

Religious Mayors, School Appointments, and Teenage Pregnancy

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Motivation

- Large literature documents how religious institutions shape behavior through **community norms, networks, and beliefs**
- Less is known about what happens when religious movements **gain political power** and use the tools of government
- Pentecostalism is one of the **fastest-growing religious movements** in the world — and increasingly winning **executive office**

Motivation

- Political appointment for public service is a channel for wielding influence that is largely opaque.
 - Operates *below the radar* of legislative scrutiny or budgetary oversight
- Brazil offers an unusual opportunity:
 - Two parties (**PRB** and **PSC**) are **institutional extensions** of major Pentecostal churches — not just individual religious candidates
 - They explicitly target **school-based sexual education** in their legislative agendas
 - Mayors control **municipal schools** (curriculum, principal appointments) but not state schools in the same municipality ⇒ a built-in placebo

This Paper

- **Research question:** What is the causal effect of Pentecostal local political leadership on teenage pregnancy, sexual education and health outcomes among teenagers in Brazil?
- **Empirical strategy:** Regression discontinuity design using close mayoral elections between Pentecostal-party (PRB/PSC) and non-Pentecostal candidates, 2008–2016
- **Main results:**
 - +40% increase in teenage birth rates among exposed cohorts
 - Municipal schools are 12.5 pp less likely to offer sexual education
 - Increase in STDs, reduction in HPV vaccination, higher female dropout
 - General conservativeness *does not* explain results
- **Mechanism:** mayor-appointed principals replace sex-ed — in municipal schools only

Related Literature

- **Religion and political leadership**

- Evidence of policy effects but mechanisms often unclear [Meyersson 2014; Nellis et al. 2018; Blaydes & Kayser 2010]
- Contribution: clean RD + clear mechanism

- **Political leaders' identity and public services**

- Gender, ethnicity of elected officials affect spending and service quality [Chattopadhyay & Duflo 2004; Brollo & Troiano 2016; Akhtari et al. 2022]
- Contribution: ideology transmitted through *bureaucratic appointments*, not legislation

- **Sexual education and teenage fertility**

- Mixed results, mostly positive in experimental settings [Duflo et al. 2015; Dupas 2011; Dhar et al. 2022]
- Contribution: quasi-experimental evidence on the *reverse margin* — politically induced *removal* of sex-ed

Roadmap

1. Background: Pentecostal parties, the school system, and sex-ed politics
2. Data
3. Empirical strategy and validity checks
4. Main result: teenage births
5. Mechanisms: sexual education and principal appointments
6. Downstream outcomes: STDs, HPV, dropout
7. Ruling out alternative channels



Background

Two parties, institutional ties to Pentecostal churches

PRB / Republicanos

Partisan vehicle of *Igreja Universal* (IURD).

PSC

Main electoral vehicle of *Assembleia de Deus*.

- Both parties advance agenda of sexual morality, family values and religious education.
- We focus on **institutional alignment**, rather than individual religiosity.
- We provide evidence that candidates' religions align with the parties.

Congress → Religious signals →

The school system: a natural within-municipality contrast

- Brazil's education system is **decentralized**.
 - **Municipal schools** (middle school, ages 10–15): mayors appoint principals, set non-mandatory curriculum. ~40% of principals are political appointees.
 - **State schools** (high school, ages 15–17): state governors control. *Mayors do not have authority.*
 - Municipal and state schools **sit in the same municipality**, serve overlapping populations.
- ⇒ Same-municipality state schools become our within-place *placebo*.

Sexual education is the contested frontier

- Sex-ed is a “transversal theme”: **non-mandatory**, locally determined.
- PSC legislators led the *Escola sem Partido* proposal (PL 7180/2014); PRB cosponsored.
- Explicit rhetoric: “*leave sexual education and religion to parents.*” (Siufi, PSC 2016)



Data

Electoral sample

- Mayoral elections 2004–2016 (TSE).
- Pentecostal = PRB or PSC candidate.
- Keep single-round, top-2, no coalition overlap.
- Cycles with outcome data: 2008, 2012, 2016.
- Running variable: Pentecostal's margin of victory.
- Full sample: 722 races.

430

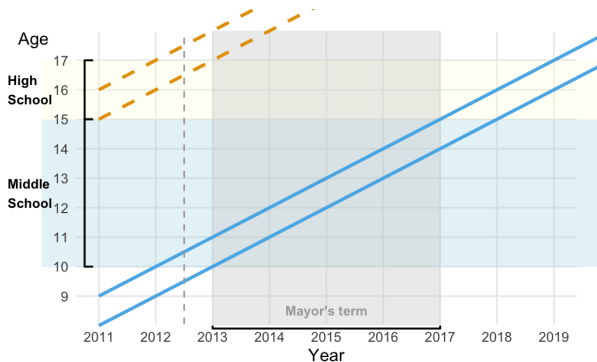
Races in preferred bandwidth

The outcomes chain: six administrative systems

- **Births** — SINASC, universe of births (mother age + municipality).
- **Curriculum & principals** — *Prova Brasil* principal questionnaire (waves 2009–2019).
- **STDs** — SINAN compulsory notification (syphilis, HIV).
- **HPV vaccination** — SI-PNI dose-level records, ages 9–14.
- **Dropout & attainment** — INEP school census; 2022 population census.

summary stats →

Cohort timing: who is exposed to what



- **Treated cohort:** girls aged **9–10** at election.
- We track births at ages 11–15 (years 2–5 post-election).
- **Comparison cohort:** girls aged **16–17** at election — past middle school.



Empirical Strategy

Specification

$$Y_{mt} = \alpha + \beta \text{Win}_{mt}^{\text{Pent}} + f(\text{margin}_{mt}) + \gamma C_{mt} + \varepsilon_{mt}$$

- β = local ATE at the threshold.
- Local linear, triangular kernel, optimal bandwidth (≈ 0.15).
- Controls C_{mt} : state FE + cycle FE + lagged dep. var.
- SEs clustered at municipality.

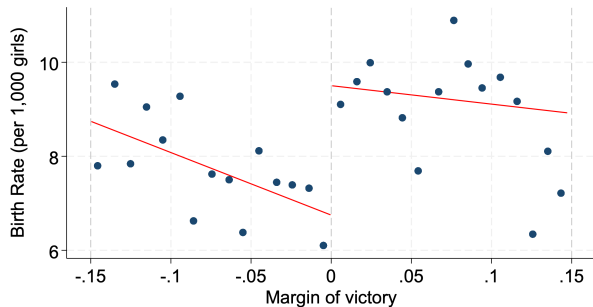
Validity tests

- No evidence of manipulation at the cutoff ($p=0.996$) [Detail →](#)
- Municipality characteristics are balanced. [Detail →](#)
 - Population, urbanization, literacy, income, sanitation, share Pentecostal
- Candidate characteristics are balanced. [Detail →](#)
 - Age, gender, college education, marital status

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Results

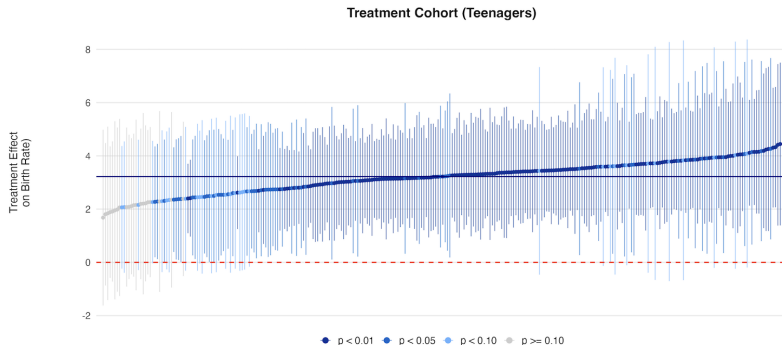
Teen births: a sharp jump at the Pentecostal cutoff



RD estimate: 3.008 (0.911)
Robust p-value: 0.001

- **+3.0 births per 1,000 girls** aged 13–17.
- Baseline 7.57 $\Rightarrow$ **+40%**.
- Preferred spec, $h = 0.15$, triangular kernel.
- Stable across 288 specifications.

Robustness: 288 specifications

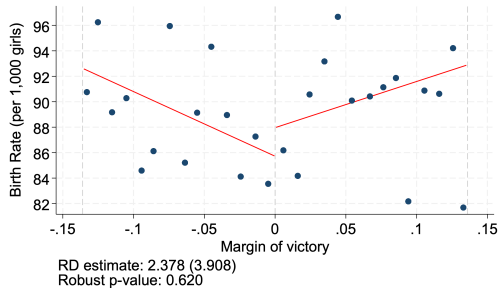


Placebo cutoffs →

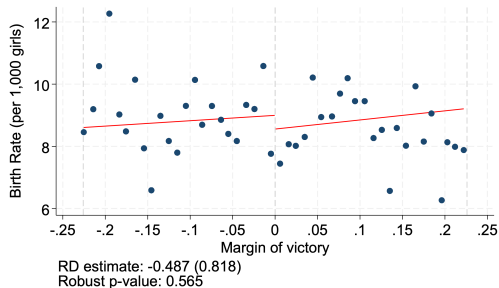
- 4 bandwidths ×
2 polynom. fits ×
3 kernels ×
4 control sets ×
3 winsor. lvls
- No negative estimates
- 60.8% sig. at 1%.
- Preferred spec $\approx$ median (3.2).

Not older women, not prior cohorts

Comparison: women aged 16–17 at election.



Pre-placebo: same-age cohort one cycle earlier.



Magnitude, in context

- Average municipality in bandwidth: 400 girls in cohort.
- $\Rightarrow \approx$ **1.2 extra births per year per municipality** ($\approx$ 4.8 over a 4-year term).
- Aggregated across the 342 Pentecostal victories in 2008–2016:
 - $\approx$ **1,600 additional teen births**.
- Magnitudes are large relative to *baseline at these ages*, modest relative to all-age fertility — consistent with a school-channel mechanism.

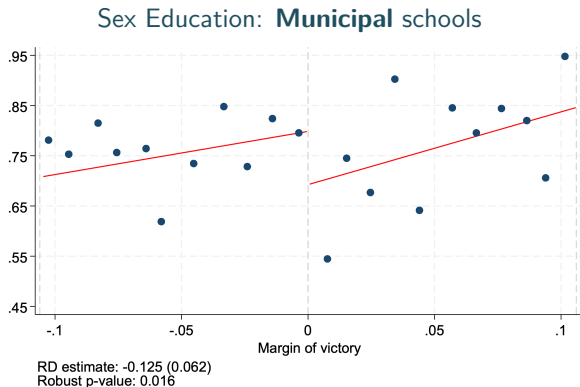


Mechanisms

Where does the effect come from?

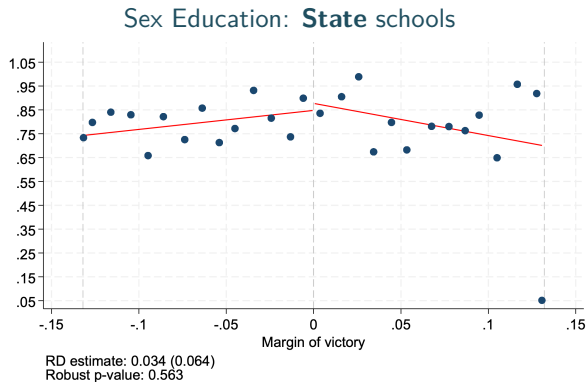


Sex-ed drops — in municipal schools



- **-12.5 pp** ($p = 0.016$).
- Baseline $\approx 70\% \Rightarrow$ **18% reduction**.
- Coefficient is 12–15 pp across spec variants.

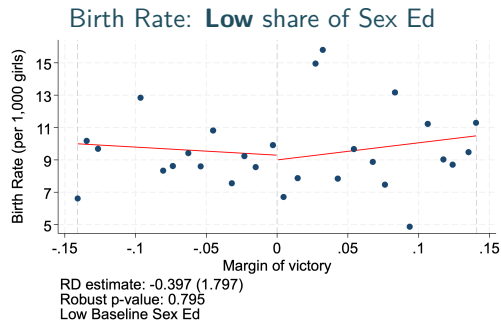
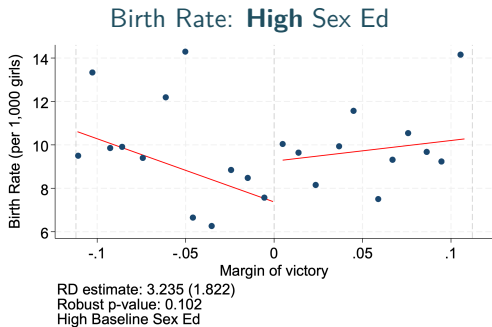
No effect in state schools



- Null effects where mayors have no influence.

full courses table →

Heterogeneity: Effects appear where baseline sex ed was high

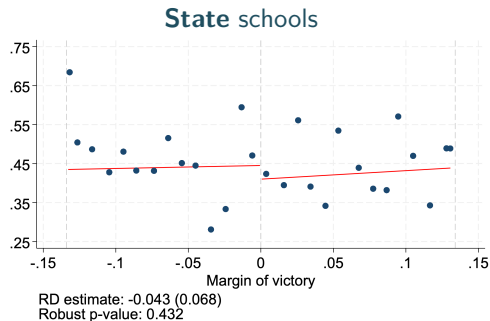
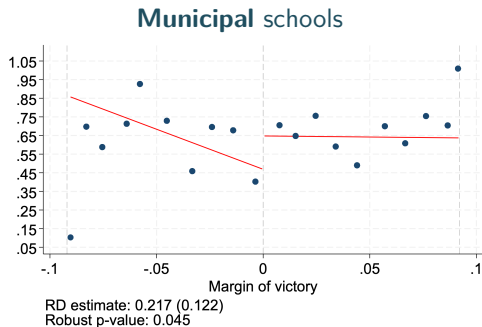


Effect loads on places with *something to remove*.

Pentecostal split →

Principals are replaced in municipal schools

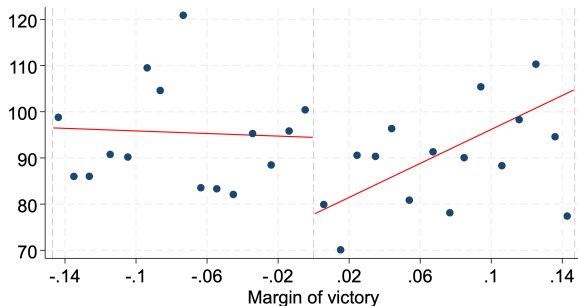
Share of principals with <2 years in position — collected in the year after each election.





Downstream effects

Health inputs: HPV vaccination for girls aged 9–11

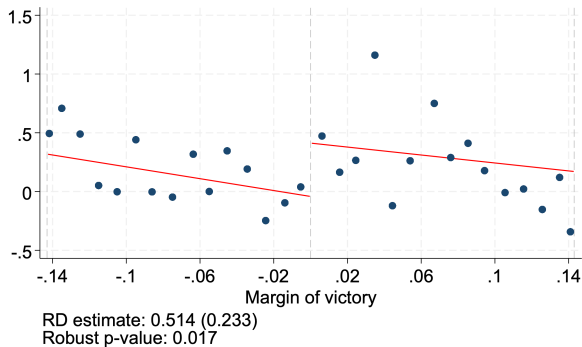


RD estimate: -18.977 (7.135)
Robust p-value: 0.004

- **-19.0 pp** coverage ($p = 0.004$).
- Ages 9–11 doses fall within the current administration; ages 12–14 don't — and show **no effect**.
- School-delivered campaigns go through municipal structures.

age-by-age coverage →

Health outputs: Syphilis in school-age girls

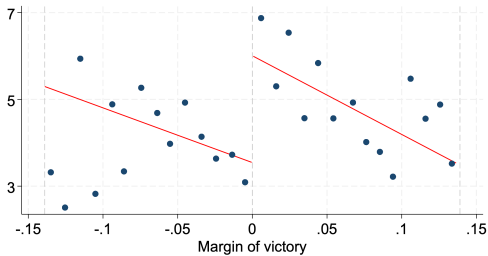


- **+0.514** cases per 1,000 ($p = 0.017$).
- Baseline 0.17 $\Rightarrow \approx 300\%$ rise.
- Heavily skewed distribution (many zeros): driven by amplified transmission where cases are already present.

robustness $\rightarrow$ adult placebo $\rightarrow$ HIV nulls $\rightarrow$

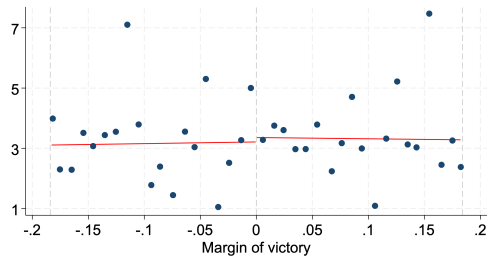
Female middle school dropout: municipal only

Municipal



RD estimate: 2.791 (0.950)
Robust p-value: 0.001

State

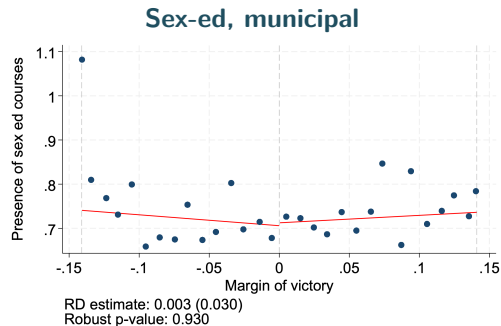
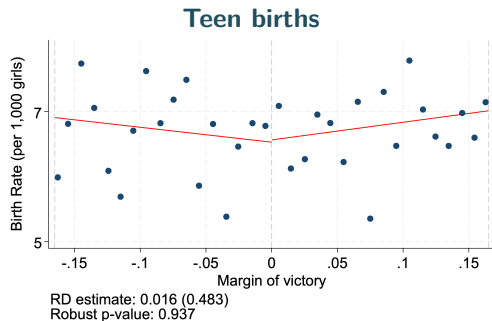


RD estimate: 0.169 (0.822)
Robust p-value: 0.886



Ruling out alternatives

Is it just conservatism? — The right-wing placebo



Non-Pentecostal right-wing parties (PP, DEM, PR, PRP, PSDC)
2,872 elections — 4× the Pentecostal sample .

Other channels

- Abortion →
- Contraceptive availability →
- Saúde da Família staffing →
- Municipal expenditures →
- Social services →
- Marriage rates →
- Church entry →
- Population growth rate →

VIII

Conclusion

Takeaways

- Religious **institutional** politicians act on doctrine through **bureaucratic appointments**, not budgets or legislation.
- One mayor → thousands of teens: 1,600 births, 1,700 dropouts, hundreds of syphilis cases in 2008–2016.
- Decentralization is **double-edged**: local discretion can be captured by organized ideological groups below the radar of formal oversight.
- Effects on HPV vaccination and middle-school dropout hint at long-term effects.

Thank you

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GeFam | April 17, 2026



Backup

Appendix slides — follow hyperlinks from main deck.

Religious affiliation by party

	Religious Occupation	Religious Alias	Either Signal	N Candidates
PRB	0.575	1.846	2.074	24,156
PSC	0.465	1.765	1.897	29,470
Other Right-Wing	0.138	0.608	0.655	185,042
PT	0.081	0.343	0.377	80,395
PMDB	0.090	0.387	0.410	91,919
PSDB	0.135	0.502	0.545	71,945
Other Parties	0.147	0.776	0.834	883,542

Share of municipal candidates with a religious title or ministry occupation, by party.

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Religious affiliation by party

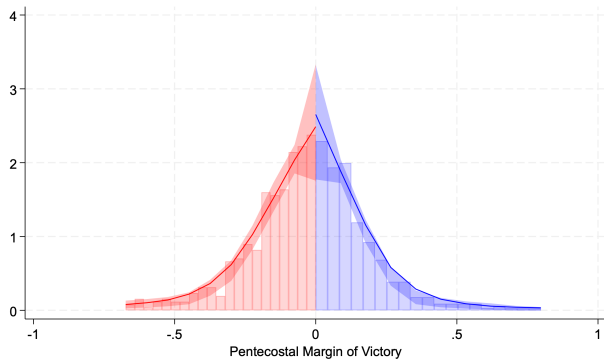
	Gomes (2021)			Lacerda (2018)		
	Legislatures 2007–2019			Legislature 2015–2019		
	Evang. Dep.	Total Dep.	Share (%)	Evang. Dep.	Total Dep.	Share (%)
PRB	25	37	67.6	15	21	71.4
PSC	29	40	72.5	9	13	69.2
Other Right-Wing	47	454	10.4	10	99	10.1
PT	12	193	6.2	1	68	1.5
PMDB	25	207	12.1	4	65	6.2
PSDB	15	142	10.6	5	54	9.3
Other Parties	70	698	10.0	24	193	12.4
All Parties	223	1771	12.6	68	513	13.3

Share of congress linked to Pentecostal churches, by party.

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	Full Sample			Within Bandwidth		
	Pentec. (1)	Non-Pent. (2)	p-val. (3)	Pentec. (4)	Non-Pent. (5)	p-val. (6)
<i>Candidate Characteristics</i>						
Age	47.82	48.66	0.293	48.12	49.33	0.248
Female (%)	8.5	13.4	0.043	9.7	13.6	0.230
College degree (%)	46.2	48.2	0.615	44.9	45.3	0.933
Married (%)	72.5	77.9	0.106	74.1	77.6	0.398
<i>Municipality Characteristics</i>						
Population (log10)	4.12	4.10	0.528	4.10	4.10	0.983
Income per capita	12.01	10.21	0.084	10.66	9.52	0.396
Urban (%)	62.0	61.9	0.981	61.5	60.3	0.552
Literacy (%)	80.7	81.4	0.335	80.1	81.0	0.279
Sanitation (%)	31.3	32.3	0.647	28.1	28.2	0.967
Evangelicals (%)	16.1	16.4	0.604	16.4	16.4	0.988
Pentec. incumbent (%)	13.7	8.7	0.031	12.5	12.6	0.971
Treated cohort size	401.9	395.1	0.896	381.9	397.9	0.779
Placebo cohort size	413.7	407.4	0.907	392.9	411.4	0.750
<i>Outcomes</i>						
Birth rate (teen cohort)	8.57	7.70	0.029	9.09	7.57	0.005
Birth rate (adult cohort)	88.78	85.95	0.128	92.15	87.26	0.053
Sex education taught (%)	73.1	71.4	0.533	74.7	69.8	0.155
Principal <2 years (%)	51.2	46.9	0.117	51.6	50.8	0.798
Abortions (per 1,000)	1.02	1.23	0.250	0.99	1.24	0.275
Fetal deaths (per 1,000)	0.49	0.32	0.127	0.51	0.40	0.474
Syphilis (per 1,000)	0.42	0.15	0.077	0.30	0.17	0.211
HIV (per 1,000)	0.03	0.03	0.937	0.01	0.02	0.167
N (muni-cycles)	342	380		216	214	
N (municipalities)	306	365		206	208	

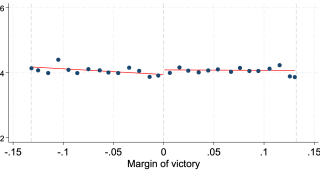
No electoral manipulation at the cutoff



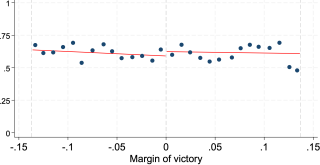
- McCrary density test.
- **p = 0.996** — no bunching.
- Rules out precise manipulation of the running variable.

Municipality Balance

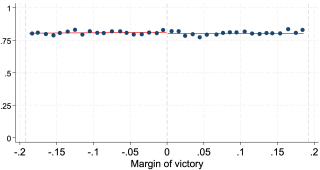
Log population



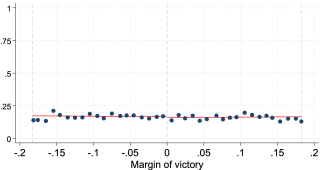
Urban share



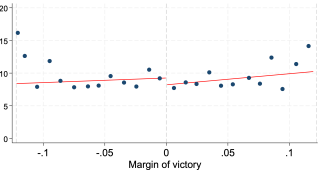
Literacy



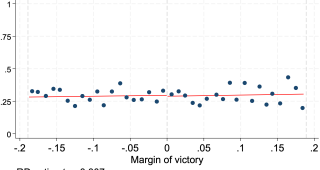
Share evangelical



Income p.c.

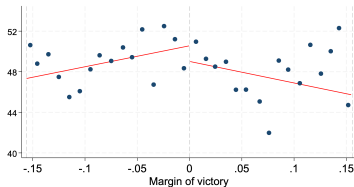


Sanitation



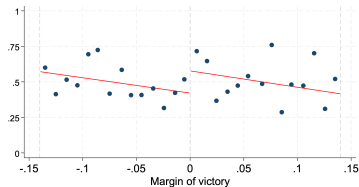
Candidate balance

Age



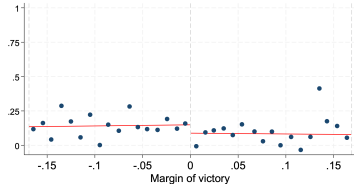
RD estimate: -1.645
Robust p-value: 0.525

Any college



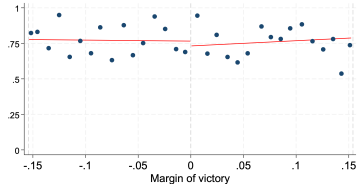
RD estimate: 0.169
Robust p-value: 0.052

Female



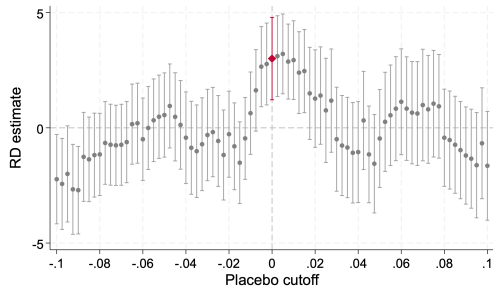
RD estimate: -0.065
Robust p-value: 0.352

Married

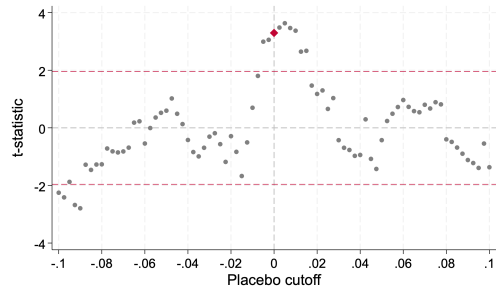


RD estimate: -0.037
Robust p-value: 0.575

Placebo cutoffs



coefficient at artificial cutoff



t-stat at artificial cutoff

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Main teen-birth table

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Treatment Cohort (Ages 9–10 at Election)</i>						
Birth Rate	3.52*** (1.153)	3.12*** (0.964)	3.07*** (0.977)	3.01*** (0.911)	2.86** (1.106)	2.97*** (0.909)
Mean dep. var.	8.26	8.32	8.35	8.34	8.21	8.39
Effective N	481	453	443	430	526	419
Robust p-value	0.001	0.001	0.001	0.001	0.013	0.001
Bandwidth	0.175	0.164	0.159	0.150	0.210	0.145
<i>Panel B: Placebo Cohort (Ages 16–17 at Election)</i>						
Birth Rate	5.74 (5.822)	-1.45 (4.612)	-2.36 (4.610)	2.38 (3.335)	1.32 (4.502)	2.75 (3.311)
Mean dep. var.	89.93	89.04	88.73	89.69	89.30	89.99
Effective N	410	326	318	399	482	402
Robust p-value	0.555	0.487	0.365	0.620	0.879	0.515
Bandwidth	0.140	0.107	0.102	0.136	0.175	0.138

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Trimming robustness

	(1)	(2)	(3)
<i>Panel A: Teen Birth Rate (per 1,000 girls)</i>			
	Baseline	Trimmed 1%	Trimmed 5%
RD Estimate	3.005*** (0.904)	2.100*** (0.844)	1.991*** (0.795)
Mean dep. var.	8.343	8.863	7.547
Effective N	434	363	384
Robust p-value	0.000	0.007	0.007
Bandwidth	0.151	0.139	0.140

Panel B: Syphilis

	Baseline (rate per 1,000)	Extensive (any cases)	Trimmed 1% (rate per 1,000)
RD Estimate	0.514** (0.233)	0.070 (0.065)	0.169 (0.327)
Mean dep. var.	0.197	0.075	2.111
Effective N	312	441	23

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Sex-ed, full table

	(1)	(2)	(3)	(4)	(5)
Schools:	Municipal				State
Sex Ed	-0.063 (0.072)	-0.120** (0.063)	-0.125** (0.062)	-0.150** (0.078)	0.034 (0.064)
State FE	N	Y	Y	Y	Y
Cycle FE	N	N	Y	Y	Y
Order polyn.	1	1	1	2	1
Mean dep. var.	0.77	0.76	0.77	0.77	0.81
Effective N. Obs.	1131	896	924	1216	789
Robust p-value	0.247	0.023	0.016	0.039	0.563
Optimal Bandwidth	0.131	0.096	0.106	0.158	0.132

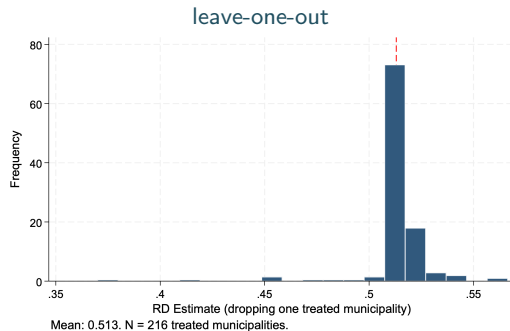
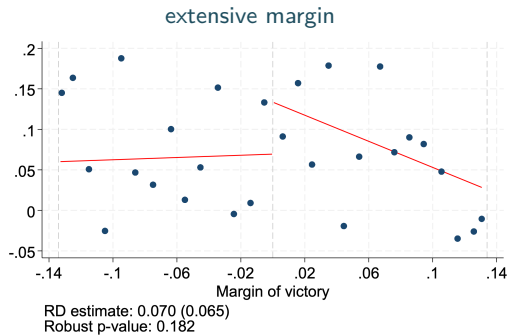
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Other courses table

	(1)	(2)	(3)	(4)	(5)	(6)
Subjects	Environment	Inequality	Racism	Sexism	Violence	Drugs
Municipal Schools	0.02 (0.042)	-0.06 (0.072)	0.02 (0.051)	-0.02 (0.078)	-0.11** (0.059)	-0.20*** (0.059)
Mean dep. var.	0.92	0.52	0.65	0.32	0.71	0.77
Effective N. Obs.	793	1134	1330	1093	950	891
Robust p-value	0.567	0.243	0.694	0.735	0.035	0.000
Optimal Bandwidth	0.084	0.132	0.191	0.128	0.109	0.097
State Schools	0.03 (0.044)	0.01 (0.063)	0.02 (0.057)	0.03 (0.066)	-0.11* (0.060)	0.01 (0.050)
Mean dep. var.	0.93	0.59	0.78	0.49	0.73	0.84
Effective N. Obs.	651	759	773	707	875	866
Robust p-value	0.318	0.866	0.602	0.455	0.083	0.924
Optimal Bandwidth	0.104	0.127	0.130	0.111	0.154	0.149

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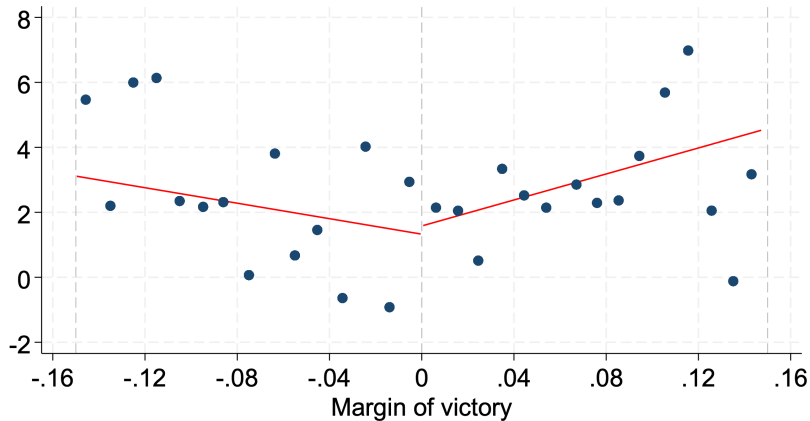
Syphilis robustness



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Syphilis placebo

Syphilis rate: adults



RD estimate: 0.280 (1.417)

Robust p-value: 0.977

HPV table

	RD Estimate	SE	p-value	N
<i>Panel A: Coverage by age at end of term</i>				
Age 9	-18.30***	7.24	0.006	311
Age 10	-19.58*	11.31	0.063	335
Age 11	-18.29**	9.00	0.027	295
Age 12	-5.47	7.72	0.430	338
Age 13	-1.92	11.17	0.710	334
Age 14	0.51	13.79	0.863	332

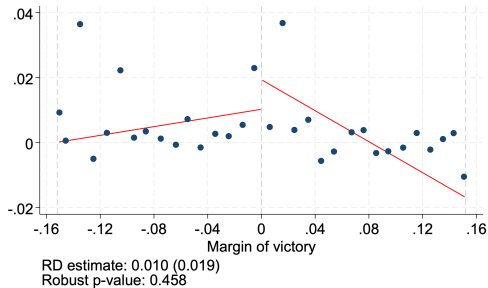
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Panel B: Robustness of ages 9–11 average

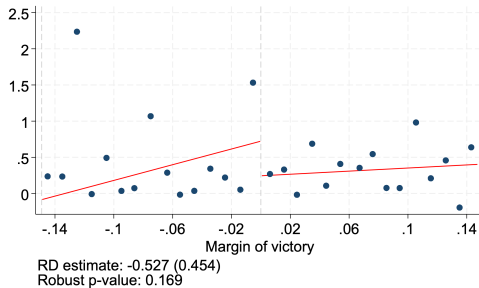
Baseline	-18.98***	7.13	0.004	317
Bandwidth 0.5h	-27.48***	8.51	0.001	172
Bandwidth 1.5h	-19.53***	5.48	0.000	398
Quadratic	-22.41***	8.57	0.009	406
Uniform kernel	-18.32**	7.88	0.020	241
No covariates	-22.88***	7.81	0.001	345

HIV

Teen HIV

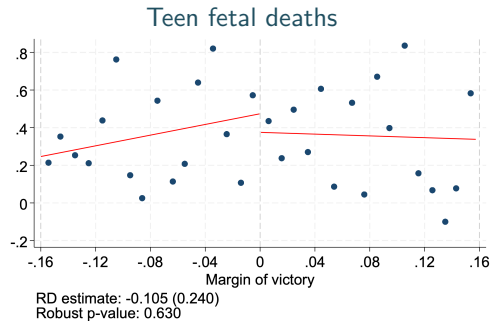
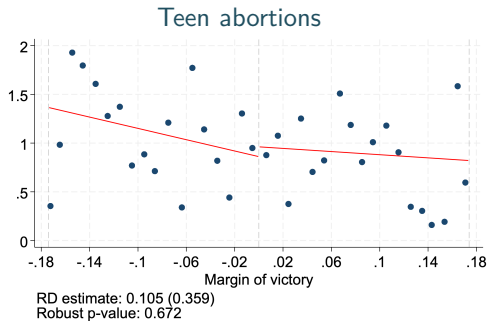


Adult HIV

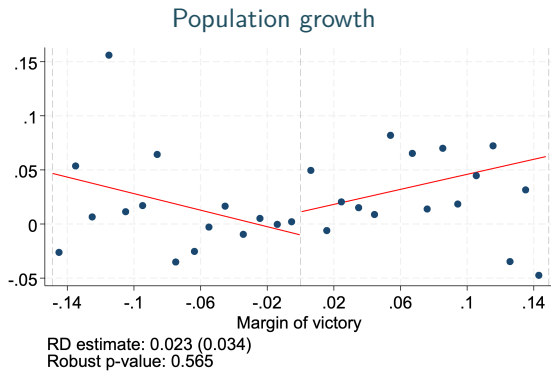


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Abortion and fetal deaths



Population growth



Contraceptives

	(1)	(2)	(3)	(4)	(5)	(6)
Type	Oral	Injectable	Male condom	Female condom	IUD	Morning After
	-0.04 (0.057)	-0.03 (0.072)	0.01 (0.016)	-0.11 (0.096)	0.02 (0.081)	0.01 (0.087)
Mean dep. var.	0.80	0.70	0.98	0.74	0.30	0.39
Effective N. Obs.	353	344	331	247	351	406
Robust p-value	0.599	0.672	0.585	0.139	0.769	0.927
Optimal Bandwidth	0.161	0.152	0.176	0.117	0.196	0.188

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Marriages

	(1)	(2)	(3)	(4)
	Avg. Age at Marriage	Under 15 (per 1,000 girls)	15–19 (per 1,000 girls)	20–24 (per 1,000 girls)
	0.070 (0.353)	-0.020 (0.139)	2.774 (6.411)	-8.536 (6.737)
Mean dep. var.	29.166	0.161	65.545	108.955
Effective N. Obs.	398	441	443	561
Robust p-value	0.683	0.746	0.756	0.179
Optimal Bandwidth	0.151	0.157	0.158	0.239

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Expenditures table

	(1)	(2)	(3)	(4)
	Health	Education	Social Assistance	Culture
	0.193 (0.235)	0.057 (0.300)	-0.106* (0.076)	0.037 (0.048)
Mean dep. var.	7.462	10.601	1.286	0.355
Effective N. Obs.	499	387	419	513
Robust p-value	0.422	0.830	0.088	0.528
Optimal Bandwidth	0.185	0.134	0.148	0.204

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Churches table

	(1)	(2)
	Pentecostal	Catholic
	-0.036 (0.067)	-0.032 (0.234)
Mean dep. var.	0.034	0.279
Effective N. Obs.	405	451
Robust p-value	0.502	0.780
Optimal Bandwidth	0.166	0.185

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SF staffing

	(1)	(2)	(3)
	Community Health Workers	Doctors	Nurses
	0.12 (0.111)	0.00 (0.042)	0.18* (0.104)
Mean dep. var.	2.87	0.56	1.00
Effective N. Obs.	494	534	359
Robust p-value	0.320	0.941	0.051
Optimal Bandwidth	0.159	0.175	0.105

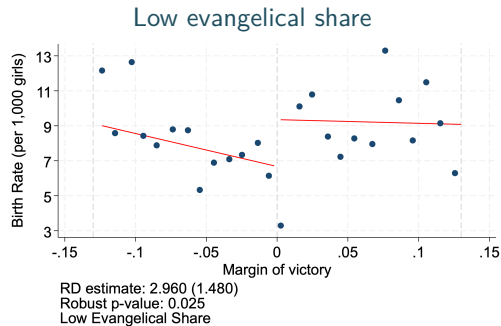
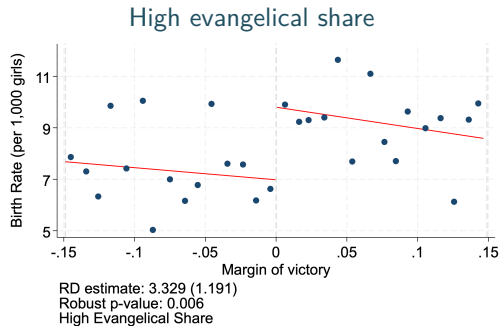
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CRAS

	(1)	(2)	(3)	(4)
	SCFV Adolescents 15–17	Families in PAIF (per 1,000 pop.)	Articulation with Health Services	Articulation with Education Services
	0.002 (0.062)	-3.434 (5.536)	-0.001 (0.008)	0.014** (0.007)
Mean dep. var.	0.855	22.318	0.994	0.991
Effective N. Obs.	308	489	347	277
Robust p-value	0.989	0.609	0.991	0.043
Optimal Bandwidth	0.157	0.155	0.176	0.129

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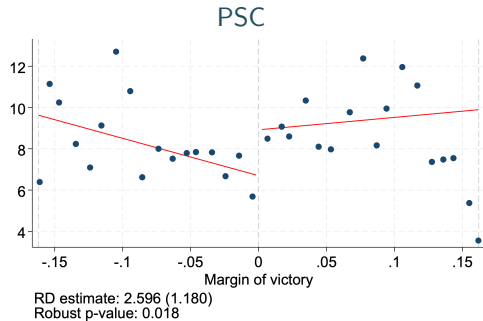
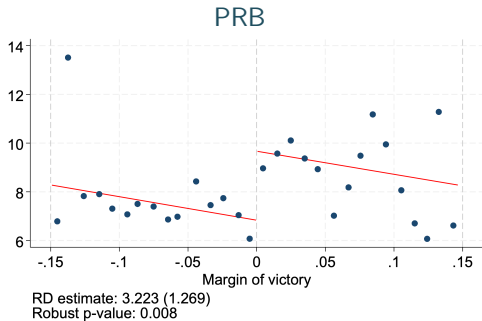
Heterogeneity by evangelical share



Nearly identical — rules out diffusion-of-values mechanism.

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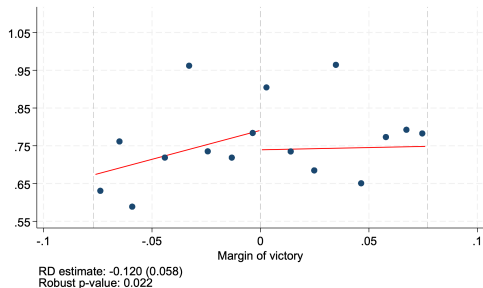
Teen births: PRB vs PSC



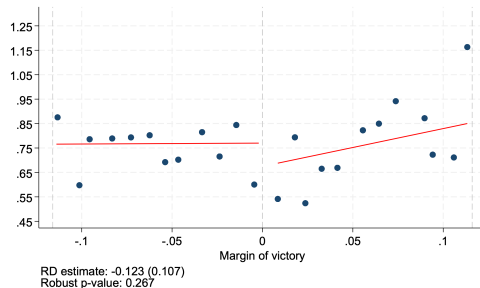
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Sex-ed: PRB vs PSC

PRB



PSC



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