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# Who does work from home? Probability of teleworking in the Spanish labor market before and throughout the pandemic

## Executive summary

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\*Note: This document is a brief and non-technical executive summary of the academic working paper, where further details on the analysis and technical aspects are developed in depth.

## Key findings

- We found that family composition (having at least one child) slightly skews up the probability of teleworking, while, in contrast with pre-pandemic data, in 2020 women would appear to have been more likely to undergo work at home practices when compared to men.
- We identify three different occupational categories: occupations which involve duties that can be naturally carried out teleworking; occupations that, given the current state of technology, can only be carried out at the workplace; finally, occupations that, given their characteristics, would present the largest room for improvement towards a higher level of teleworkability.
- We confirm that, before the pandemic crisis, all autonomous communities followed a similar path of convergence to higher levels of teleworking, and only during 2020 some regions such as Madrid or Catalonia distanced themselves notably from the rest.

## Recommendations

- Workers belonging to the work-at-home apt group (be it for technological or procedural reasons) are found to be those with the most potential of working remotely as a tool to make jobs more flexible. Regional governments should as such focus work at home and telework policies on that share of the workforce to develop effective policies.
- We find that telecommuting can be used as a tool to make jobs more flexible. Furthermore, consistently with previous studies on the matter, teleworking can be a perfect policy target to gender strategies, conciliating family and work responsibilities.

## Principales resultados

- Se ha observado que la composición familiar (tener al menos un hijo) incrementa ligeramente la probabilidad de teletrabajar, mientras que, en oposición a los datos pre-pandemia, en el año 2020 las mujeres fueron más propensas a trabajar desde el domicilio que los hombres.
- Se han identificado tres tipos de ocupaciones: aquellas que implican tareas que pueden ser desarrolladas en remoto; aquellas que, dado el actual desarrollo tecnológico, solo pueden ser llevadas a cabo en su puesto de trabajo tradicional; y finalmente, aquellas que por sus características presentan un mayor margen de adaptación al teletrabajo.
- Se confirmó que antes de la pandemia todas las Comunidades Autónomas seguían un patrón similar de convergencia hacia mayores niveles de teletrabajo. Solo durante 2020 ciertas regiones como la Comunidad de Madrid o Cataluña se distanciaron notablemente del resto de España.

## Recomendaciones

- Los trabajadores clasificados como susceptibles de trabajar desde el domicilio (ya sea por razones tecnológicas o procedimentales) son aquellos con mayor potencial de desarrollar su trabajo en remoto como herramienta de flexibilización. Los gobiernos regionales deberían poner el foco en estos para desarrollar políticas efectivas.
- El teletrabajo puede ser utilizado como herramienta para hacer el empleo más flexible. Además, de acuerdo con otros estudios, este puede ser un objetivo para las políticas de género, ayudando a conciliar las responsabilidades familiares y laborales.

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## Work at home and Teleworking practices

With the arrival of an unprecedented crisis following the coronavirus outbreak, many economic actors had to resort to different employment policies in order to reduce systemic risks related to the virus transmission mechanism. Aside from industrial policy choices related to profitability and economic survival (short time work schemes, furloughs and dismissals on the labor side, asset adjustments and shutdowns on the capital and managerial side), firms from all over the world had to consider once more how much work from home policies would be an optimal choice to counteract the widespread diffusion of the virus. Our work employed annual data sourced from the Spanish Labour Force Survey at the national and regional level to check for short term trends in work at home in both Spain and Andalucía during the 2017-2020 interval.

Some of the most relevant contributions to work at home studies come from natural experiments, which happen to have been able to detect, at least internally, a causal relationship between teleworking and productivity. Focusing on a study case for Spain, scholars have found out that work at home grew by 2.4% between 2009 and 2019, estimating that 30% of employed manpower could work at home, at least occasionally. Aside from sectoral considerations, past literature has shown that work at home is usually more often chosen by or permitted to workers between 35 and 65 years old of age, and such proportion is even higher when university level education is considered.

Our calculations use the Spanish Labor Force Survey annual data from 2017 to 2020 in order to compute the probability of teleworking each year by the main characteristics of the individuals. We explore both National and regional Andalusian data and fit a logistic regression on teleworking taking into account a set of relevant socio-demographic controls. This allowed us to give a first look at the short run Evolution of the Phenomenon in Spain and Andalusia.

## A first glance at teleworking in Spain and Andalusia

From 2017 to 2019 the use of teleworking experienced a slight increase in Spain which may reveal a short-run trend before the pandemic. During this period, the percentage of the employed who teleworked at least occasionally increased 1 percentage point (shorten as p.p.), from 7.35% in 2017 to 8.38% in 2019. Advances in the enterprise digitalization process and the increasing hyperconnectivity might have been influential factors for this slow but sustained trend in the increase of home-based work. However, the sanitary crisis and the subsequent imposition of social distancing measures increased dramatically this fraction of teleworkers, jumping up to 15.22% in 2020, almost doubling pre-pandemic digits. (see Figure 1) Furthermore, as a consequence of lockdown, a major part of these teleworkers did it over half of the working days, so not only more people were teleworking, but they were also doing it more intensively.

These patterns seem to be quite similar when differentiating by sex, except for year 2020, where we found that women experienced an even higher leap in the use of teleworking with regard to men. Despite teleworking had been more common among males in the 2017-2019 period (around 1 p.p. above), the pandemic would have inverted this fact. As a result, we observed that women teleworking reached 1.63 p.p. above men in 2020. (Figure 2)

## Probability of Teleworking: sociodemographic determinants

We predicted the probability of teleworking for individuals on the SLFS using observed characteristics such as gender, if the individual has children, occupation, type of employee (self-employed or salaried worker), sector of employment (private or public), type of working day (part-time or

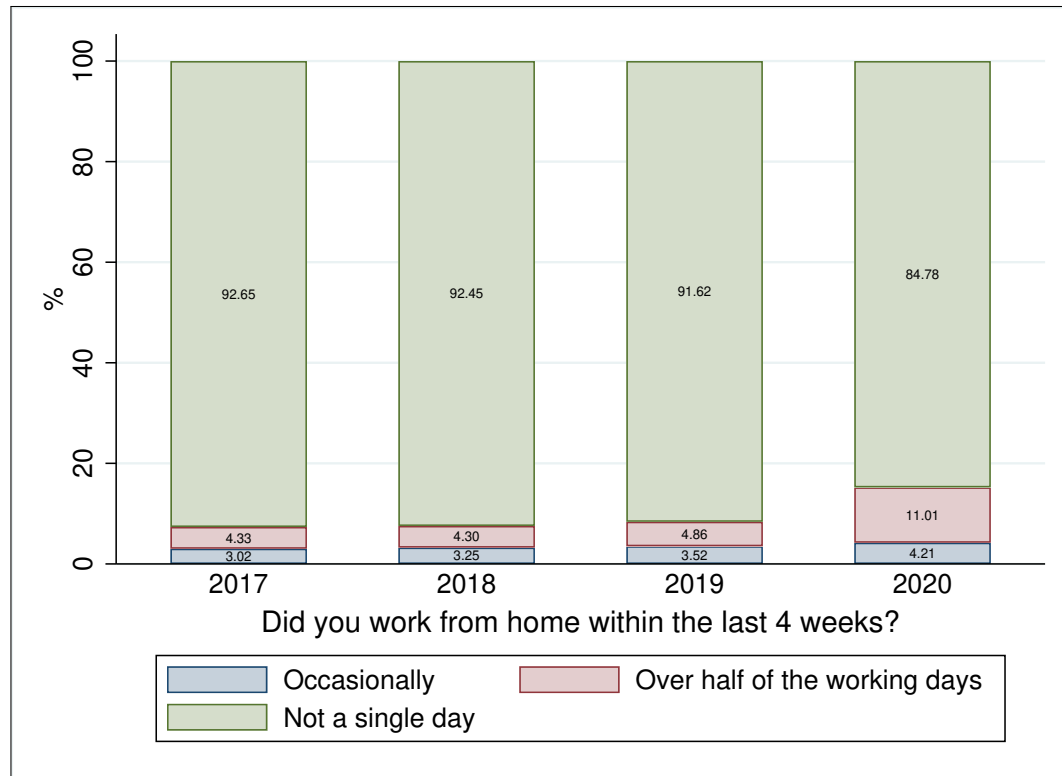


Figure 1: Teleworking intensity in Spain. Data source: Spanish LFS.

full-time), and region of residence. In substance, we found out that there were no patterns across sociodemographic characteristics that can determine short-run trends, with the exception of the type of occupation.

We first focus on the estimation of the probabilities of teleworking among men and women and whether having children matters when we assess them. We found having children to be closely related to a higher probability of performing a remote job. Nevertheless, in Spain, we cannot consider teleworking as a way of making more flexible individuals' working days as the difference between having, at least, one child under 16 years old and being a childless individual is only about 1 p.p. (percentage point).

Exploring if there are gender differences in the probability of teleworking, whether they are parents or not, we find that women, taking into account demographic and labor characteristics of each woman in our sample, were less likely to perform a remote job from home before the pandemic took place, which is a cornerstone to understand why telecommuting in Spain is not a mechanism to combine work with family commitments. Thus, if the outbreak of Corona had not happened, the evolution of the rates of remote jobs performed by women would differ from the actual ones, keeping men at a higher level than women. We estimate that women during the lockdown were 10 p.p. more likely to telecommute when compared with women with the same characteristics before the outbreak of Corona. This became even more significant as the 2020 marginal difference between women and men, compared to the same difference during the three years before the pandemic, appears to be positively skewed in favor of women by a 2 p.p. margin.

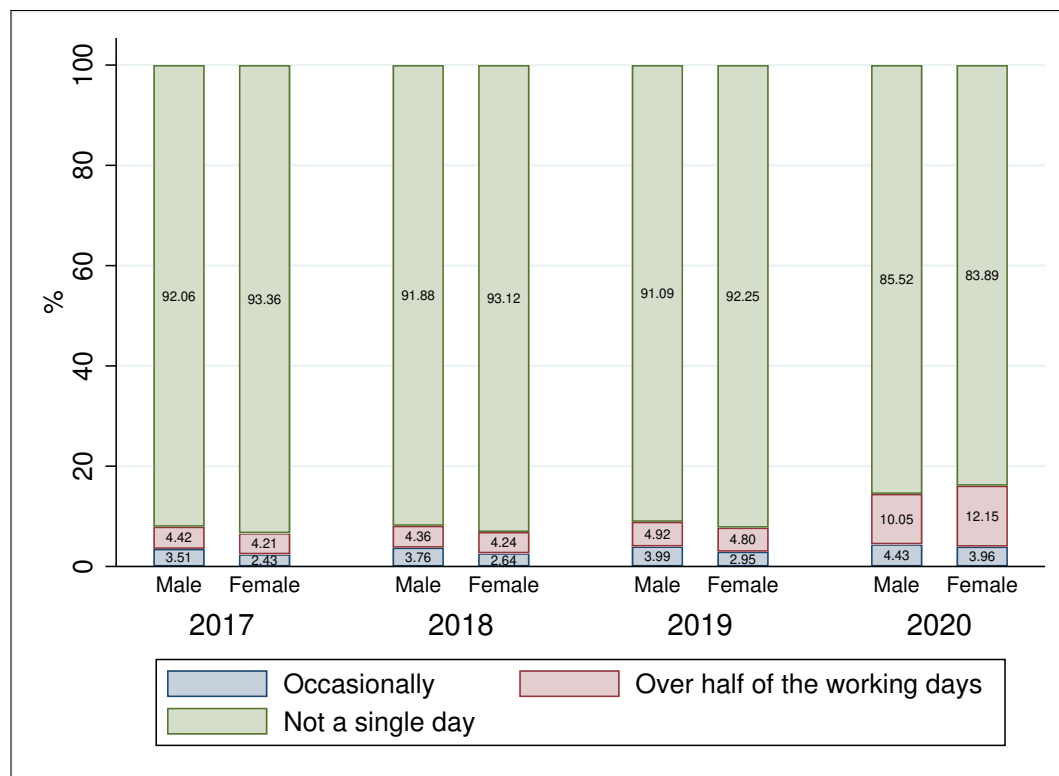


Figure 2: Teleworking intensity in Andalusia by sex. Data source: Spanish LFS.

## Probability of Teleworking: job related determinants

Switching to job related determinants, Our analysis states that an exogenous shock as the outbreak of the Corona virus is an opportunity to adapt the working system to telecommuting but only for those with the potential of being performed remotely potentially digital occupations.

There were large differences in the prevalence of teleworking across occupations before the pandemic. If we observe in Figure 3 the three-year window before Covid-19, we ideally consider three main groups. In the first place, we have those occupations where 20% of the workers had performed a remote job such as Management and Directors, and Scientific and Intellectual technicians. In the second place, 10% of Support professionals and Agriculture and Manufacturing skilled workers in Spain telecommuted, and if we focus on the bottom of the distribution of jobs performed at home, we find those occupations with higher-level social interactions or those low- and middle-skilled occupations in which teleworking remains a largely unrealistic option, making these workers more vulnerable during the lockdown.

Figure 4 shows which occupations were already more likely to be *teleworkable* before the outbreak of Covid-19 and which ones had a probability not marginally different from zero. The lockdown exacerbated the likelihood of performing a job remotely for those occupations with characteristics that enabled a fast adaptation of the work system and a prompt transformation of face-to-face into virtual services necessary to continue performing them. Nevertheless, it is important to remark that occupations such as technicians, support professionals, and others related to accounting, administrative, and other office employees experimented an increase in their likelihood to telecommute close to a 20 p.p., which is relatively the same magnitude compared to those we have mentioned

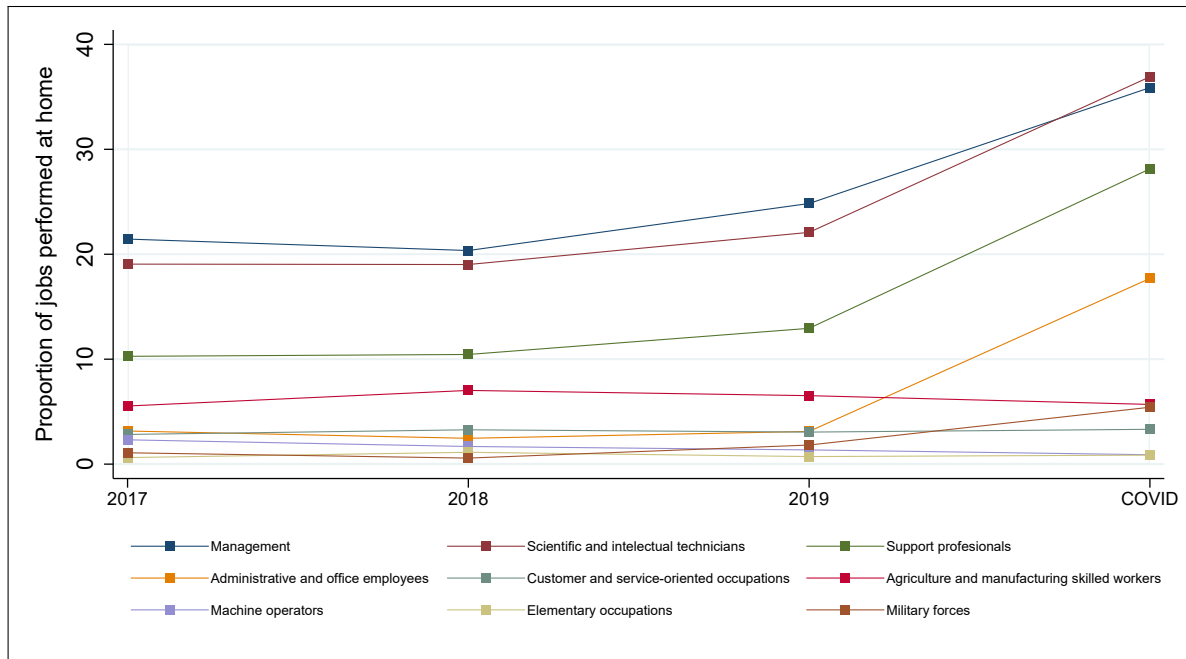


Figure 3: Proportion of individuals who perform a remote job classified by 1-digit occupations. Data source: SLFS.

before (moved from 20% to near 40%).

Henceforth, we conclude that the lockdown caused by the outbreak of the pandemic revealed three types of *teleworkable* occupations in Spain: occupations in which the use of ICT resources can offer almost the same job performance and quality of services demanded; occupations in which telecommuting can be implemented to make jobs more flexible, and occupations in which the productive and organizational structure prevents their online performance.

## Differences in employment types

Regarding the type of employee, self-employed or salaried worker, our results are consistent with those found in the literature. Evidence suggests that for many own-account workers their home is often their place of work. However, the definition of own-account teleworkers is wider and includes not only those “working at home” without ICT, such as small artisans and farmers, but also those “working from home” using ICT resources, such as designers or software developers.

Self-employed individuals were already more likely than salaried workers to telecommute before the outbreak of Covid-19, in particular, they were, on average, 17 p.p. more likely to perform a remote job than employees. However, even when more than 80% of the working population in Spain are salaried workers, they are 18 p.p. less likely to perform their jobs remotely during the lockdown compared to own-account workers. This result reveals that dependent workers can not adapt or make their jobs more flexible as self-employed, who in principle have much greater discretion over how and where their work is carried out, and this can be more related with workers’ autonomy than with technical teleworkability.

Conversely, part-time jobs provide an opportunity for flexible hours of work and for combining work with family commitments. Thus, we could expect that those part-time employees are more likely to adapt their jobs and perform them from home as they have already a more flexible working

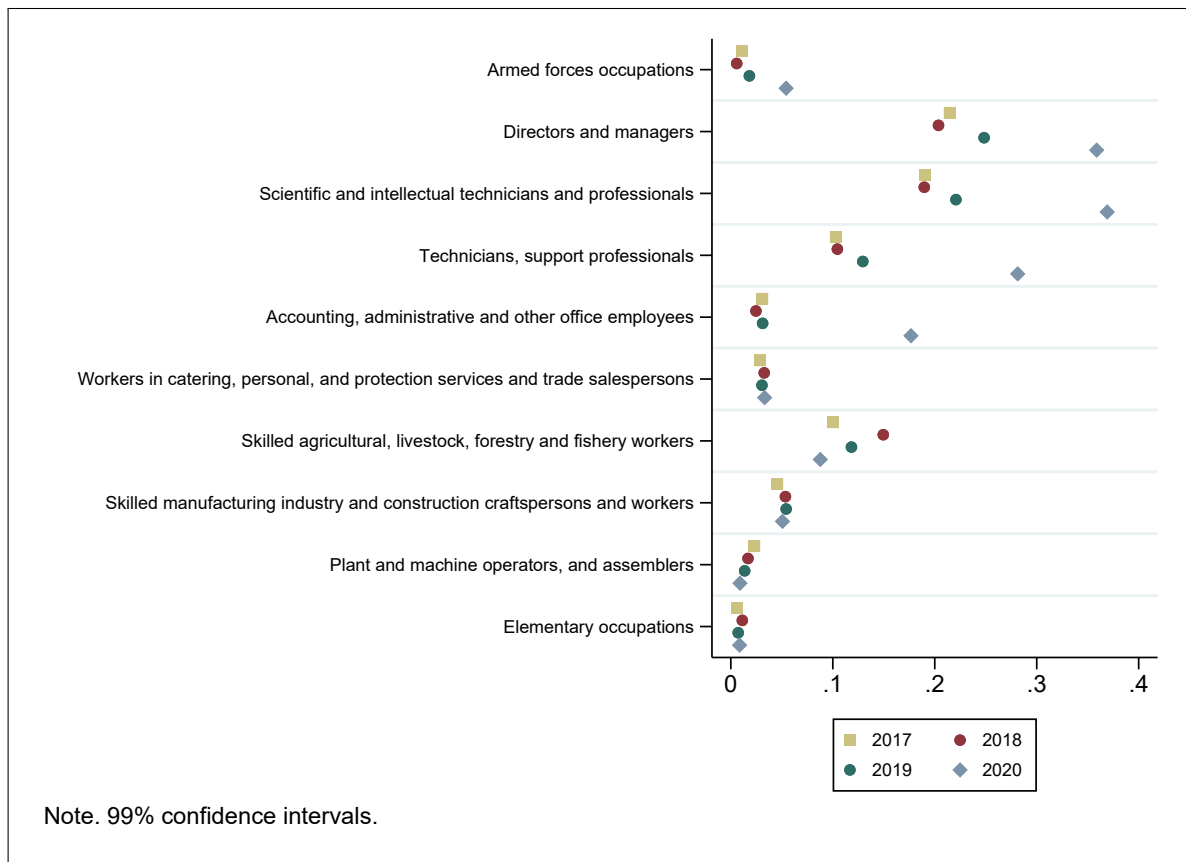


Figure 4: Predicted probabilities for teleworking across occupations. Data source: SLFS.

day compared to those working under full time schedules. However, a full-time worker in Spain is, on average, 4 p.p. more likely than a part-time worker to perform their work from home, estimated for the three years period before the Covid-19. This differences are intensified by the outbreak of Corona, where the lockdown is related to an increment of almost 7 p.p. in both type of work days and to a wider gap between full-time and part-time workers during the lockdown.

## Regional differences

The ranking of regions where workers are more likely to telecommute demonstrates, surprisingly, no gap between those better positioned in economic performance (those with lower levels of unemployment such as Basque Country, Navarre, Madrid, and Catalonia, among others) and those in the bottom (such as Canary Islands, Andalusia, and Extremadura).

Regarding the estimated probabilities of telecommuting among the 17 Spanish regions, we find an homogeneous result in performing a remote job all over the territory, presenting a regional convergence during the three year window before the pandemic. Nevertheless, the outbreak of Corona revealed that those regions with higher economic performance are those reporting to be significantly more likely to adapt jobs remotely. In particular, during the lockdown, workers in Madrid and Catalonia were, on average, twice as likely to telework than other workers located in any other Spanish region.