

Violence Against Politicians, Negative Campaigning, and Public Opinion: Evidence from Poland*

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Abstract

It is commonly viewed that violence against politicians increases support for the victim's party. We revisit this conjecture drawing on evidence from an assassination of an opposition politician in Poland. First, we analyze engagement with Twitter content posted by opposition and government politicians using a difference-in-differences framework. Second, we use a public opinion survey collected in the days around the attack, and compare party preferences of respondents interviewed just before and respondents interviewed just after the attack. Our results reveal decreased support for the victim's (opposition) party relative to support for the government. To explain this finding, we show that the opposition antagonized the public by engaging in *negative campaigning* against the government over their politician's assassination. Content analysis of tweets and news media confirms that citizens punished the opposition for their negative campaigning after the violence. Tentative evidence suggests that these effects could have had long-run political consequences.

Keywords: violence, public opinion, negative campaigning, Poland

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1 Introduction

Violence against politicians poses a serious threat to political order, even in the most advanced liberal democracies. [Appleton \(2000\)](#) lists over 200 assassination attempts against heads of government in the twentieth century. Between 1950 and 2004, in two out of three years a national leader was assassinated ([Jones and Olken, 2009](#)). Since 2016, high-level politicians from three EU-member states have been victims of political violence: in 2016, a UK Labour Party deputy, Jo Cox was shot to death few days before the Brexit vote; in January 2019, Paweł Adamowicz, the Mayor of Gdańsk in Poland was stabbed during a charity event; and in June 2019, Walter Lübcke, a regional leader of the ruling German party was killed in front of his house. A recent study shows that a surprising 13% of American mayors acknowledge having been the victims of physical violence ([Thomas et al., 2019](#)). The frequency of these incidents raises questions about the impact of violence against politicians on public opinion.

At first glance, politicians' assassinations lead to an increase in support for the targeted party. The assassinations of heads of states and heads of governments have been shown to reinforce incumbent support ([Raviv et al., 1998](#); [Appleton, 2000](#); [Perliger, 2015](#)). These changes in support are usually attributed to a combination of *rally* ([Baker and Oneal, 2001](#)) and *empathy* ([Dinas, Hartman and van Spanje, 2016](#)) effects, which posit, respectively, a higher government endorsement in situations of threat and uncertainty, and a greater affect for victims of violence. In the case of incumbent assassinations, both mechanisms are expected to work in the government's favor. However, when a *nonincumbent* politician is assassinated, the two mechanisms work in opposite directions. This discord leads to ambivalent predictions regarding net changes in public opinion after violence against nonincumbent politicians. Does approval for the victim's party also increase in the case of nonincumbent assassinations?

We study this question drawing on evidence from a lethal attack on the opposition

mayor of Gdańsk, Poland—Paweł Adamowicz—who was assassinated in January 2019 during a public charity event. The killer explicitly mentioned Adamowicz’s party affiliation as a reason for his assassination. We track changes in public opinion in two ways. First, we analyze engagement with Twitter content posted by opposition and government politicians using a difference-in-differences framework. Second, we use a public opinion survey collected in the days around the attack, in an Unexpected Event during Surveys Design (UESD) framework, which compares responses of those interviewed just before and those interviewed just after the attack (see [Muñoz, Falcó-Gimeno and Hernández, 2020](#)).

Contrary to the common view in the literature, we find that the assassination of the nonincumbent opposition politician in Poland is associated with more support for the ruling government party. Estimates are sizable: within a 15 day time window around the date of the violent attack, government politicians received 35 percent higher Twitter engagement, compared to opposition politicians. In the survey data, within the 4 day time window covered, we find that the government had a relative increase in support of around 41 percent. We confirm these findings through a series of permutation and falsification tests, including time and unit fixed-effects models, matching techniques, and placebo outcomes.

Why did the opposition lose support after the assassination of their own politician? The stabbing of Paweł Adamowicz marked an unprecedented escalation of political conflict in Poland in a context of extreme polarization and division between the government and the opposition. While citizens may have expected leaders to attempt to de-escalate conflict following the event, the opposition responded through aggressive language and verbal attacks on the government (see [Sarna and Tyc, 2020](#); [Makowska et al., 2019](#)). They blamed the government for Adamowicz’s death and accused incumbent politicians of propagating hate.

Based on these observations, we contend that the effects of violence against politi-

cians on public opinion is contingent on leaders' responses. Politicians who respond to violence in a conciliatory manner are likely to gain support; while those who take confrontational stances and engage in negative campaigning against their rivals are likely to lose support (cp. [Yuchtman-Yaar and Hermann, 1998](#)). The former response reinforces the empathy effect by increasing positive feelings for the affected party. The latter response, by contrast, reinforces the rally effect, which works to the government's advantage by heightening fears of violent escalation and antagonizing supporters who demand peace and reduced uncertainty. That is, negative campaigning abates the popularity dividends from the empathy effect.

Consistent with our proposed theory, we show that the loss of support for the opposition is related to its confrontational response to the mayor's assassination. This response—taking the form of negative campaigning against the government—antagonized many supporters. We find the opposition's use of negative campaigning after the violence on Twitter explains about 60% of their loss of relative support. This pattern is also confirmed in the survey data. We find that the opposition's loss of support is most pronounced among survey respondents who watched partisan TV channels and were thus most exposed to the party's negative campaigning. Among neutral TV viewers, by contrast, the support for the opposition is even slightly increased. Content analysis of 3,221 news items scraped from the main Polish TV channels confirms that these neutral outlets were least likely to broadcast the opposition's negative campaigning after the violence.

The unique case study and the new data we collect allows for both causal identification and a careful exploration of the proposed mechanism in an ideal setting. Our approach, leveraging short-run variation and high-frequency data, overcomes limitations of previous studies that either rely on correlational evidence (e.g. [Iqbal and Zorn, 2008](#)), or estimate the effect of assassinations by comparing successful assassinations to

unsuccessful attempts (see [Jones and Olken, 2009](#)).¹ Moreover, the Polish event provides a particular lens into the consequences of politician assassinations by allowing us to explore the role of affected actors' responses to violence both in Twitter and survey data. Finally, the fact that the assassination occurred shortly before two pivotal elections permits us to explore the potential long-run political consequences of the documented effects.

Our study contributes to the literature in four important ways. First, we provide evidence on the consequence of political assassinations in the case of an attack on a non-incumbent politician. It is a common, yet understudied type of violence against politicians, which may result in different changes in public opinion than well-documented incumbent assassinations. We are not aware of any other quantitative study which analyzed the effects of nonincumbent assassinations.² Second, we provide evidence on heterogeneous responses to political assassinations depending on politicians' reactions to these events by documenting the moderating role of negative campaigning. The lack of evidence on heterogeneous effects of political assassinations was recently highlighted in a review of the broad literature on the political consequences of political violence ([Davenport et al., 2019](#), 374).

Third, we provide tentative evidence that shocks to party support following political assassinations could have long-run political consequences. We find that 2019 electoral votes of opposition politicians and their negative campaigning *after* the assassination are negatively correlated. This empirical pattern attests to the relevance of the novel mechanism proposed by our theoretical framework. Fourth and related, we contribute to the literature on the effects of negative campaigning by pointing to one possible way of

¹The causal identification in these latter works comes at the cost of missing a meaningful 'no violence' benchmark, that is, even unsuccessful assassination attempts may affect outcomes. Studies with similar empirical designs to ours, leveraging short-run variation and measuring outcomes in the days just before and just after an important event include [Balcells and Torrats-Espinosa \(2018\)](#), [Clark, Doyle and Stancanelli \(2020\)](#) and [Morales \(2020\)](#), among others.

²[Dinas, Hartman and van Spanje \(2016\)](#) study the effect of Pim Fortuyn's killing in the Netherlands. Yet, the authors claim that the politician's death was not perceived as politically motivated at the time of elections.

reconciling existing contradictory evidence (Galasso, Nannicini and Nunnari, 2020). Our findings suggest that the effect of negative campaigning on party support is moderated by the political context in which it takes place. In particular, negative campaigning can backfire in situations of heightened political tensions, when peaceful political conflict becomes likely to turn violent.

2 Theoretical Motivation

While the causes of violence against politicians have been well documented,³ its effects on public opinion remain somewhat puzzling. A common view in the literature is that violence against politicians lowers support for political conflict and anti-government actions (Yuchtman-Yaar and Hermann, 1998; Appleton, 2000), while boosting approval of the victims of violence (Esaiasson and Granberg, 1996; Raviv et al., 1998; Appleton, 2000). In his in-depth qualitative study of 98 political assassinations in Israel and Palestine between 1900 and 1980, Ben-Yehuda (1993, 32) concludes that “almost none [of the assassinations] produced results consonant with the aim of the doer” (see also, Zussman and Zussman 2006). This conclusion also resonates with Flavio Bolsonaro’s comment after the unsuccessful murder attempt against his father during the presidential campaign in Brazil in 2018: “I just want to send a message to the thugs who tried to ruin the life of a family man, a guy who is the hope for millions of Brazilians: *You just elected him president.*”⁴

The observed changes in public opinion following violence against politicians have been typically explained by a combination of (i) a *rally 'round the flag* effect and (ii) an *empathy* effect. According to the rally effect, heightened uncertainty related to the threat of violent escalation leads voters to rely on incumbent leaders. The government has the largest access to information and resources and is thus believed to be in the

³E.g. Ley (2018); Daniele and Dipoppa (2017); Crettez and Deloche (2009).

⁴<https://www.reuters.com/article/us-brazil-election-bolsonaro/brazil-far-right-candidate-bolsonaro-in-serious-condition-after-stabbing-idUSKCN1LM2YJ>.

best position to reinstate calm (Dinesen and Jæger, 2013; Baker and Oneal, 2001). Some citizens also rally around the government for emotional reasons related to the desire to reduce anxiety, or due to an increased status quo bias in a situation of high uncertainty generated by the assassination (Skocpol, 2002). The empathy effect in turn relies on the fact that political assassinations generate more attention and greater affect toward the victims of violence (Dinas, Hartman and van Spanje, 2016).

Most evidence to date, however, focuses on the assassinations of heads of states or heads of governments—incumbent politicians. As a result, the evidence may not be generalizable to a large number of cases in which *nonincumbent* politicians are assassinated (Snitch, 1982). To illustrate, in the case of incumbent assassinations both the rally and empathy effects are expected to increase support for the government vis-à-vis the opposition. Yet, in the case of nonincumbent assassinations these mechanisms are likely to work in the opposite directions. While the rally effect is likely to increase support for the government, the empathy effect may work in the opposition’s favor. Predictions on the net effect of nonincumbent assassinations are thus ambivalent. This point is further illustrated in qualitative case studies (see, e.g. Dobрева, Grinnell and Innes (2019) on Jo Cox’s murder; and Kuzio (2005) on Viktor Yushchenko’s poisoning).

Table 1: Violence against politicians and public opinion: Two scenarios

<i>Scenario A</i> : Violence against incumbent politician				<i>Scenario B</i> : Violence against nonincumbent politician			
		Rally effect				Rally effect	
		+	–			+	–
Empathy effect	+	Government		Empathy effect	+	Opposition	
	–	Opposition			–	Government	
Δ net support:		Government \uparrow	Opposition \downarrow	Δ net support:		Government ?	Opposition ?

2.1 Hypotheses

To address the above ambiguity, we contend that the effect of violence against *nonincumbent* politicians on public opinion may be contingent on politicians' responses. We believe that the empathy effect is a relatively constant outcome of political assassinations, given that the public feels sorry for deceased politicians, no matter which party they belong to (Ben-Yehuda, 1993). Yet, these empathic concerns may not travel to the victim's larger political camp, especially if its politicians are confrontational and turn their mourning into aggressive political campaigning (see Halbertal, 2012; Simas, Clifford and Kirkland, 2020). Likewise, the rally effect depends on the public's fears of violent escalation and related uncertainty: the public is more likely to converge on the government, the more it fears that the situation could descend into a widespread violence. These fears in turn, as we propose, are a function of politicians' responses to assassinations (see Jones and Olken, 2009).

Based on these considerations, we hypothesize that a confrontational response to nonincumbent assassinations by affected politicians—which we classify as *negative campaigning*⁵—should antagonize citizens. Confrontational response exacerbates uncertainty and fears of violent escalation. This in turn reinforces the rally effect which increases incumbent support vis-à-vis the opposition.⁶ By contrast, nonincumbent politicians who refrain from confrontational response to assassinations of their allies are likely to gain support. The conciliatory response counters uncertainty and fears of violent escalation, thus canceling the government's popularity dividends generated through the rally effect. At the same time, the conciliatory response allows the opposition to take full advantage of the empathy effect—that is, increased affect for the victim of violence.

⁵Following Mayer (1996, 440), we define negative campaigning as “campaigning that attacks or is critical of an opposing candidate.” Such campaigning is particularly common in asymmetric two-party competitions that we study here (Skaperdas and Grofman, 1995).

⁶Yet, this relationship is likely to be asymmetric. Nonincumbent politicians do not have access to resources (e.g. law enforcement authorities) that would enable them to reinstate calm and reduce uncertainty. Put differently, nonincumbent politicians are unlikely to benefit from the rally effect even if incumbents engaged in negative campaigning.

By testing these hypotheses, we address the generalizability of anecdotal evidence which suggests that reactions to politicians' assassinations matter. Some parties who engaged in violent protest following the assassinations of their politicians have been shown to face greater backlash than parties participating in peaceful demonstrations (Garza, 1998). Political consequences of assassinations have also been argued to depend on how people talk about these events (Solheim, 2019; Orren and Peterson, 1967). To illustrate, following the death of Jo Cox in UK, some Twitter users lamented that politicians advocating for 'Remain' in the Brexit referendum exploited Cox's murder to foster their own political agenda. One of the users wrote: "Jo Cox killer 'had no political views,' said nothing about EU referendum. But the left will still exploit this" (Dobrev, Grinnell and Innes, 2019, 17). Yet, despite this anecdotal evidence, it remains unclear whether the perceived instrumentation of politician's deaths cost the 'Remain' campaigners some votes.

Given the lack of evidence on the effects of violence against *nonincumbent* politicians and the opposite theoretical expectations regarding these effects compared to the widely studied effects of incumbent assassinations, we revisit a consensus argument about the political consequences of politicians' assassinations. We do so in the context of the 2019 assassination of the opposition mayor of Gdańsk, Poland. This case study helps us disentangle the proposed mechanisms in an ideal setting. Poland offers micro-level survey data on public opinion before and after the violent incident. In addition, by exploiting detailed data from Twitter and news media, we are able to track politician's reactions to the assassination. We can thus measure whether politicians' messages which engaged in negative campaigning over the death of the mayor received lower support vis-à-vis support for messages adopting conciliatory stances.

3 Background

Poland has a multiparty, parliamentary system. In practice, however, since 2006, Polish politics have been marked by a competition between two parties: Civic Platform (*Platforma Obywatelska*; PO) and Law and Justice (*Prawo i Sprawiedliwość*; PiS). Both parties were founded in 2001 as splits from the anti-Communist coalition created in opposition to the Communist-successor party, Democratic Left Alliance (*Sojusz Lewicy Demokratycznej*), which dominated national politics after Poland's transition to liberal democracy in 1989 (Nalepa, 2010). PO was the ruling party between 2007–2015, while PiS has been in power since 2015 until present. In October 2019, PiS won a new four-year term, and is currently supported by the Polish President, Andrzej Duda, who is a former party member and has veto power over legislation.

Both PiS and PO are right-wing parties (see Tavits and Letki, 2009). PiS holds more conservative views and emphasizes law and order as main pillars of its program. The party embraces economic interventionism, while maintaining a socially conservative stance closely linked to the Catholic Church ideology. PiS declares no tolerance for homosexual unions, refuses to host migrants, and has been accused of tolerating hate crimes against minorities while in the government. The party has also effectively undermined the independence of the Polish justice system. Its critics claim that PiS leads the country toward authoritarianism and puts it on a collision course with the European Union. PO, by contrast, has a more moderate, liberal, and pro-European agenda. Yet, some members of the party are also strongly attached to the traditional Catholic values. As a result, the party has ambivalent stance on sexual minorities and is split regarding tolerance toward religious and ethnic minorities.

Since the failed negotiation to form a coalition government in 2005, the competition between PiS and PO has become increasingly fierce. This resulted in extreme polarization of Polish society in which citizens show a preoccupying tendency of 'dehumanizing'

their political opponents (Górska, 2019). High levels of political polarization are also reflected in a crystallization of partisan TV channels—pro-PiS TVP and pro-PO TVN. Both channels have been repeatedly accused of broadcasting content that is systematically biased in favor of the supported parties (Brzoza, Głuszek-Szafraniec and Szostok, 2017). Even a long-time neutral national charity event, Wielka Orkiestra Świątecznej Pomocy (WOŚP), has become a bone of political contention, with the PiS government publicly asking its supporters and politicians to boycott the event since 2015.

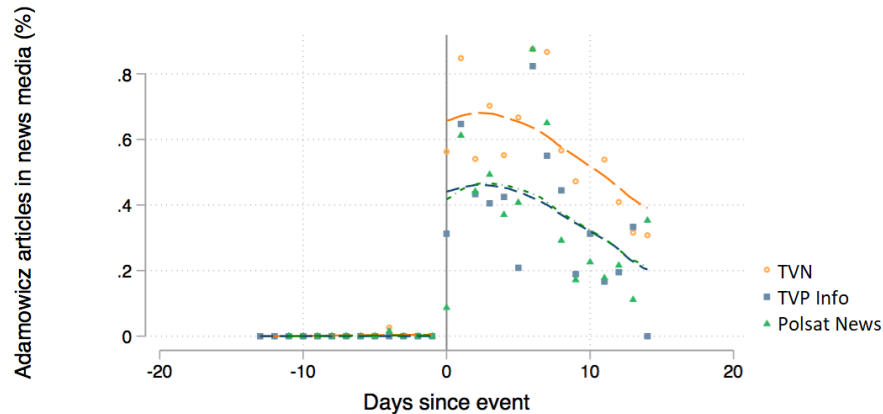
It was during the WOŚP charity event on January 13, 2019 that the Mayor of Gdańsk and the founder of the PO party, Paweł Adamowicz was stabbed to death. This marked an unprecedented escalation of political conflict in Poland. Adamowicz was attacked on the stage of the charity event by a person who explicitly sympathized with the PiS government. After the attack, the killer spoke to the audience, accusing Adamowicz's party of unjustly putting him in prison. Although this claim later turned out to be false, it resonated with the PiS government's narrative of how Adamowicz's party, PO, led to the corruption of justice system while in power. It was also discovered that the PiS government had refused to guarantee public security to the WOŚP event. Adamowicz's killer was thus disarmed by the victim's friends who were on the stage during the attack.

Both national and international news media covered the event widely. News articles data scraped from the websites of the main TV channels in Poland reveal that between 40 and 60 percent of articles mentioned Adamowicz in the days after the event (Figure 1, more on the data below). The event left the Polish public astounded. Some days after the Adamowicz's assassination, political commentators observed that:

“Politicians of various options, especially the most important ones, are still lurking, careful, looking at each other; they are afraid of making a mistake, causing a greater divide, dissonance that will ultimately destroy the atmosphere. They are thoroughly analyzing whether the assassination [of Adamowicz] will cause Poles to push for ‘reconciliation,’ for mitigating the conflict; whether it will show that Poles really

want a different language and emotions than in the last three, actually 13 years. Or the opposite—whether the murder of the Mayor of Gdańsk will radicalize moods, strengthen polarization, and promote sharp, black-and-white divides.”⁷

Figure 1: News media mentioning ‘Adamowicz’



Notes: News articles from Polish main three TV channels (TVP Info, TVN, Polsat News) mentioning Adamowicz, around the time of the event.

What are the consequences of violence against politicians in Poland? Did Adamowicz’s assassination benefit his opposition party, or did it strengthen the PiS government? Poland is a highly relevant case to study the interplay of politician assassinations and public opinion. The assassination of the nonincumbent politician happened within a well-established party system without precedent for violence against political leaders. It also happened in the context of extreme political polarization that reflects a government-vs-opposition divide. What is more, the assassination occurred in the year of two pivotal elections: the election to the European Parliament in May 2019, and the general election in October 2019 (both won by PiS). The fact that an important opposition politician was killed in an event that received wide media coverage makes this assassination particularly likely to have pronounced effects on public opinion. Lastly, the Polish event allows

⁷See <https://www.polityka.pl/tygodnikpolityka/kraj/1780046,1,normalnosc-po-zamachu.read> (authors’ translation).

us to explore short-run variation in public opinion by using high-frequency survey and Twitter data, to which we turn next.

4 Twitter Evidence

4.1 Data and measures

Our first data source is Twitter.⁸ We compiled a list of 109 Polish politicians who are active on Twitter, evenly split among government and opposition members (more details in Online Appendix A.1). Their tweets were then collected through the Twitter API, which allows us to collect the last 3,200 tweets for each individual. In a 15 day time window around the date of the violent attack on Adamowicz, we collected 3,979 tweets: 1,277 posted by government politicians and 2,702 posted by opposition politicians.

We use tweet engagement as a proxy for public support (as in Morales, 2020), following a number of studies that have documented correlations between social media outcomes and measures of political support (DiGrazia et al., 2013; Barberá, 2016; Morales, 2019; Klačnja et al., 2017). We measure engagement as $\log(\text{retweets} + \text{likes} + 1)$.⁹ Figure 2 shows the relationship between our measure of engagement and traditional polls. The relationship is positive and statistically significant, suggesting that tweet engagement is a good proxy for popular support in our context. For more details, see Appendix A.2.

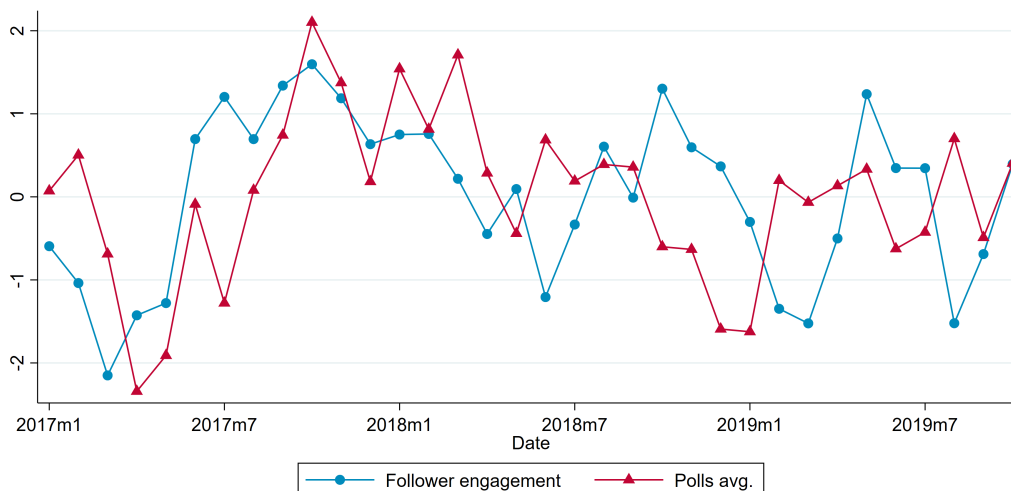
4.2 Descriptive statistics

We first analyze the relationship between political violence and public opinion graphically, by examining Twitter engagement in a short window of time around the date of

⁸More than six million people use Twitter in Poland (Kregielewski and Turek, 2020), which represents about 16 percent of the population. Poland has the largest Twitter usage in Central and Eastern Europe.

⁹Users can retweet messages with comments, sometimes critical, about their content. Yet, these critical retweets are counted as independent messages in our data and are not included in our retweets count. Recently, Twitter made counts of retweets with comments visible (see <https://mashable.com/article/twitter-retweets-with-comments-button>) but we do not have these counts in our data.

Figure 2: Relationship between Twitter engagement and traditional polls



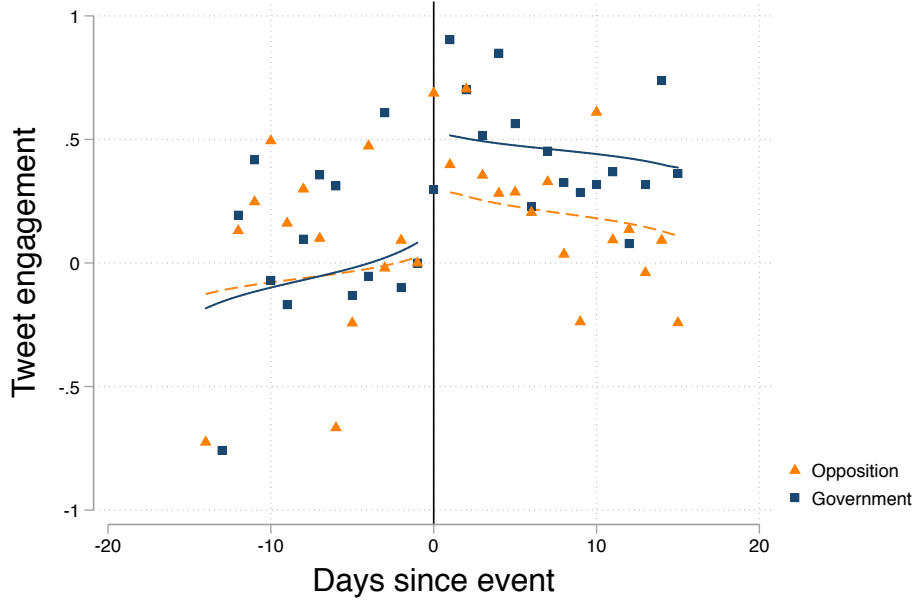
Notes: The plot shows a time-series graph of tweet engagement and the approval rating of the main political parties in Poland. We plot the difference in vote intention and the difference in Twitter engagement after de-trending and standardizing. Follower engagement at the monthly level is measured by regressing *tweetEngagement* on a set of year-month dummies with user fixed effects for the selected accounts. For more details, see Appendix A.2.

the event. To do so, we regress tweet engagement on event-day dummies, as well as politician fixed effects, and normalize all coefficients to zero on the day just before the event (such that all other event-day coefficients are measured in relation to this date). This analysis is done separately for members of the government and members of the opposition.

Figure 3 shows the results for a 15 day time window around the date of the event. The plot includes scatter points, each representing daily coefficients (from the event-day dummies), as well as kernel-weighted local polynomials that fit these estimates (separately for days before, and for days after the event). We see that Twitter engagement was higher after the event for both opposition and government politicians. Yet, the increase for the government was much larger. In addition, we do not observe evidence of diverging trends in the days before the event. The differential change in Twitter engagement after the violent attack is also visible through a simple comparison of absolute numbers

of likes and retweets (Table A3).

Figure 3: Tweet engagement across time



Notes: The plot shows event-time coefficients of tweet engagement for both government and opposition members.

4.3 Difference-in-differences regression

To test the differential increase in public support for the government relative to the opposition, we replicate the analysis shown above in a regression framework. We use a difference-in-differences model of the following form:

$$tweetEngagement_{ipt} = \beta \cdot opposition_p \times postAttack_t + \gamma_p + \gamma_t + X_i \cdot \delta + \varepsilon_{ipt} \quad (1)$$

for tweet i , by politician p , on day t . Where $postAttack_t$ is an indicator variable equal to 1 if the tweet was published after the attack, and $opposition_p$ is an indicator equal to 1 if politician p is a member of the opposition. The specification includes politician (γ_p) and day (γ_t) fixed-effects. Finally, we include a set of tweet-level controls X_i which include indicator variables for whether the tweet contains a hashtag, is a reply, or contains an @

mention.¹⁰ We exclude retweets from the sample. The coefficient of interest, β , captures the difference in engagement for opposition politicians following the event, relative to government members. As before, we restrict the sample to a 15 day window around the date of the event.

Table 2 shows the results of this analysis, separately for overall Twitter engagement, retweets and likes. Our preferred specification (column 1) reveals that opposition politicians received 35 percent *lower* Twitter engagement after the violent attack compared to government politicians. The difference was greater for likes than retweets—0.34 difference and 0.29 difference, respectively. These results suggest that the government disproportionately benefited from the attack in terms of support on the Twitter platform.

In Figure A1 we show a placebo test with a cut-off set 15 days before the actual attack. Reassuringly, we do not observe significant differential changes between government and opposition accounts in this placebo exercise (lending additional support to the parallel trends assumption). We also confirm that there were no other significant events which could impact politics in the studied period through a text analysis of transcribed news content from the main Polish TV channel (more details below). Figures 1 and A2 reveal that Adamowicz’s assassination was by far the most frequently discussed political event in the days after the violent attack. In Appendix A.5, we also investigate duration of the reported effects by using alternative time windows: 10, 20, and 30 day windows.

4.4 Robustness tests

We probe the robustness of our findings in five ways. First, we show that the reported effects are not driven by differences in engagement with tweets mentioning Adamowicz. One could expect that messages of support for Adamowicz might have received greater engagement if they were posted by government politicians. The public might have seen

¹⁰In the Appendix A.3, we replicate all the following analyses without using politician and day fixed effects or controls. The coefficients are larger, although less precisely estimated. This builds confidence in our findings.

Table 2: Violent attack and Twitter engagement

	(1) Engagement	(2) Retweets	(3) Likes
Post x opposition	-0.353* (0.183)	-0.287** (0.110)	-0.343* (0.186)
N	3977	3977	3977
Day FE	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

these messages as costlier and thus more sincere.¹¹ In Table A11, we show that our results remain unchanged if we drop tweets mentioning Adamowicz from the sample.

Second, we explore whether the reported effects may be due to the highly politicized charity event during which Adamowicz was stabbed—the Wielka Orkiestra Świątecznej Pomocy (WOŚP)—rather than due to the violent attack itself.¹² To do so, we analyze whether there are any changes in Twitter engagement for government and opposition politicians around the similarly divisive and politicized, but not leading to violence, 2018 WOŚP event. In Figure A4, we show that this is not the case. This finding reassures us that the documented changes in political support are a result of the violent event.

Third, we show that the reported effects cannot be explained by a ‘mechanic’ activation of party supports. One may argue that the Adamowicz’s assassination could have lead politically inactive citizens to express their support online. Given that the government has a larger support base, the activation of dormant supporters might have led to the government’s greater gains in popularity relative to the opposition. We rule out this possibility by showing that pre-assassination popularity (a proxy for the size of one’s

¹¹Table A10 shows that tweeting about Adamowicz after the attack is indeed associated with higher returns in terms of engagement for government politicians compared to opposition politicians.

¹²WOŚP is the biggest non-governmental charity organization in Poland. It raises money for pediatric and elderly care in Poland and abroad during yearly charity events held in early January. In 2004, WOŚP raised money for the victims of tsunami in Sri Lanka, while in 2020 it raised funds to help victims of bushfires in Australia. Since 2015, the WOŚP charity events have been boycotted by the Law and Justice government and have not been broadcast in the state television. This decision has been linked to the government’s criticism from the WOŚP’s leader’s, Jurek Owsiak.

dormant support) does not moderate politicians' increase in Twitter engagement after the violent attack (see Table A12). This confirms that our results are not a product of mechanic activation of support.

Fourth, we show that our results are not driven by changes in Twitter activity. One might suspect that politicians receive more engagement as a function of the volume of their Twitter production. Maybe, government politicians—typically less active on Twitter than opposition politicians—increased their engagement after the violent attack simply by tweeting more often? We rule out this possibility by first showing that the daily volume of tweet production is *negatively*—and not positively—related to Twitter engagement (see Table A14). We also show that there are no differences in government and opposition politicians' increase in Twitter activity after the Adamowicz's assassination (see Figure A3).

Fifth and last, we show that our results are virtually unchanged if we restrict our sample to 50-percentile of most popular politicians within each camp (see Table A13). This allows us to rule out a the possibility that decreased opposition support vis-à-vis the government could be related to greater Twitter activity of less popular opposition politicians. These politicians could have felt compelled to extensively comment on the Adamowicz's death. Their frequent tweets about Adamowicz in turn could have received less engagement than their usual more selective Twitter commentary. In Table A13, we show that this is not the case.

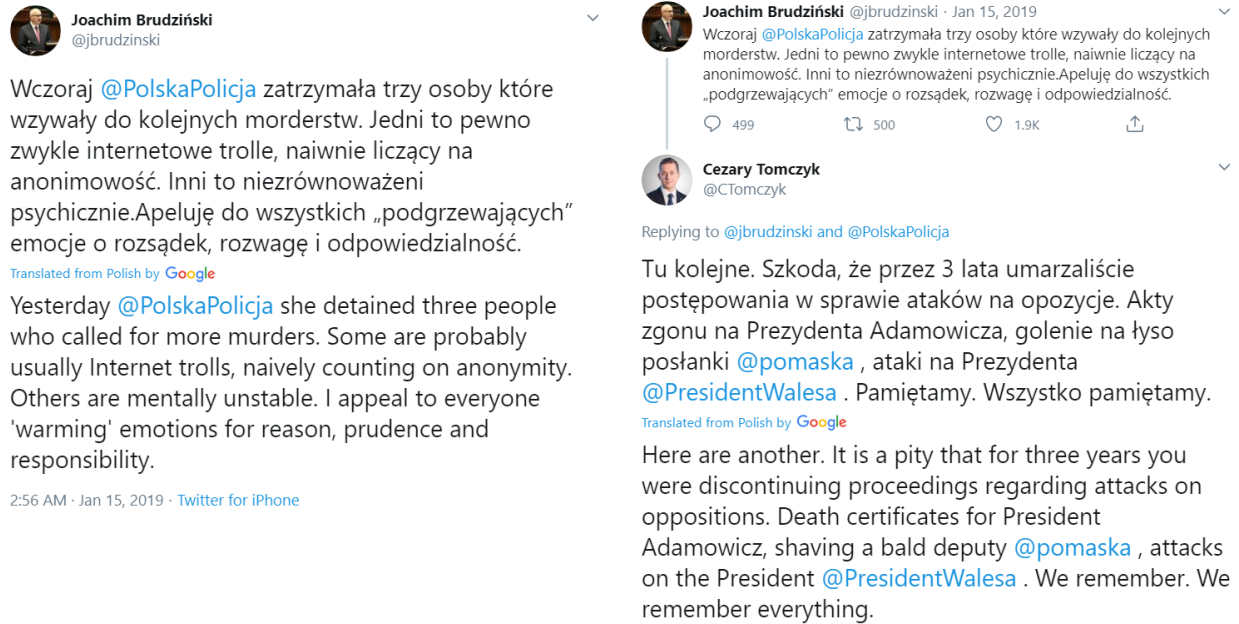
4.5 Mechanisms

We have demonstrated a robust relationship between the violent attack on the opposition politician and increased support for the government—the party that the attacker sympathized with. As we laid out in the theory section, we contend that decreased returns to *negative campaigning* after political violence could explain this finding. According to this idea, the public punished the opposition for its aggressive language and verbal

attacks on the government immediately after the attack. After the Adamowicz’s assassination, citizens expected all politicians to de-escalate political conflict (Makowska et al., 2019). Instead, negative campaigning by opposition politicians reinforced uncertainty and fears of further escalation, generating discontent among the party’s supporters. Figure 4 shows an example of such negative campaigning on Twitter.

To test this mechanism, we examine whether the opposition’s engagement in negative campaigning on Twitter after the violent attack explains their loss of support vis-à-vis the government. Following Nai (2013), we measure negative campaigning as “explicit and personal attacks on political adversaries,” which we proxy using *rival mentions* in tweets. This is a both common and conservative measure of negative campaigning (see Tavits and Jung, forthcoming; Lau and Rovner, 2009). We capture rival mentions in two ways. First, we use a list of Twitter handles of politicians from the rival camp. Second, we manually code a random sample of 500 tweets evenly split between opposition and government politicians. Using these tweets, we build a list of keywords that politicians of both parties use to mention their rivals. Appendix A.10 presents the full list of keywords.

Figure 4: Negative campaigning on Twitter



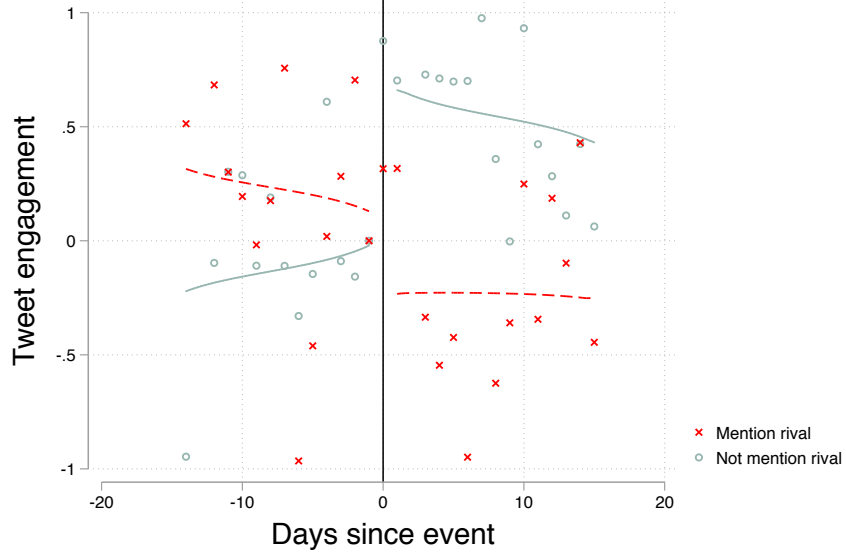
Notes: The figure shows a conciliatory government message (left) and an opposition tweet classified as negative campaigning (right). In Figure A5 we provide additional examples of tweets with negative campaigning.

We assume that opposition’s tweets mentioning the government (and vice versa) convey negative sentiments. We confirm the negative sentiments in tweets with rival mentions via sentiment analysis of Twitter content (see Online Appendix A.11). We find that tweets in which opposition politicians mention the government convey much more negative sentiments than tweets in which opposition politicians do not mention the government. This pattern holds true for tweets posted both before and after the attack (see Figure A7).

Figure A6 shows that opposition politicians engaged much more in negative campaigning in the 15 day time window around the attack than government politicians did. Before the attack, 41.6% of opposition politicians’ tweets mention political rivals, compared to 3.4% of government politicians’ tweets. After the attack, this difference decreased to 16.1 percentage point, but the opposition’s engagement in negative cam-

paingning remained high—17.7% of their tweets mentioned the government.¹³

Figure 5: Tweet engagement across time by negative campaigning



Notes: The plot shows event-time coefficients of tweet engagement for opposition tweets but split between those which mention the government, and those which do not. We cannot produce the same split for government tweets because too few of them mention the opposition (see Figure A6).

Figure 5 plots Twitter engagement of opposition politicians, but split between tweets which mention the government, and those which do not. We can see that while tweets mentioning the government received more engagement before the violent attack, this relationship was reversed after the event. To confirm this descriptive finding, we examine the relationship between the violent attack and returns to negative campaigning on Twitter in the difference-in-differences regression framework. We extend the previous model as follows:

$$\begin{aligned} tweetEngagement_{ipt} = & \beta_1 \cdot opposition_p \times postAttack_t + \beta_2 \cdot mentionRival_i \\ & + \beta_3 \cdot mentionRival_i \times postAttack_t + \gamma_p + \gamma_t + X_i \cdot \delta + \varepsilon_{ipt} \end{aligned} \quad (2)$$

¹³That opposition politicians engaged in *more* negative campaigning relative to the incumbent government is consistent with findings in Crabtree et al. (2020) which document how opposition party manifestos in Europe have on average less positive sentiment. It is also understandable within our time window, given that a government supporter was responsible for Adamowicz’s killing.

Table 3 presents the results of this analysis. The coefficient of interest, β_3 , is the interaction term between rival mentions and the post-attack dummy. Its negative sign confirms that the violent attack is associated with lowered returns to negative campaigning in terms of Twitter engagement. We can also see that the coefficient β_1 capturing the opposition’s relative loss in engagement vis-à-vis the government is 2.5 times smaller once we control for negative campaigning, compared to our baseline model (see Table 2). This suggests that the opposition’s use of negative campaigning after the attack on Adamowicz explains about 60% of their loss of support. Interestingly, the coefficient for rival mentions is positive and sizeable (0.805), which implies that negative campaigning is in general efficient in garnering support (but this positive relationship abates after the attack). Although we show that the boost in support for the government appears to be short-lived, the diminished returns to negative campaigning after the attack persist even over an event window of 30 days (see Appendix A.5).

To probe the robustness of this finding, in Table A6, we study how much each politician engaged in negative campaigning over the death of the mayor and whether this affected their support vis-à-vis support for politicians adopting conciliatory stances. This politician-level analysis firmly confirms the above results. An additional testable implication of our theory suggests that opposition’s *positive* messages should generate higher engagement after the attack relative to non-positive messages. We test this implication by relying on our sentiment analysis of tweets (see Online Appendix A.11). We divide opposition messages between those which convey positive sentiments, and those which do not. Figure A8 confirms that opposition’s positive tweets received higher engagement after the violent attack.

Alternative mechanism Another possible explanation of increased support for the government vis-à-vis the opposition after the violent attack on Adamowicz is a *right-wing turn* (Elster, 2019; Morales, 2019; Getmansky and Zeitzoff, 2014). According to this idea,

Table 3: Violent attack and Twitter engagement: Negative campaigning effect

	(1) Engagement	(2) Retweets	(3) Likes
Post x opposition	-0.162 (0.191)	-0.095 (0.122)	-0.160 (0.194)
Mention rival	0.805*** (0.129)	0.808*** (0.114)	0.775*** (0.127)
Post x Mention rival	-0.487* (0.274)	-0.491** (0.218)	-0.468* (0.264)
N	3977	3977	3977
Day FE	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

threats to security, such as violence against politicians, may reinforce support for right-wing parties that promote ‘hard-line,’ security-oriented policies. This happens because security-oriented policies are particularly desired by the public at the time of uncertainty and danger (Merolla and Zechmeister, 2009). We test this mechanism by examining Twitter support of the most extreme Polish right-wing party, Confederation (*Konfederacja*). If the right-wing turn explained our findings, we should observe an increase in Confederation support following the attack on Adamowicz. To test this prediction, we collected Twitter data from 20 Confederation politicians. There is no evidence that the violent attack on Adamowicz affected this party support (Table A15).

5 Survey Evidence

Twitter data allows us to precisely observe the messages each politician published and whether specific types of messages received higher support. Our analysis suggests that had the opposition not engaged in negative campaigning after the violence, they would not have lost support vis-à-vis the government. However, though we have shown that

support on Twitter is strongly correlated with polls, the particular effect we document may be driven by a selected sample of social media users. To examine whether the relative increase in government support generalizes to public opinion outside of social media, we corroborate our findings using survey data from a representative sample of Poland collected at the time of the attack.

5.1 Data and measures

We use data from the Centrum Badania Opinii Społecznej (CBOS) opinion poll. The CBOS poll is conducted monthly and asks respondents about their party preferences. The sample is nationally representative and comprises 1,000 individuals interviewed face-to-face and via telephone (94% and 6% of the sample, respectively). We use data from January 2019, which was collected between 10th and 17th January coinciding with the violent attack on Adamowicz. 44% of the sample was interviewed before the violent attack, while 54% were interviewed immediately after.

We measure party support using vote intentions for the October 2019 parliamentary election.¹⁴ Our main outcome variable is built in the following way: We conduct principal component analysis on 11 dummies indicating intention to vote for a particular party. We use the first component that captures the difference between support for the Law and Justice (PiS) government party (-0.778 loading) and the Civic Platform (PO) opposition party (0.570 loading).¹⁵ The higher scores on the variable (PCA) indicate greater support for the opposition vis-à-vis the government. Importantly, this measure allows us to capture losses in the main opposition party's support *to the benefit of* the government party (rather than other opposition parties). As an alternative, we use an ordinal variable scoring -1 if a person intends to vote for the government party, 1 if

¹⁴246 respondents declared no intention to vote in the 2019 election. In what follows, we consider these individuals as neither opposition, nor government supporters.

¹⁵The amount of variance explained by this component is 12 percent, relatively low but somewhat expected given that the principal component analysis was conducted on mutually exclusive dummy variables (individuals choose only one party).

s/he intends to vote for the main opposition party, and 0 if s/he intends to vote for any other party (*Ordinal*). We also use two indicator variables equal to 1 if the respondent plans to vote for PiS (*GovSupport*) or PO (*OppSupport*).

5.2 Empirical strategy

We estimate the effect of violence against politicians by relying on an Unexpected Events during Survey Design framework (UESD; Muñoz, Falcó-Gimeno and Hernández 2020, Balcells and Torrats-Espinosa 2018). To gauge changes in public opinion, we compare vote intentions of individuals interviewed just before and just after the violent attack. Any differences between these groups are likely to be attributed to the effect of violence against Adamowicz.

To use the UESD, we must invoke three assumptions. First, we assume that the violent attack did not coincide with any other event which could have provoked changes in public opinion. Here, the highly politicized WOŚP charity event is an obvious concern (see Footnote 12). Yet, in Figure A4 we have already shown that the 2018 WOŚP event (i.e. the event held one year before the Adamowicz’s killing) was not associated with any changes in public opinion. We have also documented that media coverage in the days after the event was primarily focused on the killing (Figures 1 and A2).

Second, we assume that individuals interviewed after the violent attack knew what had happened to Adamowicz. We believe that this assumption is highly plausible, given that almost all international, national, and local media outlets widely covered the Adamowicz’s stabbing in the days following the attack. Importantly, even if this assumption did not fully hold, imperfect ‘treatment’ would tend to bias our coefficients towards zero.

Third, we assume that there were no factors which could have jointly affected vote intentions and the probability of being interviewed after the attack. This assumption may be violated in at least two ways. First, some voters—e.g. extremist party supporters—

might have refused to talk about their political preference in the aftermath of Adamowicz’s assassination.¹⁶ Second, due to logistical organization of the survey, individuals with some specific characteristics might have been interviewed at the end of data collection and thus after the Adamowicz’s killing (e.g. difficult to reach holders of managerial jobs; see [Muñoz, Falcó-Gimeno and Hernández 2020](#)).

To assess these concerns, we compare individuals interviewed before and after the violent attack across all available covariates (see Figure A9 in the Appendix). Our treatment and control samples are not fully balanced, in particular, uneducated individuals who live in rural areas, do not use the Internet, voted for the PiS party in 2015, and watch state television were more likely to be interviewed before the attack. Note that these imbalances are likely to bias our estimates *downward*, given that we expect to observe increased support for the government party. This makes the imbalances less of a threat to inference and the violation of our third UESD assumption less problematic. Yet, we still address the issue using a matching approach discussed below.

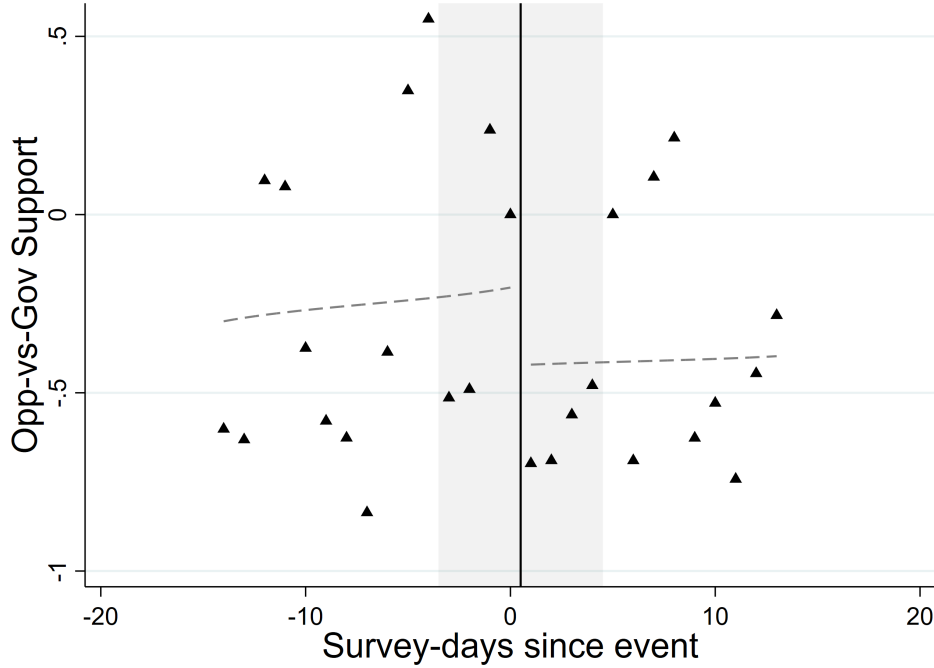
5.3 Main results

We first conduct a graphical analysis to examine descriptively whether party support in the polls changed as a result of the violent attack. We regress the opposition vis-à-vis government support variable (*PCA*) on event-day dummies and normalize all coefficients to zero on the day of the event. We account for weekend effects (ie. some interviewees may only be reached on weekends) using a weekend dummy, and we include previous and subsequent waves of the survey. Figure 6 shows a clear decline in the support for the opposition relative to the government after the event. Before the attack, 32.3% respondents supported the PiS party, and 18.4% supported the PO party. After the attack, 30.7% supported PiS, and only 15.0% supported PO. This difference, however,

¹⁶Reassuringly, in Table A17, we show that respondents interviewed before and after the attack were equally likely to participate in the election and reveal their party preferences.

may be biased due to the aforementioned imbalances in the sample.

Figure 6: Opposition vis-à-vis government support across time



Notes: The plot shows event-time coefficients of opposition vis-à-vis government support and kernel-weighted local polynomial fits. For this visualization, we include December 2018 and February 2019 waves of the CBOS poll. The main survey wave we use in the analysis is shaded in light gray. Figure A11 disaggregates this plot by party.

In the next step, we use propensity-score matching. We estimate a probit regression of the post-attack interview dummy on the unbalanced covariates. We use the estimates from this probit model as the probability of an individual of being interviewed after the attack. We then match individuals with different treatment statuses, but highly similar propensity scores, and estimate the difference in means across the two samples using a simple linear regression of the following form:¹⁷

$$oppositionVsGovernmentSupport_{it} = \beta \cdot postAttack_t + X_i \cdot \delta + \varepsilon_{it} \quad (3)$$

for individual i , on day t . Where $postAttack_t$ is an indicator variable equal to 1 if the

¹⁷Figure A10 shows the improvement in covariate balance as a result of matching.

respondent was interviewed after the attack, while X_i is a propensity score for being interviewed post-treatment.¹⁸ Following [Balcells and Torrats-Espinosa \(2018\)](#) and [Muñoz, Falcó-Gimeno and Hernández \(2020\)](#), we focus on the short-run. In particular, we restrict the sample to the January 2019 wave, collected within a 4 day time-window around the date of the Adamowicz's assassination.

In a complementary exercise, we estimate the treatment effect through OLS using all survey waves, in a model with wave and region fixed effects, as well as the set of unbalanced controls. The effect captured is thus the same "short-run" effect as that in the matching exercise, as only participants in the second wave vary in treatment assignment.

Table 4 shows the results of this analyses. We can see that support for the opposition vis-à-vis the government is 6.2 percentage points lower for individuals interviewed after the violent attack (columns 2 and 6) as measured by our ordinal index. The mean difference in support between government and opposition in our surveys is around 15 points, so this change represents a 41 percent change in relative support. This difference is explained by increased support for the government (columns 3 and 7); and to a lesser extent by decreased support for the opposition (columns 4 and 8). The results remain virtually unchanged if we only limit our OLS regression to the second wave, or if we include a linear time trend using all waves (A16). The above results are consistent with our Twitter findings both in direction and magnitudes, highlighting the government's relative gains in public support after the violent attack.

5.4 Negative campaigning

In a final step, we test whether the observed relative reduction in opposition support in the polls could also be explained by the negative campaigning mechanism. Here, we measure exposure to negative campaigning using information on which television channel respondents principally receive their daily information from (cp. [De Benedictis-](#)

¹⁸Due to missing data on some matched covariates, our sample is reduced to 818 individuals.

Table 4: Violent attack and vote intentions

	(1) PCA	(2) Ordinal	(3) GovSup	(4) OppSup	(5) PCA	(6) Ordinal	(7) GovSup	(8) OppSup
ATE.Post	-0.114* (0.059)	-0.062* (0.036)	0.040 (0.025)	-0.021 (0.023)				
Post					-0.127** (0.064)	-0.062* (0.037)	0.049* (0.027)	-0.013 (0.024)
N	818	818	818	818	2470	2470	2470	2470
Model	Matching	Matching	Matching	Matching	OLS	OLS	OLS	OLS
Survey Waves	1	1	1	1	3	3	3	3
Region FE	No	No	No	No	Yes	Yes	Yes	Yes
Wave FE	No	No	No	No	Yes	Yes	Yes	Yes

Notes: Robust standard errors in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Kessner et al., 2019). We classify TV channels into three groups: i) pro-government channels (TVP; 44.13%), ii) pro-opposition channels (TVN; 40.46%), and iii) neutral channels (Polsat; 15.40%). Following the post-attack Polish media analysis by Sarna and Tyc (2020), we assume that viewers of *partisan* TV channels—i.e. pro-government and pro-opposition TV—were most exposed to negative campaigning by opposition politicians.

To confirm this assumption, we scraped news websites of the three main TV channels (TVP Info, TVN, Polsat News), collecting information of 3,221 news items. Content analysis of these news allows us to identify how much negative campaigning the viewers of each channel were exposed to. Analogously to Twitter analysis, we define negative campaigning as rival mentions. Figure A12 in the Appendix shows the frequency of government and opposition mentions by TV channel. Again, we find that pro-opposition TV channel mentioned government politicians more often than any other channel—77% of the time. Moreover, pro-opposition TV channel also seems to have increased their broadcasting of negative campaigning after the violent attack, passing from 71% to 81% of all news content that mention the government. Neutral TV channel was least likely to mention the government or the opposition. This happened only 38% and 41% of the time, respectively.

Having confirmed that TV viewership provides us with a reasonable proxy for exposure to negative campaigning, we re-estimate our models separately for the viewers of partisan and neutral TV channels. The results of this analysis are presented in Table 5. In line with the negative campaigning mechanism, we find that the loss of opposition’s support is largest among survey respondents who watched partisan TV channels (columns 5–8). Among neutral TV viewers, by contrast, the coefficient for the post-attack interview dummy has a positive sign (columns 1–4). Neutral TV viewers who were least exposed to negative campaigning did not decrease their support for the opposition after the attack. If anything, the opposite could be true. In Table A18, we confirm this result by demonstrating a positive interaction between neutral TV viewership and the post-attack dummy.

Table 5: Violent attack and vote intentions (by TV viewership)

	(1) PCA	(2) Ordinal	(3) PCA	(4) Ordinal	(5) PCA	(6) Ordinal	(7) PCA	(8) Ordinal
ATE.Post	0.160 (0.195)	0.133 (0.118)			-0.138** (0.062)	-0.081** (0.037)		
Post			0.432** (0.181)	0.251** (0.105)			-0.197*** (0.068)	-0.104*** (0.040)
N	126	126	388	388	692	692	2082	2082
Model	Matching	Matching	OLS	OLS	Matching	Matching	OLS	OLS
Sample	Neutral TV	Neutral TV	Neutral TV	Neutral TV	Partisan TV	Partisan TV	Partisan TV	Partisan TV

Notes: Region fixed effects included. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Interestingly, we do not find differences between pro-opposition and pro-government TV viewers. This result may be explained by the fact that government politicians did not engage in negative campaigning—be it on Twitter or on the television. As a result, exposure to negative campaigning for pro-government TV viewers simply meant seeing opposition politicians attacking the government. The material by Maciek Sawicki about ‘hate speech’ emitted on TVP one day after the Adamowicz’s attack provides the best illustration in this respect (see [here](#)). The material highlights that opposition’s confrontational reaction to the assassination was both inappropriate and harmful insofar as it fueled violent political conflict. Overall, our survey evidence is consistent with the

patterns on social media, suggesting that engagement in negative campaigning after the violent attack helps explain the opposition's loss of support vis-à-vis the government.

6 Long-Run Implications

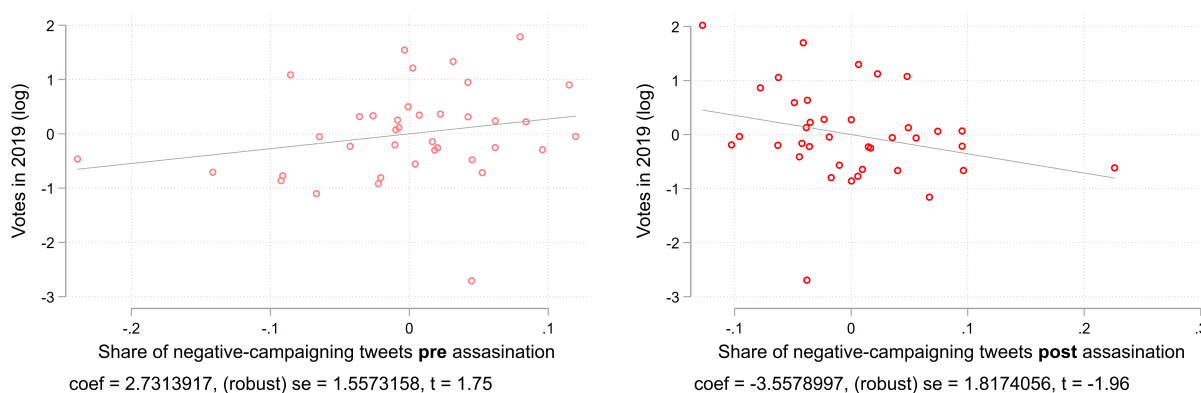
We have so far documented short-term changes in party support but have not systematically evaluated whether these changes could have led to long-run political shifts. We cannot answer this question definitively with the present data, but in one last empirical exercise, we examine whether negative campaigning after Adamowicz's assassination could have affected electoral outcomes in the European Parliament in May 2019 and the general election in October 2019. The evidence that follows is necessarily suggestive, as we work with a small sample and cannot rule out issues of endogeneity. In particular, we examine the correlation between opposition politicians' votes in the 2019 elections and their propensity to engage in negative campaigning on Twitter after the assassination of Adamowicz. The analysis is based on 39 politicians for whom we have the relevant data, including their electoral results in the previous (2015) elections.¹⁹ Our preferred specification controls for both votes in 2015 and the share of negative campaigning tweets *before* the assassination of Adamowicz, which helps us address the idea that the returns to negative campaigning may be heterogeneous depending on the political environment in which it occurs.

In line with our short-run results on public support, we find that electoral votes and negative campaigning *after* the assassination are negatively correlated. That is, opposition politicians who engaged in more negative campaigning after the violent attack did relatively worse in the 2019 elections, after controlling for their electoral performance in 2015. Figure 7 plots this partial correlation (right panel). Interestingly and consistent

¹⁹For some politicians, we have the number of votes in the 2015 national parliamentary election, and then the number of votes in the 2019 *European* parliamentary election. Moreover, some politicians changed their voting district or their ranking on the party's candidate list, both of which could affect our results. We cannot fully rule out that these measurement errors are not independent of negative campaigning.

with the patterns in the Twitter data, the observed relationship between negative campaigning *before* the assassination and electoral outcomes is actually positive (see Figure 7, left panel). Our preferred coefficient estimates (shown in Table A19, column 3) suggest that a 10 percentage point difference in the propensity of politicians to engage in negative campaigning is associated with an 8.2 percent reduction in their 2019 electoral votes.

Figure 7: Negative campaigning and electoral outcomes



Notes: The plot shows the partial correlation between the share of tweets classified as negative campaigning and electoral outcomes (log of votes in 2019) for opposition politicians, after controlling for the electoral results in the previous election (log of votes in 2015).

For comparison purposes, the most recent 2020 presidential election was lost by a PO candidate, Rafał Trzaskowski, by a very small margin of 2.06 percentage points. Interestingly, the chief of Trzaskowski's campaign was Cezary Tomczyk, one of the leading negative campaigners in our dataset and the author of the tweet presented in Figure 4. Trzaskowski himself also focused on criticizing the incumbent presidential candidate and his supporters from the PiS party.²⁰ Given the context of high polarization and escalating political conflict linked to still vivid memories of Adamowicz's assassination, the evidence we present suggests that such negative campaigning could have backfired.²¹

²⁰Political commentators pointed out that Trzaskowski's anger and aggressiveness were the weakness elements of his campaign; see, e.g., podcast by Karol Paciorek: <https://youtu.be/Dd6qpa37lc4>.

²¹Other studies showing that short-term political shocks can have long-run consequences include

7 Conclusion

This study has revisited the relationship between politician assassinations and public opinion. Our empirical focus was on the assassination of a nonincumbent politician: a common, yet understudied type of violence against politicians. Drawing on Twitter data and opinion poll collected around the time of the violence, we found that the assassination of the opposition city mayor in Poland contributed to the weakening of the victim's party relative to the government. An important mechanism that explains this finding is negative campaigning. Qualitative and quantitative analysis of tweets and news media content showed that Polish citizens punished the opposition for its engagement in negative campaigning against the government right after the violent attack. Tentative evidence also suggests that this could have had long-run political implications. We find that 2019 electoral votes of opposition politicians and their negative campaigning *after* the assassination on Twitter are negatively correlated.

Our findings thus have relevant implications for the study of negative campaigning. Despite an extensive set of studies on the topic, evidence on the effects of negative campaigning on party support remains mixed (Lau, Sigelman and Rovner, 2007). Our study provides additional support for recent studies showing that negative campaigning can actually backfire (Morisi, 2018; Galasso, Nannicini and Nunnari, 2020). Importantly, we suggest a possible way to reconcile this finding with earlier, opposite results. We show that the effect of negative campaigning on party support may be moderated by the political context in which it takes place, and in particular by the risks of violent political conflict. Based on our analysis, we find that negative campaigning is efficient in garnering support in 'normal' times of peace, but it turns to be counterproductive when peaceful political conflict becomes likely to deteriorate into a violent one. The

Morales (2019), which documents how rebel attacks in Colombia induced short-run increases in legislative support for the government, and identifies 40 congressional votes that could have been affected as a result, and Madestam et al. (2013), which documents that variation in protest turnout from a single day (induced by weather shocks) can have long-lasting effects on vote shares and party strength.

generalizability of this conclusion, we hope, can be addressed by future work, perhaps by drawing on evidence from different contexts with varying level of threat of violent political conflict.

One important limitation of our work is the fact that we examined just one case study. Doing so afforded us with rich micro-level data, but it comes at the cost of generalizability. One may therefore ask, what does the case of Poland teach us about political assassinations and public opinion more broadly? Was Adamowicz's assassination a typical case of violence against politicians? Compared to other nonincumbent politicians who have been assassinated, Adamowicz was a relatively less prominent politician within his party. Yet, the Adamowicz's assassination still attracted global media coverage and has resonated in the European parliament, where the widowed Magdalena Adamowicz has since been elected MP, and campaigns actively against hate speech. Both facts attest to the considerable relevance of our case study.

Though the setting we examine is unique, it shares many features with recent trends observed across the globe. Increased polarization, partisan media and negative campaigning (often in the form of explicit and personal attacks on rivals) appear now common even in the most liberal of democracies (Przeworski, 2019). That some politicians also actively encourage violence against opponents makes our study even more pressing.²² Importantly, our results highlight that citizens worry about this divisiveness. As one Polish scholar put it: "Adamowicz has become a symbol of something bigger than the attack itself. He died during a charity event that tries to bring Poles together. As a result, he became a symbol of the death of unity in this society."²³ But in contrast to this view, the documented backlash against negative campaigning after the political assassination gives hope that the divisiveness at the politicians' level need not percolate through the rest of the society.

²²See, e.g., <https://www.nytimes.com/2016/08/10/us/politics/donald-trump-hillary-clinton.html>.

²³<https://www.theguardian.com/world/2019/jan/15/gdansk-polish-city-mourning-mayor-pawel-adamowicz-stabbing>.

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Online Appendix

A.1 Sampling of politicians

We first searched for Twitter handles of 50 government and 50 opposition politicians who in the 2015 Polish parliamentary elections received most votes. We considered both members of the lower and upper house of the Polish parliament (*Sejm* and *Senat*, respectively). We then extended our list to politicians who emerged as prominent government and opposition figures only after the 2015 elections. Those include:

- i) government ministers,
- ii) holders of important positions in public institutions (e.g. the head of state television),
- iii) holders of leadership position within party organizations (e.g. party treasurer),
- iv) mayors of big Polish cities (with a population of above 250,000 residents).

Our aim was to have the same number of Twitter handles of government and opposition politicians, which has not been achieved due to missing or inactive Twitter accounts. In the end, we collected Twitter data from 59 government and 50 opposition politicians.

A.2 Twitter engagement and traditional polls

Figure 2 in the main text shows a time-series graph of tweet engagement and the approval rating of the main political parties in Poland. We plot the difference in vote intention between government and opposition, and the difference in Twitter engagement, after de-trending and standardizing. Follower engagement at the monthly level is measured by regressing engagement on a set of year-month dummies with user fixed effects for the selected accounts. The relationship between the polls average and the follower engagement index is statistically significant at the 90% confidence level. The relationship between the polls average and the *lag* of the follower engagement index is statistically significant at the 95% confidence level. Table A1 shows these correlations (for both leads and lags), and reveals that Twitter engagement leads traditional polls, that is, the strongest predictor of the difference in support for the parties is Twitter engagement in the previous months.

To relieve concerns that retweets may be subject to manipulation by online bots (Morales, 2020), we repeat the analysis using only *likes* in A2, revealing an even stronger correlation between Twitter support and offline support. Other studies which have documented correlations between social media outcomes and measures of political support include DiGrazia et al. (2013), Barberá (2016), and Morales (2019), among others.

Table A1: Correlation between approval polls and Twitter engagement

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F4.Follower engagement	-0.176 (0.189)								
F3.Follower engagement		-0.0894 (0.212)							
F2.Follower engagement			0.158 (0.170)						
F.Follower engagement				0.264 (0.167)					
Follower engagement					0.320* (0.182)				
L.Follower engagement						0.407** (0.179)			
L2.Follower engagement							0.351* (0.186)		
L3.Follower engagement								0.431** (0.181)	
L4.Follower engagement									0.420*** (0.134)
N	30	31	32	33	34	33	32	31	30
R2	0.0233	0.00660	0.0241	0.0695	0.102	0.165	0.122	0.172	0.198

Notes: Follower engagement is the difference in the de-trended measure of Twitter engagement ($\log(\text{likes} + \text{retweets} + 1)$) between government users and opposition users, computed from a regression model with user fixed effects. The dependent variable is the difference in voter support for the government and the opposition, from the CBOS survey. Observations include months from January 2017 to October 2019. Each column represents a regression of voter support on the leads (F), lags (L), and contemporaneous measure of Twitter engagement. Robust standard errors in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Correlation between approval polls and Twitter likes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
F4.Follower engagement	0.227 (0.166)								
F3.Follower engagement		0.263 (0.158)							
F2.Follower engagement			0.220 (0.157)						
F.Follower engagement				0.256 (0.170)					
Follower engagement					0.444** (0.179)				
L.Follower engagement						0.564*** (0.128)			
L2.Follower engagement							0.498*** (0.172)		
L3.Follower engagement								0.527*** (0.139)	
L4.Follower engagement									0.223 (0.146)
N	30	31	32	33	34	33	32	31	30
R2	0.0461	0.0701	0.0486	0.0657	0.197	0.309	0.243	0.269	0.0479

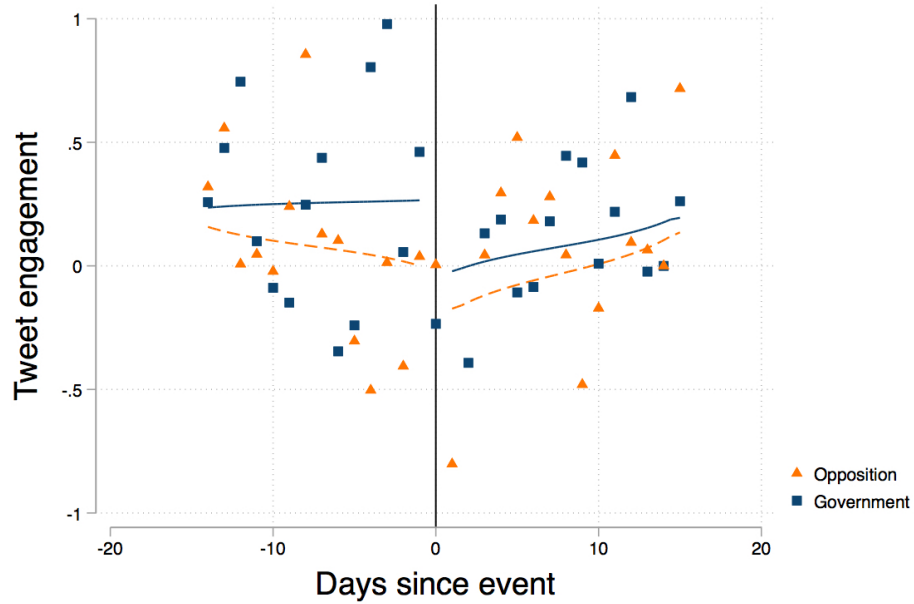
Notes: Twitter likes is the difference in the de-trended measure of Twitter likes ($\log(\text{likes} + 1)$) between government users and opposition users, computed from a regression model with user fixed effects. The dependent variable is the difference in voter support for the government and the opposition, from the CBOS survey. Observations include months from January 2017 to October 2019. Each column represents a regression of voter support on the leads (F), lags (L), and contemporaneous measure of Twitter likes. Robust standard errors in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A3: Descriptive statistics (15-day window)

	Retweets		Likes	
	Pre (1)	Post (2)	Pre (3)	Post (4)
Government	171 (457)	255 (735)	35 (85)	47 (131)
Opposition	110 (296)	90 (504)	27 (57)	17 (73)
N	1627	2352	1627	2352

Notes: The table shows the average number of retweets and likes pre and post-attack, split by government and opposition politicians' tweets. Standard deviations in parenthesis. Retweets excluded.

Figure A1: Tweet engagement across time: Placebo



Notes: The plot shows event-time coefficients of tweet engagement for both government and opposition members. The cut-off is set 15 days before the violent attack. Yet, all coefficients are normalized to the day before the actual attack as in Figure 3. Note that the placebo cut-off coincides with the New Year's Eve, which explains marginal discontinuity around this date.

Figure A2: Wordcloud constructed from transcribed TVP news content



Notes: Word frequency is represented by size. Special Polish characters (e.g. ń, ć, ł) are removed. The analysis demonstrates that the three most frequent words are “prezydenta” (mayor), “adamowicza,” and “gdaska” (the city where Adamowicz served as mayor). News content from January 14 to January 18, 2019.

A.3 No controls or fixed effects

Table A4: Violent attack and Twitter engagement

	(1)	(2)	(3)
	Engagement	Retweets	Likes
Post x opposition	-0.940 (0.656)	-0.705 (0.444)	-0.881 (0.638)
N	3979	3979	3979
Day FE	No	No	No
Politician FE	No	No	No
Controls	No	No	No

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below
 *p<0.10, ** p<0.05, ***p<0.01.

Table A5: Violent attack and Twitter engagement: Negative campaigning effect

	(1)	(2)	(3)
	Engagement	Retweets	Likes
Post x opposition	-0.711 (0.621)	-0.512 (0.422)	-0.661 (0.604)
Mention rival	1.737*** (0.286)	1.590*** (0.242)	1.673*** (0.280)
Post x Mention rival	-1.634*** (0.448)	-1.403*** (0.353)	-1.574*** (0.431)
N	3979	3979	3979
Day FE	No	No	No
Politician FE	No	No	No
Controls	No	No	No

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below
 *p<0.10, ** p<0.05, ***p<0.01.

A.4 Politician level interactions

Table A6: Violent attack and Twitter engagement: Negative campaigning effect

	(1)	(2)	(3)	(4)	(5)	(6)
	Engagment	Retweets	Likes	Engagment	Retweets	Likes
Post x Negative campaigner	-1.173* (0.663)	-0.813** (0.386)	-1.145* (0.668)	-0.923 (1.191)	-0.460 (0.716)	-0.926 (1.189)
Post x opposition				-0.093 (0.326)	-0.131 (0.198)	-0.082 (0.329)
N	3818	3818	3818	3818	3818	3818
Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: *Negative campaigner* is a dummy equal to 1 if the politician is above-median in its share of negative campaigning tweets. Standard errors clustered at the politician level in parenthesis. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

A.5 Alternative time windows

How durable are the reported effects? In Tables [A7](#), [A8](#) and [A9](#), we repeat the analysis for different time periods, considering 10, 20, and 30 day time windows. In the 10 day time window, we continue to see a substantially higher increase in Twitter engagement for government politicians. This difference is particularly large for our measure of support based on retweets. However, the estimates in the shorter time window are also less precise and thus insignificant for likes. In the longer time windows, the differential increases in Twitter engagement for government and opposition politicians are two to three times smaller compared to our baseline estimates. And, none of these estimates is statistically significant at the 90% level. This suggests that the effect of the assassination on Twitter engagement with the government was short-lived (but in line with other studies analyzing consequences of violent events, [Willer, 2004](#); [Morales, 2019](#); [Clark, Doyle and Stancanelli, 2020](#)). Despite the fact that the effects on government support are short-lived, the diminished returns to negative campaigning persist in the longer time horizon. Since we also find evidence of strong correlations between negative campaigning on Twitter and electoral outcomes, these patterns suggest that the event could have had long-run consequences through this mechanism.

Table A7: Violent attack and Twitter engagement (10-day window)

	(1) Engagement	(2) Retweets	(3) Likes	(4) Engagement	(5) Retweets	(6) Likes
Post x opposition	-0.217 (0.140)	-0.332*** (0.108)	-0.184 (0.141)	-0.044 (0.155)	-0.158 (0.125)	-0.018 (0.156)
Mention rival				0.714*** (0.142)	0.706*** (0.125)	0.690*** (0.140)
Post x Mention rival				-0.461 (0.315)	-0.474** (0.226)	-0.439 (0.307)
N	2652	2652	2652	2652	2652	2652
Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below

*p<0.10, ** p<0.05, ***p<0.01.

Table A8: Violent attack and Twitter engagement (20-day window)

	(1) Engagement	(2) Retweets	(3) Likes	(4) Engagement	(5) Retweets	(6) Likes
Post x opposition	-0.147 (0.170)	-0.127 (0.102)	-0.138 (0.173)	-0.008 (0.183)	0.003 (0.121)	-0.005 (0.185)
Mention rival				0.868*** (0.127)	0.824*** (0.115)	0.838*** (0.125)
Post x Mention rival				-0.428* (0.237)	-0.398* (0.205)	-0.411* (0.229)
N	5331	5331	5331	5331	5331	5331
Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below

*p<0.10, ** p<0.05, ***p<0.01.

Table A9: Violent attack and Twitter engagement (30-day window)

	(1)	(2)	(3)	(4)	(5)	(6)
	Engagement	Retweets	Likes	Engagement	Retweets	Likes
Post x opposition	-0.173 (0.151)	-0.114 (0.093)	-0.172 (0.153)	-0.050 (0.160)	-0.008 (0.110)	-0.053 (0.161)
Mention rival				0.835*** (0.118)	0.769*** (0.108)	0.804*** (0.117)
Post x Mention rival				-0.378* (0.202)	-0.310 (0.191)	-0.364* (0.196)
N	8130	8130	8130	8130	8130	8130
Day FE	Yes	Yes	Yes	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below

*p<0.10, ** p<0.05, ***p<0.01.

A.6 Tweets about Adamowicz

Table A10: Adamowicz Mentions and Twitter engagement

	(1)	(2)	(3)
	Engagement	Retweets	Likes
Mention Adamowicz	0.821*** (0.153)	0.688*** (0.165)	0.838*** (0.160)
Mention Adamowicz \times Opposition	-0.573*** (0.189)	-0.718*** (0.182)	-0.584*** (0.192)
N	3977	3977	3977
Controls	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. We do not report comparisons before/after the event because there was only 1 tweet mentioning Adamowicz before the event. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Violent attack and Twitter engagement (tweets about Adamowicz excluded)

	(1)	(2)	(3)	(4)	(5)	(6)
	Engagement	Retweets	Likes	Engagement	Retweets	Likes
Post \times opposition	-1.001 (0.638)	-0.736* (0.431)	-0.939 (0.620)	-0.348* (0.191)	-0.258** (0.112)	-0.337* (0.194)
N	3822	3822	3822	3818	3818	3818
Day FE	No	No	No	Yes	Yes	Yes
Politician FE	No	No	No	Yes	Yes	Yes
Controls	No	No	No	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.7 Popularity of politicians

Table A12: Violent attack and Twitter engagement (interaction with pre-attack popularity)

	(1)	(2)	(3)
	Engagement	Retweets	Likes
Post x Popularity	-0.051 (0.060)	-0.002 (0.037)	-0.058 (0.061)
N	3178	3178	3178
Controls	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: Violent attack and Twitter engagement (50% most popular)

	(1)	(2)	(3)
	Engagement	Retweets	Likes
Post \times Opposition	-0.525** (0.222)	-0.408*** (0.132)	-0.510** (0.229)
N	1923	1923	1923
Controls	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

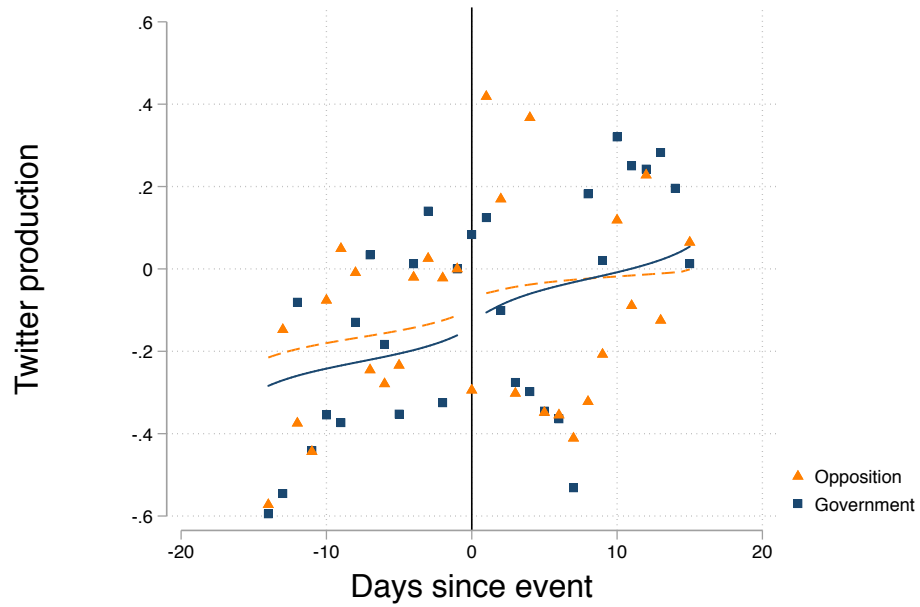
A.8 Twitter production

Table A14: Twitter production and Twitter engagement

	(1)
	Engagment
Log tweets	-0.225*** (0.004)
N	239184
Controls	No

Notes: Standard errors clustered at the politician level in parenthesis. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

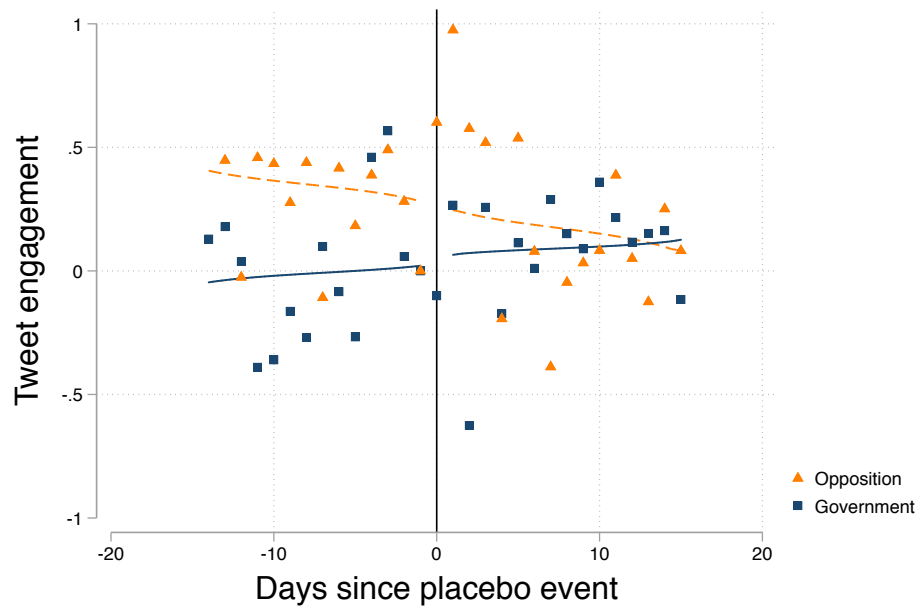
Figure A3: Violent attack and Twitter production



Notes: The plot shows event-time coefficients of Twitter production for government and opposition tweets before and after the event.

A.9 Placebo test: 2018 WOŚP event

Figure A4: Tweet engagement across time: Placebo treatment (2018 WOŚP event)



Notes: The plot shows event-time coefficients of tweet engagement for opposition tweets but split between those which mention the government, and those which do not.

A.10 Negative campaigning: Keywords

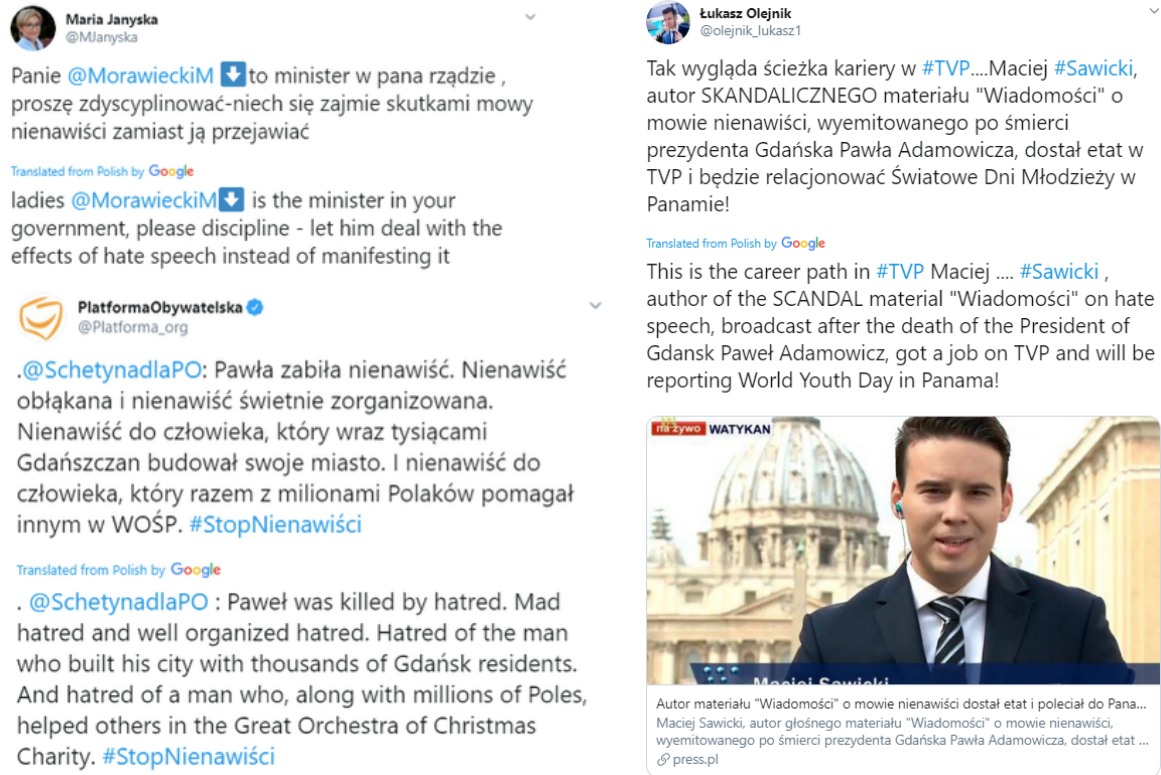
Keywords for opposition politicians' tweets **mentioning the government:**

- rzd, min, minist, wicemin, pis, mon, tvp, andruszkiewicz, berni_krynick, ustaw, budet, premier, morawieck, pisowsk, macierewicz, kaczyisk, msz, tygodnik_sieci, prokurat, smolesk, misiewicz, tasmykaczynsk, nbp, glapiski, szydo, ziobro, zieliski, gowin, jbrudzinski, drelich, wojewod, terlecki, polskapolicja, tv, republika, tvrepublika, sdownictw, pisorgpl.

Keywords for government politicians' tweets **mentioning the opposition:**

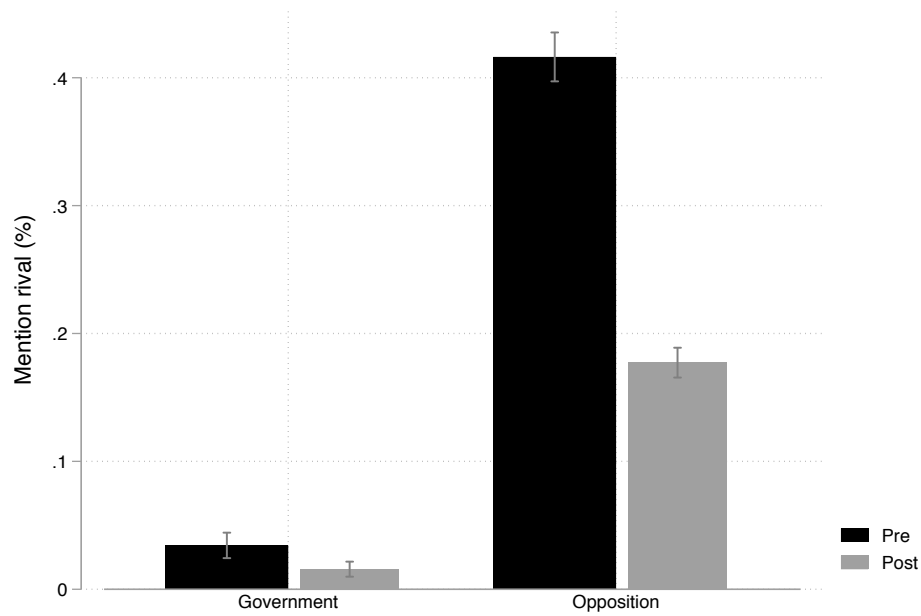
- lewac, psl_, gazwyb, nowick, sikorsk, schetyn, neuman, tomasz_lis, lis_tomasz, tusk, platform, trzaskowski_, platforma_org, klubnauer, gw_aszdziennik, gazetawyborcza.

Figure A5: Negative campaigning: Examples



Notes: The figure shows opposition tweets classified as negative campaigning. The text is displayed both in Polish and English (Google translation).

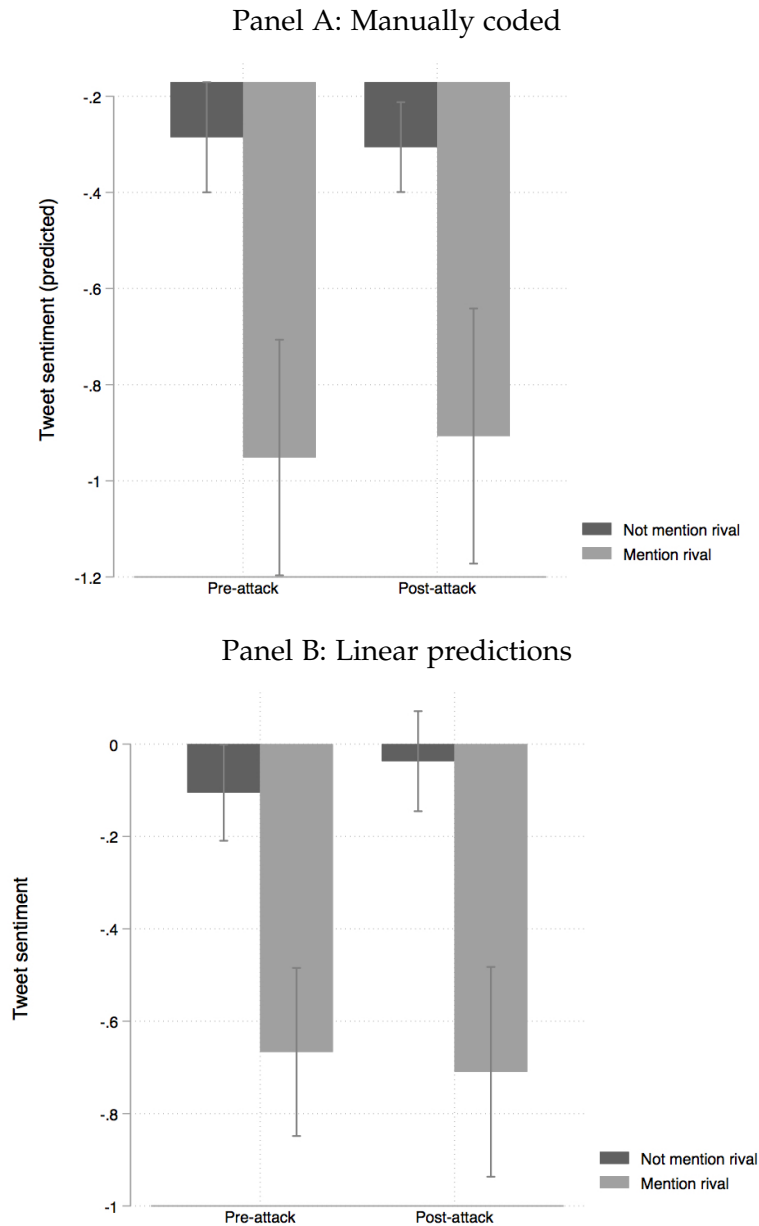
Figure A6: Negative campaigning by treatment and party affiliation



Notes: The figure shows percentages of mentioning political rivals in government and opposition politicians' tweets within 15 day time window.

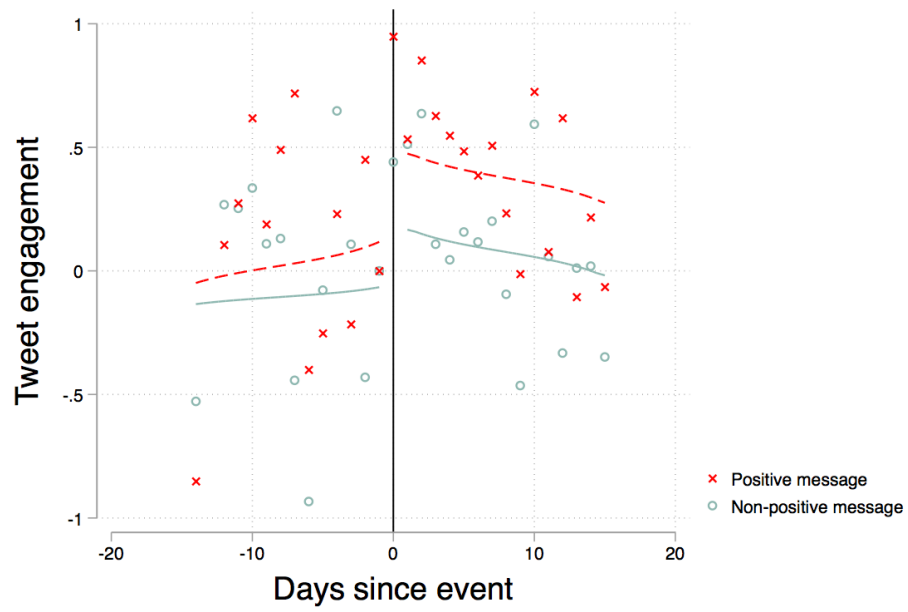
A.11 Sentiment analysis

Figure A7: Rival mentions and tweet sentiment



Notes: The figure shows average tweet sentiment for Twitter content posted before and after the attack, separately for tweets with rival mentions and without rival mentions. The upper panel focuses on manually coded tweets using three categories: 1 = positive sentiment, 0 = neutral sentiment, -1 = negative sentiment. The lower panel shows predictions from a linear text analysis in which keywords extracted from manually coded tweets are used to predict the sentiment of other tweets ([Morales, 2019](#)).

Figure A8: Tweet engagement across time by positive messages



Notes: The plot shows event-time coefficients of tweet engagement for opposition tweets but split between those which convey positive sentiments, and those which do not.

A.12 Extreme right support

Table A15: Violent attack and Twitter engagement: Confederation support

	(1)	(2)	(3)
	Engagment	Retweets	Likes
Post	0.019 (0.260)	0.017 (0.225)	-0.058 (0.196)
N	337	337	337
Controls	Yes	Yes	Yes

Notes: Standard errors clustered at the politician level in parenthesis. User fixed effects included. Significance levels shown below * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A.13 Survey evidence: Additional tables and figures

Table A16: Violent attack and vote intentions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PCA	Ordinal	GovSup	OppSup	PCA	Ordinal	GovSup	OppSup
Post	-0.105*	-0.053	0.037	-0.015	-0.147**	-0.074*	0.051*	-0.024
	(0.057)	(0.034)	(0.024)	(0.022)	(0.069)	(0.040)	(0.029)	(0.025)
N	818	818	818	818	2470	2470	2470	2470
Model	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Survey Waves	1	1	1	1	3	3	3	3
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wave FE	No	No	No	No	No	No	No	No
Linear trend	No	No	No	No	Yes	Yes	Yes	Yes

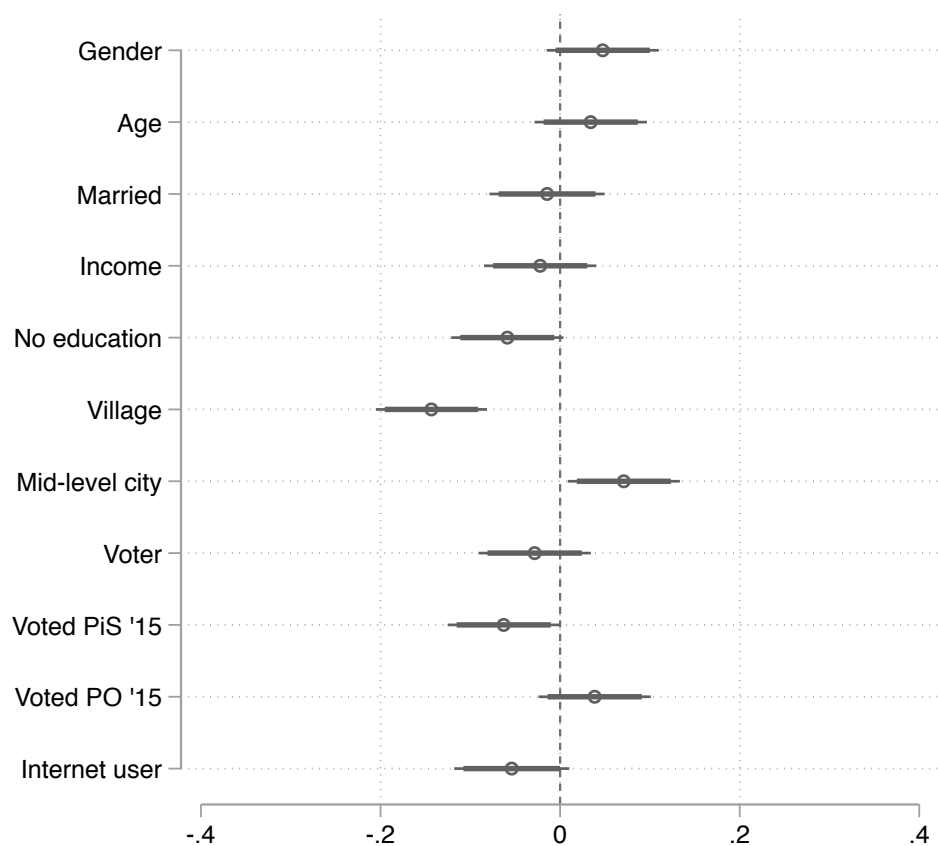
Notes: Robust standard errors in parenthesis. Significance levels shown below *p<0.10, **p<0.05, ***p<0.01.

Table A17: Violent attack and attrition

	(1)
	Reports party preferences
Post	-0.031
	(0.028)
N	986
Controls	No

Notes: Region fixed effects included. Significance levels shown below *p<0.10, ** p<0.05, ***p<0.01.

Figure A9: CBOS data: Balance



Notes: The plot shows the point estimates (dots) and their 90 and 95 percent confidence intervals (thick and thin lines, respectively) of bivariate regressions of the post-treatment interview dummy on the indicated covariates.

Figure A10: Matching: Balance improvement

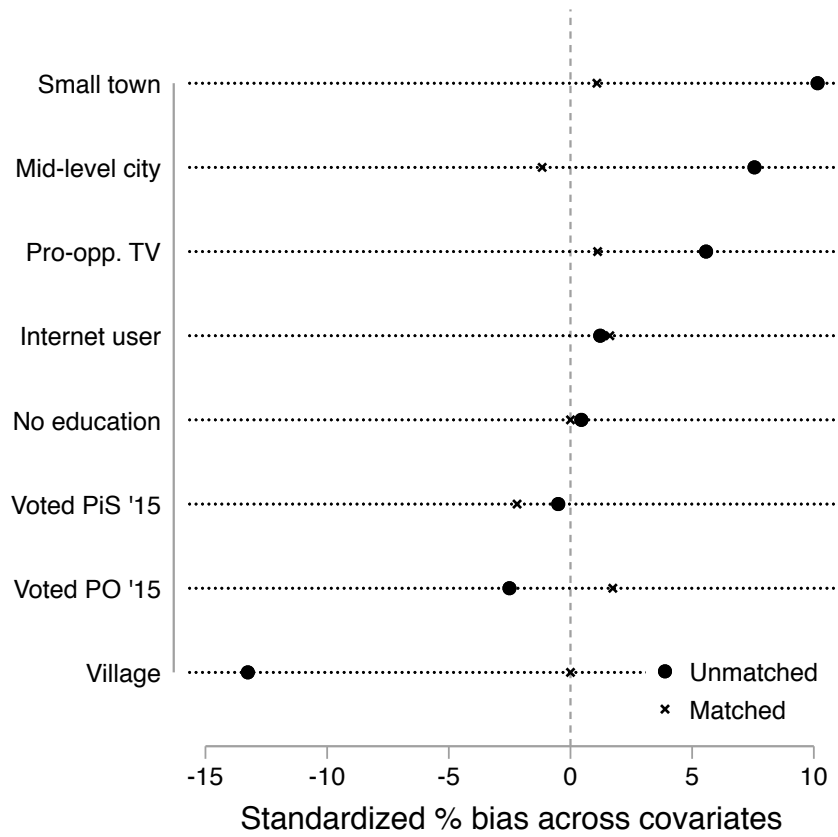
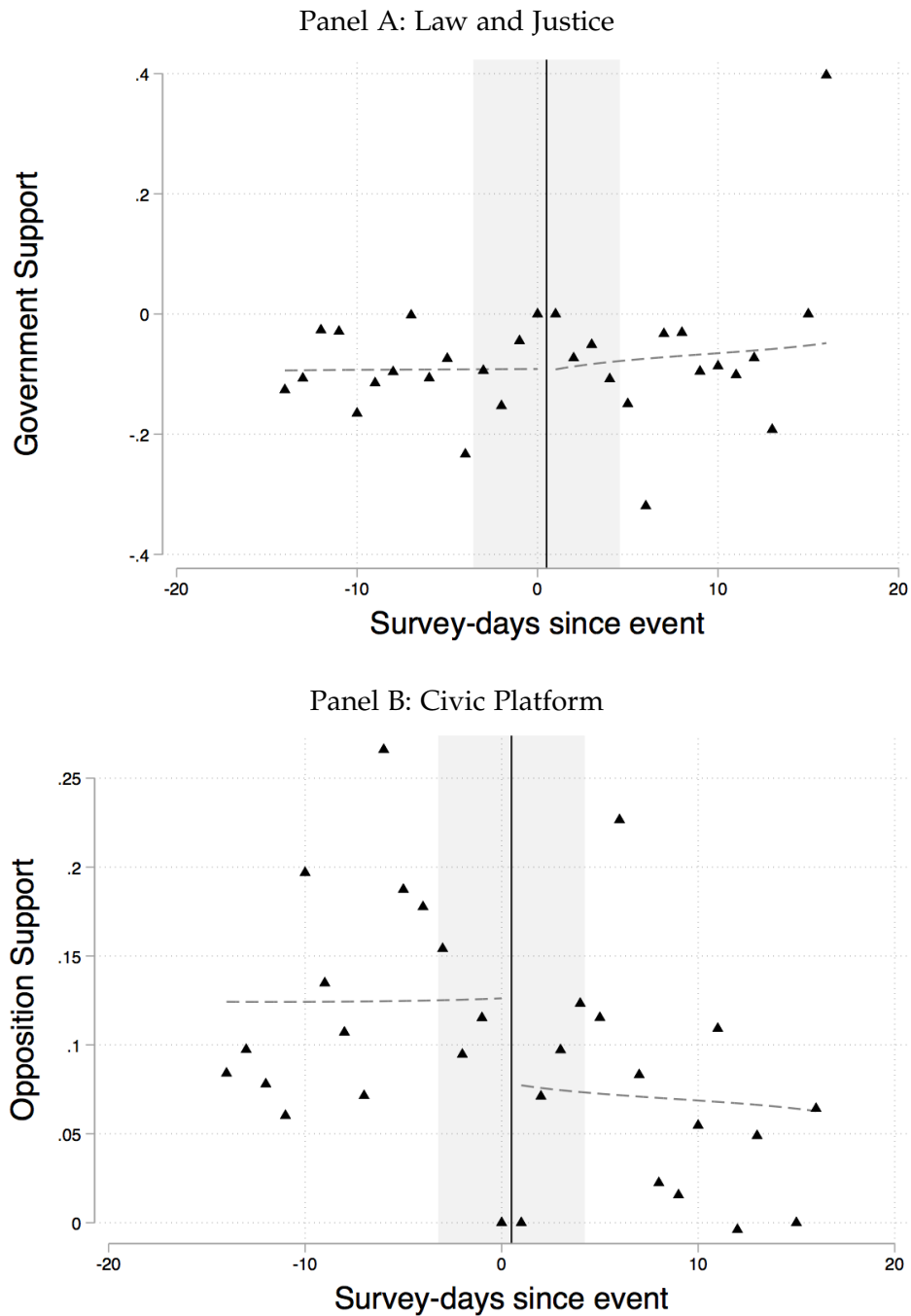
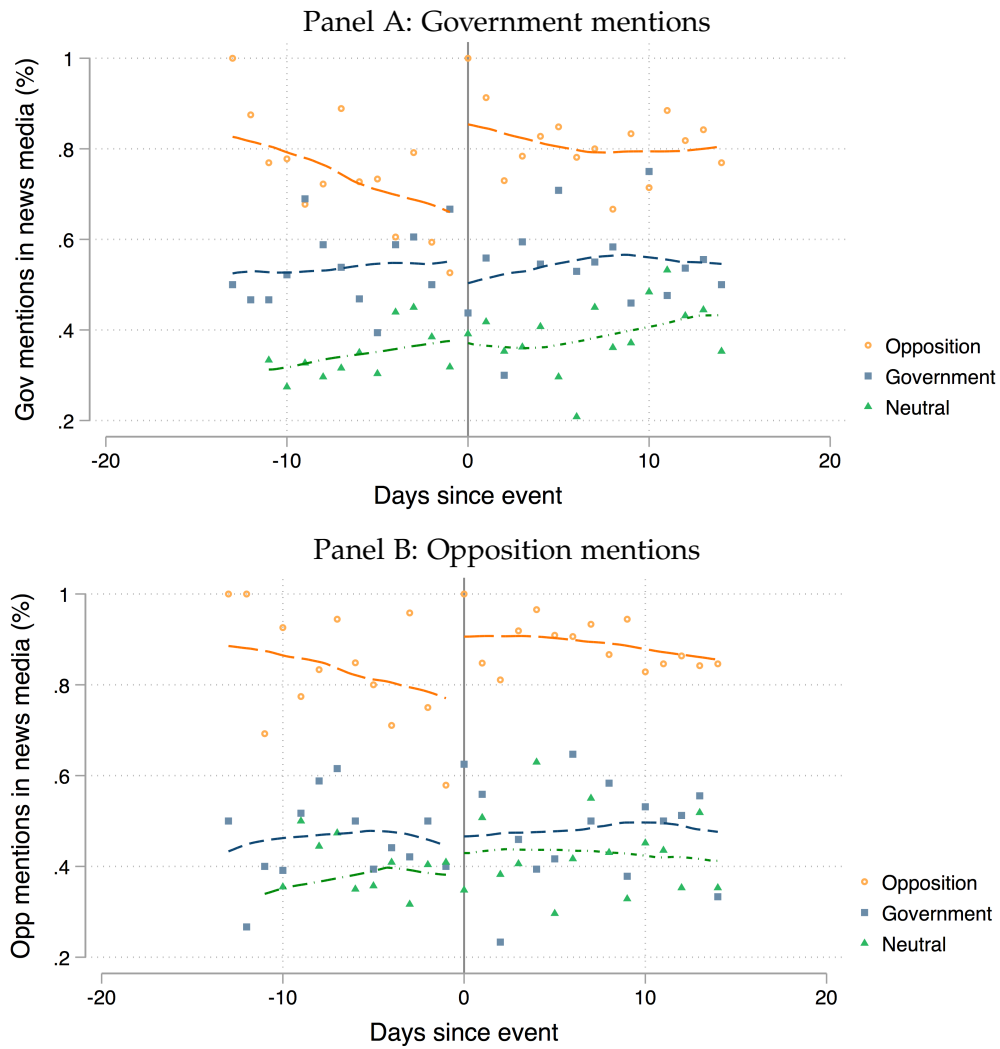


Figure A11: Opposition and government support across time



Notes: The plot shows event-time coefficients of opposition vis-à-vis government support and kernel-weighted local polynomial fits. For this visualization, we include December 2018 and February 2019 waves of the CBOS poll. The main survey wave we use in the analysis is shaded in light gray. The figure is disaggregated by party.

Figure A12: Negative campaigning by TV channels



Notes: The figure shows event-time coefficients of government and opposition mentions (upper and lower panel, respectively) and kernel-weighted local polynomial fits. The analysis is done separately for pro-government, pro-opposition, and neutral TV channel.

Table A18: Violent attack and vote intentions (interaction with TV viewership)

	(1) PCA	(2) Ordinal	(3) GovSup	(4) OppSup
Post	-0.151** (0.061)	-0.085** (0.036)	0.049* (0.026)	-0.036 (0.024)
Neutral TV	0.239** (0.111)	0.101 (0.066)	-0.147*** (0.047)	-0.046 (0.044)
Post x Neutral TV	0.346** (0.151)	0.237*** (0.090)	-0.102 (0.063)	0.134** (0.059)
N	818	818	818	818
Controls	Yes	Yes	Yes	Yes

Notes: Region fixed effects included. Significance levels shown below
 *p<0.10, ** p<0.05, ***p<0.01.

Table A19: Negative campaigning and electoral outcomes

	(1) Votes 2019	(2) Votes 2019	(3) Votes 2019
Share negative-campaigning tweets post assassination	-2.134 (1.485)	-4.702** (2.003)	-3.558* (1.817)
Share negative-campaigning tweets pre assassination		2.915* (1.666)	2.731* (1.557)
Votes in 2015 (log)			0.572** (0.210)
N	39	38	38

Notes: Correlation between negative campaigning and electoral outcomes for opposition politicians. Dependent variable is the log of votes in the 2019 elections. Robust standars errors shown below *p<0.10, ** p<0.05, ***p<0.01.