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Explaining election violence: A meta-analysis

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Richard W Frank
School of Politics and International Relations, Australian National University, Australia

Abstract
The literature on election violence lacks a consistent set of core predictors for why certain elections are violent and others are not. Between 2010 and 2022, 97 scholars published 65 peer-reviewed journal articles on this topic using quantitative research designs involving over 440 predictor variables. As a distinct research area, therefore, the study of election violence has reached a size and maturity where it is useful to take stock. Through a meta-analysis of 581 models, this article makes three key contributions. First, it finds that 13 of 44 variables consistently predict election violence, which highlights both the field's fragmentation and most promising avenues for future research. Second, it reveals that election-specific factors like fraud and competitiveness are more reliable predictors than commonly studied structural conditions like democracy or economic development. Third, it shows that many predictors operate differently at national and subnational levels, with only population size and domestic conflict significant at both levels. This article's findings suggest a greater focus is needed on election-specific triggers, explicit discussions about perpetrators and targets, and measurement issues.

Keywords
Election violence, elections, meta-analysis, political violence

Introduction

The literature on election violence lacks a consistent set of core predictors for why certain elections are violent and others are not. This growing election violence literature matters because roughly one in five national elections witness some form of election-related violence (Straus and Taylor, 2012).[1] As an enduring threat to election integrity and political stability, violence surrounding elections can indicate democratic backsliding (Obiagu, 2021) and can precipitate other forms of political violence up to, and including, civil war (Cederman et al., 2012). While there has been a profusion of recent election-violence related research, the field is nevertheless fragmented, and it is far from coalescing around a coherent and consistent set of factors that increase the chance of violence. More generally, it is possible to theoretically group factors that may precipitate electoral violence into four main explanatory clusters – slower moving structural factors, political conflict dynamics, election specific triggers, and individual target characteristics. Slower-moving structural factors include a country's socio-economic and political characteristics. A political conflict approach (taken by some political violence scholars) looks at whether current or recent conflicts make violence during elections more likely. Election-specific triggers include events and strategic decisions that can precipitate violence during the election cycle. Finally, at the individual level, citizen and/or candidate characteristics can shape their likelihood of becoming victims of election violence.

The challenge is trying to sort through the profusion of possibilities and narrow down the set of factors that are most robustly associated with election violence in a process like that taken with other forms of political violence including international (Bremer, 1992) and civil conflict (Dixon, 2009). While several theoretically focused articles outline systematic frameworks for understanding election

Corresponding author:
richard.frank@anu.edu.au

violence (Harish and Toha, 2009; Höglund, 2009; Staniland, 2014), there is no readily available, comparable effort to systematically evaluate these mechanisms empirically. This matters because the existing evidence suggests that different mechanisms can work in different contexts, at different times, and at different levels of analysis. Partial readings of this literature, therefore, can lead to very different conclusions depending on which studies are read. This is not, of course, a problem unique to the election violence literature, and scholars have developed a variety of means to more systematically map literatures and the lessons that emerge from them, including systematic literature reviews and meta-analyses.[2] To date, however, an application of these systematic techniques to the election violence literature is yet to be conducted.

This article is, therefore, a step on the path of empirical synthesis. It makes a clear contribution to the election violence literature by taking a comprehensive summary of what factors have been tested using quantitative analysis and what these tests find. By conducting a meta-analysis of these studies' results, we can better understand what factors are consistently associated with an elevated risk of election violence. Put simply, the goal of the present study is to answer the following questions: (a) what predictors of election violence are the most frequently used and (b) are they consistent in their direction and significance?

This article describes the first meta-analysis of the correlates of election violence. It includes 65 articles published in English-language peer review journals from 2010 to 2022 by 97 scholars. It summarizes the effects of 179 national-level and 269 subnational predictors of election violence used in 204 national-level and 377 subnational models respectively. This article makes several clear contributions. It is the first systematic empirical assessment of what we know about election violence predictors. Rather than relying on selective readings of this literature, this article provides clear evidence of what factors consistently matter across studies. It finds that the field is fragmented with many variables tested but far fewer either consistently used or consistently predicting violence. This is striking and suggests a need to rethink and systematize the quantitative comparative study of election violence. This article also provides clear evidence that some commonly studied factors (like democracy and gross domestic product, GDP) do not consistently predict violence, while other factors (like population size, election fraud, and competition) do, which will help direct future research. It further demonstrates important differences between national and subnational analyses – only population and domestic conflict are consistent predictors at both levels. This suggests caution when generalizing findings across levels of analysis. Finally, it identifies understudied but promising predictors, especially election-specific factors, that show potential but need further analysis across contexts. In short, the article's main contribution is its rigorous empirical analysis of what we do and do not know about the correlates of election violence. This can help the literature advance toward more systematic knowledge accumulation.

The rest of this article proceeds as follows. First, it provides an overview of several important elements of the electoral violence literature. Second, it describes the data, methods, and samples used in this study. A discussion of meta-analysis techniques follows as does a discussion of dependent variables. A summary of the analysis and findings are next followed by a discussion and conclusion. To preview the main findings, 13 variables (nine national-level and four subnational) have statistically significant effects on the probability of election violence in at least three journal articles, with only two variables (violent domestic conflict and population size) significant across both national and subnational levels of analysis.

Background

Before turning to the meta-analysis, some relevant context about the existing election violence literature is necessary. This section highlights four background elements crucial to the subsequent meta-analysis: the history of violence surrounding elections and the associated literature, the recent history of collecting data to analyze this violence, and definitional and measurement challenges – including establishing motives for election violence and representative and complete measures of this violence.

An enduring challenge

Elections have long been a contentious, and often violent, affair – from ancient Rome's Late Republic (Lutz and Lutz, 2006) and 19th-century Britain (Blaxill et al., 2024; Wasserman and Jaggard, 2007) to the 1860 American and 1936 Spanish elections, both of which precipitated civil wars (Kalmoe, 2020; Tardio, 2013). While there have been decades of work on specific countries and their elections, the current wave of quantitatively focused research can be traced to Rapoport and Weinberg (2000: 17) who demonstrated a link between elections and violence existed across contexts 'in order to

justify pondering its significance'. This, in part, likely motivated Fischer's (2002) cross-sectional analysis of 2001's violent elections and Höglund's (2009) influential theoretical framework for understanding election violence in areas with civil conflict.[3] These trends coincided with several high-profile and highly contentious elections, including in the Democratic Republic of the Congo (2005), Kenya (2007), and Côte d'Ivoire (2010). Contentious elections leading to violence are not limited, of course, to Africa. Simultaneous terrorist attacks in Madrid four days before the 2004 Spanish election have been credited with the population's decision to vote out the incumbent government (Braithwaite and Braithwaite, 2018), and every national election in Bangladesh since 1991 has seen election-related violence (Daxecker et al., 2019; Raleigh et al., 2010). The research looking at these and other cases skews towards the same (often English-speaking) countries. For example, a 2022 Scopus and Web of Science search for another project turned up 84 case-study election violence articles with 35 (42%) focused on Kenya and 17 (20%) on Nigeria.[4] In sum, there is a developed qualitative literature on specific contentious elections, and a growing number of theoretical approaches to explaining these elections.

Data collection

Comparative national and subnational election violence research has also been bolstered by a growing number of comparative datasets on elections and violence including the National Elections Across Democracy and Autocracy (NELDA) dataset (Hyde and Marinov, 2012), the Armed Conflict Location and Event Data (ACLED) Project (Raleigh et al., 2010), and the Social Conflict in Africa Database (SCAD; Salehyan et al., 2012). The creation and popularity of contentious event datasets like ACLED and SCAD are, in part, an indication of a move in the civil conflict literature towards disaggregating outcomes spatially and temporally (Buhaug and Rød, 2006). The comparative elections data coincided with a renewed post-9/11 focus on the effects of international democratization efforts (Birch and Muchlinski, 2018; Pevehouse, 2002), the post-Cold War normalization of election monitoring (Kelley, 2012), and the increasing number of post-conflict peace agreements with election mandates (Brancati and Snyder, 2011). A final foundation of the election violence literature is the availability of new datasets specifically focused on election violence starting with Taylor et al.'s (2017) African Electoral Violence Dataset (AEVD) and including the Electoral Contention and Violence Dataset (ECAV, Daxecker et al., 2019), Countries at Risk of Election Violence (CREV, Birch and Muchlinski, 2018), and the Deadly Electoral Conflict Dataset (DECO, Fjelde and Höglund, 2022). The last decade has witnessed a profusion of both data sources that specifically focus on election violence and more general election or violence-focused datasets that can be combined to study election violence.

Definitional challenges

The third background element worth highlighting is a long and ongoing discussion about definitional challenges. What do we mean when we think and write about 'election violence'? Some like Birch and Muchlinski (2020: 219) say that any violence surrounding elections (or occurring during the electoral process) should be considered because it is almost impossible to measure perpetrators' intent and because violence can shape electoral dynamics regardless of its intended purpose. Others argue that explicit connections to the electoral process are necessary (Fjelde and Höglund, 2022). Staniland (2014) is perhaps the clearest example of this as he breaks election violence into seven categories depending on whether actors have intra-systemic or anti-systemic goals and whether these actors are state or opposition actors, non-state state allies, or unaligned. This article is aimed at examining the election violence literature, broadly defined; as a result, the literature selection process includes any article that focuses on the correlates of any form of violence against people or property either before, during, or after the election cycle.[5]

Measurement

The final important piece of background relates to measuring election violence. Like the civil war literature, scholars can focus either on measures of violence that are dichotomous, i.e. violence/no violence (Hafner-Burton et al., 2013), or interval – for example, the number of events (Daxecker, 2014), the number of deaths (Salehyan and Linebarger, 2015), or both (Fjelde and Höglund, 2022). Different factors may be at play explaining whether there is any violence versus high levels of violence (Sudduth and Gallop, 2023).[6] Additionally, many datasets rely on media reports, which may be biased in their coverage of urban versus rural areas or in countries that are not often reported on in English-language media (Von Borzyskowski and Wahman, 2021; Wang et al., 2016). This has led some scholars to focus less on

broader comparative studies built on an analysis of media reports and more on subnational studies using measurements from representative samples (Collignon and Rüdig, 2020) or election monitors (Wahman and Goldring, 2020).

In summary, an established and consistent history of violent elections has attracted both case-specific and comparative research. The recent spike in election violence research coincides with high-profile cases of election violence, new coverage by media outlets and election monitors, new data sources, and newly highlighted theoretical and practical considerations when deciding on definitions and measurement. These factors are important to consider when presented with the summary statistics and meta-analysis below.

Inclusion criteria

The previous section describes several important characteristics of existing approaches to studying and measuring election violence. This section outlines the literature inclusion criteria that result in the 65 articles included in this meta-analysis. The initial survey included articles in the Scopus and Web of Science databases using the keywords 'election violence' or 'elect* AND violence'. This led to 7,231 results. After removing duplicate and irrelevant entries as well as articles focused on the consequences of election violence, there were 205 articles that focus on election violence in either individual elections or countries, or cross-nationally using theoretical or empirical analysis.[7] These include 83 articles using qualitative single case or comparative case design and five articles using formal models. To aid this study's theoretical and empirical tractability and to focus on answering its motivating questions, the analysis is restricted in several ways. The following inclusion criteria are used.[8]

Only published or accepted articles are included, and books, book chapters, working papers, and policy reports are excluded. The focus is on published (or forthcoming) articles in academic journals in English in an effort at consistency with previous political science meta-analyses (Cancela and Geys, 2016; Smets and Van Ham, 2013) as well as feasibility constraints.[9] Articles concentrating on the causes or correlates of election violence, but not its consequences, are included. That said, if articles focus on the effectiveness of prevention efforts, they are included if they are clear about what effects these efforts have on election violence's causal mechanisms. Articles where at least one quantitatively analyzed outcome represents any form of violence against people or property are included. Subnational and national analyses differ quite substantially in their empirical designs, so the meta-analysis below presents their results separately. Articles that focus on citizens' fear of violence instead of actual use of violence (Rauschenbach and Paula, 2019) are excluded.

Additionally, the focus is on research using quantitative analysis. While there is historical election violence research dating from before 2010 (Hoppen, 1994; Linantud, 1998; Rapoport and Weinberg, 2000), a survey of the available published literature suggests that English-language quantitative election violence research started appearing in that year. Articles that include quantitative data but analyze them with descriptive statistics are excluded. For example, Goldsmith (2015) presents summary statistics about which election periods are more violent than others.

Finally, the set of quantitative tests is limited in several ways. Only models in the main results tables and robustness checks tables are included; models mentioned in footnotes or in appendices are excluded. Only models specifically mentioning violence are included. For example, protests that do not lead to the explicit use violence are not included. Consistent with previous research, the focus is on main effects, and interaction terms except for variables that are squared or cubed are excluded. Only the second stage results in multi-stage equations (Ruiz-Rufino and Birch, 2020; Sudduth and Gallop, 2023) are included. Finally, some results tables only include the variable of interests' results and not controls (Crost et al., 2020). For these models, only the main independent variables are coded.

Summary statistics

Given the previous section's scope conditions, this section includes summary statistics about the 65 articles included in this analysis.[10] These statistics describe the literature's important macro-level context, including dependent variable choices and their levels of analysis, pre/post-election timing, and the perpetrators and targets of election violence.

Dependent variables

There are several interesting aspects of scholars' dependent variable choices. The clearest is that there are 157 different operationalizations of 'election violence'.[11] As mentioned above, some scholars define election violence as events with substantive and temporal electoral connections (e.g. Fjelde and Höglund, 2022), while others argue that violence can affect the

Table 1. Geographic level of analysis of 65 election violence studies.

Level	*Studies # (%)*	*Tests # (%)*
Country-level election or year		
Country	31 (45%)	204 (35%)
Subnational units		
Municipality	10 (14%)	204 (35%)
Constituency	6 (9%)	36 (6%)
District	5 (7%)	46 (8%)
State	2 (3%)	5 (1%)
County	1 (1%)	8 (1%)
2nd-level admin unit	1 (1%)	9 (2%)
Region	1 (1%)	15 (3%)
Event	1 (1%)	4 (1%)
Ethnic group	1 (1%)	11 (2%)
Grid cell	1 (1%)	8 (1%)
Party base	1 (1%)	3 (0%)
Road	1 (1%)	5 (1%)
Individual-level units		
Political candidates	5 (7%)	16 (3%)
Individuals	2 (3%)	7 (1%)
Total	69	581

Values include three articles with models at different levels of analysis (Cederman et al., 2012; Daxecker and Prins, 2016; Reeder and Seeberg, 2018).

electoral process regardless of whether it was the aim or not (Birch and Muchlinski, 2020). Table 1 summarizes the different geographic levels of analysis of election violence. Like the civil conflict and electoral turnout literatures, studies often focus either on subnational or national-level results. Therefore, this article considers results at these two levels of analysis; 31 articles use cross-national studies, and 37 use subnational studies. The main election type in almost half (31 of 65) of articles was the national-level election for the executive or legislature, or both. Most of the subnationally focused articles use data at the municipality, district, or constituency level. Also notable is a clear lack of consensus data sources.[12] The 157 election violence variables described here come from 40 unique sources.[13]

Election sample

More than most existing political science meta-analyses (an overview of which appears in the next section), the sampled election violence literature includes a wide assortment of election samples. The 37 subnational studies include 30 countries (16 in Africa). Twenty-seven studies look at African cases exclusively either cross-nationally (12) or subnationally (15). The cross-national comparative samples often include African states, in part due to data availability (AVED and SCAD). Table 2 shows various sample frequencies. The common focus on a few specific country and regions trends and case narratives introduces possible country and data source bias.[14] At this point, given this literature, it is still possible to question (depending on the proposed causal mechanism) whether the correlates of violence in one country or region also apply in another.[15] While most qualitative election violence articles focus on African elections, Daxecker and Jung (2018) and others find Asian elections more likely to be violent than those in Africa, and (counter the conventional wisdom) find more violence surrounds parliamentary elections than presidential ones. Finally, the sample selection also includes several elections that occur in countries with ongoing civil conflicts (e.g. India, Colombia, and Nigeria).

Election timing and level

Another principal area of research decision-making is the timing of analysis across election period and election level. There is a clear differentiation between those studies that focus on pre- or post-election violence and those not differentiating between election periods. For example, a quarter of national-level articles used datasets like NELDA and the Varieties of Democracy (V-Dem) that do not differentiate when in the election cycle violence occurs. This despite research (Hafner-Burton et al., 2013) arguing different dynamics are at play before and after elections. Table 3 suggests that many studies do not differentiate between pre- and post-election violence with 14 national (45%) and 17 subnational (46%) studies using the overall election period. This period can differ across works with most studies not looking at specific election cycles but often six months before election (Von Borzyskowski and Kuhn, 2020) to three months after election (Daxecker, 2012).

Sources and targets

According to existing theoretical frameworks mentioned above (Höglund, 2009; Staniland, 2014), it is important to distinguish theoretically and empirically who are the sources and targets of violence. Sources of violence can include those in government (and their supporters), those trying to get office (and their supporters), and citizens. Figure 1 suggests that 14 (37%) national-level studies are unclear about who the perpetrators are and

Table 2. Empirical samples in 65 quantitative election violence studies.

Country/election-level studies	*# (%)*	*Subnational level*	*# (%)*
Africa	12 (39%)	Multiple African states	3 (8%)
Global	9 (29%)	India	3 (8%)
Global, non-democracies	2 (6%)	Mexico	3 (8%)
Global, w/ recent/current conflict	2 (6%)	Zambia	3 (8%)
Western Europe	1 (3%)	Burundi	2 (5%)
Global, democracies	1 (3%)	Colombia	2 (5%)
Global, experiencing terrorism	1 (3%)	Italy	2 (5%)
Non-OECD countries in 1990	1 (3%)	Nigeria	2 (5%)
Latin America & Caribbean	1 (3%)	United States	2 (5%)
Global, with election monitors	1 (3%)	United Kingdom	2 (5%)
		Zimbabwe	2 (5%)
		Afghanistan	1 (3%)
		Côte d'Ivoire	1 (3%)
		Indonesia	1 (3%)
		Israel	1 (3%)
		Kenya	1 (3%)
		Malawi	1 (3%)
		Maldives	1 (3%)
		Philippines	1 (3%)
		Russia	1 (3%)
		Sri Lanka	1 (3%)
		Turkey	1 (3%)
Total	31	Total	37

Table 3. Temporal level of analysis of 65 election violence studies.

Level	*Country-level*		*Subnational*	
	Studies	*Tests*	*Studies*	*Tests*
Election period	14 (45%)	89 (44%)	17 (46%)	145 (38%)
Month	9 (29%)	82 (40%)	10 (27%)	172 (46%)
Year	7 (23%)	31 (15%)	7 (19%)	39 (10%)
Week	1 (3%)	2 (1%)	2 (5%)	5 (1%)
Between election periods	0	0	1 (3%)	12 (3%)
Event	0	0	1 (3%)	4 (1%)
Subtotal	31	204	38	377
Period				
All years (even non-election years)	9 (25%)	83 (41%)	12 (29%)	136 (36%)
Entire election cycle	9 (25%)	37 (18%)	13 (32%)	89 (24%)
Pre-election	9 (25%)	46 (23%)	13 (32%)	115 (31%)
Election day	2 (6%)	9 (4%)	0	0
Post-election	7 (19%)	29 (14%)	3 (7%)	37 (10%)
Subtotal	36	204	41	377

There are 38 subnational observations because Alesina et al. (2019) included both month and year levels of analysis.

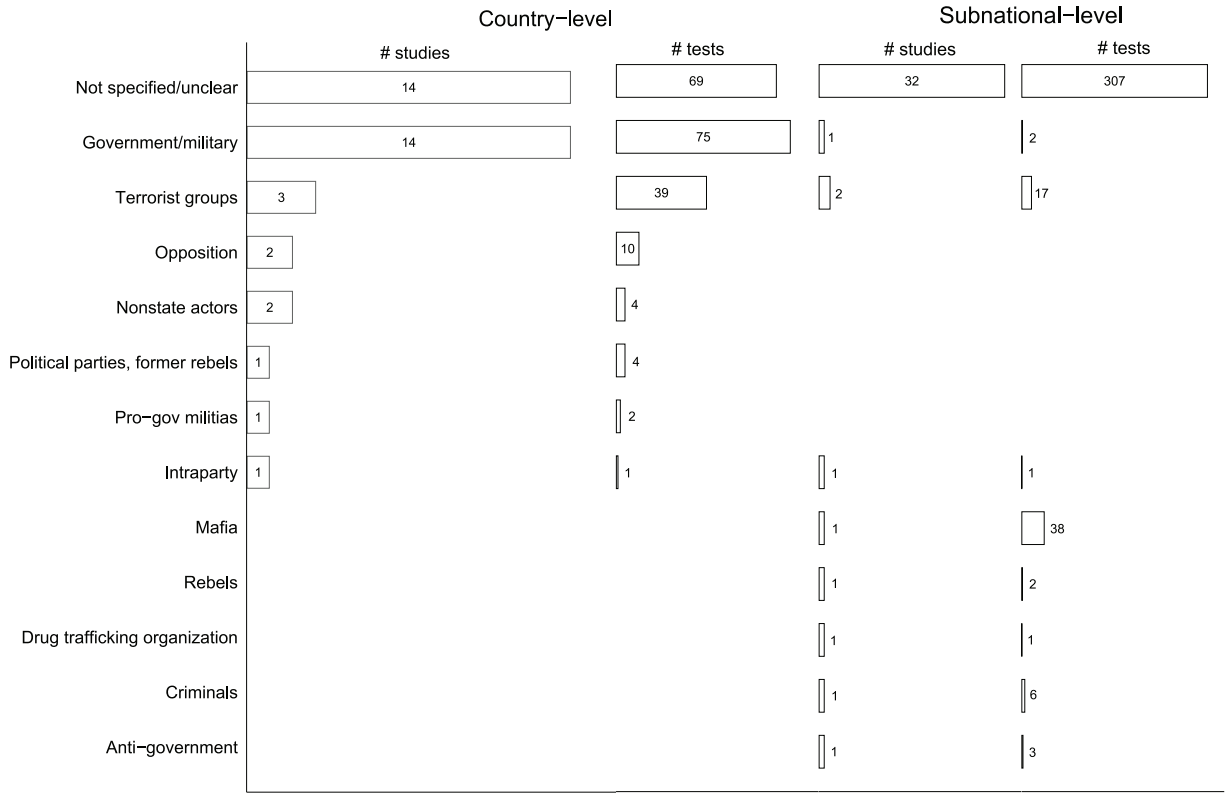

Figure 1. Perpetrators of election violence.

more than three-quarters (78%) of subnational articles do not specify their perpetrators. Those national-level variables that did specify their perpetrators have a clear focus on government or military actors (37%) and terrorist groups (6%). Those victimized by their violence were mentioned even less frequently (Figure 2). Thirty-one national-level and 26 subnational studies were unclear about who victims were. Of the subnational studies with clear targets, six look at political candidates, and two at current politicians.

To conclude, this section provides important summary information about the models and data included in the meta-analysis. It highlights where and when these articles appeared, what their dependent variables are, the level of analysis, timing, and the perpetrators and victims when explicitly mentioned. With this foundation, the next section describes this article's meta-analytic approach.

Meta-analytic approach

Meta-analysis is the 'analysis of analyses' (Imbeau et al., 2001: 3). Instead of a systematic review of the literature, this method, increasingly used in political science, examines empirical results using quantitative methods.[16] Given this article's focus on the myriad correlates of election violence included in the existing literature, I use a combined vote-counting and combined tests approach (Cancela and Geys, 2016; Geys, 2006; Imbeau et al., 2001; Smets and Van Ham, 2013). Vote counting involves a test of each hypothesis where a 'success' (1) is coded when a coefficient is statistically significant in the hypothesized direction outlined in a study; a 'failure' (0) is when it is not statistically significant; and an 'anomaly' (−1) is when it is significant in the opposite direction to that hypothesized. I follow previous research in using a two-tailed test with a $p < 0.05$ significance level (Smets and Van Ham, 2013).[17] If a control variable does not clearly have an expected direction and is significant, it is coded as a 'success' if the result is consistently in one direction and significant in at least one model. The results are then aggregated for each independent variable, and a success rate is calculated using Equation 1.[18]

$$\text{Success rate} = \left(\text{successes} / \text{number of tests}\right) * 100 \quad (1)$$

The sampled articles include a wide range of reported test frequencies from 1 (Herrick and Thomas, 2022) to 54 (Crost et al., 2020) models.[19] Therefore, looking only at test results and disregarding study and test frequency

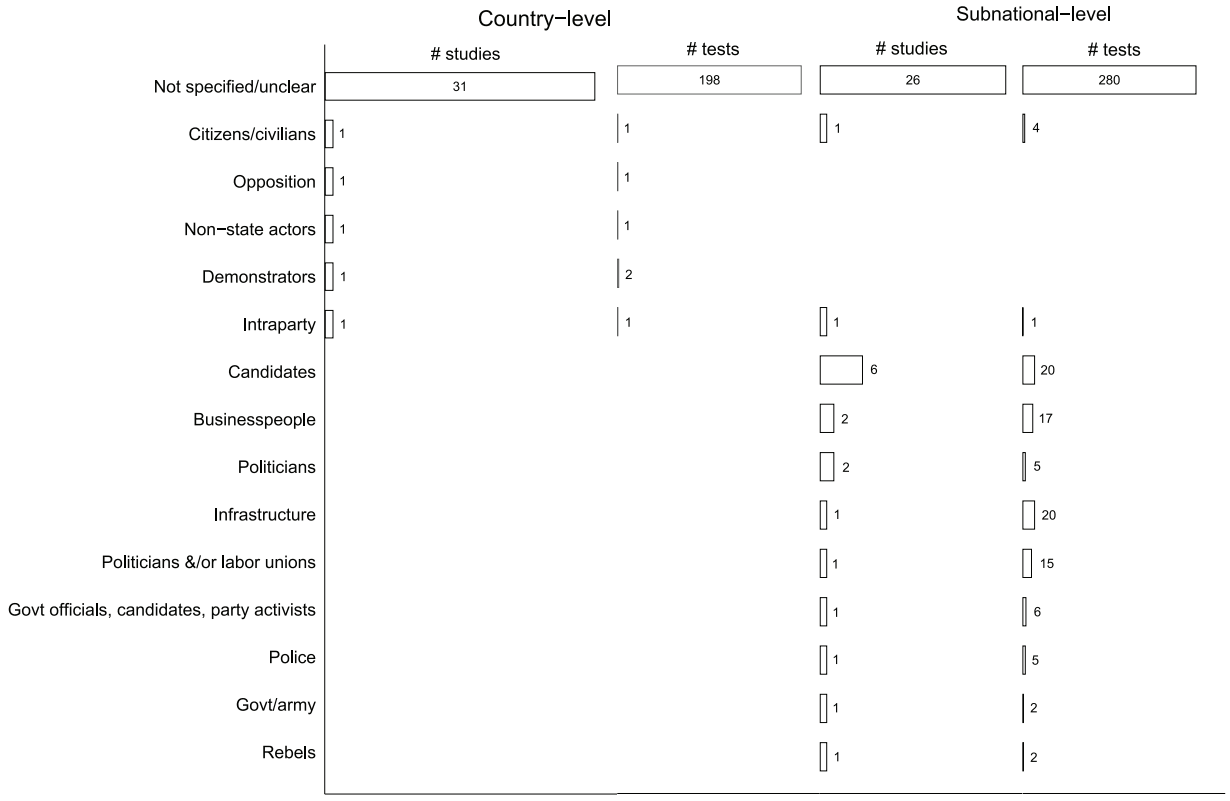

Figure 2. Victims/targets of election violence.

might bias results. The success rate is therefore weighted by the inverse of the number of tests. It is also important to note that the vote counting procedure does not look at coefficient size. Given the number of dependent variables and model specifications in this study's sample, it is more meaningful to look at the directionality and significance of results. Combining vote counting and combined tests enables the calculation of Equation 2's proxy for average effect size consistent with previous work (Cancela and Geys, 2016; Geys, 2006; Imbeau et al., 2001; Smets and Van Ham, 2013).

$$r_i = (\text{successes} - \text{anomalies}) / \text{number of tests} \quad (2)$$

With this calculation of r_i, we can calculate a variable's overall average effect size (r_{av}) using the formula in Equation 3.[20] The r_{av} has a range like a correlation coefficient, from −1 to 1, and it represents the standard deviation units that election violence changes by one standard deviation of the independent variable.

$$r_{av} = \sum r_i / \text{number of studies} \quad (3)$$

To demonstrate how these calculations work in practice, consider one of the most common predictors of election violence, *population* size. Figures 3 and 4 indicate that *population* is included in 166 models in 22 studies. Most studies expect a positive relationship between population size and election violence. Figure 4 suggests that in 97 models the relationship is indeed positive and significant, in 65 models the relationship is not significant, and in four models the relationship is the opposite to that hypothesized. The modal category at the test level is therefore a 'success'. At the study level, *population* is coded a success in 12 studies. In most models in these studies, *population* has a positive and significant effect. Ten studies are coded as failures, and there are no anomalous findings at the study level. At the test level, the success rate is 97/166 = 58.43; and the proxy for average effect size (r) is (97–4)/166 = 0.56. At the study level, the success rate is 12/22 = 55, and *population*'s average effect size for all studies, r_{av}, was $\sum_i^n r / 22 = 0.59$. A t-test of this effect indicates that it is significantly different from zero ($p < 0.05$, two-tailed test). Taking a step back, these calculations tell us that (a) *population* has a positive and statistically significant effect on election violence at both the test and study levels, and (b) the average effect size can be calculated and compared to other explanatory variables.

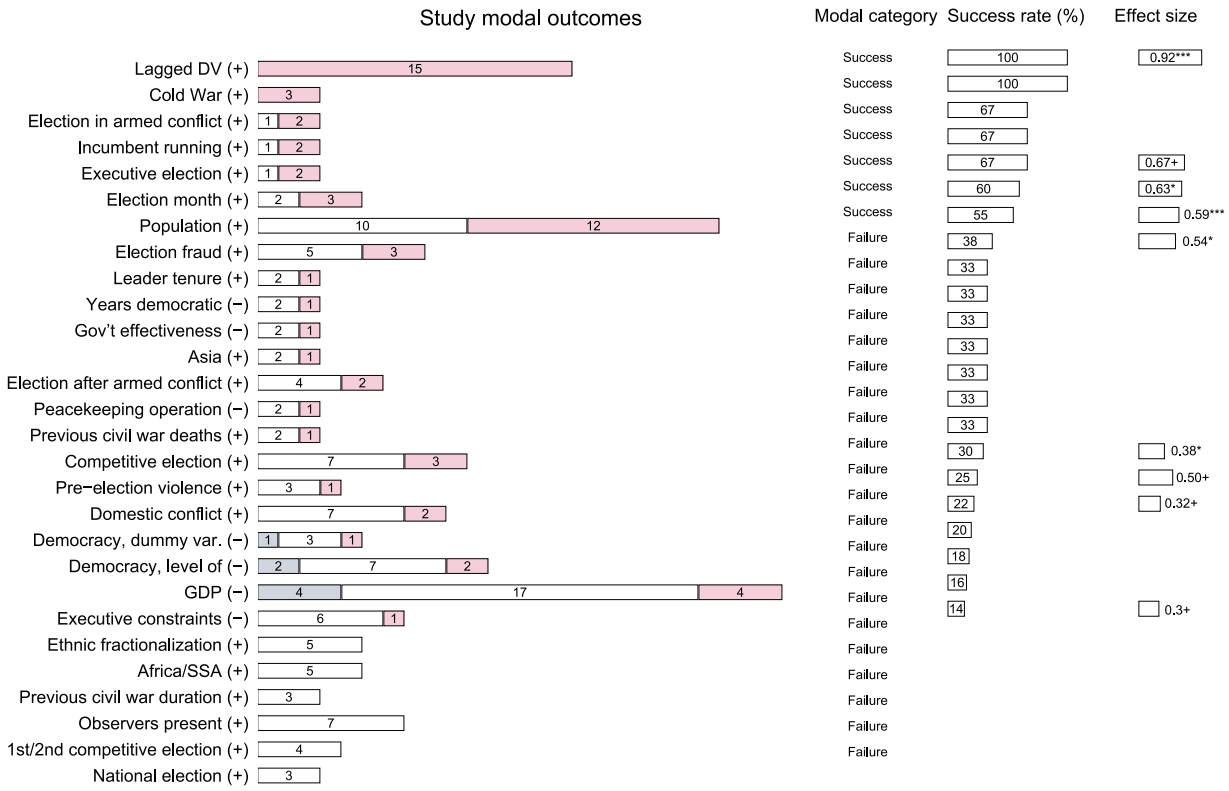

Figure 3. National-level correlates of election violence, study-level results.
T-tests of effect sizes are calculated with two-tailed significance levels.
$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; n.s. = not significant. (+) and (-) represent hypothesized relationship direction. Model outcomes for each variable are stacked bars representing when study modal outcomes are anomalies (blue), failures (white), or successes (red).

National-level results and analysis

Figures 3 to 6 summarize the results of 581 models in 65 articles, 31 of which use cross-national data and 37 use subnational data.[21] Figures 3 and 4 list the variables included in more than two studies using national election data analysis while Figures 5 and 6 look at the variables included in subnational studies. The discussion of national-level findings is organized into three main areas: structural factors, political violence, and election characteristics (Frank, 2021). For the subnational models, individual characteristics of politicians or survey respondents are also discussed.

Only six variables appear in more than one-quarter of the study sample. For national-level analyses these are *gross domestic product* (25 of 31 studies), *population* (22), a *lagged dependent variable* (15), *democracy* (11), a *competitive election* (10), and *domestic conflict* (9). Only one variable is in more than one-quarter of subnational models (subnational *population* size was included in 11 studies).

Structural factors

Most articles include structural factors that can affect the use of election violence including political institutions, economic characteristics, social, and geographic factors. These are important slow-moving factors that are often easier to measure than other types discussed below due to this slow rate of change. They are also less likely to be able to explain specific violent elections and to be subject to prevention efforts. Figures 5 and 6 include the results of 12 structural variables, six political institutions and six socio-economic or geographic factors.

Six political institutional variables appear in more than two studies. Only one (the *number of years democratic*) is a success at the test level and none at the study level. Additionally, only one political institutional factor has a significant average effect size: Polity's measure of *executive constraints* (Marshall and Jaggers, 2000). The more executive constraints there are, the less likely election violence is. The last four factors (*democracy*, a

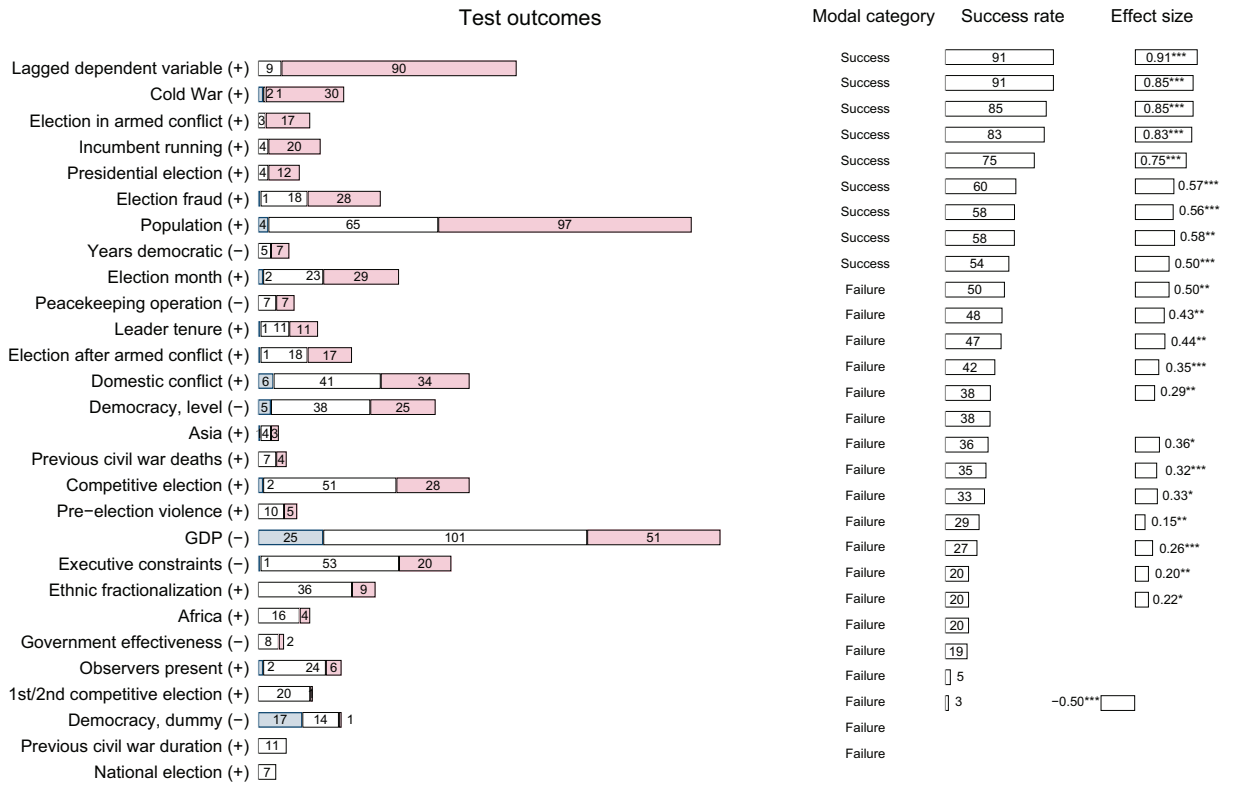

Figure 4. National-level correlates of election violence, test-level results.
T-tests of effect sizes are calculated with two-tailed significance levels.
$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; n.s. = not significant. (+) and (–) represent hypothesized relationship direction. Model outcomes for each variable are stacked bars representing when test modal outcomes are anomalies (blue), failures (white), or successes (red).

democracy dummy, *government effectiveness* and *leader tenure*) are coded as failures. Despite its popularity as a predictor, democracy does not have a statistically significant effect on election violence whether measured as the level of democracy, a dichotomous measure, or the number of years a country has been democratic.

Six socio-economic and geographic factors are included in enough studies to calculate average effect sizes. Two (*population* and a *Cold War dummy*) are coded as successes at both the test and study level, but only *population* has a statistically significant average effect size of 0.59. Economic development (proxied by per capita *GDP*) is included in 177 models in 25 articles. It is notable that *GDP* is coded as a failure in both tests and studies, and while at the test level average effect size is statistically significant, at the study level it is not. Two regional dummies (*Africa/sub-Saharan Africa* and *Asia*) are coded as failures, and neither has a statistically significant average study-level treatment effect. Finally, *ethnic fractionalization* is included in five studies, but it is also coded a failure and the study average treatment effect is not significant.

Overall, these structural variable results are important for several reasons. Of the factors that have often shaped other forms of violence, democratic characteristics besides executive constraints and level of development do not shape violence risk. Neither are there clear regional differences in the likelihood of election violence, which suggests threats to stability may be similar across regions.[22]

Violence and conflict

Scholars have repeatedly made connections between election violence and other forms of political violence (Frank, 2021; Höglund, 2009; Kalmoe, 2020; Tardio, 2013). These existing forms of violence include violence in the pre-election period as well as more intense violence like that in civil war. Violent societies are expected to have a higher likelihood of violent elections; and societies that have had election violence are more likely to have violence going forward. This is why almost half (15 of 31) of national-level studies include lagged dependent variables. Tests and studies of lagged dependent variables

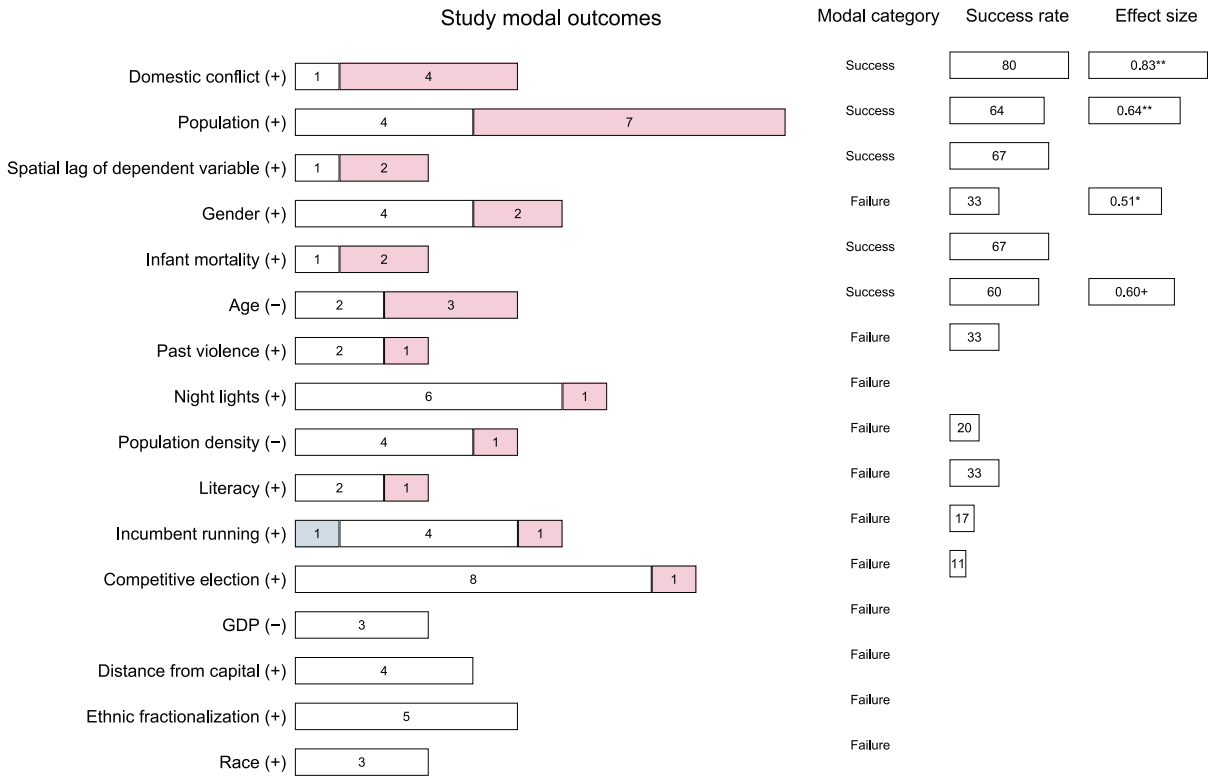

Figure 5. Subnational-level correlates of election violence, study-level results.
T-tests of effect sizes are calculated with two-tailed significance levels.
$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; n.s. = not significant. (+) and (–) represent hypothesized direction of relationship with election violence in included studies. Variables ordered by success rate. Model outcomes are stacked bars representing when study modal outcomes are anomalies (blue), failures (white), or successes (red).

are successes, and the study effect size (0.92) is both statistically significant and the highest value of any variable included in more than two studies. The success rate at the study level is 100%, by far the highest of any variable included in Figure 3. *Civil conflict* is included in nine studies, but it is coded a failure at both test and study levels. *Civil conflict*, however, does have significant average effect sizes at both levels and has an average study effect size of 0.32. A variable capturing an election in countries with ongoing armed conflict appears in three studies, and it is coded as a success at both levels; however, the study effect size is not significant. Previous research suggests that elections after armed conflict risk leading to conflict recurring (Flores and Nooruddin, 2016); and a variable for post-conflict elections is in six studies. However, the modal category here is failure, and the study effect size is not significant.

Previous elections with violence and violence before election day are both coded as successes and have significant effect sizes. This and the elections in armed conflict variable results suggest that previous and ongoing conflict can significantly increase the risk of further violence. Other violence measures (see Online Appendix E) also suggest a strategic interaction between the government and opposition's use of election violence. The only clearly significant international factor coded as having a significant effect size in Figure 3 is an ongoing peacekeeping operation. Other international factors that may shape the use of violence, including observer missions, observer evaluations of elections, and foreign aid (both democratic aid and ODA), were not coded as successes.

Election factors

More than the structural and violence predictors mentioned above, election-specific factors are likely to be successes at the study and test levels. Three variables (an *incumbent running*, an *executive election*, and the *election month*) are successes at both the test and study level, and electoral fraud is a success at the test level. All four variables have statistically significant average effect

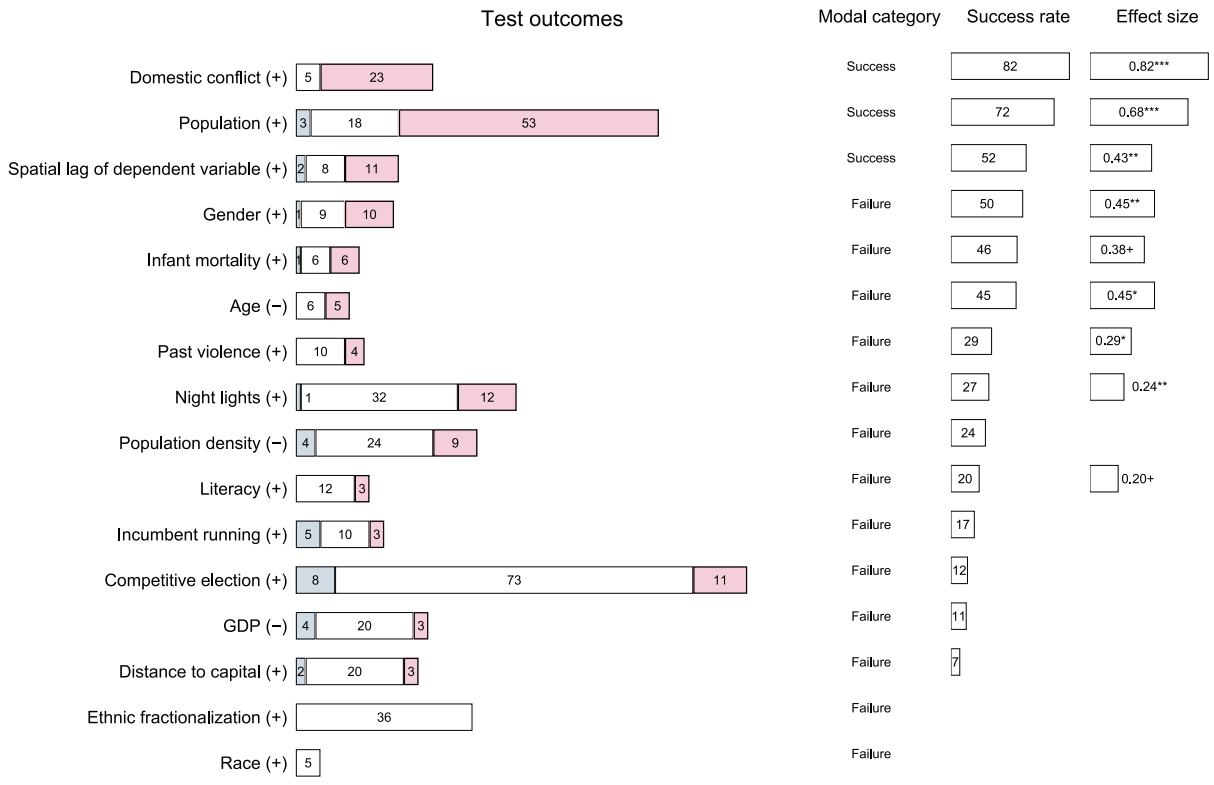

Figure 6. Subnational-level correlates of election violence, test-level results.
T-tests of effect sizes are calculated with two-tailed significance levels.
$^{+}p < 0.10$; $^{*}p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$; n.s. = not significant. (+) and (−) represent hypothesized direction of relationship with election violence in included studies. Variables ordered by success rate. Model outcomes are stacked bars representing when study modal outcomes are anomalies (blue), failures (white), or successes (red).

sizes with *executive election* having the second highest overall average effect size after *population. Competitive election*'s modal category across ten studies is failure, but the average effect size (0.38) is statistically significant. *Electoral fraud* is included in eight studies and is a success at the test level but a failure at the study level, although the average effect size is significant (and sizeable) at 0.54. A *national election* dummy and dummies for *first or second competitive elections* are coded failures and do not have significant effect sizes or success rates. Seven studies include dummies for whether *international observers* were monitoring an election. Their modal category is failure, the success rate was low, and the r_{av} was not significant.

Overall, the national-level meta-analysis suggests that election dynamics matter. One implication of this is consistent with previous research – higher stakes elections with the incumbent running or when the race includes the president or executive are more likely to have violence. Additionally, election timing matters as the election month is more likely to see violence than other months. Online Appendix Table E1 includes dozens of other timing variables, but the main takeaway can be seen from the election month: states are more likely to see violence in the days surrounding elections.

Subnational results

Turning to the subnational results in Figures 5 and 6, 16 variables are included in at least three studies, eight of which are structural. Like the national-level results, *population* is in 11 studies, and a modal success at the study level and the second largest r_{av} (0.64) of the subnational variables after domestic conflict. The only other study-level modal success variable is *infant mortality*, which three articles use as a proxy for state capacity. Higher levels of *infant mortality* increase the chance of violence and it is a success at the study level with a two-thirds success rate, but the average treatment size is not statistically significant. *Population density* is included in five studies, but it is coded a failure. *GDP* and *ethnic fractionalization* are similarly failures as the national level,

and a common subnational proxy for economic development, (*night lights*) is similarly not significant. *Distance from capital* is in four studies, but like *literacy* it is not coded as a success. Only two election-related factors are included in more than two studies; both are not successes although they had significant average effect sizes. A *competitive election* and an *incumbent candidate*, both of which mattered in the national-level results, were not statistically significant at the subnational level.

Individual factors

In addition to the three general types of explanatory factors discussed above (structural, violent, and electoral), subnational studies also include individual-level explanatory factors. Individual-level characteristics are less focused on political leaders using violence and more focused on the characteristics of targets.[23] These include politicians and candidates in the United States (Herrick and Thomas, 2022), the United Kingdom (Collignon and Rudig, 2020), the Maldives (Bjarnegård, 2023), and Sri Lanka (Bjarnegård et al., 2022). Three individual characteristics (*gender*, *race*, and *age*) are included in more than two studies; *gender* was included in the most studies (six) and tests (20). While *gender* is a modal category failure, its r_{av} is significant at both the test and study levels with one of the largest study-level (0.51) values.[24] *Race* is not coded as a success at either the individual or study level in three studies. What is consistently a success at the study level is *age*, a common control variable. Older individuals (whether candidates, politicians, or citizens) are less likely to be targeted for election violence. *Age* is coded a success in three of five studies in which it is included, and the r_{av} of 0.60 is statistically significant.

Discussion

The previous sections highlight 44 variables scholars have repeatedly included in their studies of election violence. This section begins by discussing 13 of these variables in more detail, ones that are both statistically significant predictors of violence and have statistically significant average study effects. Put simply, out of the 440 variables included in 65 published articles, the 13 variables in Figures 7 and 8 are the ones this article's metanalysis suggests are both repeatedly used and have the most consistent effect on election violence. This section then describes two series of robustness checks that see whether results differ (a) when a variable is an independent or control variable and (b) when the analysis is narrowed to models with a consistent operationalization of the dependent variable. Finally, this section connects my findings to the four background elements of the literature and the four clusters of explanatory factors highlighted above.

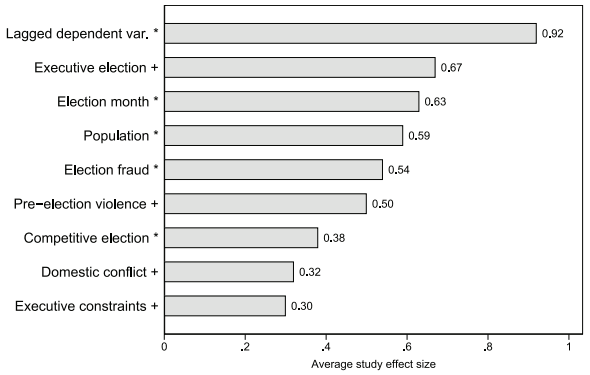

Figure 7. Average study effect size, national level.
Only variables with a statistically significant r_{av} at the 0.05 (*) or 0.1 (+) level are included.

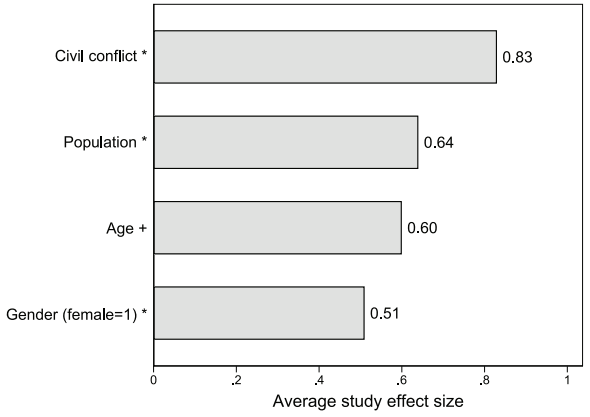

Figure 8. Average study effect size, subnational level.
Only variables with a statistically significant r_{av} at the 0.05 (*) or 0.1 (+) level are included.

Main findings

Starting with the most consistently statistically significant variables, the national-level lagged dependent variable has the largest average effect size of 0.92.[25] Countries with previous election violence are more likely to have subsequent elections turn violent (Fjelde and Höglund, 2016). The other significant variables are mostly election-related: elections that include the executive, election fraud, election months leading to more violence, election fraud, pre-election violence, and having a competitive election. This election focus is notable given that most of the variables used in more

than two studies were not election specific. Other significant factors include population, civil conflict, and institutional constraints on executive power. Only population and civil conflict are significant at both the national and subnational levels. At the subnational level the other two significant predictors are age and gender – younger citizens and female citizens are both more likely to experience violence during the election period than other groups.

Overall, this article's meta-analysis helps move the literature forward by highlighting factors that are found across multiple studies to be statistically significantly related to election violence. At the structural and political violence levels, three variables (*population*, *executive constraints*, and *civil conflict*) are significant predictors of election violence, which is consistent with findings on other forms of political violence like civil conflict (Hegre and Sambanis, 2006) and repression (Hill and Jones, 2014). The statistically significant election-related factors (e.g. fraud, competitiveness, and executive elections) dovetail with studies of electoral integrity (Frank and Martínez i Coma, 2017), election turnout (Cancela and Geys, 2016) and satisfaction with democracy (Fortin-Ritteberger et al., 2017). These results hold even when including them as independent and control variables or using a dichotomous dependent variable.

Robustness checks

A possible concern about this article's approach is that it does not differentiate between whether a variable is included as a control or an independent variable. In part this is due to the relative scarcity of factors that are (a) specifically focused on as articles' independent variables and (b) are in a large enough number of articles to calculate the statistics used in this study. Nevertheless, some methods research suggests the inclusion (or exclusion) of control variables as well as their functional form can have a material effect on statistical and substantive conclusions (Hünermund and Louw, 2023). Most articles included in this study do list substantive reasons for including controls and interpret their empirical results. Do results differ whether researchers consider a predictor an independent or control variable? Online Appendix Tables E3 and E4 examine the only four predictors used as independent variables[26] in at least three national-level studies – *competitive elections*, the presence of *election observers*, and the *election month*, and at the subnational level, *competitive elections* and survey respondent's *gender*. Overall, 16 of 19 results (for modal category and effect size statistical significance) at the test and study levels are substantively the same whether variables are included as an independent or control variable. First, *election month* is coded as a success (at both the study and test levels) as an independent variable but a failure as a control variable. Second, in subnational tests, *gender* is coded as a success as a control variable but a failure as an independent variable, and its estimated effect size is substantially smaller as an independent (0.36) than as a control variable (0.67). Third, *competitive election*'s study-level r_{av} is statistically significantly different from zero as a control variable but not as an independent variable. In sum, these further analyses suggest most results are not contingent upon whether a variable is included as an independent or control variable.

A second possible concern is that this study is overly inclusive by including articles with different definitions of election violence. For example, some studies use dichotomous measures of violence while others include some form of intensity, so results may not be consistent across outcome types. Of the 65 articles in this study, 29 use a dichotomous dependent variable (DDV). Do my results hold when only considering studies with a DDV? Online Appendix Table E5 describes the results of the 13 national-level studies using DDVs. This halves the number of variables reported in Figure 3, but in 20 modal category comparisons, results differ in only three. *Population* is coded a success in all studies and a failure with a DDV. In part this can be due to the smaller number of articles using a DDV (nine) than all models (22). By contrast, competitive election and election fraud are now a success with a DDV at the test level but a failure in all models. Overall, these additional analyses suggest that the main results are likely to be a conservative analysis of variables' effects on the latent probability of violence.

Links to background issues and thematic clusters

My main findings have clear implications for the four background elements highlighted earlier. First, regarding the enduring challenge of election violence, the results demonstrate that while violent elections have occurred across time and space, their predictors are consistent – both with structural conditions (population size) and electoral factors (fraud and competitiveness). Second, the proliferation of new datasets has enabled more sophisticated analysis, but the field's theoretical and empirical fragmentation is evident in the use of 40 data sources for measuring election violence. Third, definitional challenges remain unresolved as these myriad data sources both do (SCAD) and do not (CREV)

include explicit links between violence and elections and infrequently define both the perpetrators and targets of violence. Finally, regarding measurement, robustness checks suggest that how violence is operationalized (e.g. binary versus continuous measures) affects some findings but not others. The fact that most results hold when restricting analysis to studies using dichotomous dependent variables implies that these findings are robust to different measurement approaches. Overall, results suggest that while the field has made progress in these four areas, they continue to shape our ability to systematically understand election violence.

Looking at the four main explanatory clusters (structural factors, political conflict dynamics, election-specific triggers, and individual characteristics) several key patterns emerge. Among structural factors, only population and executive constraints consistently predict election violence, while commonly studied factors like GDP and democracy do not. This suggests a need to reconsider which slow-moving factors matter for electoral violence. For political conflict dynamics, previous election violence is the strongest predictor of future violence, while ongoing domestic conflict is significant at both national and subnational levels. This provides clear evidence that violence begets violence across electoral cycles. Election-specific triggers show particular promise for future research as electoral fraud, competitiveness, and executive elections consistently predict violence. This suggests strategic decisions and events during the electoral cycle may be more important correlates of electoral violence than structural conditions. Finally, regarding individual characteristics, the limited but clear findings that younger citizens and female candidates face higher risks of violence highlight the importance of examining how personal attributes shape vulnerability to election violence. Overall, the fact that most robust predictors come from the election-specific and political conflict categories, rather than structural factors, suggests future research might profitably focus more on dynamic short-term triggers than slow-moving background conditions.

Conclusion

To date, the literature lacks a consistent set of factors correlated with election violence. In part, this is likely due to researchers' focus on narrower research questions about specific factors rather than on systematically mapping and controlling for all potential explanatory factors. This is a sensible, incremental approach to knowledge formation; however in aggregate it can hinder broader understanding of election violence, especially if partial readings of this rapidly growing literature can lead to divergent causal conclusions depending on which studies are built on. This article's meta-analysis represents a contribution to this literature as a structured and systematic exploration of the existing research designed to provide scholars with a broader, representative snapshot of the quantitative election violence literature. It analyzes 65 articles by 97 researchers on the correlates of election violence published between 2010 and 2022. These articles include 446 independent variables, only six of which were included in more than one-quarter of these studies (*GDP*, *population*, a *lagged dependent variable*, *democracy*, *election competitiveness*, and *domestic conflict*). Almost two-thirds (298) of all independent variables are not modally successful at the study level. Of the remaining 142 variables, only 13 (10%) are included in more than two studies.

To briefly answer this article's two motivating questions (what the most common predictors are and whether their results are consistent), 44 variables are included in at least three studies, but only 13 variables have a consistent effect on election violence.[27] This is not to say that these are the only ones that matter. Future research on the 142 variables used by less than three studies but coded as successes are likely to expand the number of significant predictors. For instance, the most common type of variable statistically significant in one or two studies is election-related (19 national-level; 27 subnational-level).[28] These include election timing dummies, an election management body's autonomy and capacity, unfavorable polls, candidate, and voter intimidation.

Several important implications emerge from this meta-analysis for future research. First, election-specific factors show promise but remain understudied compared to structural conditions. Specifically, 19 national-level and 27 subnational-level election variables are significant in initial tests but lack sufficient cross-study validation to warrant further investigation. Second, researchers should carefully consider their level of analysis, as many predictors operate differently at national and subnational levels. Third, the field would benefit from greater theorizing and measuring the similarities and differences across types of election violence. The current proliferation of measures (157 different operationalizations across 40 data sources) and often siloed analyses hinders cumulative knowledge-building, including missing potential links across forms of election violence that involve similar perpetrators and targets. Fourth, researchers could usefully examine interaction effects between factors – for

instance, how structural conditions might condition the effects of election-specific triggers.

Replication data

The data, codebook, do-files, and Online Appendix are available at https://www.prio.org/jpr/datasets/ and the author's website.

ORCID iD

Richard W Frank https://orcid.org/0000-0003-4382-1039

Notes

1. The literature calls the outcome under study alternately 'election violence' and 'electoral violence'. There is no clear preference between these terms in this literature as evidenced by the 29 articles analysed in this article that use either of these terms in their titles. Fifteen use 'electoral violence' and 14 use 'election violence'. This article uses these terms interchangeably.
2. For example, Zürcher's (2017) review of the effects of development aid on violence and Smets and Van Ham's (2013) voter turnout meta-analysis.
3. A comprehensive overview of the theoretical election violence literature is outside the scope of this article. Interested readers could start with Höglund (2009); Staniland (2014); Harish and Toha (2019); Harish and Little (2017); and Birch (2020).
4. For more on English-language biases in case selection and data gathering see Wang et al. (2016).
5. Most of the quantitative literature focuses on violence against people instead of property. A notable exception is Lordan-Perret et al.'s (2019) focus on election-related attacks against Colombia's energy infrastructure. Some scholars also see election violence as a form of fraud (Lehoucq, 2003); however, in this article's sample, fraud is more likely to be seen as a cause of violence rather than a form of it. See Online Appendix A for a more detailed discussion.
6. This article's analysis finds that 28% of tests use dichotomous dependent variables, and 72% of tests use count or continuous variables.
7. Online Appendix A describes the search methodology.
8. Tradeoffs between comprehensiveness and comparability are inevitable. The goal here is to be consistent with previous meta-analyses and include a broad and representative sample of election violence studies. Some might conclude the scope conditions are overly broad. I take Stanley's (2001: 135) perspective that 'differences in quality, data or methods do not provide a valid justification for omitting studies, rather such differences provide the rationale for performing a meta-analysis [. . .] in the first place.'
9. By not including published books and unpublished research papers there is the potential for selection bias (Amsalem and Zoizner, 2022).
10. Online Appendix A includes the complete article list.
11. Most measures do not include violence intensity, although '[t]he variation within violence may be as important as the difference between violence and non-violence' (Staniland, 2014: 206).
12. This contrasts with the civil conflict literature which largely focuses on data from Collier and Hoeffler (2004), Fearon and Laitin (2003), Sambanis (2006), and Davies et al. (2022).
13. Online Appendix B summarizes dependent variable data sources.
14. Although as Stanley and Doucouliagos (2012: 16, quoted in O'Brochta, 2019: 2) write 'the central findings of meta-analysis are remarkably robust to marginal changes in the population of studies, the data, or the coded moderator variables.'
15. Phillips and Greene (2022) look at cases in conflict research and the potential for bias. A similar logic may also apply to election violence.
16. 'Meta-analysis' was first used in a statistical context by Glass (1976). Online Appendix C includes a discussion of 46 political science articles that use meta-analysis.
17. In cases without a hypothesized direction, a success is coded if a coefficient is significant. Study successes are coded conservatively. If an article has an equal number of successes and failures, it is coded a failure.
18. Statistics are reported at both the test and study levels. The study statistics are counts of the modal category for each statistic. For example, in national-level tests, four of 166 tests of population's effect are anomalous. At the study level, none of the 22 studies' modal outcome for population is anomalous, so anomalies are zero at the study level.
19. The national-level mean was 9.7 (sd 4.1); the subnational mean was 7.2 (sd 5.2).
20. These statistics can only be calculated with three or more studies, so results for variables used in at least three studies are reported. Online Appendix D includes complete results.
21. The sample includes articles with both cross-national and subnational models (Daxecker and Prins, 2016; Reeder and Seeberg, 2018). These models are included in the relevant tables.
22. An analysis of 55 other structural predictors (Online Appendix E1) adds 34 additional political institutions to the 12 in Figure 3: 13 political institutions with a test modal category of success and 21 socio-economic and geographical factors, five of which were modal successes at the test level. Variables from this list include corruption, physical integrity rights, military expenditures, and the incumbent leader being a member of the military.
23. An exception is Frantzeskakis and Parks (2022).

24. *Gender* was included in only four country-specific studies. Bjarnegård and Zetterberg (2023) suggest gender-based election violence can take different forms to that often included in the quantitative literature.
25. Lagged dependent variables do help us understand dynamic outcome persistence (Wilkins, 2018), but they can potentially wash out the effects of other variables.
26. There are explicit hypotheses about the expected relationship between a variable and election violence.
27. As measured at the study level with a modal category of success and a statistically significant average effect size. This success rate is consistent with comparable studies of other forms of political violence (Online Appendix Figure C4).
28. See the complete results in Online Appendix D.

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RICHARD W FRANK, PhD in Political Science (Binghamton University, 2009); Senior Lecturer, School of Politics and International Relations, Australian National University (2015–present).