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Broadband connection and election in Brazil: what is role of the internet?

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Question?

Did the introduction of internet broadband connection affect election outcomes in Brazil (2008, 2010 and 2012)?

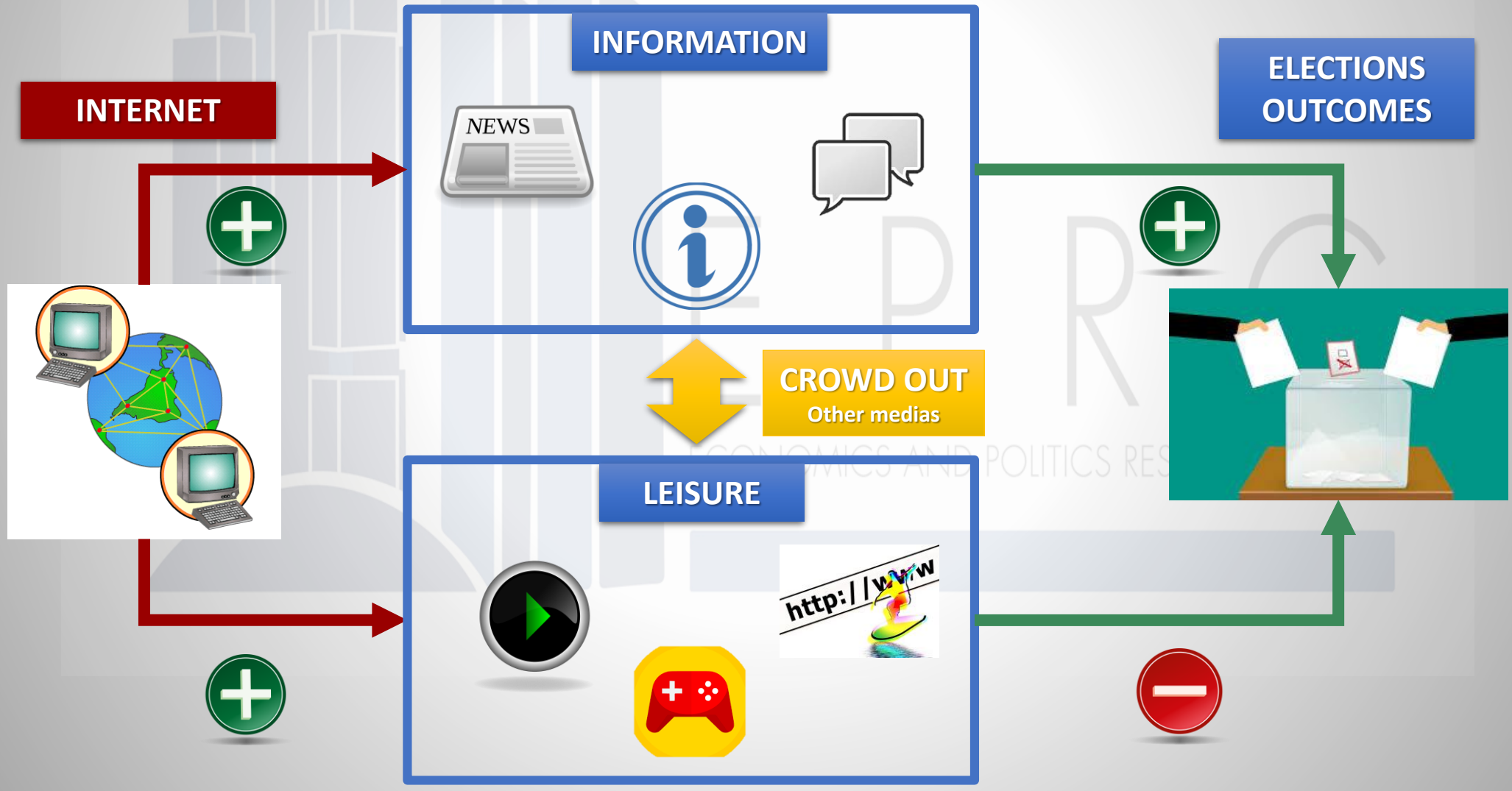
Identification strategy:

RDD applied to Backhaul Program roll out – multiple cutoffs, following Cattaneo et al. (2018)

Answer:

Apparently, it did not (at least for fixed line).

Theoretical Framework



Review

	VOTE SHARE	TURNOUT
 Campante *et al.* (2017)	+	− +
Poy & Schüller (2016)	+	+
 Miner (2015)	+	=
 Falck *et al.* (2014)		− =
Czernich (2012)		+
 Gavazza *et al.* (2015)	+	−
 Jaber (2013)	+	+
Tolbert & McNeal (2003)		+
 Menezes (2015)	+	=

BACKHAUL PROGRAM

Table 1: Backhaul Plan

Population Size	N# municipalities	%	Velocity (Mbps)
Up to 20,000	3,077	90	8
From 20,001 to 40,000	268	8	16
From 40,001 to 60,000	63	2	32
Above 60,001	31	1	64
Total	3,439	100	

[1] Source: Anatel, 2010.

Situation	# Munic	Avg Velocity	Avg Pop.
Covered	3,360	11	14,403
Covered before	2,125		67,151
Uncovered	85		35,372
Total	5,570	11	34,072

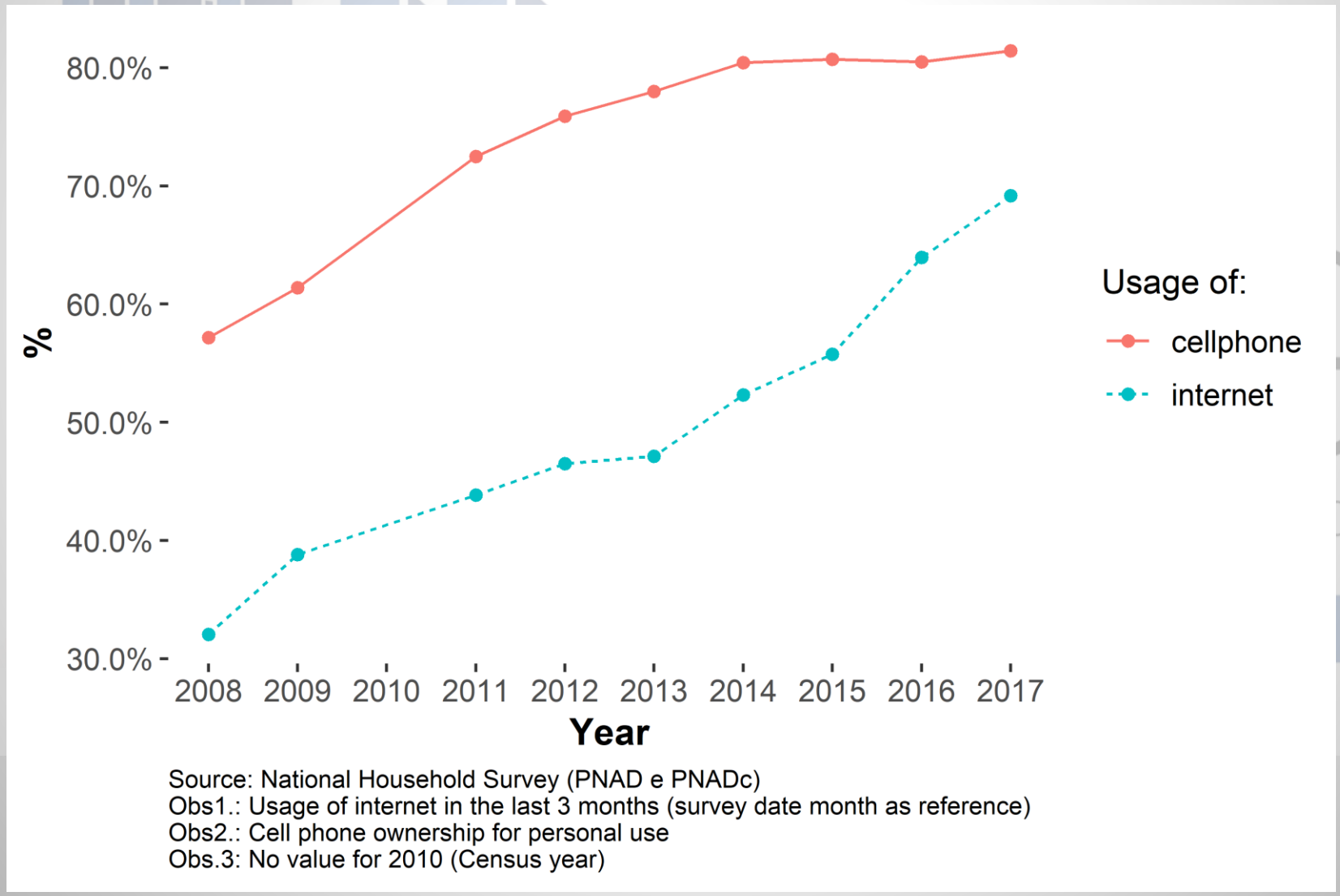
[1] Municipalities by backhaul status

Table 3: Backhaul deployment by year

Backhaul year	# Munic	Avg. Velocity	Avg Pop.
2008	1,384	13	16,911
2009	1,388	10	13,340
2010	495	9	9,026
2011	27	2	12,134
2012	7	14	25,531
2013	41	4	20,238
2014	17		38,490
2015	1		13,293
Total	3,360	11	14,403

[1] Source: Anatel.
[2] Obs.: No velocity information for 2014 and 2015.

Internet and cell phone usage in Brazil, % of 16+ years-old population, 2008-2009 and 2011-2017



Source: National Household Survey (PNAD e PNADc)
Obs1.: Usage of internet in the last 3 months (survey date month as reference)
Obs2.: Cell phone ownership for personal use
Obs.3: No value for 2010 (Census year)

RDD – Internet velocity vs population size

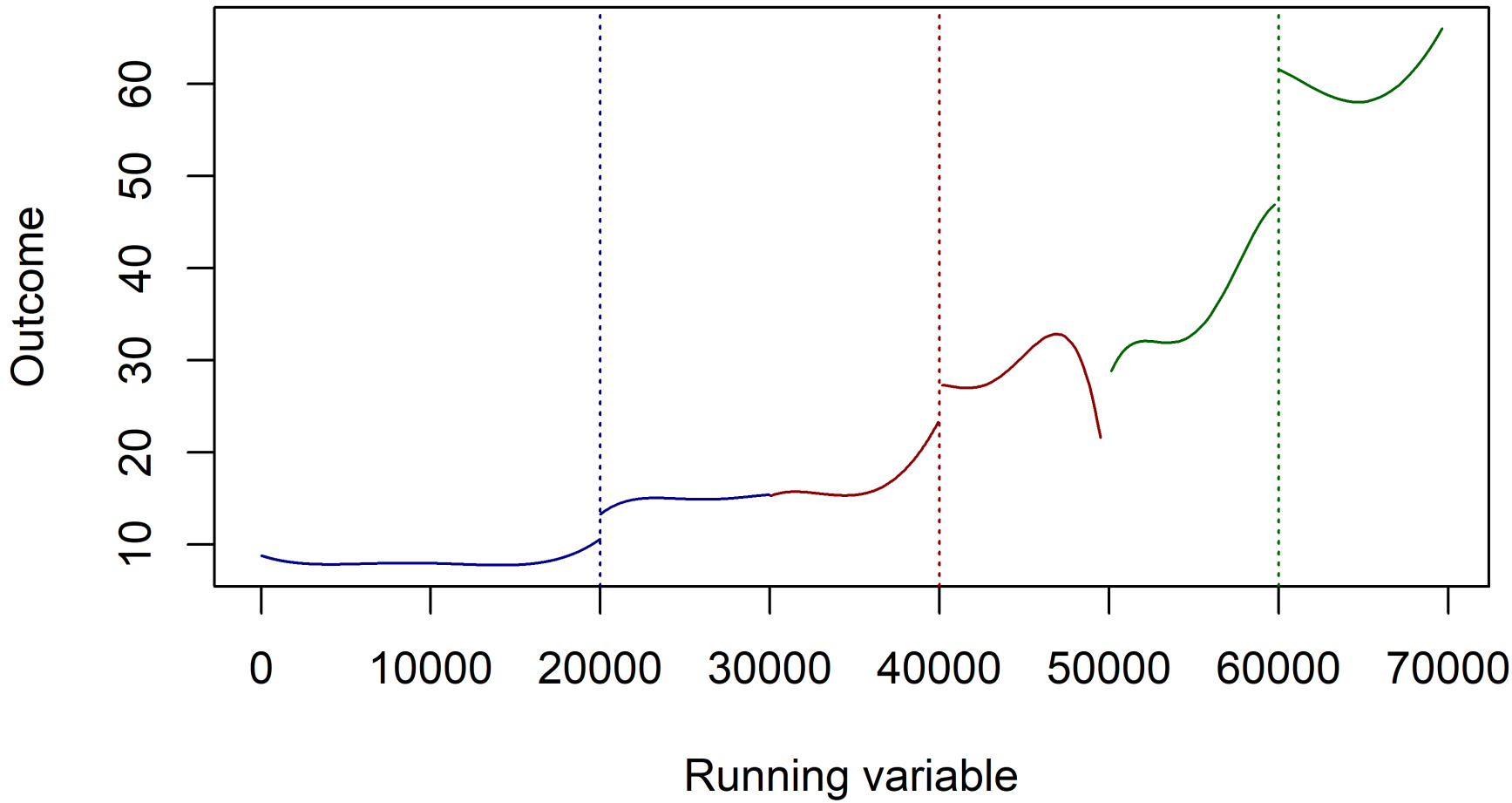


Table 7: Covariates t-test for 20,000, 2008, 2010 and 2012

* BW: 5,000

Variable	t 2008	p value 2008	t 2010	p value 2010	t 2012	p value 2012
Turnout	-1.328	0.185	-2.116	0.035	-0.717	0.474
Population	-14.296	0.000	-18.773	0.000	-35.089	0.000
Median Income	0.565	0.572	-3.665	0.000	-1.727	0.085
Pop. over 60 years	-0.342	0.733	0.260	0.795	0.697	0.486
Rural	2.105	0.036	3.538	0.000	2.387	0.018
Black	-1.196	0.232	1.549	0.122	0.610	0.542
Radio	-0.742	0.459	-1.117	0.265	-0.095	0.924
Television	-1.626	0.105	-2.022	0.044	-1.402	0.162
College	0.727	0.468	-2.257	0.025	-1.448	0.149
Married	0.385	0.700	-0.125	0.901	0.392	0.695
Working Pop.	-1.005	0.315	-3.374	0.001	-1.075	0.283
Rain (elect. day)	0.029	0.977	0.537	0.592	0.626	0.532
Avg. Temperature	0.321	0.748	1.206	0.229	0.472	0.637
PBF	1.199	0.231	3.726	0.000	2.364	0.019
BPC	-2.587	0.010	-2.589	0.010	-1.367	0.173
GDP	-0.273	0.785	-2.323	0.021	-1.840	0.067
Formal Wages	-2.818	0.005	-1.866	0.063	-1.500	0.135
Velocity	-4.637	0.000	-13.315	0.000	-12.914	0.000

[1] Source: IBGE, Inmet, ME and MC

Fujiwara (2016)

TURNOUT

Table 8: RDD regression results for turnout. Election years: 2008, 2010 and 2012. Brazil

Year	Cutoff	Type	Bw	Obs.	Estimates	SE	p.value	Weight
2008	20000	With covariates	3,304	382	0.000	0.001	0.736	0.813
2008	20000	Without covariates	3,304	382	0.001	0.002	0.513	0.813
2008	40000	With covariates	3,204	58	0.006	0.005	0.266	0.138
2008	40000	Without covariates	3,204	58	0.002	0.001	0.001	0.138
2008	60000	With covariates	9,219	66	-0.001	0.001	0.300	0.050
2008	60000	Without covariates	9,219	66	-0.004	0.004	0.332	0.050
2008	Pooled	With covariates	6,228	906	0.001	0.000	0.868	1.000
2008	Pooled	Without covariates	6,027	865	0.001	0.000	0.715	1.000
2010	20000	With covariates	2,896	346	-0.004	0.006	0.447	0.816
2010	20000	Without covariates	2,896	346	0.008	0.007	0.259	0.816
2010	40000	With covariates	3,842	79	0.010	0.028	0.710	0.138
2010	40000	Without covariates	3,842	79	0.000	0.004	0.956	0.138
2010	60000	With covariates	7,547	58	0.009	0.009	0.313	0.046
2010	60000	Without covariates	7,547	58	0.003	0.003	0.216	0.046
2010	Pooled	With covariates	4,053	570	-0.019	0.000	0.897	1.000
2010	Pooled	Without covariates	3,193	457	-0.011	0.000	0.834	1.000
2012	20000	With covariates	2,179	229	0.022	0.007	0.003	0.796
2012	20000	Without covariates	2,179	229	0.257	2.288	0.910	0.796
2012	40000	With covariates	3,699	76	0.003	0.002	0.206	0.159
2012	40000	Without covariates	3,699	76	-0.005	0.008	0.569	0.159
2012	60000	With covariates	7,564	65	-0.006	0.006	0.370	0.045
2012	60000	Without covariates	7,564	65	-0.001	0.001	0.191	0.045
2012	Pooled	With covariates	2,731	385	-0.005	0.000	0.363	1.000
2012	Pooled	Without covariates	2,776	397	-0.006	0.000	0.431	1.000

[1] Standard Errors are clustered by regions
[2] Participation for first round
[3] Bw=bandwidth
[4] LATE estimates.

Blank and Null votes

Table 10: RDD regression results for blank of null votes. Election years: 2008, 2010 and 2012

Year	Cutoff	Type	Bw	Obs.	Estimates	SE	p.value	Weight
2008	20000	With covariates	3,516	209	0.011	0.010	0.313	0.783
2008	20000	Without covariates	3,516	209	-0.014	0.053	0.789	0.783
2008	40000	With covariates	3,183	40	0.014	0.032	0.663	0.164
2008	40000	Without covariates	3,183	40	0.000	0.004	0.977	0.164
2008	60000	With covariates	12,732	56	-0.007	0.010	0.515	0.052
2008	60000	Without covariates	12,732	56	0.002	0.007	0.827	0.052
2008	Pooled	With covariates	5,999	486	-0.001	0.000	0.775	1.000
2008	Pooled	Without covariates	4,954	383	0.000	0.000	0.878	1.000
2010	20000	With covariates	3,389	392	0.004	0.002	0.089	0.799
2010	20000	Without covariates	3,389	392	-0.004	0.002	0.011	0.799
2010	40000	With covariates	3,688	75	-0.001	0.002	0.652	0.151
2010	40000	Without covariates	3,688	75	0.000	0.005	0.962	0.151
2010	60000	With covariates	8,280	65	0.000	0.001	0.810	0.050
2010	60000	Without covariates	8,280	65	0.000	0.001	0.844	0.050
2010	Pooled	With covariates	5,802	853	-0.006	0.000	0.411	1.000
2010	Pooled	Without covariates	4,283	597	0.083	0.000	0.689	1.000
2012	20000	With covariates	2,428	157	-0.801	22.691	0.972	0.774
2012	20000	Without covariates	2,428	157	-0.018	0.024	0.457	0.774
2012	40000	With covariates	2,533	40	0.007	0.006	0.199	0.163
2012	40000	Without covariates	2,533	40	0.010	0.008	0.205	0.163
2012	60000	With covariates	12,289	72	0.213	5.159	0.967	0.063
2012	60000	Without covariates	12,289	72	-0.119	1.433	0.934	0.063
2012	Pooled	With covariates	3,460	298	0.001	8,559.173	0.826	1.000
2012	Pooled	Without covariates	3,544	301	0.001	8,559.173	0.841	1.000

[1] Standard Errors are clustered by regions.
[2] For mayor elections (2008 and 2012) and presidential election (2010).
[3] Bw=bandwidth.
[4] LATE estimates.

Left wing vote share

Table 13: RDD regression for left wing parties vote share. Election years: 2008, 2010 and 2012

Year	Cutoff	Type	Bw	Obs.	Estimates	SE	p.value	Weight
2008	20000	With covariates	3,458	207	-0.036	0.033	0.274	0.787
2008	20000	Without covariates	3,458	207	-0.120	0.323	0.710	0.787
2008	40000	With covariates	3,543	48	0.018	0.081	0.825	0.156
2008	40000	Without covariates	3,543	48	0.003	0.015	0.825	0.156
2008	60000	With covariates	14,881	67	0.013	0.020	0.533	0.057
2008	60000	Without covariates	14,881	67	0.001	0.004	0.758	0.057
2008	Pooled	With covariates	4,789	366	0.012	0.001	0.312	1.000
2008	Pooled	Without covariates	5,607	436	0.012	0.001	0.246	1.000
2010	20000	With covariates	3,074	362	0.009	0.003	0.006	0.814
2010	20000	Without covariates	3,074	362	-0.061	0.016	0.000	0.814
2010	40000	With covariates	3,867	79	-0.017	0.026	0.518	0.138
2010	40000	Without covariates	3,867	79	0.012	0.041	0.777	0.138
2010	60000	With covariates	6,839	52	0.041	0.030	0.168	0.048
2010	60000	Without covariates	6,839	52	-0.010	0.013	0.443	0.048
2010	Pooled	With covariates	4,498	631	0.358	0.000	0.729	1.000
2010	Pooled	Without covariates	6,017	891	-0.065	0.000	0.192	1.000
2012	20000	With covariates	3,801	244	-0.011	0.014	0.438	0.777
2012	20000	Without covariates	3,801	244	-0.099	0.237	0.677	0.777
2012	40000	With covariates	3,051	45	-0.001	0.014	0.946	0.156
2012	40000	Without covariates	3,051	45	0.019	0.030	0.514	0.156
2012	60000	With covariates	13,630	79	-0.290	5.656	0.959	0.066
2012	60000	Without covariates	13,630	79	-0.081	0.332	0.807	0.066
2012	Pooled	With covariates	3,733	312	0.018	24.494	0.490	1.000
2012	Pooled	Without covariates	4,183	346	0.021	24.494	0.583	1.000

[1] Standard Errors are clustered by regions.
[2] For mayor elections (2008 and 2012) and presidential election (2010).
[3] Left wing parties: PSTU, PSOL, PC do B, PT, PSB and PCO.
[4] Bw=bandwidth.
[5] LATE estimates.

Discussion and conclusions

- Results suggest that broadband connection (fixed line) availability did not change election outcomes (2008, 2010 and 2012);
- Results for Brazil seems to be different from those observed in other countries (USA, Italy, Germany, UK and Malaysia);
- Institutional background may play a role (e.g. compulsory voting in Brazil and differences in government and voting systems);
- Lack of information about mobile broadband connection (no data at municipal level is available);
- Rise in social media usage and the "fake news market" in recent elections could show a different scenario.

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References


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