Independent Media, Propaganda, and Religiosity: Evidence from Poland

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Motivation

Historically, the Catholic Church explicitly opposed the freedom of the press, considering it dangerous for the values promoted by the Church and Church's popularity

- Pope Gregory XVI (1831–1846) claimed that the freedom of the press could never be sufficiently "anathematized" and Pope Pius IX (1846–1878) branded it "intrinsically evil"

More recently, the Church's rhetoric has changed to become more aligned with the modern democratic values

- Pope Francis (1936–), for instance, embraced media freedom as an essential and fundamental right

There was a concurrent general secularization trend in many European Catholic countries

Could the decrease in religiosity be related to how the Church is portrayed in the media?

Literature

The literature has documented important effects of media on a wide range of economic, social, and political outcomes:

- Surveys: DellaVigna & Gentzkow 2010; Enikolopov & Petrova 2015; DellaVigna & La Ferrara 2015

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There is evidence, in particular, that media can affect cultural traits, such as attitudes towards gender or sexual behavior:

- La Ferrara, Chong & Duryea 2012; Cheung 2012; Vaughan, Rogers, Singhal & Swalehe 2000; Banerjee, La Ferrara & Orozco 2015

Yet, there is still little evidence that media can affect other aspects of deeply-rooted culture, such as religion:

- A notable exception: Buccione & Mello (2023) show that the exposure to an Evangelical Pentecostal Church's private TV channel in Brazil has an effect on the size of Pentecostal religious movement

No quantitative evidence on how media critical of the Church affects its popularity or whether non-Church mainstream media can affect religiosity

Research question

Can non-religious mainstream media affect religiosity, which is one of the most deep-seated cultural traits?

We use a quasi-natural social experiment that took place in one of the most Catholic countries in Europe, Poland

- In 2015, a right-wing populist party Law and Justice (PiS) came to power and took editorial control of all state media, unleashing pro-PiS and pro-Catholic Church propaganda

- After 2015, only few independent media remained

- TVN remained the main freely-available TV network, which criticized the illiberal turn of Polish government and exposed
  - mutually-beneficial relationship between the Church and the ruling party,
 - pedophilia cases within the Church

Main TV stations

1. TVPolska: state TV network, available almost everywhere
2. TVN: private TV network
3. Polsat: private TV network
   - use the same transmitting infrastructure, available in 70% of municipalities
4. Entertainment multiplex (no news)
   - collection of private TV networks, started to broadcast in 2016, use different infrastructure, available in about 70% of municipalities, different from TVN and Polsat

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- Before 2015: all three main TV channels with news had independent moderately-liberal slant
- After 2015: TVPolska unleashed state propaganda, Polsat suppressed content unfavorable to the government, TVN remained independent

State advertising on TV

PiS reacted with channeling TV advertising of state companies to friendly TV networks:
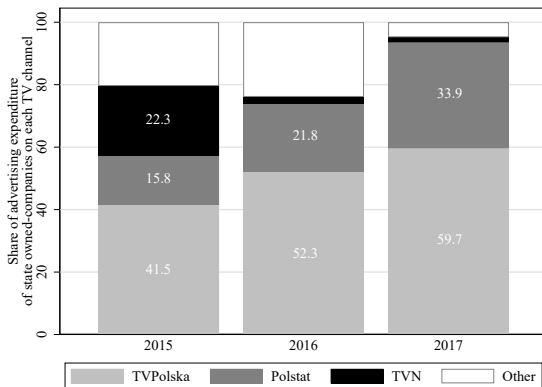
The change in content

- No transcripts available
- Scraped official Twitter accounts of TVN, TVPolska, and Polsat:
  6 accounts, 871,475 tweets in 2012-2021
  - TVPolska: @WiadomosciTVP, @tvp_info; TVN: @faktytvn, @tvn24; Polsat:
    @PolsatNews.pl, @WIOwPN

<div align="center">Compared similarity (from 0 to 1):</div>

TVPolska & TVN to themselves in 2014   TVPolska to TVN & Polsat
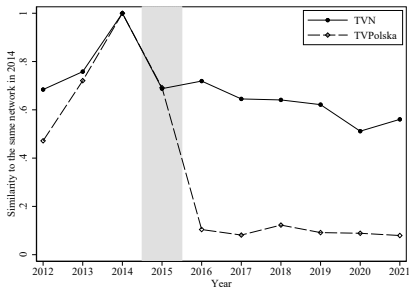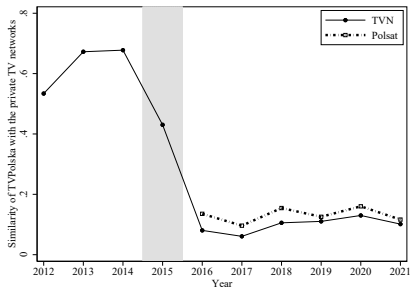
In 2018, pedophilia scandals in the Church surfaced: Only TVN covered them

In 2019, TVN was the only TV network to broadcast the documentary "Tell no-one"
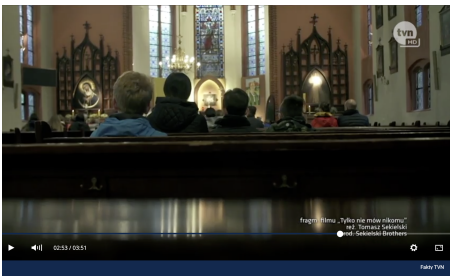
In 2020, TVN showed a reportage about cardinal Stanislaw Dziwisz, Archbishop of Krakow

The personal secretary to the Pope John Paul II, who took part in covering up cases of sexual abuse by Catholic priests

Zajawka reportażu Marcina Gutowskiego o kard. Stanisławie Dziwiszu fot. TVN24.pl

TVPolska lost viewership after turning to propaganda
Prime-time news programs: TVN *Fakty*, TVPolska *Wiadomosci*, Polsat *Wydarzenia*
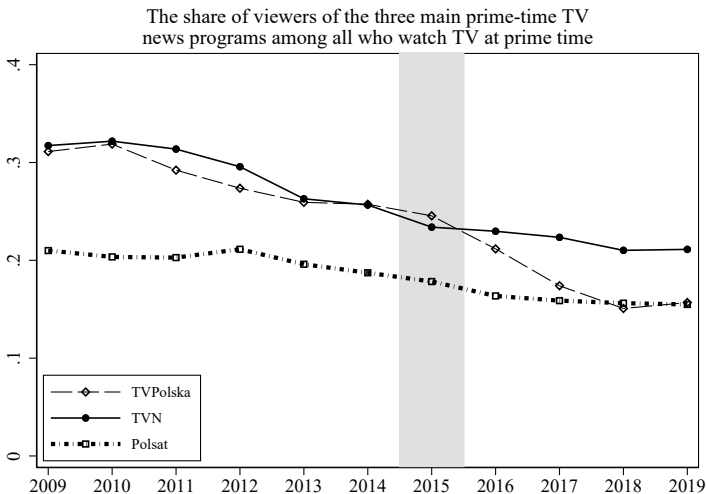
The share of viewers of the three main prime-time TV news programs among all who watch TV at prime time

This paper

1. We analyze the effect of the sharp change in the content of state TV (TVPolska) in 2015 on religious behavior depending on whether the viewers also had or did not have access to independent TV using municipality-level panel data in Poland and find:

   - After PiS came to power, religious participation increased more in places where independent TV was not available relative to places where it was available

This paper

1. We analyze the effect of the sharp change in the content of state TV (TVPolska) in 2015 on religious behavior depending on whether the viewers also had or did not have access to independent TV using municipality-level panel data in Poland and find:

   - After PiS came to power, religious participation increased more in places where independent TV was not available relative to places where it was available

2. To understand what kind of content decreased religiosity, we conduct a large-scale online experiment exposing random subsets of Polish voters to information from independent media about:

   - mutual-benefit relationship b/w the ruling party and the Church
   - the lack of reaction of the Church to pedophilia cases within it
     - Find persistent effects of both treatments, but the effect of exposing pedophilia is more important

Roadmap

1. Analysis of observational data
   - Data
   - Empirical methodology
   - Results

2. Experiment
   - Setup and treatment
   - Results of the 1st wave
   - Results of the 2nd wave

3. Conclusions

Data

1. Religiosity (2009-2019): Panel data on rates of mass attendance and taking Holy Communion by municipality
   - The numbers of people in each parish counted on the third Sunday of October of each year
   - Source: Institute of Statistics of the Catholic Church

2. Media landscape: Signal strengths of main networks in 2015
   - Source: ITM model, use transmitter location, height, and strength to calculate predicted signal
   - Data on availability of good TV Signal from the National Council for Radio and TV (*KRITT*)
   - Panel data on viewership by region and year of the main news programs by TVN and TVPolska

3. Controls
   - Mobile and fixed Internet: Access to 3G and distance to the broadband infrastructure
   - Natural disasters
   - Nighttime light density
   - Panel data on cable TV subscriptions by region and year

TV coverage: Signal quality from Irregular Terrain Model

TVN (& Polsat) vs. TVPolska signals across 2450 municipalities:

(a) TVN: 71%   (b) TVPolska: 90%

◀ Map of entertainment TV multiplex

Dichotomizing TVN Signal Strength

Relationship b/w "Good TVN Signal" from National Council for Radio and TV (KRITT) and signal strength from ITM

bandwidth = .8
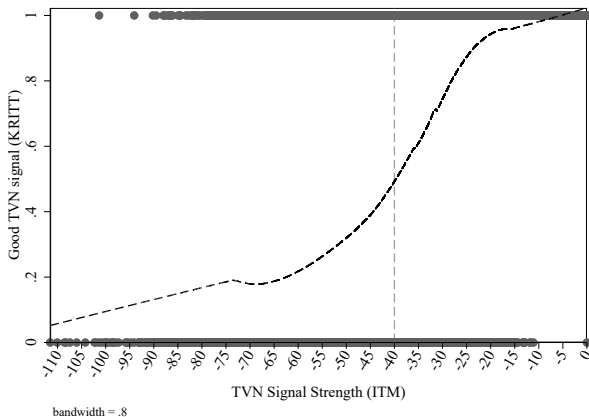
-40 dB cut-off is consistent with other studies that use ITM
(e.g., Olken 2009; Bursztyn and Cantoni 2016)

Determinants of signal strength (LASSO)

|	TVN	TVPolska
	Good Signal	Good Signal
	LASSO	LASSO
	(1)	(2)
Free-space TVN signal strength in 2015	0.043*** (0.005)	
Free-space TVPolska signal strength in 2015		0.019*** (0.005)
Top population decile	0.049*** (0.019)	-0.039* (0.021)
Austro-Hungarian partition	-0.255*** (0.054)	-0.074*** (0.028)
Prussian partition	0.029 (0.044)	
(log) Altitude	-0.032 (0.021)	-0.033** (0.015)
Share of population employed in agriculture		-0.002** (0.001)
Pre-2009 support for PiS (PCA)	-0.017 (0.013)	
Observations	2478	2478
R-squared	0.275	0.163
Mean of dependent variable	0.71	0.90

List of other variables:

- Population-size deciles
- Night-time lights pc
- Fixed / mobile internet
- Rural / urban areas
- Shares with different education levels
- Age structure of pop.
- EU subsidies per capita
- Municipality revenue pc
- Industrial production pc
- Wages relative to country average
- Share of population that speaks only Polish
- Religious participation in 2009

Viewers switched to watching TVN, where it is available

Dependent variable:	Share of TVN viewers among			
	(1)	(2)	(3)	(4)
Weighted mean $\mathbb{1}$\{Good TVN signal\}	0.213**	0.154**		
	(0.054)	(0.054)		
Weighted mean $\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{Post PiS\}		0.175**	0.146**	0.145**
		(0.057)	(0.048)	(0.060)
Weighted mean $\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{2015\}		0.041	-0.001	-0.008
		(0.046)	(0.057)	(0.051)
Year FE	✓	✓	✓	✓
Log prime-time viewers of TVN and TVPolska		✓	✓	✓
Weighted mean Free TVN signal $\times$ Post; $\times$ 2015		✓	✓	✓
Weighted mean Free TVN signal		✓		
Region FE			✓	✓
Fixed and Mobile Internet $\times$ Year FE				✓
Log cable TV subscribers				✓
Observations	176	176	176	176
R-squared	0.357	0.518	0.519	0.538
Mean of dependent variable	0.491	0.491	0.491	0.491
SD of variable of interest	0.151	0.151	0.151	0.151
Wild bootstrap-t p-value: $\mathbb{1}$\{Good TVN signal\}	0.014	0.035		
Wild bootstrap-t p-value: $\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{Post PiS\}		0.064	0.044	0.079

Mass Attendance and Taking Communion (2019)
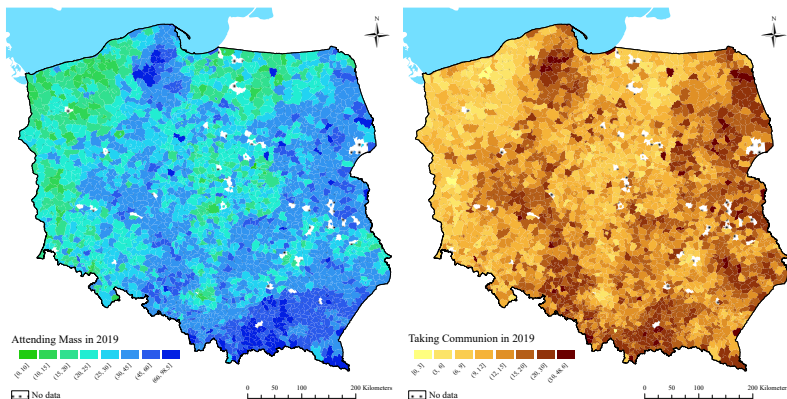
(a) Mass attendance

(b) Taking Communion

This spatial pattern is very persistent and can be traced back to the Partitions of Poland in the 18th century (Grosfeld & Zhuravskaya 2015)

Secularization trends in religiosity (2000–2019)
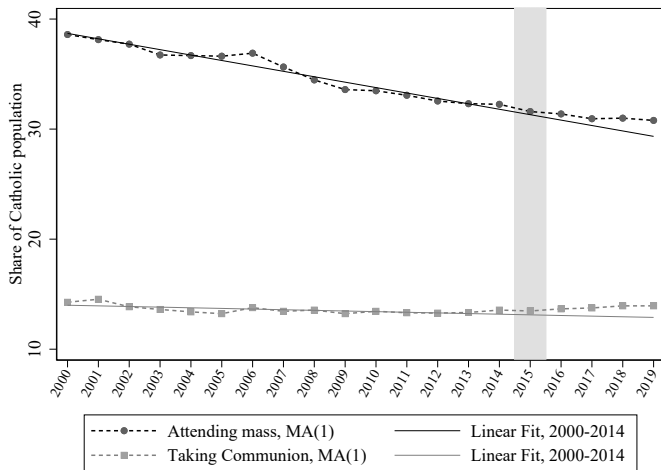
PiS won 2 elections in 2015: Presidential (May) and Parliamentary (October)

- PiS got control of editorial policy of public media after October

Trends in religiosity by TVN signal strength (2009–2019)
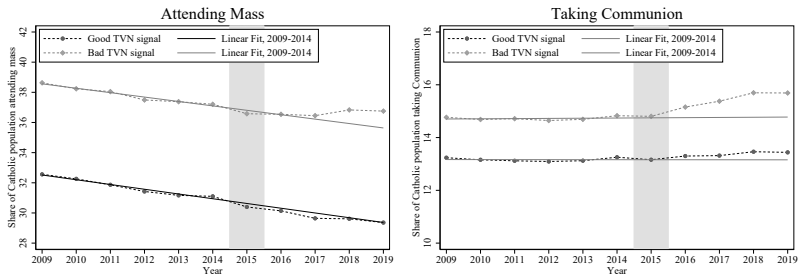
Correlation between initial religiosity and TVN signal

Difference in Differences

$$Religiosity_{mt} = \alpha_1 TVsignal_m \times Post_t + \beta_1 FreeSpaceSignal_m \times Post_t$$
$$+ \alpha_2 TVsignal_m \times 2015_t + \beta_2 FreeSpaceSignal_m \times 2015_t$$
$$+ \mathbf{X'_{mt}}\delta + \mu_m + \tau_t + \epsilon_{mt},$$

- m – municipality (gminy); t – year
- $Religiosity_{mt}$ – attending mass, taking Communion
- $TVsignal_m$ – good signal strength of TVN
- $FreeSpaceSignal_m$ – free-space signal strength of TVN
- $Post_t$ – dummy for the period after PiS came to power (> 2015)
- 2015_t – dummy for the transition year
- X_{mt} – municipality-level covariates: mobile and stationary internet by year FEs, log nightlight density per capita, disasters, etc.
- μ_m – municipality fixed effects
- τ_t – year fixed effects
- ϵ_{mt} – SEs corrected for spatial correlation within 100 km radius

There are no pre-trends

TVN availability and religious participation:
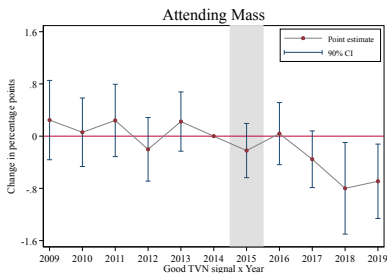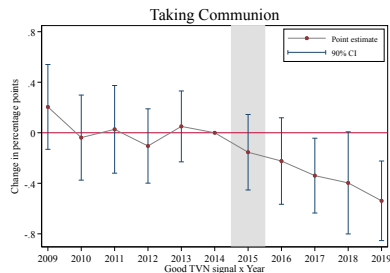
(a) Attending mass   (b) Taking Communion

Mass attendance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Dependent Variable			Share of Catholic population attending mass				
$\mathbb{1}\{$Good TVN signal$\} \times \mathbb{1}\{$Post PiS$\}$	-0.791***	-0.729***	-0.877***	-0.539**	-0.574**		
	(0.227)	(0.220)	(0.260)	(0.248)	(0.246)		
$\mathbb{1}\{$Good TVN signal$\} \times \mathbb{1}\{2015\}$	-0.401**	-0.370*	-0.488**	-0.313	-0.350*		
	(0.194)	(0.193)	(0.202)	(0.197)	(0.208)		
TVN signal strength $\times \mathbb{1}\{$Post PiS$\}$						-0.035**	-0.039**
						(0.015)	(0.015)
TVN signal strength $\times \mathbb{1}\{2015\}$						-0.011	-0.014
						(0.012)	(0.012)
Free-space TVN signal strength $\times \mathbb{1}\{$Post PiS$\}$			0.029	0.022	0.024	0.051*	0.057*
			(0.022)	(0.022)	(0.022)	(0.029)	(0.029)
Free-space TVN signal strength $\times \mathbb{1}\{2015\}$			0.023	0.018	0.027	0.021	0.033
			(0.023)	(0.021)	(0.023)	(0.027)	(0.030)
R-squared	0.850	0.851	0.851	0.852	0.852	0.852	0.852
Mean of dependent variable	34.99	34.99	34.99	34.99	34.99	34.99	34.99
Year and Municipality FEs	✓	✓	✓	✓	✓	✓	✓
Fixed and Mobile Internet $\times$ Year FEs		✓	✓	✓	✓	✓	✓
Nighttime light density per capita		✓	✓	✓	✓	✓	✓
Disaster dummy		✓	✓	✓	✓	✓	✓
Log cable TV subscribers		✓	✓	✓	✓	✓	✓
Partitions of Poland $\times$ Year trend				✓		✓	
Partitions of Poland $\times$ Year FEs					✓		✓
Observations	26,617	26,617	26,617	26,617	26,617	26,617	26,617
SD of the TVN signal measure	0.45	0.45	0.45	0.45	0.45	10.13	10.13

Taking Communion

Panel B: Dependent Variable	Share of Catholic population taking Communion						
𝟙{Good TVN signal} × 𝟙{Post PiS}	-0.557***	-0.507***	-0.600***	-0.394***	-0.355**		
	(0.124)	(0.124)	(0.143)	(0.140)	(0.138)		
𝟙{Good TVN signal} × 𝟙{2015}	-0.273**	-0.261*	-0.283*	-0.176	-0.243*		
	(0.138)	(0.134)	(0.152)	(0.149)	(0.142)		
TVN signal strength × 𝟙{Post PiS}						-0.034***	-0.031***
						(0.008)	(0.008)
TVN signal strength × 𝟙{2015}						-0.017	-0.024**
						(0.015)	(0.012)
Free-space TVN signal strength × 𝟙{Post PiS}			0.018	0.008	0.004	0.041**	0.035**
			(0.014)	(0.013)	(0.013)	(0.016)	(0.016)
Free-space TVN signal strength × 𝟙{2015}			0.004	-0.002	0.006	0.015	0.031
			(0.014)	(0.014)	(0.014)	(0.024)	(0.022)
R-squared	0.745	0.746	0.746	0.747	0.748	0.748	0.748
Mean of dependent variable	14.61	14.61	14.61	14.61	14.61	14.61	14.61
Year and Municipality FEs	✓	✓	✓	✓	✓	✓	✓
Fixed and Mobile Internet × Year FEs		✓	✓	✓	✓	✓	✓
Nighttime light density per capita		✓	✓	✓	✓	✓	✓
Disaster dummy		✓	✓	✓	✓	✓	✓
Log cable TV subscribers		✓	✓	✓	✓	✓	✓
Partitions of Poland × Year trend				✓		✓	
Partitions of Poland × Year FEs					✓		✓
Observations	26,617	26,617	26,617	26,617	26,617	26,617	26,617
SD of the TVN signal measure	0.45	0.45	0.45	0.45	0.45	10.13	10.13

Municipalities by TVN reception and the matched sample

T & C pairs: Good vs. Bad TVN signal, 1SD difference in TVN signal strength, have the closest propensity scores, are perfectly balanced

(a) Good TVN Signal   (b) Matched sample

Balance test in the matched sample

Event-study in the matched sample
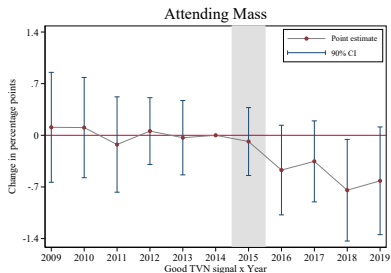
(a) Attending mass
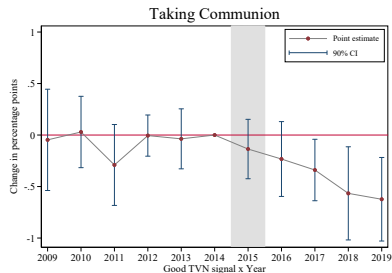
(b) Taking Communion

ATE in the matched sample

Very close to the baseline estimates

| | Share of Catholic population | | | |
| | attending mass | | taking Communion | |
	(1)	(2)	(3)	(4)
$\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{Post PiS\}	-0.602**	-0.568**	-0.387**	-0.384**
	(0.259)	(0.252)	(0.157)	(0.153)
$\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{2015\}	-0.153	-0.106	-0.091	-0.082
	(0.188)	(0.201)	(0.161)	(0.158)
Year and Municipality FEs	✓	✓	✓	✓
Fixed and Mobile Internet $\times$ Year FE		✓		✓
Night-time light density per capita		✓		✓
Disaster dummy		✓		✓
Log cable TV subscribers		✓		✓
Partitions of Poland $\times$ Year FEs		✓		✓
Observations	21,055	21,055	21,055	21,055
R-squared	0.836	0.839	0.730	0.733
Mean of dependent variable	34.68	34.68	14.46	14.46
SD of the TVN signal measure	0.42	0.42	0.42	0.42

Other robustness checks and heterogeneity

Robustness checks:

- Controlling for the effects of TVPolska and entertainment TV after 2015 ◄ Other TV channels
- Controlling for the effects of population deciles over time ◄ Additional covariates
- Controlling for the effects of pre-2009 support for PiS over time
- Controlling for the effects of religiosity in 2009 over time
- Restricting the analysis to post-2013 after switch to digital transmission ◄ Digital transmission
- Different Conley correction thresholds ◄ Alternative thresholds

Heterogeneity:

- Estimated effects are larger in municipalities with a greater religious participation in 2009 and in rural areas ◄ Heterogeneous effects

How big are the estimated effects?

- In places where TVN was not freely available, pro-Church state propaganda slowed down the decline in the rate of mass attendance by 28 percent and fully reversed the decline in the rate of taking Communion

- Trends continued in places where the independent TV was available

Persuasion rates:

- Using data on viewership of TVN's and of TVPolska's main news programs, we calculate the persuasion rates of watching:

		TVN	TVPolska
Attending mass	$f =$	-11.5	4.6
Taking Communion	$f =$	-17.0	2.3

What type of content on TVN reduced religiosity?

TVN exposed both:

1. pedophilia in the Church
2. relationship b/w the ruling party PiS and the Church

We conducted an online survey-experiment:

- To test how each of these two types of content affects viewers
- To explore mechanisms and individual heterogeneity

Two different information treatments from the independent media

Design

Survey-experiment conducted in Poland by a consortium of two polling firms: CBOS and opinie.pl

- We pre-registered it: AEARCTR-0005767
- And obtained IRB approval: PSE 2020-007

9,416 Poles were randomly drawn from a pool of over 100,000 subscribers to the opinie.pl online platform

- Three subgroups of equal sizes (N =3×3000+): C, T1, T2
- Stratified randomization: age × gender × education

Timeline of the experiment and surveys

Main outcome of interest: religiosity, measured as trust in religious institutions, attitudes towards the Church, donations to Catholic NGOs, etc.

Two stages of the experiment:

❶ First survey (Apr 29–May 11, 2020):

    1: collected pre-treatment characteristics
    2: exposed participants to the treatments
    3: collected the short-term outcomes

❷ Follow-up survey, three-four weeks later

    - collected longer-term outcomes on attitudes and self-reported behavior

Treatment 1: Child abuse in the Church
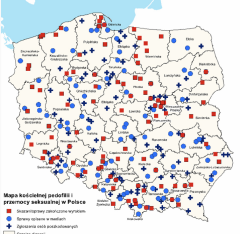
- A map of pedophilia cases (submitted in a report to Pope Francis)
- A video interview with a creator of the map about cover-ups
- A story of one child-abuser priest who was moved between parishes

Treatment 2: Ties between PiS and the Church

- A quote from PiS manifesto about the leading role of the Catholic Church
- Information on government funding of Catholic media
- Examples of priests calling mass attendees to vote for PiS
- A video of a PiS leader thanking the Catholic Church for support during the election campaign

Average treatment effects: Trust in the Church

Trust in religious institutions (PCA)
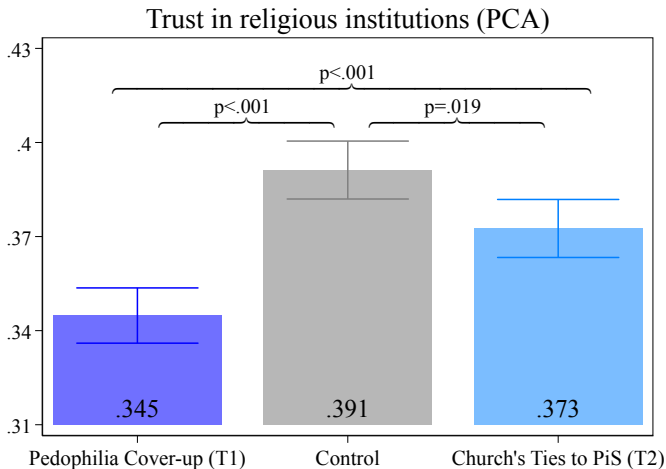
Average treatment effects: Donations

Chose a religious foundation to donate

(Inverse of) Attrition Rate by Treatment Status

Participated in the follow up

LT Average treatment effects: Trust in the Church

Trust in religious institutions (PCA)
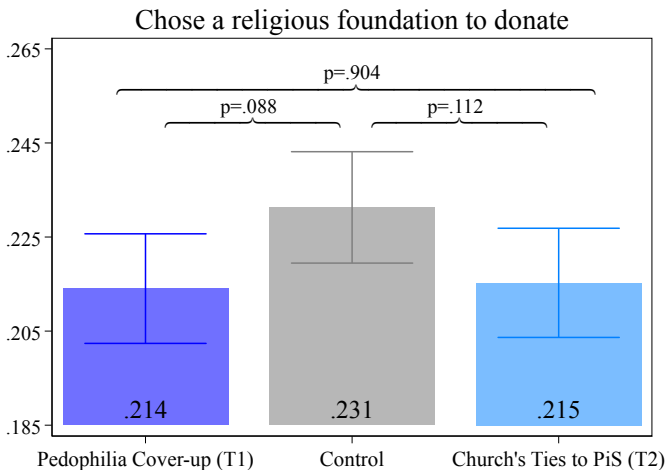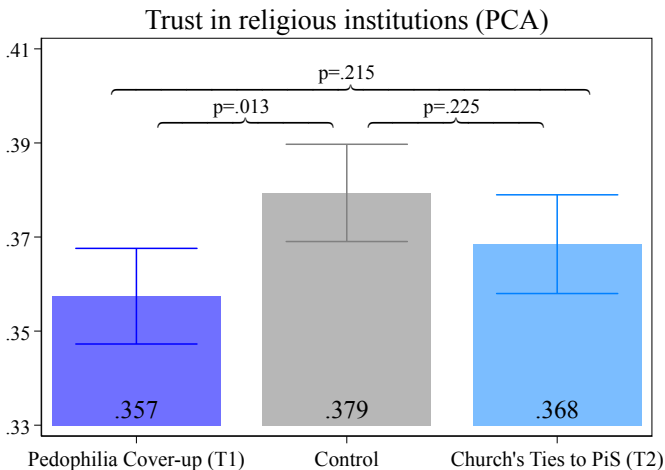
LT Average treatment effects: Mass attendance intent

Intends to participate in the mass at least once a week in the future
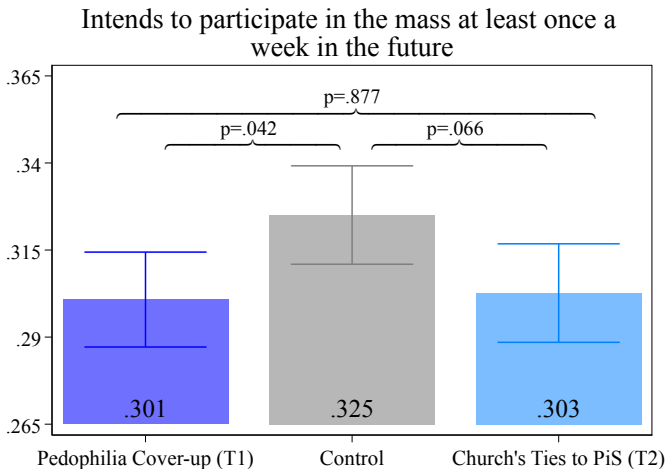
LT Average treatment effects: Mechanism
Searched information on pedophilia

Actively searched information on pedophilia in the Church in the media or on the internet
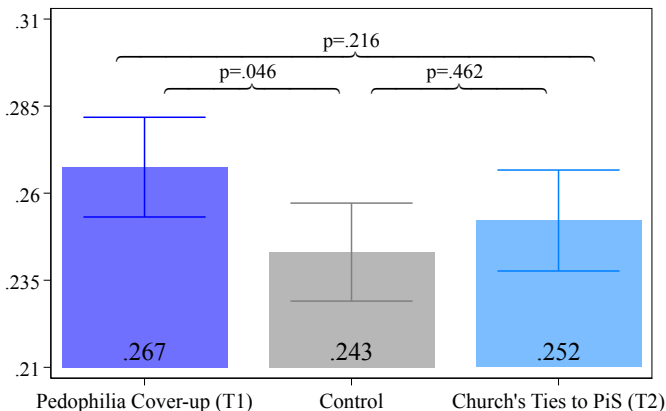
LT Average treatment effects: Mechanism
Watched documentary "Tell no one" since the first round

Watched 'Tell no one' since the first round
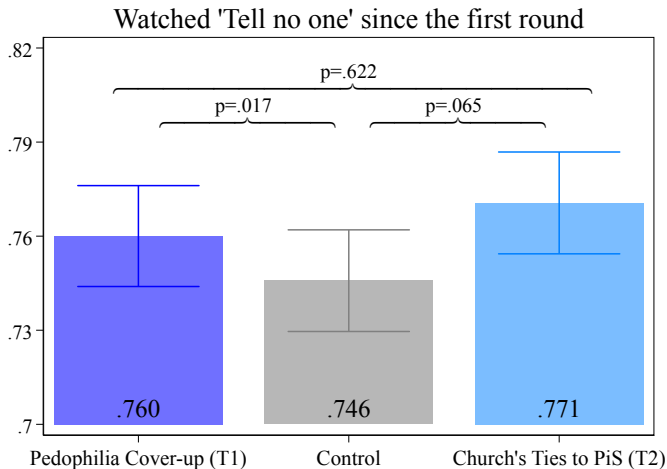
Experimenter Demand Effects
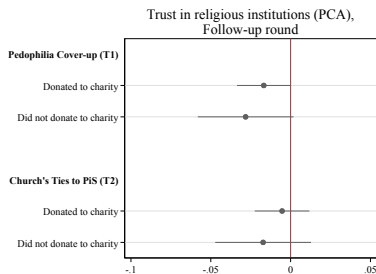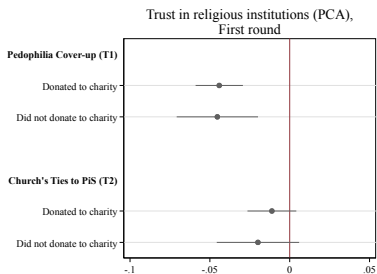
Persuasion rates in the experiment

Outcome:	Mean		
	Control	Treatment 1	Persuasion rate
Trust in the Church (1st wave)	0.381	0.346	-12.1%
Trust in the Church (2nd wave)	0.376	0.357	-5.9%
Donated to religious foundations	0.223	0.215	-7.6%
Attend mass weekly in the future	0.314	0.300	-7.6%

Conclusion

Media can significantly affect religiosity, a deeply-rooted cultural trait

- Independent TV has an important countervailing effect to media propaganda

- Experiment confirms that exposure to content critical of the Church available only on independent media decreases in trust in religious institutions

- The impact of TV is stronger in more religious and rural municipalities. Similarly, experimental treatment effects are larger among religious people from rural areas

- Access to free-to-air independent TV still remains important even in the age of internet as people do not search for independent information unless it is freely available

Appendix

Entertainment TV: Signal quality from Irregular Terrain Model

Entertainment TV Signal Strength

[-69.6,-60.0] [-60.0,-55.0] [-55.0,-50.0] [-50.0,-45.0] [-45.0,-40.0] [-40.0,-35.0] [-35.0,-30.0] [-30.0,-20.0]

+ Antennas

0   50   100   200 Kilometers
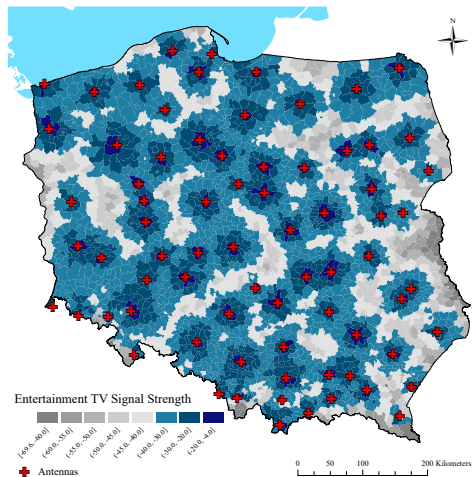
◂ Back

Correlation between signal strength in 2015 and in 2019

coef = .982, (robust) se = .006, t = 171., N = 2478, R-squared = .98

(a) TVN

coef = .995, (robust) se = .003, t = 344., N = 2478, R-squared = .98
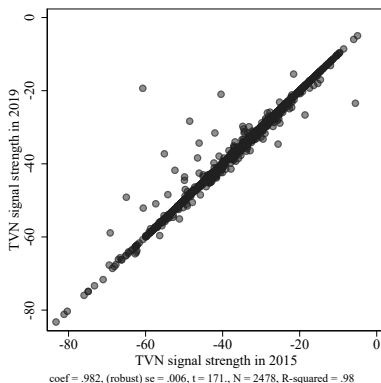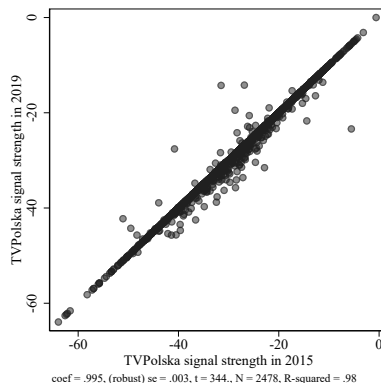
(b) TVPolska

Correlation between initial religiosity and TVN signal strength

	Mass attendance in 2009		Taking Communion in 2009	
	(1)	(2)	(3)	(4)
Panel A:	Good TVN signal strength and religiosity			
𝟙{Good TVN signal in 2015}	-3.461**	-1.355	-0.839	-0.426
	(1.526)	(0.920)	(0.563)	(0.346)
Free-space TVN signal strength in 2015		-0.090		-0.047
		(0.075)		(0.037)
Prussian partition		0.672		0.388
		(2.536)		(1.295)
Austro-Hungarian partition		17.543***		2.549**
		(2.021)		(1.291)
Observations	2418	2418	2418	2418
R-squared	0.017	0.263	0.005	0.028
Panel B:	Good TVPolska signal strength and religiosity			
𝟙{Good TVPolska signal in 2015}	-1.396	-0.796	-0.917*	-0.679
	(1.538)	(1.275)	(0.552)	(0.528)
Free-space TVPolska signal strength in 2015		-0.157*		-0.052
		(0.095)		(0.036)
Prussian partition		0.647		0.385
		(2.555)		(1.319)
Austro-Hungarian partition		18.399***		2.772**
		(2.287)		(1.264)
Observations	2418	2418	2418	2418
R-squared	0.001	0.265	0.003	0.029

◄ Back

Bin scatter plots: Religious participation and TVN
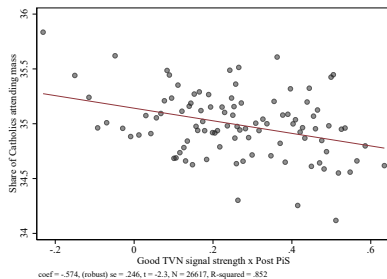
(a) Attending mass
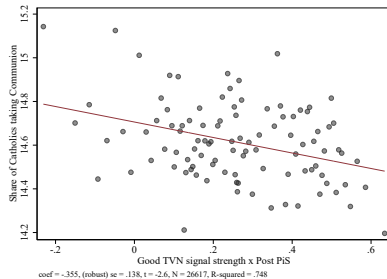
(b) Taking Communion

[◂ Back]

First difference: residual variation net off controls

Religiosity in municipalities with good and bad TVN signal

(a) Attending mass

(b) Taking Communion

Scatter plots of the signal strength of different TV networks across municipalities

(a) TVN vs. TVPolska   (b) TVN vs. Entertainment TV
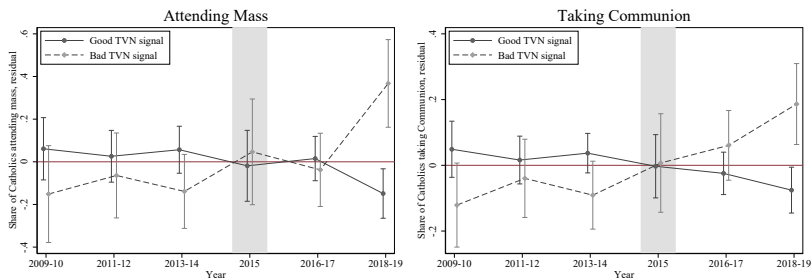
Balance test of treatment status in the matched sample

Variable	N	(1) Control Mean/(SE)	N	(2) Treated Mean/(SE)	N	(1)-(2) Pairwise t-test P-value
Log night-time lights per capita in 2009	451	-1.984 (0.056)	1495	-1.890 (0.018)	1946	0.112
Log distance to optic-fiber internet nodes	451	0.967 (0.034)	1495	0.991 (0.013)	1946	0.513
Speed of 3G mobile internet	451	38.327 (0.568)	1495	38.492 (0.248)	1946	0.790
Religious participation (PCA), 2009-2014	451	-0.098 (0.081)	1495	-0.083 (0.034)	1946	0.867
Pre-2009 support for PiS (PCA)	451	-0.059 (0.092)	1495	-0.092 (0.039)	1946	0.740
Austro-Hungarian partition	451	0.120 (0.017)	1495	0.128 (0.009)	1946	0.654
Prussian partition	451	0.419 (0.035)	1495	0.445 (0.013)	1946	0.482
Log population	451	9.079 (0.060)	1495	9.131 (0.022)	1946	0.418
Share of working age population	451	67.363 (0.170)	1495	67.401 (0.068)	1946	0.832
Log cable TV subscribers in 2009	451	12.599 (0.041)	1495	12.584 (0.016)	1946	0.733
Log altitude	451	5.032 (0.048)	1495	4.950 (0.021)	1946	0.120
Share of population employed in agriculture	451	36.861 (1.244)	1495	35.231 (0.513)	1946	0.226
Share of population with secondary education	451	17.679 (0.296)	1495	18.046 (0.103)	1946	0.242
Share of population with higher education	451	6.205 (0.207)	1495	6.231 (0.075)	1946	0.905

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Effect of TVN vs. TVPolska and Entertainment TV

Mass attendance

Sample:	All municip.	Good TVPolska	Good Entert. TV	Bad TVN reception	All municip.
	(1)	(2)	(3)	(4)	(5)
Panel A: Dependent Variable:	Share of Catholic population attending mass				
$\mathbb{1}$\{Good TVN signal\} × $\mathbb{1}$\{Post PiS\}	-0.717**	-0.632**	-0.656**		
	(0.311)	(0.276)	(0.314)		
$\mathbb{1}$\{Good TVPolska signal\} × $\mathbb{1}$\{Post PiS\}	0.098			0.058	
	(0.338)			(0.432)	
$\mathbb{1}$\{Good entertainment TV signal\} × $\mathbb{1}$\{Post PiS\}	0.112			0.192	0.128
	(0.253)			(0.449)	(0.256)
$\mathbb{1}$\{Good TVN signal\} × $\mathbb{1}$\{Good TVPolska signal\} × $\mathbb{1}$\{Post PiS\}					-0.568*
					(0.342)
$\mathbb{1}$\{Good TVN signal\} × $\mathbb{1}$\{Bad TVPolska signal\} × $\mathbb{1}$\{Post PiS\}					0.397
					(0.549)
$\mathbb{1}$\{Bad TVN signal\} × $\mathbb{1}$\{Good TVPolska signal\} × $\mathbb{1}$\{Post PiS\}					0.211
					(0.369)
R-squared	0.079	0.081	0.085	0.064	0.079
Mean of dependent variable	34.99	34.78	34.57	37.88	34.99
Year and Municipality FEs	✓	✓	✓	✓	✓
Fixed and Mobile Internet × Year FE	✓	✓	✓	✓	✓
Night-time light density per capita	✓	✓	✓	✓	✓
Disaster dummy	✓	✓	✓	✓	✓
Log cable TV subscribers	✓	✓	✓	✓	✓
Partitions of Poland × Year FEs	✓	✓	✓	✓	✓
Free-space TVN signal strength	✓	✓	✓		
Free-space TVPolska and entert. TV signal strength	✓			✓	✓
All relevant interactions with $\mathbb{1}$\{2015\}	✓	✓	✓	✓	✓
Observations	26,617	23,913	19,287	7,672	26,617
SD of the TVN signal measure	0.45	0.41	0.38	0.00	0.45

◂ Correlation between signal strength of different channels

Effect of TVN vs. TVPolska and Entertainment TV

Taking Communion

Panel B: Dependent Variable:	Share of Catholic pop. taking Communion				
$\mathbb{1}${Good TVN signal} $\times$ $\mathbb{1}${Post PiS}	-0.465***	-0.362**	-0.308*		
	(0.164)	(0.150)	(0.173)		
$\mathbb{1}${Good TVPolska signal} $\times$ $\mathbb{1}${Post PiS}	0.022			0.008	
	(0.204)			(0.254)	
$\mathbb{1}${Good entertainment TV signal} $\times$ $\mathbb{1}${Post PiS}	0.196			0.116	0.201
	(0.139)			(0.236)	(0.140)
$\mathbb{1}${Good TVN signal} $\times$ $\mathbb{1}${Good TVPolska signal} $\times$ $\mathbb{1}${Post PiS}					-0.431**
					(0.207)
$\mathbb{1}${Good TVN signal} $\times$ $\mathbb{1}${Bad TVPolska signal} $\times$ $\mathbb{1}${Post PiS}					-0.188
					(0.580)
$\mathbb{1}${Bad TVN signal} $\times$ $\mathbb{1}${Good TVPolska signal} $\times$ $\mathbb{1}${Post PiS}					0.050
					(0.213)
R-squared	0.748	0.751	0.752	0.741	0.748
Mean of dependent variable	14.61	14.48	14.34	15.53	14.61
Year and Municipality FEs	✓	✓	✓	✓	✓
Fixed and Mobile Internet $\times$ Year FE	✓	✓	✓	✓	✓
Night-time light density per capita	✓	✓	✓	✓	✓
Disaster dummy	✓	✓	✓	✓	✓
Log cable TV subscribers	✓	✓	✓	✓	✓
Partitions of Poland $\times$ Year FEs	✓	✓	✓	✓	✓
Free-space TVN signal strength	✓	✓	✓		✓
Free-space TVPolska and entert. TV signal strength	✓			✓	✓
All relevant interactions with $\mathbb{1}${2015}	✓	✓	✓	✓	✓
Observations	26,617	23,913	19,287	7,672	26,617
SD of the TVN signal measure	0.45	0.41	0.38	0.00	0.45

Robustness: Additional covariates

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Dependent Variable:			Share of Catholic pop. attending mass			
$\mathbb{1}\{$Good TVN signal$\} \times \mathbb{1}\{$Post PiS$\}$	-0.568**	-0.548**	-0.613**	-0.551**	-0.694***	-0.633***
	(0.243)	(0.243)	(0.246)	(0.242)	(0.241)	(0.239)
$\mathbb{1}\{$Good TVN signal$\} \times \mathbb{1}\{2015\}$	-0.262	-0.286	-0.272	-0.263	-0.347	-0.356
	(0.205)	(0.211)	(0.209)	(0.204)	(0.212)	(0.218)
R-squared	0.0802	0.0861	0.0810	0.0806	0.1155	0.1272
Mean of dependent variable	35.03	35.03	35.03	35.03	35.03	35.03
Osters delta						5.78
Panel B: Dependent Variable:			Share of Catholic pop. taking Communion			
$\mathbb{1}\{$Good TVN signal$\} \times \mathbb{1}\{$Post PiS$\}$	-0.347**	-0.337**	-0.353**	-0.327**	-0.390***	-0.348**
	(0.137)	(0.138)	(0.137)	(0.137)	(0.140)	(0.141)
$\mathbb{1}\{$Good TVN signal$\} \times \mathbb{1}\{2015\}$	-0.200	-0.209	-0.189	-0.190	-0.235	-0.215
	(0.148)	(0.156)	(0.142)	(0.152)	(0.156)	(0.161)
R-squared	0.7508	0.7513	0.7508	0.7509	0.7573	0.7573
Mean of dependent variable	14.62	14.62	14.62	14.62	14.62	14.62
Osters delta						3.11
Year and Municipality FEs	✓	✓	✓	✓	✓	✓
Fixed/Mobile Internet × Year FEs; Night lights; Disasters	✓	✓	✓	✓	✓	✓
Free-space TVN signal strength × Post PiS and in 2015	✓	✓	✓	✓	✓	✓
Log cable TV subscribers	✓	✓	✓	✓	✓	✓
Partitions of Poland × Year FE	✓	✓	✓	✓	✓	✓
Population deciles × Year FEs		✓				✓
Log altitude × Year FEs			✓			✓
Pre-2009 PiS support × Year FEs				✓		✓
Religious participation, 2009 × Year FEs					✓	✓
Observations	26,179	26,179	26,179	26,179	26,179	26,179
SD of variable of interest	0.45	0.45	0.45	0.45	0.45	0.45

◂ Back

Robustness: 2013–2019 after the switch to digital transmission

| | Share of Catholic population | | | |
| | attending mass | | taking Communion | |
	(1)	(2)	(3)	(4)
$\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{Post PiS\}	-0.548**		-0.344**	
	(0.262)		(0.153)	
$\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{2015\}	-0.322		-0.221	
	(0.271)		(0.146)	
TVN signal strength $\times$ $\mathbb{1}$\{Post PiS\}		-0.032**		-0.030***
		(0.016)		(0.009)
TVN signal strength $\times$ $\mathbb{1}$\{2015\}		-0.011		-0.023**
		(0.014)		(0.011)
Free-space TVN signal strength $\times$ $\mathbb{1}$\{Post PiS\}	0.014	0.038	0.002	0.031*
	(0.025)	(0.033)	(0.013)	(0.018)
Free-space TVN signal strength $\times$ $\mathbb{1}$\{2015\}	0.019	0.021	0.004	0.029
	(0.026)	(0.034)	(0.014)	(0.021)
Year and Municipality FEs	✓	✓	✓	✓
Fixed and Mobile Internet $\times$ Year FE	✓	✓	✓	✓
Night-time light density per capita	✓	✓	✓	✓
Disaster dummy	✓	✓	✓	✓
Partitions of Poland $\times$ Year FEs	✓	✓	✓	✓
Observations	16,978	16,978	16,978	16,978
R-squared	0.899	0.899	0.830	0.830
Mean of dependent variable	34.35	34.35	14.66	14.66
SD of the TVN signal measure	0.45	10.12	0.45	10.12

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Robustness to different Conley correction thresholds
Good TVN signal strength
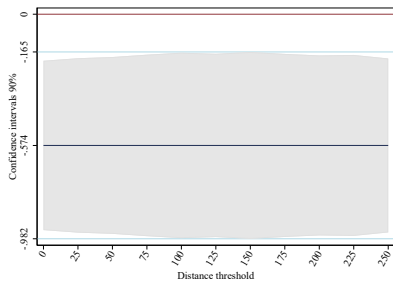
(a) Attending mass
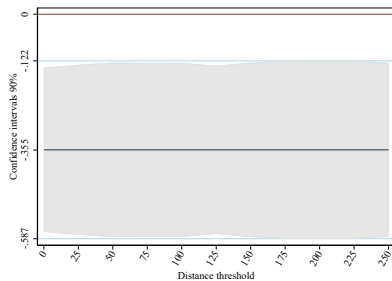
(b) Taking Communion

Heterogeneous effects: Mass attendance

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:	Share of Catholic population attending mass					
$\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{Post PiS\}	-0.791***	-0.559**	-0.529*	-0.944***	-0.554**	-0.702*
	(0.227)	(0.264)	(0.289)	(0.328)	(0.217)	(0.367)
$\times$ $\mathbb{1}$\{Religious participation in 2009 > Median\}		-0.701*				
		(0.410)				
$\times$ $\mathbb{1}$\{Rural\}			-0.375			
			(0.368)			
$\times$ $\mathbb{1}$\{Pre-2009 support for PiS > Median\}				0.610		
				(0.396)		
$\times$ Share of 15-29 year olds					0.159	
					(0.105)	
$\times$ Share of 65+ year olds					0.097	
					(0.082)	
$\times$ $\mathbb{1}$\{Stationary internet > Median\}						-0.136
						(0.365)
$\times$ $\mathbb{1}$\{Mobile internet > Median\}						-0.040
						(0.388)
$\mathbb{1}$\{Good TVN signal\} $\times$ $\mathbb{1}$\{2015\}	-0.401**	-0.286	-0.401**	-0.402**	-0.389**	-0.400**
	(0.194)	(0.177)	(0.193)	(0.196)	(0.196)	(0.195)
R-squared	0.864	0.867	0.864	0.864	0.865	0.864
Year and Municipality FEs	✓	✓	✓	✓	✓	✓
Observations	26,617	26,240	26,617	26,617	26,578	26,617
SD of the TVN signal measure	0.45	0.45	0.45	0.45	0.45	0.45

Heterogeneous effects: Taking Communion

Panel B:	Share of Catholic population taking Communion					
𝟙{Good TVN signal} × 𝟙{Post PiS}	-0.557***	-0.331**	-0.244	-0.507***	-0.396***	-0.542**
	(0.124)	(0.163)	(0.175)	(0.190)	(0.124)	(0.215)
× 𝟙{Religious participation in 2009 > Median}		-0.487**				
		(0.245)				
× 𝟙{Rural}			-0.467**			
			(0.229)			
× 𝟙{Pre-2009 support for PiS > Median}				0.119		
				(0.234)		
× Share of 15-29 year olds					0.031	
					(0.064)	
× Share of 65+ year olds					0.009	
					(0.043)	
× 𝟙{Stationary internet > Median}						-0.037
						(0.210)
× 𝟙{Mobile internet > Median}						0.018
						(0.227)
𝟙{Good TVN signal} × 𝟙{2015}	-0.273**	-0.237**	-0.273**	-0.273**	-0.267**	-0.273**
	(0.138)	(0.141)	(0.138)	(0.138)	(0.139)	(0.139)
R-squared	0.769	0.772	0.769	0.770	0.770	0.769
Year and Municipality FEs	✓	✓	✓	✓	✓	✓
Observations	26,617	26,240	26,617	26,617	26,578	26,617
SD of the TVN signal measure	0.45	0.45	0.45	0.45	0.45	0.45

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Grosfeld, Madinier, Sakalli, and Zhuravskaya   Independent Media, Propaganda, and Religiosity

Parliamentary Elections (2007–2019)

	PiS vote share		Turnout	
	(1)	(2)	(3)	(4)
Panel A: Parliamentary Elections, 2007, 2011, 2015, and 2019				
$\mathbb{1}$\{Good TVN signal strength\} × Post PiS	-0.198	-0.214	0.861***	0.733***
	(0.557)	(0.557)	(0.245)	(0.238)
$\mathbb{1}$\{Good TVN signal strength\} × 2015	0.115	0.054	-0.021	0.402**
	(0.305)	(0.275)	(0.216)	(0.187)
Free-space TVN signal strength × Post PiS	-0.199***	-0.190***	-0.017	-0.019
	(0.051)	(0.054)	(0.028)	(0.025)
Free-space TVN signal strength × 2015	-0.090***	-0.090***	0.007	-0.025
	(0.035)	(0.033)	(0.022)	(0.016)
Observations	9,900	9,900	9,900	9,900
R-squared	0.951	0.951	0.966	0.967
Mean of dependent variable	37.43	37.43	45.40	45.40
SD of the TVN signal measure	0.45	0.45	0.45	0.45
Year and Municipality FEs	✓	✓	✓	✓
Fixed and Mobile Internet × Year FE	✓	✓	✓	✓
Night-time light density per capita	✓	✓	✓	✓
Disaster dummy	✓	✓	✓	✓
Empire × Year trend	✓		✓	
Empire × Year FE		✓		✓

European Parliament Elections (2009–2019)

	PiS vote share		Turnout	
	(1)	(2)	(3)	(4)
Panel B: European Parliament Elections, 2009, 2014, and 2019				
$\mathbb{1}\{$Good TVN signal strength$\} \times$ Post PiS	-0.060	-0.161	0.074	0.024
	(0.589)	(0.574)	(0.228)	(0.231)
Free-space TVN signal strength $\times$ Post PiS	-0.262***	-0.236***	0.022	0.031
	(0.050)	(0.051)	(0.021)	(0.022)
Observations	7,421	7,421	7,421	7,421
R-squared	0.937	0.938	0.979	0.979
Mean of dependent variable	40.45	40.45	26.17	26.17
SD of the TVN signal measure	0.45	0.45	0.45	0.45
Year and Municipality FEs	✓	✓	✓	✓
Fixed and Mobile Internet $\times$ Year FE	✓	✓	✓	✓
Night-time light density per capita	✓	✓	✓	✓
Disaster dummy	✓	✓	✓	✓
Empire $\times$ Year trend	✓		✓	
Empire $\times$ Year FE		✓		✓

Pre-treatment characteristics (1 of 2)

	Mean	Median	SD	Min	Max	Obs.
Lives in a rural area	0.309	0	0.462	0	1	9,416
Lives in a city ($<$ 200,000 inhabitants)	0.460	0	0.498	0	1	9,416
Lives in a big city ($>$ 200,000 inhabitants)	0.230	0	0.421	0	1	9,416
Marital status: single	0.194	0	0.396	0	1	9,416
Marital status: married	0.481	0	0.500	0	1	9,416
Marital status: in an informal partnership	0.245	0	0.430	0	1	9,416
Employed	0.662	1	0.473	0	1	9,416
Unemployed	0.067	0	0.251	0	1	9,416
Student	0.119	0	0.324	0	1	9,416
Household size	3.372	3	1.407	1	7	9,416
Household income	8.473	8	2.732	1	14	8,290
Has internet access at home	0.864	1	0.343	0	1	9,361
Internet services used: Facebook, twitter	0.860	1	0.347	0	1	9,416
Internet services used: pro-PiS portals	0.089	0	0.284	0	1	9,416
Internet services used: anti-PiS portals	0.255	0	0.436	0	1	9,416
Time spent watching TV last week	3.699	4	1.518	1	6	9,416
Main TV source of information: public TV	0.192	0	0.394	0	1	9,416
Main TV source of information: TVN	0.488	0	0.500	0	1	9,416

Pre-treatment characteristics (2 of 2)

	Mean	Median	SD	Min	Max	Obs.
Main other sources of information: internet media	0.546	1	0.498	0	1	9,416
Main other sources of information: social media	0.441	0	0.497	0	1	9,416
Main other sources of information: periodicals	0.112	0	0.315	0	1	9,416
Denomination: Catholic	0.838	1	0.368	0	1	9,161
Denomination: doesn't belong to any denomination	0.121	0	0.326	0	1	9,161
Attends mass weekly	0.305	0	0.461	0	1	8,859
Takes Communion weekly	0.129	0	0.335	0	1	8,259
Considers self a religious person	0.762	1	0.426	0	1	9,090
Donates time or resources to a religious charity	0.130	0	0.337	0	1	9,290
Voted in the parliamentary elections in 2019	0.719	1	0.449	0	1	9,322
Voted for PiS in the parliamentary elections in 2019	0.334	0	0.472	0	1	5,886
Voted in the EU elections in 2019	0.629	1	0.483	0	1	9,301
Voted for PiS in the EU elections in 2019	0.320	0	0.466	0	1	5,116
Watched the movie Clergy	0.568	1	0.495	0	1	9,364
Watched the movie Tell no one	0.598	1	0.490	0	1	9,308

Summary of outcomes

	Mean	Median	SD	Min	Max	Obs.
Primary outcomes:						
Chose a religious foundation to donate money	0.220	0	0.414	0	1	9,416
Trust in religious institutions (principal component)	0.370	0	0.340	0	1	9,066
Trust in the Church	0.340	0	0.474	0	1	9,263
Trust in parish priests	0.384	0	0.486	0	1	9,257
Trust in the Episcopate	0.184	0	0.387	0	1	9,216
Trust in the Pope	0.699	1	0.459	0	1	9,270
Opinion: The Church's reaction to the pedophilia is insufficient	0.774	1	0.418	0	1	9,264
Disagree: The problem of pedophilia in Church is exaggerated	0.755	1	0.430	0	1	9,279
Disagree: The attack on the Church is underway to reduce its authority	0.566	1	0.496	0	1	9,221
Opinion: Lessons of religion should take place at school	0.430	0	0.495	0	1	9,331
Opinion: At school because the children are safer	0.500	1	0.500	0	1	3,948
Opinion: At parish because school should be separated from the Church	0.530	1	0.499	0	1	4,406
Approve: The state budget may be spent on financing Church-run media	0.064	0	0.245	0	1	9,338
Opinion: The mutual support of PiS and the Catholic Church is inadmissible	0.691	1	0.462	0	1	9,416
Secondary outcomes:						
Intention to vote for Duda if there were no pandemic	0.260	0	0.439	0	1	7,105
Intention to vote for Duda if vote by correspondence	0.495	0	0.500	0	1	2,742
Trust in political institutions (principal component)	0.191	0	0.324	0	1	9,154
Trust in the president	0.286	0	0.452	0	1	9,265
Trust in the Senate	0.279	0	0.449	0	1	9,238
Trust in the Sejm (parliament)	0.149	0	0.357	0	1	9,257
Trust in the government	0.185	0	0.388	0	1	9,277
Has positive feelings for PiS	0.249	0	0.432	0	1	9,155

Omnibus test of randomization quality

Sample:	Treatment 1 & Control		Treatment 2 & Control		(continued...)	Treatment 1 & Control		Treatment 2 & Control	
Dependent variable:	Treatment 1		Treatment 2			Treatment 1		Treatment 2	
	coeff.	se	coeff.	se		coeff.	se	coeff.	se
Lives in a city	0.015	(0.015)	0.004	(0.015)	Main TV source: TVPolska	0.007	(0.020)	0.007	(0.020)
Lives in a big city	0.005	(0.019)	-0.015	(0.019)	Main TV source: TVN	-0.011	(0.016)	-0.000	(0.015)
Marital status: single	-0.006	(0.029)	0.029	(0.029)	Other sources: internet media	-0.002	(0.014)	-0.016	(0.014)
Marital status: married	-0.029	(0.025)	0.026	(0.026)	Other sources: social media	0.005	(0.015)	0.029**	(0.015)
Marital status: partnership	-0.013	(0.027)	0.016	(0.028)	Other sources: periodicals	-0.000	(0.022)	-0.008	(0.022)
Employed	-0.004	(0.016)	-0.014	(0.016)	Religion: Catholic	-0.003	(0.033)	-0.016	(0.033)
Unemployed	-0.016	(0.027)	-0.017	(0.027)	Religion: not religious	-0.028	(0.039)	-0.025	(0.039)
Student	-0.003	(0.028)	0.000	(0.027)	Attends mass weekly	-0.010	(0.018)	-0.025	(0.018)
Household size	0.013**	(0.005)	-0.007	(0.005)	Takes Communion weekly	0.009	(0.024)	-0.005	(0.024)
Household income	-0.000	(0.003)	0.003	(0.003)	Considers self a religious person	-0.007	(0.019)	0.043**	(0.019)
Has internet access at home	0.008	(0.019)	-0.007	(0.019)	Donated to a religious charity	-0.002	(0.021)	-0.018	(0.021)
Internet use: Facebook/Twitter	-0.004	(0.019)	0.014	(0.020)	Voted in the parl. elections in 2019	-0.020	(0.029)	-0.013	(0.029)
Internet use: pro-PiS portals	0.002	(0.024)	0.020	(0.024)	Voted for PiS in the parl. elections	-0.023	(0.029)	-0.015	(0.029)
Internet use: anti-PiS portals	-0.002	(0.016)	-0.005	(0.016)	Voted in the EU elections in 2019	0.025	(0.024)	0.039	(0.024)
Time spent watching TV last week	0.000	(0.005)	-0.003	(0.005)	Voted for PiS in the EU elections	0.000	(0.031)	-0.011	(0.032)
Watched the movie Tell no one	-0.001	(0.015)	0.016	(0.015)	Watched the movie Clergy	0.014	(0.014)	0.019	(0.014)
					Observations	6293		6299	
					R-squared	0.006		0.010	
					P-value for joint significance	0.997		0.54	

Balance test of covariates (1 of 2)

	Treatment 1		Treatment 2			
	coefficient	s.e.	coefficient	s.e.	R-squared	N
Lives in a rural area	-0.006	(0.011)	-0.002	(0.012)	0.036	9416
Lives in a city (< 200,000 inhabitants)	0.010	(0.013)	0.009	(0.013)	0.007	9416
Lives in a big city (> 200,000 inhabitants)	-0.004	(0.010)	-0.008	(0.010)	0.038	9416
Marital status: single	0.003	(0.009)	0.001	(0.009)	0.157	9416
Marital status: married	-0.009	(0.012)	0.007	(0.012)	0.148	9416
Marital status: in an informal partnership	0.003	(0.010)	-0.002	(0.010)	0.070	9416
Employed	0.001	(0.011)	-0.004	(0.011)	0.140	9416
Unemployed	-0.004	(0.006)	-0.005	(0.006)	0.021	9416
Student	0.002	(0.006)	0.002	(0.006)	0.463	9416
Household size	0.069**	(0.034)	-0.028	(0.033)	0.127	9416
Household income	0.053	(0.070)	0.077	(0.071)	0.079	8290
Has internet access at home	0.006	(0.009)	0.001	(0.009)	0.016	9361
Internet services used: Facebook, twitter	0.001	(0.009)	0.013	(0.009)	0.045	9416
Internet services used: pro-PiS portals	0.003	(0.007)	0.006	(0.007)	0.022	9416
Internet services used: anti-PiS portals	0.003	(0.011)	0.004	(0.011)	0.043	9416
Time spent watching TV	0.011	(0.037)	0.003	(0.037)	0.057	9416
Main TV source of information: public TV	0.004	(0.010)	-0.005	(0.010)	0.008	9416
Main TV source of information: TVN	-0.004	(0.012)	0.009	(0.012)	0.031	9416

Balance test of covariates (2 of 2)

	Treatment 1		Treatment 2			
	coefficient	s.e.	coefficient	s.e.	R-squared	N
Other sources of information: internet media	0.004	(0.012)	-0.002	(0.012)	0.027	9416
Other sources of information: social media	0.007	(0.012)	0.029**	(0.012)	0.048	9416
Other sources of information: periodicals	0.003	(0.008)	0.000	(0.008)	0.019	9416
Denomination: Catholic	0.006	(0.009)	0.005	(0.009)	0.021	9161
Denomination: doesn't belong to any denomination	-0.007	(0.008)	-0.007	(0.008)	0.019	9161
Attends mass weekly	-0.004	(0.012)	-0.017	(0.012)	0.008	8859
Takes Communion weekly	0.002	(0.009)	-0.008	(0.009)	0.007	8259
Considers self a religious person	-0.002	(0.011)	0.017	(0.011)	0.028	9090
Donated time or resources to a religious charity	0.001	(0.009)	-0.006	(0.009)	0.005	9290
Voted in the parliamentary elections in 2019	-0.000	(0.011)	0.009	(0.011)	0.109	9322
Voted for PiS in the parliamentary elections in 2019	-0.005	(0.011)	-0.009	(0.011)	0.012	9029
Voted in the EU elections in 2019	0.008	(0.012)	0.025**	(0.011)	0.123	9301
Voted for PiS in the EU elections in 2019	-0.000	(0.010)	-0.004	(0.010)	0.011	9089
Watched the movie "Clergy"	0.013	(0.012)	0.031**	(0.012)	0.019	9364
Watched the movie "Tell no one"	0.006	(0.012)	0.028**	(0.012)	0.018	9308

We control for these few unbalanced covariates: hh size, using social media, turnout in 2019 EU elections, and having watched the movies

Distribution of difference in days between two rounds

N=7,369, Median days = 23
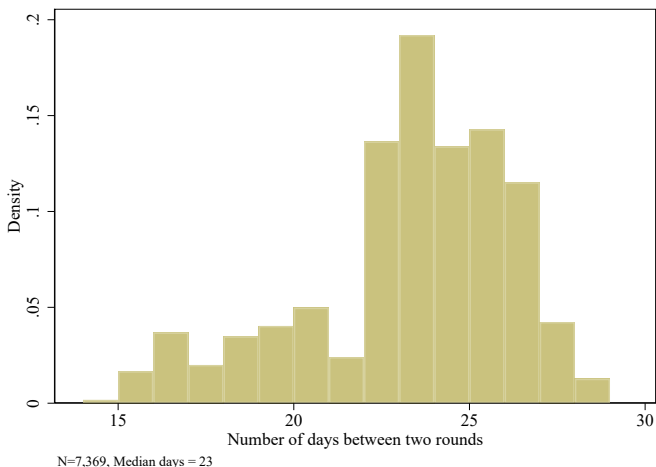
Back

Selective Attrition by Treatment Status?

78% came back for the follow-up round

	Outcome from Wave 1:		
	Trust in religious institutions	Problem of pedophilia not exaggerated	Donated to religious foundations
	(1)	(2)	(3)
Treatment 1 × Participated in follow up	-0.001	0.932	0.079
	(0.026)	(0.036)	(0.036)
Treatment 1 × Not participated in follow up	-0.015	0.942	0.060
	(0.028)	(0.039)	(0.039)
Treatment 2 × Participated in follow up	0.022	0.872	0.079
	(0.026)	(0.037)	(0.036)
Treatment 2 × Not participated in follow up	0.030	0.879	0.067
	(0.028)	(0.039)	(0.038)
Control × Participated in follow up	0.046	0.855	0.096
	(0.026)	(0.036)	(0.036)
Control × Not participated in follow up	0.028	0.859	0.081
	(0.027)	(0.039)	(0.038)
Observations	9066	9279	9416
R-squared	0.633	0.780	0.280
Mean of dependent variable	0.370	0.755	0.220
P-value for joint equality of coefficients between participated and not participated within each treatment group separately	0.380	0.921	0.495
P-value for equality of coefficients, T1	0.306	0.558	0.276
P-value for equality of coefficients, T2	0.577	0.720	0.468
P-value for equality of coefficients, Control	0.190	0.858	0.390

Heterogenous effects: Trust in the Church
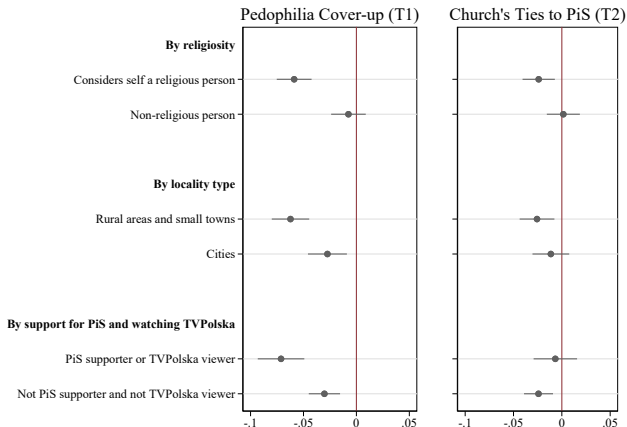
This corroborated by the observational-data heterogeneity: effects are larger in rural areas and with higher religiosity

LT heterogenous effects: Trust in the church

Trust in religious institutions (PCA)
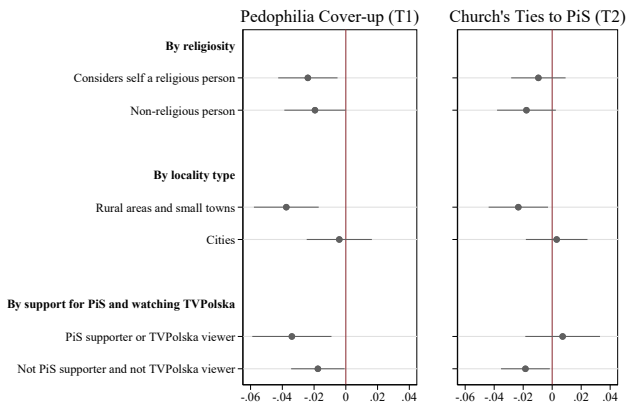
Similar pattern, but somewhat less precise

Religious Outcomes in First and Follow-up Rounds

	First-round outcomes		Follow-up round outcomes			
					Between rounds	
	Trust in religious institutions	Donated to religious foundations	Trust in religious institutions	Attend mass weekly in future	Searched for information about peadophilia	Watched the documentary "Tell no one" on internet
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment 1	-0.046***	-0.017*	-0.022**	-0.024**	0.024**	0.045**
p-value	(0.000)	(0.088)	(0.013)	(0.042)	(0.046)	(0.017)
Randomization-t p-value	{0.000}	{0.086}	{0.012}	{0.044}	{0.050}	{0.016}
Sharpened q-value	[0.001]	[0.083]	[0.063]	[0.073]	[0.073]	[0.063]
FWER p-value	[0.000]	[0.306]	[0.127]	[0.271]	[0.280]	[0.136]
Holm-Bonferroni p-value	[0.001]	[0.366]	[0.148]	[0.334]	[0.342]	[0.158]
Treatment 2	-0.019**	-0.016	-0.011	-0.022*	0.009	0.035*
p-value	(0.019)	(0.112)	(0.225)	(0.066)	(0.462)	(0.065)
Randomization-t p-value	{0.022}	{0.107}	{0.234}	{0.070}	{0.462}	{0.064}
Sharpened q-value	[0.065]	[0.094]	[0.118]	[0.076]	[0.131]	[0.076]
FWER p-value	[0.160]	[0.296]	[0.391]	[0.270]	[0.464]	[0.317]
Holm-Bonferroni p-value	[0.190]	[0.337]	[0.442]	[0.325]	[0.464]	[0.389]
Observations	9066	9416	7194	7277	7157	2832
R-squared	0.198	0.076	0.199	0.183	0.051	0.038
Mean of dependent variable	0.370	0.220	0.369	0.309	0.254	0.222
Lee bounds, Treatment 1	[-.049, -.045]	[-.017, -.017]	[-.022, -.022]	[-.027, -.023]	[.024, .025]	[.043, .049]
Lee bounds, Treatment 2	[-.025, -.011]	[-.016, -.016]	[-.011, -.011]	[-.026, -.018]	[.003, .022]	[.034, .038]
p-value for equality of treatment effects	0.000	0.904	0.215	0.877	0.216	0.622

◂ Back

Trust in Religious Institutions

Dependent variable:	Trust in the Church	Trust in parish priests	Trust in the Episcopate	Trust in the Pope
	(1)	(2)	(3)	(4)
Treatment 1	-0.058***	-0.035***	-0.055***	-0.028**
p-value	(0.000)	(0.002)	(0.000)	(0.011)
Randomization-t p-value	[0.038]	[0.438]	[0.008]	[0.182]
Sharpened q-value	[0.155]	[0.574]	[0.066]	[0.377]
FWER p-value	[0.204]	[0.809]	[0.046]	[0.596]
Holm-Bonferroni p-value	[0.260]	[1.000]	[0.053]	[0.937]
Treatment 2	-0.017	-0.019	-0.026***	-0.007
p-value	(0.136)	(0.106)	(0.008)	(0.538)
Randomization-t p-value	[0.888]	[0.373]	[0.634]	[0.156]
Sharpened q-value	[0.799]	[0.574]	[0.574]	[0.377]
FWER p-value	[0.894]	[0.798]	[0.846]	[0.574]
Holm-Bonferroni p-value	[0.894]	[1.000]	[1.000]	[0.929]
Observations	9263	9257	9216	9270
R-squared	0.170	0.130	0.092	0.098
Mean of dependent variable	0.340	0.384	0.184	0.699
Lee bounds, Treatment 1	[-.06, -.056]	[-.037, -.034]	[-.059, -.049]	[-.029, -.027]
Lee bounds, Treatment 2	[-.02, -.013]	[-.022, -.015]	[-.028, -.02]	[-.008, -.006]
p-value for equality of treatment effects	0.000	0.157	0.001	0.055

Assessment of Church's Reaction and Donations

| | Church's Reaction insufficient | Disagree with | |
		Problem of pedophilia exaggerated	Attack on church underway
	(1)	(2)	(3)
Treatment 1	0.066***	0.078***	0.033***
p-value	(0.000)	(0.000)	(0.006)
Randomization-t p-value	[0.000]	[0.000]	[0.004]
Sharpened q-value	[0.001]	[0.001]	[0.006]
FWER p-value	[0.000]	[0.000]	[0.016]
Holm-Bonferroni p-value	[0.001]	[0.001]	[0.017]
Treatment 2	0.010	0.018*	0.027**
p-value	(0.313)	(0.099)	(0.023)
Randomization-t p-value	[0.319]	[0.096]	[0.026]
Sharpened q-value	[0.120]	[0.040]	[0.020]
FWER p-value	[0.314]	[0.180]	[0.068]
Holm-Bonferroni p-value	[0.314]	[0.197]	[0.072]
Observations	9264	9279	9221
R-squared	0.101	0.104	0.102
Mean of dependent variable	0.774	0.755	0.566
Lee bounds, Treatment 1	[.066, .066]	[.077, .08]	[.032, .034]
Lee bounds, Treatment 2	[.005, .014]	[.015, .019]	[.025, .029]
P-value for equality of treatment effects	0.000	0.000	0.619

Beliefs about Priests at Schools

	Religious courses at school	At school to control priests	At parish because of secular state	Approve priest salaries for teaching
	(1)	(2)	(3)	(4)
Treatment 1	0.001	0.131***	0.001	-0.027**
p-value	(0.908)	(0.000)	(0.947)	(0.019)
Randomization-t p-value	[0.908]	[0.000]	[0.949]	[0.019]
Sharpened q-value	[1.000]	[0.001]	[1.000]	[0.071]
FWER p-value	[0.993]	[0.000]	[0.944]	[0.116]
Holm-Bonferroni p-value	[1.000]	[0.001]	[0.944]	[0.131]
Treatment 2	-0.006	0.017	0.012	-0.008
p-value	(0.595)	(0.367)	(0.479)	(0.487)
Randomization-t p-value	[0.599]	[0.371]	[0.480]	[0.481]
Sharpened q-value	[1.000]	[1.000]	[1.000]	[1.000]
FWER p-value	[0.926]	[0.922]	[0.946]	[0.921]
Holm-Bonferroni p-value	[1.000]	[1.000]	[1.000]	[1.000]
Observations	9331	3948	4406	9339
R-squared	0.183	0.058	0.099	0.083
Mean of dependent variable	0.430	0.500	0.530	0.324
Lee bounds, T1	[0, .002]	[.125, .137]	[-.002, .003]	[-.029, -.024]
Lee bounds, T2	[-.006, -.006]	[.006, .031]	[.002, .024]	[-.008, -.008]
p-value for equality of treatment effects	0.522	0.000	0.526	0.100

The Effects on Political Preferences

Dependent variable:	Intention to				
	Vote for Duda-PiS (had there been no COVID epidemic)	Vote for Duda-PiS (in real conditions) by correspondence)	Trust in the president	Positive feelings for PiS	Mutual support between Church & PiS inadmissible
	(1)	(2)	(3)	(4)	(5)
Treatment 1	-0.020	-0.057***	-0.008	-0.012	0.068***
p-value	(0.105)	(0.009)	(0.481)	(0.248)	(0.000)
Randomization-t p-value	{0.102}	{0.008}	{0.482}	{0.253}	{0.000}
Sharpened q-value	[0.054]	[0.011]	[0.146]	[0.093]	[0.001]
mhtreg FWER p-value	[0.222]	[0.050]	[0.477]	[0.384]	[0.000]
Holm-Bonferroni p-value	[0.307]	[0.059]	[0.477]	[0.500]	[0.001]
Treatment 2	-0.027**	-0.075***	-0.030***	-0.021**	0.033***
p-value	(0.024)	(0.000)	(0.005)	(0.043)	(0.003)
Randomization-t p-value	{0.026}	{0.001}	{0.006}	{0.039}	{0.003}
Sharpened q-value	[0.022]	[0.003]	[0.010]	[0.029]	[0.008]
mhtreg FWER p-value	[0.093]	[0.005]	[0.025]	[0.124]	[0.017]
Holm-Bonferroni p-value	[0.116]	[0.007]	[0.029]	[0.159]	[0.020]
Observations	7105	2742	9265	9155	9416
R-squared	0.108	0.159	0.081	0.090	0.116
Mean of dependent variable	0.260	0.495	0.286	0.249	0.691
Lee bounds, Treatment 1	[-.029, -.006]	[-.075, -.042]	[-.012, -.002]	[-.015, -.008]	[.068, .068]
Lee bounds, Treatment 2	[-.032, -.019]	[-.087, -.065]	[-.031, -.03]	[-.022, -.02]	[.033, .033]
P-value for equality of treatment effects	0.557	0.412	0.041	0.394	0.002

The Effects on Trust for Political Institutions

Dependent variable:	Trust in political institutions	Trust in the Sejm	Trust in the Senate	Trust in the government
	(1)	(2)	(3)	(4)
Treatment 1	-0.013	-0.013	-0.016	-0.006
p-value	(0.117)	(0.149)	(0.150)	(0.528)
Randomization-t p-value	{0.116}	{0.152}	{0.148}	{0.530}
Sharpened q-value	[0.436]	[0.436]	[0.436]	[0.436]
mhtreg FWER p-value	[0.457]	[0.512]	[0.470]	[0.772]
Holm-Bonferroni p-value	[0.910]	[0.896]	[0.756]	[1.000]
Treatment 2	-0.009	-0.003	-0.007	-0.015
p-value	(0.261)	(0.768)	(0.529)	(0.122)
Randomization-t p-value	{0.266}	{0.774}	{0.524}	{0.126}
Sharpened q-value	[0.436]	[0.632]	[0.436]	[0.436]
mhtreg FWER p-value	[0.587]	[0.759]	[0.886]	[0.478]
Holm-Bonferroni p-value	[1.000]	[0.759]	[1.000]	[0.865]
Observations	9154	9257	9238	9277
R-squared	0.060	0.044	0.089	0.068
Mean of dependent variable	0.191	0.149	0.279	0.185
Lee bounds, Treatment 1	[-.014, -.009]	[-.015, -.006]	[-.016, -.015]	[-.007, -.004]
Lee bounds, Treatment 2	[-.012, -.002]	[-.006, .006]	[-.012, 0]	[-.015, -.015]
P-value for equality of treatment effects	0.664	0.254	0.422	0.365

Heterogeneity by pre-existing religiosity

Profoundly and moderately religious vs. rather not and not at all religious

Dependent variable:	First round		Follow-up round	
	Trust in religious institutions	Donated to religious foundations	Trust in religious institutions	Attend mass weekly in future
	(1)	(2)	(3)	(4)
Treatment 1	-0.059***	-0.023*	-0.024**	-0.032**
p-value	(0.000)	(0.078)	(0.035)	(0.044)
Randomization-t p-value	{0.000}	{0.072}	{0.041}	{0.056}
Sharpened q-value	[0.001]	[0.171]	[0.153]	[0.171]
FWER p-value	[0.000]	[0.469]	[0.309]	[0.341]
Holm-Bonferroni p-value	[0.002]	[0.798]	[0.489]	[0.540]
Treatment 1 x Non-religious person	0.051***	0.009	0.004	0.024
p-value	(0.000)	(0.649)	(0.785)	(0.208)
Randomization-t p-value	{0.000}	{0.605}	{0.813}	{0.247}
Sharpened q-value	[0.002]	[0.484]	[0.612]	[0.254]
FWER p-value	[0.000]	[0.946]	[0.953]	[0.754]
Holm-Bonferroni p-value	[0.002]	[1.000]	[1.000]	[1.000]
Treatment 2	-0.024**	-0.017	-0.010	-0.027*
p-value	(0.018)	(0.189)	(0.404)	(0.089)
Randomization-t p-value	{0.019}	{0.158}	{0.411}	{0.101}
Sharpened q-value	[0.095]	[0.219]	[0.378]	[0.196]
FWER p-value	[0.183]	[0.738]	[0.886]	[0.489]
Holm-Bonferroni p-value	[0.258]	[1.000]	[1.000]	[0.823]
Treatment 2 x Non-religious person	0.025*	-0.003	-0.008	0.017
p-value	(0.079)	(0.873)	(0.623)	(0.385)
Randomization-t p-value	{0.078}	{0.945}	{0.694}	{0.369}
Sharpened q-value	[0.171]	[0.653]	[0.531]	[0.367]
FWER p-value	[0.489]	[0.873]	[0.972]	[0.919]
Holm-Bonferroni p-value	[0.850]	[0.873]	[1.000]	[1.000]
Observations	9066	9416	7194	7277
R-squared	0.199	0.076	0.199	0.183
Mean of dependent variable	0.370	0.220	0.369	0.309
P-value: T1 + T1 x Non-religious person	0.450	0.371	0.098	0.492
P-value: T2 + T2 x Non-religious person	0.881	0.188	0.150	0.376

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Heterogeneity by locality size

Dependent variable:	First round		Follow-up round	
	Trust in religious institutions	Donated to religious foundations	Trust in religious institutions	Attend mass weekly in future
	(1)	(2)	(3)	(4)
Treatment 1	-0.062***	-0.012	-0.037***	-0.035**
p-value	(0.000)	(0.401)	(0.003)	(0.041)
Randomization-t p-value	{0.000}	{0.397}	{0.003}	{0.042}
Sharpened q-value	[0.001]	[0.324]	[0.025]	[0.111]
FWER p-value	[0.000]	[0.821]	[0.035]	[0.328]
Holm-Bonferroni p-value	[0.002]	[1.000]	[0.042]	[0.510]
Treatment 1 x Cities	0.035**	-0.013	0.033*	0.021
p-value	(0.025)	(0.512)	(0.058)	(0.380)
Randomization-t p-value	{0.023}	{0.512}	{0.060}	{0.377}
Sharpened q-value	[0.088]	[0.347]	[0.124]	[0.324]
FWER p-value	[0.240]	[0.866]	[0.406]	[0.869]
Holm-Bonferroni p-value	[0.348]	[1.000]	[0.659]	[1.000]
Treatment 2	-0.026**	-0.018	-0.023*	-0.029*
p-value	(0.019)	(0.190)	(0.061)	(0.095)
Randomization-t p-value	{0.017}	{0.185}	{0.064}	{0.098}
Sharpened q-value	[0.084]	[0.200]	[0.124]	[0.155]
FWER p-value	[0.191]	[0.697]	[0.390]	[0.508]
Holm-Bonferroni p-value	[0.269]	[1.000]	[0.620]	[0.867]
Treatment 2 x Cities	0.014	0.004	0.026	0.012
p-value	(0.369)	(0.833)	(0.141)	(0.629)
Randomization-t p-value	{0.374}	{0.831}	{0.145}	{0.625}
Sharpened q-value	[0.324]	[0.453]	[0.172]	[0.412]
FWER p-value	[0.914]	[0.836]	[0.624]	[0.860]
Holm-Bonferroni p-value	[1.000]	[0.836]	[1.000]	[1.000]
Observations	9066	9416	7194	7277
R-squared	0.201	0.076	0.202	0.189
Mean of dependent variable	0.370	0.220	0.369	0.309
P-value: T1 + T1 x Cities	0.014	0.093	0.742	0.415
P-value: T2 + T2 x Cities	0.325	0.363	0.811	0.316

Heterogeneity by supporting PiS and watching TVPolska

Dependent variable:	First round		Follow-up round	
	Trust in religious institutions	Donated to religious foundations	Trust in religious institutions	Attend mass weekly in future
	(1)	(2)	(3)	(4)
Treatment 1	-0.071***	-0.026	-0.034**	-0.045**
p-value	(0.000)	(0.138)	(0.025)	(0.025)
Randomization-t p-value	{0.000}	{0.133}	{0.026}	{0.027}
Sharpened q-value	[0.001]	[0.359]	[0.107]	[0.107]
FWER p-value	[0.000]	[0.709]	[0.202]	[0.207]
Holm-Bonferroni p-value	[0.002]	[1.000]	[0.321]	[0.324]
Treatment 1 x Not PiS supporter or TVPolska viewer	0.041**	0.014	0.016	0.035
p-value	(0.011)	(0.521)	(0.370)	(0.152)
Randomization-t p-value	{0.011}	{0.520}	{0.378}	{0.149}
Sharpened q-value	[0.094]	[0.543]	[0.543]	[0.359]
FWER p-value	[0.110]	[0.967]	[0.916]	[0.716]
Holm-Bonferroni p-value	[0.162]	[1.000]	[1.000]	[1.000]
Treatment 2	-0.007	0.003	0.007	-0.025
p-value	(0.622)	(0.863)	(0.645)	(0.236)
Randomization-t p-value	{0.619}	{0.860}	{0.650}	{0.239}
Sharpened q-value	[0.591]	[0.740]	[0.591]	[0.469]
FWER p-value	[0.972]	[0.867]	[0.951]	[0.802]
Holm-Bonferroni p-value	[1.000]	[0.867]	[1.000]	[1.000]
Treatment 2 x Not PiS supporter or TVPolska viewer	-0.017	-0.030	-0.026	0.009
p-value	(0.288)	(0.169)	(0.169)	(0.714)
Randomization-t p-value	{0.300}	{0.176}	{0.173}	{0.718}
Sharpened q-value	[0.543]	[0.359]	[0.359]	[0.621]
FWER p-value	[0.853]	[0.703]	[0.704]	[0.919]
Holm-Bonferroni p-value	[1.000]	[1.000]	[1.000]	[1.000]
Observations	9066	9416	7194	7277
R-squared	0.242	0.103	0.237	0.199
Mean of dependent variable	0.370	0.220	0.369	0.309
P-value: T1 + T1 x Not PiS supporter and not TVPolska viewer	0.001	0.272	0.086	0.512
P-value: T2 + T2 x Not PiS supporter and not TVPolska viewer	0.008	0.019	0.071	0.300

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Heterogenous effects: Mass attendance intent

Intends to participate in the mass at least once a week in the future

By religiosity / By locality type / By support for PiS and watching TVPolska

Pedophilia Cover-up (T1) — Church's Ties to PiS (T2)

‹ ATE   ‹ By religiosity   ‹ By urban status   ‹ By PiS and TVPolska