Introduction
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Data-Methodology
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Religious IM
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Correlates Religious IM
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Regional Exposure Effects
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Discussion
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Conclusion
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Religion and Social Mobility in Africa

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Stelios Michalopoulos [3]   Elias Papaioannou [4]

[1]Harvard University, CEPR and NBER
[3]Brown University, CEPR and NBER   [4]London Business School and CEPR

New Economic School
Moscow

November 18, 2020

Presentation Structure

1. **Introduction and Motivation**

2. **Data and Approach**

3. **Intergenerational Mobility (IM) across Religious Affiliation**

4. **Mapping and Correlates of IM Religious Gaps**

5. **Regional Childhood Exposure Effects vs Spatial Sorting**

6. **Discussion**

7. **Conclusion**

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Introduction

Section Structure

1. **Motivation**

2. **Motivational Descriptive Evidence**

3. **Related Literature**

Motivation

Religious Fundamentalism and Conflict in Africa

Boko Haram 'western education is sinful' (Hausa)

- **Religious strains and conflict in the Sahel** [Nigeria, Mali, Sudan, Burkina Faso, Niger, and the Central African Republic] evolving around religion (North-South)

- **Religion instrumental in many other African countries** [e.g., Ethiopia (Ogaden), East Africa, (North) Mozambique]

- **Religious discrimination, repression, and nationalism is rising in Africa** [e.g., Fox (2004), Basedau and Schaefer-Kehnert (2019)]

Motivation, cont.

Religious Fundamentalism across the World

- **Religious fundementalism appears globally on the rise** [e.g., Huntington (1991), Almond, Appleby and Sivan]

- **Religious conflict, terrorism, and violence**

- **Cultural backlash against modernization is often organized across religious group membership** [e.g., Benabou, Ticchi, and Vindigni (2016), Norris and Inglehart (2018) for evidence from advanced countries].

Motivation, cont. Religion in Africa
Two Experiments?

1. **Christianity in Africa** coined as the "biggest social experiment" [Meyer (2004), Nunn (2012)]

2. **Islam is the fastest religious group in Africa** [Levzion (2016), Shahin (1997), Jansons]

3. **Coexistence (Projections) by 2050?** [Pew Forum]
   - By 2050, Sub-Saharan African population about 1.9 billion (from 823 million)
   - Muslim population 670 million from 248 million
   - Christian population 1.1 billion from 517 million
   - Co-existence with or without Religious Segregation

This Paper

Religion and Educational Opportunity across African Countries and Regions

▶ **Religion and Educational Mobility [absolute upward and absolute downward intergenerational mobility]**

▶ **New measures IM across religion affiliation**

▶ **Drivers of religion IM (gaps)**

▶ **Role of regions and spatial sorting on religion IM**

Ambition. Broader Research Agenda
Study Educational Opportunity in Africa since Independence

- ▶ Map regional differences in mobility across and within countries; understand origins; distinguish region's causal role from spatial sorting (Alesina, Hohmann, Michalopoulos, and Papaioannou (ECMA 2020); ongoing work with Brandon Tan (Harvard))

- ▶ Understand the role of educational policies (e.g., compulsory primary schooling laws, expansion of schooling infrastructure); ongoing work with Torsten Walter (NYU)

- ▶ Understand ethnic inequality in educational opportunity (building on Alesina, Michalopoulos, and Papaioannou (JPE 2016))

- ▶ Dynamics of rural-urban gap (structural transformation)

- ▶ Other

Years of Schooling across Religious Groups

Christians, Muslims, and Animists, aged 14+

	group percentage			1940s				1980s			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
country	Christian	Muslim	Traditional	Christian	Muslim	Traditional	$\Delta(c-m)$	Christian	Muslim	Traditional	$\Delta(c-m)$
Botswana	76.0	0.6	4.9	3.53	9.44	1.3		10.8	11.19	8.62	
Egypt	5.6	94.4		4.9	2.76			9.25	8.52		
South Africa	82.7	1.5	0.2	6.01	8.13	1.99		9.16	10.48	7.85	
Nigeria	52.5	46.6	0.9	3.68	1.38	1.08		9.07	3.95	5.26	
Ghana	70.1	16.9	6.6	6.02	1.85	0.98		8.26	4.55	1.94	
Cameroon	69.2	20.9	5.6	4.46	2.03	1.64		7.9	2.88	2.27	
Zambia	91.7	0.5	4.3	3.84	4.19	3.42		7.25	7.88	7.05	
Togo	47.9	15.7	29.0	3.51	1.07	0.52		7.12	4.35	2.78	
Malawi	81.4	12.9	2.4	3.35	1.49	2.19		6.57	4.78	4.95	
Senegal	4.2	95.2		3.69	1.14			6.22	2.6		
Uganda	85.5	11.2	0.8	3.05	2.84	0.44		5.41	5.64	0.53	
Benin	44.2	25.4	22.0	2.77	0.85	0.28		5.2	2.62	2.22	
Liberia	85.8	12.1	0.6	2.51	1.73	0.64		5.07	3.42	2.19	
Rwanda	93.2	1.8	0.3	1.66	2.14	0.27		4.76	5.84	5.62	
Sierra Leone	21.1	76.7	0.1	3.88	0.84	0.0		4.53	2.2	1.31	
Mali	2.4	95.1	2.0	1.36	0.7	0.18		3.87	2.09	0.63	
Burkina Faso	21.6	58.7	18.8	1.07	0.23	0.05		3.67	1.56	0.45	
Mozambique	56.4	18.0	6.7	1.43	0.92	1.54		3.16	2.23	3.41	
Ethiopia	64.0	31.1	3.9	0.84	0.38	0.16		2.91	1.47	0.61	
Guinea	5.7	86.9	3.0	2.21	0.64	0.12		2.91	1.4	0.81	

Primary Completed across Religious Groups

Christians, Muslims, and Animists, aged 14+

	group percentage			1950s				1990s			
country	(1) Christian	(2) Muslim	(3) Traditional	(4) Christian	(5) Muslim	(6) Traditional	(7) $\Delta(c-m)$	(8) Christian	(9) Muslim	(10) Traditional	(11) $\Delta(c-m)$
Botswana	76.0	0.6	4.9	0.51	0.78	0.24		0.96	0.92	0.82	
Egypt	5.6	94.4		0.47	0.31			0.88	0.87		
Nigeria	52.5	46.6	0.9	0.55	0.9	0.23		0.88	0.57	0.35	
South Africa	82.7	1.5	0.2	0.66	0.9	0.27		0.84	0.95	0.79	
Ghana	70.1	16.9	6.6	0.62	0.23	0.12		0.77	0.57	0.3	
Cameroon	69.2	20.9	5.6	0.68	0.3	0.21		0.76	0.42	0.39	
Togo	47.9	15.7	29.0	0.5	0.19	0.11		0.73	0.57	0.42	
Zambia	91.7	0.5	4.3	0.55	0.57	0.5		0.72	0.76	0.7	
Benin	44.2	25.4	22.0	0.35	0.12	0.04		0.65	0.4	0.45	
Senegal	4.2	95.2		0.46	0.21			0.64	0.3		
Uganda	85.5	11.2	0.8	0.37	0.41	0.04		0.52	0.61	0.03	
Sierra Leone	21.1	76.7	0.1	0.43	0.15	0.04		0.49	0.29	0.25	
Mali	2.4	95.1	2.0	0.21	0.11	0.02		0.43	0.3	0.18	
Rwanda	93.2	1.8	0.3	0.2	0.32	0.03		0.39	0.55	0.38	
Burkina Faso	21.6	58.7	18.8	0.19	0.05	0.01		0.36	0.19	0.08	
Liberia	85.8	12.1	0.6	0.36	0.23	0.14		0.32	0.3	0.14	
Malawi	81.4	12.9	2.4	0.25	0.11	0.16		0.31	0.2	0.18	
Guinea	5.7	86.9	3.0	0.36	0.14	0.07		0.3	0.22	0.16	
Ethiopia	64.0	31.1	3.9	0.09	0.03	0.02		0.29	0.16	0.07	
Mozambique	56.4	18.0	6.7	0.1	0.06	0.12		0.2	0.12	0.23	
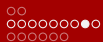
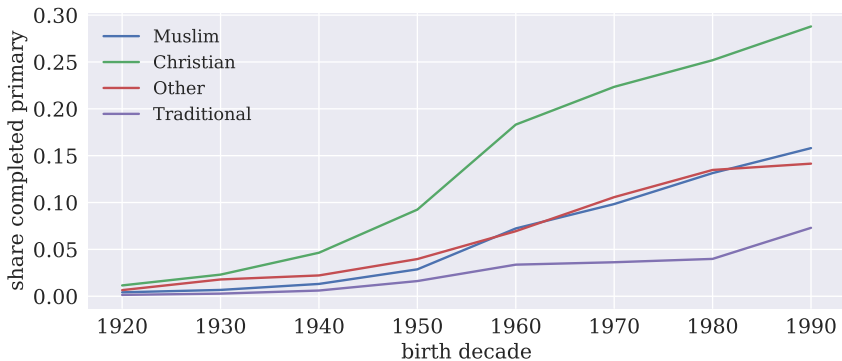# Completed Primary Schooling across Religions, cont.

Example 1. Nigeria. Individuals 14+
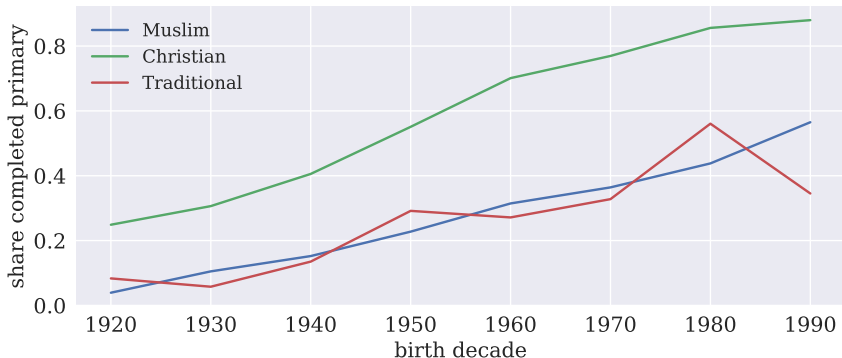
Completed Primary Schooling across Religions, cont.

Example 2. Ethiopia. Individuals 14+

Related Literature

1. **Religion, Economics, and Politics**

   ▶ Different Economic Fundamentals and Institutions shape religious Norms - Marxist View
   ▶ Economic, Political, and Social, Implications of Religious Norms - Weberian View

2. **Intergenerational Mobility (in Education)**

   ▶ Mapping Land of Opportunity for Different Groups
   ▶ Characterize Intergenerational Mobility (Patterns, Correlates)
   ▶ Regional Exposure Effects vs Sorting/Selection

3. **African Development**

   ▶ Measurement
   ▶ Post-Independence Policies and Historical Legacies

Religion, Economics, and Politics
Literature

- **Religion: The Economists' View**
  - General Reviews: Iyer (2016), Guiso, Sapienza, and Zingales (2003), Barro and McCleary (2003)
  - On Islam: Kuran (2018) Islam and Economic Performance

- **Islamic Education**
  - Andrabi, Das and Khwaja (2012), Myersson (2015)

- **Islam in Africa**
  - Platas Izama (2018), Bauer, Platas, and Weinstein (2019), Mc Cauley (2014), Basedau (2017)
  - Mc Cauley (2017) religious conflict

Intergenerational Mobility

Dimensions. Income, Earnings, Wealth, Education

▶ **Income, Lifetime Earnings** [mostly developed-industrial countries]

Erikson and Goldthorpe (1992); Checchi et al. (1999); Jantti et al. (2006); Corak (2006); Hertz et al. (2008); Mayer and Lopoo (2008);

Long and Ferrie (2013); Clark (2014); Chetty et al. (2014, 2016); Derenoncourt (2019)

     ▶ Mapping and correlational analysis. Where is the Land of Opportunity? [Chetty et al. QJE 2014]

     ▶ Causal impact of regions vs. sorting [Chetty and Hendren QJE 2018a,b]

▶ **Education. [reviews Solon (1999) and Black and Deveroux (2011)]**

"In addition to earnings, educational attainment provides an important source of information about the lives of individuals; as a result, there has been extensive study of intergenerational transmission of education. As a practical matter, education has advantages over earnings in terms of estimation; with education, measurement issues are much less difficult. People tend to complete education by their mid-twenties so, unlike with lifetime earnings, analysis can successfully take place when children are relatively early in the life-cycle. Also, non-employment causes no difficulties, and measurement error is likely to be much less of a problem as people tend to know their own educational attainment. Furthermore, there is now an extensive literature that shows that higher education is associated with many other beneficial characteristics such as higher earnings, better health and longer lifespans."

▶ **Intergenerational Transmission. Education [Becker and Tomes (1976), Loury (1981)]**

▶ schooling and "good outcomes" with DHS and Afrobarometer

Intergenerational Mobility in Education across Space
Generic Works on Educational IM

- Hertz et al. (2007). 42 countries (only 3 African)

- Chevalier et al. (2009). U.S., Western Europe

- **Alesina, Hohmann, Michalopoulos, and Papaioannou (2020). African countries and regions**

- **Asher, Novosad, and Rafkin (2018). India**
  - mapping educational IM across Indian districts, castes, and religious groups
  - correlates of regional IM

- **Card, Domnisoru, and Taylor (2018). United States in 1920-1940**
  - mapping educational IM across US states and racial groups
  - educational policies and educational IM

- **World Bank (Narayan et al. (2018))**
  - survey data
  - construct measures of IM in education and income across many countries

Intergenerational Mobility and Ethnicity / Race
United States Focus

- ▶ Borjas (QJE 1992, AER 1995)
  - ▶ Ethnicity as externality in human capital accumulation
  - ▶ skills of current generation depend on parental and ethnic capital
  - ▶ Ethnic capital stronger in ethnically segregated neighborhoods

- ▶ Chetty et al. (QJE 2020)
  - ▶ Large variation in IM across race
  - ▶ Family characteristics explain little of black-white gap in IM conditional in income (as in our setting)
  - ▶ Regions do not matter much (opposite finding here)
  - ▶ Black-white gap IM among boys remains even in the same neighborhood

- ▶ Davis and Mazumder (2018). U.S.
  - ▶ estimates of IM by region and ethnicity/race
  - ▶ ethnic IM gaps are larger than regional gaps
  - ▶ migration explains little of variation in IM

African Development

Historical and Post-Independence Features

- **Economics Research** religion under-explored
    - **National Policies and Factors** Collier and Gunning (JEL 2001)
    - **Historical (Colonial and Precolonial) Factors** Michalopoulos and Papaioannou (JEL 2020)
- **Political Science, Sociology, and History**
    - **review** Meier zu Selhausen (2019))
    - **case studies** Meier zu Selhausen, van Leeuwen, and Weisdorf (2018), Fourie and Swanepoel (2015)

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Section Structure

1. **Data. IPUMS**

2. **Methodology**
   ▶ Cohabitation
   ▶ Cohort Effects/Trends

International IPUMS, Census data

▶ Representative samples (typically 10%) from national censuses [exception Nigeria, household surveys]

▶ Examine individuals aged 14-18 and 14-25 (more below)

▶ 6,392,474 individuals

▶ 20 countries; 38 censuses (1970-2013)

▶ Benin, Botswana, Burkina Faso, Cameroon, Egypt, Ethiopia, Liberia, Ghana, Guinea, Mali, Malawi, Mozambique, Nigeria, Rwanda, Uganda, South Africa, Sierra Leone, Zambia, Togo, Uganda

▶ 2,205 districts

Religion Shares in the Sample
Unweighted

All Individuals
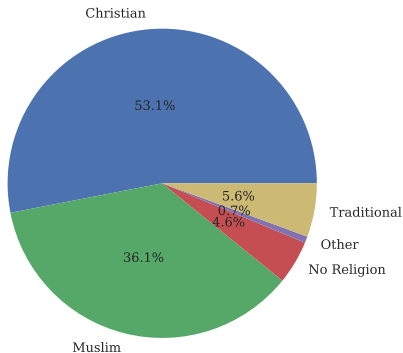
Matched Individuals
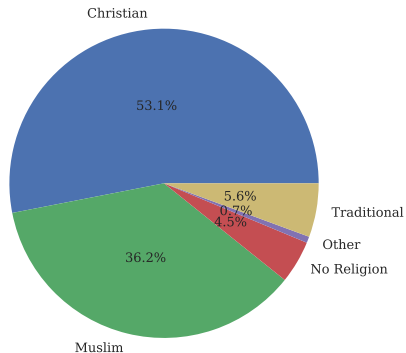
Religion Shares in the Sample
Weighted. 1980 Population

All Individuals

Christian

50.8%

2.8%
0.5%
3.1%

Traditional
Other
No Religion

42.8%

Muslim

Matched Individuals

Christian

51.4%

2.9%
0.6%
3.0%

Traditional
Other
No Religion

42.2%

Muslim
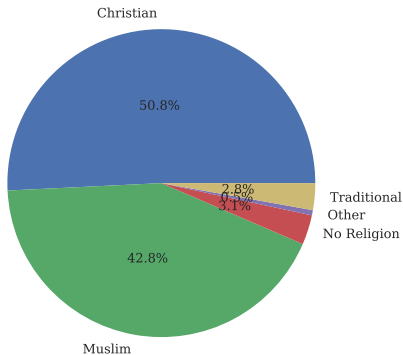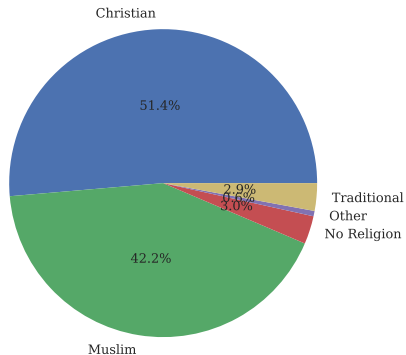
On Education. Correlation with "Good Outcomes"

Some Remarks. Alesina, Hohmann, Michalopoulos, and Papaioannou (2020)

- ▶ **DHS**. Validation IPUMS education data across regions

- ▶ **DHS**. Education and Wealth (composite wealth index)

- ▶ **DHS**. Education and Health (e.g., child mortality, fertility, age of marriage, female bargaining power)

- ▶ **Afrobarometer**. Education and Good Outcomes (e.g., living conditions, no food and water, support for democracy)

- ▶ **Mincerian Returns**.
  - ▶ higher returns to education in low income countries (e.g., Psacharopoulos (1994), Caselli, Ponticelli, and Rossi (2014)).
  - ▶ Young (2012): 11.3% (OLS) - 13.9% (2SLS); higher in SSA than in 11 non-SSA low income countries
  - ▶ Montenegro and Patrinos (2014): about 12.% in Africa, compared to 9.7% for the rest of the world. 4 of top-5 countries are in Africa.
  - ▶ Psacharopoulos and Patrinos (2004): wage increase for completed primary of 37.6% across 15 Sub-Saharan African countries in the 1980s and 1990s, as compared to 26.5% for secondary and 27.8% for tertiary.

Methodology. Absolute IM
Chetty et al. (2014, 2016) definitions

▶ "Relative" IM
  ▶ Regressions of (relative) child outcomes (education) on (relative) parental outcomes

▶ "Absolute" IM
  ▶ Likelihood of children having outcome y conditional on parents having (relative)
    outcome x. ($\Rightarrow$ likelihood of having better / worse outcomes than parents)

This paper: absolute educational IM [also in Alesina, et al. (2020) and Chetty et al.
(2017); like parallel work of Card et al. (2018)]

▶ Upward IM: Likelihood that children of parents with less than primary
  education ("illiterate") complete at least primary ("literate")

▶ Downward IM: Likelihood that children of parents at least primary
  education fail to complete primary school

Absolute Intergenerational Mobility

Measuring social mobility using multi-generational households

IM: compare individuals' education to that of a "previous generation"

- ▶ Households where more than one generation lives in the same households

- ▶ *Relationship to household head* → assign individuals to "generations"
    - ▶ **head, spouse, siblings**
    - ▶ **children, nephews, nieces**
    - ▶ grandchildren
    - ▶ parents, uncles, aunts
    - ▶ grandparents

Co-residence

Assessing primary school attainment vis a vis parents

Tension

(A) Younger individuals more likely to live with their parents

(B) Older individuals more likely to have finished education

$\Rightarrow$ **to deal with (A) and (B)**

- ▶ individuals aged 14-18 (80%-90% co-residence rate in the sample compared to 95.1% for 8-year olds) (Card, Domnisory, and Taylor, 2018)

- ▶ at the same time, old enough to have completed primary school

- ▶ compare results to results from individuals aged 14-25 and 14+

Country-Level Co-residence Rates

Muslims, Animists, Christians
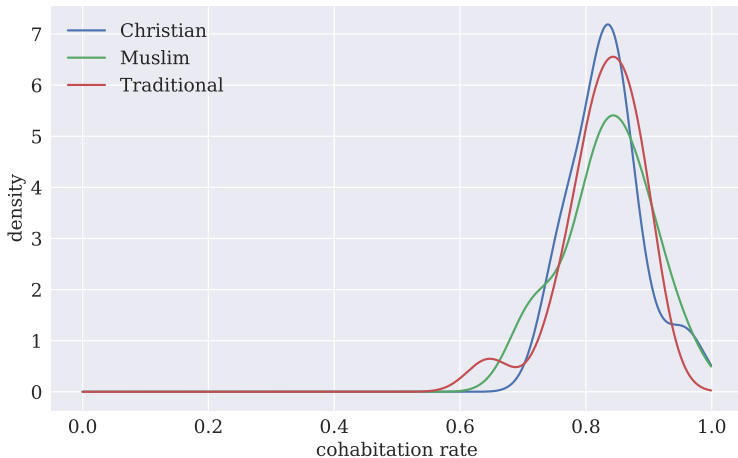
District-Level Co-residence Rates

Muslims, Animists, Christians

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Correlates Religious IM
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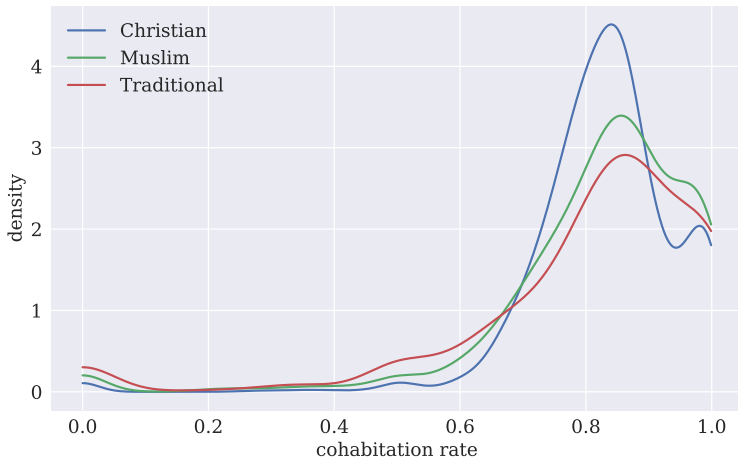
Methodology
Time and cohort effects

Step 1. Define indicator variables

▶ lit_par$_{ibct}$ = 1 if the parents of child i born in birth-cohort b in country c and observed in census t are literate and zero otherwise

▶ IM_up$_{ibct}$ = 1 if a child i born to illiterate parents in (decadal) birth-cohort b in country c and observed in census year t is literate and zero otherwise.

▶ IM_down$_{ibct}$ = 1 if a child i born to literate parents in (decadal) birth-cohort b in country c and observed in census year t is illiterate and zero otherwise.

Step 2. For all individuals, estimate

$$\text{lit\_par}_{ibct} = \alpha^o_{cb} + \epsilon_{ict}$$
$$\text{IM\_up/down}_{ibct} = \alpha^y_{cb} + \epsilon_{ict},$$

$\hat{\alpha}^o_{cb}$ share of literate parents in country c, birth-cohort b.

$\hat{\alpha}^y_{cb}$ estimate of upward/downward IM in country c, birth-cohort b.

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Correlates Religious IM
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Regional Exposure Effects
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Section Structure

1. **Intergenerational Mobility across Religious Affiliation**

2. **Drivers of Religious IM Gaps**
   ▶ Household & Family Characteristics
   ▶ Income Features
   ▶ Regional Factors

3. **Further Evidence**

Intergenerational Mobility across Religious Lines

20 African Countries. individuals aged 14-18

	upward IM							downward IM						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
country	overall	Christian	Muslim	Traditional	$\Delta(c-m)$	N^{10+}_{dot}	$s(c>m)$	overall	Christian	Muslim	Traditional	$\Delta(c-m)$	N^{10+}_{dot}	$s(c>m)$
Botswana	0.798	0.822	0.556	0.699				0.085	0.083	0.027	0.076		1	0.0
South Africa	0.731	0.74	0.874	0.764		34.0	0.324	0.105	0.106	0.04	0.182		37	0.162
Egypt	0.673	0.679	0.673			187.0	0.775	0.052	0.048	0.052			186	0.634
Cameroon	0.613	0.739	0.424	0.481		113.0	0.867	0.056	0.042	0.196	0.185		107	0.738
Nigeria	0.612	0.786	0.466	0.229		6.0	0.667	0.096	0.078	0.162	0.0		7	0.143
Ghana	0.557	0.654	0.468	0.263		108.0	0.741	0.173	0.157	0.263	0.471		108	0.759
Togo	0.526	0.641	0.534	0.382		34.0	0.765	0.19	0.165	0.214	0.361		30	0.633
Zambia	0.439	0.446	0.484	0.449		6.0	0.5	0.253	0.25	0.221	0.262		6	0.667
Uganda	0.4	0.404	0.485	0.019		122.0	0.377	0.29	0.295	0.257	0.641		121	0.488
Benin	0.298	0.415	0.214	0.213		58.0	0.759	0.292	0.274	0.308	0.469		50	0.5
Mozambique	0.287	0.324	0.207	0.366		47.0	0.638	0.249	0.225	0.314	0.22		41	0.634
Mali	0.274	0.395	0.273	0.187		57.0	0.754	0.237	0.219	0.237	0.491		47	0.532
Sierra Leone	0.261	0.319	0.248	0.091		82.0	0.854	0.332	0.257	0.385	0.6		81	0.802
Senegal	0.244	0.527	0.235			22.0	1.0	0.264	0.163	0.274			22	0.773
Liberia	0.222	0.218	0.266	0.103		20.0	0.4	0.538	0.537	0.544	0.632		18	0.444
Burkina Faso	0.191	0.332	0.182	0.072		44.0	0.955	0.235	0.199	0.269	0.569		42	0.81
Guinea	0.182	0.229	0.181	0.138		14.0	0.929	0.439	0.5	0.418	0.724		14	0.286
Rwanda	0.181	0.183	0.274	0.077		21.0	0.238	0.543	0.541	0.489			19	0.632
Malawi	0.133	0.143	0.096	0.095		109.0	0.716	0.512	0.503	0.616	0.556		90	0.711
Ethiopia	0.116	0.138	0.082	0.017		58.0	0.759	0.344	0.323	0.481	0.8		52	0.731

Cross-Country Correlates of Religious IM

Correlations (non causal)

- **Income (GDP p.c.)**
- Religious Fractionalization/Polarization
- **Religious Segregation** (Alesina and Zhuravskaya (AER 2011)
- Muslim Share
- Slave Trade
- Broad African Regions
- **Ethnic Partitioning** (Alesina, et al. (JEEA 2011)

Cross-Country Correlates of Religious IM Gap

Correlations (non causal)

- **Income (GDP p.c.)**
- Religious Fractionalization/Polarization
- **Religious Segregation** (Alesina and Zhuravskaya (AER 2011)
- Muslim Share
- Slave Trade
- Broad African Regions
- **Ethnic Partitioning** (Alesina, et al. (JEEA 2011)

Drivers of Religious IM Gap (Indiv. Level)
Hypotheses/Categories

1. **Household/Family Characteristics**
   - ▶ Household Structure [multi-generational, number of hh members by generation]
   - ▶ Family Arrangements [father only, mother only, father and mother only, mother/father/both and other relatives, only other relatives]
   - ▶ Relationship to household head [child, foster child, grandchild, sibling, spouse, other relative]
   - ▶ Previous Generation Age of Birth [mother, father, other]

2. **Income Features**
   - ▶ Rural-Urban Household
   - ▶ Sector of Employment [household head and older generation]
   - ▶ Profession [household head and older generation]

3. **Regional Factors**
   - ▶ Country-Region X Urban Fixed-Effects

Preliminary. Differences across Religious Affiliation
Household/Family Characteristics

- ▶ **Household Structure**
  - ▶ Muslim and Traditional households are, on average, larger.
  - ▶ Muslim and Traditional households are more likely to be multi-generational (incl. grandparents).
  - ▶ Differences weaken, though present, once we condition on regional constants
- ▶ **Family Arrangements**
  - ▶ Muslim and Traditional households more likely to have others (besides mother and father).
  - ▶ Animists parents less likely to live with their children
- ▶ **Relationship to household head**
  - ▶ Small differences across religious affiliation [child, foster child, grandchild, sibling, other relative]
- ▶ **Previous Generation Age of Birth**
  - ▶ Muslim and Traditional mothers and fathers marry earlier and give birth younger.
  - ▶ Differences weaken once we condition on regional constants

Preliminary. Differences across Religious Affiliation
Income/Profession/Industry

- ▶ **Household Rural-Urban**
    - ▶ No differences between Muslim and Christian households.
    - ▶ Animists households 20% (10% with region constants) more likely to be rural.
- ▶ **Industry of Employment** Previous Generation
    - ▶ Muslims somewhat more likely to work in agriculture, 3%.
    - ▶ Animists considerably more likely to work in agriculture, 20% (10% with region constants).
    - ▶ Muslims and especially Traditionalists less likely to work in services (1% and 5%).
    - ▶ No differences in mining, manufacturing, construction, and utilities
- ▶ **Occupation** Previous Generation
    - ▶ no differences in most occupations (i.e., elementary, machine operators, crafts, armed forces, etc)
    - ▶ small differences in professionals (overall small percentage of the population), skilled agriculture and service workers
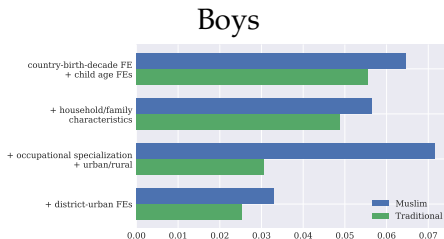
Drivers of Religious IM Gap

Upward IM Gap (Christian-Muslim and Christian-Animist)
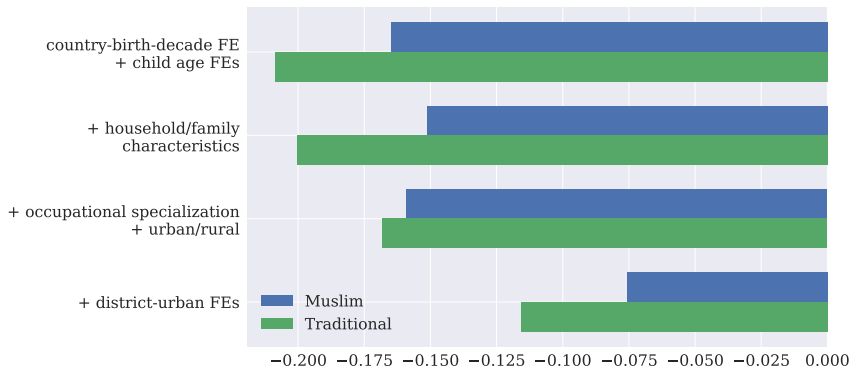
Drivers of Religious IM Gap

Downward IM Gap (Christian-Muslim and Christian-Animist)

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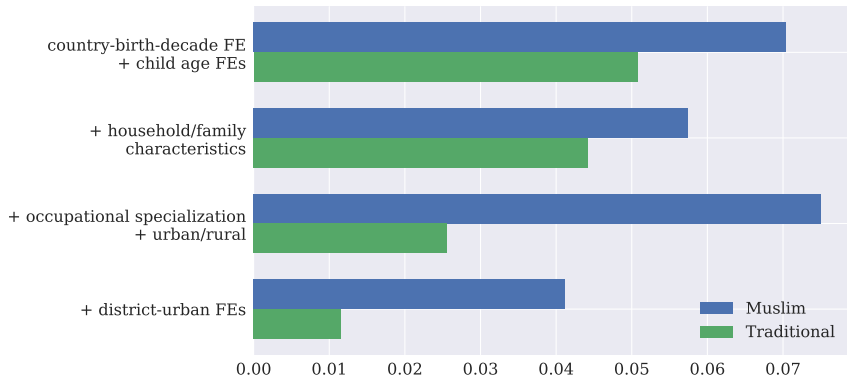
Drivers of Religious IM Gap, by Gender

Upward IM Gap (Christian-Muslim and Christian-Animist)

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Correlates Religious IM
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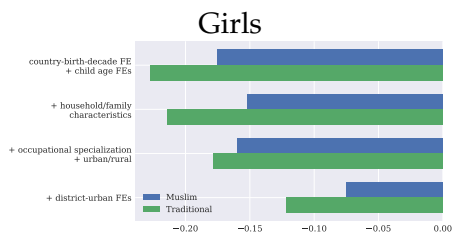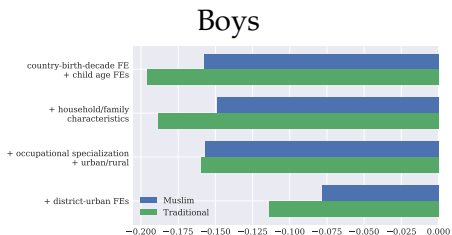
Drivers of Religious IM Gap, by Gender

Downward IM Gap (Christian-Muslim and Christian-Animist)
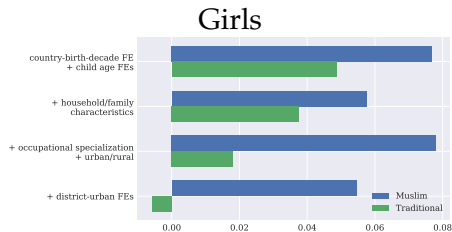
Drivers of Religious IM Gap. Summary

Overall Patterns and Country Heterogeneity

1. **Household/Family Characteristics. <u>Small-Moderate</u>**
   - Overall small impact [about 10%]
   - Very important for female downward IM [impact larger than all other factors]
   - Somewhat larger role in West Africa (Nigeria, Ghana, Benin, Togo, and Cameroon)

2. **Economic Features, <u>No Role</u>**
   - Small differences between Christians and Muslims on occupational specialization, industry of employment, and rural-urban status. If anything religious gap increases.
   - Wider differences between Christians and Animists. Some explanatory power explaining gap

3. **Regional Factors. <u>Largest Impact</u>**
   - Regional constants explain roughly half of upward IM and downward IM gap
   - Biggest impact in Nigeria, Benin, Ghana, and Senegal

Drivers of Religious IM Gap. Further Evidence

Further Evidence and Sensitivity Analysis

- Accounting for ethnic affiliation [non-negligible within-ethnicity variation in religion]

- Looking only at biological children

- Alternative conditioning sets

- Dropping regions with relatively low cohabitation

Further Evidence. Ethnicity and Religion

Within-Ethnicity Herfindahl Indices of Religion Shares
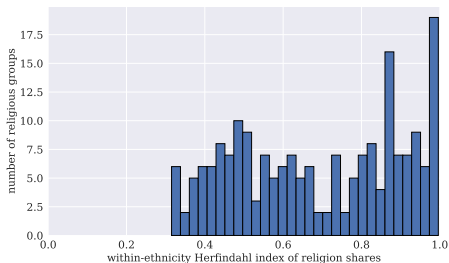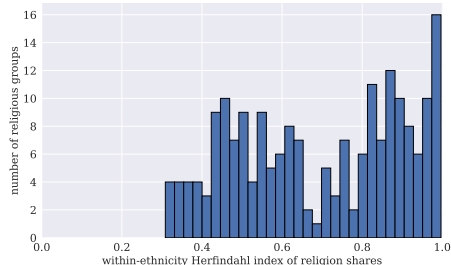
Presentation Structure

1. **Introduction and Motivation**

2. **Data and Approach**

3. **Intergenerational Mobility (IM) across Religious Affiliation**

4. **Mapping and Correlates of IM Religious Gaps**

5. **Regional Childhood Exposure Effects vs Spatial Sorting**

6. **Discussion**

7. **Conclusion**

Correlates of Religious IM (Gap)

Section Structure

1. Mapping Religious IM Gaps across African Regions

2. Differences in Residence across Religious Affiliation

3. Correlates of Religious IM

4. Correlates of Religious IM Gap

5. Taking Stock. Further Evidence

Historical Legacies and African Development
Inertia under the microscope

▶ **Inertia** Why History Matters?
   Initial conditions and/or the intergenerational transmission of human capital.

▶ **Historical Legacies**. [review Nunn (2014), Michalopoulos and Papaionnou (2020)]

   ▶ Colonial infrastructure, roads and railroads [Jedwab and Moradi, *RECSTAT* 2016; Kerby, Jedwab, and Moradi, *EJ* 2016]

   ▶ Christian colonial missions. [Nunn (2013); Cage and Rueda (*AEJ-Applied*, 2016)]

   ▶ Slave trades and Geography (proximity to coast and ruggedness) [Nunn, *QJE* 2007; Nunn and Puga, *RECSTAT* 2011]

   ▶ Precolonial Political Centralization [Gennaioli and Rainer, *JEG* 2007; Michalopoulos and Papaioannou, *ECMA* 2013]

   ▶ Ethnic Partitioning [Alesina, et al. *JEEA* 2011; Michalopoulos and Papaioannou, *AER* 2016]

   ▶ Precolonial production mode [Michalopoulos, Putterman, and Weil, *JEEA* 2018]

   ▶ Various ethnic traits, like polygyny[Fenske, *JDE* 2016]

Correlates of Regional IM across Religion
Objectives

Characterize regional IM across religious affiliations

- ▶ Commonalities across religious groups
- ▶ Comparison other contents (India, United States)

African Historical development

- ▶ at independence conditions, regional development
- ▶ geography-location
- ▶ colonization and precolonial features

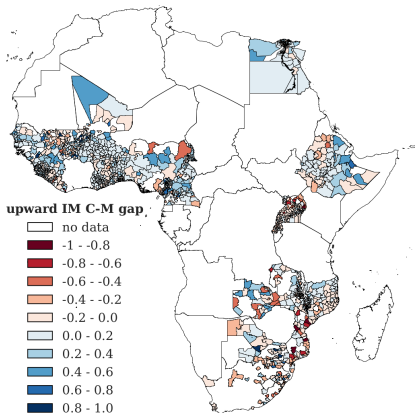# Correlates of Regional IM across Religion

Caveats

- Focus on historical and geographical-locational features and at-independence features

- Non-causal estimates
  - Non random assignment
  - Error-in-variables

- Objective to characterize religious IM across African regions
  - Building on Alesina et al. (ECMA 2020)
  - Like Chetty, et al. (QJE 2014, QJE 2018b, 2020) in the US
  - Asher, Novosad, and Rafkin (2019) in India

Religious IM Gaps across African Regions

Christian-Muslim Gap in Upward IM

All Regions · Min 10 Obs

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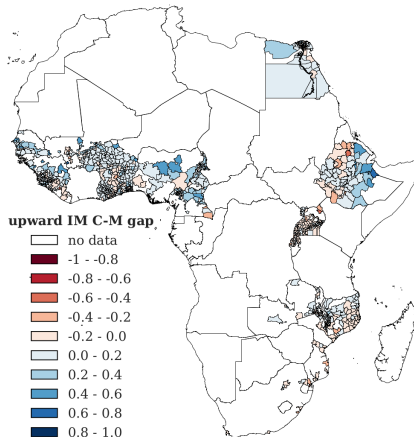
Religious IM Gaps across African Regions

Christian-Animist Gap in Upward IM

All Regions

Min 10 Obs
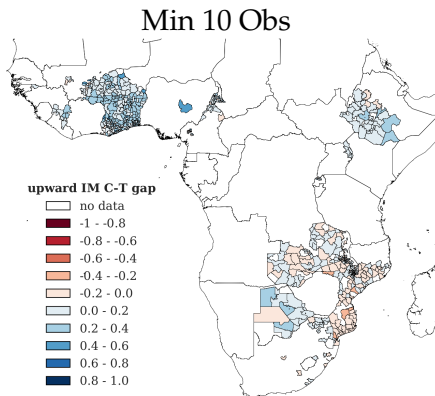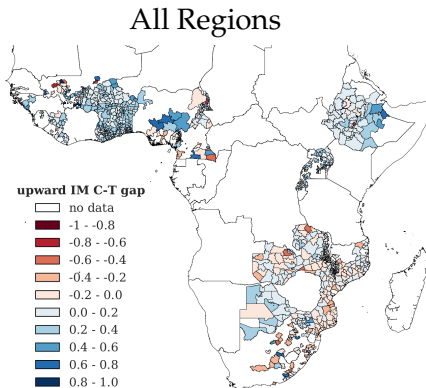
Correlates of Regional IM across Religion

Aspects, Variables (Alesina et al. (2020))

▶ **Geography**
  - ▶ distance to capital, border, coast
  - ▶ agricultural suitability
  - ▶ stability of malaria transmission
  - ▶ terrain ruggedness
  - ▶ presence of oil field, diamond mine

▶ **Colonial and pre-colonial variables**
  - ▶ distance to colonial rail-roads & roads
  - ▶ distance to Protestant and Catholic missions
  - ▶ distance to pre-colonial empires/states

▶ **At-independence, (mostly) from individuals born up to 1960**
  - ▶ population density in 1950 & urban share
  - ▶ industry labour shares

Correlates of Religious IM and Religious Gaps

Within Country LS Specifications

- ▶ Regress IM of individual i of religious affiliation g born in birth-cohort b observed in census-year t in country c on fixed effects...

- ▶ at-independence development (D), location-geographic features (G, and historical aspects (H)

- ▶ ... also conditional also on stock of education at the parental religion-region-cohort level (significant) $\widehat{E}^o_{c,g,b,r}$ (share of parents with completed primary education)

$$\text{IM}^{up-down}_{i,c,g,t,b,r} = \gamma_c + \gamma_b + \gamma_t + \delta_g + \phi_1 D_{g,c} + \phi_2 G_{g,c} + \phi_3 H_{g,c} \ \ [+\lambda \widehat{E}^o_{c,g,b}] + \epsilon_{i,c,g,t,b}$$

- ▶ also consider specification with province constants

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Preliminary Evidence. Residence Differences

Individual Level Population-Weighted LS Estimates
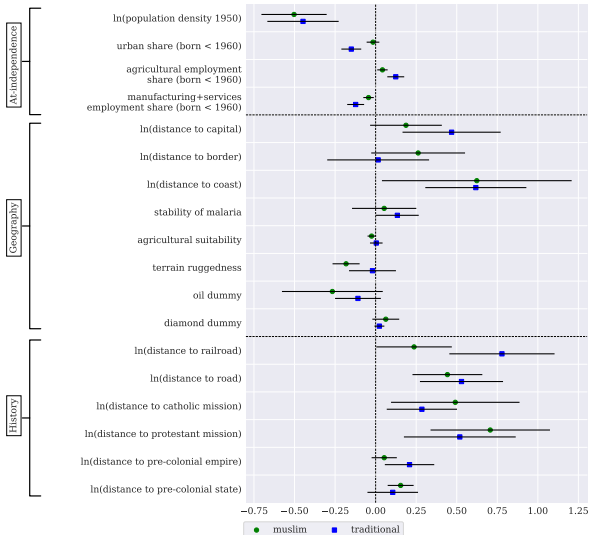
Preliminary Evidence. Residence Differences, cont.
Summary

- **Muslims reside in less developed regions**
  - less densely populated, less oriented in services and manufacturing
  - further away from the capital and from the coast
  - further away from colonial roads, railroads, and Christian missions (providing education)

- **Animists reside in even less developed and more remote regions**

Correlates of Religious IM across African Regions

At-independence Development, Geography-Location, and History

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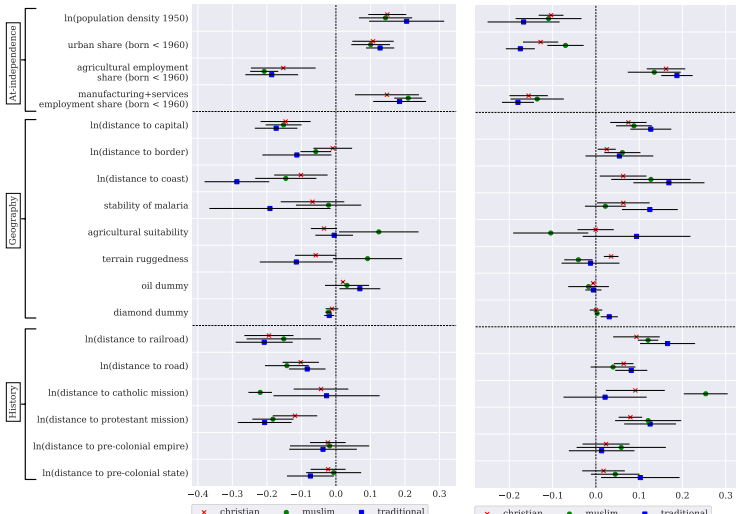
Correlates of Religious IM across African Regions

At-independence Development, Geography-Location, and History
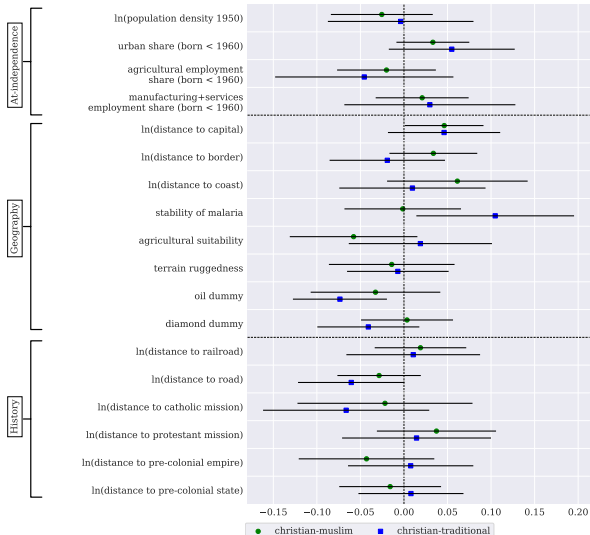
Taking Stock. Religious IM Gaps across African Regions

Summary

- **Correlation between regional features** (at-independence development, good geography-location, and early colonial investments) **and IM equally strong for Muslims, Christians, and Animists** [not causal]

- Regional features uncorrelated with religious IM gaps

- Muslims and Animists reside in less developed, with relatively unfavorable location-geography regions

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Religious IM across African Regions
Questions

▶ **Which regional features explain the IM gaps?**

▶ **Do regions matter -in a causal sense- for educational mobility?**
[next section]

Religious IM across African Regions and Own Religion Share

Cultural Spillovers. Religious Capital

- **Educational IM and presence of co-religious in the district**
    - Do Muslims and Animists fare worse in areas where they are minorities? [minority discrimination]
    - How about Christians?

- **Spillovers?**

- **Test** Regional specifications: IM on religion share, cond. on country (province) fixed-effects; separately for Christians, Muslims, and Animists
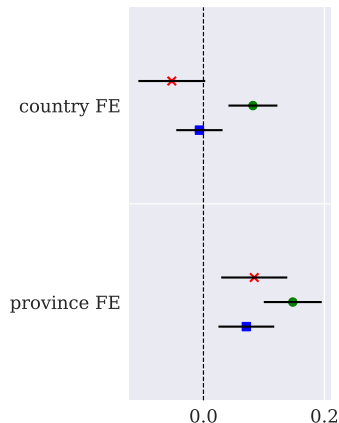
Religious IM across Regions and Own Share
Christians. Upward IM and Downward IM

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Religious IM across Regions and Own Share

Muslims. Upward IM and Downward IM
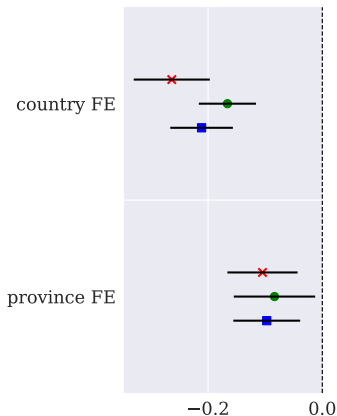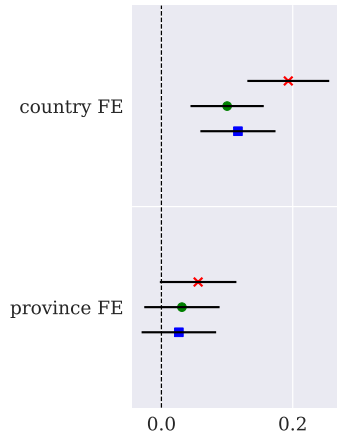
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Religious IM across Regions and Own Share

Animists. Upward IM and Downward IM
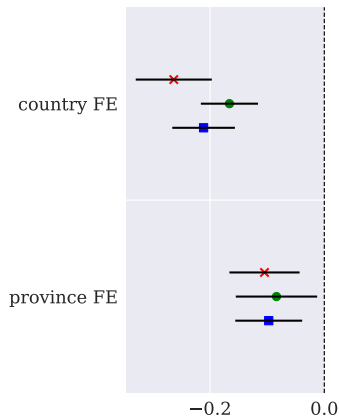
Religious IM across Regions and Own Share

Bin Scatters Upward IM Christians (left panel) and Muslims (right panel)
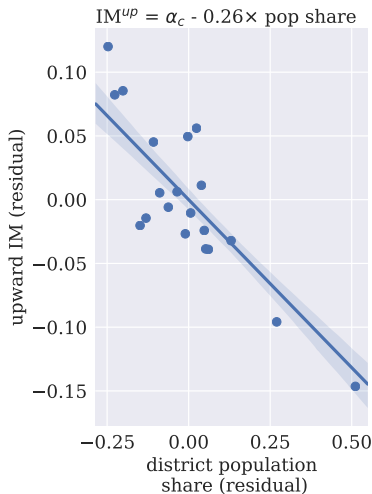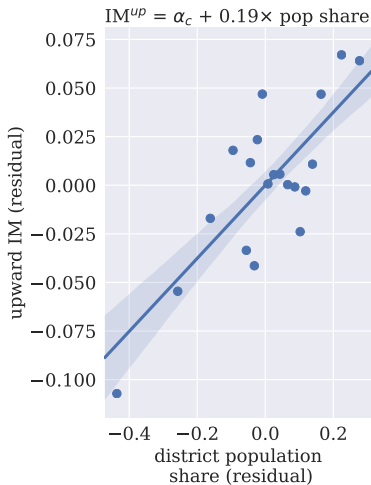
Religious IM across African Regions and Own Religion Share, cont.

Summary

- ▶ Muslims fare worse in regions where they are majorities or significant minorities [see also Platas Izama (2018)]

- ▶ For Animists small and statistically insignificant correlation between IM and own religion share

- ▶ Christians, if anything, do somewhat better in regions with a high own religion share

Presentation Structure

1. **Introduction and Motivation**

2. **Data and Approach**

3. **Intergenerational Mobility (IM) across Religious Affiliation**

4. **Mapping and Correlates of IM Religious Gaps**

5. **Regional Childhood Exposure Effects vs Spatial Sorting**

6. **Discussion**

7. **Conclusion**

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Regional Childhood Exposure Effects and Selection
Section Structure

1. Methodology. Chetty and Hendren (2018a)

2. Semi-Parametric Estimates. Regional Childhood Exposure Effects and Sorting by Religious Affiliation

3. Further Evidence

Methodology. Chetty and Hendren (2018a)
Approach

Look across moving households

Focus on moving young individuals (children) who

- ▶ live outside their birth region (as recorded by the Census)
- ▶ for whom time of residence in the current region is observed
- ▶ who have moved to current region of residence between age 1 and 18
- ▶ are children of illiterate parents [upward IM]

If regions matter for schooling, children, whose families move, earlier in life in the formative for schooling age, should be affected the most

Introduction   Data-Methodology   Religious IM   Correlates Religious IM   **Regional Exposure Effects**   Discussion   Conclusion
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Methodology. Chetty and Hendren (2018a), cont.

Semi-Parametric Estimation, allowing for Religion-Specific Slopes (Chetty et al. (2020))

1. Construct **average IM gap** for every origin-destination pair (using data on non-migrants). Do so using (a) all non-movers (nm); (b) non-movers of the same religion (r)

$$\Delta_{odb}^r = \widehat{\text{IM}}^r\_\text{up}_{bd}^{\text{nm}} - \widehat{\text{IM}}^r\_\text{up}_{bo}^{\text{nm}},$$

2. Estimate

$$\text{IM}\_\text{up}_{ibmcod}^r = [\psi_h +]\,\alpha_{ob} + \alpha_m + \sum_{m=1}^{18} \beta_m^r \times \mathbb{I}(m_i = m) \times \Delta_{odb}$$

$$+ \sum_{b=b_0}^{B} \kappa_b \times \mathbb{I}(b_i = b) \times \Delta_{odb} + \epsilon_{i,ibmcod}.$$

3. Plot religion-specific childhood regional exposure effects by age, $\hat{\beta}_m^r$.

Methodology. Chetty and Hendren (2018a), cont.

Further Evidence. Alesina, Hohmann, Michalopoulos, and Papaioannou (2020)

- **Household Fixed-Effects Specification**. Compare Siblings; account for family unobserved features.
    - selection turns insignificant (and close to 0)
    - regional exposure effects during childhood very similar

- **Endogeneity**. Push Shocks and and Pull Factors
    Pull Shocks (years of abnormal outflows)Push Factors (shift - share using past migration)Pull Shocks and Push factors: similar estimates (both exposure effects and sorting)

Methodology. Chetty and Hendren (2018a), cont.
Migration Data

- Most censuses (14 out of 20 countries) record individuals' **birth regions**: either admin-1 or admin-2
- **migrant** : individual who lives outside his or her birth region
- For 13 out of 20 countries we also observe **since when** individuals resident in current location
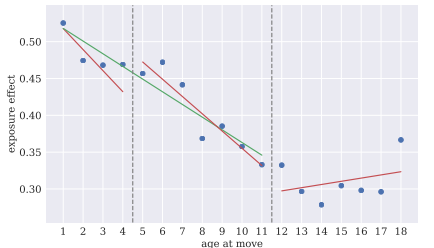- Countries: Benin, Cameroon, Egypt, Ethiopia, Ghana, Guinea, Mali, Malawi, Rwanda, Uganda, South Africa, Zambia, Togo

$\Rightarrow$ **exploit timing of children move**

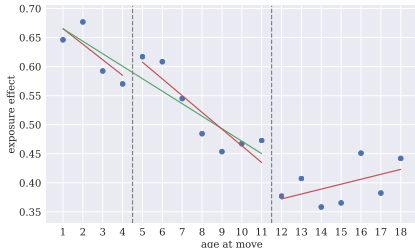# Childhood Regional Exposure Effects and Selection

Christians and Muslims. Overall Destination-Origin Differences in IM

Christians. 1.7%; Selection 0.30

- 1-4: slope = -0.029
- 5-11: slope = -0.023
- 12-18: slope = 0.004
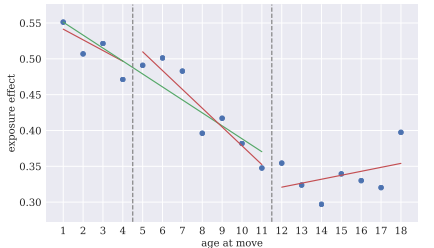- 1-11: slope = -0.017

Muslims. 2.1%; Selection 0.40

- 1-4: slope = -0.027
- 5-11: slope = -0.029
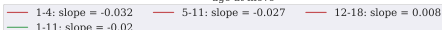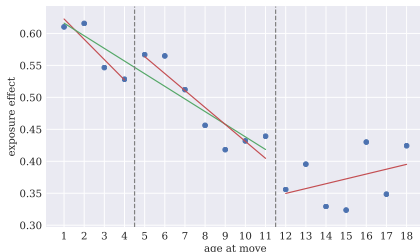- 12-18: slope = 0.008
- 1-11: slope = -0.021

Childhood Regional Exposure Effects and Selection
Christians and Muslims. Religion-specific Destination-Origin Differences in IM

Christians. 1.8%; Selection 0.35

- 1-4: slope = -0.015
- 5-11: slope = -0.026
- 12-18: slope = 0.006
- 1-11: slope = -0.018

Muslims. 2.0%; Selection 0.35

- 1-4: slope = -0.032
- 5-11: slope = -0.027
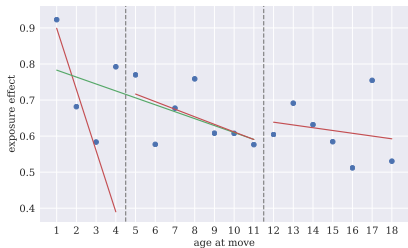- 12-18: slope = 0.008
- 1-11: slope = -0.02

Childhood Regional Exposure Effects and Selection

Animists. Overall and Religion-specific Destination-Origin Differences in IM

Overall. 1.9%; Selection 0.6

Religion 1.0%; Selection 0.6

Introduction
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Data-Methodology
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Religious IM
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Correlates Religious IM
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Regional Exposure Effects
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Discussion
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Conclusion
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Further Evidence

Additional Tests

- ▶ heterogeneity by gender; biggest regional exposure effect for girls, esp. Muslim

- ▶ household fixed-effects; similar results on childhood regional exposure effects

Regional Effects vs Sorting. Summary
Takeways

- significant regional childhood exposure effect for all religious groups.
    - somewhat stronger for Muslims;
    - noisy for Animists

- sizable spatial sorting for Christians and Muslims; and especially for Animists

- somewhat stronger regional childhood exposure effects for girls, esp. Muslim

Presentation Structure

1. **Introduction and Motivation**

2. **Data and Approach**

3. **Intergenerational Mobility (IM) across Religious Affiliation**

4. **Mapping and Correlates of IM Religious Gaps**

5. **Regional Childhood Exposure Effects vs Spatial Sorting**

6. **Discussion**

7. **Conclusion**

Summary

Evidence so far

1. Muslims and Animists reside in less developed regions (and upward IM)

2. Correlations between Regional Features (favorable geography, early investments, and at-independence development) and IM similar for Muslims, Animists, and Christians

3. Regions matter equally for Africans of all religious denominations (similar causal effects)

4. Muslims fare worse (lower upward IM and higher downward IM) in regions where they form the majority or are a significant minority; this is not the same for Christians and Animists

   Why?

Further Evidence. Moving to Opportunity

Internal Migration across Religious Affiliation

- ▶ **Migration Patterns**, cond. on birth region and birth-cohort [extensive margin]

- ▶ **Role of distance and own-religion share in destination** [extensive margin]

- ▶ **Preferences** [Afrobarometer survey evidence]

Further Evidence. Moving to Opportunity. Results

Internal Migration across Religious Affiliation. Summary

- ▶ **Migration Patterns**, cond. on birth region and birth-cohort [extensive margin]
  - ▶ Animists considerably less likely to migrate
  - ▶ Muslims less likely to migrate (stronger without Egypt)

- ▶ **Role of distance and own-religion share in destination** [intensive margin]
  - ▶ Animists move in very proximate to their birth region migrate
  - ▶ Muslims move to more proximate regions than Christians

- ▶ **Preferences** [Afrobarometer survey evidence]
  - ▶ Muslims value more residing close to other Muslims, as compared to Christians

Further Evidence. Moving to Opportunity. Results
## Muslim Heterogeneity. Likely Explanations

▶ Differences in Mincerian returns to education across religious affiliation

▶ Differences in returns to "other" good outcomes across religious affiliation [DHS, Afrobarometer]

▶ Socialization (Platas Izama (2018), survey evidence from Malawi): religious identity, promoted by religious elites

Out Migration across Religious Affiliation

IPUMS, cont. (a) Illiterate Parents, (b) Literate Parents
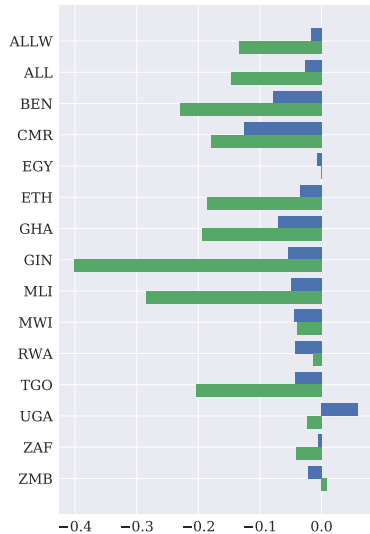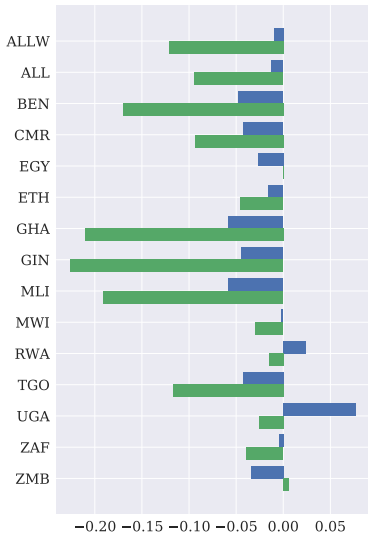
Presentation Structure

1. **Introduction and Motivation**

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7. **Conclusion**

Conclusion. Results Summary

Educational Religious Upward and Downward IM across across African Countries and Regions

- ▶ **New IM Measures**
  - ▶ absolute upward IM and absolute downward IM for Muslims, Animists, and Christians across countries and regions
  - ▶ Considerable Religious IM Gaps (Christian - Muslims/Animists)

- ▶ **Drivers Religious IM gaps**
  - ▶ Household/Family Characteristics. Small-Moderate
  - ▶ Economic Features. No Role
  - ▶ Regional Factors. Big Role (Segregation)

Introduction   Data-Methodology   Religious IM   Correlates Religious IM   Regional Exposure Effects   Discussion   Conclusion
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Conclusion. Results Summary, cont.

Educational Religious Upward and Downward IM across across African Countries and Regions

- ▶ **Correlates Religious IM (and Gaps)**
  - ▶ At-independence development, colonial investments, and god location-geography matter for IM, equally for all religious groups
  - ▶ Geography, development, and history do not correlate with the religious IM gap across regions
  - ▶ But, Muslims and Animists reside on lower development and geography regions
  - ▶ Muslims fare worse in regions where they are large minorities or majorities; this is not the case for Animists; if anything, positive for Christians

Introduction
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Data-Methodology
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Religious IM
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Correlates Religious IM
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Regional Exposure Effects
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Conclusion
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Conclusion. Results Summary, cont.

Educational Religious Upward and Downward IM across African Countries and Regions

▶ **Regional Childhood Exposure Effects vs Selection across Religious Affiliation**
  ▶ Similar regional exposure effects for Christians, Muslims, and Animists
  ▶ somewhat stronger for Muslims, esp. girls
  ▶ sizable spatial sorting for all religions
  ▶ stronger selection for Animists (slightly more for Christians)

▶ **Further Evidence. Migration**
  ▶ Migration [Extensive Margin]]. Muslims and especially Animists less likely to migrate
  ▶ Migration [Intensive Margin]. Role of distance and own-religion share in destination stronger for Muslims and Animists
  ▶ Migration [Preferences]. Muslims value more residing close to other Muslims (as compared to Christians and Animists)