

Does the growth of religious minorities transform electoral politics?

Evidence from the evangelical boom in Brazil

Appendix

Victor Araújo*

*Lecturer in Comparative Politics, Department of Politics & IR, University of Reading, UK.
Email: v.araujosilva@reading.ac.uk.

Contents

A	Distribution of evangelical candidates across political parties	3
B	Testing for manipulation around the cutoff	6
C	Testing for the balance of pretreatment municipal-level covariates	8
D	Descriptive statistics	9
E	Measurement validity check: the estimated share of Christian evangelicals using census data	10
F	Fixed effects models using the estimated share of Christian evangelicals	11
G	Fixed effects models testing for heterogeneous effects by time	12
H	Using the Worker's Party (PT) share of votes as an alternative measure of conservatism	13
I	First-stage and reduced form placebo estimates	14
J	The impact of the LPT and the expansion of the Evangelical Christianity	15
K	First-stage and reduced form estimates using the estimated share of Christian evangelicals	16
L	Testing for the rise of other religious groups around the LPT cutoff	17

A Distribution of evangelical candidates across political parties

Table 1 reports the absolute and relative number of evangelical candidates competing for a position at the local council (Câmara dos Vereadores) from 2000 to 2024. The data is disaggregated by political parties. The column *Established* informs the year of creation of any party. As described, evangelical candidates are distributed across various parties and tend to run for office with mainstream, well-established political parties, e.g., MDB, PDT, PP, PTB, and PSD.

Table 1: Distribution of evangelical candidates competing in local council elections across political parties (2000-2024)

Party	Other Candidates	Pastores	Total	Established	Extinguished	Note
AGIR	7030	97	7127	2020	-	former PTdoB
%	0.24	0.5	0.24	-	-	-
AVANTE	29704	344	30048	2017	-	former PTdoB
%	1.01	1.78	1.02	-	-	-
CIDADANIA	21106	154	21260	2019	-	former PPS
%	0.72	0.8	0.72	-	-	-
DC	11278	185	11463	2018	-	former PSDC
%	0.38	0.96	0.39	-	-	-
DEM	98695	601	99296	2007	2021	current União Brasil
%	3.37	3.11	3.36	-	-	-
MDB	81873	496	82369	2017	-	former PMDB
%	2.79	2.57	2.79	-	-	-
Podemos	6232	67	6299	2017	-	former PTN
%	0.21	0.35	0.21	-	-	-
NOVO	7701	68	7769	2011	-	-
%	0.26	0.35	0.26	-	-	-
PAN	4606	33	4639	1996	2006	current PTB
%	0.16	0.17	0.16	-	-	-
PATRIOTA	22994	280	23274	2017	-	former PEN
%	0.78	1.45	0.79	-	-	-
PC do B	51868	178	52046	1985	-	-
%	1.77	0.92	1.76	-	-	-
PCO	697	4	701	1995	-	-
%	0.02	0.02	0.02	-	-	-
PDT	168528	886	169414	1979	-	-
%	5.75	4.59	5.74	-	-	-
PFL	75454	239	75693	1985	2007	current União Brasil
%	2.57	1.24	2.56	-	-	-
PGT	1507	9	1516	1987	2002	current PDT
%	0.05	0.05	0.05	-	-	-
PHS	34207	271	34478	1995	2019	current Solidariedade
%	1.17	1.4	1.17	-	-	-
PL	104277	963	105240	1985	-	former PR
%	3.56	4.99	3.56	-	-	-
PMB	11015	134	11149	2015	-	-
%	0.38	0.69	0.38	-	-	-
PMDB	211884	711	212595	1980	2017	current MDB
%	7.22	3.69	7.2	-	-	-
PMN	37481	309	37790	1984	-	-
%	1.28	1.6	1.28	-	-	-
PODE	41566	476	42042	2017	-	former PTN
%	1.42	2.47	1.42	-	-	-
PP	179619	1040	180659	2003	-	former PDS
%	6.12	5.39	6.12	-	-	-
PPB	33600	71	33671	1995	2003	current PP
%	1.15	0.37	1.14	-	-	-
PPL	5650	46	5696	2011	2020	current PCdoB
%	0.19	0.24	0.19	-	-	-
PPS	91080	437	91517	1992	2019	current Cidadania
%	3.11	2.26	3.1	-	-	-
PR	62833	387	63220	2006	2019	current PL
%	2.14	2.01	2.14	-	-	-
PRB	39293	620	39913	2005	2019	current PL
%	1.34	3.21	1.35	-	-	-
PRD	16127	206	16333	1995	2006	-
%	0.55	1.07	0.55	-	-	-
PRN	1170	3	1173	1989	1993	-
%	0.04	0.02	0.04	-	-	-

Note: Elaborated by the author with data from the Brazilian Electoral Court (TSE).

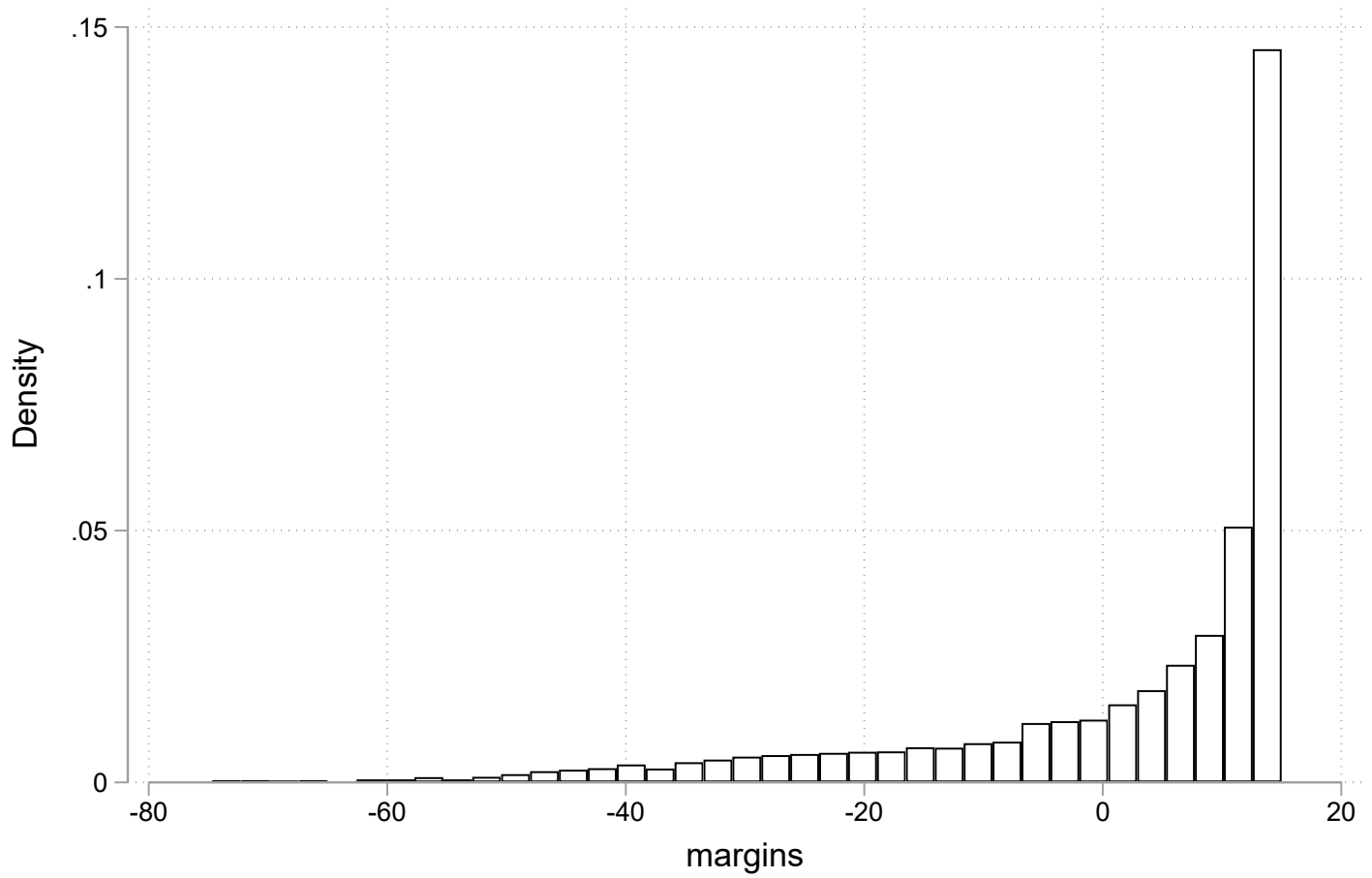
continued Table 12

Party	Other Candidates	Pastores	Total	Established	Extinguished	Note
PRONA	4064	25	4089	1993	2006	current PL
%	0.14	0.13	0.14	-	-	-
PROS	21501	190	21691	2010	-	-
%	0.73	0.98	0.73	-	-	-
PRP	32869	209	33078	1995	2019	-
%	1.12	1.08	1.12	-	-	-
PRTB	35439	312	35751	1994	-	-
%	1.21	1.62	1.21	-	-	-
PSB	152396	854	153250	1985	-	-
%	5.2	4.43	5.19	-	-	-
PSC	77263	1159	78422	1985	-	-
%	2.63	6.01	2.66	-	-	-
PSD	132787	867	133654	2011	-	-
%	4.53	4.49	4.53	-	-	-
PSDB	220665	1149	221814	1988	-	-
%	7.52	5.96	7.51	-	-	-
PSDC	30150	286	30436	1995	2018	current DC
%	1.03	1.48	1.03	-	-	-
PSL	59480	493	59973	1994	2021	current União Brasil
%	2.03	2.56	2.03	-	-	-
PSOL	19397	64	19461	2004	-	-
%	0.66	0.33	0.66	-	-	-
PST	5031	35	5066	1994	-	-
%	0.17	0.18	0.17	-	-	-
PSTU	1653	3	1656	1994	-	-
%	0.06	0.02	0.06	-	-	-
PT	213132	592	213724	1980	-	-
%	7.27	3.07	7.24	-	-	-
PT do B	27768	198	27966	2006	2020	current 2020
%	0.95	1.03	0.95	-	-	-
PTB	146845	965	147810	1981	-	-
%	5.01	5	5.01	-	-	-
PTC	32737	356	33093	1990	-	-
%	1.12	1.85	1.12	-	-	-
PTN	28148	243	28391	1989	2017	current Podemos
%	0.96	1.26	0.96	-	-	-
PV	81507	423	81930	1986	-	-
%	2.78	2.19	2.78	-	-	-
REDE	12234	95	12329	2015	-	-
%	0.42	0.49	0.42	-	-	-
REPUBLICANOS	58253	802	59055	2005	-	former PRB
%	1.99	4.16	2	-	-	-
SD	14151	120	14271	2012	-	-
%	0.48	0.62	0.48	-	-	-
SOLIDARIEDADE	30223	280	30503	2012	-	-
%	1.03	1.45	1.03	-	-	-
União Brasil	33808	253	34061	2021	former DEM/PSL	-
%	1.15	1.31	1.15	-	-	-
UP	165	0	165	2019	-	-
%	0.01	0	0.01	-	-	-
Total	2932844	19294	2952138	-	-	-
-	100	100	100	-	-	-

Note: Elaborated by the author with data from the Brazilian Electoral Court (TSE).

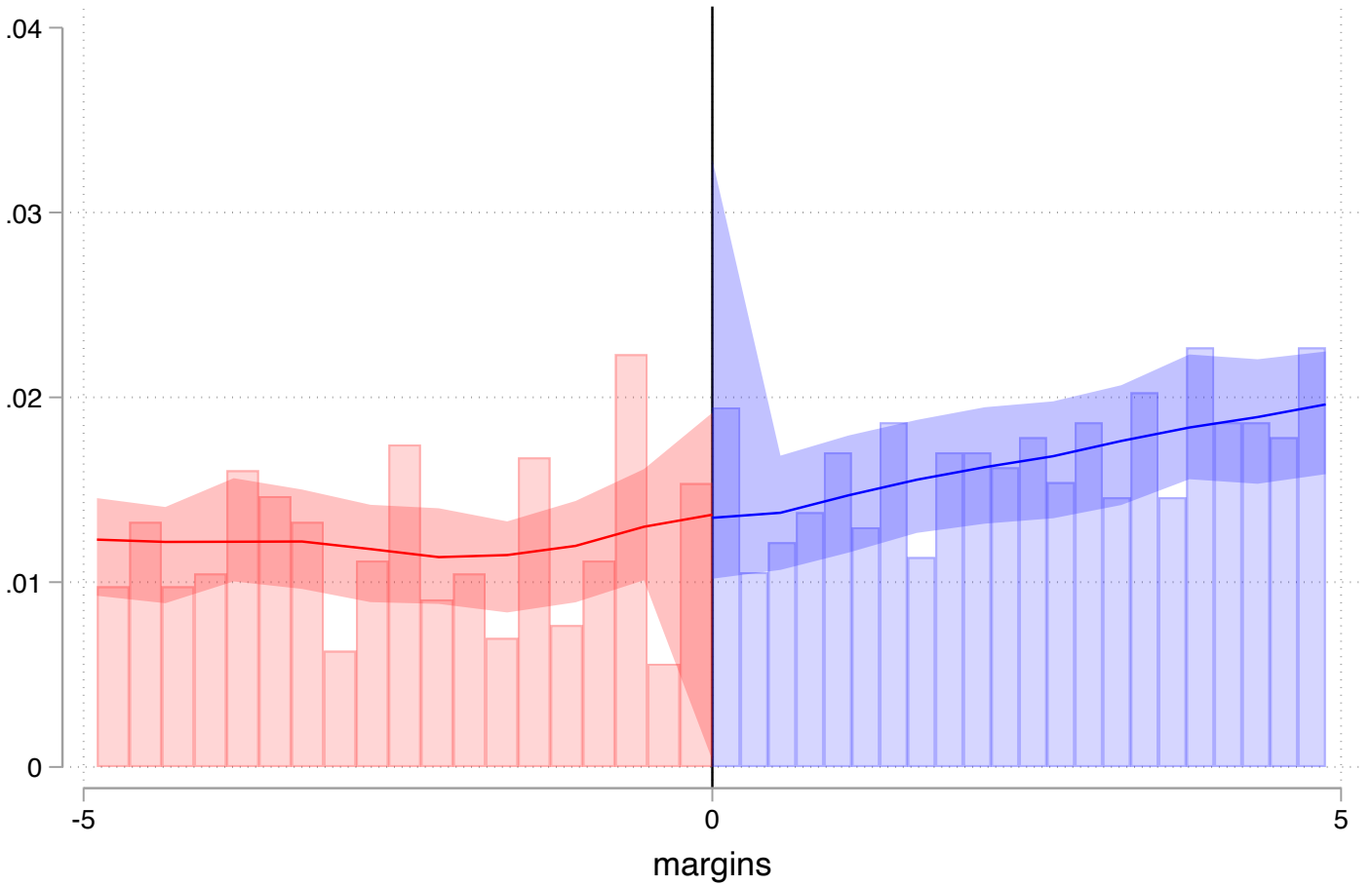
B Testing for manipulation around the cutoff

Figure 1: Histogram of the running variable



Note: Compiled by the author with data from the Brazilian Institute of Geography and Statistics (IBGE). The unit of analysis is the municipality (N = 5,564). The running variable (margins) is the percentage of households with electricity in 2000 according to the Brazilian census.

Figure 2: RD manipulation test plot



Note: Compiled by the author with data from the Brazilian Institute of Geography and Statistics (IBGE). We use the automatic manipulation test based on density discontinuity developed by [Cattaneo et al. \(2018\)](#). The running variable (margins) is the percentage of households with electricity in 2000 according to the Brazilian census.

Table 2: RD Manipulation test using local polynomial density estimation

Cutoff $c = 0$ (85)	Left of c	Right of c
Number of obs	1712	3852
Eff. Number of obs	119	137
Order est. (p)	2	2
Order bias (q)	3	3
BW est. (h)	1.680	1.674
Method	T	$P > T $
Robust	1.4530	0.1462
Number of obs	5564	
BW method	unrestricted	
Model	comb	
Kernel	triangular	
VCE method	jackknife	

Note: Compiled by the author with data from the Brazilian Institute of Geography and Statistics (IBGE, 2000). I use the automatic manipulation test based on density discontinuity developed by [Cattaneo et al. \(2018\)](#). The running variable (margins) is the percentage of households with electricity in 2000 according to the Brazilian census.

C Testing for the balance of pretreatment municipal-level covariates

Table 3: Formal continuity-based analysis for pretreatment covariates (2000)

Variable	Coef. LATE	Std. Err.	Obs.	N. Clusters	BW est (h)
Socioeconomic variables					
Fertility rate	.002	.019	797	25	$80 \geq 85 \leq 90$
Life expectancy	-.209	.142	797	25	$80 \geq 85 \leq 90$
Child mortality rate	.903	.837	797	25	$80 \geq 85 \leq 90$
Human development index (HDI)	-.003	.003	797	25	$80 \geq 85 \leq 90$
Illiteracy rate	.389	.597	797	25	$80 \geq 85 \leq 90$
Income inequality (measured by Gini index)	.002	.002	797	25	$80 \geq 85 \leq 90$
Poverty rate	1.49*	.738	797	25	$80 \geq 85 \leq 90$
Unemployment rate	.072	.286	797	25	$80 \geq 85 \leq 90$
% of occupations in the formal sector	-.0205	.638	797	25	$80 \geq 85 \leq 90$
Economically active workforce	-122.1	191.5	797	25	$80 \geq 85 \leq 90$
Income per capita	-8.64*	4.97	797	25	$80 \geq 85 \leq 90$
Level of urbanization	-.003	.006	797	25	$80 \geq 85 \leq 90$
Population size	-294.7	442.6	797	25	$80 \geq 85 \leq 90$
Political variables					
Voter turnout (Local elections, 2000)	-.270	.412	782	25	$80 \geq 85 \leq 90$
Is the elected mayor a member of the PT (1996)	-.005	.008	797	25	$80 \geq 85 \leq 90$
Is the elected mayor a member of the PT (2000)	.000	.005	797	25	$80 \geq 85 \leq 90$
Number of voted parties (Local council elections, 2000)	.070	.133	782	25	$80 \geq 85 \leq 90$
Number of voted parties (Mayoral elections, 2000)	-.052*	.026	782	25	$80 \geq 85 \leq 90$
Number of voted parties in state parliament elections (2002)	-.013	.156	795	25	$80 \geq 85 \leq 90$
Number of voted parties in federal parliament elections (2002)	.003	.166	795	25	$80 \geq 85 \leq 90$
Number of elected council members (PFL, 2000)	.049	.105	797	25	$80 \geq 85 \leq 90$
Number of elected council members (PMDB, 2000)	.047	.086	797	25	$80 \geq 85 \leq 90$
Number of elected council members (PPB, 2000)	.067	.100	797	25	$80 \geq 85 \leq 90$
Number of elected council members (PTB, 2000)	.039	.079	797	25	$80 \geq 85 \leq 90$
Number of elected council members (PT, 2000)	-.032	.034	797	25	$80 \geq 85 \leq 90$

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Compiled by the author using data from the Brazilian Institute of Geography and Statistics (IBGE, 2000), and Brazil's Electoral Court (Tribunal Superior Eleitoral, TSE). The unit of analysis is the municipality. I estimate the the Local Average Treatment Effect (LATE) using a linear model with clustered standard errors at the level of intervention (i.e., the municipality) (Abadie et al., 2023). My LATE estimates rely on observations of the running variable (% of households with electrification in 2000) around the 85% threshold.

D Descriptive statistics

Table 4: Descriptive statistics - pretreatment municipal-level data

Variable	Obs	Mean	Std.Dev.	Min	Max
Voter turnout (Local elections, 2000)	5,504	86.70	6.64	57.02	99.11
Number of voted parties (Local council elections, 2000)	5,504	8.35	4.31	1	30
Number of voted parties (Mayoral elections, 2000)	5,504	2.695	1.048	1	15
Number of voted parties in state parliament elections (2002)	5,558	24.15	3.787	8	30
Number of voted parties in federal parliament elections (2002)	5,558	23.34	4.043	10	30
Number of elected council members (PFL, 2000)	5,564	1.725	1.610	0	10
Number of elected council members (PMDB, 2000)	5,564	2.022	1.652	0	11
Number of elected council members (PPB, 2000)	5,564	1.248	1.504	0	12
Number of elected council members (PTB, 2000)	5,564	.8927	1.227	0	7
Number of elected council members (PT, 2000)	5,564	.4417	.9417	0	16
Is the elected mayor a member of the PT (1996)	5,564	.0210	.1434	0	1
Is the elected mayor a member of the PT (2000)	5,564	.0334	.1797	0	1
Fertility rate	5,564	2.870	0.736	1.560	7.790
Life expectancy	5,564	68.41	3.963	57.46	77.24
Child mortality rate	5,564	39.28	18.71	12.51	106.3
Human development index (HDI)	5,564	0.523	0.104	0.208	0.820
Illiteracy rate	5,564	23.56	13.51	1	63.01
Income inequality (measured by Gini index)	5,564	0.547	0.0687	0.300	0.870
Poverty rate	5,564	41.06	22.78	0.700	90.76
Unemployment rate	5,564	11.02	6.223	0	59.17
% of occupations in the formal sector	5,564	36.03	18.12	1.920	86.38
Economically active workforce	5,564	13725	91633	280	5.341e+06
Income per capita	5,564	347.2	188.1	74.95	1760
Level of urbanization	5,564	0.585	0.237	0	1
Population size	5,564	30149	183702	795	1.040e+07
% of households with electrification in 2000	5,564	86.60	17.03	10.30	100
Targeted municipalities	5,564	0.308	0.462	0	1

Note: The unit of analysis is the municipality. Compiled by the author with data from the Brazilian Institute of Geography and Statistics (IBGE, 2000 and 2010) Brazil's Electoral Court (Tribunal Superior Eleitoral, TSE).

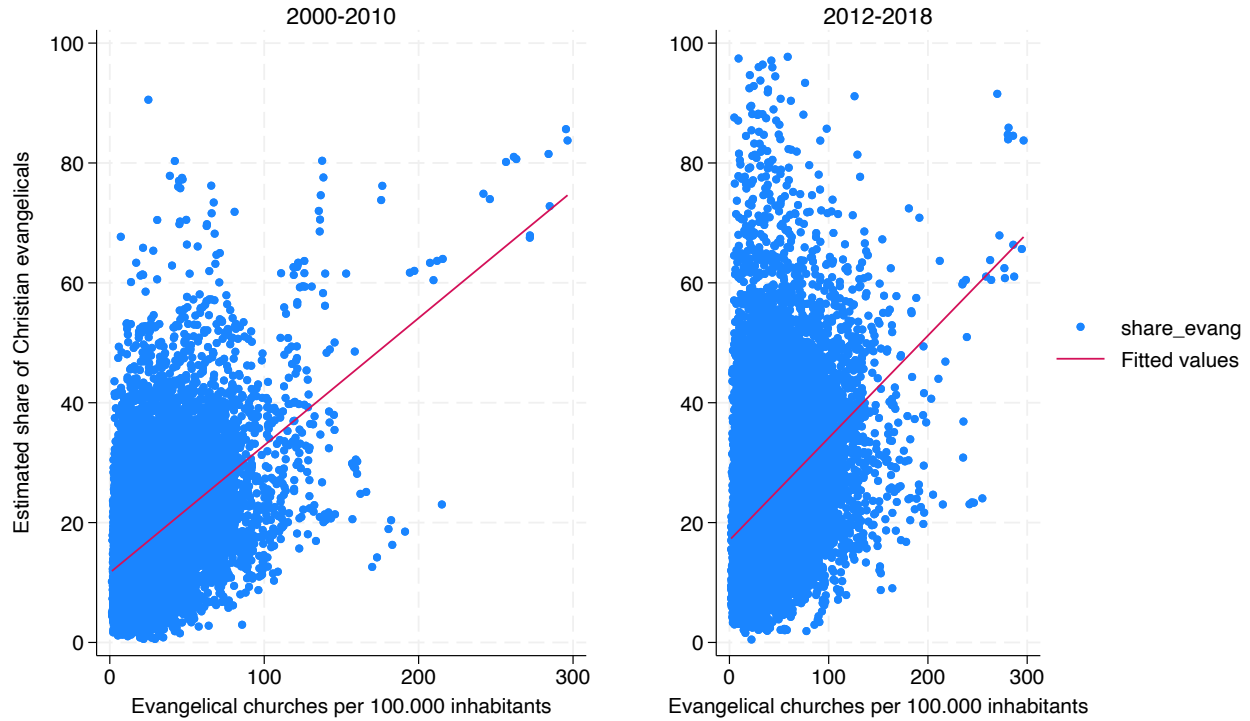
Table 5: Descriptive statistics - municipal-level panel data (1994-2018)

Variable	Obs	Mean	Std.Dev.	Min	Max
Voter turnout	71,006	.825	.079	.001	.994
Electoral competition	71,004	.147	.154	0	.994
Electoral conservatism	71,012	.189	.182	-.653	.848
Electoral polarization	71,012	5.54	.9451	0	9.1
Worker's Party (PT) share of votes	46,813	27.94	15.78	.0237	98.76
Human development index	71,000	.606	.132	.165	.929
Population size	70,398	33076	196647	652	1.22e+07
Number of evangelical churches	62,194	10.26	80.85	0	6912
Number of evangelical churches per 100,000	61,796	24.03	25.28	0	296.4

Note: The unit of analysis is the municipality. Compiled by the author with data from the Brazil's Electoral Court (Tribunal Superior Eleitoral, TSE), [Power and Rodrigues-Silveira \(2019\)](#), and [Araújo \(2023\)](#).

E Measurement validity check: the estimated share of Christian evangelicals using census data

Figure 3: Correlation between the estimated shared of Christian evangelicals and the number of evangelical churches per 100,000 inhabitants (2000-2018)



Note: Compiled by the author. The share of evangelical churches per 100,000 inhabitants was originally calculated by [Araújo \(2023\)](#).

F Fixed effects models using the estimated share of Christian evangelicals

Table 6: Correlation between the share of Christian evangelicals and a set of electoral outcomes (2000-2018)

	Turnout			Competition			Conservatism			Polarization		
	All	National	Local	All	National	Local	All	National	Local	All	National	Local
Churches per 100,000	-.0001 (.0002)	-.0000 (.0002)	.0001 (.0002)	.0003 (.0002)	.0004 (.0001)	.0002* (.0007)	.0039*** (.0009)	.0049*** (.0006)	.0022*** (.0017)	.0014 (.0026)	.0059** (.076)	-.0049** (.086)
Obs.	54,389	27,422	26,967	54,386	27,422	26,964	54,391	27,422	26,969	54,391	27,422	26,969
N. clusters	27	27	27	27	27	27	27	27	27	27	27	27
R ²	0.059	0.015	0.214	0.027	0.060	0.052	0.000	0.000	0.009	0.000	0.009	0.000

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Table 11 reports Ordinary least-squares (OLS) models with unit and election-year fixed effects and the following controls: human development index, log of the population size, and log of the electorate size. The main explanatory variable is the estimated share of Christian evangelicals. Standard errors are clustered at the state level.

G Fixed effects models testing for heterogeneous effects by time

Table 7: Heterogeneous effects by time: Correlation between the share of Christian evangelicals and a set of electoral outcomes (1994-2018)

	Turnout			Competition			Conservatism			Polarization		
	94-00	02-10	12-18	94-00	02-10	12-18	94-00	02-10	12-18	94-00	02-10	12-18
Churches per 100,000	.0001 (.0001)	-.0002** (.0001)	-.0005*** (.0000)	.0001 (.0003)	.0003 (.0002)	-.0001 (.0001)	-.0003 (.0003)	.0004 (.0003)	.0010*** (.0003)	.0022 (.0020)	.0001 (.0022)	-.0010 (.0011)
Obs.	18,140	24,207	19,432	18,140	24,206	19,432	18,143	24,209	19,432	18,143	24,209	19,432
N. clusters	26	26	26	26	26	26	26	26	26	26	26	26
R ²	0.096	0.061	0.047	0.064	0.021	0.002	0.046	0.001	0.009	0.005	0.010	0.002

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Table 11 reports Ordinary least-squares (OLS) models with unit and election-year fixed effects and the following controls: human development index, log of the population size, and log of the electorate size. The main explanatory variable is the number of evangelical churches per 100,000 inhabitants (Churches per 100,000). Standard errors are clustered at the state level.

H Using the Worker's Party (PT) share of votes as an alternative measure of conservatism

Models 13–15 in Table 8 show the correlation between the number of evangelical churches per 100,000 inhabitants and the PT's share of votes in national (i.e., presidential) and local elections. The PT's share of votes tends to decrease as the number of evangelical churches increases. These findings align with the results reported in Models 7–9, which demonstrate that the number of evangelical churches per 100,000 has a positive impact on the conservatism index.

Table 8: Correlation between the number of evangelical churches per 100,000 inhabitants and a set of electoral outcomes (1994–2018)

	Turnout			Competition			Conservatism			Polarization			PT's vote share		
	All	National	Local	All	National	Local	All	National	Local	All	National	Local	All	National	Local
	-.0007*** (.0001)	-.0005*** (.001)	-.0006*** (.0001)	.0003*** (.0002)	.0001 (.0000)	.0001 (.0000)	.0018*** (.0003)	.0021*** (.0003)	.0015*** (.0003)	.0000 (.0010)	-.0010 (.0014)	-.0015 (.0011)	-.252*** (.017)	-.287*** (.019)	-.1156** (.034)
Obs.	61,779	33,560	28,219	61,778	33,560	28,218	61,784	33,560	28,224	61,784	33,560	28,224	41,362	33,543	7,819
N. clusters	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
R ²	0.0569	0.020	0.203	0.058	0.086	0.005	0.001	0.001	0.026	0.012	0.032	0.003	0.102	0.123	0.089

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Table 11 reports Ordinary least-squares (OLS) models with district and election-year fixed effects and the following controls: human development index, log of the population size, and log of the electorate size. The main explanatory variable is the number of evangelical churches per 100,000 inhabitants (Churches per 100,000). Standard errors are clustered at the state level. The independent variables are voter turnout (turnout), electoral competition (competition), electoral conservatism (conservatism), electoral polarisation (polarization), and the share of votes for the Worker's Party (PT's vote share).

Models 13–15 in Table 9 estimate the impact of evangelical churches on the PT's share of votes in areas targeted by the LPT. The estimated reduced-form coefficients are negative across all models, although they are not statistically significant at conventional levels.

Table 9: The impact of evangelical churches on electoral politics (2004–2018)

	Turnout			Competition			Conservatism			Polarization			PT's vote share		
	All	National	Local	All	National	Local	All	National	Local	All	National	Local	All	National	Local
(A) First-stage	-2.49*** (.949)	-2.73** (1.41)	-2.93** (1.22)	-2.47** (.955)	-2.73** (1.41)	-2.91*** (1.23)	-2.50*** (.944)	-2.69* (1.42)	-2.70** (1.26)	-2.41*** (.969)	-2.75** (1.40)	-2.92** (1.21)	-2.78** (1.20)	-2.41* (1.43)	-1.75 (1.77)
(B) Reduced form LATE	-.007** (.003)	-.004 (.002)	-.007** (.003)	.002 (.003)	-.003 (.004)	.007 (.003)	-.010* (.005)	-.015 (.010)	-.003 (.005)	.004 (.022)	.002 (.024)	.0341 (.025)	.780 (.543)	.881 (.666)	.723 (1.24)
Eff. N. (Left of c)	1583	892	895	1560	892	883	1592	884	884	1489	900	892	1096	872	555
Eff. N. (Right of c)	2136	1210	1241	2127	1210	1204	2160	1202	1122	2048	1222	1233	1440	1168	892
Order loc. poly. (p)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
BW loc. poly. (h)	3.63	4.01	4.11	3.59	4.01	4.01	3.66	3.97	3.79	3.41	4.05	4.09	3.88	3.90	892

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Figure 13 reports FRD local linear estimates using an optimal bandwidth selection [Calonico et al. \(2020\)](#). I use the percentage of households with electricity in 2000 (i.e., the running variable) to predict the number of evangelical churches per 100,000 inhabitants in targeted municipalities (panel A). This as-if random treatment assignment estimates the LATE in reduced form estimates (panel B). My outcome variables in reduced form estimates are voter turnout (turnout), electoral competition (competition), electoral conservatism (conservatism), electoral polarisation (polarization), and the share of votes for the Worker's Party (PT's vote share).

I First-stage and reduced form placebo estimates

Table 10: The impact of evangelical churches on electoral politics - Placebo estimates using pre-intervention (LPT) data (1994-2003)

	Turnout			Competition			Conservatism			Polarization		
	All	National	Local	All	National	Local	All	National	Local	All	National	Local
(A) First-stage	- .826 (.669)	-.822 (1.03)	-.580 (1.25)	-.781 (.649)	-.952 (1.10)	-.408 (1.18)	-.860 (.685)	-.924 (1.07)	-.411 (1.19)	-.753 (.644)	-.871 (1.05)	-.477 (1.22)
(B) Reduced form LATE	-.019 (.018)	-.014 (.022)	-.032 (.073)	.004 (.019)	-.019 (.029)	.076 (.224)	.004 (.016)	.006 (.021)	.028 (.099)	.301 (.277)	.349 (.444)	.144 (.410)
Eff. N. (Left of c)	1242	876	483	1332	771	573	1189	808	550	1347	844	517
Eff. N. (Right of c)	1722	1190	681	1821	1063	798	1646	1108	768	1847	1164	725
Order loc. poly. (p)	1	1	1	1	1	1	1	1	1	1	1	1
BW loc. poly. (h)	4.85	5.39	4.98	5.13	4.84	5.66	4.64	5.03	5.55	5.20	5.24	5.28

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Figure 13 presents FRD local linear estimates using the optimal bandwidth selection method proposed by [Calonico et al. \(2020\)](#). I use the percentage of households with electricity in 2000 (i.e., the running variable) to predict the number of evangelical churches per 100,000 inhabitants in targeted municipalities (Panel A). This as-if random treatment assignment estimates the LATE in reduced-form estimates (Panel B). My outcome variables in the reduced-form estimates are voter turnout (turnout), electoral competition (competition), electoral conservatism (conservatism), and electoral polarization (polarization).

J The impact of the LPT and the expansion of the Evangelical Christianity

Table 11: The impact of the LPT on the estimated share of Christian evangelicals

Estimand	FE 1	ITT 2	3	4	SRD			
					5	6	7	8
Estimate	.0780*** (.032)	1.914** (.313)	11.67*** (2.38)	2.643*** (.821)	.646 (.4486)	.0382 (.1198)	.100 (.071)	.131** (.039)
Obs.	18,316	38,375	1,021	2,013	3,118	7,911	12,121	30,510
R ²	0.170	0.185	-	-	-	-	-	-
BW loc. (h)	-	-	1%	2%	3%	7%	10%	15%

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. The fixed effects (FE) model (1) employs unit and year-election fixed effects to regress the number of the LPT connections per capita against the estimated share of Christian evangelicals while controlling for human development, population size, and the electorate size. The Intention to treat (ITT) model (2) estimate the average difference in the between the share of Christian evangelicals in municipalities below the 85% cutoff (therefore, potentially targeted by the program) with those above this same threshold regardless of whether they actually participated in the program. Sharp regression discontinuity (SRD) models (3-8) estimate the local average treatment effect (LATE) by comparing municipalities just below (treated units) with those just above (non-treated units) the 85% LPT threshold. Table show my results using several bandwidths (1%, 2%, 3%, 7%, 10%, and 15%) selection, i.e., the window used to estimate the LATE. I use Ordinary Least Squares (OLS) models across all specifications reported in this table.

K First-stage and reduced form estimates using the estimated share of Christian evangelicals

Table 12: The impact of evangelical churches on electoral politics (2004-2018)

	Turnout			Competition			Conservatism			Polarization		
	All	National	Local	All	National	Local	All	National	Local	All	National	Local
(A) First-stage	-1.08** (.513)	-1.03 (.868)	-1.22** (.544)	-1.10** (.506)	-1.30* (.692)	-1.07 (.665)	-1.59*** (.385)	-1.09 (.786)	-1.16** (.574)	-1.02* (.556)	-.999 (.880)	-1.23** (.555)
(B) Reduced form	-.014** (.007)	-.012 (.010)	-.007** (.003)	.005 (.007)	.000 (.007)	.011 (.010)	-.006 (.004)	-.033 (.027)	.005 (.008)	.007 (.048)	-.021 (.068)	.030 (.043)
Eff. N. (Left of c)	2262	1088	1686	2318	1615	1126	3803	1259	1436	1992	1060	1560
Eff. N. (Right of c)	2998	1423	2370	3126	2276	1499	5814	1719	2001	2560	1384	2196
Order loc. poly. (p)	1	1	1	1	1	1	1	1	1	1	1	1
BW loc. poly. (h)	4.29	4.05	6.30	4.41	6.03	4.28	7.38	4.81	5.47	3.76	3.96	5.82

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Table 12 reports FRD local quadratic estimates using an optimal bandwidth selection [Calonico et al. \(2020\)](#). I use the percentage of households with electricity in 2000 (i.e., the running variable) to predict the estimated share of Christian evangelicals in targeted municipalities (panel A). This as-if random treatment assignment is used to estimate the LATE in reduced form estimates (panel B). My outcome variables in reduced form estimates are voter turnout (turnout), electoral competition (competition), electoral conservatism (conservatism), and electoral polarisation (polarization).

L Testing for the rise of other religious groups around the LPT cutoff

Table 13: The impact of LPT on the number of non-evangelical religious facilities (A) and the impact of non-evangelical religious facilities on electoral outcomes (B)

	Turnout			Competition			Conservatism			Polarization		
	All	National	Local	All	National	Local	All	National	Local	All	National	Local
(A) First-stage	1.074** (.548)	.633 (.795)	.616 (.725)	1.03* (.546)	.293 (.767)	.932 (.761)	1.40** (.591)	-.184 (.715)	.465 (.697)	1.29** (.565)	.579 (.791)	1.20 (.785)
(B) Reduced form LATE	.0175* (.009)	.024 (.030)	.031 (.036)	-.011 (.009)	-.023 (.070)	-.016 (.015)	.0173* (.009)	-.223 (.874)	.017 (.034)	-.004 (.042)	.026 (.123)	-.054 (.067)
Eff. N. (Left of c)	1602	872	916	1617	940	825	1340	1144	1001	1484	880	760
Eff. N. (Right of c)	2129	1186	1266	2152	1312	1118	1825	1614	1414	2017	1210	1047
Order loc. poly. (p)	1	1	1	1	1	1	1	1	1	1	1	1
BW loc. poly. (h)	3.62	3.92	4.16	3.65	4.26	3.77	3.14	5.16	4.54	3.42	3.96	3.52

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The unit of analysis is the municipality. Figure 13 reports FRD local linear estimates using an optimal bandwidth selection [Calonico et al. \(2020\)](#). I use the percentage of households with electricity in 2000 (i.e., the running variable) to predict the number of non-evangelical religious facilities per 100,000 inhabitants in targeted municipalities (panel A). This as-if random treatment assignment is used to estimate the LATE in reduced form estimates (panel B). My outcome variables in reduced form estimates are voter turnout (turnout), electoral competition (competition), electoral conservatism (conservatism), and electoral polarisation (polarization).

References

- Abadie, A., Athey, S., Imbens, G. W., and Wooldridge, J. M. (2023). When should you adjust standard errors for clustering? *The Quarterly Journal of Economics*, 138(1):1–35.
- Araújo, V. (2023). Surgimento, trajetória e expansão das igrejas evangélicas no território brasileiro ao longo do último século (1920-2019). Technical report.
- Calonico, S., Cattaneo, M. D., and Farrell, M. H. (2020). Optimal bandwidth choice for robust bias-corrected inference in regression discontinuity designs. *The Econometrics Journal*, 23(2):192–210.
- Cattaneo, M. D., Jansson, M., and Ma, X. (2018). Manipulation testing based on density discontinuity. *The Stata Journal*, 18(1):234–261.
- Power, T. J. and Rodrigues-Silveira, R. (2019). Mapping ideological preferences in brazilian elections, 1994-2018: a municipal-level study. *Brazilian Political Science Review*, 13:e0001.