The impact of judicial performance on violent crimes

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Abstract

This paper uses a regression discontinuity approach to estimate the impact of judicial productivity on homicide rates. We exploit discontinuous rules of judicial district classification in Brazil. Our main results indicate that an increase in judicial performance significantly reduces local homicide rates. We show that elevating a district from first to second level raises its total number of sentences, sentences per judge, and sentences per process allocated to courts, and also reduces homicide rates. This effect is mostly driven by the selection of more productive and experienced judges in second level districts. This is the first causal analysis concerning the impact of judicial performance on homicide rates.

Keywords: Crime, Homicide, Judicial Efficiency, Justice System, Legal capacity

1 Introduction

The improvement of legal capacity has a central role on the development process, once it affects the degree to which the State is able to protect property rights and enforce contracts, stimulating economic transitions, fostering credit markets and promoting investment, competition and firm growth (Besley and Persson (2009); Chemin (2009); Laeven and Woodruff (2007); Ponticelli and Alencar (2016); Costa and Mello (2006); Naritomi et al. (2012); Lichand and Soares (2014)). In parallel, legal capacity may affect crime through increased punishment probability or the intensification of severity. This paper studies the relationship between legal capacity and violence in Brazil. The country registered 59,627 homicides in 2014, approximately 10% of the world total (IPEA (2016a); IPEA (2016b)). The Brazilian context is similar to that of other developing countries, especially those in Latin America. In 2012, the homicide rate was 25.2 in Brazil, 23 in South America and 6.2 in the world according to UNODC (2014)[1]. In contrast with an elevated magnitude of violent crimes, Brazil has an enormous and expensive judicial system. Its maintenance costs the equivalent to 1.2% of national GDP, while in Argentina, Chile, USA, England, and Germany this relationship varies between 0.13 and 0.32% (Da Ros (2015)). Despite the important allocation of resources, justice is unable to meet society's demands. In 2014, only 20% of the total number of cases were concluded (de Justiça (2015)). Regarding criminal justice, only 8% of homicides in the country are solved (Waiselfisz (2011)). In addition, the system is heterogeneous with a high variability among local courts in terms of efficiency, even when considering units in the same state (Ponticelli and Alencar (2016)). The perception of more than half of the population is that it is easy to disobey the law and there are few reasons for respecting it. Most Brazilians do not trust the justice system and consider going to court to be expensive (de Direito de São Paulo da Fundação Getulio Vargas (2014)).

We test whether the performance of the judicial system has a significant impact on homicide rates and estimate the magnitude of this effect. We analyze variations in judicial features and homicide rates among similar municipalities classified as first and second level districts[2]. These levels are determined by different rules in each State, which are usually discontinuous functions of the number of voters, population, taxes, number of processes allocated and other variables. We exploit the discontinuity in the number of voters brought about by each state's rules of district classification, which significantly increases the probability of a district being classified as second level instead of first level for the states we analyzed: São Paulo, Ceará and Sergipe[3]. We constructed

[1]According to Atlas da Violência (IPEA (2016a)), da Saúde (2015) and IBGE (2015), the homicide rate in Brazil in 2012 was 28.3 per 100,000 inhabitants. These are the sources for the homicides rates used in this paper. We referred to UNODC data in order to use a unique reference to compare the rates among countries.

[2]A district can comprise one or more municipalities. Judges' career stages coincide with district classification. Once promoted, based on merit or experience criteria, a judge works in higher level districts and receives higher wages. There are no differences in judicial structure due to district classifications determined by the law.

[3]The district must have at least 50000 voters in São Paulo (SP), 12500 in Ceará (CE) and 24500 in Sergipe

a novel database on judicial productivity, homicides and municipal characteristics - a panel with annual observations per district from 2009 to 2013. We estimate the district classification effect on judicial productivity, homicide rates and justice structure employing an RDD approach. Using a 2SLS regression, we estimate the potential impact of judicial productivity on homicide rates, instrumenting productivity measures by the discontinuity in voters.

According to the seminal model of Becker (1968), crime is a rational decision based on predictions of benefits and losses. In line with this framework, many studies demonstrate that an increase in the probability of punishment reduces crimes (Di Tella and Schargrodsky (2004); Soares and Naritomi (2010); Di Tella and Schargrodsky (2010); Chalfin and McCrary (2014); Buonanno (2013); Draca et al. (2011); Levitt and Miles (2006)). Most of them focus on the impact of police instead of justice. The effect of sanction severity on crimes has been considered significant in some analyses and nonsignificant in others (Chalfin et al. (2005); Vertova (2009); Hoekstra and Orozco-Aleman (2014)). Probably due to the lack of data and identification strategies, the effectiveness of the judicial system in reducing crimes is unknown. According to the Becker (1968) model, it may affect criminality through an increase in the probability of punishment and severity changes, which can have a deterrence or an incapacitation effect. There are also few analyses of policy impacts on violence for developing countries and of policies that can improve the judicial system.

Our results indicate that an increase in legal capacity significantly reduces homicides. First, we find that crossing a state's voter threshold raises by 45% the probability of a district being classified as second level instead of first level. Simultaneously, our estimates show an increase from 60% to 80% in the number of sentences and in the number of sentences per judge at the cutoff, as well as an imprecise 20% increase in the number of sentences per process allocated to each district. The reduction in district homicide rates and districts' seat homicide rates is approximately 60% at the threshold. We estimate that an increase in judicial productivity reduces homicide rates, where a 1% increase in the number of sentences or in the number of sentenced per judge reduces homicide rates by 0.95% and 1.2%, respectively. Although less precise, a 1% growth in the number of sentences per process is associated with a reduction of more than 2.2% in homicide rates. The productivity increase is mostly promoted by the selection of more experienced and more productive judges in second level districts, since there is an increase in judges' experience levels and in the number of sentences per judge at the threshold.

To our knowledge, this is the first impact estimate of judicial performance on homicide rates. The high influence of justice on violence reinforces the role of the criminal system, discussed in many empirical and theoretical studies focused mostly on police action. Our findings offer an alternative to police strategies in fighting crime, shedding light on the effectiveness of the judicial system and stimulating efforts to increase judicial productivity.

(SE) to be classified as second level. The classification rule of São Paulo takes into account the number of voters and the average number of processes allocated to each district in the last five years, while rules in Sergipe (SE) and Ceará (CE) take into account the number of voters, the number of processes allocated to each district and the population.

This paper is organized as follows: Section 2 describes the Brazilian judicial system and discusses the violence problem. Section 3 introduces the data and summary statistics. Section 4 explains the empirical strategy. Section 5 presents our results, and Section 6 concludes.

2 The Brazilian judicial system

2.1 Judicial organization

This paper analyzes the impact of increases in judicial productivity in homicide rates. We focus on first and second level districts of first instance state courts. The first instance of a state is the most important part of the Brazilian judicial system in terms of allocated processes. In 2014, it heard 62% of the cases of the Brazilian judicial system and was responsible for 79% of the national backlog of pending cases (de Justiça (2015)). Most of the processes were evaluated solely at this instance, among the processes that could be revised only 8.2% were appealed against (de Justiça (2015)).

According to the Constitution of 1988, the Brazilian judicial system consists of the following bodies: Federal Justice (*Justiça Federal*), Labor Justice (*Justiça do Trabalho*), Electoral Justice (*Justiça Eleitoral*), Military Justice (*Justiça Militar*), State Military Justice (*Justiças Militares Estaduais*) and State Court (*Justiças Estaduais Ordinárias*). They are usually classified as Special Justice (*Justiça Especial*) and Ordinary Justice (*Justiça Comum*). Special Justice courts are responsible for specific matters established by the Constitution and is composed by the Labor Justice, the Electoral Justice, the Military Justice and the State Military Justice. The Ordinary Justice is responsible for crimes against life, among other matters, and is composed by the Federal Justice and State Courts. The Federal Justice has the jurisdiction to hear cases involving the Federal Government and some specific agents, while State Courts have the jurisdiction to hear other cases (Cintra et al. (2009)).

State Courts are organized based on the Federal and State Constitutions, on the Organic Law of National Magistrates (*Lei Orgânica Nacional da Magistratura Nacional*) and on States' Judicial Organization Laws (*Lei de Organização Judiciária*). State Courts are divided into first and second instances, where the latter deals with appeals and is responsible for managing those courts (Cintra et al. (2009)). Most cases are exclusively allocated to the first instance of State Courts, which are the ones we analyze in this study. The first instance of State Courts is divided into districts (*comarcas*), which can comprise one or more municipalities. These districts are classified as first, second or third level[1], according to state rules. They are determined by the State Judicial Organization Law and are usually based on a discontinuous function of the number of voters in the district as well as on other variables that reflect local judicial demand.

[1]The number of categories varies from 1 to 4 between states. In analyzed states, there are 3 districts' categories, as most of the Brazilian states. Most of the districts are classified as first or second levels.

The classification of districts coincides with judges' career stages: when a judge is hired, she works as a substitute judge for approximately 2 years; then, she is allocated to a first level district; if promoted, she is allocated to a second level district; and so on. Promotions are based on experience or productivity/quality criteria. Therefore, second level districts usually have more experienced/productive judges than first level districts. They can also have more judges and courts due to a larger number of processes allocated to those districts. These differences are presented in the next sections.

2.2 Justice quality and violence

The Brazilian judicial system is expensive and inefficient, characterized by lengthy trials (BANK (2004); Castro (2011)). In 2004, the cost of the Brazilian and the state judicial system was approximately 31 and 17 billion dollars, respectively[2]. The judicial structure in the country accounts for 2.3% of total public expenditure, while that of states' judicial systems account for 5.2% of the sum of states' public expenditures (de Justiça (2015)). The national cost corresponds to 1.2% of national GDP. In other countries, the cost of the judicial system as a percentage of the GDP is usually lower - around 0.13% in Argentina, 0.14% in USA and England, 0.22% in Chile and 0.32% in Germany. Most of the judicial budget, approximately 90%, are allocated to human resources, mainly to public servants. Compared to other countries, Brazil has a similar number of judges per 100,000 inhabitants, 8.2, while England has 3.8, Chile, 5, USA, 10.8, Argentina, 11.4 and Germany 24.7. On the other hand, Brazil has a high number of justice servants per 100,000 inhabitants, 205, while England has 30.6, Chile, 42.1, Germany, 66.9 and Argentina, 150 (Da Ros (2015)). The total number of cases in justice in the country is also large, 93 million, corresponding to more than 6,000 processes per judge and 0.5 per inhabitant in 2013 (Da Ros (2015)).

The amount of processes affect the perception of judicial efficiency among judges, judicial servants and the population in general. The Judiciary Census (de Justiça (2014)) showed that 84% of judges consider their workload to be high and impossible to handle within their working time, but 70% are satisfied with services offered to citizens. The same survey showed that 48% of justice servants consider their workload high and impossible to handle within their working time, but 80% are satisfied with services offered to citizens. According to the survey Justice Confidence Index (*Índice de Confiança na Justiça*, de Direito de São Paulo da Fundação Getulio Vargas (2014)), more than half of the people do not trust the justice system and consider going to court to be expensive. According to this index, more than 70% of the Brazilians disagree that the judicial system is honest while 96% disagree that it is swift. More than 80% of the sample say that it is easy to disobey to the law and 57% believe that there are few reasons for respecting the law (de Direito de São Paulo da Fundação Getulio Vargas (2013)).

The first instance of state courts would spend around 5 years in order to end the backlog

[2]Equivalent to 68.4 billion and 37.6 billion Reais, respectively. The amounts in dollars were calculated based on the exchange rate in 06/30/2014.

of pending cases, based on the current judicial productivity statistics published by the National Council of Justice (*Conselho Nacional de Justiça, CNJ*). In 2014, the congestion rate was 80%, calculated as the total percentage of open cases (de Justiça (2015)). The number of cases per judge in that instance was 7,200 in Brazil and 11,300 in São Paulo, while the number of sentences per judge was 1,300 in Brazil and 1,600 in São Paulo. Despite the high congestion rate, the first instance of state courts concluded almost the same number of new cases in 2014, 99% precisely, which means that the backlog remained nearly stable.

In particular, the Brazilian Criminal Justice has serious investigative limitations and fails in incarceration processes. Only 8% of the homicides in Brazil are solved and most of them expire after a 20-year time limit (Waiselfisz (2011)). In 2014, Brazil had 579,423 prisoners, 401 per 100,000 inhabitants over 18 years old. Among them, 38% were awaiting trial (de Segurança Pública (2015)).

Homicide rates in Brazil remained stable, despite being high, at around 26.5 from 2004 to 2011. It has grown since 2012 and was 29.1 per 100,000 people in 2014 (IPEA (2016a)). There is a spatial redistribution of these crimes with an increase in homicide rates in cities in the interior, these that do not belong to Metropolitan Regions (Waiselfisz (2011)). Cities with a population below 100,000, which means 94.2% of the Brazilian municipalites, had an increase of more than 40% in homicide rates between 2000 and 2010, while the others had a decrease in this period (Waiselfisz (2011)).

Soares and Naritomi (2010) argue that the incidence of crime in Latin America is expected to be high based on its socioeconomic and public policy characteristics, especially high inequality, the proportion of young people in the population, low incarceration rates and small police forces. According to Cerqueira (2013) the main causes of homicide in the country are: poverty and income inequality, the proportion of young men in the population, the criminal justice system, the use of legal and illegal drugs, and the possession of weapons.

3 Data and summary statistics

We constructed a novel panel on judicial productivity, homicide rates and municipal characteristics with judicial district level data from 2009 to 2013. The main data source is called Open Justice (*Justiça Aberta*), a database managed by the National Justice Council (de Justiça (2013)). This system allows individuals to consult online monthly reports on judges' and courts' productivity in PDF format from 2009 onward. A dataset with information on all Open Justice reports from 2009 to 2014, originally covering all judges and courts in Brazil, was exclusively provided to us by the National Justice Council. District level information and States' Judicial Organization Laws including district classification criteria are available on State Courts' websites. Contract features of judges are taken from the Annual Report of Social Information, RAIS (do Trabalho e Emprego (2013)), an annual administrative survey of the Labor Ministry of Brazil with detailed individual and firm information, like salaries, gender, race, age, education and occupation. Data on homicides was taken from DATASUS, a Ministry of Health database (da Saúde (2015)). To characterize the

municipalities, we utilize the Census (IBGE (2010)) and the Munic survey (IBGE (2006)), published by the Brazilian Institute of Geography and Statistics (IBGE). The number of military and civilian police for São Paulo State is provided by Secretaria de Segurança Pública do Estado de São Paulo (2008). The number of voters per municipality is provided by the Superior Electoral Court (Eleitoral (2009)). Finally, the list of municipalities grouped by judicial district is used in Castro (2009) and was provided to us by the author.

In order to describe judicial resources, we calculate the number of judges, courts and municipalities per district as well as judges' average experience and gender distribution, using the Open Justice database, a list of municipalities per district and RAIS. From the Open Justice database, we construct the following judicial productivity and demand measures per district and year: number of processes allocated, number of sentences, number of sentences per judge and number of sentences per process allocated. The number of processes allocated is a proxy for judicial demand. The number of sentences is our output measure and is very informative once they are the decisions that conclude a case[1]. The sentences per judge are a type of output/input index and partially reflect judiciary efficiency. Finally, the sentences per process allocated to a court are a type of output/demand index and partially reflect response capacity. They are used in official reports developed by the National Justice Council.

In turn, district and municipal annual homicide rates are calculated based on DATASUS/Ministry of Health data and population estimates published by IBGE. They are the local number of homicides per 100,000 inhabitants. To construct local socio-demographic variables, we use the Census 2010 and calculate for district seats: the percentage of urban population, the proportion of the population over 18 years old who completed high school, the proportion of the population under 18 years old, the Gini coefficient, and average household income per capita. The district number of voters is the sum of the number of voters in municipalities in 2009, the first year we analyzed. To test for sudden increases in public security resources at the discontinuity, we use the Munic 2006 database and calculate the following for districts' seats and for all district municipalities: number of municipal police per 100,000 inhabitants and per capita public security expenditure. Additionally, we test if the number of military and civilian police per 100,000 inhabitants present a discontinuous variation at the threshold, considering measures for districts' seats and for all district municipalities. Information on military and civilian police is only available for São Paulo State.

This paper exploits the discontinuity in district level classification rules based on the number of voters, despite the existence of other determinants for each State, like population, taxes and number of processes allocated to courts. The sample contains three States for which the discontinuity in voters determines a significant increase in the probability of being classified as second level district instead of first level: São Paulo, Ceará and Sergipe. Their first and second level districts served 649 municipalities and more than 16 million people in 2009, 11.7% and 8.6% of the country's municipalities and population, respectively. In order to be classified as second level districts, the district must have at least 50,000 voters in São Paulo (SP), 12,500 in Ceará (CE) and 24,500 in

[1]Each case can be decided by one or more sentences.

Sergipe (SE). Table 1 shows State thresholds and sample information.

Descriptive statistics by district level and the percentage distance to the threshold for judicial productivity and structure, seat characteristics, homicide rates, and public security resources are shown in tables 2 to 4. Differences in averages between second and first level districts are calculated with clustered standard errors at the district level. The average number of processes allocated is much higher in second level districts (8226) than it is in first level districts (1830), which is also true for the average number of sentences, around 3400 for second level districts and 800 for first level districts. The absolute difference decreases when restricting the data to those observations in which the percentage distance to states' voter thresholds is lower than 40% (smallest sample), but still remains very high. The mean number of sentences per judge is around 340 for second level districts (full sample and smallest sample). It is lower for first level districts, 292 in the full sample and 214 in the smallest sample. The mean number of sentences per process allocated is similar for first and second level districts. It is around 0.5 for both levels in the full sample, remains the same in the smallest sample for level 1 districts, and equals 0.58 in the smallest sample for level 2 districts. Second level districts seem to have more resources (3.8 courts and 8.8 judges on average) and a higher variability in that number than first level ones (1.3 courts and 4.1 judges on average), but they usually have a similar number of municipalities (approximately 2). First level judges usually have around 5 years' experience, while second level judges usually have more than 6 years. Also, more than 65% of judges are men.

Differences in homicide rates are very sensible to sample restrictions, reflecting the positive correlation between homicides and number of voters and the potential reversion of this trend around the threshold due to increases in judicial productivity, the main hypothesis we test in this paper. District homicide rates are higher for second level districts (19.8) than they are for first level ones (17.6) in the full sample. In the sample closest to the threshold, rates are lower for second level districts (17.4) than they are for those of first level (20.5). The same trend is observed in seat homicide rates, around 20 for both groups in the full sample and equal to 17.6 for districts of second level and 21.6 for first level ones in the smallest sample.

Regarding the local characteristics, we some some significant differences between first and second level districts. Seat urbanization rates are 83% for second level districts and 78% for first level districts, proportions of high school graduates are 36% and 31%, respectively, and average household incomes per capita are 672 and 597 Reais. The Gini coefficient is around 0.50 and the proportion of people under 18 years old is 29% for the whole sample. The number of police officers per 100,000 inhabitants is similar between first and second districts, especially in the smallest sample. The same occurs for per capita public security expenditure. Smoothness tests are shown in tables 15 to 18 and discussed in results section.

4 Empirical Strategy

We employ a regression discontinuity approach to estimate the impact of district level classification on judicial productivity and its effect on homicide rates. District level classification criteria are determined for each State. The Brazilian Constitution says that it must consider predictors of the demand for judicial services, such as local population, number of voters, number of processes allocated, district area, and taxes. Most states determine the rule as a discontinuous function of a subgroup of those variables.[1] Determinants and thresholds vary from State to State and are explained in each state's Judicial Organization Law. We have chosen a single-dimensional RD instead of a multidimensional RD due to its well-known inference properties and to increase the sample comparability considering the same factor for the whole sample. Number of voters is one of the most frequent determinants and is pivotal in some States, while some of the other determinants are unknown/noisy or are not themselves important determinants of the treatment [2]. The number of voters in a district is a very good predictor of treatment in São Paulo, Ceará and Sergipe, what explains the choice of those states. Since the probability of treatment - being classified as a second level district instead of a first level one - increases around states' voter thresholds, our basic model is defined as follows:

$$Y_{it} = \alpha + \beta' 1_{assignment} + f(Voters_i) + \gamma_t + \varepsilon_{it} \tag{1}$$

where Y_{it} is the log of the outcome variable of interest for district i in year t; $1_{assignment}$ is an indicator function of whether the number of voters in district i in 2009 was greater than or equal to the state's voter threshold; $f(Voters_i)$ is a function of the percentage difference between the number of voters in a district and the state's threshold; and γ_t is the year fixed effect. Despite the fact that year fixed effects are unnecessary for identification, we include them to increase precision (Imbens and Lemieux (2008)). Our main specifications are estimated without controls, but we obtain similar results including them, as shown in Appendix[3]. The coefficient of interest is β, which estimates the effect of satisfying the voter condition on the outcomes.

We consider parametric and non-parametric functions of the percentage difference between the district number of voters and the threshold. Parametric specifications include quadratic and cubic splines, shown in the main tables, with standard errors clustered at the district level. Since

[1] For example, to be classified as second level in São Paulo (SP), a district must have at least 50,000 voters and 7,000 processes allocated to its courts on average in the last 5 years. Sergipe (SE) and Ceará (CE) take into account number of voters, number of processes allocated and population.

[2] For example, in São Paulo (SP), the state where demand for judicial services is greater in Brazil, there is no population criteria and we do not have access to the average number of processes allocated in the last 5 years.

[3] We use as controls: proportion of seat population who live in urban areas, log of seat average household income per capita, Gini coefficient, percentage of people under 18 years old, proportion of adults (over 18) who completed high school.

mistakes in functional forms may lead to biased estimates, we exploit non-parametric specifications using local linear regressions (Hahn et al. (2001), Porter (2003)). They are estimated applying a kernel function on the distance of the number of voters to the state's threshold. In the main tables, we show the triangular kernel estimators and in the appendix we show similar rectangular kernel estimators. We estimate regression discontinuity bias-corrected coefficients and robust clustered standard errors at the district level, presented in Calonico et al. (2014b). These are more robust to bandwidth choices and valid under conditions weaker than conventional. The authors present confidence intervals based on fixed-matches estimated errors, exploiting the 3 nearest neighbors of each observation. Since these results have very low standard errors for our database [1], we show a more conservative option: the fixed-matches estimated errors exploiting the 5 nearest neighbors of each observation. Results with the original standard errors are presented in the appendix.

Parametric regressions are estimated for the whole sample, first and second level districts, at each State. Non-parametric regressions are estimated for a broad range of bandwidths: 40, 60, 80, the Imbens-Kalyanaraman (IK) optimal bandwidth and the Calonico-Cattaneo-Titiunik (CCT) optimal bandwidth (Imbens and Kalyanaraman (2012) and Calonico et al. (2014b)). The optimal bandwidth selection procedure is implemented using the Calonico et al. (2014a) Stata package [2], and calculated based on specifications without year fixed effects and clustered standard errors.

Once the treatment is not a deterministic function of the running variable, the reduced-form coefficient of interest, as described in equation 1, is the intention-to-treat (ITT) estimator. In order to estimate the effect of an increase in judicial productivity on homicide rates, we run Two-Stage Least Squares (2SLS) regressions where the indicator function of whether the number of voters was greater than or equal to a state's voter threshold, $1_{assignment}$, is the excluded instrument. They are estimated parametrically using quadratic and cubic splines and non-parametrically using local linear regressions for triangular and rectangular kernels and the same bandwidths as the reduced-form estimates. We use the IK and CCT optimal bandwidths of the dependent variables. In fuzzy regression discontinuity designs, Imbens and Lemieux (2008) suggest using the smallest bandwidth between the outcome and the treatment optimal bandwidths estimated separately . The bias-corrected coefficients and the cluster robust confidence intervals are calculated according to Calonico et al. (2014b). The main tables report the conservative standard errors, while the default SEs are shown in Appendix.

A central identification assumption in the RD design is that agents are unable to control the official number of voters around the cutoff. Additionally, the existence of other policies determined by the same running variable discontinuity or differences in the distribution of the determinants of the outcome above and below the cutoff can also bias the treatment effect estimate. They are tested and discussed in section 5.3. Furthermore, it is necessary to correctly specify the function of the running variable, which motivates the use of a variety of functional forms. The 2SLS approach requires two additional untestable assumptions. First, satisfying the state voter condition cannot cause a reduction in the probability of treatment (monotonicity). Second, crossing the threshold

[1] They have been widely used, like in Schmieder et al. (2016).

[2] Available on May 2016 at http://www-personal.umich.edu/ cattaneo/software/rdrobust/stata

must affect homicides exclusively through increases in judicial productivity (exclusion restriction). They are also discussed in section 5.3.

5 Results

We begin by testing the increase in the probability of treatment at the threshold. Afterwards, we estimate the reduced-form effect of the district classification on judicial productivity and homicide rates. The impact of judicial productivity on homicide rates is calculated using OLS and 2SLS regressions. We investigate the mechanisms related to the productivity increase analyzing reduced-form regressions. Finally, we discuss additional specifications, identification assumptions and placebo tests. The reduced-form results are followed by graphs of the local linear regression of the outcome on the running variable, with no controls, for the full sample and for the compliers. We consider compliers to be those treated assigned to treatment, and non-treated not assigned to treatment. Our main results are presented for 5 non-parametric bandwidths (40, 60, 80, IK and CCT) and for 2 parametric specifications (quadratic and cubic splines).

5.1 Main results

The increase in the probability of treatment at the threshold is presented in table 7 and in figure 1. The satisfaction of the state voter conditions raises the probability of a district being classified as second level instead of first level by 45%. This result is statistically identical for all specifications and is significant at the 5% level in regressions using a bandwidth equal to or greater than 40. The graph shows the frequency of level 2 districts by the percentage normalized distance to the threshold. Most of the observations with negative distances refer to first level districts. Among those with positive distances close to the cutoff, approximately 50% are classified as second level districts. This relationship is as expected, once the voter criteria is a necessary, but not sufficient, condition for the level determination due to the existence of other determinants in each state.

Table 8 examines the reduced-form effects of district classification on judicial productivity. Column 1 indicates a significant increase in the number of sentences from 60% to 80% for most specifications. This is a relevant measure because this is the decision that concludes a case, although it can be concluded by more than one sentence. We estimate a growth in the number of sentences per judge equal to 60% and significant at the 5% level in the non-parametric specifications close to the 40% threshold as well as in the parametric specifications. The estimated increase in the number of sentences per process allocated is around 20% or more in most regressions and significant at the 5% level in the cubic spline and at the 10% level only in non-parametric models with more than 1,300 observations. The estimated increase in the number of processes allocated to courts is lower and non-significant in the non-parametric regressions, but it is significant at the 1% level in the quadratic spline and significant at the 10% level in the cubic spline. This smooth relationship is

expected assuming that judicial demand is a continuous function of the total number of voters.

Figures 2 to 4 graphically display the increase of these three productivity measures at the threshold. The graphs show the mean of outcomes per evenly spaced bins of the running variable. They are constructed for the full sample and for the sample restricted to observations for compliers. The difference in the mean of outcomes between districts to the left of the cutoff and districts to the right of the cutoff are in line with results found econometrically. Firstly, figure 2 shows a clear rise in the number of sentences at the voters cutoff, reflecting the improvement in the absolute volume of services offered to the society in similar districts that are classified differently. Statistically, these districts are similar even in terms of number of processes allocated, which is positive and continuously correlated with voters. Secondly, figure 3 shows a rise in the number of sentences per judge, reflecting differences in individual efficiency and in judiciary efficiency, if we consider judges as a proxy for judicial resources as a whole. This measure is called "Magistrate Productivity Index" in government reports. Thirdly, figure 4 shows a relevant rise in the number of sentences per process allocated to courts. It reflects the state capacity to respond to judicial demand and is called "Demand Attendance Index" in government reports. The increase in this measure is more disperse than it is in other measures since it is simultaneously affected by the variability in the number of sentences and in the number of processes allocated. Its dispersion is also a consequence of the small number of observations and clusters, the imprecision in the determination of the treatment, the presence of outliers and the existence of potential measurement errors. In general, the mean of outcomes per evenly spaced bins of the running variable seems to be less spread in the graph for compliers than it is in the graph for the full sample, in spite of their similarity.

Table 9 reports the reduced-form effects of judicial classification on seat and district homicide rates. We find a 60% reduction in both rates, according to the regressions with bandwidths of 40%. The results are significant at the 5% levels. Specifically, the decrease in district homicide rates varies from 31% to 63% and is statistically significant at the 5% level for 3 non-parametric regressions and at the 10% level for the 2 remaining. The decrease in seat homicide rates varies from 27% to 66% for the non-parametric regressions and is statistically significant at the 5% level as the sample is restricted to bandwidths equal to 40% or lower. The coefficient is lower for higher samples and is close to zero in the parametric models. We should expect similar results for the different ranges if homicide rates are linearly correlated with voters. However, if this relationship is not linear, the larger the range, the greater the likelihood of a biased estimator will be. The small sample and the high non-compliers homicide rates reinforce the importance of the potential bias. Figures 5 and 6 clarify the positive correlation between homicide rates and the number of voters, reversed or at least attenuated around the threshold. The effect of judicial classification on these crimes is very evident in the graph for compliers, because non-compliers increase the average observed rate and its variability in the full sample graph. This suggests that our regressions estimate a lower-bound effect.

We assume that district classification reduces homicide rates exclusively through an increase in judicial productivity. This is an untestable assumption, but there may exist other mechanisms through which district classification affects crime. To analyze this relationship, we first estimate

a quadratic and a cubic spline through an OLS regression. Table 11 shows that a 1% increase in the number of sentences is correlated with a 0.09% decrease in homicide rates at the 1% level. The coefficients for sentences per processes and sentences per judge are close to zero and not significant at the 5% level. These results are distinct from a causal treatment effect estimate due to the existence of important sources of endogeneity. Firstly, simultaneity, once judicial productivity can reduce homicides as well as homicides may affect the number of process allocated, the number of judges, or the number of sentences and shift productivity measures in an unexpected direction. Secondly, omitted variable bias, since homicides rate and judicial productivity can both be correlated with other factors, such as population and local income.

We address these sources of endogeneity using a 2SLS regression. We exploit the district level assignment dummy (which equals 0 if the district number of voters is lower than the threshold and 1 otherwise) as the excluded instrument for judicial productivity. Tables 12 to 14 present second stage results, while first stage results are equivalent to the reduced-form regression in which the dependent variable is the instrumented variable. [1] We find that a 1% increase in the number of sentences leads to a 0.95% decrease in homicide rates, a slightly larger absolute value than the OLS coefficient. This estimate is significant at the 5% level for bandwidths equal to 40% or lower and similar, but is not significant at the 5% level for the other bandwidths. As discussed before in this section, the variation in homicide rates estimated applying broader ranges is potentially biased. Column 1 of table 13 shows the impact of a 1% increase in the number of sentences per judge in district homicide rates, which varies from -1.9% for CCT optimal bandwidth (19) to -0.86% for bandwidths of 80% in non-parametric regressions. It is significant at the 5% level for bandwidths of 80% and CCT and at the 10% level for bandwidths of 40%. Coefficients for the other samples and the parametric regressions are not significant. Column 2 displays the effect of a 1% increase in the number of sentences per judge in seat homicide rates. Results are similar to the district variable for each bandwidth, but slightly lower. Table 14 reports the effect of a 1% increment in sentences per process allocated to courts on homicide rates. We find a significant reduction (at the 5% level) of 2.3% for regressions for bandwidths of 40%. The coefficient is lower but larger than 1.4 and not significant at the 5% level for regressions for bandwidths greater than 40%. On the other hand, the coefficient is higher and significant at the 1% level for regressions for CCT optimal bandwidths, which is lower than 25%. The coefficient is lower and non-significant at the 10% level for non-parametric seat regressions. These results must be considered carefully once the effect of district classification on sentences per process, which corresponds to the first stage model, is non-significant at the 5% level.

We found that an increase in the number of sentences or in the number of sentences per judge promotes an important reduction in homicide rates, according to our preferred regressions, those restricting the sample to the districts with number of voters 40% larger or 40% lower than the state threshold. This result is significant even when considering conservative standard errors. The capacity of courts to deal with new cases also seems to be a key factor in reducing these crime

[1] The p-value of the F-test for excluded instrument is equivalent to the p-value of the t-test for the significance of the judicial performance variable in the first stage regressions.

rates. The three dimensions are intrinsically integrated, once the improvement in sentences is a consequence of the more efficient use of resources, as reflected by the number of sentences per judge, and of the availability of additional resources, as tested below. Variations in the total number of sentences per new cases, in turn, are mainly a result of the increase in the number of those decisions associated with the relatively lower increase in the number of processes allocated. Figures 8 to 10 in the appendix show how these variables are correlated. The magnitude of the effect is elevated and probably reflects the existence of legal bottlenecks in the criminal process, given that the number of cases solved per year is around 20% of the total number of processes.

Table 10 presents the reduced-form analysis of the mechanisms of judicial productivity gains around the discontinuity. We observe a continuous variation in the number of judges and courts around the voter cutoff, with some significant evidence of increases in the number of courts reported by parametric regressions. Furthermore, there is some significant evidence of the allocation of judges with approximately 50% more years of experience to second level districts than to first level districts, as reported at the 10% level by non-parametric regressions with bandwidths of 40% and 33% and at the 1% level by parametric regressions. There are no differences in gender distribution. Despite the increase in the average availability of resources between first and second districts in the sample, that variation is continuous at the threshold and of low magnitude. This reinforces the importance of the productivity of judges in the improvement of judiciary productivity over the availability of resources. The hypothesis of selection of more productive and/or experienced judges in the promotion processes from first to second level is sustained by the promotion criteria adopted by state courts, based on merit or experience, and by the empirical evidence, such as the increase in the number of sentences per judge itself and in their experience at the threshold.

5.2 Additional results

In order to check the robustness of the results to specification and methodological variations, we show additional results in the appendix. Tables 19 to 22 and tables 31 to 33 display the same regressions discussed in this section with robust standard errors calculated exactly as in Calonico et al. (2014b). They exploit the variance of the 3 nearest neighbors of each observation, considering the clustered structure of the data in our base. Our main tables, discussed above, present more conservative standard errors, exploiting the variance of the 5 nearest neighbors. The coefficients estimated by both groups of results are identical, as they should be, but confidence intervals are much smaller in standard one. We observe significant variations at the 1% level of the probability of treatment, judicial productivity and homicide rates for all non-parametric regressions. The increase in the number of judges and courts became significant at the 1% level, while the raise in judges' experience levels remained significant and the variation in gender insignificant. The impact of increases in judicial productivity on homicide rates is also significant at the 1% level. Despite the important growth in the standard errors of the main regressions, we find significant effects of district classification on judicial productivity and homicide rates. Appendix tables 23 to 26 and tables 34 to 36 show the models estimated controlling for the proportion of seat population who

live in urban areas, log of seat average household income per capita, Gini coefficient, percentage of people under 18 years old, and proportion of adults (over 18) who completed high school. Appendix tables 27 to 30 and tables 37 to 39 show the local linear regressions estimated using rectangular kernels instead of triangular kernels. We obtain similar trends adding controls or using rectangular kernels as we do in the main tables, despite occasional differences.

We present a placebo test in the appendix using a fake discontinuity at the middle between the threshold of second and the third level voters for each state. Table 40 displays non-significant impacts of the fake discontinuity dummy on district classification. Table 41 shows reductions in productivity measures at the cutoff, opposite to what we obtain, some of them significant at the 5% level. The variation in homicide rates is never statistically different from zero. Coefficients for the number of judges, number of courts, judges' experience levels and gender are negative and most of them are not significant at the 5% level in non-parametric models and non-significant in parametric models. These results reinforce the validity of our identification strategy.

5.3 Validity tests

A central condition for the validity of the identification is the agent's inability to manipulate figures of the number of voters in a district to alter their classification. We test the occurrence of sorting around the threshold performing the McCrary test , which verifies a discontinuous variation in the density function of voters at the cutoff[1] (McCrary (2008)). The null hypothesis is that the discontinuity is zero. Figure 7 in the appendix shows the test for a single year, once we consider as the running variable the number of voters in 2009. As expected, the result is the same for other years. We perform the test restricting the sample to bandwidths of 80% and 40%, and the discontinuity estimates are never significant at the 5% level. The manipulation of the number of voters is improbable. Firstly, electoral enrollment is compulsory for literate citizens aged 18 to 70, despite being optional for illiterate citizens, as well as for those aged 16 and 17 or those older than 70. Secondly, the Electoral Superior Court (*Superior Tribunal Eleitoral*), a federal body, is responsible for maintaining municipal voter statistics. Thirdly, in order to manipulate these figures, it would be necessary to manipulate estimates in one or more of their municipalities as well as the entry of non-seat municipalities in a district. A municipality can be a district seat if it satisfies some criteria established by each state, such as discontinuous population rules. Otherwise, it must be incorporated in a frontier municipality district (for further details see Ponticelli and Alencar (2016)). Fourth, the classification rules depend on other variables and are different among states. Fifth, state criteria are determined by previously established laws [2], while estimates regarding the number of voters change monthly.

[1]The test was implemented using the DCdensity Stata package available in June 2016 at: http://eml.berkeley.edu// jmccrary/DCdensity/

[2]The São Paulo code was created in 1964 and the classification criteria were modified in 2005; the Ceará code was created in 1994; and the Sergipe code was created in 2003

The existence of other policies determined by the same running variable discontinuity or differences in the distribution of outcome determinants above and below the cutoff may invalidate our identification strategy. Tables 15 to 18 regress our reduced-form model exploiting as dependent variable some potential confounders. The regressions use only one-year cross-section data, since our running variable and potential confounder variables are known for 2010, 2009 and 2006 in the case of seat characteristics, voters and public security resources, respectively. Data on military and civilian police are available only for the year of 2008 for the state of São Paulo (de Segurança Pública do Estado de São Paulo (2008)). We find no evidence of a discontinuous increase in seat urbanization rates, average household income per capita, Gini index, proportion of population aged 17 or lower and percentage of people over 18 years old who completed high school. Furthermore, the coefficients are close to zero in most of these regressions. As shown in table 18, there is no significant variation in the number of municipalities per district around the threshold. The same occurs for the number of police officers per 100,000 inhabitants and public security expenditure per capita, for which only the cubic splines report a significant decrease. We have data on the number of military and civilian police officers per municipality only for the state of São Paulo, which comprises most of the municipalities in our sample. The number of police officers per State is determined by laws proposed by state governments and passed (or not) by the legislative power. There are no federal or state allocation rules, to the best of our knowledge, what reduces the probability of a discontinuous increase in the number of police officers at the threshold. In addition, the existence of different thresholds for each State also reduces the probability of a discontinuous increase of some potential confounder at the threshold.

The 2SLS approach requires, additionally, that the monotonicity assumption and the exclusion restriction hold. They are untestable, but the monotonicity assumption is reasonable since the excluded instrument, the threshold dummy, significantly and positively impacts judicial productivity. The validity of the exclusion restriction, in turn, may be a caveat. Given that RD hypotheses are credible, homicide rates should vary at the discontinuity only due to justice differences related to district classification. However, district classification changes can influence homicide rates through judicial productivity or other mechanisms, such as a subjective perception of justice efficiency related to how a court is classified, what undermines the hypothesis that the threshold dummy (excluded instrument) affects homicide rates exclusively through productivity (instrumented variable), despite the relevance of this channel. Consequently, the effect of judicial productivity on homicide rates can be biased.

6 Conclusion

In this paper we investigate the impact of judicial productivity on homicide rates by exploiting district level classification. We use novel data on judicial productivity and homicide rates. In order to be classified as a second level district, the local number of voters must be higher than the criteria defined by each state. Satisfying the threshold is a necessary, but not sufficient condition,

due to the existence of other determinant variables. We use a Regression Discontinuity approach to estimate an ITT effect of district level on judicial productivity and homicide rates as well as a 2SLS to estimate the effect of the former on the latter. We estimate an increase of around 45% in the probability of classification as a second level district at the threshold. We find improvements in judicial productivity resulting from a difference in judicial levels. They correspond to a growth of 60% to 80% in the number of sentences and in the number of sentences per judge. There is also a noisy evidence of a 20% increase in the number of sentences per process. Reductions in seat and district homicide rates at the discontinuity are around 60%. We show that judicial productivity increases lead to a reduction in homicide rates. Specifically, a 1% increase in the number of sentences and number of sentences per judge decreases homicide rates by approximately 0.9% and 1.2%, respectively.

We present the first causal evidence of the impact of legal capacity on homicide rates, to the best of our knowledge. We investigate how important role of the judiciary system is in reducing violence, in addition to evidences in the literature about the effect of police action and punishment certainty on those crimes. The lack of data on productivity levels of public and homicide rates, especially in developing countries, and of a clear identification strategy associated with a reasonable number of observations make this analysis hard to carry out. Moreover, it is motivated by elevated homicide rates in those countries and expensive and/or inefficient judicial systems.

The main limitations of this paper are the lack of identification of further mechanisms through which district classification affects the productivity of courts and homicide rates and the potential existence of a crime displacement. Furthermore, the estimated effects may be underestimated because of non-compliers. The impact of judicial productivity on homicide rates may be overestimated due to the existence of other channels through which differences in district levels reduce crime. The police response to changes in the judicial system also is an untestable source of bias.

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Figures and Tables

Table 1: States rules of district classification and sample information

State	Court level	Voters threshold	Observations	Districts	Municipalities	Population
SP	Both	50000	1101	221	518	13120294
	1		761	153	330	5480504
	2		340	68	188	7639790
CE	Both	12500	285	57	58	1314780
	1		175	35	36	686133
	2		110	22	22	628647
SE	Both	24500	180	36	73	1991957
	1		130	26	62	837395
	2		50	10	11	1154562
3 states	Both		1566	314	649	16427031
	1		1066	214	428	7004032
	2		500	100	221	9422999

Notes: Sample restricted to districts classified as first or second level. Population estimates based on 2009 data.

Table 2: Summary statistics of districts' judicial productivity

Bandwidth	Court level	Allocated	Sentences	Sentence per judge	Sentence per process	Observations	Districts
40	1	1598	645	214	0.50	475	95
		(2423)	(598)	(270)	(0.34)		
	2	5391	2410	338	0.58	180	36
		(8390)	(3260)	(346)	(0.94)		
	Difference	3794***	1766***	124**	0.08		
		[881]	[469]	[53]	[0.09]		
60	1	1816	772	284	0.49	771	155
		(3195)	(1196)	(430)	(0.31)		
	2	5644	2409	345	0.53	255	51
		(7742)	(3054)	(328)	(0.80)		
	Difference	3828***	1638***	61	0.05		
		[761]	[371]	[47]	[0.07]		
80	1	1854	808	296	0.49	1036	208
		(2833)	(1073)	(413)	(0.29)		
	2	6223	2686	359	0.53	315	63
		(7916)	(3159)	(330)	(0.73)		
	Difference	4369***	1877***	63	0.04		
		[755]	[354]	[41]	[0.05]		
Full sample	1	1830	800	292	0.49	1066	214
		(2796)	(1060)	(409)	(0.29)		
	2	8226	3394	349	0.50	500	100
		(12332)	(4994)	(298)	(0.59)		
	Difference	6396***	2595***	57*	0.00		
		[1065]	[479]	[33]	[0.04]		

Notes: Sample restricted to districts classified as first or second level. The set of rows restricts the sample to those observations in which the percentage distance to state threshold is smaller than 40%, 60% and 80%, with the exception of the last one.Clustered standard errors at district level for the difference in means are in brackets. Standard deviations are in parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Summary statistics of districts' justice structure

Bandwidth	Court level	Courts	Experience	Gender	Judges	Municipalities	Obs	Districts
40	1	1.16	5.31	64.63	4.30	2.01	475	95
		(0.45)	(3.86)	(23.68)	(2.81)	(1.24)		
	2	2.67	6.46	72.99	6.49	2.36	180	36
		(2.11)	(3.54)	(19.57)	(3.60)	(1.91)		
	Difference	1.51***	1.15	8.36**	2.19***	0.35		
		[0.35]	[0.74]	[3.97]	[0.54]	[0.34]		
60	1	1.23	5.17	64.50	4.18	2.08	771	155
		(0.48)	(3.57)	(27.47)	(2.71)	(1.24)		
	2	2.70	6.28	68.56	6.61	2.33	255	51
		(2.06)	(3.17)	(23.65)	(3.77)	(1.83)		
	Difference	1.47***	1.11**	4.06	2.43***	0.26		
		[0.29]	[0.51]	[3.94]	[0.46]	[0.27]		
80	1	1.34	5.09	66.46	4.13	2.03	1036	208
		(0.51)	(3.44)	(27.89)	(2.64)	(1.18)		
	2	2.97	6.31	69.85	7.06	2.41	315	63
		(2.20)	(3.17)	(22.81)	(4.31)	(1.83)		
	Difference	1.63***	1.23***	3.39	2.93***	0.38		
		[0.28]	[0.44]	[3.29]	[0.48]	[0.24]		
Full sample	1	1.34	5.12	66.48	4.14	2.00	1066	214
		(0.52)	(3.49)	(27.77)	(2.63)	(1.18)		
	2	3.83	6.21	66.15	8.79	2.21	500	100
		(5.15)	(2.96)	(22.95)	(9.16)	(1.72)		
	Difference	2.49***	1.09***	-0.34	4.65***	0.21		
		[0.52]	[0.37]	[2.89]	[0.90]	[0.19]		

Notes:Sample restricted to districts classified as first or second level. The set of rows restricts the sample to those observations in which the percentage distance to the state voters threshold is smaller than 40%, 60% and 80%, with the exception of the last one.Clustered standard errors at district level for the difference in means are in brackets. Standard deviations are in parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Summary statistics of district's seat characteristics and homicide rates

Bandwidth	Court level	Urban	Gini	High school	Young	Income	District homicide rate	Homicide rate	Observations	Districts
40	1	70.95	0.49	28.18	31.13	491	20.47	21.62	475	95
		(22.45)	(0.05)	(9.91)	(5.09)	(272)	(14.92)	(16.49)		
	2	81.85	0.51	34.96	28.30	670	17.44	17.61	180	36
		(19.50)	(0.04)	(10.01)	(4.65)	(288)	(13.29)	(13.23)		
	Difference	10.90***	0.02**	6.79***	-2.83***	179***	-3.03	-4.01*		
		[3.99]	[0.01]	[1.96]	[0.94]	[56]	[2.30]	[2.35]		
60	1	77.01	0.49	30.53	29.44	582	18.04	19.45	771	155
		(20.77)	(0.05)	(9.01)	(4.88)	(262)	(12.99)	(14.59)		
	2	82.68	0.51	35.53	28.22	695	17.34	17.63	255	51
		(19.05)	(0.04)	(10.88)	(4.55)	(328)	(12.78)	(12.79)		
	Difference	5.67*	0.02***	4.99***	-1.22	113**	-0.69	-1.83		
		[3.15]	[0.01]	[1.69]	[0.75]	[51]	[1.74]	[1.78]		
80	1	77.68	0.48	31.02	28.78	599	17.25	18.85	1036	208
		(20.03)	(0.05)	(8.36)	(4.75)	(241)	(12.13)	(13.59)		
	2	83.37	0.51	35.85	28.16	697	17.33	17.80	315	63
		(18.67)	(0.05)	(10.63)	(4.64)	(312)	(12.67)	(12.76)		
	Difference	5.69**	0.02***	4.83***	-0.62	98**	0.08	-1.05		
		[2.73]	[0.01]	[1.46]	[0.67]	[43]	[1.53]	[1.56]		
Full sample	1	77.70	0.48	30.97	28.81	597	17.57	19.15	1066	214
		(19.96)	(0.05)	(8.36)	(4.77)	(241)	(12.85)	(14.19)		
	2	83.19	0.50	35.54	28.96	672	19.79	20.12	500	100
		(19.58)	(0.05)	(10.93)	(4.69)	(330)	(14.54)	(14.54)		
	Difference	5.48**	0.02***	4.57***	0.16	75**	2.22	0.97		
		[2.39]	[0.01]	[1.24]	[0.57]	[37]	[1.47]	[1.49]		

Notes: Sample restricted to districts classified as first or second level. The set of rows restricts the sample to those observations in which the percentage distance to the state voters threshold is smaller than 40%, 60% and 80%, with the exception of the last one.Clustered standard errors at district level for the difference in means are in brackets. Standard deviations are in parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Summary statistics of public security resources

Bandwidth	Court level	Seat's municipal police	District's municipal police	Seat's security expenditure	District's security expenditure	Observations	Districts
40	1	34.08	32.49	4.61	4.04	475	95
		(57.08)	(52.26)	(10.38)	(9.03)		
	2	23.89	24.84	4.11	3.81	180	36
		(39.39)	(37.53)	(6.99)	(6.36)		
	Difference	-10.19	-7.66	-0.51	-0.23		
		[8.81]	[8.25]	[1.58]	[1.41]		
60	1	37.17	35.40	5.72	5.11	771	155
		(63.06)	(58.99)	(12.48)	(10.96)		
	2	27.21	27.45	5.67	5.24	255	51
		(42.23)	(40.64)	(11.53)	(10.63)		
	Difference	-9.96	-7.96	-0.06	0.13		
		[7.80]	[7.42]	[1.90]	[1.73]		
80	1	33.00	32.49	4.69	4.26	1036	208
		(59.56)	(55.18)	(11.22)	(9.90)		
	2	28.34	28.61	5.77	5.30	315	63
		(46.40)	(44.92)	(12.05)	(11.24)		
	Difference	-4.66	-3.88	1.08	1.04		
		[7.16]	[6.84]	[1.72]	[1.57]		
Full sample	1	32.07	31.57	4.56	4.14	1066	214
		(58.96)	(54.67)	(11.08)	(9.78)		
	2	39.48	37.53	6.48	5.89	500	100
		(55.69)	(52.10)	(12.11)	(11.15)		
	Difference	7.41	5.95	1.92	1.75		
		[6.88]	[6.42]	[1.44]	[1.30]		

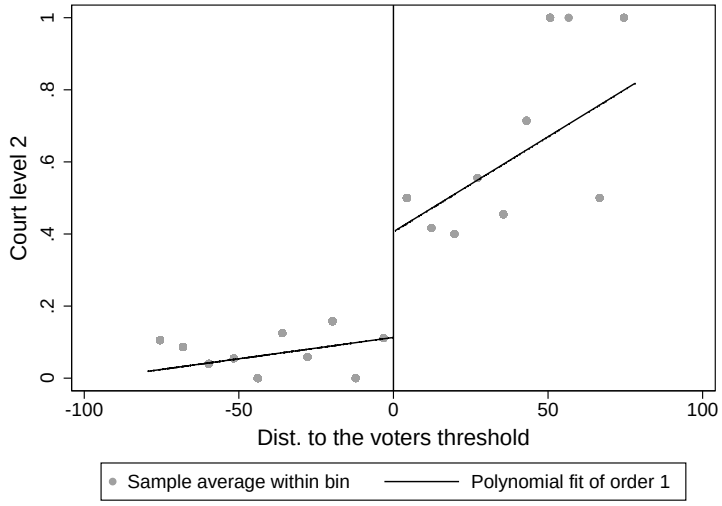
Notes: Police per 100,000 inhabitants. Per capita public security expenditure. Sample restricted to districts classified as first or second level. The set of rows restricts the sample to those observations in which the percentage distance to the state voters threshold is smaller than 40%, 60% and 80%, with the exception of the last one.Clustered standard errors at district level for the difference in means are in brackets. Standard deviations are in parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Summary statistics of districts' police and seats' police

Bandwidth	Court level	Seat's military police	District's military police	Seat's civilian police	District's civilian police	Observations	Districts
40	1	149.22	146.38	75.89	70.51	475	95
		(113.11)	(98.23)	(62.21)	(42.97)		
	2	194.71	181.05	92.82	88.63	180	36
		(96.36)	(82.09)	(54.51)	(47.59)		
	Difference	45*	35	17	18		
		[26]	[22]	[15]	[12]		
60	1	130.94	133.65	72.30	67.76	771	155
		(86.55)	(76.07)	(51.04)	(38.68)		
	2	183.76	170.13	88.12	82.67	255	51
		(91.37)	(77.07)	(54.51)	(47.80)		
	Difference	53***	36**	16	15*		
		[18]	[15]	[10]	[9]		
80	1	124.81	129.96	74.17	70.05	1036	208
		(79.28)	(70.30)	(48.71)	(37.76)		
	2	177.47	167.31	90.27	84.50	315	63
		(85.89)	(71.68)	(53.04)	(46.24)		
	Difference	53***	37***	16*	14*		
		[14]	[12]	[9]	[7]		
Full sample	1	125.36	130.77	74.71	70.63	1066	214
		(78.98)	(70.39)	(48.51)	(37.82)		
	2	164.20	155.24	79.63	74.88	500	100
		(77.45)	(64.88)	(49.18)	(42.85)		
	Difference	39***	24**	5	4		
		[11]	[10]	[7]	[6]		

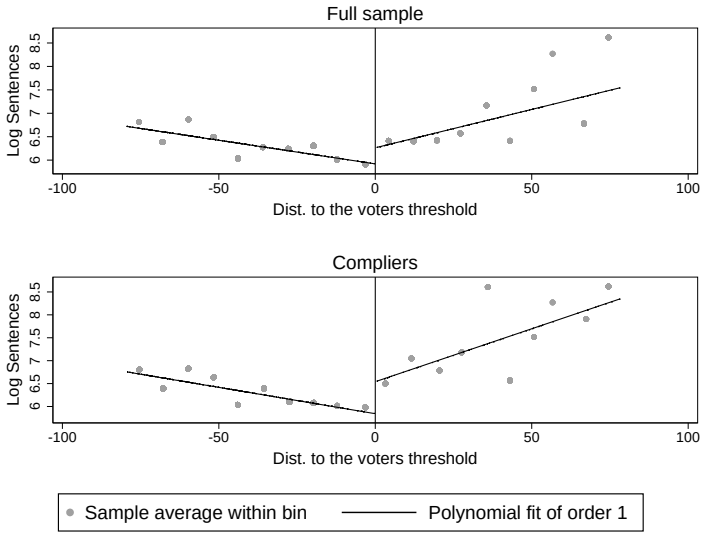
*Notes:*Police per 100,000 inhabitants. Data available only for São Paulo State. Sample restricted to districts classified as first or second level. The set of rows restricts the sample to those observations in which the percentage distance to the state voters threshold is smaller than 40%, 60% and 80%, with the exception of the last one.Clustered standard errors at district level for the difference in means are in brackets. Standard deviations are in parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Figure 1: Frequency of level 2 districts



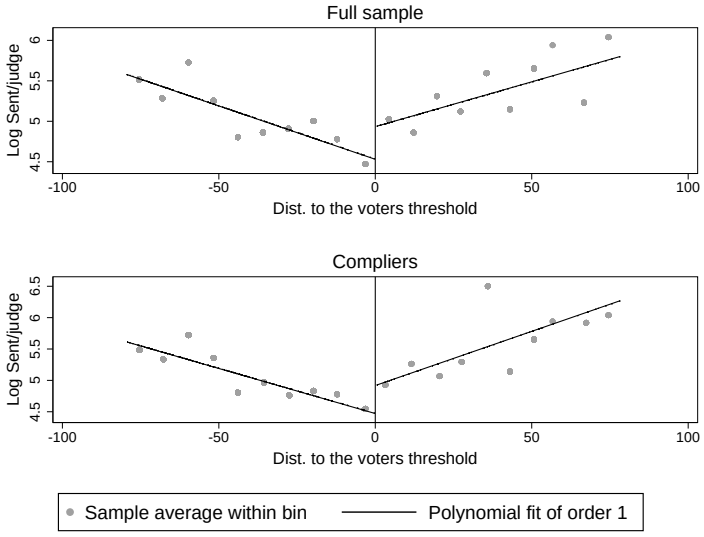
Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80% in both graphs.

Figure 2: Number of sentences (log)



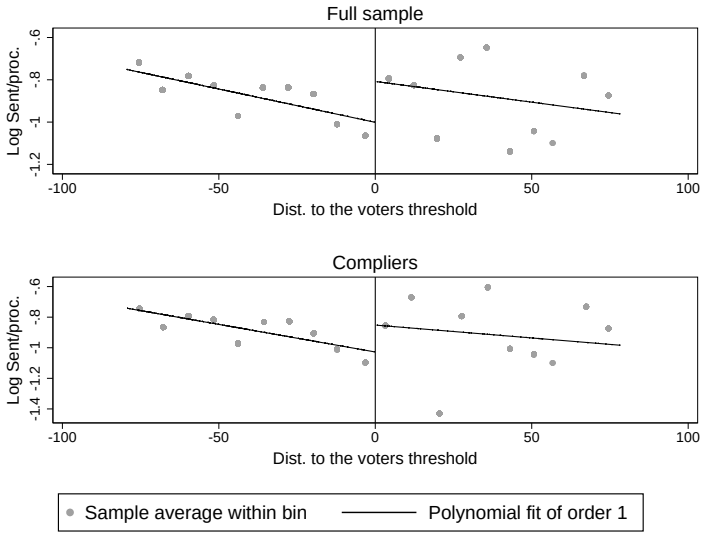
Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Figure 3: Number of sentences per judge (log)



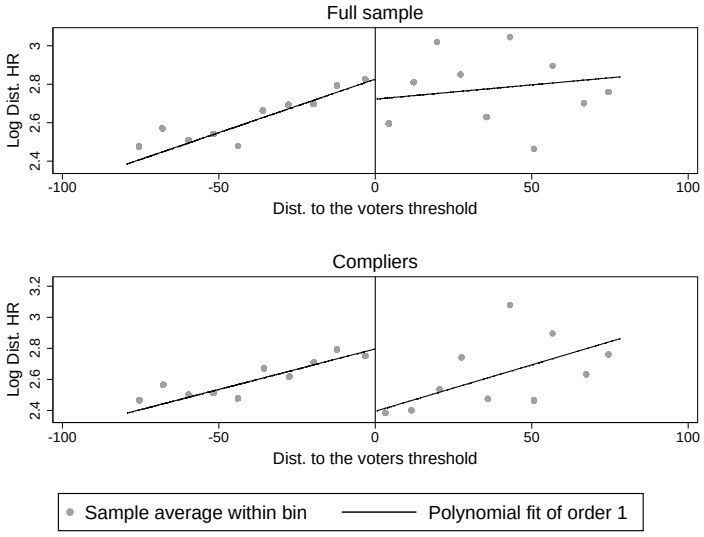
Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Figure 4: Number of sentences per process allocated (log)



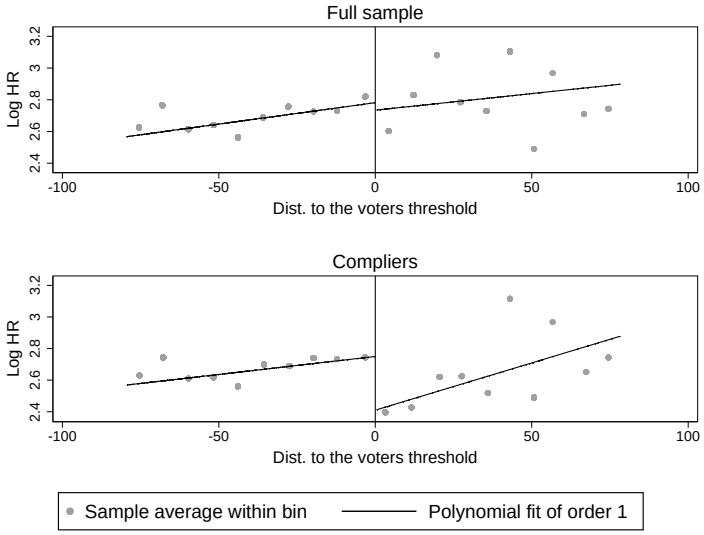
Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Figure 5: District homicide rate (log)



Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Figure 6: Homicide rate (log)



Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Table 7: Reduced-form effects - level 2 court

Dependent	District Level 2
	(1)
Voters >= cutoff	0.450**
	[0.196]
Bandwidth	40
Observations	655
Districts	131
Voters >= cutoff	0.461***
	[0.144]
Bandwidth	60
Observations	1,026
Districts	206
Voters >= cutoff	0.346***
	[0.117]
Bandwidth	80
Observations	1,351
Districts	271
Voters >= cutoff	0.443*
	[0.248]
IK Bandwidth	31.307
Observations	505
Districts	101
Voters >= cutoff	0.295
	[0.309]
CCT Bandwidth	25.574
Observations	415
Districts	83
Voters >= cutoff	0.543***
Quadratic spline	[0.077]
Bandwidth	Full sample
Observations	1,571
Districts	315
Voters >= cutoff	0.402***
Cubic spline	[0.082]
Bandwidth	Full sample
Observations	1,571
Districts	315
Year FE	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Reduced-form effects - judicial productivity

Dependent	Log Sentences	Log Sentence per process	Log Sentence per judge	Log Allocated
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.785**	0.290	0.594**	0.248
	[0.313]	[0.179]	[0.282]	[0.321]
Bandwidth	40	40	40	40
Observations	655	653	655	655
Districts	131	131	131	131
Voters >= cutoff	0.574**	0.226	0.389	0.131
	[0.275]	[0.153]	[0.249]	[0.279]
Bandwidth	60	60	60	60
Observations	1,026	1,024	1,026	1,026
Districts	206	206	206	206
Voters >= cutoff	0.359	0.216*	0.253	-0.043
	[0.250]	[0.130]	[0.226]	[0.247]
Bandwidth	80	80	80	80
Observations	1,351	1,349	1,351	1,351
Districts	271	271	271	271
Voters >= cutoff	0.694**	0.214*	0.592**	0.186
	[0.283]	[0.125]	[0.272]	[0.286]
IK Bandwidth	53.499	89.248	45.129	55.633
Observations	926	1,389	770	951
Districts	186	279	154	191
Voters >= cutoff	0.369	0.097	0.168	0.477
	[0.429]	[0.196]	[0.423]	[0.340]
CCT Bandwidth	20.514	30.420	20.707	24.711
Observations	340	478	340	405
Districts	68	96	68	81
Voters >= cutoff	0.806***	0.125	0.693***	0.650***
Quadratic spline	[0.181]	[0.079]	[0.157]	[0.193]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Voters >= cutoff	0.597***	0.202**	0.594***	0.346*
Cubic spline	[0.194]	[0.085]	[0.175]	[0.202]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Reduced-form effects - homicide rate

Dependent	Log District homicide rate	Log Seat homicide rate
	(1)	(2)
Voters >= cutoff	-0.631***	-0.595**
	[0.217]	[0.236]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Voters >= cutoff	-0.408**	-0.353*
	[0.187]	[0.203]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Voters >= cutoff	-0.310*	-0.271
	[0.164]	[0.177]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Voters >= cutoff	-0.433**	-0.265
	[0.194]	[0.175]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Voters >= cutoff	-0.576*	-0.657**
	[0.295]	[0.276]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Voters >= cutoff	-0.006	0.052
Quadratic spline	[0.108]	[0.114]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Voters >= cutoff	-0.072	-0.005
Cubic spline	[0.118]	[0.124]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 10: Reduced-form effects - mechanisms

Dependent	Log Experience	Log Judges	Log Courts	Log Gender
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.479*	0.128	0.087	-0.158
	[0.262]	[0.197]	[0.060]	[0.240]
Bandwidth	40	40	40	40
Observations	357	655	655	351
Districts	80	131	131	80
Voters >= cutoff	0.204	0.134	0.024	-0.009
	[0.206]	[0.168]	[0.055]	[0.164]
Bandwidth	60	60	60	60
Observations	691	1,026	1,026	660
Districts	148	206	206	147
Voters >= cutoff	0.153	0.078	-0.023	0.047
	[0.179]	[0.141]	[0.054]	[0.129]
Bandwidth	80	80	80	80
Observations	986	1,351	1,351	942
Districts	208	271	271	207
Voters >= cutoff	0.152	0.075	0.066	0.001
	[0.175]	[0.140]	[0.056]	[0.152]
IK Bandwidth	83.521	81.770	49.228	65.329
Observations	996	1,361	840	733
Districts	210	273	168	163
Voters >= cutoff	0.570*	0.056	0.027	-0.268
	[0.301]	[0.223]	[0.038]	[0.529]
CCT Bandwidth	33.450	27.078	15.033	21.756
Observations	282	425	210	169
Districts	62	85	42	37
Voters >= cutoff	0.370***	0.090	0.332***	0.082
Quadratic spline	[0.120]	[0.086]	[0.059]	[0.077]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Voters >= cutoff	0.333**	0.005	0.255***	0.147*
Cubic spline	[0.132]	[0.092]	[0.064]	[0.083]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Year FE	Y	Y	Y	Y

Notes: Experience and gender information are unavailable for some States. The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 11: Effect of judicial productivity on homicide rate (OLS)

Dependent	Log District homicide rate	Log Seat homicide rate	Log District homicide rate	Log Seat homicide rate	Log District homicide rate	Log Seat homicide rate
Independent	Log Sentences	Log Sentences	Log Sentence per process	Log Sentence per process	Log Sentence per judge	Log Sentence per judge
	(1)	(2)	(4)	(3)	(6)	(5)
Independent	-0.088***	-0.073***	-0.014	0.011	-0.014	-0.002
Quadratic spline	[0.023]	[0.024]	[0.029]	[0.031]	[0.024]	[0.025]
Bandwidth	Full sample	Full sample	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,571	1,569	1,569	1,571	1,571
Districts	315	315	315	315	315	315
Independent	-0.099***	-0.084***	-0.011	0.015	-0.020	-0.007
Cubic spline	[0.024]	[0.024]	[0.029]	[0.031]	[0.025]	[0.026]
Bandwidth	Full sample	Full sample	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,571	1,569	1,569	1,571	1,571
Districts	315	315	315	315	315	315
Year FE	Y	Y	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 12: Effect of sentences on homicide rate (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentences	Log Sentences
	(1)	(2)
Log Sentences	-0.945**	-0.948**
	[0.466]	[0.465]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentences	-0.830	-0.796
	[0.693]	[0.666]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentences	-0.890*	-0.784
	[0.466]	[0.494]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentences	-0.597	-0.772
	[0.728]	[0.496]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentences	-1.250***	-1.122***
	[0.469]	[0.410]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentences	-0.008	0.064
Quadratic spline	[0.133]	[0.144]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentences	-0.121	-0.009
Cubic spline	[0.192]	[0.207]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 13: Effect of sentences per judge on homicide rate (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per judge	Log Sentence per judge
	(1)	(2)
Log Sentence per judge	-1.241*	-1.228*
	[0.719]	[0.731]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentence per judge	-1.202	-1.066
	[0.805]	[0.806]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentence per judge	-0.865**	-0.716
	[0.435]	[0.449]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentence per judge	-0.933	-0.687
	[1.010]	[0.439]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentence per judge	-1.887**	-1.436**
	[0.787]	[0.694]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentence per judge	-0.009	0.075
Quadratic spline	[0.155]	[0.163]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentence per judge	-0.121	-0.009
Cubic spline	[0.203]	[0.209]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 14: Effect of sentences per process allocated on homicide rate (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per process	Log Sentence per process
	(1)	(2)
Log Sentence per process	-2.329**	-2.235**
	[0.954]	[0.988]
Bandwidth	40	40
Observations	653	653
Districts	131	131
Log Sentence per process	-1.857*	-1.612
	[0.951]	[0.997]
Bandwidth	60	60
Observations	1,024	1,024
Districts	206	206
Log Sentence per process	-1.459*	-1.291
	[0.822]	[0.892]
Bandwidth	80	80
Observations	1,349	1,349
Districts	271	271
Log Sentence per process	-1.815*	-1.273
	[1.062]	[0.893]
IK Bandwidth	54.232	82.487
Observations	934	1,364
Districts	188	274
Log Sentence per process	-13.966***	-4.785***
	[3.343]	[1.059]
CCT Bandwidth	19.509	24.442
Observations	308	403
Districts	62	81
Log Sentence per process	-0.027	0.440
Quadratic spline	[0.858]	[0.955]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Log Sentence per process	-0.334	-0.003
Cubic spline	[0.600]	[0.612]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 15: Discontinuity test - seat's characteristics

Dependent	Log Urban	Log Income	Log Gini	Log Young	Log High school
	(1)	(2)	(3)	(4)	(5)
Voters >= cutoff	0.010	0.279	0.047	-0.027	0.061
	[0.242]	[0.369]	[0.052]	[0.094]	[0.242]
Bandwidth	40	40	40	40	40
Districts	131	131	131	131	131
Voters >= cutoff	-0.035	0.196	0.064	-0.032	-0.002
	[0.205]	[0.310]	[0.045]	[0.083]	[0.205]
Bandwidth	60	60	60	60	60
Districts	205	205	205	205	205
Voters >= cutoff	-0.040	0.179	0.056	-0.042	-0.005
	[0.177]	[0.266]	[0.038]	[0.073]	[0.176]
Bandwidth	80	80	80	80	80
Districts	270	270	270	270	270
Voters >= cutoff	-0.040	0.182	0.062	-0.039	-0.003
	[0.175]	[0.275]	[0.043]	[0.075]	[0.183]
IK Bandwidth	81.511	74.265	64.740	73.727	73.991
Districts	272	259	219	258	259
Voters >= cutoff	0.027	0.369	0.047	-0.035	0.081
	[0.258]	[0.411]	[0.057]	[0.101]	[0.249]
CCT Bandwidth	35.236	32.041	32.403	31.378	37.115
Districts	113	102	103	101	121
Voters >= cutoff	0.012	0.071	-0.019	-0.040	0.036
Quadratic spline	[0.061]	[0.101]	[0.020]	[0.031]	[0.065]
Bandwidth	Full sample	Full sample	Full sample	Full sample	Full sample
Districts	314	314	314	314	314
Voters >= cutoff	-0.036	0.052	-0.000	-0.049	0.004
Cubic spline	[0.066]	[0.110]	[0.021]	[0.033]	[0.070]
Bandwidth	Full sample	Full sample	Full sample	Full sample	Full sample
Districts	314	314	314	314	314

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 16: Discontinuity test - district's number of municipalities and municipal police

Dependent	Log Municipalities	Log District's municipal police	Log Seat's municipal police
	(1)	(2)	(3)
Voters >= cutoff	0.036	0.524	0.328
	[0.284]	[1.131]	[1.175]
Bandwidth	40	40	40
Districts	131	131	131
Voters >= cutoff	-0.073	0.205	0.099
	[0.240]	[0.996]	[1.032]
Bandwidth	60	60	60
Districts	205	205	205
Voters >= cutoff	-0.083	0.034	0.056
	[0.213]	[0.881]	[0.903]
Bandwidth	80	80	80
Districts	270	270	270
Voters >= cutoff	-0.020	-0.263	0.057
	[0.193]	[0.810]	[0.905]
IK Bandwidth	114.898	110.239	79.648
Districts	290	289	270
Voters >= cutoff	0.295	0.180	0.326
	[0.331]	[1.181]	[1.180]
CCT Bandwidth	30.221	33.228	39.271
Districts	96	108	128
Voters >= cutoff	-0.044	-0.588	-0.722*
Quadratic spline	[0.116]	[0.420]	[0.423]
Bandwidth	Full sample	Full sample	Full sample
Districts	314	314	314
Voters >= cutoff	-0.018	-0.970**	-1.138**
Cubic spline	[0.126]	[0.453]	[0.455]
Bandwidth	Full sample	Full sample	Full sample
Districts	314	314	314

Notes: Police per 100,000 inhabitants. The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 17: Discontinuity test - civilian police and military police (SP)

Dependent	Log Seat's military police	Log District's military police	Log Seat's civilian police	Log District's civilian police
	(1)	(2)	(3)	(4)
Voters >= cutoff	-0.133	-0.193	0.238	0.426
	[0.399]	[0.330]	[0.352]	[0.336]
Bandwidth	40	40	40	40
Districts	68	68	68	68
Voters >= cutoff	0.233	0.174	0.478	0.587*
	[0.308]	[0.260]	[0.324]	[0.310]
Bandwidth	60	60	60	60
Districts	135	135	134	135
Voters >= cutoff	0.219	0.158	0.436	0.428
	[0.254]	[0.218]	[0.304]	[0.284]
Bandwidth	80	80	80	80
Districts	194	194	193	194
Voters >= cutoff	0.245	0.135	0.434	0.355
	[0.271]	[0.196]	[0.307]	[0.271]
IK Bandwidth	71.964	114.795	75.924	110.171
Districts	175	207	187	206
Voters >= cutoff	-0.156	-0.239	0.043	0.330
	[0.403]	[0.338]	[0.376]	[0.368]
CCT Bandwidth	39.371	38.185	33.378	32.143
Districts	66	64	54	50
Voters >= cutoff	0.312*	0.240	0.414	0.314
Quadratic spline	[0.188]	[0.176]	[0.258]	[0.267]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Districts	220	220	219	220
Voters >= cutoff	0.565**	0.434*	0.624*	0.607
Cubic spline	[0.262]	[0.246]	[0.361]	[0.373]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Districts	220	220	219	220

Notes: Police per 100,000 inhabitants. Police information available only for São Paulo State. The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 18: Discontinuity test - public security expenditure

Dependent	Log District's security expenditure	Log Seat's security expenditure
	(1)	(2)
Voters >= cutoff	0.324	0.209
	[0.700]	[0.718]
Bandwidth	40	40
Districts	131	130
Voters >= cutoff	0.323	0.219
	[0.625]	[0.640]
Bandwidth	60	60
Districts	205	204
Voters >= cutoff	0.274	0.193
	[0.542]	[0.555]
Bandwidth	80	80
Districts	270	268
Voters >= cutoff	0.277	0.243
	[0.547]	[0.606]
IK Bandwidth	78.366	67.805
Districts	267	235
Voters >= cutoff	0.287	0.250
	[0.743]	[0.763]
CCT Bandwidth	32.537	32.087
Districts	105	101
Voters >= cutoff	-0.294	-0.385
Quadratic spline	[0.244]	[0.253]
Bandwidth	Full sample	Full sample
Districts	314	311
Voters >= cutoff	-0.547**	-0.653**
Cubic spline	[0.262]	[0.272]
Bandwidth	Full sample	Full sample
Districts	314	311

Notes: Per capita public expenditure. The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix

Table 19: Reduced-form effects with CCT default CI - level 2 court

Dependent	District Level 2
	(1)
Voters >= cutoff	0.450***
	[0.000]
Bandwidth	40
Observations	655
Districts	131
Voters >= cutoff	0.461***
	[0.000]
Bandwidth	60
Observations	1,026
Districts	206
Voters >= cutoff	0.346***
	[0.000]
Bandwidth	80
Observations	1,351
Districts	271
Voters >= cutoff	0.443***
	[0.000]
IK Bandwidth	31.307
Observations	505
Districts	101
Voters >= cutoff	0.295***
	[0.000]
CCT Bandwidth	25.574
Observations	415
Districts	83
Voters >= cutoff	0.543***
Quadratic spline	[0.077]
Bandwidth	Full sample
Observations	1,571
Districts	315
Voters >= cutoff	0.402***
Cubic spline	[0.082]
Bandwidth	Full sample
Observations	1,571
Districts	315
Year FE	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 20: Reduced-form effects with CCT default CI - judicial productivity

Dependent	Log Sentences	Log Sentence per process	Log Sentence per judge	Log Allocated
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.785***	0.290***	0.594***	0.248***
	[0.000]	[0.000]	[0.000]	[0.000]
Bandwidth	40	40	40	40
Observations	655	653	655	655
Districts	131	131	131	131
Voters >= cutoff	0.574***	0.226***	0.389***	0.131***
	[0.006]	[0.001]	[0.003]	[0.004]
Bandwidth	60	60	60	60
Observations	1,026	1,024	1,026	1,026
Districts	206	206	206	206
Voters >= cutoff	0.359***	0.216***	0.253***	-0.043***
	[0.006]	[0.001]	[0.003]	[0.004]
Bandwidth	80	80	80	80
Observations	1,351	1,349	1,351	1,351
Districts	271	271	271	271
Voters >= cutoff	0.694***	0.214***	0.592***	0.186***
	[0.005]	[0.002]	[0.000]	[0.004]
IK Bandwidth	53.499	89.248	45.129	55.633
Observations	926	1,389	770	951
Districts	186	279	154	191
Voters >= cutoff	0.369***	0.097***	0.168***	0.477***
	[0.000]	[0.000]	[0.000]	[0.000]
CCT Bandwidth	20.514	30.420	20.707	24.711
Observations	340	478	340	405
Districts	68	96	68	81
Voters >= cutoff	0.806***	0.125	0.693***	0.650***
Quadratic spline	[0.181]	[0.079]	[0.157]	[0.193]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Voters >= cutoff	0.597***	0.202**	0.594***	0.346*
Cubic spline	[0.194]	[0.085]	[0.175]	[0.202]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 21: Reduced-form effects with CCT default CI - homicide rate

Dependent	Log District homicide rate	Log Seat homicide rate
	(1)	(2)
Voters >= cutoff	-0.631***	-0.595***
	[0.000]	[0.000]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Voters >= cutoff	-0.408***	-0.353***
	[0.000]	[0.000]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Voters >= cutoff	-0.310***	-0.271***
	[0.000]	[0.000]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Voters >= cutoff	-0.433***	-0.265***
	[0.000]	[0.000]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Voters >= cutoff	-0.576***	-0.657***
	[0.000]	[0.000]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Voters >= cutoff	-0.006	0.052
Quadratic spline	[0.108]	[0.114]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Voters >= cutoff	-0.072	-0.005
Cubic spline	[0.118]	[0.124]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 22: Reduced-form effects with CCT default CI - mechanisms

Dependent	Log Experience	Log Judges	Log Courts	Log Gender
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.479***	0.128***	0.087***	-0.158
	[0.028]	[0.000]	[0.000]	[0.147]
Bandwidth	40	40	40	40
Observations	357	655	655	351
Districts	80	131	131	80
Voters >= cutoff	0.204***	0.134***	0.024***	-0.009
	[0.020]	[0.002]	[0.000]	[0.088]
Bandwidth	60	60	60	60
Observations	691	1,026	1,026	660
Districts	148	206	206	147
Voters >= cutoff	0.153***	0.078***	-0.023***	0.047
	[0.020]	[0.002]	[0.000]	[0.062]
Bandwidth	80	80	80	80
Observations	986	1,351	1,351	942
Districts	208	271	271	207
Voters >= cutoff	0.152***	0.075***	0.066***	0.001
	[0.020]	[0.002]	[0.000]	[0.079]
IK Bandwidth	83.521	81.770	49.228	65.329
Observations	996	1,361	840	733
Districts	210	273	168	163
Voters >= cutoff	0.570***	0.056***	0.027***	-0.268
	[0.035]	[0.000]	[0.000]	[0.421]
CCT Bandwidth	33.450	27.078	15.033	21.756
Observations	282	425	210	169
Districts	62	85	42	37
Voters >= cutoff	0.370***	0.090	0.332***	0.082
Quadratic spline	[0.120]	[0.086]	[0.059]	[0.077]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Voters >= cutoff	0.333**	0.005	0.255***	0.147*
Cubic spline	[0.132]	[0.092]	[0.064]	[0.083]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 23: Reduced-form effects with covariates - level 2 court

Dependent	District Level 2
	(1)
Voters >= cutoff	0.358*
	[0.191]
Bandwidth	40
Observations	655
Districts	131
Voters >= cutoff	0.358**
	[0.141]
Bandwidth	60
Observations	1,026
Districts	206
Voters >= cutoff	0.276**
	[0.114]
Bandwidth	80
Observations	1,351
Districts	271
Voters >= cutoff	0.368
	[0.247]
IK Bandwidth	31.307
Observations	505
Districts	101
Voters >= cutoff	0.245
	[0.297]
CCT Bandwidth	25.574
Observations	415
Districts	83
Voters >= cutoff	0.550***
Quadratic spline	[0.075]
Bandwidth	Full sample
Observations	1,571
Districts	315
Voters >= cutoff	0.399***
Cubic spline	[0.076]
Bandwidth	Full sample
Observations	1,571
Districts	315
Year FE	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 24: Reduced-form effects with covariates - judicial productivity

Dependent	Log Sentences	Log Sentence per process	Log Sentence per judge	Log Allocated
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.497*	0.370**	0.445	-0.161
	[0.261]	[0.164]	[0.298]	[0.252]
Bandwidth	40	40	40	40
Observations	655	653	655	655
Districts	131	131	131	131
Voters >= cutoff	0.374	0.251*	0.299	-0.112
	[0.242]	[0.140]	[0.254]	[0.230]
Bandwidth	60	60	60	60
Observations	1,026	1,024	1,026	1,026
Districts	206	206	206	206
Voters >= cutoff	0.216	0.229*	0.217	-0.202
	[0.225]	[0.122]	[0.228]	[0.211]
Bandwidth	80	80	80	80
Observations	1,351	1,349	1,351	1,351
Districts	271	271	271	271
Voters >= cutoff	0.498**	0.225*	0.461	-0.057
	[0.247]	[0.117]	[0.282]	[0.233]
IK Bandwidth	53.499	89.248	45.129	55.633
Observations	926	1,389	770	951
Districts	186	279	154	191
Voters >= cutoff	-0.179	0.259	-0.067	-0.372
	[0.445]	[0.179]	[0.496]	[0.333]
CCT Bandwidth	20.514	30.420	20.707	24.711
Observations	340	478	340	405
Districts	68	96	68	81
Voters >= cutoff	0.764***	0.126*	0.699***	0.612***
Quadratic spline	[0.162]	[0.071]	[0.156]	[0.148]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Voters >= cutoff	0.597***	0.188**	0.636***	0.363**
Cubic spline	[0.176]	[0.078]	[0.178]	[0.158]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 25: Reduced-form effects with covariates - homicide rate

Dependent	Log District homicide rate	Log Seat homicide rate
	(1)	(2)
Voters >= cutoff	-0.592***	-0.533***
	[0.162]	[0.180]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Voters >= cutoff	-0.327**	-0.253
	[0.154]	[0.171]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Voters >= cutoff	-0.207	-0.157
	[0.143]	[0.159]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Voters >= cutoff	-0.383**	-0.148
	[0.156]	[0.158]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Voters >= cutoff	-0.758***	-0.639***
	[0.181]	[0.210]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Voters >= cutoff	0.073	0.128
Quadratic spline	[0.085]	[0.093]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Voters >= cutoff	0.024	0.084
Cubic spline	[0.093]	[0.101]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 26: Reduced-form effects with covariates - mechanisms

Dependent	Log Experience	Log Judges	Log Courts	Log Gender
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.328	0.018	-0.003	-0.052
	[0.243]	[0.160]	[0.049]	[0.182]
Bandwidth	40	40	40	40
Observations	357	655	655	351
Districts	80	131	131	80
Voters >= cutoff	0.127	0.051	-0.049	-0.006
	[0.196]	[0.137]	[0.048]	[0.134]
Bandwidth	60	60	60	60
Observations	691	1,026	1,026	660
Districts	148	206	206	147
Voters >= cutoff	0.074	-0.002	-0.076	0.041
	[0.175]	[0.115]	[0.049]	[0.110]
Bandwidth	80	80	80	80
Observations	986	1,351	1,351	942
Districts	208	271	271	207
Voters >= cutoff	0.074	-0.004	-0.004	0.003
	[0.173]	[0.114]	[0.048]	[0.127]
IK Bandwidth	83.521	81.770	49.228	65.329
Observations	996	1,361	840	733
Districts	210	273	168	163
Voters >= cutoff	0.412	-0.135	-0.204***	0.075
	[0.288]	[0.184]	[0.063]	[0.307]
CCT Bandwidth	33.450	27.078	15.033	21.756
Observations	282	425	210	169
Districts	62	85	42	37
Voters >= cutoff	0.343***	0.051	0.314***	0.079
Quadratic spline	[0.117]	[0.068]	[0.056]	[0.072]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Voters >= cutoff	0.271**	-0.027	0.242***	0.140*
Cubic spline	[0.127]	[0.072]	[0.061]	[0.078]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 27: Reduced-form effects with rectangular kernel - level 2 court

Dependent	District Level 2
	(1)
Voters >= cutoff	0.464***
	[0.163]
Bandwidth	40
Observations	655
Districts	131
Voters >= cutoff	0.438***
	[0.124]
Bandwidth	60
Observations	1,026
Districts	206
Voters >= cutoff	0.259**
	[0.105]
Bandwidth	80
Observations	1,351
Districts	271
Voters >= cutoff	0.518***
	[0.199]
IK Bandwidth	31.307
Observations	505
Districts	101
Voters >= cutoff	0.530**
	[0.244]
CCT Bandwidth	25.574
Observations	415
Districts	83
Voters >= cutoff	0.543***
Quadratic spline	[0.077]
Bandwidth	Full sample
Observations	1,571
Districts	315
Voters >= cutoff	0.402***
Cubic spline	[0.082]
Bandwidth	Full sample
Observations	1,571
Districts	315
Year FE	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 28: Reduced-form effects with rectangular kernel - judicial productivity

Dependent	Log Sentences	Log Sentence per process	Log Sentence per judge	Log Allocated
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.724**	0.285*	0.548*	0.208
	[0.326]	[0.173]	[0.290]	[0.338]
Bandwidth	40	40	40	40
Observations	655	653	655	655
Districts	131	131	131	131
Voters >= cutoff	0.295	0.129	0.065	-0.028
	[0.284]	[0.140]	[0.264]	[0.279]
Bandwidth	60	60	60	60
Observations	1,026	1,024	1,026	1,026
Districts	206	206	206	206
Voters >= cutoff	0.368	0.221*	0.330	-0.013
	[0.242]	[0.119]	[0.229]	[0.233]
Bandwidth	80	80	80	80
Observations	1,351	1,349	1,351	1,351
Districts	271	271	271	271
Voters >= cutoff	0.475	0.189	0.476*	0.017
	[0.292]	[0.116]	[0.276]	[0.287]
IK Bandwidth	53.499	89.248	45.129	55.633
Observations	926	1,389	770	951
Districts	186	279	154	191
Voters >= cutoff	0.624	0.356*	0.580	0.458
	[0.420]	[0.195]	[0.408]	[0.397]
CCT Bandwidth	20.514	30.420	20.707	24.711
Observations	340	478	340	405
Districts	68	96	68	81
Voters >= cutoff	0.806***	0.125	0.693***	0.650***
Quadratic spline	[0.181]	[0.079]	[0.157]	[0.193]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Voters >= cutoff	0.597***	0.202**	0.594***	0.346*
Cubic spline	[0.194]	[0.085]	[0.175]	[0.202]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,571	1,569	1,571	1,571
Districts	315	315	315	315
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 29: Reduced-form effects with rectangular kernel - homicide rate

Dependent	Log District homicide rate	Log Seat homicide rate
	(1)	(2)
Voters >= cutoff	-0.497**	-0.402*
	[0.213]	[0.232]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Voters >= cutoff	-0.339*	-0.302
	[0.176]	[0.190]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Voters >= cutoff	-0.247	-0.212
	[0.154]	[0.165]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Voters >= cutoff	-0.345*	-0.195
	[0.183]	[0.163]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Voters >= cutoff	-0.396	-0.618**
	[0.291]	[0.279]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Voters >= cutoff	-0.006	0.052
Quadratic spline	[0.108]	[0.114]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Voters >= cutoff	-0.072	-0.005
Cubic spline	[0.118]	[0.124]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 30: Reduced-form effects with rectangular kernel - mechanisms

Dependent	Log Experience	Log Judges	Log Courts	Log Gender
	(1)	(2)	(3)	(4)
Voters >= cutoff	0.348	0.123	0.064	-0.081
	[0.256]	[0.194]	[0.075]	[0.198]
Bandwidth	40	40	40	40
Observations	357	655	655	351
Districts	80	131	131	80
Voters >= cutoff	0.074	0.170	-0.036	0.004
	[0.199]	[0.156]	[0.067]	[0.137]
Bandwidth	60	60	60	60
Observations	691	1,026	1,026	660
Districts	148	206	206	147
Voters >= cutoff	0.101	0.037	-0.008	0.122
	[0.170]	[0.127]	[0.057]	[0.112]
Bandwidth	80	80	80	80
Observations	986	1,351	1,351	942
Districts	208	271	271	207
Voters >= cutoff	0.125	0.043	0.068	0.071
	[0.169]	[0.126]	[0.061]	[0.129]
IK Bandwidth	83.521	81.770	49.228	65.329
Observations	996	1,361	840	733
Districts	210	273	168	163
Voters >= cutoff	0.639**	-0.091	0.009	-0.105
	[0.270]	[0.223]	[0.071]	[0.414]
CCT Bandwidth	33.450	27.078	15.033	21.756
Observations	282	425	210	169
Districts	62	85	42	37
Voters >= cutoff	0.370***	0.090	0.332***	0.082
Quadratic spline	[0.120]	[0.086]	[0.059]	[0.077]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Voters >= cutoff	0.333**	0.005	0.255***	0.147*
Cubic spline	[0.132]	[0.092]	[0.064]	[0.083]
Bandwidth	Full sample	Full sample	Full sample	Full sample
Observations	1,126	1,571	1,571	1,082
Districts	238	315	315	237
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 31: Effect of sentences on homicide rate with CCT default CI (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentences	Log Sentences
	(1)	(2)
Log Sentences	-0.945***	-0.948***
	[0.000]	[0.000]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentences	-0.830***	-0.796***
	[0.011]	[0.008]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentences	-0.890***	-0.784***
	[0.004]	[0.003]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentences	-0.597***	-0.772***
	[0.011]	[0.002]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentences	-1.250***	-1.122***
	[0.000]	[0.000]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentences	-0.008	0.064
Quadratic spline	[0.133]	[0.144]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentences	-0.121	-0.009
Cubic spline	[0.192]	[0.207]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 32: Effect of sentences per judge on homicide rate with CCT default CI (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per judge	Log Sentence per judge
	(1)	(2)
Log Sentence per judge	-1.241***	-1.228***
	[0.000]	[0.000]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentence per judge	-1.202***	-1.066***
	[0.006]	[0.005]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentence per judge	-0.865***	-0.716***
	[0.002]	[0.001]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentence per judge	-0.933***	-0.687***
	[0.009]	[0.001]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentence per judge	-1.887***	-1.436***
	[0.000]	[0.000]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentence per judge	-0.009	0.075
Quadratic spline	[0.155]	[0.163]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentence per judge	-0.121	-0.009
Cubic spline	[0.203]	[0.209]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 33: Effect of sentences per process allocated on homicide rate with CCT default CI (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per process	Log Sentence per process
	(1)	(2)
Log Sentence per process	-2.329***	-2.235***
	[0.152]	[0.154]
Bandwidth	40	40
Observations	653	653
Districts	131	131
Log Sentence per process	-1.857***	-1.612***
	[0.159]	[0.160]
Bandwidth	60	60
Observations	1,024	1,024
Districts	206	206
Log Sentence per process	-1.459***	-1.291***
	[0.139]	[0.140]
Bandwidth	80	80
Observations	1,349	1,349
Districts	271	271
Log Sentence per process	-1.815***	-1.273***
	[0.170]	[0.139]
IK Bandwidth	54.232	82.487
Observations	934	1,364
Districts	188	274
Log Sentence per process	-13.966***	-4.785***
	[0.168]	[0.124]
CCT Bandwidth	19.509	24.442
Observations	308	403
Districts	62	81
Log Sentence per process	-0.027	0.440
Quadratic spline	[0.858]	[0.955]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Log Sentence per process	-0.334	-0.003
Cubic spline	[0.600]	[0.612]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 34: Effect of sentences on homicide rate with covariates (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentences	Log Sentences
	(1)	(2)
Log Sentences	-1.431***	-1.354***
	[0.493]	[0.478]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentences	-1.216*	-1.063
	[0.642]	[0.725]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentences	-0.643	-0.430
	[0.401]	[0.482]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentences	-1.204	-0.398
	[0.742]	[0.477]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentences	-4.699***	-2.233***
	[1.731]	[0.647]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentences	0.096	0.168
Quadratic spline	[0.112]	[0.124]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentences	0.039	0.141
Cubic spline	[0.155]	[0.171]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 35: Effect of sentences per judge on homicide rate with covariates (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per judge	Log Sentence per judge
	(1)	(2)
Log Sentence per judge	-1.538**	-1.434**
	[0.623]	[0.590]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentence per judge	-1.113**	-0.864
	[0.537]	[0.584]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentence per judge	-0.522	-0.334
	[0.329]	[0.371]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentence per judge	-1.260*	-0.309
	[0.664]	[0.366]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentence per judge	-3.686**	-1.890**
	[1.527]	[0.852]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentence per judge	0.105	0.183
Quadratic spline	[0.122]	[0.134]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentence per judge	0.037	0.132
Cubic spline	[0.145]	[0.157]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 36: Effect of sentences per process allocated on homicide rate with covariates (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per process	Log Sentence per process
	(1)	(2)
Log Sentence per process	-2.049***	-2.007***
	[0.718]	[0.745]
Bandwidth	40	40
Observations	653	653
Districts	131	131
Log Sentence per process	-1.583**	-1.293
	[0.753]	[0.886]
Bandwidth	60	60
Observations	1,024	1,024
Districts	206	206
Log Sentence per process	-1.071	-0.882
	[0.753]	[0.911]
Bandwidth	80	80
Observations	1,349	1,349
Districts	271	271
Log Sentence per process	-1.769**	-0.849
	[0.778]	[0.919]
IK Bandwidth	54.232	82.487
Observations	934	1,364
Districts	188	274
Log Sentence per process	-5.035***	-2.535***
	[1.156]	[0.617]
CCT Bandwidth	19.509	24.442
Observations	308	403
Districts	62	81
Log Sentence per process	0.593	1.031
Quadratic spline	[0.818]	[1.034]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Log Sentence per process	0.133	0.456
Cubic spline	[0.507]	[0.596]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 37: Effect of sentences on homicide rate with rectangular kernel (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentences	Log Sentences
	(1)	(2)
Log Sentences	-1.098*	-0.942
	[0.659]	[0.692]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentences	-1.100**	-0.973*
	[0.551]	[0.588]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentences	-0.762	-0.683
	[0.473]	[0.551]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentences	-1.083	-0.629
	[1.043]	[0.556]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentences	-0.977***	-0.727
	[0.372]	[0.559]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentences	-0.008	0.064
Quadratic spline	[0.133]	[0.144]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentences	-0.121	-0.009
Cubic spline	[0.192]	[0.207]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 38: Effect of sentences per judge on homicide rate with rectangular kernel (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per judge	Log Sentence per judge
	(1)	(2)
Log Sentence per judge	-1.358	-1.139
	[0.838]	[0.871]
Bandwidth	40	40
Observations	655	655
Districts	131	131
Log Sentence per judge	-0.925**	-0.741*
	[0.414]	[0.433]
Bandwidth	60	60
Observations	1,026	1,026
Districts	206	206
Log Sentence per judge	-0.564	-0.444
	[0.347]	[0.365]
Bandwidth	80	80
Observations	1,351	1,351
Districts	271	271
Log Sentence per judge	-1.314	-0.422
	[0.839]	[0.372]
IK Bandwidth	54.232	82.487
Observations	936	1,366
Districts	188	274
Log Sentence per judge	-1.057	-0.386
	[0.677]	[1.234]
CCT Bandwidth	19.509	24.442
Observations	310	405
Districts	62	81
Log Sentence per judge	-0.009	0.075
Quadratic spline	[0.155]	[0.163]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Log Sentence per judge	-0.121	-0.009
Cubic spline	[0.203]	[0.209]
Bandwidth	Full sample	Full sample
Observations	1,571	1,571
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 39: Effect of sentences per process allocated on homicide rate with rectangular kernel (IV)

Dependent	Log District homicide rate	Log Seat homicide rate
Instrumented	Log Sentence per process	Log Sentence per process
	(1)	(2)
Log Sentence per process	-2.136**	-1.738
	[1.000]	[1.095]
Bandwidth	40	40
Observations	653	653
Districts	131	131
Log Sentence per process	-1.507**	-1.248
	[0.728]	[0.801]
Bandwidth	60	60
Observations	1,024	1,024
Districts	206	206
Log Sentence per process	-1.292	-1.186
	[0.866]	[0.994]
Bandwidth	80	80
Observations	1,349	1,349
Districts	271	271
Log Sentence per process	-1.620*	-1.177
	[0.834]	[1.036]
IK Bandwidth	54.232	82.487
Observations	934	1,364
Districts	188	274
Log Sentence per process	-3.392***	-2.186***
	[1.007]	[0.799]
CCT Bandwidth	19.509	24.442
Observations	308	403
Districts	62	81
Log Sentence per process	-0.027	0.440
Quadratic spline	[0.858]	[0.955]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Log Sentence per process	-0.334	-0.003
Cubic spline	[0.600]	[0.612]
Bandwidth	Full sample	Full sample
Observations	1,569	1,569
Districts	315	315
Year FE	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 40: Placebo test reduced-form effects - level 2 court

Dependent	District Level 2
	(1)
Voters >= cutoff	-0.244
	[0.292]
Bandwidth	40
Observations	530
Districts	106
Voters >= cutoff	-0.346
	[0.222]
IK Bandwidth	67.384
Observations	915
Districts	183
Voters >= cutoff	-0.180
	[0.386]
CCT Bandwidth	24.612
Observations	305
Districts	61
Year FE	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters pseudo-threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 41: Placebo test reduced-form effects - judicial productivity

Dependent	Log Sentences	Log Sentence per process	Log Sentence per judge	Log Allocated
	(1)	(2)	(3)	(4)
Voters >= cutoff	-1.137	-0.511***	-0.791	-0.626
	[0.848]	[0.197]	[0.535]	[0.905]
Bandwidth	40	40	40	40
Observations	530	530	530	530
Districts	106	106	106	106
Voters >= cutoff	-1.009	-0.233	-0.734	-0.610
	[0.734]	[0.150]	[0.463]	[0.780]
IK Bandwidth	47.986	60.936	48.079	48.648
Observations	645	828	645	650
Districts	129	166	129	130
Voters >= cutoff	-1.566	-0.314	-1.393*	-1.309
	[1.154]	[0.273]	[0.825]	[1.434]
CCT Bandwidth	26.497	20.309	21.502	22.110
Observations	340	245	260	265
Districts	68	49	52	53
Year FE	Y	Y	Y	Y

Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters pseudo-threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 42: Placebo test reduced-form effects - homicide rate

Dependent	Log District homicide rate	Log Seat homicide rate
	(1)	(2)
Voters >= cutoff	0.147	0.096
	[0.344]	[0.357]
Bandwidth	40	40
Observations	530	530
Districts	106	106
Voters >= cutoff	0.144	0.096
	[0.348]	[0.295]
IK Bandwidth	39.658	49.990
Observations	520	660
Districts	104	132
Voters >= cutoff	0.111	0.079
	[0.433]	[0.372]
CCT Bandwidth	30.120	38.436
Observations	405	495
Districts	81	99
Year FE	Y	Y

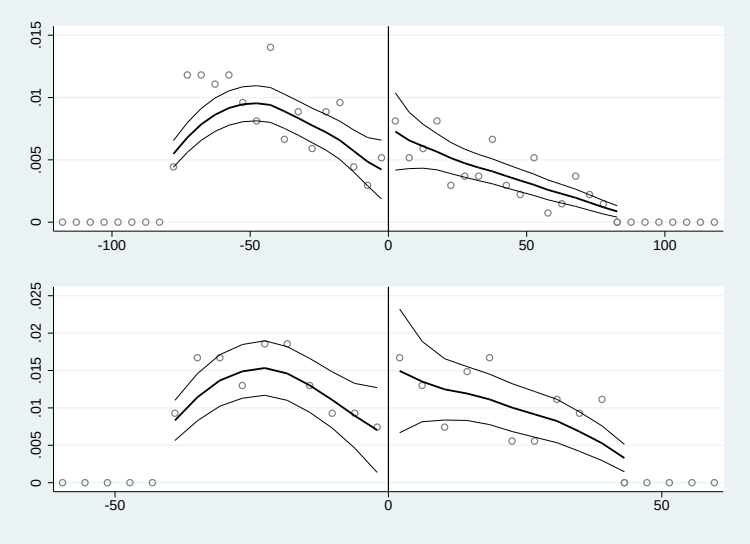
Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters pseudo-threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 43: Placebo test reduced-form effects - mechanisms

Dependent	Log Judges	Log Courts	Log Experience	Log Gender
	(1)	(2)	(3)	(4)
Voters >= cutoff	-0.324	-0.381	-0.509*	-0.141
	[0.387]	[0.355]	[0.305]	[0.088]
Bandwidth	40	40	40	40
Observations	530	530	275	268
Districts	106	106	63	63
Voters >= cutoff	-0.270	-0.303	-0.318	-0.031
	[0.335]	[0.289]	[0.283]	[0.081]
IK Bandwidth	46.920	51.229	51.687	71.336
Observations	615	675	362	635
Districts	123	135	81	141
Voters >= cutoff	-0.310	-0.442	-0.634**	-0.188**
	[0.672]	[0.397]	[0.318]	[0.091]
CCT Bandwidth	22.122	33.876	33.902	20.577
Observations	265	455	222	122
Districts	53	91	52	31
Year FE	Y	Y	Y	Y

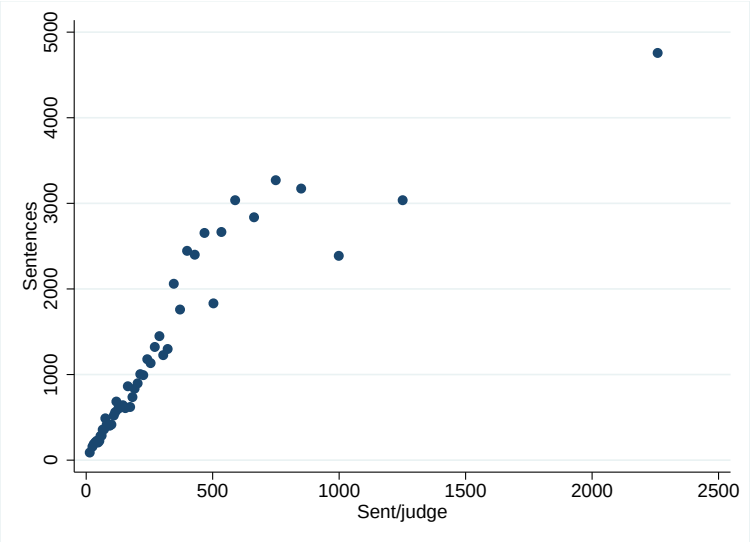
Notes: The set of rows restrict the sample to first and second level districts in which the percentage distance to the voters pseudo-threshold is smaller than 40%, 60%, 80%, Imbens-Kalyanarman (IK) and Calonico-Cattaneo-Titiunik (CCT) optimal bandwidths. Clustered standard errors at district level are in brackets.Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Figure 7: McCrary test - per year



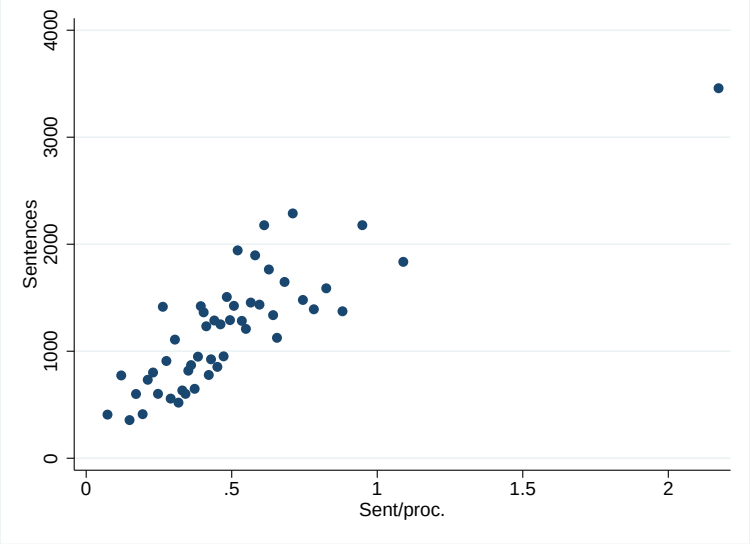
Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80% and 40%. The discontinuity estimates (log difference in height) and standard errors, in parenthesis, are respectively 0.73 (0.43) and 0.93(0.64) . The estimates are identical for the years once the district classification and distance to the threshold are the same for the 5 years.

Figure 8: Relationship between sentences and sentences per judge



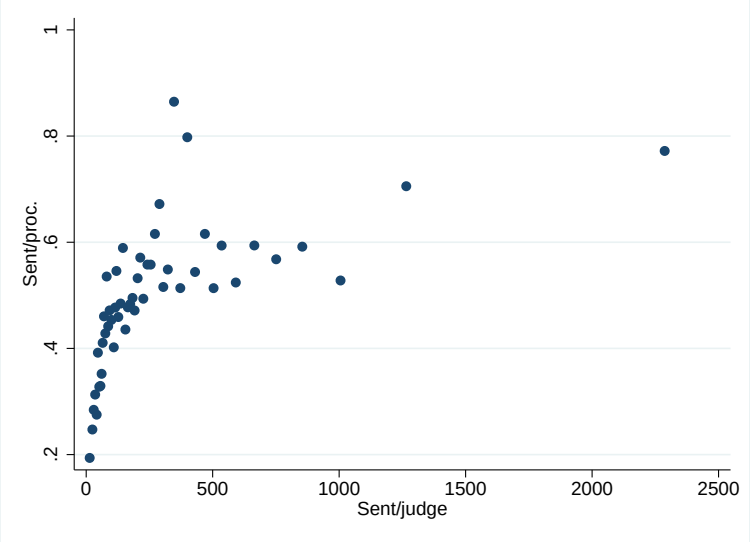
Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Figure 9: Relationship between sentences and sentences per process allocated



Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.

Figure 10: Relationship between sentences per process allocated and sentences per judge



Notes: The sample is restricted to the first and second level districts in which the percentage distance to the threshold is smaller than 80%.