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Inherently vulnerable? Ethnic geography and the intensity of violence in Bosnian civil war

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ABSTRACT

Which geographic configurations of ethnic settlements are most susceptible to violence in ethnic conflict? Existing research on ethnic conflict focuses on regional configurations of ethnicity, thus neglecting how local vulnerable pockets of minorities may become primary targets for violence. The mechanism linking minority enclaves to more violence posits that the regional majority group will fight local minorities in order to (i) create ethnically homogeneous areas and (ii) remove potential support for the other group by the local minority. Minority enclaves that cannot easily receive outside support from their ethnic brethren are vulnerable and thus provide incentives to attack. The paper thus argues that the presence of vulnerable ethnic minorities in areas dominated by other ethnic groups heightens the perception of threat, suggesting that the implications of the ethnic security dilemma are more pronounced. The paper uses Geographic Information Systems (GIS) to develop measures of isolated and vulnerable minority enclaves. This novel measure captures local (micro) and regional (macro) patterns of ethnic settlements that remain veiled behind a focus on ethnicity in larger administrative units. In a quantitative case study of the Bosnian war (1992–1994), I show that the presence of local minorities within territories controlled by an enemy ethnic majority is associated with more violence. The results remain robust when accounting for the presence of the UN peacekeeping mission (UNPROFOR) and across several robustness checks.

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Introduction

In April 1992, Serb forces encircled the city of Bijeljina and cleansed the town of its Bosniak population. The city of Bijeljina is located in the middle of Bijelijna *opština* (municipality from now), which was ethnically Serb-dominated before the Bosnian war. As the map in Fig. 1 shows, the city was a Bosniak enclave surrounded by Serb settlements. After Serbs proclaimed the municipality part of the Serb Autonomous Oblast, the local majority of Bosniaks in the town of Bijeljina realized that an invasion was imminent and organized its defense around the Patriotic League. Their resistance, however, was not sufficient to defend themselves against the Arkanovci and other Serb forces, which quickly captured the town (Toal & Dahlman, 2011). After the invasion, they proceeded with the four-day long ethnic cleansing of non-Serb population (Human Rights Watch, 2000). The circumstances in which the attack occurred favored the offense: a loosely organized resistance defending a city that was completely surrounded by Serb-held areas. The tragic massacre of Bijeljina occurred in the early moments of the Bosnian war and exemplifies how isolated enclaves entail a defensive vulnerability for the minority group and an offensive opportunity for the surrounding majority group. Indeed, the next target of the Serb offensive was Janja, another Bosniak majority town in the Serb municipality of Bijeljina (Toal & Dahlman, 2011).

The illustration of ethnic settlement patterns and violence in Bijelijina has implications for the relationship between ethnic configurations and violence in ethnic conflict. While explored in many studies, much of this research misses the multitude of possible spatial configuration of ethnic groups veiled behind non-territorial notions of ethnic diversity. Consistent results in different research designs and at different levels of analysis find that the degree of ethnic intermingling has a positive effect on the severity of violence. For example, when there are two or few groups of comparable sized (high polarization and intermediate fragmentation), clashes are remarkably severe (Costalli & Moro, 2012; Klasnja & Novta, 2014; Montalvo & Reynal-Querol, 2005). These studies, however, focus on aggregate measures of ethnicity and overlook how local pockets of minorities increase the intensity of violence. Recognizing the importance of local and regional patterns of settlements, this paper theorizes that, as in the case of Bijeljina, enclaves hosting local minorities surrounded by a group of different ethnicity are more prone to violence because of the vulnerabilities induced by this spatial configuration. Majority groups devote resources to fight locally

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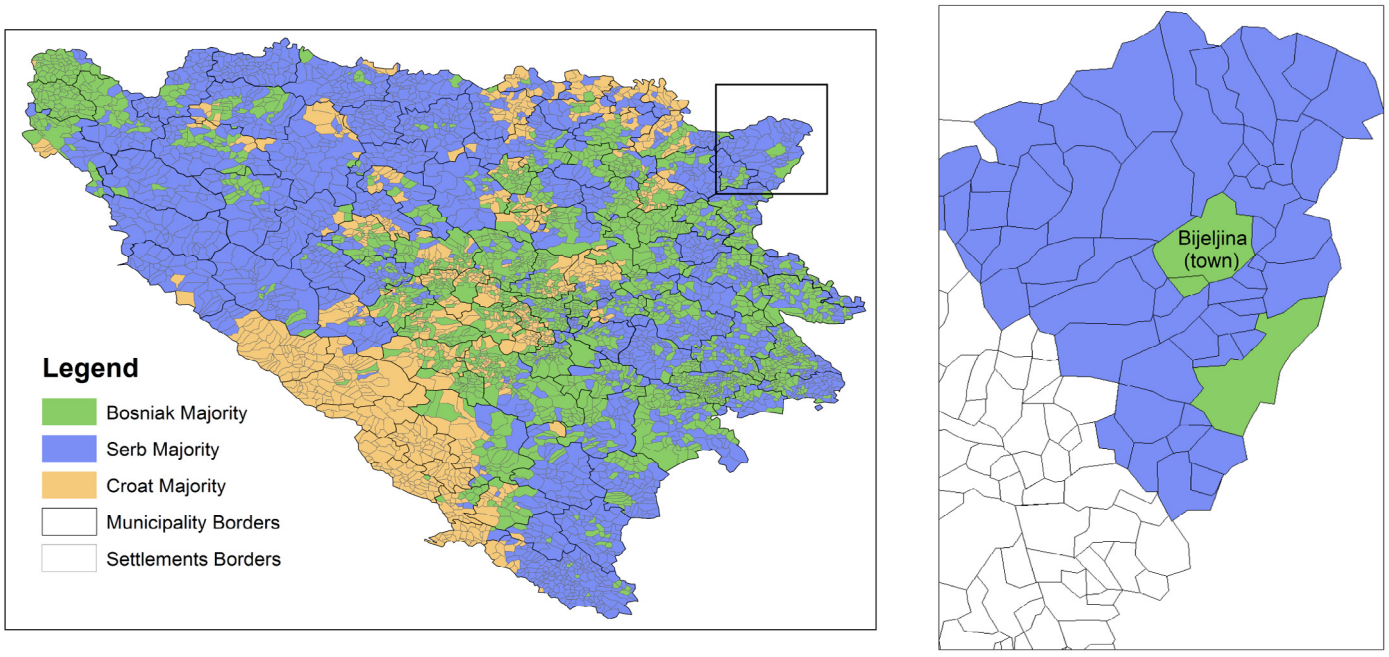

Fig. 1. Detail of Bijeljina settlements within Bijeljina municipality.

vulnerably minorities in order to (i) create ethnically homogeneous areas with stable control and (ii) remove potential support for the other group.

This paper makes two contributions to the existing literature on ethnic civil wars. First, it shows that both regional *and* local ethnic group distribution are important for understanding how ethnic intermingling produces intense ethnic violence. The proposed mechanism posits that local sources of insecurity affect the strategic objectives of regionally dominant ethnic groups. In ethnic civil war, power and control are more stable if territorial homogeneity and elimination of opponent's supporters can be achieved. The perceived threat to a majority group's territorial control induced by the presence of local-level minorities explains how village or town-level settlement patterns produce the conditions for violent collective behavior at a higher level of aggregation (the region or municipality). In other words, the severity of ethnic security dilemma varies in space and this variation is accounted by ethnic patterns at the local level. Second, the paper introduces a novel measurement of ethnic intermingling that captures ethnic vulnerability emerging from geography and demographic concentration. Using fine-grained data on the spatial distribution of ethnic groups within administrative units, I measure the spatial variation of threat and vulnerability by identifying isolated enclaves of undefended local minorities surrounded by a majoritarian opponent ethnic group. This specific configuration of local ethnic enclaves cannot be captured by measures of ethnicity that measure the level of intermixing.

The paper is structured as follows. First, I review the literature on the severity of ethnic conflict. The second section presents the argument of how intermingled ethno-demographic patterns create vulnerabilities and increase violence. I then describe the construction of the vulnerable minorities' measure and compare it to other measures of ethnicity. The empirical section tests the hypothesis with data on the Bosnian conflict (1992–1995). I show that the size of the vulnerable minorities is linked to higher levels of violence using a variety of estimation methods. Results for the violence-increasing effect of minority enclaves remain consistent when accounting the presence of the UN peacekeeping mission (UNPROFOR) and the endogenous relationship between peacekeeping and violence. I conclude with policy implications and suggestions for future research.

Ethnicity and violence in ethnic conflict

Civil conflict scholarship has explored the link between the distribution of ethnic groups and the intensity of violence within states. This literature has highlighted how the polarization of ethnic groups (Costalli & Moro, 2012; Esteban & Ray, 2008; Montalvo & Reynal-Querol, 2005) and groups' regional distribution within the country (Melander, 2009; Weidmann, 2011) are associated with the intensity of conflict. These conceptualizations of ethnic diversity, however, neglect that local intermingling also shapes the dynamics of violence.

Arguments on polarization emphasize the implications of the number and size of ethnic groups for violence. Since group size can be thought of as a proxy for its ability to mobilize resources, large groups can be expected to fight harder in locations where their population share is approximately the same. This effect of the size and share of ethnic groups has been analyzed using an index of polarization (Montalvo & Reynal-Querol, 2005). Society is polarized when there is a small number of fairly large groups with high intra-group ethnic homogeneity and high inter-group ethnic heterogeneity (Esteban & Schneider, 2008). Using countries as units of analysis, Montalvo and Reynal-Querol (2005) shows that conflict in highly polarized societies tends to be very severe, conditional on conflict actually breaking out. Applying polarization to within-country variation in intensity, Costalli and Moro claim that violence is highest when polarization is high (i.e. groups are large) and fractionalization is at intermediate levels (i.e. the number of groups is small) because groups have to fight harsher to reach their objectives (Costalli & Moro, 2012, 804). Their analysis shows that polarization is indeed a good predictor of intense violence in the Bosnian conflict. Yet a limitation of this work on polarization is that it neglects the spatial location of groups, making it impossible to know whether

findings are conditional on groups being geographically concentrated. Recent work by Klasnja and Novta (2014) considers spatial dynamics and shows that the effect of polarization on violence is conditional on the degree of group segregation in analysis of conflict patterns in Bosnia and India. When polarization is high (i.e. groups are large) and segregation is low (i.e. groups are spread across the country), conflicts are more deadly because diffused group presence allows violence to spread. Conversely, when segregation is high, violence is lower even if polarization is high because violence cannot easily diffuse.

A second set of arguments focuses explicitly on the geographic distribution of ethnic groups. Weidmann's (2011) work examines how the regional concentration of ethnic groups affects the strategic importance assigned to subnational regions (Weidmann, 2011). When two or more groups simultaneously occupy a significant share of territory across different regions, they are of strategic importance for all groups and become contested during conflict. Similar to work on polarization, this argument focuses on group size since strategic importance increases with the share of group presence, but has regional implications because groups assess importance based on regional group presence. Using subnational data from the Bosnian war, empirical results show that territorial contestation – measured as a function of ethnic group share by municipality and surrounding municipalities – increases conflict severity. However, while territorial contestation captures important subnational variation in ethnic group concentration, it does not capture more local-level dynamics that are the subject of this paper.

Also focusing on a different spatial configuration of ethnic groups, work by Melander (2009) highlights the multiple possible configurations of ethnic group concentration in the same region: groups may occupy separate areas of the same reason, splitting the region in two halves, one of the two groups may be enclaved within the other group settlement, or they may be more interspersed. Moreover, a group may live in a region whose ethnic composition is very diverse so that no group has numerical dominance. Melander (2009) argues that geographically-induced vulnerabilities, fear, and first-strike advantages are greatest in intermixed regions, which therefore exhibit highest conflict severity. Melander's model predicts that the most severe conflict (protracted ethnic war) is twice as likely when no ethnic group is dominant and patterns are diverse (Melander, 2009, 115).

The theorized mechanism put forward in this paper builds on work by Klasnja and Novta (2014) and Melander (2007, 2009). Similar to Klasnja and Novta, I emphasize the importance of the spatial configuration of ethnic groups, but elaborate more explicitly which local and regional configurations are most prone to violence. While they argue that the most peaceful scenario possible is complete segregation of groups, such a neat separation is very unlikely in the real world. It is far more likely to observe the presence of minority enclaves within homogenous areas where segregation is slightly below the maximum. I will argue that this configuration potentially triggers more violence because it exposes enclaves to attacks. As segregation decreases, the number of enclaves of different ethnic affiliation should increase as homogeneity lowers. Violence should follow this growing trend up to the point where a pattern of complete intermixing (low segregation) prevails over scattered vulnerable enclaves. Similar to Melander (2009), I focus on implications from the ethnic security dilemma and connect it to ethnic settlement patterns, but theorize and establish these patterns more systematically. My argument thus connects micro-level dynamics resulting from the local distribution of groups (in particular the presence of isolated villages inhabited by local minorities) with more aggregate patterns at the municipality level (in particular the dominance of groups in the administrative unit). The next section relates vulnerable ethnic patterns to intense violence by linking the ethnic security dilemma to violence in ethnic wars.

Incentives and threats: how the geography of ethnic groups shapes violence

My argument combines rationalist accounts of the ethnic security dilemma with existing work on how ethnic composition and geography shapes strategic incentives for violence. More specifically, I identify patterns of ethnic settlements that are expected to be vulnerable to violence because control over them accomplishes important strategic objectives, including unifying areas inhabited by the same ethnic group and securing communication networks (Melander, 2007). Although it is not straightforward to assess the true intentions of competing groups under uncertainty, I adopt the ethnic security dilemma as a heuristic tool to present and argument how ethnic patterns can shape inter-groups violence. I expect that the distribution of ethnic groups affects the cost-benefit calculations of fighting in some locations. Macro-level conditions (i.e. majority status within administrative units) represent the situational mechanism through which individuals and groups form their actions. The aggregation of these behaviors may result in macro-level outcomes, namely the escalation of violence. Yet postulating a direct correlation between ethnic distribution and intensity of conflict at the macro-level neglects how both macro *and* micro-level dynamics interact and result in escalation. Considering the geographic separation of groups and the defensive disadvantages resulting from it is an attempt to move in this direction since vulnerable location inhabited by local minorities are an offensive opportunity for the majority group. In this setting, the structure of preferences (territorial control and elimination of threats) and opportunities (vulnerable enemy) shapes the decision of the majority group to act violently. For the case under analysis, the final outcome of this process is escalation of violence within the municipality. In short, I posit that the intensity of violence is related to the spatial variation of the perceived threat so that particular configurations of ethnic patterns (namely enclavized local minorities) fuel more violence. Hence in line with the ethnic security dilemma, the geographic distribution of groups shapes their decision to fight in specific locations as a consequence of cost-benefit calculations in which they recognize first-strike advantages, thus a need to act pre-emptively. As Melander points out, geographically-induced perceived vulnerabilities may drive to 'all-or-nothing type of decision' aimed at hindering any possibility for the opponent to capitalize from this weakness (Melander, 2009, 103). This widespread distrust can ignite a spiral of action-reaction resulting in confrontational behavior and eventually conflict, as the ethnic security dilemma suggests (Posen, 1993). Since the distribution of groups changes in space, how strategic opportunities vary across from these different patterns of population settlements? When two or more groups live in highly intermingled areas, settlements that are both concentrated *and* isolated may actually provide incentives for attacks because of their vulnerable status. Distant enclaves that are impossible to defend are essentially left 'to the mercy' of the opponent (Van Evera, 1994, 19). I define vulnerable settlements as areas of concentrated ethnic minorities that are geographically isolated from their ethnic brethren and surrounded by an adversary ethnic majority. The presence of more enclaves imply a greater threat to control, but also greater likelihood of successfully eliminate them because of their vulnerable position. The ultimate objectives of the hegemonic group are to gain strength and remove alien elements that could attack first or to deter and weaken the opponent, both of which result in higher ethnic homogeneity. Achieving territorial control and remove the threat represented by members of the other ethnic group work in combination and reinforce each other. Indeed, the strategic use of ethnic cleansing, for example, results in both stronger territorial control and elimination of opponents. However, the two objectives do not necessarily overlap and have different motivations. The desirability of territorial hegemony could stem from the need for

more resources, strategic depth or control over key locations. Additionally, there are also long-term implications of this achievement since 'reducing the population size of the opponent […] allows for a larger viable share' of future rents in the post-conflict period (Esteban, Morelli, & Rohner, 2010, 4). In these instances, the groups do not necessarily feel threatened by the mere presence of a local minority but still decides to attack the latter for the abovementioned reasons. Yet at the same time, the local minority is perceived as threatening to the extent that it is a resource for the opponent group and can act in its favor. This perception of threat exacerbates the need and urgency to resort to violence. I will now describe the two mechanisms in more detail.

First, I argued that ethnic groups in conflict aim to gain territorial control by increasing the ethnic homogeneity of the areas they occupy. The intensity of violence therefore depends on the level of control held by each ethnic group. For example, in areas where one of the groups exerts full control incentives for violence are significantly attenuated: there is less reason for the group to bring violence there as there is no immediate threat to its superiority and security (Kalyvas, 2006). In Kalyvas' words, violence in areas with either complete or no control is 'off the equilibrium path' (Kalyvas 2008, 402). On the other hand, areas where control is fragmented asymmetrically among actors namely where one actor exert hegemonic rather than full control, selective violence against supporters or members the rival group is expected to peak (Kalyvas, 2006). One question, however, follows: how much homogeneous has to be the territory to be safe or hegemonically controlled? The numerous cases of ethnic cleansing that occurred in Bosnia-Herzegovina indicate that although individuals of different ethnicity are not necessarily actively hindering territorial control, the majoritarian group still has reasons to completely eliminate them to reduce perception of threat to security and increase territorial control. Additionally, all three ethnic groups involved in the conflict were targets and perpetrators of massacres, hence mass killings were not a measure specifically adopted by only one ethnic group. Consequently, when willingness to achieve territorial control is combined with exclusionary ideologies, groups are more likely to take drastic measures in order to establish homogeneity (Melander, 2007, 2009). For this reason, violence will be greater where several small pockets of local minorities hinder ethnic homogeneity in the territory controlled by the majority group.

Second, the physical presence of isolated and enclaved members of the opponent ethnic groups is perceived as a potential threat, thus motivating the resort to violence against them. Local minorities represent a resource for their own ethnic group even if they are physically separated from it, at least at the eye of the majoritarian group. In other words, local minorities are a direct threat since they can be easily mobilized by the enemy and used as fifth column for irregular warfare. Also in the context of conventional civil wars, factions devote resources to 'sweep the rear' by targeting supporters of their opponent, particularly if their presence is not negligible demographically (Balcells, 2010, 296). In line with Kalyvas (2006), the final outcome should be increasing selective violence. How are potential victims selected? During ethnic civil wars, ethnic identities are the most immediately available pre-war trait that groups may use to identify enemy's supporter. Consequently, this information allows the group to act against the supporters of its enemy selectively but on a collective scale. The intensity of the conflict is expected to rise as this collective violence is 'selective at the group level but indiscriminate at the individual level' (Hultman, 2014, 290). This argument also allows to reconcile Melander's and Kalyvas' theoretical arguments linking the intensity of violence to territorial control (either military or demographic) which apparently point to different conclusions: for the former, hegemonic control results in more violence as consequence of the ethnic security dilemma while for the latter, hegemonic control and availability of information imply more selective violence, which lead to less overall violence as it is less deadly that indiscriminate killings. The bridge between the these frameworks however becomes more apparent as one focus on the fact that Melander draws his conclusions referring to the context of ethnic conflict, where identities and membership are easier to ascertain.[1]

The above discussion suggests that geography affects not only strategic incentives but also attitudes toward risk and emotions. Both expectations imply that the presence of local minorities is associates with the same outcome, namely more intense violence. To summarize, majoritarian ethnic groups have incentives for attacking local minorities' areas to establish territorial homogeneity and remove opponents regardless of their hegemonic status. This motivation is more compelling when groups have exclusive identities and if group configurations have long-term implications for the share of future rents. The size of the local minority plays a role in this mechanism as larger the size results in more acute perception of threat. Violence is expected to be high because removing the threat entails large-scale attacks if the objective is to clean the area from the minority. Even surrender may not be a viable option for the enclaved population because of serious commitment problems. Notably, the theory outlined above points toward a relation between vulnerable settlements and one-sided violence since civilians are the target of ethnic cleansing. However, local minorities may be protected by an armed group or themselves be organized for defense. Consequently, I expect that the presence of vulnerability settlements increases not only the level of one-sided violence, but also the overall number of casualties. This discussion leads to the following hypothesis:[2]

H1. Larger population in vulnerable settlements increases the intensity of violence in municipalities.

An alternative explanation is that a minority group may voluntarily choose to position itself in a vulnerable location because of the group's attachment and the symbolic value of the specific territory. Violence would then be the result of preconditions that make minorities more willing to fight for their land rather than vulnerability. To begin with, it is unlikely that a significantly large number of settlements has symbolic value. Even assuming that some of the settlements have symbolic value for a group, the expected outcome would still be more violence since symbolic value of territories provides reason to fight. Another factor which could be a precondition for violence in vulnerable settlements is that when resources are scarce, not all locations can be defended by a militarily organized group. In this circumstance, known as the Colonel Blotto game, allocation of resources may result in inherently vulnerable locations. While it is not possible to account for this explanation with the available data, the vulnerability of settlements as posited in this paper is also based on geographic factors and would still hold regardless of whether resources are allocated or not to some settlements. If troops are deployed to protect villages that are isolated, the lack of direct communication lines and numerical inferiority makes deployment ineffective in reducing vulnerability. It is likely that resources would not be allocated in first place to these locations.

Empirical analysis

Case selection: Bosnian Conflict

The Bosnian conflict (1992–1995) is used as a quantitative case study to test the hypotheses. The case is valuable for three reasons. First, the case includes the main features of an ethnic security dilemma: anarchy following Yugoslavia disintegration and increasing uncertainty about others' intentions, especially after the outbreak of the conflict between Croats and Serbs in Croatia. In addition, the

Bosnian case is a clear example of how intermingled settlements make some locations more prone to severe violence because small, weak enclaves became particularly vulnerable to attacks by the opponents. Others have noted that the distribution of violence during the conflict was concentrated in specific areas characterized by the presence of strategic incentives to violence, one of which is ethnic settlement patterns (Melander, 2007). Second, the availability of micro-level population and ethnic group settlement data from immediately before the conflict from the 1991 census is a precious source for a quantitative study. Such data are important for establishing the effect of intermingling on violence because it is expected to be stronger at the local level than more aggregate levels (Van Evera, 1994, 8). While intermingling at a more aggregate level (such as the municipality) could be tempered through elites' negotiation, intermingling at the local level (such as settlements) is potentially more dangerous because 'elements of one or both groups [are left] insecurely at the mercy of the other' (Van Evera, 1994, 19). In addition, all three ethnic groups represented a substantial share of the population, meaning that no group was had an absolute majority at the national level. The largest groups, namely the Bosniaks, represented the 43% of the population (BNIS (Bosnian National Institue of Statistics), 1992). Thirty-four municipalities had an absolute Bosniak majority, 31 were Serb-held and 14 were majority Croat.[3] During the conflict, ethnoterritorial logics and the idea that each group had its own exclusive homeland became a main driver of violence. Bosniaks, Serbs and Croats aimed at un-mixing populations under their control, and ethnic cleansing became the crucial instrument to build such a "new ethnoterritorial order of space" (Toal & Dahlman, 2011, 5). Some municipalities, especially those inhabited by Serb majority and along the Serbian border, experienced particularly deadly violence. In terms of victims, Bosniaks suffered more human losses that both Serbs and Croats, losing more than 3% of the 1991 population. Serbs lost approximately 1.8% of their co-ethnics and Croats lost 1% (Toal & Dahlman, 2011). A more detailed analysis confirms that Serb areas were the most violent ones, followed by Bosniak and Croat municipalities thus implying that Serbs could have used more violence against the Bosniak and Croat minorities within their territories. Overall, however, ethnic groups resorted to both two-sided and one-sided violence so extensively that being under Bosniak, Serb or Croat majority did not reduce the vulnerability of isolated minorities.[4]

Data and method

I test the hypotheses using times-series-cross-sectional data for 105 Bosnian municipalities and each year of the 1992–1995 conflict.[5] The dependent variable is conflict severity measured using the log of casualties. This measure includes both civilian and military victims and is retrieved from the Research and Documentation Centre of Sarajevo (RDC) (Costalli, 2014). There are two reasons motivating the use of data on victims instead of conflict events. The first reason is theoretical. I argue that vulnerable settlements might motivate aggression with the aim of creating homogeneous areas. This objective does require extensive use of violence against the minority and potentially ethnic cleansing. The hypothesis on vulnerability can be more explicitly tested using data on casualties instead of using a dummy or a count for violent incidents within the municipality. The second reason is related to the quality of event data for the Bosnian conflict. Armed Conflict Location and Event Data ACLED for the Bosnian conflict use one main source of information and the data are incomplete (Raleigh, Linke, Hegre, & Karlsen, 2010). Spell out KOSVED's data on one-sided violence seems to underreport violence compared to RDC (Schneider & Bussmann, 2013), especially for violent municipalities such as Srebrenica, Sarajevo, Mostar, Bratunac and Foca. I geocoded KOSVED to compare it with cross-sectional data on civilian casualties from RDC and found underreporting.[6] A final concern with the RDC data is that they do not disaggregate victims by ethnic group, which is why it cannot be established whether violence is actually perpetrated against the vulnerable minority. Only the KOSVED data have some information on the ethnic groups involved in one-sided violence incidents. So I propose a visualization strategy to make the best use of the available information on violence disaggregated by ethnic group. A corollary of the paper is that a vulnerable ethnic group is more likely to be the target rather than the perpetrator of one-sided violence. I overlay each group's vulnerable settlements with one-sided violence events from KOSVED where the same group was victim (red circles) and then with events where the group was perpetrator (blue circles). Fig. 2 shows that there is more overlap between one-sided violence and vulnerable settlements when the target of the violence has the same ethnicity as the vulnerable minority. Conversely, the overlapping is lower when the vulnerable groups and the perpetrator of violence share ethnic identity.

In the estimation section, I proceed from simple estimations to more sophisticated ones. I begin testing the hypothesis of violence related to vulnerability estimating a Panel Corrected Standard Error model with clustered standard errors and correction for first order temporal autocorrelation. Yet when looking at dynamics of violence in Bosnia it is important to factor in the presence of UNPROFOR mission, which was deployed since the early stages of the conflict. By doing so, issues of endogeneity emerge since the decision to deploy peacekeepers may be endogenous to levels of violence. Since significant problems of endogeneity emerge when trying to assess the effect of peacekeeping interventions on levels of violence, the main models use a Conditional Mixed Process (CMP) estimation to account for the endogeneity between casualties and peacekeepers deployment.

Operationalizing ethnic vulnerability

Before the empirical section, I introduce the measurement of ethnic vulnerability and explain why it is necessary to create a different variable for ethnicity to test the hypothesis. I argued before that small pockets of population of different ethnic identity may be perceived as a threat also by majoritarian groups thus pushing the latter to resort to violence or coercive expulsion. It follows that not only control over territory but also homogeneity of the latter are extremely relevant for ethnic groups in conflict. The rationale for building a new variable is therefore that incentives for violence stem from the how ethnicity, geography, and group concentration interact to create vulnerable ethnic patterns at the local level. The distribution of minority enclaves, I argue, explains the intensity of violence since it measures the distribution of a perceived threat to territorial control. I use demographic data from the 1991 census to construct a measure of what I call vulnerable minorities (BNIS, 1992). The measure identifies the size of the population inhabiting small settlements in which they are an enclaved minority. Enclaved minorities are ethnically dominant in the immediate locale, namely the settlement, but a minority in the larger administrative unit they inhabit (Massey, Hodson, & Sekulic, 1999). Vulnerable minorities are locally concentrated in the settlements yet a different ethnic group dominates the larger unit. In addition to local concentration and dominance, the geographical isolation of the enclaved minority is important since the theoretical dynamics apply only if groups are isolated and detached from their ethnic brethren. Enclaves are a minority in the administrative unit but are also not adjacent to other areas beyond the unit inhabited by its own ethnic group.

In order to calculate the size of the vulnerable enclaved minority, settlements were defined as vulnerable based on the above criteria (local concentration, dominance and isolation). The 105 Bosnian municipalities with demographic data from 1991 census were divided into smaller settlements, thus further

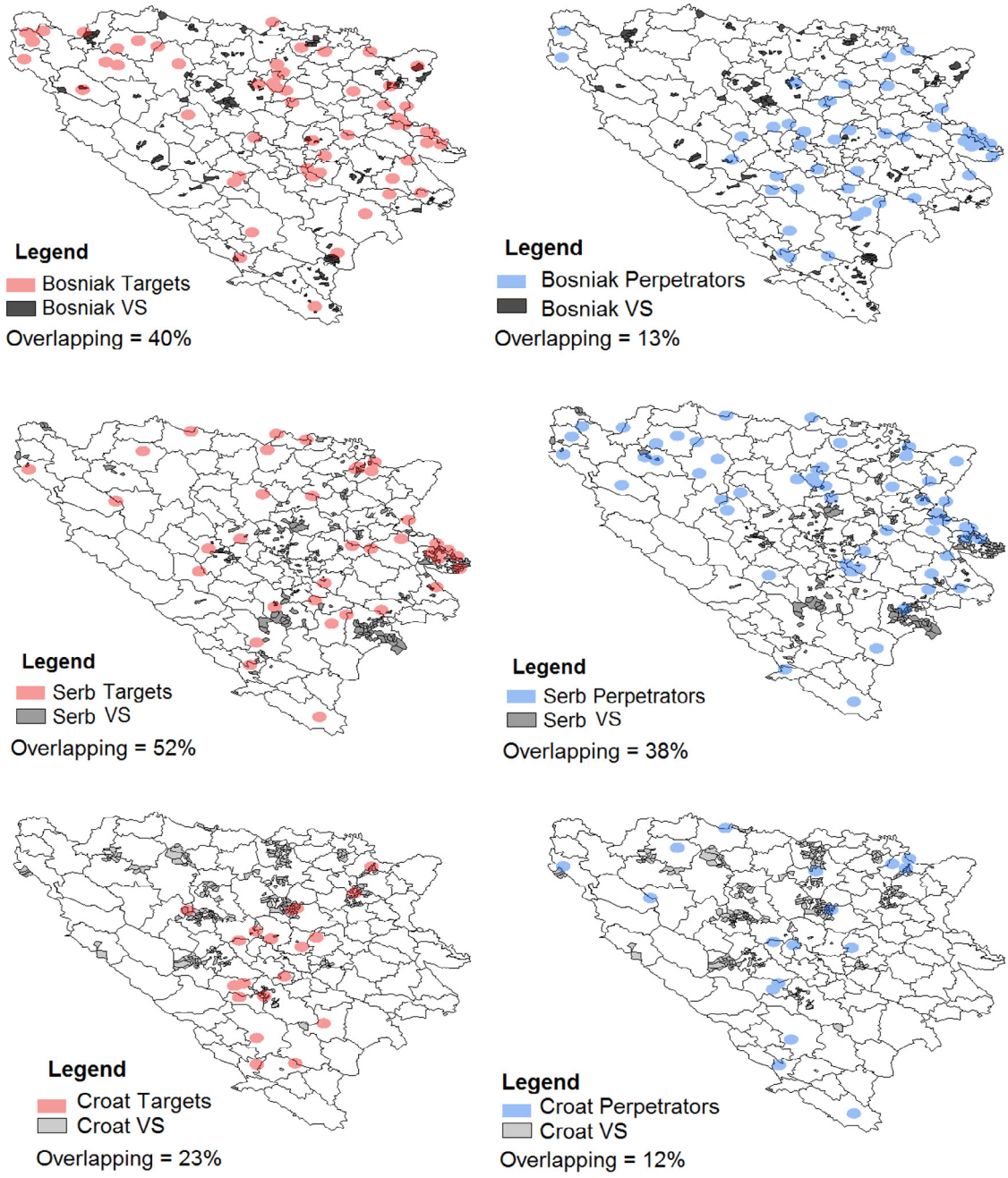

Fig. 2. Overlapping between vulnerable settlements of each ethnicity and conflict events with targets (left) and perpetrators (right) of the same ethnic group.

disaggregating the ethnic composition of municipalities by assigning the share of Bosniaks, Serbs and Croats inhabiting the settlements. The disaggregation is shown in Fig. 3.

The next step was to identify the ethnic majority of each municipality and count the number of settlements inhabited by an ethnic group that is a *majority (>50%) in a specific settlement but a minority at the municipality level.* The right-hand panel in Fig. 4 shows a map of vulnerable areas for the three ethnic groups in all municipalities. Different shades of gray are assigned based on the relative majority in each unit. The map on the left-hand side shows the overall ethnic majority in each municipality to facilitate the identification of the municipality majority when settlements are particularly confusing.

Third, vulnerable settlements are also identified based on the geographic isolation of the local minority. A group is isolated from its brethren if its settlement is not contiguous with a larger region dominated by the same ethnic group. For example, if a Croat settlement lies at the border of the municipality and is connected to a Croat municipality, it is not isolated and can be defended by the group. To illustrate, Fig. 5 shows the number of vulnerable settlements for Trebinje, the most southern Bosnian municipality. The municipality has a Serb majority, but some small settlements within the unit are ethnically dominated by Bosniaks and Croats. As shown in the map, 10 settlements (of a total of 179 settlements) are counted as vulnerable since they are geographically isolated and inhabited by an ethnic group that is a majority in the settlement but a minority within the municipality. The final step involved assigning the population size of the local minority to each settlement and then summing this value for the whole municipality.

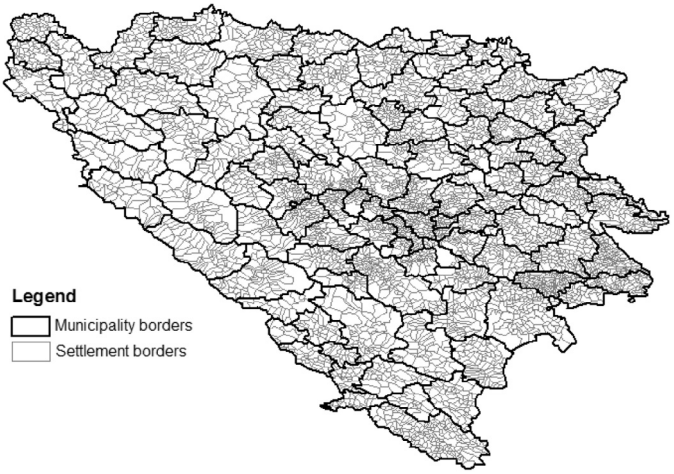

Fig. 3. Bosnia-Herzegovina by settlements.

A potential disadvantage of the measure of vulnerability is that it does not change over time. Settlements may no longer host a vulnerable minority if they have been ethnically cleansed, or if the population pre-emptively left the area. While I cannot track population changes and movements across or within municipalities because such data are not available, implications of these temporal dynamics likely make it more difficult to establish the relationship between vulnerability and violence. Suppose, for example, that a municipality is ethnically cleansed in 1992 meaning that vulnerability in the following years should be equal zero. A static measure is less likely to find a correlation in the analysis.

As a preliminary examination of the relation between vulnerability and violence, Fig. 6 below shows the settlements identified as vulnerable and the location of conflict. Data on conflict locations combine information from ACLED (Raleigh et al., 2010) and KOSVED (Schneider & Bussmann, 2013). ACLED include violent and non-violent conflict events while KOSVED focuses on one-sided violence. The mean distance of the events from the closest vulnerable settlements is only 4.1 km for ACLED, and 3.7 km for KOSVED. Seventy percent of ALCED events and 75% of KOSVED events are within 5 km of a vulnerable settlement. While I will not use ACLED and KOSVED for my empirical analyses (ACLED lacks information

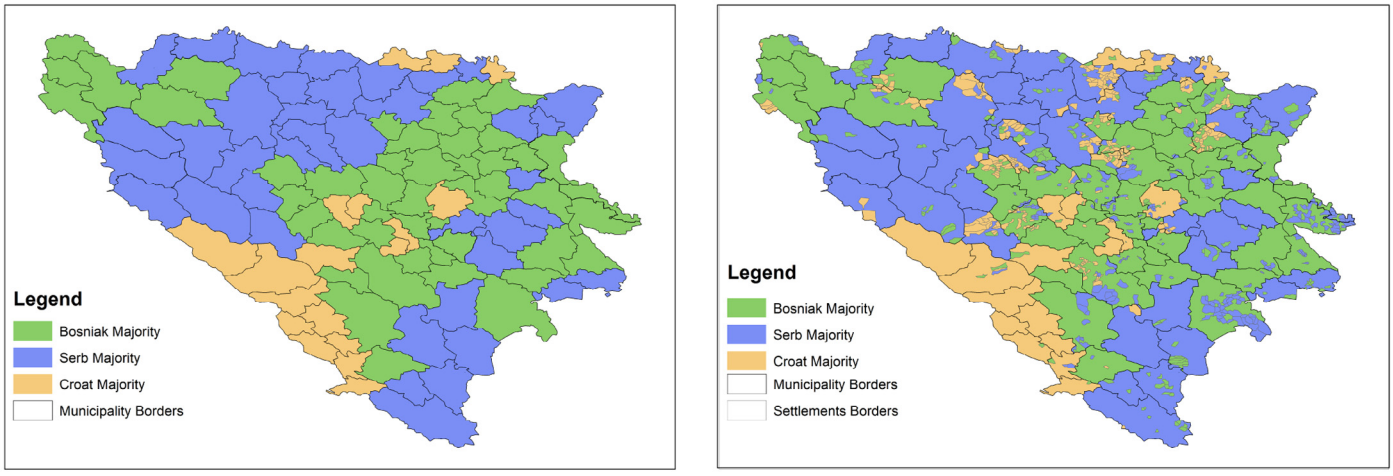

Fig. 4. Left panel: Municipalities by ethnic majority. Right panel: Settlements within municipalities.

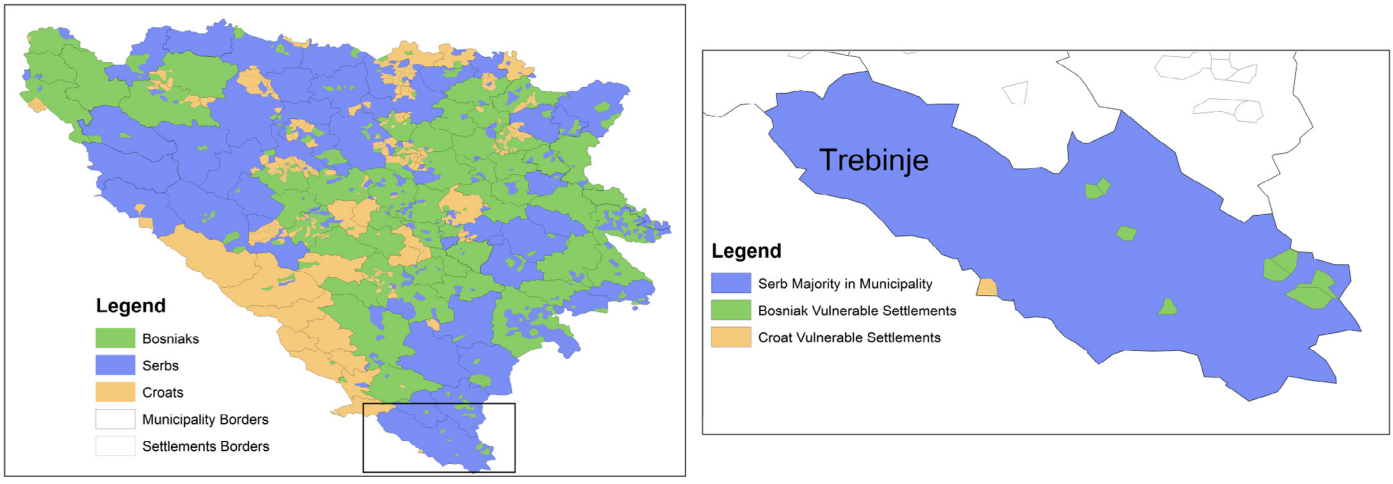

Fig. 5. Municipalities and settlements; detail of Trebinje municipality.

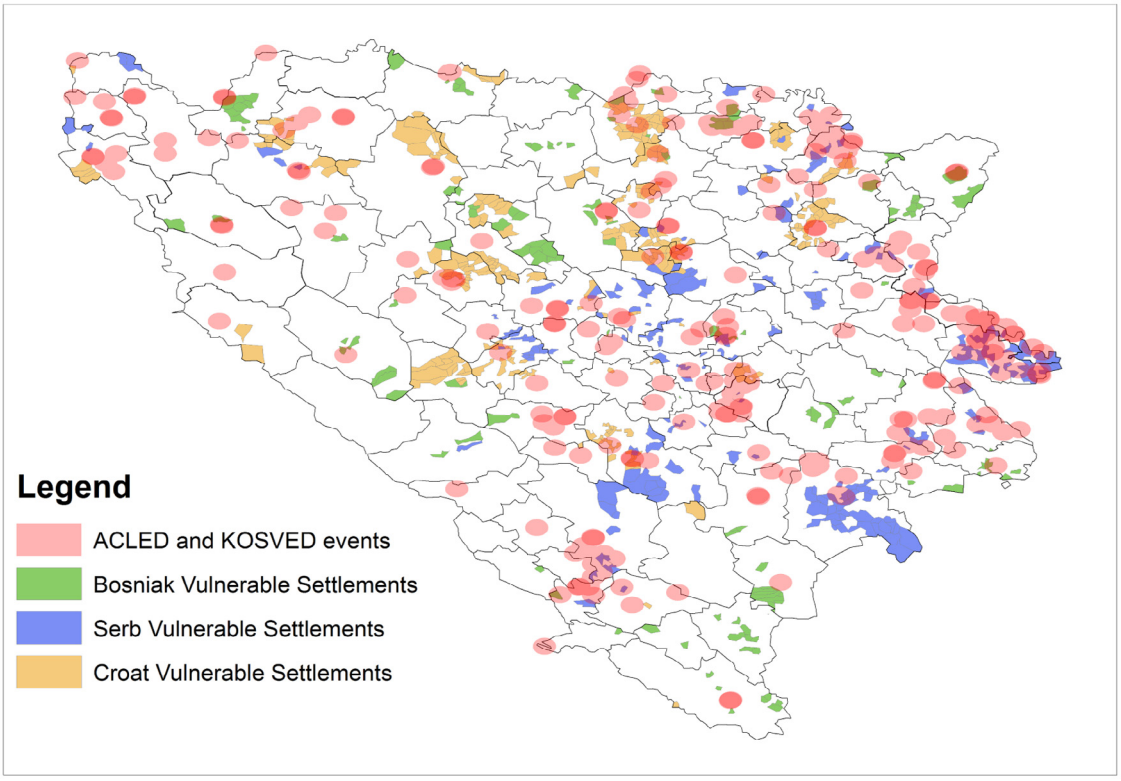

Fig. 6. Vulnerable settlements with ACLED and KOSVED data.

on the number of casualties while KOSVED underreports many killings compared to the data by the Research and Documentation Center of Sarajevo), this preliminary assessment supports the expectations.

To clarify what the vulnerability measure adds to previous research, I briefly compare it to two other operationalizations of ethnicity. The concepts of ethnic polarization and territorial contestation capture the idea that groups are large enough to compete with each other for the control a municipality. However, both measures neglect intermingling configurations at the local level. For example, if groups are large but one of them is very fragmented and enclaved within a municipality, it has a strategic disadvantage compared to the other group. In addition, it is more difficult for the fragmented group to protect its territory effectively. Alternatively, two groups may be unequal in size but one of them is territorially contiguous to a larger area dominated by its co-ethnics. In this scenario, the smallest group has the advantage of strategic depth and communication lines even if it is inferior in size within the municipality. Polarization does not capture this dynamic because it is based on the size and number of groups within a unit. Territorial contestation also ignores local variations because it is concerned with the distribution of groups across neighboring units rather than within-municipality variation. In contrast, vulnerable settlements provide a local measure of ethnic vulnerability which links the macro-conditions generating this vulnerability (i.e. majority status of another group within the municipality) with the macro-outcome (violence escalation within the municipality). Vulnerable settlements as defined in this paper provide a micro-level perspective: the local isolation of members of the group is the result of macro-conditions related to the ethnic distribution in the administrative unit. Thus, vulnerability has a direct relationship with both ethnic features of administrative units both at wider and local scale. In addition, vulnerable enclaves of local minorities encourage attacks from the enemy group hence they also directly relate to violence escalation. It follows that this macro configuration has an effect on violence by first producing local vulnerabilities and then opportunities for offensive actions. In other words, violence escalation is only an indirect result of ethnic configuration at the macro-level. To ensure that the measure of vulnerable settlements captures dynamics different from those in other measures of ethnicity, I present two models with measures of polarization and. I include scatterplots in the appendix (Fig. A1, Appendix) to show the correlation between my measure of ethnic vulnerability and polarization and contestation. The low correlations support the conclusion that the variables are capturing different aspects of ethnicity.

Independent variables

Vulnerable minority. This variable measures the (logged) size of the population inhabiting small settlements of municipality-level minorities that were isolated, detached from the rest of the group, and surrounded by opponents. I expect this variable to have a positive effect on violence. As alternative and simpler operationalization, I also use the count of settlements that are vulnerable according to my definition within each municipality in one of the main models.

Control variables

PK presence. The presence of peacekeepers is expected to have a decreasing effect on violence, so I use a dummy coded 1 if peacekeepers were present in the municipality in the previous year. The lag is used for two reasons. First, it is unknown when peacekeepers were deployed during a particular year, and since I assume that peacekeepers presence has an effect on violence, I look at their deployment in the previous time period. Second, I expect the effect to be gradual and eventually resulting in a change in violence in

the following period. The data come from the PKOLED dataset (Dorussen, 2007). The availability of disaggregated data on the deployment of troops for UN peacekeeping operations has allowed designing the research to include the local dimension of the interventions.

Territorial contestation. Municipalities to which more than one group assigns strategic importance are more contested and also more violent. According to Weidmann's definition, each group assess the strategic importance of a location based on the ethnic group share in the municipality and its surroundings (Weidmann, 2011). I include this measure in one of the model to show the robustness of the vulnerable minorities' variable.

Ethnic polarization. The intensity of violence is positively associated to ethnic polarization. This index accounts for the size and the share of each ethnic group, thus telling how distant the ethnic make-up is from bipolarity (where the index equals 1). Similar to territorial contestation, this variable is added in one of the main models presented.

Distance from international border. This variable measures the distance from the Serb and Croat border. It is used to account for the fact that intervention of bordering states in favor of one group is likely to cause more violence at the border (Costalli & Moro, 2012).

Contiguity with future Bosnian-Serb border. This dummy is used to indicate whether the municipality borders with what later became the Bosnian-Serb border. The rationale behind this inclusion is that violence is expected to be higher along the future border areas because of its contested nature. It is interesting to note that the future border overlaps significantly with the frontlines of the conflict. Thirty-seven of the 48 municipalities that were contiguous to the future border were also exactly on the frontlines. So the conflict was actually fought along the future border. Although not included in this paper, controlling for the distance between settlements and the frontlines produces nearly identical results to those presented.

Cultivated and constructed land. These variables are from the Bosnian National Institute of Statistics (BNIS, 1992) and are used here as proxies for open terrain calculated as percentage of cultivated land and the share of surface occupied by buildings. These two variables are expected to influence violence because open terrain offers fewer opportunities for armed groups to organize their operations, while urbanization is used to detect densely populated areas (Costalli, 2014).

Income and population. The level of income and population in a given areas are common control variables used in quantitative research on civil wars.[7] There are many findings supporting their inclusion in such studies (Collier & Hoeffler, 2004; Fearon & Laitin, 2003; Hegre & Raleigh, 2009). As the previous variables, also these two are from the Bosnian National Institute of Statistics (BNIS, 1992).

Spatial lag. Violence is contagious and tends to spread and cluster spatially so that municipalities are more likely to have higher death tolls if they are close to violent units. Spatial factors have been found to improve accuracy of violence prediction for the Bosnian conflict (Weidmann & Ward, 2010), which is why I include a first order spatial lag in the models.[8]

Summary statistics of all variables are presented in Table 1.

Estimation results

I begin with some preliminary simple models that show estimates of the correlation between the size of the vulnerable population (or enclaved minorities) and severity of conflict. Model 1 is the baseline and shows the individual effect of enclaved minorities on conflict. The coefficient retains significance and positive direction. The coefficient for peacekeepers is not significant, even when I add an interaction term in Model 2 to test the hypothesis on peacekeeping effectiveness in enclaved minorities. In Model 2, although the interaction between vulnerable areas and peacekeepers presence is not significant, vulnerable areas are still significantly and positively associated to more violence. Thus the models presented so far provide support for H1 about enclaved minorities. In models 3 and 4 in Table 2, enclaved minorities is included in the same model with ethnic polarization and territorial contestation; in both models, the coefficients for enclaved minorities' are positive and significantly associated with high levels of violence. This finding is consistent with expectations. In Model 3, territorial contestation is also significant, confirming that neighborhoods effects also matter (Weidmann, 2011; Weidmann & Ward, 2010). Other variables associated with higher violence are population and the spatial lag of victims, which means that units experience more killings when surrounding units are violent. Conversely, open terrain and income have negative coefficients. Model 4 reports a positive and significant estimate for ethnic polarization, but results for enclaved minorities are also consistent with the baseline Model 1. One difference is that distance from border is negative and significant in model 4, suggesting that the closer a unit is to the border, the more severe is conflict. As for the baseline and interaction models (1 and 2), the effect of peacekeepers presence in still statistically insignificant models 3 and 4.

Now I move to the Conditional Mixed Process (CMP) models which account for the endogeneity caused by correlated disturbances between intensity of conflict and presence of UN peacekeepers. The CMP model is very flexible in that it allows es-

Table 1
Summary statistics.

Variable	Observations	Mean	Standard deviation	Min	Max
Victims (log)	420	4.321	1.506	0	8.660
PK Presence	420	0.095	0.294	0	1
Vulnerable Minorities (log)	420	5.878	3.064	0	10.303
Vulnerable Settlements	420	6.419	8.157	0	38
Territorial Contestation	420	0.027	0.017	5.00e-06	0.062
Ethnic Polarization	420	0.745	0.235	0.036	0.983
Distance from Border	420	0.436	0.057	4.78e-16	0.495
Future Border	420	0.486	0.500	0	1
Cultivated Land	420	0.171	0.160	0	0.673
Constructed Land	420	0.005	0.006	0.0001	0.038
Income PC (log)	420	8.464	0.186	8.145	8.953
Population (log)	420	10.286	0.806	8.331	12.865
Victims (spatial lag)	420	4.405	1.242	0	7.902

Table 2
Main models.

Variables	Model 1 PCSE baseline	Model 2 PCSE with count	Model 3 PCSE with PK interaction	Model 4 PCSE with territorial contestation	Model 5 PCSE with polarization	Model 6 CMP with PK interaction	
	Victims (log)	Victims (log)	Victims (log)	Victims (log)	Victims (log)	Past PK presence	Victims (log)
PK Presence (time lag)	0.0373	0.012	0.103	–0.0404	–0.00774		–0.989**
	(0.0938)	(0.0833)	(0.272)	(0.104)	(0.0968)		(0.461)
Vulnerable Minorities (log)	0.0705***		0.072***	0.0717**	0.0460**	–0.0228	0.0645***
	(0.0200)		(0.021)	(0.0286)	(0.0194)	(0.0354)	(0.0189)
Vulnerable Minorities*PK			–0.01				0.00434
			(0.034)				(0.0507)
Vulnerable Settlements (count)		0.014***					
		(0.002)					
Territorial Contestation				18.11***			
				(3.239)			
Ethnic Polarization					1.620***		
					(0.314)		
Distance Border	–2.825	–2.663*	–2.844	–2.348	–5.233**	–2.537	–1.874*
	(1.753)	(1.408)	(1.797)	(1.814)	(2.369)	(2.482)	(0.958)
Future Border	0.0316	0.091	0.032	0.0603	–0.0190	0.0574	0.157
	(0.114)	(0.131)	(0.115)	(0.153)	(0.106)	(0.200)	(0.102)
Cultivated	–1.739***	–1.255***	–1.729***	–1.448***	–1.778***	–0.797	–1.519***
	(0.200)	(0.282)	(0.205)	(0.300)	(0.184)	(0.747)	(0.373)
Constructed	–9.151***	–18.799***	–9.840***	6.192	2.627	11.79	1.373
	(2.227)	(6.662)	(3.074)	(5.664)	(4.976)	(21.24)	(11.28)
Income PC (log)	–0.580***	–0.213	–0.578***	–0.838***	–0.859***	–0.0547	–0.685**
	(0.0931)	(0.165)	(0.102)	(0.154)	(0.133)	(0.569)	(0.296)
Population (log)	0.976***	1.015***	0.973***	1.010***	0.940***	0.583***	1.075***
	(0.0668)	(0.616)	(0.064)	(0.0763)	(0.0410)	(0.176)	(0.0873)
Victims (spatial lag)	0.744***	0.722***	0.744***	0.672***	0.691***	0.211**	0.570***
	(0.0381)	(0.044)	(0.038)	(0.0539)	(0.0480)	(0.103)	(0.0415)
Victims (time lag)						0.108***	0.0215
						(0.0411)	(0.0273)
Constant	0.0643**	–6.078***	–2.834*	–2.848**	–1.527	–6.800	–2.818
	(1.884)	(1.665)	(1.464)	(1.403)	(2.042)	(4.866)	(2.543)
Rho						0.795***	
Observations	420		420	420	420	420	

Clustered standard errors in parentheses.
*** p < 0.01, **p < 0.05, *p < 0.1.

timating seemingly unrelated regressions with a binary and a continuous variable in the outcome equations. In the CMP model, the dependent variable in one equation is again the log of victims, while the dependent variable in the binary equation is a dummy equal to 1 if peacekeepers where present in the municipality in the previous period. I report the results of two CMP models (models 5 and 6) in Table 2. The difference between the two models is that model 6 includes the interaction between peacekeepers and the size of local minorities. In model 5, the equation for peacekeeping as the outcome has only three significant coefficients, which are population, level of violence in the previous year, and level of violence in the neighboring units. This result is compatible with previous studies showing that peacekeepers are sent where conflicts are more severe (cite). With regard to killings, the coefficient for vulnerable minorities is positive and significant. The marginal effect of enclaved minorities is presented in the graph below (Fig. 7, left panel).

In the CMP models (5 and 6), peacekeepers' involvement is associated with decreases in violence in subsequent years. However, as Model 6 shows, this effect is not significant when intervention takes place in vulnerable areas. Fig. 7 (right panel) describes the expected values of casualties when peacekeepers are present or not as the size of the population in the vulnerable areas increases (and all other variables held at their means). Although the overall level of violence is lower when deployment took place in the previous year, this does not reduce the positive effect of enclaved minorities on violence. The two lines are almost parallel, suggesting that peacekeepers do not reduce incentives for violence in municipalities where the risk of violence is high.

Robustness tests

A series of robustness tests assess an alternative approach to deal with endogeneity in peacekeeping, alternative operationalization of vulnerable settlements, civilian casualties as the dependent variable and conditional effects for municipalities with absolute majorities are presented in Table 3. A second strategy adopted because of endogeneity concerns is to re-estimate models after having performed matching. While not resolving the issue completely, matching can be used to alleviate it along with reducing model dependence and sensitivity to specifications and functional forms. I perform matching using the Coarsened Exact Matching (CEM) proposed by Iacus, King, and Porro (2012). The aim of matching is to create a new sample where treated observations are matched with non-treated observations that are similar on the basis of user-defined covariates. In order to get a sample appropriately matched on panels instead of observations (Nielsen & Sheffield, 2009), I perform the matching on the cross-section version of the data and select enclaved minorities and victims as covariates for matching. Using the sum or the mean value for deaths across the entire time period would cause post-treatment bias (King & Zeng, 2007, 201). Since I need to compare violence before and after the treatment, I use levels of violence recorded in 1992 because peacekeepers presence is expected to have an effect on violence trends only in subsequent time periods. Re-estimating the panel models with weights assigned to each observation after matching (with excludes 11 municipalities), results do not substantially change across the three models. Enclaved

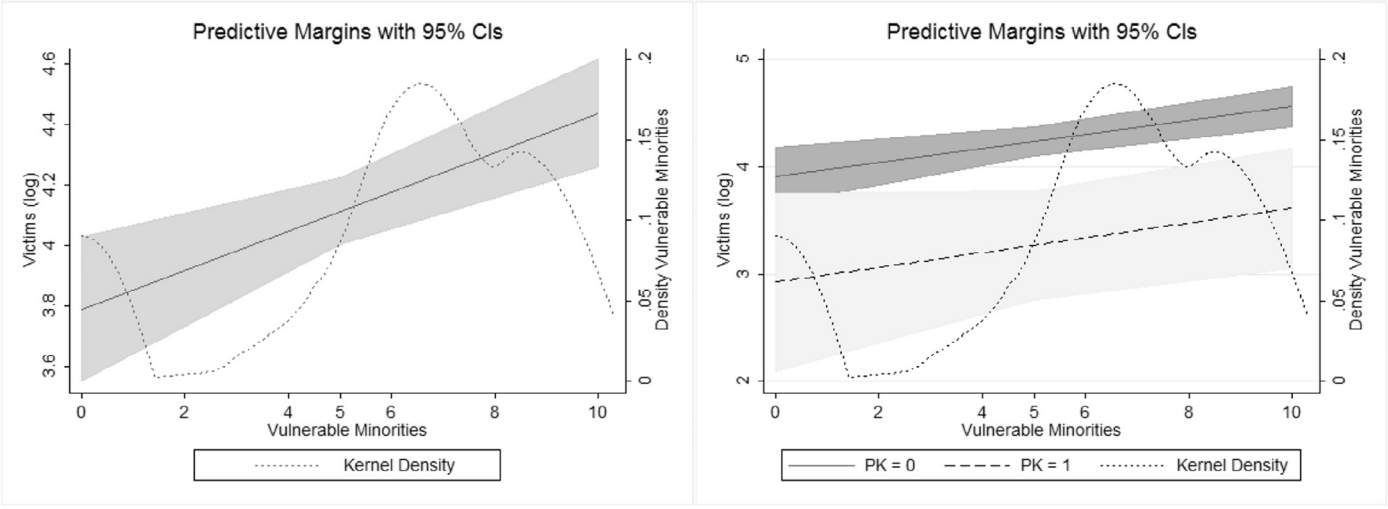

Fig. 7. Marginal effects of vulnerable minorities.

minorities are positively correlated with higher violence (Model 7 and Model 8) but again no significant result is reported for variables measuring peacekeeping effectiveness.

I have already shown that the results in PCSE model are significant even when a count of the vulnerable settlements is used (Model 2). Here I show that also the CMP model results are not affected by this change. In Model 9, I re-estimate the CMP model using the count of the number of vulnerable settlements rather than the size of the population within each settlement. The results are still consistent for both equations, with vulnerable settlements having a direct effect on violence, and peacekeepers being able to reduce violence in time periods subsequent to deployment (although only at 0.1 significance level), except when conditional on vulnerable areas. The argument that local minorities located in enclaves are more vulnerable to attacks by the opponent group suggests that civilians may be particularly at risk. I include a robustness test with civilian casualties as dependent variable, although it must be noted that the data are cross-sectional since yearly data are not available. The data is from the Research and Documentation Center of Sarajevo (Costalli, 2014). Model 10 supports the intuition that civilian killings are higher in enclaved settlements, probably because these settlements are more difficult to protect and easier to attack and cleanse.[9] Note that the coefficient for peacekeepers' presence is also positive, but since the analysis lack temporal information, it is difficult to infer whether the deployment followed or anticipated (and did not prevent) civilian victimization.

The last model presented (Model 11) is based on the observation that vulnerability may be conditional on the presence of an absolute majority ethnic group at the municipality level. Using the argument on territorial control proposed by Kalyvas (2006), one could argue an ethnic group with an absolute majority has fewer

Table 3
Robustness tests.

Variables	Model 7 PCSE after matching	Model 8 PCSE after matching	Model 9 CMP with count		Model 10 cross-sectional with civilians	Model 11 CMP with majority interaction	
	Victims (log)	Victims (log)	Past PK presence	Victims (log)	Civilian victims (log)	Past PK presence	Victims (log)
PK Presence (time lag)		0.0907		–0.774**	0.619**		–1.164***
		(0.278)		(0.358)	(0.298)		(0.447)
Vulnerable Minorities (log)	0.0804***	0.0816***			0.138**	–0.0241	0.00413
	(0.0270)	(0.0277)			(0.0575)	(0.0346)	(0.0331)
Vulnerable Minorities*PK	0.00957	–0.0120					0.0240
	(0.100)	(0.0364)					(0.0503)
Majority Group							–0.573**
							(0.250)
Majority*Vulnerable Minorities							0.0764**
							(0.0347)
Vulnerable Settlements (count)			–0.00693	0.0241***			
			(0.017)	(0.009)			
Vulnerable Settlements*PK				–0.00590			
				(0.017)			
Rho			0.666***			0.836***	
Observations	376	376	420		105	420	

Standard errors in parentheses.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
The set of control variables are not shown in the table. They are: distance from border, future border, cultivated land, constructed land, income per capita, population, spatial lag of victims and time lag of victims.

reasons to use violence because there is no immediate threat to its superiority. But in areas where an absolute majority faces concentrated ethnic minorities, the dominant group may perceive a threat as these minorities are potential opponents or may be used for guerrilla tactics. Here, killings will be higher. The results of Model 10 provide support for this claim, showing that the coefficient for the interaction of enclaved minorities and absolute ethnic majority is positive and significant. In addition, if we look at the constituent terms ethnic majority's effect on violence is negative while enclaved Cminorities no longer have an effect. This result would require further investigation but still suggests the possibility that isolated minorities' settlements which does not seem to be vulnerable *per se* and thus more prone to violence, rather only in relation to the perception of threat they pose on the majority group.

Additional robustness test performed (and available on request), include measuring vulnerability with a log-transformed count of vulnerable settlements and using the ratio between this count and the total number of settlements in a given municipality. Neither of these transformations affected the results.

Conclusions

This paper contributes to the study of dynamics of ethnic violence showing that specific geographic configuration of demographic settlements and the distribution of ethnic groups in space may create incentives for conflict escalation. Enclaves of minorities within the area of control of one group are both an easy target and potential threat since the local population is susceptible of being recruited for guerrilla. In order to simultaneously remove the threat and establish solid control, the dominant group's military has no reason to refrain from attacking these settlements, and their isolated position as exclaves for the enemy group hinders an effective defense for logistical reasons. These incentives for violence provided by the geographical distribution of ethnic groups in intermingled environments are supported in all models presented, including robustness tests. The measure of vulnerability presented here draws on concepts robustly and consistently relevant in explaining ethnic violence, such as concentration and majority status. Yet in addition, the concept of enclaved minorities in vulnerable settlements examines the importance of settlement patterns at a lower level of aggregation, where dynamics of fear and competition are expected to be more salient. The main contribution of this paper is thus to demonstrate mechanisms connecting micro and macro-level dynamics that remain cannot be shown with ethnic configurations at the level of larger administrative units. The empirical results show that pockets of sizeable minorities within the territory of a different ethnic majority indeed increase the level of violence.

Two limitations merit discussion. In this paper, vulnerability within municipality has been argued to stem from incentives for first-strikes and civilian victimization. The availability of data about ethnic changes within municipalities during the conflict would have allowed testing whether outbursts of violence in municipalities with vulnerable settlements were followed by lower intensity, thus suggesting a dynamic consistent with the expectations of a security dilemma. Once the perceived threat is removed, violence is unnecessary. Unfortunately, yearly data on civilian victims are not available for the Bosnian conflict, yet such information is crucial if the humanitarian aim of a peacekeeping mission is to be assessed. Another result that could benefit from further research is the effect of vulnerable settlements on violence when a group is an absolute majority in the unit. Preliminary results are in line with the dynamics of violence proposed by Kalyvas and adapted to ethnic conflicts, with majority status having an indirect effect on violence.

Finally, considering the focus on the Bosnian conflict in the empirical analysis, it is important to discuss possible generalizations. The vulnerable enclaves identified in this analysis are not unique to Bosnian human geography and are likely to exist in many countries where groups are not completely segregated. The mechanism relating geographic vulnerability and ethnic dominance to more violence during ethnic conflicts have a more general nature. Examples of countries with similar settlement patterns are Croatia, Kosovo, or Georgia. Considering the case of conflict in Croatia between Croats and Serbs in 1991 in more detail, most violent episodes took place in regions where intermingling had given rise to vulnerable Serb enclaves, similarly to the patterns in Bosnia. Although the level of intermingling varied within Croatia, some of the violent episodes in the Croatian war took place in areas where the pockets of Serb ethnic majorities were separated from the wide region of Krajina in the south-east of Croatia, which was a Serb stronghold. This was particularly true for the north-eastern part of the country, where Serb enclaves were dispersed but inhabited by absolute majority. This is consistent with the findings of this paper and supports the intuition that the rationale behind hypotheses is more generally applicable. The Balkan and Caucasus regions more generally are characterized by high ethnic diversity, and for this reason have been used as examples of situations where the ethnic security dilemma caused escalation of violence after the collapse of the central authority (Dulić & Kostić, 2010; Kaufman, 1996; Posen, 1993; Roe, 2004). When more than one ethnic group live in the same country, they rarely live completely separated from each other, and this paper demonstrates how interminglement can contribute to violence.

The findings of this paper have important policy implications for external interventions in ethnically divided countries at war. Once the proneness to risk of specific settlements patterns emerging from high intermingling is established, third parties intervention could adjust deployment strategies accordingly in the objective of the mandate. By relying on data at a significant level of disaggregation, it is possible to identify specific areas at risk of violence ex ante and intervene locally. With regard to the case under analysis, the UN did not succeed in identifying violence-prone locations, basing decision for deployment according to levels of violence in the previous year and in the surrounding areas along with other factors such as population and areas that were part of the future negotiated border of the post-conflict years. Since the vulnerability of areas within municipalities was not a factor accounted for in the decision-making process, it is not surprising that the presence of UN troops in municipalities with vulnerable settlements makes no difference on subsequent levels of violence. As the quantitative case study of the Bosnian conflict and UNPROFOR shows, peacekeepers were able to reduce violence in areas where they were deployed, but this effect was absent when conditioned on vulnerable settlements. If the intuition that vulnerability of settlements pose more risk for civilians than for armed groups is correct, the finding can be interpreted in line with other studies on peacekeeping effectiveness arguing that reduction of violence, especially against civilians, requires partiality, strong mandates, and adequate forces on the ground. Indeed the success of some more recent UN missions (for example in Sierra Leone and Mozambique) are empirical evidences that protection of civilians in the midst of violence is possible when the scope of the mandate is clear and not too ambitious and the mission has enough capabilities to halt widespread violence. The UNPROFOR mission, unfortunately, lacked all of these.

Conflict of interest

The author reports no financial or conflicts of interest.

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Appendix

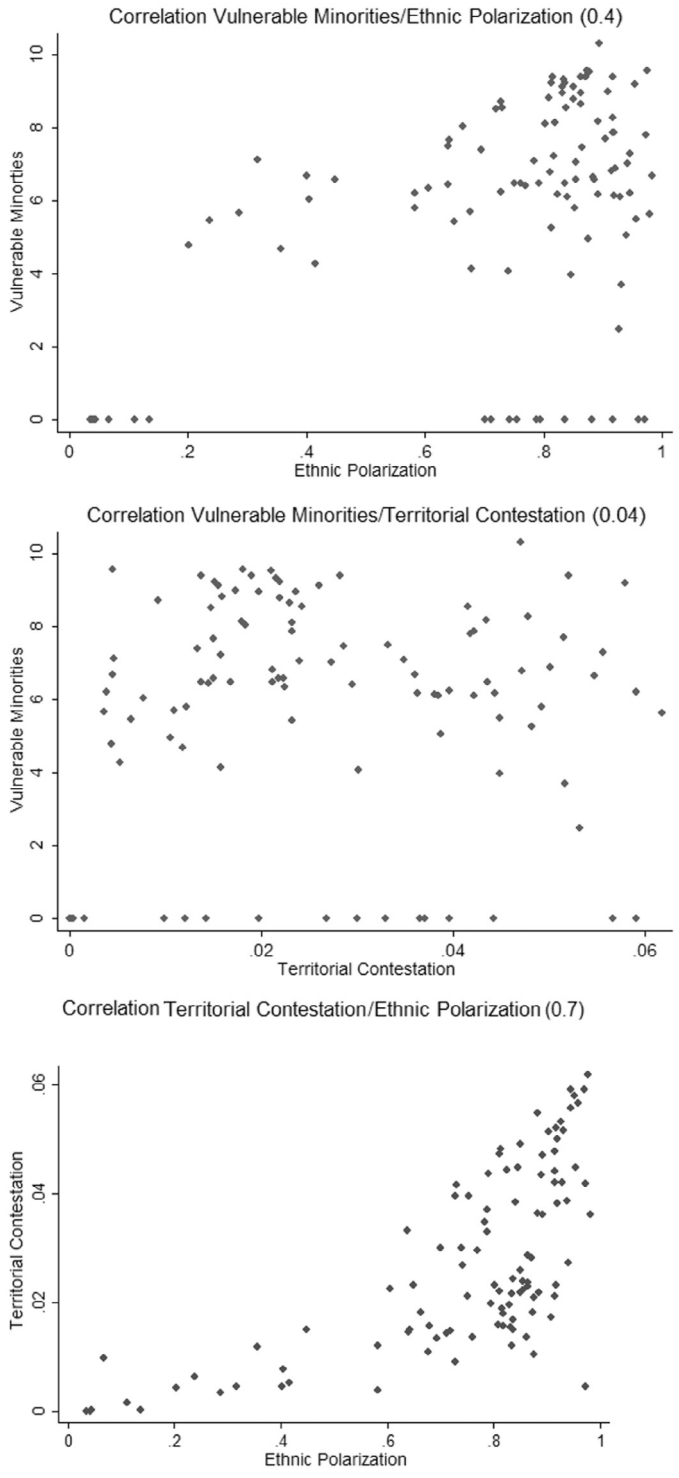

Fig. A1. Correlation among vulnerable minorities, ethnic polarization and territorial contestation.

Endnotes

[1]The theoretical argument presented so far elaborates on groups' motivations to escalate violence against local minoritarian enclaves. These motivations are rooted in immediate perceptions of obstacle to territorial dominance and threats that the hegemonic group finds desirable to eliminate. By doing so, the group attempts to reduce uncertainty and obtain a strategic advantage in the ongoing conflict. It is interesting that a rationalist account has similar empirical implications as accounts based on social psychology's notion of risk-attitude. According to social psychologists, strong groups are more risk-prone and willing to escalate violence even if the threat they perceive is not physical or existential, but rather more symbolic and ideological. While physical threats produce fear and risk-aversive behavior, threats that are more symbolic (such as a threat to territorial sovereignty as it is posed by local minorities) produce anger. In turn, anger is typically associated with group strength (large size) and, contrary to fear, encourages confrontational behavior and consequently increases the level of violence perpetrated by the strong group against the local minority (Mackie, Devos, & Smith, 2000; Petersen, 2011). Local minorities living in enclaves are then expected to be more fearful and consequently value self-preservation more than all else. So they will likely escape the threat. The hegemonic group, on the other hand, is more risk-acceptant and will use violence against local minorities even if the latter do not threaten the physical security of the group.

[2]I also test the hypothesis linking ethnic vulnerability to violence using the count of the vulnerable pockets within each municipality (thus regardless of the number of inhabitants) to show that the result holds even using a less sophisticated measure of vulnerability.

[3]Twenty-six municipalities had no absolute ethnic majority.

[4]This expectation was confirmed in a model (not shown) where vulnerable minorities were interacted with a variable distinguishing the three different majorities. Serb units are more violent than Bosniak and Croat ones (which are indistinguishable from each other), but the majority status of a particular ethnic group does not interact with the vulnerability of enclaved minority groups.

[5]Following (Costalli, 2014), I aggregate Sarajevo into a single municipality.

[6]To ensure that the choice of RDC data does not affect the results, I also ran a model using civilian casualties reported by KOSVED as the dependent variable. The model (not reported here) shows that vulnerable minorities are robustly associated with more civilian casualties.

[7]Data to account for population movements during the conflict are not available.

[8]A distance-based spatial lag does not significantly change the results.

[9]I do not show the CMP model because the rho coefficient is not even close to significance, meaning that the process of deployment and civilian casualties are not correlated.

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