

**The Changing Geography of Violence in the North Caucasus of Russia, 1999-2011:
Regional Trends and Local Dynamics in Dagestan, Ingushetia and Kabardino-
Balkaria.¹**

John O'Loughlin

Edward C. Holland

Frank D.W. Witmer

Institute of Behavioral Science

University of Colorado at Boulder

Campus Box 483

Boulder, Co. 80309-0483

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Abstract

Analysis of the temporal and spatial trends of 17,438 violent events in the North Caucasus of Russia from August 1999 to July 2011 shows that the diffusion of conflict away from Chechnya has intensified in the 2007-2011 years, with rising levels of violence in neighboring republics. An increasing number of casualties are civilians as a result of violence in Dagestan, Ingushetia and Kabardino-Balkaria, the three republics that are the focus of the paper. Insurgent attacks are now more frequently carried out in urban areas. The largest cities of Makhachkala, Nazran', and Nal'chik are primary sites of violence in their respective republics (Dagestan, Ingushetia and Kabardino-Balkaria). The landscapes of violence in different zones (elevation, forests, urban and strategic locations) vary dramatically over the region. Employing multiple methods of spatial pattern analysis (geographic disaggregations, potential surfaces, and time-series analysis by republic) and geographically sensitive regression models, the authors assess the spatial fragmentation of violence from the perspective of rebel groups operating in the three republics. Although violence in the region has continued to decline in absolute terms over the past four years, new geographies of violence are developing in the region, underscoring the emergence of republic-based insurgent operations against the various organs of the Russian state.

On 16 April 2009, the Kremlin officially declared that Russia's counter-terrorism operation in the republic of Chechnya was over. The announcement came ten years after then-President Boris Yeltsin initiated the operation; in the interim, roughly 25,000 people were killed², Chechnya's capital of Grozny was severely damaged, and an Islamic insurgency spread, bringing violence to other republics of the North Caucasus initially uninvolved in Chechnya's fight for independence from the Russian state. Ramzan Kadyrov, the Moscow-installed leader of Chechnya, reiterated the Kremlin line, stating that "if the anti-terror operation is over that means we have defeated the bandits. We can calmly announce our victory" (quoted in Bloomfield, 2009).

Like Vladimir Putin's April 2002 declaration of the end of the military phase in Chechnya during a State of the Nation speech, this 2009 pronouncement was premature (Russell, 2005). Later in April 2009, Doku Umarov, the leader of the Caucasus Emirate, issued his own declaration, reactivating the *Riyadus-Salikhin* (Garden of Martyrs) Reconnaissance and Sabotage Battalion. The Battalion, first established by Shamil Baseyev in October 1999, was composed of *shahids* – Arabic for 'witness' or, as a religious term, 'martyr' – willing to die for the insurgency. In its initial instantiations, the Battalion was responsible for numerous high-profile attacks, including truck bombings in Grozny (the Chechen capital) and in Mozdok, North Ossetia. (For locations mentioned in the text, see Figure 1). The reconstitution of the Battalion indicated that suicide bombings were again part of the tactical repertoire of the North Caucasus insurgency which significantly changed its character, from an ethno-territorial one focused on Chechnya to an Islamist one, in the process becoming broader in appeal and more diffuse in geographic expression across the region.

With the change in the nature of the insurgency, terrorism has returned to Moscow and its environs in the past two years. The first attack of the new campaign was the November 2009 bombing of the Nevsky Express, which runs between the

² Estimate of casualties in the second Chechen war vary widely. This number is towards the lower end of the spectrum and comes from a report by Amnesty International (2007).

capital and St. Petersburg that killed 26 people and injured 96 others. In late March 2010, two female suicide bombers carried out attacks on the Moscow metro. The first bombing at the Lubyanka station, a busy transit point in the system located under the headquarters of the Federal Security Service (abbreviated FSB [*Federal'naya sluzhba bezopasnosti*], the successor to the KGB), was followed 40 minutes later by an explosion at Park Kultury, on the circle line that rings the city center. In total, 38 people were killed and 60 were injured. In January 2011, a suicide bombing in the international arrivals terminal of Moscow's Domodedovo Airport – the capital's most modern transport facility – killed 37.

In addition to these high-profile bombings, violence continues in both Chechnya and the neighboring republics of the North Caucasus. In the former case, violence has decreased from its high point between 1999 and 2002;³ this is due, in part, to Russia's policy of Chechenization (turning over security and political operations in the republic to local allies) and the cooptation of the former-rebel Kadyrov clan by the federal authorities to provide a local bulwark against the insurgents (Russell, 2007, 2009). In other parts of the North Caucasus – most notably Dagestan, Ingushetia, and Kabardino-Balkaria – violence has spiked at irregular intervals since 2007, due to Russia's heavy-handed counter insurgency techniques, entrenched corruption and government ineffectiveness, and a pervasive lack of economic development and grim employment prospects for young men (Kramer, 2005; Gerber and Mendelson, 2009). In these republics, semi-independent *jamaats* (Islamist groups openly fighting against the Russian state) only loosely affiliated with Umarov's umbrella organization are the primary drivers of violence.

We document the course of the insurgency in Dagestan, Ingushetia and Kabardino-Balkaria, with particular emphasis on the past half-decade. Using a data set of 17,438 violent events in the North Caucasus that we collected from the start of the

³ During a one-week period in the summer of 2009, there were three suicide bombings in Chechnya; region-wide, there was a sharp uptick in violence between 2008 and 2009 (see discussion below and Barry, 2009).

second Chechen war in August 1999 through July 2011, we identify spatial patterns of violence both at the region-wide and republic-specific scales. The paper contributes to the localized study of violence in the North Caucasus while also engaging with the broader question of how this conflict, and conflicts in general, evolve. It builds on the analysis of O’Loughlin and Witmer (2011), which identified hotspots of violence and its gradual diffusion in the North Caucasus away from Chechnya between 1999 and 2007. This paper complements the global study of terrorism by Flint and Radil (2009) in this journal by a detailed examination of local dynamics of rebel actions.

We open the paper by reviewing the security context in the North Caucasus, with a focus on regional developments since the Kremlin’s April 2009 declaration of victory, before covering events in the republics of Dagestan, Ingushetia and Kabardino-Balkaria in detail. Though we place the study in the context of the academic literature on the disaggregated study of civil war violence (see the recent reviews by O’Loughlin and Raleigh, 2009 and Raleigh, Witmer, and O’Loughlin, 2010), our main interest in this paper is the changing nature and location of rebellion in the North Caucasus and its contextual underpinnings, seen through a regional geographic lens.



Figure 1: Map of Locations mentioned in the text

In our geographic analysis of the conflict, we rely on an up-to-date (to the end of July 2011) dataset of disaggregated violent events for the North Caucasus. Despite an increase in attention to “geography” in civil war research, variations in violence considered at local contexts remain poorly understood. The article considers longitudinal trends in violence in the North Caucasus, though the empirical emphasis is on the recent diffusion of violence away from Chechnya and into neighboring republics.

We provide evidence for four specific arguments. First, the diffusion of conflict away from Chechnya has intensified in the 2007-2011 years, with rising levels of violence in neighboring republics. Second, an increasing number of casualties – those either injured or killed – are civilians as a result of violence in Dagestan, Ingushetia and Kabardino-Balkaria. The insurgency targeted mostly police, military and government official and infrastructure in the first few years of the second Caucasian war (after 1999) but recent trends have been different.⁴ Third, and affecting the ratio at which civilians are more often the victims of violence, we find that insurgent attacks are now more frequently carried out in urban areas. The largest cities of Makhachkala, Nazran’, and Nal’chik are primary sites of violence in their respective republics, Dagestan, Ingushetia and Kabardino-Balkaria. Fourth, we show that the landscapes of violence in different zones (elevation, forests, urban and strategic locations) vary dramatically over the region. To substantiate these arguments, we employ multiple methods of spatial pattern analysis (geographic disaggregations, potential surfaces, and time-series analysis by republic) and geographically sensitive regression models to assess the spatial fragmentation of violence from the perspective of rebel groups operating in the three republics. Our overall argument is that, although violence in the region has continued to decline in absolute terms over the past four years, new geographies of violence are developing in the region, underscoring the emergence of republic-based insurgent operations against the various organs of the Russian state.

⁴ Civilians made up a substantial percentage of the total casualties during both Chechen wars. Since 1994 75,000 civilians have been killed according to the Russia-based human rights center, Memorial (Kavkazskiy Uzel, 2007).

Contextualizing Violence and Regional Trends in the North Caucasus of Russia

This section of the paper provides contextual background on the three republics – Dagestan, Ingushetia and Kabardino-Balkaria – highlighted in the conflict-event analysis. Acknowledging the argument of Murphy and O’Loughlin (2009, p. 242) in proposing a regional geography “that is concerned with explanation, not just description” and considers relevant local processes “in relation to developments unfolding both above and below the scale of the region,” our contribution gives an updated picture of the violence in the North Caucasus, while also touching on the relevant political and social conditions found there and in Russia more generally (for the broader region, see O’Loughlin, Kolossov and Radvanyi, 2007). As Sagramoso (2007, p. 683) notes: “despite some major commonalities, the local socio-political, economic and religious conditions vary substantially across the North Caucasian republics.” Other research, specifically that of Hahn (2008), has outlined the gains made by Caucasian insurgents in 2004 and early 2005 – including the consolidation of regionally-oriented combat *jamaats* and the increased role of fundamentalist Muslims in the leadership structure of the insurgency – and Russia’s counterinsurgency efforts between 2005 and 2007 (see further review below). Ware’s (2011) recent piece outlines how the policy of “Chechenization,” through the cooptation of local, ethnic Chechen leaders (specifically the Kadyrov clan) with the aim of delegating counterinsurgency responsibilities to local units (Russell, 2008), has been exported to Dagestan, Ingushetia, and Kabardino-Balkaria; in these cases, it resulted in a rise, rather than a decrease, in violence by militants (Hahn, 2011b).

The insurgency in the North Caucasus has its origins in the renewal of hostilities in Chechnya and neighboring Dagestan in late summer 1999. Though Shamil Basayev carried out an insurgent-style raid on the town of Budennovsk in neighboring Stavropol’ *kray* late in the first war of 1994-96, it was the August 1999 invasion of western Dagestan that consolidated the shift towards guerrilla engagements against Russian forces as the central tactic of the Chechens’ military strategy. During the early

years of the second war, Basayev sought to broaden the Chechen insurgency that had fought the federal center to a ceasefire and led to a great deal of autonomy for the republic. As the most committed of the Chechen leadership to an armed Islamist uprising to build a “shariat” that included nearby Muslim regions in the North Caucasus (Kramer, 2004-2005), Basayev’s tactics led to a different military style of confrontation with the Russian authorities. Two attacks on regional cities reflect the application of these tactics beyond Chechnya proper: the 21-22 June 2004 raid on Nazran’, Ingushetia, which targeted 15 government buildings in the republic’s main city and left 88 dead, and the 13 October 2005 action in Nal’chik, Kabardino-Balkaria, which brought the republic’s capital to a standstill and resulted in more than 100 deaths, including 14 civilians (Dunlop and Menon, 2006).⁵ The insurgency complemented its guerrilla campaign with terrorist operations aimed at Russian citizens and conducted in both the North Caucasus and European Russia. Accused by the Russian government of the apartment bombings in Moscow and Volgodonsk in September, 1999, they included the hijacking of two domestic airliners by two female Chechen ‘black widows’ on 24 August 2004; and hostage-takings at the Dubrovka Theater in Moscow in October 2002 and at School Number One in Beslan, North Ossetia in September 2004 that resulted cumulatively in nearly a thousand deaths.

From the Russian government perspective, the security situation improved during 2006 and into 2007. The deaths, in turn, of Aslan Maskhadov, Abdul-Khalim Sadulayev, and Shamil Basayev in 2005 and 2006 left the Chechen resistance weakened; Doku Umarov succeeded Sadulayev as field commander. During this two-year period there were no major terrorist attacks; Taylor (2007) suggests that this lull was the result of a changeover in regional leadership, specifically the appointment of Dmitry Kozak as presidential plenipotentiary to the Southern Federal District (SFD) in the wake of Beslan, and the short-term, ameliorative effect of the federal center’s repressive policies. “Chechenization” also resulted in reduced levels of violence, particularly in Chechnya

⁵ The attack on Nal’chik (discussed in more detail below) should be distinguished from Nazran’, as it included primarily local insurgents with only indirect ties to the Chechen leadership (see McGregor, 2006).

proper (Russell, 2009). With the proclamation of the Caucasus Emirate in October 2007, Umarov sought to reverse the fortunes of the insurgency; he named himself leader of an Islamic state in the North Caucasus, renouncing the political role of the secular Russian government. Umarov was initially unsuccessful in extending the insurgency's ambit beyond the North Caucasus; the Urals and Volga fronts, formed in July 2006 with the intent of expanding the insurgency's presence further into European Russia, were ineffectual (Hahn, 2008). Though violence increased during the summer of 2007 in Ingushetia and, subsequently, in Dagestan, the overall number of attacks continued to decrease in Chechnya (Kuchins, Malarkey and Markedonov, 2011).

The April 2009 announcement by the Kremlin of the end of the counter-terrorist operation in Chechnya was motivated by its reduced violence. Between 2004 and 2007, the percentage of events occurring in Chechnya out of the total events in the North Caucasus fell from 90 percent to approximately 50 percent. In 2009, both the number of violent events and the number of deaths from such events was lower in Chechnya than in either Dagestan and Ingushetia (Mendelson, Malarkey and Moore, 2010); the associated surge in militant activity in these neighboring republics has also been acknowledged by Russia's military leadership (North Caucasus Analysis, 2008).

This spread of violence from Chechnya is the new reality for the security situation in the North Caucasus. It also calls into question the long-term capability of the strategies thus far employed by the Kremlin in countering the insurgency. Taylor (2007, p. 13), for example, criticizes the institutional viability of Russia's approach: "the type of state Russia has in the North Caucasus is the kind most likely to provoke revolution: simultaneously repressive, patrimonial, and organizationally weak." "Chechenization" has high potential to backfire as Ramzan Kadyrov further consolidates his position in the republic and is conceded even greater autonomy by the federal center. Similarly, Ware (2011, p. 507) cautions against the spread of the policies employed in Chechnya to other republics in the North Caucasus: the export of the personalistic leadership model associated with Chechenization "to Ingushetia, Kabardino-Balkaria and Dagestan only seem[s] to provoke militant Islamist reactions."

And declarative statements establishing the official line on the status of a conflict, like that made by the Kremlin in April 2009, do not always accurately reflect the facts on the ground.

In partial recognition of the continued violence in the North Caucasus and its diffusion beyond Chechnya, Russia's President Dmitry Medvedev announced the creation of the North Caucasus Federal District (NCFD) in January 2010 (Ware, 2011).⁶ In doing so, Medvedev suggested that economics are at the root of the region's problems, indicating an acceptance by the Kremlin of the strategies first advocated by Dmitry Kozak during his tenure as plenipotentiary to the SFD between 2004 and 2007 (Slider, 2008). Alexander Khloponin, who previously headed the Siberian region of Krasnoyarsk, was brought in to lead the new federal district.⁷ He was provided substantial political and economic leverage, with the right to sack the heads of federal agencies in the region. Khloponin was also named a deputy prime minister, ensuring direct access to both Putin – through this position – and Medvedev – as presidential envoy. Further, Sakwa (2010, p. 614) suggests that Khloponin's appointment serves as a counterweight “to Kadyrov's power within Chechnya and act[s] as a bulwark against his regional ambitions.”

Initial reviews of Khloponin's tenure as head of the NCFD have been negative. As envoy, Khloponin must navigate between the Scylla of the insurgency and the Charybdis of government and economic dysfunction in the North Caucasus, while simultaneously jammed between influential local leaders and policy prerogatives coming from Moscow. In dealing with the rebels, Khloponin has had little success, with no notable reduction in violence either in the North Caucasus or European Russia, as evinced by the March 2010 metro bombings and the January 2011 attack at

⁶ The NCFD, which was hived off from the SFD, includes Stavropol' *kray* (where the district's administrative capital of Pyatigorsk is located) and six ethnic republics: Dagestan, Chechnya, Ingushetia, North Ossetia, Kabardino-Balkaria, and Karachayevo-Cherkessia and thus corresponds to our study area in this paper. The truncated SFD is now composed of Rostov, Volgograd, and Astrakhan *oblasts*, Krasnodar *kray*, and the republics of Adygeya and Kalmykiya.

⁷ An example of Khloponin's economic successes as leader Krasnoyarsk *kray*: the region attracted higher levels of investment than either Moscow or St. Petersburg in 2007 (see Ware, 2011).

Domodedovo Airport. Ivan Sidoruk, Deputy Prosecutor-General for the NCFD, reported a 300 percent rise in “serious terrorist attacks” in the North Caucasus during the first eight months of 2010 in comparison to the year prior (Doukaev, 2010). Much of this violence occurred in Dagestan, most markedly the 31 March 2010 bombing in Kizlyar, which killed 12, including the town’s police chief.

This recent increase in terrorist activity, both in the North Caucasus and European Russia more broadly, can be linked to Doku Umarov’s Caucasus Emirate. The reestablishment of the Riyadus-Salikhin Battalion marked the return of suicide bombing as a primary tactic of the insurgency (RFE/RL, 2009). Two days after the Moscow metro bombing, Umarov claimed responsibility for the attack in a video sent to Kavkaz Center, a pro-rebel website; likewise, Umarov attributed the Domodedovo attack to the Battalion (Hahn, 2011a). In the North Caucasus itself, the regional *jamaats* have each undertaken suicide operations under the broader aegis of Riyadus-Salikhin (see below and Moore, 2011, for a review). In response to the increased number of attacks, in May 2011 the U.S. Department of State designated the Caucasus Emirate a global terrorist organization (<http://www.state.gov/r/pa/prs/ps/2011/05/164312.htm>). This move indicates perhaps that Russia is opening international channels for resolving an issue it has previously viewed as a domestic concern and from which it excluded international agencies. Among observers, a division has emerged in the explanations for the insurgency. Hahn (2011b, p. 1) has recently argued that the Caucasus Emirate maintains close ties to Al-Qaeda and the international Islamist network, with the internet serving as a key mechanism of communication, and he believes that western commentators have ignored “the global jihadization of the Chechen/Caucasus mujahideen” (see also Kurbanov, 2010). Hahn contrasts his position with that of Gerber and Mendelson (2009) and King and Menon (2010), among others, who deemphasize the import of Islamism in favor of other, primarily the poor state of the local economy, explanations. Markedonov (2010) criticizes the 2009 “Strategy for the Social-Economic Development of the North Caucasian Federal District till 2025” for its emphasis on

economic development strategies to improve the quality of life in the region as it remains silent on the political and military challenges facing the Russian state.⁸

We now turn to the consideration of insurgent violence in Dagestan, Ingushetia and Kabardino-Balkaria. This republic-specific approach is employed in recognition of the growing consensus that the insurgency in the North Caucasus is best described as a network, similar to other terrorist groups, with local and regional cells waging war against the state in Dagestan, Chechnya, Ingushetia, and Kabardino-Balkaria (We acknowledge some measure of regional coordination, including funding and tactical changes; see Hahn, 2011b). As Kuchins, Malarkey and Markedonov (2011, p. 20) write: “what is happening in the North Caucasus is not a unified region-wide conflict but rather a series of local conflicts stemming from local problems.” The long-term aim of Islamists of consolidating the Caucasus Emirate across the region should be positioned against the reality that these groups, for the most part, operate in delimited areas in response to republic-specific grievances and concerns. Consideration of these republic-specific contexts is thus necessary for an understanding of the local violence landscapes and their dynamics.

Dagestan

Dagestan, the largest of the ethnic republics in the North Caucasus, was thrust into the international spotlight when Shamil Basayev launched his raid from Chechnya into its western border villages in August 1999. Prior to this, however, hostility between fundamentalist elements and more traditional Muslims in the republic was on the rise, a result of the growing appeal of Salafism as an austere, conservative form of religious practice. (The term “Wahhabism” is commonly used, often in a derogatory manner in Russia for these religious conservatives). In 1998, three villages near the center of the republic – Karamakhi, Chabanmakhi, and Kadar – declared their

⁸ Issued on September 6, 2009 by the Medvedev administration as “Strategiya sotsial’no ekonomicheskogo razvitiya Severo Kavkazskogo federal’nogo okruga do 2025,” available from www.government.ru/media/2010/10/4/35578/file/1485.doc (last accessed October 6, 2011).

independence and adopted a social and legal system based on *sharia* law; this resulted in armed conflict between local paramilitaries and Dagestani security forces (Giuliano, 2005). In June 1996 prior to this declaration, the head of Kadar village had been murdered, purportedly by local fundamentalists who subsequently fled to Chechnya (Kisriev and Ware, 2000). A year later, a group of Wahabbis from Karamakhi attacked a military barracks at Buynaksk, the administrative center of the rayon where the three villages are located. To quote Kisriev and Ware (2000, p. 479): “there was a fateful inevitability to the military actions in Dagestan.”

The August 1999 incursion failed to incite widespread support for the establishment of an Islamic state in the North Caucasus (though some Dagestanis were part of the invading force) as local militias cooperated with republic and federal forces to repel the invaders. Rather, it led to the improvement of relations between Moscow and the republic and substantive efforts at economic development, including a significant increase in federal aid and the development of Dagestan’s capital, Makhachkala, as a port and hydrocarbon hub. Recent figures suggest that between 75 and 80 percent of Dagestan’s budget is financed by Moscow, with a substantial spike in funding occurring between 1999 and 2000 (Ware and Kisriev, 2010). During the initial stages of the second war in Chechnya, Dagestan, like other regions in the Russian Federation, revised its constitution to eliminate inconsistencies between this document and the Federal constitution. Changes included the revision of electoral practices for parliamentary elections and the establishment of the office of President, to replace Dagestan’s governing committee, known as the State Council, the chairman of which served as the republic’s executive under the structure of the 1994 Constitution (Kisriev and Ware, 2005). Throughout the post-1991 period, most people in Dagestan remained firmly committed to the Russian state; for example, surveys have registered only low levels of support for either religious or ethnic-based separatism (Ware et al., 2003).

While Moscow has consolidated its formal political position in Dagestan, there has been an increase in terrorist violence in the republic starting in late 2002 (Kisriev and Ware, 2005). A key driver of violence remains the suppression of Islamic

organizations and the mistreatment of young Muslims by local security forces; the republic formally banned Wahabbism in December 1999 (Sagramoso, 2007). In turn, Sagramoso (2007, p. 703) reports an uptick in violence between 2004 and 2006, as the “arbitrariness of the police and law enforcement structures impelled many young men into the arms of the extremists.”

During this period, the Sharia *jamaat*, headed by Rappani Khalilov, emerged as the key Islamist organization in the republic (Holland and O’Loughlin, 2010). Khalilov, purported to be a close associate of Shamil Basayev, helped implement a series of terrorist attacks in Dagestan, including the May 2002 bombing during a Victory Day parade in the town of Kaspiysk, which killed 45, and the assassinations of members of the republic’s government, including two ministers for national policy, information, and external relations. Khalilov was killed in September 2007, though a new leader of the Sharia *jamaat* was quickly installed in his place. This pattern has characterized official efforts against the insurgency in Dagestan over the past half-decade; while no leader in Dagestan has survived longer than a year as leader since Khalilov’s death, the insurgency remains not only viable but has achieved a considerable measure of success in targeting political, military, and police officials. The deaths of the *jamaat*’s leaders elicit dueling declarations from the *jamaat* and the Russian government; the former says that the jihad will proceed unabated, while the latter claims success in eliminating a key player in the violence. In general, the deaths of individual militants, even those in leadership positions, have had little impact on overall strength of the insurgency.

More broadly, over the past 2-3 years Dagestan has experienced a renewed surge in violence. After surviving numerous assassination attempts, Adilgirey Magomedtagirov, Dagestan’s Interior Minister, was killed by a sniper when leaving a wedding celebration in Makhachkala in June 2009. The suicide attack in Kizlyar, mentioned previously, was subject to increased international attention because it followed the twin metro bombings carried out by two Dagestanis in Moscow earlier that same week. In September 2010, a series of bombs was planted at the Irganay hydroelectric facility, which mirrored an attack earlier in the summer at Baksan in

Kabardino-Balkaria (discussed below). This is not to say that insurgents no longer directly engage with Russian forces. In June 2011, a battle between insurgents and security forces in the village of Kuznetskovka, not far from Kizlyar, left 13 military and security troops dead (Jamestown Foundation, 2011). These events are only a selective sampling of higher-profile events in the republic⁹. Our events dataset reflects this recent intensification of the low-grade insurgency in Dagestan; the absolute number of events has increased from 138 in 2008, to 269 in 2009, to 368 in 2010, with a further 229 events through the first seven months of 2011.

Of particular note in Dagestan is the uptick in suicide attacks, which primarily target government and security institutions – multiple security checkpoints, local police stations, and a military base near Buynaksk have been targeted in the past two years (Mendelson, Moore, and Malarkey, 2010). The bombing in Kizlyar was one of five suicide attacks in Dagestan during 2010. In 2011, suicide bombings continued to serve as a common tactic in the republic; recent attacks include paired bombings in Gubden – the home village of Ibragimkhalil Daudov, the current leader of the Dagestan front of the Caucasus Emirate – in February 2011 and an attack in downtown Makhachkala on 10 May, which supposedly targeted Russia’s Interior Minister Rashid Nurgaliev.

Moscow recently orchestrated a change in the political leadership of the republic, in response to the increasing violence, the need for further economic development, and continuing concern over the maintenance of ethnic balance in Dagestan’s political system (Ware, 2011). In early February 2010, Magomedislam Magomedov was endorsed by Dmitry Medvedev for the post of republic president. The son of Magomedali Magomedov, the Chairman of the republic’s State Council from 1994 to 2006, Magomedov *fi*ls was viewed as a compromise choice, who could mediate across varied political and economic interests and use his political capital to establish consensus on combating the insurgency (Dzutsev, 2010). He replaced Mukhu Aliyev, an ethnic Avar (the Magomedovs are Dargins) and communist holdover who was the

⁹ Attacks on convoys continue and attacks are often coordinated – see, for example, recent attacks in Makhachkala and environs (Mydans, 2011).

elder Magomedov's main political rival and Dagestan's first *de jure* president. Aliyev served a single term and was widely perceived as unwilling to forcefully prosecute the war, which led to a falling out with Moscow.

Ingushetia

Ingushetia experienced more direct fallout from the fighting in Chechnya than either Dagestan or Kabardino-Balkaria. During the course of the second Chechen war, there were 250,000 internally displaced persons (IDPs) in Ingushetia as a result of the conflict (Mendelson, 2006). However, violence in Ingushetia is usually incorporated into discussions of Chechnya, most likely due to historical and cultural continuities between the two groups – they were united in a single republic during the late Soviet period, both groups were deported to Central Asia by Stalin in 1944, and both were repatriated in the 1950s. Their languages are closely related since both are Vainakh peoples.

Ingushetia, however, should be treated as distinct from Chechnya when considering the republic's security situation in the past decade. A key event in galvanizing resistance to Russia was the replacement by Murat Zyazikov in 2002 of Ruslan Aushev, the long-tenured and popularly-elected president of the republic. Aushev, a former Soviet general who served in Afghanistan, had effectively countered the Islamist threat in the republic during this 1990s; his policies included the legalization of polygamy and appeals to clan and familial networks to find employment for potential fundamentalists (Evangelista, 2004). Aushev had, however, differed with the Kremlin and openly criticized how the war in Chechnya was conducted. Following a legal dispute regarding the proper length of his presidential term, he resigned in late 2001. The Kremlin manipulated the election to replace Aushev, ensuring that its preferred candidate, Zyazikov, won in the second round of voting in May 2002.

A general in the Federal Security Service (FSB), Zyazikov was viewed as corrupt and lacked legitimacy due to the dubious circumstances surrounding his election. Regarding Ingushetia's refugee population, he was committed to returning the IDPs

(internally displaced persons) to Chechnya, in part to support the Russian government's claim that the republic was safe, but despite testimony from returnees that the situation remained unstable due to continued fighting and inadequate housing provision. Other drivers of conflict in Ingushetia include corruption, widespread poverty, and a general mistrust of the Russian government due, in part, to the loss of Prigorodniy *rayon* to North Ossetia as a result of the Stalin-era deportation (on the last issue, see O'Loughlin, Ó Tuathail and Kolossov, 2008). Perhaps most importantly, the extension of counter-insurgency techniques used in Chechnya to Ingushetia, specifically the *zachistki* or 'mop-up' operations, early in Zyazikov's tenure as president increased the sense of alienation among large segments of the population. Pain (2005) reports, for example, that in the first six months of 2004, roughly 100 young men disappeared in the republic.

The June 2004 raid on Nazran', Ingushetia's largest city and former capital, should be viewed in this context. Coordinated by Shamil Basayev, the attack began on the night of 21 June 2004, and targeted Ingushetia's interior ministry and other government buildings. According to Fuller (2009), many of the ethnic Ingush involved in the attack had relatives who were rounded up during *zachistki* and had subsequently disappeared. More broadly, the Nazran' raid was indicative of the future direction of the North Caucasus insurgency; conservative Muslims, especially young men, have been increasingly willing to take up arms against Russian military and security forces, due primarily to the abusive and extrajudicial tactics adopted by these organs, and the anti-state insurgency has extended its action beyond the borders of Chechnya proper. Though Basayev had previously selected targets in neighboring North Caucasian republics (not to mention terrorist actions like the hostage-taking at the Dubrovka Theater in Moscow or the hospital in Budennovsk, Stavropol' *kray*), Nazran' conclusively showed that the insurgency had support in other republics unlike the case of Dagestan in August 1999. The subsequent emergence of Islamist affiliated *jamaats* in Dagestan and Kabardino-Balkaria further reflects the development of such support and the extension of the insurgency's theater of operations.

Following the Nazran' attack, violence in Ingushetia continued to rise, as Russian authorities did not abandon their hardline tactics. Though conflict events have been frequent in Ingushetia, they go generally unremarked by the international media; few major events have taken place in the republic, though the school hostage-taking and its violent dénouement in Beslan took place just beyond Ingushetia's borders in neighboring North Ossetia. That said, our dataset indicates the steady rise in violence after Zyazikov came to power in 2002 (see Figure 2). In 2002, we recorded 70 events in Ingushetia; this figure rose slightly, to 90 events, in 2003, before dramatically increasing to 157 events the following year. In 2008 – the year Zyazikov resigned from the presidency - there were 357 violent events, with a subsequent drop-off in the years since, to 309 events in 2009 and 192 events in 2010.

Despite a substantial rise in violence and widespread protests during Zyazikov's tenure – Ware (2011) estimates that more than 80percent of Ingushetia's population had joined the nonviolent movement to replace him by summer 2008 – it was the extrajudicial killing of opposition figure Magomed Yevloev that finally forced his resignation (in addition to Yevloev, a second opposition leader, Maksharip Aushev, was killed in October 2009.). Rather than reinstate former president Aushev, which was the preference of the opposition, the Kremlin turned to Yunus-Bek Yevkurov, a former paratrooper officer who had progressed to a high-level administrative position in Russia's military intelligence. Upon assuming the presidency, Yevkurov adopted a series of populist measures intended to distinguish himself from his predecessor, including meeting with members of the opposition. These conciliatory actions did not prevent being targeted by insurgents as Yevkurov was critically injured during in a July 2009 suicide bombing in Nazran'. This attack followed closely on the heels of the assassination of two other government officials. High-profile attacks continued in the republic and in August 2009, a suicide bombing at the headquarters of the Nazran' police department killed 20 and injured 80.

Overall, Yevkurov's time as Ingushetia's president has resulted in substantive improvements in the republic's security situation. There has been a appreciable drop in

violence – in the first seven months of 2011, we recorded 34 conflict events, indicating a notable downward trend; the human rights organization “Memorial” reports a reduction in attacks on police and in abductions, the latter approaching an 80 percent decline (*The Economist*, 2011). Other government successes include a ground- and airstrike against militants in late March 2011, information on whose gathering-point was gained in part through collaboration with civilian informants.

Yet concerns remain. Dzutsev (2011b) argues that Yevkurov has done little to address the longer-term drivers of violence: distrust of officials among the region’s youth, the cycle of attack and retaliation, and the continued lack of an open and independent media provide feedback mechanisms for political discontent. Yevkurov’s lack of formal control over either the local police or federal security forces limits his ability to temper actions that provoke individuals to join the resistance, such as abduction and torture (*Economist*, 2011). And despite his personal courage in the face of the assassination attempt, doubts about Yevkurov’s credibility remain; Dzutsev (2011a) reports that trust of Yevkurov by his constituents is 8.6 percent, below even that of Zyazikov.

Kabardino-Balkaria

In the first decade following the breakup of the Soviet Union, growth in Islamic practice and religious institutions in Kabardino-Balkaria was steady. The republic’s religious revival occurred primarily among youths – one survey reported that only 2percent of practitioners at a Nal’chik mosque were over age 40 (Richmond, 2008). Younger Muslims generally support classically trained imams – as opposed to the older, traditional religious elders who practiced a syncretic form of Islam – and in turn adopt a more conservative approach to religious practice. These more fundamentalist elements in the Islamic community grew frustrated with the criminality, corruption, and disregard for Islamic strictures – specifically the ban on the sale and consumption of alcohol – present in the republic. Coincident with the 1999 start of the second Chechen war, the authorities in Kabardino-Balkaria attempted to rein in fundamentalist activity

by closing the republic's Islamic Center, compiling a database of purported Wahhabis, and severing ties between local Muslims and international Islamic organizations (Yemelianova, 2005). These actions reflected the emerging divide between purported "new Muslims" and more traditional elements in the republic's Muslim community; in time, the former group turned away from doctrinal matters and religious disputes and towards extremist violence (Markedonov, 2011).

The security situation remained quiescent until 2003, when militants engaged in a shoot-out with police in the town of Baksan; Shamil Basayev was reportedly involved, having come to Kabardino-Balkaria to oversee the formation of a local paramilitary group. In turn, the Yarmuk *jamaat* emerged as the leading insurgent group in the republic. Founded in 2002 and primarily composed of a group of Balkars trained in Georgia's Pankisi Gorge, members of the *jamaat* returned to Kabardino-Balkaria late that year after seeing action in Ingushetia (Hahn, 2006).¹⁰ The *jamaat's* early actions included an August 2004 engagement with security forces near the village of Chegem and a December 2004 raid on the regional branch of the Federal Anti-Narcotics Service. Federal and regional security services stepped up their pursuit of the Yarmuk *jamaat* in response. During a shootout in late January 2005, the group's leader, Muslim Atayev (also known as Seifullah), was killed at the end of a three-day battle at his apartment near Nal'chik. Atayev's successor, Rustam Bekanov, was subsequently killed along with three accomplices in April 2005. The offensive against the *jamaat* followed on the heels of a second crackdown against conservative Muslims in Kabardino-Balkaria, initiated in September and October 2003; this included the closure of a number of mosques in the republic and the arresting of suspected Wahhabis (Yemelianova, 2005).

The 13 October 2005 attack on Nal'chik occurred in the context of these dual crackdowns. The attack included approximately 150 to 200 militants drawn primarily from the local population, though it was generally viewed as poorly coordinated—

¹⁰ The Pankisi Gorge was used by the Chechen militants and foreign fighters as a training base and refuge, primarily between 2002 and 2004 (Vidino, 2005). The Russian government accused Georgia of harboring the rebels, suggesting that 200 rebels remained after Georgia received military support from the United States to enhance its counterterrorism response in the Gorge.

Leahy (2008, p. 13), for example, characterizes it as an “operational catastrophe.” The intended targets included Nal’chik’s airport, as well as the regional branches of the FSB and Interior Ministry. More than 100 people were killed over the course of the fighting, though a relatively small proportion of these casualties were civilians. In its wake, there was further public discontent over the handling of the bodies of casualties, the arrest of Ruslan Nakhushev, a leading intellectual in the republic and a non-practicing Muslim, and stepped-up sweep operations. The prosecution of 58 suspected participants in the raid is ongoing; many of the accused counter the charges by saying that the open and direct targeting of actively practicing Muslims impelled the youths to forcefully oppose the Russian and republican governments.

Anzor Astemirov, who headed the Yarmuk *jamaat* during the Nal’chik raid and survived, subsequently emerged as an important component in the ideological structure of the Caucasus Emirate. In 2008 he was appointed *qadi*, or head of the organization’s Sharia court. Astemirov’s successes in carrying out rebel actions were relatively few, though there was an uptrend in violence during 2008 and 2009. Asker Jappuyev succeeded to the leadership of the republic’s *jamaat* following Astemirov’s death during a security operation in Nal’chik on 24 March 2010. Over the next few months, violence increased substantially in Kabardino-Balkaria; of the 111 events recorded in our database during 2010, all but five occurred after this leadership transition. The *jamaat*’s new leadership clearly implemented a shift in strategy. Whereas the group had previously targeted security forces, “new insurgency leaders seem to follow a different ideological path by targeting civilians...as well as orchestrating attacks against economic targets” (Zhemukhov and Ratelle, 2011, p. 5). On 21 July 2010, four militants attacked the Baksan hydroelectric facility, killing two security guards and successfully detonating a series of explosive devices. The attack damaged two of the facility’s generators.

Subsequent high-profile attacks in Kabardino-Balkaria have included the assassinations of the republic’s mufti, Anas Pshikhachev, who, by the nature of his position was viewed as loyal to Moscow and associated with traditional Islamic

practice, and Aslan Tsipinov, an ethnographer who deemphasized the role of Islam in Circassian national identity (the Kabardins are a Circassian population). In February 2011, insurgents killed three tourists traveling to the El'brus ski resort, in the south of the republic. These attacks came in the wake of the Kremlin's proposal at the World Economic Forum to develop a series of ski resorts in the North Caucasus by 2020, at a cost of nearly \$15 billion. It should be noted that in comparison to Ingushetia and Dagestan, the republic's leadership has been stable; Arsen Kanokov replaced the long-tenured Valery Kokov in September 2005 and has had marginal success in weaning the republic from federal subsidies (Ware, 2011). The plan to develop ski resorts is viewed by many as unrealistic due to the region's relative geographic isolation (in comparison, for example, to the Alps and Pyrenees) and the continued high levels of violence in the region. In the wake of the February 2011 attack, Khloponin suggested a short-term halt to travel to the El'brus resort.

Recent developments in Kabardino-Balkaria have made the situation more uncertain. The *jamaat's* leadership core – including Asker Jappuyev and Ratmir Shameyev, the young leader of the group's Chegem sector – was killed in late April 2011 during an operation in Progress, located along the border between Kabardino-Balkaria and Stavropol'kray. In total, eight militants and two women were killed during the operation. Fuller (2011) reports that the group was apparently betrayed to local security personnel, which in turn raised questions as to whether the FSB had infiltrated the *jamaat*. Regardless, though the *jamaat* has previously suffered similar losses, it is unclear whether this most recent attack will result in a decline in violence.

EXAMINING THE GEOGRAPHY OF VIOLENCE IN THE NORTH CAUCASUS, 1999-2011

In this section, we provide a longitudinal overview of the events dataset to establish a picture of the violence in the wider North Caucasus and specifically, in Dagestan, Ingushetia and Kabardino-Balkaria. The complete dataset contains 17,438 events, collected starting in August 1999 and running through the end of July 2011. The

data were gathered from wire reports available through the LexisNexis Academic service. Where reported, locations were coded to the population point's coordinates. If not reported, events were assigned the geographic coordinates of the centroid of the *rayon* (the Russian equivalent of county) where the specific event occurred. Events lacking locational information about either the population point or *rayon* were dropped from our geographical analysis. Latitude and longitude coordinates were obtained from either Falling Rain (www.fallingrain.com) or the National Geospatial-Intelligence Agency GEO-net Names server (<http://earth-info.nga.mil/gns/html/>). When collecting the data, events were categorized by actor, including rebels, military, and police; this was determined based on the primary actor (initiator) of the event as identified in the wire report.¹¹ Supplementary information on Chechnya was collected from the reports (in Russian) in the Caucasian Knot (*Kavkazskiy Uzel*) database. In analyzing the data on violent events, we class military and police events together, as both these actors represent the interests of the Russian government, albeit at different scales – the federal and republic, respectively. Also included in the database is the date of the event, a brief synopsis, and the number of reported casualties (killed and injured) resulting from the event. Beyond general trends, which substantiate our first two arguments that violence is continuing to spread beyond Chechnya and increasingly targeting civilians, we present three types of analysis to explore the spatial diffusion of violence in the North Caucasus: a) a surface plot of potential violence; b) an evaluation of three 'classic' arguments from the civil war literature, which considers the proportion of violence in urban areas, the targeting of strategic locations, and the relationship between physical geographic attributes (elevation and forest cover) and the frequency of attacks; and c) a geographically-sensitive regression model of the place-specific event counts. Our main focus is on the changing spatial dynamics of the conflicts, rather than testing hypothesized relationships about their local causes and distributions that would

¹¹ A fourth event category was arrests, which were more common during more active phases of the Chechen conflict during 1999-2002. They are not analyzed in this paper.

require unavailable detailed information about the specific localities and their networks of rebellion.¹²

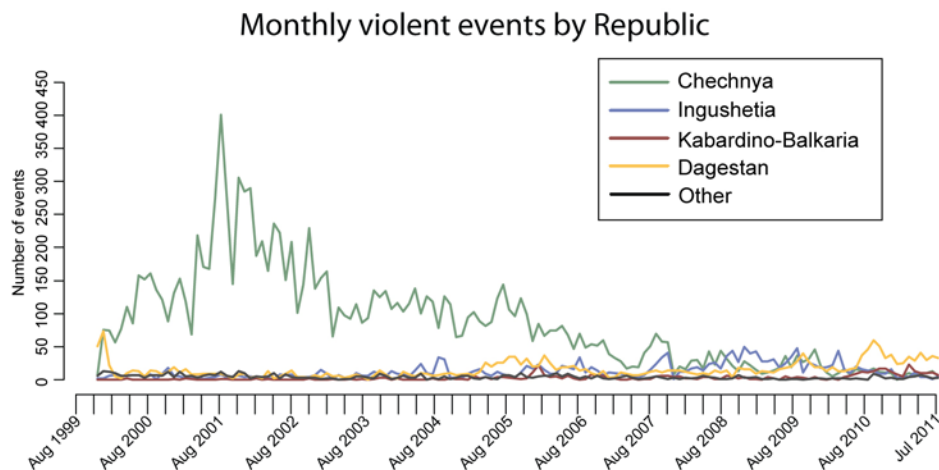


Figure 2: Violent Events by Republic and by Month August 1999-July 2011

Our first claim is that violence is diffusing from Chechnya and that this process has intensified in the past four years since the end-date (July 2007) of the O’Loughlin and Witmer (2011) work. In its most recent country report on terrorism, the U.S. State Department (2011) wrote that “terrorist attacks in Russia continued to emanate from the ongoing unrest in the North Caucasus” noting the Moscow metro bombings and the attack in Kizlyar two days later. As overall levels of violence in the region have decreased in the past four years but the locations of violence are changing and its occurrence is growing in the three republics that are the focus of this paper (Figure 2). Instances of violence have gone up substantially in Dagestan and Kabardino-Balkaria in 2009-11 while in Ingushetia, the number of violent events has declined from its peak in the fall of 2008- spring of 2009. In Chechnya, violence has decreased substantially, a process that began in 2007. Our data thus support the claims of prior work in both academic and policy circles on the North Caucasus trends (Russell, 2009; Lipman, 2009; Mendelson, Malarkey, and Moore, 2010)

¹² Replication data and R code are available online at <http://www.colorado.edu/ibs/waroutcomes/data.html>.

Accompanying the rise in conflict events within the three republics is a shift in their violence locations. In Figure 3, we examine how each of the three republics is changing via four-year temporal windows: August 1999-July 2003, August 2003-July 2007, and August 2007-July 2011. In Dagestan, during this first period violence was generally concentrated in five areas: the capital, Makhachkala, and its environs; near the cities of Khasavyurt (along with the bordering rayon of the same name) and Kizlyar along the border with Chechnya; in the southwest of the republic, where the August 1999 attack led by Shamil Basayev took place; and in Buynakskiy rayon, where the villages of Karamakhi, Chabanmakhi, and Kadar are located and where conservative Islamist elements first gained a foothold in the republic (see Figure 1 for locations; Giuliano, 2005; Hahn, 2011b). During 2003-2007, conflict spread further into the republic's mountains, though the particular sites where violence most frequently occurred remained generally the same, though the sites of the Basayev incursion dissipated as violence hot-spots. In the most recent period, 2007-2011, further nodes of violence have appeared; the city of Derbent (predominantly Azeri in composition) in the southeast, Karabudakhkentskiy and Sergokalinskiy rayons to the south of Makhachkala, and the city of Izberbash also located along the Caspian littoral. Moreover, violence has increased substantially in Khasavyurt and the proximate city of Kizilyurt, Kizlyar and its rayon, Buynakskiy rayon and the city of Buynaksk, and Makhachkala. In and around Dagestan's capital, we recorded 322 violence events between August 2007 and July 2011, plus 30 more events in the suburban center of Kaspiysk. In the four years prior, there were a total of 202 events in the capital region and Kaspiysk, and only 94 between 1999 and 2003.

In the small geographic area of Ingushetia, two nodes of violence are easily identified. In the north of the republic (Malgobekskiy rayon) and a band along the center of the republic, near the federal highway and Nazran' both saw a notable intensification, particularly noticeable around Nazran' during the August 2007-July 2011 period. Kabardino-Balkaria, in contrast, has been the site of a substantial diffusion of violence to points previously untouched by conflict. Between 1999 and 2003, the few

violent events recorded in the republic were located in Nal'chik, while during the next four year incidence of violence spread gradually towards Mt. Elbrus in the republic's southwest near the Georgian border. Between August 2007 and July 2011, in addition to Nal'chik, the town and rayons of Tyrnyauz, Baksan, and Chegem were all sites of an increased number of conflict events.

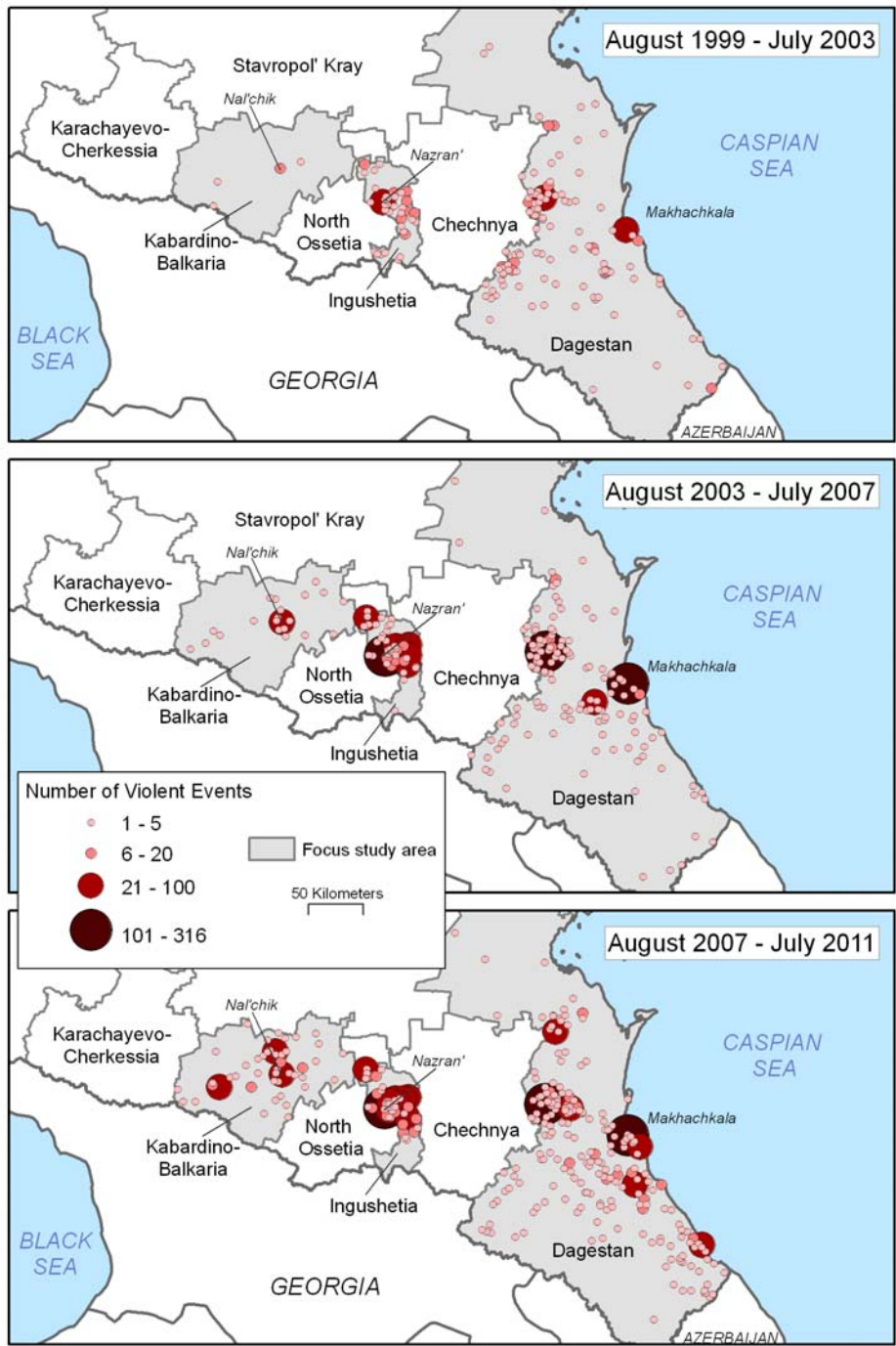


Figure 3: Violent events in Dagestan, Ingushetia and Kabardino-Balkaria, August 1999-July 2011

WHO AND WHAT ARE THE INSURGENTS TARGETING?

Our second argument is that civilians – either as bystanders or directly targeted by rebels – are increasingly more likely to be the victims of insurgent attacks; this is particularly true in Dagestan, though it holds for the other republics as well. Because our data identified both the primary actor and the casualties reported for each violent event, we are able to calculate the impact, in terms of number injured and killed, of attacks by rebels on both civilians and military/police actors. Those events without casualties were frequently aimed at infrastructure in the region; the sabotage of railway lines, for example, has become a common occurrence throughout the past decade. Previous work has suggested that the Islamist insurgency in the three republics primarily targets individuals and infrastructural elements most associated with regional security, due to their association with the federal and local leaderships, but also due to their indiscriminate tactics in countering the insurgency (International Crisis Group, 2008; RFE/RL, 2009). We compare this number to the number of attacks that targeted civilians,¹³ and find that those associated with the police and military are disproportionately more likely to be the target of rebel attacks in comparison to civilians (Table 1).

While the general pattern is unsurprising, by looking at trends over time, we observe a notable change: during periods of conflict intensification (late 2009 to present in Dagestan, April 2010 to present in Kabardino-Balkaria, and 2008 and 2009 in Ingushetia) civilians and those unassociated with regional security organs are more likely to be casualties of violence. Given the low numbers of total events in Kabardino-Balkaria prior to late March 2010, a single event skews casualty numbers. One-quarter of the total casualties for the time period from August 2007 to July 2008 were the result of a bomb on a passenger bus in November 2007, all of whom were civilians. Overall, though, most (66 percent) of the victims of the rebel attacks in the three republics

¹³ Included in the civilian category are local politicians, religious leaders, journalists, and civilians of unidentified profession, who are often caught as bystanders in attacks.

continue to be employed by Russian federal or local institutions, with only small variations by republic (Dagestan 65 percent, Ingushetia 67 percent and Kabardino-Balkaria 59 percent).

	Aug 2007-July 2008	Aug 2008-July 2009	Aug 2009-July 2010	Aug 2010-July 2011
Dagestan	81 (29.6 percent)	213 (23.9 percent)	366 (43.4 percent)	505 (38.4 percent)
Ingushetia	285 (20.0 percent)	587 (32.0 percent)	507 (55.6 percent)	68 (26.5 percent)
Kabardino- Balkaria	56 (53.6 percent)	16 (25.0 percent)	72 (50.0 percent)	110 (36.4 percent)

Table 1: Total deaths reported as a result of rebel action (and percent civilian), 2007-2011

Spatial Distribution and Concentration: Potential Surface Maps

Potential surface maps are tools designed to summarize visually a spatial distribution using both the distance between points and their respective values. The concept originated in physics to measure the potential, or energy, in a field (e.g. gravitational, electrical, or magnetic) and has been used in geography to measure, for each location, the potential impact of all surrounding areas on a particular point (Taylor, 1977). After the first applications by John Stewart (1947) of population potential contour maps for most regions of the world and was widely applied to other measures such as manufacturing potentials (Harris, 1954). The method was later updated by Warntz (1964) Instead of a simple choropleth map showing actual levels of violence, potential maps show the influence of violence across space as a function of distance between locations. Assuming the influence of violence exhibits an inverse distance decay (see Appendix 1), these potential surface maps can then be interpreted as showing how the potential for violence in one location is influenced by violence in surrounding areas.

For our study, we create violence potential surfaces for rebel events, excluding events whose location can only be geocoded to a republic. To do this, we spatially aggregate the events to a set of uniform grid cells overlaid on the study area. With 292 grid cells for the study area, the 25 km cells are a size selected with an eye towards minimizing intra-cell variation and maximizing inter-cell variation. Figure 4 shows the violence surface maps for rebel events, with contour lines at 5 events/km intervals added to help interpretation. Six years are shown; 2001-02 experiencing the most intense number of violent events, 2004-05 as a transitional year, and the last four years to illustrate recent changes.

The early years of the rebel violence surface map illustrates that the potential for violence was generally greatest in Chechnya and to the south of Grozny towards the mountains, whereas the threat drops off steeply towards the northern steppe, an area firmly under Russian military control after the first few months of the war. Rebel.

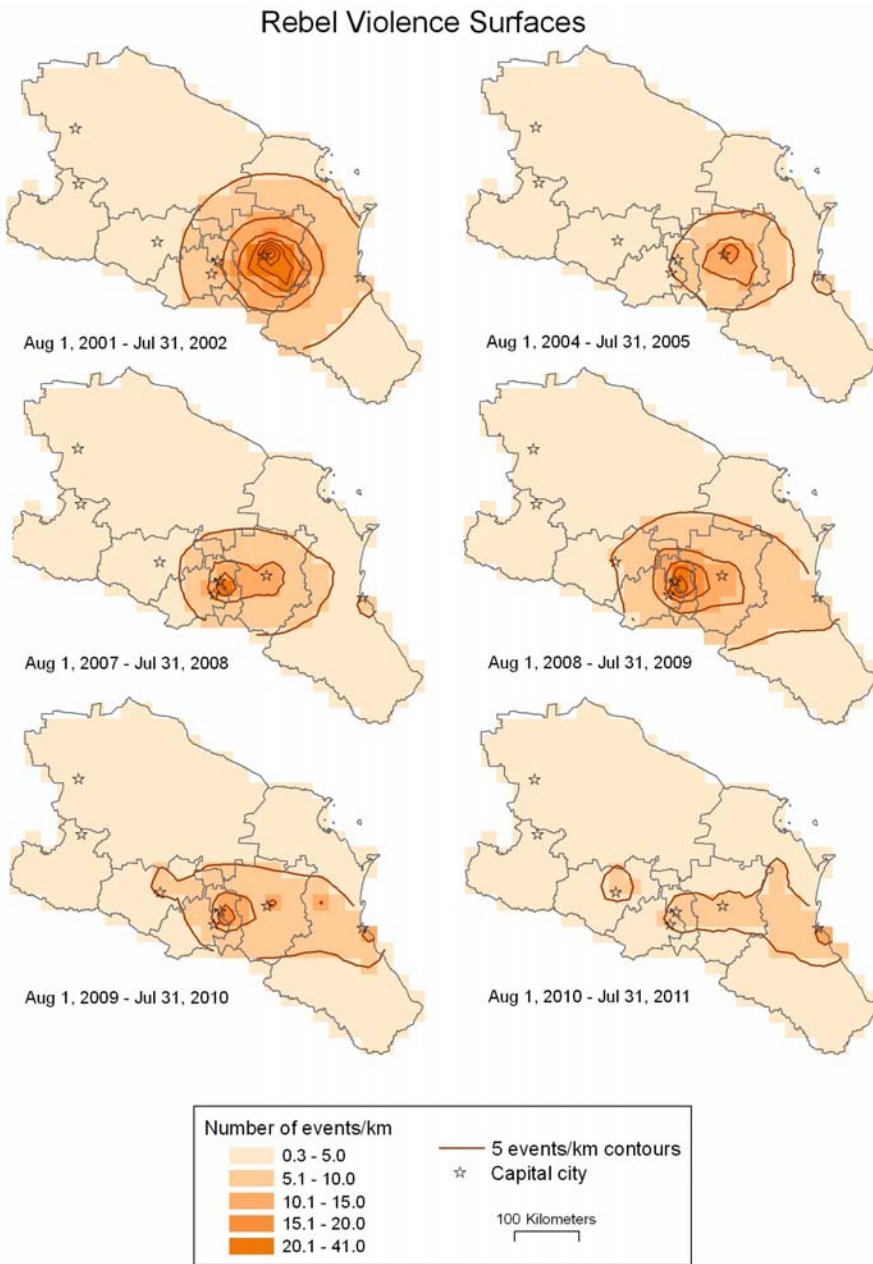


Figure 4: Rebel Violence Potential Surfaces, Select Years.

potential violence is persistent over time, and shows a distinct trend beginning in 2004-05 with a noticeable shift toward Nazran'; there is an additional center of potential violence visible in Makhachkala

The periods beginning in August 2000 and August 2004 illustrate the changes over time from a highly concentrated pattern of violence (August 2000 – July 2001) to a much more reduced pattern of violence (August 2004 – July 2005). Fragmentation intensifies for 2007-08 when nearly all violent rebel activity is concentrated in Ingushetia, especially around Nazran', with spillover into Chechnya and North Ossetia and just a modest cluster of rebel violence in Makhachkala. The following year, violence potential diffuses even further; while Nazran' remains a hotspot, Grozny reemerges as a location for potential violence, along with Khasavyurt and Makhachkala in Dagestan. In the most recent timeframe (2010-2011), Makhachkala is now the epicenter of violence in the North Caucasus region, with Nal'chik emerging as a secondary node and the diminution of violence in Ingushetia clearly observable. Overall, the patterns in these maps support our proposition that the changing nature of the conflict is becoming visible in a more fragmented spatial pattern across the region.

FACTORS IN THE GEOGRAPHIC DISTRIBUTION OF REBEL ACTIONS

We map spatial distributions of violent events according to three criteria that derive from the civil war literature, namely degree of urbanization, the concentration of violence around strategic locations, and physical geography. For each criterion, spatial categories were constructed from multiple sources of geographic data before summing event counts. As we did in evaluating casualties, we are interested in those events where rebels were designated as the actor. Our attention to these conflict associations is motivated by the sizeable and growing literature on the locational factors differentially related to violence (see the reviews and methods in Raleigh, Witmer, and O'Loughlin, 2010; O'Loughlin et al, 2010; and Schutte and Weidmann, 2011).

While political scientists have emphasized institutional factors in accounting for the onset and duration of civil war violence (an emphasis criticized in Korf, 2011), geographers have tended to focus on the regional and local differences in the map of violence. Though political scientists have generally accepted that the landscape of civil

war violence is usually highly uneven within a polity, their “geographic” measures are often highly aggregate (general measures of terrain and forest) or simplistic binaries (peripheral versus core locations). Their assumptions are that these generic indices reflect deeper patterns resulting from rebel strategies (mountains and forests offering sanctuaries and hiding places for bases) and the tit-for-tat elements of irregular warfare (Fearon and Laitin, 2003). Recent research that has parsed the unrefined physical geographical elements into more nuanced and localized indicators has not found a consistent relationship with the rate of violence (Kalyvas and Kocher, 2009).

Consideration of the places of conflict in historical studies was revived by David Fitzpatrick (1977) in his account of the 1916-1922 Irish rebellion by paying close attention to the dramatic differences in the level of mobilization of local populations against the British state. Subsequent work in the same vein by Peter Hart (2003) not only garnered detailed statistics on the indicators of violence but engaged in a crude analysis of the local correlates of violence using contemporary census measures of socio-economic, agricultural and industrial employment. Without recourse to the rational actor approach that underpins the Kalyvas (2006) work on the Greek civil war, the conclusions of the Irish studies are quite similar. Within a general model of self-interest (certain locales specialized in economic activities that relied on the British market and thus, would be hurt by a successful independence movement), the historians of the Irish conflicts stressed localized circumstances of rebellion, including the role of schools, activists, historical memories of previous uprisings, personal networks and key organizers, in accounting for the highly variegated map of violence. Similar political and economic factors motivate violence in the North Caucasus, and are loosely connected in opposition to the federal state.

While disaggregation does not necessarily equate to detailed geographic event data, in practice, this has been the main paradigm for breaking civil wars into analytical components. Furthermore, the variables selected for study have been determined both by availability and theoretical interest; they include the “greed” and “creed” measures (income, inequality indices, and religious, ethnic and national groupings) (Collier and

Hoeffler, 2004; Weidmann, 2009), as well as factors considered to be important in government and rebel strategies (inhospitable terrain including elevation and forest cover, distances to key strategic and urban centers, border and peripheral locations) (Buhaug and Rød, 2006; Rustad et al., 2008).

We will examine these key factors separately first for the trends in each republic before developing a synthesis of the explanations in a geographically- sensitive and integrated model of violence across the whole region.

Urban/Rural Distributions

The degree of urbanization can be divided into four categories (rural, large village, near urban, and urban), representing relative population densities and settlement sizes and allows examination of the widely-mooted increased effect of urban location on violence (e.g. Kalyvas, 2008). Large villages (about 5,000 residents or more) and urban areas (more than 50,000 residents) were identified using the Digital Chart of the World (DCW) (Danko, 1992). These data were originally developed for the US Defense Mapping Agency for aeronautical purposes (Operational Navigation Chart) at a scale of 1:1,000,000 and so do not include many smaller villages and towns. The data for this portion of Russia were digitized from the Operational Navigation Chart F-04 which was published from 1972-74.

One of the data layers in the DCW is a geographic polygon layer of populated places, irrespective of political boundaries, seen as the large villages and urban areas of Figure 5a. Urban areas (17 in total) were selected by identifying those built-up polygons that corresponded to cities with a census population in 2002 of at least 50,000 people (Perepis, 2002). The near urban category was derived from these 17 urban areas by constructing a spatial buffer of 5 km around each polygon. The rural category was defined as the remainder of the study area, except for the villages as the smallest

population centers. Because of the fine spatial resolution required for this analysis, events geocoded to the *rayon* or republic were excluded from this analysis.¹⁴



Figure 5: Urban-Rural Areas and Strategic Locations in the North Caucasus

During the first half of the study period, a plurality of rebel events occurred in rural areas; over time, a trend towards more urban areas for rebel-initiated violence is

¹⁴ All map projections and data analyses were conducted using the Universal Transverse Mercator (UTM) coordinate system set to zone 38N. This coordinate system divides the globe into 60 vertical zones (each 6 degrees wide), and uses the transverse Mercator projection that preserves distances and direction over the study area.

evident (Figure 6). Violent events occurring in large villages declined over time while near urban violence remained relatively stable. This trend holds in the three republics considered here.

There also appears to be a relationship between increased levels of violence and its distribution amongst urban and rural zones. At the height of violence in Ingushetia, from August 2008 to July 2009, more than one-third of events took place in zones designated as urban in our classification, while 21.4 percent were in rural areas. Over the past three years in Dagestan, as violence has increased, its locations in urban areas has intensified (total events occurring in urban areas is 57.2 and 29.5 percent in rural areas). In both republics, events were more likely to occur in rural areas during the first years of the Second Caucasian war. In Kabardino-Balkaria a similar pattern holds – as violence increases, it concentrates more in cities. Between August 2007 and July 2009, for example, 45.2 percent of events were classified as rural and 38.7 percent in urban areas. In the most recent year, between August 2010 and July 2011, the percent rural has decreased substantially to 28.9 percent, while percent urban has risen slightly to 40.8 percent (a plurality of the total events). In part, this shift towards an urban theater of operation reflects the increased number of attacks in Dagestan; as McGregor (2006, p. 11) reported before the recent surge in violence there, “the rebels are less likely to be found in the mountains than in the cities, with the urban warfare of assassinations, bombings and gunfights replacing the tactics of a mobile guerrilla force.” Melvin (2007) observes that urban areas are frequently the sites of gun battles between militants and Russian forces.

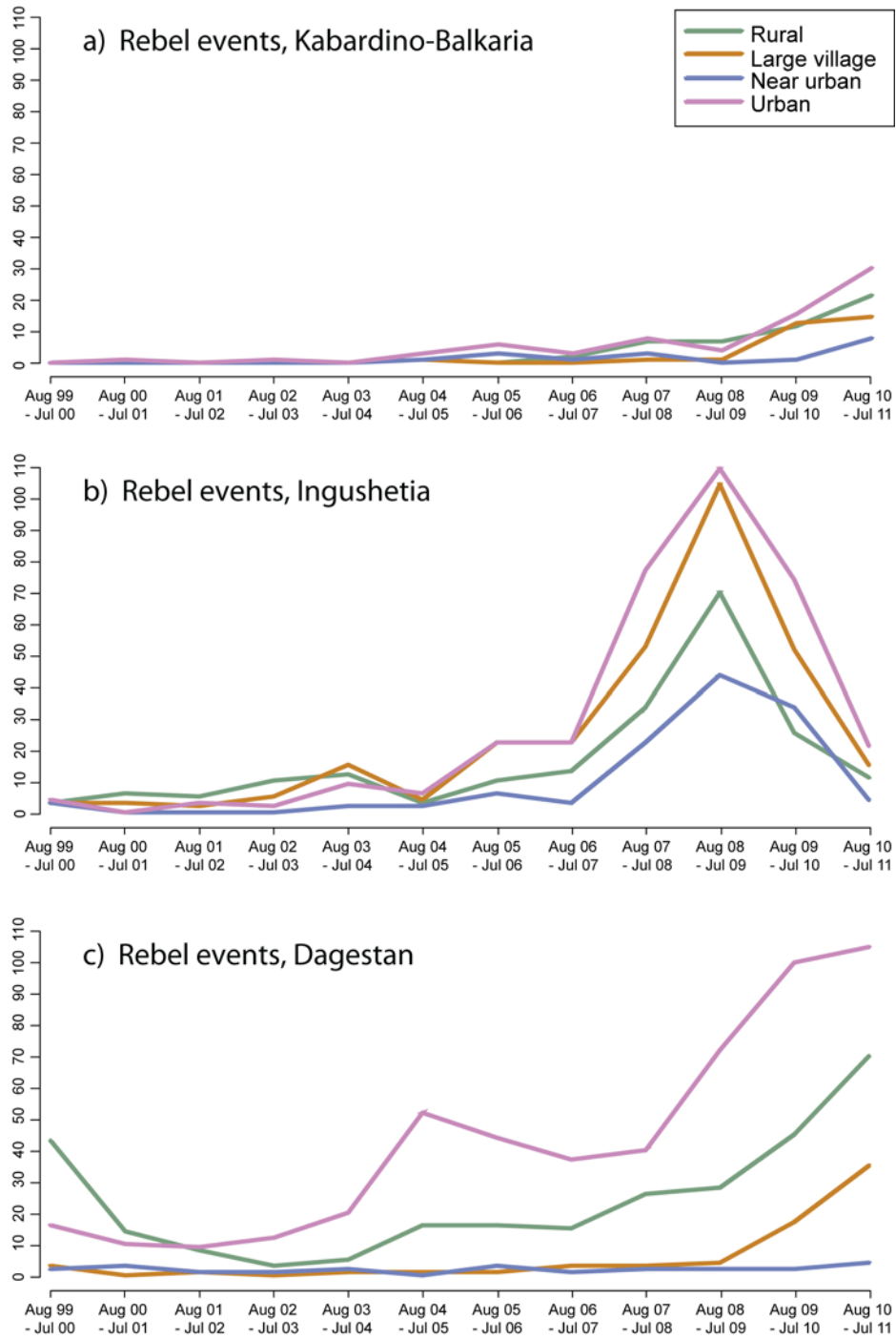


Figure 6: Rebel events by urban-rural type, 1999-2011

Near Strategic Locations

By examining the yearly number of rebel events near strategic locations, we can evaluate the evolving strategies of these groups. We define three types of strategic locations. Major military bases were identified using information on the North Caucasus Military District (Russian Military Review, 2007). In the North Caucasus as a whole, the six main military installations, all with elements of the 58th Army, are located in Budyennovsk, Vladikavkaz, Prokhladny, Buynaksk, Khankala, and Mozdok (Global Security, 2005) (see Figure 5b for these and other strategic locations). Republic capitals (Cherkessk, Grozny, Makhachkala, Nal'chik, Nazran', Stavropol', and Vladikavkaz) as regional centers of power and of Russian administrative institutions are also strategic locations and frequently the targets of major rebels attacks.¹⁵ The third strategic entity is the Caucasian Federal Highway, derived from the road network in the Digital Chart of the World (ESRI, 1993). The highway roughly parallels the mountains and connects all the regional capitals and its central importance to Russian military and local security effectiveness is well-documented (Lyall, 2006). Again, our analysis is focused on Dagestan, Ingushetia and Kabardino-Balkaria.

To identify conflict events that occurred near these strategic locations, a geographic buffer of 5 km for the highway and 10 km for the military bases and capitals was constructed to capture their possible impact as rebel targets on the geographic distribution of the war. Violent events (excluding events that could only be geocoded to *rayon* as well as those geocoded to republic centroids) within any of these buffered regions were counted as near a strategic location, and rebel percentages by year are shown in Figure 7. In the first two years, insurgent attacks were equally divided between strategic and non-strategic targets for Dagestan and Ingushetia. By the end of 2003, a noticeable shift towards strategic locations had occurred, particularly in Dagestan. Since then, the percentage of attacks proximate to the identified locations has leveled off, and even declined somewhat in the last two years of the data series. Ingushetia, on the other hand, has seen a more gradual rise in rebel events near strategic

¹⁵ Though Nazran' is not officially the capital of Ingushetia, (Magas replaced it in 2002), it remains the largest and most strategic city in that republic.

locations; of the three republics, such attacks are most common there (at 76.5 percent of total events during the August 2010-July 2011 timeframe), in part due to the concentration of violence around the Caucasus Federal Highway.

Kabardino-Balkaria is an exception to the general pattern, in part because of the infrequency of conflict events in the republic in the first years of the insurgency. Violence is diffusing within Kabardino-Balkaria as much of the events that previously took place in or near the capital of Nal'chik has now spread to more remote areas. Overall, this shift in strategy reflects better organization and more diffuse support of the different rebel groups and/or a shift in tactics to guerrilla assaults on key installations and prominent persons associated with the federal and local state apparatuses. There is also a relationship between the intensification of conflict in urban zones as reported above and the designation of the leading cities in each of the republics as strategic locations.

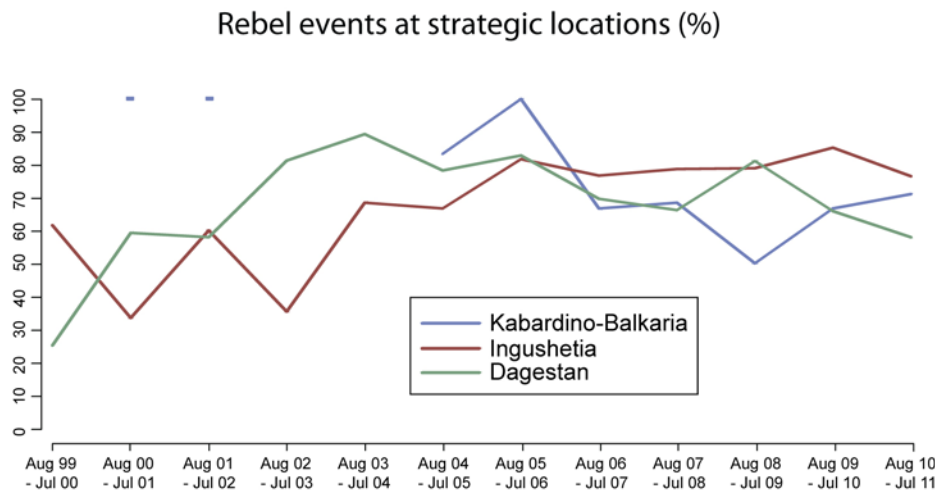


Figure 7: Yearly Distribution of Rebel Events by Strategic Location

Elevation/Vegetation Distributions

Though well-debated in the civil war literature, the geographic distribution of mountains and forests is expected to influence the course of low-intensity guerrilla wars. We generate a more nuanced and disaggregated index than is typically used. The categories aim to capture physical geographic differences that affect human land use

and patterns of settlement and thus influence the nature of violence. To construct the categories, we integrated digital elevation data and land cover data to create four categories, low elevation, mid elevation with no forest, mid elevation forested, and high elevation (Figure 8). These categories effectively separate the steppe in the northern study area from the hills and mountains of the southern portion. Few forests are found in the steppe region or high mountains, so only the mid elevation zone differentiates between forests and non-forests.

The elevation data were collected aboard the Space Shuttle *Endeavor* in February 2000, processed by the US Geologic Survey, and retrieved from the University of Maryland's Global Land Cover Facility (USGS, 2004). We obtained these digital data at a resolution of three arc seconds (nominal 90 meter pixel resolution) and divided them into three elevation zones (less than 300 m, 300 m to 1,500 m, and over 1,500 meters). Forest data were also obtained from the Global Land Cover Facility (University of Maryland, 1998) derived from AVHRR 1 km satellite imagery between 1981 and 1994. Each pixel was classified as one of fourteen different land cover categories using a decision tree classifier and finer resolution Landsat imagery (Hansen et al., 1998). We reclassified evergreen, deciduous, mixed forest, and woodland pixels as forest, since each category has more than 40 percent canopy cover and trees over 5 m in height (Hansen et al., 2000).

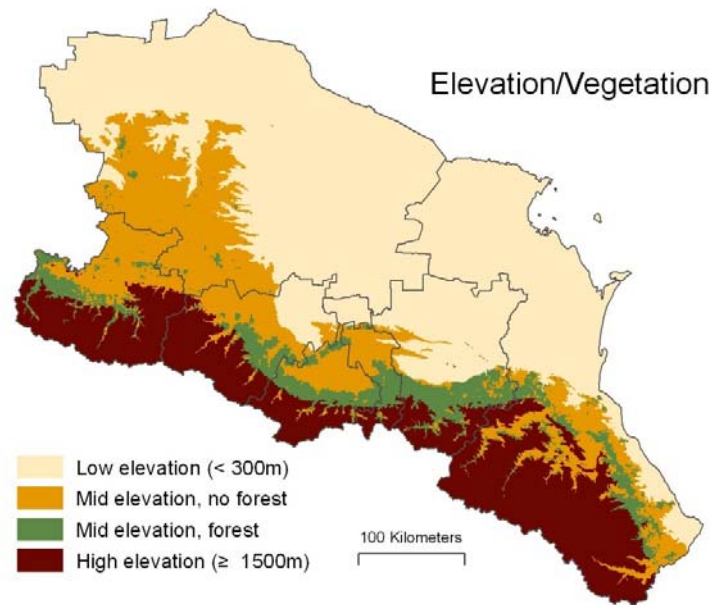


Figure 8: Distribution of Forests and Mountains in the North Caucasus

Since there is little variation from year to year, Table 2 presents the aggregated rebel violent events by elevation/vegetation category for two time-periods, by type of event and by republic. In the region as a whole, rebel events occur more often in non-forested mid elevations than forested mid elevations, but in Chechnya, twice as many events occur in forested areas since there is little non-forested mid elevation terrain in Chechnya. Though the terrain and forest argument does not necessitate rebels striking in these areas (only using the physical features for protection), violence in this mid-elevation forested zone is characterized by local attacks on villages and police forces.

a) Rebel, Aug 99 - July 07	Kabardino-Balkaria		Ingushetia		Dagestan	
	Count	Percent	Count	Percent	Count	Percent
Low elevation (< 300m)	1	4.3	1	0.4	253	67.8
Mid elevation, no forest	20	87.0	178	77.1	94	25.2
Mid elevation, forest	1	4.3	49	21.2	11	2.9
High elevation (≥ 1500m)	1	4.3	3	1.3	15	4.0
Totals	23	100.0	231	100.0	373	100.0

b) Rebel, Aug 07 - July 11	Kabardino-Balkaria		Ingushetia		Dagestan	
	Count	Percent	Count	Percent	Count	Percent
Low elevation (< 300m)	8	4.8	8	1.0	473	77.3
Mid elevation, no forest	137	83.0	645	84.4	91	14.9
Mid elevation, forest	4	2.4	111	14.5	32	5.2
High elevation (\geq 1500m)	16	9.7	0	0.0	16	2.6
Totals	165	100.0	764	100.0	612	100.0

Table 2: Elevation/Vegetation Distributions of Violence August 1999-July 2011

The yearly elevation/vegetation distributions by republic were also calculated, but are not included here since there was only a small change over time, despite the observation by Kramer (2006) that the fighting was shifting to the mountains as the government and its local allies have gained control of Grozny and surrounding areas.

Modeling Violence in the North Caucasus of Russia using Poisson Mixed Models

To assess the relative importance over time of several key explanatory variables that have been mooted in the civil war literature briefly reviewed above and whose separate effects we have illustrated in the graphs and tables, we estimate regression models that consider their joint and independent effects. We generate models that predict the number of rebel events in locations by breaking the data series at August 1, 2007 because the last four years of the series reflects a significant change in the character and nature of the conflict. Since we are predicting values (counts of violent events) at specific points, we exclude those violent events that were geocoded at republic centroids because the reports lacked specific geographic coordinates. We aggregated violence to town/city coordinates, rounded to the nearest 10 kilometers. This rounding prevents nearby adjacent towns from inclusion multiple times in the analysis. To avoid a conflict analysis that considers only violent places, we also include the rounded

coordinates for all of the towns in the GEOnet Names Server (GNS) from the National Geospatial-Intelligence Agency (NGA) for the North Caucasus study area. This yields a total of 1,614 coordinates, for which we extracted values for the explanatory variables discussed above, forest (1 for presence or 0 for absence in the 5 km. range), village (present or not), urban or near urban locations (present or not), elevation (in kilometers), and distance to nearest strategic location (kilometers). We also add a distance to Grozny (kilometers) measure as an explicitly spatial control for the disproportionate violence experienced in Grozny (as the rebel capital to 2000) and surroundings. Lastly, we add the local population for each, obtained from CIESIN's Gridded Population of the World (GPWv3) dataset (<http://sedac.ciesin.columbia.edu/gpw/>) for the years 2000 and 2010 at the 2.5 minute resolution to act as a control since we would expect the number of violent events to be related to the size of the local population.

The violent event data count distribution lends itself well to a Poisson regression model; most towns (85 percent) do not experience rebel violence, about six percent experience one event, and the remainder (nine percent) sees two or more rebel events. Since we expect a strong republic-level effect across the seven political units, we use a generalized linear mixed model to examine differences between the republics.¹⁶ This procedure allows us to partition the variance into republic-level and local-level effects.

Estimates for the two models (before and after August 1, 2007) are presented in Table 3. The comparative model diagnostics (i.e. log likelihood ratios and area under the curve -AUC- values) show that model b) (for recent violence since August 2007) is a better predictive model than model a). We calculate the AUC metric by compressing model fitted values to the range 0 to 1. The curve is determined by true and false positive prediction rates for thresholds from 0 to 1 with an AUC value of 1 suggesting that the model perfectly predicts rebel violence.

¹⁶ We use the Poisson generalized linear mixed model available in the 'lme4' R software package.

Examining the republic-level variance, the modeling indicates a strong effect – from 34 percent in the first period to 43 percent in the second period. Because of the variable ethnic character of the seven political units, with two non-Muslim regions (the Russian dominated Stavropol' kray and the Ossetian dominated North Ossetia), this outcome is unsurprising and would be highly-correlated with the Russian percentage as a predictor in the model. The fact that the effect is getting stronger over time suggests the increasing republic-level differentiation in violence. While four republics/territories continue to see significant violence, the two non-Muslim regions and Karachayev-Cherkessia (the westernmost republic) have seen a diminution in violence since the height of the war against the Chechen rebels, 1999-2003.

The fixed effects for the predictors are almost all significant though not always in the expected direction. Locations that are urban or close to urban areas, locations close to Grozny, locations close to strategic locations, and higher elevation locations have higher counts of violence. Locations with larger populations have more violence in the second period, but the reverse effect (smaller places with more violence) is evident in the period to 2007. In the earlier period, the Chechnya-focused war incorporated almost all locations in that republic and in bordering areas of Dagestan and Ingushetia. In recent years, with the relative pacification of Chechnya, the larger cities and towns, especially the capitals, of the other Muslim republics have experienced most violence from local rebel cells. The decline in significance for the coefficients for the village indicator corresponds to this effect of community size. Unlike the claims of the political scientists of a higher likelihood of rebel activity in forested areas, the trend in the North Caucasus is the reverse, no significant effect in the first period and a negative effect in the most recent one.

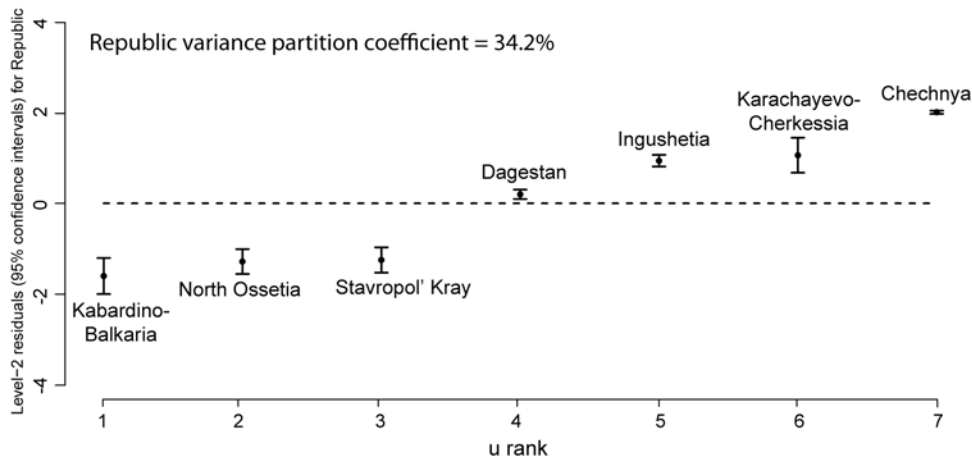
	a) August 1999 - July 2007			b) August 2007 - July 2010		
<i>Fixed effects</i>	<i>Estimate</i>	<i>z value</i>		<i>Estimate</i>	<i>z value</i>	
(Intercept)	2.719	5.082	**	0.649	1.016	
Forest	-0.020	-0.493		-0.209	-3.595	**
Village	0.214	2.805	**	0.295	1.629	
Urban/near urban	2.036	35.906	**	2.330	38.341	**
Elevation (km)	0.386	8.654	**	0.116	2.036	*
Dist. to strategic (km)	-0.049	-28.944	**	-0.041	-18.167	**
Dist. to Grozny (km)	-0.009	-12.235	**	-0.005	-7.961	**
Pop. 2000 (ln)	-0.103	-4.963	**			
Pop. 2010 (ln)				0.090	3.222	**
<i>Random effects</i>	<i>Variance</i>	<i>Pct of Total</i>		<i>Variance</i>	<i>Pct of Total</i>	
Republics	1.711	34.2		2.476	42.9	
<i>Summary</i>	<i>Value</i>			<i>Value</i>		
Log likelihood	-3487.3			-2134.2		
AUC	0.859			0.872		
N	1614			1614		
Sum of Events	3851			2069		

Significance codes: ** $p < 0.01$, * $p < 0.05$

Table 3. Generalized linear mixed models for predicting rebel violence in the North Caucasus

Mapping the residuals from the models in Table 3 shows no evident geographic patterning but plotting them by republic (the whisker plots in Figure 9) reveals a strong pattern by the republic's level of overall violence. With the exception of one

a) Multilevel model Republic residuals for rebel events, Aug 1999 – Jul 2007



b) Multilevel model Republic residuals for rebel events, Aug 2007 – Jul 2011

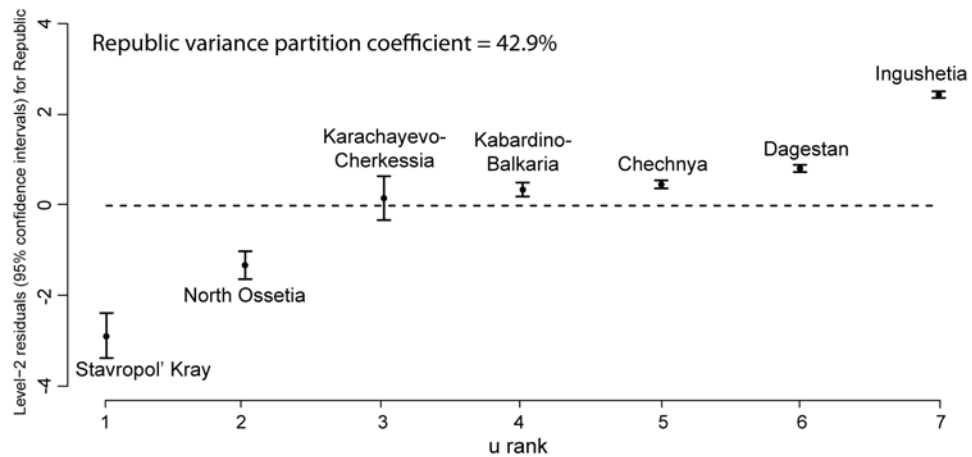


Figure 9: Multi-level Model Residuals by Republic, 1999-2007 and 2007-2011

distribution (that for Karachayevo-Cherkessia in the second time period), all of the distributions differ significantly from zero (the horizontal dashed line in the plots). The width of the whiskers indicates the 95 percent confidence interval of the residuals for each republic with the black dot as their mean. Positive values (above the line) show an underprediction of violence (more than expected in these republics after accounting for the distribution by the predictors) and negative values are overpredicted republics. Comparisons of the republics across the two graphs show consistent underprediction for the three most violent regions, for Chechnya (though significantly lowered after

2007), Ingushetia (but with more violence than predicted after 2007), and Dagestan (also more violence after 2007 than predicted). Conversely, the less violent regions (Stavropol', North Ossetia and Karachayevo-Cherkessia) are over-predicted but Kabardino-Balkaria, which saw the proportionately greatest upsurge in violence, switches from over-prediction in the 1999-2007 period to underprediction in the latter period.

CONCLUSIONS

As we expected from the journalistic accounts of dramatic instances of rebel attacks and descriptive studies of the republic by republic trends rebel violence, since the start of the second Chechen war, dispersed to other areas of the Chechen Republic and later, to the adjoining republics of Ingushetia and Dagestan. The dramatic fall in violence in Chechnya after 2004 is not paralleled by similar decreases elsewhere but instead, taking advantage of local environmental and cultural contexts, the rebellion continues, though at an overall reduced level. The importance of mountainous and forested terrain (as refuges and bases for rebels) for understanding of conflict locations is not supported in a regional study of the North Caucasus of Russia. Instead, the rebellion has taken on a more urban character in the republics where it is now most entrenched. Access to important targets (the main highway and major urban centers) remains central in the rebel strategy.

Using geographically-sensitive multi-level modeling, we showed that contextual effects are strongly variable within the study region. The two Muslim republics to the west, Karachayevo-Cherkessia and Kabardino-Balkaria display different trends over the past decade. While the former remained relatively peaceful, the latter has seen a dramatic upturn in rebel activity association with the consolidation of a local Islamist mobilization. Attention to these local circumstances and further interest in the causes of these differences is suggested by both our account of the political and security

developments in each republic and the (carto)graphic and analytical interpretations that follow.

Since there is continued interest in developing general models of explanation in civil war study, the disaggregated approach implies, but does not always realize, the full implications of the paradigmatic shift. It must integrate detailed visualization of patterns and trends with in-depth consideration of contextual idiosyncrasies and refrain from a concern with attaining a general model of geographic explanation. Our study of the evolving dynamics of the second Caucasian war demonstrates both the complexities of the insurgent process and its resulting spatial patterns.

Appendix 1. Calculation of Violence Potential

The calculation of violence potential (v_i) at each location i is defined as

$$v_i = \frac{E_i}{r/2} + \sum_{\substack{j=1 \\ j \neq i}}^n \frac{E_j}{d_{ij}}$$

for all n grid cells where E_j is the number of violent events at location j with a distance, d_{ij} , from location i . Distance is measured in kilometers between cell centers yielding a violence potential value with units of events per km. For $i = j$, the number of violent events is divided by $r/2$, where r is the radius of a circle equal in area to an individual grid cell. Since each grid cell is 625 km^2 , $r/2 = 7.05 \text{ km}$. This calculation of the potential of a grid cell on itself is the most appropriate given the square shape of our districts and the assumption that the violent events are distributed uniformly over the cell (Frolov 1977).

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