Body-Worn Cameras and Racial Disparities in Police Violence: Evidence from Brazil

Eduardo Fagundes, Joana Monteiro, Leandro Piquet and Pedro CL Souza*

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Abstract

We examine the effects of introducing body-worn cameras in one of the world's largest police departments. Using the staggered rollout of the technology across units in São Paulo's Police Department in 2022, we find that the cameras led to a 51.8% reduction in police lethality. This decline is entirely driven by a decrease in violence against Black individuals, who previously faced disproportionately high mortality rates. After the cameras were introduced, the lethality rate for Blacks aligns with that of Whites. Effects are concentrated in low-income census tracts, with a high proportion of Blacks, and with high baseline levels of police violence. We find no evidence that the cameras reduced police effort or altered citizen behavior.

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*Fagundes: Universitat Pompeu Fabra, Faculty of Economics and Business, eduardo.fagundes@upf.edu. Monteiro: Fundação Getúlio Vargas, EBAPE, joana.monteiro@fgv.br. Piquet: International Relations Institute, Universidade de São Paulo, lpiquet@usp.br. Souza: Queen Mary University of London, School of Economics and Finance, p.souza@qmul.ac.uk. We thank Cel Cabanas and Julia Guerra for outstanding partnership, and seminar participants at Queen Mary, Paris School of Economics, University of Southampton, Fundação Getúlio Vargas, and 12th AL CAPONE/LACEA for insightful comments. Marcos Cambrainha and André Mancha provided outstanding research assistance. A companion policy paper is available here. This project was funded through the Innovation for Poverty Action's Peace & Recovery Program. A previous version of this work was entitled "Monitoring Street-Level Bureaucrats: the impact of body-worn cameras on police performance."

1 Introduction

Every year, over a thousand people in the United States lose their lives due to police use of lethal force, and Black people are almost three times more likely to be victimized.[1] Previous research corroborates that the police is more likely to use force against Black individuals (Fryer Jr, 2019; Hoekstra and Sloan, 2022) who are likely to be discriminated against in other ways, such as being arrested and searched more often than Whites (Goncalves and Mello, 2021; Feigenberg and Miller, 2022; Stashko, 2023; Grosjean et al., 2023).

In this paper, we study how the introduction of police body-worn cameras (BWCs) affected police lethality and the racial composition of victims in one of the largest police forces in the world. In June 2021, the Military Police of the State of São Paulo, Brazil, launched a program to equip all officers with BWCs. We exploit variation from the staggered rollout during the first year of implementation to assess the effects of the policy in a context of high police violence. In 2019, São Paulo alone accounted for 867 deaths – out of more than 6,000 nationwide, and a figure approaching the 1,116 deaths recorded in the United States that same year –, with 79.1% of victims identified as Black.[2]

Our primary finding is that body-worn cameras significantly reduce police lethality: by comparing trends over time between precincts with and without body-worn cameras in a differences-in-differences framework, we estimate a reduction in the number of people killed by the police decreases by 51.8%. This reduction is entirely driven by a 71.8% decrease in police killings of Black individuals. There is no statistically significant reduction of lethality of White individuals, who start with a 54.9% lower baseline level of lethality. After the implementation of body-worn cameras, racial disparities in police lethality disappear.

Moreover, the effects are driven by underprivileged areas of the city. Using census tract data, we show that the reductions are particularly pronounced in low-income areas, areas with an above-median share of Black residents, high levels of property crime, and high baseline police lethality. These findings are fully consistent with the interpretation that police killings are spatially heterogeneous, with the largest effects occurring where police use of force was initially most prevalent.

We then examine the underlying mechanisms that may be driving these results. One concern is that increased oversight could reduce police effort – a phenomenon known as police passivity or *de-policing*. Prior research has shown that monitoring and oversight can decrease the number of dispatches attended by police.[3] We find no evidence supporting this mechanism in our context. On the contrary, body-worn cameras appear to have *increased* police effort: we observe an increase in the number of incidents reported by the police, no statistically significant decline in any type of report, alongside increases in reported thefts (17.4%) and domestic violence (99.5%).

[1]Source: Mapping Police Violence project, `https://mappingpoliceviolence.org/`, accessed Nov 19th 2024.

[2]Source: Forum Brasileiro de Segurança Pública, Anuário Brasileiro de Segurança Pública, 2020. Available at `https://forumseguranca.org.br/publicacoes/anuario-brasileiro-de-seguranca-publica/`, accessed Nov 18th 2024.

[3]Extensive evidence suggests that external oversight or media scandals can reduce police effort. See Shi (2009), Long (2019), Prendergast (2001), Devi and Fryer (2020), Mastrorocco and Ornaghi (2025), Prendergast (2021), Cheng and Long (2022), Rozema and Schanzenbach (2023), Ang et al. (2025).

We further disambiguate whether the effects are driven by behavioural changes in the police or the citizen side. If the body-worn camera reduced suspects' hostile actions against police officers, there would not be much reason for officers to use force in the first place.[4] From this perspective, the reduction in the use of force may not solely reflect a decrease in abusive practices but rather a broader effort to de-escalate situations while remaining compliant with use-of-force protocols. Again, we rule out that this case, as we do not observe any statistically significant effects of citizen resistence, contempt or disobedience to police officers.

We then conduct a series of robustness and specification checks to validate our findings. First, we confirm the absence of differential pre-trends prior to the policy's introduction. To address known biases in difference-in-differences designs with staggered rollout, our main specifications follow the framework developed by Sun and Abraham (2021). We also test for potential spillover effects and examine whether impacts are concentrated at the margin between treatment and control units. Across all checks, our main conclusions remain robust.

This paper contributes to three strands of literature. First, we demonstrate that body-worn cameras (BWCs) can significantly reduce police lethality in a context where police actions previously exhibited a high rate of lethality.[5] The existing literature on BWCs has primarily focused on general measures of use of force (Barbosa et al., 2025) or indirect proxies, such as citizen complaints (Lum et al., 2019; Williams Jr et al., 2021).[6] Our findings are more similar and complement those of Kim (2020) who finds that cameras were associated with a reduction of 22%, and non-significant, raising to 38% and statistically significant, in areas with higher pre-existing levels of use of force. Different from the our study, they do not find differential effects across race.

We contribute to a second strand of the literature by showing an effective intervention that can reduce the racial divisions in policing. It has been previously documented that the police uses force more frequently against Black individuals (Fryer Jr, 2019; Hoekstra and Sloan, 2022), have their car searched more often (Knowles et al., 2001; Anwar and Fang, 2006; Dominitz and Knowles, 2006; Feigenberg and Miller, 2022), or a generally racially profiled (Persico, 2002; Durlauf, 2005; Antonovics and Knight, 2009; Stashko, 2023) or suffer from discrimination or biases (Goncalves and Mello, 2021; Grosjean et al., 2023). Not only Blacks are subject to more police violence but the burden in terms of legitimacy costs also lies mainly on them (Ang, 2021; Owens and Ba, 2021).

Third, our paper contributes to the understanding on how police officers respond to interventions that seek to increase police accountability through managerial directives or workplace incentives. Using offer arbitration for police unions, Mas (2006) shows that worker performance depends on financial returns

[4] Barbosa et al. (2025) results suggest that this is a relevant causal channel. Using information on *ex-ante* risk assessment, they show that the estimated drop in police use of force comes from low-risk events, which they interpret as the cameras preventing the escalation of violence and improving cooperation between police officers and citizens.

[5] For implementations in other context in Brazil, see Barbosa et al., 2025 for the evaluation in Santa Catarina, and Magaloni et al., 2023 in Rio de Janeiro.

[6] See also these papers for a literature review and meta-analyses.

relative to references points of perceived fair pay. Baicker and Jacobson (2007) show that financial incentives for drug seizures reduce enforcement of other crimes. Banerjee et al. (2021) finds that training and monitoring produced robust improvements on performance. Other studies varying outside monitoring of the police suggest that increased oversight may reduce police effort.[7] More closely related to this work, Rivera and Ba (2023a) use court rulings in Chicago to argue that police oversight improves police-community relations without increasing crime.

This paper is organized as follows. Section 2 presents the context and specific characteristics of the setting and the intervention. It also describes the different data sources that we use for this analysis. Section 3 presents the empirical methods. Section 4 describes the results, conducts a range of robustness analysis – including evaluation of pre-trends – and discusses the interpretation of the results in light of the possible mechanisms that drive the reductions in police lethality. Section 5 conclude with a brief cost-benefit analysis.

2 Context and Data

2.1 Context

This paper analyses the use body-worn cameras by the Military Police in the metropolitan area of São Paulo – the richest, largest and most populous city in Brazil and in Latin America, home to 11.4 million people, roughly 30% more populous than the largest city in the United States, New York. The municipality of São Paulo alone is responsible for approximately 10% of the Brazilian Gross Domestic Product.[8]

Furthermore, with 80,000 police officers, the Military Police of São Paulo is the largest police force in Brazil and in Latin America.[9] It is primarily responsible for street and beat patrols, responding to emergency calls, operating the 911 lines, and executing arrests. This makes it one of the most visible components of the public security system.

The São Paulo police is a significant source of violence. In 2019 the police caused the death of 867 citizens in the state, which means that police alone was responsible to 21 percent of all intentional deaths.[10] This figure represents a rate of 1.8 per 100,000 inhabitants, approximately six times that of registered in United States. This level of deaths caused by the police remained high after several reforms to improve police oversight and scandals of police brutality over the last twenty years (Gonzalez, 2020).

In this context, the adoption of body-worn cameras (BWCs) by São Paulo's police was heralded as a potential solution to improve transparency and accountability. The Military Police began studying the technology in 2014, with the first and second pilot programs conducted in 2016 and 2018, respectively. This extended learning process allowed the project to mature and ensured that key implementation challenges

[7] See for example Prendergast (2021), Cheng and Long (2022), Ang et al. (2025), and others.
[8] Source: 2022 Brazilian census, available here; and United States 2023 census, available here. For GDP data, see here.
[9] Source: Forum Brasileiro de Segurança Pública (2024).
[10] Source: Forum Brasileiro de Segurança Pública (2020). Available here.

– such as IT, infrastructure, and governance – were identified and addressed. In early 2019, the state governor approved the proposal to implement a large-scale BWCs project.[11] The project was designed with an ambitious scope: all street-level officers would be required to wear BWCs, which would remain activated throughout their shifts.

In June 2021, the police deployed 10,200 body-worn cameras across 18 police major operational units, including 10 located in the Metropolitan Region. Each major operational unit is further divided into multiple precincts, which serve as logistical hubs and primary operational bases for the officers assigned to them. Importantly for our analysis, each unit is responsible for a geographically defined area, handling all patrolling and emergency response within its jurisdiction. Cameras were issued to all street-level officers within these precincts.

Cameras were on "always-on" mode per police protocol, with thus little margin for discretion. By all standards, this was planned as an intensive treatment. São Paulo constituted one of the few police forces in the world that decided for such policy, with the majority of departments worldwide choosing to give more discretion to the police officer.[12]

The implementation of BWCs in São Paulo was supported by a strict supervision structure and detailed usage protocols. Prior to the program, the police already had a supervision system in place, including intermediate officers overseeing low-ranking officers in the field and a clear chain of command. The BWC program was layered on this system by requiring officers to regularly review footage of their subordinates. Supervisors are encouraged to provide feedback, highlighting both errors and adherence to protocols. The program was expanded in two more waves, in February 2022 (30 precincts) and April 2022 (46 precincts). By August 2022 all areas of the metropolitan area of São Paulo were fully using the cameras, and it is when our period of evaluation stops. Appendix Figure A1 details the areas patrolled by each unit according to treatment status.

2.2 Data

This work uses information from two main sources to analyse the effects of police body-worn cameras. The first source of information is the Military Police incident response database. An incident in the database is typically initiated by a 911 call from a member of the public, although in some cases officers may initiate the response themselves if they observe an incident during routine patrol.

The data is completed by the officer on duty, who records various characteristics of the incident, including the individuals involved, the type of incident, and the location. We were granted access to aggregate figures on the type of incident by precinct and month. We use this information to track what officers report about dispatches while wearing the camera, as well as to monitor the number of cases across various types of dispatches. We also use this data to assess whether officers reduce their effort and

[11]See Appendix A for costing details.

[12]See Ariel et al. (2016) for the heterogeneous effects of police worn cameras according to officer discretion, and Kim (2020) for further evidence comparing institutions in the United States.

activity when wearing the devices.

The number and composition of incidents across implementation waves are shown in Panel A of Table A1. On average, in the period prior to implementation, police precincts record around 226 incidents per two-month period, with thefts and robberies being the most common incidents. Column (6) also shows that treated and control precincts have broadly similar incident profiles.

The second source is the crime statistics compiled by São Paulo's Public Security Secretariat (SSP-SP). The Secretariat is a branch of the executive that oversees all state police forces. In this role, it collects data from the Civilian Police, which operates independently from the Military Police and holds investigative powers. The Civilian Police precinct – our unit of analysis – is typically smaller a subdivision of the Military Police precinct.[13] Crucially for our purposes, the Secretariat produces statistics on police lethality, our main outcome, and the data includes information on the race of the deceased.[14]

The number of people killed by the police is shown in the first row ("police lethality") of Panel B in Table A1. The data indicate that precincts in the earlier implementation waves exhibited higher levels of force. On average, first-wave precincts recorded 0.504 police-involved deaths per two-month period, compared to 0.394 and 0.333 for the second and third waves, respectively, though these differences are not statistically significant. Third-wave units closely resemble the control units, which reported an average of 0.314 police-involved deaths per two-month period. This pattern reflects a strategy to prioritize deploying body-worn cameras to units with higher levels of lethal activity prior to treatment. However, since these differences reflect pre-treatment levels, they do not affect the identification of treatment effects, as discussed in the next section. Overall, the numbers indicate that the police killed approximately 34 people per month, or 408 per year, in our sample prior to the intervention.

The Secretariat also compiles statistics on the number of people injured by the police. A limitation of this data is that it reports the race of all individuals involved in the incident, but not specifically who was injured by the police. This constrains our ability to provide a racial decomposition of the body-worn camera effects on this outcome. In Panel B of Table A1, we also present indicators of police use of force, such as disobedience, contempt, and resistance, as well as the number of arrests and drug possession cases, which may reflect police productivity. Finally, we report aggregate crime statistics, including homicides, robberies, and thefts.

3 Empirical strategy

Our empirical strategy takes advantage of the timing of the adoption across police units, and the three waves of implementation in June 2021, February 2022 and April 2022. This staggered technological adoption allows us to use a differences-in-differences approach to evaluate the impact of the program by

[13] We use the general term "precinct" interchangeably to refer to the geographical subdivisions of both the Civil and Military Police. In our context, a Military Police precinct follows military terminology and is referred to as a *Batalhão* (Battalion) or a *Companhia* (Company).

[14] Data are publicly available at https://www.ssp.sp.gov.br/transparenciassp/. Date accessed: January 13, 2025

comparing the treatment and control groups before and after implementing the cameras. Our preferred specifications rely on the Sun and Abraham (2021) estimator due to the concerns and biases of standard differences-in-differences estimates under heterogeneous treatment impacts. Yet, in every case we show that the results are similar with the fixed effect model.[15]

Our identification strategy is similar to that used by Kim (2020), which assessed the impact of BWC adoption across different police agencies in the United States. However, in our study, we compare precincts within the same police agency, allowing us to control for common factors like broader crime trends that could influence the timing of adoption, and other potential confounders such as policies and institutional practices. A key strength of our approach is that all officers within a given unit are treated simultaneously, avoiding the spillover effects across shifts or officers that often challenge BWC studies.[16] However, this design introduces the potential for spillovers across precincts, such as if control units are influenced by the adoption of BWCs in treatment units. We address this concern in the robustness section, noting that any increased perception of monitoring in control units would likely attenuate the measured effects of the cameras.

The following equation is estimated for all groups throughout the implementation phases:

$$Y_{ipt} \quad = \quad \beta \cdot BWC_{pt} + \delta_i + \delta_t + \epsilon_{ipt} \tag{1}$$

where Y_{ipt} denote the outcome of interest, e.g., the number of individuals killed by the police, recorded for precinct i, within Military Police unit p, at time t, which is the unit of treatment. The treatment variable BWC_{pt} equals 1 if unit p was treated at time t. The specification includes precinct fixed effects δ_i and time fixed effects δ_t. The error term ϵ_{ipt} is clustered at the level of the operational unit p over time. The coefficient of interest is β.

The main assumption for identifying the causal effect of body-worn cameras is that the evolution of the trend of the control group is a good counterfactual for the path of the treatment group had this group not received the cameras. In the robustness section, we present suggestive evidence in favor of this hypothesis by showing that the trends of pre-intervention groups are parallel. To do so, we estimate a more granular version of Equation (1),

$$Y_{ipt} \quad = \quad \sum_{\substack{l=-4, \\ l\neq -1}}^{4} \beta_l \cdot BWC^l_{pt} + \delta_i + \delta_t + \epsilon_{ipt} \tag{2}$$

where $BWC^l_{pt} = 1$ if unit p at time t is l periods before or after their implementation period, and zero otherwise. We take the null hypothesis $\beta_{-4} = \cdots = \beta_{-2} = 0$ as evidence of the absence of parallel trends.

[15] We opted to the Sun and Abraham (2021) estimator due to it allowing for flexible specifications of the clustered standard errors. Callaway and Sant'Anna (2021) provides the same point coefficients when compared with the never-treated units, but do not allow for the clustering at Military Police operational unit-by-time level.

[16] For example, Barbosa et al. (2025) shows that differences-in-differences estimates based on unit-wide treatments align closely with event-level results.

A potential concern with our identification strategy is that the timing of BWC adoption might be correlated with characteristics of police units that could change at a time that coincides with the adoption of body-worn cameras. For instance, our results could be biased if unit commanders observe a spike of police violence and had the ability to self-select into units scheduled to receive BWCs at the time of implementation. However, this concern is mitigated in São Paulo's case, as the list of units for each implementation wave was determined centrally by police headquarters and publicly announced during the procurement process. Any attempt by commanders to influence unit selection would have needed to occur at the time of this announcement, which was approximately eight months before the cameras were deployed in the field. Thus, the centralized and transparent process reduces the likelihood of such selection bias.

We now proceed to discuss the main results of our study.

4 Results

Police lethality. We show in Table 1 that BWCs have a significant impact in reducing police lethality. The table estimates the effects over our main sample, running from April 2020 to August 2022, when all units started using cameras (and thus we no longer have a control population). The implementation period covers approximately the first year of the programme. In all that follows, the unit of analysis is a Civilian Police precinct with data aggregated over periods of two months.

Panel A presents the impact on the number of deaths resulting from police actions, using our preferred Sun and Abraham (2021) estimator. Column 1 shows the effect on the total number of lives saved. The point coefficient indicates that the BWC treatment reduces police lethality by 0.200 lives per precinct in a period of two months, significant at the 5% level. Rescaled by the baseline of 0.386 lives lost over the same duration, this corresponds to a 51.8% reduction in police lethality. This implies that 183.1 lives would be saved if cameras were deployed in all stations over the course of one year.[17]

Columns (2), (3) and (4) disaggregate the effects by race. We show in Column (2) a substantial reduction in police lethality involving Black individuals: a decrease of 0.183 from a baseline of 0.255 deaths per precinct per two-month period, significant at 5% level, representing a 71.8% reduction. For White individuals (Column 3), the effect is much smaller, not statistically significant, and from a lower baseline of 0.115 deaths per precinct per two-month period. In the post period, the lethality rates of Black individuals is comparable, and lower, to that of Whites.[18]

Panel C corroborates these findings. Here, the outcome variable is whether the police precinct recorded *any* lethal event involving the police during a two-month period, with racial disaggregation in Columns (2) to (4). Consistent with Panel A, we find a reduction in the likelihood of any police lethal event by 10.0

[17]Calculated using the figures in Table A1 showing that, at baseline, 353.4 individuals are killed by police across all precincts annually.

[18]Column (4) reports the effects for individuals classified as "other races," a category that is rarely observed in our data to start with.

percentage points across all races (a 39.7% decrease) and by 10.5 percentage points for Black individuals (a 57.7% decrease). Once again, the effects for White individuals and those classified as other races are much smaller.

In Panels C and D, we present the effects estimated using the standard differences-in-differences method. The results are broadly consistent with those obtained using the Sun and Abraham (2021) estimator, although the slightly lower point estimates suggest that the differences-in-differences approach may be subject to a slight downward bias.

Overall, these results suggest that body-worn cameras may be particularly effective in reducing police lethality against Black individuals, who face higher baseline levels of police violence. We now examine how the effects of the cameras vary depending on the characteristics of the locations where they are deployed.

Police lethality – heterogeneity. We now show that the impact of body-worn cameras are highly heterogeneous across space. To demonstrate this, we use pre-period data merged with census tract to examine the heterogeneous effects across different localities. Specifically, we disaggregate the effects by below- and above-median levels of income, homicide rates, property crime rates, and baseline police lethality.

As we show in Columns (1) and (2) of Table 2, the effects are primarily driven by low-income areas. In these areas, the confidence interval includes a potential reduction of up to 100% in lethality. Columns (3) and (4) split the sample by the proportion of Black residents, as reported across census tracts. The analysis indicates that the entire reduction in police lethality occurs in tracts with an above-median proportion of Black residents, where baseline police lethality is 63% higher. The analysis using the differences-in-differences estimator yields similar results. All coefficients are significant at the 5% level.

Columns (5) to (7) present the split-sample results by levels of homicide and property crime. In both cases, with the differences in differences estimator in Panel B, we find that the effects are strong and significant in areas with higher baseline levels of crime; yet, the finding is not robust to the Sun and Abraham (2021) estimator, so we treat this as a suggestive evidence.

Finally, in Columns (9) and (10), we disaggregate the effects by baseline levels of police lethality. The results indicate that areas with high baseline lethality experience a 67.9% reduction, while areas with low baseline lethality remain unaffected. Following the implementation of cameras, the data suggest that levels of police lethality between low- and high-violence areas converge, eliminating the initial disparity.

Persons injured in police dispatches. Table 3 evaluates the effects on the number of persons injured in police action (Columns 1-4). One challenge with using data on persons injured in police dispatches is that it is likely severely under-reported: the mean of the dependent variable is lower than for police lethality at the aggregate. This is especially concerning when evaluating the effect of a monitoring technology because, in principle, the cameras could act by both reducing the true levels and reducing the underreporting (which would attenuate the estimate of the true effects).

Using the Sun and Abraham (2021) estimator, we do not find any effects in any of those variables; yet, the differences-in-differences point to a significant reduction of injured persons (of -.079 which, compared to the baseline values of -.177, corresponds to a reduction of 44.6%). The changes in the estimated coefficients are due both to the intensification of the point estimates, and a reduction of standard errors. Due to the divergence of the estimates, we consider this evidence to be suggestive at best.

The racial decomposition is, in this case, made difficult to attribute because, in contrast to cases of police lethality, we do not observe the race of the specific individual who was injured. We instead observe the racial composition of the set of individuals that were, in any capacity, present at the incident. In other words, we know that someone within that group was injured, but not who within that group. In order to mimic the racial decomposition in Table 1, we classify as "Black" or "White" if *all* individuals within that dispatch were of those races; and "Other" both in case of a homogeneous composition of other races and, also to include mixed-raced compositions. This classification is conservative, and results in relatively few cases of all-Black and all-White incidents, which reduces power.

Resistance, disobedience and contempt. Columns (5)-(8) in Table 3 reports the effects on cases of resistance, and disobedience and contempt follow in Columns (9)-(12). Those outcomes carry, in our view, a dual interpretation. When legitimate, resistance, disobedience and contempt measure of citizen actions and behavior against the police. Police officers may register as those cases in order to justify abusive or excessive use of force (Barbosa et al., 2025). Our results are not suggestive or conclusive of any of those effects being at play. Using the differences-in-differences, the estimate is larger and significant: cases of resistance to the police fall by .484, equivalent to a 25.5% drop, and significant at 1% level. Yet, the coefficients using the Sun and Abraham (2021) are much more muted and not statistically significant. We also find no effect on cases of disobedience and contempt across the two estimators.

Police effort, reporting and investigations. We next assess the effect of body-worn cameras on the number, quality, and type of reported police dispatches. Our findings show that the reduction in police lethality is not driven by a decrease in police effort.[19]

In Column (1) of Table 4, we estimate the effect of body-worn cameras on the number of dispatches in treated areas. We find a positive and significant effect of 28.8 additional incidents per precinct-bimester, corresponding to a 12.6% increase. In Column (2), we examine effects on crimes reported through officer-initiated calls and find positive but statistically insignificant point estimates.[20] Together, these results provide no evidence in support of the *de-policing* hypothesis, which would predict a reduction in police

[19]This is important because one hypothesis in the literature suggests that officers may reduce effort and avoid encounters when wearing a camera, implying that reductions in police lethality could result from reduction of effort rather than decreased violence during police-citizen interactions, conditional on effort. See Magaloni et al. (2023).

[20]This is recorded in our data as *in delicto flagrante*, referring to dispatches where an officer, while carrying out other duties, witnesses a crime in progress.

response and proactive engagement.

We are also able to track the number of reports at both the incident response (Panels A and C, with Military Police data) and crime reports (Panels B and D, Civilian Police data). As before, we estimate these effects using both the Sun and Abraham (2021) estimator and the standard differences-in-differences approach. We first observe in Column (3) that the number of arrests remained constant across treated areas, although we can only track arrest incidence through the Civilian Police. Columns (4)–(8) report the frequency of reporting for different types of dispatches. Columns (6) and (8) show a significant *increase* in reported cases of theft (17.4%) and domestic violence (99.5%) at the Military Police level, with these increases carrying over to varying degrees at the investigatory stage.[21]

We note that the effect on domestic violence reporting is substantial and consistent with Barbosa et al. (2022), who studied the impact of body-worn cameras in Santa Catarina, Brazil.[22] We also interpret this as evidence that body-worn cameras improve the diligence with which incidents are documented, thereby reducing the underreporting of such cases.

Overall, these findings do not suggest that police officers are avoiding encounters or reducing their efforts. On the contrary, the evidence indicates that officers may be increasing their efforts to report cases that are often underreported. We interpret this as evidence that officers perceive BWCs as a tool for close monitoring and adjust their behavior to enhance compliance with protocols. Since these reports originate from the officers themselves, it suggests that the cameras reduce the scope for discretion. The results are consistent with the interpretation that, possibly motivated by fear of being accused of omission, officers are more actively enforcing the law in situations where they might otherwise have refrained from acting.

Robustness. We conduct several exercises to demonstrate the robustness of our estimates to plausible alternative specifications and to rule out potential confounding effects.

First, in Figure A2, we present estimates interacted with coefficients for each two-month period before and after the intervention. This allows us to assess dynamic effects and verify the parallel trends assumption prior to the intervention. Although the estimates are noisy, we observe slight pre-trends suggesting that, absent the policy, treated areas were modestly *increasing* their gap relative to control precincts. This would introduce a bias *against* detecting body-worn camera effects.

Second, we analyze the effects using progressively excluding observations near the border between treated and control units. The coefficients can be seen in Table A2. This approach ensures that the results are not driven by potential manipulation – for example, if police officers in camera-equipped units shifted incidents near the border to neighbouring control units. Reassuringly, the point estimates remain stable as we expand the exclusion of border observations.

Third, and finally, we assess the sensitivity of the results by adopting a more granular precinct-by-

[21] Additionally, there is an increase in cases of drug possession reported by the Civilian Police, though not by the Military Police.

[22] Barbosa et al. (2022) also notes that the magnitude of the effect is large even compared to interventions explicitly aimed at improving reporting of such crimes, such as the establishment of women-run police stations.

month unit of observation in Table A3. We initially used two-month intervals to avoid overlapping treatment waves that would occur with greater aggregation. In the other direction, monthly analysis introduces more noise due to the lower frequency of the outcome variable at this level, making it more difficult to detect effects on lethality because of potential floor effects. Consistent with this, the mean of the dependent variable approximately halves. While only the reduction in the extensive margin remain significant at the 10% level using the Sun and Abraham (2021) estimator, the difference-in-differences estimates remain significant at 1%. In all cases, the point estimates remain sizeable, indicating a reduction in lethality of 36.4% overall and 44.5% among Black individuals.

4.1 Interpretation

The observed reduction in police lethality can be attributed to three potential channels. The results suggest that BWCs enhance monitoring, which increases compliance with institutional protocols, including those governing the use of forces (Williams Jr et al., 2021; Kim, 2020). This increased compliance can occur because officers may anticipate a higher likelihood or severity of penalties for deviations from protocols (Becker and Stigler, 1974), or the presence of cameras may promote self-awareness and reflection, independent punishment expectation (Ariel et al., 2018). Under this interpretation, the reduction in police lethality and use of force results from curbing previous excesses or abuses. Although we cannot test this directly, it is possible that the intensive nature of the treatment – cameras recording continuously, combined with close supervision – played an important role in generating the treatment effects observed.[23]

One alternative explanation is that the reduction of police lethality stems from improved interactions with citizens. If the body-worn camera reduced suspects' hostile actions against police officers, there would less reason for officers to use force in the first place. The presence of a recording device encourages all parties to de-escalate conflicts.[24] From this perspective, the reduction in the use of force may not solely reflect a decrease in abusive practices but rather a broader effort to de-escalate situations while remaining compliant with use-of-force protocols. From Table 3, we did not observe that markers of citizen behavior – resistance, contempt or desobedience – were significantly lower in treated areas. While we cannot completely rule out that such effect is not taking place, we can reject that estimated effects are comparable to the reduction in police lethality observed in Table 1, and could therefore completely explain it.

A third explanation stems through changes in police effort. On the one hand, increased scrutiny reduces incentives for police engagement.[25] One potential concern is that perceived improvements in police use of force are driven by disengagement, de-policing, rather than an improvement in police quality given the characteristics of the encounter between police and citizens. Taken together, our results in Table

[23]See Magaloni et al. (2023) for a discussion and the effects of changing the operational protocol throughout the implementation of cameras in Rio de Janeiro, Brazil.

[24]Barbosa et al. (2025) results suggest that this is a relevant channel and interpret that cameras may prevent the escalation of violence.

[25]For body-worn camera papers, see Ariel et al. (2018) and Lum et al. (2019). See also further references about monitoring of the police, Long (2019), Devi and Fryer (2020), Prendergast (2021), Cheng and Long (2022) and others

4 rule out any reduction in police effort or depolicing. They are instead suggestive that the opposite are at play, and align with the literature that suggest that increased monitoring of body worn cameras can help to alleviate agency problems (Barbosa et al. (2025); Rivera and Ba, 2023b).

5 Conclusion and MVPF

Police use of force poses a challenge to democratic governance, particularly where state coercion is marked by widespread extralegal violence, arbitrary and discriminatory law enforcement, pervasive corruption, and weak or absent external accountability (Gonzalez, 2020).

This paper presents evidence that body-worn cameras (BWCs) are an effective technology for reducing police lethality and eliminating its racial disparities. Exploring the staggered rollout of BWCs in São Paulo – home to one of the largest police forces in the world – we find that police killings declined by nearly 52% following implementation, with a 71.8% reduction in the deaths of Black individuals. After the introduction of BWCs, racial disparities in police lethality disappear.

We find no evidence that these reductions came at the cost of reduced police effort or effectiveness. On the contrary, the data suggest an increase in overall police activity, including higher reporting of thefts and domestic violence cases. Nor are the effects explained by changes in citizen behavior, as there is no statistically significant reduction in resistance or contempt toward officers. Findings are instead consistent and suggestive of a mechanism of increased compliance with internal rules and protocols under heightened monitoring.

In Section Appendix A, we calculate the Marginal Value of Public Funds (MVPF) for the body-worn camera intervention. We estimate that BWCs are likely to avert approximately 183.1 deaths per year in the municipality of São Paulo alone. Using conservative assumptions and a range of Value of the Statistical Life, we find an MVPF between 8.41 and 10.66. These values are in line with Barbosa et al. (2025), who estimate an MVPF of 9.26 for a similar program in Santa Catarina, Brazil, and also notice that the MVPF compares favourably to a range of both police and non-police interventions. The relatively high MVPF is expected, as the protective effects of BWC we estimate are large and occur in a context with a higher baseline level of police violence.

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Figures and Tables

Table 1: Effects of BWC on police lethality

	All	Black	White	Other
	(1)	(2)	(3)	(4)
Panel A. Police Lethality (Sun and Abraham, 2021)				
BWC treatment	-0.200	-0.183	-0.029	0.012
	[0.099]**	[0.083]**	[0.048]	[0.018]
Mean of the DV	0.386	0.255	0.115	0.017
Units	179	179	179	179
N. Obs	2506	2506	2506	2506
Panel B. Indicator for lethal incident (Sun and Abraham, 2021)				
BWC treatment	-0.100	-0.105	-0.019	0.012
	[0.061]*	[0.048]**	[0.033]	[0.019]
Mean of the DV	0.252	0.182	0.098	0.013
Units	179	179	179	179
N. Obs	2506	2506	2506	2506
Panel C. Police Lethality (differences-in-differences)				
BWC treatment	-0.158	-0.129	-0.029	0.000
	[0.047]***	[0.036]***	[0.023]	[0.009]
Mean of the DV	0.386	0.255	0.115	0.017
Units	179	179	179	179
N. Obs	2506	2506	2506	2506
Panel D. Indicator for lethal incident (differences-in-differences)				
BWC treatment	-0.086	-0.085	-0.022	-0.005
	[0.032]***	[0.027]***	[0.019]	[0.007]
Mean of the DV	0.252	0.182	0.098	0.013
Units	179	179	179	179
N. Obs	2506	2506	2506	2506

Note: Effects of body-worn cameras on police lethality. Estimates of Equation (1). Unit of observation in Panels A are the number of people killed by the police in a police precinct every two months, from the Sun and Abraham (2021) estimator. Column (1) refers to all cases with police lethality. Columns (2), (3) and (4) break down by race (respectively, Black, White and Other). Dependent variable in Panel B is the indicator which is equal to one if there was one or more police-related lethalities in the precinct-bimester. Panels C and D mirror the panels above but with the two-way fixed effect model. Sample from April 2020 to August 2022. Fixed effects at the police precinct level. Standard errors are clustered at the Military Police operational unit level by time. *** p<0.01; ** p<0.05; * p<0.1.

Table 2: Effect of BWC on police lethality

Place-based heterogeneous effects

	Income		Black Residents		Homicides		Property Crimes		Police Lethality	
	Low	High	Low	High	Low	High	Low	High	Low	High
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A. Sun and Abraham (2021)										
BWC treatment	-0.558	0.251	0.026	-0.456	-0.169	-0.186	0.047	-0.312	-0.016	-0.402
	[0.160]***	[0.249]	[0.098]	[0.158]***	[0.097]*	[0.173]	[0.108]	[0.191]	[0.080]	[0.179]**
Mean of the DV	0.448	0.324	0.295	0.481	0.221	0.606	0.237	0.537	0.235	0.592
Units	90	89	91	88	102	77	90	89	103	76
N. Obs	1260	1246	1274	1232	1428	1078	1260	1246	1442	1064
Panel B. Differences-in-differences										
BWC treatment	-0.357	-0.035	-0.075	-0.280	-0.030	-0.271	-0.041	-0.215	-0.101	-0.195
	[0.075]***	[0.057]	[0.051]	[0.078]***	[0.048]	[0.081]***	[0.052]	[0.078]***	[0.052]*	[0.084]**
Mean of the DV	0.448	0.324	0.295	0.481	0.221	0.606	0.237	0.537	0.235	0.592
Units	90	89	91	88	102	77	90	89	103	76
N. Obs	1260	1246	1274	1232	1428	1078	1260	1246	1442	1064

Note: Effects of body-worn cameras on police lethality. Split-sample estimates by census tracts. Estimates of Equation 1. Unit of observation in Panels A are the number of people killed by the police in a police precinct every two months, from the Sun and Abraham (2021) estimator (Panel A) and two-way fixed effects (Panel B). Columns (1) and (2) split the sample according to census tracts below and above median level of income at the baseline. Columns (3) and (4) divide the sample according to median levels of self-declared proportion of Black individuals. Columns (5) and (6) divide the sample according to the baseline levels of homicides; similarly, Columns (7) and (8) split according to the median number of property crimes. Columns (9) and (10) split the sample according to baseline levels of police lethality. Sample from April 2020 to August 2022. Fixed effects at the police precinct level. Standard errors are clustered at the Military Police operational unit level by time. *** p<0.01; ** p<0.05; * p<0.1.

Table 3: Effect of BWC on bodily injury, resistence, desobiedience, and contempt

	Bodily Injury by the Police				Resistance				Desobedience or contempt			
	All	All-Black	All-White	Other or mixed	All	All-Black	All-White	Other or mixed	All	All-Black	All-White	Other or mixed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Panel A. Sun and Abraham (2021)												
BWC treatment	-0.054	-0.033	0.023	-0.044	-0.301	-0.044	-0.013	-0.244	0.367	0.064	0.054	0.249
	[0.054]	[0.027]	[0.019]	[0.043]	[0.225]	[0.063]	[0.040]	[0.197]	[0.308]	[0.063]	[0.085]	[0.277]
Mean of the DV	0.177	0.070	0.034	0.073	1.899	0.321	0.143	1.434	3.385	0.255	0.400	2.729
Units	179	179	179	179	179	179	179	179	179	179	179	179
N. Obs	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506
Panel B. Differences-in-differences												
BWC treatment	-0.079	-0.027	0.003	-0.054	-0.484	-0.112	-0.049	-0.323	-0.154	-0.003	-0.036	-0.115
	[0.032]**	[0.017]	[0.013]	[0.021]**	[0.103]***	[0.034]***	[0.024]**	[0.091]***	[0.155]	[0.031]	[0.042]	[0.140]
Mean of the DV	0.177	0.070	0.034	0.073	1.899	0.321	0.143	1.434	3.385	0.255	0.400	2.729
Units	179	179	179	179	179	179	179	179	179	179	179	179
N. Obs	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506

Note: Effects of body-worn cameras on bodily injury committed by the police (Columns 1-4), and number of cases of resistance (Columns 5-8), and disobedience or contempt (Columns 9-12). Columns (1), (5) and (9) show the effects on all races. Columns (2), (6) and (10) show the effects when all of those related in the report are Black. Columns (3), (7) and (11) is the equivalent but all-white composition. Columns (4), (8) and (12) are the effects on mixed-race groups. The identity of the persons who was injured by the police or committed one of the offenses is not known. Panel A shows the Sun and Abraham (2021) estimates, and Panel B has the two-way fixed effect estimates from Equation 1. Unit of observation is a precinct in a two-month period. Sample from April 2020 to August 2022. Fixed effects at the police precinct level. Standard errors are clustered at the Military Police operational unit level by time. *** p<0.01; ** p<0.05; * p<0.1.

Table 4: Effects of BWC on reporting

	Total Incident	Self-initiated	Arrests	Drug Possession	Homicide	Theft	Robbery	Domestic Violence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Military Police (Sun and Abraham, 2021)								
BWC treatment	28.842			0.345	-0.132	2.424	1.259	8.902
	[11.455]**			[0.795]	[0.141]	[0.967]**	[1.073]	[1.132]***
Mean of the DV	228.564			7.089	0.485	13.921	13.377	8.946
Units	152			152	152	152	152	152
N. Obs	1976			1976	1976	1976	1976	1976
Panel B. Civil Police (Sun and Abraham, 2021)								
BWC treatment		0.694	0.163	1.152	-0.060	18.082	7.562	7.131
		[1.227]	[1.880]	[0.201]***	[0.146]	[8.663]**	[6.732]	[3.167]**
Mean of the DV		27.628	37.275	1.736	1.037	172.143	144.603	139.368
Units		179	179	179	179	179	179	179
N. Obs		2506	2506	2506	2506	2506	2506	2506
Panel C. Military Police (differences-in-differences)								
BWC treatment	43.863			-0.085	-0.009	3.921	2.993	10.946
	[6.427]***			[0.425]	[0.056]	[0.790]***	[0.858]***	[0.919]***
Mean of the DV	228.564			7.089	0.485	13.921	13.377	8.946
Units	152			152	152	152	152	152
N. Obs	1976			1976	1976	1976	1976	1976
Panel D. Civil Police (differences-in-differences)								
BWC treatment		-0.192	-1.139	1.481	-0.031	18.897	19.715	9.661
		[0.819]	[1.217]	[0.233]***	[0.080]	[7.137]***	[4.454]***	[1.976]***
Mean of the DV		27.628	37.275	1.736	1.037	172.143	144.603	139.368
Units		179	179	179	179	179	179	179
N. Obs		2506	2506	2506	2506	2506	2506	2506

Note: Effects of body-worn cameras on reporting of the number of prisons (Column 1), cases of drug possession (Column 2), homicides (Column 3), theft (Column 4), robbery (Colum 5) and domestic violence (Column 6). Reports by the Military Police are found in Panels A and C, and by the Civil Police in Panels B and D. Panels A and B report the (sun2021estimating) estimate of Equation 1, and Panels C and D show the DiD fixed effect estimator. Unit of observation is a precinct in a two-month period. Sample from April 2020 to August 2022. Fixed effects at the police precinct level. Standard errors are clustered at the Military Police operational unit level by time. *** p<0.01; ** p<0.05; * p<0.1.

Appendix A Marginal Value of Public Funds

To compute the Marginal Value of Public Funds for the body-worn camera intervention in São Paulo, we draw on multiple sources to quantify the the benefit to the society generated per dollar of expenditure (Finkelstein and Hendren, 2020; Hendren and Sprung-Keyser, 2020).

Benefit. We focus on the benefits associated with the reduction in police lethality. This is both because police lethality is the primary outcome examined in our study, and because other potential benefits – such as changes in racial composition, spatial heterogeneities, increased reporting of domestic violence, or improved trust in the police – are difficult to quantify, despite being plausibly positive. By excluding these secondary effects from our analysis, we are therefore likely providing a conservative estimate, or a lower bound, of the true benefits of body-worn cameras.

The first component of our analysis involves estimates of the Value of a Statistical Life (VSL) that are both applicable to and reasonable for the Brazilian context during the period under study. To this end, we follow the approach of Barbosa et al. (2025). While VSL estimates vary considerably across studies, we adopt the median value derived from five sources, yielding an estimate of USD 816,743.99 per life, expressed in 2018 dollars.[26]

In our data, we find that, prior to the experiment, there were on average 69.7 incidents of police lethality per year in control units, and 283.7 in treatment units. This corresponds to a total of 353.4 deaths per year in the metropolitan area of São Paulo. We then apply our headline estimate of a 51.8% reduction in police lethality from Sun and Abraham (2021), as reported in Table 1 (or 40.9% when using the differences-in-differences estimator). This corresponds to an estimated 183.1 lives saved per year (144.5 using the differences-in-differences estimate). In monetary terms, applying the VSL described above, the annual benefit ranges between USD 117,202,762 and USD 148,320,708, expressed in 2018 dollars.

Cost. The monthly camera cost was R$ 486,00 in 2021 BRL, as quoted in official contract between the police and the camera provider. [27] The contract covers all backend infrastructure, cloud storage, and the data uplink between police stations.

In order to match the benefit data, which is costed in 2018 dollars, we deflate by the Brazilian Consumer Price index (15.8% inflation in the period) and convert by the 2018 US dollars - Brazilian Reais exchange rate (3.66 BRL per USD). This gives monthly camera cost at US$ 114.64. We cannot determine with certainty how many cameras were deployed specifically within the metropolitan area of São Paulo, but we work with the aggregate figure of 10,200 cameras deployed *across the state*, acknowledging that some were allocated to areas outside the metropolitan area. This approach is conservative, as it very likely overestimates the costs and therefore underestimates the Mean Value of Public Funds. Overall, we then

[26]Specifically, the studies considered are Corbi et al. (2006), Rocha and Soares (2015), Cerqueira et al. (2020), Pereira et al. (2020), and Viscusi and Masterman (2017).

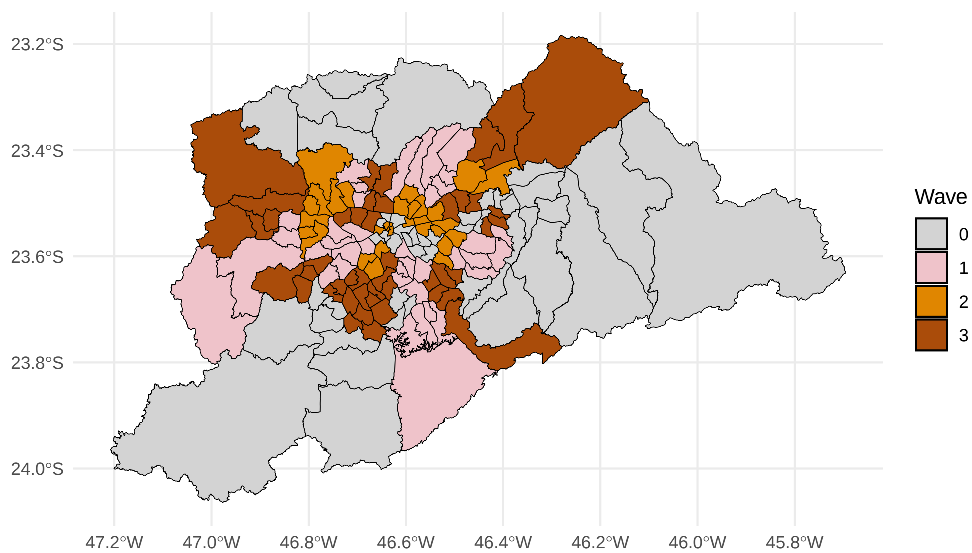
[27]Source: Secretaria de Seguranca Publica, Policia Militar do Estado de São Paulo, Contract DTIC-001/183/21.

find a combined yearly cost of 14,031,936 in 2018 US dollars, which is directly comparable to the benefits of the policy.

MVPF and comparison to other interventions. When compared to the estimated benefits, the Mean Value of Public Funds (MVPF) ranges from 8.41 to 10.66, depending on the estimator used to compute the benefits. These figures are comparable to those reported by Barbosa et al. (2025), who find an MVPF of 9.26 in the context of an intervention in the Brazilian state of Santa Catarina. Both results are consistent with the broader evidence that body-worn cameras (BWC) are highly cost-effective. For instance, in the United States, Williams Jr et al. (2021) estimate a benefit-cost ratio of 4.95. The larger effects observed in the Latin American context may be attributed to higher baseline levels of police violence, and larger treatment effects. Those estimates also compare favourably to other police interventions (see Barbosa et al., 2025).

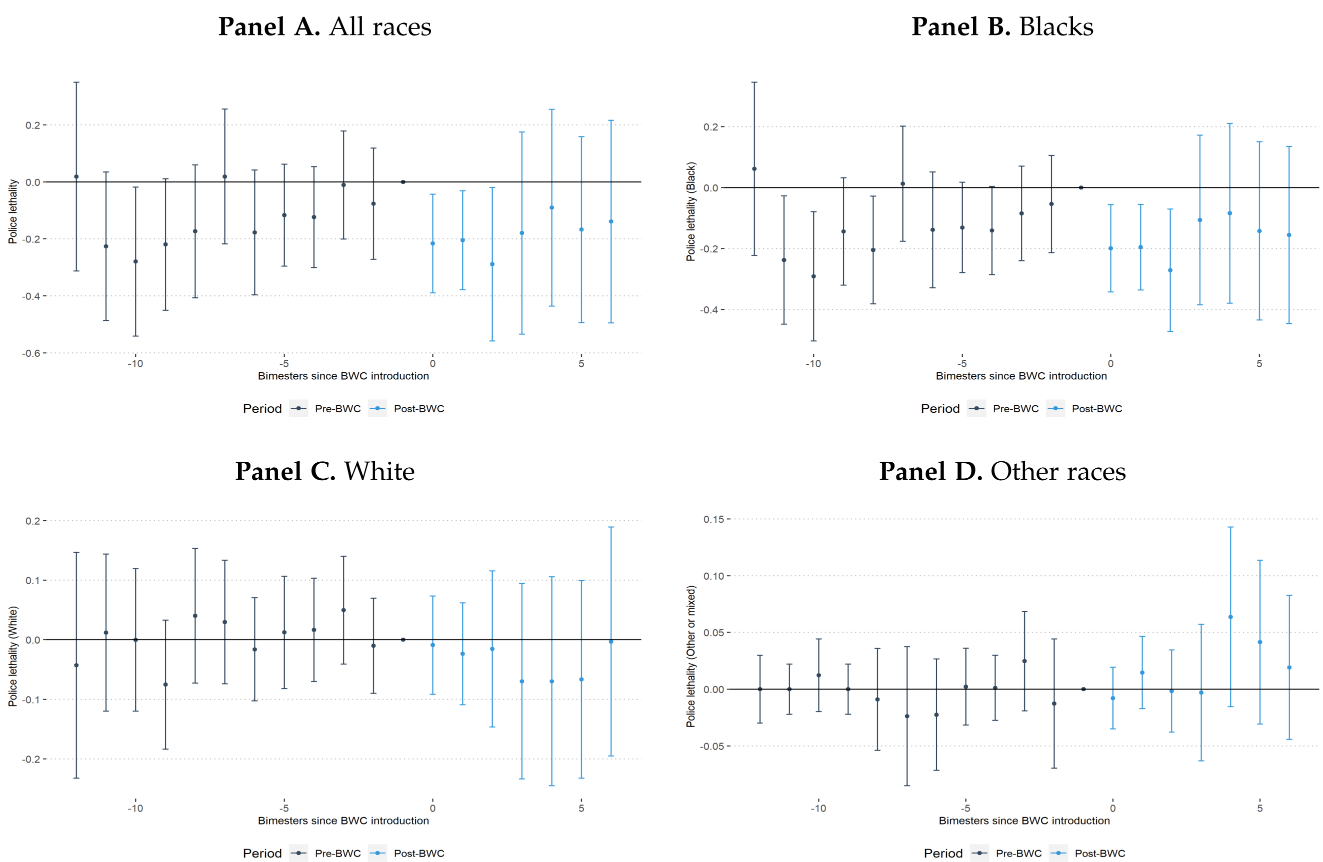
Appendix Figures and Tables

Appendix Figure A1: Staggered introduction of body-worn cameras in São Paulo



Note: Roll-out of body-worn cameras in São Paulo by Military Police precincts. First-wave precincts (39 units - in light pink) started wearing cameras in June 2021. Second-wave precincts (30 units - in orange) started the treatment in February 2022. Third-wave units started in April 2022 (46 units - in brown). All other precincts (37 units - in gray) were treated in August 2022 and effectively represent our never-treated control group in the analysis.

Appendix Figure A2: Dynamic Effects and Pretrends



Note: Effects of police lethality before and after the implementation date. Sample from April 2020 to August 2022. Coefficients are the effects at two month intervals. Coefficients of Equation (2) with the Sun and Abraham (2021) estimator.

Appendix Table A1: Descriptive Statistics

	Control 37 units	First Wave 39 units June 2021	Second Wave 30 units Feb 2022	Third Wave 46 units April 2022	Combined 115 units	Difference	
	Mean	Mean	Mean	Mean	Mean	Coef	Sd.Err.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Incident responses							
Total	236.477	221.556	238.156	221.884	226.017	-10.46	(28.43)
Thefts	12.365	12.214	18.294	13.768	14.422	2.057	(2.158)
Robberies	13.05	12.423	14.856	13.486	13.483	0.433	(2.179)
Domestic Violence	11.959	7.47	7.328	8.83	7.977	-3.983	(1.786)
Drugs	6.559	7.09	7.772	7.069	7.259	0.701	(1.352)
Homicides	0.653	0.419	0.361	0.486	0.43	-0.223	(0.137)
Panel B. Crime records							
Police lethality	0.314	0.515	0.396	0.333	0.416	0.102	(0.093)
Bodily injuries by the police	0.131	0.259	0.144	0.174	0.196	0.064	(0.035)
Disobedience	1.173	1.800	1.140	1.778	1.600	0.427	(0.175)
Contempt	1.587	2.059	2.068	2.000	2.041	0.454	(0.201)
Resistance	1.417	2.285	2.171	1.844	2.096	0.679	(0.230)
Arrests	31.282	42.693	29.919	44.830	39.728	8.446	(4.343)
Drug possession	0.949	1.793	2.243	2.174	2.059	1.110	(0.276)
Homicides	1.099	1.215	0.838	1.281	1.129	0.029	(0.226)
Robberies	103.288	167.126	148.622	166.519	161.520	58.231	(27.538)
Thefts	115.253	177.407	223.919	190.048	195.437	80.184	(29.965)

Notes: Bimonthly averages of the indicators in the 12 months preceding the first-wave implementation (June 2020-May 2021). The implementation dates are June 2021 (first wave, 39 units), February 2022 (second wave, 30 units) and April 2022 (third wave, 46 units). Means are presented for presented in Columns (1) to (5) for the control group, each wave individually, and combined across waves. Differences in means between the combined treatment and control is shown in Columns (6) along with the standard error in Column (7). Panel A reports the number of dispatches as registered by the Military Police of São Paulo. "Total" refers to the total number of dispatches in a Military police precinct by a period of two months, followed by the number of dispatches that were classified by the police officer to pertain to "thefts", "robberies", "domestic violence", "drugs", and "homicide". *Source:* Military Police of São Paulo. Panel B refers to measures of police use of force, police activity and crime, as registered by the Civilian Police and reported by São Paulo's Public Security Secretariat (SSP-SP). "Police lethality" is the mean number of persons killed by the police. Combined, the .314 average deaths for the 37 control units for a period of two months, with .515, .396 and .333 deaths for the first, second- and third-wave precincts is equivalent to 37*.314+.515*39+.396*30+.333*46=58.9 deaths bimester, or 353.4 per year, on average. "Bodily injuries by the police", "Disobedience", "Contempt" and "Resistance" are the number of such cases, which are often associated to police use of force. "Arrests" and "drug possession" are proxies for police activities. "Homicides", "Robberies", and "thefts" are the numbers of those respective crimes. All measures are average number of reported cases by (Civilian) police precinct, and a period of two months. *Source:* Secretaria de Segurança Pública de São Paulo (SSP-SP). Data are available from `https://www.ssp.sp.gov.br/transparenciassp/` and `www.ssp.sp.gov.br/estatistica/pesquisa.aspx`.

Appendix Table A2: Effects of BWC on police lethality

Robustness to observations at the border

	Cutoff 0m				Cutoff 100m				Cutoff 250m				Cutoff 500m			
	All	Black	White	Other	All	Black	White	Other	All	Black	White	Other	All	Black	White	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Panel A. Sun and Abraham (2021)																
BWC treatment	-0.200	-0.183	-0.029	0.012	-0.176	-0.173	-0.015	0.012	-0.162	-0.151	-0.021	0.010	-0.127	-0.120	-0.011	0.004
	[0.099]**	[0.083]**	[0.048]	[0.018]	[0.094]*	[0.083]**	[0.041]	[0.018]	[0.095]*	[0.087]*	[0.043]	[0.017]	[0.094]	[0.087]	[0.038]	[0.016]
Mean of the DV	0.386	0.255	0.115	0.017	0.370	0.244	0.109	0.017	0.351	0.228	0.107	0.016	0.332	0.217	0.101	0.015
Units	179	179	179	179	179	179	179	179	179	179	179	179	179	179	179	179
N. Obs	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506
Panel B. Differences-in-differences																
BWC treatment	-0.158	-0.129	-0.029	0.000	-0.143	-0.121	-0.021	0.000	-0.129	-0.103	-0.025	-0.001	-0.113	-0.085	-0.024	-0.004
	[0.047]***	[0.036]***	[0.023]	[0.009]	[0.045]***	[0.035]***	[0.022]	[0.009]	[0.044]***	[0.034]***	[0.022]	[0.009]	[0.044]***	[0.033]**	[0.022]	[0.008]
Mean of the DV	0.386	0.255	0.115	0.017	0.370	0.244	0.109	0.017	0.351	0.228	0.107	0.016	0.332	0.217	0.101	0.015
Units	179	179	179	179	179	179	179	179	179	179	179	179	179	179	179	179
N. Obs	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506	2506

Note: Effects of body-worn cameras on police lethality. Sample from April 2020 to December 2024. Estimates of Equation 1. Unit of observation in Panels A are the number of people killed by the police in a police precinct every two months, excluding observations at the border from various cutoffs (along columns). Column (1) refers to all cases with police lethality. Columns (2), (3) and (4) break down by race (respectively, Black, White and Other). Panel A refers to the Sun and Abraham (2021) estimator. Panel B are the DiD estimates model. Fixed effects at the police precinct level. Standard errors are clustered at the Military Police operational unit level by time. *** p<0.01; ** p<0.05; * p<0.1.

Appendix Table A3: Effects of BWC on police lethality

Precinct-by-month unit of observation

	All (1)	Black (2)	White (3)	Other (4)
Panel A. Police Lethality (Sun and Abraham, 2021)				
	-0.070	-0.057	-0.020	0.007
	[0.066]	[0.063]	[0.020]	[0.006]
Mean of the DV	0.193	0.128	0.057	0.008
Units	179	179	179	179
N. Obs	5012	5012	5012	5012
Panel B. Indicator for lethal incident (Sun and Abraham, 2021)				
BWC treatment	-0.075	-0.051	-0.022	0.007
	[0.044]*	[0.040]	[0.020]	[0.005]
Mean of the DV	0.147	0.104	0.052	0.007
Units	179	179	179	179
N. Obs	5012	5012	5012	5012
Panel C. Police Lethality (differences-in-differences)				
BWC treatment	-0.079	-0.065	-0.014	0.000
	[0.023]***	[0.018]***	[0.011]	[0.004]
Mean of the DV	0.193	0.128	0.057	0.008
Units	179	179	179	179
N. Obs	5012	5012	5012	5012
Panel D. Indicator for lethal incident (differences-in-differences)				
BWC treatment	-0.056	-0.048	-0.012	-0.002
	[0.017]***	[0.015]***	[0.010]	[0.004]
Mean of the DV	0.147	0.104	0.052	0.007
Units	179	179	179	179
N. Obs	2506	2506	2506	2506

Note: Effects of body-worn cameras on police lethality. Estimates of Equation (1). Unit of observation in Panels A are the number of people killed by the police in a police precinct every months, from the Sun and Abraham (2021) estimator. Column (1) refers to all cases with police lethality. Columns (2), (3) and (4) break down by race (respectively, Black, White and Other). Dependent variable in Panel B is the indicator which is equal to one if there was one or more police-related lethalities in the precinct-bimester. Panels C and D mirror the panels above but with the two-way fixed effect model. Sample from April 2020 to August 2022. Fixed effects at the police precinct level. Standard errors are clustered at the Military Police operational unit level by time. *** p<0.01; ** p<0.05; * p<0.1.