

The Implications of the Pentecostal Movement: (no) Evidence (yet) from Nigeria

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PhD Workshop

Science Without Religion is Lame

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 - Partnership with Pentecostal denomination in Nigeria
 - Impacts of engaging with the church
 - People's underlying motivations

This Project

Question

- What are the effects of joining a Pentecostal denomination?
- **Today:** What are the effects of proselytization?
 - Religious activities and agency
 - Mental health
 - labor supply and income
 - Perception of in group and out group
- What motivates people to join a denomination?

This Project

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Preview of Results

- Proselytization matters (for the church and for people)
 - ↑ labor supply
 - ↑ religious engagement
 - ↓ agency
 - doubles probability that people convert
- Higher probability to engage with the church for concrete reasons

Overview

1. Context

2. Data

3. Effects of Joining the Church

4. Church Engagement

Literature

- Religion can affect behavior
(Bryan et al., 2021; Buccione and Melo, 2020; Solá, 2022))
- Membership in churches changes people's networks
(Murphy et al., 2020)
- People engage for concrete reasons with churches
(Auriol et al., 2020; Bentzen 2019, 2021;)
- Increases in human capital (an living standards) decrease membership in Pentecostal denominations
(Alfonsi et al., 2022)

Overview

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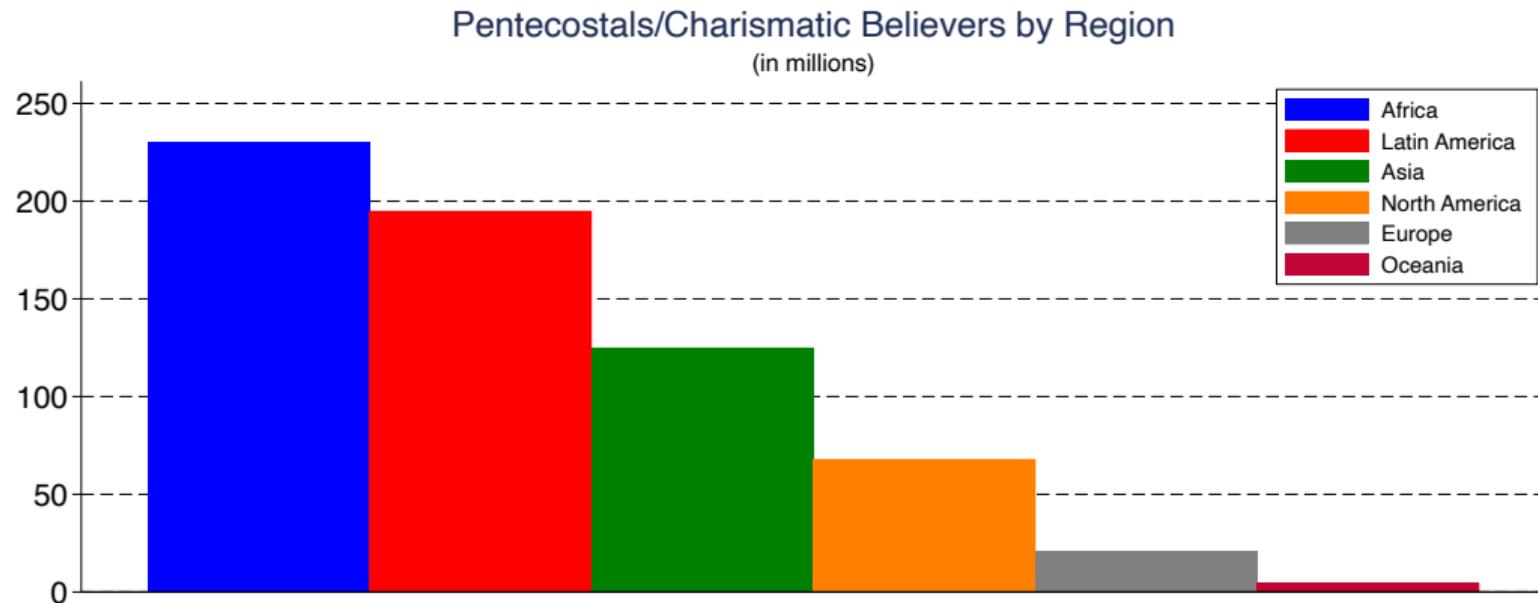
3. Effects of Joining the Church

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Pentecostalism/Charismatic Christianity

- Emphasize the Holy Spirit and direct 'experience' of God
- Highlighting interventionist notion of God
 - Spiritual gifts (e.g. speaking in tongues)
 - The notion of God creating miracles is very important
 - Notion that God can protect you, make your life flourish
 - Divine healings
- Prosperity Gospel
 - Tithe obligation
 - Donations are seed money
- Strict behavioral rules (e.g. no alcohol)
- Their ideas are popular: 236 million converted since 2000 ($\uparrow 87\%$)

Especially Popular Low-Income Countries



Source: Pew Research Center

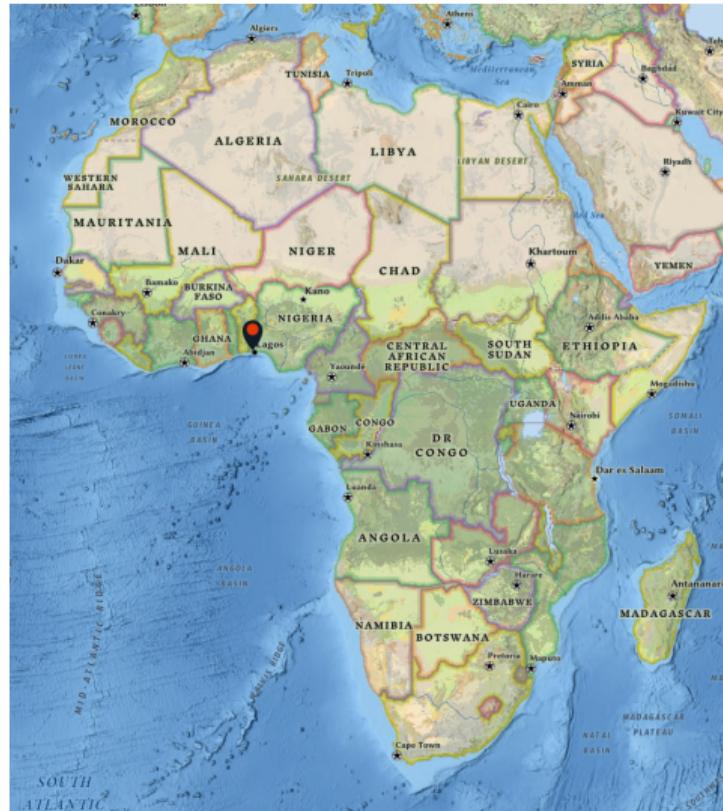
Nigeria

- Most populous African country
- GDP per Capita: around \$2,065
- Muslim north and Christian South and fragmented by ethnic groups
- Religion is extremely important – 5 of the 10 largest Evangelical churches by capacity are in Nigeria
- Baseline religious engagement is high
 - Praying per day: 1.6 hours
 - Time in service on Sunday: 4 hours
 - Probability to switch denomination: 35%

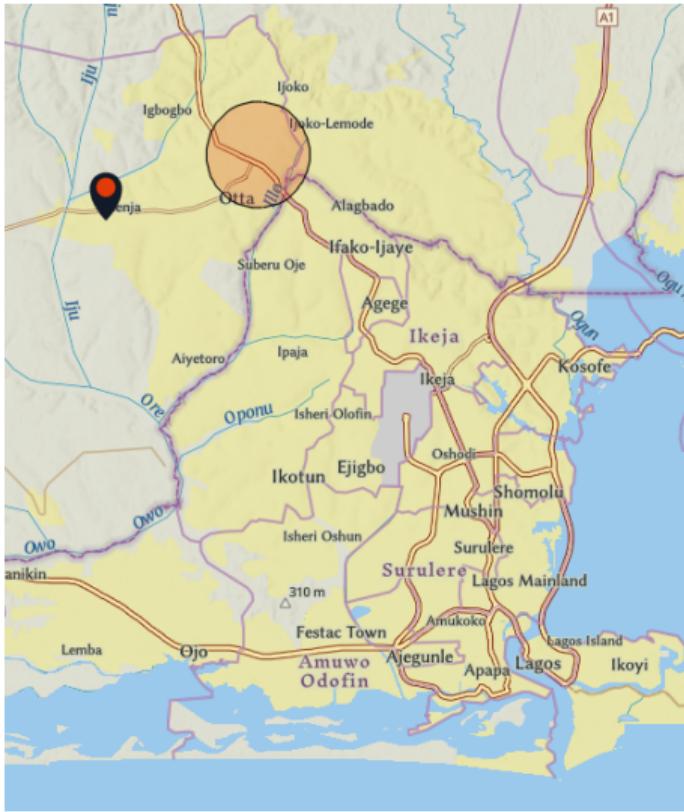
Living Faith Worldwide



Living Faith Worldwide



Living Faith Worldwide



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Treatment Assignment/Control Group

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Proselytization team approaches people in
the street



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People invited to church and contact
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Members of the proselytization team approach people in the street



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People are offered a bible lottery and contact information collected

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Pictures

Treatment Assignment

Control

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Members of the proselytization team approach people in the street



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Enumerators can follow up with individuals over phone

Data

- Survey data
 - Two rounds of data collection
 - June/July and November/December
 - Phone surveys of treatment group (n=964) and control group (n=226)
 - Attrition rate: 10.3%.

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 - Two rounds of data collection
 - June/July and November/December
 - Phone surveys of treatment group ($n=964$) and control group ($n=226$)
 - Attrition rate: 10.3%.
- Church records
 - The denominations records success of their proselytization team
 - Phone interviews with people
 - May through July 2023 at the moment
 - Only service attendance ($n=8,008$)

Survey Data: Outcomes Measured

- Demographic characteristics
- Religious activities
 - Hours spent praying and in church, # of religious activities
 - God as Causal Agent Scale (0 - 35)
 - God Health Locus of Control Scale (0-30)
- Labor Supply and Income
 - Current Income
 - Expected income change in 6 months
- Mental Health
 - PHQ2 scale (0-6)
 - Optimism about future
- Trust

Survey Data: Summary Statistics

	Treatment Group			Control Group			P-Value
	Mean	SD	Observations	Mean	SD	Observations	
Demographic Characteristics							
Participant is female	0.36	0.48	956	0.39	0.50	226	0.401
Participant's age	31.68	11.15	956	30.82	9.88	226	0.262
Participant's schooling	3.22	0.74	956	3.28	0.65	226	0.192
Religious Activities							
Hours praying in a typical day	1.61	1.36	956	1.51	1.01	226	0.289
Hours spent in church on Sunday	3.95	1.56	792	3.96	1.49	214	0.941
God as a causal agent score	30.33	2.53	956	30.45	2.56	226	0.528
Labor Supply and Income							
Hours working in a typical day	7.76	3.48	956	7.64	3.36	226	0.638
Monthly Income (Naira)	110,121	125,086	956	112,054	143,181	226	0.852
Mental Health							
PHQ2 score	1.85	1.38	956	1.80	1.35	226	0.568
Trust							
Trust in other Nigerians	2.07	0.95	956	2.03	0.85	226	0.528

Full Sum Stats

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IV Design

If Assumptions hold

IV assumptions

$$D_i = \pi_0 + \pi_1 Z_i + \nu_i$$

$$Y_i = \beta_0 + \beta_1 \hat{D}_i + \epsilon_i$$

- identifies LATE: treatment effect for compliers
- IV is (weakly) relevant: Conversion increases from 3% to 5.8%

prev. rel

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- **Today:** ITT estimates

$$Y_i = \gamma_0 + \gamma_1 Z_i + \varepsilon_i$$

ITT Estimates: Religious Engagement and Agency

	(1) Hours Praying per Day	(2) Religious Activities Per Week	(3) Hours in Church on Sundays	(4) GHLOC Scale	(5) GCA Scale
Approached by LFW proselytizer	0.059 (0.117)	0.501*** (0.181)	-0.024 (0.145)	0.677** (0.298)	0.126 (0.184)
Constant	1.690*** (0.105)	3.321*** (0.161)	4.140*** (0.129)	20.881*** (0.268)	29.916*** (0.166)
Observations	1,182	1,006	1,006	1,182	1,182
Mean of indep. var	1.72	3.72	4.12	21.43	29.89

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

ITT Estimates: Labor Supply and Income

	(1) Hours Working per Day	(2) Monthly Income	(3) Income Expectations
Approached by LFW proselytizer	1.293*** (0.279)	8543.988 (13997.627)	-9.789 (7.080)
Constant	6.735*** (0.251)	140695.214*** (12603.148)	97.528*** (6.360)
Observations	1,182	1,182	1,182
Mean of indep. var	7.78	147621.65	89.63

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

ITT Estimates: Mental Health

	(1) PHQ2 Score	(2) Next Year will be good	(3) Certainty of Future
Approached by LFW proselytizer	-0.001 (0.109)	-0.029 (0.036)	-0.045 (0.037)
Constant	1.889*** (0.102)	3.733*** (0.032)	3.719*** (0.033)
Observations	1,182	1,182	1,182
Mean of indep. var	1.87	3.71	3.68

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

ITT Estimates: Trust

	(1) Trust Nigerians	(2) Trust Hausa	(3) Trust Christians	(4) Trust Muslims
Approached by LFW proselytizer	0.004 (0.074)	0.052 (0.077)	0.041 (0.085)	0.070 (0.077)
Constant	1.958*** (0.067)	1.963*** (0.069)	2.223*** (0.076)	1.967*** (0.070)
Observations	1,182	1,182	1,182	1,182
Mean of indep. var	1.96	2.01	2.26	2.02

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People Switch Religious Affiliations Frequently

	Mean	SD	Observations
atheist	0.83	0.41	6
atr	1.00	0.00	3
catholic	0.26	0.44	72
muslim	0.19	0.39	167
other	0.50	0.50	243
pentecostal	0.34	0.47	650
protestant	0.39	0.49	41
Total	0.35	0.48	1,182

Identifying Motivations to Join the Church

- The topic of the service changes each Sunday [Example Flyer](#)
- The outreach team uses these topics to approach people
- Group individual topics into a few motifs
- I want to use the quasi randomness of the motifs to estimate their relative importance

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- The topic of the service changes each Sunday [Example Flyer](#)
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$$P(\text{join} | M = m)$$

- Assumptions needed: $Y(0)_i, Y(1)_i \perp\!\!\!\perp M | j$
 - In this context: people are not differently targeted with different motifs

Identifying Motivations to Join the Church

- Including motifs: financial wealth, health, family

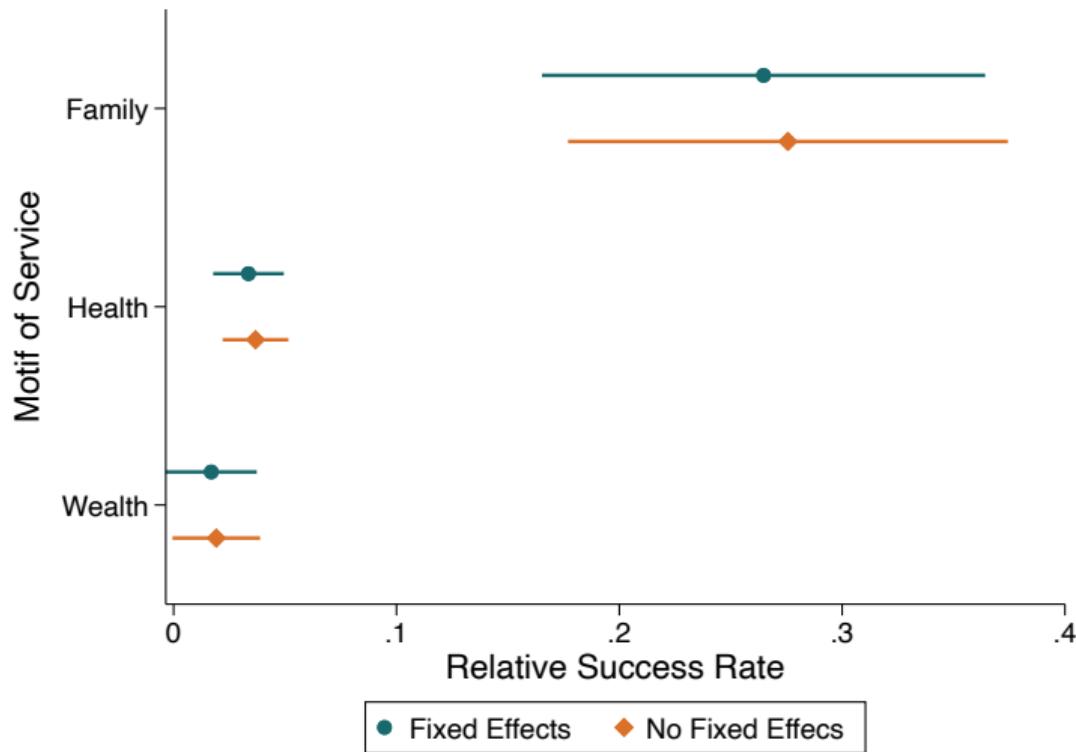
$$Y_i = \alpha + \sum_{m_1}^M \beta_m \cdot \mathbb{1}_{m(i)} + \phi_j \mathbb{1}_{j(i)} + \varepsilon_i$$

ϕ_j : individual proselytizer fixed effects

β_m : effect of motif m , identified by conditional independence assumption

Motifs Classification

Identifying Motivations to Join the Church



Conclusion

- Design allows to study people's interaction with a church
- Balanced treatment and control
- Proselytization matters
- Baseline religious engagement is high
- But converting seems to matter
- People join for concrete reasons
- Frequent switching of religious affiliation

Living Faith Worldwide: Places of Proselytization



Full Summary Statistics

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Monthly Income (Naira)	110,121	125,086	956	112,054	143,181	226	0.852
Expected income change	60.34	54.94	956	57.99	52.94	226	0.583
Mental Health							
PHQ2 score	1.85	1.38	956	1.80	1.35	226	0.568
How likely is the next year a good year	3.68	0.48	954	3.70	0.51	226	0.562
How certain are plans for the future	3.60	0.54	956	3.67	0.51	226	0.095
Trust							
Trust in other Nigerians	2.07	0.95	956	2.03	0.85	226	0.528
Trust in Muslims	2.16	0.96	956	2.05	0.82	226	0.091
Trust in Hausa	2.09	0.99	956	2.35	0.95	226	0.304
Trust in Christians	2.40	1.04	956	2.35	0.95	226	0.464

back to sum stats

IV Design

Assumptions needed

- Random assignment: $Y_{d,z}, D_z \perp\!\!\!\perp Z \forall d, z$
 - The instrument must be independent of potential outcomes and treatment status
 - So here: being approached by the proselytization team must be independent of potential outcomes and treatment status
 - I argue that both is plausible
 - The same people approach people for treatment and control group talking about religion
 - Conditional on being willing to talk to the proselytization team, some people get invited and others don't
- Exclusion: $Y_{d,1} = Y_{d,0}$
 - Every effect of the instrument Z must come through D
 - So here: any impact of being approached by the outreach team must come through people joining the church.
- Monotonicity: being invited to church makes everyone more likely to join

Example of Flyer

JOIN US THIS SUNDAY @

Covenant Day Of Fruitfulness

— 26TH JUNE, 2022 —

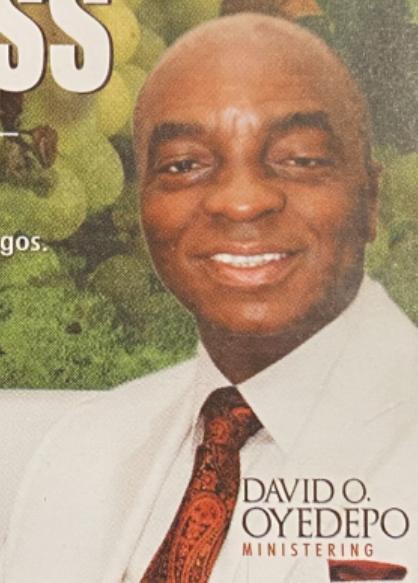
@ FAITH TABERNACLE
Canaanland, Km 10, Idiroko Road, Ota-Lagos.

SERVICE SCHEDULE

6:00am | 7:55am | 9:50am | 11:45am

*The Church provides free transportation from our loading bays from across Lagos and Ota.
Call 08021818080 for direction to the one closest to where you live.*

FOR ENQUIRIES PLEASE CALL: 0 7 0 8 0 6 3 8 0 0 0



DAVID O.
OYEDENO
MINISTERING

Motifs Classification

	Attend Service			
	(1)	(2)	(3)	(4)
May 21 (G: Open Doors)	-0.0169 (0.0113)	-0.0135 (0.0114)	-0.0169 (0.0113)	-0.0135 (0.0114)
May 28 (G: Open Doors)	-0.0126 (0.0098)	-0.0112 (0.0098)	-0.0126 (0.0098)	-0.0112 (0.0098)
June 4 (G: Breaking invisible barriers)	-0.0288* (0.0159)	-0.0307* (0.0166)	-0.0288* (0.0159)	-0.0307* (0.0166)
June 11 (H: All round rest)	0.0097 (0.0108)	0.0076 (0.0114)	-0.0282 (0.0212)	-0.0375* (0.0215)
June 18 (H: Healing and Anointing)	0.0893*** (0.0177)	0.0886*** (0.0194)	0.0514** (0.0254)	0.0435* (0.0264)
June 25 (F: Marital Breakthroughs)	0.2651*** (0.0507)	0.2591*** (0.0513)	0.0000 (.)	0.0000 (.)
July 2 (G: Encounter Destiny)	-0.0039 (0.0139)	-0.0032 (0.0146)	-0.0039 (0.0139)	-0.0032 (0.0146)
July 9 (W: Business Breakthrough)	0.0172 (0.0148)	0.0165 (0.0153)	0.0188 (0.0187)	0.0164 (0.0189)
July 16 (H: Breaking Generational Curses)	0.0379* (0.0212)	0.0451** (0.0217)	0.0000 (.)	0.0000 (.)
July 23 (W: Financial Fortune)	-0.0016 (0.0157)	0.0001 (0.0163)	0.0000 (.)	0.0000 (.)
July 30 (G: Settlement)	-0.0096 (0.0167)	-0.0065 (0.0173)	-0.0096 (0.0167)	-0.0065 (0.0173)
Observations	8,008	8,006	8,008	8,003
Proselytizer FE	No	Yes	No	Yes
Motif FE	No	No	Yes	Yes

back to eqn.

Previous Religious Affiliation

	Percent
No religious affiliation	1.5
ATR	0.0
Catholic	1.5
Muslim	15.6
Other	29.7
Pentecostal	48.4
Protestant	3.1

Living Faith Worldwide's Proselytization: The Treatment Group

- Main data collection exploits denomination's proselytization activities

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- Team drives to nearby locations

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- Team drives to nearby locations
- Approaching pedestrians passing by their location

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- Collecting the phone numbers

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- Main data collection exploits denomination's proselytization activities
- Team drives to nearby locations
- Approaching pedestrians passing by their location
- Invitation to join the church on the next Sunday
- Collecting the phone numbers
- My enumerators use the phone number to call people and collect data

[back to overview](#)

Constructing the Control Group

- Construct a control group using people working for the proselytization team
- They approach people on the street in similar geographic locations
- Talk about religion but **don't invite them to join the church and mention the denomination**
- Offer participation in a lottery in which people can win a bible
 - Obtain people's contact information
 - Mimic selection of treatment group

[back to overview](#)