# Ethnic Politics and Ebola Response in West Africa

**Souleymane Soumahoro**

## Abstract

In this paper, I examine the effects of power sharing on vulnerability to adverse shocks in a multiethnic setting. Combining a unique dataset on the allocation of ministerial posts across ethnicities with the spatial distribution of Ebola, I provide evidence that ethnic representation mitigated the transmission of Ebola in Guinea and Sierra Leone. The findings suggest that one percentage point increase in proportional cabinet shares reduced Ebola transmission by five percent, as reflected in the total number of confirmed cases. I also provide suggestive evidence that this relationship goes beyond a simple correlation and operates through public resource capture and trust in political institutions.

Keywords: Political Institutions, Ethnic Politics, Power Sharing, Africa, Ebola

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# 1 Introduction

Governments play an important role in preventing, controlling and eradicating potential threats to public health. Investments in human capital and social infrastructure are also crucial for successful health interventions. Therefore, given budget constraints, it is essential for policymakers to ensure an efficient allocation of public capital. Need-based targeting, however, can be challenging in ethnically diverse and polarized societies. There is evidence suggesting, for example, that the prevalence of distributive politics can deprive many from a fair share of public goods and increase vulnerability to socioeconomic shocks (Franck and Rainer, 2012; Burgess et al., 2015; Kramon and Posner, 2016). It is also possible, some have argued, that a proportional allocation of power in fragmented societies mitigates the misallocation of public resources (Francois et al., 2015). Yet, evidence on vulnerability to adverse shocks associated with a (dis)proportional allocation of power is scant.

In this paper, I examine the role of ethnic politics in the spread of the Ebola virus disease (EVD) in West Africa. One of the deadliest form of this infectious disease erupted in 2014 and infected nearly 40,000 people across the region and beyond. Guinea and Sierra Leone, which constitute with Liberia the hardest hit countries, are the focus of this study. In both countries, national politics is highly polarized and many observers believe that ethnic politics greatly contributed to the swift spread of the virus. For example, local response to Ebola was the weakest in Forest Guinea, a region with a long history of political marginalization. This region also exhibited the most violent forms of resistance to treatment campaigns (Wilkinson and Fairhead, 2017). In Sierra Leone, grievances over political discrimination is believed to have exacerbated the Ebola crisis through the erosion of trust in government and health agencies (International Crisis Group, 2015; Wilkinson and Leach, 2014).

To uncover in a systematic way the link between ethnic politics and vulnerability to EVD, I analyze a new dataset on the ethnic composition of recent governments in Guinea and Sierra Leone.[1] I find that disproportional representation in cabinet is highly correlated with lower vulnerability to EVD, as reflected in the number of infected individuals. Specifically, there were fewer Ebola cases in jurisdictions largely dominated by ethnic groups holding a substantial share of ministerial positions. This relationship

[1] Although the present data collection effort is independent from previous endeavors, the way I construct the index of ethnic representation in government is nonetheless similar to the approach developed in Francois et al. (2015). Like these authors, the index of political inclusion is computed by subtracting the population share of the ethnic group from the share of positions it holds in government. However, the focus here is on the governments of Bai Ernest Koroma (Sierra Leone) and Alpha Condé (Guinea) who begun their terms in 2009 and 2010, respectively, and confronted the 2014 Ebola crisis while in power.

is robust to the inclusion of various jurisdiction and ethnic levels controls for economic development, geography, and pre-colonial institutions.

I also develop a control function approach to address potential endogeneity concerns. In particular, I instrument for ethnic representation in the Ebola-era cabinets using data on post allocation in historical governments with similar ethnic makeup. There is indeed a strong correlation between the Malinké-dominated governments of Sékou Touré (1958-1984) and Alpha Condé (2010-). Similarly, historical and contemporary northern-dominated APC governments are correlated in Sierra Leone. In addition to this first stage assumption, the exclusion restriction requirement is also satisfied. In fact, power sharing in historical coalitions can only affect resilience to the 2014 Ebola outbreak only through its effects on contemporary post allocations. Estimates from this control function method suggest that ethnic politics has a causal effect on vulnerability to health shocks.

To shed light on the underlying potential mechanisms, I explore the latest pre-Ebola rounds of the Afrobarometer survey. Examining both directly observed indicators of public goods allocation and self-reported trust attitudes, I find that individuals from overrepresented ethnic groups fare relatively better and are trusting of political institutions. They have superior access to basic infrastructures such as piped water, sewerage systems, and electricity. They also tend to exhibit more trust towards the president, the parliament, the police, the court of law and the national tax agency. The latter finding is consistent with narratives suggesting that lack of trust in statewide institutions significantly contributed to non-compliance to anti-Ebola interventions across Guinea, Liberia and Sierra Leone (Blair et al., 2016; Fairhead, 2016).

These results are important to understand the socioeconomic costs of what Scarritt (1993) describes as "competition over political and economic distribution in the context of unstable multiethnic coalitions" [p. 252]. In fact, political cohabitation in multiethnic settings can generate poor development outcomes if ethnic factions engage in war of attrition (Alesina and Drazen, 1991), uncoordinated extortions (Easterly and Levine, 1997), group-specific bribe collection (Shleifer and Vishny, 1993; Mauro, 1995), or exhibit preferences for own-group targeting in the provision of public policies. The latter, which often refers to ethnic favoritism, is generally understood as an important channel through which ethnic polarization may be growth-impeding (Franck and Rainer, 2012; Hodler and Raschky, 2014; Burgess et al., 2015; Kramon and Posner, 2016).

However, most of the empirical examination of ethnic favoritism in sub-Saharan Africa tends to focus on the importance of individual leaders such as the president or a minister, ignoring the prevalence of large power sharing ethnic coalitions (Posner,

2005; Van de Walle, 2007; Arriola, 2009; Francois et al., 2015). If, as suggested by Francois et al. (2015), "African ruling coalitions are surprisingly large and that political power is allocated proportionally to population shares across ethnic groups" [p. 465], then individual leaders' effects might actually be more modest than previously identified in the literature. The findings herein add to this literature by quantifying a sizable impact of a disproportionate allocation of power—relative to group size—on group vulnerability to adverse shocks in a context of multiethnic governing coalitions. The analysis also goes beyond a simple correlation and documents the causal implications of ethnic favoritism.

These results also complement a large literature on health disparities across racial and ethnic groups. Much of the insights of this literature come from rich countries, especially the United States, where differences in socioeconomic status, access to healthcare and environmental deterioration, among other non-taste-based factors, are believed to generate health disparities at the expense of racial and ethnic minorities (see for example, Smedley et al. (2002) and Dynan (2009) for a literature review). The role of racial and ethnic discrimination in aggravating health disparities across groups has also been recognized (Brondolo et al., 2009). However, evidence from developing countries on the effects of political exclusion on health disparities is very scarce. Notable exceptions are Lieberman (2009) and Chatty et al. (2013), who show that ethnic politics is a key challenge to non-discriminatory health policies in many developing countries. I advance this literature by identifying a strong empirical regularity between political exclusion and vulnerability to Ebola, a deadly communicable disease.

Finally, this analysis falls into a small but growing literature that seeks to understand the socio-economic costs and transmission dynamics of the deadliest Ebola outbreak in history. In addition to its unprecedented death toll, the 2014 Ebola outbreak also engendered significant socio-economic costs and reduced growth prospects in many sub-Saharan African countries by inducing negative spillover effects on employment, confidence, trade and tourism (Thomas et al., 2015). Most of the efforts to understand the transmission patterns of the epidemic focus on poverty, dysfunctional health systems, high population mobility and misperceptions of the disease by locals (Chan, 2014; Fang et al., 2016). By considering the importance of power sharing in multiethnic institutional environments, this paper is in line with narratives that go beyond non-political factors to explain the spread of Ebola in West Africa (Leach, 2015; Fairhead, 2016).

The remainder of the paper is organized as follows. In Section 2, I present a brief historical background on the Ebola crisis in sub-Saharan Africa and discuss the interplay between ethnic polarization and socioeconomic disparities, and their implications for local responses to Ebola in West Africa. Section 3 describes the main data and elaborates

on how the predominant ethnic group of a subdistrict is determined.[2] In Section 4, I present the empirical analysis starting with the identification strategy and the baseline results followed by a causal analysis in Section 5. Finally, I examine some of the potential mechanisms in Section 6 and concludes in Section 7.

# 2 Background

## 2.1 The Ebola Crisis in West Africa

Ebola virus disease is a viral hemorrhagic fever of humans and other primates caused by one of the five known species of ebolavirus: Bundibugyo ebolavirus, Reston ebolavirus, Sudan ebolavirus, Taï Forest ebolavirus, and Zaire ebolavirus. Two (2) to twenty-one (21) days after contracting the virus, the subject exhibits signs of fever fatigue, sore throat, muscular pain, and headache. These symptoms are followed by vomiting, diarrhea and rash and other complications such as bleeding, kidney and liver impairments may occur rapidly. According to the World Health Organization, the fatality rate of EVD is about 50% on average, but it could vary between 25% to 90%. The EVD is highly contagious and is transmitted through direct contact with bodily fluids (blood, secretion or organs) of an infected human or animal subject. The EVD first emerged in 1976 from two distinct outbreaks a few months apart in Sudan and Democratic Republic of Congo (ex-Zaire). Since then, there have been more than two dozen outbreaks globally, many of which occurred in sub-Saharan Africa. However, none of these outbreaks reached the scope and severity of the 2014 EVD crisis in West Africa.

Guinea, Liberia and Sierra Leone, the three most affected countries, are also among the poorest and most vulnerable countries in the world. Recent figures from the 2015 Human Development Report ranked the three countries at the bottom of the countries with the lowest human development index scores. Liberia's human development index in 2014 was 0.430, ranking this country at 177th out of 188 countries. Sierra Leone (181st) and Guinea (182nd) performed even worse with 0.413 and 0.411, respectively. Liberia and Sierra Leone, which topped the list in terms of Ebola-related infections with respectively 10,675 and 14,124 cases, had each experienced a decade-long civil war before the Ebola crisis. Guinea, where 3,811 people were infected, had also suffered from several years of political stagnation until its first ever multi-party elections in 2010. Because of

[2]Throughout the paper a subdistrict refers to the third level administrative unit which corresponds to the sub-prefecture in Guinea and the chiefdom in Sierra Leone. As for the district, it describes the second-level administrative division known as the prefecture in Guinea.

these poor development outcomes, many commentators perceive in the recent Ebola crisis the consequences of poverty and political instability, and the constraints they might have generated for human development and public goods provision (Chan, 2014).

While the poverty argument is appealing to inform cross-country differences in infection rates, it may not be sufficient to fully capture the within-country transmission dynamics. As discernible in Figure 1, there was a great deal of spatial heterogeneity in the number of Ebola cases across subdistricts in both Guinea and Sierra Leone. This fact has motivated alternative explanations highlighting demographic, cultural, behavioral and geographical factors. A study by Krauer et al. (2016) even suggests that EVD transmission increased with population density and subnational wealth index, a clear rebuttal to the poverty argument. These authors interpret their findings as a result of urbanization and its implications for overcrowding and high human mobility. The political instability argument, which has received less if any formal empirical scrutiny, describes the Ebola crisis as the legacy of armed conflict and ineffective post-conflict recovery in the region (Leach, 2015). However, political violence in many African countries is often a symptom of ethnic polarization, economic marginalization and misallocation of public goods fueled by ethnic politics (Posner, 2005; Esteban et al., 2012).

## 2.2 Ethnicity and Politics in Guinea and Sierra Leone

The overwhelming literature on comparative politics in sub-Saharan Africa highlights three key characteristics of political systems in this region. First, the executive branch of government is generally understood as the epicenter of political and economic power, much more so than the legislative and judiciary branches (Jackson and Rosberg, 1982; Posner, 2005; Bratton et al., 1997). Second, cabinet appointments in government are mostly driven by political patronage in which ethnic, regional or religious networks of the ruling party are rewarded for their allegiance with public resources (Van de Walle, 2007; Arriola, 2009; Kramon and Posner, 2016). Third, comparatively to other types of social organizations structured along religious or other cultural lines, ethnic identity emerges as the foundation of the political landscape in many countries (Bates, 1983; Easterly and Levine, 1997; Posner, 2004). The political experiences of Guinea and Sierra Leone do not seem to be an exception to these well-established features of African politics.

In Guinea, there is a long history of ethnic feuds stemming from precolonial warfare, the French colonial policy of *divide and rule*, the independence struggles, and contemporary political competitions (Mamdani, 1996; Camara et al., 2013). In the early days

after the independence in 1958, Sékou Touré—the first president of Guinea—established a single party system with what he characterized as a large multiethnic coalition. In a bid to overcome the challenges of economic and political instability and mitigate the threats of ethnic polarization, he forbade organizations with clear ethnic and regional ties, carried out reasonable ethnic balance in the civil service and built an ethnically blind army (Le Vine, 2004; Camara et al., 2013). However, deteriorating economic conditions aggravated by persistent sociopolitical tensions revived old ethnic rivalries and parochialism. By 1968, according to Le Vine (2004), "cabinet posts increasingly went to Malinké politicians, usually at the expense of Fulani, whom Sékou Touré had on occasion accused of disloyalty, and for good reason Guineans frequently accused Touré himself of surrounding himself with faithful cotribalists and members of his own family" [p. 173]. When Touré passed away of heart attack in 1984, his successor Lansana Conté (an ethnic Susu) took power in a coup ending a week-long civilian transition led by Lansana Béavogui (an ethnic Toma). To consolidate his power and attenuate ethnic anxieties, Conté initially opened up his regime to other ethnic groups. However, ethnic rivalries resurfaced rapidly with the proliferation of ethnic-based parties following the return to a multi-party system in 1993 (Camara et al., 2013).

In Sierra Leone, the crystallization of ethno-political boundaries is rooted in the pre-independence struggles over the franchise, civil rights, and representation in colonial institutions (Kandeh, 1992). The ethnic divide, which initially opposed the Creoles to the indigenous people, turned swiftly into a strife between rival native elites after independence in 1961. The Mende-dominated Sierra Leone People's Party (SLPP) emerged as the leading political force and run the country under the leadership of the Margai brothers—Milton (1961-64) and Albert (1964-67)—for nearly a decade. However, corruption within the SLPP elite and the despotic inclination of Albert Margai boosted the popularity of the All People's Congress, the northern opposition, which won the parliamentary elections of 1967. As he strengthened his grip on power, the new prime minister, Siaka Stevens, dismantled democratic institutions and instituted a one-party system on the grounds that it would guarantee national unity (Kandeh, 1992). Instead, Stevens perpetuated the instrumentalization of ethnic identities (Kandeh, 1992), while "plundering the country's resources for his own personal gain" [p. 289] (Glennerster et al., 2013). The degeneration of political and economic conditions persisted under Joseph Momoh (1985-92), Stevens' successor and fellow APC member. Eventually, the country fell into a vicious cycle of "nepotism, ethnic favoritism, or the politics of exclusion" [p. 179] (Bangura and Mustapha, 2015), which set the stage for a decade-long civil war between 1991 and 2002.

## 2.3 Did Ethnic Politics Affect Ebola Responses?

In a context where ruling elites have unconstrained prerogatives in resource allocation—a salient feature of weak democracies—there are several potential mechanisms through which ethnic politics can affect public health. Politicians can, for example, directly channel valuable health resources such as medication, immunization coverage, personnel and medical infrastructure towards their ethnic base. Jurisdictions largely inhabited by the coethnics of the ruling elite can also have an edge in public policies such as education and road building that affect preparedness to health crises (Kramon and Posner, 2016; Burgess et al., 2015). Finally, the persistence of ethnic favoritism can erode inter-ethnic relationships (Caselli and Coleman, 2013), and deteriorate trust in political institutions leading to non-compliance to public health interventions or precautionary measures. There were in fact several instances of community resistance to anti-Ebola efforts that many attributed to the socio-political legacies of existing ethnic frictions (Fairhead, 2016).

In Sierra Leone, the return of the APC to power in 2007 after defeating the SLPP coincided with increasing allegations of ethnic favoritism and corruption. Ernest Bai Koroma, the elected president, was accused of replacing key government officials from the southern and eastern regions with his fellow northern APC sympathizers (International Crisis Group, 2015).[3] The political atmosphere was already deteriorating when the first Ebola infections emerged in May 2014 in the eastern districts of Kenema and Kailahun, two of the historical strongholds of the SLPP opposition. The opposition accused the government of politically motivated negligence, suggesting that the "epidemic was started - or was allowed to get out of control - by the Government in order to depopulate opposition areas" [p. 20] (Wilkinson and Fairhead, 2017). This resulted in distrust in government leading to non-compliance to safe burials of Ebola victims and resistance to anti-Ebola efforts (Wilkinson and Fairhead, 2017). There were also riots motivated by the under-equipment of health centers (ACAPS, 2015).

Most of the evidence—albeit anecdotal—linking ethnic politics directly to the lack of decisive public response to Ebola came from Guinea. The fact that Forest Guinea, for example, was the main Ebola hotspot during the outbreak may not be accidental. This southeastern region has a long history of marginalization, which was in part due to Sékou Touré's effort to modernize the country by outlawing initiation societies (McGovern, 2012). The land reform that accompanied this campaign "was experienced in the Forest region as a threat to indigenous land rights and as favoritism to rival Manding

[3]Ernest Bai Koroma was born to a Temne father and a Limba mother, two northern ethnic groups that are historically affiliated to the All People's Congress (APC).

immigrants" [p. 16] (Wilkinson and Fairhead, 2017).[4] The Ebola crisis also coincided with the tenure of Alpha Condé, an ethnic Malinké, who was elected in 2010. Alpha Condé allegedly revived some of the policies of Sékou Touré that discriminated against the Forest people in public service appointments (Wilkinson and Fairhead, 2017). Viewing Ebola as a conspiracy of the Malinké-dominated administration, many in the Forest region not only refused to cooperate with public health responders but also exhibited violent resistance to anti-Ebola campaigns (Fairhead, 2016; ACAPS, 2015). The situation deteriorated further when eight members of a high-ranking delegation of public officials, health workers, and journalists were assaulted and murdered in September 2014 in the southeastern subdistrict of Womey (Fairhead, 2016).

# 3 Data

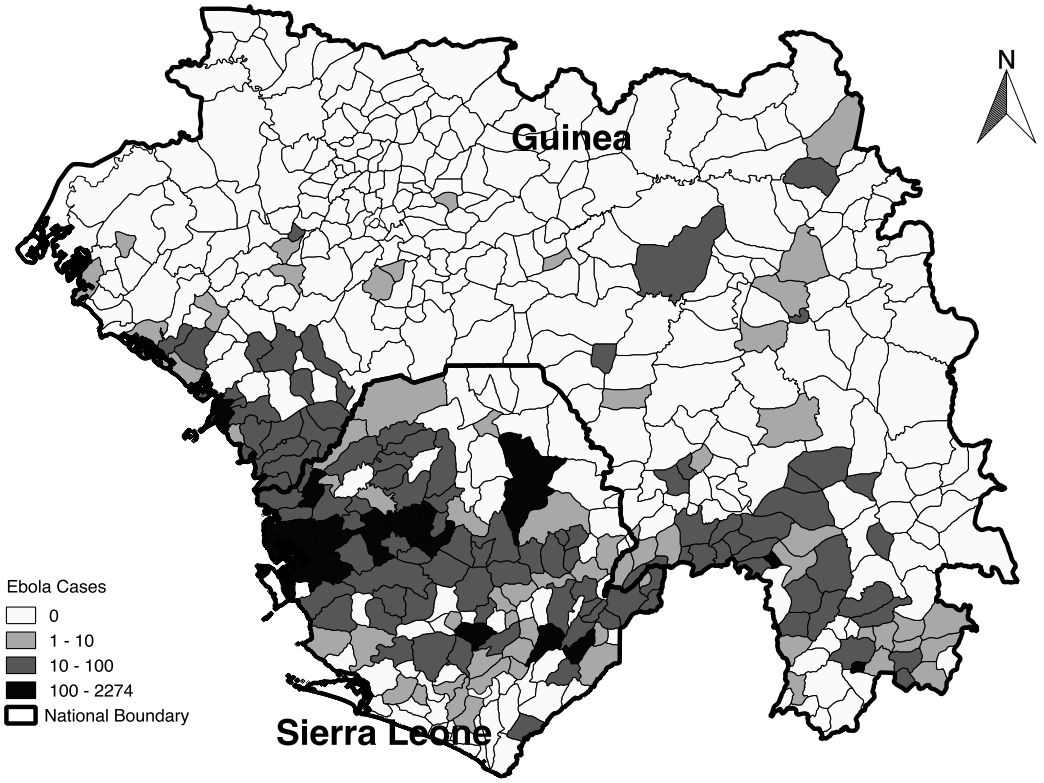
## 3.1 Ebola Cases

During the Ebola crisis and afterwards, the World Health Organization periodically published on its official website country-level data on the number of cases and deaths. Overall, these statistics suggest an equally alarming impact of the Ebola crisis across the West African region. In Sierra Leone, the WHO's figures indicate, Ebola infected 14,124 and killed 3,956 individuals. In Guinea, the number of reported Ebola cases amounted to 3,811 with a fatality rate of approximately 67%. This is a clear indication that both countries were severely affected. However country-wide information provides little insights about the spatial distribution of the disease incidents across subnational jurisdictions. Because this paper is more concerned about the local dynamics at play in the spread of Ebola, I explore alternative but complementary data sources.

The first source of information emanates from the data collection and dissemination efforts of the WHO's national representation in Guinea. This data covers the period between February 2014 and November 2015. I complement this series with the data compiled by Fang et al. (2016) who use testing records reported to the Sierra Leone Ministry of Health and Sanitation between May 2014 and September 2015. Information on both confirmed and suspected Ebola cases are available in the Sierra Leone's dataset, but only confirmed cases are documented in the database from Guinea. For statistical convenience, I pooled together the confirmed cases which break down into 2,638 cases from Guinea and 8,358 cases from Sierra Leone. On average, as shown in the summary statistics in panel A of Table 1, there were 23 confirmed cases by subdistrict with a

[4]Manding is an alternative name for Malinké.

Figure 1: Spatial Distribution of Ebola Cases in Guinea and Sierra Leone




standard deviation as large as 123 cases.

Figure 1 also suggests a great deal of heterogeneity in the spatial distribution of Ebola across subnational units. For example, 227 out of 486 subdistricts in both countries exhibited at least one confirmed Ebola case, suggesting that more than 53% of the jurisdictions remained Ebola-free over the study period. A close look at the geographic distribution reveals that the number of infected individuals varied strikingly across the historical homelands of ethnic groups, as if ethnic boundaries provided a shield against the deadly communicable disease. The Forest region in Guinea, a well-known politically marginalized area, topped the list in terms of infections with more than 45% of overall confirmed cases. By way of comparison, only 14% of confirmed Ebola cases were confined in Upper Guinea, the ancestral homeland of the ruling Malinké elite. How much of this heterogeneity in Ebola-related incidents is attributable to ethnic politics? One way to assess this question is to systematically link ethnic representation in the executive branch of government and ethnic-level response to Ebola.

Table 1: Summary Statistics

| | Observations | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| **Panel A: Key Variables of Interest** | | | | | |
| Confirmed Ebola Cases | 486 | 22.62 | 123.12 | 0.00 | 2274.00 |
| Government Share [1] | 481 | 21.43 | 15.43 | 0.00 | 51.13 |
| Population Share [2] | 481 | 24.56 | 13.18 | 0.50 | 39.00 |
| Ethnic Power [1]-[2] | 481 | -3.13 | 15.30 | -20.05 | 28.38 |
| **Panel B: Economic and Geographic Controls** | | | | | |
| Log Population Density | 486 | 3.86 | 1.10 | 1.38 | 9.55 |
| Distance to Road | 486 | 10.57 | 10.53 | 0.02 | 58.14 |
| Number of Health Clinics | 486 | 5.12 | 12.65 | 0.00 | 256.00 |
| Distance to Ebola Treatment Center | 486 | 97.62 | 82.94 | 1.41 | 384.02 |
| Diamond Indicator | 486 | 0.07 | 0.25 | 0.00 | 1.00 |
| Mean Nighttime Lights | 486 | 0.46 | 3.60 | 0.00 | 51.27 |
| Agricultural Suitability | 486 | 0.50 | 0.20 | 0.00 | 0.96 |
| Mean Elevation | 486 | 0.38 | 0.26 | 0.00 | 1.20 |
| **Panel C: Pre-Colonial Ethnic Characteristics** | | | | | |
| Gathering | 483 | 0.38 | 0.49 | 0.00 | 1.00 |
| Hunting | 483 | 0.42 | 0.49 | 0.00 | 1.00 |
| Fishing | 483 | 0.75 | 0.66 | 0.00 | 2.00 |
| Animal Husbandry | 483 | 2.32 | 1.65 | 1.00 | 5.00 |
| Clans | 483 | 0.19 | 0.39 | 0.00 | 1.00 |
| Slavery | 483 | 0.99 | 0.10 | 0.00 | 1.00 |
| Local Democracy | 483 | 0.03 | 0.18 | 0.00 | 1.00 |
| Political Centralization | 483 | 0.38 | 0.49 | 0.00 | 1.00 |

*Notes:* Panel A describes the key variables of interest including the total number of confirmed Ebola cases per subdistrict, the share of cabinet posts held by each ethnicity and its relative population size. Ethnic power, the main variable of interest, is the difference between government share and population share. Panel B displays information on subdistrict-level economic and geographic controls including population density (log), distance to main road, the number of health clinics, distance to Ebola treatment center, an indicator for diamond mine, mean nighttime light density, agricultural suitability index, and mean elevation. Panel C presents the pre-colonial ethnic characteristics from the Ethnographic Atlas of Murdock (1967).

## 3.2 Power Distribution

To measure the extent of power allocation, I first look at the ethnic composition of cabinets.[5] Then, I match to each subdistrict the post shares of its dominant ethnic group. I focus on the governments of Alpha Condé in Guinea and Ernest Bai Koroma in Sierra Leone. Both presidents were in power a few years before and after the Ebola crisis. Al-

[5]I cross-validated the list of cabinet members with the CIA's Chiefs of State and Cabinet Members of Foreign Governments available on the website of this Institution at https://www.cia.gov/library/publications/world-leaders-1/.

pha Condé came to power in November 2010, after securing 52.5% in the second round of the presidential election. He was officially sworn in as head of state in December 2010, but it took him until April 2011 to complete the formation of his first cabinet. Condé sought reelection in the 2015 presidential race and won with 58.85% of the vote. Between April 2011 and December 2015, Condé formed 4 cabinets with 34 members each, on average. In Sierra Leone, Ernest Bai Koroma of the APC won the presidential election of September 2007 with 54.6% of the suffrage. He also secured the majority vote in the 2012 presidential race, collecting 58.7% of the suffrage. By December 2015, Bai Koroma formed 9 cabinets with on average 26 ministers each.

Overall, there are 137 and 257 records of government-ministers in Guinea and Sierra Leone, respectively. This amounts to 45 individual top officials in Guinea and as many as 54 officials in Sierra Leone. Thus, each cabinet member appears on average in 3.04 lists in Guinea and 4.76 lists in Sierra Leone. To help identify the ethnic background of these 99 top officials, I adopt a triangulation approach by checking the consistency of many data sources. As in Francois et al. (2015), I rely on local news outlets including principally webguinee.net and guineepress.info for Guinea, and thepatrioticvanguard.com, news.sl and apctimes.com for Sierra Leone. I also cross-validate these sources using various internet platforms. In both countries, a striking pattern emerges from the data. In Guinea, 22 of the 45 individual officials including president Alpha Condé were from the Malinké ethnic group. In Sierra Leone, the ethnic heritage of Bai Koroma—the Temne and Limba—accounts for 25 out of 54 appointees.

As it is standard in the literature, I identify the dominant ethnic group in each jurisdiction by projecting the Global Administrative Areas (GADM) map on the 17th edition of *Ethnologue*. I use the World Language Mapping System (WLMS) which provides an up-to-date information on the spatial distribution of the ethnolinguistic groups listed in *Ethnologue*. Except for capital cities, I identify in each country one of the major ethnicities as the single dominant group of each subdistrict.[6] Using the 5th round of the Afrobarometer survey, I find similar patterns. The single dominant group previously identified in the mapping procedure represents more than half of population in 90% of the subdistricts.[7] Burgess et al. (2015) suggest that the persistence of a stable ethnic marker at the lowest administrative level in most sub-Saharan African countries has its

[6]For Guinea, the dataset includes 8 major ethnic groups: Fulani, Malinké, Susu, Kissi, Kpelle, Toma, Mano and Yalunka. In Sierra Leone, there are 10 main ethnic groups in the dataset including the Mende, Temne, Limba, Kissi, Kono, Kuranko, Loko, Sherbro, Susu and Yalunka.

[7]In Sierra Leone, war-related migration in 1991-2002 had limited effect on local ethnic composition. As evidence to this, Glennerster et al. (2013) document that "during and immediately after the civil war, there was systematic movement of individuals towards areas where their own ethnic group was historically more numerous."

origin in the colonial legacy.

# 4 Empirical Analysis

## 4.1 Identification Strategy

As mentioned above, Ebola incidents are recorded as discrete count events. Thus, to identify the relationship between ethnic representation in government and local response to Ebola, I begin by estimating a baseline count data regression model in the form of:

$$Y_{i,e,c} = \alpha_c + \beta EthnicPower_{e,c} + \mathbf{X}'_{i,c}\Gamma + \mathbf{X}'_{e,c}\Omega + \epsilon_{i,e,c}, \quad (1)$$

where $i$ indicates subdistrict, $e$ ethnic community, and $c$ country. The outcome variable $Y_{i,e,c}$ denotes the total number of confirmed Ebola cases in the subdistrict $i$ for which the largest ethnic community $e$ is identified among the ethnic groups of country $c$. To account for the count-data nature of the main outcome variable, I estimate different specifications of equation 1 using both the Poisson and negative binomial models.

$\mathbf{X}'_{i,c}$ is a vector control of variables reflecting economic and geographic conditions specific to the subdistrict. They include log population density, distance to road, the number of health clinics in the subdistrict, distance to Ebola treatment centers (ETC), an indicator for the presence of a diamond mine, average nighttime light density, agricultural suitability index, and mean elevation. Many of these covariates are likely to influence the spread of Ebola and other types of infectious diseases. For example, Fang et al. (2016) documents increasing Ebola transmission risk with population density, cropland coverage and proximity to ETC. There is also a growing literature using nighttime light density as proxy for local development to explain subnational variation in socioeconomic outcomes. In Section 5.1, I expand the baseline model with economic and geographic controls by including a vector of ethnic-level covariates, $\mathbf{X}'_{e,c}$. I use essentially pre-colonial economic, cultural and institutional characteristics of ethnic groups. These data come from the widely used ethnographic Atlas of Murdock. There is indeed a large literature suggesting that deeply-rooted ethnic characteristics are correlated with contemporary socioeconomic outcomes (e.g. Michalopoulos and Papaioannou (2013); Giuliano and Nunn (2013)).

The main variable of interest, $EthnicPower_{e,c}$, captures the extent to which an ethnic group $e$ is (dis)proportionately represented in the central government of country $c$. Following Francois et al. (2015), I measure $EthnicPower_{e,c}$ as the difference between

the share of cabinet positions held by ethnic group $e$ and its relative population size. By construction, a positive value of $EthnicPower_{e,c}$ suggests an overrepresentation of a particular group while a negative value is indicative of a disproportionate political exclusion. Francois et al. (2015) describe this variable as a "revealing statistic" of power allocation in the context of sub-Saharan African countries. Under the well-established argument that power sharing involves resource capture, one should expect a stronger response to Ebola in the homelands of overrepresented communities. Therefore the coefficient $\beta$ on the variable $EthnicPower_{e,c}$ is likely to be negative. I test this hypothesis using various specifications of equation 1.

Finally, I include a country fixed effect ($\alpha_c$) and a district fixed effect ($\alpha_d$ omitted in equation 1 to avoid inconsistency in the subscript notation). These fixed effects are included to control for hard-to-account-for policy and institutional environments (such as colonial experience), and hard-to-measure geographic factors that may affect local resilience to health shocks. To close the description of the model in equation 1, $\epsilon_{i,e,c}$ is the error term. I also report robust standard errors clustered at the district level for all specifications.

## 4.2 Power Sharing and Response to Ebola

Table 2 presents the baseline results from estimating various specifications of equation 1 using Poisson (columns 1-3) and negative binomial (columns 4-6) models.[8] I begin by estimating a basic regression model linking confirmed Ebola cases to ethnic representation in the executive. Except for country and district effects, all other control variables are excluded from the basic specification presented in columns 1 and 4. Specifications in columns 2 and 5 add population density, the number of health clinics, and distances to the nearest main road and ETC to the basic model. Both distance variables are measured relatively to the centroid of the subdistrict. The last specifications, presented in columns 3 and 6, augment previous specifications with an indicator for diamond mine, average nighttime light density, agricultural suitability index and mean elevation.

Consistent with the hypothesis that ethnic politics affected local response to Ebola, estimates of coefficient $\beta$ from all specifications are negative and statistically significant. I interpret this as evidence that ethnic representation in government was associated with

[8] Although I present the estimates from both models, there is a large discrepancy between the mean and the variance of the total number of Ebola cases (see summary statistics in Table 1). In addition, the estimated (but not reported) parameter of over-dispersion is highly significant in all specifications. This suggests that the negative binomial model, which properly deals with over-dispersion, is more appropriate than the Poisson model.

Table 2: Ethnic Representation and Ebola — Economic and Geographic Controls

| | Poisson | | | Negative Binomial | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ethnic Power | -0.044*** | -0.023*** | -0.022*** | -0.036*** | -0.024** | -0.031*** |
| | (0.015) | (0.007) | (0.007) | (0.013) | (0.011) | (0.011) |
| Log Population Density | | 0.361*** | 0.362*** | | 0.780*** | 0.782*** |
| | | (0.089) | (0.114) | | (0.112) | (0.117) |
| Distance to Road | | -0.020 | -0.021 | | -0.005 | -0.004 |
| | | (0.014) | (0.014) | | (0.018) | (0.018) |
| Health Center | | 0.062*** | 0.066*** | | 0.072*** | 0.079*** |
| | | (0.021) | (0.024) | | (0.010) | (0.011) |
| Distance to ETC | | -0.013** | -0.013** | | -0.008 | -0.007 |
| | | (0.006) | (0.006) | | (0.005) | (0.005) |
| Diamond | | | 0.195 | | | 0.592** |
| | | | (0.189) | | | (0.300) |
| Luminosity | | | -0.039*** | | | -0.037*** |
| | | | (0.006) | | | (0.009) |
| Agricultural Suitability | | | 1.285 | | | 0.416 |
| | | | (0.786) | | | (1.011) |
| Elevation | | | -0.077 | | | 2.499*** |
| | | | (0.954) | | | (0.970) |
| Observations | 481 | 481 | 481 | 481 | 481 | 481 |
| District FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the total number of confirmed Ebola cases by subdistrict. Robust standard errors clustered at the district level are reported in parentheses. Two empirical strategies are employed: a Poisson model (columns 1-3) and a negative binomial model (columns 4-6). Within each model, the results based on the specifications without control (columns 1 and 4), with economic controls (columns 2 and 5), and including all controls (columns 3 and 6) are reported. All specifications include district and country fixed effects.

increased resilience to the transmission of Ebola. The estimated coefficient of correlation is also economically meaningful across specifications. Specifically, results from the negative binomial regression with the full set of baseline controls suggest that one percentage point increase in cabinet appointment—relative to group size—reduced the average risk of infection by about 3.01%, ceteris paribus (column 6). The results from the baseline regressions also suggest a weak local response to Ebola in the vicinity of ETC and in densely populated areas. The latter confirms previous findings pointing to increased mobility and overcrowding as contributing factors to the outbreak. Finally, controlling for population density and other relevant variables, local development as

proxied by nighttime luminosity was a mitigating factor to the spread of the virus. This is consistent with the poverty argument put forward in many narratives.

Did ethnic politics actually shape the spatial distribution of Ebola? The negative negative correlation between ethnic power and Ebola suggests it did. However, a convincing answer requires more than a simple correlation inference. In fact, potential omitted variable bias and measurement error could threaten the validity of the results presented so far. It is not implausible that cabinet appointments are correlated with missing societal characteristics that may also influence local capacity to limit the spread of Ebola. For example, social capital, a key driver of participation and representation in political institutions (Putnam, 2001), can also affect local responses to health shocks (Scheffler and Brown, 2008). In the following section, I address potential endogeneity issues in two manners. First, I expand the baseline specifications in Table 2 with a set of pre-colonial ethnic characteristics. Second, I develop a control function procedure using power allocation in early post-colonial cabinets as a source of independent variation—with respect to Ebola—in present-day power sharing. I discuss the validity of this approach in more detail in Section 5.2.

# 5 Dealing with Potential Endogeneity

## 5.1 Controlling for Observables

Many observers believe that cultural preferences such as traditional healing and burial practices compromised anti-Ebola efforts (Wilkinson and Fairhead, 2017). The possibility of a higher risk of infection in some cultural environments makes it necessary to control for ethnic-level characteristics and thus attenuate culture-related bias. Therefore, using the Ethnographic Atlas of Murdock (1967), I identify and control for a number of pre-colonial ethnic characteristics. Overall, these variables characterize persistent ethnic-specific cultural and societal traits reflecting long-standing preferences that influence contemporary outcomes. By including these covariates as $\mathbf{X}'_{e,c}$ in equation 1, I hope to capture the role of culture, one of the most debated but hard-to-account-for potential aggravating factor of the Ebola transmission.

I begin by controlling for major subsistence activities inherited from previous ancestral generations. The relevant measures within the context of Guinea and Sierra Leone include dependence on gathering, hunting, fishing, and animal husbandry. There is some evidence suggesting for example that hunting may increase the risk of Ebola infection (Morell, 1995). The first three measures of subsistence activities are dummy

Table 3: Ethnic Representation and Ebola — Pre-Colonial Ethnic Characteristics

| | Poisson | | | Negative Binomial | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ethnic Power | -0.024*** | -0.033*** | -0.032*** | -0.044*** | -0.049*** | -0.050*** |
| | (0.009) | (0.010) | (0.010) | (0.014) | (0.015) | (0.016) |
| Gathering | -0.032 | -0.347 | -0.333 | 0.053 | -0.237 | 0.035 |
| | (0.471) | (0.388) | (0.394) | (0.470) | (0.444) | (0.461) |
| Hunting | 0.536 | 1.600*** | 1.587*** | 1.157*** | 2.254*** | 2.254*** |
| | (0.407) | (0.595) | (0.590) | (0.437) | (0.506) | (0.482) |
| Fishing | 0.565 | 0.265 | 0.200 | 0.803 | 0.275 | -0.230 |
| | (0.538) | (0.461) | (0.451) | (0.531) | (0.545) | (0.568) |
| Animal Husbandry | 0.126 | -0.075 | -0.114 | 0.094 | -0.151 | -0.389* |
| | (0.284) | (0.245) | (0.240) | (0.240) | (0.210) | (0.235) |
| Clans | | -1.129*** | -1.050*** | | -1.258*** | -0.942*** |
| | | (0.345) | (0.347) | | (0.341) | (0.341) |
| Political Centralization | | 1.795*** | 1.747*** | | 1.777*** | 1.958*** |
| | | (0.454) | (0.475) | | (0.341) | (0.336) |
| Slavery | | | 0.951 | | | 1.528 |
| | | | (1.068) | | | (0.975) |
| Local Democracy | | | 0.259 | | | 1.452*** |
| | | | (0.440) | | | (0.506) |
| Observations | 481 | 481 | 481 | 481 | 481 | 481 |
| Baseline Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| District FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the total number of confirmed Ebola cases by subdistrict. Robust standard errors clustered at the district level are reported in parentheses. Two empirical strategies are employed: a Poisson model (columns 1-3) and a negative binomial model (columns 4-6). Within each model, the results based on the inherited subsistence activities (columns 1 and 4), with clans and jurisdictional hierarchy added (columns 2 and 5), and including all controls (columns 3 and 6) are reported. All specifications include district and country fixed effects.

variables that take the value one when dependence to the activity in question (gathering, hunting and fishing) is greater than 5%, and zero otherwise. As for the fourth index, it varies from zero to nine in the original data and reflects for each ethnicity the percentage of subsistence provided by animal husbandry. In the sample of ethnicities from Guinea and Sierra Leone, this measure varies between one (6%–15% dependence) and five (46%–55% dependence) (see Table 1).

The second set of ethnic-level controls comprise societal and institutional arrangements that are correlated with contemporary economic and political develop-

ment (Michalopoulos and Papaioannou, 2013; Giuliano and Nunn, 2013). They include an indicator for each of the following pre-colonial institutions: clan communities, jurisdictional hierarchy beyond the local community, the prevalence of slavery, and local democracy. Specifically, the variables *clans* and *slavery* are each assigned the value one when community marriage organization and/or slavery are present, as reflected in the Ethnographic Atlas, and zero otherwise. Following Michalopoulos and Papaioannou (2013), the indicator for *political centralization* is coded as one if jurisdictional hierarchy beyond local community equals two, three, and four, and zero otherwise. Finally, as in Giuliano and Nunn (2013), local democracy is prevalent when succession to the office of the local headman is through elections or formal consensus.

In Table 3, I report the estimates when ethnic-level covariates capturing the influence of culture in the transmission of Ebola are included in equation 1. In all specifications, including proxies of deeply-rooted cultural heritage does not substantially affect the coefficient of interest. The estimated coefficients of ethnic power remain negative, statistically significant and economically sensible. Comparing the results from the negative binomial regressions (columns 6 of Tables 2 and 3), I find that adding the full set of ethnic controls to the baseline equation increased the effect of ethnic power (in absolute value) by more than 61%. Interestingly, I also find that subdistricts dominated by ethnicities with a tradition of hunting experienced relatively higher Ebola infection. The latter provides a suggestive evidence on the role of hunting in Ebola transmission.

## 5.2 Control Function Approach

After controlling for a large set of economic, geographic and cultural characteristics, the negative relationship between ethnic power and Ebola is still statistically robust and economically meaningful. This reinforces the hypothesis that ethnic politics influenced local response to Ebola. However, before I interpret this relationship as causal I must address potential concerns that it could be driven by unobserved heterogeneity.

To illustrate the implications of a possible endogeneity of the variable of interest, suppose $EthnicPower_{e,c}$ is partially correlated with an exogenous ethnicity-specific variable $Z_{e,c}$ that is omitted from Equation 1. It is possible to express $EthnicPower_{e,c}$ as an implicit function of $\mathbf{X}'_{e,c}$, $Z_{e,c}$ and $\mu_{e,c}$:

$$EthnicPower_{e,c} = EthnicPower_{e,c}(\mathbf{X}'_{e,c}, Z_{e,c}, \mu_{e,c}), \tag{2}$$

where $\mathbf{X}'_{e,c}$ is defined as before and $\mu_{e,c}$ is an error term depicting unobserved ethnicity-specific characteristics assumed to be linearly correlated with $\epsilon_{i,e,c}$. The latter assumption

implies that $\epsilon_{i,e,c}$ can be decomposed as:

$$\epsilon_{i,e,c} = \sigma_{\mu}\mu_{e,c} + \upsilon_{i,e,c}, \tag{3}$$

where $\upsilon_{i,e,c}$ is an idiosyncratic error term that is assumed to be independent across subdistricts, ethnicities and countries. According to Equations 2 and 3, if the omitted ethnic-level characteristic $Z_{e,c}$ has an effect on post allocations across ethnicities, then $\epsilon_{i,e,c}$ and $EthnicPower_{e,c}$ will be correlated. As such, even after controlling for $\mathbf{X}'_{e,c}$, parameter estimates from Equation 1 is likely to be inconsistent. This omitted variables problem can be detected and resolved via a control function (CF) approach.
In practice, coefficients from the CF approach are obtained from estimating the following second-stage equation:

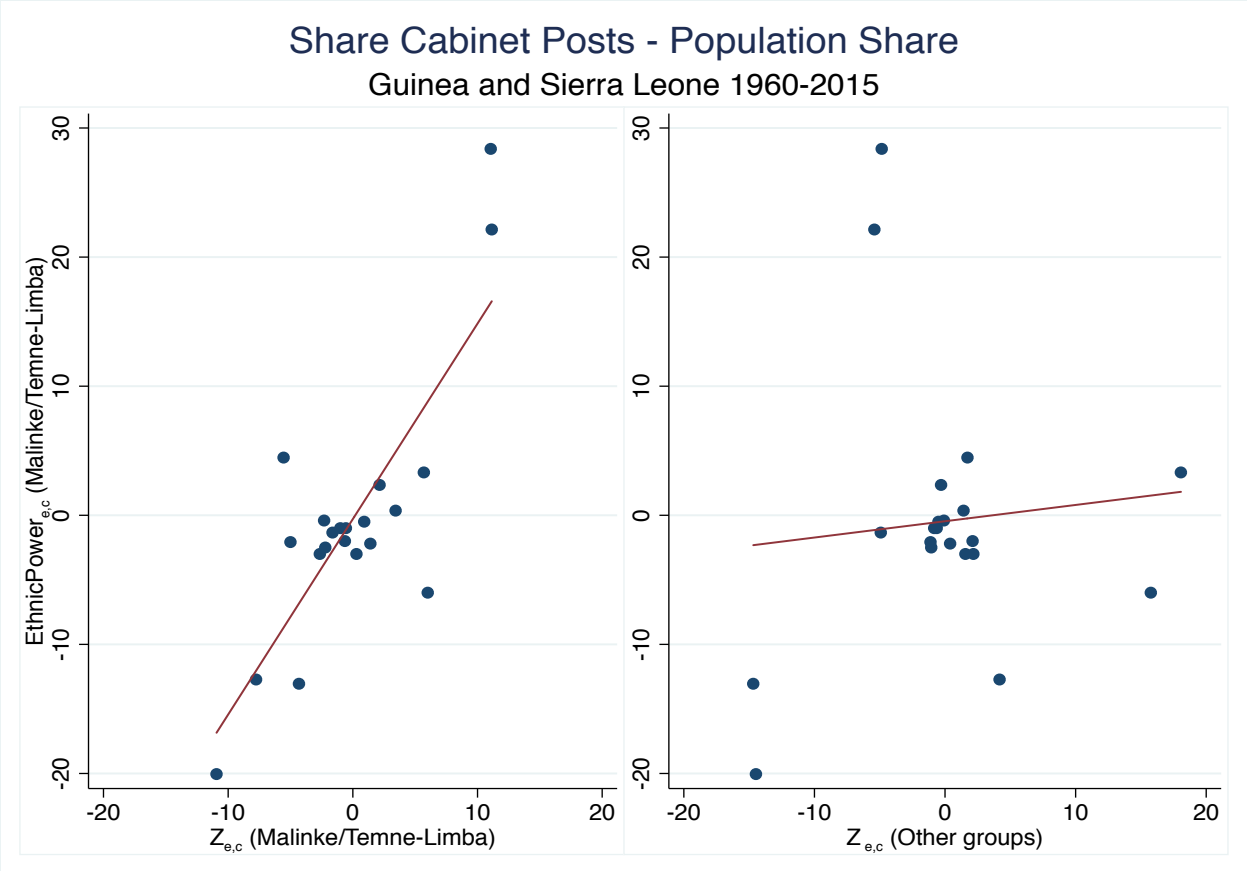
$$Y_{i,e,c} = \alpha_c + \beta EthnicPower_{e,c} + \mathbf{X}'_{i,c}\Gamma + \mathbf{X}'_{e,c}\Omega + \sigma_{\mu}\hat{\mu}_{e,c} + \upsilon_{i,e,c}, \tag{4}$$

where $\hat{\mu}_{e,c}$ correspond to the OLS residuals obtained from a first-stage regression of $EthnicPower_{e,c}$ on ethnicity-specific covariates $\mathbf{X}'_{e,c}$ (defined as before) and a variable $Z_{e,c}$ that is correlated with $EthnicPower_{e,c}$ but uncorrelated with the decision of ethnicities to avert Ebola hot spots, conditional on other controls and country specific conditions.

One such candidate variable is the allocation of power in historical cabinets with ethnic makeup similar to contemporary governments. Specifically, the Ebola-era governments were ruled by a Malinké (Alpha Condé) in Guinea and a Temne-Limba (Bai Koroma) in Sierra Leone. Looking at the historical records of both countries, I identify one episode of Malinké-led governments in Guinea (under Sékou Touré) and several episodes of Temne-Limba (under the APC) dominated ruling coalitions in Sierra Leone. The data on historical power sharing across ethnicities comes from Francois et al. (2015) and covers the period 1960-2004. Using power allocation in these previous coalitions, I construct the average shares—relative to population size—of cabinet posts held by each ethnicity, and denotes it as $Z_{e,c}$, when the presidents in past coalitions share the same ethnic heritage with the Ebola-era presidents. As shown in the left panel of Figure 2, $Z_{e,c}$ is highly correlated with $EthnicPower_{e,c}$. However, the distribution of power in past coalitions ruled by presidents from other ethnicities, denoted $\bar{Z}_{e,c}$, is uncorrelated with contemporary power sharing as indicated in the right panel of Figure 2. This reinforces the validity of $Z_{e,c}$ as a good instrument for contemporary power allocation.

In Table 4, I present the results derived from both the Poisson (columns 1-3) and the negative binomial (columns 4-6) regressions. I contrast estimates from the previously presented standards estimation techniques (columns 1 and 4) with the results based on

Figure 2: Past and Contemporary Ethnic Coalitions




various specifications with a control function. In all specifications, I include a full set of observable economic, geographic and ethnic characteristics, as well as country and district fixed effects. While the standard errors of the specifications in columns 2 and 5 are not clustered, the ones in columns 3 and 6 are clustered at the district level. I only report the estimated coefficients of the main variables of interest, ethnic power and the residual $\hat{\mu}_{e,c}$. The latter provides a heteroskedasticity-robust Hausman test of the null hypothesis that $EthnicPower_{e,c}$ is exogenous (Wooldridge, 2015).

Overall, adding the control function to the standard approach does not substantially affect the sign and the magnitude of the ethnic power coefficient. It remains negative, highly significant and economically relevant. Specifications based on the Poisson model confirm the importance of ethnic representation in mitigating the impact of Ebola in Guinea and Sierra Leone. The estimated coefficients of $EthnicPower_{e,c}$ are negative and statistically significant at standard confidence levels (columns 1-3). However, while the unclustered standard error suggests that ethnic representation might be endogenous as

Table 4: Ethnic Representation and Ebola — Control Function Approach

| | Poisson | | | Negative Binomial | | |
|---|---|---|---|---|---|---|
| | | Control Function | | | Control Function | |
| | | Unclustered | Clustered | | Unclustered | Clustered |
| | **MLE** | Std. Err. | Std. Err. | **MLE** | Std. Err. | Std. Err. |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ethnic Power | -0.032*** | -0.023*** | -0.023* | -0.050*** | -0.052*** | -0.052*** |
| | (0.010) | (0.004) | (0.014) | (0.016) | (0.013) | (0.019) |
| Residuals | | -0.043*** | -0.043 | | 0.005 | 0.005 |
| | | (0.011) | (0.055) | | (0.036) | (0.057) |
| Observations | 481 | 481 | 481 | 481 | 481 | 481 |
| Baseline Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Ethnic-level Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| District FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variable is the total number of confirmed Ebola cases by subdistrict. Two empirical strategies are employed: a Poisson model (columns 1-3) and a negative binomial model (columns 4-6). Robust standard errors clustered at the district level are reported in parentheses in the MLE specifications (columns 1 and 4). Standard errors of the control function approach are either unclustered (columns 2 and 5) or clustered at the district level (columns 3 and 6). All specifications include economic, geographic and ethnic controls, as well as district and country fixed effects.

indicated by the statistically significance of the residual (column 2), this hypothesis does not stand when the standard errors are clustered at the district level (column 3). Given the presence of a statistically significant over-dispersion parameter, the results inferred from the negative binomial model is likely to be more informative.

The results from the negative binomial regressions yield approximately similar point estimates for both the standard MLE and the control function approach (columns 4-6). It suggests that one percentage increase in ethnic-level cabinet appointment reduced the risk of contracting Ebola virus in a subdistrict by more than 5%. Because the heteroskedasticity-robust standard errors on the residual $\hat{\mu}_{e,c}$ is not statistically significant, this is a suggestive evidence that the null hypothesis that $EthnicPower_{e,c}$ is exogenous cannot be rejected. Thus, estimates from the standard MLE and the control function methods based on the negative binomial regression model are not statistically different.

# 6 Testable Channels

The evidence so far suggests that coalition politics affected local response to the 2014 Ebola crisis in Guinea and Sierra Leone. I document that the homelands of ethnicities with more representation in government experienced limited Ebola transmission. This finding is robust to the inclusion of area and ethnicity specific controls that reflect local development, environmental conditions and cultural preferences. The literature abounds with many potential mechanisms including ethnic control of the state and its implications for resource allocation. Also, the widespread prevalence of ethnic bias in public policy can deteriorate social capital and affect trust in policymakers. Using data from the fifth round of the Afrobarometer survey collected prior to the Ebola crisis in Guinea and Sierra Leone, I test some of these potential channels.

## 6.1 Access to Public Goods

I begin by asking whether ethnic representation in government is associated with access to public infrastructure. In the Afrobarometer survey, the enumerator under the supervision of a field officer is tasked to report whether the respondents have access to a number of public goods. These include access to electricity grid, piped water and sewerage system. The two possible answers are "yes" when the infrastructure is present in the enumeration area and "no", otherwise. Taking into account the binary nature of the outcome variable, I run two separate regressions: a linear probability model and a probit model. In both regressions, I include the measure of ethnic representation while controlling for a rich set of individual (age, age squared, gender, education, religion, living conditions and employment status), household (size and urban status), geographic (diamond mine indicator, agricultural suitability index and elevation) and economic controls (nighttime light density and population density). I also include a country fixed effect and cluster the standard error at both the ethnicity and subdistrict levels.

As shown in Table 5, the variable of interest (ethnic power) has a positive and statistically significant sign across categories of infrastructure and estimation strategies. The result suggests that representation in multiethnic ruling coalitions is associated with public resource capture, conditioning on a battery of control variables. Within the context of Guinea and Sierra Leone, the fellow ethnic affiliates of cabinet members have superior access to public goods such as electricity, piped water and sewerage system. This finding is consistent with the hypothesis that coalition politics may have affected the spatial distribution of Ebola through its effect on the ethnic-based (mis)allocation of public goods.

Table 5: Ethnic Representation and Access to Public Goods

| | **Linear Probability Model** | | | **Probit Model** | | |
|---|---|---|---|---|---|---|
| | Electric Grid | Piped Water | Sewerage System | Electric Grid | Piped Water | Sewerage System |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ethnic Power | 0.001* | 0.004*** | 0.003** | 0.016** | 0.014*** | 0.014*** |
| | (0.001) | (0.001) | (0.001) | (0.007) | (0.004) | (0.005) |
| Observations | 2217 | 2209 | 2184 | 2214 | 2206 | 2181 |
| Geographic Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Economic Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variables are dummy variables indicating the presence in the enumeration area of electricity grid (columns 1 and 3), piped water (columns 2 and 4), and sewerage system (columns 3 and 6). Two-way robust standard errors clustered at the ethnicity and district levels are reported in parentheses. Two empirical strategies are employed: a linear probability model (columns 1-3) and a probit model (columns 4-6). All specifications include country fixed effects, individual controls (age, age squared, gender, education, religion, living conditions and employment status), economic and geographic controls.

## 6.2 Trust in Political Institutions

Another channel that the Afrobarometer survey allows to examine is the link between representation in government and trust in political institutions. Lack of ethnic representation can erode trust in government leading to non-compliance to desirable policy interventions. There were indeed many instances of fierce community resistance to health workers and government officials during the 2014 Ebola crisis (ACAPS, 2015). Ethnic representation may have mitigated the spread of Ebola by fostering trust between politically connected communities and national institutions. To explore this mechanism, I examine the relationship between the measure of ethnic representation and the respondents' self-reported trust in political institutions.

To the question of how much they trust a number of listed political institutions, the respondents choose between: "not at all" coded as 0; "just a little" coded as 1; "somewhat" coded as 2; and "a lot" coded as 3. Using these categorical outcome variables, I examine whether ethnic representation influences the level of trust individuals exhibit towards the president, the parliament, the police, the court of law, the national tax agency, and the opposition parties. The results based on the OLS (upper panel) and the ordered probit (lower panel) regressions are displayed in Table 6. In all specifications, I

account for individual, household, geographic and economic controls, as well as country fixed effects. I also cluster the standard errors at both the ethnic and subdistrict levels.

Table 6: Ethnic Representation and Trust in Political Institutions

| | **Ordinary Least Squares** | | | | | |
|---|---|---|---|---|---|---|
| | President | Parliament | Police | Court | Tax Agency | Opposition Parties |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Ethnic Power | 0.026*** | 0.015** | 0.010** | 0.010*** | 0.009** | -0.018*** |
| | (0.007) | (0.006) | (0.004) | (0.004) | (0.004) | (0.005) |
| | **Ordered Probit** | | | | | |
| Ethnic Power | 0.032*** | 0.017*** | 0.010*** | 0.011*** | 0.009*** | -0.020*** |
| | (0.003) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Observations | 2176 | 2094 | 2175 | 2137 | 2032 | 2145 |
| Geographic Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Economic Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Individual Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes |

*Notes:* The dependent variables are categorical variables indicating respondent's level of trust in political institutions. The categories are: 0 "not at all"; 1 "just a little"; 2 "somewhat"; and 3 "a lot". Two-way robust standard errors clustered at the ethnicity and district levels are reported in parentheses. Two empirical strategies are employed: OLS (upper panel) and Ordered Probit (lower panel). All specifications include country fixed effects, individual controls (age, age squared, gender, education, religion, living conditions and employment status), economic and geographic controls.

As expected, ethnic representation in government foster trust in the president, the parliament, the police, the court of law and the national tax agency (columns 1-5). Also, being ethnically affiliated to the ruling coalition, as reflected in the extent of representation, is likely to deter trust in the opposition parties as indicated in column 6 of Table 6. These findings are consistent with a number of hypotheses suggesting that distrust in public institutions triggered active resistance to anti-Ebola efforts and non-compliance to recommended practices such as safe burials and quarantine measures (Fairhead, 2016; Wilkinson and Fairhead, 2017).

# 7 Conclusion

In this analysis, I examine how power sharing in a multiethnic setting affects vulnerability to adverse shocks. I focus on the recent Ebola outbreak in West Africa which claimed

the lives of thousands and severely disrupted economic exchanges. Previous examinations of the gravity of the outbreak focus on poverty, geography and culture. I offer an alternative explanation: ethnic politics and its implications for resource allocation and trust in political institutions.

Using a unique dataset on power allocation across ethnicities in Guinea and Sierra Leone, I provide evidence that representation in government strongly affected local response to the 2014 Ebola outbreak. The transmission of Ebola was substantially limited in jurisdictions where the dominant ethnicity holds a significant share of the national cabinet. I also document that public resource capture and trust in the political institutions (generally controlled by the ruling coalition) are two relevant mechanisms. These results suggest that in addition to limiting access to public goods, political marginalization may also inflict serious harms by increasing vulnerability to crises. Consequently, institutional reforms that limit the misallocation of public goods should be accompanied by concerted efforts to design need-based targeting.

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