



# Capacity for remote working can affect lockdown costs differently across places

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Differences in the ability to perform jobs remotely will affect the impact of confinement and certain other social distancing measures on both individuals' employment outcomes and disruptions to local economies. This note provides an assessment of the regional capacity of 27 EU countries, Switzerland, Turkey and the United States to transition to remote working during a lockdown situation. It also shows that large cities typically have a higher share of occupations amenable to remote working. To a certain degree, this may compensate for the higher economic impact of COVID-related measures on cities.

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## Capacity for remote working can affect lockdown costs differently across places

The health and economic consequences of the COVID-19 crisis are felt differently across places. Specific locations – notably large cities and densely populated places – can suffer from a faster spread of the virus due to higher population density (Stier, Berman and Bettencourt, 2020<sup>[1]</sup>), and from larger shares of employment at risk due to greater specialisation in sectors that are particularly hard hit by lockdowns (OECD, 2020<sup>[2]</sup>). At the same time, other factors may help these locations adapt more easily to lockdowns, thereby mediating their direct economic and social costs.

One important determinant of lockdown costs is whether jobs can be performed remotely. In turn, the extent to which jobs are amenable to remote working depends strongly on the nature of the tasks carried out by workers, which can differ significantly even within the same workplace. For example, academic researchers in universities can often continue working during a lockdown or under social distancing requirements, while canteen staff working in the same university may be forced to cease or strongly reduce their activities.

This note provides an assessment of the capacity of places to adapt to remote working during lockdowns (the underlying methodology is explained in the Key Box). In doing so, it complements other analyses that estimate the potential impact of containment measures within countries based on the sectoral structure of local economies.

### Assessing the regional share of occupations amenable to remote working

The assessment of regions' capacity to adapt to remote working is based on the diversity of tasks performed in different types of occupations and is structured in two steps.

The first step requires classifying each occupation based on the tasks required and according to the degree to which those tasks can be performed remotely. For example, occupations requiring workers to be outdoors (e.g., food delivery person) or to use heavy equipment (e.g., a vehicle) are considered to have a low potential of remote working. In contrast, occupations requiring only a laptop and an internet connection (e.g., an accountant, finance specialist, etc.) will have a high potential to work remotely. This classification is based on a recent study by Dingel and Neiman (Dingel and Neiman, 2020<sup>[3]</sup>) which is built from the O\*NET surveys conducted in the U.S. These surveys include targeted questions that make it possible to assess the potential of remote working of occupations in a systematic way (see note below).

The second step relies on data from labour force surveys and consists of assessing the geographical distribution of different types of occupations and subsequently matching those occupations with the classification performed in the first step. Combining the two data sets allows assessing the number of workers that can perform their task from home as a share of the total employment in the region.

Note text. While other authors have used the US Standard Occupational Classification system (SOC) to classify occupations, this note uses the International Standard Classification of Occupations (ISCO), requiring a crosswalk between the two schemes for associating each occupation to a level of remote working potential in other countries. It is worthwhile noting that this work assumes that task content of occupations is consistent across countries, as in Saltiel (2020<sup>[4]</sup>) or Gottlieb, Grobovsek and Poschke (2020<sup>[5]</sup>). Other studies focused on specific countries have categorised the remote working potential of occupations based on subjective, expert judgement, such as OFCE (2020<sup>[6]</sup>) and Centre for Cities (2020<sup>[7]</sup>) for France and the United Kingdom, respectively.

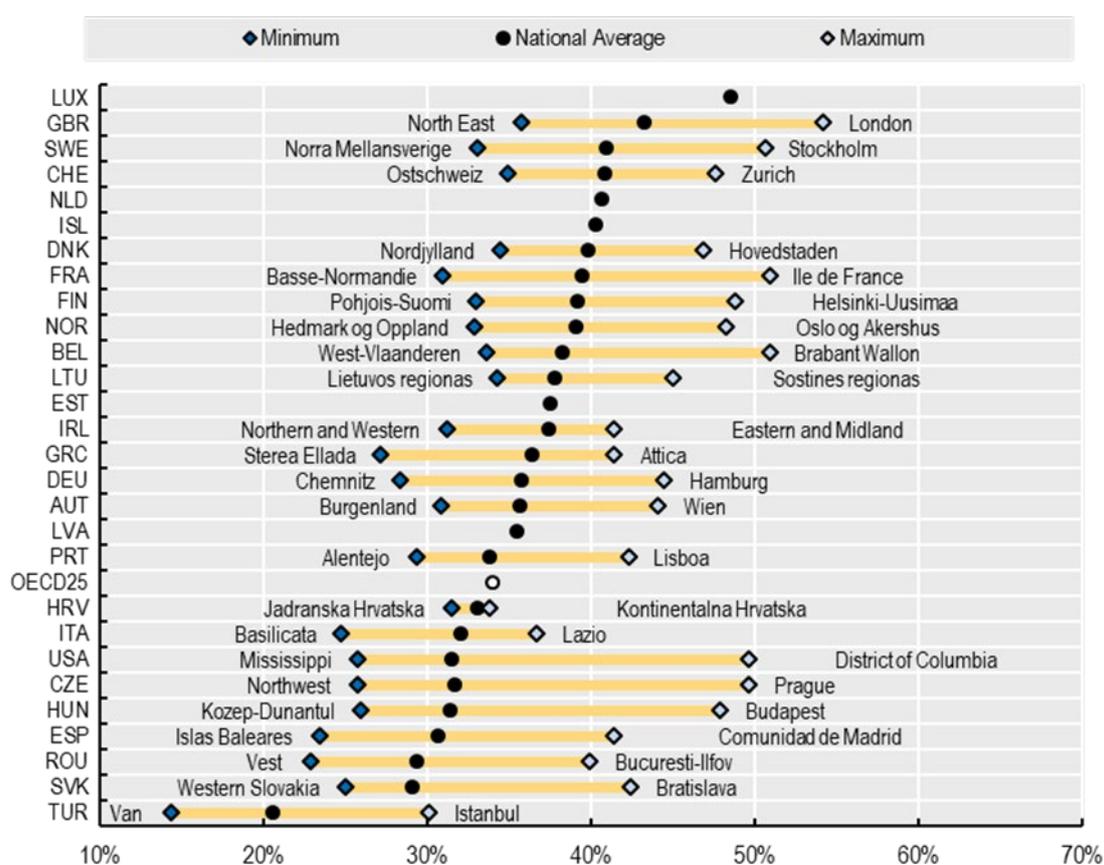


### Cities have a larger share of people that can work remotely

The potential of remote working varies greatly between and within countries. For example, 50% of jobs can potentially be done from home in Luxembourg, but only 21% in Turkey (Figure 1). Looking at individual regions reveals that capitals have, in most cases, the highest rate of potential remote working, which is 9 percentage points higher than their country average.

**Figure 1. Potential for remote working differs strongly between and within countries**

Share of jobs that can potentially be performed remotely (%), 2018, NUTS-1 or NUTS-2 (TL2) regions



Note: The number of jobs in each country or region that can be carried out remotely as the percentage of total jobs. Countries are ranked in descending order by the share of jobs in total employment that can be done remotely at the national level. Regions correspond to NUTS-1 or NUTS-2 regions depending on data availability. Outside European countries, regions correspond to Territorial Level 2 regions (TL2), according to the [OECD Territorial Grid](#).

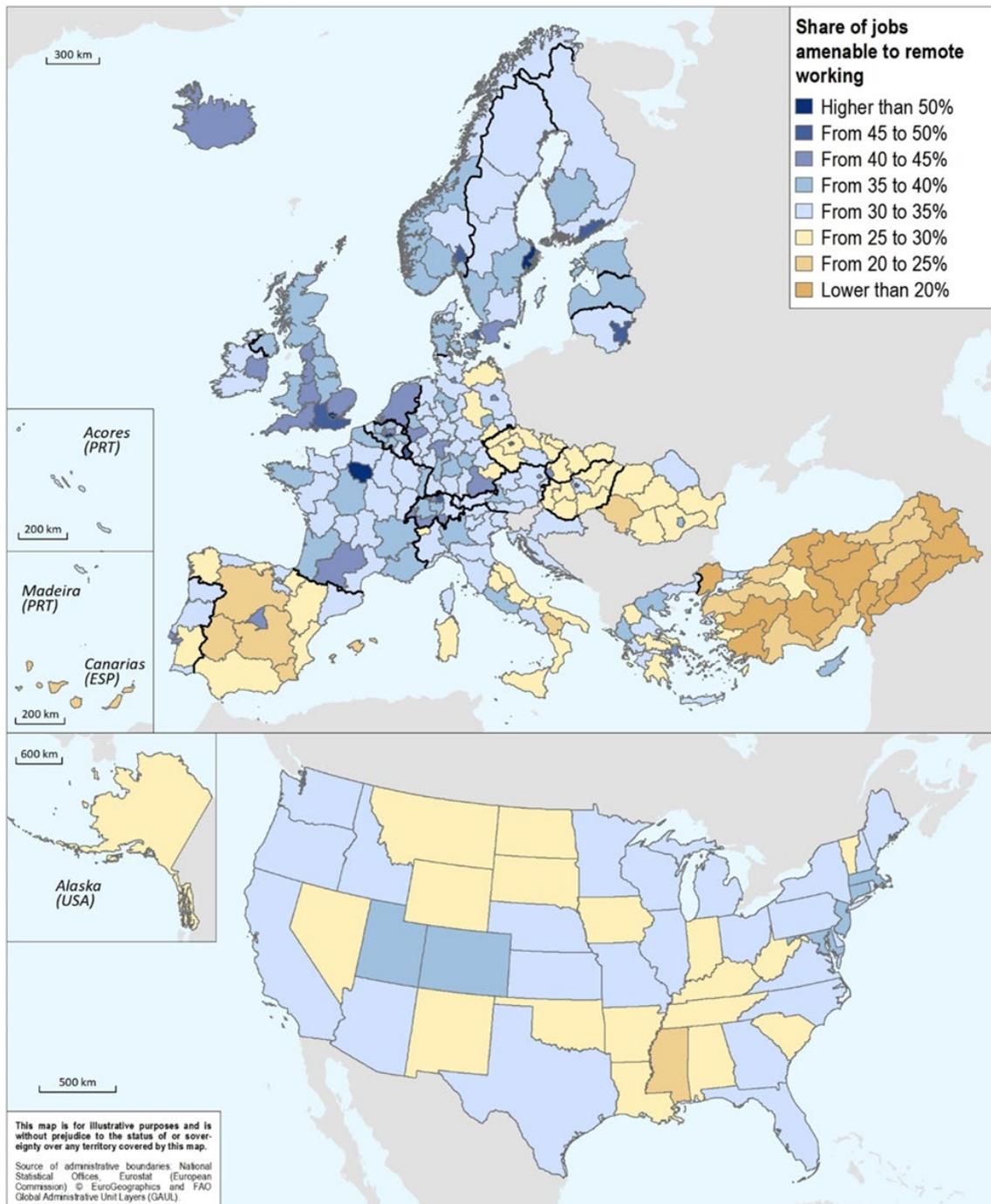
Source: OECD calculations based on European Labour Force Survey, American Community Survey, Turkish Household Labour Force Survey and Occupational Information Network data (accessed in April 2020).

Overall, regional differences in potential remote working are stark (Figure 2). On average, there is a 15-percentage point difference between the region with the highest and lowest level in a given country. This difference reaches more than 20 percentage points in the Czech Republic, France, Hungary, and the U.S., driven by comparatively high levels of potential remote working in their capitals.



**Figure 2. Share of jobs amenable to remote working in selected OECD and European countries**

Percent values, 2018, NUTS-1 or NUTS-2 (TL2) regions



Potential remote working is also higher in more densely populated areas. Using the “Degree of Urbanisation”<sup>1</sup> to distinguish different types of settlement for European countries, cities (above fifty thousand inhabitants) have a 13-percentage point higher share of jobs amenable to remote working than

<sup>1</sup> The Degree of Urbanisation is a methodology to classify cities, towns & semi-dense areas, and rural areas for international comparative purposes. The method proposes three types of areas reflecting the urban-rural continuum instead of the traditional urban–rural dichotomy.

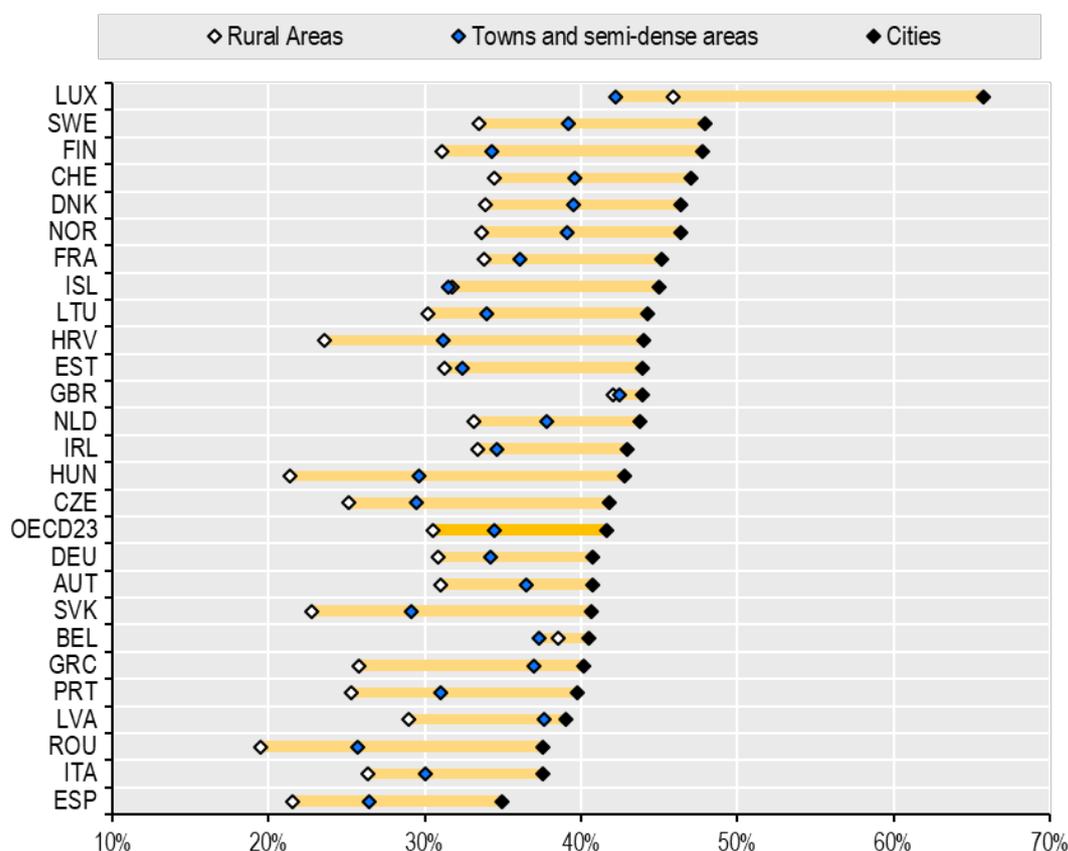


rural areas (Figure 3). This city-rural gap is particularly significant in Croatia, Finland, Hungary and Luxembourg, where the difference is larger than 17 percentage points. Interestingly, for towns and semi-dense areas, the potential for remote working seems to be somewhat closer to rural areas than to that of cities.

In this context, it is important to stress that the presented analysis assumes that workers in all regions and countries have access to an efficient internet connection, which is necessary for remote working. Therefore, the actual numbers of workers that *can* work from home will be influenced by the extent and the quality of broadband coverage in the region. In that sense, the assessed potential of remote working should be considered as the most optimistic scenario for regions that have lower levels of digital infrastructure compared to the national average, especially for many rural areas (OECD, 2019<sup>[8]</sup>). Consequently, until rural broadband infrastructure has been sufficiently upgraded, the rural-urban divide in *actual* remote working may even be higher than the already large gap in *potential* remote working discussed here.

### Figure 3. Differences in potential remote working capacity in cities, towns and rural areas

Share of jobs that can potentially be performed remotely (%), 2018, NUTS-1 or NUTS-2 (TL2) regions



Note: The number of jobs in each country or region that can be carried out remotely as the percentage of total jobs. Countries are ranked in descending order by the share of jobs in the total employment that can be done remotely in Cities. Regions correspond to NUTS-1 or NUTS-2 regions depending on data availability. Information on the degree of urbanisation is only available for 28 EU countries. Outside European countries, regions correspond to Territorial Level 2 regions (TL2), according to the [OECD Territorial Grid](#).

Source: OECD calculations based on European Labour Force Survey, American Community Survey, Turkish Household Labour Force Survey and Occupational Information Network data (accessed in April 2020).



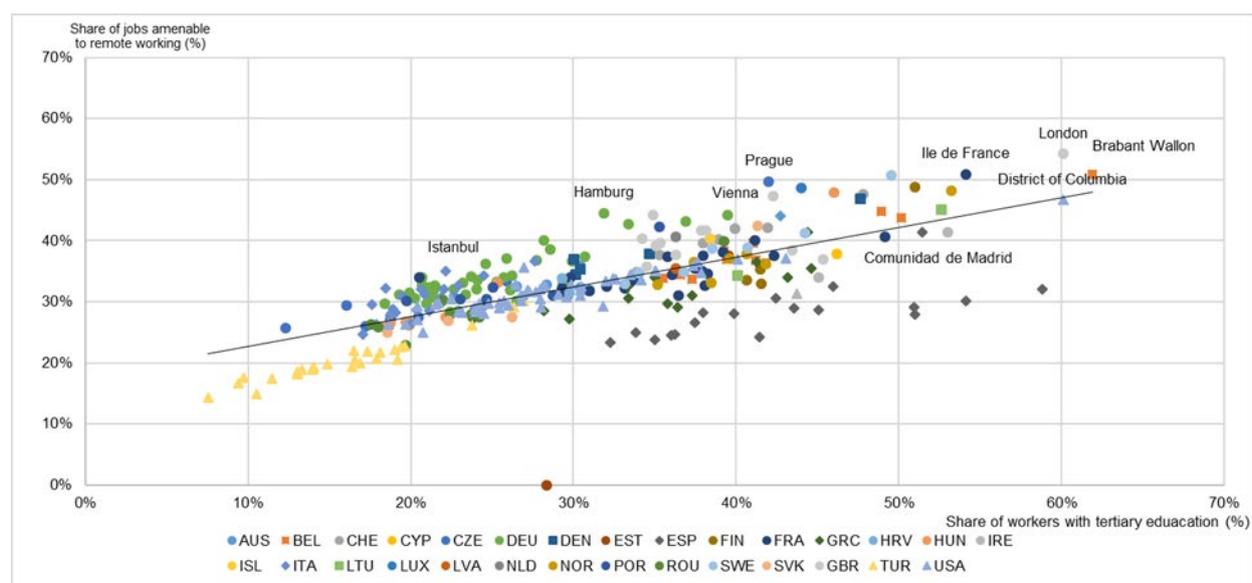
### The remote working potential of a region reflects the skills of its labour force

The possibility of remote working correlates strongly with the skill requirement of the occupation.<sup>2</sup> As a result, rates of potential remote working across regions reflect the skill composition of the local workforce. Figure 4 illustrates this relationship across regions by plotting regions' levels of potential remote working (vertical axis) against the share of workers with tertiary education (horizontal axis). The trend line shows that as the share of workers with tertiary education in the region increases, the share of jobs amenable to remote working also increases at a more or less similar rate.<sup>3</sup>

However, differences in the potential of remote working across regions are not only driven by skills. For example, Spanish (dark grey marker) or Turkish regions (yellow marker) are located well below the trend line indicating that the share of jobs amenable to remote working in these regions is lower than expected given the education levels of the workforce. On the other hand, German regions (green markers), which are above the trend line, have higher rates of jobs amenable to remote working that would be expected from the skill composition of the workforce. While these differences require further analysis, the industrial composition of the regional economies might play a role.

**Figure 4. Share of potential remote working increases with skill-levels in the region**

Share of jobs that can be performed remotely (%) and workers with tertiary education (%), in 2018



Note: The number of jobs in the region that can be performed remotely as the percentage of total jobs (vertical axis), and the share of workers with tertiary education in total workforce (horizontal axis). Regions correspond to NUTS-1 or NUTS-2 regions depending on data availability.. Outside European countries, regions correspond to Territorial Level 2 regions (TL2), according to the [OECD Territorial Grid](#). Source: OECD calculations based on European Labour Force Survey, American Community Survey, Turkish Household Labour Force Survey and Occupational Information Network data (accessed in April 2020).

<sup>2</sup> For instance, almost 70 percent of Management jobs (ISCO-08 categories 11-14) can be performed remotely, but less than 10 percent of jobs in Elementary Occupations (ISCO-08 categories 91-96).

<sup>3</sup> This positive relationship is statistically significant (Pearson R's = 0.75).



### ***The possibility of remote working offers a source of resilience to places under confinement measures***

Evaluating the potential economic impact of lockdown measures taken to slow the spread of COVID-19 raises several fundamental questions about the geography of occupations. Given the faster spread of the pandemic in cities, stricter containment measures may have to be imposed there. However, the higher potential to remote working observed in cities could help compensate for a stronger immediate economic impact of stricter containment measures.<sup>4</sup> In addition, lockdowns are potentially more harmful in cities, given the larger share of local service jobs. The possibility of generating economic activity remotely provides a specific source of resilience, which tends to be stronger in cities than in less densely populated areas.

The share of jobs that are amenable to remote working is an essential element in regions' capacity to function under lockdown or social distancing conditions. Yet, some additional considerations should also be made. The potential for each occupation to be performed at home does not take into account the specific constraints faced by workers and firms to make potential work from home actually happen. For instance, individual's capacity to telework may be hindered due to technological and hardware reasons (lack of IT equipment, broadband connection, etc.), family reasons (taking care of young kids or old relatives), or due to physical constraints (no space to work at home). In addition, remote working is viable only assuming the continuation of the activity in the sector as a whole. However, if demand in a specific sector collapses completely, all workers employed in the sector will suffer and may have to cease working, regardless of whether their occupation could be performed remotely or not. This note suggests that different places might adapt more easily than others to changing circumstances. Overcoming the challenges emerging with the global pandemic requires looking at the problem with a place-based lens and adopting a territorial approach (OECD, 2019).

Moving forward, regions and cities might adapt at different speed to the "social-distance economy", which may lead to a greater acceptance of remote working beyond the current health crisis. Such wider acceptance might open new opportunities for places, such as intermediate cities, that combine high-quality digital infrastructure with relatively large shares of high-skilled occupations.

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<sup>4</sup> Remote working also allows workers to avoid commuting to work, offsetting some of the increased contagion risks in cities.



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