Home (not so) sweet home: remote work and medical leaves in Brazil

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Abstract

The COVID-19 pandemic caused an unprecedented shift to remote work worldwide. In this paper, we investigate the dual impact of this transition on physical and mental health by analyzing over 1.5 millions medical leaves in Brazil from 2018 to 2021. Using a differences-in-differences model, we compare workers from firms that transitioned to remote work (non-essential services) and the ones that stayed commuting to their workplace (essential services) before and after the pandemic. Our findings reveal a significant decrease in labor accidents, primarily driven by fewer bodily injuries, but a substantial increase in medical leaves related to mental health issues, particularly among men in high stress sectors. The abrupt transition to remote work, combined with increased domestic responsibilities in a setting of social distancing norms, likely contributed to elevated stress levels and work-life conflicts. Our finding highlight the contrasting health impacts of remote work during the pandemic and underscores the need for targeted mental health support in remote work policies.

Keywords: Labor Accidents, Mental Health, COVID-19

JEL Codes: I10, I18, D04

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1 Introduction

The COVID-19 pandemic brought unprecedented changes to the way we live and work. One of the most relevant shifts was the rapid and widespread adoption of remote work. As stay-at-home orders were implemented globally, millions of employees transitioned from their traditional workplace to working from home. This shift, while necessary to curb the spread of the virus, had profound implications for both physical and mental health. On one hand, the reduction in commuting and physical presence in potentially hazardous work environments arguably decreased labor accidents. On the other hand, the isolation, stress, and blurred boundaries between work and personal life associated with remote work may have contributed to a rise in mental health issues (Russell et al., 2009; Song and Gao, 2020; Gajendran and Harrison, 2007).

This paper explores these contrasting trends by analyzing empirical data on medical leaves in Brazil before and following the pandemic. In particular, we leverage more than 400,000 labor accidents per year registered in Brazil between 2018 and 2021, with detailed information about the medical issue and some demographics of the workers such as gender, age, and firm sector. Brazilian workers in the formal labor market are entitled to stay on paid medical leave when they suffer an accident or a disease caused by their work. By exploring the dual impact of remote work on physical and mental health, this study provides a comprehensive understanding of the implications of the work-from-home model in the context of a global crisis.

To investigate how the adoption of remote work affected medical leaves, we compare workers entitled and not entitled to remote work using a differences-in-differences model. Specifically, we explore the Brazilian government stay-at-home regulation that defined essential sectors that must remain open during the pandemic while the remaining sectors should stop their in-person operations, forcing an abrupt adoption of working-from-home arrangements for some firms and employees. Thanks to the granularity of our dataset, we disentangle the heterogeneous effect by different types of medical leaves, and shed some light

on the potential effects of remote work on physical and mental health following the pandemic outbreak.

Our analysis reveal contrasting effects of the COVID-19 pandemic on medical leaves for workers who transitioned to remote work. We find a significant decrease in total medical leaves, driven primarily by a reduction in labor accidents related to bodily injuries, with consistent results across gender and age groups. However, there was a notable increase in medical leaves due to mental health issues. We argue that this dual effect is attributed to the abrupt transition to remote work, which reduced physical labor accidents as workers stayed home but elevated stress levels and mental health issues due to the sudden need to adapt homes for work and manage domestic duties without proper protocols and support from employers. Our differences-in-differences estimates show a 10.6% overall reduction in medical leaves for remote workers, contrasted by a 160% increase in mental health-related leaves compared to the control group. Despite the low frequency of medical leaves caused by mental health illnesses pre-pandemic, our findings highlight a substantial increase in this type of medical leave for workers in remote work arrangements.

To ensure the robustness of our findings, we conducted an Event Study to assess the dynamic effects of the COVID-19 pandemic on medical leaves and test for any pre-trends in labor accidents. This exercise confirms no prior trend for medical leaves, validating the parallel trends assumption of our differences-in-differences model. While total medical leaves returned to pre-pandemic levels six months after the outbreak, mental health-related leaves remained elevated after the one-year period evaluated in the Event Study. This sustained increase suggests that new work arrangements, such as remote work, may have contributed to higher stress levels due to overwork and blurred boundaries between professional and personal tasks.

We interpret the reduction in physical injuries as a mechanical decrease in labor accidents in the context of the pandemic. Since most firms and industries were not authorized by the Brazilian government to continue in-person operations, many employees could not perform

their duties from home, as their work often required machinery and tools available only at their workplace. Consequently, fewer labor accidents related to physical injuries were expected in these non-essential sectors. Regarding the increase in medical leaves caused by mental health issues, we show evidence supporting higher levels of stress and potential work-life conflicts, as such increase is driven by men and workers of high stress sectors. In a setting where male workers stayed at home with other family members, they probably had to assume more family responsibilities. This outcome is particularly surprising since women would, in theory, face a heavier burden, assuming most tasks related to taking care of the house and children while working at the same time and place (Sandoval-Reyes et al., 2021; Alon et al., 2020).

Our paper contributes to three strands of literature. First, we document a pervasive effect on mental health unrelated to job loss and negative income shocks. By leveraging data on Brazilian workers from the formal labor market covered by a social safety net, who remained employed during the pandemic, we differ from other studies that found negative effects on mental health driven by income shocks (Baranov et al., 2022; Fontes et al., 2024; Bau et al., 2022). Therefore, our approach isolates the effect of remote work from economic distress in the context of the pandemic (Mahmud and Riley, 2021; Witteveen and Velthorst, 2020), providing valuable insights into other mechanisms that may also affect mental health, such as increased stress and domestic tasks.

Second, we provide a novel dataset comprising detailed information registered by labor medicine doctors about physical and mental health issues that caused medical leaves. Specifically for remote work, the findings in the literature are mixed regarding stress and work-life balance. While some evidence points out that workers may benefit from remote work through increased job autonomy (Duxbury and Halinski, 2014; Gajendran and Harrison, 2007; Hartig et al., 2007; Sardeshmukh et al., 2012), other studies show higher levels of stress due to overwork and increased work-life conflicts (Song and Gao, 2020; Felstead and Henseke, 2017; Russell et al., 2009). Most of the evidence in the aforementioned studies

relies on surveys, self-reported data, and small samples. Thus, our paper adds to this literature by providing compelling evidence from more than 1.5 million medical leaves in Brazil, representing a more accurate and objective measure of physical and mental health issues. Last, we also contribute to a recent trend in papers about the expansion of remote work after the COVID-19 pandemic and their consequences for firms and employees (Davis et al., 2024; Bloom et al., 2021; Hansen et al., 2023; Brucks and Levav, 2022; Jalota and Ho, 2024; Ho et al., 2023).

2 Background

2.1 Labor Market Regulation in Brazil

Brazil has more than 100 million employed workers according to the National Household Survey (Pnad Contínua - 2023) by the Brazilian Institute of Geography and Statistics (IBGE). Approximately 38 million are in the formal labor market, 32 million are self-employed, and the remaining 30 million declare working in the informal sector[1].

Within the formal labor market, employees are covered by the CLT[2], which regulates labor contracts and protect workers' rights. One crucial aspect of this framework is the medical leave provision, which allows employees to take time off work due to illness, injuries and labor accidents. Medical leave is granted upon presentation of a medical certificate, typically issued by a licensed healthcare professional, specifying the nature of the illness or injury and the recommended duration of the leave.

Firms in the formal labor market must ensure that employees receive appropriate medical treatment and continue paying the employee's salary during the period of medical leave, thus providing financial stability during times of illness or injury. Therefore, the Brazilian Labor legislation for the formal labor market aims to safeguard employees' rights and well-being,

[1] *Agência IBGE Notícias. Acessed on March 10th, 2024.*

[2] *"Consolidação das Leis do Trabalho" (CLT). Federal Regulation No. 5.452. Implemented on May 1st, 1943.*

being a huge differential when compared to the lack of benefits in the informal sector.

2.2 Labor accidents and medical leaves in Brazil

According to the Brazilian legislation, labor accident is defined as any injury or illness that has the work environment as the cause or happened when commuting to the workplace. Employers or employees must inform the occurrence of a labor accident to the government through a document called *"Comunicados de Acidentes de Trabalho - CAT"*. Filling a CAT is a mandatory document to request a paid medical leave to the Ministry of Social Security (INSS).

In 2018, the INSS evaluated 595 thousands of administrative process related to labor accidents. The total expenditure, including aids and benefits, was approximately R$ 12 billion[3]. Only about 17% of the injured required minor medical care, allowing employees to promptly continue with their normal work. In other cases, about 61% resulted in the employee being away from work for less than 15 days, during which the employer bears the worker's salary, and in 22% of cases, absences lasted for more than 15 days[4].

2.3 The Covid-19 Pandemic and remote work expansion

During the COVID-19 pandemic, the Brazilian government declared a nationwide state of emergency[5]. The federal government aimed to mobilize resources and coordinate regulations to combat the spread of the virus across the country. As part of this emergency response, stringent measures were implemented to mitigate the spread of COVID-19 and protect public health. These measures aimed to flatten the curve of infections, alleviate strain on healthcare systems, and protect vulnerable populations.

The adoption of remote work became a crucial strategy to ensure business continuity

[3] *Brazilian Labor Justice*

[4] Since 83% of labor accidents result in medical leave, we use the terms "labor accidents" and "medical leaves" interchangeably throughout the remainder of the paper.

[5] Decree No. 188, issued on February 4, 2020, by the Ministry of Health

while safeguarding the health and safety of employees. Essential services, such as healthcare, public safety, and food supply chains, were authorized to continue their operations with necessary precautions. However, other sectors considered non-essential transitioned abruptly to remote work arrangements to minimize physical interactions and reduce the risk of virus transmission.

The COVID-19 pandemic exacerbated mental health issues both in Brazil and worldwide. In Brazil, the heightened stress and anxiety caused by the pandemic have led to a notable increase in mental health-related problems. According to a study by the IBGE, there was a significant rise in reports of mental health issues during the pandemic, with a substantial number of Brazilians seeking mental health services[6]. Moreover, the World Health Organization (WHO) reported a dramatic increase in the prevalence of anxiety and depression worldwide, estimating a 25% rise in the first year of the pandemic[7]. These trends highlight shed light on the need for enhanced mental health support for workers after the pandemic.

3 Methods

3.1 Data

We leverage data from the *"Comunicados de Acidentes de Trabalho"* (CAT-INSS) from 2018 to 2022. This dataset is regulated by Law No. 6.367/1976 that established the reporting of workplace accidents to the Brazilian National Institute of Social Security (INSS). According to the Brazilian Labor legislation, employers must report all labor incidents and ensures that workers receive appropriate benefits and medical assistance in cases of injury or incapacity resulting from work-related incidents. The CAT-INSS dataset provides comprehensive information on reported workplace accidents and consequently medical leaves across the country. Further, it also includes detailed information on the date and location of the accident, the

[6] *Covid: saúde mental piorou para 53% dos brasileiros sob pandemia, aponta pesquisa*
[7] *COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide*

nature of the injuries, the firm sector, and the occupations of the workers.

Regarding the identification of which sectors adopted the remote work arrangement following the COVID-19 pandemic we rely on the federal regulation of essential services[8], which defined the sectors and firms allowed to keep in-person operations (*essential services*). Hospitals, drugstores, supermarkets, grocery stores, gas stations, transportation and security services, banks, construction, and cleaning services maintained their regular operations. Restaurants and Food services, were restricted to work only through delivery operations. The remaining sectors were forced to operate fully through remote work.

We group all labor accidents registered per municipality by month and firm sector. We rely on a specific code called the "Classificação Nacional de Atividade Econômica" (CNAE) that characterizes the main economic activity of brazilian firms. We use the CNAE code to match the essential services defined by the federal regulation and create a panel where we identify labor accidents in (i) firms allowed to keep in person operations following the COVID-19 outbreak and (ii) firms forced to move to remote work.

Table 1: Medical Leaves in Brazil - Monthly Average from 2018 to 2022

		1	2	3	4	5	6
		Essential Services			Non Essential Services		
Monthly Average		Before Pandemic	After Pandemic	t-test	Before Pandemic	After Pandemic	t-test
Gender	Total	7,916.14	7,713.73	-202.40	27,821.95	25,036.52	-2,785.43
	Female	4,524.00	4,625.82	101.82	7,371.57	6,351.13	-1,020.44
	Male	3,389.28	3,055.69	-333.59	20,441.85	18,614.00	-1,827.85
Age	15-25 y.old	1,246.42	1,196.56	-49.86	4,792.19	4,470.13	-322.06
	25-35 y.old	2,297.33	2,203.87	-93.46	8,085.09	7,064.26	-1,020.83
	35-45 y.old	2,067.95	2,089.08	21.13	6,656.04	6,049.60	-606.43
	45-55 y.old	1,110.33	1,092.47	-17.85	3,934.57	3,558.91	-375.65
	55 y.older	439.90	366.34	-73.55*	1,711.33	1,470.95	-240.37
Cause	Mental Health	238.90	96.78	-142.12***	154.90	115.69	-39.20**
	Body Injuries	5,010.28	3,978.43	-1,031.85**	22,234.23	18,929.08	-3,305.15*
	Musculoskeletal Illness	512.66	386.30	-126.36***	1,829.66	1,496.60	-333.05**
	Mortality and Morbidity	692.00	744.30	52.30	1,497.52	1,530.47	32.95
	Body Pain	88.00	64.13	-23.87***	305.33	242.87	-62.46**
	Flu and respiratory viruses	1,205.52	1,169.21	-36.30	992.61	914.91	-77.70

Note: This table presents the monthly average of medical leaves in Brazil from 2018 to 2022. Columns 1 and 2 show these statistics before and after the pandemic (March 2020) for sectors declared as essential services by the Brazilian Government, while Columns 4 and 5 show the same statistics for the remaining sectors (non-essential services). Columns 3 and 6 present the results of a t-test on the difference of means pre- and post-pandemic for essential and non-essential services, respectively.
*p<0.1,**p<0.05,***p<0.01

[8] *Federal Regulation No. 10.282 implemented on March, 20th 2020.*

3.2 Empirical Framework

Our identification strategy employs a difference-in-differences approach to test the impact of remote work arrangements on labor accidents. With the federal regulation suspending in-person operations for non-essential services following the COVID-19 outbreak, employees in these sectors transitioned to remote work setups. Consequently, this group abruptly stopped commuting to physical workplaces and began performing their duties from home. Conversely, workers in essential services kept their commuting routines and continued to be exposed to workplace environments due to the nature of their work.

We expect a reduction in labor accidents for workers in non-essential sectors that adopted the remote work, particularly in physically demanding industries such as manufacturing and machinery, since their tasks cannot be performed remotely. There is likely to be also a decrease in accidents during commutes, as remote work eliminates the need for workers to travel to their workplaces. Additionally, remote work mitigates exposure to diseases transmitted by interpersonal contact, potentially lowering the incidence of infectious diseases such as influenza and COVID-19. On the other hand, prolonged time spent in shared living spaces, coupled with various restrictions caused by social distancing rules, may lead to conflicts over household responsibilities and childcare, potentially increasing stress levels and contributing to mental health issues such as burnout, which may also be classified as labor accidents.

By designating workers in non-essential sectors as the treated group, our identification strategy relies on whether labor accidents in treated and control groups would have followed similar trajectories post-March 2020 in the absence of the COVID-19 and the widespread adoption of remote work. While this assumption is untestable, we argue that it is likely to hold given the unexpected nature of the pandemic for firms and its arguably exogenous origins. Prior to March 2020, there were no relevant obstacles for firms to adopt remote work practices. However, pandemic-related restrictions accelerated the adoption of remote work, particularly for non-essential sectors that have to adapt their operation to comply with the federal regulation. Furthermore, the absence of differential pre-trends offers indirect evidence

supporting the validity of our findings. Under these assumptions, we use the following model to assess the effect of the COVID-19 pandemic on medical leaves:

$$y_{mgt} = \phi_m + \phi_{st} + \beta_1 * \text{COVID}_t + \beta_2 * \text{COVID}_t \times \text{Remote Work} + X_{mt} + \mu_{mgt} \qquad (1)$$

Where COVID_t is a dummy variable equal to one after the announcement of social distancing rules and the regulation of essential sectors by the Brazilian government in March, 2020 and Remote Work is a dummy equal to one for the group of firms that moved to the remote-work arrangement ; ϕ_m and ϕ_{st} are municipalities and state-specific time fixed effect, while the former capture any time-invariant characteristics of the municipalities, the latter absorbs all time-varying changes that occur at the state level, such as changes in the government spending in healthcare and infrastructure, which is usually benefit multiple municipalities; and X_{mt} is a vector of covariates, specifically I use the municipality's GDP per capita to account for differences in economic development across municipalities. Hence, the coefficient β_2 shows the effect of the COVID-19 on labor accidents for workers in non-essential services after controlling for location and time-fixed effects.

4 Results

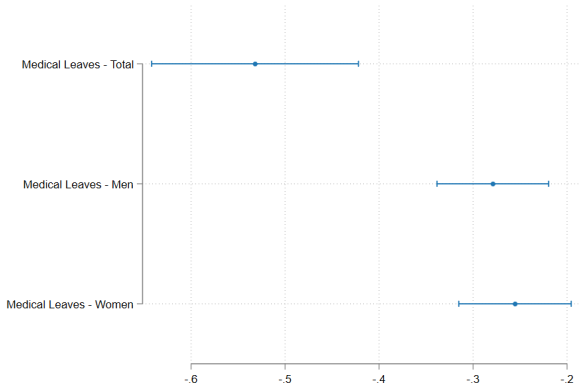
4.1 Main results

Figure 1 shows the estimates for the effect of the COVID-19 pandemic on medical leaves of workers who transitioned to remote work. The estimates for total medical leaves presented in the top row, indicate a significant decrease in medical leaves with no differences by gender. In the second row, we observe that the decrease in labor accidents is primarily driven by fewer bodily injuries, with no significant effect on medical leaves related to respiratory and infectious diseases. The notable exception to the overall decrease in labor accidents is the

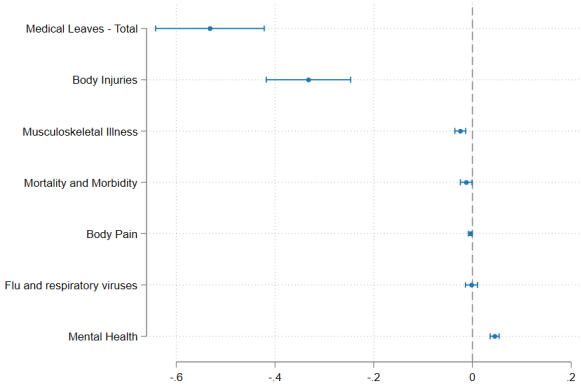
increase in medical leaves due to mental health issues. Finally, in the last row, we show a consistent reduction in labor accidents across all age groups, with the largest decrease observed among workers aged 25 to 35 years.

The main takeaway from our findings is the contrasting effects on physical and mental health medical leaves. The reduction in physical health-related medical leaves can be interpreted as a mechanical decrease in labor accidents since many workers in sectors requiring physical efforts and posing higher risks of labor accidents were sent home. These workers, unable to perform their usual activities at home, experienced an abrupt reduction in potential causes of labor accidents. This is particularly true for manufacturing and other industries where workers handle machinery or carry heavy weights. Regarding the increase in medical leaves related to mental health, we argue that the abrupt transition to remote work elevated stress levels in a context where workers had little time to adapt their homes and firms had not established protocols and proper support for executing job tasks from home. Additionally, another potential explanation for increased mental health issues is that employees transitioned to remote work while also having to collaborate in domestic duties, such as housekeeping and childcare.

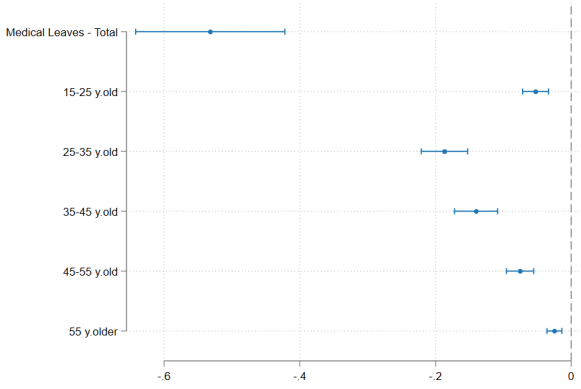
Table 2 shows the detailed estimates of our differences-in-differences model, including the means for the control group, which comprises workers from sectors that did not transition to remote work following the pandemic outbreak. The overall drop in medical leaves for workers who migrated to remote work is equivalent to an 10.6% reduction compared to the control group. Although the frequency of mental health-related medical leaves was relatively low, as detailed in Table 1, we find an impressive increase equivalent to 160% using the control group as a reference. Despite the large uncertainty caused by the pandemic, such as waiting for the development and availability of vaccines, which may also have affected stress levels, we argue that the abrupt transition to remote work amplified this effect. This is because our differences-in-differences results are derived from comparisons with workers who were also affected by the pandemic.



(a) Gender



(b) Cause



(c) Age

Figure 1: The Effect of COVID-19 Pandemic on Medical Leaves in Brazil

This figure shows the differences-in-differences estimator and 95% confidence intervals for the effect of the pandemic on medical leaves for workers in non-essential services, captured by the coefficient of the interaction COVID × Home Office. Panel A presents the overall results and breaks them down by gender, Panel B shows the effect by cause of medical leave, and Panel C by age group.

Table 2: The Effect of COVID-19 Pandemic on Medical Leaves in Brazil

	Treatment Effect	**Control Group Mean**	**Obs.**	**R-squared**
Dependent Variable	**Panel A: Gender**			
Total	-0.532***	4.997	323,148	0.947
	(0.056)			
Women	-0.255***	1.324	323,148	0.926
	(0.031)			
Men	-0.279***	3.671	323,148	0.95
	(0.030)			
	Panel B: Cause			
Mental Health	0.045***	0.028	323,148	0.758
	(0.005)			
Body Injuries	-0.332***	3.993	323,148	0.933
	(0.044)			
Musculoskeletal Illness	-0.025***	0.328	323,148	0.884
	(0.006)			
Mortality and Morbidity	-0.013**	0.268	323,148	0.879
	(0.006)			
Body Pain	-0.005**	0.054	323,148	0.735
	(0.002)			
Flu and Respiratory Viruses	-0.002	0.178	323,148	0.929
	(0.006)			
	Panel C: Age			
15-25 y.old	-0.053***	0.861	323,148	0.916
	(0.010)			
25-35 y.old	-0.187***	1.452	323,148	0.934
	(0.017)			
35-45 y.old	-0.140***	1.195	323,148	0.94
	(0.016)			
45-55 y.old	-0.075***	0.707	323,148	0.933
	(0.010)			
55 y.older	-0.025***	0.307	323,148	0.895
	(0.006)			

Note: This table shows the differences-in-differences estimator for the effect of the pandemic on medical leaves for workers in non-essential services, captured by the coefficient of the interaction COVID × Home Office. Panel A presents the overall results and breaks them down by gender, Panel B shows the effect by cause of medical leave, and Panel C by age group. Robust standard errors are shown in parentheses.
*p<0.1,**p<0.05,***p<0.01

4.2 Robustness

Parallel Trends. A potential threat to our identification strategy would be a growing or decreasing trend in labor accidents prior to the COVID-19 pandemic and the transition of non-essential sectors to the remote work. In this case, our estimates would capture a pre-trend of medical leaves rather than an exogenous shift in the workplace. To enhance the robustness of our findings, we employ an Event Study to assess the dynamic effects of the COVID-19 pandemic on medical leaves and test for the presence of a pre-trend in labor accidents. By including an indicator variable for the number of months before and after the COVID-19 outbreak (2020m3), we use the Event-Study specification presented in Sun and Abraham (2021). Figure 2 shows the results for this exercise for total medical leaves, mental health medical leaves, and for both outcomes split by gender. Overall the event-study shows no prior trend for these outcomes, which validates the parallel trends assumption of our differences-in-differences model.

While total medical leaves return to zero six months after the pandemic outbreak, mental health medical leaves keep positive levels for the one year period evaluated. We interpret the former result as a probably relaxing of social distancing rules, with some workers gradually return to workplace and firms implementing hybrid operations and health protocols as use of masks. On the other hand, the sustained increase in mental health medical leaves seem to be be associated with these new work arrangements, in line with previous evidence on the increased levels of stress of remote work driven by overwork and lack of boundaries between professional and personal tasks (Sandoval-Reyes et al., 2021; Song and Gao, 2020; Russell et al., 2009).

Alternative specification. Given that the number of labor accidents is count data with non-negative integer values, a Poisson regression model is often suggested as a more appropriate method to estimate the causal effect of the COVID-19 pandemic on medical leaves. To address the relatively low incidence of labor accidents for some municipalities and sectors in Brazil, we run a Poisson regression as a robustness test. The results of

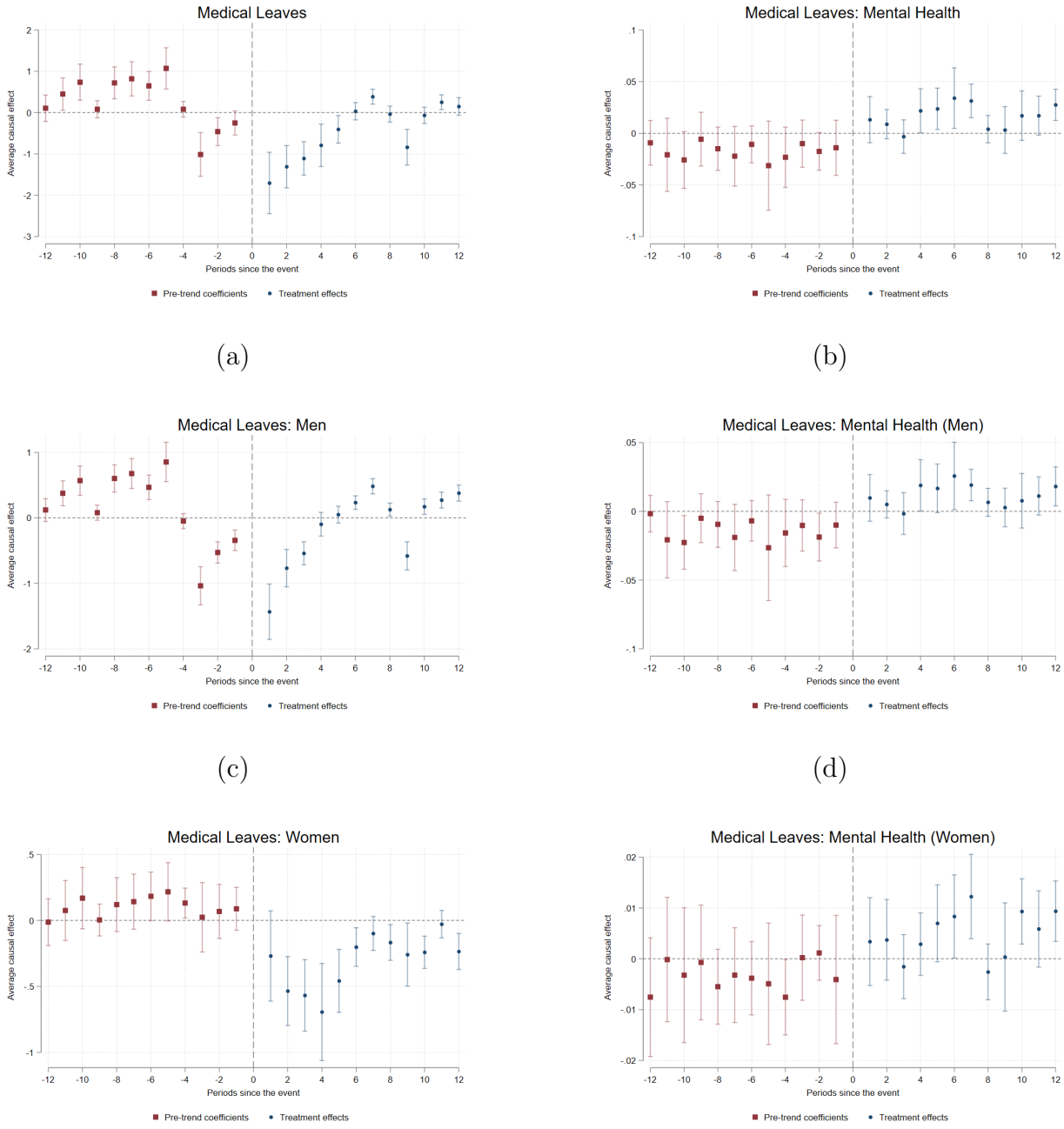


Figure 2: Robustness - Event-study

Note: This figure shows the event-study for the effect of the COVID-19 pandemic on medical leaves using the specification proposed by Sun and Abraham (2021). The outcome variable in the left column are total medical leaves, while the right columns shows mental health medical leaves, both split by gender. The bars represent 95 percent confidence intervals. Standard errors are clustered at the municipality level.

this exercise are presented in Table 3. The results are qualitatively similar to our baseline differences-in-differences, confirming the robustness of our findings.

Table 3: The Effect of COVID-19 Pandemic on Medical Leaves in Brazil - Poisson Estimates

	Treatment Effect	**Mean**	**Observations**
Dependent Variable	**Panel A: Gender**		
Total	-0.080***	4.997	316,050
	(0.010)		
Women	-0.171***	1.324	228,690
	(0.013)		
Men	0.010	3.671	302,022
	(0.010)		
	Panel B: Cause		
Mental Health	0.612***	0.028	50,820
	(0.062)		
Body Injuries	0.070***	3.993	298,200
	(0.007)		
Infectious Diseases	0.355	0.003	7,134
	(0.496)		
Flu and Respiratory Viruses	-0.051***	0.178	130,872
	(0.015)		
	Panel C: Age		
15-25 y.old	-0.029**	0.861	224,994
	(0.012)		
25-35 y.old	-0.093***	1.452	252,546
	(0.012)		
35-45 y.old	-0.106***	1.195	246,498
	(0.013)		
45-55 y.old	-0.084***	0.707	216,090
	(0.015)		
55 y.older	0.032	0.307	174,468
	(0.021)		

Note: This table shows the Poisson estimates for the effect of the pandemic on medical leaves for workers in non-essential services, captured by the coefficient of the interaction COVID × Non-Essential. Panel A presents the overall results and breaks them down by gender, Panel B shows the effect by cause of medical leave, and Panel C by age group. Robust standard errors are shown in parentheses.
*p<0.1,**p<0.05,***p<0.01

4.3 Mechanisms

We argue and demonstrate in our baseline estimates that the abrupt transition to remote work affected mental health by increasing stress in a context of social distancing where multiple family members stayed at home. Additionally, with schools closed, men and women arguably had to participate more intensively in childcare and housekeeping. Last, the increase in mental health leaves is not directly related to a negative income shock, as our data

predominantly includes employees who retained their jobs during the pandemic.

To shed more light on the drivers of the increased mental health issues, we focus on financial sector firms (investment and commercial banking, brokerages, insurance companies, etc.), which previously exhibited higher levels of stress and anxiety[9]. The COVID-19 outbreak exacerbated stress and anxiety, and professionals already experiencing high levels of overwork and job pressure were likely the most affected by social distancing norms and legal restrictions on mobility.

To explore the heterogeneous effect of the transition to remote work, we restrict our sample to the non-essential sectors and further split it between financial firms and other companies. We employ the same differences-in-differences regression described in Equation 1, considering financial sector firms as the *treated group*. Figure 3 and Table 4 present the results and detailed estimates of this analysis[10]. Our findings indicate a significant increase in medical leaves for workers in the financial sector, especially among men aged 25 to 35. Unlike the general trend where we observed a decrease in total medical leaves, particularly physical injuries, the financial sector experienced a significant increase in medical leaves across various health issues, not just mental health.

These results highlight a distinct and more severe impact of the transition to remote work on employees in high-stress industries. Therefore, our findings suggest that workers in high-pressure environments faced compounded stressors during the pandemic, exacerbating existing job pressures and possibly intensifying the effects of remote work. The rise in medical leaves among men aged 25 to 35 underscores the particular vulnerability of younger male employees in these sectors, who might be balancing high job demands with additional family responsibilities at home.

These findings contrast sharply with the overall results. This divergence suggests that industry-specific factors play a crucial role in determining the health impacts of remote work.

[9]Surveys and descriptive studies in Brazil have documented these trends. (link)

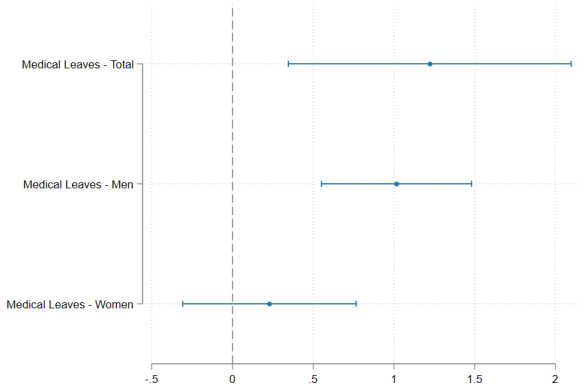
[10]We also perform a event study as a robustness check. The estimates presented in Figure 5 are less precise since we reduced substantially the sample size.

While remote work can reduce physical risks in industries with significant manual labor, it can exacerbate mental and general health issues in high-stress, cognitively demanding sectors. These insights highlight the need for tailored interventions and support systems that address the unique challenges faced by workers in different industries, particularly those in high-stress environments.

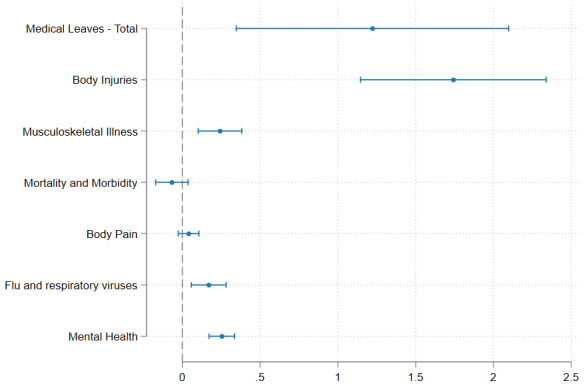
Table 4: The Effect of COVID-19 Pandemic on Medical Leaves in Brazil (Financial Sector)

	Treatment Effect	**Control Group Mean**	**Obs.**	**R-squared**
Dependent Variable	**Panel A: Gender**			
Total	1.222***	1.421	34,503	0.930
	(0.447)			
Women	0.229	0.812	34,503	0.916
	(0.274)			
Men	1.016***	0.608	34,503	0.927
	(0.237)			
	Panel B: Cause			
Mental Health	0.254***	0.033	34,503	0.759
	(0.042)			
Body Injuries	1.742***	0.899	34,503	0.925
	(0.305)			
Musculoskeletal Illness	0.242***	0.092	34,503	0.851
	(0.072)			
Mortality and Morbidity	-0.067	0.124	34,503	0.858
	(0.053)			
Body Pain	0.040	0.016	34,503	0.564
	(0.034)			
Flu and Respiratory Viruses	0.170***	0.217	34,503	0.933
	(0.057)			
	Panel C: Age			
15-25 y.old	0.108	0.224	323,148	0.884
	(0.119)			
25-35 y.old	0.532***	0.412	323,148	0.910
	(0.204)			
35-45 y.old	0.230	0.371	323,148	0.921
	(0.156)			
45-55 y.old	0.105	0.199	323,148	0.909
	(0.076)			
55 y.older	0.062	0.079	323,148	0.839
	(0.044)			

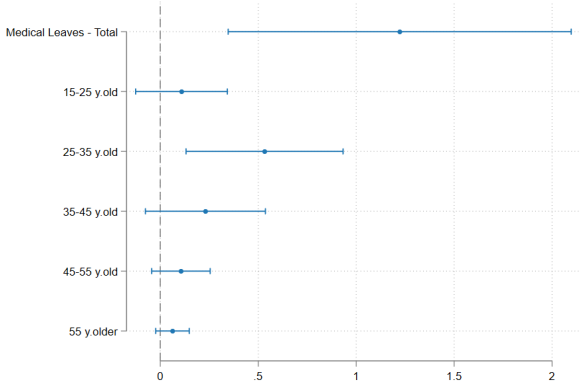
Note: This table shows the differences-in-differences estimator for the effect of the pandemic on medical leaves for workers in non-essential services, captured by the coefficient of the interaction COVID × Home Office. Panel A presents the overall results and breaks them down by gender, Panel B shows the effect by cause of medical leave, and Panel C by age group. Robust standard errors are shown in parentheses.
*p<0.1,**p<0.05,***p<0.01



(a) Gender



(b) Cause



(c) Age

Figure 3: The Effect of COVID-19 Pandemic on Medical Leaves in Brazil (Financial Sector)

This figure shows the differences-in-differences estimator and 95% confidence intervals for the effect of the pandemic on medical leaves for workers in non-essential services, captured by the coefficient of the interaction COVID × Home Office. Panel A presents the overall results and breaks them down by gender, Panel B shows the effect by cause of medical leave, and Panel C by age group.

5 Discussion

The contrasting effects on physical and mental health due to remote work have important policy implications. First, while the reduction in labor accidents is a positive outcome, the increase in mental health issues is a huge concern. Policymakers and employers must prioritize mental health support in remote work arrangements. This could include providing access to mental health services and promoting work-life balance.

Second, employers should establish clear protocols and provide adequate resources to support employees in their transition to remote work. This includes ensuring that workers have the necessary tools and environment to perform their tasks efficiently from home, thereby reducing stress and preventing burnout.

Finally, the sustained increase in mental health-related medical leaves highlights the need for long-term strategies to support mental health beyond the immediate pandemic response. Policymakers should invest in mental health infrastructure and create awareness campaigns to destigmatize mental health issues and encourage individuals to seek help.

6 Conclusion

The COVID-19 pandemic reshaped the way we work, with a large adoption of remote work. Our findings reveal a significant decrease in labor accidents, primarily due to fewer bodily injuries, as workers were no longer exposed to the physical hazards of their usual work environments. However, this positive outcome contrasts with a substantial increase in medical leaves related to mental health issues, particularly among men and high-stress environments. Our paper shed light on the complexity of the remote work model. While it can reduce physical health risks, it also introduces significant mental health challenges.

Furthermore, our study highlights the need for comprehensive remote work policies that address both physical and mental health. Policymakers and employers must prioritize mental health support, provide access to mental health services, and promote work-life balance.

Tailored support programs for different demographics, especially those most affected by the shift to remote work, are essential.

Finally, a balanced approach that considers both physical and mental health is crucial for fostering a healthy and productive workforce in the post-pandemic era. By addressing the mental health challenges associated with remote work, we can create a more supportive and sustainable work environment for all.

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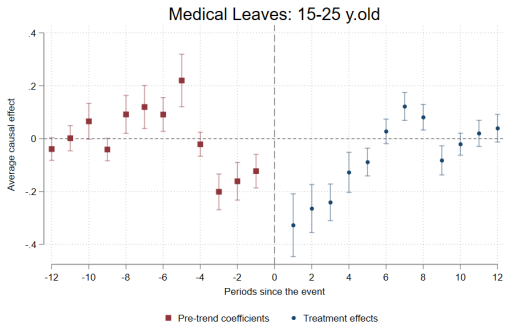
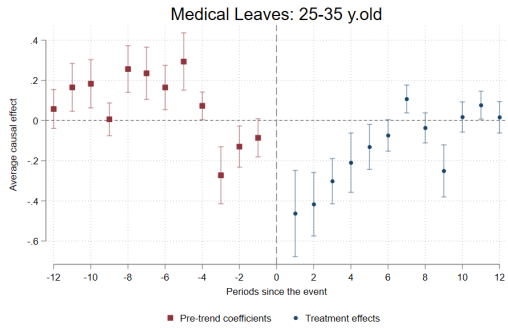
8 Appendix

8.1 Figures and Tables



(a) 15 to 25 years old



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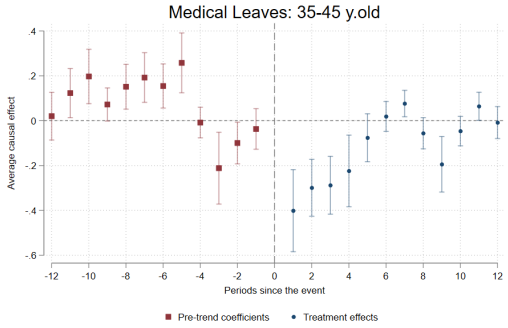
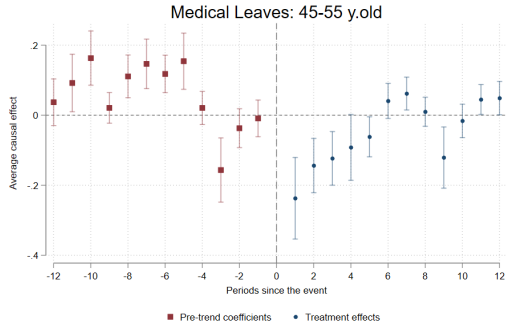


(c) 35 to 45 years old



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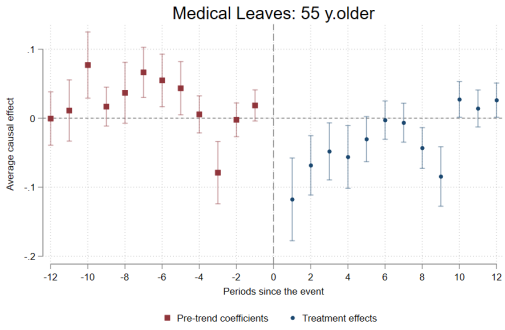
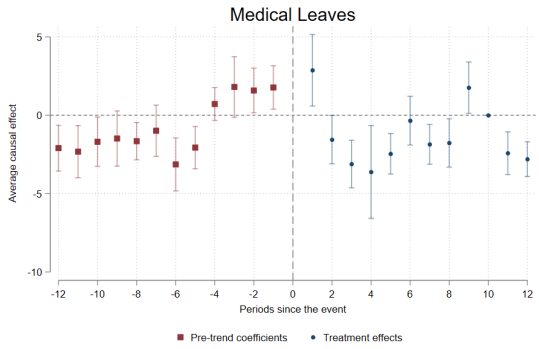


(e) 55 years or older

Figure 4: Robustness - Event-study by Age Group

Note: This figure shows the event-study for the effect of the COVID-19 pandemic on medical leaves using the specification proposed by Sun and Abraham (2021). The bars represent 95 percent confidence intervals. Standard errors are clustered at the municipality level.



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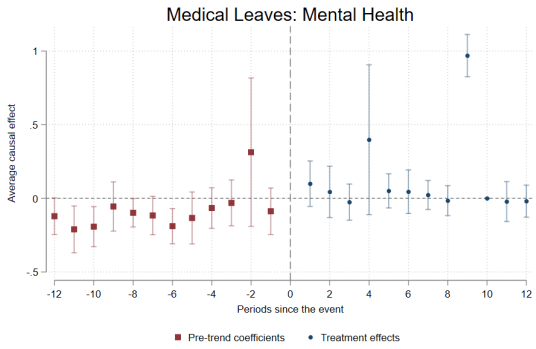

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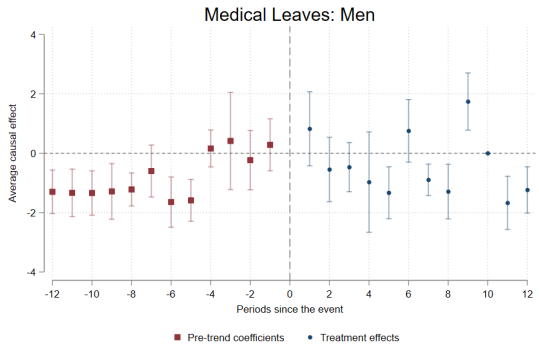

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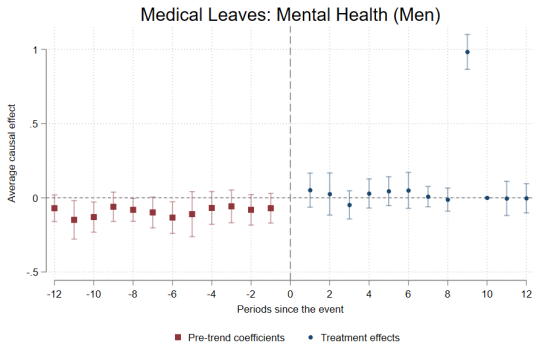

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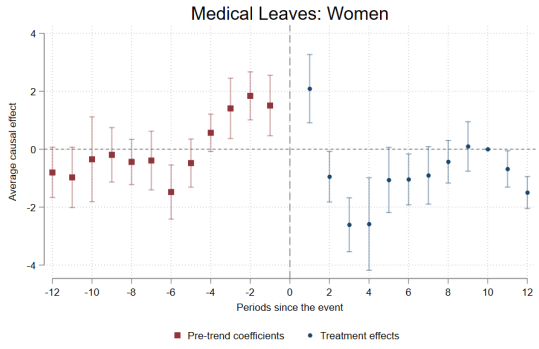

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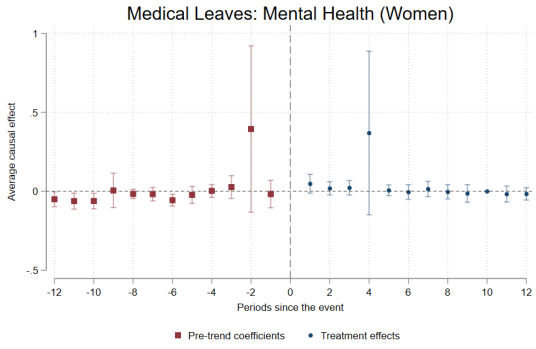

(f)

Figure 5: Robustness - Event-study (Financial Sector)

Note: This figure shows the event-study for the effect of the COVID-19 pandemic on medical leaves using the specification proposed by Sun and Abraham (2021). The outcome variable in the left column are total medical leaves, while the right columns shows mental health medical leaves, both split by gender. The bars represent 95 percent confidence intervals. Standard errors are clustered at the municipality level.