

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

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: Mello & Buccione (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: (1) how media critical of the Church affects its popularity or (2) whether non-Church mainstream media affects religiosity

This paper fills these gaps

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

- 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, covered up by Church leadership

Preview and Roadmap

We document that, as a result of this political change:

- 1 The content of state media changed
- 2 Viewers switched from state to independent TV, where it was available
- 3 Religious participation continued to follow circularization trend in places with independent TV and this trend was reversed where only state TV was available
- 4 Experimental evidence on the mechanism shows that religious people were unaware of Church's corruption and scandals, unless they got information on free-to-air TV despite the spread of social media

Main Data (2009-2019)

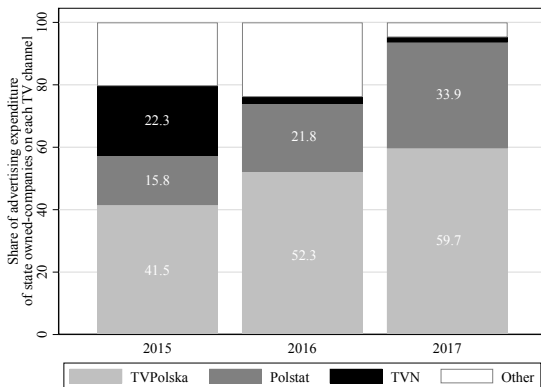
- 1 TV:
 - Content: posts on official TV social-media accounts
 - Viewership: Nielsen, region-level panel, prime-time news
 - Availability: Signal strength of TV channels before 2015 election
- 2 Religiosity: municipality-level panel data on rates of mass attendance and taking Holy Communion
 - Annual census of church goes in every parish
 - Source: Institute of Statistics of the Catholic Church
- 3 Wide range of controls
 - Mobile and fixed Internet
 - Cable TV subscriptions
 - Nighttime light density
 - Natural disasters
 - Historical controls

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
- 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:

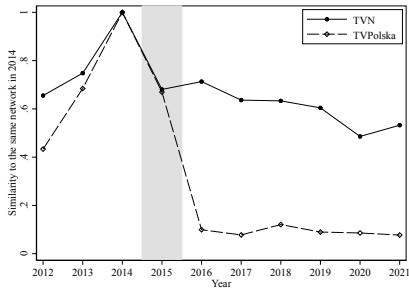


The change in content

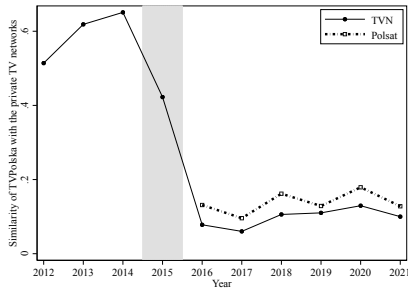
- No transcripts available
- Scraped official Twitter accounts of TVN, TVPolska, and Polsat: 6 accounts, 871,475 tweets in 2012-2021
 - TVPolska: @WiadomosciTVP, @tvp.info; TVN: @faktytvn, @tvn24; Polsat: @PolsatNews.pl, @WIOwPN

Compared similarity (from 0 to 1):

TVPolska & TVN to themselves in 2014



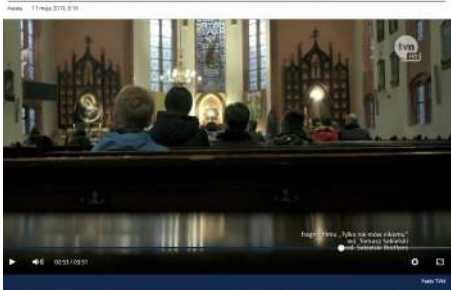
TVPolska to TVN & Polsat



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”

Film "Tylko nie mów nikomu" dziś na antenie TVN



Film "Tylko nie mów nikomu" dziś na antenie TVN



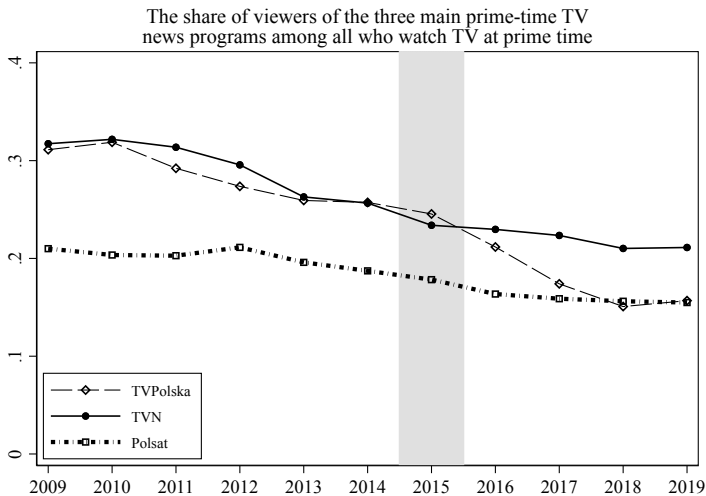
In 2020, TVN showed a reportage about cardinal Stanislaw Dziwisz, Archbishop of Krakow

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



TVPolska lost viewership after turning to propaganda

Prime-time news programs: TVN *Fakty*, TVPolska *Wiadomosci*, Polsat *Wydarzenia*



TVPolska viewers switched to watching TVN

where TVN was available (region-level panel, Nielsen's data)

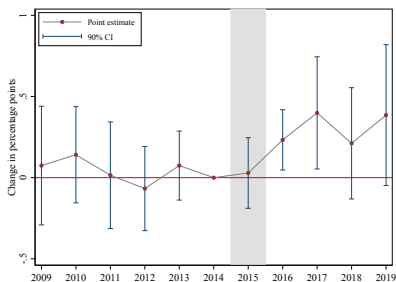
Dependent variable:	Share of TVN viewers among			
	(1)	(2)	(3)	(4)
Weighted mean $\mathbb{1}\{\text{Good TVN signal}\}$	0.215** (0.054)	0.156** (0.053)		
Weighted mean $\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Post PiS}\}$		0.174** (0.057)	0.144** (0.048)	0.143** (0.060)
Weighted mean $\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{2015\}$		0.041 (0.046)	-0.001 (0.057)	-0.008 (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: $\mathbb{1}\{\text{Good TVN signal}\}$	0.014	0.035		
Wild bootstrap-t p-value: $\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Post PiS}\}$		0.064	0.044	0.079

TVPolska viewers switched to watching TVN

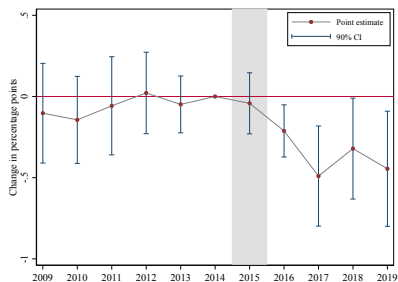
where TVN was available (region-level panel, Nielsen's data)

Compare viewership dynamics for regions with higher and lower TVN availability:

Log prime-time TVPolska viewers

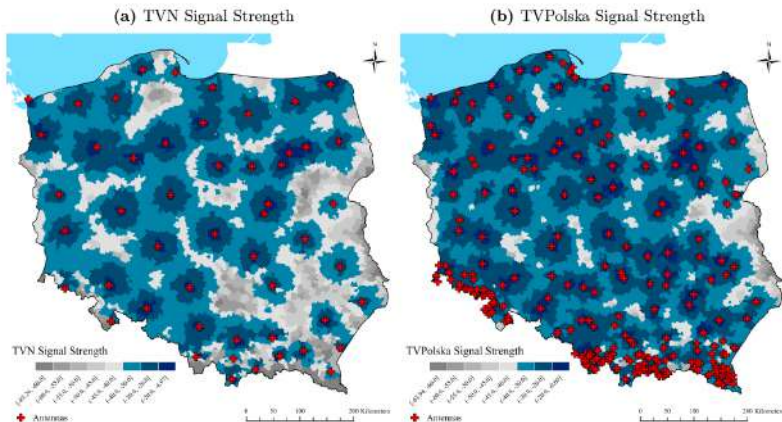


Log prime-time TVN viewers



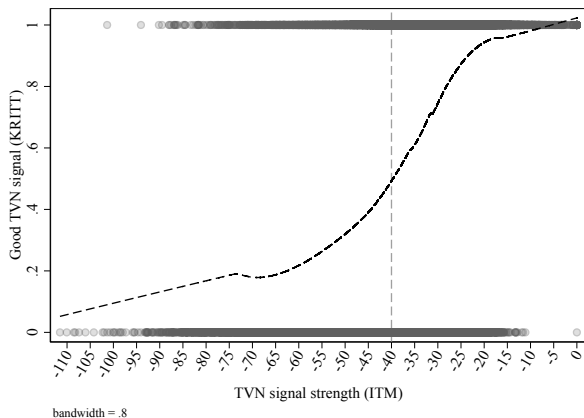
TV coverage: Signal quality from Irregular Terrain Model

TVN (& Polsat) vs. TVPolska signals across 2450 municipalities:
 TVN: 71%; TVPolska: 90%



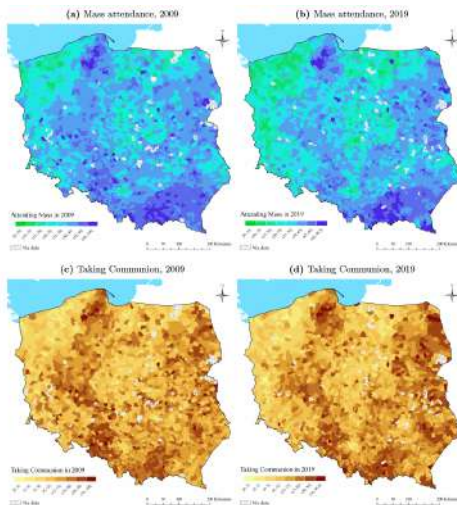
Dichotomizing TVN Signal Strength

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



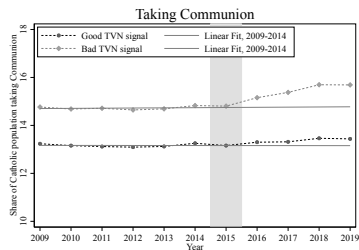
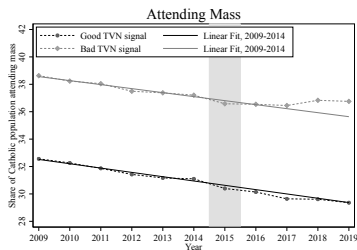
-40 dB cut-off is consistent with other studies that use ITM
(e.g., Olken 2009; Bursztyn and Cantoni 2016)

Mass Attendance and 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)

Trends in religiosity by TVN signal strength (2009–2019)



PiS won 2 elections in 2015: Presidential (May) and Parliamentary (October)

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

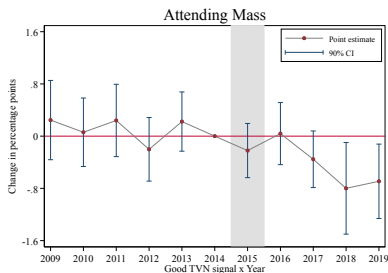
Difference in Differences

$$\begin{aligned}
 \text{Religiosity}_{mt} = & \alpha_1 \text{TV signal}_m \times \text{Post}_t + \beta_1 \text{FreeSpaceSignal}_m \times \text{Post}_t \\
 & + \alpha_2 \text{TV signal}_m \times 2015_t + \beta_2 \text{FreeSpaceSignal}_m \times 2015_t \\
 & + \mathbf{X}'_{mt} \delta + \mu_m + \tau_t + \epsilon_{mt},
 \end{aligned}$$

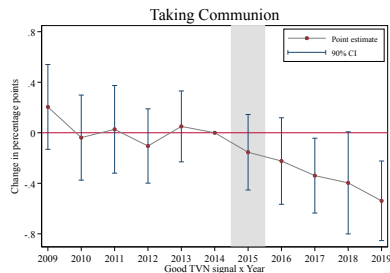
- m – municipality (gminy); t – year
- Religiosity_{mt} – attending mass, taking Communion
- TV signal_m – good signal strength of TVN
- FreeSpaceSignal_m – free-space signal strength of TVN
- Post_t – dummy for the period after PiS came to power (> 2015)
- 2015_t – dummy for the transition year
- X_{mt} – 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

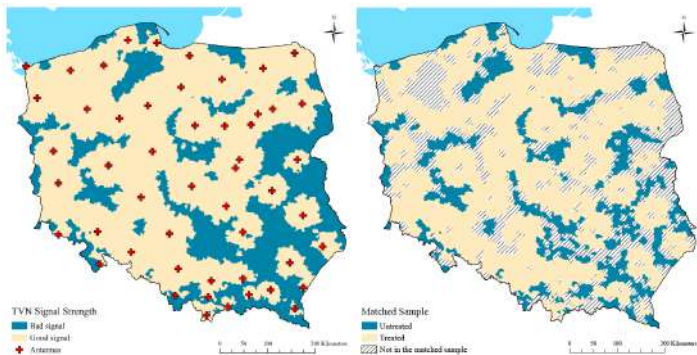
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Dependent Variable	Share of Catholic population attending mass						
1{Good TVN signal} × 1{Post PiS}	-0.791*** (0.227)	-0.729*** (0.220)	-0.877*** (0.260)	-0.539** (0.248)	-0.574** (0.246)		
1{Good TVN signal} × 1{2015}	-0.401** (0.194)	-0.370* (0.193)	-0.488** (0.202)	-0.313 (0.197)	-0.350* (0.208)		
TVN signal strength × 1{Post PiS}						-0.035** (0.015)	-0.039** (0.015)
TVN signal strength × 1{2015}						-0.011 (0.012)	-0.014 (0.012)
Free-space TVN signal strength × 1{Post PiS}			0.029 (0.022)	0.022 (0.022)	0.024 (0.022)	0.051* (0.029)	0.057* (0.029)
Free-space TVN signal strength × 1{2015}			0.023 (0.023)	0.018 (0.021)	0.027 (0.023)	0.021 (0.027)	0.033 (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 × 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

Taking Communion

Panel B: Dependent Variable	Share of Catholic population taking Communion						
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	-0.557*** (0.124)	-0.507*** (0.124)	-0.600*** (0.143)	-0.394*** (0.140)	-0.355** (0.138)		
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{2015\}$	-0.273** (0.138)	-0.261* (0.134)	-0.283* (0.152)	-0.176 (0.149)	-0.243* (0.142)		
TVN signal strength $\times \mathbb{1}\{\text{Post PiS}\}$						-0.034*** (0.008)	-0.031*** (0.008)
TVN signal strength $\times \mathbb{1}\{2015\}$						-0.017 (0.015)	-0.024** (0.012)
Free-space TVN signal strength $\times \mathbb{1}\{\text{Post PiS}\}$			0.018 (0.014)	0.008 (0.013)	0.004 (0.013)	0.041** (0.016)	0.035** (0.016)
Free-space TVN signal strength $\times \mathbb{1}\{2015\}$			0.004 (0.014)	-0.002 (0.014)	0.006 (0.014)	0.015 (0.024)	0.031 (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 \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

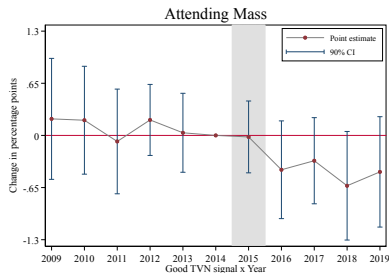
Municipalities by TVN reception and the matched sample

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

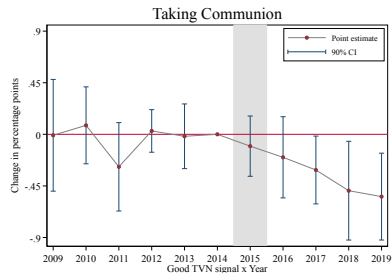


◀ Balance test in the matched sample

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)
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	-0.591** (0.254)	-0.551** (0.246)	-0.362** (0.152)	-0.355** (0.149)
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{2015\}$	-0.167 (0.182)	-0.111 (0.196)	-0.087 (0.148)	-0.073 (0.147)
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	21,064	21,064	21,064	21,064
R-squared	0.837	0.840	0.731	0.734
Mean of dependent variable	34.65	34.65	14.46	14.46
SD of the TVN signal measure	0.42	0.42	0.42	0.42

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 ($N = 3 \times 3000+$): C, T1, T2
- Stratified randomization: age \times gender \times education

Timeline of the experiment and surveys

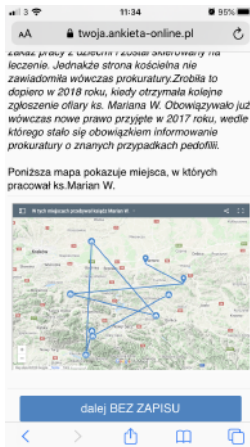
Main outcome of interest: religiosity, measured as trust in religious institutions, attitudes towards the Church, donations to Catholic NGOs, etc.

Two stages of the experiment:

- 1 First survey (Apr 29–May 11, 2020):
 - 1: collected pre-treatment characteristics
 - 2: exposed participants to the treatments
 - 3: collected the short-term outcomes
- 2 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

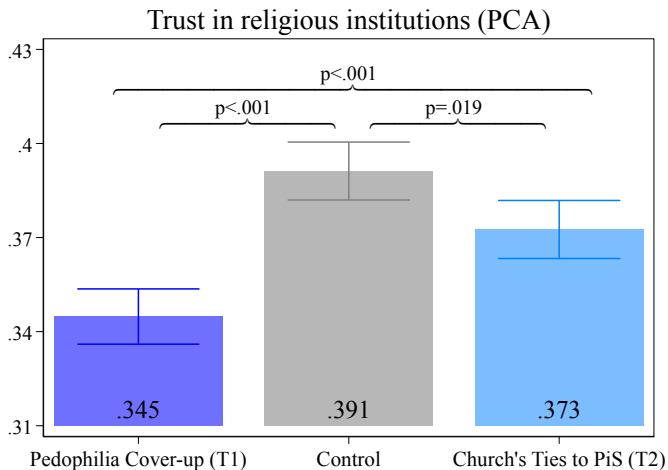


Treatment 2: Ties between PiS and the Church

- 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



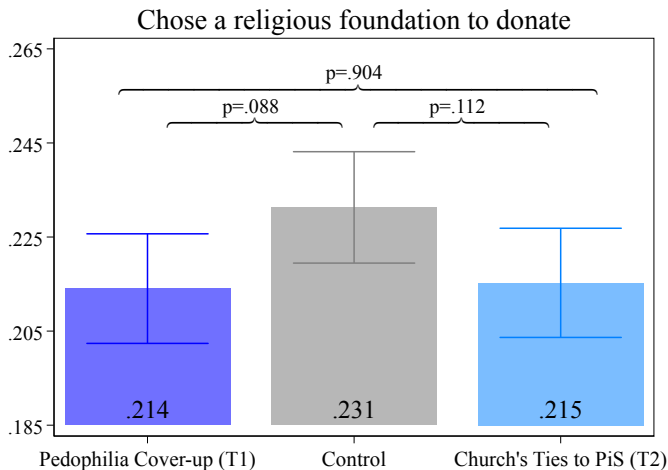
Average treatment effects: Trust in the Church



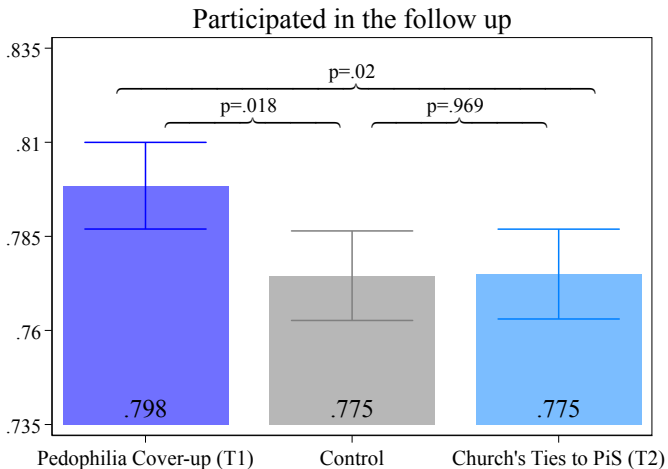
◀ Omnibus test

◀ Balance test

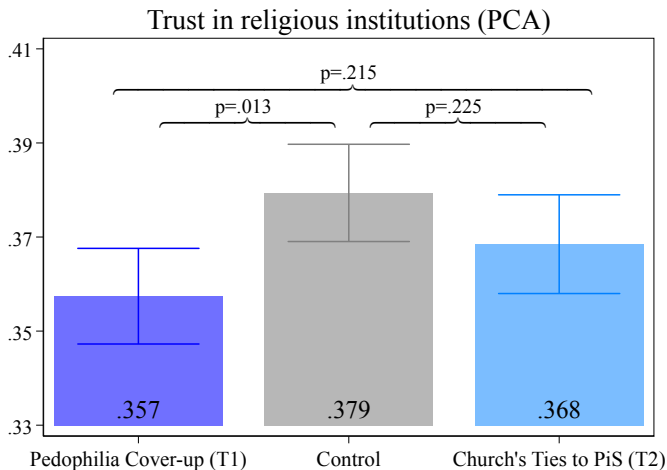
Average treatment effects: Donations



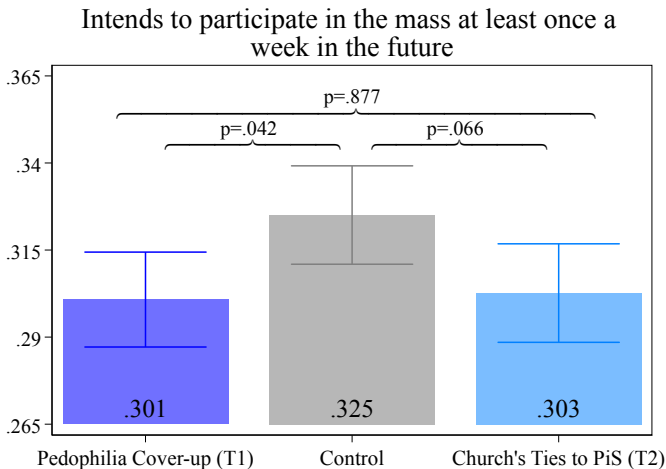
(Inverse of) Attrition Rate by Treatment Status



LT Average treatment effects: Trust in the Church



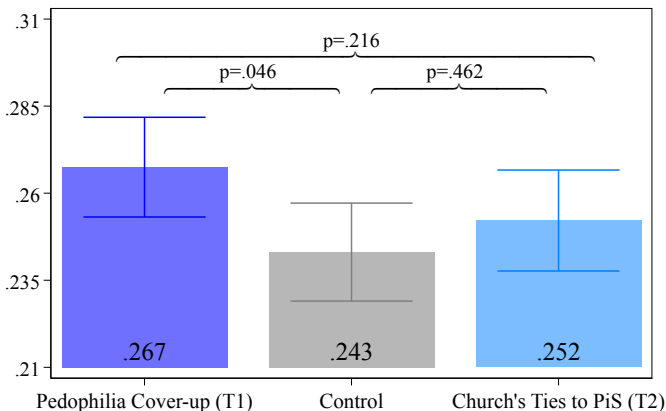
LT Average treatment effects: Mass attendance intent



LT Average treatment effects: Mechanism

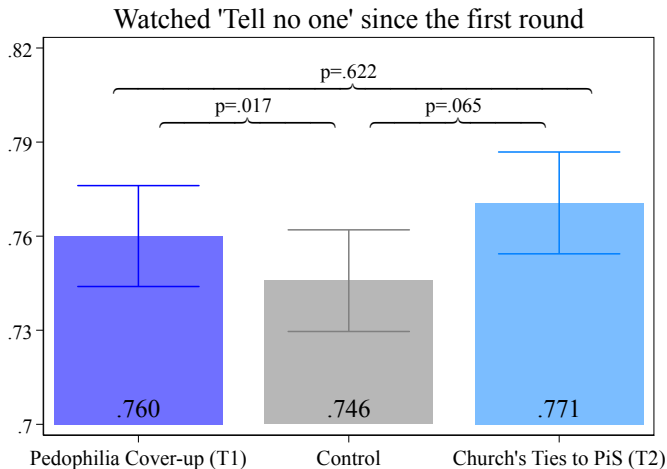
Searched information on pedophilia

Actively searched information on pedophilia in the Church in the media or on the internet

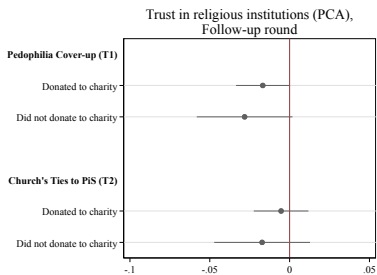
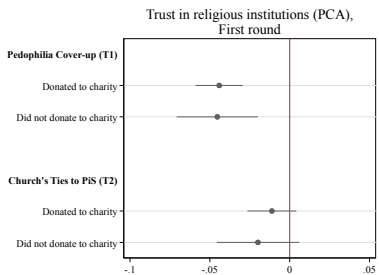


LT Average treatment effects: Mechanism

Watched documentary “Tell no one” since the first round



Experimenter Demand Effects



Persuasion rates of the Pedophilia Cover-up Treatment

Outcome:	Persuasion rate
Trust in the Church (1 st wave)	-12.1%
Trust in the Church (2 nd wave)	-5.9%
Donated to religious foundations	-7.6%
Attend mass weekly in the future	-7.6%

Conclusion

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

- Independent TV has an important countervailing effect to media propaganda
 - Viewers switched from state propaganda to independent TV, where independent TV was available
 - Religious participation continued to follow circularization trend in places with independent TV and this trend was reversed where only state TV was available
 - Experiment confirms that exposure to content critical of the Church available only on independent media decreases in trust in religious institutions
- 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

Balance test of treatment status in the matched sample

Variable	(1) Control		(2) Treated		(1)-(2) Pairwise t-test	
	N	Mean/(SE)	N	Mean/(SE)	N	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 with and without TVPolska

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					
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	-0.717** (0.311)	-0.632** (0.276)	-0.656** (0.314)		
$\mathbb{1}\{\text{Good TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	0.098 (0.338)			0.058 (0.432)	
$\mathbb{1}\{\text{Good entertainment TV signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	0.112 (0.253)			0.192 (0.449)	0.128 (0.256)
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Good TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$					-0.568* (0.342)
$\mathbb{1}\{\text{Bad TVN signal}\} \times \mathbb{1}\{\text{Good TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$					0.211 (0.369)
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Bad TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$					0.397 (0.549)
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 \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

Effect of TVN with and without TVPolska

Taking Communion

Sample:	All municip.	Good TVPolska	Good Entert. TV	Bad TVN reception	All municip.
	(1)	(2)	(3)	(4)	(5)
Panel B: Dependent Variable: Share of Catholic population taking Communion					
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	-0.465*** (0.164)	-0.362** (0.150)	-0.308* (0.173)		
$\mathbb{1}\{\text{Good TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	0.022 (0.204)			0.008 (0.254)	
$\mathbb{1}\{\text{Good entertainment TV signal}\} \times \mathbb{1}\{\text{Post PiS}\}$	0.196 (0.139)			0.116 (0.236)	0.201 (0.140)
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Good TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$					-0.431** (0.207)
$\mathbb{1}\{\text{Bad TVN signal}\} \times \mathbb{1}\{\text{Good TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$					0.050 (0.213)
$\mathbb{1}\{\text{Good TVN signal}\} \times \mathbb{1}\{\text{Bad TVPolska signal}\} \times \mathbb{1}\{\text{Post PiS}\}$					-0.188 (0.580)
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

Heterogeneous effects: Mass attendance

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A:	Share of Catholic population attending mass					
1{Good TVN signal} × 1{Post PiS}	-0.791*** (0.227)	-0.559** (0.264)	-0.507* (0.290)	-0.957*** (0.330)	-0.573*** (0.219)	-0.702* (0.367)
1{Good TVN signal} × 1{2015}	-0.401** (0.194)	-0.286 (0.177)	-0.389** (0.192)	-0.402** (0.196)	-0.402** (0.197)	-0.400** (0.195)
× 1{Religious participation in 2009 > Median}		-0.701* (0.410)				
× 1{Rural}			-0.390 (0.374)			
× 1{Pre-2009 support for PiS > Median}				0.632 (0.398)		
× Share of 15-29 year olds					0.165 (0.105)	
× Share of 65+ year olds					0.100 (0.082)	
× 1{Fixed internet > Median}						-0.136 (0.365)
× 1{Mobile internet > Median}						-0.040 (0.388)
R-squared	0.850	0.854	0.850	0.851	0.851	0.850
Year and Municipality FEs	✓	✓	✓	✓	✓	✓
Observations	26,617	26,240	26,578	26,617	26,606	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*** (0.124)	-0.331** (0.163)	-0.254 (0.172)	-0.519*** (0.192)	-0.406*** (0.124)	-0.542** (0.215)
1{Good TVN signal} × 1{2015}	-0.273** (0.138)	-0.237* (0.141)	-0.266* (0.137)	-0.273** (0.138)	-0.275* (0.140)	-0.273** (0.139)
× 1{Religious participation in 2009 > Median}		-0.487** (0.245)				
× 1{Rural}				-0.442* (0.227)		
× 1{Pre-2009 support for PiS > Median}				0.145 (0.236)		
× Share of 15-29 year olds					0.034 (0.064)	
× Share of 65+ year olds					0.011 (0.044)	
× 1{Fixed internet > Median}						-0.037 (0.210)
× 1{Mobile internet > Median}						0.018 (0.227)
R-squared	0.745	0.748	0.746	0.746	0.746	0.745
Year and Municipality FEs	✓	✓	✓	✓	✓	✓
Observations	26,617	26,240	26,578	26,617	26,606	26,617
SD of the TVN signal measure	0.45	0.45	0.45	0.45	0.45	0.45

Omnibus test of randomization quality

Sample:	Treatment 1 & Control		Treatment 2 & Control		<i>(continued...)</i>	Treatment 1 & Control		Treatment 2 & Control	
	Treatment 1		Treatment 2			Treatment 1		Treatment 2	
Dependent variable:	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)	Attends 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	

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Balance test of covariates (1 of 2)

	Treatment 1		Treatment 2		R-squared	N
	coefficient	s.e.	coefficient	s.e.		
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		R-squared	N
	coefficient	s.e.	coefficient	s.e.		
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

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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 (0.026)	0.932 (0.036)	0.079 (0.036)
Treatment 1 × Not participated in follow up	-0.015 (0.028)	0.942 (0.039)	0.060 (0.039)
Treatment 2 × Participated in follow up	0.022 (0.026)	0.872 (0.037)	0.079 (0.036)
Treatment 2 × Not participated in follow up	0.030 (0.028)	0.879 (0.039)	0.067 (0.038)
Control × Participated in follow up	0.046 (0.026)	0.855 (0.036)	0.096 (0.036)
Control × Not participated in follow up	0.028 (0.027)	0.859 (0.039)	0.081 (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