Public Policies and Femicides during the COVID-19 Pandemic: Evidence from São Paulo, Brazil

Abstract

With the outbreak of the COVID-19 pandemic in early 2020, concerns arose that stay-at-home policies could exacerbate Violence Against Women (VAW). Evidence shows an increase in calls to domestic violence helplines in several countries. However, limited economic studies have investigated the pandemic's effects on femicides, the most extreme form of VAW. This paper examines the effects of social isolation measures and emergency aid policies implemented during the COVID-19 outbreak on femicides in São Paulo, Brazil. Using daily femicide data from 2016 to 2020, a social isolation index, and monthly employment and emergency cash transfer data, we estimate fixed-effects models. Our findings reveal that the probability of femicide more than doubled (0.32 p.p.) during periods of pronounced isolation (March-April 2020). The impact was more significant in poorer municipalities, where male job losses drove this increase. However, the provision of emergency aid in poorer areas, which covered 29.8% of the population in these areas, mitigated this harmful effect, reducing it by more than twice the magnitude of the employment shock. These results underline the interplay between economic conditions, social policies, and gender-based violence during crises.

JEL Codes: J12, I18.

Keywords: violence against women, femicide, COVID-19 pandemic, social isolation.

1 Introduction

The COVID-19 pandemic prompted a worldwide concern about its effects on violence against women (VAW). Violence against women (VAW) can be defined as any act of gender-based violence, that is, any act directed against a woman because she is a woman or that affects women disproportionately. VAW encompasses violence occurring within the general society or in the family, so it can be expressed in different forms: domestic violence, femicide, sexual violence, human trafficking, female genital mutilation, and online or digital violence (UN Women, 2021). Multiple commentators reported that VAW intensified during the COVID-19 pandemic, giving rise to a phenomenon that became known as a "shadow pandemic"(UN Women, 2020). Consequently, many academic papers have attempted to assess the connection between the pandemic and VAW (Peterman and O'Donnell, 2020). Yet little is known about the effect of the pandemic on femicides, the most extreme form of VAW, which is generally defined as the intentional murder of women because they are women (World Health Organization 2012). Femicide also has a strong and prolonged impact on women's families. Surviving children of women killed by their intimate partners experience lasting adverse effects as they lose one parent to murder, the other to prison, and often have to leave their parents' home and adapt to a new living environment (World Health Organization, 2012).

Despite the relevance of studying femicides, only a few economic studies have investigated the effects of COVID-19 on femicides. Asik and Nas Ozen (2021) found that the probability of a woman being killed by her partner in Turkey decreased by 57 percentage points during the period of the strictest measures of social isolation due to the difficulty of ex-partners in reaching the victims. Hoehn-Velasco et al. (2021) argue that femicides in Mexico did not show a U-shaped trend like other crimes (lapses in alimony, sexual offences, domestic violence) and remained relatively constant during the pandemic. Femicides only declined in states where male employment losses were higher, by an estimated 24 percentage points. Lewis et al. (2024) find no association between the number of femicides and social distancing measures during the pandemic in the United States. Cocco et al. (2024) conduct time series analysis of femicide trends in Italy between 2013 and 2022, and find that confinement measures did not change the stability and seasonality of the trends. There was, however, a decrease in femicides committed by former partners but an offsetting increase in femicides committed by cohabiting partners. Hacin and Gozard (2024) explore the seasonal distribution of femicides for Croatia, Hungary, Montenegro, North Macedonia, and Slovenia and show no specific pattern of femicides that could relate to stay-at-home policies. However, the latter three studies do not provide identification strategies that allow to retrieve potential causal effect between femicides and social policy measures. Furthermore, although Hoehn-Velasco et al. (2021) investigated the unemployment mechanism for variations in femicide during the pandemic, none of these studies could explore another potentially relevant policy response, namely the implementation of financial aid interventions to relieve household financial tensions during the pandemic (e.g., cash transfers) Roman et al. (2023) used a differences-in-differences strategy to estimate the impact of the Covid-19 quarantine policies in Brazil, and found that domestic violence calls increased by 11.8 % in the first quarter of the quarantine, while health reports reduced by 12.6 % a quarter later. However, this study did not report impacts in terms of femicides.

This paper aims to study the effects of different policies enacted during the COVID-19 outbreak on femicide in the state of São Paulo, Brazil. One of those policies is stay-at-home orders. The fear of the virus made policymakers recommend and implement social isolation mandates. In São Paulo, their peak was in March and the beginning of April 2020, but this decreased gradually in the following months, due to the increase in formal unemployment and consequent loss of income. In response to economic distress, the government introduced emergency aid provided to the most vulnerable families.

For our study, we gathered daily femicide data from São Paulo state's police reports between 2016 and 2020, along with daily data on a social isolation index in 2020 - measuring the percentage of mobile devices in a given municipality that remained within a short distance from the user's residence. Using these data, we estimate fixed effects models that compare femicide data for the period of higher social distancing during the pandemic (March-April 2020) to the corresponding periods in previous years (2016 to 2019), as well as to later and earlier periods of 2020.

There are several potential mechanisms that may have influenced the occurrence of VAW episodes, and in particular femicides, during the pandemic. These mechanisms are discussed in

Section 2. In this paper, we focus on examining the role of economic channels, specifically the role of job losses in male-dominated industries. To quantify job losses, we adopt a shift-share approach to capture the labor shock experienced by various municipalities. We also construct a measure of the intensity of the financial aid provided by the government to understand how this policy might have acted during the social isolation period.

Our main results indicate that the probability of femicide more than doubled during the more pronounced isolation period. The deleterious impact of social distancing on the probability of femicide was predominantly observed in economically disadvantaged municipalities, and was particularly linked to male job losses. This underscores the intricate connection between economic struggles and VAW. Encouragingly, we find evidence that emergency financial aid provided by the federal government played a role in mitigating the adverse impact on femicide probability during the pandemic, showcasing the potential of effective policy measures in times of crisis. We can interpret this finding as being supportive of a causal role of economic distress for the increased risk of femicide during the pandemic. However, we acknowledge that this effect is not consistently statistically significant across all robustness checks[1]. Nonetheless, the magnitude and direction of the estimated effects remain similar across these exercises, suggesting a consistent underlying pattern despite differences in statistical precision.

We contribute to a growing literature on the impacts of stay-at-home orders on VAW during the COVID-19 pandemic (Bullinger et al. (2021a); Leslie and Wilson (2020); Miller et al. (2020); Piquero et al. (2020) for developed countries, Agüero (2021); Asik and Nas Ozen (2021); Gibbons et al. (2021); Hoehn-Velasco et al. (2021); Perez-Vincent and Carreras (2020); Poblete-Cazenave (2020); Silverio-Murillo et al. (2020) for low and middle-income countries). We add particularly to a small and mixed literature on lethal violence against women. To our knowledge, our paper is the first to analyze the combined effects of other policies enacted during the COVID-19 outbreak. We are also one of the few attempts to analyze femicides in Brazil.

We also contribute to the emerging literature that examines the mechanisms behind the relation-

[1]In particular, results using femicide rates as the outcome, alternative control periods (such as 2018–2019), or changes in the fixed effects structure and clustering level (e.g., municipality and month-year fixed effects with clustering at the municipality level) do not always yield statistically significant estimates.

ship between VAW and social isolation measures (Ashby (2020); Bullinger et al. (2021a); Gibbons et al. (2021); Leslie and Wilson (2020); Miller et al. (2020); Mohler et al. (2020); Piquero et al. (2020)). Most of the literature that investigates such mechanisms focuses on developed countries, except for Gibbons et al. (2021) for Argentina and Bhalotra et al. (2021a) for Chile. Our shift-share variable indicates that the most negative impact of employment losses took place in poor municipalities in Brazil.

The remainder of this paper is divided into four sections. Section 2 briefly describes the evolution of the legal framework related to femicides in Brazil, how important the issue of femicides has become in Brazil and São Paulo state, the related public policies implemented during the pandemic period, and the existing literature on the mechanisms behind the relationship between VAW and COVID-19. Section 3 presents our empirical strategy and data. Section 4 presents our main results. Section 4.3 brings an alternative specification and its results. Section 5 concludes.

2 Background

The first federal criminal law against domestic violence in Brazil was passed in 2006. Known as 'Maria da Penha Law" (Federal Law No. 11,340), it aimed to increase rigour in treating VAW crimes, by stipulating harsher punishments to aggressors, improved protection for victims, and accelerated procedures for handling VAW cases. Due to the persisting high number of gender-related violent deaths in Brazil, in 2015 the Brazilian Penal Code established femicide (as per its definition in the Introduction) as a new category of "qualified homicide"(Federal Law No. 13,104, also known as Femicide Law). While the basic penalty for murder is imprisonment from six to twenty years, the new law imposed harder penalties for femicide (imprisonment from twelve to thirty years).[2]

Despite this change, homicides against women and femicides still represent a significant social and public health burden in Brazil. Out of 83 countries, Brazil ranks fifth in homicide rates against women. The rate of 4.8 homicides per 100,000 women is only below those observed in El Salvador, Colombia, Guatemala, and Russia (Waiselfisz (2015)). A significant share of femicides in Brazil

[2]See https://www.unwomen.org/en/news/stories/2015/3/in-brazil-new-law-on-femicide-to-offer-greater-protection.

(about 25%) occurs within the victim's home, and 50% of the recorded cases of VAW (for women aged between 18 and 59 years) are committed by their current or former intimate partners (Waiselfisz (2015)).

Our study focuses on the Brazilian state of São Paulo, for important reasons. First, Brazil had 1,229, 1,330, and 1,350 femicides recorded in 2018, 2019, and 2020 (respectively). São Paulo was responsible for between 11-13% of these cases, registering 168 femicides in 2020, a figure that is relatively high also by international standards. Second, São Paulo comprises more than 20% of the total Brazilian population. Third, since 2000, São Paulo has had a system allowing the filing of police reports over the internet, which enables access to systematic data for our analysis, and as of April 3, 2020, the reporting of domestic violence cases was embedded into the system. Cases of femicides in Brazil (and of VAW more generally) are recorded in the police system and come from reports from different official sources, including, among others, the national helpline, police stations, and social assistance units (Bastos et al., 2020). The existence of an online, wide-encompassing and less fragmented VAW recording system in São Paulo (along with the uninterrupted operation of the agencies collecting information on VAW cases during the pandemic; see below) should have favoured the proper recording of femicide cases in the state during the pandemic, thus mitigating the possibility of under-reporting in the femicide data that we use for our study (Bastos et al., 2020).

The concern with the perceived intensification of VAW during COVID-19 led many countries to implement diverse types of policies to address this challenge. Broadly, these policies involved strengthening response systems for VAW, ensuring the continued resourcing of essential services for VAW victims, and adopting technology-based solutions to expand awareness, access to information and violence reporting (Bastos et al., 2020). In Brazil, in addition to the emergency aid provided to the most vulnerable families (which we examine in detail in the next sections), between March and July 2020, the federal government increased awareness campaign efforts and passed legislation designating VAW services as essential, hence ensuring that they remained open during the pandemic. It also mandated that all cases reported through the national VAW helpline should be communicated to authorities within 48 hours, and allowed urgent protective measures to be requested through online channels.

Additional protective policies were in some instances adopted at the state and city levels in Brazil, although invariably on a piecemeal basis and with limited geographic scope (e.g. only one or a few cities (Bastos et al. (2020); UN Women (2022))). This was also the case in São Paulo state where, for example, São Paulo capital city introduced a support package including housing and financial support for VAW victims or otherwise vulnerable women (launched in June 2020); trained additional female attendants to provide support through the city's hotline and health agents to visit vulnerable families; and launched renewed VAW awareness campaigns. A new police station support unit for VAW victims was introduced in just four other cities of the state of São Paulo (São Caetano do Sul, Itanhaém, Itaquaquecetuba e Arujá).

Policies such as those outlined above were often implemented by countries as emergency measures during the pandemic, amid unclear evidence about their intended and unintended impacts. In Brazil, this adds to scant rigorous evidence about the specific drivers of high femicide rates. In particular, during the COVID-19 pandemic period, there are several mechanisms through which the pandemic could have affected domestic violence and femicides, including social controls and isolation, emotional cues and intra-household bargaining power.

Gelles (1983) and Gelles and Strauss (1979) applied the theory of social control developed in sociology to understand the occurrence of domestic violence. A key conclusion is that societal controls and protection can reduce the incidence of domestic violence. Therefore, formal policy interventions and informal societal disapproval of friends and family increase the costs of violent behaviour for men. As pointed out by Gelles (1983), domestic violence increases if friends and relatives outside the family cannot act as agents of social control. Mandatory confinement measures may lead to a decrease in societal controls and protection, since women at risk of domestic violence are less able to seek help from the police, family, friends, coworkers, or protection services. These theoretical predictions are confirmed by empirical studies. Usher et al. (2020) showed that lockdowns and stay-at-home orders ended up reducing women's opportunities to avoid their violent partners. Beland et al. (2021) revealed a positive correlation between women's inability to maintain social interactions and domestic violence. Yet, Roman et al. (2023) show that protective services for women may reduce the risk of assaults during quarantine.

A related mechanism through which the COVID-19 pandemic could also have affected domestic violence is the increase in mental health disorders resulting from health and economic threats (income losses, unemployment), compounded by social distancing measures. Card and Dahl (2011) suggest a positive link between emotional cues and domestic violence. One study relating economic stress and VAW is Béland et al. (2021), which examines Canadians' concerns regarding the impact of COVID-19 on domestic violence. It finds evidence that the inability to meet financial obligations and circumstances about maintaining social ties are significantly related to family stress and domestic violence concerns. However, the study finds no evidence that changes in work arrangements are related to family stress and violence at home. Similarly, Gibbons et al. (2021) find no relationship between falls in family income or in partner's income and partner violence.

A related potential mechanism arises from the fact that confinement of partners at home can impact the household in various ways. On the one hand, it increases the time that men and women spend together, increasing the potential for conflict. On the other hand, it reduces women's contact with ex-partners or partners who do not live in the same household. Dugan et al. (1999) discuss this pathway to domestic violence through the theory of exposure reduction. They find that Intimate Partner Violence (IPV) in the US declined from 1976 to 1992 due to a decrease in the number of marriages, an increase in the economic status of women, and the possibility of getting a divorce. Bhalotra et al. (2021b) show that women's exposure time to violent perpetrators inside the household is a potential mechanism for increased domestic violence when it is attached to relaxing income constraints.

The pandemic and the stay-at-home measures also affected the employment and income conditions of households. The economic effects of isolation measures may affect domestic violence as well, and the direction of these effects is ambiguous a priori. Household bargaining models predict that male job loss should reduce domestic violence and that female job loss should induce the opposite effect (Anderberg et al. 2016). By contrast, male backlash theory argues that a higher male unemployment rate induces an increase in domestic violence as an attempt to reaffirm control over women (Macmillan and Gartner 1999, Bloch and Rao 2002, Anderberg and Rainer 2011, Bhalotra et al.

2022). Testing related mechanisms, Bhalotra et al. (2021a) point out that job loss and exposure were important mechanisms in Chile. Male job loss led to a large increase in helpline calls, while female job loss led to a decrease in crime reporting. Income supporting programmes mitigated the effects of the income shock (job loss). Unemployment, however, affected more men than women in the Chilean case.[3] Bhalotra et al. (2021b) analyse Brazilian data and find that job loss leads to a large and pervasive increase in domestic violence. Another significant result indicates that while unemployment insurance benefits are being paid, eligible men are no less likely to commit domestic violence. On the other hand, they are more likely to perpetrate it when benefits expire. In principle, these disproportional impacts of household economic distress on the risk of women suffering violence could be exacerbated by other factors. For example, whilst the presence of a second job in the household seemed to have reduced the risk of VAW in Indonesia during COVID-19, food insecurity and the number of household members (including children) have been linked with increased VAW risk in the same context, possibly due to heightened economic stress arising from the increased competition for household resources (Halim et al., 2020).

There is also a growing literature investigating the relationship between conditional cash transfers (CTs) and VAW. Baranov et al. (2021) discuss theories from different disciplines, such as economics and sociology, about the predicted effects of CTs in low and middle-income countries, concluding that the programs could either increase, decrease or have an ambiguous result on VAW. For example, standard household bargaining models in economics predict that access to economic resources improves women's bargaining power within the household and makes the possibility of leaving a violent partner more credible, hence reducing violence. Yet an increase in VAW could ensue if husbands use violence to gain control over their wives' income or behaviour.

The presence of all the channels discussed above may have been strengthened during the pandemic, due to the longer duration of a high-stress situation. Empirical investigations are essential for understanding which channels are particularly influential for patterns of VAW in this context. While we acknowledge the relevance of all the potential drivers of VAW discussed above, our em-

[3] Chile seems to be an exception as an important feature of the recession that followed the adoption of stay-at-home measures was that it disproportionately impacted women. The NY Times even named it a "Shecession" (https://www.nytimes.com/2020/05/09/us/unemployment-coronavirus-women.html).

pirical study focuses on the economic stress channel, which with our data we are able to examine specifically through the male employment and income pathways, as explained next.

3 Methods

3.1 Data

We use individual microdata with daily frequency from January 2016 to December 2020 about femicides in the State of São Paulo.[4] We restrict the sample to the period from 2016 to 2020 to ensure consistency in the classification and reporting of femicides. This timeframe begins shortly after the implementation of the Femicide Law (Law 13.104/15), which came into effect in March 2015, introducing femicide as a specific category of homicide with aggravating circumstances related to domestic or family violence, contempt, or discrimination against women. We have detailed information about each crime, such as the municipality of occurrence, neighbourhood, and hour of occurrence, and the victim's characteristics, such as sex and age. We construct a balanced panel of municipalities with aggregated data per week. It is important to note that our data is inflated with zeros when we do not observe any femicide in the municipality on a given week (99.6%).[5]

Appendix Table A2 provides descriptive statistics of femicides for the period of study for all sample (Panel A), municipalities below the poverty index for the state (Panel B), and locations above this same index (Panel C). Columns (1) and (2) present the statistics for weeks 1 to 10 and 11 to 15 of 2020, respectively. Columns (3) and (4) show the corresponding statistics for the same weeks during the 2016–2019 period. Lastly, columns (5) and (6) present the p-values from a mean difference test comparing the two periods: 2020 versus 2016–2019.

The data show an increase in femicides – measured by total femicides, femicide rate, or the probability of femicides – between weeks 1-10 and weeks 11-15 of 2020. A similar pattern is observed for the 2016–2019 period, except for the femicide rate. Columns (5) and (6) show that the total number of femicides and the probability of femicides are higher in 2020 compared to 2016–2019,

[4] São Paulo state has 645 municipalities. Data are available at http://www.ssp.sp.gov.br/transparenciassp/. - Femicides. Data collected on 2020/06/11.

[5] Appendix Table A1 shows the number of municipalities with at least one femicide in a year.

with statistically significant differences in both weeks 1–10 and 11–15.[6]

Our first figures show the monthly evolution of total femicides, 1, total femicides which happened at home 2 or in the street 3, for two distinct periods, 2020 and the average of 2016-2019. The total number of femicides at home in the state of São Paulo grew right at the beginning of the pandemic (end of March and beginning of April 2020) compared to the average observed in previous years. As expected, femicides occurring in the streets present an opposite trend compared to femicides occurring at home, after the implementation of the lockdown (from month 3). Therefore, the increase in the total number of femicides appears to be dominated by the trend in femicides at home.

Given the high frequency of zero femicide observations across municipalities and weeks, we model the probability of observing at least one femicide (i.e., a binary outcome) instead of femicide rates. This choice improves model tractability in the presence of sparse data and aligns with recent literature analyzing femicides, such as Asik and Nas Ozen (2021).

We obtained a measure of social distancing from InLoco, a private company that collects geocoded data from mobile devices. During the pandemic, InLoco collaborated with researchers to create an index of social distancing. The covered period ranges from February 2020 to December 2020 for the whole state of São Paulo. The InLoco social distance index measures the percentage of devices in a given municipality that remained within a radius of 450 meters from the location identified as a residence - determined by frequent nightly checks. The index is calculated daily and ranges from zero to one (Ajzenman et al., 2021), where one corresponds to the situation when all individuals in the municipality stay close to their homes during the whole day. We use this social distancing index to create the variable that identifies the pandemic period in the state.

Figure 4 depicts the evolution of the social distancing index throughout the year 2020. We observe a sharp increase in social distancing beginning in the 11th week of 2020. In the following weeks, social distancing increases and reaches its maximum level in early April (approximately 0.53) in the 15th week. From the second week of April, the social distancing index declines consistently.

On March 11 2020, i.e. the beginning of the 11th week of that year, the World Health Organi-

[6]Our results are mainly driven by femicides at home, as Appendix Table A9 shows.

zation (WHO) formally declared Covid-19 as a global pandemic. One week later, the government of the state of São Paulo implemented social distancing policies[7]. After an initial period of adherence to these policy measures, concerns about the harmful effects of the lockdown on the economy arose in the media, at a time that coincided with the start of the declining trend in social isolation observed in the figure. The basic period that we consider as of lockdown is from the 11th to the 15th week of 2020. However, we also consider five alternative periods, all starting at the 11th week, but ending at the 16th, 17th, 18th, 19th, and 53rd week (the last week of the year), to assess the relationship between social isolation and femicides. The treatment variable is, therefore, defined as the period between the blue line and the red lines in Figure 4, in the year 2020.

We also collect data on poverty from the "Atlas of Human Development in Brazil" platform[8]. Its poverty index is defined according to the *Bolsa Família* eligibility criteria, in which families in a situation of extreme poverty are those with a monthly income of up to R$70.00 per person[9] or US$39,76.[10] This index is available by municipality and was constructed by using information from the Population Census of 2010.[11] Based on this indicator, we create a dummy variable that takes the value of one if the municipality's poverty index is above the median for the state (1.08%), corresponding to extreme-poor municipalities, and zero otherwise (non extreme-poor municipalities). Therefore, all municipalities in yellow and green in figure 5 are classified as poor according to the criteria we have just described.

Figure 6 shows that poor municipalities had higher levels of social distancing than non-poor

[7]The State of São Paulo decree number 64,864, of March 16, 2020, establishes remote working for elderly public employees or those with a chronic disease, and decree No. 64,881, of March 22 2020, introduces a quarantine in the State of São Paulo. Essentially, it consists of a suspension of in-person service to the public in commercial establishments and service providers, especially in nightclubs, shopping centres, galleries and similar establishments, gyms and fitness centres, except for internal activities, local consumption in bars, restaurants, bakeries and supermarkets, without prejudice to delivery and drive-thru services. The exception was establishments with essential activities, for example, hospitals, supermarkets, pharmacies, etc. More details at https://www.saopaulo.sp.gov.br/coronavirus/quarentena/.

[8]This platform is the result of a partnership between the United Nations Development Programme (UNDP), the Institute for Applied Economic Research (IPEA), and the Joao Pinheiro Foundation (FJP). As detailed in http://www.atlasbrasil.org.br/acervo/atlas "Conceived with the purpose of presenting the Municipal Human Development Index (MHDI), the Atlas currently makes available, in addition to the index, more than 330 indicators that encompass topics such as health, education, income and labor, housing, social vulnerability, environment and political participation, for the 5,570 cities (...)".

[9]Value of 2010 August.

[10]We consider the average PTAX R$$ of 1.76 for 2010.

[11]More details found in Data source: http://www.atlasbrasil.org.br/consulta

municipalities[12]. This finding suggests that it is important to assess the heterogeneity of average impact estimates by considering municipal poverty as a relevant source of heterogeneity.

We collected microdata on recruitment and termination of employment from the General Register of the Employed and Unemployed (CAGED). We have monthly data for 2020.[13] We also collected data on annual employment from the Annual Social Information List (RAIS) for 2019 (i.e., before the COVID-19 pandemic). In both databases, we have information about the worker's gender and the sector in which they work (see Appendix Table A3 for the list of sectors).[14]

We aggregate the above data by month and use it to build a measure of employment shocks. This variable can be interpreted as an expected rate of employment loss, expressed as a fraction of the municipality's population. It can take either positive or negative values, where negative values indicate net employment destruction. Then, we use this shift-share measure to evaluate the municipalities where industries dominated by men have more considerable losses and define a dummy that takes the value of one if the municipality had employment destruction in industries dominated by men.[15]

More formally, we construct an exogenous indicator of employment loss based on a shift-share strategy, a well-established approach in applied economics for dealing with endogeneity in localized shocks. The shift-share method leverages variation in predetermined industrial structures across municipalities, combined with exogenous shocks to employment at the industry level, to generate a

[12]This difference is statistically significant at 1% level.

[13]Data before 2020 is also available, but the variables are not comparable across years due to a change in the collection methodology.

[14]CAGED and RAIS focus exclusively on formal employment. While informal employment constitutes a significant share of the Brazilian labor market, detailed and consistent data on informality at the municipal level is unavailable. As such, our findings predominantly reflect dynamics within the formal sector.

[15]We focus on male-dominated industries due to the potential link between economic downturns in these sectors and household stressors, as suggested in the literature. This focus aligns with our investigation of femicide rates, as disruptions in male income may influence domestic violence dynamics. Nonetheless, we acknowledge that female-dominated industries also experienced significant impacts during the pandemic. To ensure the robustness of our findings, we conducted additional analyses incorporating employment shocks in female-dominated industries. The results remain consistent, further supporting the validity of our conclusions. Tables detailing these robustness checks are available upon request.

plausibly exogenous measure of local economic shocks.[16] as follows:

$$\text{employment shock}^g_{it} = \sum_k s^g_{ki,2019} \cdot \Delta\ell_{-ikt} \tag{1}$$

where k stands for industry, i for municipality, g for gender and t is month. $\Delta\ell_{-ikt}$ is the (leave-one-out) change in employment by industry and month that we gathered directly from CAGED. $s^g_{ki,2019}$ is the share of individuals of gender g, working in industry k and municipality i in 2019, constructed following Card (2009).Specifically, we define the share as

$$s^g_{ki,2019} = \frac{N^g_{ki,2019}}{N_{k,2019}} \times \frac{1}{P_{i,2019}} \tag{2}$$

where N is the number of workers and P is the population.

Figure 7 shows the spatial distribution of the employment shock in the state of São Paulo. The most affected municipalities (those where we observe job losses) are highlighted in green (employment loss lower than 0.2%) and yellow (job losses of 0.2% or more).

Figure 8 also shows that impoverished municipalities had higher levels of employment shock than those that were not extremely poor, during the sharp increase in social distancing at the beginning of the pandemic.

A cash transfer, called "emergency financial aid", was offered by the Federal Government from April to December 2020 to help the most vulnerable population during the pandemic. The eligibility criteria for financial aid are to be part of the Individual Microentrepreneurs program (MEI program), taxpayers of the Brazilian public pension system, self-employed and informal workers who do not receive any other benefits from the Federal Government (except for Bolsa Família). All beneficiaries must be over 18 years old, have no formal employment, be from a family with a monthly per capita income (per person) of up to half the minimum wage (R$ 522.50 or US$ 101.34 in 2020), or with a total monthly family income of up to three salaries minimum (R$ 3,135 or US$ 608.05 in 2020), in addition to having no annual taxable income, in 2018, above R$ 28,559.70 or US$ 5,539.33.[17]

[16] The shift-share design has also been used in the treatment effects analysis, due to its relevance on exogeneity claims.

[17] We consider the average PTAX R$$ of 5.16 for 2020.

From April to September 2020, the monthly transfer ranged from R$ 600 (US$ 116.37, corresponding to approximately 57% of the minimum wage) to R$ 1200 (US$ 232.74). In the following months, the value was reduced to R$ 300 (US$ 58.19) or R$ 600 (US$ 116.37) Microdata on the emergency aid is available online on the website of the Transparency Portal and is made available by the Ministry of Citizenship. We have information about each beneficiary, such as the amount received and whether they receive benefits from other social programs, such as the Bolsa Família Program. We also collected data about the days of each month when the emergency aid was released to the population each month, using mainly government news and official announcements.

Figure 9 shows the spatial distribution of the share of beneficiaries of emergency financial aid in the state of São Paulo for April 2020. Figure 10 shows that poor municipalities, as expected, had higher proportions of emergency financial aid beneficiaries in their populations, than those that were not poor.

3.2 Method

Our empirical strategy relies on the variation in the timing of social distancing implementation and the difference between 2020 and the previous years. Since we are only considering the municipalities of the state of São Paulo, the timing of implementation and the period of increasing social distancing are the same; then identification comes essentially from the comparison between these periods in 2020 and the years 2016 to 2019.

Our dependent variable, $Femicide_{wyi}$, is a binary variable that equals one if a femicide occurred in the week w of year y and municipality i. We aggregate the daily data into weeks to reduce the zero-inflated problem of the data.[18]

We follow an empirical strategy similar to the one adopted by Asik and Nas Ozen (2021) and

[18] Approximately 99.6% in the weekly database against 99.9% in the daily data. To assess the robustness of our results given the high proportion of zeros in the dependent variable, we conducted additional analyses aggregating data at the microrregion level and by running a logit model. These alternative specifications yielded consistent results, reinforcing the reliability of our baseline model. The results of these robustness checks are available upon request.

estimate a linear model with multi-way fixed effects:

$$Femicide_{wyi} = \alpha + \beta D_{2020} \times SD_w + \phi_i + \gamma_t + \lambda_{it} + \varepsilon_{wyi} \tag{3}$$

where SD_w is a dummy for the period between the 11th and 15th week of 2016 to 2020, which are the weeks when social distancing is increasing, as seen in Figure 4 above. D_{2020} is a dummy indicating the year 2020. We also control for municipality (ϕ_i), time (γ_t) and municipality-time (λ_{it}, municipality-year and municipality-week) fixed effects. Specifically, γ_t includes both year and week-of-year fixed effects, which account for seasonality by capturing recurring patterns during the same weeks across different years and controlling for time trends that could affect femicide rates uniformly across municipalities. ε_{wyi} is the idiosyncratic error term. We cluster the standard errors at the municipality-year level.[19] The coefficient β captures the effect of heightened social distancing between weeks 11th and 15th of 2020 on the probability of femicide. Our treatment variable refers to the period of more stringent isolation in the state. As explained in the next section, we also examine social distancing between alternative periods to define our treatment variable.

It is important to clarify our decision to include municipality-year and municipality-week fixed effects. They enhance the robustness of our model by addressing omitted variable bias related to both time-invariant and time-varying factors within each municipality. The municipality-year fixed effects control for annual, location-specific shocks, such as economic trends, structural changes, or regional policy shifts, while the municipality-week fixed effects capture short-term variations such as seasonality or local events that may influence femicide rates in a given week.

The model with a binary outcome variable estimates the probability of occurrence of at least one femicide in municipality i, week of year w and year y. Thus, if there is an increase/decrease in femicide cases in a city in the same week that another femicide has already happened, the probability will not change. The change in probability occurs with cases in other cities/weeks, that is, with spatial and temporal variation.[20]

[19] We have assessed the influence of different specifications of fixed effects on our results, as well as clustering options. Results are available in Appendix Table A5 and show evidence that the results are not driven by a specific functional form of fixed effects.

[20] We have also run our same regressions using femicide rate per 100,000 inhabitants, instead of the probability of

4 Results

4.1 Main

Table 1 presents the estimated coefficients of β from Equation 3. It shows that social distancing increased the probability of femicides in 2020. All regressions include controls and fixed effects for the municipalities, time (week and year), and municipality time. The difference among columns is the period of increased social distancing considered. Column (1) shows the effects for the 11th to the 15th week of the 2020 year, and the following columns add a week to this period, with the last column including the rest of the year, or 11-53th week. The results indicate an increase in the probability of femicides, considering all alternative periods of social distancing, except in for the last, most extended period. In Column (1) of Table 1, our preferred specification, the point estimate indicates that social distancing increased the probability of femicides by 0.32 percentage points. This effect is sizeable considering the average probability pre-pandemic in the sample of 0.33%, which means that the probability of femicides almost doubled in the period of increased social distancing in the state.[21]

To further assess the robustness of our findings to potential omitted variable bias, we applied the bounding methodology proposed by Oster (2019). This approach estimates the extent to which unobservable factors would need to influence our results to fully explain the observed effect. The results of this analysis indicate that unobservables would need to be 4.70 times as important as observables to explain away our treatment effect entirely (i.e., reduce it to zero). This magnitude far exceeds the commonly accepted threshold of 1, a rule of thumb in the literature for evaluating the influence of unobservable factors. These findings reinforce the robustness of our results and suggest that omitted variable bias is unlikely to materially affect our conclusions (see Appendix Table A12).[22]

femicide. Results, available in Appendix Table A5, show evidence that the results are not driven by the way femicides are measured.

[21]We have assessed the influence of specific municipalities on our results by running regressions excluding one municipality at a time (leave-one-out procedure). The results show evidence that the results are not driven by a specific municipality of the sample. We have also assessed other comparison groups by running results using only 2019, 2018-2019, and 2017-2019 as control periods (see Appendix Tables A6, A7, A8). The magnitude of the results remain the same, but we lose significance once we reduce our sample of analysis. Tables are available upon request.

[22]We also estimated an event study specification including different sets of fixed effects (to improve the variation

In Table 2 we find no effects of social isolation on femicides in poor municipalities. Table 2 shows the same results as Table 1 but restricts the sample to the 50% of poorer municipalities of the state. Using this sample, we do not find variation in the probability of femicides due to the isolation from the COVID-19 pandemic. This result may seem counter-intuitive, yet we show some evidence below that the potential negative impact of the pandemic on the probability of femicides in poor municipalities may have been alleviated by public policies that focus on those municipalities.

4.2 Channels

We now describe an augmented model used to investigate possible mechanisms that may be driving the effects we find in the previous section. As we discussed in Section 2, the pandemic, specifically through the introduction of social distancing measures, may affect violence against women in many ways. We examine in this section to what extent changes in economic conditions can account for the observed risk of femicide. The idea is to evaluate how economic shocks potentially increase the effects we find. Equation 3 is augmented by adding an interaction of the pandemic variables ($D_{2020} \times SD_w$) with a measure of employment shock ($\mathbf{1}[Employmentshock < 0]$). The equation becomes:

$$\begin{aligned} Femicide_{wyi} = \alpha + \beta_1 D_{2020} \times SD_w + \beta_2 D_{2020} \times SD_w \times \mathbf{1}[Employmentshock < 0] + \\ + \phi_i + \gamma_t + \lambda_{it} + \varepsilon_{wyi} \end{aligned} \tag{4}$$

First, in Table 3 we investigate whether the observed increase in the probability of femicide found in Table 1 could be associated with the employment shock in male-dominated sectors. Columns (1) and (2) report our baseline results and the estimated coefficients for equation 4, respectively. The point estimates in column (2) suggest that municipalities more affected by male job losses experience a larger increase in the probability of femicides. Columns (3) through (6) report the analogous results separately for poor and non poor municipalities, respectively. In both cases,

we could explore), as a robustness check. The estimates remain noisily estimated, likely due to the rare nature of the outcome. However, F-tests for the joint significance of pre-treatment leads indicate no evidence of differential pre-trends.

we observe that male job losses during the period increase the probability of femicides. However, the coefficient for poor municipalities is only marginally significant, and the increase for non poor municipalities is larger. Overall, these results suggest that employment shocks in male-dominated sectors are associated with an increase in femicide probability of a non-negligible magnitude. The social isolation effect seems to be driven by the municipalities where male job losses were observed during the period.

As a further economic channel, we also explore the possible influence of the emergency financial aid provided by the government in 2020. For this exercise, we interact pandemic variables, as well as its interactions with the employment shock, with the share of emergency aid, according to the following specification:

$$\begin{aligned} Femicide_{wyi} = \alpha + \beta_1 D_{2020} \times SD_w + \beta_2 D_{2020} \times SD_w \times \mathbf{1}[Employmentshock < 0] + \\ + \beta_3 D_{2020} \times SD_w \times Aid + \beta_4 D_{2020} \times SD_w \times \mathbf{1}[Employmentshock < 0] \times Aid \\ + \phi_i + \gamma_t + \lambda_{it} + \varepsilon_{wyi} \end{aligned} \tag{5}$$

Table 4 reports the results considering the whole sample and separately for poor and non-poor municipalities. Again, columns (1) and (2) report our baseline results and the estimated coefficients of Equation (5). The point estimate in column (2) suggests that financial aid may have helped mitigate the effect of male job losses; however, the coefficient is imprecisely estimated. In columns (3) through (6), which present the results separately for poor and non-poor municipalities, we find that financial aid mitigated the harmful impact of the male employment shock only in poorer municipalities. Considering that the average share of people who received financial aid is 29.8% in poor municipalities, the effect associated with financial aid in impoverished municipalities is more than two times greater than the negative effect of the employment shock.

Thus, we can conclude that the cash transfer policy was relevant to mitigate the likelihood of femicides in more vulnerable municipalities.[23]

[23]We have also run the same estimations but define the share of financial aid as the percentage of women covered by the transfer in the municipality. In other words, the share of financial aid, in this exercise, is the number of women

4.3 Alternative specification

As explained in Section 3, our identification relies on the variation in the timing of social distancing between 2020 and the average of previous years. We considered the average social distancing among São Paulo municipalities to define the analysis period.

In this section, we follow Bullinger et al. (2021b) to present a robustness exercise considering an additional identification strategy, derived from the comparison among municipalities with different levels of social distancing. First, we calculate the average of InLoco measures from April 1–15 and March 1–15 by municipality. Then, we divide those municipalities into four quartiles (Figure 11). The first quartile refers to municipalities with the lowest social distancing index in the period. The fourth quartile comprises the municipalities where the population was the most isolated within the state.

Figure 12 presents the spatial distribution of municipalities by quartile of average social distancing. The figure shows that the most isolated municipalities in the period were those in the southeast of the state or closer to the state's capital.

We explore this spatial heterogeneity to further scrutinise our main results. We do so by comparing municipalities with the highest index (highest quartiles), our treatment group, with the bottom index (lowest quartiles), or the control group. We estimate the following equation 6:

$$Femicides_{wyi} = \alpha + (\beta_1 Q2_i + \beta_2 Q3_i + \beta_3 Q4_i) \times SD_w \times D_{2020} + \phi_i + \gamma_t + \lambda_{it} + \varepsilon_{wyi} \tag{6}$$

where i represents municipality, w week and y year. $Q2$, $Q3$, $Q4$ represents quartiles of average isolation index, $SD_w \times D_{2020}$ refers to the weeks 11 to 15th of 2020. All fixed effects from Equation 3 were also included.

Table 5 shows that the impacts we find are stronger for the municipalities with the highest isolation indices.[24] In this table, each column corresponds to a distinct control group. In column

who received financial aid as a proportion of the number of women in the municipality in 2020. The results are in Appendix Table A10. The results indicate the same pattern as that shown in Table 4.

[24]Appendix Table A11 presents the same results for poor municipalities, yet in this case, the small samples for each quartile prevent firm conclusions from being drawn.

(1), municipalities from quartiles 2, 3, and 4 correspond to the treatment group, and municipalities within quartile 1 are the control group. In column (2), municipalities from Q2 were incorporated as controls, and municipalities from Q3 and Q4 were treated. Finally, in column (3), the treatment group is from Q4, while the control group is municipalities from Q3. Panels A and B adopt a different focus period for social distancing, 11th-15th week and 11th-53rd week, respectively.

Those results indicate that social isolation increased the probability of femicides for the municipalities with the highest isolation index (Q4) in comparison with all control groups (Panel A). When extending the period of analysis (Panel B), the results are only statistically significant when the control group includes municipalities from quartile 2. The estimated effects in Panel A are sizeable, between three and four times the level of the pre-pandemic average probability in the sample (0.33%).

5 Discussion

The COVID-19 pandemic had important impacts on families around the world. Besides economic losses, indirect effects on domestic violence, in particular on VAW, were reported in many countries. A growing literature has investigated the effects of the pandemic on different measures of VAW, but evidence on the effects on femicides is still missing.

We examine the effects of social distancing measures on femicides in the state of São Paulo, Brazil. In Brazil, social isolation peaked during March and the beginning of April 2020. We examine this period with daily data on femicides and a social isolation index between 2016 and 2020 to estimate the effects on femicides. Our main results indicate that the probability of femicide more than doubled during the more pronounced isolation period. We then explore the role of job losses in male-dominated industries, poverty, and financial aid provided by the government as a pathway through which social isolation may affect the risk of femicide. We find that economic distress increased the risk of femicide during the pandemic. Our analyses also suggest that in poor municipalities, governmental financial aid to households mitigated the increased risk of femicide.

While our main results indicate a substantial increase in the probability of femicides during the COVID-19 pandemic, we acknowledge that this effect is not consistently statistically significant across all robustness checks. Specifically, when we use femicide rates as the outcome variable, the estimates are not always statistically significant. However, across these alternative specifications, the magnitude and direction of the estimated effects remain broadly similar. This consistency in effect size suggests a persistent underlying relationship, even though some specifications yield less statistical precision.

This study corroborates findings from other contexts about an increased risk of VAW episodes during the periods of most intense social isolation amid the COVID-19 pandemic (Rocha et al. (2024); de Souza Santos et al. (2022)). The focus on femicide, the most extreme form of VAW, is a novel contribution of our study. Unlike our analysis for Brazil, the only two other studies that have examined the effects of social distancing measures on femicide risk during the pandemic using a credible identification strategy did not report increases in femicide risk (Hoehn-Velasco et al. (2021); Asik and Nas Ozen (2021)). The different conclusions may reflect differences in contextual factors tempering the link between social distancing and VAW (e.g. variations in the degree of actual societal adherence to stay-at-home mandates), as well as the ambiguity of the theory itself (Rocha et al. (2024); Miller et al. (2020)). Whilst stay-at-home policies and the pandemic environment itself may have increased costs for VAW perpetrators (by e.g. making it harder for vulnerable women to be reached by ex-partners, or through a higher perceived risk of becoming infected with COVID-19 in prison in case of arrest), the costs to victims of accessing support services or reporting crimes to authorities (while living in close proximity to VAW perpetrators) are also likely to have increased. The latter could, in turn, be reflected in lower abuse reporting rates, making it more difficult for the authorities to detect and respond to an increase in VAW, and ultimately increasing the risk of more severe violence like femicide. This possibility is plausible in the Brazilian setting, judged by the general reduction in the reporting rates of non-fatal VAW episodes during the pandemic (Bastos et al., 2020) and the fact that approximately 70% of femicide victims had not reported their aggressor before.[25] This is also the finding reported by (Roman et al., 2023) who estimated a

[25] See https://www.gov.br/mdh/pt-br/assuntos/noticias/2020-2/novembro/70-das-mulheres-vitimas-de-feminicidio-nunca-denunciaram-agressoes.

small increase in domestic violence calls, and a fall in health reports, as a consequence of the Covid-19 quarantine in Brazil.[26] Importantly, increases in VAW under-reporting during the pandemic are much less likely to have affected the proper recording of the femicide data in our study, compared to other indicators (e.g., abuse cases reported to hotlines) employed in previous studies.

Our evidence about the influence of economic pathways for the observed change in VAW risk is another particularly novel contribution of this study. The finding that emergency financial aid to families mitigated the rise in femicide risk supports arguments that economic stress is a key driver of VAW. It also points to such financial transfers as being effective tools to prevent violence in these contexts, potentially also by allowing women to become more financially independent and leave abusive relationships (Baranov et al., 2021). Furthermore, our results offer support to claims that spikes in VAW risk can be linked to job losses and their effect on household economic stress (Beland et al. (2021); Bhalotra et al. (2021b); Gibbons et al. (2021); Bhalotra et al. (2021a)). The above economic channels are likely to have compounded the influence of wider social factors on the risk of femicide during the pandemic, including the reduced possibility for people outside the families to act as agents of social control amid stay-at-home measures (Gelles and Strauss (1979); Gelles (1983)).

Some policy implications arise directly from our findings. Roman et al. (2023) show that the availability of protective services for women may reduce the adverse effect of quarantine on domestic violence. Likewise, our evidence about the importance of economic channels highlights the protective impact of financial support packages aimed at households under financial distress during socioeconomic crises (beyond the pandemic period), to mitigate any spikes in VAW. Effective financial aid can take various forms, including enhanced social protection networks (e.g. unemployment support) and wage subsidies to alleviate the negative impacts of job losses (Bastos et al., 2020) that

[26] For instance, Roman et al. (2023) document an 11.8% increase in hospitalizations related to domestic violence in Brazil. However, key differences in outcomes, data granularity, and methodology may explain this contrast. While Roman et al. use hospitalizations as a proxy for domestic violence, we focus exclusively on femicides—a rarer but more severe form of violence. Additionally, their use of quarterly data may smooth out short-term spikes in violence that are more visible in our weekly data, especially during the period of extreme social isolation. Furthermore, our analysis is restricted to São Paulo state and leverages a different identification strategy. Taken together, these distinctions suggest that our findings, while seemingly larger, reflect a complementary but distinct perspective on the effects of the pandemic on gender-based violence.

we identified in our analyses. There will likely be additional potential VAW benefits if such financial support is more intensive for the poorest households and targeted at women, which in some settings has been found to reduce the frequency of VAW episodes when combined with policies to empower women and reduce male controlling behaviour (Peterman et al. (2022); Fakir et al. (2016)). Finally, it seems essential that these preventive policies are accompanied by governmental efforts to ensure sustained resourcing for, and availability of, early warning report systems and support services for vulnerable women, not least during challenging economic times, to reduce the likelihood of repeated abuse and its escalation to extreme violence (Bastos et al., 2020).

This study has its limitations. With our data, it is challenging to obtain specific estimates of the added impact from the COVID-19 period itself on VAW (e.g. through compounded anxiety and tensions), on top of the related impacts arising from employment and income shocks. Moreover, our analyses focus on the economic pathways between social isolation and VAW risk, whereas (as discussed previously) there are potentially important, inter-related non-economic drivers of VAW that we cannot scrutinise further with our data. Future research on the extent to which changes in VAW risk can be attributed to economic versus non-economic channels is warranted. Lastly, our analyses focused on the state of São Paulo, partly due to better data availability. Further research is needed to understand how generalisable our results are to the wider Brazilian context, in particular to more socio-economically disadvantaged states. However, the fact that our sample also includes poor populations living in relatively disadvantaged municipalities of São Paulo state offers some reassurance that key findings, such as those pertaining to the economic pathways of VAW, may apply more generally in Brazil and other settings.

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Figures

Figure 1: Total femicides, State of São Paulo, 2016-2020

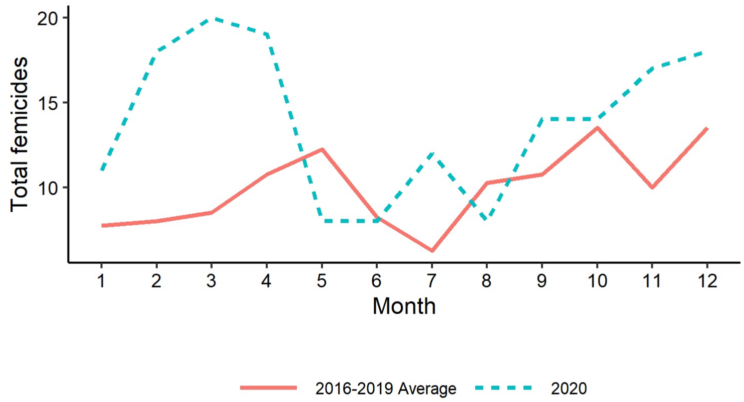


Figure 2: Total femicides at home, State of São Paulo, 2016-2020

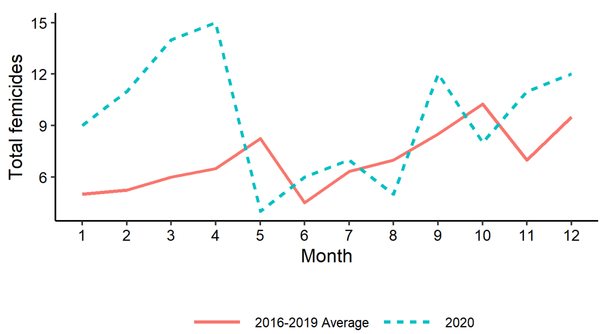
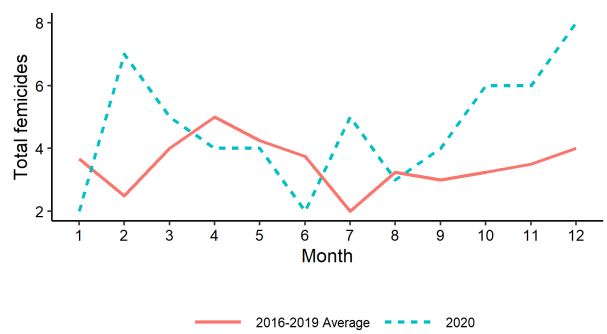
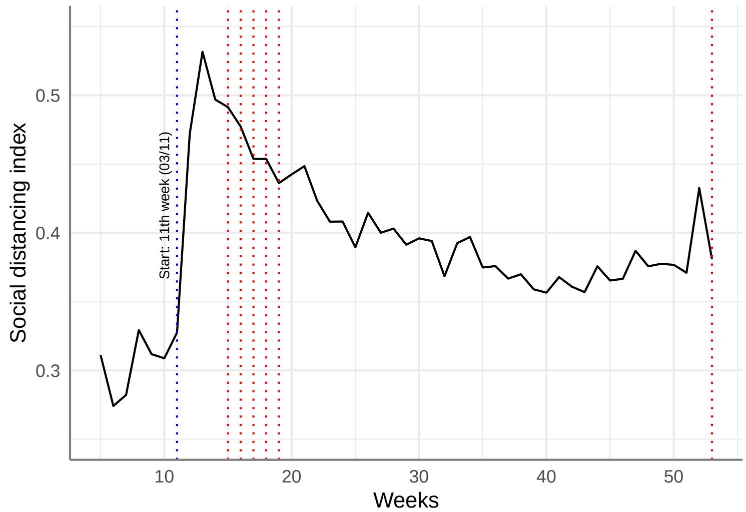


Figure 3: Total femicides on the street, State of São Paulo, 2016-2020



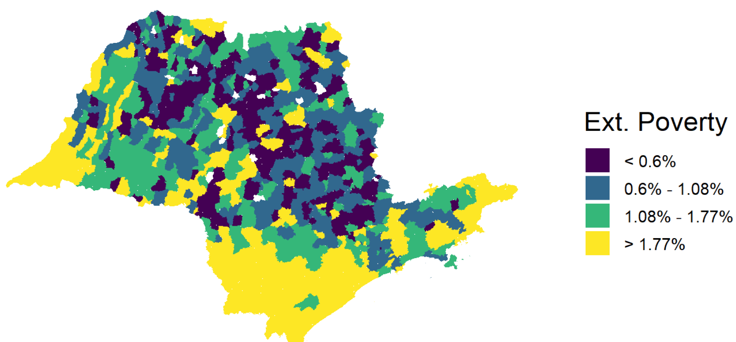
Source: Secretariat of Public Security (SSP-SP)

Figure 4: Inloco social distancing trends, State of São Paulo, 2020



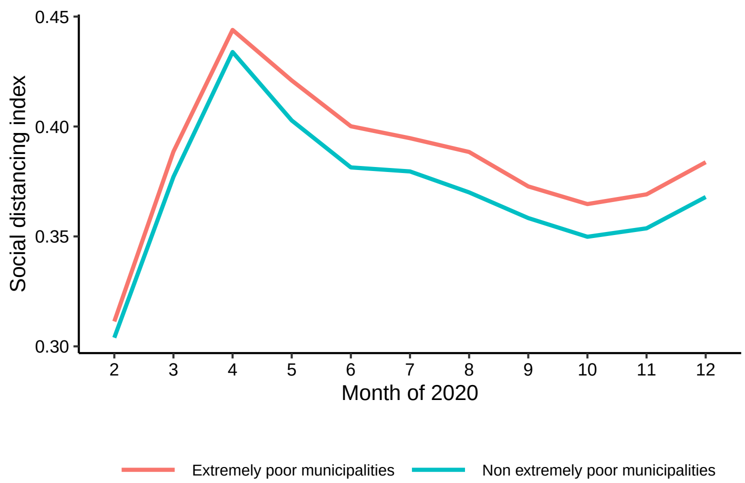
Source: InLoco, 2020

Figure 5: Vulnerability by municipality



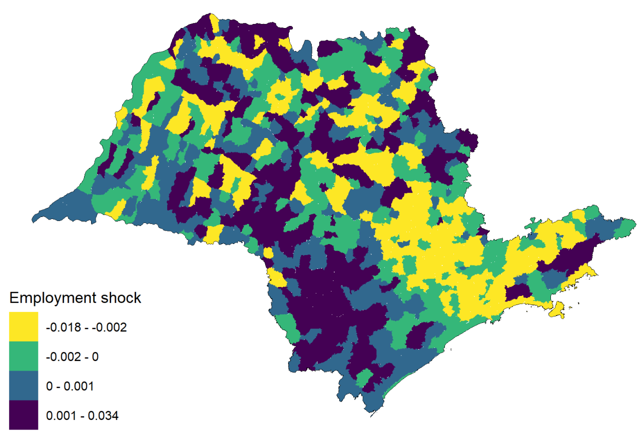
Source: Population Census, 2010

Figure 6: Social distancing index evolution by vulnerability



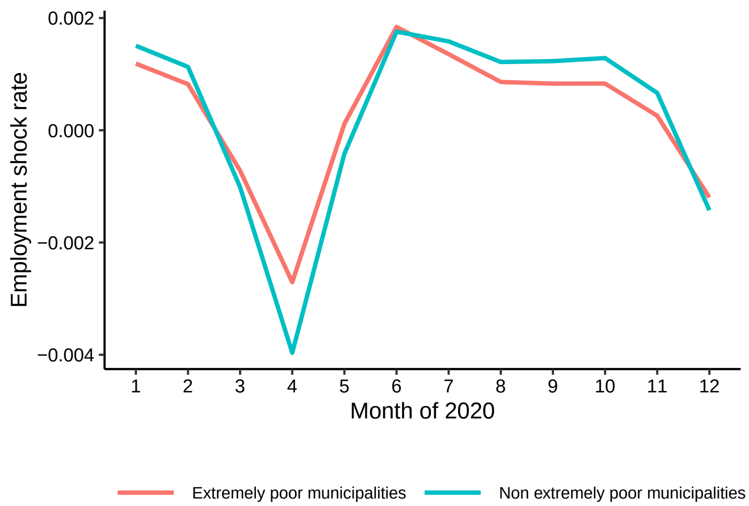
Source: InLoco 2020.

Figure 7: Employment shock by municipality, April of 2020



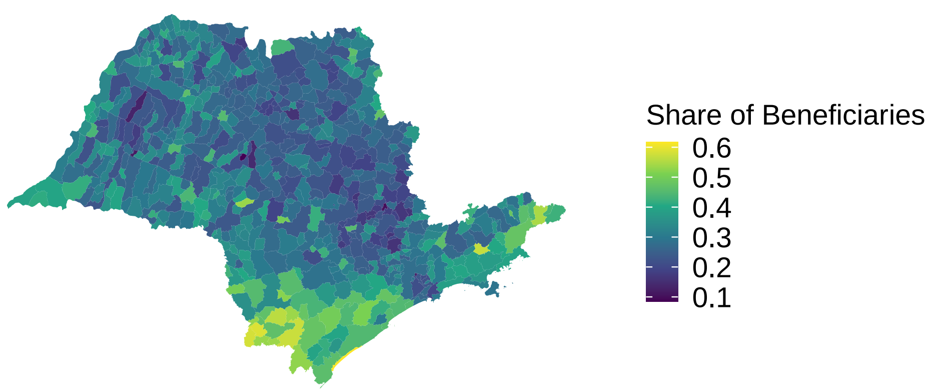
Source: RAIS 2019 and CAGED 2020.

Figure 8: Employment shock rate evolution by vulnerability



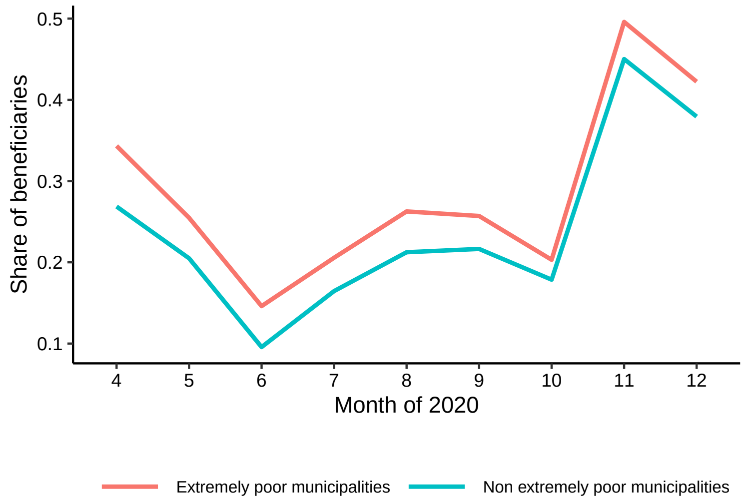
Source: RAIS 2019 and CAGED 2020.

Figure 9: Share of Beneficiaries by municipality - April/2020



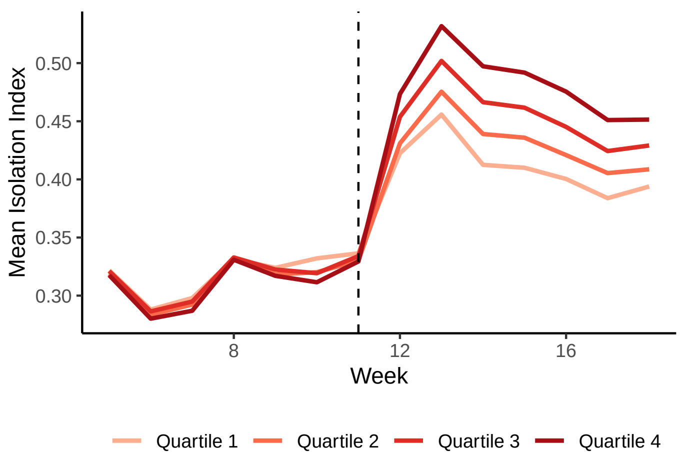
Source: Ministry of Citizenship, 2020.

Figure 10: Share of beneficiaries evolution by vulnerability



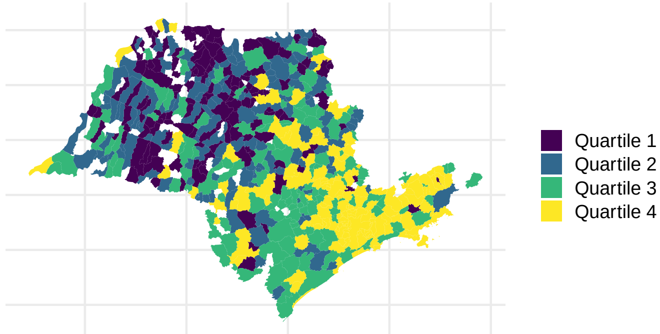
Source: Ministry of Citizenship, 2020.

Figure 11: Isolation index by quartile, 2020



Source: InLoco (2020).

Figure 12: Spatial distribution of isolation index by quartile, 2020



Tables

Table 1: Impact of social distancing (different isolation periods) on the probability of femicides, all sample, 2016-2020

Dep. Variable:	**Pr (Femicide)**					
	11-15th week	11-16th week	11-17th week	11-18th week	11-19th week	11-53rd week
SD $\times D_{2020}$	0.0032**	0.0027**	0.0027**	0.0024**	0.0017*	-0.0011
	(0.0010)	(0.0008)	(0.0007)	(0.0006)	(0.0007)	(0.0007)
Fixed-effects						
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Week	Yes	Yes	Yes	Yes	Yes	Yes
Observations	170,925	170,925	170,925	170,925	170,925	170,925
Mean Social Dist. Index	0.464	0.466	0.464	0.463	0.460	0.403
Mean dep. var. (2016-2019)	0.0033	0.0033	0.0033	0.0033	0.0033	0.0033
Mean dep. variable	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2016 to December 2020 for all 645 municipalities of Sao Paulo. SD is expressed in six measures: columns (1) to (6). SD is a dummy for the period indicated in each column. Standard errors are clustered at the municipality-year level. Each regression uses the full panel of weekly data from 2016 to 2020 across 645 municipalities (totaling 170,925 observations: 53 weeks × 5 years × 645 municipalities). The difference across columns lies in how the post-treatment period is defined, not in the sample size. For example, in Column 1, the post-treatment period corresponds to weeks 11–15, and the pre-treatment period includes weeks 1–10 of all years and weeks 11–15 of pre-pandemic years (2016–2019). While weeks 16–53 of 2020 are not treated in this specification, they are included in the estimation to help identify fixed effects and account for time trends. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table 2: Impact of social distancing (different isolation periods) on the probability of femicides for poor and non poor municipalities, 2016-2020

Dep. Variable:	Pr (Femicide)					
	11-15th week	11-16th week	11-17th week	11-18th week	11-19th week	11-53rd week
Panel A: Poor						
SD $\times D_{2020}$	0.0017	0.0010	0.0009	0.0010	0.0011	-0.0009
	(0.0012)	(0.0010)	(0.0009)	(0.0008)	(0.0010)	(0.0007)
Observations	83,210	83,210	83,210	83,210	83,210	83,210
Mean Social Dist. Index	0.441	0.441	0.438	0.437	0.433	0.397
Panel B: Non poor						
SD $\times D_{2020}$	0.0045**	0.0043**	0.0044**	0.0037**	0.0022*	-0.0014
	(0.0015)	(0.0013)	(0.0012)	(0.0010)	(0.0010)	(0.0012)
Observations	87,715	87,715	87,715	87,715	87,715	87,715
Mean Social Dist. Index	0.430	0.430	0.427	0.425	0.422	0.381
Fixed-effects						
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Week	Yes	Yes	Yes	Yes	Yes	Yes

Source: Secretariat of Public Security (SSP-SP) and InLoco data
Notes: We use weekly data from January 2016 to December 2020 for 314 municipalities of Sao Paulo, that represents the most extreme poor places in Panel A and for 331 municipalities of Sao Paulo that are above the state median poverty rate in Panel B. SD it's expressed in six measures: column (1) to (6). SD is a dummy for the period indicate on each column. Standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table 3: Impact of social distancing and male employment shock on the probability of femicides in São Paulo, all, 50% non poor and 50% poor municipalities, 2016-2020

Dependent Variable:	Pr(femicide)					
Sample:	All municipalities		Poor municipalities		Non Poor municipalities	
	(1)	(2)	(3)	(4)	(5)	(6)
SD $\times D_{2020}$	0.0032**	-0.0004*	0.0017	-0.0004*	0.0045**	-0.0005
	(0.0010)	(0.0002)	(0.0012)	(0.0002)	(0.0015)	(0.0004)
SD $\times D_{2020} \times \mathbf{1}$[Employment shock<0]		0.0047**		0.0032*		0.0061**
		(0.0012)		(0.0015)		(0.0021)
Fixed-effects						
Week	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	170,925	170,925	83,210	83,210	87,715	87,715
Dep. var. mean (2016 - 2019)	0.0033	0.0033	0.0025	0.0025	0.0043	0.0043
Dep. var. mean (2016 - 2020)	0.0035	0.0035	0.0026	0.0026	0.0045	0.0045

Source: Secretariat of Public Security (SSP-SP)
Notes: We use weekly data from January 2016 to December 2020 for all 645 municipalities of Sao Paulo for all sample, 314 municipalities for the sample of poor locations, and 331 municipalities for the sample of non poor. The dependent variable is the probability of femicide in a given municipality on a given week. SD is a dummy for the weeks 11th (March) to 15th (April) of 2016 to 2020. Employment shock is a dummy for negative shocks on men's jobs. Robust standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table 4: Impact of social distancing, financial aid and male employment shock on the probability of femicides in São Paulo, all, 50% of non poor and 50% poor municipalities, 2016-2020

Dependent Variable:	Pr(femicide)					
Sample:	All municipalities		Poor municipalities		Non Poor municipalities	
	(1)	(2)	(3)	(4)	(5)	(6)
SD $\times D_{2020}$	0.0032**	-0.0005*	0.0017	-0.0005**	0.0045**	-0.0005
	(0.0010)	(0.0002)	(0.0012)	(0.0002)	(0.0015)	(0.0004)
SD $\times D_{2020} \times \mathbf{1}$[Employment shock<0]		0.0048**		0.0042*		0.0051*
		(0.0013)		(0.0018)		(0.0022)
SD $\times D_{2020} \times \mathbf{1}$[Employment shock<0] $\times$ Financial Aid		-0.0045		-0.0377*		0.0478
		(0.0130)		(0.0153)		(0.0322)
Fixed-effects						
Week	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality-Year	Yes	Yes	Yes	Yes	Yes	Yes
Observations	170,925	170,925	83,210	83,210	87,715	87,715
Dep. var. mean (2016 - 2019)	0.0033	0.0033	0.0025	0.0025	0.0043	0.0043
Dep. var. mean (2016 - 2020)	0.0035	0.0035	0.0026	0.0026	0.0045	0.0045

Source: Secretariat of Public Security (SSP-SP)
Notes: We use weekly data from January 2016 to December 2020 for all 645 municipalities of Sao Paulo for all sample, 314 municipalities for the sample of poor locations, and 331 municipalities for the sample of non poor. The dependent variable is the probability of femicide in a given municipality on a given week. SD is a dummy for the weeks 11th (March) to 15th (April) of 2016 to 2020. Employment shock is a dummy for negative shocks on men's jobs. Robust standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table 5: Impact of social distancing on the probability of femicides by quartile of the isolation distribution, 2016-2020

Dependent Variable:	Pr(Femicide)		
	Control Group		
	$Q1$	$Q2$	$Q3$
	(1)	(2)	(3)
Panel A: 11th - 15th week			
$Q2_i \times$ SD $\times D_{2020}$	-0.0013		
	(0.0019)		
$Q3_i \times$ SD $\times D_{2020}$	0.0020	0.0034	
	(0.0037)	(0.0036)	
$Q4_i \times$ SD $\times D_{2020}$	0.0117**	0.0131**	0.0111*
	(0.0055)	(0.0054)	(0.0057)
Panel B: 11th - 53th week			
$Q2_i \times$ SD $\times D_{2020}$	-0.0004		
	(0.0006)		
$Q3_i \times$ SD $\times D_{2020}$	0.0007	0.0013	
	(0.0008)	(0.0008)	
$Q4_i \times$ SD $\times D_{2020}$	0.0017	0.0022*	0.0016
	(0.0013)	(0.0013)	(0.0014)
All Fixed-effects			
Municipality	Yes	Yes	Yes
Year×Month	Yes	Yes	Yes
Year×Week	Yes	Yes	Yes
Observations	170,925	134,355	97,785

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2016 to to December 2020 for 507 municipalities of Sao Paulo. The dependent variable is the probability of femicide in a given municipality on a given week. SD is a dummy for the weeks 11th (March) to 15th (April) on Panel A and for the weeks 11th (March) to 53th (December) on Panel B. Standard errors are clustered at the municipality level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

A Appendix Tables and Figures

Table A1: Number of Municipalities with at least 1 femicide case in the period

Population* <100.000 (564)	
March 2017-Feb. 2018	24
March 2018-Feb. 2019	38
March 2019-Feb. 2020	44
March 2020- Feb. 2021	48
Population* >100.000 (81)	
March 2017-Feb. 2018	34
March 2018-Feb. 2019	47
March 2019-Feb. 2020	43
March 2020- Feb. 2021	55

Source: Secretaria of Public Security (SSP-SP)
Notes: Population in 2019

Table A2: Descriptive Statistics of Femicides by Periods

	2020		2016-2019		Mean difference	
	Weeks 1-10	**Weeks 11-15**	**Weeks 1-10**	**Weeks 11-15**	**Weeks 1-10**	**Weeks 11-15**
Panel A: All municipalities						
Total Femicides	0.0053	0.0078	0.0028	0.0035	0.0025**	0.0043**
	[0.0805]	[0.0912]	[0.0563]	[0.0615]		
Femicides Rate	0.0090	0.0178	0.0113	0.0083	-0.0023	0.0095
	[0.2500]	[0.4547]	[0.5617]	[0.2766]		
Binary Variable (Femicide)	0.0048	0.0074	0.0026	0.0033	0.0022**	0.0041**
	[0.0692]	[0.0860]	[0.0513]	[0.0576]		
Number of Observations	6450	3225	25800	12900		
Panel B: Poor municipalities						
Total Femicides	0.0025	0.0051	0.0015	0.0032	0.0010	0.0019
	[0.0504]	[0.0712]	[0.0389]	[0.0563]		
Femicides Rate	0.0083	0.0061	0.0125	0.0076	-0.0042	-0.0015
	[0.2922]	[0.1378]	[0.6981]	[0.2193]		
Binary Variable (Femicide)	0.0025	0.0051	0.0015	0.0032	0.0010	0.0019
	[0.0504]	[0.0712]	[0.0388]	[0.0563]		
Number of Observations	3140	1570	12560	6280		
Panel C: Non poor municipalities						
Total Femicides	0.0078	0.0103	0.0040	0.0038	0.0038**	0.0065**
	[0.1011]	[0.1067]	[0.0689]	[0.0661]		
Femicides Rate	0.0097	0.0289	0.0102	0.0090	-0.0005	0.0199
	[0.2018]	[0.6202]	[0.3901]	[0.3217]		
Binary Variable (Femicide)	0.0069	0.0097	0.0037	0.0035	0.0032**	0.0062**
	[0.0831]	[0.0979]	[0.0607]	[0.0588]		
Number of Observations	3310	1655	13240	6620		

Table A3: CNAE's codes

Code	Category	Description
A	Section A	Agriculture
B	Section B	Extractive industries
C	Section C	Manufacturing
D	Section D	Electricity and gas
E	Section E	Water, sewage and waste
F	Section F	Construction
G	Section G	Trade
H	Section H	Transport and Mail
I	Section I	Accommodation and food
J	Section J	Information and communication
K	Section K	Financial
L	Section L	Real estate
M	Section M	Professional and scientific
N	Section N	Administrative
O	Section O	Public administration
P	Section P	Education
Q	Section Q	Human health and services
R	Section R	Arts, culture, sports and recreation
S	Section S	Other services
T	Section T	Domestic services
U	Section U	International organizations

Table A4 shows that there were, on average, 0.7 femicides per 100,000 women in 2020 in SP. When restricting the sample to poor municipalities, the femicide rate was slightly lower, 0.6 femicides per 100,000 women. During the same period, the chance of occurring a femicide was 0.35% considering all cities of the State, while it was 0.24% in impoverished cities. Those femicide observations are slightly higher than those observed as an average for 2016-2019. Another relevant piece of information refers to the share of beneficiaries of the financial aid paid by the federal government. The average for the state was that 27% of all people received the aid in the state, while 29% of the residents of poorer municipalities were benefited from the financial aid. Finally, we also observe 0.03% of male job losses in 2020.

Table A4: Mean and standard deviation (SD) of the main variables, 2020.

	(1) Overall	(2) $1(Poverty = 1)$
Femicides rate (per 100,000 women)(yearly)	0.672	0.607
	(3.1)	(3.23)
Femicides rate (per 100,000 women)(monthly)	0.056	0.051
	(0.906)	(0.937)
Femicides (probability)	0.0035	0.0024
	(0.0593)	(0.0490)
Femicides 2016-2019 (probability)	0.0033	0.0023
	(0.0572)	(0.0478)
Share of Beneficiaries of the Financial Aid	0.273	0.298
	(0.209)	(0.225)
Employment shock Masc	0.397	0.402
	(0.489)	(0.490)
Number of municipalities	645	314

Source: Secretaria of Public Security (SSP-SP), RAIS, and CAGED.
Notes: Femicides (probability) is a dummy that indicates whether there was any femicide in a given municipality and week. Share of Beneficiaries of the Financial Aid refers to the average between April and December of 2020 of the % of individuals who received the emergency aid from the Federal Government. Employment shock is the average "movimentation" in formal employment on 2020.

Table A5: Results by different Specifications, Fixed Effects and Clusters

	Equation 1		Equation 2		Equation 3		Equation 4	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pr(Femicide)								
SD × D_{2020}	0.0032**	0.0032**	0.0032***	0.0032**	0.0025***	0.0025	0.0032***	0.0032*
	(0.0010)	(0.0015)	(0.0004)	(0.0015)	(0.0000)	(0.0022)	(0.0000)	(0.0015)
SD			0.0001	0.0001				
			(0.0009)	(0.0007)				
Panel B: Femicide Rate								
SD × D_{2020}	0.0052	0.0052	0.0057***	0.0057	0.0106***	0.0106	0.0052*	0.0052
	(0.0055)	(0.0090)	(0.0011)	(0.0091)	(0.0000)	(0.0091)	(0.0014)	(0.0090)
SD			0.0030	0.0030				
			(0.0016)	(0.0030)				
Fixed-effects								
Municipality	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Week	Yes	Yes	No	No	No	No	Yes	Yes
Month	No	No	Yes	Yes	No	No	No	No
Year	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Month $\times Year$	No	No	No	No	Yes	Yes	No	No
Municipality $\times Week$	Yes	Yes	No	No	No	No	No	No
Municipality $\times Year$	Yes	Yes	No	No	No	No	No	No
Cluster								
Municipality $\times Year$	×		×		×		×	
Municipality		×		×		×		×

Table A6: Impact of social distancing (different isolation periods) on femicide prob, all sample, 2017-2020

Dep. Variable:	Pr(Femicide)					
	11-15th week	11-16th week	11-17th week	11-18th week	11-19th week	11-53rd week
SD $\times D_{2020}$	0.0030*	0.0026*	0.0027**	0.0024**	0.0017	-0.0012
	(0.0011)	(0.0009)	(0.0009)	(0.0008)	(0.0008)	(0.0009)
Fixed-effects						
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Week	Yes	Yes	Yes	Yes	Yes	Yes
Observations	136,740	136,740	136,740	136,740	136,740	136,740
Dependent variable mean	0.00399	0.00399	0.00399	0.00399	0.00399	0.00399
Mean Social Dist. Index	0.464	0.466	0.464	0.463	0.460	0.403

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2017 to December 2020 for all 645 municipalities of Sao Paulo. SD it's expressed in six measures: column (1) to (6). SD is a dummy for the period indicate on each column. Standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table A7: Impact of social distancing (different isolation periods) on femicide prob, all sample, 2018-2020

Dep. Variable:	Pr(Femicide)					
	11-15th week	11-16th week	11-17th week	11-18th week	11-19th week	11-53rd week
SD $\times D_{2020}$	0.0028	0.0025	0.0025	0.0022	0.0013	-0.0017
	(0.0017)	(0.0012)	(0.0011)	(0.0009)	(0.0009)	(0.0012)
Fixed-effects						
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Week	Yes	Yes	Yes	Yes	Yes	Yes
Observations	102,555	102,555	102,555	102,555	102,555	102,555
Dependent variable mean	0.00429	0.00429	0.00429	0.00429	0.00429	0.00429
Mean Social Dist. Index	0.464	0.466	0.464	0.463	0.460	0.403

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2018 to December 2020 for all 645 municipalities of Sao Paulo. SD it's expressed in six measures: column (1) to (6). SD is a dummy for the period indicate on each column. Standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table A8: Impact of social distancing (different isolation periods) on femicide prob, all sample, 2019-2020

Dep. Variable:	**Pr(Femicide)**					
	11-15^{t}h week	11-16^{t}h week	11-17^{t}h week	11-18^{t}h week	11-19^{t}h week	11-53^{r}d week
SD $\times D_{2020}$	0.0039	0.0028	0.0030	0.0025	0.0018	-0.0008
	(0.0020)	(0.0019)	(0.0016)	(0.0014)	(0.0013)	(0.0012)
Fixed-effects						
Municipality	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Week	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Year	Yes	Yes	Yes	Yes	Yes	Yes
Municipality×Week	Yes	Yes	Yes	Yes	Yes	Yes
Observations	68,370	68,370	68,370	68,370	68,370	68,370
Dependent variable mean	0.00461	0.00461	0.00461	0.00461	0.00461	0.00461
Mean Social Dist. Index	0.464	0.466	0.464	0.463	0.460	0.403

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2019 to December 2020 for all 645 municipalities of Sao Paulo. SD it's expressed in six measures: column (1) to (6). SD is a dummy for the period indicate on each column. Standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table A9: Impact of social distancing (isolation) on the probability of femicide by location of femicide, 2016-2020

Dependent Variables:	Pr(Femicide) (1)	Pr($Femicides_{home}$) (2)	Pr($Femicides_{street}$) (3)
SD	0.0002	0.0007	-0.0005
	(0.0012)	(0.0014)	(0.0005)
SD × D_{2020}	0.0035**	0.0029**	0.0004
	(0.0009)	(0.0009)	(0.0006)
Fixed-effects			
Municipality	Yes	Yes	Yes
Year	Yes	Yes	Yes
Month	Yes	Yes	Yes
Week	Yes	Yes	Yes
Municipality×Year	Yes	Yes	Yes
Municipality×Month	Yes	Yes	Yes
Municipality×Week	Yes	Yes	Yes
Observations	201,885	201,885	201,885
Dep. variable mean	0.00299	0.00208	0.000996
Dep. variable mean (2016 - 2019)	0.00276	0.00195	0.000876

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2016 to December 2020 for all 645 municipalities of Sao Paulo. The dependent variable is the probability of femicide in a given municipality on a given week by locality of femicide. Isolation is a dummy for the weeks 11th (March) to 15th (April) of 2016 to 2020. Column (1) reports our baseline results (all femicides). Column (2)'s dependent variable considers only femicides that occurred within the women's home. Column (3) reports the results when the outcome variable is the probability of femicides that occurred outside the women's homes (on the street). All regressions include all controls and fixed effects reported in Equation **??**. Standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table A10: Impact of social distancing, considering male employment shock and financial aid for women, on the probability of femicides, all sample and sample of poor municipalities, 2016-2020

Dependent Variable:	Pr(femicide)			
Sample:	All municipalities		Poor municipalities	
	(1)	(2)	(3)	(4)
SD × D_{2020}	0.0032**	-0.0005*	0.0017	-0.0005**
	(0.0010)	(0.0002)	(0.0012)	(0.0002)
SD × D_{2020}× **1**[Employment shock<0]		0.0056**		0.0060**
		(0.0014)		(0.0021)
SD × D_{2020}× % women beneficiaries		0.0006*		0.0006*
		(0.0002)		(0.0002)
SD × D_{2020}× **1**[Employment shock<0] × % women beneficiaries		-0.0079		-0.0219**
		(0.0052)		(0.0061)
Fixed-effects				
Week	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Municipality	Yes	Yes	Yes	Yes
Municipality-Week	Yes	Yes	Yes	Yes
Municipality-Year	Yes	Yes	Yes	Yes
Fit statistics				
Observations	170,925	170,925	83,210	83,210
Dependent variable mean	0.00353	0.00353	0.00256	0.00256

Source: Secretaria of Public Security (SSP-SP)
Notes: We use weekly data from January 2016 to December 2020 for all 645 municipalities of Sao Paulo for all sample and for 314 municipalities for the sample of poor municipalities. The dependent variable is the probability of femicide in a given municipality on a given week. SD is a dummy for the weeks 11th (March) to 15th (April) of 2016 to 2020. Employment shock is a dummy for negative shocks on men's jobs. Robust standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

Table A11: Impact of social distancing on the probability of femicides by quartile of the isolation distribution, sample of poor municipalities, 2016-2020

Dependent Variable:	Pr(Femicide)		
	Control Group		
	$Q1$	$Q2$	$Q3$
	(1)	(2)	(3)
Panel A: 11th - 15th week			
$Q2_i \times$ SD $\times \text{D}_{2020}$	-0.0026		
	(0.0016)		
$Q3_i \times$ SD $\times \text{D}_{2020}$	-0.0001	0.0019	
	(0.0034)	(0.0031)	
$Q4_i \times$ SD $\times \text{D}_{2020}$	0.0090	0.0110	0.0097
	(0.0080)	(0.0079)	(0.0080)
Panel B: 11th - 53th week			
$Q2_i \times$ SD $\times \text{D}_{2020}$	-0.0006		
	(0.0008)		
$Q3_i \times$ SD $\times \text{D}_{2020}$	0.0002	0.0009	
	(0.0010)	(0.0009)	
$Q4_i \times$ SD $\times \text{D}_{2020}$	0.0000	0.0007	0.0002
	(0.0014)	(0.0014)	(0.0014)
Fixed-effects			
Municipality	Yes	Yes	Yes
Year×Month	Yes	Yes	Yes
Year×Week	Yes	Yes	Yes
Fit statistics			
Observations	83,210	66,250	49,290

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use weekly data from January 2016 to December 2020 for 283 municipalities of Sao Paulo. The dependent variable is the probability of femicide in a given municipality on a given week. SD is a dummy for the weeks 11th (March) to 15th (April) on Panel A and for the weeks 11th (March) to 53th (December) on Panel B. Standard errors are clustered at the municipality level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.

A.1 Robustness

In this subsection,

We conduct a bounding methodology, following Oster (2019), to alleviate concerns that our findings are biased due to selection in unobservables. Using our preferred specification in Equation (3), we estimate that unobservables would need to be 4.70 times as important as observables to explain away our results (i.e. a zero treatment effect). By far and large, this number exceeds 1, the rule of thumb adopted in the literature. Additionally, should unobservables be as important as observables in our data, our estimated treatment effect would be 0.0028. Thus, according to Oster (2019), our treatment effect can be bounded between $[0.0028, 0.0032]$.

Table A12: Oster's (2019) bounds for β

Variable	Coefficient	Std. Error	Identified Set	δ for $\beta = 0$
SD $\times$ D_{2020}	0.0032	0.0010	[0.0028, 0.0032]	4.697

Notes: This table presents the results of the bounding methodology proposed by Oster (2019). We consider our preferred specification as in Equation (3) and a R^2_{max} of 1.3 the estimated R^2.

Lastly, we also investigate whether our results are robust to an estimation method that deals with the large number of zeroes in our sample. Recall that our dependent variable is the probability of any femicide occurring in a municipality in a given week and given year. Thus, aside from the linear probability model, we also estimate our main results considering a logit. In addition to this, we test alternative levels of aggregation of our sample, to reduce the frequency of zeroes. We estimate our main results aggregating our sample at the microregion-week and microregion-month levels, besides the municipality-week.

The results of these exercises are presented in Table A13. Panel (A) displays the results for the linear probability model, while Panel (B) shows the results for the logit model. Columns (2) and (3) of Panel (A) show the results for the aggregation at the microregion-week and microregion-month levels. Both point estimates are positive and statistically significant. The point estimates in panel (A) column (2) suggest that the probability of femicide in a given microregion during the social distancing period rises by 2.6 percentage points, an increase of 80%. In column (3), with our data aggregated at the microregion-month level, the results point to an increase of 7 percentage points or an increase of approximately 58%. Moving to panel (B), we observe a similar pattern. The result in column (1) is marginally significant and suggests an increase of 86% in the probability of femicides during social distancing periods, which is very close to our baseline estimates ($\approx 91\%$ increase). The results in Panel (B), columns (2) and (3), are similar to our main findings, in terms of magnitude, using the alternative aggregations. Overall, our result is robust to distinct aggregation levels and the functional form (i.e., Linear Probability Model or Logit).

Table A13: Impact of social distancingon the probability of femicides, Different Aggregations, 2016-2020

Dependent variable:	Pr(femicide)		
	Municipality-Week	Microregion-Week	Microregion-Month
	(1)	(2)	(3)
Panel A: OLS			
SD × D_{2020}	0.0032**	0.0268**	0.0702**
	(0.0010)	(0.0094)	(0.0206)
Panel B: Logit			
SD × D_{2020}	0.6231*	0.4044	0.7166**
	(0.3610)	(0.2867)	(0.3148)
Region FE	Yes	Yes	Yes
Week FE	Yes	Yes	
Month FE			Yes
Year FE	Yes	Yes	Yes
Region-Week FE	Yes	Yes	
Region-Month FE			Yes
Region-Year FE	Yes	Yes	Yes
Observations	170,925	16,695	3,780
Dependent variable mean	0.0035	0.0339	0.1201

Source: Secretariat of Public Security (SSP-SP) and InLoco data.
Notes: We use data from January 2016 to December 2020 for the municipalities of Sao Paulo. The dependent variable is the probability of femicide in a given municipality on a given week. SD is a dummy for the weeks 11th (March) to 15th (April). Panel A presents the results for a linear probability model. Panel B presents analogous results for considering a logistic distribution. Standard errors are clustered at the municipality-year level. Significance levels: ***: 0.01, **: 0,05, *: 0.1.