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## SPECIAL ISSUE ARTICLE

## THE IMPACT OF COVID-19 ON CRIME AND JUSTICE

# Crime under lockdown: The impact of COVID-19 on citizen security in the city of Buenos Aires

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[Correction added on October 19, 2021, after first online publication: The copyright line was changed.]

**Research Summary:** This paper studies the impact of the COVID-19 pandemic and the subsequent lockdown on criminal activity in the City of Buenos Aires, Argentina. Following quarantine restrictions, we find a large, significant, robust, and immediate decline in property crime reported to official agencies, police arrests, and crime reported in victimization surveys. We observe no significant change in homicides, and a significant increase in arrests for “resistance to authorities”. The decrease in criminal activity was greater in business and transportation areas, but still large in commercial and residential areas (including informal settlements). After the sharp and immediate fall, crime recovered but, by the end of 2020, it had not reached its initial levels. The arrest data additionally shows a reduction in the distance from the detainee’s address to the crime location, and a fall in the number of detainees from outside the City of Buenos Aires. Crime became more local as mobility was restricted.

**Policy Implications:** We find no evidence that the reduction in the number of detainees from outside the City of Buenos Aires led to a displacement of crime

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to suburban areas. This result aligns with the hypothesis that focalized place-based interventions have the potential to reduce overall crime rates. Moreover, the increase in arrests for "resistance to authorities" at the checkpoints set up during the lockdown shows that the enforcement of mobility restrictions can cause frictions between citizens and police, negatively affecting police's legitimacy. We also find that the increased government presence for the provision of health and social services in informal settlements during the pandemic led, as a positive externality, to an additional decrease in crime.

**KEYWORDS**

citizen security, crime, Argentina, COVID-19, lockdown, displacement

## 1 | INTRODUCTION

The COVID-19 pandemic shook humanity to its core in 2020. In addition to its direct health effects, the pandemic forced worldwide authorities to implement extraordinary policies to curb the spread of the virus and prevent the healthcare system's collapse. These policies included quarantines, closure of nonessential services and businesses, interruption of face-to-face schooling, constraints on the use of public transportation, restrictions on gathering size, and comprehensive control and closure of international and domestic borders (Hale et al., 2020). Beyond these public policies, individuals adopted self-protection measures, such as maintaining social distancing and adjusting hygiene practices. The fear of contagion and the containment measures disrupted people's lives, changing almost all activity patterns and social dynamics.

Criminal activity was not an exception. The COVID-19 pandemic and the accompanying changes in social dynamics affected victims, criminals, police agencies, and criminal justice systems in multiple ways. These impacts altered opportunities and incentives for criminal activity through several simultaneous and heterogeneous channels.

First, the government-imposed quarantines and curfews, and the individuals' self-protection decisions had marked effects on movement patterns (see, e.g., Medimorec et al., 2020). People's schedules and family dynamics changed drastically: work was restricted—or completely suspended for nonessential activities—schools were closed, public transportation was limited, and several social activities were banned, all of which significantly reduced the exposure of potential victims to out-of-home crime. Second, the pandemic and the lockdowns simultaneously affected supply and demand in most economic activities, leading to an unprecedented economic contraction (World Bank, 2020). The recession triggered unemployment and poverty, while the heterogeneity of the shocks increased inequality, likely affecting the economic incentives to get involved in criminal activities (Fajnzylber et al., 2002; Raphael & Winter-Ebmer, 2001; Schargrodsy & Freira, 2021). Third, the police changed their deployment on the streets and shifted their focus

from crime prevention to the enforcement of mobility restrictions (Alvarado et al., 2020; Lum et al., 2020). These changes likely altered both the deterrence and incapacitation effects of policing. Fourth, in several countries, inmates who were soon to serve their sentences or were at risk of COVID-19 complications were released or given house arrest, in order to reduce prison overcrowding and contagion among inmates and prison officers (ACLU Analytics, 2020; Londoño et al., 2020). Moreover, detentions for some minor offenses were reduced or put on hold due to delays in the judicial systems, whose operating capacity was also affected by lockdowns. These changes in the criminal justice system's functioning might have reduced its incapacitation and deterrence effects, potentially contributing to more criminal activity. Finally, school closures and social programs' suspensions reduced access to local networks and support services among at-risk youth, potentially increasing their vulnerability to criminality.

In short, the pandemic affected victims, criminals, police forces, and the judiciary and penitentiary systems. The combination of several simultaneous and heterogeneous shocks calls for an empirical answer to the question of the impact of the pandemic on crime and violence. In particular, this study aims to understand the pandemic's impact on crime in the City of Buenos Aires, the capital of Argentina.

Argentina's national government imposed a mandatory lockdown on March 20, 2020. In the City of Buenos Aires, the lockdown remained in place (with some modifications) until November 9, 2020. We use official historical statistics on crime and police arrests, and crime victimization survey data. We estimate the pandemic's overall impact on crime using a city-level linear regression model and controlling for secular trends and seasonal variations. Our identification of the pandemic's impact relies on the assumption that, had the pandemic not occurred, the different outcomes (such as the number of crimes) would have shown a seasonal evolution similar to that of the previous years. We assess the robustness of our results by estimating an alternative event-study model and using different econometric specifications.

We observe a large, significant, and immediate decline in crime following the imposition of the lockdown. After this sharp fall, crime started to recover, but it had not reached its prelockdown levels by the end of the strict lockdown in November 2020. On average, the lockdown led to a 52.5% fall in reported property crimes and a 59.3% fall in police arrests. Moreover, crime victimization measured from a monthly victimization survey fell 20.7%. Instead, we find no significant change in the number of homicides. In addition, we observe a large and significant increase (84.6%) in the number of detentions due to "resistance to authorities." The decrease in criminal activity was greater in business and transportation areas but still large in commercial and residential areas. These latter areas include informal settlements (*barrios populares*), which show an additional fall in theft, burglary, and larceny when a test-and-trace program (the *Detectar* Program) was implemented, suggesting that increased government presence in these areas could have had positive externalities on crime.

We contribute to the novel literature on the impact of the COVID-19 pandemic on crime in different parts of the world. Several studies report an overall decline in crime during the first weeks of isolation in Los Angeles, California (Campedelli et al., 2021), San Francisco and Oakland, California (Shayegh & Malpede, 2020); Vancouver, Canada (Hodgkinson & Andresen, 2020); Sweden (Gerell et al., 2020), Queensland, Australia (Andresen & Hodgkinson, 2020), and Mexico City, Mexico (Balmori de la Miyar et al., 2021).

The changes were not homogeneous across different types of crime. Campedelli et al. (2021) found that in Los Angeles (California) nonviolent property crimes fell to a greater extent. Halford et al. (2020), using data from a police district in the United Kingdom, found that shoplifting and theft were the crimes that declined the most after the first week of lockdown. In Sweden,

pickpocketing experienced the largest decline (Gerell et al., 2020). Rosenfeld and Lopez (2020) found that property and drug crime fell, while violent crime increased in a study examining 27 U.S. cities.

The evidence on the dynamics of serious assaults is mixed. Ashby (2020) and Campedelli et al. (2021) found no significant changes in reported assaults in several U.S. cities. However, there was a significant decline at least during some weeks in Sweden (Gerell et al., 2020) and Mexico City (Balmori de la Miyar et al., 2021). Halford et al. (2020) also noticed a decrease in the first week of confinement in a police district in the United Kingdom.

The evidence regarding car thefts is also mixed. Los Angeles, San Francisco, and Denver saw an increase in car thefts during the pandemic's first wave, whereas there was a decrease in Atlanta, Detroit, and Dallas, and no variation in Indianapolis (Mohler, 2020; Rosenfeld & Lopez, 2020). Hodgkinson et al. (2020) found no change in Vancouver's trend (when rates usually increase due to seasonal patterns), nor did Halford et al. (2020) for a police force area in the United Kingdom. For Queensland (Australia), Andresen and Hodgkinson (2020) found significant declines in most policing districts after the lockdown imposition, whereas Payne and Morgan (2020) found no major changes. In Latin America, there is evidence of a sharp fall in car thefts in urban areas of Colombia (Alvarado et al., 2020) and Mexico City (Balmori de la Miyar et al., 2021).

Most studies find a decline (albeit moderate) in reported burglaries after the start of the pandemic (Andresen & Hodgkinson, 2020; Ashby, 2020; Balmori de la Miyar et al., 2021; Halford et al., 2020; Mohler et al., 2020). The exceptions are two studies covering Sweden and Queensland (Australia), where the number of reported burglaries remained unchanged (Gerell et al., 2020; Payne & Morgan, 2020). Residential burglary declined by 20% from March to June 2020 in several U.S. cities, but commercial burglaries spiked at the end of May in association with mass protests against police violence (Rosenfeld & Lopez, 2020). In Detroit, Felson et al. (2020) find a decline in burglaries in residential areas and an increase in mixed land use areas.

Homicides—arguably the most violent and costly crime—showed heterogeneous dynamics across periods and places. A study for 64 cities in the United States revealed an overall decline in monthly homicides rates during April and May 2020. However, rates rose in 25 of the 64 cities examined (Abt et al., 2020). Rosenfeld and Lopez (2020) reported an increase across 11 U.S. cities in June 2020—led by Chicago, Philadelphia, and Milwaukee. In Latin America, homicides fell in Peru (Calderon-Anyosa & Kaufman, 2021) and El Salvador and Honduras (Semple & Ahmed, 2020) after the lockdown. The initial dynamics were similar in Colombia, where homicide rates fell sharply during the pandemic's first weeks. However, in June 2020, homicides had already returned to their pre-pandemic trend (Alvarado et al., 2020). In Mexico City, there was no significant change in homicide rates (Balmori de la Miyar et al., 2021).

Perhaps the most comprehensive study on the impact of the COVID-19 pandemic on crime is Nivette et al. (2021). This article considers 27 cities worldwide for six major crime categories (assault, theft, burglary, robbery, vehicle theft, and homicide). It finds that lockdowns were associated with a considerable, but a heterogeneous drop in urban crime. Their overall results show declines in all types of crime, except for homicide. Our findings for the City of Buenos Aires of a large and significant decline in reported property crimes, police arrests, and crime victimization, with no relevant change in homicides, are in line with the results of the literature on the impact of the COVID-19 pandemic on crime.<sup>1</sup>

Most studies of the COVID-19 pandemic's impact on crime rely only on official crime reports. However, the gap between actual and reported crime could be particularly relevant when assessing the crime impact of the pandemic. Mobility restrictions might have affected people's ability to report crimes. Moreover, the pandemic has also affected patrolling agencies, which have taken

over new tasks (Lum et al., 2020). Lower police availability because of staff absences due to illness and safety measures to prevent police contagion may have affected reporting (Halford et al., 2020). A survey conducted across 13 police agencies in Latin America and the Caribbean reported that all agencies modified their proactive and preventive activities (Alvarado et al., 2020). Thus, the observed changes in reported crime rates during the pandemic might combine changes in actual crime levels and changes in reporting rates. Instead, our use of both official reports and a victimization survey allows us to address this potential shortcoming. In addition to extending the study of the crime impact of the COVID-19 pandemic to Buenos Aires, a large Latin American capital city, we contribute to this recent literature by showing that the observed fall in reported crime is not just an artifact of diminished reporting, but it is also observed in survey victimization data.

Moreover, the richness of our data set, which includes information on detainees' area of residence and crime location, also allows us to evaluate how the lockdown affected criminals' mobility patterns, providing insights into structural features of criminal activity. In addition to the reduction in overall crime, we find that crime became "more local" during the pandemic. The lockdown reduced the share of detainees from outside the City of Buenos Aires and decreased the distance from the detainee's area of residence to the crime location. This reduction in the share of detainees from outside the City, likely driven by increased controls in the city accesses, did not seem to lead to a relative augment in crime in the suburban areas. The lockdown's impact on reported victimization in the City's suburbs and the rest of the country was not statistically different from that inside the City of Buenos Aires. These results align with the hypothesis that focalized place-based interventions have the potential to reduce overall crime rates. These findings coincide with previous studies on local police deployments (see Di Tella & Schargrofsky, 2004, for Buenos Aires; and Draca et al., 2011, for London) and with the hot spot literature (see Braga et al., 2014, 2019; Weisburd & Telep, 2016; Weisburd et al., 2012). Some recent studies, however, find that, because of the presence of displacement, hot spot interventions or comparable natural experiments might not induce reductions in total crime (see Sherman et al., 2014, for Trinidad and Tobago; Collazos et al., 2021, for Medellin; Blattman et al., 2021, for Bogota; and Hodgkinson et al., 2020, for a Midwestern Canadian city). The shift in patrolling patterns and the strict mobility controls across jurisdictions imposed in Buenos Aires during the pandemic unfolds a proper scenario to assess the displacement of crime and to contribute to this open debate.

The rest of the paper is organized as follows. Section 2 describes the sequence of measures implemented by the Argentine authorities to address the pandemic. Section 3 details our data and empirical strategy. Section 4 presents the results for the different crime measures. Finally, Section 5 presents the conclusions of our study.

## 2 | THE COVID-19 PANDEMIC IN ARGENTINA AND THE CITY OF BUENOS AIRES

The World Health Organization declared COVID-19 a pandemic on March 11, 2020 (WHO, 2020). Argentina's national government ordered its population to remain under a mandatory lockdown on March 20, 2020, closing international and domestic borders and only allowing essential businesses to remain open. This first phase of strict isolation was enforced nationally until April 12. After this initial phase, each province and municipality of the country periodically relaxed or strengthened mobility restrictions (alternating between strict lockdown phases and social distancing regimes) according to the number of positive COVID-19 cases and available intensive care unit (ICU) beds.

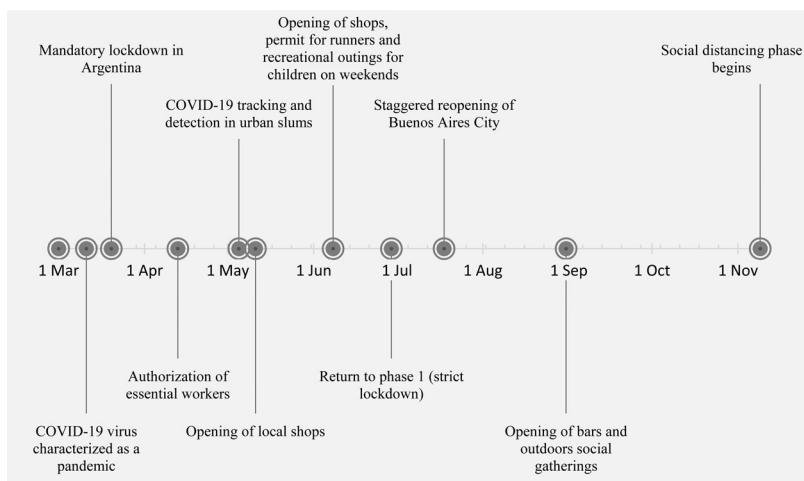


FIGURE 1 COVID-19 policies and restrictions in the City of Buenos Aires

March–November 2020

Sources: WHO (2020) and GCBA (2020a, 2020b, 2020c, 2020d)

The City of Buenos Aires, the capital of Argentina, is an autonomous federal territory that does not belong to any of the country's 24 provinces. The city government maintained the strict initial restrictions until May 11 (GCBA, 2020a). After that day, different economic and recreational activities began to be progressively allowed. On June 8, the local government authorized recreational rides for children during weekends and nighttime outdoor physical activities (GCBA, 2020a). After an increase in positive COVID-19 cases, local authorities decided to reverse these relaxations and reinstated a strict lockdown between June 29 and July 17. After this day, the City of Buenos Aires began a staggered reopening of different economic sectors (GCBA, 2020b). On November 9, the City of Buenos Aires left the mandatory lockdown phase, giving way to a stage of social distancing (GCBA, 2020c) in which mobility permits were no longer necessary. Schools began to reopen, and the government permitted more social gatherings (GCBA, 2020d). Figure 1 illustrates the timing of the lockdown stages in the City of Buenos Aires:

Mobility fell very sharply throughout the City after the lockdown began, and then it started to recover slowly. Online Appendix Figures A1–A3 show the evolution of mobility in the City, using data for the number of vehicles counted by government traffic cameras, one-way tickets sold in the public transport system, and Google mobility cellular use data. The number of public transportation users doubled in early May 2020 compared to the first week of isolation (La Nación, 2020a). Despite this recovery, mobility remained well below prelockdown levels for several months. National authorities introduced a unique mobility permit and a mobile phone application (“*Cuidar*”) to extend mobility permits, monitor citizens' symptoms, and allow essential workers to attend to their duties. Citizens could ask for three types of permits: essential activities, nonessential activities, and a 48-h permit for specific situations (such as attending a nonurgent medical appointment or providing assistance to relatives). Due to an increase in COVID-19 cases, authorities decided to return to phase 1 on June 29, strengthening mobility restrictions, limiting business hours, and imposing more severe fines for non-compliance until July 17 (Alvarez, 2020). Mobility levels decreased, but not as much as at the beginning of the lockdown in late March (La Nación, 2020b). After this period, several commercial, recreational, and cultural activities were

enabled, including the opening of parks. By the end of the lockdown period and the beginning of the social distancing phase, mobility had increased significantly from the deep initial drops but was not still near prelockdown levels.

In terms of the disease's spread, the Buenos Aires Metropolitan Area initially concentrated most of the country's COVID-19 cases (Costa, 2020, May 10). By mid-June, ICU bed occupation exceeded 50% (Bär, 2020). The City reached the first peak of contagions on September 15. From that moment on, there was a slow and steady decline in daily cases through the end of the year (Sigal, 2020). Online Appendix Figures A4 and A5 present the rates of COVID-19 cases and COVID-19 related deaths for the City of Buenos Aires and Argentina, respectively from March to December 2020.

### 3 | DATA AND METHODOLOGY

#### 3.1 | Property crime and homicide data sets

The Ministry of Justice and Security of the City of Buenos Aires produces a rich crime statistics system. These statistics, which are the primary source of criminal information for this study, include reported property crimes and homicides between January 1, 2018, and November 30, 2020, for the City. This period encompasses the mandatory lockdown period (from March 20 to November 9, 2020) and the two previous years, which we use to capture seasonal variations in criminal reports in nonpandemic years.

The criminal reports data set includes georeferenced individual records for the main property crimes: robberies or thefts—involving or not a weapon—burglaries, and larcenies. Each record also specifies the type of location where the event occurred (home, office, public transportation, street, public space, store, etc.).

The reported homicides data set provides information on the cause of death, and the time and place of the event (georeferenced). In addition, when known, the data set includes some sociodemographic characteristics of the victim and the perpetrator.

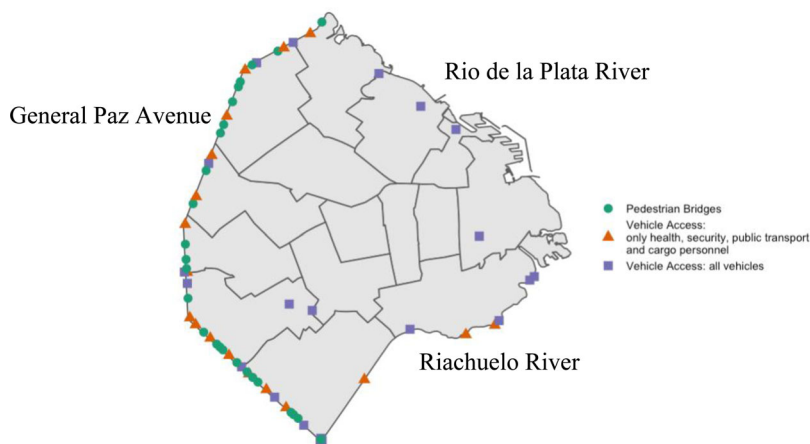
#### 3.2 | Detainees data set

We also use data on all detainees in the City between January 1, 2019, and November 30, 2020, provided by the Ministry of Justice and Security of the City of Buenos Aires.

The data set contains information about the type of crime that led to the detention, the crime's date and location, and the detention date. It also specifies the detainee's sociodemographic information, including nationality, sex, age, and place of residence (the neighborhood is specified, but not the exact address). In the data set, almost half of detainees are residents of the City of Buenos Aires (48.4%), 26% of detainees live in the Province of Buenos Aires (which surrounds the City), 9.7% are homeless, and 0.5% have an address in another province or country. There is no residence data for 15.5% of detainees.<sup>2</sup>

#### 3.3 | LICIP's victimization survey data set

Official crime statistics typically capture a fraction of actual crimes due to underreporting. The gap between actual and reported crime could be particularly relevant when assessing the impact



**FIGURE 2** The 15 communes of the City of Buenos Aires and the entry checkpoints during the isolation period

Source: Government of the City of Buenos Aires Data Portal (<https://data.buenosaires.gob.ar/dataset/puntos-de-acceso-a-la-ciudad/resource/4b7c5065-2a15-4b5c-bd23-ed3c3046c673>, accessed on March 30, 2021)

[Color figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

of the COVID-19 pandemic on crime since the pandemic might have also affected people's ability to report crimes. For our analysis, we complement the official crime statistics with information from a victimization survey produced by the Crime, Institutions and Policy Research Laboratory of Torcuato Di Tella University (LICIP-UTDT for its initials in Spanish).

Following international standards,<sup>3</sup> the survey asks the interviewed subjects whether they or a cohabiting household member has suffered at least one crime in the last 12 months, regardless of whether they reported it to the authorities or not. The survey is conducted monthly by phone to a random and geographically balanced sample of 1200 households across the country's main urban conglomerates.<sup>4</sup> It also provides information on respondents' age, sex, and educational level.

We use data from the victimization survey for January 2018 to November 2020. During the period of analysis, 25.5% of the interviewed households reported having been victimized. Among the victimized households, the most frequently reported crimes were violent crimes (56.7%), larceny of personal belongings (18.8%), home burglary (12.6%), and car theft (3.7%).

### 3.4 | Classification of areas within the City of Buenos Aires

The 203 km<sup>2</sup> of the City of Buenos Aires are divided into 15 administrative divisions called *comunes*, which comprise 48 neighborhoods. As shown in Figure 2, the city is separated from the homonymous Province of Buenos Aires by the Riachuelo river (crossed by six bridges) and the General Paz Avenue (with 22 vehicle crossings and 26 pedestrian bridges). Due to COVID-19 restrictions, checkpoints were placed at several tolls and highway exits.

Crime dynamics might diverge between different areas of the City. To assess if the pandemic had differential effects across types of areas, we used a machine-learning model to classify the location of each reported crime into the following seven land use categories: residential, commercial, business/offices, transportation, parks, industrial, and *barrios populares*.<sup>5</sup> Figure A6 in

the Online Appendix shows how the machine-learning model classified each block and provides further details of the methodology and sources.

### 3.5 | Empirical strategy

We aim to measure the impact of the COVID-19 pandemic and the subsequent policy responses on crime in the City of Buenos Aires. As discussed above, the pandemic simultaneously affected potential victims, potential criminals, police forces, and the judiciary and penitentiary systems. We take a reduced-form approach to estimate the overall impact of the pandemic on a set of crime and arrest outcomes, as we do not have disaggregated information to disentangle the relative importance of each different channel. We use a linear regression model with time dummies to control for seasonal variations and secular trends in the dependent variables. Formally, we estimate the following models:

$$Y_t = \beta D_t + \gamma_d + \mu_s + \delta_y + \varepsilon_t \quad (1)$$

and

$$Y_t = \sum_{i=1}^8 \beta_i D_{it} + \gamma_d + \mu_s + \delta_y + \varepsilon_t, \quad (2)$$

where the dependent variable  $Y_t$  is a crime or arrest outcome on date  $t$ ,  $\gamma_d$  is a day-of-the-week dummy variable,  $\mu_s$  is a week-of-the-year dummy variable,  $\delta_y$  is a year dummy variable, and  $\varepsilon_t$  is an idiosyncratic error term.

In Equation (1), we consider one dummy variable  $D_t$  to indicate the whole lockdown period. In this first model, the coefficient  $\beta$  captures the average impact of the different stages of the lockdown on the outcome variable. In Equation (2), the dummy variables  $D_{it}$  ( $i = 1, \dots, 8$ ) correspond to each of the seven most relevant stages of the lockdown period, and the last one indicates the beginning of the social distancing phase, as described in Figure 1. These dummy variables start at zero, take the value of one when each stage went into effect and remain at this value after that. For example,  $D_1$  takes the value of one for all dates since the start of the lockdown (March 20, 2020, onwards) and  $D_2$  takes the value of one for all dates since the start of the second stage of mobility restrictions (April 12, 2020, onwards). Therefore, each  $\beta_i$  coefficient captures the incremental impact of the new stage of the lockdown on the outcome variable (relative to the previous stage). For example,  $D_2$  captures the change in the outcome variable during the second stage of the lockdown relative to the lockdown's first stage.<sup>6</sup>

The inclusion of the year and week-of-the-year time dummies is critical for our identification strategy and the interpretation of the  $\beta$  coefficients. The year dummy variables capture secular changes in the outcomes. The week-of-the-year dummies capture within-year seasonality. The  $\beta$  coefficients capture the deviation in the outcome variable during the lockdown period relative to its prelockdown trend after accounting for typical seasonal changes. Therefore, the  $\beta$  coefficients provide an estimate of the impact of the pandemic (and the different lockdown stages) on criminal activity under the assumption that, if the pandemic had not occurred, the outcome (e.g., the number of crimes) would have shown a seasonal evolution as in previous years.<sup>7</sup> The fact that the timing of the pandemic and the changes in mobility restrictions were unrelated to the crime

variables we examine supports the plausibility of this assumption. The addition of day-of-the-week dummy variables captures within-week systematic patterns in the outcome variable and helps to increase the precision of the model.

We estimate the models by ordinary least squares. The time-series nature of our data could lead to autocorrelation in the model residuals and induce bias in the estimation of our standard errors. This bias, in turn, might lead to incorrect statistical inference. We address this issue using a heteroscedasticity and autocorrelation consistent (HAC) estimator for the standard errors, following Newey and West (1987). We implement this estimator using the automatic bandwidth selection procedure presented in Newey and West (1994). This estimator allows us to perform (asymptotically) valid statistical inference in the presence of autocorrelation and heteroscedasticity.

To estimate the first model, we use data until October 2020, when the strict lockdown is finished. For the second model, we also use the information for November 2020. We estimate these models using the counts of the outcome of interest as the dependent variable. In the case of homicides, we use weekly counts to reduce the number of zero-valued observations. In the analysis of victimization survey data, we use monthly victimization rates. In these last two cases, we use month-of-the-year dummy variables to capture within-year seasonal variations instead of week-of-the-year dummies. This change does not substantially alter the underlying identification assumption or the interpretation of the  $\beta$  coefficient.

For crime and arrests data, we also provide estimates using the inverse hyperbolic sine (IHS) transformation of the daily counts as the dependent variable in the Online Appendix. This transformation, proposed initially by Johnson (1949), is helpful since it approximates the logarithmic function, but, as opposed to the logarithmic function, it is defined at zero (see Burbrige et al., 1988). When using this transformation, the  $\beta$  coefficients can be easily reexpressed to percentage changes.<sup>8</sup>

We complement the previous models with an event-study model. This model allows us to test if, before the pandemic, crime dynamics in 2020 resembled patterns of previous years. The existence of parallel trends in crime dynamics before the pandemic helps validate the counterfactual assumption, supporting the causal interpretation of our results. Following Alvarado et al. (2020), we partition our data in fortnights and estimate the following model:

$$Y_t = \sum_{k=-5}^T \beta_k D_t^k + \gamma_d + \mu_s + \delta_y + \varepsilon_t. \quad (3)$$

In this dynamic version, instead of using a static indicator  $D_t$  taking the value of one since the mandatory isolation period began, we include a set of dummy variables  $D_t^k$  that take the value of one for fortnight  $k$  in the year 2020 and zero otherwise. We set  $k = 0$  for the fortnight starting the week before the beginning of the mandatory lockdown as some changes in mobility (and crime) started to take place once the pandemic was declared, a few days before the mandatory lockdown (see, e.g., Online Appendix Figures A1–A3). Coefficients between  $k = -5$  and  $-1$  capture changes in the outcome variable during the fortnights before the shock. The coefficient for fortnight  $k = -1$  is the omitted category in the estimation and normalized to zero.  $k = T$  is the last fortnight of 2020 with available information for each database. If the coefficients for  $k < -1$  show no discernible pattern, it indicates that, before the pandemic, trends for 2020 were “parallel” to those of the previous years. In turn, the coefficients for  $k \geq 0$  capture any deviation in the seasonal fluctuation of crime between the fortnights of 2020 under lockdown and the same fortnights of the previous two years.

*Robustness exercises using panel data.* To assess the robustness of our main results, we estimate the pandemic's impact on different types of crimes using information disaggregated at the commune and census tract level. For these robustness checks, we use the following panel data model:

$$Y_{c,t} = \beta D_t + \gamma_d + \mu_s + \delta_y + \theta_c + \varepsilon_{c,t}, \quad (4)$$

where the dependent variable  $Y_{c,t}$  is the value of a crime outcome at date  $t$  in commune (or census tract)  $c$ . In this model, we include a set of commune (or census tract) fixed effects ( $\theta_c$ ) to account for the nonvarying heterogeneity between these geographical areas. The inclusion of these fixed effects allows us to exploit the within-area variation over time to estimate our coefficient of interest ( $\beta$ ). The rest of the variables maintain the same interpretation as in the previous models.

*Analysis of detainees' mobility patterns.* In addition to estimating the pandemic's impact on victimization rates and the number of different types of crimes and arrests, we examine how the pandemic affected the average distance between the detainees' residence area and the crime location. For this analysis, we use an event-level data set in which each observation corresponds to one arrest and estimate the following model:

$$Y_{a,t} = \beta D_t + \gamma_d + \mu_s + \delta_y + \varepsilon_{a,t}, \quad (5)$$

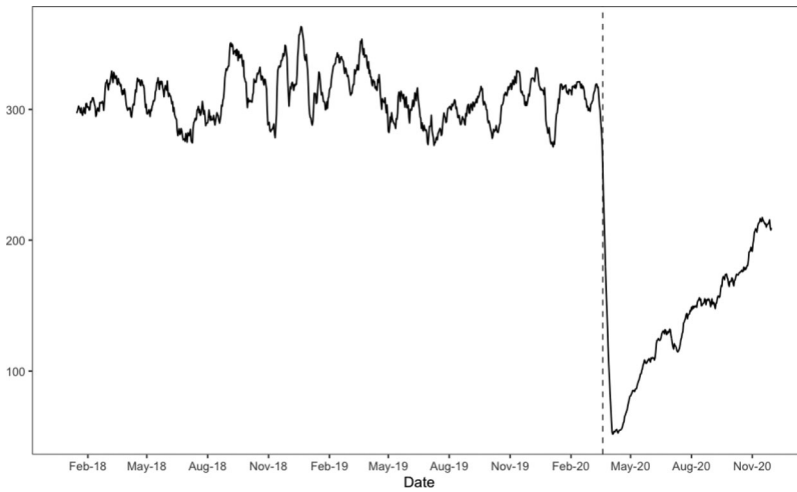
where the dependent variable  $Y_{a,t}$  is the distance between the detainee's area of residence and the crime location for arrest  $a$  occurred on date  $t$ . The rest of the variables maintain the same interpretation as in the previous models.

## 4 | RESULTS

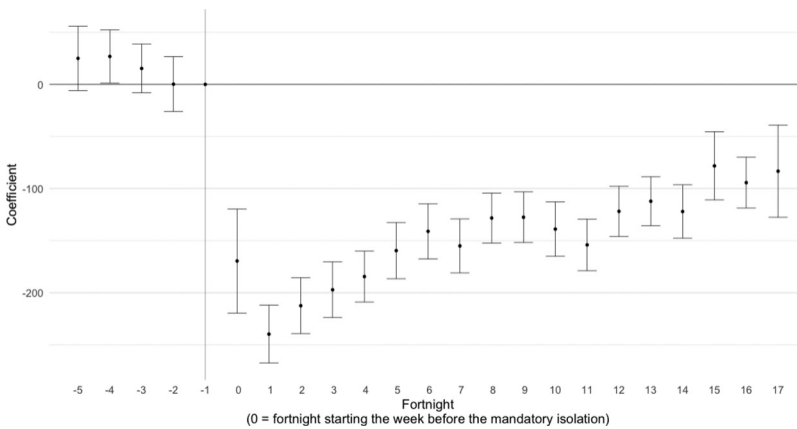
### 4.1 | Property crime and homicides

Figure 3 shows a dramatic fall in (reported) property crime in Buenos Aires after the strict lockdown began on March 20, 2020 (indicated by the dashed vertical line). Before the pandemic, the daily average number of thefts and larcenies was 309. This number fell sharply to 49 on the first week of isolation.<sup>9</sup> After the large drop, the number of events then recovered gradually to around 185 per day by October 2020, still below the prepandemic levels. The drop in property crime occurred in each of the 15 Buenos Aires communes (see Online Appendix Figure A7 for each commune).

Table 1 presents the results of the estimation of our two main models using the daily number of reports of thefts, burglaries, and larcenies for the whole City of Buenos Aires. The number of daily crime reports fell, on average, by 162 during the strict lockdown period. This fall represents 52.5% of the average daily prelockdown reports. The number of reports plummeted on the first period of lockdown and then started to recover. In the first stage of the lockdown, the average daily number of reported thefts, burglaries, and larcenies fell by 245 (80% of the prelockdown average). The posterior evolution of crime reports was sensitive to the intensity of mobility restrictions. The subsequent relaxations in mobility restrictions were accompanied by increases in the number of reports. This steady recovery in the number of crime reports had a short impasse when the city reinstated a strict lockdown between June 29 and July 17, 2020. Table A1 in the Online Appendix reports the results of these estimations using the IHS transformation of the daily count of thefts,



**FIGURE 3** Daily number of reported thefts and larcenies in Buenos Aires City  
*Note:* 15-day moving average. The dashed line marks the beginning of the mandatory lockdown



**FIGURE 4** Event study of the impact of the lockdown on thefts, burglaries, and larcenies  
*Note:* The event study model includes day of the week-, week of the year-, and year-specific fixed effects. 90% confidence intervals reported

burglaries, and larcenies as the dependent variable. Results are robust to this alternative specification of the dependent variable. Results are also robust to alternative model specifications that include fixed effects controlling for the commune of the crime (Online Appendix Tables A2 and A3), or the census tract where the crime was committed (Online Appendix Tables A4 and A5).

Figure 4 shows the results of the estimation of the event study model. These results first show that, before the pandemic, crime trends in 2020 were not systematically different from those observed in the previous two years. Moreover, the sharp decline since the mandatory lockdown does not follow a previous prelockdown trend.

We examine if the change in criminal dynamics varied by the type of area of the city, using the categories described in Section 3.4. Online Appendix Tables A6 and A7 report the estimations for each type of area separately. We find that theft, burglary, and larceny reports fell across all

**TABLE 1** Estimation of the effect of the lockdown on the number of daily reports for thefts, burglaries, and larcenies in the City of Buenos Aires

	<b>Model 1</b>	<b>Model 2</b>
Mandatory lockdown (–)	–161.978*** (10.371)	–244.931*** (11.813)
Authorization of essential workers (+)		35.422*** (9.637)
Opening of local shops (+)		26.424*** (8.712)
Opening of shops permit for runners, and recreational outings for children on weekends (+)		46.798*** (7.910)
Return to phase 1 (strict lockdown) (–)		–20.989** (9.658)
Staggered reopening of the city (+)		18.543** (8.310)
Opening of bars and outdoors social gatherings (+)		20.398** (8.625)
Social distancing phase (+)		22.820* (12.207)
Prelockdown mean	308.655	308.655
Change with respect to prelockdown levels	–52.5%	–
Year DV	Yes	Yes
Week DV	Yes	Yes
Day of the week DV	Yes	Yes
R <sup>2</sup>	0.813	0.846
Adj. R <sup>2</sup>	0.799	0.834
Num. obs.	1035	1065

*Note:* The dependent variable is the daily number of reports of thefts, burglaries, and larcenies. A (+) refers to a relaxation of the isolation measures, while a (–) reflects more restrictions. Model 1 considers the period January 2018–October 2020. Model 2 uses information until November 2020. Models include year-, week-, and day of the week-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

the different types of areas. The decline was relatively less pronounced in places with a relatively smaller reduction in mobility, such as residential and commercial areas. Business and transportation areas, together with parks, had the largest reductions in theft, burglary, and larceny reports. Figure A8 in the Online Appendix shows the drop in property crime for each type of area in the City of Buenos Aires.

Interestingly, we did not find a significant effect of the lockdown on property crimes committed inside homes (houses or buildings), but there was more than a 50% decline outside home locations (see Online Appendix Table A8).

Crime dynamics in informal settlements (*barrios populares*) during the COVID-19 pandemic deserve special attention. In the City of Buenos Aires, these areas were particularly vulnerable to the pandemic's economic consequences and were the first ones where the local government implemented test-and-trace efforts (the *Detectar* Program). This program's implementation brought a large deployment of public officers and resources to test and trace COVID-19 cases and

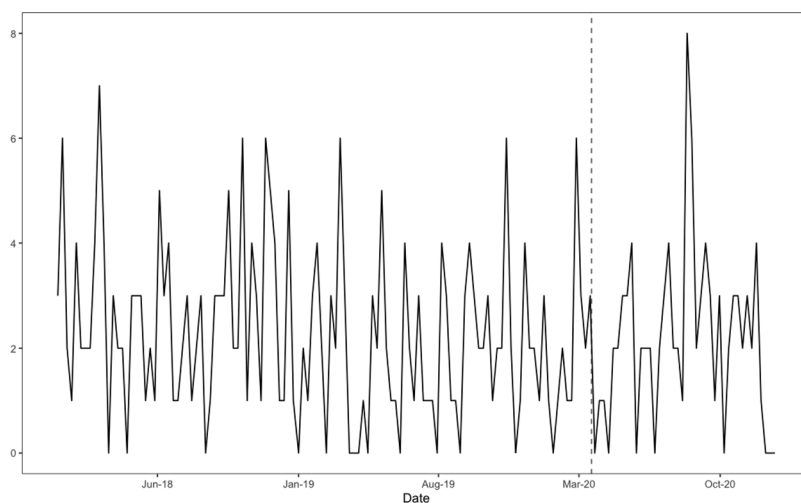


FIGURE 5 Weekly number of reported homicides in Buenos Aires City

Note: 15-day moving average. The dashed line marks the beginning of the mandatory lockdown

provide food and shelter to infected people (Suaya & Schargrotsky, 2020). This increased government presence could have had positive externalities on crime. To estimate the *Detectar* Program's effect on crime, we first run our model on observations for the informal settlements, including an additional dummy variable taking a value of one for the periods after the *Detectar* Program started in each *barrio popular*.<sup>10</sup> Online Appendix Table A9 reports the results of the estimation of this model. We find that the *Detectar* Program's deployment further reduced theft and larceny reports in these deprived areas.

We also estimate this augmented model using as a dependent variable the ratio between the number of reported thefts, burglaries, and larcenies inside *barrios populares* and the total number of these property crimes reported in the neighborhood where *barrio populari* is located. This exercise seeks to assess if the evolution of crime in *barrios populares* during the *Detectar* program's implementation was different from that in their surrounding areas. Online Appendix Table A10 shows the results of the estimation of this model. When considering all *barrios populares*, we find a negative, but not statistically significant (at standard levels) effect of the *Detectar* Program. This estimation includes some *barrios populares* whose neighborhoods were also part of the *Detectar* Program. When we restrict the estimation only to those *barrios populares* for which the program did not cover its surrounding neighborhood, we find a significant negative effect on the ratio of reported property crimes. The increased government presence in response to the health crisis seems to have indirectly reduced crime in these areas.

We also assess if changes in reported thefts, burglaries, and larcenies during the lockdown differed between day and night. Online Appendix Table A11 presents the results of the estimation of our two main models considering separately reported crimes committed at night (from 10 pm to 6 am)<sup>11</sup> or during the day. We find a similar decline in reported thefts and larcenies in the night (−61.3% relative to prelockdown level) and the day (−51.1%).

We then analyze the impact of the lockdown on homicides. The homicide rate in the City of Buenos Aires was 3.32 per 100,000 inhabitants in 2019 (Ministry of Justice & Security of the City of Buenos Aires, 2020). This rate is low compared to the average for Argentina (5.3) and South America (21).<sup>12</sup> Figure 5 shows the 15-day moving average of the number of reported homicides

**TABLE 2** Estimation of the effect of the lockdown on the number of weekly reports of homicides in the City of Buenos Aires

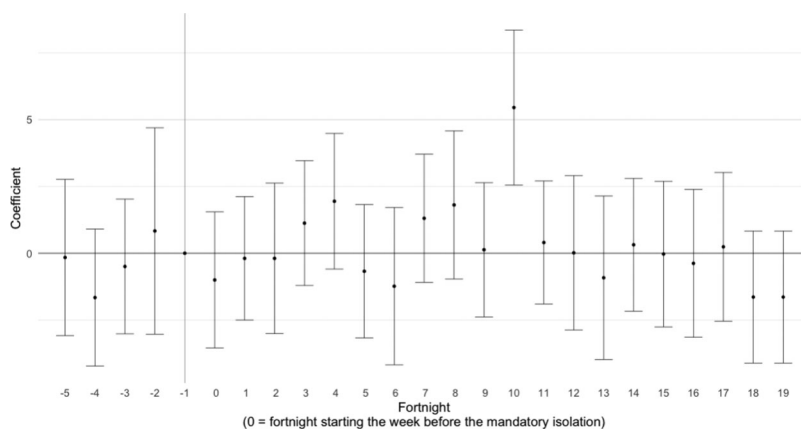
	<b>Model 1</b>	<b>Model 2</b>
Mandatory lockdown (–)	0.375 (0.588)	–0.421 (0.861)
Authorization of essential workers (+)		0.979 (0.763)
Opening of local shops (+)		0.003 (0.948)
Opening of shops, permit for runners and recreational outings for children on weekends (+)		–1.128 (0.846)
Return to phase 1 (strict lockdown) (–)		2.788*** (0.689)
Staggered reopening of the city (+)		–0.103 (1.156)
Opening of bars and outdoor social gatherings (+)		–2.312* (1.182)
Prelockdown mean	2.278	2.278
Change with respect to prelockdown mean	16.45%	—
Year DV	Yes	Yes
Month DV	Yes	Yes
R <sup>2</sup>	0.122	0.187
Adj. R <sup>2</sup>	0.035	0.066
Num. obs.	156	156

*Note:* The dependent variable is the weekly number of homicide reports. A (+) refers to a relaxation of the isolation measures, while a (–) reflects more restrictions. Model 1 considers the period January 2018–October 2020. Model 2 uses information until November 2020. Models include year- and month-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

from January 2018 to November 2020. We observe no noticeable change in homicide patterns after the start of the lockdown on March 20, 2020 (vertical dashed line).

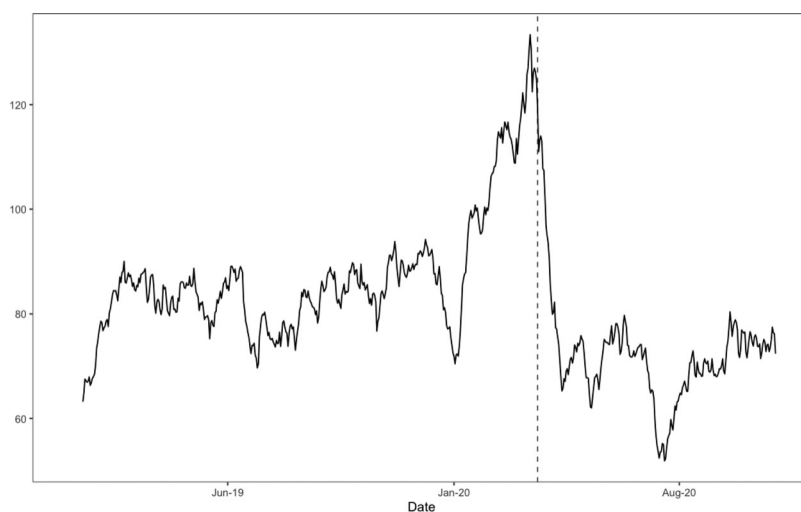
We formally assess the lockdown's impact on homicides by estimating the linear regression models described above. Table 2 shows the results of the estimations. We find no significant impact of the lockdown on the number of weekly homicides.<sup>13</sup> Perhaps this result should not be surprising: our review of the recent literature on the crime impact of the pandemic presented in the introduction had also found no systematic changes in homicides.<sup>14</sup> The event study pictured in Figure 6 confirms the lack of effect of the lockdown on the dynamics of homicides in the City of Buenos Aires.

We also examine if the homicide dynamics during the lockdown differed between *barrios populares* and other areas of the city. Online Appendix Table A13 shows the results of the estimations considering homicides inside and outside *barrios populares* separately. We find that the lockdown led to an increase in homicides committed outside *barrios populares* and had no significant impact on homicides inside them. The difference between the impact of the lockdown on homicides outside and inside *barrios populares* is statistically significant (at standard confidence levels).



**FIGURE 6** Event study of the impact of the lockdown on homicides

*Note:* The event study model includes day of the week-, week of the year-, and year-specific fixed effects. 90% confidence intervals reported



**FIGURE 7** Number of daily detainees in Buenos Aires City

*Note:* 15-day moving average. The dashed line marks the beginning of the mandatory lockdown

## 4.2 | Detainees

We assess the impact of the lockdown on police arrests, and further investigate its effects on crime dynamics. Figure 7 shows the 15-day moving average of the number of detainees in the City of Buenos Aires from January 2019 to November 2020. The graph shows a large fall in the number of detainees after the start of the lockdown on March 20, 2020 (vertical dashed line). The graph also reveals that the number of detainees had jumped at the beginning of 2020. This initial jump responded to a change in the detention criteria by the local police implemented at the beginning of the year.

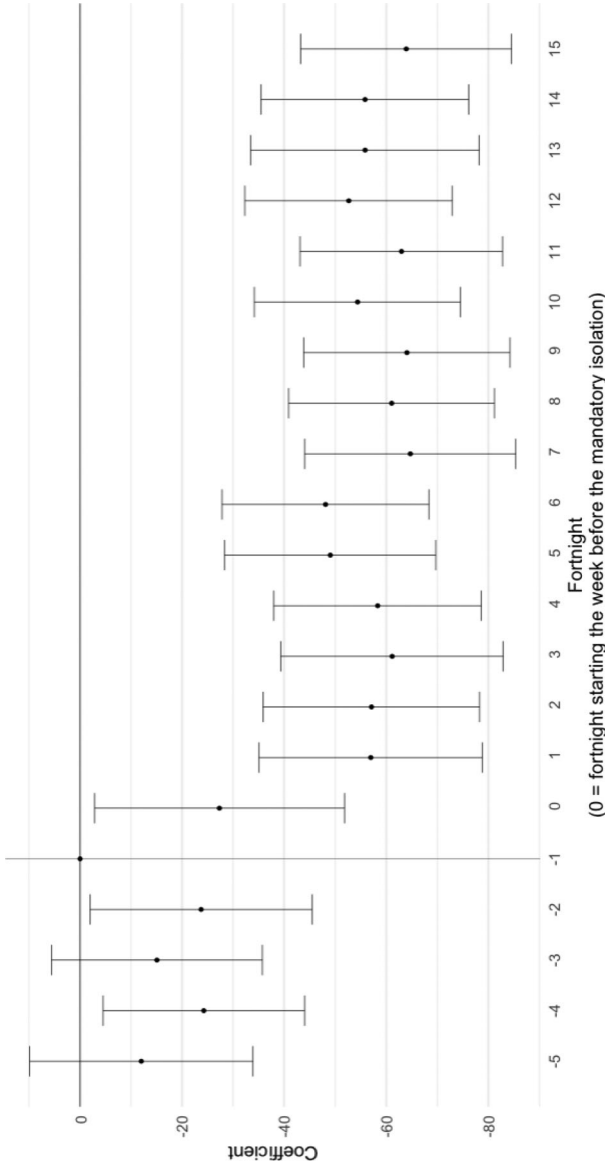
Given these particular dynamics, in Table 3 we present two alternative estimations for the pandemic's effect on arrests. Models 1 and 2 first consider as counterfactuals that, without the pandemic, the dynamics of detainees during the lockdown would have followed a seasonal pattern as in 2019 starting from the 2020 prelockdown levels. The results show a large drop in arrests of about 60%. Figure 8 reveals similar findings using the event study specification. Alternatively, in Models 3 and 4 of Table 3, we report the results of the estimation of an augmented model, which includes an additional dummy taking the value of one for the prepandemic months of 2020 and zero otherwise. In these alternative models, the counterfactual for the 2020 lockdown period is, directly, the same period of 2019. The results are similar, but quantitatively smaller, implying a drop in detainees of about 25%.

We estimate the impact of the lockdown on the number of detainees by different types of crime. Table 4 reports the results of these estimations. We find that the lockdown led to significant and large drops in the number of detainees for most crimes, ranging from 30% (sexual assaults) to 66.4% (thefts using motorbikes) of the prelockdown means. The only type of crime that increased during the lockdown was "resistance to authorities." The lockdown led to a sizeable and significant increase in the number of detainees for this type of incident, typically referring to episodes at the checkpoints set up during the lockdown to enforce mobility restrictions. The increase in this type of crime reflects an important consequence of the pandemic on police activity. The police were put in charge of enforcing the mobility restrictions imposed to limit the virus's spread. This responsibility entailed a change in police deployment (from strategies based on crime hot spots to strategies based on transit hot spots) and police interaction with citizens. The increase in "resistance to authorities" episodes reflects the challenges for police officers to enforce new and changing regulations, which some citizens defied. The increase in this type of episode evidences a potential cost and risk of this new role for police agencies. The enforcement of mobility restrictions can generate frictions between citizens and police, which can negatively affect the trust and legitimacy in the police and be counterproductive to its effectiveness in crime prevention and control.

We use the information on detainees to assess if the pandemic and the subsequent mobility restrictions brought a change in the age profile of detainees. School closures and the suspension of social programs reduced access to education and support services among at-risk youths, potentially increasing juvenile delinquency. Table 5 shows the results of the estimation of the impact of the lockdown on the number of detainees, considering detainees under 18 years old, from 18 to 30 years old, and older than 30 years old, separately. We find a large fall in detainees for the three age groups. The largest drop (relative to the prelockdown averages) occurs among juvenile arrests, suggesting that the City of Buenos Aires did not face an increase in juvenile delinquency during the lockdown.

We also use the information on detainees to assess if the lockdown changed criminals' mobility patterns. Every day, the City of Buenos Aires usually receives millions of people from surrounding areas who commute to work, study, do paperwork, receive medical attention, or do recreational activities. The lockdown restricted the entrance to the city only to persons in essential occupations (such as health-care workers) or with special authorization. The police enforced these restrictions by controlling all the vehicular accesses to the city (shown in Figure 2). As the data set includes information on the residence area of detainees and the location of the crime for which they were detained, we can assess if the lockdown controls affected the possibility of outside residents coming to the City of Buenos Aires to commit crimes.

The first three columns of Table 6 show the results of the estimations of the impact of the lockdown on the number of detainees with a residence in the City of Buenos Aires, with a residence in the Province of Buenos Aires (i.e., outside the city), and with no residence (homeless or *situación*



**FIGURE 8** Event study of the impact of the lockdown on detainees

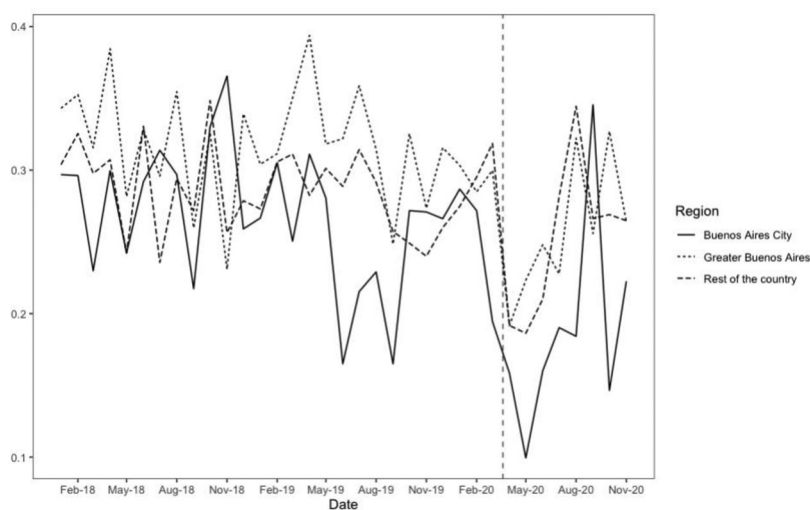
*Note:* The event study model includes day of the week-, week of the year-, and year-specific fixed effects. Additional fixed effects for the place of residence of the detainees were included. 90% confidence intervals reported

**TABLE 3** Estimation of the effect of the lockdown on the number of daily detainees in the City of Buenos Aires

	Model 1	Model 2	Model 3	Model 4
Mandatory lockdown (-)	-51.545*** (4.204)	-38.867*** (5.084)	-20.851*** (3.508)	-7.907** (4.009)
Authorization of essential workers (+)		-5.557 (5.287)		-5.557 (4.840)
Opening of local shops (+)		3.214 (4.450)		3.214 (3.430)
Opening of shops, permit for runners and recreational outings for children on weekends (+)		9.298** (4.544)		9.298*** (3.204)
Return to phase 1 (strict lockdown) (-)		-21.416*** (4.035)		-21.416*** (3.109)
Staggered reopening of the city (+)		8.937*** (2.909)		8.937*** (2.226)
Opening of bars and outdoor social gatherings (+)		-6.625 (5.744)		-6.625 (5.953)
Social distancing phase (+)		-71.436*** (5.882)		-71.436*** (6.201)
2020 prelockdown			30.694*** (2.558)	30.959*** (2.161)
Prelockdown mean	87.108	87.108	87.108	87.108
Lockdown chg. with respect to prelockdown mean	-59.2%	-	-23.94%	-
2019 mean	82.204	82.204	82.204	82.204
Lockdown chg. with respect to 2019 mean	-62.7%	-	-25.4%	-
Year DV	Yes	Yes	No	No
Week DV	Yes	Yes	Yes	Yes
Day of the week DV	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.577	0.686	0.561	0.680
Adj. R <sup>2</sup>	0.530	0.647	0.521	0.647
Num. obs.	700	700	700	700

Note: The dependent variable is the daily number of detainees. All four models include all data between January 1, 2019, and November 30, 2020. Models 3 and 4 further introduce a dummy variable (DV) that takes 1 only for the observations in 2020 before the introduction of the mandatory lockdown. Models 1 and 2 include year-, week-, and day of the week-specific DV and Models 3 and 4 include week- and day of the week-specific DV. Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

*de calle*), respectively. We find that the impact on the number of detainees is (in relative terms) much larger for detainees with residence outside the city. The lockdown reduced the number of detainees residing in the Province of Buenos Aires by 48.4% (of the prelockdown averages). The impact on the number of detainees with residence in the City of Buenos Aires drop was about half this size: 29.8%. These results indicate that mobility restrictions and police checkpoints altered the relative costs and opportunities of committing crimes in the City of Buenos Aires for potential criminals living inside and outside the City.



**FIGURE 9** Percentage of victimized interviewed households in Buenos Aires City, Greater Buenos Aires, and the rest of the country

The lockdown also reduced mobility within the City of Buenos Aires. The police set up some checkpoints inside the city to verify if passersby had the proper authorization to move around. We assess if the mobility restrictions altered criminals' mobility patterns within the city. Table 6 shows the impact of the lockdown on the number of detainees who reside in a different commune where the alleged crime was committed (column 4) and in the same commune (column 5). We find a significant and larger relative decline (46.5%, relative to the prelockdown mean) in the number of detainees from another commune than in the number of detainees living in the same commune (9%, and not statistically significant at standard levels).<sup>15</sup> Our results suggest that mobility restrictions and reinforced street police presence led to relatively fewer detainees from outside the city and fewer detainees from other communes of the city. During the lockdown, crime became “more local.”

We also examine the impact of the lockdown on the distance from the location of the crime to the residence area of the detainee. Online Appendix Table A15 shows that the lockdown led to a significant and large distance reduction of more than one mile when considering all detainees (column 1), but smaller and less precise when restricting the analysis to detainees who reside in the City of Buenos Aires (column 2). The rest of this table performs the same analysis considering separately different types of crime. We find that the lockdown reduced the average distance between the crime location and the detainees' area of residence for most of them.

### 4.3 | Victimization surveys

The previous results rely on official crime reports. Official statistics is an extremely useful source of information, as they provide many details on the characteristics and dynamics of criminal activity. However, examining these statistics might not be enough to assess the impact of the pandemic (and other phenomena) on crime. The pandemic and the subsequent containment measures may have also affected crime reporting rates. If this is the case, the previous analysis might be confounding actual crime reductions with decreases in crime reporting.

**T A B L E 4** Estimation of the effect of the lockdown on the number of daily detainees in the City of Buenos Aires by crime type

	<b>Drug trafficking</b>	<b>Theft</b>	<b>Thieves on Motorbike</b>	<b>Larceny</b>	<b>Drug dealing</b>	<b>Sexual assault</b>	<b>Homicide</b>	<b>Resistance to authorities</b>	<b>Others</b>
Mandatory lockdown	-16.515*** (2.000)	-9.532*** (0.866)	-0.642*** (0.155)	-6.161*** (0.487)	-3.009*** (0.503)	-0.409** (0.166)	-0.290** (0.127)	2.184*** (0.820)	-5.859*** (1.820)
Mean Jan./Feb 2020	28.55	26.2	0.967	11.03	4.8	1.35	0.65	2.583	21.933
Change to Jan./Feb 2020	-57.85%	-36.38%	-66.39%	-55.86%	-62.69%	-30.3%	-44.61%	84.55%	-26.71%
Prelockdown mean	23.158	19.707	0.872	7.622	2.86	1.043	0.5	4.775	21.232
Change to prelockdown levels	-71.31%	-48.37%	-73.62%	-80.83%	-105.2%	-39.21%	-58%	45.74%	-27.59%
Year DV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Week DV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day of the week DV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.606	0.318	0.158	0.333	0.231	0.141	0.135	0.335	0.323
Adj. R <sup>2</sup>	0.561	0.241	0.063	0.258	0.144	0.043	0.037	0.260	0.247
Num. obs.	700	700	700	700	700	700	700	700	700

*Note:* The dependent variable is the number of detainees per day for each type of crime. All models consider the period January 2019–October 2020. Models include year-, week-, and day of the week-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

**TABLE 5** Estimation of the effect of the lockdown on the number of daily detainees in the City of Buenos Aires by age

	<18	18–30	>30
Mandatory lockdown	−5.980*** (0.382)	−25.281*** (1.555)	−15.066*** (1.452)
Mean January/February 2020	8.717	53.65	43.85
Change with respect to January/February 2020	−68.6%	−47.1%	−34.4%
Prelockdown mean	5.75	44.953	36.419
Change with respect to prelockdown levels	−104%	−56.2%	−41.4%
Year DV	Yes	Yes	Yes
Week DV	Yes	Yes	Yes
Day of the week DV	Yes	Yes	Yes
R <sup>2</sup>	0.334	0.533	0.460
Adj. R <sup>2</sup>	0.259	0.480	0.399
Num. obs.	700	700	700

Note: The dependent variable is the number of detainees each day. The first model includes detainees under 18 years old. The second model includes detainees between 18 and 30 years old. The third model includes detainees over 30 years old. All models consider the period January 2019–October 2020. Models include year-, week-, and day of the week-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

**TABLE 6** Estimation of the effect of the lockdown on the number of daily detainees in the City of Buenos Aires by the address of the detainee

	City of Buenos Aires	Province of Buenos Aires	Homeless	Different commune	Same commune
Mandatory lockdown	−12.098*** (1.214)	−12.413*** (1.461)	−2.369*** (0.520)	−9.703*** (0.934)	−1.506 (0.948)
Mean January/February 2020	45.933	26.083	13.150	33.600	10.967
Change with respect to January/February 2020	−26.3%	−47.6%	−18%	−28.9%	−13.7%
Prelockdown mean	40.655	25.644	6.529	20.863	16.782
Change with respect to prelockdown levels	−29.8%	−48.4%	−36.3%	−46.5%	−9%
Year DV	Yes	Yes	Yes	Yes	Yes
Week DV	Yes	Yes	Yes	Yes	Yes
Day of the week DV	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.383	0.618	0.531	0.543	0.465
Adj. R <sup>2</sup>	0.311	0.574	0.477	0.490	0.403
Num. obs.	670	670	670	670	670

Note: The dependent variable is the number of detainees each day. The first model only includes detainees with an address in the City of Buenos Aires; the second model includes only detainees with an address in the Province of Buenos Aires; the third model only includes homeless detainees; the fourth and fifth models consider detainees with an address in a different commune or the same commune of the City of Buenos Aires, respectively. All models consider the period January 2019–October 2020. Models include year-, week-, and day of the week-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

**TABLE 7** Estimation of the effect of the lockdown on the percentage of victimized households

	City of Buenos Aires		Greater Buenos Aires		Rest of the Country	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Mandatory lockdown	-0.055*** (0.018)	-0.124*** (0.010)	-0.023 (0.024)	-0.164*** (0.007)	-0.023 (0.025)	-0.096*** (0.008)
Mandatory lockdown		-0.015 (0.020)		0.121*** (0.017)		0.018 (0.028)
+ 1 month						
Mandatory lockdown		0.094 (0.093)		-0.001 (0.026)		-0.014 (0.033)
+ 2 months						
Mandatory lockdown		-0.006 (0.021)		-0.022 (0.034)		0.106** (0.038)
+ 3 months						
Mandatory lockdown		-0.004 (0.019)		0.087 (0.050)		0.045* (0.025)
+ 4 months						
Mandatory lockdown		0.233*** (0.010)		0.014 (0.015)		-0.050*** (0.004)
+ 5 months						
Mandatory lockdown		-0.309*** (0.007)		-0.000 (0.005)		-0.032 (0.023)
+ 6 months						
Mandatory lockdown		0.059** (0.022)		0.010 (0.016)		0.046* (0.023)
+ 7 months						
Prelockdown mean	0.266	0.266	0.316	0.316	0.287	0.287
Change with respect to prelockdown levels	-20.7%	-	-7.3%	-	-8%	-
Year DV	Yes	Yes	Yes	Yes	Yes	Yes
Month DV	Yes	Yes	Yes	Yes	Yes	Yes
Num. obs.	35	35	35	35	35	35
R <sup>2</sup>	0.445	0.804	0.554	0.874	0.421	0.747
Adj. R <sup>2</sup>	0.142	0.555	0.311	0.714	0.105	0.426

Note: the dependent variable is the proportion of surveyed individuals who reported having been victims of a crime in the preceding 12 months to the survey. All models consider monthly data for the period January 2019–November 2020. The mandatory lockdown begins in April 2020. Models include year- and month-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

We assess the robustness of our results using information from the LICIP’s monthly victimization survey described in Section 3.3 above. Figure 9 presents the January 2018–November 2020 evolution of crime victimization for the City of Buenos Aires, the suburban Greater Buenos Aires area (i.e., municipalities in the Province of Buenos closest to the City), and the rest of the country. There is a large drop in reported victimization in the three areas right after the implementation of the lockdown. Indeed, April 2020 showed the lowest national victimization rate measured by this survey since its first round (March 2008). In May 2020, the survey registered the lowest victimization rate for the City of Buenos Aires when it reached 10%, well below its prepandemic levels of around 25%. The victimization rate began to increase after that initial fall, but it remained below previous years’ levels.

We also estimate the impact of the pandemic and the lockdown on these monthly victimization data. Table 7 reports the results of these estimations for the City of Buenos Aires in the first two columns. We find that the pandemic and the lockdown led to a large and statistically

TABLE 8 Differences in the impact on victimization across regions

	Model 1
Mandatory Lockdown	-0.054** (0.022)
Mandatory Lockdown * Greater Buenos Aires	0.019 (0.026)
Mandatory Lockdown * Rest of the country	0.042 (0.033)
Year DV	Yes
Month DV	Yes
Region DV	Yes
F-stat (proj. model)	1.840
F-test p-value (proj. model)	0.146
R <sup>2</sup>	0.472
Adj. R <sup>2</sup>	0.361
Num. obs.	105

Note: We omit the coefficient corresponding to the City of Buenos Aires. Therefore, and because we are including region-specific dummy variables (DV), the Mandatory Lockdown coefficient captures the isolated impact on the City of Buenos Aires. Since neither the interaction with Greater Buenos Aires nor with the rest of the country are statistically significant, we cannot reject that the results for those places are similar from the ones obtained for the City of Buenos Aires. In addition, coefficients for Greater Buenos Aires and the rest of the country are not statistically different from each other. Models include year- and month-specific dummy variables (DV). Heteroscedasticity and autocorrelation consistent standard errors in parentheses. \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.1$ .

significant fall in the reported victimization rate of 5.5 percentage points, a 20.7% drop relative to the prelockdown mean. As with official crime statistics, we observe a large initial fall and a posterior recovery.<sup>16</sup> The reductions in reported victimization confirm that the observed falls in reported crime during the lockdown are not only an artifact of increased underreporting.

We also use the information from the victimization survey to scrutinize if the changes in criminal mobility patterns induced by the lockdown and the mobility controls led to crime displacement. We seek to assess if increased controls in the access to the City of Buenos Aires, which reduced the share of detainees from outside the City, led to a relative increase in crime in its surrounding areas. We take advantage of the fact that the survey provides information on households in the Greater Buenos Aires area and the other main urban conglomerates in the country. In the rest of Table 7, we separately estimate the impact of the lockdown on the reported victimization for households living in the Greater Buenos Aires area and the rest of the Argentine urban conglomerates. Although the pandemic's effects are somewhat weaker in these regions, Table 8 shows that the lockdown's impacts on reported victimization in the Greater Buenos Aires and the rest of the country are not statistically different from that for the City of Buenos Aires. This relatively homogeneous drop in crime across the City of Buenos Aires, its surrounding areas, and the whole country suggests that the reduced crime in the City was not displaced to other areas.

## 5 | CONCLUSIONS

This paper studies the impact of the COVID-19 pandemic and the subsequent lockdown on criminal activity in the City of Buenos Aires, Argentina. We find a large and significant decline in

criminal activity during the lockdown, from March to November 2020. The lockdown led to a large drop in property crimes reported to official agencies ( $-52.5\%$ ), arrests made by the police ( $-59.3\%$ ), and crime reported in victimization surveys ( $-20.7\%$ ), but not in homicides. Moreover, the fall in criminal activity was widespread across different areas of the city.

Our paper contributes to the literature on the crime impact of the COVID-19 pandemic in two main ways. First, we provide information on the evolution of crime during the pandemic in a large Latin American capital city, a relatively understudied setting. Second, by combining information from both official reports and a victimization survey, our results suggest that the observed fall in reported crime during the lockdown was not an artifact of increased underreporting. Most papers that examine the pandemic's impact on crime rely solely on official statistics and can, therefore, confound actual crime changes with changes in crime reporting. Combining these different data sources is critical to accurately assess the impact of shocks that might simultaneously affect crime and reporting rates. This observation applies to the pandemic but extends to other changes in policing strategies or in crime determinants (especially in contexts with high rates of crime underreporting).

Moreover, we contribute to the analysis of crime displacement by assessing the lockdown's impact on criminals' mobility patterns. The pandemic led to reduced mobility and strict controls in the accesses to the City of Buenos Aires. These changes likely increased the cost of committing crimes inside the city for potential criminals residing in the suburban metropolitan area. We find that the lockdown led to relatively fewer detainees from outside the city and from other communes of the city. In short, we find that during the lockdown crime became "more local." But we find no evidence that this reduction in the participation of detainees from outside the City of Buenos Aires led to a displacement of crime to suburban areas. These results align with the hypothesis that focalized place-based interventions have the potential to reduce overall crime rates. However, the enforcement of mobility restrictions during the lockdown was extraordinarily tight. We should be cautious about the external validity of these displacement results, as local interventions may not have similar overall effects in other contexts.

Our results provide some additional insights for the design of citizen security policies, although these lessons should be considered with caution, taking into account the exceptionality of the pandemic. We document a significant increase in arrests for "resistance to authorities," which mainly included conflicts at the checkpoints set up during the lockdown to enforce the mobility restrictions. These episodes reflect new challenges faced by police agencies worldwide. Suddenly, police officers were required to enforce new and changing mobility restrictions in several countries. The increase in these types of detentions in the City of Buenos Aires illustrates the potential costs and risks of this new role for police agencies. The enforcement of mobility restrictions can cause frictions between citizens and police, negatively affecting police's trustworthiness and legitimacy, and limiting its effectiveness in crime prevention and control. It is critical that authorities carefully evaluate who will enforce mobility restrictions and how to do so, considering the need to provide training for police officers or create specific agencies to this end.

We find that the increased government presence for testing and tracing of COVID-19 cases in informal settlements appears to have led to an additional decrease in crime in these areas beyond the overall impact of the pandemic. This result exemplifies how increased and targeted government interventions for the provision of social services can have positive externalities and complement law enforcement agencies' efforts in the fight against crime.

Finally, our results show that not all crimes are the same. The stark difference between homicide dynamics and property crimes dynamics during the lockdown illustrates how these different crimes have distinct drivers. These heterogeneous dynamics highlight the need to design

specific strategies to address different crimes, especially homicide—the most violent and costly one. Moreover, the data also highlight the interjurisdictional nature of the crime, suggesting the need to strengthen judicial cooperation between jurisdictions in criminal prosecution.

The available data from the Buenos Aires City government, covering up to November 2020 at the time of writing, allow us to study the pandemic's short-term impact on crime. But the pandemic is not at all over and, in response to a second and stronger COVID-19 wave, lockdown restrictions were reimposed in Argentina in April 2021. The last available LICIP victimization survey shows that relative to a 12.9% average victimization rate during the most stringent lockdown period of April–May 2020, crime victimization has already rebounded to 22.8% in April–May 2021, but it is still below the prepandemic level of 29.6% victimization rate of April–May 2019. The recency of this massive shock, and its potentially lasting effects on unemployment, poverty, and inequality, prevents us from speculating on its longer-term impact. Moreover, Latin America, already a region with a high level of inequality and crime, has been hit particularly hard by the pandemic, both in health and economic terms. The overall long-term impacts of the COVID-19 pandemic on crime are highly uncertain and call for future close monitoring of crime dynamics.

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### CONFLICT OF INTEREST STATEMENT

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### ENDNOTES

- <sup>1</sup> Our study does not cover domestic and intrafamily violence. These crimes (or, at least, their reporting) displayed different dynamics across countries and cities; see Boxall et al. (2020) for Australia, Balmori de la Miyar et al. (2021) for Mexico City, and Perez-Vincent et al. (2020) for the City of Buenos Aires.
- <sup>2</sup> The frequencies of the types of crimes leading to these arrests are 30.1% drug trafficking and drug dealing, 23.5% robbery, 8.5% larcenies, 4.7% attack and/or resistance to authority, 4.7% injuries, 1.1% sexual assaults, 0.7% homicides, and 26.7% other crimes.
- <sup>3</sup> See United Nations Interregional Crime and Justice Research Institute, ICVS – International Crime Victims Survey ([http://www.unicri.it/index.php/services/library\\_documentation/publications/icvs/data](http://www.unicri.it/index.php/services/library_documentation/publications/icvs/data)).
- <sup>4</sup> For technical details of the LICIP victimization survey, see the survey's historical reports available in UTDT LICIP's website: [https://www.utdt.edu/ver\\_contenido.php?id\\_contenido=968&id\\_item\\_menu=2156](https://www.utdt.edu/ver_contenido.php?id_contenido=968&id_item_menu=2156) (accessed April 6, 2021). The list of questions is available in the January 2019 report.
- <sup>5</sup> The National Ministry of Social Development (Registro Nacional de Barrios Populares) provides maps on all *barrios populares* in Argentina (<https://datos.gob.ar/dataset/desarrollo-social-registro-nacional-barrios-populares>, accessed on March 30, 2021)

- <sup>6</sup> The change in the outcome variable in the second stage against the prelockdown period is given by the sum of  $D_1$  and  $D_2$ .
- <sup>7</sup> This model can be interpreted as a “difference-in-differences” (DiD) model (Leslie and Wilson, 2020). The  $\beta$  coefficient captures the difference in the change in the outcome variable between the periods before and after March 20 in 2020 versus the change between these two periods in previous years. The two differences occur over the “time” dimension, as opposed to typical DiD models that usually compare pre- versus postchanges between different treated and control units. Using this terminology, we can define the year 2020 as our treated unit and the previous years as the control ones.
- <sup>8</sup> To interpret  $\beta$  as a percentage change, we follow Halvorsen and Palmquist (1980) and use the correction suggested by Kennedy (1981), as explained in Bellemare and Wichman (2020): % Change =  $\text{Exp}(\beta - 0.5(\text{Var}(\beta))) - 1$ . We present the  $\beta$  estimate and the percent change in the tables.
- <sup>9</sup> Figure 3 also suggests that reported crime started falling shortly before the national lockdown. This premature fall could be the result of an anticipation of individual decisions before the official lockdown once it was well known that coronavirus cases were already present in the city. It is also plausible that, as some crimes are reported a couple of days after the event, the lockdown could have interrupted those reports.
- <sup>10</sup> The estimated model is  $y_{it} = \alpha L_t + \beta D_{it} + \gamma_d + \mu_s + \delta_y + \varepsilon_{it}$ , where  $y_{it}$  is the number of thefts, burglaries, and larcenies reported in *barrio popular*  $i$  during week  $t$ ;  $L_t$  is a binary variable that takes 1 since the mandatory lockdown started, and 0 before it was put in place;  $D_{it}$  is a binary variable that takes 1 for every week  $t$  in *barrio popular*  $i$  once the *Detectar* Program was rolled out in *barrio popular*  $i$  and 0 before;  $\gamma_d$ ,  $\mu_s$ ,  $\delta_y$  are day-of-the-week, week-of-the-year, and year dummy variables, respectively; and  $\varepsilon_{it}$  is an idiosyncratic error term.
- <sup>11</sup> This time interval was chosen because it coincides with the police night shift.
- <sup>12</sup> Homicides rate in Argentina and South America refer to 2018. Source: UNODC Data Portal, <https://dataunodc.un.org/content/data/homicide/homicide-rate>.
- <sup>13</sup> The coefficient on the mandatory lockdown variable is positive but not statistically significant (at standard confidence levels). Similar results can be observed in Online Appendix Table A12 using the IHS specification. It draws our attention that there was an increase in homicides when the city went back to phase one of isolation in June/July 2020, later reversed in the final social distancing period.
- <sup>14</sup> Nivette et al. (2021) find significant effects on homicides in only 3 of 27 cities under study, and hypothesize that, as a substantial proportion of homicides are usually committed in domestic contexts or associated with organized crime; these criminal events may have been less affected by mobility restrictions and other effects of the pandemic.
- <sup>15</sup> We also estimate these models using the IHS transformation of the daily counts as the dependent variable. Results, reported in Online Appendix Table A14, show similar patterns, but the reduction in the number of detainees from the same commune is significant under this specification.
- <sup>16</sup> Note that the relative magnitudes in the falls in reported victimization and official crime reports are hard to compare because the survey victimization question refers to incidents in the last 12 months (and not solely to the last month).

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## SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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