



Who can telework today? The teleworkability of occupations in the EU

Headlines

- The share of work that can be carried out remotely is much greater than the extent of teleworking before the outbreak, which was marginal in most countries.
- Around 37% of EU-27 employees are in occupations that can technically be carried out from home.
- The share of employees in teleworkable occupations ranges between 35 and 41% in most EU countries.
- Many clerical and administrative jobs which had little access to telework before the pandemic can in fact be fully performed remotely.
- The feasibility of telework is greater for high-paid jobs, for jobs in larger firms and for those typically held by women.
- Most low- and middle-skilled occupations are not teleworkable, making these workers more vulnerable to the current crisis. A teleworkability divide could therefore exacerbate existing labour market inequalities.

As a result of the COVID-19 pandemic millions of workers have been teleworking in the last months in the EU and many continue to do so. Telework has become crucial to mitigate job losses and support business continuity, while posing challenges in terms of work-life balance and working conditions. As analysed in a [recent JRC policy brief](#), the transition to telework may have been particularly challenging for some workers, employers and EU countries with little or no prior experience with telework.

Looking forward, the extent to which workers can perform their jobs from home is becoming a key factor shaping the pandemic's economic and distributional consequences. Workers, firms, and countries with higher potential to telework are better equipped to deal with the negative repercussions of the crisis, and manage future risks.

Against this background, having an accurate understanding of how many and which jobs can be performed remotely has become a pressing issue. This brief presents estimates of the share of employees that are currently in teleworkable occupations across EU countries, sectors and socio-economic profiles. This is done on the basis of a conceptual framework which aims to discern the jobs that can be done from home from those that cannot, while also taking into account the potential efficiency losses they could bear if performed remotely – see the quick guide for an explanation of how we define and assess the technical teleworkability of occupations.

How many workers in the EU can telework? Who are they?

Around 37% of EU-27 workers are in occupations that can be carried out from home. This share is much higher than the pre-outbreak prevalence of teleworking (15% regular or occasional telework in 2019), but in line with figures from real-time surveys on the prevalence of telework during the pandemic.

This means that around 22%, or 43 million workers in the EU-27, who did not telework before the COVID-19 outbreak,



could be working from home, and have in all probability started doing so during the first semester of 2020. Many of those who started teleworking only after the outbreak are dependent employees - which are the focus of this brief. For the self-employed, who in principle have much greater discretion over how and where their work is carried out, there was already a much closer correspondence between actual teleworking and technical teleworkability (Figure 1).

The share of teleworkable occupations does not vary much across EU countries. The share of employees in teleworkable occupations ranges from 35 to 41% in two thirds of EU countries, reaching the highest value in Luxembourg (54%) and the lowest in Romania (27%) (Figure 2). Northern and Western European Member States have the largest fractions of employees in teleworkable occupations, whereas these shares are below the EU-27 average in Central

and Eastern Europe and in some Southern European Member States, such as Italy, Portugal, and Spain.

Since the technical teleworkability of an occupation is the same across different countries, this relatively limited variation in the share of teleworkable employment across EU Member States only reflects differences in the occupational composition of their workforce. This suggests that the **pre-outbreak large differences in the prevalence of telework primarily resulted from differences in organisational and management practices**, and other factors such as ICT infrastructures, and only secondarily from differences in the shares of employment in telework-compatible occupations.

Many knowledge- and ICT-intensive services could function almost entirely with remote work. Financial

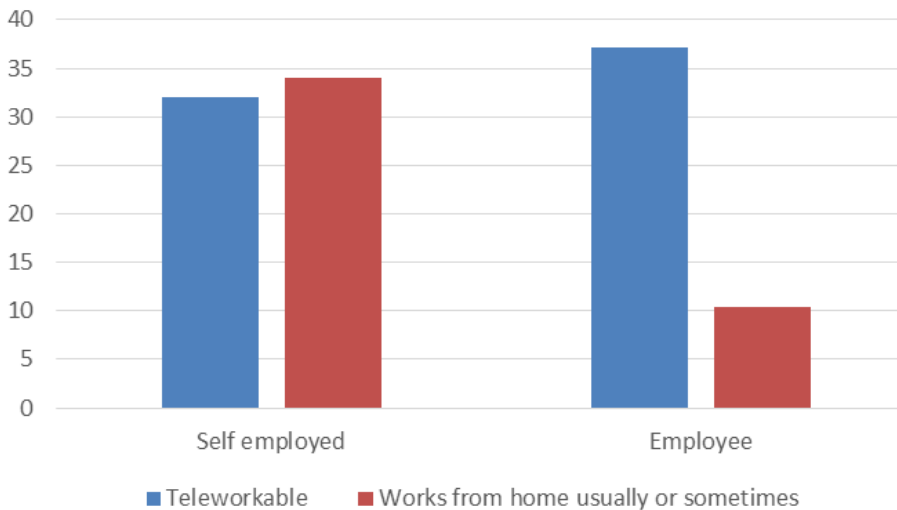


Figure 1: % of teleworkable employment compared to incidence of teleworking (2018), EU27

Note:

Note: 'teleworkable' refers to share of employment in teleworkable occupations according to our operationalisation; 'works from home usually or sometimes' refers to share of employment from LFS 2018 microdata (EU27).

Source: LFS



Figure 2: Teleworkability and past and current prevalence of telework across countries (% of employees)

Source: Eurostat LFS data for 2019.

*Eurofound (2020) "[Living, working and COVID-19: First findings](#)" – April 2020.

** JRC-Eurofound "[Teleworkability and the COVID-19 crisis: a new digital divide?](#)"

services is the sector with the highest share of teleworkable employment (93%), followed by information and communication (79%), education (68%) and other professional, scientific and technical activities (66%) (see Figure 3 below).

The share of teleworkable occupations is also high in sectors such as real estate and public administration, where the adoption of telework before the outbreak was relatively limited.

Figure 3 also shows that the share of teleworkable employment remains rather low in health (30%), retail (27%) and accommodation and food services (16%) as well as in manufacturing and construction sectors.

Most professional activities can be carried out entirely from home, but also many clerical and administrative jobs. More than 70% of managers and professionals, and 50% of technicians, could technically work from home. Interestingly, this share is even higher (83%) among clerical and administrative workers who, before the outbreak, had very limited access to telework (see Figure 4 below). In fact, while one quarter of managers was regularly or sometimes teleworking already before the outbreak, this fraction was very marginal (5%) among clerical and support workers. This arguably suggests that **before the outbreak access to telework depended more on occupational hierarchy and associated privileges than the task composition of the work.**

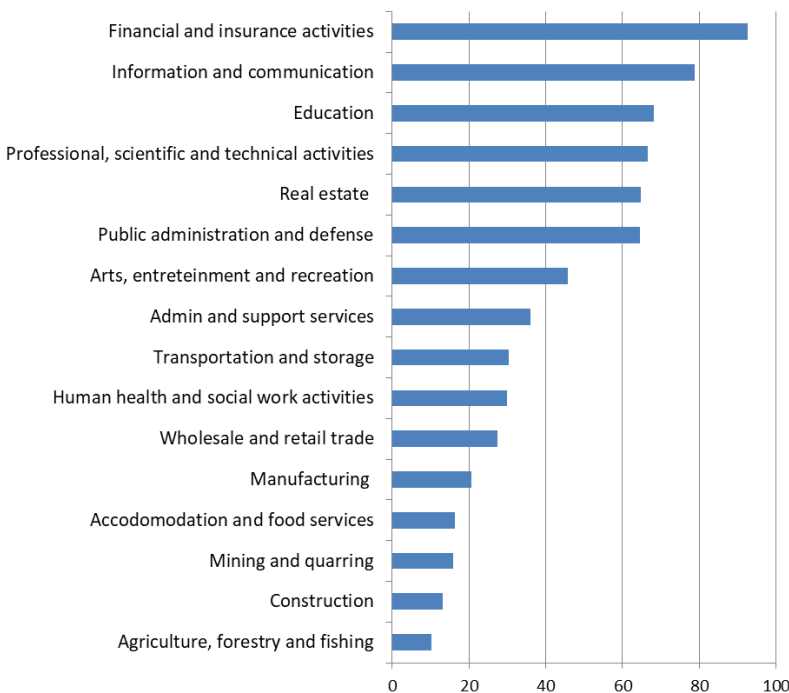


Figure 3: Teleworkability, EU27, % of employment by sector

Source: LFS, COVID group. Note: employees only

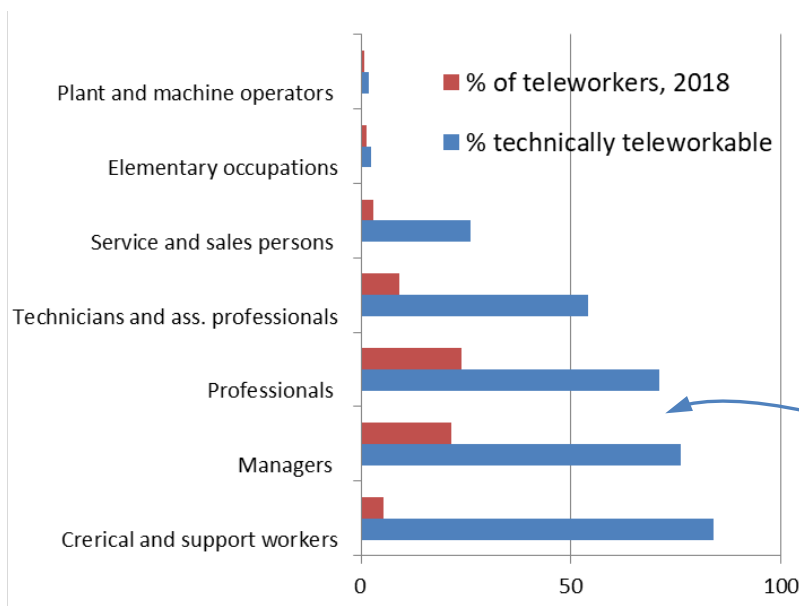


Figure 4. Teleworkability and actual teleworking, EU27, share of employment % by broad occupation group

Source: LFS, COVID group. Note: employees only

25% of managers was regularly or sometimes teleworking before the outbreak, while telework was very marginal (5%) among clerical and support workers. This arguably suggests that before the outbreak access to telework depended more on occupational hierarchy and associated privileges than the task composition of the work.

However, it is important to keep in mind that **the majority of teleworkable jobs requires extensive social interaction**, which often makes working remotely sub-optimal (see the Quick Guide).

For the large majority of low- and middle-skilled occupations, teleworking remains a largely unrealistic option, making these workers more vulnerable. The forced closures of many workplaces led to a larger pool of employees working from home for the first time, but the reality is that the large majority of workers is in occupations that are not compatible with telework using current technology. For these workers, who already before the outbreak were among the most vulnerable, workplace closures have often resulted in furloughing, reductions of working hours, or job losses.

Three-quarters of the highest-paid employees can telework, but only 3% of the lowest-paid can. Differences in the potential to telework also emerge among workers in the middle of the wage distribution. In fact, while more than half of employees in medium-high paid jobs (i.e. those in fourth and third quintile) are in teleworkable occupations, less than 15% of medium-low wage earners is in such occupations (Figure 5).

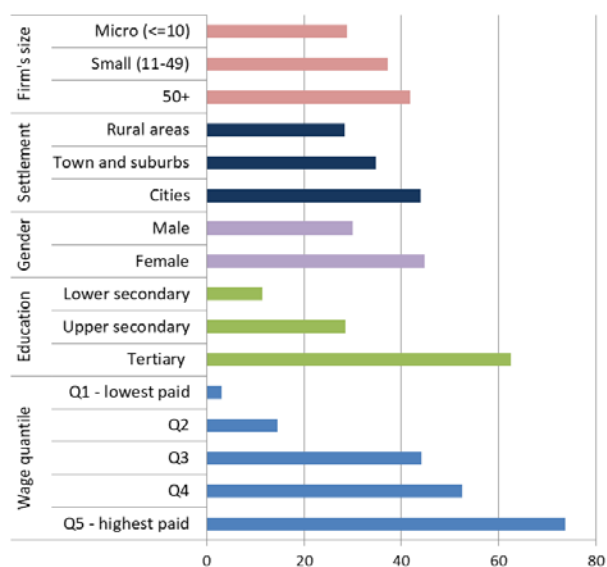


Figure 5: Employees in teleworkable occupations, by socio-economic profile, %

Source: LFS, COVID group, Structure of Earnings Survey. Note: employees only. Job-wage quintiles based on author's calculations of SES 2014 data.

Overall, these findings clearly reinforce the concerns that **the pandemic may exacerbate income inequality**, especially between the top and the bottom of the income distribution.

Employees in teleworkable occupations are more likely to have tertiary education, and work in medium and large-sized enterprises. Given the strong correlation

between wage and education, it is not surprising to see that workers with higher levels of education are considerably more likely to have teleworkable occupations. In fact, over 60% of employees with tertiary education can telework, but less than 30% of those with upper-secondary education can. Meanwhile, more than 40% of employees in medium and large firms are in teleworkable occupations, whereas only 23% of employees in micro-enterprises are in such jobs. Instead, the share of teleworkable occupations does not seem to vary considerably across age groups, type of work contract, and household composition of job-holders.

A much larger share of women than men (45% vs 30%) are in teleworkable occupations. This difference largely reflects patterns of sectoral segregation of employment: men tend to be over-represented in sectors with limited teleworkability potential such as manufacturing and construction. Yet, even within these typically male-dominated sectors, women are more likely to be in teleworkable jobs. For instance, only 6% of men working in construction are in teleworkable jobs, against 69% of women employed in the same sector. Similarly large gender differentials can be observed in other sectors such as utilities, mining, and transports. This reflects the fact that female workers tend to work in different jobs than men in these sectors and that these jobs tend to be the teleworkable ones – office-based, secretarial or administrative jobs, with a lower share of physical handling tasks.

The fact that women are more likely to be in teleworkable occupations than men is at odds with pre-outbreak figures showing no discernible gender differences in telework uptake. In 2019, the prevalence of telework was almost identical between men and women. Considering that women are far more likely to be in teleworkable occupations, this means **that before the outbreak women were facing more important barriers than men in accessing telework.** Once again, this partly reflects that women are typically overrepresented in office-based, secretarial and administrative occupations with lower work autonomy. The outbreak-induced necessity has removed, at least temporarily, many of the barriers to telework for these types of occupations. This is corroborated by the Eurofound COVID-19 survey data, which show that since the onset of the current crisis slightly more women than men are teleworking.

More than 40% of employees living in cities are in teleworkable occupations, against less than 30% of those living in rural areas.

This is normal because cities have higher shares of employment in knowledge- and ICT-intensive occupations than towns or rural areas. The implications of these findings are however complex, and will depend on how telework adoption trends will play out in the future.

On the one hand, differences between cities and the rest of the country could widen, as the former have higher potential to telework. On the other hand, growing shares of telework could entail an important shift in spending and population from cities to less densely-populated areas.

Quick guide: what kind of jobs can be done from home?

The teleworkability of an occupation can be *defined as the material possibility of providing labour input remotely into a given economic process*. Since with current technology the physical manipulation of things is the real bottleneck to remote working, we identify seven indicators measuring the intensity of physical tasks (e.g. moving objects, inspecting equipment, etc) across detailed occupations. Occupations are then classified as *non-teleworkable* whenever any of these indicators is above a certain threshold, and as *technically teleworkable* otherwise.

However looking only at physical tasks is not enough: the degree of social interaction required for a given occupation is a key factor to assess how efficiently it can be performed remotely. When an occupation is teleworkable and involves only limited social interaction, it could be carried out with no or limited loss of quality. But for occupations which are rich in social interactions, telework will inevitably involve some loss of quality given the limitations of existing ICT technologies.

For this reason **we analyse jointly the extent of technical teleworkability and that of social interactions to provide a more complete picture of which jobs can be (efficiently) performed from home**. We assess the extent of social interactions on the basis of five indicators capturing the intensity of social tasks (e.g. influencing, assisting or caring for others etc). We can hence group occupations into three categories:

- **Teleworkable, with limited social interaction:** Examples of these occupations are: clerks, ICT professionals, authors, and secretaries.
- **Teleworkable, with extensive social interactions :** These are jobs that are physically teleworkable, but which require a lot of social interaction. Within this group there are many types of managers and professionals, as well as teachers.
- **Non-teleworkable:** These are jobs that are not teleworkable because they require a significant amount of physical interaction with things or people. Some of them, such as nurses, salespersons, fitness workers, and childcare workers, are the least teleworkable as they also require extensive social interactions. Other non-teleworkable jobs, including most manual occupations in manufacturing, transport and mining, require instead very limited social interactions. In this case, the bottleneck is purely technical, and technological progress could make these jobs teleworkable in the future. Interestingly, these jobs are probably the most susceptible to automation.

For further methodological details please see [the paper underlying this policy brief](#). Overall, two thirds of teleworkable occupations require extensive social interactions, which account for around 22% of EU employment, against 13% of occupations that are teleworkable but involve limited social interactions.

Table 1: Three categories of teleworkability

Occupation type	% of EU employment	Number of ISCO 3-digit occupations
Non-teleworkable	65	83
Teleworkable, with limited social interaction	13	14
Teleworkable, with extensive social interaction	22	26

Related and future JRC work

As part of a comprehensive effort to [assess the economic and social impacts of the COVID-19 crisis and related containment measures](#), the JRC has launched a series of projects focusing on key labour market implications of the crisis.

The analysis presented in this brief builds on [already published work](#) on the challenges that countries, employers and workers are facing in adapting to the new work-from-home environment, on the basis of pre-outbreak trends in the prevalence of telework across EU countries, sectors and occupations.

A forthcoming study will assess the **implications of the massive shift towards telework for work organisation, job quality and work-life balance** on the basis of recent literature on the issue as well as a qualitative study based on semi-structured interviews with workers who are teleworking as a result of the COVID-19 outbreak.

This policy brief has been prepared by Santo Milasi, John Hurley, Martina Bisello, Ignacio González-Vázquez and Enrique Fernández-Macías. It is based on the JRC-Eurofound Working Paper "[Teleworkability and the COVID-19 crisis: a new digital divide?](#)" written by Matteo Sostero, Santo Milasi, John Hurley, Enrique Fernández-Macías and Martina Bisello (European Commission JRC and Eurofound).

The brief is part of a broader set of activities conducted by the COVID & Empl Working Group composed by researchers from the JRC, Eurofound, Cedefop and EU-OSHA, including Martina Bisello, Maurizio Curtarelli, Marta Fana, Enrique Fernández-Macías, John Hurley, Santo Milasi, Joanna Napierala, Annarosa Pesole, Konstantinos Pouliakas, Ignacio González-Vázquez, Matteo Sostero, Songül Tolan, Sergio Torrejón, Cesira Urzi Brancati, Simon Walo.

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