Annexes

Municipal ideological score - methodological notes

List of acronyms

BLS – Brazilian Legislative Survey

CD – Câmara dos Deputados

CM – Câmara Municipal

CONCLA – Comissão Nacional de Classificação

EAP – Economically Active Population

ENEP – Effective Number of Electoral Parties

FinBra – Finanças dos Municípios Brasileiros

GDP – Gross Domestic Product

HH – Herfindahl-Hirschman Index of market concentration

IBGE – Instituto Brasileiro de Geografia e Estatística

IPEAData – Data repository of the Instituto de Pesquisa Econômica Aplicada

MIS – Municipal Ideological Score

STN – Secretaria do Tesouro Nacional

TSE – Tribunal Superior Eleitoral

UNDP – United Nations Development Programme

Introduction

This document compiles all the definitions for all indicators included in the Municipal Ideology model estimations. It includes the sources of information employed, the methods of data computation and treatment. It has two primary purposes. The first is to make the analyses related to municipal ideology reproducible. The second is to allow other researchers to re-use this dataset in their own work in the future.

The construction of the dataset required the processing of large quantities of information extracted from different sources from the Tribunal Superior Eleitoral (TSE), the entity responsible for organizing and administering elections, to the Instituto Brasileiro de Geografia e Estatística (IBGE), responsible for all census and demographic data. A list of these sources and the respective URL addresses of the data employed can be found in Table 01.

Table 1: List of sources

Source	Name	URL
CONCLA	Divisão Territorial Brasileira	http://goo.gl/5g9rR6
TSE	Vote data (1994-2014)	http://goo.gl/7YTKY6
TSE	Voter data (1994-2014)	http://goo.gl/7YTKY6
TSE	Candidate data (1994-2014)	http://goo.gl/7YTKY6
TSE	District data (1994-2014)	http://goo.gl/7YTKY6
BLS	Brazilian Legislative Surveys (1993-2017)	https://goo.gl/aO3L77
UNDP	Human Development Atlas (1991-2010)	http://goo.gl/VZ7O1g
IBGE	Estimativas da População (2012-2014)	http://goo.gl/kHlEkg
IBGE	Produto Interno Bruto dos Municípios (1999-2013)	http://goo.gl/TYmOQR
IPEAData	Produto Interno Bruto dos Municípios (1994-1996)	http://goo.gl/gn0mej
STN	Financas dos Municípios Brasileiros (FinBra)	http://goo.gl/i8xI8a
STN	Sist. de Inf. Contábeis e Fiscais do Setor Publico Brasileiro (Siconfi)	http://goo.gl/1UfcdM
IBGE	Evolução da Divisão Territorial Brasileira (1872-2010)	http://goo.gl/r6vxXU
IBGE	Cidades@	http://goo.gl/2XlHmY
IBGE	Localidades	http://goo.gl/XlzbWe

Source: Authors' own elaboration.

The period covered ranges from 1994 to 2018. The choice of this timeframe was due to data restrictions. Unfortunately, there are no detailed data at the municipal level for the 1982, 1986, 1989, and 1990 elections. These first elections would complete the data series with all elections held from the transition until the present. Despite these limitations, the data includes enough variation to make the study of local ideology viable. During this period, Brazil had five presidents, elected a large number of governors and mayors and experienced substantial changes in the political parties with a reasonable number of mergers, extinctions, and creation of new ones.

There are some limitations in the data that must be mentioned beforehand. Since the TSE data are administrative records, there should not be any missing case for any year. This is mainly because it documents the electoral results. Nonetheless, for the period between 1994 and 2000, data are flawed, with a significant proportion of missing cases. In some cases, we were able to overcome this limitation using data from old TSE sources, but which are not available online anymore. In other occasions, it was not possible to recover the original information. There are also differences among electoral results, district and candidate data. For these first years, it was necessary to triangulate the information to determine the winner in the local or state executives and to record the district magnitude, since the data were corrupt or missing in some sources.

Once all electoral information was systematized, it was combined with the ideological scores obtained through the Brazilian Legislative Survey (BLS). The purpose was to compute the municipal ideological score (MIS) as a synthetic indicator for the ideological position of each locality. This procedure would allow us to test some classical and new hypotheses on the political and socio-demographic characteristics associated with the voting

behavior observed in Brazil.

Table 02 gathers all information concerning the number of cases analyzed by year, the total number of municipalities, the BLS wave employed to estimate the MIS in each year and the proportion of all votes explained by the original BLS data. We also imputed the ideological score for those small parties not represented in the lower house of the National Congress (CD). The specific criteria employed to perform this imputation are explained in the next session. The general trend observed is a growing weight of small parties in time. Nonetheless, as expected, the permeability of small parties is much higher in municipal elections when compared to those of national elections.

Table 2: PR election cycles and party ideology estimates used in this study

Year	Election.Type	N	IBGE	BLS.Wave	BLS	Imputed
1994	Legislative (CD)	5,019	5,123	1993 Wave 02	96.5	3.5
1996	Municipal (CVs)	5,402	5,507	1997 Wave 03	87.3	12.7
1998	Legislative (CD)	5,481	5,507	1997 Wave 03	94.7	5.3
2000	Municipal (CVs)	5,151	5,507	2001 Wave 04	85.0	15.0
2002	Legislative (CD)	5,564	5,560	2001 Wave 04	91.9	8.1
2004	Municipal (CVs)	5,456	5,560	2005 Wave 05	81.2	18.8
2006	Legislative (CD)	5,565	5,565	2005 Wave 05	87.6	12.4
2008	Municipal (CVs)	5,563	5,565	2009 Wave 06	81.3	18.7
2010	Legislative (CD)	5,565	5,566	2009 Wave 06	90.0	10.0
2012	Municipal (CVs)	5,566	5,566	2013 Wave 07	79.3	20.7
2014	Legislative (CD)	5,570	5,570	2013 Wave 07	80.9	19.1
2016	Municipal (CVs)	5,568	5,570	2017 Wave 08	84.1	15.9
2018	Legislative (CD)	5,570	5,570	2017 Wave 08	76.7	23.3
Totals	13 Cycles	71,040	71,736	7 waves 1993-2017	85.4	14.6

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.
Notes: CD is Câmara dos Deputados (lower house of national legislature), and CVs are Câmaras de Vereadores (municipal councils). In some years, the TSE includes the codes for municipalities that have been created but have not been installed according to IBGE criteria. This explains slight differences in numbers between the third and fourth columns.

It is also important to clarify that the ideological score is based exclusively on legislative voting in PR elections. Since the executive is profoundly influenced by the personal attributes of the candidate to the city hall or the presidency, we decided to focus on the legislative branch. This branch presents a more stable behavior regarding the structure of voting.

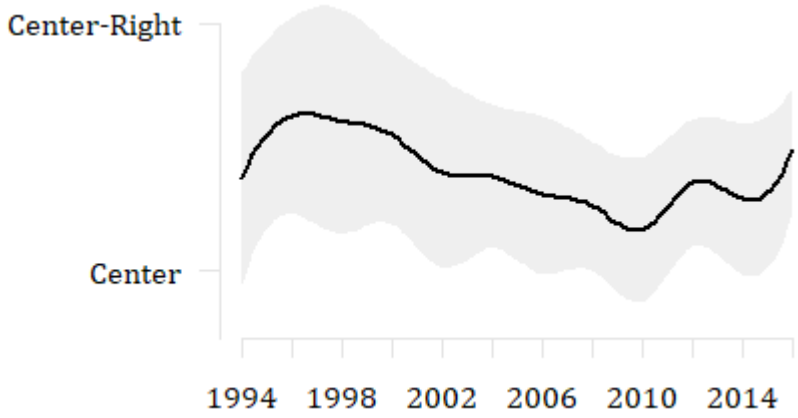
Alongside the municipal ideological score, we also computed some indicators for the party system at the municipal level that includes the Effective Number of Electoral Parties (ENEP), as well as measures for party fragmentation and electoral competition. This data were complemented with socio-demographic information necessary to test some hypotheses on the effects of social, administrative and economic variables on local ideology.

In Table 03 below, you can find the descriptive statistics for the Municipal Ideological Score. The data are described for all electoral years as well as each year individually. The results suggest a trend towards a more concentrated distribution around the center-right of the ideological spectrum.

The data also shows a trend towards the left during Lula years. This movement was inverted in 2012 with the first local elections after the victory of Dilma Rousseff in 2010, revealing a pattern that has continued to date.

The reduction of the standard deviation is also worth noting. It dropped from 0.227 in 1998 to 0.125 in 2016. The range also presented the same behavior. These two indicators suggest higher ideological homogeneity, despite the growing party fragmentation observed in the period.

Figure 1: Mean and S.D. intervals for the MIS (1994-2016)



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Table 3: Descriptive statistics for the municipal ideological score (1994-2018)

Year	Mean	Median	S.D.	Min.	Max.	Range
1994	0.187	0.180	0.216	-0.654	0.743	1.397
1996	0.312	0.328	0.198	-0.562	0.848	1.410
1998	0.302	0.303	0.227	-0.651	0.813	1.464
2000	0.274	0.283	0.179	-0.396	0.770	1.166
2002	0.197	0.195	0.191	-0.546	0.704	1.249
2004	0.190	0.191	0.145	-0.555	0.690	1.245
2006	0.153	0.156	0.159	-0.321	0.614	0.935
2008	0.131	0.135	0.130	-0.432	0.682	1.114
2010	0.083	0.090	0.146	-0.478	0.547	1.024
2012	0.177	0.183	0.128	-0.495	0.645	1.139
2014	0.145	0.155	0.153	-0.499	0.628	1.127
2016	0.245	0.255	0.125	-0.352	0.636	0.987
2018	0.221	0.247	0.162	-0.496	0.617	1.113
All years	0.202	0.198	0.179	-0.651	0.848	1.499

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Explanatory power of our models

Before describing the procedures adopted for the imputation of ideological scores for those parties not present in the national legislative, we would like to detail the explanatory power of the variables employed in each model formulated for this study.

As stated in the main text, we test four main theoretical 'explanations' on local ideology in Brazil. These are not 'theoretical models', but perspectives rooted in the Brazilian literature on the subject. The first is the 'Political Alignments' model ('governismo', in Brazilian jargon). Here we test the power of the Presidency to attract local political forces to their own ideological position.

The second, 'Modernization', verifies the impact of Human Development on ideology. Some classical works on Brazilian political sociology state that larger urban and more developed areas tend to be more on the left of the ideological scale when compared to their rural, less developed counterparts.

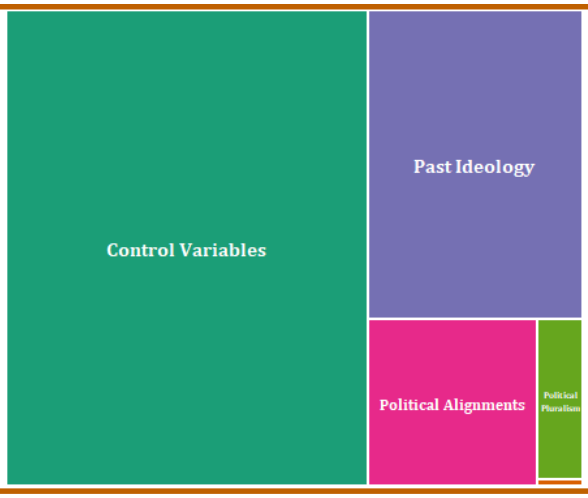
Our third model, 'Political Pluralism', tests the effect of political competition and pluralism on ideology. More competitive settings tend to be more polarized and present its ideological center of gravity closer to the center. It means that, in a system characterized by a distribution biased towards the right, more competition would bring the position to the left.

Our fourth model, 'Social Inclusion', verifies if the poverty reduction policies expanded during the PT administrations, have changed the ideological position to the left, as some of the literature would expect.

We ran a Pooled OLS regression model to test the significance and to assess the explanatory power of each of these models. We also included the lagged D.V. to account for the effect of past ideology and some control variables, such as the logged number of voters, the electoral year, and a dummy variable indicating if it was a concurrent election or not.

Figure 02 below displays the results:

Figure 2: Variance explained by each model



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

As we can observe, past ideology explains more than half of the variation in the model. Nonetheless, it is useful to highlight that both 'Political Alignments' and 'Political Pluralism' models also display considerable effects on local ideology, even when controlled by previous ideology. Modernization and social inclusion, on the other hand, appear to exert little impact on the phenomenon.

We also tested for the effect of different degrees of imputation on the explanatory power of the IVs. The results are gathered in Table 04. As we can observe, most coefficients are stable, keeping their direction and significance no matter the proportion of votes cast to parties with imputed ideology. The main exceptions are Human Development and Electoral competition that are unstable and, according to our interpretation in the main text, are must not be considered as presenting any significant impact on local ideology.

Table 4: GLS pooled models with variable degrees of imputation

Indicator	0%	≤ 10%	≤ 20%	≤ 30%	≤ 40%	>40%
MIS (lagged)	0.359***	0.359***	0.342***	0.331***	0.326***	0.322***
	(0.008)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Ideological Prox.	-0.055***	-0.007	-0.012***	-0.012***	-0.010***	-0.011***
Mayor/President	(0.010)	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)
Presidential Ideology	-0.597***	-0.290***	-0.266***	-0.257***	-0.249***	-0.248***
	(0.046)	(0.013)	(0.011)	(0.010)	(0.010)	(0.010)
Proximity * Pres. Ideology	0.572***	0.411***	0.385***	0.379***	0.373***	0.371***
	(0.022)	(0.011)	(0.009)	(0.008)	(0.008)	(0.008)
Presidential Approval	0.122***	0.072***	0.060***	0.051***	0.050***	0.052***
	(0.018)	(0.009)	(0.007)	(0.007)	(0.007)	(0.007)
Approval * Ideology Pres.	0.798***	0.315***	0.301***	0.291***	0.285***	0.287***
	(0.076)	(0.022)	(0.018)	(0.017)	(0.016)	(0.016)
Political Alignment	0.039***	0.009***	0.010***	0.010***	0.010***	0.010***
	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Human Development Index	0.000***	0.000***	0.000***	0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Party Fragmentation	-0.271***	-0.327***	-0.274***	-0.244***	-0.224***	-0.211***
	(0.022)	(0.012)	(0.011)	(0.010)	(0.010)	(0.010)
Electoral Competition	-0.089***	-0.048***	-0.034***	-0.028***	-0.023***	-0.019***
	(0.015)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Turnout	-0.061**	-0.112***	-0.106***	-0.102***	-0.099***	-0.097***
	(0.027)	(0.013)	(0.011)	(0.011)	(0.010)	(0.010)
Polarization	-0.023***	0.029***	0.022***	0.017***	0.014***	0.010***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Variation in Poverty Rate	0.002**	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)
Size of Electorate	-0.010***	-0.018***	-0.015***	-0.013***	-0.012***	-0.011***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Concurrent Elections	0.002	-0.087***	-0.084***	-0.082***	-0.080***	-0.079***
	(0.010)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Year	0.002***	0.002***	0.002***	0.002***	0.001***	0.001***
	(0.001)	(0.0003)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Constant	-2.946**	-3.846***	-3.089***	-2.781***	-2.569***	-2.459***
	(1.206)	(0.580)	(0.486)	(0.453)	(0.440)	(0.432)
Observations	10,567	40,093	49,896	55,207	57,938	59,726
Log Likelihood	5,451	19,758	25,766	29,129	30,793	31,791
Akaike Inf. Crit.	-10,864	-39,477	-51,494	-58,221	-61,547	-63,545
Bayesian Inf. Crit.	-10,726	-39,314	-51,326	-58,051	-61,377	-63,374

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.
Note: p<0.1p<0.05p<0.01.
The pooled model shown in Table 01 of the main text is here reestimated on subsamples, incorporating municipalities with varying degrees of imputation in the Municipal Ideological Score. The model with 0% presents no imputation (it includes only municipalities in which all the votes cast were given to parties included in the BLS). The 10% model retains the first category and then adds those municipalities where up to 10% of all votes were cast to parties not included in the BLS, and so forth.

A note on imputed ideology of minor parties not included in the BLS dataset

The large number of minor parties competing in PR elections means that we had 123 party-year observations of legally registered parties whose ideology was not measured by the Brazilian Legislative Surveys (BLS). For these microparties, we assign a reputational ideology based on comparisons to similar parties whose values were recorded in the BLS. We opted for a simple and intuitive reputational classification with only four categories, two left of center and two right of center.

We assigned the microparties into the four groups listed below. Here we include the TSE registration number of each party at the time of the election in question. The TSE number helps to remove doubt about the identity of successor parties, parties resulting from mergers, and parties that are different but have similar or even identical names. For example, 21 PCB (Partido Comunista Brasileiro) is not the historic PCB, which is today the PPS and still carries the number of the original PCB (23). Numbers can be inherited when parties change their names or merge. The numbers can also be recycled by the TSE: for example, the number 30 was held by the defunct PGT from 1995-2003 but was later reassigned to the Partido Novo in 2015.

Left

These are strongly ideological microparties of the extreme left. These parties receive an ideology score equal to that of the leftmost party observed in the BLS for the year in question. The leftmost score is often furnished by the PCdoB but occasionally by the PSTU and PSOL for the years in which these parties were included in BLS. Imputed cases: 16 PSTU, 21 PCB, 29 PCO, and 50 PSOL prior to 2008. (The PSOL was later included in the BLS beginning in 2009, and thus we use its recorded BLS scores for 2008 elections onward.) These four parties account for 0.90% of the aggregate votes in the expanded dataset (with imputation).

Center-Left

These are microparties identifiably of the center-left. They receive a score equivalent to the average of the two most stable mainstream parties of this type, PSB and PDT, for the relevant year. Imputed case: 43 PV, prior to 2008. (The PV was later included in the BLS beginning in 2009, and thus we use its recorded BLS scores for 2008 elections onward.) The pre-2008 PV accounts for 2.52% of the aggregate votes in the expanded dataset.

Center-Right

These are typically nondescript, clientelistic 'parties for rent', created for personalistic, party-switching or bargaining reasons. They receive a score equivalent to the average of the two most stable mainstream parties of this type, PTB and PL/PR, for the year

in question. Imputed cases: 10 PRB, 17 PTRB, 17 PSL (prior to 2018), 18 PST, 19 PTN, 26 PAN, 27 PSDC, 28 PRTB, 30 PGT, 31 PSN/PHS, 33 PMN, 36 PRN/PTC, 41 PSD, 44 PRP, 51 PEN, 54 PPL, 70 PT do B, 77 SD, 90 PROS. (Note: 41 PSD is unrelated to 55 PSD, which was created by Gilberto Kassab in 2011 and is recorded separately in BLS 2013 and 2017.) These 19 parties account for 11.7% of the aggregate votes in the expanded dataset.

Right

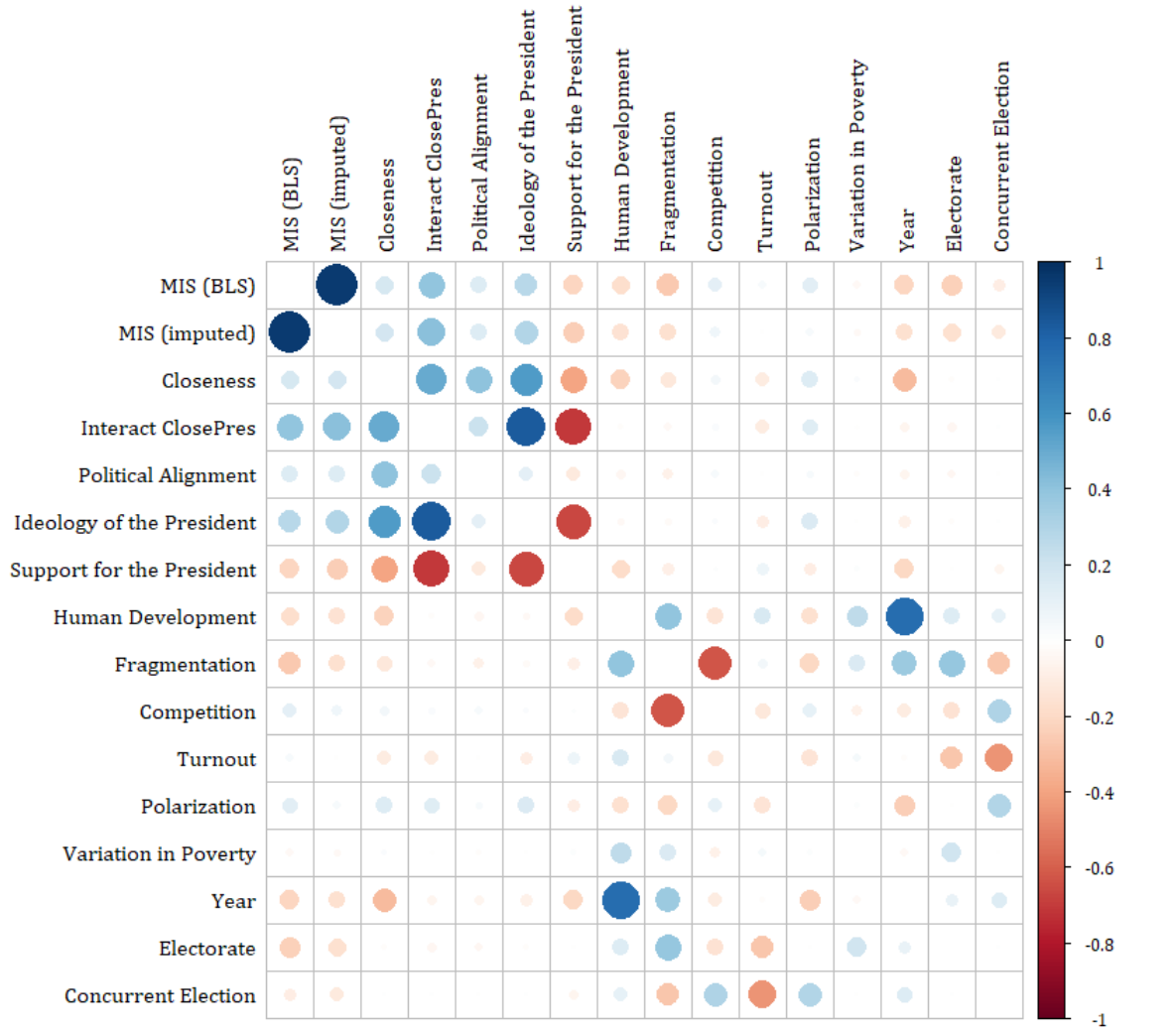
These are conservative microparties that have a more identifiable ideological orientation and are thus more programmatic than the microparties in the Center-Right category. Their ideological profiles may focus on moralist traditionalism and right-wing Christianity, extreme economic liberalism, or a hardline law-and-order discourse. These parties receive an ideology score equal to that of the rightmost party observed in the BLS for the relevant year. The rightmost score is usually furnished by the PFL/DEM or by the PDS/PPR/PPB/PP. Imputed cases: 20 PSC (prior to 2016), 30 NOVO, 56 PRONA. (The PSC was later included in the 2017 BLS and we include that value for the 2016 elections.) These three parties account for 2.82% of the aggregate votes in the expanded dataset. For the 2018 elections only, the PSL was also included in the 'Right' category, and was given the same score as the rightmost observed party in BLS8 conducted in 2017 (DEM). Given the major changes in the PSL in 2018, this probably underestimates the real conservatism of the fast-growing party (a PSL score will be available only after BLS9, scheduled to go to the field in March 2021).

Along with the the data distributed with the main database, we will include a file containing the proportion of votes for each party in each legislative election and the ideological score assigned to it. This will be sufficient to reproduce the results obtained by this investigation.

Correlogram of the variables composing the database

The figure below represents the Spearman's correlation coefficient matrix for all variables contained in the regression models.

Figure 3: Variance explained by each model



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Detailed description of the variables contained in the dataset

Municipal code (IBGE)
Variable name(s): GEOCODIG_M

Definition

The identification code for each municipality generated by the Brazilian Institute for Geography and Statistics (IBGE, in its Portuguese acronym).

Methods for empirical operationalization

This code is required for the comparison of electoral data with all other governmental data, such as GDP, labor force, or demography.

Source

The municipal code is the responsibility of the National Commission for Classification (CONCLA, in its Portuguese acronym). The municipal codes are found here: http://goo.gl/5g9rR6.

Municipal code (TSE)

Variable name(s): cod_tse

Definition

The identification code for each municipality used by the Supreme Electoral Tribunal (TSE, in its Portuguese acronym).

Methods for empirical operationalization

Since this code has no similarity to the one under the responsibility of the IBGE, a conversion table had to be employed for guaranteeing comparability (by assigning the IBGE code for each name in TSE database). This demanded another investigation of name changes of municipalities in order to make both classifications compatible.

Source

The source of data for this indicator is the vote data from the TSE, available at: http://goo.gl/7YTKY6.

Name of the municipality

Variable name(s): nm_ibge

Definition

The official name of the municipality according to the IBGE.

Source

The municipal code is the responsibility of the National Commission for Classification (CONCLA, in its Portuguese acronym). The municipal codes are found here: http://goo.gl/5g9rR6.

Name of the municipality without accents

Variable name(s): nm_ibge_noac

Definition

The official name of the municipality according to the IBGE without accents and diacritics.

Source

The municipal official names are responsibility of the National Commission for Classification (CONCLA, in its Portuguese acronym). They can be found here: http://goo.gl/5g9rR6.

State

Variable name(s): uf

Definition

The official acronym of the state to which each municipality belongs.

Source

The source of data for this indicator is the vote data from the TSE, available at: http://goo.gl/7YTKY6.

Descriptive statistics

The data below displays the number of cases (municipalities) by electoral year. It is possible to observe that there are many missing cases for local elections in 2000 and, in lower degree, 2004. Data for 1994 and 1996 were replaced by other sources (mainly old data archives from TSE not available online). This data problem is recognized by the same TSE, as can be seen on the official webpage: http://goo.gl/7YTKY6.

Table 5: Number of cases (municipalities) by electoral year

	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018
AC	22	22	3	22	22	21	22	22	22	22	22	22
AL	100	98	102	101	100	100	101	106	102	101	102	102
AM	61	55	59	62	61	61	60	60	62	62	60	60
AP	16	16	1	16	2	14	18	22	18	15	16	16
BA	413	405	416	408	416	404	428	459	428	417	415	416
CE	184	178	184	184	182	182	184	184	183	183	184	181
DF	0	0	0	0	0	0	0	0	0	0	0	0
ES	77	77	77	78	77	75	79	80	79	78	78	78
GO	240	238	244	231	244	244	244	248	247	237	245	245
MA	119	116	1	214	200	211	215	214	216	216	217	217
MG	846	844	850	851	843	838	852	854	853	848	852	851
MS	77	76	77	77	78	78	78	78	79	79	78	79
MT	126	118	117	139	82	141	138	138	140	139	139	140
PA	122	121	93	143	141	142	143	142	143	144	144	144
PB	223	214	223	223	222	221	223	222	222	223	222	222
PE	184	183	184	184	184	183	184	184	184	184	184	184
PI	221	212	222	220	222	219	224	223	225	222	224	220
PR	397	396	398	396	391	388	396	397	400	396	396	397
RJ	91	59	92	92	92	92	91	91	92	92	92	92
RN	160	157	166	165	164	165	167	166	167	166	166	167
RO	52	50	52	52	51	51	51	51	52	51	52	52
RR	7	15	8	15	1	15	15	15	15	15	15	15
RS	465	465	496	497	495	494	495	495	497	497	495	496
SC	293	293	293	293	293	293	292	292	294	294	295	295
SE	75	73	2	75	71	71	79	93	78	74	74	75
SP	643	642	644	645	636	638	643	644	645	645	643	644
TO	138	132	138	137	139	137	139	139	138	138	139	136

Source: http://goo.gl/7YTKY6.

Municipal ideological score

Variable name(s): ideo_na; ideo_imp; ideo_na_lag; ideo_imp_lag

Definition

This variable corresponds to the ideological score of Brazilian municipalities. Positive values correspond to an ideological orientation towards the right, while negative ones represent the predominance of left parties. Zero represents the ideological center. The farther from zero, the more ideologically signed (either to the right, if values are positive, or to the left, if they are signed negatively). The index varies from approximately -1 to approximately 1, with the values corresponding to: -1, extreme left; 0, center; and 1, extreme right. This definition includes the lagged version of the indicator, representing the value

for the variable at the previous election.

Methods for empirical operationalization

This measure is calculated using the aggregate of the ideological contributions of all parties that received votes in either local or national legislative elections in the period between 1994 and 2014. The ideological contribution of each party in each electoral year is the sum of the proportion of votes of each party multiplied by its ideological score for that year. The higher the proportion of votes won by a party, the higher its influence in shaping the final MIS. If it is a rightwing party, it will bring the municipal score to higher positive values. If it is at the center, the average will be close to zero. If it is a leftwing, the score will be a high and negative value. It is important to notice that negative and positive party scores are designed to cancel each other out, so, if there is a strong polarization between two parties (or groups of parties) from the left and the right, the score would tend towards zero (the center). As an aggregate measure, a zero in this indicator can represent substantially dissimilar scenarios, such as 01.the dispute among many center-oriented parties; 02. soft right and soft left; or 03. extremist parties from right and left that cancel each other out in the final score. In the third scenario, there could be a centrist MIS (zero) without a political center.

Since the party ideological scores are obtained through the results of the Brazilian Legislative Survey, the election was to employ always the closest BLS wave in time from the reference election. For 1994, the ideological scores were extracted from the 1993 BLS wave, for 1996 and 1998, the 1997 wave was employed; for 2000 and 2002, it was the 2001 wave; and so on. This procedure avoided large distances in time between the ideological positions of the legislators (due to party migration and other changes in time) and the moment of the election. See Table 02 above for a complete description of the sample.

This indicator has two variants. The first (ideo_na) was computed using only those parties with representation in the national congress. This choice led to the exclusion of small parties with some weight in local voting patterns, but not enough to be represented in the national congress. To assess the relevance of these parties, the second indicator performed the same calculation but considering an imputed score of the ideological position for those microparties (more information on section 02). The two variables are highly correlated (r=0.942), which confers robustness to the analysis and avoids distortions in the ideological score for some municipalities due to the lack of ideological classification of a party that is important at the local level.

Formula

$$\sum_{i=1}^{n} v_i * s_i$$

Where:

v_i - represents the proportion of votes for (local or national) legislative elections in a given year.

s_i - represents the ideological score for a given party in the closest year when the Brazilian Legislative Survey (BLS) was conducted. More details on how each score for each party was computed, see Power and Zucco (2012).

Sources

The sources of data for this indicator are the vote data from the TSE, available at http://goo.gl/7YTKY6, and the standardized results for the ideological scores extracted from the Brazilian Legislative Survey (POWER AND ZUCCO, 2012; ZUCCO, 2009).

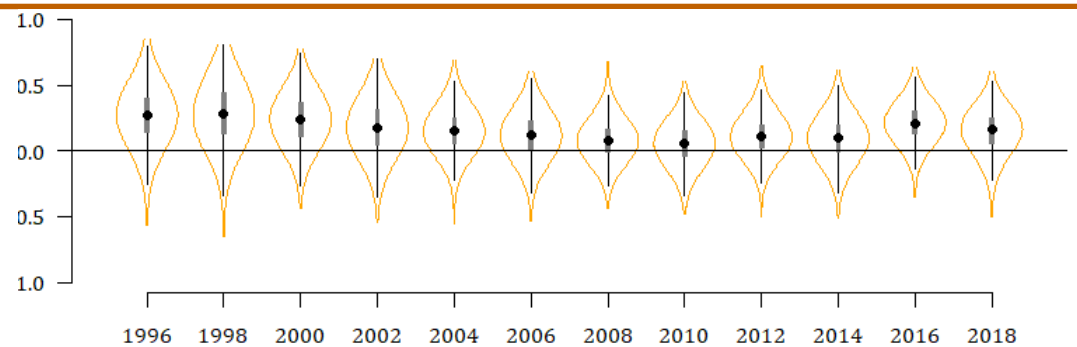
Descriptive statistics

Table 6: Municipal ideological score

Municipal Ideological Score (not imputed)								
N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	-0.652	0.848	1.5	0.152	0.159	0.178	1.118
Municipal Ideological Score (with imputed values)								
N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	-0.652	0.848	1.5	0.186	0.189	0.179	0.947

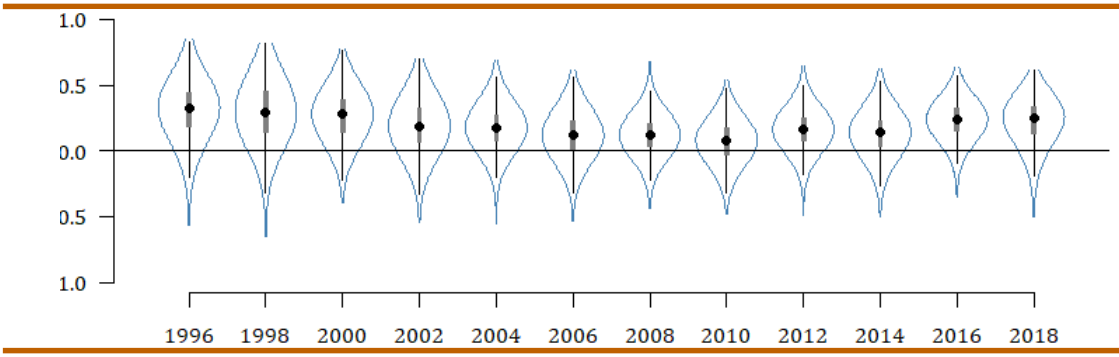
Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 4: Violin plot. Distribution of the municipal ideological score (not imputed)



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 5: Violin plot. Distribution of the municipal ideological score (with imputed values)



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Ideological proximity Mayor/President

Variable name(s): closeness

Definition

This indicates the ideological congruence between the party of the mayor and the president.

Methods for empirical operationalization

This is calculated as one minus the absolute distance between the ideological score for the party of the incumbent mayor and the ideological score (individual) of the incumbent president. The ideological scale is represented here as 0 for the left and 1 for the right, so the maximum absolute ideological difference would be 1. Higher values indicate greater ideological congruence.

Formula

$$1 - M_i - P_k$$

Where:

I_i - is the ideological position of the incumbent mayor.

P_k - is the ideological position of the incumbent president at the national level.

Source

Compiled by authors using BLS and TSE data.

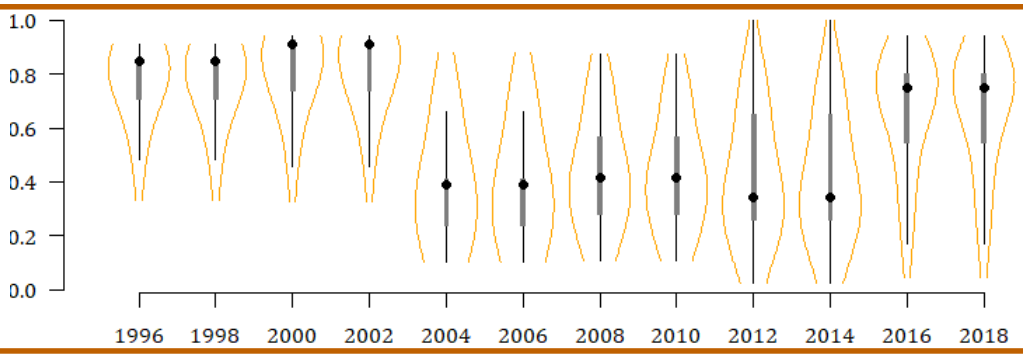
Descriptive statistics

Table 7: Descriptive statistics for the ideological proximity

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	0.026	1	0.974	0.663	0.575	0.265	0.461

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 6: Violin plot. Mayor/President ideological closeness



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Presidential ideology

Variable name(s): ideo_pres

Definition

Left-right placement of the president as measured in Waves 07 (2013) and 08 (2017) of the Brazilian Legislative Survey, which asked respondents retrospectively to assign a value for each president from Sarney to Dilma. The scores for Itamar, Fernando Henrique Cardoso, Lula, and Dilma are the average across both waves, while Temer was included only in Wave 08.

Methods for empirical operationalization

See BLS documentation for more information.

Source

BLS.

Presidential approval

Variable name(s): supp_pres

Definition

Average presidential approval in the moment of the election.

Methods for empirical operationalization

Average monthly approval score using Brazilian polls for July-Aug-Sept of the election year (from ZUCCO and CAMPELLO (2015) dataset plus our own 2016 and 2018 values for Temer popularity).

Source

CAMPELLO, Daniela and ZUCCO JR., Cesar (2015), Presidential Success and the World Economy.

Descriptive statistics

Table 8: Descriptive statistics for the presidential approval

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	0.12	0.87	0.75	0.61	0.57	0.197	0.345

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Political alignment with the President

Variable name(s): coal_pres

Definition

This variable indicates if a mayor belongs to a party that is a member of the support coalition of the President in the national Chamber of Deputies.

Methods for empirical operationalization

Corresponds to 1 when the mayor's party belongs to the support coalition of the President and 0 when it does not.

Source

The source of data for this indicator is the vote and voter data from the TSE, available at <http://goo.gl/7YTKY6>.

Descriptive statistics

Table 9: Descriptive statistics for the presidential approval

Var1	Freq
0	16102
1	49448

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Municipal Human Development Index

Variable name(s): IDHM

Definition

The UNDP index of human development measured at the municipal level.

Methods for empirical operationalization

Since the data is only available for census years, the values for electoral years between two decennial censuses had to be estimated (1994 to 2010) or projected (2012 to 2018). For years between two censuses, the estimated value corresponds to the subtraction of the value for the census value in t+1 and census value in t0. The result would be divided by the total number of years between the two censuses. The resulting year average would be multiplied by the number of years corresponding to each electoral years. For instance, 1991=100, 2000=190, then (190-100)/9=10; for 1994, 10x3+100=130; for 1996, 10x5+100=150; and for 1998, 10x7+100=170. In the case of 2012 to 2018, the same logic applies but considering the ratio of growth from 2000 and 2010 as constant for the following years. This means that the increase in the variable is linear on time for electoral years that do not correspond to census years.

Sources

The source of this variable is the Human Development Atlas in Brazil (2013), available at <http://www.atlasbrasil.org.br/2013/en/download/>.

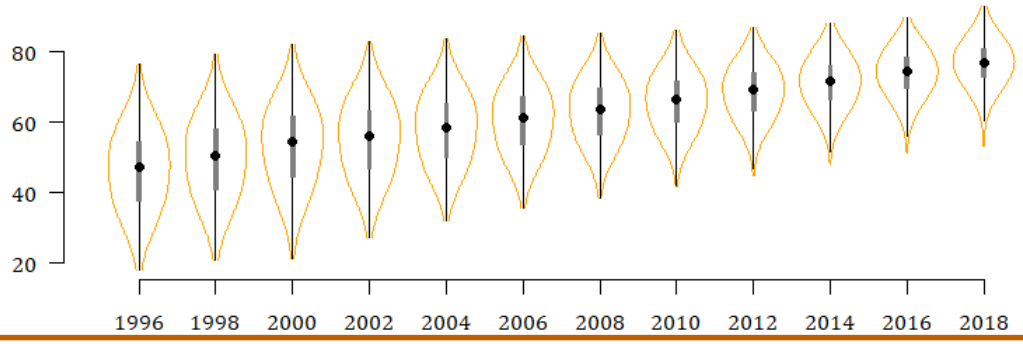
Descriptive statistics

Table 10: Descriptive statistics for the Human Development Index

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,518	32	18.2	92.92	74.72	63.56	62.022	12.456	0.201

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 7: Violin plot. Distribution of the Human Development Index by electoral year.



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Index of electoral fragmentation (f)

Variable name(s): fragf

Definition

This variable constitutes an alternative measurement for party fragmentation. In this sense, it is a derived version of the Herfindahl-Hirschman Index. It represents the proportion of vote not explained by the major players. While the Effective Number of Electoral Parties focuses on how large is the concentration, this indicator reveals the reverse: the importance of the proportion of votes not explained by the HH Index.

Methods for empirical operationalization

This indicator is composed by one minus the sum of the squared proportion of votes of each party for the legislative elections. The higher the value, the more competitive and less concentrated is the vote. It ranges from 0 to 1.

Formula

$$1 - \sum_{i=1}^{n} p_i^2$$

Where the p_i^2 is the squared proportion of vote of each party in the municipality.

Source

The source of data for this indicator is the vote data from the TSE, available at <http://goo.gl/7YTKY6>.

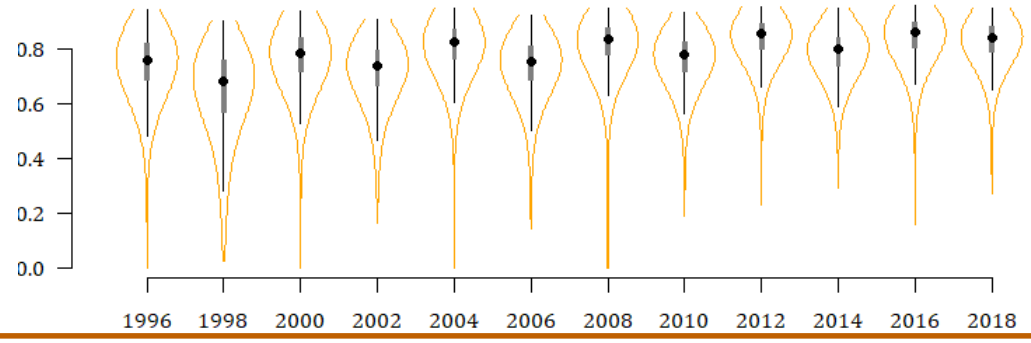
Descriptive statistics

Table 11: Descriptive statistics for the Index of Electoral Fragmentation

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	0	0.958	0.958	0.795	0.773	0.113	0.146

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 8: Violin plot. Distribution of the fragmentation index (f) by electoral year



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Index of electoral competition

Variable name(s): comp

Definition

This is the opposite index from the previous. It measures the level of competition in a given political unit.

Methods for empirical operationalization

It is computed by the difference between the proportions of the vote of the two parties with most votes. It ranges from 0 (absolutely competitive) to 1 (no competitive).

Source

The source of data for this indicator is the vote and electoral data from the Tribunal Superior Electoral, available at <http://goo.gl/7YTKY6>.

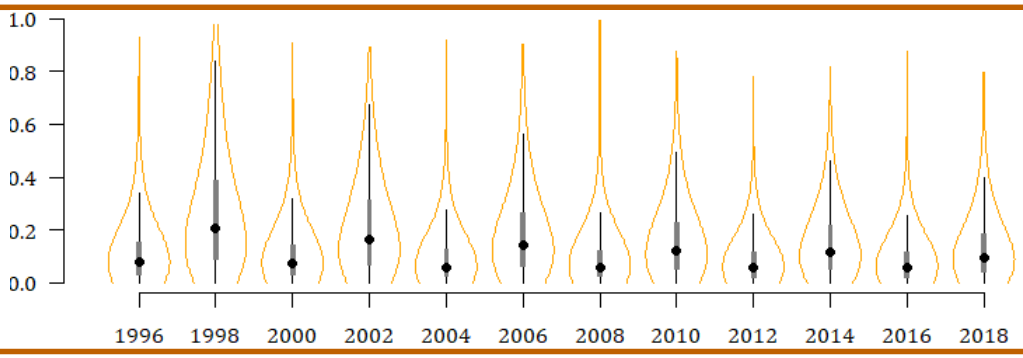
Descriptive statistics

Table 12: Descriptive statistics for the Index of Electoral Fragmentation

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,544	6	0	0.994	0.994	0.091	0.139	0.145	1.05

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 9: Violin plot. Distribution of the Index of Electoral Competition by electoral year



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Electoral participation (voter turnout)

Variable name(s): turnout

Definition

Electoral participation is key to any democracy. It grants legitimacy to the process of selection of political leaders and, most of all constitutes a measure of trust and confidence in democratic institutions. In concrete terms, it corresponds to the proportion of people entitled with the right to vote who actually voted.

Methods for empirical operationalization

Corresponds to the division between the total number of votes (valid + blank and null) and the total number of voters. It ranges from 0 to 1.

Formula

$$(Va_i + Vbn_i)/Vt_i$$

Where:

Va_i - is the number of valid votes obtained by all parties in each municipality.

Vbn_i - is the number of blank and null votes cast for the legislative election in each municipality.
Vt_i - is the number of voters registered in each municipality.

Source

The source of data for this indicator is the vote and voter data from the TSE, available at <http://goo.gl/7YTKY6>.

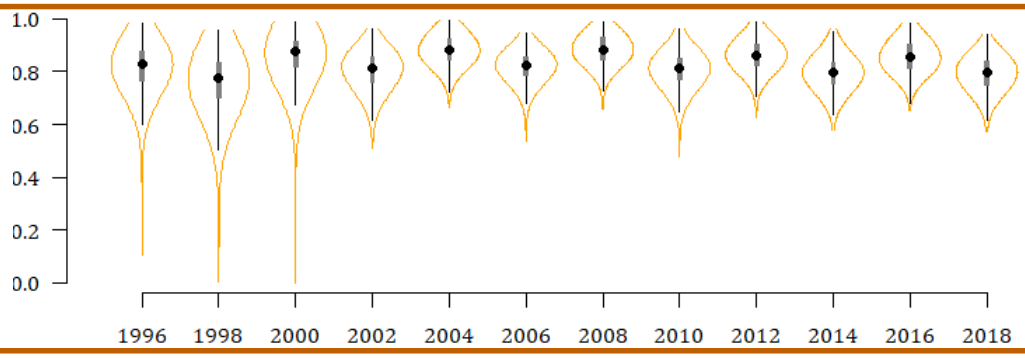
Descriptive statistics

Table 13: Descriptive statistics for the Index of Electoral Fragmentation

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,546	4	0.001	0.994	0.993	0.835	0.829	0.076	0.091

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 10: Violin plot. Distribution of the turnout in a given electoral year



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Dalton's political polarization index

Variable name(s): pol_pi

Definition

This is the Dalton's measure of political polarization for multiparty systems.

Methods for empirical operationalization

It is computed as ten times the squared root of the sum of the products between the proportion of votes of each party and its absolute variation from the mean local ideological position. It ranges from 0 (no polarization) to 10 (extreme polarization).

Formula

$$10 \times \sqrt{\sum_{i=1}^{n} p_i \times \frac{I_i - I}{5}}$$

Where:

I_i - is the ideological position of each party (rescaled to a 1-9 scale).

I - is the mean ideological position of the local political system (rescaled to a 1-9 scale).

p_i - is the proportion of vote of each party.

Source

Own elaboration using BLS and TSE data. See also Russell Dalton (2008).

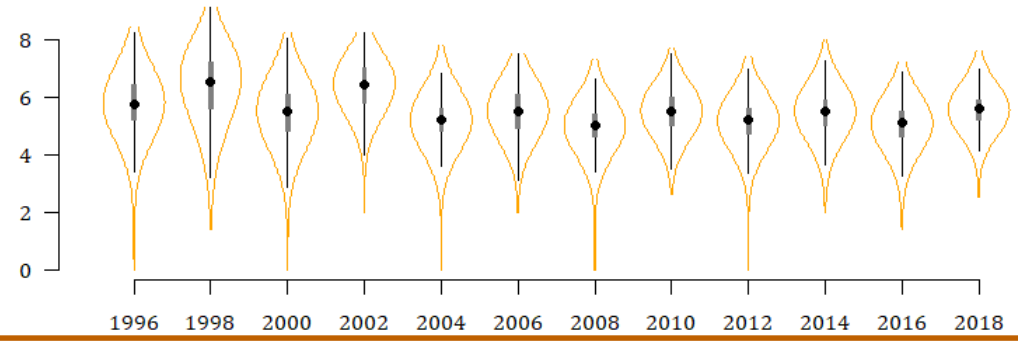
Descriptive statistics

Table 14: Descriptive statistics for the Political Polarization Index

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	0	9.1	9.1	5.5	5.5	0.9	0.2

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 11: Violin plot. Dalton's political polarization by year



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Variation in poverty rate

Variable name(s): var_pob

Definition

Change in the percentage of poverty in the municipality between two electoral years.

Methods for empirical operationalization

It is computed as the percentage of poverty at t0 minus the same proportion in t-1. The values for the intercensal years were interpolated. For more information about the interpolation method, see the empirical operationalization of the variable IDH-M.

Source

The source of this variable is the Human Development Atlas in Brazil (2013), available at <http://www.atlasbrasil.org.br/2013/en/download/>.

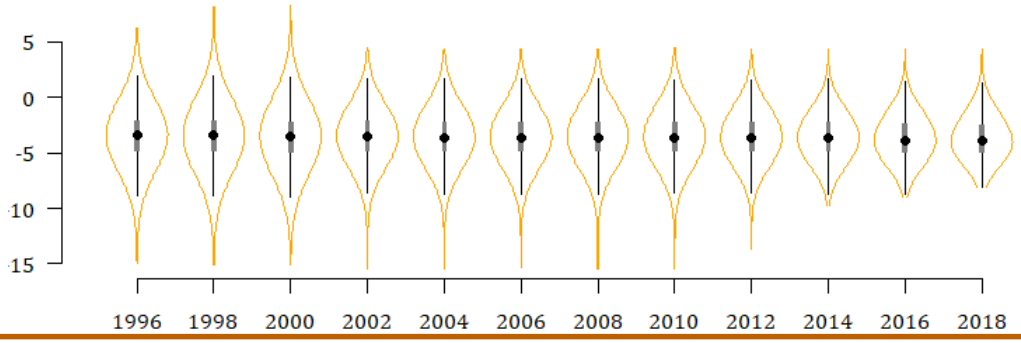
Descriptive statistics

Table 15: Descriptive statistics for the variation in poverty rate

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
59,734	5,816	-15.41	8.3	23.71	-3.6	-3.575	1.869	-0.523

Source: UNDP, Atlas do Desenvolvimento Humano Municipal; TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 12: Violin plot. Variation in poverty rate



Source: UNDP, Atlas do Desenvolvimento Humano Municipal; TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Voters

Variable name(s): qtde_eleitores

Definition

Total number of registered voters in the municipality.

Methods for empirical operationalization

Count of total number of registered voters in the municipality for a given electoral year.

Source

The source of data for this indicator is the vote and voter data from the TSE, available at <http://goo.gl/7YTKY6>.

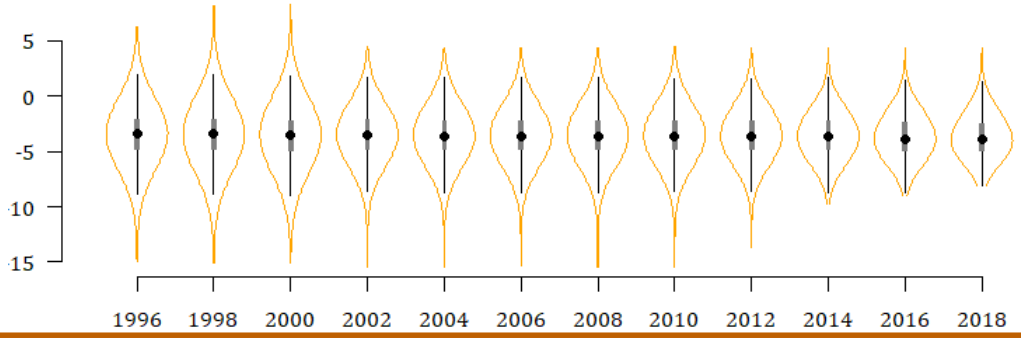
Descriptive statistics

Table 16: Descriptive statistics for the total number of voters

N	NAs	Min	Max	Range	Median	Mean	Std. Dev.	Coef. Var
65,550	0	4703	90527204	90522501	7765	22702.805	14138801	6.228

Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

Figure 13: Violin plot. Number of voters



Source: TSE, Repositório de Dados Eleitorais; Brazilian Legislative Survey.

PT in the Presidency

Variable name(s): pt

Definition

Indicates whether the PT was occupying the presidency or not.

Methods for empirical operationalization

It is a dummy variable with 1 for years when the PT was in office (2004 to 2016).

Source

Own elaboration.

Concurrent elections

Variable name(s): national

Definition

Indicates those election years in which presidents and governors were on the ballot.

Methods for empirical operationalization

A binary variable indicating those election years in which presidents and governors were on the ballot (1994, 1998, 2002, 2006, 2010, 2014, and 2018).

Source

Own elaboration.

Electoral year

Variable name(s): year

Definition

The year in what the election took place.

Source

The source of data for this indicator is the vote data from the TSE, available at <http://goo.gl/7YTKY6>.

Data dictionary

The table below contains the data dictionary for the dataset employed in all analyses and is available in the webpage of BPSR.

Table 0: Data dictionary

Variable	Description
GEOCODIG_M	Municipal code (IBGE)
cod_tse	Municipal code (TSE)
nm_ibge	Name of the municipality (IBGE)
nm_ibge_noac	Name of the municipality (no accents)
uf	State accronym
ideo_na	Municipal Ideological Score (BLS)
ideo_imp	Municipal Idelogical Score (imputed)
ideo_na	Municipal Ideological Score (BLS), lagged
ideo_imp	Municipal Idelogical Score (imputed), lagged
closeness	Closeness Mayor/President
ideo_pres	Ideology of the President
supp_pres	Support for the President
coal_pres	Political Alignment with the President
IDHM	Human Development Index
fragf	Fragmentation F
comp	Electoral Competitiveness
turnout	Turnout
pol_pi	Dalton's Polarization Index
var_pob	Variation in Poverty
qtde_eleitores	Total number of voters
national	Concurrent Election
year	Electoral Year

Source: Authors' own elaboration.

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