The Historical Legacies of Islamic Rule in Africa*

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Abstract

Under what conditions are historical institutions beneficial or detrimental to contemporary economic development? While some existing work finds political centralization positively associated with long-term development, other research identifies inefficiencies that are locked-in by centralized institutions. Linking together literatures on Africa and the Islamic world, we argue that historical institutions varied in consequential ways. In particular, the religious basis of political authority was important. Empowered religious elites shaped the nature of the colonial encounter, with long-lasting effects on development. Focusing on historical kingdoms in Africa, we find that areas governed by Islamic states experience higher infant mortality, fewer years of education, and lower density of nightlights in comparison to areas exposed to non-Islamic rule. These effects are not driven by Islam per se. Instead, the long-run effects of Islamic rule operate through three mechanisms associated with colonialism: low religious competition, the insulation of local elites, and weak penetration of colonial administration.

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1 Introduction

Over the past several decades, scholars of comparative politics have accumulated significant evidence that historical institutions can have long-lasting impacts on contemporary outcomes, from economic development to social trust and rule-following (Acemoglu et al., 2001; Nunn, 2009; Alsan, 2015; Lowes et al., 2017). This body of research has been central to understanding contemporary inequalities in economic development, educational attainment, and access to health care in Africa. The persistent impact of historical institutions helps explain why it has been so difficult to address contemporary development challenges despite enormous investments by governments, non-governmental organizations, and international donors (Easterly, 2009).

Yet despite the recognition that historical institutions often matter for contemporary development outcomes, there remains little consensus regarding which institutions produce a positive or a negative impact on development, and through which mechanisms their effects are transmitted to the present. A growing body of work, much of it from sub-Saharan Africa, has shown that centralized historical institutions at the ethnic group level allow groups to overcome collective action problems in public goods provision and facilitate the accumulation of wealth. Empirically, ethnic group centralization has been associated with higher levels of contemporary economic and institutional development (Herbst, 2000; Boone, 2003; Gennaioli and Rainer, 2007; Bandyopadhyay and Green, 2016).

However, centralization may not always produce optimal long-term development outcomes. Another body of work has shown that centralized political institutions can lock-in or accentuate pre-existing power relations, limiting political and economic competition in ways that can generate long-run inefficiencies (Stasavage, 2014; Blaydes and Chaney, 2013; Mamdani, 1996; Hariri, 2012). Much of the evidence for this countervailing influence comes from the Middle East and examines the "reversal of fortune" experienced by Islamic states after the turn of the 14th century (Kuran, 2011; Rubin, 2017).

This paper helps adjudicate the debate about the impact of historical institutions on contemporary development outcomes. Drawing on the existing literature, we hypothesize that not

all centralized states are created equal: the long-term effects of historical state centralization on contemporary development outcomes are conditional on the religious basis of authority, and specifically whether the political elite derived their authority from Islamic traditions. While some have argued that long-term differences in development across places with and without Islamic institutions are a result of the institutional differences specific to Islam, such as the *waqf* system (Kuran, 2011), our claim is different. We argue instead that a history of Islamic rule affects long-term development outcomes through its impact on the colonial encounter, including public investments and the design of institutions during the colonial period. European colonizers treated Islamic states differently than non-Islamic states and stateless areas. In contrast to prior work, which treated the Islamic world as exceptional in its history of Islamic rule, we examine this argument empirically in a context with variation in both the degree of centralization and the religious bases of authority: pre-colonial state structures across Africa.

The paper focuses on three mechanisms of transmission through which different development trajectories emerged during the colonial period in Africa and persisted until today. We hypothesize that areas governed by Islamic states tended to experience less religious competition, less institutional transformation at the local level, and more limited exposure to European power structures during the colonial and post-colonial periods. Consequently, there was less investment in public goods by both the local and colonial elite, which has had a long-lasting impact on patterns of economic development. While our analysis is limited to sub-Saharan Africa, similar dynamics may have been at play in the interaction between colonial powers and Islamic political authorities in the Middle East and South Asia.

To test these conjectures, this paper presents a novel geo-referenced dataset of state centralization that differentiates between pre-colonial states according to their religious basis of authority. Our data trace the territorial extent of traditional, Christian, and Islamic kingdoms in Africa from 1600CE until 1900CE. Across several complementary empirical models, we find that Islamic kingdoms were associated with higher rates of infant mortality and fewer years of formal education in comparison to comparable areas ruled by traditional or Christian kingdoms. Estimates of

the effect on the density of night lights are more sensitive to the particular model specification but are also found to be lower in areas under Islamic rule in two of our three main empirical strategies. In support of our argument that the nature of institutions matter, we show that the persistent effects of Islamic rule are not a function of the initial conditions in areas where such states consolidated, nor a reflection of a shift in trade routes from the Sahara to the coast, nor Islamic beliefs.

These results provide powerful evidence of a reversal of fortune on the African continent. In the 1500s, Africa's political landscape was dominated by strong, centralized Islamic states (Gomez, 2018). These states maintained internal stability, regulated commerce, and promoted education (Lovejoy, 2016). Levels of literacy were relatively high among Muslims compared to non-Muslims, and the expertise of Muslim bureaucrats was sought out by non-Muslim kingdoms. Our results indicate that in contemporary Africa these relationships are reversed.

Supporting the theorized mechanisms, we find that Christian missions were less likely to be established in the territorial area of ethnic groups that had been ruled by Islamic kingdoms. These findings are consistent with the colonial strategy of making substantial concessions to Islamic rulers. We also find that trust in traditional leaders is lower in areas that were ruled by Islamic authorities, pointing to the ways in which religious elites were insulated from political competition, and that ethnic groups previously governed by Islamic states are less likely to hold power in post-colonial and contemporary national-level institutions, suggesting a continued marginalization from the political process.

Together, the findings underscore the persistent legacies of historical institutions but also the important differences among pre-modern state structures. The religious basis of political authority emerges as consequential not because of the content of religious beliefs, but instead because colonial powers engaged differently in areas ruled by religious elites. These findings offer a fresh perspective on the story of Africa's persistent underdevelopment, reinforcing a recognition of the long-lasting effects of the colonial encounter but also surfacing the central – and perhaps understudied – role of religion in shaping subsequent development trajectories.

2 The Persistent Impact of Institutions

Strong, centralized institutions are often considered a precondition to political and economic development. These institutions control territory, enforce rules, collect and distribute resources, and facilitate collective action. However, it has been difficult to draw firm conclusions about the long-run effects of historical institutions and the mechanisms by which they operate given the diversity of societies and geographic contexts in which data has been gathered and theories tested.

For example, a substantial body of research, much of it on Africa, has shown that early statehood has long-term effects on development outcomes, including the quality of political institutions (Bockstette et al., 2002; Gennaioli and Rainer, 2005), public goods such as immunization and paved roads (Gennaioli and Rainer, 2007), economic activity and development (Michalopoulos and Papaioannou, 2010; Pierskalla et al., 2017; Bandyopadhyay and Green, 2016), and interstate conflict (Depetris-Chauvin, 2015; Wig and Tollefsen, 2016). However, not all studies find that state centralization had a positive impact on contemporary outcomes. At the micro-level in Congo, Lowes et al. (2017) find that individuals living in the territorial extent of the pre-colonial Kuba Kingdom are more likely to cheat in field experiments than those living outside, suggesting weaker norms about cooperation and rule-following.

At a more macro-level, the literature on state institutions in the Middle East has been concerned with explaining the so-called "reversal of fortune" that occurred in the late 14th century as economic growth began to stall in the Middle East but accelerated in Europe. These scholars have focused on the strength of state institutions to explain this divergence. For example, Blaydes and Chaney (2013) argue that the strength of the state in the Middle East during the Middle Ages, stemming from its central position in global trade, meant that these states were able to consolidate power from local landholders and did not adopt a feudal system as in Europe. The absence of a feudal system retarded later development because the decentralization of power in feudalism was crucial in building the checks on power that developed into contemporary democratic institutions and facilitated economic growth (Cox, 2016).

Other research has emphasized that the *content* of historical institutions, and not just the degree of centralization, is crucial for understanding their long-run impacts (Acemoglu et al., 2001). For example, institutions developed to solve salient problems at particular points in time reduce flexibility in dealing with new challenges in the future by creating special interest groups and locking in a particular distribution of power. These inefficiencies generally compound over time until external forces break the equilibrium during a critical juncture and necessitate the creation of new institutions, empowering a new set of stake holders. Such arguments have been applied to the strength of European city states (Stasavage, 2014), but are most common in analyses of the Middle East.

Beyond concerns for the distribution of power, other scholars have explored the content of institutions through the lens of religion. For example, Kuran (2004, 2001) argues that Islamic economic institutions, namely the ability to hide wealth in tax-free religious endowments and the difficulty of establishing corporations, had long-term impacts on economic development. Similarly, Michalopoulos et al. (2014) use a formal model to demonstrate that the adoption of Islam could be responsible for limiting the accumulation of capital by the elite by enforcing more equitable inheritance rules and mandating tithing, which may have limited the potential for industrialization in the Middle East.

A final part of the literature recognizes that contemporary outcomes reflect the interaction of historical institutions and external influences. A number of scholars have focused on colonial strategies of rule, arguing that indirect and direct rule is associated with different long-term outcomes. Indirect rule typically granted greater authority to local leaders, which many argue allowed them to more easily use political power for personal gain rather than public benefit (Mamdani, 1996). Among British territories, indirect rule has been negatively associated with long-term political stability, bureaucratic effectiveness, and rule of law compared to those areas governed by direct rule (Lange, 2004). On the other hand, in India, Iyer (2010) finds that areas governed by direct rule today experience lower levels of access to schools, health centers, and roads.

But what explains why some places experienced more or less direct rule, or, put another way, different *levels* of colonialism – differences in the extent to which colonizers modified or established new political and economic institutions? Gerring et al. (2011) argue that places with a greater degree of "stateness" are likely to experience a more indirect form of colonial rule. In the context of Latin America, Mahoney (2010) argues that the degree of pre-colonial institutional complexity interacted in important ways with colonial strategies to shape the experience of colonization, as well as long-term development outcomes.

We build on these literatures in an effort to make sense of these contradictory findings about the role of historical state centralization in different contexts. By focusing on pre-colonial African states, we are able to examine long-run development trajectories in an environment in which institutions varied both in their degree of centralization as well as their religious basis of authority. In doing so, we focus on state institutions that transcend and incorporate various ethnic groups. In highlighting the role of historical states, we push beyond the traditional focus on ethnic group structures, including both studies of social structures (Michalopoulos and Papaioannou, 2010; Moscona et al., 2018; Wig and Tollefsen, 2016) and a growing literature on the role of local traditional elite (Baldwin, 2016; Beall and Ngonyama, 2009; Acemoglu et al., 2013). The historical evidence suggests that the institutional landscape was complex and dominated by large, multi-ethnic kingdoms which influenced life far beyond the territory of their core ethnic group. While scholars of comparative politics have devoted significant attention to whether and how these state institutions diverged from the kinds of institutions that emerged in Europe (Herbst, 2000), only a handful of articles have examined the impact of these institutions and none have focused on the relationship with contemporary development (Besley and Reynal-Querol, 2014; Lowes et al., 2017; Depetris-Chauvin, 2015).

2.1 Islamic kingdoms

The political organization of societies in pre-colonial Africa ranged from segmented groups to highly centralized, hierarchical kingdoms. Among centralized polities in pre-colonial Africa,

there was also variation in the basis of political authority. Early states often legitimized their rule on the basis of religious authority of some kind. In many cases, the religion was specific to the particular kingdom. However, with the arrival and spread of Islam, beginning around the 7th century CE, Islamic political authority began to feature more prominently across the region.

The Islamic kingdoms we discuss in this paper are states in which Islam provided a basis of political authority and legitimacy for the ruling elite. Nearly one third of the historical states we identify in Africa meet this criteria for a substantial period of time. By states, we refer to political organizations in which territory was controlled by force and governed by a centralized authority, which often included an army. In Islamic states, rulers were able to earn greater legitimacy and therefore often enjoyed greater stability by using religious beliefs and institutions to reinforce political authority. In practice, this often meant the incorporation of Islamic law and the active support of religious scholars. One political benefit of Islam was that it offered a means through which a leader could secure loyalty on the basis of religion from otherwise diverse groups (Stride and Ifeka, 1971, 136). Islam was also beneficial for governance in that it offered a common language and script, which served to help unify culturally diverse areas with respect to administration, commerce, and scholarship (Levtzion and Spaulding, 2003, ix).

In practice, Islamic political authority took a variety of forms, ranging from a leader's self-identification as a Muslim to a ruling family claiming to be descendants of Prophet Mohammad. The latter was arguably a more powerful form of Islamic political authority because it meant that rule was divine, and necessitated that succession be hereditary. For example, the king of the Islamized Ghana state around 1100 AD claimed to descend from the Quraysh, an Arab tribe into which the Prophet Mohammad was born.[1]

Even in the absence of a claim of descending from the Prophet, Islam could provide political legitimacy. As Stride and Ifeka (1971, 140) write:

"Islam had a special appeal for rulers of Sudanic empires…Acceptance of Islam, correct observance of religious ceremonies and patronage of the *ulama* brought him the political support of urban Muslim communities influential for their role in commerce and for their learning."

[1]In Gomez (2018), citing Muhammad al-Idrisi's Kitab Rujar.

In the centuries leading up to colonization, there were a series of jihadist movements across West Africa, which resulted in a number of Jihad states, from the Fuuta Toro in Senegal to the Sokoto Caliphate in northern Nigeria. It was in these post-Jihad states that the ties between political and religious authority were strongest. As a consequence of these revolutions, "Islam moved from the periphery to the center of the socio-political system and became the only source of legitimacy for the state and its rulers." (Levtzion, 1994, 215) While the exact place of religion in governance varied across Islamic states, collectively they share a common characteristic: rulers built centralized, hierarchical structures to control diverse geographic territories, and used religious beliefs and religious scholars to bolster their political authority.

Important prior work has drawn attention to the unique role of Islamic political institutions in shaping development trajectories. Using a comparative-historical analysis of two kingdoms, the Emirates of Northern Nigeria and the Buganda kingdom of Uganda, Platas Izama (2016) shows how the Islamic basis of political authority in the former led to a more indirect form of colonial rule, despite the fact that both areas were characterized by a high degree of pre-colonial institutional complexity and ruled by the same colonial power. At the same time, the Islamic nature of political authority meant that colonial authorities prevented Christian missionaries from working in the Nigerian Emirates, while they allowed them to operate freely in Buganda. Over time, the nature of colonial rule – both the degree of indirect rule and the extent to which missionaries operated, and particularly the extent to which they invested in education – led to divergent outcomes across the two cases. In Northern Nigeria, Muslims fell behind Christians in educational attainment, a situation which persists to the present day. In Buganda, Muslims had greater access to and Muslim leaders invested in establishing their own schools. Platas Izama (2016) attributes this divergence to the role Islamic political authority played in shaping patterns of colonial rule. We build on this intuition and case evidence, developing and testing the argument on the universe of African cases. In the next section, we elaborate on the mechanisms that underpin the relationship between religious political authority, colonial rule, and long-term development outcomes.

3 Mechanisms of Persistence

Our primary argument is that the long-run effect of pre-colonial institutions on development outcomes is conditional on the religious basis of political authority, namely, whether or not the basis of political authority was Islamic or not. We expect worse development outcomes in areas of Africa where the basis of political authority for pre-colonial institutions was Islamic, as compared to areas where this was not the case.

In this paper, we identify three primary mechanisms through which historical institutions might affect present-day development outcomes. The mechanisms are not mutually exclusive, but rather interact with and reinforce one another in each country's history. They are: 1) the degree of competition among religious elites, 2) the institutional insulation of local elites during colonial rule, and 3) the limited penetration of the colonial state. We discuss each in turn.

Religious Competition

The first mechanism focuses on the degree of religious competition. We propose that areas under Islamic rule had more limited exposure to Christian missionaries and thus experienced relatively *lower religious competition*, a factor which has been associated with greater public goods provision in colonial Africa (Gallego and Woodberry, 2010).

Colonial governments, especially in the early days of colonialism, were not in a position either financially or administratively to provide basic social services to the majority of inhabitants of African colonial territories. Christian missionaries began fulfilling this function, in part as a means to win over converts. Existing research has shown how the investments of missionaries affected long-term outcomes in education, income, and democratization (Woodberry, 2012; Nunn, 2014; Valencia Caicedo, 2018).

Allowing missionaries to provide services could promote stability, by offering something in return for the loss in autonomy and political power, prevent disease, improve agricultural production, and provide the human capital necessary for staffing the colonial bureaucracy (Abernethy,

2000). On the other hand, missionaries could themselves be a source of conflict, either in their competition with one another, or when facing resistant African populations. Colonial authorities sought to balance these competing effects.

One way in which this was done was to limit the work of missionaries in predominantly Muslim areas. Colonial authorities anticipated that resistance to missionary activity would be stronger in areas ruled by Islamic authorities than authorities who derived their authority from hereditary lineages or traditionalist religions. For example, the British restricted missionary presence in Northern Nigeria and forbade missionaries from proselytizing among Muslims in Sudan (Sharkey, 2012).

Providing evidence to this claim, Lord Lugard, the British colonial administrator for Nigeria, reflected in 1922 on his policies towards facilitating missionary activity in traditionalist and Islamic areas:

> "Every administrator would, I think cordially welcome the establishment of Missions among pagan tribes … The case is otherwise when the missionary desires access to an advanced Moslem state, where his presence would be resented, and might be regarded as a breach of the pledge of non-interference with the religion of the people." (Lugard, 1922)

As suggested by this historical anecdote, the political basis of authority influenced both how local political elites reacted to Christian missionary activity as well as the compromises that colonial administrations were willing to strike with such authorities. In other cases, missionaries were not prevented from settling in Muslim areas by colonial authorities, but rather found these were areas in which they were not very successful either in converting Africans or enticing them to attend schools. As a result, missionaries themselves often put less effort in areas with substantial Muslim populations. Because missionaries provided such a large proportion of colonial schools – greater than 90 percent in territories like the Gold Coast (Ghana), Uganda, and Nyasaland (Malawi) (Berman, 1974) – and because they were less likely to operate in predominantly Muslim areas, there were many fewer missionary schools in these areas and inhabitants were thus less likely to attend school during the colonial period.

An early deficit in educational attainment could persist for a variety of reasons, including low access to schools, inter-generational effects of low education, and lower prioritization of schooling. Further, areas with Islamic states were also those most likely to have Islamic education systems already in place, and thus may have seen less of a need for an alternative educational system as well as higher costs of adopting new forms of education. At the same time, the implicit and explicit policies of isolating Muslim areas from Christian influence also meant that religious elites themselves were shielded from competition. Given that competition has been shown, at least in the case of Catholics and Protestants, to increase long-term schooling outcomes, the absence of competition could also be another explanation for relatively lower educational attainment among Islamic states (Card et al., 2010; Gallego and Woodberry, 2010).

Research from the Middle East has also suggested that when the power of religious elites is high or increases – for example when they are shielded from competition or their place in society protected – that they will more effectively block access to the types of education that might reduce their authority (Chaney, 2016). Thus, in addition to lower access to formal education as a result of more limited investments by Christian missionaries, less competition among religious elites in areas with Islamic states could also have reduced the likelihood that local elites would invest in providing formal education.

Institutional Insulation of Local Elites

A second mechanism through which centralized Islamic rule could affect contemporary development outcomes is through its impact on the degree to which African populations were ruled indirectly. Crowder (1968) has referred to variation in the practice of indirect rule as "interventionist" or "non-interventionist", with the Islamized Emirates of Northern Nigeria being among the classic cases of a non-interventionist form of indirect rule. Non-interventionist rule meant that colonial authorities interfered little in the affairs of local elites, sometimes enabling increasingly autocratic rule (Crowder, 1968, 219). Relatively autocratic rule during the colonial period could persist into the present, resulting in lower accountability of local leaders and lower trust

in local institutions. Further, the greater the percentage of a country exposed to Islamic rule and thus, more indirect rule, the greater the likelihood that national level institutions will also be affected by a relatively authoritarian legacy in the post-independence period.

We argue that centralized states experienced varying degrees of indirect rule, and that areas with an Islamic basis of authority experienced a more extreme form of indirect rule – non-interventionist rule. As such, local elites in these areas were more likely to be insulated from political competition and had little incentive to change or modernize during the colonial period.

These differences occurred because colonial authorities deemed Islamic religious authority a more legitimate organizing principle than traditional rule (Loimeier, 2013). As a result, colonial administrators were more likely to uphold or even strengthen Islamic authority, and in particular, the authoritarian features which tended to characterize all centralized states. The British Administrator Lord Hailey, for example, described the Islamic Nigerian Emirates in his 1939 African Survey: "The personality of the ruler commands a religious reverence; his orders receive implicit obedience. The Emirate organization has all the authoritarian aspect of the medieval Islamic state, and there is not as yet any evidence of general dissatisfaction with that position…" (Hailey, p. 17 Nigeria Report) This quote illustrates the implicit support by colonial authorities for "authoritarian" rule among political elites in areas with Islamic bases of political authority.

Islam mattered in shaping the extent of indirect rule because of Europeans' perceptions of the legitimacy of rule and the extent to which they were willing to interfere with and limit the more authoritarian aspects of centralized states. While authoritarian institutions do not necessarily translate into poorer development outcomes, these institutions are generally thought to reduce political accountability and minimize channels through which citizens can express their preferences. Thus, areas with Islamic kingdoms may have experienced a greater degree of indirect rule, resulting in the insulation of political elites, and the absence of forms of political accountability. These factors may have in turn limited the incentives of local elites to invest in public goods and services to the population, as they could not easily be held accountable.

Limited Penetration of the Colonial State

The third mechanism through which the presence of Islamic institutions historically might translate into poor development outcomes today is through the extent of penetration of the colonial state. Those areas that remained relatively untouched by colonial rule were also less well positioned to access the post-colonial state and its resources. This mechanism is closely related to the previous mechanisms, but while the first focused on missionary investments, and the second on the power of local elites, this mechanism focuses specifically on non-missionary colonial investments in infrastructure, bureaucracy, and capital cities. Colonial investments could exert a long-run effect on the distribution of infrastructure as well as a population's proximity and access to political power in the post-colonial period.

For example, Huillery (2010) finds that in French West Africa, colonial authorities were more likely to settle in areas that were prosperous in the pre-colonial period, except in cases when those areas were hostile. She further finds that kingdoms were more likely to be hostile and that there is likely a correlation between the degree of hostility and Islam, which is corroborated in colonial reports from the time (Huillery, 2010, 28). As a result, much colonial investment – for example in school infrastructure – was concentrated along the coast, including capital cities. Saint-Louis, on the northern coast of Senegal, was the capital of French West Africa until 1902, at which point it moved to Dakar, also on the Senegalese coast. Further, the capitals of France's inland territories, areas with former Islamic kingdoms, were established much later than the coastal ones. The British colonial capitals in West Africa are all along the West African coast, where Islamic influences were much weaker. By contrast, in East Africa, major capitals were located largely inland, while Islamic influence was concentrated along the coast. Inland East African capitals were also established earlier than their inland West African counterparts, despite colonial powers arriving there later.

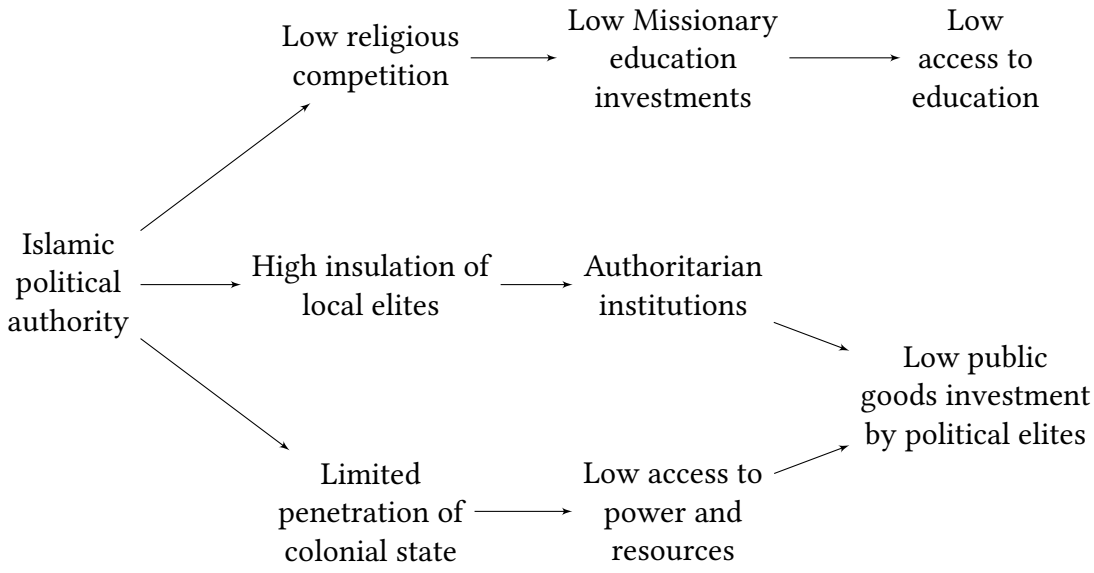
The rationale for the location of colonial capitals varied, but it is notable that despite the significant presence of Islam at the dawn of the colonial period, almost none of the colonial capitals in sub-Saharan Africa were located in Islamic kingdoms, while at least ten were located

within a traditional or Christian kingdom. This may reflect a more general inequality in the distribution of resources and access to the colonial state between Islamic kingdoms and other parts of the continent.

This geographical disparity in colonial investments was compounded by a human capital shortfall, which may have further isolated areas with Islamic kingdoms. Both the colonial and post-colonial state required skilled bureaucrats who would have needed to attend formal schooling and learn the language of the colonizer. Limited access to this type of education would have meant that the average person living in an Islamic kingdom would have had a lower likelihood of being eligible for a bureaucratic position than those with better access to formal education. Even though some Muslim elites in Islamic states did attend formal schools, they would likely have done so in relatively smaller numbers than elites elsewhere. It is likely the human capital gap affected access to political power into the post-independence period, both in staffing bureaucratic roles and leading political movements. Those who took power in the post-independence period were often Christian, even in Muslim-majority countries.

These three mechanisms and their predicted effects are visualized in Figure 1. For all three mechanisms, the proposed effect of Islamic rule is not a feature inherent to religious institutions or practice but rather how a history of Islamic rule shaped the colonial encounter and thus long-term development outcomes.

Figure 1: Diagram of theoretical argument



3.1 Empirical Predictions

We expect to observe lower levels of contemporary economic development in areas that were exposed to Islamic kingdoms. Our main hypotheses are as follows:

H1a Contemporary economic activity should be lower for ethnic groups ruled by Islamic kingdoms than those ruled by traditional or Christian kingdoms.

H1b Contemporary health outcomes should be worse for ethnic groups ruled by Islamic kingdoms than those ruled by traditional or Christian kingdoms.

H1c Contemporary educational attainment should be should be lower for ethnic groups ruled by Islamic kingdoms than those ruled by traditional or Christian kingdoms.

Our hypotheses regarding mechanisms are as follows:

- *Religious competition*:

  H2 *Religious competition*: The number of Christian missions during the colonial era should be lower for ethnic groups ruled by Islamic kingdoms than those ruled by traditional or Christian kingdoms.

- *Institutional Insulation of Local Elites*:

  H3a *Trust in local institutions*: Trust in contemporary local institutions should be lower in areas exposed to Islamic kingdoms.

  H3b *Transformation of national institutions*: Countries with a greater share of area exposed to Islamic kingdoms should experience fewer years of democracy in the post-colonial period.

- *Penetration of the colonial state*:

  H4a *Investments by colonial state*: Areas exposed to Islamic rule should benefit from less investment in non-educational infrastructure by colonial powers than other comparable areas.

  H4b *Access to post-colonial state*: Areas governed by Islamic kingdoms should experience less political representation in post-independence cabinets than other areas.

4 Measuring Historical Legacies

We introduce a new measure of state history that reflects the spatial and temporal bounds of every kingdom in Africa from 1600CE to 1900CE. This time frame reflects the influence of kingdoms that pre-dated extensive colonial interaction by several hundred years and whose influence is likely to be strongest on contemporary outcomes. We compiled this dataset through an extensive review of the Encyclopedia Britannica's regional historical survey articles. We define a kingdom as a politically organized community or major territorial unit having a monarchical form of government headed by a hereditary ruler. We cross-checked the comprehensiveness of this list against several sources and additional kingdoms were added.[2] Our survey uncovered 71 historical kingdoms during this time period, a more comprehensive list than found in previous work. The full list of kingdoms is provided in SI, Section 4.

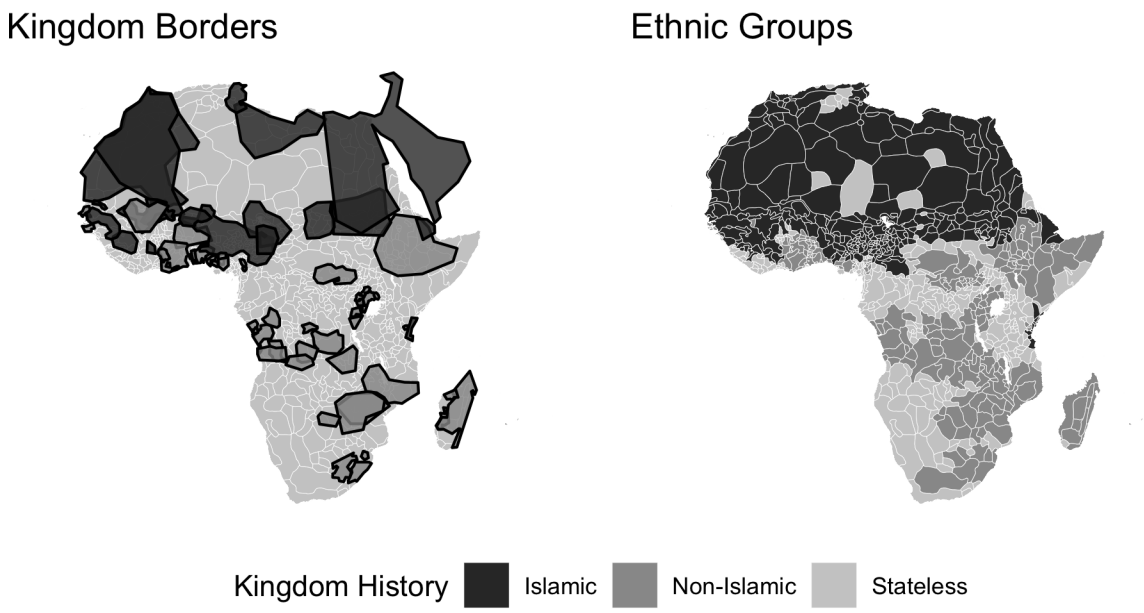
[2]These additional sources included the University of Iowa Museum of Art, the Heilbrunn Timeline of Art History from the Metropolitan Museum of Art, and *African Kingdoms: An Encyclopedia of Empires and Civilizations*.

For each kingdom, we code the approximate start and end dates, territorial boundaries, and the basis of political authority as either Islamic or non-Islamic. Where documents referred to political authority as "monarchical" without an explicit mention of religion, we assume that authority was traditional-dynastic in nature. Maps of territorial boundaries were taken from Encyclopedia Britannica, museum websites, the Library of Congress, and online historical articles. Given the sparsity of data on the territorial extent of historical kingdoms, we rely on a snapshot of the state's boundaries at one point in time, usually corresponding to its maximal spatial extent. We demonstrate the robustness of our results to varying degrees of error in the measurement of these boundaries.

The boundaries of the historical kingdoms included in our survey are presented in Panel A, Figure 2. Of the 71 historical states in our survey, 20 had Islamic bases of political authority and 51 had traditional or Christian bases. Islamic kingdoms were concentrated in northern Africa and along the eastern coast, corresponding with historical Muslim trade routes, while states in southern Africa were almost exclusively traditional or Christian. In subsequent analyses, we take several steps to account for this spatial clustering.

We used this geo-referenced dataset of historical kingdoms to code whether each of the 773 sub-Saharan African ethno-linguistic groups recorded by the anthropologist George Murdock were ruled at any point in time by an Islamic or non-Islamic kingdom. Data on the territorial boundaries of these ethnic groups comes from a 1959 map of ethnographic regions for Africa produced by Murdock and has been used frequently in the literature on state centralization (Michalopoulos and Papaioannou, 2010). Ethnic groups ruled by Islamic and non-Islamic states contemporaneously are coded as having an Islamic basis of political authority because these institutions were present in at least some of the ethnic group's territory. We find 313 ethnic groups were not included within the boundaries of any historical states, 243 were within traditional or Christian states, 179 were within Islamic states, and 55 had both Islamic and non-Islamic states.

Figure 2: Historical State Centralization



4.1 Limits of Existing Measures of Centralization

Our measure of historical ethnic centralization in Africa contrasts with existing work which usually relies on an Ethnographic Atlas compiled by Murdock in 1967. The data cover 1267 ethnolinguistic groups across the globe (392 of which are in Africa) and provide a wealth of group-level variables, including a measure of political complexity. While this data has become standard in the literature on state development in Africa, it has numerous shortcomings. Importantly, the Atlas explicitly codes only "legitimate" institutions, rather than institutions imposed by military force. While the degree of ethnic group centralization may also have an influence on contemporary development outcomes, in this paper we are interested in whether and how state institutions had long-run effects, even when they were imposed on groups by rival ethnic groups through territorial expansion.

Our measure also has several analytic advantages, including the transparency of the coding process and the exhaustive coding of all ethnic groups. The Ethnographic Atlas provides little detail on how cases are coded and there are prominent historical errors. For example, the Atlas codes the Kongo ethnic group as a petty chiefdom (the lowest level of centralization) despite

the consolidation of states into the Kingdom of Kongo sometime in the late 1300s which lasted until the mid 1600s with the invasion of the Portuguese (Thornton, 1977, 2001). Without a clear coding criteria, it is hard to determine whether this coding intentionally reflects some aspect of the group's centralization, is the result of a simple typographical error, or reflects the historical knowledge available five decades ago when the Atlas was compiled. Further, the Atlas is based on the earliest available sources, which, for many groups in Africa, are sources compiled during the colonial period. This is problematic as it is an ex-post measure of "pre-colonial" centralization, which itself may be in part a product of colonial rule. Finally, it is difficult to determine how the Atlas addresses change in an ethnic group's degree of centralization over time, as it treats centralization as a fixed attribute of ethnicities rather than an attribute which has changed in response to political and social pressures over time.

Beyond coding criteria, the list of ethnic groups in Murdock's Atlas are not exhaustive. Historically influential ethnic groups, such as the Hausa of West Africa, are not included. We are not aware of an explicit random sampling strategy, and the exclusion of entire regions, such as the Horn of Africa, suggest that no such strategy was in place. Of the 773 ethnic groups in sub-Saharan Africa, only 369 have associated data on political centralization. The significant degree of missing data poses serious selection concerns for existing analyses of state centralization and contemporary development as ethnic groups with lower levels of economic development (as measured by night light density) were less likely to have their degree of state centralization recorded in the Ethnographic Atlas. By selecting on the dependent variable, these analyses could be excluding a large number of disconfirming cases.

How much of a difference does our alternative measure of state centralization make? Examining the data, there is a positive correlation of .17 between Murdock's measure of ethnic group centralization and our measure of state centralization, indicating significant divergence between these two measures. Differentiating between these two potential mechanisms by which centralization may have had an impact on contemporary development outcomes is important. As the following empirical sections show, the existing narrative that historical centralization has unam-

biguously positive effects is complicated by our analysis of the basis of political authority.

4.2 Development Outcomes

We study the long-run impact of historical institutions on several important contemporary development outcomes: economic activity, education, and health. For each of these measures, we aggregate geo-located data to the ethnic group level. Because reliable, disaggregated data on economic activity are not available for most of sub-Saharan Africa, we follow the literature in using the density of light at night as a proxy (Michalopoulos and Papaioannou, 2013). This measure has been shown by numerous studies to be a reliable indicator of economic activity (Elvidge et al., 1997; Doll et al., 2006; Mellander et al., 2015). The data come from the Defense Meteorological Satellite Program's Operational Linescan System (DMSP-OLS) which captures heat emanating from the earth coded on a range from 0 to 63. We use the data available for 2013, the most recent data available. We measure the average luminosity recorded within the boundaries of each ethnic group and adjust by ln(x + .01) to account for the prevalence of low-luminosity areas.

Our next two contemporary development measures come from the nationally representative Demographic and Health Survey (DHS) administered across much of sub-Saharan Africa by USAID. We collected 118 geo-referenced surveys conducted by DHS from 1990 to 2017. Some ethnic group areas were not surveyed at all. Some of these groups were relatively small, and others were conflict areas that could not be reached by DHS, such as much of Somalia. Individual-level responses are spatially aggregated to the ethnic group level.

Our second development outcome is the infant mortality rate. Other measures of health quality are also of potential interest but infant mortality is strongly correlated with local economic conditions as well as female literacy (Schell et al., 2007). Previous studies into the effects of state centralization have found an impact on infant mortality rates (Gennaioli and Rainer, 2005). Infant mortality is measured as the proportion of infant deaths under 1 year of age per 1,000 live births. For each ethnic group, we calculate the total number of infant deaths and live births reported by respondents in the group's spatial boundaries.

Our third measure is educational attainment, measured as average years of schooling. We analyze educational attainment because it a particularly important pathway contributing to variation in economic development that is known to have been affected by the nature of interaction with colonial powers. Previous studies into the effects of state centralization have found an impact on adult illiteracy and educational attainment (Gennaioli and Rainer, 2005).

5 Empirical Analysis

Taking a broad view, the patterns of development across sub-Saharan Africa align with the expectations of our theory. Table 1 breaks down our primary variables of interest by state history across all 773 ethnic groups. Ethnic groups ruled historically by Islamic kingdoms had a lower density of night lights than areas that had traditional or Christian states or areas that had no history of state consolidation. Of these three types of state history, areas with traditional or Christian kingdoms exhibit the highest night light density today. The rate of infant deaths was significantly higher than in traditional or Christian areas or areas without states, with about 82 infant deaths per 1,000 live births in comparison to about 65 infant deaths elsewhere. Respondents in areas with Islamic states have about 50% fewer years of formal education, attending formal schools for approximately 3 years on average, in comparison to four and a half or five years in non-Islamic areas.

Table 1: Descriptive Statistics

Kingdom History	N	Night Lights	Infant Mortality	School Years
Non-Islamic	243	0.24	65.00	4.42
Islamic	234	0.16	82.22	3.05
Stateless	296	0.20	67.22	4.89
Total	773	0.20	71.06	4.19

While these descriptive statistics are consistent with our theoretical expectations, there are important concerns about omitted variables that could confound the relationship between historical institutions and contemporary development outcomes. In particular, selection into particular

state types as a function of pre-existing local conditions could bias our results. To account for potential alternative drivers of contemporary outcomes, we collect a number of controls derived from the relevant literature on the effects of state centralization, discussed below. We are careful to select variables that are not a consequences of the policies adopted by colonial powers.

5.1 Empirical Strategies

We employ three complementary empirical strategies to address the important selection concerns. First, we employ the full sample of ethnic groups and control for a wide range of potential confounding variables. This analysis relies on the assumption that our statistical model captures all of the relevant potentially confounding variables. To relax this assumption, we narrow our scope to a small sample of neighboring ethnic groups where the assignment into Islamic or non-Islamic kingdoms can reasonably be thought to be random and analyze the same development outcomes. Finally, we use a matching strategy to select a sample of ethnic groups that balance across our set of covariates, approximating the random assignment of institutional types. This matching process is a compromise between the strong restrictions imposed by the neighbors analysis and the broad cross-sectional regression. In all analyses, we find strong support that Islamic kingdoms were associated with higher rates of infant mortality and fewer years of formal education. Estimates of the impact of historical institutions on the density of night lights are more sensitive to the particular model specification but are estimated to be lower in areas under Islamic rule in two of our three empirical strategies.

5.1.1 Cross-national regression

Our first empirical strategy is to compare all ethnic groups in sub-Saharan Africa and to include a battery of controls using data on pre-colonial conditions. We estimate the impact of Islamic and non-Islamic state institutions on contemporary development outcomes with the following regression model:

$$y_i = \alpha_0 + \beta_1 \cdot \text{Islamic}_i + \beta_2 \cdot \text{Stateless}_i + \delta_i \cdot \text{Controls} + \epsilon_i$$

The unit of analysis is each of 773 sub-Saharan ethnic groups identified in Murdock's 1959 map of ethnographic regions for Africa. The dependent variable y_i is one of several indicators of contemporary development outcomes measured in the historical homeland of the ethnic group i. α_0 is the intercept which captures the mean development outcomes in traditional and Christian areas when all other control variables are zero. *Islamic* is an indicator for whether an ethnic group's homeland was within an Islamic kingdom. β_1 measures the difference in the average value of the outcome variable in ethnic groups that were part of Islamic kingdoms in comparison to non-Islamic kingdoms, which serve as the base case. *Stateless* is an indicator denoting that there were no historical kingdoms overlapping with the ethnic group's homeland.

We include a battery of controls that address potential selection into state type, including estimated population in 1800CE, land suitability for agriculture, land inequality, the length of internal rivers, distance to the coast, the length of colonial railways, total area, average elevation, rough terrain, malaria suitability, the presence of oil wells and diamond mines, total slave exports, latitude and longitude, and fixed effects for the country in which most of the ethnic group's territory falls.[3] Models using DHS data also include controls for the number of surveys in the ethnic group's territory. We use heteroskedasticity robust (HC1) standard errors clustered on the country.

5.1.2 Neighbors Strategy

The second strategy focuses on a subset of ethnic groups under Islamic kingdoms that neighbor ethnic groups under non-Islamic kingdoms. Our identification assumption is that neighboring ethnic group pairs were as-if randomly assigned to historical rule under either Islamic or non-Islamic kingdoms. More concretely, our analysis assumes that the expansion of competing historical kingdoms was halted for reasons that were exogenous to contemporary development

[3]Details on data sources in SI, Section 1.

outcomes, such as the presence of natural barriers separating the territory of two ethnic groups. These assumptions are less likely to hold for the assignment of ethnic groups to rule by any state or not, so ethnic groups without a history of state consolidation are not included in the analysis.

Given the almost complete segregation of Islamic and non-Islamic kingdoms, these ethnic group neighbors only appear in a very particular band along the equator and along the eastern coast in what is now Tanzania. The spatial distribution of our ethnic neighbors appears in Figure 3. Given our identification assumptions, our analysis identifies the local average treatment effect (LATE) of being assigned to either an Islamic or non-Islamic kingdom for ethnic groups along this band. We cannot rule out the possibility that consolidation under Islamic states had a different effects for groups that did not border non-Islamic kingdoms or that were located further north or south.

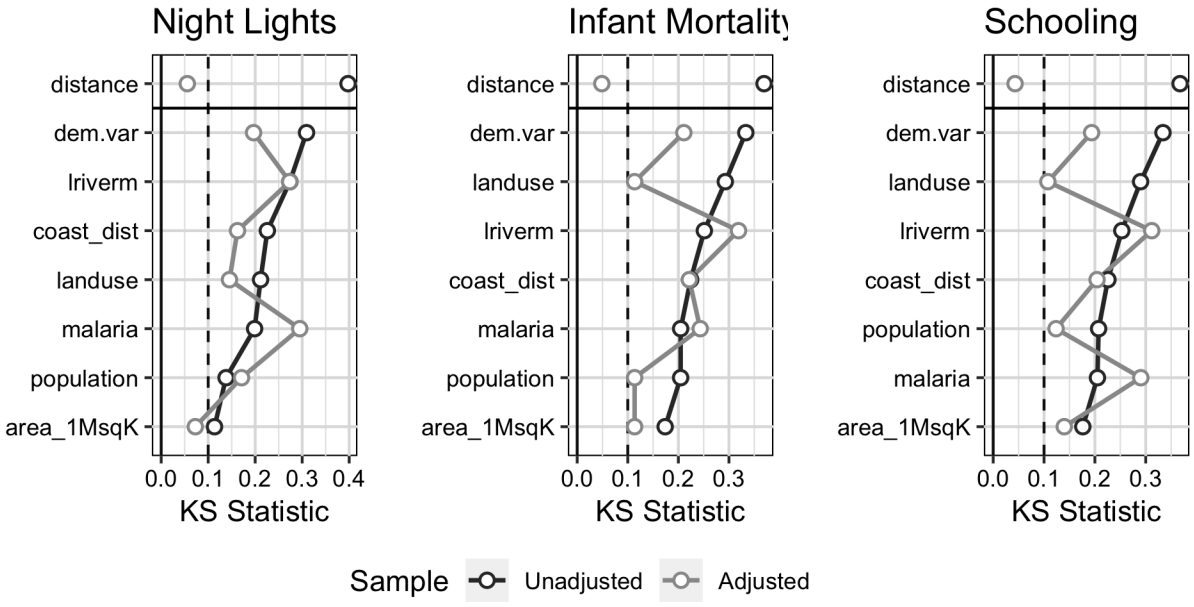
Figure 3: Ethnic group neighbors

5.1.3 Matching Strategy

Our third empirical strategy uses a subset of matched ethnic groups chosen to improve balance across the observed covariates. Matching helps replicate a randomized experiment as closely as possible by balancing treatment and control groups across covariates (Stuart, 2010). As in the

neighbors analysis, we drop all ethnic groups without histories of state centralization and focus only on the comparison of groups with Islamic states to non-Islamic states. We use "nearest neighbor" matching which matches each treated unit with the "closest" control unit across several covariates. We select these covariates from our battery of control variables and choose a combination which yields the greatest improvement in the Kolmogorov-Smirnov statistic, a standard test for equality between two distributions, which is shown in Figure 4. Because not all ethnic groups have data on infant mortality and schooling, we show separate balance tests for each subsample of the data. Our covariates are population in 1800CE, land suitability for agriculture, the length of internal rivers, the distance to the coast, the total area, rough terrain, and malaria suitability. The matching helps improve balance on rough terrain and land suitability in particular. Because the algorithm excludes control units which are not matched to treated units, the estimand for this analysis is the average treatment effect for the treated (ATT) rather than the average treatment effect (ATE). Matching is performed using the MatchIt statistical package (Ho et al., 2013).

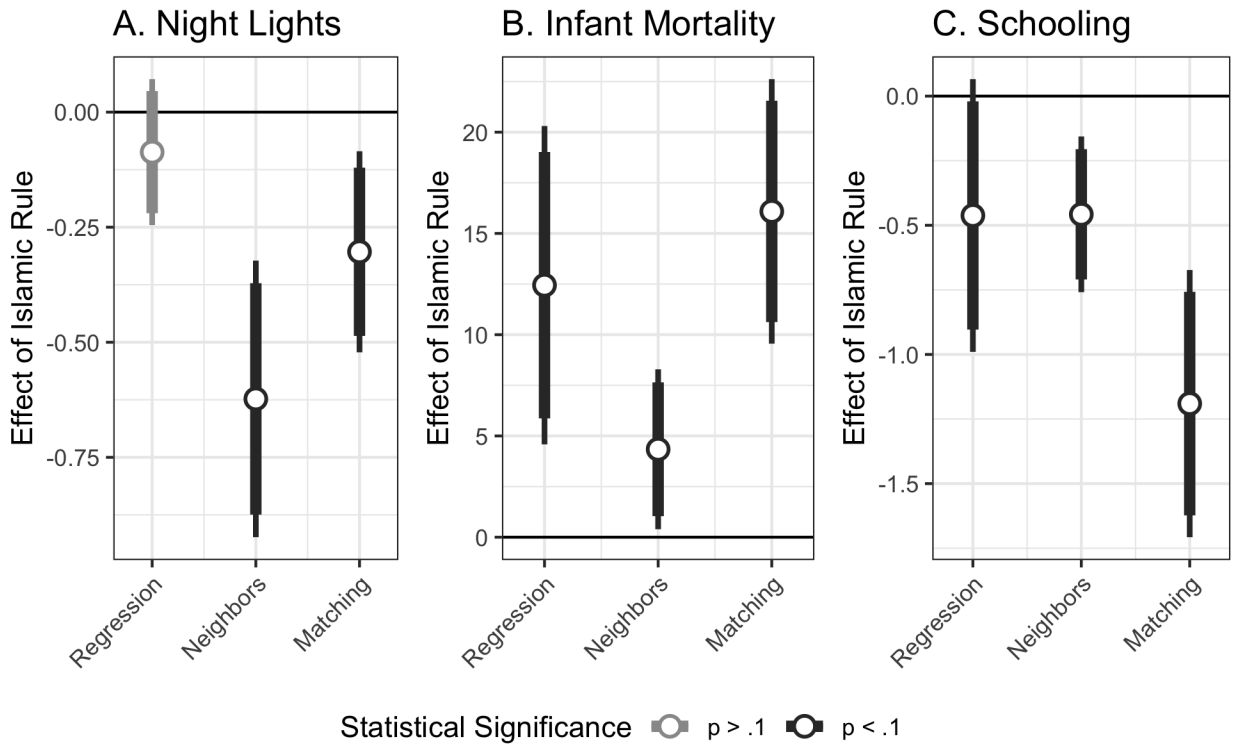
Figure 4: Covariate Balance



5.2 Main Results

The effect of Islamic rule on our three primary dependent variables is shown in Figure 5, and in Tables 7, 8, and 9 for our three empirical strategies, cross-national, neighbors, and matching, respectively. We find empirical support for Hypotheses 1a, 1b, and 1c in almost all of the empirical analyses: contemporary development outcomes are worse today in areas that were ruled by Islamic kingdoms in comparison to comparable areas ruled by traditional or Christian kingdoms. In particular, the density of night lights tends to be lower in areas with Islamic states than traditional or Christian states, infant mortality is significantly higher, and average years of schooling are also much lower.

Figure 5: Main Results



Note: Thick bars indicate confidence intervals at the $p < .1$ level, while thin bars indicate the $p < .05$ level.

The first element of Figure 5 shows the impact of Islamic rule on the density of night lights. The correlation is in the expected negative direction across all three empirical strategies, ranging

between estimates of a reduction in logged night light density of -.14 to -.09, and is significant for two of the three specifications. A 0.14 reduction in logged night light density corresponds to about one-third of a standard deviation of average night light density across the ethnic groups in the study. Aggregating the data to the national level shows that this effect corresponds to an average reduction in GDP per capita of about 53 USD using country level night lights and GDP data from 2000 provided by the World Bank. The density of night lights is lower and statistically significant if the cross-sectional analysis is expanded to include ethnic groups in North Africa.

We find that infant mortality rates are significantly higher in areas ruled by Islamic kingdoms in all three of our empirical analyses, supporting Hypothesis 1b. The point estimates are shown in the second element of Figure 5. In addition to the standard controls, the models also include controls for the number of DHS surveys conducted in the ethnic group's territory. Depending on the empirical strategy used, infant mortality rates are between 4.7 and 13.8 points higher for ethnic groups that lived under Islamic states rather than non-Islamic states.

Infant mortality across all ethnic groups was 81 per 1,000 on average, so Islamic states are associated with between a 6% and a 17% increase in infant mortality, depending on the empirical strategy. To use another metric, the estimates indicate that there were between 3,663 and 10,757 additional infant deaths among the 779,460 births recorded in areas under Islamic kingdoms, as compared to the expected rate of infant deaths under traditional or Christian kingdoms (Riddell et al., 2017). We find similar results when we analyze infant mortality across decades, although the gap seems to be narrowing over time (see SI, Section 5.3).

Finally, we find that the average years of schooling is also much lower in areas ruled by Islamic kingdoms, as shown in the third element, supporting Hypothesis 1c. The average number of school years was about 4 years. Across our empirical strategies, respondents from areas with Islamic kingdoms completed between half a year and a year and a quarter fewer years of formal education than respondents in areas with traditional and Christian kingdoms, a reduction of about 12% and 31% respectively. These differences were statistically significant at least at the $p < .1$ level and in the expected direction in each of the empirical models. The effect of Islamic kingdoms

on average years of schooling is not statistically significant at the $p < .05$ level but is statistically significant at $p < .1$. We also find similarly sized reductions in average schooling when we break down the sample into men and women, indicating that the results are not due to beliefs about the value of education for women, and when we break the results down by age, indicating that the effects did not come from a particular cohort of students (see SI, Section 5.3).

5.3 Alternative Explanations

Our theory maintains that the gap in contemporary development outcomes is a relatively recent product of the interaction between colonial administration and historical states rather than a function of persistent and long-running under-development in these areas. To test the possibility that Islamic kingdoms took root in areas with unfavorable conditions for development, we compare a set of measures of historical development conditions in areas with and without Islamic kingdoms. We find that along a number of dimensions, Islamic kingdoms are found in places with conditions that reflect relatively greater development, or conditions more conducive to development. For example, population density in 1800CE was slightly higher in Islamic kingdoms than non-Islamic kingdoms, and land suitability for agriculture, distance to water, elevation, and climate and soil conditions, were about a third of a standard deviation (sd = 6.5) higher in Islamic kingdoms than non-Islamic kingdoms (see SI, Section 3.1).

A second alternative explanation emphasizes the role of Islamic beliefs rather than Islamic institutions as an impediment to long-run development. If our results are due to the influence of the population's beliefs rather than the role of religious authorities in political institutions, we would expect to see variation in development outcomes between ethnic groups ruled by Islamic states as a function of contemporary religious observance. Specifically, our three development outcomes should be worse for ethnic groups with a greater proportion of Muslims, and it should not vary according to state history. We test this possibility using data on religious affiliation at the ethnic group level, replicating the cross-sectional regressions from the main analyses but interacting state history with contemporary religious observance.

We find, as in our main specification, that the density of night lights and years of schooling are higher in non-Islamic states while infant mortality tends to be lower. As documented in other empirical work, years of schooling are significantly lower in ethnic groups with a higher proportion of Muslims (Platas Izama, 2016), a trend that holds for groups with both exposure to Islamic kingdoms and non-Islamic kingdoms. In ethnic groups that were not ruled by Islamic states, higher proportions of Muslims are associated with worse development outcomes today, corresponding with the trends identified in education, but this trend does not contribute to the gap between Islamic and non-Islamic kingdoms. Together the results provide evidence against the hypothesis that our trends are driven by Islamic beliefs alone (SI, Section 3.2).

A final alternative explanation is that the contemporary development outcomes of areas ruled by Islamic kingdoms reflect a shift in global trade routes from the Sahara to the Atlantic Coast. To test this, we interact our primary independent variable with a measure of distance from historical trans-Saharan trade routes. We find little support for the hypothesis that patterns of trade moderate the effect of Islamic kingdoms. While development outcomes are significantly worse for ethnic groups further removed from the coast, these trends are present in both Islamic and non-Islamic states. As distance from the coast increases, we see reductions in night lights and years of schooling and increases in infant mortality under both Islamic and non-Islamic kingdoms. For our results to be explained by the shifting of trade routes, these differences would have to be larger for Islamic states than non-Islamic states, but we do not find evidence of such differential treatment effects (SI, Section 3.3).

6 Testing Mechanisms

In this section, we test a set of empirical predictions derived from the observable implications of the three mechanisms we have proposed linking Islamic rule to contemporary development outcomes.

6.1 Religious competition

We find strong evidence that religious competition was weaker in areas ruled by Islamic states than areas rules by traditional or Christian kingdoms or area without states. We use the presence of Christian missions as a proxy for religious competition because local religious elite would have to compete with the ideological and material services provided by Christian missionaries. Data on the location of missions comes from a map produced by William Roome showing all Protestant and Catholic missions in 1924. Other scholars have used these data to show that the presence of missions impacted the degree of religious conversion, supporting their use as a proxy for religious competition (Nunn, 2010). Summary statistics, provided in 2, support Hypothesis 2, the number of missions in non-Islamic kingdoms is more than three times larger than in Islamic kingdoms.

Table 2: Summary Statistics: Christian Missions by Type of Pre-Colonial Institution

	Count	Min	Median	Mean	Max	Total
Non-Islamic	243	0	0	2.59	31	630
Islamic	234	0	0	0.53	13	125
Stateless	296	0	0	1.52	28	450
Total	773	0	0	4.65	72	1205

To control for potential confounders, we regress the number of Christian missions on kingdom type and the same controls used in previous analyses. As shown in Table 3, the coefficient on Islamic kingdom is negative in all specifications, and significant in all but the model with country fixed effects. In the model without controls, there are approximately 2 fewer missions in areas with Islamic kingdoms compared to those with non-Islamic kingdoms. Introducing controls accounts for about half of this variation, reducing the impact of Islamic kingdoms to about 1 fewer mission per ethnic group.

These results provide relatively strong evidence that missionaries were less likely to operate in Islamic kingdoms. As missionaries provided much of the formal education in many African countries during the colonial period, this likely had a direct effect on educational attainment, as suggested by (Platas Izama, 2016). The downstream effects of education may also explain the

negative correlations found between Islamic kingdoms and economic development as well as infant mortality.

Table 3: Christian Missions

	No Controls (1)	Controls (2)	Fixed Effects (3)
Islamic Kingdom	-2.06^{***}	-0.80^{**}	-0.60
	(0.54)	(0.35)	(0.38)
Stateless	-1.07^{*}	-0.60	-0.58
	(0.55)	(0.41)	(0.42)
Constant	2.59^{***}	-0.90	0.64
	(0.53)	(0.94)	(1.83)
Controls		✓	✓
Country FE			✓
Observations	773	773	773
R^2	0.06	0.27	0.40
Note:			*p<0.1; **p<0.05; ***p<0.01

6.2 Insulation of Local Elites

The second proposed mechanism is that local elites in areas with Islamic kingdoms were more insulated from political pressures than in other areas. This is because colonial administrations relied to a greater degree on systems of indirect rule and consolidated power in the hands of existing political leaders. We test this mechanism at the local and national level.

At the local level, we expect that the insulation of local elites results in less trust in the effectiveness of these institutions. We use data from Round 6 of the Afrobarometer survey to examine whether those living in areas of former Islamic kingdoms have lower levels of trust in local governments. Specifically, we use a question which asks "How much do you trust each of the following, or haven't you heard enough to say?" Because authority at the local level is fragmented between several players, we measure trust in local councils, traditional leaders, and religious leaders. Answers range from "Not at all" (0) to "A Lot" (3).

As shown in Table 4, in models without country fixed effects, we find a reduction in trust in traditional leaders in areas with Islamic kingdoms compared to areas with traditional or Christian

kingdoms. In these areas, trust in traditional leaders was approximately .1 scale points lower. We also find a negative relationship between Islamic rule and trust in local councils, and a positive association with trust in religious leaders, although these latter effects are not statistically significant. The negative association between Islamic kingdoms and traditional leaders disappears when we include country level fixed effects.

Table 4: Trust in Traditional Leaders

	Dependent variable:		
	Local Councils	Traditional Leaders	Religious Leaders
	(1)	(2)	(3)
Islamic	−0.036	−0.102*	0.021
	(0.061)	(0.062)	(0.053)
Stateless	0.048	−0.020	0.018
	(0.051)	(0.052)	(0.044)
Constant	1.346***	1.809***	1.810***
	(0.116)	(0.129)	(0.101)
Observations	464	461	464
Controls	✓	✓	✓
R^2	0.183	0.180	0.184
Note:			*p<0.1; **p<0.05; ***p<0.01

We use data from Polity IV to examine variation in national-level institutions across sub-Saharan Africa. We test the association between the proportion of ethnic groups ruled by Islamic kingdoms with the country's average polity score after independence, the number of years it was considered a democracy, and the number of successful and attempted coups. The unit of analysis is the country, which limits statistical power. We include controls for the presence of oil wells and diamond mines.

Table 5: Post-Independence Democratization and Regime Stability

	Dependent variable:			
	Polity Score	Democracy Years	Successful Coups	Attempted Coups
	(1)	(2)	(3)	(4)
Islamic Rule	-2.431^{*}	-0.192^{*}	1.422^{*}	0.776
	(1.385)	(0.109)	(0.778)	(1.269)
Oil	-0.115	-0.006	-0.085	-0.123
	(0.111)	(0.009)	(0.062)	(0.101)
Diamonds	0.014	0.001	-0.028	-0.013
	(0.114)	(0.009)	(0.064)	(0.104)
Constant	-1.731^{**}	0.342^{***}	1.608^{***}	3.089^{***}
	(0.658)	(0.052)	(0.389)	(0.635)
Observations	51	51	47	47
R^2	0.120	0.099	0.094	0.035
Note:				*p<0.1; **p<0.05; ***p<0.01

As predicted by the theory, we find a negative correlation between the fraction of ethnic groups exposed to Islamic rule and a country's polity score as well as its percentage of post-independence years as a democracy, as shown in Table 5. Countries where all major ethnic groups were exposed to Islamic rule had polity scores that were on average 2.4 points lower than countries where none of the major ethnic groups were exposed to Islamic rule. These countries also experienced 20 percent fewer years under democracy than compared to groups with no experience under Islamic rule.

The number of successful coup attempts was higher in countries with more Islamic states, with 1.4 additional coup attempts in countries completely treated by Islamic rule versus those without any experience under Islamic rule. The number of attempted coups was also slightly higher, although this difference was not statistically significant, suggesting that the mechanisms is primarily through the likelihood that coups succeed and not in the proclivity of the army to stage a coup.

6.3 Penetration of the Colonial State

Finally, we examine whether areas with Islamic kingdoms experienced lower penetration in general by the colonial state, as well as whether ethnic groups exposed to colonial states were underrepresented in post-independence governments. It has already been noted that post-independence leaders tended to be Christian, even in Muslim majority countries (Christensen and Laitin NB). It is likely groups exposed to Islamic kingdoms were more generally underrepresented in post-independence bureaucracies and among the political elite. To test this hypotheses, we propose to use data on the ethnic composition of cabinets in the post-independence period. Here, we aim to test whether ethnic groups exposed to Islamic kingdoms are underrepresented compared to their share of the total population. We collect data on the representation of ethnic groups in national level institutions from the Ethnic Power Relations dataset (Vogt et al.).[4]

Table 6 shows the results of regressing an ethnic group's power status on its historical legacies of state centralization. We find that ethnic groups ruled by Islamic states had less power in national governments across the period from 1946 until 2010 compared to ethnic groups ruled by traditional or Christian kingdoms, with average ethnic power status scores that were lower by .08 points. These results persist when we look only at the immediate post-colonial period, where ethnic groups ruled by Islamic states received ethnic power status scores .06 points lower than groups ruled by traditional or Christian kingdoms.

[4]See SI, Section 1.2 for details on coding.

Table 6: Ethnic Power Relations

	Dependent variable:	
	Average Power Status	Post-colonial Power Status
	(1)	(2)
Islamic	-0.076^{***}	-0.059^{*}
	(0.029)	(0.034)
Stateless	-0.046	-0.017
	(0.029)	(0.034)
Constant	1.142^{***}	1.132^{***}
	(0.021)	(0.025)
Observations	843	843
R^2	0.008	0.004
Adjusted R^2	0.006	0.001
Note:	*p<0.1; **p<0.05; ***p<0.01	

7 Robustness

We conduct a number of robustness checks, summarized in brief here, and presented in full in SI, Section 5. The results demonstrate that the relationships established in the paper do not depend on a particular set of specifications but are found across a broad range of possible analyses.

First, we conduct a sensitivity analysis, which estimates the potential effect of a binary confounding variable on continuous dependent variables with normally distributed error terms. Almost all of the observed covariates in the infant mortality and schooling models lie outside the threshold of statistical significance, which means that any unobserved confounding variable would have to have a stronger correlation with both the presence of Islamic kingdoms and the dependent variables than any of the controls included in the model to reverse our findings (SI Section 5.1).

Second, to account for measurement error in the territorial extent of historical kingdoms, we shift each kingdom in a random direction a set distance proportional to its size, and repeat 20 times. Across our three measures of contemporary development outcomes, the results are broadly robust to randomly shifting the kingdom borders a moderate distance from their original location

(SI Section 5.2.1). We also employ different criteria for coding ethnic groups as included within the borders of a historical kingdom, and show that our results are robust to imposing almost any alternative coding rule (SI Section 5.2.2). Finally, we disaggregate our dependent variables by decade (infant mortality and education), and by gender (education), and find similar effects to the main effects we report (SI Section 5.3).

8 Conclusion

Recent work has provided evidence that points in two divergent directions regarding the long-term effects of historical institutions. On the one hand, scholars have argued and found evidence supporting the idea that early statehood was a boon for contemporary development. A central idea in this work is that the presence of a state – centralized political authority with a monopoly over the use of violence within a given territory – is a prerequisite for economic development. States facilitate trade and help overcome collective action problems. In so doing states provide either public goods and services or an environment in which private actors are incentivized to do so. On the other hand, institutions can lock-in inefficiencies, creating vicious cycles of extraction and predation, leading to underinvestment by both public and private actors.

In this paper, we bring together these two sets of theoretical intuitions, and demonstrate that the religious basis of political authority is central to understanding how historical institutions affect contemporary economic development in Africa. These findings not only demonstrate how the religious basis of authority shapes the long-term impacts of historical institutions, but also helps demonstrate and explain how economic reversals of fortune have unfolded in a part of a world that is generally thought to be underdeveloped as a whole. Pre-colonial Africa was home to expansive kingdoms and booming trade. Areas ruled by Islamic kingdoms were, if anything, better off than areas that were not, as Islamic kingdoms were centers of trade and scholarship. Today, by contrast, it is not an exaggeration to say that these former economic hubs are proverbial backwaters. Our theory and findings help illuminate and make sense of this stunning transfor-

mation by showing how the religious basis of authority that was once advantageous became a detriment to long-term development with the advent of colonial rule.

Appendix

Table 7: Cross-sectional regression results, showing full controls

	Night Lights			Infant Mortality			Schooling		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Islamic	−0.08	−0.04	−0.09	14.35***	4.87	12.70***	−1.37*	0.38	−0.47*
	(0.06)	(0.06)	(0.07)	(4.39)	(4.51)	(3.44)	(0.71)	(0.49)	(0.27)
Stateless	−0.04	−0.01	−0.02	−2.57	−2.84	1.85	0.47	0.42	0.19
	(0.06)	(0.05)	(0.03)	(4.45)	(3.35)	(1.67)	(0.44)	(0.31)	(0.27)
Population (100k)		0.10	0.07		−1.51	−0.95		−0.07	−0.03
		(0.08)	(0.07)		(1.30)	(0.94)		(0.15)	(0.06)
Land Suitability		0.01	0.01***		−0.01	0.11		0.10***	0.04***
		(0.01)	(0.01)		(0.27)	(0.20)		(0.02)	(0.01)
River Length (100km)		0.01	−0.004		2.01	0.70		−0.08	−0.04
		(0.02)	(0.02)		(1.26)	(1.23)		(0.10)	(0.09)
Coast Distance (100km)		0.10***	0.01		−1.20	1.25		0.34	0.03
		(0.03)	(0.03)		(2.66)	(1.97)		(0.29)	(0.17)
Area (100km^2)		−0.02***	−0.03***		0.72	1.42**		−0.003	−0.13***
		(0.004)	(0.01)		(0.47)	(0.66)		(0.03)	(0.04)
Elevation (m)		−0.00	−0.00		−0.00**	−0.00		−0.00	0.00
		(0.00)	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)
Rough Terrain (m^2)		−0.00	0.00		−0.01	−0.00		0.003***	0.002*
		(0.00)	(0.00)		(0.01)	(0.01)		(0.00)	(0.00)
Malaria		−0.00	−0.00		0.02*	0.02*		0.00*	0.00*
		(0.00)	(0.00)		(0.01)	(0.01)		(0.00)	(0.00)
Latitude		−0.19	0.16		11.53	25.96		8.08***	4.19
		(0.27)	(0.24)		(18.66)	(18.79)		(2.08)	(2.65)
Longitude		−0.005	−0.005		0.49	−0.91		−0.12***	−0.11**
		(0.004)	(0.01)		(0.34)	(0.57)		(0.02)	(0.05)
DHS Surveys		−0.002	−0.00		−0.27	0.37		−0.02	−0.04
		(0.002)	(0.01)		(0.23)	(0.66)		(0.01)	(0.03)
Constant	0.24***	0.42**	0.05	78.04***	76.56***	26.85	4.42***	−1.53	0.48
	(0.07)	(0.19)	(0.17)	(3.33)	(12.33)	(18.06)	(0.40)	(1.27)	(2.25)
Controls		✓	✓		✓	✓		✓	✓
Country FE			✓			✓			✓
Moran's I	0.086***	0.044***	0.02***	0.079***	0.045***	0.01***	0.157***	0.071***	0.018***
Observations	773	773	773	639	639	639	640	640	640
R^2	0.01	0.31	0.48	0.06	0.17	0.38	0.11	0.45	0.65

Notes: The Moran's I statistic tests for the presence of spatial correlation in the model's residuals. All models use heterskedasticity-consistent (HC1) standard errors clustered on the country. *p< 0.1, **p< 0.05, ***p< 0.01

Table 8: Neighbors Analysis

	N	Average Night Lights	Average Infant Mortality	Average Schooling
Islamic	35	0.23	91.40	3.34
Non-Islamic	36	0.38	86.76	3.63
Difference		-0.14***	4.64***	-0.29**
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 9: Matching

	Night Lights		Infant Mortality		Schooling	
	(1)	(2)	(3)	(4)	(5)	(6)
Islamic Kingdom	-0.11^{***}	-0.09^{**}	13.68^{***}	13.86^{***}	-1.46^{***}	-1.27^{***}
	(0.04)	(0.04)	(3.45)	(3.51)	(0.30)	(0.27)
Population		0.00^{***}		-0.00		0.00^{**}
		(0.00)		(0.002)		(0.00)
Landuse		0.0004		0.13		0.02
		(0.004)		(0.33)		(0.03)
River Length		0.00^{**}		0.00^{**}		-0.00
		(0.00)		(0.00)		(0.00)
Area		-0.00		-0.00^{***}		-0.00
		(0.00)		(0.00)		(0.00)
Malaria		-0.36^{**}		3.09		3.59^{***}
		(0.15)		(16.95)		(1.36)
Coast Distance		-0.00^{***}		-0.00		-0.00^{*}
		(0.00)		(0.00)		(0.00)
Rough Terrain		-0.00		0.00		0.00
		(0.00)		(0.00)		(0.00)
Constant	0.27^{***}	0.46^{***}	78.71^{***}	80.97^{***}	4.51^{***}	2.60^{***}
	(0.03)	(0.10)	(2.81)	(11.29)	(0.25)	(0.92)
Observations	344	344	278	278	272	272
R^2	0.02	0.29	0.05	0.09	0.30	0.30

Note: *p<0.1; **p<0.05; ***p<0.01

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