Precolonial Legacies and Institutional Congruence in Public Goods Delivery: Evidence from Decentralized West Africa

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Abstract: Scholars have long identified political bias in how African politicians distribute state resources. Though much of this literature focuses on the role of group identities, centrally ethnicity and partisanship, this article shifts focus to local governments, increasingly important players in basic social service provision, to argue that public goods allocation under democratic decentralization is intimately shaped by historical identities. Specifically, I highlight the role of identities rooted in the precolonial past. To explain this, the article articulates a theory of institutional congruence, arguing that greater spatial overlap between formal institutional space and informal social identities improves the ability of elites to overcome local coordination problems. Looking to the West African state of Senegal, I deploy a nested analysis, drawing on interviews with rural Senegalese elites to understand how the precolonial past shapes local politics today via the social identities it left behind. I secondly test the argument with a unique, geocoded dataset of village level public goods investments in the 2000s, finding that areas that were home to precolonial states distribute goods more broadly across space. These patterns cannot be explained by ethnic or electoral dynamics. Finally, two brief case studies of on-the-line cases illuminate how the presence of precolonial identities facilitates local cooperation. The article thus calls into question our ability to treat identities as static over time by highlighting the interactive relationship between institutions and identities at the same time that it calls attention to emerging sub-national variation in local government performance following decentralization reforms across the developing world.

Introduction

Scholars have long recognized political bias in how sub-Saharan African governments deliver development projects and state resources. Recently, renewed attention to this question has produced a surge of empirical research on the politics of social service delivery in the region.[1] One emerging consensus is that African citizens may be more or less likely to gain access to services as a function of the identities they hold. Building on broader theories of distributive politics, evidence abounds that African governments direct public goods strategically to shore up political support among specific groups, such as coethnics or copartisans.[2] An alternative reading suggests that holding group identities confers benefits to members by improving their capacity to coordinate around or coproduce public goods themselves.[3]

This article joins this debate by looking to local governments, increasingly active social service providers on the continent. Though concurring that group identities explain patterns in social service delivery, I present evidence from rural West Africa that identifies locally salient identities, specifically those inherited from the region's precolonial political geography, as a key driver of emerging differences in distributional strategies. Even though Africa's precolonial states ceased to exist as political units long ago, their kings co-opted and their bureaucracies subsumed by the colonial state, I find that they left as an inheritance deeply held identities that today structure political decision-making under decentralization. While areas home to precolonial kingdoms were endowed with collective identities stretching across villages, historically

[1] Golden and Min 2013; Briggs 2014; Franck and Rainer 2012.
[2] Bates 1983; Bratton and van de Walle 1994.
[3] Charnysh, Lucas, and Singh 2015.

acephalous areas, those lacking hierarchical precolonial political institutions, lack such cross-village ties.

To explain this, I articulate a theory of institutional congruence, whereby high spatial overlap between formal institutional space and informal social identities improves the ability of elites, such as local elected officials or village chiefs, to coordinate locally. The creation of new administrative boundaries with decentralization thus unintentionally generated varying degrees of congruence between formal administrative boundaries and informal social ones. Because group identities help motivate individuals to overcome coordination dilemmas, the relative degree of congruence determines a local government's allocative strategy: broad and equalizing in cases of high congruence or contentious and targeted in areas where it is low.[4]

I make this argument by looking to the West African state of Senegal, which was both home to a dynamic, precolonial state system and which devolved responsibility for constructing and maintaining basic education and health facilities to local governments in 1996. I present the results of a three-staged empirical analysis. First, I draw on qualitative interview data with over three hundred rural Senegalese political and traditional elite. These interviews suggest that strong group identities rooted in the past motivate political action in communities home to precolonial kingdoms, while their absence enables more contentious political dynamics elsewhere. Secondly, I construct an original, geocoded dataset on the delivery of village-level primary education and basic health infrastructure in the 2000s to test whether congruence with the precolonial past explains actual distributional patterns. I find robust evidence of this effect: falling within the territory of a precolonial state increases a village's likelihood of receiving

[4] Kollock 1998.

locally-delivered infrastructural investments. A series of tests, including innovative geospatial analyses, confirm that local governments behave differently in historically centralized areas by distributing public goods more broadly across space. Alternative explanations, in contrast, cannot explain these patterns. Finally, I end the paper with case study evidence from two typical cases to illustrate how the presence of a strong precolonial identity in one, but not the other, facilitates coordination in the local government.

This article makes three intersecting contributions to our understanding of political identities and distributional politics in Africa. First, the findings challenge the prevailing tendency to deduce politically relevant identities from observed political behavior.[5] My argument, that social identities can persist at the grassroots with minimal political effect only to forcefully reenter political life decades later, suggests that we are analytically limiting ourselves - particularly when studying institutional change and the effects thereof - by treating identities as exogenous or static variables.[6] I offer a framework for understanding why identities may generate distinct behavior at some moments of time but not at others: previously latent identities become politically salient once they become congruent with their formal institutional environment. The spatial interaction between identities and institutional boundaries, in other words, deserves our explicit attention.

Second, and relatedly, I refocus attention to the social constraints facing local politicians. Whether we prefer the language of social sanctioning or rural clientelism, I build on work from across the social sciences to argue that local politicians are socially embedded, their political

[5] A classic example is Posner's (2004) PREG measure.
[6] Echoing recent work by Singh and vom Hau 2016.

choices shaped by the dense social worlds that they inhabit.[7] Taking actors own understandings of their social and political identities seriously, rather than assuming that national political cleavages, such as ethnicity, map onto local politics, can, I show, reveal entirely new forms of political identification that are unobservable from above.[8]

Finally, and cumulatively, this calls for scholars to renew their interest in democratic decentralization, one of Africa's most significant institutional reforms in recent years. One of the project's central implications is that explicitly local factors can generate meaningful subnational variation in local government performance. Still, despite abundant evidence from other continents and disciplines, this article is among the first in political science to theorize why African experiences under decentralization vary and, in turn, to test it with micro-level data.[9]

Decentralization and Subnational Divergence in Rural Senegal

Senegal began its decentralization project in 1972. Like many countries, the reforms were intended to bolster the political ambitions of the central state, in this case by providing a new patronage channel to the countryside.[10] Decentralization divided the country's many villages into 320 'rural communities' (*la communauté rurale)*, each run by an elected council at the head of which sat a President or 'PCR' (*le président du conseil rural*).[11] In the intervening decades, Senegal's decentralization project evolved substantially, notably following reforms in 1996 that both introduced meaningful party competition and granted rural communities, previously only

[7] Habyarimana et al. 2007; Gouldner 1960.
[8] See also Nugent 2010.
[9] E.g. Bardhan and Mookherjee 2006; Blundo, Arifari, and Olivier de Sardon 2006.
[10] Dickovick and Wunsch 2014; Boone 1992, 180.
[11] Reforms in 2014 changed this nomenclature: rural communities became 'rural communes' and PCR 'mayors.' I retain the pre-2014 language for consistency. Senegal redistricted in 1996, 2009 and 2011, resulting in 384 local governments today.

responsible for land allocation, control over nine policy areas.[12] Among these, the devolution of basic health and primary education reflects a region-wide trend of shifting authority over basic social service provision to the local level.[13] Consequently, local councils have full legal autonomy in the construction and placement of new primary schools and basic health centers.[14] Though local governments have meager independent fiscal assets, all local councils receive yearly fiscal transfers from the central state to cover their operating costs and, critically for my argument, to finance projects in devolved sectors.[15] Combined with funding that may enter a local council from external development projects, this allows local governments to distribute several 'small' improvements, such as new classroom blocks or health clinics, over a five-year term.[16]

The arrival of democratic decentralization in 1996 - with its new resources and autonomy - dramatically altered the incentives facing local elites, re-orienting their behavior towards the local state. Because local councils now decide where to place projects, the ability to target villages with a school or clinic is an unparalleled source of local patronage. Though local governments make varied investments, such as building a football pitch for a youth league or buying millet mills to alleviate women's labor, their most significant accomplishments each term are almost always the construction of major infrastructure. Public goods, like new schools, additional classrooms or clinics, are highly valued by local population and demand for them

[12] These are: land management, natural resource management, health and social action, youth, sports and leisure, culture, education, urban planning, urbanism and housing and planning.
[13] Riedl and Dickovick 2014.
[14] The central state plays a consultative role by providing technical and planning services.
[15] Local governments have the right to raise local taxes, but few collect meaningful receipts. The most significant transfer from the central government, the *Fonds de Dotation de la Decentralisation* (FDD), averaged between 22,000$ to 28,000$ in 2013 for example. Though these funds are not immune from political influence, they are largely determined by population size and are highly consistent across years.
[16] Donors are expected to work through and consult with the local council when determining where to run projects.

should not be underestimated. Requests such as one chief's in Koalack Region, that the rural community "should build us a school so that we have our own and so that our children do not have to walk two kilometers to the school ..." are heard throughout the countryside.[17]

The question of what factors increase the likelihood of any given village, such as that in Kaolack, receiving a new service is a perennial one in Political Science. Though long-touted as a means to improve local development, decentralization in practice leaves us with striking empirical puzzles.[18] Why, for example, was Dodel, located in Senegal's north, able to increase primary school access for an additional ten percent of its population between 2002 and 2012 while Sare Coly Salle, in the south, improved access for less than one percent despite similarly poor initial levels of access? Recent work by political scientists might look to partisanship or ethnicity, yet both communities vote similarly and are dominated by the Fulani ethnic group.[19] Others might suggest that this is a problem of elite capture or a function of central state favoritism.[20] But here again, we must ask why elite capture would be more prevalent in one but not both cases while acknowledging that both communities are far from the capital and receive similar per capita fiscal transfers from the central state each year, one straightforward measure of favoritism.

As an illustrative pair, Dodel and Sare Coly Salle suggest not only that we are seeing striking subnational divergences in local social service delivery but that existing explanations are ill-fit to explain them. Much as Laitin argued over thirty years ago in his study of ancestral cities among the Yoruba, this article suggests that these divergences are quite tractable once we

[17] Author interview, Kaolack Region, 1 May 2013.
[18] See Olowu and Wunsch 2004.
[19] E.g. Jablonski 2014.
[20] Olowu and Wunsch 2004; Boone 2003; Dickovick and Wunsch 2014.

examine locally relevant forms of group membership.[21] Put succinctly, Dodel engages in broader and more inclusive delivery to its constituent villages because community members retain a shared sense of descent from the precolonial Fouta Toro Kingdom while in Sare Coly Salle, located in the acephalous south, no such unifying social identity exists.

A Theory of Institutional Congruence

The devolution of basic social service provision provides both an opportunity and a challenge for local officials: public goods investments are valuable local patronage, but delivering them poses an acute coordination problem because it requires local elites to decide together how to distribute a finite stock of goods across competing villages. Voters in developing countries are principally concerned with the ability of politicians to deliver and, like all politicians, local elected officials are sensitive to the demands of political competition.[22] But local politicians are also uniquely embedded in their communities and failing to deliver risks reputational and social penalties in addition to those they may face at the ballot box. If politicians only pursued their individual interest, seeking to divert goods to their home villages, co-ethnics or co-partisans, the local government council would deadlock or target goods inefficiently. This is a classic social dilemma: the individual rationality of politicians incentivizes them to prefer a distributional pattern that is not optimal for the population as a whole.[23] Within villages, social embeddedness has been shown to facilitate cooperation, but for politicians in local government this poses a

[21] Laitin 1986.
[22] Kitschelt 2000; Wantchekon 2003; Franck and Rainer 2012. One PCR observed: "never forget that tomorrow they will have to reelect you" (Author interview, Diourbel Region, 15 February 2016).
[23] Kollock 1998.

particular challenge: how can local elites coordinate to deliver scarce goods to some, but not all, villages?[24]

To answer this question, this article articulates a theory of institutional congruence. I argue that local governments are better able to coordinate around public goods delivery when there is a high degree of spatial overlap between formal institutional boundaries and shared social identities rooted in the past. Put otherwise, cross-village coordination is possible when local elites share a social identity, a broad, subjective feelings of belonging to a group rooted in a common historical connection.[25] As I develop in more detail below, in the West African countryside, it is identities tied to the precolonial past that demarcate local belonging or exclusion. To the present, Senegalese villagers residing in zones that were home to the country's precolonial kingdoms proudly identify with their precolonial history, embracing taken for granted identity categories that rest on localized logics of appropriateness and strong social norms.[26]

Consequently, Senegal's decentralization reforms effectively served as an exogenous shock, generating variation in the degree to which locally-salient social identities overlap with new jurisdictional boundaries.[27] The changing spatial bounds of the local state put social identities into new relief, unintentionally facilitating the ability of some, but not all, local elites to coordinate in the rural council. When group identities elide with the local state, the dominant outcome in areas home to precolonial kingdoms, decentralization generates social and political

[24] Scott 1976; recently, Mattingly 2016.
[25] Singh 2015; Laitin 1998, 16.
[26] Brubaker and Cooper 2000, 20; Abdelal et al. 2006, 697.
[27] Senegal's decentralization was largely "technocratic and done in Dakar" (Author interview, history professor, Dakar, 25 February 2016). As detailed in the Supplementary Materials, institutional congruence is unlikely to result from differences in bottom-up capacity to demand formal institutional space.

rewards for elites to act towards the group. Fearing social sanction from citizens and fellow elites alike, decision-makers in these cases tend to deliver local public goods broadly to groups members. Conversely, coordination problems are acute in areas of low congruence as local elites pursue the interests of their own village or sub-group at the expense of the broader community. Patterns of public goods delivery under decentralization hinge therefore on how institutional boundaries net social identities into new administrative spaces.

This theory synthesizes a series of studies that likewise argue that social identities influence distributional outcomes by easing social dilemmas. This dispersed body of literature identifies similar processes at different levels of government - from the village to the state - around the world - from authoritarian China to Native American reservations in the United States.[28] Central to these arguments and my own is the recognition that group identities must both invoke what Singh describes as a shared sense of 'we-ness' and be made meaningful for decision-makers.[29] My theory of institutional congruence thus brings these works together into a unified framework by specifying an explicit role for institutional overlap. When formal and informal social institutions are congruent, the beneficial properties of social identities are unleashed, facilitating coordination and encouraging elites to pursue more developmentally beneficial outcomes.

Broad evidence from across the social sciences supports the contention that the presence of strong group identities helps overcome social dilemmas.[30] Shared group membership not only

[28] See Tsai 2007 on China, Englebert 2000 on Africa, Díaz-Cayeros, Magaloni, and Ruiz-Euler 2014 on Mexico, Singh 2015 on India and Cornell and Kalt 1995 and Dippel on Native American reservations.
[29] Singh 2015. For Singh, this results from political elites' intentional efforts. I argue that identities are the product of much longer-run historical formations.
[30] Kollock 1998, 194.

fosters a sense of common welfare and goals, but can incentivize individuals to act in the interest of the groups, better positioning actors to overcome collective action dilemmas.[31] This may be due to the anticipation of reciprocity and future interaction with group members, or to possible punishment, echoing in different language the emphasis on social expectations and norms of reciprocity that marked early work on clientelism.[32] Even if an individual privately prefers to target goods delivery to their own village, for example, sanctioning mechanisms, such as group norms or reputational threats within dense social networks, help explain how individual preferences are brought in line with those of the group.[33] Indeed, even in the presence of other strong identities, like ethnicity, the availability of superordinate identities, such as nationalism, can enable cooperation.[34]

I present evidence below that suggests that when group identities rooted in the precolonial past embed the majority of a local government's villages, local elites engage in more broadly redistributive behavior. In such situations, elites possess both the motivation - their shared identity - and the institutional relief - their identity's relative congruence with the local state - that are necessary for cooperation. Still, though precolonial identities are particularly salient in the West African Sahel, the theory's portability is much broader, as evidenced by the geographic scope of the theoretical tradition upon which I build. The argument reflects the more enduring principle that political preferences often revolve around culturally specific forms of

[31] Brewer 1979; Tajfel and Turner 2004; Shayo 2009.
[32] Apicella et al. 2012; Gouldner 1960.
[33] Habyarimana et al. 2007; Raub and Weesie 1990; Dionne 2015..
[34] E.g. Miguel 2004.

group membership that may not parallel objective measures of diversity and, consequently, that will naturally vary in form across space.[35]

Ethnicity by another name?

Many explanations of African politics revolve around the role of ethnicity. Indeed, the benefit of ethnic homogeneity are so widely accepted that much of the ensuing debate focuses on adjudicating between potential mechanisms.[36] Could the identities left by precolonial statehood simply be ethnicity by another name?

Certainly, ethnicity remains a relevant social category for Senegalese, but it has never become a significant political cleavage.[37] Today, Senegalese only rarely conflate their historical and ethnic identities, reflecting in part the fact that "political and ethnic boundaries rarely coincided in precolonial Africa."[38] To illustrate, in Louga Region, villagers from the Fulani ethnic group recounted how the king of the Wolof-dominated Cayor Empire had granted their ancestors land on which to settle. Though explicitly invoking their ethnic minority status, they still proudly claimed their relation to the Cayor, a narrative echoed by their Wolof neighbors. This inter-ethnic harmony persisted to the present; 'you will find children with Fulani names in the neighboring Wolof village, just as you will find Fulani children bearing Wolof names here,' boasted a local councilor.[39]

Still, it bears recognition that historically centralized areas are, on average, slightly more homogenous than their acephalous counterparts, with respective *arrondissement*-level ethnic

[35] Laitin 1986.
[36] See Habyarimana et al. 2007; Baldwin and Huber 2010; Lieberman and McClendon 2013; Alesina, Baqir, and Easterly 1999.
[37] Diouf 1994; Koter 2016, chpt 3.
[38] Colson 1969, 31.
[39] Author Interview, Louga Region, 20 February 2016.

fractionalization scores of 33.8 and 38.6, but both areas see substantial variation. Moreover, fractionalization scores are not significant in the empirical analysis below. Others have argued that politically centralized precolonial communities have stronger development outcomes because of persistent, group-specific attributes.[40] In Senegal however, members of the same ethnic groups who were part of a precolonial state perform differently today than co-ethnics living in areas that were not, even at similar levels of ethnic heterogeneity.[41] Together, these factors indicate that it is a characteristic of the precolonial political *institution* - and not ethnicity - that drives the subnational divergences identified here.

From Precolonial States to Decentralization: Mapping Identities in Rural Senegal

To demonstrate the argument that locally salient group identities orient local elites' behavior, by embedding them in dense, cross-village identities, I draw on data from in-depth interviews with over three hundred local elites from across rural Senegal.[42] Interviews were conducted with respondents across Senegal, effectively sampling the breadth of Senegal's dynamic micro-state system. When studying the long-run effects of precolonial states, social scientists have generally focused on prominent cases of precolonial statehood, such as Uganda's Buganda Kingdom or the Tswana in Botswana.[43] The precolonial states of the West African Sahel, emerging in the wake of the Malian Empire's collapse, were in general weaker and less entrenched than better known cases, rising and falling between the fourteenth and nineteenth centuries. Though West Africa's states possessed well-defined territorial administrations and

[40] Bandyopadhyay and Green 2016; Michalopoulos and Papaioannou 2015.
[41] Senegal's precolonial states granted specific rights to minorities, for example Fulani herders in Cayor paid a unique tax on livestock (Ba 1976, 173).
[42] These interviews were conducted by the author or a research assistant between January and July of 2013, see discussion in the Supplementary Materials.
[43] For example, Bandyopadhyay and Green 2016; Robinson and Parsons 2006.

projected national identities, in many ways they represent a harder-test of precolonial legacies.[44] On the eve of France's final push to conquer Senegal in the 1880s, slightly under half of Senegal's territory was under the control of a centralized political organization. Where states were absent, acephalous villages remained politically autonomous, though at times they formed federated defense systems.[45] As maps from the precolonial era are scarce and often highly inconsistent, Figure 1 displays Senegal's precolonial state system as estimated by the author (a full discussion of coding can be found under 'Data and Measurement').

[FIGURE 1 HERE]

That Senegalese are acutely aware of their precolonial history is revealed in the tenancy to employ unofficial, precolonial names when making geographic references. One local government councilor, commenting that his region saw little political conflict, added "especially not in the *Ndiambour*," invoking the area's precolonial name.[46] This statement echoes many heard in rural Senegal and demonstrates how local actors actively embrace and reinforce social identities tied to the precolonial past. In historically centralized areas this has a taken-for-granted form: when asked about local inter-village relations, another councilor dismissively responded, "we are all *ceddo"*, a reference to the powerful warrior slave caste of ethnically Wolof precolonial kingdoms.[47] Though improbable that all citizens in his community descend from the

[44] Warner 1999.
[45] See Pélissier 1966; Boone 2003.
[46] Author Interview, Louga Region, 19 February 2016.
[47] Author Interview, Tivaouane Department, 14 May 2013.

ceddo, the councilor took the category as self-evident, illustrating how durable and localized understandings of identity persist.

In contrast, historically acephalous areas almost always lack robust, cross-village identities. Even very old villages in these areas are overwhelmingly identified by their founder's individual story of settlement. For example, one chief told of his grandfather who independently cleared the land and settled the village.[48] Others actively claim their acephalous history: a councilor in Ziguinchor noted that we were in 'Diola country,' referencing the dominant local ethnicity. The Diola's lack of hierarchical authority meant that there was (and always had been) independence and equality between villages, though this had costs: "it's not like the North ... they all have arguments with each other and this means that they get less [services]."[49] Even when respondents in acephalous zones invoke group identities, they tended to be conceptualized as lines of demarcation rather than points of unity. One PCR, from a low social caste, was widely accused of playing the 'caste card' by favoring casted villages for example, while elsewhere, a Fulani councilor reported that, "the Wolofs [are more powerful] because the notables are from that ethnicity."[50]

Group identities of this nature matter because they structure the behavior of local politicians in at least two ways. First, local elites live in the communities they serve and elected officials own families are often the winners or losers of allocative decisions. "They occupy the same place as citizens. Whether they do good or bad, they do it to themselves," one chief observed.[51] Politicians themselves are aware of their own sensitivity to this intimate social

[48] Author Interview, Kedougou Region, 4 April 2013.
[49] Author Interview, 8 July 2013.
[50] Author Interviews, Kolda Region, 8 April 2013; Tambacounda Region, 19 March 2013.
[51] Author Interview, Saint-Louis Region, 16 February 2013.

pressure, with one PCR in Kolda Region wryly commenting, "of course the state doesn't care [about how we manage locally] because they are far from the population. At the local level, we are always seen - at baptisms, at weddings, at the market ...".[52] This difference in attitudes, between those embedded in a congruent identity and those who are not, is seen in two strikingly different representations of party politics. In the area of the precolonial Cayor Empire, one PCR acknowledged that as the leader of his local branch, he needed to attract party militants, but that he could never let this become contentious for fear of upsetting local social relations.[53] In acephalous Ziguinchor, in contrast, a second PCR explained bluntly, "politicians are only politicians ... the interest of the party dominates."[54]

Second, strong local identities also structure politicians' behavior amongst each other. Shared identities facilitate local government work by constraining opportunistic behavior via the threat of social sanctioning.[55] This was invoked outright. Despite the right to discipline councilors who miss three meetings in a row, a PCR in the former Saloum Kingdom only sighed, "we don't do it, because it's not good for social cohesion."[56] Numerous party leaders in historically centralized areas observed that they were careful to make geographically representative electoral lists out of fear that they be seen as favoring some villages or families more than others.[57] We "let others [villages] take something" at their turn, one chief explained and, as a result, projects flow across the community.[58] While all group identities may value

[52] Author Interview, Kolda Region, 11 April 2013. This echoes recent work by Paller 2014.
[53] Author Interview, Thies Region, 13 May 2013.
[54] Author Interview, Ziguinchor region, 1 July 2013.
[55] See Schaffer 1998 on Senegalese norms of social cohesion.
[56] Author Interview, Kaffrine Region, 24 April 2013.
[57] Author Interview, Saint Louis Region, 22 July 2013.
[58] Author Interview, Kaffrine Region, 8 February 2016.

social cohesion however, the developmental impact of these social norms hinge on whether or not the group's contours map onto the local state.

The Persistence of Social Identities

Why have precolonial identities persisted, given the one hundred year lull between the dismantling of precolonial kingdoms and decentralization reforms in 1996? The reproduction of these identities can be explained by two generic realities of West African social life and two amplifying effects of precolonial kingdoms. First, as with any society, West African communities value and transmit their histories. A prominent role in this is played by griots, or traditional praise singers, who hold reciprocal socio-economic ties to prominent families within casted ethnic groups.[59] As a distinct caste, griots function as 'oral historians,' memorizing and reciting a family or community's history, ensuring the inter-generational transmission of local mythologies and histories of settlement.[60] At a more fine-grained level, the relative continuity of precolonial identities is due, in no small part, to the fact that social status in rural West Africa is often tied to patterns of historical settlement. Local elites, notably village chiefs and notables, traditionally derive their authority from village social hierarchies; the village chief almost always descends from the village's founder, for example.[61] Local elites have every incentive, therefore, to reinforce the value of their autochthony claims vis-a-vis their ancestors' settlement in the area and, in historically centralized zones, this almost inevitably involves laying claim to precolonial kingdoms.[62]

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[59] Most Senegalese ethnic groups have social castes. Those that do not exclusively fall within acephalous areas (Koter 2016, 70). Acephalous zones thus either lack such a mechanism of reproduction or, among casted ethnic groups outside of centralized zones, griots often recount family-specific stories.
[60] Galvan 2004, 41.
[61] Galvan 2004.
[62] E.g. Geschiere and Jackson 2006.

These generic realities exist across the region, but historically centralized areas in particular preserve the value of precolonial identities. This is due firstly to the fact that in these areas, the colonial transition was generally smoother because the French focused on co-opting kings and their courts, unintentionally preserving village-level social hierarchies in the process. The colonial counter at the grassroots was more disruptive in acephalous areas, which often lacked widely-recognized rulers to facilitate quick submission.[63] Though colonization produced social upheaval across the continent, acephalous regions were particularly prone to contestation in the late 19th century, even among village chieftaincies.[64] Finally, precolonial history has become mythologized over time both locally and nationally, granting local elites in centralized areas a second advantage: the ability to claim a revered past that, collectively, further cements their claims to local social status.

As a result, precolonial identities never ceased to exist - they have always been relevant to the socio-economic lives of rural Senegalese - but their political relevance diminished considerably in the century between colonization and decentralization. Social identities embedded within historical legacies are spatially path dependent therefore, but they are only sometimes rendered politically relevant as a function of formal institutional design. This calls into question not only the recent tendency to pretermit decades, if not centuries, of history within the historical renaissance currently sweeping development economics and political science, but also the assumption that an actor's behavior reveals their salient identities.[65] To the

[63] Klein 1968, 290.
[64] See Peterson 2004 on western Mali.
[65] E.g. Hopkins 2011.

contrary, I contend that identities themselves shape political behavior, but only when they are congruent with formal institutional space.

These patterns are reflected in the local histories recounted by interviewees. Eighty percent of respondents in centralized areas correctly identified who had ruled the area prior to French conquest, while only forty-five percent could in acephalous areas. And even in areas where historically acephalous communities have deep-roots, such as the Casamance, respondents noted persistent historical divisions, often in the form of rival or enemy villages. More recently, though both historically centralized and historically acephalous regions have seen significant in-migration, the former have long integrated migrants into existing social structures. While in acephalous areas in-migrants have tended to create parallel and distinct social and political lives that generate political cleavages around ethnicity, autochthony or caste.[66] Acephalous zones have also been home to more rampant village creation as family feuds or factionalism lead villages to split. Over seventy percent of interviewees in historically centralized areas reported that their villages were founded before 1900, compared to only thirty-seven percent in acephalous areas. All rural Senegalese communities proudly recount their past therefore, but the depth of that history - and the degree to which it includes a broader community or remains village-specific - varies significantly.

Data and Measurement

Respondents may invoke precolonial identities in describing their experiences with local politics, but does a local government's congruence with a precolonial kingdom explain actual subnational differences in local public goods provision? The qualitative data suggest that local

[66] I.e. Pélissier 1966 on the Saloum; Blundo 1998 on Koungheul. See Author 2015 for a more detailed discussion on these politics.

actors perceive greater distributional equity in areas home to precolonial states. I test this implication by constructing an original dataset covering all 14,320 official Senegalese villages between 2002 and 2012. The dataset is built on GIS data provided by the *Centre de Suivi Ecologique* in Dakar, with data provided from the Senegalese Ministries of Education and Health and the 2000 and 2009 rounds of the *Enquête villages sur l'acces aux services sociaux de base*, conducted by the Senegalese National Agency for Statistics and Demography (ANSD). Because of Senegal's 2009 administrative redistricting (see supplementary materials), models are run for two time periods: 2002-2009 and 2009-2012 with all relevant variables calculated to the adjusted boundaries. I georeference basic infrastructure and control variables to their villages using Blasnik's (2010) method for matching fuzzy text: village names are matched within each rural community and all non-exact matches are reviewed by hand.

The dataset measures two infrastructure investments made by local Senegalese governments: new schools and new health clinics (*postes* or *cases*). Looking at two public goods helps mitigate concern that communities may value public goods differently or that politicians may target certain communities with one particular good.[67] As noted above, local governments do make other, smaller investments, such as financing yearly youth football tournaments, for which data is unavailable. Investments in primary schools and health clinics are the most significant and, given that all rural communities build some mix of this infrastructure in the period under study, also the most comparable investments made by Senegal's local councils.

The dataset reports that 3,515 villages received access to a new primary school between 2002 and 2012. Similarly, between 2009 and 2012, 1,794 villages gained access to a new health

[67] Kramon and Posner 2013.

clinic (a health hut or post) in the subsample of 10,897 rural villages for which health data is available. Because most local public goods are built with the intention of serving multiple villages, I use the Senegalese national standards for access to construct the dependent variable: three kilometers for primary schools and five kilometers for health facilities. When villages had no access in the baseline year, they are coded as receiving a new investment when a facility is built within the defined distance. Villages that were already within these standards are only coded as receiving a new investment when a facility is built *closer* than their previous point of access. The dependent variables, *Primary Schools* and *Health Clinics*, are accordingly dummy measures taking the value of one if a village receives new access during the period under analysis and zero if not.

Although approximate borders of precolonial states can be found in early European maps, substantial concerns about the accuracy of early explorers leads me to opt to measure precolonial statehood as emanating outwards from precolonial power centers, following Herbst's (Herbst 2000) argument that precolonial power was projected concentrically outwards from nodes of power. I code precolonial centers of power from a wide-variety of historic sources as follows: given the rotating nature of power among families in Senegambian precolonial states, I georeference any village that was the capital of a province or that was the fiefdom of an important clan as well as key commercial or ceremonial villages. I then construct twenty kilometer buffers around the assembled list of villages in ArcGIS, thereby locating all villages that fall within the buffer of each precolonial kingdom's centers of power.[68] Because I am

[68] Twenty kilometer buffers approximate the boundaries in early colonial maps. Table A3 in the Supplementary Materials assesses the sensitive of the results to this cutoff, showing that they are robust to increasing the buffer size to a more generous 25 or 30-kilometer radius.

interested in the relative congruence between a precolonial state and villages within any given local government, villages receive a score of one if they fall within the buffer of a precolonial state that covers the majority of villages in their local government.[69] Villages that are not congruent with the dominant precolonial state or which fall in local governments with acephalous histories are coded as zero.

To account for the rise and fall of states over time, coding is done for eight points in time between the first and second half of each century between 1500 and 1880. I apply a discount rate to these measures, penalizing more distant experiences with centralization in favor of more recent statehood under the assumption that longer intervals between the onset of colonial rule and centralization are more likely to have eroded the strength of precolonial identities. This variable, *Institutional Congruence 20km*, is then standardized to range zero to one. A detailed discussion of coding procedures and inclusion/exclusion criteria for statehood is discussed in the Supplementary Materials.

The data are analyzed using logistic models with robust standard errors clustered at the local government. Models include three series of control variables. First, a set of village-level variables capture local need. Logged village population and population density, calculated as the total population falling within three (schools) and five (clinics) kilometer grid squares around a village, measure the number of potential beneficiaries of a new facility.[70] The square root of the distance to the nearest school or clinic as well as the percent of villages in a community that had their own school/clinic in the baseline year are also included. Together, these variables

[69] See Figure A2 in the supplementary materials for an illustration. When villages fall within the buffer of more than one state, they are coded as 'belonging' to the closest capital village.
[70] Results are robust to using the local government population density.

capture initial levels of access under the assumption that worse access indicates greater need for new services.

A key assumption of this project is that rural Senegalese have similar preferences for public goods across space. I include a count measure of the number of facilities built by each local government during each time period as this might reflect local preference. Local demand may also be higher in wealthier areas of the country, who could be better positioned to demand or coproduce services. At the village level, I include a measure of local economic activity in the baseline year, an additive measure of the presence of: a boutique, market, artisanal workshop (i.e. metalworking) or facilities for transforming raw products (i.e. charcoal).[71] I also proxy for sub-national income data with an *arrondissement*-level index of household belongings from the 2005 Demographic and Health Surveys to capture sub-national wealth differences.[72] Because horizontal social capital has been shown to improve subnational governance outcomes, improving the organization capacity of villages to petition the local state, I also include a count measure of the number of civic associations in each village.[73]

As some families may prefer to send their children to Islamic schools or to not send them at all, I include two additional variables in models evaluating primary school construction: a)

[71] Unfortunately, data from the ANSD do not cover all official villages. Because the approximately 1200 villages missing in the first period and 2100 in the second are disproportionately small, dropping them from models could potentially bias results. Consequently, I assign the local government average to villages with missing data. Results are consistent using the arrondissement average or when villages with missing data are dropped.

[72] This measure is comparable to the DHS survey's rural wealth index, but removes any possessions dependent on existing social services, notably electricity.

[73] Most famously, Putnam 1993. Coded from the ANSD's *Enquête village*, this measure excludes associations dependent on a preexisting public good, i.e. school associations, counting: village development associations, women's groups, local sports or youth groups, village political party branches and economic interest groups. Given data gaps, this variable uses the same procedure as with local economic activity (see Footnote 71).

the percent of primary school-aged population attending school in the rural community in the baseline year, capturing the relative local value placed on education via higher rates of attendance, and b) a control for the percent of villages in a rural community whose names take common markers of Mouride affiliation, a prominent Islamic brotherhood around which preferences for Islamic education plausibly revolve.[74] Fixed effects models further indicate that any such community-specific unobservables do not appear to drive the results.

Finally, geographic variables account for the possibility that geographic conditions favored both the formation of precolonial states and contemporary economic development. This includes a village's logged distance to the nearest navigable waterway, its elevation, a dummy variable for ecological zone as well as its latitude, longitude and their interaction.[75] These variables further account for a village's relative exposure to precolonial trade and the early French colonial state, both of which clustered along the coast and rivers.

The Delivery of Basic Social Services in Senegal, 2002-12

Table 1 presents the results of the paper's base models, which estimate the effect of a village's congruence with a precolonial state (if any) on the probability that the village gains access to a new primary school or health clinic during the 2000s. Across models, the odds of a 'congruent' village receiving access to a new social service are 1.5 to 3 times higher than acephalous areas. More substantively, the results suggest that local governments in centralized

[74] For instance, 'Touba' or 'Mbacke.' Accordingly, I assume that Touba's role as the seat of the Mouride religious brotherhood merits its exclusion from the analysis. At 530,000 residents, Touba's population is closer to Senegal's secondary cities than other rural communities, but given the political status of Mouride leaders, the locality remains 'rural.' The area's piety means that only nine percent of primary school-aged children were enrolled in public schools in 2012, far below the national average (50.6%). Results hold if included, but given improvement in model fit, I exclude Touba from the sample give its exceptionalism.
[75] Highly collinear with other geographic variables, rainfall estimates are omitted.

areas improved the probability of access to new primary schools by six to ten percent in the first period and around three percent in the second; similarly, the increased probability of receiving new health access is around seven percent between 2009-12. The models robustly indicate that even controlling for at similar levels of need, demand and geographic suitability, falling within the boundaries of a precolonial states significantly increases the odds of receiving access to new social services.

To capture potential unobserved heterogeneity within administrative units, I rerun these models with local government fixed effects to estimate whether institutional congruence can explain within-unit variation. Put otherwise, within the same local government, are villages within the territory of a precolonial state more likely to receive an investment than those that were not? The results suggest that institutional congruence is important even *within* local governments: when the majority, but not all, of a local government's territory was covered by a precolonial state, villages that fall *within* the buffer are more likely to receive public goods access than those that fall outside of the estimated boundaries.

[TABLE 1 HERE]

Importantly, these findings are robust to alternative specifications of the models and of the independent and dependent variables, including the construction of new classrooms. Crucially, my key independent variable is insignificant in a series of placebo tests using central government delivered investments, suggesting that the legacy of precolonial identities only affects local government decision-making. Nor do the results appear to be sensitive to potential omitted variable bias, such as an unmeasured factor that both drives the formation of

precolonial states and shapes the ease of public goods delivery today. These results are discussed in the Supplementary Materials.

Relative Placement Efficiency

The results of Table 1 cannot be reduced to simply delivering more new facilities. Only in the first period do historically acephalous areas substantively outbuild their centralized counterparts, suggesting, as seen in Table 1, that the probability of access differs.[76] This raising the question: do rural councils engage in spatially different patterns of distribution? Expectations of government favoritism abound, but despite growing interest in how public goods delivery is politically targeted, empirical research relies on the idea of an ideal allocative decision that is never actually modeled.[77] To get around this problem and to develop a metric for the relative efficiency of placement, I make use of Location-Allocation models, often employed by businesses and public agencies to help identify the most efficient location for public services, warehouses, stores, etc., taking into account the locations of existing facilities, potential new sites and the spatial spread of demand.

I run two forms of these models. First, local governments may seek to *maximize coverage* calculate an ideal location for building a school/clinic thus that the percent of the local government's population that lives within three/five kilometers of a school or clinic is maximized, taking into account existing facilities. Secondly, they may prefer to *maximize attendance*, calculating the capacity of existing schools (measured with students per classroom) and the locations of existing clinics. These models predict the best location if the goal is to

[76] In the first period the average local government constructed approximately seven new schools in uncentralized areas versus 5.5 in centralized zones. This number is 2.9 and 3.4 respectively for schools and 2.1 versus 1.8 for clinics in the second.
[77] Golden and Min 2013.

increase the total number of residents 'attending' a facility, discounting over distance under the assumption that individuals prefer and hence are more likely to use public goods closer to their homes. For each rural community, the models are run so as to identify as many locations as were actually built during the time period. The total number of students or villagers that would have been covered by the 'ideal' location is then compared to the actual number covered by the built facilities by a local government. A more detailed description of both model forms, as well as an illustration, can be found in the Supplementary Materials.

Table 2 presents the results of these analyses, using the difference in students who could have been covered by new schools/clinics if the local government always chose the 'ideal' location and those actually covered by the facility as built. I construct the dependent variable by aggregating the difference at the local government level; a value of zero on the dependent variable indicates that a local government built at the ideal location(s). Negative coefficients therefore reflect more efficient choices as the number of students who *could* have been covered, but were not, decreases. Table 2 reveals no significant relationship between precolonial centralization and building social services that maximize attendance. Precolonial centralization is however associated across the board with building schools and clinics in locations that increase the number of covered citizens. In other words, these areas are providing services to ensure that more villages gain access, building closer to the 'ideal' locations. This is evidenced by the coefficient moving towards zero, which again represents the ideal choice. In other words, local governments in areas that were home to precolonial states on average improve coverage for 160 to over 600 more citizens than their acephalous counterparts. These models offer a novel test of the argument that there are sub-national differences in the politics of local public goods

delivery in rural Senegal while confirming the argument that precolonial centralization is associated with broader spatial distribution today.

[TABLE 2 HERE]

Alternative Explanations

How does the seemingly robust effect of precolonial centralization compare to preexisting explanations of public goods delivery? Table 3 presents the results of an additional set of models that test the ability of common alternative hypotheses to explain the patterns identified in Table 1. Panel A examines the ability of local government electoral competition to explain which villages receive investments. By matching each village to the nearest voting booth in their rural community during the 2002 and 2009 local elections, I measure local electoral competition, *Vote Gap*, as the gap between the first and second place party.[78] Because each village is assigned the results of its nearest voting booth, I interact Vote gap with Logged population; two neighboring villages sharing a polling location might both be home to swing voters, for example, but the attractiveness of targeting them with a public good is conditional on their population size.[79] There is no effect of electoral competition on receiving public goods access.

Given the prevalence of claims about ethnic heterogeneity's dampening effect on public goods provision, *Ethnic fractionalization* is tested in Panel B. Given significant gaps in data on local ethnic composition, I measure this by averaging the ethnic fractionalization of rural communities for which data is available across the next highest administrative level, or *arrondissement*. Once again, there is no effect, reflecting the relatively low level of ethnic politicization in Senegal.[80] To test whether there is an effect of ethnic group characteristics, Panel C uses the now popular data from Murdock to test whether an ethnic group's level of

[78] Data are matched following the procedure outlined above. In 2002, five rural communities have missing electoral data and, similarly, eleven in 2009.
[79] Alternative measures of electoral competition can be found in Table A5 in the supplementary materials.
[80] Franck and Rainer 2012.

political centralization explains public goods delivery.[81] The inclusion of Murdock's variable fails to overturn the positive and significant effect of my own measure.

Finally, because the central government may shape outcomes through unequal targeting of resources, I include two measures of potential favoritism in Panel D. A measure of the percent change in the teacher/student ratio between the baseline and outcome years for each region, *Percent change teachers per student*, proxies for unequal transfer of resources from the central state because the allocation of teachers remains the purview of the Ministry of Education. For the second period, models include the average dollar per capita transfer from the central to local state between 2009-12 via the *Fonds de Dotation de la Decentralisation* (FDD). *Average FDD* thus captures more directly any inequalities in central government transfers.[82] There is no evidence of favoritism on the part of the central government; fiscal transfers are insignificant and preferential resource allocation, measured by the change in the teacher/student ratio by region, is interestingly significant in both time periods, but in opposite directions, suggesting an inconsistent effect.

These models lend little support to existing explanations of public goods delivery. Crucially, the inclusion of these variables does not impact the positive and significant coefficient on precolonial centralization and when significant, these variables are inconsistent across time period and type of good. Though perhaps influential at the margins, the results in Table 3 indicate an independent and positive effect for congruence with a precolonial state.

[81] Murdock 1981; Michalopoulos and Papaioannou 2015; Gennaioli and Rainer 2007.
[82] Difference of means tests indicate that per capita transfers are, on average, larger for uncentralized areas. The mean value per capita is $1.86 for uncentralized areas and $1.50 for centralized areas.

[TABLE 3 HERE]

Why is there no effect before 1996?

In line with the emerging consensus that 'history matters,' I find that a higher overlap between a local government's formal institutional space and the bounds of a precolonial state improves a village's likelihood of receiving an investment from the local state.[83] Dominant explanations of historical causes have focused on the cumulative effects of institutions over time; could villages that fall within former precolonial kingdoms simply have always been more favored for reasons that have nothing to do with decentralization or local social identities?

I employ archival documents to look at the placement of primary schools and health facilities from the onset of colonial rule in the 1880s onwards, though data limitations prevent a complete time series. The marginal effect of a village's experience with precolonial centralization on the likelihood that it receives new access (maintaining the same definition) to a social service between the year listed and the prior period (starting in 1902) is illustrated in Figure 2.[84] It is immediately clear that the positive effect of precolonial centralization on social service access is a recent phenomenon. Though there is an initial and positively significant difference in the first years of colonization when public goods provision was limited to a handful of trading posts and administrative centers on the coast, this effect disappears by the 1930s when the French began expanding social services access to their colonial subjects and the direction of effect is negative

[83] E.g. Akyeampong et al. 2014.

[84] Full results of the models from which these figures are taken can be found in Table A12 in the Supplementary Materials. Because many villages had not yet been founded in the earlier time periods, models for years prior to 1932 restrict the sample to villages listed in the first French censuses (circa 1900) while data from 1932-52 are restricted to villages listed in the 1958 official census.

by the early 1970s. Given the lack of data on social service access in the 1980s and 90s, I am unable to pinpoint the 1996 reforms as an exact point of change, yet as late as 1972 the bias of the early postcolonial state is in the opposite direction, with historically acephalous areas more likely to receive new public goods.

[FIGURE 2 HERE]

That the positive effect of precolonial centralization is not the product of a long-run cumulative process, but rather specific to the post-decentralization period, confirms the value of unpacking history as a means to evaluate more or less plausible hypotheses.[85] In this way, the findings suggest that arguments that would lead us to expect that areas home to precolonial states should *always* perform better over time are less compelling. Notably, the findings call into question the emerging consensus that the presence of strong group identities like ethnicity facilitates the collective action necessary to demand or coproduce development projects.[86] Together, the interview data and the large-N analysis suggest that while social identities matter, it is their relationship with formal institutional structures that enables or hinders their ability to help groups overcome social dilemmas. The social legacies of precolonial centralization are spatially path dependent therefore, but their effect is intermittent, only unleashed under certain formal institutional configurations.

Institutional Congruence in Action: Two Illustrative Cases

[85] Grzymala-Busse 2011.
[86] Notably, Habyarimana et al. 2007.

To illustrate the dynamics behind Senegal's diverging patterns of social service delivery, I turn to two typical, 'on the line' cases identified from the base models in Table 1.[87] These brief cases highlight how the presence of a strong, precolonial identity facilitates coordination among local elites, while its absence enables more familiar forms of political conflict. To preserve the anonymity of respondents, I identify the cases by their precolonial territorial names: the first, located in Diourbel region, fell within the precolonial state of *Baol*. The second, in Kaffrine Region, falls in the historically acephalous zone of *Koungheul*. Today, both communities are home to approximately 20,000 residents who are majority Wolof, Senegal's largest ethnicity, though significant Sereer, Fulani and Mandingue minorities are present in both. Residents largely follow the Islamic Mouride Brotherhood and their economies are based on peanut production, Senegal's main export crop. In 2014, both elected educated and dynamic PCRs in contentious elections.

Like most of the country, both communities have seen substantial development activity in recent years. Yet Koungheul's distribution of these projects has been highly unequal. Villages in the local government's north, home to half of the population, house only twenty percent of the community's social service infrastructure. This divide was described by some as reflecting ethnic tensions, with the Fulani population clustering in the north, while others cited the former PCR's substantial favoritism of his home village, the local government seat of 'Koungheul-Ville'.[88] Koungheul-Ville had particularly acute political tensions with its immediate neighbors, whose ancestors had welcomed Koungheul-Ville's founder one hundred years prior by granting

[87] See Lieberman 2005. A discussion of this data collection, conducted in February 2016, is in the Supplementary Materials.
[88] Author Interview with Local Government Secretary, Kaffrine Region, 9 February 2016.

him land on which to settle. Over the past century, however, these autochthons felt their rights as the region's first-comers had been trampled on. "They want to appropriate everything that comes to the rural community," one neighboring chief scoffed at Koungheul-Ville.[89]

The community's many divisions had notably manifested themselves in the 2014 local elections, which had been particularly contentious. The popular, incumbent PCR had intended to run with President Macky Sall's *Alliance pour la république* (APR), but had been challenged in the primary by numerous factions, including a Fulani from the north and a resident of Koungheul-Ville. In the end, the incumbent PCR ran under a relatively new party and, to the surprise of his opponents, won by mobilizing a coalition of villages against Koungheul-Ville. "The other villages knew that if Koungheul-Ville got the reins on power, then they would all be left aside," the local government secretary observed.[90] Political tensions continued in the local council, with all interviewees reporting some form of conflict as to how the council should prioritize investments. "Just like with women, there are always rivalries ..." the PCR quipped.[91]

Unlike Koungheul, respondents in Baol reported strong ties to the community, observing a shared understanding that Baol was rightfully constituted by its component villages.[92] This recognition of meaningful, shared territory did not eliminate partisan competition. The PCR of Baol had also faced a tough election in 2014 and, likewise thinking he would run with the locally incumbent party, the *Parti démocratique sénégalais* (PDS), he chose instead to go with a new party to the surprise of local PDS leaders. The grandson of the outgoing council president, the PCR was able to attract support from the entire community, including Fulani and Sereer ethnic

[89] Author Interview, Kaffrine Region, 9 February 2016.
[90] Author Interview, Kaffrine Region, 9 February 2016.
[91] Author Interview, Kaffrine Region, 8 February 2016.
[92] Author interview with Adjoint-PCR, Diourbel Region, 15 February 2016.

minorities, who, unlike in Koungheul, were widely considered as autochthons.[93] The PCR and others noted that the election had generated tension between villages in the community's south and those in the north, which, like in Koungheul, was relatively remote. This potential cleavage was carefully negotiated. Acknowledging that he hadn't received unified support in the north, the PCR had still worked hard to build a 'representative network' on his party's electoral lists by including councilors from the north.[94]

Contrary to dominant theories that politicians target core voters, Baol's council had decided that a new health post, the community's most significant infrastructure scheduled for the 2016 fiscal year, should be placed in a northern village that had actively voted against the PCR and his party.[95] Nor was this understood as a play for swing votes. The council made a practice, the PCR proudly told me, of bringing a local development agent in to make technical assessments, lest citizens think his party only delivered projects to win votes.[96] Other elites confirmed this, noting that the dense social connections between villages meant that they already knew the needs of other villages. Consequently, they endorsed the northern village as the most deserving of the health facility.[97] Of course, discontent existed, but it never took on ethnic or partisan dimensions. One chief, for example, claimed that his village had been 'forgotten' by the rural council, but as is common in centralized areas he quickly justified the

[93] I.e. "they have always been here.' Author interview with village notable, Diourbel Region, 17 February 2016. Koungheul's PCR also descended from a family with a history of political engagement.
[94] Author interview Diourbel Region, 15 February 2014.
[95] Author interview with local government secretary, Diourbel Region, 17 February 2016.
[96] Author interview, Diourbel Region, 15 February 2016.
[97] Author interviews with village chiefs, Diourbel Region, 15-17 February 2016.

council's behavior, noting that they simply did not have the means to give projects to everyone.[98]

Baol and Koungheul are not exceptional cases. Local governments across Senegal have limited means, poor human resources and face innumerable demands from constituents. But residents of Baol feel that they belong to a natural and coherent community that prevented political disagreements from amplifying, keeping local elites committed to the project of local governance and development. No one in Baol identified divisions with other villages, council relations were harmonious and productive and ethnic minorities were defined as community members because they too claimed descent from precolonial Baol. This is a sharp contrast to Koungheul, where despite the best efforts of the industrious PCR, the community's lack of a unifying history split local politics along various dimensions, at times ethnicity, at others autochthony. In the aggregate, these divisions biased the work of the rural council and, perhaps worse, was cited as eroding the population's engagement with the local state altogether.[99]

Conclusion

The past twenty years have seen a rapid proliferation of social service delivery across the developing world. In Senegal alone, work spurred on by the Millennium Development Goals halved the population living under $1.25 a day, achieving gender parity in primary education and greatly reducing child mortality. Yet progress is patchy across the continent and within its constituent countries. This has not escaped scholarly attention, but to a list of common arguments - that this variation reflects partisan or ethnic targeting, that it tells us something

[98] Author interview, Diourbel Region, 16 February 2016.
[99] Author interviews with village chiefs, Kaffrine Region 10 February 2016.

about corruption or coproduction - this paper adds that progress may be uneven within a single country as a function of historically inherited and spatially uneven attributes.

Looking to decentralized West Africa, this article demonstrates the powerful role played by historical identities in contemporary public goods provision. By exploiting Senegal's dynamic precolonial geography, I articulate a theory of institutional congruence: local governments can better coordinate when their formal institutional boundaries are congruent with robust social identities. It is this relative degree of congruence that shapes subsequent allocative strategies: broad and equalizing in cases of high congruence or contentious and targeted in areas where it is low. Of course, the empirical support for the argument is limited here to a single case. Still, the 'resurgence of tradition' following the dual reforms of democratization and decentralization, paired with evidence that precolonial identities have renewed political value across the West African Sahel, lend support to my contention that historical group identities not only have a broad but also a significantly revived influence at the local level.[100] Whether all precolonial states generate historical legacies of this nature remains an open empirical question. This study does identify the need for politically latent identities to retain some socio-economic currency in periods of political dormancy as an important scope condition, however. Without this, historical identities are unlikely to persist at all.

The argument holds two important implications for broader scholarship on how identities shape distributive politics: theoretically, it argues that politically relevant identities may persist latently for long-periods of time, only to be reactivated under certain institutional configurations. Rather than assuming identity categories are static, I show how that they can

[100] Englebert 2002; Hilgers and Jacob 2008 on precolonial claims in Burkinabé local election.

become politicized even in the relatively short-term, particularly following moments of institutional change. In turn, the argument redirects our attention to the interaction between the boundaries of formal state and informal social institutions.

Empirically, this article calls for increased attention to the dual reforms of democratization and decentralization in Africa, specifically regarding how they enable old politics to claim a new stage. Though initially dismissed as window-dressing, the local state, decentralized or devolved, remains the primary point of government contact for many rural Africans, yet scholars have done relatively little work to understand bottom-up generators of variation in local political life. As the scope of what local agents control expands, it becomes even more important that we interrogate the ways in which we expect local state actors to pursue their own interests and, more importantly, when we think their interests dovetail with those of the broader community.

Like many, I conclude with a word of caution. Delivering goods broadly across space is not necessarily the ideal criteria with which to evaluate local development outcomes; highly-populated villages with overcrowded classrooms could suffer if small, isolated localities receiving their own school is the local priority. In this vein, the social identities that embed local officials within their local communities may produce preferable public goods outcomes in some situations, but this remains patronage politics in another form and likely comes at a cost. Recent evidence suggests that embedded elites disproportionately capture local democratic space and may use their influence for personal gains in ways not observed in my data.[101] Our focus on how politicians skew public goods distribution merits reflection, I suggest, on just what a neutral

[101] E.g. Acemoglu, Reed, and Robinson 2014.

allocation would be and whether it's reasonable to expect any politician - African or otherwise - to apolitically pursue it.

Figures and Tables

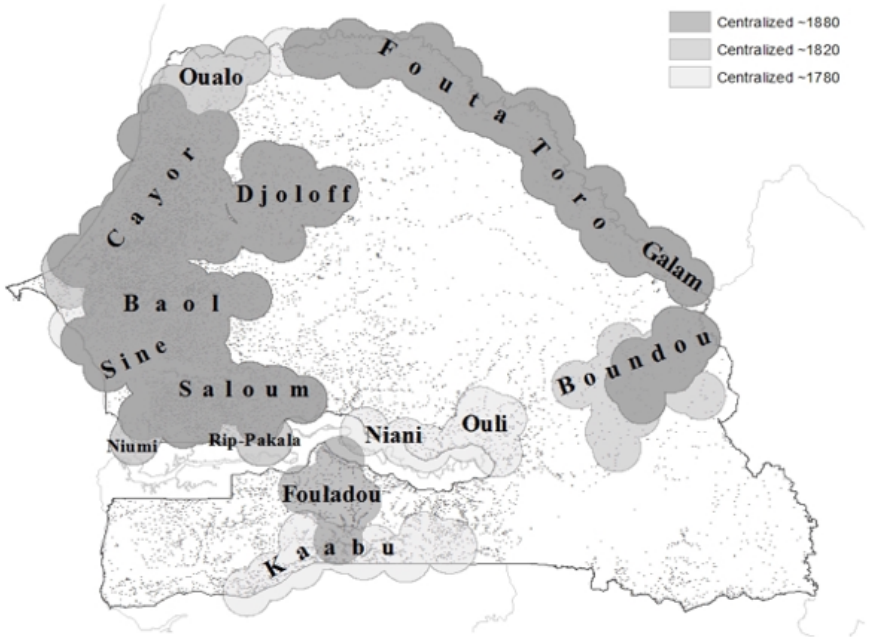

FIGURE 1: Senegal's Precolonial States over Time

Note: Precolonial states are coded by georeferencing key centers of power for each kingdom over time and constructing 20km buffers around these points following the logic of Herbst (2000) and others that power in precolonial Africa extended outward from nodes of power.

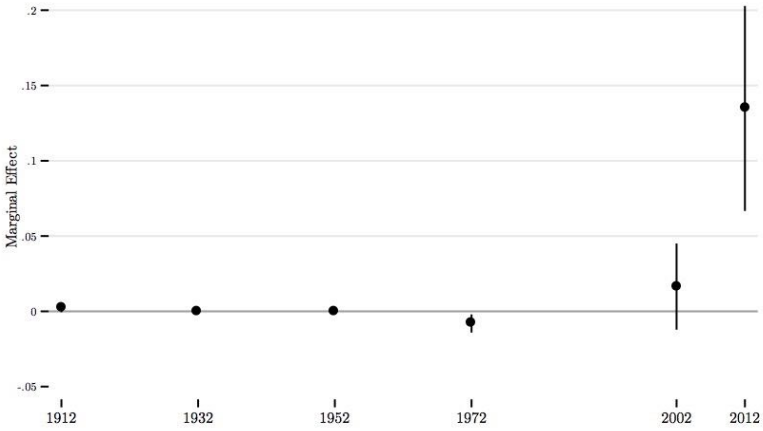

FIGURE 2: Marginal Effect of Centralization on New Social Service Access Over Time with 95% Confidence Intervals

TABLE 1. Effect of Institutional Congruence on New Social Service Delivery

	Primary Schools								Health			
	2002-09				2009-12							
	Logit			FE	Logit			FE	Logit			FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Institutional Congruence 20km	1.515** (0.206)	1.977*** (0.227)	2.499*** (0.389)	2.684** (0.964)	1.817*** (0.271)	1.551*** (0.212)	1.626** (0.262)	2.009** (0.633)	1.838** (0.376)	2.189*** (0.418)	2.403*** (0.511)	3.385** (1.495)
Local Need	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Local Demand	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N
Geographic	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y
N	14264	14264	14168	13063	14221	14221	14125	11240	10829	10829	10755	8123
Pseudo-R^2	0.106	0.154	0.167	0.167	0.116	0.170	0.175	0.179	0.082	0.171	0.185	0.119

*** $p < 0.001$, ** $p < 0.05$. Logit models report odds ratios with robust standard errors clustered at the rural community in parentheses. Rural community-level fixed effects models from conditional logit models with robust, clustered standard errors.

TABLE 2. Effect of Institutional Congruence on Location-Allocation Choice

PANEL A: Maximize Attendance Models

	Primary Schools				Health	
	2002-09		2009-12			
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional Congruence 20km	-75.546 (52.864)	-82.854 (49.543)	-27.540 (86.572)	-38.988 (94.586)	714.012 (599.324)	762.332 (539.666)
Local Need	Y	Y	Y	Y	Y	Y
Geographic	N	Y	N	Y	N	Y
N	283	283	318	318	183	183
R^2	0.216	0.218	0.553	0.448	0.284	0.307

PANEL B: Maximize Coverage Models

	Primary Schools				Health	
	2002-09		2009-12			
	(7)	(8)	(9)	(10)	(11)	(12)
Institutional Congruence 20km	-567.436*** (110.685)	-596.805*** (106.374)	-167.272** (74.555)	-171.758** (77.088)	-685.891** (292.061)	-677.862** (279.399)
Local Need	Y	Y	Y	Y	Y	Y
Geographic	N	Y	N	Y	N	Y
N	283	283	318	318	183	183
R^2	0.290	0.295	0.154	0..173	0.220	0.223

*** $p < 0.001$, ** $p < 0.05$. Results of OLS regressions with robust, clustered standard errors by region in parentheses.

TABLE 3. Logistic Estimates of New Social Service Delivery: Alternative Explanations

	PANEL A: Electoral Variables			PANEL B: Ethnicity			PANEL C: Murdock Data			PANEL D: Central Gov. Relations			
	Primary Schools		Health	Primary Schools		Health	Primary Schools		Health	Primary Schools			Health
	2002-09	2009-12		2002-09	2009-12		2002-09	2009-12		2002-09	2009-12		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Vote Gap	0.305*	0.850	1.160										
	(0.188)	(0.601)	(0.867)										
Vote Gap x Ln Population	1.179	1.036	0.971										
	(0.121)	(0.127)	(0.119)										
Logged Population	1.126**	1.152**	1.224***										
	(0.059)	(0.076)	(0.066)										
Ethnic Fractionalization				1.000	1.002	0.997							
				(0.003)	(0.003)	(0.004)							
Murdock Centralization Score							1.166	1.021	1.173				
							(0.161)	(0.192)	(0.215)				
% Change Teachers per Student/Region										0.341**	1.410*		
										(0.121)	(0.275)		
Average FDD (per capita in $)												0.999	1.000
												(0.000)	(0.000)
Institutional Congruence 20km	1.987***	1.548**	2.165***	1.989***	1.569***	2.159***	1.822***	1.529*	1.689**	2.145***	1.827***	1.865***	2.317***
	(0.224)	(0.217)	(0.434)	(0.230)	(0.211)	(0.399)	(0.301)	(0.346)	(0.396)	(0.349)	(0.319)	(0.326)	(0.539)
N	13565	11362	10173	14264	14221	10828	12633	12591	9537	14264	14221	14221	10828
Pseudo-R^2	0.155	0.172	0.173	0.154	0.170	0.171	0.169	0.186	0.179	0.157	0.170	0.169	0.171

*** $p < 0.001$, ** $p < 0.05$, * $p < 0.1$. Odds ratios with robust standard errors, clustered at the rural community, in parentheses. All models include controls for local need and demand.

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Supplementary Materials:

Precolonial Legacies and Institutional Congruence in Public Goods Delivery: Evidence from Decentralized West Africa"

Contents

1. Coding of Pre-Colonial States

Discussion: Inclusion/Exclusion Criteria

This project measures statehood at fifty year intervals from 1500-1880 as the fulfillment of four criteria, the first two of which follow North et al.'s definition of a natural state[102]:

1) a limited organizational form, notably an elite tied together through personal relations and a political hierarchy built around patron-client relationships. Political rule in the Djoloff, in central Senegal, for example, was assured by a well-defined set of elites elected out of provinces, who together formed an advisory council to the King, while maintaining clients within their provinces;[103]
2) a system for taxing trade. Many of West Africa's states profited off of the slave trade, taxing caravans as well as European traders (e.g. Gomez on Boundou).[104]

The last two criteria are those identified by Hawthorne as features of Africa's precolonial states:[105]

3) regularized tribute systems from clients. In West Africa, tributes often a yearly tribute and took specific forms in each state, such as a payment for the right to farm land which, though administered locally, was claimed by the royal court in Boundou.[106] In Saloum, the Buur (king) received the following: each village farmed a field for the royal household, with one animal per herd and one-tenth of the millet crop going to the Buur as well. The royal family had a monopoly on the area's lucrative saltworks, customs officials collected trade taxes and criminal activities required offenders to pay indemnities that supported local judges and the Buur;[107] and
4) some form of local representation to regulate social and economic life. This often took the form of direct appointments from the royal court or, more commonly, a system whereby a local chief or religious figure was delegated to enforce the king's orders and laws.

The Sahelian West African state system formed in the wake of the collapse of the Malian Empire in the 1300s. Naturally, some states were stronger than others and in the half-millennium preceding French colonization the fates of states waxed and waned. The sub-region of Senegambia formed a relatively cohesive historical entity, bordered on the west by the Atlantic, the north by the sharp cultural and livelihood differences between the populations south of the Senegal River and the Maure and Berber pastoralists to the north, and the east by the current boundary of the Senegalese State. The easternmost states that fall within modern-day Senegal, Gajaaga and Boundou were largely oriented to the Senegambian West, while states

[102] North, Wallis, and Weingast 2009, 5-9.
[103] Monteil 1966, 603-4.
[104] Gomez 1992, 64.
[105] Hawthorne 2013, 77.
[106] Clark 1996, 8.
[107] Klein 1968, 20.

slightly further to the East, such as Khasso and Kaarta, were more culturally similar and historically oriented to the Mandingue state system in present-day Mali.[108] Large parts of the region had been incorporated in the kingdoms of Ancient Ghana (~300-1200) and Mali (~1200-1400s), but Curtin highlights bottom-up pressures to centralize as well as this historical legacy. States that formed along the Senegal River, for example, were based on fertile floodplains, in close proximity to the Saharan trade and were early adapters of Islam.[109] States were capable of enforcing property rights, adapting to the changing whims of capitalist markets and constructed around central governments with national identities.[110] On the eve of the final French push to conquer Senegal, slightly under half of Senegal's territory was under the control of a centralized political organization.

Figure A1: Precolonial Capitals and Discount Rate Illustration

Details on each precolonial state can be found at [hyperlink to author's website here]. A map of Senegal's precolonial political geography, over time, can be seen in Figure A1.

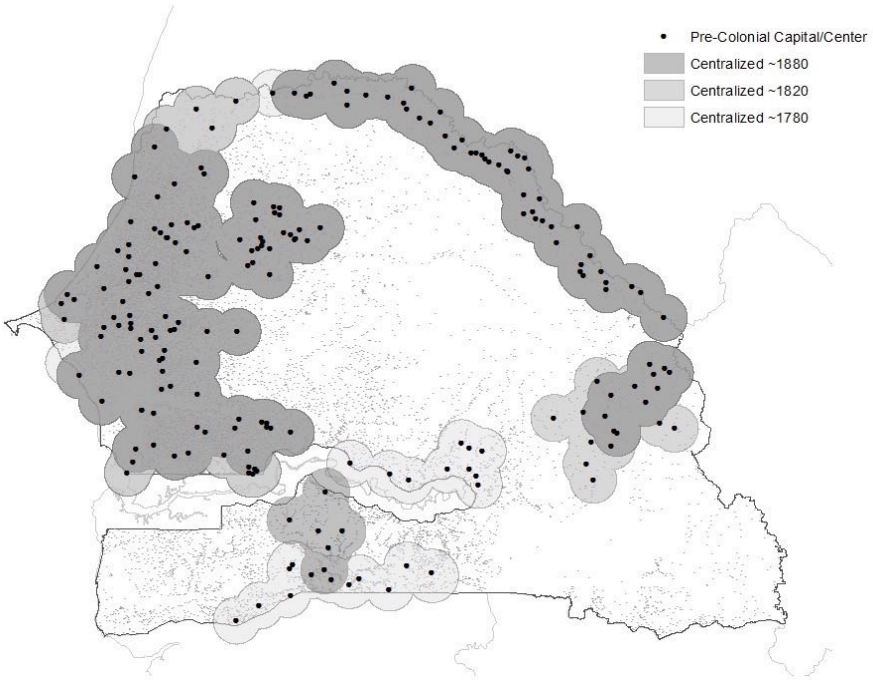


Figure A2: Illustration of Congruence Measure

[108] Curtin 1975, 7.
[109] Curtin 1975, 7-8.
[110] Warner 1999.

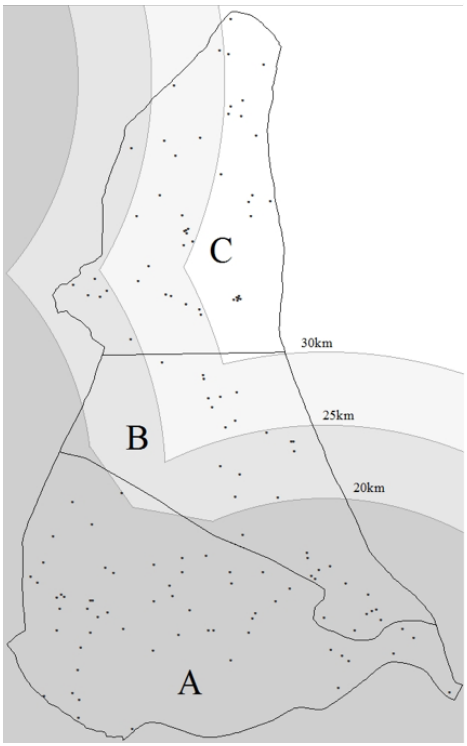


Figure A2: Illustration of Congruence Measure

20, 25 and 30km centralization buffers and three rural communities (A, B, and C) are shown with their villages.

A: All villages fall within the 20km buffer, hence all villages score a 1 for all three size estimates.

B: At the 20km buffer, only 15 of 32 villages are centralized. All villages score a 0. At the 25km buffer, the majority (71%) of villages are centralized, hence all villages that fall within the 25km buffers receive a score of 1 and all others a 0. At the 30km buffer all villages receive a 1.

C: All villages fall outside of the 20km buffer and hence score a 0. Only 7 villages fall within the 25km buffer, all villages receive a 0. 28 out of 41 villages fall within the 30km buffer, hence these 28 receive a 1 while the remaining 19, never covered by a buffer, receive a 0.

2. A Note on Administrative Boundaries

It is possible that the results are driven by the process of administrative delineation. If local government boundaries were created via a bottom-up, consultative process, such as the case in Mali, then contemporary government performance could be the product of the capacity of some communities to organize and demand their own local government. Interviews in Dakar reveal no clear motivation in how the original administrative divisions took place in the 1970s. The most frequent explanation is simply that the government divided up existing *arrondissements* in a way that made sense to the local subprefect (see Figure A3 for an overlay of these two units).

Arrondissements were created at independence. While early French delimitation of the colonial *canton* sometimes resembled the boundaries of pre-colonial provinces in areas that had been home to kingdoms, in acephalous areas colonial administrative units often had no geographic or political significance.[111] As the colonial state bureaucratized, the French desire to create uniform administrative divisions resulted in less historically-meaningful administrative divisions throughout the country.[112] At independence, this meant that the average *arrondissement* aggregated parts of slightly over four colonial *cantons* with most *cantons* being split into 2.5 *arrondissements*.[113] These numbers suggest signifiant rupture from the colonial-era borders as the Socialist post-colonial regime attempted to consolidate power in the rural countryside.

To the extent that the 1972 decentralization reform was designed to meet the central state's political objectives, there is little evidence that local political cleavages generated boundaries delimitation.[114] Rather, the state's strategy was to form an administrative structure wherein each region was divided into three departments, each department into three arrondissements and each *arrondissement* into three local governments. *Arrondissements* themselves were the product of a late colonial bureaucratic desire for uniform administrative divisions while local governments were created according to a 'principle of centrality.'[115] This referred to the government's effort to meet a technical criteria of identifying villages capable of serving as economic poles, such as weekly markets, peasant cooperatives or health centers, for local

[111] Boone 2003, 106

[112] Crowder 1968, 191

[113] For the former, this is 3.91 and 3.58 (centralized and uncentralized areas respectively). Note that these maps were digitized and geo-referenced by the author and likely contain some margin of error.

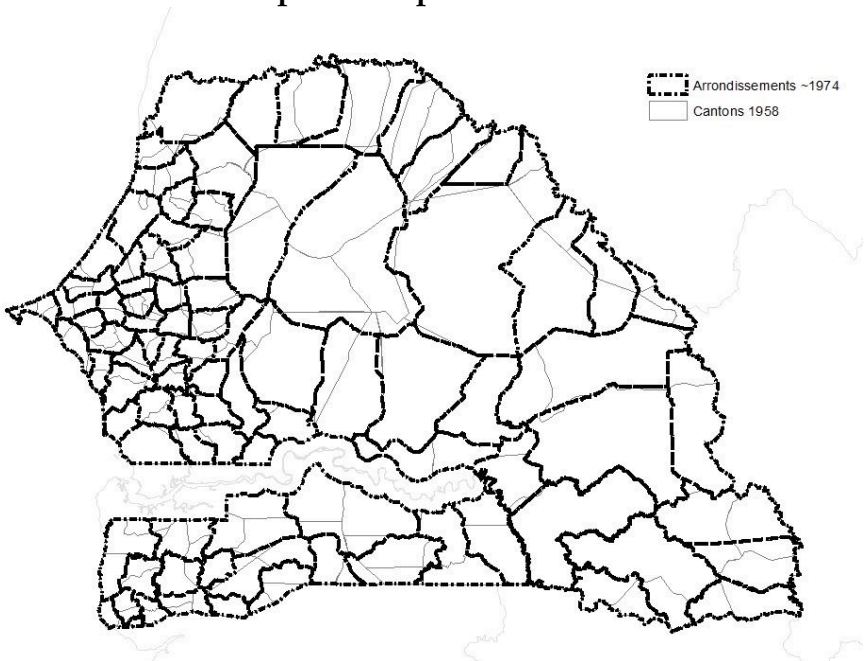
[114] This was verified in interviews conducted in 2016. One councilor explained that his local government borders, as drawn by the central state in 1976, were the same created by the French. The 1976 reforms did shift the local government seat to a more central location along a main road; the colonial canton seat had been in a historically prominent village that had declined significnatly in size. The precolonial canton, he continued, had no clear meaning that he was aware of, though he felt that the boundaries made sense, as the villages it included were "homogenous, solidary" (Interview, Louga Region, 19 February 2016).

[115] Interview, History Professor, Dakar, 25 February 2016. Here, locally influential figures were at times able to divert the pole to their home village, this is particularly true for influential religious figures.

government capitals.[116] How the remainder of the territory was divided, however, was then done to ensure demographic balance and, more ambiguously, 'economic potential.'[117]

More recently, Senegal undertook significant administrative redistricting in 2009. Numerous explanations have been put forward for these changes. The government claimed it was designed to bring the administration closer to the citizenry by creating smaller administrative units, but the general consensus is that the regime of President Wade was acting with a direct eye on the 2009 local elections. In reality, rural communities that were divided had, on average, more villages (73 versus 57) and larger surface areas (124,067 hectares versus 61,673), though political motives were clearly at play as well. Although uncentralized areas were more likely to have an administrative division, with only 10.4% of rural communities in formerly centralized regions having a boundary change as opposed to 20.1% in uncentralized regions (significant at $p < 0.05$), this was driven by political motives of the central state, with little to no reference to local political objectives. Indeed, numerous individuals working in rural areas interviewed for this project noted the sloppiness with which the divisions had been conducted in Dakar. In one community in southeastern Senegal, for example, a village was officially listed as belonging to a neighboring rural community even though it was over ten kilometers from the border. This meant that citizens of the village had to travel to their 'official' local government for all paperwork for over a year as the local administration attempted to remedy the situation.[118]

Figure A3: Colonial *Cantons* and post-independence *Arrondissements*

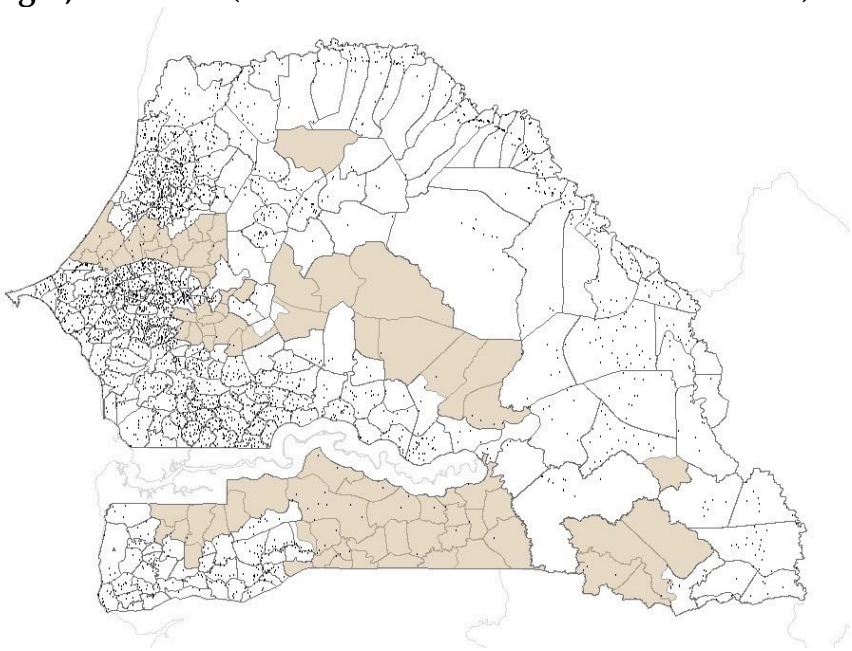


Source for 1970s Arrondissements: Atlas National du Senegal.

[116] Interview, Dakar, 6 February 2016.
[117] Interview, Development Planner, Dakar, 3 February 2016. If a river system went through an arrondissement, for example, the government sought to facilitate each local government's access to it.
[118] Author Interview, Kedougou Region, 2 April 2013

Figures A4 and A5 illustrate villages that are listed in historic censuses.[119] While village growth has taken place over time, census data suggests that over seventy-six percent of existing Senegalese villages today were founded by 1958. By contrast, in regions where data exists, only twenty-six percent of villages existing today were listed in the first French censuses. Though certainly due, to a degree, to poor information, this still suggests a notable growth in population during the colonial era. Because most internal migration has been rural to urban, village growth almost exclusively represents villages created due to population growth or, alternatively, in-migration from other countries. The exception to this is population movements that took place under the *Terres Neuves*, wherein pilgrims followed religious guides to settle new communities and farm peanuts. All results are robust to excluding local governments that can be characterized as falling within this zone as represented by Pelissier.[120]

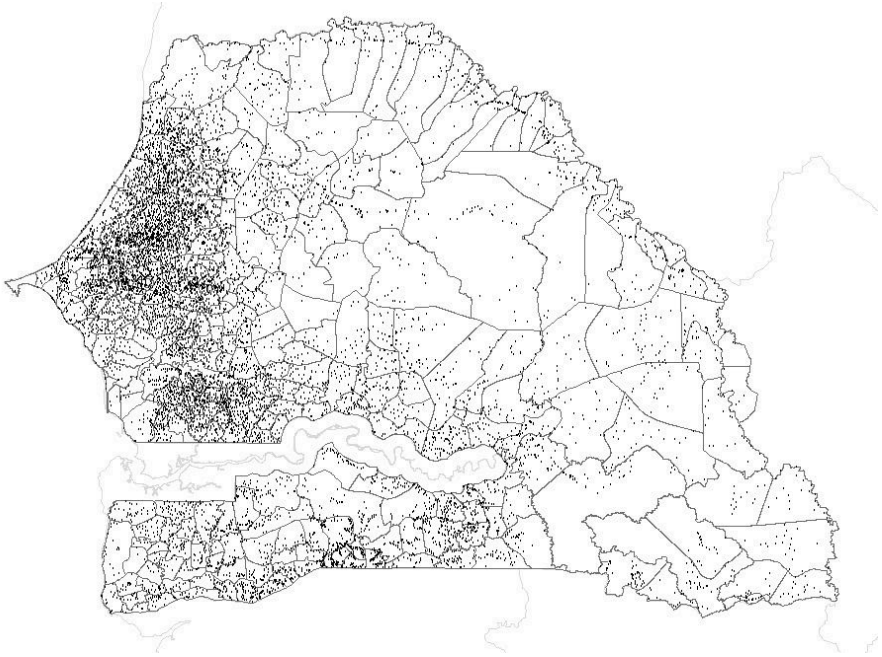
Figure A4: Villages, circa 1900 (shaded areas indicate insufficient data)



Source for 1900 villages: AOF (1903-04), Becker 1983.

[119] AOF 1903-5; Becker 1983; Sénégal 1958.
[120] Pélissier 1966.

Figure A5: Villages, circa 1958



Source for 1958 villages: Sénégal 1958.

3. Alternative Model Specifications; Independent Variables

Table A1.

I also model my data using hierarchical models. Following Bell and Jones, all multi-level models include a centered mean score of institutional congruence at the rural community level.[121]

TABLE A1. Table 1 Replication; Hierarchical Models

	Primary Schools						Health		
	2002-09			2009-12					
	(1)	(2)	(3)	(5)	(6)	(7)	(9)	(10)	(11)
Institutional	2.673***	2.748***	2.784***	2.200***	2.173***	2.104***	3.626***	3.572***	3.645***
Congruence 20km	(0.421)	(0.433)	(0.449)	(0.445)	(0.436)	(0.438)	(0.651)	(0.637)	(0.664)
Local Need	Y	Y	Y	Y	Y	Y	Y	Y	Y
Local Demand	N	Y	Y	N	Y	Y	N	Y	Y
Geographic	N	N	Y	N	N	Y	N	N	Y
N	14264	14264	14168	14221	14221	14125	10850	10850	10850
Level-2	318	318	318	368	368	368	276	276	276

*** $p < 0.001$, ** $p < 0.05$. Odds ratios and standard errors, in parantheses, from two-tailed, mixed-level logit models. All hierarchical models include a centered mean of pre-colonial centralization at the local government level (level 2).

Table A2.

Table A2 tests a number of alternative specifications of the independent variable. First, models one, seven and thirteen use the local government average of the *Institutional Congruence 20km* measure used in the main text (*Institutional Congruence 20km, CR Average*). A second set of specifications test the effect of just having been congruent in 1880, the year of French colonization. This is a dummy variable (*Institutional Congruence, 1880 Dummy*). Third, the main independent variable is recoded to follow Bockstette, Chandra and Putterman's measure of state antiquity, which constructs a measure of an area's 'statehood' by looking at three attributes: a) whether a form of government existed beyond a tribal level; b) whether the government was locally based or whether a region was a colony of another state; and c) the amount of territory controlled by the state as a percent of the current state area.[122] This measure is similarly subject to a discount decay function in order to weigh more heavily the scores of a respective area in 1880 - the eve of French arrival (*Institutional Congruence, Index 20km*). Fourth, *Precolonial Centralization 20km*, is a zero to one continuous measure that

[121] Bell and Jones 2015.

[122] Bockstette, Chanda, and Putterman 2002. In their original conceptualization, Bockstette, Chandra and Putterman have cut-off points for territorial coverage that are all too large for the amount of territory covered by any of Senegal's pre-colonial states. Because following their original measurements this would artificially compress what is otherwise meaningful variation, here their original cut-off points are scaled down to whether or not a state controlled over five percent, two to five percent or under two percent of the current state's territory.

simply captures whether or not a village falls within the twenty kilometer buffer of any state for each of the time points measured. This does not test the role played by congruence, but looks more simply at centralization in general.

The final two alternative specifications, *% CR 1900* and *% CR 1958*, draw on colonial census data (described in Appendix 2) to examine whether the percent of villages in a rural community today that existed during either of these census years is correlated with public goods delivery. Because the theory argues that precolonial centralization impacts contemporary patterns of public goods delivery via on-average higher congruence between elite networks and local government boundaries, higher rates of villages dating to the precolonial era may likewise capture the cohesive and durable local identities. Because only incomplete data exists from the first French censuses, this measure is best understood as an approximation of any give village's existence at the turn of the last century; areas of the country for which there is no or clearly incomplete data are omitted. This is supplemented with data from 1958, a less ideal measure, but for which a complete inventory of villages exists. Precolonial centralization has relatively strong correlations with the percent of villages founded by 1900 (0.43) and 1958 (0.52). The results of Table A2 are consistent with the centralization measure, though *% CR 1900* is insignificant for health data.

TABLE A2: Table 1 Replication; Alternative Measures of Independent Variable

	New School Access												New Health Access					
	2002-09						2009-12											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Institutional Congruence 20km, CR Average	2.382*** (0.389)						1.513** (0.294)						2.089** (0.527)					
Institutional Congruence, 1880 Dummy		1.822*** (0.317)						1.565** (0.222)						1.769*** (0.308)				
Institutional Congruence, Index 20km			2.930*** (0.503)						1.526** (0.274)						2.386*** (0.616)			
Precolonial Centralization 20km				2.725*** (0.416)						1.857*** (0.293)						1.917** (0.394)		
% CR 1900					1.007** (0.003)						1.008** (0.004)						1.005 (0.005)	
% CR 1958						4.916*** (1.731)						1.533 (0.631)						2.518** (1.019)
N	14168	14168	14168	14168	12568	14168	14125	14125	14125	14125	12526	14125	10750	10750	10750	10750	10750	10750
Pseudo-R^2	0.163	0.161	0.165	0.167	0.165	0.162	0.174	0.175	0.174	0.177	0.188	0.173	0.179	0.179	0.18	0.179	0.179	0.177

*** $p < 0.001$, ** $p < 0.05$. Coefficients are odds ratios from logistic regressions with robust standard errors, clustered at the rural communiy, in parantheses. Models include full controls as specified in Table 1.

Table A3.

Table A3 tests whether or not the results are sensitive to a 20km buffer size.

TABLE A3. Table 1 Replication; Increased Centralization Buffer Size

Panel A: Congruence; Discount Rate

	New Primary School Access				New Health Access	
	2002-09		2009-12			
	25km	*30km*	*25km*	*30km*	*25km*	*30km*
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional Congruence	1.869*** (0.219)	2.085*** (0.254)	1.570*** (0.213)	1.719*** (0.257)	2.103*** (0.405)	1.961*** (0.384)
Local Need	Y	Y	Y	Y	Y	Y
Local Demand	Y	Y	Y	Y	Y	Y
Geographic	N	N	N	N	N	N
N	14264	14264	14221	14221	10850	10850
Pseudo-R^2	0.152	0.154	0.170	0.171	0.169	0.167

PANEL B: Congruence; Bockstette et al. Index

	New Primary School Access				**New Health Access**	
	2002-09		**2009-12**			
	25km	*30km*	*25km*	*30km*	*25km*	*30km*
	(7)	(8)	(9)	(10)	(11)	(12)
Institutional Congruence, Index	2.012*** (0.251)	2.004*** (0.256)	1.588** (0.243)	1.715*** (0.278)	2.172*** (0.470)	2.214*** (0.480)
Local Need	Y	Y	Y	Y	Y	Y
Local Demand	Y	Y	Y	Y	Y	Y
Geographic	N	N	N	N	N	N
N	14264	14264	14221	14221	10850	10850
Pseudo-R^2	0.152	0.151	0.169	0.169	0.167	0.167

PANEL C: Congruence; 1880 Dummy

	New Primary School Access				New Health Access	
	2002-09		2009-12			
	25km	*30km*	*25km*	*30km*	*25km*	*30km*
	(13)	(14)	(15)	(16)	(17)	(18)
Institutional Congruence, Dummy	1.628*** (0.174)	1.709*** (0.188)	1.519*** (0.175)	1.727*** (0.191)	1.732*** (0.261)	1.686*** (0.246)
Local Need	Y	Y	Y	Y	Y	Y
Local Demand	Y	Y	Y	Y	Y	Y
Geographic	N	N	N	N	N	N
N	14264	14264	14221	14221	10850	10850
Pseudo-R^2	0.151	0.152	0.170	0.172	0.167	0.166

*** $p < 0.001$, ** $p < 0.05$. Coefficients are odds ratios from logistic regressions with robust standard errors, clustered at the rural communiy, in parantheses.

Table A4.

To ensure that the results are not driven by a single region of Senegal, Table A4 reruns the models with region-by-region deletion.

TABLE A4. Table 1 Replication; Region by Region Deletion

	No Diourbel	No Fatick	No Kaffrine	No Kaolack	No Kedougou	No Kolda	No Louga	No Matam	No Saint-Louis	No Sedhiou	No Tamba-counda	No Thies	No Ziguinchor
						New Schools 2002-09							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Institutional Congruence	2.531***	2.305***		2.768***		2.364***	2.462***	2.407***	2.232***		2.597***	2.460***	2.453***
20km	(0.391)	(0.365)		(0.530)		(0.399)	(0.398)	(0.418)	(0.425)		(0.434)	(0.363)	(0.414)
N	12998	13352		11979		11719	11560	13688	13037		12470	12594	13663
Pseudo-R^2	0.162	0.157		0.167		0.171	0.168	0.176	0.174		0.181	0.168	0.164
						New Schools, 2009-12							
	(14)	(15)	(16)	(17)	18	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
Institutional Congruence	1.410**	1.665**	1.745***	1.710**	1.584**	1.581**	1.641**	1.622**	1.536**	1.658**	1.781***	1.492**	1.611**
20km	(0.231)	(0.273)	(0.305)	(0.290)	(0.255)	(0.275)	(0.277)	(0.272)	(0.259)	(0.279)	(0.312)	(0.249)	(0.274)
N	12955	13309	13161	12908	13767	12460	11518	13648	13482	13354	12791	12551	13624
Pseudo-R^2	0.173	0.171	0.175	0.176	0.175	0.176	0.169	0.183	0.173	0.177	0.187	0.179	0.172
						New Health, 2009-12							
	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)
Institutional Congruence	2.202***	2.392***	2.999***	2.775***	2.379***	3.056***	2.181***	2.158***	2.003***	2.502***	2.459***	2.033**	2.341***
20km	(0.453)	(0.515)	(0.687)	(0.589)	(0.519)	(0.747)	(0.508)	(0.463)	(0.428)	(0.551)	(0.529)	(0.485)	(0.533)
N	10201	10244	10009	9702	10471	9111	8809	10299	10162	10463	9746	9746	10353
Pseudo-R^2	0.179	0.183	0.188	0.194	0.191	0.176	0.184	0.184	0.194	0.188	0.206	0.184	0.174

*** $p < 0.001$, ** $p < 0.05$. Coefficients are odds ratios from logistic regressions with robust standard errors, clustered at the rural communiy, in parantheses. All models include all controls. Omitted regions for 2002-09 are those that were created in the 2009 redistricting.

Table A5.

Two models run additional tests of electoral competition. First, as seen in Table A5, there is no effect of measuring local electoral compassion by the percent of votes going to the winning party, *Percent Winning Votes*, at the nearest voting bureau. Similar to *Vote Gap* in the main model, this is run as an interaction term. Secondly, since we might think of the effects of political competition accrue to the rural community rather than villages, models are also run with a dummy variable that takes the value of one if the ruling local council is aligned with the incumbent, national political party (*National Alignment*). Again, this is insignificant.

TABLE A5. Table 3 Replication; Alternative Electoral Variables

	Primary Schools				Health	
	2002-09		2009-12			
	(1)	**(2)**	(3)	**(4)**	**(5)**	**(6)**
% Winning Party	0.461		0.647		3.366	
	(0.503)		(0.801)		(4.160)	
% Winning Party x Ln Population	1.086		1.040		0.857	
	(0.190)		(0.222)		(0.174)	
Logged Population	1.151		1.134		1.344**	
	(0.138)		(0.162)		(0.184)	
National Alignment		0.964		1.187		1.144
		(0.094)		(0.159)		(0.211)
Institutional Congruence 20km	2.008***	1.960***	1.532**	1.571***	2.160***	2.179***
	(0.228)	(0.222)	(0.214)	(0.217)	(0.431)	(0.406)
N	13565	14264	13360	14221	10192	10850
Pseudo-R^2	0.152	0.154	0.172	0.171	0.173	0.171

*** $p < 0.001$, ** $p < 0.05$. Coefficients are odds ratios from logistic regressions with robust standard errors clustered at the rural community in parantheses. All models include controls for local need and demand

5. Alternative Model Specifications; Dependent Variables

Table A6.

TABLE A6. Table 1 Replication; Any New Social Service Access (Health & Primary Combined), 2009-12

	Logit			FE
	(1)	(2)	(3)	(4)
Institutional Congruence 20km	1.566**	1.489**	1.649***	2.113**
	(0.231)	(0.199)	(0.245)	(0.637)
Local Need	Y	Y	Y	Y
Local Demand	N	Y	Y	Y
Geographic	N	N	Y	Y
N	10894	10796	10723	10220
Pseudo-R^2	0.055	0.098	0.106	0.078

*** $p < 0.001$, ** $p < 0.05$. Coefficients are odds ratios from logistic regressions with robust standard errors, clustered at the rural community, in parantheses. Fixed effects models at the rural community-level and report odds ratios with robust, clustered standard errors in parentheses.

Table A7.

Table 1 uses the Senegalese State standards for access to social services. Table A7 reduces this definition of access. Even at more conservative estimates of access, institutional congruence with a precolonial state still appears to increase the probability of a village receiving access to a social service.

TABLE A7. Table 1 Replication; Reduced Radius of 'Access' Definition

	PANEL A: Primary School Access within 2km						PANEL B: Primary School Access within 1km						PANEL C: Health					
													3km Access			1km Access		
	2002-09			2009-12			2002-09			2009-12			2002-09			2009-12		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Institutional Congruence	1.328**	1.613***	2.143***	1.931***	1.625**	1.596**	1.284**	1.613***	2.175***	1.531**	1.348**	1.346*	2.063***	2.407***	2.624***	1.873***	2.124***	2.337***
20km	(0.191)	(0.219)	(0.424)	(0.349)	(0.296)	(0.318)	(0.161)	(0.175)	(0.305)	(0.232)	(0.175)	(0.214)	(0.413)	(0.438)	(0.521)	(0.368)	(0.412)	(0.504)
Local Need	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Local Demand	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y
Geographic	N	N	Y	N	N	Y	N	N	Y	N	N	Y	N	N	Y	N	N	Y
N	14264	14264	14168	14221	14221	14125	14264	14264	14168	14221	14221	14125	10733	0733	10660	10730	10730	10657
Pseudo-R^2	0.138	0.169	0.181	0.165	0.213	0.215	0.107	0.146	0.155	0.103	0.153	0.155	0.063	0.138	0.149	0.062	0.117	0.123

*** $p < 0.001$, ** $p < 0.05$. Coefficients are odds ratios from logistic regressions with clustered, robust standard errors at the rural community in parantheses.

Table A8.

Rural communities can also invest in new classrooms for existing schools. Table A8 presents results of models estimating the effect of institutional congruence on new classroom construction. Given the over-dispersed nature of classroom count data, estimations of new classroom placement are done with mixed-level negative binomial models. Results for classrooms are, in general, consistent with those of other local government investments, with the exception of fixed effects models in the first time period.

TABLE A8. Table 1 Replication; New Classroom Construction

	2002-09						2009-12						
	Logit					FE	Logit						FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Institutional Congruence 20km	1.219*** (0.068)	1.211*** (0.066)	1.222*** (0.068)	1.212*** (0.066)	1.133** (0.066)	0.974 (0.089)	1.344*** (0.108)	1.292*** (0.100)	1.259** (0.099)	1.267** (0.098)	1.302*** (0.100)	1.292*** (0.100)	1.464** (0.240)
% Gap Between Parties x Logged Population			1.030 (0.078)						1.076 (0.099)				
% Gap Between Parties			0.916 (0.429)						0.728 (0.439)				
Ethnic Fractionalization				1.000 (0.001)						0.996** (0.002)			
% Change Teachers per Student/Region					1.516** (0.232)						0.741** (0.092)		
Average FDD (per capita in $)												1.000 (0.000)	
Logged Population			0.993 (0.032)						1.088** (0.043)				
Local Need	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Local Demand	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	N
N	4284	4284	4115	4284	4284	4284	5514	5514	5279	5514	5514	5514	5499

*** $p < 0.001$, ** $p < 0.05$. Incident rate ratios from two-tailed negative binomial models. Robust standard errors clustered at the rural community in parentheses. Incident rate ratios from negative binomial models with fixed effects at the rural community-level have robust standard errors clustered by rural community.

6. Robustness Checks

Omitted Variable Bias

A central concern about the argument is that the results could be driven by an omitted variable. The models presented so far, including fixed effects models, are robust to several structural and geographical features, but could another unmeasured factor be driving these results? Working within the limits of observational data, I run a coefficient sensitivity analysis, which uses observed control variables to estimate the likelihood that unobserved variation is biasing estimates on the independent variable, here precolonial centralization. Coefficient sensitivity models seek to estimate how much stronger the effect of unobserved factors need to be on selection into treatment, relative to observed variables, for the former to nullify the estimated effect of the independent variable.

Table A9 employs Oster's method.[123] Oster argues that estimating omitted variable bias through coefficient sensitivity should be scaled to changes in the R^2 because of assumptions of shared covariance between the two sets of variables. To do so, Oster recommends bounding estimates by a plausible R_{max}, the idea that any given dependent variable can obtain at a maximum an R^2 of one, thereby explaining all variation on the dependent variable. Coefficient stability analysis estimates an 'identified set' of possible βs on the key independent variable, bounded by potential values of R_{max}.

TABLE A9. Assessment of bias in estimated effect of institutional congruence from unobservables; Oster's coeffecient stability approach

	w/ Geo Controls β^c	w/ Full Controls β^c	Oster, 2014			
			Geo	*Full*	*Geo*	*Full*
Primary Schools, 02-09	0.076***	0.089***	[0.076, 0.356]	[0.089, 0.426]	[0.076, 4.223]	[0.089, 3.290]
	(0.019)	(0.015)				
R^2	0.108	0.152				
R_{max}			0.237	0.334	1	1
Primary Schools, 12-09	0.023*	0.025**	[0.023, 0.129]	[0.025, 0.148]	[0.023, 13.97]	[0.025, 1.368]
	(0.013)	(0.010)				
R^2	0.076	0.112				
R_{max}			0.166	0.247	1	1
Health, 09-12	0.039	0.075***	[0.039, 0.401]	[0.075, 0.245]	[0.039, 8.182]	[0.075, 3.738]
	(0.027)	(0.023)				
R^2	0.069	0.159				
R_{max}			0.152	0.351	1	1

*** $p < 0.001$, ** $p < 0.05$. Results of models estimating coefficient sensitivity to unobserved variables with robust clustered standard errors by local government. Models in the first two columns report coefficients from OLS models for new schools, and health facilities for the full sample of villages. All other models are calculated using Oster's (2013) *psacalc* command in Stata; binary dependent variables are estimated using an OLS framework given limitations of this command.

[123] Oster 2016.

Models in the first two columns re-estimate the coefficient of precolonial centralization on the three central outcome variables. Due to restrictions in the estimation techniques, all coefficients represent the outcomes of linear models with region fixed effects. The latter four columns present the results of the coefficient sensitivity analysis.[124] The lower bound (listed first), which is the model-reported coefficient, is compared to the upper bound (listed second) which is the estimated coefficient from Oster's method. Models run with Oster's recommended R_{max} of 2.2 times the R^2 report coefficients that are generally consistent, indicating a positive impact of precolonial centralization on public goods delivery. Although the gap between the upper and lower bounds increases, results still suggest that even if an unobserved variable explains as much variation as the entire fitted model, it would not overturn the positive coefficient of precolonial centralization. The last two sets of models reflect the unrealistic demands of setting R_{max} at one, where the gap between estimated coefficients increases dramatically.

Placebo Tests

To further demonstrate that these patterns are explained by local-level dynamics, I run a series of placebo tests using the placement of *High Schools* over the full period (2002-12) and a village being *Electrified* or receiving *Improved Roads* in the first (2000-09).[125] These investments are highly valued by local populations and, far beyond the financial or technical means of local governments, are exclusively provided by the central state. The results, found in Table A10, indicate that precolonial centralization offers no significant leverage on a village's likelihood of receiving central government delivered services. Precolonial statehood influences the placement of locally-provided public goods therefore, but does not those delivered by the central state.

TABLE A10. Placebo Test: Central State Provided Services

	High Schools, 2002-12		Electrification, 2002-09		Improved Roads, 2002-09	
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional	0.872	1.893	1.171	1.089	0.769**	0.774*
Congruence 20km	(0.530)	(1.319)	(0.276)	(0.247)	(0.102)	(0.102)
Local Need	Y	Y	Y	Y	Y	Y
Local Demand	N	Y	N	Y	N	Y
N	1432	1433	12253	12251	14408	14382
Pseudo-R^2	0.284	0.393	0.098	0.119	0.043	0.045

*** $p < 0.001$, ** $p < 0.05$, * $p < 0.1$. Coefficients are odds ratios from logistic regressions with robust standard errors, clustered at the rural community, in parentheses. Sample for high schools restricted to villages with a population of more than 1,000 due to state criteria for construction.

6. Location-Allocation Models

[124] Models with geographic controls include: latitude, longitude, their interaction, logged distance to the nearest waterway, elevation and the distance to the nearest facility in the baseline year to capture spatial clustering. Full models add village population and the number of the facility type built by the local government in that period.

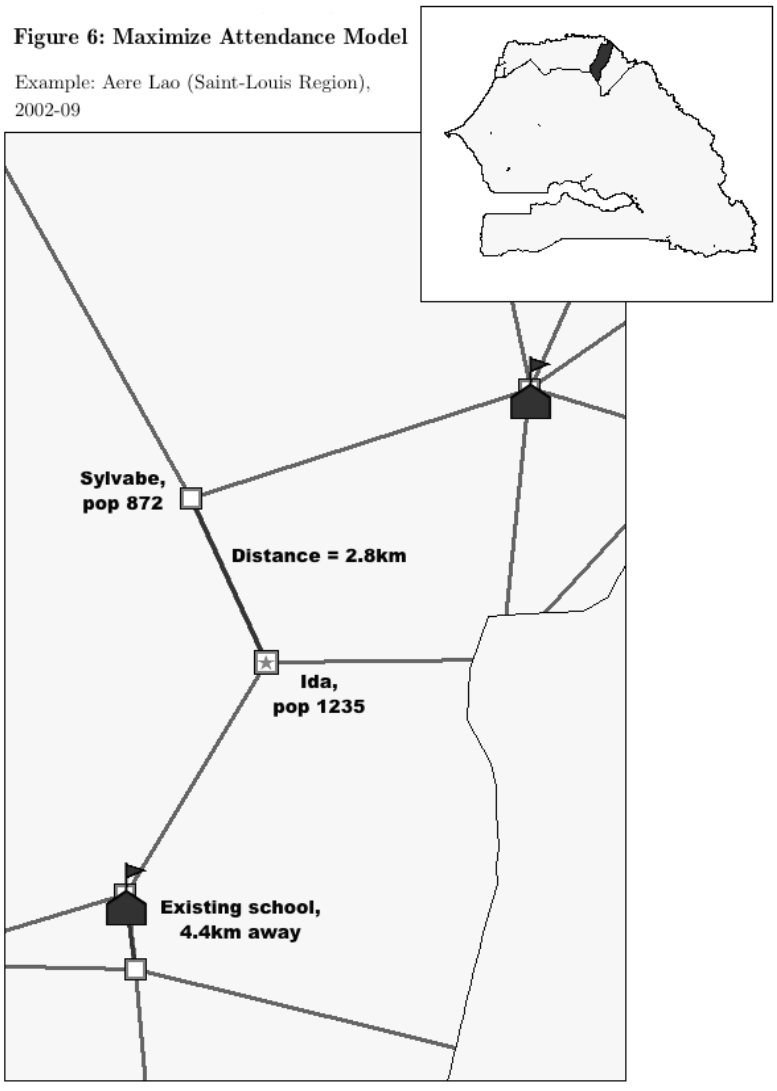
[125] Gaining access to or having an existing road 'improved' refers to a grated or paved road.

Location Allocation Models

Maximize attendance models choose locations so as to maximize the total number of users ('demand weight') who can utilize a facility within an assigned distance. The model chooses locations so as to maximizes the percent of the population that will attend a facility, discounting village population weight as a linear function of the distance from a facility under the assumption that individuals are more likely to use facilities that are closer to them. Figure A6 presents an example from the local government of Aere Lao. The model predicts that the village of Ida as the best location to maximize the total number of students who will attend school. Ida's student population is estimated at approximately 337 students, all of which are assigned to the chosen location. At 2.8 kilometers away, Sylvabe is only estimated to be willing to send roughly ten of its 238 students, for a total weighted population of 347 students at the chosen site.

Figure 6: Maximize Attendance Model

Example: Aere Lao (Saint-Louis Region), 2002-09



Maximize coverage models seek to assign schools to locations that will maximize the total percent of the population covered by a given radius - in this case the three kilometer standard set by the Senegalese State for schools and five kilometers for health. The model then gives locations that will maximize the percent of the population falling within the assigned impedance range, taking into account existing facilities. Villages that were covered in the baseline year and which fall inside the radius of a predicted facility are subtracted from the total population covered. Using again the examples of Ida and Sylvabe, here all of Sylvabe's population is added to the demand weight because it was not covered in 2002.

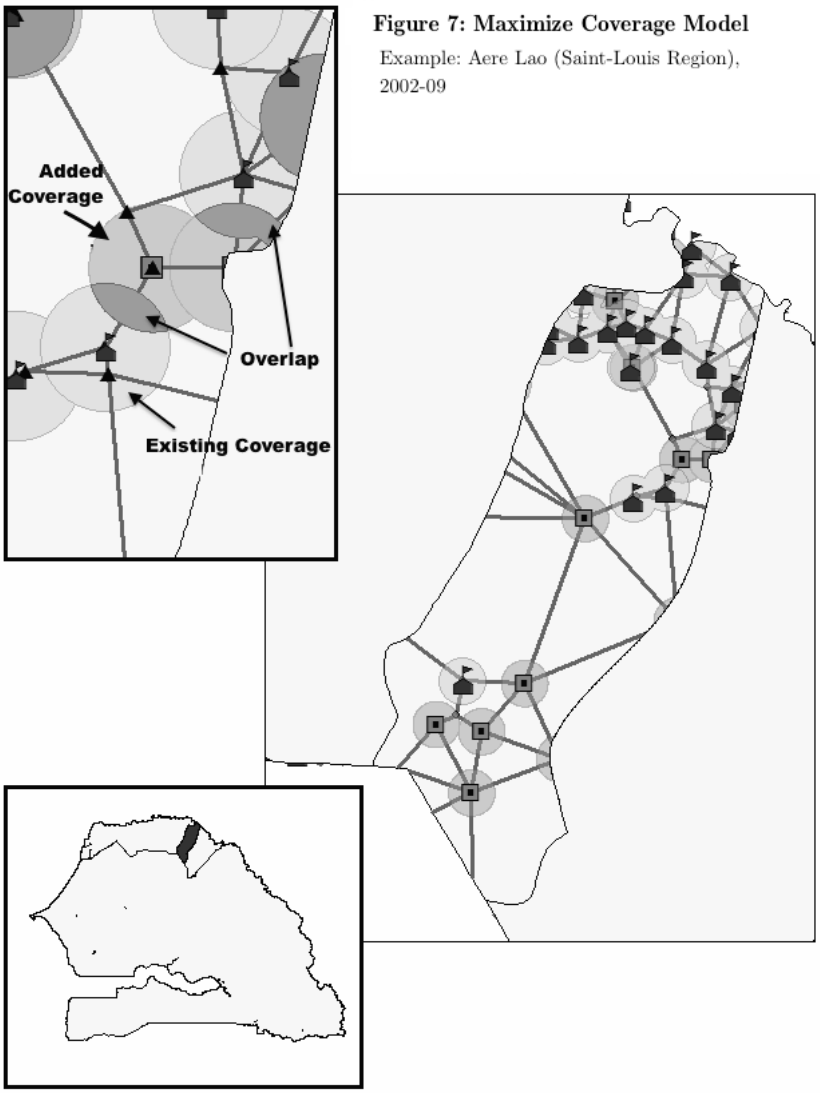


Figure 7: Maximize Coverage Model

Example: Aere Lao (Saint-Louis Region), 2002-09

Table A11.

Table A11 evaluates alternative explanations for the outcomes in Table 2, the location allocation models. Results similarly support the effect of the central independent variable, *Institutional Congruence 20km*. These models provide tentative support for some alternative explanations, but they are never robust across model specification. Nonetheless, they do suggest that more competitive electorally (M1), greater fiscal transfers (M11) and greater ethnically homogenous areas (M17) may shape government strategies as well.

TABLE A11. Table 2 Replication; Location-Allocation Modeling, Alternative Explanations

PANEL A: Maximize Attendance Models

	Primary Schools							Health			
	2002-09			2009-12							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Institutional Congruence 20km	-73.63 (55.15)	-108.86 (61.04)	-60.24 (58.15)	-23.87 (87.13)	-2.91 (78.53)	-6.49 (79.27)	0.99 (77.03)	809.52 (574.80)	728.89 (602.69)	617.37 (559.88)	759.19 (597.98)
% Gap Between Parties (CR)	-75.77 (77.11)			-134.75 (100.19)				-325.87 (592.09)			
National Alignment		-23.38 (39.44)			19.78 (46.31)				370.73 (593.94)		
Ethnic Fractionalization			1.55 (1.31)			-0.54 (1.31)				-14.80 (12.05)	
Average FDD (per capita in $)							-0.07 (0.05)				-0.28** (0.09)
Geographic	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.218	0.214	0.223	0.449	0.481	0.488	0.491	0.265	0.303	0.304	0.301
N	279	282	282	306	317	316	316	174	182	181	181

PANEL B: Maximize Coverage Models

	Primary Schools							Health Centers			
	2002-09			2009-12							
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(24)
Institutional Congruence 20km	-562.74*** (115.72)	-559.51*** (119.04)	-566.34*** (104.52)	-130.40* (71.79)	-159.52* (76.18)	-221.59** (76.74)	-169.32** (74.59)	-731.37** (329.96)	-691.75*** (296.05)	-673.26** (287.57)	-794.75** (289.51)
% Gap Between Parties (CR)	-106.11 (214.66)			175.15 (255.83)				-77.55 (322.84)			
National Alignment		-28.02 (133.79)			106.57 (83.66)				89.83 (159.31)		
Ethnic Fractionalization			-1.17 (2.44)			-6.25 (1.83)				3.03 (4.19)	
Average FDD (per capita in $)							-0.02 (0.05)				0.13* (0.07)
Geographic	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R^2	0.288	0.296	0.296	0.159	0.161	0.179	0.155	0.222	0.228	0.232	0.235
N	279	282	282	306	317	316	316	174	182	181	181

*** $p < 0.001$, ** $p < 0.05$, *$p < 0.1$. Results of OLS regressions with robust, clustered standard errors by region in parantheses. All models include a control for the number of new facilities built during that time period. Models include population density, logged population, and the percent of villages with the public good in the baseline year. Education models include *Perc Mouride*. Geographic controls include average village elevation, average logged distance to the nearest navigable waterway and a dummy variables that takes the value of one if a local government has more than 25% of its villages falling in the Ferlo Desert.

7. Figure 2 Model Results

Table A12. Effect of Precolonial Centralization on New Social Service Access Over Time, Fixed Effects Models

	1902-12	1912-32	1932-52	1952-72	1972-2002	2002-12
	(1)	(2)	(3)	(4)	(5)	(6)
Precolonial	4.875**	1.173	1.140	0.659**	1.100	1.723***
Centralization 20km	(3.618)	(1.266)	(0.421)	(0.099)	(0.094)	(0.235)
Pseudo-R^2	0.132	0.369	0.409	0.304	0.188	0.035
N	2583	8731	10711	10711	14098	10105

*** $p < 0.001$, ** $p < 0.05$. Results of logit models with fixed effects at the 2002 Region. Standard errors, clustered at the 2002 Region, are in parentheses.

8. Discussion: Qualitative Data

Sampling Strategy

This paper employs qualitative data drawn from original, highly-structured interviews conducted in two phases. First, a survey was conducted between February and July of 2013 with local elected officials, regional government officials and development agents and village chiefs as part of a larger project. In total, the interviews cover fifty-six rural communities, spread out over fourteen departments in ten of Senegal's thirteen regions.[126] Sampling was conducted to balance on a number of characteristics, centrally precolonial statehood, distance from Dakar, economic structure and population density. From this, a set of fourteen zones were purposively chosen so as to obtain variation on these factors as well as geographic spread across the country. Within each of these fourteen zones, one department was randomly selected. Subsequently, two arrondissements were chosen randomly in each department and, in turn, two rural communities in each arrondissement. Within each rural community, I interviewed the Rural Council President (PCR) or, in two cases when the PCR was unavailable his adjoint (the vice-PCR), one, randomly selected rural councilor and four to five randomly selected village chiefs. Random sampling was done by assigning a number to each official village and randomly drawing four numbers (within the range of possible villages). In the event that the chief was unavailable (due to illness, voyage or, at times, age), the next closest village was chosen. An exception this was if a village had a 'delegated' chief, for example, a chief who works in Dakar may delegate a brother or nephew to fulfill duties while he is away. All interviews were conducted by the author or a research assistant in the language of the respondent's choice.

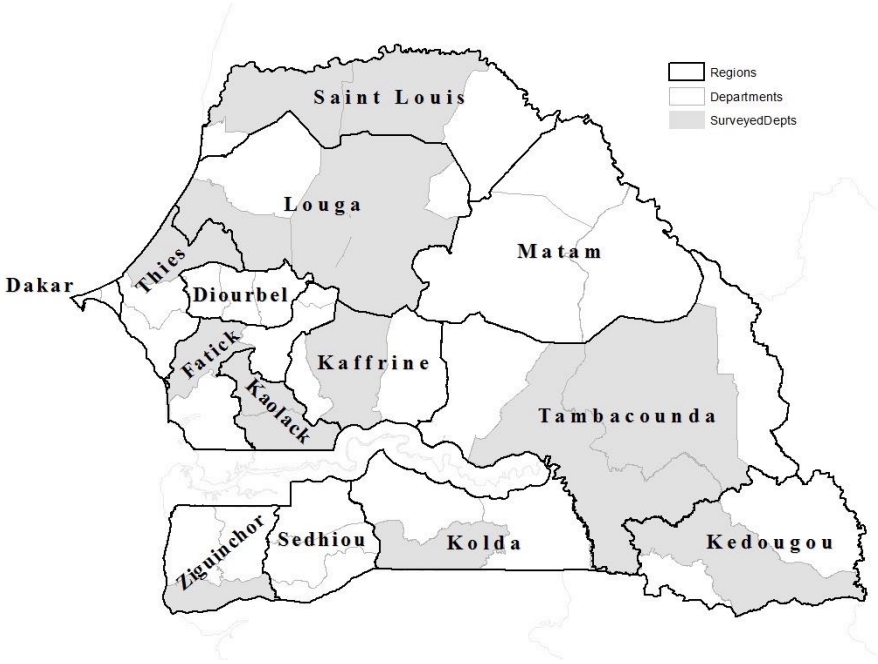
The interview questionnaire asked respondents a range of questions about the history of their village and rural community, the level of social service access, their evaluations of the economy and the local and central government and a range of personal demographics. Interviews were highly structured, asking respondents a pre-determined list of questions that were mixed between closed and open-ended formats. Interviews with local development agents and Sous-Prefets were open-ended, allowing me to follow up on various details that emerged out of the

[126] Excluding the region of Dakar. The three local communities in the Region of Dakar were not treated as eligible in the sample because four rural communities were sought in each Department. Senegal's administrative hierarchy is structures as follows, from lowest to highest: rural community, arrondissement, department, region, central state.

structured interviews. A number of questions, such as general inquiries about the relations between elected and traditional authorities, local tax collection, etc. were always asked however. To ensure the anonymity of respondents, they are identified only by their position, department and date of the interview. A map of the department's surveyed can be found in Figure A8 below.

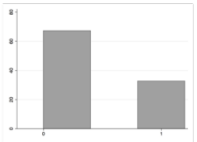
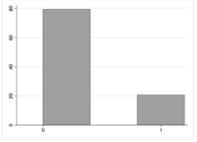
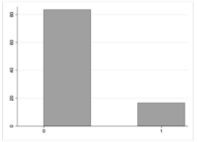
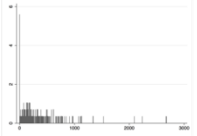
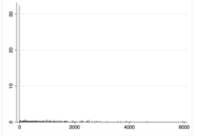
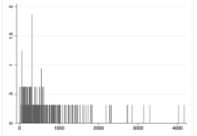
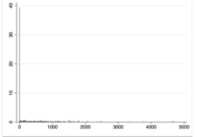
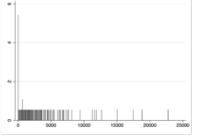
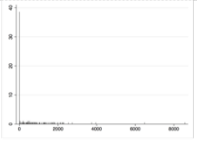
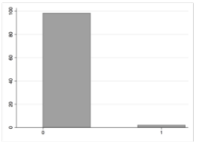
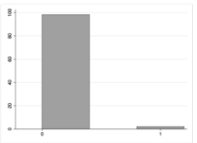
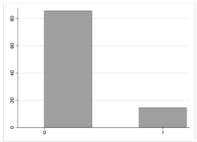
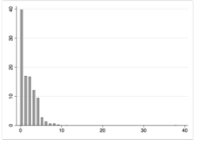
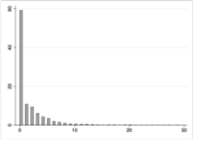
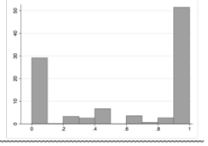
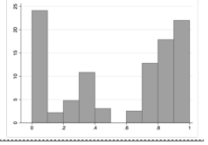
Secondly, I conducted follow-up case studies of a handful of on-the-line cases from the regression results presented in this paper. This data was collected in February-March of 2016. These interviews were more open-ended, so while still asking respondents to describe local political life, I was able to dig deeper into particular controversies that I had learned about or ask more follow-up questions than possible in the more structured first round of data. The fluidity of these interviews also means that there was a less specified system of identifying respondents. As with the previous round, I interviewed the community secretary, PCR, the adjoint-PCR and local development agents. Selection for interviews with village chiefs and councilors was done so as to ensure balance geographically across the community, but in view of a smaller research team, engaged in more convenience sampling.[127] In total, we conducted approximately ten in-depth interviews in each community.

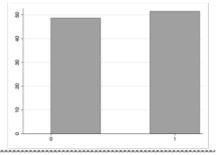
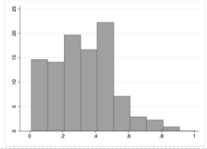
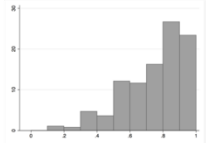
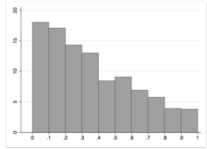
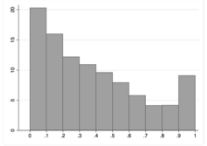
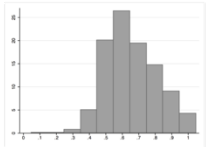
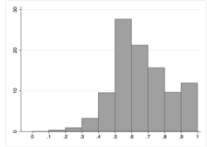
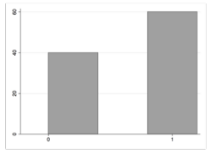
Figure A8: Survey Locations

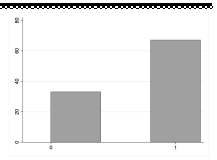
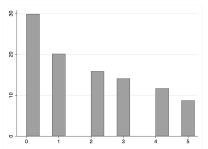
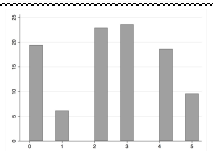
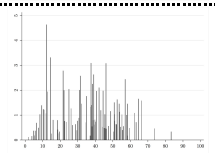
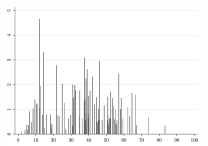
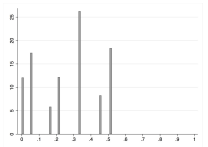
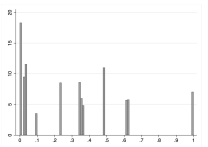
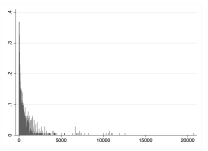


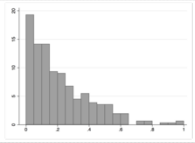
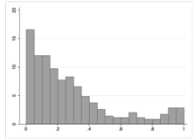
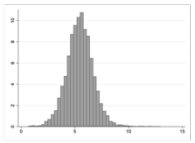
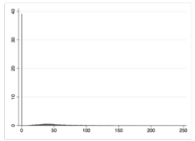
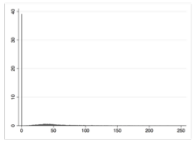
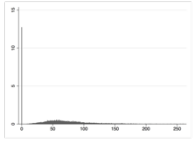
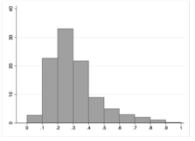
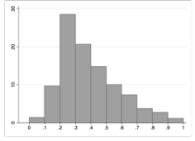
[127] For example, if a village chief from a zone was present at a weekly market, we choose to interview him without randomly selecting one village from among a set in a given area of the community.

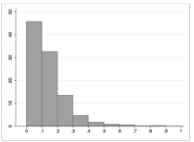
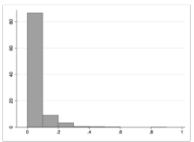
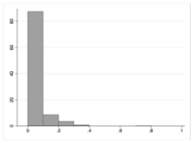
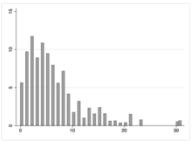
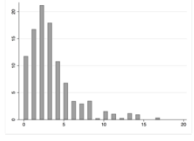
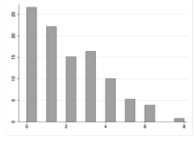
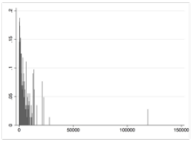
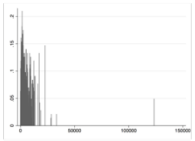
9. Data Appendix

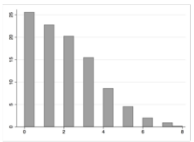
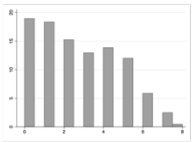
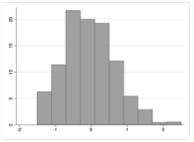
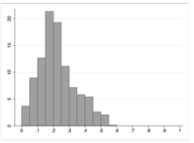
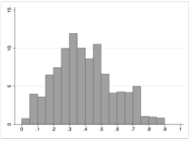
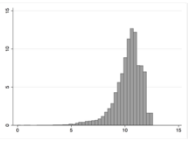
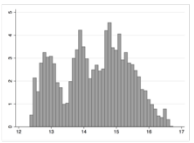
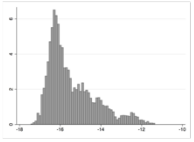
NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
DEPENDENT VARIABLES						
New School Access (3km), 2002-09	A 0-1 measure of whether or not a village received access to a new school in a given time period	Senegalese Ministry of Education	14468	0.33	0.47	
New School Access (3km), 2009-12	A 0-1 measure of whether or not a village received access to a new school in a given time period	Senegalese Ministry of Education	14468	0.21	0.4	
New Health Facilities (5km), 2009-12	A 0-1 measure of whether or not a village received access to a new health post or health hut in a given time period	Senegalese Ministry of Health	10913	0.16	0.37	
Maximize Attendance - Schools, 2002-09	The difference between the number of students who would have been covered under the ideal-point locations for the maximize attendance model and those that were actually covered by the built facility (zero means the ideal point was chosen)	Author Coded	287	329.1	548.2	
Maximize Coverage - Schools, 2002-09	The difference between the number of students who would have been covered under the ideal-point locations for the maximize coverage model and those that were actually covered by the built facility (zero means the ideal point was chosen)	Author Coded	287	824.6	1398	
Maximize Attendance - Schools, 2009-12	The difference between the number of students who would have been covered under the ideal-point locations for the maximize attendance model and those that were actually covered by the built facility (zero means the ideal point was chosen)	Author Coded	322	630.8	1171	
Maximize Coverage - Schools,2009-12	The difference between the number of students who would have been covered under the ideal-point locations for the maximize coverage model and those that were actually covered by the built facility (zero means the ideal point was chosen)	Author Coded	322	464.2	1176	
Maximize Attendance - Health 2009-12	The difference between the number of citizens who would have been covered under the ideal-point locations for the maximize attendance model and those that were actually covered by the built facility (zero means the ideal point was chosen)	Author Coded	184	2813	3372	
Maximize Coverage - Health, 2009-12	The difference between the number of citizens who would have been covered under the ideal-point locations for the maximize coverage model and those that were actually covered by the built facility (zero means the ideal point was chosen)	Author Coded	184	636.1	1047	
New High Schools (5km), 2002-12	A 0-1 measure of whether or not a village (population greater than 1000) received a high school in the given time period	Senegalese Ministry of Health	1608	0.02	0.14	
New Hospitals, 2002-12	A 0-1 measure of whether or not a village (population greater than 1000) received a health center or hospital in the given time period	Senegalese Ministry of Health	1608	0.02	0.13	
Improved Roads, 2002-09	A 0-1 measure of whether or not a village received access to an improved road in the given time period	ANSD *Enquete Villages* 2002, 2009	14512	0.15	0.35	
New Classrooms, 2002-09	A count measure of the number of new classrooms a school received in a given time period	Senegalese Ministry of Education	4303	1.62	4.62	
New Classrooms, 2009-12	A count measure of the number of new classrooms a school received in a given time period	Senegalese Ministry of Education	5594	1.48	2.82	
INDEPENDENT VARIABLES						
Centralizatio n Discount, 20km	A discount-decay function of an area's level of centralization at 8 time periods between 1500-1880 Areas are coded as centralized 0-1 for each time period based on whether or not they fall within a 20km buffer of a pre-colonial capital or key city	Author coded, misc historical sources	14468	0.61	0.44	
Bockstette et al. Discount, 20km	Bockstette, Chanda and Putterman's (2002) state antiquity index with a discount-decay function All variables within 20kms of pre-colonial capitals are assigned the score for the level of 'statehood' of a kingdom at 8 time periods between 1500-1880	Author coded, misc historical sources	14468	0.55	0.39	

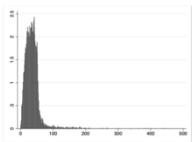
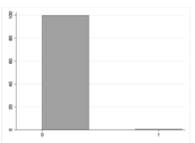
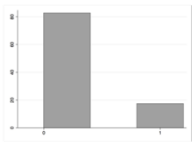
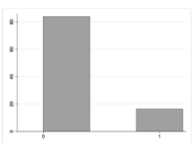
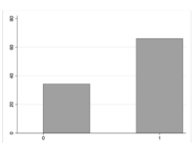
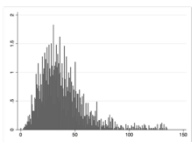
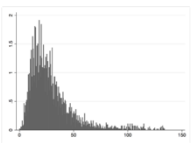
NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
1880 Centralizatio n Dummy, 20km	A 0-1 measure where villages take a value of 1 if they fall within the buffer of an area that was centralized in 1880	Author coded, misc historical sources	14468	0.51	0.49	
% Villages 1900	The percent of villages in a rural community that are listed in the first French censuses	Becker, et al (1983) ; Misc Historical Sources (ANS 1G:251; 1G:289-96)	11264	0.29	0.19	
% Villages 1958	The percent of villages in a rural community that are listed in the 1958 village repetoire	1958 *Repetoire des villages*	14508	0.75	0.19	
Gap Btw Parties, 2002-09	The % gap between the winning and second place party at a voting booth in the 2002 local elections	Author coded; *Direction Generale des Elections*	13762	0.36	0.36	
Gap Btw Parties, 2009-12	The % gap between the winning and second place party at a voting booth in the 2009 local elections	Author coded; *Direction Generale des Elections*	13600	0.38	0.29	
% Votes Winning Party, 2002-09	% of votes going to the winning party at a voting booth in 2002 local elections	Author coded; *Direction Generale des Elections*	13848	0.66	0.15	
% Votes Winning Party, 2009-12	% of votes going to the winning party at a voting booth in 2009 local elections	Author coded; *Direction Generale des Elections*	13682	0.66	0.17	
Nat'l Aligned, 2002-09	A 0-1 measure of whether or not the majority party in the rural council is aligned with the central state	Author coded; *Direction Generale des Elections*	14468	0.6	0.49	

NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
Nat'l Aligned, 2009-12	A 0-1 measure of whether or not the majority party in the rural council is aligned with the central state	Author coded; *Direction Generale des Elections*	14468	0.67	0.47	
Civic Associations, 2002-09	An additive measure of whether or not a village has the following civic associations: a village development association, a women's 'promotion' group, a local sports/cutural group, a village-level political party branch or an economic interest group This creates a 0-5 measure	ANSD *Enquete Villages* 2002	14497	1.83	1.61	
Civic Associations, 2009-12	An additive measure of whether or not a village has the following civic associations: a village development association, a women's 'promotion' group, a local sports/cutural group, a village-level political party branch or an economic interest group This creates a 0-5 measure	ANSD *Enquete Villages* 2009	14475	2.46	1.52	
Ethnic Fractionalizat ion, 2002-09	A Herfondihl Index of Ethnic Fragmention Based on ethnic information of approximately 200 rural communities and averaged at the *arrondissement* level	Author coding based on secondary documents and local planning materials	14454	36.2	16.8	
Ethnic Fractionalizat ion, 2009-12	A Herfondihl Index of Ethnic Fragmention Based on ethnic information of approximately 200 rural communities and averaged at the *arrondissement* level	Author coding based on secondary documents and local planning materials	14454	36.2	16.9	
New Teachers per capita, 2002-09	The number of new, central-state appointed teachers assigned to a region per student-aged capita between 2002-09; measure is standardized to a 0-1 scale	Author coded; Senegalese Ministry of Education	14497	0.27	0.18	
New Teachers per capita, 2009-12	The number of new, central-state appointed teachers assigned to a region per student-aged capita between 2009-12; measure is standardized to a 0-1 scale	Author coded; Senegalese Ministry of Education	14449	0.29	0.29	
Avg. FDD per capita	Per capita average yearly fiscal transfers (*Fonds de Dotation de la Décentralisation*) in dollars from the central government to a rural community, 2009-12	*Direction des Collectivities Locales*	14569	211.8	523.9	

NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
Gap Parties (CR), 2002-09	The % gap between the winning and second place party in the local government during the 2002 local elections	Author coded; *Direction Generale des Elections*	312	0.222	0.197	
Gap Parties (CR), 2009-12	The % gap between the winning and second place party at a voting booth in the 2009 local elections	Author coded; *Direction Generale des Elections*	351	0.281	0.261	
CONTROL VARIABLES						
Ln Village Population, 2012	Log of village population, 2011	*Repetoire officiale du villages* 2011, Gouvernment du Senegal	14497	5.45	1.19	
Sqrt D School, 2002-09	Square root of the minimum distance to the nearest school from a given village in 2002	Author coded; Senegalese Ministry of Education	14412	35.7	31.3	
Sqrt D School, 2009-12	Square root of the minimum distance to the nearest school from a given village in 2009	Author coded; Senegalese Ministry of Education	14415	28.6	29.5	
Sqrt D Health, 2009-12	Square root of the minimum distance to the nearest clinic from a given village in 2009	Author coded; Senegalese Ministry of Education	10858	53.52	36.91	
% Villages School, 2002-09	% villages in a rural community that have a primary school in 2002	Author coded; Senegalese Ministry of Education	14497	0.3	0.16	
% Villages School, 2009-12	% villages in a rural community that have a primary school in 2009	Author coded; Senegalese Ministry of Education	14497	0.39	0.19	

NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
% Villages Health, 2009-12	% villages in a rural community that have a health facility in 2009	Author coded; Senegalese Ministry of Health	10964	53.4	36.9	
% CR Mouride, 2002-09	Percent of villages in the local government (2002-09) whose names take a common marker of Mouride affiliation; "darou", "touba", "mbacke," "serigne," "mouride"	Author Coded	14572	0.05	0.07	
% CR Mouride, 2009-12	Percent of villages in the local government (2009-12) whose names take a common marker of Mouride affiliation; "darou", "touba", "mbacke," "serigne," "mouride"	Author Coded	14557	0.04	0.06	
# New Schools (CR), 2002-09	Count measure of number of schools built by a rural community, 2002-09		14495	6.253	5.519	
# New Schools (CR), 2009-12	Count measure of number of schools built by a rural community, 2009-12		14432	3.21	2.89	
# New Clinics (CR), 2009-12	Count measure of number of new clinics built by a rural community, 2009-12		10971	1.965	1.789	
Pop Density, 3km	Population density in 3km radius of village		14454	1393	9058	
Pop Density, 5km	Population density in 5km radius of village	Author Coded	14365	2621	10509	

NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
Economic Activity, 2002	An additive index of economic activity in a village This includes: a boutique/small store, a market, an artistinal workshop, and facilities for the valorization of the following: forest products, seafood, animal husbandry, fruit or agricultural products for a full range of 0-8	ANSD *Enquete Villages* 2002	13145	1.86	1.65	
Economic Activity, 2009	An additive index of economic activity in a village This includes: a boutique/small store, a market, an artistinal workshop, and facilities for the valorization of the following: forest products, seafood, animal husbandry, fruit or agricultural products for a full range of 0-8	ANSD Enquete Villages 2009	12274	2.59	2.02	
Wealth, 2005	An index of average household wealth, calculated at the *arrondissement* level in 2010	*Demographic and Health Survey*, 2010	14497	-0.04	0.7	
% Student Attendance, 2002	Percent of school aged children attending school in a rural community in 2002	Author coded; Senegalese Ministry of Education	14497	0.23	0.12	
% Student Attendance, 2009	Percent of school aged children attending school in a rural community in 2009	Author coded; Senegalese Ministry of Education	14449	0.4	0.18	
Ln D Waterway	Logged distance between a village and the nearest navigable waterway	Author Coded, GIS Shapefiles	14283	10.3	1.29	
Latitude	A village's latitude	GIS Shapefiles	14497	-15.4	1.17	
Longitude	A village's longitude	GIS Shapefiles	14497	14.3	1.04	

NAME	DESC	SOURCE	N	$\bar{X}$	SD	DISTRIBUTION
Village Elevation	Village elevation in meters	USGS Global Elevation Grids (Systematic Subsample 75 arc-seconds)	14369	35.9	27.5	
Mangrove	A 0-1 measure that takes a 1 when a village falls within a Mangrove	White (1983)	14470	0.004	0.06	
Sahel Grassland	A 0-1 measure that takes a 1 when a village falls within Sahel Grassland	White (1983)	14470	0.17	0.38	
Rainforest/Grassland	A 0-1 measure that takes a 1 when a village falls within Lowland Rainforest/Grassland	White (1983)	14470	0.16	0.37	
Sudanian Forest	A 0-1 measure that takes a 1 when a village falls within Sudanian Forest	White (1983)	14470	0.66	0.47	
Students per Classroom, 2002	Number of students per classroom in 2002	Author coded; Senegalese Ministry of Education	4334	37.1	19.7	
Students per Classroom, 2009	Number of students per classroom in 2009	Author coded; Senegalese Ministry of Education	5595	28.3	19.5	

10. Citations

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