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Mediated Terrorism: US News and Al-Qaeda Attacks

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Abstract

This paper presents an empirical test for the hypothesis that US news coverage of al-Qaeda causes al-Qaeda attacks. To isolate causality, disaster deaths worldwide provide an instrumental variable crowding out al-Qaeda coverage. Studying daily al-Qaeda coverage by CNN, NBC, CBS, and Fox News, as well as the NYT and the WaPo, results consistently produce a positive and statistically significant effect. At its mean, al-Qaeda coverage is suggested to cause 1.2-2.3 al-Qaeda attacks (equivalent to 5.8-10.9 deaths) in the upcoming week. Results are remarkably consistent across media outlets and it appears unlikely that attacks are simply delayed when coverage is low.

JEL-Codes: C260, D740, F520, L820.

Keywords: al-Qaeda, media attention, media effects, terrorism, 9/11.

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“What the enemies of the United States cannot do, its media is doing that.”

Osama bin Laden (discussed in [Scheuer, 2004](#), p.159).

The journalistic *Code of Ethics* prescribes a moral imperative to minimize harm, as journalists should “[b]alance the public’s need for information against potential harm or discomfort” ([Society of Professional Journalists, 2014](#)). Is this principle violated by the media’s coverage of terrorism? Numerous commentators have suggested that media attention may directly encourage terror attacks (e.g., see [Rather, 2012](#), [Doward, 2015](#), [Lévy, 2016](#), [Rudoy, 2016](#), [Jacobs, 2017](#), or [Sitt, 2017](#)). Several politicians and researchers have echoed that sentiment. Former British Prime Minister Margaret Thatcher urged us to “starve the terrorist and the hijacker of the oxygen of publicity on which they depend” ([Apple Jr., 1985](#)). More recently, in August 2016, then-Secretary of State John Kerry argued along similar lines: “Perhaps the media would do us all a service if they didn’t cover it [terrorism] quite as much” ([Fox News Insider, 2016](#)). Prominent scholars have written entire books about mass-mediated terrorism and how, for terrorists, “the message matters, not the victims” ([Schmid and De Graaf, 1982](#), p.14; also see [Weimann and Winn, 1994](#), or [Nacos, 2016](#)). And this ‘message’ stands and falls with how much the media covers terrorism. For example, [Nacos \(2016, p.46\)](#) compares *non*-reporting of terrorism to the proverbial tree in the forest whose fall goes unnoticed when no one is around.

Nevertheless, some earlier research has downplayed the media’s role in inspiring terrorists (e.g., see [Schlesinger et al., 1984](#), or [Picard, 1986](#)).¹ In the meantime, journalists continue to cover terrorist groups, such as al-Qaeda, to an extraordinary extent as will be documented in the following pages (also see [Melnick and Eldor, 2010](#), or [Jetter, 2017](#)). Interestingly, though, the media have proposed and largely enforced self-regulatory guidelines for other topics where coverage may lead to harmful consequences, such as suicides (e.g., see [Mindframe, 2014](#), [King,](#)

¹For example, [Nacos \(2010, p.4\)](#) quotes [Picard \(1986\)](#), writing that “[t]he literature implicating the media as responsible for the contagion of terrorist violence has grown rapidly, but, under scrutiny, it appears to contain no credible supporting evidence and fails to establish a cause-effect relationship.”

2010, or [Reporting on suicide, 2017](#)). With respect to terrorism, what we are missing is an empirical test for the hypothesis implied by Thatcher, Kerry, and so many other commentators and scholars. We need an empirical strategy that allows us to test for a *causal* relationship between media coverage of a terrorist group and their subsequent attacks. The following pages aim to do that. I analyze the daily news coverage of al-Qaeda on *CNN*, the *NBC Nightly News*, the *CBS Evening News*, and *Fox News*, as well as in the *New York Times (NYT)* and the *Washington Post (WaPo)*, in connection with detailed information on al-Qaeda attacks from 9/11 until the end of 2015. As Osama bin Laden, the infamous founder and leader of al-Qaeda, repeatedly labeled the US as the group's main enemy and highlighted the importance of the media, I hypothesize that if al-Qaeda cared about media coverage at all, it would be the US media.²

To circumvent the latent endogeneity problems in trying to isolate causality, this study employs an instrumental variable (IV) strategy. Specifically, I propose that disaster deaths worldwide provide an exogenous variation that could affect contemporaneous media coverage of al-Qaeda: Everything else equal, the news may focus less on the group when more people are dying from disasters. In turn, it remains difficult to argue that al-Qaeda is in any other way influenced by disasters around the world.³ Crucially, it is also difficult to argue that al-Qaeda may be able to systematically predict disaster deaths worldwide and therefore schedule their missions accordingly, perhaps to avoid attacking in times with increased news pressure. The data suggest that this assumption is reasonable and al-Qaeda attacks on a given day are orthogonal to the number of disaster deaths on the same day.

The corresponding results from two-stage-least-squares (2SLS) regressions suggest a positive and statistically significant effect of al-Qaeda coverage on the number of subsequent attacks

²For evidence on the US as the principal enemy of al-Qaeda, see, for example, bin Laden's 'letter to America' ([Burke, 2002](#)). Further, bin Laden frequently eluded to the importance of the media, for instance by saying that "[i]t is obvious that the media war in this century is one of the strongest methods; in fact, its ratio may reach 90% of the total preparation for the battles" ([Nacos, 2016](#), p.30).

³Note that results are consistent when excluding disasters in countries where al-Qaeda is based, such as Afghanistan, Algeria, Iraq, Mali, Pakistan, Saudi Arabia, or Yemen. This alleviates concerns that terrorists may directly respond to natural disasters in their own country, as suggested by [Berrebi and Ostwald \(2011, 2013\)](#).

by the group. This result emerges consistently for data from all four television news outlets and both newspapers. In terms of magnitude, at their mean, al-Qaeda news coverage translates to 1.22-2.29 al-Qaeda attacks in the upcoming week, everything else equal. This magnitude corresponds to approximately 5.81 to 10.91 deaths, on average. It is remarkable how consistent the corresponding magnitudes are across all four television news programs and both newspapers.

These results are consistent when extending the time horizon of subsequent attacks to 14, 30, or 60 days. Thus, I find no evidence that planned attacks are merely delayed when news coverage is unusually low. Rather, the overall number of attacks decreases when coverage is less. Results from a battery of alternative empirical specifications, robustness checks, and placebo regressions provide additional support for these findings.

The paper aims to contribute to two distinct areas of research. First, it may help us to better understand what drives terrorist attacks. The economic damages from the 9/11 attacks alone have been estimated to range from US\$25-60 billion (Frey et al., 2007, p.12), in addition to the human tragedies and indirect costs (e.g., counter-terrorism efforts).⁴ Thus, understanding what may be able to contain terrorism has become an important research focus, both for policymakers and scholars. With respect to the media, Rohner and Frey (2007) find a correlation between the degree of attention terrorism receives in the *NYT* and attacks; in Jetter (2017), I find evidence consistent with the hypothesis that *NYT* coverage of terrorism in general may encourage future attacks, exploring a similar IV strategy based on natural disasters. One improvement in the present paper is a direct and much clearer identification of news segments dedicated to a *specific* terrorist group with al-Qaeda and a straightforward link to subsequent attacks by the same

⁴The macroeconomic consequences of terrorist attacks have also been analyzed by Abadie and Gardeazabal (2003), Blomberg et al. (2004), Eckstein and Tsiddon (2004), Llussá and Tavares (2011), and Meierrieks and Gries (2013), among many others. Recently, Brodeur (2015) investigates US data on the county level to show that successful terrorist attacks can reduce the number of jobs available and increase consumer pessimism (see Benmelech et al., 2010, for a similar study on Israel). Studying the Israeli-Palestinian conflict, Gould and Klor (2010) suggest terrorism could actually “cause Israelis to be more willing to grant territorial concessions to the Palestinians.” Other relevant studies on the Israeli-Palestinian conflict come from Jaeger and Paserman (2006, 2008) and Jaeger et al. (2012). Terrorism may also carry social and political consequences (Glaeser and Shapiro, 2002; Dreher et al., 2010; Gassebner et al., 2011).

group.

Second, and more general, this study contributes to a growing empirical literature on the power of the media in driving political and conflict situations. For instance, radio programs may have crucially influenced the rise of the Nazis ([Adena et al., 2015](#)), the Rwandan genocide ([Li, 2004](#); [Yanagizawa-Drott, 2014](#)), and the recent rise of nationalistic anti-Serbian parties in Croatia ([DellaVigna et al., 2014](#)). However, we still have less empirical evidence on the links between the media and *terrorism*, with the exception of the studies mentioned above. This paper aims to fill that gap, suggesting that the media may play a powerful role in inspiring al-Qaeda missions. Potential policy conclusions are discussed in [Section 5](#).

The paper proceeds with a brief overview of the associated literature and potential mechanisms linking media coverage of terrorism to subsequent attacks. [Section 2](#) describes data sources, whereas [Section 3](#) introduces the empirical design. [Section 4](#) presents the main empirical findings, and [Sections 4.3](#) and [4.4](#) discuss results from extensions, robustness checks, and placebo regressions. Finally, [Section 5](#) concludes.

1 Background

1.1 The Media and Political Consequences

Media in its various forms can play a pivotal role in political conflict situations. Radio, television, and newspaper coverage can spur or deter political violence, as they can be used as propaganda tools or, more generally, as a megaphone to spread information across a large audience (also see [Gilboa et al., 2016](#), for a recent overview of underlying concepts). A growing literature seeks to test for causal relationships between media coverage and violent outcomes. And the corresponding magnitudes can be sizeable. For example, [Yanagizawa-Drott's](#) (2014) findings attribute as much as 10 percent of the violence in the 1994 Rwandan genocide to one

radio station's propaganda efforts (also see [Paluck and Green, 2009](#), for the role of radio post-conflict in Rwanda). Studying Hitler's rise to power, [Adena et al. \(2015\)](#) suggest the radio first contained the Nazis' influence, but later helped them to consolidate power. Focusing on the post-conflict Serbo-Croatian relationship, [DellaVigna et al. \(2014\)](#) document substantial voting gains by Croatian nationalist parties driven by the availability of nationalistic Serbian radio.

Beyond conflict-related outcomes, media in its various forms has been suggested to influence political decisions, preferences, and beliefs, as well as voting behavior. For instance, [Eisensee and Strömberg \(2007\)](#) link news coverage of disasters to US disaster relief efforts; [DellaVigna and Kaplan \(2007\)](#), [Schroeder and Stone \(2015\)](#), and [Martin and Yurukoglu \(2017\)](#) connect the introduction of *Fox News* to US voters' political preferences and beliefs; [Gentzkow \(2006\)](#) and [Campante and Hojman \(2013\)](#) study how the television may have affected voter turnout and political polarization in the US; a number of studies focus on the role of media bias, such as [Gentzkow and Shapiro \(2006\)](#), [Gerber et al. \(2009\)](#), [Chiang and Knight \(2011\)](#), [Enikolopov et al. \(2011\)](#), [Larcinese et al. \(2011\)](#), [Durante and Knight \(2012\)](#), or [Baum and Zhukov \(2015\)](#). However, the media's impact may not be confined to political outcomes alone. For instance, *i*) the broadcasting of crime-related stories could affect judges' sentencing decisions in France ([Philippe and Ouss, 2017](#)), *ii*) movie violence may decrease the number of violent crimes, at least in the short run ([Dahl and DellaVigna, 2009](#)), *iii*) MTV's *16 and Pregnant* may have decreased teen birth rates by as much as 4.3 percent ([Kearney and Levine, 2015](#)), and *iv*) the access to cable television may have substantially improved women's roles in India ([Jensen and Oster, 2009](#)). [DellaVigna and Gentzkow \(2010\)](#) and [Puglisi and Snyder \(2015\)](#) provide comprehensive summaries of the associated literature. Although these studies highlight potential effects and magnitudes of media coverage in a number of related settings, comparatively less is known about potential media effects on *terrorism*.

1.2 The Media and Terrorism: Existing Literature

Specifically, only few empirical studies evaluate a potentially causal link between media coverage of a terrorist group and their subsequent attacks.⁵ Rohner and Frey (2007) document Granger causality between terrorist attacks and media attention, using monthly data from the *NYT* and the *Neue Zürcher Zeitung*, after Nelson and Scott (1992) found no such evidence. Unfortunately, inherent endogeneity concerns make it difficult to infer causality. Most importantly, an omitted variable bias remains difficult to resolve since a number of characteristics associated with the exact conflict situation can affect media coverage and ensuing terrorism at the same time.

To give just one example, consider one of bin Laden's video messages to the US, announcing a wave of attacks: Media coverage is likely to soar, and, if the announcement is of substance, attacks will follow. Thus, when regressing the incidence of attacks in period $t + 1$ on media coverage in period t without properly accounting for the omitted variable (i.e., the video message in period $t - 1$), the derived coefficient could be biased upwards. In this case, we may falsely attribute terrorism to increased media coverage. Alternatively, if security efforts are strengthened following the announcement, attacks may be prevented, which would introduce a downward bias. In this case, we may underestimate the causal effect of news coverage on terrorism. Either way, an ordinary regression analysis of the number of attacks in period $t + 1$ on media coverage in period t would not reveal causality. One could think of a range of other omitted variables that are difficult to account for in publicly available data, such as (potentially secret) counter-terrorist activities, internal al-Qaeda dynamics, or any political considerations by a public administration that could influence both media coverage and activities related to al-Qaeda.

In an attempt to address these endogeneity concerns, in Jetter (2017), I use natural disas-

⁵Nevertheless, we do know more about how media coverage of terrorism may influence people's political beliefs (e.g., see Slone, 2000, Forest et al., 2012, Iyer et al., 2014).

ters in the US as an exogenous variation crowding out contemporaneous coverage of terrorism (also see [Jetter, 2014](#), for a more detailed explanation of the data). However, it remains difficult to derive an exact search algorithm that is consistent across *all* terrorist attacks and groups worldwide. Further, groups in different countries may care about different audiences and news outlets. Thus, media attention is proxied with the number of *NYT* articles that mention the attacked country's name (similar to the strategy employed by [Baum and Zhukov, 2015](#)). Nevertheless, the results suggest a positive and statistically powerful effect of *NYT* coverage of the attacked country on subsequent attacks in the same country. The following pages aim to provide a precise identification of media coverage dedicated to one terrorist group, focusing on the US news media and al-Qaeda, one of the most prominent and deadliest terror groups worldwide that at its heart opposes the US (e.g., see bin Laden's 'letter to America', [Burke, 2002](#)).

1.3 Why Would Media Attention Matter to Al-Qaeda?

Why would al-Qaeda attack more (less) when the US media covers them more (less)? I want to briefly discuss three (potentially complementary) explanations, although one may certainly think of other mechanisms. First, the group may try to exploit the media platform they currently have. Once the spotlight is on al-Qaeda, attacks may be conducted in the expectation that the corresponding media attention would also be higher.⁶ Why would this be the case? In practical terms, journalists and news consumers are already familiar with the group's agenda, their grievances, and recent operations, which may facilitate coverage of a new attack. Indeed, news coverage may exhibit path dependency in topics. In fact, news outlets may follow an agenda setting behavior – once a topic is in the media spotlight, the likelihood of additional

⁶Interestingly, this goal of *maximizing* media coverage may stand in contrast to a *government's* desire to minimize media attention, as suggested by [Durante and Zhuravskaya \(2015\)](#) in their recent study on the Israeli-Palestinian conflict.

coverage and attention increases (e.g., see [King et al., 2017](#), for recent evidence).⁷ Indeed, [Section 2.2](#) will show a significant path dependency for news coverage of al-Qaeda and other prominent topics in US television news, i.e., the coverage of a topic yesterday or in the prior week emerges as a strong predictor of news coverage today.

Second, an alternative (and perhaps complementary) intuition by which coverage could motivate attacks is to consider the *absence* of coverage. If a terrorist organization continually fails to win the media's attention, group members could lose motivation and feel discouraged to plan and execute future missions. However, if the media recognizes, and thereby validates and prioritizes, the group, this could serve as motivation to continue the group's quest. Thus, we may not only think about media coverage encouraging attacks, but also about the absence of coverage discouraging attacks.

Third and final, [Nacos \(2010\)](#) discusses the 'contagion hypothesis', suggesting that "violence-prone individuals and groups imitate forms of (political) violence attractive to them, based on examples usually popularized by mass media." She discusses how extensive media coverage of hijackings by Palestinian terrorists in the 1960s and 1970s may have inspired other groups to follow their example.⁸ In sum, one could think of several reasons why media coverage of al-Qaeda may motivate the group to conduct further attacks.

⁷In a seminal paper, [McCombs and Shaw \(1972\)](#) discuss the agenda-setting power of mass media outlets. [Coleman et al. \(2009\)](#) provide a recent summary of the literature on agenda setting in communications studies. For example, [Larcinese et al. \(2011\)](#) detect substantial agenda-setting power by US newspapers when it comes to economic news (e.g., unemployment rates or inflation).

⁸[Nacos \(2010\)](#) discusses several examples of cases where media coverage of terrorism is likely to have encouraged further attacks, such as Timothy McVeigh, the man responsible for the Oklahoma City bombing in 1995. [Nacos \(2010\)](#) summarizes [Weimann and Winn's \(1994\)](#) conclusion that their data "yielded considerable evidence of a contagion effect wrought by coverage." Further references are presented in [Nacos \(2010\)](#).

2 Data

The main data for this study are derived from the Global Terrorism Database (GTD), the Vanderbilt Television News Archive (VTNA), the online archives for the *NYT* and the *WaPo*, as well as the International Disaster Database, commonly known as EM-DAT. In the following, I introduce each dataset in turn, focusing on how they will be used in the empirical analysis.

2.1 Data on Al-Qaeda Attacks

The GTD includes detailed information on terrorist attacks worldwide on the daily level from 1970 to 2015 (LaFree and Dugan, 2007; START, 2016). Crucially for this study, each attack features information about the perpetrator group name (variable *gname*) if that information is known. Focusing on al-Qaeda attacks (spelled al-Qaida in the GTD), I consider the post-9/11 timeframe from September 12, 2001 until December 31, 2015, when the most recent edition of the GTD ends. Although founded as early as 1988, al-Qaeda really only appears on the international scene with 9/11. Before that, the GTD only records six al-Qaeda attacks, one of which constitutes the 1998 US embassy bombings. Since 9/11, however, al-Qaeda is listed as the responsible group for 1,849 terror attacks.⁹

Given the role of media coverage in this study, it is important to discuss how the GTD collects data. The database only records a terrorist attack if it has been reported by some press outlet anywhere in the world, which could introduce a bias into the data. For example, when major newsworthy events are occurring (such as a natural disaster), the GTD could miss a contemporaneous terrorist attack if the media focused on the other event. Although possible in

⁹I collect attacks from all al-Qaeda related groups, containing the phrase ‘al-Qaida’ – the spelling used in the GTD for the group. This includes the following 12 groups (with the number of attacks in parentheses): Al-Qaida in the Arabian Peninsula (AQAP, 893), al-Qaida in Iraq (635), al-Qaida in the Islamic Maghreb (AQIM, 235), al-Qaida (49), al-Qaida in Yemen (12), al-Qaida in Saudi Arabia (7), al-Qaida in the Indian Subcontinent (7), Sympathizers of al-Qaida Organization (4), Jadid al-Qaida Bangladesh (JAQB, 3), al-Qaida Network for South-western Khulna Division (2), al-Qaida Organization for Jihad in Sweden (1), and al-Qaida in Lebanon (1).

theory, this appears unlikely when reading the GTD codebook (START, 2016), which indicates that “[t]he process begins with a universe of over one million media articles on any topic published daily worldwide” (see discussion in Jetter, 2017, for more detail). Thus, it is unlikely that a terrorist attack remains completely unreported. Indeed, the data suggest that the number of deaths from disasters on a given day is orthogonal to the number of terrorist attacks documented in the GTD (see Section 3.2). Nevertheless, I can of course not completely eliminate the possibility of the GTD not including *all* al-Qaeda attacks.

The top row of Table 1 displays summary statistics for al-Qaeda attacks per day since 9/11 (5,224 days from September 12, 2001 until December 31, 2015). Summary statistics for all additional variables employed throughout the paper are referred to appendix Table A1. On average, the group conducted approximately one attack every three days and April 19, 2012 was the most violent day with 43 attacks. The second row summarizes the main dependent variable throughout the upcoming empirical analysis: The number of al-Qaeda attacks over a seven-day timespan. The left graph of Figure 1 visualizes the number of al-Qaeda attacks per day over the entire sample timeframe, employing a kernel-weighted local polynomial smoothing regression.

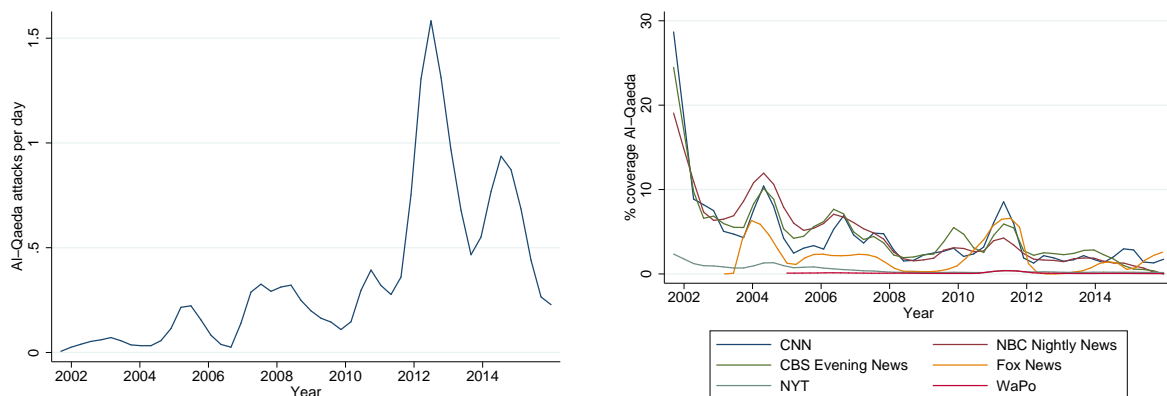


Figure 1: Al-Qaeda attacks over time (left) and media coverage of al-Qaeda over time (right). Displaying kernel-weighted local polynomial smoothing regressions.

Table 1: Summary statistics of main variables. All variables constitute daily averages from September 12, 2001 until December 31, 2015.

Variable	Mean	(Std. Dev.)	Min.	Max.	N	Source ^a
Al-Qaeda attacks	0.35	(1.50)	0	43	5,224	GTD
Al-Qaeda attacks in subsequent 7 days	2.48	(4.68)	0	52	5,217	GTD
<i>CNN</i> coverage of al-Qaeda (share \times 100)	4.59	(11.55)	0	100	4,393	VTNA
<i>NBC</i> coverage of al-Qaeda (share \times 100)	4.95	(11.28)	0	100	4,590	VTNA
<i>CBS</i> coverage of al-Qaeda (share \times 100)	5.07	(11.45)	0	100	4,123	VTNA
<i>Fox News</i> coverage of al-Qaeda (share \times 100)	1.96	(8.14)	0	100	3,538	VTNA
<i>NYT</i> coverage of al-Qaeda (share \times 100)	0.50	(0.79)	0	11.61	5,208	NYT
<i>WaPo</i> coverage of al-Qaeda (share \times 100)	0.11	(0.63)	0	26.08	3,974	WaPo
Disaster deaths in days $t - 3$ until t , in 10,000	0.86	(13.70)	0	500	5,224	EM-DAT

Notes: ^aSources: GTD = Global Terrorism Database (based on [LaFree and Dugan, 2007](#)); VTNA = Vanderbilt Television News Archive ([VTNA, 2016](#)); NYT = NYT archive, available under <http://www.nytimes.com/ref/membercenter/nytarchive.html>; WaPo = WaPo archive, available under <https://www.washingtonpost.com/newssearch/search.html>; EM-DAT = International Disaster Database ([Guha-Sapir et al., 2014](#)).

2.2 Media Data

To measure television news coverage of al-Qaeda in the US, I access the *VTNA*, available under <https://tvnews.vanderbilt.edu/>. The *VTNA* includes all news segments from the *NBC Nightly News* and the *CBS Evening News*, as well as an hour per day of *CNN* (since 1995) and *Fox News* (since 2004).¹⁰ Note that the *VTNA* lacks data for up to 16 percent of days from September 12, 2001 until December 31, 2015 (*Fox News*, however, is only available since 2004). Nevertheless, all results are consistent when accounting for the missing days in several alternative strategies (discussed in Section 4.3). Each news segment contains the headline and a short abstract, as well as its respective length in seconds. To calculate the coverage dedicated to al-Qaeda on a given day, I code every news segment as coverage of the terrorist group that includes one of the following terms either in the headline or abstract (upper- and lower-case spellings): *bin Laden*, *bin Ladin*, *Qaeda*, and *9/11*.¹¹ I then calculate the share of the total daily news coverage on a given station that covers al-Qaeda by dividing the total number of seconds of al-Qaeda news segments by the total number of seconds of all news segments on the same station and day.¹²

To measure newspaper coverage in the US, I download all articles from the online archives of the *NYT* and the *WaPo*, available under <http://www.nytimes.com/ref/membercenter/nytarchive.html> and <https://www.washingtonpost.com/newssearch/search.html>. Unfortunately, the *WaPo* archive only contains its comprehensive list of articles from January 1, 2005 onwards. To measure the degree of al-Qaeda coverage in either outlet, I apply the same search algorithm as above to each news article. If an article includes one of the

¹⁰Data from the *VTNA*, as well as the *NYT* and *WaPo* archives, are obtained by writing an algorithm that scrapes the website for all news segments.

¹¹A thorough search through the *VTNA* reveals that alternative spellings, such as al-Qaida, are not employed. All results are consistent when only searching headlines, not abstracts.

¹²For example, assume four *CNN* news segments on a given day with the lengths of 30, 60, 90, and 100 seconds. Further imagine that the first two news segments mention one of the al-Qaeda keywords discussed above. In that case, the share of al-Qaeda coverage on *CNN* on the respective day becomes $\frac{30+60}{30+60+90+100} = \frac{90}{280} = 0.32$.

al-Qaeda specific keywords, I code the article as coverage of al-Qaeda. To derive a relative measure of al-Qaeda coverage, I then divide the number of *NYT* articles including an al-Qaeda term by the total number of *NYT* articles published on the same day. The same method is applied for the *WaPo*.

Table 1 displays summary statistics of the respective media variables. Concerning television news, between two percent (*Fox News*) and five percent (*NBC* and *CBS*) of the average daily coverage consists in news about al-Qaeda. In fact, on some days, *all* television news coverage focused on al-Qaeda, indicated by the maximum value of 100 percent reached by all television outlets. For the newspaper outlets, on an average day, one out of every 200 *NYT* articles discusses al-Qaeda in some form, but only one out of every 909 *WaPo* articles. The right graph of Figure 1 visualizes a kernel-weighted polynomial smoothing of al-Qaeda coverage by each news outlet over time. Not surprisingly, coverage has been extraordinarily high following 9/11 across all news programs. Overall, the correlation between al-Qaeda coverage of all media outlets is substantial, reaching coefficients between 0.3 and 0.58 (also see appendix Table A2).

To put the magnitude of al-Qaeda television news coverage in perspective, Figure 2 compares the daily average to that for other prominent terms with *Clinton*, *China*, and *Russia*. For each term, I apply a measuring methodology analogous to that for al-Qaeda, searching for the respective terms and then dividing the number of seconds by the total coverage on the same station and day. Interestingly, coverage of *Clinton* (which may include Hillary, Bill, and Chelsea) remains less than al-Qaeda coverage across all outlets. With the exception of *Fox News*, al-Qaeda has been covered more than China and Russia combined on an average day. Although purely descriptive, these comparisons highlight how much media exposure al-Qaeda has received on US television news programs since 9/11.

Finally, to test whether media coverage indeed features path dependency in topics, Table 2 displays results from regressing al-Qaeda coverage on day t on previous al-Qaeda coverage. In Panel A, I use coverage of the previous day as a predictor, whereas Panel B takes an extended

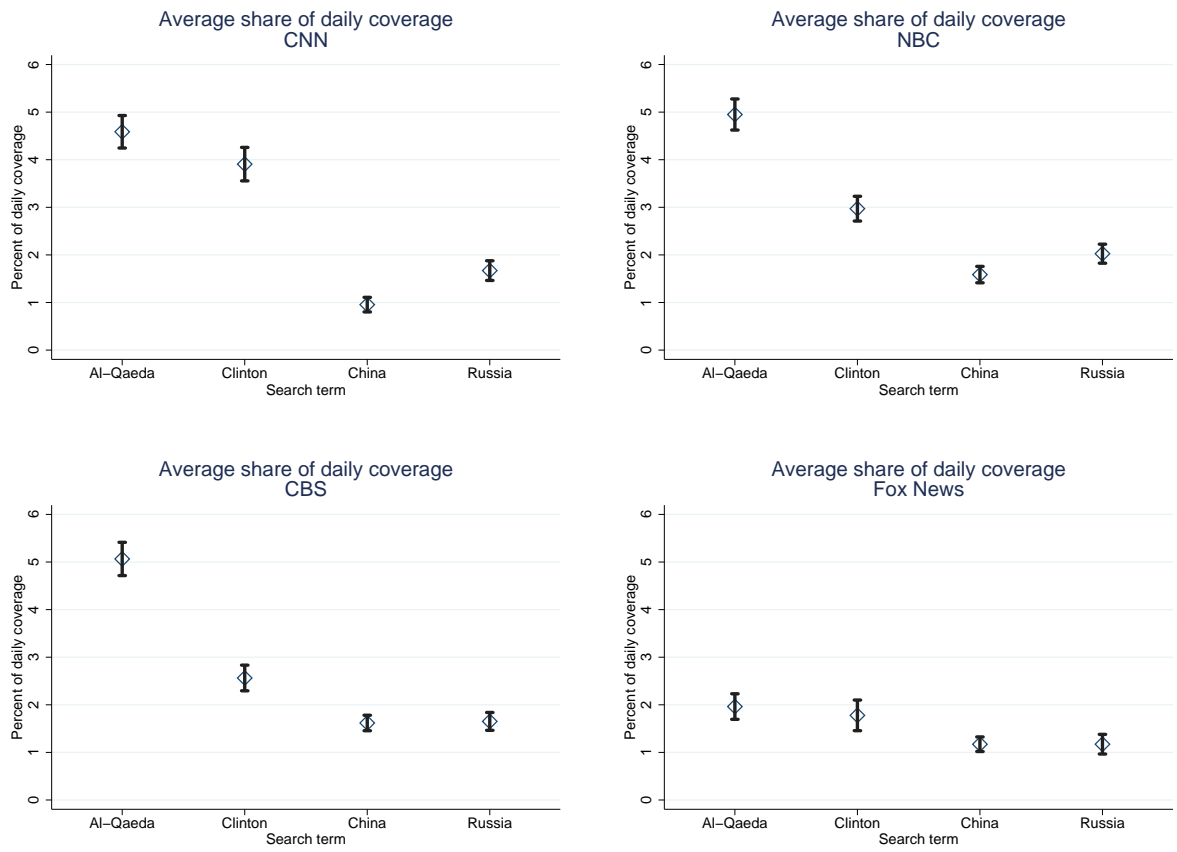


Figure 2: Average daily coverage for various search terms from September 12, 2001 until December 31, 2015. *Al-Qaeda* includes searches for *bin Laden* and *9/11*; *China* includes searches for *Chinese*.

timeframe for past coverage, averaging the main independent variable over the previous seven days. In each regression, I control for actual al-Qaeda attacks on day t and in the previous three days, fixed effects for each weekday and month, as well as the Ramadan.¹³ These covariates may independently affect al-Qaeda activity and news reporting in the US. Throughout all estimations displayed in Table 2, the degree of al-Qaeda coverage in the immediate past prevails as a strong predictor of al-Qaeda coverage today. These results enforce the idea that once a topic enters the media, additional coverage becomes more likely in the subsequent days.¹⁴

Table 2: Results from OLS regressions, predicting media coverage of al-Qaeda on day t with al-Qaeda coverage on days $t - 1$ (Panel A) and on days $t - 7$ until $t - 1$ (Panel B).

Dependent variable: Al-Qaeda coverage in...	<i>CNN</i> (1)	<i>NBC</i> (2)	<i>CBS</i> (3)	<i>Fox News</i> (4)	<i>NYT</i> (5)	<i>WaPo</i> (6)
Panel A: Using al-Qaeda coverage yesterday						
Al-Qaeda coverage yesterday	0.408*** (0.034)	0.398*** (0.029)	0.354*** (0.032)	0.319*** (0.062)	0.600*** (0.028)	0.559*** (0.048)
FE for days of the week and months, and al-Qaeda attacks ^a	yes	yes	yes	yes	yes	yes
<i>N</i>	3,917	4,309	3,619	3,331	5,205	3,975
Panel B: Using al-Qaeda coverage last week						
Average al-Qaeda coverage on days $t - 7$ until $t - 1$	0.658*** (0.043)	0.597*** (0.043)	0.630*** (0.041)	0.465*** (0.091)	0.819*** (0.031)	0.632*** (0.132)
FE for days of the week and months, and al-Qaeda attacks ^a	yes	yes	yes	yes	yes	yes
<i>N</i>	4,395	4,590	4,109	3,486	5,214	3,977

Notes: Robust standard errors are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. ^aIncludes 2 variables measuring the number of al-Qaeda attacks on day t and on days $t - 3$ until $t - 1$.

¹³Data for historical Ramadan days are available from <https://www.moonsighting.com/actual-saudi-dates.pdf>.

¹⁴In additional estimations, I also conducted the respective regression analyses for the terms discussed in Figure 2 and there, too, strong path dependency emerges (results available upon request).

2.3 Data on International Disasters

The last main data source used in this study comes from the EM-DAT database that catalogues disasters worldwide on a daily level with the number of deaths for each individual disaster. In the empirical analysis, a measure capturing the deaths from disasters will serve as an instrumental variable in providing an exogenous variation for al-Qaeda news coverage. (Section 3 will provide further detail, addressing the validity and exclusion restrictions of the IV.)

In particular, EM-DAT includes natural and technological disasters if at least one of the following criteria is fulfilled (Guha-Sapir et al., 2014): (i) Ten (10) or more people reported killed, (ii) hundred (100) or more people reported affected, (iii) declaration of a state of emergency, or (iv) call for international assistance. *Natural* disasters are divided into 5 sub-groups, covering 15 disaster types; *technological* disasters are divided into 3 sub-groups, covering 15 disaster types.¹⁵ To create a continuous measure of the impact of disasters, I first divide the total number of deaths from a disaster by the number of days the disaster lasted. For instance, a flood that lasts ten days and causes 100 casualties would translate to ten casualties for each day. Finally, I aggregate those observations on the daily level to produce one comprehensive measure of deaths from disasters for every day throughout the sample period.

3 Empirical Methodology

3.1 Addressing Endogeneity in a 2SLS Framework

In principle, a researcher is interested in regressing the number of al-Qaeda attacks in a given period, say one week, on a measure of the preceding media coverage al-Qaeda has received. In

¹⁵The respective sub-groups for the natural disaster category are geophysical (e.g., earthquakes or volcanic activity), meteorological (e.g., storms or extreme temperature), hydrological (e.g., flood or landslide), climatological (e.g., drought or wildfire), and biological (e.g., epidemic or animal accident). The corresponding technological disaster categories are industrial (e.g., explosion or chemical spill), transport (e.g., air or water), and miscellaneous (e.g., collapse or fire). Further details are provided under <http://www.emdat.be/guidelines>.

econometric terms, with *Coverage* representing one of the six media variables introduced in Section 2.2, we can write

$$\sum_{t+1}^{t+7} (al - Qaeda\ attacks) = \alpha_0 + \alpha_1 (Coverage)_t + \mathbf{x}'_t \alpha_2 + \delta_t, \quad (1)$$

where the main coefficient of interest becomes α_1 , conditional on control variables captured by the vector \mathbf{x}'_t . Throughout the empirical estimations, $\mathbf{x}'_{i,t}$ includes (i) variables measuring the number of al-Qaeda attacks on day t and on days $t - 3$ until $t - 1$ to control for the contemporaneous level of terrorism (e.g., see Berrebi and Lakdawalla, 2007, for a study of the timing of subsequent terrorist attacks in Israel) and (ii) fixed effects for each day of the week, months, and whether the day falls into the yearly Ramadan period. These time-specific parameters are intended to capture any statistical variation in al-Qaeda attacks that could be influenced by religious or cultural habits specific to certain time periods, as well as climatic particularities, for example. δ_t constitutes the conventional error term and throughout the analysis, all estimations are conducted using robust, heteroskedastic-, and autocorrelation-consistent (HAC) standard errors. Nevertheless, all results are consistent when employing a continuously-updated GMM estimation (referred to Section 4.3). Finally, I will also consider a binary indicator for media coverage, i.e., whether *any* al-Qaeda coverage occurred on the specific day in the respective media outlet.

However, several endogeneity concerns arise when trying to estimate the *causal* effect of media coverage on subsequent terrorism, as suggested in equation 1. Most importantly, omitted variables become an issue, as it is virtually impossible to capture a conflict situation in its entirety with variables that could affect both media coverage and the occurrence of subsequent attacks. Not controlling for such developments may artificially introduce an upward or a downward bias into α_1 , thereby making it impossible to investigate causality.

To circumvent this endogeneity problem, a 2SLS framework can help, provided a suitable

IV can be found. I argue that deaths from disasters worldwide present an exogenous variation if such disasters are unexpected for terrorists and can directly decrease media attention devoted to al-Qaeda, everything else equal. Specifically, I propose the number of disaster deaths on days $t - 3$ until t in the following first stage framework:

$$(Coverage)_t = \beta_0 + \beta_1 \sum_{t-3}^t (Disaster\ deaths) + \mathbf{x}'_t \beta_2 + \epsilon_t. \quad (2)$$

The predicted *coverage* is then used in the second stage to predict the number of attacks on days $t + 1$ until $t + 7$, following equation 1. To further explore potential time lags in the IV, Table 3 displays results from regressing al-Qaeda coverage on *CNN* on day t on the number of disaster deaths on day t and the preceding three days. (I use *CNN* as an example here, but the corresponding results for the other five media outlets are displayed in the appendix Table A3.) In each specification, disaster deaths emerge as a negative and statistically significant predictor of al-Qaeda coverage on *CNN*. All estimations in the remainder of the paper focus on using the number of disaster deaths on days $t - 3$ until t as the IV, but all second stage results are consistent when employing just those disaster deaths on day t , for example. Nevertheless, the first stage turns weaker for some of the estimations. (Note that second stage results, however, exclusively produce a positive coefficient for al-Qaeda coverage in *all* alternative estimations I conducted.)

3.2 Excludability of the IV

Although Table 3 produces comforting results related to the IV's validity, an important aspect remains the exclusion restriction. In particular, can the number of disaster deaths worldwide influence al-Qaeda missions in any other way than via media coverage? Most importantly, it is possible that the group attacks less when disasters are particularly severe, perhaps in anticipation of decreased media coverage. If that were the case, then disaster deaths on day t should be a

Table 3: Results from OLS regressions, estimating whether deaths from disasters predict al-Qaeda coverage on *CNN*.

Dependent variable: <i>CNN</i> coverage of al-Qaeda on day t (mean = 4.59)					
	(1)	(2)	(3)	(4)	(5)
Disaster deaths on t	-0.093*				
	(0.048)				
Disaster deaths on $t - 1$		-0.029***			
		(0.011)			
Disaster deaths on $t - 2$			-0.019***		
			(0.005)		
Disaster deaths on $t - 3$				-0.021***	
				(0.005)	
Disaster deaths on days $t - 3$ until t					-0.012***
					(0.003)
Control variables ^a	yes	yes	yes	yes	yes
N	4,396	4,396	4,396	4,396	4,396

Notes: Robust standard errors are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. ^aIncludes fixed effects for days of the week, months, and Ramadan, as well as 2 variables measuring the number of Al-Qaeda attacks on day t and on days $t - 3$ until $t - 1$.

statistically meaningful predictor of the number of al-Qaeda attacks on the same day.

Table 4 displays results from several OLS regressions to check whether that is the case, using the sample days for which CNN coverage is available as an example. In column (1), I only use the number of disaster deaths today to predict the number of al-Qaeda attacks today. However, the respective coefficient does not come close to being statistically significant on any conventional level. Column (2) adds binary indicators for each day of the week and months, as well as a binary indicator for Ramadan days. Nevertheless, the same result prevails and it appears unlikely that al-Qaeda terrorists are systematically attacking less when the global death toll from disasters rises.

Table 4: Results from OLS regressions, estimating the number of Al-Qaeda attacks per day.

Dependent variable: Al-Qaeda attacks on day t (mean = 0.35)						
	(1)	(2)	(3)	(4)	(5)	(6)
Disaster deaths on t	-0.002 (0.006)	-0.006 (0.007)				
Disaster deaths on $t + 1$ until $t + 3$			0.000 (0.001)	-0.000 (0.001)		
International event ^a					-0.107** (0.046)	-0.120* (0.067)
FE for days of the week, months, and Ramadan		yes		yes		yes
N	4,396	4,396	4,396	4,396	4,396	4,396

Notes: Robust standard errors are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. ^aConstitutes a binary indicator that is equal to one if any of the following events is ongoing: The Super Bowl, the FIFA World Cup, the Olympic Games (summer or winter), the Academy Awards, or a G8 Meeting.

Further, columns (3) and (4) check whether disaster deaths in the upcoming days are in any way able to predict terrorist attacks, which could indicate that al-Qaeda is expecting substantial disasters and therefore attacks less. However, I find no evidence for that hypothesis and overall

it appears unlikely that al-Qaeda systematically adjusts its attacks to the expected number of disaster deaths. Note that the results displayed in Table 4 also address concerns about potentially omitted terrorist attacks in the GTD: If attacks were indeed less likely to be picked up on days with numerous deaths from disasters, then the respective coefficients should turn negative and statistically significant. However, that is not the case.

Finally, columns (5) and (6) check whether there is any evidence that al-Qaeda schedules their missions around major *predictable* events. Specifically, I create a binary indicator that takes on the value of one if any of the following events is taking place on the respective day: The Super Bowl, the FIFA World Cup, the Olympic Games (summer or winter), the Academy Awards, or a G8 Meeting. Indeed, the respective regressions indicate that al-Qaeda attacks significantly less on such days. Thus, a variable measuring news pressure from predictable events (e.g., as used in [Eisensee and Strömberg's](#), 2007, setting) may not satisfy the exclusion restriction.¹⁶

4 Empirical Findings

4.1 Main Results

Table 5 displays the main results of the 2SLS analysis. Panel A reports the second stage coefficients for al-Qaeda coverage in the respective outlet and Panel B documents first stage results. The first six columns employ the share of al-Qaeda coverage, whereas columns (7) – (12) use a binary indicator for whether there was any al-Qaeda coverage in the respective outlet and day. All discussed control variables are accounted for. Panel C shows statistical test results to evaluate IV performance.

¹⁶[Eisensee and Strömberg \(2007\)](#) construct a news pressure variable to isolate the effect of media coverage of natural disasters on the US government's relief efforts. In their setting, this variable functions well because intuitively natural disasters do not re-schedule during the Olympics, for example.

Table 5: Results from IV regressions predicting the number of Al-Qaeda attacks on days $t + 1$ until $t + 7$.

Outlet:	(1) CNN	(2) NBC	(3) CBS	(4) Fox News	(5) NYT	(6) WaPo	(7) CNN	(8) NBC	(9) CBS	(10) Fox News	(11) NYT	(12) WaPo
Panel A: 2nd stage predicting Al-Qaeda attacks on days $t + 1$ until $t + 7$												
Al-Qaeda coverage on day t	0.300** (0.153)	0.247*** (0.086)	0.290** (0.118)	0.621** (0.279)	2.357** (1.026)	20.884* (11.277)	5.744* (2.981)	4.985*** (1.651)	5.612** (2.360)	6.458** (2.729)	2.201** (0.977)	12.694* (6.735)
Control variables ^a	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Panel B: 1st stage predicting respective Al-Qaeda coverage												
Disaster deaths on days $t - 3$ until t	-0.0124*** (0.0032)	-0.0250*** (0.0085)	-0.0206*** (0.0066)	-0.0093* (0.0048)	-0.0014*** (0.0003)	-0.0002** (0.0001)	-0.0006*** (0.0002)	-0.0012*** (0.0004)	-0.0011*** (0.0003)	-0.0009*** (0.0003)	-0.0015*** (0.0002)	-0.0003** (0.0001)
Control variables ^a	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Panel C: Econometric statistics												
F-test insignificance of IV ^b	15.18***	8.75***	9.74***	3.74*	27.86***	5.49**	14.96***	7.82***	10.59***	7.83***	40.90***	6.41**
Endogeneity test (p-value)	0.016**	0.004***	0.007***	0.032**	0.003***	0.021**	0.013**	0.003***	0.006***	0.021**	0.004***	0.021**
N	4,393	4,590	4,123	3,538	5,208	3,974	4,393	4,590	4,123	3,538	5,208	3,974

Notes: All estimations are conducted using the *ivreg2* command in Stata with robust, heteroskedastic-, and autocorrelation-consistent (HAC) standard errors (option *r bw(1)* in Stata). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. ^aIncludes fixed effects for days of the week, months, and Ramadan, as well as 2 variables measuring the number of Al-Qaeda attacks on day t and on days $t - 3$ until $t - 1$. ^bDisplaying results from the Sanderson-Windmeijer multivariate F test of excluded instruments (see [Baum, 2007](#), and [Sanderson and Windmeijer, 2016](#)).

Beginning with the results relating to *CNN* coverage in column (1), we can see that al-Qaeda coverage emerges as a positive and statistically significant predictor of al-Qaeda attacks in the upcoming week. In terms of magnitude, increasing the share of coverage dedicated to al-Qaeda on a given day by ten percentage points is suggested to lead to three attacks, everything else equal. This is approximately equivalent to two thirds of one standard deviation in the number of attacks over a seven-day time period (compare Table 1). If we believe the excludability argument of the IV, then we can interpret that coefficient as causal. The results displayed in Panel B show that, as hypothesized, the number of disaster deaths becomes a negative and statistically powerful predictor of al-Qaeda coverage on *CNN* in the first stage. The F-test for the IV passes the common threshold level of ten (Stock et al., 2002; Stock and Watson, 2012) with a value of 15.18, indicating a strong IV in statistical terms. Further, the null hypothesis of the endogenous regressor being irrelevant is rejected (see Baum et al., 2007, for a detailed explanation of the corresponding test statistics).

Turning to the remaining 11 regression results of Table 5, remarkably, the second stage results exclusively produce positive and statistically meaningful coefficients for al-Qaeda coverage. This result emerges when employing the share of al-Qaeda coverage and when defining coverage as a binary indicator; it is not only true for television news from the *NBC Nightly News*, the *CBS Evening News*, and *Fox News*, but also for *NYT* and *WaPo* articles related to al-Qaeda. In terms of first stage coefficients, disaster deaths consistently remain a negative predictor of al-Qaeda coverage throughout all media outlets, albeit with differing statistical precision. First stages are particularly strong for results from *CNN*, *CBS*, and *NYT* data, but less so for the remaining outlets. Nevertheless, even though the IV becomes marginally weaker in these estimations (with F-test results under the value of ten, but still statistically powerful), the second stage estimations still produce the familiar positive relationship between al-Qaeda coverage and subsequent attacks.

To get a better understanding of the suggested magnitudes, Figure 3 visualizes the main

coefficients of interest derived in columns (1) – (6) of Table 5. In particular, I multiply the respective mean coverage (displayed in Table 1) with the respective coefficient, which produces the average number of additional attacks that are theoretically explainable by al-Qaeda coverage. It is interesting to see that the predicted effect produces almost identical magnitudes, ranging from 1.2 to 1.5, for five of the six media outlets. Taken literally, this implies that up to 1.5 of the average 2.48 Al-Qaeda attacks in a given seven-day period are *caused* by media coverage, or 60 percent. This translates to approximately 5.7 – 7.1 casualties from al-Qaeda attacks, since the average al-Qaeda attack produces 4.8 deaths. The results related to *WaPo* coverage suggest an even higher magnitude, although none of the suggested coefficients differ from each other in statistical terms, as indicated by the respective confidence intervals (vertical lines). Overall, the consistency with which the link between al-Qaeda coverage and subsequent al-Qaeda attacks emerges across a variety of media outlets hints at a general relationship.

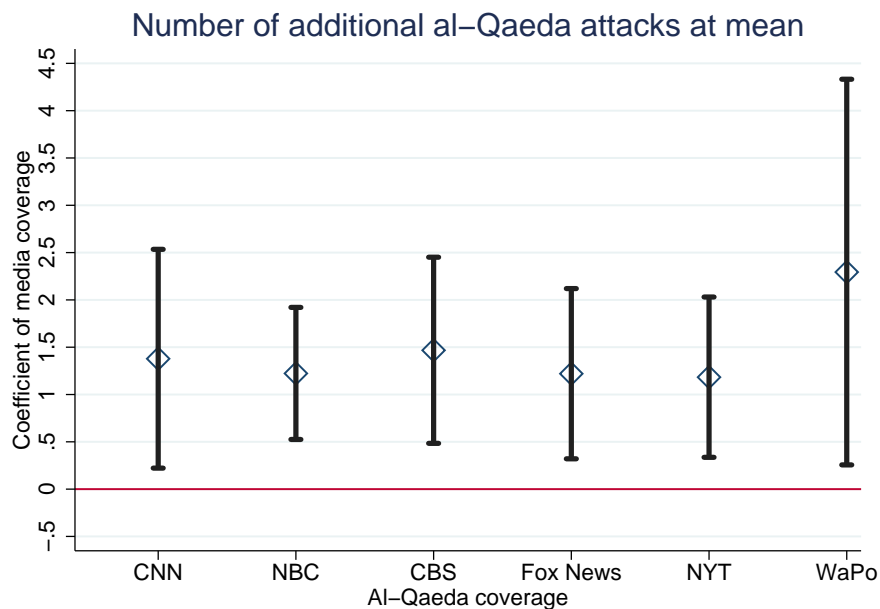


Figure 3: Predicted additional al-Qaeda attacks at the mean al-Qaeda coverage of the respective outlets, visualizing the coefficients derived in Table 5. Two-sided 95 percent confidence intervals are displayed.

4.2 Permanent or Temporary Effects?

An important question that arises from these results comes from focusing on the associated timeframe of subsequent attacks. In Table 5, I use the seven days after al-Qaeda coverage and if we believe the corresponding results, then two alternative explanations are possible with respect to timeframes: First, there could be a permanent effect in that al-Qaeda systematically attacks more (less) when their media exposure is large (small). In this case, restraining media coverage of al-Qaeda would lead to a net decrease in attacks. However, there is also a second possibility – namely that the group may simply delay their attacks when media coverage is low and move up attacks earlier than planned when coverage is high. If that were the case, then media coverage of al-Qaeda may simply alter the *timing* of terror missions, but not the overall amount. Thus, it is important to understand whether the effect suggested in Table 5 produces a net change in total attacks or if it just redistributes planned attacks from one day (or week) to another.

To distinguish between these two explanations, Figure 4 displays a range of regression results for al-Qaeda coverage in all six media outlets. Each coefficient displayed represents the second stage result for al-Qaeda coverage from an individual regression that follows the same structure and control variables as those displayed in Table 5. Along the x-axis, I vary the dependent variable, ranging from the initial one week timeframe over two weeks, three weeks, and eventually up to four weeks. Further, the final three coefficients of each subgraph predict al-Qaeda attacks on days 15-22 after the initial coverage, as well as 15-30 and 15-60 days thereafter.

Intuitively, if al-Qaeda coverage would merely affect the *timing* of attacks, we would expect a *negative* and statistically significant effect after some point. In other words, if al-Qaeda coverage today were low and the group were to delay their missions, then at some point we should see an extraordinarily high number of attacks. However, that is not the case. In fact, for none of the displayed regression coefficients across any of the six media outlets do we observe a negative

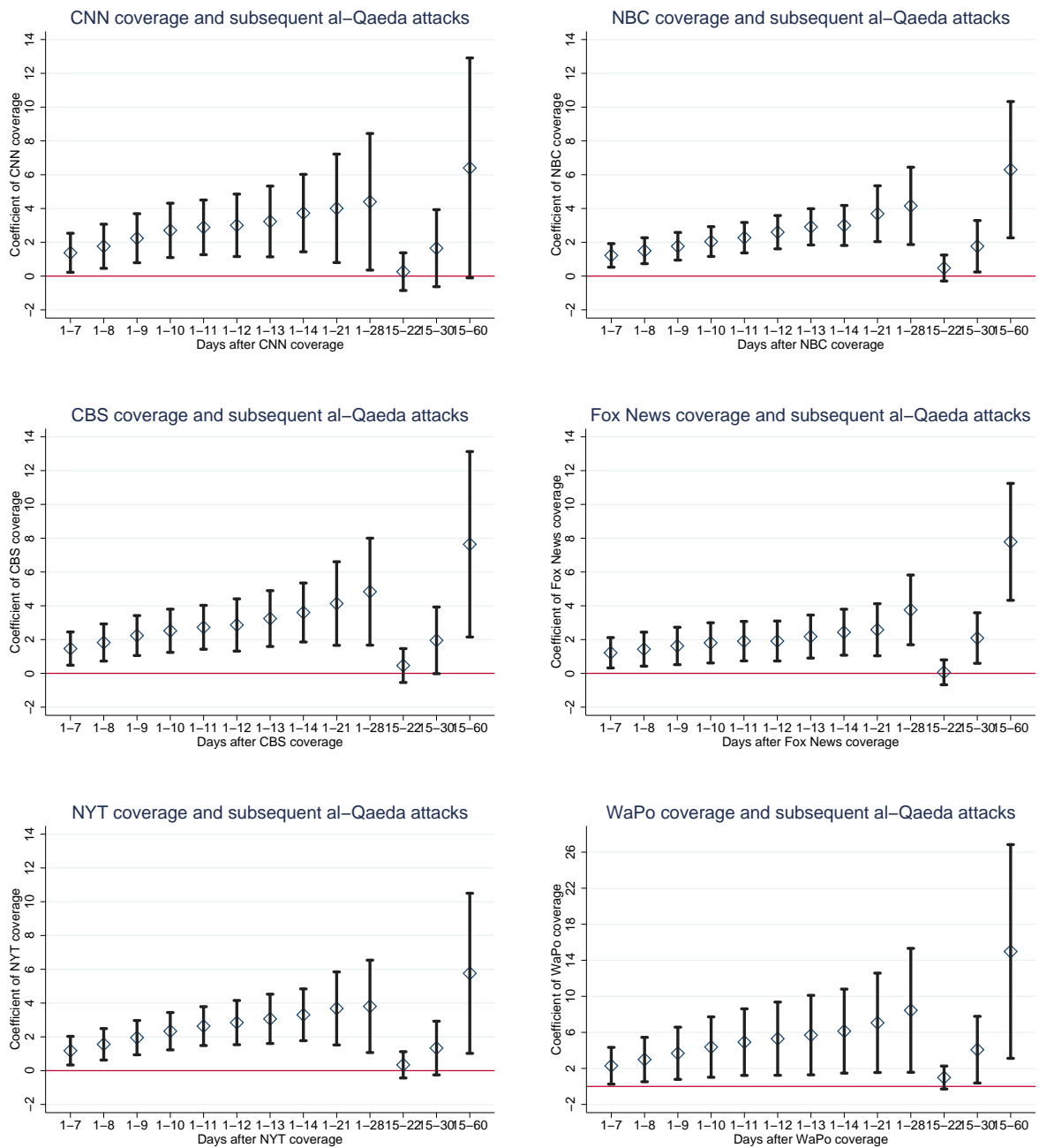


Figure 4: Displaying coefficients of the respective media coverage variable from regressions estimating the number of al-Qaeda attacks up to 60 days after the initial al-Qaeda coverage. The full set of control variables from Table 5 are included in all regressions. All coefficients display two-sided 95 percent confidence intervals.

coefficient. If anything, the relationship remains positive even when predicting attacks 15-60 days after the initial coverage. These findings support the hypothesis that al-Qaeda coverage affects the *total* number of attacks, as opposed to just driving their timing.

4.3 Extensions and Robustness Checks

Table 6 presents a host of robustness checks of the main results displayed in columns (1) through (6) of Table 5. In particular, each Panel presents only the second stage coefficients of the respective al-Qaeda news coverage variable and the alternative specifications are briefly described in the Panel title.

In Panel A, I employ the continuously-updated GMM estimator (or *CUE*) suggested by Hansen et al. (1996), whereas in Panels B and C, I exclude specific days from the sample to check whether the post-9/11 or the time period surrounding the capture of bin Laden in 2011 are driving the results. However, all three Panels show that the main result remains consistent, not only in terms of statistical relevance, but also when it comes to magnitudes. Further, in Panel D, I consider the argument presented by Berrebi and Ostwald (2011, 2013), suggesting that natural disasters in a given country can directly affect the execution of terror attacks. Thus, the IV here ignores all disasters in the countries where al-Qaeda are most active: Afghanistan, Algeria, Iraq, Mali, Pakistan, Saudi Arabia, and Yemen. Again, the key result is closely replicated for all six outlets.

In Panel E, I include several additional covariates that could independently affect media coverage of al-Qaeda or subsequent attacks. Specifically, I follow Puglisi (2011) in accounting for key variables related to US politics via controlling for whether the day falls into a US presidential election campaign period (taking place between August and October of an election year, following Puglisi, 2011) and whether the sitting US President comes from the Republican party. Further, the results displayed in Panel E also account for more detailed measures of

Table 6: Robustness checks, displaying only second stage coefficients for al-Qaeda coverage, predicting the number of al-Qaeda attacks in the subsequent week. Each coefficient comes from one individual regression, following the most complete estimations from Table 5 as a benchmark.

	<i>CNN</i>	<i>NBC</i>	<i>CBS</i>	<i>Fox News</i>	<i>NYT</i>	<i>WaPo</i>
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Employing a continuously-updated GMM estimation (command <i>cue</i> in <i>ivreg2</i>)						
Al-Qaeda coverage on day <i>t</i>	0.300** (0.153)	0.247*** (0.086)	0.290** (0.118)	0.621** (0.279)	2.357** (1.026)	20.884* (11.277)
Panel B: Excluding post-9/11 data from 09/12/2001 - 12/31/2001						
Al-Qaeda coverage on day <i>t</i>	0.383** (0.190)	0.282*** (0.096)	0.355** (0.144)	0.621** (0.279)	2.725** (1.134)	20.884* (11.277)
Panel C: Excluding capture of bin Laden period from 05/02/2011 - 05/09/2011						
Al-Qaeda coverage on day <i>t</i>	0.313* (0.162)	0.250*** (0.087)	0.296** (0.121)	0.667** (0.299)	2.394** (1.045)	29.909 (18.850)
Panel D: Excluding disasters in al-Qaeda countries^a						
Al-Qaeda coverage on day <i>t</i>	0.294* (0.152)	0.242*** (0.085)	0.285** (0.118)	0.606** (0.279)	2.297** (1.012)	20.213* (10.983)
Panel E: Adding control variables^b						
Al-Qaeda coverage on day <i>t</i>	0.798*** (0.308)	0.612*** (0.175)	0.657*** (0.207)	1.166*** (0.376)	11.584*** (3.722)	31.818** (15.019)
Panel F: Only using 1 observation per week						
Al-Qaeda coverage on day <i>t</i>	0.464** (0.232)	0.278* (0.167)	0.228* (0.123)	1.107* (0.664)	3.469** (1.635)	17.463*** (6.013)
Panel G: Only considering al-Qaeda attacks in Iraq						
Al-Qaeda coverage on day <i>t</i>	0.373*** (0.114)	0.277*** (0.060)	0.349*** (0.084)	0.767*** (0.234)	3.081*** (0.762)	23.613** (11.224)
Panel H: Coding missing days as zero al-Qaeda coverage						
Al-Qaeda coverage on day <i>t</i>	0.321** (0.139)	0.202** (0.082)	0.254** (0.105)	0.618*** (0.238)	2.433** (1.025)	18.509** (9.084)
Panel I: Coding missing days as complete al-Qaeda coverage						
Al-Qaeda coverage on day <i>t</i>	0.340** (0.150)	0.211** (0.084)	0.270** (0.110)	0.733** (0.287)	2.530** (1.106)	5.905 (3.622)

Notes: Robust standard errors are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. ^aExcludes disasters in Afghanistan, Algeria, Iraq, Mali, Pakistan, Saudi Arabia, and Yemen. ^bIncludes the following additional variables in both stages: Binary indicators for whether a US presidential campaign is going on and whether the sitting President is Republican; 7 individual variables for al-Qaeda attacks in the previous 7 days.

current and immediately preceding al-Qaeda missions by including seven independent variables that measure al-Qaeda attacks in the previous seven days ($t - 7, t - 6, \dots, t - 1$). The key second stage coefficient of al-Qaeda coverage remains robust and, interestingly, even *gains* in magnitude.

Next, Panel F addresses concerns about the overlapping time dimensions in the dependent variable. Since the baseline sample considers every day from 9/11 until the end of 2015, and the dependent variable counts attacks over seven days, any given attack enters seven different observations. To check whether such concerns related to the time series nature of the data are driving the findings, I here only consider one observation every week (using Wednesdays in this case). Again, the main result is retained, albeit with less statistical precision, which is perhaps reflective of a much smaller sample size when using only one observation per week.

Further, Panel G provides a more precise definition of al-Qaeda and the group's interest in the US media by focusing on attacks in Iraq only. Since the US have been involved militarily and politically in Iraq over decades now, the country remains one of the key battlegrounds between the US and al-Qaeda. Interestingly, once we consider al-Qaeda attacks in Iraq only, the estimation becomes even more precise in statistical terms (five of the coefficients displayed in Panel G are statistically significant on the one percent level with the final one being significant on the five percent level). In addition, magnitudes are further raised when compared to the benchmark findings of Table 5.

Finally, Panels H and I address missing data in the *VTNA*, *NYT*, and *Wapo* archives. To check whether the derived results could be driven by systematic data omission for the media outlets, I first code all days with missing observations for an outlet as zero al-Qaeda coverage (Panel H). This assumes that the respective news would not display data when al-Qaeda was not covered, testing whether these omissions in the media data are non-random. However, the corresponding results are reassuring and this explanation seems unlikely. In Panel I, I then assume the opposite – that all days with no media data have experienced *full* al-Qaeda coverage. But, here again,

the main results are reproduced. Overall, these alternative estimations displayed in Table 6 produce consistent conclusions, i.e., al-Qaeda coverage appears to systematically inspire al-Qaeda attacks in the near future.

4.4 Placebo Regressions

Finally, Table 7 displays an additional estimation to check the validity of the main results. Specifically, instead of predicting attacks in the upcoming week, I re-estimate the main regressions from Table 5 when using al-Qaeda attacks in the *preceding* three days as an outcome variable. Intuitively, we should expect a null effect in the second stage as it would be quite counterintuitive to see al-Qaeda news coverage on day t *causing* al-Qaeda attacks on days $t - 3$ until $t - 1$.

Table 7: Placebo IV regressions, predicting the number of Al-Qaeda attacks in the previous 3 days ($t - 3$ until $t - 1$).

Outlet:	(1) <i>CMN</i>	(2) <i>NBC</i>	(3) <i>CBS</i>	(4) <i>Fox News</i>	(5) <i>NYT</i>	(6) <i>WaPo</i>
2nd stage predicting Al-Qaeda attacks on days $t + 1$ until $t + 7$						
Al-Qaeda coverage on day t	0.009 (0.165)	0.020 (0.102)	0.038 (0.123)	-0.003 (0.348)	0.867 (0.862)	8.802 (7.946)
Control variables ^a	yes	yes	yes	yes	yes	yes
N	4,396	4,593	4,126	3,538	5,215	3,981

Notes: All estimations are conducted using the *ivreg2* command in Stata with robust, heteroskedastic-, and autocorrelation-consistent (HAC) standard errors (option *robust* in Stata). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. ^aIncludes fixed effects for days of the week, months, and Ramadan, as well as 2 variables measuring the number of Al-Qaeda attacks on day t and on days $t - 3$ until $t - 1$.

Indeed, the corresponding results in Table 7 produce a relatively precisely estimated null effect in the respective second stages. In terms of statistical relevance, the coefficients associated

with al-Qaeda coverage on television news remain statistically insignificant with t-values well below one. For al-Qaeda coverage in the *NYT* and the *WaPo*, t-values remain one and 1.1, respectively. Thus, as expected, al-Qaeda coverage today is not able to predict al-Qaeda attacks yesterday once instrumented via disaster deaths.

5 Conclusion

This paper investigates the link between al-Qaeda coverage in the major US television and newspaper outlets (*CNN*, the *NBC Nightly News*, the *CBS Evening News*, *Fox News*; the *NYT* and the *WaPo*) and subsequent al-Qaeda attacks. In particular, I try to test the hypothesis that increased media coverage can encourage further terrorism, whereas the absence of coverage might discourage terror attacks, specifically focusing on al-Qaeda and the US news. To isolate causality, I use disaster deaths worldwide on a daily basis: Everything else equal, I propose that more disaster deaths are crowding out al-Qaeda news coverage in the US.

The main 2SLS results suggest a positive and statistically powerful relationship. Indeed, if we believe the exclusion restriction (for which I find empirical support), coverage of al-Qaeda causally leads to further al-Qaeda attacks. This relationship is also sizeable in economic terms: At their means, the respective outlets are suggested to cause 1.22-2.29 al-Qaeda attacks (or 5.81-10.91 deaths) in the upcoming week, everything else equal. Interestingly, this magnitude remains remarkably stable throughout all six media news outlets. Additional estimations provide evidence that is consistent with a *permanent* interpretation of these findings, i.e., al-Qaeda attacks are not just postponed when coverage is low. Rather, it appears as if the overall number of attacks decreases (increases) when coverage is low (high). A battery of robustness checks, alternative estimations, and placebo regressions produce results that further support the paper's main conclusion.

How should these results be interpreted and what do they mean for potential policy recom-

mendations? Taking the results literally, one may be tempted to suggest regulating the amount of reporting on al-Qaeda, and maybe even ban reporting entirely. Of course, such drastic measures cannot be reconciled with a strong commitment to press freedom and likely do not present a socially desirable solution, since they may produce substantial (and likely negative) externalities. However, journalists and news program directors may be well advised to re-think the extent to which terrorism is covered. For example, a simple look at the *VTNA* data reveals that al-Qaeda has received more coverage than China and Russia *combined* since 9/11. Thus, the journalistic *Code of Ethics* and its guidelines to minimize harm may indeed be violated by an ‘extensive’ coverage of al-Qaeda.

Thus, a potential solution could relate to media representatives’ awareness that increased coverage could actively lead to detrimental consequences. Indeed, ‘self-imposed’ media guidelines have become relevant in other domains where reporting could produce negative consequences from a societal perspective. As an example, one may consider the media’s treatment of suicides: It is well understood that ‘sensationalist’ coverage of a suicide can encourage copycats. Thus, journalists are advised to “decide whether to report,” “modify or remove information that may increase risk” and “present information about suicide in ways that may be helpful” (e.g., see [King, 2010](#), [Mindframe, 2014](#), and [Reporting on suicide, 2017](#)). Such examples may provide a useful starting point for a discussion on how to avoid the encouragement of terrorist attacks via increased media coverage. For instance, the French newspaper *Le Monde* has recently decided to stop publishing photos and names of terrorists ([Borger, 2016](#)) which has led to some discussion (e.g., see [McKenzie, 2016](#)). In this context, further research could also analyze the content of news segments and potentially be able to distinguish which types of coverage are particularly harmful or even helpful. I leave these ideas for future projects.

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Appendix For Online Publication

Table A1: Summary statistics of additional variables. All variables constitute daily averages from September 12, 2001 until December 31, 2015.

Variable	Mean	(Std. Dev.)	Min.	Max.	N	Source ^a
Ramadan	0.08	(0.28)	0	1	5,224	online
International event ^b	0.05	(0.23)	0	2	5,224	online
<i>CNN</i> coverage of al-Qaeda (yes/no)	0.26	(0.44)	0	1	4,396	<i>VTNA</i>
<i>NBC</i> coverage of al-Qaeda (yes/no)	0.26	(0.44)	0	1	4,593	<i>VTNA</i>
<i>CBS</i> coverage of al-Qaeda (yes/no)	0.28	(0.45)	0	1	4,126	<i>VTNA</i>
<i>Fox News</i> coverage of al-Qaeda (yes/no)	0.17	(0.38)	0	1	3,538	<i>VTNA</i>
<i>NYT</i> coverage of al-Qaeda (yes/no)	0.62	(0.49)	0	1	5,215	<i>NYT</i>
<i>WaPo</i> coverage of al-Qaeda (yes/no)	0.17	(0.38)	0	1	3,981	<i>WaPo</i>
Disaster deaths in days $t - 3$ until t , in 10,000, excluding countries where al-Qaeda may be based ^c	0.85	(13.7)	0	500.04	5,224	EM-DAT
US presidential campaign	0.05	(0.22)	0	1	5,224	own, Puglisi (2011)
Republican US president	0.51	(0.5)	0	1	5,224	own, Puglisi (2011)
Al-Qaeda attacks in Iraq in subsequent 7 days	0.85	(3.84)	0	44	5,217	GTD

Notes: ^aSources: *online* = Data for Ramadan days are derived from <https://www.moonsighting.com/actual-saudi-dates.pdf>; data for international events are derived from the official websites of the respective events; *VTNA* = Vanderbilt Television News Archive ([VTNA, 2016](#)); *NYT* = *NYT* archive, available under <http://www.nytimes.com/ref/membercenter/nytarchive.html>; *WaPo* = *WaPo* archive, available under <https://www.washingtonpost.com/newssearch/search.html>; EM-DAT = International Disaster Database ([Guha-Sapir et al., 2014](#)); GTD = Global Terrorism Database (based on [LaFree and Dugan, 2007](#)). ^bConstitutes a binary indicator that is equal to one if any of the following events is ongoing: The Super Bowl, the FIFA World Cup, the Olympic Games (summer or winter), the Academy Awards, or a G8 Meeting. ^cExcluding disasters in Afghanistan, Algeria, Iraq, Mali, Pakistan, Saudi Arabia, and Yemen.

Table A2: Correlation coefficients between al-Qaeda coverage in media outlets.

Variables	<i>CNN</i>	<i>NBC</i>	<i>CBS</i>	<i>Fox News</i>	<i>NYT</i>	<i>WaPo</i>
<i>CNN</i> coverage of al-Qaeda (share \times 100)	1.00					
<i>NBC</i> coverage of al-Qaeda (share \times 100)	0.48	1.00				
<i>CBS</i> coverage of al-Qaeda (share \times 100)	0.50	0.55	1.00			
<i>Fox News</i> coverage of al-Qaeda (share \times 100)	0.55	0.37	0.38	1.00		
<i>NYT</i> coverage of al-Qaeda (share \times 100)	0.46	0.42	0.41	0.33	1.00	
<i>WaPo</i> coverage of al-Qaeda (share \times 100)	0.42	0.30	0.33	0.43	0.58	1.00

Table A3: Results from OLS regressions, estimating whether deaths from disasters predict al-Qaeda coverage in the remaining five media outlets. Each coefficient comes from an independent regression of the dependent variable (see column titles) on the respective media variable (see row title), including the same control variables employed in Table 4: Fixed effects for days of the week, months, and Ramadan, as well as 2 variables measuring the number of Al-Qaeda attacks on day t and on days $t - 3$ until $t - 1$.

Dependent variable: Al-Qaeda coverage on...	<i>NBC</i> (1)	<i>CBS</i> (2)	<i>Fox News</i> (3)	<i>NYT</i> (4)	<i>WaPo</i> (5)
Disaster deaths on t	-0.035*** (0.010)	-0.034* (0.021)	-0.097*** (0.023)	-0.002*** (0.001)	-0.000* (0.000)
Disaster deaths on $t - 1$	-0.044** (0.021)	-0.186*** (0.041)	-0.100*** (0.024)	-0.003*** (0.001)	-0.000* (0.000)
Disaster deaths on $t - 2$	-0.127 (0.118)	-0.029** (0.014)	-0.015 (0.009)	-0.003*** (0.001)	-0.000** (0.000)
Disaster deaths on $t - 3$	-0.042** (0.019)	-0.027*** (0.007)	-0.010** (0.005)	-0.003*** (0.001)	-0.000** (0.000)
Disaster deaths on days $t - 3$ until t	-0.025*** (0.008)	-0.021*** (0.007)	-0.009* (0.005)	-0.001*** (0.000)	-0.000** (0.000)
<i>N</i>	4,593	4,126	3,538	5,215	3,981

Notes: Robust standard errors are displayed in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.