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When Lockdowns Force "Everyone" to Work From Home: Inequalities in Telework During COVID-19 in Uruguay

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Abstract

Working from home (WFH) arrangements have been on the rise globally throughout the 21st century. Despite this trajectory, developing economies have trailed developed countries in adopting such arrangements. However, because of COVID-19 lockdowns and social distancing measures, countries such as Uruguay, where teleworking was scarce and unregulated, were forced to adopt this practice to ensure business continuity. Under such conditions, preexisting organizational and individual disparities stratified the likelihood of WFH during the pandemic. Conventional wisdom holds that the main determinants potential-to-telework stems almost exclusively from the nature of jobs themselves. This article expands the traditional understanding of telework determinants by showing that during the first stages of the pandemic, individual features of the worker, and organizational and managerial features of the employer, were both determinative of the likelihood that a given worker would work from home. We conducted a secondary data analysis of the March 2020 wave of the Work Monitor, a web-based survey of 847 employed Uruguayan adults. We fitted several multivariate regression models predicting (a) the odds of working for a company which adopted COVID-19-related teleworking policies at least for some workers and (b) the odds of WFH as a consequence of COVID-19. As the adoption of telework was largely unplanned and abrupt, results show that disparities on organizational adoption of teleworking policies were related to pre-pandemic differences across organizations in terms of preparedness, technological investment, and management practices. Results also show that employers' willingness to enable

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WFH policies was the strongest predictor, at any level, of the likelihood of individuals to telework during the national emergency. Individual disparities in terms of human capital also have a great impact on the likelihood of teleworking during lockdowns, but their effect depends on the existence of organizational teleworking policies. Findings' implications for the present and future of telework in developing countries are discussed.

Keywords
telework, work from home, inequalities, COVID-19, Uruguay

Introduction

The COVID-19 pandemic has disrupted economies and societies worldwide. One of the most critical ways in which COVID-19 has affected the economic activity and security of individuals has been through the impact of measures affecting the workplace: the International Labour Organization (2020) estimates that, as of April 2020, more than 80% of the world's workforce was affected by full or partial lockdown measures. Many governments have recommended or even mandated remote work, thereby making the feasibility of adapting work arrangements to home settings a critical element in ensuring business and employment continuity during the COVID-19 pandemic (International Labour Organization, 2020).

Our article aims to study the antecedents of working from home (WFH) as a consequence of COVID-19 in a revealing societal case. We focus on Uruguay, a small Latin American economy with a relatively strong welfare state and a large public presence in the economy. Uruguay is a predominantly urban (95%) country, with one of the smallest Latin American territories and economies, dwarfed by its giant neighbors Argentina and Brazil (United Nations, Department of Economic and Social Affairs, Population Division, 2018). Nonetheless, Uruguay occupies an enviable position among South American nations in terms of low levels of income inequality and poverty and high levels of political stability, as well as relatively effective digital inclusion policies (Nathan et al., 2016; Robinson et al. 2020). Uruguay decreed a national health emergency on March, 13th of 2020 (Decree N° 93/2020), immediately after the first couple of COVID-19 cases were detected (International Monetary Fund, 2020). This swift governmental response, critical to mitigating the spread of COVID-19, has had several expected negative consequences for the workforce, with more than 250,000 individuals, out of 1.6 million active workers, apply for COVID-19-related partial or full unemployment benefits (Presidency of the Republic of Uruguay, 2020). As for the Decree N° 93/2020, the government also called upon all public and private companies to develop teleworking strategies wherever possible. This mandate for public companies and recommendation for private ones became the first legal instance in which telework was directly addressed by Uruguayan governmental authorities, as no previous legislation for the practice had existed in the country. Based on national data from

the Uruguayan Work Monitor of Equipos Consultores, a social research company in the country, we will assess (a) the odds of working for companies that developed policies to enable WFH as a consequence of COVID-19, and (b) the odds of WFH as a consequence of COVID-19. Building on the existing literature on teleworking, we will consider both organizational and individual level determinants of WFH in order to examine telework during the COVID-19 pandemic. Delving into the phenomenon of telework, particularly within the national and temporal settings in which our study takes place, can shed new light on its enablers and determinants, and fill existing gaps by bridging the potential-to-telework literature, more direct telework assessments, and parts of the digital inequalities' literature.

Literature Review

Origins and Definitions

The origin of the term *telecommuting* can be traced to a period almost half a century before the current pandemic, during the 1970's oil crisis. It was initially presented as a solution to traffic congestion due to commuting a way of reducing the consumption of fossil fuels. Information and technologies (IT) companies also explored the idea in the 1970s. The attention paid to telework also increased as women entered the workforce in large numbers, adding to the number of commuters on the roads (Allen et al., 2015).

Despite the long history of teleworking, there is still no clear consensus on what exactly constitutes teleworking. For example, compared to other languages where there is a precise term suitable to define the phenomenon (i.e., "teletrabajo" in Spanish), in English speaking countries, several terms exist to refer to the same phenomenon: telework, telecommuting, WFH, distance or remote work, information and communication technologies (ICT)-mobile work, and virtual teams, just to name a few (Allen et al., 2015; Bick et al., 2020; Eurofound & International Labour Office [ILO], 2017). Building on seminal works and most extended legal definitions relating to the subject (i.e., Allen et al., 2015; Eurofound & ILO, 2017; Messenger, 2019), we summarize some key common elements of telework:

i) it is a practice or form of labor arrangement adopted by a company either partially or in its entirety
ii) it is embedded in a contract or employment arrangement (formal or informal)
iii) it involves carrying out tasks that, while possible to be carried out within the employer's premises, are carried out elsewhere; and
iv) these tasks are carried out through ICT.

The consensus ends here as, for example, the extent of the "elsewhere," and the minimum threshold for a work arrangement to be considered telework are contested (Eurofound & ILO, 2017; Messenger, 2019). Among several typologies that combine place and daily duration of working time, Eurofound and ILO's (2017) is one of the most

useful. They classify telework into three groups: regular home-based teleworkers; occasional teleworkers or ICT-mobile workers with mid-to-low mobility and frequency of work outside the employer's premises; and extremely mobile ones with high frequency of working in various places. Our study will be focused more specifically on what Bick et al. (2020) refer to as pandemic-caused WFH. These are teleworkers who adopted this work arrangement only as a consequence of the COVID-19 pandemic; probably full-time teleworkers but just for the duration of Uruguayan lockdowns.

Minimal Conditions for Teleworking From Home in the 21st Century

Some of the critical factors necessary for teleworking from home are ICT's mediation of tasks that can be conducted remotely, as well as work roles which allow for reasonable levels of autonomy in the job or tasks (Allen et al., 2015). Equitable access to digital technologies, particularly the internet, requires hardware and connectivity as well as software and process implementation, all key barriers to teleworking in small and medium enterprises (Greer & Payne, 2014). Furthermore, both management and workers need to have a certain level of digital skills to sustain an adequate level of usage of specialized ICT, something which is severely unequally distributed in populations across the globe (ITU, 2018).

Not all jobs or occupations are suitable for telework. Physically portable tasks and/or ones that can be performed online are more easily adaptable to telework; this can be described as different occupations' "ability to WFH" in Bick et al.'s (2020) terms. Numerous scholars have adapted occupational descriptions from the Occupational Information Network (O*NET) to administrative or official statistics data in order to estimate the ability to WFH in different occupations and national contexts. In Uruguay, where this study takes place, at least two other recent studies employed this method: de los Santos and Fynn (2020) and Guntín (2020). Although this method is useful and ability to WFH is critical, we propose that, organizational and managerial determinants are similarly relevant for WFH before, during, and after the COVID-19 pandemic.

Worker-Level Determinants of Work From Home

Research suggests that WFH has substantive costs and drawbacks, and that positive expectations with regard to telework do not necessarily translate into positive outcomes for all individuals alike. Temporal sovereignty appears to be the first and clearest advantage for teleworkers, according to current research. Theoretically, telework allows for a better balance of work and private life by easing the management of care and household tasks, saving commute time, and bypassing the limitations of traditional working arrangements (Allen et al., 2015; Eurofound & ILO, 2017; Messenger, 2019). Nonetheless, empirical findings signal that this is not always the case, as without clear regulations telework can increase the number of working hours compared to in-office workers, to the point of making the work–life balance even more difficult (Cléach & Metzger, 2004). Partial and home-based teleworkers, compared to full-time and mobile ones, reap the most benefits from temporal flexibility (Allen et al., 2015; Eurofound & ILO, 2017).

Furthermore, teleworkers often outsource care while at home in order to carry out their jobs (Greer & Payne, 2014). This is a key arena where gender differences, which severely condition the division of the childcare burden, are expected to affect the teleworking experiences of male and female workers unequally (Alon et al., 2020). With the closures of schools and daycares, the balance of private and working life became even more complex and unequal for parenting female teleworkers (Alon et al., 2020).

Mobility-related issues such as commute time and the health-related benefits of avoiding long trips and traffic jams are some of the clearer advantages of teleworking from home (Allen et al., 2015; Eurofound & ILO, 2017; Messenger, 2019). Moreover, as mobility-based inequalities condition the access to in-office job opportunities, telework is expected to be even more appealing to workers living outside of large urban areas or working hubs (Hernández et al., 2020)

The familiarity, skills, and attitudes of individuals toward the integration of technology in the workplace could also be linked to their likelihood of teleworking, as they would also be an indicator of their level of support toward other technological innovations. Younger workers and those with tertiary education have more positive attitudes toward technological innovations, even after controlling for job's characteristics (Dodel & Mesch, 2020).

Organizational-Level Determinants and Deterrents of Telework From Home

Whereas ability to WFH approaches focus on the characteristics of individuals' jobs and occupations as the key determinants, there is consensus in the literature that organizational-level characteristics can severely hamper telework, even when individual abilities to WFH are optimal.

For example, Bick et al. (2020)'s study on changes in commuting related to COVID-19 among U.S. workers provides strong evidence for this claim. They found that, prior to the pandemic, a large majority of on-site workers who switched to WFH after the pandemic attributed their on-site work in the past to their employers' preferences rather than their own desires.

In this sense, supervisors and managers—especially middle management—are the main opponents of WFH within companies (Allen et al., 2015; Messenger, 2019). Research has uncovered differences in management styles, cultures, and control preferences behind these barriers. For example, managers who exhibited more positive attitude toward worker autonomy and more flexible work dynamics, such as abandoning the direct supervision of employees in favor of more indirect and goals-oriented approaches, were more inclined to enable WFH (Tapasco & Giraldo-García, 2020; Peters & Batenburg, 2015; Pyoria, 2011). As these organizational and managerial configurations tend to be more prevalent in sectors of the economy such as technology industry, education, and scientific and professional services, during WFH adoption before and, particularly, during the COVID-19 pandemic was comparatively higher in these sectors (Bick et al., 2020).

Furthermore, certain organizational capabilities related to WFH depend on the development of ICT infrastructure, cyber-safety measures, and digital skills (Pyoria, 2011; Tapasco & Giraldo-García, 2020) are also unequally distributed, favoring the same sectors of economy designated previously (i.e., see INE & DINATEL, 2015, for Uruguay), as well as being less prevalent in small and micro enterprises, particularly in Latin America (Plottier et al., 2013).

Lastly, the key organizational-level advantage of WFH during the COVID-19 pandemic is its centrality for business continuity (Bick et al., 2020; WHO, 2020). According to Bick et al. (2020), the increases in cost of on-site work due to health risks related to COVID-19 predict this kind of employers' behavior; something which already occurred during previous large-scale health crises or natural disasters such as the 2009'a swine flu pandemic (Messenger, 2019). That said, business continuity is not something usually considered by small companies in countries where such crises rarely occur. Fabeil et al. (2020), for example, argue that most decisions taken by small companies during COVID-19, even the ones related to WFH, were mainly ad-hoc and survival responses.

National-Level Determinants and Deterrents of Telework From Home

The COVID-19 pandemic has made visible various national-level determinants of telework, mainly investments in ICT goods and services, and telework-related frameworks and regulations. Two types of national scale investments are critical. First, public and private investments in internet connectivity are necessary to enable digital services to be delivered to households during lockdowns (Robinson et al., 2020). Second, investments in the digital services necessary to undertake emergency public services—such as education, health, and governmental interactions—are also critical for some economic sectors during the pandemic (Robinson et al., 2020).

Uruguay is probably an outlier among developing economies in terms of physical and digital infrastructure. Most basic services are provided by the public sector. Moreover, recent public administrations have invested strongly in technological infrastructure, affordable fiber-optic enabled connectivity across the country, the development of digital government services, and the distribution of technological devices and services free of charge to all students and teachers in the public education sector (Robinson et al., 2020).

Telework in the Context of the COVID-19 Pandemic

The COVID-19 pandemic has brought about an increased interest in telework and WFH research, but aside from some excellent comparative surveys in the European Union, pre-COVID-19 teleworking data collection was uneven and presented problems of cross-national comparison (Eurofound & ILO, 2017; Messenger, 2019). Therefore, two different approaches to measuring telework in the context of COVID-19 prevail: the ability to WFH method, based on secondary data, and telework-specific surveys. Regarding the former, most of these studies appear to be associated with the

evaluation of the economic impacts of social distancing measures adopted to stop the spread of COVID-19. For example, Dingel and Neiman (2020), using the O*NET to classify occupations, classified the occupations in the United States in terms of their "teleworkability" and found that 37% of jobs could be plausibly done at home. These are jobs which are generally better paid than those requiring commuting (Bick et al., 2020). The application of Dingel and Neiman's (2020) classification criteria to 85 other countries reveals that low-income economies have a lower proportion of jobs that can be done from home. For example, de los Santos and Fynn (2020) and Guntin (2020) all apply a similar approach to Uruguay. Their figures range from 47% of the employees with ability to WFH to 23%.

The second strategy, based on primary data, can draw on both company and individual worker-level data (Allen et al., 2015). For our purposes we will discuss only the latter, as the data collection strategy utilized was substantially more prevalent prior to COVID-19. Incidentally, before the pandemic, regular teleworking was of low prevalence across the world, except for a few Nordic nations. On the other hand, teleworking seemed to be growing steadily in all countries (Allen et al., 2015; Messenger, 2019). Even considering the problems and differences in measurement, developed economies consistently reported higher levels of telework before the pandemic, doubling or tripling Latin American countries (Eurofound & ILO, 2017; Messenger, 2019).

In Uruguay in 2019 only 6% of surveyed internet users had teleworked in the prior 3 months, more than twice as many as had done so in 2010 (AGESIC, 2020). Even so, data shows that teleworking was not a widespread practice in the country before March 2020. Both the ability to WFH and the direct inquiry approaches arrive at similar findings with regard to the unequal opportunity structure for WFH.

Finally, the national context and historical circumstances in which our data collection occurs makes the study very relevant to timely questions regarding the future of telework. More than a year ahead of the beginning of the global pandemic, several studies of WFH as a consequence of COVID-19 now exist. The largest and most accurate example was carried out by Eurofound in the framework of its Living, Working and COVID-19 (2020) survey on European residents. The survey showed that, on average, 37% of workers in the European Union member states began to telework after the onset of the pandemic. The levels of telework were related to the prevalence of various services and sectors in the national economies, the ones taking part in the knowledge economy. Divergences in WFH correlate with the nations' disparities in terms of socioeconomic development. Bick et al. (2020) conducted a similar study for U.S. workers, focusing on WFH before and after the COVID-19 outbreak. They found that WFH increased sharply and persistently after the outbreak, particularly in occupations with greater ability to WFH. The share of WFH only arrangements in their sample was 8% before the pandemic (February 2020), and rose up to 31% by May 2020. Barrero et al. (2021) conducted several online surveys assessing potential impacts of WFH in the United States. They found substantial support for an increase in WFH arrangements after the pandemic ends, projecting that full WFH workdays will quadruple compared to pre-COVID-19 levels.

In Uruguay, the National Statistical Office (INE in Spanish) added a short teleworking question to the official household survey (AGESIC, 2020). The NSO estimated that the percentage of workers who declared WFH regularly during the COVID-19 pandemic (19%) quadrupled previous figures (5%). These surveys are consistent with past findings as well as with private sector assessments such as the "Work Monitor" survey (Bericat & Acosta, 2020), on which we will base the following analysis.

In sum, the context of our study, namely Uruguay, is a developing economy with relatively low levels of pre-COVID-19 WFH. In addition, teleworking is particularly concentrated among particular social groups and occupations in Uruguay, as compared to European countries and the United States. Because of the social distancing measures and regulations that came into effect following COVID-19, WFH became more of a necessity than a choice for most, but not the only alternative nor the option by default. The government increased the coverage and reduced the requirements for partial or full unemployment benefits, as well as creating specific COVID-19-related ones. In addition, whereas WFH was encouraged, the central government did not mandate it (Presidency of the Oriental Republic of Uruguay, 2020).

Hypotheses

The purpose of this study is to simultaneously test hypotheses about WFH/telework in the context of Uruguay. The statistical models explore the effects of both individual features of the worker and organizational and managerial features of the employer. We argue that these two levels of analysis are both decisive when it comes to the likelihood that a given worker adopts teleworking practices during the pandemic. Our work will advance WFH/telework research by integrating these two levels into a more comprehensive framework by studying: (a) the presence of company policies to enable telework from home as a consequence of COVID-19 and (b) teleworking from home as a consequence of COVID-19. The hypotheses behind our models are represented in Figure 1.

Employer-Level Hypotheses

H1—*Company size*: Bigger companies (with a larger workforce), compared to smaller ones, are expected to be better positioned to enact WFH in short term, thus having higher chances of enabling WFH for at least some workers.

H2—*Public sector*: Seeing as the Uruguayan public sector had invested centrally in ICT, and the governmental system is highly vertical and hierarchical and WFH was mandated by the President when possible, public companies in Uruguay will have better chances of enabling WFH for at least some of their workforce compared to companies in the private sector.

H3—*Sector of activity*: Companies in certain sectors of activity that tend to be early adopters or invest more in ICT are expected to be better positioned to enable emergency WFH during a pandemic. Moreover, some of these sectors tended to have higher shares of employees with ability to WFH. For both issues, sectors such as education, communication, transportation and storage, and professional, scientific and technical activities, are expected to have higher chances of pursuing WFH for at least some workers, compared to other sectors.

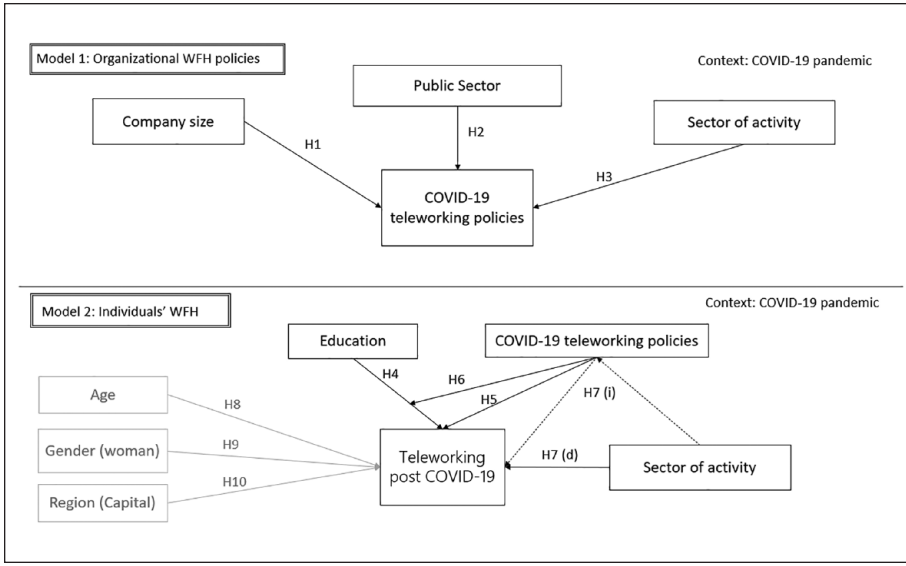

Figure 1. Model hypotheses.

Individual-Level Hypotheses

H4—*Human capital*: People with higher levels of formal education tend to have higher levels of ability to WFH than those with lower educational achievements and thus, higher chances of WFH as a consequence of COVID-19.

H5—*Organizational teleworking policies*: Individuals working for companies that took measures to enable telework for at least some of their workforce as a consequence of COVID-19 will have better odds of teleworking from home.

H6—*Interaction between human capital and organizational policies*: The effects of human capital interact with the presence of organizational policies to enable telework for at least some workers, increasing their impact on propensity to telework as a consequence of COVID-19.

H7—*Sector of activity*: We expect differences in WFH as a consequence of COVID-19 for individuals employed in industry sectors which companies tend to have comparative advantages related to the implementation of ICT innovations and have a higher share of employees with previous ability to WFH. These sectors are the same mentioned in H3. Additionally, as in H3 we predict a direct effect of the sector of activity on organizational teleworking policies, and in turn the latter predicts WFH as a consequence of COVID-19 (H5), we also expect an indirect effect for some categories of H7 mediated through organizational policies. Particularly, for the categories which have direct statistically significant effects in H3 but not with H7 (see the dotted lines in Figure 1 for the proposed mediation).

Control Variables

- *Age*: As younger generations tend to be more familiar with digital technologies, even to the point of incorporating them in their everyday occupations, they will have a higher chance to telework from home as a consequence of COVID-19 than older generations.
- *Gender*: As a consequence of gender-based inequality in the share of care duties, women will be more inclined than men to engage in WFH.
- *Residence*: People residing outside the capital city can reduce commuting times by WFH if they live far from job-hubs and, thus, will be more inclined to WFH than residents of Montevideo (capital city).

Method

Data. Our analyses are based on data from the Work Monitor, an ongoing study conducted by the social research organization Equipos Consultores in Uruguay. The Work Monitor survey has been carried out bimonthly since 2014 covering people over 18 years old who reside in the country and own a cell phone. In the wake of the COVID-19 pandemic the Work Monitor's wave, conducted on the weekend of the 21st and 22nd of March, changed its collection and sampling strategies due to the social distancing limitations in place that reduced the company's call-center capabilities. The COVID-19 wave consisted of a web survey based on a non-probability sample using advertisements on the social networks Facebook and Instagram for its distribution. Sample size was of 1110 cases and respondents were Uruguayan residents over the age of 18. Our study, however, is based on a subsample of employed individuals, which amounted to 847 cases. Data was weighted by age, sex, region, educational level, and activity condition based on the Continuous Household Survey of the INE. The questionnaire gathered information on respondents' socioeconomic position, job placement, job satisfaction and links, along with a set of practices that sought to measure changes in work organization, incidence of telework due to COVID-19, workers' perceptions of the impact of the pandemic on work, and emotional well-being, among others.

Measures

Dependent Variables. COVID-19-related teleworking policies. Employed individuals were asked if the company for which they worked the most hours had taken a series of measures for at least some of their workers as a consequence of COVID-19. Our first dependent variable referred to "The possibility to work from home through telework." Responses were recoded as follows: 1 for "yes," and 0 for "no," and "does not apply."

WFH as a consequence of COVID-19. Employed individuals were asked if they were "currently working from home remotely, or teleworking." Response categories consisted of "yes, as a consequence of COVID-19," "yes, I was teleworking before COVID-19 (and not as a consequence of the pandemic)," and "no." We recoded the question into a dichotomous variable where "teleworking as a consequence of COVID-19" was coded as 1 and everything else as 0.

Independent Variables

Controls

- *Sociodemographic controls*. Age was specified as a continuous variable, whereas sex was recoded as a binary variable where "male" was coded as 1. The geographical place of residence was recoded as 1 for individuals living in Montevideo, the nation's capital, which has close to half of the country's population, and 0 for individuals residing in all other localities.
- *Human capital /educational level*. Individuals were asked several questions regarding their highest level of educational attainment, generating an ordinal variable with three levels ("Primary level of secondary education," "Secondary education," and "Tertiary education"). However, due to extremely low cases of lower education levels and COVID-19 of childcare services outside the variables, we opted to convert educational attainment into a binary variable, distinguishing individuals with a tertiary education from those with lower educational attainment.
- *Sector of activity*. The questionnaire asked individuals to identify their employer's focal activity or product. The inclusion of this variable allowed for the categorization of the companies' sector of economic activity based on the fourth version of the Uruguayan adaptation of the International Standard Industrial Classification of All Economic Activities. Response categories were coded as follows:

"Primary production (agriculture, afforestation, fishing, mining)"

"Manufacturing industry (construction, and basic services)"

"Retail, restaurant, and hotels," "Communication, transportation, and storage"

"Education"

"Health and social services"

"Professional, scientific, and technical activities"

"Public administration and national defense"

"Domestic service and care"

"Other services" (a pseudo-residual category including private security, travel agencies, administrative offices, and most call-center workers).

As COVID-19 lockdowns tend to have a greater impact on the retail, restaurant, and hotels sectors, we selected it as the reference category for all multivariate analyses.

- *Size of employer's company*: Respondents were asked about the number of workers in the company of their main occupation. Response categories consisted of "non-employees/sole proprietorship" (independent contractors), "Between 2 and 4 individuals," "Between 5 and 19 individuals," "Between 20 and 49 individuals," "Between 50 and 99 individuals," "100 or more individuals." Non-employee companies were selected as the reference category in regression analyses.
- *Sector of employment*: There were several questions concerning the employment status of the worker and the sector in which the job was located. Response categories were recoded into "Public sector worker" or others (including, "Private sector worker," "Owner," and "Independent contractor"). Residual categories were coded as missing values. "Public sector worker" was selected as the reference category.

Description of the Sample

The average age of respondents was 42 years old ($SD = 12.56$). 55% of respondents were male and 43% lived in Uruguay's capital, Montevideo. In terms of education, 42% of the sample had completed lower secondary education, 31% of the sample had completed upper secondary education, and 27% of the sample reported completing their tertiary education. Table 1 shows that a simple majority of workers were employed in the retail sector, restaurant, and hotels sectors (21%), followed closely by the manufacturing industry, construction, and basic services sectors (19%). Between 6.5 and 8.9% of respondents were employed in all other sectors of activity; these figures are reasonable within Uruguayan's economy structure.

In terms of the employment status of the respondents, 58% of respondents worked in the private sector, 16% in the public sector, 4% were self-employed or owned their own business, and 22% were classified as independent contractors. 22% of

Table 1. Percentage of Workers by Sector of Activity.

Sector of activity	
Primary production (agriculture, afforestation, fishing, mining)	7.95
Manufacturing industry, construction, and basic services	18.84
Retail, restaurant, and hotels	21.41
Communication, transportation, and storage	7.49
Education	6.9
Health and social services	8.88
Professional, scientific, and technical activities	6.41
Public administration and national defense	6.6
Domestic service and care	6.79
Other services	8.74
Total	100

respondents worked in "sole proprietorships" or single-employee firms, 13% worked for companies with 2 to 4 individuals, 17% for companies with 5 to 19 individuals, 12% for companies with 20 to 49 individuals, 6% for companies with 50 to 99 individuals, and 29% for large companies with 100 or more individuals.

Regarding telework policies, 41% of respondents reported working in companies that took measures to enable telework from home for at least some of their workers, but only 20% reported WFH because of COVID-19.

Analytical Strategy

To test our hypotheses, we fitted multiple logistic regressions. This technique was selected primarily due to the nature of the dependent variables. Contrary to school-based studies, work-related surveys such as ours targeting individuals seldom collect organizational data from organizations as part of an additional level besides individual responses, and they are therefore inadequate for generating multilevel units. Given the lack of multilevel data, we were forced to leave aside multilevel models (Cameron & Trivedi, 2009). For respondents employed by an organization, our study uses respondent-reported information about the employer to test organizational-level hypotheses. Consequently, the analysis deals with determinants which correspond to different levels of aggregation without adequate data for hierarchical modeling, nor information to control for the potential scenario where multiple employees work in the same organization. Whereas this is clearly a limitation, this is not unprecedented in the literature of WFH studies (i.e., see Bick et al., 2020) and there are some techniques to correct the potential biases arising from it. As recommended by other quantitative researchers, we corrected our regressions estimates using clustered standard errors, which the literature indicates as the adequate correction when observations may be randomly sampled but the explanatory or treatment variable (COVID-19-related teleworking policies in this case) is measured at a higher level than the outcome variables (McKenzie, 2017; Nichols & Schaffer, 2007).[1]

Finally, as H7 involves assessing potential indirect effects of sector of activity mediated by COVID-19-related teleworking policies, we conducted mediation analysis for logistic models. As diverse techniques often yield differing results (Grotta & Bellocco, 2013), three different methods to compute the mediation will be used to assess the existence of indirect effects: STATA's user-written commands (1) *khb* based on Breen et al. (2018) and Kohler et al. (2011), (2) *ldecomp* based on Buis (2010), and (3) *med4way* based on Bellavia and Valeri (2018). Results will be considered valid only when at least two procedures signal statistically significant indirect effects, counting as partial or full mediations (Rucker et al., 2011).

Findings

Table 2 presents the odds ratio corresponding to being employed in a company which adopted COVID-19-related teleworking policies. The model has a reasonable fit (McFadden's Pseudo $R^2 = 0.119$) and exhibits no problematic multicollinearity issues

Table 2. Logistic Regression Predicting Working for a Company With COVID-19-Related Teleworking Policies.

		OR (*SE*)
Public sector of the economy		1.947* (0.617)
Size of the employer (ref. cat.: unipersonal)	Between 2 and 4 workers	1.706 (0.731)
	Between 5 and 19 workers	1.110 (0.417)
	Between 20 and 49 employees	1.891 (0.786)
	Between 50 and 99 workers	4.598** (2.284)
	100 or more workers	2.369* (0.986)
Sector of activity (ref. cat.: retail, restaurant, and hotels)	Primary production (agriculture, afforestation, fishing, mining)	0.785 (0.352)
	Manufacturing industry, construction, and basic services	0.929 (0.348)
	Communication, transportation, and storage	2.334* (0.974)
	Education	6.054*** (2.392)
	Health and social services	1.075 (0.428)
	Professional, scientific, and technical activities	5.555*** (2.712)
	Public administration and national defense	1.324 (0.859)
	Domestic service and care	1.297 (0.653)
	Other services	1.381 (0.749)
Constant		0.264** (0.125)
Fit statistics	*N*	763
	Pseudo R^2 (McFadden)	0.119
	BIC	969.9
Multicollinearity	Condition index (scaled)	12.45

Note. OR = odds ratio; *SE* = standard error; BIC = Bayesian information criterion.
*$p < .05$. **$p < .01$. ***$p < .001$.

(condition index = 12.45). The relation between the size of the company and the development of COVID-19-related teleworking policies validates H1. Compared to "non-employee" companies, large businesses have substantially higher odds of implementing COVID-19-related teleworking policies, even more for companies ranging from 50 to 99 workers (odds ratio [OR] = 4.75; $p < .01$) than for the ones with 100 or more workers (OR = 2.639; $p < .05$). Our estimates also validate H2, and provide support for the claim that, all else equal, employment in public sector organizations almost doubles the odds of working for a company with COVID-19-related teleworking policies, compared to employment in other sectors (OR = 1.947, $p < .05$).

Finally, H3 was also confirmed. Employees working in economic sectors which had previously invested more in IT, and/or had higher shares of employees with ability to WFH, have higher odds of working for an employer who established an explicit policy facilitating telework. Relative to employers in the retail, restaurant, and hotels

sectors, employers in the communication, transportation, and storage sectors (OR = 2.334, $p < .05$), in the professional, scientific, and technical activities sectors (5.555, $p < .001$), and in the education sector (OR = 6.054, $p < .001$) have from 2 to 6 times the odds of implementing COVID-19-related teleworking policies.

Next, we conducted analyses predicting the odds of WFH in the wake of COVID-19. We fitted four nested models: the first included individual attribute predictors, the second integrated the sector of activity, and the final principal effects model added COVID-19-related telework policies. The fourth model included the interaction between educational attainment and these policies. All successive models proved to have a better fit, both in terms of their BIC and McFadden's Pseudo R^2 values. The biggest improvements in model fit were observed after the introduction of organizational-level predictors in Models 2 and 3 (see Table 3).

Results led to rejecting some of the controls we introduced into the model, as neither gender nor nonmetropolitan residence (outside the nation's capital) had any statistically significant effects on the odds of teleworking. Age, however, turned out to predict telework, even after controlling for other likely confounders, as members of younger generations have statistically significant higher odds of teleworking as a consequence of COVID-19 (in Model 3b: OR = 0.969, $p < .01$). Having tertiary education was the second strongest predictor, validating the proxy for ability to WFK hypothesis (H4). In the final main effects model (Model 3a), the odds of teleworking as a consequence of COVID-19 increased sevenfold for individuals with tertiary education compared to those with lower academic achievements (OR = 7.193, $p < .001$). Regarding the hypothesis about the respondents' sector of activity (H7), its direct effects on WFH as a consequence of COVID-19 was statistically significant. However, not all of the variable categories had the hypothesized effect. The odds of teleworking increased across all models only for those employed in the education and other services sectors. In Model 3b, employment in the education sector increased the odds of teleworking by a multiple of 3.5 ($p < .05$), all else equal. Employment in other service sectors boosted the odds by a multiple of 5.1 ($p < .05$), compared to the reference category of retail, restaurant, and hotels. This goes contrary to what we expected in the direct effects' version of H7.

Finally, working for a company with COVID-19-related teleworking policies for at least some workers was by far the strongest predictor of WFH as a consequence of COVID-19. Net of covariates, employment in such a firm increased the chances of telework by more than 21 times in the final main effects model ($p < .001$).

The introduction of interaction terms, namely the interaction between telework policies and education, presents a more nuanced picture of how the two strongest predictors of WFH affect the odds of WFH. Model 3b shows that having tertiary education has a statistically significant effect on the odds of WFH, only when COVID-19-related teleworking policies are put in place. The presence of COVID-19-related teleworking policies, however, has an effect on the odds of WFH during the pandemic, whether or not we consider each individuals' educational background. The increase in odds of WFH due to the presence of these policies, however, is substantially higher for individuals with tertiary education. Figure 2 facilitates the visualization of these varying effects by

Table 3. Logistic Regression Predicting Working From Home as a Consequence of COVID-19.

		Model 1	Model 2	Model 3a	Model 3b
		OR (*SE*)	OR (*SE*)	OR (*SE*)	OR (*SE*)
Sociodemographic	Gender (male)	1.009 (0.222)	1.029 (0.233)	1.180 (0.333)	1.159 (0.333)
	Capital city	1.079 (0.402)	0.985 (0.339)	0.608 (0.216)	0.588 (0.220)
	Age	0.976 (0.0124)	0.969** (0.0104)	0.972* (0.0114)	0.969** (0.0114)
Human capital	Education (tertiary)	7.084*** (1.871)	5.131*** (1.485)	7.193*** (2.090)	2.039 (1.466)
Sector of activity (ref. cat.: retail, restaurant, and hotels)	Primary production		1.885 (1.725)	1.856 (1.901)	1.753 (1.798)
	Manufacturing industry, construction, and basic services		0.607 (0.445)	0.417 (0.270)	0.374 (0.240)
	Communication, transportation, and storage		1.753 (1.106)	0.972 (0.595)	0.935 (0.584)
	Education		8.201*** (4.622)	3.518* (1.929)	3.457* (1.946)
	Health and social services		0.479 (0.337)	0.293 (0.218)	0.251 (0.194)
	Professional, scientific, and technical activities		5.029* (3.239)	2.620 (1.653)	2.641 (1.776)
	Public administration and national defense		2.019 (1.465)	0.867 (0.561)	0.832 (0.555)
	Domestic service and care		0.368 (0.312)	0.337 (0.255)	0.320 (0.236)
	Other services		4.287* (2.955)	5.527* (4.678)	5.059* (3.669)
Organizational policies	Working for a company with COVID-19-related teleworking policies			21.130*** (9.635)	10.13*** (5.987)
Interaction Education × Policy	Interaction Education × Policy				5.312* (4.466)
Constant		0.286 (0.202)	0.262 (0.249)	0.0455*** (0.0379)	0.0998** (0.0833)
Fit statistics	*N*	775	775	775	775
	Pseudo R^2 (McFadden)	0.146	0.243	0.422	0.432
	BIC	660.1	648.6	524.1	523.4
Multicollinearity	Condition index (scaled)	13.1	14.9	16.0	17.2

Note. OR = odds ratio; *SE* = standard error; BIC = Bayesian information criterion.
*$p < .05$. **$p < .01$. ***$p < 0.001$.

computing the adjusted predicted probabilities of WFH for each level of the interaction between COVID-19-related telework policies and education.

Finally, we conducted additional mediation analyses. We tested for the presence of an indirect effect of the sector of activity, mediated by COVID-19-related teleworking policies. Three different methods were employed (see Appendix 1 for results of each method) for these analyses.

Whereas each method calculates mediation in a particular way, and thus provides slightly different estimates, the sign and statistical significance of all mediation analyses provide support for a mediated effect. These results confirm the presence of an indirect effect stemming from the employer's sector of activity. Furthermore, particular sectors were statistically significant predictors of COVID-19-related teleworking policies, even if they did not predict WFH as a consequence of COVID-19. In this sense, as compared to employment in the retail, restaurant, and hotels sectors, employment in the communication, transportation, and storage sectors, the education sector and the professional, scientific, and technical activities sectors significantly increase the chances of WFH as a consequence of COVID-19. However, this indirect effect is mediated by the presence of COVID-19-related teleworking policies.

Whereas the effects of working in the communication, transportation, and storage; and the professional, scientific, and technical activities sectors are fully mediated by organizational policies, being employed in the education sector is only partially mediated, as it is both a statistically significant direct *and* indirect predic-

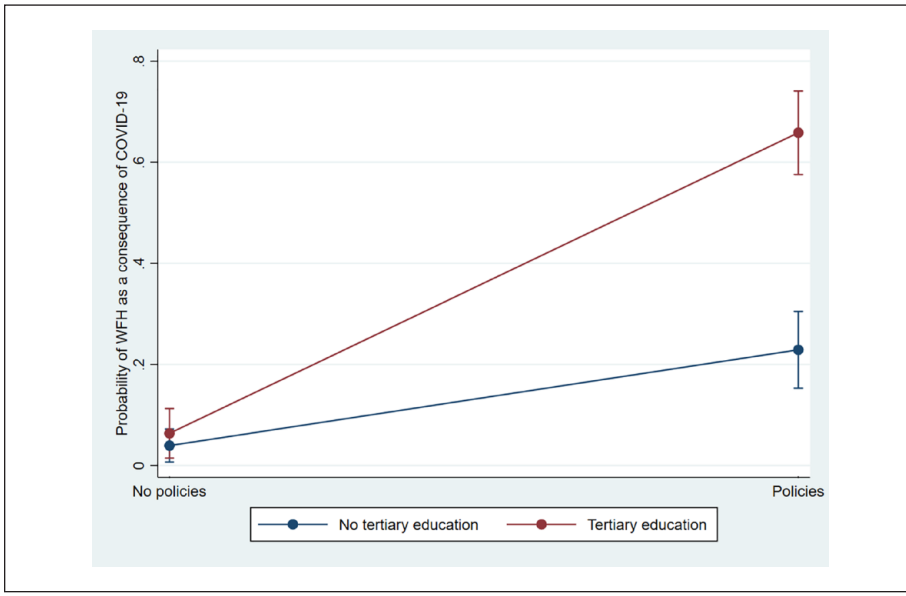

Figure 2. Predictive margins of "COVID-19 telework policies" interaction with "Education" with 95% confidence intervals.

tor of WFH. The pseudo-residual category of other services' sector is not a statistically significant indirect predictor.

Discussion

Our article studies shifts in working practices ensuing from COVID-19 measures. In developing economies, the advent of COVID-19 lockdowns and social distancing measures forced some companies to allow some of their workers to WFH to ensure business continuity. We find, that in a distinctively revealing national setting, namely an unequal but politically stable country with a centralized government, one of the strongest welfare states in Latin America, and almost nonexistent WFH before the pandemic, differences in telework are associated with a combination of sectoral, organizational, and individual-level factors.

Moreover, as the adoption of WFH during the COVID-19 pandemic was largely unplanned and abrupt, it has highlighted both pre-pandemic differences across organizations in terms of preparedness, technological investment, and management practices, as well as differences across individuals in terms of their capacity to telework. Adoption patterns might have been different, had WFH been gradually diffused over time outside of an emergency situation.

We fitted several multivariate regression models predicting (a) the odds of working for organizations that developed COVID-19-related teleworking policies for at least some of their workers, (b) the odds of WFH as a consequence of COVID-19. One of the key findings of our study is that the employers' commitment to take measures to enable teleworking is the strongest predictor, at any level, of the likelihood of individuals to telework during this national emergency. Conventional wisdom holds that the main determinants of teleworking during the pandemic stem almost exclusively from the nature of jobs themselves. This article expands the traditional understanding of telework determinants by showing that individual-level attributes of workers as well as organizational and managerial features of the employer are joint contributors to the likelihood that a given worker adopts teleworking during the pandemic.

Nonetheless, according to the responses of individual workers, not all businesses had the same incentives or capacities to take such actions. Differences in company size and sector of economic activity also matter. Preparedness to enact WFH in the short-term and having higher shares of employees with ability to WFH, appear to both be critical factors enabling or impeding the swift implementation of teleworking-related policies within organizations. Working in certain sectors had a twofold effect on both the chances of developing policies, and on teleworking *per se.* Whereas in some cases the effect on the sector of activity over the chances to WFH was direct, in others they were mediated by the development of telework policies. This pattern appears with regard to the professional, scientific, and technical activities sectors, and the communication, transportation, and storage sectors. This pattern could indicate that organizational and managerial choices in these sectors play particularly strong roles in determining telework arrangements.

Our findings also provide evidence of the role that governments and state investments can play to encourage telework, or at least to further the conditions that favor a smoother transition from in-office work to WFH during national emergencies. In the context of a small, statist, and politically centralized economy like the Uruguayan economy, most public services are provided by government monopolies. Moreover, due to Uruguay's welfare-state tradition, the government had made significant nationwide investments aimed at modernizing and democratizing government through the use of ICT, as well as the integration of ICTs across all levels of the educational system. The chances of working for a company that had developed teleworking policies as a consequence of COVID-19 almost doubled for public servants, even after controlling by sector of activity and size of the company. The executive branch's order to telework in the public administration appears to have been successful, at least in the beginnings of the pandemic (Presidency of the Oriental Republic of Uruguay, 2020).

Regarding individual factors, neither gender nor proximity to the capital city had a statistically significant effect on pandemic-related telework. Nevertheless, we think neither factor should be discarded as a potential teleworking antecedent. For example, gender-based teleworking disparities are intrinsically linked to childcare and other domestic economic inequalities (Eurofound & ILO, 2017), a disparity that the COVID-19 pandemic severely intensified (Alon et al., 2020). On the other hand, the geographical distance-to-job measure available was very basic and did not reflect distance-to-work inequalities within the capital, which have already been discussed in the literature on Montevideo (see Hernandez et al., 2020).

On the other hand, age was a statistically significant predictor of WFH, as younger generations, *ceteris paribus*, are more likely to be teleworking in the wake of COVID-19. We argue that this is a consequence of cohort-based digital inequalities. In other words, younger workers tend to be more familiar with technological innovations and perceive such advancements to have had a positive impact in their job life compared to older workers (Dodel & Mesch, 2020). Improvements in individual and household-level digital inequality measures are required to further advance this line of research, proven to be critical in both telework and potential-to-telework literature.

Human capital was by far the strongest individual-level predictor of WFH due to COVID-19, which is in line with all existing ability to WFH and telework literature (i.e., Allen et al., 2015; Bick et al., 2020; Guntin, 2020). Nonetheless, our findings provide a more nuanced understanding of how educational attainment as operationalized by tertiary education versus lower educational attainment, interacts with organizational-level determinants.

All else equal, higher levels of human capital have a statistically significant effect on teleworking only when COVID-19-related teleworking policies are in place. Working for companies that developed COVID-19-related teleworking policies proved to be a statistically significant predictor, with or without high levels of human capital. Nonetheless, its effect on WFH was substantially stronger when individuals had tertiary education. These results are in line with Buck et al.'s (2020)

finding that the majority of U.S. workers' changes in commuting practices during the pandemic were caused by the temporary lifting of prior commuting mandates relating to daily on-site working, not just their personal preferences.

We argue that, as a whole, these findings inform the risks of assessing telework exclusively based on individual-level determinants of the ability to WFH. It also highlights the risks of overlooking the interactions of organizational and individual determinants. Organizational support is critical for the existence of WFH arrangements and can be considered a quasi-necessary condition for effective telework to occur, even when occupational attributes such as familiarity with ICT and ability to WFH are favorable to telework.

Limitations and Future Research

Whereas survey-based estimates of telework incidence often coincide with official statistics as in this case, our study utilizes a survey based on nonrandom sampling. Our study also had the constraint common to most population surveys set outside the work environment: organizational-level data was provided by workers, partially reducing its quality, and hindering the creation of multilevel models, which are the ideal techniques to analyze this type of phenomenon. National statistics offices could provide this type of information to further advance the assessment of aggregate-level determinants and the proportion of explained variance accounted for by each level.

Lastly, we should insist on distinguishing the WFH during the COVID-19 pandemic from WFH in a post-COVID-19 world. In the first place, several workers and employers are expected to have had their first teleworking experiences during the pandemic under extraordinary circumstances. They had little choice but to work from home, despite their lack of experience and the potential for disruption because of forced homeschooling of children and the suspension of childcare services outside the home (Bericat & Acosta, 2020). These are not ideal conditions for WFH. It is hoped that post-COVID-19 telework can unfold under more auspicious circumstances. Further research should focus on differentiating the sources and consequences of emergency versus regular telework, as well as identifying the disparities which companies and individuals continue to face vis-a-vis WFH. In line with Barrero et al. (2021), we expect that partial-time WFH or hybrid arrangements will grow in prevalence as the frequency and intensity of WFH has a great impact on the well-being of workers and their satisfaction with telework as a whole (Allen et al., 2015; Eurofound & ILO, 2017).

Appendix 1. Mediation Analysis for Logistic Regression Summary.

ldecomp (vce cluster)			
	Indirect (OR)	Direct (OR)	Total (OR)
Communication, transportation, and storage	1.388**	1.375	1.908
Education	2.183***	3.369***	7.275***
Professional, scientific, and technical activities	1.692***	2.515*	4.245***
Other services	0.736	2.48	1.824
khb logit (vce cluster and weights)			
Communication, transportation, and storage	1.481	0.935	1.384
Education	1.527**	3.457*	5.280***
Professional, scientific, and technical activities	1.492*	2.641	3.941*
Other services	1.081	5.059*	5.467*
med4way (with bootstrap)			
	Excess relative risk due to pure indirect effect	Excess relative risk due to controlled direct effect	Total effect risk ratio
Communication, transportation, and storage	0.626***	1.391***	2.732
Education	0.993***	7.272***	8.546
Professional, scientific, and technical activities	0.742***	3.321***	4.628
Other services	0.251	4.878	4.437

*$p < .05$. **$p < 0.01$. ***$p < .001$.

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Note

1. To create these pseudo-clusters we generated an ID variable combining the company's sector of the economy and size (number of employees) with the geographical location of the respondent (Capital or rest of the country). This new variable generated 106 clusters (a reasonable number according to the Cluster Standard Errors literature; Nichols & Schaffer, 2007) which allowed to relax the requirement of observation independence and adjust for intragroup correlation associated with the potential presence of multiple employees of the same companies.

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