CRIMINOLOGY

SUBNATIONAL DETERMINANTS OF KILLING IN RWANDA*

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Nearly one million people were killed in the Rwandan genocide in 1994. Although scholars have theorized why this violence occurred, we know comparatively less about how it unfolded. Accordingly, this article assesses the determinants of subnational levels of killing in 142 Rwandan communes by relying on data from the Rwandan Ministry of Local Administration and Community Development, the National University of Rwanda, and the 1991 Rwandan census. Fixed effects analyses reveal that top-down and bottom-up factors coalesced to influence violence across Rwanda. The state orchestrated and implemented the violence, and more violence occurred near the extremist center of the country as well as where state actors met strong opposition. Local conditions also shaped the violence, however, and indicators of low community cohesion and social control are associated with comparatively more violence. When put together, a unique model is introduced that integrates state conflict theories and social control theories of crime to explain subnational killing during the genocide in Rwanda.

In April 1994, Rwanda plunged into violence that took the lives of up to one million people in just several months. The extreme number of individuals killed during such a short period of time has remained a defining aspect of the genocide, and scholars have suggested there were 333.3 killings per hour, or 5.5 killings per minute, throughout the country (Barnett and Finnemore, 2004; Gourevitch, 1998). This powerful statistic highlights the intensity of the violence, although it simultaneously obscures the subnational distribution of killings *within* Rwanda. Indeed, the genocide did not unfold uniformly across Rwanda but was concentrated in certain parts of the country (Straus, 2006; Verpoorten, 2012).

This article analyzes the factors that influenced the number of people killed in Rwandan municipalities, which each experienced between 100 and 55,000 deaths. Fixed effects analyses reveal that the state-led targeting of Tutsis shaped the violence within municipalities. Areas near the center of the country and where state actors faced the strongest threats also experienced comparatively more violence. Nevertheless, top-down factors are not alone sufficient to explain subnational variation in killing. As hundreds of thousands of civilians participated in the violence, the communities in which they lived also shaped how the violence unfolded, and comparatively low rates of marriage, low formal employment, and high levels of education were associated with significantly more killing.

In what follows, I briefly review the 1994 genocide in Rwanda. I then pose and assess hypotheses regarding the factors that may have influenced subnational levels of violence in Rwanda. When taken together, my findings highlight that both top-down and bottom-up processes are associated with how the genocide unfolded, indicating that state conflict theories and social control theories of crime inform variation in genocidal violence and suggesting that theories regarding subnational variation in crime can inform understandings of violence in other contexts.

THE ROAD TO GENOCIDE IN RWANDA

Rwanda was named a German colony in 1884, although colonialism became particularly consequential when Belgium took over the country after World War I (see Des Forges, 2011; Newbury, 1988; Vansina, 2005). Belgian officials established a policy of indirect rule through the existing Rwandan monarchy, which governed Rwanda through a system of chiefs and subchiefs. The new colonialists also mandated that Rwandans carry identification cards that classified each citizen as belonging to one of three ethnic groups: Hutu, Tutsi, or Twa. Although these ethnic groups existed prior to colonialism, Belgian colonialists racialized existing identities by suggesting that Tutsis were taller and had lighter skin than Hutus. They also enacted policies that benefited Tutsis, who dominated positions of power despite comprising no more than 15 percent of the population (Lemarchand, 1970; Mamdani, 2001; Newbury, 1978).

The Tutsi monarchy remained intact throughout the colonial period (Newbury, 1988). During the early 1950s, however, Rwandan Hutus began to express discontent at years of marginalization despite their numerical majority, and the colonial administration shifted its support. A Hutu emancipation movement emerged, culminating in Rwandan independence (1962) and the institution of a Hutu-led government. Violence and discrimination against Tutsis became common, and tens of thousands of Tutsis fled Rwanda (Des Forges, 1999; Hintjens, 1999; Reyntjens, 1996).

A 1973 coup brought President Habyarimana to power, and his Hutu-led regime continued to discriminate against Tutsis. Meanwhile, some of the Tutsis who had fled the country began forming an armed liberation movement known as the Rwandan Patriotic Front (RPF) in neighboring Uganda. On October 1, 1990, this army attacked Rwanda's northern border. Propaganda against the RPF swept through the country's radio stations and newspapers, and soon all Tutsis were associated with the enemy (Straus, 2006). In an effort to end the civil war, the Habyarimana government and the RPF signed several peace protocols known as the Arusha Accords. Sporadic violence nonetheless continued (Des Forges, 1999), and an economic downturn and the looming power-sharing deal with the RPF threatened those in power (Guichaoua, 2010; Longman, 2011; Verwimp, 2013). Habyarimana's political party, the MRND (National Revolutionary Movement for Development), also lost its monopoly on politics, leading to the formation of numerous opposition parties that placed additional pressure on the government (Des Forges, 1999).

Then, on April 6, 1994, President Habyarimana's plane was shot down as it was landing in the capital, killing all occupants on impact. This marked the beginning of the genocide, and soon violence targeted Tutsis and moderate Hutus throughout Rwanda. The RPF also reinitiated its war within Rwanda, and several months later, up to one million people had been killed.

SUBNATIONAL VARIATION IN VIOLENCE

Studies of Rwanda and other episodes of genocide have largely employed top-down, state-centered approaches. Numerous analyses have examined how state-level factors—such as civil war (Fein, 1993; Krain, 1997), the type of government (Harff, 2003; Mann, 2005), or state-led exclusionary ideologies (Hagan and Rymond-Richmond, 2008; Weitz, 2003)—influence the onset of genocide. Much of this work has also emphasized an elite threat model, theorizing genocide as a response to threats to political elites (e.g., Midlarsky, 2005; Valentino, 2004).

Even though state-centric analyses are vital, a small but growing body of work has turned its attention to the meso-level dynamics of genocide. Mirroring recent scholarship on the disaggregation of civil wars (see Cederman and Gleditsch, 2009), this scholarship has suggested that state-level factors (like the type of government) cannot fully explain subnational patterns in violence. Indeed, as Owens, Su, and Snow (2013: 78) proposed, "The most recent and promising analytic trend in the study of genocide and mass killing is the emergence of a comparative perspective dedicated primarily to explaining variable patterns of genocide across various subnational contexts." This area of research has remained underdeveloped (Finkel and Straus, 2012), however, and only a handful of studies have examined particular communities or individuals in Rwanda, concluding that fear (Straus, 2006), personal ties (Fujii, 2011 [2009]; McDoom, 2013), and local authorities (Mulinda, 2010) influenced how violence unfolded (see also Loyle, 2009).[1]

This article thus examines the meso-level factors associated with violence in Rwanda's municipalities (see also Verpoorten, 2012). As Finkel and Straus (2012) noted that meso-level studies have a tendency to either downplay or exclude the role of the state, I also examine how top-down, state-centered factors may have influenced the violence in Rwandan municipalities. I theorize these top-down and bottom-up factors in the following discussion.

TOP-DOWN VIOLENCE

President Habyarimana's plane crash was the spark in a country where many risk factors of genocide were already present. After the 1990 RPF invasion, a group of Hutu extremists known as the *akazu* began to assess how to maintain dominance (Hintjens, 1999; Melvern, 2006 [2004]; Verwimp, 2013). Many feared losing power and, in turn, denounced Tutsis as dangerous enemies. For instance, a leading member of the MRND party publicly urged Hutus to resist invasion, suggesting that the civil war would not have occurred if the "Tutsi invaders" had been killed as children (FCA325, 2003).

These sentiments coalesced into genocide in the days after the plane crash. Within hours of the assassination, several members of the Hutu political elite seized control of the country and created an interim government. By dawn the next day, lists of political opponents had been distributed to death squads (Des Forges, 1999). Prominent

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1. Straus (2006) employed bivariate analyses to assess the onset of violence in Rwanda's prefectures (regions) and communes (municipalities). McDoom (2014) further explored the subnational onset of violence, although I do not review these studies here because I examine the *level* of violence rather than subnational *onset*. Note that Verpoorten (2012) also examined subnational violence, but her analysis did not assess top-down *and* bottom-up factors but focused on the role of population pressure. Additionally, her analysis excluded urban areas.

Tutsis and moderate Hutus were massacred, and thousands of ordinary citizens were also targeted. On April 11, the new authorities summoned the *prefects* (governors) to the capital city. Although they were not given explicit orders, Des Forges (1999: 156) explained that, "In this highly centralized political system … the absence of a message was itself a message: attacks were to continue."

The top-down nature of this violence suggests that state actors influenced patterns in violence at subnational levels. These patterns align with much genocide scholarship that considers genocide to be a result of state actions as well as with state conflict theories of crime that would view genocide as actions pursued in light of state interests. As such, several state-level factors may have been associated with killing within municipalities. These factors include indicators of state interest as well as state military, political, and ideological power.

First, the violence strategically targeted men and women of any age who identified as Tutsi, were thought to be Tutsi, or were merely associated with a Tutsi. Tutsis were called *inyenzi* (cockroaches), and political leaders urged their extermination throughout the country. As the government sought to destroy all Tutsis, I expect *regions of Rwanda with larger populations of Tutsis experienced more killings than did regions with fewer Tutsis*.

Other factors may have influenced the state's ability to implement this violence across Rwanda. Although the literature on civil war has found that distance from the center of a country provides opportunity for anti-state insurgency (Cederman, Buhaug, and Rød, 2009; Fearon and Laitin, 2003; Murshed and Gates, 2005) and other unsanctioned violence (Su, 2011), proximity to the center of a country during state-led violence may lead to increased violence. In this case, the genocide in Rwanda was centrally organized (Des Forges, 1999). Numerous *prefects* (governors), *bourgmestres* (mayors), and other state agents actively participated in the genocide, and the central government eliminated those who did not support the violence. Thus*, there may have been more killings near Kigali, Rwanda's centrally located capital city*.

Outside of the capital, the state may have had varying levels of control. For instance, the government had the Rwandan Armed Forces (FAR) at its disposal, which was dominated by Hutus and commanded by one of the key architects of the genocide (African Rights, 1995). As Des Forges (1999: 176) illustrated, "the military played a decisive role by directing and initiating the slaughter." As I will further explain, the RPF also reinvaded Rwanda as the genocide began and waged a war against the FAR. The FAR could not be active everywhere, though, and instead exercised the state's military power in certain areas of Rwanda. Accordingly*, regions where the government deployed FAR troops may have experienced more killings*.

The interim government's control may have also varied based on the degree of local political support. The *akazu* and numerous interim government officials were members of MRND.[2] This political party was the only legal political party in Rwanda between 1975 and 1991, and Hutus dominated its ranks as well as the ranks of its youth wing (the *Interahamwe*). In 1991, however, the Habyarimana regime was forced to allow political opposition. Several other political parties formed, including MDR (the Republican

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2.   Others were members of the Coalition for the Defense of the Republic (CDR), a hardline faction of MRND. Yet, as CDR members led no prefectures and only two communes, I cannot test the effects of CDR. Additionally, there are no data on the movements of the *Interahamwe* or on the other youth militias associated with political parties.

Democratic Movement)—a Hutu-based party that became MRND's largest opponent and "chief threat" (Des Forges, 1999: 44). As most of the key political leaders supporting the genocide remained members of MRND, *I anticipate that subnational areas led by members of MRND had more killings.*

Finally, scholars have suggested that state-led ideologies provide motivating frames for genocidal violence (Fujii, 2011 [2009]; Hagan and Rymond-Richmond, 2008; Harff, 2003). In this case, political elites propagated an ideology that cast Tutsis as threatening outsiders, and state-supported radio stations broadcast hate speech and propaganda. The state-led station, Radio Rwanda, was largely responsible for the broadcasts when the civil war began. When the Arusha Accords prohibited hate speech, political elites began working with an "independent" station known as Radio RTLM to incite violence. For instance, a Radio RTLM (1994) broadcast encouraged civilians to kill Tutsis by saying, "Learn the tricks to catch them. You may set a trap for them; you may dig a hole in which they can fall." In line with scholarship on the mobilizing effect of media (e.g., Roscigno and Danaher, 2001), this propaganda may have incited violence (Thompson, 2007). In fact, Radio RTLM regularly read the names of Tutsis during the genocide (Des Forges, 1999), and the International Criminal Tribunal for Rwanda (ICTR) prosecuted several individuals who were responsible for the radio broadcasts because they urged Hutu civilians to kill. These broadcasts did not reach all areas of Rwanda, however, which suggests *areas where there was greater exposure to the radio may have experienced more killings*, as Yanagizawa-Drott (2014) has recently argued.

Thus, a top-down perspective suggests that factors relevant to the state, including state interest and state power, influenced the violence. Specifically, it suggests that:

Hypothesis 1: Regions with larger populations of Tutsis experienced more killings.

Hypothesis 2: Areas close to the capital experienced more killings.

Hypothesis 3: Regions where the Rwandan Armed Forces were present experienced more killings.

Hypothesis 4: Areas controlled by MRND experienced more killings.

Hypothesis 5: Regions with greater exposure to the radio experienced more killings.

BOTTOM-UP VIOLENCE

Although state actors orchestrated the genocide, the state relied on civilians to accomplish its goal (Fujii, 2011 [2009]; Straus, 2006). Hutus were encouraged to form "self-defense" groups and to kill as many Tutsis as possible, and political elites suggested that Tutsis would kill Hutus if they did not act first, capitalizing on fear caused by the civil war. Several hundred thousand Rwandans heeded this call (Mamdani, 2001; Straus, 2006). Neighbors killed their neighbors, pastors killed members of their congregations, and teachers killed their students, resulting in the widespread erosion of social ties and relationships. Members of well-trusted institutions, like the Catholic Church, also took part in the violence (Des Forges, 1999; Longman, 2011), and long-standing local institutions—such as agricultural associations and resident-run cell committees—broke down.

Some civilians who participated in the genocide were forced to do so, although many others were not. In other words, even though the government urged civilians to participate, civilians were still faced with a choice. Some individuals actively committed

genocidal crimes, and Straus's (2006) interviews with more than 200 perpetrators illuminated that they acted for a variety of reasons, such as fear or group influence. Numerous others chose not to participate or even chose to rescue Tutsis. In fact, even the highest estimates of perpetrators imply that most Hutus did not take part in the slaughter. I thus examine meso-level factors that may have affected civilians' decisions to participate and, in turn, would have shaped subnational patterns in killings. These factors include 1) social control and cohesion and 2) competition.

Social Control and Cohesion

Scholars of hate crime, homicide, and other forms of violence have argued that numerous factors shape participation in crime, which consequentially influences subnational crime rates. Their theories, known as social disorganization theories, start with the idea that crime is never randomly dispersed but is concentrated in certain areas (Bursik, 1988; Kornhauser, 1978; Shaw and McKay, 1942). Put simply, place matters, and communities with comparatively less informal social control, trust, and cohesion have higher rates of crime (Sampson and Groves, 1989).

Although these ideas have mainly been applied to crime in the United States, variation in social control, trust, and cohesion is characteristic of all countries. Indeed, social disorganization theories have been tested in urban and rural areas (Bouffard and Muftic, 2006) and in numerous countries (Breetzke, 2010; Lowenkamp, Cullen, and Pratt, 2003). Even though these theories have not been extended to genocide, it stands to reason that levels of community trust and social control may have influenced subnational levels of genocidal violence in Rwanda. McDoom (2014) argued, for instance, that communities with tighter bonds between residents saw a later onset of violence during the genocide because it took time to break those bonds. Social disorganization theories would similarly suggest that municipalities with lower levels of cohesion, trust, and social control may have experienced more violence overall. To assess this, I consider key indicators of social control and cohesion.

First, studies of the life course have established that marriage provides social controls on individuals and that married people are less likely to participate in crime (Sampson, Laub, and Wimer, 2006). Marriage also seems to influence social controls at the community level (Sampson, 1987), and communities with lower marriage rates typically have higher levels of crime (Sampson and Groves, 1989).[3] In Rwanda, marriage has long been at the center of social organization (Adekunle, 2007). Although extended family is important, the nuclear family is the only form of family protected by law (Ntampaka, 1995), and marriage is a cornerstone of social life. Thus, in line with theories regarding marriage and social control, *areas with higher rates of marriage may have had fewer killings during the genocide.*

Many studies have also found that communities of lower socioeconomic status experience comparatively more crime (Morenoff, Sampson, and Raudenbush, 2001; Sampson

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3.   Initial studies linked family disruption to a lack of parental supervision at the community level, and marriage indicators have since been used more broadly. I do not test the influence of divorce because of the rarity of formal divorce in the Rwandan context, however. Note also that data on crime rates prior to 1994 are not available, and I am thus unfortunately unable to assess their influence. Finally, although social disorganization theories were developed with reference to neighborhoods, they have also been extended to larger regions (e.g., Vuolo, 2012).

and Groves, 1989; Shaw and McKay, 1942). This finding is typically linked to community employment rates, aligning with life-course research that has found employment provides social controls on individuals' lives (Uggen, 2000). In Rwanda, more than 90 percent of the population was engaged in farming bananas, beans, or other crops on small plots of land by the time of the genocide (Verwimp, 2013: 62). Others held formal employment in the government, business, or in other capacities beyond their farms; and as African Rights (1995: 18) noted, obtaining such formal employment was one of several options available to young men during the early 1990s. Scholars have similarly suggested that individuals of lower socioeconomic status participated in the genocide in Rwanda (Des Forges, 1999; Jones, 2002). Therefore, *areas with higher formal employment rates may have experienced less killing.*

Areas with large populations of adolescent men likewise tend to experience more crime because of the lack of social controls on the lives of young adults (Sutherland, 1947). This finding aligns with studies that have discovered that countries with "youth bulges" are at a higher risk of violence because young men are the most likely segment of a population to participate in violence (Urdal, 2006). Rwanda scholars have similarly suggested that most civilians who participated in the violence were young men (Des Forges, 1999; Jones, 2002), which foregrounds my expectation that *areas with fewer young men may have had fewer killings.*

Although communities with lower rates of marriage and employment and larger populations of youth often experience more crime as a result of lack of social control, communities with stronger bonds between their residents typically experience less crime. In the case of genocide, interethnic marriage between Hutus and Tutsis may have fostered stronger bonds (Alba and Golden, 1986; Merton, 1941), and many have suggested that interethnic marriage reduces the probability of violent conflict among groups. *Areas with more interethnic marriage may have consequently experienced fewer killings.* Conversely, studies of crime have typically found that high residential mobility acts as a barrier to friendship bonds and, thus, influences higher rates of crime (Sampson and Groves, 1989; Shaw and McKay, 1931). *Areas with lower population mobility may have thus seen less killing during the genocide* as low population mobility may have fostered bonds and social cohesion among residents. Overall, then, I hypothesize that:

> *Hypothesis 6*: Areas with greater social control and cohesion—indicated by a) higher rates of marriage, b) higher rates of formal employment, c) fewer young men, d) more interethnic marriage, and/or e) low mobility—experienced less killing.

DIFFERENTIAL SOCIAL ORGANIZATION AND DEFENDED COMMUNITIES

Although social disorganization theories predict that communities with higher levels of social control and cohesion would see less killing, each of these indicators may also have the opposite effect. Even though it is typically assumed that communities seek to prevent crime from occurring, Sutherland's (1947) theory of differential social organization notes that communities can also be organized toward crime (Matsueda, 2006). In other words, the structural characteristics that influence crime prevention may also positively motivate crime, depending on the goal of a community. A highly organized gang, for instance, may organize around a goal of committing crime. In the case of genocide, an entire community may similarly be organized around a goal of committing genocide.

For example, the defended communities perspective suggests that people go to great lengths to defend their community identities. In line with this, Lyons (2007) found that communities with high levels of social control and cohesion sometimes experience *more* hate crime within their community. Similar processes may be at work in genocide. Indeed, the *Interahamwe*—a youth wing of MRND that became notorious for its role in the violence—translates to "those with a common goal" (African Rights, 1995). It remains to be seen whether broader communities also shared this common goal of eliminating Tutsis, however. Thus, although I hypothesize that indicators of social control and cohesion influence genocidal killings in much the same way that they influence homicide or other forms of crime, they may also have had the opposite effect, which would indicate that communities had a common goal.

COMPETITION

Finally, competition between Hutus and Tutsis may have influenced how violence unfolded within communities. Resource scarcity has been linked to conflict (Homer-Dixon, 1994; Urdal, 2008), and many scholars have argued that resource scarcity contributed to the violence in Rwanda because hunger and landlessness often led to hopelessness (Mamdani, 2001; Prunier, 1995; Uvin, 1998). Although most of these theories focus on the onset of genocide, some suggest that scarcity influenced participation in the violence, which would in turn affect subnational patterns (e.g., Greenfield, 2009; Jones, 2002; Verpoorten, 2012). As this is arguably one of the most prominent theories regarding why people may have participated in the violence, I anticipate *areas with more resource scarcity—measured by kilocalorie production per day—had more killings.*

Population pressures may have similarly influenced uncertainty regarding resources (Agnew, 2012; Henderson, 1993). Population pressure is associated with violence (Østby et al., 2011; Raleigh and Urdal, 2007), with many suggesting that it can motivate participation in violence or make salient differences between groups. Population pressure is also often discussed in the case of Rwanda, which had Africa's highest population density in 1994. Thus*, areas of Rwanda that had higher population densities may have seen more killing.*

Finally, resource competition theories suggest that socioeconomic status is associated with violence. Yet, rather than linking socioeconomic status and employment to the controls on the lives of residents, resource competition theory suggests that violence varies with the degree of interethnic competition (Olzak, 1990, 1992). For example, research has frequently found connections between economic recessions and ethnic-based conflict (Olzak, 1992; Soule, 1992; Tolnay and Beck, 1995). Thus*, areas with more competition over formal employment—which was rare but typically coveted—may have seen more killings*. I consequently anticipate that:

> *Hypothesis 7*: Competition, indicated by a) resource scarcity, b) population pressure, and c) the proportion of Tutsis who were formally employed, is associated with more killings.

In sum, I anticipate that both top-down and bottom-up factors influenced the violence within Rwandan municipalities, and I test state conflict theories of crime, social control theories of crime, and resource competition theories. Potential top-down influences include the state-led targeting of Tutsi, state military, political, and ideological power,

and the spread of state-led propaganda. The situations in which civilians executed the violence may also matter, with social control/cohesion and competition potentially shaping violence as well.

METHODS AND MEASURES

DEPENDENT VARIABLE

To assess these top-down and bottom-up influences, I use a measure of killings from a survey conducted by the Rwandan Ministry of Local Administration and Community Development and the National University of Rwanda [Ministère De L'Administration Locale, Du Développement Communautaire et des Affaires Sociales (MINOLAC), 2004]. The survey sought to document every person killed during the genocide,[4] including Tutsis who were targeted as well as Hutus who were killed because they resembled a Tutsi, had kinship ties with Tutsis, befriended a Tutsi, or for related reasons. Indeed, the first of the Hutu 10 Commandments—a piece of propaganda published in a popular magazine in December 1990—declared that any Hutu who married or befriended a Tutsi woman, did business with a Tutsi, or even lent money to a Tutsi was a traitor. Likewise, African Rights (1995: 69) noted that much of the venom in extremist propaganda was placed "equally on Tutsi and opposition Hutu."
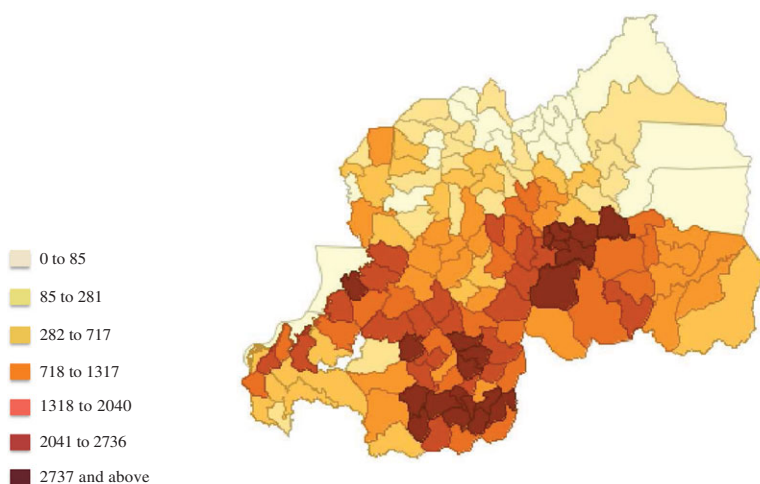
The survey (MINOLAC, 2004) includes reported and confirmed deaths, which were checked against other reports as well as against records of human remains. These measures are correlated at .99, and I use the measure of reported deaths. This number ranges from 71 deaths to 54,700 deaths in a single commune, with a mean of 7,287 deaths. In total, there were 932,218 reported deaths, and their spatial distribution is illustrated in Figure 1.

As with any official data, these data are not perfect. Although the National University of Rwanda designed and conducted the survey (MINOLAC, 2004), it had the support of a government ministry. Nonetheless, it is important to note that the government does not treat these data as official, instead citing more than a million deaths. Beyond this, the survey found that more than 900,000 people died, which is above typical estimates of 800,000. Yet, this difference likely stems from the fact that the survey also counted Hutus who were killed, whereas most calculations of victims are based solely on the population of Tutsis. Finally, any data on killings during mass violence are surely incomplete. In cases where entire families had been killed, neighbors completed the survey on behalf of the victims, which may have mitigated some issues but also likely resulted in errors (see also Verwimp, 2013: 1–2, 56–7).

As a result of these concerns, I assess the validity of the data in appendix A in the online supporting information.[5] Specifically, I compare the data from the National University of Rwanda and Rwandan Ministry of Local Administration and Community

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4. The survey included killings between October 1990 and December 1994, although most deaths occurred between April and July 1994. Additionally, the Rwandan government now cites 1,074,107 deaths. Lemarchand (2013) noted that this statistic conveys a realistic magnitude but suggested that it includes Hutu deaths, like the survey (even though it is not possible to disaggregate the survey results by ethnicity). Factoring in underreporting in the census yields estimates closer to 800,000 Tutsi victims (see Verpoorten, 2005).

5. Additional supporting information can be found in the listing for this article in the Wiley Online Library at http://onlinelibrary.wiley.com/doi/10.1111/crim.2017.55.issue-1/issuetoc.

Figure 1. Rate of Killing per 10,000 Commune Residents in 1994 Rwanda

Legend:
- 0 to 85
- 85 to 281
- 282 to 717
- 718 to 1317
- 1318 to 2040
- 2041 to 2736
- 2737 and above

NOTES: Three communes included in the "0 to 85" category are missing data. Note also that this figure displays a rate per population because some areas of the country were sparsely populated. A figure of the absolute number of people killed illustrates similar patterns.
SOURCE: MINOLAC (2004).

Development (MINOLAC, 2004) against a house-to-house survey that was conducted in the Kibuye prefecture of Rwanda. This survey was conducted by IBUKA, a survivors' organization that sought to ascertain all victims of the genocide in that region. The survey has been used in well-respected studies of Rwanda, including those by Straus (2006) and Verwimp (2004). As shown in appendix A, the MINOLAC data for Kibuye are correlated with the IBUKA data at .996, which is nearly perfect. Although it is still possible that the number of deaths is inflated, this provides strong evidence that the relative differences between communes are accurate.

The lowest administrative level for which the MINOLAC data are available is the commune. Communes were small areas governed by *bourgmestres* (mayors) who wielded much local power (Wagner, 1998) and often directed the violence when the genocide began (Des Forges, 1999: 236–7). As Des Forges (1999: 38) explained, the *bourgmestres* were "the ultimate authority at the local level … clearly and directly the president's man out on the hills." The commune was likewise the basic level of development (Verwimp, 2013), and the presence of *bourgmestres* and their policies within the commune is likely captured in many of the other variables. Beginning in 1990, residents also needed permission to move into and out of their communes (Verwimp, 2013: 270), validating the analysis of the commune level.

Data on the dependent variable are missing for three communes. As these were communes where the RPF was located throughout much of the genocide, there were likely fewer killings (although the census is missing data for these communes as well). Thus, this analysis includes 142 of the 145 communes. To calculate the dependent variable for the 142 communes, I transform the number of deaths by logging it. A log transformation increases the normality of the distribution and, as the number of deaths is never negative, ensures the predicted values of *y* are positive. I control for population in all models, as I

will further explain, although appendix B in the online supporting information includes all models with the dependent variable as a logged rate that standardizes on killings per 10,000 people in each commune. Finally, even though the violence also involved torture, sexual violence, property crimes, and displacement (African Rights, 1995), I focus on killings because of data availability and reliability.

INDEPENDENT VARIABLES

As observed in table 1, many independent variables are from the 1991 Rwandan census. This census occurred less than 3 years before the genocide and provides the best estimates of 1994 measures. The census also took place after the 1990 RPF invasion of Rwanda, indicating that some effects of the subsequent civil war are likely reflected. Thus, even though the census undercounted Tutsis (Verpoorten, 2005; see also appendix B in the online supporting information), it nonetheless provides the best data that exist for many of the measures, and the Minnesota Population Center cleaned the data for use in academic research (IPUMS International, 2012; see use in Verpoorten, 2012; Verwimp, 2013). As Rwanda conducted both a *de facto* and *de jure* census—meaning they counted present residents, absent residents, and visitors—I restrict the data to present and absent residents to avoid double counting. Individual-level data are aggregated to commune means; for variables that only pertain to adults, I exclude children from calculations.

Four trips to Rwanda guided the operationalization of variables as I was able to learn about the dynamics of violence through interviews and to assess context-specific indicators. Table 1 includes detailed information about the source and operationalization of each variable, although I briefly review the independent variables here as well. State-led targeting of Tutsis is captured by the percentage of Tutsis in each commune. Information on the location of the Rwandan Armed Forces is obtained from the Genodynamics Project (2010), which created its measures by compiling testimony from the ICTR and interviews with commanders. Specifically, I test the presence of Rwandan Armed Forces (FAR) as a measure of the interim government's military control. In doing so, I also control for the presence of other troops, including the Rwandan Patriot Front (which reinitiated the civil war as the genocide began) and the French troops that were sent to Rwanda through Operation Turquoise.

I measure proximity to the center of Rwanda by including a dichotomous variable for communes within the national capital, Kigali. Although the interim government moved to Gitarama in mid-June (Des Forges, 1999), this measure only includes Kigali because most killing had occurred by this time. As studies of ethnic violence typically use elevation to measure distance from state control (Bohara, Mitchell, and Nepal, 2006; Cederman, Buhaug, and Rød, 2009; Fearon and Laitin, 2003), I test elevation as an alternative measure. High elevation is often considered a proxy for areas that are hard to reach and has consequently been considered a condition that fosters insurgency. In cases of state-led genocide, it may yield an opposite effect.

To examine political control, I include measures of the political party of *bourgmestres* (commune mayors). I test the specific influence of MRND in line with the hypothesis presented earlier but assess the influence of other parties as well (see appendix D in the online supporting information). These data are from Guichaoua (2010) and represent

Table 1. Dependent and Independent Variables by Commune in Rwanda (142 Communes)

Variable	Description	Coding	Source	Mean	Range
Dependent Variable					
Number of people killed	Number of people killed in each commune, logged	Number	MINOLAC and National University of Rwanda	8.17	4.26 to 10.91
Top-Down Variables					
Tutsi	Percentage of population that is Tutsi	Percentage	1991 Census	9.15	.00 to 44.46
Capital	Communes containing Kigali	0 = Not Capital 1 = Capital	1994 Map	.02	.00 to 1.00
Elevation	Average distance from sea level, logged	Meters	Geological Survey	7.47	7.04 to 7.88
FAR troops	FAR present at any time	0 = No FAR 1 = FAR	Genodynamics	.83	.00 to 1.00
MRND *bourgmestre*	Communes with MRND *bourgmestre*	0 = Not MRND 1 = MRND	Guichaoua 2010	.65	.00 to 1.00
Radio coverage	Commune's average RTLM coverage	Percentage	Yanagizawa-Drott 2014	19.73	.00 to 86.30
Bottom-Up Variables					
Married	Percentage of adult population who are married	Percentage	1991 Census	57.61	44.88 to 72.64
Formal employment	Percentage of adult population employed in formal sector	Percentage	1991 Census	11.17	2.52 to 44.79
Always lived	Percentage of residents who have always lived in a commune	Percentage	1991 Census	70.85	23.32 to 83.85
Intermarriage	Percentage of marriages that are Hutu-Tutsi marriages	Percentage	1991 Census	5.56	.06 to 23.69
Young men	Percentage of men age 15–30	Percentage	1991 Census	12.69	10.39 to 15.49
Population density	Population/km², logged	Thousands/km²	ArcGIS	5.95	3.69 to 7.22
Kilocalorie production	Kilocalories produced per day per capita, logged	100s	1989 Ag. Census	7.62	5.74 to 8.27
Tutsi formal employment	Percentage of formal employment positions occupied by Tutsis	Percentage	1991 Census	13.26	.00 to 49.79
Controls					
Population	Number of residents (present and absent) in a commune, logged	Number	1991 Census	10.75	9.82 to 11.59
Distance from roads	Distance b/w commune centroid and closest road, logged	Kilometers	ArcGIS	.93	-4.56 to 3.13
Distance from cities	Distance b/w commune centroid and closest prefecture capital, logged	Kilometers	ArcGIS	2.56	.24 to 3.58
Literate	Percentage of population that is literate	Percentage	1991 Census	55.30	36.53 to 72.97
Catholic	Percentage of population that is Catholic	Percentage	1991 Census	62.08	27.44 to 92.64
Surrounding violence	Average violence in all bordering communes, logged	Average magnitude of surrounding violence	GeoDa	8.46	5.40 to 10.23

ABBREVIATIONS: ag. = agricultural; b/w = between; FAR = Rwandan Armed Forces; km = kilometers; MINOLAC = Ministry of Local Administration and Community Development; MRND = National Revolutionary Movement for Development; RTLM = Radio Télévision des Milles Collines.

the leader's political party at the outset of the violence.[6] Finally, to assess ideological power through the dissemination of anti-Tutsi ideologies, I include data on Radio RTLM coverage, which were created by Yanagizawa-Drott (2014). This measure is only available for 128 of the 145 communes, however. Note also that although Radio Rwanda broadcast throughout the genocide as well, it broadcast less frequently than Radio RTLM did and had coverage over the entire country (African Rights, 1995).

Measures of social control and cohesion are mostly from the census. To measure marriage levels, I include the percentage of people older than 15 years of age who were married. I operationalize marriage as including legal marriage, customary marriage, free unions, and polygamous marriages as all would likely have had similar effects on social control. Polygamous marriages were illegal but socially accepted (Jefremovas, 2012), and informal marriages were also common but were likely undercounted. Interethnic marriage between Hutus and Tutsis follows this operationalization as well and is measured as a percentage of all marriages in the commune.

As the census does not have data on income and as typical measures of unemployment yield little variation because of the agrarian nature of Rwandan society, I include the percentage of individuals who reported that they were an employer or an employee. This percentage indicates employment in the formal sector, which ranged from 3 to 45 percent of a commune. Population mobility is measured by the percentage of the population who had always lived in the commune, and I define young men as men 15 to 30 years of age because Rwandans could be drafted into the military at age 15 (although see appendix F in the online supporting information for alternative operationalizations).

Competition is measured through the percentage of formal employment positions held by Tutsis. I use population density to measure population pressure, and I use kilocalorie production per day per capita to measure resource scarcity as it pertains to the availability of food in each commune (Agricultural Census, 1989). Studies of competition in other contexts have employed more sophisticated measures of competition, such as polarization or even crime reporting, but the scarcity of data regarding pre-1994 Rwanda renders such sophisticated tests of competition impossible.

Finally, I examine several control variables apart from the commune population. First, educated individuals may be more likely to participate in violence than their less educated counterparts as education creates a gap between expectations and lived reality and instills in people the confidence to feel they should address such gaps (Friedman, 2011; Goldstone, 2002; Gurr, 1970). I thus control for the percentage of people who were literate in a commune, which is an indicator that they had some exposure to school. Furthermore, I control for the percent Catholic. Catholicism was the dominant religion in Rwanda, and the Church was heavily intertwined with the colonial project and often favored certain groups, restricting leadership positions within the Church first to Tutsis and, after the 1950s, to Hutus. Although religion was not a primary organizer of identity during the violence, the Catholic Church may have nevertheless contributed to the politicization of ethnic identities and related exclusionary ideologies (Des Forges, 1999;

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6. Some leaders were removed from their positions when they did not support the violence, meaning this effect may be dampened. I also assessed the effects of all political parties (as shown in appendix D in the online supporting information) but include only significant relationships because of the small *N*. Finally, although Guichaoua (2010) had listed the *bourgmestres* of Kivumu and Karengera as members of MRND, ICTR documents confirmed they were members of MDR.

Longman, 2011). Finally, I created variables in ArcGIS to measure distance from towns and roads to capture remoteness and ease of access, which may have also influenced the level of violence.

ANALYTIC STRATEGY

To analyze killing within communes, I rely on regression with a prefecture-level fixed effect. Communes were located within 11 prefectures (provinces), which were fairly cohesive because of history and geography (Des Forges, 1999). *Prefects* (akin to governors) led each prefecture and wielded much power both before and during the genocide. The *prefect* of Butare, for example, was able to keep violence at bay for several weeks, whereas other *prefects* actively encouraged their residents to participate. Fixed effects models are thus needed as a result of the nested nature of the data (communes nested within prefectures), which violates the assumption of independence required for regression. A Hausman test confirmed that fixed effects are preferable to random effects, and I use robust standard errors because regression diagnostics revealed slightly heteroskedastic errors. I also control for the average number of killings in all communes that contiguously neighbor each commune (Deane et al., 2008). This spatial lag in the dependent variable addresses spatial autocorrelation in killings, and the models are, thus, spatial lag models.[7]

To be clear, these models do not justify strong causal influences but establish associations. As this study includes all but three communes and many of these relationships have never been tested, bivariate relationships offer a broad snapshot of whether predictors are associated with violence. I thus present bivariate and multivariate results as well as a series of appendices that further probe results. As the dependent variable is logged in all models, coefficients in these models can be interpreted in terms of percentage changes by multiplying the coefficient by 100 (or for a more precise interpretation, exponentiating the coefficient, subtracting 1, and multiplying by 100).

RESULTS: DETERMINANTS OF SUBNATIONAL KILLING

Table 2 presents bivariate associations, including robust standard errors and prefecture fixed effects, and I discuss these bivariate relationships alongside the multivariate analysis presented in table 3. Indeed, although 142 communes essentially constitute a census of Rwandan communes, 142 is still a small *N* for quantitative analysis. I thus exclude factors that were not significant or did not improve model fit in table 3 and discuss bivariate and multivariate analyses concurrently.

Model 1 in table 3 introduces variables pertaining to top-down, state-led processes. In line with the targeting of Tutsis and consistent with bivariate analysis, there were significantly more killings in communes with larger populations of Tutsis. A 1 percent

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7. I used rook contiguity to create the spatial weights matrix, although queen contiguity did not yield qualitatively different results (see model 1 in appendix E in the online supporting information). I include all neighbors (rather than restricting by prefecture), and I log the spatially lagged dependent variable in line with the dependent variable. Note also that I do not use count models because of the high frequency of killings.

Table 2. Bivariate Predictors of Logged Killings in 142 Communes in Rwanda

Independent Variables	Model	Bivariate	(SE)	Tutsi	(SE)
Top-Down					
Tutsi	1	.076***	(.010)	—	—
Capital	2	1.403***	(.173)	1.264***	(.121)
Elevation (log)	3	−1.202	(.948)	−.455	(.701)
FAR troops	4	.220	(.426)	.110	(.372)
MRND *bourgmestre*	5	−.102	(.137)	−. 004	(.119)
Radio coverage	6	.001	(.006)	.002	(.004)
Bottom-Up					
Married	7	−.068**	(.021)	−.035†	(.018)
Formal employment	8	.012	(.013)	−.015	(.011)
Always lived in commune	9	−.029**	(.010)	−.019**	(.006)
Intermarriage	10	.098***	(.022)	.009	(.022)
Young men	11	.102	(.081)	.017	(.066)
Population density (log)	12	.003	(.154)	−.209†	(.124)
Kilocalorie production (log)	13	.438	(.291)	.490*	(.205)
Tutsi formal employment	14	.055***	(.007)	.025**	(.009)
Controls					
Population (log)	15	.925**	(.351)	1.174***	(.244)
Distance from roads (log)	16	−.027	(.051)	.052	(.042)
Distance from cities (log)	17	.046	(.101)	.023	(.090)
Literate	18	.056***	(.013)	.024*	(.012)
Catholic	19	−.004	(.005)	−.007†	(.004)
Surrounding violence (log)	20	.478**	(.152)	.312*	(.133)

NOTES: Prefecture fixed effects are included but excluded in the table because of lack of space. Robust standard errors are in parentheses. All models include the 142 communes in the analysis except for model 6, which includes 128 communes because of missing data. "Tutsi" includes the predictor and the percent Tutsi.
ABBREVIATIONS: FAR = Rwandan Armed Forces; MRND = National Revolutionary Movement for Development; RPF = Rwandan Patriotic Front; SE = standard error.
$^\dagger p < .10$; $^* p < .05$; $^{**} p < .01$; $^{***} p < .001$.

increase in the Tutsi population is associated with between a 7 and an 8 percent increase in killings within a commune.

When controlling for the percent Tutsi, it appears that communes near the extremist center saw higher levels of violence, as the capital city had significantly more killing in bivariate and multivariate analyses.[8] Outside of the capital, the government's army (the FAR) also influenced patterns in the violence. Yet, the presence of the army alone was not significantly associated with the level of violence (table 2). Rather, its presence is specifically consequential when combined with the presence of the Tutsi-led RPF, which reinitiated the civil war as the genocide was unfolding. As observed in table 3, each day the frontline (between the Rwandan Armed Forces and the RPF) was present in a commune is associated with an .8 percent increase in the number of killings within the commune. This finding suggests there was more violence in areas where government troops were facing the RPF, indicating the importance of government threat. Appendix C in the online supporting information further probes the association between the presence of various troops as well as the frontline, illustrating the robustness of this finding and

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8.   Distance from Kigali did not yield significant effects. Other analyses illustrated that there was not significantly more violence in border communes or in communes that bordered Burundi (see models 2–4 in appendix E in the online supporting information).

Table 3. Fixed Effects Models of Killing in Communes in Rwanda

Independent Variables	Model 1		Model 2		Model 3	
	b	(SE)	b	(SE)	b	(SE)
Top-Down						
Tutsi	.079***	(.009)	.071***	(.008)	.056***	(.015)
Kigali City	1.372***	(.268)	1.881***	(.393)	1.845***	(.406)
Days on the frontline	.008**	(.003)	.008**	(.003)	.008**	(.003)
MDR commune in an MRND prefecture	.320	(.221)	.610**	(.227)	.612**	(.233)
Bottom-Up						
Married	—	—	−.044*	(.018)	−.044*	(.018)
Formal employment	—	—	−.030*	(.012)	−.027*	(.013)
Literate	—	—	.025*	(.012)	.025*	(.012)
Always lived in commune	—	—	−.723	(.639)	−.737	(.645)
Tutsi formal employment	—	—	—	—	.012	(.645)
Controls						
Population (log)	1.148***	(.229)	1.157***	(.225)	1.139***	(.229)
Surrounding violence (log)	.264†	(.138)	.092	(.142)	.079	(.143)
Prefecture Fixed Effects						
Byumba	−1.338**	(.431)	−1.330**	(.417)	−1.336**	(.419)
Cyangugu	−.416†	(.215)	−.269	(.256)	−.251	(.254)
Gikongoro	−.165	(.234)	.109	(.185)	.122	(.180)
Gisenyi	−.623†	(.358)	−.099	(.399)	−.071	(.398)
Gitarama	−.168	(.158)	−.377*	(.177)	−.363*	(.175)
Kibungo	.033	(.168)	.091	(.184)	.021	(.182)
Kibuye	−.262	(.187)	.112	(.221)	.155	(.220)
Kigali Rural	−.205	(.189)	−.189	(.208)	−.212	(.210)
Ruhengeri	−1.383**	(.434)	−1.036*	(.465)	−1.029*	(.465)
Constant	−6.857**	(2.533)	−3.579	(3.165)	−3.361	(3.199)
Communes	142		142		142	
R^2	.849		.868		.869	

NOTES: Although R^2 values using the *xtreg* command are incorrect, I estimated R^2 using *regress* and a series of dummy variables. Note also that Butare prefecture is excluded, and robust standard errors are in parentheses.
ABBREVIATIONS: MDR = Republican Democratic Movement; MRND = National Revolutionary Movement for Development; SE = standard error.
†$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

suggesting that the frontline was particularly consequential in the first 2 months of the genocide.[9]

In line with this finding, leaders' political parties are also associated with the level of violence within communes. Nevertheless, communes ran by *bourgmestres* who belonged to the ruling party (MRND) did not see comparatively more violence as hypothesized (table 2). Instead, communes that were led by MRND's strongest Hutu opposition party—MDR—saw significantly more violence. Analysis revealed that this was only the case, however, when these communes were in prefectures governed by an MRND politician (table 3). Put another way, MDR communes in non-MRND prefectures did

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9. Appendix C in the online supporting information includes dummy variables measuring RPF, French, and FAR presence as well as the number of days each troop faction was present. None of these indicators are significantly associated with the number of deaths. The bivariate association between the sum of the days the frontline was present in a commune and the number of those killed is significant, however. I also disaggregate the presence and sum of troops by month, and models 13, 14, 17, and 18 in appendix C show that troop presence in April and May was particularly consequential.

not experience significantly higher levels of violence (see appendix D in the online supporting information). In line with military competition, more violence occurred in areas where there was threat to those orchestrating the genocide but also where those threatened had some degree of control.

Although most top-down factors are associated with subnational patterns in violence, Radio RTLM coverage is not significantly associated with the level of killing, as illustrated in table 2. I also explored an interaction between radio coverage and radio ownership, which was insignificant (see model 5 in appendix E in the online supporting information). This does not imply that the radio played no role in the violence but illustrates that it is not significantly associated with the level of killing at the commune level. Indeed, other analysis has shown that communes with greater Radio RTLM coverage saw earlier *onsets* of violence (Nyseth Brehm, 2014).

When taken together, these relationships nonetheless support a top-down view of the genocide, highlighting the role of the interim government's targeting of Tutsis, proximity to the extremist center, and threat to political elites and their army around the country. Yet, community-level factors are also significantly associated with the level of violence, indicating that top-down processes are not sufficient to explain subnational violence *during* genocide. Even though the violence was a top-down endeavor, the communities in which the civilian participants lived shaped their participation and, consequently, the level of violence.

As observed in model 2 of table 3, communes with higher levels of employment in the formal sector had significantly lower levels of violence. Employment provides social controls on individuals and communities.[10] At the individual level, for instance, men who were home may have been more likely to participate in the violence; evidence even suggests that killing squads sought out unemployed men (African Rights, 1995: 57). In line with this finding, areas with higher marriage rates experienced significantly less violence in bivariate and multivariate analysis, which corresponds to numerous studies that have found that family cohesion influences rates of crime at both individual and aggregate levels.

Communes with higher levels of literacy experienced more violence. This was the case in bivariate analysis and in table 3, and the average years of education among commune residents is associated with more killing as well (see model 1 in appendix F in the online supporting information).[11] The percentage of young men, however, is not significantly associated with the level of violence in bivariate or multivariate

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10. As some may worry that this effect is driven by urban areas, model 6 in appendix E in the online supporting information restricts the analysis to rural areas, operationalized as communes that did not include a prefecture capital city. As observed in appendix E, formal employment is significant at the .05 level in rural areas.

11. As literacy and marriage are highly correlated (–.65), model 2 in appendix F in the online supporting information includes several variables for further exploration of their effects. Higher percentages of people who were literate and were *not* married are associated with significantly higher levels of killing when compared against the percentage of those who were literate and married, whereas the percentages of people who were not literate and married/not married are not significantly associated with the violence. Thus, the notion of marriage as a social control is further supported.

analysis.[12] Young men are not inherently more violent but are more likely to participate in violence as a result of the lack of social controls on their lives. In other words, the social controls themselves matter more than the age or gender of commune residents does.

Measures of social bonds are also not significantly associated with killings. Although higher percentages of people who had always lived in a commune are associated with lower levels of violence in bivariate analysis, the percentage of people who have always lived in a commune is not significant in full models. Additionally, areas with more interethnic marriage did not see less violence, which is likely because the violence also targeted Hutus who were associated with Tutsis. Indeed, as Fujii (2011 [2009]) and McDoom (2013) have shown, social ties can also facilitate violence during genocide.

Bivariate analysis found that communes with higher population densities did not have more killing (table 2).[13] Resource scarcity, measured by food insecurity, was also not significantly associated with the level of violence within a commune. These results were further probed and excluded from table 3 because of a lack of contribution to model fit and the small *N*. This falls in line with Verwimp's (2005) finding that there was not an overrepresentation of perpetrators among people with farms suffering from low land productivity or poor soil quality. Nevertheless, the *perception* of scarcity may have influenced violence, which is something that cannot be measured quantitatively in this case.

To explore theories of competition further, I also assessed ethnic-specific measures of formal employment. As observed in table 3, the percentage of formal employment positions occupied by Tutsis is not significantly associated with the level of violence within a commune. To probe this finding further, appendix F (models 5 and 6) in the online supporting information illustrates that there were significantly lower levels of violence in communities that had higher rates of Hutu employment as well as in communities with higher rates of Tutsi employment. When taken together, this provides additional support for the notion that competition did not drive patterns in violence at the commune level.

Finally, each model includes the population and the violence in surrounding communes. In turning first to population, there were significantly more killings in more populated areas as there were more people who were at risk of death. The violence in surrounding communes is not significantly associated with the level of violence within each commune, however.

Thus, top-down forces—indicated by the percentage of Tutsis, the capital city, the frontline between the FAR and the RPF, and political threat in the form of MDR *bourgmestres*—were associated with significantly more killing within a commune. Levels of killing were also higher in communities that had higher levels of education, lower

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12. As young men as a proportion of the total adult population (rather than of the entire population) may better capture youth bulges (Urdal, 2006), model 3 in appendix F in the online supporting information includes young men as a percentage of the population of adult men. This indicator is not significantly associated with the level of violence. Given recent findings that many perpetrators were in their mid-30s (Nyseth Brehm, Uggen, and Gasanabo, 2016), model 4 assesses the percentage of middle-aged men, which is also not significantly associated with the level of violence.

13. Verpoorten (2012) found that population density did not operate in isolation but through an interaction. I tested this interaction (Population density × Marriage), and it was not significant (see model 7 in appendix F in the online supporting information). Other significant interactions were not found.

levels of formal employment, and lower levels of marriage. Even though top-down factors are important, community factors also clearly shaped the level of violence during the genocide, indicating that both are necessary to understand how the violence unfolded.

DISCUSSION: TOP-DOWN AND BOTTOM-UP VIOLENCE

This article has assessed subnational factors associated with killings during the 1994 genocide in Rwanda. I find that there were large differences in the levels of violence among Rwanda's communes and that both top-down and bottom-up perspectives are necessary to explain this variation. As the violence was orchestrated and executed by the state, factors relating to state actors and their power influenced subnational levels of killing. The state created and propagated ideologies that dehumanized and excluded Tutsis, and many state actors sought to destroy all Tutsis. This state-led targeting clearly impacted the patterns of violence throughout the country, and places with higher percentages of Tutsi residents saw more killings. The capital also experienced more killing as the violence unfolded in close geographical proximity to those who orchestrated it. The capital was the epicenter of the violence, and this finding suggests that—contrary to civil wars and other anti-state violence that thrive in the periphery—state-led violence may be stronger under the government's direct control, especially when political opponents are targeted and there are not many efforts to hide the violence.

In other parts of the country, competition and threat to the political elites undertaking the genocide influenced killings. Places where the FAR troops met RPF troops saw more violence, highlighting the role of the civil war and the threat it placed on the interim government. Likewise, political competition in the form of MDR *bourgmestres* was also associated with more killings in MRND prefectures, again highlighting the role of elite threat. In this case, evidence from case studies suggests that interim government leaders targeted communes where they anticipated (or saw) opposition to the genocide, often traveling to the communes themselves to encourage violence or even to remove the leaders (Des Forges, 1999). Furthermore, as an African Rights (1995: 187) report about the genocide noted, MDR was "the most powerful opposition party" and was consequently targeted. Indeed, even before the violence began, a popular MDR leader who was widely regarded as the potential future prime minister of Rwanda was assassinated. Thus, rather than seeing less violence, communes led by the MRND's main political opposition experienced comparatively more violence that likely targeted both Tutsis as well as Hutu moderates in the MDR party.

Although the genocide was orchestrated by the state, hundreds of thousands of civilians implemented the killing, and viewing the violence strictly as a top-down endeavor ignores the other factors that influenced their participation. As the models demonstrate, the characteristics of the communities in which people lived are also associated with the level of violence within a commune. Unlike the top-down factors, however, competition (among civilians) is not a strong predictor of the level of killing. Kilocalorie production per day, population density, and competition over formal employment (measured by the percentage of positions held by Tutsis) are not significantly associated with the level of violence, which does not suggest that these factors did not influence the onset of the genocide or that they did not influence some individuals' decisions. Rather, they are not significantly associated with the level of killing at the commune level.

Instead, community-level factors influenced the violence through their effect on so-cial control and cohesion. Communes with higher percentages of married individuals had lower levels of violence. Communes with higher percentages of individuals employed in the formal sector also had lower levels of violence. Marriage and employment are key social controls on individuals and communities worldwide, and these findings show that they are also associated with subnational patterns in killings during the genocide in Rwanda.

The effect of marriage may even be dampened by the recruitment of married men to participate in the violence. Although many people who participated were not recruited, others may have been primed to participate through civilian defense corps that were created after 1990 and that targeted married men (Des Forges, 1999: 83; Verwimp, 2013: 147). The effect of formal employment is also likely lower than some may expect as a result of the prevalence of agriculture in Rwanda.

Beyond marriage and formal employment, literacy is also associated with the level of violence within communes. Even though education is generally linked to political moderation, educated individuals can be more likely to participate in violence than their less educated counterparts because education creates a gap between expectations and lived reality and instills in people the confidence to feel they should address such gaps (Friedman, 2011; Goldstone, 2002; Gurr, 1970). Beyond this, education laden with dis-criminatory ideologies—such as education influenced by colonial legacies—can motivate ethnic violence (Lange, 2011; Lange and Dawson, 2010). Several studies of the Rwandan education system have argued that this was the case in Rwanda as curricula taught that Tutsis were outsiders who had taken the country from the native Hutus (Gasanabo, 2004; King, 2013). Students were also socialized to believe Tutsis were inferior, and roll call was often organized by ethnicity, propagating the idea that the ethnic groups were fundamentally different (Hilker, 2011). Teachers and other school employees may have also been disproportionately represented among the killers (African Rights, 1995: 119, 860). This finding provides some evidence for these relationships at the commune level, although they should be further examined.

Overall, these results suggest that both top-down and bottom-up processes affect subnational violence. In the wake of the President's plane crash, it was the political elites who took control of the government and the armed forces who initiated the genocide by targeting political opponents, creating roadblocks, and suggesting that Hutu civilians needed to kill Tutsis. If not for this interim government, the violence likely would not have started at the national level or at subnational levels. This observation aligns with state conflict theories of crime, and the findings related to political and military opposition (in the form of MDR *bourgmestres* and RPF armed forces) illustrate that threat influences subnational patterns in violence, extending theories linking genocide and threats to political elites (e.g., Midlarsky, 2005; Valentino, 2004).

Although the government orchestrated the violence, civilians acting within their communes—and therefore subject to the social controls and context within those communes—were the ones who carried out many of the killings. Thus, understanding the social controls present within the communities in which people lived is vital to understanding which areas of Rwanda experienced more violence. In this case, com-munities with lower levels of social control and cohesion had higher levels of violence, indicating that social control and cohesion are important to understanding violence committed by civilians but that a defended communities perspective is not accurate in

this context. This finding falls in line with a new area of scholarship focusing on the meso-level dynamics of violence, including civil war (e.g., Cederman and Gleditsch, 2009) and genocide (e.g., Rafter, 2016; Straus, 2006). As criminologists have long explored subnational patterns in crime, this analysis suggests that criminology has much to bring to the subnational examination of atrocities—a promising avenue for the criminology of genocide and for genocide studies as a whole (see also Hagan, Kaiser, and Hanson, 2016).

Although the results of this study are robust, I cannot account for the movement of people (both those who participated in killings and those who were victimized) during the genocide, which is not well documented. As the genocide took place in a matter of months, I also am not able to analyze how certain factors influenced the magnitude of violence over time. Fine-grained data will hopefully allow for such analyses in the future, which could also be conducted at more localized levels, such as in neighborhoods and across networks (McDoom, 2013). Finally, it bears repeating that these findings are not intended to shed light on what influenced the onset of the violence at the state level. Factors that influence the onset of state-led genocide and those that influence how genocide unfolds are importantly different as the state alone is often responsible for the onset, whereas both state and community factors influence its unfolding at subnational levels. This draws a distinction between the onset of violence and how it unfolds and eventually ends, somewhat paralleling the distinction in international criminal law between *ad bellum* and *post bellum* processes.

CONCLUSION

This article has tested factors associated with subnational levels of killing during the 1994 genocide in Rwanda. Literature on genocide has emphasized that genocide is often a top-down process, and Rwanda is no different, as state actors orchestrated and executed the violence. Yet, the government of Rwanda also encouraged civilians to participate, and the genocide saw at least several hundred thousand citizens partic-ipate in killing. As a result, I argue it is vital to view genocide not just as a top-down endeavor but also to recognize that subnational conditions influence violence within communities as well.

When I examined the level of killing within communes, I found the state-led targeting of Tutsis impacted subnational violence as there was more killing in areas with higher percentages of Tutsi residents. Communes in close proximity to the extremist center of the violence also saw comparatively more killing. Yet, in other parts of the country, threat and competition to the political elite were associated with violence. Specifically, levels of killing were highest in communes where the Rwandan Armed Forces were challenged by the RPF and where strong political opponents held power in regions broadly controlled by the reigning political party.

Beyond the expected influence of top-down factors, subnational factors also shaped how the violence unfolded across Rwanda. Communes with higher marriage rates and higher formal employment rates experienced less violence, suggesting that social control and cohesion influenced the violence. Also, more violence occurred in areas with more educated individuals, indicating that education in Rwanda may have had a dark side. Thus, genocide is a top-down and a bottom-up process, and factors related to both influenced patterns of violence throughout Rwanda.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Appendix A. Comparison of MINOLAC data from Kibuye and Ibuka survey of Kibuye

Appendix B. Table 3 with dependent variable as a logged rate of killings per 10,000 commune residents

Appendix C. Exploring troop presence in 142 communes in 1994 Rwanda

Appendix D. Exploring *bourgmestre* political parties in 1994 Rwanda

Appendix E. Supplemental analyses

Appendix F. Supplemental analyses II