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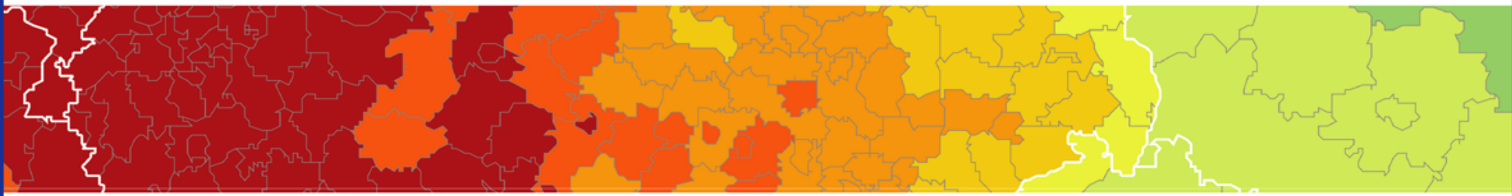

PROFECY – Processes, Features and Cycles of Inner Peripheries in Europe

(Inner Peripheries: national territories facing challenges of access to basic services of general interest)

Applied Research

Final Report

Annex 8. Analysis of inner peripherality in Europe

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PROFECY – Processes, Features and Cycles of Inner Peripheries in Europe

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Abbreviations

<EU75%	Lagging regions at European level, when GDP per capita was lower than 75% of the European average
<EUNAT75%	Areas both lagging at European and national levels
<NAT75%	Lagging at national level, when GDP per capita was lower than 75% of the national average
<OnlyEU75%	Areas only lagging at European level
<OnlyNAT75%	Areas only lagging at national level
A–D	Accumulating–Depleting
AT	Austria
BE	Belgium
Benelux	Belgium, the Netherlands and Luxembourg
BG	Bulgaria
CZ	Czech Republic
DE	Germany
DG	Directorate-General
DG AGRI	Directorate-General for Agriculture and Rural Development
DG REGIO	Directorate-General for Regional and Urban Policy
DK	Denmark
EE	Estonia
EC	European Commission
EDORA	European Development Opportunities in Rural Areas
e.g.	For example (in Latin)
EL	Greece
ES	Spain
ESPON	European Observation Network for Territorial Development and Cohesion
EU	European Union
F/M	Female/Male
FI	Finland
FR	France
FYROM	Former Yugoslavian Republic of Macedonia
GDP	Gross Domestic Product
GVA	Gross value added
HR	Croatia
HU	Hungary
i.e.	That is (in Latin)
IE	Ireland
inh	inhabitants
IP	Inner periphery(ies)
ISCED	International Standard Classification of Education
IT	Italy
K-S test	Kolmogorov-Smirnov test
LT	Lithuania
LU	Luxembourg
LV	Latvia
Max.	Maximum
Min.	Minimum
MK	Former Yogislav Republic of Macedonia
N	No
NACE_rev.2	Statistical Classification of Economic Activities in the European Community (in French)
NEET	Young people 'Not in Education, Employment or Training'
NL	The Netherlands
NO	Norway
No.	Number
NUTS	Nomenclature of Territorial Units for Statistics (in French)

PL	Poland
PPS	Purchasing Power Standard
PROFECY	Processes Features and Cycles of Inner Peripheries in Europe
PT	Portugal
QCA	Qualitative comparative analysis
R&D&I	Research, Development and Innovation
RO	Romania
SE	Sweden
SEMIGRA	Selective Migration and Unbalanced Sex Ratio in Rural Regions
SGI	Service(s) of General Interests
SI	Slovenia
SK	Slovakia
Std. Deviation	Standard deviation
U–R typology	Urban-Rural typology
UK	United Kingdom
UN	United Nations
Y	Yes

1 Introduction

1.1 Aims and tasks of analysis

In characterising inner peripherality a key objective is to place inner peripheries delineated by ESPON PROFECY project in the socio-economic space of Europe. The status of inner peripheries cannot be really understood and interpreted in itself, but by compared to other types of regions in Europe. Thus, during analyses implemented here, the main question was what made these territories differentiable from other areas in terms of geographical patterns and various socio-economic characteristics. Overlapping and differentiated geographies between inner peripheries and other types of regions might indicate how close they are to each other in a physical sense, and what aspects of spatiality form regional patterns of this image. The comparison of the socio-economic status of inner peripheral areas and other typologies might reveal if IP regions have entirely unique features or these are inseparable from characteristics and potential mechanisms affecting other regions with certain socio-economic or geographical specificities too.

Analyses are not only focused on positioning between IP and other areas in the ESPON space, but on exploring similarities and differences within the groups (different types) of inner peripheries too. It might help to resolve if inner peripheries identified by delineations framed by a multidimensional understanding of peripheralization form a group with common characteristics or they are rather different, with having different reasons to be peripheral. Another important objective of characterising inner peripheries is to capture trends potentially affecting the socio-economic positions of inner peripheries. Besides following socio-economic tendencies and their regional patterns over time, it might also help to answer what makes IP to be evolved from the viewpoint of socio-economic factors.

These aspirations were translated into different tasks to be analysed whose findings are presented here in the Final Report:

- Providing an analysis on the geographies of European inner peripheries compared to other territories with certain geographic or socio-economic specificities;
- Analysing the socio-economic status of inner peripheries by exploring similarities and differences with other regional typologies;
- Following changes of socio-economic characteristics over time;
- Exploring the connection between the spatial dimension of centrality–peripherality at the European scale and different features reflecting on the social characteristics or economic performance of regions (and in particular inner peripheral areas);
- Analysing the status of inner peripheries, by characterising the regional and socio-economic profiles of IP regions.

Analyses elaborated for characterising inner peripheries are carried out at NUTS 3 level. This choice is reasoned from different aspects. On the one hand, two of the four delineations (economic potential interstitial areas and depleting regions) used NUTS 3 level units for the identification of territories with inner peripheral characteristics. And analyses needed to be kept at this level to have a common basis in comparisons among different types of inner peripheral areas. Similar considerations were taken into account in the case of geographical and socio-economic comparisons between IP regions and other typologies (EU regional typologies, lagging areas), which are only available at this administrative level. On the other hand, realities of gathering comprehensive socio-economic information for a Europe-wide analysis on the status of inner peripheries also supported NUTS 3 level analyses. By being aware of potential drawbacks of identifying IP at this level, in characterising inner peripherality, several supplemental experiments are carried out for refining the interpretation of status of inner peripheries.

1.2 Database of research tasks

1.2.1 Selection of regional typologies used in the analysis

Among typologies available at NUTS 3 level in the NUTS 2013 system not all region types are used in the analysis built on the comparison of geographical patterns and socio-economic status of inner peripheries and other regions with geographical specificities or economic performance characteristics. The selection principles of typologies used served the goal of making the comparison of different datasets (IP regions and other areas) more meaningful for the research.

Several typologies for potential use include a large number of regions, covering even the third or more of the 1400–1500 NUTS 3 units considered. When analysing group specificities or distribution characteristics of these region types, it is hard to interpret them, because of the great variety of these areas, including more disadvantaged or more developed territories as well at the same time. On the contrary, a more limited number of regions within a typology category might show more significant and specific information on group characteristics.

In this way, from Urban-Rural typology of DG AGRI and DG REGIO, the category of ‘Intermediate’ regions are considered to be challenging to be interpreted, but was kept for these analyses (Table 1.1). This category consists of a large number of areas, which might be transitional in their socio-economic characteristics, not only by taking into account their geographical status between urban and rural regions. While ‘Urban’ and ‘Rural’ classes, however also contain numerous areas, they might show more specificities in this sense as separate groups. Similarly to intermediate regions, elements of Metropolitan region typology were also considered to be hard to interpret as a coherent groups. This typology covers metropolises and their hinterlands, consisting of urban, intermediate or rural regions too, with potentially very diverse socio-economic characteristics. Regarding these potential drawbacks and the strong similarity considering group characteristics with urban regions, metropolitan areas were excluded from some of the analyses.

Table 1.1: Selection of regional typologies used in analyses

Typology name	Elements	Source	Used in analyses	Name in analyses
Urban-Rural typology		DG AGRI and DG REGIO		
	Predominantly urban		Yes	Urban
	Intermediate		Yes	
	Predominantly rural		Yes	Rural
Typology on mountain areas		DG Regio		
	> 50 % of population live in mountain areas		No	
	> 50 % of surface are in mountain areas		No	
	> 50 % of population and > 50 % of surface are in mountain areas		Yes	Mountain
Typology of NUTS 3 regions entirely composed of islands		DG Regio	Yes (as joint category)	Island
	major island < 50,000 inhabitants			
	major island between 50,000 and 100,000 inh.			
	major island between 100,000 and 250,000 inh.			
	island with 250,000 - 1 million inhabitants			
	island with >= 1 million inhabitants			
Metropolitan region typology		DG Regio	Yes (as joint category)	Metropolitan
	Capital metropolitan region			
	Metropolitan region			
Typology of lagging regions		Own calculation		
	GDP per capita (PPS) is lower than 75% of EU28 average		Yes	Lagging (<EU75%)
	GDP per capita (PPS) is lower than 75% of EU28 average but not lower than 75% of national average		Yes	Lagging (<OnlyEU75%)
	GDP per capita (PPS) is both lower than 75% of the national and EU28 averages		Yes	Lagging (<EUNAT75%)
	GDP per capita (PPS) is lower than 75% of national average but not lower than 75% of EU28 average		Yes	Lagging (<OnlyNAT75%)
	GDP per capita (PPS) is lower than 75% of national average		Yes	Lagging (<NAT75%)

From different categories of mountain area typology, only those areas were processed into the analyses, which covers regions with >50 % of population and >50 % of surface is in mountain areas. These criteria might ensure to be more focused when considering mountain region characteristics of distribution of population and economic activities, since they exclude those mountain areas where the majority of population resides in lower elevated areas. Contrary to that, all categories of ‘Island’ typology are considered to be kept for the analysis, since several socio-economic specificities related to island positions (demographic characteristics, industries, accessibility conditions etc.) might affect this entire group independently from the size-factor, at least in some extent.

The definition of lagging areas is a relative and open issue, since it is not a fixed and permanent category and significantly depends on both the level of comparison (lagging compared to what, at what regional level) and the purpose of classification. In academic papers researchers might have more space to formulate and develop complex ways of identifying with a potentially better targeting ability. Complex and innovative options for defining lagging regions in European-level policy oriented researches, such as the classification of DG Internal Policies analysis[1] or the ESPON EDORA typology (A–D type)[2] provide interesting insights on how to define socio-economically disadvantaged areas without restricting it to one or two underlined aspects, and be comprehensive at the European level.

These experiments rarely build into actual policy practices. From the viewpoint of EU-level classifications, such methodologies are more favourited, which are reproducible, traceable and available (regarding data needs) for a continent-wide coverage. This might indicate the advantage of using simple indicators for policy purposes. Nevertheless, these can only have restricted facilities in interpreting disadvantages of regions in a complex way, so their connection to the phenomena to be identified should be clear for a reliable usage.

The European Commission use the simple GDP per inhabitant value-based classification in determining the eligibility of NUTS 2 regions for accessing EU Structural Funds (for lagging regions). It emphasises the role of economic performance in disadvantaged status of regions by implying that those areas might be lagging, which lack economic capacities to perform (better). This definition compares GDP/capita (PPS) values of regions to the EU average.[3,4]. Three classes are formed by this method: less developed (GDP/capita < 75% of EU average), transition (GDP/capita = 75–90% of EU average), more developed (GDP/capita > 90% of EU average).

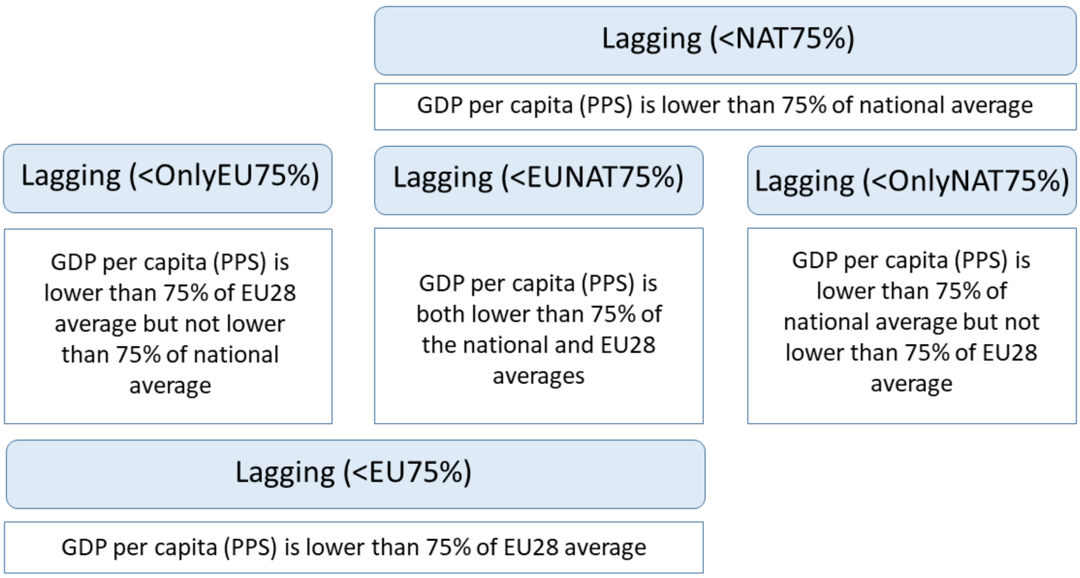
The categorisation provides an acknowledged and well-grounded regional typology of economic performance, and is selected to be used in analyses of ESPON PROFECY project for identifying lagging areas. Nevertheless, some drawbacks affect this mode of defining lagging regions that one needs to have in sight. These shortcomings of this categorisation might be overcome by different ways of fine tuning. Current categorisation of NUTS 2 regions eligible for subsidy can be updated by the most recent data on regional performance

(GDP/capita), which is based on three years average values (most current data cover years 2013–2015).

It is also possible to keep the criterion of ‘GDP/capita below 75% of EU average’ as a form of identification of less developed regions, but do the calculations directly at NUTS 3 level. This might have an impact on the accuracy of targeting, since many NUTS 2 regions consist of different types of areas regarding economic performance, which might cover the presence of several disadvantaged areas, while identifying others which are less affected by these handicaps.

Another option for fine tuning this methodology might be using the ‘below 75%’ criterion not just by comparing regional performance values to the EU average, but reflecting on within country differences too. From policy-oriented aspects, this option might gain importance, since it puts emphasis not only on lagging regions measured at the European level, but the presence of territorial inequalities at national levels too. On the one hand, it might represent multiply disadvantaged regions by the coincidence of certain degrees of deviation both from EU and national average, on the other hand, it helps to fine tune this type of measure to outline areas identified as lagging in national context in more developed countries.

Figure 1.1: Lagging region typologies used in ESPON PROFECY project



During the identification of lagging areas (for comparing them to the status of inner peripheries) in PROFECY analyses these options were taken into consideration. Recalculations of GDP per capita (PPS) data were made at NUTS 3 level and by using the most recent data available (2013–2015), and both EU28-level and national thresholds were used. As a result, lagging regions are counted in analyses as five (or in some cases, three) groups (Figure 1.1). The first group of lagging regions includes those areas whose GDP per capita value do not reach the 75% of EU28 average. A subcategory of that contains those regions, whose GDP per capita value do not reach the 75% of EU28 average but their economic performance is above the 75% level of their national average. Another group consists of the less developed regions in the comparison, lagging behind the 75% of both the EU and national GDP per capita averages. While the last two groups of lagging areas cover those regions, which were identified as disadvantaged by considering their GDP per inhabitant level compared to national averages (including disadvantaged areas at the EU level too) or only regarding their GDP per inhabitant level compared to national averages. In some parts of the analyses joint categories representing all regions lagging in the EU context or outlining every economically disadvantaged area from national aspects are not listed (see for instance Chapter 3).

1.2.2 Presentation of socio-economic data used

In the investigations of socio-economic characteristics of inner peripheries, a multiple indicator-based way of analysis was chosen. By covering several dimensions potentially connected to the status of inner peripheral areas compared to other region types as state parameters, a balanced insight on their socio-economic specificities are intended to be interpreted. The selection of indicators to be used needed to take attention to several aspects for composing a meaningful analysis.

One of the main questions related to the analysis of status of inner peripheries is if (and how) socio-economic characteristics of the delineated IP areas could be traced back to their special socio-spatial conditions. Basic structures of processes leading to the evolution of inner peripheries were already outlined by the Inception and Interim Reports of ESPON PROFECY project[5,6]. Assumptions related to the interpretive and descriptive models of different conceptual types of inner peripherality highlighted potential causes and drivers of peripheralization and also underlined various socio-economic consequences associated with the phenomena.

By the analysis of these consequences, broader problem areas related to different conditions and processes associated with demography, social capital, economic performance, and the availability of services of general interests were defined. And within these domains dimensions with narrower meaning were also named. For filling up these dimensions with content, quantifiable indicators were assigned to them, from the database gathered before, mainly from Eurostat sources at NUTS 3 level.

Potential demographic problems of inner peripheries (and other region types) are illustrated by indicators of consequences of depopulation and outmigration tendencies (population change, migration rate, ratio of child age and active age population etc.) and measures related to disadvantaged demographic conditions, such as ageing (old age dependency rate), gender imbalances (gender balance of working age population) or poor health conditions (crude death rate) (Table 1.2).

Table 1.2: The structure and selection of indicators for analyses

Problem areas	**Dimensions**	**Indicators**	**Used in ansalyes?**
Demographic problems and disadvantaged demographic conditions	Outmigration of young active population	Population change, %	Y
		Migration rate, %	Y
		Migration rate of active age population (15–64), %	N
		Ratio of child age population (0–14), %	Y
		Ratio of young age population (15–24), %	N
		Ratio of working age population (15–64), %	Y
	Disadvantaged demographic composition and processes	Old age dependency rate, %	Y
		Gender balance (F/M) of working age (15–64) population, %	(Y)
		Crude birth rate, %	N
		Crude death rate, %	(Y)
Decline of social capital	Low labour market participation	Inactivity rate (15+), %	Y
		Gender gap in activity (F/M), %	Y
		Unemployment rate (15+), %	Y
		Youth unemployment rate (15–24), %	N
		Long-term unemployment rate (15+), %	N
		NEET rate (15–24), %	(Y)
	Low qualification	Ratio of population with low qualification (ISCED 11 0–2) (25–64), %	Y
		Ratio of population with high qualification (ISCED 11 5–8) (25–64), %	N
Low economic potential	Low productivity	GDP (PPS) per inhabitant, % EU28=100	Y
		GVA per inhabitant, Thousand €	N
		GVA per employed persons, Thousand €	Y
		Ratio of employed persons in agriculture (NACE_rev2 A), %	N
		Ratio of employed persons in manufacturing (NACE_rev2 C), %	Y
	Low entrepreneurship and innovation	Number of active enterprises per 10000 persons	Y
		Birth rate of enterprises, %	Y
		Death rate of enterprises, %	N
		Three year survival rate of enterprises (born in t-3), %	Y
Poor provision of SGI	Low availability of SGI	Density of banks, per 10000 persons	N
		Density of cinemas, per 100000 persons	N
		Density of doctors, per 10000 persons	N
		Density of hospitals, per 100000	Y

Problem areas	Dimensions	Indicators	Used in ansalyes?
		persons	
		Density of pharmacies, per 10000 persons	N
		Density of primary schools, per 10000 persons	Y
		Density of secondary schools, per 10000 persons	N
		Density of retail units, per 10000 persons	Y
		Maximum and average travel times to SGI units, minute	Y

The potential decline of social capital is measured by different participation rates at the labour market (for example, inactivity, unemployment, gender gap, NEET) and educational attainment data representing qualification characteristics. Economic potentials of the analysed areas and groups of regions are illustrated by productivity indicators such as GDP per inhabitants of GVA per employed persons or the ratio of employed persons in manufacturing industry. Furthermore, the dimension of entrepreneurship is also covered by different business demography measures (number of active enterprises, birth rate, survival rate of enterprises) – but only for a group of available countries.

As measures of consequences of poor provision of services of general interests, indicators reflecting on the availability and density of SGI are also built in the analysis, by representing service sectors of health, education and retail. In some analyses maximum or average travel time to these SGI units were also used as indicators.

Because of the big number of variables covering similar data topics, a pre-selection of these measures was implemented for further use. Correlation analyses among indicators of the same dimensions were carried out, and based on statistical correlations and the known logical relationships between variables a part of these indicators was excluded from accomplished analysis. Only the ones, thought to be the most representative were processed into further investigations.

1.2.3 Processing territorial units into analyses

Goals and methodologies of different tasks during the analysis of status of inner peripheries determine, how the four different delineated types of inner peripheries be made enter common analyses. Although most of the presented methods are suitable for representing different types of regions identified as inner peripheries separately, it might multiply elements of tools of visualisation and analysis. Because of that, in some cases it is proposed to make the ‘union’ of different types of IP enter the analyses (Figure 1.2). In this way, the project group could work with the widest pool of IP regions, while the differentiation between types of inner peripheries should be taken into account when choosing the focus of interpretation of results. This could be adequate in those cases, where individual NUTS 3 units are basic elements of analysis (e.g. time-series analysis – Chapter 4 –, scatter plot analyses – Chapter 5 – and cluster analysis-based socio-economic classification of IP – Chapter 6). Where these basic elements are groups of regions (e.g. in comparisons of the overlap between IP and other region types – Chapter 2 – or in tasks using box plots Chapter 3 and Chapter 5), keeping the separation of different IP types seems to be more adequate.

Figure 1.2: Inner peripheries counted by different types and by the 'union' of different delineations

Region	IP Type1	IP Type2	IP Type3	IP Type4	IP count
A	1	0	0	0	1
B	0	0	0	0	0
C	0	0	1	0	1
D	1	0	0	0	1
E	0	0	0	0	0
F	0	0	0	0	0
G	1	1	1	1	4
H	0	0	0	0	0
I	0	1	0	0	1
J	0	0	0	0	0
K	0	0	1	0	1
L	1	0	0	1	2
M	0	0	0	0	0
N	0	1	0	0	1
O	0	0	0	0	0
P	0	0	0	0	0
Q	0	0	1	0	1
R	0	0	0	0	0
S	1	0	1	0	2
T	0	0	0	0	0
U	0	1	0	1	2
V	0	0	0	0	0
W	0	0	0	1	1
X	0	0	0	0	0
Y	0	0	1	0	1
Z	1	0	0	0	1

Region	IP?
A	Y
C	Y
D	Y
G	Y
I	Y
K	Y
L	Y
N	Y
Q	Y
S	Y
U	Y
W	Y
Y	Y
Z	Y

(IP types and region labels listed in the figure above are not actual results from the projects. These are just hypothetical examples for demonstrating principles of counting of areas identified as inner peripheries by separating the different cases of delineations or by using a merged pool of all types, which determines how to process territorial units into analyses.)

1.3 Inner peripheries and areas at risk of becoming peripheral

Besides the delineation of the four groups of inner peripheries, ESPON PROFECY project made experiments and recommendations for identifying territories at risk of becoming inner peripheral as well. These ideas can be found in Chapter 4.3 in the Final Report and in the form of a more detailed version in Chapter 5 in Annex 4 for the Final Report. Areas identified as territories at risk of becoming inner peripheries are not proceeded into analyses related to tasks characterising the status of inner peripheries in Europe due to several considerations.

Similarly to methodologies of identifying inner peripheries, the proposal for delineation of areas at risk could be based on a multi-approach methodology. The presented options refer to areas at risk of becoming inner peripheral according to their status in access to services. Since this only reflects on one type of inner peripheries, a comprehensive evaluation of territories at risk in Europe is not able to be carried out. Even if all the different IP delineations had their equivalent among approaches of identifying regions at risk of becoming inner peripheries, the situation would presumably be very complicated. The four groups of inner peripheries themselves have different combinations of overlaps, what raises challenges in the interpretation of their socio-economic characteristics, and determines how they can be proceeded into analyses (see previous Chapter 1.2.3). These issues are managed in different ways in analyses presented in this report. But with a potential addition of a further dimension of territorial units to be analysed, too many combinations would occur, which would be difficult to be filled with meaningful content in terms of 'actual' socio-economic phenomena.

Approaches of delineating territories at risk of becoming inner peripheral presented in Chapter 5 in Annex 4 for the Final Report provide options for the identification of these areas of risk on the basis of their potential dependence on one SGI facility or their multiple, but not critical disadvantages regarding access to different services at grid level. NUTS 3 level assignment of these territories is not carried out, because these areas are usually comparatively small and by being scattered across the countries they do not form continuous patches. In this way, these territorial units would hardly fit into the framework of methodologies used and data needs fulfilled for analysing the status of areas associated with phenomena of inner peripherality. Even if data supply regarding these units could practically be satisfied, it would be difficult to match meaningful variables to the description of them, because potential risks of peripheralization from the viewpoint of SGI access might not always have direct links to socio-economic trends, since e.g. in the provision of services, administrative or political motives are also present.

Analyses presented in the report aim at exploring territorial and socio-economic specificities of inner peripheral areas, in most of the introduced tasks in comparison with other European region types (what kind of socio-economic challenges affects them, is their status less or more disadvantaged compared to other typologies etc.). Despite previous explanations, the position of regions of risk might potentially be derived indirectly from findings of these analyses. Identified vulnerabilities, unfavourable socio-economic conditions associated with inner peripheries might be considered as potential risk factors in processes of peripheralization. If non-peripheral areas share these vulnerabilities or have specific combinations of them, it might indicate dangers of becoming inner peripheries. It might happen in the case, if their opportunities of access or position regarding connectedness deteriorate, which could cause higher risks than in the case of actual IPs with less disadvantaged socio-economic position.

2 Analysing geographies of European inner peripheries compared to regional typologies on other territorial realities

2.1 Overlap between inner peripheries and EU regional typologies

The analysis based on the comparison of deviations and overlaps between geographies of IPs and other regional typologies in Europe is using cross table analysis and overlaid maps to gain information on meaningful patterns. Units of analyses are provided by the delineation process identifying four groups of inner peripheral areas. Besides, regional typologies widely used in association with NUTS 3 EU regions (separated elements of Urban–Rural typology, mountain areas, islands and metropolitan regions) are also processed into analyses. Since a special focus on lagging areas is expected to be applied in comparisons with inner peripheries, different groups of lagging EU regions are identified by economic performance (GDP per inhabitant) in relation to EU and national averages.

Results based on cross tables and overlaid maps indicate significant overlap between different groups of inner peripheries and other regional typologies. In general, regarding EU regional typologies, inner peripheral regions most frequently tend to overlap with intermediate regions (Map 2.1–Map 2.4), rural regions (Map 2.5–Map 2.8) and mountain areas (Map 2.13–Map 2.16) (see also Table 2.1). Besides, other regional types might show more notable overlap with one or another IP delineation types, such as in the case of depleting inner peripheries and urban areas (Map 2.9–Map 2.12) or metropolitan areas, which imply that processes of marginalisation could significantly affect these territories too.

Table 2.1 shows the overlap between IP regions (resulting from the four delineations) and other regional typologies for Europe. Regarding IP delineations 1 and 3 (based in lower accessibility to regional centres and SGIs) it is worth mentioning that around half of them are identified as mountain regions. By contrast, the overlapping percentage is lower for mountain areas regarding IP Delineation 2 (lower economic potential interstitial areas), and Delineation 4 (depleting areas). This overlap is mostly located in the biggest mountain ranges. It should be noted that mountains have a major influence reducing accessibility due to geographical factors, therefore they also influence the averaging process used to delineate IPs. Notwithstanding that, there are also inner peripheries in less mountainous areas.

Regarding the urban-rural typology it is interesting to note that most IP regions are located in non-urban areas (>80%), except for Delineation 4 (depleting areas) where IPs are distributed more or less equally between the three categories (urban, intermediate, rural). However, some urban regions perform worse as compared with their surroundings, therefore, some urban regions are also identified as inner peripheries. In addition, as Delineation 4 is based exclusively on socio-economic indicators, the overlap between Metropolitan regions and Delineation 4 is more pronounced than any other delineation (almost the double).

Table 2.1: Overlap between inner peripheries and EU regional typologies

	Urban regions	**Intermediate regions**	**Rural regions**	**Mountain regions**	**Island regions**	**Metropolitan regions**
IP 1 (regional centres)	9.6%	48.6%	41.8%	49.5%	0.0%	24.0%
IP 2 (interstitial)	18.8%	40.0%	41.2%	38.2%	1.2%	23.0%
IP 3 (SGI access)	10.8%	44.1%	45.2%	53.8%	1.1%	20.4%
IP 4 (depleting)	32.2%	34.1%	33.7%	24.4%	2.6%	43.0%

The following tables present an analysis of the overlap between inner peripheries and EU regional typologies for the different macro-regions in Europe (countries are grouped according to its geographical location based on the Eurovoc Classification[a]). The text below presents the results of the overlap of the four Delineations for Central and Eastern Europe (Table 2.2); Western Europe (Table 2.3); Southern Europe (Table 2.4) and Northern Europe (In Southern Europe (Table 2.4) it is remarkable the high proportion of IPs located in intermediate regions (ranging from 39% to 70% of IPs). However, for Delineation 4 the number of IPs located in rural regions is more relevant. In this macro-region, the presence of mountainous regions seems very relevant and it is related to the existence of IPs, as there is a high percentage of IPs located in these areas (ranging from 58 to 88% depending on the Delineation).

In Northern Europe (Table 2.5), IPs are mostly located in non-urban regions (only showing a slight overlap in Delineation 1). In addition, depending on the delineation used, they mostly overlap with rural regions (Delineation 1, 2 and 4) or with intermediate ones (Delineation 3). Delineation 4 also shows an important overlap (>45%) with the intermediate typology of regions. The overlap between mountain regions and the different four delineations shows also and interesting results, as there is a relevant overlap with delineations 1 (38%) and 2 (43%) while the overlap is low or inexistent for the other two delineations.

Table 2.5).

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[a] Eurovoc Classification: **Central and Eastern Europe** (Albania; Belarus; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Former Yugoslav Republic of Macedonia; Hungary; Kosovo; Moldova; Montenegro; Poland; Romania; Russia; Serbia; Slovakia; Slovenia; and Ukraine; where Turkey has also been added); **Western Europe** (Andorra; Austria; Belgium; France; Germany; Ireland; Liechtenstein; Luxembourg; Monaco; Netherlands; Switzerland; and United Kingdom); **Southern Europe** (Cyprus; Greece; Italy; Malta; Portugal; San Marino; and Spain) and **Northern Europe** (Denmark; Estonia; Finland; Iceland; Latvia; Lithuania Norway; and Sweden).

(http://eurovoc.europa.eu/drupal/?q=request&view=mt&mturi=http://eurovoc.europa.eu/100277&language=en)

Table 2.2: Overlap between inner peripheries and EU regional typologies (Central and Eastern Europe)

	Urban regions	**Intermediate regions**	**Rural regions**	**Mountain regions**	**Island regions**	**Metropolitan regions**
IP 1 (regional centres)	7.0%	39.5%	53.5%	48.8%	0.0%	11.6%
IP 2 (interstitial)	6.7%	37.8%	55.6%	55.6%	0.0%	8.9%
IP 3 (SGI access)	0.0%	46.2%	53.8%	76.9%	0.0%	0.0%
IP 4 (depleting)	11.1%	25.9%	63.0%	59.3%	0.0%	18.5%

In Central and Eastern Europe (Table 2.2) IPs overlap less with urban regions, as about 90% of IPs are located on the other categories of the urban-rural typology. In addition, the percentage of IPs in Mountain regions is significantly high (>50%) for all the delineations, being particularly high (>75%) regarding Delineation 3, based on access to SGIs. As these countries are located inland, and subsequently there are no IPs on Island regions. On the other hand, the overlap of IPs with metropolitan regions is low (10%), although the value doubles for Delineation 4.

Table 2.3: Overlap between inner peripheries and EU regional typologies (Western Europe)

	Urban regions	**Intermediate regions**	**Rural regions**	**Mountain regions**	**Island regions**	**Metropolitan regions**
IP 1 (regional centres)	11.2%	48.0%	40.8%	40.8%	0.0%	33.7%
IP 2 (interstitial)	28.8%	42.5%	28.8%	15.0%	0.0%	35.0%
IP 3 (SGI access)	15.0%	35.0%	50.0%	41.7%	0.0%	28.3%
IP 4 (depleting)	41.9%	33.3%	24.7%	11.8%	2.2%	56.5%

In Western Europe (Table 2.3) most of the IPs are not located intermediate and rural regions, with the exception of Delineation 4 where the overlap of IPs and urban areas increases until 29%. The IPs of Western European countries in Mountain regions varies significantly depending on the delineation used: if the focus is set on the distance to regional centres or SGIs (Delineation 1 and 3) the number of IPs is approximately three times than for Delineation 2 (lower economic potential interstitial areas) and 4 (depleting areas). Regarding metropolitan regions, a relevant proportion of IPs in can be observed for all delineations, where again Delineation 4 stands out (>50%).

Table 2.4: Overlap between inner peripheries and EU regional typologies (Southern Europe)

	Urban regions	Intermediate regions	Rural regions	Mountain regions	Island regions	Metropolitan regions
IP 1 (regional centres)	8.7%	67.4%	23.9%	71.7%	0.0%	19.6%
IP 2 (interstitial)	18.5%	48.1%	33.3%	77.8%	3.7%	14.8%
IP 3 (SGI access)	5.9%	70.6%	23.5%	88.2%	5.9%	11.8%
IP 4 (depleting)	13.0%	39.1%	47.8%	58.7%	6.5%	8.7%

In Southern Europe (Table 2.4) it is remarkable the high proportion of IPs located in intermediate regions (ranging from 39% to 70% of IPs). However, for Delineation 4 the number of IPs located in rural regions is more relevant. In this macro-region, the presence of mountainous regions seems very relevant and it is related to the existence of IPs, as there is a high percentage of IPs located in these areas (ranging from 58 to 88% depending on the Delineation).

In Northern Europe (Table 2.5), IPs are mostly located in non-urban regions (only showing a slight overlap in Delineation 1). In addition, depending on the delineation used, they mostly overlap with rural regions (Delineation 1, 2 and 4) or with intermediate ones (Delineation 3). Delineation 4 also shows an important overlap (>45%) with the intermediate typology of regions. The overlap between mountain regions and the different four delineations shows also and interesting results, as there is a relevant overlap with delineations 1 (38%) and 2 (43%) while the overlap is low or inexistent for the other two delineations.

Table 2.5: Overlap between inner peripheries and EU regional typologies (Northern Europe)

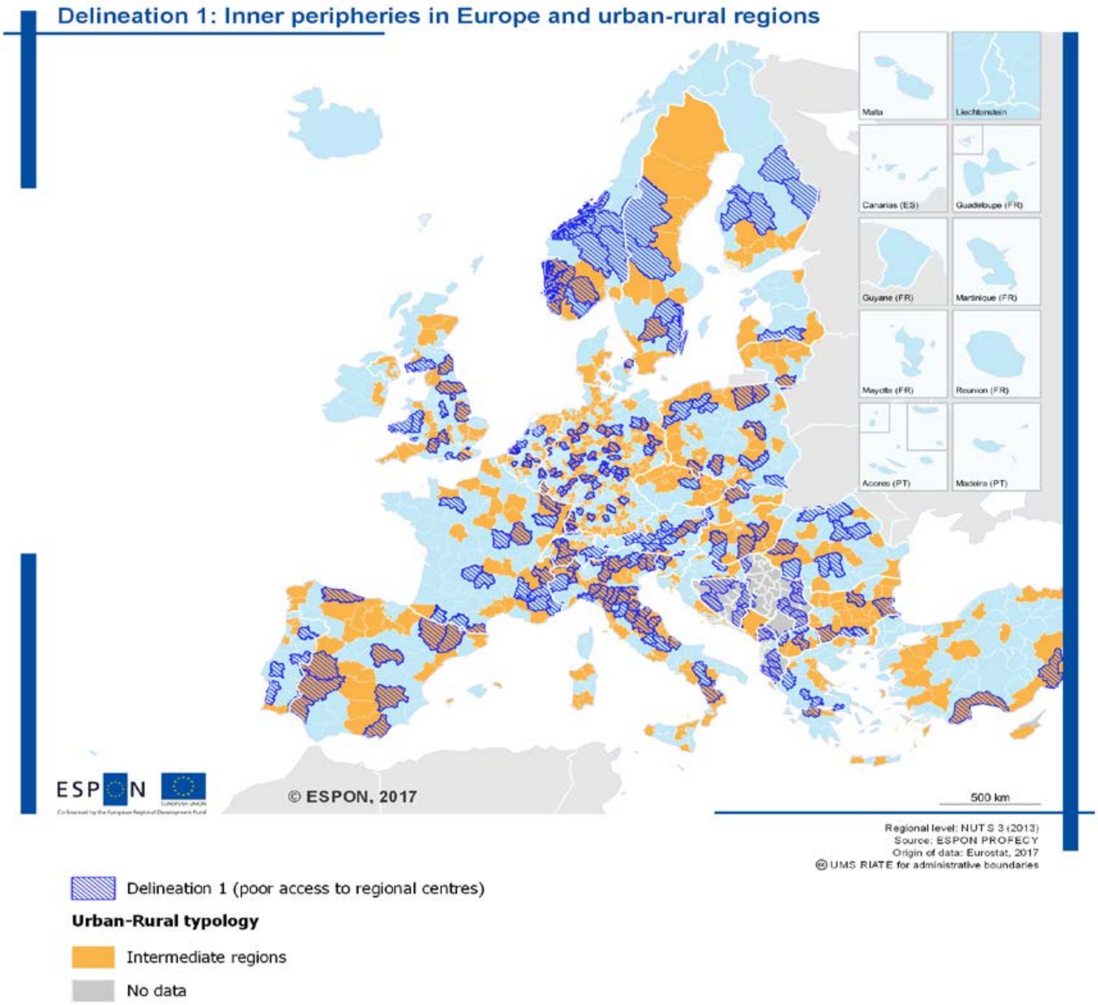
	Urban regions	Intermediate regions	Rural regions	Mountain regions	Island regions	Metropolitan regions
IP 1 (regional centres)	9.5%	28.6%	61.9%	42.9%	0.0%	14.3%
IP 2 (interstitial)	0.0%	15.4%	84.6%	38.5%	7.7%	15.4%
IP 3 (SGI access)	0.0%	66.7%	33.3%	0.0%	0.0%	0.0%
IP 4 (depleting)	0.0%	45.5%	54.5%	9.1%	0.0%	18.2%

From the comparison of the four tables (Table 2.2 to Table 2.5), where the different European countries are grouped according to its geographical location, some aspects need to be highlighted:

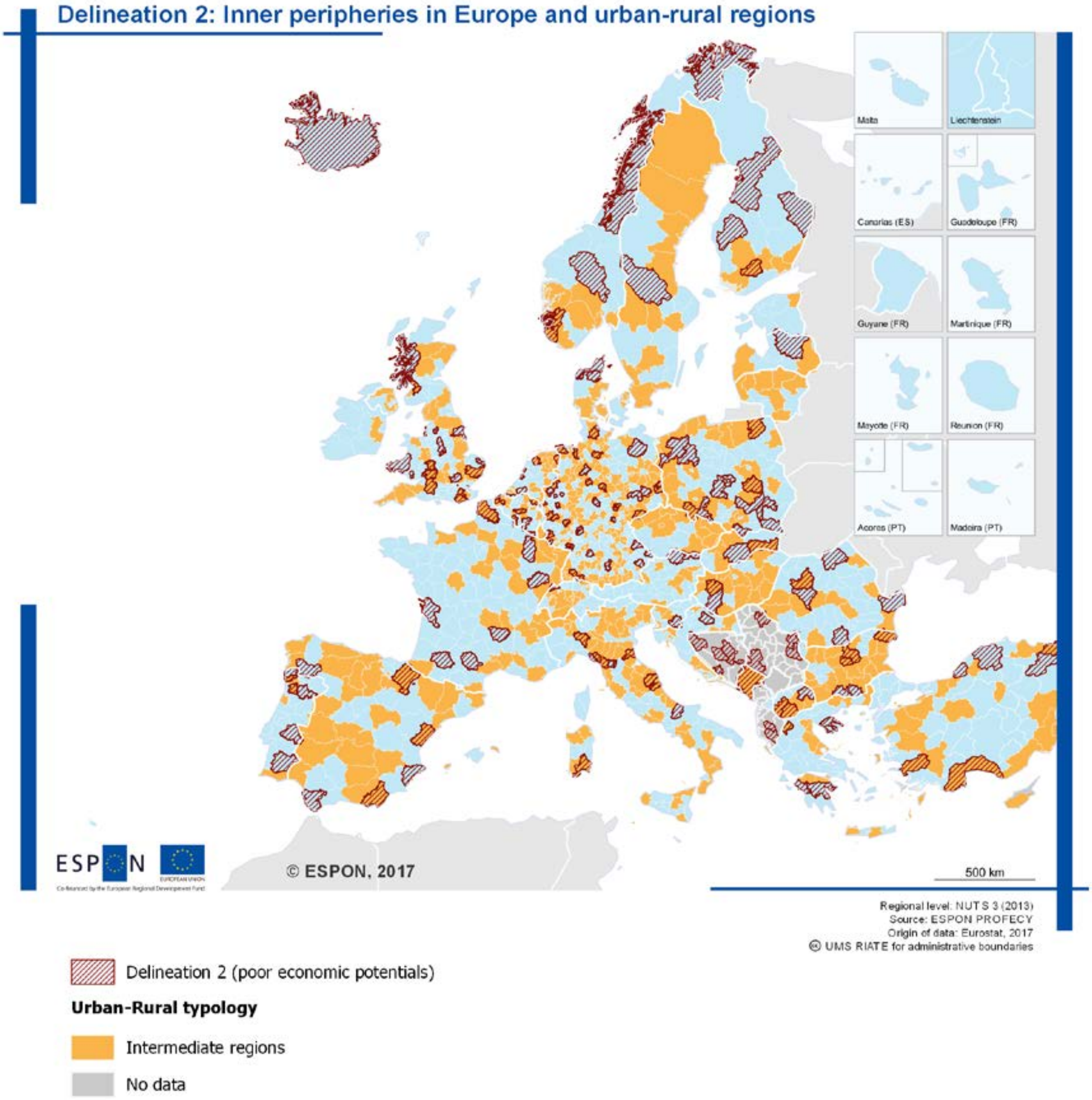
- Regarding the urban-rural typology, most IPs are located in non-urban regions, and depending on the group of countries analysed, they are predominantly rural regions (Central and Eastern Europe or Nothern Europe), intermediate regions (Southern Europe) or similarly distributed across both categories (Western Europe).

- The geographical characteristic of being located in a mountain region is very relevant regarding the four delineations, although it is more marked in the macro-region of Central and Eastern Europe and Southern Europe, where the overlap of IPs with mountain regions ranges from 58 to 76% and from 57 to 88%, respectively. In the other groups, although important the overlap is below 42%.
- The relationship between IPs and metropolitan regions shows also interesting results because, although the overlap is lower as compared to other regional typologies (i.e. mountain regions), it represents a maximum overlap of about 19%, except for Western Europe where the proportion increases up to 28–56% depending on the delination analysed.

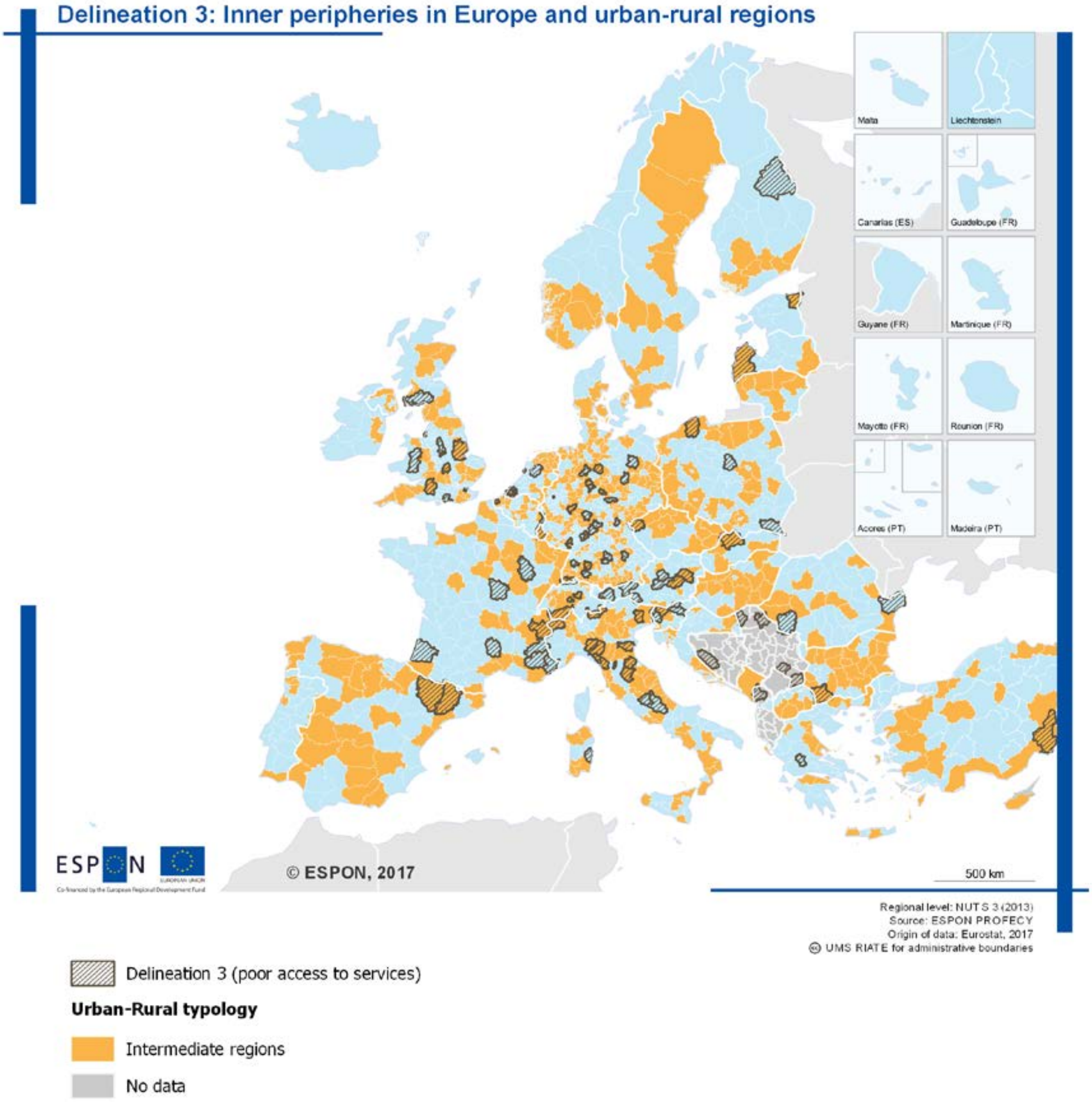
Map 2.1: Overlap between inner peripheries (Delineation 1 – travel time to regional centres) and intermediate areas of the urban-rural typology



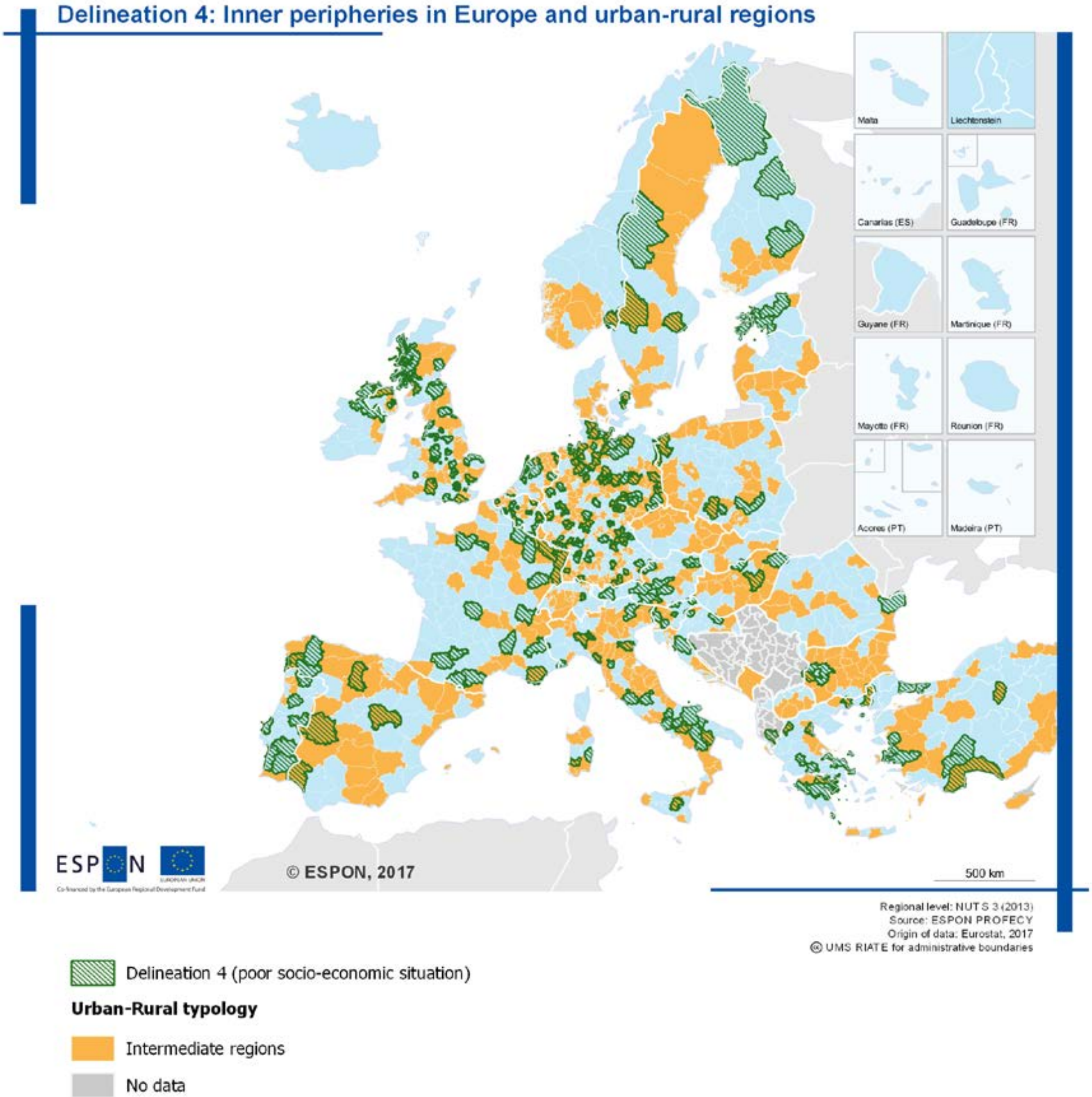
Map 2.2: Overlap between inner peripheries (Delineation 2 – economic potential interstitial areas) and intermediate areas of the urban-rural typology



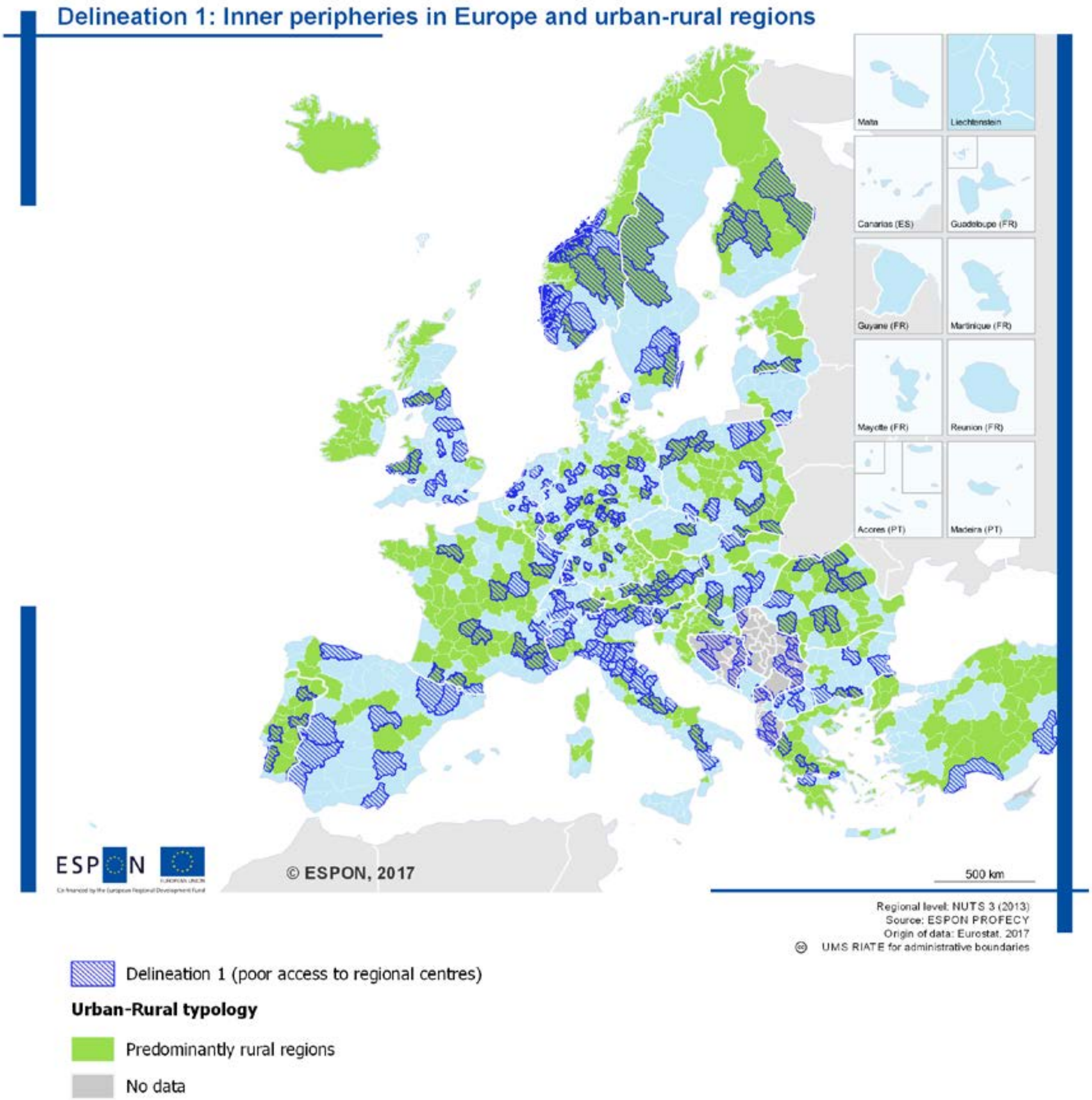
Map 2.3: Overlap between inner peripheries (Delineation 3 – access to SGIs) and intermediate areas of the urban-rural typology



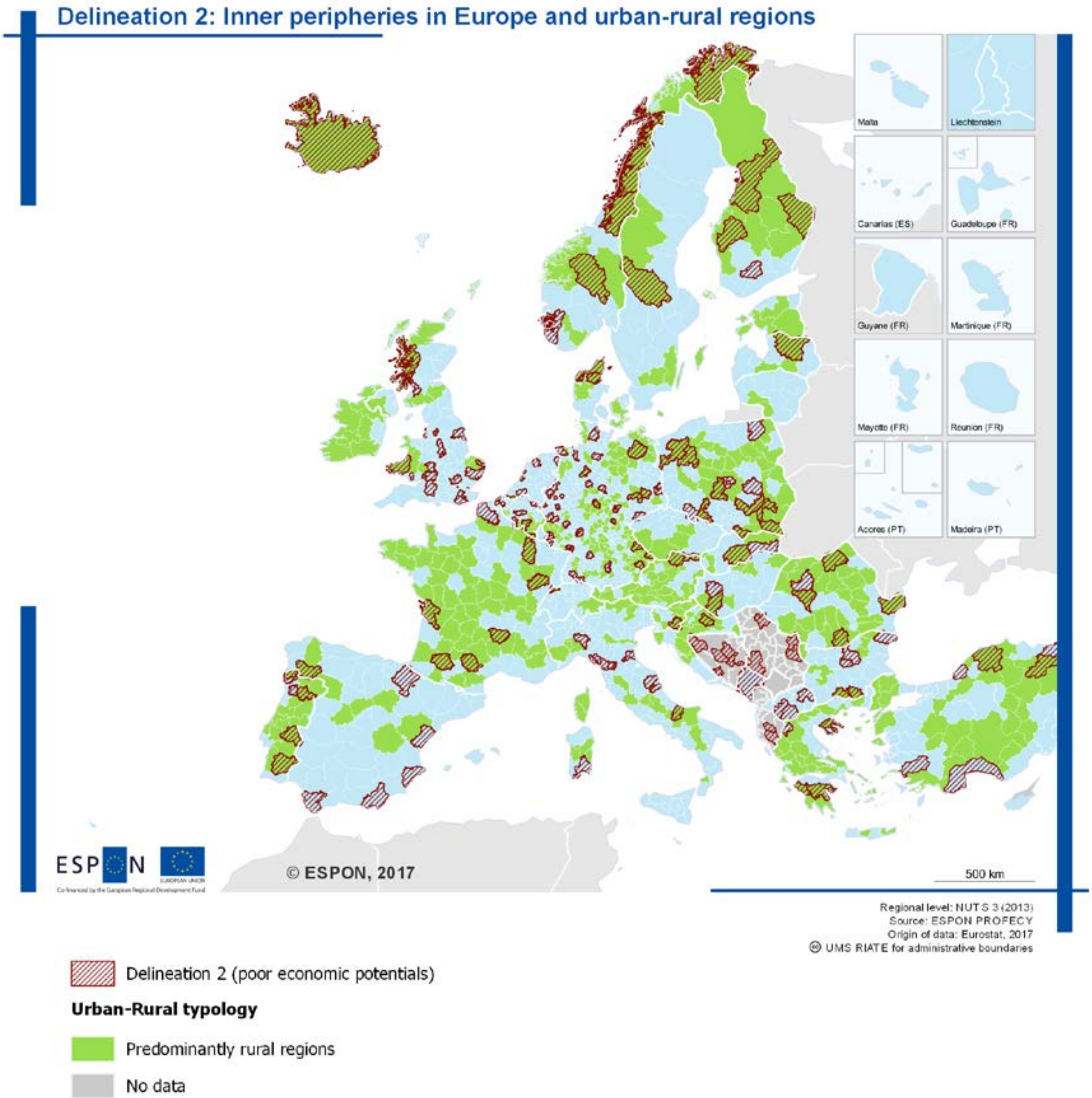
Map 2.4: Overlap between inner peripheries (Delineation 4 – depleting areas) and intermediate areas of the urban-rural typology



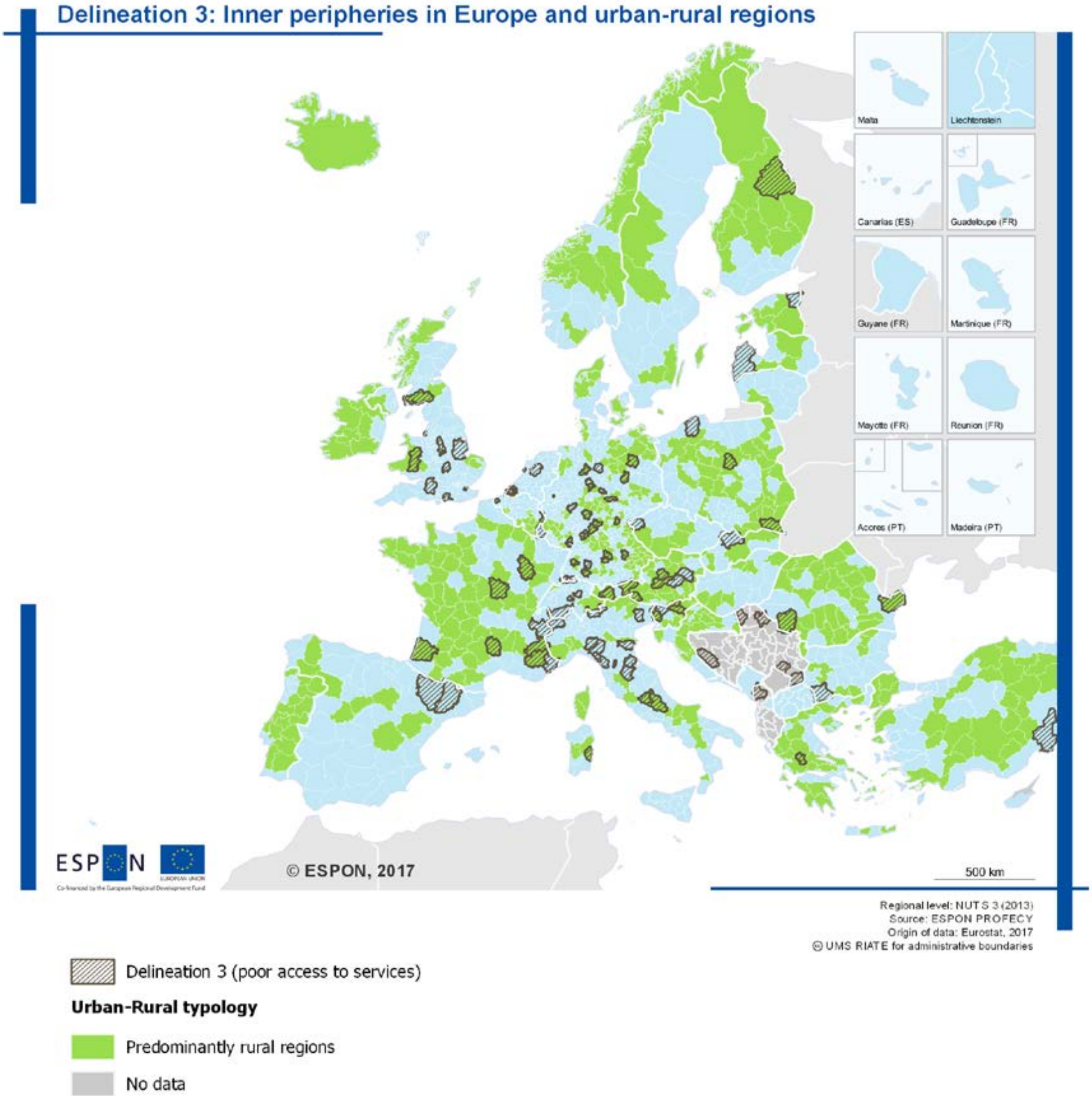
Map 2.5: Overlap between inner peripheries (Delineation 1 – travel time to regional centres) and rural areas of the urban-rural typology



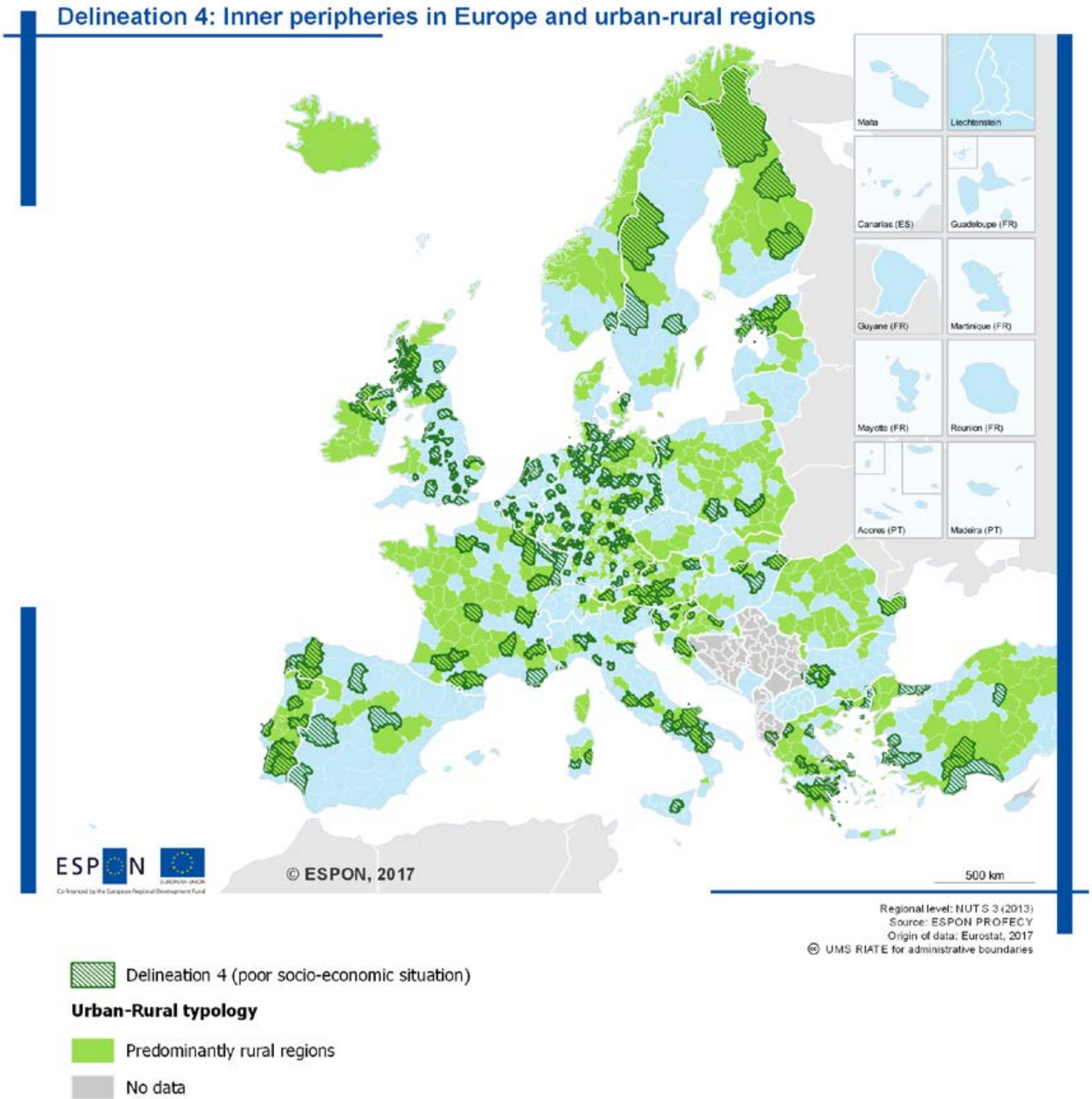
Map 2.6: Overlap between inner peripheries (Delineation 2 – economic potential interstitial areas) and rural areas of the urban-rural typology



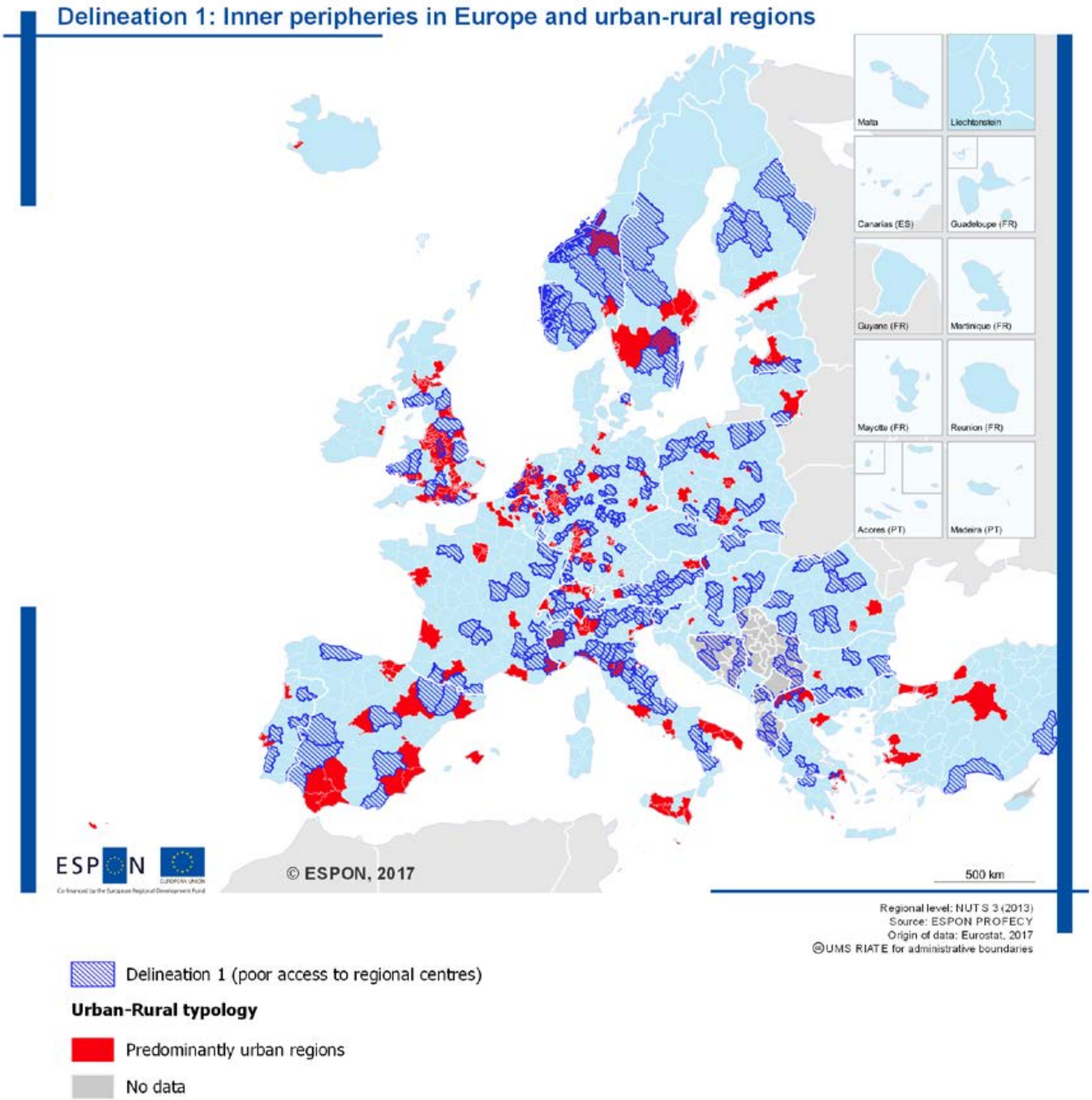
Map 2.7: Overlap between inner peripheries (Delineation 3 – access to SGIs) and rural areas of the urban-rural typology



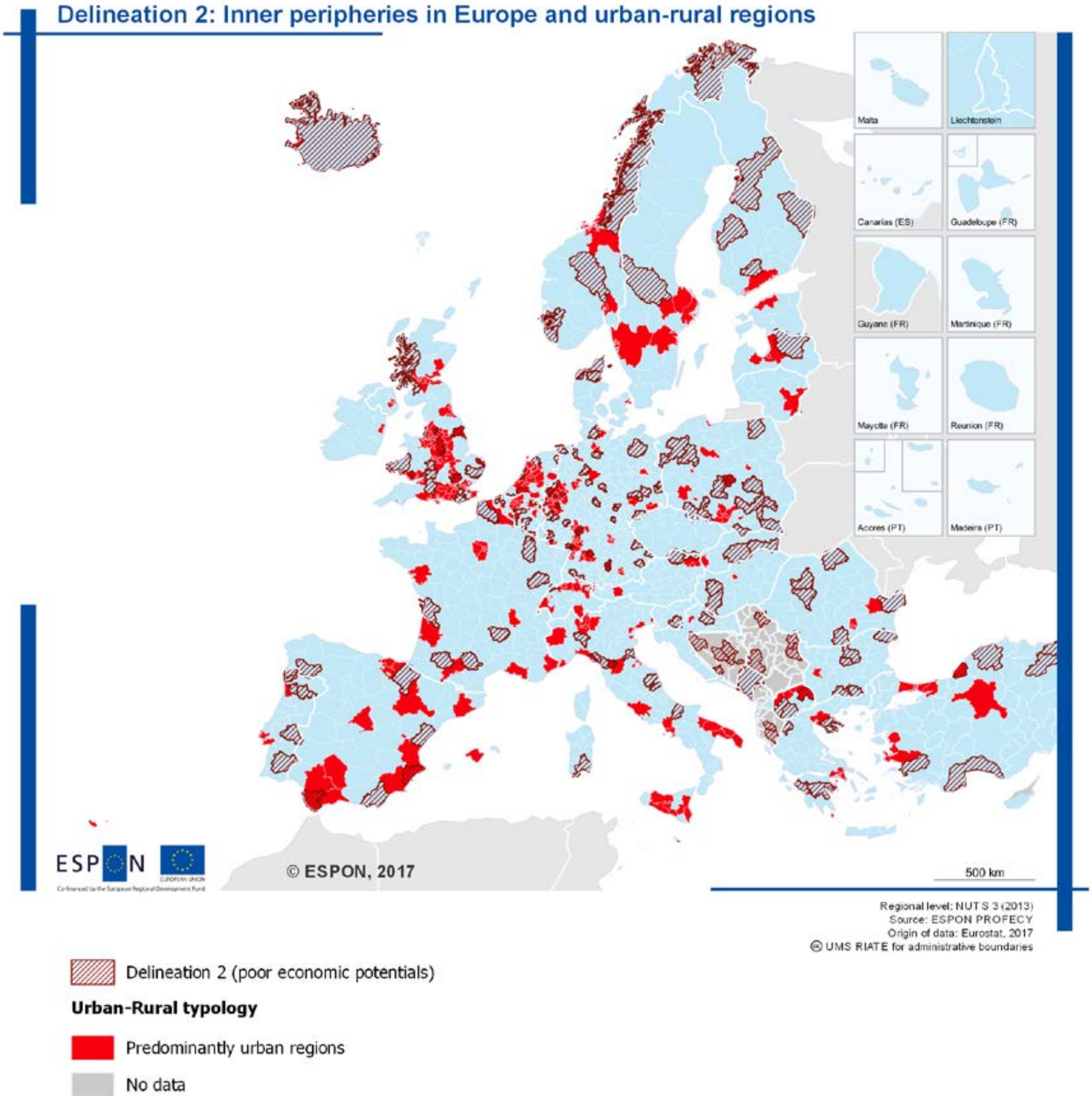
Map 2.8: Overlap between inner peripheries (Delineation 4 – depleting areas) and rural areas of the urban-rural typology



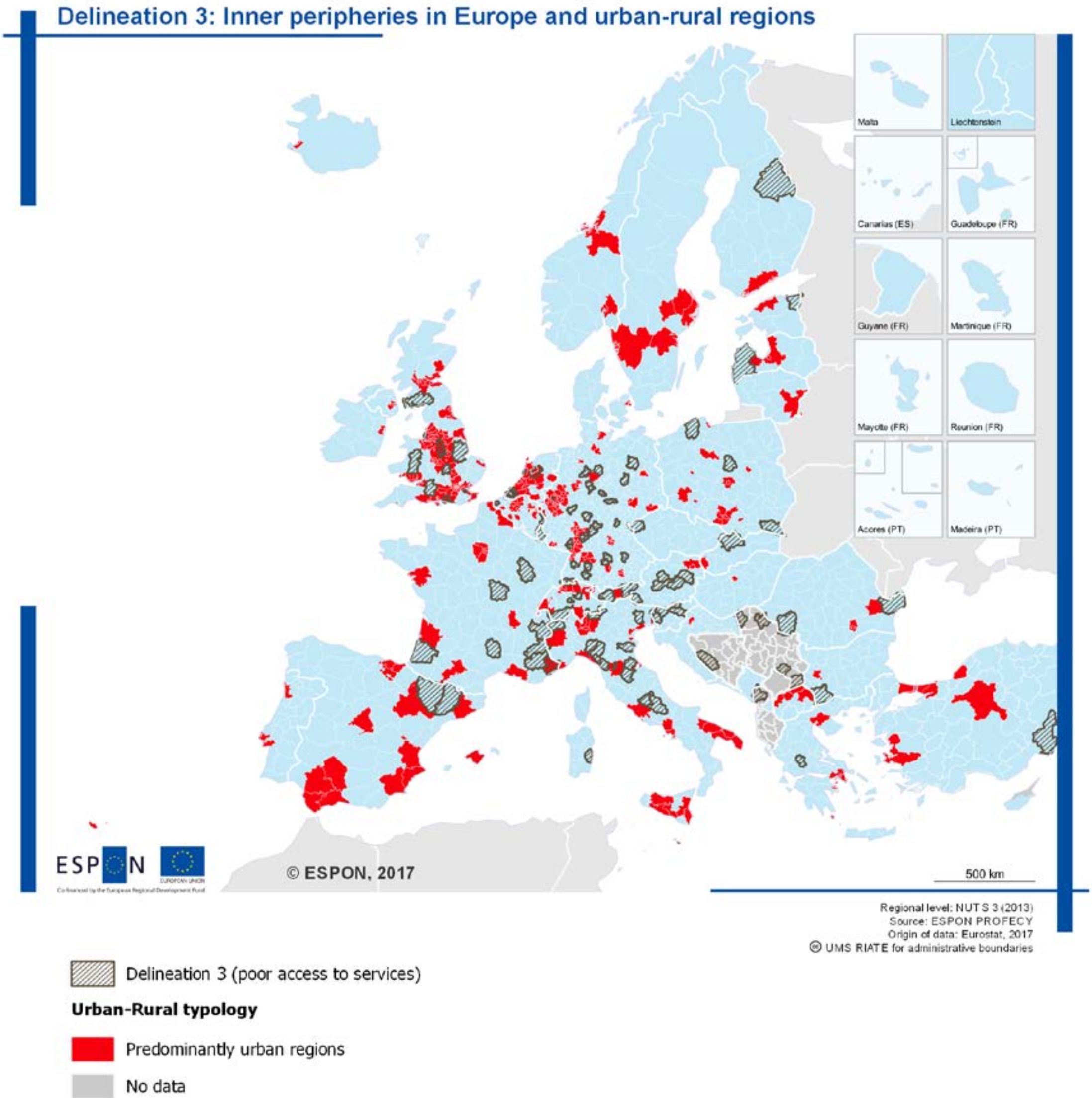
Map 2.9: Overlap between inner peripheries (Delineation 1 – travel time to regional centres) and urban areas of the urban-rural typology areas



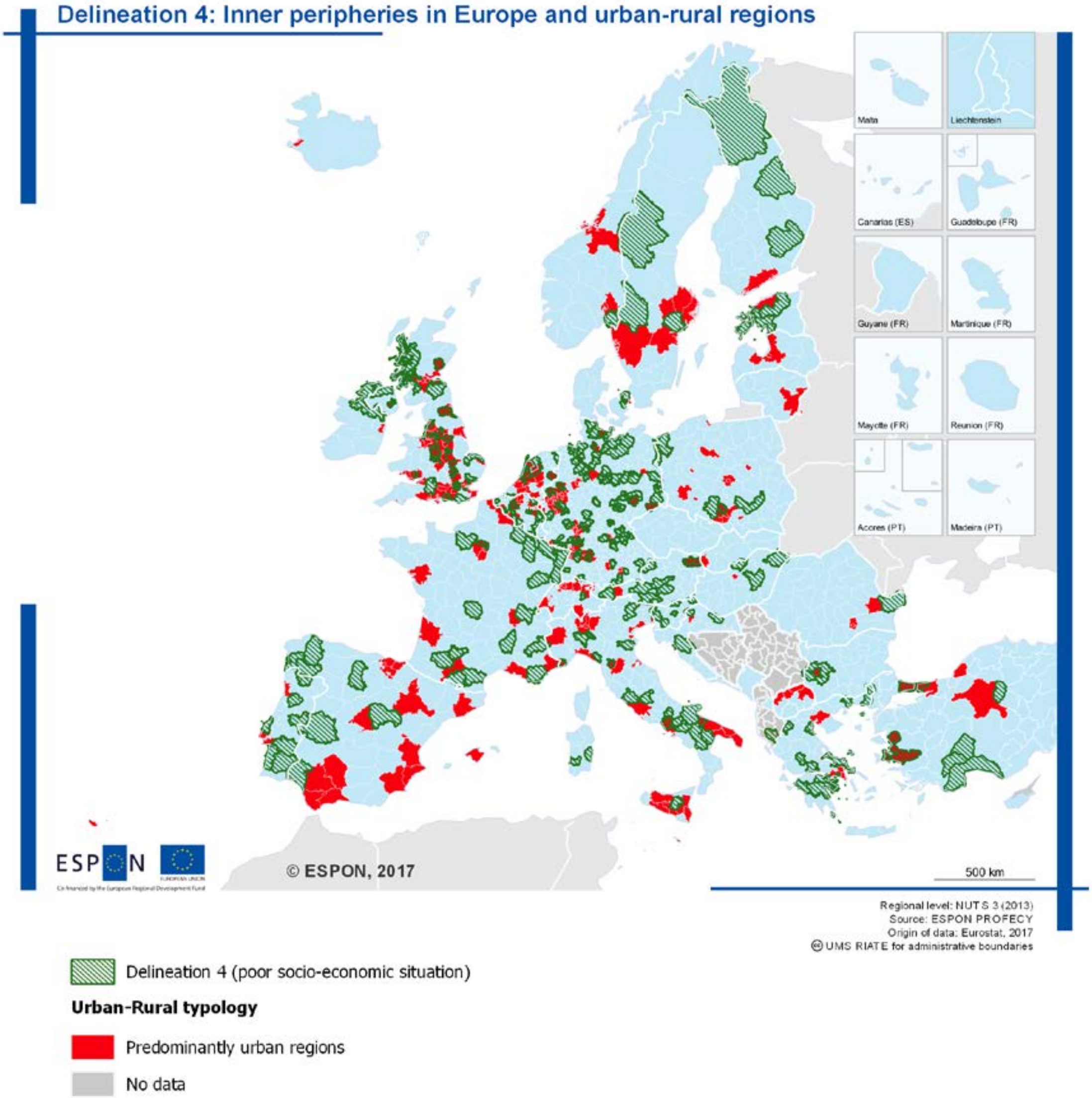
Map 2.10: Overlap between inner peripheries (Delineation 2 – economic potential interstitial areas) and urban areas of the urban-rural typology areas



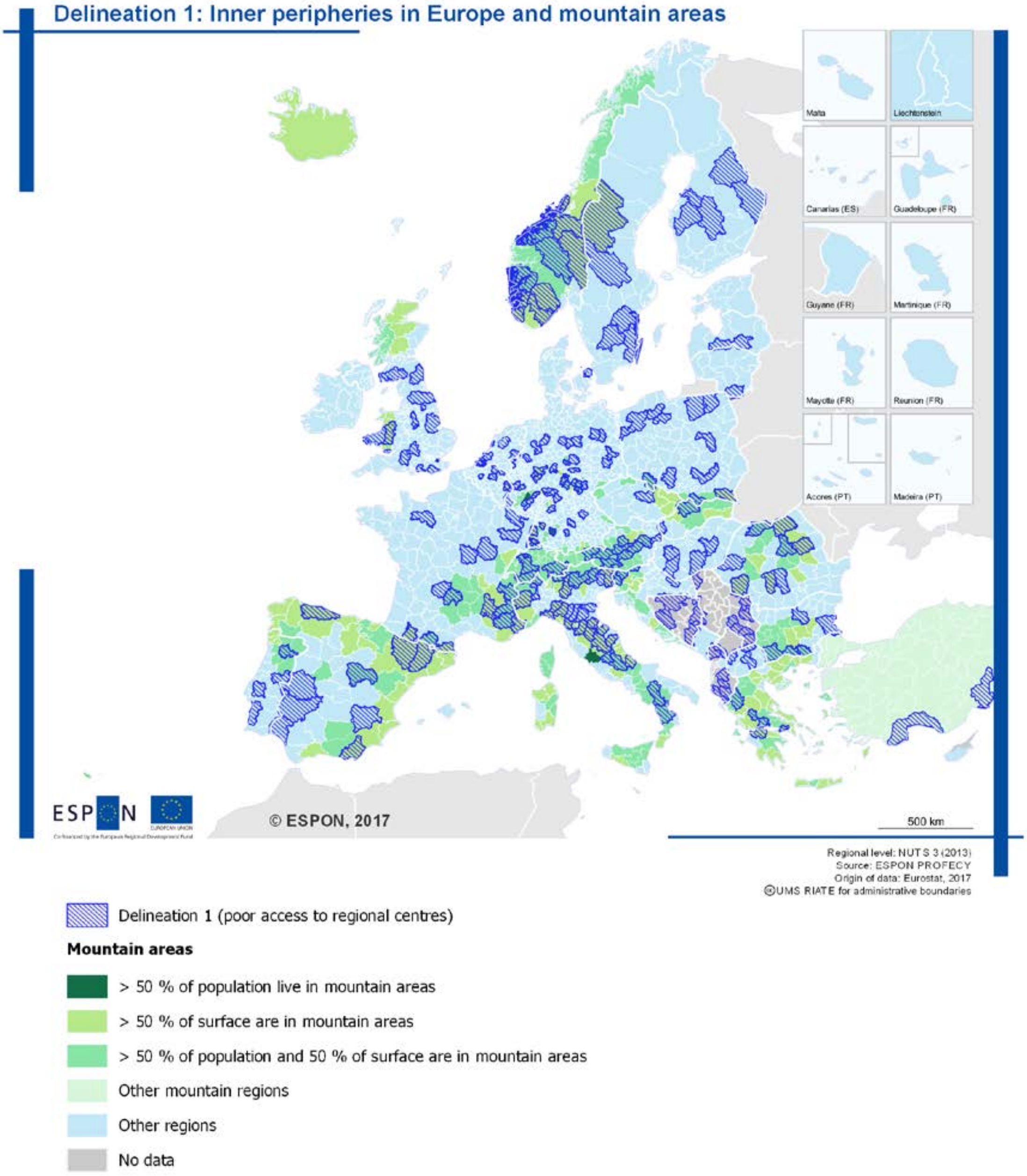
Map 2.11: Overlap between inner peripheries (Delineation 3 – access to SGIs) and urban areas of the urban-rural typology areas



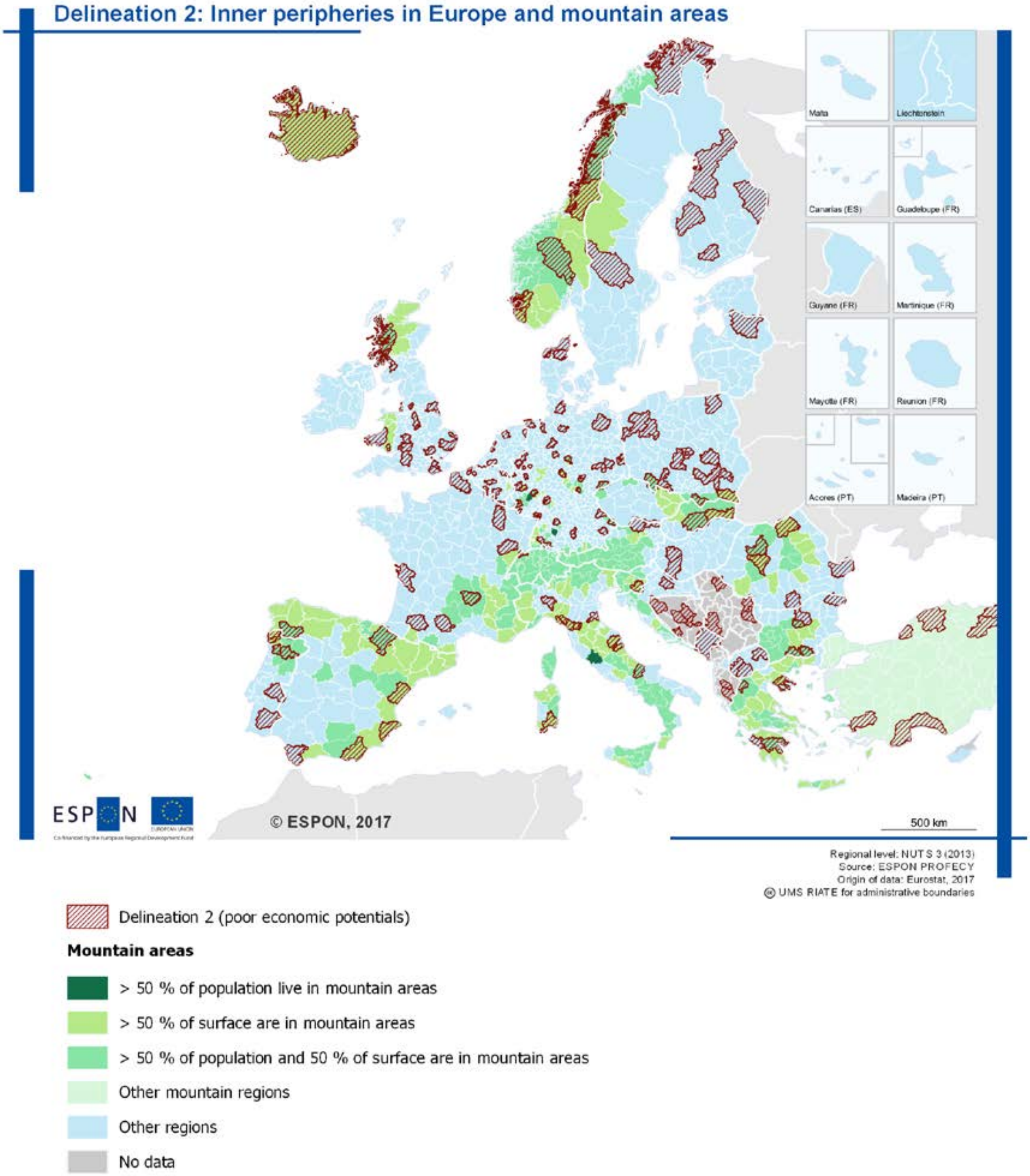
Map 2.12: Overlap between inner peripheries (Delineation 4 – depleting areas) and urban areas of the urban-rural typology areas



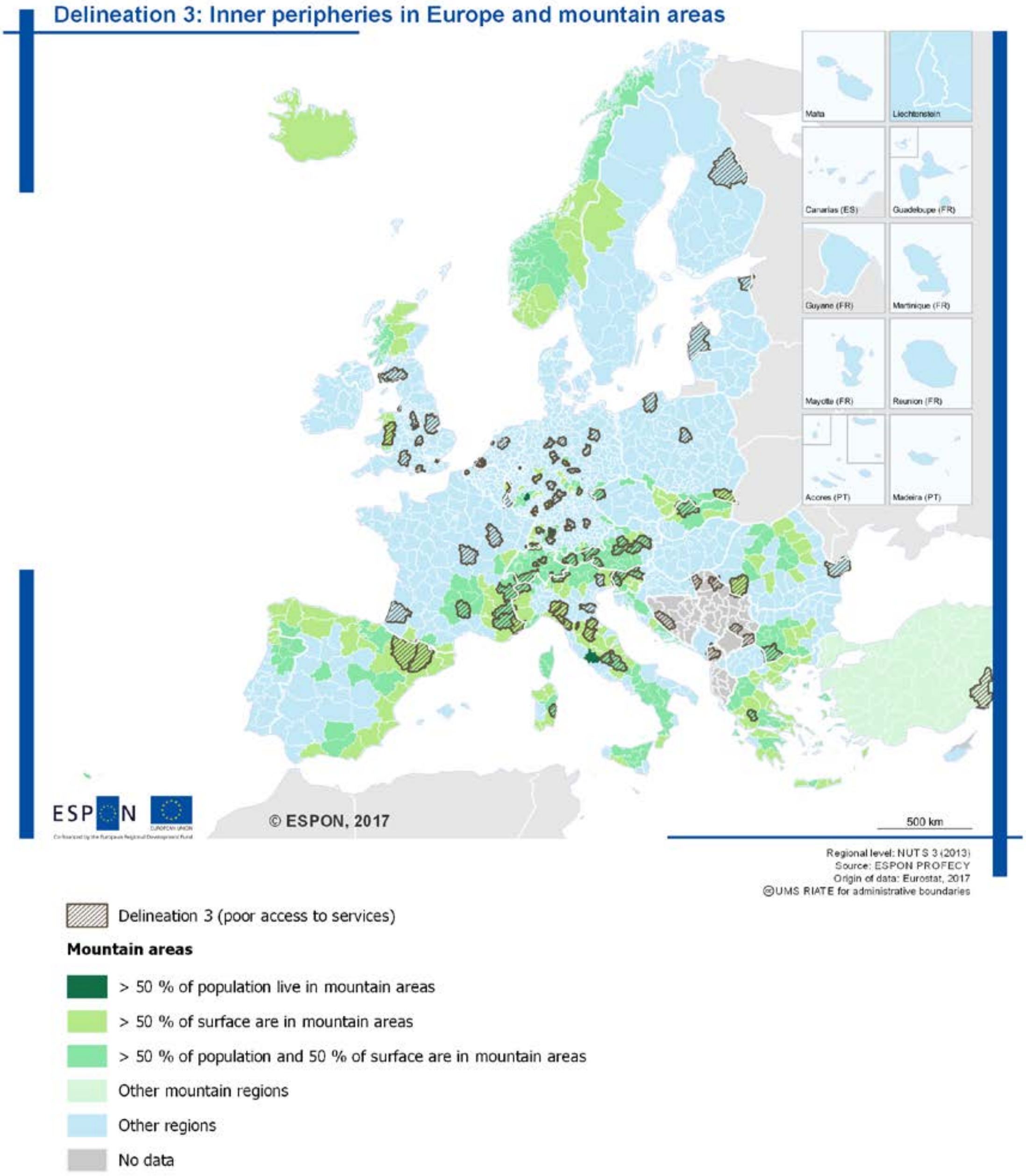
Map 2.13: Overlap between inner peripheries (Delineation 1 – travel time to regional centres) and mountain regions



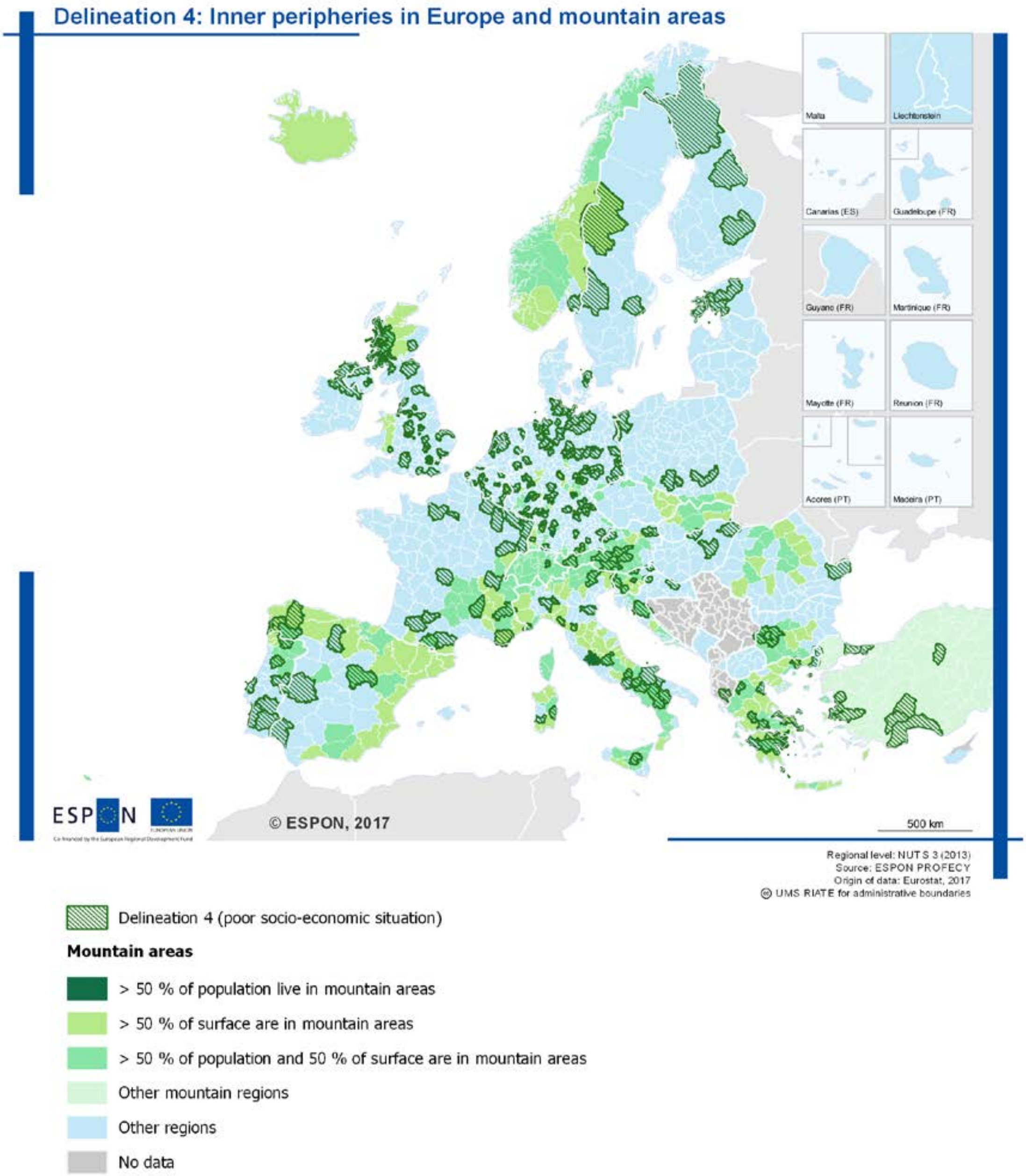
Map 2.14: Overlap between inner peripheries (Delineation 2 – economic potential interstitial areas) and mountain regions



Map 2.15: Overlap between inner peripheries (Delineation 3 – access to SGIs) and mountain regions



Map 2.16: Overlap between inner peripheries (Delineation 4 – depleting areas) and mountain regions



2.2 Overlap between inner peripheries and EU lagging regions

In general, inner peripheries overlap considerably with lagging areas at national level and, although in a less marked manner, with lagging European areas (Table 2.6). Besides, the relative majority of inner peripheral areas from the four delineations might be defined as lagging from both a national and a European perspective. Regarding overlaps between IPs and lagging regional types, economic potential interstitial areas (IP 2) and depleting areas (IP 4) seem to stand out, which is explained by the fact that these delineations have more direct connection with economic performance (Map 2.18 and Map 2.20).

Regional variations behind the overlap between inner peripheral areas and other socio-economic typologies show some characteristic macro-regional patterns. For the comparison of inner peripheries and lagging typologies a more in-depth analysis was conducted and assessed at macro-regional level. The results contribute to explain the geographies of inner peripheries in comparison with lagging typologies, showing clearer trends regarding regional variation (Map 2.17, Map 2.18, Map 2.19 and Map 2.20).

While nationally lagging territories might be present everywhere in Europe depending on the degree of national regional inequalities, lagging areas from the aspect of European level are present within the EU28 mainly in the Mediterranean area and in Central and Eastern Europe. This differentiation affects regional patterns of overlap between IPs and lagging regions too. In Western Europe, inner peripheries are usually not lagging or lagging only from national perspectives, while in the southern and eastern part of Europe, areas with inner peripheral characteristics more frequently overlap with (multiply) lagging areas.

Regarding overlaps between IP and lagging regional types (Table 2.6), economic potential interstitial areas (IP 2) and depleting peripheries (IP 4) seem to stand out, which can be explained, since these delineations have more direct connection with economic performance (Map 2.18 and Map 2.20). By contrast, inner peripheral types regarding travel time to regional centres (IP 1) and accessibility to services (IP 3) have a higher overlap with not lagging regions (Map 2.17 and Map 2.19). This might be explained by the fact that those indicators are only indirectly connected to economic performance and related to long term development processes. In some cases, inner peripheries are geographically separated from areas showing lagging trends at national and European level (e.g. Northern Italy and Northern Spain). In those cases, inner peripheries reflect a more limited performance in the regional context, although located in areas with higher economic development (regarding GDP indicator).

Table 2.6: Overlap between inner peripheries and EU lagging regions

	<EU75 %	<NAT75 %	<OnlyEU75 %	<OnlyNAT75 %	<EUNAT75 %	Not Lagging
IP 1 (regional centres)	35.0%	46.1%	9.7%	20.9%	25.2%	44.2%
IP 2 (interstitial)	46.4%	53.0%	11.9%	18.5%	34.4%	35.1%
IP 3 (SGI access)	24.2%	34.1%	7.7%	17.6%	16.5%	58.2%
IP 4 (depleting)	43.3%	60.5%	6.9%	24.1%	36.4%	32.6%

The text below presents a more detailed analysis of the previous cross-table (Table 2.6) by considering the geographical distribution of IPs according to the macro-regions where they are located (as mentioned earlier, countries are classified in macro-regions based on the Eurovoc Classification[b]). Therefore, the overlap of the four delineations with lagging regions is assessed for the macro-regions of Central and Eastern Europe (Table 2.7); Western Europe (Table 2.8); Southern Europe (Table 2.9) and Northern Europe (Table 2.10).

Table 2.7: Overlap between inner peripheries and EU lagging regions (Central and Eastern Europe)

	<EU75 %	<NAT75 %	<OnlyEU75 %	<OnlyNAT75 %	<EUNAT75 %	Not Lagging
IP 1 (regional centres)	97.7%	65.9%	31.8%	0.0%	65.9%	2.3%
IP 2 (interstitial)	97.0%	66.7%	30.3%	0.0%	66.7%	3.0%
IP 3 (SGI access)	85.7%	42.9%	42.9%	0.0%	42.9%	14.3%
IP 4 (depleting)	100.0%	60.0%	40.0%	0.0%	60.0%	0.0%

In Central and Eastern Europe (Table 2.7) nearly all IP delineations are located in lagging regions (namely the category <EU75%, as shown in Figure 1.1) with a GDP per capita (PPS) lower than the 75% of EU28 average (ranging from 85 to 100%). Table 2.7 shows that, out of them, there is also a major overlap for all delineations corresponding to lagging regions that are both lower than 75% of national and European averages (namely the category <EUNAT75%), with a lower proportion of IPs lagging only at European level (included in the category <OnlyEU75%).

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[b] Eurovoc Classification: **Central and Eastern Europe** (Albania; Belarus; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Former Yugoslav Republic of Macedonia; Hungary; Kosovo; Moldova; Montenegro; Poland; Romania; Russia; Serbia; Slovakia; Slovenia; and Ukraine; where Turkey has also been added); **Western Europe** (Andorra; Austria; Belgium; France; Germany; Ireland; Liechtenstein; Luxembourg; Monaco; Netherlands; Switzerland; and United Kingdom); **Southern Europe** (Cyprus; Greece; Italy; Malta; Portugal; San Marino; and Spain) and **Northern Europe** (Denmark; Estonia; Finland; Iceland; Latvia; Lithuania Norway; and Sweden).

(http://eurovoc.europa.eu/drupal/?q=request&view=mt&mturi=http://eurovoc.europa.eu/100277&language=en)

Table 2.8: Overlap between inner peripheries and EU lagging regions (Western Europe)

	<EU75 %	<NAT75 %	<OnlyEU75 %	<OnlyNAT75 %	<EUNAT75 %	Not Lagging
IP 1 (regional centres)	12.6%	52.6%	0.0%	40.0%	12.6%	47.4%
IP 2 (interstitial)	29.1%	59.5%	0.0%	30.4%	29.1%	40.5%
IP 3 (SGI access)	8.8%	35.1%	0.0%	26.3%	8.8%	64.9%
IP 4 (depleting)	32.1%	64.1%	0.0%	32.1%	32.1%	35.9%

In Western Europe (Table 2.8), there are two noticeable trends: On the one hand, there is a significant percentage of IPs that are not located in lagging regions (ranging from 36% to 65%, depending on the delineation analysed). On the other hand, those IPs that are located in lagging regions show all a GDP per capita below 75% of their national averages. In line with macro-regional trends for Western Europe, a small proportion of these regions appear to perform as well below the 75% EU28 average (ranging from 9% to 32% depending on delineation analysed).

Table 2.9: Overlap between inner peripheries and EU lagging regions (Southern Europe)

	<EU75 %	<NAT75 %	<OnlyEU75 %	<OnlyNAT75 %	<EUNAT75 %	Not Lagging
IP 1 (regional centres)	32.6%	19.6%	13.0%	0.0%	19.6%	67.4%
IP 2 (interstitial)	51.9%	22.2%	29.6%	0.0%	22.2%	48.1%
IP 3 (SGI access)	17.6%	17.6%	0.0%	0.0%	17.6%	82.4%
IP 4 (depleting)	69.6%	47.8%	21.7%	0.0%	47.8%	30.4%

In Southern Europe (Table 2.9), the number of IPs located in not lagging regions appears noticeable (ranging from 30% to 82%, depending on the delineation). Regarding this trend, it is noteworthy mentioning the weak relation between poor access to SGIs (Delineation 3) and lagging regional typologies: only 17.6% of Delineation 3 IPs perform worse than both national and European averages). On the other hand, and reflecting the macro-regional trends for Southern Europe, the IPs that are also lagging regions show GDP values below 75% the EU28 average, but also, most of them (except for Delineation 2), below 75% of the national averages.

Table 2.10: Overlap between inner peripheries and EU lagging regions (Northern Europe)

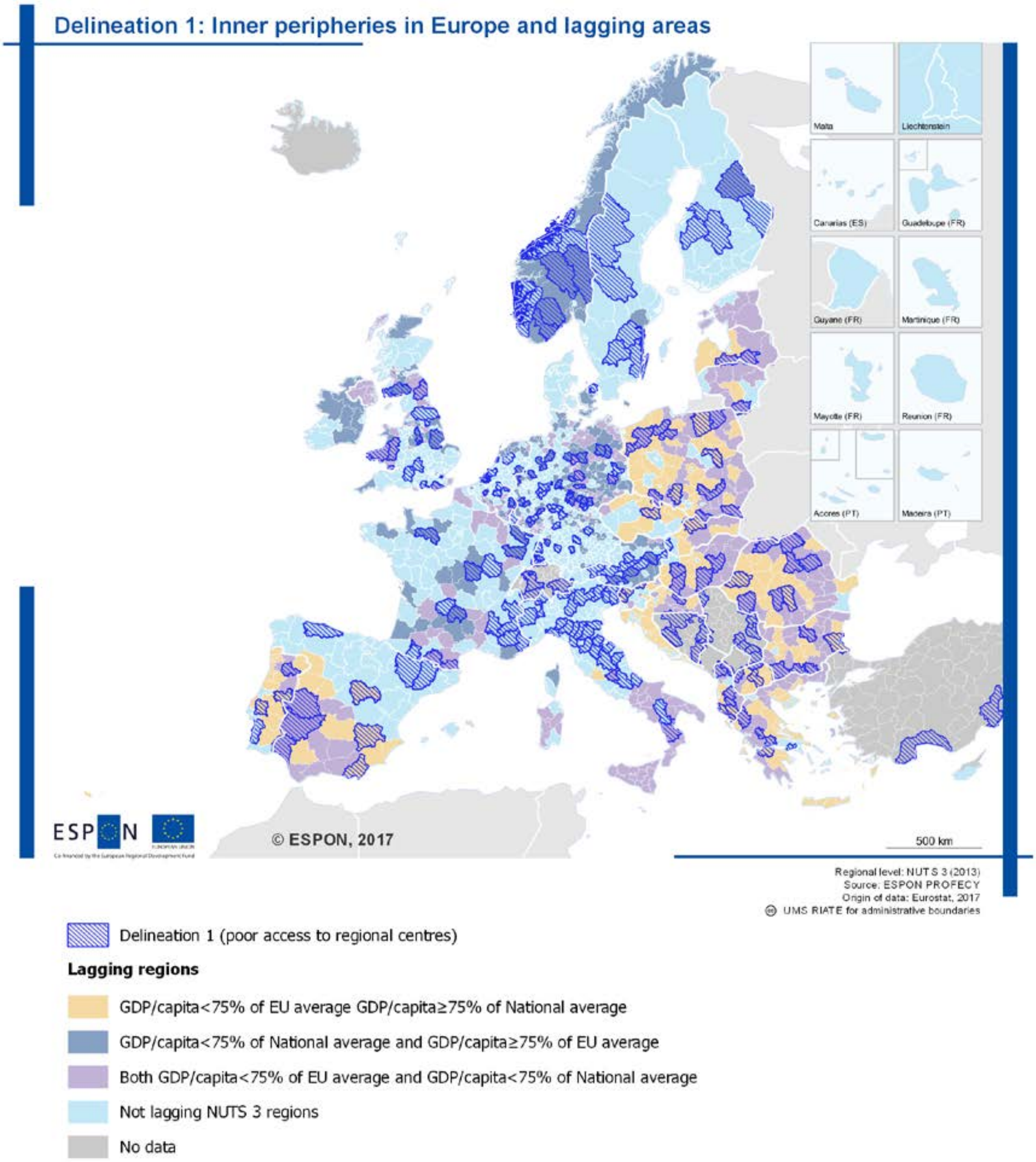
	<EU75 %	**<NAT75 %**	**<OnlyEU75 %**	**<OnlyNAT75 %**	**<EUNAT75 %**	**Not Lagging**
IP 1 (regional centres)	9.5%	33.3%	0.0%	23.8%	9.5%	66.7%
IP 2 (interstitial)	8.3%	41.7%	0.0%	33.3%	8.3%	58.3%
IP 3 (SGI access)	66.7%	66.7%	33.3%	33.3%	33.3%	0.0%
IP 4 (depleting)	18.2%	54.6%	0.0%	36.4%	18.2%	45.4%

In Northern Europe (Table 2.10), Delineation 3 shows some distinctive features as compared with the rest of the delineations. For instance, IP regions are distributed equally among regions lagging only at national level, only at European level and both at national and European level (33.3% each), with no overlap with not lagging regions. On the other hand, this trend contrasts with the remaining delineations, where a significant share of IPs is located in not lagging areas (ranging from 45% to 67%, depending on delineation). For delineations 1, 2 and 4, the IPs that overlap with lagging regions are all below they are 75% of the national average. However, around one third of them is also lagging at European scale under, a figure that is higher for Delineation 4.

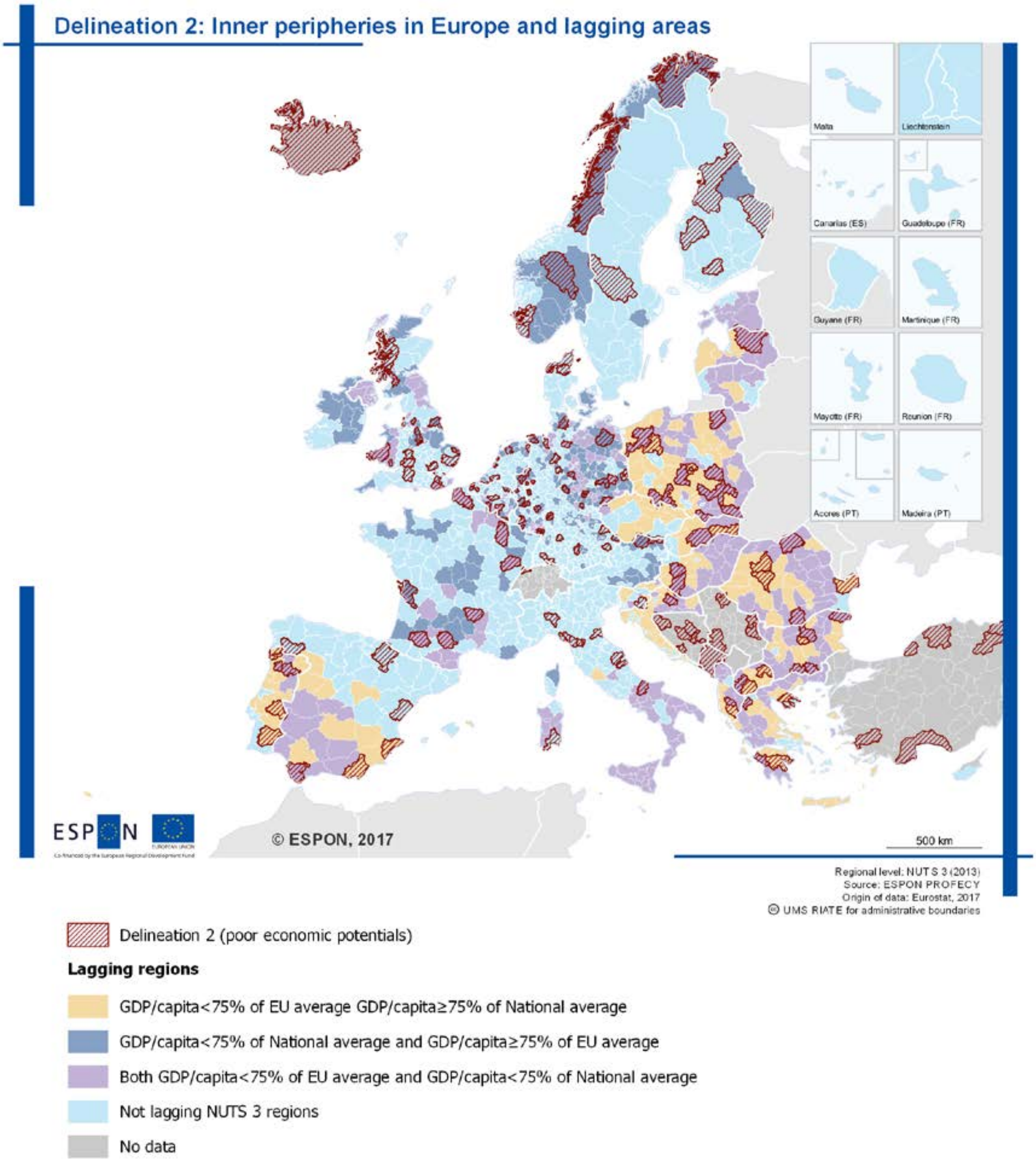
From the comparison of the four tables (Table 2.7 to Table 2.10) showing the overlap of IPs and lagging regions according to their geographical distribution on macro-regions, some insights can be extracted:

- The overlap of Delineation 3 (based on access to SGIs) shows a distinctive trend, that appears different from the other delineations (1, 2 and 4).
- For delineations 1, 2 and 4, the higher or lower overlap of IPs with lagging regions varies according to the macro-region where they are located. For instance, in Central and Eastern Europe, almost all IPs are located in lagging regions (95–100%). This percentage decreases, although it still represents the majority of IPs, for Western Europe (53–65%). In addition, in Southern and Northern Europe the overlap with lagging areas varies importantly depending on the delineation (ranging from 33–70% and 33–55%, respectively).
- For delineations 1, 2 and 4, for countries with a GDP per capita indicator below European average (Central, Eastern and Southern Europe) all their IPs located in lagging regions are classified as lagging at European scale, as they present a GDP per capita below 75% EU28 average, although some do not present a GDP per capita below 75% of the national average. Conversely, for countries with a GDP per capita indicator above European average (Western and Northern Europe) all the IPs overlapping with lagging regions present a GDP per capita below 75% of the national average. Although, out of them, some lagging regions are also presenting a GDP per capita value below 75% of EU28 average.

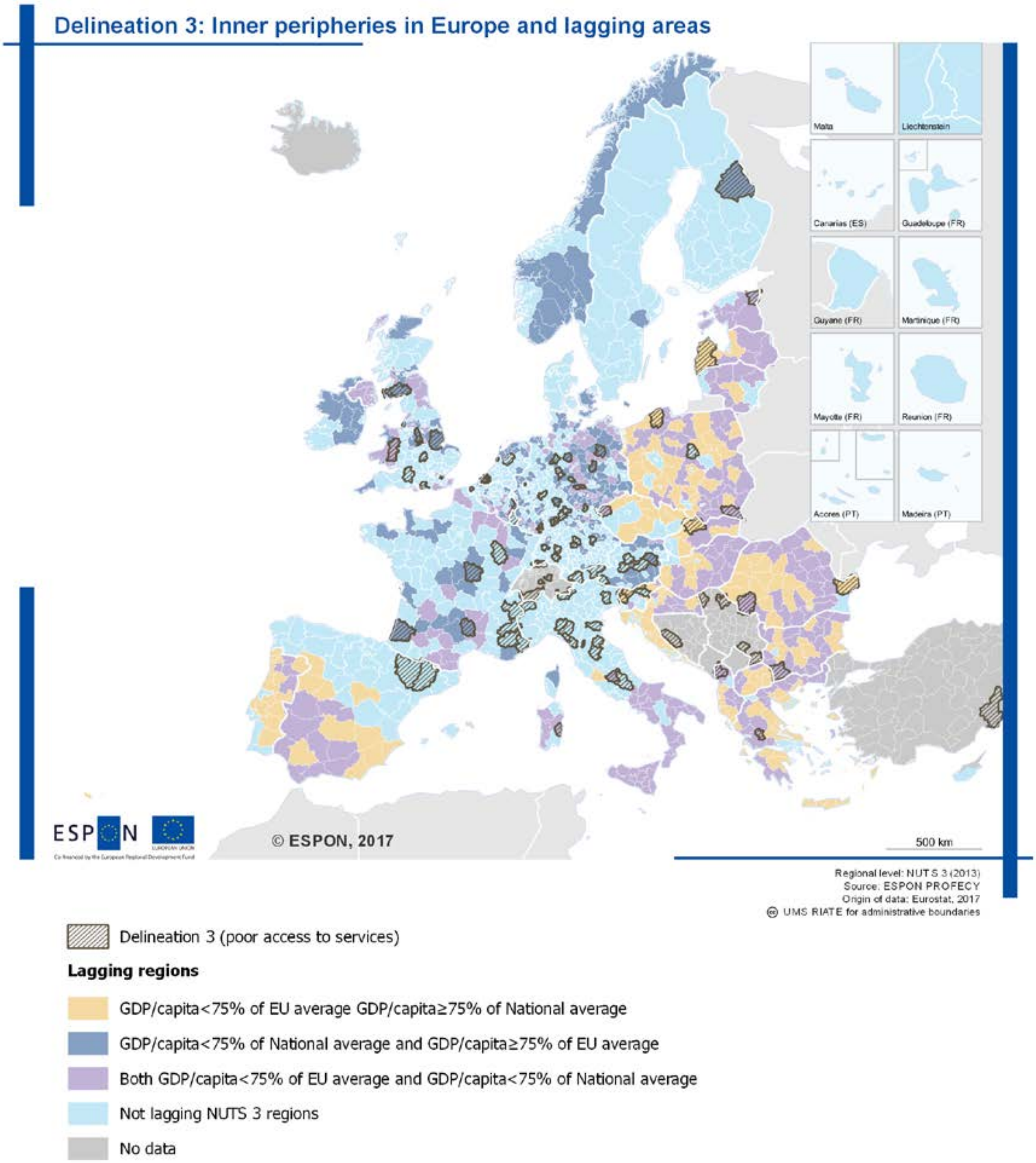
Map 2.17: Overlap between inner peripheries (Delineation 1 – travel time to regional centres) and lagging areas



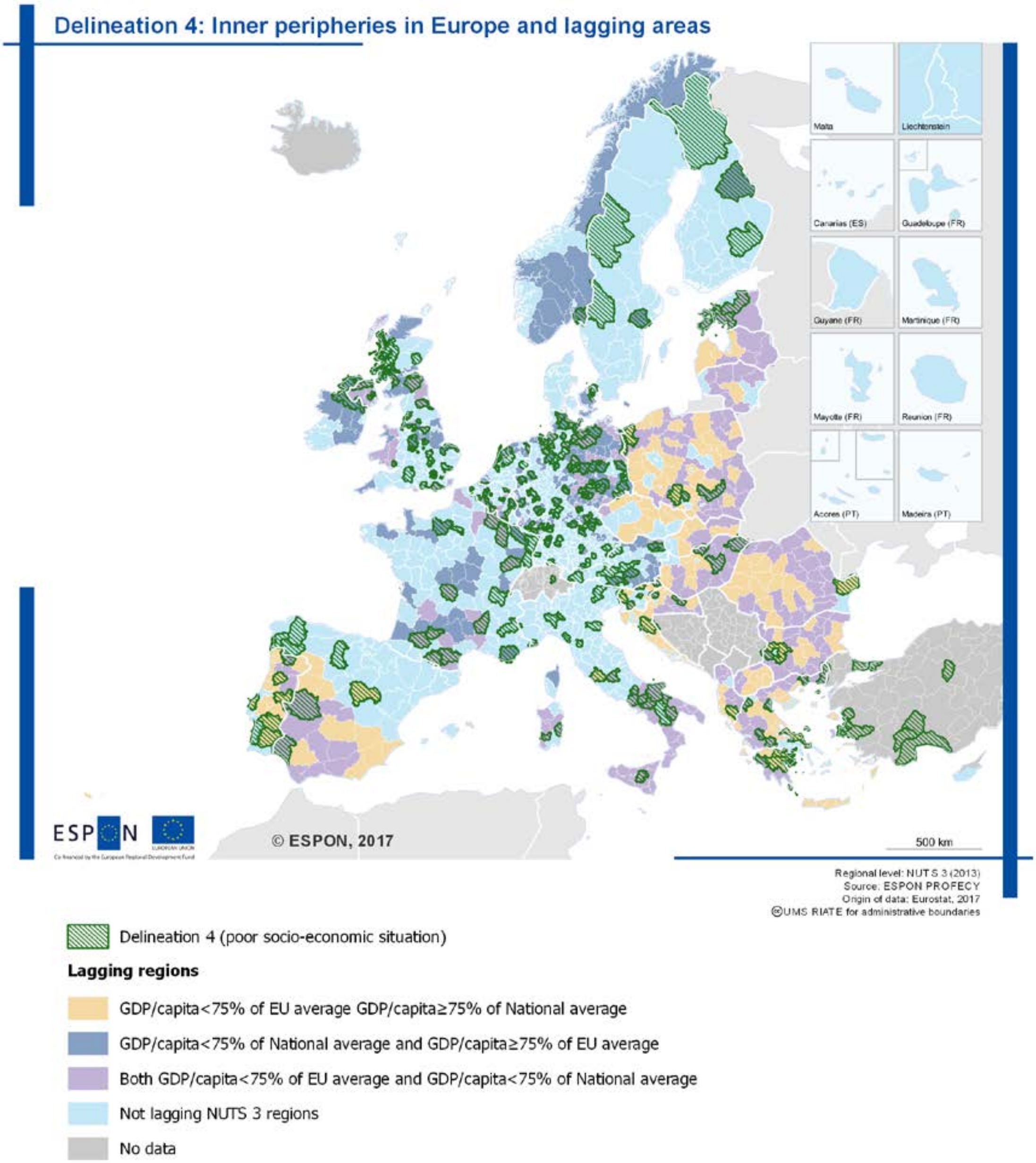
Map 2.18: Overlap between inner peripheries (Delineation 2 – economic potential interstitial areas) and lagging areas



Map 2.19: Overlap between inner peripheries (Delineation 3 – access to SGIs) and lagging areas



Map 2.20: Overlap between inner peripheries (Delineation 4 – depleting areas) and lagging areas



2.3 Summary findings

In Chapter 2 the four delineations have been compared with regional typologies and lagging regions in order to assess regional patterns and map the geographies of inner peripheries.

Regarding the comparison with regional typologies, some differences and similarities between delineations have been identified from the spatial overlap. This cross-table analysis has been done also by macro-regional categories (Central and Eastern Europe, Western Europe, Southern Europe, and Northern Europe). Furthermore, when looking at common points by groups of countries (or European macro-regions) some aspects appeared to be related to the geographical distribution of the IPs.

From the overlap of IPs with regional typologies, some insights can be extracted:

- There is an important overlap between the delineations of Inner Peripheries based in accessibility to regional centres and SGIs (Delineation 1 and 3) and the mountain regions (around half of IP regions from Delineation 1 and 3 are generally located in mountain regions). Therefore, geographical factors have affected more importantly delineations based on accessibility.
- Regarding the urban-rural typology, most inner peripheries are located in non-urban regions (>80%), except for Delineation 4 (depleting areas) where IPs are distributed almost equally among the three categories (urban, intermediate and rural regions) of the urban-rural typology. Regarding the IPs that overlap with non-urban areas, they are evenly distributed among intermediate and rural regions.
- Inner peripheries overlap with metropolitan regions for all delineations, although the coincidence is more marked (and doubles) when delineations are based on socio-economic indicators.

When looking at the overlap of IPs with regional typologies by European macro-regions (based on groups of countries), some aspects are worthwhile to be mentioned:

- In Central and Eastern Europe, regarding the urban-rural typology IPs are located in non-urban regions (>90%) and usually in mountain regions (>50%) for all four delineations.
- In Western Europe, the distribution of IPs overlaps with non-urban regions (>70%), although this proportion is reduced to 60% when looking at Delineation 4. In these countries, depending on the delineation, there is a considerable variation regarding the overlap with mountain regions: the overlap is about 40% for delineations based on accessibility factors (Delineation 1 and Delineation 3) and it decreases down to approximately 15% for the remaining two delineations. In addition, there is an important presence of IPs (around 30%) in metropolitan regions, however the percentage increases to 55% for Delineation 4.
- In Southern Europe, IPs are located mostly in non-urban regions (>82%) with the particularity that the majority of them are located in intermediate regions (with the exception of Delineation 4). There is also a strong relation between IPs and Mountain regions (>70%), except for Delineation 4 where the overlap decreases down to 58%.
- In Northern Europe, IP are located in non-urban regions: the majority of IPs are located in rural regions (except for Delineation 3). The existence of IPs in mountain regions depends on the delineation used: with a notable overlap for Delineation 1 and Delineation 2 which is lower for the rest of delineations. Therefore, it does not appear to be a clear relation between accessibility factors and mountain regions in this case.

To conclude:

- Regarding the urban-rural typology, IPs mostly overlap with non-urban regions and correspond to predominantly rural regions (in Central and Eastern Europe or Northern Europe), intermediate regions (in Southern Europe) or appear evenly distributed across both categories (in Western Europe).
- In addition, the geographical factor of being located in mountain regions appear relevant in all delineations, although the overlap is more marked for the cases of Central, Eastern and Southern Europe.

- The relationship between IPs and metropolitan regions is also significant and related to the urban characteristics of these regions. Furthermore, the overlap is important for Western Europe (ranging from 28 to 56% depending on the delineation used).

Regarding the comparison with regional typologies, some differences and similarities between delineations have been identified from the spatial overlap. This cross-table analysis has been done also by macro-regional categories (Central and Eastern Europe, Western Europe, Southern Europe, and Northern Europe). Furthermore, when looking at common points by groups of countries (or European macro-regions) some aspects appeared to be related to the geographical distribution of the IPs.

A similar cross-table analysis has been conducted for lagging areas, illustrating the similarities and differences among the geographies of IPs and lagging regions. Lagging regions have been defined as showing a GDP per capita lower than 75% of the national or European average. This comparison has been conducted at European scale, and also by groups of countries representing different European macro-regions.

From the analysis of the overlap at European scale of IPs and lagging areas, the following observations can be derived:

- There is a relevant proportion of IPs that are located in in not lagging regions, this figure ranges from 32% to 58% depending on the delineation.
- Notwithstanding that, a significant proportion of IPs is located in lagging areas. Out of them, there are more IPs located on lagging regions from a national perspective (below 75% of the respective national average) than on lagging regions at a European level (below 75% of EU average).

When looking at the overlap of IPs and lagging areas by macro-regions, some insights can be extracted:

- In Central and Eastern Europe, almost all IPs are located in lagging regions, and they all correspond to lagging regions at European level 75% of the EU average (and a relevant percentage also to regions lagging at national level).
- In Western Europe, there is a significant percentage of IPs that are not located in lagging regions (ranging from 36% to 65%, depending on the delineation), while those located in lagging regions are areas with a GDP per capita below 75% of the respective national averages.
- In Southern Europe, a large number of IPs are located in not lagging regions (ranging from 30% to 82%, depending on the delineation). The ones located on lagging regions show GDP values below 75% of the EU average, although in some cases also below the 75% of the national average.
- In Northern Europe, the share of IPs located in not lagging regions is important for delineations 1, 2 and 4 (ranging from 45% to 67%). In case there is overlap among IPs and lagging region, they present values below 75% of the national average.

To conclude:

- The overlap of Delineation 3 (based on access to services) with lagging regions shows a particular tendency, different from the other delineations (1, 2 and 4). These patterns vary depending on the macro-region analysed showing sometimes higher or lowers overlaps with not lagging areas than the other delineations.

- For delineations 1, 2 and 4, there is a significant proportion of IPs located in not lagging regions (ranging from 30% to 67% depending on delineation and the macro-regional group of countries). In these case, Central and Eastern Europe presents an exception as 95-100% of the IPs are located in lagging regions.
- For delineations 1, 2 and 4, reading European regions with higher GDP per capita values (largely located in Western and Northern Europe), the overlap with lagging regions occurs in areas considered to be lagging from a national perspective. Meanwhile, in countries presenting lower GDP per capita values (predominantly located in Central, Eastern and Southern Europe), IPs overlap with regions lagging at a European scale (although a significant proportion of them are also considered to be lagging at a national level).

3 Analysing characteristics of IPs in comparison with other regional typologies and lagging areas

From the aspect of this task (and of other tasks too related to the analysis of the status of inner peripheries) the main question is what makes these territories differentiable from other areas in terms of various socio-economic characteristics. Do inner peripheries have entirely unique features or are these inseparable from characteristics and potential mechanisms affecting other regions with geographical specificities or lagging regions? If these particularities (only or mainly typical of inner peripheries) could be revealed, one might come closer to answer what are the driving forces of peripheralization, and what are the required domains of interventions (local symptoms) which need targeted actions the most to reverse processes associated with IP.

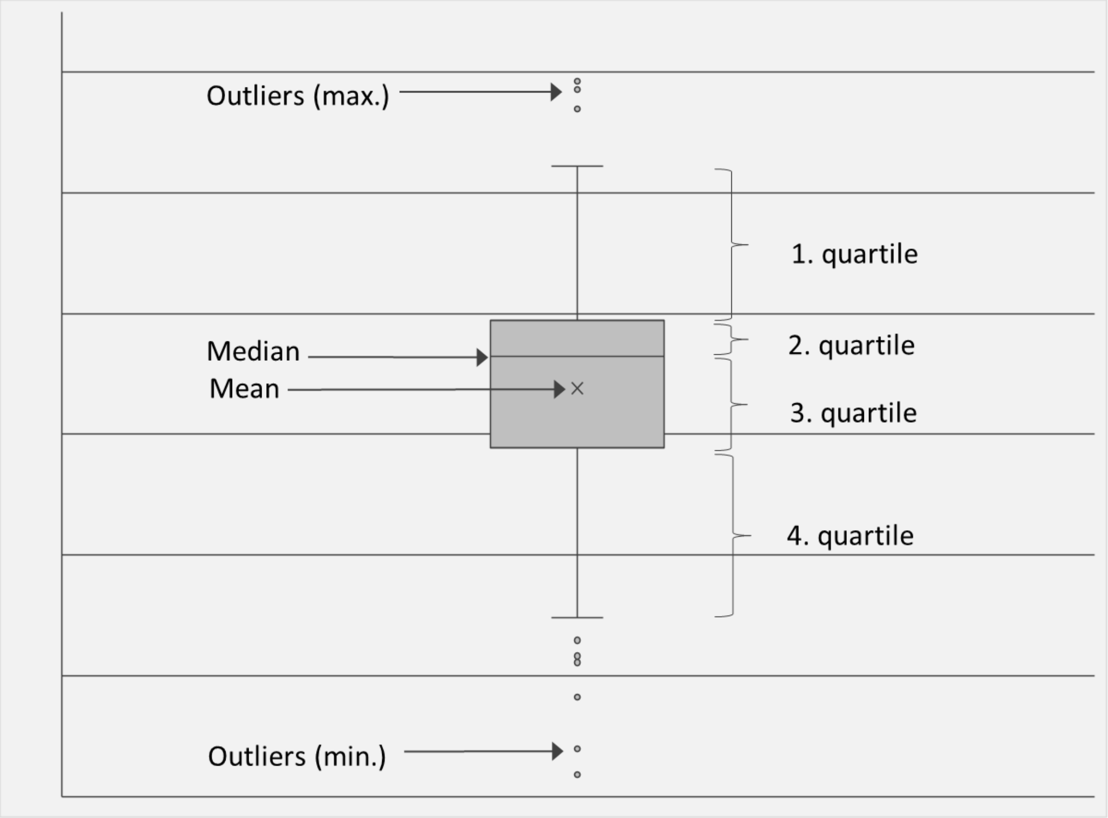
The presented analysis of the status of European inner peripheries in comparison with their socio-economic characteristics with that of lagging/less developed areas and elements of different typologies frequently used in EU policy discourse is based on the evaluation of different features of distributions of various socio-economic indicators. By comparing the position and performance of inner peripheral areas and other region types by this way, specific characteristics and the potential determinant factors (geographic, socio-economic etc.) could be analysed in a complex framework. Nevertheless, the analysis focuses not only on positioning between IP and other areas in the ESPON space, but on exploring similarities and differences within the groups (types) of inner peripheries too.

3.1 Methodological considerations for the analysis and the interpretation of results

In order to make socio-economic patterns of different groups of regions with different sample size become comparable, focus of analyses was placed onto the comparison of distribution of different datasets by box plots as illustrative tools of analysis.

Representation and comparison of datasets on boxplots provides several opportunities for the interpretation of specificities of the distribution of these datasets. Quartiles of samples are visualized by (parts of) boxes and whiskers, whose size refers to the range of the given dataset, but also to the (regional) differences within the group represented (Figure 3.1). Quartiles also indicates the middle value (median) of the dataset, but other average values, e.g. the arithmetic mean could also be read off the chart. If the distribution of a dataset is not compact or even, and maximum or minimum values appear as extrema, on a boxplot chart these values are illustrated as outliers.

Figure 3.1: The interpretation of a box plot chart



The understanding of characteristics of analysed distributions of different groups, illustrated by a boxplot chart could be supported if related descriptive statistics of datasets are also directly taken into account. Descriptive statistics used in this analysis are:

- Mean
  It refers to arithmetic mean or average, calculated by the sum of the values divided by the number of values.
- Median
  It represents the middle value of a dataset, separating the higher and the lower half.
- Maximum (Max.)
  Largest value of a dataset, it might appear on a boxplot chart as an outlier.
- Minimum (Min.)
  Smallest value of a dataset, it might appear on a boxplot chart as an outlier.
- Standard deviation (Std. Deviation)
  It represents the average deviation from the average value (arithmetic mean) of a dataset. If the value of standard deviation is higher (but the relative range is lower), it means that the entire dataset is widespread.
- Relative range
  It represents the difference between the largest and the smallest value of the dataset compared to the average value (arithmetic mean) – (Max.-Min.)/Mean. If the value of relative range is higher (but the standard deviation is lower), it means that while most of the distribution of the dataset is ‘compact’, there considerable outliers in it.

3.2 Database of analysis

The analysis with a comparison between the socio-economic status of inner peripheral areas and other region types is built on indicators presented in Chapter 1.2.2. The pre-selected pool of variables provided a balanced coverage of socio-economic characteristics to describe (with about 20 potential indicators in analysis). After the first rounds of tests the original selection was narrowed down, because of the very similar patterns they provided in comparison with other key indicators (e.g. NEET rate vs. unemployment rate), their more or less uniform distributions regarding the analysed groups of regions, or because the data availability (regional level) made the interpretation of results difficult (e.g. ratio of population with low qualification). Apart from this, considerations related to the socio-economic content of these variables were built into the interpretation of analyses carried out at a general level.

Besides the four groups of IP delineations, elements of other typologies were processed into this type of analysis. The selection covers elements of Urban–Rural typology (urban, intermediate and rural regions), typology on mountain areas and islands. Nevertheless, metropolitan areas were excluded from analyses because of their very similar group characteristics to urban regions. Three elements of lagging typology used in this task of ESPON PROFECY project are represented here – those NUTS 3 regions which do not reach the level of 75% of EU28 average GDP per inhabitant value (but not lagging within their countries) as Lagging (OnlyEU75%), those, which lag behind (the 75% of) national averages of their home countries in this sense (but reaching 75% of EU28 average) as Lagging (<EUNAT75%), and those areas, which can be identified as lagging in both national and EU context as Lagging (<OnlyNAT75%).

The different territorial coverage of typologies used in the analysis come up with some potential limitations in comparison. The inclusion of every covered area by every typology might lead to false interpretation of results, since it might happen that different socio-economic characteristics of areas included in one regional typology but excluded from another could significantly influence distribution specificities or related descriptive statistics of a given group of regions.

Thus, in order to ensure the coherence of the analysis, areas not covered by one or another (or more) regional typology or mode of delineation of inner peripheries were excluded from further analysis in this task. Cases, affected by these principles of exclusion:

- Regions not included in delineations of inner peripheries
  These areas are the outermost regions of the European Union, including French overseas territories such as Guadeloupe, French Guyana, Martinique, Réunion and Mayotte, islands from Spain (Canary Islands) or Portugal (Azores, Madeira) and the Spanish African territories (Ceuta and Melilla).
- Countries not covered by EU-level typologies (of DG REGIO)
  These cases affect Western Balkan countries, namely Albania, Bosnia and Herzegovina, Serbia and Kosovo under UN Security Council Resolution 1244.

- Countries lacking GDP data for identifying the groups of less developed (lagging) regions
  This group of areas covers those countries, which are not official member states of the EU, but covered by official EU typologies, while they currently lack comparable information on their regional performance (GDP per capita, PPS). Countries excluded on the basis of that: Iceland, Liechtenstein, Montenegro, Switzerland and Turkey. Bosnia and Herzegovina, Serbia and Kosovo under UN Security Council Resolution 1244 do not fit to this criterion as well.

3.3 Detailed analysis of the status of inner peripheries

In this task, series of box plots and related descriptive statistics are analysed when comparing the distribution specificities of delineations of inner peripheries and different groups (typologies, classifications). Analyses focusing on different data topics follow the same structure. Firstly, the context and the relevance of analysed indicator is presented. Based on descriptive statistics and box plot illustrations general positions of the analysed region types are described, by focusing on inner peripheral areas, their similarities and differences compared to other typologies. The groups of IP delineations are also the subjects of comparison when analysing selected socio-economic features of these territories. Both in comparisons between inner peripheries and other EU typologies and between IP groups included, the interpretation of regional variances of group distributions is also highlighted. Reflections towards other socio-economic dimensions and measures are also made, whenever the potential linkage between these indicators might appear as an explanatory factor in the patterns of analysed similarities and differences.

3.3.1 Demographic status

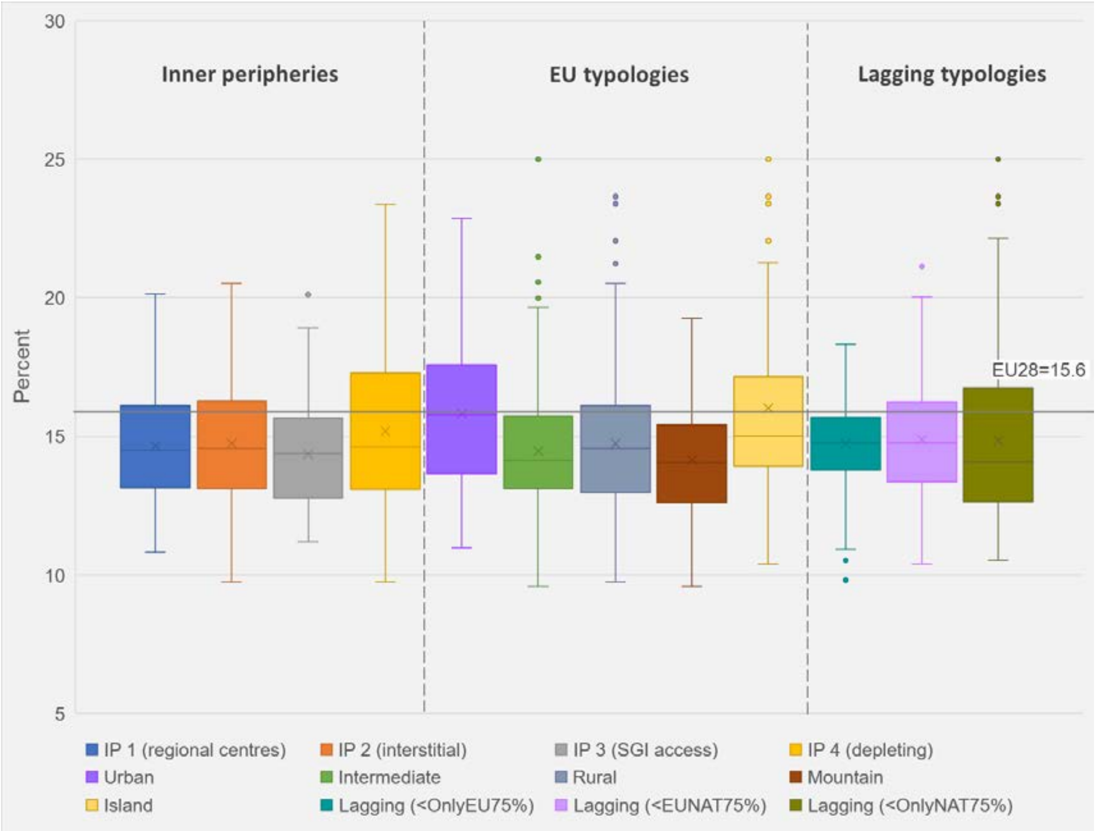
Ratio of child age population

This demographic indicator and its distribution related to birth rate, but it also can give further information about the need of different basic services such as primary education. Generally, the average rate of child age population in different examined groups of countries and NUTS 3 regions according to unstandardized data varies between 10% and 20%, but there are some noticeable differences among them.

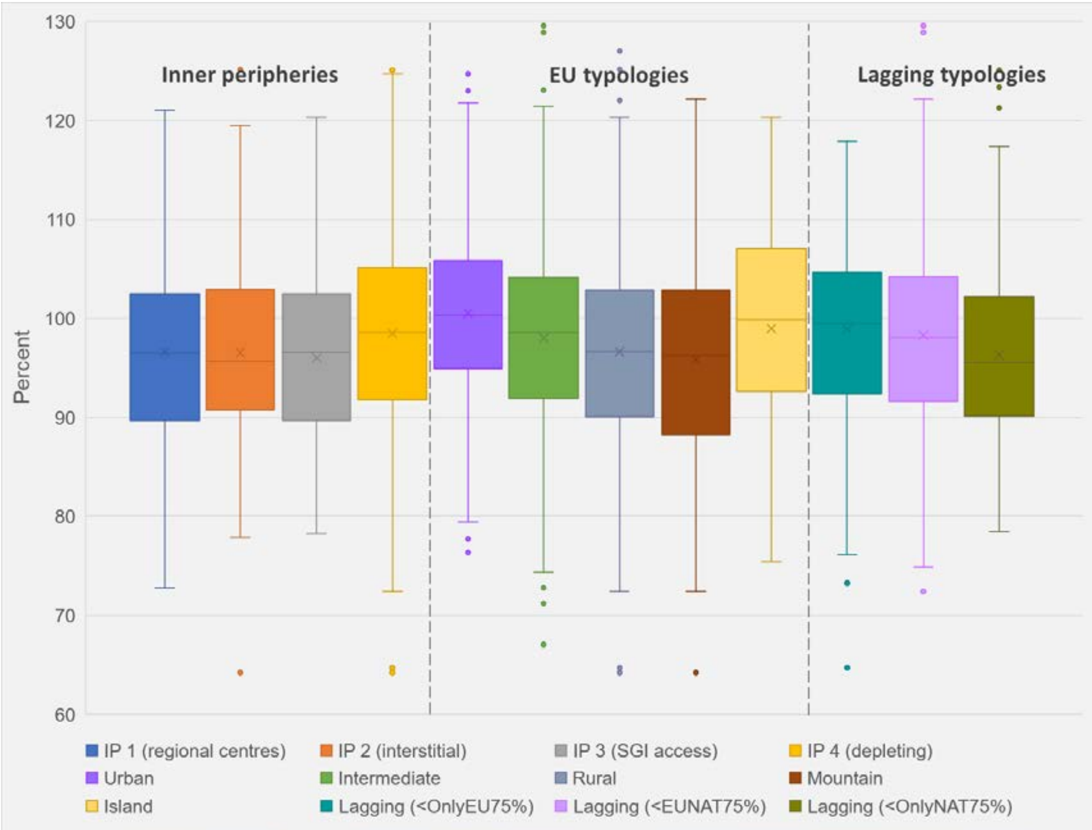
Firstly, similarities among IP delineations – majority of them as accessibility-based inner peripheries – are stronger than differences. All of them are below EU28 average (15.6%). The group of IP 1 (regional centres) and IP 2 (interstitial) has almost the same situation to each other according to descriptive statistics in rate of child age population (0–14 years) (Table 3.1). The lowest average level can be detected in the group of IP 3 (SGI access), while the highest is in the group of IP 4 (depleting). Moreover, the highest values of maximum, standard deviation and relative range are standing in the group of IP 4, so this type of inner periphery appears as a little bit ’outstanding’ group in comparison to other three IP delineations based on its more favourable position due to higher rates of child age population (Figure 3.2).

Figure 3.2: Ratio of child age (0-14) population in Europe by IP delineations and EU regional typologies, 2015

A – unstandardized



B – standardized as percentages of national averages



Secondly, observable similarities might be detected between IP 1, IP 2, IP 3 delineations and Intermediate, Rural and Mountain regions according to the examined demographic indicator. The clear difference is observed between accessibility-based inner peripheries as IP 1, IP 2, IP 3 regions and especially Island regions regarding descriptive statistics. In comparison IP 1, IP 2, IP 3 regions with those lagging regions where GDP per capita is less than 75% of EU or/and national level, it seems that differences are more typical rather than similarities. Differences can be experienced according to median, maximum and minimum values, while similarities are based on mean, standard deviation and relative range. In general, similarities appear between IP 1 and Lagging (<EUNAT75%) groups due to its compact features. Differences are in evidence between IP 3 regions and lagging regions, in those where GDP per capita is less than 75% of the national average (<OnlyNAT75%). The main difference between them is that these latter areas have higher level of mean and maximum value than IP 3 regions have.

Thirdly, among all examined groups of regions the highest rates as maximum values of child age population characterise Island (e.g. in Ireland) and Intermediate (e.g. in Ireland, France, Norway) groups, while the lowest as minimum values could be found in Mountain (e.g. in Germany) and Intermediate (e.g. Germany, Italy) groups. Many of outliers – those regions where their mean rates stand highly above EU28 average – belong to the groups of Intermediate, Rural and Island. Majority of these regions can be found for instance, in Ireland (e.g. Mid-East, Midland, Mid-West, South-East etc.).

Ratio of child age (0–14) population in Europe by IP delineations – based on ESPON PROFECY methodology – and EU regional typologies in 2015 shows different pattern according to standardized data as percentages of national averages. Among all examined groups of NUTS 3 regions Urban regions are in the best position as reaching higher average than their national average. Island regions have similar position in comparison to Urban regions with its little bit lower level than the national average. The other groups of regions seem to be very similar to each other, and there are no significant differences among them according to descriptive statistics. Consequently, IP delineations on the one hand, unify a compact group among each other, but on the other hand, they have no uniquely characterised position compared to other EU typologies. The used delineations of IP regions in this project can be defined as compact groups according to rates of child age population standardized as percentages of national level. It applies for regions defined as lagging regions too which also show this compact situation in descriptive statistics. Naturally, there are some differences between IP delineations and lagging regions, but in comparison to groups of other EU typologies both appear as compact groups.

Table 3.1: Descriptive statistics related to child age population data

A – unstandardized

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	14.7	14.5	20.2	10.8	0.6	2.1
IP 2	14.8	14.6	20.5	9.7	0.7	2.2
IP 3	14.4	14.4	20.1	11.2	0.6	1.9
IP 4	15.2	14.6	23.4	9.7	0.9	2.7
Urban	15.8	15.8	22.9	11.0	0.8	2.5
Intermediate	14.5	14.1	25.0	9.6	1.1	2.1
Rural	14.7	14.6	23.7	9.7	0.9	2.3
Mountain	14.2	14.1	19.3	9.6	0.7	2.0
Island	16.0	15.0	25.0	10.4	0.9	3.3
Lagging (<OnlyEU75%)	14.7	14.8	18.3	9.8	0.6	1.5
Lagging (<EUNAT75)	14.9	14.8	21.3	10.4	0.7	2.2
Lagging (<OnlyNAT75%)	14.8	14.1	25.0	10.5	1.0	2.8

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	96.6	96.5	121.1	72.8	0.5	9.2
IP 2	96.5	95.6	125.2	64.2	0.6	8.8
IP 3	96.0	96.5	120.3	78.3	0.4	8.3
IP 4	98.5	98.6	125.1	64.2	0.6	10.0
Urban	100.5	100.3	125.1	76.4	0.5	8.7
Intermediate	98.0	98.6	129.6	67.1	0.6	9.0
Rural	96.6	96.7	127.0	64.2	0.7	9.6
Mountain	95.8	96.3	122.2	64.2	0.6	9.9
Island	99.0	99.9	120.3	75.4	0.5	10.6
Lagging (<OnlyEU75%)	98.9	99.5	117.9	64.7	0.5	9.2
Lagging (<EUNAT75)	98.3	98.1	129.6	72.4	0.6	9.6
Lagging (<OnlyNAT75%)	96.3	95.5	125.1	78.5	0.5	8.6

In the group of regions defined as inner peripheries, IP 4 (depleting) has the best position according the higher level of child age population measured by considering the national context. It means the multifactorial disadvantaged socio-economic position of IP 4 regions does not result lower rate of child age population.

The highest values (more than 125%) can be observed in the United Kingdom, France, Greece, while the lowest are in Spain, Portugal, France (less than 65%). IP 4 regions have similar good position compared to Intermediate, Island and Lagging groups of regions based on the standardized data as percentages of national averages. The highest rates of mean are observed in Urban and Island regions, while the highest maximum value is belonging to Intermediate and Lagging (<EUNAT75%) regions according to the national averages. Position of the groups of IP 1, IP 2, IP 3 regions is similar to the position of Rural and Mountain regions due to the standardized rates as percentages of national averages.

Paradox situation might be observed in the group of Intermediate regions. Their arithmetic mean is below EU28 average, but they have better position among examined regions compared to the national average.

Ratio of child age population in comparison to ratio of working age population and old age dependency rate can determine the typical differences among examined groups due to the contribution obligation of working age population. Regions can outline more disadvantaged position according to the combination of higher rate of child age population and old age dependency with lower rate of working age population. Principally, it can be experienced in the case of Lagging (<EUNAT75%), in that group of regions where GDP per capita is less than 75% of the EU and the national average.

In summary, groups of IP delineations are more compact than other examined groups of regions: they do not contain outliers, and majority of their descriptive statistics is similar to each other. Some outstanding values such as maximum or minimum might characterise IP 4 group, whose arithmetic mean is very close to the EU28 average and whose national mean is very close to the national average. The consistently low levels of child age population in regions defined as inner peripheries have contributed to demographic ageing with fewer births, which also leads to a decline in the proportion of young people and partly of working age people in the total population[7].

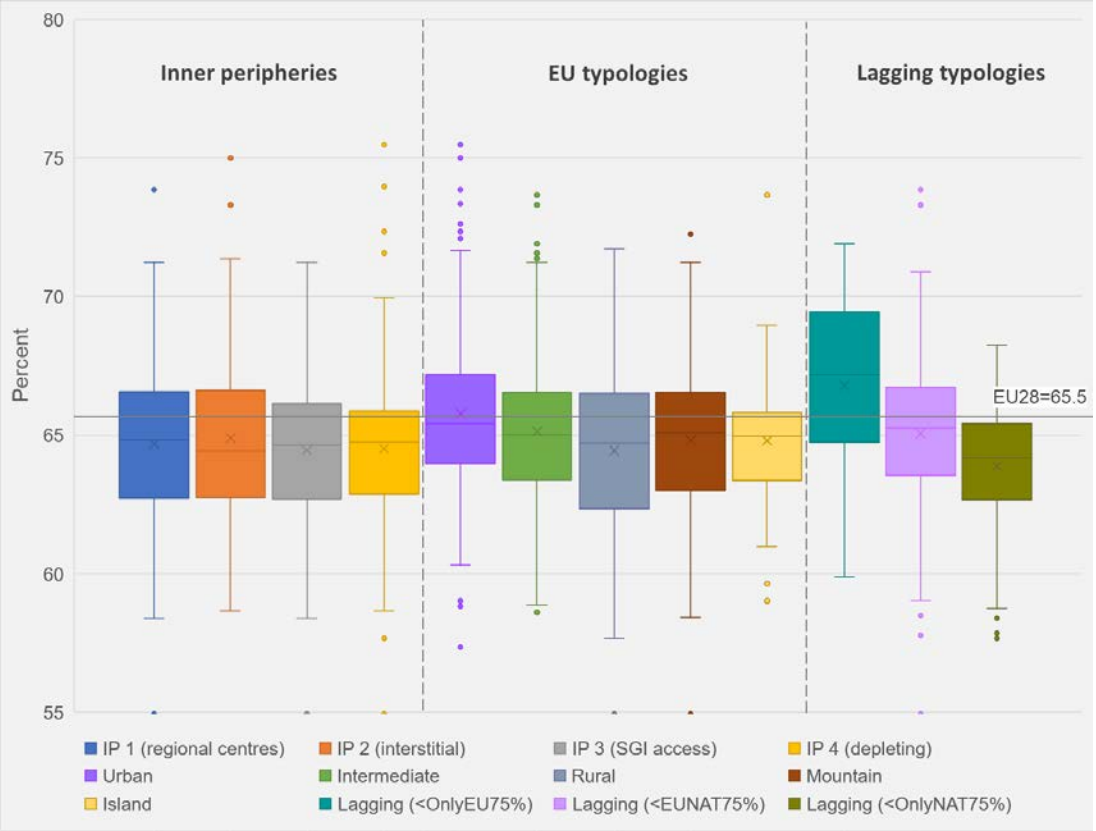
Working age population

The working age population is defined as those aged 15 to 64. This demographic variable is a basic indicator for employment and it is also suitable to measure the proportion of age dependency ratios. The indicator can also give further useful information about labour market.

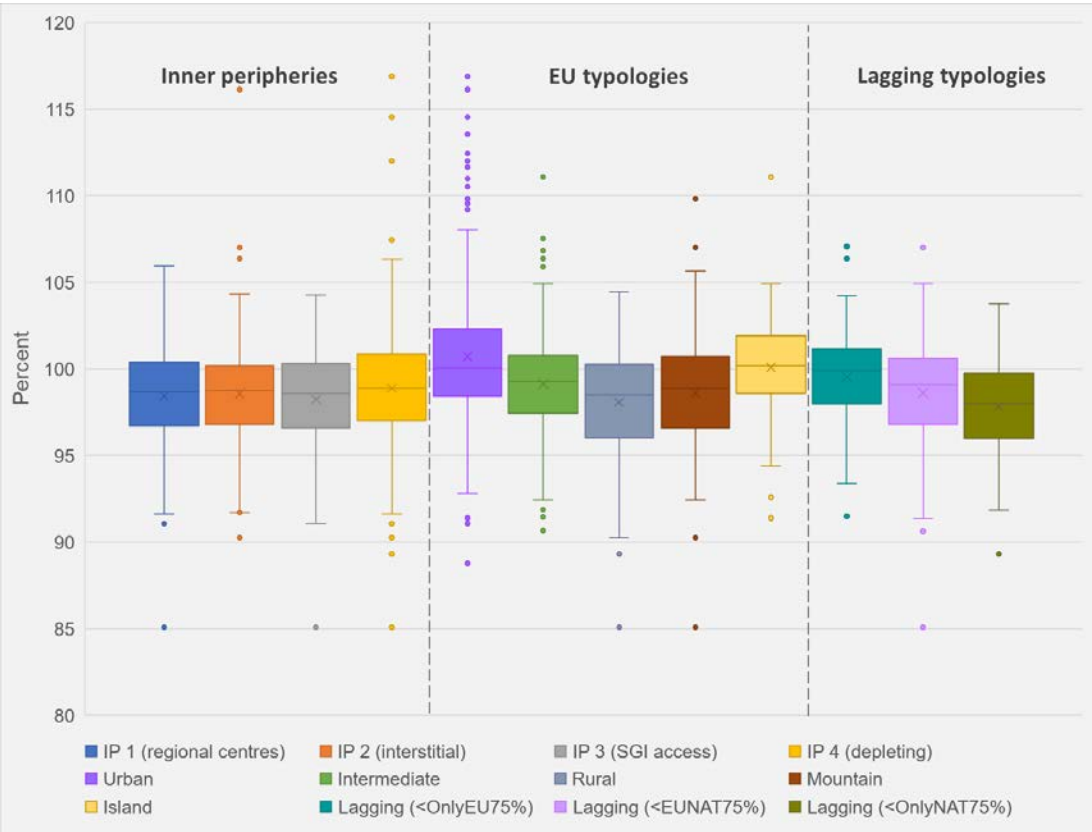
Ratio of working age (15–64) population, based on unstandardized data as well as standardized as percentages of national averages and its distribution among the examined groups of regions seems to outline more compact pattern, and there are significant similarities among them (except for Lagging [<OnlyEU75%] group). EU28 average is 65.5% which is a little bit higher than averages detected in different groups of IP delineations. It results that majority of regions defined as inner peripheries has relatively more unfavourable position due to the lower rate of working age population (Figure 3.3).

Figure 3.3: Ratio of working age (15–64) population in Europe by IP delineations and EU regional typologies, 2015

A – unstandardized



B – standardized as percentages of national averages



Groups of inner peripheral areas seem to be more compact among examined regions, as well as to each other according to descriptive statistics. Anyway, a lot of outlier regions belong to Urban (e.g. in the United Kingdom, Denmark) and Intermediate (e.g. in Estonia, FYROM, Romania) areas as well as to IP 4 regions (e.g. in the UK). In general, the fact is that Urban regions in all groups show higher rate of population aged 15 to 64, because they largely attract working age population due to more and better working opportunities.

Many regions from the groups of the four IP delineations with higher rate of working age population (more than 70%) are located in areas of post-socialist countries (e.g. FYROM, Slovakia, Poland), but in the group of IP 4 (depleting) some regions from the UK also appear, while the lowest ones – with the rate of below 60% – are located in the United Kingdom, Portugal or France. Nevertheless, values of standard deviation and relative range demonstrate that there are not significant differences among the majority of NUTS 3 regions defined as inner peripheries.

There are not marked differences among the groups of inner peripheries according to arithmetic mean and median based on unstandardized data. All groups of IPs have lower average level than EU28 average. Among IP regions the group of IP 3 regions has the lowest values of maximum and these regions stand especially in post-socialist countries. On the other hand, among IP regions the group of IP 2 has the highest values of minimum and these regions are found mainly in France, in the UK or in Spain.

Expressive differences between regions identified as inner peripheries can be observed compared to Lagging (<OnlyEU75%) regions. Firstly, Lagging (<OnlyEU75%) regions which were identified as less developed considering values of GDP per inhabitant as 75% of the EU average, have the most advantageous positions e.g. due to their highest mean or median (see descriptive statistics) (Table 3.2). Secondly, there are also significant differences between this group of lagging areas and other groups of lagging typologies. Apart from this fact, average values of all lagging regions are below the national level. Similarities are stronger between IP regions and those lagging areas whose economic performance do not reach 75% of the EU and the national average (Lagging [<EUNAT75%]).

Clear similarities or differences between the four types of inner peripheries and other groups are based on their relative position to each other. Similarities are emphasized between IPs and in comparison with other groups, differences are more highlighted. These differences regarding main group characteristics of IP regions can be observed in their positions compared to Lagging groups (<OnlyEU75%, <EUNAT75%, <OnlyNAT75%). Nevertheless, it worth to be mentioned the significant difference between them is mainly based on that regions, defined as lagging areas, have higher average level of working age population.

Table 3.2: Descriptive statistics related to working age population data

A – unstandardized

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	64.7	64.8	73.9	54.9	0.3	3.0
IP 2	64.9	64.4	75.0	58.7	0.3	3.0
IP 3	64.5	64.6	71.2	54.9	0.3	2.8
IP 4	64.5	64.7	75.5	54.9	0.3	2.6
Urban	65.8	65.4	75.5	57.3	0.3	2.7
Intermediate	65.1	65.0	73.7	58.6	0.2	2.6
Rural	64.4	64.7	71.7	54.9	0.3	3.0
Mountain	64.8	65.1	72.3	54.9	0.3	2.8
Island	64.8	65.0	73.7	59.0	0.2	2.4
Lagging (<OnlyEU75%)	66.8	67.2	71.9	59.9	0.2	2.9
Lagging (<EUNAT75)	65.1	65.3	73.9	54.9	0.3	3.0
Lagging (<OnlyNAT75%)	63.9	64.2	68.3	57.7	0.2	2.2

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	98.4	98.7	105.9	85.1	0.2	2.9
IP 2	98.6	98.7	116.1	90.3	0.3	3.1
IP 3	98.2	98.6	104.3	85.1	0.2	3.0
IP 4	98.9	98.9	116.9	85.1	0.3	3.5
Urban	100.7	100.0	116.9	88.8	0.3	3.9
Intermediate	99.1	99.3	111.1	90.7	0.2	2.8
Rural	98.1	98.5	104.4	85.1	0.2	2.9
Mountain	98.6	98.9	109.8	85.1	0.3	3.2
Island	100.1	100.2	111.1	91.4	0.2	3.2
Lagging (<OnlyEU75%)	99.5	99.9	107.1	91.5	0.2	2.7
Lagging (<EUNAT75)	98.6	99.1	107.0	85.1	0.2	3.1
Lagging (<OnlyNAT75%)	97.8	98.0	103.8	89.3	0.1	2.7

If we examine the position of IPs to each other and to other typologies according to standardized data as percentages of national averages, we can conclude the followings. The ratio of working age population is the highest in Urban areas compared to groups of IPs delineated by the PROFECY project and other EU typologies if we consider their positions at national levels. In contrast, Island regions have higher rate of working age population compared to their national level, but their relative position among IP delineations and other EU typologies have handicaps with its lower level. Though IP regions are below the national averages, but this gap is not significant. Among them cannot be detected marked differences either mean level and minimum values. Only based on maximum values might discover differences between the group of IP 1, IP 3 regions and the group of IP 2, IP 4 regions. The highest values of maximum can be experienced in the UK, Portugal, Italy from the group of IP 2 and IP 4. The relative position of IPs to each other is very similar to their relative position among other typologies based on comparison to national averages. Only the groups of Urban and Island regions have higher mean level then their national averages. The other groups have lower mean level than their national averages, but this gap is not larger than 2%.

It is also worth comparing ratio of working age (15–64) population to gender balance of this age groups of population to obtain more details about female’s and male’s participation opportunities in economic activity or in labour market. Former ESPON SEMIGRA project observed that young and high qualified women are one of the most mobile population groups in Europe. This might be one of the explanatory factors for differences in the rate of young adult men and women[8,9].

In summary, groups of IP delineations have relatively disadvantaged position among other typologies of NUTS 3 regions according to the ratio of working age (15–64) population. The average level of working age population is lower than the EU28 average and the national averages in all groups of IPs. In general, this demographic indicator might be an explanatory indicator to make characteristics for European inner peripheries.

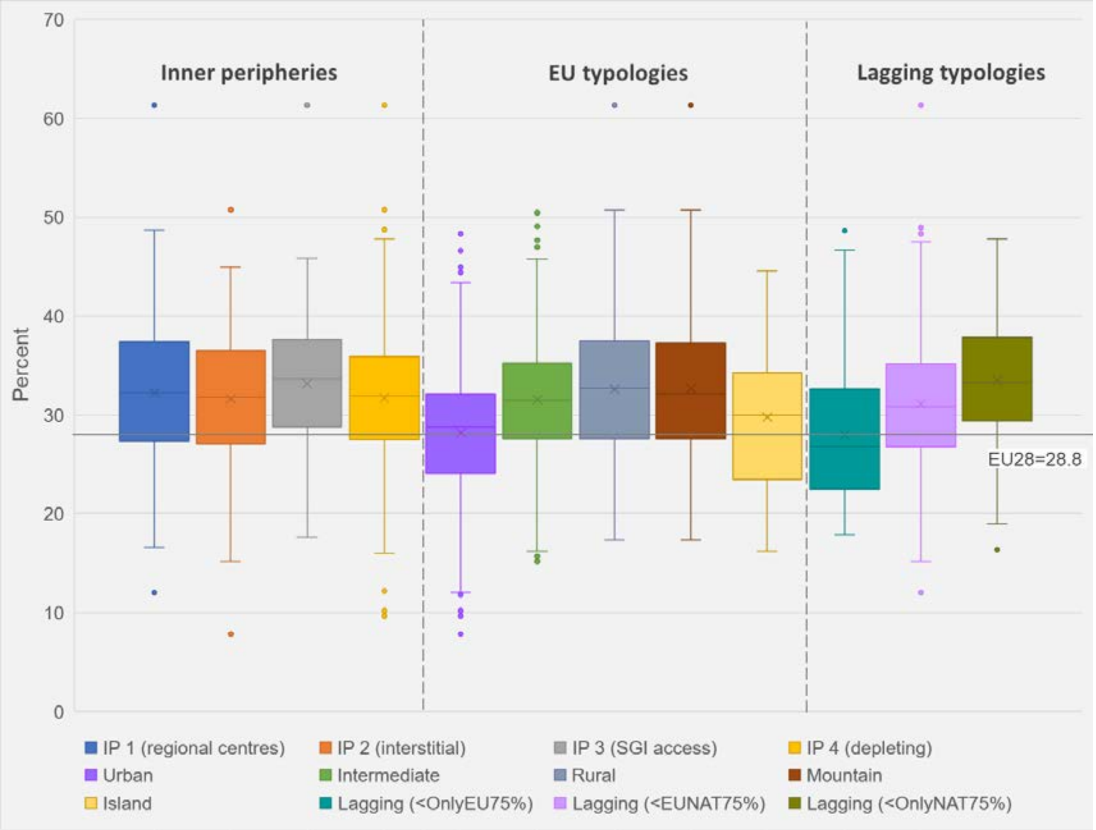
Old age dependency rate

Old age dependency rate gives information about number of people aged 65 and over as percent of working age population. So, this demographic indicator also can measure the contribution obligation of working age population. Old age dependency and its distribution is related to the rate of child age and working age population.

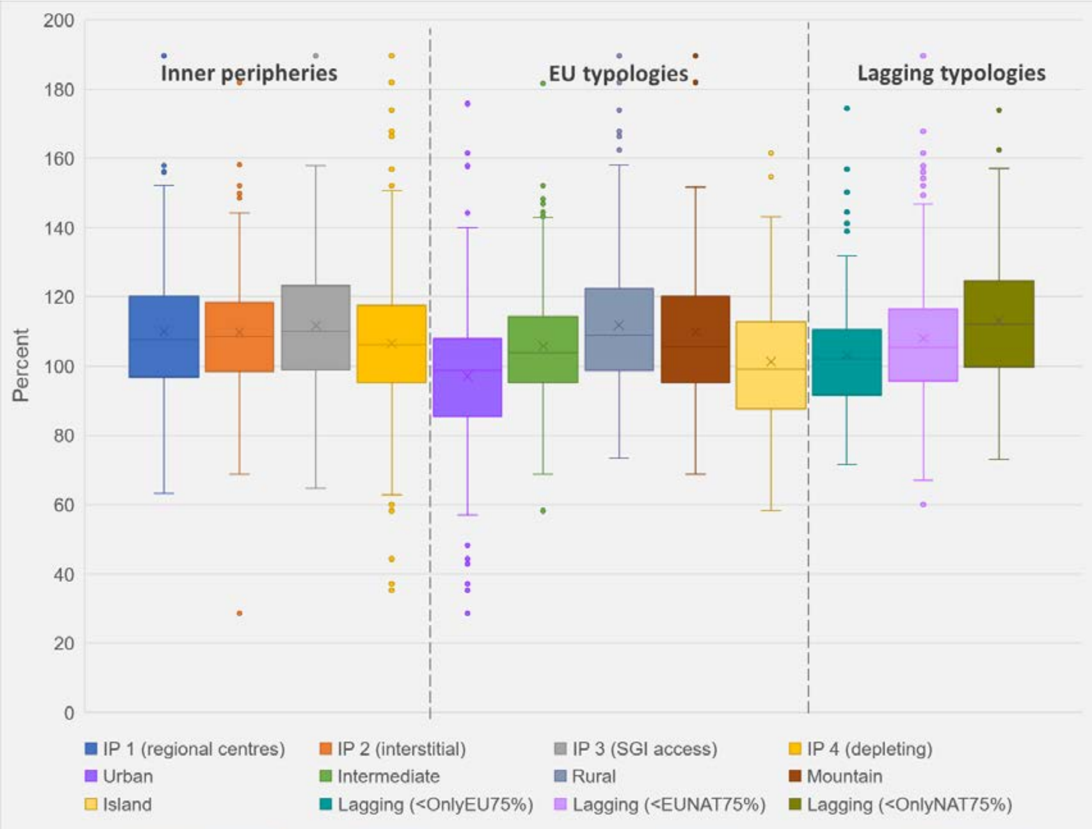
European NUTS 3 regions by IP delineations and other European regional typologies show relevant similar and compact situation among all groups of countries (Figure 3.4). EU28 average is 28.8% which is lower than average old age dependency rates observed in groups of regions defined as inner peripheries. This situation also applies for other groups of regions (except for Urban and Lagging [<OnlyEU75%] regions). Mean and median of IP delineations as accessibility-based inner peripheries is higher than EU28 average, and these groups of regions also stand out within their countries, regarding old age dependency in comparison with their own national level. In other words, regions defined as inner peripheries are touched by challenges of old dependency related to lower rate of child age population and relatively lower level of working age population than other national territories. Mean and median of IP 3 delineation (SGI access) is the highest in comparison with other examined groups. It might imply that the worse access to different services particularly goes together with more disadvantaged demographic situation compared to other European regions.

Figure 3.4: Old age dependency rate in Europe by IP delineations and EU regional typologies, 2015

A – unstandardized



B – standardized as percentages of national averages



This Europeanly worse position also appears in their relative national positions, because the old age dependency rate is higher than national level, and this value is among the highest in comparison with other European regions based on standardized data as percentages of national averages (see descriptive statistics) (Table 3.3). We can conclude that accessibility-based inner peripheries are strongly hit by the challenges of ageing rather than depleting inner peripheries.

The average rate of old age dependency in different groups varies broadly between 10% and 60% resulting in relative higher levels of standard deviation. Old age dependency rates are particularly low in those regions where the rate of child age population is high. The indicator in general tends to be lower in urban areas and Lagging (<OnlyEU75%) regions while tends to be higher in Rural and Mountain regions as well as in all inner peripheries.

Mean and median values based on this indicator also stand out in Lagging (<OnlyNAT75%) regions where development level is under 75% of national average. This result might demonstrate that nationally worse position for a NUTS 3 region, is more likely accompanied by Europeanly worse or the worst positions.

Old age dependency rates show little bit more different patterns among IP regions. These rates are higher in regions with high travel times to regional centres (IP 1) and areas with low access to SGI (IP 3), which might imply that poor accessibility might result in higher rate of old age dependency. Regions with the highest rates of old age dependency are usually situated for example in the UK, France, Greece, Portugal, Italy, generally in the case of each group of inner peripheries.

The majority of those regions where the value of this demographic indicator is quite low can be found in East Central European countries (e.g. Poland, Slovakia) from the group of IP 1 and IP 3, while they are more likely located in Western European countries (e.g. the UK) in the case of groups of economic potential interstitial peripheries (IP 2) and depleting inner peripheral areas (IP 4). On the other hand, it must be mentioned that according prognoses, the share of the elderly population among inhabitants will increase consistently in post-communist countries in the future, which might result increasing rates of old age dependency[10].

Clear differences between group characteristics of the four IP delineations are coming from higher levels of standard deviation and relative range detected particularly in IP 1 (access to regional centres) and IP 4 (depleting) groups. Similarities are well-marked between IP 3 and Lagging (<OnlyNAT75%) regions according to their position compared to other European regions as well as to their national average.

Table 3.3: Descriptive statistics related to old age dependency data

A – unstandardized

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	32.2	32.3	61.3	12.1	1.5	7.2
IP 2	31.6	31.8	50.8	7.9	1.4	6.9
IP 3	33.2	33.7	61.3	17.6	1.3	6.9
IP 4	31.7	31.9	61.3	9.7	1.6	7.1
Urban	28.2	28.8	48.3	7.9	1.4	6.3
Intermediate	31.5	31.5	50.5	15.2	1.1	6.1
Rural	32.6	32.6	61.3	17.3	1.4	6.9
Mountain	32.7	32.2	61.3	17.3	1.3	7.0
Island	29.8	30.0	44.6	16.2	1.0	6.7
Lagging (<OnlyEU75%)	28.0	26.7	48.7	17.8	1.1	7.0
Lagging (<EUNAT75)	31.1	30.8	61.3	12.1	1.6	7.0
Lagging (<OnlyNAT75%)	33.5	33.3	47.8	16.4	0.9	6.1

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	110.1	107.6	189.5	63.3	1.1	18.9
IP 2	109.8	108.6	182.0	28.6	1.4	18.8
IP 3	111.6	110.1	189.5	64.8	1.1	19.5
IP 4	106.5	106.2	189.5	35.2	1.4	21.8
Urban	97.2	98.8	175.8	28.6	1.5	19.4
Intermediate	105.7	103.8	181.7	58.2	1.2	16.2
Rural	111.9	109.0	189.5	73.5	1.0	19.0
Mountain	109.8	105.6	189.5	68.7	1.1	19.3
Island	101.3	99.2	161.6	58.2	1.0	18.5
Lagging (<OnlyEU75%)	103.2	102.1	174.4	71.7	1.0	16.7
Lagging (<EUNAT75)	108.0	105.3	189.5	60.0	1.2	19.1
Lagging (<OnlyNAT75%)	113.2	112.2	174.0	73.1	0.9	17.8

The position of IP regions based on standardized data as percentages of national averages can show a little bit more disadvantaged position. The average level is between 106.5% and 111.6% compared to the national average in inner peripheries. 106.5% is belonging to the group of IP 4 while 111.6% is belonging to the group of IP 3. Among all examined groups the highest value of maximum is standing in IPs (more than 189.5%) (e.g. in the UK, France, Greece, Portugal, Spain). On the other side, where the lowest level can be experienced compared to national average, IP 2 regions have the most advantaged position: e.g. in the UK (Tower Hamlets) the old age dependency rate is only 28.6%, while the second lowest value is 68.7% for Portugal (Tâmega e Sousa).

The indicator of old age dependency rate might be a typical feature of inner peripheries with the indicator of the rate of working age population. They can give important information about the relationship between demographic situation and economic performance. Regions typified as inner peripheries can show that lower level of working age population goes together with higher level of old age dependency.

In summary, we can conclude that the relative disadvantaged position of inner peripheries among the examined European NUTS 3 regions based on their higher rate of old age dependency which goes together their handicaps compared to their national level.

3.3.2 Labour market status

Inactivity rate

The inactivity rate (15+) is the proportion of the population of working age who are not active in the labour market. In this way, this indicator can directly or indirectly give information about the socio-economic processes regarding economic activities. It is worth explaining the connection between activity and inactivity to define the spatial pattern of the examined NUTS 3 regions: low activity goes together with higher inactivity which can result absolutely or relatively disadvantaged position for regions.

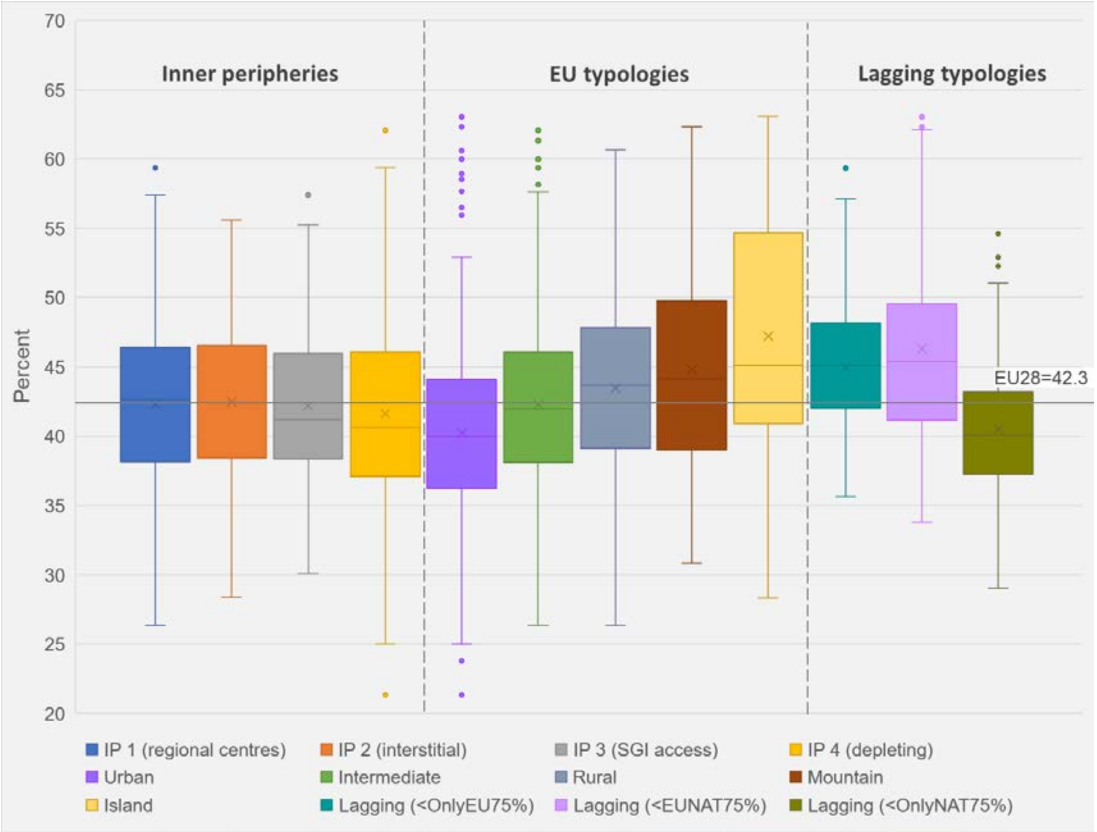
This labour market indicator captures broad regional differentiation among examined NUTS 3 regions in term of participation in economic inactivity (Figure 3.5). The average level of EU28 is 42.3% which is relatively high rate. Lower average level than this EU28 average means a better position and for example it can be detected in the groups of IP 3 (SGI access) and IP 4 (depleting) regions, Urban and Lagging (<OnlyNAT75%) regions. The average level of IP 1 (regional centre) and IP 2 (interstitial) is almost the same as EU28 average. In the groups of IPs regions defined as inner peripheries the group of IP 4 has the best position due to the arithmetic mean which is the lowest (41.6%) among IPs.

Higher rates of inactivity than EU28 average present a more disadvantaged position and it can be experienced in the groups of Rural, Mountain, Island regions and Lagging (<OnlyEU75%) and Lagging (<EUNAT75%) regions. The group of Intermediate regions also has the same average as EU28.

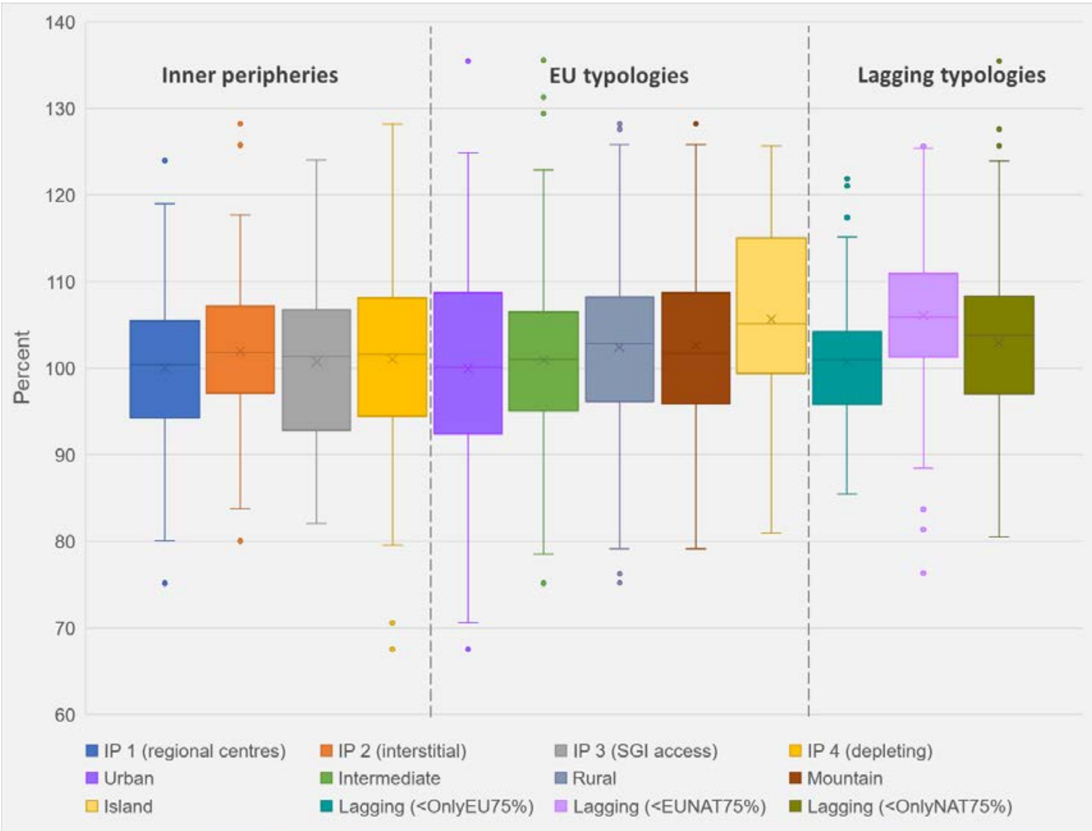
Generally, lower inactivity rates among regions identified as inner peripheries in ESPON PROFECY project can be observed mainly in Scandinavian countries, but in the group of IP 3 and IP 4 regions they also seem to be present in the Netherlands, the UK and Germany too. Inner peripheral regions with high inactivity mostly characterise Mediterranean countries as well as post-socialist states. This indicator of permanent exclusion from the labour market often reach above 50% within these areas (e.g. in Italy, Greece, Romania, Bulgaria).

Figure 3.5: Inactivity rate (15+) in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



The worst situation appears especially in Island and Lagging (<EUNAT75%) regions: in these groups of NUTS 3 regions on the one hand, the unstandardized inactivity rate is highly above EU28 average, but on the other hand, the standardized inactivity rate as percentages of national averages is also considerably above national averages. Lagging (<EUNAT75%) regions are good examples for representing that their less developed level than 75% of European and also national level (measured by GDP per inhabitant values) goes together both of Europeanly and nationally worse positions according to higher level of inactivity rate.

Significant differences between IP regions are not represented according to descriptive statistics (Table 3.4). They are very compact and have not outliers. Their position might be considered to be good according to unstandardized data and standardized data as percentages of national averages too. If we examine IPs among each other based on standardized data as percentages of national averages, we can discover the best mean value of IP 1 which equals with national average as well as in the group of Urban regions: in this IP 1 group the maximum values (more than 120%) are belonging to the UK and Spain. Differences are not so much remarkable between IP regions and other typologies compared to national averages. Their mathematical mean changes mainly between 100.0% and 102.7%. Only Island regions and Lagging (<EUNAT75%) regions are sticking out from this position with their mean more than 105%.

On the contrary, several remarkable differences can be experienced between IP regions and all groups of lagging areas (where GDP per capita is only lower than 75% of EU average, or where GDP per capita is lower than 75% of both of EU and national average, or where GDP per capita is only lower than 75% of national average). Differentiation is particularly significant between inner peripheries and those lagging regions where development level is lower than both EU and national levels (Lagging [<EUNAT75%] regions). The comparison of regions typified as inner peripheries to other regional typologies can show the marked differentiation between IPs and Island regions too, which also stand out regarding their unfavourable inactivity positions.

Inactivity rates might demonstrate the phenomenon of exclusion from the active labour market participation and they represent both the present condition and future potentials of labour force. The inactivity rate depends heavily on sex, age and education level. For instance, a lot of men and women aged 15–24 are outside the labour market in the EU28. This high number is explained by the fact that most people in this age group are still in education or training. Persons with a high educational level are less likely to be inactive. The other determinative factor of higher inactivity rates among working age population is that women aged 25–54 are often inactive because of personal or family reasons. On the other hand, there are also many women and men who are inactive due to sickness/disability, education or retirement[11].

Table 3.4: Descriptive statistics related to inactivity data

A – unstandardized

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	42.3	42.6	59.4	26.3	0.8	5.8
IP 2	42.5	42.5	55.6	28.4	0.6	5.1
IP 3	42.2	41.2	57.4	30.1	0.6	5.5
IP 4	41.6	40.6	62.1	21.3	1.0	6.7
Urban	40.2	40.0	63.0	21.3	1.0	6.3
Intermediate	42.3	42.0	62.1	26.3	0.8	5.9
Rural	43.4	43.7	60.6	26.4	0.8	5.8
Mountain	44.8	44.2	62.3	30.8	0.7	7.0
Island	47.2	45.1	63.0	28.3	0.7	8.2
Lagging (<OnlyEU75%)	44.9	45.1	59.4	35.6	0.5	4.5
Lagging (<EUNAT75)	46.3	45.4	63.0	33.8	0.6	6.4
Lagging (<OnlyNAT75%)	40.5	40.1	54.6	29.0	0.6	4.7

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	100.0	100.5	124.0	75.2	0.5	8.3
IP 2	101.9	101.8	128.2	80.0	0.5	7.6
IP 3	100.7	101.4	124.0	82.1	0.4	9.4
IP 4	101.0	101.7	128.2	57.6	0.7	9.6
Urban	100.0	100.1	135.5	57.6	0.8	10.8
Intermediate	101.0	101.0	135.6	75.2	0.6	8.9
Rural	102.4	102.8	128.2	75.2	0.5	9.0
Mountain	102.7	101.8	128.2	79.1	0.5	9.1
Island	105.6	105.1	125.6	80.9	0.4	11.0
Lagging (<OnlyEU75%)	100.7	101.0	121.9	85.4	0.4	7.2
Lagging (<EUNAT75)	106.1	105.9	125.6	76.3	0.5	7.8
Lagging (<OnlyNAT75%)	102.9	103.7	135.5	80.5	0.5	8.4

Economic inactivity rate tends to be the lowest in Urban regions, which is presumably mainly caused by a higher rate of outmigration from rural to urban areas. Nevertheless, higher inactivity rates have a more or less direct relationship with the phenomena of the latest economic crisis and its socio-economic consequences, because during crisis periods more and more people retreat from active labour market.

The group of Lagging (<OnlyNAT75%) regions – where GDP per capita is less than 75% of national average, but not less than 75% of EU average – has an interesting position among the examined NUTS 3 regions. Their position seems to be moderately more unfavourable

nationally, but in European comparison these regions have the second lowest level of inactivity rates.

In summary, IP regions are very compact among European NUTS 3 regions and their position might be considered to be good according to inactivity rate. High inactivity rates are mostly appeared in Mediterranean countries as well as in post-socialist states. Beside inner peripherality, it seems higher inactivity rate is the result of macroeconomic status.

Gender gap in activity

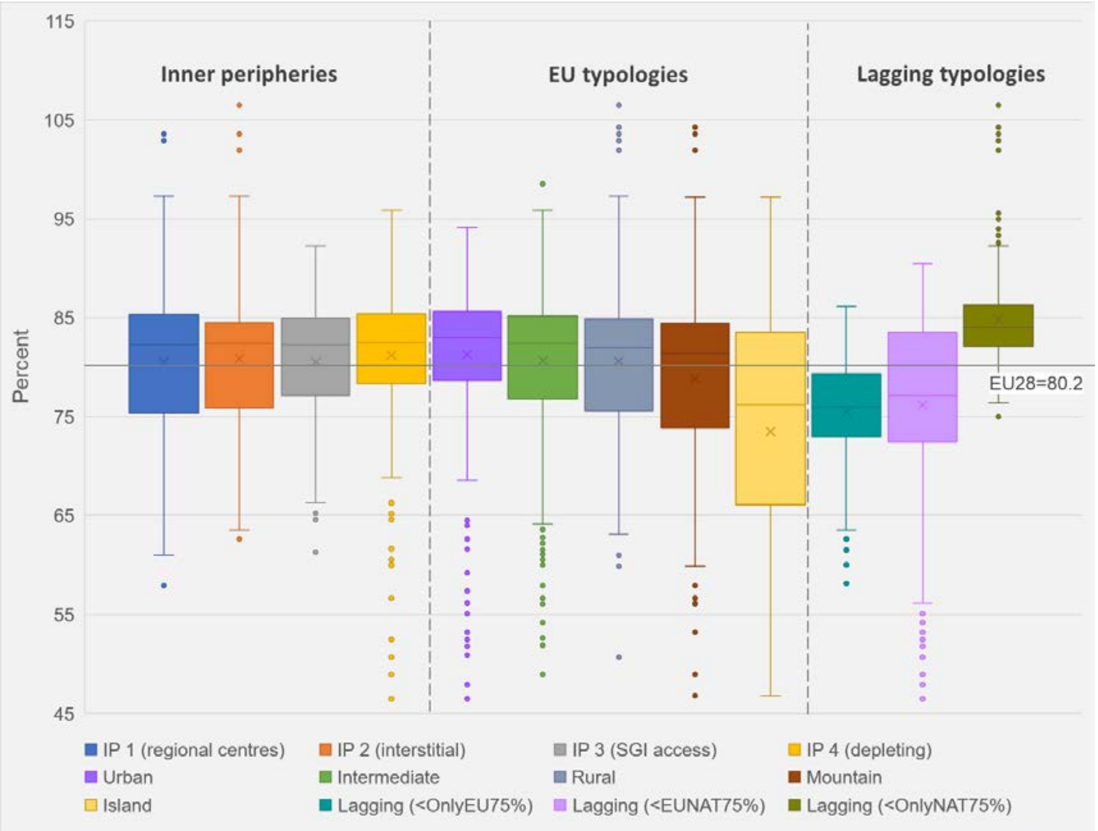
Gender gap is commonly used in reference to human resources and equal participation of women and men in all areas of work. It is also an important indicator to define equality/inequality in labour market and to measure how people are able to access the same workplace rewards, resources and opportunities regardless of gender. The indicator and its distribution are in strong correlation with the indicator of general gender balance of working age (15–64) population.

Gender-related differences of participation in economic activity show typical spatial patterns across Europe. Positions based on the average levels of all groups of NUTS 3 regions compared to the EU28 average (80.2%) draw attention to the slightly better position of urban areas, but the groups of inner peripheral areas are also a little bit above the EU28 average. The good positions of urban areas (more gender equality in the labour market) at the European level correspond to their advantageous situation in national context too. A somehow paradox situation can be found in the group of those lagging regions where the GDP-based development level is (only) less than 75% of national average: gender inequality in labour market is overrepresented nationally, but this unfavourable situation does not appear among European regions at all. Moreover, this group of Lagging (<OnlyNAT75%) regions has the highest mean level because of its many outliers (e.g. in Sweden, Norway, Germany).

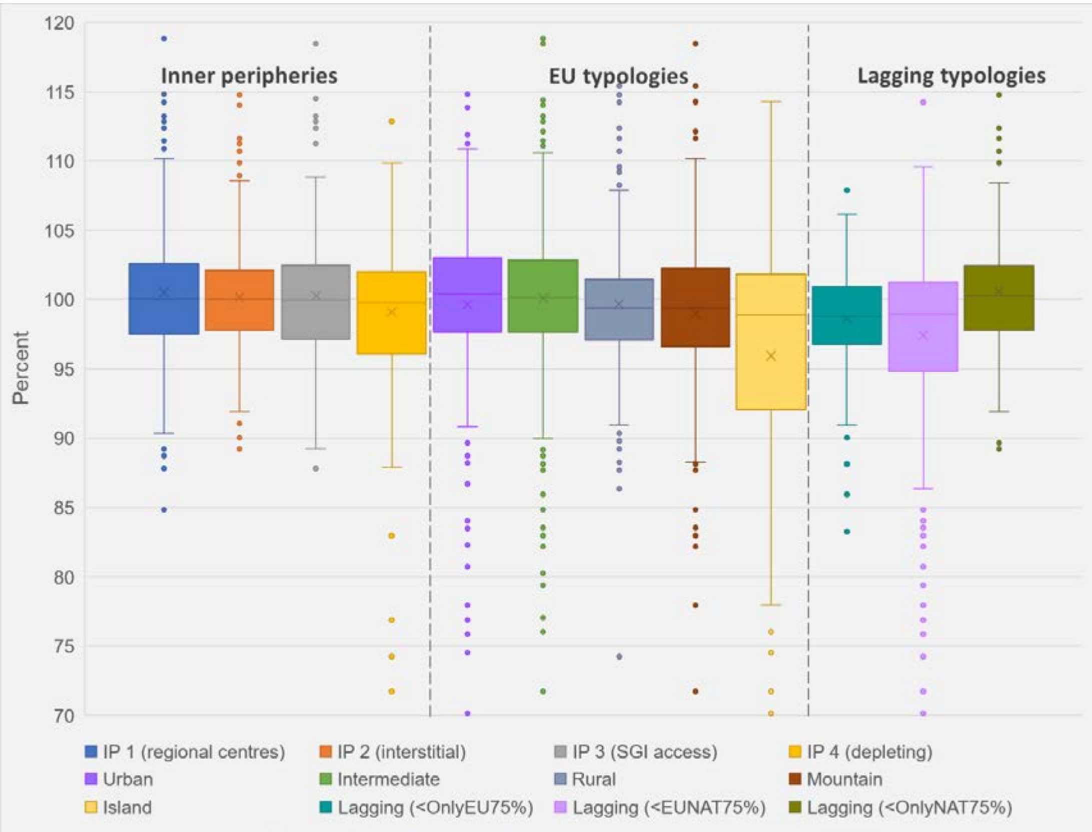
Gender effects within the labour market seem to vary considerably more between the four groups of IP delineations used in this project and lagging regions (except for Lagging [<OnlyNAT75%]), rather than between IP regions and regions identified as rural areas according to descriptive statistics (Table 3.5). The gender gap regarding the participation in the active population is lower in IP regions than in the case of those lagging regions whose development level regarding economic performance is only less than 75% of EU, but also in the case of other lagging territories underperform in comparison both with the European and the national level. At the same time, rural and intermediate areas can be characterised with lower levels of gender related inequalities, which are very similar to inner peripheries (Figure 3.6).

Figure 3.6: Gender gap in activity (female/male) in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



Looking at the status of regions identified as inner peripheries by ESPON PROFECY regarding activity gender gap, some further observations can be made. All IP regions have more favourable situation among European NUTS 3 regions according to higher level of gender equality in labour market. This advantage does not appear at national level, because all IP regions is under their national level (only IP 4 regions tend more to present a lover gap in national contexts). Majority of regions in IP 1 (regional centres) group as well as in IP 2 (interstitial) group with lower gender gap are located in Scandinavian countries, while in IP 3 (SGI access) and IP 4 (depleting) groups, more regions with less difference regarding female and male activity can be found in France, the UK, the Netherlands. Among those IP regions where gender gap is high, there are more areas from Italy, Romania, FYROM. It is also worth mentioning that among regions defined as inner peripheries, only IP 4 (depleting) regions have slightly better positions according to more gender equality in labour market. On the other hand, IP 4 regions have lots of outliers tending be positioned to more gender inequality.

Significant differences according to a gendered aspect of the labour market do not appear among inner peripheral regions: the average rate of gender gap changes especially between 65% and 95% by European level, and between 90% and 110% by national level. It means female's participation in economic activity is usually lower than male's participation, but regions identified as inner peripheries are not be considered as the most disadvantaged regions in Europe.

Differences between men and women in labour market participation are the smallest in Western and Northern part of Europe (e.g. the UK, Norway, Sweden, Denmark). Moreover, women's participation in labour market is significantly higher than men's participation in the Scandinavian countries. Conversely, gender-related labour market differences are especially high in many regions of Southern (e.g. Italy, Greece) and East Central European countries (e.g. Poland, Romania). In these regions, female activity rates do not reach even the 70% of the male rates.

The regions regarding their high gender gap can be found among rural, mountain, island, lagging (<EUNAT75%) regions. For example, the most of these regions – where women's participation in labour market is less than 50% of men's participation – is located in the southern part of Italy. Possible explanation is coming from that women leave the labour market more often (e.g. for maternity leave or for family care), or the traditional role of men as breadwinners is ordinary, or after the latest economic crisis the rate of inactive men has might have been also increased[12].

Gender gaps related to labour market participation is complex and hard to interpret: on the one hand, women quite often faced the lower rates of direct participation, on the other hand, they are usually more often faced the negative consequences of part-time work and lower payments despite their generally higher level of qualification[13].

Table 3.5: Descriptive statistics related to gender gap in activity data

A – unstandardized

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	80.5	82.2	103.6	57.9	0.6	7.3
IP 2	80.9	82.4	106.5	62.6	0.5	7.1
IP 3	80.5	82.2	92.3	61.3	0.4	6.0
IP 4	81.2	82.5	156.5	46.5	1.4	8.5
Urban	81.3	83.0	94.1	46.5	0.6	7.4
Intermediate	80.7	82.4	156.5	49.0	1.3	8.0
Rural	80.6	81.9	133.2	50.7	1.0	7.5
Mountain	78.8	81.4	104.3	46.8	0.7	9.7
Island	73.5	76.2	97.2	46.8	0.7	12.3
Lagging (<OnlyEU75%)	75.4	76.0	86.2	58.1	0.4	5.8
Lagging (<EUNAT75)	76.2	77.2	90.5	46.5	0.6	9.4
Lagging (<OnlyNAT75%)	84.8	84.0	156.5	75.0	1.0	6.9

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	100.5	100.0	118.9	84.9	0.3	5.4
IP 2	100.2	100.0	114.8	89.2	0.3	4.5
IP 3	100.3	100.0	118.5	87.8	0.3	5.6
IP 4	99.1	99.7	174.2	68.1	1.1	7.1
Urban	99.7	100.4	115.1	68.1	0.5	6.2
Intermediate	100.1	100.1	174.2	71.7	1.0	6.2
Rural	99.7	99.4	148.3	74.2	0.7	5.5
Mountain	99.0	99.4	118.5	68.5	0.5	7.0
Island	95.9	98.9	114.3	68.5	0.5	10.1
Lagging (<OnlyEU75%)	98.6	98.8	108.0	83.2	0.3	4.3
Lagging (<EUNAT75)	97.4	99.0	125.4	68.1	0.6	7.5
Lagging (<OnlyNAT75%)	100.6	100.3	174.2	89.2	0.8	6.4

In comparison, relatively high activity gender gap often goes together with higher inactivity and unemployment across the European regions. It must be mentioned that inequality in gender balance of working age (15–64) population is noticeable across the European regions. At regional level, majority of regions have a little bit imbalanced situation with respect to gender. Slightly, gender imbalance in some groups of regions may arise as a consequence of various factors including natural factors: e.g. this means the sex ratio at birth worldwide is commonly thought to be 107 boys to 100 girls, or premature death primarily hits middle-aged males with the consequence of shrinking their rates over 65 aged years[14].

In summary, as inner peripheries are not considered as the most disadvantaged regions in Europe according to gender gap in activity. On the one hand, significant differences do not appear among them. On the other hand, they have relatively better position due to female's participation in economic activity compared it to other European typologies.

Unemployment rate

The indicator of unemployment is defined as people without work, but actively seeking employment and currently available to start work. Unemployment rates can vary due to the welfare systems of the European countries: possibly there are significant differences in the conditions of welfare system e.g. how can help people to obtain labour market opportunities.

Unemployment rate and its regional distribution by different delineations of IP and other EU regional typologies has typical patterns (Figure 3.7). Firstly, the average level of the examined labour market indicator is 8.5% in EU28, but the average unemployment rate of different groups significantly differs from this level, as well as from each other, which results in higher values of standard deviation and relative range (see descriptive statistics) (Table 3.6). Secondly, a strikingly important gap is detected between IP delineations and other groups of NUTS 3 regions.

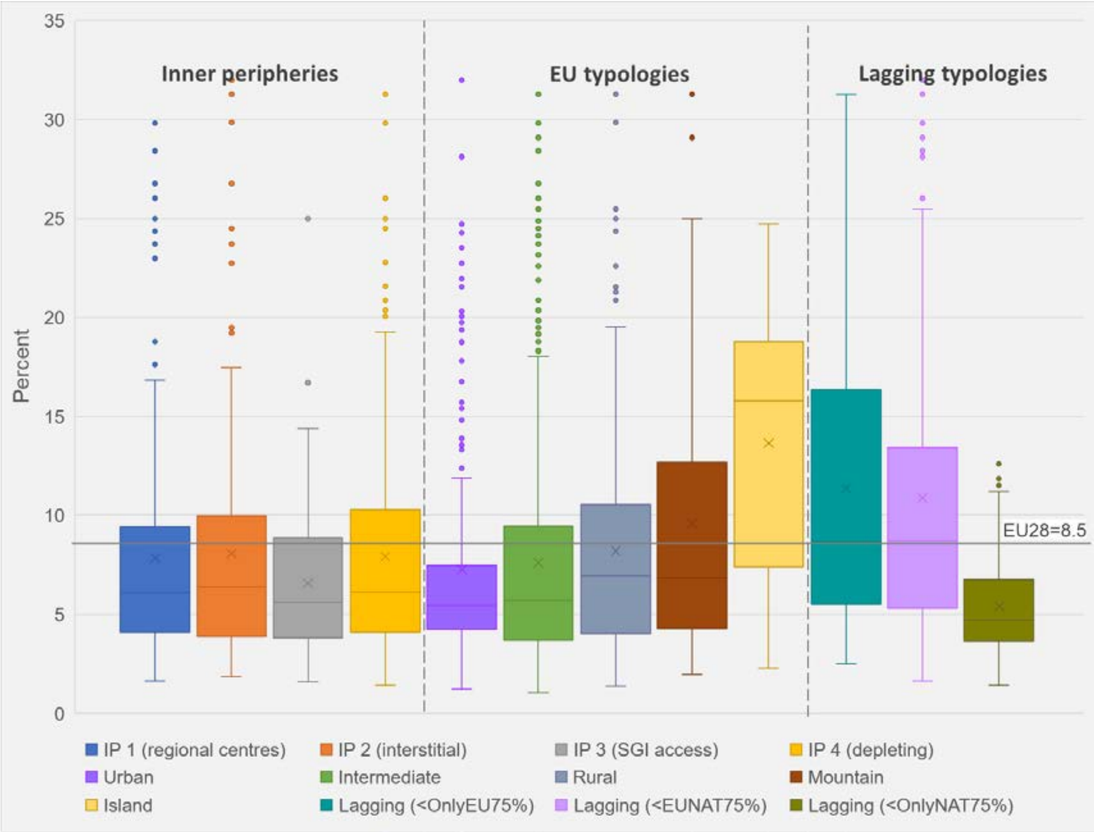
Thirdly, majority of similarities among regions is coming from two sources: on the one hand, the lowest level of unemployment rate (15+) is almost the same in all groups (it changes between 1.0% and 2.5%). On the other hand, most of groups (except for IP 3, mountain, island and Lagging [<OnlyEU75%] regions) have many outlier regions with outstanding positions in comparison to the mean and median of their groups.

Fourthly, groups of regions identified as inner peripheries in this project have pronouncedly good situation among European NUTS 3 regions, as well as by compared that to their national average. Lastly, it might also be discovered, if regions are becoming more disadvantaged, then they are threatened by increasing rates of unemployment: for instance, see those lagging groups which are less developed than 75% GDP per inhabitant level of both EU and national averages (<EUNAT75%).

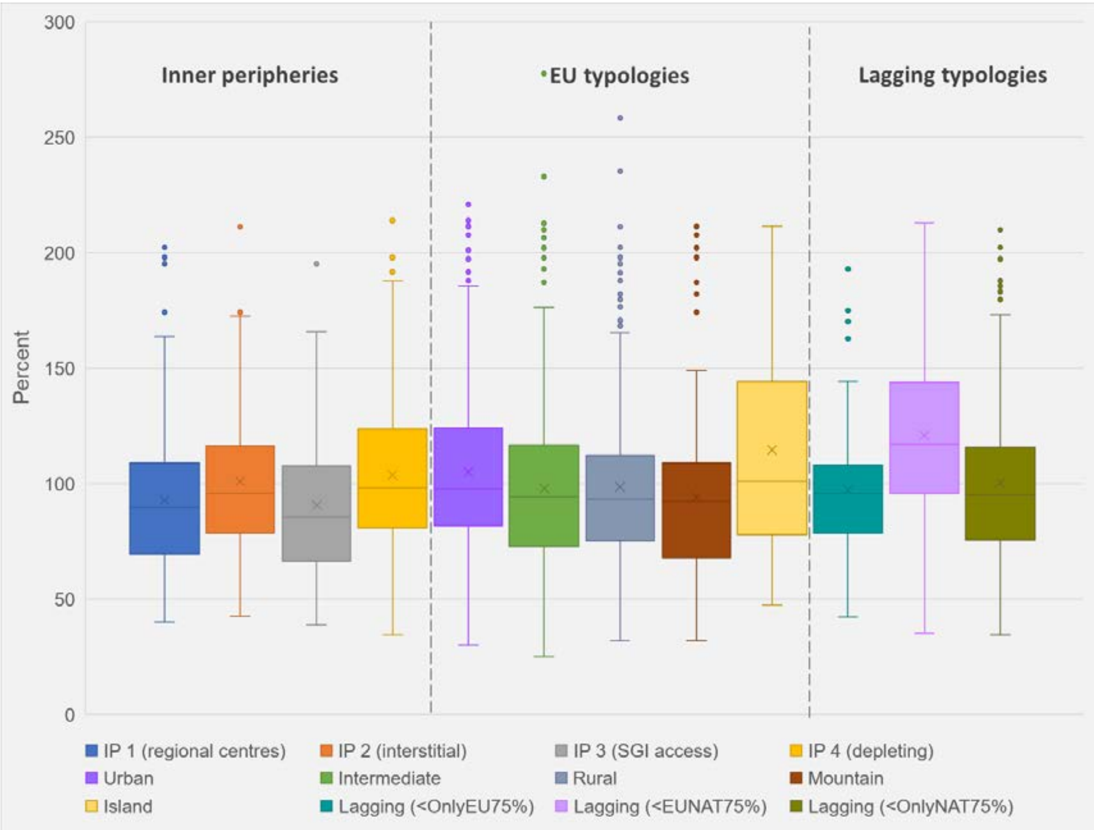
IP regions have similar positions compared to each other regarding their unemployment rates, and their groups seem to be real compact and unified. The group of IP 3 (SGI access) regions have the lowest average rate (6.6%), while IP 2 (interstitial) regions have the highest (8.1%), but all of them are below of EU28 average. Their better situation can also be experienced according to standardized data as percentages of national averages: IP1 (regional centres) and IP 3 has the lowest average levels among all European regions compared to national territories, the arithmetic mean of IP 2 group equals with national averages. Nevertheless, IP 4 (depleting) has the highest level of unemployment compared to national average which can result its more disadvantaged position among inner peripheries. In other words, handicaps in economic performance of depleting inner peripheries go together with higher rate of unemployment.

Figure 3.7: Unemployment rate (15+) in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



In the groups of the regions defined as inner peripheries, NUTS 3 regions mainly from Germany are in the most advantaged position due to their lowest level of unemployment rates. It is interesting that one Romanian region (Suceava) also stands among these regions. There are remarkable differences between inner peripheral regions with higher rates, but many of these outliers appear particularly above 20%. For example, Italian, Greek, FYROM, Spanish regions form a group according to their high level (at least 20%) of unemployment rate.

In general, groups IP delineations used in ESPON PROFECY have similar better positions compared to Urban, Intermediate, and partly Rural regions. The highest mean of unemployment rates characterises typologies of Island, Lagging (<OnlyEU75%) and Lagging (<EUNAT75%) regions, while Lagging (<OnlyNAT75%) regions have typically more favourable positions compared to their national average as well as to other EU regional typologies. Thus, the lowest average level of unemployment appears in this group: that is an interesting result, because these regions – with GDP per capita level less than 75% of their national average – are more compact group and have better position than Urban regions do (see descriptive statistics).

Notable similarities can be detected between IP 1 (access to regional centres), IP 4 (depleting) and Urban, Intermediate regions based on their mean and maximum values, but it can also be seen that they completely differ from each other according to standardized data at national levels. For example, the group of IP 1 and Intermediate regions are below national average, while groups of IP 4 and Urban regions are above national average. Among all examined regions the groups of Island and Lagging (<EUNAT75%) regions have some handicaps due to the standardized data as percentages of national averages, because the arithmetic mean is 114.5% for islands, and 120.8% for Lagging (<EUNAT75%) regions.

Similarities across all European regions is real conspicuous especially between the groups IP, urban and rural areas. More differentiation is existing between inner peripheries and islands, with an observable unfavourable situation of Island regions among all other European regions based on their higher level of NEET rate.

The share of youth which are neither in employment nor in education or training within this age group is a relatively new indicator, but one that is given increasing importance. The popularity of this concept is associated with its assumed potential to address a broad array of vulnerabilities among youth, touching on issues of unemployment, early school leaving and labour market discouragement[15].

The term of unemployment traditionally covers only people who are not in education, want to work and actively seek a job but cannot find one. They are so called active unemployed (ILO definition). However, there is a large group within the young generation that does not belong to the active unemployed, but is neither in employment nor in education. They are with the active unemployed (who are not in training) together form a group of young people who are called NEET[16].

Table 3.6: Descriptive statistics related to unemployment data

A – unstandardized

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	7.8	6.1	29.8	1.6	3.6	5.8
IP 2	8.1	6.4	32.0	1.9	3.7	6.0
IP 3	6.6	5.6	25.0	1.6	3.6	3.8
IP 4	7.9	6.1	31.3	1.4	3.8	5.7
Urban	7.3	5.5	32.0	1.2	4.2	5.4
Intermediate	7.6	5.7	31.3	1.0	4.0	5.7
Rural	8.2	6.9	31.3	1.4	3.6	5.6
Mountain	9.6	6.8	31.3	2.0	3.1	7.1
Island	13.7	15.8	24.7	2.3	1.6	6.4
Lagging (<OnlyEU75%)	11.4	8.7	31.3	2.5	2.5	7.2
Lagging (<EUNAT75)	10.9	8.7	32.0	1.6	2.8	7.3
Lagging (<OnlyNAT75%)	5.4	4.7	12.7	1.4	2.1	2.6

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	92.9	89.6	202.3	40.0	1.7	30.1
IP 2	100.9	96.0	306.8	42.7	2.6	34.9
IP 3	90.7	85.6	195.2	38.7	1.7	30.6
IP 4	103.6	97.9	214.0	34.5	1.7	33.1
Urban	105.0	97.9	220.9	30.0	1.8	34.5
Intermediate	98.0	94.2	303.3	24.9	2.8	36.3
Rural	98.5	93.3	306.8	31.9	2.8	37.7
Mountain	94.0	92.4	211.4	31.9	1.9	33.9
Island	114.5	100.8	211.4	47.4	1.4	41.0
Lagging (<OnlyEU75%)	97.3	95.7	192.9	42.3	1.5	25.2
Lagging (<EUNAT75)	120.8	116.9	213.0	35.2	1.5	36.1
Lagging (<OnlyNAT75%)	100.4	95.1	306.8	34.5	2.7	37.4

The distribution of unemployment rate among European regions shows similarities particularly with the spatial pattern of NEET rate, and in general, relevant positions of IP regions are almost the same among other groups of regions according to these two labour market indicators. NEET rate can measure the number of those young people who are not in education, employment or training. It provides information on the transition from education to work and focuses on the number of young people who find themselves disengaged from both education and the labour market. The indicator is quite complex, and its explanation depends on how educational and welfare systems of the European nations differ from each other.

Young people defined as 'NEET' are at risk of becoming socially excluded, with low income and without the skills to improve their economic situation.

In summary, it is important to declare that patterns of unemployment rate are complex and difficult to interpret according to its gender or age-specific gaps, or the different welfare systems. However, it is also worth mentioning the close relationship between unemployment and inactivity rate: sometimes if inactivity rate decreases then unemployment increases in many regions. A reasonable explanation is that people who before were economically inactive now are openly unemployed and therefore categorised as economically active.

Population with low qualification (ISCED 0–2)

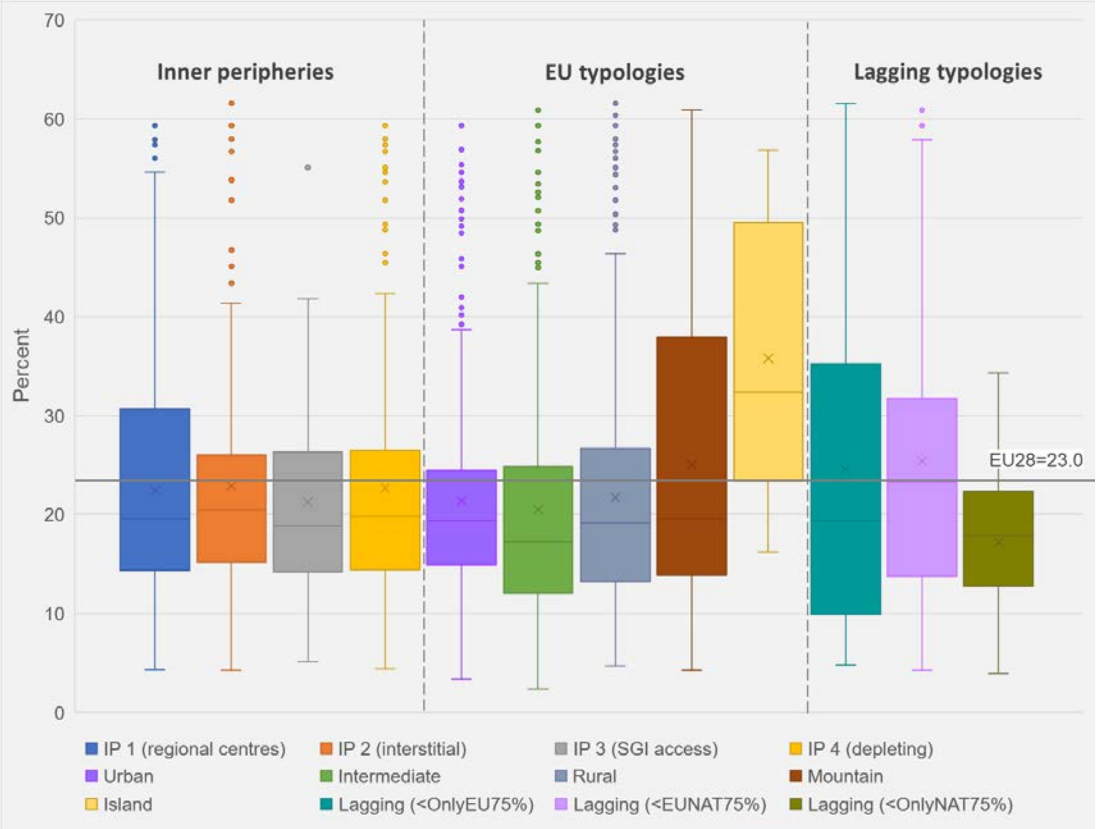
The indicator of ratio of population (25–64) with low qualification (ISCED 0–2) and its distribution among groups of regions by IP delineations and EU regional typologies draws attention to specific differences. On the one hand, this indicator is appropriate to measure access to basic service. On the other hand, it also must be mentioned educational systems differ from country to country, so that the results need to be carefully interpreted.

The average rate of low qualified population according to the majority of examined NUTS 3 regions is between 20% and 25% based on arithmetic mean of unstandardized data, but the highest rate is above 35% in Island regions, while the lowest rate – below 20% – is belonging to Lagging (<EUNAT75%) regions (Figure 3.8). Especially, several regions in Germany show the lowest level of minimum (approximately 5%), while Portugal, Spain, or southern part of Italy has the highest level of maximum (more than 50%). IP delineations (except for IP 3), Urban, Intermediate and Rural groups contain majority of outliers which stand mainly in Southern part of Europe. In these groups of regions, the value of relative range is larger than in other groups. In general, regions in Southern European countries present higher proportions of low qualified population. Group of Urban regions has unique characteristics due to its high number of outlier regions. Majority of them can be found in Southern part of Europe (Portugal, Spain, Italy, FYROM).

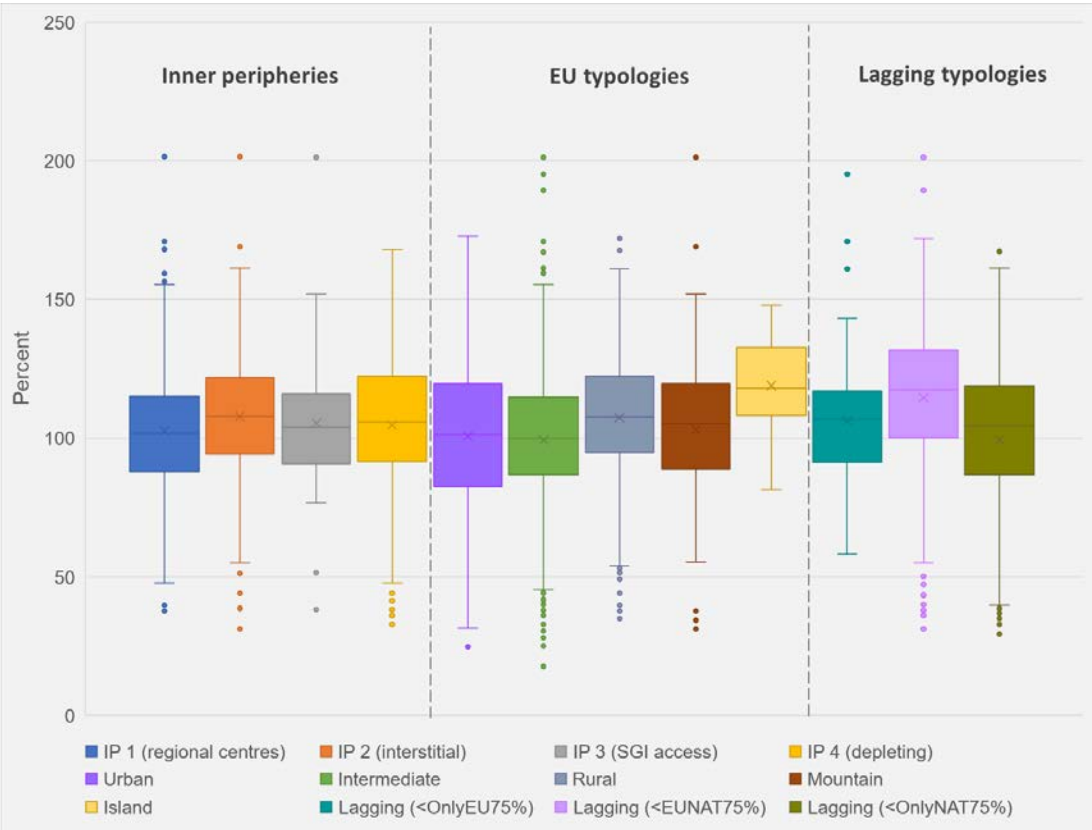
Firstly, regions classified into the groups of IP delineations – used the methodology of ESPON PROFECY – in many ways are similar to each other based on unstandardized data and standardized data as percentages of national averages too. It means similarities are more specific for IPs rather than differences. Secondly, regions defined as inner peripheries have many outliers – except for IP 3 regions – which regions are standing highly above arithmetic mean. In other words, IP 3 regions based on their definition by accessibility unify the most compact group. Thirdly, the EU28 average is 23.0% in ratio of population (25–64) with low qualification which is higher than the arithmetic mean of IPs. It results that there are other regions in Europe which have more disadvantaged position due to higher level of low qualified people than inner peripheries have. Fourthly, Europeanly better position of IPs – based on their lower level of low qualified people – does not go together also nationally better position. Namely, average level of low qualified population in inner peripheries is higher than their national level (see descriptive statistics) (Table 3.7).

Figure 3.8: Ratio of population (25-64) with low qualification (ISCED0-2) in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



Most of remarkable similarities are visible between IP delineations and regions identified as rural areas according to the present examined indicator with its descriptive statistics. The marked difference is interpretable between IP regions and especially Island regions. There are not significant differences among the examined groups of NUTS 3 regions due to the maximum values. The exception is the group of Lagging (<Only NAT75%) regions where the economic performance is lower than 75% of national average but higher than 75% of EU28 average: the maximum value of low qualification is only 34.3% (in the UK) that means nationally worse position does not result Europeanly worse situation. Among the examined groups the second highest value of minimum can be experienced just in the group of IP 3 regions (SGI access). This fact can strengthen the previous finding that this group of IPs can create the most compact group among all examined groups of regions.

The arithmetic mean of inner peripheries based on standardized data as percentages of national averages runs between 102.5% and 107.7%, so the gap is not so significant between their averages and national averages. This gap is similar Rural, Mountain and Lagging (<OnlyEU75%) regions. The maximum values of low qualification in IPs are especially representing in post-communist countries (Poland, Bulgaria, Czech Republic, Hungary), but there are some regions from Germany. The maximum values based on standardized data as percentages of national averages differ from those one which based on unstandardized data. In the latter case, majority of those IP regions which have higher level of low qualified people can be found in mainly countries from Southern part of Europe (e.g. Portugal, Spain, Italy). The minimum values of low qualification in IPs are principally belonging to German regions based on unstandardized and standardized data too.

Clear differences as well as similarities are detected in comparison IP regions to lagging regions. The values of relative range are very similar to each other. The strong similarity might be detected between IP 2 and Lagging (<OnlyEU75%) regions based on their maximum and minimum values. The strong difference might be detected between IP 2 and Lagging (<OnlyNAT75%) regions based on their maximum values. Regions defined as inner peripheries have more compact situation rather than lagging regions have, thus IP delineations have more outliers according to its higher level of low qualified people.

Ratio of population (25-64) with low qualification in comparison to unemployment rate (15+) can demonstrate very similar pattern to each other. Regions can define more disadvantaged position according to the combination of higher rate of low qualified population with higher rate of unemployment (15+). Regions typified as Lagging (<EUNAT75%) in Europe are one of typical examples to demonstrate this connection.

In summary, inner peripheries – defined them according to the methodology of ESPON PROFECY project – have more handicaps Europeanly rather than nationally based on the ratio of low qualified people. The spatial distribution can show higher level of low qualification in post-communist countries and in the states of Southern Europe.

Table 3.7: Descriptive statistics related to low qualification data

A – unstandardized

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	22.4	19.6	59.3	4.3	2.5	12.0
IP 2	22.9	20.5	61.6	4.2	2.5	12.4
IP 3	21.3	18.8	55.1	5.2	2.3	9.9
IP 4	22.7	19.8	59.3	4.4	2.4	12.0
Urban	21.4	19.4	59.3	3.4	2.6	10.5
Intermediate	20.5	17.3	60.9	2.4	2.9	12.3
Rural	21.7	19.1	61.6	4.7	2.6	12.3
Mountain	25.1	19.6	60.9	4.2	2.3	14.7
Island	35.8	32.4	56.9	16.2	1.1	13.1
Lagging (<OnlyEU75%)	24.6	19.3	61.6	4.8	2.3	16.3
Lagging (<EUNAT75)	25.4	23.3	60.9	4.2	2.2	14.5
Lagging (<OnlyNAT75%)	17.2	17.8	34.3	4.0	1.8	6.8

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	102.5	101.7	201.6	37.6	1.6	26.4
IP 2	107.7	108.0	201.6	31.3	1.6	24.6
IP 3	105.3	103.8	201.3	38.2	1.5	22.7
IP 4	104.7	105.7	168.1	32.7	1.3	25.6
Urban	100.7	101.3	172.9	24.9	1.5	26.1
Intermediate	99.3	100.0	201.6	17.7	1.9	27.2
Rural	107.4	107.7	172.1	34.9	1.3	24.9
Mountain	103.0	105.3	201.3	31.3	1.6	26.1
Island	119.0	118.1	147.9	81.3	0.6	14.8
Lagging (<OnlyEU75%)	106.2	106.9	195.4	58.3	1.3	21.0
Lagging (<EUNAT75)	114.6	117.4	201.6	31.3	1.5	28.0
Lagging (<OnlyNAT75%)	99.4	104.3	167.4	29.4	1.4	30.2

3.3.3 Economic performance status

GDP per inhabitants

Gross Domestic Product (GDP) is commonly used as an indicator of the economic health of a country, as well as an economic indicator of quality of life to measure a country's standard of living. GDP per inhabitant can also be used to compare the productivity of various countries with a high degree of accuracy. The popularity of GDP as an economic indicator in part stems from its measuring of value added through economic processes. The volume index of GDP per capita in Purchasing Power Standards (PPS) is expressed in relation to the European Union (EU28) average set to equal 100.

GDP (PPS) per inhabitant in percentage of the EU average in Europe by IP delineations and EU regional typologies shows characterised distribution among the examined groups of NUTS 3 regions. All of IP delineations and EU regional typologies can be typified based on the economic productivity according to their position to the average of EU28 (100%), to their own national average and to each other (Figure 3.9).

If the unstandardized index of a country group is higher than 100, the group's level of GDP per head is higher than the EU28 average and vice versa. If the standardized index as percentages of national averages is higher than 100, the group's level of GDP per head is higher than the national average and vice versa. Only the group of Urban regions has higher average than 100% according to both unstandardized and nationally standardized data. All of the other NUTS 3 regions including groups of IP areas delineated in ESPON PROFECY, EU typologies and lagging regions reached lower level of development level than EU28 average and their national average.

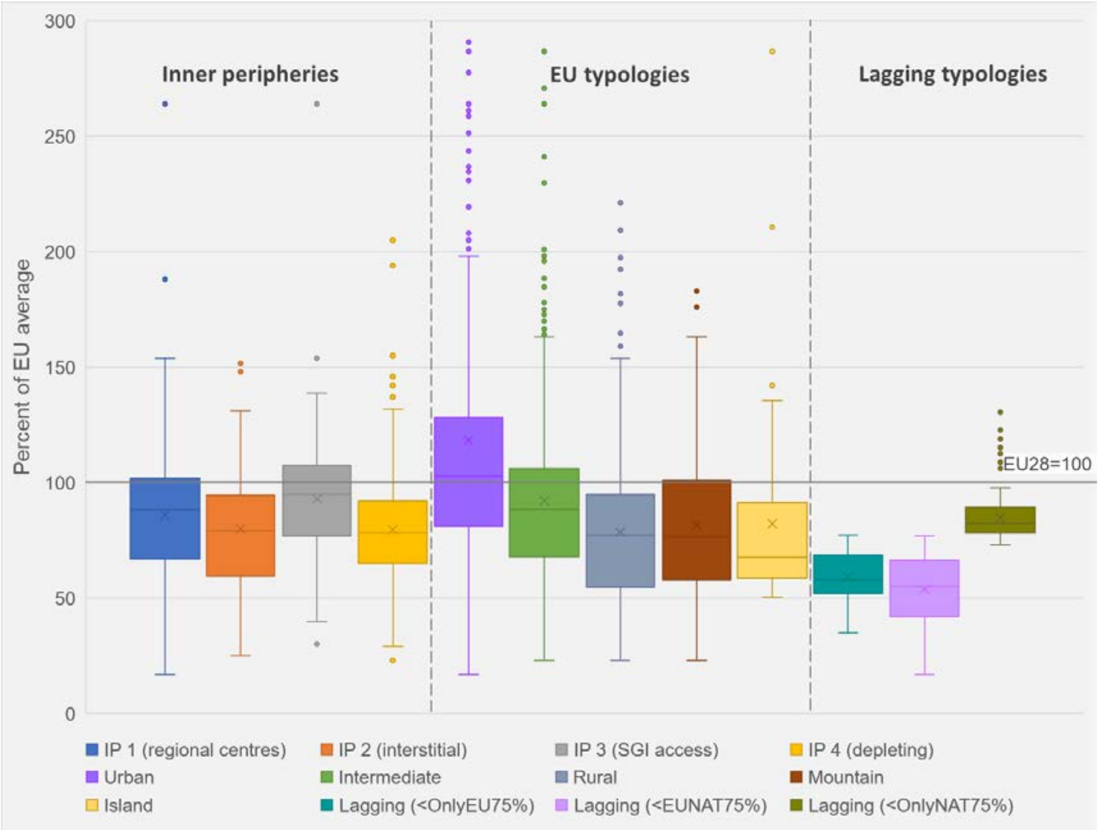
The average GDP per inhabitant level within the groups of IP delineations varies between 79% and 93% compared to EU28 average, while it changes between 96% and 98.5% compared to national averages. It is very hard to identify the best group regarding economic productivity among inner peripheries, because there are significant differences within each group. For instance, the highest arithmetic mean belongs to IP 3 regions (SGI access), but the highest level of maximum value can be found in IP 2 (interstitial). According to descriptive statistics significant differences can be also experienced within other groups of EU regional typologies based on high values of standard deviation and relative range (Table 3.8).

This differentiation can also be seen among regions identified as inner peripheries. The clearest differences among IPs can be observed between IP 4 (depleting) regions and the other three groups of inner peripheral areas (regarding lower levels of mean, median maximum and minimum values). This is not surprising, since the delineation of the former group (depleting IP) is partly based on handicaps considering economic performance.

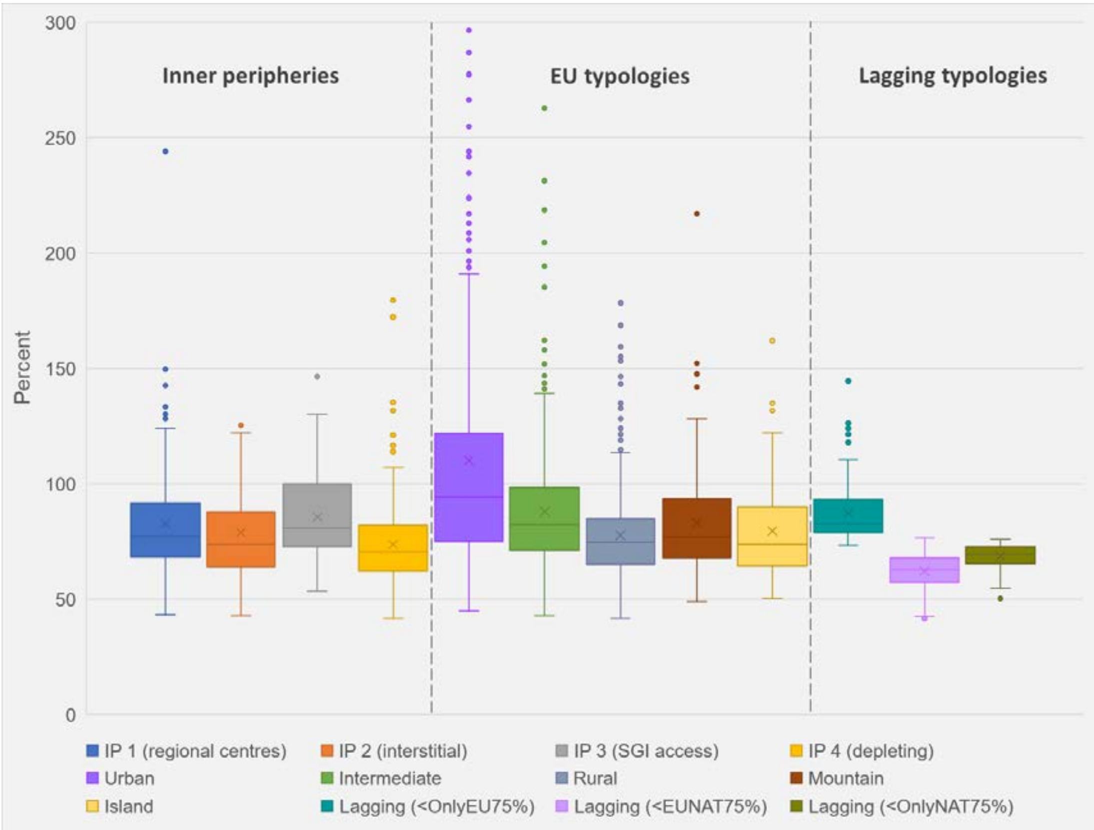
Here are some examples. In general, the highest level of economic productivity belongs to IP 1 (regional centres) and IP 3 (SGI access) regions from Western (e.g. Luxemburg, the UK, Germany), Central (e.g. Austria) and Northern Europe (e.g. Norway). Besides these patterns, some regions defined as inner peripheries from Italy can be found among NUTS 3 regions with their highest level of GDP per capita. All of these Italian IP 1 regions are Urban regions. All of those inner peripheral regions, which can be characterised by the lowest level of economic development – below 40% of EU28 average – are located in post-communist countries (e.g. Bulgaria, Romania, FYROM, Croatia, Poland, Latvia etc.).

Figure 3.9: GDP (PPS) per inhabitant in percentage of the EU average in Europe by IP delineations and EU regional typologies, 2015

A – unstandardized



B – standardized as percentages of national averages



In the group of IP 4 (depleting) there are also some Hungarian NUTS 3 regions (e.g. Nógrád, Szabolcs-Szatmár-Bereg, Jász-Nagykun-Szolnok) which are represented by low economic productivity. In comparison of IP regions to each other, it can be detected that the spatial distribution of inner peripheral regions is almost the same. Regions with higher productivity can be found in Western Europe (e.g. the UK, the Netherlands, Germany, France etc.), while lower productivity belong to East Central European countries (e.g. Bulgaria, Romania, Croatia, Poland, Hungary etc.).

Spatial distribution is moderately changing if we examine standardized data as percentages of national averages among inner peripheries identified by ESPON PROFECY project. In this case, some regions from East Central Europe (e.g. from Romania, Poland, Estonia) appear among regions with better economic productivity, because their GDP (PPS) per inhabitant is higher than the national average. The differences among IPs by standardized data as percentages of national averages show the followings. Firstly, the arithmetic mean is the highest – between 80% and 85% – in the group of IP 1 and IP 3, while it is lower – between 73% and 79% – in the group of IP 2 and IP 4. Secondly, differences can be seen among the groups of IPs but the scale of these differences is not very significant. Thirdly, nationally better or worse economic productivity differs wide range especially within each group among NUTS 3 regions.

Clear difference between IP regions – mostly identified by drawbacks in accessibility – and lagging regions – delineated by considering their lower development level – can be found according to both unstandardized and standardized data. On the one hand, inner peripheries have generally better positions based on their economic productivity compared them to lagging regions (<OnlyEU75%, <EUNAT75%, <OnlyNAT75%). On the other hand, especially between IP 1 and Lagging (<OnlyNAT75%) regions moderate similarity also appears. Similarity is stronger than difference between IP regions and Rural, Intermediate areas. They appear as more compact groups, but it can be mentioned, that rural and intermediate areas have much more outlier regions.

The indicator of GDP (PPS) per inhabitant in percentage of the EU average and its spatial distribution among the examined groups of NUTS 3 regions in comparison with other indicators representing economic performance status can show strong similarity between GDP per inhabitant and GVA per inhabitants. This similarity is significantly based on relative position of the examined regions to each other measured to national averages.

In summary, inner peripheries have multiple potential risk factors of becoming more disadvantaged areas. Peripheral features are generally related e.g. to ageing, outmigration, low qualification, inactivity or unemployment, potentially all corresponding to the worse economic position of these NUTS 3 regions.

Table 3.8: Descriptive statistics related to GDP per inhabitant data

A – unstandardized (compared to EU28 average)

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	85.7	88.0	264.0	17.0	2.9	31.5
IP 2	79.9	79.0	410.0	25.0	4.8	37.8
IP 3	93.0	95.0	264.0	30.0	2.5	30.6
IP 4	79.6	78.3	205.0	23.0	2.3	23.7
Urban	118.2	103.0	1,245.1	17.0	10.4	88.9
Intermediate	92.1	88.5	475.0	23.0	4.9	42.2
Rural	78.6	77.1	221.2	23.0	2.5	31.3
Mountain	81.6	76.6	183.0	23.0	2.0	31.7
Island	82.1	67.6	286.8	50.1	2.9	39.8
Lagging (<OnlyEU75%)	59.0	58.1	77.1	35.0	0.7	10.6
Lagging (<EUNAT75)	53.7	55.1	77.0	17.0	1.1	14.6
Lagging (<OnlyNAT75%)	84.7	82.2	130.5	73.1	0.7	9.3

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	82.7	77.2	244.2	43.2	2.4	22.4
IP 2	78.7	73.5	379.6	42.9	4.3	29.7
IP 3	85.5	80.8	146.4	53.4	1.1	18.4
IP 4	73.6	70.4	179.6	41.6	1.9	18.3
Urban	110.1	94.3	1,152.9	44.8	10.1	81.0
Intermediate	88.0	82.4	383.1	42.9	3.9	30.1
Rural	77.7	74.6	178.4	41.6	1.8	19.4
Mountain	83.2	76.8	217.0	48.9	2.0	23.1
Island	79.5	73.7	162.0	50.4	1.4	22.6
Lagging (<OnlyEU75%)	87.2	82.8	144.4	73.4	0.8	12.8
Lagging (<EUNAT75)	62.2	62.7	76.5	41.6	0.6	7.4
Lagging (<OnlyNAT75%)	68.6	69.5	76.0	50.4	0.4	5.0

GVA per inhabitants

Besides GDP, labour productivity can also be measured by gross value added per employed person with the result of a strong connection between these output measures[17]. Gross value added per employed person and its distribution in Europe by IP delineations and other EU regional typologies show very similar pattern to the distribution of GDP (PPS) per inhabitant. Similarities between these two examined economic indicators come from their position to the average level of EU28 and national levels, and of course, to each other.

It is worth discovering a unique position of islands in Europe: their economic productivity by GDP (PPS) almost equals with IP 1 regions (low access to regional centres), but their productivity by gross value added per employed person is the second best – but lower than the EU28 average – among the other groups of regions. The most explanatory factor of this situation is based on higher productivity of prosperous tourism and catering which is overrepresented in islands in the Mediterranean area, but on the other hand, metropolitan and urban regions (e.g. Dublin, Belfast) defined as Island regions can also increase the average level of island areas regarding this performance indicator. Better position of islands can be seen according to unstandardized and standardized data too (Figure 3.10).

One of the similarities between distribution characteristics of groups of inner periphery delineations and other EU regional typologies is based on that all of the examined groups of NUTS 3 regions – except for urban areas – have more or less disadvantaged position in relation to their national averages.

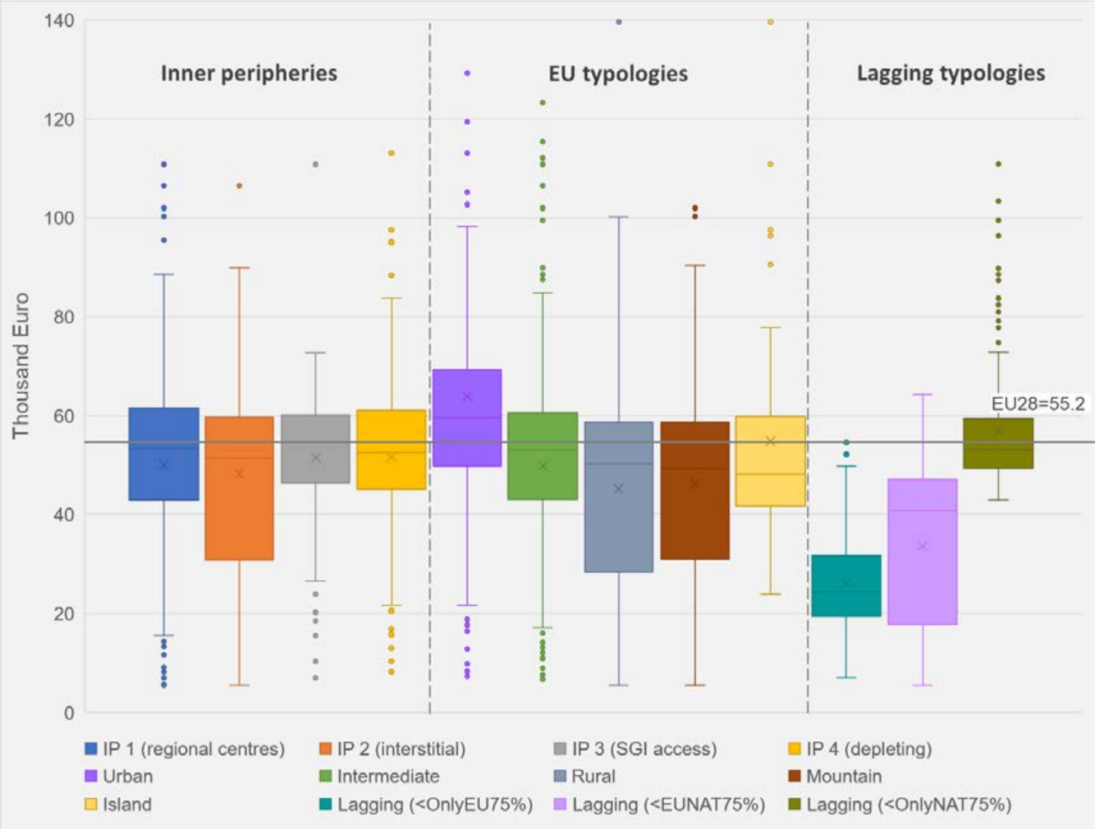
Only one exception is the group of Urban regions with its highest value of arithmetic mean and the outstanding maximum values of e.g. in Camden & City of London, Milton Keynes, Dublin, Munich, Paris, Oslo etc. From the aspect of economic productivity urban areas stand out with their higher rates of highly qualified, active working age population and share of employed persons in tertiary and quaternary sector of the economy.

The other similarity between areas defined as inner peripheries and other European regions can be observed in the minimum values. Firstly, these minimum values – less than 10 Thousand Euro – really represent those regions from across Europe which have multiple socio-economic problems. Secondly, the more unfavourable position of them is also underlined by nationally standardized data: majority of examined groups of regions have minimum values less than 60% compared to national averages. Thirdly, these regions with socio-economic handicaps and their territorial distribution show typical spatial patterns in Europe: majority of them can be found in East Central Europe, but many others are located in the Mediterranean part of Europe. In all four groups of delineated inner peripheries – the highest GVA values are occurred in the Benelux countries, Scandinavian nations, the UK, Germany and Austria.

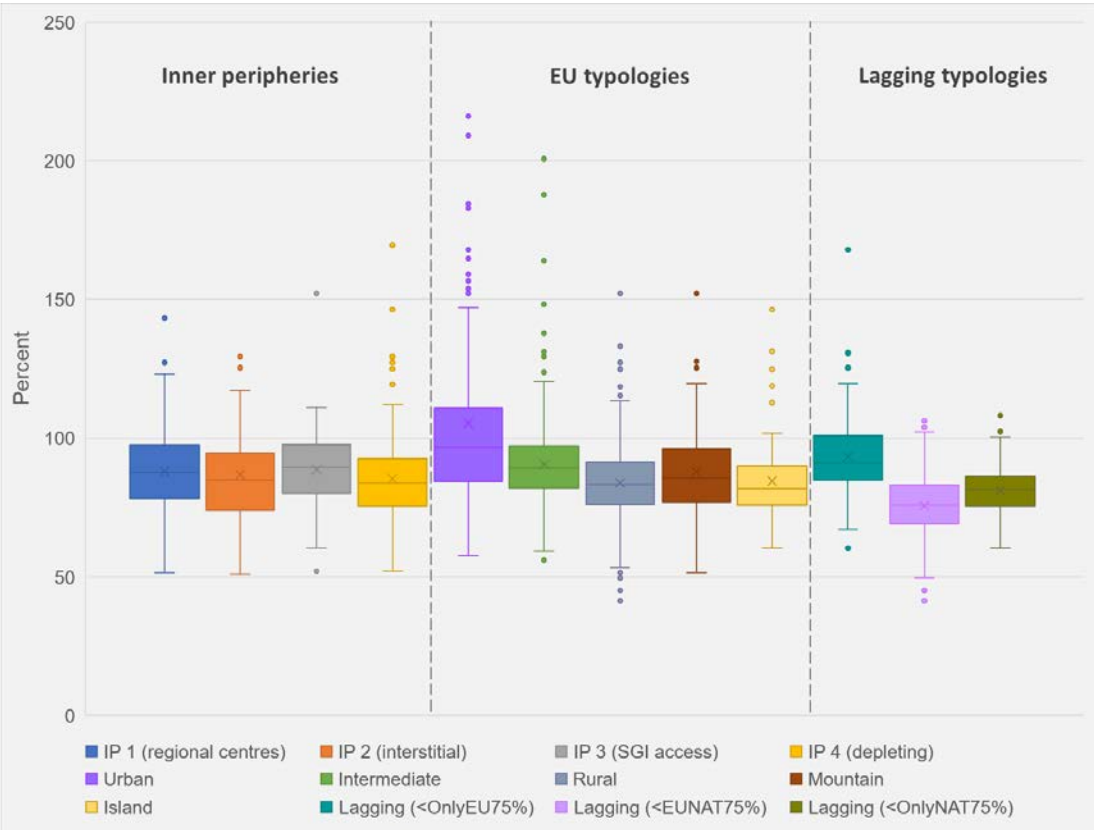
Among the groups of IPs there is no significant difference if we examine their position by GVA per inhabitants based on standardized data as percentages of national averages. Their arithmetic mean changes between 85.3% and 88.6% which is lower than their national averages, but this gap is not large-scale. In majority of IP groups minimum values are belonging to post-socialist countries based on their relative position to the national averages. The exception is the group of IP 3 (SGI access) where the worst accessibility goes together with the lowest level of GVA especially in those inner peripheral regions which can be found in e.g. Greece or in the UK.

Figure 3.10: Gross value added per employed person in Europe by IP delineations and EU regional typologies, 2014

A – unstandardized



B – standardized as percentages of national averages



Generally, a little bit worse position of IP 2 regions (interstitial) is detected compared to other territories identified as inner peripheries. Among IP 1 (regional centres) and IP 3 (SGI access) regions Luxembourg has the highest level of gross value added per person employed. Among IP 2 (interstitial) and IP 4 (depleting) regions from the UK have the highest level of gross value added per person employed.

Table 3.9: Descriptive statistics related to GVA per inhabitant data

A – unstandardized

	Mean	Median	Max.	Min.	Relative range (max-min) / mean	Std. Deviation
	Thousand Euro					
IP 1	50.1	53.4	110.8	5.6	2.1	20.7
IP 2	48.2	51.4	239.5	5.6	4.9	25.7
IP 3	51.5	54.8	110.8	7.0	2.0	15.7
IP 4	51.6	52.5	113.1	8.2	2.0	14.7
Urban	63.9	59.6	771.4	7.3	12.0	50.2
Intermediate	49.9	53.1	123.3	6.6	2.3	19.3
Rural	45.2	50.3	139.6	5.6	3.0	20.0
Mountain	46.3	49.4	101.9	5.6	2.1	19.4
Island	54.8	48.2	162.4	24.0	2.5	25.7
Lagging (<OnlyEU75%)	26.1	24.4	54.5	6.9	1.8	10.5
Lagging (<EUNAT75)	33.6	40.8	64.4	5.6	1.7	16.8
Lagging (<OnlyNAT75%)	56.9	53.2	110.8	42.9	1.2	12.0

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	87.8	87.5	143.3	51.5	1.0	14.2
IP 2	86.7	84.9	359.1	50.9	3.6	26.6
IP 3	88.6	89.4	152.2	52.1	1.1	13.9
IP 4	85.3	83.9	169.6	52.1	1.4	14.7
Urban	105.3	96.7	1,156.7	57.8	10.4	72.7
Intermediate	90.6	89.2	200.7	55.9	1.6	14.6
Rural	83.8	83.3	152.2	41.4	1.3	13.9
Mountain	87.9	85.8	152.3	51.5	1.1	15.1
Island	84.5	81.7	146.3	60.4	1.0	16.7
Lagging (<OnlyEU75%)	93.3	91.1	168.0	60.4	1.2	14.6
Lagging (<EUNAT75)	75.6	75.9	107.2	41.4	0.9	10.9
Lagging (<OnlyNAT75%)	81.2	81.4	108.1	60.5	0.6	8.1

Labour productivity by gross value added per employed person results in almost the same position for IP 2 and Rural regions, however maximum values are higher in the group of rural areas (e.g. in Ireland, Norway, Germany). Clear differences are proved between IP regions delineated by ESPON PROFECY project and lagging regions (defined by the level of GDP per capita). It is also confirmed by the finding that the average GVA per capita level of Lagging (<OnlyEU75%) regions (economic performance is lower than 75% of EU average, but higher than 75% of national averages) only can reach 50% of the average level of inner peripheries regarding the four groups of delineations. Among lagging areas, Lagging (<OnlyNAT75%) regions (considered to be lagging only in national contexts) have the most favourable position according to descriptive statistics (Table 3.9).

In summary, inner peripheries identified by delineation processes of the project show better economic productivity than labour productivity when considering nationally standardized data. However, the gap among regions may be narrower when analysing labour productivity than when analysing GDP per capita[18].

Employment in manufacturing industry

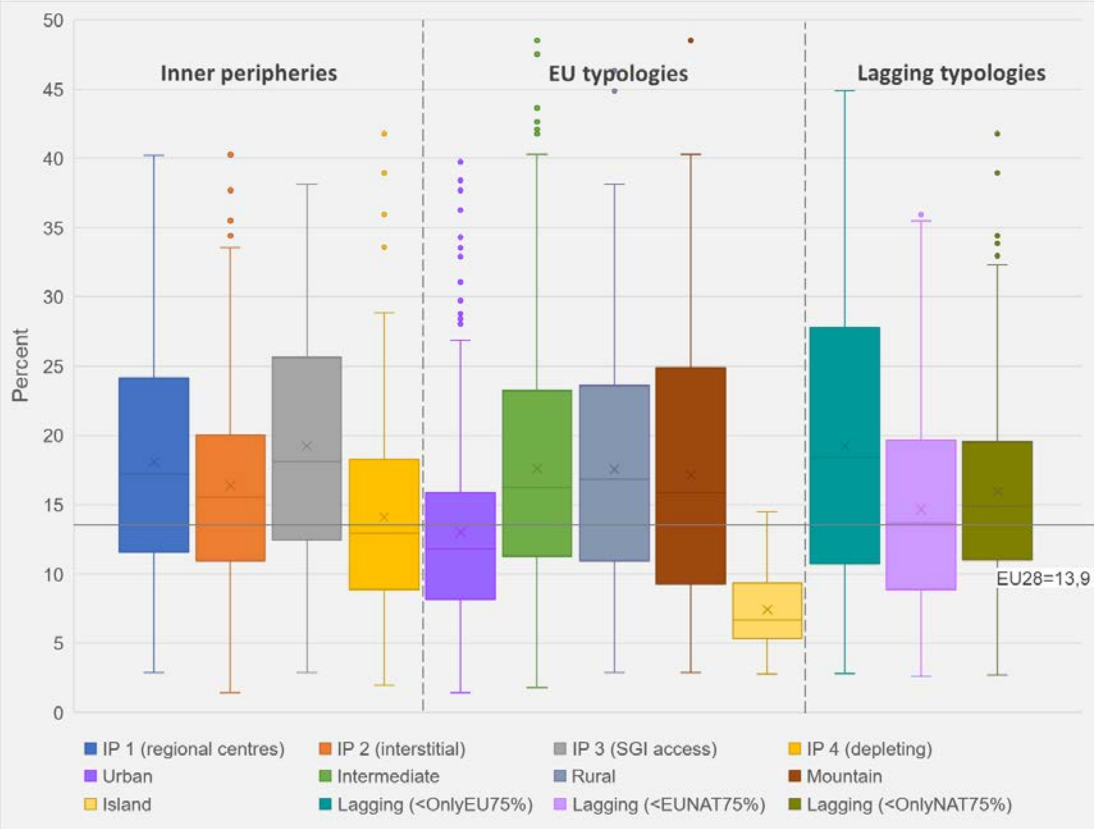
The manufacturing sector includes a vast range of activities and production techniques, from small-scale enterprises using traditional production techniques to very large enterprises sitting atop a high and broad pyramid of parts and components suppliers collectively manufacturing complex products. The manufacturing sector is probably the most varied activity within the non-financial business economy at the NACE section level of detail[19].

Ratio of employed persons working in manufacturing industry (NACE Rev.2 C) in Europe by IP delineations and other EU regional typologies show quite concentrated pattern among the European NUTS 3 regions (Figure 3.11). The EU28 average is 13.9%. Island regions are recording very low shares of manufacturing employment, while other groups of regions have much higher level of manufacturing employment, including inner peripheries. The concentration of people employed in manufacturing industry is also relatively low in most of the urban regions in Europe, because these areas are particularly concentrating high-quality, knowledge-intensive activities, tertiary jobs or labour market opportunities related to R&D&I sector. At the same time, it is worth declaring that Urban regions were also hit seriously by the latest economic crisis and suffered temporary recession in e.g. manufacturing activities with the result of decreasing number and rate of workers in manufacturing industry. Thus, the arithmetic mean and median, or the maximum and minimum values of Urban regions are the second lowest among the examined regions by this economic indicator.

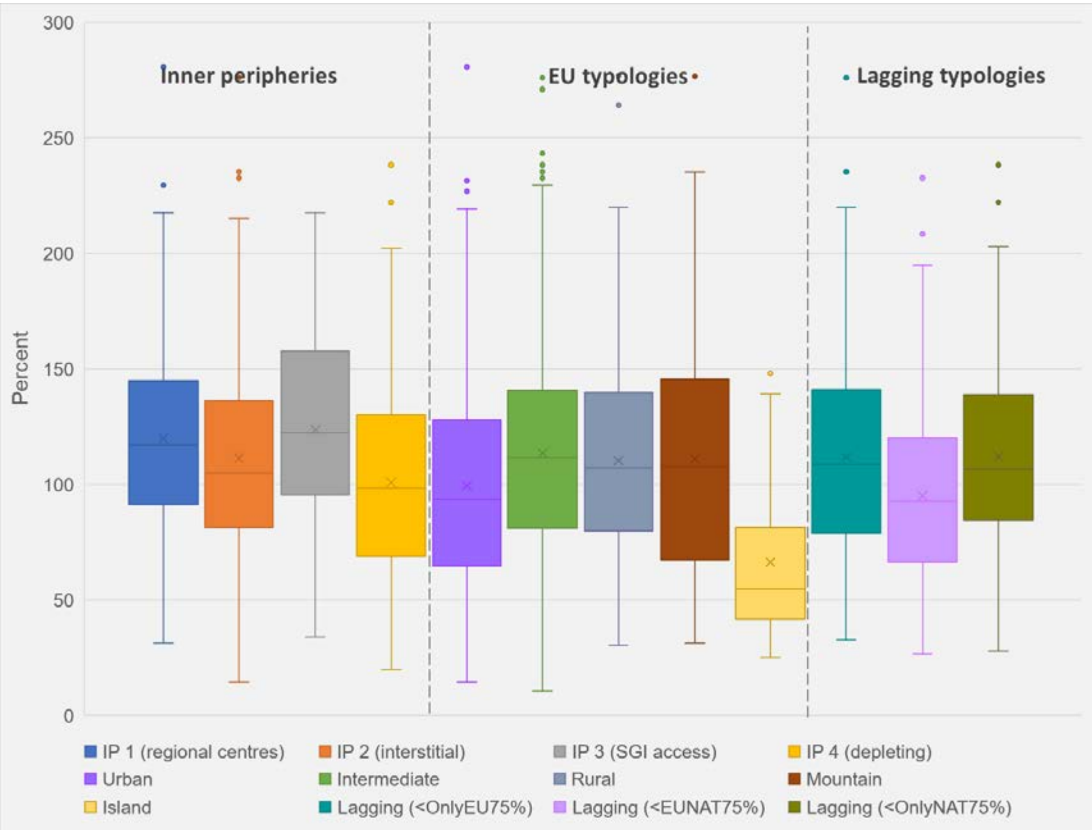
Among IP delineations, similarities are much stronger than differences. IP regions are representing higher level of employed persons working in manufacturing industry across all over Europe. Among IP regions, only IP 4 (depleting) regions are standing with lower level of this labour market indicator. The average level of inner peripheries (arithmetic mean) varies between 14.1% and 19.2%, while they are highly above their national average, except for the group of depleting inner peripheries (IP 4), which equals with it.

Figure 3.11: Ratio of employed persons working in manufacturing industry (NACE Rev.2 C) in Europe by IP delineations and EU regional typologies, 2014

A – unstandardized



B – standardized as percentages of national averages



If we examine the standardized data as percentages of national averages, similar patterns can be seen, but besides the urban and island areas, Lagging (<EUNAT75%) regions have also lower level of employed persons working in manufacturing industry than averages measured at national levels. In other groups of NUTS 3 regions – also including inner peripheries – there are higher rates of workers in manufacturing industry than their national average. The highest arithmetic mean can be experienced just in IP 3 regions (123.6%), while the group of IP 4 regions almost equals with the national average (100.8%). This fact may indicate the differences among inner peripheries based on standardized data as percentages of national averages. It means the best position for IP 4 regions, the worst situation for IP 3 regions, while IP 1 and IP 2 regions have a medium position among IPs. We can conclude that accessibility-based inner peripheries (mainly IP 3 regions) are in strong connection with higher rate of employed persons working in manufacturing industry.

The closest connection can be experienced firstly, between IP and different types of lagging regions (especially between IP 3 and Lagging [<OnlyNAT75%]). Secondly, similarities might occur for example, between the group of IP 2 (interstitial) and the groups of Rural and Intermediate regions, according to descriptive statistics (Table 3.10). Thirdly, similarities among IPs might be detected between IP 1 and IP 3 regions based on their arithmetic mean, median, maximum and minimum values.

The clear difference is mainly appeared between Island regions and other typologies with the result of the lowest level of manufacturing employment in islands.

At the top end of the scale among regions defined as inner peripheries, areas from both Western European and East Central European countries might record a more than 30% share of employed persons working in manufacturing industry. For instance, majority of these Western European regions can be found in the Northern part of Italy (e.g. Reggio nell'Emilia) or in Bavaria of Germany, while East Central European inner peripheries with higher share in manufacturing industry are located in the Czech Republic, Poland, Slovenia, Bulgaria or Romania. At the other end of the scale, the IP regions with the lowest share (10% or less) of employers in the manufacturing sector are in Southern European states, Benelux countries, the United Kingdom or in Scandinavia.

The relative importance of manufacturing industry in the economy is based on its specialisation which differs within the groups of inner peripheries. It is worth analysing the faces of the specialisation at the subsector level of manufacturing industry according to countries with the highest shares of employed people working in manufacturing industry. For example, Italy is the largest in the specialisation in manufacturing of the textiles, wearing apparel, and leather products; the German specialisation is for the manufacture of machinery and equipment; high specialisation ratios are recorded in Slovenia for the manufacture of fabricated metal products and basic pharmaceutical products and preparations[19].

Table 3.10: Descriptive statistics related to manufacturing employment data

A – unstandardized

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	18.1	17.2	40.3	2.9	2.1	7.9
IP 2	16.4	15.5	40.3	1.4	2.4	7.9
IP 3	19.2	18.1	38.2	2.9	1.8	8.3
IP 4	14.1	12.9	41.8	1.9	2.8	7.2
Urban	13.0	11.8	39.8	1.4	2.9	7.1
Intermediate	17.6	16.2	48.5	1.8	2.7	8.4
Rural	17.6	16.8	46.3	2.9	2.5	8.5
Mountain	17.2	15.9	48.5	2.9	2.7	9.3
Island	7.4	6.7	14.5	2.8	1.6	3.1
Lagging (<OnlyEU75%)	19.2	18.4	44.9	2.8	2.2	10.0
Lagging (<EUNAT75)	14.6	13.7	36.0	2.6	2.3	7.0
Lagging (<OnlyNAT75%)	15.9	14.9	41.8	2.7	2.5	6.8

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	119.7	117.0	280.7	31.5	2.1	41.9
IP 2	111.4	104.9	276.2	14.5	2.3	45.7
IP 3	123.6	122.3	217.7	34.0	1.5	42.2
IP 4	100.8	98.2	238.3	19.9	2.2	41.5
Urban	99.3	93.6	280.7	14.5	2.7	46.8
Intermediate	113.4	111.7	276.7	10.4	2.3	45.8
Rural	110.2	107.2	277.0	30.5	2.2	43.2
Mountain	111.0	107.8	277.0	31.5	2.2	53.0
Island	66.4	54.9	148.1	24.9	1.9	31.2
Lagging (<OnlyEU75%)	111.9	108.8	275.9	32.6	2.2	46.0
Lagging (<EUNAT75)	94.9	92.7	232.6	26.5	2.2	37.6
Lagging (<OnlyNAT75%)	112.0	106.7	238.3	27.7	1.9	38.5

The indicator of ratio of population (25–64) with low qualification (ISCED 0–2) and its distribution among groups of regions by IP delineations and EU regional typologies draws attention a typical connection with the rate of employed persons working in manufacturing industry. Intermediate regions have lower arithmetic mean than inner peripheries have which means more people with low qualification can be found in inner peripheral regions. Firstly, poorer regions are primarily affected by this problem. For example, in Spain, higher concentrations of people with low qualification are found in the poor regions of the country, in regions of Extremadura, Andalucía, Castilla la Mancha and Galicia[20]. Secondly, higher level of manufacturing industry employees combines with lower level of low qualification in inner peripheries implies that most likely higher qualified employees work in manufacturing industry.

In summary, most of similarities between IP delineations and especially lagging regions can be observed by the ratio of employed persons working in manufacturing industry (NACE Rev.2 C) compared to other examined economic or demographic indicators.

To conclude the results and experiences related to demographic, labour market and economic factors, generally inner peripheries are defined by socio-economic rather than geographic characteristics, or distance from centres of economic activity[21]. Often, they are affected by economic restructuring; the loss of a key industry and high unemployment. Unlike true geographic specificities they are mutable or transient rather than permanent[22]. Perhaps this transient position can be an explanatory factor not to appear inner peripheries as the most disadvantaged regions among other EU typologies.

3.3.4 Entrepreneurship status

Number of active enterprises

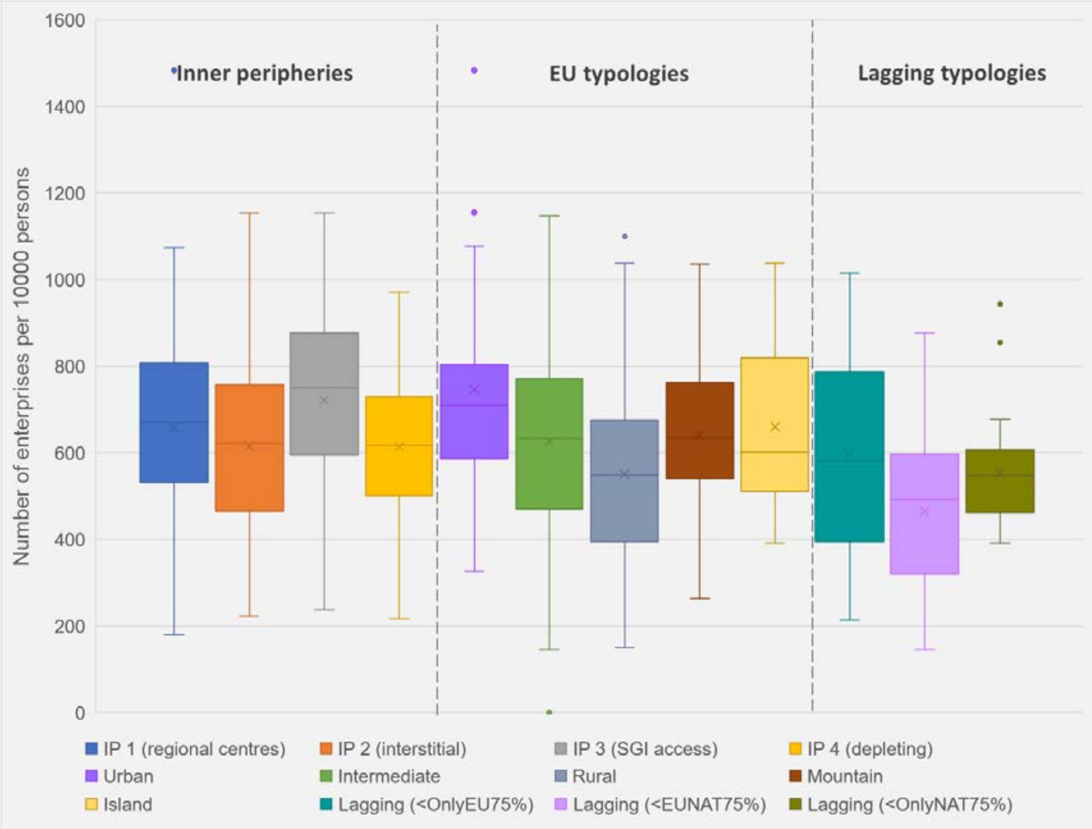
Number of active enterprises per 10,000 persons is an important indicator of business economy and business demography, so do indicators of birth rate of enterprises and three year survival rate of enterprises. Distribution characteristics of these measures by groups of IP delineations and other EU regional typologies, unfortunately cannot cover all European countries, since the dataset used only includes a narrow selection of countries with data available: Austria, Bulgaria, Czech Republic, Denmark, Spain, France, Croatia, Hungary, Italy, Lithuania, Portugal, Romania and Slovakia.

Business demography provides information for numbers, births, and survival rates of enterprises, as well as indirect information on related employment[23]. The largest number of active enterprises is registered in urban regions as well as in IP 3 (SGI access) regions, but it also reaches a considerable level in the group of IP 1 (regional centres), IP 2 (interstitial), intermediate regions, mountainous areas and islands too (the average is above 600 per 10,000 people).

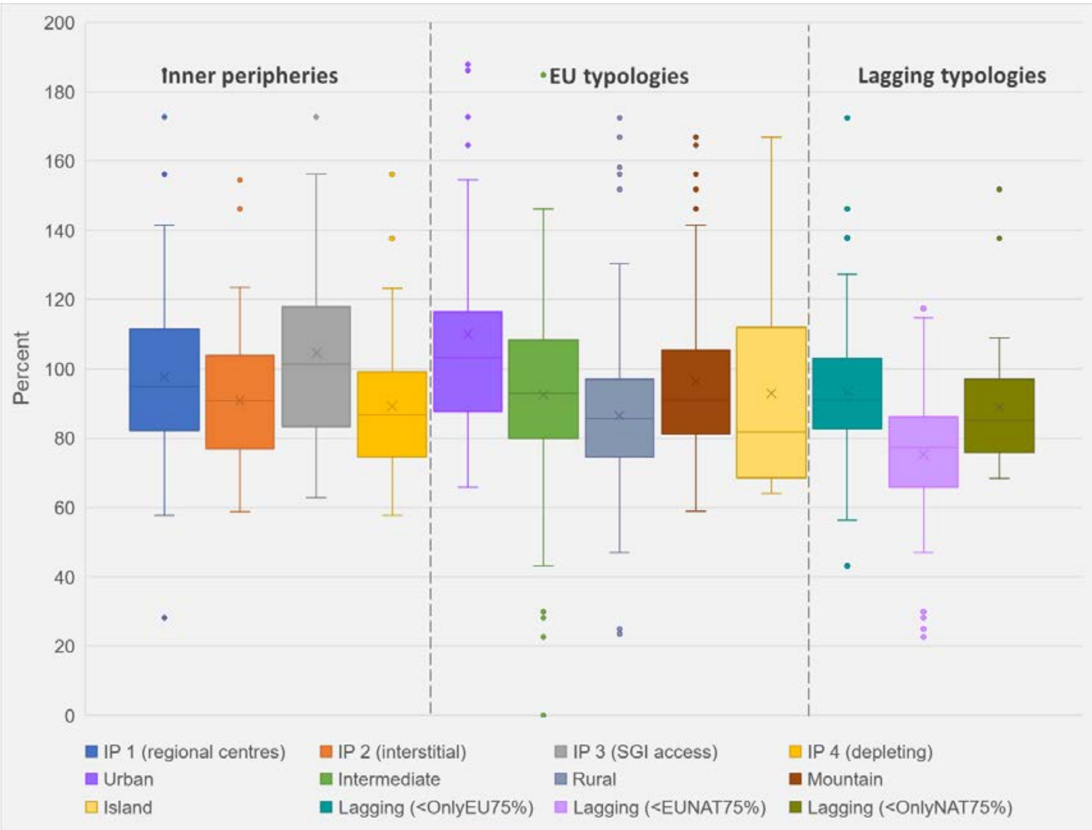
Regarding unstandardized data, there are no significant differences between the four groups of inner peripheral areas identified by ESPON PROFECY project (Figure 3.12). Nevertheless, the position of IP 3 regions seems to be better than others based on its standardized data as percentages of national averages (see descriptive statistics) (Table 3.11). For example, among IP 1 regions the largest number of active enterprises is detected in Slovakia, Czech Republic, France, Italy, while among IP 2, IP 3 and IP 4 (depleting) regions, areas from Southern European are overrepresented regarding these characteristics (e.g. Italy, Portugal, Spain).

Figure 3.12: Number of active enterprises per 10000 persons in Europe by IP delineations and EU regional typologies, 2013

A – unstandardized



B – standardized as percentages of national averages



These findings are in accordance the results of analyses by Eurostat (based on data from 2014): the largest active enterprise population is registered in Italy (3.9 million), followed by France (3.4 million) and Spain (2.9 million). The services sector was dominant in every country, as measured by the highest proportion of active enterprises in 2014[23].

Table 3.11: Descriptive statistics related to data on active enterprises

A – unstandardized

	Mean	**Median**	**Max.**	**Min.**	**Relative range (max-min) / mean**	**Std. Deviation**
	No. of enterprises per 10,000 persons					
IP 1	658.0	669.8	1,483.3	179.8	2.0	206.0
IP 2	614.2	622.9	1,154.8	221.8	1.5	200.8
IP 3	721.1	750.7	1,154.8	237.2	1.3	201.0
IP 4	613.4	616.7	970.4	217.3	1.2	165.8
Urban	746.0	709.4	1,775.6	325.8	1.9	251.6
Intermediate	629.0	634.0	1,923.8	144.3	2.8	215.1
Rural	550.6	547.9	1,098.8	150.1	1.7	204.0
Mountain	640.0	634.4	1,036.6	262.8	1.2	163.1
Island	660.0	602.3	1,038.2	391.8	1.0	181.0
Lagging (<OnlyEU75%)	597.3	581.1	1,015.5	212.9	1.3	227.9
Lagging (<EUNAT75)	464.7	492.7	877.6	144.3	1.6	171.4
Lagging (<OnlyNAT75%)	553.8	546.4	943.5	391.8	1.0	111.2

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	97.8	94.8	186.1	28.2	1.6	22.9
IP 2	90.9	90.7	154.4	58.7	1.1	20.0
IP 3	104.6	101.2	172.7	62.8	1.1	25.1
IP 4	89.3	86.8	156.2	57.6	1.1	17.9
Urban	109.9	103.2	285.8	65.8	2.0	38.6
Intermediate	93.0	92.9	185.0	22.7	1.7	21.7
Rural	86.6	85.6	172.5	23.6	1.7	20.4
Mountain	96.3	91.0	166.8	59.0	1.1	21.1
Island	93.0	81.8	166.8	64.0	1.1	29.7
Lagging (<OnlyEU75%)	93.3	90.9	172.5	43.2	1.4	19.1
Lagging (<EUNAT75)	75.3	77.3	117.4	22.7	1.3	17.6
Lagging (<OnlyNAT75%)	89.0	85.0	151.9	68.3	0.9	17.2

The smallest number of active enterprises from regions defined as inner peripheries is detected especially in post-socialist countries (e.g. in Bulgaria, Romania, Croatia), but there are some disadvantaged regions from this aspect in France both in IP 2, IP 3 and IP 4 groups. In comparison of groups of inner peripheries with high travel time to regional centres and economic potential interstitial areas, similarities are emphasized, but some data from descriptive statistics show a little bit more unfavourable position of IP 2 regions compared to IP 1 regions according to their lower level of mean, median and maximum values. Positions of the group of IP 4 regions seems to be more similar to the group of IP 2 regions, while in general, the best positions regarding density of enterprises usually belongs to the group of IP 3 regions. According to unstandardized data, among the examined regions the group of IP 3 regions has the second best position – after Urban regions – based on average level of number of active enterprises per 10000 persons. This fact is also actual according to standardized data as percentages of national averages. Thus, the group of IP 3 regions has only higher arithmetic mean than national average.

The comparison of regions identified as inner peripheries with other typologies might outline more advantages of inner peripheries. From this aspect, rural or lagging areas among the examined groups of European NUTS 3 regions have the most handicaps due to the examined indicator. Thus, those regions which are defined as Lagging (<EUNAT75%) regions due their low economic performance compared to both the EU average and national average levels, have the lowest level of mean and maximum value among the examined groups of regions processed into this analysis.

In summary, number of active enterprises can confirm the relatively better position of regions defined as inner peripheries in ESPON PROFECY project. In other words, inner peripheral status does not go together with the lack of active enterprises. It is also current for accessibility-based inner peripheries (IP 3). Namely, worse accessibility does not go together with lack of active enterprises.

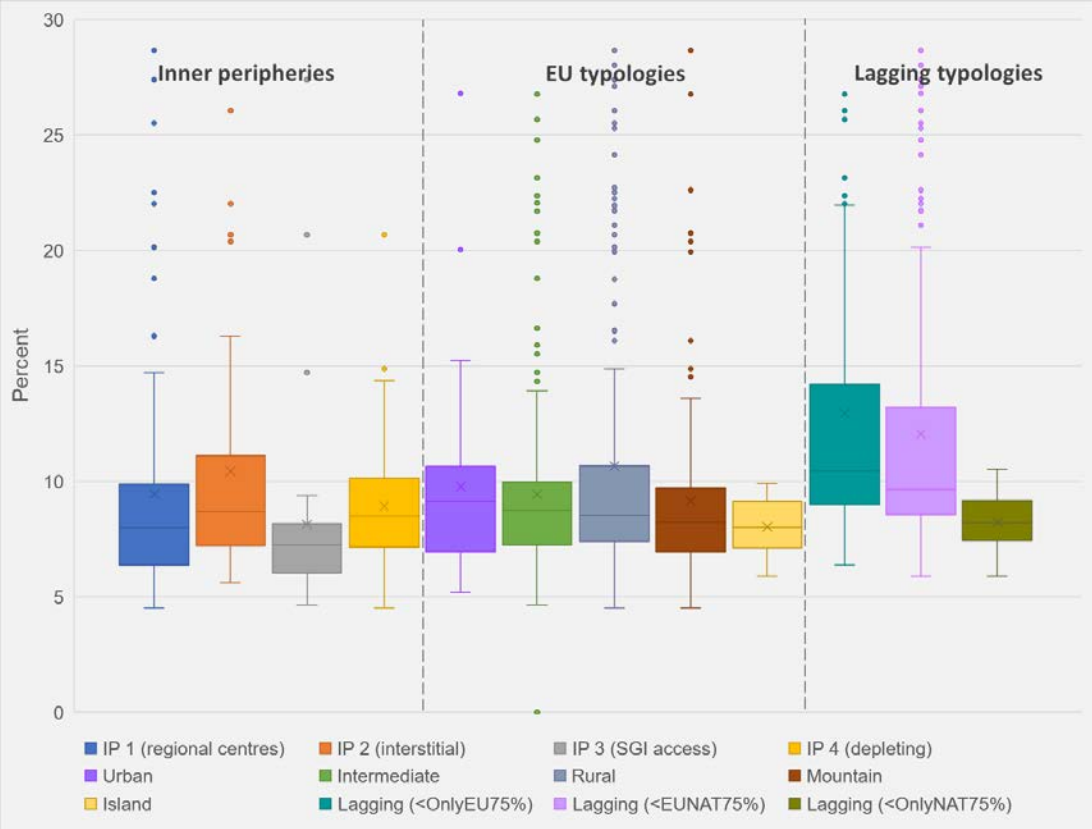
Birth rate of enterprises

The birth of new enterprises is often seen as one of the key determinants of job creation and economic growth. Enterprise births are thought to increase the competitiveness of a region's enterprise population, by obliging them to become more efficient in view of newly emerging competition. As such, they stimulate innovation and facilitate the adoption of new technologies, while helping to increase overall productivity within an economy[23].

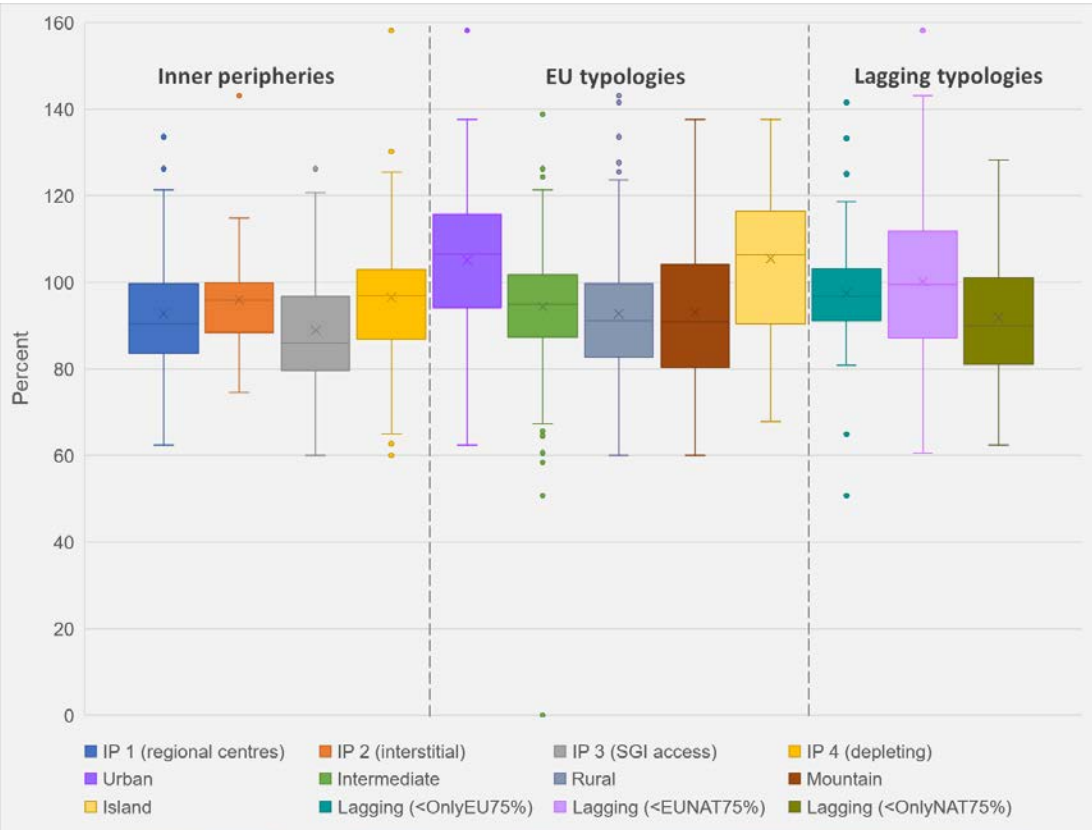
In general, if increasing the possibilities of becoming disadvantaged regions – and other areas belonging to the groups of inner peripheral, rural or lagging regions – the birth rate is also increasing. For example, groups of IP regions have quite good position across the examined typologies of regions regarding their number of active enterprises, but due to the lower birth rate, they remain in midfield position among NUTS 3 regions. In other words, very good or the best position of regions according to their number of active enterprises cannot guarantee the similar better position due to the birth rate of enterprises.

Figure 3.13: Birth rate of enterprises (compared to the number of active enterprises) in Europe by IP delineations and EU regional typologies, 2013

A – unstandardized



B – standardized as percentages of national averages



Moderate differentiation can be detected among IP regions identified by the project with the result of relative better position of IP 2 regions (interstitial) due to its mean and median, or higher maximum and minimum values (Figure 3.13). The mean of birth rate of enterprises in inner peripheries varies between 8.1% and 10.4%. According to standardized data as percentages of national averages, the arithmetic mean of birth rate of enterprises regarding inner peripheries are generally lower than national averages, and varies between 88.9% and 96.5% (Table 3.12). This gap is smallest for IP 4 regions, while the largest for IP 3 regions. It seems inner peripheries create more compact group in comparison to unstandardized data rather than standardized data. Many outliers belong to IP 1 and IP 2 regions based on standardized data, while these outliers do not appear by standardized data.

Similarities between IP delineations and other groups of NUTS 3 regions are coming from the maximum values of birth rate: approximately, one third rate of active enterprises is newly born in all groups (except for islands), while the level of minimum values is around 4.5–6.0%. Generally, the mean level of birth rate varies between 8.0% and 12.9% with the highest rate in Lagging (<OnlyEU75%) regions and the lowest rate in islands. There is an interesting fact: Island regions are in the worst position according to unstandardized data, but the birth rate of enterprises (compared to the number of active enterprises) is higher in islands than their national averages.

In the comparison of inner peripheral regions with lagging regions we can conclude that besides strong similarities between these two groups, lagging regions have a little bit more advantaged position compared to inner peripheries. Considering geographical patterns of birth rate of enterprises in inner peripheral regions, several assumptions can be highlighted. On the one hand, many of regions defined as inner peripheries are located in Romania or in Portugal with the maximum values of birth rate, on the other hand, the lowest level based on minimum values is detected in inner peripheries mainly from Italy or Spain.

In summary, the most important highlight is that the more advantages of IPs based on number of active enterprises might be lost due to birth rate of enterprises. It is current especially for IP 3 regions which have the best position among IPs based on number of active enterprises while this is eliminated due to birth rate of enterprises.

Table 3.12: Descriptive statistics related to birth rate of enterprises

A – unstandardized

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	9.5	8.0	28.7	4.5	2.6	5.0
IP 2	10.4	8.7	32.5	5.6	2.6	5.3
IP 3	8.1	7.2	27.4	4.6	2.8	4.3
IP 4	8.9	8.5	20.7	4.5	1.8	2.7
Urban	9.8	9.1	30.2	5.2	2.6	4.5
Intermediate	9.5	8.7	26.9	4.6	2.4	4.0
Rural	10.6	8.5	32.5	4.5	2.6	5.6
Mountain	9.2	8.2	28.7	4.5	2.6	4.2
Island	8.0	8.0	9.9	5.9	0.5	1.2
Lagging (<OnlyEU75%)	12.9	10.5	30.2	6.4	1.8	5.8
Lagging (<EUNAT75)	12.1	9.6	32.5	5.9	2.2	5.8
Lagging (<OnlyNAT75%)	8.2	8.2	10.5	5.9	0.6	1.1

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	92.7	90.5	133.6	62.4	0.8	14.4
IP 2	96.0	96.0	143.1	74.6	0.7	11.5
IP 3	88.9	86.0	126.3	60.0	0.7	14.9
IP 4	96.5	97.0	158.2	60.0	1.0	14.9
Urban	105.1	106.4	158.2	62.4	0.9	18.0
Intermediate	94.9	95.0	138.8	50.8	0.9	13.5
Rural	92.7	91.1	143.1	60.0	0.9	14.8
Mountain	93.0	91.0	137.7	60.0	0.8	17.5
Island	105.5	106.4	137.7	67.8	0.7	17.3
Lagging (<OnlyEU75%)	97.6	96.8	141.5	50.8	0.9	12.8
Lagging (<EUNAT75)	100.2	99.5	158.2	60.6	1.0	17.5
Lagging (<OnlyNAT75%)	91.9	90.0	128.2	62.4	0.7	15.5

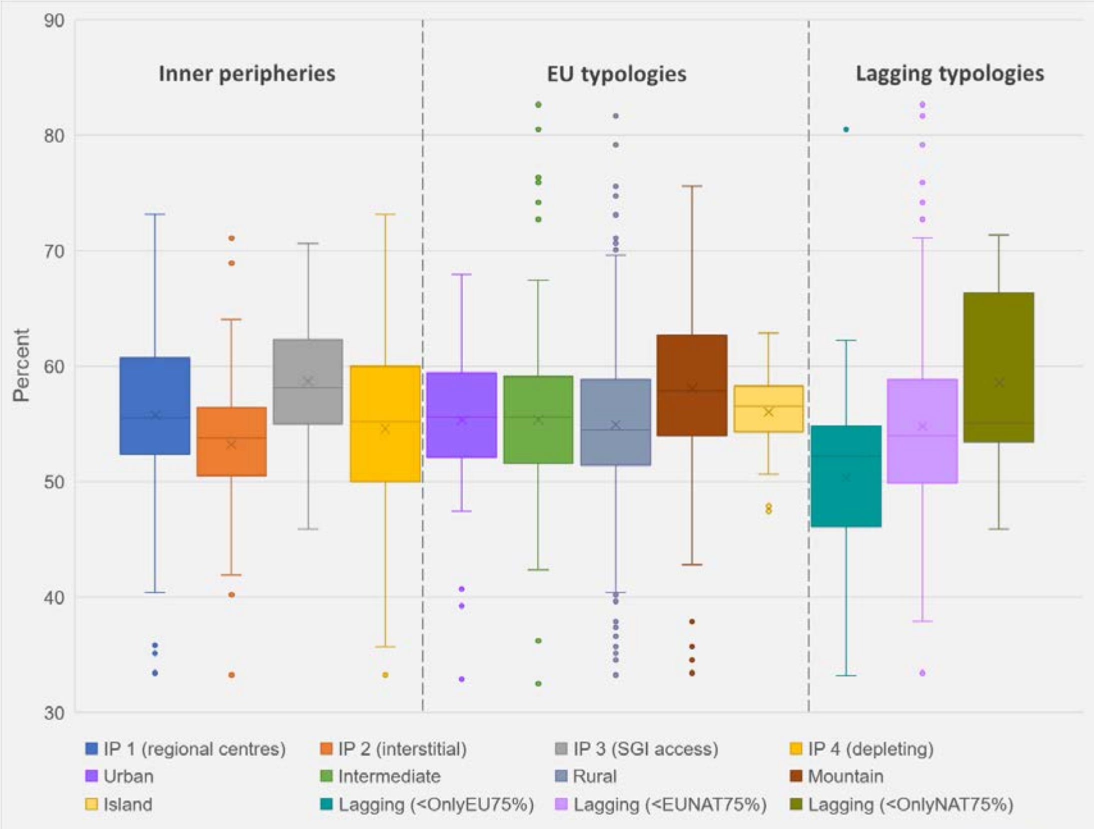
Survival rate of enterprises

Contrary to the more static indicators of business demographics, the focus in examination of three year survival rate of enterprises is to present information about the life cycle of newly born enterprises and the ability to survive up to three years after their creation.

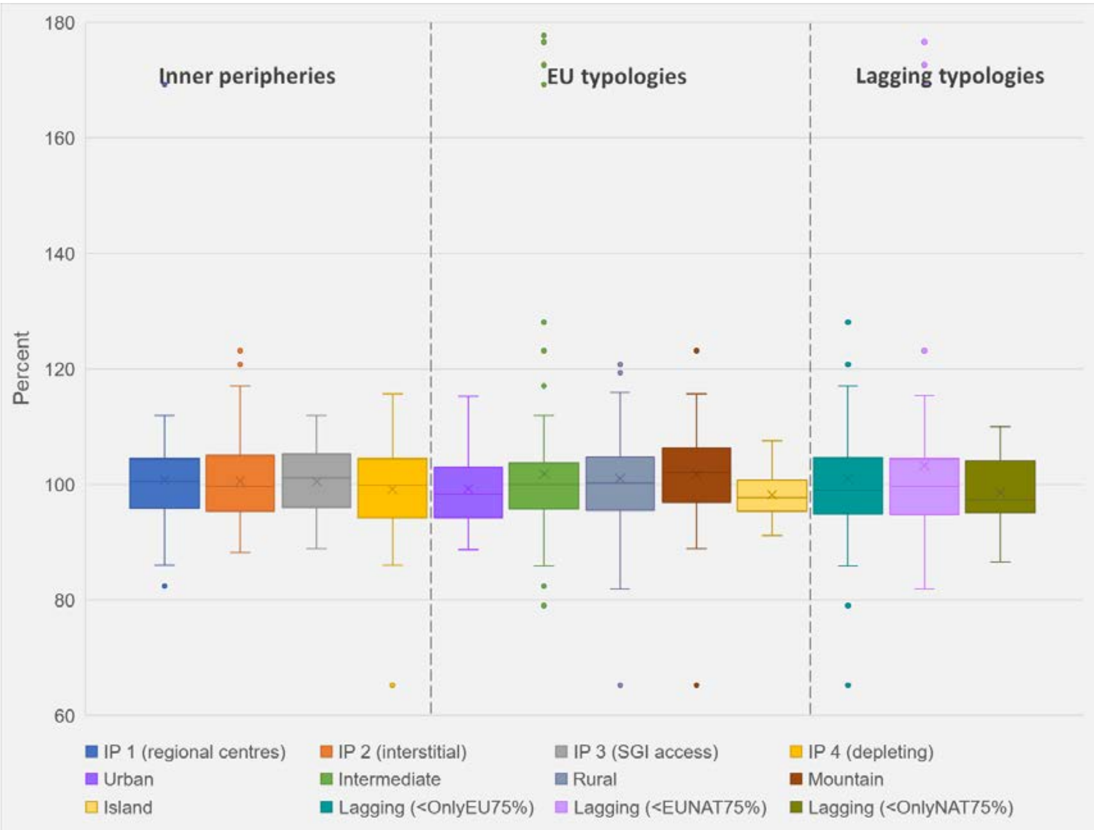
All examined groups appear as very compact according to standardized data as percentages of national averages (Figure 3.14). On the other hand, some differences can be experienced among them according to unstandardized data, but these differences are not so much significant or very considerable.

Figure 3.14: Three year survival rate of enterprises (born in t-3) in Europe by IP delineations and EU regional typologies, 2013

A – unstandardized



B – standardized as percentages of national averages



Considering both unstandardized and standardized data as percentages of national averages, we can see relatively good positions in all examined groups of identified inner peripheries in comparison with other types of territories in Europe. Firstly, all groups of IP regions are above their national level regarding the measure of survival rate of enterprises, which implies more advantaged position within their countries. Only average level of IP 4, Urban, Island, Lagging (OnlyNAT75%) regions are below of their national average, but the level of backwardness in this sense is quite low (they all reach 98–99% compared to national averages). Secondly, there are no significant differences among NUTS 3 regions, since their mean level based on unstandardized data changes between 50.3% and 58.7%.

Minimum level varies between 32.5% and 47.4%: it means at least one third of enterprises exist three years after their birth date. South European regions are overrepresented among regions with lower levels, but some regions from East Central European, post-socialist countries are also can be found among them.

Among the groups of inner peripheries IP 3 regions appear again with their better average position based on unstandardized data. But this advantage is not so much significant compared to other IPs. Anyway, the group of IP 3 regions seems the most compact among IPs, because it has not got any outliers. Inner peripheries might be more compact due to the standardized data as percentages of national averages. Only IP 4 regions are slightly lagging behind other IP regions.

The highest average level of three year survival rates is recorded for the group of mountainous, IP 4 (depleting) and Lagging (<OnlyNAT75%) regions (as average both above 58%) (Table 3.13). Urban regions are not represented among European regions with the most advantaged positions. The lowest average level of this business demography indicator is reported in the group of Lagging (<OnlyEU75%) regions. A paradox situation is coming from that one of the maximum values can be detected in this group. The highest maximum values can be experienced in the group of Intermediate, Rural, Lagging (<OnlyEU75% and <EUNAT75%) regions (more than 80%). In other words, enterprises have higher survival rates in these regions. For example, many of them are from Latvia.

Slight differences can be found between inner peripheries and lagging regions with relatively better position of IP regions. Probably, similarities could also be seen between the groups of depleting inner peripheries (IP 4) and Lagging (<EUNAT75%) regions according to the presented descriptive statistics.

Comparing enterprise survival rate to birth rate of enterprises and the number of active enterprises, it can be seen that the most disadvantaged regions are Lagging (<EUNAT75% and <OnlyNAT75%) regions in this respect. In these groups of NUTS 3 regions, the number of active enterprises is relatively low, and despite of the highest level of birth rate, enterprises are unviable. It results that the half of newly born enterprises is not existing three years later in those lagging regions where the development level measured as GDP per capita is lower than 75% compared both to EU average and national levels.

Table 3.13: Descriptive statistics related to survival rate of enterprises

A – unstandardized

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	55.8	55.5	73.1	33.4	0.7	7.5
IP 2	53.2	53.8	71.1	33.2	0.7	7.0
IP 3	58.7	58.1	70.7	45.9	0.4	5.5
IP 4	54.6	55.2	73.1	33.2	0.7	8.6
Urban	55.3	55.6	68.0	32.9	0.6	6.0
Intermediate	55.6	55.6	82.7	32.5	0.9	6.9
Rural	54.9	54.5	81.7	33.2	0.9	8.4
Mountain	58.0	57.9	75.6	33.4	0.7	7.9
Island	56.0	56.6	62.9	47.4	0.3	3.7
Lagging (<OnlyEU75%)	50.3	52.2	80.5	33.2	0.9	7.4
Lagging (<EUNAT75)	54.8	54.0	82.7	33.4	0.9	8.0
Lagging (<OnlyNAT75%)	58.6	55.1	71.3	45.9	0.4	7.0

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	100.8	100.5	169.3	82.4	0.9	9.2
IP 2	100.6	99.7	123.1	88.2	0.3	7.5
IP 3	100.5	101.1	111.9	88.8	0.2	5.6
IP 4	99.2	99.9	115.7	65.2	0.5	8.3
Urban	99.2	98.4	115.2	88.6	0.3	6.1
Intermediate	102.3	100.1	192.4	79.0	1.1	16.1
Rural	101.0	100.2	190.1	65.2	1.2	11.3
Mountain	101.8	102.1	123.1	65.2	0.6	7.3
Island	98.2	97.7	107.6	91.1	0.2	4.4
Lagging (<OnlyEU75%)	101.0	99.0	187.4	65.2	1.2	12.9
Lagging (<EUNAT75)	103.2	99.6	192.4	81.9	1.1	19.7
Lagging (<OnlyNAT75%)	98.6	97.3	110.0	86.6	0.2	5.7

In summary, regarding comparisons based on examined indicators of business demography from the point of view of inner peripheries, it is worth mentioning moderately advantaged position of them among other groups of European regions and emphasizing differences between the four of delineated IPs. In this sense, especially IP 3 regions (low SGI access) are characterized better features of business economy than other IP regions, but these differences are not very emphasized.

The main features of enterprises with number, birth and survival rate reflect, to some degree, the dynamism of the EU economy through the adaptation of economic structures to changing market conditions. The potential contribution that enterprise creation can make to employment is also one of the most important aspects drawing the attention of policy makers to the subject of enterprise demography. In this context, enterprise creation can be seen as an indicator of competitiveness, as a factor of economic growth and as a vital means of creating jobs[23].

3.3.5 Status in density of SGI

Density of retail units

The indicator of density of retail units gives information about the number of retail units per 10,000 persons considering the examined groups NUTS 3 regions. Differences among the groups of regions are based on complex explanations: on the one hand, retail units significantly vary from each other by their commodities and activities, on the other hand, they have to provide the access to basic commodities. Thus, relatively smaller areas can show larger diversities according to the number and type of retail units.

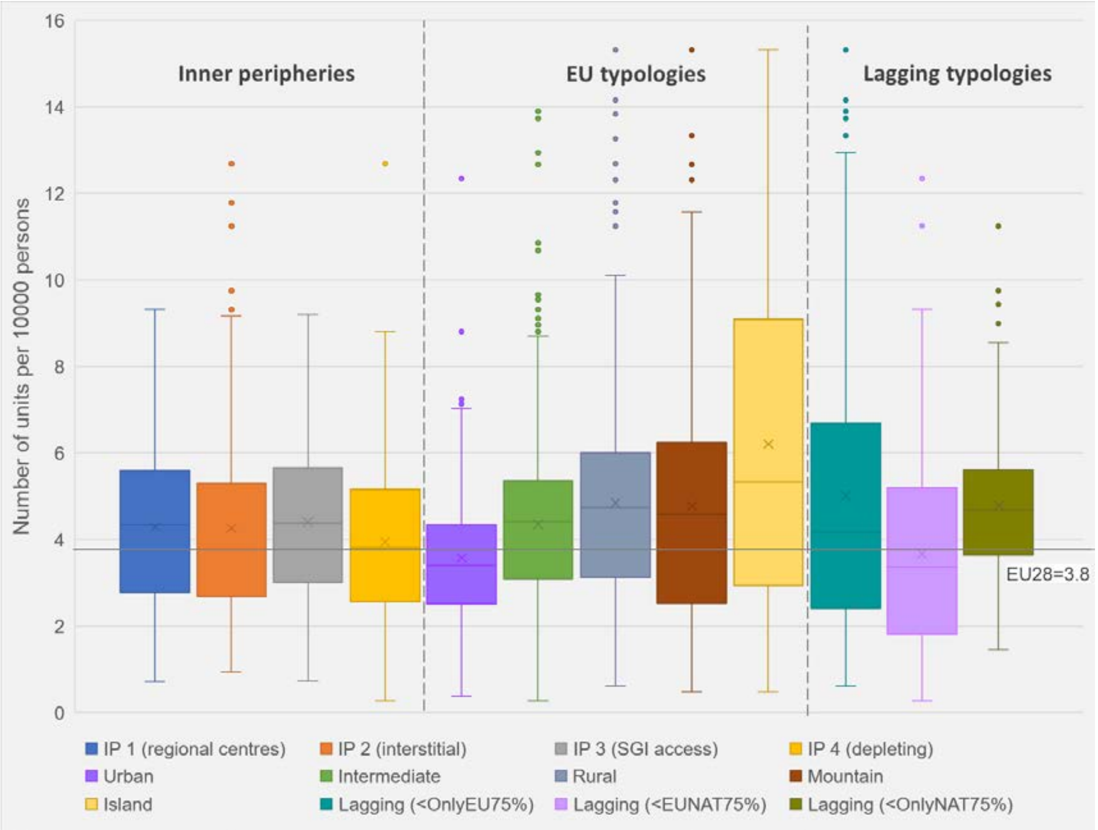
The first conspicuous observation is that many of the examined groups of NUTS 3 regions have better position than their national average (Figure 3.15). There are only three exceptions: IP 4 (depleting) regions are just equalling with national average, while Urban and Lagging (<EUNAT75%) regions are slightly below the national average. The second important fact is that there are no significant differences among regions. Only island areas are standing out regarding this feature. The highest average level as well as maximum values in density of retail units per 10,000 persons is observed for islands which is based on the diversification of tourists' demands and the islands' specific geographic position to supply locally the permanent and the temporary population.

The lowest average level in density of retail units is observed for IP 4, Urban and Lagging (<EUNAT75%) regions (Table 3.14). Handicaps of the urban group are relative: in urban areas, there are many other types and forms of commercial services (e.g. malls, online shopping). On the other hand, the disadvantages of depleting inner peripheries (IP 4) and multiply lagging group (Lagging [<EUNAT75%]) are concrete: the lowest level of their economic development determines the weaknesses of tertiary sector in the economy. Besides, all groups of regions contain a significant number of outliers, except for IP 1 (regional centres) regions and islands.

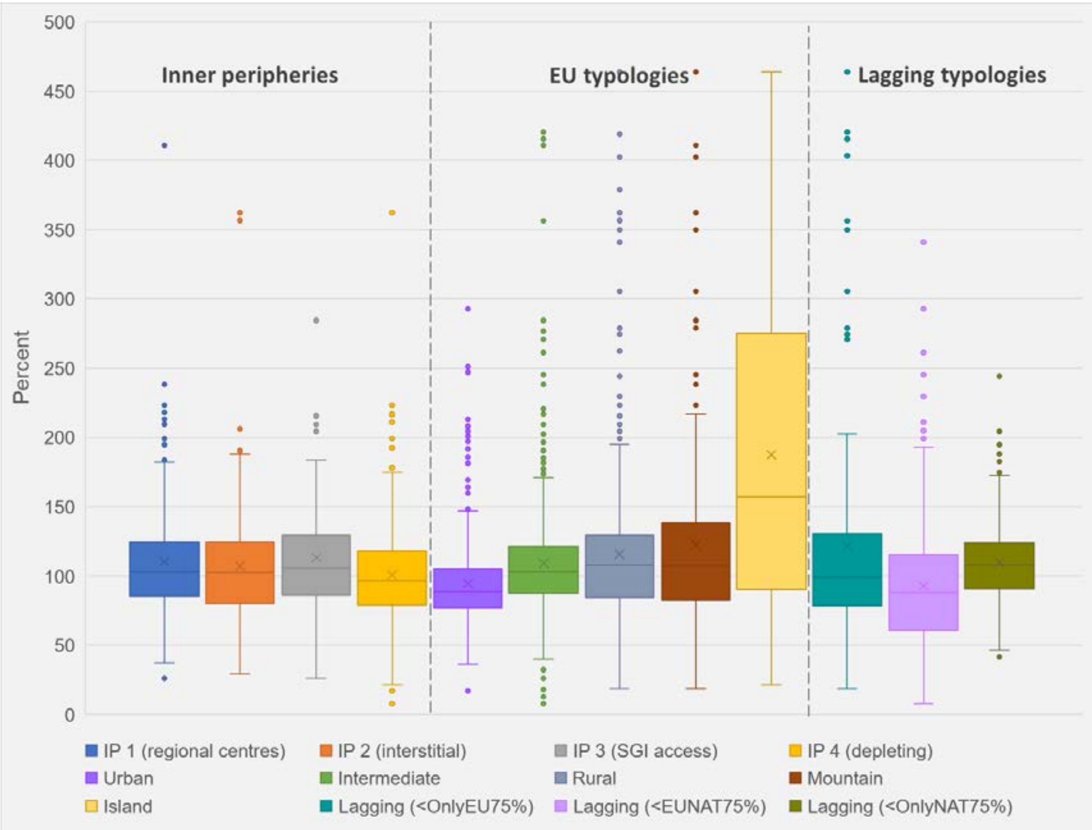
The more disadvantaged position of regions identified as inner peripheries in this project is relative: their average level in density of retail units is not so much high neither low. Moreover, the theoretical and conceptual framework of their inner peripherality is mostly coming from the weaknesses of availability. This is one of the most important explanatory factor in the relatively disadvantaged position of IP delineations among the European NUTS 3 regions. In the group of IP 4 regions can be detected that their handicaps in socio-economic status go together lower level of availability regarding retail services taken into account.

Figure 3.15: Density of retail units in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



The maximum values in the group of IPs are belonging to Hungary, Italy, Poland, Germany (as IP 1 regions), to the UK, Hungary, Greece, Germany, Poland (as IP 2 regions), to Austria and Germany (as IP 3 regions), and to the UK, Austria, Slovenia, Hungary (as IP 4 regions). The minimum values can be found in Romania, Bulgaria, FYROM (IP 1 and IP 2), and in Italy, Greece, Bulgaria if we consider the positions of inner peripheries showing disadvantages in SGI access (IP 3) or depleting inner peripheries (IP 4).

Table 3.14: Descriptive statistics related to retail unit density data

A – unstandardized

	Mean	**Median**	**Max.**	**Min.**	**Relative range (max-min) / mean**	**Std. Deviation**
	Number of units per 10,000 persons					
IP 1	4.3	4.3	9.3	0.7	2.0	1.9
IP 2	4.3	3.8	12.7	0.9	2.8	2.2
IP 3	4.4	4.4	9.2	0.7	1.9	1.8
IP 4	3.9	3.8	12.7	0.3	3.1	1.8
Urban	3.6	3.4	12.3	0.4	3.3	1.5
Intermediate	4.4	4.4	13.9	0.3	3.1	1.8
Rural	4.8	4.7	15.3	0.6	3.0	2.5
Mountain	4.8	4.6	15.3	0.5	3.1	2.8
Island	6.2	5.3	15.3	0.5	2.4	4.0
Lagging (<OnlyEU75%)	5.0	4.2	15.3	0.6	2.9	3.3
Lagging (<EUNAT75)	3.7	3.4	12.3	0.3	3.3	2.2
Lagging (<OnlyNAT75%)	4.8	4.7	11.2	1.5	2.0	1.6

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	110.6	102.8	410.9	26.1	3.5	43.2
IP 2	106.9	102.3	362.1	29.4	3.1	42.7
IP 3	113.1	105.5	284.5	26.1	2.3	41.4
IP 4	100.6	96.8	362.1	8.1	3.5	37.3
Urban	94.5	88.7	292.8	17.1	2.9	33.5
Intermediate	109.2	103.1	420.5	8.1	3.8	43.1
Rural	115.6	107.9	463.8	18.8	3.9	59.9
Mountain	122.4	107.4	463.8	18.8	3.6	72.9
Island	187.5	156.8	463.8	21.1	2.4	119.5
Lagging (<OnlyEU75%)	121.6	99.3	463.8	18.8	3.7	81.0
Lagging (<EUNAT75)	93.0	88.2	340.8	8.1	3.6	46.3
Lagging (<OnlyNAT75%)	109.6	107.6	244.2	41.4	1.8	29.4

Descriptive statistics can demonstrate slightly more disadvantages of IP 4 regions (depleting). Majority of similarities between IP delineations and other EU typologies can be led back to the minimum values in density of retail units, which stand mostly in post-socialist countries as well as in the Southern part of Italy. Significant differences between IP regions identified in ESPON PROFECY in different ways and other regions are mostly coming from the absolutely disadvantaged position of inner peripheries according to their accessibility features, which is coupled with lower level in density of retail units.

If we examine standardized data as percentages of national averages, we can see more outliers belong to IPs. These outlier regions – e.g. from the UK, Italy, Germany, France – represent the highest density of retail units. Among IPs especially IP 1 and IP 3 regions are similar to each other based on comparison to their national averages. Their average level in density of retail units is more than 110% which means their worse accessibility does not go together with lower density of retail units. On the other hand, among IPs mainly IP 2 and IP 4 regions have similarity to each other based on comparison to their national averages. Their average level in density of retail units is lower than IP 1 and IP 3 regions have. It means inner peripherality of IP 2 (interstitial) and IP 4 (depleting) regions based are so complex that can result weaknesses in density of retail units in national context. Position of IPs based on standardized data as percentages of national averages is similar to the position of Lagging (<OnlyNAT75%) regions: this similarity comes from their relative and better position compared to national averages.

In summary, inner peripheries might create more compact group Europeanly rather than nationally. On the other hand, inner peripheries have more advantaged position due to the density of retail units nationally rather than Europeanly.

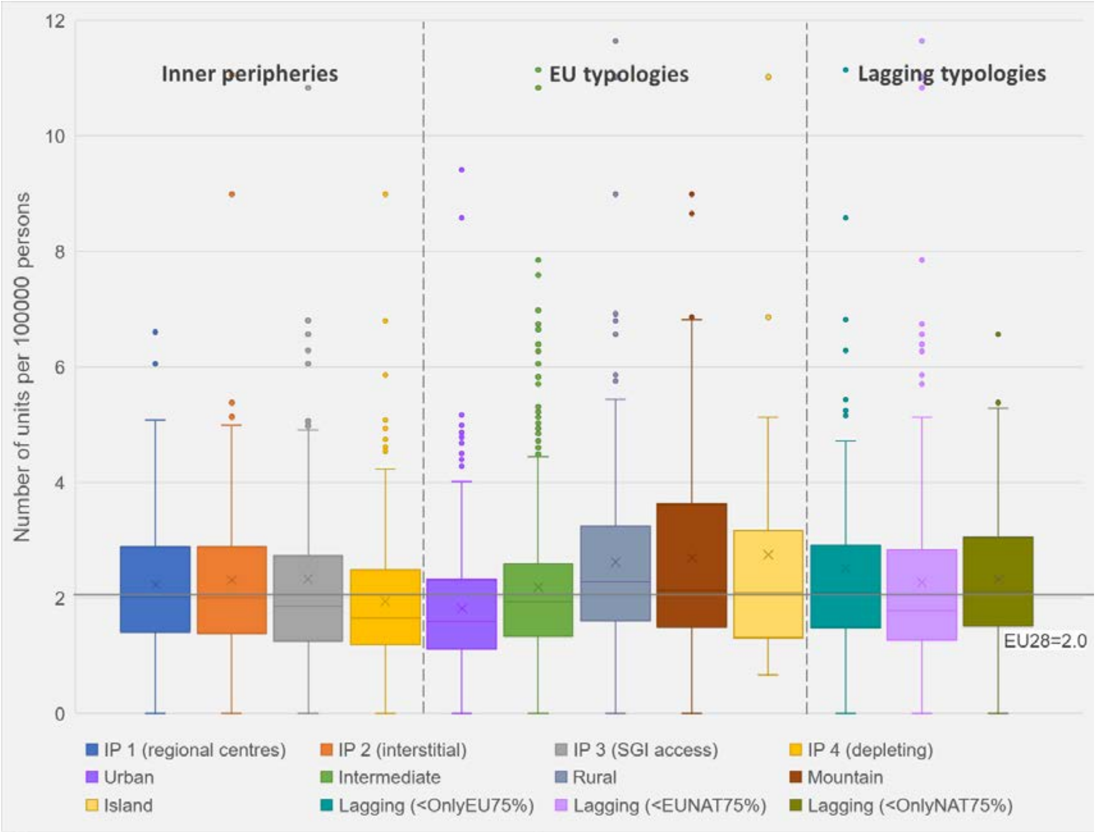
Density of hospitals

The indicator of density of hospitals gives information about the number of hospitals per 100,000 persons in the examined groups of NUTS 3 regions. Differences among the groups of regions are based on complex explanations: on the one hand, access to hospitals depends on the density of hospitals but on the other hand, availability of hospitals can also influence the opportunities of access to hospitals.

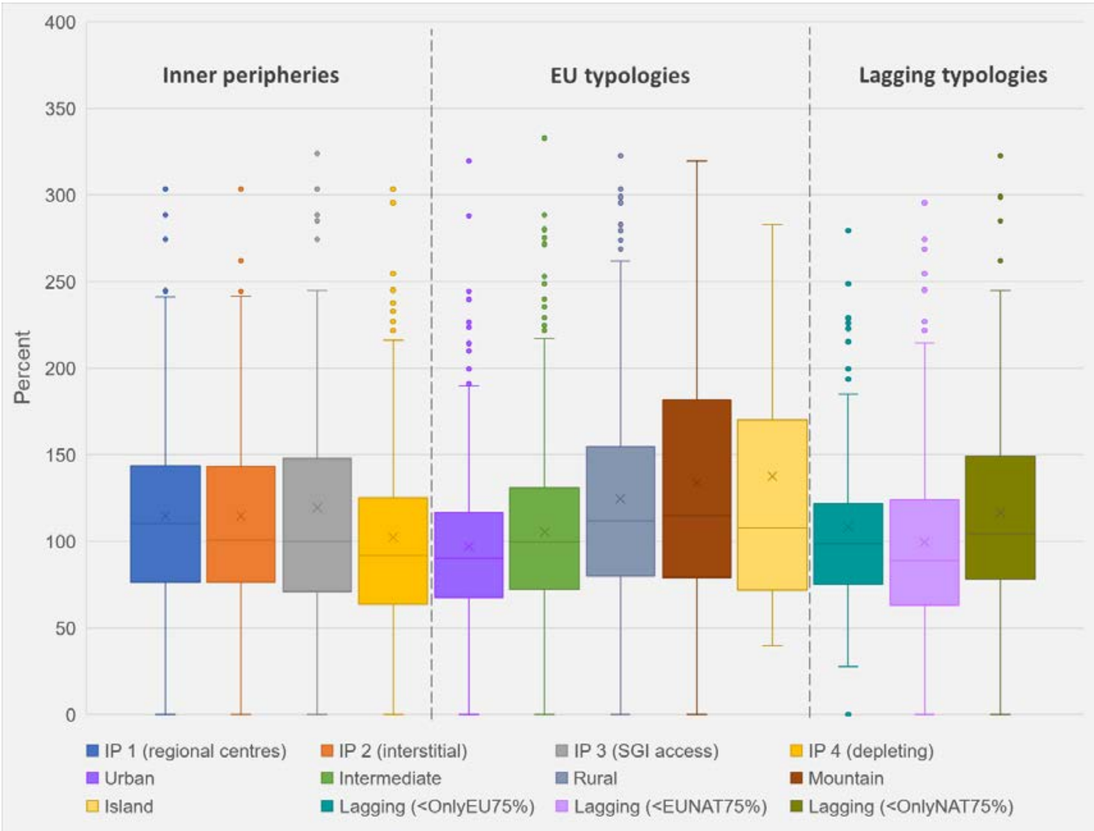
The lowest average level in density of hospitals per 100,000 persons is observed for Urban regions, but it does not mean worse accessibility: in urban areas the number of hospitals is lower but with larger capacity to cover higher rate of population in access to in-patient service. The second lowest level can be found in IP 4 (depleting) regions, but in this case, we can say the more disadvantaged socio-economic position goes together with difficulties to access to health care. On the other hand, IP 4 regions do not show such disadvantaged position nationally (Figure 3.16).

Figure 3.16: Density of hospitals in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



In general, there are not significant differences among NUTS 3 regions in basic patterns. All groups are very compact. The highest average level in density of hospitals per 100,000 persons is observed for Rural, Intermediate, mountainous and Island regions, and all of these groups contain the maximum values of this indicator. On the one hand, the coverage of these areas is better, on the other hand, it is also possible that there are more hospitals in these regions but with lower capacity to supply lower rate of population. Their position according to this indicator also seems more favourable compared to their national averages.

Similarities are more visible rather than differences among IPs based on unstandardized data as well as standardized data as percentages of national averages. Perhaps, IP 4 regions (depleting) are slightly lagging behind other IP delineations. The complex socio-economic handicaps of IP 4 regions can result lower density of hospitals Europeanly and nationally too. It can be also seen that the arithmetic mean of IPs (except for IP 4 regions) is higher than EU28 average.

The most disadvantaged position can be detected for regions identified as inner peripheries and lagging areas defined as less developed regions regarding economic performance, which is based on the followings. Firstly, the lower average level in density of hospitals goes together worse accessibility in the different groups of IP delineations, because originally, the definition of three of these IP regions is in strong relation their interrelationship regarding availability-accessibility difficulties. Secondly, the lowest level of development in lagging and inner peripheral regions goes together with less number of hospitals as well as worse availability (Table 3.15). It can be seen that there are some regions in all groups of typologies where can be found none of hospitals, e.g. in Slovenia, Belgium, Germany. Thirdly, all groups of regions contain outliers. Fourthly, it is also worth mentioning that lagging areas and IP regions might have a more disadvantaged position at the European level, but these disadvantages do not appear nationally.

If we examine standardized data as percentages of national averages, we can detect higher density of hospitals than national averages related to inner peripheries. Their national averages changes between 102.2% and 119.5% (see descriptive statistics). The highest values of maximum are belonging to IP 2 and IP 4 regions (e.g. in the UK, the Netherlands, Norway, France, Germany).

In summary, inner peripheries might create more compact group Europeanly as well as nationally among European typologies. All of them have outliers based on unstandardized and also standardized data. Their European and national position seems better, but on the other side, there are some groups of regions which have more advantages rather than IPs have (e.g. Islands or Rural areas).

Table 3.15: Descriptive statistics related to hospital density data

A – unstandardized

	Mean	Median	Max.	Min.	Relative range (max-min) / mean	Std. Deviation
	Number of units per 100,000 persons					
IP 1	2.2	2.0	6.6	0.0	3.0	1.1
IP 2	2.3	2.0	11.1	0.0	4.8	1.4
IP 3	2.3	1.9	10.8	0.0	4.7	1.7
IP 4	1.9	1.7	9.0	0.0	4.6	1.2
Urban	1.8	1.6	9.4	0.0	5.2	1.2
Intermediate	2.2	1.9	11.1	0.0	5.1	1.3
Rural	2.6	2.3	12.8	0.0	4.9	1.6
Mountain	2.7	2.1	12.8	0.0	4.7	1.8
Island	2.7	2.1	12.8	0.7	4.4	2.2
Lagging (<OnlyEU75%)	2.5	2.1	12.8	0.0	5.1	1.7
Lagging (<EUNAT75)	2.3	1.8	11.6	0.0	5.1	1.7
Lagging (<OnlyNAT75%)	2.3	2.1	6.6	0.0	2.8	1.2

B – standardized as percentages of national averages

	Mean (%)	Median (%)	Max. (%)	Min. (%)	Relative range (max-min) / mean	Std. Deviation
IP 1	114.5	110.3	303.6	0.0	2.7	53.3
IP 2	114.7	100.8	549.8	0.0	4.8	63.8
IP 3	119.5	100.0	324.2	0.0	2.7	70.6
IP 4	102.2	91.9	549.8	0.0	5.4	60.7
Urban	96.9	89.9	319.7	0.0	3.3	48.2
Intermediate	105.3	99.4	332.8	0.0	3.2	50.5
Rural	124.5	112.1	674.0	0.0	5.4	70.1
Mountain	133.8	115.0	549.8	0.0	4.1	80.6
Island	137.5	107.6	674.0	39.6	4.6	108.9
Lagging (<OnlyEU75%)	108.3	98.5	523.6	0.0	4.8	59.4
Lagging (<EUNAT75)	99.5	88.8	674.0	0.0	6.8	60.7
Lagging (<OnlyNAT75%)	116.6	104.1	322.9	0.0	2.8	56.6

Density of primary schools

The indicator of density of primary schools gives information about the number of primary schools per 10,000 persons in the examined NUTS 3 regions. This indicator can also show the regional distribution of opportunities in access to education.

Firstly, in all groups of NUTS 3 regions, standardized means as percentages of national averages are above the national average, the one exception is the group of urban areas. Secondly, all groups appear very compact according to standardized densities as percentages of national averages (Figure 3.17), but all of these groups have many outliers (except for IP 3 regions). Thirdly, the average level in density of primary schools varies between 2.5% and 3.7%, and there are visible differences between maximum and minimum values according to standard deviation and relative range based on unstandardized data.

The lowest average level is detected in the groups of lagging regions (defined them as less developed regions based GDP per capita level lower than 75% compared to European average or national level averages): their socio-economic handicaps go together with difficulties in availability and access to primary education (especially in Lagging [<OnlyEU75% and <EUNAT75%] regions). On the other hand, Lagging (<OnlyNAT75%) regions are in the best position among lagging areas as well as other European regions. It means their nationally relatively more disadvantaged position – their GDP-based development level is only below 75% of the national averages – does not appear among other European typologies at all.

The second highest average level is observed in the group of rural areas, while the third best averages can be experienced in regions defined as inner peripheries (Table 3.16). The highest maximum values (more than 14%) can be detected in the groups of IP 2 (interstitial) and IP 4 (depleting), rural areas and Lagging (<OnlyNAT75%) regions. The lowest minimum values (less than 8%) can be detected in the group of IP 3 (SGI access) regions.

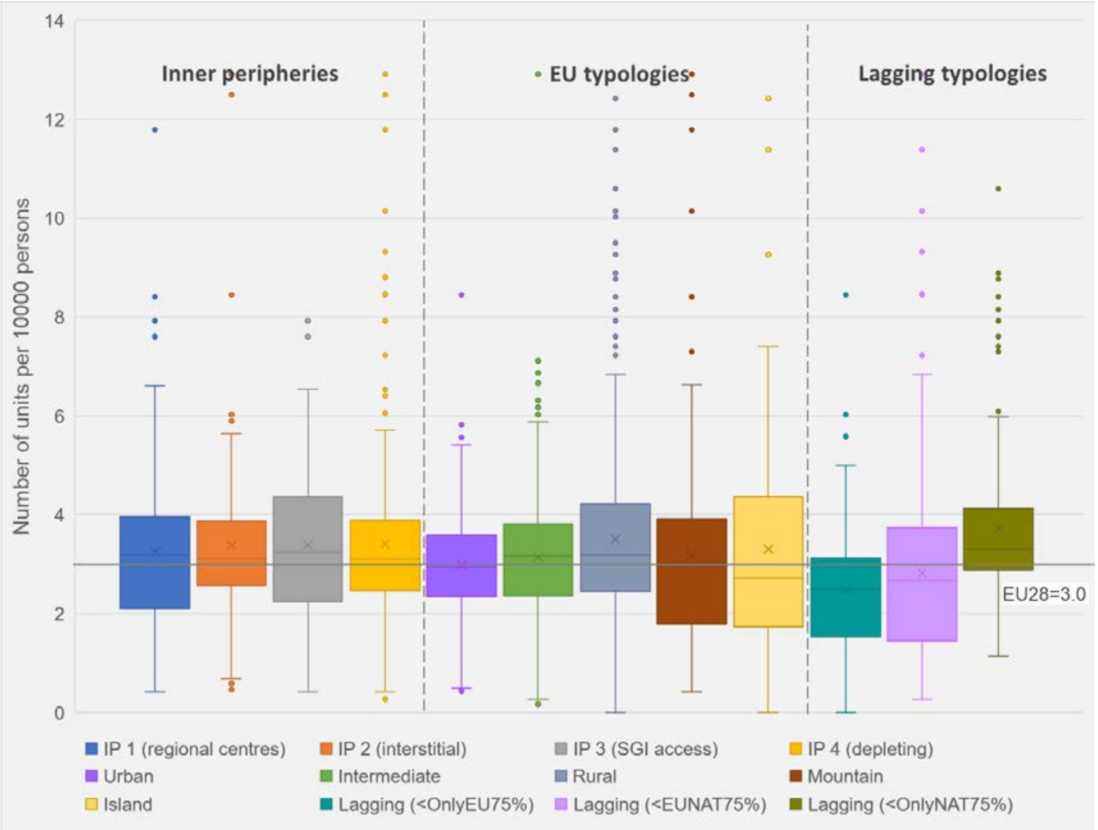
The position of IP 1 regions (low access to regional centres) based on density of primary schools is similar to the position of islands. The highest density of primary schools is kept by Italy, France, Finland, Belgium, the UK in the group of IP 1 regions. Considering economic potential interstitial areas (IP 2), regions from Belgium, Greece, the UK, Poland and Finland might be characterised by higher number of primary schools compared to their number of inhabitants. Different groups of inner peripheries identified by ESPON PROFECY project indicate very similar patterns compared to each other regarding the regional distribution of the highest the lowest values of this indicator. Within the group of depleting inner peripheries (IP 4), there are many outliers, which stand outstandingly above the average level of density of primary schools.

It must be mentioned that in the groups of rural, island and Lagging (<OnlyEU75%) areas some NUTS 3 regions with no any primary school can be found, which is a marked handicap in access to education. All groups of regions contain many outliers: least of them belong to urban areas, islands, Lagging (<OnlyEU75%) regions, while the most of them are contained by the groups of rural areas and IP 4 regions.

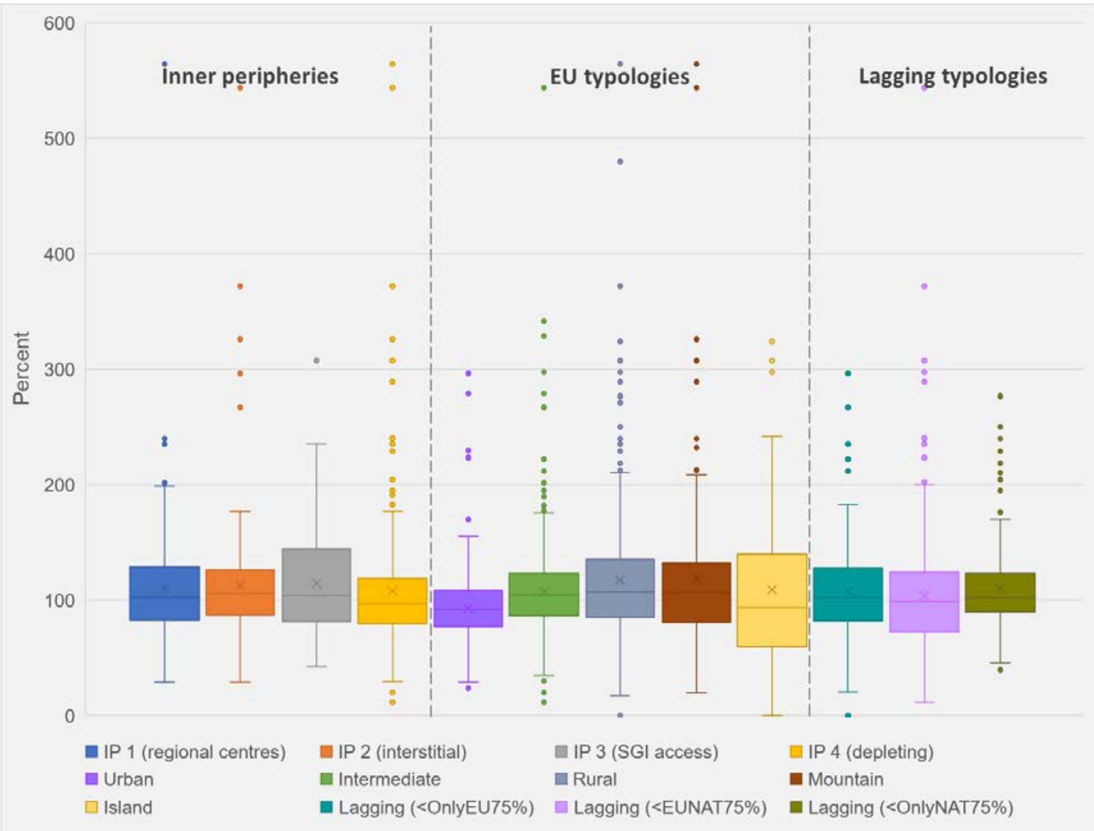
If we examine the standardized data as percentages of national averages, we cannot see marked differences among inner peripheries. All of their arithmetic mean is above national average and it runs between 108.1% and 114.4%. The lowest level of maximum value and the highest level of minimum value is belonging to IP 3 regions.

Figure 3.17: Density of primary schools in Europe by IP delineations and EU regional typologies, 2016

A – unstandardized



B – standardized as percentages of national averages



In summary, in comparison the positions of NUTS 3 regions identified as inner peripheries with other EU typologies regarding the density of some basic services such as retail units, hospitals, primary schools, a relatively disadvantaged situation of inner peripheries can be detected among the European regions. It based on relative worse values of these examined indicators experienced in IP regions (see descriptive statistics), and the applied methodology to define their characteristics related to multiple difficulties in accessibility and availability.

Table 3.16: Descriptive statistics related to primary school density data

A – unstandardized

	Mean	**Median**	**Max.**	**Min.**	**Relative range (max-min) / mean**	**Std. Deviation**
	Number of units per 10,000 persons					
IP 1	3.3	3.2	11.8	0.4	3.5	1.7
IP 2	3.4	3.1	14.4	0.5	4.1	1.9
IP 3	3.4	3.2	7.9	0.4	2.2	1.6
IP 4	3.4	3.1	14.4	0.3	4.2	1.9
Urban	3.0	2.9	8.5	0.4	2.7	1.0
Intermediate	3.1	3.2	12.9	0.2	4.1	1.3
Rural	3.5	3.2	14.4	0.0	4.1	2.0
Mountain	3.2	3.0	12.9	0.4	3.9	2.0
Island	3.3	2.7	12.4	0.0	3.8	2.4
Lagging (<OnlyEU75%)	2.5	2.5	8.5	0.0	3.4	1.2
Lagging (<EUNAT75)	2.8	2.7	14.4	0.3	5.0	1.9
Lagging (<OnlyNAT75%)	3.7	3.3	10.6	1.1	2.5	1.4

B – standardized as percentages of national averages

	Mean (%)	**Median (%)**	**Max. (%)**	**Min. (%)**	**Relative range (max-min) / mean**	**Std. Deviation**
IP 1	109.7	102.4	564.4	28.8	4.9	49.5
IP 2	112.7	105.9	543.9	28.8	4.6	56.2
IP 3	114.4	104.0	307.4	41.9	2.3	47.8
IP 4	108.1	96.5	564.4	11.2	5.1	60.5
Urban	92.9	91.5	296.4	23.6	2.9	29.3
Intermediate	107.4	104.3	543.9	11.2	5.0	40.7
Rural	117.3	107.0	564.4	0.0	4.8	56.4
Mountain	118.0	106.6	564.4	19.6	4.6	70.1
Island	108.8	93.7	324.1	0.0	3.0	69.9
Lagging (<OnlyEU75%)	107.8	101.6	296.4	0.0	2.8	43.4
Lagging (<EUNAT75)	103.5	98.8	543.9	11.2	5.1	54.3
Lagging (<OnlyNAT75%)	110.1	101.9	276.5	39.3	2.2	35.9

3.4 Summary findings

Inner peripheries – defined them according to used methodology in ESPON PROFECY project – show some characteristic features based on the analyses of different determinant factors (e.g. socio-economic indicators). Similarities and differences can be detected within the groups of inner peripheries and between IPs and other European regional typologies with lagging areas. Generally, inner peripheries and their position among European regions as well as their relative position in national context depend on their inner peripherality and macroeconomic status too. On the other hand, many drivers of peripheralization and geographical specificities can influence in a complex way the position of IPs among other examined areas in the ESPON space. The presented analysis of the status of European inner peripheries in comparison with their socio-economic characteristics gives the following important findings:

- Similarities are more determinative among four groups of European inner peripheries rather than differences. Significant inequalities usually do not appear compared them to each other in European as well as national context based on unstandardized data and standardized data as percentages of national averages. In general, IP regions unify more compact groups rather than other regions do (e.g. lagging areas).
- Inner peripheries defined as depleting regions (IP 4) – based on their handicaps of economic performance, labour market processes and population dynamics – in some cases are lagging behind the other types of inner peripheries. This relative lagging position is especially belonging to their economic performance status with lower average of GDP per inhabitant, to the entrepreneurship status with less number of active enterprises, and to the status in density of SGI with lower level of density of retail units and hospitals.
- Relative lagging position of depleting inner peripheries (IP 4) among other typologies of IPs is not surprising because it is partly based on handicaps considering their economic performance. On the other hand, depleting regions show some advantages against other IPs according to some socio-economic indicators. For example, average rate of child age population is the highest in IP 4 regions, or inactivity rate is little bit lower in IP 4 group than in other groups of inner peripheries.
- Typical demographic status observed in the groups of inner peripheries are occurred with dominant European demographic features, e.g. lower level of child age population, or higher rate of old age dependency is the consequence of decreasing birth rate and ageing. The run of these demographic indicators draws attention some future challenges such as lack of manpower, or the contribution reduction related to inner peripheries.
- The determinative factor influencing demographic status of IPs is the rate of working age population. Lower or even the lowest rate of working age population detected in inner peripheral areas is one of the most typical characteristics of IPs. This current situation can be experienced in comparison with other regional typologies and also with national averages.
- Labour market status based on inactivity rate, unemployment rate and rate of low qualified people show typical spatial distribution. Inner peripheral regions with high average level of these indicators mostly characterise Mediterranean countries as well as post-socialist states.
- The comparison of regions typified as inner peripheries to other regional typologies based on labour market status can demonstrate the marked differentiation between IPs

and those lagging areas where development level is lower than both 75% EU and national level averages (Lagging [<EUNAT75%] regions) with more disadvantaged situation of latter regions.

- The most vulnerable inner peripheral regions have lower economic performance (as regards GDP per capita values) than 50% of EU28 average and their national average. These inner peripheral regions are touched by the majority of risk factors which can directly lead to the increase of vulnerability of becoming lagging region even measured at the European level or compared to national averages (or both). Majority of these inner peripheries can be found in industrialized areas of Western and East Central Europe.
- Gross value added per employed person and its distribution in Europe by IP delineations and other EU regional typologies show very similar pattern to the distribution of GDP (PPS) per inhabitant. However, inner peripheries represent better economic productivity than labour productivity when considering nationally standardized data. Furthermore, differences between IPs and other regional typologies regions may be narrower when analysing gross value added per employed person than when analysing GDP per capita.
- Economic performance of inner peripheries identified by delineation processes of the project can also be characterized by specificities of the indicator of the rate of employed persons working in manufacturing industry. Firstly, higher level of manufacturing industry employees can be experienced in IP regions, and this is current Europeanly as well as nationally. Secondly, areas from both Western European (e.g. Germany, northern part of Italy) and East Central European countries (the Czech Republic, Poland, Slovenia, Bulgaria or Romania) might record a more than 30% share of employed persons working in manufacturing industry. Thirdly, higher level of manufacturing industry employees combines with lower level of low qualification in inner peripheries implies that most likely higher qualified employees work in manufacturing industry.
- The applied methodology to define characteristics of the European inner peripheries related to multiple difficulties in accessibility and availability. This reason can result in a relatively disadvantaged situation for IPs regarding the density of some basic services such as retail units, hospitals, primary schools. However, these handicaps of IPs appear in comparison them with other regional typologies, but differences are not so much significant. Moreover, handicaps of IPs on the European level do not appear nationally at all: it means majority of inner peripheral regions have higher density of retail units, hospitals and primary schools than their national averages.
- In summary, inner peripheries might form a quite compact group of typologies on the European level as well as nationally among European typologies. Their multiple difficulties in accessibility and availability do not always result in clear or typical disadvantaged socio-economic position in comparison with other European regions regarding most of the analysed dimensions, while in some cases their drawbacks are more visible (e.g. demographic status, considering age structure).

4 Following changes of socio-economic characteristics of inner peripheries over time

The formation and evolution of inner peripheries is a dynamic process, so the classification of regions and triggering processes may change over time. For this reason, it would be important to trace these changes in the project. Nevertheless, since IP delineations of PROFECY project only provide an actual snapshot of geographies of European inner peripheries (except for one of the delineations identifying depleting regions), efforts should be focused on exploring changes socio-economic status of today's IP in the recent past.

The task aims to assess how internal potentials of IPs could be exploited under changing external challenges over time. This way, evidences from the analysis of the changing status of IPs could help the identification of processes and drivers playing key role in the marginalisation of inner peripheries.

4.1 Methodological considerations

4.1.1 Analysing shifts of socio-economic status of inner peripheries within a period of time

One of the methodological tools chosen for the analysis of changes of the socio-economic status of inner peripheries over time is scatter plot analysis. A very illustrative form of analysing shifts of socio-economic positions of inner peripheries compared to other areas could be accomplished, if we set up a coordinate system on a scatter plot representing changes within a period of time. The two axes of the scatter plot represent distributions of a given variable (illustrating certain demographic, social or economic characteristics) in two snapshots of time.

Fields outlined by the coordinate system might be based on points of intersection of zero values or EU28 averages (in two points of time), and they illustrate directions of shifts in the status of units in the analysis, by visualizing generalized tendencies (position have remained the same – bad or good; there is an advancement; deterioration of status can be observed).

While shifts represented by fields of the scatter plot illustrate only relative trends between two points of time, many or most of the changes might happen within categories of regions with disadvantaged or more favourable positions. For the adequate interpretation of these changes a trend line of positive/negative values is also represented on analysed scatter plots, which gives the opportunity of a more detailed evaluation of position shifts of different regions.

Inner peripheries (and/or other special types of regions) might be differentiated in the scatter plot in accordance with the purpose of the analysis, by using different signs and colours etc. In this way, their position changes could be represented in a very clear way, not just by reflecting the general trends affecting their status, but also by making comparison with other region types. In the presented analyses, groups of inner peripheral areas based in the four delineations were merged, and the differentiation among NUTS 3 units identified as being inner peripheral was made by their numbers of assignment as IP. Besides, non-peripheral areas were also represented separately.

In the case of indicators which originally express some kind of dynamics by themselves (population change, migration rate), scatter plot illustrations were not used. Instead, tables on typical directions of changes were applied to outline these basic trends.

4.1.2 Analysing socio-economic dynamics of inner peripheries

Positions shifts within a period of time, and the generalised directions of changes between two points of time tell less about the detailed socio-economic dynamics of analysed areas. Within a period of ten-fifteen years, different directions of changes might be observed related to global, national and regional tendencies. In order to follow these trends changing the socio-economic positions of inner peripheral areas are also analysed based on the comparison of line charts representing time-series of potential key measures associated with phenomena of peripherality.

Since units of investigation in this analysis are single regions, two methodological considerations are followed to keep the accomplishment and the interpretation of analysis and results manageable. Firstly, into this analysis of time-series only regions assigned as inner peripheries were processed. Insights on the development path of inner peripheral regions compared to other regions of Europe might be obtain from analyses of socio-economic position shifts of areas illustrated by scatter plots. The classification of inner peripheral areas according to delineation types is used, but not always directly represented in this analysis. Instead of that, a common pool of inner peripheries is used here, which contains all regions identified as IP by one or another delineation type regardless their actual assignments (see Figure 1.2 in Chapter 1.2.3). In this way, the union of all delineations serve as the basis the generalised interpretation of different socio-economic tendencies affecting the analysed period. Comparisons though are made on variations between paths of changes of the four groups of delineated inner peripheries for representing the status of given regions from this aspect.

The other consideration taken into account is the use of generalised trends of time series for the analysis. Since the path of development of one or another territory over time might significantly vary by one or another, the unstructured information provided by the great mass of socio-economic time-series data should be adjusted for a meaningful interpretation. During analyses six basic, generalised trends were defined on the basis of data available for the gathered time-frame in the case of indicators used in the analysis. Time-series of fourteen-fifteen years were broken down to three periods (of four–five years), and the degree of change within these periods and the overall direction and degree of dynamics were taken into account during the evaluation of trends. The basic threshold for identifying significant changes was recalculated in the case of every indicators by using the average degree of change of analysed units (regarding the whole period) and the standard deviation of the distribution of these values. Basic trends are:

- Uptrend
  If a (mathematically) positive overall change (>[average rate + Std. deviation value]) can be observed in the region or at least two of the three break-downs of periods can be characterised with significant positive change (>[average rate + Std. deviation value]).
- Mostly sideways with uptrend tendencies
  If a (mathematically) positive overall change (<[average rate + Std. deviation value]) can be observed in the region and at least two of the three break-downs of periods can also be characterised with sideways tendencies (positive or negative).
- Change with positive tendencies
  Any other regions than ‘Uptrend’, ‘Downtrend’ and ‘Sideways’ with usually a (mathematically) positive overall balance, where a trend change (>half of [average + Std. deviation value]) occurred within one or another sub-period analysed.
- Change with negative tendencies
  Any other regions than ‘Uptrend’, ‘Downtrend’ and ‘Sideways’ with usually a (mathematically) negative overall balance, where trend change (>half of [average - Std. deviation value]) occurred within one or another sub-period analysed.
- Mostly sideways with downtrend tendencies
  If a (mathematically) negative overall change (>[average rate - Std. deviation value]) can be observed in the region and at least two of the three break-downs of periods can also be characterised with sideways tendencies (positive or negative).
- Downtrend
  If a (mathematically) negative overall change (<[average rate - Std. deviation value]) can be observed in the region and at least two of the three break-downs of periods can be characterised with a small degree of change (<[average rate - Std. deviation value]).

The general direction of (absolute) change of a given indicator within the analysed period of time determine a lot of the build-up of these categories. The more or less clear-cut Europe-wide tendencies of some indicators (e.g. old age dependency rate, ratio of population with low qualification or the ratio of employed persons in manufacturing) resulted in the absence of certain generalised trends (e.g. no big positive or negative changes).

While categories of uptrend, downtrend and sideways dynamics indicate patterns easily understandable (significant or slight-moderate positive or negative tendencies during the analysed period), generalised paths of trend changes are more complicated to interpret. Here, tendencies of changes regarding the whole period usually also indicate a certain overall increase or decrease of values of different socio-economic measures analysed, but these are broken by different kinds of trend shifts. It might happen that a former tendency ends and the development regarding the analysed measure takes a new direction (e.g. new path in population dynamics). Another typical case, where the general progress is broken for a certain period, but it continues afterwards (e.g. temporary peaks of unemployment rates with current signs of recovery). These various meanings of changing trend categories are indicated during analyses.

4.1.3 Database of analysis

Analyses following changes of socio-economic characteristics of inner peripheries are built on datasets presented in Chapter 1.2 of this annex report. The selection of indicators to be used was based on considerations on the available time span and the content of variables. Due to their cross-sectional character, data on SGI access could not be used here, while business demographics indicators were excluded from these dynamical analyses because they only cover a shorter period from 2008 to 2014. Thus, only demographic, labour market indicators and variables on economic performance and structure were processed into analysis.

Among the pool of variables representing these dimensions, a reduced selection of indicators was selected carefully chosen by considering their potential meaning in interpreting processes associated with peripheralization. Demographic indicators cover: population dynamics, net migration rate and old age dependency rate. Selected labour market indicators represent processes of temporary (unemployment rate) or temporary exclusion (inactivity rate) from the labour market. Variables of economic performance (GDP per inhabitants) and economic structure (share of employment in manufacturing industry) are also included in these analyses. Countries with no data for several of the selected indicators were excluded from analyses. These countries are: Albania, Liechtenstein, Montenegro, Turkey, Bosnia and Herzegovina, Serbia and Kosovo under UN Security Council Resolution 1244.

4.2 Demographic tendencies

Population dynamics

Socio-economic phenomena associated with peripheralization might result in different kind of demographic processes, which might be regarded as disadvantages of inner peripheral regions (outmigration, ageing, population loss). Simply, the change of population numbers might able to provide a framework for the interpretation of basic demographic tendencies. Between 2000 and 2015 the population of European Union (EU28) reached and surpassed 500 million inhabitants, with and total growth rate of 4.5% regarding this period. Positioning identified inner peripheral NUTS 3 regions within this trend might imply manifold results. On the one hand, there is a bigger share of areas with inner peripheral characteristics with increasing population during this period. In the most cases of them it resulted only in slight population growth (Table 4.1 A). In the case of shrinking IP regions, the rates of population loss are also considered to be moderate. This corresponds to basic population development paths of non-peripheral areas, however there is a gap between the two groups, with a higher growth rate and less chance of population loss in those regions, which do not face problems of peripheralization.

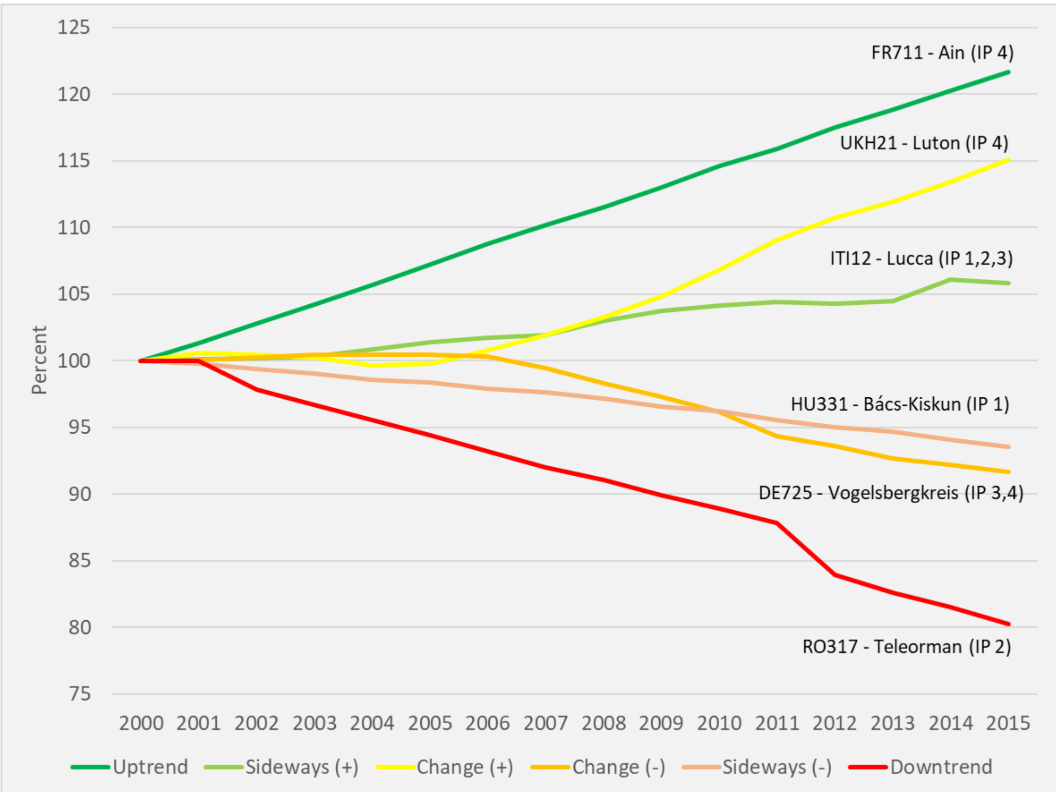
Table 4.1: Population dynamics in inner peripheral and other region types in Europe, 2000–2015

Direction and rate of change	**A – unstandardized**		**B – compared to national levels**	
	Inner peripheries	**Other regions**	**Inner peripheries**	**Other regions**
More than -20%	1.3	1.8	0.0	0.3
-20 to -10%	9.5	8.4	11.8	6.6
-10 to 0%	30.0	25.7	*50.0*	*47.9*
0 to 10%	*38.7*	*43.5*	34.4	38.7
10 to 20%	16.2	15.9	3.4	5.6
More than 20%	4.2	4.7	0.4	0.9

This difference between inner peripheral and other areas is also present when following these tendencies in national context. In general, national territories are split into two groups, in which the absolute majority of European regions appears as areas with population decrease (or less increase), while a relative minority of regions can be described by positive population dynamics compared to national averages (Table 4.1 B). These trends characterize both inner peripheries and other national territories too, but in the case of IP regions, population loss or lower level of increase is more frequent compared to national level tendencies.

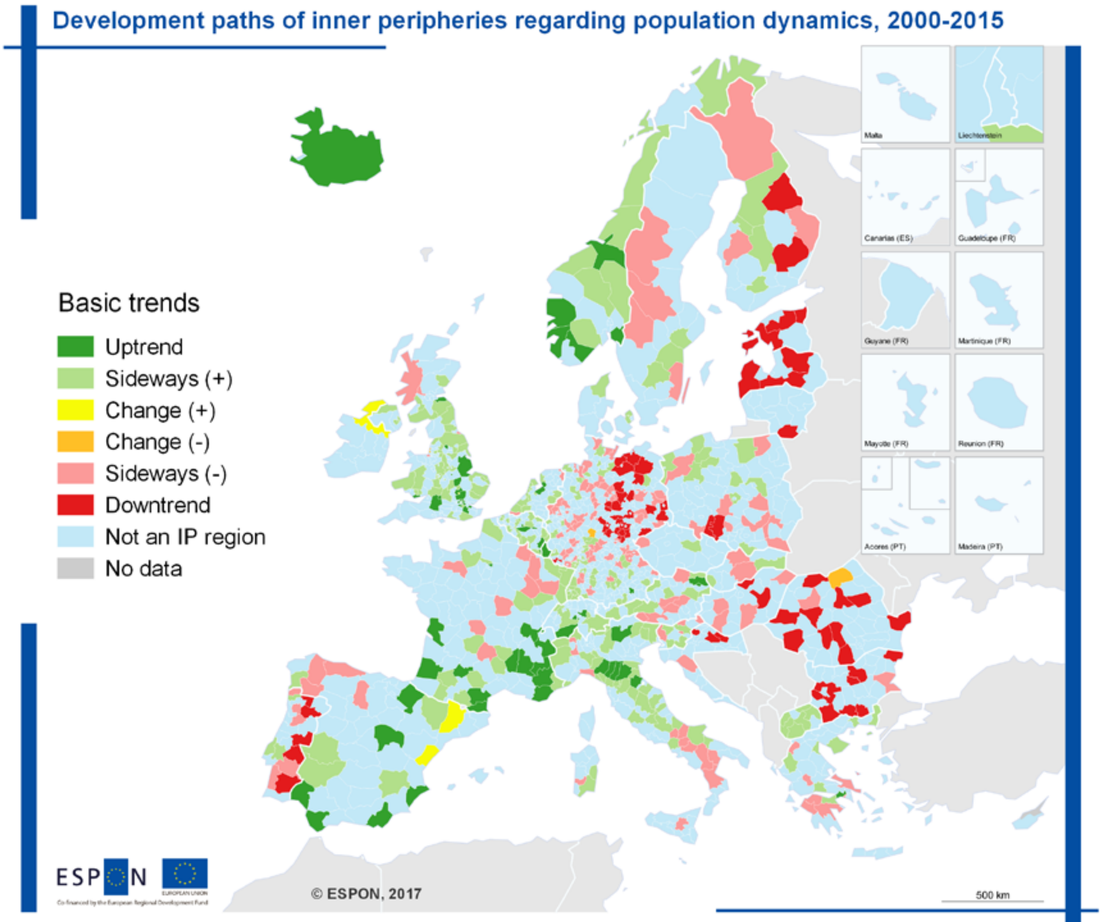
Inner peripheral areas themselves might also be differentiated by basic trends regarding population change between 2000 and 2015. IPs with growing population might be present in various regions of Europe in great numbers. Among them, there can be found areas with uptrend dynamics with continuous and significant population growth compared to other peripheral areas (Figure 4.1). A bigger share of inner peripheries composes the group with slight or moderate improvement of the number of inhabitants. Beside these paths of positive population development, decreasing numbers of inhabitants also characterize inner peripheral areas. A not negligible share of them have faced significant population lost during the analysed period, while in most cases, the decrease of population in regions identified as inner peripheries only led to moderate shrinkage. Trends with path changes are rare. The few examples show that these IPs are basically related to sideways tendencies based on the first half of the fifteen years taken into account, but switched path in the second half of the 2000s.

Figure 4.1: Basic trends in dynamics of inner peripheries regarding population change, 2000–2015 (population in year 2000 = 100%)



Regional variations of population dynamics characteristics among inner peripheries of Europe are not really different from well-known European population development trends (Map 4.1). Significantly positive dynamics (uptrend) are in present only in several countries, such as the United Kingdom, Benelux states, France, Italy, Spain, Switzerland or Norway. Natural demographic tendencies might be varying between these areas, but intensive immigration characterizes most of them. Regions with only moderate population growth can mostly be found within these countries. Inner peripheral areas with population loss regarding 2000–2015 might be present in almost all countries. Their dominance can be observed in Germany, Finland, Portugal in the Baltic and most of the East Central European states. Significant population loss (downtrend dynamics) might appear in Portugal, the eastern part of Germany, Croatia, Hungary, Poland, Finland, and most of inner peripheries of the Baltic States, Romania and Bulgaria also follow this trend. The few cases of path changing areas have no meaningful regional pattern.

Map 4.1: Development paths of inner peripheries regarding population dynamics, 2000–2015



Uptrend: significant increase of population
Sideways (+): minor-average increase of population
Change (+): an overall increase of population with trend change (stagnation/increase; increase/decrease)
Change (-): an overall decrease of population with trend change (stagnation/decrease; decrease/stagnation)
Sideways (-): minor-average decrease of population
Downtrend: significant decrease of population

Regional level: NUTS 3 (2013)
Source: ESPON PROFECY, 2017
Origin of data: Eurostat, 2017
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Positioning these basic tendencies of population development processes of inner peripheral regions in the national contexts of population dynamics shows that path followed by inner peripheries correspond to their position changes compared to other national territories in most cases. Except for some cases, negative population dynamics always appear as decrease compared to national averages too. That is the same with inner peripheries with uptrend dynamics in population change. The situation is more mixed in the case of IPs only with slight increase of population in the period of 2000–2015. Within this group, inner peripheral regions are also present with population growth falling behind other national territories or even other inner peripheral areas following uptrend dynamics (e.g. Austria, Belgium, Spain, France, the Netherlands or the UK).

Analysed basic tendencies do not significantly differentiate between the four groups of delineations (Table 4.2). The relative majority of inner peripheries within each delineation types follow population tendencies with moderate growth, and there is also a quite significant share of IP regions with slight population loss within each group. It is the group of inner peripheries identified as economic potential interstitial areas (IP 2) which stands out in the sense, that uptrend dynamics is the less frequent here among the four delineations. Besides, downtrend dynamics less characterize depleting inner peripheral areas (IP 4), which might seem to be odd at first sight, since this delineation is partly based on the identification of negative population tendencies. It might be explained with that among inner peripheries within this group there are more areas which can be regarded being peripheral due to other socio-economic processes of marginalization than simply to population loss.

Table 4.2: Coverage of different types of inner peripheries by population dynamics trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	12.8	*44.8*	0.5	0.5	25.6	15.8
IP 2 (interstitial)	8.6	*48.3*	0.7	1.3	25.8	15.2
IP 3 (SGI access)	15.2	*41.3*	1.1	2.2	28.3	12.0
IP 4 (depleting)	14.6	*42.1*	0.8	0.8	31.0	10.7

Migration rate

Migration characteristics usually significantly correspond to the attractive force of regions. This relationship is not always valid and explicit, however from the viewpoint inner peripherality it could be supposed that several consequences (e.g. demographic, economic) of being peripheral might lead to outmigration from and area or could be an impact of that. Regarding migration trends, data from the past fifteen years tend to show only slight differences between migration characteristics of inner peripheral areas in Europe and other territories in the continent. Between 2000 and 2015 the EU28 had an overall positive net migration rate (3.5%). This basic trend applied to the absolute majority of European NUTS 3 units regardless being inner peripheral or not (Table 4.3 A). The difference between IP regions and other territories mostly appears in the lower share of areas with higher positive net migration rate of and the higher proportion of units with slight outmigration from inner peripheries.

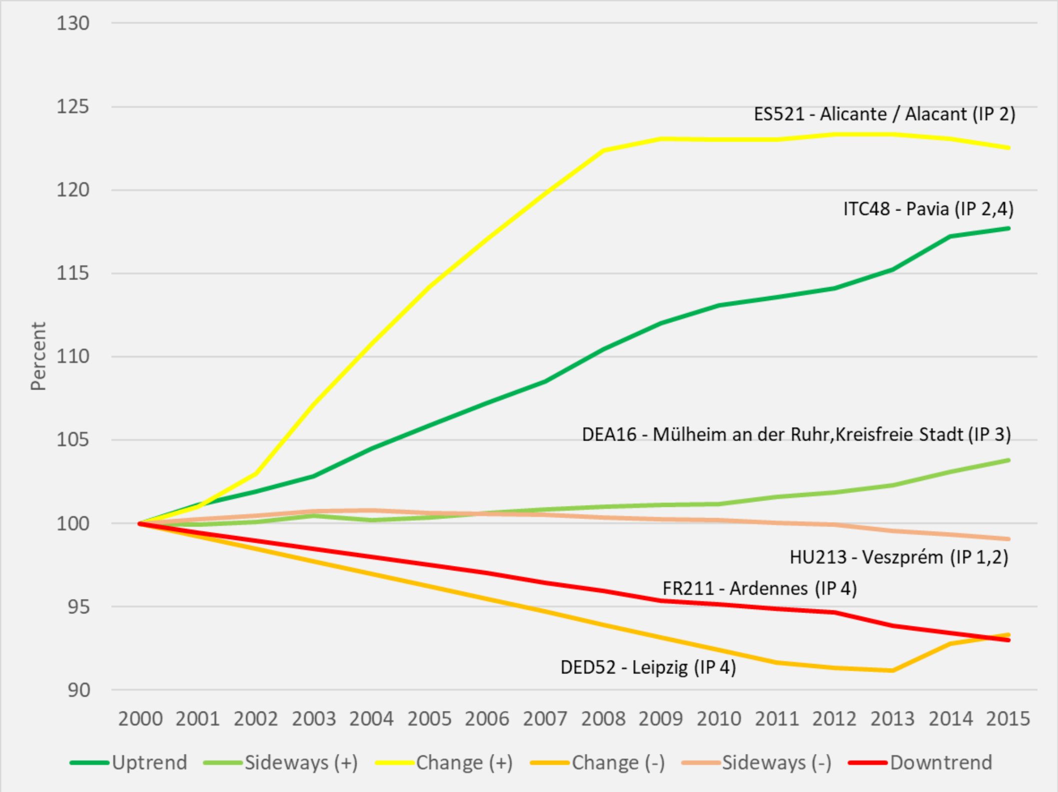
Table 4.3: Migration paths in inner peripheral and other region types in Europe, 2000–2015

	A – unstandardized				**B – compared to national levels**	
Direction and rate of change	**Inner peripheries**	**Other regions**		**Direction and rate of change**	**Inner peripheries**	**Other regions**
More than -20%	0.2	0.3		High–NAT+ %	40.2	46.3
-20 to -10%	2.9	3.5		Low–NAT+ %	29.3	24.3
-10 to 0%	25.8	23.0		Negative–NAT+ %	19.5	15.7
0 to 10%	54.6	54.1		Positive–NAT- %	1.9	2.6
10 to 20%	15.8	17.1		Low–NAT- %	2.5	3.3
More than 20%	0.8	2.0		High–NAT- %	6.7	7.8

Migration tendencies measured at national levels indicate different position changes (Table 4.3 B). 90% of inner peripheral regions is located in countries with positive net migration rate at the national level (‘NAT+’). This ratio in the case of other territories is about 85%. Among these areas the share of regions with lower than national average migration rate (‘Low–NAT+’) is much higher than in the case of other territories. Moreover, there are more inner peripheral regions which face outmigration in countries with positive net migration (‘Negative–NAT+’) than in the case of non-peripheral areas. By fitting into this trend, inner peripheral areas in countries with overall negative net migration rate less frequently present immigration tendencies (‘Positive–NAT-‘) than other European regions.

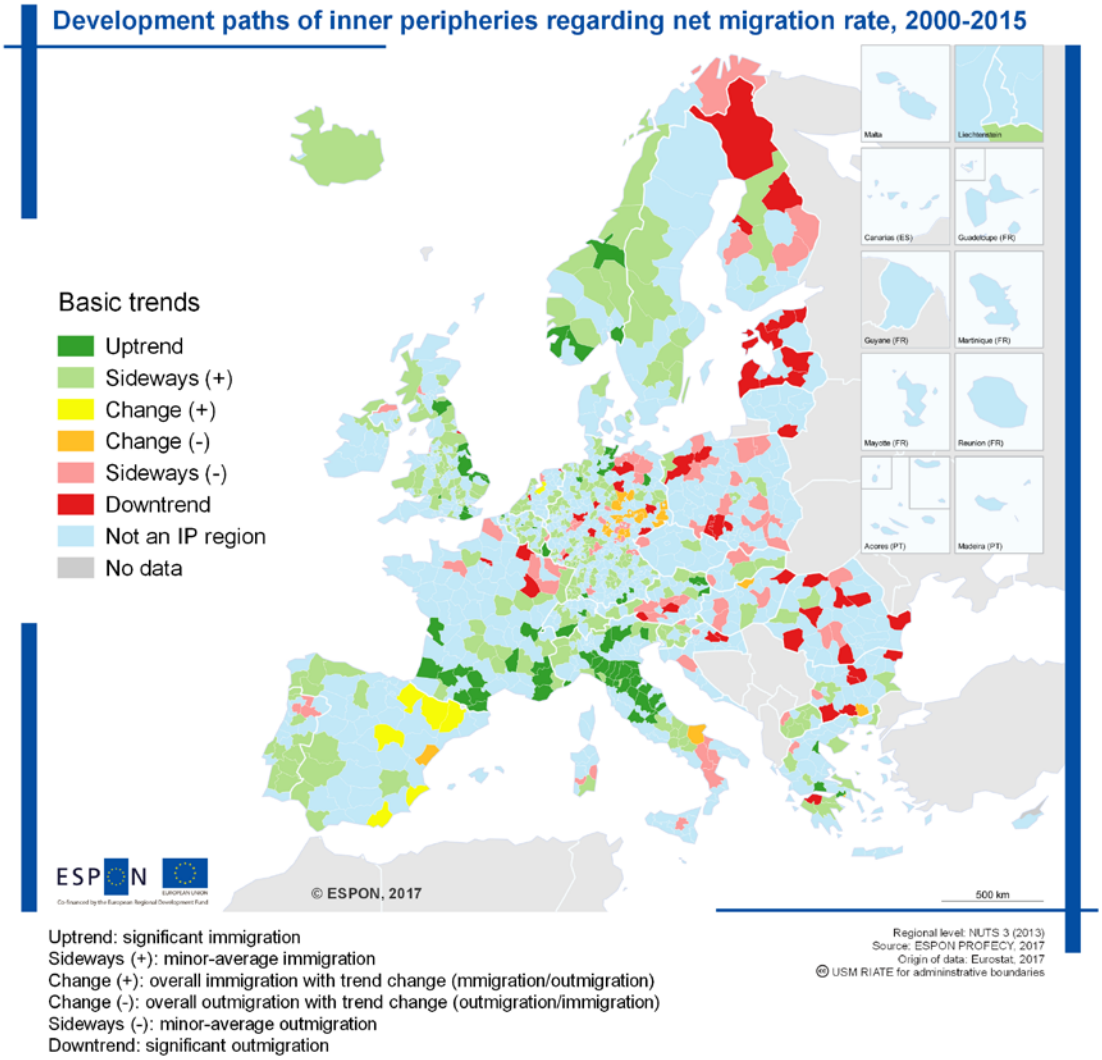
By breaking down the overall change of migration between 2000 and 2015 to annual changes in the case of areas with inner peripheral characteristics, different paths of IP regions can be outlined (Figure 4.2). There are several areas, where significant uptrend dynamics can be observed with high positive net migration rates in every year. Besides, as previously presented figures indicated, the majority of inner peripheries show some (lower) level of continuous immigration during this period. Outmigration tendencies might appear as downtrend paths, but there are more inner peripheral areas, from where only a lower rate of population emigrated annually. Regarding these basic trends, path changes might mean that one or another region which was formerly characterised with significant positive migration dynamics, somehow lost its attractiveness, and become a ‘sender’ area (Change+). While in opposite cases (Change-), the overall balance of migration is negative regarding the period 2000–2015, but these regions become target areas of immigration for some years (mostly in the end of the analysed period).

Figure 4.2: Basic trends in dynamics of inner peripheries regarding change of net migration rate, 2000–2015 (migrant population in year 2000 = 100%)



Regional patterns of inner peripheries' development paths regarding net migration rate outline a very divided Europe (Map 4.2). Areas with clear uptrend dynamics are only concentrated in a few parts of Europe. Mainly regions in Northern Italy and Southern France compose this groups, other territories with similar features are located for example in the United Kingdom, in Norway, and in some parts of Germany, Greece, Austria and Switzerland. While a couple of regions with (lower) positive migration tendencies can be found in every European country, this path mostly characterises countries from the formerly mentioned group. In addition to some examples e.g. from North-eastern France, Germany, Finland or Carinthia and Styria in Austria, negative migration tendencies mostly affect East-central European countries. From the Baltic States to Poland, Romania, Croatia and Bulgaria, and in a lesser extent, Hungary. Switches in migration dynamics paths are more or less regionally exclusive, since they characterise only some groups of inner peripheral areas in Eastern Germany by reversing the basically downtrend dynamics, and becoming new target areas of immigration, or they outline IPs in Spain, where migration tendencies changed path in the late 2000s, in the time of economic crisis.

Map 4.2: Development paths of inner peripheries regarding net migration rate, 2000–2015



The correspondence of these European level tendencies with national trends provide might some interesting findings. In the case of inner peripheries with uptrend dynamics, their position shows immigration rates above the national averages. It might also characterise several regions with permanently lower ratios of positive net migration between 2000 and 2015 from Belgium, Germany, Greece, France, the Netherlands or the UK. IP-regions with population outmigration regarding the analysed period usually are: areas with negative net migration rate, higher than the national average in an emissive country (e.g. Bulgaria, Estonia, Latvia or Poland), or territories of outmigration in a country, which – in general – is a target area of immigration (France, Germany, Italy, the United Kingdom). Path changing German regions, where originally downtrend dynamics were dominant, got closer to national tendencies with this switch.

The differentiation between the four groups of delineations show the correlation of paths of two-two IP types (Table 4.4). On the one hand, in the case of areas identified as inner peripheries due to their lower access to regional centres or SGIs, the share of the dominant path (Sideways (+)) does not reach 50%. Besides, these IP regions might be characterised by higher share of uptrend dynamics, but with negative migration tendencies as well. On the other hand, economic potential interstitial and depleting inner peripheries tend to correspond more to the dominant path – more than 55% of them belongs to the Sideways (+) category. While the share of other migration tendencies is usually lower among these areas.

Table 4.4: Coverage of different types of inner peripheries by migration trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	15.8	47.8	3.0	3.9	19.2	10.3
IP 2 (interstitial)	11.9	55.6	2.0	3.3	17.9	9.3
IP 3 (SGI access)	17.4	46.7	3.3	2.2	19.6	10.9
IP 4 (depleting)	14.9	57.9	1.1	5.4	13.4	7.3

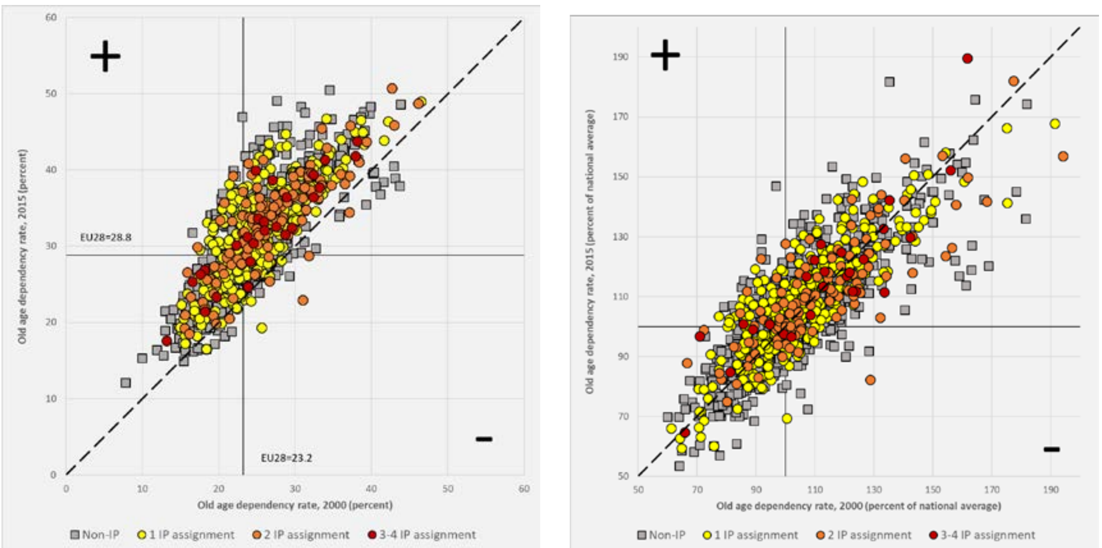
Old age dependency rate

Demographic tendencies potentially associated with the phenomena of inner peripherality can be related to changes in the age structure. Accelerated ageing might be regarded as a consequence of population loss of an area by natural causes due to the lower share of younger age groups or outmigration processes. Position changes of NUTS 3 regions over the past one-two decades, considering their processes of ageing provide some very clear tendencies. In most of the parts of Europe, regions have to face the problem of ageing in some extent, which also results in the general growth of old age dependency rates (see the position of the scatterplot and the diagonal line on Figure 4.3 A). There are only some regions (even inner peripheral or not) among European NUTS 3 units, where these ratios have been decreased.

Figure 4.3: Position shifts of NUTS 3 regions in Europe regarding old age dependency rate, 2000–2015

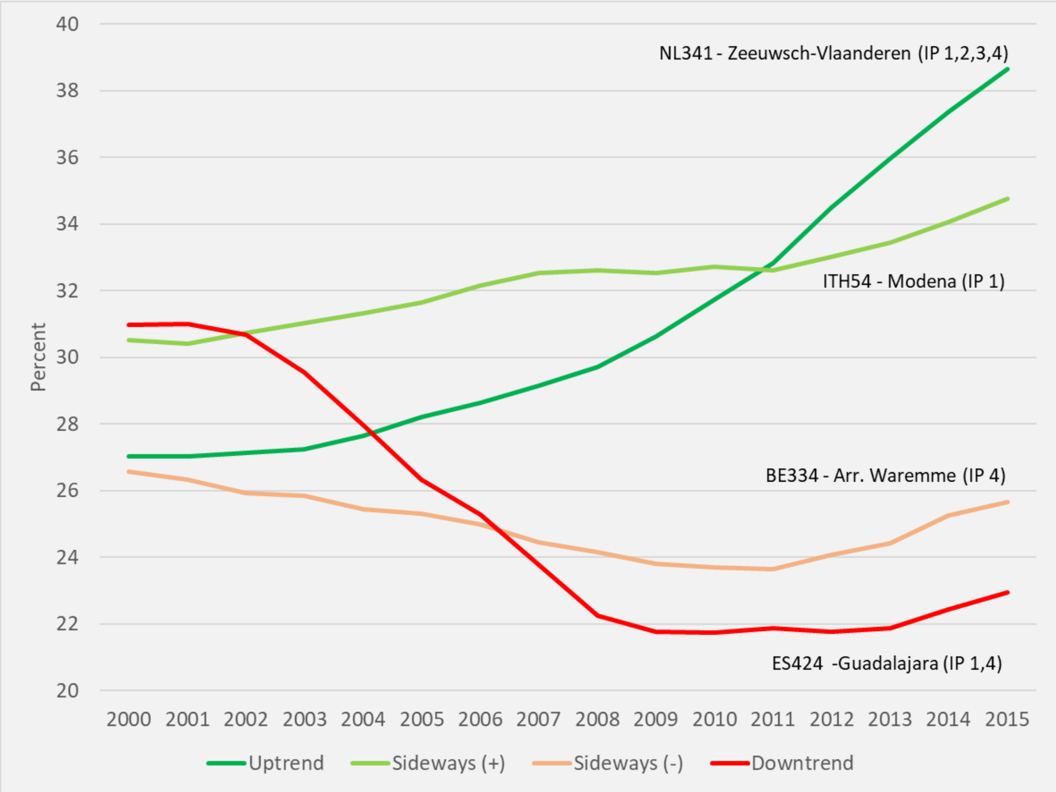
A – unstandardized

B – standardized as percentages of national averages



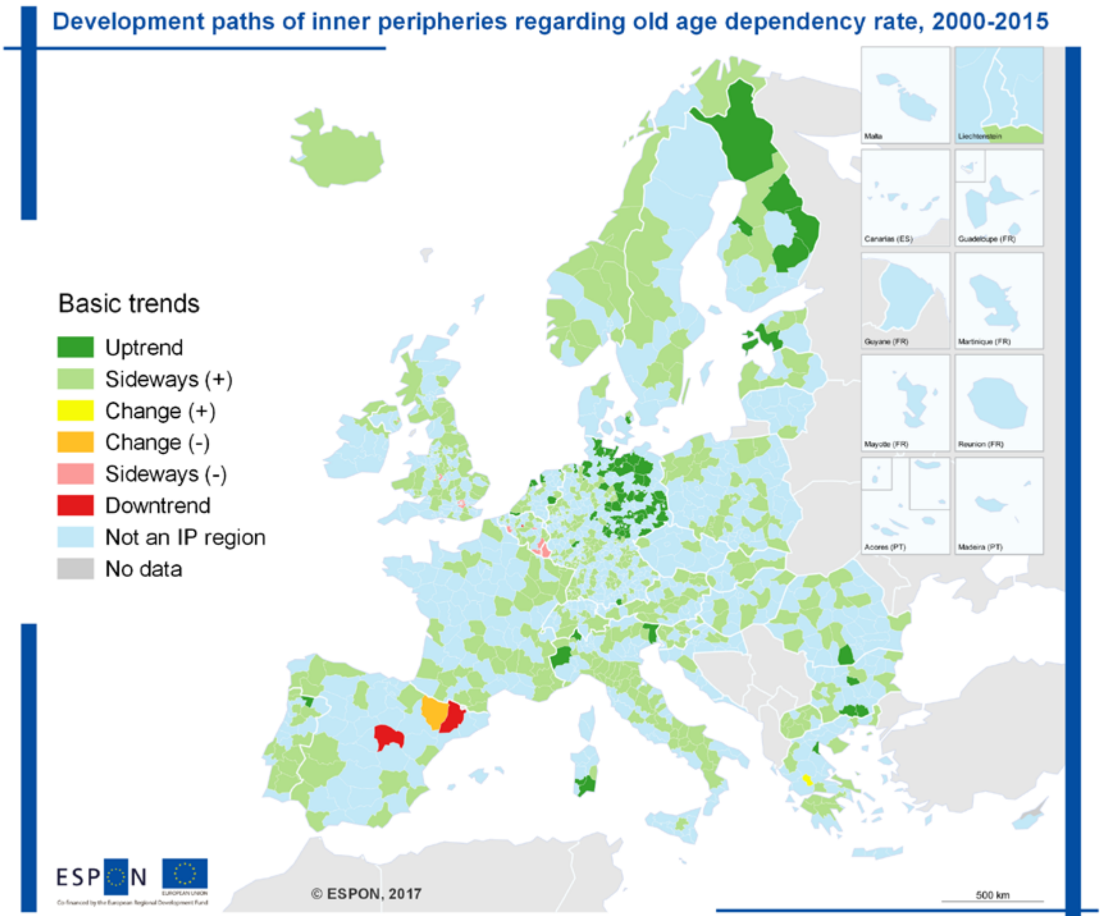
Relative position changes are less significant, the great majority of regions kept their positions (compared to EU average), even if their old age dependency rates were lower of higher in the two years in analysis. Areas related to the phenomena of inner peripherality fit into this image, however as general tendency of IP regions, they used and still use to be part of those groups of territories, where old-age dependency is higher. This trend is more visible when positions and position shifts compared to national averages are taken into account. While the dynamics of inner peripheries is not considerable different from other regions, IP areas tend to be more affected by ageing processes, as shown by their past and current positions among other national territories (Figure 4.3 B). If a region is multiply associated with inner peripherality (by regarding the four delineations), it shows the signs of being more affected by ageing processes too, which also illustrate disadvantages of these areas compared to other regions in the EU. Similar tendencies might appear when simply the change of the share of active age groups is considered.

Figure 4.4: Basic trends in dynamics of inner peripheries regarding old age dependency rate, 2000–2015



Behind these more or less unidirectional trends great variance can be found. Focusing only on inner peripheries shows that these areas followed different path and reached different degree of ageing from the beginning of 2000s to mid-2010s. The most typical trend, affecting inner peripheral areas is the intensive growth of old age dependency rates, which illustrates the notable shift between active and elder age groups. In many cases it shows clear uptrend dynamics, but besides that, most of the IP regions were affected by some kind of growth of old age dependency between 2000 and 2015 (sideways tendencies with less intensive increase). The decrease of old age dependency rates hardly characterised inner peripheral areas during this era. Downtrend dynamics or even less intense decrease of old age dependency rates could only be observed in some regions – typical target areas of migration. But in these cases, these de-ageing processes usually slowed down by the end of 2000s, and affected regions also switched over to the path of increasing old age dependency rates (Figure 4.4). Besides that, other significant – trend-like – changes cannot be observed by analysing these processes.

Map 4.3: Development paths of inner peripheries regarding old age dependency rate, 2000–2015



Uptrend: significant overall increase of old age dependency rate
Sideways (+): minor-average overall increase of old age dependency rate
Change (+): an overall increase of old age dependency rate with trend change (increase/decrease/increase)
Change (-): an overall decrease of old age dependency rate with trend change (decrease/increase)
Sideways (-): minor-average overall decrease of old age dependency rate
Downtrend: significant overall decrease of old age dependency rate

Regional level: NUTS 3 (2013)
Source: ESPON PROFECY, 2017
Origin of data: Eurostat, 2017
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Development paths of inner peripheries regarding old age dependency rates outline meaningful regional patterns in Europe. Uptrend dynamics affects well-known cases of ageing areas in Europe, such as Eastern Germany and several regions in Italy, in Bulgaria or in Baltic states. Besides, some inner peripheries from Finland and the Netherlands share this trend (Map 4.3). Decreasing old age dependency appears only in some IP regions. Most of them, such as Belgian regions or some urban territories in the area of London are preferred target areas of immigration. Here, immigration and demographic characteristics of migrants and their descendants ensures the continuance of a more juvenile age structure.

National position changes of inner peripheries more or less correspond to these tendencies measured at the European level. Inner peripheral areas following uptrend dynamics in ageing faced accelerated increase of old age dependency rates compared to national averages too. Sideways tendencies with the general growth of old age dependency identify a very large group of IP regions. Thus, variances regarding national position changes may appear among these NUTS 3 units, however in most of these cases, the increase of old age dependency rates of IPs is still higher than national averages. Notable exceptions can be found in Germany, the Netherlands and Italy, where several inner peripheral areas with uptrend dynamics relativize the rate of ageing of other regions. Naturally, the decrease of old age dependency in IP regions results in lower rates compared to national averages.

In general, different IP delineation types do not really discriminate between paths of dynamics regarding old age dependency. The absolute majority (75–85%) of both four groups of inner peripheries seem to follow sideways (+) tendencies, which means the moderate growth of old age dependency rates between 2000 and 2015 (Table 4.5). Besides, uptrend dynamics might also characterize a notable share of both four types of inner peripheral areas. Depleting peripheral regions (IP 4) slightly stand out from these patterns, with a higher share of units following uptrend dynamics, which is not surprising, since one of the identification factors of depleting inner peripheral areas is negative population dynamics with related demographic processes (depopulation, outmigration, ageing). On the other hand, the decrease of old age dependency ratio can also be observed more often in the case this group of inner peripheries. Here, the cause of being peripheral cannot be found in population dynamics, but is rather related to economic factors, such as labour market participation or economic performance.

Table 4.5: Coverage of different types of inner peripheries by ageing trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	13.3	*84.2*	0.5	0.5	0.5	1.0
IP 2 (interstitial)	11.9	*86.8*	0.0	0.0	1.3	0.0
IP 3 (SGI access)	7.6	*88.0*	1.1	1.1	1.1	1.1
IP 4 (depleting)	16.1	*74.7*	0.4	0.0	8.0	0.8

4.3 Labour market tendencies

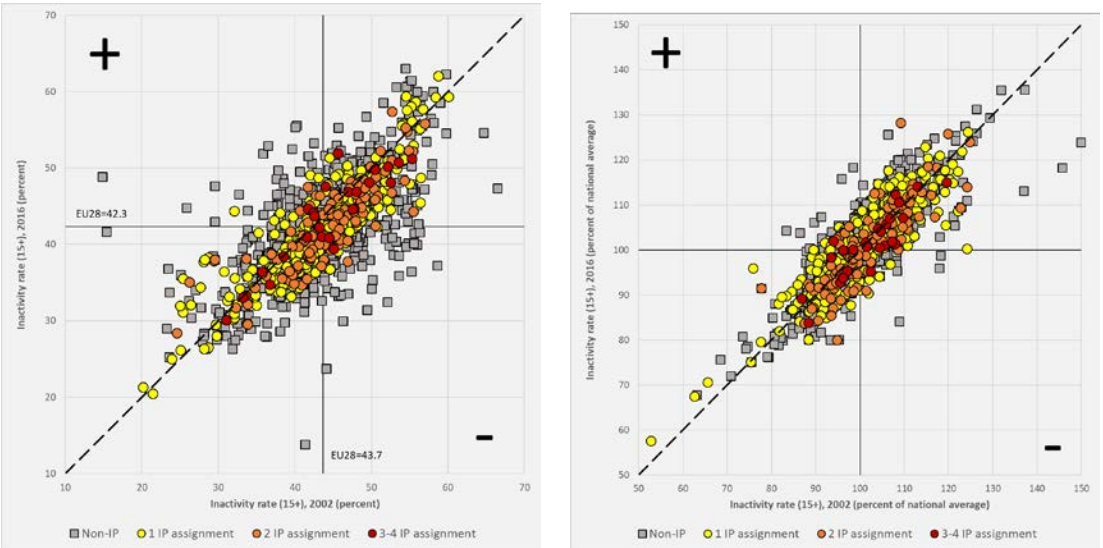
Inactivity rate

Labour market trends are important factors of the evaluation of positions of regions affected by the phenomena of inner peripherality. Among these factors the permanent exclusion from the active labour market, measured by inactivity rate might appear as a consequence of economic regression and the disadvantaged situation of working force in an area, which are regarded as important elements of peripheralization processes.

Figure 4.5: Position shifts of NUTS 3 regions in Europe regarding inactivity rate (15+), 2002–2016

A – unstandardized

B – standardized as percentages of national averages



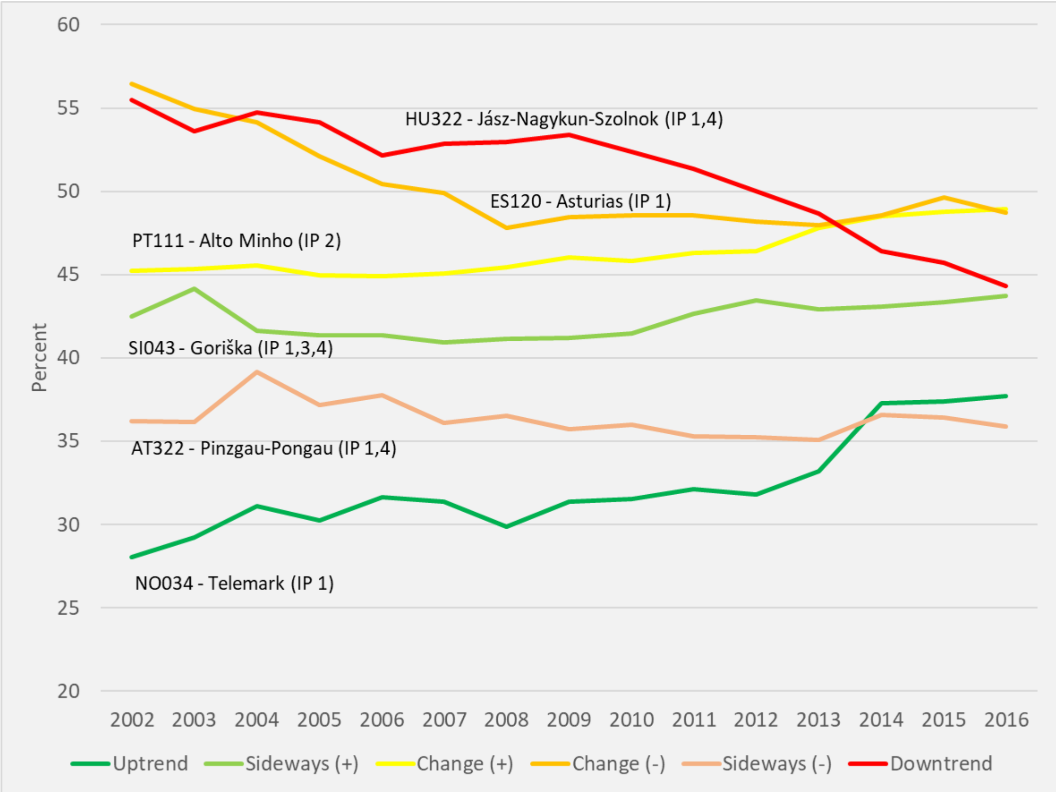
Position shifts of European NUTS 3 units regarding inactivity between 2002 and 2016 display Europe-wide trends, followed by the great majority of regions (Figure 4.5 A). Considering absolute changes within this period both the increase and decrease of inactivity rates can characterize European regions. Nevertheless, as general tendency, the diminution of inactivity is more frequent, even in the case of areas labelled as inner peripheries.

Relative position changes show the conservation of advantages and disadvantages regarding inactivity. Only a minority of regions switched paths by taken these two years into account, and these tendencies seem to be less frequent in the case of inner peripheral areas. Considering position changes compared to national territories, these trends more clearly appear (Figure 4.5 B). The dispersion of regional units is more compact, which illustrate the locked positions of these regions regarding inactivity. It characterizes inner peripheries and non-IP units as well. These tendencies do not really discriminate between IP regions from that aspect if an area is identified being peripheral by one, two or more delineations.

Nevertheless, continuous trends show more variance among inner peripheries than comparison of position shifts between two points of time. Regarding the dynamics in changes of inactivity rates, the spectrum is full (Figure 4.6). Based on Europe-wide trends, the dominance of IP regions with decreasing inactivity rate might be foreseen. In many cases, the intensive decrease of inactivity rates manifest itself in downtrend dynamics, but inner peripheral areas with moderate diminution are more numerous. Besides, tendencies resulted in the growth of exclusion from the active labour market are not uncommon as well. In addition to sideways trends with moderate increase of inactivity rates between 2002 and

2016, there are also inner peripheral areas, where uptrend dynamics might appear regarding this socio-economic factor. Trend changes affecting dynamics of inactivity are important to identify. They indicate breaks in followed paths, which in the case of labour market indicators for the years between 2002 and 2016 indicates potential consequences of the economic crisis on peripheralization. Changes might appear as breaking the originally decreasing paths – trend labelled as Change (-) – or starting a new path of notable increase of inactivity rates – Change (+).

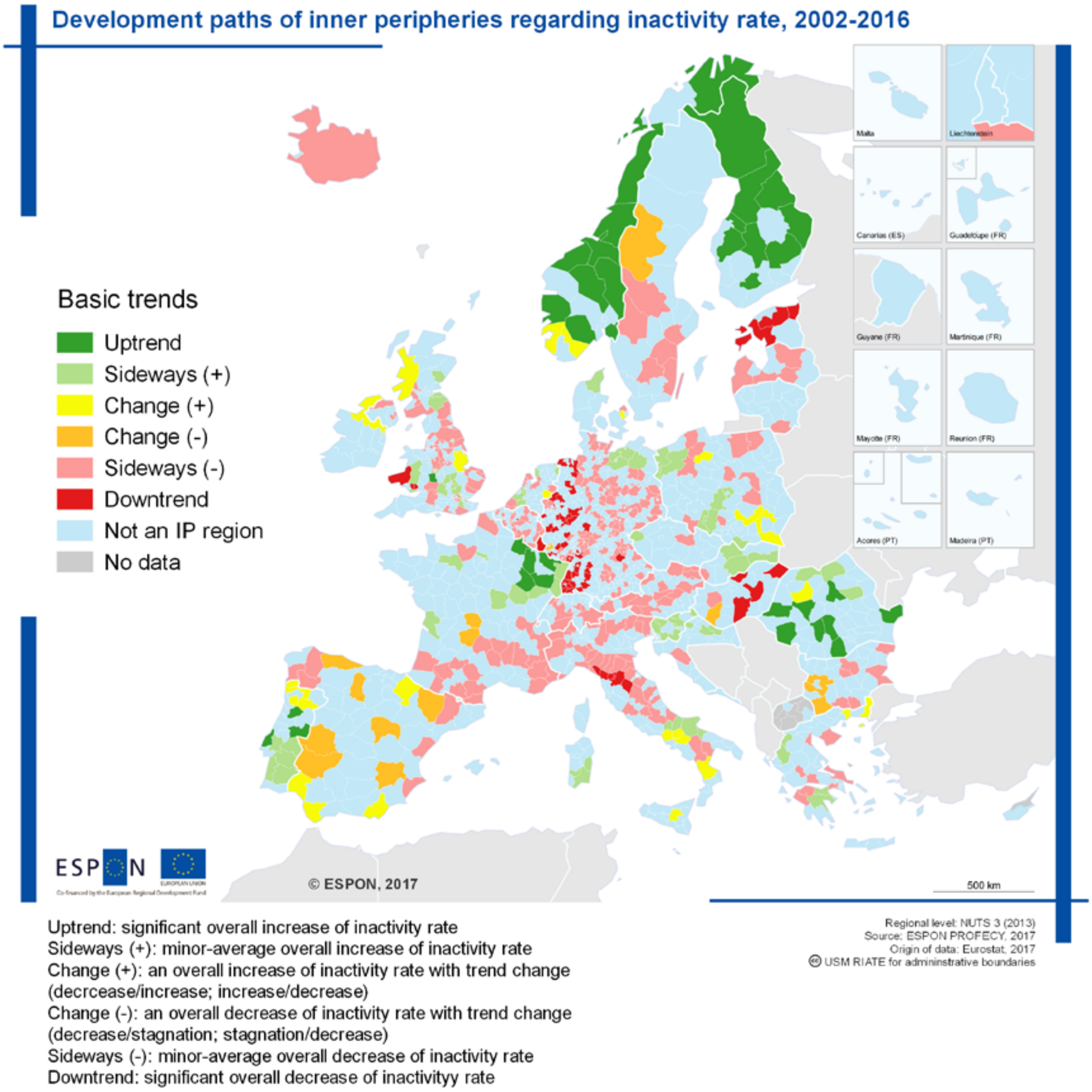
Figure 4.6: Basic trends in dynamics of inner peripheries regarding inactivity rate (15+), 2002–2016



Regional patterns outlined by these development paths mainly show variances between countries, but in several cases, regional variances too between inner peripheral areas within one country too (Map 4.4). Clear uptrend dynamics appear in Scandinavian states (Norway and Finland), in Romania and in some parts of France or Portugal. Moderate growth of inactivity rates between 2002 and 2016 affects many regions and countries, notably, Slovenian or Slovakian inner peripheries, several IP regions from Poland, Portugal the United Kingdom and France.

The most common path of development regarding the dynamics of inactivity in inner peripheral areas is the slight decrease. In some countries, the intensive reduction of inactivity resulted in downtrend dynamics, which shows that several of these IP regions are less vulnerable in this sense, i.e. their peripheral position does not correspond to this labour market disadvantage. Most notable cases are regions from the western part of Germany, Hungarian IP units from the eastern part of the country, Estonian and some Italian inner peripheral areas. Major trend changes regarding inactivity happened in Spain, Italy, Bulgaria and in some other IP regions from the United Kingdom, Norway to Sweden and Poland. Their presence is the most significant in Spain, where inactivity trends in inner peripheries are presumably significantly influenced by the impact of economic crisis.

Map 4.4: Development paths of inner peripheries regarding inactivity rate (15+), 2002–2016



The comparison of these patterns of trends to national position changes might vary this image. Among inner peripheries with uptrend dynamics Finnish and Norwegian IP regions shows moderate growth of inactivity rates compared to other non-peripheral regions of these countries. In the Sideways (+) category only some Portuguese and Romanian regions stand out with lower growth rate of inactivity compared to other parts of these countries, but it might be explained by the presence of other IP region within these countries with uptrend dynamics. It might also happen that even with the (generally moderate) decline of inactivity rates between 2002 and 2016, national positions of inner peripheries became worse from this aspect (Austria, Belgium, Germany and several UK regions) compared to other areas less affected by peripheralization.

Different IP delineation types seem to be spread in some extent among the classified basic tendencies related to changes inactivity between 2002 and 2016, however they are concentrated in designated trend-categories (Table 4.6). All the four IP delineation types shows their greater presence (relative or absolute majority) in processes of moderate decrease of inactivity rates. Moreover, downtrend dynamics are also quite frequent in all groups of identified inner peripheries. Besides, several IP regions from both four delineation categories might be characterized by the increase of inactivity rates (Uptrend and Sideways (+) dynamics) during the analysed period. From the pool of variances between different IP types it is worth to underline the situation of economic potential interstitial areas (IP 2). Among groups of inner peripheries, they seem to be the most affected by the increase of inactivity in Europe, and changes resulting in switch to increasing paths are the most common in case of them. These trends might be related to their shadow location from the viewpoint of economic activity, which might boost the withdrawal from active labour market.

Table 4.6: Coverage of different types of inner peripheries by inactivity trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	9.5	11.0	5.5	5.0	*57.5*	11.5
IP 2 (interstitial)	8.8	17.6	8.8	1.4	*48.6*	14.9
IP 3 (SGI access)	4.3	12.0	2.2	2.2	*65.2*	14.1
IP 4 (depleting)	4.2	17.6	4.6	3.8	*57.5*	12.3

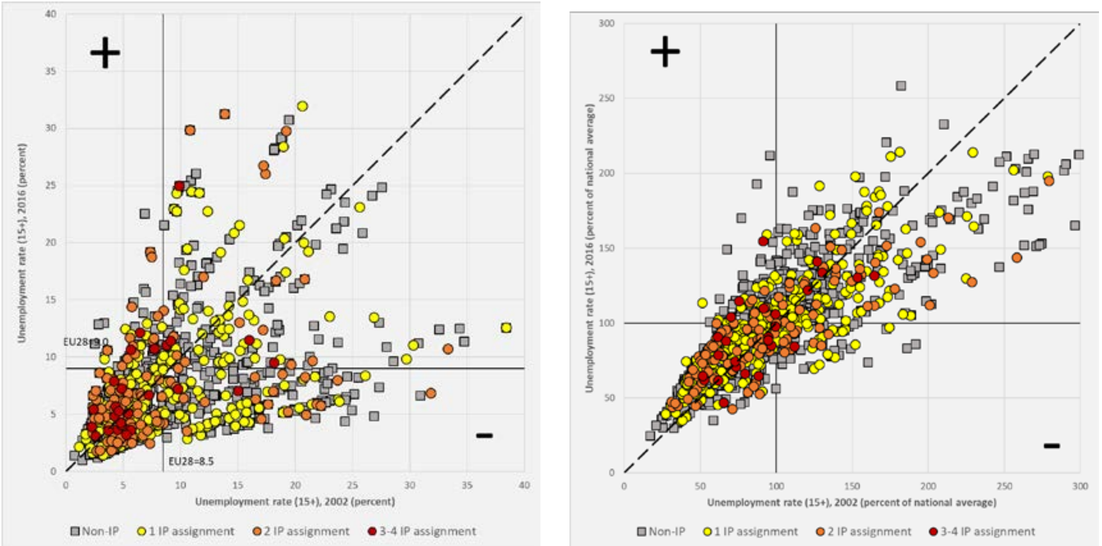
Unemployment rate

Changes of rates of participation at the labour market measured by unemployment rate might also provide useful information on the growing or declining strength of local labour markets or the changing accessibility to workplaces within or outside in an area in the background of global economic processes. While the EU28 averages of unemployment rates seems to be almost equal in 2016 (9%) compared to 2002 (8.5%), patterns of position changes demonstrate much more variance and illustrate different path changes of regions (both inner peripheries and non-IP areas). Unlike to other socio-economic measures, there is no a designated absolute direction of changes, and position shifts regarding unemployment are more disperse, there is a less share of NUTS 3 units which keep their former position (compared to EU28 average) (Figure 4.7 A).

Figure 4.7: Position shifts of NUTS 3 regions in Europe regarding unemployment rate (15+), 2002–2016

A – unstandardized

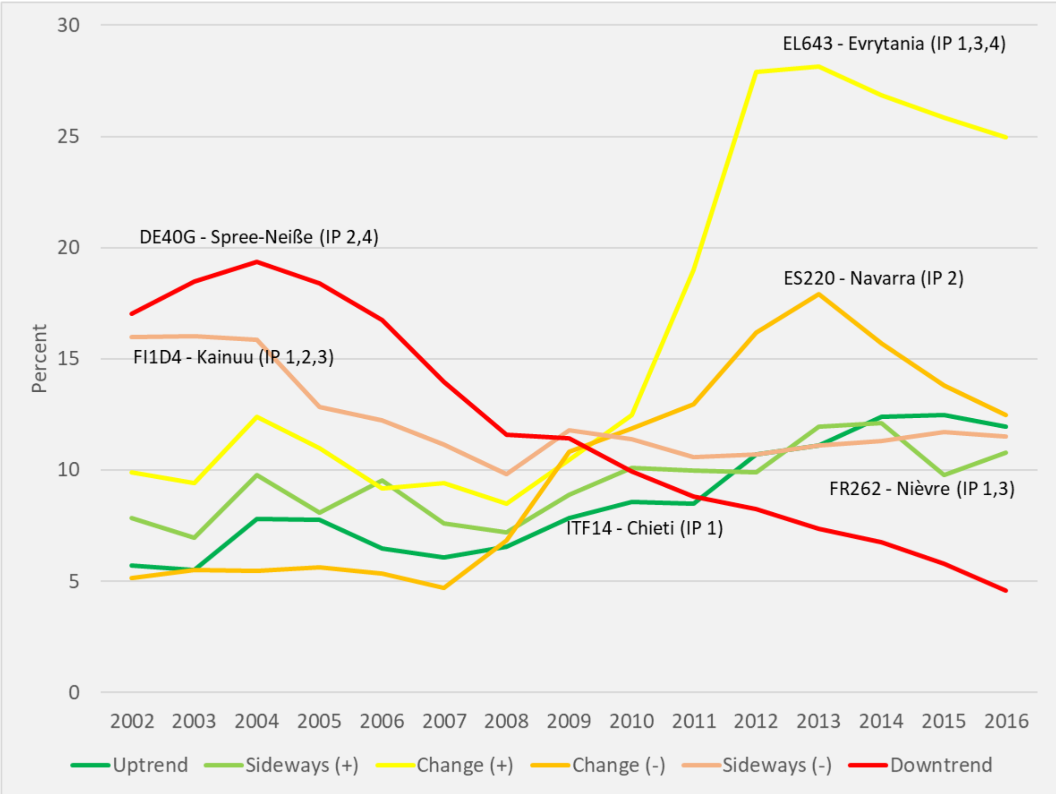
B – standardized as percentages of national averages



Within this pattern, it is worth to mention that positions of regions considered to be inner peripheries is not disadvantaged. Many of these areas had low rates of unemployment in the beginning of 2000s, and still can be characterized by low-moderate level of unemployment in recent years. Naturally, IPs might also be found among regions with more disadvantaged positions regarding changes of past decades, and among ‘shifters’ too (in both direction). In general, position changes compared to national averages of unemployment rates seem to be less disperse. Positions in 2016 are closer to positions in 2002, the majority of European region kept their advantages or disadvantages during this period (Figure 4.7 B). Inner peripheral areas might not be considered as specifically disadvantaged compared to other national territories according to their unemployment positions and trends, they tend to follow Europe-wide patterns. Differentiation between the positions of IP regions based on the number of delineations covered cannot be observed, territories identified as peripheries from multiple aspects do not stand out from these patterns.

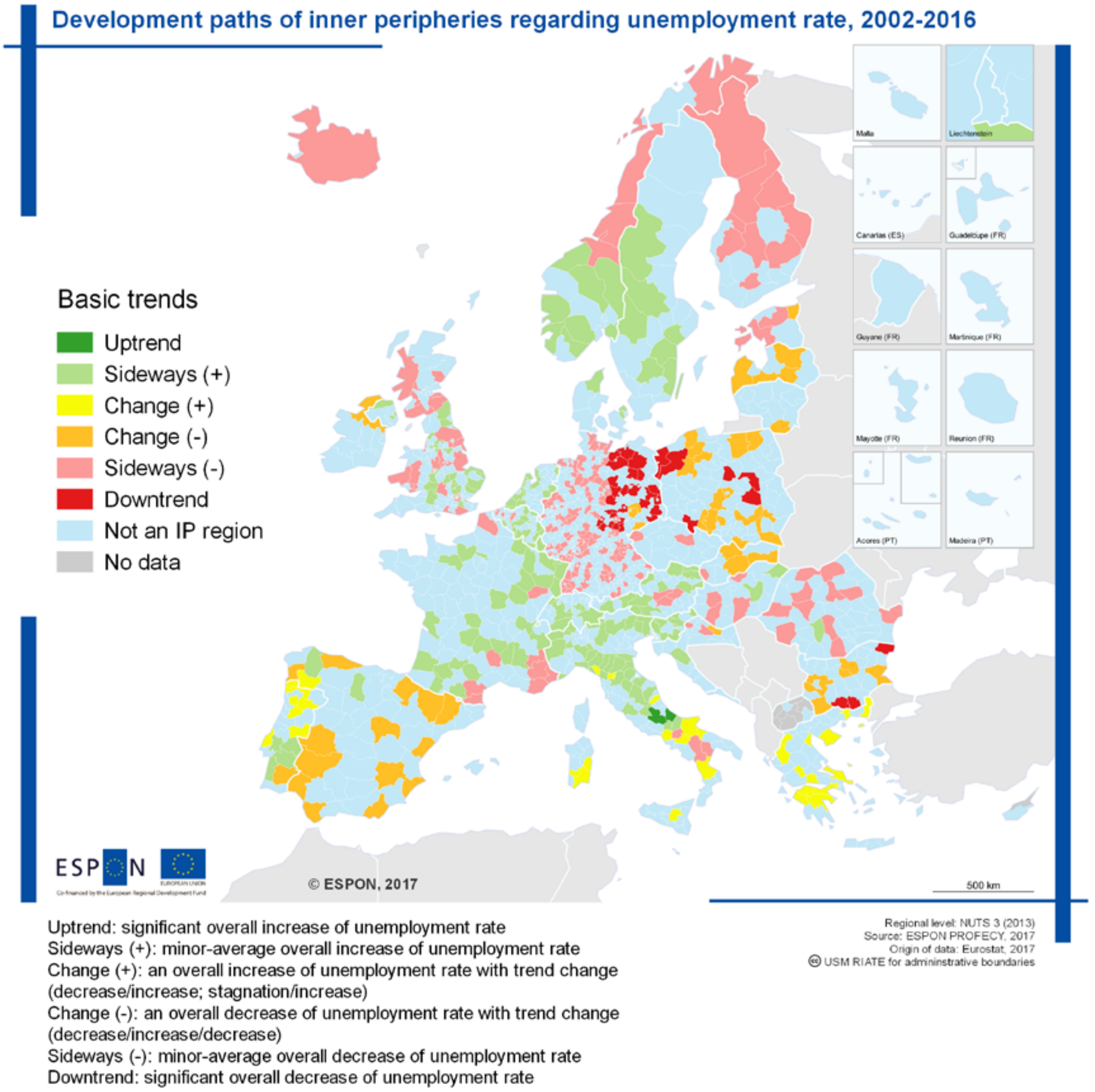
Much of the position shifts and the dispersion of regions regarding unemployment trends between 2002 and 2016 can only be explained by analysing tendencies within this period. Variances of paths followed by inner peripheries during these years can be described by some basic trends (Figure 4.8). An apparent steadiness of positions of IP regions is shown by the fact of that about the 80% of inner peripheral areas are covered by sideways tendencies (in more or less equal numbers), i.e. the moderate growth or decrease of unemployment rates. Besides these lower growing rates more intensive, continuous paths of increasing unemployment are not revealing, there are only very few inner peripheries with uptrend dynamics. Conversely, downtrend paths seem to be more frequent. Considering tendencies related to changes of unemployment rates between 2002 and 2016, breaks in paths, shifts in trends are quite common too. These are mostly related to the impact of economic crisis on labour markets, which caused an accelerated and permanent growth of unemployment rates in several inner peripheral areas. The difference between the two trends is related to that in one of the cases, even the balance of growth of unemployment rates might be positive compared to positions in the pre-crisis period, but the given region returned to a more favourable path – Change (-). While in the other case, the shift seems to be more intense and permanent – Change (+), which indicates prolonged effects of the crisis.

Figure 4.8: Basic trends in dynamics of inner peripheries regarding unemployment rate (15+), 2002–2016



Regional variances of these basic trends outline several significant patterns. Inner peripheral areas with more or less continuous increase of unemployment rates from 2002 to 2016 are mostly situated in Italy, France, Austria, the Benelux, the United Kingdom, Sweden, Norway and Switzerland (Map 4.5). As mentioned before, this means only moderate growth in most of the cases, uptrend dynamics are only present in a very few regions (in Italy). Tendentious diminution of unemployment characterizes those regions, where (A) the basis of unemployment rates was relatively high in the beginning of the period, but favourable economic processes ensured the continuous decrease of it, even after overcoming some regrown peaks due to the crisis (countries from East Central Europe), or (B) where relatively favourable positions survived throughout the analysed period (Germany, several regions from the UK or Finland and Norway). Downtrend dynamics are mostly present in Eastern Germany, in Poland and Bulgaria. Development paths regarding unemployment rate with major shifts outline those inner peripheral areas, whose labour market were hit more by effects of the economic crisis started in 2008. A part of them supposedly returned to a more favourable path after the first shocks (e.g. regions from Spain, Bulgaria, Slovakia or Poland), while others – all of them from the Mediterranean area – had to face bigger shocks or prolonged impact, lasting until today (e.g. Greek inner peripheries).

Map 4.5: Development paths of inner peripheries regarding unemployment rate (15+), 2002–2016



Correspondence between these basic trends and changes of positions of NUTS 3 units identified as inner peripheries in the national contexts is quite high regarding unemployment. Notable exceptions are for example Austria, where sideways tendencies with very slight general increase of unemployment correlate lower growth rate than the national average, which can be explained by the counterweighting effect of Vienna, whose positions worsened more from this aspect. In Portugal tendencies affecting crisis regions makes other inner peripheral areas seem to be more favourable compared to national averages, while for example in Germany, downtrend dynamics of the eastern part of the country relativize the otherwise clear (but moderate) decrease of unemployment rates in other territories in national context.

Arrangement of inner peripheries according to different delineation types into these basic tendencies shows a quite disperse image (Table 4.7). In both four groups of IP regions, most of areas are characterized by sideway trends regarding the change of unemployment. A slight relative majority of inner peripheries delineated by travel times to regional centres faced general growth of unemployment rates between 2002 and 2016, while in economic potential interstitial regions and territories with poor access to SGI the decrease of unemployment was more frequent. The groups of depleting and interstitial IPs contain several regions described as areas suffering long-lasting shift in unemployment. At the same time, a notable share of interstitial inner peripheries (and IPs far from regional centres too) seem to find way back to more favourable paths regarding unemployment.

Table 4.7: Coverage of different types of inner peripheries by unemployment trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	1.0	*40.0*	4.0	12.0	34.5	8.5
IP 2 (interstitial)	0.0	28.4	9.5	14.9	*41.2*	6.1
IP 3 (SGI access)	1.1	38.0	4.3	8.7	*43.5*	4.3
IP 4 (depleting)	0.0	*39.8*	10.0	5.4	39.5	5.4

Low qualification

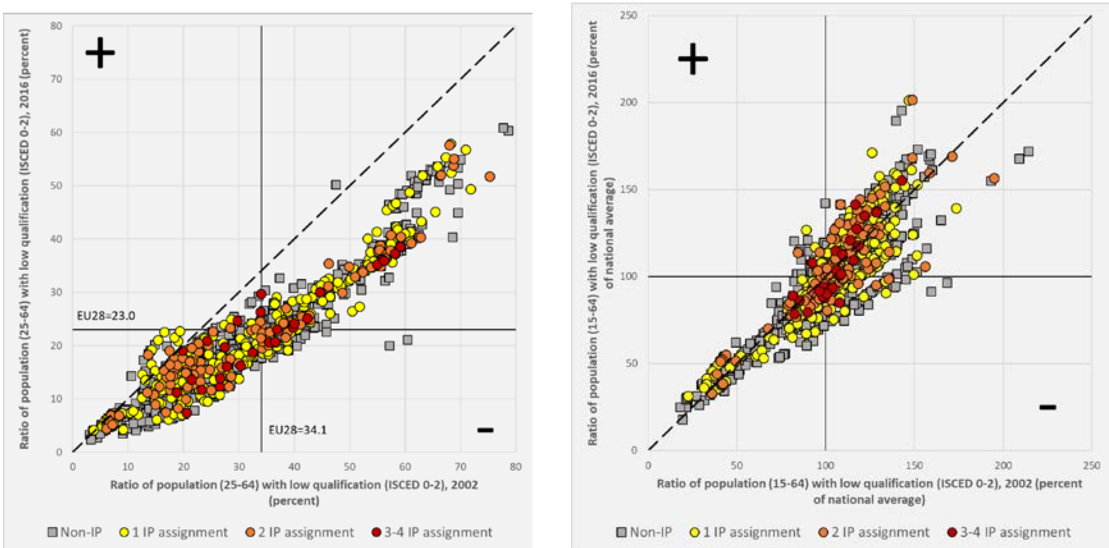
Priority of inclusive growth declared by the Europe 2020 strategy is not only related to direct labour market indicators but to measures of qualification too, since potential success on the labour market might strongly be defined by educational attainment[24]. Besides the general decrease of ratios of population with low qualification (ISCED 0–2) observable all over Europe in the past decades, several processes associated with peripheralization might have a countereffect these favourable tendencies at different regional levels (outmigration of young, qualified people from an area, challenges of provision of units of educational services etc.). Nevertheless, this impact is very difficult to identify, since the overall decrease of ratios of population with low qualification provides more significant trends. Between 2002 and 2016 the decrease of low educated people within the EU28 exceeded 10 percentage points (from 34.1% to 23%). Within this period, there were only some NUTS 3 regions, where values of this measure have increased (Figure 4.9 A).

Regarding relative position shifts related to this indicator, it can be stated that previously more disadvantaged areas in Europe (from the aspect of qualification) are still in unfavourable positions compared to others, where ratios of lower educated people was originally lower. Nevertheless, now the difference between them is not that high than fifteen years before. Being inner peripheral or not does not really alter this image. While the dispersion of trends regarding position shifts compared to national averages seems to be bigger, there is no significant observable difference between regions more vulnerable to phenomena of peripheralization and other areas (Figure 4.9 B). Notable changes mainly characterise regions where the ratio of population with low qualification is/was much higher compared to the national average. A part of them managed to diminish their drawbacks, others got stuck in more disadvantaged positions.

Figure 4.9: Position shifts of NUTS 3 regions in Europe regarding ratio of population (25–64) with low qualification (ISCED 0–2), 2002–2016

A – unstandardized

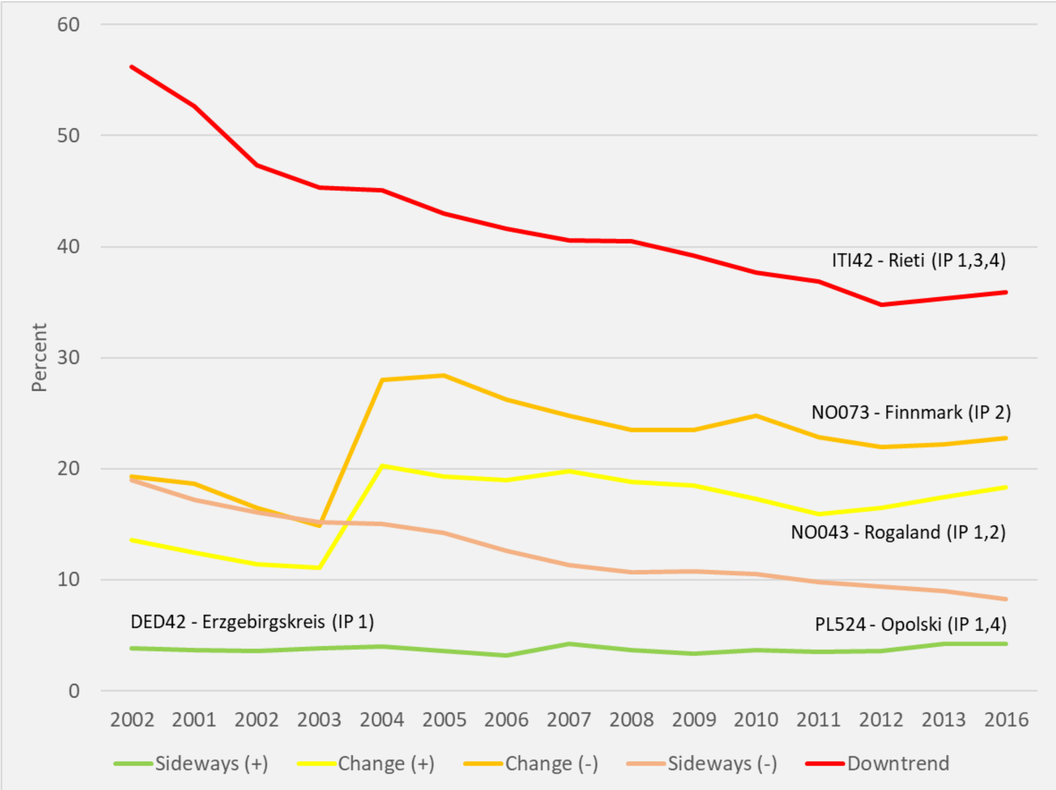
B – standardized as percentages of national averages



Tendencies affecting inner peripheral areas' ratios of population with low qualification within the analysed period show no significant alterations compared to general trends. The most notable paths of development of this measure are related to downtrend and sideways tendencies with significant or moderate decrease of this ratio (Figure 4.10). These paths were more or less continuous over the past fifteen years, there is only a small proportion of NUTS 3 IP regions, where the decrease of lower educated people has been discontinued in the latest years (mainly from Italy and Germany). Continuous increasing tendencies of ratios of population with low qualification were not present in Europe (with a very few exceptions) during the analysed period. Significant position shifts are mostly related to regions of Norway, where a break in time series can be observed in the early 2000s in the LSF database, which leads to a sudden increase of lower educated population. It cannot be really considered as a real trend, since it might be related to a data issue.

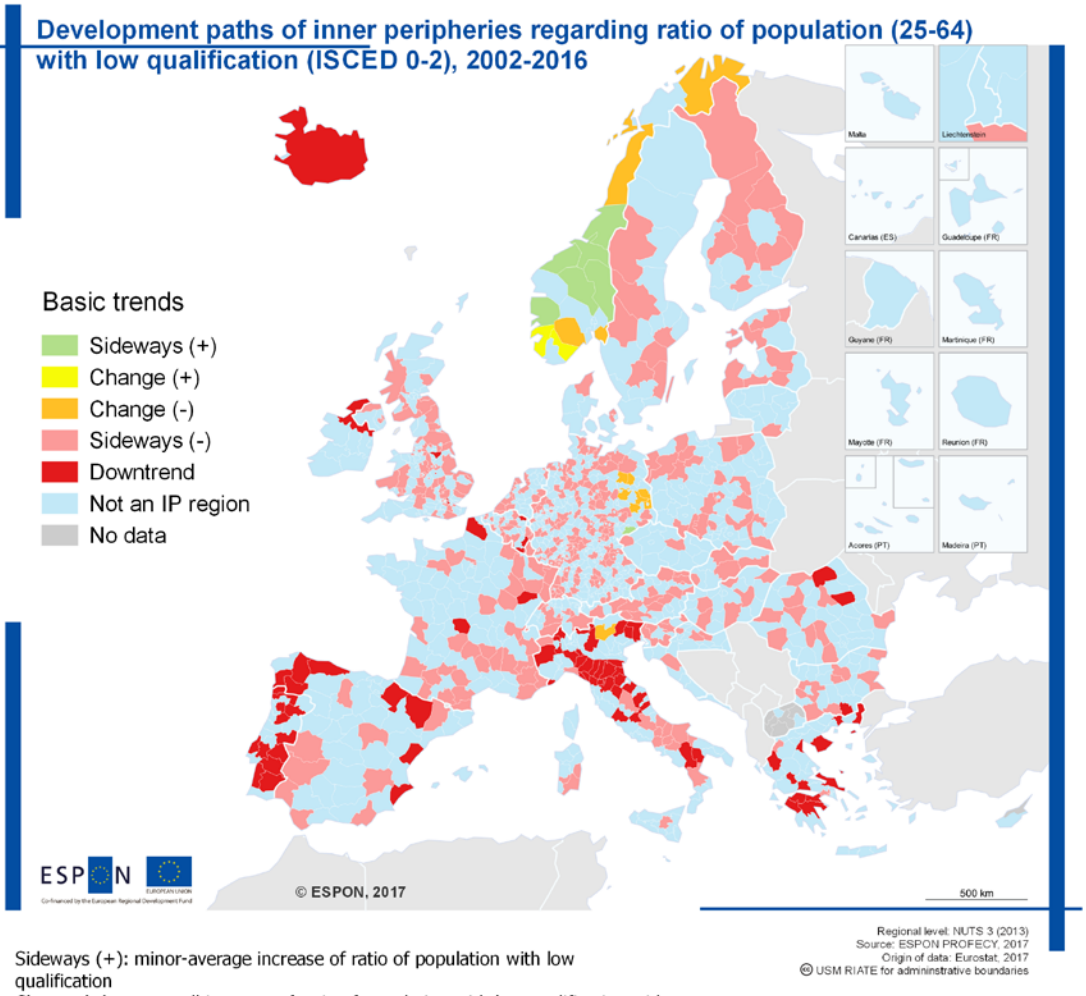
Regional variances of these tendencies confirm the previously introduced findings. Besides extrema and unreliable data, regional patterns of inner peripheries from this aspect are outlined by geographical differences of regions with moderate and more significant decrease of ratios of population with low qualification between 2002 and 2016 (Map 4.6). While examples of a downtrend path could be found in East Central Europe (Romania, Bulgaria) and in the Atlantic states of the EU (France, Belgium, the UK, Ireland), most of inner peripheral areas following this trend are situated in Mediterranean countries (Portugal, Spain, Italy and Greece). Here, the high ratios of population with low qualification (60–80%), even in the early 2000s, provided a basis for a sudden decrease regarding a period of fifteen years. Nevertheless, in Spain and Italy (contrary to Portugal and Greece) this decreasing path was not uniform in every part of these countries. For instance, inner peripheral region from the western or central part of Spain and IPs of Southern Italy showed a more moderate diminish of lower educated people compared to other national territories. In other parts of Europe, this moderate decrease of ratio of population with low qualification between 2002 and 2016 was a more universal tendency.

Figure 4.10: Basic trends in dynamics of inner peripheries regarding ratio of population (25–64) with low qualification (ISCED 0–2), 2002–2016



Regarding the basic correspondence between the mentioned general tendencies and changes within the national context affecting regions identified as inner peripheries, some notable exceptions are already mentioned (several IP regions of Spain and Italy). Similar paths can be observed in most of the case of Hungarian, Croatian and Greek inner peripheral areas, where a moderately or even significantly decreasing dynamics of ratios of population with low qualification has not led to favourable position changes. Despite their (absolute, numerical) progress regarding this phenomenon, their backwardness compared to other territories of these countries has increased during the past fifteen years. In the case of other inner peripheries this clear trend could not be observed, there are numerous inner peripheral NUTS 3 regions in every affected country, which made advancements and others which lagged behind compared to national level decrease of ratios of lower educated people between 2002 and 2006.

Map 4.6: Development paths of inner peripheries regarding ratio of population (25–64) with low qualification (ISCED 0–2), 2002–2016



Sideways (+): minor-average increase of ratio of population with low qualification
Change (+): an overall increase of ratio of population with low qualification with trend change (increase/decrease/increase)
Change (-): an overall increase of ratio of population with low qualification with trend change (increase/decrease)
Sideways (-): minor-average decrease of ratio of population with low qualification
Downtrend: significant decrease of ratio of population with low qualification

The differentiation between groups of IP delineation types does not show real variance regarding the paths of development related to current processes of educational attainment (Table 4.8). In every group decreasing-sideway dynamics could be considered as the most dominant trend, at least 75% of NUTS 3 units identified as inner peripheries follow this tendency. Inner peripheries delineated by a certain lack of access to Services of General Interest (IP 3) and depleting IP areas (IP 4) are more likely to be characterised by this path. Downtrend dynamics of ratios of population with low qualification is slightly more frequent among inner peripheral areas with higher travel times to regional centres (IP 1) and within the group of economic potential interstitial areas (IP 4).

Table 4.8: Coverage of different types of inner peripheries by (low) qualification trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	0.0	2.5	1.0	3.0	*75.9*	17.7
IP 2 (interstitial)	0.0	2.0	0.7	2.6	*75.5*	19.2
IP 3 (SGI access)	0.0	0.0	0.0	1.1	*84.8*	14.1
IP 4 (depleting)	0.0	0.0	0.0	1.5	*82.4*	16.1

4.4 Economic tendencies

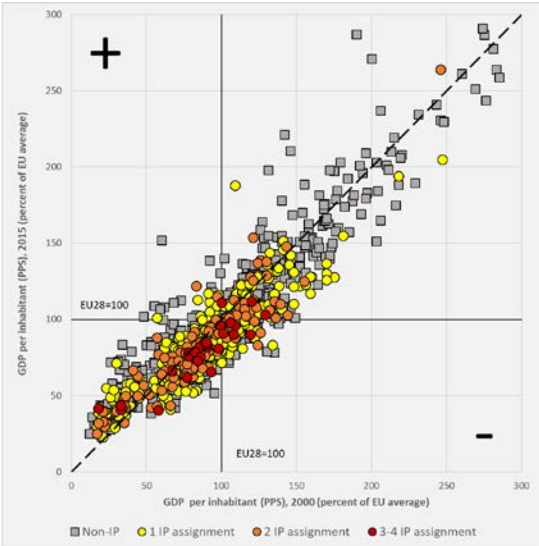
GDP per inhabitants

Inner peripheral status of regions might be linked to their economic performance in many ways, and it is also important to see, how general economic processes, change of potentials and capacities of regions differentiate between IP and other areas and within the group of inner peripheries. Position shifts regarding GDP per inhabitant between 2000 and 2015 generally shows the somehow locked positions of regions in Europe. There is a significant number of NUTS 3 units (either inner peripheral or not), whose formerly favourable positions deteriorated due to a switch of path in economic performance during the period, but most of the European regions remained in their original relative positions (better or worse) compared to the EU28 average (Figure 4.11Figure 4.8 A). Absolute changes show that the majority of analysed regional units suffered some kind of loss in economic performance from 2000 to 2015. Inner peripheral position appears as a disadvantage within these general patterns. Position changes of IP areas basically do not follow trend divergent from other territories. Shortcomings of these regions are rooted in their previously existing and preserved significant handicap in economic performance compared to other areas in Europe.

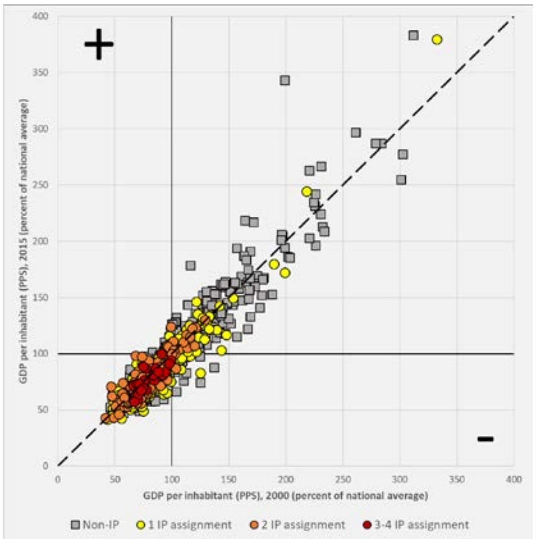
Considering national contexts of changes in economic performance, position shifts measured by GDP per inhabitant, an even more compact pattern can be observed, with only a low degree of shifts regarding relative position changes compared to national averages (Figure 4.11 B). The disadvantaged positions of regions identified as inner peripheries measured at national scales. Their economic performance usually lags behind other national territories, and this situation has not really changed in the past one-two decades. Regarding GDP per inhabitant values, being multiply peripheral in the used system of delineations means further disadvantages. Former and actual positions of these areas (at both European and national levels) are poorer compared to other territories, and trends characterize their economic performance in the past years show not much sign of improvement.

Figure 4.11: Position shifts of NUTS 3 regions in Europe regarding GDP per inhabitant (PPS), 2000–2015

A – unstandardized

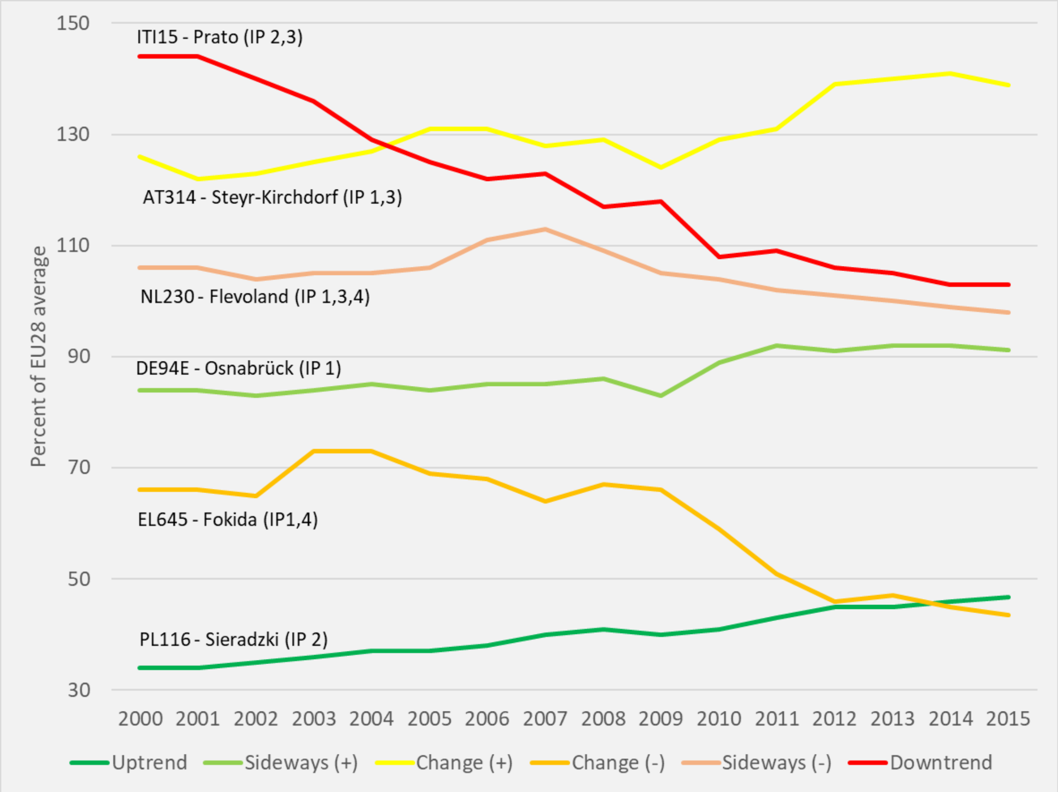


B – standardized as percentages of national averages



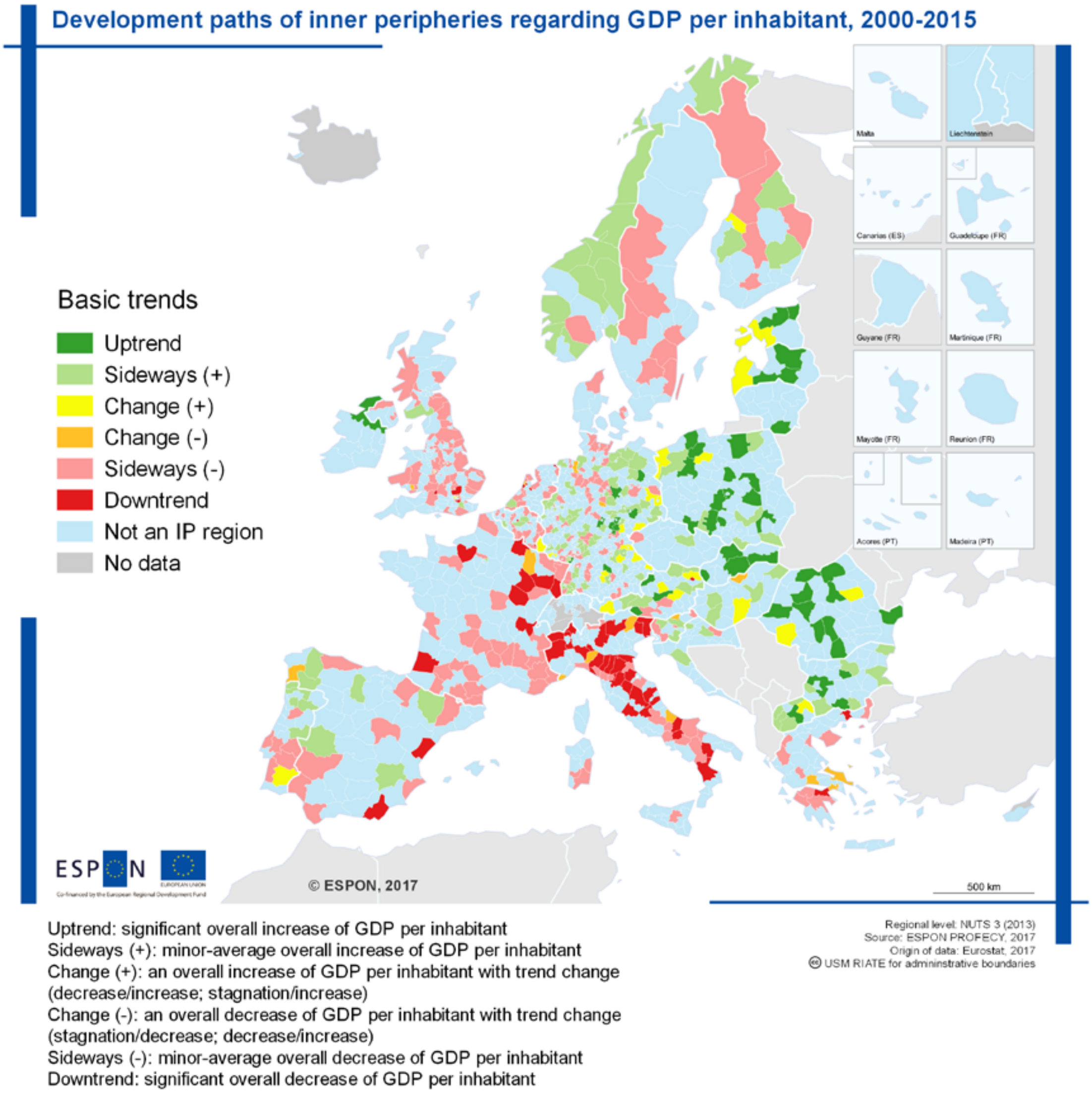
Position shifts of inner peripheral regions in Europe seem to be more tinged by focusing on GDP dynamics within the period 2000–2015. Basic trends related to economic performance of regions during these years have something in common. They are significantly affected by the economic crisis, which notably set back the GDP growth in many parts of Europe. It appears as a break in the path based on time series in almost every trend type. Since not absolute GDP growth is measured here, but tendencies on how the relative position of region has changed compared to the EU28 average, the better or worse position of inner peripheral areas are not independent from each other. Uptrend dynamics of economic performance can be described by almost continuous improvement of GDP per inhabitant values compared to European averages (Figure 4.12). Positive sideways tendencies characterize inner peripheral areas, where the dynamics of economic performance was low, but after the economic crisis that stagnating position compared to the EU28 level has appeared as improvement (compared to other IP regions). Negative tendencies in economic performance affect regions whose regression started in or before the beginning of the analysed period or which started to decline due to the crisis. In several cases, this decline mostly related to the impact of the economic crisis caused significant change of path in economic performance. At the same time, other position shifts might appear as positive tendencies, in the case of inner peripheral areas with slight-moderate GDP growth in the early-mid 2000s, which kept and improved their positions due to the relative recession of others.

Figure 4.12: Basic trends in dynamics of inner peripheries regarding GDP per inhabitant (PPS), 2000–2015



Regional variances of development paths of inner peripheries regarding economic performance from 2000 to 2015 might be illustrated by quite clearly outlined patterns in Europe. Uptrend dynamics mostly characterize inner peripheral areas from East Central Europe (Baltic States, Poland, Slovakia, Romania, Bulgaria), which fit into tendencies affecting not just inner peripheral regions from these parts of Europe (Map 4.7). The improvement of their economic performance was quite fast to reach advancements from a generally lower basis. Trends with moderate approach to or advancement of the EU28 GDP per inhabitant levels are mostly present in Central Europe (Austria and Germany), but some Hungarian, Spanish, Portuguese, Norwegian or Finnish IP areas belong to this group. Paths with significant positive changes are also present in these countries. Recession in economic performance compared to EU28 average in the analysed period mostly affect inner peripheral regions from the Atlantic, Nordic and Mediterranean parts of Europe. Downtrend dynamics especially characterize French and Italian (and in less extent Spanish and Greek) peripheral territories. Notable negative shifts are also present in these countries.

Map 4.7: Development paths of inner peripheries regarding GDP per inhabitant (PPS), 2000–2015



The comparison of these tendencies to processes at the national level illustrate some interesting findings of inner peripheries. Oddly, IP areas with uptrend dynamics are not always show improvement of economic performance compared to other national territories. It can be explained, because most of regions within this group are not just peripheral, but reached less improvement (measured by GDP per inhabitant) from 2000 to 2015 compared to non-IP areas within these countries (Poland, Romania, Slovakia). There is a potentially similar situation in the case of positive Sideways regions. Otherwise, the positive trend compared to the level of EU28 also means improvement of economic performance at national levels too. Tendencies with worsening positions at the European level follow the same path when comparing these inner peripheral areas to other national territories, only the change of economic performance of some Italian regions appears as positive trend at the national level due to the strong presence of downtrend dynamics in other parts of the country.

Differentiation between groups of IPs based on delineation types shows some convergence of paths regarding position changes of inner peripheries identified by their handicap in accessing regional centres (IP 1), different types of SGI (IP 2) or their interstitial position in the economic space (IP 2) (Table 4.9). Depleting inner peripheral areas have other characteristics considering changes of GDP per inhabitant values between 2000 and 2015. Since the basis of this type of delineation used GDP dynamics as a criterion, it is clear that the share of these regions is lower in trend groups with improvement of economic performance. In compliance with that, inner peripheries from this delineation group are more listed into trend paths indicating economic regression.

Table 4.9: Coverage of different types of inner peripheries by economic performance (GDP) trends (%)

	Uptrend	**Sideways (+)**	**Change (+)**	**Change (-)**	**Sideways (-)**	**Downtrend**
IP 1 (regional centres)	12.0	28.5	6.0	4.0	*38.0*	11.5
IP 2 (interstitial)	13.4	32.9	4.7	2.7	*40.3*	6.0
IP 3 (SGI access)	9.0	27.0	7.9	4.5	*40.4*	11.2
IP 4 (depleting)	4.2	15.8	3.9	5.4	*61.0*	9.7

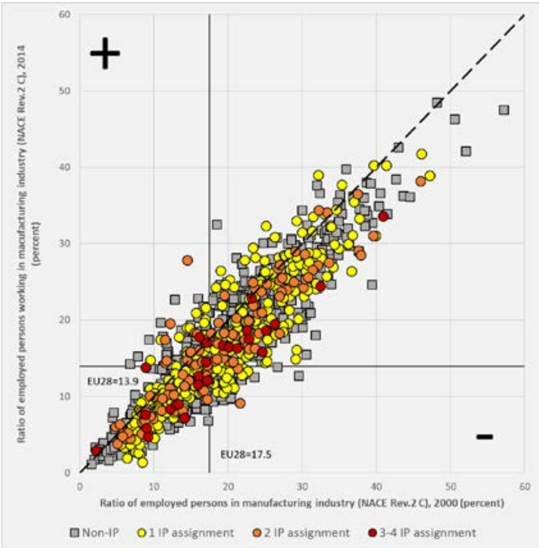
Employment in manufacturing industry

Besides direct changes in economic performance, it might be worth to analyse how changes in economic structure impact inner peripheral areas in Europe, and see if these structural changes are in relation to their peripheral status. To illustrate these tendencies, positions changes of regions regarding employment in manufacturing industry between 2000 and 2014 are investigated here. During the past decades, significant deindustrialization processes could be observed in almost all over Europe, within the EU28 the share of this economic branch among employed persons fall from 17 to 13.9% (Figure 4.13 A). Regarding absolute position changes of inner peripheries and non-IP regions, we find the majority of them fitting into this decreasing tendency, while there are also several areas where the ratio of employment in manufacturing industry increased during these years. The number of position shifts is relatively low in different groups of regions, shock-like changes are not outlined by the comparison manufacturing employment data from these two years.

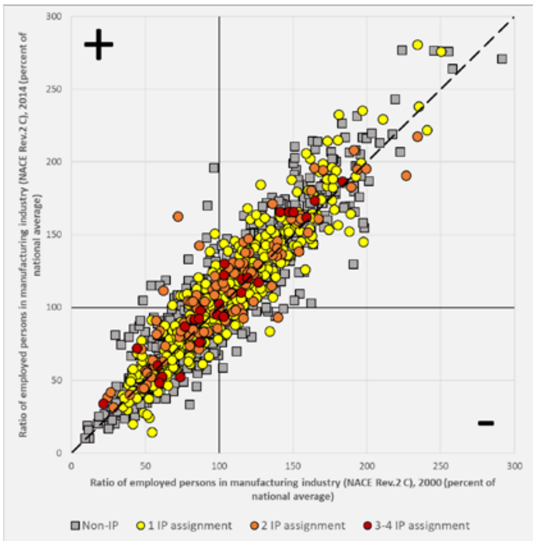
National tendencies also correspond to these patterns (Figure 4.13 B). Besides some bigger shifts, areas mostly kept their former relative positions. Inner peripheries also fit into this image, they faced similar trends regarding employment in manufacturing industry compared to other national territories. The differentiation between inner peripheral areas based on the number of assignments in the four delineations does not show the sign of different positioning of disadvantages of regions multiply affected by the phenomena of peripheralization, apart from that these areas are less often present among highly industrialized regions.

Figure 4.13: Position shifts of NUTS 3 regions in Europe regarding employment in manufacturing industry (NACE Rev.2 C), 2000–2014

A – unstandardized



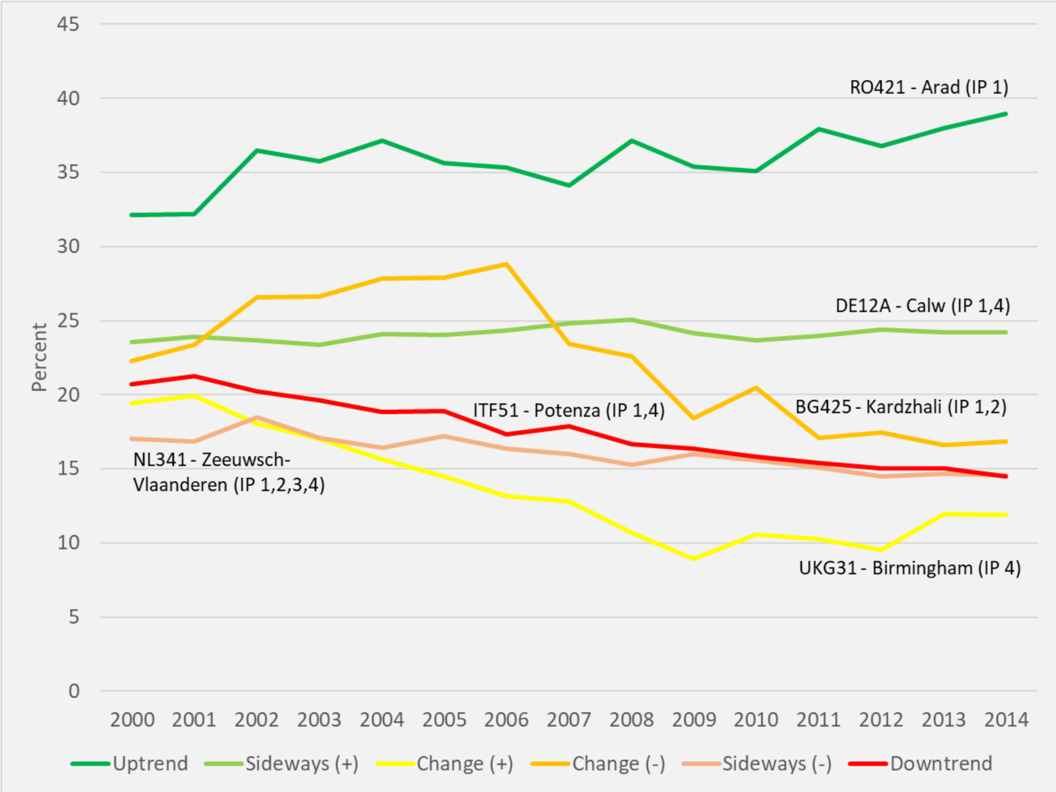
B – standardized as percentages of national averages



Besides clear tendencies of deindustrialization in all over Europe, the spectrum of paths regarding changes of shares of employment in manufacturing industry between 2000 and 2014 seem to be more diverse, even within the wide groups of inner peripheries (Figure 4.14). Clear uptrend dynamics or the slight increase of the ratio of employment in manufacturing branches are not frequent trends, but they appear in several countries. Most of European inner peripheral areas follow a decreasing path in regarding manufacturing employment. In some cases, the intensity of deindustrialization result in downtrend dynamics, while in the great majority of NUTS 3 units identified as being inner peripheral moderate decrease can be observed regarding the period from 2000 to 2014. Besides clear unidirectional tendencies, switch between basic paths might also occur. In most cases, it means some degree of reindustrialization in IP regions with formerly decreasing trends regarding employment in manufacturing. Their presence might be related to the intention of boosting economic performance after the economic crisis by economic production.

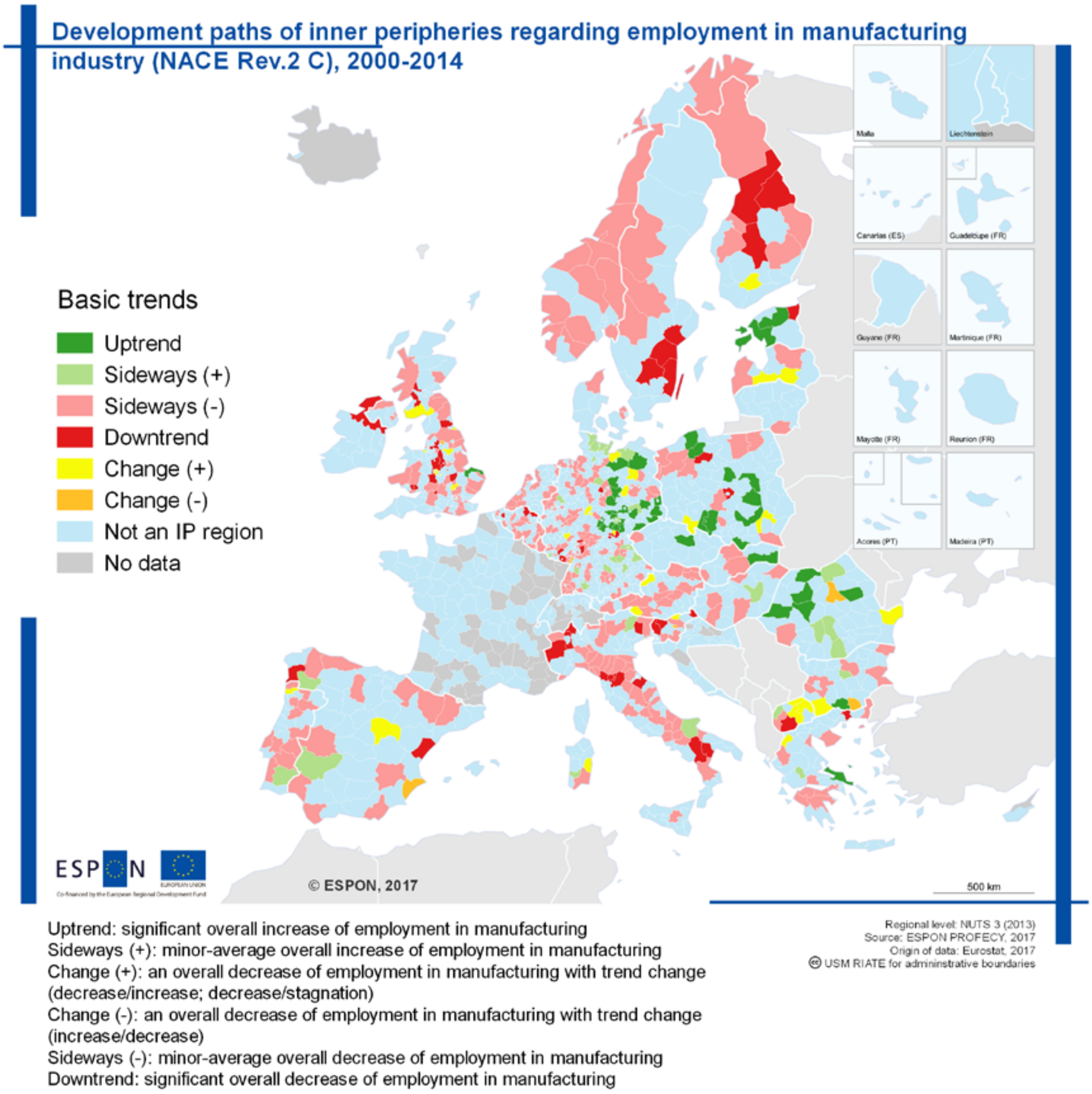
Basic directions of changes in ratios of employment in manufacturing industry manifest themselves in characteristic regional patterns in Europe. Trends with increasing industrial employment, even uptrend dynamics or more moderate growth of employment shares of this economic branch, mainly characterize East Central European inner peripheries and German regions (from the eastern parts of the country). These paths correspond to improvement regarding other socio-economic factors (economic performance, unemployment), which implies that the role of industry is still significant in the prosperity of these inner peripheral areas. Locations of re-growing shares of employment in manufacturing industry (Change (+) path) can also be found in most cases. The decrease of manufacturing employment affects all other regions in Europe in varying extent. Besides paths of moderate reduction, downtrend dynamics are present for example in Italy, in the United Kingdom, in Germany and in some Scandinavian inner peripheral areas (Map 4.8).

Figure 4.14: Basic trends in dynamics of inner peripheries regarding employment in manufacturing industry (NACE Rev.2 C), 2000–2014



The comparison of tendencies at the European level to position changes in national contexts implies two-folded findings. On the one hand, the general paths of development of inner peripheral areas regarding employment in manufacturing industry between 2000 and 2014 are in correspondence with trends affecting them compared to national territories. Growth or significant decrease of industrial employment leads to similar position changes at both the European and national levels. Nevertheless, in many cases of those IP regions where the decrease of share of industrial employment only seems to be moderate, this decrease resulted in increase compared to other national territories (e.g. in the UK, Sweden, Portugal, the Netherlands, Italy, Spain or Belgium). It might also imply that the role of industry remained more significant in inner peripheries compared to other parts of these countries.

Map 4.8: Development paths of inner peripheries regarding employment in manufacturing industry (NACE Rev.2 C), 2000–2014



Division of the selected basic trends only shows slight differentiation between the four delineation types (Table 4.10). About 2/3 of NUTS 3 units in every delineation groups can be characterized by moderate decrease of industrial employment, and other typical paths also have basically similar shares regarding different delineations. The most significant difference is how uptrend dynamics is present within a group of IPs or not. In this sense, inner peripheries identified by their disadvantages in accessing regional centres (IP 1) stand out by having more increasing regions, while this trend hardly characterizes inner peripheral areas with poor access to SGI (IP 3).

Table 4.10: Coverage of different types of inner peripheries by employment trends in manufacturing industry (%)

	Uptrend	Sideways (+)	Change (+)	Change (-)	Sideways (-)	Downtrend
IP 1 (regional centres)	10.3	7.1	6.0	1.1	*64.1*	11.4
IP 2 (interstitial)	8.5	7.1	6.4	2.1	*64.5*	11.3
IP 3 (SGI access)	3.7	6.2	9.9	0.0	*67.9*	12.3
IP 4 (depleting)	6.3	8.0	7.6	0.8	*66.8*	10.5

4.5 Summary findings

Socio-economic status of inner peripheral areas might change over time, even over a shorter period of time. It is important to know, if trends and position changes affecting these areas are associated with processes of peripheralization and marginalisation, or they are more related to general socio-economic tendencies took place during the analysed period in Europe or in certain countries.

Analyses on changes of the status of inner peripheries are planned with the intention of finding answer to these questions. Comparisons between inner peripheral areas and non-peripheral territories at European and national levels, analysis of detailed paths of development and the seek for geographical patterns in these processes aimed to explore specificities of dynamics of regions more affected by phenomena of inner peripherality. Despite certain limitations of socio-economic variables used and the level of analyses (NUTS 3), which might obscure some features of processes associated with IPs, the interpretation of presented socio-economic changes over time might give a background for the explanation on the past and current dynamics of inner peripheral areas when seeking for drivers of their evolution. Key summary findings related to this research tasks are:

- Socio-economic position shifts during the analysed periods often have a particular direction regarding the vast majority of European (NUTS 3) regions, for instance in the case of processes related to ageing (increase of old-age dependency rates) and changes in qualification and employment in manufacturing (decrease of ratios of low qualified people and employment in manufacturing industry). Considering other demographic, social or economic dimensions (e.g. population dynamics, labour market, economic performance) directions of changes are more diverse.
- Relative position shifts regarding most of the analysed socio-economic aspects during the past fifteen years show the sign of position locks. Regions with lower performance in socio-economic indicators usually could not catch up, while territories with generally more advantaged characteristics also kept their positions. Major reorder of positions might be observed in the case of labour market-related features, especially in the case of unemployment. In this case, an intensive growth of unemployment rates impacted several NUTS 3 regions (mostly from the Mediterranean, potentially associated with the past years' economic crisis), which partially counterbalanced more favourable positions shifts.
- Regarding absolute and relative position shifts in labour market and economic characteristics, areas identified as inner peripheries do not significantly differ from non-peripheral regions of the EU28. Paths of demographic processes affecting them,

however show a more disadvantaged situation of inner peripheral territories. Negative population dynamics (or less increase), outmigration and ageing characterise more these areas.

- Compared to trends measured on the European level, negative position shifts of inner peripheries are slightly clearer in comparison with other national territories. Again, especially demographic trends show more drawbacks of regions identified as inner peripheries (more common presence of outmigration and population loss, or less increase of population and lower positive migration rates than their country averages).
- Development paths of inner peripheries from the early 2000s to the mid-2010s regarding analysed demographic, labour market and economic processes are not unidirectional. In this way, European inner peripheral areas, while sharing several similarities regarding socio-economic status, faced different kinds of socio-economic tendencies in the past fifteen years. Their changes mostly follow general European level trends, resulted in slight-moderate shifts regarding the selected indicators (positive population dynamics, increase of old age dependency rates, decrease of inactivity, ratios of low educated people and those of working in manufacturing industry). In some cases, not one, but two dominant tendencies might show up. This characterises trends associated with changes in economic performance (measured as GDP per inhabitants) and unemployment – negative and positive paths are equally present among IP regions.
- Other generalised development paths (significant increase or decrease in certain indicators, bigger shits, path changes) are less frequent, but their presence is meaningful, and could be explained by taking a closer look on affected cases.
- Generalised development paths of analysed socio-economic indicators describing trends associated with regions identified as inner peripheries, usually have expressive regional patterns measured on the European level. Demographic tendencies mostly differentiate between inner peripheral areas of Western and East Central Europe, with more frequent positive dynamics in the Western (and the Sun Belt Mediterranean) area and higher probability of outmigration, shrinkage or less growth of population considering inner peripheries from post-socialist countries. Labour market tendencies highlight the vulnerability of Mediterranean inner peripheries, where trend changes or increase in unemployment rates due to the economic crisis dominated outcomes of these processes, considering the period from the early 2000s to mid-2010s. Changes in economic performance indicate an overall catching up of East Central European inner peripheral areas to EU28 average, while Western European IPs and Mediterranean territories seem to have position lost.
- Trends affecting inner peripheries measured at national levels (compared to national averages) are usually in correspondence with general tendencies. Positive dynamics (related e.g. to population or labour market processes, economic performance) at the European level generally results in progress compared to national averages as well, while negative trends (depopulation, outmigration, growth of unemployment etc.) affecting NUTS 3 regions identified as inner peripheries are often present in comparison with national positions too.
- ‘Anomalies’, where the direction of socio-economic changes compared to national level tendencies differs from unstandardized paths of inner peripheries, often indicate certain specificities and disadvantages of these areas. For instance, regarding economic performance, growth of GDP per inhabitant values compared to the EU28 average do not always result in progress measured at national levels. That might occur in several inner peripheral areas, especially from East Central Europe, where IPs have frequent overlap with lagging regions, and the past fifteen years show no signs of national level catching up (of these territories). Decreases in manufacturing employment might also

considered to be moderate in the case of inner peripheral areas compared to other national territories in several countries (the UK, the Netherland, Italy, Spain etc.), which might imply a continued importance of secondary economic branches regarding economic performance within these areas.

- Differences between generalised paths of inner peripheries considering the four delineation types are moderate. Tendencies related to socio-economic indicators analysed affect these groups in a more or less similar way. Explainable differences are mostly related to interstitial areas (IP 2) and depleting inner peripheries (IP 4) whose economic performance or labour market and population processes often show more negative dynamics compared to other IP types. These drawbacks might fit in the explanation of delineation approaches of these areas, namely distance from economic centres and general disadvantaged situation regarding socio-economic status and processes.

5 Analysing the socio-economic status of European inner peripheries compared to economic characteristics and relative location within the framework of core–periphery patterns

Analysing and comparing the divergences and similarities among inner peripheries and other European regions, regarding the spatial dimension of centrality–peripherality at the European scale, might give insights to explain regional differences regarding the social characteristics or economic performance of inner peripheries. In this sense, the status of IP might be assessed in light of more 'traditional' core–periphery relations, by using complex accessibility indicators: potential accessibility (by road, rail, air and multimodal, and relative change in accessibility for the period 2001–2014)[c].

The analysis is based on characteristics of inner peripheries regarding general accessibility patterns in comparison to different lagging areas and EU typologies (urban–rural typology, mountain areas, islands and metropolitan areas) at NUTS 3 level. By using boxplots, the gap among IPs and other regional typologies might be evaluated according to the different characteristics of the set (e.g. the degree of internal inequalities, their position compared to other EU regions, average values, etc.) giving valuable information for analysing variations on dispersion trends.

In addition, additional variables illustrating different socio-economic features (demography, labour market, economic development, etc.) and other spatial aspects (travel distance to selected SGIs or regional centres) is also used. This analysis could be supported by introducing scatter plots to conduct bidimensional analysis, comparing simultaneously two variables. The spatial dimension of the analysis is also included in a more explicit way crossing socio-economic indicators with proximity indicators (statistics on travel time to SGIs or regional centres).

5.1 Comparison of inner periphery's characteristics regarding general accessibility patterns in comparison to lagging areas and EU typologies

Results related to accessibility indicators show in some cases a moderate performance of inner peripheries, slightly below or slightly above average values. Regarding accessibility indicators by road and rail (Figure 5.1 and Figure 5.2) Delineation 1 and Delineation 2 IPs perform moderately below European average. This result shows the more direct relation of those delineations with potential accessibility indictors. By contrast, Delineation 3 IP, related

[c] The ESPON Matrices project (update accessibility indicators for 2017) datasets regarding potential accessibility travel indicators provide results of an accessibility model for European NUTS 3 regions for the years 2001, 2006, 2011 and 2014. Potential accessibility for each NUTS 3 region is calculated by weighting the population in all destination regions by the travel time to go there. Four potential accessibility indicators are available: by road, by rail, by air and multimodal. All indicator values are expressed as index, i.e. related to the ESPON average. The relative changes over time for four potential accessibility indicators are also included.

to access to SGIs, and Delineation 4 IP, related to depleting trends, show values slightly above European average. Regarding potential accessibility, Inner peripheries show, in general, more dispersion compared to other categories, such as lagging areas.

Figure 5.1: Comparison of potential accessibility index by road (2014) for different types of inner peripheries, EU typologies and lagging regions

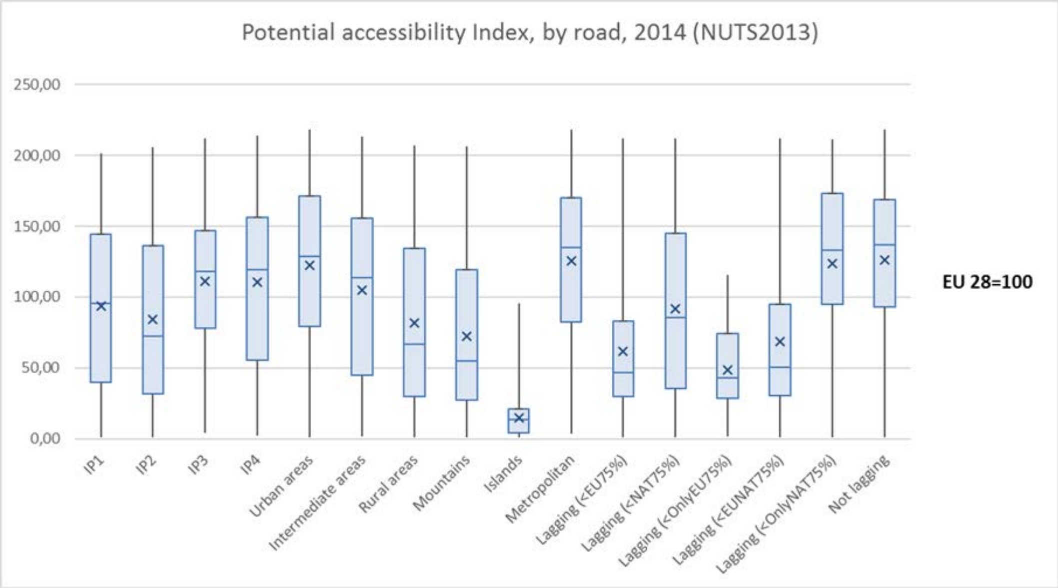
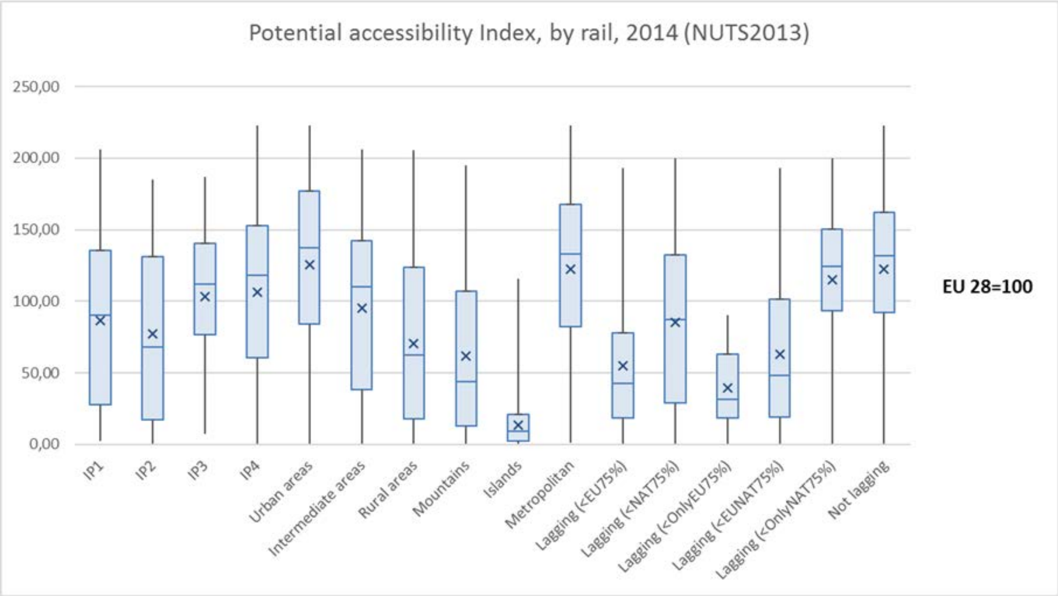


Figure 5.2: Comparison of potential accessibility index by rail (2014) for different types of inner peripheries, EU typologies and lagging regions



For indicators of accessibility by air (Figure 5.3), as expected, urban areas and metropolitan areas stand out. In relation to multi-modal accessibility indicators (Figure 5.4) inner peripheries show a moderate position. In the case of accessibility patterns, national and European trends might be used to further explain regional trends of inner peripheries. These results also help to assess the limitations of the traditional 'core–periphery' indicators to reflects variations in inner peripheries.

Figure 5.3: Comparison of potential accessibility index by air (2014) for different types of inner peripheries, EU typologies and lagging regions

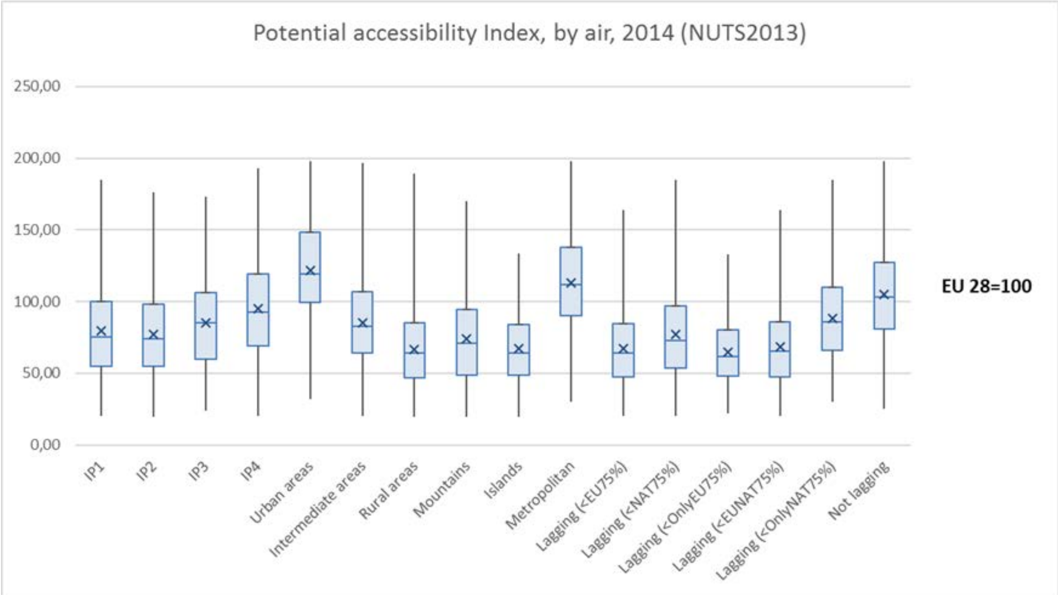
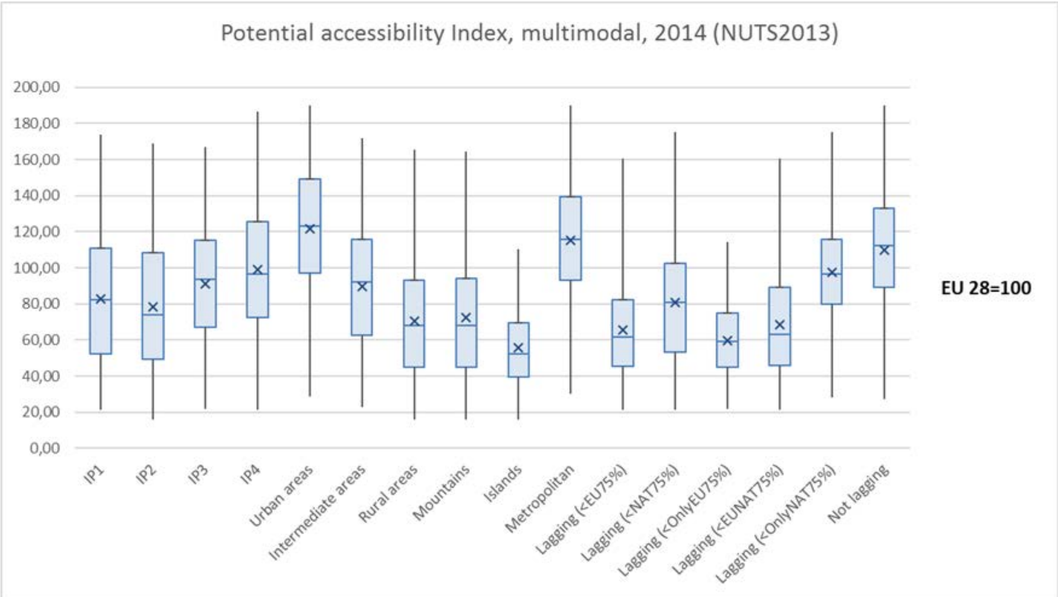
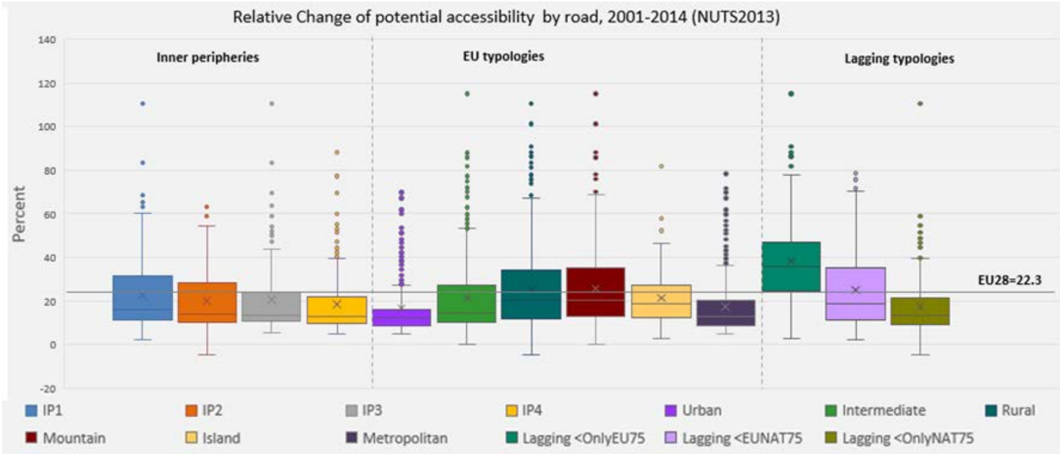


Figure 5.4: Comparison of potential accessibility index using multi-modal transport (2014) for different types of inner peripheries, EU typologies and lagging regions



In addition, the improvement of accessibility by road for the period 2001–2014 (Figure 5.5), shows generally lower accessibility improvements, as compared to the other typologies (rural areas and lagging European areas).

Figure 5.5: Comparison of the relative change of potential accessibility by road (2001–2014) for different types of inner peripheries, EU typologies and lagging regions



5.2 Analysis of the relation of accessibility factors with other spatial and socio-economic characteristics in inner peripheral and European regions

A more in-depth analysis regarding the relation of potential accessibility and other spatial indicators has been conducted (travel time to SGIs). The analysis of potential accessibility and other spatial and socio-economic characteristics is supported by scatter plots. Section 5.2.1 presents scatter plots representing the correlation of potential accessibility and travel time to SGIs (average and maximum travel time to hospitals, secondary schools and retail facilities) for inner peripheries and other European areas. Besides, the relation of the spatial core-periphery patterns is also assessed in the light of the socio-economic characteristics of inner peripheries and other (non-IP) areas. A cross-sectional analysis of spatial indicators (potential accessibility and travel time to SGIs) and socio-economic indicators (GDP per capita, population change and population density) is presented in Section 5.2.2.

5.2.1 Analysis of the relation of accessibility indicators

Travel time to primary schools and potential accessibility indicators

Regarding the average travel time to primary schools, Figure 5.6 and Figure 5.7, show that higher values of potential accessibility are related with a lower travel time to primary schools (both the mean travel time and the maximum travel team for each NUTS 3 region). This is related to the fact that areas closer to regional centres have, in general, better access to primary schools. Regarding access to primary schools, IPs from Delineation 3 and Delineation 1 seem to stand out (Figure 5.6 – A), showing higher travel times to primary schools in comparison to non-IPs and IPs from Delineation 2 and 4 (Figure 5.6 – B). The relative definition of inner peripheries becomes noticeable as for different potential accessibility ranges, IPs appear located in the higher travel time ranges of the full group of NUTS 3 regions. By contrast, the trend on the minimum travel time to primary schools (Figure 5.8) does not reflect a clear trend for different potential accessibility values.

Figure 5.6: Comparison of NUTS 3 regions in Europe regarding mean travel time to primary schools and potential accessibility by road (2014) for different types of inner peripheries

A –IP1 and IP3 | B – IP2 and IP4

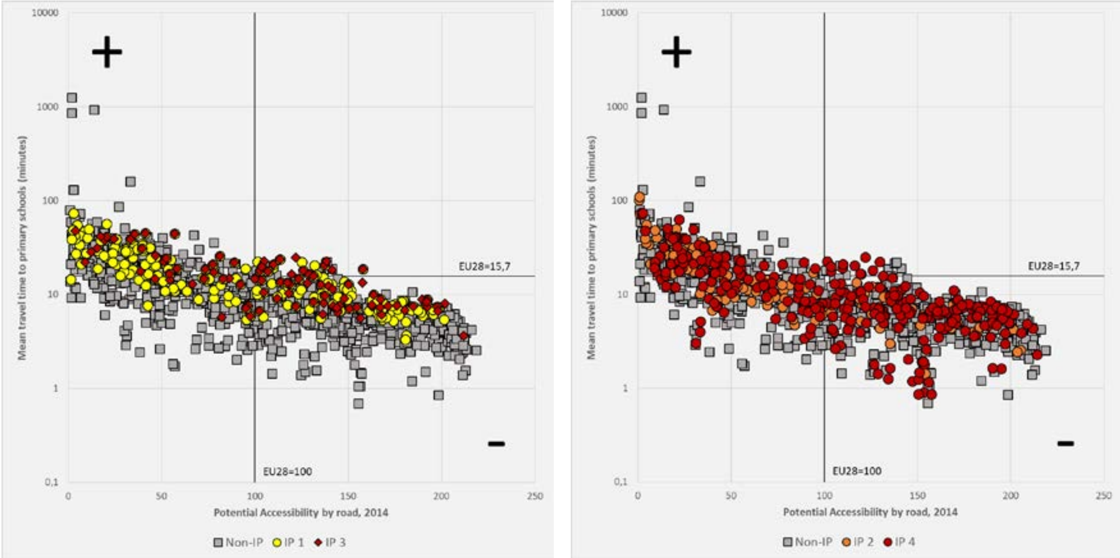


Figure 5.7: Comparison of NUTS 3 regions in Europe regarding maximum travel time to primary schools and potential accessibility by road (2014) for different types of inner peripheries

A – IP1 and IP3 | B – IP2 and IP4

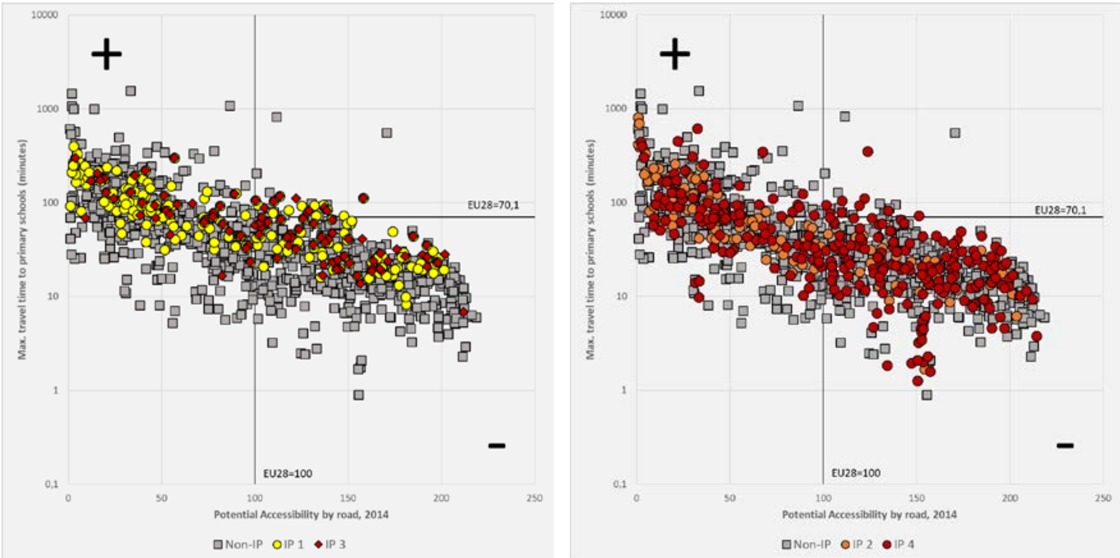
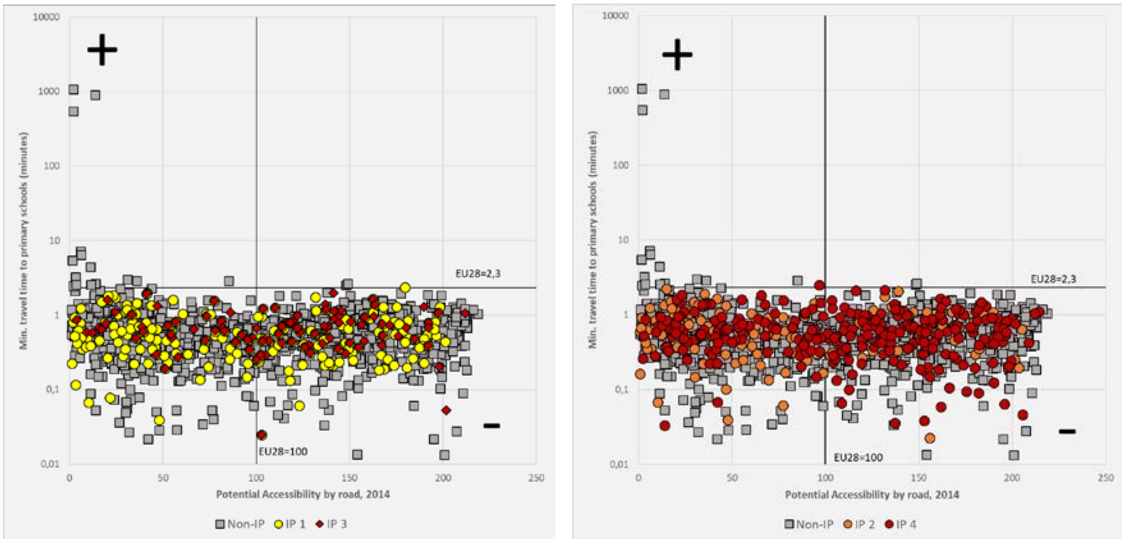


Figure 5.8: Comparison of NUTS 3 regions in Europe regarding minimum travel time to primary schools and potential accessibility by road (2014) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4



Travel time to hospitals and potential accessibility indicators

In line with the indicators used for identifying inner peripheries, Delineation 1 (higher travel time to regional centres) and Delineation 3 (poor accessibility to SGIs) show a point cloud located in the higher range of mean and maximum travel time to hospitals (Figure 5.9 and Figure 5.10). In addition, the minimum travel time to hospitals shows a slightly increasing trend for higher potential accessibility values (Figure 5.11).

Figure 5.9: Comparison of NUTS 3 regions in Europe regarding mean travel time to hospitals and potential accessibility by road (2014) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

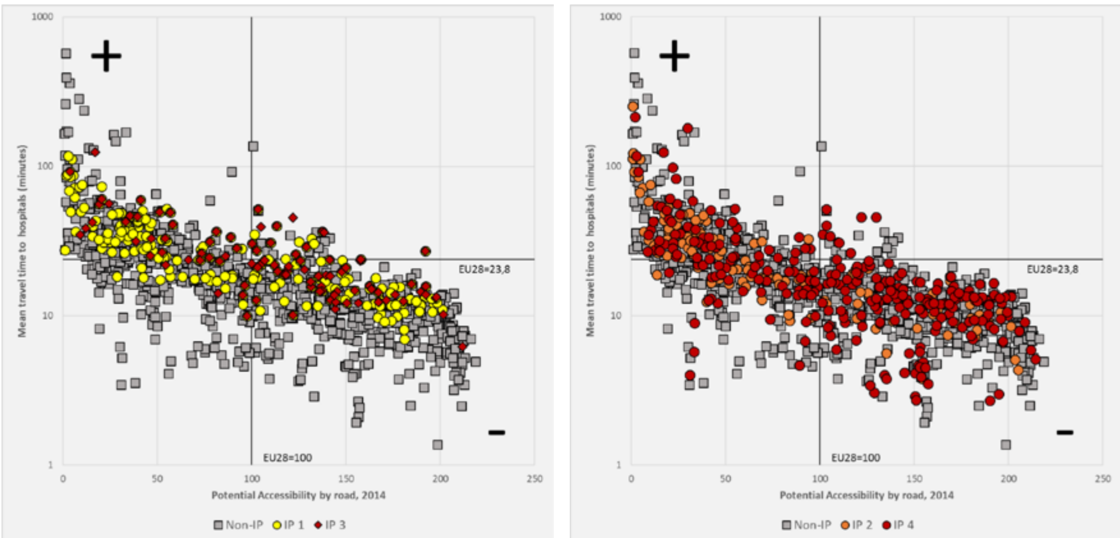


Figure 5.10: Comparison of NUTS 3 regions in Europe regarding maximum travel time to hospitals and potential accessibility by road (2014) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

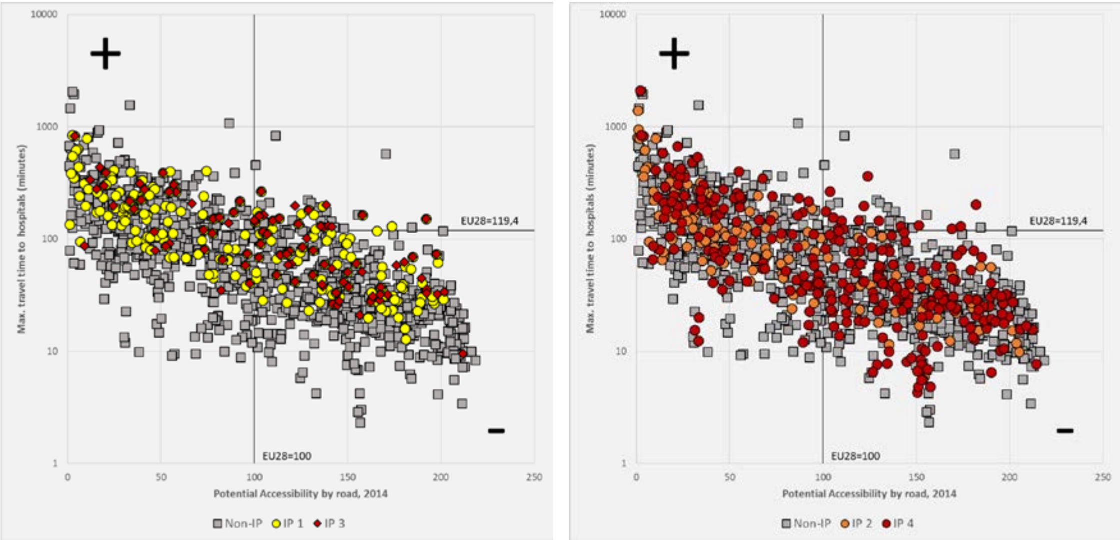
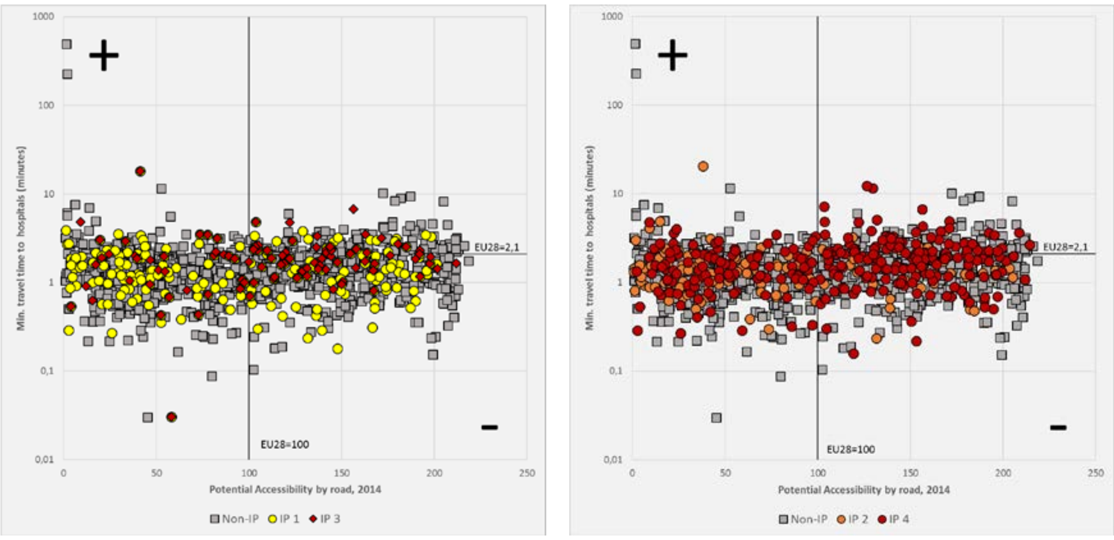


Figure 5.11: Comparison of NUTS 3 regions in Europe regarding minimum travel time to hospitals and potential accessibility by road (2014) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4



Travel time to retail facilities and potential accessibility indicators

Regarding access to retail facilities, mean and maximum travel time decrease when potential accessibility increases (Figure 5.12 and Figure 5.13). In this case, the point cloud for Delineation 1 and Delineation 3 is mostly located below average values (as outlier values have increased the averages significantly). However, Delineation 1 and Delineation 3 present, in general, higher travel times than non-inner peripheries, especially in areas with lower potential accessibility. In addition, and similarly to minimum travel time to primary schools, the trends on the minimum travel time to retail facilities (Figure 5.14) do not show major trends for different potential accessibility values.

Figure 5.12: Comparison of NUTS 3 regions in Europe regarding mean travel time to retail facilities and potential accessibility by road (2014) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

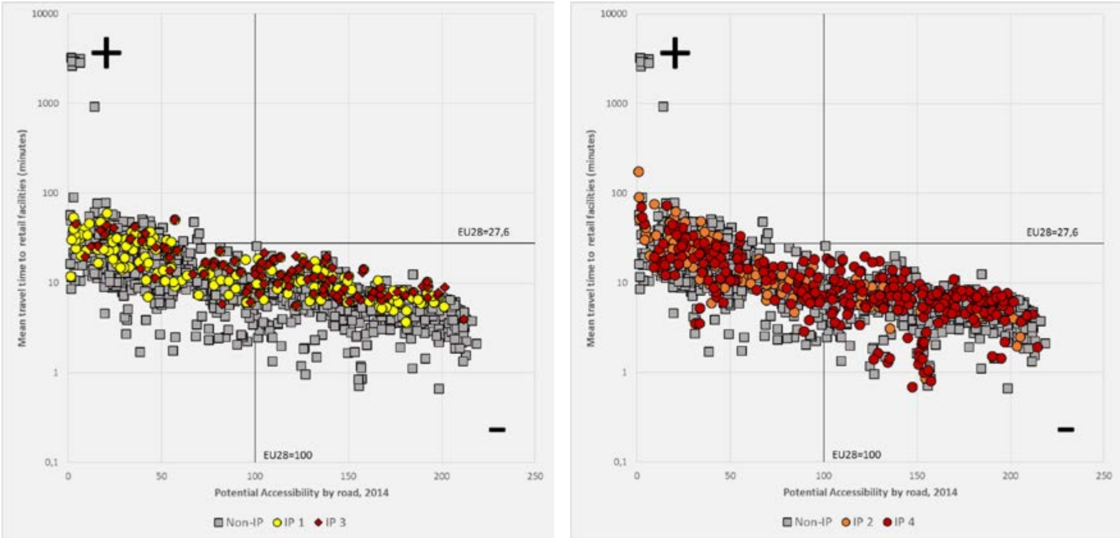


Figure 5.13: Comparison of NUTS 3 regions in Europe regarding maximum travel time to retail facilities and potential accessibility by road (2014) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

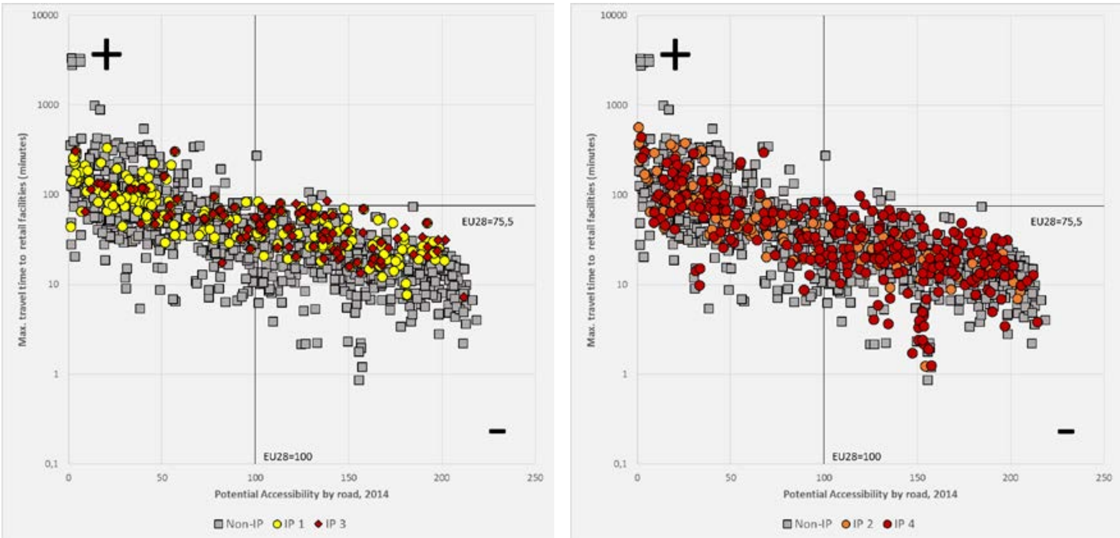
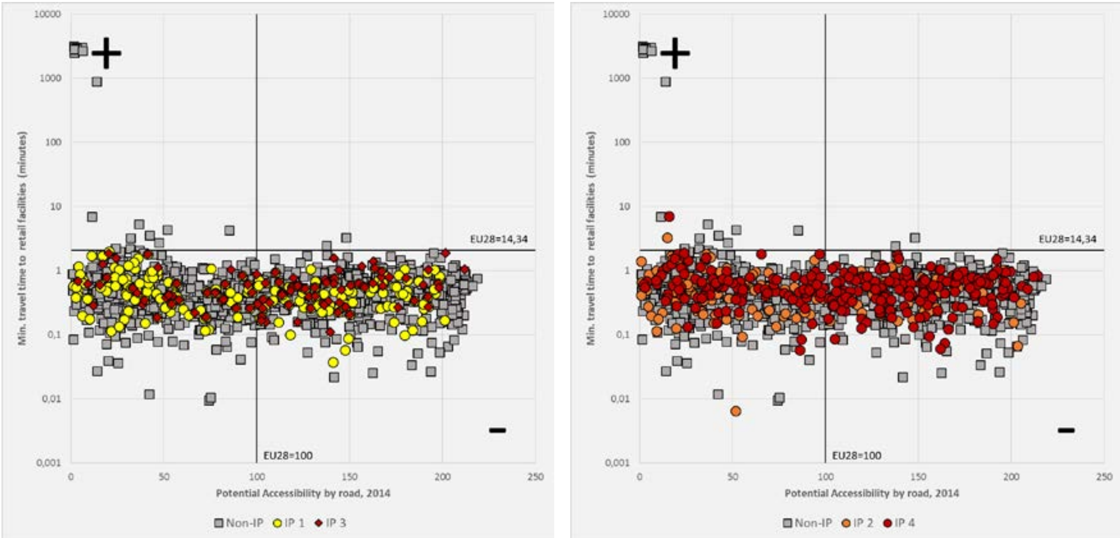


Figure 5.14: Comparison of NUTS 3 regions in Europe regarding minimum travel time to retail facilities and potential accessibility by road (2014) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4



5.2.2 Analysis of the relation of SGI accessibility indicators with selected socio-economic characteristics

In order to assess how inner peripheries differentiate from other European regions, the study has been extended to include additional socio-economic and spatial variables. Although the results show a moderate correlation between the chosen variables, the results could be explained by analysing inner peripheries in the national and European context.

In line with the conceptual models and variables used to define the different delineations, Delineation 1 and 3 might show more correlation with spatial indicators while Delineation 2 and 4 peculiarities might be more related with socio-economic variables.

GDP per capita (2015) and SGI accessibility indicators

Regarding GDP per capita in relation to travel time to primary schools (Figure 5.15 and Figure 5.16), it can be observed that Delineation 1 and 3, although showing below (or close to average) mean travel time to primary schools, present a moderate position regarding GDP per capita. The trend is more marked when looking at maximum travel time to primary schools, where the point cloud for Delineation 1 and 3 is concentrated around higher values of maximum travel times to primary schools. For Delineation 1 and 4, the point cloud is mostly located in the area presenting lower than average per capita GDP values, but showing a disperse cloud for mean travel time to primary schools. By contrast, Delineation 2 and 4 clouds present higher maximum travel time to primary schools.

Again, the moderate trends are, to some extent, explained by the fact that delineation of inner peripheries has been based in relative performance of NUTS 3 regions as compared to their neighbouring areas, therefore resulting in inner peripheries showing a wide range of values for the selected indicators.

Figure 5.15: Comparison of NUTS 3 regions in Europe regarding mean travel time to primary schools and GDP per capita (2015) for different types of inner peripheries

A – IP1 and IP3 | B – IP2 and IP4

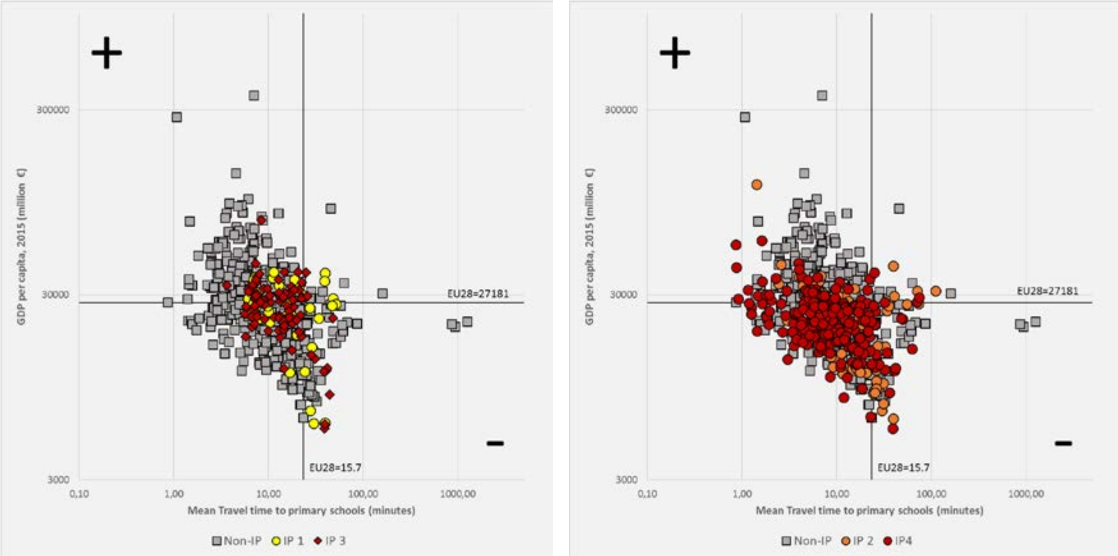
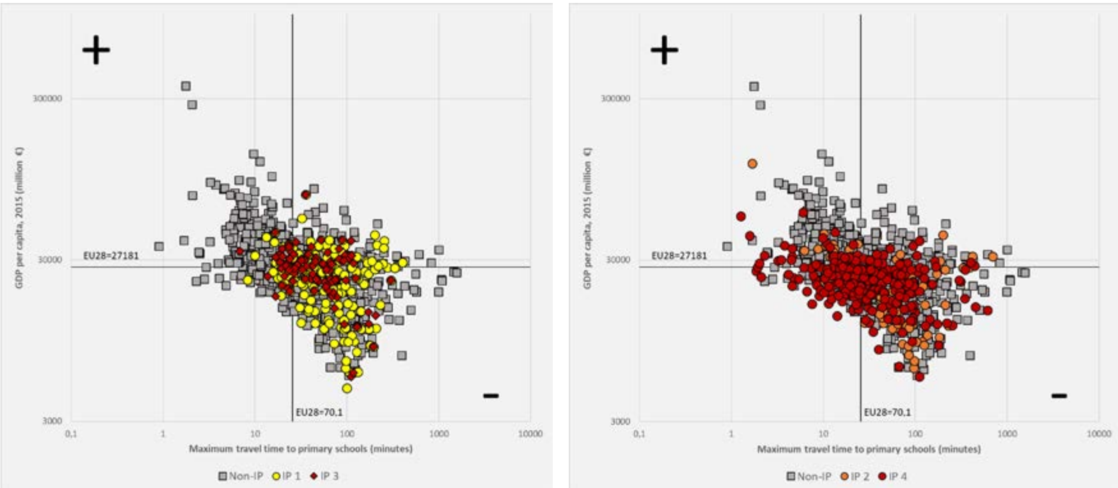


Figure 5.16: Comparison of NUTS 3 regions in Europe regarding maximum travel time to primary schools and GDP per capita (2015) for different types of inner peripheries.

A – IP1 and IP3 | B – IP2 and IP4



Regarding GDP per capita and travel time to hospitals (Figure 5.17 and Figure 5.18), all delineations appear located around average values. For Delineation 1 and 4, although most areas are located below average GDP values, the values appear disperse regarding maximum travel time to hospitals.

Figure 5.17: Comparison of NUTS 3 regions in Europe regarding mean travel time to hospitals and GDP per capita (2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

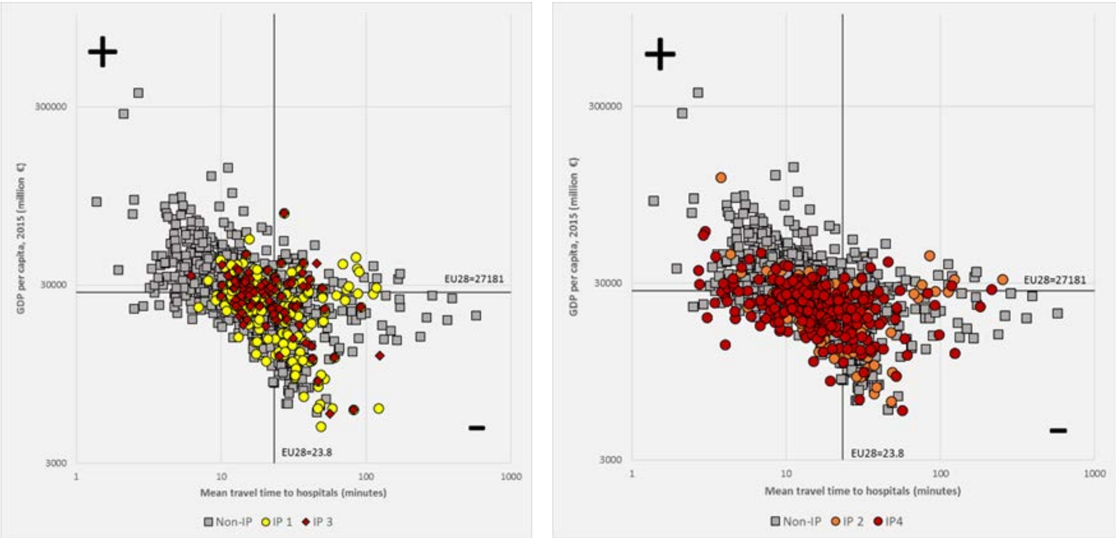
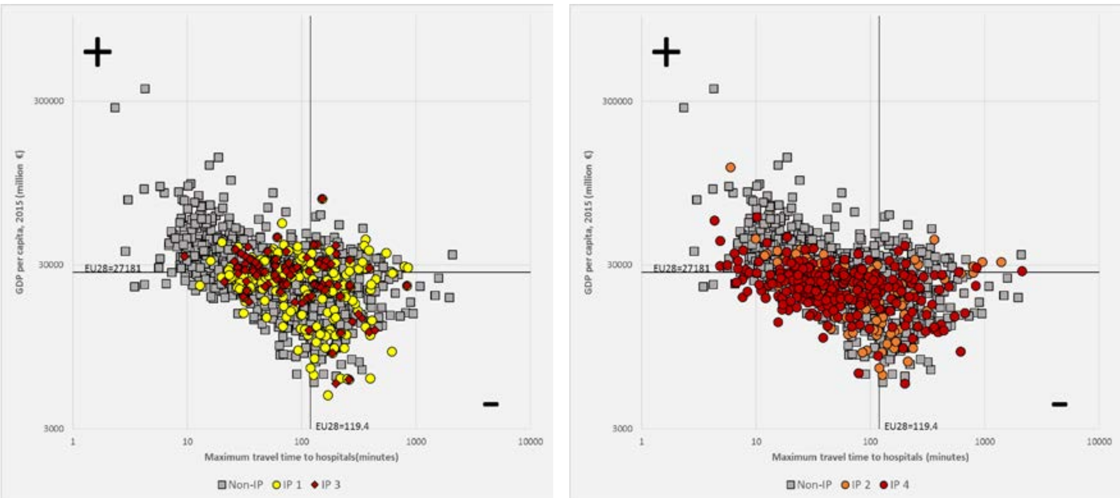


Figure 5.18: Comparison of NUTS 3 regions in Europe regarding maximum travel time to hospitals and GDP per capita (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4



Regarding GDP per capita and travel time to retail facilities (Figure 5.19 and Figure 5.20), all delineations present a relatively disperse point cloud, where areas below per capita GDP average show diverse patterns regarding accessibility to retail facilities.

Figure 5.19: Comparison of NUTS 3 regions in Europe regarding mean travel time to retail facilities and GDP per capita (2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

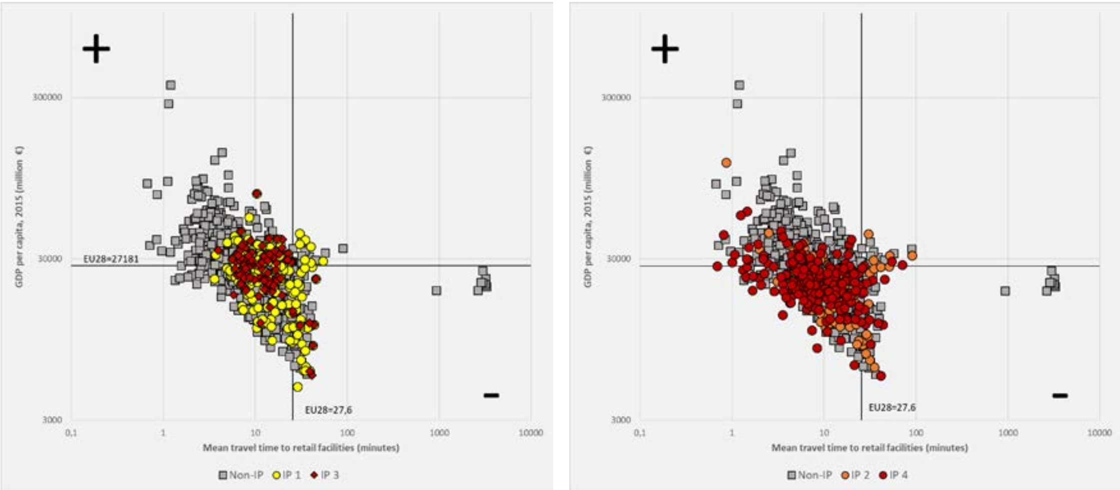
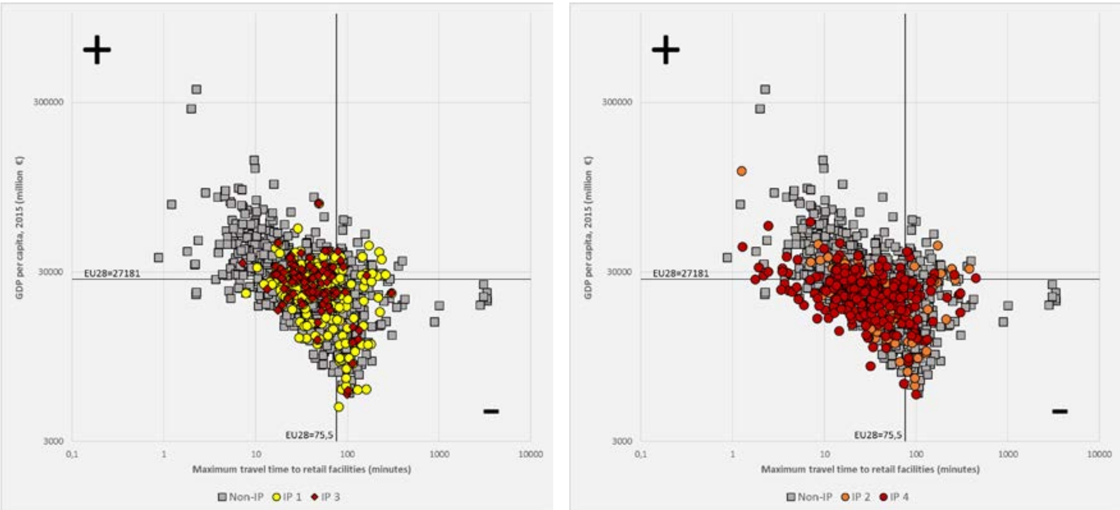


Figure 5.20: Comparison of NUTS 3 regions in Europe regarding maximum travel time to retail facilities and GDP per capita (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4



Regarding potential accessibility by road and rail in relation to GDP per capita, (Figure 5.21 and Figure 5.23) the results show that inner peripheries represent regions with both low and high values of potential accessibility in absolute terms. It can be as well noticed, that areas with higher potential accessibility also show a slightly higher GDP per capita.

Regarding the change in potential accessibility by road and rail (between 2001 and 2014), although results appear disperse, a higher concentration of inner peripheries can be associated to lower than average GDP per capita (Figure 5.22 and Figure 5.24).

Figure 5.21: Comparison of NUTS 3 regions in Europe regarding potential accessibility by road (2014) and GDP per capita (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

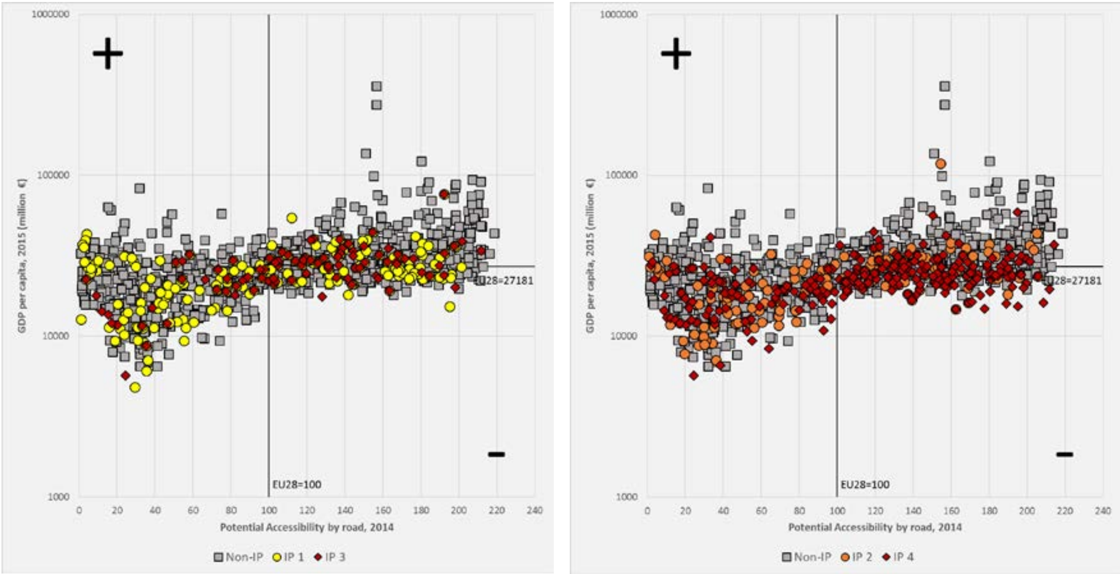


Figure 5.22: Comparison of NUTS 3 regions in Europe regarding relative change in potential accessibility by road (2001–2014) and GDP per capita (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

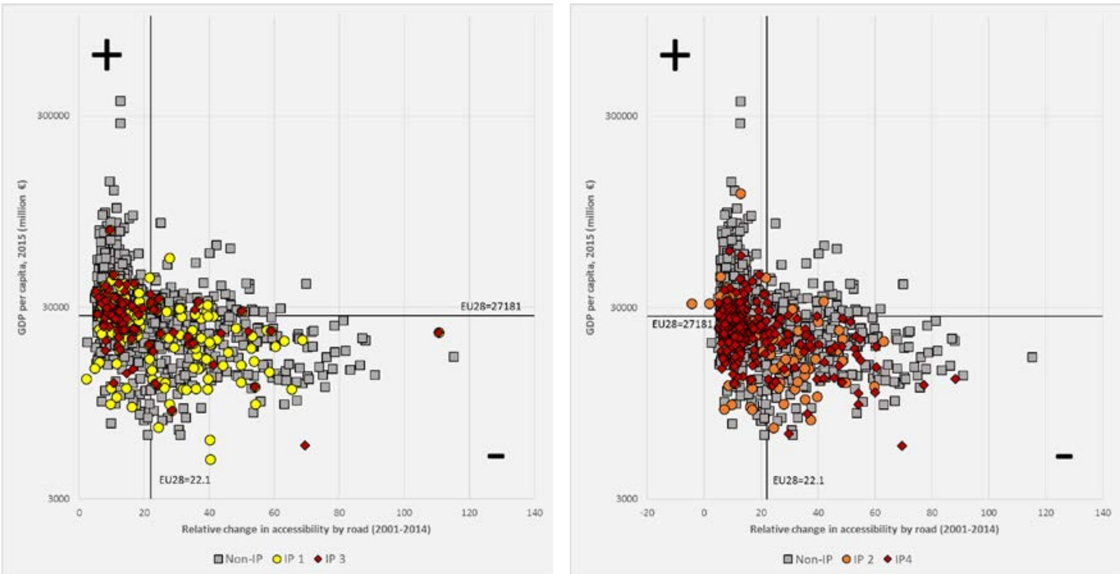


Figure 5.23: Comparison of NUTS 3 regions in Europe regarding potential accessibility by rail (2014) and GDP per capita (2015) for different types of inner peripheries

A –IP1 and IP3

B – IP2 and IP4

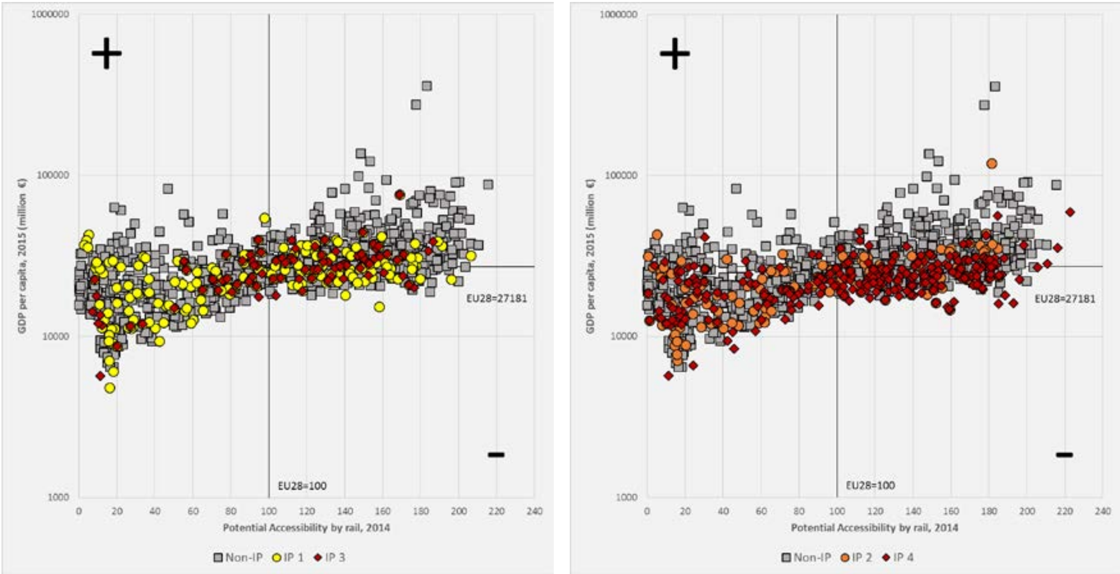
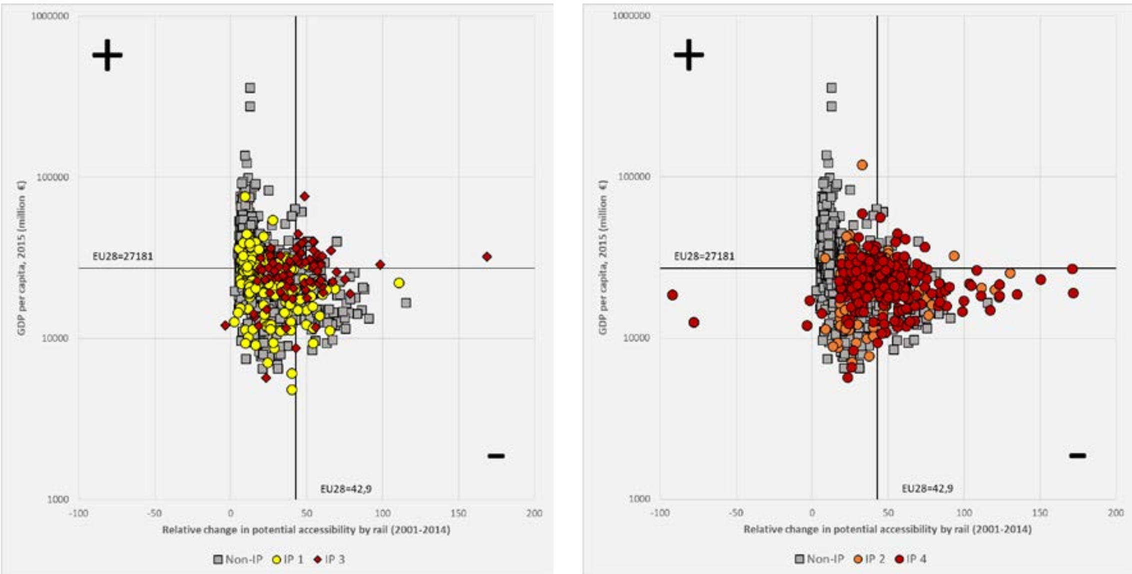


Figure 5.24: Comparison of NUTS 3 regions in Europe regarding relative change in potential accessibility by rail (2001–2014) and GDP per capita (2015) for different types of inner peripheries

A – IP1 and IP3

B – IP2 and IP4



Population change (2000–2015) and SGI accessibility indicators

The relation of population change (2000–2015) with travel time to selected SGIs is shown in the following section (primary schools: Figure 5.25 and Figure 5.26; hospitals: Figure 5.27 and Figure 5.28; and retail facilities: Figure 5.29 and Figure 5.30). All delineations show a disperse pattern for population change values, with a higher concentration around average values. For these reasons, the results will not be analysed in more detail. As noted earlier, the point clouds for Delineation 1 and 3, generally show higher mean and maximum travel time values to primary schools and hospitals that their non- inner peripheral counterparts.

In addition, inner peripheries present both low and high values of potential accessibility, in absolute terms. The results show a low correlation between potential accessibility and population change for the studied time series (Figure 5.31 and Figure 5.33). As noted earlier, inner peripheries usually present lower values of change in potential accessibility by road and rail. Therefore, the improvement of potential accessibility between 2001 and 2014 seems to be lower for inner peripheries than for other areas (Figure 5.32 and Figure 5.34).

Figure 5.25: Comparison of NUTS 3 regions in Europe regarding mean travel time to primary schools and Population change (2000–2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

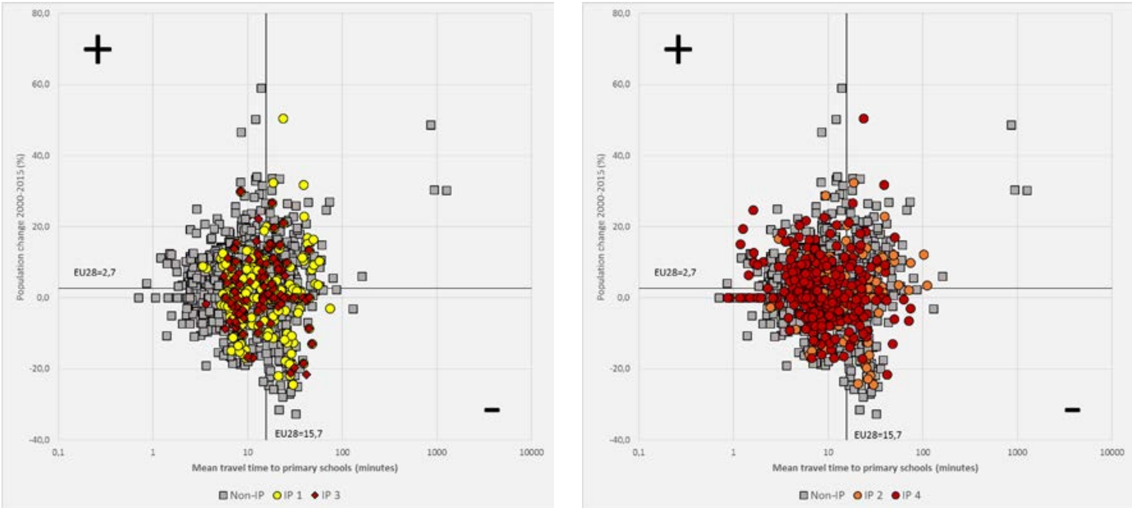


Figure 5.26: Comparison of NUTS 3 regions in Europe regarding maximum travel time to primary schools and Population change (2000–2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

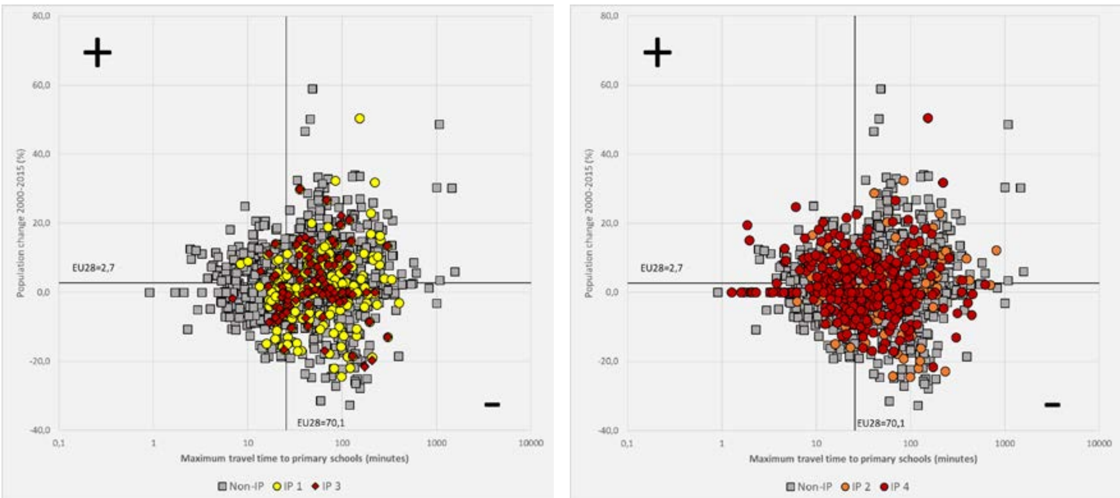


Figure 5.27: Comparison of NUTS 3 regions in Europe regarding mean travel time to hospitals and Population change (2000–2015) for different types of inner peripheries

A –IP1 and IP3 | B – IP2 and IP4

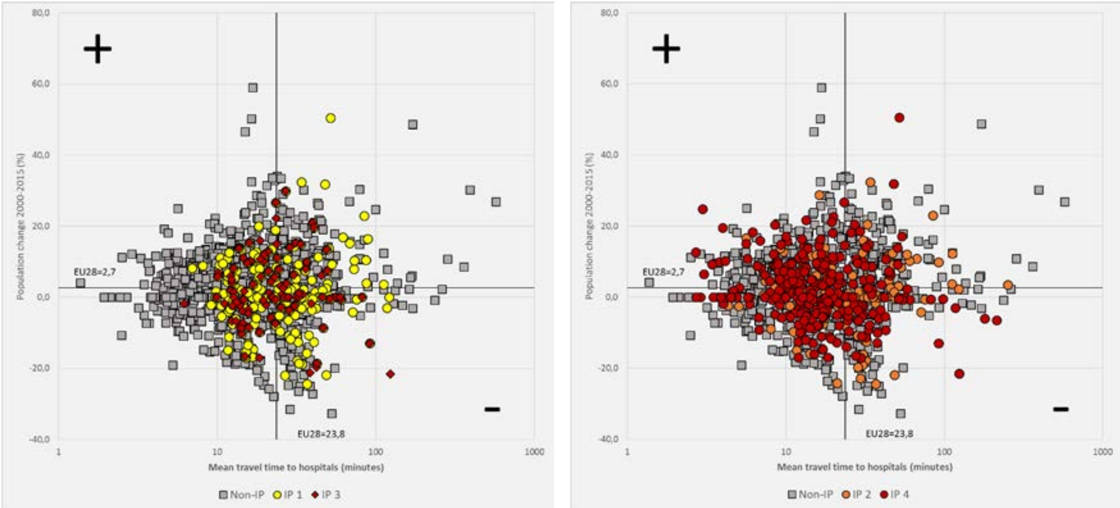


Figure 5.28: Comparison of NUTS 3 regions in Europe regarding maximum travel time to hospitals and Population change (2000–2015) for different types of inner peripheries

A – IP1 and IP3 | B – IP2 and IP4

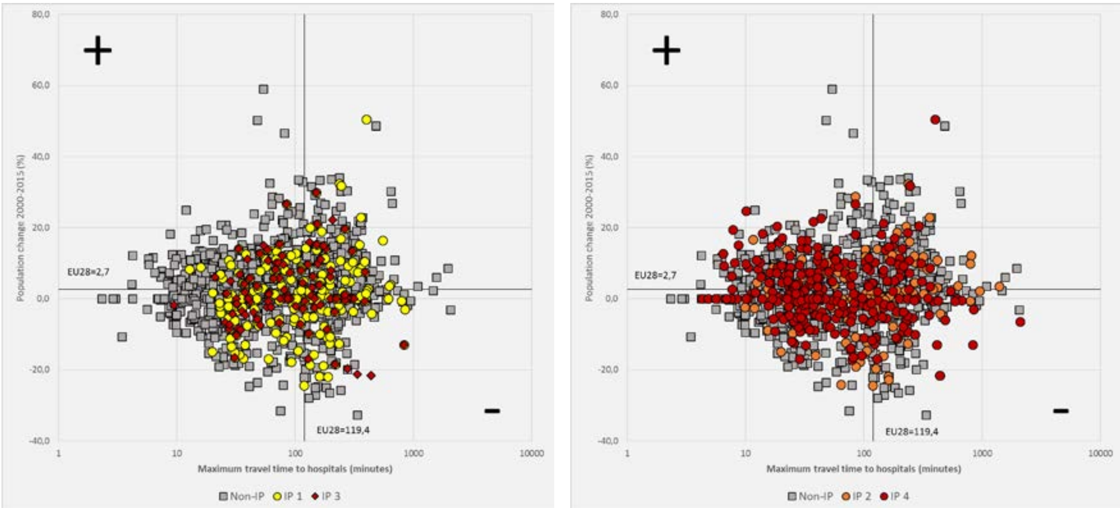


Figure 5.29: Comparison of NUTS 3 regions in Europe regarding mean travel time to retail facilities and Population change (2000–2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

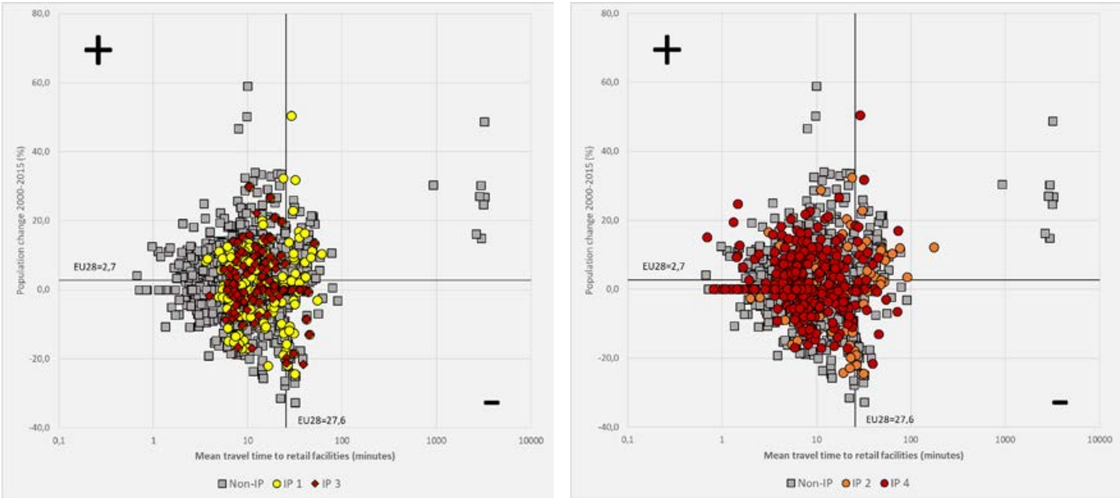


Figure 5.30: Comparison of NUTS 3 regions in Europe regarding maximum travel time to retail facilities and Population change (2000–2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

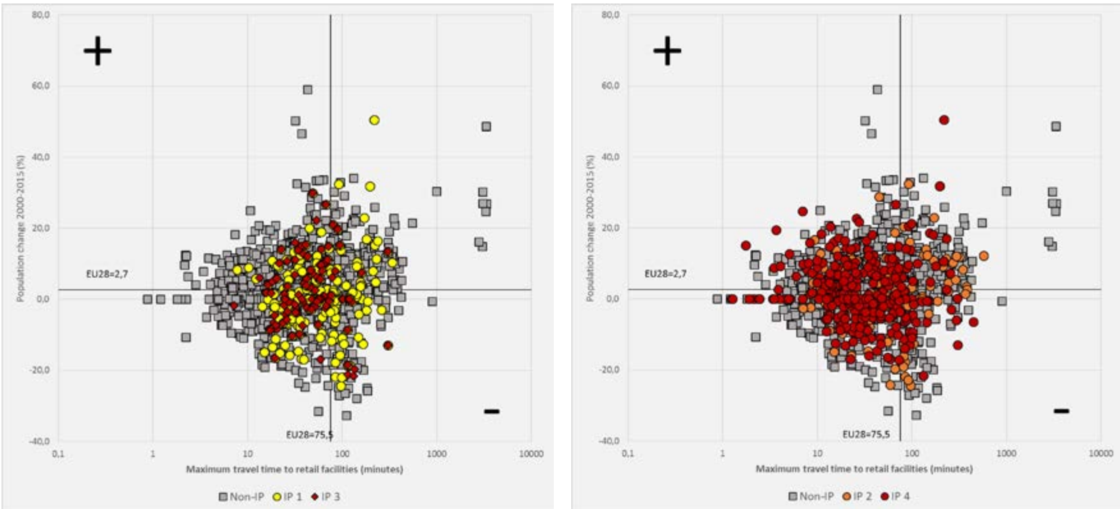


Figure 5.31: Comparison of NUTS 3 regions in Europe regarding potential accessibility by road (2014) and Population change (2000–2015) for different types of inner peripheries

A –IP1 and IP3　　　　　　　　　　B – IP2 and IP4

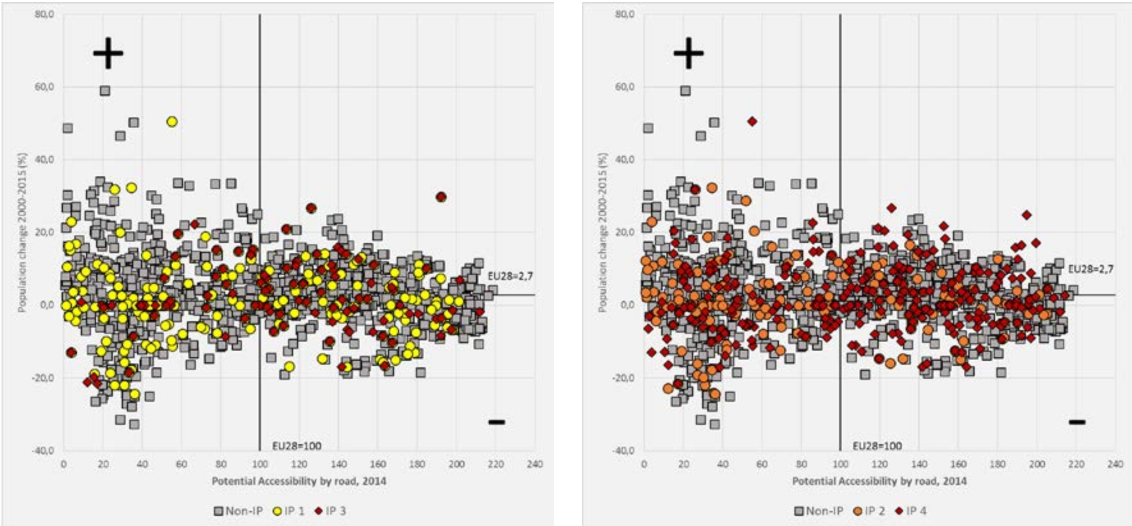


Figure 5.32: Comparison of NUTS 3 regions in Europe regarding relative change in accessibility by road (2001–2014) and Population change (2000–2015) for different types of inner peripheries

A – IP1 and IP3　　　　　　　　　　B – IP2 and IP4

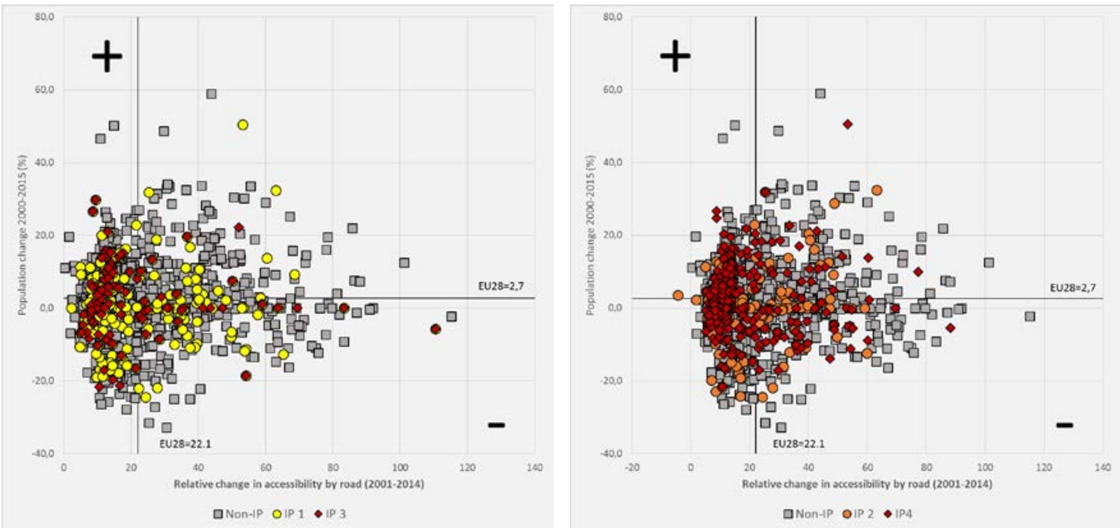


Figure 5.33: Comparison of NUTS 3 regions in Europe regarding potential accessibility by rail (2014) and Population change (2000–2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

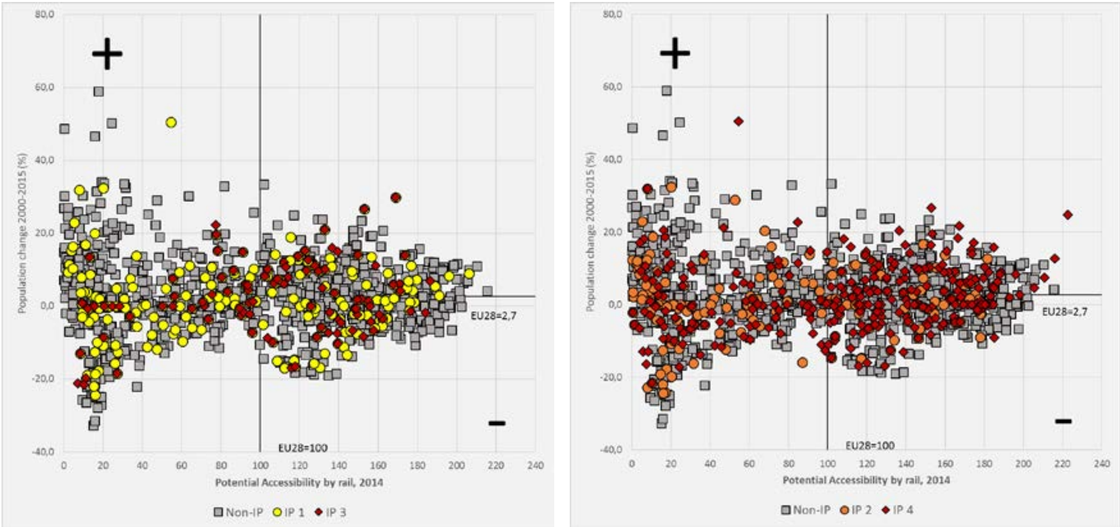
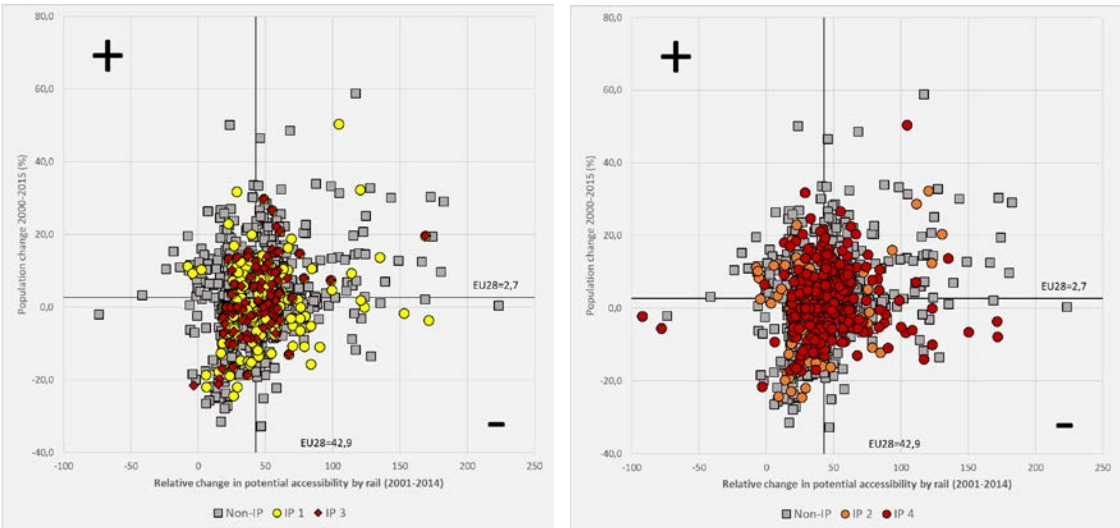


Figure 5.34: Comparison of NUTS 3 regions in Europe regarding relative change in accessibility by rail (2001–2014) and Population change (2000–2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4



Population density (2015) and SGI accessibility indicators

The cross-sectional analysis of population density and travel time to SGIs is presented below. Population density and access to SGIs show an inverse correlation, presenting higher travel times to SGIs for lower population density values (primary schools: Figure 5.35 and Figure 5.36; hospitals: Figure 5.37 and Figure 5.38; and retail facilities: Figure 5.39 and Figure 5.40).

Delineation 1 and 3 values are generally below the average values for population density and present values close to the average for mean travel time to primary schools. However, when looking at maximum travel time to primary schools, most IPs present travel times higher than average (in addition to being generally below population density average).

Regarding travel time to primary schools for Delineation 1 and 3, most IP are generally below the average values for population density and present values close to the average for mean travel time to primary schools. However, when looking at maximum travel time to primary schools, most IPs present travel times higher than average (in addition to being generally below population density average).

When looking at accessibility to hospitals for Delineation 1 and 3, although they show a lower mean population density, they present a wide range of values for mean and maximum travel time hospitals (which are located below and above average values). This moderate position is, to some extent, related to definition of IPs as performing relatively worse than neighbouring areas (although they may not perform worse in absolute terms). Similarly, to travel time to primary schools, Delineation 2 and 4 results show a wide range of population density and travel time to hospital values.

In relation to travel time to retail facilities, Delineation 1 and 3 show a moderate position. For instance, mean travel time to retail facilities shows values around the average or below. However, when looking at maximum travel time to retail facilities the point cloud for is less concentrated in the extreme values.

Regarding potential accessibility by road and rail in relation to population density (Figure 5.41 and Figure 5.43), there is a trend showing higher population density for higher accessibility areas (where Delineation 1 and 3 show lower than average population density values). Changes in potential accessibility do not appear related to population density, although Delineation 1 and 3 present dispersion around the values for changes in potential accessibility by rail (or lower than average in the case of accessibility potential accessibility by road) (Figure 5.42 and Figure 5.44).

Figure 5.35: Comparison of NUTS 3 regions in Europe regarding mean travel time to primary schools and Population density (2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

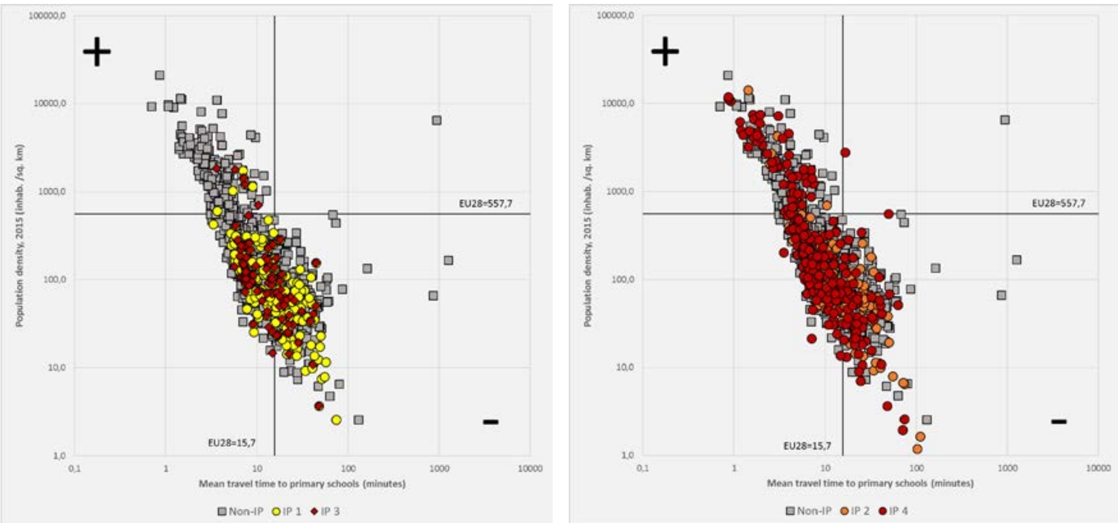
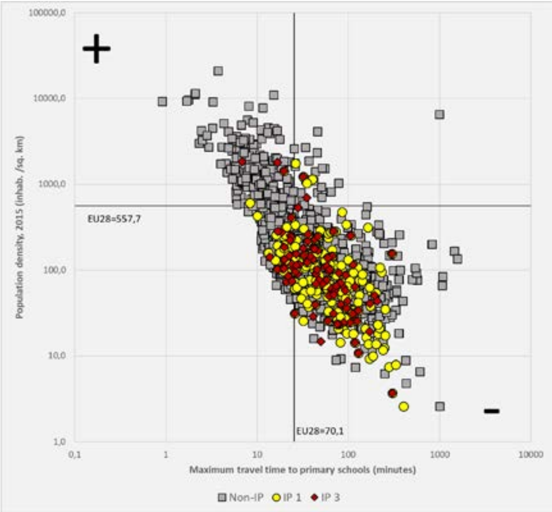


Figure 5.36: Comparison of NUTS 3 regions in Europe regarding maximum travel time to primary schools and Population density (2015) for different types of inner peripheries

A – IP1 and IP3



B – IP2 and IP4

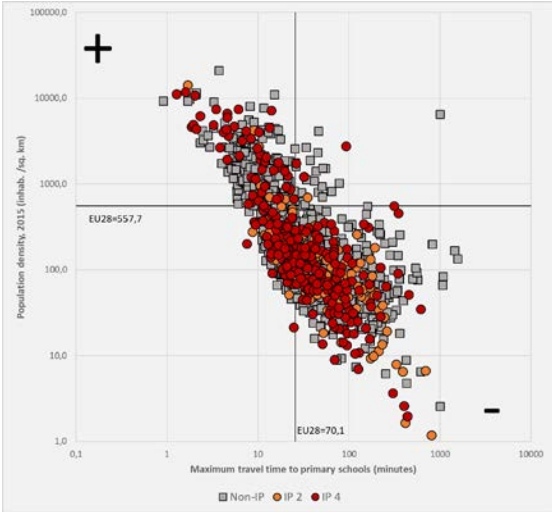
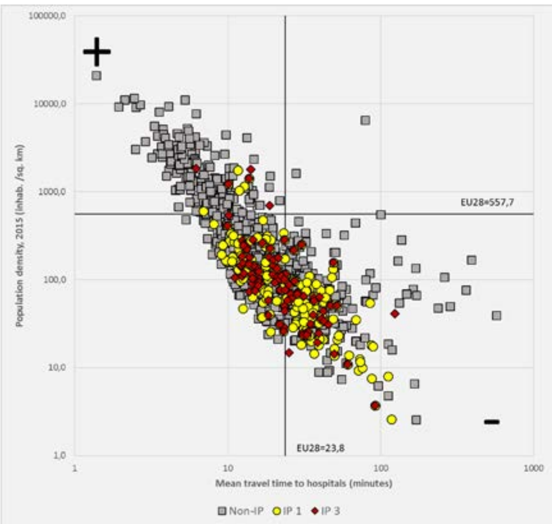


Figure 5.37: Comparison of NUTS 3 regions in Europe regarding mean travel time to hospitals and Population density (2015) for different types of inner peripheries

A –IP1 and IP3



B – IP2 and IP4

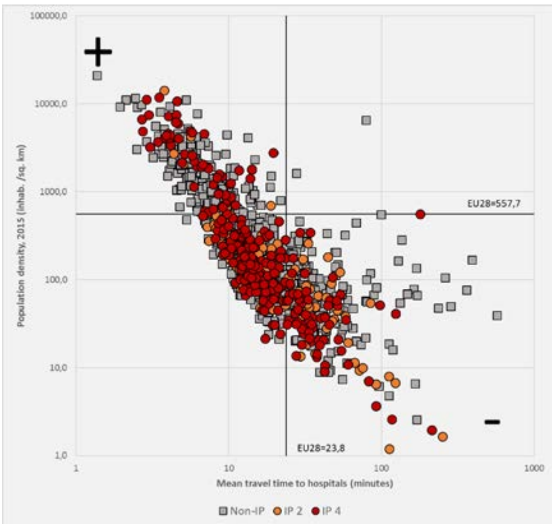
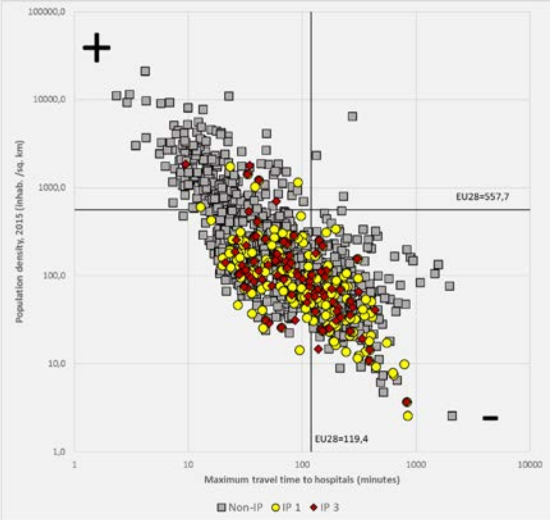


Figure 5.38: Comparison of NUTS 3 regions in Europe regarding maximum travel time to hospitals and Population density (2015) for different types of inner peripheries

A – IP1 and IP3



B – IP2 and IP4

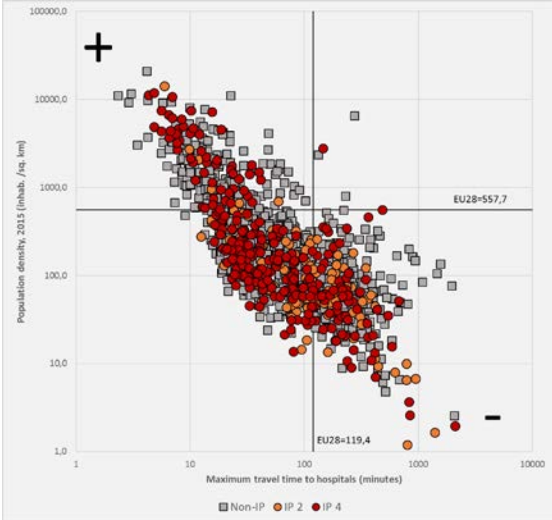
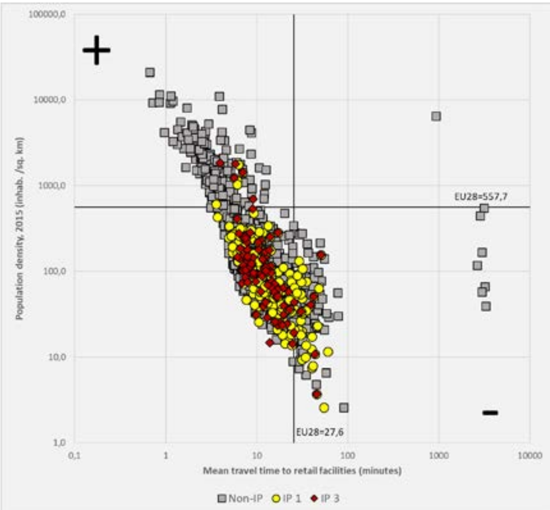


Figure 5.39: Comparison of NUTS 3 regions in Europe regarding mean travel time to retail facilities and Population density (2015) for different types of inner peripheries

A –IP1 and IP3



B – IP2 and IP4

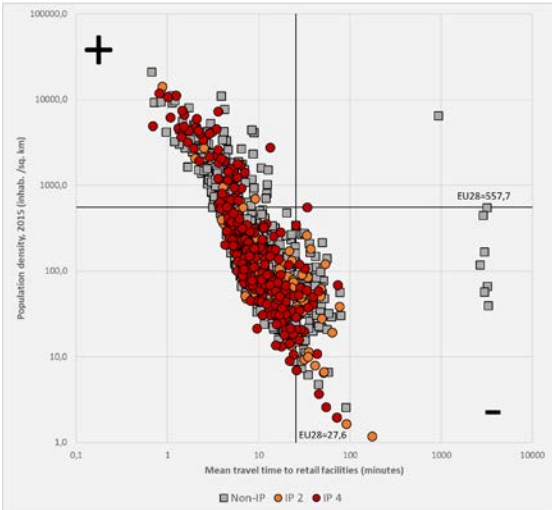


Figure 5.40: Comparison of NUTS 3 regions in Europe regarding maximum travel time to retail facilities and Population density (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

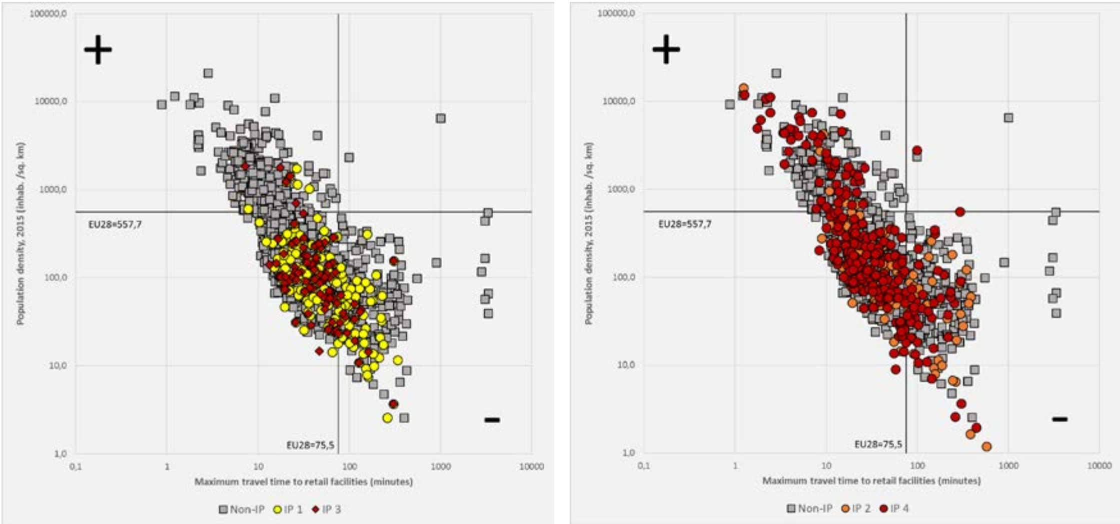


Figure 5.41: Comparison of NUTS 3 regions in Europe regarding potential accessibility by road (2014) and Population density (2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

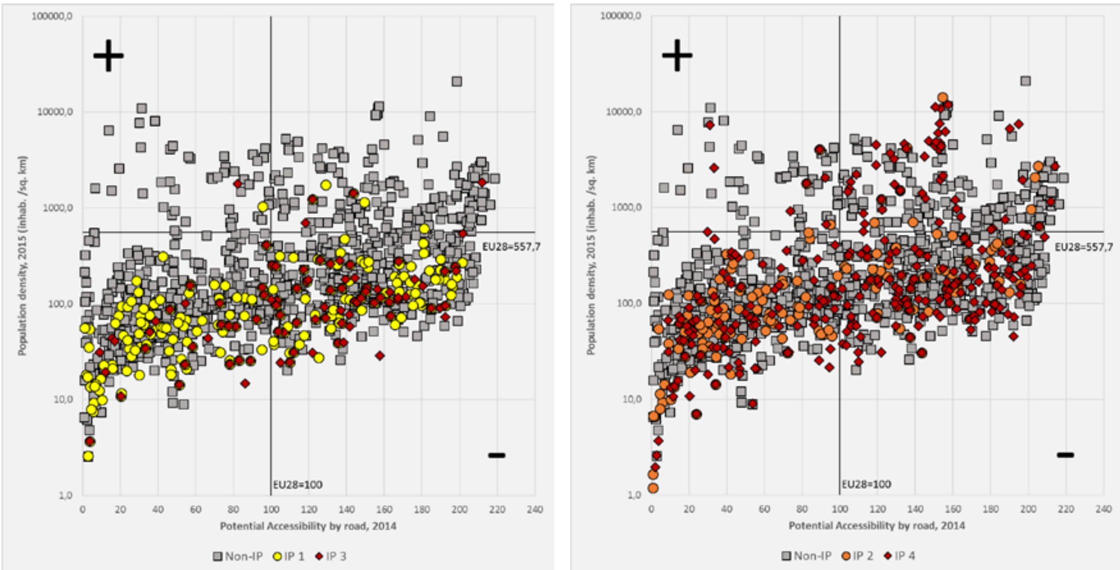


Figure 5.42: Comparison of NUTS 3 regions in Europe regarding relative change in accessibility by road (2001–2014) and Population density (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4

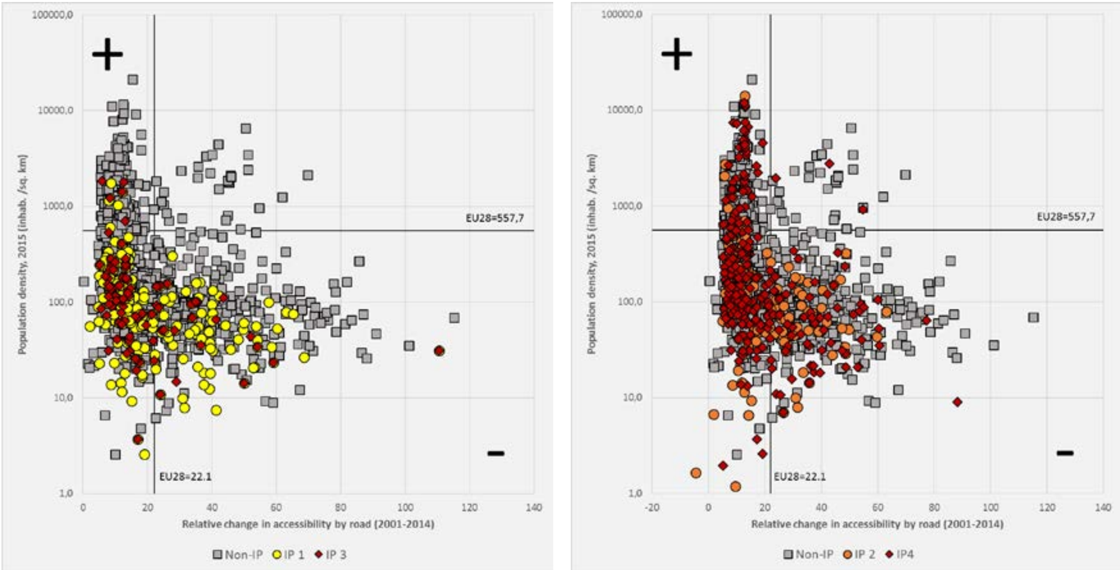


Figure 5.43: Comparison of NUTS 3 regions in Europe regarding potential accessibility by rail (2014) and Population density (2015) for different types of inner peripheries

A –IP1 and IP3 B – IP2 and IP4

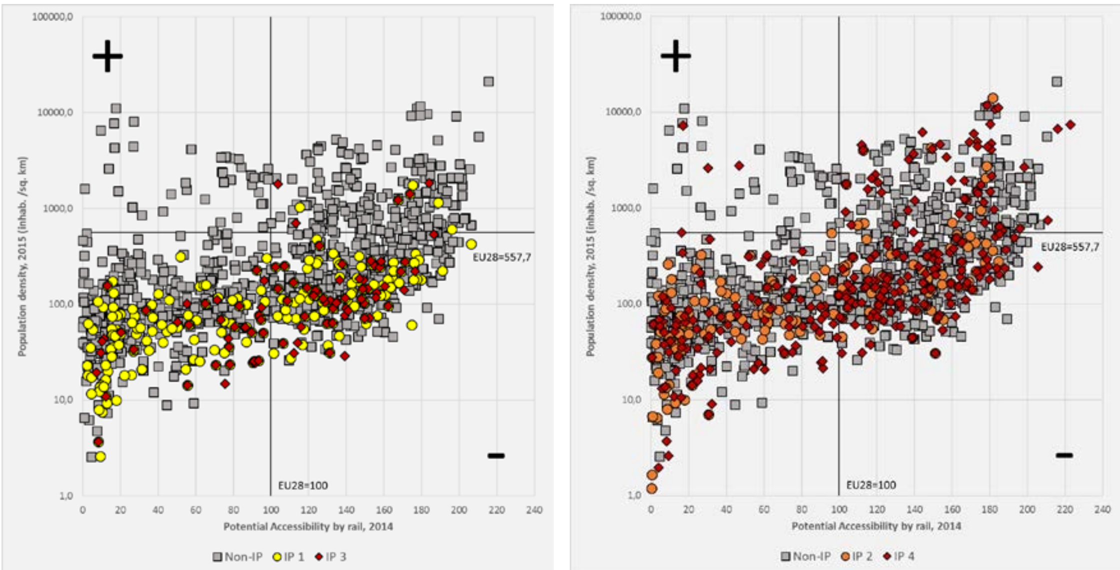
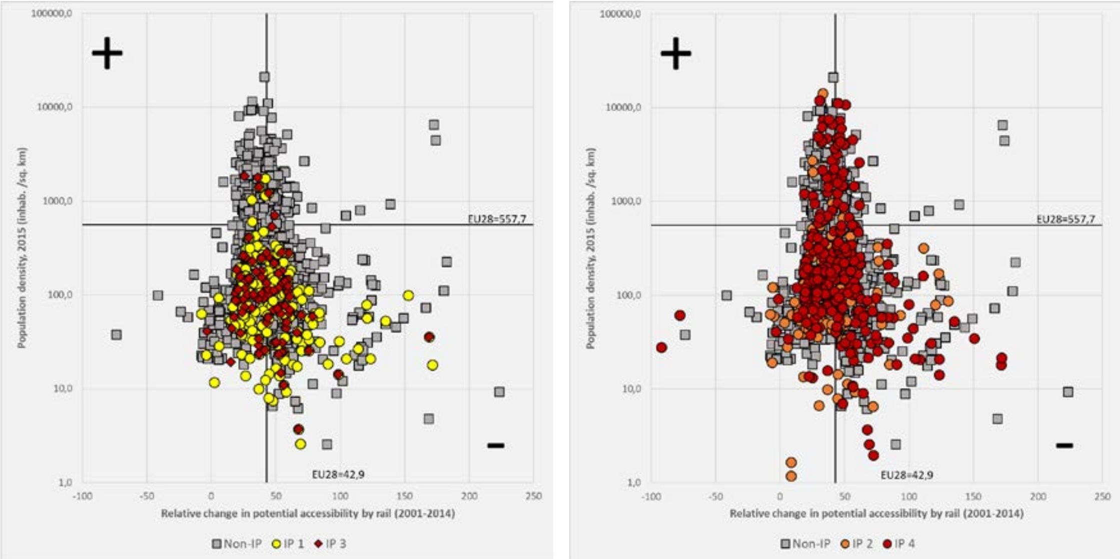


Figure 5.44: Comparison of NUTS 3 regions in Europe regarding relative change in accessibility by rail (2001–2014) and Population density (2015) for different types of inner peripheries

A – IP1 and IP3 B – IP2 and IP4



5.3 Summary findings

- Results related to accessibility indicators show a moderate performance of inner peripheries, as compared to other typologies, showing values slightly below or slightly above average.
- Regarding accessibility indicators by road and rail, Delineation 1 and Delineation 2 perform moderately below European average. By contrast, Delineation 3, related to access to SGIs, and Delineation 4, related to depleting trends, show values slightly above European average.
- Regarding accessibility by air, as expected, urban areas and metropolitan areas stand out. In relation to multi-modal accessibility indicators inner peripheries show a moderate position, as compared to other regional typologies.
- The improvement of accessibility by road for the period 2001–2014 shows generally lower rate, as compared to the other typologies (rural areas and lagging European areas).
- Regarding accessibility patterns, NUTS 3 regions showing higher values of potential accessibility show also a lower travel time to primary schools, hospitals and retail facilities. This is related to the fact that areas closer to regional centres have, in general, better access to SGIs.
- In line with the indicators used for identifying inner peripheries, Delineation 1 (higher travel time to regional centres) and Delineation 3 (poor accessibility to SGIs) show higher travel times to selected SGIs (primary schools, hospitals and retail facilities) than other regions with similar potential accessibility values. These results show the limitations of the traditional 'core-periphery' indicators as they reflect variations due to inner peripherality.
- The definition of inner peripheries as performing worse than the neighbouring areas has impact on spatial indicators as, for different potential accessibility ranges, IPs (from Delineation 1 and 3) appear located in the higher travel time ranges of the full group of NUTS 3 regions.

- In line with the conceptual models and variables used to define the different delineations, Delineation 1 and 3 might show more correlation with spatial indicators, while Delineation 2 and 4 peculiarities might be more related to socio-economic variables.
- GDP per capita and population density show a general inverse correlation with travel time to SGIs, while population change (2000–2015) did not appeared to be related with travel time to SGIs.
- Delineation 1 and 3, although showing below (or close to average) mean travel time to primary schools, present a moderate position regarding GDP per capita. The trend is more marked when looking at maximum travel time to primary schools, where values below the average GDP are also associated to higher maximum travel times to primary schools. Similarly, Delineation 2 and 4 also show higher than average maximum travel time to primary schools and present lower than average per capita GDP values.
- Regarding travel time to hospitals and retail facilities, all delineation appears located around (or below) average values, although showing in some cases lower levels of GDP per capita.
- Regarding the change in potential accessibility by road and rail (between 2001 and 2014), although results appear disperse, inner peripheries are associated in some cases to lower than average GDP per capita.
- All delineations show a disperse pattern for population change indicator, showing a cloud distributed around average values. The point clouds for Delineation 1 and 3, generally show higher mean and maximum travel time to primary schools and hospitals than non-peripheries.
- The cross-sectional analysis of population density and travel time to SGIs shows an inverse correlation between the two variables, presenting higher travel times to SGIs for lower population density values.
- Delineation 1 and 3 values are generally below the average values for population density and present values close to the average (or below) for mean travel time to primary schools. However, when looking at maximum travel time to primary schools, most IPs present travel times higher than average (in addition to being generally below population density average).
- When looking at accessibility to hospitals for Delineation 1 and 3, although those delineations show a lower mean population density, they also present a wide range of values for mean and maximum travel time hospitals (which are located below and above average values).
- Regarding potential accessibility by road and rail in relation to population density, there is a trend showing higher population density for higher accessibility areas (where Delineation 1 and 3 show lower than average population density values).
- Changes in potential accessibility do not appear related to population density, although Delineation 1 and 3 present dispersion around the values for changes in potential accessibility by rail (or lower than average in the case of accessibility potential accessibility by road).
- The moderate correlation shown among spatial and socio-economic indicators for IPs may be explained, to some extent, by the fact that delineation of inner peripheries has been based in relative performance of NUTS 3 regions as compared to their neighbouring areas, therefore resulting in inner peripheries showing a wide range of values for the selected indicators, depending on their geographical location.

6 Experimental analysis on characterising regional and socio-economic profiles of inner peripheral regions

ESPON PROFECY project delineated four different types of inner peripheries. The main goal of this experimental task is to help resolving the question whether the different delineations of inner peripheries share similarities or not in terms of socio-economic characteristics. To answer this question, the analysis intends to provide a common socio-economic typology of the inner peripheries delineated by different methods. Here, inner peripheries are to be regrouped by their socio-economic attributes, creating more homogenous subgroups (clusters) regardless the differentiation between the four groups of delineations. If clustering results after all correspond to delineations, it might imply that these four types of inner peripheries have basically different socio-economic characteristics, if not, it might refer more the overlap between the different concepts of peripherality (in terms of socio-economic status).

The analysis builds upon a two-stage mixed model of analysis, proposed by Philip Haynes[25]. At the first stage, a cluster analysis is formed to undertake an exploratory analysis of the characteristics of the IP's and the likely groupings of the delineated NUTS 3 regions. Secondly, a qualitative comparative analysis (QCA) is applied, providing a transparent and robust method for the construction and labelling of the homogenous groupings of the inner peripheries (based on their socio-economic features).

6.1 Exploratory investigation based on cluster analysis

As a first step of this modelling procedure, an explorative data analysis is applied to regroup the delineated NUTS 3 units of inner peripheries in the ESPON space into socio-economically 'homogenous' groups (clusters, classes). Of the many possible explorative data analysis methods, we use the well-established cluster analysis. The steps of the analysis are:

Preparations of data: Creating a harmonised database at NUTS 3 level (Table 6.1), and filling gaps as much as possible. Experiences of previous ESPON projects show that there are only limited dimensions of available data (usually age structure, gender balance, labour market), and there are only a low number of variables within dimensions.

Table 6.1: Variables of analysis

Indicator name	Year	Calculation	Unit of measure
Ratio of child age population	2015	Total population (0–14) / Total population * 100	Percent
Ratio of active age population	2015	Total population (15–64) / Total population * 100	Percent
Old age dependency rate	2015	Total population (65+) / Total population (15–64) * 100	Percent
Gender balance	2015	Female population (15–64) / Male population (15–64) * 100	Percent
Population density	2015	Total population / Total area	Inhabitants/km^2

Indicator name	Year	Calculation	Unit of measure
Gross domestic product (GDP) per inhabitant	2015	Indicator from Eurostat [nama_10r_3gdp]	Percentage of the EU average
Change of GDP per inhabitant	2000-2015	(GDP per inhabitant (NUTS 3)(t1)) - GDP per inhabitant (NUTS 3)(t0))/ (GDP per inhabitant (NUTS 0)(t1) - GDP per inhabitant (NUTS 0)(t0))	Percentage of the national change of GDP per inhabitant
Ratio of persons employed in agriculture, forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons	2014	Number of persons employed in NACE_R2 A / Total number of employed persons *100	Percent
Inactivity rate (15+ population)	2015	100 - (Total economically active population (15+) / Total population (15+) *100)	percent
Unemployment rate (15+ population)	2015	Total unemployed population (15+) / Total economically active population (15+) *100	Percent
Ratio of population with less than primary and lower education (ISCED 2011 0-2) aged 25-64	2015	Indicator from Eurostat [edat_lfse_04]	Percent
Ratio of population with tertiary education (ISCED 2011 5-8) aged 25-64	2015	Indicator from Eurostat [edat_lfse_04]	Percent
Gender gap in activity (15+ population)	2015	((Female economically active population (15+) / Female population (15+) *100) / (Male economically active population (15+) / Male population (15+) *100)) *100	Percent
EU NUTS 3 typologies: Urban			Dummy variable (0/1)
EU NUTS 3 typologies: Intermediate			Dummy variable (0/1)
EU NUTS 3 typologies: Rural			Dummy variable (0/1)
EU NUTS 3 typologies: Metropolitan			Dummy variable (0/1)
EU NUTS 3 typologies: Mountain			Dummy variable (0/1)
Lagging areas at EU level	2015	Only GDP/capita<75% EU100 (lagging)	Dummy variable (0/1)
Lagging areas at Eu and national level	2015	Both GDP/capita<75% EU100 and GDP/capita<75% NAT100 (lagging)	Dummy variable (0/1)

The actual values of the variables show quite high heterogeneity that hinder comparability. With regards to the national specialities, the values of all variables were expressed as a percentage of the appropriate national averages. This method reflects the relative (localised) nature of the inner peripheries – as it highlights the area's relative position within the country.

After standardization, a series of cluster analysis was executed, in which process 3–6 classes of units were formed. The applied clustering method was k-medians and Euclidean distance measured the similarity of the units. The variables of the clustering were:

- Ratio of child age population, (2015, NUTS 3),
- Ratio of active age population (2015, NUTS 3),
- Gross domestic product (GDP) per inhabitant (2015, NUTS 3),
- Ratio of persons employed in agriculture, forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons (2014, NUTS 3).

Due to availability problems regarding several variables, some countries covered by IP delineations were excluded from the clustering process: Iceland, Liechtenstein, Montenegro, Switzerland, Turkey, Bosnia and Herzegovina, Serbia and Kosovo under UN Security Council Resolution 1244.

During the selection process more aspects (i.e. relevance, territorial coverage and their covariance) had to be considered, affecting the final selection of variables. With regard to relevance the selected variables are connected to three important dimensions of inner peripheries': to the age structure, to the economic structure and to economic performance. In addition to all these aspects, it is essential to ensure that sufficient number of variables remain to characterise the clusters.

After the selection of variables, the optimal number of clusters had to be evaluated. This optimisation was carried out by the evaluation of the Calinski-Harabasz indices. The index measures both the clusters' separation (distances between cluster centres) and compactness (distances between cluster centre and the objects.) Four different clustering analyses were performed, with different number of clusters (from 3 to 6 classes) to find the best clustering process. The classification with 4 classes proved to be the most fitting, by maximising the value of the Calinski–Harabasz pseudo-F index[26] (see Table 6.2).

Table 6.2: Pseudo F values

Number of clusters	Calinski-Harabasz pseudo-F
3	541.85
4	*742.91*
5	635.71
6	632.07

After accomplishing classification, the analysis was continued with the description of the classes. Firstly, the different clusters were described by using the mathematical means, as middle values. In order to shed light on the characteristics the values are colour coded, where red represents the lowest and green the highest value. The characteristics of each cluster concerning the mean value of the sixteen variables can be seen in Table 6.3.

Table 6.3: Characteristics of clusters (means)

Variable label	**Cluster**			
	1	**2**	**3**	**4**
Ratio of child age population	97.5	95.0	100.5	96.0
Ratio of active age population	98.5	98.2	100.1	98.0
Old age dependency rate	109.1	113.3	99.2	112.9
Gender balance	98.5	97.9	100.0	97.7
Population density	84.0	43.5	604.0	49.8
Ratio of persons employed in agriculture. forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons	140.5	448.9	50.4	242.4
Gross domestic product (GDP) per inhabitant	77.6	68.8	91.1	70.2
Change of GDP per inhabitant	98.1	100.2	95.5	100.6
EU typology Urban areas	0.1	0.0	0.5	0.1
EU typology Rural areas	0.4	0.6	0.1	0.6
EU typology Mountain areas	0.4	0.2	0.3	0.2
Lagging areas (EU and National level <75%)	0.3	0.5	0.2	0.4
IP Delineation 1	0.5	0.4	0.4	0.3
IP Delineation 2	0.3	0.3	0.2	0.4
IP Delineation 3	0.2	0.2	0.2	0.1
IP Delineation 4	0.4	0.6	0.5	0.6

Findings are summarized in the Table 6.4. Every cluster is characterized by low GDP level ranging from 68,8 to 91,1 percent of the appropriate national GDP per inhabitant level. Three of the four clusters (1,2,4) are hit by ageing (above average old dependency rate) and are thinly populated. Beyond the common characteristics each cluster of inner peripheries has some distinguishing feature.

- In short, Cluster 1 is characterised by low population density, unfavourable age structure, relatively high share of mountainous areas, low level of GDP/inhabitants and relatively high agricultural employment share.
- Cluster 2 represents the extreme rural peripheries that are characterised by very low population density and economic performance. Both the old age dependency rate and the agriculture’s share in employment are very high, signalling the unfavourable socio-economic conditions.
- Cluster 3 differentiates significantly from the others in most indicators, especial the high population density, the relatively favourable age structure and economic performance have to be noted. Every second cluster member is classified as urban area, which reflects the urban dimension of the inner peripheries.
- Cluster 4 show some similarity with Cluster 2: as it is sparsely populated and characterized by above average agricultural employment, low level of GDP, but it is closer to the national average.

It should be noted that the different delineations of the inner peripheries do not coincide with results of the cluster analysis. A cluster membership does not add extra information on the type of IP delineation and vice versa, as no concentration of the delineated IP's can be observed through the clusters.

Table 6.4: Cluster descriptions

Cluster	Description (compared to the national average)	Sample of NUTS 3 units
1	Close to the relevant national averages in terms of: child rate, gender balance, active age population rate, Above national average in terms of: rate of agricultural employment; old dependency rate, Below the national average in terms of: GDP per inhabitants, population density, Relatively high share of mountainous areas Number of NUTS 3 units: 179.	Hautes-Alpes, Tiroler Oberland, Suffolk, Cagliari, Vâlcea, Banskobystrický kraj, Erzgebirgskreis
2	Close to the relevant national averages in terms of: child rate, active age population rate, gender balance, Above national average in terms of: rate of agricultural employment, old dependency rate Below the national average in terms of: population density, GDP per inhabitants, Relatively high share of rural areas, Number of NUTS 3 units: 46	Douro, Dumfries & Galloway, South West Wales, North of Northern Ireland, Foggia, Creuse
3	Close to the relevant national averages in terms of: child rate, active age population rate, gender balance; Above national average in terms of population density; Below the national average in terms of: old dependency rate, rate of agricultural employment, GDP per inhabitants; Relatively high share of urban areas; Number of NUTS 3 units:163	Blackpool, Bytomski, La Spezia, Cádiz, Perugia, Asturias
4	Close to the relevant national averages in terms of: child rate, active age population rate, gender balance; Above national average in terms of: old dependency rate, rate of agricultural employment; Below the national average in terms of: population density, GDP per inhabitants; Relatively high share of rural areas; Number of NUTS 3 units:127	Potenza, Vidzeme, Alentejo Litoral, Weinviertel, Zeeuwsch-Vlaanderen, Pomurska, Lääne-Eesti, Sieradzki, Szabolcs-Szatmár-Bereg,

Average values hide the disparities within groups, thus in every cluster there can be found units, that are quite dissimilar to the other cluster members. (e.g. the mean GDP/inhabitant value is 77.57% in case of the Cluster 1, but the maximum value is more than 146% of the corresponding national average). In order to create more homogeneous subgroups from the members of the clusters the qualitative comparative analysis strategy is to be utilised.

Summary statistics of clusters can be checked in Table 6.5; Table 6.6; Table 6.7; Table 6.8.

Table 6.5 Summary statistics for Cluster 1 (N=179)

Indicator	Mean	Std. deviation	Min	Max
Ratio of child age population	97.5	9.0	64.2	125.2
Ratio of active age population	98.5	2.7	85.1	106.4
Old age dependency rate	109.1	17.3	64.8	189.5
Gender balance	98.5	2.7	87.8	105.8
Population density	84.0	56.6	10.9	434.9
Ratio of persons employed in agriculture, forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons	140.5	24.9	96.7	186.2
Gross domestic product (GDP) per inhabitant	77.6	16.4	42.6	146.4
Change of GDP per inhabitant	98.1	12.0	65.2	151.9
EU typology Urban areas	0.1	0.3	0.0	1.0
EU typology Rural areas	0.4	0.5	0.0	1.0
EU typology Mountain areas	0.4	0.5	0.0	1.0
Lagging areas (EU level <75%)	0.1	0.3	0.0	1.0
Lagging areas (EU and National level <75%)	0.3	0.4	0.0	1.0
IP Delineation 1	0.5	0.5	0.0	1.0
IP Delineation 2	0.3	0.5	0.0	1.0
IP Delineation 3	0.2	0.4	0.0	1.0
IP Delineation 4	0.4	0.5	0.0	1.0

(Note: all indicator expressed as percentage of the proportional national average)

Table 6.6: Summary statistics for Cluster 2 (N=46)

Indicator	Mean	Std. deviation	Min	Max
Ratio of child age population	95.0	10.0	64.7	114.8
Ratio of active age population	98.2	3.1	91.7	102.9
Old age dependency rate	113.3	23.0	75.1	167.8
Gender balance	97.9	3.0	92.1	104.0
Population density	43.5	38.2	2.6	216.5
Ratio of persons employed in agriculture, forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons	448.9	133.0	324.7	913.5
Gross domestic product (GDP) per inhabitant	68.8	12.5	44.8	111.1
Change of GDP per inhabitant	100.2	10.4	76.7	129.3
EU typology Urban areas	0.0	0.1	0.0	1.0
EU typology Rural areas	0.6	0.5	0.0	1.0
EU typology Mountain areas	0.2	0.4	0.0	1.0
Lagging areas (EU level <75%)	0.0	0.2	0.0	1.0
Lagging areas (EU and National level <75%)	0.5	0.5	0.0	1.0
IP Delineation 1	0.4	0.5	0.0	1.0
IP Delineation 2	0.3	0.4	0.0	1.0
IP Delineation 3	0.2	0.4	0.0	1.0

Indicator	Mean	Std. deviation	Min	Max
IP Delineation 4	0.6	0.5	0.0	1.0

(Note: all indicator expressed as percentage of the proportional national average)

Table 6.7: Summary statistics for Cluster 3 (N= 163)

Indicator	Mean	Std. deviation	Min	Max
Ratio of child age population	100.5	9.5	72.8	125.1
Ratio of active age population	100.1	3.8	91.1	116.9
Old age dependency rate	99.2	21.0	28.6	157.9
Gender balance	100.0	3.0	83.6	108.5
Population density	604.0	1176.0	19.2	8741.4
Ratio of persons employed in agriculture, forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons	50.4	31.1	0.0	101.9
Gross domestic product (GDP) per inhabitant	91.1	34.3	47.2	379.6
Change of GDP per inhabitant	95.5	8.9	71.8	120.4
EU typology Urban areas	0.5	0.5	0.0	1.0
EU typology Rural areas	0.1	0.3	0.0	1.0
EU typology Mountain areas	0.3	0.5	0.0	1.0
Lagging areas (EU level <75%)	0.1	0.3	0.0	1.0
Lagging areas (EU and National level <75%)	0.2	0.4	0.0	1.0
IP Delineation 1	0.4	0.5	0.0	1.0
IP Delineation 2	0.2	0.4	0.0	1.0
IP Delineation 3	0.2	0.4	0.0	1.0
IP Delineation 4	0.5	0.5	0.0	1.0

(Note: all indicator expressed as percentage of the proportional national average)

Table 6.8: Summary statistics for Cluster 4 (N=127)

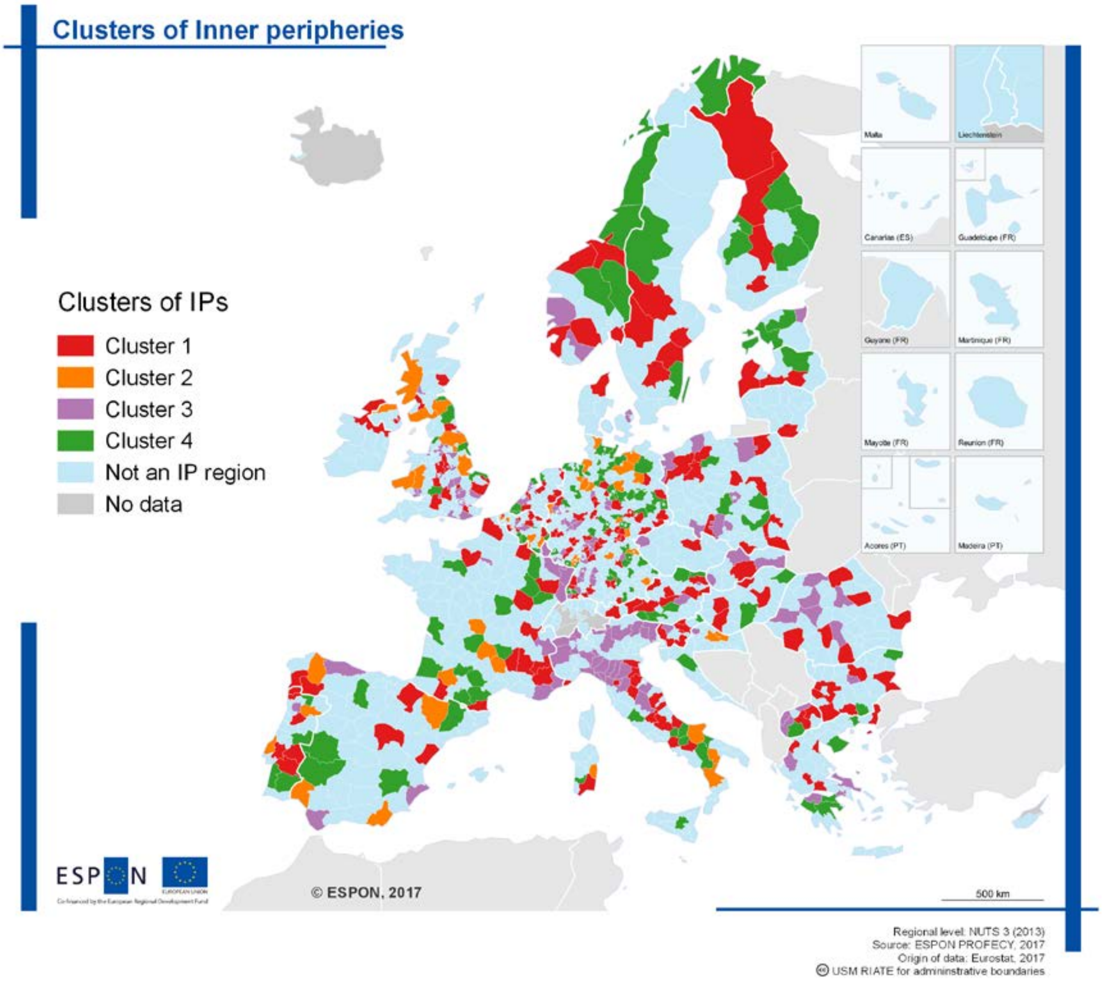
Indicator	Mean	Std. deviation	Min	Max
Ratio of child age population	96.0	9.2	72.4	121.4
Ratio of active age population	98.0	2.7	89.3	103.6
Old age dependency rate	112.9	17.8	76.2	174.0
Gender balance	97.7	3.2	89.2	106.0
Population density	49.8	26.7	9.7	201.6
Ratio of persons employed in agriculture, forestry and fishing (NACE_R2 A) in percentage of the total number of employed persons	242.4	36.0	188.5	315.5
Gross domestic product (GDP) per inhabitant	70.2	15.1	41.6	124.0
Change of GDP per inhabitant	100.6	12.4	68.7	144.6
EU typology Urban areas	0.1	0.3	0.0	1.0
EU typology Rural areas	0.6	0.5	0.0	1.0
EU typology Mountain areas	0.2	0.4	0.0	1.0

Indicator	**Mean**	**Std. deviation**	**Min**	**Max**
Lagging areas (EU level <75%)	0.1	0.3	0.0	1.0
Lagging areas (EU and National level <75%)	0.4	0.5	0.0	1.0
IP Delineation 1	0.3	0.5	0.0	1.0
IP Delineation 2	0.4	0.5	0.0	1.0
IP Delineation 3	0.1	0.3	0.0	1.0
IP Delineation 4	0.6	0.5	0.0	1.0

(Note: all indicator expressed as percentage of the proportional national average)

The cluster analysis does not create spatially determined pattern of classes as no clear macroregional concentration occurs (see Map 6.1). None of the ESPON space's macroregions (Northern, Southern, Eastern, Western Europe, or Adriatic-Ionian Region, Baltic Sea Region, Danube Region, Alpine Region, Mediterranean Region, Atlantic Arc, Black Sea Region) are dominated by one cluster.

Map 6.1: Clusters of inner peripheries – output of the cluster analysis



At lower, national level the situation is different, reflecting the spatial and socio-economic specificities of the countries. For instance, the Cluster 3 which represents the urban dimension of the inner peripheries is overrepresented in the more urbanised countries such Italy, Czech Republic and the United Kingdom (Table 6.9). At the other end of scale, the rural IP's are overrepresented in the mountainous and sparsely populated countries (Austria, Bulgaria, Finland and Sweden).

Table 6.9: Cluster membership at country level

Country		Cluster relative share (%) compared to the average share				Total Number
		1	2	3	4	
AT		161.8	0.0	39.5	126.7	16
BE		117.7	203.6	57.4	92.2	22
BG		191.8	0.0	35.1	90.1	9
CZ		143.9	0.0	158.0	0.0	2
DE		87.7	142.9	76.2	132.3	141
DK		95.9	0.0	210.6	0.0	3
EE		0.0	0.0	105.3	270.3	3
EL		89.9	0.0	118.5	126.7	16
ES		84.6	263.4	55.8	119.3	17
FI		127.9	0.0	0.0	225.3	9
FR		93.3	121.0	68.3	142.5	37
HR		0.0	559.8	79.0	101.4	4
HU		191.8	0.0	0.0	135.2	6
IE		287.7	0.0	0.0	0.0	1
IT		79.0	87.8	154.9	63.6	51
LT		287.7	0.0	0.0	0.0	1
LU		0.0	0.0	316.0	0.0	1
LV		191.8	0.0	0.0	135.2	3
MK		95.9	0.0	158.0	67.6	6
NL		127.9	0.0	105.3	90.1	18
NO		119.9	0.0	52.7	169.0	12
PL		137.0	0.0	105.3	77.2	21
PT		132.8	172.2	24.3	124.8	13
RO		143.9	0.0	158.0	0.0	12
SE		205.5	0.0	0.0	115.9	7
SI		215.8	0.0	39.5	50.7	8
SK		71.9	0.0	237.0	0.0	4
UK		51.9	124.4	197.5	33.8	72
All country	Share (%)	34.8%	8.9%	31.7%	24.7%	-
	Number	179	46	163	127	515

(Note: Cluster 4 is overrepresented e.g. in Austria as it is relative share (126.7%) is more than 100%. In case of Cluster 4, the average share (100%) is equal to 24.7%)

6.2 Introduction of qualitative comparative analysis (QCA) in the investigation of socio-economic typology of inner peripheries

The qualitative comparative analysis is a relatively new method in the social sciences[27], and can be used to build empirical typologies[28]. The QCA promotes systematic comparison of cases to identify set relations between conditions and outcomes. In the case of a classification based on cluster analysis, the cluster membership can be taken into account as the outcome, and conditions are represented by the socio-economic indicators.

In a QCA framework, the term “set” is used rather than “variable” to emphasize that each variable has been transformed to represent the individual’s level of membership in a given condition (instead of the continuous variable GDP/inhabitants, the “set” (a dummy variable) of Above average GDP per inhabitants is used). The combination of individual “sets”—for example, “Above average GDP per inhabitants” AND “Above average old dependency rate” – is then referred to as a “configuration”. These configurations constitute a solid base for labelling the clusters.

According to Schneider and Wagemann, the steps of the analysis are[29]:

- Recoding – calibration. For each case, membership scores were calculated, indicating that the variable score is below (0) or above (1) the national average value;
- Construction of the Truth Table. One row in the truth table displays one set of cases that show the exact combination of conditions;
- Boolean minimization to reduce the number of conditions;
- Finally, the so created classes may be described and labelled by utilising the social-economic indicators, conditions.

(The analysis was carried out by the STATA software package’s fuzzy module[30]).

In optimal cases the QCA analysis represents an iterative process, where additional sets (variables) may be added to enhance the robustness of the model. In our case the situation is different as the data availability is limited. The possibilities of the QCA is restricted to shed light on the dominant configuration of each cluster. The dominant configuration of the cluster can be seen as the most frequent pattern of sets (variable’s value). Findings are summarized in Table 6.10.

The dominant configuration of the first cluster is above national old dependency rate, low population density, low GDP/inhabitant level and high ratio of agricultural employment. The cluster may be called: classic rural periphery.

Cluster 2 dominant configuration shows some similarity to Cluster 1 (low population density and high ratio of agricultural employment), but in some dimensions these areas show dynamism: the change of the GDP/inhabitant is more favourable than the national level and also the age structure is more balanced. The group can be seen as the representative of the developing rural areas.

Table 6.10: Dominant configuration of the clusters

Cluster	Old age dependency rate	Gender balance	Population density	Ratio of persons employed in agriculture, forestry and fishing	Gross domestic product (GDP) per inhabitant	Change of GDP per inhabitant	Number of cases
1	HIGH		LOW	HIGH	LOW		89
	Cluster outliers						90
2	LOW		LOW	HIGH		HIGH	20
	Cluster outliers						26
3	LOW		HIGH	LOW		LOW	54
	Cluster outliers						109
4		LOW	LOW	HIGH	LOW	LOW	49
	Cluster outliers						78

(Note: only the dominant configurations can be found in the table, all the other configurations are taken as outliers.)

Cluster 3 represents the urban side of the inner peripheries. The dominant configuration consists high population density, favourable age structure (low old age dependency rate), low agricultural employment, but the local economy is underperforming. Cluster 3 may be called: underperforming urban areas.

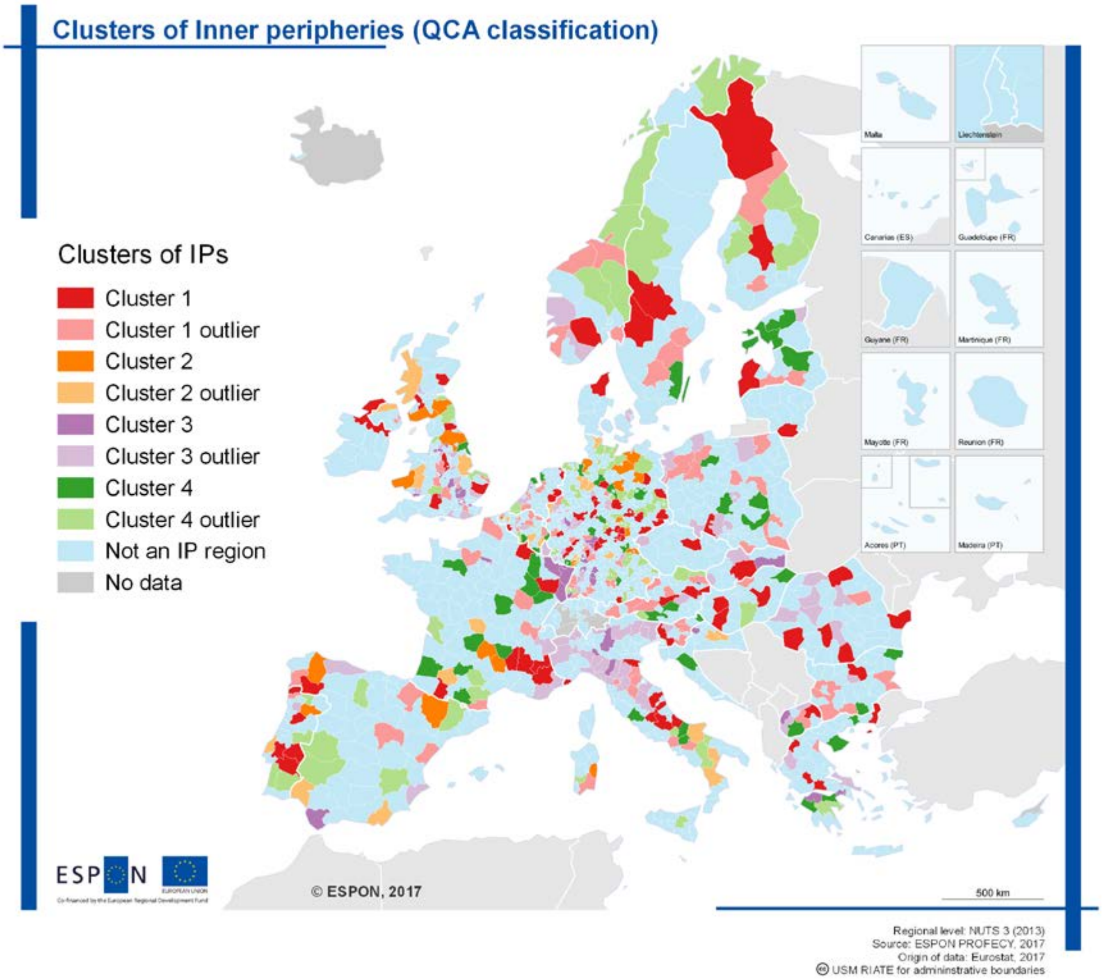
Cluster 4 represents the less favourable conditions of the inner peripheries. The cluster members can be depicted by low GDP/inhabitant, sluggish economy, high agricultural employment and unfavourable gender balance among the active age groups (male surplus). The labelling: lagging rural peripheries is based on the signs of the socio-economic crises.

It must be noted that the QCA analyses enriched the picture of the clusters, created by the standard cluster analyses. The configuration based method helped to overcome the well-known shortages of the variable based description method. Cluster 2 and 4 are quite similar in many aspects (see Table 6.3.), but the QCA sheds light on the cluster's inner composition and considers the second cluster as more dynamic.

On the contrary the QCA analyses do not affect the regional patterns of the clusters (see Map 6.2) as no clear macro regional concentration of dominant configuration can be observed. None of the configurations are concentrating in the ESPON space's macro regions (Northern, Southern, Eastern, Western Europe, or Adriatic-Ionian Region, Baltic Sea Region, Danube Region, Alpine Region, Mediterranean Region, Atlantic Arc, Black Sea Region).

Map of clusters evaluated as the output of the QCA differentiate between more and less typical units (or cluster outliers) of cluster-member regions (Map 6.2).

Map 6.2: Clusters of inner peripheries – output of the QCA



6.3 Summary findings

- There is clear evidence that the different delineations of inner peripheries share some similarities in terms of socio-economic characteristics. In national context these areas are often (but not always) characterised by low population density and low economic performance. On the other hand, the delineated areas are quite different in other dimensions: the age structure, the gender balance of the active age groups and the dynamism of the economy.
- This heterogeneity may be reduced by clustering the Inner peripheries. The two-stage clustering method (cluster analysis followed by QCA) proved to be helpful to create and label more homogeneous subgroups of the delineated inner peripheries.

7 Experiments refining the interpretation of status of inner peripheries

Presented geographical patterns of the location and socio-economic characteristics of inner peripheral areas (in comparison with other types of regions) often provide results, which might be a little obscure, although the most relevant findings always can be found within these patterns. In addition to these tasks, some supplemental experiments are carried out, which aim at providing more targeted opportunities of interpretation on the status of inner peripheries, to serve the better understanding of their detailed characteristics. Different additional experiments were considered to be used to refine basic findings associated with the status of inner peripheries. They are presented in this report in the form of parts of two research tasks: comparison between the demographic status of inner peripheries and other regional typologies by the exclusion of overlapping cases and analysing the degree of IP coverage and its relationship with socio-economic aspects.

7.1 Comparison between the demographic status of inner peripheries and other regional typologies by the exclusion of overlapping cases

The analysis of the socio-economic status of inner peripheral areas in comparison with European regional typologies (U–R typology, lagging regions etc.) indicated several potential specificities of positions of these groups of regions, while it also showed that the interpretation of findings on these comparisons are sometimes obscure. Status of inner peripheries, however indicated somewhat moderately disadvantaged positions of these areas, clear differences between socio-economic features of IP regions and other groups of typologies have not been presented.

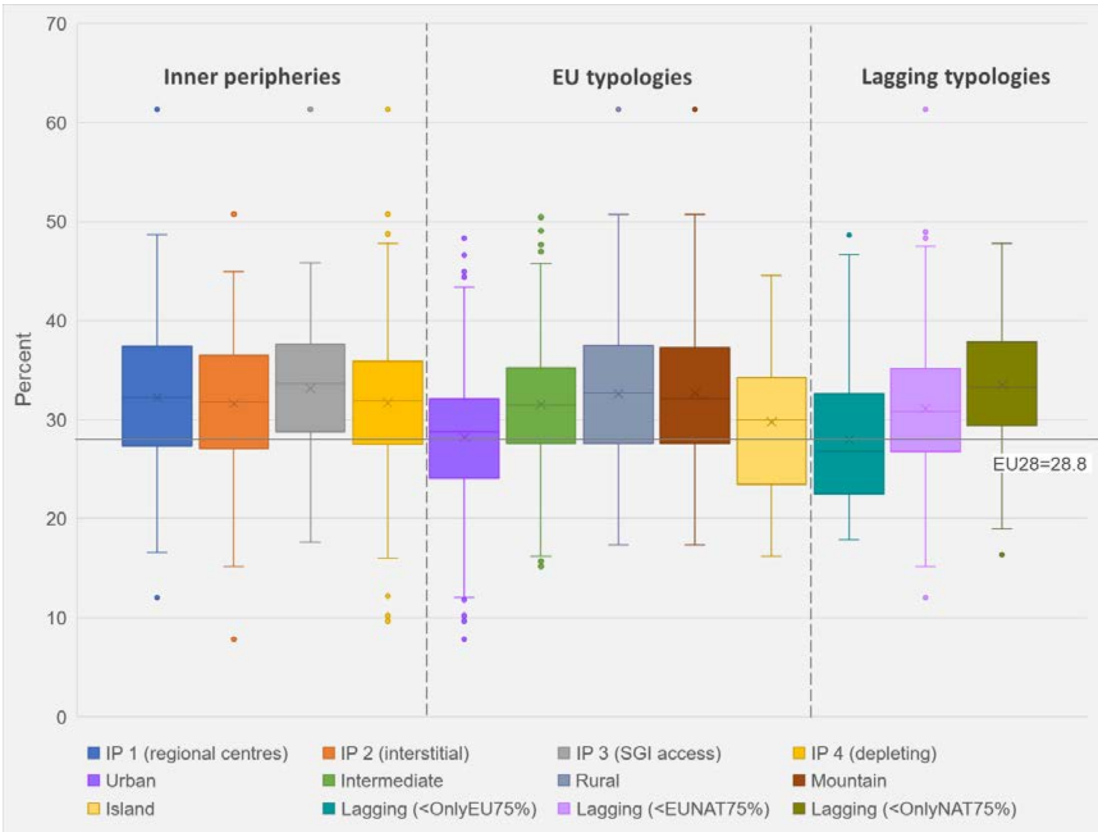
Since there is a certain level of geographical overlap between territories more affected by phenomena of inner peripherality (identified at the NUTS 3 level) and other region types, it might raise the question that socio-economic similarities between inner peripheral areas and other groups of regions might be derived from real similarities, or it just happens, because in some extent, the same (overlapping) units are proceeded into analysis. In order to dig into this question, an experiment was carried out by focusing on the comparison of inner peripheries and other regional typologies by the exclusion of overlapping cases in analyses.

For carrying out this experiment, several simplifications were made. The basic idea of analysis is borrowed from Chapter 3, so the main idea was to make comparisons between the distributions of selected socio-economic indicators of IP regions and other territories. For the experiment, only one variable, old age dependency rate was selected. It is a measure which more or less clearly indicates the disadvantaged positions of inner peripheries compared to various EU regional typologies. From these region types, those were selected for further analyses, which showed a higher rate of overlap with inner peripheral areas. As introduced in Chapter 2 of this report, these are Intermediate, Rural, Mountain regions. Besides, two classes of lagging regions were also selected, namely <EUNAT75% (lagging at bot EU and national levels) and <OnlyNAT75% (lagging only at national levels) areas.

Questions of analyses were: how the similarities and differences of the distribution of inner peripheral regions and other selected region types change regarding old age dependency data, if we exclude overlapping cases from analyses, and how it influences the status of IP areas in comparison with the demographic characteristics of different EU regional typologies (strengthens or highlight disadvantages). Here, two types of analyses are presented. On the one hand, similar investigations to Chapter 3 box plot analyses were carried out, by also recalling findings of the former ones. Since different IP types are overlapping with different range of regions regarding other typologies, they are proceeded into analysis separately. On the other hand, another type of analysis is focused on how differences and similarities of compared groups of regions change if we exclude or keep overlapping regions from/in analysis by a direct measure of comparing distributions of two samples, the Kolmogorov-Smirnov test.

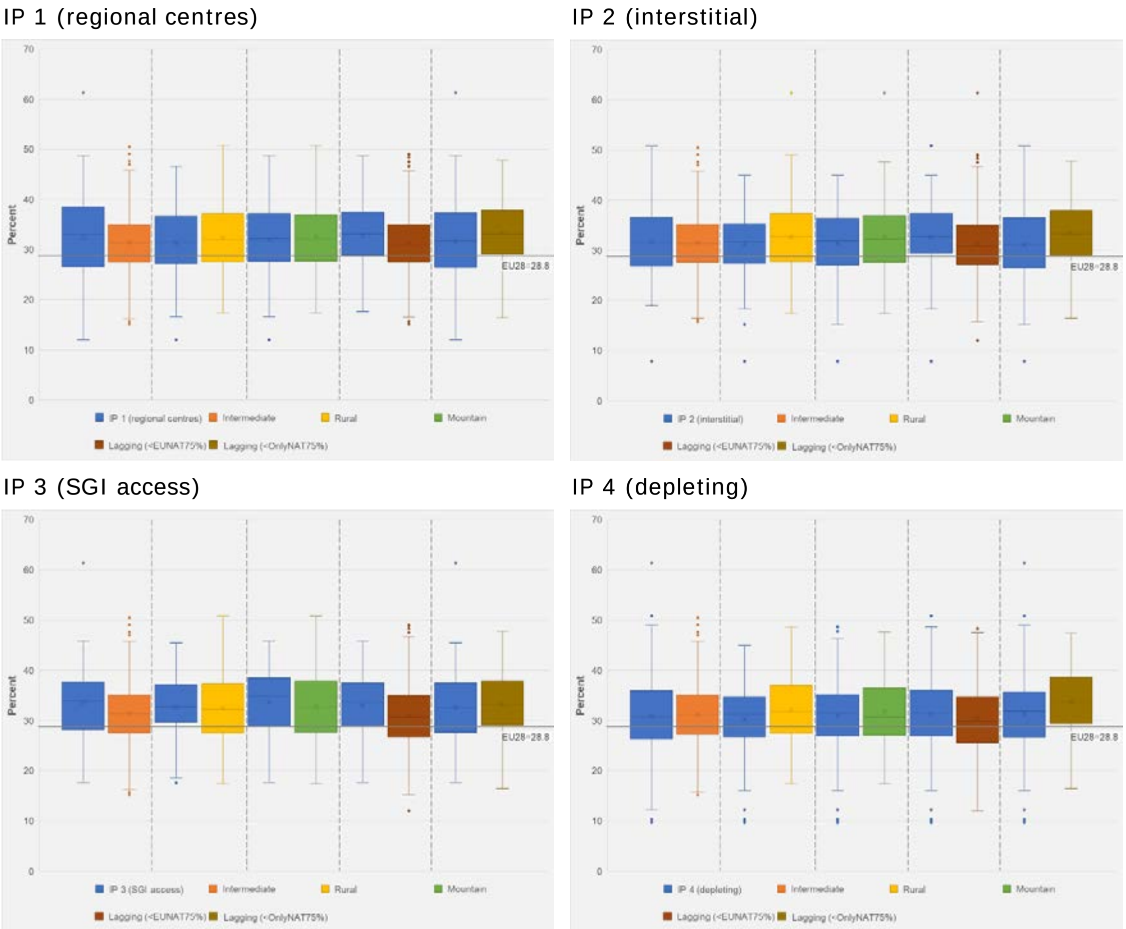
As introduced in Chapter 3, IP delineations and other European regional typologies show compact situation by this demographic indicator with relatively worse position of inner peripheries according to their higher level of old age dependency ratio than EU28 average and national level based on comparison with including overlapping areas too (Figure 7.1, Figure 7.3).

Figure 7.1: Old age dependency rate – unstandardized



Old age dependency rates show more remarkable differences among the groups of regions defined them as inner peripheries based on the methodology of ESPON PROFECY project. These rates are higher in regions with high travel times to regional centres (IP 1) and areas with low access to SGI (IP 3), which might imply that poor accessibility might result in processes boosting higher rate of old age dependency. IP regions with the highest rates of old age dependency are usually situated in Western European countries (e.g. the UK, France) as well as in Southern European states (e.g. Greece, Portugal, Italy). IP regions with the lowest rates of old age dependency are generally located East Central European countries (e.g. Poland, Slovakia) from the group of IP 1 and IP 3 regions, while they are more likely from Western European countries (e.g. the UK) in the case of groups of economic potential interstitial peripheries (IP 2) and depleting inner peripheral areas (IP 4).

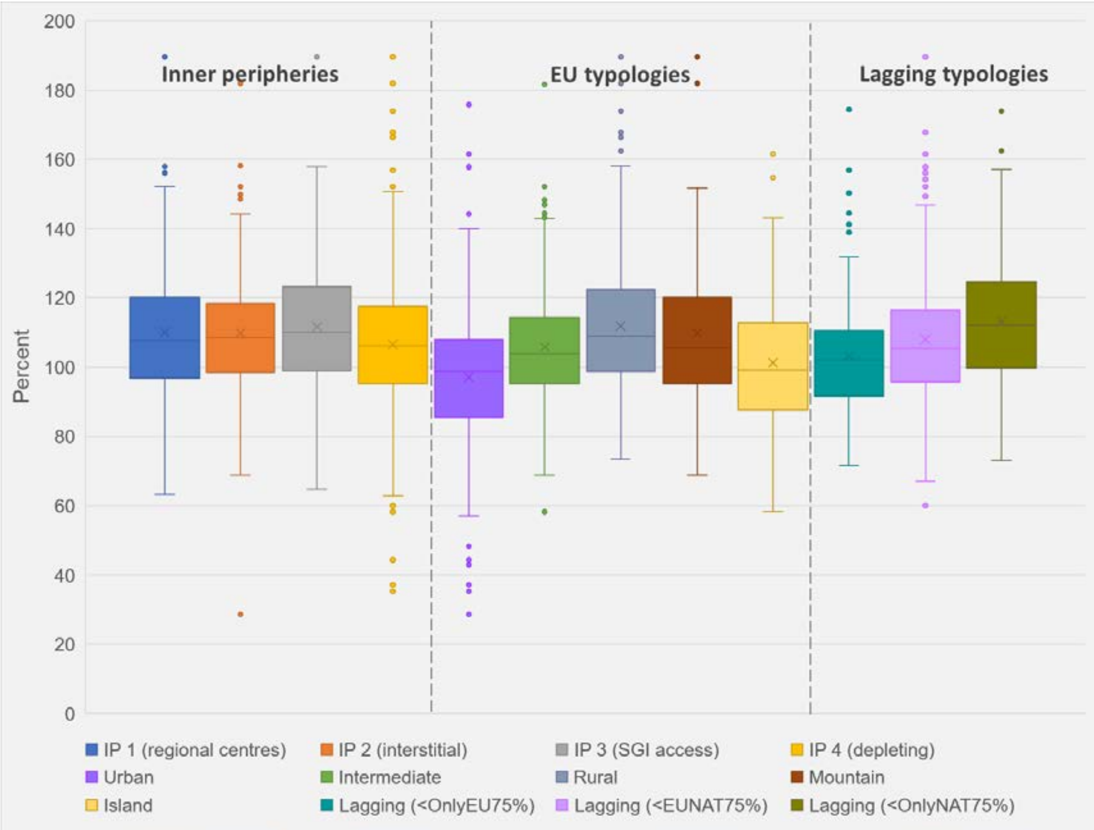
Figure 7.2: Comparison between IPs and selected regional typologies by excluding overlapping cases



Comparisons between regions defined as inner peripheries and selected regional typologies by excluding overlapping cases show slightly more complex patterns than comparison based on all affected NUTS 3 regions (Figure 7.2). First of all, it seems this type of comparison might also strengthen the disadvantaged position of IPs among European regions due to old age dependency ratio. It means majority of the most important results is very similar to those results which were based on comparison including overlapping areas according to unstandardized data and standardized data as percentage of national averages too.

Both of similarities and differences can be experienced among IP delineations. Similarities can mostly be detected between IP 1 (regional centres) and IP 2 (interstitial) regions according to their same higher or lower average level of old age dependency ratios compared to other selected regional typologies. For instance, they have higher mean of old age dependency ratios than intermediate and those lagging regions where GDP per capita is lower than 75% of EU and national average (<EUNAT75%), but on the other hand, they have lower average level of old age dependency ratios than Rural, Mountain and lagging regions with moderate or favourable positions at the EU level, but lower economic productivity than 75% of their national average (<OnlyNAT75%).

Figure 7.3: Old age dependency rate – standardized as percentage of national averages



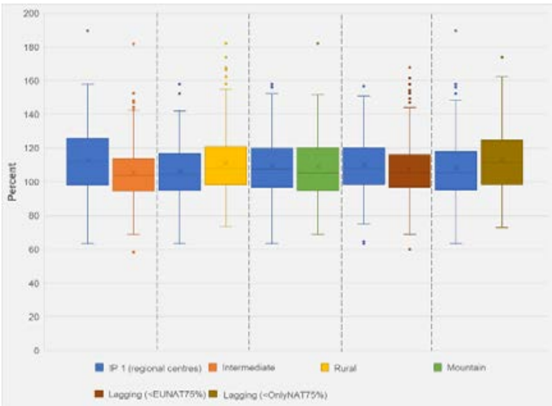
Differences between IP delineations of this ESPON project (and other selected groups of regions) appear in two ways. In the first case, differences are presented mainly between the group of IP 1, IP 2 regions and the group of IP 3 regions. These latter inner peripheral areas – mostly identified them by drawbacks in accessibility – differ from those patterns which can be experienced between other two types of IP regions and selected regional typologies based on comparison by excluding overlapping cases. This general pattern shows a better position of IP 1 (regional centres) and IP 2 (interstitial) regions compared to Rural, Mountain and Lagging

(<OnlyNAT75%) regions, but it also refers to their relatively more disadvantaged situation in comparison with Intermediate and Lagging [<EUNAT75%] regions. Nevertheless, IP 3 regions highlight other patterns due to their more unfavourable position with higher average level of old age dependency ratio than all other selected groups of NUTS 3 regions (except for Lagging [<OnlyNAT75%] regions).

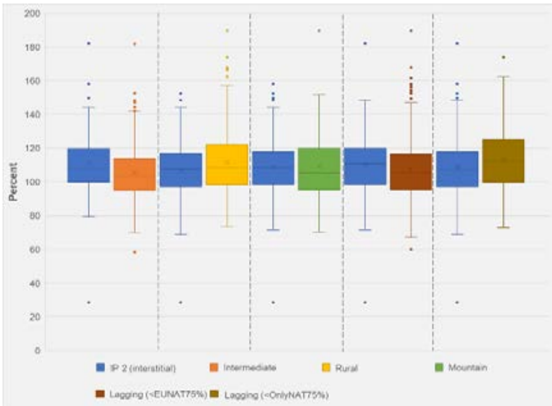
In the second case, there are clear differences between the group of IP 1, IP 2 regions and the group of IP 4 regions. These latter depleting regions differ from those general patterns which can be experienced between other two types of IP regions and the selected regional typologies based on the comparison by excluding overlapping cases (see above). Nevertheless, IP 4 regions represent other patterns due to their better position with lower average level of old age dependency ratios than all other selected groups of NUTS 3 regions (except for Lagging [<EUNAT75%] areas).

Figure 7.4: Comparison between IPs and selected regional typologies by excluding overlapping cases

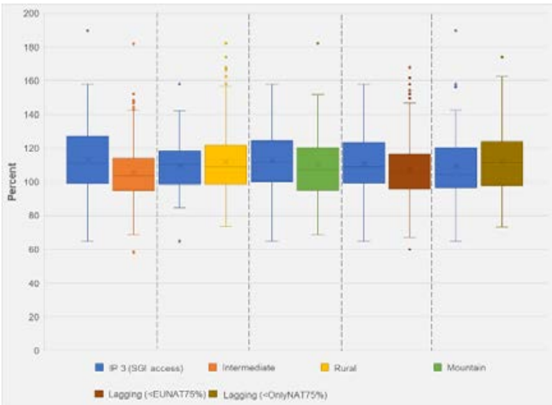
IP 1 (regional centres)



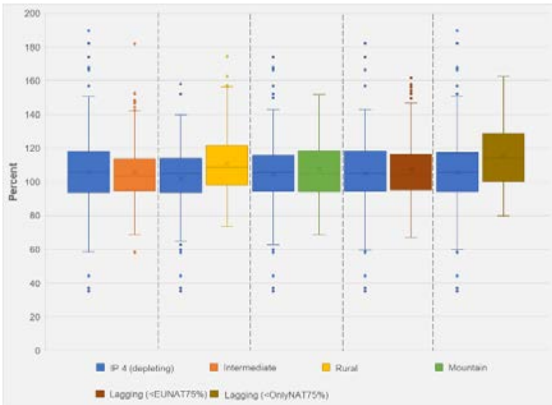
IP 2 (interstitial)



IP 3 (SGI access)



IP 4 (depleting)

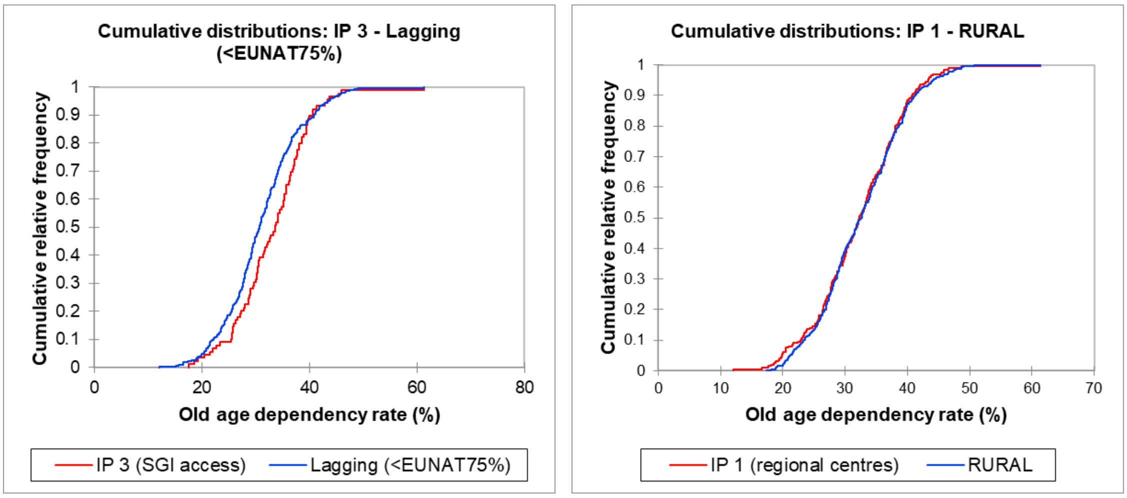


Comparison by excluding overlapping cases according to standardized data as percentage of national averages might also confirm these similarities and differences (Figure 7.4). On the one hand, average levels of old age dependency rates of all IP delineations of ESPON PROFECY change between 105% and 113% compared to their national averages. These higher average levels of old age dependency rate (in comparison with their national averages) was also observed by comparisons including overlapping cases. On the other hand, relative positions of each group of inner peripheries might show clear similarities and differences by higher or lower average level of old age dependency rates compared to other selected regional typologies. It means, these relative positions of IP 1, IP 2, IP 3, IP 4 regions are very similar or the same in the two cases of comparisons used unstandardized and standardized data too.

Besides these comparisons of descriptive statistics of datasets and the graphic representation of distributions (box plots), distributions of two datasets can directly be compared by statistical-mathematical tools, for example the Kolmogorov-Smirnov test (K-S test). The non-parametric Kolmogorov-Smirnov test is used to compare the distribution of a sample and a hypothetic distribution or distributions of two samples (even with low or different sample sizes). During the test a null hypothesis is formulated stating that the hypothesized difference (D) between the cumulative relative frequency and distributions of the two samples is 0. This D-value is measured as the maximum ‘distance’ between the distributions of the two samples. Whether this hypothesized difference is high or low (differences or similarities are stronger), it depends on a defined significance level. Another statistical value (p) of the K-S test expresses this relationship. If p-value is higher than the defined significance level (alpha), it indicates that the two samples follow the same or similar distribution. Lower than alpha p-values imply that the null hypothesis should be rejected, since the distributions of the two samples are different (Figure 7.5).

Figure 7.5: The comparison of different and similar distributions in Kolmogorov-Smirnov test (at the significance level alpha 0.05)

Different distribution – p-value = 0.02 Similar distribution – p-value = 0.96



P-values of different sample pairs cannot be mathematically compared, but only in a relative way, by the interpretation of the analysed p-values, for example by considering whether they express similar or different distributions, or by exploring whether similarities are relatively lower or higher in these cases. Exemplified by old age dependency values, these cases are investigated when making comparisons between the distributions of inner peripheral areas and other region types by using both unstandardized and standardized data (as percentage of national averages) and measures with overlapping cases between different region types included and excluded (Table 7.1, Table 7.2).

Table 7.1: Comparison of distributions of old age dependency data (unstandardized) of inner peripheries and other regional typologies (p-value of Kolmogorov-Smirnov test)

		Intermediate	**Rural**	**Mountain**	**<EUNAT75%**	**<OnlyNAT75%**
IP 1 (regional centres)	with overlapping cases	0.03	0.96	0.94	0.06	0.15
	overlapping cases excluded	0.01	0.63	0.86	0.02	0.07
IP 2 (interstitial)	with overlapping cases	0.48	0.76	0.70	0.38	0.21
	overlapping cases excluded	0.32	0.17	0.61	0.04	0.09
IP 3 (SGI access)	with overlapping cases	0.02	0.48	0.73	0.02	0.92
	overlapping cases excluded	0.04	0.29	0.29	0.03	0.70
IP 4 (depleting)	with overlapping cases	0.74	0.09	0.55	0.13	0.14
	overlapping cases excluded	0.69	0.01	0.71	0.05	0.06

Significance level alpha=0.05. Green cells (>0.05) indicate similar distributions, red cells (<0.05) denote different distributions

The mathematical comparisons of distributions of (unstandardized) old age dependency data of inner peripheries and other regional typologies emphasize more similarities than differences between these groups (Table 7.1). In most of the compared cases similar distributions of old age dependency rates are observed between all types of inner peripheries and Rural regions, Mountain regions and those lagging regions where the GDP per inhabitant is less than 75% of national averages (but refers to a moderate or favourable productivity at the EU level). In these cases, p-value of the K-S test is high – close to 1 – which might indicate strong similarity based on the comparison of distributions of the examined demographic indicator between the given type of IP and the given type of selected regional typology. On the one hand, these significant similarities appear in measures with overlapping cases both included and excluded, but on the other hand, the strength of these similarities is significantly decreasing in measures with overlapping cases excluded. P-values show weaker similarity in some cases (e.g. between IP 1, IP 2, IP 4 and Lagging [<OnlyNAT75%] regions). It means the distributions of old age dependency ratios are less similar in measures with overlapping cases between the examined groups of IP regions and other regional typologies. Even this weaker similarity is decreasing in measures with overlapping cases excluded.

Other compared cases might also show changes of similarity in distributions of this examined indicator between measures with overlapping cases of IPs and regional typologies included or excluded. These changes mean that basically similar distribution in measures with overlapping cases turns into more difference when these areas are excluded. This change appears for example between IP 1 (regional centres), IP 2 (interstitial), IP 4 (depleting) and lagging regions (<EUNAT75%) (NUTS 3 regions where GDP per capita is less than 75% of EU and national averages).

In a minor part of all compared cases, remarkable differences can be observed between IP regions and other selected regional typologies according to the distributions of old age dependency ratio either in the case of including or excluding overlapping cases (see unstandardized data). These significant differences can be seen between IP 1, IP 3 regions and Intermediate areas, and also between IP 3 regions and Lagging (<EUNAT75%) areas. By examining these examples, it might be said that differences in distributions are stronger when overlapping cases are excluded.

Table 7.2: Comparison of distributions of old age dependency data (standardized as percentages of national averages) of inner peripheries and other regional typologies (p-value of Kolmogorov-Smirnov test)

		Intermediate	**Rural**	**Mountain**	**<EUNAT75%**	**<OnlyNAT75%**
IP 1 (regional centres)	with overlapping cases	0.01	0.94	0.97	0.32	0.20
	overlapping cases excluded	0.00	0.28	0.89	0.21	0.10
IP 2 (interstitial)	with overlapping cases	0.02	0.66	0.53	0.24	0.07
	overlapping cases excluded	0.02	0.18	0.45	0.06	0.03
IP 3 (SGI access)	with overlapping cases	0.02	0.99	0.77	0.20	0.46
	overlapping cases excluded	0.03	0.97	0.30	0.25	0.09
IP 4 (depleting)	with overlapping cases	0.19	0.05	0.36	0.48	0.00
	overlapping cases excluded	0.06	0.01	0.29	0.22	0.00

Significance level alpha=0.05. Green cells (>0.05) indicate similar distributions, red cells (<0.05) denote different distributions

In comparisons of distributions of old age dependency data standardized as percentages of national averages of inner peripheries and other regional typologies, similarities are also more emphasized than differences (Table 7.2), like in the case of unstandardized measures. Most in the compared cases, similar distributions of old age dependency rates are observed according to standardized data as percentages of national averages. These similarities are generally appeared between all types of inner peripheries and Rural regions, Mountain areas and those Lagging regions where GDP per inhabitants is less than 75% of national averages, but economic productivity is moderate or favourable measured at the EU level. Significant similarities in standardized data as percentages of national averages appear both in measures with overlapping cases included and excluded, but the strength of these similarities is significantly decreasing in latter cases.

Weaker similarity based on lower p-value is appeared especially between IP 1, IP 2 and lagging regions (<OnlyNAT75%) which refers to a similar situation in comparison with the distribution of unstandardized data (see Table 7.1). Distributions with similarity turning into differentiation can be detected (by switching between overlapping cases included and excluded) on the one hand, between IP 2 (interstitial) regions and lagging areas (<OnlyNAT75%), on the other hand, between IP 4 (depleting) regions and Rural territories (based on standardized data as percentages of national averages). A part of all compared cases indicates remarkable differences e.g. between IP 1, IP 2, IP 3 and Intermediate regions, and also between IP 4 and lagging areas (<OnlyNAT75%) (Table 7.2). These differences are also significant either in measures with overlapping cases or when these areas are excluded.

In summary, comparisons between IP delineations and selected regional typologies by including and excluding overlapping cases show certain similarities, but slightly different patterns and distributions of old age dependency rates as well. We can conclude that comparison by overlapping cases excluded might confirm differences between inner peripheries and other groups of NUTS 3 regions. It means that the degree of similarities in distributions are decreasing and differences are appearing stronger in measures with overlapping cases excluded. Generally, comparisons between IP regions and selected regional typologies by excluding overlapping case shows very similar or the same patterns and relative positions of IPs by unstandardized standardized (as percentages of national averages) data. The exclusion of overlapping cases reveals clearer differences and a more disadvantaged demographic position of inner peripheral areas compared to other region types. For instance, when excluding these overlapping cases, groups of IP delineations 1 and 3 might be characterised by higher levels of old age dependency rate than Lagging (<EUNAT75%) regions have. In this way, it seems that difficulties in accessibility are stronger influencing factor in socio-economic position of inner peripheries rather than both of Europeanly and nationally worse socio-economic position.

7.2 Analysing the degree of IP coverage and its relationship with socio-economic aspects

Inner peripheral areas identified by ESPON PROFECY project were mostly delineated by using different accessibility measures. In the case of Delineation 1 (distance from regional centres) and 3 (access to different SGIs) these calculations were based on grid level operations, and basic results of these types of inner peripheries in Europe were also introduced first at grid level. Delineated inner peripheries were also overlaid with the NUTS 3 level, because analyses on positioning the status of inner peripheral areas in the socio-economic space of the European Union (in comparison with other region types) needed a common basis, an administrative level, where analysed data and units could be harmonised.

Regarding Delineation 1 and 3, those NUTS 3 units were assigned as inner peripheries, where the coverage of IP patches surpassed 30% of the area of overlaid regions. This idea is based on the presumed connection that the higher the share of IP patches in the area of NUTS 3 regions, the more affected these units are by phenomena related to inner peripherality. Analyses on the status of inner peripheral areas focused on identifying such characteristics, (structural features, conditions, disadvantages, vulnerabilities), which makes them differentiable from other region types in Europe. Specificities, which might be linked to the peripheral location of IP regions. Findings show, that, while there are verifiable disadvantages of being inner peripheral (population dynamics, age structure, economic performance etc.), these connections are often difficult to interpret and not always direct.

In the current experiment, these connections are further analysed by measuring correlation (Pearson correlation coefficient) between indicators of inner peripherality and various socio-economic characteristics. Indicators of inner peripherality are measured by the coverage (area share) of peripheral areas within NUTS 3 regions, so the analysis is narrowed down to inner peripheries identified by Delineation 1 (regional centres) and 3 (SGI access). In the latter case, when identified inner peripheries at NUTS 3 level, PROFECY project team used a combination of delineations related to access to different services, partly by considering some SGIs to be more essential for the population (access to train stations, hospitals and primary schools). In this way, only area shares of these types of SGI-related periphery measures are processed into current analyses, by representing this complex group of inner peripheries. Socio-economic indicators taken into account are taken from analyses on the comparison of socio-economic status of inner peripheries and other European regional typologies (Chapter 3). Nevertheless, in this case, measures associated with entrepreneurship data (number of enterprises, birth and survival rate) are not included in analyses, due to lower sample sizes. Besides, regarding data on employment in manufacturing industry, data for France is not included in the comparisons, since also not available.

Results of calculating the Pearson correlation coefficient by comparing IP area shares within NUTS 3 regions and various socio-economic measures show that there is no direct connection between these factors, the statistical relationship is usually very weak or negligible (Table 7.3). At the same time, different cases and the direction of connections might provide interesting findings. The highest (but still very low) correlation coefficients might be observed between analysed demographic and economic measures and peripherality indicators of NUTS 3 area shares. This corresponds to previous results, which presented that being inner peripheral is often resulted in demographic challenges related to age structure (lower share of active age groups, higher old age dependency rates) and lower economic performance (GDP or GVA). Besides, correlations between IP coverage variables and ratios of employed persons working in manufacturing industry also imply, that the higher the degree covered by IP areas within a NUTS 3 region, the higher the share of employment in manufacturing industry as well (which was also underlined among previous findings).

Table 7.3: The correlation between IP coverage of NUTS 3 regions and socio-economic indicators (unstandardized)

Pearson correlation coefficient	**Share of IP in the area of the NUTS 3 region (%)**			
	IP 1 (regional centres)	**IP 3 (SGI access, train stations)**	**IP 3 (SGI access, hospitals)**	**IP 3 (SGI access, primary schools)**
Ratio of child age (0-14) population	-0.09	-0.13	-0.05	-0.08
Ratio of active age (15-64) population	-0.06	-0.08	-0.10	-0.11
Old age dependency rate	0.11	0.15	0.11	0.14
Inactivity rate	0.08	0.05	0.08	0.02
Gender gap in activity	-0.08	-0.06	-0.07	-0.04
Unemployment rate	0.07	-0.03	0.02	-0.06
Ratio of low qualified population	0.10	0.05	0.09	0.04
GDP per inhabitant	-0.17	-0.17	-0.18	-0.14
GVA per inhabitant	-0.11	-0.11	-0.11	-0.08
Employment in manufacturing industry	0.16	0.20	0.14	0.21
Retail units per inhabitant	-0.06	-0.02	-0.05	-0.08
Hospitals per inhabitant	0.04	0.07	-0.07	0.02
Primary schools per inhabitant	0.02	0.06	0.04	-0.01

Analysed relationships indicate slightly different strength between these connections, if processed socio-economic indicators are measured in a standardized way, as percentages of national averages (Table 7.4). Besides the previously underlined linkages, other socio-economic factors might also show some relationships with IP shares in the area of NUTS 3 units in this case. Nationally standardized unemployment rates, ratios of low qualified population and the density of primary schools seem to be higher in regions more affected by phenomena of inner peripherality. This latter, weak but positive relationship shows that these connections do not always represent socio-economic disadvantages of inner peripheral areas. It is understandable if the density of primary school is lower in the less peripheral regions, usually in urban centres, where the fine access to these and school sizes might counterbalance this issue of availability.

Table 7.4: The correlation between IP coverage of NUTS 3 regions and socio-economic indicators (standardized as percentages of national averages)

Pearson correlation coefficient	**Share of IP in the area of the NUTS 3 region (%)**			
	IP 1 (regional centres)	**IP 3 (SGI access, train stations)**	**IP 3 (SGI access, hospitals)**	**IP 3 (SGI access, primary schools)**
Ratio of child age (0-14) population	-0.08	-0.10	-0.07	-0.06
Ratio of active age (15-64) population	-0.14	-0.18	-0.18	-0.19
Old age dependency rate	0.14	0.18	0.17	0.18
Inactivity rate	-0.02	-0.03	0.00	0.00
Gender gap in activity	0.02	0.01	0.02	-0.01
Unemployment rate	-0.08	-0.13	-0.09	-0.13
Ratio of low qualified population	0.08	0.08	0.11	0.13
GDP per inhabitant	-0.16	-0.18	-0.18	-0.17
GVA per inhabitant	-0.10	-0.12	-0.11	-0.09
Employment in manufacturing industry	0.14	0.15	0.11	0.19
Retail units per inhabitant	-0.01	-0.01	-0.01	-0.08
Hospitals per inhabitant	0.05	0.06	-0.07	0.05
Primary schools per inhabitant	0.10	0.14	0.10	0.01

It might also imply that these correlations are partly more related to specificities of regional centres or access points of services of general interests, than to indices of inner peripheries. In order to have a more detailed insight on this, NUTS 3 units with 0% share of inner peripheral areas were excluded from further analyses. It is reasonable, if we think on special characteristics of urban, central areas: for instance, the usually younger age structure in most parts of Europe, the outstanding economic performance of cities compared to peripheral areas or specificities of the employment structure, with a generally lower level of employment in manufacturing industry in the most central, urbanised regions.

As it was expected, without processing data values of centres into analyses, correlations between IP coverages and socio-economic variables taken into account became even more weaker (Table 7.5). The range of measures showing a slightly stronger relationship with indicators of inner peripherality remained the same compared to the previous investigation: IP coverage of NUTS 3 regions seem to be in more correlation with variables of age structure, economic performance and occupation characteristics. National level standardization might outline these connections in this case too (Table 7.6). Besides the mentioned socioeconomic dimensions, measures of SGI densities seem to have slightly stronger correlation with shares of IP areas in NUTS 3 units.

Table 7.5: The correlation between IP coverage of NUTS 3 regions and socio-economic indicators (unstandardized), by the exclusion of centres (units with 0% share of inner peripheral areas)

Pearson correlation coefficient	**Share of IP in the area of the NUTS 3 region (%)**			
	IP 1 (regional centres)	**IP 3 (SGI access, train stations)**	**IP 3 (SGI access, hospitals)**	**IP 3 (SGI access, primary schools)**
Ratio of child age (0-14) population	-0.12	-0.10	-0.06	-0.07
Ratio of active age (15-64) population	0.01	-0.03	-0.05	-0.08
Old age dependency rate	0.06	0.09	0.08	0.11
Inactivity rate	0.06	0.01	0.06	-0.01
Gender gap in activity	-0.06	-0.05	-0.06	-0.02
Unemployment rate	0.05	-0.03	-0.01	-0.07
Ratio of low qualified population	0.05	0.04	0.06	0.03
GDP per inhabitant	-0.06	-0.10	-0.11	-0.09
GVA per inhabitant	-0.06	-0.07	-0.09	-0.05
Employment in manufacturing industry	0.08	0.10	0.06	0.16
Retail units per inhabitant	0.00	0.05	0.01	-0.01
Hospitals per inhabitant	0.04	0.07	-0.06	0.03
Primary schools per inhabitant	0.00	0.05	0.04	-0.01

Table 7.6: The correlation between IP coverage of NUTS 3 regions and socio-economic indicators (standardized as percentages of national averages), by the exclusion of centres (units with 0% share of inner peripheral areas)

Pearson correlation coefficient	**Share of IP in the area of the NUTS 3 region (%)**			
	IP 1 (regional centres)	**IP 3 (SGI access, train stations)**	**IP 3 (SGI access, hospitals)**	**IP 3 (SGI access, primary schools)**
Ratio of child age (0-14) population	-0.10	-0.10	-0.10	-0.07
Ratio of active age (15-64) population	-0.04	-0.09	-0.12	-0.14
Old age dependency rate	0.07	0.12	0.13	0.15
Inactivity rate	0.02	-0.04	0.04	0.00
Gender gap in activity	0.03	0.02	0.02	0.00
Unemployment rate	-0.01	-0.08	-0.03	-0.12
Ratio of low qualified population	0.02	0.04	0.08	0.11
GDP per inhabitant	-0.06	-0.12	-0.13	-0.12
GVA per inhabitant	-0.07	-0.12	-0.13	-0.07
Employment in manufacturing industry	0.06	0.08	0.03	0.14
Retail units per inhabitant	0.08	0.11	0.08	0.01
Hospitals per inhabitant	0.07	0.07	-0.04	0.09
Primary schools per inhabitant	0.05	0.11	0.07	-0.01

Besides correlation analyses, these relationships between IP coverage as a measure of being inner peripheral and selected socio-economic indicators were also further analysed on scatter plots. The idea was to use a separated representation for NUTS 3 regions assigned as inner peripheries and other (non-IP) European areas in the four IP measures taken into account (one from Delineation 1 – regional centres, three from Delineation 3 – access to train stations, hospitals and primary schools).

As mentioned before, the threshold of IP assignment is surpassing the 30% coverage of the area of a region. This criterion is not automatically used during the delineation of inner peripheries. There are inner peripheral NUTS 3 units, where the share of IP coverage does not reach 30%, and non-IP regions as well, where this index of peripherality is above the threshold. In the former case, some regions were manually assigned as inner peripheries (even with lower shares of IP coverage), because they are parts of bigger IP patches divided by regional or national borders, and strictly applying the threshold would have led to the elimination of notable territories affected by inner peripherality. In the latter case, surpassing 30% in IP area share only means that within these regions there were smaller, separated IP patches (sliver polygons), which were excluded from final calculations. Units with 0% of peripheral area coverage were excluded from this analysis too.

As a representation for the socio-economic side of these comparisons, only indices of old age dependency rates and GDP per inhabitant (not standardized at national levels) used here, because these measures usually show stronger relationship (in every analysis carried out) with peripheral status. The four measures of IP coverage were processed separately.

The analysis of scatter plots provides some interesting findings. On the one hand, inner peripheral areas and non-IP regions do not always show the same direction regarding the relationship between IP coverage and old age dependency or economic performance (Figure 7.6–Figure 7.13). On the other hand, correlations between measures in the case of inner peripheries are usually weaker than in the case of non-peripheral NUTS 3 regions. It implies that while there is a verifiable connection between inner peripherality and higher old age dependency or lower economic performance, the significance of these relationships become lower and lower with the increase of IP area coverage.

Relationships seem to be more meaningful in the other side of this spectrum. As the exclusion of regions with 0% of IP shares indicated, there is an observable, inverse directional correlation between the most central areas and analysed socio-economic indicators, where the higher level of centrality goes with lower rates of old age dependency and higher performance measured as GDP per inhabitant. By moving away from centres, socio-economic positions might become more disadvantaged, as expected, and it confirms the presumed relationship between peripheral location and potential socio-economic disadvantages, but it has a more direct effect on areas closer to centres than in the case of the most peripheral areas distant from them.

Figure 7.6: The connection between IP coverage of NUTS 3 regions and old age dependency rate – IP 1 (regional centres)

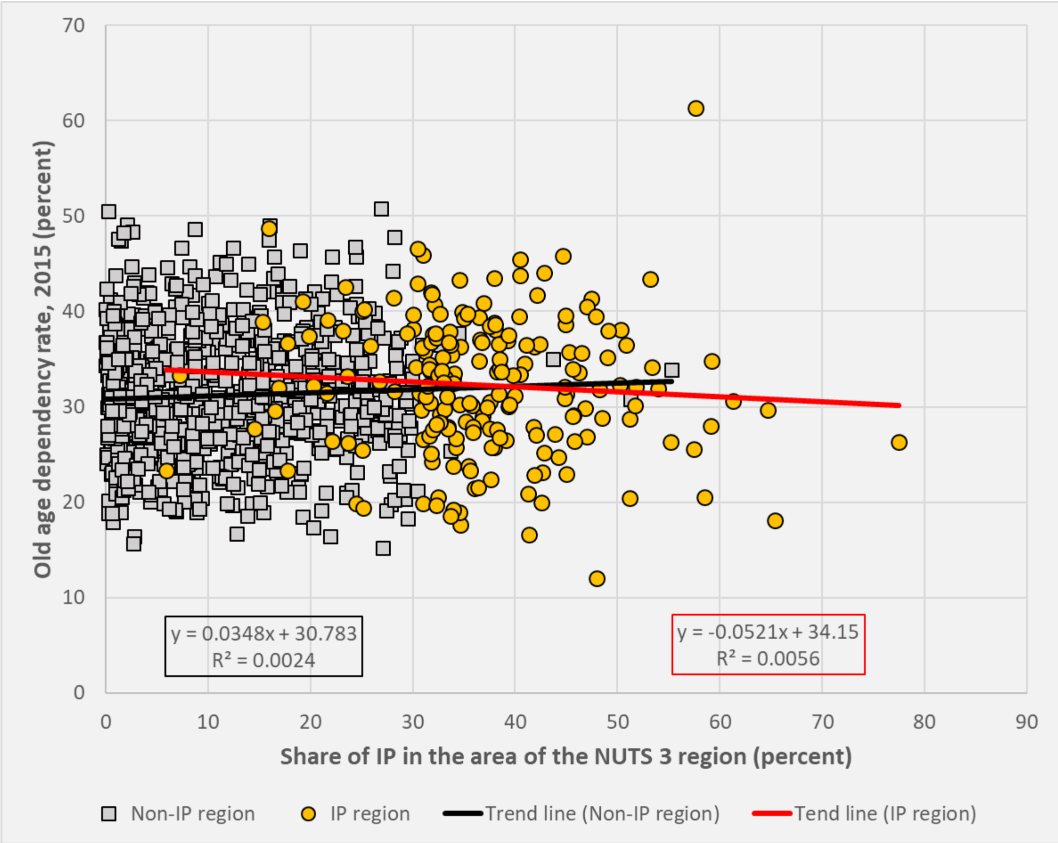


Figure 7.7: The connection between IP coverage of NUTS 3 regions and GDP per inhabitant – IP 1 (regional centres)

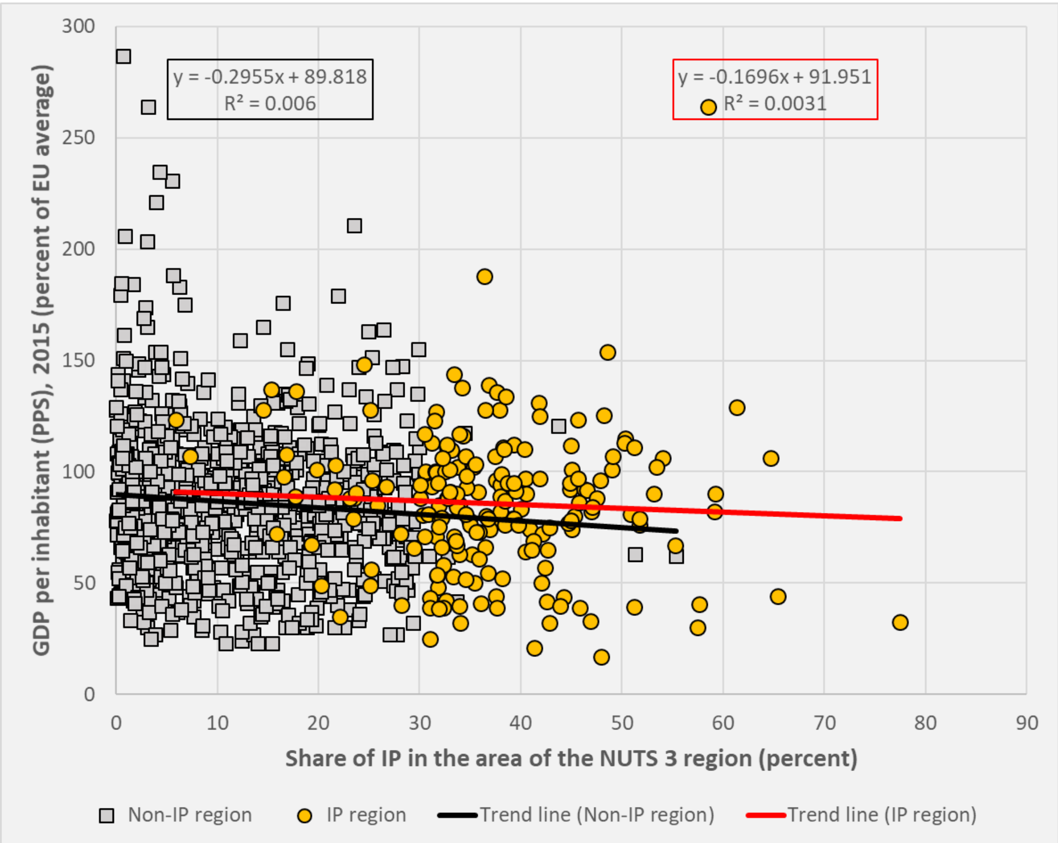


Figure 7.8: The connection between IP coverage of NUTS 3 regions and old age dependency rate – IP 3 (SGI access, train stations)

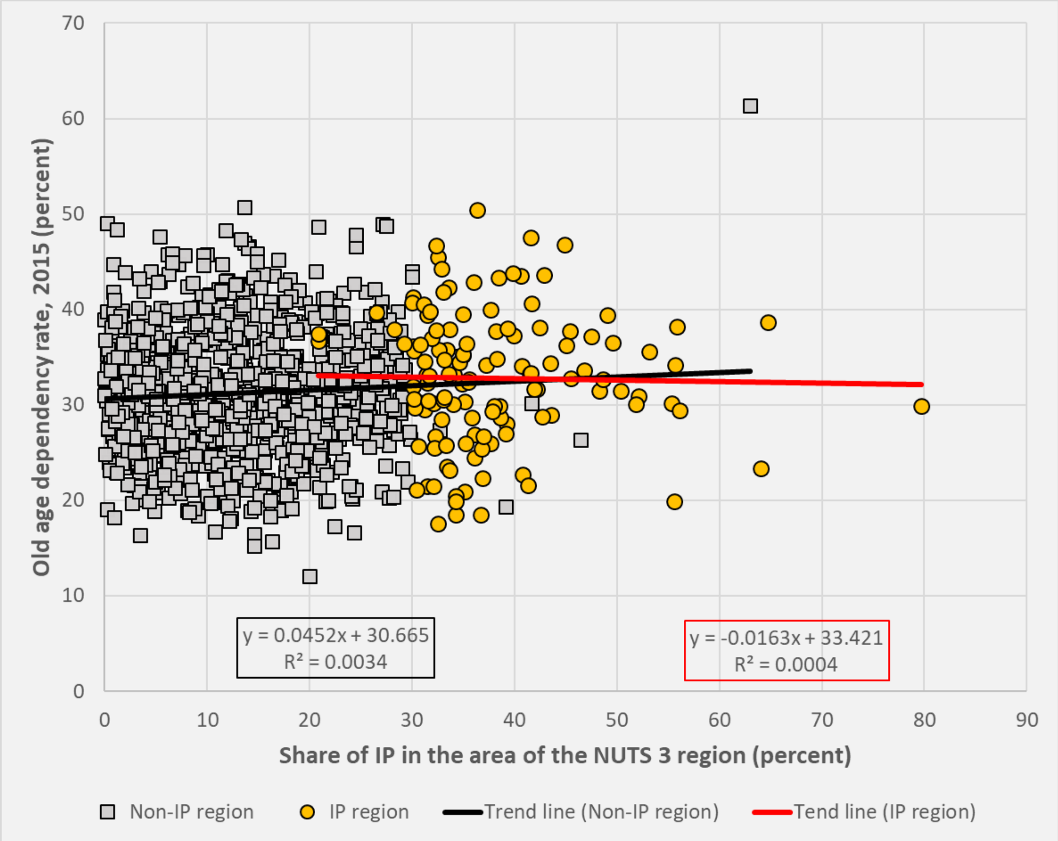


Figure 7.9: The connection between IP coverage of NUTS 3 regions and GDP per inhabitant – IP 3 (SGI access, train stations)

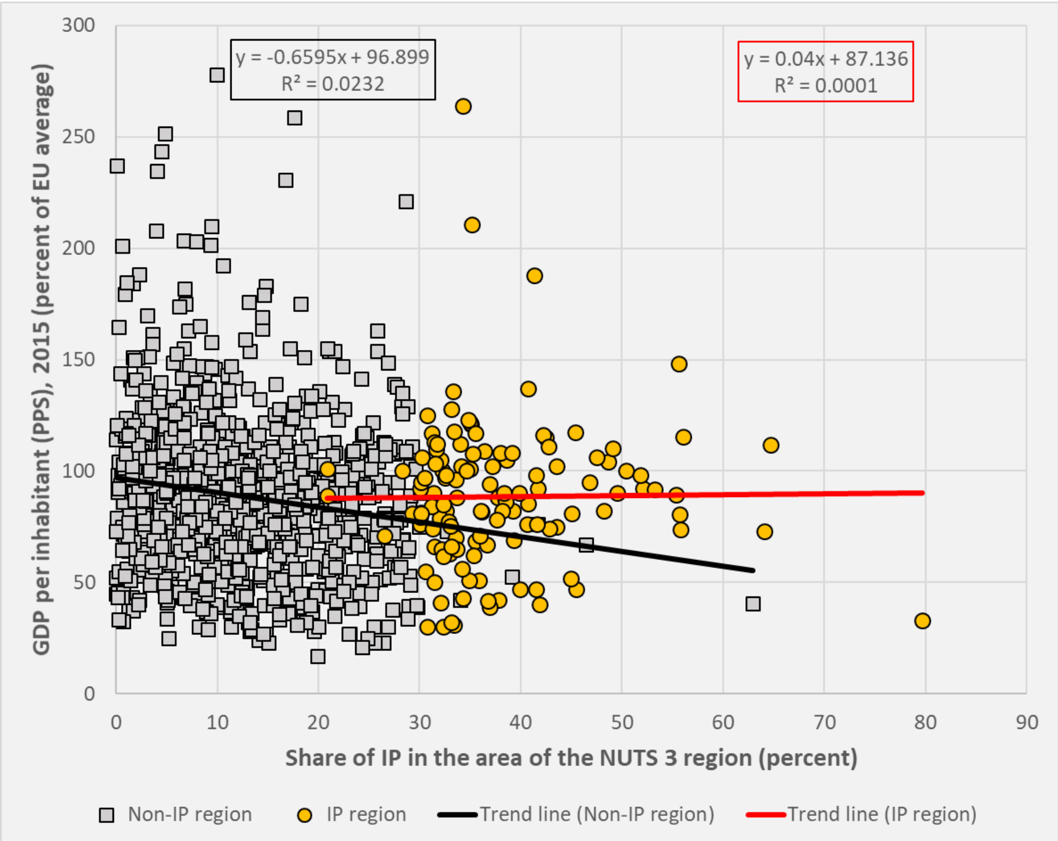


Figure 7.10: The connection between IP coverage of NUTS 3 regions and old age dependency rate – IP 3 (SGI access, hospitals)

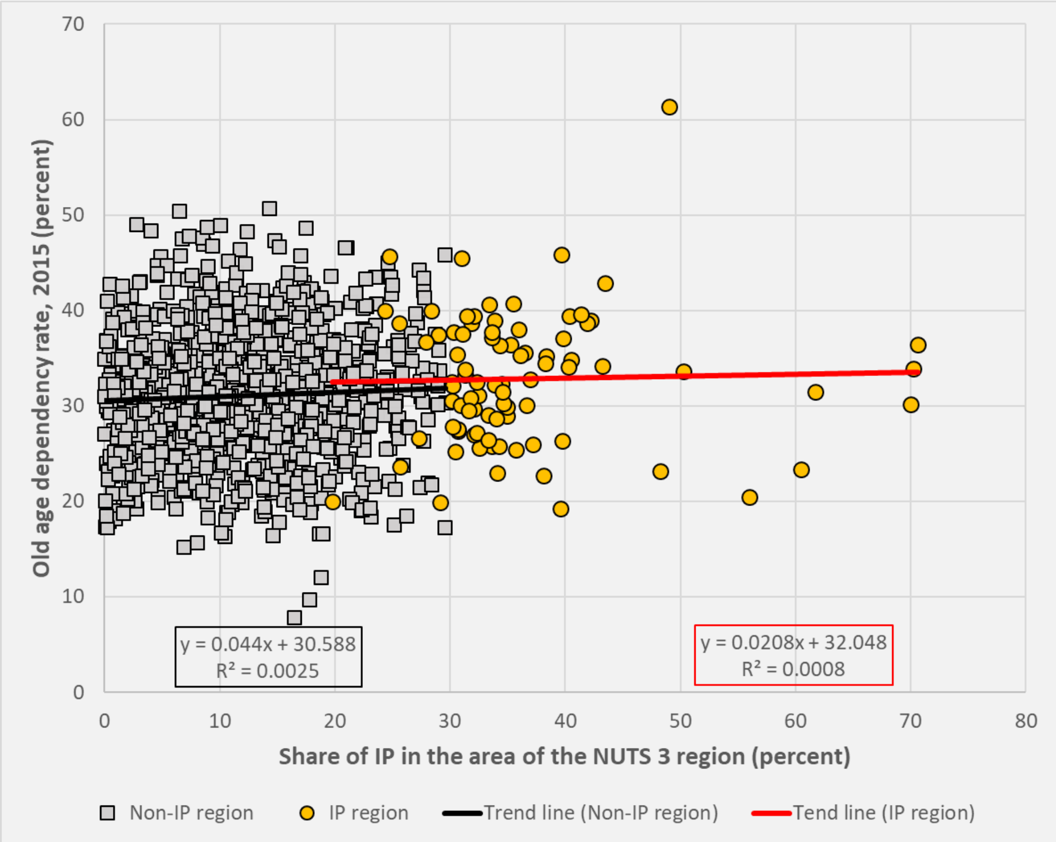


Figure 7.11: The connection between IP coverage of NUTS 3 regions and GDP per inhabitant – IP 3 (SGI access, hospitals)

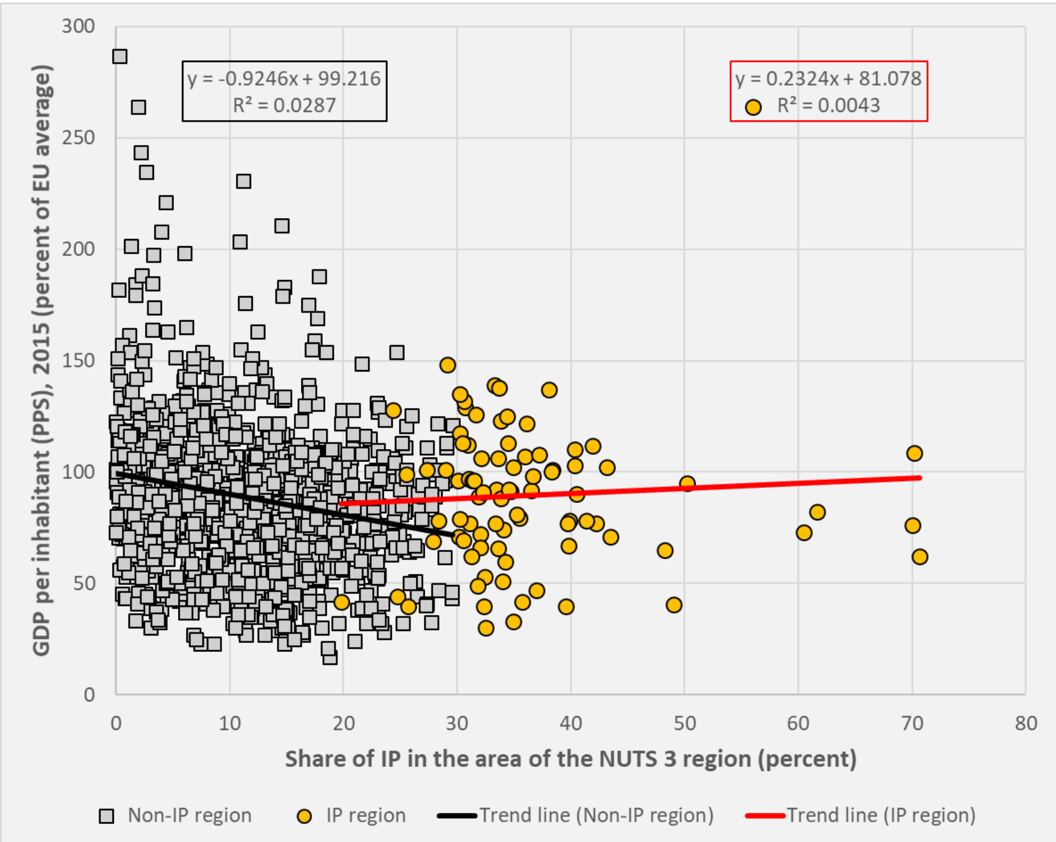


Figure 7.12: The connection between IP coverage of NUTS 3 regions and old age dependency rate – IP 3 (SGI access, primary schools)

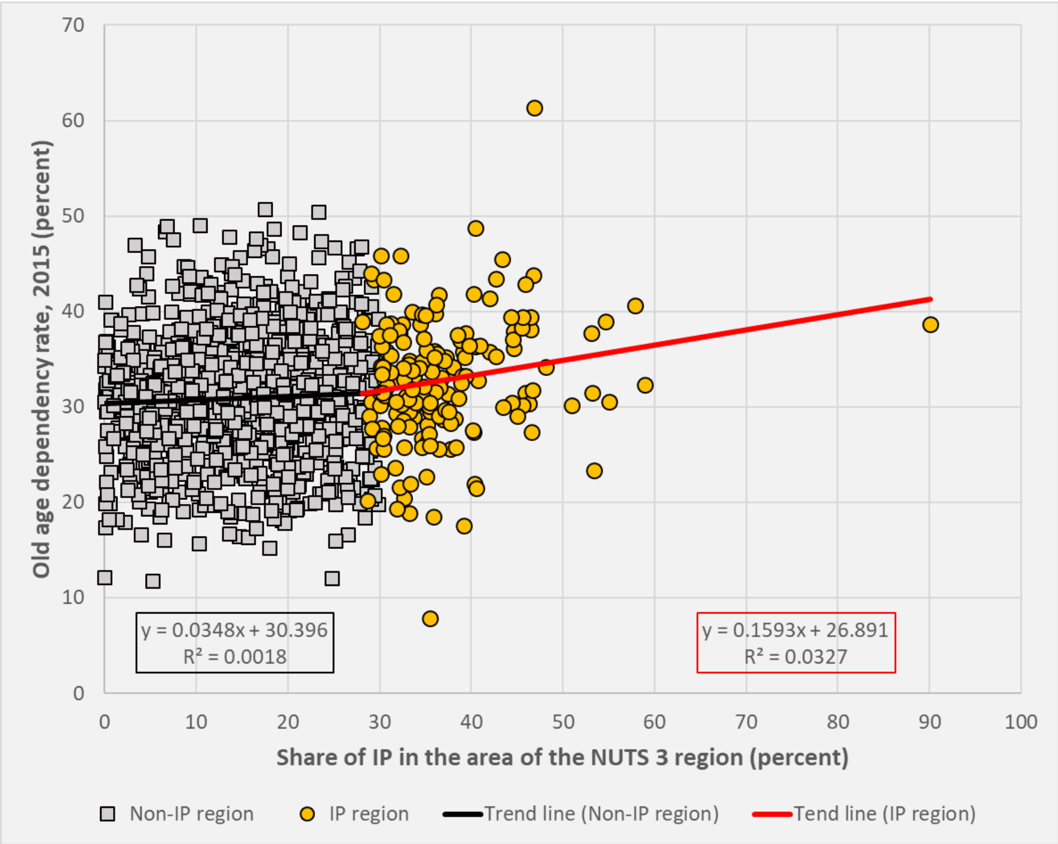
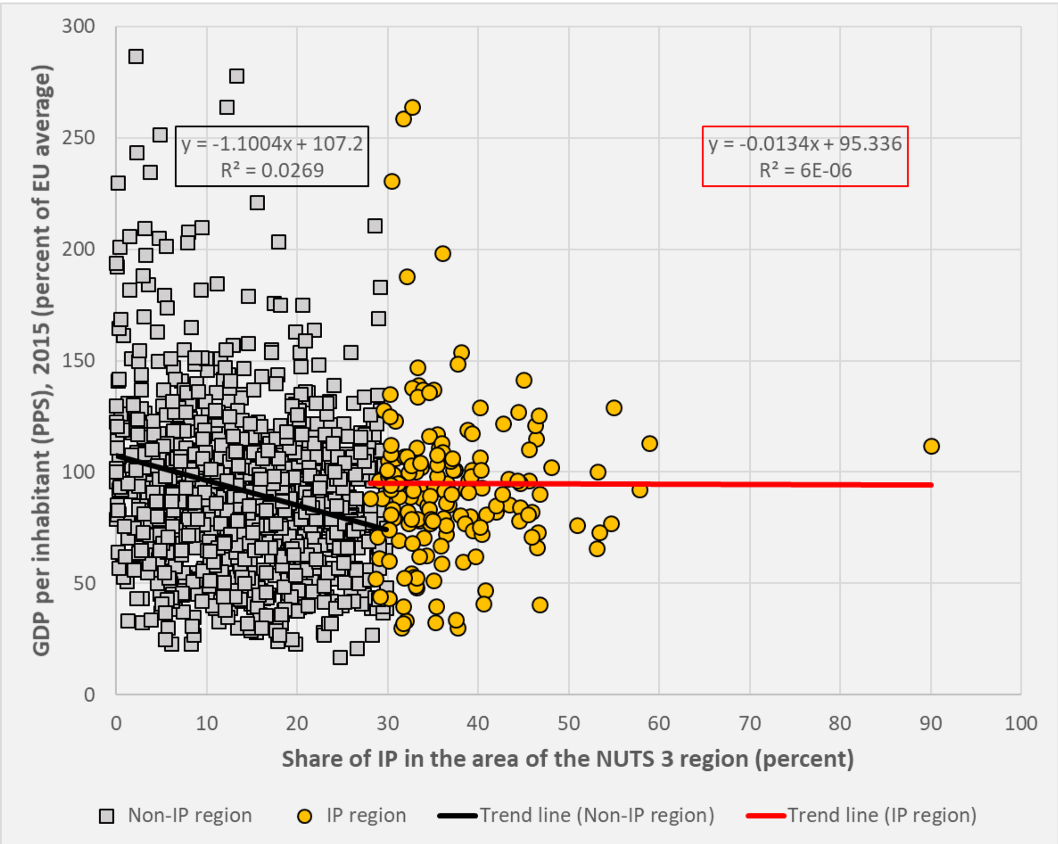


Figure 7.13: The connection between IP coverage of NUTS 3 regions and old age dependency rate – IP 3 (SGI access, primary schools)



There is only a little variance between IP types taken into consideration during this analysis regarding the direction and strength of correlations. The case of inner peripheries as identified as regions with low access to primary schools might indicate an exceptional situation. Here, the connection between IP coverage of NUTS 3 regions and old age dependency rate show a kind of relationship, which was expected in other cases too, by indicating a more direct relationship between being inner peripheral and socio-economic vulnerabilities. This case of inner peripheries with low access to primary school might be understand if we consider that the location and density of primary schools is related to the age structure. This situation might be favourable in areas where the share of younger age groups is higher, while the access to primary school might be worse in territories with more affected by phenomena of ageing.

In summary, correlation analyses might confirm that the relationship between inner peripherality and various socio-economic vulnerabilities is not direct and often difficult to interpret. Nevertheless, analysed results indicate that directions and strengths of these connections are meaningful when considering the phenomena of inner peripherality. Socio-economic disadvantages seem to increase along with higher coverage of peripheral areas in NUTS 3 regions, especially regarding the case of age structure and economic performance. These relationships are also outlined in the case of nationally standardized measures of socio-economic indices. Nevertheless, explored connections also imply that correlations are strongly affected by favourable socio-economic positions of central areas or regions very near them and less directly linked to explicit disadvantages of inner peripheries.

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ESPON 2020 – More information

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