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EUROPEAN UNION

Inspire Policy Making with Territorial Evidence

THEMATIC PAPER

A brief radiography of the social and territorial consequences of two years in the COVID-19 pandemic
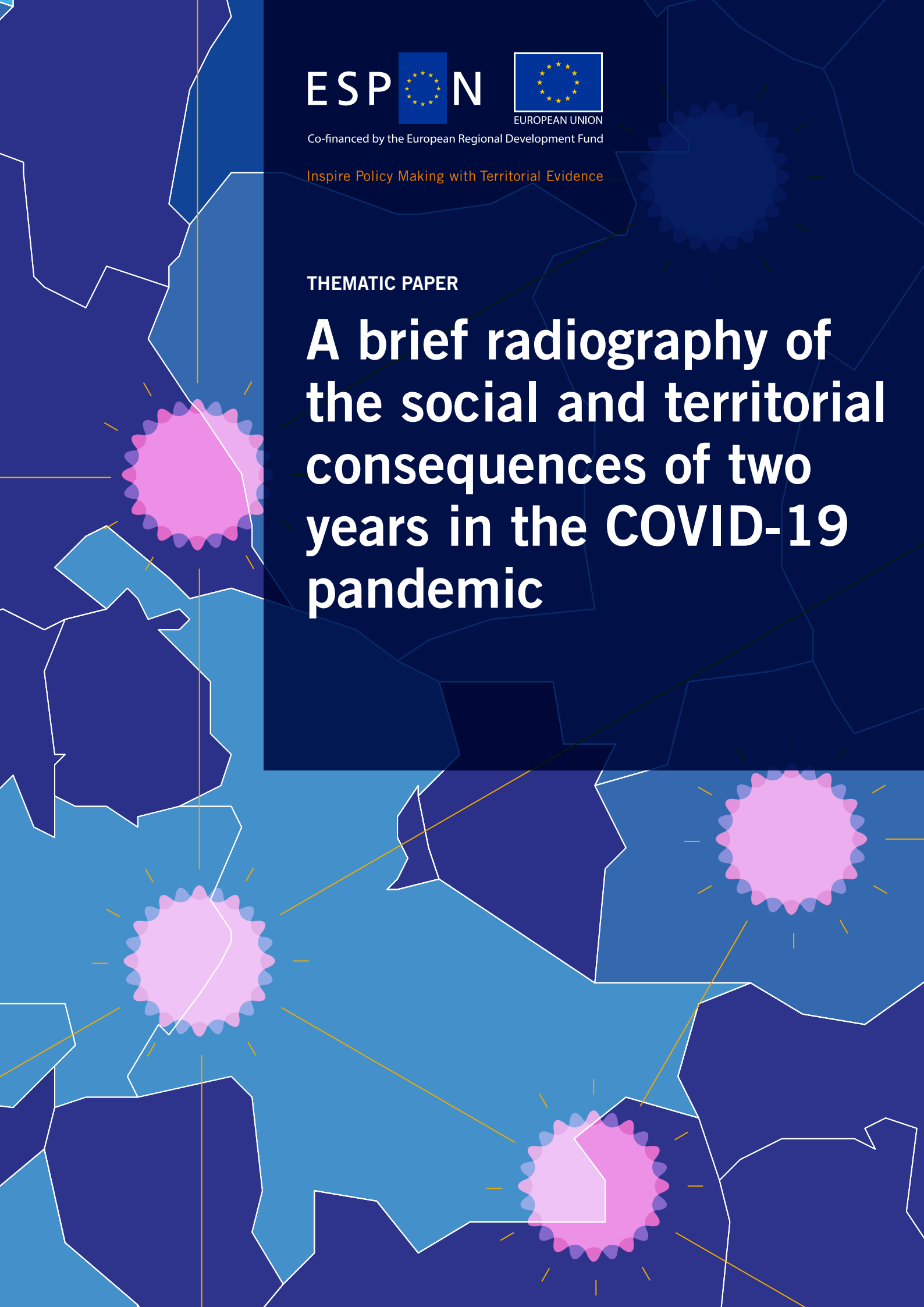
The expansion of the COVID-19 pandemic has changed the world and, subsequently, the European continent in ways no one could have expected. In their fight against the virus and to gain medical control of its spread, all European countries and regions have implemented containment measures limiting mobility and personal freedoms. These measures have had severe side effects on the social and economic functioning of European regions and cities, affecting the daily social and economic lives of the residents on different scales (ESPON, 2022a), and have been detrimental in many ways – resulting, inter alia, in people losing their jobs or having reduced income, being socially isolated, and/or having to balance working at home with homeschooling their children. The idea that COVID-19 affects us all equally (but to different extents, depending on location, educational and ethnic background, income status, etc.) was certainly helpful for raising the support necessary to implement prevention measures, but it is also false, because this crisis has generated social and territorial inequalities,[1] resulting in different types of impacts on different people (ESPON, 2022b).

But is there a pattern of diffusion for COVID-19 across European regions, and how has this evolved since its onset? An infectious disease can turn into a global pandemic when three major risk factors interact: pathogen, host and context (EPRS, 2022). While the first two factors are hard to account for, monitor or even control, understanding the third factor – context – could shed some light on the prevention of future pandemics (EPRS, 2022). Here, we refer to ESPON – European Territorial Observation Network research. One of its EU-wide projects (*Geography of COVID-19: Territorial Impacts of COVID-19 and Policy Answers in European Regions and* Cities (ESPON TERRCOV)) analysed the kinetics of the epidemic across European regions and examined the links between the spread of the disease and variables likely to influence it (such as density, urban/rural types of territories, the structure of the population, regional socioeconomic characteristics) (ESPON, 2022b). This investigation will help answer another important question: are there specific territorial and/or socioeconomic characteristics that can entail a higher risk of death/more severe course of disease and/or higher probabilities of negative socioeconomic impacts?

Linked to this, the next question raised is: what is the socioeconomic impact of the COVID-19 crisis at regional level, as each of the European regions has responded to it in distinctive ways? Building on the evidence produced within the ESPON TERRCOV project, this paper will display, at a more detailed territorial level, the impact on poverty and employment as a result of subsequent lockdown measures.

To conclude, the final section of this report is dedicated to presenting a post-COVID-19 recovery scenario that has tested the effects of the NextGenerationEU (NGEU) funding on employment at regional level, a scenario produced within the EU-wide ESPON project analysing *Interregional Relations in Europe* (ESPON, 2022a).

KEY POLICY MESSAGES

▪ The pandemic shone a spotlight on potential challenges to the collaboration between local, regional and national actors. Public bodies should use this opportunity to work on strategically improving practices, tools and regulations that will benefit citizens and will also allow policymakers and stakeholders to react even more efficiently in future crisis situations.

▪ The pandemic also tested the capacity of EU authorities (on all levels) to react quickly, and the good practices and successful policies that resulted during this period should be further developed or enhanced. More importantly, creating platforms and networks for sharing best practice policy responses during crisis periods at different levels of governance (EU, national, regional and local) should become a priority.

▪ Further support should be offered to the most vulnerable groups who were hit hardest by the pandemic (including elderly people, children, low-income families and homeless people) through national and local policies, and helping these groups move forward and overcome the main economic, health-related, educational or social setbacks caused by the pandemic.

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[1] Key findings of the Eurofound *Living, Working and COVID-19* survey (2020) also support this claim regarding the first wave of COVID-19. See also Allas et al. (2020).

1
Analysing the spatiotemporal diffusion patterns of COVID-19 virus within European regions

As of 29 April 2022, there were 510 million COVID-19 cases and 6.2 million deaths worldwide (World Health Organization, n.d.). By now, the world has experienced four waves of pandemic, and the spread of the novel, mutated forms of coronavirus – namely, Alpha in September 2020, Beta in May 2020, Gamma in November 2020, Delta in October 2020 and Omicron in November 2021 (ESPON, 2022b).[2]

First responses/restrictions were implemented at national level as a drastic response to the rapid and aggressive spread of the virus, starting with Italy – the first country to be massively affected by COVID-19 – which confined its population on 9 March 2020. This process was soon adopted by most other European countries, which gradually confined their residents while adopting new social distancing policies, and closing non-essential businesses or even their borders to try to limit the circulation of the virus (ESPON, 2022b) (see Figure 1).

Figure 1
Country response measures to COVID-19
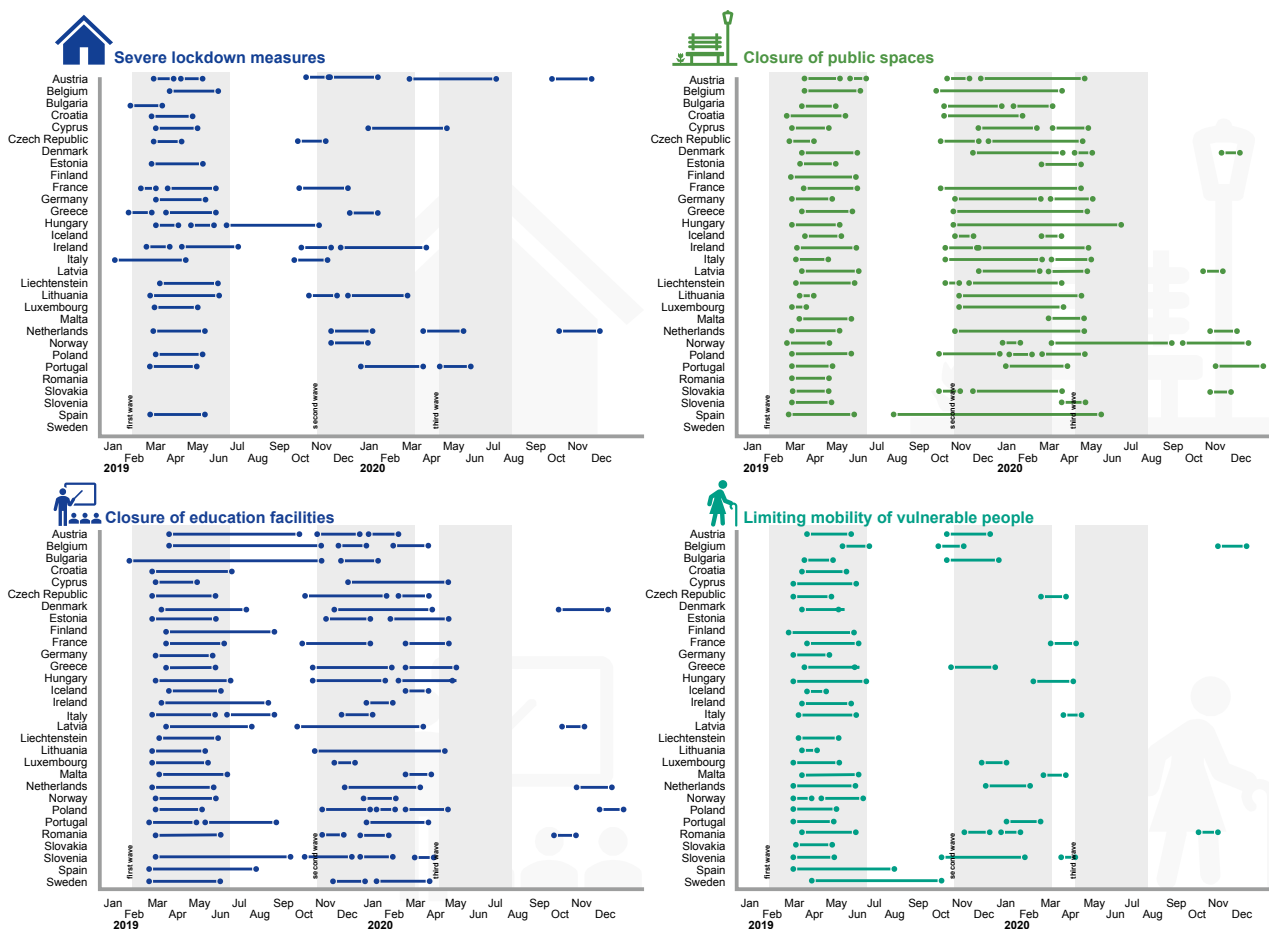
Source: ESPON, 2022b

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[2]   In analysing the pandemic from a territorial perspective, as data are still being gathered, this report will focus on the first three waves, following these time frames: first wave, from mid-February 2020 to mid-June 2020; second wave, from the beginning of November 2020 to mid-March 2021; and third wave, from the end of March 2021 to mid-June 2021.

Following the hierarchical model, as COVID-19 spread from person to person, its diffusion adapted to population flows and human mobility: first, major transport hubs (e.g. major airports and other logistic/mobility hubs, capitals, tourist areas) were hit, then smaller centres and, finally, the virus arrived in rural or peripheral areas. This hierarchical model of diffusion was spotted during the first wave, during which metropolitan regions were the most affected; peripheral areas were only affected later at European and national levels. Contagious diffusion followed later in the first wave, during which neighbourhood effects became more important (ESPON, 2022b).

Following this line of logic, ESPON evidence indicates how, when and how heavily COVID-19 hit each major European region. Due to the novelty of the situation and rapid changes in it, the only way to create a comparable EU-wide overview and capture regional inequalities in the spatial diffusion of the virus was through developing a regional typology based on the number of reported cases. Major regions in Europe[3] were hit by the pandemic at different times. In fact, the waves overlapped in time: in the British Isles, the third wave of the pandemic (caused by the Alpha variant) peaked in January 2021, while in east-central Europe the second wave was still in its declining phase. Likewise, the fourth wave reached the British Isles and southern and western parts of Europe much earlier than it reached the eastern regions. At European level, the pandemic (corresponding to the first wave) hit the central part of Europe (the British Isles and southern and western Europe) first, which is the area most connected to global networks. In contrast, in the peripheral regions of Europe – mainly east-central and northern Europe – there was a delay of several weeks before the onset of an outbreak.

Infection rates during the pandemic fluctuated not only between the major regions of Europe but also between the different region types. In some areas, such as islands, coastal regions, mountains, border areas, predominantly urban regions and metropolitan regions, surges of infections were spotted at different times. In particular, the pandemic curves were observed in predominantly urban and metropolitan regions, which exhibited higher rates than those of predominantly rural or sparsely populated regions, leading to a fair conclusion that urbanisation plays an important role in the onset of the pandemic in a region. The difference in the timing of COVID-19 waves between urban and rural areas is meaningful not only at European level but also within countries: the COVID-19 waves appeared in the main cities first, and then in their agglomerations, followed by rural areas.

Nevertheless, it should be noted that there is a connection between the regional types and the major European regions: each wave of COVID-19 appeared in the most urbanised western regions (the British Isles and southern and western Europe) first. In contrast, east-central European countries (where there is an above-average number of predominantly rural regions) were hit by the pandemic waves later; in the north (as a consequence of low population density), COVID-19 not only appeared later but there were also fewer cases. This means that the pandemic waves appeared in the central regions first, and then spread to the peripheral areas on both a European and a national scale.

## A changing geography of COVID-19 mortality: three waves, three narratives

Taking the analysis a step further, while the indicator of reported cases was useful for describing the spatial diffusion of COVID-19, the impact of the pandemic could be better assessed by looking at mortality indicators (i.e. number of COVID-19-related deaths and excess mortality[4]). As the eighth report on economic, social and territorial cohesion highlights, since the outbreak of the COVID-19 pandemic, more than 872 000 excess deaths were recorded in the EU compared with previous years (European Commission, 2022). **But which territories recorded the highest mortality rates within the three waves?**

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[3] For this analysis, Europe was divided into six major regions: (1) north (Denmark, Finland, Iceland, Norway, Sweden); (2) the British Isles (Ireland, the United Kingdom); (3) west (Belgium, France, Luxembourg, the Netherlands); (4) south (Cyprus, Greece, Italy, Malta, Spain, Portugal); (5) west-central (Austria, Germany, Liechtenstein, Switzerland); and (6) east-central (Bulgaria, Croatia, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia).

[4] The analysis could not be performed in the absence of these indicators. The level of spatial detail available varies, but the indicators were used in a complementary way: the number of COVID-19-related deaths was available at the NUTS 3 level for only 13 countries, while excess mortality was available at the NUTS 3 level in all countries except Croatia, Estonia, Germany, Ireland and Slovenia.

Figure 2
Development of excess mortality across European countries

Average weekly excess mortality (EU countries)
from January 2020 to November 2021
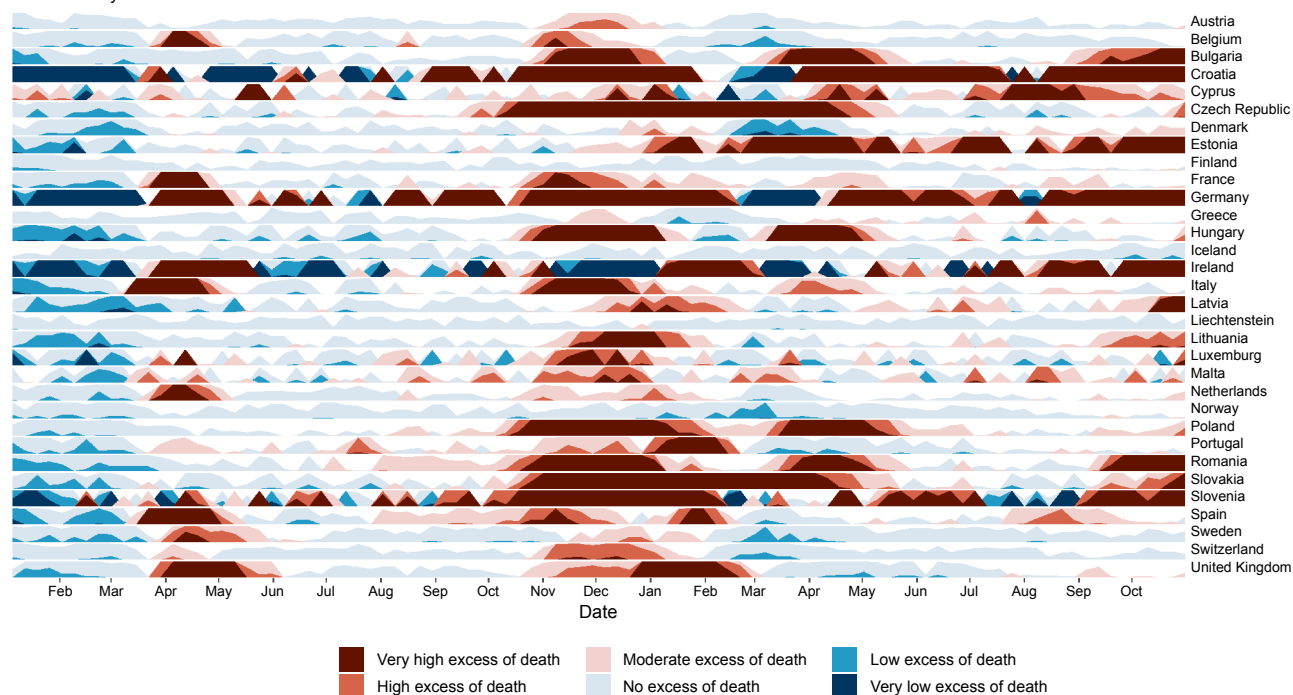
Source: ESPON, 2022b

During the first wave, excess mortality started to rise in southern Europe first, followed by the British Isles and western Europe. It can be observed that the values for northern Europe, west-central Europe and the outermost regions barely increased during this period, while the values for east-central Europe were very low (see Figure 3). The first wave was followed by a calmer period during summer 2020, but the increased contact numbers during this period, and the partial re-emergence of cross-border migration and of international tourism led to an increase in the number of COVID-19 cases in July and August, triggering the second wave.

During the second wave, east-central Europe became the worst affected region. Other major regions experienced significant excess mortality, but at a lower rate. The second wave overlapped with the third wave, which once again caused substantial fatalities in the British Isles and severely affected east-central Europe. The excess mortality in other major regions was drastically lower. Finally, the fourth wave resulted in only a slight increase in excess mortality in most major regions, with the exception, once again, of east-central Europe, where high levels of mortality rates were recorded during this period. One area to particularly highlight is the outlier in the outermost regions for August 2021, which indicates a severe COVID-19 wave that hit Guadeloupe and Martinique.

Figure 3

Weekly number of (a) COVID-19-related deaths and (b) excess mortality, per 10 000 inhabitants in the major regions of Europe (1st week of 2020–43rd week of 2021)
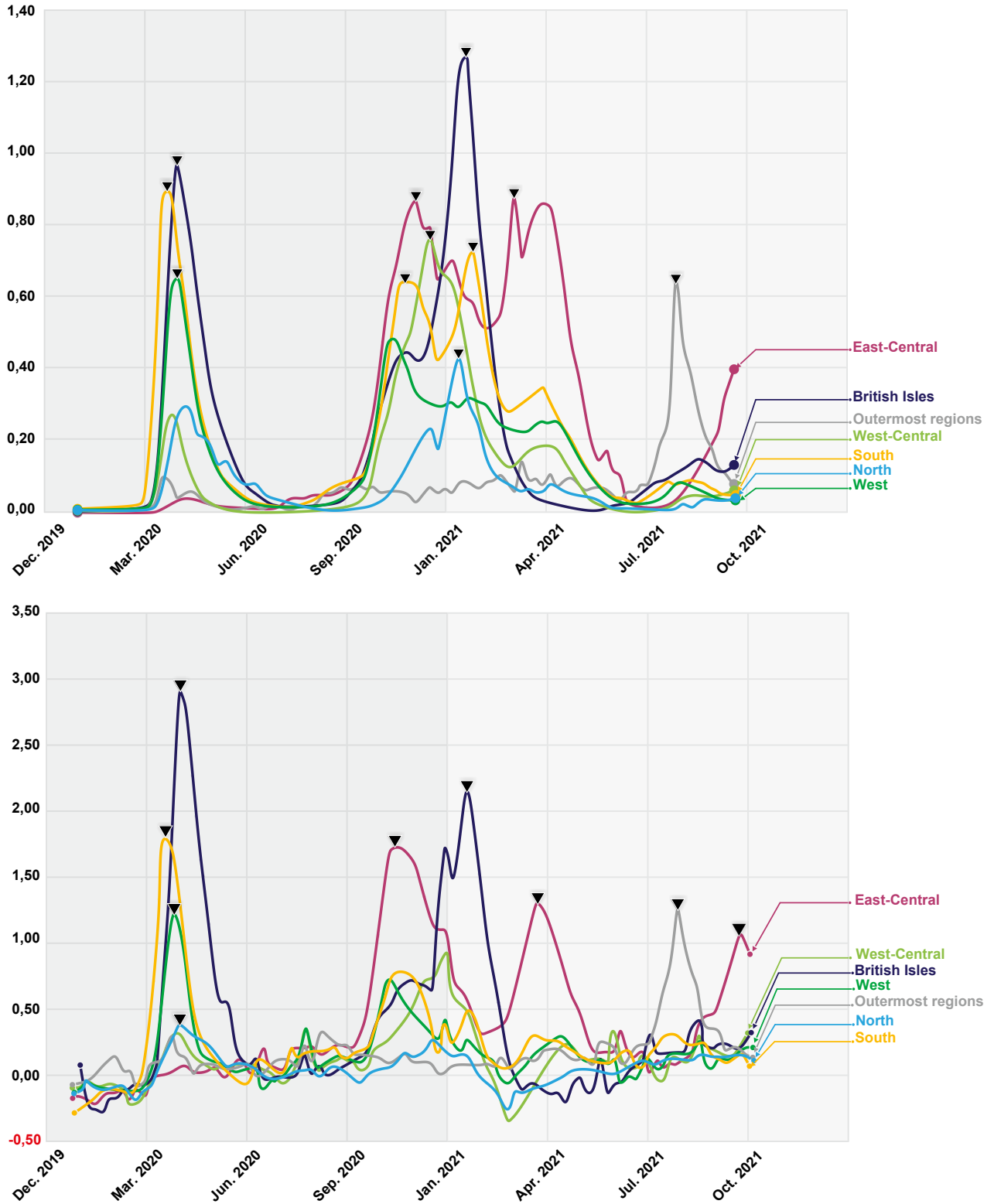
Source: ESPON, 2022b

To clarify the spatial pattern of deaths, mortality data were summarised and mapped by wave. Scrutinising the COVID-19 mortality rate during the first three waves across EU regions revealed that, during the first wave (see Map 2a), the virus severely affected a limited number of EU countries (with the highest death rates recorded in Italy and Spain), hitting the major vibrant centres of Europe and their surrounding areas, such as London (United Kingdom), Madrid (Spain), Milan (Italy) and Paris (France). During this wave, the most affected regions (e.g. Lombardy, Italy; London, United Kingdom; Madrid, Spain; Paris and Val-de-Marne, France; and Stockholm County, Sweden) are those hosting megacities – for instance, global nodes (e.g. London and Paris), European engines (e.g. Barcelona, Brussels, Madrid and Milan) and strong metropolitan European growth areas (e.g. Bilbao and Turin). In contrast, the regions of east-central Europe showed positive resistance during the first wave, as COVID-19 reached these regions a few weeks later than the western part of Europe, and strict, timely containment measures limited the spread of the virus.

During the second wave (see Map 2b), the virus moved from western to eastern European countries (e.g. Mazowieckie-Regional, Poland; and Central Bohemia and Moravian Silesia, Czechia). Thus, in the second wave, areas that had previously been less affected by the pandemic became the main hotspots. This might be explained by the capacity of western European regions to initiate and deploy policies and maintain lockdown, while east-central European countries displayed some difficulties in managing and controlling the pandemic.

During the third wave (see Map 2c), the holistic pattern of the second wave persisted (except in the United Kingdom), meaning that regions affected during the first wave still showed a significant coping capacity for managing the pandemic, while eastern European countries (e.g. Bulgaria, Latvia, Lithuania, Poland and Romania) still experienced the highest COVID-19 death rates.

Taken together, these analyses revealed that, during the first three waves of the pandemic, a spatial shift from the European centres to the peripheries took place. For the pandemic as a whole, the worst-affected regions were the British Isles and east-central Europe (mainly rural areas), while other parts of western and southern Europe, after an initial shock, were hit less by the later waves.

Map 1
COVID-19 death rates per 100 000 inhabitants across different waves

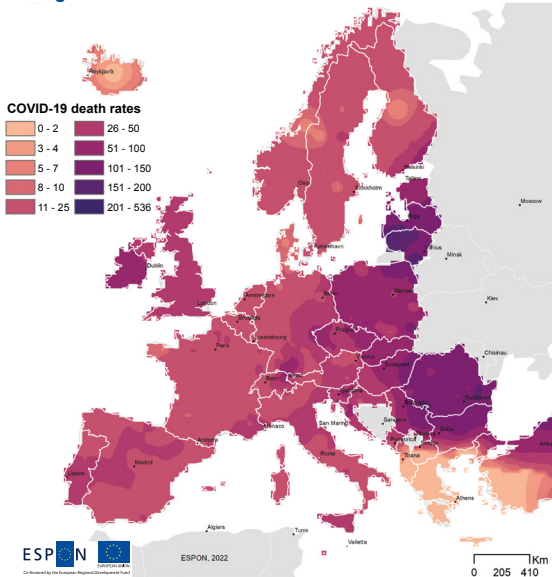#### During the first wave
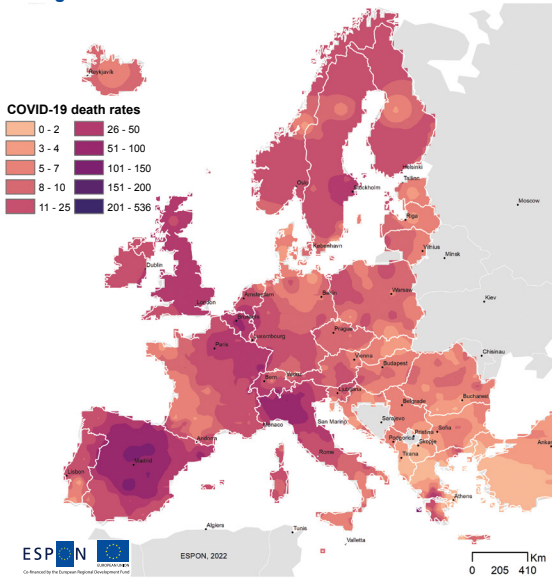
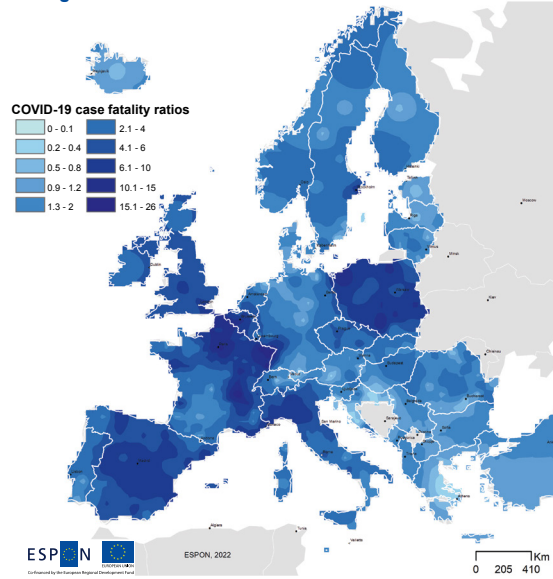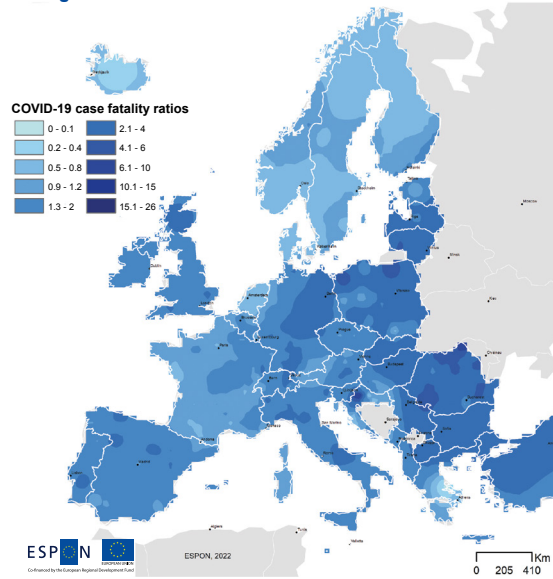#### During the second wave
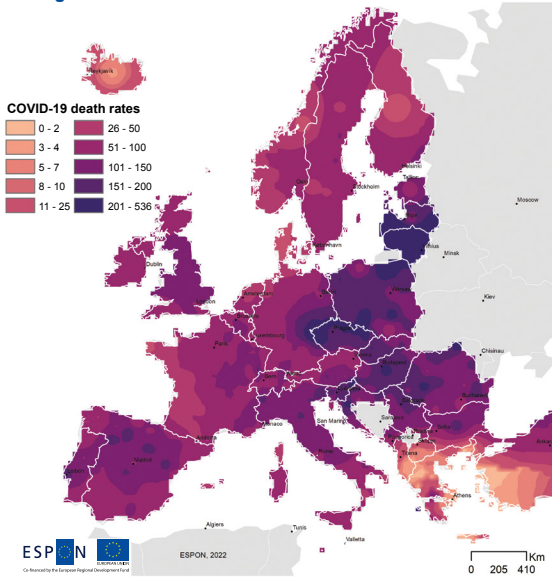
During the third wave

Map 2
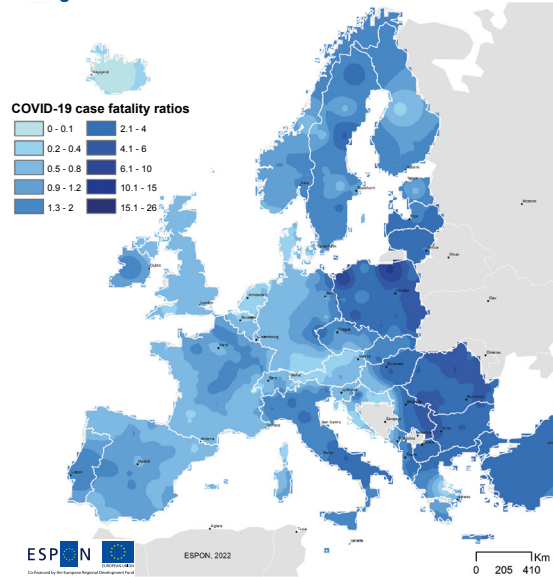### Excess mortality per 100 000 inhabitants across different waves

During the first wave

During the second wave
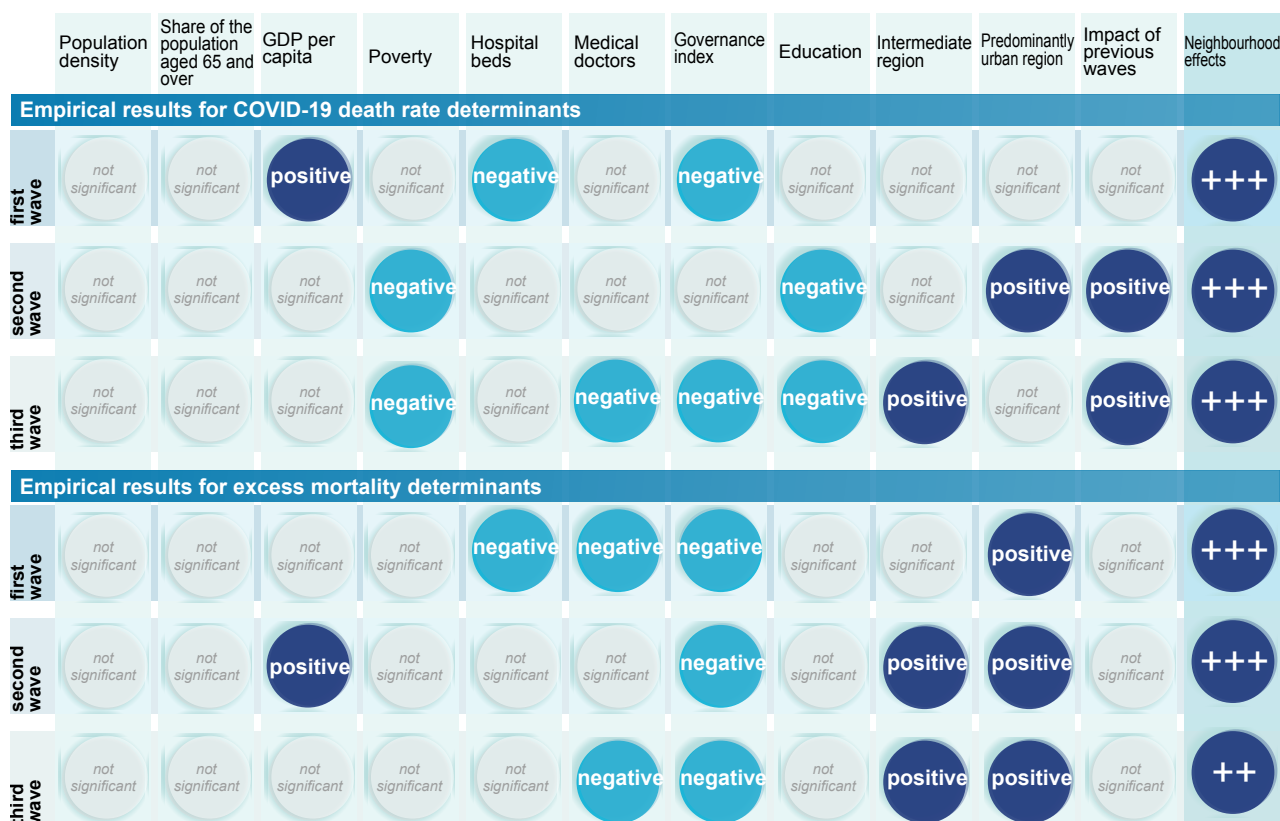

During the third wave

But which sociogeographic determinants matter more and could explain the regional spatial variation?

Building on the hypothesis that pre-existing spatial characteristics and inequalities have an impact on the spread of the virus and its spatial concentration, ESPON gathered evidence looking at several variables and their interaction, as listed in the figure below.

Figure 4
Empirical results for COVID-19 death rate determinants and for excess mortality determinants

	Population density	Share of the population aged 65 and over	GDP per capita	Poverty	Hospital beds	Medical doctors	Governance index	Education	Intermediate region	Predominantly urban region	Impact of previous waves	Neighbourhood effects
Empirical results for COVID-19 death rate determinants												
first wave	not significant	not significant	positive	not significant	negative	not significant	negative	not significant	not significant	not significant	not significant	+++
second wave	not significant	not significant	not significant	negative	not significant	not significant	not significant	negative	not significant	positive	positive	+++
third wave	not significant	not significant	not significant	negative	not significant	negative	negative	negative	positive	not significant	positive	+++
Empirical results for excess mortality determinants												
first wave	not significant	not significant	not significant	not significant	negative	negative	negative	not significant	not significant	positive	not significant	+++
second wave	not significant	not significant	positive	not significant	not significant	not significant	negative	not significant	positive	positive	not significant	+++
third wave	not significant	not significant	not significant	not significant	not significant	negative	negative	not significant	positive	positive	not significant	++

The first conclusions indicate that both wealth and income dimensions play a major role in driving the spread of COVID-19, and increasing death rates worldwide and especially in Europe (ESPON, 2022b). In correlation, the variable 'predominantly urban region' can explain the spatial differentiation of COVID-19 mortality, as European metropolitan regions are often the richest ones. This also links to the degree of urbanisation – a critical determinant associated with the reproductive number of infections (known as R0). Furthermore, the predominantly urban regions also have high mobility patterns as a result of national/regional commuting: in Brussels, for example, the high number (almost 50 %) of regional commuters (working in Brussels and living in neighbouring regions) has contributed significantly to the spread of the virus, alongside the metropolis's international connectedness.

On the other hand, spatial density appears to be non-significant in the different models or infection waves. This is because physical proximity and interactions between people matter more than density, indicating that inhabitants who are in close daily contact create the perfect environment for the virus to replicate. However, high density (such as high numbers of people gathered in a small perimeter) cannot be ruled out completely. These are the places where the virus finds its favourable conditions through superpropagation. A few of these events have been accounted for: a one-time event in a ski resort in the Austrian Alps, a religious conference in eastern France, carnival festivities in western Germany and a football match in northern Italy have led to large regional outbreaks (largely explaining the uneven distribution of deaths across regions in some countries, regardless of the region type). For example, in France, a religious event attended by 2 500 people in February 2020 became the source of a massive COVID-19 outbreak, accounting for one third of the country's COVID-19 deaths by April 2020.

However some differentiations have been detected, as some determinants have been found to be relevant to different waves.

For the first wave, gross domestic product (GDP), and also interregional flows, played an important role, based on the positive relationship between this indicator and health outcomes, health system performance and mortality trends, as rich regions are more likely to be hit by a pandemic because of their international openness and, as a result, people moving more frequently or longer distances. For example, the fact that northern Italy was the first European region to be particularly affected is a logical result of the importance of Chinese diasporas and freight mobility between Milano and China: they are very well connected by air (Milan Malpensa Airport, the second-busiest Italian airport, after Rome–Fiumicino International Airport, is an important freight hub) and by rail (the first direct freight link between Chengdu and Milan was inaugurated in 2019, establishing the new Silk Road). This could explain why Lombardy was hit earlier than regions in southern Italy, which are much further from globalised connections and have been somewhat protected.

Comparing the results obtained for the first wave regarding excess mortality and COVID-19 death rates, it is possible to conclude that government and regional health spending – proxied by the number of hospital beds – exerts a negative influence on COVID-19 prevalence, as the health system is clearly critical for managing and amortising the undesirable outcomes of the pandemic. The reverse effect was felt in regions affected by austerity policies aiming to decrease public health expenditure, which also reduced the adaptation capacity of the health system and intensified the tragic consequences of the pandemic in some countries (which experienced higher mortality associated with COVID-19).

Another factor that heavily influenced the global spread of COVID-19 was the trend of disinformation, undermining policy responses and amplifying distrust and concern among citizens. The ESPON findings confirm the hypothesis that a higher quality of governance at the subnational level has significantly reduced both the death and excess mortality rates in European regions. This is important for and relevant to the success of the containment and mitigation measures, as these are difficult to enforce directly and can only work if there is trust in institutions and among citizens. Tested on French *départements*,the hypothesis was confirmed: social trust factors influence the rate of mortality and that citizens adapt their confidence according to the intensity of the crisis. (ESPON, 2021a)

Within the second wave, both highly developed and undeveloped territories were affected, excluding GDP per capita as a determinant in relation to mortality rates (for example, northern Italy – an affluent region – had similar mortality rates to Bulgarian regions – which are among the less developed regions of Europe).

Another determinant, which was considered non-significant in the first wave, was education – this can be explained by the fact that, as the pandemic crisis progressed, more scientific publications highlighting the importance of barrier measures were published and, therefore, those who were more educated tended to follow those recommendations. This was less the case for those who were not as educated, who may have been influenced by social networks and disinformation (ESPON, 2022b). For the second wave, for example, ESPON research revealed that for a 10 % increase in the share of the population with tertiary education, the mortality rate, on average, was 6.9 % lower.

2
Unravelling the socioeconomic consequences of the COVID-19 pandemic on EU regions

The socioeconomic effects were driven by three main factors: (1) **the length and strictness of lockdown measures implemented** – as the places with stricter lockdown measures tended to experience a deeper recession; (2) **the robustness of the economic structure** – as some activities were much more affected than others, and Member States and regions that were more dependent on services (notably accommodation and those relating to culture, leisure and tourism) and activities generally requiring proximity saw a greater decline in their economic movements; and (3) **the variety of policy responses** – in scope and intensity, as the pandemic had different impacts at local, regional and national levels. The direct and indirect effects carry additional complex implications for economic and social progress in the short, medium and long terms. The following themes of social consequences have been identified through surveys and national-scale analyses so far (ESPON, 2022b).

▪ Health, access to healthcare and well-being, and quality of life: increasing mortality, fighting long-COVID symptoms and delaying all other non-urgent interventions have further jeopardised the sustainability of the healthcare systems, including a lowering of life-expectancy indicators. The pandemic has had a severe and not only short-term but long-lasting impact on the mental health of all citizens.

▪ Poverty and social exclusion: overall, the number of people at risk of poverty or social exclusion has increased in Europe, and both health- and non-health-related stresses of the COVID-19 crisis have exacerbated existing social inequalities. Mortality and morbidity, job loss, income loss and learning loss have put a disproportionate amount of pressure on vulnerable and middle-income groups.

▪ Labour market and working conditions: closing or limiting economic activities had a far-reaching effect on the labour market, with a sharp decline in working hours in 2020. Furthermore, government measures requiring physical distancing have had long-lasting effects on working conditions, and teleworking has become widespread for those workers whose jobs allowed it. Youth unemployment has increased and young people have also faced greater than average risks of losing their jobs; women have also been particularly vulnerable to the labour market consequences of the pandemic.[5]

▪ Education and training: COVID-19 disrupted education provision on an unprecedented scale in all levels of education systems, which experienced this impact through complete or targeted school closures, restrictions in educational facilities and abrupt changes in daily operations. Learning losses have been large and inequitable, and the damages could be long-lasting.

BOX 1

Pre-pandemic state of play of the socioeconomic conditions at regional level (NUTS 2)

Until the COVID-19 outbreak, economies in EU Member States and regions were on a steady path to recovery from the adverse effects of the 2008 economic and financial crisis. For some of the most important socioeconomic indicators, the situation was as follows.

▪ Between 2014 and 2019, **real GDP** was on a growth path (with an EU average of 2.1 % per year); however, in 2020, real GDP fell by 6.0 %. All economic sectors were affected by the consequences of containment measures, the disruption of global supply chains, the sharp reduction in demand for goods and services, and the fall in tourism, business travel and recreation.

▪ The **employment rate**: had fully recovered from the [2008 economic] crisis, and reached its highest value in 2019 at 73 % for those aged 20–64. Regional disparities … remain larger than before the economic crisis. Employment rates in less developed regions remain far below those in more developed regions. Reducing regional employment

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disparities requires more employment growth and a reduction of the gender gap. In less developed regions, the gender employment gap is almost twice that in more developed regions (17 vs 9 percentage points).

- **Unemployment rates** decreased in all EU Member States, from a high of 11.4 % in 2013, to 6.7 % in 2019. The highest levels were registered in less developed regions (8.8 %), followed by transition regions (7.9 %) and more developed ones (5.6 %). On average, the highest unemployment rates were in southern EU regions (12 %) and the lowest in eastern ones (4.4 %).

- Regarding **risk of poverty or social exclusion**: in 2019, around 91 million people in the EU (20 % of the population) were at risk of poverty or social exclusion. The rate was slightly higher in rural areas (22 %) than in cities (21 %) and in towns and suburbs (19 %), but it declined in all three cases between 2012 and 2019.

- In addition: the number of people at risk of poverty and social exclusion has fallen by 17 million between 2012 and 2019, mostly due to the decline of the number of people in severe material deprivation in eastern Member States.

Source: See the key findings of Europea*n Commission (2022).*

Going beyond the broad overview (as depicted in Box 1), assessing the social consequences of COVID-19 at territorial level remains a challenge. Here we insert ESPON evidence from the scrutiny of three socioeconomic indicators at NUTS 3 levels across ESPON countries to create a more detailed radiography of the territorial consequences: development of unemployment (see Box 2), youth unemployment rates (see Box 3) and at-risk-of-poverty rates (see Box 4), between 2019 and 2020.

BOX 2

Unemployment rates for NUTS 3 regions: evolution between 2019 and 2020

The labour market was hit heavily in 2020:

> The fall in the number of working hours was even more significant, as the share of furloughed workers increased. Furthermore, most of those who lost their jobs became in Q2 2020 not only unemployed but also inactive (not seeking work and having left the labour market) … Although the decline tapered off subsequently, the impacts on the labour market and working conditions are far-reaching.

Some of the short-term labour market effects are further deepening territorial disparities, and 'territorial disparities are the result of differences in the structure of the economy and occupational structure, as well as differences in support policies between countries'.

> On average, unemployment across the EU regions has increased by 12.13 % compared to the pre-COVID-19 regime (2019). The spatial distribution of this evolution is not equally spread out across EU regions. In a cross-country comparison, Iceland had the highest increase in unemployment (66.17 %) ; alternatively, some countries, such as the Baltic States (48.21 %) and Czechia (32.74 %), have been hit hard by the crisis. On the other hand, both Italy and France experienced a decreased trend in unemployment (6.5 % and 4 %, respectively). Seventy-four percent of Italian regions (mostly from the south) experienced a decrease in unemployment rates; only 25 % of regions have experienced increased values (mostly those hit directly by the COIVD-19 pandemic). The ban on dismissing employees, a unique measure in Europe introduced by Italy after the outbreak of the pandemic, may explain these results. This measure expired in July 2021 for large companies and at the end of October for small and medium-sized enterprises, particularly in the services, textile, fashion and footwear industries.
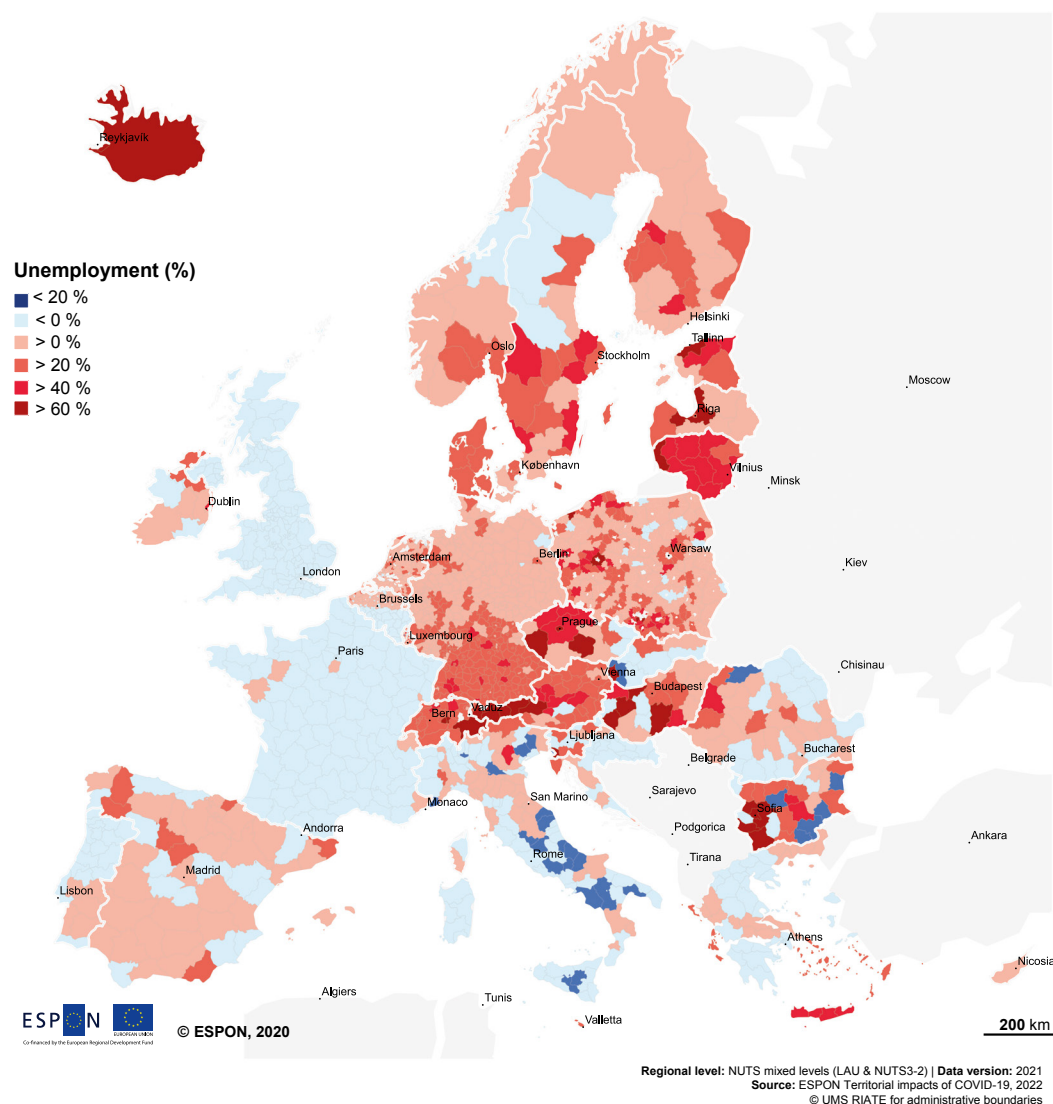
From a regional perspective:

> Klaipėda county (Lithuania) had the highest unemployment increase across the Lithuania regions (estimated growth rate of 63 %), followed by Marijampolė county (estimated growth rate of 55 %). Both Panevėžys county and Telšiai county ranked third, with a growth rate of 54 %. In France, the average evolution of the unemployment rate across all regions decreased by 0.35 %, and only five departments experienced an increase (but limited) in unemployment rates.

Regarding sectoral effects, the most severe declines were recorded in the accommodation and food and beverage sectors, as well as the transportation and storage sectors. The main affected sectors were closed sectors linked to tourism and nonteleworkable jobs (such as service and sales jobs), elementary and blue-collar occupations. All in all, regional economies with a higher share of workers employed in travel- or tourism-related sectors had a greater decline in employment rates – notably in South-Western Europe (Spain and Portugal), which was disproportionately hit by the crisis. Furthermore, temporary workers were disproportionately affected, and in terms of demographic group, low-paid women and younger workers suffered the sharpest employment declines during the early, most severe period of the pandemic.

Map 3

COVID-19 socioeconomic consequences: evolution of unemployment (%) between 2019-2020

Unemployment (%)
- < 20 %
- < 0 %
- > 0 %
- > 20 %
- > 40 %
- > 60 %

© ESPON, 2020

Regional level: NUTS mixed levels (LAU & NUTS3-2) | Data version: 2021
Source: ESPON Territorial impacts of COVID-19, 2022
© UMS RIATE for administrative boundaries

The short- and long-term effects of the pandemic would have been far worse if governments had not stepped in at the right time, and deployed policies aiming to mitigate job losses and guarantee additional social protection of workers:

in 2020, 35 million people benefited from short-time working schemes in the EU, mainly during Q2 2020. Several Member States introduced new short-time working schemes (Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, the Netherlands, Poland and Slovenia), or adjusted their existing short-time working or wage-subsidy schemes or increased their generosity (Austria, Belgium, Czechia, France, Germany, Italy, Malta and Spain).

The amounts spent on these schemes varied across Europe (with a massive input of EUR 100 billion in France, for example); usually the allocation of the governmental schemes corresponded to 'the spatial structures of the economy and spatial distribution of workplaces, thereby solidifying existing spatial divisions'. This means that 'more resources have been allocated to the more developed, more prosperous and more resilient regions'.

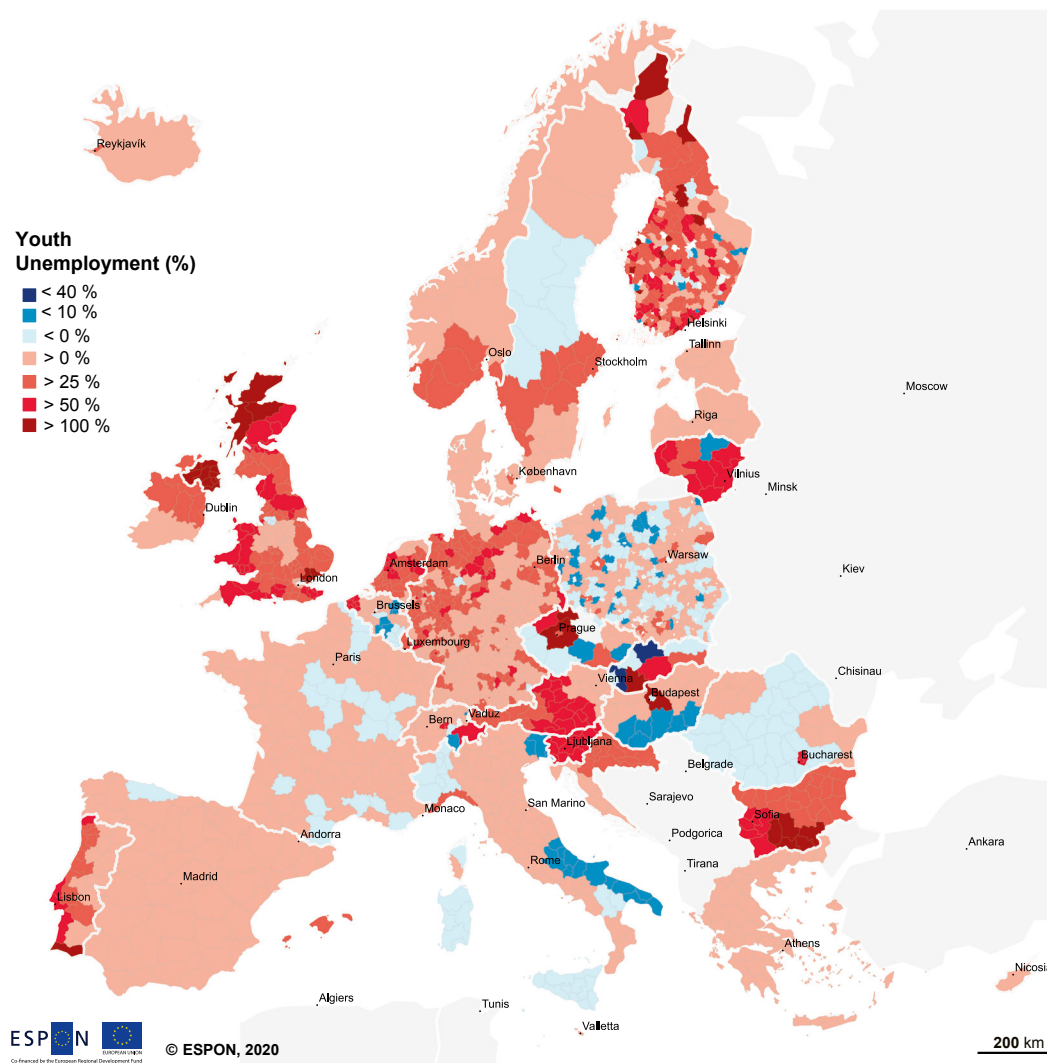Source: ESPON (2022b)

BOX 3

Youth unemployment rates in NUTS 3 regions; evolution between 2019 and 2020

Regarding youth unemployment:

Young people are disproportionately disadvantaged in many ways during economic downturns: emerging joblessness, financial insecurity and mental health problems are typical recurring consequences of crisis. According to a survey conducted by Eurofound in spring 2021, almost two-thirds of participants in the youngest age group (18–34 years) were at risk of depression especially evident among those who had lost their job.

Map 4
COVID-19 socioeconomic consequences: evolution of youth unemployment (%)
between 2019 - 2020

Youth Unemployment (%)
- < 40 %
- < 10 %
- < 0 %
- > 0 %
- > 25 %
- > 50 %
- > 100 %

© ESPON, 2020

200 km

Regional level: NUTS mixed levels (LAU & NUTS3-2) | **Data version:** 2021
Source: ESPON Territorial impacts of COVID-19, 2022
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As the pandemic hit in 2020:

the percentage change of youth unemployment across the EU regions increased by 21.81 % compared to the pre-COVID-19 regime (2019). Structure effects are even more significant for youth unemployment, as an above-average proportion of young people is working in sectors affected by restrictions. Most young people (13 %) were employed in accommodation and food service activities (13 %, while this ratio is 5 % for the 30+ cohort) and in wholesale and retail (11 %). Consequently, regions that were more oriented in these sectors had a higher probability of experiencing strong growth in the youth unemployment rate.

Furthermore:

Some countries particularly experienced a significant increase in youth unemployment rates (e.g., Slovenia, Lithuania and Bulgaria: 76.8 %, 68.5 % and 63.2 %, respectively). Nonetheless, some spatial patterns should be taken into consideration, as revealed in the map. The same situation was found for (several) touristic regions that experienced a higher increase in youth unemployment rates. In these touristic regions, young people often have a limited duration contract (fixed-term, temporary) and have therefore been more exposed to redundancya – for example, in the case of Algarve (Portugal) (a: See OECD (2021).

In addition:

Despite the evident regional variation across EU countries, the most significant distinctions appear to be within countries (regions/counties/municipalities of the same country). The results show that capital regions were severely hit by the pandemic. These capital regions are often home to major universities, and where young people had more difficulty accessing a job in 2020 when they left school due to the health crisis.

Source: ESPON (2022b).

BOX 4

At-risk-of poverty rates for NUTS 3 regions: evolution between 2019 and 2020
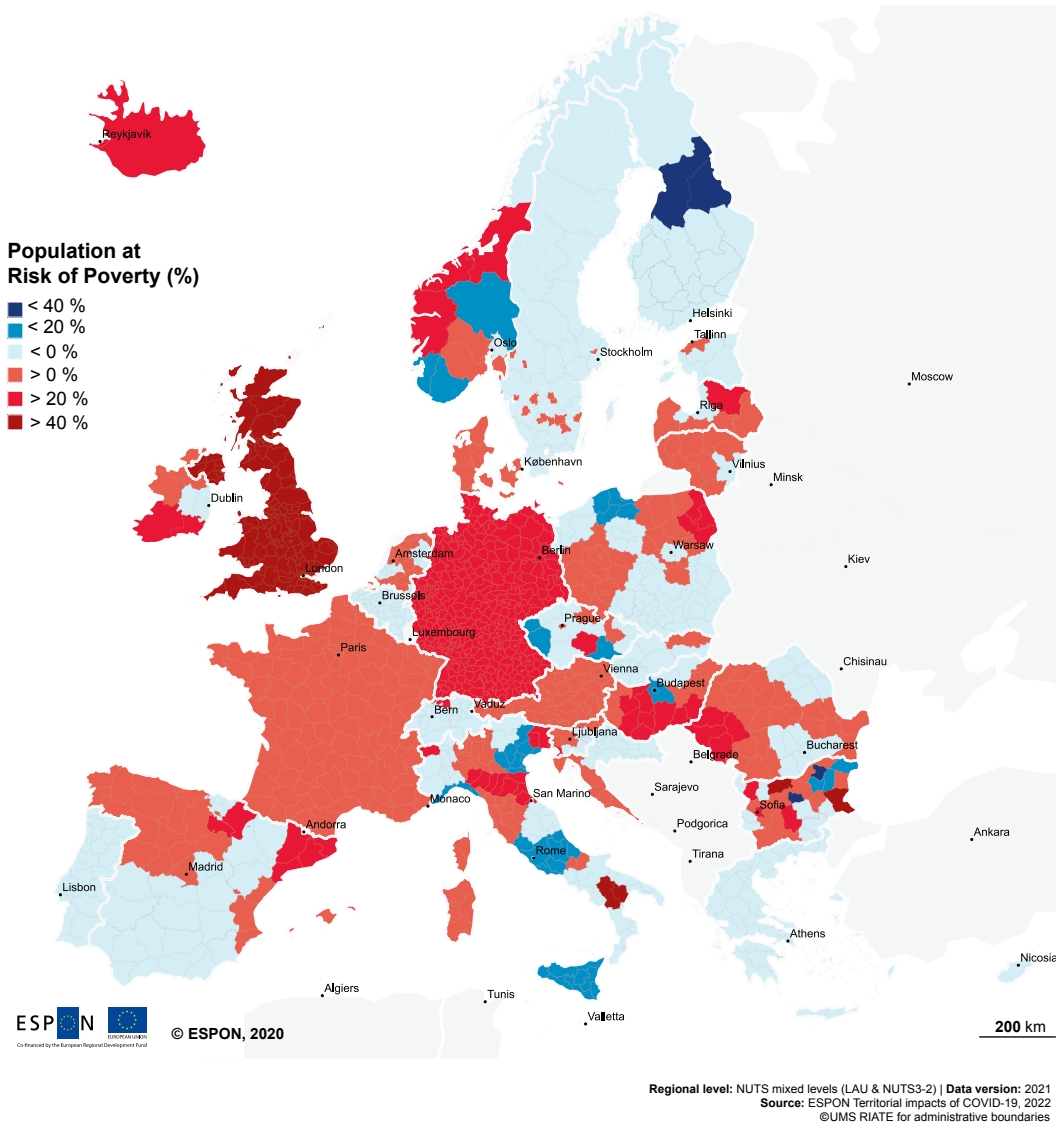
Regarding risk of poverty:

Although downward in economic performance and an increased unemployment are typically associated with emerging poverty and a fall in income, early estimates for 2020 at the EU level show that social benefits and national short-term work schemes are likely to alleviate the effects of the pandemic on disposable income and the poverty rate. Poverty remains stable at the EU level but with a high heterogeneity across countries and different segments of the population. Due to government support and measures during the pandemic, inequalities across the income distribution have been even reduced in European countries, and without this coordinated governmental support, the pandemic would have hit the bottom of the income distribution even harder.

Overall, the evolution of people AroP [at risk of poverty] across the EU regions decreased by 1.21 % on average compared to the pre-COVID-19 regime (2019). The UK had the highest change of people living in households with income below the risk-of-poverty threshold (with a growth rate estimated at 85.4 %), followed by Iceland (32.6 %), Germany (25 %) and Latvia (9.9 %). In these countries, the COVID-19 pandemic has led to an increase in poverty. On the other hand, about half of the EU Member States do not show particular differences compared with 2019.

Despite the evident regional variation across countries, the most significant distinctions appear to be within countries (regions/counties/municipalities of the same country). This can be explained by the fact that in many countries, regions have the administrative competence to manage social aspects. Some regions have thus put in place specific regional and local policies to help the poorest households cushion the crisis, notably through direct financial aid to maintain or increase their purchasing power.

Map 5
COVID-19 socioeconomic consequences: evolution of ARoP (%) between 2019 - 2020

**Population at
Risk of Poverty (%)**

- < 40 %
- < 20 %
- < 0 %
- > 0 %
- > 20 %
- > 40 %

© ESPON, 2020

200 km

Regional level: NUTS mixed levels (LAU & NUTS3-2) | Data version: 2021
Source: ESPON Territorial impacts of COVID-19, 2022
©UMS RIATE for administrative boundaries

Source: ESPON (2022b).

3
Territorial patterns for a potential scenario in post-COVID-19 recovery

The EU's pressure tests are not over, and the way it rises to the challenge and deals with recovery is the key to unlocking future potential and preserving our European societal principles as a whole. The COVID-19 crisis has affected European economies through the disruption of national and international flows of goods, services, people, capital and knowledge, leading to income loss, and in-work poverty or unemployment. As a result, many households lost a significant portion of their income and were exposed to the risk of poverty.

According to estimates, the initial employment shock induced by the first wave of the pandemic was 10 times greater than that during the financial crisis over a decade earlier (EPRS, 2022), and only the powerful policy response cushioned the pandemic's impact and prevented unemployment from spiking as sharply as was initially feared (International Monetary Fund European Department (n.d.)). Using the job retention schemes, Member States managed to keep the damage to the labour market on a smaller scale,[6] meaning that, for the euro area alone, the unemployment rate was 2.5 % lower than it would have been without any intervention, keeping around 4 million workers in their jobs (International Monetary Fund European Department (n.d.)). These actions also enabled a swift recovery of the labour market, and, as the newest data from the EU Labour Force Survey show, employment rates are converging towards pre-pandemic rates for 2021 (as shown in Figure 7) (Eurostat (2022)), a situation that could be only provisional if the private sector is unable to survive the crisis. In addition, the long-term effects of COVID-19 will overlap with those related to the new trends in globalisation/de-globalisation (protectionism, shortening of Global Value Chains, geopolitical tensions and conflicts, etc.) and the EU Green Deal, which might change the performance of regional labour markets, affecting the intensity and shapes of the commuting flows, slowing down recovery.
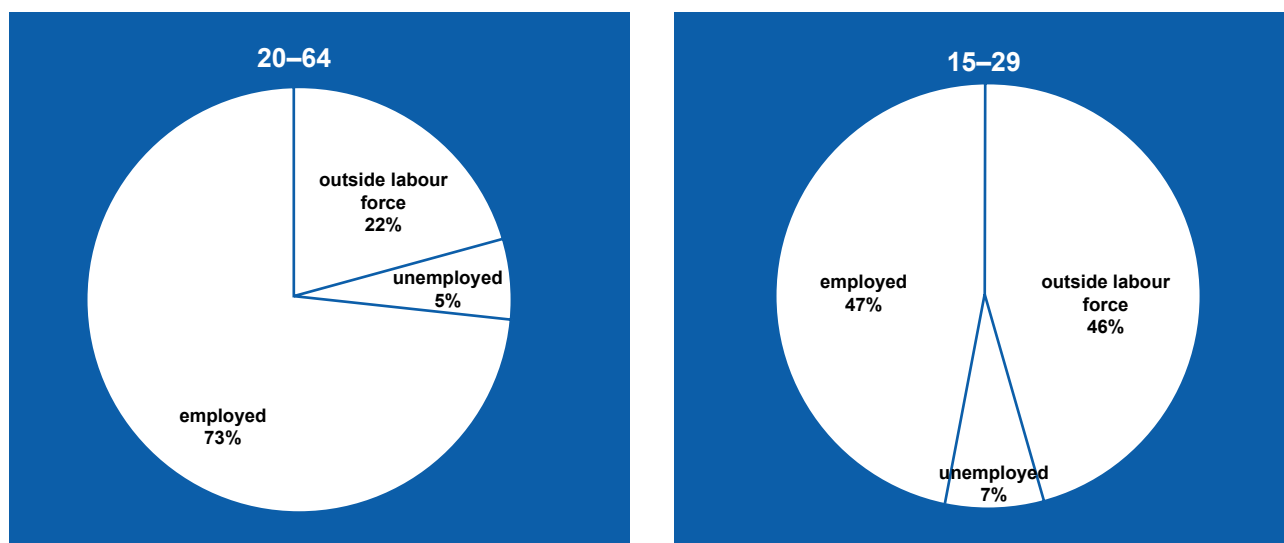
Figure 5
Employment rates in the EU, 2019–2021
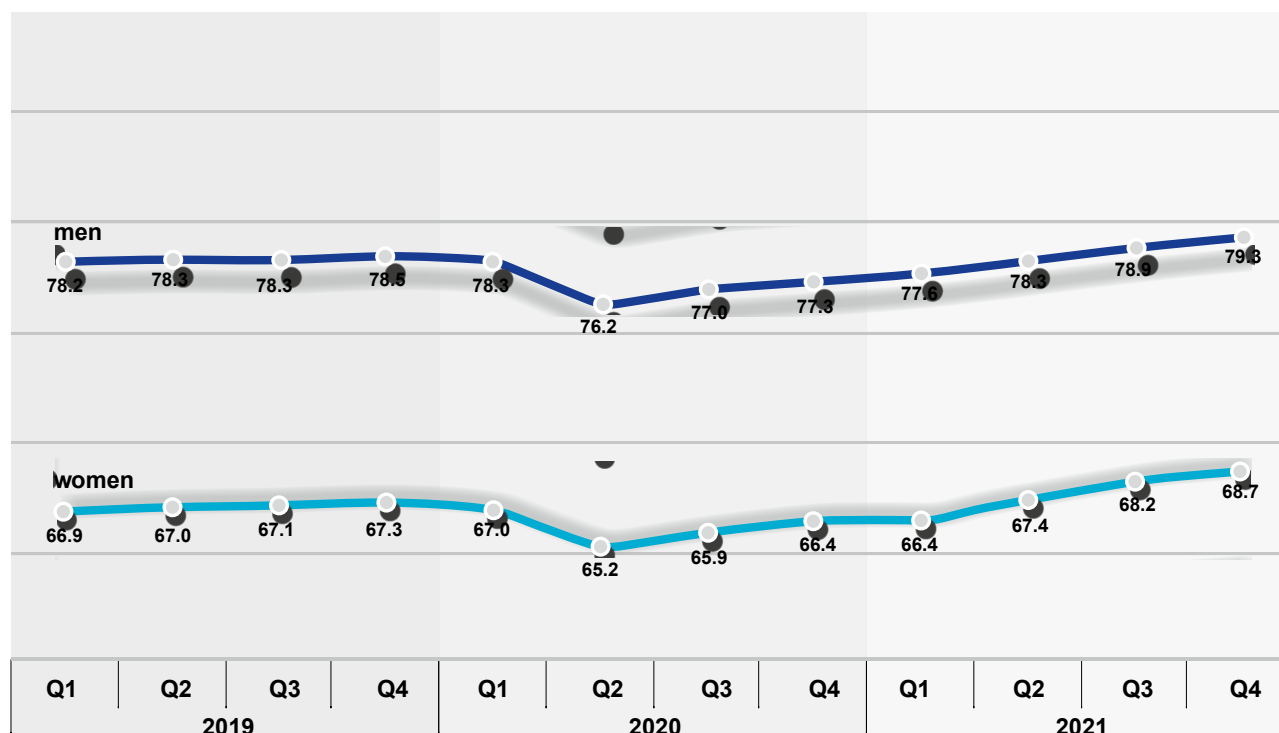
Source: Eurostat (2022).

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[6] According to European Commission estimates, more than 40 million people were covered by these arrangements in the EU by mid-2020.

Figure 6
Employment rates for 2019–2021 for those aged (a) 20–64 and (b) 15–29

20–64

outside labour force
22%

unemployed
5%

employed
73%

15–29

employed
47%

outside labour force
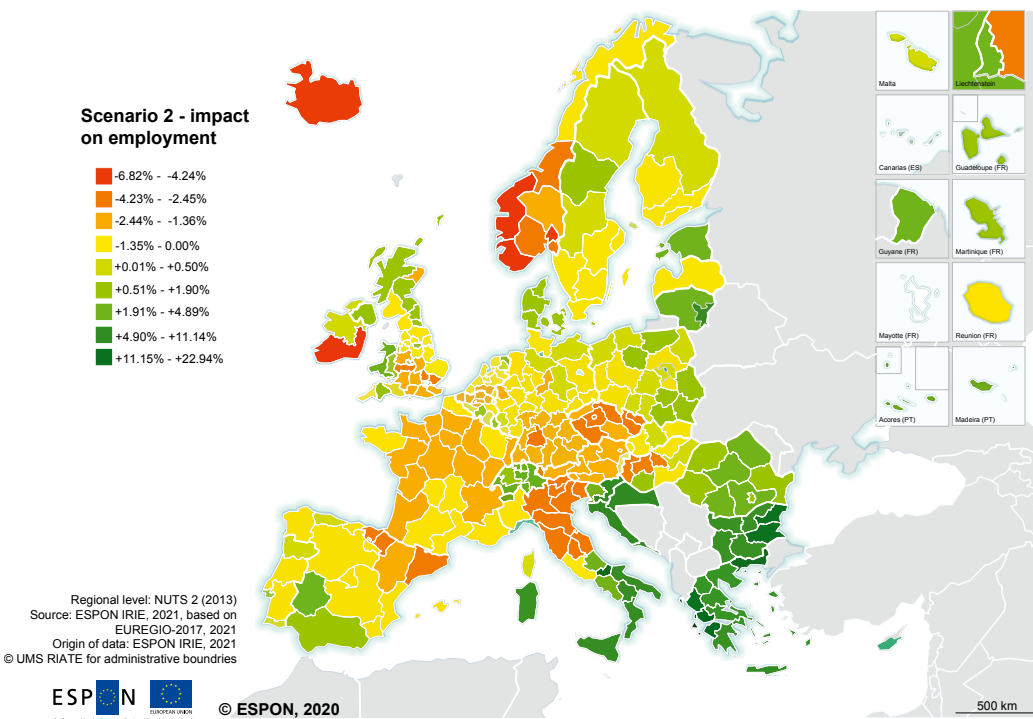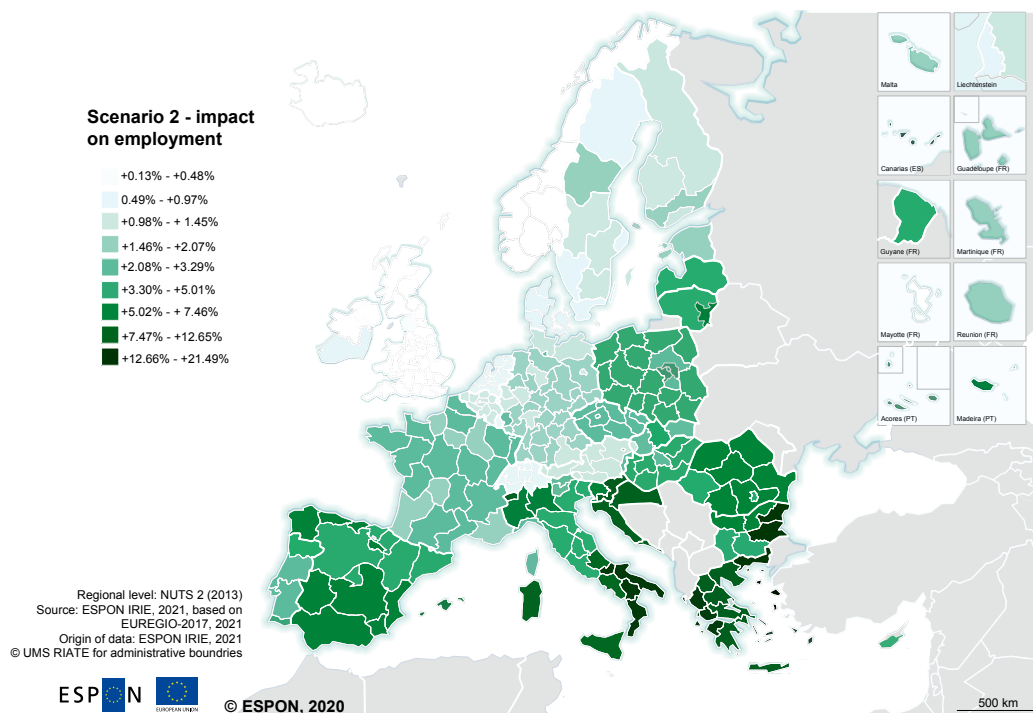46%

unemployed
7%

Source: Eurostat (2022).

To that extent we turn to understanding how the recovery plan for the EU could play out by looking at the NGEU funding – the EUR 806.9 billion EU stimulus package (which included EUR 338 billion in grants and EUR 385.8 billion in loans). Further, in an ESPON scenario, we have looked at a simulation that is designed for **damage restitution and territorial catch-up**, and estimates the impact that the NGEU funds might have on each member country depending on the allocated amount of funds (focus on the grant share), while assuming a path dependence effect within the distribution of the funds by sectors and regions. The scenario is built on the premise that funds allocated by regions will aim to compensate for the territorial damage caused by the pandemic, and to, indirectly, reduce the regional disparities within each country. Thus, in this scenario, the country maximum grants are allocated using a territorial approach, also taking into consideration the sector-specific objectives of the different programmes (ESPON, 2022a).

As expected, there is a clear positive effect of NGEU funding throughout Europe, including the non-EU-27 countries (see Map 6). Although the results show heterogeneity across regions, the main differences occur at country level, indicating that the territorialisation mechanism applied by the European Commission is what will ultimately make a difference in the territorial effects of the funds. Such distribution of funds by countries is clearly inclined towards the eastern and southern European countries, with a noticeable concentration on Bulgaria, Croatia and Slovenia, followed by Greece, Italy, Portugal and Spain (ESPON, 2022a).

This scenario obtains the best results in terms of cohesion, producing the most positive net effects for the regions, equally distributed between Bulgaria, Greece, Hungary, Romania and Slovenia, and lagging regions of Italy, Portugal or Spain. In contrast, the negative net effects are found in the southern regions of Iceland and Norway, as they are not able to enjoy the indirect effects exerted by the input–output relations of the EU-27.

Map 6
(a) Impact of NGEU funds on the regions: employment, and
(b) Europe after the pandemic and NGEU intervention: employment

Scenario 2 - impact on employment

- +0.13% - +0.48%
- 0.49% - +0.97%
- +0.98% - + 1.45%
- +1.46% - +2.07%
- +2.08% - +3.29%
- +3.30% - +5.01%
- +5.02% - + 7.46%
- +7.47% - +12.65%
- +12.66% - +21.49%

Regional level: NUTS 2 (2013)
Source: ESPON IRIE, 2021, based on EUREGIO-2017, 2021
Origin of data: ESPON IRIE, 2021
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500 km

Scenario 2 - impact on employment

- -6.82% - -4.24%
- -4.23% - -2.45%
- -2.44% - -1.36%
- -1.35% - 0.00%
- +0.01% - +0.50%
- +0.51% - +1.90%
- +1.91% - +4.89%
- +4.90% - +11.14%
- +11.15% - +22.94%

Regional level: NUTS 2 (2013)
Source: ESPON IRIE, 2021, based on EUREGIO-2017, 2021
Origin of data: ESPON IRIE, 2021
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500 km

Source: ESPON (2022a).

Analysing the combined impact of the recession caused by COVID-19 and the investments from the NGEU funding, we can see that there is a clear heterogeneity across countries and regions in terms of the total effect achieved. A hidden conclusion from this analysis is that, in reality, the positive effects that are to be produced by the NGEU are larger than the negative effects of 2020, and probably much more than they appear, because the funding is to be combined with the convergent efforts of local authorities and Member States (as per their national recovery plans), which were not taken into account in the analysis (this was because relevant information on the territorial dimension of these national plans was not available) (ESPON, 2022a).

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