

# Vagaries of Police Behavior

*Research Note*

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## **Abstract**

Criminal justice reformers often attempt to curb police discretion. In this note, I use the case of criminal justice reform in Venezuela to study the consequences of constraining the police. After a new code of criminal procedure restricted police power to arrest and detain suspects, legal scholars and journalists claimed that officers reacted by killing those whom they could no longer arrest and detain. Using microdata on violent deaths, I find support for this claim, suggesting that constraints on the police—even those that appear socially beneficial—can induce harm when officers respond strategically and when judicial controls are fragile.

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Criminal justice reformers often attempt to curb police discretion. In the United States, for example, legal and administrative reforms in the 1980s subjected police officers to more explicit rules about the use of deadly force (Fyfe, 1988). In China, criminal procedure reforms in the 1990s tried to limit police officers’ control over the length of pre-trial detention and home surveillance (Chu, 2000). And in Italy, in 1988 and again in 2001, legislation banned police officers from testifying about what defendants say outside of court (Illuminati, 2005). As James Q. Wilson summarized, there is a class of reformers for whom, no matter what the problem, “the remedy . . . is to reduce [police] discretion wherever possible” (1968, p. 281).

In this note, I study the consequences of constraining the police. Previous work has documented the dangers of introducing high-powered incentives for military officials in weakly institutionalized regimes (Acemoglu et al., 2016); here, I find that the mere imposition of constraints—namely, restrictions on police officers’ power to arrest and detain suspects—can induce harm when officers respond strategically and when judicial controls are fragile.<sup>1</sup>

In particular, I consider the case of criminal justice reform in Venezuela, where the government implemented a criminal procedure code similar to those put in place across Latin America since 1990 (Langer, 2007). Venezuela’s new code of criminal procedure restricted arrest powers, requiring officers either to obtain a warrant or to observe a crime *in flagrante* before making an arrest; it also imposed stricter limits on pre-trial detention. This worked: the arrest rate and the pre-trial incarceration rate plummeted. But legal scholars, sociologists, and journalists claimed another, unintended consequence: that police who “felt deprived of their enormous power” killed those whom they could no longer arrest and imprison (Alguíndigue and Pérez Perdomo, 2008, p. 109–110).

Using daily mortality data to observe changes in lethal violence, I find that violent deaths jumped 25% immediately after the new code came into effect (Section 2.2). I find no comparable jump in other causes of death around the same date, or for violent deaths around the same day (July 1) in other years. While there is no direct, comprehensive measure of police use of lethal force in Venezuela, incomplete data collected by an NGO reveal an increase in the year following the new criminal procedure code (Section 2.2).

I assess competing explanations for the jump in the violent death rate. Perhaps the observed increase in lethal violence was driven not by police reaction to the

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<sup>1</sup>For related discussion of potential unintended consequences of criminal justice reform, see especially Brinks (2008), and also Weaver (2007), Mummolo (2017), Gottschalk (2015, 2006).

reform but by a general, rational response to the reduced probability of arrest, which lowered the cost of committing murder (Becker, 1968). Using data on other crimes, however, I find no jump in robbery rates when the new code came into effect. This finding is inconsistent with the notion that the jump in lethal violence was driven by widespread response to lower arrest rates. Another possible explanation is that civilian vigilantism increased in response to the perceived inefficiency of the new criminal procedure code; I view police violence as more plausible principally because of the immediacy of the jump in lethal violence. Section 2.3 discusses these and other alternative explanations.

The analysis allows me to bound the magnitude of police reaction to the implementation of the new code. The number of additional lethal violence victims in the wake of the new code constitutes approximately 1.8% of the missing arrests. In other words, if we were to attribute the *entire* jump in lethal violence to extra-judicial police killings, we would conclude that “the police counter response was to kill suspected criminals” 1.8% of the time: for each 1,000 missing arrests, there were 18 deaths (quote from Alguíndigue and Pérez Perdomo, 2008).

Were the true magnitude even a small fraction of that number, this finding would constitute evidence that the reform “provoked political economy responses from those who [saw] their economic or political rents threatened” (Acemoglu, 2010). These responses rendered harmful a reform that appeared socially beneficial.

## 1 Intended consequences of the new code of criminal procedure

In 1998, the Venezuelan legislature approved a new code of criminal procedure that entered into force the following year, on July 1, 1999.<sup>2</sup> The code was drafted by lawyers, judges, and legal scholars who sought to change a criminal justice system that “remained a blemish on [Venezuela’s] image of liberal democracy” and “crushed poor and uneducated suspects in its Kafkaesque gears” (Alguíndigue and Pérez Perdomo, 2008, 2013).

Venezuela’s new code of criminal procedure marked a paradigm shift (Birkbeck, 2003, p. 2), replacing the written, inquisitorial criminal procedure typical of civil law systems with the oral, accusatorial procedure typical of common law systems (Langer,

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<sup>2</sup>Three articles entered into force immediately, in 1998: mechanisms for alternative dispute resolution (Articles 34–36), procedures for plea bargaining (Articles 376, 504, and 505), and access to exhibits for the defendant and her counsel (Article 313).

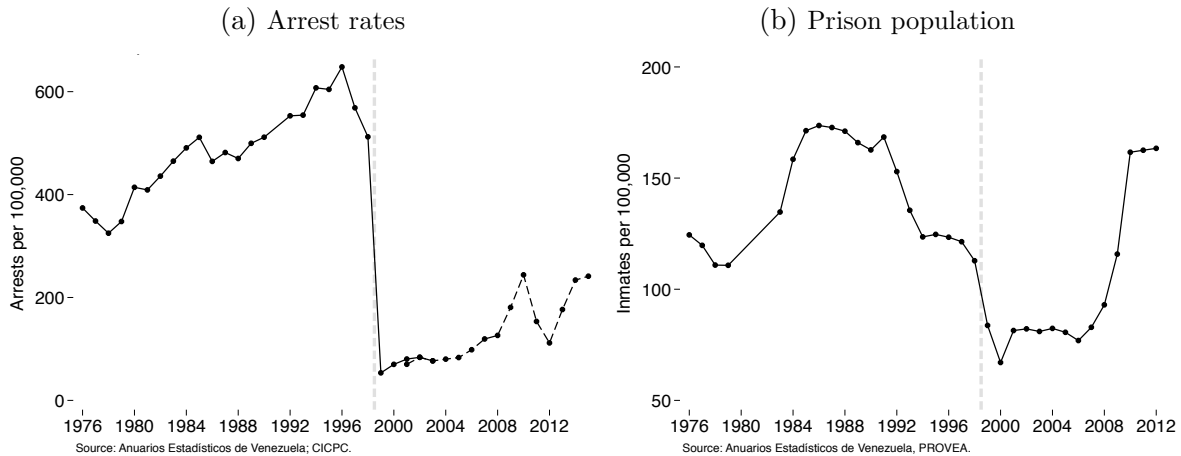
2007; Birkbeck, 2003; Alguíndigue and Pérez Perdomo, 2013, p. 124). Where previously judges participated in investigation and prosecution (Langer, 2007, p. 629), the new system limited the judge’s role to adjudication (IADB 2002, p. 6).

Two changes are especially relevant for this study. First, the new code allowed the police to make arrests only after (a) obtaining a warrant or (b) observing a crime being committed; the previous code allowed police to make arrests as part of pre-trial investigations (IADB 2002, p. 6–7; CEC, 1962, Article 75-H; COPP, 1998, Articles 259–264; Vásquez González, 2017).

Second, the new code aimed to make pre-trial detention the exception rather than the rule: suspects could be detained pre-trial only under judicial order, and only under new, more restrictive guidelines (Birkbeck, 2003, p. 9–10). Moreover, those detained without a warrant (i.e., those caught *in flagrante*) could be held only for 48 hours, after which the public prosecutor had to either indict or release them (Birkbeck, 2003, p. 10).

These changes had immediate effects both on the arrest rate and on the incarceration rate. The arrest rate fell 90% between 1998 and 1999, from 512 per 100,000 to 53 per 100,000 (Figure 1a); by way of comparison, the Colombian police made 343 arrests per 100,000 in 2008 (PN, 2008). The prison population fell 25% between 1998 and 1999 (Figure 1b).<sup>3</sup> For comparison, the incarceration rate in Colombia was 156 per 100,000 in 2008 (CEJ 2012).

Figure 1: Incarceration and arrests before and after the new criminal procedure code



<sup>3</sup>The prison population also fell quickly in 1992–1994, likely due to a new pre-trial detention law (the *Ley de Libertad Provisional Bajo Fianza*).

## 2 Possible unintended consequences of the new code of criminal procedure

### 2.1 The hypothesis about extra-judicial killings

Police officers publicly lamented their loss of power under the new code of criminal procedure. “They’ve taken away the authority we had,” a Caracas police inspector told the Associated Press in August, 1999, one month after the new code came into effect (Jones, 1999). Police also criticized public prosecutors’ inability to gather evidence or to conduct investigations, both of which were previously responsibilities of the police, and bemoaned the release of suspects arrested without a warrant (i.e., those who the police claimed had been caught *in flagrante*).<sup>4</sup> One human rights group wrote that the the police “waged war on the new system” by trying to convince the public that the new code had increased crime (COFAVIC, 2005, p. 20).

Legal scholars, sociologists, and prosecutors suggested that police officers may have responded to the new code, or to failures in its implementation, by substituting the use of lethal force for unchecked arrest powers.<sup>5</sup> For sociologist Andrés Antillano, the new code and prior reforms

implied the reduction of the legal powers of the police (such as arrests without warrants...). This resulted in a decline in excessive use of legal power, such as arbitrary detentions and the use of torture to obtain confessions. But at the same time, there seems to have been an increase in activity related to the use of informal (and extra-legal) power by the police, such as killings (2010, p. 340–341).

Monsalve Briceño (2006), based on interviews with police officers in Caracas, concluded that the new code restricted arrest powers “that the police had used as effective substitutes for judicial punishment” and that officers might therefore consider it “within their competence” to punish via physical force (p. 14).<sup>6</sup> If an officer were

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<sup>4</sup>For police complaints about prosecutors gathering evidence, see Rivera (2003); Jones (1999); Monsalve Briceño (2006, p. 21). For complaints about releasing detainees, see, e.g., Monsalve Briceño (2006), p. 20, “Pedro” from Polioriente says: “I feel impotent when I see a criminal back on the street two hours after bringing him to the prosecutor.”

<sup>5</sup>Similarly, Hanson (2017) finds that an effort to rein in use of force in Venezuela’s National Bolivarian Police backfired, increasing officers’ sense of vulnerability and possibly fueling violence (Ch. 4).

<sup>6</sup>Asked whether the police are *legally* responsible for applying punishment, one officer said “currently no, but before the [new criminal procedure code] yes” (Monsalve Briceño, 2005, p. 5).

to suspect that a detainee would not be punished within the judicial system, the officer “might decide not to inform the public prosecutor and instead punish directly” (Monsalve Briceño, 2006, p.14).

Similarly, Alguíndigue and Pérez Perdomo (2008, p. 109–110) wrote:

The police felt that the legal reforms deprived them of the enormous power they previously enjoyed. The police could no longer imprison known criminals . . . But even in cases where people were caught *in flagrante delicto*, the judges could set the criminals free on technicalities . . . The police responded by killing suspected criminals rather than taking the risk that judges would free them later on procedural grounds.

Prosecutors also accused the police of a violent response to the new code. For example, in a letter to the daily newspaper *El Nacional*, one prosecutor wrote that “some police officials, instead of respecting the civilizing limits imposed by the new code of criminal procedure (which apparently threatens their protagonism), prefer to take justice into their own hands” (Moreno Pineda, 1999).

## 2.2 Evaluating the hypothesis about extra-judicial killings

Ideally, I would evaluate this hypothesis using a direct and comprehensive measure of deaths at the hands of police; unfortunately for the purposes of this study, this measure does not exist (González Mejías and Kronick, 2017). Instead, I consider lethal violence overall—for which I do have a high-quality, high-frequency measure—and then use additional data to adjudicate among competing explanations for the overall violence trend.

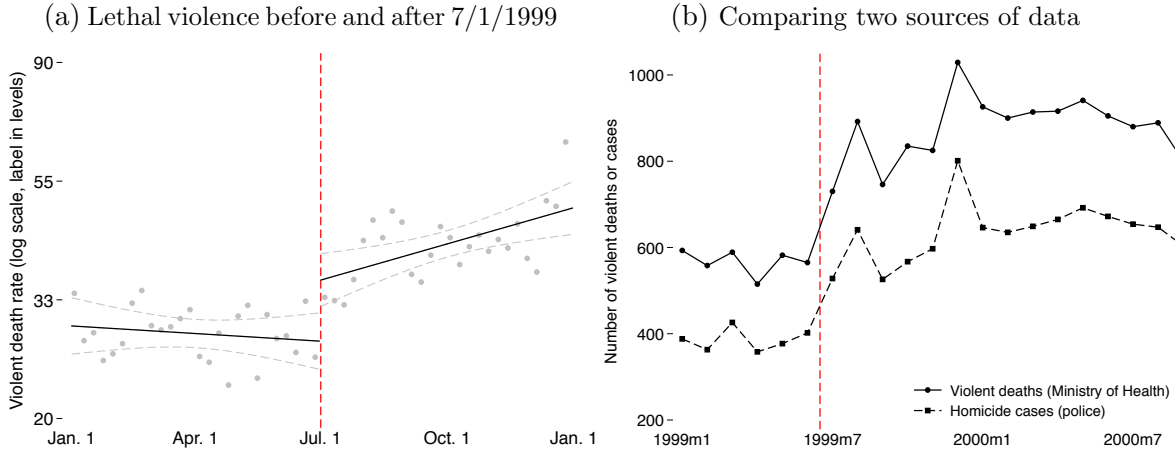
The lines in Figure 2a show predictions, from linear regressions, of log daily violent death rates; the points mark weekly means.<sup>7</sup> The data derive from vital statistics, maintained by the Ministry of Health (see González Mejías and Kronick, 2017, for details). The vertical line marks July 1, 1999, when the new criminal procedure code entered into force. The graph reveals that lethal violence jumped in the weeks following July 1, relative to the weeks prior. Observing the daily data (as opposed to annual data) is critical both because 1999 saw many other changes—among them, Hugo Chávez took office as president in January—and because the violent death rate began increasing in the late 1980s (Kronick, 2017).

Figure 2b compares the monthly violent death count observed in the vital statistics

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<sup>7</sup>Daily violent death rates were scaled by  $\times 365$ , so that the y-axis is on the more familiar scale of annual violent death rates.

Figure 2: Violent death rates before and after the penal code reform



data (that is, the data used for Figure 2a) with homicide cases observed in the police data (not available by day or by week). The police records confirm the trend observed in vital statistics: a sharp increase following the new criminal procedure code. This does not appear to be a seasonal pattern (i.e., a July effect), nor does death from other causes jump around July 1, 1999 (Appendix Figures A.2a and A.2b).

To estimate  $\theta = E(Y|\text{July 1, 1999}) - E(Y|\text{June 30, 1999})$ , where  $Y$  denotes the violent death rate, I first estimate

$$Y_t = \alpha_1 + \alpha_2 \text{Post}_t + \beta_1 t + \beta_2 (\text{Post}_t \times t) + \epsilon_t$$

where  $t$  is a day counter taking a value of one on July 1, 1999 (and 2 on July 2, and 0 on June 30, etc.) and  $\text{Post}_t$  is an indicator for all dates on or after July 1. I then estimate  $\hat{\theta} = \hat{\alpha}_2 + (\hat{\beta}_1 + \hat{\beta}_2) \times 1$ .

This approach yields  $\hat{\theta} = 8.31$  (s.e. 3.52), leading me to reject the null that  $H_0 : \theta = 0$ . For estimates using local linear regression, see Appendix Table A.1 and accompanying discussion. The violent death rate prior to the new code was approximately 30 per 100,000—meaning that the jump of 8.31 per 100,000 constituted a 27% increase over the pre-reform rate.

Dividing this estimate of the jump in lethal violence (8.31 per 100,000) by the fall in the arrest rate (459 per 100,000), I find that the additional violent deaths were approximately 1.8% of the drop in arrests—a ratio that, in my view, supports the

plausibility of the police violence hypothesis.<sup>8</sup> This ratio would also serve as a key input to any welfare calculation—especially if incarceration implies a “civic penalty” (Lerman and Weaver, 2014; Weaver and Lerman, 2010, c.f. Gerber et al., 2017).

The analysis thus far says only that lethal violence increased just after July 1, 1999; I do not observe how many of these additional victims were killed by the police. The only direct measure is incomplete: since 1989, the Venezuelan human rights organization PROVEA has compiled press accounts of extrajudicial killings by state security forces. As PROVEA acknowledges, the data are far from comprehensive; however, under the (strong) assumptions of stationarity in the proportion of violations appearing in the press, and in the proportion of press reports picked up by PROVEA, these data provide a meaningful measure of the trend in extra-judicial killings by police.

Appendix Figure A.3a shows that PROVEA’s count of victims of extra-judicial killings was largely flat in the two years prior to July 1999 and then began rising after that date, though there is no jump immediately after the new code came into effect. The same is true of the police count of cases of “resistance to authority,” a crime imputed to many victims of extra-judicial police killings (González Mejías and Kronick, 2017), as shown in Appendix Figure A.3b. I view these trends as consistent with, though not confirmation of, the notion that the new criminal procedure code increased police use of lethal force. In their own annual report for 2001, PROVEA mentioned police reaction to implementation of the new code, which police officials had publicly blamed for “putting thousands of ‘antisocials’ on the streets” (p. 37).

Because new code came into effect across the whole country simultaneously, and because variation in implementation was idiosyncratic, I can not leverage geographic variation in the law or in its implementation (Rosell, 2017). However, I do consider whether geographic variation in the pre-reform record of extra-judicial killings predicts the size of the post-reform jump in lethal violence. Appendix Figure A.4 indicates that, indeed, the post-reform jump in lethal violence was larger in states with higher (pre-reform) rates of extra-judicial killings (as measured in the NGO data). However, the imprecision of state-level estimates of the jump in the violent death rate, together with the limited number of observations ( $N = 24$ ), makes it difficult to evaluate how this correlation changes with the inclusion of other covariates.

If indeed extra-judicial killings by police account for the jump in lethal violence, we might expect victim characteristics to change: in particular, we might expect a

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<sup>8</sup>Of course this is a subjective assessment, but if the ratio were, say, an order of magnitude higher, I would conclude that something else must explain the increase in violence.



higher proportion of adolescent victims and/or of male victims. Prior to the reform, approximately 40% of lethal violence victims were between the ages of 15 and 25; if *all* of the additional victims post-reform had been between the ages of 15 and 25, that proportion would have increased to 53%. In fact, as Figure A.5b suggests, the proportion of victims aged 15–25 increased to 44%—about one-third of the maximum possible increase.<sup>9</sup>

Taken together, I interpret these findings as evidence in favor of the hypothesis that police reacted to the new code of criminal procedure by using lethal violence. In the state of Portuguesa, one police-linked death squad proclaimed as much, publishing a pamphlet that “blamed [the new code] for the rise in crime that led the group to act and claim[ing] that they would not stop until [the new code] was repealed” (U.S. Department of State, 2002). The available quantitative data, in my view, are consistent with the notion that their behavior was not unique.

## 2.3 Competing explanations

One obvious alternative explanation for the jump in lethal violence is that the sharp drop in arrest rates—and consequent drop in the cost of committing crimes—led non-police civilians to commit more murders (Becker, 1968). If this were the case, however, the same incentives would drive people to commit other crimes; as I show in Appendix Figures A.1a and A.1b, there is no jump in reported robbery cases after the new criminal procedure code came into effect.<sup>10</sup> Similarly, if the release of prisoners—which occurred gradually, not all at once on July 1—drove the jump in lethal violence, we might expect an increase in other crimes.

A second alternative explanation, more difficult to rule out, is that the new code increased the perception of impunity, which in turn increased (non-police) lynchings of suspected criminals. Indeed, the press reported several such lynchings; in one case, the police told a robbery victim “that her report could not be processed because the new criminal procedure code had come into effect and there was no public prosecutor in the office to open the investigation” (El Universal, 1999).<sup>11</sup> In my view, however,

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<sup>9</sup>If *all* of the additional victims had been male, the proportion of male victims would have increased from 91% (pre-reform) to 93%; the data are too imprecise to detect such small changes (Figure A.5a).

<sup>10</sup>This raises the question of why the drop in arrest rates would *not* increase robberies; to my mind, the most plausible explanation is that, as many critics charged, arrests before the new code were extremely arbitrary.

<sup>11</sup>One state governor was criticized for appearing to encourage lynchings; he said that he “would not use the police to protect thieves, rapists, or murders” (El Mundo, 1999).

the immediacy of the jump in lethal violence is more consistent with an organized response than with atomistic non-police civilian reactions.

### 3 Conclusion

In this note, I find evidence that police in Venezuela reacted to a new code of criminal procedure by using violence in place of unrestricted powers of arrest. This echoes other cases; Chevigny (1995), for example, says that impatience with criminal justice systems across Latin America created “an explosive brew of state power and vigilantism” in which police “bypass the rest of the system and punish by violence” (p. 143).<sup>12</sup> He quotes a jurist in Buenos Aires: “Faced with a criminal, the police think, ‘I’ll punish you just in case the judges don’t’” (p. 181). Chevigny calls this “official vigilantism.”

Why, then, did reformers and politicians fail to anticipate the police response?<sup>13</sup> One possible explanation is that police violence increased not as a result of the reform in and of itself, but rather as a result of the failure to implement the reform as imagined—and, in particular, to the lack of judicial punishment for police violence (c.f. Brinks, 2008). While it is beyond the scope of this paper to narrate the many causes of this failure, I note that, on top of opposition from within the judiciary and the police, the inauguration of political outsider Hugo Chávez—which occurred after the Venezuelan congress approved the new code, but before it took effect—hindered implementation: when “the reform proponents lost political power, the code was quickly orphaned” (Alguíndigue and Pérez Perdomo, 2013, p. 125). Jorge Rosell, one of the drafters of the new code and a former Supreme Court justice, concluded that “the principal cause of the failure of the reform process was the lack of political will of the governing regime” (2014, p. 161). Similarly, the founder of a major Venezuelan human rights NGO said that “we do not highlight the police reaction to the new [criminal] procedural rules but rather to the structural impunity for police crimes” (Ortega Mendoza, 2017). Given that Hugo Chávez was an unlikely presidential

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<sup>12</sup>Skolnick and Fyfe (1993) tell a similar story for the United States, where, in their view, police use excessive force in order to control those “underpunished by established law” and to compensate for a judicial process deemed “too ponderous, too indolent, too unaware, or too constrained to deal with ‘the problem’” (p. 24).

<sup>13</sup>Potential bad outcomes were not entirely unanticipated; indeed, legal scholar Rogelio Pérez Perdomo wrote in 1998 that, while he “ferently wish[ed] that our criminal procedure would begin to work in accordance with the principles and rules of the new code,” it was important to “be conscious that reality doesn’t change by decree and that nothing guarantees that the judicial system will easily adapt to the new code. For that reason [he was] personally worried” (p. 40). However, to the best of my knowledge, neither Pérez Perdomo nor others anticipated police violence.

contender during the years of the development of the new criminal procedure code, it is easy to imagine that the drafters did not anticipate either his election or its consequences for the judicial system.

Reading press accounts and policy reports about experiences of criminal procedure reform elsewhere in Latin America, some countries appear to have experienced resistance and backlash from the police, like Venezuela; others did not.<sup>14</sup> One possible explanation for this heterogeneity is variation in the strength of judicial institutions, which provide a check on police behavior; another is that reform sparked backlash only where it threatened the economic interests of police officers. Evaluating these and other hypotheses strikes me as a useful objective for future work.

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<sup>14</sup>Brinks (2008); Zazueta (2017); Angel (2017); Rodríguez Ferreira and Shirk (2013); Blanco (2012).

## References

- Acemoglu, D. (2010). Theory, general equilibrium, and political economy in development economics. *The Journal of Economic Perspectives*.
- Acemoglu, D., Fergusson, L., Robinson, J., and Romero, D. (2016). The perils of high-powered incentives: Evidence from colombia’s false positives. *Working Paper*.
- Alguíndigue, C. and Pérez Perdomo, R. (2008). The Inquisitor Strikes Back: Obstacles to the Reform of Criminal Procedure. *Southwestern Journal of Law and Trade in the Americas*.
- Alguíndigue, C. and Pérez Perdomo, R. (2013). Revolución y proceso penal en Venezuela: 1999-2012. *Anales de la Universidad Metropolitana*, 13(2):119–144.
- Angel, A. (2017). Subieron los homicidios porque los jueces liberan a personas detenidas con armas? *Animal Político*.
- Antillano, A. (2010). ¿Qué conocemos de la violencia policial en venezuela? Las investigaciones e hipótesis sobre el uso de la fuerza física por la policía. *Espacio Abierto*.
- Becker, G. S. (1968). Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76(2):169–217.
- Birkbeck, C. (2003). Venezuela. In *Datos Mundiales Sobre Los Sistemas de Justicia Criminal*. Bureau of Justice Statistics.
- Blanco, L. (2012). The Impact of Reform on the Criminal Justice System in Mexico. *RAND*.
- Brinks, D. M. (2008). *The Judicial Response to Police Killings in Latin America*. Cambridge University Press.
- CEC (1962). Código de Enjuiciamiento Criminal. *Gaceta Oficial N. 748*.
- Chevigny, P. (1995). *The Edge of the Knife: Police Violence in the Americas*. The New Press of New York.
- Chu, M. P. H. (2000). Criminal procedure reform in the people’s republic of china: The dilemma of crime control and regime legitimacy. *Pacific Basin Law Journal*.
- COFAVIC (2005). Los grupos parapoliciales en Venezuela. <http://bit.ly/2yQ7MCL>.

- COPP (1998). Código Orgánico Procesal Penal. *Gaceta Oficial N. 5208*.
- Corporación Excelencia en la Justicia (2012). Composición población reclusa Colombia.
- El Mundo (August 24, 1999). Una excarcelación masiva de delincuentes y el cansancio de la ineficacia judicial provocan una eclosión de linchamientos. *El Mundo*.
- El Universal (July 4, 1999). Intentan linchamiento ante falta de un fiscal. *El Universal*.
- Fan, J. and Gijbels, I. (1996). *Local Polynomial Modelling and its Applications*. CRC Press.
- Fyfe, J. (1988). Police use of deadly force: Research and reform. *Justice Quarterly*.
- Gerber, A., Huber, G., Meredith, M., Biggers, D., and Hendry, D. (2017). Does incarceration reduce voting? *Journal of Politics*.
- González Mejías, J. and Kronick, D. (2017). Measuring lethal violence in Venezuela. *Draft Chapter for Edited Volume*.
- Gottschalk, M. (2006). *The Prison and the Gallows: The Politics of Mass Incarceration in America*. Cambridge University Press.
- Gottschalk, M. (2015). *Caught: The Prison State and the Lockdown of American Politics*. Princeton University Press.
- Hanson, R. (2017). Unruling the law: Democratic policing, socialist revolution, and violent pluralism in Venezuela. *Doctoral Dissertation*.
- Illuminati, G. (2005). The frustrated turn to adversarial procedure in Italy. *Washington University Global Studies Law Review*.
- Imbens, G. and Kalyanaraman, K. (2012). Optimal bandwidth choice for the regression discontinuity estimator. *Review of Economic Studies*.
- Inter-American Development Bank (2002). Support for reform of the criminal justice system. *Loan Document*.
- Jones, B. (1999). New penal code stirs crime wave Venezuela. *The Associated Press*.
- Kronick, D. (2017). Prosperity and violence in illegal markets. *Working Paper*.

- Langer, M. (2007). Revolution in Latin American Criminal Procedure: Diffusion of legal ideas from the periphery. *The American Journal of Comparative Law*.
- Lerman, A. and Weaver, V. (2014). *Arresting Citizenship: The Democratic Consequences of American Crime Control*. The University of Chicago Press.
- Monsalve Briceño, Y. (2005). Control social y castigo: Percepción en funcionarios policiales venezolanos. *Capítulo Criminológico*.
- Monsalve Briceño, Y. (2006). Repercusiones del sistema de justicia en el castigo policial. *Capítulo Criminológico*.
- Moreno Pineda, L. (November 16, 1999). Letter to *El Nacional*. *El Nacional*.
- Mummolo, J. (2017). Modern police tactics, police-citizen interactions and the prospects for reform. *Forthcoming, The Journal of Politics*.
- Ortega Mendoza, L. (2017). Personal email communication.
- Pérez Perdomo, R. (1998). El código orgánico procesal penal y el funcionamiento de la administración de justicia. *Capítulo Criminológico*.
- Policía Nacional de Colombia (2008). Resultados operativos de la Policía Nacional de Colombia. *Centro de Investigaciones Criminológicas, Policía Nacional de Colombia*.
- PROVEA (2001). Situación de los derechos humanos en Venezuela. *Informe Anual*.
- Rivera, R. (2003). Solo 7.0 por ciento de asesinatos son castigados en venezuela. *Notimex*.
- Rodríguez Ferreira, O. and Shirk, D. A. (2013). *La Reforma al Sistema de Justicia Penal en México*. Justice in Mexico Project.
- Rosell, J. (2017). Personal email communication.
- Rosell Senhenn, J. L. (2014). La reforma procesal penal en venezuela en qué fallamos? *Ciencias Penales desde el Sur: Segundo Congreso Latinoamericano de Derecho Penal y Criminología*.
- Skolnick, J. H. and Fyfe, J. (1993). *Above the Law: Police and the Excessive Use of Force*. The Free Press.

- U.S. Department of State (2002). Country report on human rights practices. *Bureau of Democracy, Human Rights, and Labor*.
- Vásquez González, M. M. (2017). Personal email communication.
- Weaver, V. and Lerman, A. (2010). Political consequences of the carceral state. *The American Political Science Review*.
- Weaver, V. M. (2007). Frontlash: Race and the development of punitive crime policy. *Studies in American Political Development*.
- Wilson, J. Q. (1968). *Varieties of Police Behavior: The Management of Law and Order in Eight Communities*. Harvard University Press.
- Zazueta, C. (July 12, 2017). El sistema de justicia al que la policía le falla. *Animal Político*.

# A Online Appendix

## A.1 Estimates using local linear regression

The main text estimates the magnitude of the jump in violent deaths at July 1, 1999 simply by fitting two lines: one for January–June 1999, a second for July–December 1999.

While the motivating graph (Figure 2a) perhaps looks like a typical regression discontinuity figure, the data used here differ from those commonly used in regression discontinuity analysis in two ways. First, the running variable in this case (days) is discrete, precluding the possibility of observations arbitrarily close to the treatment date. Second, the data are a single time series—that is, there is only one observation at each value of the running variable.

Table A.1: Estimating the jump using local linear regression

Estimates of  $\theta = E(Y|\text{July 1, 1999}) - E(Y|\text{June 30, 1999})$  using local linear regression, for five groups of causes of death; first row uses optimal bandwidth proposed in Imbens and Kalyanaraman (2012), second row uses half that bandwidth, third row twice the bandwidth.

	(1)	(2)	(3)	(4)	(5)
	All violent death	Violent death <i>unknown intent</i>	Intentional homicide	Circulatory disease	Infectious disease
Pre-reform rate	29.27	14.40	13.75	142.94	30.35
$h = 9.8$	19.19 (10.74), [0.07]	13.96 (6.12), [0.02]	2.80 (4.81), [0.56]	6.67 (7.34), [0.36]	-5.64 (4.36), [0.20]
$h = 4.9$	21.04 (10.14), [0.04]	14.51 (4.83), [0.00]	3.22 (3.62), [0.37]	9.99 (7.84), [0.20]	-4.66 (7.14), [0.51]
$h = 19.6$	9.93 (8.17), [0.22]	9.57 (5.26), [0.07]	1.55 (3.87), [0.69]	-3.64 (6.94), [0.60]	-0.43 (5.28), [0.94]

Standard errors in parentheses; p-values (for test of  $\theta = 0$ ) in brackets. Dependent variable is the death rate (deaths per 100,000 population), except in specification (5), in which it is the number of deaths of children under one year per 1,000 population.

This means that, as I show in Table A.1, local linear fits are highly sensitive to bandwidth choice. This table presents estimates of the jump using local linear regression with the optimal bandwidth proposed in Imbens and Kalyanaraman (2012). The first row uses the optimal bandwidth; the second and third rows use half and twice the optimal bandwidth, respectively, as recommended by the authors. Clearly, the estimate changes dramatically with bandwidth choice, though the point estimate is always positive, which is not the case for two “placebo” causes of death (circulatory

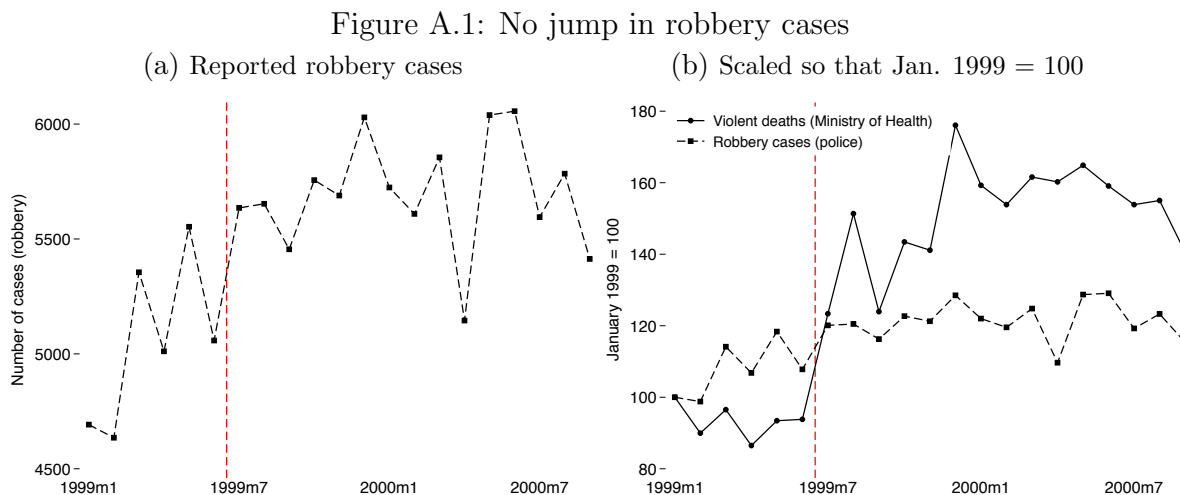


disease and infectious disease). As we would expect, the largest bandwidth produces an estimate that is closest in magnitude to the estimate presented in the main text.

Finally, I note that, at least in these estimates, the jump in violent deaths (Column 1, and main text) is driven not by a jump in *intentional homicides* (Column 3) but rather by a jump in violent deaths *of unknown intent* (Column 2); victims of police violence might be more likely to be classified as the latter. See González Mejías and Kronick (2017) for details on the vital statistics data.

## A.2 Other crimes

As noted in Section 2.3, one way to assess the most obvious competing hypothesis—that the sudden drop in arrest rates drove non-police civilians to commit more crimes—is to consider trends in crimes other than homicide. The only other crime for which I have monthly data from 1999 is robbery; the monthly robbery trends are presented in Figure A.1.



A more nuanced version of this competing hypothesis is that organized crime groups anticipated and responded to the legal change, while other criminals did not. In this case, we might expect an increase only in certain crimes—such as drug trafficking, kidnapping, or extortion. While I have not been able to locate monthly data for any of these crimes, the longer annual series show no increase in 1999 or 2000, though both kidnapping and extortion rates begin to climb in 2002. Indeed, of all the crimes for which I have annual data, the only one to register something of a jump in 1999

is vehicle robbery (driven in large part by an uptick in motorcycle robbery). There is no similar jump in reported vehicle thefts.

### A.3 Additional figures

These figures are referenced in the main text.

Figure A.2: Other explanations: (a) Seasonality or (b) general increase in mortality?

The lines show predictions, from local linear regression, of (log) daily death rates; the points mark the weekly average of these daily death rates. The local linear regressions use an Epanechnikov kernel with the rule-of-thumb bandwidth proposed in Fan and Gijbels (1996), p. 110–113.

(a) Lethal violence before and after 7/1/2000

(b) Infectious disease deaths in 1999

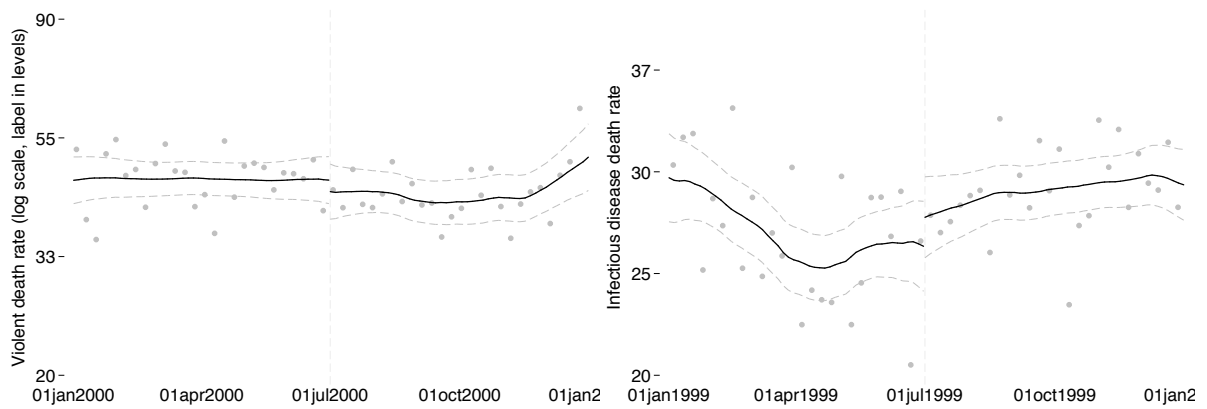


Figure A.3: Direct, but incomplete, measures of police use of force

In Figure (a), the lines show predictions, from local linear regression, of the number of extra-judicial killings by police per day (as registered by the NGO PROVEA; see main text for discussion); the points mark monthly averages of those counts. The local linear regressions use an Epanechnikov kernel with the rule-of-thumb bandwidth proposed in Fan and Gijbels (1996), p. 110–113. Figure (b) plots the number of cases of “resistance to authority” recorded by the police, by month.

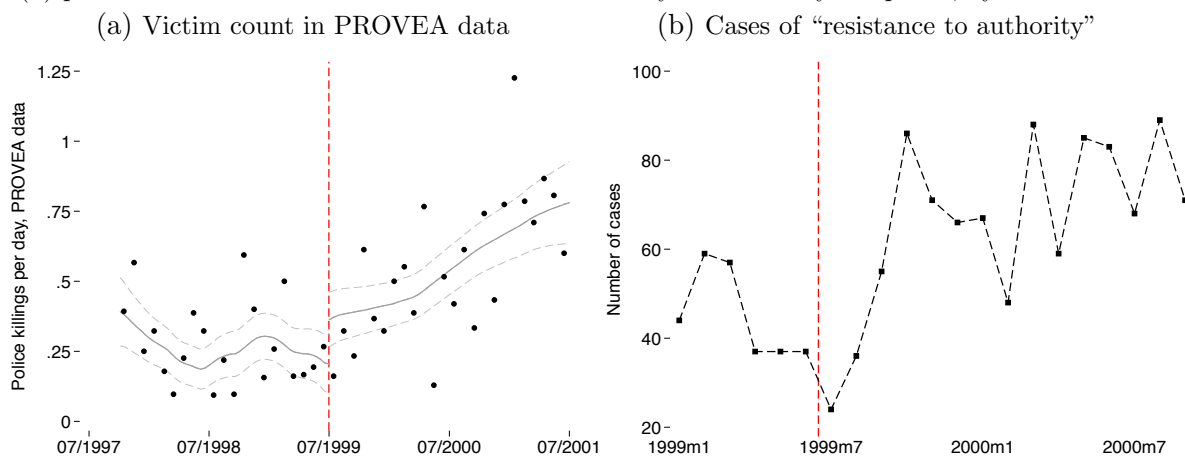
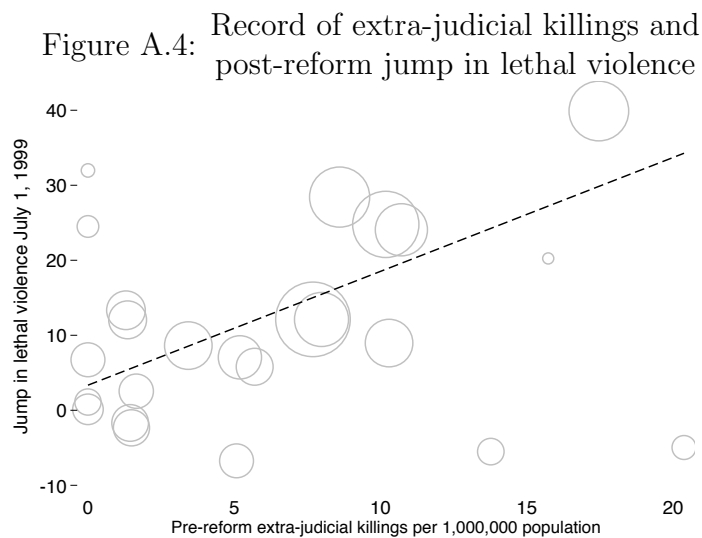


Figure A.4 plots the relationship between (a) the pre-reform record of extra-judicial killings in state  $s$  and (b) an estimate of  $\theta_s = E(Y_s | \text{July 1, 1999}) - E(Y_s | \text{June 30, 1999})$ , across Venezuela’s 24 states.<sup>15</sup> The points and the linear fit are weighted by state population. The estimates  $\hat{\theta}$  were obtained by estimating Equation ?? separately for each state, using data from the years 1999 and 2000. As noted in the text, these estimates are imprecise.



<sup>15</sup>Technically, 23 states and the federal district.

Figure A.5: Changes in sex and age composition of lethal violence victims

The lines show predictions, from local linear regression, of the proportion of violent death victims who were (a) male or (b) between the ages of 15 and 25; the points mark weekly averages. The local linear regressions use an Epanechnikov kernel with the rule-of-thumb bandwidth proposed in Fan and Gijbels (1996), p. 110–113.

