
Saving Democracy: Reducing Gang Influence on Political Elections in El Salvador

Eleno Castro & Randy Kotti

Advisor: Gautam Nair, Section Leader: Rema Hanna

John F. Kennedy School of Government, Harvard University

In fulfilment of the requirements for the Master in Public Administration in International Development

March 12, 2022

Executive Summary

El Salvador is one of the most violent countries in the world, mostly because of gang violence. This paper studies the extent to which gangs affect political elections across El Salvador and hence affect the quality of democracy. Despite the growing body of qualitative evidence suggesting collusion between gangs and political parties in El Salvador, little has been done systematically at the national level. Using police data and voting results, we find that homicides in gang-controlled neighborhoods tend to decrease during electoral seasons along with an increase in electoral participation. These effects are especially significant in the neighborhoods where political parties have a strong voting base. Consistent with the interviews we conducted, this suggests that parties negotiate with gangs to foster electoral participation in the areas where they are more likely to receive electoral support and thus increase their chances of winning. Gangs may also affect elections by forcing political parties to ask permission to get into gang-controlled neighborhoods during campaigns. Also, politicians can agree with gangs to receive gang members' direct votes and their collaboration to mobilize voters. To mitigate the influence of gangs on elections, we recommend organizing staggered municipal elections to increase voters' security and discourage politicians' negotiation through citizens' protection on election day. In addition, we make a series of recommendations to improve the quality of elections and reduce the effects of gangs control: (1) organize electoral campaign days protected by security forces to ensure parties' equitable access to gang-controlled areas, (2) restrict ex-convicts' voting rights for violent crimes to reduce the influence of gang members, (3) increase the number of polling stations and let voters register in the station they prefer, and (4) extend electronic voting to people living in El Salvador (not just the diaspora).

We would like to thank Rema Hanna, Gautam Nair, and Pierre Boyer for their valuable advice throughout this work, and add a mention of appreciation for the special support of Micaela Sviatschi and Carlos Schmidt-Padilla who shared gang and incarceration data with us. We thank the interviewees who dedicated their time to share their experience and knowledge. We are also thankful to our classmates of the MPA/ID class of 2022 for their insightful feedback and support, especially Lucia Schwartz, Isabella Soehn, and Octavio Zunino.

Contents

1	Introduction	3
1.1	Gangs and democracy in El Salvador	3
1.2	Truce and the politicization of gangs	4
1.3	Literature review	6
1.3.1	Criminal groups and political elections	6
1.3.2	El Salvador	7
2	Gangs and political elections: mechanisms of action	9
2.1	Crime and voter preferences	9
2.2	Newspapers and official investigations	10
2.3	Qualitative evidence	12
3	Data	14
3.1	Electoral results	14
3.1.1	Municipality level	14
3.1.2	Voting-center level	14
3.2	Criminality data	15
3.2.1	Registry of the National Civil Police	15
3.2.2	General Directorate of Prisons	15
3.2.3	Gang-controlled areas in San Salvador	15
4	Methodology	16
4.1	Identifying gang-controlled municipalities	16
4.1.1	Gang-related homicides	16
4.1.2	The 2012 truce: an exogenous shock revealing gang control	16
4.1.3	Gang-control and truce: validity check	17
4.1.4	Alternative measures of gang presence and gang heterogeneity	18

4.2 Regression models	19
4.2.1 Two Way Fixed Effect Estimations	19
4.2.2 Geographic Regression Discontinuity	20
5 Quantitative Results	22
5.1 Party preferences in gang-controlled areas	22
5.2 Buying peace: gang criminality during electoral seasons	23
5.3 Crime reduction and participation increase	27
5.4 Low competition neighborhoods: increasing favorable turnover	30
5.5 Geographic regression discontinuity	34
6 Policy challenges	37
6.1 Summary of mechanisms	37
6.2 Changing the rules of the game	37
6.3 Risks and unknowns	38
7 Recommendations	39
7.1 Main recommendation: staggered municipal elections	39
7.2 Suggestions for implementation	40
7.2.1 Allocation of security in the elections	42
7.2.2 Costs	43
7.3 Other recommendations	44
7.3.1 Electoral Campaign Day	45
7.3.2 Restrict voting from people with criminal records	46
7.3.3 Create new polling stations and let voters chose where they register .	47
7.3.4 Electronic voting	48
8 References	49
Appendices	52

1 Introduction

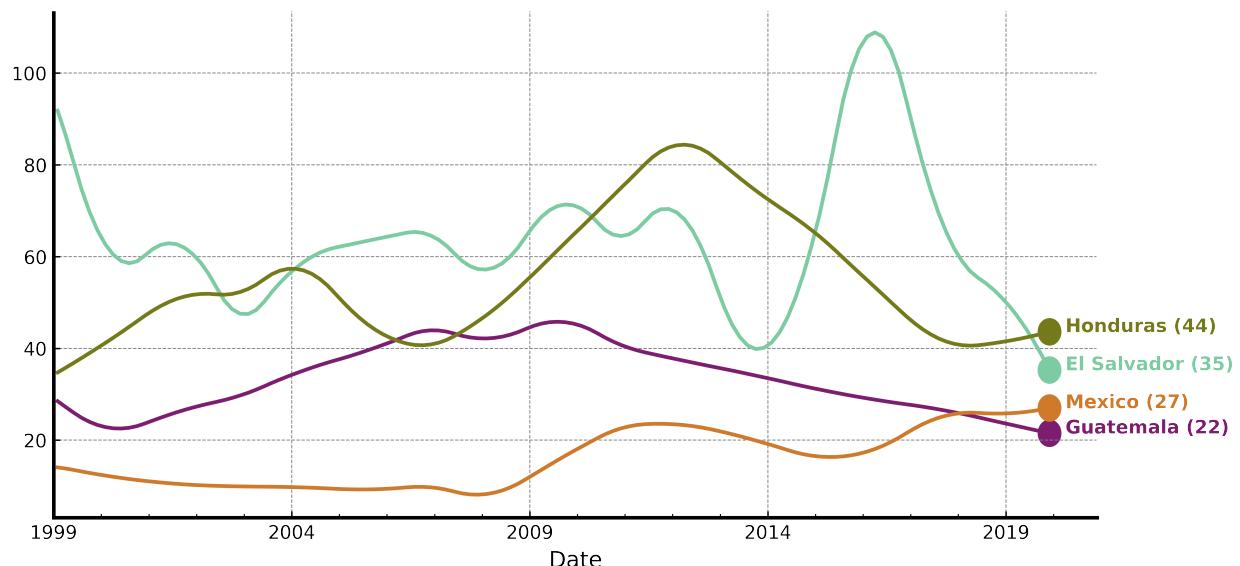
1.1 Gangs and democracy in El Salvador

Criminal structures in El Salvador influence the country's democratic processes, affecting the electoral results of the neighborhoods they control, which endangers democracy and affects the development of institutions in the country. El Salvador is one of the most violent countries in Latin American (Figure 1). In 2015, the country reached a maximum peak that exceeded 100 homicides per 100,000 inhabitants, five times higher than the average for Latin America. According to data from the National Police, a third of homicides are due to gangs. According to different authors, the economic costs as a percentage of GDP ranged between 6.5% and 16% (Jaitman et al., 2017; Peñate et al., 2016). The gangs are mainly responsible for the high level of crime.

However, the influence of gangs on political elections has barely been studied at the national level, and neither has it been addressed as a public policy problem. This paper is addressed to local think tanks, such as FUSADES, interested in improving institutions, democracy, and the socio-economic situation in El Salvador. Our goal is to raise public awareness by uncovering the mechanisms enabling parties to collude with gangs at a more systematic level. We focus on criminality patterns in gang-controlled areas, and how these affect electoral participation and parties' electoral outcomes.

The main gangs in El Salvador are Mara 18 and MS-13, formed by Latin American migrants in Los Angeles. The gangs arose in poor neighborhoods with high rates of violence. During 1996, the US Illegal Immigration Responsibility Act substantially increased the number of deportations of these groups. Between 1998 and 2010, approximately 300,000 people with crime reports were deported to Central America. The massive deportations produced the spread of these criminal groups throughout Central America, with El Salvador being one of the most affected countries (Sviatschi, 2020). There are currently 100,000 gang members in Central America.

Figure 1: International homicide rate (per 100,000 people)



Source: Own elaboration based on data from the World Bank and InsightCrime

Gangs can jeopardize the democratic institutions that the country has built. El Salvador has managed to consolidate democracy after the civil war that ended in 1992. After the conflict, a two-party system was consolidated: the left-wing, the FMLN party, and the right-wing, the ARENA party. A new party, Nuevas Ideas, was created in the center-right in 2017 and won the most recent elections. According to Freedom House, the country was considered democratically free until 2019 (currently it is considered partially free), contrary to neighboring countries such as Nicaragua, Guatemala, and Honduras and even surpassing other countries with better economic development such as Mexico, Ecuador, and Colombia in the index.

1.2 Truce and the politicization of gangs

In 2012, the government facilitated a highly criticized truce dialogue between the main gang leaders in prisons. Journalistic investigations claim that the government offered better conditions in the jails and less repression by the police in exchange to incen-

tivize gang leaders to strike a truce among themselves. The truce became effective after the March 2012 elections and led to a 48% decrease in murders within a month. Despite the significant drop, the public opinion remained mostly opposed to the truce. The government was blamed for giving political legitimacy to the gangs by engaging with them and indirectly reinforcing gangs' control over some territories by reducing police enforcement. Although murders reduced, petty crimes, extortions, and drug trafficking kept increasing (Lohmuller, 2015).

The truce was abandoned starting 2014 after the victory of the FMLN at the presidential elections. In 2014, Salvador Sánchez Cerén from the left-wing party FMLN won the presidential elections by 6,364 votes only. Shortly after his election, his administration started backing up from the 2012 truce. Gang leaders were transferred again to maximum security prisons in January 2015, battalions of Special Forces were deployed in May 2015 to combat the gangs, and in August 2015, the two main gangs in El Salvador were declared "terrorist groups" by the Supreme Court. Criminality reached a new peak, with about 110 murders per 100,000 inhabitants reported in 2015, almost 1.5 times higher than pre-truce levels.

Despite the country's substantial democratic advances, politics has been implicated with gangs on multiple occasions, especially after the truce. Before the 2014 elections, a newspaper launched an investigation accusing political leaders of buying votes from gang leaders. Recently, two former mayors of San Salvador from the right-wing party were presented with arrest warrants for alleged negotiations with gangs. Freedom House also reports that gangs try to affect voters' behavior.

The truce consolidated the gangs' political agenda. In 2015, the two main gangs in El Salvador released a joint statement claiming that they would be open to negotiating a truce with the government (Reuters, 2015). In 2021, investigations by the U.S. Department of the Treasury (2021) indicate that the Government of Nayib Bukele (Nuevas Ideas) has held negotiations with gangs to win elections. In other words, the truce shifted the conflict from gang rivalry to politically motivated violence.

1.3 Literature review

1.3.1 Criminal groups and political elections

The ability for organized groups to sway political elections and policies by instrumenting violence has been demonstrated in many contexts across the literature. Dal Bó and Di Tella (2003) built a model within which "nasty" groups can harass policymakers into implementing policies that benefit their interests instead of society's. Building on these findings, Dal Bó and Di Tella (2006, 2007), show how a combination of money incentives ("plata") and punishments ("plomo") can reduce the quality of policymakers and increase corruption in weak judiciary systems.

In the south of Italy, Mafia violence appears to be the continuation of politics by other means. Consistent with Dal Bó and Di Tella (2003), Daniele and Dipoppa (2017) rely on media data to show that violence against local politicians increase in high organized crime regions mostly after elections, not before, especially when there is a change in local government. This suggests that mafia groups target newly elected politicians at the beginning of their mandate. Still in the context of Italy, Pinotti (2012) and Alesina, Piccolo and Pinotti (2019) find on the contrary that violence against politicians increase before national elections in those regions where organized crime exerts high influence. Political competition is also reduced and pre-election periods are even more violent when the outcome of an election is uncertain. This tends to prove that Mafia groups focus their action primarily before elections by deterring inconvenient politicians from running for office in the first place.

In Brazil, not only does organized crime stifle political competition, it also artificially increases participation from a coerced margin of the population. Bullock (2021) conducted interviews and analyzed blog posts to identify the effect of criminal dominance in favelas on local elections. She found that politicians may strike alliances with criminal groups, who will tilt the elections in their favors through two mechanisms: mobilizing voters they control (corralling) and preventing rival candidates from campaigning (gatekeeping). In areas controlled by organized crime, this translates into higher coerced par-

ticipation and lower political competition. Blattman (2009) has also found that in Uganda greater exposure to violence increases electoral participation, although the mechanisms are quite different. He points out that traumatic effects could boost personal growth and foster political activity. Bateson (2012) found that these results can be generalized to different geographic context, especially in Latin America.

1.3.2 El Salvador

More specific to El Salvador, gangs negatively affect the socio-economic outcomes of the areas they control. Melnikov, Schmidt-Padilla and Sviatschi (2020) show that households in gang neighborhoods are seriously affected by gang influence on a broad range of socio-economic indicators: income, education, and housing quality. The gangs impose their own rules and limit the freedom of residents. These differences did not exist before the consolidation of gangs in those areas. Other papers have also pointed out that gangs affect electoral and non-electoral political participation (Córdova, 2019) and that they could diminish the effect of policies that aim to increase electoral participation, such as voting closer to home (Baires, Sviatschi and Vargas, 2019).

In this paper, we focus specifically on the influence of gangs on electoral elections in El Salvador. We first identify gang-controlled neighborhoods by using the truce as an exogenous shock. In line with Alesina, Piccolo and Pinotti (2019) and Daniele and Dipoppa (2017), we rely on Two-Way Fixed Effect estimations at the voting center level to study criminality in gang-controlled neighborhoods during elections. We find that homicides in these neighborhoods tend to decrease during electoral seasons along with an increase in electoral participation. These effects are especially significant in the neighborhoods where political parties have a strong voting base. Consistent with the interviews we conducted, this suggests that parties negotiate with gangs to foster electoral participation in the areas where they are more likely to receive electoral support and increase their chances of winning. The people mobilization is limited in areas with no clear electoral preferences among most voters.

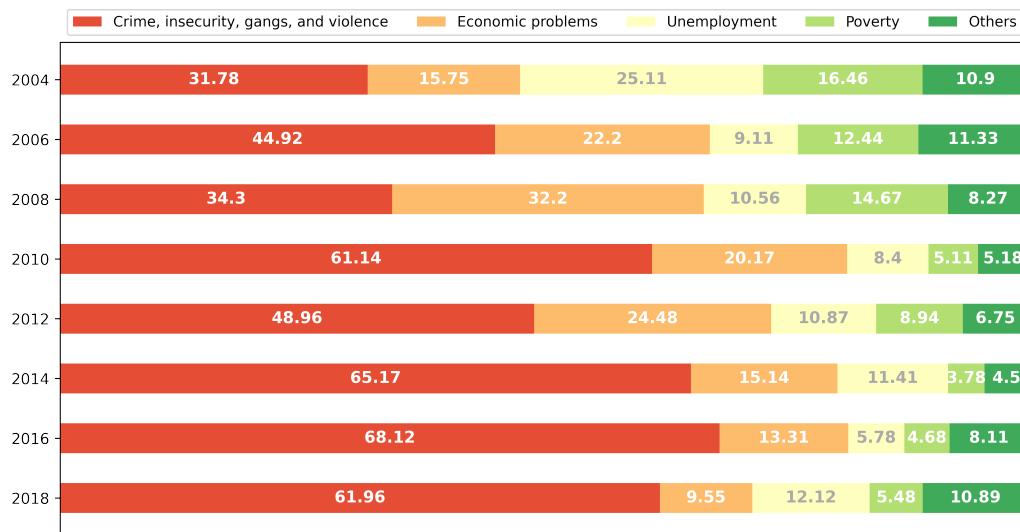
Based on this analysis, we explore several avenues to mitigate the influence of gangs on the electoral process in El Salvador: We recommend organizing staggered municipal elections to increase voters' security to discourage politicians' negotiation through citizens' protection on election day. In addition, we make a series of recommendations to improve the quality of elections and reduce the effects of gangs control: (1) organize electoral campaign days protected by security forces to ensure parties' equitable access to gang-controlled areas, (2) restrict ex-convicts' voting rights for violent crimes to reduce the influence of gang members, (3) increase the number of polling stations and let voters register in the station they prefer, and (4) extend electronic voting to people in the interior of the country.

2 Gangs and political elections: mechanisms of action

2.1 Crime and voter preferences

According to *The AmericasBarometer by the Latin American Public Opinion Project (LAPOP)* (2004 - 2018), since 2004, Salvadorans consistently report that the most severe problem in the country is crime, insecurity, gangs, and violence. This concern has increased since 2004, from 32% to 62% in 2018. Crime and insecurity seem to have remained the main problem for the country, even in times of economic recession. Hence, voters will tend to favor politicians who are able to reduce criminality (see Figure 2)

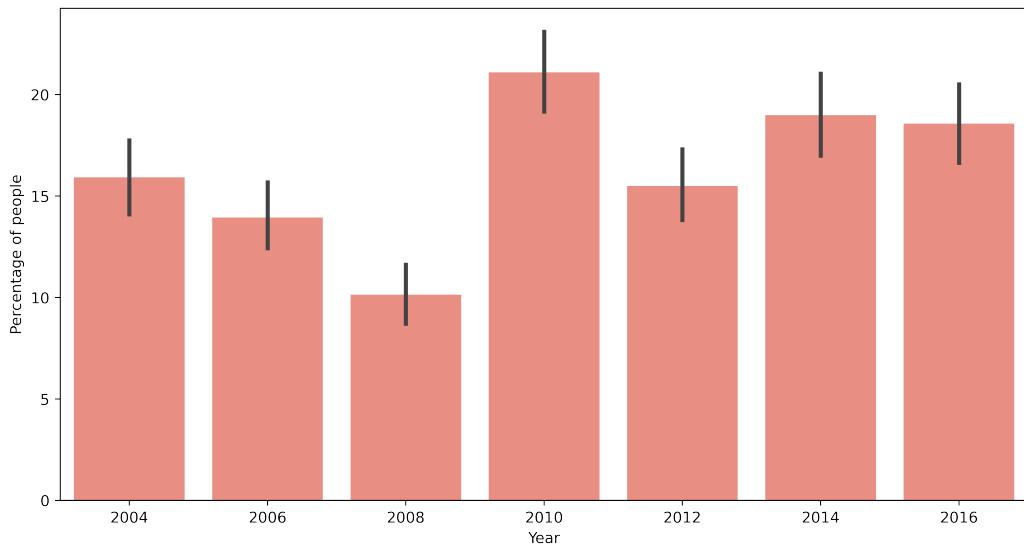
Figure 2: Voters' main concerns in El Salvador



Source: The AmericasBarometer by the Latin American Public Opinion Project (LAPOP). 1,500 Salvadorans participate in the survey each year. The surveys are nationally representative.

On the other hand, since 2010, between 15 and 20% of Salvadorans have reported living in a neighborhood seriously affected by gangs. This share increased between 2012 and 2014, during the truce when homicides decreased. Although the increase is not significant, it could indicate that the gangs maintained or even strengthened their control during the truce (see Figure 3).

Figure 3: People living in Gang Areas



Source: The AmericasBarometer by the Latin American Public Opinion Project (LAPOP).

2.2 Newspapers and official investigations

Given that crime remains the primary concern of Salvadoran voters, secretly negotiating with gangs to reduce homicides, probably the most high profile crimes, could be an effective strategy to attract voters. In 2012 indeed, the Government of El Salvador secretly facilitated a truce process between gang leaders. The truce was highly effective in reducing the high homicide rates: in just one month, homicides fell by 48%, an unprecedented drop in the country's recent history. In return, the Government agreed to improve prison conditions for gang leaders and reduced police control in some areas. The truce made it possible to recognize the gangs and legitimize power in their territories (Lohmuller, 2015).

The truce also proved to politicians that dialogue with gangs can be a solution to the high levels of criminality in the country. After the truce, in 2014, the former mayors of San Salvador, Norman Quijano and Ernesto Muñoz, were accused of negotiating electoral favors with gang leaders (*Avanza causa penal contra políticos por pacto con pandillas en El Salvador*, 2020; Caceres, 2020). According to journalists from *El Faro*, former Mayor Norma

Quijano offered to eliminate the anti-gang law and reduce police control in certain areas in exchange for support in the 2014 presidential elections.

According to journalistic investigations, Martinez (2020) and Roberto Valencia (interviewed), the actual number of negotiations between gangs and political leaders remains unknown. Using videos and audio leaks by gang members, journalist have been able to reveal many negotiations between politicians and gangs. In 2016, the leader of the Barrio 18 gang assured that all the parties engaged negotiations with gangs (Martinez, 2016) for the 2014 presidential election. This was also confirmed by the former mayor of San Salvador Ernesto Muyschondt in public statements (Labrador and Martinez, 2016).

More recently, the U.S. Department of the Treasury (2021) revealed that Osiris Luna, Vice Minister of Justice of the Nayib Bukele Government, had held secret negotiations with MS-13 and Barrio 18 gang leaders. According to the Treasury, in 2020, the Government offered financial incentives for the gangs to keep the number of homicides low and support the Nuevas Ideas party in the legislative and municipal elections of 2021. In addition, the Government of El Salvador offered special privileges to leaders in prisons such as cell phones and prostitutes. This is not the first time that members of the Nuevas Ideas party have been accused of negotiating with gangs. Martinez (2018) revealed that in 2015, delegates from Nayib Bukele offered money to gang leaders not to disturb his candidacy.

Candidates also seem to be interested in the vote of gang members themselves. The exact number of gang members is currently unknown, but some estimates points toward 60,000 members and 500,000 support base (relatives and collaborators), which would represent 8% of the population of El Salvador (Zaidi, 2019; Raderstorf and Meléndez Sánchez, 2015; International Crisis Group, 2017). This number is significant, especially when considering that there was only 6,000 votes separating the winner from the defeated candidate at the 2014 presidential election.

2.3 Qualitative evidence

To complement these reports, we conducted interviews with two journalists, one campaign manager, one former congressmen, two academics, and one member of the Supreme Electoral Tribunal (SET). From these discussions, we understand that gangs seem to affect electoral results through (1) voters' preferences and (2) electoral participation. The following is based on what our interviewees have experienced or observed themselves on the field. This enables us to formulate hypotheses that we test quantitatively in the next section. The interviewees will remain anonymous.

(1) Voters' preferences

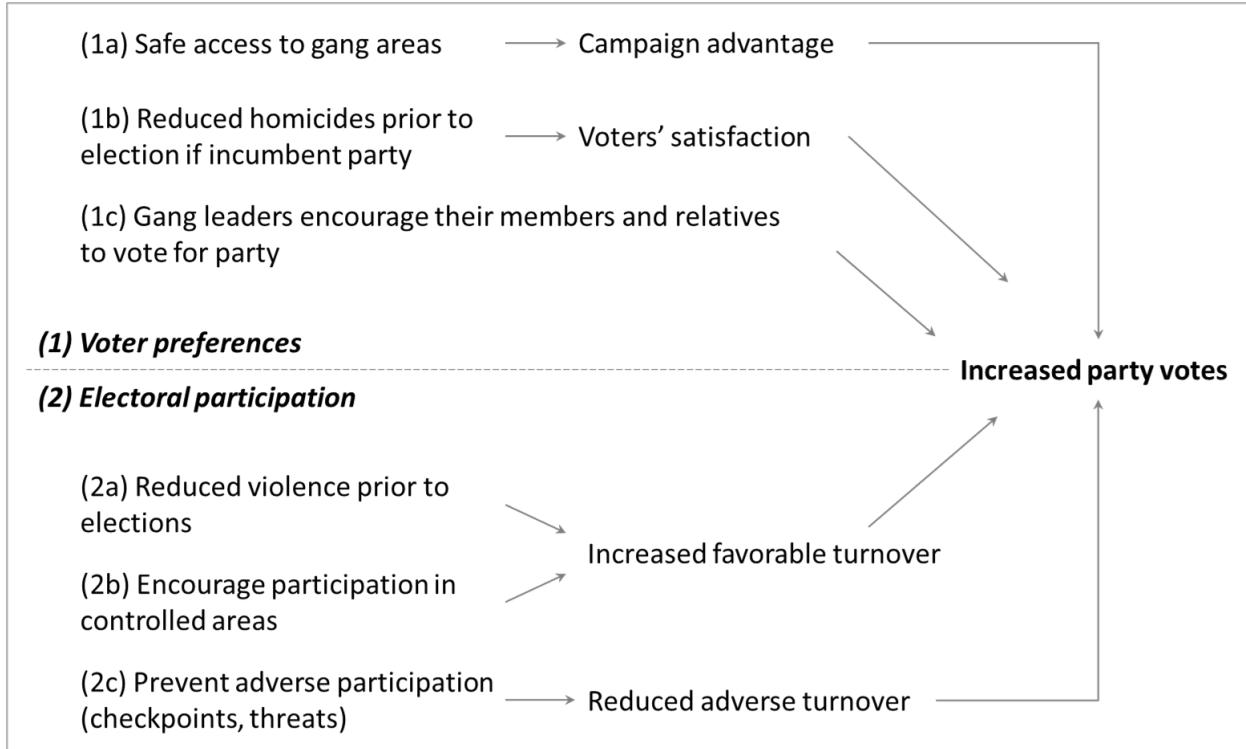
- (a) Incumbent candidates can ask gang leaders to reduce homicides prior to the elections to improve the perception that voters' have of them.
- (b) Gangs can prevent specific parties to campaign within the neighborhoods they control. Politicians need to negotiate safe access.
- (c) Gang leaders usually offer their members' votes to the candidates in exchange for several advantages (cash, in-kind favors, reduced police enforcement). Gangs can also ask their relatives to support a specific party.

(2) Electoral participation

- (a) Gangs can increase violence prior to the elections to prevent people from voting. Conversely, they can also reduce violence to make people feel safer to vote.
- (b) Gang members may be collecting identity cards prior to the elections to prevent certain people from voting. They can also announce that they will check hands to verify that these people did not go to vote (voting centers mark voters' hands with ink to prevent multiple voting).
- (c) Gang members could prevent the movement of people on election day to the polling stations (using checkpoints for instance).

These mechanisms are also summarised below on Figure 4.

Figure 4: Gangs and political elections: potential mechanisms of action



3 Data

Table 1 below summarises the data sources we use in this paper.

Table 1: Data Summary

Source	Description	Geographic Unit	Time Span
Electoral Supreme Court	Electoral results	262 municipalities	1994 - 2019
Electoral Supreme Court	Electoral results	1500 voting centers	2012 - 2019
National Civil Police	Daily murders	262 municipalities	2005 - 2019
National Civil Police	Daily murders	1500 voting centers	2011 - 2019
Newspapers and National Police	Gang-controlled areas	Neighborhood	2014 & 2018
General Directorate of Prisons	Convicts' data	Neighborhood	2000 - 2020

3.1 Electoral results

3.1.1 Municipality level

To analyze the elections, we use municipal level results for the number of votes cast for each party. Based on these data, we created different measures of political outcome, such as electoral participation, votes for left and right parties, and whether incumbent parties stay in power. We also computed competitiveness indicators (see Appendix A). The data available includes all municipalities in El Salvador (262 units) and covers elections from 1994 to 2019.

3.1.2 Voting-center level

As a complement to the election results at the municipal level, we also use the electoral results for each voting center within El Salvador from 2012 to 2019 (1500 units per year, with their geographic locations and associated areas). This data allows us to create the similar indicators as those mentioned above at a more granular level.

3.2 Criminality data

3.2.1 Registry of the National Civil Police

We measure criminality based on the homicides reported at the municipal level in the daily registry of the National Civil Police (NPC). From this registry, the homicide rates are calculated at the municipal level for specific periods (weeks); non-culpable homicides have been excluded from this rate. The database was cross-verified with other sources of information such as the health system homicide data.

To match the homicide data with the voting centers, we counted the number of homicides that occurred within the neighborhoods (polygons) that must vote in each voting center. We georeferenced a database of homicides since 2011 at the neighborhood level from the address text. We obtained a database of all the neighborhoods in El Salvador and their coordinates from the General Directorate of Statistics and Census. We couldn't use google to georeference the addresses since many of the areas aren't found on the website.

3.2.2 General Directorate of Prisons

To validate and complement the analysis of the presence of gangs, we use data from the prisons. This data enables us to identify the main neighborhoods where convicted gang members lived before going to prison. We use the same methodology that we use for homicides to georeference the addresses of this base.

3.2.3 Gang-controlled areas in San Salvador

We obtained the controlled areas of the city of San Salvador and other surrounding municipalities for the years 2014 and 2018. In 2014, the digital newspaper El Faro published the area of some gang-controlled neighborhoods in San Salvador, the capital city of El Salvador. The 2018 maps were created from reports from the National Civil Police. This data was used to run regression discontinuities by crossing gang-controlled areas and voting center locations.

4 Methodology

4.1 Identifying gang-controlled municipalities

4.1.1 Gang-related homicides

Along with the homicides and their approximate location, the daily registry of homicides made available by the National Police also reports victims' occupations. Based on this, we identified gang-related murders by looking for victims either directly categorized as gang members or involved in extortion and drug trafficking. We also included murders committed against the police as markers of gang violence.

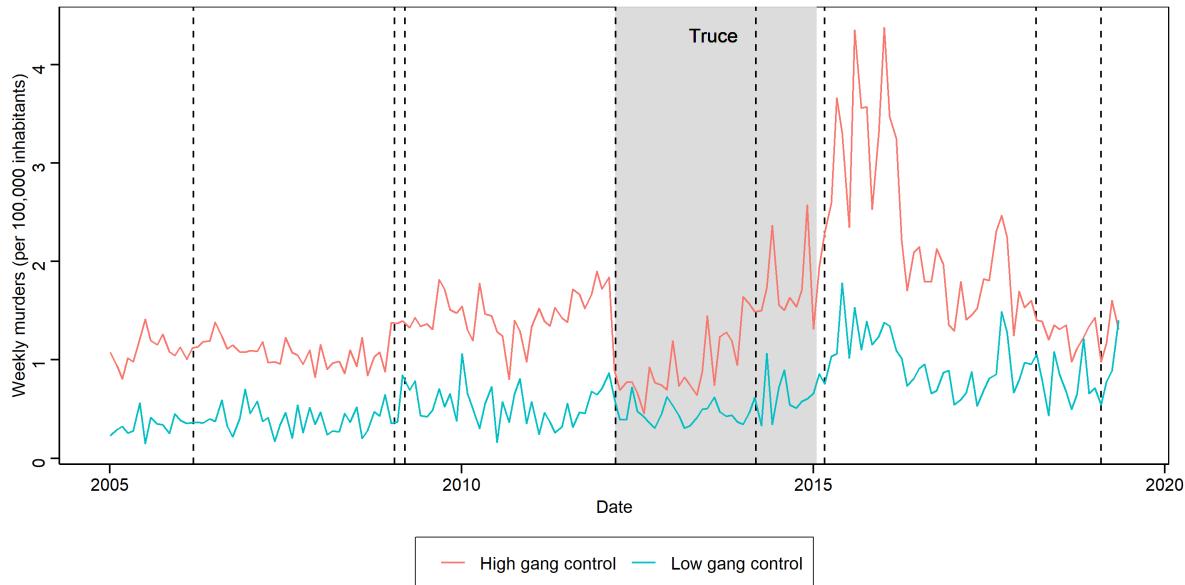
This measure of gang violence may present two problems. First, gang-related murders reported by the police may be a sign of gang weakness rather than gang control. In the municipalities where gangs wield enough influence, they might be able to act so that the homicides they commit don't get linked to them, or don't get reported altogether. High gang violence could also be the result of gangs struggling to keep their power over certain localities. Second, gang-related homicides are strongly correlated with the measure of homicides in general (correlation at .51). This poses endogeneity concerns when it comes to analyzing criminality in gang-controlled areas as measured through gang-related criminality.

4.1.2 The 2012 truce: an exogenous shock revealing gang control

To mitigate these identification concerns, we consider the variation in criminality brought by the 2012 truce. The government and gangs endeavoured to keep the negotiation process secret as long as they could. Gangs agreed to split some territories and committed to reducing violence. In exchange, the government conceded a reduction in police violence and economic stimuli for some designated localities (Lohmuller, 2015). As soon as the agreement was reached on March 9, 2012, national gang leaders, most of them from prisons, sent orders to their members. This led to a sudden and exogenous variation in criminality,

especially so in locations where gangs had an influence (see Figure 5).

Figure 5: Murder rate evolution: gang-controlled areas compared to non-gang-controlled areas



Source: own elaboration based on police data (PNC) at the municipality level.

This exogenous shock in criminality enables us to identify the municipalities and voting centers where gangs had control in 2012. More specifically, we define gang-controlled locations as those where the relative decrease in murder rates, measured over a one-year period before and after the truce, was above the median.

4.1.3 Gang-control and truce: validity check

To verify the relevance of our indicator of gang-control, we associated the decrease in criminality induced by the truce in 2012 with the number of gang-related murders before the truce since 2005 at the municipal level. Results are reported in Table 2.

All estimates are positive and statistically significant, meaning that the municipalities where the criminality rate reduced the most following the truce are also those municipalities where gang-related murders were high before the truce. This correlation holds both looking at

short-term (column (1)) and longer-term trends (columns (2) and (3)).

These results tend to validate the two hypotheses that, first, the variation in criminality during the truce reveals gang-control at the time of the truce; second, that gang-related murders signify more the presence of gangs than their weakness.

Table 2: Criminality Reduction at the Truce and Gang-Related Murders in El Salvador

	Dependent variable		
	Gang-Related Murder Rate (2005-2012)		
	(1)	(2)	(3)
6-month decrease in crime at the truce	2.021*		
	(1.139)		
1-year decrease in crime at the truce		2.848***	
		(.703)	
2-year decrease in crime at the truce			3.217***
			(.780)
Observations	197	212	228
R ²	.010	.040	.046
Adjusted R ²	.005	.035	.042

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between gang-related criminality prior to the truce (between 2005 and 2012) and the variation in murder rates due to the truce in 2012, measured over a 6-month, 1-year and 2-year window.

4.1.4 Alternative measures of gang presence and gang heterogeneity

Using the data we georeferenced based on the General Directorate of Prisons, we are able to identify the neighborhoods where gang members were sent to jail. This provides another metric of gang-presence that we use for robustness: neighborhoods where the number of convicted gang-members is above median.

We were also able to identify 29 gang leaders and their neighborhoods of origin among

convicted gang members. We use this as a last robustness metric of gang-control: neighborhoods where at least one gang leader was living before being convicted.

Prior to the truce, gang members used to be incarcerated in different penitentiaries based on their gang affiliation (Barrio-18 or MS-13) to avoid bringing gang wars from the streets to the prisons. For this purpose, gang affiliation was systematically gathered in the data, which allows us to distinguish neighborhoods with a higher MS-13 or Barrio-18 control.

4.2 Regression models

4.2.1 Two Way Fixed Effect Estimations

Our main estimation rely on a Two Way Fixed Effects strategy at the voting center level where we use cumulatively year (v_t), week (w_t), and voting center (f_n) fixed effects. This allows us to identify variations in criminality independently from the expected level of criminality at a given time in a given place and better isolate the effect of electoral seasons and gang-control.

$$\begin{aligned} \text{Murder Rate}_{n,t} = & \alpha \text{ Electoral Season}_t \\ & + \beta \text{ Electoral Season}_t \times \text{Gang Control}_n \\ & + \gamma v_t + \sigma w_t + \tau f_n + \epsilon_{n,t} \end{aligned} \tag{1}$$

In the estimation above, the term Gang Control_n alone is absorbed in the voting center fixed effect f_n . We also extend Equation 1 to identify the patterns of criminality during electoral seasons in gang-controlled neighborhoods where political competition is low (meaning that a given party has a strong base). To prevent endogeneous results, we measure political competition as given by the 2012 election, which is outside of our sample time-span at the voting center level.

$$\begin{aligned}
\text{Murder Rate}_{n,t} = & \alpha \text{ Electoral Season}_t \\
& + \delta \text{ Electoral Season}_t \times \text{ Low Competition}_n \\
& + \beta \text{ Electoral Season}_t \times \text{ Gang Control}_n \\
& + \psi \text{ Electoral Season}_t \times \text{ Gang Control}_n \times \text{ Low Competition}_n \\
& + \gamma v_t + \sigma w_t + \tau f_n + \epsilon_{n,t}
\end{aligned} \tag{2}$$

For robustness check, we also use a more complex model where we define Low Competition dynamically in time by looking at competition during the preceding election.

In order to identify the distinctive effect of gang-control on outcomes such as political participation and specific parties' vote shares ($Y_{n,t}$), we use a variation of Equation 1, where the voting center fixed effect becomes a municipality fixed effect \tilde{f}_m :

$$Y_{n,t} = \alpha \text{ Gang Control}_n + \gamma y_t + \sigma w_t + \tau \tilde{f}_m + \epsilon_{n,t} \tag{3}$$

This estimation allows us to identify the specific effect of gang-control while controlling for location confounders at the municipality level. This does not allow for a proper inference but should at least eliminate a significant fraction of the omitted bias. Similarly as before, we use a variation of Equation 3 allowing for an heterogeneous effect in Low Competition neighborhoods.

For all estimations, we use robust standard errors clustered either at the voting center or the municipality level where appropriate.

4.2.2 Geographic Regression Discontinuity

We use the maps of the areas controlled by gangs in 2014 and 2018 in San Salvador to identify whether the fact that voters have to vote in a gang-controlled area affects political outcomes at the voting center level. We use the same geographic regression discontinuity

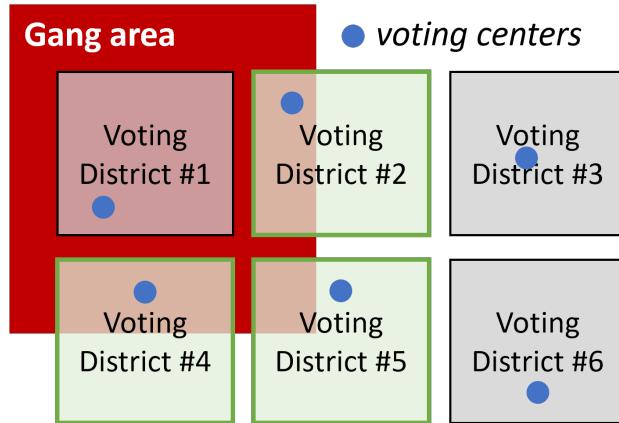
framework as Melnikov, Schmidt-Padilla and Sviatschi (2020).

$$Y_n = \alpha + \beta \mathbb{1}[\text{DistanceToGang} > 0]_n + \delta \text{DistanceToGang}_n \\ + \rho \text{DistanceToGang}_n \times \mathbb{1}[\text{DistanceToGang} > 0]_n + \epsilon_n \quad (4)$$

The independent variable belongs to the range of electoral outcomes such as participation, parties' vote share, and political competition indicators outlined in Appendix A (gap between the first and second most voted party, Herfindahl–Hirschman index, Political Competition index). The Calonico et al. (2017) model was used to identify the optimal bandwidth in each regression, with a degree of polynomial 2 and with a triangular kernel. Other variations were considered to strengthen the analysis.

We focus more specifically on voting areas that overlap with gang-controlled territories, without being fully inside these territories (e.g., voting centers #2, #4, and #5 on Figure 6, but not voting center #1). This enables us to pool together voters who live inside gang territories, and may have specific characteristics and preferences, with voters living outside of gang-controlled areas. By doing so, we can isolate the effect of voting centers being inside gang-controlled areas.¹

Figure 6: Qualifying Voting Centers in the Regression Discontinuity Design



¹We are not able to display the detailed maps of gang-control for confidentiality reasons.

5 Quantitative Results

5.1 Party preferences in gang-controlled areas

Findings

Electoral results in gang-controlled neighborhoods are consistent with the investigation reporting collusion between political parties and gangs. In these neighborhoods, voters favored FMLN (left wing party) in 2014 and 2018 before changing their support in 2019. They also voted against ARENA (right wing party) in 2014, 2018, and 2019. In gang-controlled neighborhoods, gangs and voters' preferences are aligned. This encourages us to assess whether gangs have a direct influence on voters.

Whether gang leaders only encourage their members and relatives to vote for a given party, or if they directly coerce voters, we expect to observe a difference in voting patterns in gang-controlled areas. To verify this, we relate the impact of gang-control at the voting center level on FMLN and ARENA's vote shares and control for municipality fixed effects (see Equation 3). Each municipality encompasses on average 6 voting centers. Given that gangs' support for specific parties has changed overtime, we considered the different elections separately.

The results are reported in Table 3. We observe that gang-controlled areas have voted significantly more for FMLN (left wing) in 2014 (column (1)) and against in 2019 (column (3)). Areas under gang influence have voted consistently against ARENA (right wing) across the period (columns (4) to (6)). The direction of the estimates is consistent with the claims that FMLN managed to outbid ARENA for gang support in 2014 and that Nayib Bukele's Nuevas Ideas party relied on gangs for the 2019 election against both FMLN and ARENA (see section 2.2).

The magnitude of the effects is rather large, between 0.9 and 2.5 percentage points, especially considering that FMLN won the 2014 election by 6,000 votes only. Appendix D shows that these results are consistent using alternative measures of gang-control. Even descrip-

tive, these results support the broader hypothesis that gang influence may affect electoral results in some ways, whether legally or not. In the next sections, we verify some of the mechanisms that could explain this.

Table 3: Party Preferences in Gang-Controlled Areas

	Dependent variable					
	FMLN (2014)	FMLN (2018)	FMLN (2019)	ARENA (2014)	ARENA (2018)	ARENA (2019)
	(1)	(2)	(3)	(4)	(5)	(6)
Gang-Control	1.518** (.666)	.906 (.692)	-1.369** (.604)	-1.277** (.624)	-.985 (.648)	-2.508*** (.594)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations Mean	48.7	28	17.8	43.9	39.6	29.4
Observations	2,854	1,428	1,422	2,854	1,428	1,422
R ²	.475	.764	.663	.366	.763	.486
Adjusted R ²	.425	.715	.592	.307	.714	.378

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between gang control and party specific votes in the 2014, 2018, and 2019 elections at the voting center level. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. We added municipality fixed effects and clustered the standard errors by municipality.

5.2 Buying peace: gang criminality during electoral seasons

Findings

During electoral seasons, specifically in gang-controlled areas, homicides and gang-related homicides decrease. The effect is particularly strong in the two months leading to an election and the month after. This is consistent with the hypothesis that political parties must negotiate safe access to gang-controlled neighborhoods.

The first step to assess gang influence on political elections is to study criminality patterns during electoral seasons. For this, we use the Two Way Fixed Effect estimation described in section 4.2.1 (Equation 1). We relate the weekly murder rate per 100,000 inhabitants to an indicator variable equal to 1 during electoral seasons. We define electoral seasons as the period starting 3 months prior to the elections and ending 3 months after, 3 months being the typical campaign duration in El Salvador. We also verify the robustness of our results using different time windows (see Appendix C).

We excluded the 2012 and 2015 elections from this analysis to ensure that our estimates would not be biased by the particular events that unravelled these years. Indeed, the 2012 truce was struck three days before the elections and mechanically led to a strong reduction in criminality. Conversely, the FMLN government announced drastic measures against gangs two weeks before the 2015 elections, including the return to maximum security prisons for gang leaders and the deployment of special forces in gang areas. This was effectively the end of the truce, and the beginning of a new era of high crime (see Figure 5).

Table 4 reports the results we obtained following this specification. Columns (1) and (2) show that homicides tend to increase both before and after elections across El Salvador. In gang-controlled areas however, the homicide rate significantly reduces when compared to non gang-controlled areas (column (3)) by about 0.27 mean. We observe a similar pattern for gang-related murders (column (4)) with a differential decrease of about 0.41 mean. These rather large reduction in criminality in gang-controlled areas confirms the hypothesis that gangs use peace rather than violence itself to weigh on political elections in El Salvador.

Table 5 reports the same analysis conducted with our alternative measures of gang-control: neighborhoods with a high number of convicted gang members (High-Prisoners), and gang leaders' neighborhoods of origin (Gang-Leaders). We observe similar results: criminality reduces in gang-controlled areas during elections. We also introduced gang-heterogeneity (columns (4) and (5)) and observe that this reduction in criminality is particularly significant in neighborhoods controlled by MS-13, less so in neighborhoods controlled by B-18. MS-13's leadership is known to have a tighter control on its members (Lohmuller, 2015) as compared to B-18 which suffers more internal divisions. Hence, MS-13 could be better positioned to negotiate agreements with parties themselves, especially during national elections.

Figure 7 plots the differential effect of gang-control on criminality over time during electoral seasons. The reduction in criminality during electoral seasons in gang-controlled areas seems particularly strong in the 2 months preceding and the month following an election.

Table 4: Criminality in Gang-Controlled Areas during Electoral Seasons

	Dependent variable			
	Homicide Rate (per 100,000 inhabitants)			Gang-Related
	(1)	(2)	(3)	(4)
Electoral Season	.209*** (.060)			
Before Election		.270*** (.068)	.437*** (.088)	.193*** (.049)
After Election		.120 (.081)	.304*** (.103)	.123** (.057)
Before Election × Gang-Control			−.347*** (.107)	−.107* (.056)
After Election × Gang-Control			−.381*** (.126)	−.188** (.078)
Time and Voting Center FE	Yes	Yes	Yes	Yes
Observations Mean	1.42	1.42	1.42	0.45
Observations	415,224	415,224	415,224	415,224
R ²	.055	.055	.055	.023
Adjusted R ²	.052	.052	.052	.019

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between criminality and electoral season, specifically in gang-controlled areas between 2012 and 2019. Electoral season is an indicator variable equal to one 12 weeks before and after an election. The homicide rate is measured weekly and annualized per 100,000 inhabitants. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. Robust standard errors clustered by voting center are reported between parenthesis. The 2012 and 2015 elections were removed from the sample because of outside events affecting the dependent variable (resp. truce and end of truce)

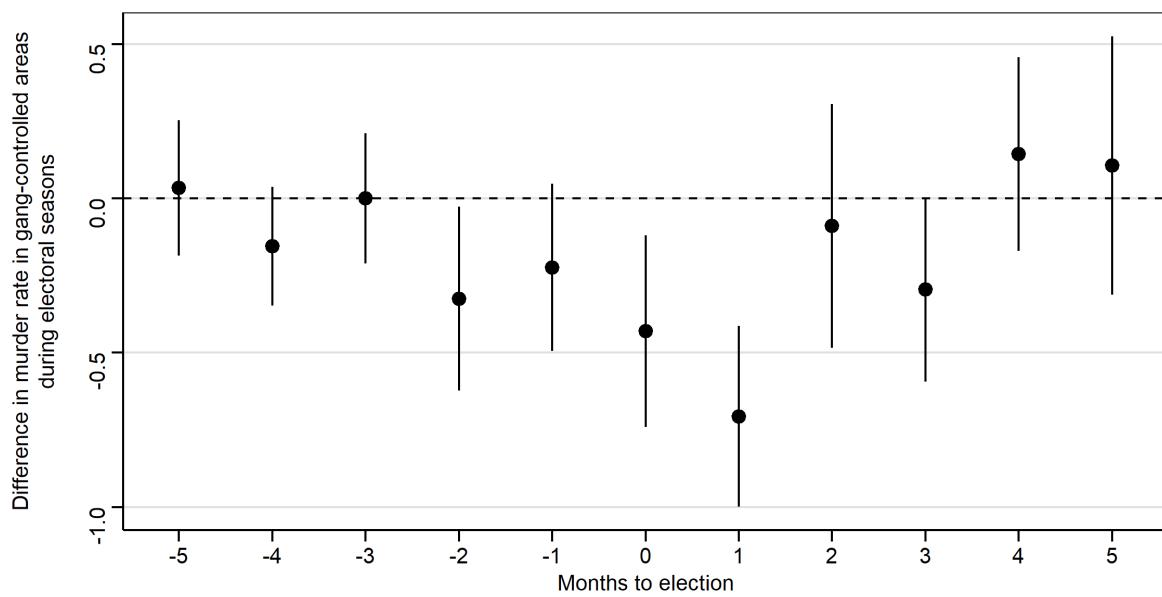
**Table 5: Criminality in Gang-Controlled Areas during Electoral Seasons
(robustness to gang control)**

	Dependent variable				
	Homicide Rate (per 100,000 inhabitants)				
	(1)	(2)	(3)	(4)	(5)
Election	.382*** (.078)	.283*** (.069)	.222*** (.061)	.236*** (.069)	.283*** (.069)
Election × Gang-Control	-.358*** (.090)				
Election × High-Prisoners		-.597*** (.207)			
Election × Gang-Leaders			-.655* (.380)		
Election × B-18				-.211 (.199)	
Election × MS-13					-.584*** (.201)
Time and Voting Center FE	Yes	Yes	Yes	Yes	Yes
Observations Mean	1.42	1.42	1.42	1.42	1.42
Observations	415,224	415,224	415,224	415,224	415,224
R ²	.055	.055	.055	.055	.055
Adjusted R ²	.052	.052	.052	.052	.052

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between criminality and electoral season, specifically in gang-controlled areas between 2012 and 2019. Electoral season is an indicator variable equal to one 12 weeks before and after an election. The homicide rate is measured weekly and annualized per 100,000 inhabitants. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. High-Prisoners represents the neighborhood where the number of convicted gang members was above average. B-18 and MS-13 are constructed similarly based on B-18 and MS-13 convicts. Gang-Leaders represents the neighborhoods of origins of convicted gang leaders. Robust standard errors clustered by voting center are reported between parenthesis. The 2012 and 2015 elections were removed from the sample because of outside events affecting the depending variable (resp. truce and end of truce)

Figure 7: Difference in Homicide Rate in Gang-Controlled Areas during Electoral Seasons



Source: own elaboration based on police data (PNC) at the voting center level.

5.3 Crime reduction and participation increase

Findings

Criminality in the months leading to an election is negatively associated with electoral participation: voters may be dissuaded to vote when there is violence in the streets. Consistent with the reduction in violence during electoral seasons in gang-controlled neighborhoods, we observe that gang influence is positively associated with electoral participation. Gangs might be influencing elections not only by reducing violence but also by favoring voting.

The reduction in criminality that we established in the previous section is consistent with the results of our interviews, according to which parties negotiate safe access to gang-controlled territories in order to campaign. Whether directly because of the overall reduction in criminality, or because parties are better able to campaign in safer neighborhoods, we expect to see an increase in political participation during elections as a result of the decrease in crime.

To test this hypothesis, we analyzed the association between homicides prior to elections and electoral participation. We used year and voting center fixed effect to control for the expected turnover in specific locations in specific years. Table 6 shows that higher homicide rates prior to elections are indeed associated with less turnover.

Table 6: Electoral Participation and Crime

	Dependent variable			
	Electoral Participation			
	(1)	(2)	(3)	(4)
6-month Homicide Rate Prior to Election	-.003*** (.001)			
3-month Homicide Rate Prior to Election		-.002*** (.001)		
6-month Gang Homicide Rate Prior to Election			-.004* (.002)	
3-month Gang Homicide Rate Prior to Election				-.005*** (.001)
Election and Voting Center FE	Yes	Yes	Yes	Yes
Observations Mean	52.5	52.5	52.5	52.5
Observations	5,234	5,234	5,234	5,234
R ²	.645	.646	.645	.646
Adjusted R ²	.526	.527	.526	.527

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between criminality 6 months and 3 months prior to elections and voters' turnout. The homicide rate is measured weekly and annualized per 100,000 inhabitants. We added election and voting center fixed effects and clustered the standard errors by voting center.

Building further on these results, and knowing that criminality reduces on average in gang-controlled areas during electoral season, we expect to see an increase in electoral participation in gang controlled areas. Using the same framework as Equation 2, column (1) of Table 7 reports a statistically significant and positive effect of gang-control on voters' participation. The estimate is rather large: a 2.75 percentage point increase in participation in gang controlled areas. Alternative measures of gang-control lead to consistent estimates,

although less statistically significant (columns (2) and (3)). Hence, potentially related to the reduction in criminality that we observe during electoral seasons, gang influence seems to be geared toward encouraging participation in the territories they control.

These results are consistent with LAPOP survey data between 2010 and 2018. Respondents declaring that they lived in a neighborhood where gangs had a significant influence reported on average 5.1 percent points more often than they participated during the previous election. The estimate increases to 5.4 percentage points when controlling for socio-economic indicators and adding time and location fixed effects (columns (1) and (3) of Table 15 in Appendix 14).

Table 7: Electoral Participation in Gang-Controlled Areas

	Dependent variable		
	Electoral Participation		
	(1)	(2)	(3)
Previous Participation	.119 (.231)	.125 (.233)	.125 (.233)
Gang-Control	2.752** (.870)		
High-Prisoners		1.440 (.926)	
High-Leaders			1.456* (.709)
Election and Municipality FE	Yes	Yes	Yes
Observations Mean	52.5	52.5	52.5
Observations	6,834	6,834	6,834
R ²	.383	.376	.375
Adjusted R ²	.359	.352	.351

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between gang control and voters' turnout. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. High-Prisoners represents the neighborhood where the number of convicted gang members was above average. Gang-Leaders represents the neighborhoods of origins of convicted gang leaders. We added election and municipality fixed effects and clustered the standard errors by municipality.

5.4 Low competition neighborhoods: increasing favorable turnover

Findings

How does increased political participation favor parties directly? We observe that the reduction in criminality and increase in participation in gang-controlled neighborhoods is particularly driven by the neighborhoods where political competition is low. When they negotiate with gangs, parties could be targeting these neighborhoods where they have a strong voting base to make sure that increased participation converts into favorable votes.

Gangs seem to favorably affect political turnover, either by their direct influence, or by reducing violence. Nonetheless, since negotiating with gangs is costly, parties need to have some certainty that an increase in turnover can translate into more votes in their favor. This is more likely to be the case in neighborhoods where parties know, historically, that they have a strong voting base in the first place. Following this reasoning, we expect to see stronger effects in the voting centers where political competition is low.

Using the model delineated in Equation 2, we first look at the criminality patterns around electoral seasons. To measure political competitiveness in any election, we use the results of the 2012 election, which comes before the starting date of our sample. We define Low-Competition either as the lowest quartile of the Herfindahl Hirschman Index (HHI) distribution or as those voting centers where the vote gap between first and second was above 15%. Results are reported in Table 8. The estimates of interest are shown in the last two lines. Both using HHI and Vote Gap, we observe that criminality reduces significantly during electoral seasons in gang controlled areas particularly in places where political competition was low. We obtain statistically significant results for the measure of competition using the vote gap. Indeed, parties and gangs seem to focus their action in places where parties have more certainty about their electoral base.

We also conducted this analysis using a dynamic definition of political competition, where for any election, we use the competitiveness of the previous election. The results are con-

Table 8: Criminality in Gang-Controlled Areas during Electoral Seasons

	Dependent variable			
	Homicide Rate		Gang-Related	
	(1)	(2)	(3)	(4)
Electoral Season	.372*** (.124)	.226* (.133)	.104 (.068)	.038 (.071)
Electoral Season × Low-Competition (HHI)	−.099 (.165)		−.031 (.089)	
Electoral Season × Low-Competition (Vote Gap)		.231 (.150)		.112 (.081)
Electoral Season × Gang-Control	−.240 (.153)	−.070 (.187)	−.066 (.086)	.036 (.105)
Electoral Season × Gang-Control × Low-Competition (HHI)	−.194 (.234)		−.155 (.141)	
Electoral Season × Gang-Control × Low-Competition (Vote Gap)		−.436* (.244)		−.286** (.139)
Time and Voting Center FE	Yes	Yes	Yes	Yes
Observations Mean	1.42	1.42	0.45	0.45
Observations	203,188	203,188	203,188	203,188
R ²	.029	.029	.013	.013
Adjusted R ²	.025	.025	.010	.010

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between criminality and electoral season, specifically in low-competition gang-controlled areas between 2012 and 2019. Electoral season is an indicator variable equal to one 12 weeks before and after an election. The homicide rate is measured weekly and annualized per 100,000 inhabitants. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. Low competition is measured using the Herfindahl Hirschman Index (HHI) and the vote gap between first and second candidates. Robust standard errors clustered by voting center are reported between parenthesis. The 2012 and 2015 elections were removed from the sample because of outside events affecting the depending variable (resp. truce and end of truce)

sistent and reported in Table 13 of Appendix C.

On participation, we use Equation ?? to analyze the differential effect of gang-control on voter turnout in low competition neighborhoods. Results are reported in Table 9. Both column (1) and (2) show that participation tends to increase in Low-Competition places, but even more so in gang-controlled areas. Related to the reduction in crime we observe, participation seems also to matter most to gangs in the places where voters' preferences are more homogeneous.

Table 9: Electoral Participation in Low-Competition Gang-Controlled Areas

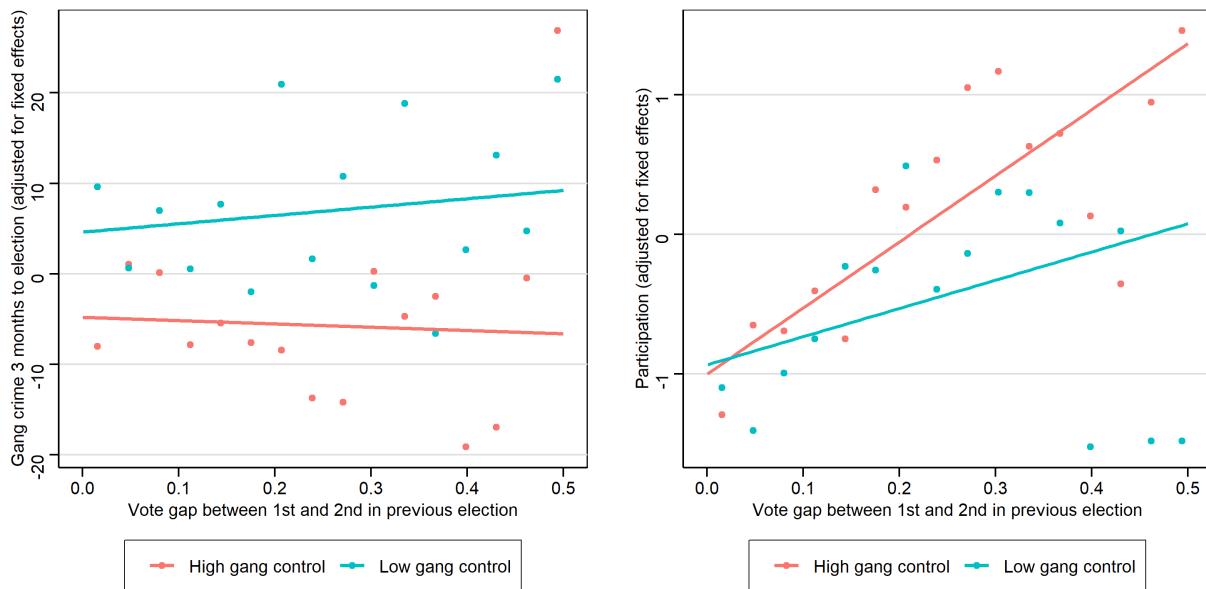
	Dependent variable	
	Electoral Participation	
	(1)	(2)
Previous Participation	-.373*** (.012)	-.372*** (.012)
Low-Competition (HHI)	.905*** (.343)	
Low-Competition (HHI) \times Gang-Control	.904* (.498)	
Low-Competition (Vote Gap)		.713** (.307)
Low-Competition (Vote Gap) \times Gang-Control		1.451*** (.441)
Election and Voting Center FE	Yes	Yes
Observations Mean	52.5	52.5
Observations	7,955	7,955
R ²	.765	.766
Adjusted R ²	.688	.690

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between gang control and voters' turnout in neighborhoods where political competition was low during the previous election. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. Low competition is measured using the Herfindahl Hirschman Index (HHI) and the vote gap between first and second candidates. We added election and voting center fixed effects and clustered the standard errors by voting center

Figure 8 summarises graphically our findings. The left regions of the graphs represent high competition (low vote gap between first and second), whereas the right regions designate low competition neighborhoods. In gang-controlled areas (red lines), compared to non gang areas (blue lines), participation increases more in low-competition voting centers and criminality reduces more. This supports the claim that parties may be colluding with gangs especially in the neighborhoods where they have more voters. By increasing safety, and fostering known-to-be favorable political participation, parties may collude with gangs to increase their overall vote share.

Figure 8: Competitive districts, gang criminality, and participation



Source: own elaboration based on police data (PNC) and electoral results by the Electoral Supreme Court at the voting center level.

These findings are also supported by the fact that there doesn't seem to be any trend difference between gang-controlled areas and non gang areas when looking at the 2012 elections, before that gangs and political parties started colluding according to journalistic investigations (see Figure 18 in Appendix E).

5.5 Geographic regression discontinuity

Findings

Focusing on the voting centers around the borders, we did not identify differences in electoral participation. However, the electoral preferences change substantially for the years 2014 and 2018. These differences do not exist in previous or subsequent years in which we do not know the presence of the gangs. Gang presence in both years decreases the gap between first and second most voted parties. In 2014, the gap between the first and second reduces 70 percentage points, and in 2018 it dropped 10 percentage points. In the interviews we did not find anecdotes in which gangs directly force people to vote for a specific party, but we did find that gang members and their families could agree to vote for a specific party. These results could suggest that the latter is happening.

In order to present more causal evidence, we rely on the regression discontinuity model outlined in section 4.2.2. For this analysis, we use the maps of gang-controlled areas available for San Salvador in 2014 and 2018 along with the election results at the voting center level. In 2014, none of the candidates reached the 50% vote share required to win. For this reason, a second round was held, which we also took into account in the estimations.

We were not able to identify any difference in participation, whether voting centers are located inside or outside gang-controlled territories (see Table 16 in Appendix F). Nonetheless, Tables 10 and 11 show that voting centers inside gang-controlled territories present a significant distortion in political competition as compared to voting centers outside of gang-controlled areas, even if they pool voters both from inside and outside these areas. In 2014 and 2018, the vote gap between candidates ranked first and second in these voting centers was lower by 0.70 and 0.10 points respectively (columns (2)). These results are also illustrated graphically in Appendix F.

The differences in vote gap between first and second candidates are not significant for other years using the same maps (columns (1) and (3)). One explanation could be that gang

territories' borders may have shifted over time. Prior to 2014, according to journalists, gang members were able to strengthen control of their territory thanks to the truce. After 2015 however, the Government launched a new Security Plan that may have modified gangs' territories.

According to interviews, in 2014, the gangs tried to strongly affect the electoral results because a project called Sanctuary Municipalities had been suspended. This project had the objective of investing in infrastructure and increasing employment in specific municipalities where the gangs were. The suspension caused the gangs to be against the municipal party; this forced Norma Quijano (candidate for the presidency in those elections and Mayor of San Salvador) to negotiate with the gangs between the first and second round of voting. Subsequently, the gangs leak audio and video of the negotiations to the press.

Tables 17 and 18 in Appendix F present the results obtained using other measures of competitiveness (HH - Index and Political index). The results in 2014 remain significant, but not in 2018. The number of observations is quite low and could limit the correct interpretation of the results.

Table 10: Gang-Control Effect on Gap First-Second in 2014 (RD)

	(1) Before 2014	(2) 2014	(3) After 2014
Gang Control Area - 2014 map	-0.018 (0.178)	-0.711*** (0.161)	-0.046 (0.103)
Robust 95% CI	[-.73 ; .341]	[-1.062 ; -.269]	[-.252 ; .301]
Kernel Type	Triangular	Triangular	Triangular
BW Type	mserd	mserd	mserd
Observations	41	94	170
Conventional p-value	0.922	0.000	0.653
Robust p-value	0.476	0.001	0.860
Order Loc. Poly. (p)	2	2	2
Order Bias (q)	3	3	3
BW est. (h)	98.9	90.5	97.7
BW bias (b)	132.8	138.8	151.8

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 11: Gang-Control Effect on Gap First-Second in 2018 (RD)

	(1) Before 2018	(2) 2018	(3) After 2018
Gang Control Area - 2018 map	0.008 (0.024)	-0.109** (0.050)	0.043 (0.061)
Robust 95% CI	[-.037 ; .067]	[-.21 ; .006]	[-.09 ; .176]
Kernel Type	Triangular	Triangular	Triangular
BW Type	mserd	mserd	mserd
Observations	760	222	432
Conventional p-value	0.726	0.030	0.484
Robust p-value	0.573	0.065	0.526
Order Loc. Poly. (p)	2	2	2
Order Bias (q)	3	3	3
BW est. (h)	1246.2	1484.7	1653.6
BW bias (b)	2011.6	2145.5	2255.8

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6 Policy challenges

6.1 Summary of mechanisms

Based on our interviews and quantitative analysis, the main leverage that gangs use to influence elections is peace, or the absence of violence. Homicides in gang-controlled neighborhoods tend to decrease during electoral seasons along with an increase in electoral participation. These effects are especially significant in the neighborhoods where political parties have a strong voting base. This suggests that parties negotiate with gangs to foster electoral participation in the areas where they are more likely to receive electoral support and increase their chances of winning. Gangs also affect the quality of campaigns in the neighborhoods they control. According to interviews, the parties must ask for permission and give something in return to the gangs to enter those neighborhoods. Permission is usually granted through a party member in the community. This scheme could be depleting parties' campaign resources and hurting small parties that don't have as many members in all neighborhoods.

6.2 Changing the rules of the game

Parties are facing a coordination problem of the type prisoner's dilemma in choosing whether to collude with gangs or not. The most socially profitable situation is the one where neither of the parties collude. In the state of things however, both parties have an incentive to strike a deal with gangs to win more votes, assuming that the other party does not seek such an agreement. This results in both parties reaching the Nash equilibrium of both colluding with gangs. In order to sustain the situation where parties do not collude with gangs, the rules of the game must be changed. Two options can be considered to break out of the prisoner's dilemma: (1) adding a cost to or reducing the benefit of colluding with gangs (2) adding a private benefit of not colluding with gangs, both so that deviating is not profitable anymore.

6.3 Risks and unknowns

Any public policy recommendation to solve this problem must consider the following challenges:

- (1) **Public support.** After the multiple scandals of dialogues between gangs and political leaders, citizens are generally against negotiating with gangs. In addition, negotiating in secret would raise questions about the gang members' benefits. Citizens seem to favor more authoritarian policies such as Mano Dura. The current president seems to be famous for promoting a solid anti-gang discourse, although he has reportedly sought gang support.
- (2) **Support from political leaders.** Currently, any public policy initiative must be approved by the Nuevas Ideas party, which the US Treasury has accused of making agreements with gangs. Although the Government has carried out multiple investigations against former mayors who have had agreements with gangs, it has not carried out any investigation against members of its own party. It does not seem easy for the Government to act impartially to judge all political parties. On the other hand, although the Nuevas Ideas party has the support of the majority of the population, they also have indications of negotiating with gangs.
- (3) **Gang strategic adjustment.** The policy must consider that gangs can react and rethink a new strategy in the next elections. Municipal and congressional elections are every three years, while presidential elections are every five years. The gangs could force the candidates to negotiate if, for example, they increase control of their territories before elections.
- (4) **The fundamental solution lays in the long term.** The gang problem in El Salvador is rooted in other social problems even outside Salvadoran territory. The effects of the gangs in the lives of Salvadorans are not limited to the exercise of democracy but to all aspects of their daily lives. The first-best solution must solve fundamental problems such as education, employment, family disintegration, and migration.

7 Recommendations

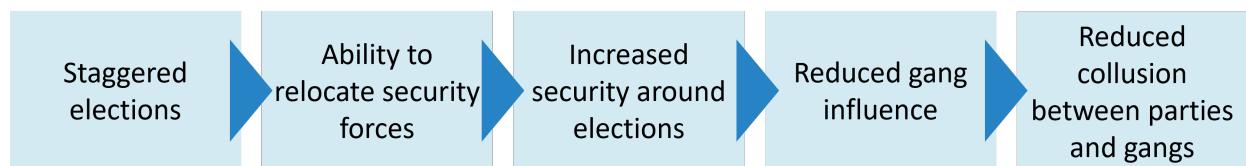
7.1 Main recommendation: staggered municipal elections

The main problem we were able to identify quantitatively is that parties need gangs to mobilise their voting base. To bypass this power that gangs have acquired, one solution could be to increase security during electoral seasons. With increased security, on the one hand, voters might feel safer to vote (Section 5.3), and on the other hand, parties won't need to negotiate with gangs to gain access to their territories and mobilize voters.

Security forces are limited however. In the 2021 elections the Supreme Electoral Court (SEC) used the maximum capacity of police members, approximately 5,000 members Supreme Electoral Tribunal (2021). Security cannot be improved even if the SEC wanted because there are simply not enough police officers in the National Civil Police (Instituto Universitario de Opinión Pública, 2020). This is currently the bottleneck in providing more security on election day.

To mitigate this issue, the SEC could implement an electoral schedule in which groups of municipalities vote on different days. This would help concentrate security and resources that promote electoral participation in different geographic areas and reduce the influence of gangs on election day (see Figure 9). This measure would be more effective for municipal and congressional elections, since the relevant electoral unit defining winners is the municipalities. For presidential elections, however, candidates and gangs could react between election days to influence the final result.

Figure 9: Theory of Change



Staggered elections are held most notably in India for the parliamentary elections (BBC, 2019). The local police is often perceived as partisan, which raises concerns that politicians may collude with local police forces to sway elections. For this reason, the government sends federal forces to secure polling stations. But the federal police is not large enough to handle all 900 million eligible voters at once. Hence, elections are held on different days to enable the government to reallocate federal forces around the country.

Technical correctness: This measure could reduce gang influence by concentrating more security in neighborhoods with more gang control. Working on multiple days would allow more efficient use of resources. However, politicians and gangs may temper with the vote if this measure is implemented for presidential elections.

Administratively Feasible: This measure could be implemented by the Supreme Electoral Court and the National Police because they would concentrate resources in areas where the problem is more profound and the time limitation (doing the elections in one day) may not be a barrier.

Politically Supportable: Politicians may agree with this policy. It would enable them to circumvent gangs to corral their voters. Also they would need fewer resources during campaigns and would increase credibility with the voters.

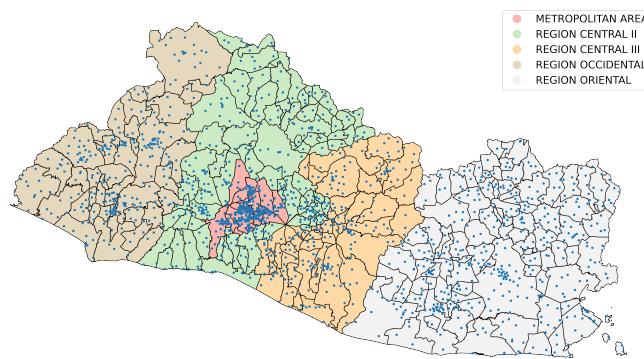
7.2 Suggestions for implementation

To implement this policy, we suggest to create 5 groups of municipalities following the administrative regions boundaries (Central, Occidental, and Oriental region). Using these groups would help concentrate resources in municipalities close and similar to each others.

The Metropolitan Area of San Salvador should be treated separately from the Central Regions since its population is extremely high comparing to other regions (see table 19). Gangs are also more concentrated in the municipalities closer to San Salvador.

The Supreme Electoral Court (SEC) should coordinate with the National Civil Police (NPC)

Figure 10: Regions in El Salvador



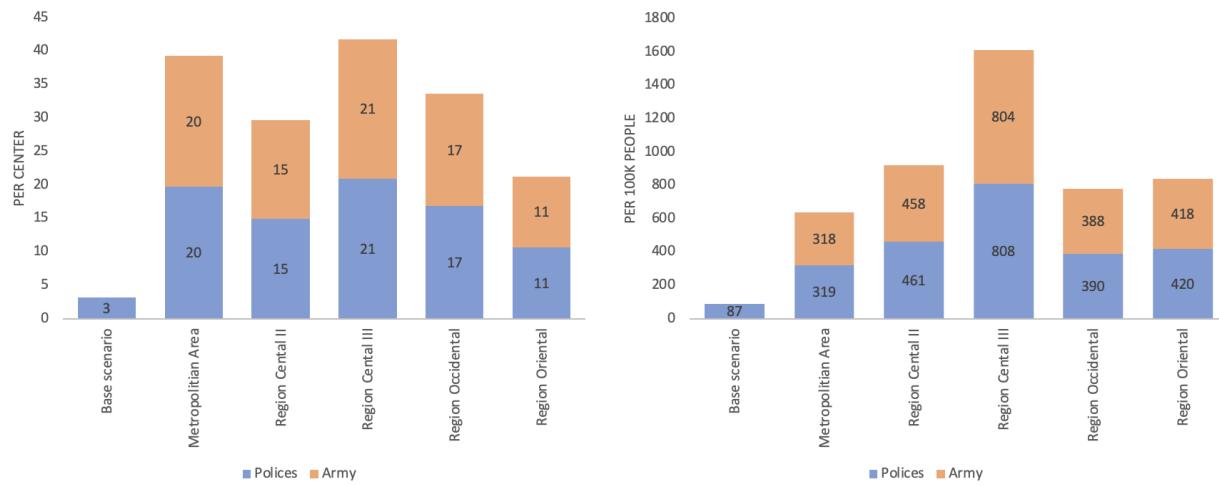
to carry out this implementation. Jointly, the SEC and the NPC must identify the most appropriate dates to conduct the elections. Election dates should be held in consecutive weeks. They could be carried out on Saturday and Sunday, to reduce the economic costs of the elections.

We also recommend to include the Army in the process. The Army is already working to implement the Government Security Plan, as part of which and the number of soldiers has recently increased significantly. We recommend creating an interim division of the Army that works directly with the SEC while the elections are taking place. To reduce incentives for members to develop ties to gangs in the neighborhoods they would protect, the division should: (1) randomly select its members in each election, (2) should not participate more than twice in elections. 25% of the armed forces would be enough to double the number of security members during the elections (Ministerio de la Defensa Nacional, 2021). Working with two institutions (the police and the army) would increase the security during election seasons and therefore decrease gang influence along with the incentives for parties to collude.

7.2.1 Allocation of security in the elections

Scenario 1. Allocation by voting center: One way to distribute security members would be to follow the voting centers delineation as it is currently done. If the elections were held on different days, the number of security members would increase at least three times, if an agreement is reached with the army this number could improve six times. See Figure 11.

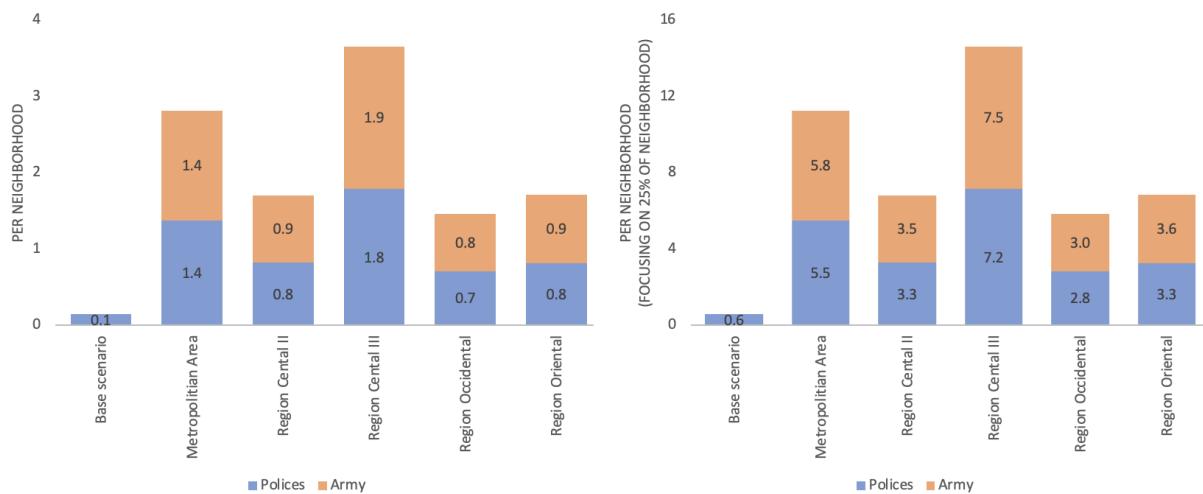
Figure 11: Scenario 1 - Maximum capacity of security members per center



Source: Our own estimations from Supreme Electoral Tribunal (2021); Ministerio de la Defensa Nacional (2021); Instituto Universitario de Opinión Pública (2020)

Scenario 2. Allocation by neighborhood: Security could also be distributed by neighborhoods (smaller unit than the voting center). However, the number of policemen involved in the elections is less than the number of neighborhoods, even if only the 25% most affected neighborhoods by crime were considered. If the elections are divided into 4 days, and using additional resources from the army, 1 to 2 security force member on average could be sent per neighborhood. If the measure is focused on the neighborhoods with the highest criminality rates, the number of members could increase to at least 6 per neighborhood. See Figure 12.

Figure 12: Scenario 2 - Maximum capacity of security members per neighborhoods



Source: Our own estimations from Supreme Electoral Tribunal (2021); Ministerio de la Defensa Nacional (2021); Instituto Universitario de Opinión Pública (2020)

7.2.2 Costs

The SEC spends \$5.8 million dollars to organize a second round of elections when necessary (Supreme Electoral Tribunal, 2021). Holding the election in 4 days could increase the election cost by at most \$17.4 million (cost of 3 additional elections), which represent an increase of 34% of the annual SEC budget. On the other hand, the national civil police would spend approximately \$200,000 in additional salaries, while the army would spend \$345,000. However, concentrating the police in certain areas could increase crime in other regions. It is recommended that not all security members be used in elections. Using a part of the security agents could be enough to improve the security of the elections substantially.

There are also indirect benefits of this measure. For example, substantially fewer people could be trained to support elections. Currently, 85,000 people are employed on election day. This number could be brought down to approximately 25,000 people with the additional support of the police and the army. As for the direct benefits, it is challenging to estimate the benefits of free and democratic elections. However, this type of measure would reduce the costs used by the parties to negotiate with the gangs. These would limit a source

of financing for organized crime, which maintains the high crime rates in the country.

7.3 Other recommendations

The solution to reduce gang influence during elections is of course more complex than providing more security during elections. Although this would discourage negotiation between politicians and gangs, other mechanisms need to be considered. Therefore, we make a series of secondary recommendations to address the following problems respectively:

- (1) Access to neighborhoods controlled by gangs during political campaigns (section 7.3.1),
- (2) Gang members votes (section 7.3.2),
- (3) People's mobility during election day (sections 7.3.3 and 7.3.4)

Figure 13 below summarises our recommendations and feasibility assessment.

Figure 13: Summary of Recommendations

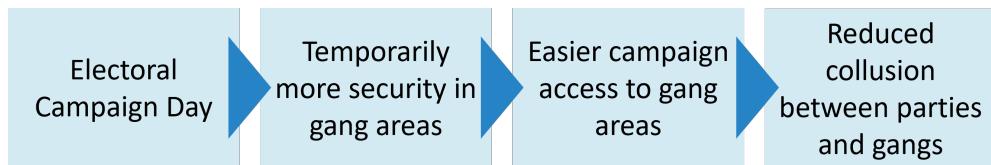
	Technical correctness	Administratively Feasible	Politically Supportable
<i>Voter preferences</i>			
(1) Electoral Campaign Day	Orange	Green	Orange
(2) Restrict the vote of people with criminal records	Green	Green	Red
<i>Electoral participation</i>			
(3) Staggered municipal elections	Orange	Green	Green
(4) Create new polling stations and let voters chose where they register	Orange	Green	Green
(5) Electronic voting	Orange	Green	Green

7.3.1 Electoral Campaign Day

One of the most prominent problems that emerged during the interviews is that political parties are obliged to ask for permission to enter the neighborhoods controlled by gangs. Party members living in the local area mainly lead these negotiations. This could be affecting smaller political parties, which do not have members in all territories and have fewer resources to negotiate with gangs.

One way to reduce the cost of campaigning for political parties would be to coordinate a Campaign Day in those neighborhoods. The Government could reinforce security during these days to enable parties to campaign without asking gangs' permission. The leading promoter of these events could be the Government through the Supreme Electoral Court.

Figure 14: Theory of Change (Electoral Campaign Day)



Technical correctness: This measure could prevent the parties from negotiating with gangs if the Government sends a credible signal that the event will be safe and secure. The Government has managed to hold events in these communities, such as inaugurations of public infrastructure on other occasions, so this option is viable. However, there is still the possibility that gangs could resist these types of events.

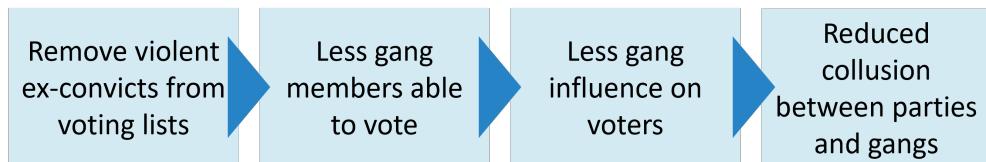
Administratively feasible: The Government has the institutional capacity to carry out this type of policy through the National Police and the Supreme Electoral Court.

Political supportable: The Government recognizes the power gangs have over specific neighborhoods and may be interested in maintaining security in those areas. However, the current government has also been involved in deals with the gangs and may have incentives to keep the opposition from having access to specific neighborhoods.

7.3.2 Restrict voting from people with criminal records

The Supreme Electoral Court could prevent people with criminal records from voting, especially ex-convicts who committed violent crimes (e.g., murders) or recidivists. Most gang members have a criminal record, hence this measure would reduce gangs' voting power and discourage negotiations. Being a gang member in itself is a crime in El Salvador. If the Police could identify gang members, they would be in jail and wouldn't be able to vote.

Figure 15: Theory of Change (Restrict Voting)



Technical correctness: According to interviews and news, gangs could affect elections through their vote. The data indicates more participation in these territories, and the preferences differ between elections. If this phenomenon is not due to the presence of gangs, this measure will not affect the vote of people without criminal records.

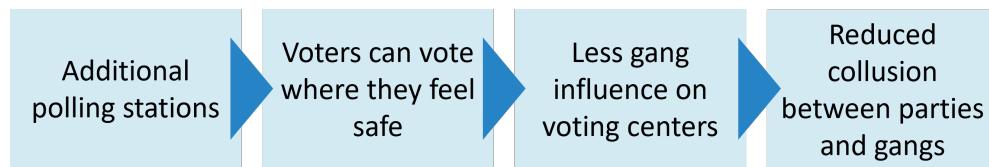
Administratively Feasible: This condition could be easily implemented by the Supreme Electoral Court with the necessary inputs from the National Civil Police. They should be able to purge the electoral register.

Politically Supportable: This measure could be extremely controversial among political parties. They would accuse each other of taking advantage of the elections or discriminating against people's voting rights. The parties that negotiate the most with the gangs might also disagree.

7.3.3 Create new polling stations and let voters chose where they register

The Supreme Electoral Court could open more voting centers to prevent people from moving into neighborhoods controlled by gangs. Hence, this should reduce the influence that gangs have on elections. The Supreme Electoral Court could allow people to choose where they register to vote.

Figure 16: Theory of Change (New Polling Stations)



Technical correctness: This measure could improve the participation of those who do not vote because their polling station is located in gang territory. Our interviewees shared this concern with us; however, the quantitative results indicate more participation in neighborhoods with gangs, and the seriousness of the problem cannot be measured. According to Baires, Sviatschi and Vargas (2019), when El Salvador increased the number of centers within its program Residential Voting, participation does not increase in neighborhoods with gangs.

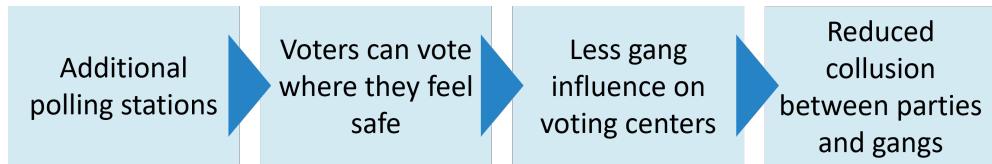
Administratively Feasible: The Supreme Electoral Court has been adding new voting centers to make voting easier. The Court can add more polling places in territories where the gangs could not have influence. On the other hand, the court could create a platform where citizens can choose which voting center is most convenient.

Politically Supportable: All parties recognize the power gangs have in mobility between neighborhoods and could agree to promote a measure limiting their power during elections. This measure could also positively affect participation unrelated to the gang problem.

7.3.4 Electronic voting

Recently, the Government of El Salvador has proposed electronic voting for Salvadorans living abroad (Lemus, 2021). This measure could be replicated for citizens who live in areas controlled by gangs. This measure would allow Salvadorans to vote from an electronic device connected to the Internet.

Figure 17: Theory of Change (Electronic Voting)



Technical correctness: This policy would make it easier for people whose mobility is limited on election day due to gang control. However, this measure faces two obstacles: (1) Electronic voting could pose other risks such as cyber attacks; (2) Some people might be reluctant to use electronic devices as older people.

Administratively Feasible: The government intends to launch this policy for people living abroad in the next elections. Expanding the policy to people living within gang territory should have a marginal cost. However, it poses a series of challenges in the selection of people who can or should use this mechanism.

Politically Supportable: the policy of electronic voting is being led by the Nuevas Ideas party that has a majority in Congress, the party could be in favor of better voting conditions for people living in the interior of the country.

8 References

- Aistrup, Joseph A. 2014. “Constituency Diversity and Party Competition: A County and State Level Analysis.” *Political Research Quarterly* p. 15.
- Alesina, Alberto, Salvatore Piccolo and Paolo Pinotti. 2019. “Organized Crime, Violence, and Politics.” *The Review of Economic Studies* 86(2):457–499.
- Avanza causa penal contra políticos por pacto con pandillas en El Salvador.* 2020. *Deutsche Welle*.
- URL:** <https://www.dw.com/es/avanza-causa-penal-contra-pol%C3%ADticos-por-pacto-con-pandillas-en-el-salvador/a-54045042>
- Baires, Wilber, Micaela Sviatschi and Juan Vargas. 2019. “Should I stay or should I go? The unintended effects of enfranchisement.”
- Bateson, Regina. 2012. “Crime Victimization and Political Participation.” *American Political Science Review* 106(3):570–587.
- BBC. 2019. “India Lok Sabha election.”
- URL:** <https://www.bbc.com/news/world-asia-india-47493056>
- Blattman, Christopher. 2009. “From Violence to Voting: War and Political Participation in Uganda.” *American Political Science Review* 103(2):231–247.
- Bullock, Jessie. 2021. “Machine Gun Politics: Why Politicians Cooperate with Criminal Groups.” p. 61.
- Caceres, Gabriela. 2020. “Norman Quijano prometió a pandilleros eliminar la ley antipandillas, según la Fiscalía.” *El faro*.
- URL:** https://elfaro.net/es/202001/el_salvador/23975/Norman-Quijano-promet%C3%AD-%C3%B3-a-pandilleros-eliminar-la-ley-antipandillas-seg%C3%A9-BAn-la-Fiscal%C3%ADA.htm
- Calonico, Sebastian, Matias D. Cattaneo, Max H. Farrell and Rocío Titiunik. 2017. “Rdro-bust: Software for Regression-discontinuity Designs.” *The Stata Journal* 17(2):372–404.
- Chakravarty, Satya R., Manipushpak Mitra, Suresh Mutuswami and Rupayan Pal. 2020. “On the probability ratio index as a measure of electoral competition.” *Palgrave Communications* 6(1):96.
- Córdova, Abby. 2019. “Living in Gang-Controlled Neighborhoods: Impacts on Electoral and Nonelectoral Participation in El Salvador.” *Latin American Research Review* 54(1):201–221.

Dal Bó, Ernesto and Rafael Di Tella. 2003. “Capture by Threat.” *Journal of Political Economy* p. 32.

Dal Bó, Ernesto and Rafael Di Tella. 2006. ““Plata o Plomo?”: Bribe and Punishment in a Theory of Political Influence.” *American Political Science Review* 100(1):41–53.

Dal Bó, Ernesto and Rafael Di Tella. 2007. “Reputation When Threats and Transfers Are Available.” *Journal of Economics & Management Strategy* 16(3):577–598.

Daniele, Gianmarco and Gemma Dipoppa. 2017. “Mafia, elections and violence against politicians.” *Journal of Public Economics* 154:10–33.

Instituto Universitario de Opinión Pública. 2020. “Evaluando la Profesionalización del Cuerpo Policial Civil.”

URL: <https://www.wola.org/wp-content/uploads/2020/10/Police-SV-ESP-9.30.pdf>

International Crisis Group. 2017. ““El Salvador’s Politics of Perpetual Violence.”” *Latin America Report No 64* .

URL: <https://www.crisisgroup.org/latin-america-caribbean/central-america/el-salvador/64-el-salvadors-politics-perpetual-violence>

Jaitman, Laura, Dino Caprirolo, Rogelio Granguillhome Ochoa, Philip Keefer, Ted Leggett, James Andrew Lewis, José Antonio Mejía-Guerra, Heather Sutton and Iván Torre. 2017. *Los costos del crimen y de la violencia: nueva evidencia y hallazgos en América Latina y el Caribe*.

Labrador, Gabriel and Carlos Martinez. 2016. “Ernesto Muyshondt: “Si querés ser político en este país tenés que tratar con ellos.”” *El faro* .

URL: https://elfaro.net/es/201603/el_salvador/18214/Ernesto-Muyshondt-Si-quer%C3%A9s-ser-pol%C3%ADtico-en-este-pa%C3%ADs-ten%C3%A9s-que-tratar-con-ellos.htm

Lemus, Lissete. 2021. “Diputados acuerdan voto electrónico para salvadoreños en el exterior.”

URL: <https://www.elsalvador.com/noticias/nacional/asamblea-acuerda-voto-electronico-salvadoreños-exterior/878303/2021/>

Lohmuller, Michael. 2015. “El Salvador’s Gangs & Prevailing Gang Paradigms in a Post-Truce Context.” *Georgetown Security Studies Review* pp. 250–281.

Martinez, Carlos. 2016. ““Todos los partidos han buscado acercamientos con nosotros.”” *El faro* .

URL: <https://elfaro.net/es/201604/salanegra/18347/%E2%80%9CTodos-los-partidos-han-buscado-acercamientos-con-nosotros%E2%80%9D.htm>

Martinez, Carlos. 2018. “Nayib Bukele también pactó con pandillas.” *El faro* .

URL: https://elfaro.net/es/201806/el_salvador/22148/Nayib-Bukele-tambi%C3%A9n-pact%C3%B3-con-pandillas.htm

Martinez, Oscar. 2020. “En El Salvador todos han negociado con las pandillas.” *New York Times* .

URL: <https://www.nytimes.com/es/2020/08/02/espanol/opinion/pandillas-el-salvador.html>

Melnikov, Nikita, Carlos Schmidt-Padilla and Maria Micaela Sviatschi. 2020. “Gangs, Labor Mobility and Development.”.

Ministerio de la Defensa Nacional. 2021. “Memoria de Labores.”.

URL: <https://www.fuerzaarmada.mil.sv/wp-content/uploads/2021/06/MEMORIA-DE-LABORES-JUNIO-2020-MAYO-2021.pdf>

Peñate, Margarita, Kenny De Escobar, Arnulfo Quintanilla and César Alvarado. 2016. “Estimación del Costo Económico de la Violencia en El Salvador 2014.” *Banco Central de Reserva de El Salvador* .

Pinotti, Paolo. 2012. Organized Crime, Violence, and the Quality of Politicians: Evidence from Southern Italy Pinotti, Paolo. In *Lessons from the Economics of Crime*. The MIT Press pp. 175–198.

Raderstorf, Ben and Manuel Meléndez Sánchez. 2015. “A Nation Held Hostage.” *The Dialogue* .

URL: <https://www.thedialogue.org/blogs/2015/08/a-nation-held-hostage/>

Reuters. 2015. “Líderes de pandillas de El Salvador instan al Gobierno al diálogo.”.

URL: <https://mobile.reuters.com/article/amp/idLTAKBNOL104U20150128>

Supreme Electoral Tribunal. 2021. “Plan General de Elecciones.”.

Sviatschi, María Micaela. 2020. “Spreading Gangs: Exporting US Criminal Capital to El Salvador.” *American Economic Review* .

The AmericasBarometer by the Latin American Public Opinion Project (LAPOP). 2004 - 2018.

URL: www.LapopSurveys.org

U.S. Department of the Treasury. 2021. “Treasury Targets Corruption Networks Linked to Transnational Organized Crime.”.

URL: <https://home.treasury.gov/news/press-releases/jy0519>

Zaidi, Tariq. 2019. “A Nation Held Hostage.” *Foreign Policy* .

URL: <https://foreignpolicy.com/2019/11/30/el-salvador-gang-violence-ms13-nation-held-hostage/>

Appendices

A Measuring political competition

Effectively measuring political competition has proved to be controversial due to the different alternatives used. Previous researchers have operationalized this concept in a variety of ways, with the empirical results often hinging on which measure is used (Aistrup, 2014). Based on a literature review, three main indicators stood out. The first (1) simply calculates the gap competition (difference in percentage points) of the first (F_{it}) and second place (S_{it}) in the elections (t) for each municipality (i).

$$(1) \quad X_{it} = F_{it} - S_{it}$$

The second competitive indicator (2) considered is the Herfindahl-Hirschman index (HHI) that is usually used to measure the market concentration or level of competitiveness in an industry. In this case, when the indicator is closer to one then a single political party has monopolized the share of votes in the municipality; when it is close to zero, then the share of votes is similar between many political parties. The indicator is calculated as the sum of the square of the share (S_j) of each party(N).

$$(2) \quad X_{it} = \sum_{j=1}^N S_j^2$$

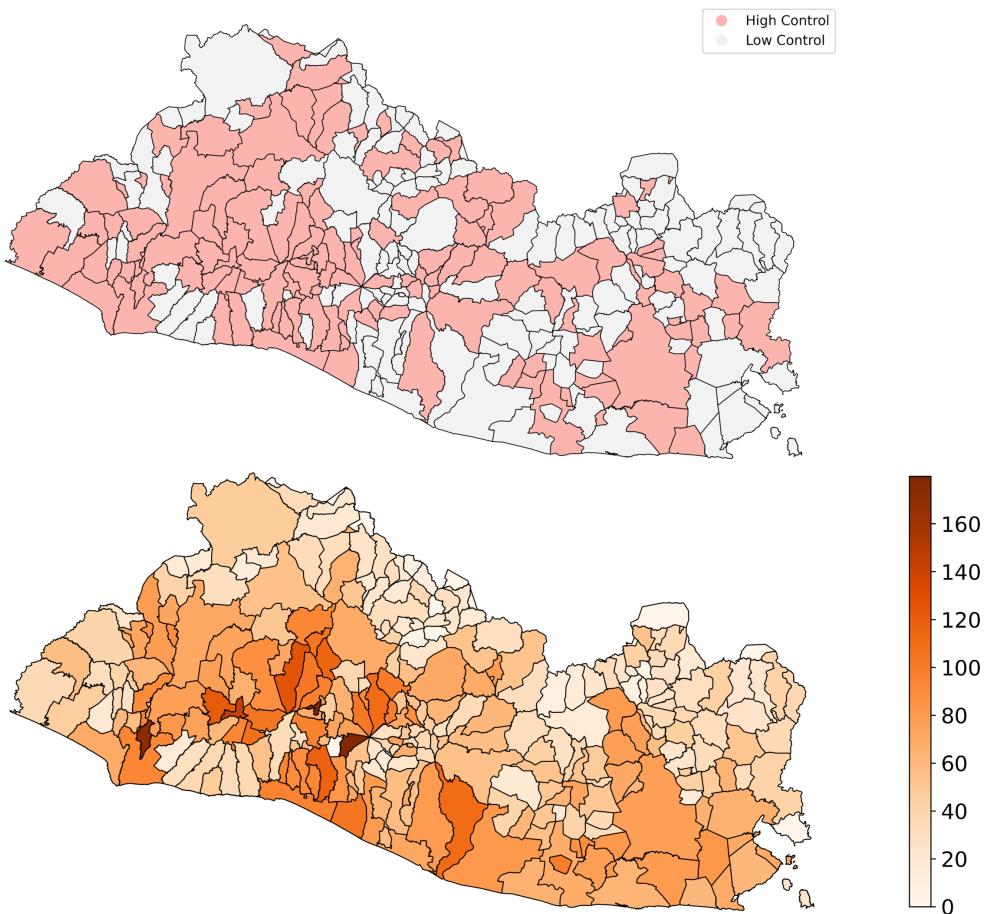
The third indicator (3) was defined by Chakravarty et al. (2020), which measures the probability that randomly chosen voters have voted for different parties. In a municipality with perfect competition, each voter has the same probability of voting for any party and the indicator would have a value of zero, whereas it will be close to one when voters choose the same party.

$$(3) C_{it} = \frac{|N|}{|N| - 1} \left[1 - \sum_{j=1}^N S_j^2 \right]$$

The advantage of this indicator is that it allows comparing the competitiveness of elections with different numbers of parties, which is convenient for the study since the number of parties has varied over time and across municipalities; hereafter referred to as the political competition index (PCI).

B Gang-controlled areas

Gang Controlled Areas and Murder Rates Across El Salvador



C Gang criminality during electoral seasons

**Table 12: Criminality in Gang-Controlled Areas during Electoral Seasons
(robustness to electoral season)**

	Dependent variable			
	Homicide Rate (per 100,000 inhabitants)			
	(1)	(2)	(3)	(4)
Election (4 weeks)	.115 (.109)			
Election (4 weeks) × Gang-Control	-.378*** (.132)			
Election (8 weeks)		.158* (.087)		
Election (8 weeks) × Gang-Control		-.349*** (.104)		
Election (12 weeks)			.382*** (.078)	
Election (12 weeks) × Gang-Control			-.358*** (.090)	
Election (16 weeks)				.449*** (.071)
Election (16 weeks) × Gang-Control				-.232*** (.077)
Time and Voting Center FE	Yes	Yes	Yes	Yes
Observations Mean	1.42	1.42	1.42	1.42
Observations	415,224	415,224	415,224	415,224
R ²	.055	.055	.055	.055
Adjusted R ²	.052	.052	.052	.052

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between criminality and electoral season, specifically in gang-controlled areas between 2012 and 2019. Electoral season is an indicator variable equal to one 12 weeks before and after an election. The homicide rate is measured weekly and annualized per 100,000 inhabitants. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. Robust standard errors clustered by voting center are reported between parenthesis. The 2012 and 2015 elections were removed from the sample because of outside events affecting the depending variable (resp. truce and end of truce)

Table 13: Criminality in Gang-Controlled Areas during Electoral Seasons

	Dependent variable			
	Homicide Rate		Gang-Related	
	(1)	(2)	(3)	(4)
Electoral Season	.243** (.110)	.179 (.120)	.037 (.061)	.015 (.068)
Low-Competition (HHI)	.099 (.118)		.052 (.067)	
Low-Competition (HHI) × Gang-Control	.551** (.259)		.281** (.141)	
Electoral Season × Low-Competition (HHI)	.125 (.144)		.071 (.080)	
Low-Competition (Vote Gap)		-.165 (.112)		-.094 (.059)
Low-Competition (Vote Gap) × Gang-Control		.275 (.187)		.086 (.105)
Electoral Season × Low-Competition (Vote Gap)		.187 (.134)		.077 (.072)
Electoral Season × Gang-Control	-.169 (.126)	-.043 (.151)	.048 (.065)	.097 (.083)
Electoral Season × Gang-Control × Low-Competition (HHI)	-.291 (.222)		-.280** (.123)	
Electoral Season × Gang-Control × Low-Competition (Vote Gap)		-.397* (.212)		-.227** (.112)
Time and Voting Center FE	Yes	Yes	Yes	Yes
Observations Mean	1.42	1.42	0.45	0.45
Observations	249,866	249,866	249,866	249,866
R ²	.043	.043	.019	.019
Adjusted R ²	.038	.038	.013	.013

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between criminality and electoral season, specifically in low-competition gang-controlled areas between 2012 and 2019. Electoral season is an indicator variable equal to one 12 weeks before and after an election. The homicide rate is measured weekly and annualized per 100,000 inhabitants. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. Low competition is measured using the Herfindahl Hirschman Index (HHI) and the vote gap between first and second candidates. Robust standard errors clustered by voting center are reported between parenthesis. The 2012 and 2015 elections were removed from the sample because of outside events affecting the depending variable (resp. truce and end of truce)

D Party votes in gang-controlled areas

Table 14: Party Preferences in Gang-Controlled Areas

	Dependent variable					
	FMLN (2014)			FMLN (2019)		
	(1)	(2)	(3)	(4)	(5)	(6)
Gang Control	1.518** (.666)			-1.369** (.604)		
High-Prisoners		1.579** (.681)			-1.730** (.757)	
High-Leaders			1.874 (1.324)			-1.634** (.769)
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations Mean	48.7	48.7	48.7	17.8	17.8	17.8
Observations	2,854	2,854	2,854	1,422	1,422	1,422
R ²	.475	.474	.473	.663	.662	.661
Adjusted R ²	.425	.424	.423	.592	.592	.591

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between gang control and party specific votes in the 2014, 2018, and 2019 elections at the voting center level. Gang control is defined as the neighborhoods where the decrease in homicides due to the 2012 truce was above median. High-Prisoners represents the neighborhood where the number of convicted gang members was above average. Gang-Leaders represents the neighborhoods of origins of convicted gang leaders. We added municipality fixed effects and clustered the standard errors by municipality.

Table 15: Participation in Gang-Controlled Areas (LAPOP survey)

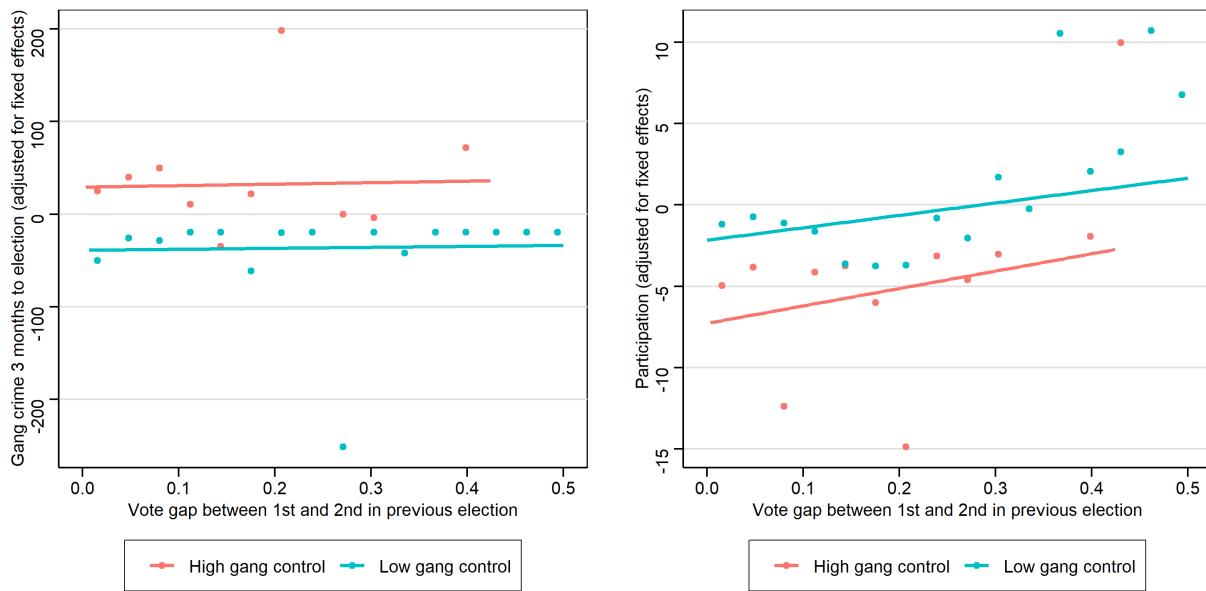
	Dependent variable		
	Electoral Participation		
	(1)	(2)	(3)
Gang-Control (Survey)	5.052*** (1.072)	6.763*** (1.867)	5.434*** (1.757)
Years of Education		.972*** (.153)	1.053*** (.173)
Urban		-4.586*** (1.522)	-3.539** (1.564)
Gender		1.030 (1.926)	1.218 (1.960)
Age		4.303*** (.180)	4.326*** (.189)
Age ²		-.037*** (.002)	-.038*** (.002)
Income Category FE	No	Yes	Yes
Time and Departament FE	No	No	Yes
Observations Mean	72.3	72.3	72.3
Observations	7,573	3,950	3,950
R ²	.002	.174	.179
Adjusted R ²	.001	.169	.171

*p<0.1; **p<0.05; ***p<0.01

Notes: This table reports the association between gang control and participation using LAPOP survey data between 2010 and 2018. Respondents were asked whether they thought that their neighborhoods was affected by gangs. Gang-control is an indicator variable equal to 1 when respondents replied "a lot". Robust standard errors clustered by province are reported between parenthesis.

E Low competition neighborhoods

Figure 18: Competitive districts, gang criminality, and participation (2012 election)



Source: own elaboration based on police data (PNC) and electoral results by the Electoral Supreme Court at the voting center level.

F RDD - Results

Results of the discontinuous regression in 2014 - multiple degrees

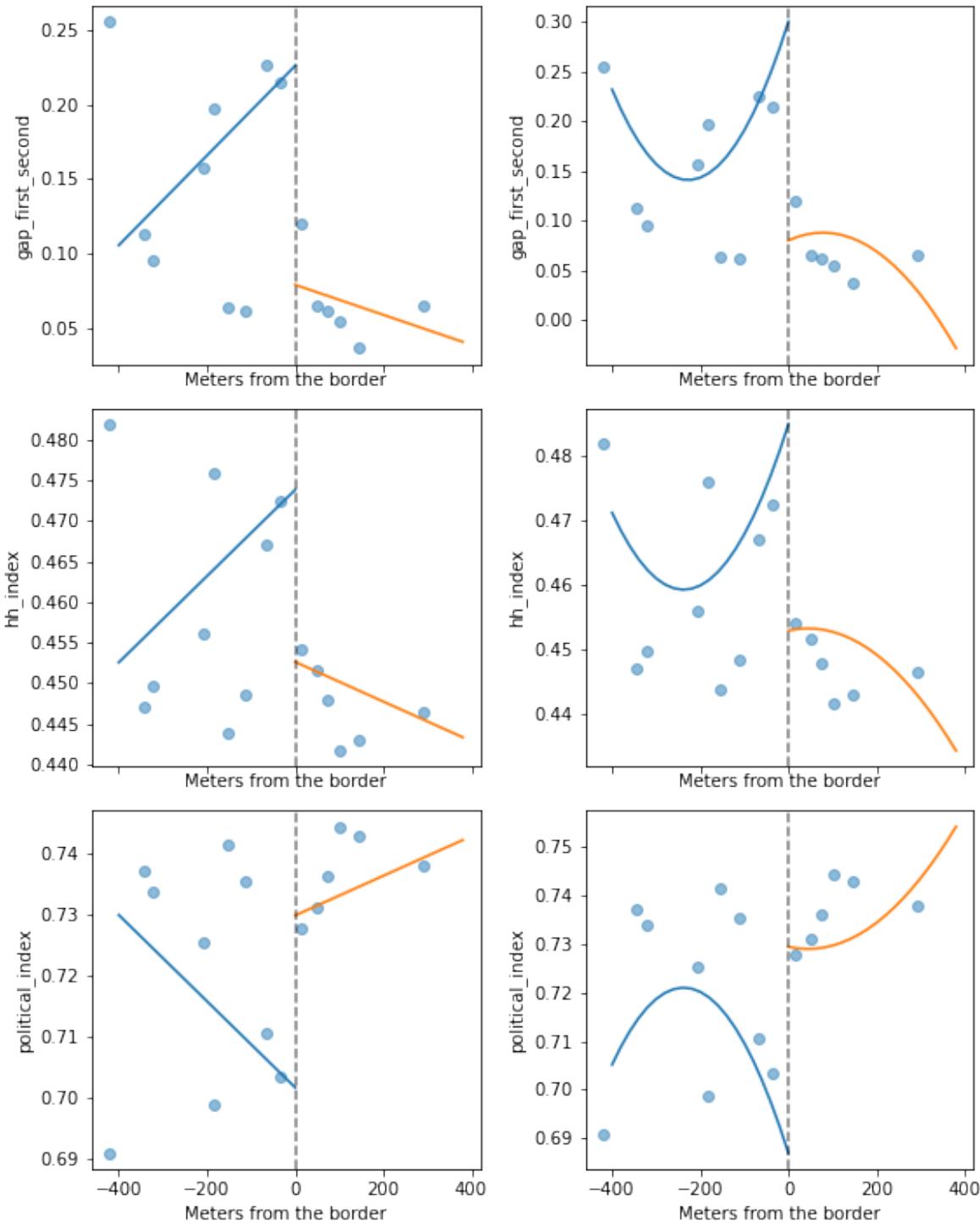


Table 16: Gang-Control Effect on Participation in 2014 and 2018 (RD)

	(1) Participation 2014	(2) Participation 2018
Gang Control Area	-0.021 (0.025)	0.006 (0.026)
Robust 95% CI	[-.086 ; .031]	[-.044 ; .075]
Kernel Type	Triangular	Triangular
BW Type	mserd	mserd
Observations	94	209
Conventional p-value	0.399	0.825
Robust p-value	0.359	0.605
Order Loc. Poly. (p)	1	1
Order Bias (q)	2	2
BW est. (h)	149.5	933.1
BW bias (b)	220.9	1561.6

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 17: Results of the discontinuous regression - Validation 2014

	(1) Gap First-Second	(2) HH index	(3) Political index
Gang Control Area	-0.711*** (0.161)	-0.115*** (0.028)	0.153*** (0.038)
Robust 95% CI	[-1.062 ; -.269]	[-.193 ; -.051]	[.068 ; .257]
Kernel Type	Triangular	Triangular	Triangular
BW Type	mserd	mserd	mserd
Observations	94	94	94
Conventional p-value	0.000	0.000	0.000
Robust p-value	0.001	0.001	0.001
Order Loc. Poly. (p)	2	2	2
Order Bias (q)	3	3	3
BW est. (h)	90.5	93.6	93.6
BW bias (b)	138.8	135.0	135.0

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 18: Results of the discontinuous regression - Validation 2018

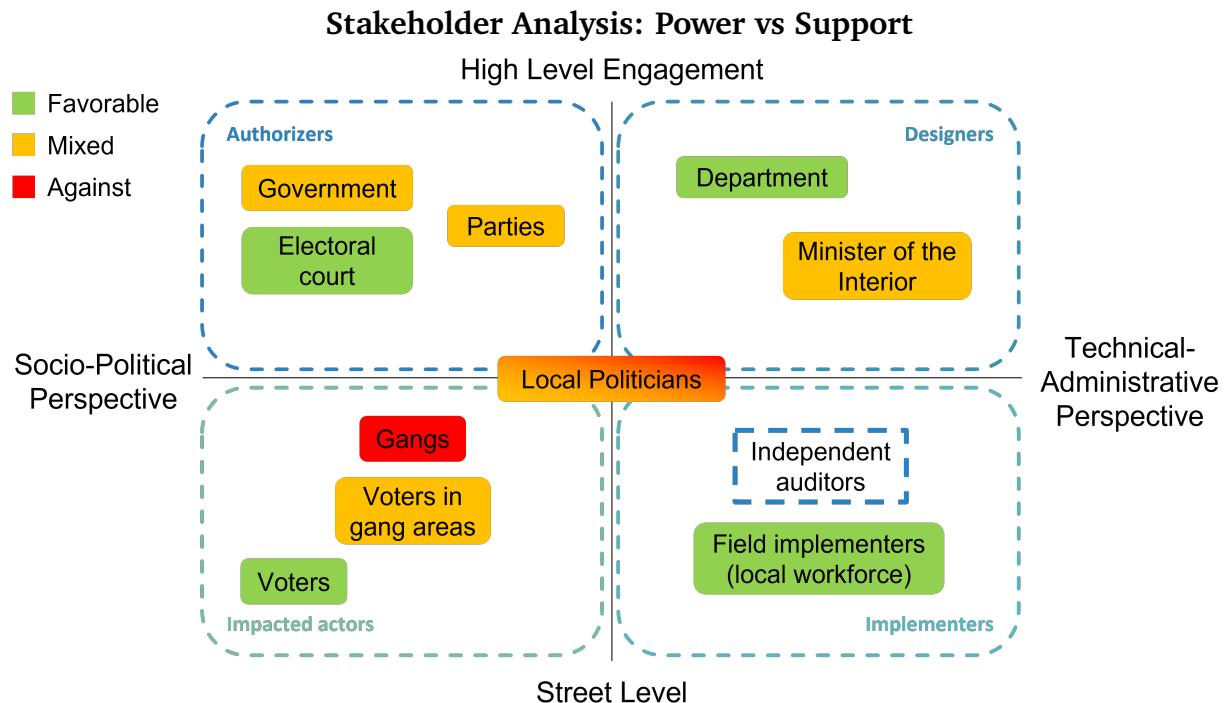
	(1) Gap First-Second	(2) HH index	(3) Political index
Gang Control Area	-0.109** (0.050)	-0.024 (0.027)	0.026 (0.029)
Robust 95% CI	[-.21 ; .006]	[-.074 ; .039]	[-.042 ; .081]
Kernel Type	Triangular	Triangular	Triangular
BW Type	mserd	mserd	mserd
Observations	222	222	222
Conventional p-value	0.030	0.376	0.376
Robust p-value	0.065	0.541	0.541
Order Loc. Poly. (p)	2	2	2
Order Bias (q)	3	3	3
BW est. (h)	1484.7	1363.7	1363.7
BW bias (b)	2145.5	1983.1	1983.1

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 19: Main Statistics - Regions

Region	Municipalities	Neighborhoods	Population	Polling Centers	Poverty
METROPOLITAN AREA	14	3,450	1,566,629	254	25
REGION CENTRAL II	76	5,655	1,085,447	336	53
REGION CENTRAL III	44	2,662	619,058	239	55
REGION OCCIDENTAL	41	6,624	1,282,118	297	51
REGION ORIENTAL	87	5,539	1,190,861	469	54

G Stakeholders



Stakeholder Analysis: Relations between Groups

