

# Religious Media, Conversion and its Socioeconomic Consequences: The Rise of Pentecostals in Brazil

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# Motivation

- All world religions endorse certain behaviors and uphold certain social norms
  - ▶ Marital norms, fertility
  - ▶ Political candidates and parties
  - ▶ Meaning to life
- Despite recent advance, we still know little about the causal effects of religion on behaviors
- Difficult to study the causal effect of religion on behaviors
  - 1) Ingrained to culture and institutions
  - 2) Endogeneity in affiliation and participation

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- Despite recent advance, we still know little about the causal effects of religion on behaviors
- Difficult to study the causal effect of religion on behaviors
  - 1) Ingrained to culture and institutions → Fast-growing new religious movements
  - 2) Endogeneity in affiliation and participation → Exogenous shocks to the probability of conversion

# This Paper

We study the rise of Pentecostal in Brazil

- One of the world's fastest-growing religious movement
  - ▶ Increased by 400% between 1991 and 2010 in Brazil
  - ▶ From 3% of the population in 1980, to 16.8% in 2010
  - ▶ Foster conservative values, particularly for women
- Quasi-random variation in exposure to religious media
  - ▶ Bankruptcy of a channel in a very concentrated → unique opportunity
  - ▶ Change of ownership of a TV channel → religious content
- Church-prescribed behaviors:
  - ▶ Traditional role of women: FLFP, fertility, education
  - ▶ Voting

# This Paper

## Question

- ▶ Can *religious media* affect religious affiliation?
- ▶ If so, is this change in religious affiliation followed by changes in behaviors?

## Empirical Strategy

- ▶ Quasi-random variation in exposure to religious media
- ▶ Compare the evolution of the outcomes of interest in regions exposed to religious content to those not exposed

## Main Results

- ▶ Exposure to religious media increases Pentecostal affiliation
  - ★ Medium-term: 25% from baseline, 10% of 1991-2000 increase
  - ★ Long-term: 50% from baseline, 12% of 1991-2010 increase
- ▶ Adherence to church-prescribed behaviors:
  - ★ Traditional role of women: higher fertility, lower female labor force participation, lower school completion for girls in the next generation
  - ★ More votes to Pentecostal candidates

# Literature Review

## 1) Religion on Behaviors

- ▶ **Historical religions** Bassi and Rasul 2017; Campante and d Yanagizawa-Dot, 2015; Fruehwirth, Yer, and Zhang, 2019; Gruber and Hungerman 2008; Squicciarini 2020
- ▶ **New religious movements** Bryan, Karlan, and Choi 2018  
→ **Contribution:** Effect of Pentecostalism on behaviors

## 2) Media on Behaviors

- ▶ **Non-religious media:** Bursztyn and Cantoni 2016; Durante, Pinotti, and Tesei 2019; La Ferrara, Chong, and Duryea 2012; Gentzkow and Shapiro 2008; Olken 2009; Jensen and Oster 2009; Banerjee, La Ferrara, and Orozco-Olvera 2019; Braga 2007; DellaVigna, Enikolopov, et al. 2011; Yanagizawa-Drott 2014; Gentzkow 2006; Gentzkow, Shapiro, and Sinkinson 2011; DellaVigna and Kaplan 2007; Enikolopov, Petrova, and Zhuravskaya 2011; Adena et al. 2015; Chiang and Knight 2011; Wang 2020
- ▶ **Religious media:** Grosfeld et. al 2023  
→ **Contribution:** Effect of religious media on religious conversion and behaviors

# Table of Contents

1 Background

2 Data

3 Empirical Strategy

4 Main Results

5 Conclusion

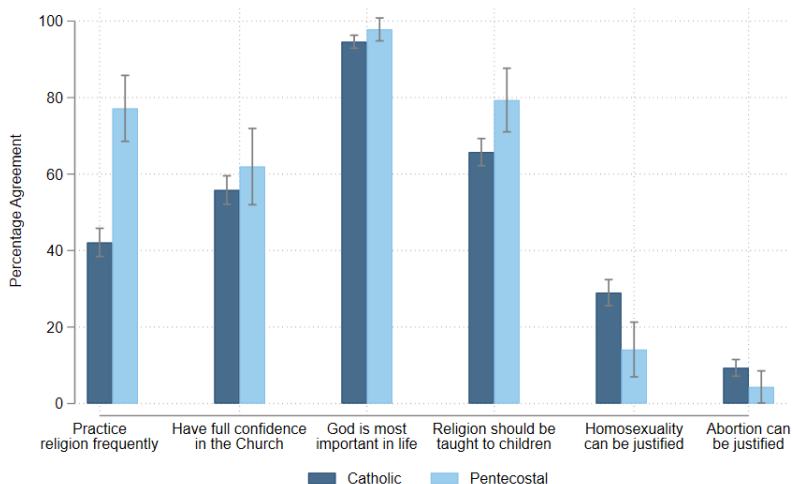
# Pentecostal Movement

- The Pentecostal movement is a part of Protestant Christianity
- They are more religiously observant than other Christians
- More literal interpretations of sacred texts
- Influential in Latin America and Africa, where it is followed by 13% and 12% of the population, respectively.



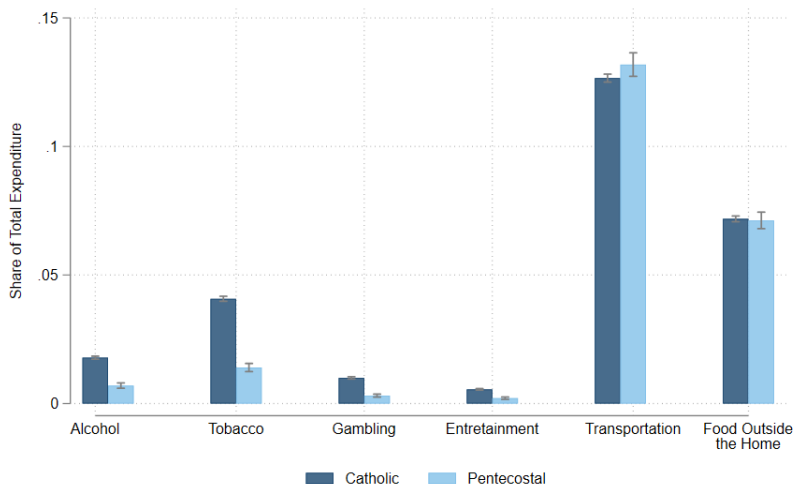
# Pentecostal's values

► Table



# Pentecostal's values

► Table



# Background

## RecordTV

- Founded in 1953, but went bankrupt in late 1980s
- Pentecostal Bishop Edir Macedo bought RecordTV in 1990
  - ▶ Media market in Brazil is extremely concentrated
  - ▶ Only **seven** nationwide TV channels → Rare event
- RecordTV also has a clear political stance
  - ▶ RecordTV aired Bishop Edir Macedo blessing the candidate Jair Bolsonaro during the 2018 presidential campaign



“What is preached today is: “My daughter will never submit to a man.” Then she will be submitted to unhappiness. Because there does not exist family, marriage, [...] or happiness when the woman is the head.”

“I want my daughters to marry a *macho*. The man has to be the head. Because if they are not the head, the marriage is fated to fail.”

– Bishop Edir Macedo

# Background

## RecordTV's Programming

- Started broadcasting **religious** content
- Amount of religious content per week (Campos, 1997):
  - ▶ RecordTV: 60 hours
  - ▶ Rede Globo: 1 hour
  - ▶ SBT: 12 minutes
- Religious shows include
  - ▶ Talk shows
  - ▶ Preaching
  - ▶ Moralizing soap operas
  - ▶ Biblical documentaries



# Background

## Example of RecordTV's programming

### Saturday

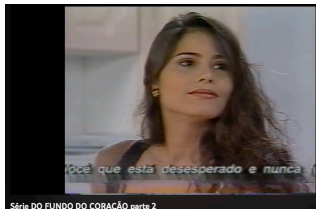
Show	Type
06h00 - Programa Educacional MEC	Educational
06h30 - Jesus Verdade	Religious
07h00 - Renascer	Religious
07h30 - Reunião dos Milagres	Religious
08h30 - Espaço Evangélico	Religious
10h00 - Falando de Vida	Religious
11h00 - Gospel Line	Religious
12h00 - Brasil Feliz com Edson Moura	Talk-show
14h30 - Mara Maravilha Show	Children's show
16h00 - Quem Sabe... Sábado!	Comedy show
18h00 - Circuito Mundial de Vôlei de Praia	Sport
19h00 - Cidade Alerta	News
20h00 - Jornal da Record	News
20h45 - Informe Local	News
21h00 - The Nanny	Sitcom
21h30 - Programa Ana Maria Braga	Talk-show
23h30 - Palavra de Vida	Religious
03h00 - Sessão Transnoite: Família Adams	Comedy

### Weekday

Show	Type
05h00 - O Despertar da Fé	Religious
06h00 - Santo Culto em Seu Lar	Religious
07h00 - Ponto de Fé	Religious
08h30 - Caminhos da Esperança	Religious
09h15 - Forno, Fogão & Cia.	Cooking show
09h45 - Desenhos da Vovó	Cartoons
11h00 - O Mundo de Beakman	Children's show
11h30 - Desenho Mania	Cartoons
12h00 - Informe Local	News
12h30 - Zorro	Series
13h00 - Note & Anote	Cooking, art crafts
17h30 - Cidade Alerta	News
19h15 - Jornal da Record	News
20h00 - Olho da Terra	Religious
20h30 - Ratinho Livre	Variety show
22h00 - Programa Ana Maria Braga	Talk-show
24h00 - Jornal Onze e Meia	News
24h25 - Programa de Negócios	Business show
24h30 - 25ª Hora	Religious
01h30 - Palavra de Vida	Religious

# Background

## Church's Merchandise during non-religious shows



If you are desperate and have never been to [Church], call [number]

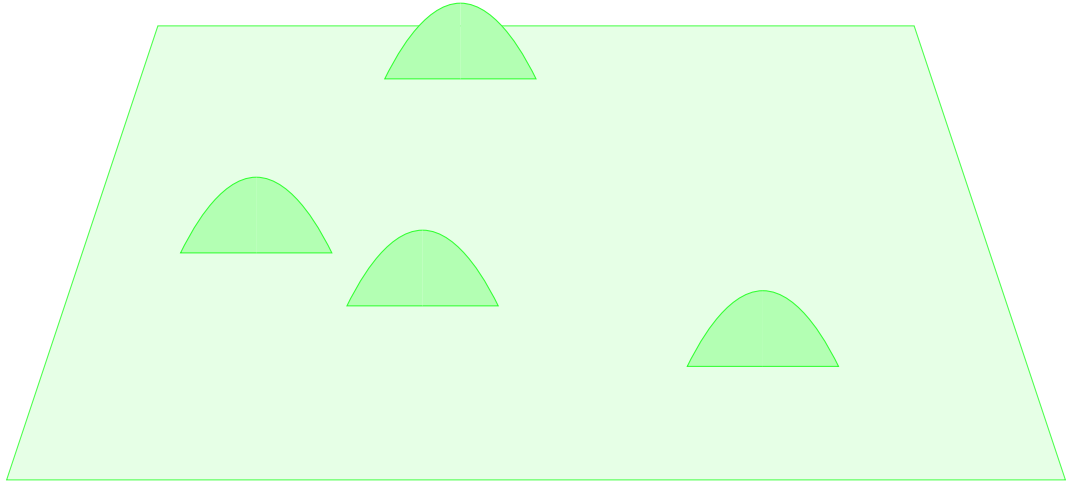
# Table of Contents

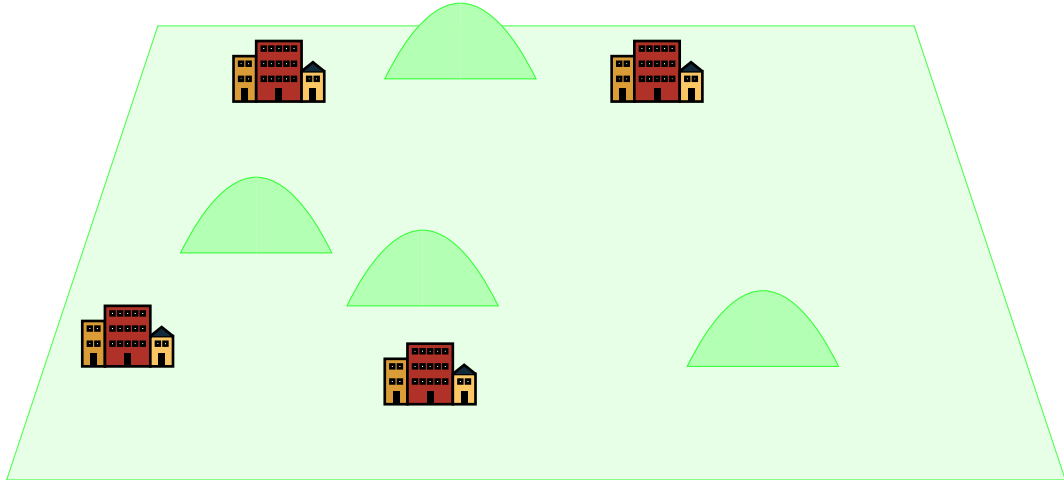
- 1 Background
- 2 Data**
- 3 Empirical Strategy
- 4 Main Results
- 5 Conclusion

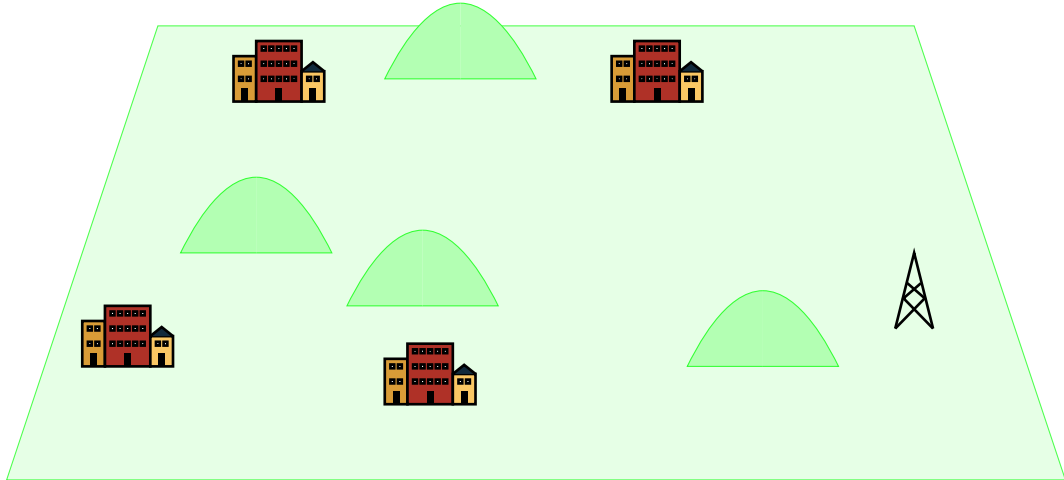


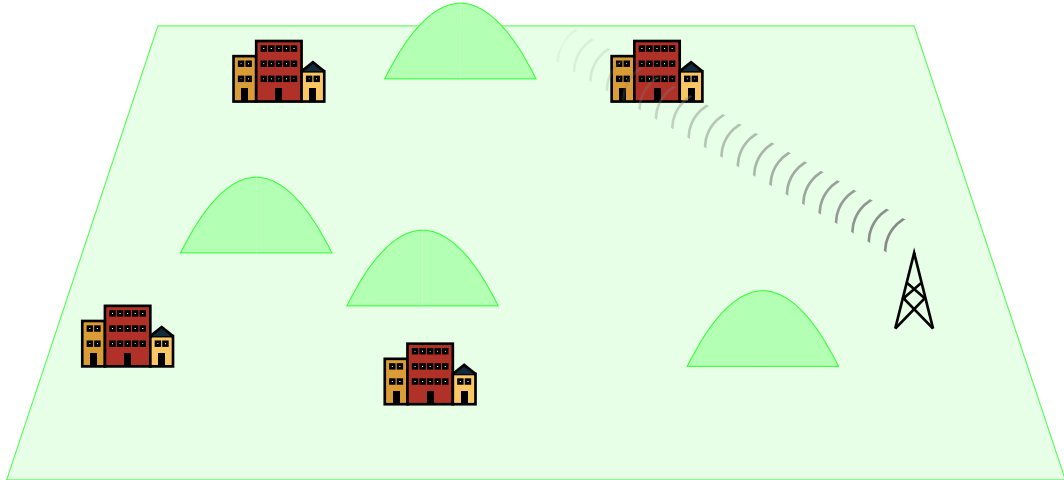
# Main Data

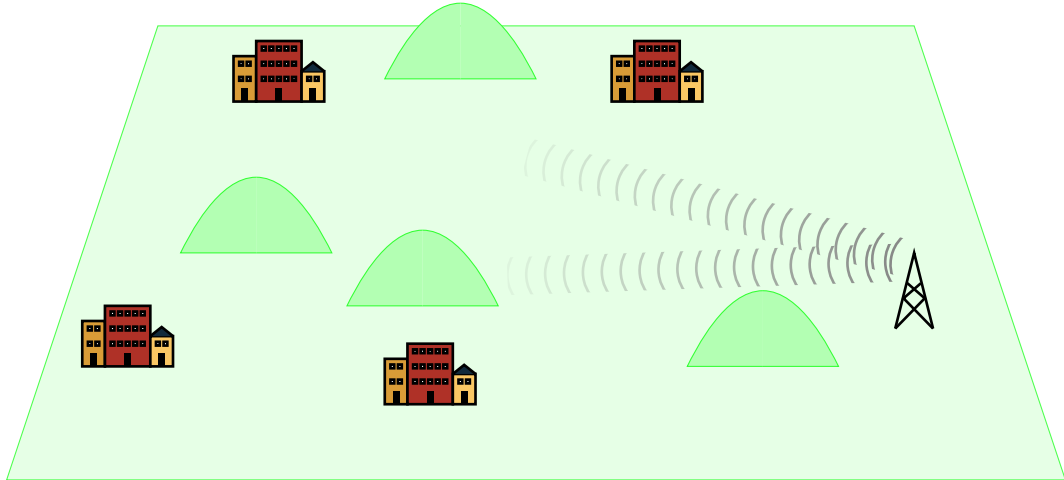
- TV coverage: National Telecommunication's Agency (ANATEL)
  - ▶ Transmitter's power, height, frequency, location, date of installation, owner
  - ▶ Irregular Terrain Model
- Religious and Behavioral Outcomes: Brazilian Census (1980, 1991, 2000, 2010)
  - ▶ Religious affiliation, Fertility, Labor force participation, Education
  - ▶ Other controls
- Votes for Pentecostal Candidates: Federal Electoral Authority, TSE (2002, 2006, 2010, 2014)
  - ▶ Candidates' profile, number of votes received from each municipality
  - ▶ Candidates' religion classification: hand-coded by Lacerda (2017)
- Other datasets: IBOPE (viewership)

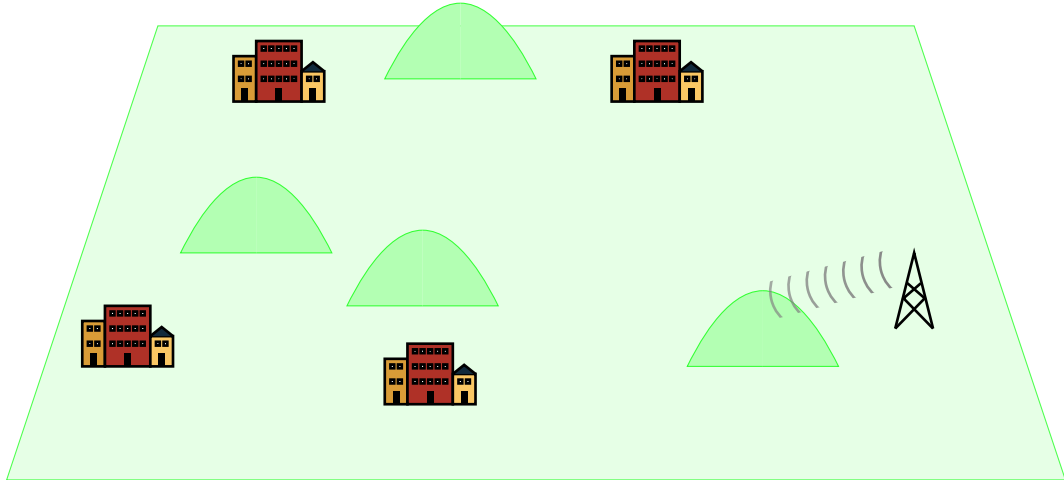


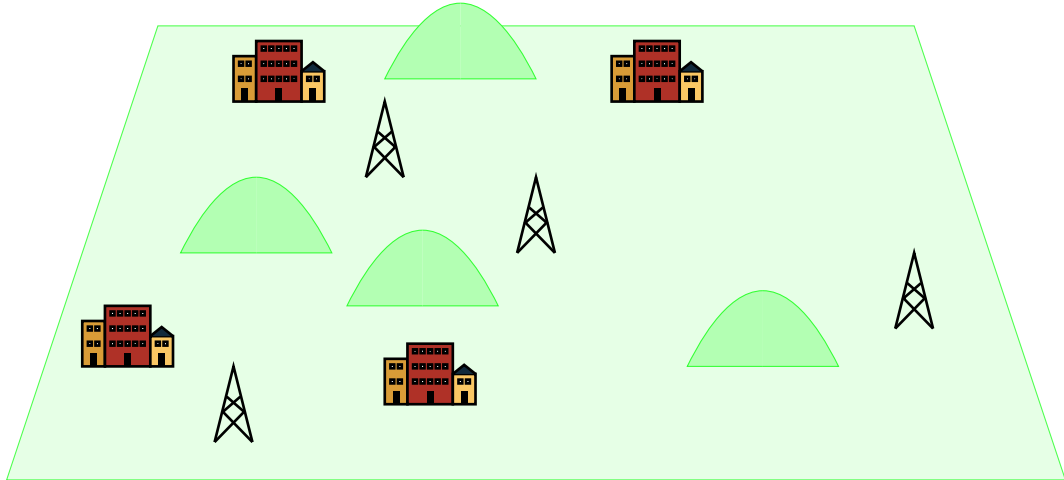




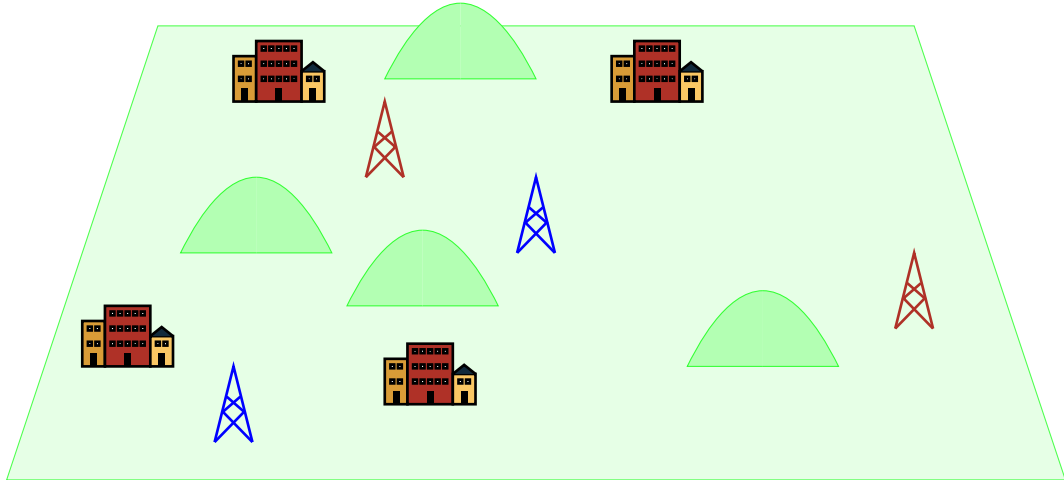


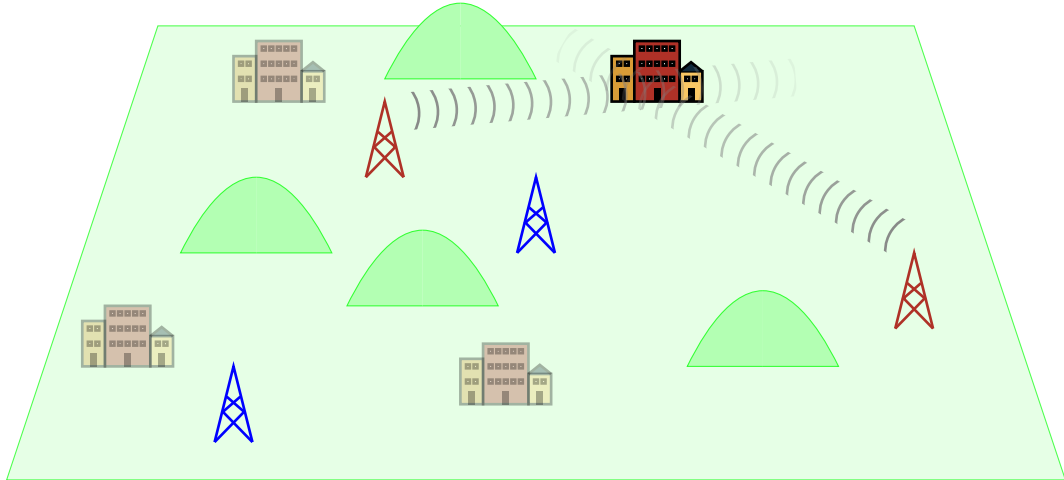


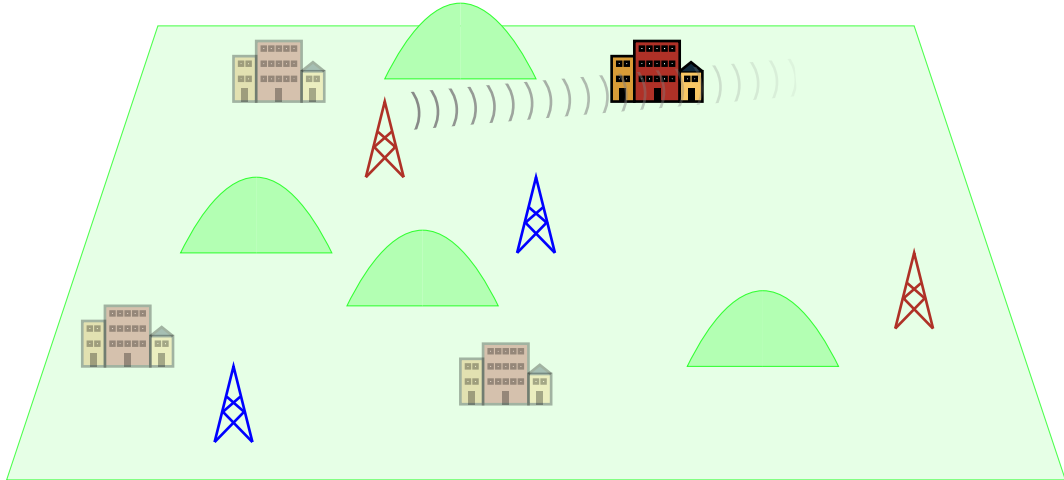








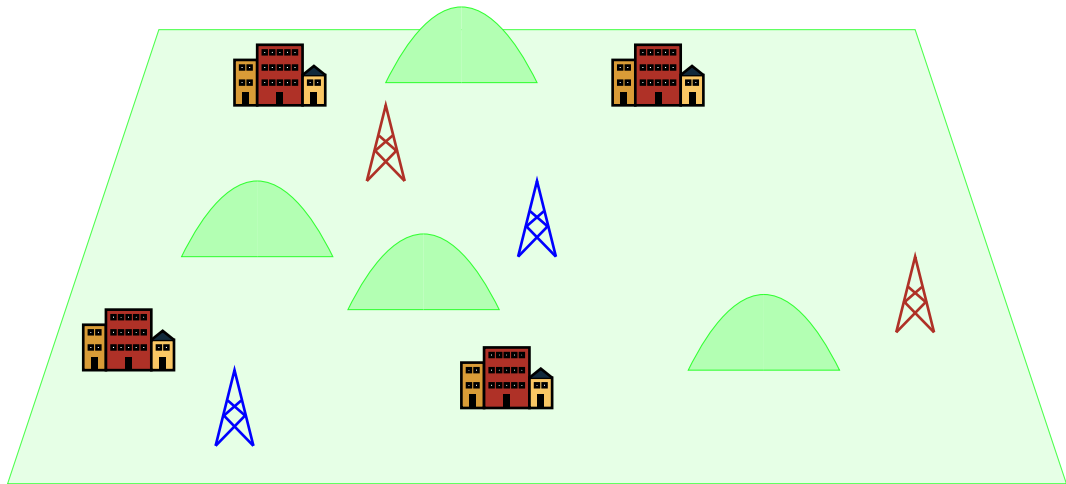




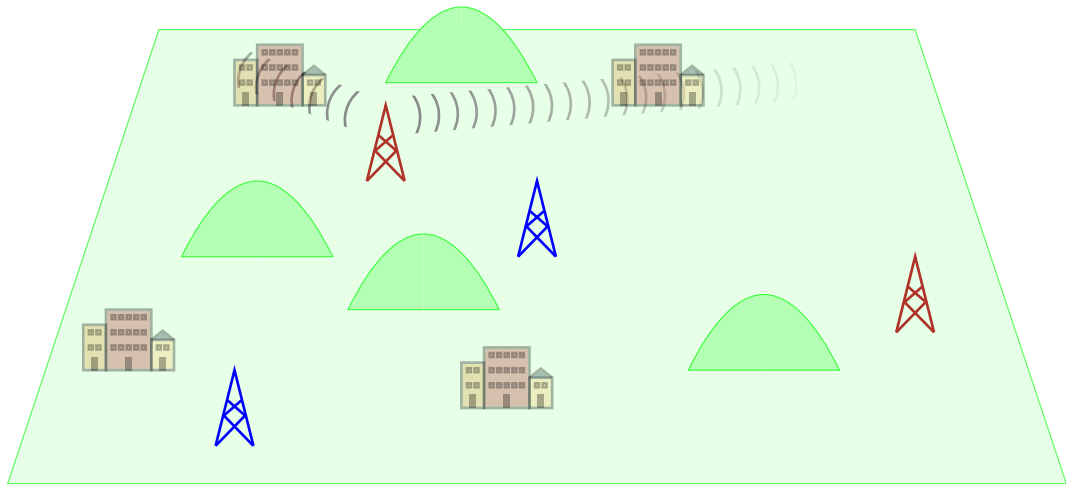
# Table of Contents

- 1 Background
- 2 Data
- 3 Empirical Strategy**
- 4 Main Results
- 5 Conclusion

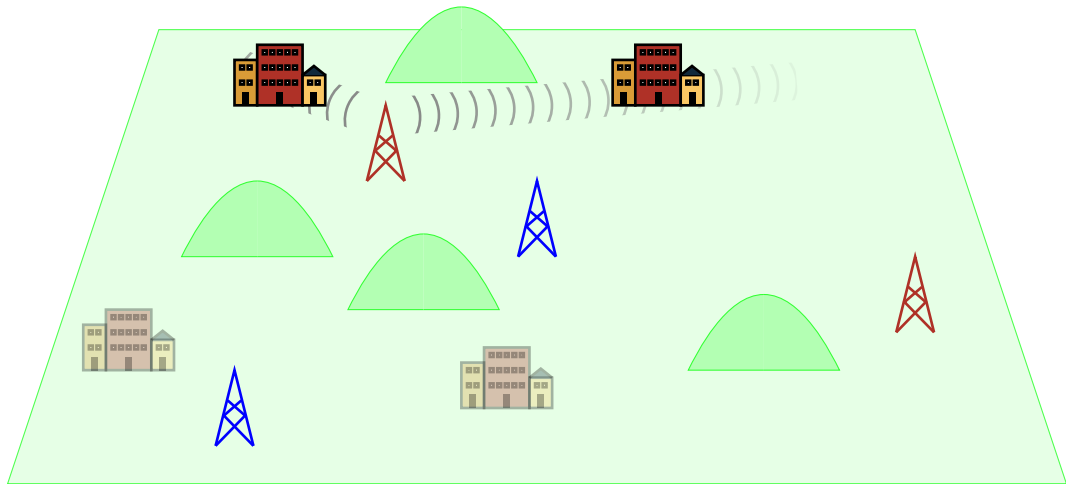
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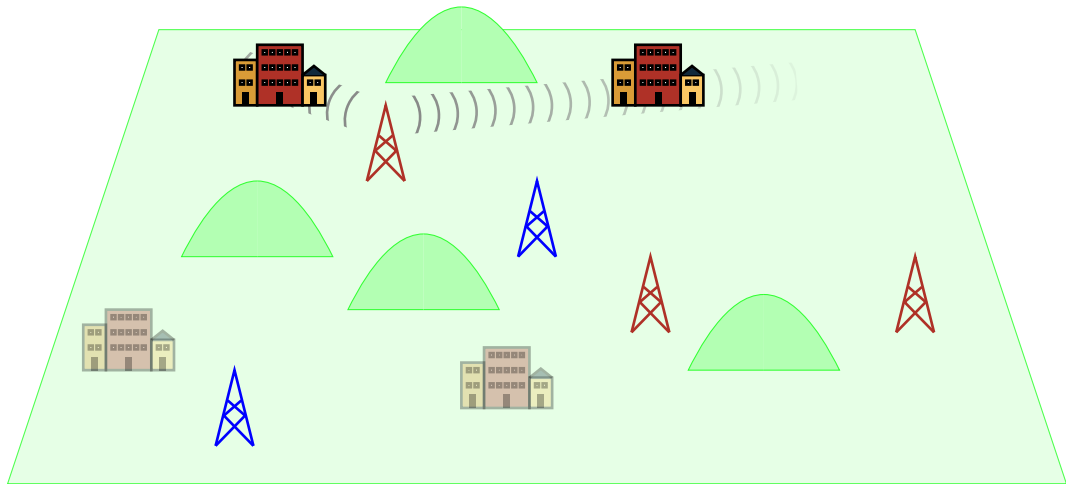
## Before Change of Ownership



## After Change of Ownership - Initial Placement

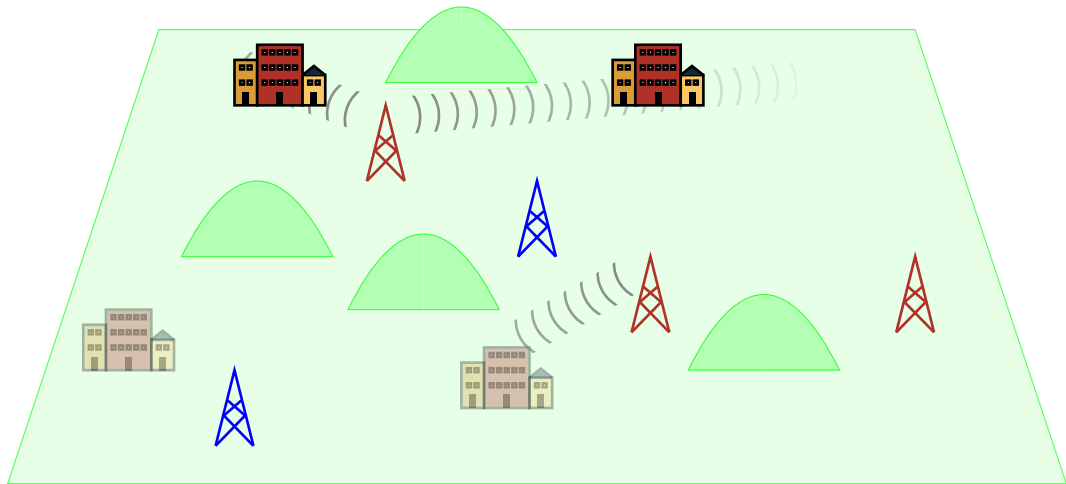


## After Change of Ownership - Expansion





## After Change of Ownership - Expansion



# Baseline Empirical Strategy

- We compare the evolution of the outcomes of interest in regions exposed to religious content to those in regions not exposed to religious content
- We use only RecordTV's transmitters before the change of ownership
  - ▶ Placement of transmitters was exogenous to the expansion strategy of the church
  - ▶ Media market is very **concentrated** → unique opportunity to buy a TV channel
- Assumption: In the absence of changes in the content of the TV channel, the evolution of the outcomes of interest for exposed area would have been the same as for non-exposed areas

# Baseline Empirical Strategy

$$Y_{m,t} - Y_{m,91} = \beta_1 \cdot \text{Signal}_m^{1990} + \beta_2 \cdot \text{Propagation Controls}_m + \beta_3 \cdot X_m^{1991} + \delta_{\text{mesoregion}(m)} + \varepsilon_m,$$

- $\Delta_{91-t} Y_m$ : difference between the outcome on interest between 1991 and t,  $t \in \{2000, 2010\}$
- $\text{Signal}_m^{1990}$ : RecordTV Signal in 1990
- $\text{Propagation Controls}_m$ : signal in free space, height, area, ruggedness, and their squares
- $X_m^{1991}$ : log population, % tv, % radio, % high school
- $\delta_{\text{mesoregion}(m)}$ : mesoregion fixed effects

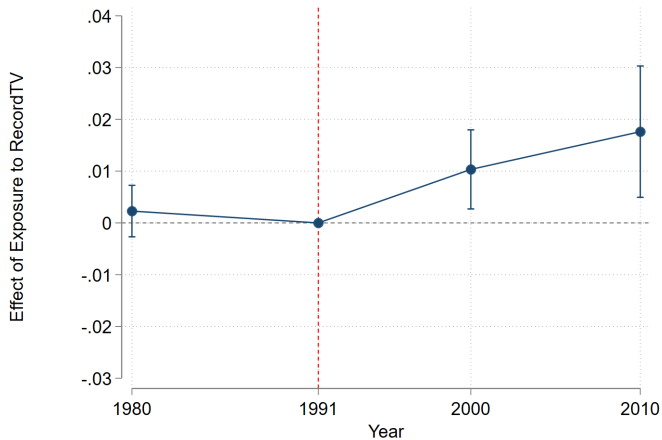
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# Table of Contents

- 1 Background
- 2 Data
- 3 Empirical Strategy
- 4 Main Results**
- 5 Conclusion

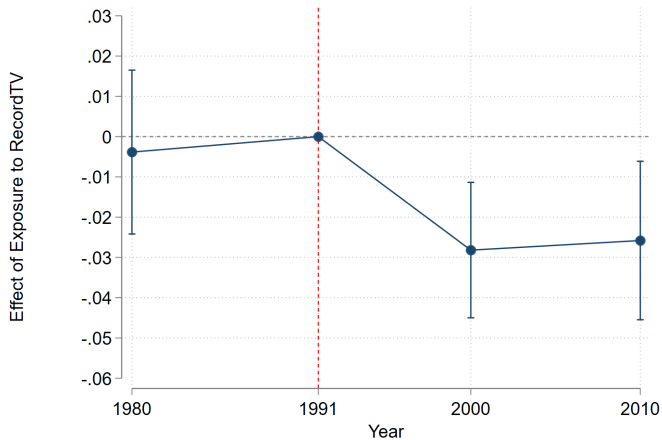
# Main Results

## Share of Pentecostals



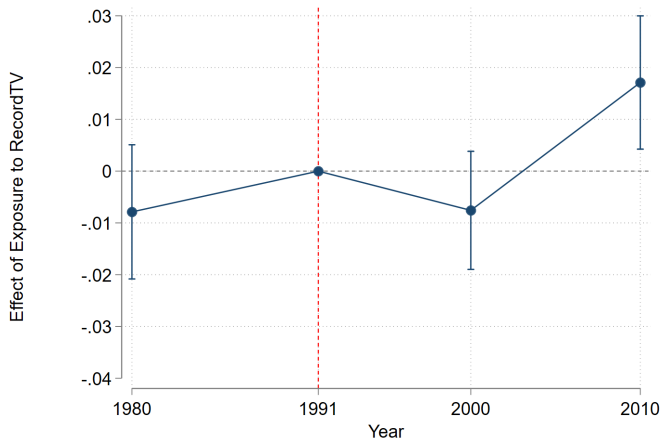
# Main Results

## Female Labor Force Participation



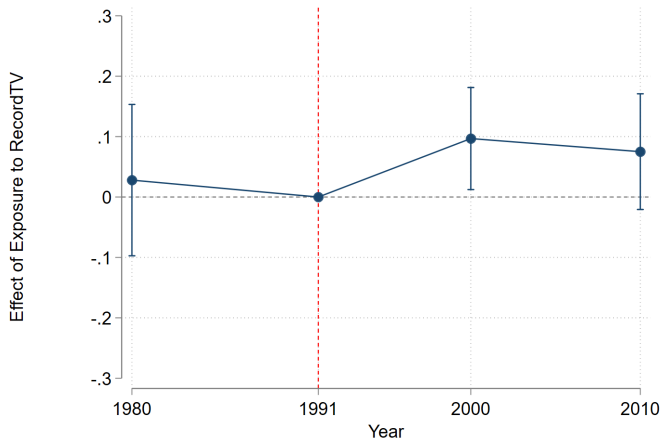
# Main Results

## Male Labor Force Participation



# Main Results

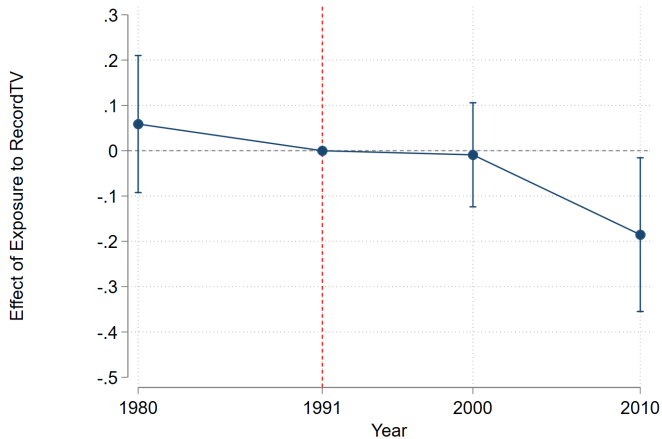
## Total Fertility





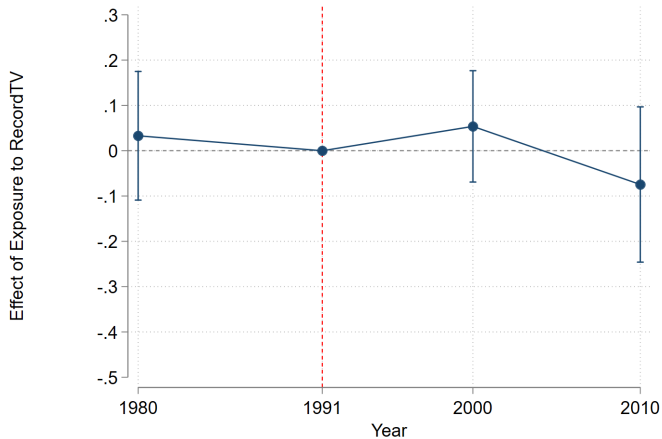
# Main Results

## Girls Education



# Main Results

## Boys Education

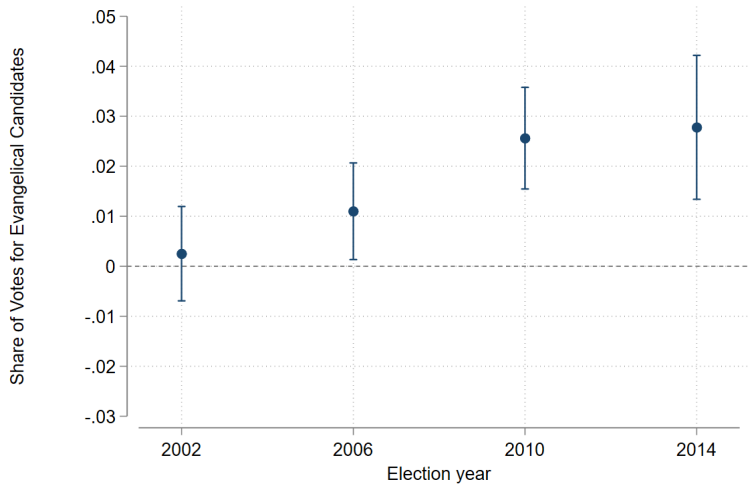


# Voting

- The Pentecostal church encourages followers to vote for their candidates
- Share of votes for religious-affiliated Congressman
  - ▶ Availability of information on religious affiliation
  - ▶ Candidates for Congress compete for votes in the entire state → exclude mechanical effect
- Lacerda (2017) hand-coded a list of Pentecostal candidates for the 2002, 2006, 2010, and 2014 elections
  - ▶ Religious references in candidacy names
  - ▶ Literature review matching candidates' names and churches
  - ▶ Online searches through prominent newspaper

# Results

## Voting



# Persuasion Rate

DellaVigna and Kaplan (2007)

Effect of the treatment on the relevant behavior, adjusting for exposure and population left to be convinced in the initial period :

$$f = \frac{y_T - y_C}{e_T - e_C} \cdot \frac{1}{1 - y_0},$$

- $y_T - y_C$ : treatment effect ( $\hat{\beta}_1$ )
- $e_T - e_C$ : effect of the coverage on viewership ( $\hat{\gamma}_1$ )
- $1 - y_0$ : share of non-Pentecostals in 1991

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Results: between 2.3%-8.5%

# Table of Contents

- 1 Background
- 2 Data
- 3 Empirical Strategy
- 4 Main Results
- 5 Conclusion**

# Conclusion

- Exposure to RecordTV increases adherence to the Pentecostal church
- Results suggest that the expansion of Pentecostalism lead to more conservative behaviors
- This paper emphasizes how the impact of technology is channeled through social norms and religious practices.
- Study of social norms has to account for the possibility of rapid change, as social movements can leverage changing technology to further their goals and quickly reshape the social landscape.



Thank you!

Contact: [marcela\\_mello\\_silva@brown.edu](mailto:marcela_mello_silva@brown.edu)

# Main Outcomes: Pre

Dep. Var.:	$\Delta$ Share of Pentecostals	$\Delta$ Number of Children	$\Delta$ LFP Women	$\Delta$ LFP Men	$\Delta$ Girls' Schooling	$\Delta$ Boys' Schooling	$\Delta$ Suicide Rate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Panel A: 1980-1991</b>							
Signal RecordTV 1991	.00042 (.0013)	.0011 (.0025)	-.006 (.005)	.004 (.0027)	.00036 (.0043)	-.00092 (.0041)	-.099 (.24)
Number of Obs	3935	3935	3935	3935	3935	3935	3988
Number of Clusters	3935	3935	3935	3935	3935	3935	3988
Propagation Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Munic. Controls Baseline	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State and MR FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean Dep. Var. Baseline	.03	.17	.41	.88	.26	.2	3.5

**Notes:** Data sources: 1991 and 2000 Census, TSE, SIM/SUS, and ANATEL. Dependent variable are defined as: (1) Share of Pentecostals (2) female labor for participation, (3) male labor for participation (4) the average number of children had by 15-35 years-old women had between 1991 and 2000, (5) share of 15-18 years-old girls that finished at least middle school, (6) share of 15-18 years-old girls that finished at least middle school, (7) homicides per 100,000 inhabitants. Regressions are weighted by the 1991 population. Robust standard errors.level. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

# Sample Restrictions

	(1) Pentecostal	(2) Female LFP	(3) Male LFP	(4) Gave Birth	(5) Girls' Schooling	(6) Boys' Schooling	(7) Suicide Rate	(8) Pentecostal Candidates
Benchmark	.0095*** (.0029)	-.0092* (.0048)	-.0053 (.0063)	.027* (.016)	-.022*** (.0069)	-.0096 (.0088)	-.03 (.025)	.0054* (.0032)
State Capitals	.0091*** (.0029)	-.011** (.0047)	-.0071 (.0063)	.025 (.016)	-.021*** (.0072)	-.0074 (.0093)	-.0087 (.023)	.0055* (.003)
State Capitals and Pop. > 1000K	.0089*** (.003)	-.011** (.0047)	-.0072 (.0063)	.026 (.016)	-.021*** (.0072)	-.0072 (.0093)	-.0079 (.023)	.006** (.0028)
State Capitals and Pop. > 500K	.0087*** (.003)	-.0099** (.0048)	-.0057 (.0063)	.028* (.016)	-.021*** (.007)	-.0061 (.0091)	-.013 (.022)	.0049* (.0026)
State Capitals and Pop. > 250K	.006** (.0027)	-.0078 (.0052)	-.01 (.0064)	.029 (.018)	-.023*** (.0074)	-.0026 (.0083)	-.0032 (.017)	.0021 (.0028)
State Capitals and Pop. > 100K	.0035 (.0027)	-.0061 (.0058)	-.0061 (.0069)	.038** (.019)	-.025*** (.0074)	-.0053 (.0088)	-.0017 (.011)	.0022 (.0019)
Transmitter	.0071** (.0029)	-.0083 (.0051)	-.0044 (.0063)	.014 (.017)	-.022*** (.0074)	-.0091 (.0095)	-.028 (.022)	.007** (.0034)
Transmitter and Distance > 10km	.0077*** (.0027)	-.0074 (.005)	-.0053 (.0064)	.01 (.018)	-.02*** (.0074)	-.0096 (.0095)	-.029 (.023)	.0077** (.0035)
Transmitter and Distance > 20km	.0071** (.0029)	-.0051 (.005)	-.0069 (.0065)	.0049 (.018)	-.019** (.008)	-.0094 (.0095)	-.027 (.023)	.0077** (.0037)
Transmitter and Distance > 30km	.0068** (.003)	-.0041 (.0057)	-.007 (.0073)	.012 (.02)	-.019** (.0079)	-.012 (.0098)	-.036* (.02)	.0083** (.0033)

Notes: Data sources: 1991 and 2000 Census and ANATEL. \*p<0.10, \*\*p<0.05, \*\*\*p<0.01

Table: Brazilian TV Channels (1950-1999)

TV Channel	Year Established	Year Discontinued	Coverage
TV Tupi	1950	1980	Nationwide
RecordTV	1953	-	Nationwide
TV Continental	1959	1970	Nationwide
TV Excelsior	1963	1970	Nationwide
TV Itapoan	1960	-	Nationwide
TV Globo	1965	-	Nationwide
TV Bandeirantes	1967	-	Nationwide
SBT	1981	-	Nationwide
Rede Manchete	1983	1999	Nationwide
MTV Brasil	1990	-	Nationwide

# Pentecostal's values

◀ Back

Variable	Pentecostal		Catholic		P-C
	Mean	SD	Mean	SD	p-value
Panel A: Opinion about Sensitive Topics					
Practice Religion Frequently (%)	77.2	42.2	42.1	49.4	0.00
Have Full Confidence in the Church (%)	62	48.8	55.8	49.7	0.26
God is Most Important in Life (%)	97.8	14.7	94.6	22.6	0.07
Think Religion is Important to Teach to Children (%)	79.3	40.7	65.7	47.5	0.00
Homosexuality Can Be Justified (%)	14.1	35	29	45.4	0.00
Abortion Can Be Justified (%)	4.35	20.5	9.33	29.1	0.04
Panel B: Individual Monthly Expenditure on Selected Goods as Share of Total Expenditure					
Alcohol (%)	.699	5	1.78	8.25	0.00
Tobacco (%)	1.4	7.68	4.08	13.7	0.00
Gambling (%)	.308	2.79	.999	6.21	0.00
Entertainment (%)	.208	2.23	.553	3.9	0.00
Transportation (%)	13.2	22.1	12.7	21.9	0.26
Food Outside the Home (%)	7.12	15.5	7.18	15.7	0.87

**Notes:** Data sources: 2002 Latin Barometer and 2002/2003 Brazilian Household Expenditure Survey (POF/IBGE).

# Interpretation

## Main Results

Dep. Var.:	$\Delta$ Share of Pentecostals				$\Delta$ Catholic	$\Delta$ Protestant
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A: Medium term (1991-2000)</b>						
Signal 1991	-.0025 (.0022)	.024*** (.0041)	.019*** (.0034)	.0077*** (.0019)	-.011*** (.0031)	.003*** (.0011)
<b>Panel B: Long term (1991-2010)</b>						
Signal 1991	-.0061** (.003)	.035*** (.0052)	.026*** (.0043)	.015*** (.0032)	-.02*** (.0045)	.0025** (.0012)
Number of Obs	3990	3990	3990	3989	3989	3989
Propagation Controls	No	Yes	Yes	Yes	Yes	Yes
Baseline Controls	No	No	Yes	Yes	Yes	Yes
State FE	No	No	No	Yes	Yes	Yes
Mean Dep. Var. Baseline	.03	.03	.03	.03	.83	.02

# Other Specifications

## Medium-term

Specification	Dependent Variables						
	Pentecostals	Fertility	FLPF	School Girls	MLPF	School Boys	Suicides
Signal	-.0025 (.0022)	.0056*** (.0014)	-.0065** (.0031)	.019*** (.0063)	.0056*** (.001)	.022*** (.0061)	-.12 (.077)
Signal FS	.02*** (.0043)	-.0029 (.002)	-.0067 (.0053)	-.024*** (.0088)	-.0053* (.0027)	-.019* (.0099)	-.61*** (.21)
Propagation	.024*** (.0041)	.00018 (.0018)	-.0093** (.0046)	-.01 (.0065)	-.00062 (.0028)	-.0027 (.0065)	-.46** (.19)
Controls	.019*** (.0034)	.0012 (.0017)	-.009** (.0037)	.000011 (.0068)	.0013 (.0028)	.00064 (.0068)	-.24 (.21)
MR FE	.0088*** (.002)	-.00074 (.0015)	-.017*** (.0036)	.0032 (.0052)	-.0044* (.0027)	.0016 (.005)	-.15 (.23)
State FE	.0077*** (.0019)	.00057 (.0015)	-.017*** (.0039)	-.0024 (.0048)	-.0033 (.0028)	-.0071 (.0047)	-.077 (.23)
Lagged outcome	.0077*** (.0019)	.00071 (.0014)	-.018*** (.004)	-.002 (.0048)	-.0024 (.0028)	-.0076 (.0047)	-.11 (.21)

# Other Specifications

## Long-term

Specification	Dependent Variables						
	Pentecostals	Fertility	FLPF	School Girls	MLPF	School Boys	Suicides
Signal	-.00093 (.0034)	.012*** (.0019)	.000028 (.0048)	-.02** (.0097)	.014*** (.0018)	-.0045 (.008)	-.2** (.095)
Signal FS	.03*** (.0066)	-.0043 (.0029)	-.015** (.0072)	-.0068 (.012)	-.015*** (.0041)	.0053 (.011)	-.42* (.25)
Propagation	.037*** (.0062)	.00075 (.0026)	-.01* (.0061)	-.021** (.0095)	-.0058 (.0041)	.0044 (.0088)	-.5** (.24)
Controls	.031*** (.0053)	.003 (.0021)	-.0063 (.0047)	-.0024 (.0064)	.0049 (.0041)	.012 (.0079)	-.3 (.24)
MR FE	.016*** (.0031)	.0022 (.0016)	-.012*** (.0044)	-.011* (.0057)	.0024 (.004)	-.0049 (.0061)	-.27 (.27)
State FE	.015*** (.0032)	.0037** (.0017)	-.015*** (.0045)	-.015*** (.0057)	.0018 (.0038)	-.0078 (.0058)	-.47* (.27)
Lagged outcome	.015*** (.0032)	.004*** (.0014)	-.017*** (.0044)	-.015*** (.0054)	.0033 (.0037)	-.0084 (.0056)	-.51** (.25)



# Characteristics by Coverage

	Mean	Univariate		State FE & Controls	
	(SD)	Coefficient	R <sup>2</sup>	Coefficient	R <sup>2</sup>
Population (log)	4.912 (2.088)	0.200 (0.211)	0.010	-0.345** (0.159)	0.652
Population Density	1.341 (2.247)	0.267 (0.166)	0.015	-0.159 (0.130)	0.735
Income per capita	47,139.120 (29,981.308)	7,134.692*** (2,195.064)	0.059	-1,702.973 (3,158.080)	0.701
Average Age	26.010 (2.504)	1.391*** (0.184)	0.322	0.304 (0.251)	0.674
Share of White	0.518 (0.250)	0.107*** (0.009)	0.192	0.025** (0.011)	0.864
Share of Women	0.506 (0.016)	0.002* (0.001)	0.021	-0.004*** (0.001)	0.454
Average Years Education	4.139 (1.546)	0.470*** (0.119)	0.096	-0.177 (0.122)	0.696
Share Urban Population	0.746 (0.262)	0.054*** (0.014)	0.044	0.012 (0.018)	0.531
Share TV	0.441 (0.208)	0.061*** (0.014)	0.089	-0.015 (0.017)	0.711
Share Radio	0.823 (0.139)	0.062*** (0.005)	0.210	-0.005 (0.006)	0.777
Gini Index	0.552	-0.008*	0.019	-0.030***	0.219