Social and Institutional Origins of Political Islam

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Abstract

Under what conditions do Islamist movements emerge and spread? An established body of literature relates the origins and expansion of organized political Islam to social and demographic changes, Western encroachment, and the growth of the modern state. To test these hypotheses, we match a listing of Muslim Brotherhood branches founded during the interwar period in Egypt with contemporaneous census data on over 4,000 subdistricts. A multilevel analysis shows that Muslim Brotherhood branches were more likely in subdistricts that were accessible by the rail network and where levels of literacy were higher. Branches were less likely in districts with large European populations, and where the footprint of state administration was more extensive. These findings challenge the orthodoxy that contact between Muslims and the West spurred the growth of political Islam, and instead highlight the critical role of state infrastructure in Islamist mobilization.

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1 Introduction

In the first decades of the twentieth century a variety of mass movements emerged, each mobili-
zizing in the name of Islam. From North Africa to the Indonesian archipelago, Islamists were
on the leading edge of national liberation struggles, and would go on to play prominent roles in
post-independence politics: winning national elections, developing sophisticated social welfare
activities, and occasionally waging violent insurgencies. Yet despite the extensive outpouring of
academic and journalistic writing on the subject, little is known about the conditions under which
organized Islamist movements emerge and the local ecologies that facilitate their diffusion. This
is part of a more general shortcoming in the literature on Islamism: while significant attention
has been paid to the biographies and ideologies of Islamist movements and their leaders, little if
any research has systematically evaluated the social and political contexts of this activism (Masoud
(2014) is a notable exception). As Ketchley and Biggs (2016) argue, in rare instances when system-
atic data on Islamist movements is available, it is worth the painstaking effort to reconstruct these
contexts.¹

This paper uses an array of new historical sources to explore the rise of organized political Islam
in Egypt. We examine three claims in particular. First, that Islamist movements emerged as a
result of a series of social and demographic transformations in the period leading up to the Second
Islamism was an indigenous reaction to the Westernization of Muslim societies and, in particular,
the proselytization of Muslims by Christian missionaries (Baron 2014, Cleveland 2014, Sharkey
2008, 2013). Finally, we consider theories relating Islamist emergence and expansion to uneven
state development, with Islamist movements acting as alternatives to weak and ineffective state
institutions and services (Lia 1998, Munson 2001, Davis and Robinson 2012). While all of these
explanations are widely cited in the literature, previous studies have not adequately accounted for
where Islamist movements establish an organizational presence and gain adherents. We address
this shortcoming by combining a unique cache of historical data with an ecological research design
inspired by recent studies of social movements and contentious politics in Western contexts (Biggs

¹See also Steven Brooke, “Old Questions and New Methods in the Study of Islamism,”
and Knauss 2012, Kawalerowicz and Biggs 2015). In doing so, we offer a new explanation for the origins of one of the most consequential political phenomena in the modern history of the Islamic world.

In 1937 the Muslim Brotherhood’s Arabic-language newspaper published the results of a nationwide inventory of the organization’s chapters, furnishing micro-level data on over 200 local branches of the movement. We locate these chapters in their social contexts by using contemporaneous census records of over 4,000 of Egypt’s subdistricts. We test the claim that Christian proselytization spurred Islamist activism by coding the annual reports of British and American missionaries active in Egypt during this period. To measure state presence, we analyze the distribution of employees in state administration. Finally, we examine maps and timetables of the country’s rail network during that time period to account for the role of transport infrastructure in the spatial diffusion of the Muslim Brotherhood.

We find that the Muslim Brothers were more likely to establish branches in subdistricts with higher rates of literacy and fewer agricultural workers, supporting claims that Islamism initially spread among the urban middle classes. We can detect no effect of Christian missionary activity, and large European populations significantly reduced the likelihood of branch formation, challenging arguments that conceptualize Islamist growth as a reaction to Westernization. Finally, our results show that the Brothers were more likely to establish branches in areas where there were fewer state officials and in those neighborhoods and hamlets connected to the Egyptian state railway. Islamist activism, in other words, conformed to the general pattern seen in the mobilization of social movements in other contexts: the emergence and growth of organized political Islam was inextricably linked to the development of the modern state.

The paper proceeds as follows. In the next section we examine the literature on political Islam in the Middle East and beyond, isolating three distinctive theories that purport to explain the conditions under which Islamist movements coalesce and spread. After describing the data and analysis we present the results. Subsequent sections provide an interpretation and discussion of the results as well as a brief description of robustness checks on the data. We close by highlighting the key findings and isolating potential areas for future research.
2 The Rise of Organized Political Islam

By the eve of the Second World War, mass-based Islamist movements had emerged across the Muslim world. These groups, including the Khilafat movement in India, the Sarekat Islam in Java and the Muslim Brothers in Egypt, commanded memberships in the hundreds of thousands, and provided new outlets for Muslims’ social grievances and political aspirations (Alavi 1997, Burke 1972, Khalid 1999, Lia 1998, Minault 1982, Noer 1973, Özcan 1997, Qureshi 1999, Reetz 2006, Shirazi 1990). In this section, we sort the literature on the rise of organized political Islam into three general strands, focusing on demographic change, cultural reaction, and institutional context, respectively. For each, we identify several theoretically-relevant, testable hypotheses through which to examine the contexts of Islamist emergence and expansion in interwar Egypt.

2.1 Demographic Change


- H1a: Islamist movements are more likely to be present in areas with higher literacy rates.

A related claim is that Islamist mobilization is tied to urbanization. Islamism, several scholars have suggested, was particularly attractive for those economic migrants cut free from traditional rural networks of family and tribe and thrust into the tumult of unfamiliar urban environments.
In parallel, a variety of authors claim that Islamists have been historically absent from areas where the agrarian economy predominates, in part because of the persistence of folk forms of Islam and other traditional social configurations that proved resistant to the Islamist message (Ayubi 1980, Kupferschmidt 1982, 1987). We express these implications as the following:

- **H1b:** Islamist movements are more likely to be present in areas with higher rates of urbanization.
- **H1c:** Islamist movements are more likely to be present in areas with higher levels of population growth.
- **H1d:** Islamist movements are more likely to be present in areas with lower levels of employment in agriculture.

Structural explanations also relate the initial appeal of Islamist movements to socioeconomic deprivation (Schulze 2002, Woltering 2002). The years following the First World War saw significant disruption of traditional economies resulting from the war effort and the incorporation of colonial societies into the world capitalist system (Owen 1993). Muslims, in these interpretations, joined Islamist movements as a reaction to their declining economic position and to gain access to Islamists’ social welfare activities (Munson 2001). Parallels to this argument can be found in the literature on more contemporary Islamist mobilization, which attributes Islamist activism to economic immiseration and a lack of employment opportunities (Gambetta and Hertog 2016, Roy 1994). If unemployment and economic disruption were motors of political Islam’s growth and expansion, we would expect:

- **H1e:** Islamist movements are more likely to be present in areas with higher levels of economic deprivation.

### 2.2 Westernization

A separate vein of research relates Islamist mobilization to the cultural threat that Westernization supposedly poses to traditional Islamic values (Gershoni 1988, Dekmejian 1995). As Afaf Lutfi al-
Sayyid Marsot argues, the first Islamists gained adherents in areas where Muslims saw “a palpable loss of identity in their society as a result of westernization and foreign occupation” (1984). Similarly, John Voll suggests that the Muslim Brothers’ appeal was greatest for those “who had already had significant contact with Westernizing ideas and institutions” (1994, 182). This has led some scholars to brand those who comprised the first Islamist movements as “emotional xenophobes” (Harris 1964, 148). The key implication of the Westernization thesis is that Islamist movements emerged in those places where contact between the Muslim population and Europeans was most intense. This can be summarized as:

- H2a: Islamist movements are more likely to be present in areas where the proportion of Europeans is higher.

Muslim opposition to Westernization, a newer set of scholars argues, is more correctly understood as a reaction to one specific facet of Western encroachment: the proselytization efforts of Christian missionaries. Beginning in the late nineteenth century, American and European missionary societies had established a significant presence across the Middle East and North Africa, aimed at converting both indigenous Orthodox Christians and Muslims (Makdisi 2008, Sedra 2011, Okkenhaug 2015, Carter 1984). The prominence of Christian missionaries in the rhetoric of the Muslim Brotherhood has been well chronicled (Sharkey 2008, 2013). In a recent study, Beth Baron explicitly relates the Brothers’ expansion of the movement to a concerted campaign of countering Christian missions present in Egypt at the time (2014). If missionaries were responsible for the growth of political Islam, we should expect:

- H2b: Islamist movements are more likely to be present in areas where Christian missionaries were most active.

An alternative hypothesis, related to proselytization, focuses on religious competition. Islamists frequently highlight the supposedly pernicious influence exerted on Muslim society by religious minorities, especially Jews and Christians (Ayubi 1991, 62; Kepel 2006; Roy 1994, 85, 202). This dynamic is tied to European colonialism, which was perceived as favoring and promoting the interests of non-Muslims to the detriment of indigenous Muslim populations. If religious competition
and sectarian animosity was a factor in Islamist mobilization, we should expect:

- H2c: Islamist movements are more likely to be present in areas where the proportion of non-Muslims is higher.

### 2.3 State Development

A third family of explanations for the growth of Islamist activism focuses on its relationship to the emergence of the modern state. The dynamics of modern contentious politics, in general, are entwined with the rise of centralized states (Tilly 1990, 2008, Tarrow 2011, 2015). For the purposes of the discussion here, we are interested in how state development and state infrastructure simultaneously facilitated and circumscribed the organizational presence and trajectory of Islamist mobilization. In defining state presence, we follow Michael Mann’s classic typology of state infrastructural power (1984), and concentrate on the role played by centrally-organized services and systems of transport in shaping Islamist organizational expansion.

A common argument is that Islamist movements gain adherents where the state is weak or lacks infrastructural capacity - an assertion that has become common currency in scholarship that seeks to explain the proliferation of Islamist welfare activities. The key premise here is that Islamist movements act as an alternative to the state, providing services that the state might otherwise be expected to administer. Discussing the post-1967 Middle East, Lisa Wedeen, for example, notes how “as the state has retreated economically in the Middle East, Islamist movements have tended to fill in the gaps, providing goods and services states do not proffer” (2003, 55). Relatedly, scholars suggest that that groups like the Muslim Brothers initially thrived in areas where the state lacked the resources to survey and monitor them (Heyworth-Dunne 1950, Davis and Robinson 2012). If either hypothesis is correct, one key empirical implication is that:

- H3a: Islamist movements are more likely to be present in areas with fewer state officials and services.

Social movements must generate and sustain some degree of personal connection between individuals (McAdam 1986, Wickham 2002). Still, the role of transport infrastructure in the spatial
The diffusion of social movements has largely eluded systematic investigation, despite a preponderance of anecdotal evidence suggesting the importance of road networks (Cunningham and Phillips 2007, Hobsbawn and Rudé 1968, Rudé 1999/1964), stagecoach lines (Skocpol 1997), and railroads (Pethybridge 1972) to this process. Those studies suggest that the development of state infrastructure, while not intended to support mobilization, can nonetheless create opportunities for citizens and subjects to become involved in activism (Tarrow 2011, Ch. 4). At the same time, the topography of a state’s transport infrastructure can also delimit a movement’s outer orbit. As Charles Tilly notes in his history of the social movement, “transportation breakthroughs such as intercity steam trains, electrical cars, and jet aircraft facilitated social movement contact at a distance but [also] impeded contact with like-minded people who lived far away from major transport lines” (2004, 104). This suggests that the spatial expansion of the modern state and its systems of transport and communication shaped the ability of the Muslim Brotherhood to mobilize populations. Therefore we should expect that:

- H₃b: Islamists movements are more likely to be present in areas that are more accessible by transport infrastructure.

In the remainder of the paper we turn to examining these hypotheses as they relate to the emergence and growth of the Muslim Brotherhood in interwar Egypt. In the following sections, we provide a brief overview of the Brothers’ history, before introducing a series of new data sources on the period and describing our method for analyzing them.

3 The Society of the Muslim Brothers

Among the most potent Islamist social movements to emerge out of the interwar period was the Egyptian Society of the Muslim Brothers. Founded in the Suez Canal city of Ismailia in 1928, the Brothers grew to establish cognate movements in nearly every country with a Muslim population. As a result, the Muslim Brothers are often considered as “the mother organization of all modern Islamist movements” (Lia 1998, 1).

The founding and growth of the organization must begin with the story of its founder, Hasan
al-Banna, who arrived in the Suez Canal city of Ismailia to teach Arabic in 1927. His down-to-earth preaching style and personal charisma began to attract acolytes among the town’s growing population, six of whom would in March 1928, form the Muslim Brotherhood (Lia 1998, 36). The organization’s appeal was prodigious, and it quickly spread to towns and villages along the Suez Canal. In 1933, al-Banna was transferred from Ismailia to Cairo, marking the first transition in the society’s history (Lia 1998, 21-53; Mitchell 1993, 1-11).

In Cairo, the Brotherhood’s headquarters in the district of al-Darb al-Ahmar became a hive of activity. Members lectured in mosques throughout the swelling metropolis, established a printing press and magazine, and al-Banna himself began undertaking ever longer trips, visiting existing branches and establishing new ones around the country (Lia 1998, 129-150). The Brotherhood’s rapid growth was reflected in their increasing political profile, as they began to make more strident demands for the application of Islam in widening matters of public life. This politicization escalated with the outbreak of the Arab Revolt in Palestine in 1936. The Brotherhood leapt onto the national stage and not only began to propagandize and fundraise in the cause of the Arabs, but to intervene directly on the battlefield. In response, the British began to apply ever sharper pressure on the Egyptian authorities to reign in the group (Awaisi 1998, Gershoni 1986).

In October 1941 the Egyptian government cracked down on the Brothers, banning the group, and suppressing their publications. Hasan al-Banna was arrested for publicly criticizing the regime, although he was soon released after branches of the Muslim Brotherhood from around the country threatened to mobilize (Lia 1998, 255-56). Despite the regime’s quick capitulation, the incident marked an shift in tone between the Brotherhood and the authorities. “From that time” Richard Mitchell tells us, “no government in Egypt avoided clashing with the Society of the Muslim Brothers” (Mitchell 1993, 23).

We focus on this critical early period of the Muslim Brotherhood, from the group’s founding in 1928 through to the first confrontation with the Egyptian state. This was a period of both qualitative and quantitative transformation. During this period, Krämer tells us, “the Society of the Muslim Brothers was gradually transformed from a benevolent society with pronounced Sufi elements to a social movement with the attributes of a mass-based political party” (2014, 36). By 1944, British Intelligence agents in Cairo estimated that the movement comprised half a million members (Lia
To put this into perspective, the 1947 Egyptian census reported a national population of just under 19 million. If this estimate of the Muslim Brothers’ membership is accurate, twelve years after the movement’s founding roughly one out of every forty Egyptians belonged to the organization, making it one of the largest social movements in the world at that time. Yet despite the Brothers’ tremendous growth and increasing power on the national stage during this period, the factors fueling this rise have remained elusive. In suggesting a more intense focus on this period, Gershoni reminds us that scholars:

> [h]ave not properly explained how a small religious organization, which in the early 1930s was still a peripheral, almost anonymous body devoid of all political ambitions, became, by the close of the decade, the most powerful and highly organized Islamic force in Egypt (1986, 367).

In what follows, we take up these calls by coupling an array of new sources on the period with cutting edge analytical techniques.

## 4 Data and Method

Political scientists increasingly use underutilized historical sources to speak to matters of distinct contemporary importance, such as the political divergence of the West and the Muslim World (Blaydes and Chaney 2013), the persecution of religious minorities (Braun 2016), the dynamics of local resistance to foreign rule (Ferwerda and Miller 2014), and state strategies of counterrevolution (Weyland 2016). This trend is especially welcome for scholars of the Middle East and North Africa, where systematic contemporary data about social and political conditions is scarce, unreliable, and potentially dangerous to acquire (Brown 2015).

To conduct our analysis, we exploit a branch survey published in the 11 June 1937 edition of the Muslim Brothers’ Arabic-language newspaper, *Jaridat al-Ikhwan al-Muslimeen* (reproduced in Goma’a Amin’s history of the movement (2003, 424-439)). This survey is apparently a complete record of the Brothers’ branches established up until that point. An updated branch survey appeared in a different Muslim Brotherhood newspaper (*al-Ta’aruf*) on 18 May 1940. This second survey provides an important opportunity to test the robustness of our findings, which we do
The Egyptian Ministry of Finance carried out a nationwide census in March 1937, an English-language, district-level summary of which is widely available. However, the American University in Cairo and the Egyptian National Library hold eighteen Arabic-language appendices to that census that contain socioeconomic data at the subdistrict level, as well as labour force statistics that do not appear in the district-level summary (1937).

Annual reports for the three largest missionary societies active in Egypt during this period - the United Presbyterian Church of North America (1931), the Church Missionary Society (1931), and the Egypt General Mission (1931) - detail the number and location of Christian missionaries at the level of the district.²

During this time period Egypt’s railway system was one of the most advanced in the Arab world (Goldfinch 2003). Princeton University holds a timetable and route map published by the Egyptian State Railway (1936), which records the extent of Egypt’s railway infrastructure.

To our knowledge, these materials have not been previously analyzed together.³ In the following section we describe how we operationalize these variables and execute the analysis.

### 4.1 Dependent Variable

The dependent variable is the presence or absence of a Muslim Brother branch in a census subdistrict (no subdistrict contained more than one branch). This gives a remarkably fine-grained measure of the social context of where the Brothers were active. Each subdistrict was roughly equivalent to a large neighborhood; the median subdistrict contained 2,656 people. Of the 212 Muslim Brother branches listed in the 1937 survey, eight were missing information. The remaining 204 branches (96.2 per cent) can each be reliably located in their census subdistrict.⁴

²We could only locate reports for all three missions for the year 1930, which falls within the period between the Muslim Brothers’ founding (1928) and the publication of the branch surveys (1937, 1940). Analysis of British missionary reports for the subsequent period suggests that missionary numbers did not increase in the interim. See Figure 4 in the appendix.

³A preliminary analysis of the 1937 Muslim Brother branch survey can be found in Masoud (2014, 118). While multivariate, the analysis is inevitably limited due to its reliance on only five district level variables from the 1937 census. The intraclass correlation obtained from the null model indicates that 95 per cent of the variation explaining branch formation is at the subdistrict level.

⁴For a discussion on assignment, see the Appendix.
there were 4,135 subdistricts in Egypt; the Muslim Brothers had a branch in 4.93 per cent of them (Figure 1 maps the location of each branch).

As a binary variable, the presence of a Muslim Brother branch is modeled using multilevel logistic regression. To account for clustering, the model introduces random intercepts at the district level; districts contained from two to 90 subdistricts, with a median of 32. There were 140 districts in Egypt during this period; missing observations for remote and sparsely populated districts reduces this number to 126. The model is estimated with eight integration points. The number of Muslims in a subdistrict is the offset variable. With twice as many Muslims in a subdistrict, we expect that it will be twice as likely that a Muslim Brother branch will be present. The inclusion of the offset naturally excludes areas with no Muslims, reducing the number of subdistricts where a branch was possible to 4,134.

### 4.2 Independent Variables

Table 1 provides descriptive statistics for all variables (Appendix Table 4 is the correlation matrix). From the 1937 census we construct a series of ecological indicators at both the subdistrict and district levels, which are measured as percentages using a population denominator. Literacy is measured as the percentage of the population over five years of age in a subdistrict who can read and write. The literature suggests that this variable should be positive. We also enter variables recording district-level population change since 1917 and population density per square kilometer. If political Islam spread to urban districts with higher levels of migration, these variables should also be positive. The percentage of a subdistrict’s population employed in agriculture (farming, hunting and fishing) accounts for the agrarian economy. We expect this variable to be negative. The percentage of male unemployment in a subdistrict is our measure for economic deprivation. The literature leads us to expect that this variable will be positively associated with a Muslim Brother branch being present.

The percentage of non-Muslims (Christians and Jews) in a subdistrict measures inter-religious animosity and competition. We also enter a variable measuring the percentage of Europeans (British, French, Italian and Greek) in a district. To test for the impact of Christian missionaries, we sum the
Figure 1: Spatial Distribution of Muslim Brotherhood Branches, March 1937
Table 1: Summary Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muslim Brother branch, 1937</td>
<td>0</td>
<td>1</td>
<td>0.04</td>
<td>0.21</td>
</tr>
<tr>
<td>Muslim population (subdistrict)</td>
<td>0</td>
<td>59278</td>
<td>3440.35</td>
<td>3654.18</td>
</tr>
<tr>
<td>Employed in agriculture (subdistrict)</td>
<td>0</td>
<td>83.96</td>
<td>32.52</td>
<td>13.79</td>
</tr>
<tr>
<td>Literate (subdistrict)</td>
<td>0</td>
<td>100</td>
<td>15.81</td>
<td>10.92</td>
</tr>
<tr>
<td>Unemployed males (subdistrict)</td>
<td>0</td>
<td>70</td>
<td>10.34</td>
<td>5.03</td>
</tr>
<tr>
<td>Population density (district)</td>
<td>76.22</td>
<td>72594.16</td>
<td>2277.55</td>
<td>8373.84</td>
</tr>
<tr>
<td>Population change since 1917 (district)</td>
<td>-71.38</td>
<td>69300</td>
<td>75.08</td>
<td>1855.07</td>
</tr>
<tr>
<td>Sq. rt. Distance from Cairo (district)</td>
<td>0</td>
<td>26.15</td>
<td>11.36</td>
<td>5.2</td>
</tr>
<tr>
<td>Administrative centre (district)</td>
<td>0</td>
<td>1</td>
<td>0.02</td>
<td>0.16</td>
</tr>
<tr>
<td>Non-Muslim (subdistrict)</td>
<td>0</td>
<td>100</td>
<td>6.45</td>
<td>14.34</td>
</tr>
<tr>
<td>Europeans (district)</td>
<td>0</td>
<td>34.01</td>
<td>0.59</td>
<td>2.69</td>
</tr>
<tr>
<td>Missionaries (district)</td>
<td>0</td>
<td>11.1</td>
<td>0.13</td>
<td>0.61</td>
</tr>
<tr>
<td>Employed in state administration (district)</td>
<td>0.18</td>
<td>75.04</td>
<td>0.95</td>
<td>2.21</td>
</tr>
<tr>
<td>Egyptian state railway (subdistrict)</td>
<td>0</td>
<td>1</td>
<td>0.09</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Each observation comprises one subdistrict in one district

personnel reported in missionary reports and then transform the count into a ratio of missionaries to the district’s total population. The literature on Westernization and cultural threat predicts that these variables will all be positive.

To test the hypothesis that Islamist movements expanded where the state lacked infrastructural capacity, we enter the percentage of a district’s population employed in state administration (including police officers, civil servants, and government officials). This assumes that state officials worked in the district where they lived; a reasonable assumption for this time period. We are also interested in the role of transport infrastructure in the spatial diffusion of the movement. Travel during the interwar years was primarily conducted using the country’s state-owned railway network, and so we enter a binary variable for the presence of a train station in a subdistrict.

We also add two control variables. Because activists will have struggled to reach geographically isolated areas, we introduce a variable measuring a district’s distance from Cairo. We also expect social movements to establish an organizational presence close to political power, and so we enter a binary variable at the district level if that district is a governorate’s administrative center.
5 Results

Table 2 presents the results, with coefficients expressed as odds ratios.\(^5\) Model one begins with the social and demographic contexts of branch formation; Model two adds indicators for Westernization, missionary activities, and religious competition; Model three adds indicators for state development and infrastructure. Each subsequent model represents an improvement in quality, as indicated by the diminution in Akaike information criterion (AIC).

Model one offers mixed support for demographic explanations. H1a is strongly affirmed: The Muslim Brothers were more likely to establish branches in subdistricts with higher literacy rates. In contrast, H1b and H1c are not supported. Population density has no discernible effect on branch formation, while population change unexpectedly reduces the probability of branch formation. H1d and H1e are supported. Branches were more likely in subdistricts with higher rates of male unemployment, and they were less likely in subdistricts with more employment in agriculture. The probability of a branch increases with distance from Cairo, suggesting that the movement initially grew outside the capital. Districts that hosted administrative centers were less likely to host a Muslim Brother branch, although this is not statistically significant (\(p = .27\)).

Model two introduces indicators for Westernization and religious competition. H2 receives no support. The percentage of Europeans in a district is significantly and negatively associated with the Muslim Brothers establishing a branch, contrary to H2a. In other words, where Europeans were present in large numbers the Brotherhood tended to lack an organizational presence. H2b is also not supported; there is no evidence for a relationship between the number of Christian missionaries in a district and Muslim Brothers being present. The percentage of non-Muslims in a subdistrict is (very modestly) positively associated with Muslim Brother branch formation, but this just falls outside of the bounds for accepted statistical significance (\(p = .07\)). With the inclusion of measures for Westernization, the unexpected negative association between branch formation and population change loses statistical significance.

Model Three adds indicators for state infrastructural power. All other hypotheses remain unaffected. H3a is strongly supported. The Muslim Brothers were more likely to establish branches

\(^5\)In brief, odds more than one indicates that an outcome is more likely to occur, odds less than one indicate that the outcome is less likely.
Table 2: Predicting the probability of a Muslim Brother branch, 1937

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
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<th>Model 3</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>or</td>
<td>se</td>
<td>p</td>
<td>or</td>
<td>se</td>
<td>p</td>
</tr>
<tr>
<td>Subdistrict: Employed in agriculture (%)</td>
<td>.95</td>
<td>.01</td>
<td>.00 ***</td>
<td>.96</td>
<td>.01</td>
<td>.00 ***</td>
</tr>
<tr>
<td>Subdistrict: Literate (%)</td>
<td>1.06</td>
<td>.01</td>
<td>.00 ***</td>
<td>1.07</td>
<td>.02</td>
<td>.00 ***</td>
</tr>
<tr>
<td>Subdistrict: Unemployed men (%)</td>
<td>1.05</td>
<td>.02</td>
<td>.01 *</td>
<td>1.06</td>
<td>.02</td>
<td>.01 **</td>
</tr>
<tr>
<td>District: Population density (sq km)</td>
<td>1.00</td>
<td>.00</td>
<td>.00 ***</td>
<td>1.00</td>
<td>.00</td>
<td>.01 *</td>
</tr>
<tr>
<td>District: 20 year population change (%)</td>
<td>.99</td>
<td>.00</td>
<td>.00 **</td>
<td>.99</td>
<td>.01</td>
<td>.28</td>
</tr>
<tr>
<td>District: Distance from Cairo (sq root)</td>
<td>1.07</td>
<td>.03</td>
<td>.01 *</td>
<td>1.06</td>
<td>.03</td>
<td>.02 *</td>
</tr>
<tr>
<td>District: Administrative centre</td>
<td>.51</td>
<td>.27</td>
<td>.21</td>
<td>.75</td>
<td>.43</td>
<td>.60</td>
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<tr>
<td>Subdistrict: Non-Muslim (%)</td>
<td>1.02</td>
<td>.01</td>
<td>.07</td>
<td>1.01</td>
<td>.01</td>
<td>.10</td>
</tr>
<tr>
<td>District: European (%)</td>
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<td>.07</td>
<td>.00 **</td>
<td>.74</td>
<td>.06</td>
<td>.00 ***</td>
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<tr>
<td>District: Missionaries per 10,000</td>
<td>.80</td>
<td>.15</td>
<td>.21</td>
<td>.88</td>
<td>.17</td>
<td>.51</td>
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<tr>
<td>District: Employed in state admin (%)</td>
<td>.62</td>
<td>.11</td>
<td>.00 **</td>
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<tr>
<td>Subdistrict: State railway station</td>
<td>3.41</td>
<td>.68</td>
<td>.00 ***</td>
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<td>Constant</td>
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<td>.00</td>
<td>.00 ***</td>
<td>.00</td>
<td>.00</td>
<td>.00 ***</td>
</tr>
<tr>
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<td>.00 ***</td>
<td>1.07</td>
<td>.16</td>
<td>.00 ***</td>
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<td>Reduction in AIC compared to Model 1</td>
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<td>-19</td>
<td>-19</td>
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<td>-19</td>
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<td>4134</td>
<td></td>
<td>4134</td>
<td></td>
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<tr>
<td>Districts</td>
<td>126</td>
<td></td>
<td>126</td>
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<td>126</td>
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</tr>
</tbody>
</table>

Multilevel logistic regression, with ln(Muslim population) as offset
or: odds ratio; se: standard error
p: p-value (two-tailed), *** p < .001, ** p < .01, * p < .05
in districts with fewer adults employed in state administration, our measure for state infrastruc-
ture. H3b is also strongly supported. The presence of a train station is a substantive and significant
predictor of a Muslim Brother branch at the subdistrict level. Net of all other factors, the odds of
a Muslim Brother branch being present was 3.41 times greater in subdistricts where there was a
train station (as compared to subdistricts without a train station).

Figure 2 shows the magnitude of the effect of the statistically significant continuous variables
from the full model. Holding all other variables constant at their median values, increasing the
percentage of literacy in a subdistrict from 6.6 per cent to 27.9 per cent (the 10th to the 90th per-
centiles) quadruples the predicted probability of a Muslim Brother branch from .008 to .38. The
inverse holds for employment in agriculture. Increasing the percentage of agricultural workers in a
subdistrict from 8.6 per cent (the 10th percentile) to 48.1 per cent (the 90th percentile) more than
halves the probability of a Muslim Brother branch existing from .027 (note that the 95 per cent
confidence interval extends to .018) to .008. An increase in male unemployment from 4.5 per cent
to 15.7 per cent (the 10th to the 90th percentiles) is associated with a modest rise in the predicted
probability of branch presence from .01 to .017.

The proportion of Europeans in a district is negatively associated with branch presence. At the
10th percentile - indicating a subdistrict within a district where Muslims had few opportunities to
come into contact with Europeans - the probability of a branch is .013. At the 90th percentile - a
subdistrict within a district where Muslims had the greatest exposure to Europeans - the probability
falls to .003. At higher values, this association is even more pronounced. At the 95th percentile,
the probability of a Muslim Brother branch being present is practically zero. The likelihood of
Islamist presence is also related to the number of state officials in a district. At the 10th percentile
- a subdistrict within a district where 0.5 per cent of the population work in the state’s bureaucratic
machinery - the probability of a branch is .014. At the 90th percentile - a subdistrict within a district
where 1 per cent of the population is employed in state administration - the predicted probability
of a Muslim Brother branch decreases by almost two thirds to .005.

These were calculated using the Stata command `genatmedian`, written by Michael Biggs.
Figure 2: Branch formation by agriculture, literacy, unemployment, Europeans, and state administration, respectively.
6 Robustness

The maximum likelihood estimator used in logistic regression can give biased coefficients if there are only a small number of cases on the rarer of the two outcomes (Allison 2012, King and Zeng 2001). This is a concern as Muslim Brother branches were present in less than five per cent of subdistricts. Penalized logistic regression is an estimator for binary dependent variables that was developed for this scenario. Thus as an initial robustness check, we re-analyze the original 1937 survey using the alternative estimator for the full model.7 The results are presented in Appendix Table 5, which are substantively identical to those reported in Model 3 in Table 2.8

Our analysis can also be replicated for a second Muslim Brother branch survey published in 1940. That survey records 260 branches, of which 238 can be reliably assigned to a census subdistrict. There was significant turnover in the three years separating the surveys, a product of internal schisms in the movement and leadership quarrels culminating in a formal split in 1939 (Lia 1998, 247-250). Of the branches surveyed in 1937, 96 (45 per cent) had folded or ceased to be affiliated with the movement by 1940, while 122 new branches appeared. This presents an important opportunity to test our findings, by re-running the analysis on a sample that had changed considerably from the original data.

Table 3 presents the results from the full model. Again, branches were more likely in subdistricts with a higher literacy rate and in subdistricts where fewer workers were employed in agriculture. The sign for unemployment remains positive, but is no longer statistically significant. Branches were less likely in districts with a large European population, and more likely in subdistricts with a train station and in districts with fewer adults employed in state administration. Despite the high rate of branch turnover, our findings suggest that there was no significant change in the social and institutional ecologies of Islamist mobilization in the three years since the first survey was published.

7We used the Stata package firthlogit, developed by Joseph Coveney (2015). Note that firthlogit does not support a multilevel option or the inclusion of an offset variable. A popular equivalent to penalized logistic regression is the relogit module developed by Tomz, King and Zeng (2003). Re-analyzing our data using relogit produces substantively identical results.

8We also re-analyzed our data using both multilevel OLS and logistic regression with robust standard errors. Again, both estimators provide substantively similar results (the outputs are available from the authors).
Table 3: Predicting the probability of a Muslim Brother branch, 1940

<table>
<thead>
<tr>
<th>Model 5</th>
<th>or</th>
<th>se</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdistrict: Employed in agriculture (%)</td>
<td>.97</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Subdistrict: Literate (%)</td>
<td>1.07</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>Subdistrict: Unemployed men (%)</td>
<td>1.02</td>
<td>.02</td>
<td>.28</td>
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<tr>
<td>District: Population density (sq km)</td>
<td>1.00</td>
<td>.00</td>
<td>.02</td>
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<tr>
<td>District: 20 year population change (%)</td>
<td>1.00</td>
<td>.01</td>
<td>.57</td>
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<tr>
<td>District: Distance from Cairo (sq root)</td>
<td>1.01</td>
<td>.03</td>
<td>.64</td>
</tr>
<tr>
<td>District: Administrative centre</td>
<td>.56</td>
<td>.32</td>
<td>.33</td>
</tr>
<tr>
<td>Subdistrict: Non-Muslim (%)</td>
<td>1.01</td>
<td>.01</td>
<td>.51</td>
</tr>
<tr>
<td>District: European (%)</td>
<td>.79</td>
<td>.06</td>
<td>.00</td>
</tr>
<tr>
<td>District: Missionaries per 10,000</td>
<td>1.10</td>
<td>.18</td>
<td>.54</td>
</tr>
<tr>
<td>District: Employed in state admin (%)</td>
<td>.56</td>
<td>.11</td>
<td>.00</td>
</tr>
<tr>
<td>Subdistrict: State railway station</td>
<td>2.97</td>
<td>.56</td>
<td>.00</td>
</tr>
<tr>
<td>Constant</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Random intercept: district (std dev)</td>
<td>.97</td>
<td>.15</td>
<td>.00</td>
</tr>
</tbody>
</table>

Subdistricts: 4134
Districts: 126

Multilevel logistic regression, with ln(Muslim population) as offset
or: odds ratio; se: standard error
p: p-value (two-tailed), *** p < .001, ** p < .01, * p < .05

7 Discussion

Before discussing the implications of these findings, we should acknowledge their limitations. Because our analysis is ecological, we cannot illuminate the role played by social networks in driving Muslim Brother branch formation. It is almost certain that branches were more likely in areas where the movement’s leadership had pre-existing relationships with the local community (Lia 1998, 43). Unfortunately, no data are available on other relevant characteristics of the movement, such as the number of Brothers in each branch or the professional backgrounds of those who constitute each branches’ membership, which would allow for a comparison with the underlying population (Ketchley and Biggs 2016). In the absence of such information, readers should be alert to the risk of committing an ecological fallacy: our analysis can only illuminate the local contexts in which branches were formed, not the precise characteristics of individuals who joined. Despite these limitations, our analysis has the great advantage of identifying the characteristics of subdistricts and districts that made the establishment of a Muslim Brother branch more or less likely.
The tendency for Muslim Brother branches to be present in areas with higher literacy rates and fewer workers employed in agriculture is consistent with the image of political Islam emerging among newly literate publics living at a distance from the traditional agrarian economy. However, this interpretation of social progress and modernization is somewhat tempered by the correlation between branch formation and locales with higher rates of male unemployment. The interwar period was characterized by rising levels economic inequalities, with increased exposure to the world capitalist economy bringing uncertainty and hardship for colonized peoples across the world. The first Islamists, with their emphasis on social solidarity and welfare, may well have capitalized on this, particularly amongst Muslims whose socioeconomic trajectories began to increasingly diverge from what their rising levels of education led them to expect.

Our findings as they pertain to Westernization run counter to the received wisdom about how and why political Islam emerged. Qualitative accounts of the Muslim Brothers’ emergence and early growth spotlight the large European population in the Suez Canal city of Ismailia as a key factor in the development of the movement (Goldberg 1981, Husaini 1956). For example, in Richard Mitchell’s classic treatment of the Muslim Brothers, he notes that the large European presence in Ismailia, where even the street signs “were written in the language of the economic occupation” provoked al-Banna into action (1993, 7). We found, however, that districts with large European populations were significantly less likely to host a Muslim Brother branch. One potential reason for this divergence is that prior investigations have not adequately accounted for the spatial distribution of Europeans. In the 1937 census, 8 per cent of Ismailia’s population are recorded as being European (the 95th percentile). Viewed from this perspective, the birthplace of the movement appears atypical of the social and political conditions associated with Islamist expansion elsewhere. One important implication of this finding is that contact between Muslims and Western populations may actually have inhibited, rather than impelled, Islamist growth during this period.

This is not wholly unexpected. As Mansoor Moaddel notes, sizeable European emigré communities resided across the Middle East and North Africa several decades before the emergence of organized political Islam (2005, 198). If Islamist mobilization was a traditionalist reaction to an alien Western culture, why did it emerge decades after this encroachment peaked? One potential explanation for our findings is that the Muslims most susceptible to joining Islamist movements
were those who experienced Westernization vicariously, rather than viscerally. In other words, instead of Muslims who lived and worked in close proximity to Europeans, it was those who read about European transgressions in Palestine or heard local sheikhs inveigh against missionaries’ attempts to convert Muslims, yet rarely encountered Europeans in the flesh, who were most prone to join a movement like the Muslim Brothers. As several studies have noted, Islamists proactively cultivated this hostility in their publications and public appearances, often explicitly counteringpoising Islamic social values to Westernization (Al-Anani 2013, Gershoni 1988).

The presence and absence of state infrastructure is an important explanation for variation in Islamist presence and expansion. The likelihood of a Muslim Brother branch being established increased as the percentage of state employees decreased, our proxy for the extent of state infrastructure and development. This finding tallies with other recent studies of Islamist mobilization, which portrays organized political Islam as a religious social movement that provides functions and services that might otherwise be fulfilled by the state. However, as Melani Cammett and Pauline Jones Luong (2014) note, this dynamic is frequently cited, but rarely if ever empirically demonstrated. In this, our paper provides the first concrete evidence that political Islam first emerged and spread in areas where the state lacks capacity, an important prerequisite for welfare-centric arguments about Islamists’ appeal and mobilization.

Even taking into account other characteristics, the available transport infrastructure of the day profoundly influenced where the Muslim Brotherhood’s branches would appear. Research on social movements has shown that transport infrastructure - including ports, road networks, and the railway - often occupies a key space in the ecology of modern contentious politics (Silver 2003). Still, the role of transport networks in determining the spatial diffusion of social movements has eluded systematic investigation.

The travel itineraries of the Muslim Brothers’ leadership during this period further underline the importance of the Egyptian state railway in the diffusion of the movement. As Brynjar Lia notes, when al-Banna visited an area in the hope of establishing a new branch, he would be met by representatives of the movement’s youth wing at the train station, who would then proceed to march through the main street of the town or village chanting the Brothers’ hymn, “Ya Rasul Allah” (O God’s Prophet) (1998, 131). David Commins concurs, writing in his study of Hasan al-Banna
that he would travel “throughout the country by train, automobile, and cart [and] pray in the village mosque and then talk with people about religion” (1994, 147). In the period between August 1933 to September 1939, the Muslim Brothers’ newspaper records numerous trips undertaken by the movement’s founder Hassan al-Banna as he traversed the county looking to establish branches. These journeys were made exclusively by rail, and we map them in Figure 3.

This focus on transportation infrastructure serves as a crucial linkage between the social, bottom-up narratives of an urban middle class that have traditionally populated accounts of the Brotherhood’s rise and the purposive, top-down organizational efforts of the group’s tireless leadership, most prominently the founder Hasan al-Banna. These journeys were important for the Brotherhood’s organizational expansion for a number of reasons, including allowing the group to break into local social networks and providing a charismatic focal point through which local socioeconomic grievances could be translated into organized sociopolitical activism.

8 Conclusion

Based on an array of new historical sources we have offered the first systematic account of the emergence and growth of organized political Islam. We find that chapters of the Muslim Brotherhood were more likely to be present in areas with higher proportions of literate individuals. However, in contrast to much of the received wisdom, we find little support for hypotheses that contact between Muslims and the West, either generally or specifically in the form of Western missionary activism, spurred the growth of Islamism in Egypt. In fact, the likelihood of a Brotherhood chapter was inversely related to the proportion of Europeans in a district. This calls into question mechanistic, grievance-based explanations of Islamist emergence.

Our findings are novel in several other respects. In two ways our results show that the expansion of the Muslim Brothers was profoundly influenced by the reach and development of the modern state. On the one hand this is a story of the uneven growth of the modern administrative and bureaucratic state: Brotherhood branches were likely to exist in districts where the state’s infrastructural presence - proxied by the percentage of state officials - was weak or nonexistent. On the other, the accoutrements of the modern state played an important role in determining the
Figure 3: Hasan al-Banna’s Rail Visits, 1933-1939

(a) August 1933
(b) July 1936
(c) November 1938

(d) January 1939
(e) February 1939
(f) September 1939
spatial diffusion of the movement. We find that a strong predictor of organizational presence was whether or not a rail station was located in that subdistrict. This dovetails with what the Brotherhood saw as innovative about their own movement: contemporaneous accounts in their own newspapers are spotted with reports and itineraries of the leadership’s travels by rail across the length and breadth of the country. An ironic implication of this finding is that one of the world’s leading anti-imperialist movements grew by appropriating one of imperialism’s most trumpeted accomplishments.

An appreciation of the local ecologies conducive to Islamist expansion distinguishes our approach from earlier efforts. We were able to take this perspective by applying cutting edge methodological techniques to a range of unexploited historical sources, spanning contemporaneous census records and labor force statistics, branch surveys published in movement newspapers, archival data on missionary activism, and maps and timetables from Egypt’s state-operated rail system. In this, this paper continues a growing trend in comparative politics to excavate underutilized sources of historical data, as well as to return to more-well known sources with new tools and methods, to illuminate matters of distinct importance for contemporary political science. Comparably detailed and comprehensive listings for more recent Islamist movements seems to be lacking, but our research suggests that it can be worth the while to devote attention to a more extensive search for this type of data.

Three areas of future inquiry are worth highlighting. One outstanding question is the role played by local religious infrastructures in the Brotherhood’s spread. Qualitative accounts, as well as an array of primary sources, discuss the prominent role that mosques and religious lectures played during this period of the Brotherhood’s growth. Prominent sheikhs associated with the group frequently spoke on religious topics at the Brotherhood’s headquarters in Cairo, and travelled around the country delivering sermons and lectures at mosques. Our research design, however, makes no account for the extant religious infrastructure at either the district or the subdistrict level. Integrating this factor into future analysis would shed light on an important dynamic that is potentially central to the emergence of this movement.

Secondly, as noted in the body of the paper, we lack reliable data on the movement’s membership. While the highly disaggregated nature of the analysis helps mitigate concerns of improper in-
ference, a study of the micro-level processes of branch formation holds notable potential for testing and refining the conclusions from the above section.

Finally, the political and movement ecology of our paper is rather barren: we examine only the relationship between the emergence of organized political Islam and the Christian missionary movement. Yet the period under study was a hothouse of other kinds of social, religious, and political activism. Groups like Young Egypt (Misr al-Fatat) (Jankowski 1975, Shalabi 1981), the Wafd Party (Deeb 1979, Quraishi 1967) and the Young Men’s Muslim Association (YMMA) were prominent political actors during the interwar period, injecting a dynamic of competition (and potentially cooperation) into the environment in which the Brotherhood grew. Scholars working in a variety of other contexts have identified the rivalry between movements as vital to organizational spread and vitality (McAdam, Tarrow and Tilly 2001). Taking this vibrant competitive ecosystem into account is likely a profitable avenue of further inquiry.
References


Harris, Christina Phelps. 1964. *Nationalism and Revolution in Egypt: The Role of the Muslim Brotherhood*. Hoover Institution Press.


9 Appendix

9.1 Assignment to Subdistricts

In the vast majority of cases, a branch or train station had the same name as the census subdistrict, making assignment academic. In some cases, spelling or transcription errors, or differences between popular and official spellings of a location, made assigning these branches or stations more difficult. However in nearly all of these cases we were able to triangulate with a high degree of certainty by using two additional sources. The first was a directory of villages assigned to both subdistrict and districts published by the Egyptian Ministry of Finance (1925). This was particularly helpful because it contained both the original Arabic spellings and the common English transliteration of the unit. It also, quite fortuitously, contained hand-written Arabic corrections that often provided the informal or popularly-known name of the unit alongside the official designation. The second source was a Arabic language multi-volume geographical encyclopedia of Egyptian towns published in 1963. This provided, for each unit, a brief discussion of the history and naming conventions (Ramzi 1963).

For some cities in the Nile Delta and the Suez Canal region we struggled to locate Muslim Brother branches in their subdistricts. This was due to inconsistent naming conventions used in both the census and the branch survey. For example, in the census, subdistricts were sometimes assigned numbers instead of names- designations that do not appear in contemporaneous maps, or survive in current usage. To address this, we exploited a convenient feature of urban geography. Cities outside of the capital often had city limits, with subdistricts designated as being either “inside the limit” (dakhil al-kurdun) or “outside the limit” (kharig al-kurdun). Examination of branch addresses reported in the Muslim Brothers’ newspaper suggest that branches were often “inside the limit,” and so we aggregate subdistricts along this distinction and assign branches to the newly pooled subdistrict.

Similarly, some subdistricts were delineated using directions, e.g. Aswan al-Qibli (South Aswan) and Aswan Bahri (North Aswan). These distinctions rarely appear in the branch survey or contemporaneous maps, suggesting that these were often arbitrary administrative divisions rather than socially distinct spaces. Again, on these occasions, we aggregate subdistricts and assign branches
and calculate independent variables for the pooled unit. Aggregation reduces the number of sub-districts from 4,272 to 4,230. Missing observations at the district level reduces the total number of subdistricts analyzed to 4,135.

9.2 Missionary Activism

Figure 4: Number of Church Missionary Society Missionaries in Egypt, 1923-1939
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<tr>
<th>(1)</th>
<th>(2)</th>
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<th>(8)</th>
<th>(9)</th>
<th>(10)</th>
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<td>(1)</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>(2)</td>
<td>Muslim population</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>(3)</td>
<td>Employed in agriculture (%)</td>
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<tr>
<td>(4)</td>
<td>Literate (%)</td>
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<td>0.15</td>
<td>-0.54</td>
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</tr>
<tr>
<td>(5)</td>
<td>Unemployed males (%)</td>
<td>0.11</td>
<td>0.17</td>
<td>-0.37</td>
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<tr>
<td>(6)</td>
<td>Non-Muslim (%)</td>
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<td>-0.01</td>
<td>-0.23</td>
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<td>Population density (sq km)</td>
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<td>0.45</td>
<td>0.04</td>
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<td>(8)</td>
<td>Population change since 1917 (%)</td>
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<td>(9)</td>
<td>Distance from Cairo (sq. rt.)</td>
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<td>0.04</td>
<td>0.10</td>
<td>-0.37</td>
<td>0.30</td>
<td>0.15</td>
<td>-0.21</td>
<td>-0.05</td>
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<td>(10)</td>
<td>Administrative centre</td>
<td>0.07</td>
<td>0.21</td>
<td>-0.32</td>
<td>0.34</td>
<td>0.04</td>
<td>0.10</td>
<td>0.24</td>
<td>0.14</td>
<td>-0.06</td>
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</tr>
<tr>
<td>(11)</td>
<td>Europeans (%)</td>
<td>-0.01</td>
<td>0.07</td>
<td>-0.43</td>
<td>0.54</td>
<td>0.05</td>
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<td>0.43</td>
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<td>-0.12</td>
<td>0.33</td>
<td></td>
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<tr>
<td>(12)</td>
<td>Missionaries per 10,000</td>
<td>0.01</td>
<td>0.07</td>
<td>-0.22</td>
<td>0.27</td>
<td>-0.02</td>
<td>0.23</td>
<td>0.23</td>
<td>0.07</td>
<td>-0.08</td>
<td>0.04</td>
<td>0.36</td>
</tr>
<tr>
<td>(13)</td>
<td>Employed in state administration (%)</td>
<td>0.01</td>
<td>0.13</td>
<td>-0.44</td>
<td>0.50</td>
<td>-0.03</td>
<td>0.11</td>
<td>0.25</td>
<td>0.49</td>
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<td>0.30</td>
</tr>
<tr>
<td>(14)</td>
<td>Egyptian state railway</td>
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<td>0.33</td>
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<td>0.13</td>
<td>0.02</td>
<td>-0.04</td>
<td>0.07</td>
<td>0.05</td>
<td>0.03</td>
<td>0.01</td>
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</table>
### Penalized Logistic Regression, 1937 Branch Survey

Table 5: Predicting the probability of a Muslim Brother branch, 1937

<table>
<thead>
<tr>
<th>Model 4</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>or</td>
<td>se</td>
</tr>
<tr>
<td>Subdistrict: Employed in agriculture (%)</td>
<td>.96</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>Subdistrict: Literate (%)</td>
<td>1.05</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>Subdistrict: Unemployed men (%)</td>
<td>1.04</td>
<td>.02</td>
<td>.04</td>
</tr>
<tr>
<td>District: Population density (sq km)</td>
<td>1.00</td>
<td>.00</td>
<td>.12</td>
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<tr>
<td>District: 20 year population change (%)</td>
<td>1.00</td>
<td>.00</td>
<td>.30</td>
</tr>
<tr>
<td>District: Distance from Cairo (sq root)</td>
<td>1.02</td>
<td>.02</td>
<td>.15</td>
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<tr>
<td>District: Administrative centre</td>
<td>1.48</td>
<td>.59</td>
<td>.24</td>
</tr>
<tr>
<td>Subdistrict: Non-Muslim (%)</td>
<td>1.00</td>
<td>.01</td>
<td>.95</td>
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<tr>
<td>District: European (%)</td>
<td>.76</td>
<td>.05</td>
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<tr>
<td>District: Missionaries per 10,000</td>
<td>.98</td>
<td>.13</td>
<td>.91</td>
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<tr>
<td>District: Employed in state admin (%)</td>
<td>.68</td>
<td>.09</td>
<td>.00</td>
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<tr>
<td>Subdistrict: State railway station</td>
<td>5.84</td>
<td>.99</td>
<td>.00</td>
</tr>
<tr>
<td>Constant</td>
<td>.04</td>
<td>.02</td>
<td>.00</td>
</tr>
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<td>Subdistricts</td>
<td>4135</td>
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<td></td>
</tr>
</tbody>
</table>

Penalized logistic regression

or: odds ratio; se: standard error

p: p-value (two-tailed), *** p < .001, ** p < .01, * p < .05