Socio-economic segregation has increased in all of the analysed capital cities except Amsterdam. Among the considered cities considered, Madrid exhibited the highest level of segregation in 2011. Madrid was closely followed by Tallinn and London. Madrid and Tallinn also had the strongest increase in socio-economic segregation between 2001 and 2011, together with Stockholm. The lowest level of segregation among these cities was observed Oslo, followed by Riga and Prague (OECD 2016, pp. 75–81).

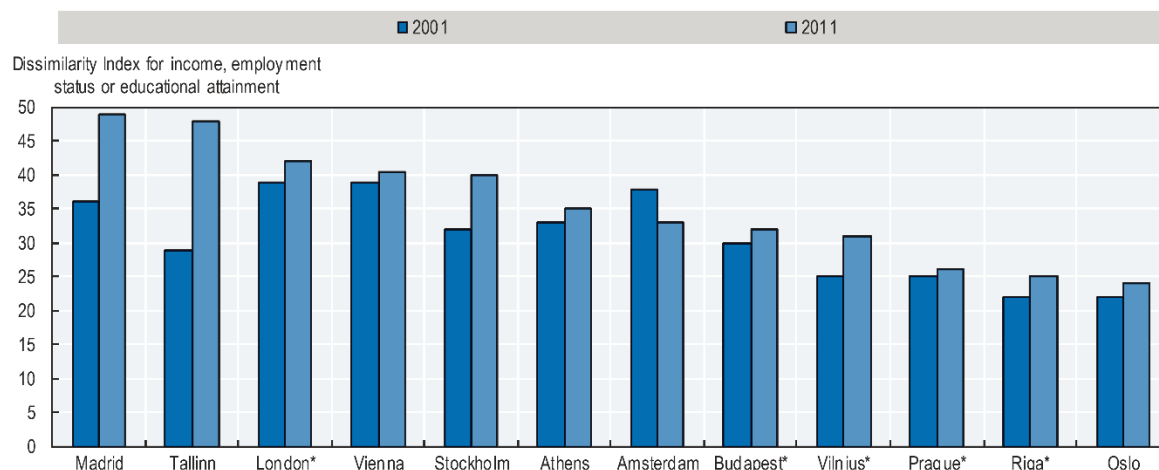
It needs to be noted that, while spatial segregation is commonly acknowledged as indicator for social divide on the urban level, social diversity in urban neighbourhoods is not necessarily associated with social cohesion and harmony, as social groups can live alongside each other with little or no interaction (Shaw and Hagemans 2015, p. 325).

Similarly ethnic neighbourhood diversity is neither sufficient for social peace and cultural interchange, nor are multi-ethnicity and multi-cultural in urban neighbourhoods explanations for ethnic intolerance and social conflicts (Amin 2002, 960). As often, the reasons for urban deprivation and social inequalities are complex and multi-layered, and so are the potential strategies and solutions.



**Figure 2-28: Change in spatial segregation of major European cities, 2001-11**

Index of Dissimilarity: The higher the index the higher spatial segregation



*Notes:* The Index of Dissimilarity was computed in terms of occupation (managers vs. elementary occupations) for Madrid, Tallinn, London, Budapest, Vilnius, Athens, Prague and Riga; in terms of income (highest vs. lowest income quintile) for Amsterdam, Oslo and Stockholm; in terms of educational attainment (university degree vs. compulsory education) for Vienna.

\* Municipality instead of metropolitan region.

Source: OECD 2016, p. 76

### 2.2.8.2 Deprivation in large housing estates

Spatial concentration of poverty and social disadvantages have also been driven by planning intervention in the 1950s-1980s, when large mono-functional housing estates were built to meet the needs of the growing urban population. While many of these estates were well equipped with facilities according to modern standards, others however were built in a very short time, with inadequate infrastructure and facilities for social, education and supply services. The popularity of those estates declined and was used by housing officials to rehouse disadvantaged groups, including, among others, migrants to the city. Since the 1990s, these neighbourhoods are seen as the most problematic areas of a city, with problems ranging from physical downgrading of the housing stock, increasing concentrations of low-income households, rising criminality and decreasing quality of public spaces. Since then, across Europe, these areas have been targeted by a range of policy strategies (Wassenberg 2004; van Kempen et al. 2007; Dekker et al. 2011).

The socio-demographic and economic situation of large housing estates differs in European regions. In Eastern Europe, these estates are still able to attract the middle-classes, especially well-educated families, artists and young childless couples. Hence, income levels are higher and unemployment levels are lower than in the rest of the cities of Eastern Europe. The situation in southern, western and northern European Member States is different. Especially in southern Europe, the original population of large housing estates is ageing, leading to an overrepresentation of the elderly. As the original population is ageing and diminishing, migrant and ethnic minority families are moving into

the relatively spacious apartments. This can be observed particularly in Western and Northern Europe. In Western Europe, in some of these estates, over 80 percent of the total population belongs to ethnic minority groups, usually with low incomes and little opportunities on the urban housing market.

Although the presence of a mix of elderly and migrant/ethnic minority population in these areas has produced social-cultural heterogeneity, this is often negatively perceived, especially by those who have been long established in these neighbourhoods. Also, partially due to the ageing and migrant population, unemployment levels are usually higher in large housing estates of southern, western and northern member countries. Employment opportunities for ethnic minority members and migrants are often lower and particularly young people with migrant background experience difficulties in finding jobs. Another reason is that the initial design of these estates did not offer spaces for production and services, but were foremost oriented towards providing residential space (Dekker and van Kempen 2004, pp. 573–574).

Today, the physical condition of these large-scale housing estates is a factor that aggravates the social situation in these neighbourhoods. Maintenance is often problematic, especially in those that were built several decades ago, and where low-quality building material was used, resulting in many physical problems in this building stock. Despite often being located between large tracts of greenery, they are often perceived as grey and monotonous (Dekker and van Kempen 2004, pp. 572–573).

**For residents living in large housing estates, public transport availability is crucial.** Especially for those housing estates that are located in urban peripheral locations, transportation is a challenge. Also, walking distances to public transport can be very long.

### **2.2.8.3 Transformation of declining inner-city neighbourhoods**

Large housing estates are not the only areas where deprivation and processes of decline can be observed. Historically, many inner-city neighbourhoods, especially the city extensions of late 19th and early 20th century, were established to accommodate the working classes of the growing urban populations. In the second half of the 20th century, in many European cities, migrants replaced the aging population in these neighbourhoods, living along with low-income domestic residents. Like large housing estates, some of these neighbourhoods have experienced processes of urban decay, economic decline and stigmatization (see e.g. Breckner 2013 for Hamburg/Germany).

Today, a partial reorientation in residential choices can be observed that transform these inner-city neighbourhoods. The middle- and high-income populations more often choose such neighbourhoods as their preferred places of living. This tendency is a counter-dynamic to the dominance of suburbanization in previous decades. Such developments have resulted in historical inner-city neighbourhoods becoming more and more attractive as residential locations for urban middle classes, also in the light of increasingly dense housing markets (Hierse et al. 2017).

Many authors have pointed to the benefits of the “return” of middle classes into formerly decaying inner city areas. The presence of middle classes usually leads to landscape and infrastructure upgrades and attracts public investment to the area. Often the benefits of improvement in education and job prospects for poorer residents are highlighted, resulting in the opportunity of upward social mobility.

Finally, as spatial segregation along social and economic lines is usually perceived negatively, the presence of residents with different income levels and the resulting "social mix" is welcomed and lauded. However, other scholars have argued that the evidence of benefits of social mixing is actually thin. They argue that the process of gentrification leads to higher rents in the respective neighbourhoods, which forces low-income residents to leave these areas (Marciniczak et al. 2016; Shaw and Hagemans 2015; Alexandri 2018).

As more inner city areas are regenerated and upgraded, becoming attractive residential locations for middle and high income citizens, low-income residents are forced to move to the peripheries of cities, or even to suburban locations (Hochstenbach and Musterd 2018). Processes of **gentrification, dynamic upgrading of inner city areas and replacement of low-income residents by urban middle classes** have been described most extensively for western European cities. However, similar processes are observed in post-socialist cities of today's eastern European Member States, such as Budapest, Vilnius and Prague (Brade et al. 2009; Fabula et al. 2017).

#### 2.2.8.4 Other deprived urban areas

As the previous paragraphs showed, urban deprivation and marginalization can appear in several urban locations, such as inner-city areas, peripheral or suburban locations, and can appear in different types of urban neighbourhoods - central and peripheral large housing estates as well as historic innercity quarters. Planners and policy makers on all levels, including the European Union, have made substantial efforts in tackling urban deprivation and inequality and improving the situation of those living in deprived urban areas.

Additionally, to the aforementioned forms of urban deprivation, a phenomenon needs to be mentioned that is far less discussed in the policy arena, where however the most severe forms of deprivation and material poverty can be observed.

The Roma are Europe's largest and most vulnerable minority. Estimates of the number of Roma in Europe differ widely. The share of Roma in Bulgaria, Slovakia and Romania is estimated at 6 to 9 percent of the population. Romania has the highest absolute number of Roma in Europe, with between 1 million and 2 million. Large populations of between 400,000 and 1 million also live in Bulgaria, Hungary and Slovakia. Western Europe's largest Roma populations are found in Spain (estimated at 630,000), France (310,000), Italy (130,000), and Germany (70,000). In total, about 7 million to 9 million live in Europe (Ringold et al. 2005, xii-xic, 155-158).

Forms of living of the Roma differ from country to country, as does the proportion living in cities or rural settlements. While many Roma live integrated in urban neighbourhoods, **marginal and segregated settlements of Sinti and Roma can be found all over European cities**. While this is often a result of limited access to housing markets, some Roma communities have chosen to live separately or hope to avoid barriers of discrimination. Throughout the European Union, particularly in South-Eastern Europe, Roma communities living in segregated settlements are experiencing conditions of extreme poverty and social marginalization. Alongside education, employment, and health care, housing and settlement issues are among the most difficult and pressing challenges of the Sinti and Roma population in Europe. Segregated Roma settlements across the European Union are characterized by substandard living conditions and insecure residence, coupled with the

threat of forced evictions, lack of civil registration and inability to access employment and education opportunities (OSCE 2006; Ringold et al. 2005).

There is an evident link between geographic location of Roma settlements, housing conditions and poverty of the communities. The housing policies of former and recent governments have often led to regional and geographic isolation and segregation of Roma neighbourhoods. These settlements are found in peripheral and disadvantaged urban locations, often in hazardous areas such as next to or between highways and railway lines or environmentally degraded and contaminated areas.

**Formal basic infrastructure provision is either inadequate or absent, and settlements often located outside the public transport catchment area, with the result that Roma communities have limited access to city centres with its public services, employment and education opportunities** (Ringold et al. 2005, 34-38, 94; Bermann and Clough Marinaro 2014, p. 409).

For a Roma settlement on the outskirts of Rome, Marinaro observed that it is entirely isolated from other residential areas as well as shops and other services. From the settlement, it takes roughly two hours to reach the Rome city centre with public transport, and the nearest bus-stop is one and a half kilometres away. Residents further declare that buses rarely stop to pick them up (Marinaro 2009, pp. 278–279). Poor public transport is also frequently mentioned as a barrier for children to attend school (Di Giovanni 2014, p. 7; European Parliament 2008, p. 147; Ringold et al. 2005, pp. 129–135).

To conclude this subchapter about urban deprived and peripheral areas, it becomes apparent that **mobility is a major challenge in these urban areas**. Insufficient transport options are often characteristics of large housing estates and peripheral deprived areas. Impediment of personal mobility thus further deprives residents living in these areas who often already experience forms of social disadvantages. The situation is further aggravated when certain neighbourhoods in cities are faced with stigmatization.

Examples show that improvement of transport services can break the vicious cycle of deprivation and marginalization. However, more research is needed to fully understand the impact of transport poverty on urban deprived areas. Certainly, the challenges need to be addressed by carefully developed, integrated solutions that do not only address the transport situation, but also the housing situation and provision of other basic services. Also, the possible outcomes of gentrification processes need to be taken into account when drafting solutions, in order not to evoke negative effects for low-income and vulnerable groups in these areas.

## 2.3 Final remarks: main elements characterising urban, peri-urban and rural areas in Europe

Regional disparities and their consequences are fostered by regional economic trends and are the root of urbanization processes and urban-rural differences. Overall, northern and western EU Member States perform better economically than southern and eastern Member States. While eastern Member States experience continued economic growth in the last decades, many southern European states stagnated or experienced a recession.

As it has been shown, many western Member States are characterized by the polarization between growing regions, mostly the capital city regions or regions with continued economic success, and declining regions that are those with an economic base of heavy industries, mining and agriculture.

**Accessibility is an important factor for both regional economic competitiveness and quality of life of the population.** Accessibility levels are above average in many western European Member States, but are substantially lower in many eastern and southern Member States, systematically disadvantaging populations in these areas and contributing to transport poverty. As accessibility and economic growth are directly linked to each other, it is questionable whether the differences in accessibility within Europe can be levelled in the medium and long run.

In global comparison, urbanization in Europe has already reached a very high level, with more than 75 % of the population living in cities or peri-urban areas. Hence, Europe is characterized by a strong spatial concentration of population, with **more than three quarters** of the population of EU-28 **living in 10% of the inhabited area of the EU**. Due to high concentration of population in and around major cities of the European Union and in the urban belt from England to Germany, economic activity is highest in those regions and contributes substantially to the GDP of the European Union and the individual countries.

**Urbanization in Europe is both a process of urban concentration and urban dispersal.** On the one hand, urban concentration is an effect of labour opportunities being available in cities that offer higher income levels. Also, well-developed transport infrastructure and other vital opportunities such as tertiary education facilities are concentrated in these cities and urbanised regions, attracting both high-skilled and low-skilled workers, students, elderly persons and migrants from outside Europe. On the other hand, the attractiveness of cities is threatened by negative agglomeration effects such as overpopulation, congestion, housing problems and high levels of social inequality, contributing to outmigration and urban dispersal.

**These two different processes decisively shape the spatial system of Europe, with impacts on mobility needs and transport opportunities.** First, higher income residents and families continue to prefer peri-urban areas as residential locations, a process that started in the second half of the 19<sup>th</sup> century. However, residential locations in Western Europe are increasingly located at substantial distance from core cities, with the effect that commuting is often car based and that commuting times increased in these countries. Secondly, socially disadvantaged populations become concentrated in deprived urban locations, often equipped with poor public infrastructure including transportation and limited access to employment opportunities.

Urban-rural differences are most pronounced in eastern and southern European Member States. **Large cities contribute substantially to all national economies**, and the relative importance is even higher in eastern and southern Member States, where rural regions often lag behind in economic performance. Besides economic performance, the rural-urban contrast becomes apparent in further indicators, such as the difference in income levels, unemployment rates, employment rates of women, internet usage and tertiary education levels.

Economic deprivation and low educational attainment can lead to social exclusion, especially in regions with scarce availability of basic services. Poor availability and quality of transport options and infrastructure can aggravate downward processes or can even



be part of the root cause for social exclusion in deprived areas. Therefore, fostering accessible and high-quality transport options can have important positive effects in such settings.

In the following table, the main findings of the analysis of the spatial layer are summarized.

**Table 2-2: Summary of key spatial specificities**

SPATIAL LAYER	MAIN CHARACTERISTICS AND TRENDS	REGIONAL DISPARITIES
<b>Urban</b>	<ul style="list-style-type: none"> <li>Slight decline of people living in cities for whole EU 28 (2010-2015)</li> <li>High accessibility to basic services and transport options</li> <li>Social polarization: high economic growth and wealth, and at the same time sharp social inequalities</li> <li>On average higher income levels than in rural areas, but lower than in peri-urban areas</li> <li>On average higher unemployment rates than in peri-urban and rural areas</li> <li>Inhabitants are more likely to have children than in rural regions</li> <li>Negative externalities such as air pollution and crime</li> <li>On average, lower levels of perceived safety than in peri-urban and rural areas</li> <li>Tense housing situation and high housing cost burden in the economically most successful cities</li> <li>On average, higher education levels than in peri-urban and rural areas</li> <li>People more often use the internet on a regular basis than in rural areas</li> <li>Highest share of mobile internet usage is in cities</li> </ul>	<ul style="list-style-type: none"> <li>High population growth in cities of Sweden, Ireland, the Czech Republic, Finland and Spain</li> <li>Population loss in cities of Portugal, Spain and Greece due to financial crisis</li> <li>Higher urbanization levels in western European countries than eastern countries</li> <li>The most concentrated urban regions of the EU are located in the Netherlands, Belgium and the United Kingdom</li> <li>Until 2050, drastic population increases are expected in capital cities and surroundings</li> <li>Population loss in urban areas with heavy industries</li> <li>High shares of elderly in cities of southern Europe</li> <li>Economic importance of cities is higher in countries with rural characteristics</li> <li>In Eastern Europe and the Baltic states employment rates are higher for cities</li> <li>Housing costs in cities of Western Europe are considerably higher than in its rural areas</li> </ul>
<b>Peri-urban</b>	<ul style="list-style-type: none"> <li>Strongest population increase among the three spatial categories for the whole EU 28 (2010-2015)</li> <li>On average higher income levels than in cities and rural areas</li> <li>On average lower unemployment rates than in cities</li> </ul>	<ul style="list-style-type: none"> <li>Most rapid population growth in peri-urban regions of capital cities and other large cities in the UK, Italy, Austria, Romania and Germany</li> <li>Further high population growth in peri-urban regions of Sweden, Ireland, the Czech Republic,</li> </ul>

SPATIAL LAYER	MAIN CHARACTERISTICS AND TRENDS	REGIONAL DISPARITIES
	<ul style="list-style-type: none"> <li>• Inhabitants are more likely to have children than in rural regions</li> <li>• On average, higher education levels than in rural areas, but lower than in urban areas</li> <li>• Generally lower housing cost burden than in cities</li> </ul>	Finland and Spain
<b>Rural</b>	<ul style="list-style-type: none"> <li>• Slight increase in people living in rural areas for whole EU 28 (2010-2015)</li> <li>• Lower accessibility to basic services and transport options than in cities</li> <li>• 81% of rural regions have a GDP/capita below EU average</li> <li>• On average lower income levels</li> <li>• On average lower unemployment rates than in cities</li> <li>• On average, lower education levels than in peri-urban areas and cities</li> <li>• On average, higher levels of perceived safety than in peri-urban areas and cities</li> <li>• Generally lower housing cost burden than in cities</li> <li>• High share of elderly population</li> </ul>	<ul style="list-style-type: none"> <li>• Rural characteristics are dominant in in large parts of Spain, southern Italy, Greece, Romania, Bulgaria, Hungary, Slovakia, Finland and Sweden</li> <li>• Rapid reductions in population in rural and/or sparsely populated eastern and southernmost regions of the EU</li> <li>• In many western and southern Member States, employment rates are higher in rural areas</li> <li>• In eastern Member States housing costs in rural areas are higher than in cities</li> <li>• High share of early leavers from education in rural areas of Romania and Bulgaria</li> <li>• High shares of population in rural areas of Eastern and southern Member States never use the internet</li> </ul>

Source: Own elaboration

### 3 Exploring mobility socio-economic landscape(s)

This chapter has the goal to present an at-large view of the literature and the debate regarding the links between poor connectivity and poverty, contributing to a working characterisation of transport poverty and of its multiple underlying social layers. This work includes the definition of the seven prioritized groups (low income and unemployed, elderly people, people with reduced mobility, women, migrants and ethnic minorities, children and young people, people living in rural and deprived areas), which are regarded as vulnerable as they are particularly and negatively subject to multiple socio-economic constraints and suffer from poor accessibility, that prevent them to fulfil basic mobility needs and that diminish their social interactions and well-being. The chapter begins with an introduction to the socio-economic constraints, followed by a brief discussion on the relevancy of each vulnerable group. A snapshot of several official datasets is then offered and evidences from several European studies are listed. The in-depth understanding of these inter-linked disadvantages is considered a steppingstone that will ultimately lead to the design and implementation of new transport research-driven business cases.

#### 3.1 Introduction

##### 3.1.1 The relationship between socio-economic disadvantage and mobility

As discussed in Chapter 1, the concept of transport poverty is complex and multidimensional, depending on the association of different types of disadvantages and still subject to debate among authors. What is consensual is that transport disadvantage and transport-related social exclusion are not always synonyms, and that the element of interaction between multiple socio-demographic features and inequalities plays a key role for the rise and resilience of social exclusion.

Lucas (2012) argues about the existence of three main leading factors, all of which are socio-economic related. The three factors are:

- **Factors which lie with the individual**, such as age, income, disability, gender and race,
- **Factors which lie with the structure of the local area**, such as a lack of available or inadequate public transport services, the failure of local services and
- **Factors which lie with the national and/or global economy**, such as the restructuring of the labour market, cultural influences, migration and legislative frameworks.

The actual impact of transport poverty on social exclusion depends on the mix and nature of the causal factors. Church et al. (2000) identified the following categories of social exclusion connected with transport poverty:

1. **Physical exclusion**, when physical barriers limit a person's ability to access the transport system.

2. **Geographical exclusion**, when poor transport services limit the accessibility to a region.
3. **Exclusion from facilities**, similar to the previous but when accessibility is poor to specific facilities/services (e.g., shopping, health, leisure, etc.).
4. **Economic exclusion**, when costs of transport (e.g., pricing, time, etc.) limit access to certain geographies or facilities.
5. **Time-based exclusion**, when the time of transport is incompatible with the available time.
6. **Fear-based exclusion**, when safety and security concerns lead people avoiding the transport system (e.g., difficulties of wayfinding in terminals, fear of getting lost, fear of being harassed, fear of being robbed, etc.).
7. **Space exclusion**, when management strategies may discourage certain segments of the population from using the transport system.

Conclusions about how transport disadvantage is related to social exclusion should be drawn carefully, because of the natural variations in cultural idiosyncrasies among regions. It is precisely the scope of analysis and one of the objectives of HiReach to determine to what extent effects of transport disadvantage take form and how groups of vulnerable people are more affected by it.

The multidimensional nature of mobility is known. Lanzendorf (2000) for example, argues that **mobility has, at least, three dimensions**:

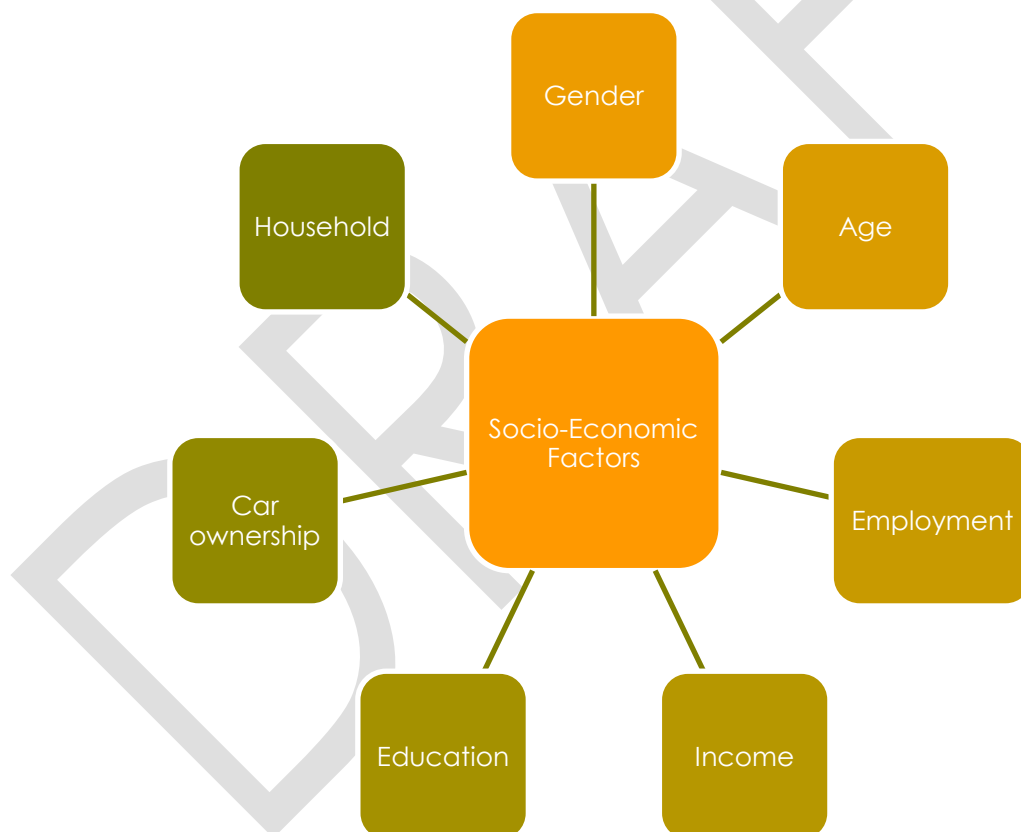
1. **Spatial** – this dimension was discussed in the previous Chapter 2.
2. **Motivational factors** – this dimension is related with the distinctive elements of a person's (sub) culture. His/her lifecycle and lifestyle elements (that is, motivational factors) influence the choice of the transport modes, types of vehicles, or even places to visit. By way of example, nowadays the importance of owning a car as a tool for social integration is less relevant in the younger generations than in the older ones. Symbolic affective motives seem to play an important role in a person's choice. These include feelings of freedom, independence, power, status or privacy, which vary among transport modes. Public transport does not nurture several of these feelings: there is no privacy and the perceived social status is reduced. At the other end of the spectrum, the car ranks high in every of these elements. Then again, the recently developed shared transport solutions, such as bike- or car-sharing, or ride-sharing (e.g., Uber, Cabify, Bla Bla Car) can however fulfil some of these motivations, since they are private, flexible and, even, source of social status (e.g., Uber Black that use superior vehicles). Another related motivational element concerns habituation. The point is that people tend to repeat the same trips every day and this creates inertia to change. This is routinely found in car users, which often do not even consider other modes of transport as an option, even when they are better. A detailed discussion of motivational factors is offered in Chapter 4.
3. **Socio-economic** – for what it concerns this dimension, the transport system is a tool to widen and enhance the range of opportunities a person can reach, that is, a tool to deliver accessibility, opening up a wide range of social mobility opportunities. Nonetheless, each mode of transport requires from the user a unique set of resources, including purchasing power, physical and mental capabilities, or time. By way of example, motorised modes of transport, such as car, train or bus, offer a wider set of opportunities than non-motorised modes, such as walking or

cycling, because they are faster, more comfortable (e.g., offer protection from adverse weather conditions) or are self-propelled. Yet, motorised modes of transport tend also to be more expensive and require additional capabilities (e.g., driving license, minimum age or wayfinding capabilities). Hence, not everyone is able to use every mode of transport. This is not necessarily negative provided a person is capable of fulfilling his/her daily mobility needs with the modes he/she can use (e.g., walking). The problem emerges when a person does not meet his/her daily transport needs. Hence, the importance of tailoring the transport services to meet particular needs of people.

**A category of variables influencing a person's capability of accessing the transport system are the socio-economic variables.** There is consistency across authors regarding the most relevant ones, being: gender, age, employment status, household income level, education level, car ownership and household composition (Silva et al. 2016).

The key socio-economic variables are listed in Figure 3-1 and briefly reviewed below.

**Figure 3-1: Key socio-economic variables influencing transport accessibility**



Source: Own elaboration

1. **Gender:** Men tend to exhibit a higher utilisation of cars than women, which tend to walk and cycle more. The underlying reasons are the gender imbalances regarding job access, income or social status (e.g., household tasks, caring for children and family). Linked to this, men travel more often than women and for longer distances (Hjorthol 1998).



2. **Age:** The intensity of travel tends to decrease with age, both in terms of frequency and distance. As we age, we lose agility, flexibility or capacity of reacting to external stimulus. Hence, our capability and willingness to move also tends to diminish. Also, elderly people tend to have no fixed occupation (i.e., a job), as they are retired, so the daily mobility routines of going to work are no longer there. For what the influence of age on car utilisation (or dependency) is concerned, it is becoming clear that the recent generations, born in the digital age, have developed new constructs of social status, valuing other symbols strongly linked to the digital platforms. Also, younger generations are more favourable and prone to the principles of shared economy, where using is more relevant than owning. Consequently, car ownership is losing importance. This does not mean that younger generations do not envisage owning a car, but simply that car ownership is less relevant than in older generations.
3. **Employment:** The type of job highly influences the person's daily mobility patterns. Job factors such as the schedule, shifts, working/resting days or location determine when, how and for how long a person travels. Indeed, the typical morning and evening peak hours (when we can see the congestion on transport systems) are highly connected with the beginning and ending of the working day. An unoccupied person has no such obligation and, hence, the mobility patterns follow different purposes. In general, an employed person travels more and for longer distances than an unoccupied person.
4. **Income:** The cost of transport differs among modes of transport. In principle, travelling by car or plane is far more expensive than walking, cycling or public transport. Even in the latter group, public transport is costlier than the other two modes. So, inevitably, wealthier people have a wider set of mobility options than poor or low-income people. Research found out that wealthier people tend to prefer car over the other modes, and tend to travel more often and for longer distances. Bearing in mind that people have a limited amount of time to travel, the speed of the mode of transport determines the geographical scope and, hence, amount of opportunities for social and economic interaction. Also, the more expensive is a mode, the faster it tends to be. Ultimately, one may conclude that income influences a person's scope and amount of opportunities and its absence characterize vulnerable groups, hence the need to grant low income people proper access to public transport in order to break the vicious cycle of no money – fewer opportunities.
5. **Education:** research is relatively scarce in what concerns linking the education level with the mobility patterns. An indirect influence can however be established between education and income, as it is known the influence of the former on the latter. Higher educated people earn more than those less educated. In this sense, we may infer about the mobility behaviour of higher educated people from the previous discussion on *Income*. However, a caveat is needed, since higher educated people are also more sensible and acknowledgeable about the importance of sustainable mobility and development. And they are more open to use innovative and sustainable modes of transport, which may lead to an inferior dependence on car.

Another indirect relation can be formed with the type of job. Less educated people tend to have less qualified jobs – blue-collar jobs – in warehouses, factories, supermarkets and so on; while higher educated people to access higher qualified jobs – white-collar jobs – in banking, consulting, education or health. Although changing from region to region, the blue-collar jobs tend to be located in the peri-urban regions outside or in the limits the urban areas; while the white-collar jobs tend to be located in urban areas (e.g.: Central Business District). Also, urban areas tend to have better and higher accessibility than outer regions, particularly, in what concerns public transport. Hence, we may expect longer travel distances and less dependence on public transport in blue-collar workers. But again, further research is deemed necessary.

6. **Car ownership and/or possession of driver's license:** People that own a car and can drive are naturally more inclined to use this mode of transport than any other mode. After all, an investment was, or is being, done and the car offers every bit of flexibility and comfort, in addition, to a favourable social status. The studies are numerous, one example is provided by Stead (2001) that concluded that car owners travel longer and more often (in their cars), and for more time. Conversely, the propensity to walk or cycle is inferior, compared with other people that do not own a car.
7. **Household size and composition:** The household composition (i.e., number of adults, children, teenagers or elderly) is likely to influence the transport choices of each one. Understandably, an adult with children in school age is expected to behave differently that an adult with no one else on his/her care. The results however are not conclusive. By way of example, the same author concluded differently in two distinctive situations. In one situation, a household with children was found to exhibit shorter travel distances and lower proportion by public transport compared with households with no children (Næss 2005); whereas in another studies, no such similar behaviour was found (Næss et al. 2011; Nielsen 2002).

The relevancy of the socio-economic variables on a person's capabilities to access the transport system and, hence, to meet his/her daily mobility needs is unquestionable. When a person's socio-economic variables do not fit the available transport system configuration, then that person is at disadvantage (via-à-vis the others with higher fitness). By way of example: 1) an elderly person which is unable to use public transport because buses are non-accessible, or 2) an unemployed person whose job is located in a poorly accessible area by public transport and he/she cannot afford to own a car.

### 3.1.2 Multiple socio-economic features of disadvantage and their impacts

As stated above, transport poverty is intricately linked to social disadvantage and social exclusion. Social exclusion has a strong element of inaccessibility, to a single or, more often, multiple features of welfare and wellbeing, namely social capital and networks, goods and services, life chances and decision-making processes.

Data suggests that usually the poorest and most socially disadvantaged in each social context are those most affected by transport disadvantage. More specifically, there is evidence that it is among the lowest income segments of the population that arise the greatest difficulties in travel patterns and access to transport. In what could be interpreted

as an interaction pattern, it is also among the lower income people that the experiences of social exclusion are described, among them those related with transport inequalities (Samek Lodovici and Torchio 2015).

An overview of the published work on the interactions and relations between socio-demographic factors and transport disadvantage, transport poverty and social exclusion (Moore et al. 2013), showed connections between low income non-car owning households with impaired access to public transit, which in turn leads to experiencing key difficulties, like access to job opportunities and (public) services.

Distance, not owning a car and low incomes are closely related with difficulties in accessing work, health care, education, commerce, leisure and culture. Social disadvantages beyond low income can also interact in the generation of transport poverty scenarios, such as not having a job, being low skilled, disabled or diseased, living in poor conditions, in remote/isolated locations, etc.

Regarding the groups at risk of social exclusion that are the specific scope of HiReach (whose socio-economic and transport disadvantages will be detailed in Chapter 3.2 below), it can empirically be seen that such multifactorial interaction is common. These groups are often prone to lower incomes and, as such, they can experience time and physical difficulties in accessing (public) transport. They might have problems to understand or even get information, and ultimately become isolated.

Any of these circumstances can relate to disadvantage in access to transport, either due to the incapability of paying fares, owning a car, understanding the available information, or physically accessing the transport or dealing with safety issues. Furthermore, it cannot be excluded that it may be the excluded person's own preferences and attitudes to dictate choices that lead to (self-enforced) transport disadvantages.

Nevertheless, any of these can empirically be related with difficulties in increasing (work) income, progression education and generally having life chances to move forward from social exclusion situations, exposing the feedback mechanism these interactions potentiate.

All these interactions and synergies have only recently started to be approached by policy and governance frameworks, but they must now be seen at the light of high and increasing levels of mobility within societies as a whole. The fast-moving global hypermobility<sup>17</sup> will most certainly become an additional key causal factor. Those individual, communities and, even, nations which are less mobile risk to be excluded from mainstream society and economy (Lucas 2012).

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<sup>17</sup> The concept of hypermobility was coined by Urry 2007 to describe the perpetual movement (physical and virtual) of people, goods and information to match the current paradigms of production and consumption worldwide. Hypermobility is further discussed in Chapter 4.2.3.

### 3.1.3 Overview of vulnerable groups addressed in HiReach

#### 3.1.3.1 Identifying vulnerable groups

Transport poverty, understood as the inability of accomplishing one's transport needs, is intricately linked to social disadvantage and social exclusion. Eventually, those people become isolated and unable to explore the social and economic benefits accruing from the social networking and interactions. The social dimension of transport system, in general, and the relevance of access to transport for social inclusion, in particular, have already been acknowledged and considered in a number of transport policies at EU and member state levels. However, there is the need to ensure that the most vulnerable user groups are the fact addressed in the public policies.

The point is that interventions in the transport systems are often conceived to reduce urban congestion, or enhance the sustainability of public transport. Examples include bike- or car-sharing schemes, or public transport systems. Although necessary and positive, they may disproportionately benefit already benefited or wealthier segments of the population. It is important that public policies internalise the social role of transport, with a closer attention to the particular mobility needs of the most vulnerable user groups.

Within the scope of HiReach, a set of seven vulnerable user groups are considered (Figure 3-2). The classification was based on available policy documents, such as CIVITAS (Dotter 2016) or a study to the European Parliament (Samek Lodovici and Torchio 2015) and it is supported on the previous discussion.

**Figure 3-2: Vulnerable user groups addressed in HiReach**



Source: Own elaboration

Arguably, **each vulnerable user group experiences transport poverty differently**, as they exhibit distinctive mobility features and requirements, and/or varying socio-economic variables and spatial specificities. Moreover, their relevance in the European social framework is different (e.g. women alone account for half of the population), while their

underlining characteristics can be temporary/transitional (e.g. linked to a specific age) or permanent (as having a disability or being part of an ethnic minority).

Material poverty is somehow an overarching socio-economic condition as far as transport poverty is concerned. **Low income and unemployed people** are particularly vulnerable as travelling entails costs (e.g., ticket, time, vehicle or fuel). It is thus unsurprisingly that this group records limited mobility patterns. In 2015, 23.7% of the population in the EU-28, were at risk of poverty or social exclusion (Eurostat 2016c).

From the spatial point of view, **people living in rural and deprived areas** are a vulnerable segment which is commonly poorly served of transport services (e.g., low frequencies, limited connectivity, or long transit times). Hence, people living here are unable to fulfil their mobility needs. A typical solution to overcome such limitations is to own a car, leading to the well-known phenomenon of forced car ownership. In 2004, around 18% of the EU-27 population lived in predominantly rural areas whereas 38% of the population lived in intermediary regions (European Commission 2008b).

Looking at specific age classes, **elderly people** endure different forms of transport disadvantage, due to diminishing physical and/or cognitive capabilities. By way of example, understanding timetable or ticketing schemes, wayfinding in terminals or accessing vehicles becomes increasingly difficult. This is even more relevant with the recent technological and the progressive digitalisation of societies and economies. In 2016, almost 20% of the EU-28 population was aged 65 years and over. On the other side, the mobility limitations of the **children and young people** are linked to the lack of autonomy or responsibility. Hence, they rely on relatives or adults to fulfil their mobility needs. The young adults' mobility limitations are of different nature and typically related with limited money to spend on travelling. In 2017, around 15% of the EU-28 population was aged 15 years or below, and around 25% was aged 24 or below (Eurostat 2018b).

**People with reduced mobility** are a particular vulnerable segment, since they experience various forms of transport poverty, depending on individual particular type of disability. Unfortunately, many transport systems were not originally conceived having in mind the particular needs of this people. Even so, over recent decades relevant improvements have been achieved. In 2012, 7.3% and 4.4% of the total EU population (aged 15 and over) reported a disability in mobility and transport life areas, respectively) (Eurostat 2018c).

**Migrants and ethnic minorities** face multiple challenges that hinder their mobility. By way of example, language and cultural barriers may limit their ability to understand the working mechanism of the transport system. Linked to this, these people often have low-paid jobs, frequently exhibiting features of the *low income and unemployed* segment. In 2014, around 4% of the inhabitants were born outside the EU-28 and 3.1% born in another EU Member State (Eurostat 2015f).

Transport disadvantage in **women** assumes multiple forms and **gender related aspects** cross all the dimensions above and beyond. It can be related with safety issues while travelling on (or to/from) the transport system; or it can be related with cultural and social norms that limit their mobility (e.g., household chores and taking care of relatives, lower salary), only to mention two examples. As they represent around 50% of the population, this segment is particularly relevant.



Of importance is the cumulative effect of several forms of transport poverty. Indeed, one may fall into more than one single group. Typical examples include elderly people living in rural or deprived areas, or low income or unemployed women. These people perceive the hardships of the individual groups. They are therefore particularly vulnerable and exposed.

### 3.1.3.2 Framing each vulnerable group

The impact of the transport and socio-economic features of disadvantage are perceived differently from each vulnerable segment, since each one exhibits unique mobility features and requirements.

**Low income and unemployed** people have already been mentioned several times in the previous discussions. Low income and unemployed people rely on the less costly modes of transport, being: walking, cycling and public transport. In longer distance, their primary mode is the latter.

In a study of low income people living, and other socially excluded groups, in three Canadian urban areas studies, authors observed, in all three areas, substantially smaller activity spaces than the average population. Also, these three areas have lower levels of public transport provision than most EU urban regions, which may evidence that this social group is likely to be dependent on the supply of public transport and local land use patterns (Páez et al. 2009).

There are important differences between low income and unemployed people: the latter have fewer compulsory travels (as they do not work) and tend to have more free time. Consequently, unemployed people can spend more time travelling and are in better positioning to adjust their mobility needs to the conditions of the transport system. Indeed, availability of time also seems to play an important role in the travel behaviour, as the segments with more free time (typically, children or youth, elderly, or unemployed) travel the farthest (and longest) to visit relatives and friends (Moore et al. 2013).

This situation may be explained by the lower value of time for these people, hence they may use the less costly modes (e.g., walking or public transport), which are also typically the slowest ones. Add to this, these people tend to live in areas with lower house rents, which are mainly located away from the prime and central urban areas. The outcome is the need to travel for longer distances. As often these areas are poorly served by public transport, people either must accept unsuitable jobs (or must decline better jobs but inaccessible) or must commute for very long periods, reducing their available time, quality of life and income.

Sometimes, accessibility is so poor, that people are forced to car ownership (Lucas et al. 2016), which further stresses their limited monthly budgets and reduces the ability to generate wealth (necessary to move to better areas and to find better jobs).

Also, these people are more vulnerable, since often they must walk or cycle in congested roadways, hence, exposed to emissions and pollutants, and to safety issues. There is then the need to provide suitable accessibility to these people, so that they can have more opportunities for social interaction and higher chances of finding better jobs.

**Elderly people** are another segment with particular mobility requirements. Enhancements in the EU health care services, in population nutrition and liveability, generous pensions, among other factors, resulted in a continuous increase of the average life expectancy over the last decades. More importantly, people continue to be active for more years.

As a result, elderly people have increasingly intensive mobility patterns (e.g., visiting relatives and friends, taking children to school, attending health or religious services, or shopping), particularly considering that they are normally unoccupied. IFMO concluded that nowadays German people in their fifties travel almost the same as those in their twenties, whereas in the 1970s the latter travelled 36% more than the former (Zmud et al. 2017).

Even so, as people age, the physical and cognitive capabilities deteriorate and, with it, the ability to drive. So, elderly people are also main supporters of walking, cycling or using public transport. In this sense, the development and growing popularity (resulting in price reduction) of e-bikes are of particular importance, as they help (elderly) people (with reducing strength) cycling for longer periods of time and in adverse topographic conditions.

An important uniqueness of this segment is that aging leads to cognitive problems and physical impairments, which limits car driving and creates diverse transport-related barriers (e.g., reaching bus stops, accessing bus vehicles, difficulties of reading and understanding information – timetables or destinations, or even fear and apprehension of travelling alone). Public transport system should therefore be adapted to the specific needs of the elderly.

**People with reduced mobility** is a highly heterogeneous group, due to the high diversity of disabilities (e.g., physical or psychological). In common is the fact that the standard transport system (means and modes) exhibits some sorts of barriers, limiting their mobility. It is thus unsurprisingly that the most frequent mode of transport of this segment is the car as passenger (DPTAC 2001). The mobility difficulties are aggravated in case of low income people, with limited access to cars. Age also plays a relevant role, because, as discussed in the previous segment, physical and psychological capabilities reduce over time.

In this segment, the physical conditions of the transport system (mean of transport) are crucial to support an independent life, fulfil the mobility needs and increase the social interactions. In this sense, accessibility to the transport system can be greatly enhanced if aspects such as i) the proper maintenance of pavements and sidewalks, ii) the implementation of ramps (and elevators) in stations, iii) the utilisation of low floor and accessible vehicles, iv) an adequate signalling and wayfinding (e.g., colour schemes, lights or voice announcements) or v) trained staff are adapted to the specific needs of people with reduced mobility.

**Women and gender-related aspects** have in general less access to private vehicles, consequently, they are more likely to use public transport than men. Therefore, access to public transport is of paramount importance not only in the fulfilling their mobility needs, but also in their empowerment and independence.

Women have less free time than men, since they are engaged in childcare, domestic work, caring for elderly or sick relatives. Also, women are more likely to work in part-time, closer to home or not work at all, to gain free time. Consequently, poor mobility can have a very high negative impact on their quality of life and well-being.

This situation is particularly relevant in rural areas. By way of example, Hanson (2003) concluded that women living in areas with poor accessibility tend i) to choose jobs closer to home or easier to travel to even they are less profitable, and ii) to take more time entering the market job since they have specific mobility restrictions and not all jobs are

suitable. The problems are aggravated in case of low income people as the cost of transport imposes further limitations on their mobility.

**Migrants and ethnic minorities** have gained increased visibility in recent years, as social and political unrest in several regions neighbouring the European Union develop. Information about this segment is however relatively scarce (Dotter 2016).

Migrants and ethnic minorities are thus two segments at high risk of poverty. Several reasons justify this situation. They tend to have (very) limited financial capabilities, not only because they might have fled from their home (without possessions) but also because inoccupation and unemployment rates are relative high in this segment.

Consequently, they are less likely to own a car. In addition, language is another barrier to integration in local communities (e.g., finding a job or getting a driver's licence) or to access public transport systems, as information is commonly available in the national language (except for the biggest cities).

Due to these dynamics, these people tend to live together in communities, often in social rented houses in the periphery of the cities. As already discussed, low income areas are often poorly served by public transport services, which further aggravates the mobility and limit opportunities for social interactions. Unsurprisingly, the main modes of transport of this group of people are walking and public transport.

**Children and young people** are amongst the main users of public transport (above all, because they have no legal age to possess a driver's licence). Hence, accessibility to the transport system is of utmost relevancy to the fulfilment of their daily mobility needs.

Low income segments or people living in rural areas may encounter additional difficulties. Firstly, because both areas tend to be served by low quality public transport services (e.g., low frequency, reduced limited routes and destinations). Secondly, fares can be another barrier for low income people. This situation is particularly relevant in secondary and tertiary education as there are fewer schools, forcing people to travel more in longer routes (resulting in higher fares). Cycling can help mitigate this limitation, although appropriate cycle lanes, parking facilities, car free zones are needed.

It is also relevant to mention that congestion has a particular negative impact on children and young people's health, as a higher concentration of emissions and pollutants may negatively impact their healthy development (and may lead to premature health conditions).

Additionally, in areas of poor accessibility, often there are limited opportunities for walking, cycling or using public transport independently, which is particularly relevant in this segment. As a consequent, parents drive children directly to the school. Research has already evidenced the negative effects of reduced independent mobility and walking on children's development (European Commission 2013a, 2014a).

Finally, **people living in rural and deprived areas** are particularly vulnerable. Services and activities are sparsely distributed in rural areas, commonly concentrated in the more populate areas. Hence, people tend to travel more and longer, in these regions.

In addition, quality and maintenance of roadways tend to be inferior and, commonly, cycle lanes are not existent. Walking and cycling is thus more unsafe and often unpractical (compared with urban areas), although the e-bikes can to a certain extend mitigate this problem.

Public transport services are also relatively limited, in terms of frequency and routes. Also, the more rural is an area, the farther apart are the public transport stations. Thus, accessibility to public transport is often inappropriate, which reduced the opportunities for social interactions.

Unsurprisingly, the number of social visits to relatives and friends is inferior compared with those people living in urban areas. Available statistics indicate that people living in urban areas are almost twice as likely to use public transport weekly as those living in small to middle sized towns or in rural areas (Dotter 2016).

Consequently, people living in rural areas are often forced to own a car, because it is the only mode of transport able to fulfil their mobility needs. Available statistics indicate that around 64% of European living in rural areas use a car, compared with 38 percent in urban areas (Dotter 2016). Naturally, transport-disadvantaged groups, such as non-car owners, low income and unemployed people, elderly, women, migrants and ethnic minorities, and young people, see their mobility opportunities further aggravated.

## 3.2 Socio-economic disadvantage and transport poverty

### 3.2.1 Low income and unemployed

#### 3.2.1.1 Relevance: quantitative assessment and characteristics

Poverty is a multidimensional issue that can be analysed by different perspectives and using different indicators. While material poverty, which is directly linked to the disposable income and, in turns, to the level of employment, is the most widespread form of poverty, the risk of poverty and social exclusion depends also on severe material deprivation and very low work household intensity.

The aim of including other components of social exclusion alongside relative monetary poverty is to highlight that other factors in addition to low income also lead to severe and chronic disadvantages and that these are all closely intertwined.

#### **Poverty and social exclusion**

Poverty reduction is a key policy component of the Europe 2020 Strategy (European Commission 2010), the EU's agenda for growth and jobs for the current decade.

EU's progress in reducing poverty is monitored through the headline indicator 'people at risk of poverty or social exclusion' ("AROPE" indicator), which is described by the following sub-indicators:

- at-risk-of-poverty after social transfers (income or monetary poverty)<sup>18</sup>;
- severely materially deprived<sup>19</sup> or

<sup>18</sup> The «at-risk-of-poverty rate» is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers. This indicator does not measure wealth or poverty, but low income in comparison to other residents in that country, which does not necessarily imply a low standard of living.

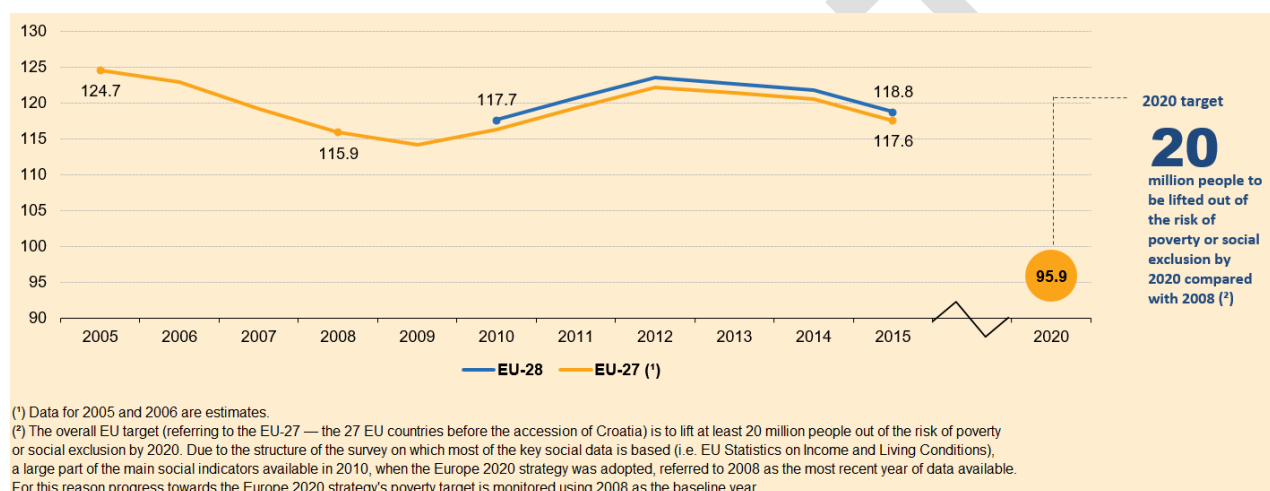
<sup>19</sup> «Material deprivation» refers to a state of economic strain and durables, defined as the enforced inability (rather than the choice not to do so) to pay unexpected expenses, afford a one-week annual holiday away

- living in households with very low work intensity<sup>20</sup>.

According to Eurostat, EU statistics on income and living conditions (EU-SILC) (Eurostat 2016c), in 2015 almost 119 million people, or 23.7 % of the population in the EU-28, were at risk of poverty or social exclusion.

The development of risk of poverty or social exclusion in the EU over the past decade has been marked by two turning points: in 2009, when the number of people at risk started to rise because of the delayed social effects of the economic crisis and in 2012, when this upward trend reversed. By 2015, the number of people at risk had fallen almost to the 2008 level, reaching 118.8 million people.

**Figure 3-3: People at risk of poverty or social exclusion, EU-27 and EU-28, 2005-2015 (million people)**



Source: Eurostat 2017g

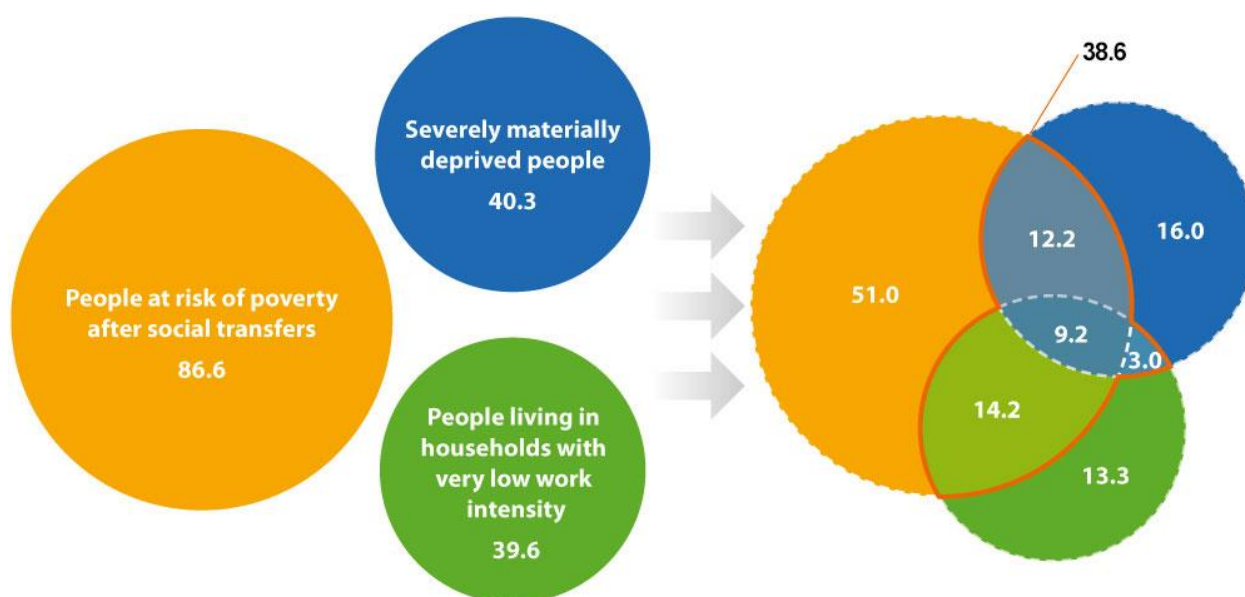
Almost 39 million people, or nearly one third (32.5 %) of all people at risk of poverty or social exclusion, were affected by more than one dimension of poverty over the same period. Another 9.2 million people, or one in twelve of those at risk of poverty or social exclusion (7.7 %), were affected by all three forms.

**Figure 3-4: Aggregation of sub-indicators of 'people at risk of poverty or social exclusion', EU-28, 2015 (million people)**

from home, a meal involving meat, chicken or fish every second day, the adequate heating of a dwelling, durable goods like a washing machine, colour television, telephone or car, being confronted with payment arrears (mortgage or rent, utility bills, hire purchase) instalments or other loan payments.

<sup>20</sup> The indicator «persons living in households with very low work intensity» is defined as the number of persons living in a household where the members of working age worked less than 20 % of their total potential during the previous 12 months.



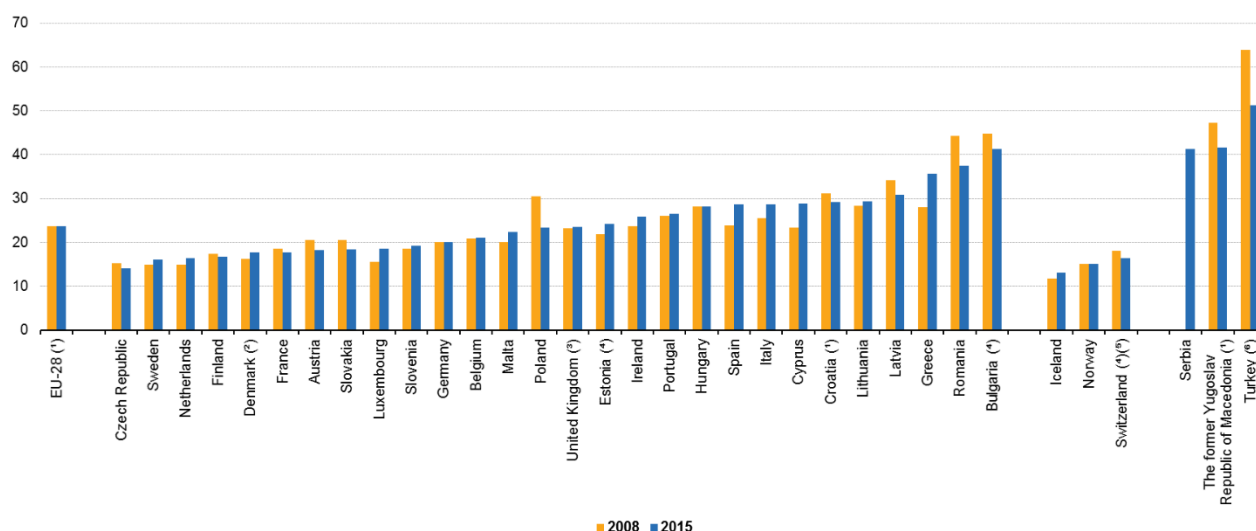


Source: Eurostat 2017g

The EU-28 average figure, calculated as a weighted average of national results, masks considerable variations between EU Member States. In 2015, more than a third of the population was at risk of poverty or social exclusion in three EU Member States: Bulgaria (41.3 %), Romania (37.3 %) and Greece (35.7 %). At the other end of the scale, the lowest shares of persons being at risk of poverty or social exclusion were recorded in Finland (16.8 %), the Netherlands (16.4 %), Sweden (16.0 %), and the Czech Republic (14.0 %).

Three southern European countries – Greece, Cyprus and Spain – experienced the most substantial increases in the share of people at risk of poverty or social exclusion from 2008 to 2015, ranging from five to eight percentage points.

**Figure 3-5: People at risk of poverty or social exclusion, by country, 2008 and 2015 (% of population)**



(\*) 2010 data (instead of 2008).

(†) break in time series in 2011.

(‡) break in time series in 2012.

(§) break in time series in 2014.

(¶) 2014 data (instead of 2015).

(\*) 2013 data (instead of 2015); break in time series in 2013.

Source: Eurostat 2017g

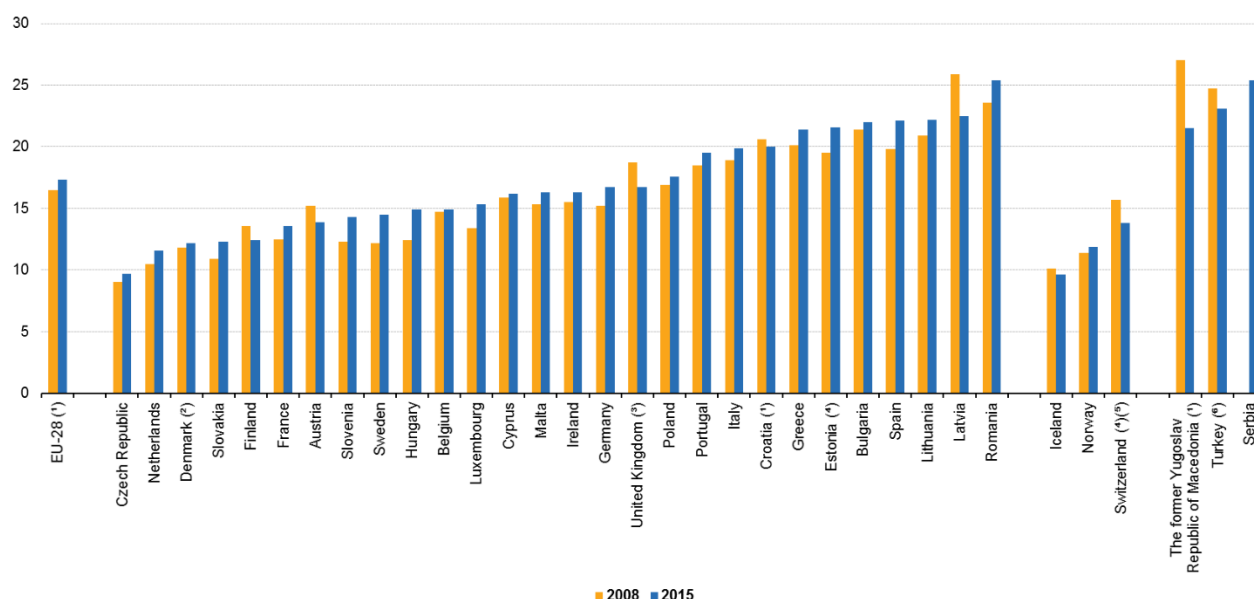
## Monetary poverty and income

Monetary poverty is the most widespread form of poverty, affecting, in 2015, 17.3 % of the EU population which earned less than 60 % of their respective national median equivalised disposable income, the so-called poverty «threshold». This represents a slight increase compared with 2008, when 16.5 % fell below this threshold.

The rate for the EU-28, calculated as a weighted average of national results, conceals considerable variations across the EU Member States. In eight Member States, namely Romania (25.4 %), Latvia (22.5 %), Lithuania (22.2 %), Spain (22.1 %), Bulgaria (22.0 %), Estonia (21.6 %), Greece (21.4 %) and Croatia (20.0 %), one fifth or more of the population was viewed as being at-risk-of-poverty. Among the Member States, the lowest proportions of persons at-risk-of-poverty were observed in the Czech Republic (9.7 %) and the Netherlands (11.6 %).

Most countries also experienced growth in the number of people below the monetary poverty line, regardless of whether they had low or high levels to begin with. Increases were most pronounced in Hungary, Sweden and Spain, with rises of between 2.3 and 2.5 percentage points. Croatia, Finland, Austria, the United Kingdom and Latvia were the exception, with monetary poverty in these countries decreasing by 0.6 to 3.4 percentage points between 2008 (Croatia: 2010) and 2015.

**Figure 3-6: People at risk of poverty after social transfers by country, 2008 and 2015 (% of population)**



<sup>(1)</sup> 2010 data (instead of 2008).

<sup>(2)</sup> Break in time series in 2011.

<sup>(3)</sup> Break in time series in 2012.

<sup>(4)</sup> Break in time series in 2014.

<sup>(5)</sup> 2014 data (instead of 2015).

<sup>(6)</sup> 2013 data (instead of 2015).

Source: Eurostat 2017g

The differences in poverty rates were wider when the population is classified according to **activity status**. The unemployed are a particularly vulnerable group: almost half (47.5 %) of all unemployed persons in the EU-28 were at-risk-of-poverty in 2015, with by far the highest rate in Germany (69.1 %), while seven other EU Member States (the three Baltic States, Bulgaria, Hungary, Romania and Malta) reported that at least half of the unemployed were at-risk-of-poverty in 2015.

Even among the employed there is a **high risk of social exclusion for workers with poor-quality jobs** (precarious, low-paid, part-time jobs) resulting in low or no income and a high risk of falling into poverty and material deprivation.

Around one in eight (13.2 %) retired persons in the EU-28 were at-risk-of-poverty in 2015; rates that were at least twice as high as the EU-28 average were recorded in Lithuania (27.6 %), Bulgaria (30.0 %), Latvia (36.7 %) and Estonia (40.1 %).

Those in employment were far less likely to be at-risk-of-poverty (an average of 9.5 % across the whole of the EU-28 in 2015). There was a relatively high proportion of employed persons at-risk-of-poverty in Romania (18.8 %) and to a lesser extent in Greece (13.4 %) and Spain (13.1 %), while Luxembourg, Italy, Poland and Portugal each reported that in excess of 1 in 10 members of their respective workforces were at-risk-of-poverty in 2015.

Poverty may cause social isolation (e.g. people cannot afford to go out with friends or invite them to their homes), and social isolation in turn may reinforce the poverty risk (e.g. friends and acquaintances can provide useful support in finding jobs).

**Table 3-1: At-risk-of-poverty rate after social transfers by most frequent activity status, 2015 (%)**

	Total population	Persons employed	Not employed	Unemployed	Retired	Other inactive persons
EU-28	16.3	9.5	23.8	47.5	13.2	29.0
Euro area (EA-19)	16.3	9.4	23.4	47.4	12.2	27.4
Belgium	13.9	4.6	23.2	40.7	12.4	31.5
Bulgaria	21.5	7.7	35.0	53.3	30.0	29.1
Czech Republic	8.6	4.0	14.3	48.7	7.4	14.0
Denmark	12.5	5.5	21.9	37.6	8.8	34.1
Germany	17.1	9.7	26.3	69.1	17.0	30.3
Estonia	22.0	10.0	39.1	54.8	40.1	33.6
Ireland	15.6	4.8	27.1	40.4	15.9	28.3
Greece	19.9	13.4	24.1	44.8	10.8	26.2
Spain	20.5	13.1	26.7	46.5	10.2	23.9
France	11.9	7.5	16.9	37.1	7.1	28.8
Croatia	19.8	5.9	29.6	42.8	22.1	32.4
Italy	18.4	11.5	24.0	47.3	11.0	26.4
Cyprus	16.0	9.1	23.4	42.0	16.5	18.7
Latvia	22.2	9.2	37.9	55.0	36.7	31.9
Lithuania	20.7	9.9	33.6	62.3	27.6	30.1
Luxembourg	13.6	11.6	16.5	42.7	5.8	22.7
Hungary	13.1	9.3	17.0	54.4	5.0	24.5
Malta	14.8	5.4	24.4	55.7	18.1	25.2
Netherlands	10.8	5.0	17.9	35.5	6.2	27.9
Austria	13.1	7.9	19.4	41.4	12.9	26.4
Poland	16.4	11.2	22.2	45.7	11.1	28.1
Portugal	18.3	10.9	25.2	42.0	14.4	31.9
Romania	22.4	18.8	26.4	55.5	15.8	42.1
Slovenia	14.3	6.7	21.9	44.8	15.9	19.9
Slovakia	10.6	6.0	16.2	45.5	6.2	15.7
Finland	13.1	3.5	22.6	39.6	13.5	30.2
Sweden	14.8	7.1	26.9	39.3	19.2	43.0
United Kingdom	15.8	8.2	26.7	48.3	18.2	35.0
Iceland	9.1	6.9	14.7	22.5	9.8	15.6
Norway	11.9	5.5	22.9	43.6	10.1	35.2
Switzerland (*)	12.3	6.3	23.1	24.6	25.7	18.8
FYR of Macedonia	19.7	8.9	27.4	39.7	7.3	26.7
Serbia	24.5	13.5	30.5	46.2	15.2	36.6
Turkey (*)	18.2	14.9	21.2	38.1	3.1	23.6

Note: for persons aged 18 or over.

(\*) 2014.

(\*) 2013.

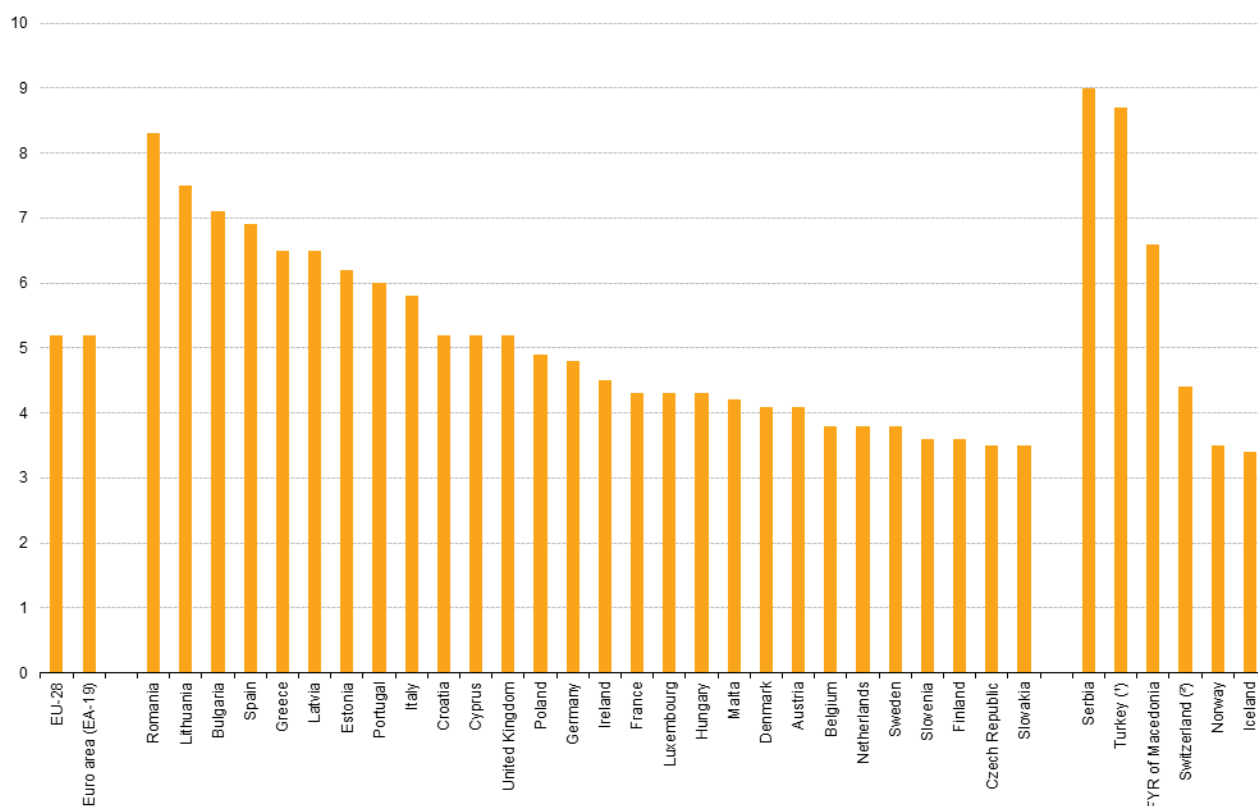
Source: Eurostat (online data code: ilc\_li04)

Source: Eurostat 2017i

The proportion of people at risk of monetary poverty is closely linked to **income inequality**. Data on economic inequality become particularly important for estimating relative poverty, because the distribution of economic resources may have a direct bearing on the extent and depth of poverty.

There were wide inequalities in the distribution of income in 2015: a population-weighted average of national figures for each of the individual EU Member States shows that the top 20 % of the population (with the highest equivalised disposable income) received 5.2 times as much income as the bottom 20 % (with the lowest equivalised disposable income).

This ratio varied considerably across the Member States, from 3.5 in Slovakia and the Czech Republic, to 6.0 or more in Portugal, Estonia, Latvia, Greece, Spain, Bulgaria and Lithuania, peaking at 8.3 in Romania.

**Figure 3-7: Inequality of income distribution, 2015 (income quintile share ratio)**


(\*) 2013.

(\*) 2014.

Source: Eurostat (online data code: ilc\_di11)

Source: Eurostat 2017i

## (Un)employment

Paid employment is crucial for ensuring sufficient living standards and it contributes to economic performance, quality of life and social inclusion, making it one of the cornerstones of socioeconomic development and well-being.

According to Eurostat (2018e), in 2016, 71.1 % of the EU population aged 20 to 64 were **employed**. This is by far the highest share that has been observed since 2002. However, it is still 3.9 percentage points behind the EU 2020 employment target of 75 %. In 2016, 6.5 % of the population were unemployed, the remaining 22.5 % were inactive, meaning they were not (actively) looking for work.

Employment rates across the EU tend to show a north-south divide on a country as well as regional level. Some of the best performing countries such as Germany, Sweden and the United Kingdom also record high regional employment rates.

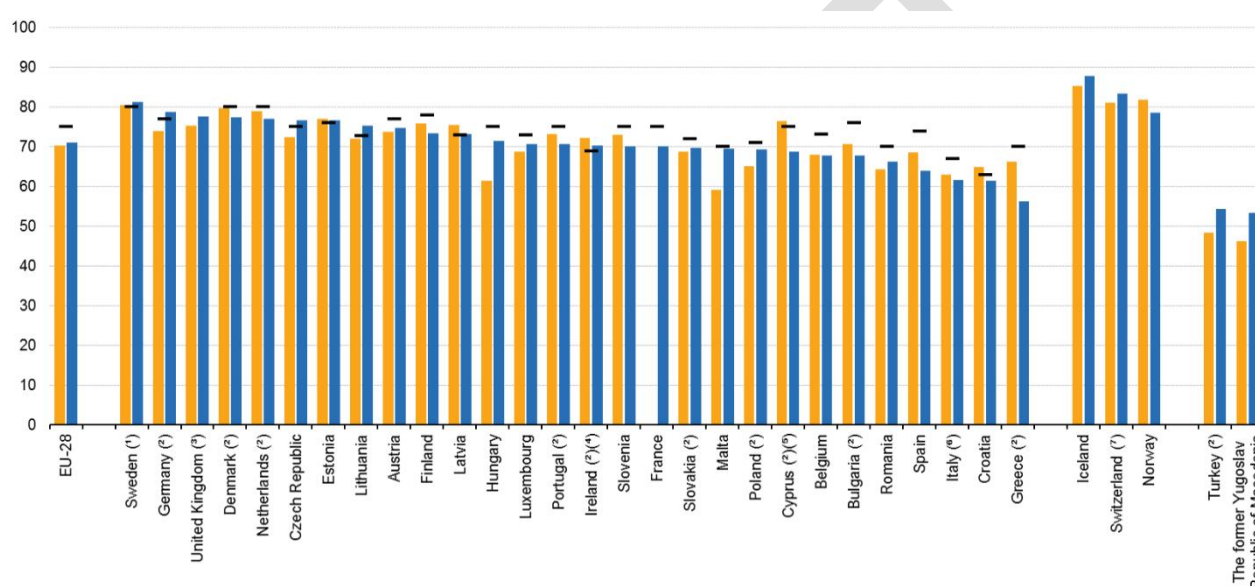
In Scandinavian and western European countries employment rates tend to be higher in rural areas. Whereas in most Baltic, southern, central or eastern Member States cities exhibit higher employment rates.



Considerably lower employment rates are observed for women than men. The gender employment gaps are widest for women in age groups associated with having caring responsibilities for children, dependent family members or grandchildren.

People with low educational attainment form one of the most disadvantaged groups in the labour market, exhibiting low employment rates. Educational attainment levels and knowledge of their host county's language have a strong influence on how well non-EU citizens integrate into the labour market. People who migrated to the EU to join their families or for international protection are among the most disadvantaged groups in the labour market.

**Figure 3-8: Employment rate age group 20 to 64 by country, 2008 and 2016**



<sup>(1)</sup> Target: more than 80%.

<sup>(2)</sup> Break(s) in time series between 2008 and 2016.

<sup>(3)</sup> No target in National Reform Programme.

<sup>(4)</sup> Target: 69-71%.

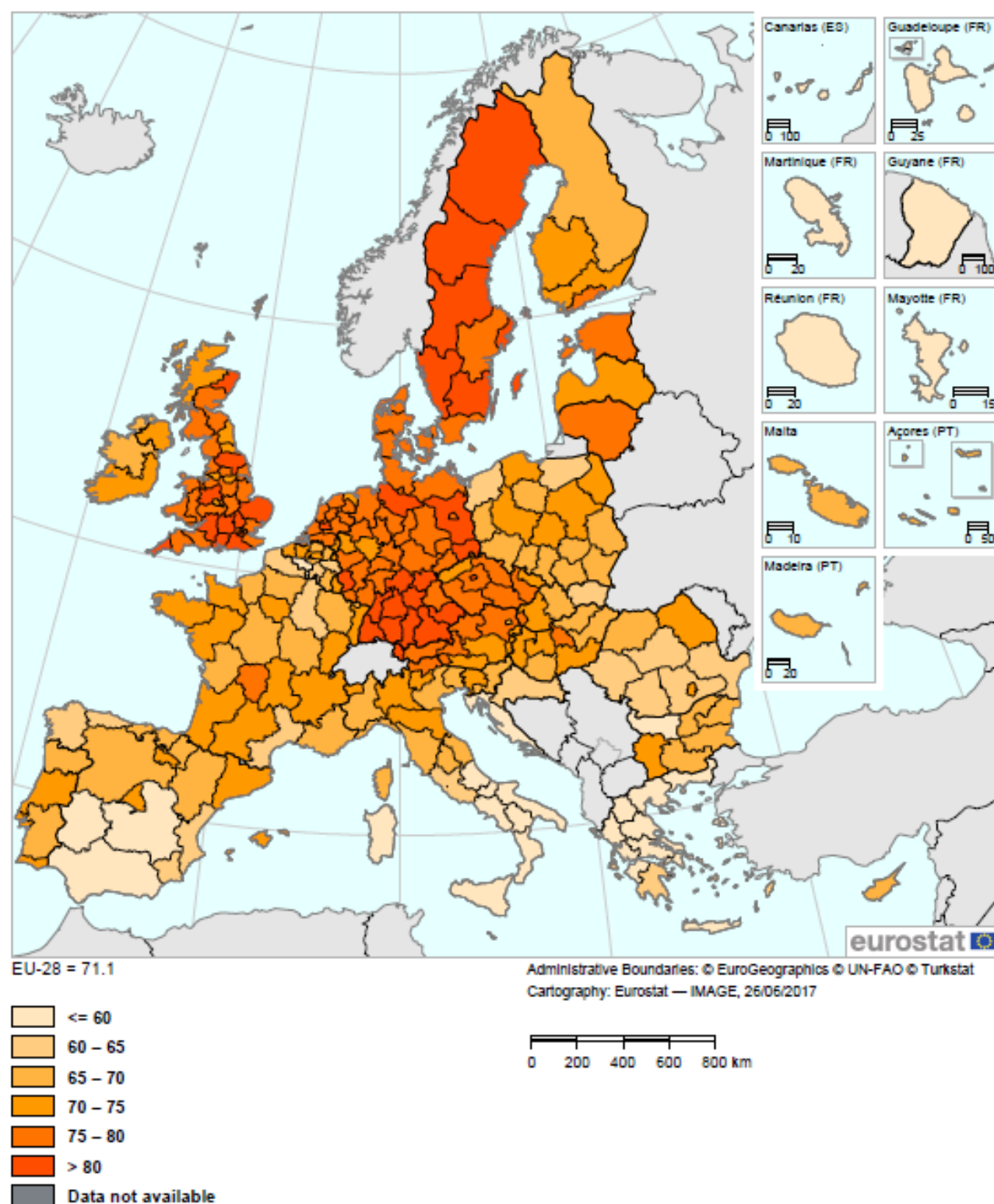
<sup>(5)</sup> Target: 75-77%.

<sup>(6)</sup> Target: 67-69%.

<sup>(7)</sup> 2010 data (instead of 2012).

Source: Eurostat 2017g

**Figure 3-9: Employment rate age-group 20 to 64 by NUTS 2 regions, 2016 (% of population aged 20–64)**

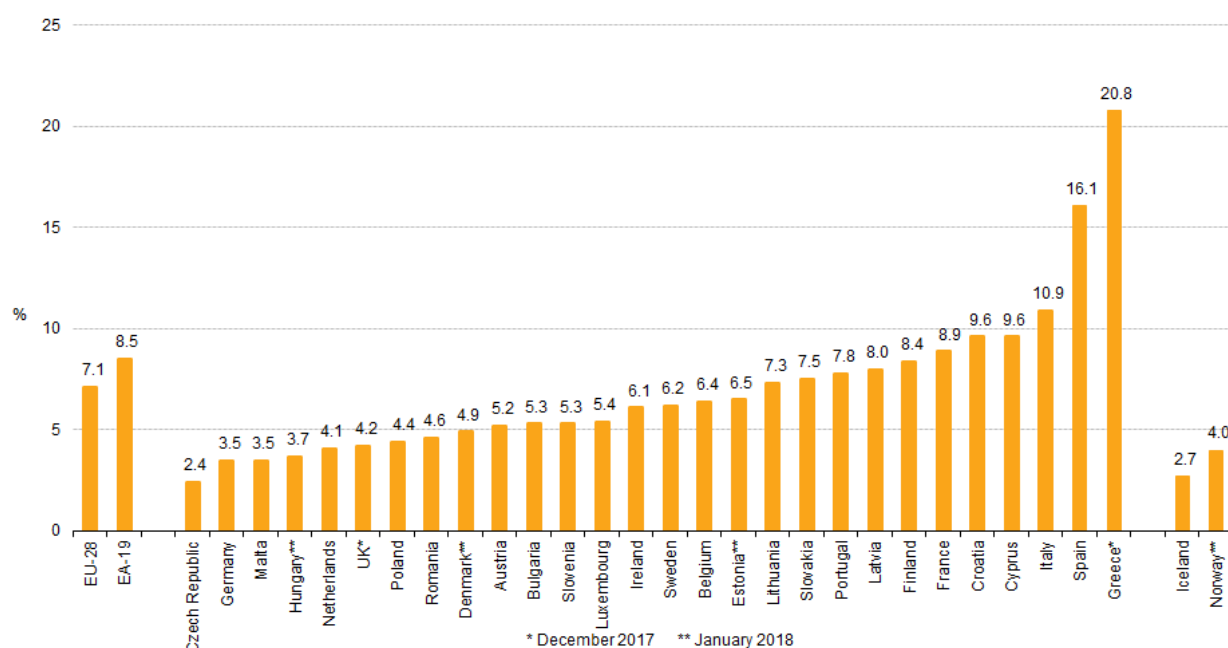


Source: Eurostat 2018e

Eurostat (2018g) estimates that 17.632 million men and women in the EU-28 were **unemployed** in February 2018. The EU-28 unemployment rate was 7.1 % in February 2018.

Among the Member States, the lowest unemployment rates in February 2018 were recorded in the Czech Republic (2.4 %), Germany and Malta (both 3.5 %) as well as Hungary (3.7 % in January 2018). The highest unemployment rates were observed in Greece (20.8 % in December 2017) and Spain (16.1 %).

**Figure 3-10: Unemployment rates, seasonally adjusted, February 2018 (%)**

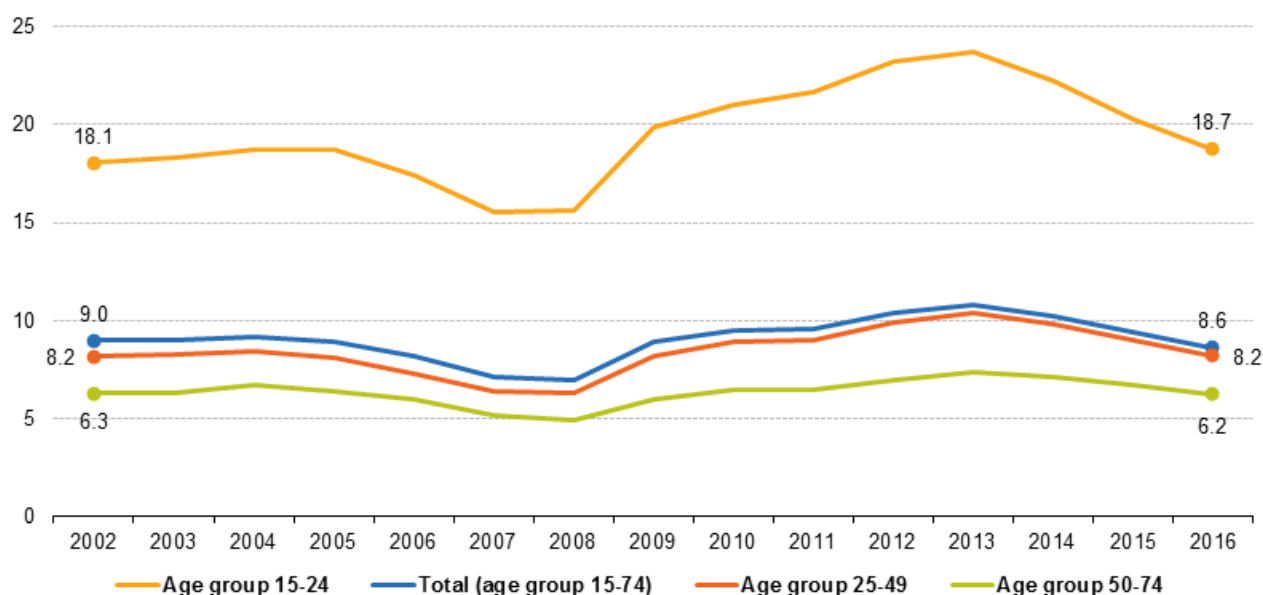


Source: Eurostat 2018g

Youth unemployment rates are generally much higher, even double or more than double, than unemployment rates for all ages.

With an unemployment rate of 18.7 % in 2016, young people aged 15 to 29 were clearly at a disadvantage compared with the overall population.

Over the past few years increases in part-time work and fixed-term contracts have been observed. Young people have been the most affected, with 16.0 % of 15 to 24 year old involuntarily employed on time-limited contracts and 8.4 % involuntarily in part-time work in 2016.

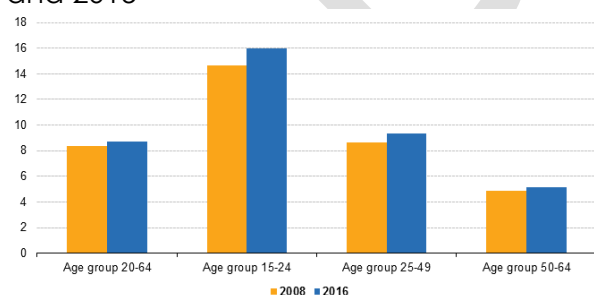
**Figure 3-11: Unemployment rate by age group, EU-28, 2002–2016 (%)**


Note: Break in time series in 2005.

Source: Eurostat 2017g

**Figure 3-12: Involuntary temporary and part-time employees by age group, EU-28 (%)**

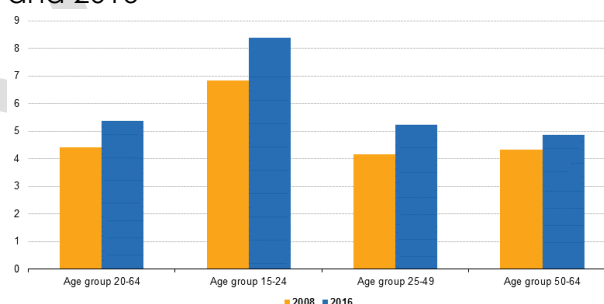
Involuntary temporary employees, 2008 and 2015



Note: Data have low reliability.

Source: Eurostat 2017g

Involuntary part-time employment, 2008 and 2016



Note: Data for 2008 have low reliability.

### 3.2.1.2 Transport related characteristics

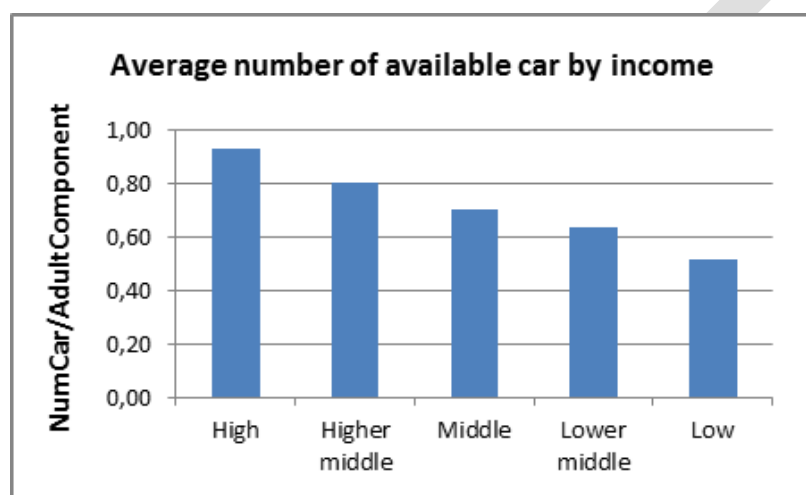
There is a substantial body of research on the relationship between low-income, poverty, unemployment and access to transport, e.g. on affordability and car dependence. Even if much of the related literature is on Anglo-Saxon countries, the main findings can be extended, with a fair degree of certainty, to most of the EU Member States.

**Low-income people and the unemployed are particularly reliant on local public transport services**, since in many cases they cannot afford a private car or other means of transport.

According to the European Commission (2013a), the use of private transport modes is closely related to income levels: only 37% of respondents who report difficulties in paying their bills most of the time use a car on a daily basis, as opposed to 52% of those who almost never have difficulties paying bills. And the unemployed are the most likely to use urban public transport: 23% against an average of 19% (European Commission 2014a).

Data from a European wide survey carried out on behalf of the European Commission about issues related to transport and mobility in 2014 shows that **the lower the income, the lower the availability of cars** (European Commission 2015). Individuals belonging to high income households do have a higher number of cars available in comparison to those living in low income households.

**Figure 3-13: Availability of cars by income level, EU-28**



Source: European Commission 2015

On the other side, low income and unemployed living in remote, peripheral or deprived areas often have to rely on private vehicles to access essential services, posing a substantial financial burden on households.

The notion of **'forced car ownership'** (FCO) is used to define households who own at least a car despite limited economic resources (i.e. being materially deprived). It is assumed that these households trade-off (at least potentially) motoring expenditure against expenditure in other essential areas. Among households with limited resources, the enforced possession and use of a durable good can be the cause of material deprivation, economic stress and vulnerability to fuel price increases. FCO results in households cutting expenditure on other necessities and/or reducing travel activity to the bare minimum, both of which may result in social exclusion.

In 2012, 6.7% of UK households and 5.1% in Germany were FCO, while the total share of households with cars was at very similar levels (77–78%) in the two countries (Mattioli 2017).

As it comes to the travel intensity, according to a study of Transport for London (2014), the average number of trips made per weekday rises with increasing household income. For

Londoners with an annual household income of less than £20,000, the average number of trips per weekday is 2.40, and for Londoners with a household income of below £5,000, the average number of trips made per weekday is 2.21, compared to 2.68 for all Londoners.

### 3.2.1.3 Transport related disadvantages

It has been seen that income, either individual or at household level, is highly influential on travel behaviour. **Low income people tend to be less mobile**, limiting themselves to those compulsory trips, such as to work, health services or food shops. This behaviour is visible in almost every country worldwide (Lucas et al. 2016). The other trips, essentially social in nature (e.g., visiting friends and relatives), are reduced if not eliminated (Moore et al. 2013). Additional, income is highly influential on mode choice.

Vulnerable segments often suffer from a lack of access to private and public transport services in terms of both options and quality of service (Barter 1999), due to budgetary reasons. They are then forced to rely on walking or cycling, which inevitably reduces the amount and scope of opportunities they can reach. The quality of transport infrastructure (e.g., existence of sidewalks, overall cleanness, or illumination) tends also to be inferior in deprived regions. Hence, low income groups are often confronted with the need to walk and cycle in unsafe conditions for longer periods and routes. They have therefore a higher risk of road-casualties and are more exposed to pollutants (Titheridge et al. 2014), with a direct impact on their quality of life and well-being.

**Transport needs tend to be relative, depending on communities' level of accessibility and social expectations.** In more accessible communities it may be relatively easy to function without driving a car, so non-drivers enjoy social inclusion, transport financial costs tend to be relatively low, and driving is considered a luxury activity. On the contrary, in a more car dependent community, driving is a necessity, due to the dispersion of destinations, poor travel options for non-drivers, and because alternative modes (walking, cycling and public transit) are stigmatized. In such a community, non-drivers tend to experience social exclusion, and transport financial costs are higher, so lower-income households are relatively poorer and experience more difficulty and loss of social status (Litman 2003).

In modern, industrialized economies the portion of household budgets devoted to transport typically varies from 10-20%, depending on various factors including employment (commuters tend to spend more on transport than people who don't commute), income (lower-income households tend to spend less in total but more as a portion of income than higher income households), vehicle ownership (vehicle owning households tend to spend a greater portion of income than zero-vehicle households), geography (suburban and rural households spend more than urban households) and the quality of local transport options (residents of neighbourhoods with better mobility options tend to spend less than in automobile-dependent communities) (Litman 2017).

**Transport affordability refers to the financial burden households bear in purchasing transport services**, particularly those required to access basic goods and activities (healthcare, shopping, school, work and social activities). This generally means that households, including those with low incomes, can spend less than 20% of their budgets on transport, or less than 45% on transport and housing combined, in recognition that households often make trade-offs between these costs and overall affordability does not really increase if affordable transportation requires unaffordable housing, or vice versa.



For people on low incomes and the unemployed, and especially those living in deprived areas, availability of public transport and affordable fares affect employment opportunities and access to basic services.

**Low-income people have less access to private modes of transport and are more likely to use public transport. People on low incomes travel shorter distances and are more sensitive to public transport fares.**

Furthermore, they are more likely to experience other social disadvantages, such as living in rural and deprived areas (less well served by public transport), and to face problems of physical access to transportation, given that low-income people are more likely to be physically disabled or to have children (Bradshaw et al. 2004).

Children from low-income families are particularly vulnerable to poverty and social exclusion and inadequate transport can have severe consequences for them, negatively affecting access opportunities to education.

#### 3.2.1.4 Multiple socio-economic disadvantages

According to EU statistics, compared with the EU average, some groups of the population are at a higher risk of poverty or social exclusion. The most affected are women, children, young people, the unemployed, single-parent households and those living alone, people with lower educational attainment, people born in a different country than the one they reside in, people out of work, and in a majority of Member States those living in rural areas.

More in detail, the following elements can be highlighted:

- **Women** are more likely to live in poverty and social exclusion than men. The share of women suffering from poverty or social exclusion was 1.4 percentage points higher than the corresponding share of men in 2015. This is a direct consequence of the gender gap in the participation to the labour market and related levels of salary.
- **Children and young people:** young people aged 18 to 24 are the most likely to be at risk of poverty or social exclusion. Almost a third of young people were at risk in 2015 (31.3%). People younger than 18 years had the second highest risk, at 26.9 %. Moreover, the situation of young people aged 18 to 24 has deteriorated the most since 2010 compared to other age groups. The main factors affecting child poverty are the labour market situation of the parents, which is linked to their level of education, the composition of the household in which the children live and the effectiveness of government intervention through income support and the provision of enabling services.
- The **elderly** (65 years old and over) faced a lower risk of poverty or social exclusion in 2015 than the overall population at EU-28 level (17.4 % as opposed to 23.7 %). The risk of poverty or social exclusion faced by people aged 65 or more in 2015 ranged from 6.1 % in the Netherlands to 51.8 % in Bulgaria. These differences in the relative situation of the elderly depend on a number of factors including the features of the pension systems for current pensioners and the age and gender structure of the elderly population, since elderly women and the very old tend to face much higher risks in some countries.

- **Lack of work** increases the risk of poverty or social exclusion. Of all groups examined based on their employment status, the unemployed faced the greatest risk of poverty or social exclusion, at 66.6 % in 2015. In comparison, the share of employed people at risk was just 12.5 %. This shows that poverty or social exclusion are more likely to affect to unemployed people. And the extent to which members of a household have the opportunity to work will also affect their risk of poverty or social exclusion. On the other side, being in work does not necessarily protect against poverty: in 2015, 7.7 % of the working EU population was at risk of poverty even though they were working full time.
- **Single parents** face the highest risk of poverty or social exclusion. Almost 50 % of all single parents were at risk of poverty or social exclusion in 2015. This was double the average and higher than for any other household type analysed. In general, households with only one adult — both with children and without — and households with many children are at a higher risk of poverty or social exclusion.
- People with **low educational attainment** are three times more likely to be at risk compared with those with the highest degrees. 34.7 % of adults with a lower secondary educational attainment were at risk of poverty or social exclusion in 2015. In comparison, only 11.7 % with tertiary education were in the same situation. This shows that the least educated people were almost three times more likely to be at risk than those with the highest education levels. This is also reflected in the data on employment which shows that the likelihood of being employed rises in line with educational level

The risk of poverty or social exclusion due to low education is passed on to **the next generation**. 65.6 % of children of parents with at most pre-primary and lower secondary education were at risk. This was over six times higher than for children of parents with first or second stage tertiary education. Thus, education, which is a strong determinant of poverty or social exclusion for adults, also influences whether children live in poverty or social exclusion. The socio-economic environment in which children grow up does not only affect the standard of living in their youth. There is also a close link between the socio-economic status of adults and the status of their parents during their childhood.

- **Migrants** are generally worse off than people living in their home country. In 2016 the risk of poverty or social exclusion in the EU-28 was lower among nationals than it was among migrants. Almost one quarter (22.9 %) of all nationals faced such a risk, while the share for foreign EU citizens was somewhat higher at just over a quarter (27.9 %; note this figure is of low reliability). However, by far the highest risk was experienced by migrants who were non-EU citizens, as almost half (48.6 %) of this subpopulation were at risk of poverty or social exclusion in 2016.

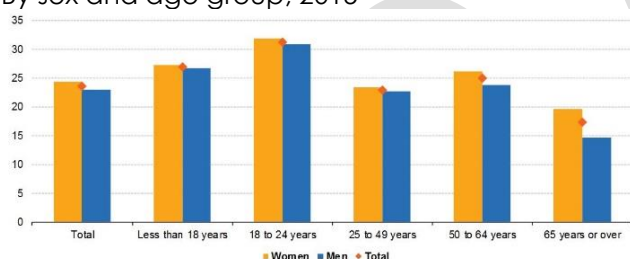
Compared to migration from a country from outside the EU, migration within the EU bears a far smaller risk of poverty or social exclusion. Country differences in the 'poverty origin gap' could be explained by a number of factors, such as the level of education, labour market access and employment status of foreign citizens residing in a given Member State. Difficulties in labour market access among foreign citizens can be due to migration-specific work obstacles: problems with credential recognition, language and communication barriers, or discrimination on social and religious grounds.

- In the majority of Member States, **people in rural areas** are more at risk of poverty or social exclusion. EU citizens in rural areas were on average slightly more likely to live in poverty or social exclusion than those living in urban areas (25.5 % compared with 24.0 %) in 2015. However, the figures vary greatly between Member States. In 15 Member States, people living in rural areas were at the highest risk of being poor or socially excluded. The countries with the highest poverty rates in rural areas compared with urban areas are Romania (26.7 % higher) and Bulgaria (23.1 % higher). In other countries, such as Denmark, Austria, Belgium, the United Kingdom, the Netherlands and Germany, the opposite is true: a clearly larger share of urban residents live in poverty or social exclusion compared with residents in rural areas or towns.

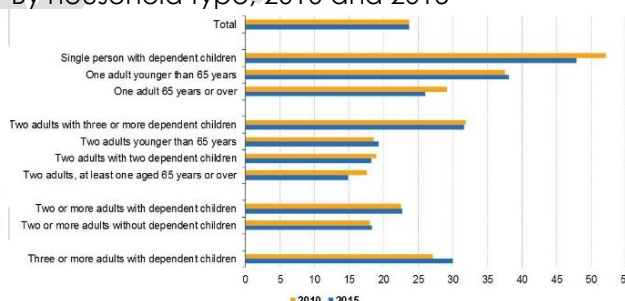
Four main categories of problems characterize rural areas in the EU and determine the risk of poverty or social exclusion: demography (for example, the exodus of residents and the ageing population in rural areas), remoteness (such as lack of infrastructure and basic services), education (for example, lack of preschools and difficulty in accessing primary and secondary schools) and labour markets (lower employment rates, persistent long-term unemployment and a greater number of seasonal workers).

**Figure 3-14: People at risk of poverty, EU-28, by sex and age group, household type, educational attainment level (% of population)**

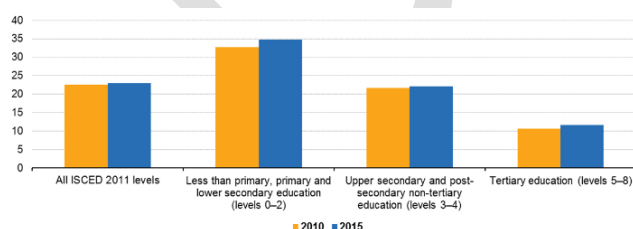
By sex and age group, 2015



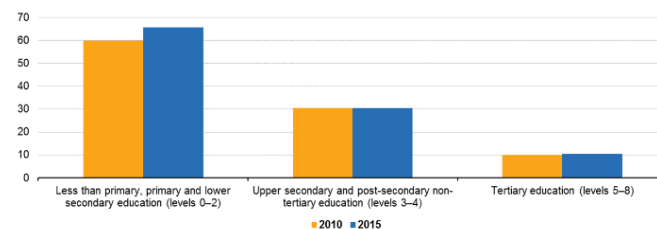
By household type, 2010 and 2015



By educational attainment level, 2010 and 2015

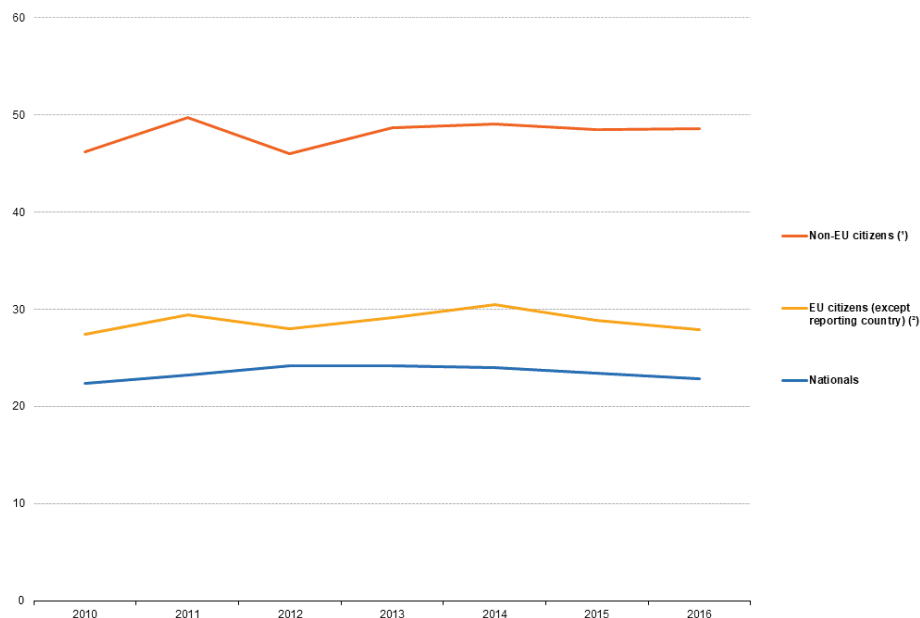


Children at risk by educational attainment level of their parents, 2010 and 2015



Source: Eurostat 2017g

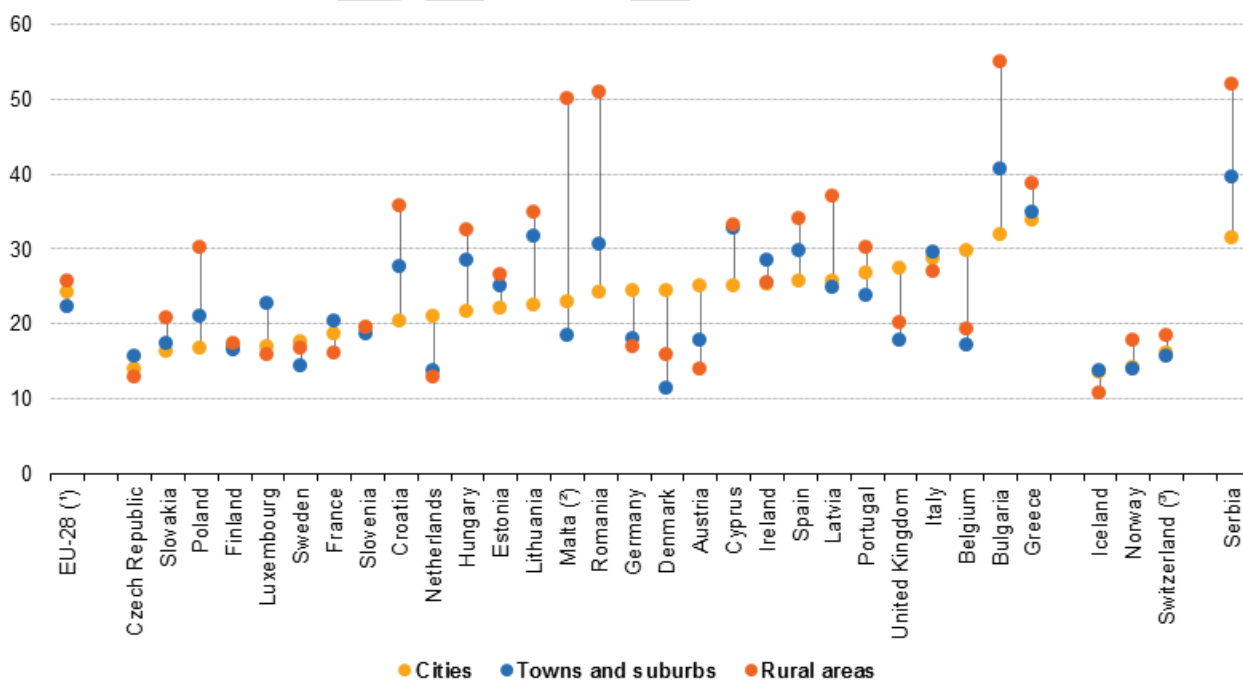
**Figure 3-15: People aged 20-64 at risk of poverty or social exclusion by citizenship EU-28, 2010-16 (%)**



(\*) 2010: low reliability, 2011-2016: estimates.  
 (\*\*) Low reliability.  
 Source: Eurostat (online data code: ilc\_peps05)

Source: Eurostat 2018f

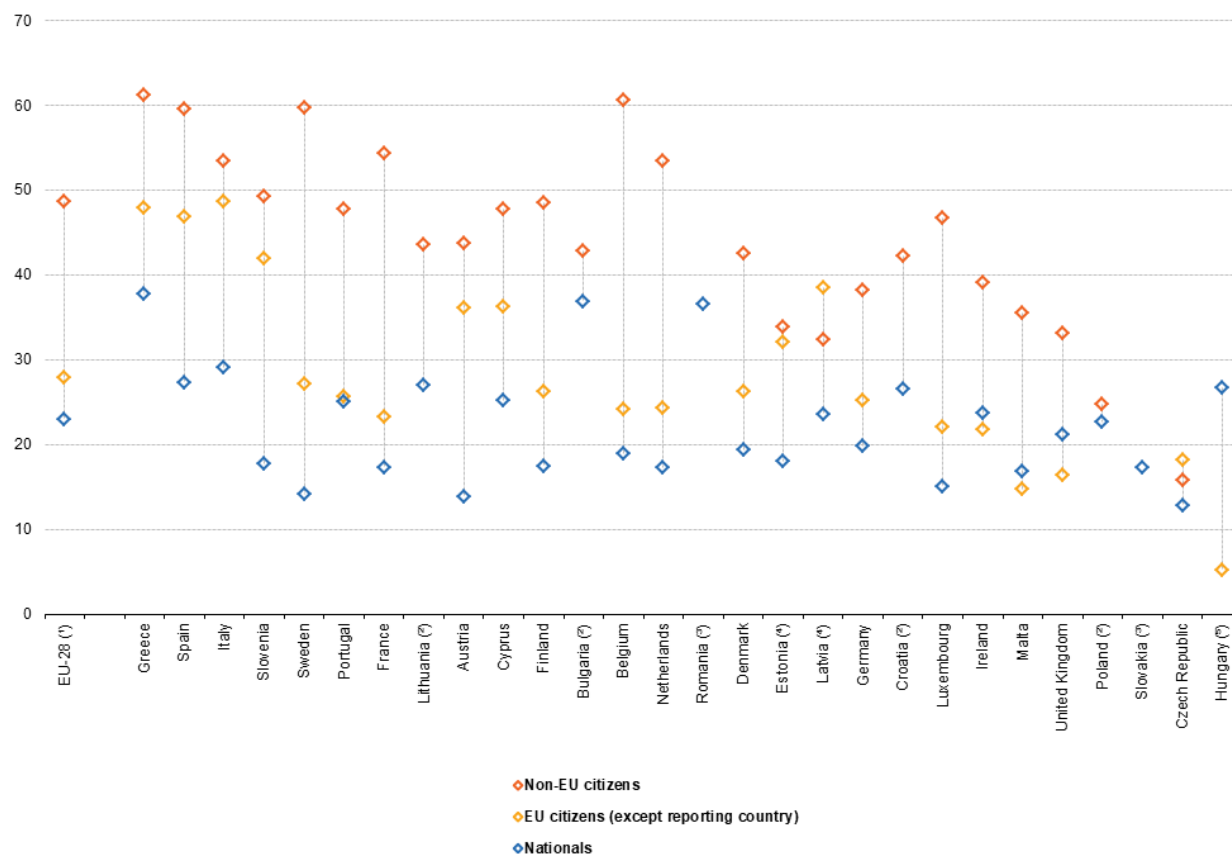
**Figure 3-16: People at risk of poverty or social exclusion by degree of urbanisation, by country, 2015**



(\*) Estimated data for rural areas  
 (\*\*) Data for rural areas are of low reliability  
 (\*\*) 2014 data

Source: Eurostat 2017g

**Figure 3-17: People aged 20-64 at risk of poverty or social exclusion by citizenship, 2016 (%)**



Note: ranked on the share for all foreign citizens.

(\*) EU citizens (except reporting country): low reliability. Non-EU citizens: estimate.

(\*) EU citizens (except reporting country): not available. Non-EU citizens: low reliability.

(\*) EU citizens (except reporting country) and non-EU citizens: not available.

(\*) EU citizens (except reporting country): low reliability.

(\*) EU citizens (except reporting country): low reliability. Non-EU citizens: not available.

Source: Eurostat (online data code: ilc\_peps05)

Source: Eurostat 2018f

## 3.2.2 Elderly people

### 3.2.2.1 Relevance: quantitative assessment and characteristics

The definition of elderly person is not consensual and the World Health Organisation (WHO) stresses that it should not be regarded as a fully uniformed concept as it is westernized and may not adapt to some local realities, namely those related with poverty (WHO 2016). Nevertheless, the common definition accepted within the EU refers to an elderly person as a person aged 65 and over, and a very old person as a person aged 85 and over (Eurostat 2017f; OECD 2018).

**Life expectancy has been increasing consistently in the last few decades** (Table 3-2), and 2015 data indicates a life expectancy at birth of 80.6 years, given that women have a higher life expectancy (83.3 years) than men (77.9 years). However, as life expectancy at birth is a fluctuating value, it is also interesting to consider life expectancy at 65 (as the value will be associated with the life expectancy those aged 65 today had when they were born). This figure was estimated to be 19.7 years in 2015 (21.2 for women and 17.9 years for men (Eurostat 2017f).

**Table 3-2: Life expectancy at birth and at age of 65 years**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
<b>Life expectancy at birth</b>	<b>78.5</b>	<b>78.9</b>	<b>79.1</b>	<b>79.4</b>	<b>79.6</b>	<b>79.9</b>	<b>80.2</b>	<b>80.3</b>	<b>80.5</b>	<b>80.9</b>	<b>80.6</b>
Male	75.4	75.8	76.0	76.3	76.6	76.9	77.3	77.4	77.7	78.1	77.9
Female	81.5	82.0	82.2	82.3	82.6	82.8	83.1	83.0	83.3	83.6	83.3
<b>Life expectancy at age 65</b>	<b>18.3</b>	<b>18.7</b>	<b>18.9</b>	<b>19.0</b>	<b>19.2</b>	<b>19.4</b>	<b>19.6</b>	<b>19.5</b>	<b>19.7</b>	<b>20.0</b>	<b>19.7</b>
Male	16.4	16.8	16.9	17.1	17.3	17.5	17.7	17.7	17.9	18.2	17.9
Female	19.9	20.4	20.5	20.6	20.8	21.0	21.3	21.1	21.3	21.6	21.2

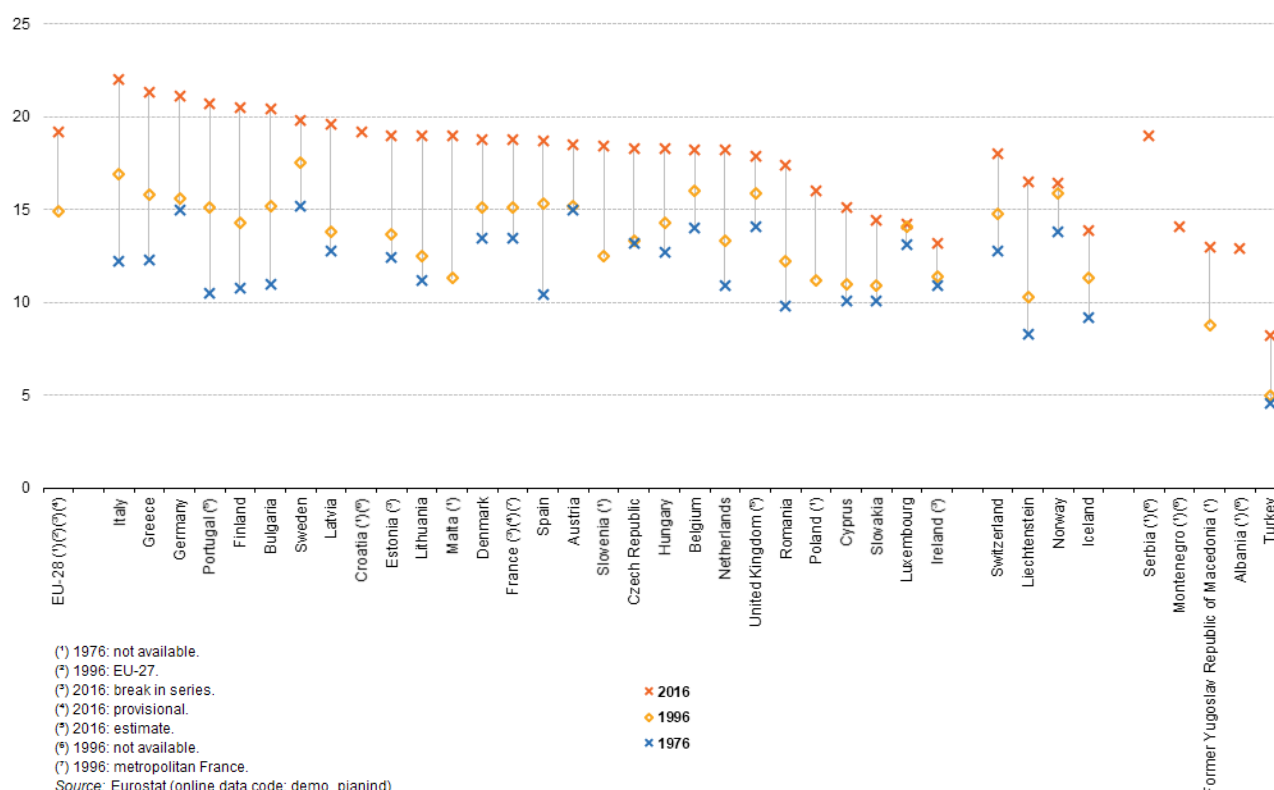
Note: 2010-2012 and 2014-2015, breaks in series.  
Source: Eurostat (online data code: demo\_mlexpec)

Source: Eurostat 2017f

In such a context it can be seen that one of the main challenges facing the EU in the next decade, both socially and economically, is the increasing proportion of elderly population.

As Figure 3-18 shows, both the number and the proportion of citizens aged 65 and over is expected to increase, together with an especially fast growth in the number of aged 85 years and over. Such a demographic shift is expected to impact on several societal and political areas, namely labour, social security and pension systems, health systems, government and personal finances (Eurostat 2017f).



**Figure 3-18: Population aged 65 years and over, 1976, 1996 and 2016 (% of total population)**


Source: Eurostat 2017f

Overall figures from the EU-28 show that about a 20% of its population is aged 65 and above, with percentages being higher in Bulgaria, Portugal, Italy (with the highest EU-28 proportion – 22%), Finland, Germany and Greece. It should however be mentioned that such proportions do vary significantly across Member States.

In 2016, the three highest shares were found in the central Greek region of Evrytania (30.7%), the north-western Spanish region of Ourense (30.7 %) and the West Flanders municipality of Veurne in Belgium (30.2%) (Table 3-3 and Table 3-4).

Furthermore, it's in rural regions that older people account for a higher proportion of the population (Eurostat 2017f). Most of the areas with high proportions of elderly persons are not only rural but sometimes also remote. Nevertheless, this reality is not widespread as, for example, in some areas of Eastern Europe, namely in Poland, the highest proportions of elderly people were found in the cities of Łódź and Warszawa (Eurostat 2017f).

**Table 3-3: Elderly population aged 65 years and over, highest shares by NUTS level 3 region, 2016 (% of total population)**

	Average	Highest share		Second highest share		Third highest share	
EU-28	19.2	Evrytania (Greece)	34.4	Ourense (Spain)	30.7	Arr. Veurne (Belgium)	30.2
Belgium	18.2	Arr. Veurne	30.2	Arr. Oostende	25.7	Arr. Brugge	23.7
Bulgaria	20.4	Vidin	28.5	Gabrovo	27.5	Lovech	26.1
Czech Republic	18.3	Královéhradecký kraj	19.6	Plzeňský kraj	18.8	Zlínský kraj	18.8
Denmark	18.8	Bornholm	27.3	Vest- og Sydsjælland	22.3	Nordsjælland	21.8
Germany	21.1	Dessau-Roßlau, Kreisfreie Stadt	29.9	Suhl, Kreisfreie Stadt	29.1	Altenburger Land	28.5
Estonia	19.0	Kirde-Eesti	21.7	Lääne-Eesti	21.0	Kesk-Eesti	20.1
Ireland	13.2	Midland	14.3	Border	14.2	West	14.2
Greece	21.3	Evrytania	34.4	Serres	28.7	Arta, Preveza	28.4
Spain	18.7	Ourense	30.7	Zamora	29.7	Lugo	28.7
France	18.8	Creuse	28.7	Lot	27.8	Nièvre	27.8
Croatia	19.2	Licko-senjska županija	24.6	Sibensko-kninska županija	24.1	Karlovacka županija	21.6
Italy	22.0	Savona	28.7	Trieste	28.6	Genova	28.4
Cyprus	15.1	—	:	—	:	—	:
Latvia	19.6	Latgale	20.9	Vidzeme	20.5	Kurzeme	20.3
Lithuania	19.0	Utenos apskritis	22.8	Alytaus apskritis	21.6	Panevezio apskritis	21.4
Luxembourg	14.2	—	:	—	:	—	:
Hungary	18.3	Békés	20.4	Zala	20.1	Heves	19.8
Malta	19.0	Gozo and Comino / Ghawdex u Kemmuna	21.3	Malta	18.9	—	:
Netherlands	18.2	Zeeuwsch-Vlaanderen	24.2	Delfzijl en omgeving	23.0	Oost-Groningen	22.5
Austria	18.5	Östliche Obersteiermark	24.4	Mittelburgenland	22.6	Westliche Obersteiermark	22.2
Poland	16.0	Miasto Łódź	20.8	Trojmiejski	19.1	Miasto Warszawa	19.0
Portugal	20.7	Beira Baixa	29.4	Alto Tâmega	29.0	Terras de Trás-os-Montes	28.9
Romania	17.4	Teleorman	25.2	Vâlcea	21.4	Buzau	20.5
Slovenia	18.4	Goriska	20.5	Pomurska	19.9	Obalno-kraska	19.4
Slovakia	14.4	Trenciansky kraj	15.9	Nitriansky kraj	15.8	Bratislavský kraj	15.5
Finland	20.5	Etelä-Savo	27.6	Kymenlaakso	25.2	Etelä-Karjala	25.0
Sweden	19.8	Götlands län	24.5	Kalmar län	24.4	Dalarna län	23.8
United Kingdom	17.9	Dorset CC	28.2	North & West Norfolk	27.9	Isle of Wight	26.7
Iceland	13.9	Landsbyggð	14.6	Höfudborgarsvæði	13.4	—	:
Liechtenstein	16.5	—	:	—	:	—	:
Norway	16.4	Hedmark	21.1	Oppland	20.4	Telemark	19.4
Switzerland	18.0	Ticino	21.8	Basel-Landschaft	21.2	Schaffhausen	20.5
Montenegro	14.1	—	:	—	:	—	:
Former Yugoslav Republic of Macedonia	13.0	Pelagoniski	15.8	Istocen	14.7	Vardarski	14.3
Albania (*)	12.9	—	:	—	:	—	:
Turkey	8.2	Sinop	18.1	Kastamonu	16.8	Çankiri	15.7

(\*) Level 3 regions: not available.

Source: Eurostat (online data code: demo\_r\_pjanind3)

Source: Eurostat 2017f

The pace of the demographic change varied between 1977 and in 2017 was most pronounced in Portugal, Italy, Malta, Finland and Bulgaria (with variations of about 10 percentage points in four decades), while was relatively slow in France, U.K., Austria, Ireland, Croatia and Luxembourg (with variations under 4 percentage points in four decades).

**Table 3-4: Proportion of population aged 65 years and more**

EU COUNTRIES	1977	1987	1997	2007	2007	VARIATION (PP)
Portugal	10,6	12,2	15,3	17,5	21,1	10,5
Italy	12,3	13,6	17,2	20,1	22,3	10,0
Malta	8,8	9,9	11,6	13,9	18,8	10,0
Finland	11,1	12,8	14,5	16,5	20,9	9,8
Bulgaria	11,2	11,8	15,3	17,6	20,7	9,5
Greece	12,6	13,2	16,2	18,6	21,5	8,9
Slovenia		10,1	12,9	15,9	18,9	8,8
Spain	10,5	12,4	15,6	16,5	19,0	8,5
Lithuania	11,3	10,3	12,8	16,6	19,3	8,0
Romania	10,0	9,7	12,4	14,7	17,8	7,8
Netherlands	11,0	12,3	13,4	14,5	18,5	7,5
Latvia	12,9	11,6	14,1	17,4	19,9	7,0
Estonia	12,4	11,3	14,1	17,3	19,3	6,9
Germany including former GDR	15,2	14,8	15,7	19,8	21,2	6,0
Hungary	12,9	12,7	14,5	15,9	18,7	5,8
Czech Republic	13,3	12,0	13,5	14,5	18,8	5,5
Denmark	13,7	15,3	15,0	15,3	19,1	5,4
Poland			11,5	13,4	16,5	5,0
Slovakia	10,2	9,7	11,1	12,0	15,0	4,8
Cyprus		10,8	11,1	12,4	15,6	4,8
Belgium	14,0	14,2	16,3	17,1	18,5	4,5
Sweden	15,5	17,6	17,4	17,4	19,8	4,3
France			15,3	16,3	19,2	3,9
United Kingdom	14,3	15,4	15,9	15,9	18,1	3,8
Austria	15,1	14,4	15,3	16,9	18,5	3,4
Ireland	10,8	10,9	11,4	10,8	13,5	2,7
European Union (current composition)				17,0	19,4	2,4
Croatia				17,7	19,6	1,9
Luxembourg	13,1	13,3	14,2	14,0	14,2	1,1

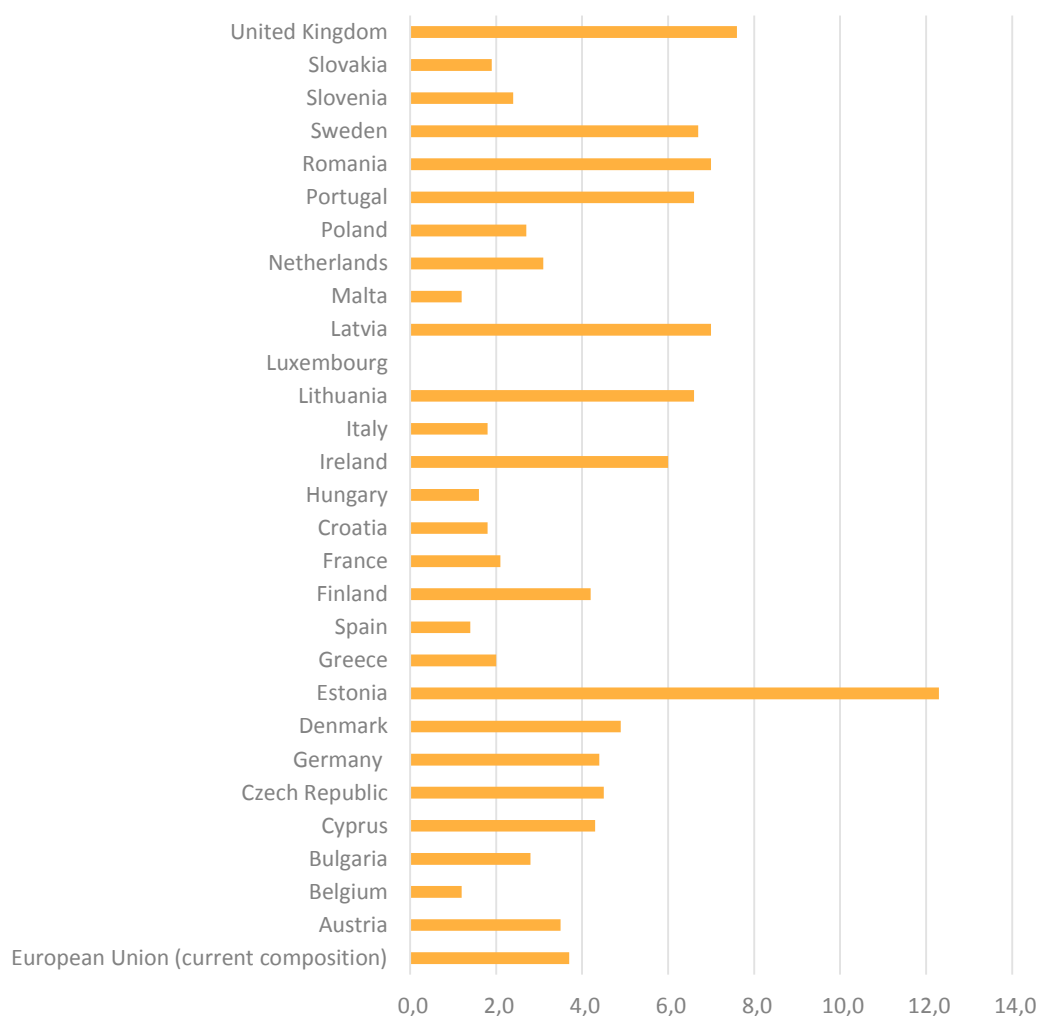
Source: Eurostat 2017f

**The higher life expectancy for women seems to have an impact on the proportion of women living alone aged 65 and over, which is higher than men** (Eurostat 2015f). Globally, in 2013 elderly citizens represented 39% of the single-person households in the EU. There are, however, some significant differences between Member States, ranging from a maximum of 49,3% in Croatia (followed by proportions around 45% in Portugal, Italy and Lithuania) to minimums in Cyprus, the Netherlands and Luxembourg (where the lowest share was reported, at 27.5%) (Eurostat 2015f).

In 2016, the percentage of economically active people (employed or unemployed) aged 65 or over in the EU was 5.7%, compared with 77.5% of the population aged 20 to 64. The highest shares of those aged 65 to 74 economically active were recorded in Estonia (13.3%) and Portugal (11.1%). The lower proportions of active people was recorded in Luxembourg (1.4%) and Spain (2.0%) (Eurostat 2017f).

Considering only employment rate (Figure 3-19), the 2016 EU-28 average for those 65 or over was of 3.7%, with again Estonia leading the rates, with 12%. Belgium and Malta, both with 1.2% are the countries with the lowest employment rate for this population segment.

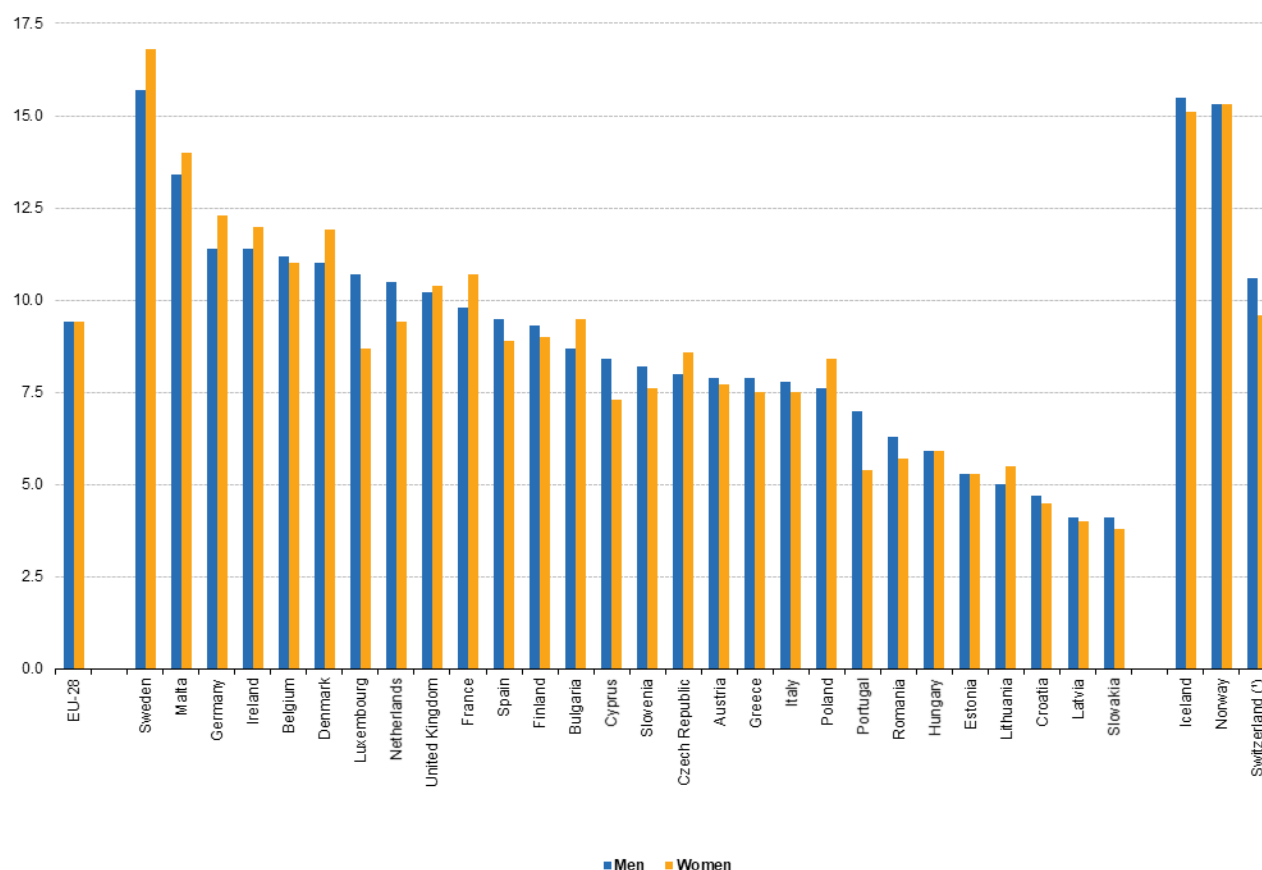
**Figure 3-19: Employed population aged 65 years and over, 2016 (% of total population)**



Source: Eurostat 2017f

An important related aspect concerns the healthy life years at the age of 65 years. This influence several of the previously discussed characteristics, including the level of activity and mobility or employment. According to the Eurostat (Figure 3-20), on average a European has around 9 years of healthy life after the 65 years. Although there are substantial variations among Member States.

**Figure 3-20: Healthy life years at the age of 65**



(\*) 2014.

Source: Eurostat (online data code: hlth\_hlye)

Source: Eurostat 2017f

Finally, it should also be considered the **growing level of access to digital tools and ICTs among older citizens**. More and more elderly people use the internet and digital technologies, both because of the natural aging or younger generations who have used internet for quite some time, or simply because people learn new skills (after all, elderly people are unoccupied and may be curious enough to learn new skills).

Even so, this segment remains somewhat wary about technology, particularly to what computers and the internet is concerned. In fact, the internet can be perceived as an opportunity to get in touch with a wide variety of new services and knowledge, some of which may be especially relevant for elderly people.

In 2016 about 45% of the elderly population — aged 65 to 74 — in the EU-28 used the internet at least once a week. In 2006 this figure was just 10% (Eurostat 2017f). Policy

planning and design for anything longer than the short term must consider the fast-growing digital capabilities experienced from one generation to the next. Nevertheless, it should be stressed that there are very significant differences between northern and western EU Member States, when compared with southern and eastern EU Member States.

In 2016 there were only four EU Member States where more than three quarters of the elderly population aged 65-74 years used the internet at least once a week: Luxembourg (88 %), Denmark (81 %), Sweden (80 %) and the Netherlands (77 %). On the other hand, in Croatia, Greece, Romania and Bulgaria that percentage was as low as 16%; the next lowest shares were recorded in Lithuania and Poland (both 23 %). Such differences are probably also mirrored when urban and rural areas are considered.

### 3.2.2.2 Transport related characteristics

According to a recent IFMO study (Zmud et al. 2017), as the proportion of people aged 65 and older increases, and the relative proportion of 15- to 64-year-old decreases, the effects both on demand and supply of transports can be considered relevant.

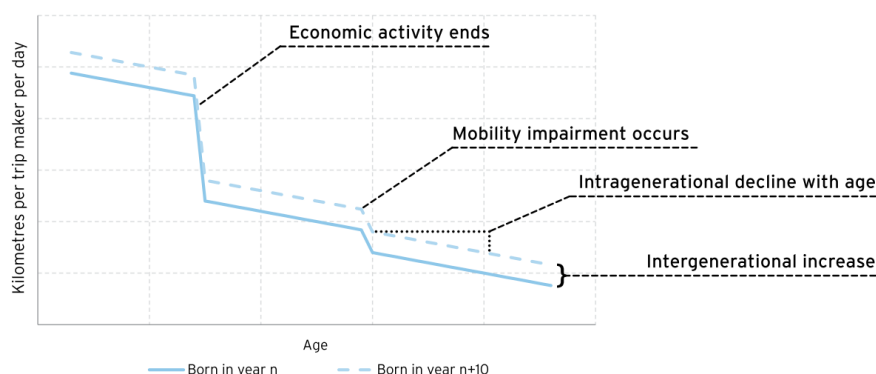
The following graph conceptualises **mobility decline over the years**, highlighting two segments of elderly people: younger-elderly (young-old) and the older-elderly (old-old). The former group refers to those people, which continues to have an active and independent life, normally after the retirement. The latter refers to those less active people (due to some sort of disability either cognitive or physical) and require help from other people.

The evolution from one to the other segment is gradual and there is no determined age. A possible estimation can be obtained from the indicator healthy life years at the age of 65 (see discussion above and Figure 3-20). At the EU level this indicator is on average of 9 years (although it ranges from 4 up to 16 years depending on the member state). Hence, the segment of the young-old may range between 65 and 74 years and the segment of the old-old is after the 75 years.

A second important insight of the graph is the representation of the intergenerational mobility gains. Young generation of elderly people have enhanced mobility than older generations, remaining active and mobile for more years. This is the consequence of improvements of the social care services, or medical and health support system.

Transport systems must thus be planned to cope with the changing needs of these new generations of highly active and mobile elderly.



**Figure 3-21: Conceptual model of mobility while ageing**

Source: Zmud et al. 2017

**People older than 65 years are increasingly mobile.** Often people in their sixties (and even older) can be seen (and see themselves) as still very active, keeping a very high overall activity level, traditionally not associated with their age. Financial resources, overall health, and mobility do have an impact on those (self)perceptions (Institute for Mobility Research 2013; Samek Lodovici and Torchio 2015).

A higher life expectancy, better overall health and increased inclusion in the workforce are factors supporting this increased activity. Furthermore, factors like pensions, changing living arrangements, and social connections combined with more varied and better transport options – do have a relationship with the amount of travel and the mode choices of older people (Institute for Mobility Research 2013).

The population over 65 has **significantly increased the average mileage per year and has a high motorization rate.** There has been significant growth in kilometres travelled per day by seniors in the study countries (Institute for Mobility Research 2013):

- 70% increase in England from 1982 to 2012;
- 40% increase in Germany from 1982 to 2012;
- 40% increase in the USA from 1983 to 2008;
- 30% increase in Japan from 1987 to 2010.

Nevertheless, for each additional year of age, senior mobility declines overall at about one kilometre per person per day. In such a context, driver attitude and driving behaviour are some of the factors that can influence this segment's transition to public transport (Shrestha et al. 2017).

Overall, whilst mobility is indisputably declining with age, succeeding generations nevertheless are starting their declines at higher levels of mobility, for which the main contributor is car ownership. In Germany, for example, the percentage of people aged 65 or more owning a car has tripled since the mid-1980s – more than for any other age group (Institute for Mobility Research 2013). But whilst car ownership rates for older people did increase, in fact car use decreases with age, probably due to an increasingly challenging driving environment.

Better health conditions may also lead to **more cycling within this age group.** For example, in Belgium, elderly people are early adopters of e-bikes (CIVITAS 2016). Moreover, walking and cycling are seen across the EU as increasing activities among elderly citizens who wish to maintain active lives, as these are not only easy to maintain and accessible means of

transport, but also associated with advantageous health outcomes (McDonald et al. 2013).

As the current elderly people are increasingly more active until later periods of their lives, it can be suggested that public transport can be crucial in maintaining active life styles even in cases where driving is no longer a possibility. Public transport is therefore very important as a support for older people's independent quality of life, improving their sense of freedom and independence (even more so in rural areas), guaranteeing access to basic services, and decreasing social isolation (Shrestha et al. 2017).

Furthermore, it must be stressed that the elderly people's characteristics will keep evolving considerably fast. It is likely, for example, that activity levels among elderly people increase in the future. Life expectancy will continue to increase, and it can be expected that senior people will keep employed for longer, taking on second careers or volunteer activities. These changes will have impact both on economical and psychological aspects. **Nevertheless, ageing can't be stopped and senior people will face sooner or later physical difficulties that will be accompanied by certain inevitabilities.**

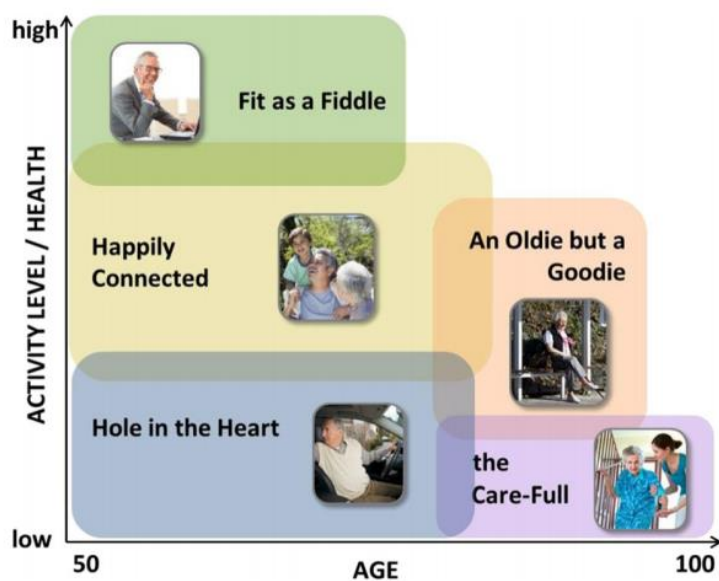
Therefore, it is possible to find at the same time factors that support as well as hinder mobility patterns alongside the ageing process. It must be recognized that today's seniors are in fact a very diverse population segment, and that therefore not all people will react in the same way.

Recognizing the relevance of this age segment and its mobility, the European Commission funded the GOAL (Growing Older and staying mobile) project, in the frame of which five profiles for elderly people were defined – 'Fit as a Fiddle', 'Hole in the Heart', 'Happily Connected', an 'Oldie but a Goodie' and 'Care-Full' (based on data available through the SHARE database, survey of Health, Ageing and Retirement in Europe<sup>21</sup>).

Figure 3-22 shows the age and activity level of the profiles of older people as described in GOAL. These profiles vary in several characteristics, namely the age, general health condition, mental capabilities, travelling reasons, driving skills, need for assistance, among others. The overlook of those profiles can be seen in Table 3-5 as listed in the GOAL project report (McDonald et al. 2012).

**Figure 3-22: Age and activity level of the profiles of older people**

<sup>21</sup> <http://www.share-project.org>



Source: McDonald et al. 2013

Table 3-5: Comparison of the characteristics of each of the five elderly people profiles

		Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
		Fit as a Fiddle	an Oldie but a Goodie	Hole in the Heart	The Care-Full	Happily Connected
Demographics	main age group	50-59	80-90	50-75	85-100	60-75
	gender	more male	more female	o	more female	o
	financial resources	+++	+	---	--	++
	still employed	+++	--	--	-	+
	household information	married or in partnership	single	O	single	married or in partnership
Health	general health	+++	+	--	---	++
	eyesight and hearing	+++	--	O	---	++
	limitation in activities	---	+	++	+++	-
	suffer from pain	---	-	++	+++	--
	Dementia / Alzheimer's	---	+	--	+++	--
	drugs needed	---	+	+++	+++	-
	aid needed	---	+++	O	+++	-
Transport	importance of driving	+++	---	+++	-	++
	importance of public transport	--	+++	--	-	+
	importance of walking	-	+++	O	+	++
	assistance needed	---	+	++	+++	--
	number and length of trips	+++	--	--	---	+
	purpose of trips	work, leisure, socializing	socializing, religious services shopping	medical facilities	medical facilities, religious services	recreation, sport, family, socializing
Environ-ment	problems with infrastructure barriers	---	++	++	+++	-
	afraid of crime	---	+	++	++	-
Life Satisfaction	satisfaction and mental health	+++	++	---	---	+++
	social networks	++	++	- (family only)	-- (family only)	+++
	activities	+++	+	--	---	++
Technology usage		+	--	-	---	+

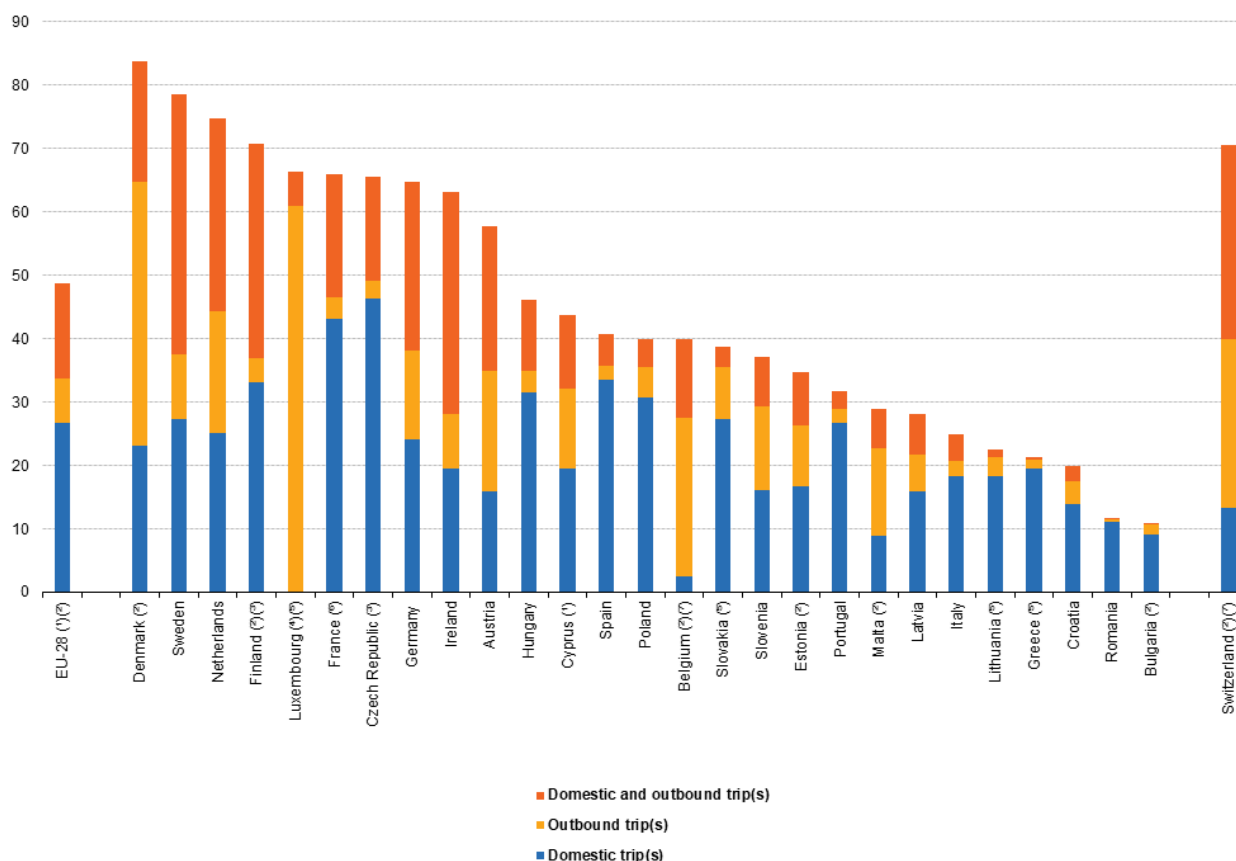
Figure 5-3: Draft Profiles comparison

+++ above average; --- below average; o not clear

Source: McDonald et al. 2013

On average, almost 50% of EU **elderly people travel for tourism purposes** and above 25% travel to another EU member state (**Errore. L'origine riferimento non è stata trovata.**). Elderly people tend to be unoccupied being able to profit from discount and budget trips offers.

**Figure 3-23: Percentage of Elderly population aged 65 years and over participating in tourism for personal purposes**



Note: United Kingdom, not available. Ranked on the total share (for all types of trips).

(\*) Estimates.

(\*) 2015.

(\*) Tourists having made outbound trips: low reliability.

(\*) Tourists having made domestic trips: not available.

(\*) Tourists having made domestic and outbound trips: low reliability.

(\*) Provisional.

(\*) Tourists having made domestic trips: low reliability.

Source: Eurostat (online data codes: tour\_dem\_toage and demo\_pjanbroad)

Source: Eurostat 2017f

### 3.2.2.3 Transport related disadvantages

Some segments of elderly people do experience mobility limitations caused by significant life-changing events, such as increasing cognitive problems and physical impairments. **The transition from using a car to using other transport modes will eventually occur for most people**, namely for health or economic reasons, or simply the responsibility of driving becomes too great. Nevertheless, such a transition will be very different according to

personal conditions and experiences, and considering different social contexts (McDonald et al. 2013).

Moreover, travel behaviours and mobility patterns change as a person ages. According to the Mobilität in Deutschland survey (2008), quoted by Hounsell and colleagues (Hounsell et al. 2016), ageing (after 55) is associated with more walking, less driving and more usage of public transport (especially after 75). Consequently, this segment of the populations is associated with fewer journeys when compared to younger adults and will likely change their transport mode (Hounsell et al. 2016). Notwithstanding, the preferences of the elderly are changing. By way of example, in the UK, the walking choice has been decreasing for some decades (McDonald et al. 2012).

Nevertheless, the mobility of older people is likely to be dependent on the adequate supply and appropriate quality of public transport services (Hounsell et al. 2016). Mollenkopf and Flaschenträger (2001; cited in Hounsell et al. 2016) found that “almost all older persons, regardless whether they participate in walking, cycling, driving or using public transport, suffer from the tighter and more aggressive traffic”.

The reduction in travel in older age groups may also simply arise because of their smaller presence in the work market. Therefore, older Europeans tend to use urban public transport mostly for leisure activities (shopping, visiting friends and relatives) to take children to school and to other after-school activities and to access healthcare services. The preservation of such activities is related with the availability of public transport, which is therefore of importance for the quality of life of the elderly (McDonald et al. 2013).

Often the changes in mobility patterns will be related with the **increasing impairment to overcome different barriers that might come along the ageing process**. Older people can face physical, psychological and economic barriers to travel. These can include diminished motor, sensory and cognitive abilities (ECMT 2002).

For example, regarding public transport, transport-related barriers can be linked to difficulties in reaching bus stops or getting in and out of vehicles, to the fear of falling or concerns with personal security, or even difficulties in reading timetables and destinations. Improvements in public transport are therefore critical in an “age-friendly” approach, especially among rural segments, supporting an independent life and access to basic services, and helping decrease social isolation (Hounsell et al. 2016).

**Safety issues and accident rates** (report accident rates by age group) in relation with declining driving capabilities are perceived as one of the reasons not to drive. In fact, the highest proportion of the accidents involving older drivers and for which they are responsible, it is somehow related with perception and decision-making issues (Verhaegen 1995).

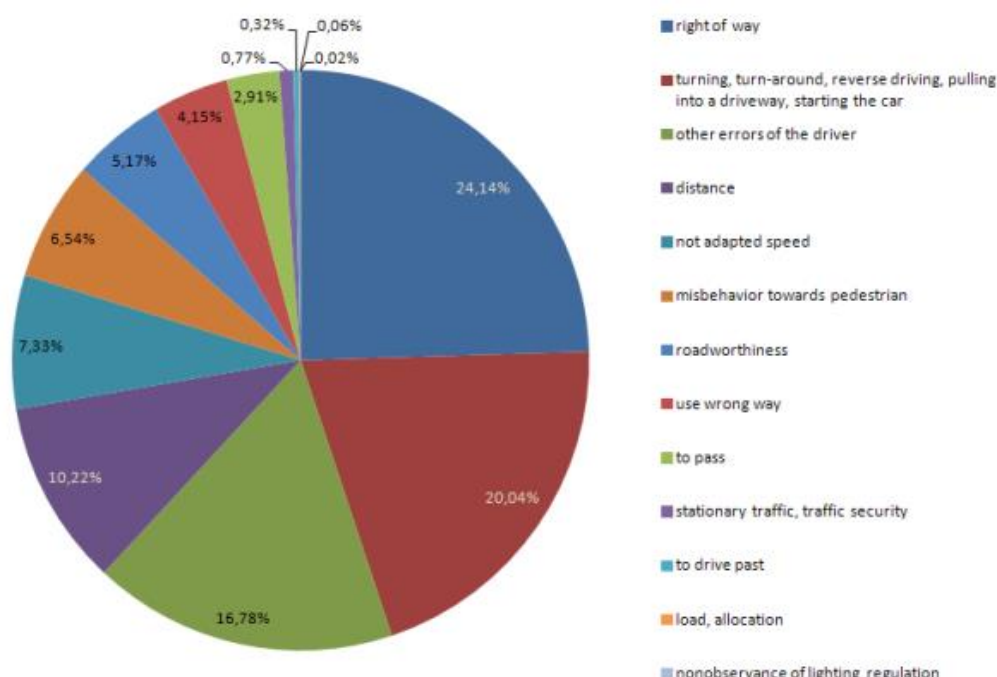
The GOAL project identified the causes of accidents with physical injury for age group 75 and older as seen in Figure 3-24. It can be seen that the use of the wrong way, together with other driving errors account for almost 37% of the cases.

Moreover, European accident data shows that older car occupants, pedestrians and cyclists have significantly higher risks of severe and fatal injuries. Male elderly citizens seem to be specifically at risk when it comes to cycling accidents, while women have an increased risk as pedestrians (Wisch et al. 2017).



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**Figure 3-24: Causes of traffic accidents with physical injury for age group 75 and older**



Source: García et al. 2012

Considering the potential impacts of injuries for older people, safety is a serious concern for this age group. The likelihood of an increased recovery period and of a greater psychological impact than a younger person in a similar incident play a significant role in this perception. These may be the reasons behind why older people worry about their safety and are reluctant to take public transport or bikes, for example, together with the fear of crime, or falling over and becoming injured (Shrestha et al. 2017). On the other hand, slow journey times might not be seen as a barrier for older people, when compared with other segments of the population (Transport for London 2014).

Besides the safety related issues, **high levels of car ownership can hinder the transition to other means of transportation that could somewhat compensate for increasing cognitive problems and physical impairments**. In fact, some elderly people who have previously relied mostly on their car can find it very challenging to transition from driving to using public transport (Shrestha et al. 2017).

The reluctance that some older people may show in using public transport may be related with their health, but also because of difficulties raised by the system itself. In fact, those who used public transport their entire lives are usually more prone to use different transport alternatives. On the contrary, those who mostly relied on their own car as their main transport mode tend to see public transport as complicated and inconvenient, mostly due to the lack of previous experience (Adler and Rottunda 2006).

### 3.2.2.4 Multiple socio-economic disadvantages

Elderly people have more critical socio-economic characteristics than the younger generations, owing to their position in the labour market and health-wellness conditions.

**Household income** can be strongly influenced by retirement (which in many cases represent a lower net monthly income), loss of a spouse, or illness, just to name a few.

The percentage of older people living alone in the EU (32,1% in EU-28) highlights some of the increased susceptibility of this segment, as it will represent not only lower incomes, but a potential drive for isolation (Eurostat 2015f). Although strongly related with geographical conditions, the percentage of older people living alone (32,1% in EU-28) can represent a strong disadvantage for this segment's mobility (Eurostat 2015f).

The **risk of poverty** among elderly people is associated with decreased mobility and to restrictions on access to transport. These older citizens will make significantly fewer trips and cover less distance daily than people with higher incomes. For example, for disadvantaged older women in low-status residential areas, trips will mostly concern the local residential environment (Giesel and Köhler 2015).

Hence, affordability is also a relevant topic for many elderly people, especially for those with less available income in retirement. In a context of more limited resources, the cost of travelling will become a major barrier for many old people to travel as often as they would like. In extreme cases, the cost of transport can represent a barrier to access basic and necessary services (hospitals, supermarkets, pharmacies, etc.) (Shrestha et al. 2017). For older people in such situations, who usually will have more time and less money, travel costs become more important, leading to the choice of cheaper alternatives that require longer travel times.

**Impairments** also are associated with declines in mobility. Despite the increasing life expectancy, this does not necessarily represent an extended quality of life, especially in light of the increasing prevalence of stressors such as smoking, diabetes, obesity and low levels of exercise. These conditions can significantly increase the need for allocation of a greater share of household spending to rising healthcare costs, contributing to a reduction in discretionary household income and dwindling wealth accumulation.

### 3.2.3 People with reduced mobility

#### 3.2.3.1 Relevance: quantitative assessment and characteristics

Disabled person or person with reduced mobility includes any given person whose mobility is reduced because of physical disabilities (sensory or affecting mobility, being permanent or temporary), intellectual impairment, or any other cause of disability, or age, who requires appropriate and specific attention as well as an adaptation of the transport service made available to all passengers and all their particular needs.

The definitions that tend to be applied for statistical purposes depend mostly on the number of questions that can be asked about issues such as impairments, limitations or barriers to participation. Table 3-6 details the differences of data sources for EU statistics when addressing the disability subject.

**Table 3-6: Overview of data sources for EU statistics on disability**

	European health and social integration survey (EHSIS)	European health interview survey (EHIS)	Statistics on income and living conditions (SILC)	Ad hoc module on employment of disabled people in the labour force survey (LFS)
Main topics covered	Disability as defined by the UN Convention	Health status, health determinants and health care use	Income, social inclusion and living conditions	Employment of disabled people
Legal basis	No	Yes	Yes	Yes
Periodicity	Once (2012)	5-yearly	Annual	Irregular (2002 and 2011)
Limitations in usual activities caused by a health problem	Yes	Yes	Yes	
Difficulties in carrying out basic activities	Yes	Yes		Yes
Difficulties in performing personal care activities	Yes	Yes (persons aged 65+)		
Difficulties in performing household care activities	Yes	Yes (persons aged 65+)		
Participation restriction linked to a health condition and/ or a basic activity difficulty	Yes			
Limitation in work caused by health problems and/ or difficulties in basic activities	Yes			Yes

Source: Eurostat 2018c

Despite the existence of a significant number of questions related to impairments, limitations and barriers to participation<sup>22</sup> we can easily perceive in Table 3-7 the distribution of all EU citizens (aged 15 and over) that have a disability, by categories of life areas in which this disability is source of constrain and by European country.

In 2012, 70.0 million people reported disabilities (aged 15 and over) in the EU-27. This number does not mean that all these persons have mobility problems. Also, in 2012, around 44.5 million people reported some sort of difficulty in conducting basic activities (including mobility) in the EU. In the same year, 52.9% (37.03 million) and 31.7% (22.19 million) of the total EU population (aged 15 and over) reported a disability in mobility and transport life areas, respectively) (Eurostat 2018c).

<sup>22</sup> When the question relates to a person conducting basic activities it can mean that we are referring to different types of barriers for any given person that reports a disability. It is possible that the same person can, eventually, experience obstacles or barriers in several different types simultaneously.

**Table 3-7: Share of disabled persons aged 15 and over reporting a disability in the specified life areas, 2012 (as a % of persons reporting a disability in at least one area)**

	Life areas									
	Mobility	Transport	Accessing buildings	Education and training	Employment	Using the internet (*)	Social contact (*)	Leisure pursuits	Paying for the essential things in life	Perceived discrimination
EU-27	52.9	31.7	37.0	25.6	38.6	4.6	2.0	60.9	22.7	19.8
Belgium	46.4	24.5	31.2	27.9	44.3	3.3	:	64.1	11.1	23.3
Bulgaria	44.6	34.7	33.2	9.8	26.6	2.0	2.4	35.2	76.4	9.6
Czech Republic	58.1	39.7	40.5	13.9	35.1	2.1	2.4	67.4	34.4	18.5
Denmark	51.0	22.1	33.7	33.6	51.5	7.6	2.8	67.6	11.9	24.3
Germany	50.4	20.8	33.4	31.6	37.9	4.2	1.1	66.0	10.1	20.3
Estonia	56.6	27.1	28.9	14.7	24.7	2.5	:	55.0	44.2	11.4
Ireland	:	:	:	:	:	:	:	:	:	:
Greece	61.2	39.5	40.9	7.7	18.4	:	:	48.1	52.9	9.7
Spain	58.5	34.0	34.9	22.3	40.8	9.1	1.7	69.0	8.7	16.5
France	44.6	29.2	31.5	35.0	35.3	5.6	2.0	66.4	10.5	23.0
Croatia	:	:	:	:	:	:	:	:	:	:
Italy	66.2	51.4	42.7	12.3	20.1	1.7	2.3	54.4	35.2	12.1
Cyprus	49.6	39.2	32.6	19.6	33.3	3.9	:	52.2	35.6	15.1
Latvia	46.7	30.3	24.6	15.1	41.2	2.4	4.1	47.2	51.3	9.8
Lithuania	47.1	32.7	34.3	19.5	42.3	4.2	2.5	48.2	39.4	12.9
Luxembourg	40.7	15.1	26.4	26.9	34.0	5.1	:	63.8	:	23.4
Hungary	60.8	44.6	44.7	16.6	42.4	2.6	:	47.5	54.8	17.5
Malta (*)	48.7	30.4	34.4	16.6	6.7	:	:	43.0	43.5	9.0
Netherlands	36.2	22.3	25.3	25.7	47.1	2.5	2.1	62.7	12.2	21.4
Austria	39.9	20.1	27.7	21.0	36.2	2.0	:	55.4	12.2	14.8
Poland	51.0	35.8	38.5	28.5	43.5	2.6	:	48.9	37.2	17.3
Portugal	47.7	33.5	35.6	13.4	38.0	:	:	42.4	36.3	11.3
Romania	66.1	42.3	51.4	15.3	31.7	1.6	4.3	47.2	65.0	13.4
Slovenia	51.5	33.4	41.0	22.5	23.5	:	4.6	60.9	24.1	13.1
Slovakia	42.5	20.5	27.8	21.0	21.5	2.2	:	55.5	34.5	15.7
Finland	40.3	13.3	25.3	19.5	44.6	4.0	:	64.5	11.0	18.6
Sweden (*)	26.6	15.9	18.5	20.5	46.7	4.3	2.1	67.2	5.1	24.9
United Kingdom	55.7	31.4	45.1	35.7	54.6	9.4	3.6	70.3	10.9	33.3
Iceland	32.1	15.0	14.5	19.6	40.7	:	:	55.1	16.9	27.7
Norway (*)	44.4	15.6	27.0	37.0	66.0	7.2	2.8	65.1	4.9	27.0

(\*) Data with low reliability for most Member States and non-member countries.

(\*) Barriers to employment and barriers of perceived discrimination: low reliability.

(\*) Barriers to paying for the essential things in life: low reliability.

Source: Eurostat (online data code: hlth\_dsi090)

Source: Eurostat 2018c

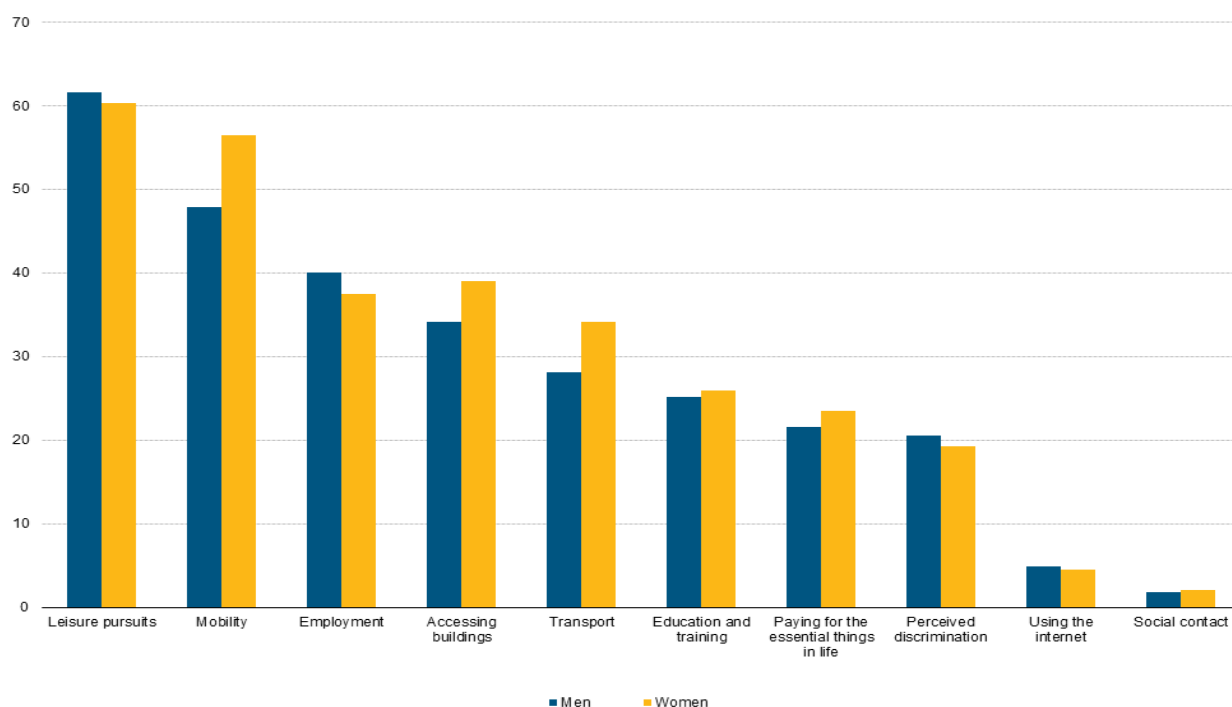
It is in two life areas where more than half of all people with disabilities (in the EU-27) reported that their disability was the cause of their restriction on participation: leisure pursuits (in other words, hobbies or interests that involve spending time with other people); and mobility (defined here as the ability to leave one's own home).

Table 3-7 testifies these arguments in all the EU Member States and also cover other aspects like persons reporting a disability in education and training or in social contacts, for example. It is worth mentioning that women reported higher levels of disability regarding mobility (54% in women vs. 48% in men) and regarding transport (33% in women vs. 28% in men) alike.

Analysing all the barriers to participation that people with disabilities face recalls some of the demographic categories where we can find higher or lower prevalence of disability. So, this prevalence of disability was: higher for women (19.9 %) than for men (15.1 %) (Eurostat 2018c) as it is evident with Figure 3-25. Disabled women seemed more likely than disabled men to report barriers to mobility, transport and to the accessibility of buildings.

The prevalence of disability was also much higher for people aged 65 and over (35.6 %) than for those aged 45–54 (18.8 %) or aged 15–44 (8.5 %), as we can testify with Figure 3-26.

**Figure 3-25: Share of disabled persons aged 15 and over reporting a disability in the specified life areas, by sex, EU-27, 2012 (estimates) (as a % of persons reporting a disability in at least one area)**



(\*) Estimates.

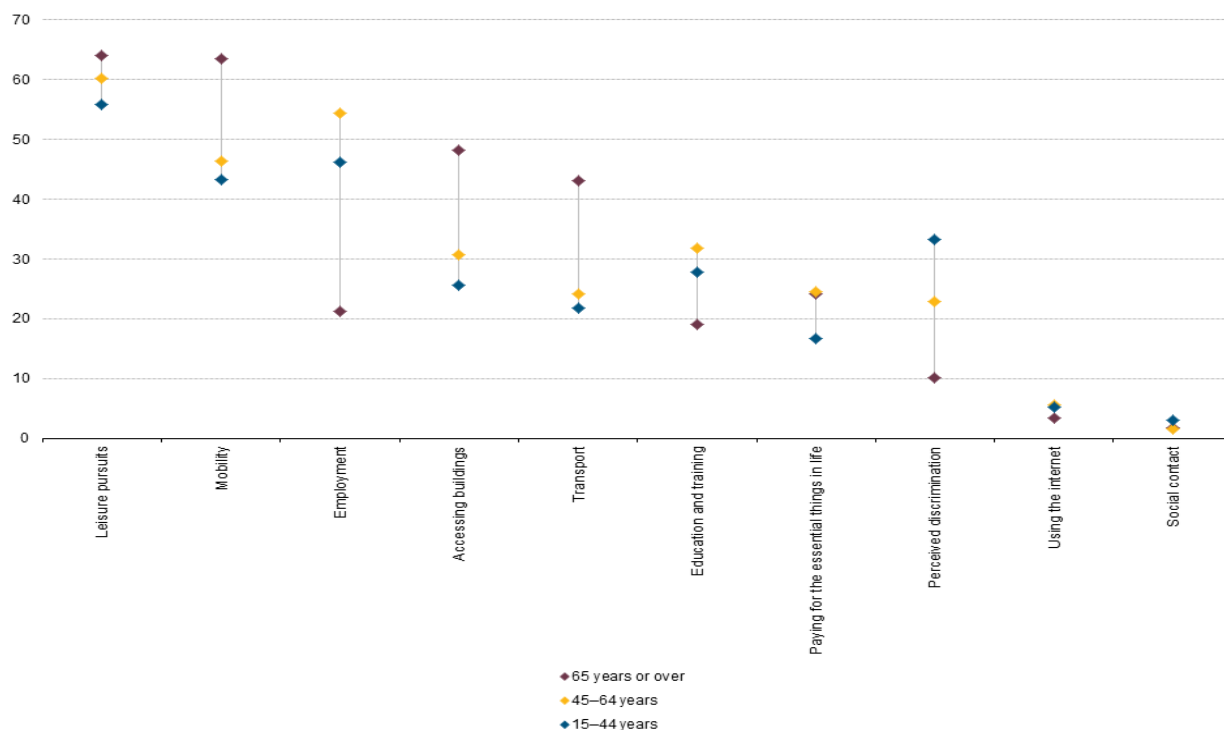
Source: Eurostat (online data code: hlth\_dsi090)

Source: Eurostat 2018c

From the following Figure 3-26 we can conclude that employment is one of the many fields where persons reported disabilities. We can extract that less than 1 person out of 2 with basic activity difficulties is in fact employed.



**Figure 3-26: Share of disabled persons aged 15 and over reporting a disability in the specified life areas by age, EU-27, 2012 (as a % of persons reporting a disability in at least one area)**



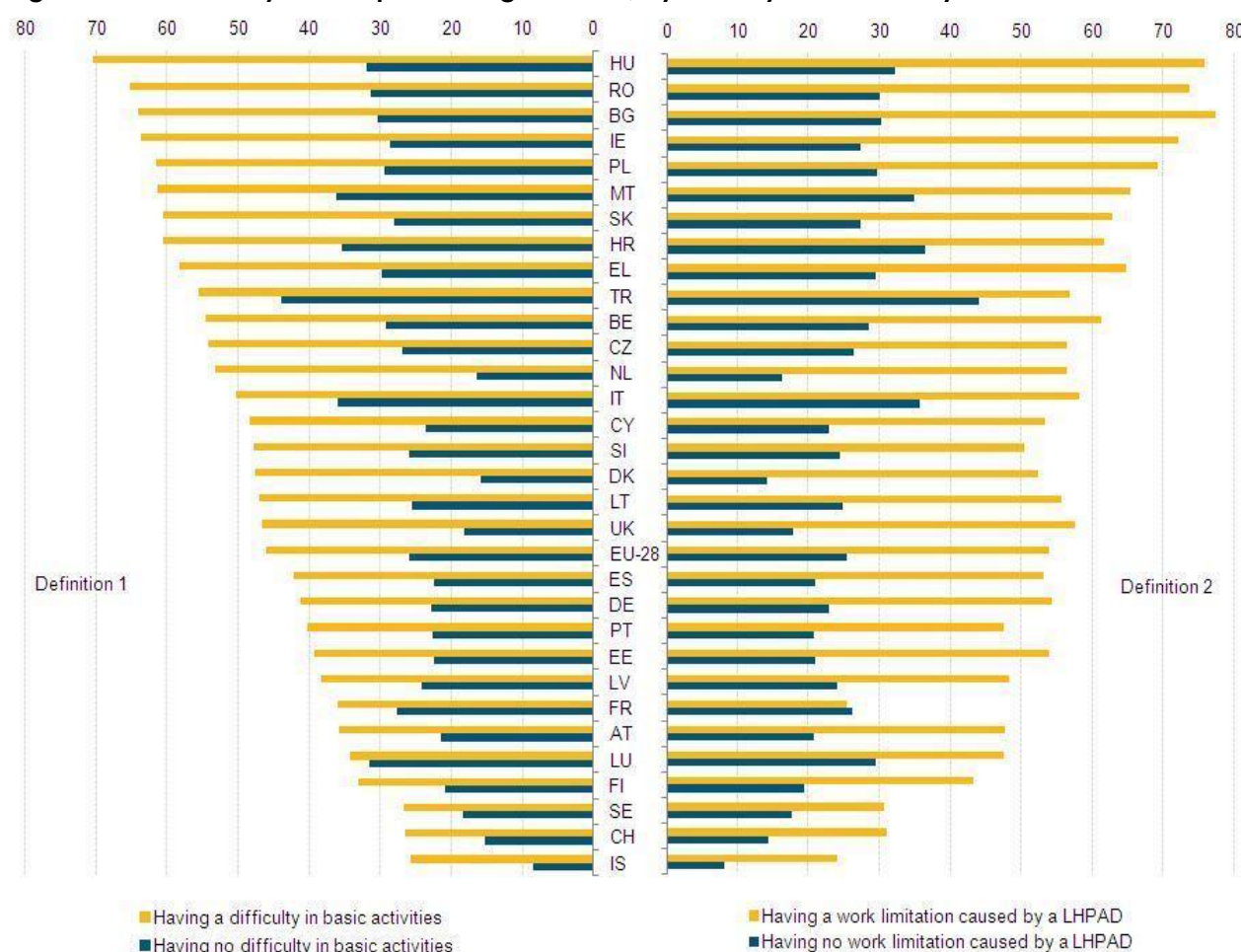
(\*) Estimates.

Source: Eurostat (online data code: hlth\_dsi090)

Source: Eurostat 2018c

Figure 3-27 shows the inactivity rate of persons (aged 15-64) by each country, in the EU-28, proving how difficulties can affect such a big number of individuals in their demand for employment. We can find a difference of over 40 percentage points between people with and without work limitations in some countries (United Kingdom, Ireland, Romania, the Netherlands, Hungary and Bulgaria). At the other end of the scale, France has reported the lowest difference of around 8 percentage points (Eurostat 2014).

**Figure 3-27: Inactivity rate of persons aged 15-64, by country and disability definition**



Source: Eurostat 2014

### 3.2.3.2 Transport related characteristics

A bulk of research about transport behaviour of disabled people is available.

In a highly dense and urbanized context, for example, the public authority Transport for London (Transport for London 2014) has realized that whilst disabled people have fundamentally a similar modal share of non-disabled Londoners, the frequency of using transport is much lower among disabled persons: 1.97 journeys per weekday among disabled Londoners vs. 2.77 for non-disabled Londoners. "Public transport types are also less commonly used by disabled Londoners than non-disabled Londoners, 60 per cent of disabled Londoners have used any public transport (excluding walking) in the last year compared with 73 per cent of nondisabled" (Transport for London 2014, p. 196).

Accessibility related barriers top-rank the main obstacles that Londoner disabled persons encounter whilst using public transport. Results therefore show that disabled people are constraint from using transport with the same frequency than others and the reasons should be grounded on the physical barriers that they must tackle. Such transportation obstacles allow disabled people even fewer opportunities to interact with their

communities, thus enhancing social exclusion in what can be regarded as a vicious cycle which is intensified in the presence of combined social layer groups (e.g. elderly people with disability).

Transport issues for disabled people can be understood as:

- the inaccessibility of public transport, where provision often fails to meet the diverse needs of young wheelchair users (transport disability);
- the importance of emotion in experiences of transport, and the anxieties produced by inaccessible transport;
- the centrality of private forms of transport in accessing leisure (mobility dependency) (Pyer and Tucker 2014, p. 38).

It is possible to assume that people with reduced mobility have special needs because of their physical or psychological limitations, but they have similar needs as non-disabled persons as well.

A recent research, carried out in 2014 by Birgitta Thorslund about the mobility behavior among people with one of the most frequent sensory deficits in humans, hearing loss, shows that “a higher degree of hearing loss was associated with less likelihood of having a driver’s license. However, individuals with hearing loss who had a driver’s license, drove as much as normal hearing drivers” (Thorslund 2014, p. 28). From this study, it was concluded that hearing loss is associated with higher use of private transport, being the car perceived as a “compensational tool for functional limitations” (Thorslund 2014, p. 55). However, it has no effect on the distribution of how much each type of transportation was used.

In contrast, Canadian-based data show a dissimilar trend. To this respect, a study shows that disabled Canadians travel considerably less and over shorter distances and have less access to key services than the average Canadian population (Paez et al. 2009). Karen Lucas, referring to the Canadian study, therefore argues that disability impacts very negatively on the well-being of disabled persons, reflected in the fact that they perform less trips than the non-disabled population. Their social lives are therefore hindered by limited access to transportation (Lucas 2012, p. 107).

American researcher Bascom (Bascom 2017) examined how individuals with disabilities are meeting their transportation needs. He hypothesized (and effectively concluded) that individuals with disabilities who have stronger and wider social networks are more likely to rideshare and have access to other forms of transportation assistance than those who have weaker social networks, which will be much more likely to rely on public transportation. This is a concrete reflection of the widely popular sociological network theory of the interpersonal ties, developed mostly by American sociologist in the 1970s.

All in all, despite the conclusion that **disabled people travel less than non-disabled even if they have similar needs** (Bascom 2017; Transport for London 2014), it seems reasonable to assume by looking to previously mentioned dissimilar trends captured by several studies that **there is no general agreement nor clear understanding about most disabled population mobility habits**. People with disability are a very heterogeneous group that can hold several different types of impairments which inhibits differently their travel options and consequently personal quality of life and independence. As such, this group is an indication of how contextual and relational transport poverty actually is.

### 3.2.3.3 Transport related disadvantages

Several scholars have related spatial and social inequalities in access to transport for particular social groups (Kenyon et al. 2002; Preston and Rajé 2007). There is now a wide recognition on the importance of an issue such as access to transport and the impact that it can have on the quality of life and independence of people with disabilities, as they have specific mobility problems.

The characterisation of the transport disadvantages in this segment is of particular difficulty, due to the wide diversity of disabilities or impairments. What follows is a brief identification of the key transport disadvantages per type of disabilities (European Parliament and the Council of the European Union 2006):

1. **reduced vision** (vision impaired) – key challenges include: situational awareness, wayfinding in terminals, acquisition of tickets, or understanding any visual-based information.
2. **reduced hearing** (hard of hearing) – key challenges include: understanding any sound-based information, which is of particular relevance in emergency situations, or even to detect any risky case.
3. **reduced movement** (mobility impaired) – key challenges are linked with the need to overcome different heights (e.g. different levels of the terminal, entering or exiting vehicles), or to overcome gaps (e.g. between terminal quay and vehicle).
4. **environmentally challenged** (allergic) – key challenges are related with high-than-average concentration of pollutants in or around vehicles and terminals. People with health conditions can be particularly affected in these areas.
5. **psychologically/mentally cognitively challenged** – a key challenge is related with the ability of the person to understand how to use the transport system, including knowing what ticket to buy, wayfinding in the terminal, or situation awareness.

People with reduced mobility are apparent less likely to benefit from access to standard means of transport if they are not designed from the start into taking their needs into account. Hence, **persons with a disability tend to rely on private transport to access services and for day-to-day activities** such as shopping and participating in social activities. In fact, the single most frequently used mode of transport by people with reduced mobility is the car as passenger (DPTAC 2001).

Arguably, in order to realize many opportunities for disabled people to participate fully in society, it is common for them to **depend on the support of relatives that chauffeur them by private transport or accompany them in public transport**.

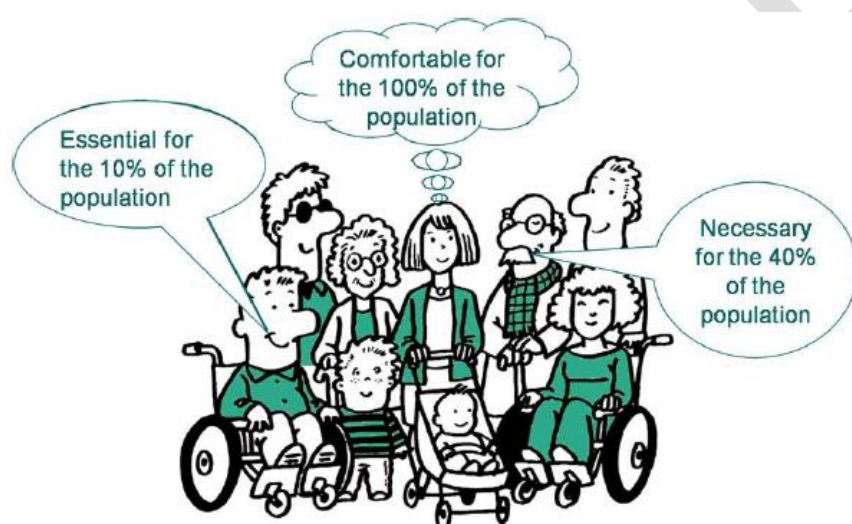
Pyer and Tucker (2014) conducted an ethnographic investigation focused on teenagers in wheelchairs. They concluded that the main symptom of transport poverty that affects this group results from the inaccessibility to public transport vehicles, which seems to be an additional reason for the application of the concept of “forced car ownership”. This trend is consistent with data from the UK Department for Transport, mentioned by these authors, which point out that car ownership among the household of disabled people is well above the national average for families with dependent children.

Even though not representative of each single type of impairment, the main conclusion that comes up from this investigation is therefore that “the availability of private cars enabled access to a range of leisure spaces which would otherwise have been closed-down to many if they had been solely reliant on public transport” (Pyer and Tucker 2014, p. 48).

The findings of Pyer and Tucker (2014) about the main source of exclusion are perfectly aligned with the ones from the Directorate-General for Internal Policies (Samek Lodovici and Torchio 2015), which highlight physical barriers and most notably public transport vehicle design as the main issue for exclusion of people with reduced mobility.

It is important to keep in mind that enhancements required for the benefit of disable persons favour also those who do not suffer from any transport impairment. Buses featuring low-floor or low-entry were meant to provide an easy access for wheelchairs but have a positive indirect effect on the boarding and alighting time of all public transport users. The gist of accessible environments is creatively captured by the following image.

**Figure 3-28: Accessibility for all**



Source: Rebstock 2017, p. 6

To converge transport infrastructures with social inclusion layouts and policies is even more significant if one assumes that the number of citizens with disabilities and/or functional limitations is likely to increase expressively with the ageing of the European Union's population.

Noteworthy is one of the very few researches about the relationship between disability and internet usage. One is referring here to a recent investigation conducted in Poland (Duplaga 2017), where the author found statistical evidence of the extent to which disable people lag behind online activities.

Despite the factors determining the use of the Internet amongst disabled people are similar to those of the general population (e.g. place of residence, level of education, occupational status, net income, etc.) **people with disabilities face a significant digital divide.**



### **3.2.3.4 Multiple socio-economic disadvantages**

In the European statistics on income and living conditions (also known as EU-SILC<sup>23</sup>), disability is narrowed according to the concept of a global activity limitation, which is defined in it as a "limitation in activities people usually do because of health problems for at least the past six months" (Eurostat 2018c).

In 2013, according to the indicator "at risk of poverty or social exclusion" (AROPE), about 30 % of the population aged 16 or more in the EU-28 and having an activity limitation was at risk of poverty or social exclusion, compared with 22 % of those with no limitation. Similar results were obtained for the at-risk-of-poverty rate (19 % vs. 15 %), severe material deprivation rate (13 % vs. 8 %) and the share of individuals aged less than 60 and living in households with very low work intensity (24 % vs. 8 %).

It is important to note that significant differences across Member States are visible, yet in all of them people without activity limitation are on average less exposed to the risk of poverty and social exclusion than those with some activity limitation (Eurostat 2015b).

People with activity limitation have to rely heavily on social transfers. At the EU-28 level, 68% population aged 16 and more and with some sort of disability would have been at risk of poverty if social transfers (e.g., social benefits, allowances and pensions) had not taken place. On the other hand, 31 % of the population with no activity limitation would have been at risk of poverty.

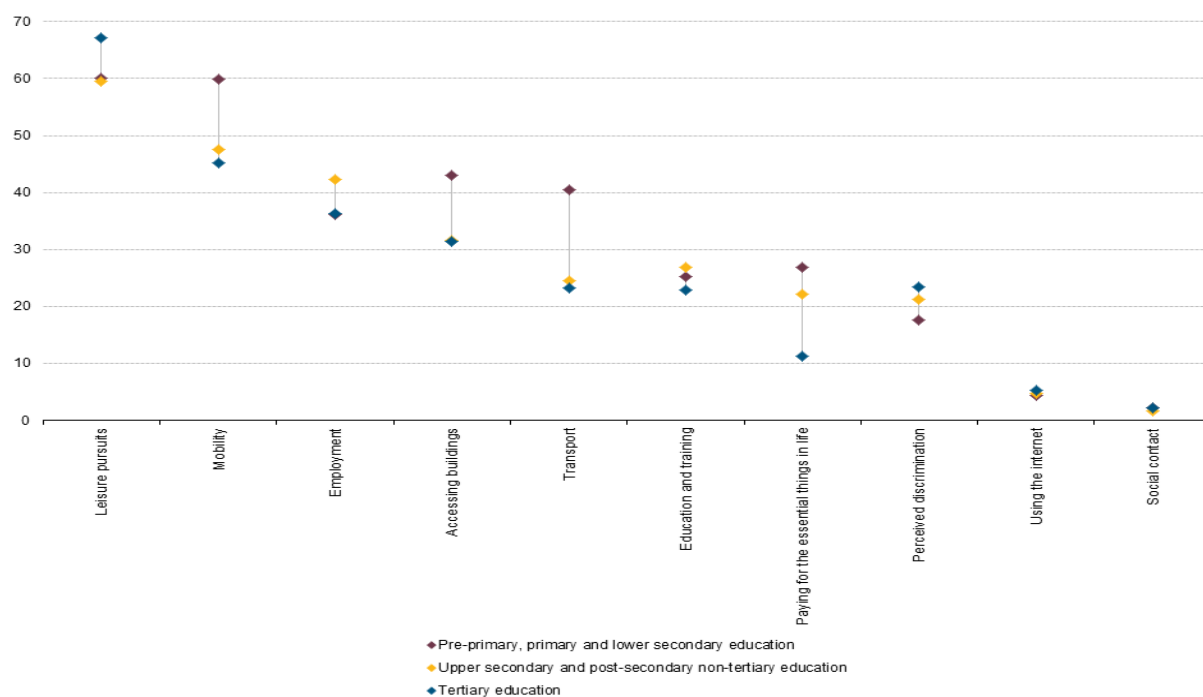
Another piece of relevant statistics is reported in Figure 3-29. People with disabilities and having completed a tertiary education were less likely to report a disability for mobility than other people with disabilities with lower levels of education. Less than 1 person out of 2 with basic activity difficulties was employed. The employment rate of people with basic activity difficulties in the EU-28 in 2011 was around 47.3%.

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<sup>23</sup> EU-SILC consists on a multi-purpose instrument which has its focus mainly on income, with detailed data being collected on income components, mostly on personal income. This detailed data collection will also retrieve data information on social exclusion, housing conditions, labour, education and health information.



**Figure 3-29: Share of disabled persons aged 15 and over with a disability in the specified life areas, by educational attainment, EU-27, 2012 (as % of persons reporting a disability in at least one area)**



(\*) Estimates.

Source: Eurostat (online data code: hlth\_dsi100)

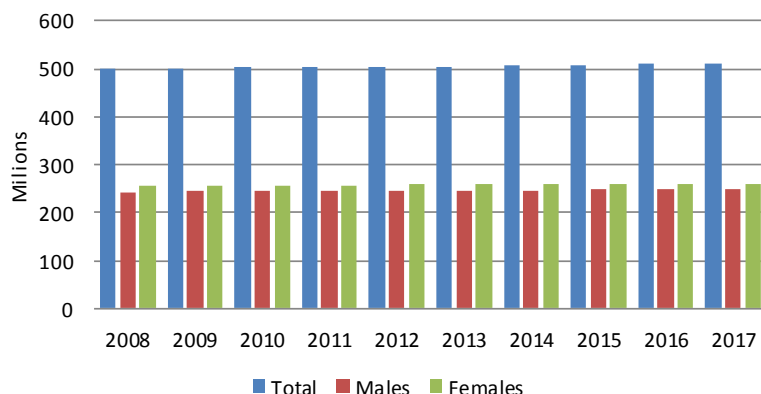
Source: Eurostat 2018c

## 3.2.4 Women and gender-related aspects

### 3.2.4.1 Relevance: quantitative assessment and characteristics

Feminine population in Europe (2017) is in total 261 million, i.e. 51.1% of the total EU population, with a negligible variation in the last decade (2008-2017).

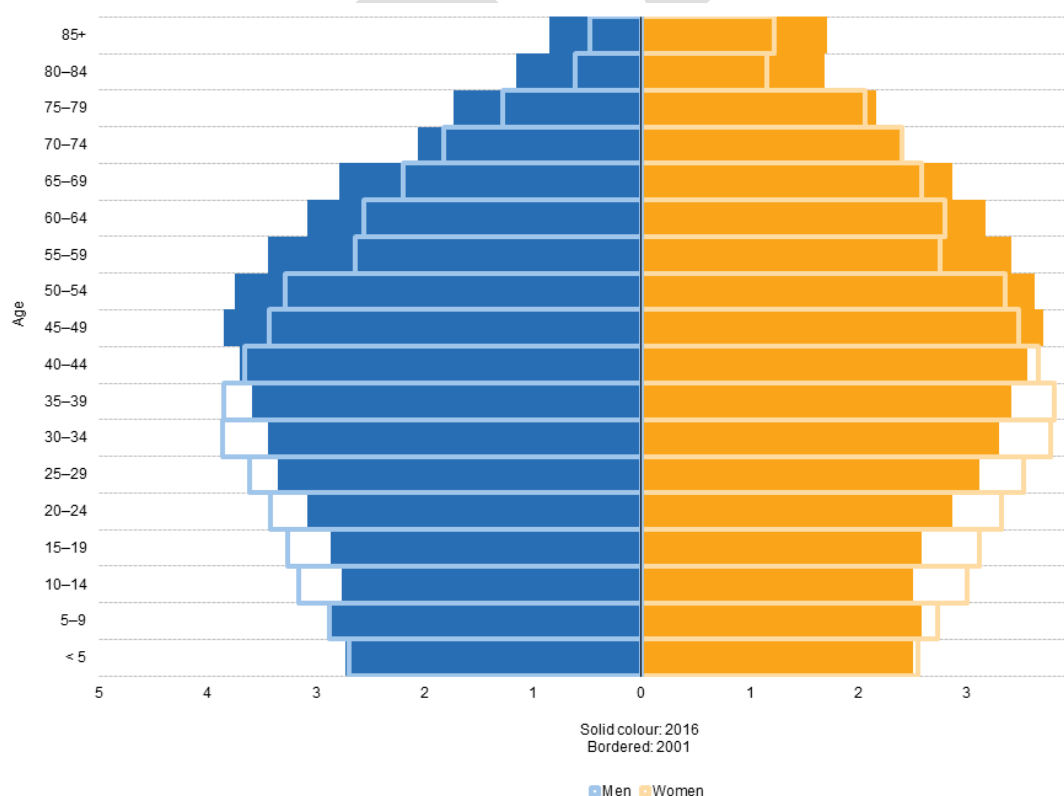
**Figure 3-30: EU Population by gender, 2008-2017**



Source: Eurostat 2018b

Figure 3-31 shows the relative gender balance in each generation, based on Eurostat data (Pickup et al. 2015).

**Figure 3-31: Population gender balance by age class (2015)**



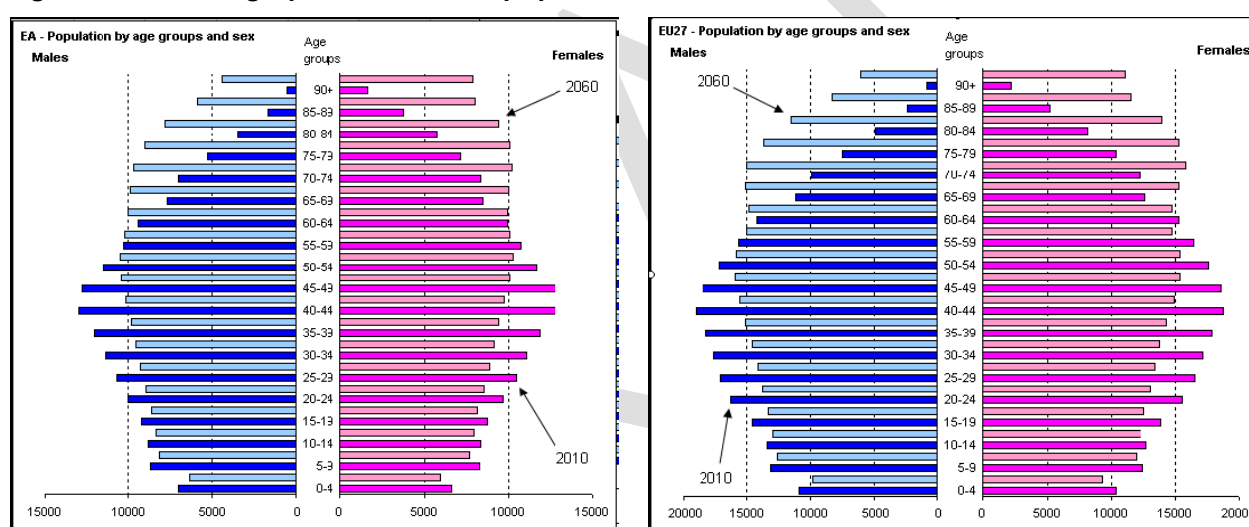
Source: Pickup et al. 2015

In the European countries population ageing is particularly relevant, with important implications on gender differences. The main trends are:

- the rate of EU population growth is the lowest among the major regions in the world. As can be seen from Figure 3-32, the demographic structure of population will be completely redrawn by 2060, especially for women;
- low fertility levels and extended longevity are the causes of the ageing of the EU population, which will become dramatic when the baby boomers will reach retirement age in the next few years. Demographic ageing is especially evident in the predominantly rural regions of some Member States, notably Portugal, Spain, Greece, Italy, Germany and France, where the proportion of people over 65 is particularly high.

These trends have important repercussions on gender differences, given that women account for the majority of elderly people. The higher life expectancy at birth for girls relative to boys<sup>24</sup> in all European countries also implies that an increasing number of old women will be living alone, with great mobility problems and difficulties in accessing services.

**Figure 3-32: Demographic structure of population in 2010 and 2060, EU-27**



Source: European Commission 2011

### 3.2.4.2 Transport related characteristics

**Major differences in the basic mobility needs of women and men are grounded in the different social roles they play and in the gender-based division of labour within the family and the community.**

<sup>24</sup> The gender gap has been narrowing in recent years, its breadth differing across countries. The decrease in the gender gap is caused both by a slowing down in the increase in women's life expectancy and a greater increase in men's one.

Women spend more than two thirds of their time at home. The greatest difference is among women and men aged 25 to 64, when men are more active in the labour force. On the contrary, men spend more time at the workplace than women.

Women usually have less free time than men, being engaged in childcare, domestic work and caring for elderly, sick or disabled relatives, and are therefore more likely to work part-time, to take on jobs nearer or better connected to home (even if low-paid), or to decide not to work at all.

From the analysis of the literature, gender differences in terms of travel frequency, time, mode and purpose emerged (Hasson and Polevoy 2011; Schwanen 2011; Samek Lodovici et al. 2012; Hodgson 2012; CIVITAS 2014). Indeed, studies have repeatedly shown that women with respect to men tend to:

- have shorter commutes;
- have a shorter distribution of travels during the day, less concentrated during peak hours (morning and evening);
- transform chain trips into complex tours to conduct household-serving trips more often;
- make less use of the car and more of public transportation.

### Women trip chaining in England

Evidence of this phenomenon comes from the 2014 National Travel Survey publication by the Department for Transport in UK. According to its results, in the observed period (2002-2014), **gender differences have been registered in the proportion of people that combine travelling to work with trips for other purposes.**

In fact, women are more likely than men to combine other purposes on their way to work: during the morning peak, 93% of men go direct from home to work, compared with 86% of women. Women are more likely than men to go to work via school (7%), escorting others (5%) or other purposes (2%).

Furthermore, during the morning peak period, women who work part time are less likely to travel to work directly than either women that work full time or men of either working status. 26% of women working part time do 'trip chains' which involve more than one link.

However, changes in socio-cultural attitudes among younger generations and changing ability to acquire mobility resources over the life course may be important. A recent study (Kimbrough 2016) shows that whilst younger adults (aged under 30) still have lower mobility compared to other age groups, younger men have much lower mobility, so that women of similar age are now travelling much further.

Sources: Department for Transport 2014; Tilley and Houston 2016

### Commuting behaviour

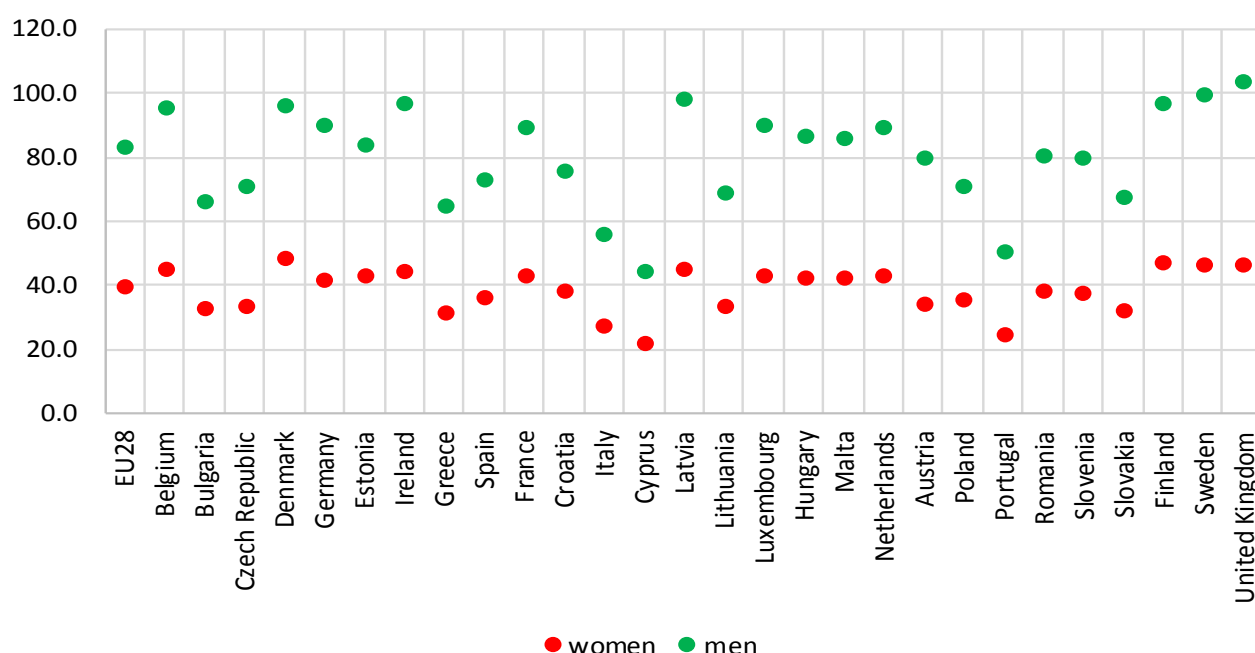
Commuting plays an integral role in both labour force participation and the allocation of time to other activities. The gender gap in the labour force persists despite major changes to women's labour market opportunities and families' structure (Kimbrough 2016).

Women on average commute shorter in both distance and time than men due to lower incomes, available modes of transport, occupation status, location choice, socioeconomic factors, geographical structure and infrastructure availability<sup>25</sup>.

In general, women face greater time-space constraint in commuting: according to Eurostat data, in 2015 the share of male and female outbound commuters among all employed persons was systematically higher for men compared to women in each of the Member States for which data are available.

While on average women tend to travel less for work (and these differences tend to increase together with the gender disparities in the labour market participation), they travel more frequently for purposes of shopping, escorting family members and household management (CIVITAS 2014).

**Figure 3-33: Average duration of commuting time one-way between work and home by gender (15-64), 2015**



Source: Eurofound 2017

### Transport modes

The Eurobarometer survey (European Commission 2007, 2013a) provides an indication of the existence of gender differences in relation to the choice and utilization of different transport modes: a higher proportion of men travel by car and motorcycle than women, while women walk and use public transport and bicycles more than men.

<sup>25</sup> See Riaz Malik 2016 for an exhaustive list of contributions.

Men are more likely than women to use a **car** daily (57% vs. 42% at EU level) (European Commission 2013a). Moreover, women tend to travel in cars more frequently as passengers rather than as drivers (CIVITAS 2014). Women have less access to private cars and driving licenses than men for reasons of economic inequality and gender stereotypes.

"In the EU today, 55 % of car users are male, 66 % of non-car users are female" (Citizens Mobility 2018). However, results from the SARTRE 4 project (Sartre 4 2012) confirm that the number of women drivers has been growing between 2000 and 2010 with an increase of 3.5%. The biggest increase in female drivers was recorded in Estonia (27.4%), Greece (17.9%), Poland (11%) and Finland (10.6%) but there were also countries with a decrease, as Italy (-7.9%), Cyprus (-5.9%) and Belgium (-3.2%).

Su and Bell (2012) suggest that more recently older women's travel patterns have been changing, reducing differences between older men and women. For example, according to the 2009 UK National Household Travel Survey (Department for Transport 2009), the gap in car driving between older men and women of the same age is narrowing.

Some authors, as Basarić et al. (2016), stressed the fact that gender differences in socio-economic and demographic conditions (like labour market participation and care duties) are at the basis of women's lower ability to own and use a car.

There exist also differences in the patterns of car travel across gender. An English study (Department for Transport 2014) showed that annual mileage of males fell from 1995 to 2009 and has since then remained relatively flat. This is in contrast with the female trend: women increased their mileage up to 2006, before this also levelled off.

The different trends in distance travelled by car across gender and age groups is mirrored in changing car accessibility. Stokes (2012) found that for women access to a car is increasing almost universally across all age groups.

Finally, statistics show a divergent trend in road accidents between men and women with fewer women than men involved in fatalities even though the gender gap closes with increasing age (Sartre 4 2012).

Compared to men, a larger share of women's travel time is done on **foot or by bicycle** (Eurostat 2016d). Heesch et al. (2012) suggest to consider separately recreational and transport cycling when examining gender differences in cycling patterns, motivators and constraints to cycling:

"Gender differences in transport cycling in Australia and other car-dependent countries reflect in part the different transportation patterns, needs, and purposes of men and women. For example, issues of safety, comfort and accessibility to destinations appear to be more important to women's overall travel behavior than to men's. This may partly explain the low transport cycling rates for women, as studies have found that women are more likely than men to report safety concerns as constraining their transport cycling.

Gender differences may also be explained by the nature of a typical transport cycling journey in Australia. The average cycle commute trip length is high, 10 km in Queensland and 11-15 km in Melbourne, generally higher than seen in Europe. Such trips may appeal to the most motivated, fit and sporty recreational cyclists, as the commute to work becomes an opportunity to improve fitness;



however, the long distances may discourage other cyclists and women disproportionately so.

International data indicate that women are more likely than men to trip chain as part of their commute, given their responsibilities for transporting children and other household members and to do the household shopping. These tasks require different cycling equipment and cycling style to those which are common in countries such as Australia" (Heesch et al. 2012, p. 2).

There are large differences in the proportion of male or female **motorcycle riders**. Most women riders can be found in Southern countries and in urban context (Sartre 4 2012).

Women tend to spend more of their time on **public transport** (bus, train, tram and so on) compared to men. The results of a bus survey submitted to bus users in London show that in 2008 women (54%) are slightly more likely to use a London day bus than men (46%). Transport for London (2014) survey shows that Dial a Ride members are more likely to be women (74 per cent) and among members aged 65 and over, they account for more than 70 per cent of the total.

However, there are some needs which may affect female demand, resulting in gender-segregated public transport. For example, Duchène (2011) suggests that the design of transport facilities is very important as women often have children with them and stairs and turnstiles are difficult to use for somebody accompanied by children and carrying packages. Hence, access to buses and underground trains must be facilitated, by providing sufficiently wide doors and by avoiding steps.

Concerning the **sharing mobility**, data shows that regular users of the car sharing are predominantly well-educated, male young adults between ages 25 and 45 (Pickup et al. 2015). The same profile is offered by public bike-sharing scheme. In London and other twenty UK cities that in November 2016 offered a public bike sharing scheme, the typical profile of users is: white, male, employed and, compared to the average population, younger, wealthier, more educated and more likely to cycle independently of bike sharing (Chatterjee et al. 2018).

Finally, compared to men, women tend to be more environment-focused, as well as hold more positive views of speed limits and congestion fees, and initiatives geared towards the promotion of a more sustainable transport system (Basarić et al. 2016).

In general, the things women appreciate about a city go beyond simple aesthetics. Women highlight the importance of comfort and safety, but also sociability and the simple pleasures of everyday life in the city. Their negative sensory experiences are directly linked to real, urgent issues regarding infrastructure, as well as behaviours in the city.

Source: Womenability 2017

### 3.2.4.3 Transport related disadvantages

The limited access to and safety of transportation are estimated to be the greatest women's transport disadvantages.

The transport accessibility disadvantages are related to several aspects:

- The difference access to the private cars between man and women. Transport for London (2014) survey shows that women are less likely than men to have household access to a car. 37% of women do not have access to a car compared to 33% of

men. When available, it is usually the male partner which benefits from its use. At this regard, public transportation provides a cheaper alternative. Some authors, like Basarić et al. (2016), stress the fact that gender differences in socio-economic and demographic conditions (like labour market participation and care duties) are at the basis of women's lower ability to own and use a car.

- The "unadjusted" gender pay gap reducing the women participation to the labour market by 16.5% (International Labour Office 2017). This gender gap also determines the access to less attractive transport services that are aimed at the segments of the population with the lowest willingness to pay (Samek Lodovici and Torchio 2015).
- Women transport disadvantages are also linked to the physical access to the public transport services. Women often travel off-peak hours with a greater variety of destinations than men's. In this respect, traditional PT offer, with schedules concentrated on peak hours and on high demand links do not fit women's need.

As it comes to travel purposes, it is important to consider that escorting practices impose an additional burden on the household, and especially on women with care responsibilities. They are time consuming and entail the need to engage in synchronising, planning and coordinating with household members, with other households, with the temporal and spatial patterns of public transport availability as well as those of other facilities and services, such as schools, shops and care services.

It is important to take into account that the women modal choice depends not only from the conventional parameters to the modal choice (times, costs and comfort) but also to the conditions and safety of the journey.

Women consider safety when determining the access to the public space and transport mode. Security and sexual harassment are issues for most women and is not restricted to a single mode of transport. Women face inappropriate behaviours in many situations, be it when they walk, cycle or even take a taxi. Even when looking for the comfort of a crowd, women find themselves harassed in public transportation. All in all, only the car seems to offer a safe space to women (which is ironic, given that many female respondents expressed a desire to use their cars less) (Womenability 2017).

Another example is the fear of violence, which is likely to have a major influence on the travel patterns of many people, especially women, eventually curtailing mobility as well as influencing time and route of travel, but data on these gendered processes are not routinely collected in mobility studies.

In developed countries as well, failure to take account of women's safety sometimes prompts the latter to prefer private car use to public transport or limit their presence on public transport to certain hours and certain routes that are perceived as safe (Citizens Mobility 2018). A bus user survey conducted in London in 2008 showed that women are far less likely to take a night bus (35%) than they are to take a day bus (54%).

In relation to transport needs in old age, Buck (2005) found that the main concerns for older people are crime and accessibility. Particularly for women, the fear of violence and aggression means that they are less willing to travel after dark and to use public transport, preferring to use cars instead.

### 3.2.4.4 Multiple socio-economic disadvantages

According to many studies, gender differences in travel patterns are mainly accounted for by the division of roles in the labour market and in the family, as well as age and location (CIVITAS 2014). For women, public transportation plays a crucial role in empowerment, access to opportunities and independence (Samek Lodovici and Torchio 2015; World Economic Forum 2017).

Gender mobility patterns have been changing in recent years, reflecting the evolution of gender differences in socioeconomic and demographic conditions (CIVITAS 2014). On the other hand, the analysis of the socio-economic background together with projections and trends confirm that, though narrowing, the gap between genders is still evident and has effects on mobility patterns.

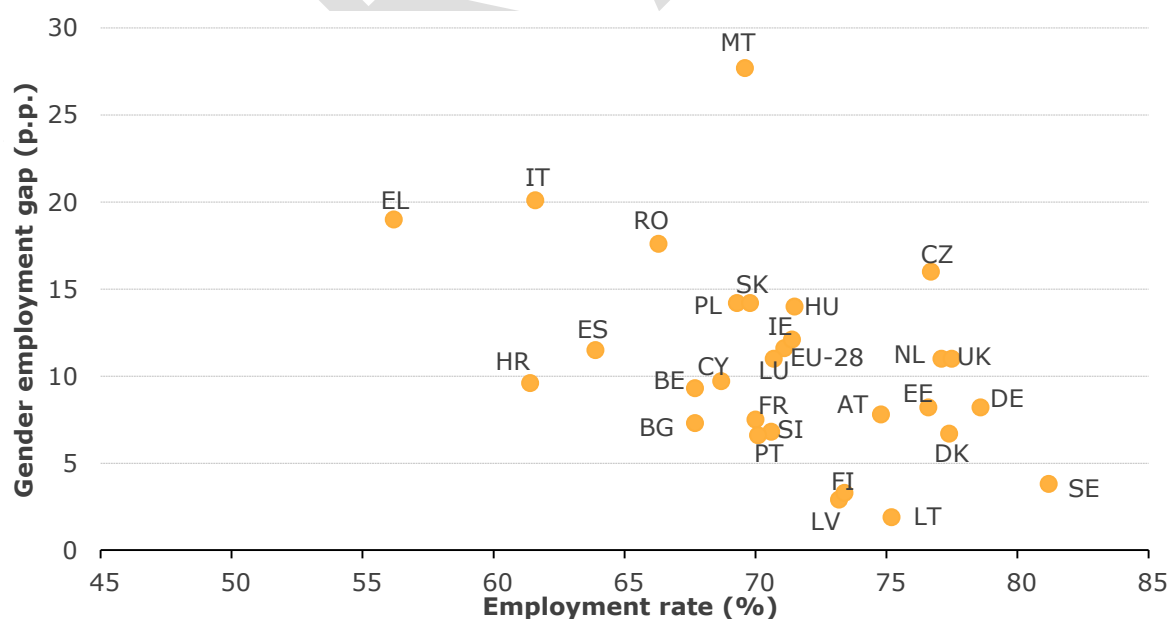
The main disadvantage in gender mobility is quite evident considering socio-economic and cultural factors and in particular the:

- Differences in participation in the labour market;
- Gender gap in employment;
- Activity in the labour status;
- Differences in caring duties and work life;
- Education level.

#### Differences in participation in the labour market

A first element to be considered is the employment and labour market participation. Women are less likely than men to participate in the labour force, and when they are active in the labour force they are more likely to be unemployed (International Labour Office 2017).

**Figure 3-34: Employment rate and gender employment gap per country, 2015**



Source: Eurostat 2018a

However, as more women entered the workforce and went from higher education to professional careers, it was widely assumed that aspects of women's and men's travel behaviour would converge (McGuckin and Nakamoto 2004).

The types of jobs held by women are more likely to be closer to home. While occupational segregation has declined over time, significant gender differences in employment by industry and occupation remain (Kimbrough 2016).

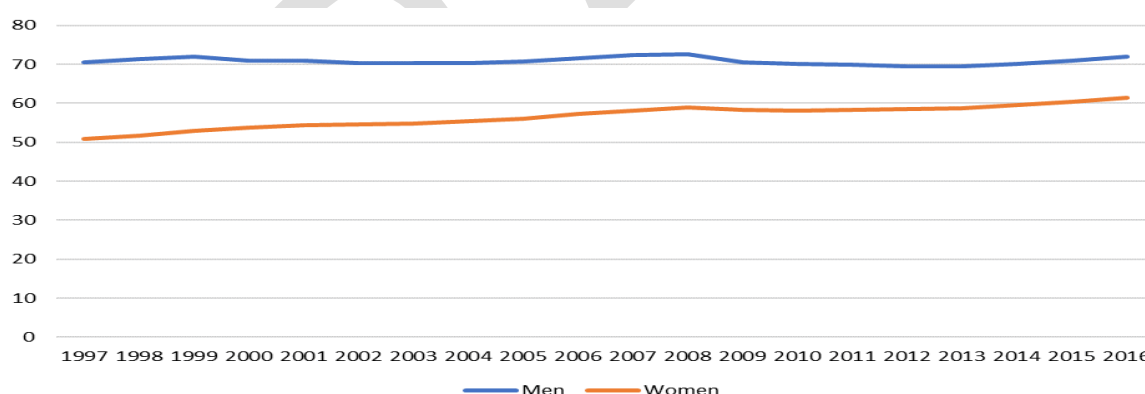
### Gender gap in employment

Although existing in all Europe, the gender gap in employment presents different patterns across European countries and years.

Considering the European average, data highlights that, particularly after the crisis (2008), the gender gap in employment in EU showed some convergence, though there is important variation among Member States. In 2016 the highest gap was recorded in Malta (25,6 p.p.), although it has considerably reduced since 2000) while the lowest in Lithuania (1,2 p.p.).

Indeed, in the late decades, the employment rate of men remained around 70%, while that of women increased from 50% to 60%. This is also the consequence of the recent global crisis, which had a different impact on the employment of men and women and it is reflected by a narrower gender gap.

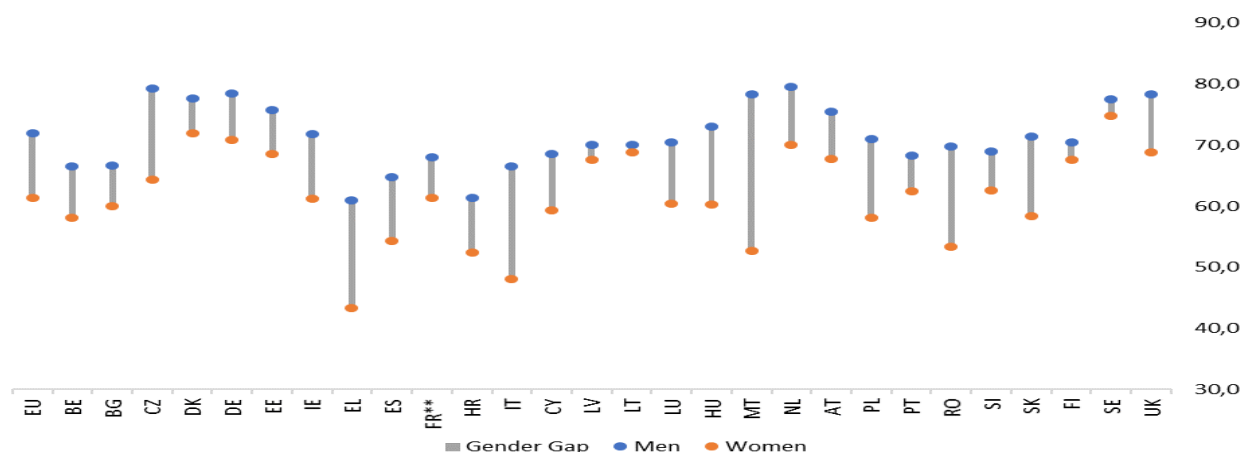
**Figure 3-35: Employment rate of men and women (15-64) at EU\* level, 1997-2016 (%)**



(\*) From 1997 to 1999 we consider EU15, for 2000 EU27 and from 2001 to 2016 EU28

Source: Eurostat 2018a

**Figure 3-36: Employment rate (15-64) and gender gap (men – women), Member States and EU28 level, 2016 (% and p.p.)**



Source: Eurostat 2018a

(\*\*) Data refer to "Metropolitan France".

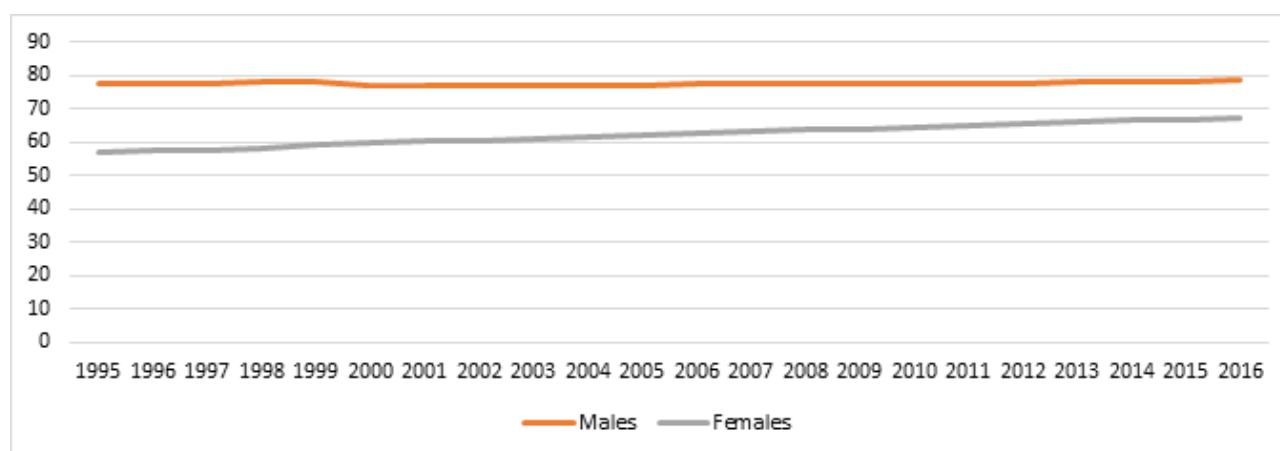
### Activity in the labour status

Women are also less likely to participate in the labour market. There are a range of factors behind this gap (Eurostat 2018a):

- **Social conventions**, which tend to place a higher importance on women's role within the family;
- **Education and careers advice**, which often reinforce gender segregation and direct women into a relatively narrow range of occupations (administration and care services);
- **Labour market issues**: employers preferring to hire young men over young women; young women facing assimilation difficulties when returning to work after childbirth and in reconciling care duties and working life; young women being more likely to have low-paid jobs or precarious employment.

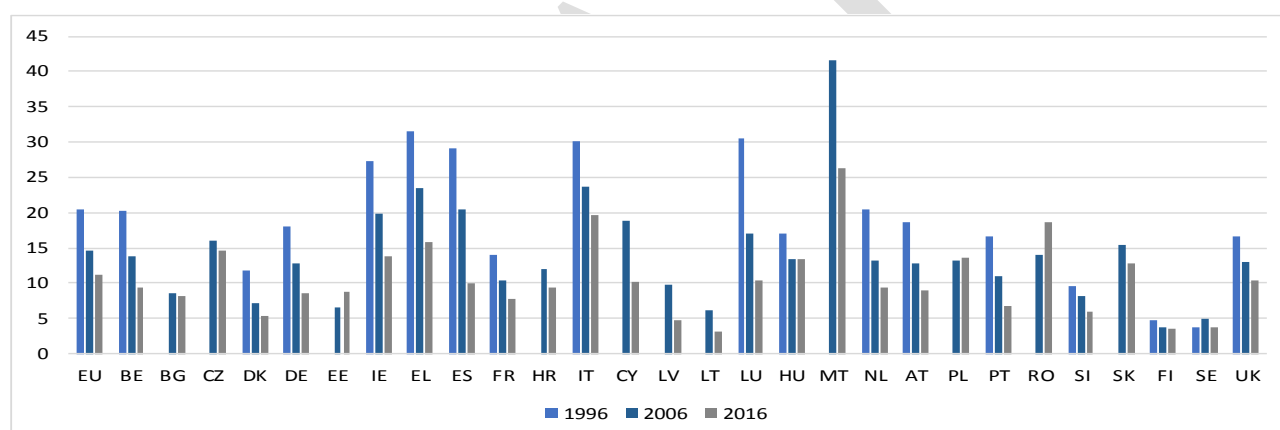
Women are less active, regardless of their labour status. In fact, gender differences exist in the activity rate, meaning that female percentage of the population, both employed and unemployed, that constitutes the manpower supply of the labour market is lower with respect of the male one.

All Member States show to a greater (Malta with a gap in activity rate of 26,4 p.p.) or less (Lithuania 3.2 p.p.) extend a gender gap in the activity rate. However, on average this gap is reducing (from in 2000 17 p.p. to 11.2 p.p. in 2016), due to the fact that more women are getting employed or are looking for a job.

**Figure 3-37: Activity rate (15-64) by gender at EU level\* 1995-2016 (%)**


Source: Eurostat 2018a

(\*) From 1995 to 1999 EU15, from 2000 to 2002 EU27, from 2003 to 2016 EU28

**Figure 3-38: Gender gap in activity rate (15-64), Member States and EU\* level, 1996-2006-2016 (p.p.)**


Source: Eurostat 2018a

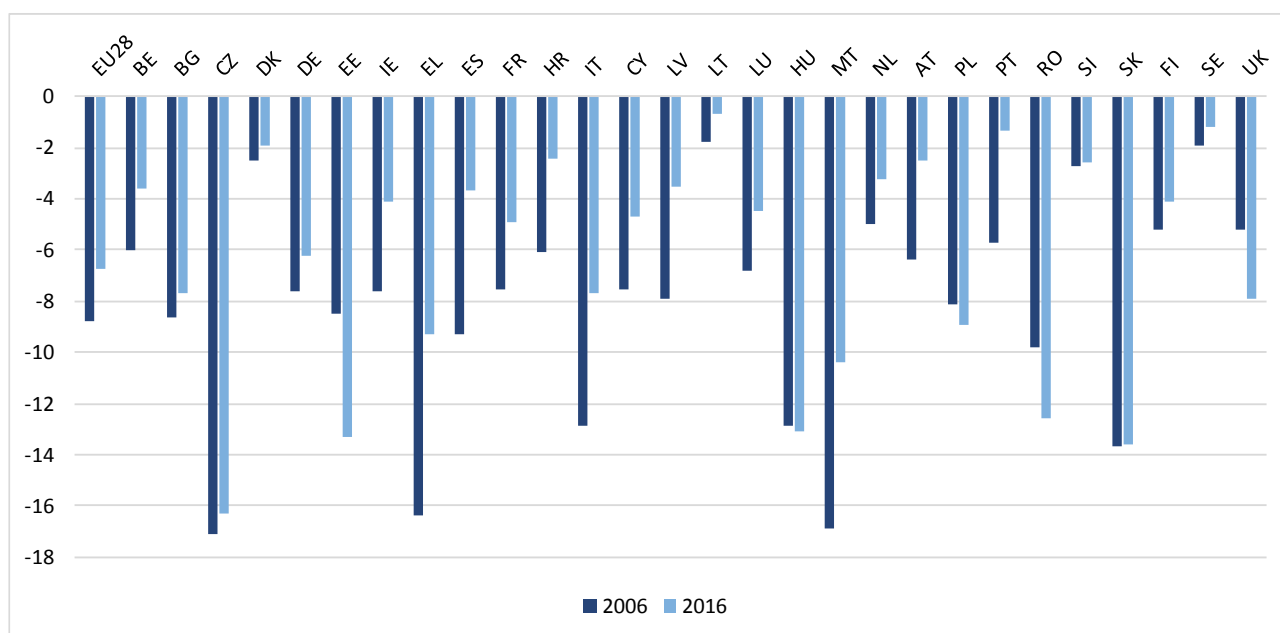
Note: (\*) From 1995 to 1999 EU15, from 2000 to 2002 EU27, from 2003 to 2016 EU28

In addition, differences exist between women and men also in relation to the proportion of young people who are neither in employment nor in education and training (NEET). In 2016 19% of young women (aged 15–34) in the EU28 were NEETs, while the corresponding share among young men was at 12.3%. The highest gap was in Czech Republic (-16.3 p.p.), while the smallest in Lithuania (-0.7 p.p.).

Differently from other labour market figures, on average, after a long period of convergence between men and women, the gender gap in the share of young NEETs started to increase since 2013 (Eurostat 2018a).



**Figure 3-39: Gender gap (men – women) in NEET rate (15-34), Member States and EU28 level, 2006-2016 (p.p.)**



Source: Eurostat 2018a

### Differences in caring duties and work-life

As mentioned previously, data analysis often reveals gender differences in the utilization of various transport modes, as well as with respect to travel purpose and daily distribution of key activities (Basarić et al. 2016) and resulting in significant differences in other aspects of travel behaviour, which includes different times, to different locations over different distances (Cresswell and Uteng 2008).

In addition to the aspects referred to above, two further issues reflect gender differences in mobility patterns. The role of women in care activities and flexibility in the work scheduling (part-time and working at home).

Whether it is caring for children or for the elderly, the current picture of gender disparities across the EU28 shows that the overwhelming care is provided by women, as shown in the following tables.

**Table 3-8: Workers (15+) daily involved in activities outside work by gender, EU28, 2015 (% of respondents and p.p.)**

ACTIVITY	MEN (%)	WOMEN (%)	GENDER GAP (p.p.)
Caring for and educating children/grandchildren	21.9	37.5	15.6
Cooking and Housework	24.2	72.2	48
Caring for elderly/disabled relatives	2.6	4.6	2

Source: Eurofound 2017

**Table 3-9: Population (18+) daily involved in activities outside work by gender, EU28, 2007 and 2011 (% of respondents and p.p.)**

ACTIVITY	MEN (%)		WOMEN (%)		GENDER GAP (p.p.)	
	2007	2011	2007	2011	2007	2011
Caring for and educating children/grandchildren	-	20.6	-	32.4		11.8
Cooking and Housework	28.5	37.6	78.7	77.4	50.2	39.8
Caring for elderly/disabled relatives	3.7	4	8.3	7.2	4.6	3.2

Source: Eurofound 2017

According to Eurofond's European Working Conditions Survey (Eurofound 2017), with respect to time spent on paid work at the EU level, in 2013 men worked 39 hours, while women worked 33 hours weekly. However, when paid working hours are combined with hours spent in commuting and unpaid work time, women worked on average 55 hours a week compared to the 48 hours of men.

As women's labour market participation is more constrained with respect to men by family and care responsibilities, flexible working time arrangements are often chosen to reconcile home responsibilities with work.

**Table 3-10: European Working Conditions Survey**

ITEM	SOURCE	VALUE
People daily working in their own home during the last 12 months in their main paid job? (% of respondents, 15+ workers)	Eurofound (2015)	Men: 6.4 Women: 7.2
Percentage of employed adults working at home (%)	Eurostat (2016)	Men: 14.6 Women: 14.4
Part-time work due to looking after children or incapacitated adults (%)	Eurostat (2016)	Men: 4.6 Women: 27.4
Percentage of part-time employment among parents (%)	Eurostat (2016)	Men: 6.2 Women: 35.8

Source: Eurofound 2017

The choice of flexible working time arrangements can reinforce existing gender inequalities and segmentation in the labour market (Eurostat 2018a) with the risk of leading to "occupational downgrading", relegating women in low-income, below their skills and insecure employment. In addition, part-time employment and the informal sector are another alternative for women although this has negative long-term implications in terms of reduced pension contributions and, thus retirement incomes (OECD 2014).

It has been stressed that women are often faced with the task of reconciling work and family life, which exposes them both to logistical as well as career challenges. In fact, women not only are more involved in childcare duties, but also in paid and unpaid elderly

care work. Whilst female predominance in elderly care work creates employment opportunities, it nevertheless raises important concerns about gender-segregated labour market and equality within household (European Institute for Gender Equality 2013).

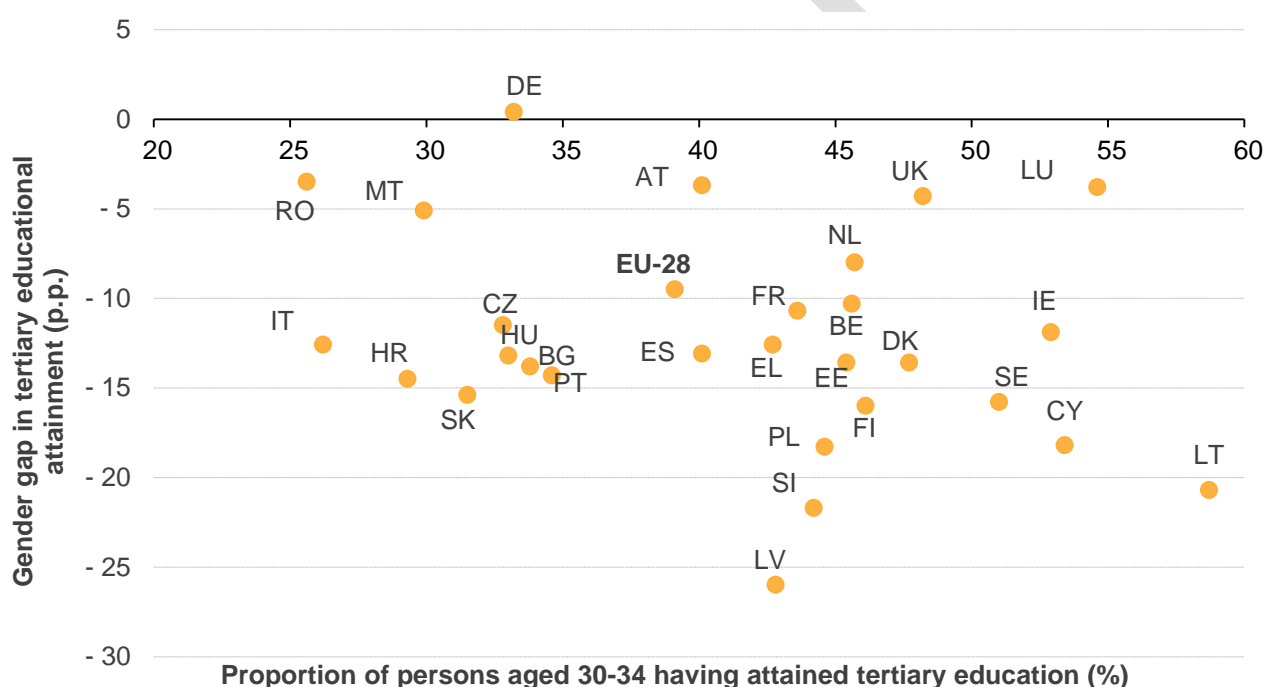
For what concerns the interaction between women care duties and transportation, the gender division of household roles and responsibilities is expected to affect individual mobility (European Commission 2014b).

Due to the unequal distribution of household and care work, they are more often transporting grocery bags, prams and children. For the same reason, their itineraries are less linear and more often interrupted than men's, making women's mobility more complex and time consuming.

### Education level

The education level of the commuters affects their commuting behaviour. The highly educated are more willing to commute longer distances than lower educated due to increased job matching possibilities, opportunities available on large geographical area and high wage levels (Riaz Malik 2016).

**Figure 3-40: Tertiary education attainment and gender gap, 2016**



Source: Eurostat 2018b

### 3.2.5 Migrants and ethnic minorities

#### 3.2.5.1 *Relevance: quantitative assessment and characteristics*

For the EU, a migrant person is “a broader-term of an immigrant and emigrant that refers to a person who leaves from one country or region to settle in another, often in search of a better life” (EU Immigration Portal 2016). The EU's official position toward migrants is that they represent an important part of the development of European societies, both in economic, social and cultural perspectives.

Therefore, guarantying a successful integration is paramount to optimize the conditions of legal migration and the consequent maximising effect to EU development. The EU supports national and local initiatives for migrant integration (supporting coordination, exchange of knowledge and financial needs), although Member States are primarily responsible for their implementation (European Commission 2018).

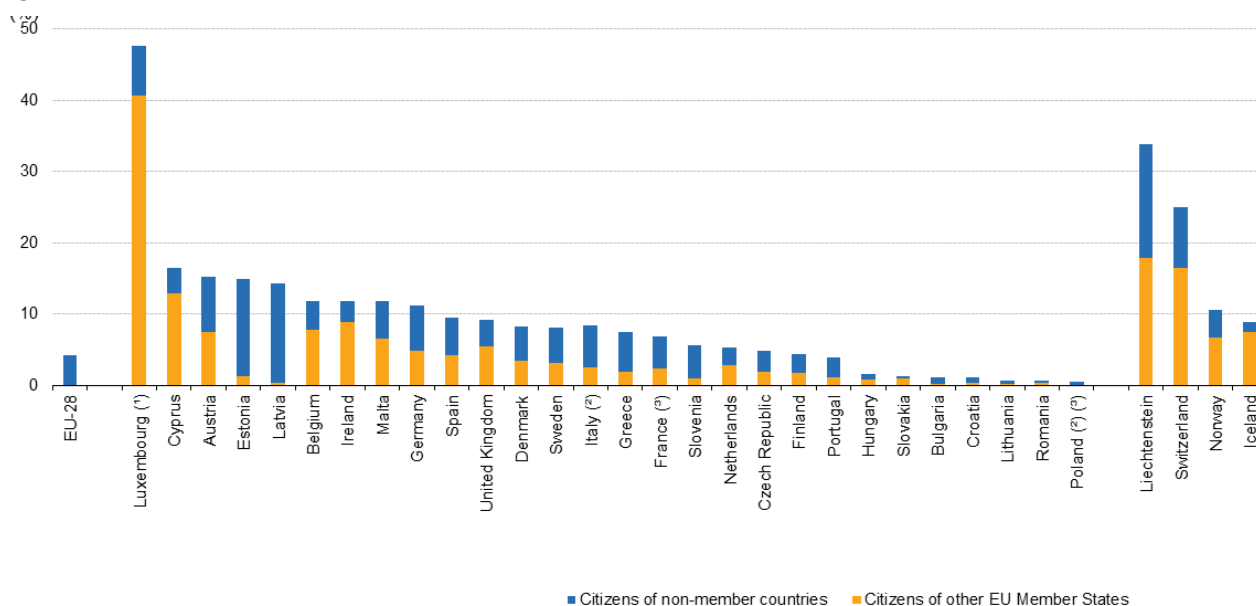
It is nevertheless clear that in many situations migrants are fragile populations, due to a myriad of possible reasons. As such, migration has been one of the political priorities of the European Commission. The approach is based on policies that prevent human tragedies and establish emergency responses, very much in a response to the crisis in the Mediterranean.

Many of the migrants included in the above definitions and conditions also can be included in the definition of ethnic minority, although in any way the two groups are 100% overlapping in any EU country. Many migrants do not belong to a specific ethnic minority, and ethnic minorities are in many parts of Europe part of societies for more than a generation, sometimes for several generations already.

Regarding ethnic minorities, they represent a group for whom social and economic exclusion remain an everyday challenge in Europe today. Cultural and ethnic backgrounds shape the challenging differences between ethnic minorities and majority populations. These differences are often also reflected in the labour market (unemployment, underemployment, and substandard remuneration), uneven access to health care and social services. Especially relevant are the connections between appropriate quality of life, prosperity and social cohesion and the absence of such significant labour market segmentation (Kahanec et al. 2010).

Economic, political and social factors usually play a combined role in migration phenomena, both regarding the origin (push factors) or the destination (pull factors). It is well known that the economic and political stable conditions of the EU countries have played a significant role in attracting immigrants.

In a different perspective, the EU countries could envision international migration as a tool to help solve some labour market shortages. It should be clear though, that migration will not be sufficient to contradict the population ageing trend that many Member States face (Eurostat 2015f).

**Figure 3-41: Share of non-nationals in the resident population, 1 January 2014**


Source: Eurostat 2015e

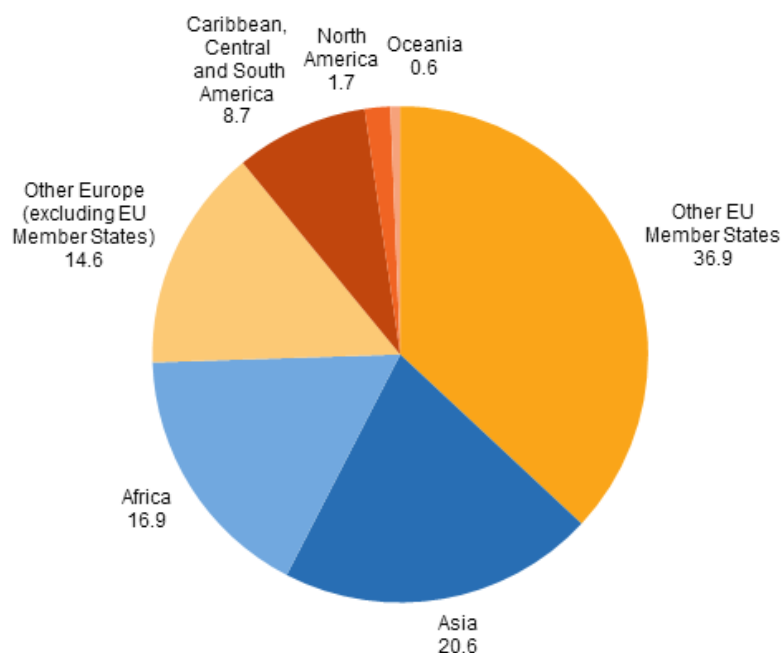
In 2014, more than 90% of the EU-28 inhabitants were born in the country where they were living; around 4% of the inhabitants were born outside the EU and 3.1% born in another EU Member State; only a marginal part of the inhabitants (0,04%) was stateless or of unknown origin. The composition of the populations varies significantly across Member States. Luxembourg is the state with the smallest native-born population (53.3%); in Croatia, Lithuania, Romania and Poland about 99.0% were locally born (Eurostat 2015f).

The above-mentioned numbers, and

Figure 3-42, show that Europeans represented almost a half of all the foreign-born people who lived in an EU Member State. More than 35% of foreign-born residents (almost 19 million persons) were born in other Member States, whilst 7.4 million people (14.6%) came from European countries outside the EU; as such, Europeans citizens (born in other EU Member States and non-member countries) comprised more than a half (51.5%) of the total foreign-born people living in the EU-28 in 2011.

The second largest continent of origin was Asia (20.6% of the foreign-born total), followed by Africa (16.9%) and the Caribbean, Central and South America (8.7%). Those original from North America (1.7%) and Oceania (0.6%) represented smaller shares (Eurostat 2015f).

**Figure 3-42: Foreign-born residents, by place of birth, EU-28, 2011 (% of all foreign-born residents)**



Source: Eurostat 2015f

There was a total of 4.3 million people immigrated to one of the EU-28 Member States in 2016. Among these, there were around 2 million people from non-member countries, 1.3 million people from a different EU Member State, around 929 thousand people who moved to a Member State of which they had the citizenship (for example, returning nationals or nationals born abroad), and some 16 thousand stateless people (Eurostat 2015e).

Some European cities account for very large proportions of migrant or ethnical minorities' populations. For example, London has an estimated 40% "Black, Asian and minority ethnic (BAME)" population (Transport for London 2014), while Berlin has an estimated 18% non-European population. Greater London had the highest number of foreign-born inhabitants among cities in the EU — almost three million (Tsang and Rohr 2011).

Interestingly, while some regions attract most of their migrants from a narrow range of countries — others are extremely diverse, drawing migrants from around the world. This is particularly true for some of Europe's largest cities and capital cities, for example, the regions of Hamburg, Munich, Paris, Amsterdam, Stockholm or London. Geographic proximity, ex-colonial links, common languages and cultural ties play an important role in determining the destinations that are favoured by migrants (Tsang and Rohr 2011).



Table 3-11: Foreign-born population by country of birth, 1 January 2017

## Non-national population by group of citizenship, 1 January 2017

	Total		Citizens of another EU Member State		Citizens of a non-member country		Stateless	
	(thousands)	(% of the population)	(thousands)	(% of the population)	(thousands)	(% of the population)	(thousands)	(% of the population)
Belgium	1 346.4	11.9	890.4	7.8	455.1	4.0	0.9	0.0
Bulgaria	79.4	1.1	13.5	0.2	64.1	0.9	1.9	0.0
Czech Republic	510.8	4.8	208.3	2.0	302.6	2.9	0.0	0.0
Denmark	484.9	8.4	202.4	3.5	275.0	4.8	7.6	0.1
Germany	9 220.0	11.2	3 985.2	4.8	5 223.7	6.3	11.1	0.0
Estonia	196.3	14.9	16.5	1.3	179.9	13.7	0.0	0.0
Ireland	564.9	11.8	426.5	8.9	138.3	2.9	0.1	0.0
Greece	810.0	7.5	205.2	1.9	604.8	5.6	0.0	0.0
Spain	4 419.6	9.5	1 932.8	4.2	2 485.8	5.3	1.0	0.0
France (*)	4 638.6	6.9	1 587.7	2.4	3 050.9	4.6	0.0	0.0
Croatia	46.0	1.1	15.1	0.4	30.1	0.7	0.8	0.0
Italy(2)	5 047.0	8.3	1 537.2	2.5	3 509.1	5.8	0.7	0.0
Cyprus	140.4	16.4	110.6	12.9	29.7	3.5	0.0	0.0
Latvia	279.4	14.3	5.9	0.3	273.3	14.0	0.2	0.0
Lithuania	20.1	0.7	5.5	0.2	13.3	0.5	1.3	0.0
Luxembourg (2)	281.2	47.6	240.3	40.7	40.8	6.9	0.2	0.0
Hungary	150.9	1.5	79.3	0.8	71.4	0.7	0.1	0.0
Malta	54.3	11.8	30.2	6.6	24.1	5.2	0.0	0.0
Netherlands	915.0	5.4	489.1	2.9	413.4	2.4	12.5	0.1
Austria	1 333.2	15.2	655.5	7.5	673.2	7.7	4.5	0.1
Poland (*) (2)	210.3	0.6	29.4	0.1	180.3	0.5	0.5	0.0
Portugal	397.7	3.9	118.2	1.1	279.6	2.7	0.0	0.0
Romania	114.5	0.6	53.5	0.3	60.6	0.3	0.3	0.0
Slovenia	114.4	5.5	18.7	0.9	95.7	4.6	0.0	0.0
Slovakia	69.7	1.3	53.5	1.0	14.7	0.3	1.5	0.0
Finland	242.0	4.4	97.2	1.8	143.8	2.6	1.0	0.0
Sweden	841.2	8.4	310.5	3.1	505.3	5.1	25.3	0.3
United Kingdom	6 071.1	9.2	3 626.5	5.5	2 444.6	3.7	0.0	0.0
Iceland	30.3	8.9	25.2	7.4	5.0	1.5	0.1	0.0
Liechtenstein	12.8	33.8	6.7	17.8	6.1	16.0	0.0	0.0
Norway	559.1	10.6	348.5	6.6	207.4	3.9	3.1	0.1
Switzerland	2 099.3	24.9	1 382.9	16.4	716.1	8.5	0.4	0.0

Source: Eurostat 2018d

Kasimis (2009) analysed the dynamics of the **agricultural population in the EU rural regions**. The author observed two types of flows of migrants. One outflow from rural areas to other EU urban areas; and one inflow of non-EU people moving into rural areas. The inflow was, at the time of publishing the paper, unprecedented at EU level.

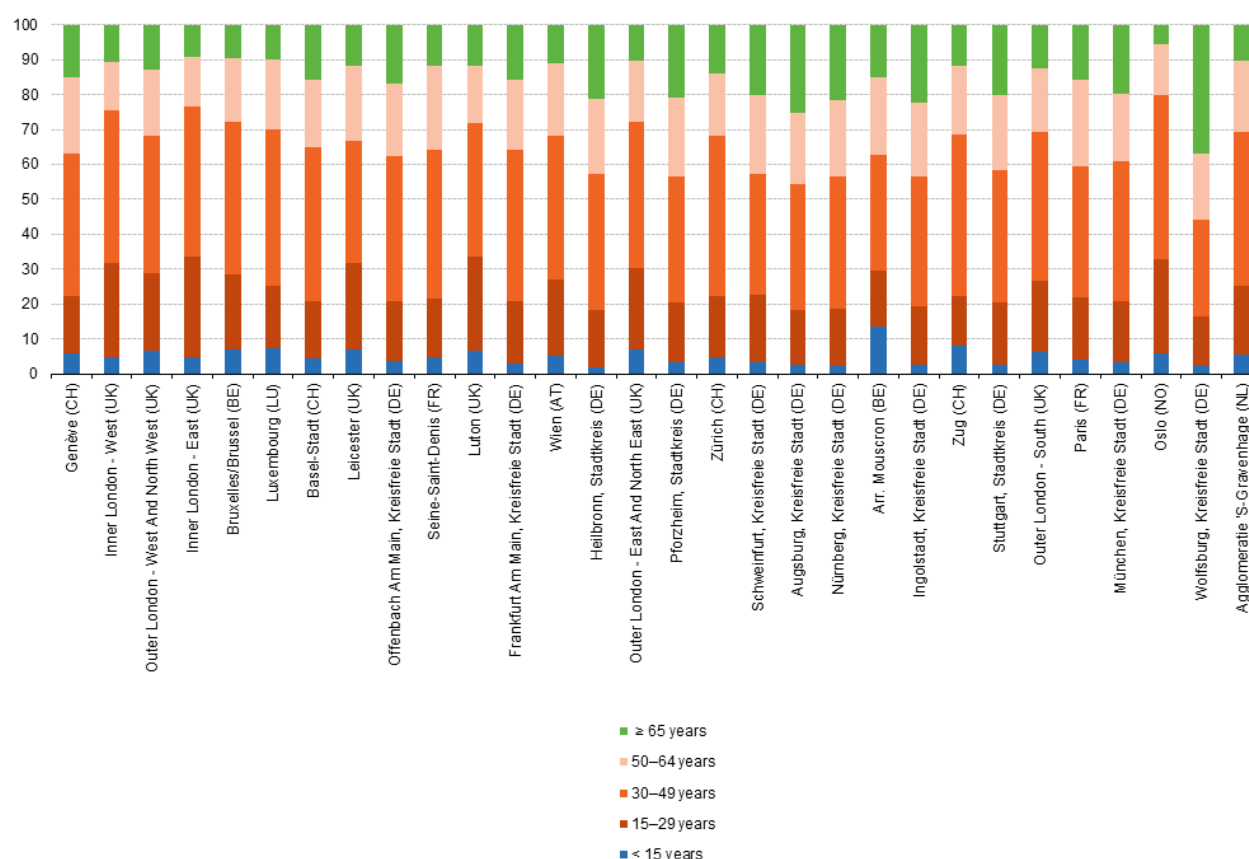
A number of factors can explain that, on the one hand, the restructuring of agriculture has created significant demands for labour which could not be satisfied because of the unfavourable demographic changes in rural areas related to rural emigration and ageing of the population; on the other hand, the local labour force is usually unwilling to work under poor working conditions and to earn low wages.

"Furthermore, the European countryside has, over the past few years, become an arena for the development of non-agricultural activities - manufacturing, tourism, housing expansion, new consumption patterns, connected to leisure and recreation that have increased demand for labour" (Kasimis 2009, p. 60). In this context, migrants can take over the gaps left in the rural labour markets by the locals.

Analysing recent Eurostat statistics regarding migrants, it is possible to characterize them properly. For example, men represented 55 % of the immigrants to the EU Member States in 2016. This share was the highest in Slovenia (63 %) and the lowest in France (49 %) (Eurostat 2018d).

Regarding immigrants' age, they were considerably younger (with a median age of 27.9 years) than the total population already resident in their country of destination (with a median age of 42.9 years) (Eurostat 2018d).

**Figure 3-43: Distribution of foreign-born inhabitants by age, selected urban regions, 2011(% of foreign-born inhabitants)**



Source: Tsang and Rohr 2011

Being part of a migrant or minority ethnic group is likely to increase the risks of marginalisation and poverty, namely due to factors such as discrimination, racism, and cultural and language problems. These (especially if combined) reduce access to good-quality jobs and education and increase the likelihood of living in deprived areas. Within these groups, women are a particular at risk sub-population.

Data from an EU-28 survey in 2017 shows that one in four (24 %) respondents felt discriminated against because of their ethnic or immigrant background in the 12 months preceding the survey. The highest rates of discrimination based on ethnic or immigrant background are observed in the area of employment and when accessing public and private services (European Union Agency for Fundamental Rights 2017), namely health, education and transportation.

### 3.2.5.2 Transport related characteristics

The travel behaviour of immigrants seems to be a **neglected area of statistical information and research** (Assum et al. 2011). There is little body of knowledge regarding the travel behaviour attitudes toward different travel modes of immigrants in Europe, namely due to scarce data and information availability, especially in eastern and southern European countries.

It is known, nevertheless, that **public transport is very relevant in everyday life of migrants and ethnic minorities**. The main barriers faced include language and discrimination, as well as poor transport availability (Samek Lodovici and Torchio 2015). Data collected in 2011 showed that migrants' travel habits are related with not driving a car, thus including public transport, walking, cycling and car sharing. Research in the US and the UK suggests that these findings are related with migrants' choice of residential locations, which are those that are well served by public transport.

Nevertheless, research also shows that non-EEA migrants tend to use buses, independently of the year of arrival, socio-demographic characteristics, or place of residence and work (Tsang and Rohr 2011). Moreover, Owen and Green (2000), based on the 1991 UK Census and cited by Tsang and Rohr (2011), found that people from minority ethnic groups were more than twice as likely as white people to use public transport to travel to work. This finding was particularly true among Black-African workers.

**Car-ownership is less likely among immigrants**, which can be suggested to be related to their less favourable economic conditions (Samek Lodovici and Torchio 2015), and they travel less in general. Trips are fewer and travel distances by car are shorter among immigrants than among the domestically born populations (Assum et al. 2011). Still, license holding, car ownership and car use are not strictly related, namely because deciding to buy a car or to get a driving license derives from individuals' needs, constraints and preferences (Tsang and Rohr 2011).

The differences between the immigrants and the domestically born seem to be greater for women than for men and greater for newly arrived immigrants than for immigrants who have stayed longer in their new country (Samek Lodovici and Torchio 2015; Assum et al. 2011).

Especially bicycle riding, but also public transport appears to be regarded as inferior forms of transport at least by certain immigrant groups. For example, cycling appears to be more appealing to locally born people than to immigrants, especially women (Samek Lodovici and Torchio 2015). This attitude combined with improved economic standards among immigrants over time may easily produce a high car access among immigrants, and consequently to less sustainable travel (Assum et al. 2011).

### 3.2.5.3 Transport related disadvantages

Availability of public transport at affordable fares has effects on employment opportunities and access to basic services. This is particularly relevant considering that migrant populations are more prone to low incomes and unemployment, especially if living in deprived areas (Samek Lodovici and Torchio 2015).

For groups at risk of social exclusion, remoteness can also have significant impact on the quality of life, as these are people probably part of transport-disadvantaged groups, such

as non-car owners (a common situation among migrants and ethnic minorities) (Samek Lodovici and Torchio 2015).

The "Together on the Move" project focused on immigrants living in Austria, Belgium and Norway, and aimed at identifying the transport needs of immigrants and the advantages/barriers they experience with different modes of transport (Assum et al. 2011). In relation to the use of public transport, the following barriers emerged:

- **Language barriers** – common problems are described as difficulties in understanding transport information (for example, information about timetables or cancellations), buying tickets and understanding where to go and which route to take. Therefore, using public transport is usually related to the immigrants' level of integration and language skills.
- **Availability and accessibility issues** are described in terms of lack of proper connections (especially when living outside the city centre), low frequency (especially in the evenings / at weekends) and physical access (buses too crowded in rush hours; problems with getting on and off a bus with a pushchair or when accompanying elderly or disabled people; difficult to handle heavy shopping loads).
- **Costs** - public transport is too expensive to use for some immigrant groups (Samek Lodovici and Torchio 2015).
- **Racial and religious discrimination** are described by young immigrants, some ethnic minorities and immigrant women wearing headscarves.

Regarding the last topic in this list, Rutten and Verstappen (2014) found that Indian Hindu migrants living in London experienced living in the margins of society, almost never leaving the areas around their houses and feeling discrimination not only in their workplace but also while travelling on public transport. These migrants were actually original from middle to upper class environments in India and were nevertheless experiencing social exclusion in their migration destination.

It is made clear that, beyond the low incomes and other barriers, there are also matters of racial and religious discrimination that may impair the usage of (public) transportation. For example, young immigrants or ethnic minorities and immigrant women wearing headscarves often say that they are the first ones to be checked at inspections (Samek Lodovici and Torchio 2015).

Given the propensity for low incomes and social exclusion of these segments of society, it is possible to suggest a higher incidence of second hand vehicles (for those who actually own a vehicle) and also a poor level of maintenance. In such a context, it is possible to suggest higher risk of car accident for these populations, as it has been described that some characteristics of second-hand cars (e.g., age, degree of wear and tear, technical design) can increase the probability of traffic accidents (Benedek et al. 2017).

Moreover, these obsolete vehicles can also be related with increased emissions and air pollution, considering their age and low maintenance levels.

#### 3.2.5.4 Multiple socio-economic disadvantages

Many of the migrant and ethnical minority segments experience socio-economic difficulties that are in fact multifactorial.

Within migrant and ethnical minorities' groups, women are a particular at risk sub-population (Samek Lodovici and Torchio 2015). The migrant women experience several difficulties, many of which related with the different roles women play in different societies. Women often have low access to the transport system, such as: public transport services (namely due to linguistic and cultural barriers), less drive licenses holding percentage when compared to the native women, less use of bikes (also due to cultural and religious barriers).

A relevant study conducted to non-Western immigrant females identified several factors of transport-disadvantage (Uteng 2009), such as: lower than average income, costly and non-adequate public transport offer, or higher travel time due to longer distances between house and job locations. As such, they are more prone to exclusion.

According to 2014 Eurostat data, 39% of migrant population (defined as born in a non-EU-28 country) was considered at risk of poverty or social exclusion. Foreign-born non-EU citizens face a higher risk of poverty and social exclusion (the AROPE rate is 32.8% in 2012) than nationals (23.2%), often due to worse labour market conditions (e.g. the unemployment rate is 5 percentage points higher), leading to lower income and lower education (46.6% vs 54.1%).

As such, the children of immigrants are particularly at risk of poverty compared with nationals. In 2012 the AROPE rate is almost 10 percentage points higher for adult immigrants and 13% higher for their children (aged 0-17) than for those born in the countries concerned (Samek Lodovici and Torchio 2015).

This does represent that social exclusion can start at very young ages and impair the social and economic development of new generations, who are no longer migrant in their core, but still experience the difficulties of the generations who in fact migrated.

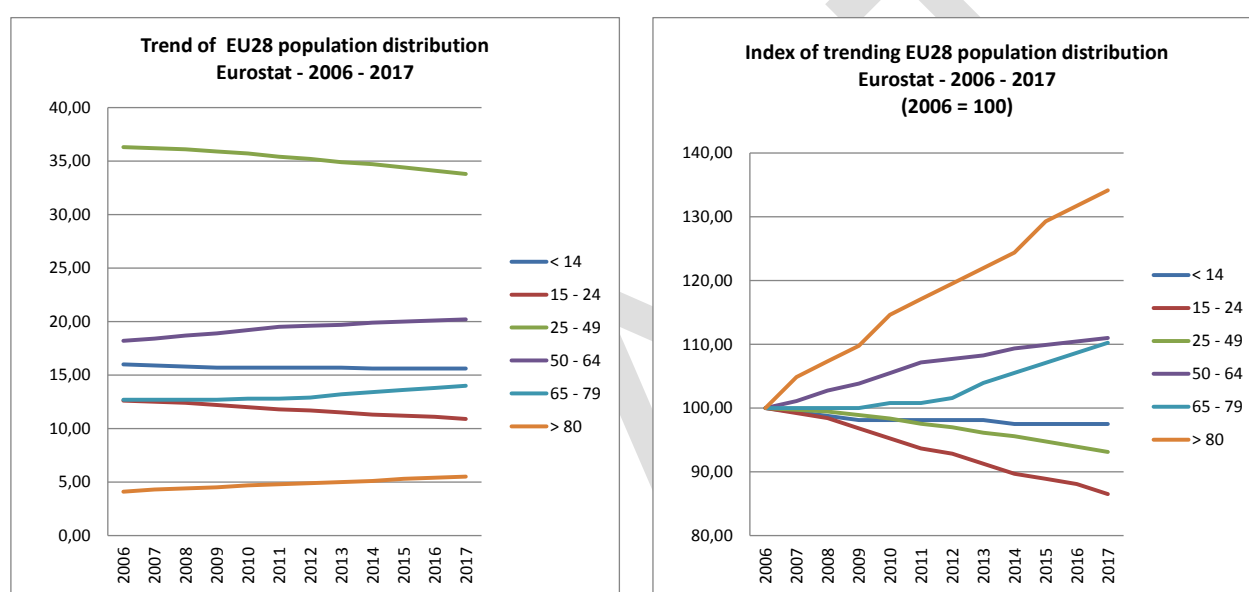
## 3.2.6 Children and young people

### 3.2.6.1 Relevance: quantitative assessment and characteristics

The European population is ageing more and more. With some rare exceptions in countries such as Ireland, Sweden, Estonia and Lithuania, the share of young people has been steadily declining over the last 10 years.

The following figure shows the trend of the population distribution per age classes for the EU-28 countries in the period 2006 – 2017.

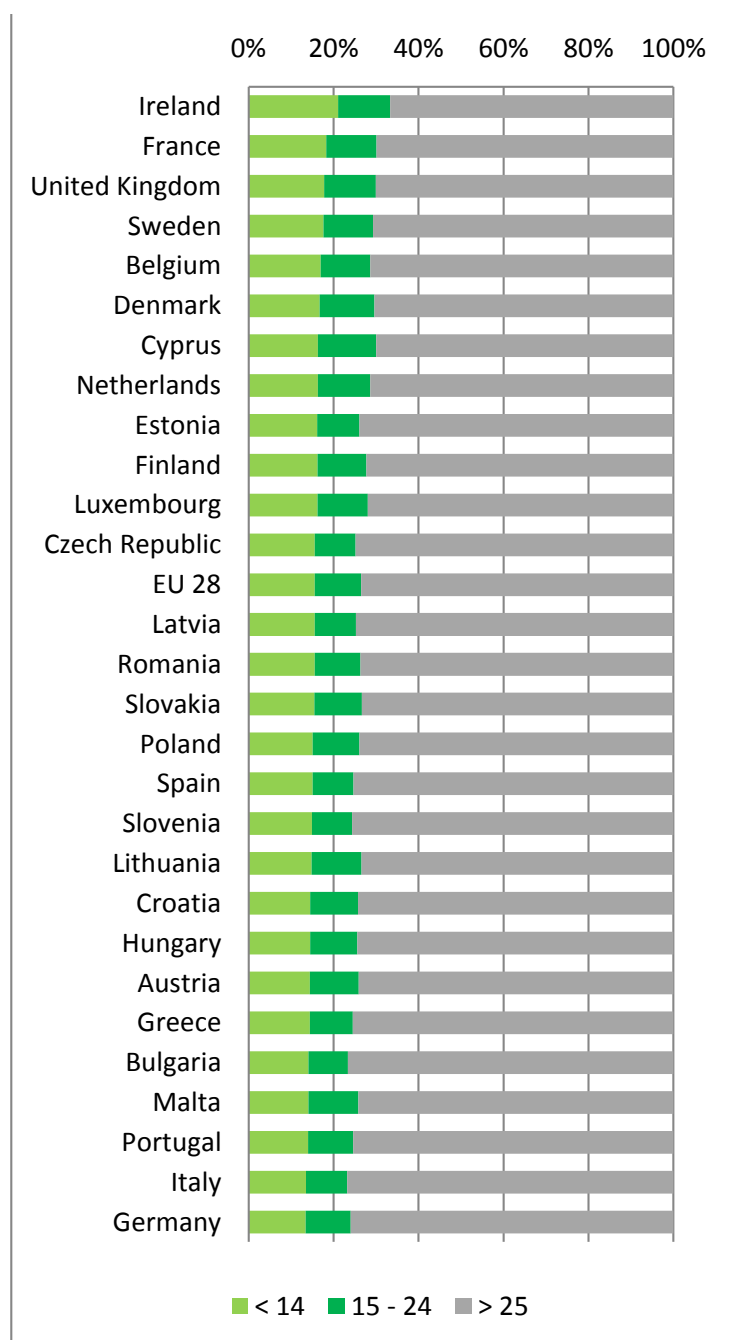
**Figure 3-44: Trend of the EU population distribution per age classes**



Source: Eurostat 2018b

The following figure illustrates the share of the young population in the European countries, which ranges from around 30% - 33% of the “younger nations” (i.e. Ireland and France) to 23% - 24% of the “older nations” (i.e. Italy and Germany).



**Figure 3-45: Young population distribution in EU countries, 2017**


Source: Eurostat 2018b

Even if several studies and researches have developed different sociological and behavioral classifications for the younger population (see for instance the box below), in order to understand and describe among others also their mobility patterns and behaviour we propose the following simple classification, based on whether children and young people are free to move independently or not:

- **Children under 14 years old** (who depend on parents and adults to meet their mobility needs);
- **Young adults under 25 years old** (who have relative freedom of movement).

## Who are the young?

### Digital Aboriginal or Generation Z - born after year 2000

This generation is also referred to as Generation I, "Screenagers or generation ADHD (Any Devices Head Down)". No other generation has ever been raised in an atmosphere where openness, transparency and sharing of private life events are common practice.

Growing up with this innate understanding of, and close relationship with technology, their attitudes and behavior regarding mobility, will also be different from previous generations.

Just like they prefer multimedia entertainment, rather than stand-alone toys, they will not accept that mobility and travel put their life on pause, and is reduced to a logistics operation from A to B. Experience, play and socializing will have to be integrated and will be as much as possible core to the journey. New providers of mobility will have to find ways to make the physical experience better through (big) data technology.

### Millennials or Generation Z - born between 1985 and 1999

When it comes to mobility, this generation demonstrates a sensational new attitude towards car ownership. As traditional career paths fracture and disintegrate, Millennials are increasingly turning to other means of making a living: harnessing the power of social networks and sharing platforms, these youngsters are less eager to buy and possess, and more inclined to rent, swap, borrow and share.

65% of Millennials state that the newest model of their favorite smartphone brand is of more value than the latest model of a fancy car brand.

The New Value seekers, as Millennial mind-sets are often referred to, are active participants in the sharing economy, prone to use room- and car sharing services (think of Couchsurfing, Airbnb, Uber, Lyft, ...).

On top of that, Millennials are considered as the guiding generation for the babyboomers. For the first time in history, more mature target audiences enjoy being inspired by the younger generations.

The Mobility Services should be an on-demand service, including all the benefits of owning your own car, while having none of the risks and inconveniences.

Source: Pickup et al. 2015, pp. 53–58

### 3.2.6.2 Transport related characteristics

#### Children

This age group has conditions of **high mobility dependence on the adult's world** (parents and others) and therefore the transport related characteristics are strongly influenced by those of the adults who are escorting them.

This general consideration opens up two further reflections.

First, the presence of children under 14 years old within the households has an impact on the mobility needs of the family itself in terms of:

- Number of daily trips (typically the need to bring children to school, medical visits, leisure and sports activities, etc.);
- Social relationships;
- Means of transport used;
- Who carries out the accompanying role within the family members.

All these aspects, therefore, have more to do with the mobility patterns related to the family life cycle than with the mobility needs of each individual.

Secondly, as soon as children grow up, they acquire more and more autonomy and independence, triggering their cognitive abilities and capabilities, sense of autonomy and so on.

Mobility patterns of early childhood (up to 10 years) are strongly intertwined with those of the adult family members, while in the following period (10 years old to 14) the adopted models start to be shaped by those of the next age group (young adults from 15 to 25), still with some peculiar constraints usually induced by:

- Presence of short/safe path to access the school, sports and recreational activities, etc. on foot or by bike;
- Presence of school bus services.

These dynamics define a specific mobility behaviour for the children under 14 years old: while strongly dependent on parents or other adults for transportation (with a major tendency to car use), as soon as they acquire some degrees of autonomy, they became the most frequent users of public transportation (especially when students).

Baslington, in his travel socialization theory suggests that "children learn about travel modes in the same way as other aspects of culture through agents of socialization: the family, school, media, and peer groups" and that "attitudes toward transport modes are embedded in childhood", making actually car dependency to be considered as a social problem and "tackled from a social policy rather than just a travel demand management approach" (Baslington 2008, pp. 93–111).

He demonstrates that for children "being with and having fun with friends was a reason given for liking various modes of transport even the unpopular school buses" (Baslington 2008, p. 103). Children in several high car ownership households wanted their parents to change the type of car for faster models while, on the contrary, in car-free households, a higher percentage of children can imagine living happily without a car in adulthood than in households that own a car (Baslington 2008).

This confirms the correlation between parents' car ownership and children's attitudes towards different transport modes. Haustein and colleagues affirm that the liking of various transport modes as well as the desire to drive or buy a car in the future is influenced also by peers (Haustein et al. 2009).

Other studies confirm the correlation between parents' car ownership and children's attitudes towards different transport modes (Cahill 1996). According to their results, seven-year-old children already associate different modes of transportation with different levels of prestige (e.g. old people are more likely to be associated with bus driving, whereas successful-looking people are linked with car brands, such as Porsche or BMW). The latter are also types of cars that children want to own when older, which Baslington takes as evidence for media influence on the children attitude toward transports (Baslington 2008).

The topic of mobility dependence and the greater use of cars even for short journeys is closely monitored by doctors and educators for health effects (obesity and childhood diabetes, heart disease, etc.) and growth development effects (reduction of cognitive abilities, lower self-esteem, etc.).

This growing car dependency for children is particularly evident in the recent evolution of the home to school mobility, where the share of children reaching school by parent's car shows a growing trend at the European level.

### **Young people**

Young people from 15 to 25 years old are the second most important user group of public transportation (36% of trips by PT), after elderly people (53% of trips by PT), and the main group cycling (8% of trips by bike) and walking (12% of trips by walk) (European Commission 2015).

Transport-related characteristics and mobility pattern for this group are particularly difficult to frame due to the significant changes in the social and economic structure which have occurred in recent years and which have strongly and rapidly modified the way in which young people live, work and travel.

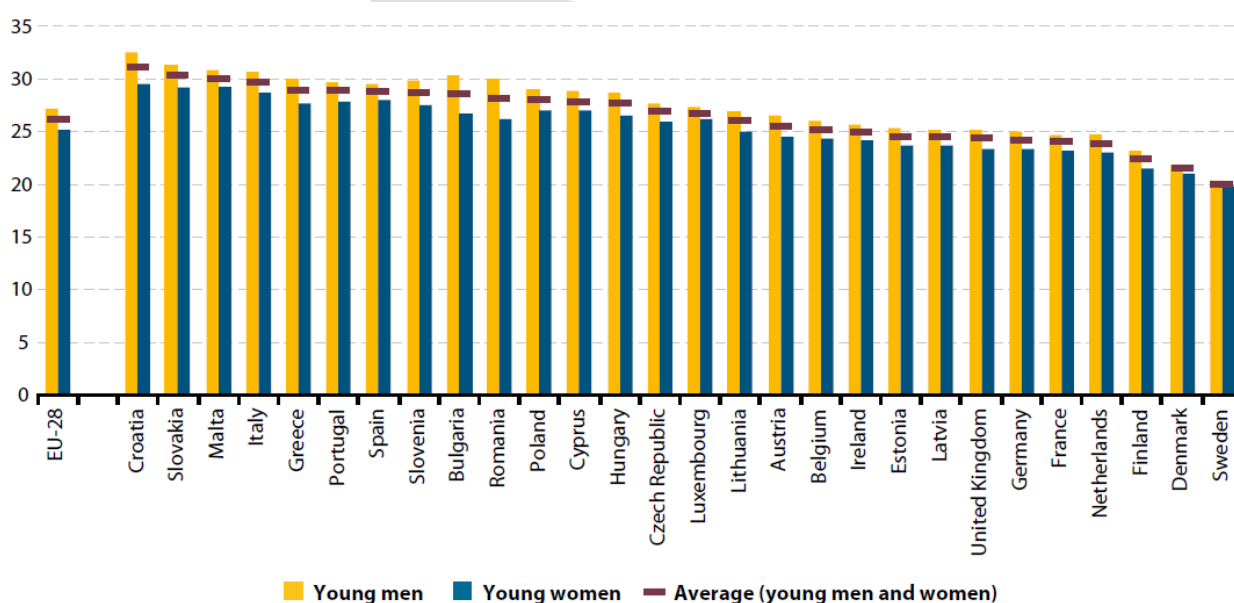
Table 3-12 summarizes the causal factors proposed by Delbosc and Currie (2013), Aretun and Nordbakke (2014) and IFMO (Institute for Mobility Research 2013) for the changes in the young people's travel behavior.

Living with parents affects the travel behaviour of the young population. According to Eurostat (2015a), in northern EU Member States, young people leave home in their early twenties while in southern and eastern EU Member States they tend to leave home in their early thirties, with young women moving out of the parental home earlier than young men, although there are considerable variations observed among EU Member States.

**Table 3-12: Causal factors for the changes in the young people's travel behavior**

MAIN CATEGORY	SPECIFIC FACTOR
Demographic situation	<ul style="list-style-type: none"> <li>Postponing of parenthood</li> <li>Increase in cohabitation</li> <li>Migration to a foreign country (study or work)</li> </ul>
Living situation	<ul style="list-style-type: none"> <li>Living with parents longer</li> <li>Decline in private home ownership</li> <li>Increased urbanization</li> </ul>
Socio-economic situation	<ul style="list-style-type: none"> <li>Increased participation in higher education</li> <li>Increase in woman's labor force participation</li> <li>Increase work in the service sector</li> <li>Increase in low-waged, uncontracted work</li> <li>Decline in disposable income</li> </ul>
Information & Communication Technologies	<ul style="list-style-type: none"> <li>Increase ICT use</li> <li>Use of mobile devices to arrange everyday life</li> <li>ICT use whilst traveling on public transport</li> <li>Increase in gaming</li> </ul>
Values and attitude	<ul style="list-style-type: none"> <li>Extended youth</li> <li>Rise of pro-environment attitudes</li> <li>Decline in cars as status symbol</li> </ul>
Transport and mobility	<ul style="list-style-type: none"> <li>Improvements in public transport</li> <li>Strict driver licensing regime</li> <li>Increased car insurance costs</li> <li>Increased spending on transport</li> <li>Rise of shared mobility</li> </ul>

Source: Delbosch and Currie 2013; Aretun and Nordbakke 2014; Institute for Mobility Research 2013

**Figure 3-46: Estimated average age of leaving the parental household, by sex, 2013**


Source: Eurostat 2015a

### **ICT use**

According to van Wee (2015), we have entered into an era of transition from travel (largely by car) to ICT-based activities and accessibility (for further discussion on the impact of ICT see Chapter 4.3.1).

The impact of the emergence of smartphones and other mobile devices on young adults' mobility is relevant. Firstly, because these devices enable online activity while travelling, which might impact on mode choice; secondly, because they might be replacing the car as the new highly visible status symbol (Tully 2011).

The increasing use of ICT and the increasing availability of (travel) information is considered to make public transport and the use of new forms of mobility (multimodality and sharing) more attractive and feasible (better accessibility, possibility of using travel time for e. g. socializing and communication).

The young "digital natives" who grow up using these technologies as part of their daily life are main users and beneficiaries of this technology allowing them to easily access real-time travel information, download and store a ticket, or unlock a shared vehicle belonging to a self-service system (e.g. a bicycle or car) (Prensky 2001). ICT obviously facilitates inter-and multimodal travel. Users can choose the mode of travel best fitting the situation, their individual time and financial budget (Tully and Alfaraz 2017).

In an article of Konrad and Wittowsky (2017) about virtual mobility and travel behavior of young people, it is affirmed that "the enrichment of travel through telecommunications means that travel time can be utilized otherwise through ICT (see also Lyons and Urry 2005).

Young people are adopting an increasingly environmental attitude towards transport, with public transport and walking accounting for significant shares of their modal split, but it is also demonstrated that the information availability about activity opportunities arisen by ICTs and the extended scope of decision-making has an enhancement effect on two levels: it results in more trips and especially in additional longer trips (Konrad and Wittowsky 2017, pp. 3–7).

### **Cars' decline among young people**

Despite the fact that the acquisition of a driver's license is still considered one of the most important travel mode related life event (Klöckner 2004) and a sort of initiation rite, which does not only imply the technical dimension of acquiring the necessary skills to drive a car but also the social dimension of crossing a very important threshold to adult life (Schönhammer 1999), in many western countries car use is increasing less than before, or even declining (Delbosc and Currie 2013; Millard-Ball and Schipper 2011), particularly for young people who seem to be less car-oriented than previous generations (Kuhnimhof et al. 2013b).

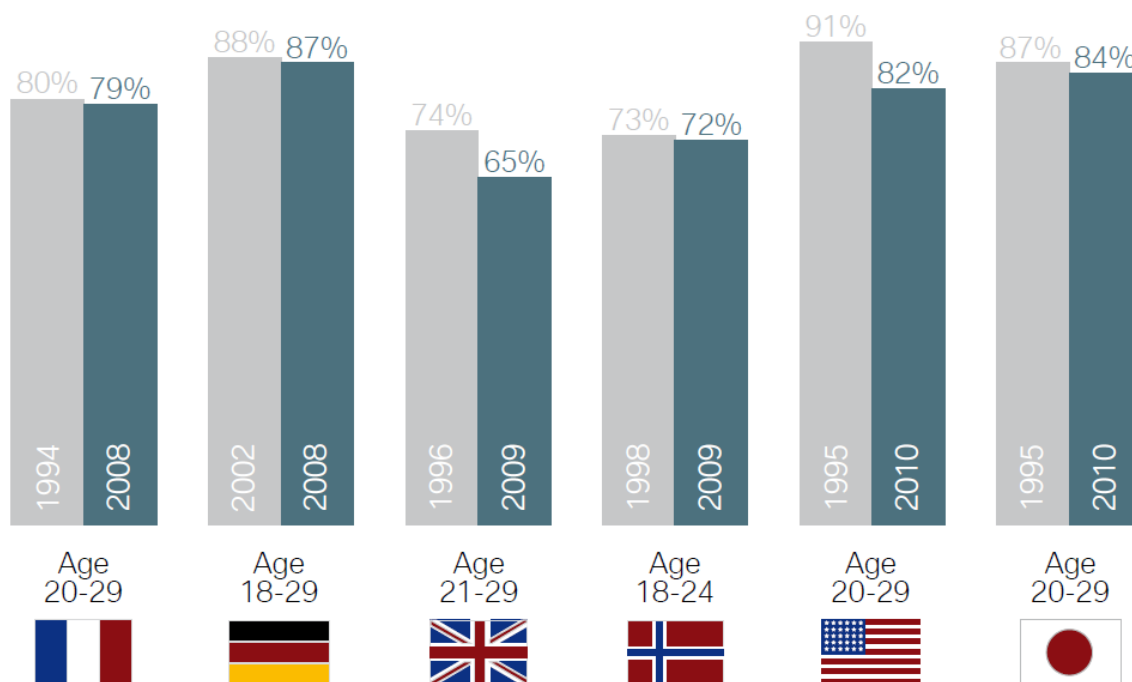
Cars affordability is an increasing issue for young people (particularly the cost of insurance), parking availability is limited, and maintenance costs are increasing with modern vehicle technology.

According to the Institute for Mobility Research (2013), license-holding among young adults has stagnated at a high level in recent years in EU countries like France, Germany



and Norway, while it has decreased in countries such as Great Britain, the USA and Japan. In most countries, the proportion of licensed drivers has fallen much more strongly for young men than for young women.

**Figure 3-47: License-holding**



Source: Institute for Mobility Research 2013

In Great Britain, Norway and the USA the decrease in licensing among young adults contributed to the recent decline in car availability (for which holding a license is one important prerequisite). In Germany and France, where young adults' license-holding was stable, it is mostly the decline of car ownership of households in which young adults live that has caused the decrease in car availability.

There is good evidence from cross-sectional analyses of UK data to suggest that the fall in license holding has been driven, at least in part, by changes to the lives of young people in terms of demographics, living situation and socio-economic situation (Berrington and Mikolai 2014; Le Vine and Polak 2014).

Besides the decrease in car ownership, additional relevant developments have contributed to the observed car mileage reduction among young adults. The most important reason for young drivers' decreasing car use is that they use alternative modes more, i.e. they exhibit increasingly multimodal behavior (Institute for Mobility Research 2013).

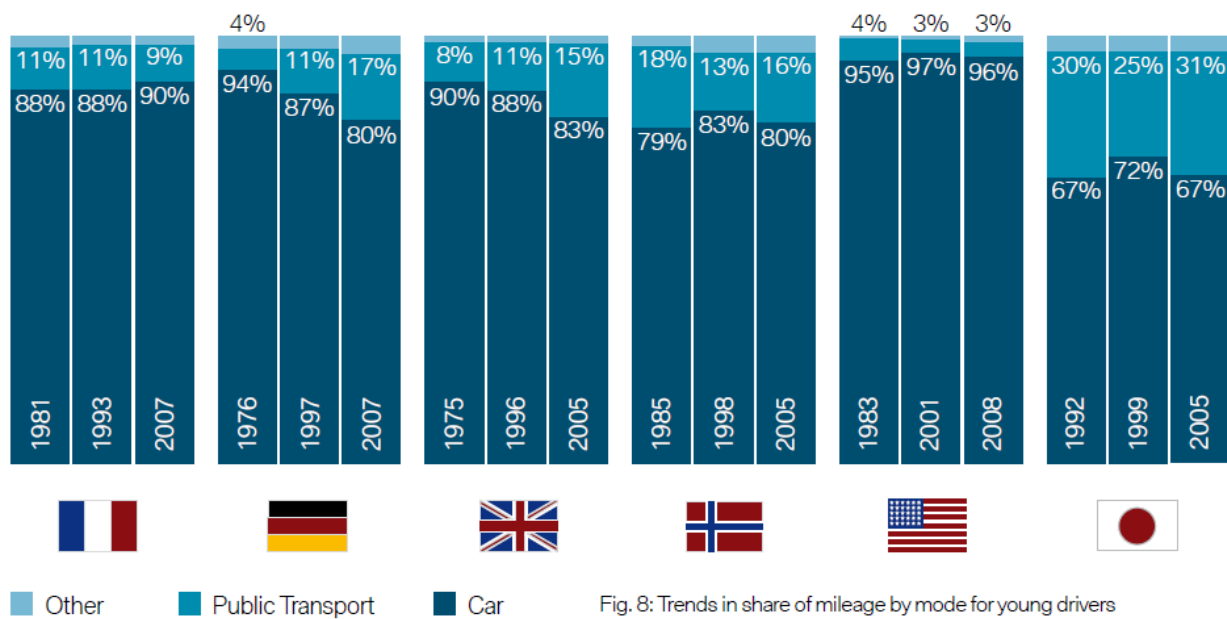
**Figure 3-48: Trend in share of mileage by mode for young drivers (age 20-29)**

Fig. 8: Trends in share of mileage by mode for young drivers (age 20-29)

Source: Institute for Mobility Research 2013

Moreover, according to scholars such as Chatterjee et al. (2018, p. 29), while “economic circumstances explained the lower level of car access for Millennials living independently of other adults” for “Millennials living dependently (e.g. with parents or other older adults) there was an unexplained cohort effect” indicating a lower tendency to own or have access to a car among Millennials.

Additionally, attitudinal research demonstrates that cars are not seen as aspirational by financially better off, non-car owning young people (Thornton et al. 2011).

The car's decline in the young adults interests can also be related to the increasing prevalence of life situations which do not engender car use.

The number of young people entering higher and specialized education, located mainly in urban centers, is increasing. They usually continue an urban lifestyle for employment and social life, facilitated by modern mobile technology. New status symbols are not cars but internet and phones - cycling is more fashionable amongst young urban professionals than driving.

### 3.2.6.3 Transport related disadvantages

#### Children

In Western Europe, children's independent mobility has seemingly declined during the past 30 years, with trends of increased car usage and accompaniment by adults (Pyer and Tucker 2014; Barker 2006, 2009). One of the most widely cited explanations for increased dependency upon parental chauffeuring is parents' concerns for their children's safety (Barker 2003, 2006; Hillman and Adams 1992).

The strong dependence of children on adults for transportation (mainly car dependency) and vice versa, i.e. households with children are likely to use a car every day (European Commission 2013a), produces:

- Direct effects on the society as negative externalities (e.g. pollution, noise, traffic safety issues, etc.) due to the increase of road traffic, particularly around high sensitive locations as school or recreational facilities;
- Indirect effects on the children health such as an increase in obesity and diseases due to a reduced independent mobility and physical activities.

### The vicious circle

The Swiss program for School Sustainable Mobility (Repubblica e Cantone Ticino 2018) identifies in the vicious circle (*Traffic → Unsafe roads → Worried parents → Increasing number of parents bringing children at school with the car for safety → More traffic → Unsafer roads → etc.*) the main cause of the phenomenon.

Moreover, not addressing the fundamental threats posed by traffic and factors of concern to parents will inevitably result in children being withdrawn from the risk or not being exposed to it until a later age. At this later age, they may be granted freedom to go out in more dangerous environments without having developed their ability to negotiate less dangerous environments (Shaw et al. 2015).

More in details, studies on Children's Independent Mobility (Shaw et al. 2015) report how the loss of independent mobility can have adverse effects on children's well-being, health and personal development, including:

- Considerable loss of autonomy and access to a safe environment outside the home;
- Consequent losses leading to a lowering of their quality of life;
- Decline in physical condition potentially leading to obesity and other health consequences. According to Eurostat (2015a), the highest share of obese young people was registered in Malta (13%); the lowest in Romania (2%), Bulgaria, Slovakia and Latvia (all three 3%). In the remaining surveyed EU Member States, the share of obese young people varied between 4% and 7%);
- Gaining insufficient practical and social skills owing to inexperience in acting independently.

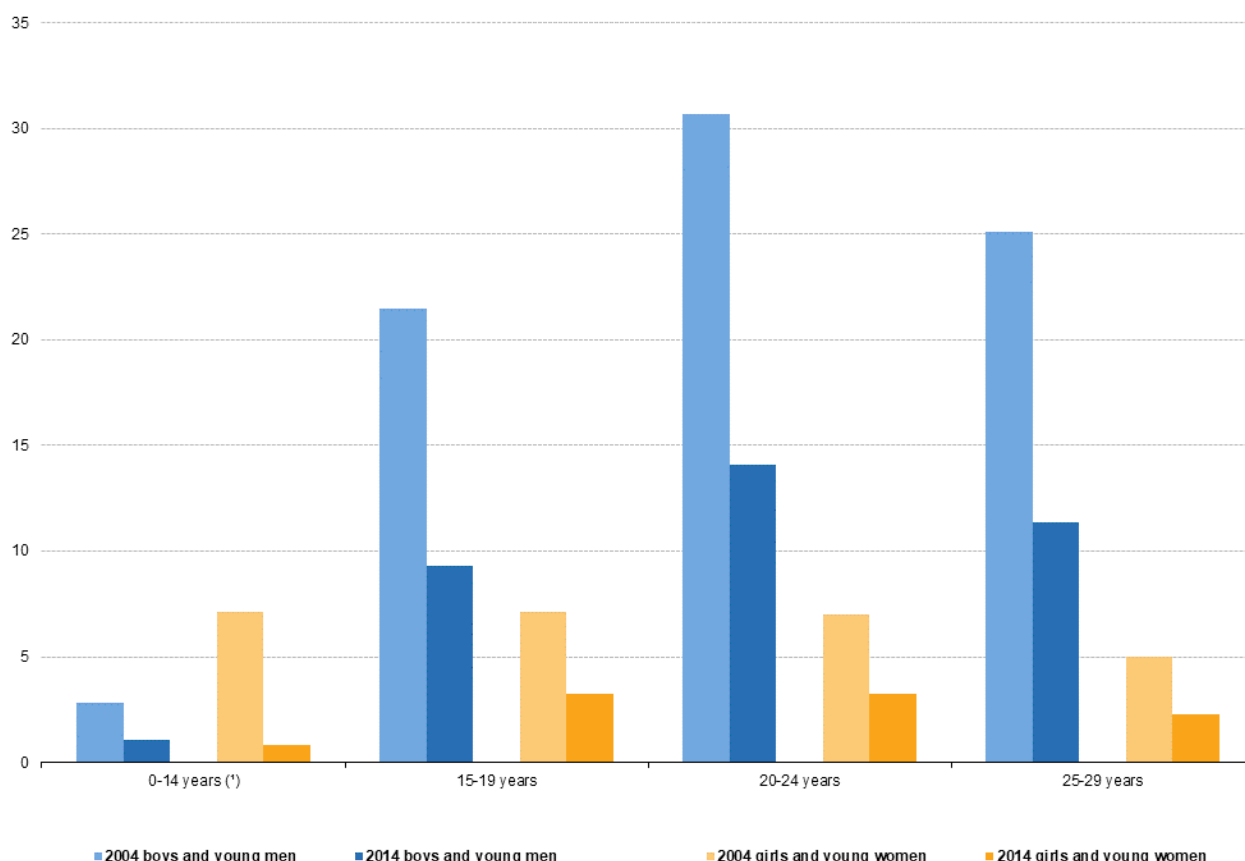
A number of studies highlights the difficulties that children in rural areas could have in accessing suitable public transport, underlining the importance of the geographical dimension in relation to the opportunities young people have to access transport (and public transport in particular), and the importance of the diversity in the transport experiences of young people to avoid built-in car dependency on the growing children (Pyer and Tucker 2014; Storey and Brannen 2000; Matthews et al. 2000; Tucker 2002).

Moreover, some authors argue that where there is a lack of suitable public transport, parental chauffeuring can place restrictions on opportunities to meet with friends, push boundaries and develop independence (Hillman and Adams 1992; Romero 2010; Ross 2007)

## Young people

Road accidents are the first cause of death for the young between 14 and 25 year old. Young males are more exposed to this risk compared to women as shown in the figure below.

**Figure 3-49: Death rates for children and young people from transport accidents, EU-28, 2004 and 2014 (number of deaths per 100,000 inhabitants)**



Source: Eurostat 2017h

When traveling by public transport, young people are some of the more vulnerable age group since, according to Transport for London (2014, pp. 141–143), “[...] those aged 16–24 are more likely than average to have experienced a recent worrying episode on public transport” and they are “[...] more likely to have experienced this during night-time”. This kind of disadvantages could be heavily increased when other factors intersect such as limited mobility.

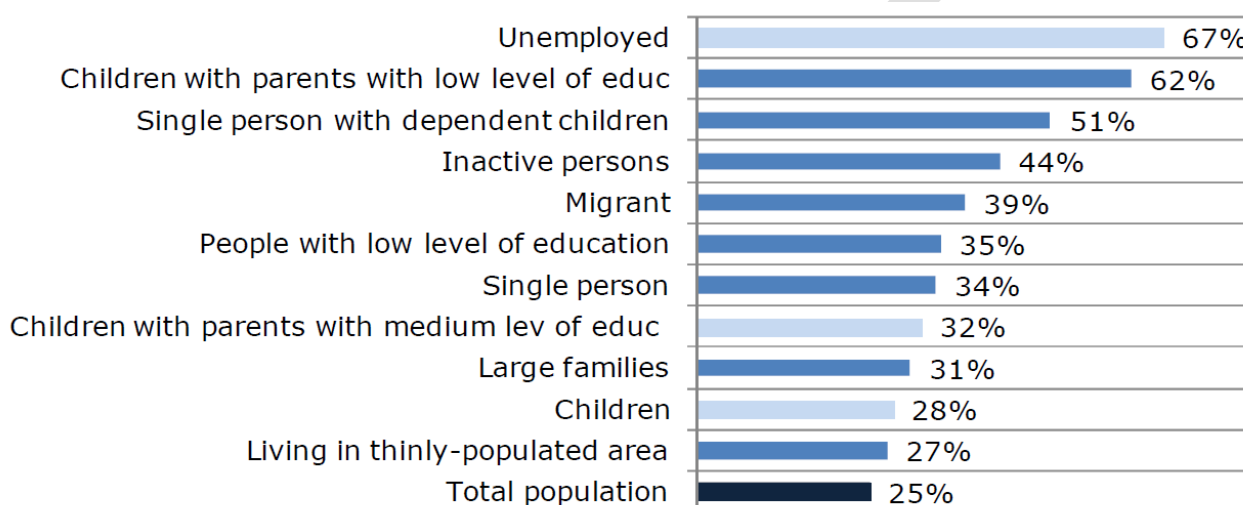
### 3.2.6.4 Multiple socio-economic disadvantages

Children are a population group at high and increasing risk of poverty, due to the increasing number of low-income households and marginalized or migrant families, resulting from the increase in the precariousness of the labour market and the reduction of the welfare system. This applies not only to rural areas but also to urban areas.

Among the factors that accentuate the poverty of families with small children we can recognize:

- Living in a single parent family household. According to Eurostat (2015a), single adults with children accounted for 4.3 % of the total number of households;
- Living in a household with a female head of the family;
- Living in a household with a low-level education head of the family.

**Figure 3-50: People at risk of poverty or social exclusion by characteristics, EU27+HR, 2012**

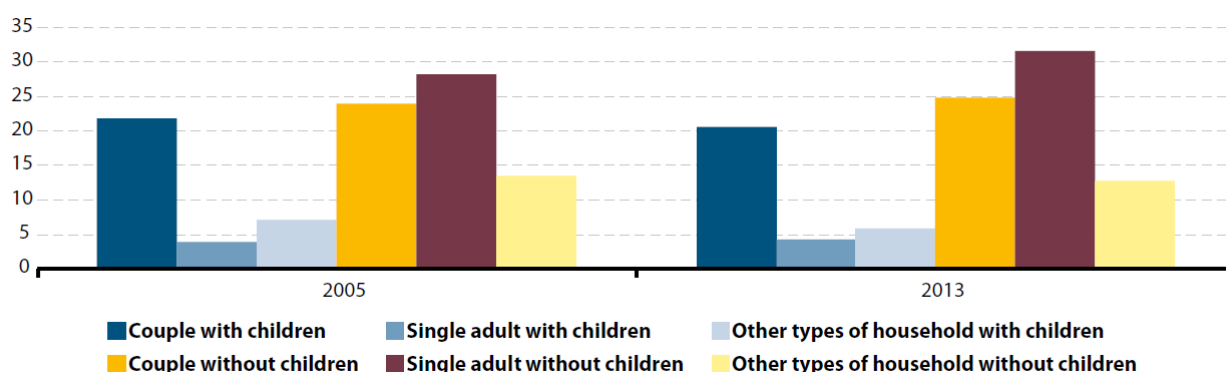


Source: Samek Lodovici and Torchio 2015 on Eurostat data extraction 2014

Note: Share of people at risk of poverty or social exclusion on total population of the same group. Low level of education: ISCED 0-2; Medium level of education: ISCED 3-4; Children: less than 18 years of age; Migrant: born in a non-EU28 country; Large families: 2 adults with 3 or more dependent children.

According to Eurostat (2015a), the share of single adults with children is increasing, from 4.0 % in 2005 to 4.3 % in 2013.

**Figure 3-51: Private households by household composition, EU-28, 2005 and 2013 (% of private households)**



Source: Eurostat 2015a

Authors highlights a correlation between road/transport safety and the economic status of the child / young / household reporting that “in the UK children belonging to the lowest social group appear to be five times more likely to die in road accidents than those from the highest; and more than a quarter of child pedestrian casualties happen in the most deprived areas” (Samek Lodovici and Torchio 2015, p. 34).

According to Samek Lodovici and Torchio (2015), living in rural or disadvantaged areas and from low-income families, poor availability and high costs of public transport may prevent access to education, job opportunities, friends and social activities of children and young people. Moreover, children growing up in disadvantaged socioeconomic conditions are less likely to do well in school, enjoy good health and realize their full potential later in life, showing higher risks of unemployment and of being socially excluded themselves.

Public transport plays a key role in access to education, especially for those living in rural and deprived areas and for those with a low-income and/or disadvantaged background. Children from low-income families travel a shorter distance to school than their high-income counterparts.

According to Kenyon (2011), connectivity is particularly important to secondary school attendance, since secondary schools tend to be more sparsely provided than primary ones.

Low-income young people usually have, if any at all, less access to private transport (European Commission 2013a). Car mobility based on friendship effectively reinforces a kind of immobility within social class: wealthier car drivers share with their wealthier friends and so cushion them from a world of “others” using public transport or walking (Skelton 2013).



## 3.2.7 People living in rural and deprived areas

### 3.2.7.1 Relevance: quantitative assessment and characteristics

There is a remarkable heterogeneity in the development trajectories of rural regions which have made the traditional urban-rural divide, often associating a generalised image of disadvantage to rural areas, quite outdated.

As discussed in Chapter 2, “rural” is no longer synonymous with decline with several examples of regions that have become places where productive clusters of great importance are located. Some rural areas represent the most prosperous and well performing areas in their countries, while others are experiencing depopulation, demographic ageing, high levels of poverty and land abandonment.

Within the same country it is possible to identify rural areas still relying heavily on agriculture and others more oriented towards the food and tourism industries. In this sense, the connection between agriculture and rural seems to become weaker when referred to the economy, despite the fact that agriculture and landscape remain distinctive elements of rural areas. This suggests going beyond the urban-rural dichotomy.

A distinction has to be made between those rural areas close or linked to urban centres and remote rural regions where the risk of poverty and material deprivation is higher. Again, this linkage is not comprehensive of the whole picture because in some Member States deprived households concentrate in cities other than in rural regions. This might happen especially in most developed countries where concentrations of deprivation are in large urban conurbations (e.g. areas that have historically had large heavy industry).

It is important to note that deprivation include a number of domains (income, employment, health, crime, education, barriers to housing and services and the living environment) with transport poverty covering just part of the whole picture. Also, not every person in a highly deprived area will themselves be deprived. Likewise, there will be some deprived people living in the least deprived areas, irrespective of spatial characteristics.

The challenges people living in rural and deprived areas have to face differ greatly between countries, regions and rural/urban places. It is therefore important to consider the specificities of local contexts.

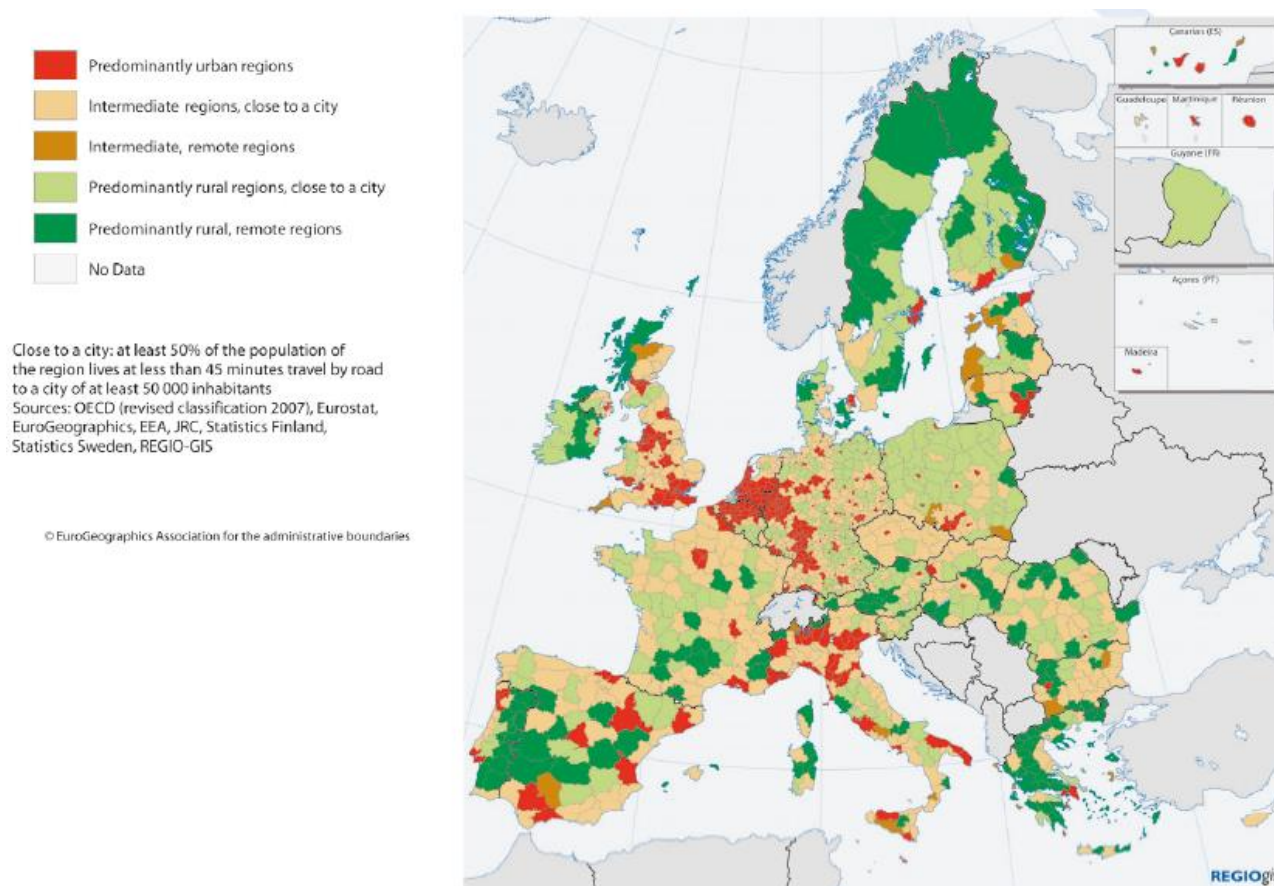
The new *urban-rural typology* developed by the European Commission adds to the basic three elements of the OECD classification (predominantly urban, intermediate and predominantly rural) based on the population density of districts, a fourth remoteness dimension to catch socio-economic differences between rural regions close to a city and remote rural regions.

The new approach, developed by Dijkstra and Poelman (European Commission 2008b), is based on driving time to the closest city: a region is considered close to a city if more than half of its residents can drive to the centre of a city of at least 50.000 inhabitants within 45 minutes. Conversely, if less than half its population can reach a city within 45 minutes, it is considered remote. This methodology found significant differences in EU countries and regions.

The urban-rural including remoteness typology classifies NUTS-3 regions in five categories: 1) predominantly urban regions; 2) intermediate regions, close to a city; 3) intermediate,

remote regions; 4) predominantly rural regions, close to a city; 5) predominantly rural, remote regions.

**Figure 3-52: Urban-rural typology of NUTS3 regions including remoteness**



Source: European Commission 2008b

There are no recent statistics on this issue but as reported in Table 3-13, the distinction between rural regions close to a city and remote rural regions reveals significant differences with the latter category experiencing a negative population growth and an average population density is half that of rural regions close to a city. Remote rural regions present also the lower levels of productivity and GDP per head.

People living and working in rural areas can be at risk of poverty and often face difficulties in accessing infrastructure and public services. When also other inequalities are present (e.g. lower levels of employment, income and educational attainment) as well as the mechanisms that perpetuate them such as remoteness and low population density it can be referred to “rural isolation” (Voloneurope 2016).

**Table 3-13: Characteristics of predominantly urban, close and remote intermediate regions and close and remote predominantly rural regions**

	Predominantly Urban	Intermediate			Predominantly rural			EU-27
		Total	Close to a city	Remote	Total	Close to a city	Remote	
Average annual % change in population, 1995-2004	0.29	0.31	0.31	0.24	0.02	0.10	-0.18	0.25
% of regions with a reduced share of national population 1995-2004	55	44	44	48	64	54	81	54
GDP per head 2004, EU-27=100	127	84	84	71	70	71	68	100
% of regions with a reduced share of national GDP 1995-2004	57	55	55	52	64	59	72	58
Population density in 2004 inhabitants/km <sup>2</sup>	552	112	114	65	40	51	27	113
Access to flights	1 059	475	483	215	237	286	114	685
Number of NUTS3 regions	416	475	454	21	393	249	144	1 284
Share of NUTS3 regions in %	32	37	35	2	31	19	11	100
Total population in 1000s	215 022	184 143	178 463	5 680	90 506	64 516	25 990	489 671
Share of population in %, 2004	44	38	36	1	18	13	5	100

Source: European Commission 2008b

Physical isolation can be also a characteristic of urban areas, particularly of those deprived and not well-connected neighbourhoods located relatively far from the city centre where job opportunities and leisure facilities (van Kempen et al. 2007).

A recent study (Bruder and Unal 2017) focused on a special group of socially excluded people - the deprived – and confirmed that urban and rural households are facing different conditions in terms of the causes of becoming poor.

In Slovak Republic, Hungary and Lithuania, living in a low work-intense household in a rural area yields higher chance to be deprived, although low work-intensity have less importance for the Hungarian citizens, compared to the Slovaks in general.

In Austria, citizens living in rural areas show less probability to be deprived, which again certifies that living in a rural area – even with low-work intensity – not necessarily result in dispossession. This is also confirmed by the 2015 English Indices of Deprivation, based on 37 separate indicators organised across 7 distinct domains<sup>26</sup> and calculated for every Lower

<sup>26</sup> These are Income Deprivation; Employment Deprivation; Health Deprivation and Disability; Education, Skills and Training Deprivation; Crime; Barriers to Housing and Services; and Living Environment Deprivation.

layer Super Output Area (LSOA), or neighbourhood, in England (Department for Communities and Local Government 2015): concentrations of deprivation are in large urban conurbations, areas that have historically had large heavy industry, manufacturing and/or mining sectors, coastal towns, and large parts of east London.

### 3.2.7.2 Transport related characteristics

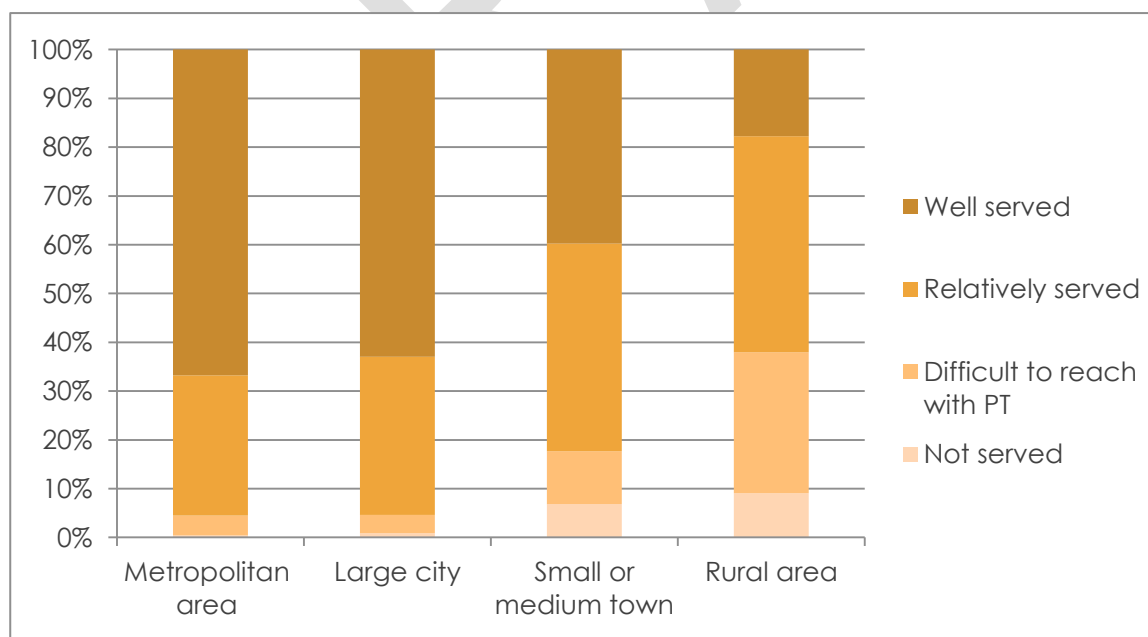
In rural areas mobility needs are mostly satisfied by the use of cars. On a typical day, 64% of Europeans living in rural villages use a car as compared to 38% in large towns.

A Eurobarometer survey indicates the significance of car travel for everyday life or the rural population, and also reveals dependence on car availability due to inadequate alternative options. Europeans who live in urban areas are more likely than Eurobarometer respondents from rural areas to think that additional charges for the use of specific roads at specific times (45% vs. 35%) would be effective in improving urban travel (European Commission 2013a). The same applies for the restrictions on the use of certain types of vehicles (70% vs. 66%) and awareness campaigns encouraging people to limit their car use (57% vs. 53%).

Again, the Eurobarometer survey revealed that Europeans in large towns are almost twice (51%) as likely to use urban public transport weekly as those in small to middle-sized towns (27%) or in rural villages (20%).

This is greatly depended by the different level of service of public transport as demonstrated in a recent EU Survey (European Commission 2015) (see Figure 3-53 and Figure 3-54) and is also confirmed by the level of accessibility in terms of proximity to bus, metro or tram stations as in the Eurobarometer survey: in rural villages only 65% of people live less than 10 minutes away from nearest station or bus stop, while in large towns this percentage rises to 87% (European Commission 2013a).

**Figure 3-53: Perceived level of Public Transport services by level of urbanization in EU**



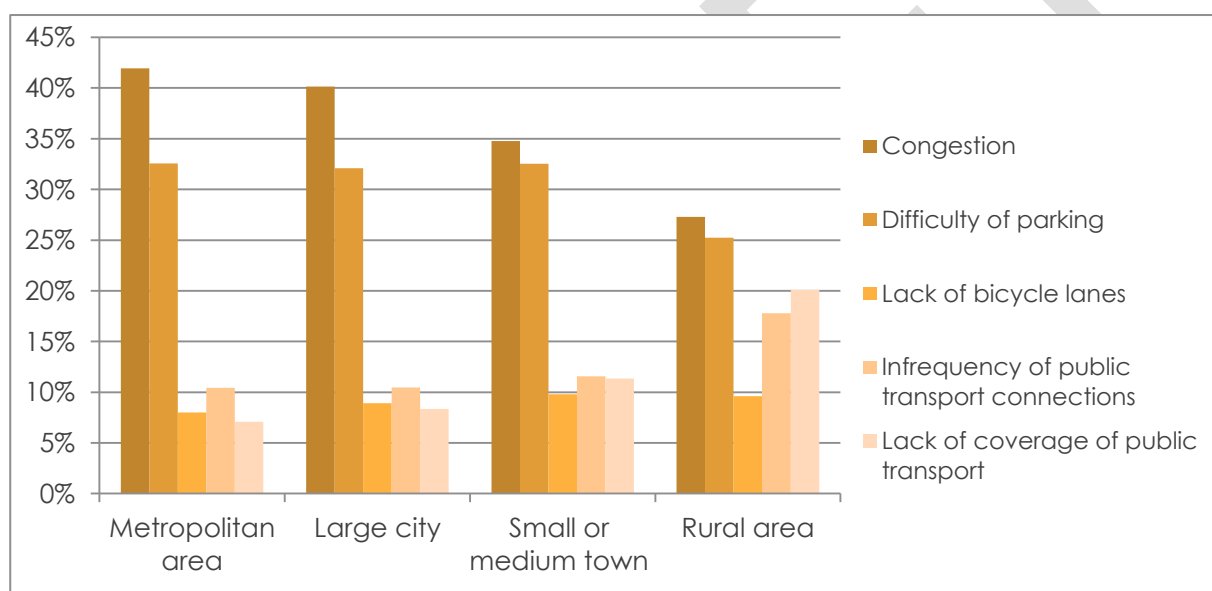
Source: European Commission 2015

Car use-dependant problems like congestion and difficulty of parking are perceived as main problems also in rural areas, but very high shares are registered in metropolitan areas, big cities and also small or medium-sized towns.

The lack of proper parking spaces seriously threatens the quality of life in some peripheral urban neighbourhoods, where green areas and sidewalks are often used for parking cars (van Kempen et al. 2007).

In rural areas 20% of respondents indicated the absence/lack of coverage of public transport and 18% the infrequency of PT connections as key problems, while the shares in urban areas are significantly lower (European Commission 2015). That might lead to a 'forced car ownership' (FCO), i.e. households are forced to own at least a car despite limited economic resources (i.e. being materially deprived).

**Figure 3-54: Perception of main transport and mobility problems by level of urbanization in EU**



Source: European Commission 2015

As reported in the study "Poverty and social exclusion in rural areas" (European Commission 2008a), in many rural contexts, the widespread presence of economic activities in the territory or the proximity to a city stimulates the phenomenon of commuting. It may help reducing unemployment in rural areas but may also divert demand for key services away from local providers towards nearby urban ones, resulting in a decline in local provision of services, which may represent an additional source of deprivation for more vulnerable groups (such as elderly and children). It may also cause house price inflation.

Some rural areas have benefited from improved transport links, improving their economic performance. Adequate infrastructures and, in particular, access to transport and the ability to travel, are identified as an especially significant resource to accessing employment and to developing social relations in remote rural areas.



This aspect is more relevant for some Eastern countries, notably Bulgaria, Poland and Romania, where the overall quality of infrastructure is lower.

As said, accessibility is a main problem in remote regions whereas does not appear to be relevant for intermediate regions with the exception of some Eastern countries (Bulgaria, Hungary and Romania), Southern countries (Greece and Portugal) and Ireland.

### 3.2.7.3 Transport related disadvantages

Limited transport infrastructure is still a problem in many rural regions, increasing the social isolation of some social groups. In particular, in rural regions characterized by high dispersion and numerous small villages, providing the traditional public transport services continue to be difficult and very expensive.

**People living in remote and low-density rural areas usually have to cope with poor and infrequent public transport services** that should on the contrary enable the local population to retain their independence and access basic services and facilities, thus limiting the risk of depopulation.

Limiting transport links and connections can make commuting impracticable and this accelerate depopulation of rural areas and increase the incidence of older people (especially elderly women living alone) than in other areas (Samek Lodovici and Torchio 2015).

Remoteness and isolation of some rural areas creates a strong dependency on a variety of infrastructures for their connectivity, including ferries and air transport. Schemes to reduce travel costs for those living and working in remote areas have greatly applied in different countries.

Maintaining road and rail networks are a challenge in rural areas, due to the distances that need to be covered, the difficulties of integrating road and rail, the small numbers of users and adverse weather conditions. Transport infrastructures and services are in any case considered fundamental to keep those areas vital (Council of Europe 2017).

Thanks to the improvement in transport links, a large number of rural regions in Europe have been able to take advantage of some emerging elements that improved their economic and social performance, e.g. the new demand for clean environment, attractive landscapes and cultural heritage. For rural areas close to urban clusters, the demand of residential houses and commuting have played an important role in changing their economic and social aspects.

All these factors have contributed to a partial reversal of the trend of rural out-migration in many rural areas in countries such as France, the UK and Italy and also in some of the New Member States, such as Poland and Hungary. Commuting has changed the characteristics of many rural areas, by making them more similar to peri-urban areas.

Similarly to what happens in several urban peripheries, deprivation can increase as a consequence of rising housing costs, transport costs and bad living conditions (e.g. pollution and congestion). These difficulties invest particularly the low-income families who originally moved to peri-urban areas exactly with the aim of reducing the cost of living, and are now trapped in a circle "moving in search of cost reduction - facing cost increase as effect of such search" (European Commission 2008a).



### **3.2.7.4 Multiple socio-economic disadvantages**

Again the report Poverty and Social Exclusion in Rural Areas (European Commission 2008a) identifies four categories of problems that characterise rural areas and determine the risk of poverty and social exclusion:

- 1) demography (for example, the exodus of residents and the ageing population),
- 2) remoteness (such as lack of infrastructure and basic services),
- 3) education (for example, lack of preschools and difficulty in accessing primary and secondary schools), and
- 4) labour markets (lower employment rates, persistent long-term unemployment and a greater number of seasonal workers).

The most vulnerable groups are children, young people, women, older workers, lower skilled workers and the unemployed (European Parliamentary Research Service Blog 2016).

The problems connected to ageing are further accentuated in remote rural areas by isolation and distance from basic services. Remoteness can therefore impact on the quality of life of groups already at risk of social exclusion and on transport-disadvantaged groups, such as non-car owners, the unemployed and low-income people, the elderly, women, migrants and young people.

In rural and thinly populated areas young people are more likely to suffer from restricted opportunities in training and employability. With respect to densely populated areas, participation in education and training among young people (aged 18-24) is much lower (47.4% vs 58.8%) and there is a higher rate of early school leaving (13.9% vs 11.6%), as well as a higher NEET rate (14.2% vs 12.5%) (Samek Lodovici and Torchio 2015).

Among people aged 30 to 34, just over one quarter (27.9%) of the EU-28 population that was living in a rural area had a tertiary level of educational attainment in 2015; this share rose to one third (33.4%) for people living in towns or suburbs, and peaked at almost half (48.1%) among those living in cities.

### 3.3 Final remarks: main findings from the analysis of vulnerable groups

#### 3.3.1 Targeted vulnerable groups and socio-economic disadvantages

Chapter 3 explored the socio-economic dimension of transport poverty and mobility deprivation, shedding light on the distinctive and unique features of the vulnerable groups targeted in HiReach, which are:

1. **low income and unemployed,**
2. **elderly people,**
3. **people with reduced mobility,**
4. **women,**
5. **migrant and ethnic minorities,**
6. **children and young people,** and
7. **people living in rural and deprived areas.**

Transport poverty and mobility deprivation are complex phenomena. The individualisation of the leading factors is not trivial since the exclusionary mechanisms and processes intercept and overlap, creating a deeply complex web of relations. Despite several conceptual differences, there is consensus in the literature that accessibility is intricately related with social exclusion when the transport system does not allow citizens to fulfil all their mobility needs.

In this respect, the notion is widely accepted that transportation is essential to the vitality of communities. It provides access to employment, health care, education, as well as to other services and economic activities which are nowadays of great importance, including tourism. Achieving the target of sustainability means considering the needs of different users and thereby offering equal levels of accessibility to transport to all different groups.

The right to have adequate, quality and safe mobility is one of the pillars EU citizens can refer to, duly secured by the Communication from the Commission to the European Parliament and the Council: "Strengthening passenger rights within the European Union COM of 16/02/2005". Such rights not only ensure equal economic and social opportunities for all (possibility to carry out basic economy activities, access to education and jobs), but also their social inclusion and access to other elements that determine quality of life parameters.

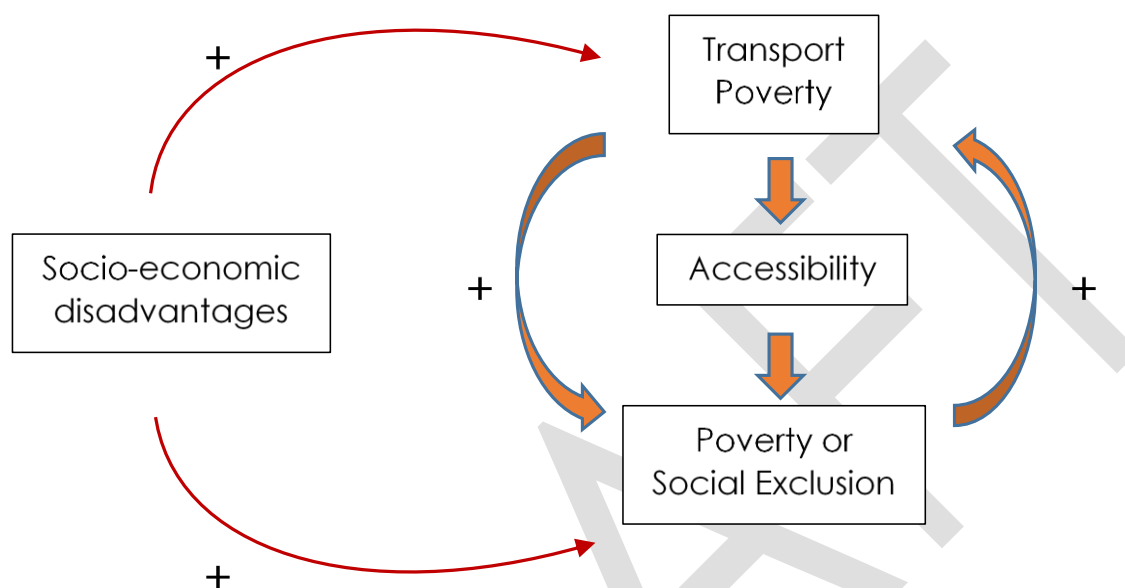
It is however important to bear in mind that EU communities vary substantially from one another. What ties them together is the presence of vulnerable groups, with non-mainstream needs, living and working in areas traditionally characterized by the lack of sustainable mobility enforcement initiatives.

The need to adopt a sensitive perspective emerges here as a challenging one. In this sense, to be effective, local mobility policy actions need to be aware of the multiple constraints that exist and that prevent people from being more participative in the public realm and endorsing more sustainable mobility options on their daily routines.

The comprehensiveness of the review carried out in the previous subchapters, related with the underlying layers of social exclusion, offers an insight into the multiple forms of disadvantage and the way they relate to each other, especially in context of poverty.

Nowadays, the influential role of the socio-economic factors on the rise of transport poverty and mobility deprivation is known (Figure 3-55), albeit the actual contribution is still object of analysis and discussion. Also, a vicious and self-reinforcing cycle between transport poverty, and poverty or social exclusion has already been established.

**Figure 3-55: Simplified conceptual diagram on the mutual influences between socio-economic disadvantage, transport poverty, and poverty or social exclusion**



Source: Own elaboration

Table 3-14 presents, for selected socio-economic factors, examples of risks of poverty or social exclusion, bridging links them to the relevant vulnerable segments. The table offers two interesting insights.

Firstly, it evidences the abovementioned interrelated and overlapped influence among socio-economic factors. Secondly, the statistical values provide some support for the estimation of the plausible prevalence of each vulnerable segment.

**Table 3-14: Selected socio-economic disadvantages and their intersections**

SOCIO-ECONOMIC FACTOR		VULNERABLE SEGMENT
<b>Migration</b>	AROPE rate 17.6% higher among adults born in a non-EU member state than for native residents.	Migrants and ethnic minorities
	AROPE rate 2.9% higher among adults born in a EU country (but living in another EU country) than for natives residents	Migrants and ethnic minorities
<b>Land-use</b>	AROPE rate 2.9% higher for residents living in rural areas than residents living in urban areas	People living in rural and deprived areas
	64% of people living in rural areas own a car as opposed to 38% living in urban areas	People living in rural and deprived areas
<b>Income</b>	17.3 % of the EU population affected by monetary poverty,	All
	7.5 % are affected by severe material deprivation,	All
<b>Occupation</b>	10.5% is the share of population (aged 0-59) living in households with very low work intensity	Low income and unemployed
	AROPE rate of 7.8% for the EU population working full time.	All
	AROPE rate of 66.9% for the unemployed	Low income and unemployed
<b>Education</b>	AROPE rate of 34.8% among those people with at most lower secondary education	All
	AROPE rate of 63.7% among children of parents with at most pre-primary and lower secondary education	All
	AROPE rate of 10.3% among children of parents who obtained the highest educational degrees	All
<b>Disabilities</b>	AROPE rate 30% higher among people with activity limitations than among the general population	People with reduced mobility
	People with activity limitations have an employment rate of 47% which is 20% below those who have not basic activity limitations	People with reduced mobility
<b>Age</b>	AROPE rate of elderly is of 18.2%	Elderly
	Elderly people are the most important PT users	Elderly
	AROPE rate of 26.4 % for young people (aged less than 18)	Children and young people
	AROPE rate of 30.6 % for young people (aged 18 to 24)	Children and young people
<b>Gender</b>	AROPE rate 1.9% higher for women than men	Women and gender-related aspects
	57% of men use a car daily, compared with 42% of women	Women and gender-related aspects
	Gender gap of 16% as to caring responsibilities	Women and gender-related aspects
<b>Household composition</b>	AROPE rate 100% higher among single parents than any other household type.	All

Source: Own elaboration

### 3.3.2 Layers of socio-economic disadvantages

A neat compartmentalisation of the multiple socio-economic disadvantages is difficult at both the theoretical and the operational levels, due to the many interrelated connections.

As already mentioned, past studies (Lucas 2012; Lucas et al. 2016; Moore, Lucas, and Bates 2013; Urry 2007; Uteng 2009) enabled the identification of three overlapping categories or layers of socio-economic disadvantages, being: individual related, local area related, and EU and Global level related (Figure 3-56).

**Figure 3-56: Overlapping layers of socio-economic disadvantages**



Source: Own elaboration

Results evidenced that the socio-economic disadvantages do not solely lie with the individual or with his/her inner characteristics and traits, but they are also shaped by local, EU and even worldwide forces and patterns. Hence, a vulnerable person may be trapped into a permanent vicious and reinforcing circle of deprivation and transport-poverty, unable to escape without help and support from others.

The support can take different forms (e.g., public policies or direct action on the individuals such as medical assistance) and be provided by different organisations (e.g., local and national authorities, NGOs, or social care system, should target the overlapping layers).

A set of fifteen socio-economic factors, distributed among these three categories, were identified and analysed (Figure 3-57).

**Figure 3-57: Multiple forms of socio-economic disadvantages**



Source: Own elaboration

Follows a brief summary of the socio-economic factors of each category.

The **broadest layer** refers to those disadvantages that permeate **vast social structures and spatial landscapes embracing both EU and non-EU Member States**. Figure 3-57 lists the individual factors found in the literature and already discussed. Societies are shaped by intertwined *cultural and motivational influences* which results in ever-evolving needs and expectations (e.g., younger generations favour less automobility vis-à-vis older generations).

They define the norms, beliefs and values of societies which underpin the *legal frameworks and regulations*. Also, they are at the root of realities and practices that are *discriminatory*, or sources of *inequalities* of gender, age, race or religion.

These patterns have been recently exacerbated by the growing inflow of *migrants* of different cultural and societal backgrounds. Whereas the movement of people within the EU is ancient and it is well-established; the recent inflow of non-EU migrants with cultural and societal backgrounds is a novel phenomenon.

The **second layer** refers to those socio-economic disadvantages accruing from the **characteristics and features of the region where people live**. The *degree of urbanisation* plays a decisive role in the level of accessibility of the population. Indeed, people leaving in rural areas are more likely to encounter challenges to fulfil their mobility needs than those leaving in more urbanised regions.



Additionally, this factor has a relevant leverage effect, since it intercepts and overlays with several socio-economic disadvantages, and it is transversal to several vulnerable groups. After all, the way people live (e.g., travel, work, study, shop, engage in social interactions) is intricately connected with the structure and organisation of the region. Linked to this, factor, *land-use planning* principles are decisive in the quantity and quality of accessible opportunities.

Understandably, the density of activities (e.g. schools, factories, offices, retailers, restaurants, etc.) in rural areas is lower than in urban areas, limiting the scope of opportunities that people in those areas can reach.

Yet, it was found that, even in urban areas, vulnerable segments may still be mobility-deprived. In this sense, the strategic planning and development of land-use should be carefully designed to bring together the adequate mix of activities, so that people could meet their mobility needs in a time and cost-efficient manner, resorting to sustainable and environmentally friendly modes of transport, such as walking and cycling.

The quality and walkability of the public spaces (e.g. existence of green areas, cleanness of streets and other spaces, availability of sidewalks or crosswalks), in particular, and of the *built environment*, in general, are also relevant factors, with a direct impact on the level and perception of *safety and security*.

This is of particular relevance, since walking and cycling are the prime modes of transport of several vulnerable groups, such as low-income people, elderly, women, or young and children. The serviceability of the built environment is by itself multidimensional, depending on several conditions, such as comfort (e.g. existence of sidewalks, crosswalks or cycle lanes), continuity (e.g., lowered sidewalks), connectivity (i.e. linking the relevant services and activities), comfort (e.g. slopes, continuity, illumination), and safety (e.g. presence of other people and commerce, physical segregation, or cleanness).

Often, rural areas or urban deprived areas lack sidewalks and roadways of quality, jeopardising walking or cycling activities. Also, dwelling in poorly illuminated streets or in poorly preserved areas is not comfortable and restrains people's mobility. Indeed, the perception of safety & security is intrinsically linked with the form and conservation of the built environment, including the transport system.

Finally, the traffic conditions have a twin role on people's health and safety. Firstly, internal combustion engines are a relevant source of local pollutants and emissions, and some vulnerable groups, such as disabled people (environmentally challenged), elderly, or children and young, can be particularly affected. Secondly, traffic generates situations of conflict among users, which are necessarily worrisome for the most vulnerable groups, notably pedestrians and cyclists.

The **final layer** of socio-economic disadvantages is centred on the **individual**. Several factors were flagged out.

*Income level* and, linked to this, *material deprivation* are transversally relevant to all vulnerable groups. After all, the quantity and quality of the opportunities and services at reach depend ultimately on the person's available budget for travelling. Yet, if low income or material deprivation is deeply sourced in transport poverty, the reverse does not necessarily hold true. As discussed above, a medium or high-income person (i.e., with no material deprivation) may even so incur in transport poverty.

This factor is, thus, far from explaining the full picture about the interrelationship between poverty, transport disadvantage, access to life essential activities and services, and transport related social exclusion.

See for example the cultural discrimination felt by migrants and ethnic minorities alike, the safety problems felt by women or even the physical bottlenecks that impeded old people (regardless of their income) to pursue basic daily tasks using transport options, a disabled person that cannot access the bus, or an elderly person who for fear of getting lost does not ride on public transport. Here, it is made clear that other socio-economic factors besides financial availability can have an equally strong impact in relation with transport disadvantage and step in the way of meeting accessibility priorities. In fact, it is wise to assume the need to contextualize each local context before inferring cause-effect chains.

Income level is strongly related with the type of *occupation*. Unemployed or unoccupied people tend to have lower levels of income and, hence, higher mobility restrictions. On the other hand, they have more free time, meaning that they have higher flexibility in the moment of planning the journeys and choosing the modes of transport (e.g. walking). Employed people tend to follow regular daily travel routines, mirroring the working hours. Even so, employed people may face material deprivation, which has a direct impact on the mobility patterns. A relevant phenomenon is the “forced car ownership” cases, in which low income and employed people need to own/use an expensive mode of transport – car, since alternative transport solutions are not feasible.

In turn, the type of job is directly linked with a person's *educational attainment*. As a matter of fact, the higher is a person's education level, the lower is his/her AROPE rate. Also, income level increases with the education level. Yet, the impact on mobility behaviour is still uncertain. On the one hand, more educated people tend to have higher income, which is typically associated with high intensity of car utilisation. On the other hand, more educated people tend to have a higher environmental awareness and consciousness that may lead them to favour other modes of transport. Regardless, studies found that more educated people have higher level of accessibility and mobility opportunities.

*Disable and impaired people* are a highly heterogeneous segment. The European Commission has labelled five independent groups. All exhibit distinctive characteristics and unique mobility restrictions. Hence preparing an all-inclusive built environment and transport system is of high complexity and difficulty. Unsurprisingly, the preferred mode of transport is the private car, as it provides customised and tailored services.

Age is another relevant socio-economic factor. Two vulnerable segments are related with the age of the person, being: children and young people, and elderly. The factor works differently on each segment though: i) children are unaccountable and unable to travel alone; ii) young people normally have low income (e.g. students), and iii) elderly people, whose physical and cognitive capabilities began fading out, may face different barriers, depending on the actual limitations. A relevant one concerns the ICT-literacy, which is increasingly relevant to access the transport system. The *gender inequality* remains a main issue at EU level, as deeply intricate cultural and societal norms and beliefs not only lead women to take on certain tasks (e.g., household chores or caring of relatives and children) limiting their available time to travel, as well as create barriers to market access (e.g.,

salary gap). The consequence is that women have a higher risk of poverty and social exclusion than men.

The *household composition* has a great influence on the mobility choices and patterns of its elements, since it influences the level of income (per capita). By way of example, at EU level, the AROPE rate of single parent households is twice the other household types. Provided there is enough income, households with children or young people exhibit higher utilisation of private car.

### 3.3.3 Main mobility barriers affecting vulnerable groups

The socio-economic factors listed above intersect in a continuous and dynamic manner impacting differently each vulnerable segment. Income seems to play a determinant role in transport poverty.

Table 3-15 provides some hints, informing that financial barriers impact significantly in almost all the before identified vulnerable users and the subgroup which would be more affected by transport poverty would then be people with reduced mobility.

Yet, it is not the single explanatory factor, and the other factors can place. First and above all, one can conclude that in a social exclusion paradigm, the cause of disadvantage is not only a matter of having not enough money to buy essential goods, such as food, as Table 3-15 shows that the focus can be placed on rather non-material causes and Figure 3-55 highlights that disadvantages often combine.

Above all it is relevant to bear in mind the amplifying effect accruing from the combination of several socio-economic factors. Imagine for example a woman, living in a rural area where public transport scarce and therefore with an uneven access to social services and health care. To guarantee her job, she could be forced to have a car. In fact, for many people in rural or less/sparsely populated areas, mobility is just not practical without a car of their own (here lies the concept of "forced-car ownership").

Even in the relatively densely populated countries of Western Europe, rural areas nationwide often lack public transport services or have an insufficient standard to guarantee independent travel. This trend is at the basis of an excessive reliance on private individual cars, despite its higher costs.

**Table 3-15: Synthesis of main mobility barriers that affect vulnerable users**

	LOW INCOME AND UN-EMPLOYED	ELDERLY PEOPLE	PEOPLE WITH REDUCED MOBILITY	WOMEN AND GENDER-RELATED ASPECTS	MIGRANTS AND ETHNIC MINORITIES	CHILDREN AND YOUNG PEOPLE	PEOPLE LIVING IN RURAL AND DEPRIVED AREAS
<b>Physical attributes</b>		General health limits activities	Access to vehicles and infrastructures	Migration is another rising force of transport poverty			
<b>Safety/security</b>		Safety and security concerns	Safety and security concerns	Safety and security concerns	Racial/religious discrimination	Vulnerable when walking to schools	Higher rates of crime and bad health
<b>Culture</b>		Low technology usage	Lack of confidence in performing basic activities	Need to perform more trips and time constraints due to different gender division of household's roles	Access to information and language barriers	Influence of parent's car-oriented culture	
<b>Mobility services</b>	Forced car-ownership and related costs	Wayfinding	Lack of dedicated/adapted public services		Low car ownership	Inadequate walkways and cycle lanes	Poor infrastructures
<b>Financial</b>	Lack of household income push them to less accessible areas	Household income	Household income	Reduced income	Transport affordability		Forced car-ownership

Source: Own elaboration

Several other meaningful combinations of multiple deprivation are likely to occur throughout Europe. There are however frequent similarities in the research carried out by different authors that one can mention and consider as typical cases. For example, low-

income groups usually spend a high share of their income on transport and in turn have the lowest quality transport systems available.

They are, as Lucas has shown (Lucas et al. 2016), most often disproportionately exposed to unsafe and unhealthy travelling environments, leading to greater incidences of traffic-related deaths and exposures. Indeed, most barriers are overarching and can appear even in less predictable situations. Hence, it is important to take into consideration is that these obstacles often show up in coexistence and interrelate with the multiple dispositions that people have<sup>27</sup>, contributing for the rise and resilience of transport poverty and to other related inequalities.

Some conclusions can nonetheless be drawn from the previous table. Findings in this chapter point out that some transported-related aspects impact differently in the selected vulnerable groups.

For example, *adequacy* seem to be the most meaningful transport barrier for those who suffer from disability to some extent. The *availability* and *frequency* of transport seem to be a major barrier for people living in rural and deprived areas, whereas the *affordability* impends people suffering from low income and unemployed to carry out basis daily activities.

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<sup>27</sup> To this respect, the MINDSETS project has shown the complex underlying psychological frames that led people to make mobility options. Habituation, for example, is one key motivational element that impacts on the modal choice. The rationale is that people tend to repeat similar trips over the days. This is even more accurate in rural contexts, where people are often less informed about choices. To counteract and deliver new options, it is important to convince people and empower them with the required confidence that can take them to mind-shift towards more sustainable travel options.

## 4 Assessment of mobility needs

In this chapter we depart from a classical account of social inequality and social disadvantage focusing on poverty, social strata and geographical layers, so to define a more complex assessment of inequality and disadvantage. This takes into account the increasing variability of lifestyles, attitudes, opinions and values, but also how they shape - on a micro-societal level - people's mobility.

The chapter analyses thus mobility patterns and needs, so to gain a holistic and comprehensive understanding of transport poverty and to trigger the activities of the following project tasks (particularly Task 2.4 – Listening to the local experts and users - and WP3 – Identification of new mobility options and business models).

The social skills requested by different transport regimes and the social construction of transport needs are here analysed, so to understanding how much they play a role in the perceptions of and attitudes towards different forms of travel and ultimately the level of realized mobility.

In this work, we rely on the current literature on transport-related poverty, but we make free use of Pierre Bourdieu's and Vincent Kaufmann's concepts, respectively of "social capital" and "motility".

### 4.1 Introduction

#### 4.1.1 Setting the problem

The previous chapters explored the spatial and social specificities of transport poverty in detail. This chapter aims to bring these results together and connect them to an analysis of mobility patterns and needs to arrive at a holistic and comprehensive understanding of transport poverty. **The main argument of this chapter is how transport poverty is the outcome of social and spatial elements, but also the outcome of socially built structural aspects.**

While social and interaction skills are fundamental in any human activity, in transport the process of contemporary globalization and economic competitiveness increase the complexity of transport regimes, including their power relations. Under such framing conditions, in the modern age, power relations in societies increasingly build on the realized levels of communication and movement, the distinctive factor being the ability to "keep up" with technological innovation and social trends (Shove 2002, p. 4; Hannam et al. 2006, p. 12).

In the transformation towards digital and automated societies, everyone's mobility arrangements are - in one way or the other - influenced by the friction between entrenched norms and roles and the fast pace of contemporary life. While for many, negotiating these complexities have become part of everyday life, it can be argued that



those who face a social or transport-related disadvantage may be overly burdened by coping with transport regime's process.

#### 4.1.1.1 Social skills and their impact on transport poverty

In investigating this issue, we need first to briefly introduce the concept of the transport regime. The **transport regime can be seen as a complex, socially and technological constructed arena, formed by technological and management elements**. However, any transport regime asks a certain level of social and cultural skills and abilities to successfully obtain a service. We can label these skills as social and cultural capitals. These set of social interactions are represented in people's actions and exchanges in using transport regimes, and they can be more or less institutionalized.

Thus, the experience of using transport regimes is crucial in shaping transports needs. The way that transport regimes create a positive experience can foster transport needs. On the contrary, negative experience (and, naturally, even just the perception of negative experience), can reduce the willingness to use transport regime(s) again. Additionally, like all human activities, also mobility is highly symbolic: transport regimes could replicate and reinforce traditional social values, including (more or less involuntarily) replicating and reinforcing inclusion and exclusion patterns.

As a consequence, these elements can produce also transport poverty. We can say that NOT owning transport-related social and cultural capital can consequentially trigger transport poverty. The pervasiveness of these social abilities and skills goes beyond the access of transport network. The perception and self-perception of any individual, as much as the power relations in society and individual's subjective estimation, are aspects that influence perception and needs also in transport.

Without being aware of these overarching and underlying conditions for movement, unrealized mobility needs may remain uncovered, with the result that they cannot be adequately addressed in policy and technology innovation. Such a social constructivist approach must take close attention to power relations and systemic inequalities.

Furthermore, sociality itself needs thorough scrutiny – including the range, nature and quality of social relations and how they change in the digital age. The effects of these wider social transformation need to be taken into account, "if transport academics are not to unintentionally exacerbate problems of social disadvantage" (Schwanen et al. 2015, p. 125). **We can thus define as central in this chapter that, beyond socio-economic and geographical factors, socialization thus can play a major role in the formation of mobility needs, perceptions of and attitudes towards different forms of travel and ultimately the level of realized mobility.**

#### 4.1.1.2 Mobility needs as a (complex) social construction and the role of social networks

We add now a further element of complexity, **which is the perception and self-perception of mobility needs**. Indeed, individual transport needs are socially constructed: the "necessity" of a trip is highly discretionary according to social and cultural backgrounds. What seems indispensable for one person can be mundane for another. This different ranking of transport needs is naturally not completely in the hands of each of us, but depends again of a long series of norms, values, experiences and (socially embedded) expectations.

Therefore, it becomes also necessary to revisit the discussion on individual *mobility* needs on the one hand, and the notion of fairness and justice in the distribution of *accessibility* levels on the other. While these are by no means mutually exclusive approaches, different strands of investigation put varying emphasis on either of the two, resulting in different conclusions about what is necessary to achieve what is called a “good” and meaningful life, and subsequent recommendation for policy and technological solutions.

John Urry and others scholars (Urry 2007; Urry and Grieco 2011) have described in detail the significance and even primacy of social relations for maintaining a meaningful life in the networked society: “What seem important in contemporary life are overlapping and intersecting social networks – in leisure, friendship, family life as well as in work and organizations. And these networks appear to demand intermittent travel, such travel being crucial to forming and sustaining such networks produced through ‘moments of co-presence’” (Cass et al. 2005, p. 545).

It is important to understand both the inclusionary *and* exclusionary effects of social networks, the “Janus-faced capacities of social capital” (Schwanen et al. 2015, p. 132). Social ties are a capital as outlined by Pierre Bourdieu, that is, a resource and it can be accumulated: this represents a power relationship and a power resource. Social capital has an exchange value, and is not detached from material resources (and other forms of capital such as cultural capital, Schwanen et al. 2015, pp. 127–128). Indeed, maintaining social ties needs investment of material resources.

The networked society is thus a society of inclusions and exclusions at the same time. Hence, due to the linkages between network capital, material resources and other forms of capital, it must be assumed, that in the present mobile societies, travel and communication options are highly accessible to the “travel rich”, those who are usually also the better off, and benefit them more than the travel poor.

Thus, **social groups that face social or transport-related disadvantages may also face higher burden to realize mobility that is needed for nurturing both basics (social constructed) needs and their social networks.** These perspectives have greatly influenced the transport and mobility disciplines in the last twenty years. Often, however, this approach is still a blank spot in transport policy and planning: we should keep in mind how it has become increasingly difficult to translate empirical findings into policy measures and technological solutions.

This asks for an analysis of mobility needs that takes into account how social ties are maintained (or not) and the extent of the “mobility burden” for vulnerable groups needed for establishing social capital. Such analysis needs to consider how vulnerable groups rely more strongly than others on additional assistance in meeting their transport needs. Apart from state’s measures, this assistance is often support from family and friends.

This leads to conceive that social relations for some groups – especially elderly and mobility-impaired people in rural areas with inadequate public transport – are a prerequisite for being mobile, while mobility of these individuals again reinforces the ability for co-presence and hence the stability of social ties (Jansuwan et al. 2013 for low-income groups; Rittner and Kirk 1995; Rajé 2007 for poor elderly people; Lovejoy and Handy 2011 for migrants in the US; Pyer and Tucker 2014 for young people with disability).

It has also been shown that different socially constructed needs can be in conflict with each other: many older people are reluctant to rely on support from friends and relatives

to meet their mobility demands due to internalized norms of self-reliance and independence, with the effect that especially elderly rather not participate in social and cultural life if they would need assistance in transportation from friends and relatives (or technical devices) (Ziegler and Schwanen 2011, p. 777; Schwanen et al. 2012, p. 1320). The same attitudes have also been described for members of immigrant communities in the US (Lovejoy and Handy 2011, p. 255).

### 4.1.2 Aims and goals

The previous paragraph explains the background of this chapter, here we present its aims and goals, e.g. **departing from a classical account of social inequality and social disadvantage focusing on poverty, social strata and so on, and arrive at a more complex understanding of inequality and disadvantage.** This takes into account the increasing variability of lifestyles, attitudes, opinions and values, how they play out on a micro-societal level and within the same social stratum and ultimately have effects people's mobility.

In this vein, the arguments here presented will allow to better identify - in the project time-frame - the unmet transport needs and the gap between realized and unrealized mobility. For some social groups, this gap is more evident and can be identified more easily. For example, in the case of the elderly: both anecdotic evidence and research indicate that there are lower levels of activity than people desire.

Mostly, those desired activities are made to maintain social relationships and leisure activities, but also to keep social reputation and access to social resources (Hjorthol 2013, p. 1194). This desire increases with age. It could also be shown, that with increasing age, meeting the more basic needs like shopping receive wider significance for a person's well-being, for example due to personal assurance to be independent and in control of one's life, the possibility to meet friends, or just the positive feeling of being out of the house, "on the road" or among people (Hjorthol 2013, pp. 1203–1206).

The exploration of this gap also poses a methodological challenge. Research on mobility needs often relies on observation of travel that actually takes place. Traditionally with quantitative methods, and increasingly with qualitative or mixed-method approaches, travel behaviour and travel patterns are explored through surveys, travel diaries, GPS tracking, focus groups and in-depth interviews.

While such studies deliver important results on mobility behaviour and patterns and provide a strong basis for transport modelling and demand forecasting, the deeper lying norms and attitudes of individuals towards their spatial movement often remain hidden. While many studies differentiate between various trip purposes, they do not explore the more fine-grained motivations for being mobile or immobile in one or the other way, and thus miss the blocked desires (Pereira et al. 2017, p. 177; Nordbakke and Schwanen 2015, pp. 1130–1131).

The definition and identification of mobility needs will thus have a strong impact on policy advice. The way in which mobility needs are defined depends on who participates in the political or agenda setting process. **A participative and inclusive process is crucial for the policies and solutions developed. This means that those who do not have access to political decision-making - or are not adequately represented - may not have the chance to express their mobility needs.**

In the case of socially disadvantaged people, new policies or solutions cannot address these needs or even further impact on the ability to participate in social life (see e.g. Rajé 2007, p. 66; Lucas 2006, 806). The HiReach project takes this observation seriously by directly involving socially vulnerable groups in the process (see HiReach Deliverable 2.2).

Some elements of related to social skills and transport needs can be appraise more closely so to gain a better grasp on the construction, reinforcement and reproduction of transport poverty. This understating can naturally feed also innovative policies and tools addressing the issue.

The following elements are indeed factors, which heavily influence the social use of transport regimes and forge mobility needs:

- **Vulnerability, social life and mobility needs:** especially for groups that are considered vulnerable, the focus is often securing the basic and formal needs of everyday life: employment, education, health care. However, such a model “rests on a definition of what excluded people should want or need and obscures the role that social networks play in maintaining a ‘good life’ and in structuring the meaning of inclusion and participation. [...] This is difficult to achieve, but one method is to focus upon ‘blocked desire’, especially when people cannot meet what they take to be important obligations of co-presence” (Cass et al. 2005, p. 551). Hence, the importance of maintaining social networks for vulnerable social groups and the associated need to be mobile needs further scrutiny.
- **Virtual life and the impact on mobility needs:** information and communication technologies (ICT) have greatly changed contemporary life. ICT tools support the ease of movement through space, and virtual mobility has been highlighted as a means to reduce and replace physical mobility. However, virtual proximity has only partially replaced the need for co-presence and the need for corporeal mobility. Face-to-face interaction is still important in the digital and virtual age as they foster friendship, intimacy and trust: “As communication increases, social networks become dense and provide more and more necessity for face-to-face-meetings. Virtual activities stimulate real activities and interaction” (Kesseling and Vogl 2016, p. 148).
- **Uneven access to mobility options:** As it has become clear in the previous chapter that accessing transport systems is highly uneven according to gender, race, income and age. While it is important to analyse how discriminatory practices prevent mobility of individuals from different groups explicitly, it is also necessary to investigate the historical, spatial and cultural context of uneven access to services. Discourses and policy debates often fail to analyse these structural aspects and therefore unintentionally overlook mobility needs of different groups (Sheller 2015 for ethnic minorities; Cresswell and Uteng 2008, p. 10 for gender aspects).

This is most evident for the needs of women, because “when policy makers debate mobility systems, or designers implement new technologies, or researchers study new mobilities, they are unconsciously already working within a context of deeply gendered discourses that must be brought to the foreground if we are to understand how planning decisions may be contributing to unequal mobility outcomes for men and women” (Sheller 2008, p. 258).

- **Mobility demands, mobility burdens and innovation:** As outlined above, the range of mobility options is further increasing day by day, and so it is the potential burden of mobility. It is important to highlight the close ties between communication tools and mobility options, because such an interplay allows more effective organization of everyday life as well as social and business relationships. ICT drives further extension and differentiation of social networks, allows schedules that are ever more complex and individualized living arrangements.

Furthermore, travelling has become a marker for status among young people, slowly replacing other status symbols such as the car (Canzler and Knie 2016, p. 61). Whenever new technologies emerge, the potential and opportunities to use these technologies change, and those innovations may only be accessible to certain parts of the population, because of high costs, the expert knowledge that is involved and so on (Cass et al. 2005, p. 542).

## 4.2 Theoretical departures

### 4.2.1 The role of socialisation

Socialisation is one of the important formative processes that shape people's attitudes and behaviours. How individuals are integrated in society over different stages of their lives influences individuals' learning experience and formation of social roles. Personal experiences and social norms are internalized and developed into personal norms that ultimately guide behaviour. Significant for socialisation are typically family members, especially parents, friends, peers, colleagues, but also institutions such as schools, and media. Socialisation can be defined as "the adoption of a group's (typical) behaviours, opinions and values by an individual so that thus an individual capable of social acting emerges" (Tully and Baier, p. 195; cited in Scheiner 2017, p. 392).

Socialisation is a key factor naturally also in shaping individuals' mobility needs and routines. Such processes have an effect on the travel modes choices of people and impacts how they adapt their mobility behaviour to changing external circumstances. Research on socialization shows that mobility behaviour is impacted at an early age by primary socialization relating to parental and family mobility, and secondary socialization in later life by mobility education in school, by mobility behaviour of peers and cliques in adolescence and by partners (see e.g. Kroesen 2015, 492-493, 501-502).

Hence, **socialization processes are most formative in childhood and adolescence, but they are not limited to it.** Travel behaviour can change over the whole life course, although changes are slower in later life (Scheiner 2017, p. 393). Studies show that "pro car" attitudes in car-owning households are transferred to the children, who themselves develop positive attitudes towards cars (on this issue, see also Chapter 3 of this report). Other research suggests that media reinforces desire for car ownership and usage as children embrace knowledge of and desire for particular types of cars and the associated lifestyles, though media is not the main or sole cause for how children's travel attitudes and choices develop (Baslington 2008, p. 109).

For young people in teenage age, having access to different mobility options is crucial for independency from family support. Thus having experienced and being familiar with



different forms of transport can enlarge the activity space and help fostering social relationships (Tully and Baier 2011, pp. 195–198).

On the other way around, reduced or highly limited exposure to transport facilities creates barriers to access those mobility systems, and thus lead to reduced mobility in young age (and later to lower perceived transport needs). This environment drives constraints in mobility, which can significantly impede access to education, job opportunities, leisure and social opportunities.

On a different angle, **travel patterns are characterized by routines and habits** and this can lead to transport mode “decisions” **which may NOT follow “rational” choice and decision for the best available option**. This seems trivial, but too often, it is out of policy maker’s mind-set.

In HiReach fieldwork activities as much as in its search of solutions, we need to take into perspective that travel routines can also be a product of formative processes including socialization. We can thus state that observed travel behaviour and travel patterns can differ from the real travel needs of people. Early socialization with cars can contribute to forced car ownership, because other available options that are cheaper may be out of sight for individuals.

#### **4.2.2 Motility as key element: linking accessibility to individual capabilities and preferences**

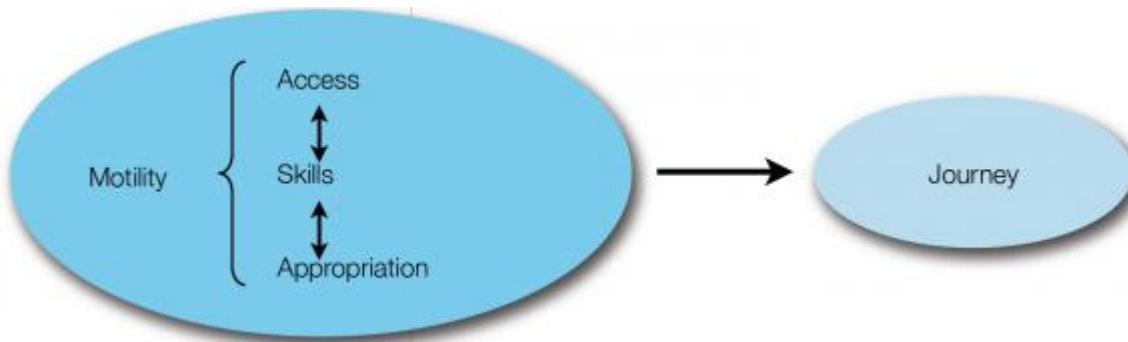
**In order to identify unrealized mobility needs and estimate the gap between actual travel and latent mobility needs, the concept of motility can be employed.** “Motility can be defined as how an individual or group takes possession of the realm of possibilities for mobility and builds on it to develop personal projects” (Flamm and Kaufmann 2006, p. 168). Furthermore, motility can be described “as the way in which entities [persons] access and appropriate the capacity for socio-spatial mobility according to their circumstances” (Kaufmann et al. 2004, p. 750).

Motility hence analyses the *potential* of and *capacity* for movement. The study of potential movement reveals further insights into people’s mobility as well as into its wider spatial and social consequences (Kaufmann et al. 2004, p. 749).

The motility approach allows to grasp a better understanding of the *contextuality* of transport challenges. It also allows analysing and explaining how increased travel options do not result in more freedom and mobility for all; this let us understand that individuals use these options in different ways. In other words, **the motility approach thus provides a useful concept to analyse transport poverty empirically.**



Figure 4-1: The motility approach



Source: based on Kaufmann et al. 2004; Flamm and Kaufmann 2006

Kaufmann and his team identified three interrelated groups of factors that define the potential to be mobile:

- **Access:** this describes the range of possible mobilities according to place, time and other contextual constraints. Access varies according to the options that are available and the *conditions* under which these options can be used. The options entail the available means of transportation and communication, as well as the range of services and goods available at a given time. The conditions refer to constraints in accessibility of the *options*, e.g. distance, cost, need to carry heavy loads etc. Spatial distribution of people and infrastructure, spatial and transport policies and socio-economic position of individuals, households and groups are paramount to analyse access.
- **Skills:** this describes capabilities and competencies required in order to use mobility options. This includes acquired knowledge and organizational capacity in order to plan activities. Three aspects are central: physical ability to move from one place to the other under given circumstances; acquired skills that relate to the rules and regulations of movement (e.g. driving license and parking permits); and organizational skills to plan and coordinate activities, including acquisition of information and the above mentioned required abilities and skills.
- **Cognitive appropriation:** this describes the personal evaluation of available mobility options in relation to personal aspirations, plans and projects and acquired skills. This aspect most importantly considers *how* and *why* people make mobility decisions – how people consider certain options, deem the more or less appropriate for themselves and ultimately select specific options. It also considers how people evaluate their own skills and decisions. How and why people make use of available options (or not) has to do with personal needs, projects, personal aspirations, plans and so on. These needs and aspirations are interrelated with prior experiences, personal values, norms, habits, attitudes and strategies (Kaufmann et al. 2004, p. 750; Kaufmann 2011, pp. 41–44; Flamm and Kaufmann 2006, p. 169).

In studying mobility needs with the motility approach, it is possible to identify the deeper lying elements that influence mobility or immobility behaviour, originating from various scales. With the increasing disappearance of generally accepted organizing principles and the heterogeneity of norms and values in recent times of transformation, it is

important to consider how people make sense of this heterogeneity and put it into mobility practice.

Scholars in the field of mobility and transport have subsequently widened their analysis of mobility needs and patterns by including the potential for movement. Cresswell and Uteng for example point out that “by mobility we mean not only geographic movement but also the potential for undertaking movements (motility) as it is lived and experienced – movement and motility plus meaning plus power” (Cresswell and Uteng 2008, p. 2). Canzler et al. define mobility “as a *change* of condition by targeting three dimensions: movements, networks and motility. [...] Movements refer to strictly a geographic dimension. [...] Networks can be defined as the framework of movements; [they] delineate the field of conceptualized possibilities. [...] Motility is how an individual or groups endorses the field of movement possibilities and uses them” (Canzler et al. 2008, pp. 2–3, emphasis in original).

#### 4.2.3 Network capital, transport and unequal mobilities

A key approach for understanding differentiated mobility needs is the concept of “network capital” developed by John Urry. He and his colleagues argue that in the modern mobile society, above all other, it is movement and the related opportunities that have become associated with an understanding of a “good life”. Social status, recognition and prestige are gained, maintained and enhanced by the degree of personal mobility and associated mobile lifestyles.

In the wake of Pierre Bourdieu’s works, mobile lifestyles together with economic and cultural capital produce *symbolic* power that is the prime currency of social distinction and mechanism for social stratification in contemporary life. Urry coined the term “network capital” to describe the elements that are needed to gain such power. He defines it as “the capacity to engender and sustain social relations with those people who are not necessarily proximate, which generates emotional, financial and practical benefit” (Elliott and Urry 2010, p. 59). For an in-depth understanding of transport poverty, it is necessary to understand how network capital varies between social groups and how accumulation of such capital creates social inequalities.

The degree of network capital a person possesses depends on the degree of access the following core elements:

- appropriate documents, passports, visas, money, vaccines, data-readiness, qualifications, and so on, that enable safe movement from one place to the other;
- a capability to connect to others (workmates, friends, and family members) at-a-distance;
- movement capacities in relationship to the environment – includes physical abilities, competencies to access (digital) information and organizational skills.
- location-free information and contact points; communication devices and mobile data access;
- appropriate, safe, and secure meeting places;
- access to technical systems including: cars, road-space, fuel, lifts, aircraft, trains, bikes, phones, email; and time and other resources to manage all of these, especially when there is system failure (Urry 2007)

As opportunities for travel and communication increase day by day, mobile lifestyles are not limited to particular elites, but have become prevalent in the middle classes. Lifestyles

of high mobility are increasingly perceived as the norm and not the exception in modern societies. High mobility or “hypermobility is glamorized, [...] idealized and made desirable in the contemporary world” (Cohen and Gössling 2015, p. 167).

Furthermore, the need to sustain growing networks of family, friends and weak ties across larger distance requires regular physical meetings and hence increased travel (Larsen et al. 2006, pp. 109–110). Thus, in mobile societies, individuals may experience a state of anxiety about “being disconnected by those moving around, [...] being stuck in place, [...] being too localist and not networked enough” (Elliott and Urry 2010, p. 47) and therefore being assigned a lower social status.

From a policy perspective, it is argued that network capital should be enlarged and spread as equally as possible in order to lessen social exclusion. “A socially inclusive society would elaborate and extend the capabilities of co-presence to all its members. It would minimize ‘coerced mobility’, both to improve psychic health and to heighten equality”.

Transport policy and planning should therefore promote networking and people's freedom to meet each other and conduct relationships over larger distances (Elliott and Urry 2010, p. 64). Such perspectives stress that is indeed necessary to increase *mobility* in addition to *accessibility* targets. However, as authors point out, this social target is in conflict with environmental targets, as growing mobility for all presupposes huge and growing supplies of various resources and further drives global warming (Elliott and Urry 2010, *ibid*). Such an egalitarian demand is furthermore problematic because of an inherent paradox of contemporary mobility.

When networking and mobility are indeed marking social status, increasing the capabilities for movement may rather not create equality in society, but may foster individual advancement and a competition for status that is by nature not egalitarian. Kaufmann concludes that “contemporary forms of mobility [...] are as much a factor of inequality as of equality: they constitute a resource that is inequitably distributed within society, while fostering access to other resources inequitably distribute in space” (Kaufmann and Montulet 2008, p. 54).

## 4.3 Examples of potential and realized mobility

### 4.3.1 Virtual and physical mobility – the impact of ICT

With recent developments of digitization and the proliferation of communication tools, the range of ways and modes to respond to personal needs has extended substantially. Social relations and networks, but also areas that touch the basic needs of people are under deep transformation, most substantially the fields of work, education, health care, supply, access to public services and political participation.

Although these forms have not been taken up equally by all social groups in all geographic areas, there is no doubt that usage and coverage will further increase in the future. It is remarkable how ICT has changed mobility patterns (impacting both the concepts and the practise of transport poverty) and how the proliferation of digitization in all aspects of life have led to the emergence of new mobility needs.

Research on the impact of ICT on travel behaviour have highlighted at least three effects of ICT on mobility: i) *modification*, ii) *substitution* and iii) *enhancement/acceleration* (see e.g. Konrad and Wittowsky 2017, p. 2).

There is not a clear and unambiguous picture on the question whether virtual mobility generally reduces, maintains or increases physical mobility today and in the future. The three effects of ICT are not mutually exclusive; not even on the individual level it can be clearly assessed whether a person is moving more or less due to ICT (Mokhtarian et al. 2006, p. 278).

Digital tools in combination with mobile communication technologies can, however, increase activity while travelling and decrease resistance to physical movement. ICT usage allows making travel time productive or more attractive. This effect of ICT on mobility has been called the *modifying* dimension of ICT (Tully and Alfaraz 2017, p. 11). Using ICT and satellite navigation reduces not only travel times, but also travel time uncertainties, discomfort and the need to plan in advance (van Wee 2016, pp. 10–11; Ben-Elia and Avineri 2015, p. 370).

**For those being familiar with these technologies, the burden of physical movement can be diminished and may even alleviate some of the disadvantages that social groups experience in transport.** For example, this can be the case for physically impaired people: due to real-time and location -based information systems on barrier-free facilities travel is becoming easier or is indeed made possible. **However, for those with low digital aptitude, these technologies and services are out of reach. As usage is becoming more widespread and the norm, people with less digital aptitude face challenges.**

Many researchers argue that virtual mobility decreases the need for physical mobility, thus *substitutes* travel. E-shopping, e-learning and telework can replace the need for physical presence and hence reduce travel. In social relationships, tools of ICT such as messaging and internet telephony can create a sense of proximity between people that are physically divided, and thus decrease the need for physical meetings and travel (Konrad and Wittowsky 2017, p. 2).

However, research on the impact of ICT on travel reduction does not produce a clear picture yet. There is also a trend of entrepreneurial co-living in Europe, especially in Scandinavian countries, where entrepreneurs live, work and socialize under the same roof (Valva 2014; Rogel 2013); such living and working arrangements reduce the need for travel and requires robust digital infrastructure and uninterrupted connectivity. Tele- and homeworking thus respond to individualised and complex arrangements and is likely to increase.

On the other side, in many regard, **virtual mobility produces more travel, thus accelerates or enhances mobility.** As already pointed out, social relations and networks can be maintained via a wide array of communication tools. However, in order to maintain and secure relationships, moments of co-presence are important.

**Thus, with growing networks and distances, the need for physical mobility to nurture these networks and fulfil social obligations is also increasing.** Elliott and Urry have highlighted the changing nature of tourist-type travel in this regard. Visiting friends and relatives involving middle and long-distance travelling has become a substantial part of leisure travel (Elliott and Urry 2010, pp. 53–57).

As touched upon above, despite growing ICT penetration, or precisely because of that, there is evidence that business travel is likely to increase and not decrease. A study in France showed that high trip frequency and demand in business travel above 80km is not

anymore restricted to persons with high income and work responsibility, such as executives, but also intermediary professionals (Aguiléra and Proulhac 2015, p. 34).

This supports the observation that **long-distance travel is increasingly becoming a prerequisite in contemporary employment, and disadvantages those who are not able to conduct physical travel frequently.**

Several authors have argued that social media contributes to the new role of long distance travel, especially using aviation, as generator of social status among young people. Social media allow for constant comparison of travel patterns, the estimation of personal “travelness” and thus contributes to identity formation and self-construction (Gössling 2017, pp. 163–164; Gössling and Stavrinidi 2015, pp. 736–743) . Thus, such forms of travel allow for accumulation of social and network capital at an early age.

This excursus is necessary to frame properly the role of ICT in transport, and considering HiReach's goals, even more in transport poverty. While the concept of digital divide is well assessed, still we have a very partial mapping of the effect of ICT in transport poverty. The question is indeed to better understand how ICT can mitigate or – on the opposite scale – escalate transport poverty. Therefore, those can be the questions needed for a better appraisal:

- Impact of ICT on transport poverty (and its reduction?);
- How is ICT in transport accessed and used by different social groups;
- Which impact we can witness on accessibility?

#### 4.3.2 Travel know-how and its learning process

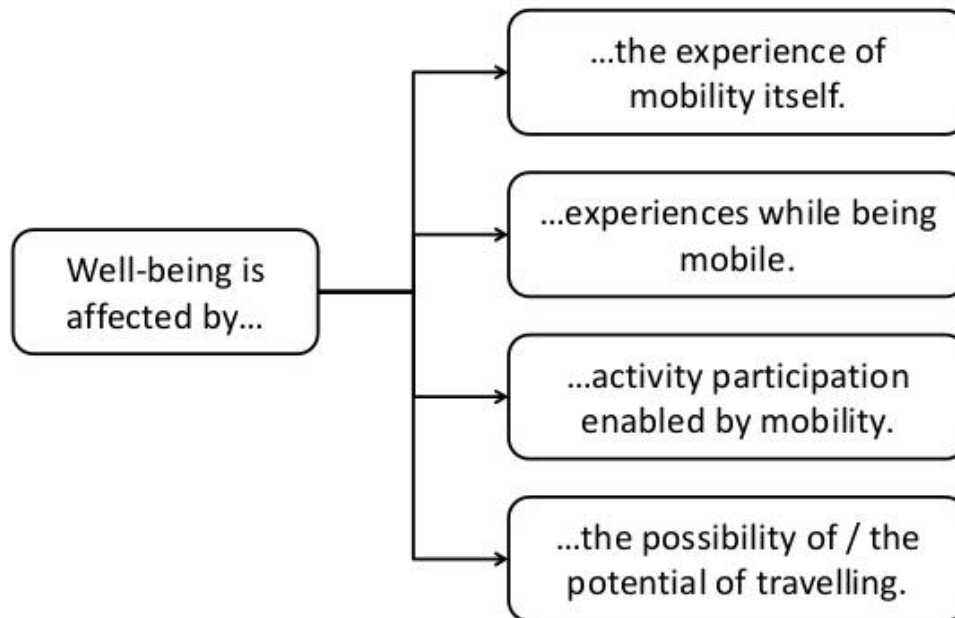
Kaufmann and Flamm (2006, pp. 175–176) point out that, in order to use and master means of transportation, it is crucial to acquire driving and riding know-how for any type of vehicle. Reaching a certain level of know-how is a process of accumulating experience that requires a medium to long-term learning process.

This may be obvious and most important for individual forms of transport such as car-driving and bicycle usage. Studies show that young car drivers need at least 3,000 kilometres to gain minimal experience of driving an automobile (Pervanchon, 1999, pp. 22–24, p. 83, in Flamm and Kaufmann 2006, p. 175). However, also the use of collective modes of transport ask for experience and sometimes a good understanding of the transport regime know-how, so to make travel possible, convenient and comfortable.



Figure 4-2: The relationships between well-being and mobility

### The relationships between well-being and mobility



Vos, J. D., Schwanen, T., Acker, V. V., & Witlox, F. (2013). Travel and subjective well-being: A focus on findings, methods and future research needs. *Transport Reviews*, 33(4), 421-442.

Source: Vos et al. 2013

While the travel experience itself is important, it is even more crucial that a person is also willing to learn from travel experiences. When a positive opinion on a certain transport mode pre-exists, learning can take place and know-how is accumulated. However, **when there is already a negative attitude towards a transport mode, these attitudes are most likely to be confirmed and improvement of the aptitude not likely** (Flamm and Kaufmann 2006, p. 176). We know that when users are given a hypothetical choice between car and public transport travel for daily commuting, car travel is associated with a more satisfactory travel experience and general well-being (Vos et al. 2013, p. 428).

The picture changes when the real commuting experiences are evaluated: research in the US and Europe show that public transport commute experiences – especially train travel – are evaluated more positively than car commuting. In the US case, while commuting, car commuters experienced more stress, anxiety, impatience and less enjoyment than commuters by public transportation (Abou Zeid 2009, pp. 83–87).

A study in different European cities revealed that train and metro commuters are more satisfied with the commuting experience than car commuters; however, in this study, bus commuters were the least satisfied (Duarte et al. 2010, pp. 22–23). This means that car usage, e.g. for commuting, is reported positively, although the actual experience may be less satisfactory.

It is also important to note the **gender difference in gaining travel experience**. Even if access to cars and possession of a driver license is granted, women in partnerships tend to



drive less, because the male partner is driving when travelling together (Ryan et al. 2015, p. 112) or the male partner is the primary user of the vehicle in single-car households (Hjorthol 2008, p. 206). **Not having enough experience and perceived insecurity in traffic may be the reasons why women more often than men give up driving**; additionally, women stop driving earlier than men while still able to drive because (Hjorthol 2013, 1197, 1205).

As stated above, also riding public transportation needs to be learned. Passengers in transit are exposed to "the everyday challenges of contemporary urban living and the thrown-togetherness of different bodies" that "can solidify prejudices and antagonisms as much as it can weaken them" (Wilson 2011, p. 646).

In order to be able to move across space in different modes of transport, knowledge of the area travelled in or of the destination are both useful. The degree of spatial competence and familiarity depends on an individual's cognitive map that s/he draws in regard to the environment. "Cognitive mapping is the process of encoding, storing, and manipulating experienced and sensed information that can be spatially referenced [...]. Parts of it are needed to solve problems, including decision-making and choice related to travel behaviour" (Golledge and Gärling 2004, p. 503).

This knowledge is influenced by spatial thinking and reasoning; the scope and precision of these cognitive maps can be very different, thus "spatial representations in humans are incomplete and error prone" (Golledge and Gärling 2004, p. 506). Prior to the existence of navigation systems, spatial knowledge was essential for those using individual modes of transport or offering transport services to others. Famously, London cab drivers earlier had to pass an exam on their geographic understanding of the city to become a licensed cab driver. Apart from the knowledge gained in personal experiences, assistant tools were limited to maps and personal recommendations of others.

Spatial knowledge is essential for way-finding and successfully reaching destinations. It makes people aware of the time and cost involved. Beyond that, spatial cognition is relevant for the soft factors of travel experiences, such as reliability, regularity and comfort. Kevin Lynch analysed how cities are experienced emotionally and thus differently from person to person: naturally, the personal and subjective evaluation of these experiences shapes access to city's opportunities (Lynch 1960).

**This becomes particularly important for perceived levels of safety in traffic and transport in different geographical areas. Incomplete spatial knowledge can lead to negative experiences in transport or can suppress travel needs overall.** Kevin Lynch as well as others argue that it is actually not the knowledge about the cartographic, Euclid space that shapes preferences for movement, but the "sense of place" associated with meaning and characterized by heterogeneity (see e.g. Massey 1994).

In Lynch's work, landmarks are such places that are fused with meaning, and provide assistance to way-finding. In fact, in parts of the world where detailed, micro-level cartographic information is absent, way-finding instructions usually work via the indication of local landmarks. In navigation and ICT supported systems, such place-based measures are increasingly taken up in experiential and gamification approaches (see e.g. Meurer et al. 2018; Papangelis et al. 2017; Souza e Silva 2017).

The above issues can be translated to practical cases and demonstrated, for example, for pedestrians and cyclists. For cyclists and pedestrians, knowledge about suitability of

cycling infrastructure and coherence of a bicycle network makes an importance difference in the decision for or against bicycle use.

As the benefits of cycling on several levels are regaining attention, city administrations or advocacy groups circulate more information on these aspects. However, much of the knowledge is acquired by personal experience. **For cycling, personal safety is tantamount, thus knowledge about accident-prone areas and places is required to deal effectively with safety hazards.** Manton et al. show that in this respect the perceived risks can overshadow the actual risks. **A focus on perceived risks highlights** how gender and cycling experience take effect on different preferences in bicycles usage, and also **barriers to bicycling for population groups, such as elderly** (Manton et al. 2016, pp. 19–20)

Considering the rise of amphibious transport regimes (neither public nor private, as car-pooling), it can be stated that being a *car driver* increases spatial knowledge more than a *car passenger*. If needed at all, the responsibility for spatial knowledge is left to the driver. With current rising demand for ridesharing services, spatial cognitive experience and thus opportunities to acquire knowledge is shrinking.

**It is likely, that children's early socialization with the car and parents' chauffeuring of their children contributes to children not developing a sense of space at all.** Interestingly, prior experience in long-distance travelling, e.g. for tourism purposes, together with exposure to cartographic material contributed positively to spatial cognition of young children on the macro-scale, exhibited by being able to draw a world map (Schmeinck and Thurston 2011, pp. 10–13). In highly mobile societies, where high mobility is associated with status, such an early socialization with the global scale may be an important element for the development of network capital (Frändberg 2009, 652–653, 663–665).

The understanding of transport regimes know-how (and the social capital needed for the usage), should thus govern HiReach's field-work and open a stream of investigation both with the experts and with the users. In a later stage, this should even open a different mind-set for HiReach's solution development. In other words, the accent of the research should move from the single elements of the transport regimes to a more holistic understanding of transport poverty. HiReach indeed aims to:

- Define the social and cultural obstacles, with a particular care to “invisible” barriers to access to transport regimes;
- Define obstacles (and users-friendly solutions) in accessing and navigating transport systems;
- Define problems and solutions keeping in mind the final-users as core element of the transport regime.

### 4.3.3 Changes in personal situation and travel choices

In 2011, “USEmobility” (*Understanding Social behaviour for Eco-friendly multimodal mobility*) project investigated individual reasons that lie behind selecting a mode of transport. More specifically, USEmobility surveyed over 10,000 ‘swing users’, i.e. citizens who had modified their mobility mix in the last five years, from six European countries (Austria, Belgium, Croatia, Germany, Hungary, and Netherlands), about the reasons for their modal

choice. USEmobility came up with a range of interesting new insights that are summarised below.<sup>28</sup>

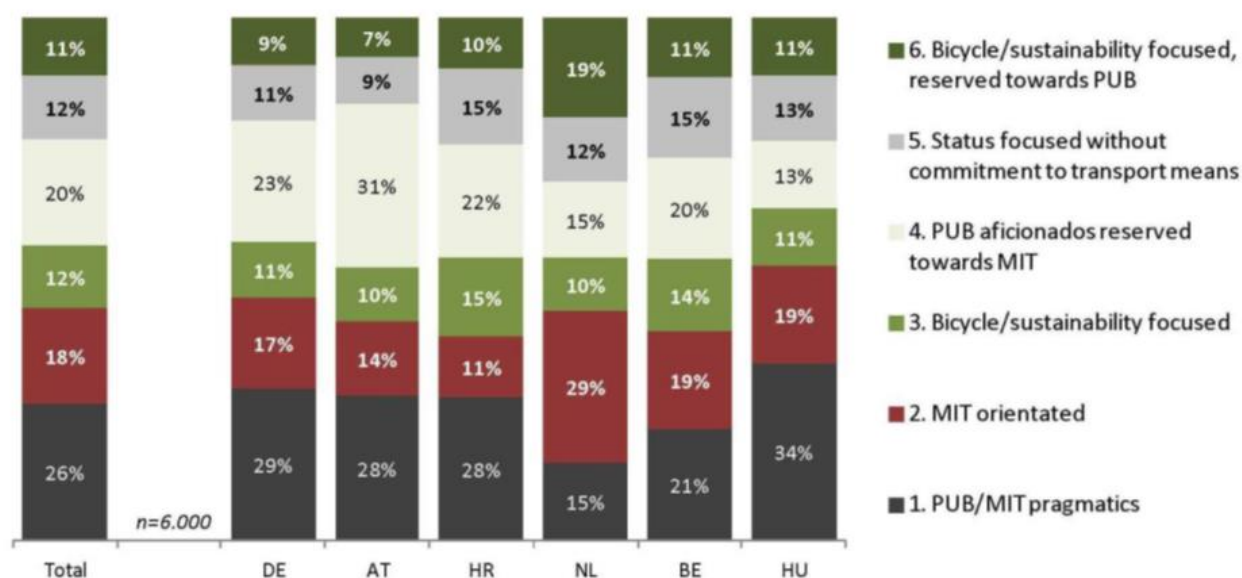
The USEmobility survey, first, showed a lot of **dynamism in people's choice of transport mode**. Almost half of the people addressed for the survey were identified as so-called 'swing users', i.e. reported a change in their use of transport means in the last five years. In Metropolitan areas, a general increase of public transport use was registered, whereas in the rural areas the change rather tended towards an increased use of private motorised transport.

Twenty per cent of the people involved in the research had decided to increase their use of public transport or to start using it for the first time; and within this group, the biggest segment (almost 1/3) consisted of 'complete changers' from motorised individual transport to public transport.

The highest dynamic was found for the travel purpose 'way to work'; in 2/3 of the cases, the 'swing users' changed their travel behaviour 'step by step'; in 1/3 of the cases these changes took place 'overnight'. Swing users' behavioural patterns were also found to be much **more multimodal and much more pragmatic** than initially expected.

On average, 70% of the swing users already used multimodal transport means. It is also interesting to see that (in all countries) on average more than a quarter of swing users – the most important group – took a pragmatic point of view when choosing mode of transport, i.e. they make different decisions according to the situation they are in and are the most dynamic in their behavioural patterns.

**Figure 4-3: USEmobility segments of attitude by country**



Source: Knuth 2012

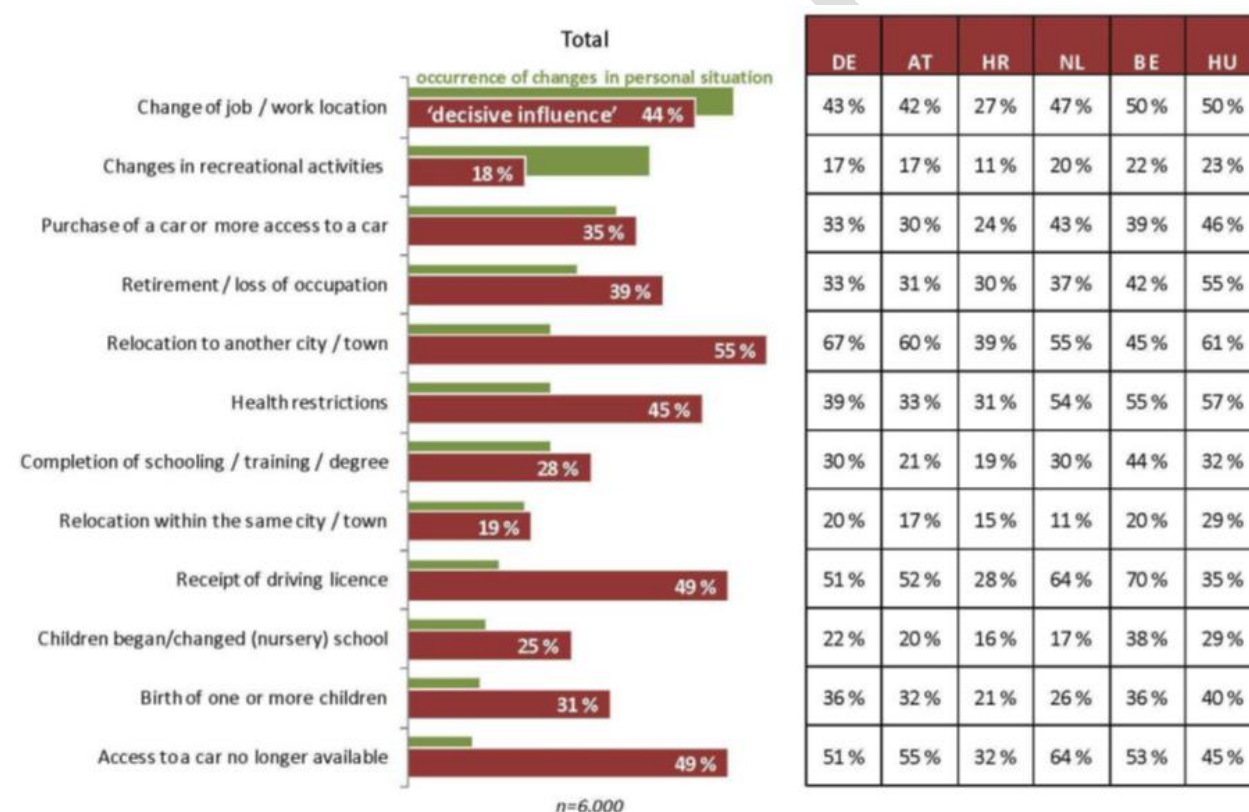
<sup>28</sup> For the full survey results: USEmobility D3.6 – Factors influencing behavioural change towards eco-friendly multimodal mobility (Knuth 2012).

In general, pull-in factors (attractiveness of the transport offer) have a higher relevance than push-out factors (dissatisfaction with the means of transport used so far). We should also note how changes in the personal situation are more relevant for a change *towards* public transport than for a change *away from* public transport. However, a decrease in public transport use is relatively often influenced by dissatisfaction (push-out).

For a continued use (including among swing users who have access to a car), public transport needs to be attractive (pull-in) in comparison to other means of transport. A new and surprising insight of the USEmobility project was how strongly **changes in people's personal situation influence changes in their choice of means of transport**. Indeed, Habits and mobility routines play an important role in people's daily mobility.

Changes in the personal situation (relocation, a new job, birth of children etc.) give people an impulse to rethink their mobility routines, consider alternatives and change their behaviour. Over half of the survey participants stated that change in their personal situation was a central motivation for their reorientation.

**Figure 4-4: Degree of influence of changes in the personal/private situation on mobility decisions**



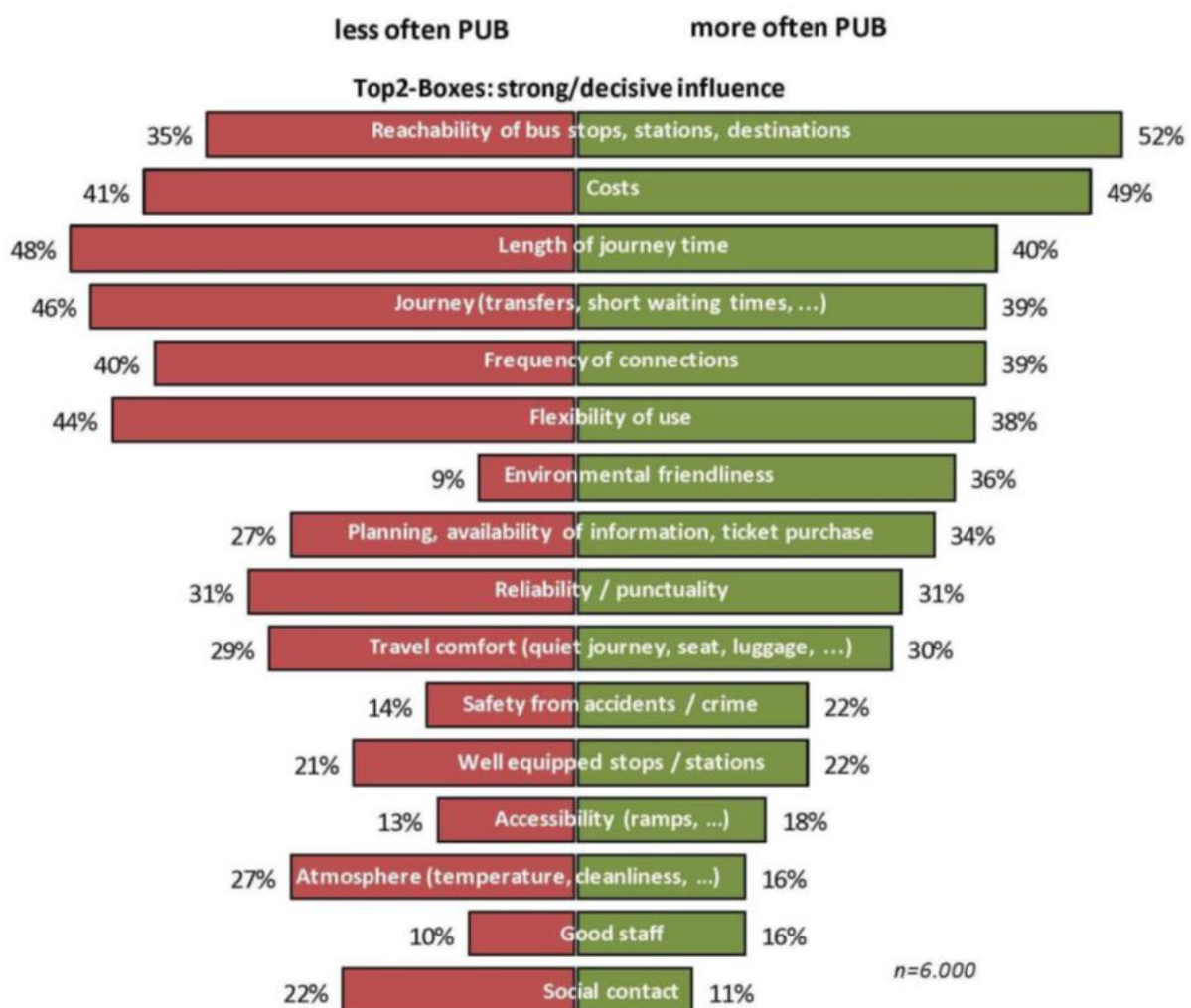
Source: Knuth 2012

A *change of job or work location* had, overall, the highest impact, followed (with considerable decrease in relevance) by *relocation* to another city or town (very relevant but not that common), *increased availability of a car*, *retirement or loss of occupation* and *health restrictions* (very relevant but not that common). *Lost access to a car* or

obtaining a driving license are highly relevant factors as well, but rather rare among swing users.

When people reconsider their mobility choices – due to a change in their personal situation and/or because new mobility alternatives become available – **pull-in factors** (attractiveness of a mode of transport, resulting in a more frequent use) **and push-out factors** (dissatisfaction with a mode of transport, resulting in a less frequent use) move into the spotlight. An overview of influencing factors is presented in the graph below.

**Figure 4-5: Influence of primary push-factors concerning public transport**



Source: Knuth 2012

The USEmobility survey showed that 'hard' factors (reachability, cost, journey time, waiting time, number of transfers, and frequency of connections) had the highest relevance, in both the decision to use public transport and multimodal transport more often or, on the contrary, to quit public transport. For a continued use of public transport, user expectations regarding these 'hard' factors need to be fulfilled. If not, a reduced use or



cease of use of public transport is to be expected. Direct connections (without transfers) push an increased use of public transport considerably.

On the other hand, inadequate reachability of stops, stations and destinations, long waiting times, insufficient frequency of connections and crowding are the main factors that cause swing users to stop using public transport or use it less often. The influence of so-called 'soft' factors was less pronounced but still considerable. Among the soft factors, flexibility, planning effort, availability of information and environmental friendliness had the highest relevance followed by comfort of travel, atmosphere on the journey and staff. This to say that 'soft' factors can be regarded as complementary success factors that can contribute under certain circumstances to the increased use of public transport; however, they cannot completely substitute the 'hard' factors.

What we should keep in mind if our finding of solution is how people facing a change in their personal situation are more open to reconsidering their mobility needs and solutions. Therefore, **directly addressing people whose life circumstances have changed**: for example, providing welcome or info packages to people who have relocated to another city or town or finished school or university; changed their job or retired; families who recently had a baby etc. opens up significant potential for influencing their modal choice (towards public transport and multimodality) at a relatively small cost.

And even if there is no change in the personal situation, the **availability of information and knowledge about the existing (PT, multimodal) offer** is quite important, as most swing users base their decision to use PT on their own experience or on information they have received from personal contacts (family, friends, acquaintances, colleagues). Relevant and comprehensive information should be provided to (potential) users, taking into account the needs of different target groups (e.g. young, elderly, disabled users, different travel purposes), e.g. by means of mobility trainings, awareness-raising campaigns etc.

## 4.4 Final remarks: potential and realized mobility

As highlighted in Chapter 1, much of the recent literature on transport poverty focuses on accessibility and accessibility poverty. It is widely acknowledged that accessibility is necessary to expand people's freedom of choice and promotes equality of opportunity regarding employment, health care, education and other basic needs and services.

Thus, from the perspective of transport policy, the focus should be on improving access to places, activities, and opportunities. The focus on accessibility however may overlook the unfulfilled mobility needs of less mobile social groups. The reason for such a blind eye is that accessibility approaches – whether *egalitarian* or *sufficientarian* – need to make assumptions either on the level of inequality that is acceptable in a fair society, or on a minimum level of accessibility that should be available to everyone.

In practice however, both assumptions pose substantial difficulties. First, for an egalitarian approach, it is very difficult to judge on the level of inequality that is acceptable in society, and consequently, many studies avoid making clear statements on this question (Pereira et al. 2017, p. 178).

Second, defining a minimum threshold for levels of accessibility is equally difficult; those trying to define such a threshold may fall into the trap of making generalized assumptions on people's needs, with the consequence that diverse preferences of vulnerable social groups may be overlooked (Preston and Rajé 2007, p. 159).



Another weakness of accessibility approaches in identifying diverse and unmet mobility needs is that improving accessibility is mostly viewed in the context of social exclusion. The above outlined challenge of defining adequate levels of accessibility is then exacerbated by weak definitions of what it means to be socially included or excluded.

With transformation of social relationships due to recent advances in communication technology and mobility options, this challenge is further complicated. Cass et al. remind us of the ever-changing conditions of contemporary life:

"In [...] an increasingly mobile world the challenge of accessing other people, places and services at some geographical distance is not something fixed and easily measurable. What is necessary for full 'social' inclusion varies as the means and modes of mobility change and as the potential for 'access' develops with the emergence of new technologies [...]. These developments transform what is 'necessary' for full social inclusion. It is important but very difficult to acknowledge the temporal as well as the spatial dimensions of social exclusion, as these relate to the changing spatial and temporal organization of contemporary life" (Cass et al. 2005, p. 542).

A practical example for the changing spatial and temporal organization are the varying and flexible daily schedules of people. To coordinate different aspects of everyday life with the schedules of institutions and people is a demanding task. Only when the varying schedules of households and individuals can be brought in line with the arrangements of transport systems and the varying schedules of facilities and opportunities to be reached, then people's (mobility) needs can be adequately met.

This leads to define a relational approach to accessibility in which policies of accessibility should be consider "relational" in their timing and geographies (Qviström 2015). Social networks are crucial for social identity and maintaining a meaningful life, and – in the form of social capital - for acquiring material benefits and social status (Schwanen et al. 2015, pp. 127–128).

As outlined above, for those depending on family, friends and other social informal ties as a life-support system (information on jobs, support in travelling etc.), increased need for travel and communication can be indeed a burden. The dynamics of social networks are difficult to approach with accessibility perspectives as they result in very specific and not generalizable mobility needs, which differ substantially from the basic "formal" needs of life.

To summarize, it can be stated that in the contemporary world, which is characterized by an "infinity of promised or assumed opportunities arising from movement" (Elliott and Urry 2010, p. 8), **accessibility is a necessary, but not sufficient condition for meeting people's diverse needs.**

Due to the flexibility of space-time arrangements in everyday life and the transformation of social networks, any action against transport poverty should also consider as crucial **to relieve people from any additional and unnecessary burden** related to transport. Transport regimes should be customer-friendly, easy accessible not just in term of physical accessibility but also in term of skills and duties needed to use the service.

Due to the increased complexity of transport related activities, the coordination **of transport activities should be kept at basic levels.** This applies first at multi-modal journeys, but it should not be limited to them. On order to enhance accessibility, we state that we

need to focus on people's capabilities to access desired destinations, and possibly uncover hidden needs.

DRAFT

## 5 Conclusions

The previous chapters have presented HiReach theoretical background and its understanding of transport poverty, offering also a working definition of the concept.

This final chapter first offers main conclusions from the cross-sectional analysis of all three layers (spatial, social and mobility needs). Second, it aims to specify the outcomes for each layer. Third, it offers elements and topics (including a grid of foci and cases specificities) for the fieldwork in the HiReach local study regions.

### 5.1 Main findings

From the analysis in this Deliverable, conclusions can be drawn for three main aspects that are crucial to alleviate transport poverty: 1) transport poverty and risk of social exclusion, 2) approaches to alleviate transport poverty and 3) fields of intervention.

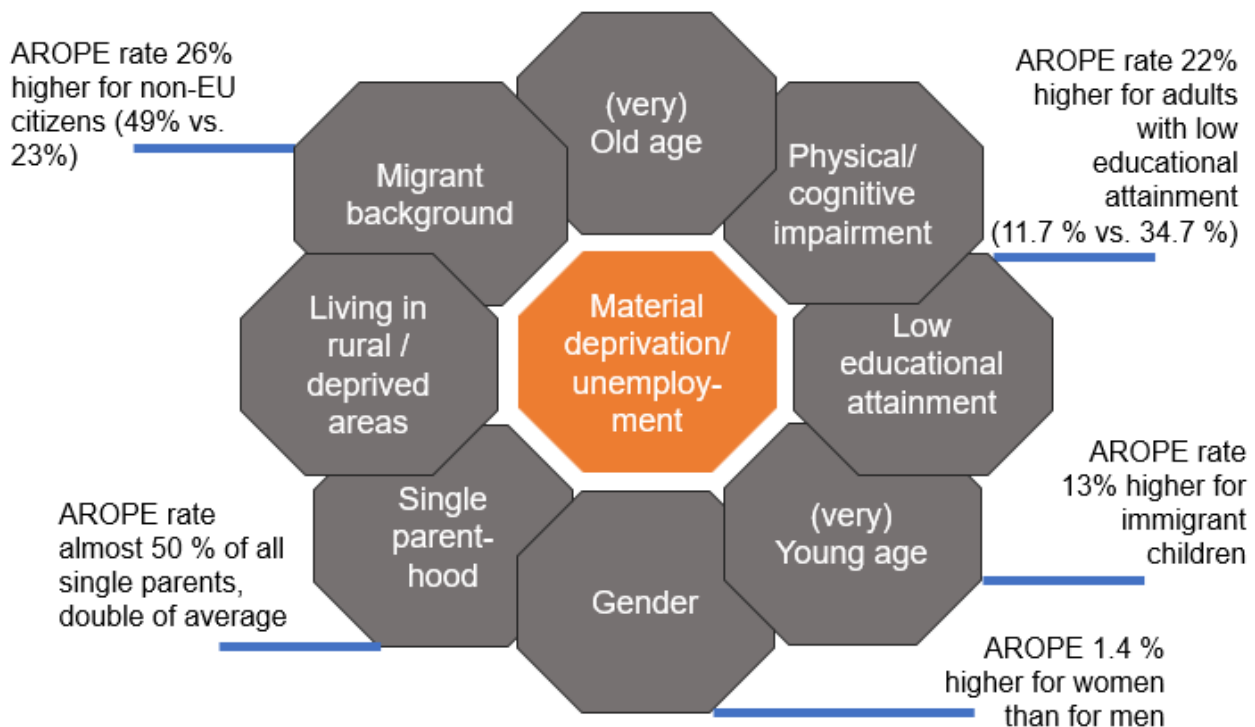
#### 5.1.1 Transport poverty and risk of social exclusion

It was shown in the analysis that social disadvantage in conjunction with transport-related disadvantage leads to transport poverty. However, as already emphasized in Chapter 1, transport poverty does not necessarily lead to social exclusion.

The analysis revealed the circumstances under which high risk of social exclusion due to transport poverty can appear. When linking the conclusions from the three different layers to each other it is revealed that experiences of transport poverty are a combined outcome of social disadvantage, spatial negative conditions and unmet mobility needs.

This cross-sectional observation reveals that **risk of social exclusion due to transport poverty is highest when two or more of the following conditions interact** (see Figure 5-2):

- **Social aspects:**
  - **Experience of multiple social disadvantages, especially when low-income levels and unemployment are involved:** The conjunction of different social disadvantages and vulnerabilities increases risk of social exclusion. Incidences that appear commonly are e.g. old age in conjunction with mobility impairment, or old age and living in remote rural areas. Other examples that were shown are disabled young people and migrant women. In all cases, low income, unemployment and precarious working conditions substantially increase the risk of social exclusion due to transport poverty (see Figure 5-1).

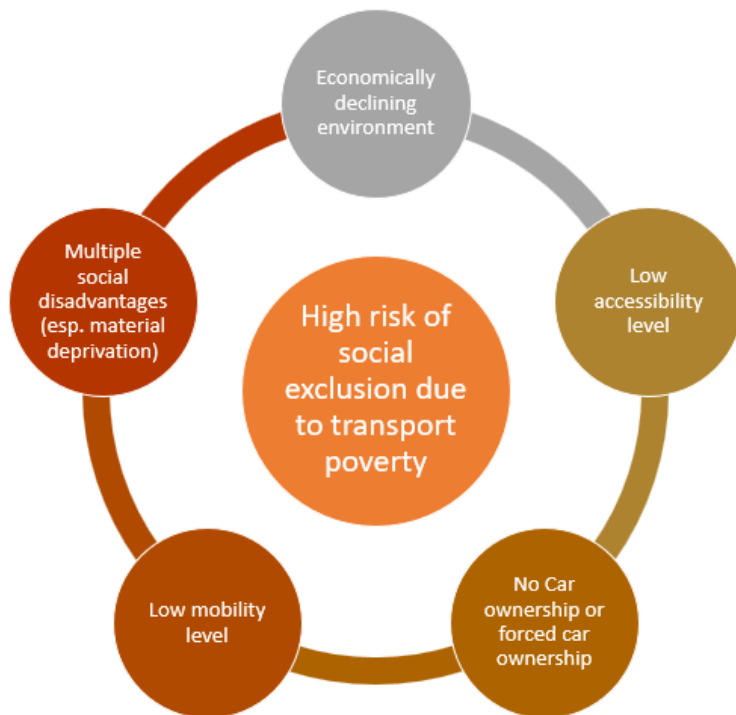
**Figure 5-1: Impact of material deprivation on transport poverty**

Source: Own elaboration

- **No car ownership or forced car ownership:** risk of social exclusion is higher when vulnerable individuals do not have access to cars. Such a risk is particularly prevalent in rural areas, where public transport availability is lower, income levels are lower and distances to opportunities are higher than in urban and peri-urban areas. Car ownership is almost unavoidable in such areas, which poses a high cost burden on materially deprived individuals. The money that is spent for mobility is then missing in other essential areas of life.
- **Spatial aspects:**
  - **Low accessibility level:** risk of social exclusion increases substantially for those individuals whose access to transport options and access to opportunities is low. This is the case for remote rural in all over Europe, but particularly in eastern and southern Members States of the EU. However, also peripheral urban locations can have low accessibility levels.
  - **Economically declining area: economically declining regions can be found all over Europe, and all three spatial layers** (urban, peri-urban, rural) are affected. When economic decline leads to outmigration of young and skilled population, coupled with decaying infrastructure and diminishing service levels. Experience of transport poverty in such areas substantially increases the risk of social exclusion.

- **Low mobility level:** as outlined in Chapter 4, mobility is the primary form of (social) capital in advanced societies and crucial for sustaining social networks. The necessity for being mobile can be a serious burden for vulnerable social groups. Thus, unmet mobility needs and low mobility levels can lead to relative disadvantages vis-à-vis those being highly mobile.

**Figure 5-2: High risk of social exclusion due to transport poverty**



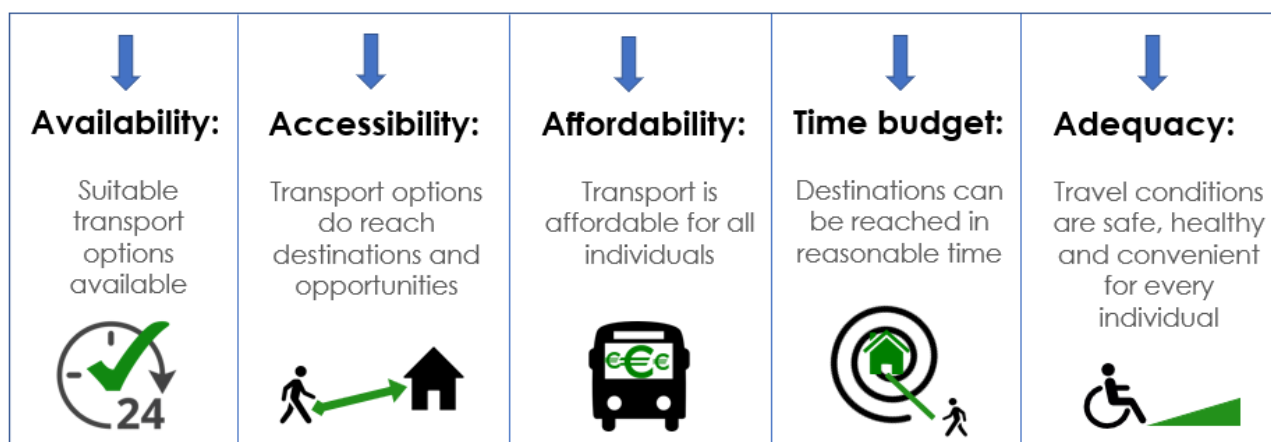
Source: Own elaboration

### 5.1.2 Approaches to alleviate transport poverty

In the introduction to this Deliverable it was highlighted that an individual is transport poor if, in order to satisfy their daily basic activity needs, at least one of the following conditions is not met to satisfaction: availability of transport, accessibility of transport and opportunities, affordability of transport, reasonable travel times and adequacy of transport.

Hence, the mobility needs for each vulnerable group needs to be analysed and, accordingly, these basic transport conditions need to be improved to create inclusive mobility options for vulnerable individuals.

As shown, depending on the needs of different social groups, some conditions are more important than others. In terms of adequacy, for elderly and women, safety in transport is a tantamount precondition for using public transport options. Negative experiences can lead to avoidance of public transport. Additionally to safety, healthy travel conditions are crucial for children and young people. Availability (including reliability), accessibility and affordability are crucial for those with low income and no access to cars.

**Figure 5-3: Necessary preconditions for inclusive mobility**


Source: Own elaboration, based on Lucas et al. 2016

The analysis of social and spatial disadvantages supports a focus on increasing accessibility for all vulnerable groups, in order to increase the potential for activity participation.

However, the analysis of mobility needs in Chapter 4 pointed out that low mobility individuals can experience relative disadvantages in highly mobile societies. As previously shown, individuals with low levels of mobility may have unmet or unrecognized mobility needs that are out of sight for these individuals, due to lifelong experiences of disadvantage, habits and routines or gender roles.

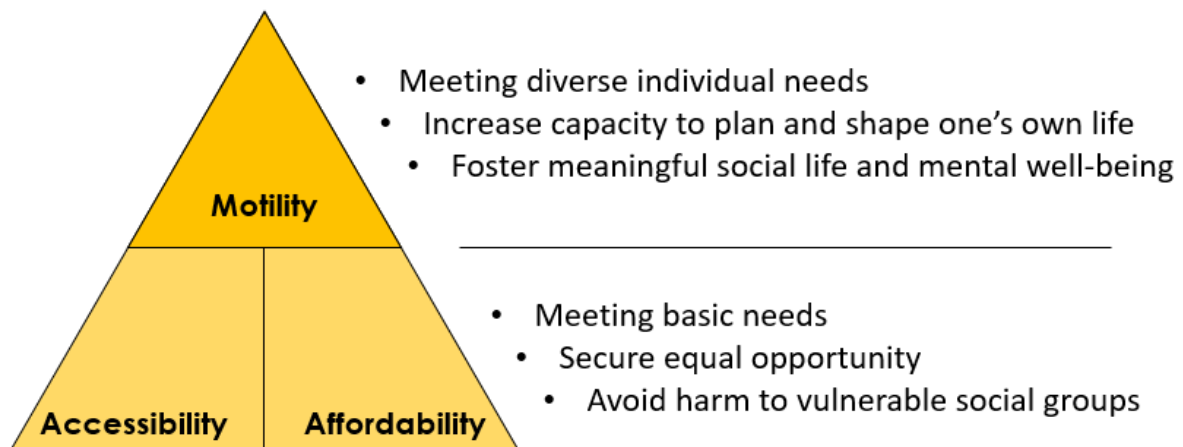
Hence, increasing accessibility can secure basic needs, but life satisfaction and mental well-being may still be reduced due to the inability to “keep up” with others in society.

Thus, **additionally to accessibility, it is crucial to increase motility – the potential to move – for members of social groups.** Here it is important to remember Ahrend et al. 2013 who highlighted that mobility is also mental flexibility and agility. It is important to increase the mental horizon and the capacity to plan and shape one's own life for members of vulnerable social groups. Only then the spaces of opportunity for disadvantaged individuals will become larger.

Due to the significance of early travel socialization as well as the importance of travel for accumulation of social and network capital at an early age, disadvantaged children and young people should have the opportunity to travel and experience a wide range of mobility solutions. Also, for elderly people, not only access to basic services is crucial, but also the *ability to move* is tantamount for being part of social networks and maintain a meaningful life at old age.

Hence, elderly and mobility impaired people need to be informed and enabled to explore all the different mobility options that are available. While traditional gender roles and models that characterised women's mobility are steadily becoming less common, it is important to challenge transport policy and planning by including gender perspectives more strongly in these domains.



**Figure 5-4: Approaches to alleviation of transport poverty**

Source: Own elaboration

### 5.1.3 Fields of intervention

This Deliverable highlighted incidence of transport poverty that indicate certain fields of urgent intervention in order to prevent social exclusion of vulnerable parts of the population:

- **Focus on people at risk of poverty:** The share of people being at risk of poverty in Europe is substantial: in 2015 almost 119 million people, or 23.7 % of the population were at risk of poverty or social exclusion in the EU-28. As shown above, experience of transport poverty is often associated with material deprivation. It must be assumed that a large part of those being at risk of poverty are also at risk of transport poverty. Risk for social exclusion due to transport poverty is particularly high when materially deprived individuals experience another social disadvantage related to age, gender, physical condition and migrant or minority status.
- **Focus on women:** in this Deliverable it has been acknowledged that women experience substantial disadvantages in their mobility due to a variety of factors such as lower incomes, gender roles and access to transport means. Furthermore, they are more likely at risk to poverty and social exclusion. As ageing of the European societies continues, elderly women will represent a substantial part of the future population of the EU.
- **Focus on children:** children and young people suffer the most from inadequate transport options. If inadequate transport results in barriers to education, training and employment at young age, they will experience substantial repercussions when growing older.
- **Focus on peripheral urban areas and peri-urban areas:** more and more people are living in metropolitan areas due to availability of jobs. However, many people are pushed out of cities - due to inadequate and expensive housing – into peripheral urban areas or peri-urban areas well beyond the city limits. Others remain in

deprived inner-city areas. All these types of areas often experience inadequate transport coverage that contribute to marginalization of vulnerable individuals.

- **Focus on economically declining regions and remote rural areas:** population in such regions is ageing and is becoming smaller. Attention of policy and planning is more and more directed to metropolitan regions where the majority of the EU population is living. Hence it is important to continue strategic development of instruments for old industrial and remote rural areas that tackle further decline of these regions. In order to secure adequate standards of living and potentially attract new economic activities, transport interventions are among the many interventions needed in these areas.

## 5.2 Summary of main aspects of transport poverty

The desktop research undertaken (and presented in the previous chapters) can be summarised along three main streams:

1. the spatial layers (urban, peri-urban, rural),
2. the social layers and
3. mobility needs and patterns.

The wide range of aspects that have an impact on vulnerable individuals' mobility is presented here according to each of the three different perspectives on transport poverty, but they are interlinked across these perspectives. Again, these grids aim to summarize the outcomes of desk research and to offer an overview of the findings, as much as to give hints for the fieldwork.

### 5.2.1 Spatial layer

**Table 5-1: Spatial layer**

MAJOR TOPIC	RATIONALE	SUBTOPICS
<b>Living situation</b>	A person's living situation can fundamentally differ in urban and rural areas, shaping fundamentally a person's mobility needs. Conditions of the living situation can be beneficial or detrimental to an individual from a vulnerable group.	<ul style="list-style-type: none"> <li>• Residential form and location</li> <li>• Household characteristics</li> <li>• Community (neighbourhood) characteristics</li> </ul>
<b>Density of and distance to available services and opportunities</b>	Key information about spatial distribution of basic services, employment opportunities, leisure destinations etc., but also the spatial extent of social networks. These are the key spatial variables for an analysis of accessibility and provide insights into a person's potential for activity participation and full integration in society. Long travel distances and low service levels can be harmful especially for individuals from almost all vulnerable groups.	<ul style="list-style-type: none"> <li>• Basic needs: health, supply</li> <li>• Employment</li> <li>• Basic education and training</li> <li>• Social (support) networks</li> </ul>

MAJOR TOPIC	RATIONALE	SUBTOPICS
<b>Transport</b>	Focus on spatial effects on characteristics of transport available to a person. These usually differ substantially between urban and rural areas, but also between Member States (Western/northern/central vs. eastern/southern states). Includes focus on commuting, which is more common in western Member States than in eastern, and thus differently shapes space and transport options. A strong policy focus on the economically active, commuting population in certain regions could be adverse to the target groups of HiReach.	<ul style="list-style-type: none"> <li>• Availability and frequency</li> <li>• Adequacy (quality)</li> <li>• Affordability</li> <li>• Commuting patterns</li> <li>• Effects of car dependency/forced car usage</li> </ul>
<b>Economic growth/decline and impact on personal situation</b>	Centres and peripheries of economic growth exist in every European member state, and not only along the rural-urban divide. Dynamic and diverse economic activity is common to large metropolitan areas of western Europe that are global centres of innovation, education and cultural activities. At the same time, old industrial regions are in a process of decline in the same states. In eastern European countries, the economic divide between urban and rural regions is still very sharp, also due to historically missing or delayed suburbanization. This polarization drastically shapes income levels, also along gender differences. Additionally, the economic situation of a region can create a spirit or atmosphere of confidence vs. disappointment that may relieve or aggravate experiences of transport poverty for vulnerable groups.	<ul style="list-style-type: none"> <li>• Presence of growing or declining industries</li> <li>• Spirit and atmosphere of growth/decline</li> <li>• Economic competitiveness and diversification</li> <li>• Income levels</li> <li>• Gender differences in employment</li> </ul>
<b>Availability and quality of secondary and tertiary education</b>	Tertiary education, especially the most renowned institutions, are often located in the economically most successful urban centres, that also provide employment for academics. Higher educated people tend to move to metropolitan regions, especially women. This contributes to a concentration of wealth, knowledge and skills in cities, being characteristic for contemporary knowledge societies, while rural areas further decline. Socially disadvantaged people may particularly suffer from these	

MAJOR TOPIC	RATIONALE	SUBTOPICS
	tendencies.	
<b>Aging</b>	Europe is increasingly characterized by a rural-urban divide based on the age of the population, with implications for transport and other infrastructure provision, economy as well as quality and satisfaction of life.	<ul style="list-style-type: none"> <li>• Accessibility to basic services</li> <li>• Internet usage for organizing daily life, including mobility</li> </ul>
<b>ICT spatial penetration</b>	The digital divide is a rural-urban divide, but also a divide along income and age. Together with the aging population in rural areas, and relatively lower incomes in rural areas, missing focus on ICT development can contribute to a downward spiral. ICT usage and infrastructure coverage are particularly low in eastern Europe rural areas.	<ul style="list-style-type: none"> <li>• Use of ICT for various purposes</li> <li>• Infrastructure coverage</li> </ul>
<b>Quality of life</b>	These aspects can make a substantial difference for individuals from vulnerable groups. Also, attractiveness for investment in certain locations (especially urban areas) is co-shaped by aspects of quality of life, resulting in overall better economic climate.	<ul style="list-style-type: none"> <li>• Housing and other costs of living</li> <li>• Environment, pollution</li> <li>• External effects: crime, violence, safety levels</li> </ul>

Source: Own elaboration

## 5.2.2 Social layer

Table 5-2: Social layer

MAJOR TOPIC	RATIONALE	SUBTOPICS
<b>Subjective experience of social disadvantage</b>	Once individuals are identified as "vulnerable", it is necessary to understand their own subjective understanding of their situation. Apart from forms of discrimination and barriers they experience in everyday life, it is important to identify the individual's understanding of participation and meaningful life to best cater to their mobility needs.	<ul style="list-style-type: none"> <li>• Forms of discrimination and barriers</li> <li>• Understanding of "full participation in society"</li> <li>• Understanding of "meaningful life"</li> </ul>
<b>Impact of multiple social disadvantages</b>	Forms of poverty can result from a combination of social disadvantages paired with transport disadvantage. Common forms would be a combination of material deprivation with demographic	

MAJOR TOPIC	RATIONALE	SUBTOPICS
	characteristics (age gender), foreign origin or physical impairment.	
<b>Employment situation</b>	This provides insights not only about the material situation and security in life of a person, but also about the need to travel for work reasons (commuting, long-distance). Certain jobs may aggravate both mobility challenges and social disadvantages (e.g. working night shifts), resulting in social isolation.	
<b>Social (support) networks</b>	The presence or absence of integration into social networks is key for understanding a person's satisfaction in life. Maintaining social networks require travel and communication, which can also be a burden especially if family and friends live in distant places. Social networks can also be beneficial on a very practical level, e.g. giving rides to a neighbour.	<ul style="list-style-type: none"> <li>• Extent of the local network: household, community, other peers</li> <li>• Range of wider social network and long-distance relationships</li> <li>• Frequency of leisure trips to visit family/friends</li> <li>• Burden to maintain social ties</li> <li>• Independent living vs. social support</li> </ul>
<b>Transportation</b>	<p>Transportation is our key theme. From a perspective of social vulnerability, it is important to understand the personal, subjective experience of disadvantage in transportation. In this context, it is important to identify the relevance of different quality criteria of transport (availability, reliability, affordability etc.). These criteria could also shed light on an individual's decision either for PT, car usage, NMT or a combination. It can be assumed that the quality of the walking and cycling environment is central to certain groups for independent living and movement (children, elderly).</p> <p>Especially elderly and the disabled can have very different opinions on whether they prefer specialized transport vs. inclusive transport services.</p>	<ul style="list-style-type: none"> <li>• Personal experience of disadvantage in transportation</li> <li>• Aptitude to use PT or car</li> <li>• Relevance of availability and reliability</li> <li>• Relevance of accessibility of transport</li> <li>• Relevance of adequacy (quality)</li> <li>• Relevance of affordability</li> <li>• Relevance of walking/cycling environment (esp. children, elderly)</li> <li>• Attitudes towards specialized vs.</li> </ul>

MAJOR TOPIC	RATIONALE	SUBTOPICS
		inclusive transport (disabled, elderly)
<b>Statistical risk of poverty and social exclusion</b>	Different regions and vulnerable groups have a higher statistical risk of poverty and social exclusion. This may affect the situation of vulnerable individuals, e.g. when living in households with very low work intensity, or neighbourhoods/communities with a high number of people at risk of poverty. This could affect quality of public services in these areas, or the effectiveness of social support networks.	<ul style="list-style-type: none"> <li>• High for children, especially from migrant families</li> <li>• High risk in: Romania, Greece, Spain, Italy, Portugal</li> </ul>
<b>ICT usage</b>	Usage of ICT, and the regularity of using such tools for different purposes, gives an indication about how people with low digital affinity are relatively disadvantaged in digital societies, and how modern transport solutions that tackle transport poverty could be taken up by vulnerable groups.	<ul style="list-style-type: none"> <li>• Regularity of use</li> <li>• Purposes of use</li> <li>• Devices</li> </ul>
<b>Political representation of vulnerable group</b>	It is necessary to get an idea in how far the voices of individuals from vulnerable groups are heard on the political level and whether political interventions are effective to the benefit to the people. Transportation is only one issue here.	

Source: Own elaboration



### 5.2.3 Mobility needs

**Table 5-3: Mobility needs**

MAJOR TOPIC	RATIONALE	SUBTOPICS
<b>Skills and capabilities</b>	It requires capabilities and competencies in order to use mobility options. Three aspects are central: physical ability to move from one place to the other under given circumstances; acquired skills that relate to the rules and regulations of movement (e.g. driving license and parking permits); and organizational skills to plan and coordinate activities, including acquisition of information. The degree of availability of these skills and capabilities co-determines an individual's transport disadvantage.	<ul style="list-style-type: none"> <li>• Access portfolio of individuals</li> <li>• Physical abilities</li> <li>• Organizational and planning skills</li> <li>• Availability and mastering of communication tools</li> <li>• Safety perception</li> </ul>
<b>Socialization and prior travel experiences</b>	Socialisation is one of the important formative processes that shape people's attitudes and behaviours, routines and habits. How individuals are integrated in society over different stages of their lives impacts individuals' learning experience and formation of social roles. Personal experiences and social norms are internalized and developed into personal norms that ultimately guide behaviour, also transport behaviour. Socialisation can substantially limit the knowledge about and aptitude towards different mobility choices. Significant for socialisation are typically family members, especially parents, friends, peers, colleagues, but also institutions such as schools, and media.	<ul style="list-style-type: none"> <li>• Car aptitude</li> <li>• Wayfinding strategies</li> <li>• Use of walking and cycling</li> <li>• Safety perception</li> </ul>
<b>Social norms, values, attitudes</b>	Entrenched social and cultural norms, roles and stereotypes shape each individual's mind-set, values and needs. These norms are represented in people's actions and interactions, can be more or less institutionalized and become part of individual habits. Transportation is gendered space, and common perspectives on the automobile result, among others, from gendered perspectives. Another example would be the awareness for environmental concerns and how they affect mobility decisions.	<ul style="list-style-type: none"> <li>• Attitudes towards different modes of travel</li> <li>• Gender roles</li> <li>• Environmental awareness</li> </ul>
<b>Personal aspirations and plans</b>	People choose their residential location, social networks and ultimately their mobility options according to their personal aspirations, plans	

MAJOR TOPIC	RATIONALE	SUBTOPICS
	and projects. This aspect most importantly considers <i>how</i> and <i>why</i> people make mobility decisions – how people consider certain options, deem the more or less appropriate for themselves and ultimately select specific options. Personal aspirations and plans are also linked to the ability to evaluate personal skills and the available options. Different plans and priorities can lead to different mobility outcomes.	
<b>Changes in life course</b>	Mobility habits can drastically change in different stages of the life course, especially when linked to residential relocation or family obligations. This is linked directly to aspirations, plans and socialization.	
<b>Hidden, unmet mobility needs</b>	The understanding of hidden mobility needs results, on the one hand, from the assumption, that access is not something fixed, but develops with the range of mobility and communication options and opportunities available. On the other hand, unmet mobility needs can result from entrenched social norms and attitudes, e.g. gender roles. Unmet mobility needs have been observed among the elderly who rather decide to be immobile than relying on external support in their mobility needs.	<ul style="list-style-type: none"> <li>• Hidden mobility needs of the elderly</li> <li>• Gender aspects</li> </ul>
<b>Mobility burden and “keeping up”</b>	Maintaining social networks and family ties across distance can burden those who struggle in everyday life for variable reasons, as well as “keeping up” with technological innovation.	
<b>Special focus on subjective estimation of safety in travel</b>	It is difficult to measure safety levels objectively, and the evaluation of safety in and around transport can differ from person to person, but also varies between different social groups, esp. elderly, women, migrants/minorities and children. Past experiences in transport are likely to influence subjective estimation of safety.	

Source: Own elaboration

## 5.3 Driving questions of HiReach

The activities run in the first stage of the project, and reported in this Deliverable, let us to define some driving questions regarding transport poverty and about the work in HiReach:

1. **We need to understand the differences between transportation-related disadvantage, social disadvantage and social exclusion, but also the linkages.** Transport

disadvantage and transport-related social exclusion are not synonymous with each other: it is possible to be socially excluded but still have good access to transport or to be transport disadvantaged but highly socially included. Social exclusion is determined by many more factors than just transport (transport may be even the least important factor).

The state-of-the-art definitions (Lucas 2012; Lucas et al. 2016) understand transport poverty as the combination of an experience of social disadvantage and transport-related disadvantage. Transport poverty can lead to social exclusion, which reinforces both transport disadvantages and social disadvantages. Whether an individual is transport poor or not, is determined by (at least) five conditions: i) availability of transport; accessibility of transport, ii) locations and opportunities; iii) affordability of transport; iv) available time budget; v) adequacy of travel options. Occurrence of one single condition can lead to an individual experiencing transport poverty.

2. **Spatial aspects are often only implicitly taken into account in the analysis of transport poverty** via the observation of social disadvantage and transportation-related disadvantages. Transport poverty is less understood from a spatial perspective – the urban, the peri-urban and the rural.

Such a perspective needs to consider the dominance of large and growing globally connected metropolitan regions in Europe, as hubs of economic growth, employment, innovation, education and cultural life, and on the other side, economic decline in former centres of heavy industries. Also, disparities between different EU Member States partly due to completely different histories.

3. **Transport poverty often results from a combination of different social disadvantages.** Most vulnerable to transport poverty are those experiencing material deprivation linked to physical impairment, migrant or ethnic minority background, single parenthood and different socio-demographic characteristics (being young, being old, gender aspects). Therefore, the impact of multiple social disadvantages in the experience of transport poverty will receive special attention in HiReach.
4. **Transport poverty is contextual and relational.** Transport poverty is experienced differently across European regions. Individual material poverty coupled with overall low quality of living, rural/urban deprivation and low quality of public transport services are strong indicators for an incidence of transport poverty; however, such a perspective may obscure pockets of transport poverty in well-developed, advantaged regions.

It must be assumed that incidents of transport poverty have a stronger exclusionary impact on individuals in societies that are highly mobile. Furthermore, in highly mobile societies, hidden and unmet mobility needs may be more difficult to identify.

5. **Analysis of transport poverty mainly focuses on basic needs.** Such a perspective misses important aspects that are considered crucial for meaningful life. This may be, e.g. the importance of social interaction and co-presence that are usually connected to leisure trips, so being beyond everyday life. Proponents of transport equity often argue that basic needs should be met, and activity participation should be enabled, both being part of everyday life. They thus argue in favour of “accessibility for all” and not “mobility for all”. While this is easily justifiable (e.g. for environmental reasons), the perspective of the “right to mobility” complicates the matter of transport poverty.

6. **We need to understand mobility needs by differentiating between “mobility” – the actual movement - and “motility” – the potential to move.** Mobility needs are not just the outcome of an individual's social position and spatial location; mobility needs are also produced and altered according to an individual's biography as well as future aspirations and plans.

Thus, a person's motility is an indication of her or his “mastering” of transport, which is closely connected to her or his “mastering” of life in general. High motility can express itself in low mobility, but in such cases low mobility will most likely not lead to social disadvantage, transport poverty or social exclusion. For this reason, it is most important to understand motility of a person, a kind of capital that is not only determined by an individual's level of access, but also produced by individual skills and competences and shaped by aspirations and attitudes and her/his biography.

7. **Transport poverty needs to be understood in a dynamic relationship with high mobility.** Technological innovation in communication and transport is constantly creating new options for travelling and interaction. Mobility needs potentially grow with the growing availability of options and are interrelated with social, spatial and technological change.

This challenges rather static understanding of accessibility and activity participation. The experience of transport poverty may also occur or be aggravated due to policies and markets focusing on the needs of the highly mobile and the most profitable transport connections.

8. **Virtual mobility needs to be analysed together with corporeal mobility.** A person's mobility patterns cannot be understood without understanding her or his use of communication tools. The use of communication tools may replace, supplement or create new needs of mobility. The interaction between virtual and physical mobility can differ from person to person, with very different outcomes.

## Annex 1: The European Union's territorial classification

The European Union uses a system of three spatial typologies that combines density measures with administrative units and functional interdependencies.

All three classifications are using a density measure as the core of all typologies, which is a population grid composed of 1 km<sup>2</sup> cells, and the differentiation between *urban centres*, *urban clusters* and *rural grid cells*.

An *urban centre* is a high-density cluster of contiguous grid cells<sup>29</sup> of 1 km<sup>2</sup> with a density of at least 1500 inhabitants per km<sup>2</sup> and a minimum population of 50 000. An *urban cluster* is a cluster of contiguous grid cells<sup>30</sup> of 1 km<sup>2</sup> with a density of at least 300 inhabitants per km<sup>2</sup> and a minimum population of 5 000. *Rural grid cells* are all remaining cells outside urban centres and urban clusters.

Based on this EU-wide spatial breakdown into urban centres, urban clusters and rural grid cells, three spatial classifications are established (European Union 2017b; Dijkstra and Poelman 2017):

- **Degree of urbanization (DEGURBA):** DEGURBA is based on the population grid and the clusters thereof explained above, superimposed by the layer of local administrative units (LAUs) in all Member States of the European Union. The combination of these two datasets reveals a classification of urban and rural areas that defines urban areas as *cities*, *towns* and *suburbs* according to varying population densities, and *rural areas* as the remaining thinly populated areas.
  - Definition of a **city**: all municipalities where at least 50% of the population lives in *urban centres* as defined above. As high density urban centres often stretch far beyond the administrative boundaries of a city, additionally the category of the Greater City is established, comprising currently a list of 33 greater cities in the EU. The Greater City covers the core cities and all the neighbouring municipalities where at least half of the population live in a contiguous urban centre that is larger than the core (administrative) city.
  - Definition of **towns and suburbs**: towns and suburbs are municipalities where at least 50% of the population lives in *urban clusters* but is not classified as a city; suburbs are usually those municipalities neighbouring large core cities – hence they are often in the commuting zones (see below) of cities; towns instead are usually older, historically grown urban settlements with intermediate density, that are not in functional interdependency with a larger city.<sup>31</sup>

<sup>29</sup> Without diagonals and with gap filling

<sup>30</sup> Including diagonals

<sup>31</sup> However, historical towns often have developed into suburbs. Vice versa, due to ever-growing commuting distances, commuting from towns and even rural areas into large cities is not uncommon today.

- Definition of **rural areas**: these areas are thinly populated, with at least 50% of the population living in rural grid cells.

It is to note that the area size of administrative units can vary in different European Member States. This is especially the case for the municipalities in northern Sweden and Finland, where municipalities can be as large as 17,333.65 km<sup>2</sup> as in the case of Inari municipality in Lapland, northern Finland.

- **Functional urban areas (FAU)**: this classification is based on the DEGURBA approach and uses the category of the *city* as the core component. Functional urban areas consist of a *city* and its *commuting zone*; the commuting zones is defined in relation to commuting patterns, on the basis of those municipalities around a certain *city* with at least 15% of their employed residents working in that *city*.

Statistical cities in the above sense then are core of the commuting zone if the percentage of outward-commuting employed residents is 15% or less. All surrounding municipalities with a share of commuting residents towards this city above 15% are considered belonging to the FUA. As stated above, suburbs as per the definition above are often part of the commuting zone, and hence part of the FUA. However, comparing the spatial extent of commuting zones (Figure 2-9) with the DEGURBA classification of suburbs around cities (Figure 2-8) it becomes apparent that the FUA covers a much larger area, extending far into areas that are considered rural. The large differences between the commuting zone and the spatial coverage of suburbs is exemplified by the case of Berlin in Germany. This example also shows that historical, independent small towns are now within the commuting zones of large cities. Also commuting zones of larger cities often overlap, as it is apparent especially for the German case.

- Definition of **Metropolitan Region**: *The classification of Metropolitan Regions is based on the Functional Urban Areas. Metropolitan Regions are represented on NUTS 3 level and are identified by selecting those FUAs with a population of 250.000 and more. A metropolitan region consists of one or more NUTS 3 regions and is named after the main FUA within its boundaries. If more than 50% of the population in an adjacent NUTS level 3 region also lives within the functional urban area, then it is included in the metropolitan region.*
- **The urban-rural typology**: this typology is based on the population grid and the clusters thereof explained above (as for DEGURBA), superimposed by the NUTS 3 level regions. This typology then distinguishes then between **predominantly urban regions** — where the rural population accounts for less than 20% of the total population — and **predominantly rural regions** — where the rural population accounts for 50% or more of the total population. The remaining regions are **intermediate regions**.<sup>32</sup> Also for this typology, it is to remark at this point that the

<sup>32</sup> It can also be the case that larger cities are located in low-density regions. The urban-rural typology considers this fact: "The classification is adjusted to take account of the presence of relatively large cities: any region that is classified as predominantly rural (by the criteria above) is reclassified as intermediate if it contains a city of more than 200 thousand inhabitants representing at least 25% of the regional population; any region



NUTS 3 level regions are very different in size and population density. While the NUTS 3 regions of Finland and Sweden are very large and have a very low population density – e.g. the Finish region of Lapland with an area of 100,366 km<sup>2</sup> and a population density of 1.8 inhabitant/km<sup>2</sup> - NUTS regions in central Europe can be very small, because the NUTS 3 level also includes cities in the German case.

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that is classified as intermediate (by the criteria above) is reclassified as predominantly urban if it contains a city of more than 500 thousand inhabitants representing at least 25% of the regional population."

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## Document History

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