

# The Geography of Electoral History: A Dataset of Recent Mexican Election Returns and Quantities of Analytical Interest

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The advent of competition in Mexican politics produced a wealth of government data for the analysis of public policy and politics. Data is distributed at the municipal level and smaller geographic units of aggregation (such as census tracts or similar levels), and in some cases at the individual level. This has spawned fertile areas of new research in education (Hoyos, Espino and García 2012), public health (Imai, King and Nall 2009; King, Gakidou, Ravishankar, Moore, Lakin, Vargas, Rojo, Ávila, Ávila and Llamas 2007), poverty relief (Díaz Cayeros, Estévez and Magaloni 2016; Molinar Horcasitas and Weldon 1994), legislative politics (Cantú, Desposato and Magar 2014; Rosas and Langston 2011), and electoral regulation (Estévez, Magar and Rosas 2008), to name a few.

electoral irregularities (Cantú 2014) vote buying (Cantú 2019)  
1952–1967 1965–1976

This paper's focus are vote returns. Electoral data has been distributed for much longer than the information discussed above. It is also better-known and has received a good deal of attention since seminal studies of the PRI's support bases in the states in federal elections of the 1950s and 1960s (Ames 1970) and the correlation of modernization measures ant voting and turnout in federal districts between 1965 and 1976 (Lehr and Pedroza 1985). This paper describes a repository...

Some of the distributed data is elementary and available elsewhere, such as the number of valid votes cast for parties in congressional races since 1991 in single-member districts, in municipalities, and in sub-municipal units of aggregation. shares by party and their change since last election) at the municipal and sub-municipal levels. Offers a cross-section time-series of dip fed returns at two levels of aggregation: municipalities and secciones electorales.

More abstract  
from blog

This note presents, discusses, and distributes statistics (available here) of party performance in Mexico's competitive era. I elaborate two quantities of interest: \*voting forecasts\* based on recent electoral history and measures of parties' \*core support\*. The procedure produces summary measures of recent electoral history in relatively small geographic units, municipalities ( $N \approx 2500$ ) and /secciones electorales/ ( $N \approx 66000$ ) throughout Mexico. I apply the methodology to four federal congressional elections between 2009 and 2018 (I will soon apply it to municipal races

too), using results since 1994 as historical input.

The note starts by showing the statistics in action to get a glimpse of their descriptive and analytic potential. By summarizing recent electoral history and its geography, the quantities offer a scenic view of a critical aspect of contemporary Mexican politics.

Later sections offer methodological detail on the estimation of these quantities of interest and are increasingly technical.

# 1 Municipal governments

## 1.1 Policy making and fiscal authority

As of April 2025, Mexico's thirty-one states were subdivided into 2,460 municipalities, plus 17 municipality-equivalents in Mexico City, the nation's capital. *Municipios* are the bottom tier of elected governments in the federal system. Municipal governments have constitutional authority over community police, zoning and construction permits, drinking water supply, sewerage and waste disposal, street lighting, pavement, and park management, and regulate public markets, slaughterhouses, and cemeteries. They undertake these responsibilities by appointing municipal staff and subcontracting services—key sources of patronage in a spoils system. The mobilization resources of local political organizations in pursuit of municipal government makes them key to the maintenance of state and national parties (Coppedge 1993; Key 1964; Rosas and Lucardi 2020; Sorauf 1959).

Municipal governments have authority to raise property taxes and charge fees from public services. On top of being constitutionally less endowed for revenue collection, few municipalities invested in technologies and administration for levying these taxes in the twentieth century, resulting in heterogeneous present-day municipal state capacity (Garfias 2018): the median municipal government employed or subcontracted 13 bureaucrats per 1,000 registered voters in 2023, the top decile had at least three times that (32 or more), and the bottom quartile 9 or less.<sup>1</sup> Most municipalities, especially in rural Mexico, obtain the lion's share of their financial resources from federal revenue sharing and earmarked federal investments (Díaz Cayeros 2006; Figueroa Mansur 2024).

## 1.2 Government structure

Municipal power is vested to a popularly-elected body, the *Ayuntamiento* (literally ‘yoked together’). The council or *cabildo* and a mayor (called *presidente* in some states, *primer regidor* in others) make up the Ayuntamiento, deciding by majority rule. The mayor is executive officer, presides municipal council sessions with voice and the tie-breaking vote, and holds variable municipal appointment powers (Ramírez Millán 2000; Robles Martínez 2009). Cabildo size is proportional to population. Councilors (called *regidores* or *concejales*), precedence ordered, propose and vote municipal policy through ordinances and rules. One or more *síndicos*, officers in charge of the Treasury and the municipio's legal representation, may complete the Council in some states, with voice but no vote. Síndicos are elected in some states, appointed in others. Municipalities have no judicial power. States do.

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<sup>1</sup> Descriptive statistics computed with data from the 2023 Municipal Government Census (INEGI 2023), excluding Mexico City and unelected municipalities.

I drop Mexico City from the descriptions below due to its special status. Before 1997, the mayor of the Federal District was a presidential appointee, who would in turn appoint delegates for the city's 16 administrative jurisdictions (called *delegaciones*). Reformers made all these elected offices in 1997. The Federal District did not, however, gain status as a state, nor did delegación executives gain fiscal powers (taxation remains in the hands of the city executive). The city further reformed in 2018, adding councils to its quasi-municipalities (now called *alcaldías*) and renaming the Federal District as Mexico City (Rabell García 2017).

### 1.3 Modal electoral institutions

Presidents are elected by plurality. Regidores are elected in two groups: one group by plurality, the other by proportional representation (PR). The plurality-to-PR regidores ratio shifts considerably across states. As of 2010, the ratio in the mean Ayuntamiento was 2 : 1. The state of Guanajuato's, with the lowest plurality share in the mix, had a 1 : 4 ratio, while Tabasco's, with the highest, had a 4 : 1 ratio (Gil Ramírez 2010:14). With parity, the president controls the council majority.

Municipal officers are elected in fused tickets. Voters have a single vote, which they cast for a list of candidates including a municipal president on top, ranked regidores, and síndicos where applicable. The vote is fused as it simultaneously affects the vote totals of candidates running for different offices (see Cox 1997:42): the presidency, plurality regidores, and síndicos (where applicable) are allocated to the most voted list. Remaining regidores are distributed to closed lists proportionally. Split ticket voting is therefore not technically possible.

### 1.4 Exceptional electoral institutions

Two notable exceptions are the states of Chihuahua since 1998 and Nayarit since 2008. Both states's voters have two votes. In Chihuahua, one vote elects the síndico by plurality, another elects the remaining municipal officers as described above (ratio 8 : 5). This opens the possibility of split ticket voting.

In Nayarit, one vote elects a president–síndicos fused ticket by plurality in municipio-wide elections. The second vote elects plurality regidores in single-member districts called *demarcaciones*, into which municipios are subdivided for the purpose. Second votes are then pooled in a secondary district (the municipio as a whole) to distribute PR regidores among the strongest plurality losers. While the ratio in Nayarit is 7 : 3, winning presidents could end up in the council minority unless their party secures enough district victories.

### 1.5 Term limits

Elected municipal officers have three-year terms.<sup>2</sup> Up to those elected in 2017, all were single-term limited. And all those elected in the 2030 elections will again be single-term limited. To everyone's surprise, reformers removed Mexico's eighty-year old constitutional ban on consecutive reelection midway in the last decade; counter-reformers restated the ban ten years later. In the interim, states

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<sup>2</sup>Coahuila's Ayuntamientos elected between 2005 and 2013 (inclusive), Hidalgo's since 2016, and Veracruz's between 2013 and 2021 enjoyed four-year terms. Exceptional distortions to three-year terms also occurred whenever state electoral calendars changed, something quite common in the period. See Magar (2017) and <https://github.com/emagar/calendarioReeleccion>.

could opt for two-term limits for municipal governments. All states except Hidalgo did so, the reform kicking off in the 2018 elections in twenty-three states. Incumbents in the other eight reforming states have been able to run again for office gradually since (the last will be Veracruz's in June 2025).

Even if short-lived, and frankly conservative in design, the effects of the institution of reelection in municipal politics should be systematic. Six consecutive years in office falls short of qualifying as the long run, but extending Ayuntamientos' time horizons up from just three years should encourage more enterprising policy. More fundamentally, the perspective of reelection should have encouraged ambitious mayors and regidores in the period to invest in maintaining their electoral alliances alive and mobilized, nurturing responsiveness in the distributive politics game (Cain, Fer ejohn and Fiorina 1987; Cox and McCubbins 1986; Motolinia 2021). The reform and its dismissal offer a unique laboratory to study institutional change.

## 1.6 Usos y costumbres

Of 570 municipalities in the state of Oaxaca, only 152 periodically elect Ayuntamientos. The rest, with predominantly indigenous populations, opted out of the electoral process since 1995, naming authorities through tribal councils instead (known as *usos y costumbres* institutions, see Eisenstadt and Ríos 2014; Elizarrarás 2002). Seven municipalities in three other states have achieved the same status in the past decade.

## 2 Municipal election data

This research note introduces a dataset of municipal election vote returns in recent decades. The dataset is distributed in a repository, publicly available at <https://github.com/emagar/elecRetrns>, that also includes returns to gubernatorial races and federal elections at different levels of aggregation.<sup>3</sup>

The municipal dataset has been under construction for some time. The original seed for the 1970s and 1980s was compiled by Molinar (1991) from official vote returns by the Interior Ministry's Registro Nacional de Electores. The primary source was systematized by Magar (1994) for northern Mexico and then by Varela (2004) nationwide. Data from the 1990s onwards was compiled from the new state election regulators, who more or less routinely report vote returns since. When that was not the case, other sources were consulted, most notably *Voz y voto : política y elecciones* (1993) and *Centro de Estudios de la Democracia y Elecciones* (1991).

Units of observation are municipalities, providing the total votes each party or electoral coalition won in periodic elections (Mexico City's populous units are included in the data despite their special status). Table 1 summarizes data coverage by state, including the number of municipalities, which grew over the years in most states.<sup>4</sup> With early 1970s returns available for a handful of states, the systematic cross-section time-series initiates with the 1979–1981 trienium. The period was inaugurated by a major federal electoral reform lowering legal entry barriers to the electoral

<sup>3</sup>The *Recent Mexican Election Vote Returns* repository is publicly available at <https://github.com/emagar/elecRetrns>.

<sup>4</sup>File `ancillary/mun.yrs.csv` in the repository reports the full listing of municipalities in each election cycle with available municipal election returns. And file `ancillary/new-mun-parents-1989on.csv` reports the

| C    | D     | E    | F                  | G    | J               | K   | L                       | M   | N         | O   |
|------|-------|------|--------------------|------|-----------------|-----|-------------------------|-----|-----------|-----|
| yr   | inegi | ife  | mun                | edon | v01             | l01 | v02                     | l02 | v03       | l03 |
| 1998 | 2001  | 2001 | ENSENADA           | 2    | 30660 pan       |     | 31951 pri               |     | 12441 prd |     |
| 1998 | 2002  | 2002 | MEXICALI           | 2    | 89354 pan       |     | 81676 pri               |     | 13899 prd |     |
| 1998 | 2003  | 2003 | TECATE             | 2    | 4590 pan        |     | 9353 pri                |     | 4983 prd  |     |
| 1998 | 2004  | 2004 | TIJUANA            | 2    | 116244 pan      |     | 98669 pri               |     | 25065 prd |     |
| 1998 | 2005  | 2005 | PLAYAS DE ROSARITO | 2    | 6055 pan        |     | 5058 pri                |     | 1367 prd  |     |
| 2001 | 2001  | 2001 | ENSENADA           | 2    | 32262 pan-pvem  |     | 31582 pri               |     | 12048 prd |     |
| 2001 | 2002  | 2002 | MEXICALI           | 2    | 95674 pan-pvem  |     | 67434 pri               |     | 11615 prd |     |
| 2001 | 2003  | 2003 | TECATE             | 2    | 7796 pan-pvem   |     | 7862 pri                |     | 2066 prd  |     |
| 2001 | 2004  | 2004 | TIJUANA            | 2    | 108921 pan-pvem |     | 87433 pri               |     | 13928 prd |     |
| 2001 | 2005  | 2005 | PLAYAS DE ROSARITO | 2    | 6324 pan-pvem   |     | 3141 pri                |     | 348 prd   |     |
| 2004 | 2001  | 2001 | ENSENADA           | 2    | 32604 pan       |     | 30839 pri-pvem-pt-pebc  |     | 13537 prd |     |
| 2004 | 2002  | 2002 | MEXICALI           | 2    | 63855 pan       |     | 63892 pri-pvem-pt-pebc  |     | 9021 prd  |     |
| 2004 | 2003  | 2003 | TECATE             | 2    | 9216 pan        |     | 10331 pri-pvem-pt-pebc  |     | 1112 prd  |     |
| 2004 | 2004  | 2004 | TIJUANA            | 2    | 134428 pan      |     | 139230 pri-pvem-pt-pebc |     | 9887 prd  |     |
| 2004 | 2005  | 2005 | PLAYAS DE ROSARITO | 2    | 7056 pan        |     | 4170 pri-pvem-pt-pebc   |     | 4539 prd  |     |

Figure 1: Screenshot with a sample of the data organization

arena and adopting a more proportional formula to convert votes into congressional seats (Molinar 1991:116). As a consequence, half a dozen new parties entered the fray.

Data is stored as text in `csv` format (comma separated values), readable with standard spreadsheet and data analysis software.<sup>5</sup> In the resulting data matrix, each row is a municipality in a given electoral year. Columns are data fields, including unit identifiers (the municipality’s name, state, census bureau ID, an so forth), the election date, and each party or coalition’s vote tally.<sup>6</sup> Also included is the vote total, to compute vote shares, and the number of eligible voters in the municipal election (the *lista nominal*), to compute turnout rates.

Vote returns are stored in column pairs (`v01, l01`), (`v02, l02`), etc. for the first party reported, the second party, and so forth. The `l` column of the pair identifies a party or coalition label, the `v` column contains the total votes it won. Figure 1 offers a glimpse for the state of Baja California’s five municipalities over three election cycles. In Ensenada for `yr = 1998`, the PRI’s 31,995 votes (`l02 = pri` indicates that this party’s vote is stored in field `v02`) made it the plurality winner, trailed closely by the PAN’s 30,660 votes (in field `v01`). The votes-label column pair storage accommodates four decades of state party system heterogeneity, compounded by ephemeral electoral coalitions (as seen in Baja California in the period portrayed) in a relatively small number of spreadsheet columns. The trade-off is that inspecting one party’s performance across municipalities often requires additional manipulation, as its votes do not necessarily appear in the same column.<sup>7</sup>

Three separate files, all with the same set of observations, are distributed:<sup>8</sup>

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parent municipalities from which the new units seceded. State abbreviations are different than those used by Mexican government agencies—some were slightly altered so that sorting them in a standard spreadsheet retains the actual alphabetical ordering of the states (e.g. Guanajuato and Guerrero are abbreviated `gua` and `gue` instead of the official `gto` and `gro`).

<sup>5</sup>Text is stored in UTF-8 character encryption. Care has been taken to drop most Spanish special characters, such as accented vowels, from text strings. The letter Ñ remains, and may appear as a garbled character in machines with other default encryption systems. See <https://docs.python.org/3/howto/unicode.html> for a primer on character encryption.

<sup>6</sup>The repository’s `README.md` file includes a detailed codebook defining the field reported in each column.

<sup>7</sup>A standalone R script (still a beta version) extracts a simplified matrix, reporting each party’s votes in a column that is named after it, for a single state-year’s municipal races. The script is located in `code/extract-state-yr-mu-returns.r`.

<sup>8</sup>Mexican election law distinguishes two forms of pre-election coalitions that parties may choose from: joint candidacies and coalitions proper. Voters can cast a vote for any joint-candidate-nominating party (or combinations of them), which are then added up to determine the plurality winning candidate, but can only cast a vote for the team

|   | State (abbreviation)                           | Number of municipalities | Years     |
|---|--|--------------------------|-----------|
| 1   | Aguascalientes (ags)                           | 9–11                     | 1977–2024 |
| 2   | Baja California (bc)                           | 4–7                      | 1971–2024 |
| 3   | Baja California Sur (bcs)                      | 3–5                      | 1974–2024 |
| 4   | Campeche (cam)                                 | 8–13                     | 1979–2024 |
| 5   | Coahuila (coa)                                 | 38                       | 1978–2024 |
| 6   | Colima (col)                                   | 10                       | 1976–2024 |
| 7   | Chiapas <sup>†</sup> (cps)                     | 110–126                  | 1976–2024 |
| 8   | Chihuahua (cua)                                | 67                       | 1974–2024 |
| 9   | Distrito Federal/Mexico City <sup>‡</sup> (df) | 16                       | 1997–2024 |
| 10  | Durango (dgo)                                  | 38–39                    | 1971–2024 |
| 11  | Guanajuato (gua)                               | 46                       | 1979–2024 |
| 12  | Guerrero <sup>†</sup> (gue)                    | 75–85                    | 1977–2024 |
| 13  | Hidalgo (hgo)                                  | 84                       | 1981–2024 |
| 14  | Jalisco (jal)                                  | 124–125                  | 1976–2024 |
| 15  | México (mex)                                   | 121–125                  | 1978–2024 |
| 16  | Michoacán <sup>†</sup> (mic)                   | 113                      | 1977–2024 |
| 17  | Morelos <sup>†</sup> (mor)                     | 33–36                    | 1976–2024 |
| 18  | Nayarit (nay)                                  | 19–20                    | 1972–2024 |
| 19  | Nuevo León (nl)                                | 51                       | 1973–2024 |
| 20  | Oaxaca <sup>†</sup> (oax)                      | 570                      | 1977–2024 |
| 21  | Puebla (pue)                                   | 217                      | 1980–2024 |
| 22  | Querétaro (que)                                | 18                       | 1973–2024 |
| 23  | Quintana Roo (qui)                             | 7–11                     | 1978–2024 |
| 24  | San Luis Potosí (san)                          | 56–58                    | 1970–2024 |
| 25  | Sinaloa (sin)                                  | 17–20                    | 1971–2024 |
| 26  | Sonora (son)                                   | 69–72                    | 1976–2024 |
| 27  | Tabasco (tab)                                  | 17                       | 1976–2024 |
| 28  | Tamaulipas (tam)                               | 43                       | 1971–2024 |
| 29  | Tlaxcala (tla)                                 | 44–60                    | 1979–2024 |
| 30  | Veracruz (ver)                                 | 203–212                  | 1976–2024 |
| 31  | Yucatán (yuc)                                  | 106                      | 1981–2024 |
| 32  | Zacatecas (zac)                                | 56–58                    | 1970–2024 |
| Municipalities nationwide by election cycle |  | 2375–2477                | 1970–2024 |

Table 1: Coverage of the election returns data at the municipal level. <sup>†</sup> Reform in these states withdrew so-called ‘usos y costumbres’ municipalities from the periodic electoral process: one municipality in Chiapas since 2021, one in Guerrero since 2018 and another since 2024, one in Michoacán since 2011, three in Morelos since 2021, and between 412 and 418 in Oaxaca since 1995. <sup>‡</sup> Administrative jurisdictions in the Federal District became elected offices since 1997, see the text for details.

| Cycle   | Coalition profile relative frequency (%) |                 |                 |                   |              |                            |                                |              |                            |       | (Mean coalitions) |
|---------|--|-----------------|-----------------|-------------------|--------------|----------------------------|--------------------------------|--------------|----------------------------|-------|-------------------|
|         | None                                     | One major-minor | Two major-minor | Three major-minor | Double-major | Double-major & major-minor | Double-major & two major-minor | Triple-major | Triple-major & major-minor | Total |                   |
|         |  |                 |                 |                   |              |                            |                                |              |                            |       |                   |
| 1979–81 | 100.0                                    | —               | —               | —                 | —            | —                          | —                              | —            | —                          | 100   | (0.00)            |
| 1982–84 | 100.0                                    | —               | —               | —                 | —            | —                          | —                              | —            | —                          | 100   | (0.00)            |
| 1985–87 | 100.0                                    | —               | —               | —                 | —            | —                          | —                              | —            | —                          | 100   | (0.00)            |
| 1988–90 | 93.9                                     | 6.1             | —               | —                 | —            | —                          | —                              | —            | —                          | 100   | (0.05)            |
| 1991–93 | 98.6                                     | 1.3             | —               | —                 | —            | —                          | —                              | —            | —                          | 100   | (0.01)            |
| 1994–96 | 99.8                                     | 0.2             | —               | —                 | —            | —                          | —                              | —            | —                          | 100   | (0.04)            |
| 1997–99 | 96.4                                     | 2.1             | —               | —                 | 1.5          | —                          | —                              | —            | —                          | 100   | (0.03)            |
| 2000–02 | 77.0                                     | 16.7            | 1.8             | —                 | 4.0          | 0.4                        | —                              | —            | —                          | 100   | (0.29)            |
| 2003–05 | 52.8                                     | 29.8            | 11.8            | 0.4               | 1.8          | 3.3                        | —                              | —            | —                          | 100   | (0.64)            |
| 2006–08 | 20.4                                     | 48.1            | 30.2            | 0.6               | 0.1          | 0.7                        | —                              | —            | —                          | 100   | (1.18)            |
| 2009–11 | 11.2                                     | 32.3            | 14.6            | 10.4              | 7.7          | 23.8                       | —                              | —            | —                          | 100   | (1.53)            |
| 2012–14 | 8.6                                      | 50.8            | 11.6            | 3.6               | 3.5          | 21.9                       | —                              | —            | —                          | 100   | (1.38)            |
| 2015–17 | 24.6                                     | 35.6            | 11.0            | 0.8               | 6.1          | 21.8                       | —                              | 0.2          | —                          | 100   | (1.16)            |
| 2018–20 | 6.3                                      | 17.4            | 14.7            | 7.1               | 6.5          | 35.0                       | 12.9                           | —            | —                          | 100   | (1.85)            |
| 2021–23 | 26.8                                     | 18.5            | 0.2             | —                 | 13.0         | 9.5                        | 0.3                            | 18.2         | 13.6                       | 100   | (1.03)            |
| 2024    | 27.2                                     | 11.4            | 1.6             | —                 | 6.0          | 11.2                       | 0.7                            | 17.1         | 24.8                       | 100   | (1.17)            |

Table 2: Coalitional profile of municipal races by federal election cycle. Cells report the percentage of municipalities in the cycle, and the cycle’s mean number of coalitions per race in parentheses. Quantities consider coalitions where one partner at least was a major party (PAN, PRI, PRD, or Morena), ignoring coalitions among minor parties only, which were also quite frequent.

- `data/aymu1970-on.csv` has raw votes, as reported in the primary source;
- `data/aymu1970-on.coalAgg.csv` aggregates coalition votes systematically where ballot structure lets voters cast their vote to any party endorsing a joint candidate; and
- `data/aymu1970-on.coalSplit.csv` splits the votes that each coalesced party contributed to the coalition total, relying for this on the relative votes each received (where the ballot structure offers this possibility), or on the coalition agreement between the parties (when one exists and the ballot structure does not offer the latter possibility), or on the relative votes coalesced parties received the last time they ran separately in the municipality (when the previous alternatives are impracticable).

### 3 Pre-election coalitions

Banned until the mid-1980s at the local level, and rarely authorized up to the mid-1990s, coalitions have since become a staple of Mexican elections. Table 2 shows this. Each table row reports the coalitional profiles observed across municipal races in a triennium (despite state electoral calendar shifts,<sup>9</sup> triennial aggregates mostly capture one periodic election per municipality). The coalitional

as a whole in coalitions proper—hence the need for three municipal vote files. These subtleties have effects in public party finance mostly, but substantially complicate voting studies as scholars need to decide how to handle coalitions. In coalitions proper, and whenever the primary source does not offer the coalesced-parties vote breakdown, one artificial vote is added to the raw file, itself split among these parties to keep track of relative contributions (one example is Baja California in 2007).

<sup>9</sup>See <https://github.com/emagar/calendarioReelecion>. State electoral calendars varied substantially up to 2015, but have since become increasingly aligned with the federal cycle. This change is discernible in the way municipal vote shares align vertically in Figure 3, increasingly clustered over darker and distinct columns that correspond with federal elections.

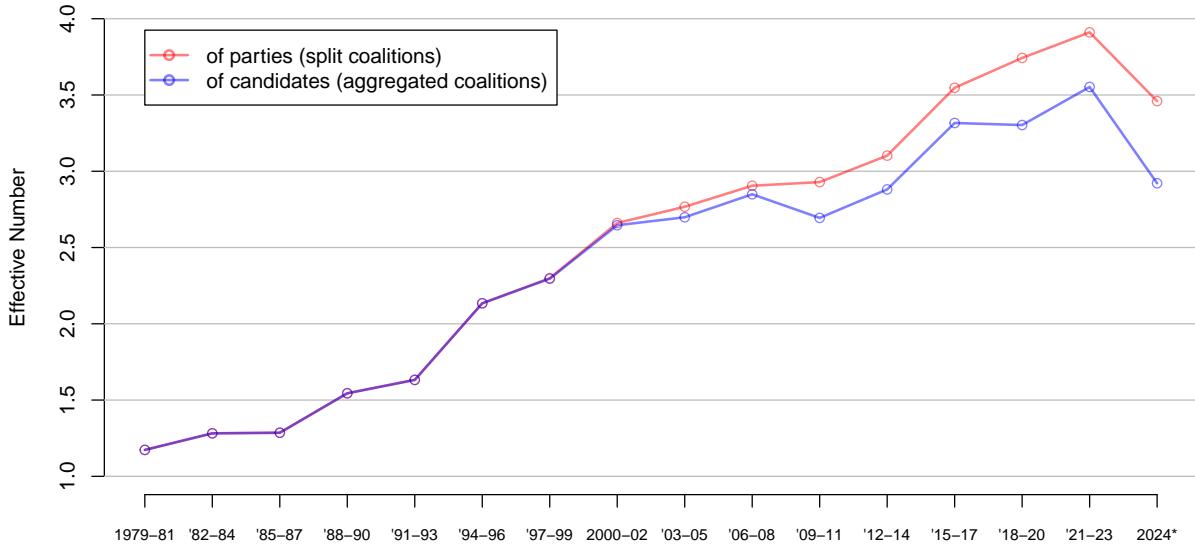


Figure 2: Municipal party system fragmentation by federal election cycle. Circles report the mean effective number of parties across municipal elections in the cycle. \* Incomplete cycle (Durango and Veracruz elections pending).

profile is ‘None’ in the absence of any coalition; it is a ‘major-minor’ arrangement when one major party (ie. PAN, PRI, PRD, or Morena) nominated a municipal ticket jointly with one or more minor parties; it is ‘Double major’ when two majors ran jointly; and so forth.

Three distinct moments are distinguishable. Between the 2000–02 and 2006–08 triennia, inclusive, at least one major party, and increasingly two major parties, would team up with minor parties to gain an edge in the municipal race. By the end of this first moment, four out of five municipal elections had one or more major-minor arrangements. A second moment, between 2009–11 and 2012–14, added frequent ‘double-major’ races, with mostly PAN and PRD forging anti-PRI tickets in over one-fifth of municipalities. And a-coalitional races became ever rarer. A third moment came with Morena’s foray into the party system, especially after 2018, forcing frequent full regroupments of erstwhile rivals PAN, PRI, and PRD (‘triple-major’ coalitions) against the new Behemoth, regroupments that shrank the number of coalitions per municipality by widening their scope (the right-most column reports triennial average coalitions per municipality, parenthesized).

Figure 2, reporting the effective number of parties and candidates in the period (Laakso and Taagepera 1979), shows a widening gap after the normalization of coalitions between major parties since 2009. The file trio lends flexibility to handle coalitions in municipal elections as needed for analysis.

## 4 Descriptive statistics

This section turns to summaries of party vote shares across municipalities nationwide. It demonstrates that municipal party support in the distributed data sets conforms to received wisdom of Mexico’s atypical democratic transition (eg. Cornelius 1996) and subsequent political national-

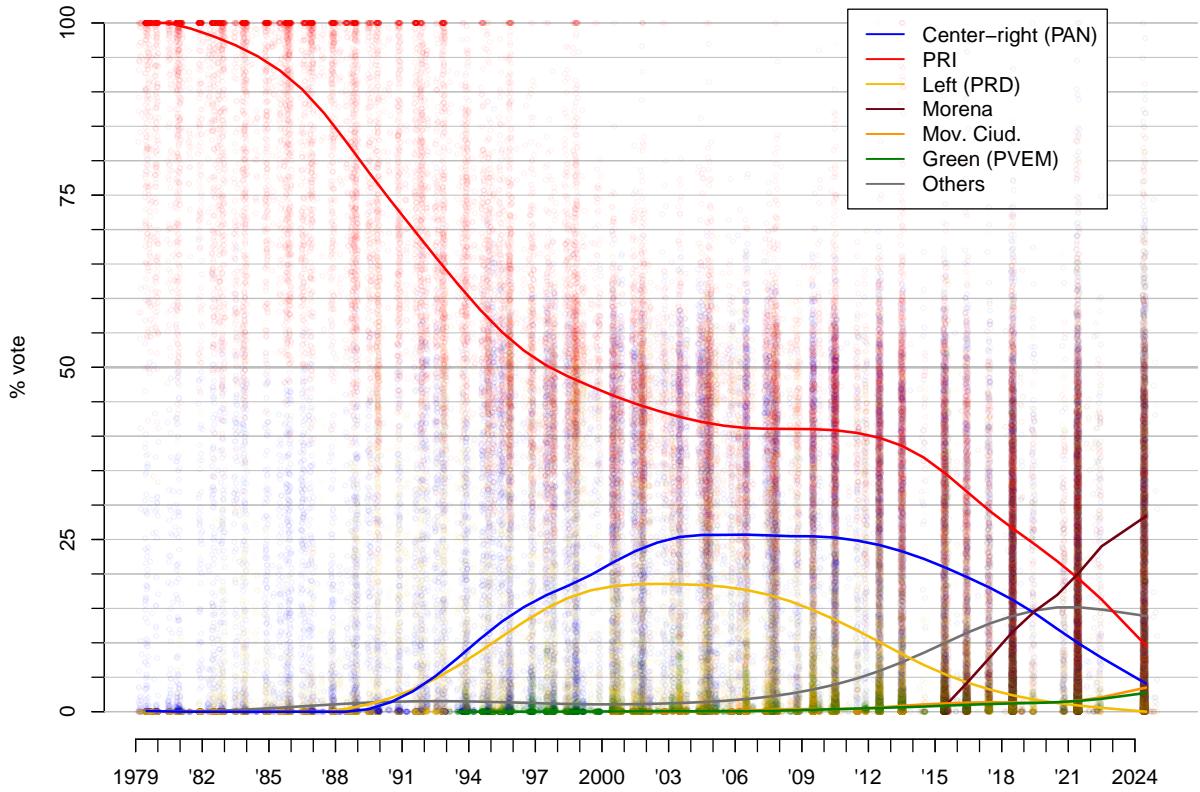


Figure 3: The electoral evolution of parties in municipal races 1979–2024. Color-coded circles report one party’s vote percentage in a municipal election (slightly x-jittered for visibility). Curves are the vote percentage that each party won in the median municipality across time (the trend is smoothed for clarity).

level development (eg. Díaz Cayeros, Estévez and Magaloni 2016). Patterns also emerge that are distinctive of municipal-level analysis. The summaries also shed light over potential applications of the data.

Figure 3 offers a group portrait, plotting every municipal elections since 1979 for which there is data (using the split coalition file). Each minuscule, color-coded circle quantifies a party’s vote percent in one municipal election—137,813 in total, for 30,633 non-missing municipal races. The hegemonic party system of the 1960s and 1970s remained much in place at the start of the series, the PRI’s red circles modally anchored at 100 percent of the vote, ruling uncontested (Segovia 1980). Back then the right-of-center PAN (in blue), as well as the new entrants in the political left (in gold), achieved more than a symbolic vote percentage in a few dozen, urban municipalities only.

Opposition parties began picking up steam after the 1982 economic crash, gradually mobilizing social discontent in the electoral arena (Klesner 1993; Molinar 1991). Plot lines, which smooth the parties’ vote in the median municipality over time, neatly capture the steady erosion of the PRI’s electoral support and the rise of a dual opposition. PAN and left, however, manifest a slower pace in municipal elections than national events in the second half of the 1980s would suggest. This

apparent anomaly owes units with massive population disparities. Ecological analyses of voting showed that the most solid predictor of opposition voting in a unit was the share of people living in cities (Ames 1970; Lehr and Pedroza 1985; Magar 1994), few in number but important in size. In a rapidly urbanizing society, this correlation became a harbinger of the challenge ahead for the PRI. It also anticipated a major obstacle for newcomers, as the PRI remained a formidable competitor in enclaves of smaller, rural, low-turnout municipalities. Up to the near end of the series, only the PRI would be capable of getting out votes in numerous units that others could only dream to approach. Until the mid-1990s, the median municipality was firmly planted in such enclaves.

Figure 4 approaches the lag from a slight different angle, winners in municipal races.<sup>10</sup> Each horizontal bar in Panel A reports the relative number of municipalities that each party won throughout a triennial cycle. For visual simplicity, coalition winners in each election go to the major party, and when two or three majors partnered, the winner goes arbitrarily to the largest of them in the state-cycle. The PRI won nearly every municipal race in the first three triennia in the series. Its slow collapse was barely notable as late as 1993, with subsequent drops punctuated by periods of apparent stability: nine wins out of ten in 1988–1993, then three out of four in 1994–1999, then about half in 2000–2014. Then came the final collapse, when Morena took over. Panel B weights municipalities by their share of all registered voters, thus portraying the population that different parties governed in each election cycle. Up to 2008, the PAN’s bars are remarkably bigger in this panel than above, indicative of its distinctive urban bias.

The simultaneous rise of a dual opposition in Figure 3 created a coordination problem for the anti-PRI vote, a factor that played out in extending the PRI’s reign despite the loss of its hegemonic status (Garrido de Sierra 2014; Magaloni 2006).<sup>11</sup> Figure 5 reports the share of the three-party vote for the major parties (i.e., subtracting votes won by candidates other than the PAN, PRI, and PRD). Municipalities the PRI won uncontested are bunched at top vertex, and displacements away from that vertex measure gradual decrements of the PRI vote in favor of the PAN and/or the PRD. The ternary plot echoes a pattern also seen in federal races (Márquez 2014): between 1989 (the year PRD was founded) and 2014 (the year before Morena’s entry), decrements are concentrated on, or very close to either triangle side. Sure, some municipalities populate the inside, but they are relatively rare. The pattern is indicative of local two-party competition. In other words, the oppositions were regionally concentrated, the PRI facing a serious challenge of one or the other, but rarely both. So, in municipal races, the PRI’s persistence was not pure opposition discoordination, but genuine strength.

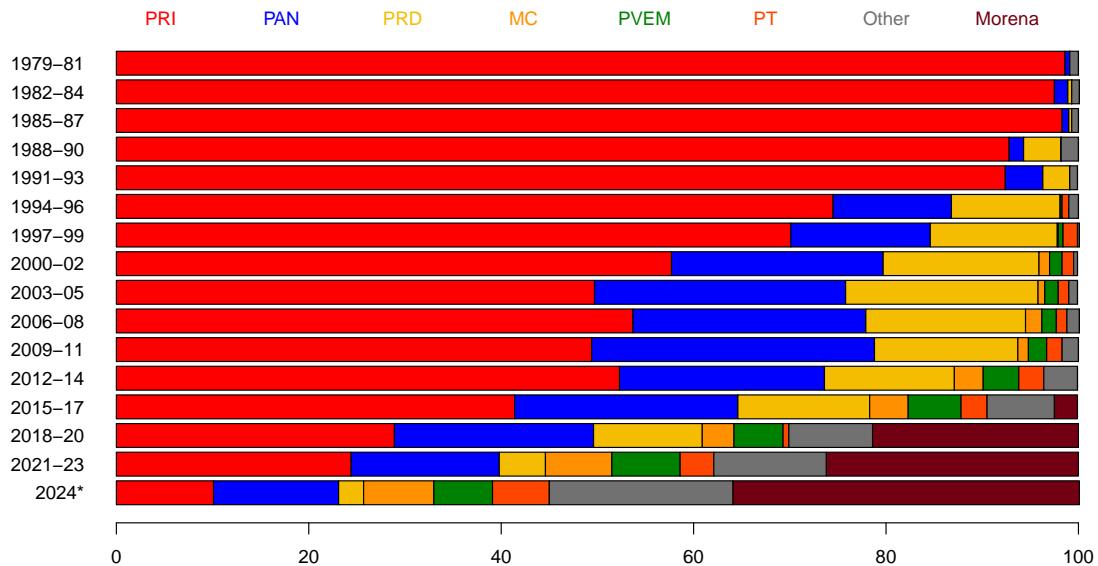
The final stage portrayed corresponds to the collapse of the party system that brought electoral democracy to Mexico (Estévez, Magar and Rosas 2008; Moreno 2009), and the rise of AMLO’s Morena. Andrés Manuel López Obrador, better-known by his initials, broke free from the left’s proverbial factionalism (Bruhn 1997) by launching a new, personalized party. The gamble paid off. Left elite discoordination gave other parties unexpected victories across the board in Morena’s inaugural 2015 elections. But AMLO’s third bid for the presidency three years later achieved a rallying cry, becoming focal point attracting not just left voters, but independents, leaners from the PRI and even from the PAN. Morena’s landslide victory in 2018, which gave it unified control of the federal and most state governments, led the former major parties to run desperate three-way

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<sup>10</sup>A separate file in the repository, `data/aymu1989-on.incumbents.csv` reports the names of the winning candidates to municipal president in races since 1989.

<sup>11</sup>The PAN and left’s parallel paths are suggestive of what Cox (1997) terms a ‘non-Duvergerian’ equilibrium: a tie between challengers that often left the PRI invulnerable in office.

**A – Percent municipalities won**



**B – Size-weighted percent municipalities won**

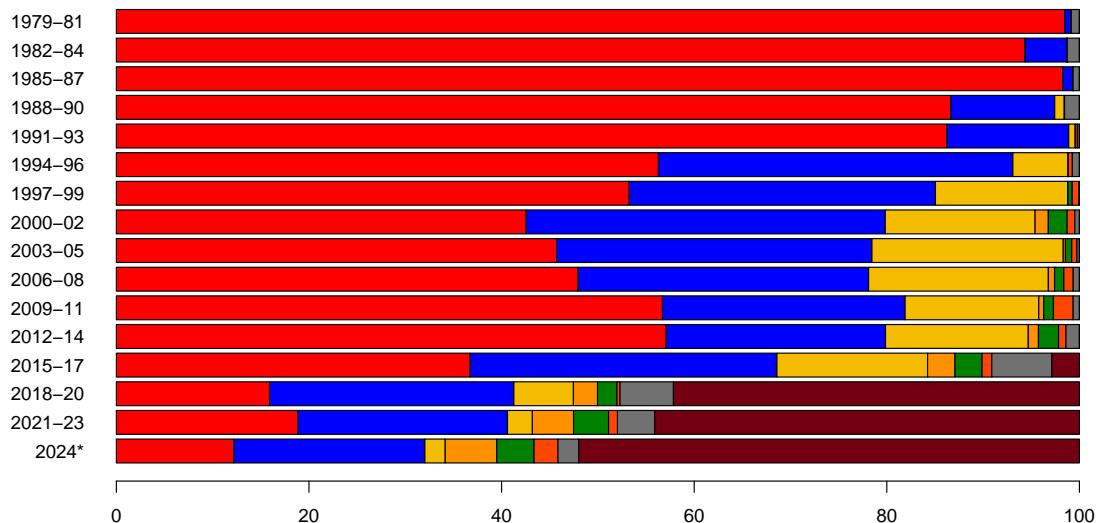


Figure 4: Winners by federal election cycle. Relative frequencies in panel B are weighted by the municipality's population. See text on how coalition coalition victories were dealt with. \* indicates an incomplete cycle (Durango and Veracruz elections pending).

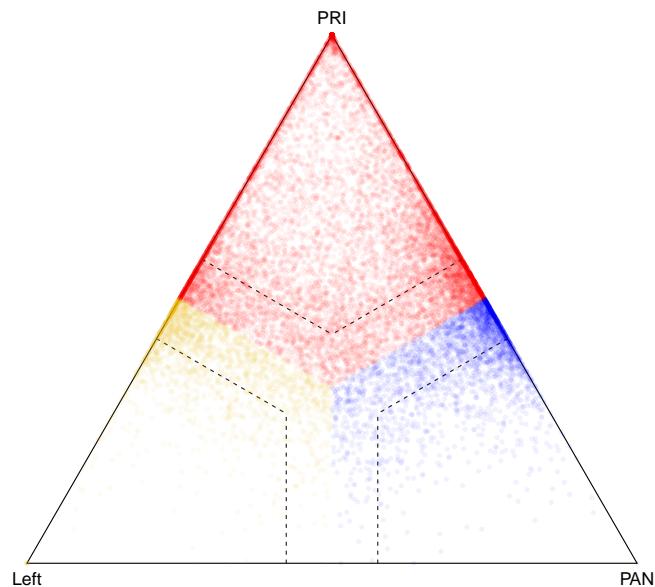


Figure 5: Bipartisan rivalries predominate 1989–2014. The ternary plot reports the share of the three-party vote that major parties won in municipal elections (excluding the Federal District). Points between dotted lines are marginal municipalities, where the margin between two parties was 10 percent or less.

coalitions in subsequent races. To little avail: while the rise of Morena appears with a lag in Figure 3 (the party mobilized the larger municipalities first, and extended its dominant mantle towards the rest afterwards), its formidable challenge managed to realign smaller municipality elites away from the PRI—the PRI’s population-weighted bar in Figure 4 finally outsized its sheer frequency in the 2024 cycle.

## 5 Reelection as insurance policy

Also discusses another dataset in the repository, incumbents. (Lucardi and Rosas 2016; Motolinia 2021)

## 6 The measurement of electoral history

Also discusses another dataset in the repository, vhats.

## 7 Non-fused tickets in Nayarit

Also discusses another dataset in the repository, nayreg.

These amount to much fewer formal powers than local governments in other systems. Mexican municipalities have no jurisdiction over public education and health, lack authority to collect other taxes, and must negotiate some fiscal resources with the state government, who may be tempted to bias redistribution of revenue sharing to municipalities (Timmons and Broid 2013)

Still, the institutional heterogeneity and variable socio-economic conditions make them very interesting for social science.

But interest in Mexico’s municipal government has nonetheless grown

But, with much heterogeneity, municipal governments grew in importance between 1990 and 2010. Percent of public spending they exert... making them, and the variance they manifest, attractive areas for the study of politics and policy.

Table [[fig:1]] presents two pairs of diagrams for the 2015 (below) and 2018 (above) congressional elections. Each dot represents one municipality, colored according to the winning party, with coordinates in the ternary plot according to the relative votes of the PAN, the PRI, and the left in the federal deputy race (other smaller parties are excluded).<sup>12</sup>

The left side shows the /vote forecasts/. The idea behind this statistic is summarizing the evolution of relative votes in the municipality in five previous elections (2003–2015 in the case of 2018) and using the tendency to project a vote forecast for the current year. Plots in the right side show the actual results observed in both elections.

Three features are noteworthy in 2018. The first is the discrepancy between the left and right plots. Either the model does a poor job forecasting, or 2018 was an extraordinary election. History gave license to expect a comfortable PRI victory, both in the number of municipalities won and

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<sup>12</sup>I must note that, for the left’s electoral history (which I arbitrarily call “Morena” in the plots and distributed data), I systematically added up the votes of the PRD, PT, and MC up to 2015. I also added Morena’s and PES’s votes that year. In 2018 the left consisted of Morena, PT, and PES jointly.

in margins of victory. Municipalities outside the dotted bands are won by margins of 15 points or more, and the bulk of secure municipalities are red in the forecast, with Morena in a distant second place. In fact, although a significant number of municipalities migrated towards the PAN, it was Morena who showed a clear advantage. PRI was the underachiever. In contrast, the lower left and right plots reveal fewer differences between them—2015 was a more normal election, the past offering much better grounds to forecast.

Second, observed municipalities fled the edges and triangle vertices in 2018. Observations in vertices show a party that has no significant challenger. While those on the edges were bipartisan, whether more (inside dotted bands) or less (outside the bands) symmetric. It is also plain in forecasts that only the PAN–Morena edge was expected to be unpopulated. In practice, however, third party vote rarely collapsed to zero, there was much more dis-coordination than in the past. In fact, the intersection of dotted bands appeared denser and more homogeneous in the right than the left diagram.

Third, the PAN /vs/ left competition was legal tender in 2018. The pattern in competitive municipalities in the last two decades, still visible in the 2015 plots, involved either PRI–PAN or PRI–left rivalries, and rarely PAN–izquierda. It was this pattern that eased electoral alliances between PAN and PRD in sub national races since 2010 that culminated in the Frente they formed in 2018 to nominate a joint presidential candidate.

Plots in Table [[fig:4]] report /secciones electorales/ and therefore offer much finer-grained than the previous portraits. They introduce the other quantity of interest in this note: parties' /core support/. The idea behind this statistic is measuring the size of the group that has historically supported the party consistently, in good but also in bad years.

The horizontal axis in each plot measures the size of party core support groups as a proportion of the /sección/'s electorate. The PRI enjoyed a clear edge over the rest of the parties in the period, with sizable cores in /all/ secciones nationwide. The distributions of the PAN and the left, in contrast, appear concentrated towards the zero—they have relatively few secciones with some unconditional support.

The vertical axis reports the three parties' performance in 2018 (the difference between the observed vote and the forecast). Positive values indicate that the party excelled expectations in the /sección/, negative ones that it under-performed its expectation. The PRI's electoral disaster appears all too clearly in the red plot. There were a few secciones with positive performance, but the density concentrates massively below the horizontal zero line, something that Table [[fig:1]] had hinted. What is truly remarkable is that the dismal performance is directly proportional to the size of the PRI core. President Peña and candidate Meade achieved what seemed, if not impossible, extremely improbable: they alienated the PRI's unconditional voters in 2018. The PAN and the left met expectations in secciones where they have enjoyed with groups of support. Both (especially Morena) over-achieved where they lack important cores, taking away PRI voters.

The note elaborates how statistics were prepared (replication code can be found [[<https://github.com/emagar/mz-data-for-maps.r>][here]]).

\* First differences One common approach to study electoral change is through first differences. Denoting  $v_t$  the party's vote share in the municipality or the /sección/, in period  $t$ , the first difference is simply  $d_t = v_t - v_{t-1}$ .

$d_t$  is an intuitive quantity, showing the sign and magnitude of change from one election to the next. But, precisely because it compares pairs of consecutive elections only, it misses more dynamic processes in the units. One example, well documented by electoral sociology, is the

regression to the mean (Campbell 1991; Segovia 1980). Its detection requires observing the unit through at least three consecutive periods to verify contrary signs in  $d_{t+1}$  and  $d_t$ . The study of secular change in the Mexican party system in the last quarter of century calls for deeper historical perspective.

(First differences appear in the fields `d.pan`, `d.pri`, and `d.morena` in the distributed data.)

\* The recent linear tendency One way of adopting it is with /vote forecasting/ from tendencies discernible in the previous five congressional races (Magar 2012). I summarize the central tendency of the recent historical vote by means of linear estimation in time, fitting a straight line for each year analyzed and each party in the municipality or /sección electoral/.

The slope of the fitted line (the tendency) serves to extrapolate the party's electoral support to the future. For instance, to get the vote share that the recent past predicts for a party in unit  $u$  for 2018, I estimate the following equation

$$v_{ut} = a_u + b_u \times t + \text{error}_{ut}, \quad t = 2003, \dots, 2015 \quad (1)$$

that I then use to predict  $\hat{v}_{u2018} = \hat{a}_u + \hat{b}_u \times 2018$ . This is an out-of-sample prediction of the party's vote share, it can be compared to the party's actual vote share in 2018 to gauge whether or not the unit approximates the historical record. For the 2015 forecast the sample shifts one period to become  $t = 2000, \dots, 2012$ , and so on an so forth for previous years. I distribute forecasts for 2009, 2012, 2015, and 2018, which involved fitting about 10 thousand municipal regressions and more than 250 thousand sección-level.

(Vote forecasts appear in the fields `vhat.pan`, `vhat.pri`, and `vhat.morena` of the distributed data.)

\* The party's support core The other historical statistic is the parties' core support in the unit. Its definition stems from classifying voters in three categories: (1) support groups, that in the past have consistently supported the party; (2) opposition groups, that have consistently supported another party; and (3) swing groups, that have neither consistently supported nor consistently opposed the party (Cox and McCubbins 1986). The party core consists of the support groups.

I use the procedure by Díaz Cayeros /et al/. (2016) to estimate this core. If  $\bar{v}_t$  denotes the party's mean support across all units in period  $t$ ,<sup>13</sup> for each party in each unit I fit

$$v_{ut} = \alpha_u + \beta_u \times \bar{v}_t + \text{error}_{ut}, \quad t = 1994, \dots, 2018. \quad (2)$$

$\beta_u$  measures the effect that national party tides have on the party's vote in unit  $u$ . For instance,  $\hat{\beta}_u = 1$  estimates that for every percentage point that the party wins or loses nationally in year  $t$ , it also wins or loses one percentage point in the unit;  $\hat{\beta}_u = 0$ , on the other hand, would indicate the unit's full isolation form national swings. It is therefore a measure of party volatility in the municipality or /sección/ (analogous to "beta volatility" in the financial literature).

The  $\alpha$  coefficient estimates the core size: expected support in unit  $u$  in the hypothetical case that the party receives no vote at the national level. For instance,  $\hat{\alpha} = .4$  would indicate that, in the

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<sup>13</sup>The analyzed unit  $u$  should be dropped from period  $t$ 's mean in order to not include the dependent variable in the right side of equation 7. I do not drop it due to the large number of municipal or seccional units (each contributing a fraction to the mean) and the use of vote shares (so large units are watered down): this refinement's impact should be negligible in each mean value.

starkest of scenarios, 40

A critique that can be anticipated towards this measure of the party's support core is its extreme counter-factual nature (King and Zeng 2006). It deserves rigorous scrutiny, something I plan doing in the near future.

(The parties' core support appears in the fields `alphahat.pan`, `alphahat.pri`, and `alphahat.morena` of the distributed data. Party volatility in `betahat.pan`, `betahat.pri`, and `betahat.morena`.)

\* Compositional variables I close with an important feature of the model specifications, associated with the *compositional* nature of electoral returns. Compositional variable are quantitative descriptions of the parts of a whole. They therefore have two characteristics: (1) they are proportions that (2) add up to unity.<sup>14</sup>

When estimating parties separately, the challenge of equations 1 and 2 is to avoid forecasting vote shares less than zero or greater than one; and that the sum of party forecasts equals 1. To achieve this, Aitchison (1986) proposes substituting vote shares by log-ratios in the analysis. Arbitrarily setting the PRI as the reference party, define party  $p$ 's vote relative to the PRI as

$$r_p = \frac{v_p}{v_{\text{pri}}}.$$

A value  $r_p = 1$  would indicate a tie between the party and the PRI, while  $r_p > 1$  that it finished ahead of the PRI in the proportion that the value reveals.

Thus, equation 1 is re-specified as

$$\ln r_{put} = a + b \times t + \text{error}$$

y equation 2 as

$$\ln r_{put} = \alpha + \beta \times \bar{r}_{pt} + \text{error}.$$

Applying the natural logarithm attenuates the effect of extreme values of the regressor on the dependent variable, similar as a logit regression would. Models fitting was done with ordinary least squares.

Coefficient estimates requires transformation to collect party vote shares. Illustrating with a three-party caste, it is trivial that

$$\hat{v}_p = \frac{\hat{r}_p}{1 + \hat{r}_{\text{pan}} + \hat{r}_{\text{morena}}} \text{ and } \hat{v}_{\text{pri}} = \frac{1}{1 + \hat{r}_{\text{pan}} + \hat{r}_{\text{morena}}}. \quad (3)$$

These are the quantities that the distributed data report.

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<sup>14</sup>Formally, the compositional are random variables subject to two constraints:  $0 \leq v_p \leq 1 \forall p \in P$  and  $\sum_P v_p = 1..$

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