GETTING A SEAT AT THE (ELECTORAL) TABLE: PARTISAN POLL WORKERS AND ELECTORAL BIAS*

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How do party representatives as poll workers at electoral tables (voting booths) affect elections? Paraguay's system of counting votes is partisan and adversarial. Every voting booth has three poll workers which are, by law, party representatives. In theory, multiple parties count votes at each booth, ensuring the integrity of elections. Yet political parties have unequal capacities to send representatives to all booths, leading to stark inequalities in partisan poll worker representation during the 2018 Paraguayan elections we study. We exploit a natural experiment to show that partisan poll workers decrease an opposing party's vote share by up to 2 percentage points (pp) and increase theirs by up to 1 pp. Our analyses also demonstrate how incentives for electoral manipulation vary by electoral system. We find that partisan poll workers collude more often with rival party poll workers within proportional representation races, as distributing votes among themselves can help their parties earn more seats for their legislative candidates. In contrast, single-winner plurality voting yields less collusion, as partisan poll workers attempt to take votes from all parties running against their own. Our results have practical implications for political parties and policymakers, as well as theoretical implications for electoral competition in developing democracies.

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"... it does not matter how many votes a candidate gets, but how many the poll workers record on the vote tallies."

– Carlos María Ljubetic, electoral justice adviser quoted in ABC Color (2018*a*)

"Indeed, you won the elections, but I won the count."

– Anastasio Somoza, Nicaraguan dictator quoted in Gott (1977)

1 Introduction

In advanced democracies, the integrity of electoral results can perhaps be taken for granted. Yet in developing democracies, ensuring the integrity of the vote count is an ongoing process. In this article we use data from the 2018 general elections in Paraguay to explore how low-level institutions—at the electoral table level— affect electoral outcomes.[1]

Paraguay is an interesting country for analyzing low-level electoral institutions because its system for counting votes is partisan and adversarial. Each electoral table in Paraguay has three "members," and these members are, by law, political party representatives (TSJE, 1996).[2] Ideally, this system protects votes because if multiple parties count votes at each booth, then each party is able to defend its own votes, leading to an accurate count. However, if parties have unequal capacities to send representatives to all tables, then they may also be limited in their ability to protect their own votes, leading to biased counts. This limitation has been highlighted as an issue by previous electoral observation missions in Paraguay (EU, 2013). In addition, there is a bevy of anecdotal evidence that in Paraguay parties with lower capacity to send representatives are at a substantial disadvantage compared to the more traditional and well-resourced parties, the ANR and the PLRA (ABC Color, 2018*a*,*b*; Colmán Gutiérrez, 2018; Ferrara, 2016; Lachi, 2009).

[1] Throughout this paper, we will use the term electoral table (*mesa electoral*) and voting booth interchangeably.

[2] Article 177 of the Electoral Code.

Exploring whether partisan, adversarial vote-control systems can (or cannot) produce a fair count is important because elections should ideally reflect the preferences of citizens, and not depend on the capacity of political parties to count votes. Yet to our knowledge, no systematic analysis has identified causal evidence that varying party capacity distorts electoral results through the vote count process. Providing such evidence could also be informative for other developing democracies and even historical elections of advanced democracies, where electoral integrity was incomplete or remains incomplete to this day.[3]

We address our research question by exploiting a natural experiment in the allocation of voters to electoral tables in Paraguay's 2018 general elections. While voters are not randomly assigned to polling stations—voters are assigned to the polling station closest to their home, and they may decide to change their polling station—*within* polling stations voters are assigned to electoral tables alphabetically—according to the first letters of their surnames. Similar to studies carried out in Argentina (Casas, Díaz and Trindade, 2017) and Mexico (Cantú, 2014), we show that the first letters of surnames do not correlate with political preferences or electoral results in Paraguay. Hence, this as-if random assignment of voters to booths allows us to credibly assume that similar electoral outcomes will be recorded across tables within the same polling station. Any strong deviance in results recorded within the same polling station is therefore likely due to qualities of the tables themselves (i.e., the partisan poll workers) and not the preferences of voters. With this natural experiment design, we explore whether the partisan composition of poll worker teams affect electoral outcomes recorded in those tables.

We leverage an original data set compiled from around 120,000 hand-written scans of election-day vote tallies where poll workers sign and include their ID numbers. These ID numbers allow us to match these poll workers with two data sets that indicate their partisanship: political party registration data from individual parties and data from the election authority on pre-registered

[3]Other countries where explicitly partisan representatives can be poll workers or polling station administrators include: Nicaragua, Honduras, Armenia, Yemen, Ukraine, Kosovo, El Salvador, Costa Rica, and Colombia (Pomares et al., 2015; Sjoberg, 2016)

electoral agents indicating the party they work for during these elections. These data demonstrate that political parties have unequal poll worker representation across voting booths and that these inequalities are greater than what is on the data from pre-registered poll workers. In fact, more than a third of pre-registered poll workers get replaced by someone else on election day. These replacements primarily benefit the traditionally dominant parties (the ANR and to a lesser extent the PLRA) to the detriment of smaller parties which end up with fewer poll workers counting votes.

Our analyses show how electoral results vary symmetrically depending on the composition of partisan poll workers. For example, starting from a voting booth with only one ANR poll worker and one PLRA poll worker, one additional ANR poll worker raises its party's vote share by as much as 0.65 percentage points (pp) in some electoral races. Comparing from this same baseline (one ANR and one PLRA poll worker), voting booths controlled fully by the opposition PLRA can lead to as much as a 1.97 pp reduction in the ANR's vote share. Similarly, one more PLRA poll worker can raise the PLRA vote share by as much as 0.40 pp in some electoral races, while electoral tables controlled fully by the rival ANR can lead to as much as a 1 pp reduction in the PLRA's vote share. Hence, parties with poll workers at a large number of voting booths and multiple poll workers at the same booth counting votes have a systematic advantage in Paraguayan elections.

We also explore how different electoral systems provide distinct incentives for electoral manipulation. We leverage the fact that the Paraguayan general elections involve six different electoral races, which are defined by either plurality voting or proportional representation. Each of these electoral races has a distinct ballot which is counted in an independent tally involving the same voters and poll workers. This setup allows us to explore how electoral fraud works strategically. It has long been known that candidates and voters behave strategically. For example, nominating and seriously considering fewer candidates in plurality single-member-district (SMD) elections than they do in multi-member proportional representation (PR) districts (Cox, 2005). Yet there has been no exploration of how these distinct electoral systems affect incentives for electoral fraud. Our results suggest that PR races provide greater scope for collusion in electoral fraud among

partisan poll workers of the two traditional parties vis-à-vis smaller parties, since annulling and redistributing smaller-party votes among themselves can aid both parties in earning seats for their legislative candidates. In contrast, plurality voting yields less scope for collusion as these elections have only one winner, and partisan poll workers appear to attempt to take votes from all parties running against their own.

We find that in elections with plurality voting a poll worker team composed of two ANR poll workers and one PLRA poll worker significantly decreases the PLRA's vote share by around 0.5 pp. This is possible since the final results for each electoral table are determined by the majority of the three poll workers at each booth. In PR races we instead get that this same partisan poll worker allocation (2 ANR and 1 PLRA) leads to a significantly lower reduction of 0.32 pp in the PLRA's vote share. Our regressions and qualitative evidence suggest that this may be due to the ANR and PLRA cooperating more often in PR races by stealing votes to the detriment of other parties lacking poll worker representation at the booths. Thus, there is some compensating collusion with the PLRA in PR races which makes the ANR poll worker majority less detrimental to the PLRA's vote share. Also relatedly, we find that poll worker allocations just having "traditional" party (ANR or PLRA) poll workers significantly reduce the vote share of other parties by around 0.32 pp in PR races.

Our results thus have multiple theoretical and empirical implications. In theoretical terms, we posit that a portion of electoral results in developing democracies may depend on political parties' capacity to send poll workers to voting booths. Our findings also demonstrate how electoral integrity can be incomplete for developing democracies in multiple ways. Previous work on the literature has focused on clientelism and vote buying by the traditional parties (ANR and PLRA) of Paraguay (Duarte et al., 2019; Finan and Schechter, 2012). Our findings show how elections can be distorted at the vote counting stage in favor of the traditional parties. Together, these studies convey how traditionally dominant political parties can maintain their strength despite advances in democratization. Across several countries, particularly those of Latin America, traditionally dom-

inant parties have foundered in recent years as these countries have further democratized (Lupu, 2016). Hence, our findings and those of the previous literature point to how traditionally dominant parties can hold onto power through alternative means, such as vote buying and ensuring their partisan poll workers count votes. Fraud in this account can reinforce the effects of electoral institutions that foment a two-party system by further advantaging parties in PR elections if they have higher capacities in reaching electoral tables than smaller parties do.

In practical terms, our results have a clear message to parties: making an effort to have many partisan poll workers is advisable. This is because having poll worker representation–or even a poll worker majority–at a booth seems to systematically favor the party with that representation or majority. This has been commented on intuitively in Paraguayan political circles and the media before, yet our study provides the first empirical analysis that the composition of partisan poll workers counting votes significantly affects electoral outcomes. While our estimated electoral distortions generated by partisan poll workers may not determine elections on their own (as we find no effects above 3 pp in absolute value), we show how a sizable portion of the electoral results does not depend on the preferences of voters.

We structure the rest of our paper as follows. We provide some background on Paraguayan elections and their administration in Section 2. Next, we outline our conceptual framework and hypotheses in Section 3. Subsequently, we describe our data and the construction of our poll worker allocation measures in Section 4. Then, we describe our empirical strategy in Section 5, while in Section 6 we present our main results and robustness checks. Finally, we provide some concluding remarks in Section 7.

2 Background and Context

Paraguay's transition to democracy has hinged primarily around strengthening elections. For example, it is notable that the democratic electoral code adopted in 1990, after Alfredo Stroessner's

35-year dictatorship, preceded the democratic constitution approved in 1992. This electoral code, although far from perfect,[4] started Paraguay off into its first fully democratic period since its independence.

However, the selection of electoral rules was largely dominated by two political forces—the Colorado and Liberal parties—which have been in existence in Paraguay in one shape or another since 1887.[5] Carrizosa (2021) argues that these forces moulded electoral rules to crystallize certain political factors that dominated Paraguayan politics around 1989, yet it is notable how these interests permeated every level of the electoral system. In this paper, we focus on the most granular level of the electoral system: the electoral table itself.

Electoral tables are organized in a way that favors the two traditional parties. First of all, by law each table only has three members, and the three political parties with the most seats in Congress have priority in allocating their poll workers to these tables. Since the Colorado and Liberal parties always have the most or second most seats in Congress, in practice this implies that these parties are *always* entitled to at least one seat in every electoral table throughout the country. The third spot has been assigned to different parties throughout Paraguay's democratic period, but in the 2018 elections, this spot was reserved for the left-wing *Frente Guasu* (FG) party which had the third most seats in Congress at the time.[6] Thus, other political parties are excluded from electoral tables unless the main parties do not pre-register poll workers to fill their quota. Theoretically, this adversarial system should provide some electoral security—especially for those parties that are able to place members in electoral tables—as the entire counting process is handled by these members.

[4]The first version of the democratic electoral code was quickly drafted in order allow democratic municipal elections to take place in 1991, and to facilitate democratic practices throughout the drafting of the 1992 constitution. A more fleshed out version of the electoral code was re-drafted in 1996.

[5]These two parties are also referred to by their acronyms, ANR (*Asociación Nacional Repúblicana*) for the Colorado party, and PLRA (*Partido Liberal Radical Auténtico*) for the Liberal party.

[6]Technically, the FG is an electoral alliance of smaller left-wing political parties which run together under the FG name for elections. The FG member parties are PPS, PFA, PPC, PPT, PCP, PCPS, PMPP, and PUP.

Although the electoral code stipulates that each party with reserved seats should have at most one poll worker at each table, in practice this is not followed as vacancies on the day of the election often occur. The empty seats that these vacancies produce are most often distributed among the ANR and PLRA through election-day replacements of poll workers. Through our own conversations with political party activists and through focus groups done with political brokers by a local political scientist (Lachi, 2009), we learned how poll worker representation is "fundamental" for parties and how some poll workers are bribed to skew results or not show up (Lachi, 2009; Paraguay, 2018).[7] While these quotes may be hyperbole, they suggest a possible scope for malfeasance and that political parties care about having partisan poll workers present. In addition, political parties use their own funds to pay for transportation and meals for poll workers as this is not covered by the election authority (Lachi, 2009), which favors better funded parties. Finally, political party activists revealed to us that some political parties encourage their voters to show up to their polling stations early, in case the pre-registered poll workers do not show up. Given that by law each electoral table has to have three members, if the pre-registered poll workers do not show up they can be replaced by any voter present in the polling station. This practice also tends to favor the traditional parties which have more registered voters and funds available to compensate their poll workers.

Besides the poll workers, some parties may have poll watchers (*veedores*) and electoral proxies (*apoderados electorales*) witnessing the count, though their presence at the count is not required and they cannot count the ballots themselves.[8] Collectively, the poll workers, poll watchers, and

[7]The news article from Paraguay (2018) is linked to a video where journalists interview an anonymous political broker who claims that electoral tables can be "bought" by bribing poll workers to distort the electoral results.

[8]Poll watchers are allowed to access the polling station where they are posted and sit next to the electoral table where they will observe the voting process. They can also present written claims and protests, and are allowed to sign the vote tallies, though their signature is not required (unlike that of all electoral table members). Electoral proxies have the right to freely access the polling stations, examine the count process, to make claims, protest results, and to receive a copy of the vote tallies filled out by a poll worker. While poll watchers tend to stick with a specific electoral table throughout the election, electoral proxies work at the polling station level and can observe the electoral process at multiple distinct electoral tables.

electoral proxies are called electoral agents (*agentes electorales*). The presence of poll watchers and electoral proxies varies depending on how remote the polling station is, with urban localities having a greater number of electoral agents. Anecdotally, the inequality in overall electoral agent representation among parties tends to be greater in more rural and remote areas.

The 2018 general elections involved six different electoral races: (1) president and vice-president, (2) senators, (3) MERCOSUR (regional trade bloc) parliament, (4) deputies, (5) departmental governor, and (6) departmental council. The first three positions are elected nationally among all Paraguayan voters, while the latter three are elected at the departmental level.[9] The president and governors are elected by plurality voting, while the remaining four races have a proportional representation (PR) system. For the 2018 elections, the PLRA, the FG, and other smaller left-wing parties formed an electoral alliance called GANAR for the presidential race.[10] In addition to the presidential race, in some departments the GANAR alliance ran together for deputies, departmental governor, and departmental council.

Weeks before the election, one member of each electoral table is randomly selected to be the "president" of the table, while the two others remain as members called *vocal* 1 and *vocal* 2. Voting proceeds as follows.[11] First, the table members confirm that the voter is registered to vote at her respective electoral table. Next, the table president takes the paper ballots (one for each electoral race) and gives them to the other two members of the table to sign them. These signed ballots are then given to the voter, who goes up to the voting booth to cast her votes, and then folds the ballots shut. The voter then returns the ballots to the table president, who signs the folded ballots, and afterwards the voter is asked to place her ballots into transparent ballot bags for each electoral race

[9]Paraguay is divided into 17 departments and one capital district. Given that the capital district is not a department, voters from the capital district do not elect a departmental council or governor (a similar function is already covered by the capital's municipality mayor and municipal council). The capital district still elects deputies who represent the capital however. In addition, Paraguayans voting abroad in polling stations setup in Argentina, the US, Spain, and Brazil did not vote for deputies, the departmental council, or departmental governor.

[10]The full list of parties that were part of GANAR are: PLRA, PRF, PDP, PEN, AP, PMAS, and the FG member parties.

[11]See Appendix Figure A1 for a picture of a typical electoral table setup.

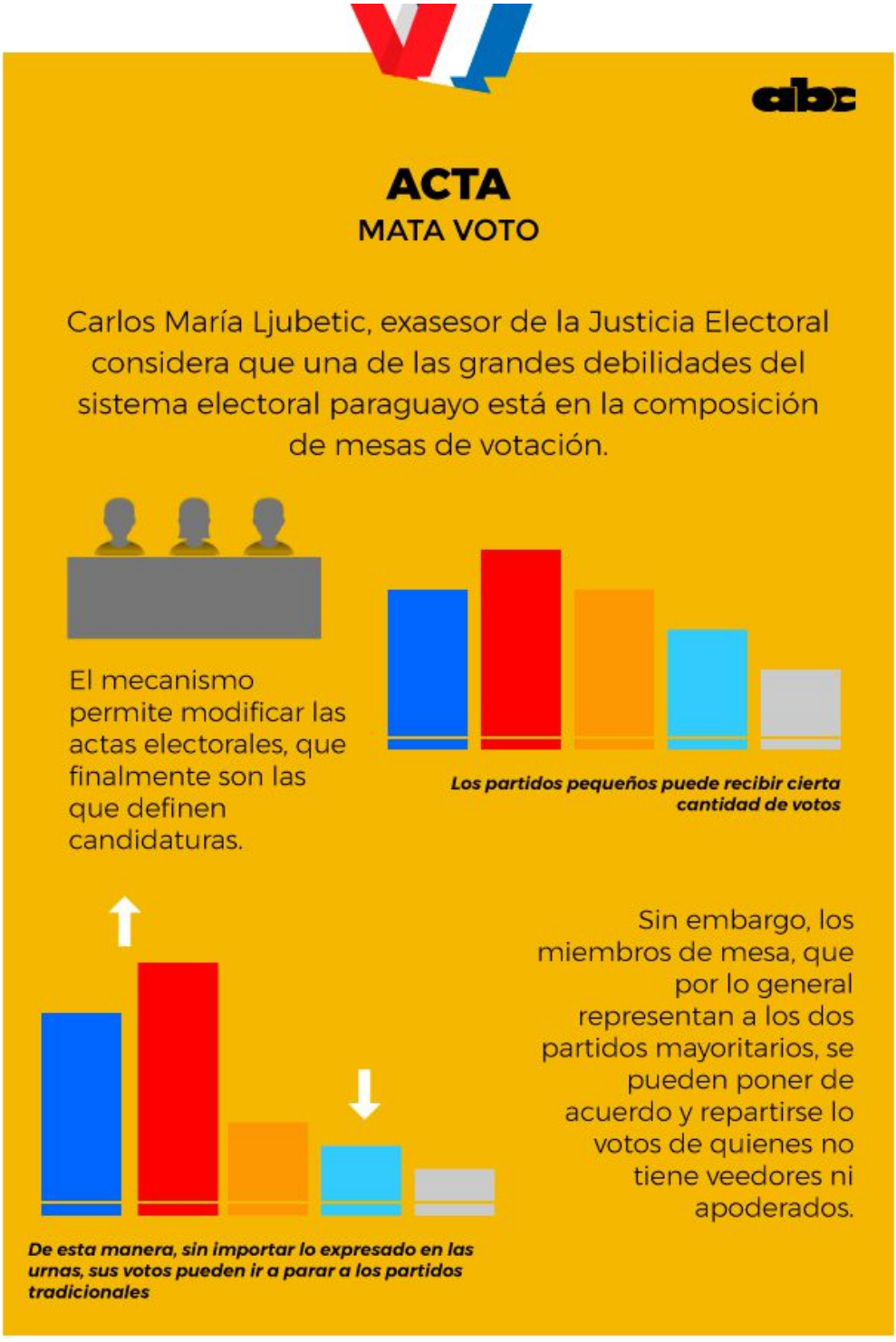
placed in the front of the table. At the end of the day, all three members count the votes together and each writes up a vote tally (called *acta electoral*) for each race of the table. All three members are required to sign each vote tally, acknowledging that they agree with the counted and registered results.

Despite this formal structure created to protect votes, there are several ways in which this setup may be subverted to benefit certain political parties. Anecdotally what is said to occur is that Colorados and Liberals defend their votes, and may distribute votes for remaining parties that do not have a representative at the voting booth (ABC Color, 2018*a*; Lachi, 2009). Allegations like this also appeared after the 2018 elections (ABC Color, 2018*b*; Colmán Gutiérrez, 2018). A Paraguayan columnist remarked that his vote for a small party representing indigenous peoples was stolen (Colmán Gutiérrez, 2018). When the results of the elections were uploaded online at the voting booth level, he checked his voting booth's results and to his surprise there were *zero* votes for the party list he voted for. This allegation could not be verified with his own paper ballot since these were discarded after the counting process.[12] This experience motivated him to call Paraguay the "country of the lost votes." A similar allegation was made by another voter who voted for another small party and who saw zero votes for her party on the electoral table result (ABC Color, 2018*b*). The irregularities that colluding coalitions can perform with paper ballots include miscounting and tampering with the paper ballots (see Figure 1 for a newspaper infographic from ABC Color (2018*a*) alluding to how colluding coalitions of poll workers could alter the count). Results at the voting booth level can only be challenged during the counting process among the poll workers, poll watchers, and electoral proxies that are present, which limits the ability of smaller parties to protect their votes.

Partisan poll workers may also engage in vote monitoring (violations of voting secrecy). Carlos María Ljubetic, a previous director of electoral processes of the elections authority of Paraguay (the

[12]Paraguayan electoral administration laws at the time did not require saving the paper ballots (Última Hora, 2018). The lowest level of documentation available for posterior inspection is at the electoral race-table level with the vote tally.

Figure 1: Newspaper infographic describing collusion at electoral tables for tabulation fraud



Notes: the text above states: "Vote tallies 'kill' votes: Carlos María Ljubetic, former electoral justice adviser considers that one of the great weaknesses of the Paraguayan electoral system is in the composition of electoral tables. This mechanism allows for the modification of the vote tallies, which are ultimately the ones that define the candidacies. Small parties can receive a certain number of votes. However, the poll workers of the table, who generally represent the two major parties, can agree and share the votes of those who do not have their own poll watchers or electoral proxies. In this way, regardless of what is expressed at the polls, their votes can go to the traditional parties."

Superior Court of Electoral Justice, known by its Spanish acronym TSJE), acknowledges this can occur as follows. Political brokers buying votes tell voters to write in particular marks on their paper ballots that the partisan poll workers could tally to confirm the vote buying agreements were followed through. Figure 2 shows a newspaper infographic from ABC Color (2018*a*) indicating how vote monitoring could occur with paper ballots. Another vote monitoring method that Ljubetic indicated during a lecture he gave to DENDE (a civil society NGO) was that partisan poll workers could mark ballots given to certain voters such that when they count the votes for these voters they can determine who they voted for.[13] In particular, since the poll workers have to sign the paper ballots given to voters before the voters submit their paper ballot, these poll workers can modify their signatures to later on recognize these ballots during the vote count.

As mentioned above, Paraguayan elections have separate ballots for each race and these ballots are inserted into different ballot boxes (TSJE, 2018). This implies that the outcomes for each race are counted in a somewhat independent fashion, and this may provide incentives for poll workers to engage in different types of irregularities depending on the race. The ballot structure of Paraguayan elections, thus allows us to explore strategic fraud and how different types of fraud may be convenient for partisan poll workers given the differing nature of the races being considered. In particular, we consider whether electoral races are defined by plurality voting or proportional representation. Technically, there is scope for collusion among opposing party poll workers with PR races since distributing votes among themselves can help both parties earn seats for their legislative candidates. On the other hand, there should be less scope for collusion with plurality voting since these elections have only one winner, so partisan poll workers are expected to attempt to take votes from all parties running against their own.

As a motivating example, we can consider the case of one electoral table where the official results were challenged because the quick count tally had visible modifications to its counts. Figure 3 shows the senatorial race quick count tally for this electoral table, with visible modifications.

[13] We have a recording of this lecture where this method was highlighted.

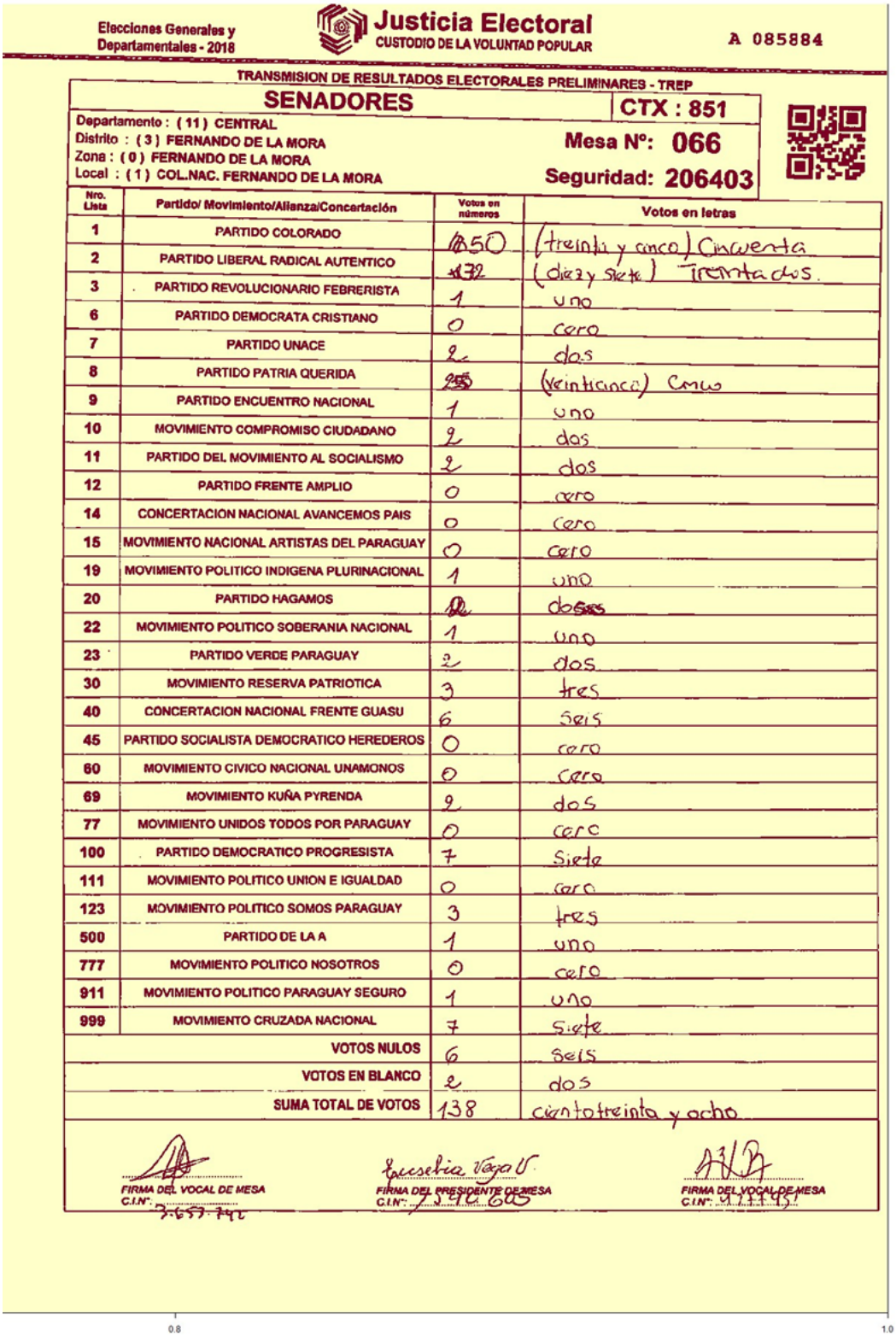
Figure 2: Newspaper infographic describing potential vote monitoring by partisan poll workers

Notes: the text above states: "Strategies for selling votes: The Paraguayan electoral system provides facilities for vote selling and for [political] brokers to ensure that voters effectively vote their way. There are less elaborate ways such as selling ID cards [to buy a voter's abstention since these are necessary to vote], or taking photos of the ballot, but there are others that are not as obvious. A voter marks his ballot with a particular sign. The electoral table poll worker (who responds to the broker of a party) verifies that the ballots contain the particular sign. This way the broker secures the votes for which he pays for."

The modifications to the results are as follows: ANR +15, PLRA +15, PPQ -20, PPH (*Hagamos*) party -10. Figure 4 shows Stata output of the official senate race results for the voting booth that had its official results challenged. These official election results data was obtained from the elections authority (the TSJE). Comparing this figure with the previous one we can confirm that the modifications remain in the official results. Figure 5 shows Stata output of the partisan support and the ID numbers of the poll workers from the electoral table that had its official results challenged. The data on partisan support and party registration come from the elections authority (the TSJE) and the political parties themselves. What we observe is that two of them belong to the ANR and one belongs to the PLRA. Neither the PPQ nor PPH had poll worker representation at this electoral table. Thus, with this electoral table we observe a presumptive case of collusive fraud benefiting the traditional parties with poll worker representation at the expense of smaller parties.[14] We expect this type of collusive fraud to be more common with the PR races for legislative positions compared to the executive elections (president and governor) which are determined by plurality voting.

[14]Note that the case with this electoral table is particularly flagrant given the visible modifications to the tally. There are other cases where the tallies were presumably manipulated from the start, so there are no visible modifications. For example, the cases mentioned by Colmán Gutiérrez (2018) and ABC Color (2018*b*) show that the parties they voted for received 0 votes according to the quick count tallies of their voting booths.

Figure 3: Quick count tally of voting booth whose official results were challenged, with visible modifications



Elecciones Generales y Departamentales - 2018

Justicia Electoral
CUSTODIO DE LA VOLUNTAD POPULAR

A 085884

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

SENADORES — CTX : 851

Departamento : (11) CENTRAL
Distrito : (3) FERNANDO DE LA MORA
Zona : (0) FERNANDO DE LA MORA
Local : (1) COL.NAC. FERNANDO DE LA MORA

Mesa Nº: 066
Seguridad: 206403

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	50	(treinta y cinco) Cincuenta
2	PARTIDO LIBERAL RADICAL AUTENTICO	32	(diez y siete) Treinta dos.
3	PARTIDO REVOLUCIONARIO FEBRERISTA	1	uno
6	PARTIDO DEMOCRATA CRISTIANO	0	cero
7	PARTIDO UNACE	2	dos
8	PARTIDO PATRIA QUERIDA	25	(veinticinco) Cinco
9	PARTIDO ENCUENTRO NACIONAL	1	uno
10	MOVIMIENTO COMPROMISO CIUDADANO	2	dos
11	PARTIDO DEL MOVIMIENTO AL SOCIALISMO	2	dos
12	PARTIDO FRENTE AMPLIO	0	cero
14	CONCERTACION NACIONAL AVANCEMOS PAIS	0	cero
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	cero
19	MOVIMIENTO POLITICO INDIGENA PLURINACIONAL	1	uno
20	PARTIDO HAGAMOS	12	dos
22	MOVIMIENTO POLITICO SOBERANIA NACIONAL	1	uno
23	PARTIDO VERDE PARAGUAY	2	dos
30	MOVIMIENTO RESERVA PATRIOTICA	3	tres
40	CONCERTACION NACIONAL FRENTE GUASU	6	Seis
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	cero
60	MOVIMIENTO CIVICO NACIONAL UNAMONOS	0	cero
69	MOVIMIENTO KUÑA PYRENDA	2	dos
77	MOVIMIENTO UNIDOS TODOS POR PARAGUAY	0	cero
100	PARTIDO DEMOCRATICO PROGRESISTA	7	Siete
111	MOVIMIENTO POLITICO UNION E IGUALDAD	0	cero
123	MOVIMIENTO POLITICO SOMOS PARAGUAY	3	tres
500	PARTIDO DE LA A	1	uno
777	MOVIMIENTO POLITICO NOSOTROS	0	cero
911	MOVIMIENTO POLITICO PARAGUAY SEGURO	1	uno
999	MOVIMIENTO CRUZADA NACIONAL	7	Siete
	VOTOS NULOS	6	Seis
	VOTOS EN BLANCO	2	dos
	SUMA TOTAL DE VOTOS	138	ciento treinta y ocho

FIRMA DEL VOCAL DE MESA C.I.N°: 3.657.792

FIRMA DEL PRESIDENTE DE MESA C.I.N°: 7.516.685

FIRMA DEL VOCAL DE MESA C.I.N°: 4.114.451

Notes: the picture above shows the senate race quick count tally for a voting booth whose official results were challenged with visible modifications. The modifications to the results are as follows: ANR +15, PLRA +15, PPQ -20, PPH (*Hagamos*) party -10.

Figure 4: Stata output showing the electoral results of a voting booth that had its official results challenged

```
. list *_vote_sen if mesaid=="11_3_0_1_66"
```

9310.

ANR_vo~n	AP_vot~n	CN_vot~n	FG_vot~n	MCC_vo~n	MKP_vo~n	MNAP_v~n	MPIP_v~n	MPN_vo~n	MRP_vo~n	MSPY_v~n	MUI_vo~n	MUTPY_~n	PAS_vo~n	PDA_vo~n
50	0	7	6	2	2	0	1	0	3	3	0	0	1	1

PDC_vo~n	PDP_vo~n	PEN_vo~n	PFA_vo~n	PLRA_v~n	PMAS_v~n	PPH_vo~n	PPQ_vo~n	PRF_vo~n	PSDH_v~n	PVP_vo~n	SN_vot~n	UNACE_~n	UNAMON~n
0	7	1	0	32	2	2	5	1	0	2	1	2	0

Notes: the picture above shows Stata output of the official senate race results for a voting booth that had its official results challenged. The official election results data was obtained from the elections authority (the TSJE). Comparing this figure with the previous one we can confirm that the following modifications remain in the official results: ANR +15, PLRA +15, PPQ -20, PPH (*Hagamos*) party -10.

Figure 5: Stata output showing the partisan support and ID numbers of poll workers from a voting booth that had its official results challenged

mesaid	f_v1_part	f_p_part	f_v2_part	f_v1_cedula	f_p_cedula	f_v2_cedula
11_3_0_1_66	PLRA	ANR	ANR	3653742	1540605	4177951

Notes: the picture above shows Stata output of the partisan support and the ID numbers of the poll workers from an electoral table that had its official results challenged. The data on partisan support and registration come from the election authority (the TSJE) and the political parties themselves. Two of the poll workers belong to the ANR and one belongs to the PLRA. Neither the PPQ nor PPH had poll worker representation at this electoral table.

3 Conceptual Framework

A broad literature analyzes election irregularities at different stages including the aggregation process (Beber and Scacco, 2012; Callen and Long, 2015; Cantú, 2019) and clientelism more generally (Anderson, Francois and Kotwal, 2015; Baland and Robinson, 2008; Duarte et al., 2019; Finan and Schechter, 2012; Hicken, 2011). Previous work has analyzed the role that independent domestic (Ichino and Schündeln, 2012) and international (Hyde, 2007) election observers can also play in developing democracies.

More recent work has studied the effect of biased polling station administrators (Neggers, 2018) and poll watchers (Ascencio and Rueda, 2019; Casas, Díaz and Trindade, 2017). Neggers (2018) exploits the random assignment of Indian government officials to teams managing election stations. He demonstrates that changes in the religious and caste composition of officer teams impacts voting at the polling station level. Leveraging the way that Argentinean voters are allocated to polling booths as a quasi-natural experiment, Casas, Díaz and Trindade (2017) find that partisan electoral observers' presence can cause a 1.5% average increase in the vote count for their preferred party. The authors propose that this is achieved through the "disappearance" of ballots for certain parties, since in Argentinean elections each party has a separate ballot. That is, partisan poll watchers limit the real options that voters have at a given electoral table, which allows them to affect elections even when they are not counting the votes. Ascencio and Rueda (2019) find a robust positive correlation between the presence of party representatives at polling stations and their party's vote share in Mexico. In addition, they explore the strategic choices that parties make in sending poll watchers to particular polling stations.

Our paper deals specifically with poll workers, that is, those actually counting the votes. The literature on poll workers is even more recent. Challú, Seira and Simpser (2020) show how non-partisan errors are made by poll workers with lower education and higher workload. The latter finding aligns with Warner et al. (2021) who study irregularities on statutory forms from Kenya's

2013 presidential elections and conclude that they are generally benign errors. Finally, Hidalgo and Rizzo (2022) is another contemporaneous paper that studies poll workers in the Mexican context, where citizens are invited to participate as poll workers if their month of birth and the first letter of their surname is randomly selected. They find that having a partisan poll worker increases their party vote share by 0.4%. This paper and ours provide evidence that institutional rules that countries use to select poll workers matter. As even random selection can result in partisan bias in the Mexican context, the prioritization of dominant parties and ability to substitute poll workers in our context should magnify those biases and make electoral distortions even more acute.

We contribute to this growing literature in two ways. First, our data allow us to replicate the exercises carried out by Hidalgo and Rizzo (2022) and Casas, Díaz and Trindade (2017) in the Paraguayan context. Our paper provides a rigorous natural experiment that allows us to identify if partisan poll workers in Paraguay affect electoral outcomes in a way that is independent from voters' preferences. This in itself provides evidence that poll workers matter under different party systems, electoral rules, ballot structures, and election administration institutions.

Second, and more importantly, the ballot structure of Paraguayan elections gives us a unique opportunity to explore how fraud may vary depending on the electoral system. Since each electoral race uses an independent ballot, poll workers can decide whether to count the votes honestly or fraudulently by election type. That is, poll workers can decide to commit fraud with the legislative elections, but choose not to do so with the executive elections.

Historically, it has been difficult to explore how different electoral systems either promote or prevent fraud. The identification of this effect has been difficult because we expect individuals to vote strategically. That is, even voters with stable and sincere preferences across different races may behave quite differently depending on the number of candidates available. For example, in a single-member district election, citizens might decide to vote for one of the top two candidates available rather than voting for a third candidate they prefer, because voting for a third party is likely to be a "wasted" vote. However, under a multi-member district election, voting for third

parties should become more likely (Cox, 2005). In exploring how incentives for electoral fraud vary from one electoral race to another, it would therefore be necessary to subtract the effect that strategic voting has on electoral behavior.

In Paraguay, this is possible because separate ballots are used for each electoral race. Therefore, by leveraging electoral race and polling station fixed effects we can capture the effect of strategic voting within each polling station. Doing this essentially allows our regression models to absorb and subtract strategic voting from our estimated poll worker effects. Since voters within voting booths but across races are constant, absorbing strategic voting should allow us to equalize voter behavior across different races. Hence, the main variance between booths across races after taking our fixed effects into account should be a function of the behavior of poll workers instead of voters across different ballots. In short, the ballot structure of Paraguayan elections allows for fraud to be committed independently at the electoral race level within each voting booth. This provides us with a unique opportunity to explore how incentives for electoral fraud vary under different electoral institutions—particularly SMD and PR systems.

Why might poll workers' incentives for fraud take different forms under SMD and PR? It may be illustrative to use a concrete example. In the presidential race, the PLRA and several smaller parties banded together to present a single candidate under the GANAR alliance. That being said, in other electoral races such as the senatorial race the GANAR alliance did not exist. Hence, the PLRA and those same parties ran separate party lists for those elections. Given this circumstance, what might be the incentives for PLRA poll workers? Since poll workers were assigned to the PLRA party specifically and not the alliance, one could expect that PLRA poll workers will defend the votes of GANAR alliance voters in the presidential election because those coincide with their own. Yet they may not defend the votes of smaller parties in PR elections, where small-party voters choose their own parties instead of the GANAR alliance. In addition, PR races should provide greater scope for cooperation in electoral fraud among the partisan poll workers present. This is because annulling and redistributing the votes from those parties not having poll workers present

can aid the parties of the colluding poll workers by earning them more seats for their legislative candidates. On the other hand, elections with SMD yield less scope for collusion as these elections have only one winner, and partisan poll workers would want to take votes from all parties running against their own. What we seek to explore is how these changing electoral circumstances affect the incentives that poll workers have to defend or discard the votes of citizens.

3.1 Hypotheses

Given the background information on the context, the literature, and the conceptual framework just laid out, below are our hypothesized results:

1. Whenever a party has a majority of poll workers in an electoral table (that is, either two or three out of three), its vote share will increase.

2. Parties lacking poll workers at an electoral table will tend to receive a lower vote share.

   (a) Hence, the presence of a poll worker from one traditional party but not the other benefits the traditional party that is present.

   (b) We also expect that the presence of only poll workers from both traditional parties should decrease the vote share of other parties.

3. In proportional representation electoral races there should be more collusive fraud between the partisan poll workers present. That is, they should be more prone to redistribute the votes from parties not present, as all parties present stand to benefit.

4 Data

We assembled data from different sources to study how partisan poll workers have an effect on elections. In 2018, the elections authority released electoral results data at the voting booth-level

for the first time. In addition, we have two datasets on the allocation of partisan poll workers to voting booths in the whole country: the *de jure* allocation from pre-registered poll workers and *de facto* allocation gleaned from election-day quick count vote tallies. That is, data for around 21,000 electoral tables nested within around 1,100 polling stations.

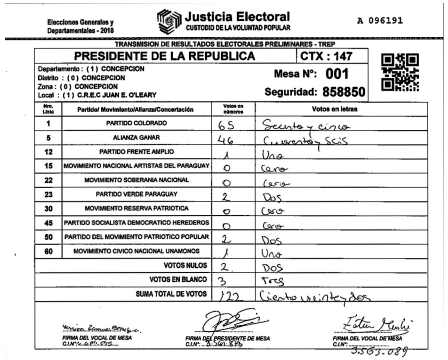
The *de jure* allocation comes from a spreadsheet obtained from the elections authority (the TSJE), which indicates the partisan poll worker representation that was officially approved two weeks in advance of the elections. It notes all the pre-registered electoral agents, that is, poll workers, poll watchers (*veedores*), and electoral proxies (*apoderados*). It also includes substitutes (at the polling station level) if any electoral agents pre-registered with priority do not show up to the polls on election day.[15] Most importantly, this data has the partisan affiliation of all pre-registered electoral agents and their national ID numbers.

In addition, the TSJE uploaded scans of every single quick count tally for all electoral races at each electoral table. The data on *de facto* poll workers was compiled by us on the basis of scans of these approximately 120,000 hand-written election-day quick count tallies written by the poll workers themselves. These were briefly published by the election authority on their website and we scraped the election authority's website for them. As the TSJE already shared the electoral results at the voting booth-level, the key additional piece of information that the scans of the tallies provide are the signatures, the ID numbers, and the "president" or "vocal" status of the poll workers at the bottom of each tally (see Figure 6).[16] Using data from the elections authority and political parties, we can match the IDs of the poll workers to the parties they work for (if they are a pre-registered electoral agent) and the parties they are registered to.

[15]While there are around 63,000 pre-registered poll workers with priority, there are less than 21,000 pre-registered substitute poll workers available. There is also substantial variation in terms of the distribution of substitute poll workers available by area and party. While some urban polling stations have many substitute poll workers available, some rural polling stations have none. 11,087 of the substitute poll workers belong to the ANR, 5,264 belong to the PLRA, and 3,030 belong to the FG. Less than 1,250 of the substitute poll workers belong to other parties.

[16]Appendix Figure A2 shows the pre-registered poll workers for the same electoral table. Comparing the pre-registered poll workers with those on the tallies shown, we can observe that the ANR and PLRA pre-registered poll workers showed up on election day, while the FG one was replaced.

Figure 6: Example quick count vote tallies from a single voting booth



Elecciones Generales y Departamentales - 2018 — Justicia Electoral — CUSTODIO DE LA VOLUNTAD POPULAR — A 096191

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

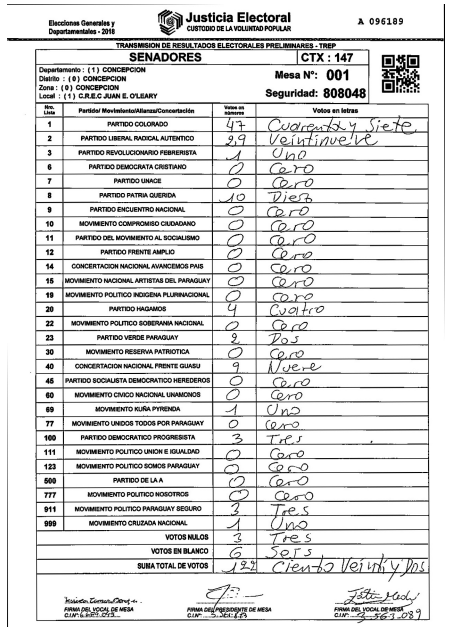
PRESIDENTE DE LA REPUBLICA — CTX : 147

Departamento : (1) CONCEPCION
Distrito : (0) CONCEPCION
Zona : (0) CONCEPCION
Local : (1) C.R.E.C JUAN E. O'LEARY

Mesa Nº: 001
Seguridad: 858850

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	65	Sesenta y cinco
5	ALIANZA GANAR	46	Cuarenta y Seis
12	PARTIDO FRENTE AMPLIO	1	Uno
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
22	MOVIMIENTO SOBERANIA NACIONAL	0	Cero
23	PARTIDO VERDE PARAGUAY	2	Dos
30	MOVIMIENTO RESERVA PATRIOTICA	0	Cero
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
50	PARTIDO DEL MOVIMIENTO PATRIOTICO POPULAR	2	Dos
60	MOVIMIENTO CIVICO NACIONAL UNAMONOS	1	Uno
	VOTOS NULOS	2	Dos
	VOTOS EN BLANCO	3	Tres
	SUMA TOTAL DE VOTOS	122	Ciento veinti dos

FIRMA DEL VOCAL DE MESA C.I.Nº: 5.561.879 — FIRMA DEL PRESIDENTE DE MESA C.I.Nº: 5.561.879 — FIRMA DEL VOCAL DE MESA C.I.Nº: 3.565.089



Elecciones Generales y Departamentales - 2018 — Justicia Electoral — CUSTODIO DE LA VOLUNTAD POPULAR — A 096189

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

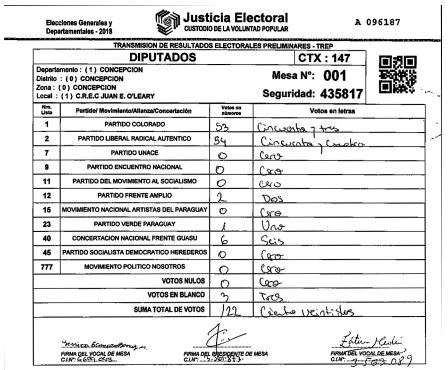
SENADORES — CTX : 147

Departamento : (1) CONCEPCION
Distrito : (0) CONCEPCION
Zona : (0) CONCEPCION
Local : (1) C.R.E.C JUAN E. O'LEARY

Mesa Nº: 001
Seguridad: 808048

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	47	Cuarenta y Siete
2	PARTIDO LIBERAL RADICAL AUTENTICO	29	Veintinueve
3	PARTIDO REVOLUCIONARIO FEBRERISTA	1	Uno
6	PARTIDO DEMOCRATA CRISTIANO	0	Cero
7	PARTIDO UNACE	0	Cero
8	PARTIDO PATRIA QUERIDA	10	Diez
9	PARTIDO ENCUENTRO NACIONAL	0	Cero
10	MOVIMIENTO COMPROMISO CIUDADANO	0	Cero
11	PARTIDO DEL MOVIMIENTO AL SOCIALISMO	0	Cero
12	PARTIDO FRENTE AMPLIO	0	Cero
14	CONCERTACION NACIONAL AVANCEMOS PAIS	0	Cero
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
19	MOVIMIENTO POLITICO INDIGENA PLURINACIONAL	0	Cero
20	PARTIDO HAGAMOS	4	Cuatro
22	MOVIMIENTO POLITICO SOBERANIA NACIONAL	0	Cero
23	PARTIDO VERDE PARAGUAY	2	Dos
30	MOVIMIENTO RESERVA PATRIOTICA	0	Cero
40	CONCERTACION NACIONAL FRENTE GUASU	9	Nueve
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
60	MOVIMIENTO CIVICO NACIONAL UNAMONOS	0	Cero
69	MOVIMIENTO KUÑA PYRENDA	1	Uno
77	MOVIMIENTO UNIDOS TODOS POR PARAGUAY	0	Cero
100	PARTIDO DEMOCRATICO PROGRESISTA	3	Tres
111	MOVIMIENTO POLITICO UNION E IGUALDAD	0	Cero
123	MOVIMIENTO POLITICO SOMOS PARAGUAY	0	Cero
500	PARTIDO DE LA A	0	Cero
777	MOVIMIENTO POLITICO NOSOTROS	0	Cero
911	MOVIMIENTO POLITICO PARAGUAY SEGURO	3	Tres
999	MOVIMIENTO CRUZADA NACIONAL	1	Uno
	VOTOS NULOS	3	Tres
	VOTOS EN BLANCO	6	Seis
	SUMA TOTAL DE VOTOS	124	Ciento Veinti y Dos

FIRMA DEL VOCAL DE MESA C.I.Nº: 5.561.879 — FIRMA DEL PRESIDENTE DE MESA C.I.Nº: 5.561.879 — FIRMA DEL VOCAL DE MESA C.I.Nº: 3.565.089



Elecciones Generales y Departamentales - 2018 — Justicia Electoral — CUSTODIO DE LA VOLUNTAD POPULAR — A 096187

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

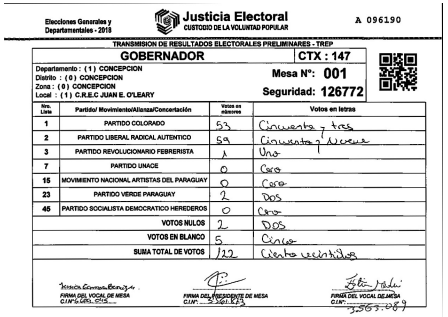
DIPUTADOS — CTX : 147

Departamento : (1) CONCEPCION
Distrito : (0) CONCEPCION
Zona : (0) CONCEPCION
Local : (1) C.R.E.C JUAN E. O'LEARY

Mesa Nº: 001
Seguridad: 435817

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	53	Cincuenta y tres
2	PARTIDO LIBERAL RADICAL AUTENTICO	54	Cincuenta y Cuatro
7	PARTIDO UNACE	0	Cero
9	PARTIDO ENCUENTRO NACIONAL	0	Cero
11	PARTIDO DEL MOVIMIENTO AL SOCIALISMO	0	Cero
12	PARTIDO FRENTE AMPLIO	2	Dos
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
23	PARTIDO VERDE PARAGUAY	1	Uno
40	CONCERTACION NACIONAL FRENTE GUASU	6	Seis
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
777	MOVIMIENTO POLITICO NOSOTROS	0	Cero
	VOTOS NULOS	0	Cero
	VOTOS EN BLANCO	3	Tres
	SUMA TOTAL DE VOTOS	122	Ciento Veintidos

FIRMA DEL VOCAL DE MESA C.I.Nº: 5.561.879 — FIRMA DEL PRESIDENTE DE MESA C.I.Nº: 5.561.879 — FIRMA DEL VOCAL DE MESA C.I.Nº: 3.565.089



Elecciones Generales y Departamentales - 2018 — Justicia Electoral — CUSTODIO DE LA VOLUNTAD POPULAR — A 096190

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

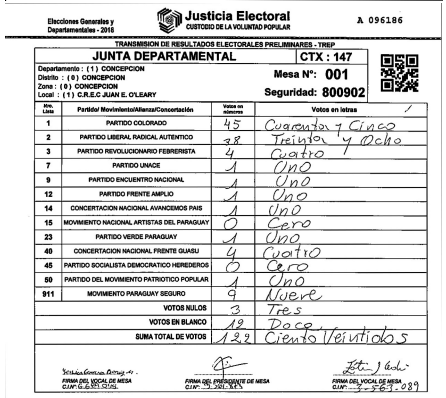
GOBERNADOR — CTX : 147

Departamento : (1) CONCEPCION
Distrito : (0) CONCEPCION
Zona : (0) CONCEPCION
Local : (1) C.R.E.C JUAN E. O'LEARY

Mesa Nº: 001
Seguridad: 126772

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	53	Cincuenta y tres
2	PARTIDO LIBERAL RADICAL AUTENTICO	59	Cincuenta y Nueve
3	PARTIDO REVOLUCIONARIO FEBRERISTA	1	Uno
7	PARTIDO UNACE	0	Cero
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
23	PARTIDO VERDE PARAGUAY	2	Dos
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
	VOTOS NULOS	2	Dos
	VOTOS EN BLANCO	5	Cinco
	SUMA TOTAL DE VOTOS	122	Ciento veintidos

FIRMA DEL VOCAL DE MESA C.I.Nº: 5.561.879 — FIRMA DEL PRESIDENTE DE MESA C.I.Nº: 5.561.879 — FIRMA DEL VOCAL DE MESA C.I.Nº: 3.565.089



Elecciones Generales y Departamentales - 2018 — Justicia Electoral — CUSTODIO DE LA VOLUNTAD POPULAR — A 096186

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

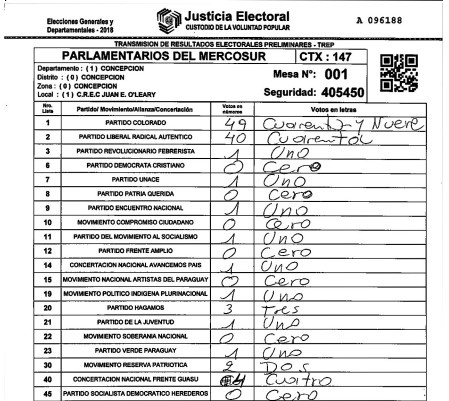
JUNTA DEPARTAMENTAL — CTX : 147

Departamento : (1) CONCEPCION
Distrito : (0) CONCEPCION
Zona : (0) CONCEPCION
Local : (1) C.R.E.C JUAN E. O'LEARY

Mesa Nº: 001
Seguridad: 800902

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	45	Cuarenta y Cinco
2	PARTIDO LIBERAL RADICAL AUTENTICO	38	Treinta y Ocho
3	PARTIDO REVOLUCIONARIO FEBRERISTA	4	Cuatro
7	PARTIDO UNACE	1	Uno
9	PARTIDO ENCUENTRO NACIONAL	1	Uno
12	PARTIDO FRENTE AMPLIO	1	Uno
14	CONCERTACION NACIONAL AVANCEMOS PAIS	1	Uno
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
23	PARTIDO VERDE PARAGUAY	1	Uno
40	CONCERTACION NACIONAL FRENTE GUASU	4	Cuatro
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
50	PARTIDO DEL MOVIMIENTO PATRIOTICO POPULAR	1	Uno
911	MOVIMIENTO PARAGUAY SEGURO	9	Nueve
	VOTOS NULOS	3	Tres
	VOTOS EN BLANCO	19	Doce
	SUMA TOTAL DE VOTOS	128	Ciento Veintiocho

FIRMA DEL VOCAL DE MESA C.I.Nº: 5.561.879 — FIRMA DEL PRESIDENTE DE MESA C.I.Nº: 5.561.879 — FIRMA DEL VOCAL DE MESA C.I.Nº: 3.565.089



Elecciones Generales y Departamentales - 2018 — Justicia Electoral — CUSTODIO DE LA VOLUNTAD POPULAR — A 096188

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP

PARLAMENTARIOS DEL MERCOSUR — CTX : 147

Departamento : (1) CONCEPCION
Distrito : (0) CONCEPCION
Zona : (0) CONCEPCION
Local : (1) C.R.E.C JUAN E. O'LEARY

Mesa Nº: 001
Seguridad: 405450

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	49	Cuarenta y Nueve
2	PARTIDO LIBERAL RADICAL AUTENTICO	40	Cuarenta
3	PARTIDO REVOLUCIONARIO FEBRERISTA	1	Uno
6	PARTIDO DEMOCRATA CRISTIANO	0	Cero
7	PARTIDO UNACE	1	Uno
8	PARTIDO PATRIA QUERIDA	0	Cero
9	PARTIDO ENCUENTRO NACIONAL	1	Uno
10	MOVIMIENTO COMPROMISO CIUDADANO	0	Cero
11	PARTIDO DEL MOVIMIENTO AL SOCIALISMO	1	Uno
12	PARTIDO FRENTE AMPLIO	0	Cero
14	CONCERTACION NACIONAL AVANCEMOS PAIS	1	Uno
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
19	MOVIMIENTO POLITICO INDIGENA PLURINACIONAL	1	Uno
20	PARTIDO HAGAMOS	3	Tres
21	PARTIDO DE LA JUVENTUD	1	Uno
22	MOVIMIENTO SOBERANIA NACIONAL	0	Cero
23	PARTIDO VERDE PARAGUAY	1	Uno
30	MOVIMIENTO RESERVA PATRIOTICA	2	Dos
40	CONCERTACION NACIONAL FRENTE GUASU	44	Cuatro
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
50	PARTIDO DEL MOVIMIENTO PATRIOTICO POPULAR	0	Cero
60	MOVIMIENTO CIVICO NACIONAL UNAMONOS	0	Cero
77	MOVIMIENTO UNIDOS TODOS POR PARAGUAY	1	Uno
100	PARTIDO DEMOCRATICO PROGRESISTA	1	Uno
111	MOVIMIENTO POLITICO UNION E IGUALDAD	0	Cero
123	MOVIMIENTO POLITICO SOMOS PARAGUAY	0	Cero
500	PARTIDO DE LA A	0	Cero
911	MOVIMIENTO POLITICO PARAGUAY SEGURO	1	Uno
999	MOVIMIENTO CRUZADA NACIONAL	0	Cero
	VOTOS NULOS	3	Tres
	VOTOS EN BLANCO	10	Diez
	SUMA TOTAL DE VOTOS	124	Ciento Veintidos

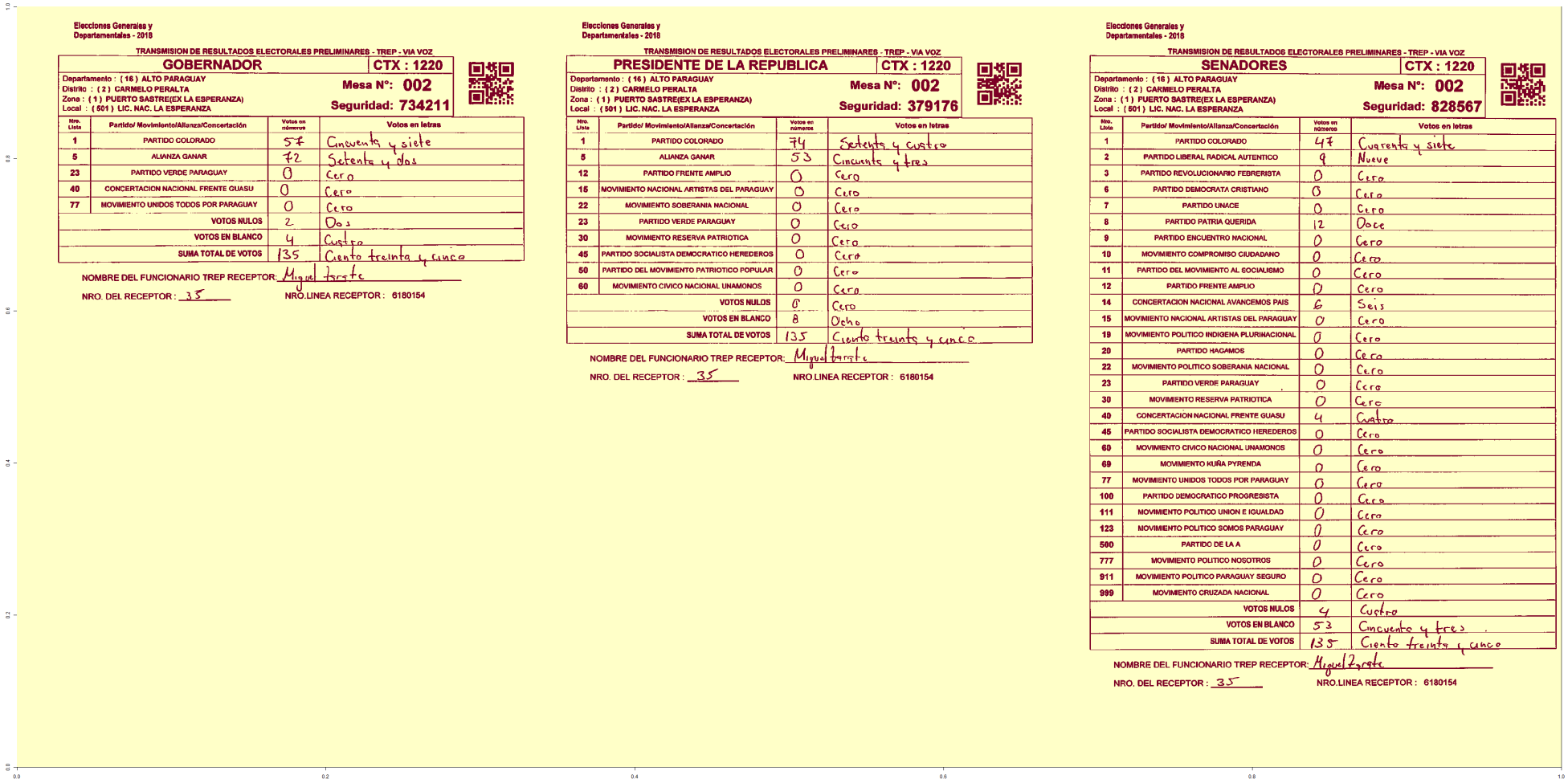
FIRMA DEL VOCAL DE MESA C.I.Nº: 5.561.879 — FIRMA DEL PRESIDENTE DE MESA C.I.Nº: 5.561.879 — FIRMA DEL VOCAL DE MESA C.I.Nº: 3.565.089

While there were a few quick count tallies where none or only a subset of the ID numbers were visible, these are a small minority of all the electoral tables. Out of the 21,211 electoral tables from this election, we have all the ID numbers for 20,365, which is more than 96% of all electoral tables. Hence, there are 846 tallies with at least one missing ID number: 148 with one missing ID, 10 with two missing IDs, and 688 with three missing IDs.[17] Although vote tallies missing one and especially all three ID numbers could be considered irregular, 631 of the vote tallies missing all ID numbers come from special quick count tallies derived from polling stations in remote areas. These are areas where sending a scanned vote tally filled out by the poll workers would have been more difficult due to low internet connectivity. In addition, these were also used in sparsely populated areas which had polling stations with less than three voting booths.[18] For these electoral tables, the results are transmitted through calls via voice. See Figure 7 for a picture showing a voice-transmitted vote tally for a polling station in the Carmelo Peralta district from the Alto Paraguay department in the Chaco region.

[17]While it is possible that some poll workers could have forged the signature and ID number of pre-registered poll workers we find this unlikely for several reasons. First, as is mentioned below, more than a third (more than 21,000) of all pre-registered poll workers get replaced according to our data, suggesting that a substantial number of replacement poll workers are willing to acknowledge they are not the pre-registered poll workers. Second, it was not expected that the quick count vote tallies would be made available to the wider public, since these elections were the first ones where this occurred. Third, working as a poll worker or political broker are anecdotally tasks that many ambitious members of the traditional political parties (ANR and PLRA) perform to climb up the political ladder of these parties. Recording their names and ID numbers honestly allows party officials to know who supported the party as poll workers during the elections.

[18]More information about the quick count tallies, including the voice-transmitted ones, can be found here: https://www.tsje.gov.py/static/ups/docs/archivos/2018/abril/trep_manual.pdf.

Figure 7: Example vote tallies transmitted via voice for remote polling stations



Elecciones Generales y Departamentales - 2018

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP - VIA VOZ

GOBERNADOR — CTX : 1220

Departamento : (16) ALTO PARAGUAY
Distrito : (2) CARMELO PERALTA
Zona : (1) PUERTO SASTRE(EX LA ESPERANZA)
Local : (501) LIC. NAC. LA ESPERANZA

Mesa Nº: 002
Seguridad: 734211

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	57	Cincuenta y siete
5	ALIANZA GANAR	72	Setenta y dos
23	PARTIDO VERDE PARAGUAY	0	Cero
40	CONCERTACION NACIONAL FRENTE GUASU	0	Cero
77	MOVIMIENTO UNIDOS TODOS POR PARAGUAY	0	Cero
	VOTOS NULOS	2	Dos
	VOTOS EN BLANCO	4	Cuatro
	SUMA TOTAL DE VOTOS	135	Ciento treinta y cinco

NOMBRE DEL FUNCIONARIO TREP RECEPTOR: Miguel Torre

NRO. DEL RECEPTOR : 35 NRO.LINEA RECEPTOR : 6180154

Elecciones Generales y Departamentales - 2018

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP - VIA VOZ

PRESIDENTE DE LA REPUBLICA — CTX : 1220

Departamento : (16) ALTO PARAGUAY
Distrito : (2) CARMELO PERALTA
Zona : (1) PUERTO SASTRE(EX LA ESPERANZA)
Local : (501) LIC. NAC. LA ESPERANZA

Mesa Nº: 002
Seguridad: 379176

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	74	Setenta y cuatro
5	ALIANZA GANAR	53	Cincuenta y tres
12	PARTIDO FRENTE AMPLIO	0	Cero
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
22	MOVIMIENTO SOBERANIA NACIONAL	0	Cero
23	PARTIDO VERDE PARAGUAY	0	Cero
30	MOVIMIENTO RESERVA PATRIOTICA	0	Cero
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
50	PARTIDO DEL MOVIMIENTO PATRIOTICO POPULAR	0	Cero
60	MOVIMIENTO CIVICO NACIONAL UNAMONOS	0	Cero
	VOTOS NULOS	0	Cero
	VOTOS EN BLANCO	8	Ocho
	SUMA TOTAL DE VOTOS	135	Ciento treinta y cinco

NOMBRE DEL FUNCIONARIO TREP RECEPTOR: Miguel Torre

NRO. DEL RECEPTOR : 35 NRO.LINEA RECEPTOR : 6180154

Elecciones Generales y Departamentales - 2018

TRANSMISION DE RESULTADOS ELECTORALES PRELIMINARES - TREP - VIA VOZ

SENADORES — CTX : 1220

Departamento : (16) ALTO PARAGUAY
Distrito : (2) CARMELO PERALTA
Zona : (1) PUERTO SASTRE(EX LA ESPERANZA)
Local : (501) LIC. NAC. LA ESPERANZA

Mesa Nº: 002
Seguridad: 828567

Nro. Lista	Partido/ Movimiento/Alianza/Concertación	Votos en números	Votos en letras
1	PARTIDO COLORADO	47	Cuarenta y siete
2	PARTIDO LIBERAL RADICAL AUTENTICO	9	Nueve
3	PARTIDO REVOLUCIONARIO FEBRERISTA	0	Cero
6	PARTIDO DEMOCRATA CRISTIANO	0	Cero
7	PARTIDO UNACE	0	Cero
8	PARTIDO PATRIA QUERIDA	12	Doce
9	PARTIDO ENCUENTRO NACIONAL	0	Cero
10	MOVIMIENTO COMPROMISO CIUDADANO	0	Cero
11	PARTIDO DEL MOVIMIENTO AL SOCIALISMO	0	Cero
12	PARTIDO FRENTE AMPLIO	0	Cero
14	CONCERTACION NACIONAL AVANCEMOS PAIS	6	Seis
15	MOVIMIENTO NACIONAL ARTISTAS DEL PARAGUAY	0	Cero
19	MOVIMIENTO POLITICO INDIGENA PLURINACIONAL	0	Cero
20	PARTIDO HAGAMOS	0	Cero
22	MOVIMIENTO POLITICO SOBERANIA NACIONAL	0	Cero
23	PARTIDO VERDE PARAGUAY	0	Cero
30	MOVIMIENTO RESERVA PATRIOTICA	0	Cero
40	CONCERTACION NACIONAL FRENTE GUASU	4	Cuatro
45	PARTIDO SOCIALISTA DEMOCRATICO HEREDEROS	0	Cero
60	MOVIMIENTO CIVICO NACIONAL UNAMONOS	0	Cero
69	MOVIMIENTO KUÑA PYRENDA	0	Cero
77	MOVIMIENTO UNIDOS TODOS POR PARAGUAY	0	Cero
100	PARTIDO DEMOCRATICO PROGRESISTA	0	Cero
111	MOVIMIENTO POLITICO UNION E IGUALDAD	0	Cero
123	MOVIMIENTO POLITICO SOMOS PARAGUAY	0	Cero
500	PARTIDO DE LA A	0	Cero
777	MOVIMIENTO POLITICO NOSOTROS	0	Cero
911	MOVIMIENTO POLITICO PARAGUAY SEGURO	0	Cero
999	MOVIMIENTO CRUZADA NACIONAL	0	Cero
	VOTOS NULOS	4	Cuatro
	VOTOS EN BLANCO	53	Cincuenta y tres
	SUMA TOTAL DE VOTOS	135	Ciento treinta y cinco

NOMBRE DEL FUNCIONARIO TREP RECEPTOR: Miguel Torre

NRO. DEL RECEPTOR : 35 NRO.LINEA RECEPTOR : 6180154

Notes: This figure shows a picture of a quick count vote tally for remote polling stations where electoral results were transmitted to the election authority through a call (via voice) instead of a scan of the vote tally. The vote tally is for a polling station in the Carmelo Peralta district from the Alto Paraguay department in the Chaco region. Instead of showing the ID numbers of the poll workers at the bottom, it has the name of the election authority employee who received the results via a call.

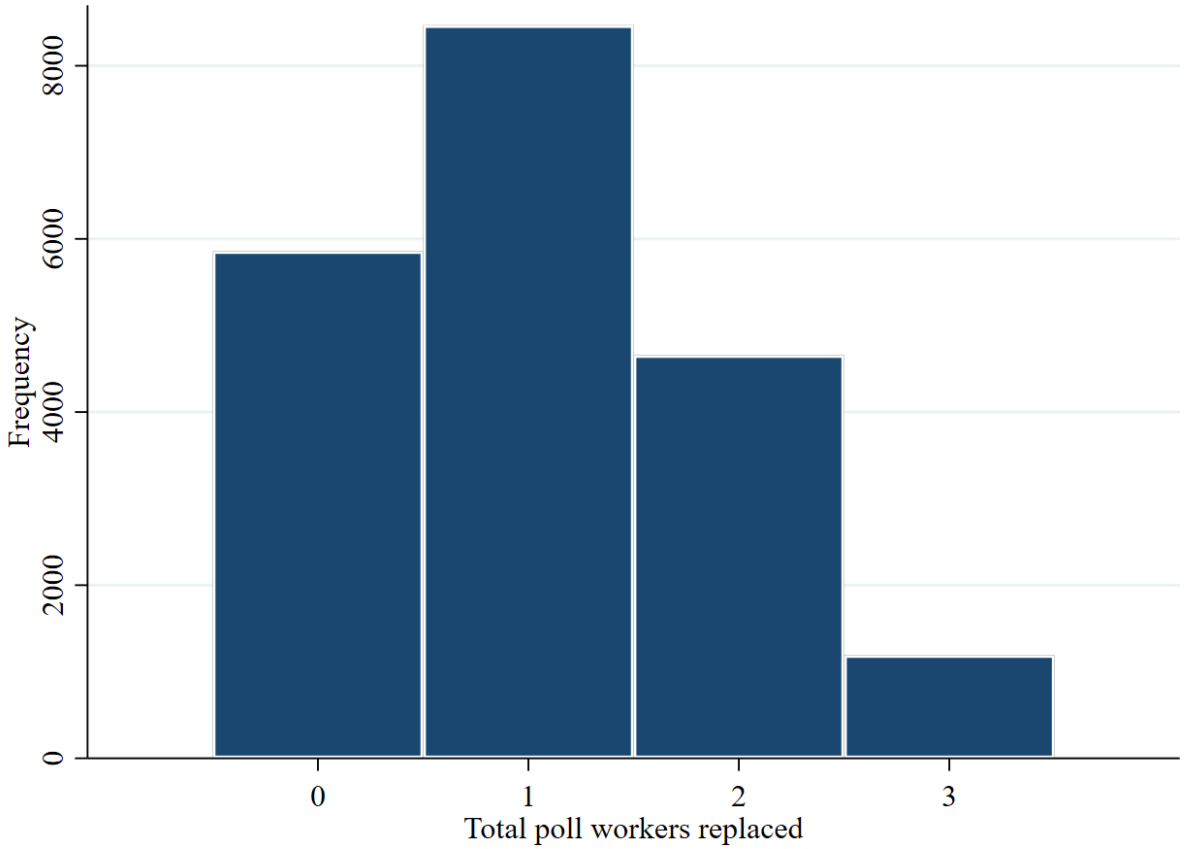
The problem with the *de jure* data of pre-registered poll workers is that those who were assigned to be a poll worker according to this data do not always correspond with the *de facto* poll workers on election day. There is usually a considerable number of absentees and replacements that could make the *de facto* poll workers considerably different from those certified in the original list of pre-registered poll workers. Figure 8 shows a histogram of how many poll workers were replaced in our sample of electoral tables where we have the IDs of all three *de facto* poll workers (around 96% of all electoral tables in this election). As can be seen from the figure, most electoral tables have at least one replacement, and there are around 1,200 electoral tables where all three pre-registered poll workers were replaced. More than a third of the pre-registered poll workers get replaced, as the total number of poll workers replaced from this figure is 21,358.

As mentioned above, to find the *de facto* poll workers we rely on the quick count vote tallies that the TSJE scanned and uploaded to its website on the day of the elections. From the tallies we digitized the ID numbers of those poll workers who were actually present at the electoral table on election day. We merge these ID numbers with nation-wide party registration data sets we obtained from the TSJE (since the elections authority collects this data from individual parties) and individual parties themselves. By merging these data sets we can uncover who the poll workers support even if they do not appear on our pre-registered electoral agents data. By merging these data, we find some cases of poll workers registered to multiple parties. Among all *de facto* poll workers, less than 4% of them (2,514 out of 63,633) are multi-party poll workers and we consider them as a separate category since they are not "pure" partisans.[19] We also find 5,166 poll workers (around 8% of all poll workers) that are not registered to any political party. While these poll workers may be working for some party and we cannot determine this, it is also possible they are truly independent voters who replaced pre-registered poll workers that did not show up on election day.

Figure 9 shows how the allocation of partisan poll workers changes for the main parties due to

[19] In Paraguay it is not illegal to be registered to multiple parties since this is not regulated.

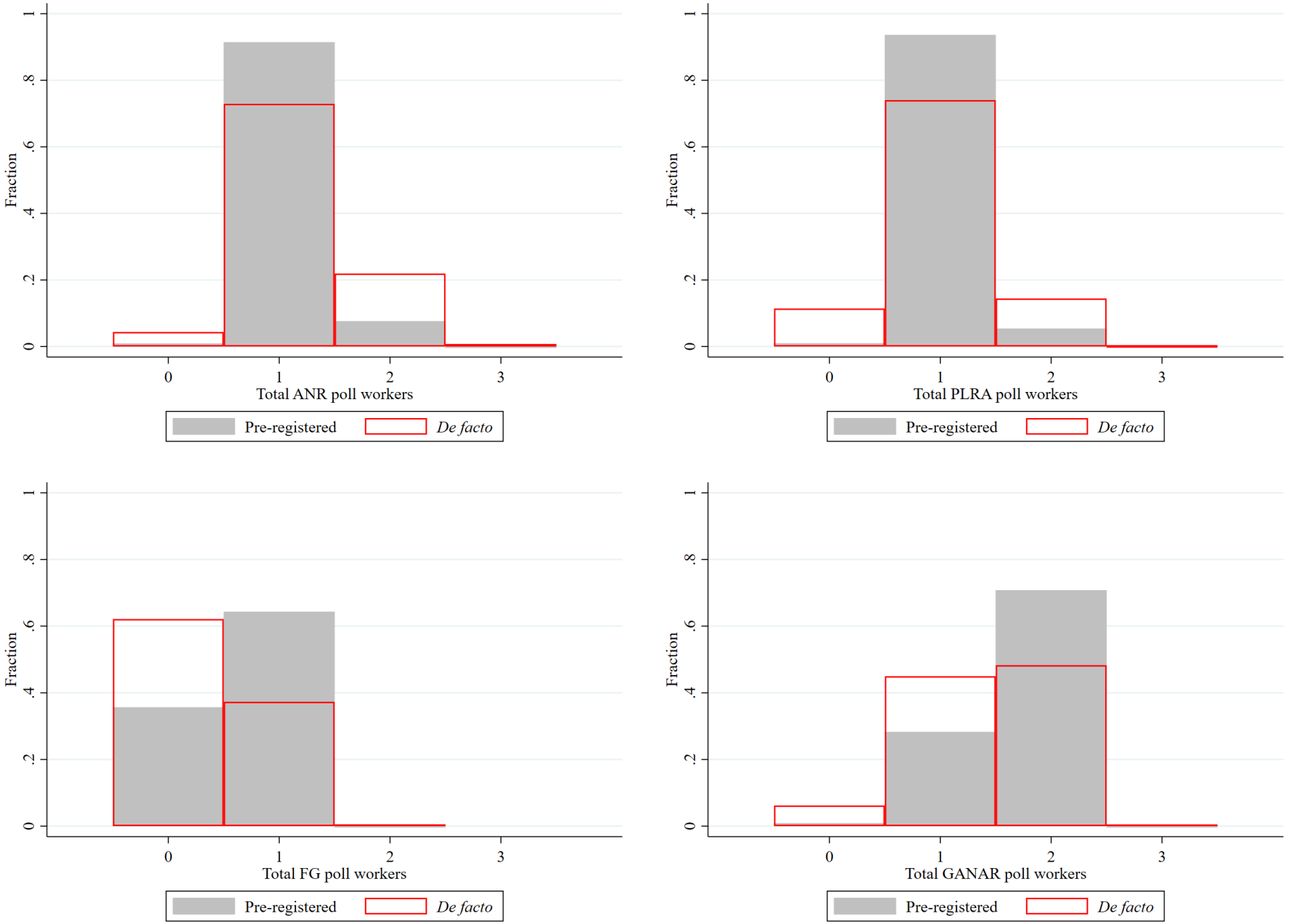
Figure 8: Total poll workers replaced at each voting booth



Notes: The sample for this figure consists of all voting booths for which we have the ID numbers of all the pre-registered poll workers and all *de facto* poll workers on election day (around 96% of all voting booths in this election).

replacements of pre-registered poll workers. The histograms show how the pre-registered allocation of poll workers in gray is relatively balanced as the main parties have only one poll worker per electoral table at most electoral tables. In contrast, the election-day *de facto* allocation of poll workers is more skewed towards the two main parties (ANR and PLRA), particularly the ANR. With the *de facto* allocation, the ANR has two or more poll workers (a majority) represented at 4,476 electoral tables (around 21% of all electoral tables). The PLRA has two or more poll workers represented at 2,947 electoral tables (around 14% of all electoral tables). Instead, the FG seems to lose a substantial portion of their poll workers on election day. The FG has two poll workers represented at only 113 electoral tables (around 0.5% of all electoral tables) and it never has three poll workers within a single electoral table. We also show how the GANAR alliance's (composed of the PLRA, the FG, and other small left-wing parties) allocation of partisan poll workers changes. We can observe an increase in electoral tables with zero GANAR poll workers and a decrease in the number of electoral tables with two GANAR poll workers, which appears to be explained by the loss of pre-registered FG poll workers. Still, GANAR has two or more poll workers represented at 9,854 electoral tables (around 46.5% of all electoral tables).

Figure 9: Pre-registered and *de facto* allocation of partisan poll workers



Notes: The sample for this figure consists of all voting booths for which we have the ID numbers of all the pre-registered poll workers and *de facto* poll workers on election day (around 96% of all voting booths in this election).

Table 1 shows the partisanship of poll workers by poll worker function: president, *vocal* 1, and *vocal* 2. With regards to the pre-registered poll workers, we can observe that the table "president" is the most equally distributed among parties. Yet we can still notice how the FG and other parties have less booth presidents than the ANR and PLRA (although the ANR still has approximately 500 more booth presidents than the PLRA). With the *de facto* poll workers the ANR and PLRA have an increase of 758 and 147 table presidents respectively. On the other hand, the FG and other parties lose 2,210 and 644 table presidents respectively. Given that the *vocal* 1 and 2 share the same role and are interchangeable, we mainly want to consider the sum of the two. The ANR and PLRA have roughly the same number of *vocal* poll workers at around 15,050. On the other hand, the FG and other parties have 8,743 and 3,084 respectively. With the replacements we can observe that the ANR gains 1,046 more *vocal* poll workers, while the other parties lose poll workers. The PLRA loses 1,137, the FG loses 3,555, and the other parties lose 1,350. Finally, we can observe that the replacements vis-à-vis the pre-registered poll worker allocations only seem to benefit the ANR, as only the ANR obtains more poll workers than its pre-registered amount.

Next, we also have the electoral register disaggregated to the electoral table level for the 2018 elections, which gives us the electoral table every voter was assigned to vote in. We also have information on voters' gender and their date of birth, from which we can calculate the age of each voter on election day. We merge this electoral register with the partisan support data we have to also measure the proportion of partisans for each party at the electoral table level.

Finally, we got access to legal documents from the elections authority indicating all electoral tables where electoral results were contested (*impugnaciones electorales*) at the electoral race level and we codified these into a dataset. For each electoral contestation, we have information on the voting booth and particular electoral race contested, the parties contesting the results, and whether the contestation was accepted. Among the contestation outcomes possible is annulling the tally of the electoral table for the particular race being contested, which entails that zero votes are counted from that electoral table for that particular race. To determine whether a contestation is accepted,

Table 1: Partisan representation of pre-registered and *de facto* poll workers by poll worker function

	President	*Vocal* 1 + *Vocal* 2	*Vocal* 1	*Vocal* 2
Pre-registered poll workers				
ANR	7,523	15,048	13,901	1,147
PLRA	7,060	15,053	7,066	7,987
FG	4,877	8,743	1	8,742
Other party	1,508	3,086	2	3,084
***De facto* poll workers**				
ANR	8,281	16,094	9,550	6,544
PLRA	7,207	13,916	6,800	7,116
FG	2,667	5,188	1,939	3,249
Other party	864	1,736	629	1,107
Multi-party	732	1,782	754	1,028
Unaffiliated	1,460	3,706	1,539	2,167
Difference between number of *de facto* and pre-registered poll workers				
ANR	758	1,046	-4,351	5,397
PLRA	147	-1,137	-266	-871
FG	-2,210	-3,555	1,938	-5,493
Other party	-644	-1,350	627	-1,977

Notes: This table indicates the partisan support of the pre-registered and *de facto* poll workers and their difference by poll worker function. The electoral table president has a few more responsibilities (including opening up the ballot box) compared to the other two poll workers called *vocal* 1 and *vocal* 2. Given that the *vocal* 1 and 2 share the same role and are interchangeable, we calculate and mainly consider the sum of the two in Column (2). The pre-registered poll workers data come from the election authority and indicate those registered in advance to work at the polls as representatives of a particular party. The data on pre-registered poll workers was not available for the electoral tables abroad, two municipalities in the Paraguari department, and 8 additional electoral tables for particular poll worker functions. This explains the approximately 250 pre-registered poll workers less than the *de facto* poll workers. The *de facto* poll workers data is collected by us by digitizing the ID numbers of the poll workers in vote tallies and merging these ID numbers with party registration datasets (for those poll workers that are not pre-registered). The multi-party poll workers are those registered to multiple parties, which are considered as a separate category since they are not "pure" partisans. The "unaffiliated" poll workers are those not pre-registered as electoral agents or registered to any political party.

the election authority checks the tallies submitted by each of the poll workers. If a majority (two or three) of poll workers' tallies agree with the electoral contestation, then the results of the tallies are amended. Yet given how this system works and that some parties may have an outright majority or collude, contestations may not be successful despite being legitimate. Overall, there are not many challenges: 3,213 out of 122,595 possible electoral table-race combinations. Out of 3,213 contestations in this election, only 738 were accepted. The low number of contestations may be partly due to the fact that parties need to have either poll workers, poll watchers, or electoral proxies present to observe irregularities, and only the traditional parties seem to be well-resourced enough to cover most of the country. In addition, given that ultimately the contestations are decided by what the majority of poll workers wrote down, some parties may not even submit a contestation which they expect to be ultimately rejected.

To summarize, Table 2 indicates the different sources we used to create our unified database. Table 3 provides summary statistics for all the variables used in the main tables except the vote share outcome variables, which are on Table 4. These variables are defined in detail on Section 5. Appendix Table A1 shares summary statistics for all the variables used in the Appendix tables, and the variables are also defined on the next section.

Table 2: Data sources used

Source	Data
TSJE	Electoral results disaggregated by electoral table
TSJE	Pre-registered poll workers for each table with the party they support
TSJE	Quick count vote tallies of each electoral table with ID numbers of poll workers
TSJE	Electoral register for 2018 elections disaggregated by electoral table
TSJE	Legal documentation of electoral results that were contested, at the electoral table-race level
TSJE & Political parties	Political party registration data

Table 3: Main summary statistics

	Observations	Mean	Standard Deviation
Total pre-registered poll workers replaced at voting booth	21,211	1.1371	0.9316
Percent of ANR voters at voting booth	21,211	34.2220	10.4397
Percent of PLRA voters at voting booth	21,211	17.3346	9.8823
Percent of other party voters (excluding the ANR and PLRA) at voting booth	21,211	4.0607	2.4103
Percent of GANAR voters at voting booth	21,211	18.4000	9.8830
Percent of other party voters (excluding the ANR and GANAR) at voting booth	21,211	2.9974	2.2157
Average surname alphabetical ranking at voting booth	21,211	0.5000	0.2873
Percent of female voters at voting booth	21,211	49.0133	4.7204
Average age of voters at voting booth	21,211	41.5312	4.4801
Equation (1) **indicator variables:**			
PLRA trifecta	21,211	0.0008	0.0283
PLRA advantage + Other	21,211	0.0130	0.1133
PLRA advantage + ANR	21,211	0.1259	0.3318
ANR advantage + Other	21,211	0.0416	0.1996
ANR advantage + PLRA	21,211	0.1694	0.3751
ANR trifecta	21,211	0.0074	0.0860
Other poll worker allocation	21,211	0.1207	0.3258
Fair poll worker allocation	21,211	0.5211	0.4996
Equation (2) **indicator variables:**			
GANAR trifecta	21,211	0.0050	0.0705
GANAR advantage + Other	21,211	0.0226	0.1486
GANAR advantage + ANR	21,211	0.4420	0.4966
ANR advantage + GANAR	21,211	0.1835	0.3871
ANR advantage + Other	21,211	0.0275	0.1635
ANR trifecta	21,211	0.0074	0.0860
Other poll worker allocation	21,211	0.0726	0.2594
Fair poll worker allocation	21,211	0.2394	0.4267
Equation (4) **indicator variables:**			
Traditional party trifecta	21,211	0.3036	0.4598
Traditional party advantage + Other party	21,211	0.4129	0.4924
Other party advantage + Traditional party	21,211	0.0134	0.1151
Other party trifecta	21,211	0.0002	0.0154
Other poll worker allocation	21,211	0.2228	0.4161
Fair poll worker allocation	21,211	0.0470	0.2117

Notes: All the means and standard deviations are rounded up to the fourth digit after the decimal.

Table 4: Vote share summary statistics

	Observations	Mean	Standard Deviation
Presidential election vote shares:			
ANR vote share	21,139	48.625	12.311
GANAR vote share	21,139	45.439	12.564
Other party vote share	21,139	5.936	5.836
Senatorial election vote shares:			
ANR vote share	21,107	32.765	12.558
PLRA vote share	21,107	24.484	12.643
Other party vote share	21,107	42.752	15.775
MERCOSUR parliament election vote shares:			
ANR vote share	21,122	42.199	13.042
PLRA vote share	21,122	30.512	13.659
Other party vote share	21,122	27.289	14.068
Deputies election vote shares:			
ANR vote share	20,932	39.295	14.101
PLRA/GANAR vote share	20,932	30.441	14.704
Other party vote share	20,932	30.264	19.012
Governor election vote shares:			
ANR vote share	18,910	46.846	12.432
PLRA/GANAR vote share	18,910	42.390	13.713
Other party vote share	18,910	10.764	11.016
Departmental council election vote shares:			
ANR vote share	18,893	40.423	12.872
PLRA/GANAR vote share	18,893	34.377	13.223
Other party vote share	18,893	25.200	13.246

Notes: All the means and standard deviations are rounded up to the fourth digit after the decimal. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. The number of observations for the deputies' vote shares is lower as there is no deputies' election for Paraguayan voters abroad. The number of observations is lower for the governor and departmental council vote shares as there is no governor or departmental council election for Paraguayan voters abroad and those in the capital district. There are still slight differences in observations across races due to electoral contestations annulling the vote counts for certain races at some voting booths and missing vote tallies that were not received by the election authority for certain electoral races.

That being said, the ability to link these different data sources together does not, on its own, entail that we can treat our study as a natural experiment. In the next section we describe the organizational features of Paraguayan elections that allow us to treat our context as that of a natural experiment.

5 Empirical Strategy

The difficulty with disentangling the effect of partisan poll workers on electoral results is the secret ballot. While it is generally quite beneficial as it allows voters to express themselves honestly at the polls (Baland and Robinson, 2008), the secret ballot makes it difficult to identify fraud because we cannot observe whether the final votes were changed at a booth or not, as we can never see the original individual votes. Not even the voter can verify if her vote was registered correctly since the voter does not know which of the votes registered at the table is hers.[20] Sometimes there may be suspicious results, particularly when the electoral results come from a booth counted by a single party. Yet it is difficult to know without further evidence if those electoral results are fraudulent or if they truly represent the preferences of voters from that booth. Having established these limitations, what is interesting about the Paraguayan case is that we have a natural experiment in the allocation of voters to voting booths. This allows us to examine the effect that partisan poll workers have on elections.

In Paraguay, citizens vote at polling stations which tend to be close to their homes and are usually schools. Within polling stations voters are assigned to voting booths alphabetically—according to the first letters of their surnames. Voters are ordered alphabetically among those from their polling station and every group of 200 voters gets their own voting booth. Thus, the first 200 voters get assigned to voting booth number 1, the next 200 voters get assigned to voting booth

[20] In addition, in Paraguayan elections the paper ballots are discarded after the counting process (Última Hora, 2018).

number 2, and so on until all voters are assigned to a voting booth.[21] Similarly to Casas, Díaz and Trindade (2017), we want to test whether the first letters of surnames do not correlate with political preferences and electoral results. If so, we have a quasi-random assignment of voters to electoral tables which allows us to credibly assume that similar electoral outcomes should be recorded across tables within the same polling station. Hence, any strong deviance in electoral results within polling stations suggests that differences across tables are due to qualities of the tables themselves (particularly the partisan poll workers) and not the preferences of voters.

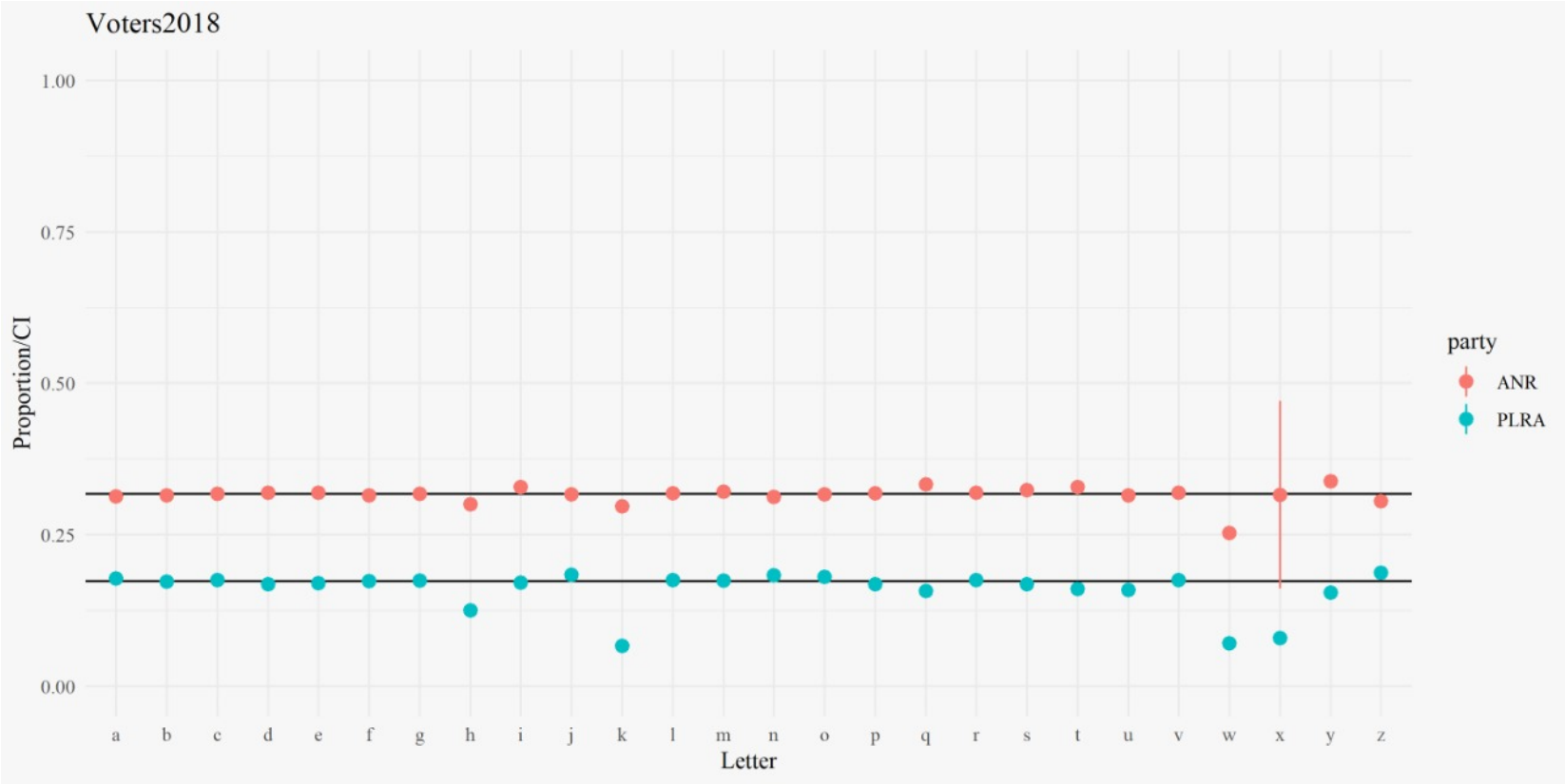
We run multiple tests to confirm whether the alphabetical assignment of voters to voting booths within polling stations can be considered quasi-random. We do this by testing directly for the association between voters' partisan support and their surname initials. To our knowledge, this is the strongest and most direct test of this identification strategy thus far in the literature. Other papers that rely on this identification strategy have used proxies for the political preferences of voters instead of their partisan registration and support according to the elections authority. Cantú (2014) tests whether voters' surname initials correlate with TV viewership or being an *Oportunidades* (conditional cash transfer) recipient. Casas, Díaz and Trindade (2017) test whether surname initials correlate with congressional candidates' parties and whether surname initials correlate with employee wages from a specific municipality. Our test with voters' actual political preferences and surname initials is more direct.

Figure 10 plots the distribution of ANR and PLRA party support among registered voters of the 2018 election for each of the indicated initials of voters' surnames. The horizontal line plots the overall average of ANR and PLRA party support. If surnames are independent of party identification, we expect a flat distribution of partisan support among the surname initials. We see that voters support these two parties at around the same overall rate across almost all surname initials. Thus, we have an overall flat distribution of ANR and PLRA party support among most surname

[21] Given that most polling stations do not have an exact multiple of 200 voters, the last voting booth in each polling station most often does not have exactly 200 voters.

initials. While there are a few outliers (h, k, w, x, and y), they are spread around different letters and these are letters which have comparatively fewer voters. Appendix Figure A3 shows that the few surname initials that are farther away from the overall means all have substantially lower frequencies. This can explain why the proportions for these letters do not approach the overall mean as much as other surname initials. Also, neither ANR nor PLRA party supporters have surnames concentrated towards the end of the alphabet or vice versa. Hence, voters' first letter of their last name does not appear to correlate with their political preferences.

Figure 10: Distribution of Party Support by Voter Initials



Notes: This figure plots the distribution of ANR and PLRA party support among registered voters of the 2018 election for each of the indicated initials of voters' surnames. The horizontal line plots the overall average of ANR and PLRA party support. Appendix Figure A3 shows that the surname initials that are farther away from the overall means (h, k, w, x, and y) have substantially lower frequencies. This can explain why the proportions for these letters do not approach the overall mean as much as other surname initials.

We additionally test whether the alphabetical ranking of voters' surnames (which determines the voting booth where citizens vote) is uncorrelated with electoral results for this election. To do so, we first calculate the alphabetical ranking of voters' last names within their polling station. This ranking is normalized by the number of voters in each polling station such that all within-polling station rankings go from 0 to 1. That is, the voter with the earliest name in the alphabet in her polling station has a ranking that is very close to 0, while the voter with the latest name in the alphabet has a ranking of 1. We then calculate the average voter alphabetical ranking that each voting booth has. Table 5 shows regressions of the ANR vote share for each electoral race on the alphabetical ranking of the voting booths. We find no significant correlation between the order of voters' last names and their preference towards the ANR. Tables 6 and 7 run similar tests but instead use the PLRA and GANAR vote share respectively. Both of these tables show similar non-significant results. Hence, these placebo tests also suggest that voters' first letters of their last names do not correlate with their political preferences.

Table 5: Relationship between voters' within-polling station alphabetical ranking and ANR votes

	President vote share (1)	Senator vote share (2)	MERCOSUR parliament vote share (3)	Deputies vote share (4)	Governor vote share (5)	Departmental council vote share (6)
Avg. surname alphabetical ranking	0.3681	-0.0366	0.1144	-0.0515	0.0583	-0.0391
	(0.2935)	(0.3007)	(0.3123)	(0.3384)	(0.3157)	(0.3269)
Mean of Dependent Variable	48.6974	32.6445	42.1395	39.1594	46.9023	40.3697
Observations	20,298	20,268	20,284	20,149	18,153	18,139
R^2	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: A unit of observation is a voting booth. Standard errors are robust. Vote shares for each electoral race are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. The "Avg. surname alphabetical ranking" is calculated by ranking all voters within each polling station in terms of the alphabetical order of their surname and then calculating the average ranking per voting booth. The number of observations on column (4) is lower for this electoral race as there is no deputies' election for Paraguayan voters abroad. The number of observations in columns (5) and (6) is also lower for these electoral races as there is no governor or departmental council election for Paraguayan voters abroad and those in the capital district. There are still slight differences in observations between columns (1)-(3) and columns (5)-(6) due to electoral contestations annulling the vote counts for certain races at some voting booths and missing vote tallies that were not received by the election authority for certain electoral races. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table 6: Relationship between voters' within-polling station alphabetical ranking and PLRA votes

	Senator vote share (1)	MERCOSUR parliament vote share (2)	Deputies vote share (3)	Governor vote share (4)	Departmental council vote share (5)
Avg. surname alphabetical ranking	-0.2408	-0.3436	-0.4191	-0.0390	-0.6417
	(0.3071)	(0.3305)	(0.4649)	(0.4473)	(0.4118)
Mean of Dependent Variable	24.5030	30.5376	28.7323	44.8315	36.1613
Observations	20,268	20,285	12,489	8,812	11,032
R^2	0.0000	0.0001	0.0001	0.0000	0.0002

Notes: A unit of observation is a voting booth. Standard errors are robust. Vote shares for each electoral race are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. The "Avg. surname alphabetical ranking" is calculated by ranking all voters within each polling station in terms of the alphabetical order of their surname and then calculating the average ranking per voting booth. The number of observations on column (3) is lower for this electoral race as there is no deputies' election for Paraguayan voters abroad and the PLRA ran independently for the deputies race at only some departments of the country (in the rest it ran as part of the GANAR alliance). The number of observations in columns (4) and (5) is lower for these electoral races as there is no governor or departmental council election for Paraguayan voters abroad and those in the capital district. Also, the PLRA ran independently for the governor and departmental council race at only some departments of the country (in the rest it ran as part of the GANAR alliance). There are still slight differences in observations between columns (1)-(2) and columns (4)-(5) due to electoral contestations annulling the vote counts for certain races at some voting booths and vote tallies that were not received by the election authority for certain electoral races. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table 7: Relationship between voters' within-polling station alphabetical ranking and GANAR votes

	President vote share (1)	Deputies vote share (2)	Governor vote share (3)	Departmental council vote share (4)
Avg. surname alphabetical ranking	-0.3711	0.1472	0.3387	0.2284
	(0.3005)	(0.5413)	(0.5169)	(0.5635)
Mean of Dependent Variable	45.3860	32.8310	40.0363	31.6273
Observations	20,298	7,660	9,341	7,107
R^2	0.0001	0.0000	0.0000	0.0000

Notes: A unit of observation is a voting booth. Standard errors are robust. Vote shares for each electoral race are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. The "Avg. surname alphabetical ranking" is calculated by ranking all voters within each polling station in terms of the alphabetical order of their surname and then calculating the average ranking per voting booth. The number of observations on column (2) is lower for this electoral race as there is no deputies' election for Paraguayan voters abroad and the GANAR alliance ran for the deputies race at only some departments of the country (in the rest several of its component parties ran separately). The number of observations in columns (3) and (4) is also lower for these electoral races as there is no governor or departmental council election for Paraguayan voters abroad and those in the capital district. In addition, the GANAR alliance ran for the governor and departmental council races at only some departments of the country (in the rest several of its component parties ran separately). The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Our analyses using data on the voters' surnames and their political preferences provide a rationale for our assumption that the assignment of voters to voting booths is a quasi-random assignment. Hence, any strong deviance in results recorded across booths within a polling station are likely due to the partisan representation of poll workers in the booth after we control for polling station fixed effects.

To analyze how the allocation of partisan poll workers affects electoral results we generate indicator variables for different types of poll worker allocations. These variables measure the effect of when parties have a majority, a minority, or no poll worker representation at an electoral table. When all three poll workers at an electoral table support the same party we have what we call a "trifecta." In our most common regression specifications we then include dummy variables for ANR and PLRA trifectas separately. We also generate additional variables for when two out of the three poll workers at an electoral table support the same party, which we refer to as "advantage." For the "advantage" indicator variables we separate these into four types: "PLRA advantage + ANR," "PLRA advantage + Other," "ANR advantage + PLRA," and "ANR advantage + Other." For these variables, "other" refers to a poll worker that is not registered as supporting either the Colorado or Liberal party. Our excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. Finally, we have an indicator variable for "other poll worker allocations", which refer to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced above. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to this "other poll worker allocation" category. Given the way these indicator variables are defined, they are all mutually exclusive and together cover all voting booths in our data.

We use the independent variables mentioned above to predict electoral results at the voting booth level in terms of vote shares for the ANR, PLRA, GANAR, and other parties.[22] All of

[22]In the Appendix we include regressions for total votes, the share of null votes, and the share of blank votes at the

our regression specifications include polling station fixed effects, so we focus only on differences across booths within each polling station. We do this because our quasi-random assignment of voters to booths only applies within polling stations, not across them. Hence, our main regression specification for most of our analysis tables has the following format:

$$Y_{ab} = \beta_0 + \beta_1 PLRA\_Trif_{ab} + \beta_2 PLRA\_Adv\_Oth_{ab} + \beta_3 PLRA\_Adv\_ANR_{ab} + \beta_4 ANR\_Adv\_PLRA_{ab} + \beta_5 ANR\_Adv\_Oth_{ab} + \beta_6 ANR\_Trif_{ab} + \beta_7 Other\_pw\_alloc_{ab} + \theta_a + \varepsilon,$$

where Y is some electoral outcome for voting booth b belonging to polling station a, and θ is a polling station fixed effect. Our coefficients of interest are the β's which capture the potential effect of different partisan poll worker allocations on electoral results.

We run an additional placebo test for the association between the partisan poll worker allocation dummies just described and the characteristics of the voting booths. Table 8 tests whether the allocation of partisan poll workers correlate with any of the voting booth characteristics that we can measure, which are: the proportion of ANR voters, the proportion of PLRA voters, the proportion of other party voters, the proportion of female voters, and the average age of voters. If the allocation of partisan poll workers (as opposed to voters) were fully random, we would expect to find that none of the allocations correlate significantly with these voting booth characteristics, which we do find for four out of five of the voting booth characteristics. However, we do find that the PLRA advantage variables (i.e., booths where the PLRA has 2 poll workers) are positively and significantly correlated with the proportion of PLRA voters in the voting booth.

We interpret our results from the placebo tests as follows. The ANR is the most well-resourced party, which is evidenced by the fact that it has more than twice as many substitute poll workers than the PLRA and almost four times the substitute poll workers that the FG has. Hence, they are able to have poll workers present at virtually all voting booths regardless of how many ANR

voting booth level.

Table 8: Placebo regressions using majority-minority poll worker allocation dummies

	% of ANR voters (1)	% of PLRA voters (2)	% of other party voters (3)	% of female voters (4)	Average age of voters (5)
PLRA trifecta	1.9656	0.2694	-0.4157	-0.9253	-0.0823
	(1.4403)	(1.2104)	(0.4603)	(1.0526)	(0.3535)
PLRA advantage	-0.3596	0.9057***	-0.0515	-0.1853	0.0453
+ Other	(0.3510)	(0.3272)	(0.1228)	(0.2645)	(0.1895)
PLRA advantage	-0.1723	0.2765**	-0.0058	0.0376	0.0706
+ ANR	(0.1271)	(0.1160)	(0.0445)	(0.0906)	(0.0456)
ANR advantage	-0.0354	0.0388	-0.0065	-0.0584	-0.0386
+ PLRA	(0.1101)	(0.0944)	(0.0366)	(0.0817)	(0.0388)
ANR advantage	-0.0790	-0.0121	0.0417	0.0636	0.0707
+ Other	(0.1953)	(0.1556)	(0.0894)	(0.1375)	(0.0696)
ANR trifecta	0.2619	0.0263	-0.0447	0.2243	-0.1342
	(0.4128)	(0.3031)	(0.1783)	(0.3024)	(0.1252)
Other poll worker	-0.1495	0.1832	0.0153	-0.1257	-0.0088
allocation	(0.1353)	(0.1118)	(0.0523)	(0.1062)	(0.0532)
Mean of Dependent Variable	34.1749	17.3445	17.3445	49.0626	41.5084
Polling station FE	X	X	X	X	X
Observations	20,354	20,354	20,354	20,354	20,354
R^2	0.7521	0.7929	0.4502	0.3338	0.8449

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

supporters vote at particular voting booths. On the other hand, the PLRA is less well-resourced and might be relying more explicitly on its supporters to volunteer as poll workers on election day if any poll worker is absent from their voting booth. While our polling station fixed effects net out the variation in strategic allocation of partisan poll workers by parties across polling stations, these regressions caution us to also take into account the partisan support of voters within electoral tables. Hence, we supplement all of our main specifications by controlling for the proportion of ANR, PLRA (or GANAR if it's for the presidential race), and other party voters. Thus, our preferred specification for most of our analyses becomes:

$$\begin{aligned} Y_{ab} = & \beta_0 + \beta_1 PLRA\_Trif_{ab} + \beta_2 PLRA\_Adv\_Oth_{ab} + \beta_3 PLRA\_Adv\_ANR_{ab} + \beta_4 ANR\_Adv\_PLRA_{ab} \\ & + \beta_5 ANR\_Adv\_Oth_{ab} + \beta_6 ANR\_Trif_{ab} + \beta_7 Other\_pw\_alloc_{ab} \\ & + \delta_1 voter\_prop\_ANR_{ab} + \delta_2 voter\_prop\_PLRA_{ab} + \delta_3 voter\_prop\_Other_{ab} + \theta_a + \varepsilon. \end{aligned} \tag{1}$$

For the presidential race, we use similar indicator variables except we consider GANAR alliance poll workers instead of just PLRA poll workers. GANAR alliance poll workers are those supporting either the PLRA, the FG, or other smaller left-wing parties that form part of the alliance.[23] This change also affects who we consider as "other" in the "GANAR advantage + Other" and "ANR advantage + Other" variables, which now consists of those poll workers not registered as supporting either the Colorado party or the GANAR alliance. Our excluded category then corresponds to voting booths with "fair allocations" having one Colorado poll worker and one GANAR poll worker. Lastly, the indicator variable for "other poll worker allocations" here refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced above. For example, a voting booth with two UNACE poll workers or a voting

[23] As mentioned previously, the full list of parties that were part of GANAR are: PLRA, PRF, PDP, PEN, AP, PMAS, and the FG member parties. Virtually all GANAR poll workers support the PLRA and FG (28,978 of the 29,294 GANAR poll workers). Only 316 poll workers support one of the other small left-wing parties that were part of GANAR.

booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. These indicator variables are all mutually exclusive and together cover all voting booths. Our regression specification for presidential race analyses is then as follows:

$$\begin{aligned} Y_{ab} =& \beta_0 + \beta_1 GANAR\_Trif_{ab} + \beta_2 GANAR\_Adv\_Oth_{ab} + \beta_3 GANAR\_Adv\_ANR_{ab} + \beta_4 ANR\_Adv\_GANAR_{ab} \\ &+ \beta_5 ANR\_Adv\_Oth_{ab} + \beta_6 ANR\_Trif_{ab} + \beta_7 Other\_pw\_alloc_{ab} \\ &+ \delta_1 voter\_prop\_ANR_{ab} + \delta_2 voter\_prop\_GANAR_{ab} + \delta_3 voter\_prop\_Other_{ab} + \theta_a + \varepsilon. \end{aligned} \tag{2}$$

In addition, we test for the possibility of differential incentives for electoral manipulation by electoral system. To do so, we generate an indicator variable for electoral races with a proportional representation (PR) system (i.e., the senatorial, MERCOSUR parliament, deputies', and departmental council races). In regressions including observations from all electoral races, we interact the PR race indicator variable with each of the indicator variables for different allocations of partisan poll workers. We also control for fixed effects of the combinations of electoral races and polling stations, such that we only compare across voting booths from the same polling station and electoral race. Our regression specification for this test is as follows:

$$\begin{aligned} Y_{abc} =& \beta_0 + \beta_1 PLRA\_Trif_{ab} + \beta_2 PLRA\_Adv\_Oth_{ab} + \beta_3 PLRA\_Adv\_ANR_{ab} + \beta_4 ANR\_Adv\_PLRA_{ab} \\ &+ \beta_5 ANR\_Adv\_Oth_{ab} + \beta_6 ANR\_Trif_{ab} + \beta_7 Other\_pw\_alloc_{ab} \\ &+ \alpha_1 PLRA\_Trif_{ab} \times PR_c + \alpha_2 PLRA\_Adv\_Oth_{ab} \times PR_c + \alpha_3 PLRA\_Adv\_ANR_{ab} \times PR_c \\ &+ \alpha_4 ANR\_Adv\_PLRA_{ab} \times PR_c + \alpha_5 ANR\_Adv\_Oth_{ab} \times PR_c + \alpha_6 ANR\_Trif_{ab} \times PR_c \\ &+ \alpha_7 Other\_pw\_alloc_{ab} \times PR_c + \delta_1 voter\_PR_c op\_ANR_{ab} + \delta_2 voter\_prop\_PLRA_{ab} \\ &+ \delta_3 voter\_prop\_Other_{ab} + \eta_{ac} + \varepsilon, \end{aligned} \tag{3}$$

where Y is some electoral outcome for electoral race c at voting booth b belonging to polling station a, and η is a fixed effect for each combination of electoral race and polling station. The coefficient for PR race is omitted because it is collinear once we control for polling station-electoral race fixed effects. Our coefficients of interest are the α's which capture the differential effect of partisan poll worker allocations on electoral results from PR races.

For a similar follow-up test, we also generate new partisan allocation indicator variables by pooling together the ANR and PLRA poll workers as "traditional party" poll workers, which we contrast with the remaining other party poll workers. We thus generate the following indicator variables: "traditional party trifecta," "other party trifecta," "traditional party advantage + other party," and "other party advantage + traditional party." Our excluded category then corresponds to voting booths with "fair allocations" having one traditional party poll worker and one poll worker from another party. Thus, the indicator variable for "other poll worker allocations" here refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced above. For example, a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. These indicator variables are all mutually exclusive and together cover all electoral tables. We once again include the interactions between PR race and the indicator variables mentioned previously. This leads us to the following regression specification:

$$\begin{aligned} Y_{abc} = &\beta_0 + \beta_1 Tradpart\_Trif_{ab} + \beta_2 Tradpart\_Adv\_Othpart_{ab} + \beta_3 Othpart\_Adv\_Tradpart_{ab} \\ &+ \beta_4 Othpart\_Trif_{ab} + \beta_5 Other\_pw\_alloc_{ab} + \alpha_1 Tradpart\_Trif_{ab} \times PR_c \\ &+ \alpha_2 Tradpart\_Adv\_Othpart_{ab} \times PR_c + \alpha_3 Othpart\_Adv\_Tradpart_{ab} \times PR_c \\ &+ \alpha_4 Othpart\_Trif_{ab} \times PR_c + \alpha_5 Other\_pw\_alloc_{ab} \times PR_c \\ &+ \delta_1 voter\_prop\_ANR_{ab} + \delta_2 voter\_prop\_PLRA_{ab} + \delta_3 voter\_prop\_Other_{ab} + \eta_{ac} + \varepsilon. \end{aligned} \tag{4}$$

Finally, in the Appendix we include tables where we examine whether the presence of any partisan poll workers (regardless of the number) can explain the electoral results. To do so, we generate indicator variables for whether there is at least one of the following types of poll workers in an electoral table: ANR supporter, PLRA supporter, GANAR supporter (for presidential races), other party supporter, multi-party supporter, and unaffiliated. Hence, we end up with the following regression specification format for all races except the presidential one:

$$\begin{aligned} Y_{ab} =& \beta_0 + \beta_1 Any\_ANR_{ab} + \beta_2 Any\_PLRA_{ab} + \beta_3 Any\_Othpart_{ab} + \beta_4 Any\_Multipart_{ab} \\ &+ \beta_5 Any\_Unaffiliated_{ab} + \delta_1 voter\_prop\_ANR_{ab} + \delta_2 voter\_prop\_PLRA_{ab} \\ &+ \delta_3 voter\_prop\_Other_{ab} + \theta_a + \varepsilon. \end{aligned} \tag{5}$$

For the presidential race we have this analogous specification:

$$\begin{aligned} Y_{ab} =& \beta_0 + \beta_1 Any\_ANR_{ab} + \beta_2 Any\_GANAR_{ab} + \beta_3 Any\_Othpart_{ab} + \beta_4 Any\_Multipart_{ab} \\ &+ \beta_5 Any\_Unaffiliated_{ab} + \delta_1 voter\_prop\_ANR_{ab} + \delta_2 voter\_prop\_GANAR_{ab} \\ &+ \delta_3 voter\_prop\_Other_{ab} + \theta_a + \varepsilon. \end{aligned} \tag{6}$$

6 Results

In this section, we show that the allocation of partisan poll workers at voting booths has an effect on elections. We first estimate the effect of allocations of partisan poll workers on each electoral race separately. Second, we pool together observations from all elections and test whether the incentives and methods of electoral manipulation by partisan poll workers vary by electoral system. Third, we explore whether the presence (regardless of the number) of partisan poll workers can explain the electoral results. Finally, we examine whether certain allocations of partisan poll workers on voting booths lead to more electoral contestations where the counts are challenged.

Table 9 shows the effect of partisan poll workers on the presidential election by running equa-

tion (2). In Column (2) we can observe that the ANR vote share increases significantly by around 0.45 percentage points (pp), which is around 0.9% of its mean vote share, whenever it has two ANR poll workers counting votes. This result is robust to controlling for the proportion of ANR, GANAR, and other party voters at each voting booth. Similarly, in Column (4) we can notice that the GANAR vote share increases significantly by around 0.48 pp, which is around 1.1% of its mean vote share, when there are two GANAR poll workers and a poll worker not registered to the ANR or the GANAR parties. We can also notice how the GANAR vote share decreases significantly by around 0.5 pp whenever the ANR has two poll workers counting votes. This result is robust to controlling for the proportion of partisan voters at each voting booth and it is interesting how this result varies symmetrically depending on which party/alliance has a poll worker majority at the electoral table. We do not observe any significant effects of these partisan poll worker allocations on the vote share of other parties. This might reflect the fact that in SMD races (such as the presidential race) one objective of biased poll workers might be to take away votes from their main competition, while potentially ignoring the other smaller parties. We also do not find any significant coefficients for the "trifecta" dummies, which may be expected as we do not have many trifecta poll worker allocations for either party (just over 260 booths).

Table 10 examines the effect of partisan poll workers on the senatorial election by running equation (1), since for this electoral race the GANAR parties run under separate party lists. We observe a similar pattern for the ANR and PLRA vote shares as in Table 9. Whenever the ANR has two poll workers counting votes, its vote shares increases significantly by around 0.52 pp, which is around 1.6% of its mean vote share. On the other hand, the PLRA vote share increases significantly by around 0.21 pp when there are two PLRA poll workers and one ANR poll worker counting votes. In addition, when the ANR has two poll workers and there is one PLRA poll worker or one poll worker not registered to the ANR or PLRA, the PLRA vote share decreases significantly by 0.25 pp and 0.35 pp respectively. These effects are around 1% and 1.4% of the PLRA's mean vote share for the senatorial race. Finally, we now observe that if the other parties

Table 9: Effect of partisan poll worker composition on presidential election results

	ANR vote share		GANAR vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
GANAR trifecta	0.0907	0.3197	-0.4114	-0.6512	0.3207	0.3315
	(0.6697)	(0.5953)	(0.6690)	(0.5773)	(0.3188)	(0.3167)
GANAR advantage + Other	-0.9366***	-0.4113	1.0247***	0.4788*	-0.0880	-0.0675
	(0.3555)	(0.2911)	(0.3448)	(0.2776)	(0.1443)	(0.1438)
GANAR advantage + ANR	-0.0779	-0.0819	0.1380	0.1402	-0.0601	-0.0583
	(0.1349)	(0.1055)	(0.1362)	(0.1052)	(0.0514)	(0.0512)
ANR advantage + GANAR	0.4477***	0.4487***	-0.4907***	-0.4949***	0.0430	0.0462
	(0.1560)	(0.1236)	(0.1573)	(0.1224)	(0.0609)	(0.0607)
ANR advantage + Other	0.5471*	0.4414*	-0.6173*	-0.5001*	0.0702	0.0587
	(0.3253)	(0.2683)	(0.3197)	(0.2607)	(0.1375)	(0.1374)
ANR trifecta	0.6549	0.5692	-0.7695	-0.6976	0.1146	0.1283
	(0.5466)	(0.4651)	(0.5395)	(0.4675)	(0.2529)	(0.2538)
Other poll worker allocation	0.2540	0.3178	-0.0917	-0.1559	-0.1623	-0.1619
	(0.2627)	(0.2255)	(0.2645)	(0.2264)	(0.1098)	(0.1098)
Mean of Dependent Variable	48.6944	48.6944	45.3871	45.3871	5.9185	5.9185
Polling station FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
GANAR voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	20,287	20,287	20,287	20,287	20,287	20,287
R^2	0.6923	0.8116	0.7017	0.8205	0.7950	0.7958

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party or alliance (in the case of GANAR) work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one GANAR (alliance between the PLRA and the FG party, as well as other smaller left-wing parties) poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two UNACE poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

have no poll worker present (particularly when a voting booth has 2 ANR and 1 PLRA poll worker) the vote share for other parties go down significantly by 0.26 pp (around 0.6% of the mean vote share).

Table 11 explores the effect of partisan poll workers on the MERCOSUR parliament election by running equation (1), since for this electoral race the GANAR parties also run under separate party lists. We observe a very similar pattern for the ANR and PLRA vote shares as in Table 10. If the ANR has two poll workers and the PLRA has one counting votes, the ANR's vote share increases significantly by 0.58 pp (around 1.4% of its mean vote share). If instead the PLRA has two poll workers and the ANR has one counting votes, the PLRA's vote share rises significantly by 0.21 pp (around 0.7% of its mean vote share). Once again, when the ANR has two poll workers and there is one PLRA poll worker or one poll worker not registered to the ANR or PLRA, the PLRA vote share decreases significantly by 0.3 pp and 0.53 pp respectively. These effects are around 1% and 1.75% of the PLRA's mean vote share for the MERCOSUR parliament race. Lastly, we continue finding that if the other parties have no poll worker representation (particularly when a voting booth has 2 ANR and 1 PLRA poll worker) the vote share for other parties go down significantly by 0.28 pp (around 1% of the mean vote share).

With Table 12 we analyze the effect of partisan poll workers on the deputies election by running equation (1). For this electoral race, there are some departments where the GANAR alliance runs together and some where it does not. Also, the parties belonging to GANAR vary across departments for this race, with FG running independently in some departments. However, the PLRA always runs separately or through GANAR (and mainly proposes its own candidates if it runs under GANAR), so we generate an outcome variable for PLRA/GANAR vote shares. We once again observe a similar pattern for the ANR and PLRA/GANAR vote shares as in Tables 10 and 11. Whenever the ANR has two poll workers counting votes, its vote share grows significantly by 0.45 pp and 0.49 pp (approximately 1.2% of its mean vote share). If instead the PLRA has two poll workers and the ANR has one counting votes, the PLRA/GANAR vote share increases

Table 10: Effect of partisan poll worker composition on senatorial election results

	ANR vote share		PLRA vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
PLRA trifecta	-1.1258	-1.7466	0.2129	0.4256	0.9129	1.3210
	(1.3951)	(1.2992)	(1.8764)	(1.5652)	(1.3663)	(1.3760)
PLRA advantage + Other	-0.7470*	-0.2205	0.5856	0.0082	0.1614	0.2122
	(0.4446)	(0.3735)	(0.3917)	(0.3259)	(0.4457)	(0.4385)
PLRA advantage + ANR	-0.2518	-0.0642	0.4064***	0.2149*	-0.1546	-0.1507
	(0.1536)	(0.1273)	(0.1428)	(0.1167)	(0.1483)	(0.1469)
ANR advantage + PLRA	0.4835***	0.5121***	-0.2189*	-0.2480**	-0.2645**	-0.2641**
	(0.1400)	(0.1194)	(0.1225)	(0.1018)	(0.1338)	(0.1326)
ANR advantage + Other	0.5065**	0.5297**	-0.3527*	-0.3506**	-0.1538	-0.1791
	(0.2567)	(0.2353)	(0.2039)	(0.1717)	(0.2536)	(0.2540)
ANR trifecta	-0.4023	-0.4884	-0.2106	-0.1790	0.6129	0.6674
	(0.6007)	(0.5726)	(0.4818)	(0.4542)	(0.5103)	(0.4984)
Other poll worker allocation	-0.0286	0.0969	-0.0761	-0.1968	0.1047	0.0999
	(0.1686)	(0.1508)	(0.1504)	(0.1313)	(0.1724)	(0.1715)
Mean of Dependent Variable	32.6369	32.6369	24.4988	24.4988	42.8642	42.8642
Polling station FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	20,257	20,257	20,257	20,257	20,257	20,257
R^2	0.7290	0.8030	0.7962	0.8597	0.8449	0.8476

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table 11: Effect of partisan poll worker composition on MERCOSUR parliament election results

	ANR vote share		PLRA vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
PLRA trifecta	-1.7476	-2.4502	0.2928	0.6208	1.4548	1.8294
	(1.7323)	(1.7716)	(1.7331)	(1.5543)	(1.3435)	(1.3719)
PLRA advantage + Other	-0.7628	-0.1232	0.6389	-0.0727	0.1239	0.1959
	(0.5288)	(0.4570)	(0.4193)	(0.3195)	(0.4287)	(0.4245)
PLRA advantage + ANR	-0.2250	-0.0027	0.4477***	0.2127*	-0.2227*	-0.2100
	(0.1686)	(0.1334)	(0.1598)	(0.1222)	(0.1319)	(0.1306)
ANR advantage + PLRA	0.5491***	0.5814***	-0.2652*	-0.2995***	-0.2839**	-0.2819**
	(0.1500)	(0.1231)	(0.1370)	(0.1078)	(0.1154)	(0.1144)
ANR advantage + Other	0.3064	0.3331	-0.5303**	-0.5330***	0.2240	0.1999
	(0.2682)	(0.2344)	(0.2320)	(0.1846)	(0.2170)	(0.2170)
ANR trifecta	0.1552	0.0563	-0.7387	-0.6900	0.5835	0.6337
	(0.5534)	(0.4865)	(0.4931)	(0.4352)	(0.4563)	(0.4447)
Other poll worker allocation	-0.0759	0.0704	0.0035	-0.1432	0.0724	0.0728
	(0.1898)	(0.1667)	(0.1697)	(0.1431)	(0.1598)	(0.1584)
Mean of Dependent Variable	42.1341	42.1341	30.5360	30.5360	27.3299	27.3299
Polling station FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	20,273	20,273	20,273	20,273	20,273	20,273
R^2	0.7046	0.8022	0.7763	0.8617	0.8456	0.8485

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

significantly by 0.4 pp (approximately 1.3% of its mean vote share). Also, when the ANR has two poll workers and there is one PLRA poll worker or one poll worker not registered to the ANR or PLRA, the PLRA/GANAR vote share decreases significantly by 0.25 pp and 0.51 pp respectively. These effects are around 0.8% and 1.7% of the PLRA/GANAR mean vote share for the deputies election. We again find that if the other parties have no poll workers counting votes the vote share for other parties decreases significantly by 0.28 pp and 0.2 pp (approximately 0.9% and 0.7% of the mean vote share).

In Table 13 we analyze the effect of partisan poll workers on the departmental governor election by running equation (1). Similarly to Table 12, we use an outcome variable for PLRA/GANAR vote shares since the PLRA either runs separately or through the GANAR alliance throughout the whole country for this electoral race. The results from this table are more similar to those of Table 9, which may be due to the fact that both explore the effects of partisan poll workers on elections defined by plurality voting. We find that whenever the ANR has two poll workers counting votes, its vote share grows significantly by 0.38 pp and 0.42 pp (approximately 0.8% and 0.9% of its mean vote share). In addition, whenever the ANR has two poll workers the PLRA/GANAR vote share decreases significantly by 0.47 pp and 0.49 pp respectively. These effects are around 1.1% of the PLRA/GANAR mean vote share for the governor electoral race. We also find that "other" poll worker allocations are associated with a significant increase in the vote share for other parties by 0.24 pp (approximately 2.2% of the mean vote share). This seems plausible since these "other" poll worker allocations consist of any poll worker allocation excluding those that are denoted with the other independent variables and the "fair" allocations having one ANR and one PLRA poll worker. Hence, these allocations include, for example, those electoral tables with 2 FG poll workers and those that have multiple unaffiliated poll workers who might be independent and more likely to support the non-traditional parties.

Finally, Table 14 shows the effect of partisan poll workers on the departmental council election by running equation (1). Similarly to Tables 12 and 13, we use an outcome variable for

Table 12: Effect of partisan poll worker composition on deputies' election results

	ANR vote share		PLRA/GANAR vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
PLRA trifecta	-1.3934	-2.2127	0.2298	0.7205	1.1636	1.4923
	(1.7561)	(1.5302)	(1.7408)	(1.3125)	(1.0443)	(1.0553)
PLRA advantage + Other	-0.9276**	-0.3321	0.7604*	0.0673	0.1673	0.2648
	(0.4609)	(0.3760)	(0.4290)	(0.3130)	(0.3525)	(0.3507)
PLRA advantage + ANR	-0.3230**	-0.1139	0.6255***	0.3968***	-0.3025**	-0.2830**
	(0.1594)	(0.1274)	(0.1607)	(0.1266)	(0.1349)	(0.1340)
ANR advantage + PLRA	0.4240***	0.4515***	-0.2216*	-0.2512**	-0.2024*	-0.2003*
	(0.1404)	(0.1159)	(0.1343)	(0.1069)	(0.1137)	(0.1126)
ANR advantage + Other	0.4649*	0.4878**	-0.5069**	-0.5082***	0.0421	0.0204
	(0.2591)	(0.2320)	(0.2280)	(0.1822)	(0.2149)	(0.2134)
ANR trifecta	0.3451	0.2628	0.0702	0.1066	-0.4153	-0.3694
	(0.5391)	(0.4644)	(0.4676)	(0.3991)	(0.4632)	(0.4627)
Other poll worker allocation	-0.1291	0.0192	-0.0692	-0.2222	0.1983	0.2030
	(0.1749)	(0.1528)	(0.1658)	(0.1400)	(0.1490)	(0.1479)
Mean of Dependent Variable	39.1551	39.1551	30.2855	30.2855	30.5593	30.5593
Polling station FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	20,138	20,138	20,138	20,138	20,138	20,138
R^2	0.7773	0.8486	0.8129	0.8812	0.9220	0.9232

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to GANAR vary across Paraguayan departments for the deputies elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The number of observations is lower for this electoral race as there is no deputies' election for Paraguayan voters abroad. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table 13: Effect of partisan poll worker composition on governor election results

	ANR vote share		PLRA/GANAR vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
PLRA trifecta	-1.2163	-1.6417	0.3139	0.6329	0.9024	1.0087
	(1.4122)	(1.0996)	(1.5028)	(1.1113)	(0.6801)	(0.6762)
PLRA advantage + Other	-1.0477**	-0.3811	0.7658	0.0425	0.2819	0.3386
	(0.4712)	(0.3616)	(0.4986)	(0.3956)	(0.2720)	(0.2692)
PLRA advantage + ANR	-0.3520**	-0.0920	0.4614***	0.1886	-0.1094	-0.0967
	(0.1638)	(0.1258)	(0.1639)	(0.1222)	(0.0807)	(0.0803)
ANR advantage + PLRA	0.2966*	0.3820***	-0.3832**	-0.4690***	0.0865	0.0869
	(0.1559)	(0.1220)	(0.1543)	(0.1178)	(0.0729)	(0.0726)
ANR advantage + Other	0.3753	0.4218*	-0.4550*	-0.4870**	0.0797	0.0652
	(0.2700)	(0.2274)	(0.2632)	(0.2105)	(0.1393)	(0.1389)
ANR trifecta	0.6218	0.6522	-0.3394	-0.3789	-0.2825	-0.2733
	(0.5439)	(0.4778)	(0.5302)	(0.4598)	(0.2979)	(0.3021)
Other poll worker allocation	-0.3400*	-0.1396	0.1135	-0.0957	0.2265**	0.2354**
	(0.1889)	(0.1582)	(0.1869)	(0.1535)	(0.1058)	(0.1054)
Mean of Dependent Variable	46.9013	46.9013	42.3609	42.3609	10.7379	10.7379
Polling station FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	18,144	18,144	18,144	18,144	18,144	18,144
R^2	0.6992	0.8142	0.7570	0.8563	0.9075	0.9083

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to the GANAR alliance vary across Paraguayan departments for the governor elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The number of observations is lower for this electoral race as there is no governor election for Paraguayan voters abroad and those in the capital district. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

PLRA/GANAR vote shares since the PLRA either runs separately or through the GANAR alliance throughout the whole country for this electoral race. We continue finding a similar pattern for the ANR and PLRA/GANAR vote shares as in Tables 10 to 12. Whenever the ANR has two poll workers counting votes, its vote share grows significantly by 0.65 pp and 0.43 pp (approximately 1.6% and 1.1% of its mean vote share). In addition, whenever the ANR has two poll workers, the PLRA/GANAR vote share drops significantly by 0.51 pp and 0.64 pp respectively. These effects are around 1.5% and 1.8% of the PLRA/GANAR mean vote share for the departmental council election. We also find that if only the ANR is counting votes at an electoral table through a trifecta then the PLRA/GANAR vote share declines significantly by 1 pp (around 2.9% of the mean vote share). In addition, other poll worker allocations lead to a significant decline of 0.31 pp in the PLRA/GANAR vote share (around 0.9% of the mean vote share).

Next, we again see that if the other parties have no poll worker present (particularly when a voting booth has 2 PLRA and 1 ANR poll worker) the vote share for other parties declines significantly by 0.21 pp (around 0.9% of the mean vote share). We also notice again that "other" poll worker allocations are associated with a significant increase in the vote share for other parties by 0.29 pp (approximately 1.1% of the mean vote share). Finally, we can observe that if only the PLRA is counting votes at an electoral table through a trifecta the vote share of other parties rises significantly by 2.5 pp (around 10.1% of the mean vote share). This coefficient estimate is in comparison to "fair" poll worker allocations having one ANR and one PLRA poll worker. This coefficient could suggest that PLRA poll workers may guard or favor other parties for these particular elections, which is plausible since the PLRA tends to be in the opposition with the other parties against the ANR. At the same time, it is important to note that the PLRA has trifectas for only 17 tables (compared to the ANR which has 158), so this result could be idionsyncratic and is driven by few observations.

Appendix Tables A2 to A7 explore the effect of partisan poll workers on the share of null (invalid) votes, the share of blank votes, and total votes recorded. While we do observe a few

Table 14: Effect of partisan poll worker composition on departmental council election results

	ANR vote share		PLRA/GANAR vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
PLRA trifecta	-0.8374	-1.3156	-1.4288	-1.2267	2.2662*	2.5423*
	(1.6475)	(1.4742)	(1.7518)	(1.5508)	(1.3633)	(1.3663)
PLRA advantage + Other	-0.7475	-0.1236	0.5250	-0.1997	0.2224	0.3233
	(0.4928)	(0.4059)	(0.4601)	(0.3502)	(0.3627)	(0.3600)
PLRA advantage + ANR	-0.1664	0.0814	0.4010**	0.1365	-0.2345*	-0.2180*
	(0.1659)	(0.1322)	(0.1652)	(0.1287)	(0.1295)	(0.1285)
ANR advantage + PLRA	0.5703***	0.6518***	-0.4351***	-0.5131***	-0.1352	-0.1388
	(0.1610)	(0.1319)	(0.1547)	(0.1215)	(0.1238)	(0.1227)
ANR advantage + Other	0.3812	0.4329*	-0.6205**	-0.6350***	0.2393	0.2022
	(0.2864)	(0.2513)	(0.2448)	(0.1998)	(0.2264)	(0.2246)
ANR trifecta	0.4634	0.4876	-0.9663*	-1.0103**	0.5029	0.5228
	(0.5608)	(0.4826)	(0.5505)	(0.4925)	(0.5155)	(0.5075)
Other poll worker allocation	-0.1638	0.0222	-0.1082	-0.3051*	0.2720*	0.2829*
	(0.1958)	(0.1681)	(0.1879)	(0.1590)	(0.1639)	(0.1630)
Mean of Dependent Variable	40.3654	40.3654	34.3802	34.3802	25.2544	25.2544
Polling station FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	18,130	18,130	18,130	18,130	18,130	18,130
R^2	0.7096	0.8084	0.7388	0.8354	0.8306	0.8333

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to the GANAR alliance vary across Paraguayan departments for the departmental council elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The number of observations is lower for this electoral race as there is no departmental council election for Paraguayan voters abroad and those in the capital district. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

significant coefficients on each of the six tables, it does not appear like any of them hold systematically across different electoral races. Hence, we conclude that partisan poll workers do not seem to have any systematic effect on blank, null, and total votes. This suggests that partisan poll workers mostly have an effect through the votes for particular parties.

Next, we explore the heterogeneous effect of partisan poll workers by electoral system. As explained previously, the same poll workers count votes from the same voters for different electoral races. Two of these races are defined by plurality voting (president and governor), while the remaining four are defined by a PR system (senator, MERCOSUR parliament, deputies, and departmental council). These electoral systems provide distinct incentives for electoral manipulation, as there is greater scope for cooperation in electoral manipulation with the PR races. This is because the poll workers present can collude by taking votes away from other parties without poll workers and assigning those votes to themselves, which would increase the number of legislative seats for all colluding parties. This potential collusion is alluded to on Figure 1 and apparently occurs on the tally from Figure 3. On the other hand, with plurality voting there can only be one winner, so it is in the interest of each party to potentially take away votes from all opposing parties (particularly the main rival parties), leaving less scope for collusion.

Table 15 pools observations from all elections together and runs equation (3) to examine the differential effect of partisan poll workers by electoral system. With the ANR vote share we find no differential effect of partisan poll worker allocations by electoral system since none of the coefficients from the interaction terms are significant. Still, we can observe how the ANR's vote share varies symmetrically with how many of its own poll workers count votes. We can observe how a PLRA trifecta leads to a significant decrease of 1.97 pp in the ANR vote share (around 4.75% of its average vote share across all races). On the other hand, whenever the ANR has two poll workers counting votes its vote share increases significantly by 0.42 pp and 0.43 pp (around 1% of its average vote share across all races). If the ANR has all three poll workers counting votes at an electoral table its vote share rises significantly by 0.58 pp (around 1.4% of its average vote

share across all races).

With the PLRA/GANAR vote shares we again observe some symmetrical effects depending on how many own party poll workers count votes. We find that if the PLRA has two poll workers and the ANR has one counting votes then the PLRA/GANAR vote share rises significantly by 0.15 pp (around 0.4% of its average vote share across all races). In addition, whenever the ANR has two poll workers counting votes the PLRA/GANAR vote share drops significantly by 0.49 pp and 0.52 pp (around 1.4% and and 1.5% of its average vote share across all races). We also find that if only the ANR is counting votes at a voting booth through a trifecta then the PLRA/GANAR vote share declines significantly by 0.55 pp (around 1.6% of its average vote share across all races). Most interestingly, we find that the interaction coefficient of PR race and having two ANR poll workers and one PLRA poll worker is positive and significant, with a coefficient of around 0.17 pp for the PLRA/GANAR vote share (around 0.5% of its average vote share across all races). Hence, although the allocation of two ANR poll workers and one PLRA poll workers tends to lower the PLRA/GANAR vote shares, this is compensated for in PR races. This is exactly the pattern we would expect to find if the ANR and PLRA poll workers colluded more often with PR races, to the detriment of other parties not represented with their own poll workers. This also suggests that the behavior found on the vote tally from Figure 3 with two ANR poll workers and one PLRA poll worker might be more systematic than just anecdotal.

With the vote share of other parties we observe two significant results. First, we observe that if only the PLRA is counting votes at an electoral table through a trifecta the vote share of other parties rises significantly by 1.04 pp (around 4.3% of its average vote share across all races). This result seems to be driven by the effect of PLRA trifectas on the departmental council elections. As explained before, this coefficient could suggest that PLRA poll workers may guard or benefit other parties for these particular elections, which is plausible since the PLRA tends to be in the opposition with the other parties against the ANR. Second, we also interestingly find that when the ANR has two poll workers and the PLRA has one poll worker counting votes the vote share of other

Table 15: Effect of partisan poll worker composition on all election results by electoral system

	ANR vote share		PLRA/GANAR vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
PLRA trifecta	-1.4153	-1.9707**	0.6248	0.9339	0.7905*	1.0368**
	(1.0171)	(0.9019)	(1.1006)	(0.9306)	(0.4705)	(0.4775)
PLRA advantage	-0.9209***	-0.2980	0.8059**	0.1140	0.1150	0.1839
+ Other	(0.3322)	(0.2627)	(0.3371)	(0.2648)	(0.1688)	(0.1667)
PLRA advantage	-0.3001***	-0.0694	0.3906***	0.1479*	-0.0905*	-0.0786
+ ANR	(0.1158)	(0.0883)	(0.1161)	(0.0874)	(0.0507)	(0.0511)
ANR advantage	0.3675***	0.4240***	-0.4367***	-0.4922***	0.0692	0.0682
+ PLRA	(0.1057)	(0.0831)	(0.1057)	(0.0816)	(0.0448)	(0.0449)
ANR advantage	0.3903**	0.4257***	-0.5063***	-0.5194***	0.1160	0.0936
+ Other	(0.1882)	(0.1571)	(0.1837)	(0.1483)	(0.0869)	(0.0876)
ANR trifecta	0.6111	0.5752*	-0.5595	-0.5498*	-0.0516	-0.0254
	(0.3852)	(0.3322)	(0.3781)	(0.3248)	(0.1934)	(0.1981)
Other poll worker	-0.2319*	-0.0643	0.1431	-0.0294	0.0888	0.0936
allocation	(0.1306)	(0.1097)	(0.1303)	(0.1076)	(0.0634)	(0.0636)
PLRA trifecta × PR race	0.1267	0.0302	-0.7650	-0.6835	0.6383	0.6533
	(1.3058)	(1.1852)	(1.4186)	(1.2005)	(0.8012)	(0.8067)
PLRA advantage	0.1243	0.1242	-0.1767	-0.1753	0.0524	0.0511
+ Other × PR race	(0.4107)	(0.3316)	(0.3984)	(0.3116)	(0.2624)	(0.2596)
PLRA advantage	0.0578	0.0514	0.0813	0.0876	-0.1391	-0.1390
+ ANR × PR race	(0.1412)	(0.1097)	(0.1402)	(0.1072)	(0.0850)	(0.0848)
ANR advantage	0.1371	0.1229	0.1563	0.1690*	-0.2934***	-0.2919***
+ PLRA × PR race	(0.1289)	(0.1032)	(0.1259)	(0.0982)	(0.0757)	(0.0754)
ANR advantage	0.0253	0.0190	0.0073	0.0119	-0.0325	-0.0308
+ Other × PR race	(0.2307)	(0.1972)	(0.2159)	(0.1748)	(0.1438)	(0.1438)
ANR trifecta × PR race	-0.4845	-0.5118	0.1142	0.1360	0.3703	0.3758
	(0.4780)	(0.4182)	(0.4526)	(0.3949)	(0.3110)	(0.3113)
Other poll worker	0.1348	0.1229	-0.2043	-0.1907	0.0695	0.0679
allocation × PR race	(0.1592)	(0.1357)	(0.1550)	(0.1294)	(0.1027)	(0.1024)
Mean of Dependent Variable	41.5808	41.5808	34.4445	34.4445	23.9746	23.9746
Polling station-elect. race FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	117,229	117,229	117,229	117,229	117,229	117,229
R^2	0.7625	0.8425	0.8203	0.8869	0.9299	0.9308

Notes: A unit of observation is a voting booth. All regressions control for polling station-electoral race fixed effects. Standard errors are robust. The parties belonging to the GANAR alliance vary across Paraguayan departments for the governor, deputies, and departmental council elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares for these races. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two UNACE poll workers would correspond to the "other poll worker allocation" category. "PR race" is an indicator variable for whether the electoral results are for electoral races with a proportional representation (PR) system (i.e., the senatorial, MERCOSUR parliament, deputies', and departmental council races). The coefficient for PR race is omitted because it is collinear once we control for polling station-electoral race fixed effects. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

parties decreases significantly by 0.29 pp (around 1.2% of its average vote share across all races). In addition, the decrease of 0.14 pp on the vote share of other parties (around 0.6% of its average vote share across all races) when there are two PLRA poll workers and one ANR poll worker is marginally insignificant given that the p-value is 0.101 and the t-statistic is approximately -1.64. These two latter findings are also consistent with a pattern of differential incentives for electoral manipulation in PR races. Both of these partisan poll worker allocations that do not have other party poll workers represented tend to lead to significantly lower vote shares for the other parties while the traditional parties represented tend to benefit.

Table 16 also explores the heterogeneous effects of partisan poll workers by electoral system and uses regression specification (4). The difference with Table 15 is that we pool the two traditional parties together and contrast them with poll workers from other parties. We find that a traditional party trifecta of poll workers counting votes increases significantly the vote share of the ANR by 0.36 pp (approximately 0.9% of its average vote share across all races). The fact that a traditional party trifecta overall tends to increase the ANR vote share is likely due to the fact that the ANR has a majority of poll workers represented more often than the PLRA does. Next, we observe that a traditional party trifecta of poll workers counting votes leads to a significant rise in the PLRA/GANAR vote share in PR races by 0.35 pp (approximately 1% of its average vote share across all races). This result follows our expectations given that traditional party trifectas tend to have ANR majorities more often than PLRA majorities. A traditional party trifecta having a mix of ANR and PLRA poll workers is more likely to collude with PR races, and hence we only observe a significant increase in the PLRA/GANAR vote share from traditional party trifectas in PR races.

Finally, we can observe how the vote share of other parties varies symmetrically with the number of traditional party and other party poll workers. Whenever the traditional parties have a trifecta counting votes the vote share of other parties decreases significantly by 0.21 pp (approximately 0.9% of the average vote share across all races). This decrease from traditional party trifectas is compounded in PR races with an additional significant decrease of 0.32 pp (approximately 1.3% of

Table 16: Effect of partisan poll worker composition on all election results by electoral system distinguishing traditional and other parties

	ANR vote share		PLRA/GANAR vote share		Other party vote share	
	(1)	(2)	(3)	(4)	(5)	(6)
Trad. party trifecta	0.3945**	0.3595**	-0.1698	-0.1510	-0.2247***	-0.2086**
	(0.1776)	(0.1485)	(0.1754)	(0.1428)	(0.0867)	(0.0870)
Trad. party adv. + Other party	0.4125**	0.2327	-0.2230	-0.0477	-0.1896**	-0.1850**
	(0.1728)	(0.1459)	(0.1700)	(0.1394)	(0.0851)	(0.0854)
Other party adv. + Trad. party	0.0402	0.0943	0.3267	0.2309	-0.3670**	-0.3252**
	(0.3405)	(0.2724)	(0.3416)	(0.2730)	(0.1600)	(0.1601)
Other party trifecta	-0.1305	-0.9512	-0.2344	0.4197	0.3649	0.5315
	(1.5190)	(1.2366)	(1.9586)	(1.4205)	(0.8801)	(0.9772)
Other poll worker allocation	0.1765	0.1071	0.0694	0.1179	-0.2459***	-0.2250**
	(0.1826)	(0.1531)	(0.1805)	(0.1474)	(0.0898)	(0.0901)
Trad. party trifecta × PR race	-0.0246	-0.0333	0.3483*	0.3527**	-0.3237**	-0.3194**
	(0.2156)	(0.1837)	(0.2089)	(0.1726)	(0.1388)	(0.1386)
Trad. party adv. + Other party × PR race	-0.1149	-0.1134	0.2113	0.2059	-0.0964	-0.0926
	(0.2099)	(0.1805)	(0.2020)	(0.1681)	(0.1355)	(0.1353)
Other party adv. + Trad. party × PR race	-0.0902	-0.1186	-0.3698	-0.3466	0.4600*	0.4652*
	(0.4149)	(0.3381)	(0.4039)	(0.3283)	(0.2575)	(0.2570)
Other party trifecta × PR race	-0.7112	-0.5718	1.8269	1.7109	-1.1157	-1.1390
	(1.8839)	(1.6073)	(2.1627)	(1.6333)	(1.5741)	(1.6028)
Other poll worker allocation × PR race	-0.0799	-0.0755	0.2579	0.2507	-0.1780	-0.1751
	(0.2218)	(0.1892)	(0.2146)	(0.1775)	(0.1435)	(0.1432)
Mean of Dependent Variable	41.5808	41.5808	34.4445	34.4445	23.9746	23.9746
Polling station-elect. race FE	X	X	X	X	X	X
ANR voter prop. control		X		X		X
PLRA voter prop. control		X		X		X
Other party voter prop. control		X		X		X
Observations	117,229	117,229	117,229	117,229	117,229	117,229
R^2	0.7622	0.8423	0.8201	0.8868	0.9299	0.9308

Notes: A unit of observation is a voting booth. All regressions control for polling station-electoral race fixed effects. Standard errors are robust. The parties belonging to the GANAR alliance vary across Paraguayan departments for the governor, deputies, and departmental council elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares for these races. Vote shares are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers at the voting booth either support the traditional parties (ANR and PLRA) or some other party. Advantage indicates that two out three poll workers either support the traditional parties (ANR and PLRA) or some other party. The excluded category corresponds to voting booths with "fair allocations" having one traditional party poll worker and one poll worker from another party. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. "PR race" is an indicator variable for whether the electoral results are for electoral races with a proportional representation (PR) system (i.e., the senatorial, MERCOSUR parliament, deputies', and departmental council races). The coefficient for PR race is omitted because it is collinear once we control for polling station-electoral race fixed effects. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

the average vote share across all races). We can also notice how two traditional party poll workers and one other party poll worker counting votes leads to a significant decrease of 0.19 pp (approximately 0.8% of the average vote share across all races). If instead the other parties have two poll workers and the traditional parties have one we still observe a significant decrease of 0.33 pp (approximately 1.4% of the average vote share across all races), yet this is compensated in PR races since we find that this allocation leads to a significant increase of 0.47 pp (approximately 1.9% of the average vote share across all races). Lastly, we find that "other" poll worker allocations lead to a significant decline of 0.23 pp (approximately 0.9% of the average vote share across all races) in the vote share of other parties. This result is also plausible since now the "other" poll worker allocations include, for example, electoral tables with two traditional party poll workers and one unaffiliated poll worker. This sort of partisan poll worker allocations are likely to ultimately benefit the traditional parties more. Hence, the results from this table also suggest that collusion between traditional party poll workers and greater electoral manipulation (to the detriment of other parties) are more likely with PR races.

Appendix Tables A8 to A13 analyze whether the presence (regardless of the number) of partisan poll workers can explain the electoral results by running equations (5) and (6). While the previous regression specifications are more informative since the official results for each voting booth are decided by what the majority of poll workers at an electoral table decide, we include these for completeness. Overall, the most consistent patterns within these tables are as follows. Having a PLRA poll worker (or GANAR poll worker for the presidential race) counting votes tends to decrease the ANR's vote share and increase the PLRA/GANAR vote share. In addition, having a poll worker from the other parties count votes tends to significantly increase the vote share of these other parties, but only on PR races.

Appendix Table A14 explores whether certain allocations of partisan poll workers on voting booths lead to more electoral contestations where results are challenged. Overall, there are not many contestations in our sample: 3,116 out of 117,742 (2.65%) possible voting booth-electoral

race combinations.[24] This is not fully surprising since most often parties need to have either poll workers, poll watchers, or electoral proxies present to observe irregularities and file a contestation. Only the ANR and the PLRA (to a somewhat lesser degree) seem to be well-resourced enough to cover most of the country. In addition, the way that contestations are adjudicated is by showing the tallies filled out individually by the three poll workers and confirming that at least two of the three poll workers have tallies that coincide. If at least two tallies coincide, then the results from those tallies are confirmed as the official results. This is a conspicuous weakness of the electoral contestation process given our evidence that individual political parties tend to have a majority in more than a third of all voting booths, and that some parties may collude at the tally-writing process. If all three tallies differ, then the tally for the relevant electoral race in that voting booth is annulled, meaning that zero votes are counted for that race in that voting booth.

Appendix Table A14 shows that contestations are much less likely to occur when a single party (either the ANR or the PLRA) controls a voting booth through a trifecta of poll workers. This is unsurprising since if no poll worker from another party is around, it is less likely any irregularity will be called out. The low number of contestations also implies that even fewer voting booths get their counts amended due to contestations being accepted or that the tally for a particular race at a particular voting booth is annulled. Hence, while contestations are a recourse that political parties may use in other contexts to demand greater electoral integrity, this recourse appears to be quite ineffective in the Paraguayan context. Electoral courts are meant to resolve electoral disputes and address allegations of electoral fraud by either recognizing their legitimacy or discarding them if they do not prove legitimate. Given our findings that partisan poll workers tend to favor their own parties, particularly when they have a majority at a voting booth, the fact that we observe less contestations when only one party controls a voting booth is likely problematic.

[24]The sample of 117,742 comes from the voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election). If we consider all voting booths in the elections, we have contestations in 3,213 out of 122,595 (2.62%) possible voting booth-electoral race combinations, as shown on Appendix Table A1.

7 Conclusion

Electoral irregularities reduce the accountability role of elections if not all votes submitted are counted faithfully. In Paraguayan elections, the system for counting votes is partisan and adversarial. Each electoral table (voting booth) in Paraguay has three "members," and these members are, by law, political party representatives. In theory this is a neutral system which protects votes since multiple parties should be counting votes at each booth, leading to an accurate count. Yet we have shown that in Paraguayan elections political parties have unequal poll worker representation across voting booths and that this affects how their votes are counted. This evidence could also be informative for developing democracies and historical elections of advanced democracies, particularly those where explicitly partisan representatives can be poll workers or polling station administrators.

We arrive at this result by using election-day vote tallies where partisan poll workers sign and include their ID numbers, which allows us to match them with political party support and party registration data sets. These inequalities in poll worker representation are greater than what would be expected from the pre-electoral registration data from the election authority on partisan poll workers, as we find that more than a third of pre-registered poll workers get replaced. These replacements primarily benefit the traditionally dominant parties (the ANR and to a lesser extent the PLRA) at the expense of smaller parties which have fewer of their poll workers counting votes.

Within a polling station, voters are assigned to voting booths according to the alphabetical order of their surnames. As we show that the alphabetical order of voters' last names is independent of voters' political preferences, this method of assigning voters to booths within polling stations constitutes a quasi-random assignment. Hence, this assignment implies that, on average, voter preferences are roughly similar across voting booths within the same polling station. Thus, any strong deviations in electoral results among voting booths from the same polling stations instead stem from other qualities of the booths, such as the partisan poll workers counting votes. Therefore,

our setting allows us to estimate the causal effect of partisan poll worker representation on electoral outcomes.

Our findings suggest that electoral results vary symmetrically with the representation of own party poll workers and those of opposing parties. Comparing with a voting booth having just one PLRA and one ANR poll worker, an additional poll worker from the ANR raises its party's vote share by as much as 0.65 percentage points (pp) in some electoral races, while electoral tables controlled fully by the opposition PLRA can lead to as much as a 1.97 pp reduction in the ANR's vote share. Similarly, one more PLRA poll worker can raise its party's vote share by as much as 0.40 pp in some electoral races, while voting booths controlled fully by the rival ANR can lead to as much as a 1 pp reduction in the PLRA's vote share. Thus, the ability of parties to have poll workers at a large number of voting booths and to have multiple poll workers count votes at the same booth give a systematic advantage to those parties which are able to do so.

We also uncover how incentives for electoral manipulation vary by electoral system. We leverage the rich context of our electoral setting and data, as the general elections in Paraguay involve six different electoral races determined by either plurality voting or proportional representation. Each of these electoral races has a separate ballot which is counted in an independent tally while involving the same voters and poll workers. Our findings point to a greater scope for collusion in electoral fraud among opposing party poll workers within PR races, since distributing votes among themselves can help both parties earn seats for their legislative candidates. On the other hand, there is less scope for collusion with plurality voting since these elections have only one winner, so partisan poll workers seem to attempt to take votes from all parties running against their own. In particular, we find that in elections with plurality voting a combination of two ANR poll workers and one PLRA poll worker counting votes at a voting booth significantly decreases the PLRA's vote share by around 0.5 pp. This is possible since the official results for each booth are determined by the majority from the individual tallies each poll worker fills out. So if the tallies of two of the three poll workers agree, then the results from those two tallies become the official

results for that particular voting booth. On the other hand, this same partisan poll worker allocation (2 ANR and 1 PLRA) in PR races leads to a significantly lower reduction of 0.32 pp in its vote share. Our results and qualitative evidence suggest that this may be due to the ANR and PLRA cooperating more often in PR races by stealing votes at the expense of other parties lacking poll worker representation at the booths. Consistent with this, we find that poll worker allocations only having traditional party (ANR and PLRA) poll workers significantly reduce the vote share of other parties by around 0.32 pp in PR races.

Our findings thus have several practical and theoretical implications. In practical terms, the implication is clear: if a party wants to compete electorally in Paraguay and the electoral rules do not change, it has to make an effort in having as many partisan poll workers as possible. This is essential since having poll worker representation and even more so a poll worker majority at a booth seems to systematically favor the party with that majority. This has been commented on intuitively in Paraguayan political circles before, but our study provides the first empirical analysis that the number of partisan poll workers counting votes significantly affects electoral results. Our estimated electoral distortions caused by partisan poll workers may not determine election outcomes on their own, as we observe no effects above 3 pp in absolute value for any particular partisan poll worker allocation. Notwithstanding, we do show how a considerable portion of the electoral results does not depend on voters' preferences.

Thus, in theoretical terms, we find that a portion of electoral results in developing democracies can depend on political parties' capacity to send poll workers to voting booths. Our results also show how electoral integrity can be incomplete for developing democracies in multiple dimensions. Previous work on the literature has focused on clientelism and vote buying by the traditional parties (ANR and PLRA) of Paraguay (Duarte et al., 2019; Finan and Schechter, 2012). Our findings show how electoral integrity can also break down at the vote counting stage in favor of the traditional parties. Combined, these studies show how political parties can be on an unequal footing in multiple ways. In several countries, particularly those of the Latin American region,

traditionally dominant parties have collapsed in recent years as these countries have democratized further (Lupu, 2016). Our findings show how traditionally dominant parties can hold onto power through alternative means, such as clientelism and ensuring their partisan poll workers count votes.

Political parties should take these results into account. Those most affected are small parties lacking the operational capacity to reach many polling stations. The smallest parties of the "third force" (other parties besides the ANR and PLRA) are at a particular disadvantage since the electoral law gives priority in poll worker allocation to the three parties with most seats in Congress. Moving forward, these smaller parties may want to consider consolidating into a smaller number of parties to join forces and reach a greater number of voting booths. This would reinforce the practice already established by the FG, which combines the forces of small left-wing political parties. In addition, if the election authority wants to address this inequality it could seek to subsidize or supplement some of the operational capacity of smaller parties to ensure they can attain a greater number of voting booths to be on a more equal footing with larger parties. We do not expect these measures to be easy to implement, yet at the same time we acknowledge that the status quo limits the ability of parties to compete on an equal footing, preventing true competition and hindering electoral accountability.

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Appendix Figures

Figure A1: Image of an electoral table with voting booth and poll workers

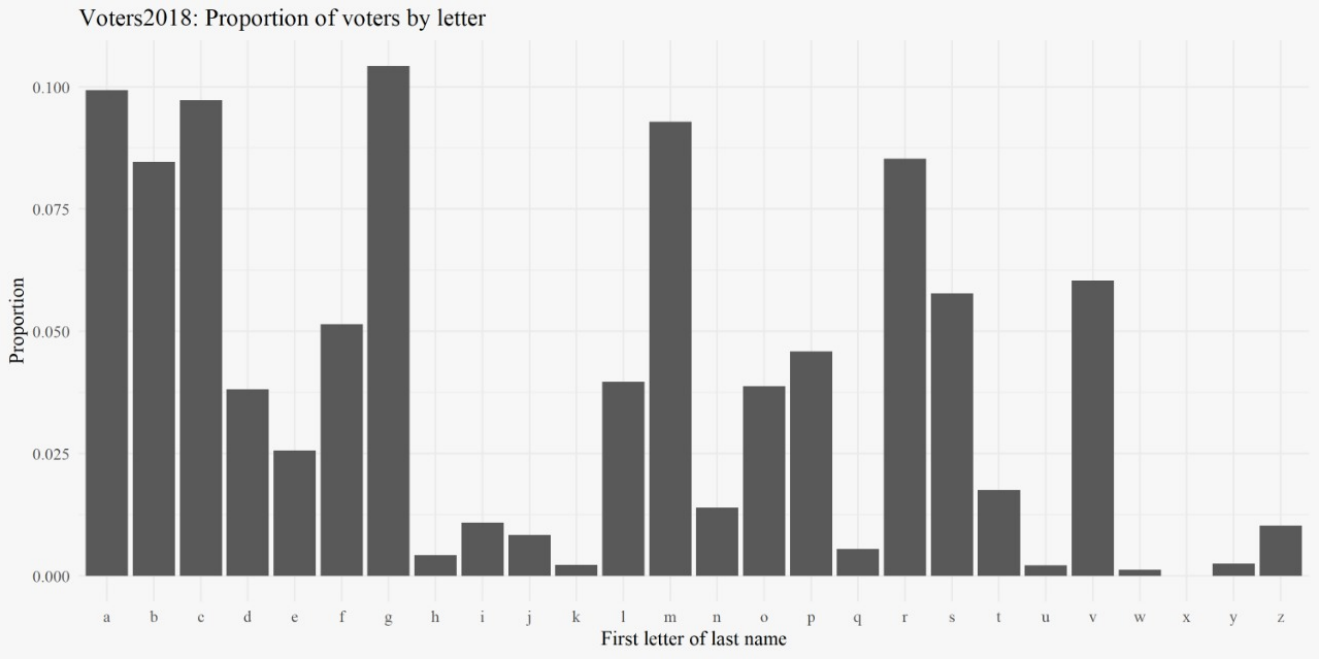
Notes: this figure shows a common setup for electoral tables in Paraguayan elections. Polling stations tend to be in public schools and voting booths tend to be installed in classrooms. The three poll workers set up a table for checking voters' ID cards outside a classroom before allowing them to vote. The picture is from EFE (2020).

Figure A2: Pre-registered poll workers from example quick count tally shown

0	CONCEPCION	0	CONCEPCION	1	C.R.E.C JUAN E. O'LEARY	1	3561873	F	9/16/1980	PRESIDENTE	TITULAR	1 ANR
0	CONCEPCION	0	CONCEPCION	1	C.R.E.C JUAN E. O'LEARY	1	3563089	F	9/13/1980	VOCAL	TITULAR	2 PLRA
0	CONCEPCION	0	CONCEPCION	1	C.R.E.C JUAN E. O'LEARY	1	5587364	F	12/24/1989	VOCAL	TITULAR	40 FG

Notes: This figure shows the pre-registered poll workers from the quick count vote tally shown on Figure 6. Comparing the pre-registered poll workers with those on the tally, the ANR and PLRA pre-registered poll workers showed up on election day, while the FG one was replaced.

Figure A3: Proportion of voters' surname initials by letter



Notes: This figure plots the proportion of voters' surname initials by letter. This figure shows how the surname initials that are farthest away from the overall means (h, k, w, x, and y) in Figure 10 have substantially lower frequencies.

Appendix Tables

Table A1: Appendix summary statistics

	Observations	Mean	Standard Deviation
Presidential election votes:			
Blank vote share	21,139	2.4354	2.3328
Null vote share	21,139	2.7507	1.9835
Total votes	21,139	122.9003	18.5923
Senatorial election votes:			
Blank vote share	21,107	5.3660	4.0687
Null vote share	21,107	3.6209	2.6598
Total votes	21,107	122.6274	18.8759
MERCOSUR parliament election votes:			
Blank vote share	21,122	8.5624	5.1904
Null vote share	21,122	3.9040	2.7265
Total votes	21,122	122.6298	18.7436
Deputies election votes:			
Blank vote share	20,932	5.2195	3.4318
Null vote share	20,932	3.0546	2.2357
Total votes	20,932	123.3690	17.1111
Governor election votes:			
Blank vote share	18,910	3.7270	2.6408
Null vote share	18,910	2.5854	1.8947
Total votes	18,910	122.2795	16.6151
Departmental council election votes:			
Blank vote share	18,893	6.7350	3.6027
Null vote share	18,893	3.4651	2.5265
Total votes	18,893	122.0788	16.6608
Equation (5) **indicator variables:**			
Any ANR poll worker	21,211	0.9235	0.2658
Any PLRA poll worker	21,211	0.8553	0.3518
Any other party (excluding the ANR and PLRA) poll worker	21,211	0.4772	0.4995
Any multi-party poll worker	21,211	0.1123	0.3157
Any unaffiliated poll worker	21,211	0.1696	0.3753
Different equation (6) **indicator variables:**			
Any GANAR poll worker	21,211	0.9065	0.2911
Any other party (excluding the ANR and GANAR) poll worker	21,211	0.1053	0.3070
Electoral contestation variables:			
Contested electoral result	122,595	0.0262	0.1598
Contested electoral result by a party that is not the ANR	122,595	0.0228	0.1493
Contested electoral result by a party that is not the PLRA	122,595	0.0189	0.1360
Contestation of electoral result accepted	122,595	0.0060	0.0774
Electoral result annulled	122,595	0.0038	0.0615

Notes: All the means and standard deviations are rounded up to the fourth digit after the decimal. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. The number of observations for the deputies' votes is lower as there is no deputies' election for Paraguayan voters abroad. The number of observations is lower for the governor and departmental council votes as there is no governor or departmental council election for Paraguayan voters abroad and those in the capital district. There are still slight differences in observations across races due to electoral contestations annulling the vote counts for certain races at some voting booths and missing vote tallies that were not received by the election authority for certain electoral races.

Regressions with majority-minority poll worker allocation dummies for blank, null, and total votes

Table A2: Effect of partisan poll worker composition on presidential election results

	Blank vote share (1)	Null vote share (2)	Total votes (3)
GANAR trifecta	-0.2286	0.0227	0.3394
	(0.1752)	(0.2454)	(0.9148)
GANAR advantage + Other	-0.1379*	-0.0461	0.5249
	(0.0828)	(0.0932)	(0.6568)
GANAR advantage + ANR	0.0206	0.0302	-0.2152
	(0.0317)	(0.0333)	(0.2299)
ANR advantage + GANAR	0.0267	-0.0594	0.1013
	(0.0388)	(0.0408)	(0.2793)
ANR advantage + Other	-0.0673	-0.0202	0.5107
	(0.0708)	(0.0880)	(0.6378)
ANR trifecta	-0.0029	0.0554	0.2721
	(0.1297)	(0.1513)	(1.1518)
Other poll worker allocation	-0.0495	-0.0299	0.1993
	(0.0619)	(0.0704)	(0.5083)
Mean of Dependent Variable	2.3829	2.7564	123.2120
Polling station FE	X	X	X
Observations	20,287	20,287	20,287
R^2	0.4626	0.2451	0.5893

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party or alliance (in the case of GANAR) work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one GANAR (alliance between the PLRA and the FG party, as well as other smaller left-wing parties) poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two UNACE poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A3: Effect of partisan poll worker composition on senatorial election results

	Blank vote share (1)	Null vote share (2)	Total votes (3)
PLRA trifecta	0.0994	-0.6551	-0.3373
	(0.6419)	(0.5962)	(1.8783)
PLRA advantage + Other	-0.0378	-0.4141***	1.4218
	(0.1612)	(0.1547)	(0.9549)
PLRA advantage + ANR	0.0328	-0.1023*	-0.2814
	(0.0613)	(0.0564)	(0.2881)
ANR advantage + PLRA	0.0097	-0.0466	-0.0396
	(0.0545)	(0.0536)	(0.2593)
ANR advantage + Other	0.1695	-0.0569	0.3938
	(0.1079)	(0.0890)	(0.5265)
ANR trifecta	-0.1979	-0.3064*	0.5788
	(0.2266)	(0.1811)	(1.1818)
Other poll worker allocation	0.0151	0.0580	0.1240
	(0.0744)	(0.0667)	(0.3412)
Mean of Dependent Variable	5.2841	3.6022	122.9378
Polling station FE	X	X	X
Observations	20,257	20,257	20,257
R^2	0.5608	0.1445	0.5732

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A4: Effect of partisan poll worker composition on MERCOSUR parliament election results

	Blank vote share (1)	Null vote share (2)	Total votes (3)
PLRA trifecta	1.2046*	-0.1039	-0.7377
	(0.6313)	(0.5334)	(2.0757)
PLRA advantage + Other	0.0001	0.0491	1.3696
	(0.2103)	(0.1902)	(1.0394)
PLRA advantage + ANR	0.0235	-0.1468***	-0.2296
	(0.0825)	(0.0561)	(0.2903)
ANR advantage + PLRA	0.0791	-0.0719	0.1203
	(0.0731)	(0.0517)	(0.2572)
ANR advantage + Other	0.0883	-0.0805	0.1939
	(0.1303)	(0.0910)	(0.5263)
ANR trifecta	-0.1740	-0.4026**	0.2172
	(0.2909)	(0.1941)	(1.1264)
Other poll worker allocation	0.0466	0.1446**	0.2669
	(0.0929)	(0.0707)	(0.3309)
Mean of Dependent Variable	8.4776	3.9100	122.9546
Polling station FE	X	X	X
Observations	20,273	20,273	20,273
R^2	0.5474	0.1867	0.5791

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A5: Effect of partisan poll worker composition on deputies' election results

	Blank vote share (1)	Null vote share (2)	Total votes (3)
PLRA trifecta	-0.5095	0.2014	-0.9529
	(0.4937)	(0.5026)	(2.2000)
PLRA advantage + Other	-0.1616	-0.1110	1.6250*
	(0.1582)	(0.1372)	(0.9505)
PLRA advantage + ANR	-0.0378	-0.0525	-0.2622
	(0.0561)	(0.0492)	(0.2850)
ANR advantage + PLRA	-0.0410	-0.0793*	0.0311
	(0.0513)	(0.0436)	(0.2554)
ANR advantage + Other	-0.0295	0.0555	0.4678
	(0.0971)	(0.0869)	(0.5287)
ANR trifecta	-0.1062	-0.1878	0.7133
	(0.1987)	(0.1600)	(1.1751)
Other poll worker allocation	-0.0450	-0.0363	0.2378
	(0.0699)	(0.0566)	(0.3345)
Mean of Dependent Variable	5.1788	3.0362	123.5415
Polling station FE	X	X	X
Observations	20,138	20,138	20,138
R^2	0.5051	0.1520	0.5168

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to GANAR vary across Paraguayan departments for the deputies elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The number of observations is lower for this electoral race as there is no deputies' election for Paraguayan voters abroad. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A6: Effect of partisan poll worker composition on governor election results

	Blank vote share (1)	Null vote share (2)	Total votes (3)
PLRA trifecta	0.2386	-0.6325	0.3023
	(0.6351)	(0.4845)	(2.1074)
PLRA advantage + Other	-0.1067	-0.0090	1.1912
	(0.1248)	(0.1120)	(0.9570)
PLRA advantage + ANR	-0.0036	-0.0999**	-0.2057
	(0.0456)	(0.0395)	(0.2810)
ANR advantage + PLRA	-0.0020	-0.0654*	0.0219
	(0.0444)	(0.0389)	(0.2654)
ANR advantage + Other	-0.1077	0.0801	0.0481
	(0.0813)	(0.0704)	(0.5435)
ANR trifecta	-0.1105	-0.1296	0.5824
	(0.1838)	(0.1450)	(1.2798)
Other poll worker allocation	-0.0608	0.0136	0.0756
	(0.0553)	(0.0483)	(0.3446)
Mean of Dependent Variable	3.6921	2.5681	122.4400
Polling station FE	X	X	X
Observations	18,144	18,144	18,144
R^2	0.4335	0.2069	0.5038

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to the GANAR alliance vary across Paraguayan departments for the governor elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The number of observations is lower for this electoral race as there is no governor election for Paraguayan voters abroad and those in the capital district. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A7: Effect of partisan poll worker composition on departmental council election results

	Blank vote share (1)	Null vote share (2)	Total votes (3)
PLRA trifecta	-0.4635	-0.3716	0.2146
	(0.5710)	(0.5603)	(2.0564)
PLRA advantage + Other	-0.1808	0.1091	1.3598
	(0.2436)	(0.2215)	(0.9746)
PLRA advantage + ANR	-0.0399	-0.0508	-0.1450
	(0.0655)	(0.0537)	(0.2815)
ANR advantage + PLRA	0.0245	-0.0871*	0.0241
	(0.0659)	(0.0503)	(0.2690)
ANR advantage + Other	0.1308	-0.0639	-0.0497
	(0.1257)	(0.0884)	(0.5515)
ANR trifecta	0.1315	-0.1139	1.0255
	(0.2386)	(0.1923)	(1.2626)
Other poll worker allocation	-0.0045	-0.0187	-0.0215
	(0.1022)	(0.0703)	(0.3534)
Mean of Dependent Variable	6.7051	3.4382	122.2386
Polling station FE	X	X	X
Observations	18,130	18,130	18,130
R^2	0.3530	0.1750	0.5044

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to the GANAR alliance vary across Paraguayan departments for the departmental council elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The number of observations is lower for this electoral race as there is no departmental council election for Paraguayan voters abroad and those in the capital district. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Regressions with poll worker partisan representation dummies

Table A8: Effect of partisan poll worker composition on presidential election results

	ANR vote share (1)	GANAR vote share (2)	Other vote share (3)	Blank vote share (4)	Null vote share (5)	Total votes (6)
Any ANR poll worker	0.0910	-0.0762	-0.0148	0.1217*	0.0605	-0.2501
	(0.2172)	(0.2119)	(0.1086)	(0.0626)	(0.0735)	(0.4789)
Any GANAR poll worker	-0.5051***	0.4790**	0.0261	0.0586	-0.0142	-0.8521*
	(0.1952)	(0.1935)	(0.0970)	(0.0522)	(0.0614)	(0.4541)
Any other party poll worker	0.1534	-0.2118	0.0584	-0.0414	0.0225	0.2827
	(0.1438)	(0.1417)	(0.0732)	(0.0443)	(0.0473)	(0.3364)
Any multi-party poll worker	-0.2380*	0.2810**	-0.0430	-0.0062	0.0361	-0.4155
	(0.1350)	(0.1349)	(0.0682)	(0.0396)	(0.0453)	(0.2961)
Any unaffiliated poll worker	-0.1866	0.1880	-0.0014	-0.0022	-0.0600	0.1684
	(0.1329)	(0.1321)	(0.0630)	(0.0363)	(0.0406)	(0.2801)
Mean of Dependent Variable	48.6944	45.3871	5.9185	2.3829	2.7564	123.2120
Polling station FE	X	X	X	X	X	X
ANR voter prop. control	X	X	X			
GANAR voter prop. control	X	X	X			
Other party voter prop. control	X	X	X			
Observations	20,287	20,287	20,287	20,287	20,287	20,287
R^2	0.8114	0.8202	0.7957	0.4626	0.2450	0.5894

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares for the first three columns are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. Vote shares for columns (4) and (5) are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. "Any ANR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the ANR. "Any GANAR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the political parties that are part of the GANAR alliance (the PLRA, FG, among other smaller left-wing parties). "Any other party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support an individual political party that is not the ANR or a party from the GANAR alliance. "Any multi-party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support multiple political parties. "Any unaffiliated poll worker" is an indicator variable for whether any of the three poll workers at the voting booth is not registered to any party and does not support any political party as an electoral agent according to the election authority's data. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A9: Effect of partisan poll worker composition on senatorial election results

	ANR vote share (1)	PLRA vote share (2)	Other vote share (3)	Blank vote share (4)	Null vote share (5)	Total votes (6)
Any ANR poll worker	-0.0873	0.0351	0.0522	0.1050	0.1690*	-0.3301
	(0.2177)	(0.1982)	(0.2528)	(0.1088)	(0.0963)	(0.5079)
Any PLRA poll worker	-0.2281	0.4165***	-0.1884	-0.0939	0.0334	-0.6741*
	(0.1571)	(0.1253)	(0.1691)	(0.0733)	(0.0625)	(0.3559)
Any other party poll worker	-0.1594	-0.0950	0.2544**	-0.0705	0.0934**	0.0268
	(0.0981)	(0.0856)	(0.1094)	(0.0469)	(0.0427)	(0.2159)
Any multi-party poll worker	-0.3377**	0.2483**	0.0893	0.0655	0.1029	-0.5601*
	(0.1440)	(0.1256)	(0.1650)	(0.0702)	(0.0638)	(0.3198)
Any unaffiliated poll worker	-0.1191	0.3206***	-0.2014	-0.0200	0.1150*	0.1581
	(0.1414)	(0.1206)	(0.1567)	(0.0655)	(0.0611)	(0.3112)
Mean of Dependent Variable	32.6369	24.4988	42.8642	5.2841	3.6022	122.9378
Polling station FE	X	X	X	X	X	X
ANR voter prop. control	X	X	X			
PLRA voter prop. control	X	X	X			
Other party voter prop. control	X	X	X			
Observations	20,257	20,257	20,257	20,257	20,257	20,257
R^2	0.8027	0.8597	0.8476	0.5609	0.1442	0.5733

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares for the first three columns are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. Vote shares for columns (4) and (5) are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. "Any ANR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the ANR. "Any PLRA poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the PLRA. "Any other party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support some party other than the ANR or PLRA. "Any multi-party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support multiple political parties. "Any unaffiliated poll worker" is an indicator variable for whether any of the three poll workers at the voting booth is not registered to any party and does not support any political party as an electoral agent according to the election authority's data. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A10: Effect of partisan poll worker composition on MERCOSUR parliament election results

	ANR vote share (1)	PLRA vote share (2)	Other vote share (3)	Blank vote share (4)	Null vote share (5)	Total votes (6)
Any ANR poll worker	-0.0518	0.0938	-0.0419	0.0156	-0.1127	-0.5203
	(0.2461)	(0.2044)	(0.2291)	(0.1330)	(0.1082)	(0.5234)
Any PLRA poll worker	-0.2712*	0.4722***	-0.2009	-0.1340	0.0347	-0.5731
	(0.1616)	(0.1359)	(0.1530)	(0.0922)	(0.0663)	(0.3512)
Any other party poll worker	-0.2521**	0.0269	0.2252**	-0.0417	0.1360***	-0.0586
	(0.1017)	(0.0906)	(0.0969)	(0.0602)	(0.0433)	(0.2140)
Any multi-party poll worker	-0.3845**	0.2714**	0.1130	-0.0342	0.1034	-0.5247*
	(0.1526)	(0.1364)	(0.1512)	(0.0894)	(0.0668)	(0.3188)
Any unaffiliated poll worker	-0.2762*	0.2413*	0.0349	-0.1663*	0.1663***	0.1283
	(0.1482)	(0.1289)	(0.1386)	(0.0866)	(0.0632)	(0.3129)
Mean of Dependent Variable	42.1341	30.5360	27.3299	8.4776	3.9100	122.9546
Polling station FE	X	X	X	X	X	X
ANR voter prop. control	X	X	X			
PLRA voter prop. control	X	X	X			
Other party voter prop. control	X	X	X			
Observations	20,273	20,273	20,273	20,273	20,273	20,273
R^2	0.8021	0.8617	0.8485	0.5474	0.1868	0.5791

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. Vote shares for the first three columns are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. Vote shares for columns (4) and (5) are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. "Any ANR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the ANR. "Any PLRA poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the PLRA. "Any other party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support some party other than the ANR or PLRA. "Any multi-party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support multiple political parties. "Any unaffiliated poll worker" is an indicator variable for whether any of the three poll workers at the voting booth is not registered to any party and does not support any political party as an electoral agent according to the election authority's data. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A11: Effect of partisan poll worker composition on deputies' election results

	ANR vote share (1)	PLRA/GANAR vote share (2)	Other vote share (3)	Blank vote share (4)	Null vote share (5)	Total votes (6)
Any ANR poll worker	-0.0119	0.2377	-0.2258	0.2221**	0.0222	-0.4552
	(0.2243)	(0.1993)	(0.2123)	(0.0963)	(0.0839)	(0.5098)
Any PLRA poll worker	-0.2431	0.2395*	0.0036	0.0186	0.0506	-0.7497**
	(0.1539)	(0.1330)	(0.1465)	(0.0669)	(0.0558)	(0.3543)
Any other party poll worker	-0.1099	-0.0862	0.1961**	0.0667	0.0601	-0.0587
	(0.0975)	(0.0919)	(0.0968)	(0.0428)	(0.0372)	(0.2119)
Any multi-party poll worker	-0.2933**	0.0078	0.2855**	0.0784	0.0399	-0.5023
	(0.1431)	(0.1333)	(0.1433)	(0.0648)	(0.0542)	(0.3192)
Any unaffiliated poll worker	-0.1851	0.1201	0.0650	-0.0076	0.1163**	0.0935
	(0.1400)	(0.1285)	(0.1392)	(0.0621)	(0.0507)	(0.3061)
Mean of Dependent Variable	39.1551	30.2855	30.5593	5.1788	3.0362	123.5415
Polling station FE	X	X	X	X	X	X
ANR voter prop. control	X	X	X			
PLRA voter prop. control	X	X	X			
Other party voter prop. control	X	X	X			
Observations	20,138	20,138	20,138	20,138	20,138	20,138
R^2	0.8485	0.8810	0.9232	0.5052	0.1520	0.5169

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to GANAR vary across Paraguayan departments for the deputies' elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares for the first three columns are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. Vote shares for columns (4) and (5) are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. "Any ANR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the ANR. "Any PLRA poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the PLRA. "Any other party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support some party other than the ANR or PLRA. "Any multi-party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support multiple political parties. "Any unaffiliated poll worker" is an indicator variable for whether any of the three poll workers at the voting booth is not registered to any party and does not support any political party as an electoral agent according to the election authority's data. The number of observations is lower for this electoral race as there is no deputies' election for Paraguayan voters abroad. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A12: Effect of partisan poll worker composition on governor election results

	ANR vote share (1)	PLRA/GANAR vote share (2)	Other vote share (3)	Blank vote share (4)	Null vote share (5)	Total votes (6)
Any ANR poll worker	0.1869	0.2030	-0.3898***	0.1121	-0.0113	-0.1317
	(0.2246)	(0.2260)	(0.1473)	(0.0785)	(0.0700)	(0.5296)
Any PLRA poll worker	-0.2472	0.3343**	-0.0871	0.0526	0.0244	-0.5768
	(0.1543)	(0.1488)	(0.0996)	(0.0554)	(0.0473)	(0.3620)
Any other party poll worker	-0.1016	0.0371	0.0645	0.0151	0.0595*	-0.0034
	(0.1004)	(0.0978)	(0.0623)	(0.0368)	(0.0318)	(0.2189)
Any multi-party poll worker	-0.3276**	0.3471**	-0.0195	0.0328	0.1035**	-0.6136*
	(0.1493)	(0.1474)	(0.0997)	(0.0538)	(0.0467)	(0.3277)
Any unaffiliated poll worker	-0.2139	0.1760	0.0379	-0.0558	0.1129**	0.0626
	(0.1412)	(0.1380)	(0.0913)	(0.0510)	(0.0443)	(0.3123)
Mean of Dependent Variable	46.9013	44.8315	10.7379	3.6921	2.5681	122.4400
Polling station FE	X	X	X	X	X	X
ANR voter prop. control	X	X	X			
PLRA voter prop. control	X	X	X			
Other party voter prop. control	X	X	X			
Observations	18,144	18,144	18,144	18,144	18,144	18,144
R^2	0.8141	0.8562	0.9083	0.4336	0.2069	0.5038

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to GANAR vary across Paraguayan departments for the governor elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares for the first three columns are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. Vote shares for columns (4) and (5) are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. "Any ANR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the ANR. "Any PLRA poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the PLRA. "Any other party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support some party other than the ANR or PLRA. "Any multi-party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support multiple political parties. "Any unaffiliated poll worker" is an indicator variable for whether any of the three poll workers at the voting booth is not registered to any party and does not support any political party as an electoral agent according to the election authority's data. The number of observations is lower for this electoral race as there is no governor election for Paraguayan voters abroad and those in the capital district. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Table A13: Effect of partisan poll worker composition on departmental council election results

	ANR vote share (1)	PLRA/GANAR vote share (2)	Other vote share (3)	Blank vote share (4)	Null vote share (5)	Total votes (6)
Any ANR poll worker	0.0135	0.3200	-0.3334	0.2752**	-0.0850	-0.3600
	(0.2378)	(0.2175)	(0.2196)	(0.1352)	(0.1101)	(0.5362)
Any PLRA poll worker	-0.3890**	0.6401***	-0.2511	-0.1038	0.0680	-0.4077
	(0.1672)	(0.1501)	(0.1566)	(0.0865)	(0.0651)	(0.3704)
Any other party poll worker	-0.3692***	0.0916	0.2776***	0.0139	0.0907**	-0.0966
	(0.1066)	(0.1014)	(0.1026)	(0.0540)	(0.0425)	(0.2198)
Any multi-party poll worker	-0.5166***	0.4958***	0.0207	0.1285	0.0334	-0.5039
	(0.1526)	(0.1430)	(0.1509)	(0.0925)	(0.0635)	(0.3316)
Any unaffiliated poll worker	-0.2993**	0.3183**	-0.0191	-0.0698	0.0658	-0.0352
	(0.1505)	(0.1373)	(0.1412)	(0.0818)	(0.0592)	(0.3175)
Mean of Dependent Variable	40.3654	36.1578	25.2544	6.7051	3.4382	122.2386
Polling station FE	X	X	X	X	X	X
ANR voter prop. control	X	X	X			
PLRA voter prop. control	X	X	X			
Other party voter prop. control	X	X	X			
Observations	18,130	18,130	18,130	18,130	18,130	18,130
R^2	0.8083	0.8353	0.8333	0.3533	0.1752	0.5043

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. The parties belonging to GANAR vary across Paraguayan departments for the departmental council elections, with FG running independently in some departments. However, PLRA always runs separately or through GANAR (and mainly proposing its own candidates), hence we have an outcome variable for PLRA/GANAR vote shares. Standard errors are robust. Vote shares for the first three columns are calculated by dividing by the number of valid votes (i.e., all votes excluding null and blank votes) and multiplying by a 100. Vote shares for columns (4) and (5) are calculated by dividing by the total number of votes (including null and blank votes) and multiplying by a 100. "Any ANR poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the ANR. "Any PLRA poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support the PLRA. "Any other party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support some party other than the ANR or PLRA. "Any multi-party poll worker" is an indicator variable for whether any of the three poll workers at the voting booth support multiple political parties. "Any unaffiliated poll worker" is an indicator variable for whether any of the three poll workers at the voting booth is not registered to any party and does not support any political party as an electoral agent according to the election authority's data. The number of observations is lower for this electoral race as there is no departmental council election for Paraguayan voters abroad and those in the capital district. The sample is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).

Analysis of electoral contestations

Table A14: Effect of partisan poll worker composition on electoral contestations

	Contested (1)	Contested by non-ANR (2)	Contested by non-PLRA (3)	Contestation accepted (4)	Tally annulled (5)
PLRA trifecta	-0.0152***	-0.0144***	-0.0118***	-0.0048***	-0.0037***
	(0.0036)	(0.0034)	(0.0034)	(0.0015)	(0.0012)
PLRA advantage + Other	-0.0038	-0.0034	-0.0014	-0.0017	-0.0000
	(0.0036)	(0.0034)	(0.0032)	(0.0018)	(0.0016)
PLRA advantage + ANR	0.0003	0.0005	0.0002	-0.0010	-0.0011**
	(0.0014)	(0.0013)	(0.0012)	(0.0007)	(0.0005)
ANR advantage + PLRA	0.0002	0.0007	0.0006	0.0004	0.0007
	(0.0013)	(0.0012)	(0.0011)	(0.0007)	(0.0005)
ANR advantage + Other	0.0005	-0.0003	-0.0011	-0.0009	-0.0008
	(0.0026)	(0.0024)	(0.0021)	(0.0012)	(0.0009)
ANR trifecta	-0.0217***	-0.0166***	-0.0114***	-0.0073***	-0.0051***
	(0.0035)	(0.0034)	(0.0028)	(0.0008)	(0.0007)
Other poll worker allocation	-0.0001	-0.0003	0.0002	0.0005	0.0007
	(0.0018)	(0.0017)	(0.0016)	(0.0010)	(0.0008)
Mean of Dependent Variable	0.0265	0.0230	0.0189	0.0059	0.0036
Polling station FE	X	X	X	X	X
Observations	117,742	117,742	117,742	117,742	117,742
R^2	0.1714	0.1854	0.1255	0.0434	0.0547

Notes: A unit of observation is a voting booth. All regressions control for polling station fixed effects. Standard errors are robust. "Contested" is an indicator variable for whether the electoral results for this electoral race and voting booth were contested. "Contested by non-ANR (PLRA)" is an indicator variable for the voting booth having its results contested by a political party that is not the ANR (PLRA). "Contestation accepted" is an indicator variable for whether the contestation towards the electoral results in this voting booth were accepted by the election authority, thus amending the count. "Tally annulled" is an indicator variable for whether the electoral results from this voting booth were annulled (i.e., 0 votes are counted). A trifecta indicates all three poll workers from the same party work at the voting booth. Advantage indicates that two out three poll workers from the same party work at the voting booth. Other refers to a poll worker that is not registered as supporting the Colorado or Liberal party. The excluded category corresponds to voting booths with "fair allocations" having one Colorado poll worker and one Liberal poll worker. The "other poll worker allocation" refers to any remaining poll worker allocation after taking into account "fair allocations" and the other allocations referenced with the independent variables. For example, a voting booth with two FG poll workers or a voting booth with two poll workers not registered as supporting any party would correspond to the "other poll worker allocation" category. The sample includes all electoral races and is restricted to voting booths for which we have the ID numbers of all three poll workers (which is around 96% of all voting booths in this election).