

**WORKING PAPER** · NO. 2024-121

# Terrorist Propaganda

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SEPTEMBER 2024

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July 26, 2024

## Abstract

This paper leverages granular survey data from within the conflict theater of Afghanistan to investigate how plausibly exogenous exposure to Islamic State (IS) propaganda influences views towards local and international forces. We study two mediums of terrorist propaganda, exploiting high-frequency time variation in global distribution of IS videos and plausibly exogenous signal penetration of a prominent IS radio tower in Afghanistan. Our findings suggest violent video and radio content undermines public support for IS and its key opponents, while increasing demand for international forces to remain in country. By contrast, videos depicting a capacity for IS governance boost their support.

*Keywords:* media, propaganda, terrorism, public opinion

*JEL Classification:* D72, D74, D8, O53

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\*We thank Isabela Campos, Matteo Grigoletto, Yulin Hao, Lucas Klotz, Paul Michel, Matthew Ribar, and Jian Pan for outstanding research support. We acknowledge generous financial support through the faculty research grant from CEIBS. For helpful comments we thank Susanna Campbell, Fei Du, Ruben Durante, Tobias Korn, Aila Matanock, Tamar Mitts, Venkat Peddireddy, Bei Qin, Thorsten Rogall, Renxuan Wang, Frank Yu, and participants at the 2020 HiCN Workshop, 2021 EPCS Conference, 2021 and 2023 PEIO Conference, 2021 Annual Internal Conference of the Research Committee Development Economics (VfS), 2021 GLAD Conference, 2021 NEPS Conference, 2022 Baptist-CEIBS-NTU-NUS Political-Economy Workshop, and seminars at the University of Goettingen, University of Hannover, and UCLouvain. The usual caveats apply. Conclusions reached from the ANQAR data are not attributable to NATO/RS nor to US Forces Afghanistan (USFOR-A), and interpretations offered are not necessarily shared by RS/NATO/USFOR-A.

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# 1 Introduction

Understanding the emergence of violent non-state actors remains a fundamental challenge. We provide evidence that insurgent groups can effectively leverage information operations—terrorist propaganda—to shape public opinion, though with some unintended consequences. This paper engages and advances a recent wave of research on the economics of media persuasion (DellaVigna and Kaplan, 2007; Gentzkow et al., 2011; Durante et al., 2019) and conflict (Yanagizawa-Drott, 2014; Armand et al., 2020; Sonin and Wright, 2022), which have clarified how slanted information shapes attitudes and behaviors in a variety of contexts. We evaluate and extend these insights by studying the Islamic State’s sophisticated attempts to influence and mobilize civilians during an ongoing conflict in Afghanistan.

Our study is set in a period of intense propaganda efforts by Islamic State (IS) between 2014 and 2018. We combine a wealth of Afghan microdata on civilian attitudes and preferences regarding government and non-government actors (including the Taliban and IS) with proprietary propaganda data gathered by a counterterrorism intelligence firm on behalf of military clients. To our knowledge, this data is the most comprehensive corpus of IS video content in existence. Using restricted access resources, we also reconstruct the operational reach and timing of radio propaganda in Eastern Afghanistan – a crucially important zone of influence for Islamic State.

To credibly estimate the effects of analog and digital propaganda campaigns, we leverage two identifying sources of variation—time series shocks and cross-sectional exposure. First we exploit temporal variation in the global distribution of IS videos by constructing a time-varying measure of propaganda video exposure based on each survey respondent’s enumeration date. Second we introduce a difference-in-difference framework to measure the impact of local IS radio within a transmission zone estimated using an irregular terrain model. The latter identification strategy leverages topography to isolate exogenous variation in exposure to radio broadcasts (see e.g., Olken, 2009; DellaVigna, Enikolopov, Mironova, Petrova, and Zhuravskaya, 2014; Yanagizawa-Drott, 2014; Armand, Atwell, and Gomes, 2020). Using the approximate construction date of an IS radio tower in Eastern Afghanistan, we then compare

the opinions of those within and outside the transmission zone, before and after the tower was constructed.

Following [Mitts et al. \(2022\)](#), we distinguish between propaganda depicting violence and content exhibiting the group’s institutional capacity (including religious practice and public goods provision). Our findings suggest violent videos and radio broadcasts by IS erode support for their group, but also for two of their key opponents – the Government of Afghanistan and the Taliban. This content also provokes a general sense of insecurity and pessimism, leading Afghans to support the then-continuing presence of international forces. By contrast, videos depicting a capacity for governance by IS tend to boost support for the group in Afghanistan.

A growing literature in economics has explored media persuasion and the effectiveness of propaganda. Previous research found that the political slants of US newspapers are ineffective at influencing voter perceptions ([Gerber, 2009](#); [Chiang and Knight, 2011](#); [Gentzkow, Shapiro, and Sinkinson, 2011](#)). On the other hand, bias in television media has been shown to influence political preferences under both democracies ([DellaVigna and Kaplan, 2007](#); [Durante, Pinotti, and Tesei, 2019](#); [Martin and Yurukoglu, 2017](#)) and weak institutions ([Enikolopov, Petrova, and Zhuravskaya, 2011](#); [Knight and Tribin, 2019](#)). Propaganda efforts by nefarious actors have also been shown to influence political and ideological preferences, with extremely deleterious consequences. [DellaVigna et al. \(2014\)](#) show that exposure to nationalistic Serbian radio in Croatia contributed to ethnic extremism. [Adena et al. \(2015\)](#) document how Nazi radio facilitated party recruitment and the consolidation of dictatorship, while inciting anti-Semitism among the citizenry. [Yanagizawa-Drott \(2014\)](#) documents the role of radio broadcasts in exacerbating the Rwandan genocide. And [Müller and Schwarz \(2021\)](#) show that anti-refugee social media posts by the far-right AfD party led to violent hate crimes against refugees in Germany.

While the above studies focus on propaganda efforts of legitimized state and media actors, we contribute by examining propaganda by a *terrorist* organization. A nascent literature focuses on the success of counterinsurgency information campaigns at inducing defections ([Armand, Atwell, and Gomes, 2020](#)) and garnering intelligence ([Sonin and Wright, 2022](#)).

Our paper complements this work by studying the flipside of the COIN – the effectiveness of terrorist propaganda. Notably, [Mitts \(2019\)](#) and [Mitts, Phillips, and Walter \(2022\)](#) have shown that IS attacks in Europe and online propaganda contributed to greater online support for IS among global Twitter users. Our study is differentiated from this work by focusing on opinion outcomes towards several actors within a conflict theater hosting IS. Specifically, we identify the impact of global and local IS propaganda on the political preferences of regular Afghans towards their government, the Taliban, international forces, and IS itself. Our work therefore sheds light on an important driver of public opinion (and practical allegiances) in the oft-cited battle for hearts and minds between domestic governments, international forces, and insurgency groups within complex civil war settings ([Berman et al., 2011](#)). As local support is crucial for the survival of any insurgent group, understanding the local success of terrorist information campaigns is of critical importance to policy-makers and security forces globally ([Sonin and Wright, 2022](#)). The continued emergence of radical insurgent groups with increasingly global presence further underscores the importance of this topic.

The remainder of our paper is structured as follows. Section 2 provides institutional background regarding the Islamic State, emphasizing their use of propaganda mediums in Afghanistan and abroad. Section 3 describes our public opinion, propaganda, and conflict data in detail. Section 4 expounds our analysis, including our identification strategy and results. Finally, section 5 concludes our study.

## 2 Institutional background

Following the emergence of the Islamic State of Iraq and the Levant (ISIL) in 2014, the group enjoyed territorial conquests in Iraq, Syria, Libya, Nigeria, Egypt, Algeria, Saudi Arabia, Yemen, Pakistan, and Afghanistan ([Jones et al., 2018](#)). The rise of the Islamic State (IS) in Afghanistan, from mid-2014 until the end of 2015, was followed by significant contraction throughout 2016. Nevertheless, between January 2017 and October 2018, IS conducted more than 84 attacks killing 819 civilians across 15 Afghan provinces ([CSIS, 2018](#)). IS conflict activity persists even in Kabul ([Clayton, 2018](#); [Reuters, 2020, 2021](#)), after the Taliban regained control ([Shalal, 2021](#)), and further afield ([Hafezi, 2024](#)). The survival of

IS, like that of all terrorist organizations, is crucially dependent upon local support in their area of operation (Nagl and Amos, 2007). In its combined effort to win hearts and minds while intimidating adversaries and dissidents, IS operates a vast network of global and local propaganda initiatives (see e.g., Monaci, 2017). These include (but are not limited to) the online circulation of videos and photos, and the local transmission of radio. The extent to which IS propaganda bears on household sentiment towards the conflict actors of Afghanistan is the topic of our study.

By 2018, Islamic State had recruited over 30,000 foreign fighters from over 80 countries (Soufan Group, 2015; Jones et al., 2018).<sup>1</sup> Islamic State Khorasan (ISK) is the IS branch whose operational jurisdiction includes Afghanistan. Former Tehrik-e Taliban Pakistan members formed the bulk of ISK fighters, having fled military operations in the Federally Administered Tribal Areas of Pakistan after mid-2014 (Taneja and Observer Research Foundation, 2018; CRS, 2022). In the same period, other sources of fighters include the Afghan Taliban and foreign militants within Afghanistan (Mumtaz, 2016), as well as Indians from Kerala. Later, following the decline of IS in Syria and Iraq, IS fighters from those branches also likely fled to Afghanistan (Taneja and Observer Research Foundation, 2018).

The media efforts of the Islamic State have typically not relied upon official websites or social media accounts. Instead, the so-called Base Foundation posted photos, videos, magazines, and audio broadcasts on jihadi forums and file-sharing websites. Online followers then downloaded and reposted content to platforms of their choosing (Gambhir, 2016). Consequently, Facebook regularly banned the dissemination of IS content, shuttering accounts informally associated with the group (Salama, 2016). The Dawn of Glad Tidings - an IS news dissemination app – was also suspended by Twitter in 2014 (Monaci, 2017). In 2015, IS launched another mobile news app—Amaq (EFSAS, 2020). By 2016, Amaq played a significant role in IS media efforts, releasing news, photos, maps, and videos through its Telegram channel and on Tumblr (Gambhir, 2016; Winter, 2018). The Base Foundation also ran the overseas al-Bayan radio – a weekly military update. Al-Bayan radio was broadcast in major cities under IS control, including Raqqa, Mosul, and Sirte (Gambhir, 2016), and available

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<sup>1</sup> Leading source countries reportedly included Tunisia, Saudi Arabia, France, the United Kingdom, Belgium, and Germany.

elsewhere via a dedicated mobile app (Jones et al., 2018).

Yarchi (2019) argues that IS practiced strategic messaging across myriad media platforms. Monaci (2017) indicates the various platforms suited different purposes of the organization – they did not simply constitute different channels of distribution for the same message. Rather, each platform was chosen for its distinct aesthetic features as part of a broader multimedia communication strategy. For example, Islamic State is notorious for releasing egregious violent video content. The group received unprecedented media attention for its production of beheadings. Other violent video content included aftermath footage of civilians maimed in opposition attacks and retaliatory strikes or hostage videos (Greene, 2015; Winter, 2016). Scholars argue the motivation behind violent IS propaganda includes threatening dissidents/apostates (Barr and Herfroy-Mischler, 2018), recruiting fighters (EFSAS, 2020), and attracting public attention (Melki and Jabado, 2016; Simons, 2018). Downstream coverage by mainstream media, in turn, legitimized the group as a significant threat to current political orders (Greene, 2015).

Though brutality is undoubtedly the aspect of IS propaganda having received the most press, it constitutes only part of the group’s overall political messaging (Winter, 2016). Aside from projecting threats and violence, IS also provides its audience with a utopian worldview and political project (Gerges, 2014). After all, the target audience of IS messaging includes unaligned civilians, in addition to IS enemies and supporters (Gratrud, 2016). For the unaligned, “social media propagated a virtual reality in which the caliphate existed as an immediately accessible utopia” (Gambhir, 2016, p. 19). Various non-violent themes emerged in the group’s messaging, with moderate content appealing to a broader public (Barr and Herfroy-Mischler, 2018; Yarchi, 2019). For example, the al-Hayat and al-Furqan media centers of IS produced a diverse array of videos focused on everyday life (Qi, 2020). Compared to other terrorist organizations, IS particularly emphasized a capacity for state-building in their messaging (Al Bayat, 2020; Lahoud, 2017). Videos by the group regularly showcased religious ceremonies, and service provision (e.g. education; food distribution), military equipment, and training camps.

Differentiating between Islamic State’s violent and state capacity content is an important

feature of our study. In the case of video propaganda, the distinction between these content categories is visually apparent.<sup>2</sup> Interpreting the content of IS radio messaging requires deeper consideration. In general the group’s radio broadcasts in Afghanistan are found to encourage violence (drawing on religious motivations), and also to spread vitriol against the government, Taliban, and international forces. As with the group’s video messaging, IS radio broadcasts also explicitly call for Afghans to join their holy war. For example, one broadcast referred to government officials in the ‘non-Islamic’ Afghan state as American stooges, requesting listeners to “kill these stooges first, and then begin with the foreign invaders until they are defeated and leave the holy soil of Khurasan” (IWPR, 2018). Another broadcast threatens death to anyone connected with the government or Taliban, the latter being even higher-priority targets (Constable, 2015). Local Afghans confirm the hostility expressed against Taliban and government officials through ISK radio broadcasts (Alarabiya, 2016). For example, a professor of Pashto literature attacks the Taliban and government during a regular program filled with jihadi music, bulletins of IS victories, messages from IS fighters, and confessions from IS captives in Afghanistan (IRIN, 2017). Meanwhile, commonly invoked sound effects conjure images of war – galloping horses, clashing swords, and bursts of machine gun-fire (Worldcrunch, 2016).<sup>3</sup>

### 3 Data

This project leverages unique data on (1) public opinion across Afghanistan, and (2) mediums of IS propaganda (both within Afghanistan and further afield). Below we introduce our data sources, and describe the variables constructed for our analysis.

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<sup>2</sup> Our categorization method is detailed in section 3.2.1.

<sup>3</sup> In general, IS presents itself as a “powerful vanguard capable of delivering victory and salvation” (Gerges, 2014, p. 46). The group’s narrative offers a counterculture for alienated and disenchanting youth of various backgrounds (Melki and Jabado, 2016). IS messaging often encourages viewers to leave their jobs and families to join the caliphate and pledge allegiance to the group (Clark and Metz, 2016; EFSAS, 2020). In this respect, IS produced several recruitment videos targeting populations in the Balkans, Xinjiang Province of China, and Trinidad and Tobago (Gambhir, 2016).



### 3.1 Public opinion

We use public opinion data from the Afghanistan Nationwide Quarterly Assessment Research (ANQAR) survey, shared via agreement with NATO. For approximately one decade from 2008, NATO commissioned a local survey company (ACSOR) to conduct quarterly nationwide polls, gathering information on household demographics and public opinion. Our analysis focuses on respondent opinions toward Islamic State, the Government of Afghanistan (GoA), the Taliban, and international forces. Specifically, we construct opinion measures for conflict actors based on the following questions: (i) *Do you think the arrival of IS would be good or bad for Afghanistan?*; (ii) *Does IS respect the religion and traditions of Afghans?*; (iii) *Do you believe the GoA is going in the right or wrong direction?*; (iv) *How well does the GoA do its job securing the country?*; (v) *Should international forces stay longer or leave Afghanistan?*; (vi) *How trustworthy is the messaging of the international forces?*; (vii) *If the Taliban were to return to power and govern Afghanistan, would it be good or bad for the people and the country?*; and (viii) *How trustworthy is the messaging of the Taliban?* Additionally, we also examine two psychological outcomes related to security: (ix) *How safe do you feel travelling outside your area?*; and (x) *Is it likely the next generation of Afghans will live in peace and security?* Household responses to the above questions are provided on a 4 or 5 point scale, depending on the measure. The exact wording for each question and response scale is provided in Table A1. For descriptive purposes we report raw values; in our regression analysis we normalize outcomes to zero mean and unit variance.

Each year of our sample consists of four ANQAR survey waves. The enumeration dates change slightly from year to year, but roughly correspond to: late February to early March (Q1), late May to early June (Q2), late August to early September (Q3), and late November to early December (Q4).<sup>4</sup> Figure 1a presents the nationwide average time series for IS-related opinion measures (i–ii above). Neither opinion measure is available for our entire sample period (2015 through 2018). Figure 1b shows the corresponding time series for GoA opinion measures (iii–iv), with full sample coverage. Figures 1c and 1d plot opinions towards the Taliban and international forces, respectively. Finally, Figure 1e shows the time series for

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<sup>4</sup> Precise enumeration dates for each survey wave are provided in Table A2.

psychological outcomes (ix–x) throughout our sample period. The ANQAR data also provides respondent-level demographic controls, including age, gender, educational attainment, and ethnicity. Tables 1 and 2 offer descriptive statistics for each public opinion measure and other variables used in our analysis.

## 3.2 Mediums of propaganda

### 3.2.1 IS videos

We track the dissemination of IS videos with data from the IntelCenter Database (ICD) – a subscription platform cataloging thousands of videos, pictures, and other propaganda material released by terrorist groups worldwide. We import data on 3,375 videos released by IS between 2014 and 2018. For each video, the ICD documents its release date, geographic setting, language, thematic category, and content keywords.<sup>5</sup> The majority of IS videos are filmed in Iraq and Syria, then distributed globally through various online platforms from which ICD gathers intelligence.<sup>6</sup>

Upon review of video source material, we distinguish between two broad categories of content: (1) videos reflecting or espousing violence and (2) videos exhibiting relatively benign institutional capacity (such as teaching the Koran or distributing food supplies). The ICD classifies videos across 15 thematic categories, ten of which are wholly characterized either by violence or state capacity and are manually categorized as such. Accordingly, we manually classify videos from those ten themes into our corresponding categories. Videos with ambiguous themes are instead categorized using content keywords provided by ICD. In particular, we train a supervised machine learning model (using lasso logit regression) to predict the category of unassigned videos using their associated keywords.<sup>7</sup>

The distribution of violent and state capacity videos across our survey waves is depicted in Figure 2.<sup>8</sup> Household-level exposure to this content in wave  $N$  is measured as the log count of

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<sup>5</sup> Since the availability of propaganda material might be related to local developments within Afghanistan, we address endogeneity concerns by excluding 37 videos filmed in Afghanistan itself.

<sup>6</sup> ICD sources are confidential vis-à-vis the public and platform subscribers.

<sup>7</sup> Videos manually assigned based on ICD themes are used as training data for the prediction model. Full details of the classification procedure are provided in Appendix B.

<sup>8</sup> A daily time series of video distribution is provided in Figure A1. Figure 2 presents wave-level aggregates to facilitate interpretation of trends and identifying variation.

videos released since the end of wave  $N - 1$  up until the household-specific enumeration date in wave  $N$ . Given the spacing of ANQAR survey waves, this implies each survey respondent is exposed to approximately three months of content.

### 3.2.2 IS radio

Our radio analysis focuses on a single IS radio tower transmitting propaganda in Pashto and Dari languages from Nangarhar province of Eastern Afghanistan. The initial construction of the tower occurred sometime between October and early December 2015. The tower was subsequently destroyed on February 1<sup>st</sup> 2016, and rebuilt in early May 2016. Records indicate the tower was destroyed a second time between July 14<sup>th</sup> 2016 and early May 2017. We identify the tower’s location based on military records of an aerial bombardment which occurred in Achin district of Nangarhar province when the radio went off air.

We measure the radio signal’s reach across several provinces in Eastern Afghanistan. To achieve this, we follow [Yanagizawa-Drott \(2014\)](#) and calculate the Longley-Rice model for radio propagation (i.e. the Irregular Terrain Model, or ITM). To calculate the ITM propagation, we follow [Armand, Atwell, and Gomes \(2020\)](#) by using the cloud-based platform *CloudRF.com*. Based on descriptions of an earlier tower used by IS, we estimate the height of the radio transmitter (antenna) to be 30 feet (9 meters). We then assume plausible parameters for an inexpensive, accessible, and portable transmitter (30 MHz at 300 Watts). We estimate the likely signal using a five-foot receiver and a field strength threshold of 25 dBuVm (based on the recommendation of CloudRF’s lead engineer). [Figure 3](#) displays radio coverage based on the ITM, with red indicating regions exposed to signals from the IS radio tower in Achin, Nangarhar. We calculate district-level exposure to radio propaganda using the population share residing in the radio’s coverage area. Sub-district population weights are derived based on Afghan settlement locations and populations from the NASA Socioeconomic Data and Applications Center.

### 3.3 IS conflict activity

The breadth and scope of IS conflict activity are important for identification throughout our analysis. It is natural to expect the group’s battlefield successes/failures to be potentially confounded with their propaganda efforts and approval ratings at the local, national, and global scale. To help address this important source of endogeneity, we introduce four variables capturing different aspects of IS conflict activity. First, for the local level we invoke Uppsala Conflict Data Program (UCDP) records to indicate whether IS conflict activity has ever taken place in an individual’s district as of their enumeration date. For this we construct a binary indicator – *Local IS Exposure* – identified at the household level. The map in Figure 4a depicts in grey the districts exposed to IS conflict activity by the end of our sample period. Second, from Global Terrorism Database (GTD) records we construct a district-quarter measure of IS-related incidents labelled *Local IS Attacks*. The red triangles in Figure 4a show district aggregates of this measure for our sample period. Third, using data from the UCDP database we construct a national-level measure of IS strength by calculating the share of districts subject to IS-related conflict in each survey wave. Figure 4b presents this time-series measure labelled *National IS Presence*. Fourth, we hand-code a measure of *Global IS Expansion* by tabulating net territorial gains reflected in a comprehensive timeline of IS activity from the Wilson Center (2018). This time series measure based on major conquests and defeats is portrayed in Figure 4b.<sup>9</sup>

## 4 Effectiveness of Islamic State propaganda

### 4.1 Effects of global IS videos

We begin our analysis in Table 3 by estimating the effect of globally produced videos on the approval of IS within Afghanistan . The latter is measured using household-level responses to the ANQAR survey question: “Do you think the arrival of IS would be good or bad for

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<sup>9</sup> From the Wilson Center (2018) data we consider all events outside Afghanistan, excluding those with no significant impact on territorial control (e.g. minor clashes and battles). We manually categorize each event as either a territorial gain or loss. We then label the period-specific net territorial gain as *Global IS Expansion*.

*Afghanistan?*” Outcomes are coded such that higher values represent greater approval. In column 1 we check the nationwide time-series correlation between video circulation and IS approval. The estimated coefficient is negative but economically and statistically insignificant. Allowing for district-level heterogeneity with district-specific trends and fixed effects in column 2 yields a significant negative correspondence between videos and IS approval ratings. In column 3 we control for the strength of IS at both the global and national scale (see section 3.3 for variable discussion). Finally in column 4 we control for local (i.e. district-level) IS conflict activity. The negative point estimate remains unchanged under these adjustments, likely owing to the earlier inclusion of district-level effects and trends.<sup>10</sup>

Based on the above results, one could naively conclude the global video campaign of IS is generally detrimental to their approval within Afghanistan. Informed by [Mitts et al. \(2022\)](#), however, we suspect the impact of IS videos may depend heavily on their content.<sup>11</sup> Accordingly, we allow for heterogeneity across video types, as discussed in section 3.2 (and Appendix B). In column 5 of Table 3 we estimate the nationwide time-series correlation between IS approval and videos subdivided into *violent* and *state capacity* categories. Even without further controls, the heterogeneous effects across video categories are apparent. The specifications of columns 6, 7, and 8 follow columns 2, 3, and 4, respectively. Across all models we find that violent videos erode support for IS in Afghanistan, while videos demonstrating institutional capacity are effective at boosting support. Notably, however, the public opinion damage from an increase in violent videos is considerably greater than the corresponding gains achieved with state capacity content. The saturated specification in column 8 demonstrates that the relationship between video propaganda and IS approval holds conditional on a strict set of controls, including district-level opinion trends, territorial gains/losses on the global and national scale, and the evolution and incidence of local IS conflict activity. The full model estimated in column 8 can be written as:

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<sup>10</sup>Specifically, the effect size may be interpreted as follows: doubling video exposure is associated with approximately a 1/20th standard deviation increase in IS approval.

<sup>11</sup>In particular, [Mitts et al. \(2022\)](#) demonstrates that violent videos are differentiated in their effects from non-violent content.

$$(1) \quad Y_{ikt} = \alpha_k + \beta^v V_{it}^v + \beta^s V_{it}^s + \theta X_{ikt} + \omega_k t + \epsilon_{ikt}$$

where  $Y$  refers to the opinion outcome for respondent  $i$  in district  $k$  surveyed in year-quarter  $t$ ;  $\alpha_k$  is the district-level fixed effect;  $\omega_k t$  allows for district-level trends;  $V$  measures video volumes for violent ( $v$ ) and state capacity ( $s$ ) categories (released since survey wave  $t - 1$  and before respondent  $i$ 's enumeration date);  $X$  contains controls at various levels of identification (including respondent-level demographics; IS conflict activity measures); and errors are clustered at the district level.

#### 4.1.1 Violent videos

In Figure 5 we expand our analysis to opinion outcomes across multiple domains. First we concentrate on the effects of violent video content ( $\beta^v$  from Equation 1 above). The first row reproduces our estimation from column 8 of Table 3. The reasons for which citizens may support or oppose a nascent rebel group are generally multifaceted.<sup>12</sup> Of particular importance in our setting is the degree to which anti-government elements (AGEs) are perceived to embody cultural norms in Afghanistan. Violent videos often depict operational attacks, destruction and death, and hostage executions. As these themes run contrary to traditional and religious values, it is therefore unsurprising that violent videos lead Afghans to believe IS does not respect their religion and traditions (see second row of Figure 5).

In response to violent IS videos, is the decline in IS approval accompanied by a concomitant rise in support for other conflict actors in Afghanistan? First we assess the degree to which violent videos influence perceptions of the Afghan government (GoA). When exposed to larger volumes of violent videos, Afghans are significantly more inclined to state their government is headed in the wrong direction (see row 3). The result in row 4 offers one potential explanation: following the release of violent videos, survey respondents perceive their government to be doing a worse job at securing the country. Both government-related outcomes suggest violent videos erode trust in the GoA.

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<sup>12</sup>See, e.g., literature review in Child (2023).

Second, we examine views towards the Taliban – the other key opponent of IS within Afghanistan. Our estimates suggest violent videos lead Afghans to more strongly oppose the Taliban’s return to power. The result may stem from a moral equivalence attributed by Afghans to IS and the Taliban (both groups being AGEs). It is also possible that scenarios depicted in violent videos are reminiscent of the Taliban’s own tactics (Al Bayat, 2020). For potentially similar reasons, violent videos are also found to erode trust in Taliban messaging - itself a proxy of general trustworthiness - (see e.g., Siegrist, Gutscher, and Earle, 2005). So while violent videos erode popular support for IS itself, they also degrade trust in two key opponents of IS within Afghanistan – the GoA and Taliban. From this perspective, the global circulation of violent videos may be consistent with the group’s domestic interests in theater.

Third, we estimate the effects of IS videos on public opinion toward international forces. Faced with salient depictions of harm and insecurity, it is no wonder that exposure to violent videos leads Afghans to approve of international forces remaining in the country (see row 7). After all, international forces had successfully weakened IS in Afghanistan, inhibiting their capacity for attacks on several occasions (Forsythe, 2018; Wilson Center, 2016; The Citizen, 2021). But despite the greater demand for security, trust in international forces appears unaffected in the following estimate (row 8).

In Table 4 we study the impact of violent video propaganda on psychological outcomes related to security. Given the aura of violence, insecurity, and mistrust brought about by these videos, we test their effects on two subjective evaluations of safety. We find that violent videos lead Afghans to feel less safe traveling outside their district (column 1). Moreover, violent videos appear to instill more general pessimism, as locals become less likely to believe the next generation will live in peace and security (column 2). Overall, these findings may therefore be interpreted as reflecting a sense of ‘terror’ provoked by violent IS video propaganda.

#### **4.1.2 State capacity videos**

Beyond terror, IS propaganda may also aim to evoke credibility. To operate effectively within a conflict theater, all rebel groups rely upon some measure of community support (Nagl and

Amos, 2007). Figure 5 suggests IS videos depicting their ability to govern and develop institutional capacity may advance their interests in this regard. Indeed, we find that state capacity videos boost the group’s image among regular Afghans (see row 1). Those with high exposure to state capacity videos are more likely to suggest the arrival of IS would benefit their country (row 2). Many state capacity videos depict IS leading religious ceremonies, teaching the Koran, or distributing gifts. Accordingly, these videos influence Afghans to believe IS respects their religion and traditions.

As with violent video content, state capacity videos influence views towards both AGEs (i.e. IS and the Taliban) similarly. Greater exposure to state capacity videos leads Afghans to favor the Taliban’s return to power (row 5) and have greater trust in Taliban messaging (row 6). The nascent rebel group’s display of public goods provision and community engagement may be reminiscent of the Taliban’s own experiences (and successes) in this domain. In other words, a moral equivalence perspective may again help to explain spillover effects onto local AGE adversaries. By contrast, the impact of state capacity videos on views towards the GoA and international forces are largely insignificant (see rows 3, 4, 7, and 8). Their effects on psychological terror are also found to be ineffectual (see Table 4).

## 4.2 Effects of local IS radio

Next we aim to identify the impact of radio propaganda on public opinion by exploiting the construction of an IS radio tower in Eastern Afghanistan. The spatial reach of IS radio signals in the region is depicted in the map of Figure 3.<sup>13</sup> This district-level radio coverage is used to calculate a measure of treatment exposure to IS radio propaganda. Meanwhile, the tower’s approximate construction date is used to identify the onset of treatment. Based on this, we conduct a difference-in-difference (DiD) analysis, comparing the evolution of opinions within the radio’s coverage area to those in neighbouring districts. Before outlining our DiD model and results, however, we conduct a first-stage validation check. This exercise provides assurance that our projected treatment measure is well-founded and empirically relevant.

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<sup>13</sup>Section 3.2.2 describes a timeline of events related to the IS radio tower in Achin, Nangarhar, and also explains the estimation procedure.



### 4.2.1 Validation of ITM projections

Throughout our sample period, the ANQAR surveys document subjectively reported IS activities. One survey question asks specifically whether respondents are aware of IS radio broadcasts in their area. Figure 6 traces the average response to this question for households within and outside the broadcast zone (projected from the ITM). This figure demonstrates that households within our estimated broadcast zone are significantly more aware of IS radio after the tower’s construction (marked by the vertical line). A greater awareness of IS radio among our treated households seems to persist throughout the sample period. Limited inclusion of the radio awareness question across ANQAR waves prevents us from detailing a complete picture in Figure 6. Nevertheless, this validation exercise suggests our ITM-based treatment measure is appropriate for the subsequent DiD analysis.

In Table 5 we formally test the difference visually apparent in Figure 6 using a DiD design. We estimate the impact of signal exposure on awareness of IS radio following the tower’s construction. Due to missing outcome data, this test is conducted using both short- and long-run indicators of IS radio awareness (in upper and lower panels, respectively). Short-run effects are measured using survey responses from the first half of 2016 (W1–W2), whereas long-run effects are from W2–W4 2017. Column 1 estimates a parsimonious DiD model, suggesting households within our projected broadcast zone are relatively more aware of IS radio in both the short and long run. Columns 2 includes district trends and fixed effects, and column 3 additionally controls for wave fixed effects. Column 4 excludes Achin—the IS stronghold district housing the radio tower, and controls for distance to Achin among the remaining districts. Column 5 additionally controls for IS conflict activity at the local level. Across all columns, our estimated measure of radio exposure is significantly positively correlated with awareness of IS radio. This relation holds across both the short and long run. Based on these validation checks, we are comfortable interpreting our ITM-based measure of IS radio exposure as accurate and meaningful for the following analysis.<sup>14</sup>

The empirical validation check above is also consistent with evidence gathered from quali-

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<sup>14</sup>Importantly, we do not directly use subjectively reported radio awareness as our explanatory variable in the subsequent DiD analysis on account of its clear endogeneity with respect to opinion outcomes drawn from the same ANQAR survey.

tative investigations. In Afghanistan, radio remained a crucial medium of information transmission during the sample period, particularly in the East and Southeast (Akseer et al., 2018). In Nangarhar, Afghan civilians have testified to the salience of IS radio. One citizen expressed concern his son would be recruited after listening to the broadcasts, following in the footsteps of his peers (IWPR, 2018). Another civilian expressed enthusiasm for IS radio while refraining from supporting the group directly (Worldcrunch, 2016). A third civilian from the province’s capital of Jalalabad attributed the popularity of IS radio to the novelty, strength, and clarity of its content (Alarabiya, 2016). These testimonies offer additional reassurance that IS radio is both relevant and influential in the lives of Afghans.

#### 4.2.2 Radio exposure and public opinion

How does radio exposure affect public opinion? Given the nonstandard timeline of treatment and data availability, we discuss the estimation sample in detail. First, uncertainty around the IS radio tower’s exact construction date means the ANQAR enumeration period of W4 2015 may fall before or after the true beginning of treatment. To ease interpretation, we therefore exclude W4 2015 from our analysis. Accordingly, our pre-treatment period constitutes W1–W3 2015. Second, our post-treatment period is again divided into two time frames. Due to the lack of IS opinion data, we cannot estimate the effects from W3 2016 until W1 2017. Accordingly, short-term effects are calculated with reference to surveys conducted from W1–W2 2016; and long-term effects from W2 2017 until W1 2018. We spatially restrict the DiD analysis to those provinces neighboring Nangarhar with non-zero exposure to IS radio.<sup>15</sup> Our DiD model takes the following form:

$$Y_{ikt} = \alpha_k + \beta R_k T_t + \psi T_t + \theta X_{ikt} + \omega_{kt} + \psi_t + \epsilon_{ikt}$$

where  $Y_{ikt}$  is again the public opinion outcome for individual  $i$  in district  $k$  in year-quarter  $t$ ;  $R_k$  indicates whether a district  $k$  majority resides in the radio transmission zone;  $T_t$  indicates if quarter  $t$  follows the first construction date of the IS radio tower;  $X_{ikt}$  captures household-

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<sup>15</sup>Provinces included in the DiD analysis are therefore: Kunar, Laghman, Nangarhar, and Nuristan. Kabul is excluded for comparability.

level controls (ethnicity, age, gender, education);  $\alpha_k$  is the district-level fixed effect;  $\omega_k t$  allows for district-level trends;  $\psi_t$  is the survey wave-level fixed effect; and  $\epsilon_{ikt}$  are the errors clustered at district level.

Figure 7 reports DiD estimates in both the short and long run. Recall from section 3.2.2 that IS radio broadcasts consist mainly of (1) encouraging war and violence and (2) launching rhetorical attacks against the government, Taliban, and international forces. In the short term (within approximately 6 months of the radio’s inception), only public opinion towards the Taliban is affected. Inhabitants of districts with greater radio exposure are more likely to believe that the Taliban’s return would be bad for Afghanistan and that Taliban messaging is not trustworthy. The relative strength of this result implies that anti-Taliban rhetoric was either more effective or more prominent than IS denouncements of the government and international forces during this period.

Next, we examine the long-term effects of IS radio between August 2017 and March 2018. In the long term, we find several key results. First, respondents from districts treated with radio exposure are less likely to believe the arrival of IS would be good for Afghanistan. This finding is perhaps attributable to the group’s strong encouragement of war and conflict through their broadcasts. Second, we obtain negative point estimates of household opinions towards the government. Perceptions of government security provisions are significantly negatively affected, likely attributable to broadcasting of anti-government rhetoric, local bulletins, or interviews with IS fighters and captives. Opinions of the Taliban are also significantly negatively affected (both outcomes), testifying to the continued effectiveness of anti-Taliban rhetoric in IS radio broadcasts. Third, we find that public trust in the messaging of international forces is negatively impacted by IS radio exposure, attributable again to rhetorical attacks. Fourth, those residing in radio-exposed districts are more likely to suggest international forces should remain in the country. This finding is perhaps driven by the greater sense of fear invoked through IS radio, which is further exemplified in our final results examining psychological outcomes (see Table 6).

## 5 Conclusion

We examine the public opinion consequences of terrorist propaganda. In particular, we estimate the impact of IS propaganda on measures of local support within the conflict theater of Afghanistan. We exploit rich spatial and temporal data on public opinion, IS propaganda, and conflict activity. Our findings indicate that violent videos and radio broadcasts by IS erode support for the group, but also for two of their main adversaries—the Government of Afghanistan and the Taliban. IS videos depicting state capacity, by contrast, seem to boost support for the organization. These results extend insights from a recent wave of research on the economics of information and conflict, which have clarified how slanted information shapes attitudes and behaviors in a variety of contexts.

These findings also reveal that public demand for international forces to remain in country to limit the escalation of conflict remained robust until the end of 2018. Although our results suggest that treated respondents were less likely to trust messaging from international forces, they conveyed a strong interest in these security forces remaining in the country. As confidence in the government and Taliban forces deteriorated, the physical presence of coalition forces remained in demand. One interpretation of this evidence is that even skeptical civilians were concerned about the potential power vacuum that would emerge with a security transition and formal military withdrawal (Fetzer et al., 2021).

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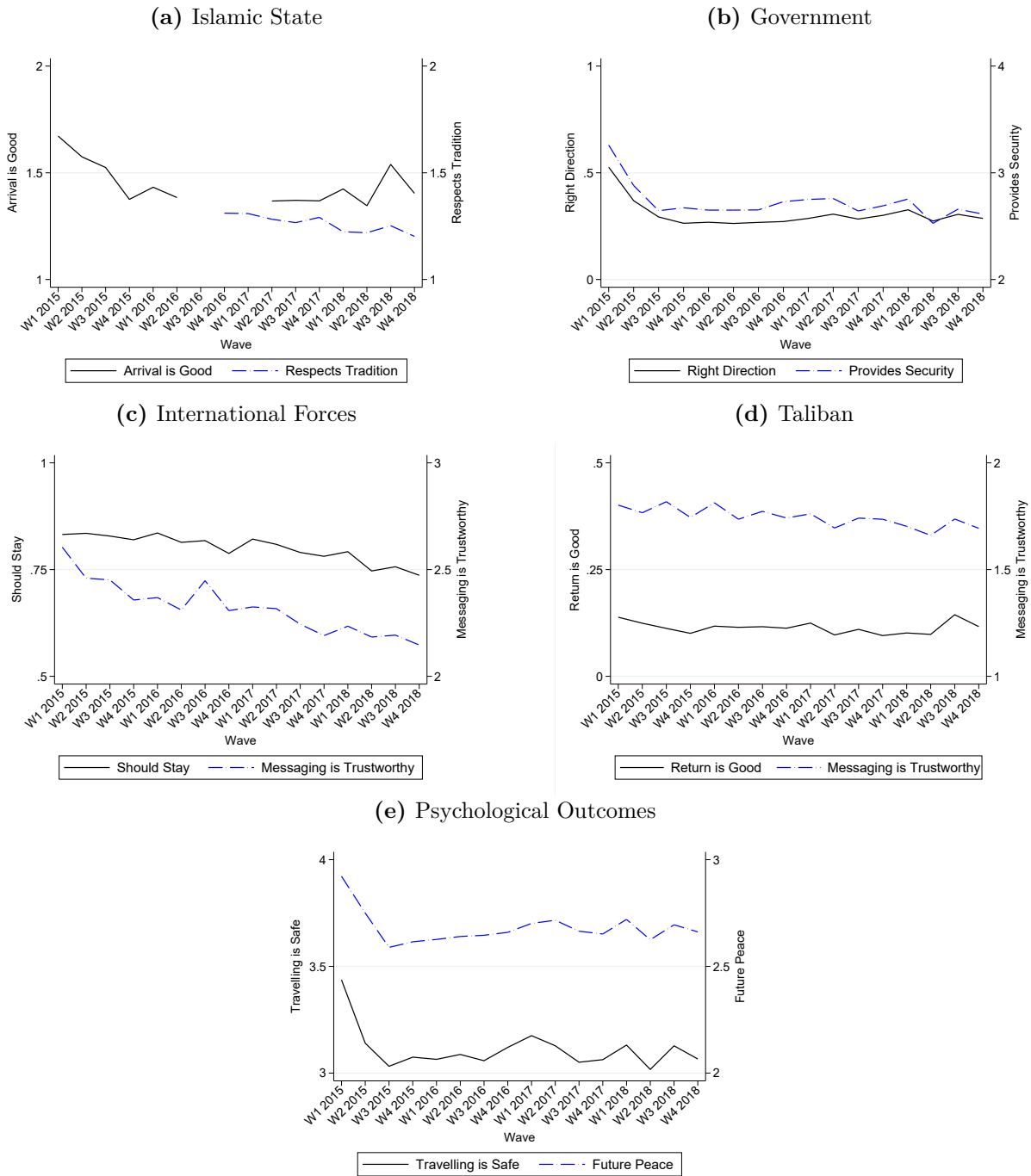
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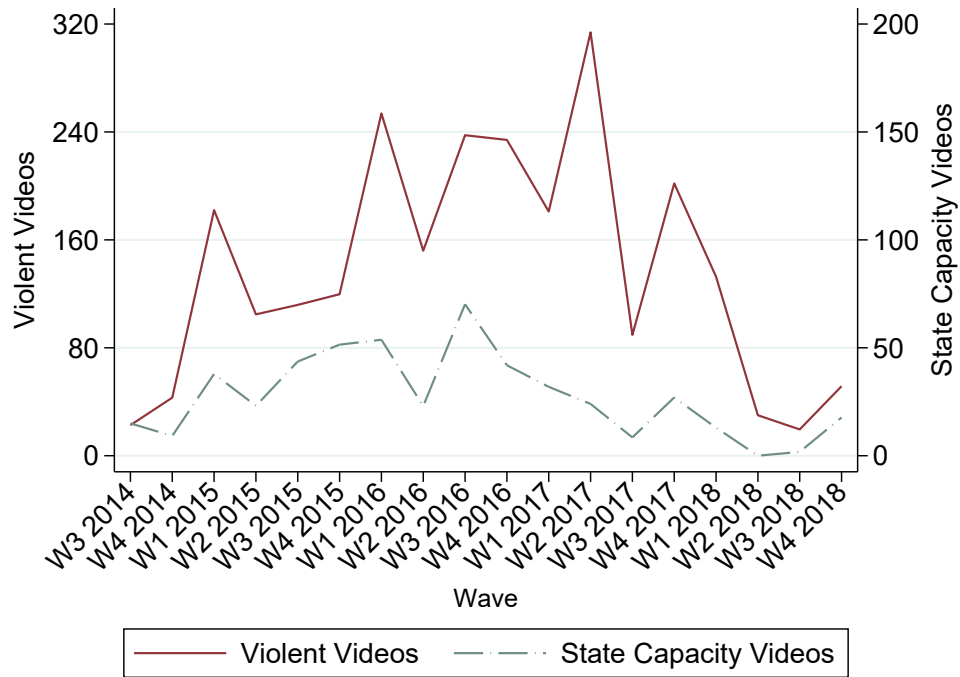


**Figure 1: Public Opinion Time Series**



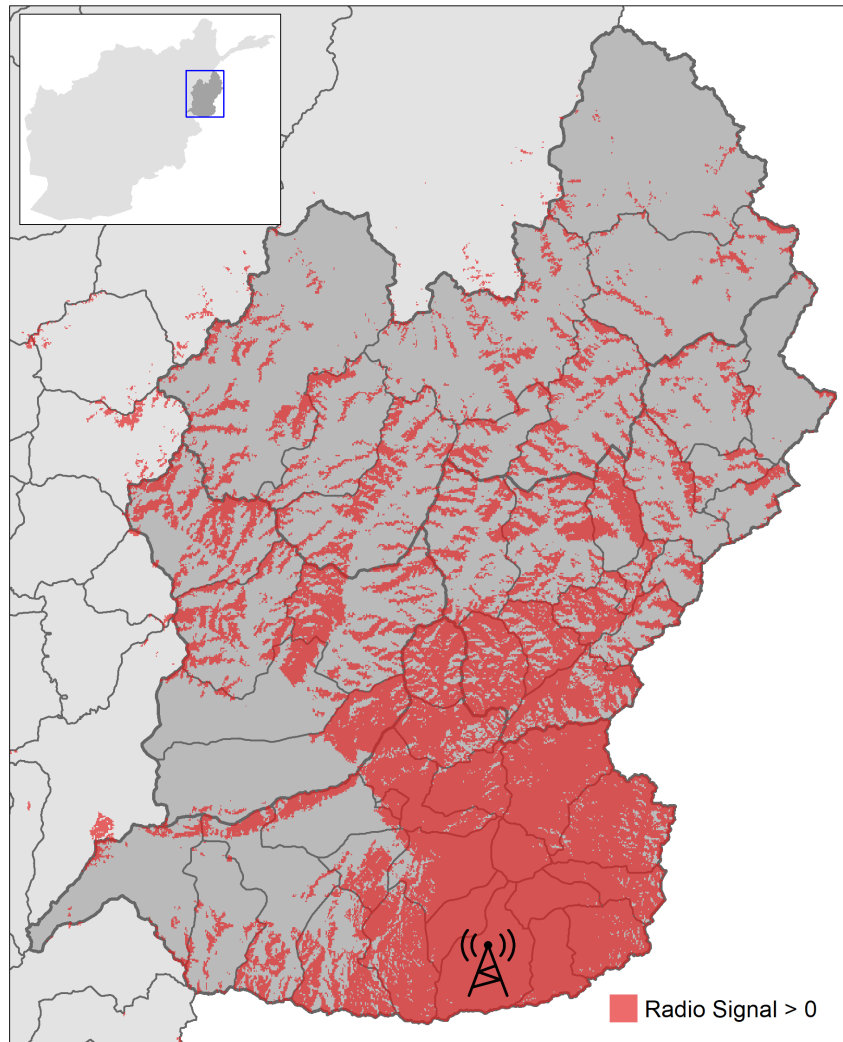
**Notes:** These subfigures depict the time series of average opinions within Afghanistan. Public opinion data are from 16 waves of the Afghanistan Nationwide Quarterly Assessment Research (ANQAR) survey conducted between 2015 and 2018. Survey questions are as follows (with ordinal response scales in parentheses): (a) *Do you think the arrival of IS would be good or bad for Afghanistan?* (1–5); *Does IS respect the religion and traditions of Afghans?* (1–4); (b) *Do you believe the GoA is going in the right direction?* (0,1); *How well does the GoA do its job securing the country?* (1–5); (c) *Should international forces leave Afghanistan?* (0,1); *How trustworthy is the messaging of the international forces?* (1–4); (d) *If the Taliban were to return to power and govern Afghanistan, would it be a good thing for the people and the country?* (0,1); *How trustworthy is the messaging of the Taliban?* (1–4); (e) *How safe do you feel travelling outside your area?* (1–5); *Is it likely the next generation of Afghans will live in peace and security?* (1–4). Higher values on a response scale indicate stronger agreement with sentiment expressed in the corresponding variable label. The exact wording for each question and response is provided in Table A1.

**Figure 2:** Online Release of Islamic State Videos



**Notes:** This figure depicts temporal variation in the online release of IS propaganda videos (aggregated by quarter). Data on globally released IS videos are from the Intel-Center Database (ICD). A total of 3375 videos were released over a 40-month period. Videos are classified by the authors into ‘violent’ and ‘state capacity’ categories (as described in section 3.2.1.)

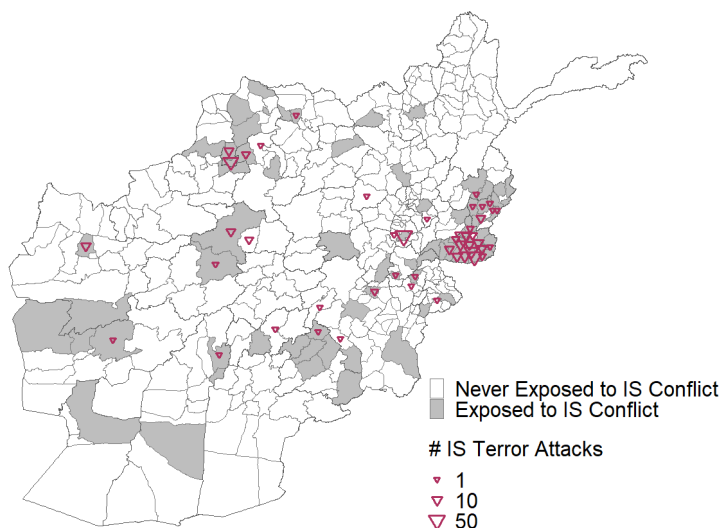
**Figure 3:** Islamic State Radio Coverage



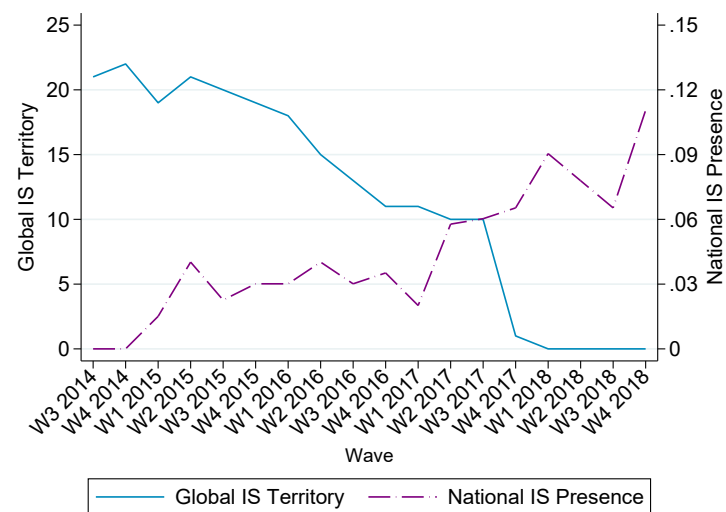
**Notes:** This map depicts the estimated reach of the signal propagated from an IS radio tower in Achin, Nangarhar. Areas in red indicate those within reach of the IS radio broadcasts. The provinces in dark grey (subdivided by district) include Kunar, Laghman, Nangarhar, and Nuristan. These constitute Nangarhar’s neighboring provinces with a non-zero population share living within the radio’s projected transmission zone.

**Figure 4:** Islamic State Conflict Activity

(a) Local IS Exposure & Local IS Attacks

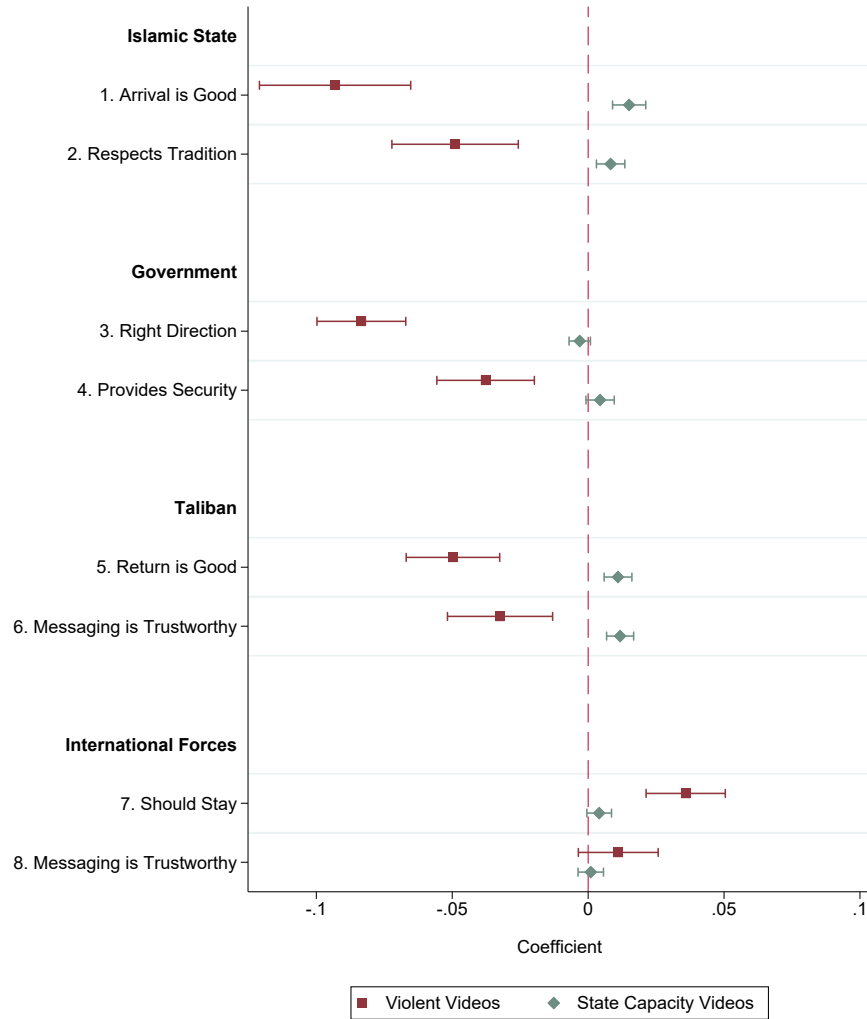


(b) Global IS Territory & National IS Presence



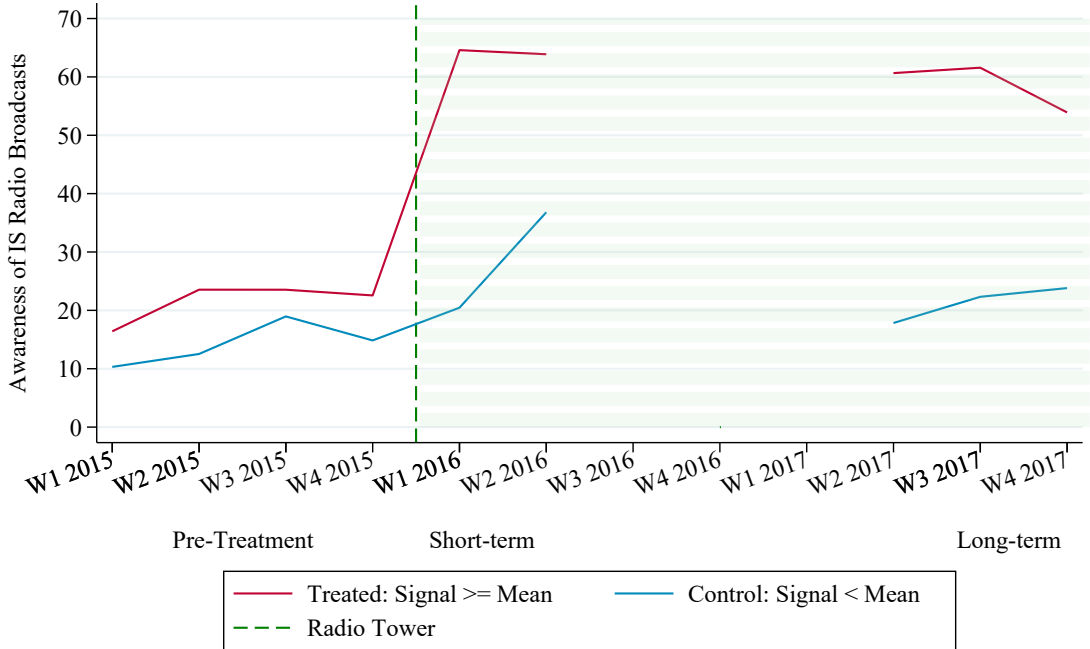
**Notes:** The map plots in grey the districts ever exposed to IS conflict before the end of our sample period (end of 2018), according to UCDP records. Red triangles represent the extent of district-level exposure to IS terror attacks, according to the GTD. The time series graph indicates: (i) the share of districts exposed to UCDP-reported IS conflict in each wave (*National IS Presence*); and (ii) the global territory controlled by IS, based on the Wilson Report (*Global IS Territory*). Global IS Territory is the cumulative measure of net IS expansion/contraction used in the analyses (*Global IS Expansion*).

**Figure 5:** Effects of IS Videos on Public Opinion



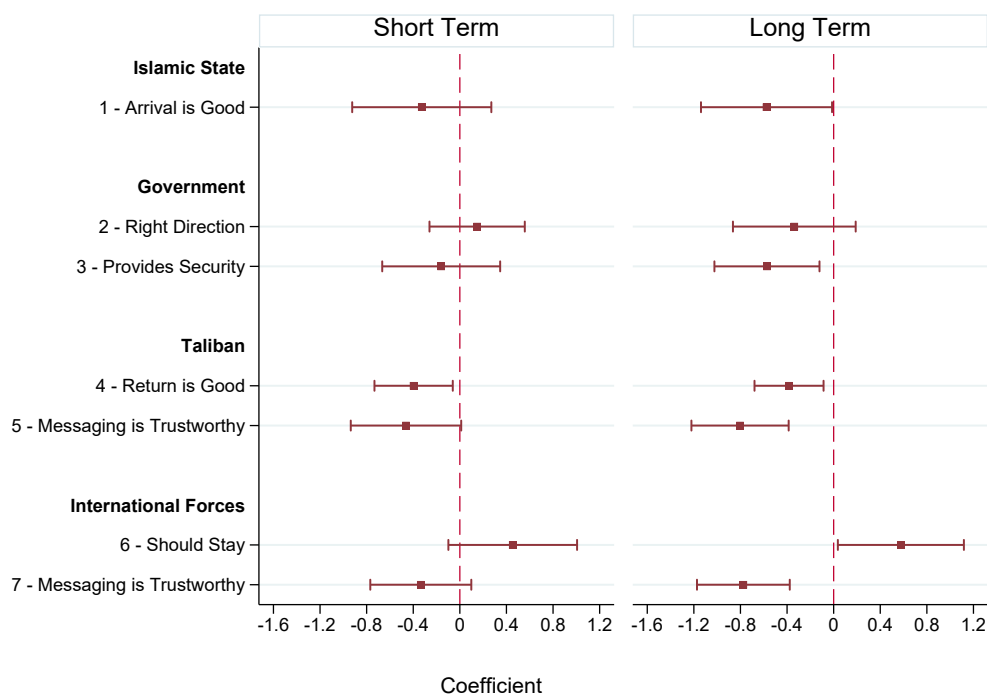
**Notes:** Videos are expressed as the logarithm of the aggregated amount released since the end of the prior opinion poll (survey wave). Outcomes are, in descending order, individual responses to the survey questions: *Do you think the arrival of IS would be good or bad for Afghanistan?*; *Does IS respect the religion and traditions of Afghans?*; *Do you believe the GoA is going in the right direction?*; *How well does the GoA do its job securing the country?*; *If the Taliban were to return to power and govern Afghanistan, would it be a good thing for the people and the country?*; *How trustworthy is the messaging of the Taliban?*; *Should international forces leave Afghanistan?*; *How trustworthy is the messaging of the international forces?*. Outcomes are standardized to have a mean of zero and a standard deviation of one. The exact wording for each question and response is provided in Table A1. We exclude videos filmed in Afghanistan (0.01%). All models (based on column 8 of Table 3) include district fixed effects, district trends, and controls for IS conflict activity. Baseline controls include age, gender, educational attainment, and ethnicity. 90% confidence intervals are based on standard errors clustered at the district level.

**Figure 6:** Awareness of IS Radio Broadcasts and Construction of an IS Radio Tower



**Notes:** The analysis includes Kunar, Laghman, Nangarhar, Nuristan provinces. Districts are regarded as treated when more than 50% of the population has access to IS radio. Awareness of IS Radio Broadcast is calculated for treated and control as the wave-level mean of the individual level binary variable re-scaled by 100. Data on the awareness of IS radio broadcasts is from ANQAR. The survey instrument is unavailable from W2 2016 through W1 2017. W4 2015 falls within the possible construction period of the first tower.

**Figure 7: Effects of IS Radio on Public Opinion**



**Notes:** Outcomes are, in descending order, individual responses to the survey questions: *Do you think the arrival of IS would be good or bad for Afghanistan?*; *Does IS respect the religion and traditions of Afghans?*; *Do you believe the GoA is going in the right direction?*; *How well does the GoA do its job securing the country?*; *If the Taliban were to return to power and govern Afghanistan, would it be a good thing for the people and the country?*; *How trustworthy is the messaging of the Taliban?*; *Should international forces leave Afghanistan?*; *How trustworthy is the messaging of the international forces?*. The exact wording for each question and response is provided in Table A1. Outcomes are standardized to have a mean of zero and a standard deviation of one. All models include district fixed effects and district trends. Baseline controls include age, gender, educational attainment, and ethnicity. All regressions include additional controls (distance to Achin, local IS exposure, and local IS attacks), all as interactions with the treatment period (*Post*). *Post* takes a value of zero for waves W1–W3 2015; one for waves W1–W2 2016 in the first panel; and one for waves W2 2017 onward in the second panel. W4 2015 falls within the possible construction period of the first tower, hence is excluded from all regressions. The analysis includes Kunar, Laghman, Nangarhar, and Nuristan provinces, and excludes Achin district. 90% confidence intervals are based on standard errors clustered at the district level.

**Table 1:** Video Analysis Descriptive Statistics

	N	Mean	SD	Mean	Max
IS Arrival is Good	130249	1.44	0.84	1	5
IS Respects Traditions	80620	1.23	0.55	1	4
Govt Right Direction	128968	0.30	0.46	0	1
Govt Provides Security	129731	2.63	1.20	1	5
Taliban Return is Good	127031	0.10	0.30	0	1
Taliban Messaging is Trustworthy	128685	1.69	0.88	1	4
Intl Forces Should Stay	127948	0.81	0.39	0	1
Intl Forces Messaging is Trustworthy	127785	2.33	0.98	1	4
Travelling is Safe	129923	3.11	1.05	1	5
Future Peace	127365	2.68	0.87	1	4
Videos	130249	155.1	94.0	19	364
Videos (Violent)	130249	130.7	83.0	18	339
Videos (State Capacity)	130249	24.4	17.2	0	63
Age	130249	35.1	12.5	18	99
Male	130249	0.63	0.48	0	1
Education	130249	2.16	1.42	1	5
Ethnic Group	130249	2.04	1.14	1	5
Global IS Expansion	130249	-1.32	2.46	-9	2
National IS Presence	130249	0.056	0.027	0.015	0.11
Local IS Exposure	130249	0.22	0.41	0	1
Local IS Attacks	130249	0.75	2.39	0	17

**Notes:** The sample is based on column 1 of Table 3. The first group of variables are from ANQAR, and are represented at the individual level. The second group of variables is reported at the ANQAR survey collection period, and the last group is reported at the district level. The third group of variable is instead reported at the district and survey collection period level. The video variables are from the IntelCenter Database. *Global IS Expansion* is coded from the Wilson Report. *Local IS Exposure* and *National IS Presence* are compiled from the UCDP. *Local IS Attacks* is calculated from the GTD.



**Table 2:** Radio Analysis Descriptive Statistics

	Short-Term Analysis Sample					Long-Term Analysis Sample				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
IS Arrival is Good	4332	1.66	0.98	1	5	9675	1.60	0.97	1	5
Govt Right Direction	4319	0.36	0.48	0	1	9651	0.41	0.49	0	1
Govt Provides Security	4318	3.03	1.10	1	5	9658	3.11	1.12	1	5
Taliban Return is Good	4227	0.13	0.33	0	1	9475	0.14	0.34	0	1
Taliban Messaging is Trustworthy	4300	1.83	0.91	1	4	9622	1.80	0.94	1	4
Intl Forces Should Stay	4281	0.78	0.41	0	1	9607	0.74	0.44	0	1
Intl Forces Messaging is Trustworthy	4269	2.12	0.93	1	4	9599	2.14	1.00	1	4
Travelling is Safe	4320	3.01	0.92	1	5	9655	3.12	0.93	1	5
Future Peace	4308	2.66	0.90	1	4	9634	2.71	0.88	1	4
Awareness of IS Radio Broadcasts	4294	0.36	0.48	0	1	5178	0.37	0.48	0	1
Population Share Reached by Radio	4332	53.65	40.77	0	100	9675	50.93	41.07	0	100
Age	4332	33.09	11.36	18	83	9675	33.48	11.21	18	82
Male	4332	0.66	0.47	0	1	9675	0.70	0.46	0	1
Education	4332	2.32	1.41	1	5	9675	2.25	1.40	1	5
Ethnic Group	4332	1.28	0.99	1	5	9675	1.43	1.21	1	5
Local IS Exposure	4332	0.27	0.45	0	1	9675	0.48	0.50	0	1
Local IS Attacks	4332	0.27	0.83	0	5	9675	0.66	1.72	0	11
Distance to Achin (km)	4332	34.41	30.24	0	154	9675	38.19	33.50	0	154

**Notes:** The sample is based on row 1 of Figure 7. The first group of variables are from ANQAR, and are represented at the individual level. The second group of variables is reported at the ANQAR survey collection period, and the last group is reported at the district level. The third group of variable is instead reported at the district and survey collection period level. The radio measure is constructed from CloudRF. *Local IS Exposure* is compiled from the UCDP. *Local IS Attacks* is calculated from the GTD.

**Table 3:** Effect of Videos on IS Approval

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Videos	-0.005 (0.010)	-0.063*** (0.012)	-0.074*** (0.015)	-0.073*** (0.015)				
Videos (Violent)					-0.065*** (0.012)	-0.088*** (0.014)	-0.093*** (0.016)	-0.092*** (0.017)
Videos (State Capacity)					0.027*** (0.003)	0.016*** (0.003)	0.016*** (0.003)	0.015*** (0.004)
Observations	130249	130249	130249	130249	130249	130249	130249	130249
Adj. R-squared	0.014	0.150	0.150	0.150	0.017	0.150	0.150	0.150
District Trends + FE	no	yes	yes	yes	no	yes	yes	yes
Global IS Expansion	no	no	yes	yes	no	no	yes	yes
National IS Presence	no	no	yes	yes	no	no	yes	yes
Local IS Exposure	no	no	no	yes	no	no	no	yes
Local IS Attacks	no	no	no	yes	no	no	no	yes

**Notes:** The outcome variable is an individual response to the ANQAR survey question: *Do you think the arrival of IS would be good for Afghanistan?* It is standardized to have a mean of zero and a standard deviation of one. Videos are expressed as the logarithm of the aggregate amount released since the end of the prior opinion poll (survey wave). We exclude videos filmed in Afghanistan (0.01%). Baseline controls include age, gender, educational attainment, and ethnicity. Standard errors are in parentheses, clustered at the district level.

\* $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

**Table 4:** Effect of Videos on Psychological Outcomes

	(1) Travelling is Safe	(2) Future Peace
Videos (Violent)	-0.053*** (0.013)	-0.034*** (0.009)
Videos (State Capacity)	0.006* (0.004)	0.002 (0.003)
Observations	234869	230355
Adj. R-squared	0.166	0.069
District Trends + FE	yes	yes
Global IS Expansion	yes	yes
National IS Presence	yes	yes
Local IS Exposure	yes	yes
Local IS Attacks	yes	yes

**Notes:** Outcomes are individual responses to the survey questions: *How safe do you feel travelling outside your area?*; and *Is it likely the next generation of Afghans will live in peace and security?*. Outcomes are standardized to have a mean of zero and a standard deviation of one. The exact wording for each question and response is provided in Table A1. Videos are expressed as the logarithm of the aggregate amount released since the end of the prior opinion poll (survey wave). We exclude videos filmed in Afghanistan (0.01%). All models include district fixed effects and district trends. Baseline controls include age, gender, educational attainment, and ethnicity. Standard errors clustered at the district level.

\* $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

**Table 5:** Radio Signal Exposure and Awareness of IS Radio Broadcasts

	(1)	(2)	(3)	(4)	(5)
Short Term: W1 2016 - W2 2016					
Signal x Post	0.188*** (0.054)	0.311*** (0.115)	0.309*** (0.114)	0.270** (0.134)	0.254* (0.149)
Observations	4443	4443	4443	4443	4443
Adj. R-squared	0.205	0.281	0.281	0.280	0.281
Long Term: W2 2017 - W4 2017					
Signal x Post	0.122* (0.063)	0.554** (0.213)	0.545** (0.213)	0.560** (0.241)	0.541** (0.257)
Observations	5325	5325	5325	5325	5325
Adj. R-squared	0.172	0.273	0.274	0.273	0.274
District Trends + FE	no	yes	yes	yes	yes
Wave FE	no	no	yes	yes	yes
Local IS Exposure	no	no	no	no	yes
Local IS Attacks	no	no	no	no	yes
Achin Excluded	no	no	no	yes	yes
Distance to Achin	no	no	no	yes	yes

**Notes:** The outcome takes a value of one for households that heard of Radio Broadcasts directly from Da'esh in their mantaqa. Signal is a binary indicator for whether the majority in the respondent's district reside within the transmission zone of IS radio. From column 4 on we exclude the province of Achin for robustness. All regressions include baseline controls: age, gender, educational attainment, and ethnicity. As indicated in the table, we add additional controls (distance to Achin, local IS exposure, and local IS attacks), all as interactions with *Post*. *Post* takes a value of zero for waves W1–W3 2015; one for waves W1–W2 2016 in the first panel; and one for waves W2 2017 onward in the second panel. The variable is available until W4 2017 included. W4 2015 falls within the possible construction period of the first tower, hence is excluded from all regressions. We include district fixed effects and district trends. The analysis includes Kunar, Laghman, Nangarhar, and Nuristan provinces. Standard errors are in parentheses, clustered at the district level.

\* $p < 0.10$  \*\* $p < 0.05$  \*\*\* $p < 0.01$

**Table 6:** Effects of IS Radio on Psychological Outcomes

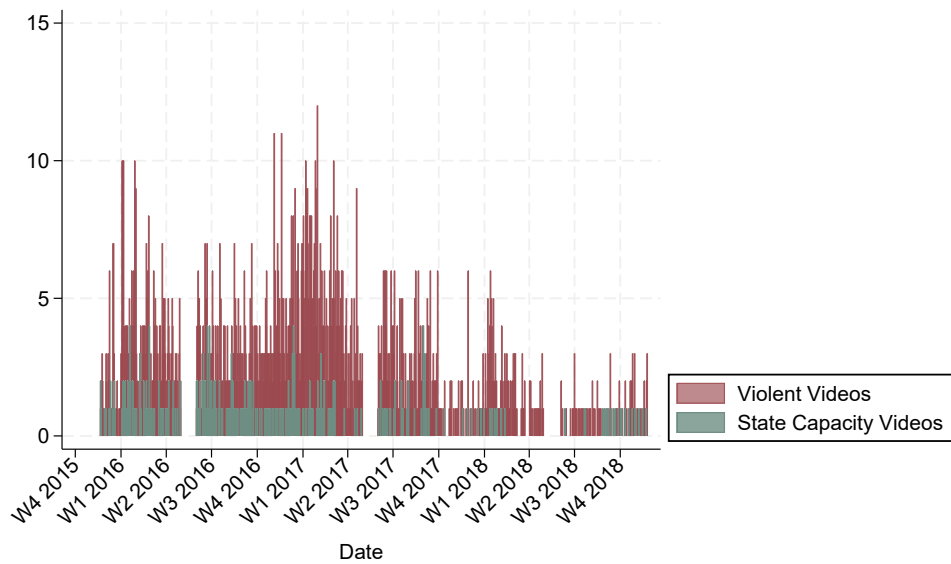
	(1)	(2)	(3)	(4)
	Travelling is Safe		Future Peace	
	Short Term	Long Term	Short Term	Long Term
Signal x Post	-0.158 (0.348)	-0.646** (0.266)	0.030 (0.263)	-0.492* (0.257)
Observations	6498	12792	6498	12750
Adj. R-squared	0.127	0.113	0.127	0.073
District Trends + FE	Yes	Yes	Yes	Yes
Wave FE	Yes	Yes	Yes	Yes
Local IS Exposure	Yes	Yes	Yes	Yes
Local IS Attacks	Yes	Yes	Yes	Yes
Achin Excluded	Yes	Yes	Yes	Yes
Distance to Achin	Yes	Yes	Yes	Yes

**Notes:** Outcomes are individual responses to the survey questions: *How safe do you feel travelling outside your area?*; and *Is it likely the next generation of Afghans will live in peace and security?*. Signal is a binary indicator for whether the majority in the respondent’s district reside within the transmission zone of IS radio. Outcomes are standardized to have a mean of zero and a standard deviation of one. The exact wording for each question and response is provided in Table A1. We use the same specification as in column 5 of Table 5. We exclude the province of Achin for robustness. All regressions include baseline controls: age, gender, educational attainment, and ethnicity. We always include all additional controls (distance to Achin, local IS exposure, and local IS attacks), all as interactions with *Post*. *Post* takes a value of zero for waves W1–W3 2015; one for waves W1–W2 2016 in the first panel; and one for waves W2 2017 onward in the second panel. W4 2015 falls within the possible construction period of the first tower, hence is excluded from all regressions. We include district fixed effects and district trends. The analysis includes Kunar, Laghman, Nangarhar, and Nuristan provinces. Standard errors are in parentheses, clustered at the district level.

\* $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

# A Appendix: Additional exhibits

**Figure A1:** Daily Time Series of IS Videos Release



**Notes:** This figure depicts the daily time series of IS propaganda videos released online. Data are from the IntelCenter Database (ICD). A total of 3375 videos were released over a 40-month period. Videos are classified by the authors into ‘violent’ and ‘state capacity’ categories (as described in section 3.2.1).

**Table A1: Variable Descriptions**

Variable	Question/Description	Categories/Scale/Formula	Source
<i>Public Opinion</i>			
IS arrival is good	“Do you think the arrival of Da’esh would be a good thing or a bad thing for Afghanistan?”	1 = very bad; 2 = bad; 3 = neither good nor bad; 4 = good; 5 =very good	ANQAR
IS respects traditions	“Does Da’esh respect the religion and traditions of Afghans?”	1 = does not respect at all; 2 = does not respect very much; 3 = somewhat respects; 4 = completely respects	ANQAR
Government right direction	“Generally speaking, do you believe the Government of Afghanistan is going in the right direction, the wrong direction, or is in the same place, not going anywhere?”	0 = wrong direction or not going anywhere; 1 = right direction	ANQAR
Government provides security	“How well does the Government of Afghanistan do its job securing the country?”	1 = very poorly; 2 = a little poorly; 3 = neither poorly nor well; 4 = a little well; 5 = very well	ANQAR
International forces should stay	“How much longer should the foreign military forces remain in Afghanistan? Should they leave now?”	0 = international forces shall leave now; 1 = shall not	ANQAR
International forces messaging is trustworthy	“Messaging of International Forces is trustworthy”	1 = not trustworthy at all; 2 = not so trustworthy; 3 = somewhat trustworthy; 4 = totally trustworthy	ANQAR
Taliban return is good	“If the Taliban were to return to power and govern Afghanistan, would it be a good thing for the people and the country, or would it be a bad thing for the people and the country?”	0 = bad for the people and the country; 1 = good for the people and the country	ANQAR
Taliban messaging is trustworthy	“Messaging of Anti-Government Elements is trustworthy”	1 = not trustworthy at all; 2 = not so trustworthy; 3 = somewhat trustworthy; 4 = totally trustworthy	ANQAR
Travelling is safe	“How safe, if at all, do you feel traveling outside of your mantaqa during the day?”	1 = very unsafe; 2 = a little unsafe; 3 = a little safe; 4 = mostly safe; 5 = completely safe	ANQAR
Future peace	“Do you believe that the next generation of Afghans (in 10-15 years) will be able to live in peace and security?”	1 = not likely at all; 2 = not likely; 3 = somewhat likely; 4 = very likley	ANQAR
Awareness of IS Radio Broadcasts	“Have you heard of any of the following indicators of Da’esh activity in your mantaqa? Radio Broadcasts directly from Da’esh”	0 = no; 1 = yes	ANQAR

**Table A1: Variable Descriptions**

Variable	Question/Description	Categories/Scale/Formula	Source
<i>Mediums of Propaganda</i>			
Videos	Videos released by IS (not in Afghanistan) in time-span 2014-2018	Logarithm of the count	ICD
Photos	Pictures released by IS in Afghanistan in time-span 2015-2018	Count	ICD
Radio	Nangarhar radio signal weighted by population in settlements reached by signal itself		Radio signal: US military, Afghan settlements: PIX
<i>Demographic Controls</i>			
Age	How old were you on your last birthday?		ANQAR
Gender	Gender		ANQAR
Ethnic Group	What is your ethnic group?		ANQAR
Education	What is your highest level of education?		ANQAR
<i>Conflict Activity</i>			
Global IS expansion	IS expansion outside of Afghanistan	Net territorial expansion in a given ANQAR survey collection period	Wilson report and hard coded data
National IS presence	IS expansion in Afghanistan	The ratio of districts exposed to IS conflict in a given ANQAR survey collection period over the total number of districts	UCDP database
Local IS exposure	Binary variable for exposure to IS conflict		UCDP database
Local IS attacks	Count of IS terror attacks in a given district and in a given ANQAR survey collection period		GTD

**Notes:** ICD corresponds to the IntelCenter Database. ANQAR is the Afghanistan Nationwide Quarterly Assessment Research surveys. UCD is the Uppsala Conflict Data Program and GTD the Global Terrorism Database.



**Table A2:** ANQAR Survey Waves and Collection Periods

Wave	Year	Start		End	
		Month	Day	Month	Day
1	2015	February	22	March	4
2	2015	May	21	June	4
3	2015	August	13	August	25
4	2015	November	11	November	20
1	2016	February	19	March	4
2	2016	May	12	May	22
3	2016	August	25	September	2
4	2016	November	18	November	27
1	2017	January	5	January	18
2	2017	April	3	April	18
3	2017	June	17	July	1
4	2017	November	6	November	18
1	2018	February	25	March	10

**Notes:** This table depicts the start and end dates of each ANQAR survey wave. Four waves were carried out each year throughout our sample. The enumeration dates change slightly from year to year, and roughly correspond to: late February to early March (wave 1), late May to early June (wave 2), late August to early September (wave 3), and late November to early December (wave 4).

## B Appendix: Classification of IS videos

### B.1 Videos

Raw video data gleaned from the IntelCenter Database (ICD) contain for each video the following fields: unique ID, title, location/setting, language, thematic type, and keyword tags. The thematic type variable classifies videos into 15 categories, and over 100 keyword tags further describe video content. We leverage these metadata to classify videos as primarily relating to category of (i) violence or (ii) state capacity.

#### B.1.1 Rule-based classification

We begin our classification by manually assigning videos from ten ICD themes into one of our two categories. For this we construct a mapping in Table B1 from thematic type to category. The mapping is crafted based on our first-hand review of source material corresponding to each thematic type. Following this first stage of rule-based classification, we have 1,896 violent videos, 269 state capacity videos, and 1,210 videos unassigned because their (ambiguous) video type contains both violent and nonviolent videos.<sup>16</sup>

#### B.1.2 Supervised prediction

To classify the 1,210 unassigned videos mentioned above, we use their associated keywords to predict whether the video is inherently violent. Because our outcome variable is binary, we train a lasso logit regression model for prediction. The model is trained (i.e. parameters estimated) on videos labeled using the rule-based classification above, with keywords leveraged as the input features. Hyperparameter tuning (for  $\lambda$ ) is conducted using 10-fold cross-validation. The final optimized prediction model is then applied to videos with unassigned categories, to label them either ‘violent’ or ‘state capacity’. Further specifications on model training and prediction are provided below.

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<sup>16</sup>In this first stage, we also classify 42 religious videos as ‘state capacity’ based on manual reading of video titles. Videos with titles containing words such as “prayer” or “recitation”, for example, are regarded as religious. The vast majority (over 95%) of remaining unassigned videos correspond to the thematic types of ‘produced video’, ‘statement video’, and ‘other video’. An excluded ‘no video’ category captures audio recordings circulated online as mp4 files.

- Hyperparameter tuning: We use 10-fold cross-validation (CV) to select the optimal penalty term ( $\lambda$ ) governing the combined absolute value of covariates in our model. The CV method divides training data into 10 subsets, in turn using 90% of training data to predict outcomes on the remaining 10% holdout sample. Average prediction error across the ten holdout samples is used to grade each value of the penalty term. The  $\lambda$  value generating the highest CV prediction accuracy is then adopted in our final model, which is then re-parameterized using the entire training set. When applying the final model to training observations with known ground-truth labels, we observe an overall classification error rate of approximately six percent.
- Prediction: Our optimized prediction model is subsequently deployed on all unassigned videos, to predict violent content based on available keyword covariates. If the predicted probability of violence is greater than 0.5, the video is classified as violent (otherwise it's included in the 'state capacity' category).

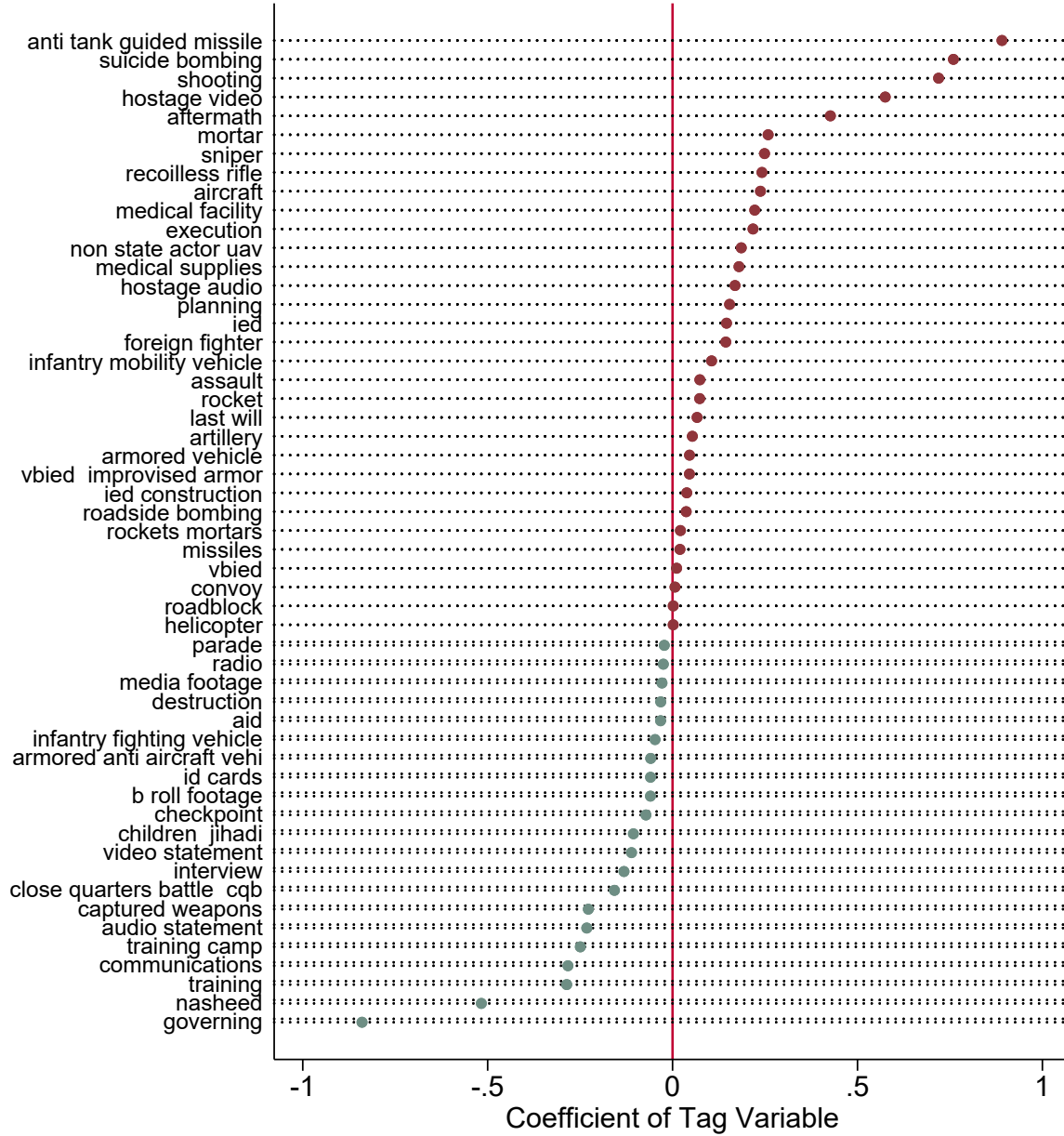
Following prediction, our sample contains 2,818 violent videos, and 557 videos pertaining to state capacity. Figure B1 lists the subset of keywords selected from our final prediction model, together with estimated coefficients. Our optimal prediction model selected 53 keywords (from over 100) which best predict violent content.

**Table B1:** Categorical Assignment of ICD Videos

<b>Thematic Type</b>	<b>Category</b>
Operational Video	Violent
Aftermath Video	Violent
Hostage Video	Violent
Last Will Video	Violent
Destruction Video	Violent
Governing Video	State Capacity
Captured Territory Video	State Capacity
Training Video	State Capacity
Street Interview Video	State Capacity
Street Life Video	State Capacity
Produced Video	-
Statement Video	-
Other Video	-
Trailer Video	-
Interview Video	-
No Video	-

**Notes:** This table defines our mapping from IntelCenter Database (ICD) thematic video type to our own aggregate categories. Unassigned videos (denoted with ‘-’) are later categorized as ‘violent’ or ‘state capacity’ using a lasso logit prediction model.

Fig. B1: Coefficient of Tags Selected by Lasso Model



**Notes:** This figure depicts the coefficients of selected features (keyword tags) in the optimized lasso logit regression model. The model predicts the category of unassigned videos ('violent' or 'state capacity') based on their associated keywords provided by the IntelCenter Database (ICD).

## C Appendix: Robustness

To ensure robustness of our findings, we conduct several additional tests. First, we examine the stability of results with respect to our inclusion of controls. When dropping respondent-level controls (i.e. age, gender, education, and ethnicity), both video and radio results remain qualitatively unchanged in Figures C1 and C2, respectively.<sup>17</sup>

Second, we account for potential confoundedness between macro-trends, the volume of videos released, and/or public opinion outcomes. From World Bank open databases, we include annual global GDP, trade (% GDP), FDI inflows and outflows (% GDP), net official development assistance, and official aid received. Figure C3 results remain qualitatively consistent under this adjustment (though some p-values cross significance thresholds in either direction).

Third, we control for the presence of 2G and 3G coverage using the Collins Bartholomew Mobile Coverage dataset.<sup>18</sup> This model adjustment ensures video results are not driven by 2G/3G network access, and also helps to balance treatment and control groups in our radio analysis. Results for both analyses are robust (see Figures C4 and C5).

Fourth, we remove Kabul from our video analysis. Unique characteristics distinguishing Kabul from the rest of Afghanistan include its: closer relationship with Western nations; higher levels of income and education; and weaker influence of insurgent groups. Excluding Kabul from our video analysis in Figure C6 contributes to the robustness of our results.<sup>19</sup>

Fifth, we exclude from our video analysis areas with exposure to IS radio broadcasts. This adjustment adds precision by preventing radio propaganda from obscuring the impact of video propaganda. Excluding the provinces of Kunar, Laghman, Nangarhar, and Nuristan in Figure C7 confirms robustness (though the earlier violent video effect turns slightly insignificant for Taliban support as measured by the trustworthiness of its messaging).

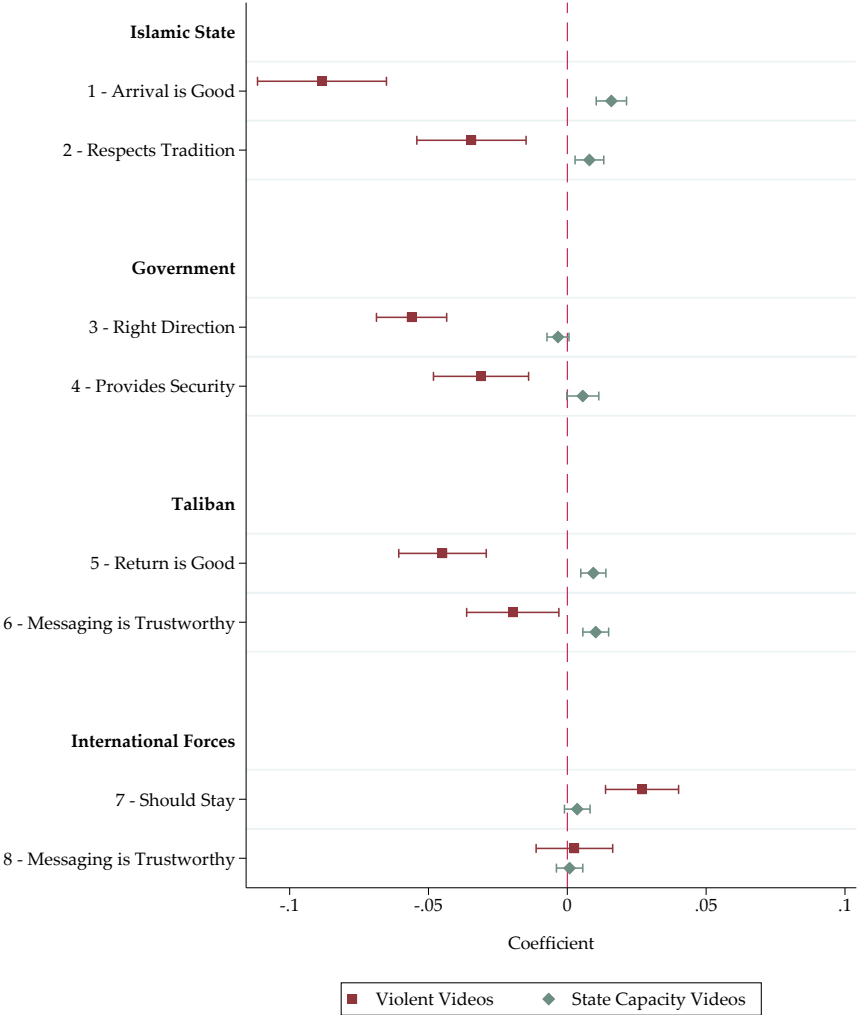
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<sup>17</sup>Notably, Table 3 already demonstrates robustness of results with respect to *conflict*-related controls for the estimated effect of propaganda videos on IS approval. This robustness extends to other outcomes, and also to the analysis of radio propaganda.

<sup>18</sup>This is a static dataset including mobile coverage updates submitted by network operators to Collins Bartholomew, so we cannot infer precise timing of mobile network expansions.

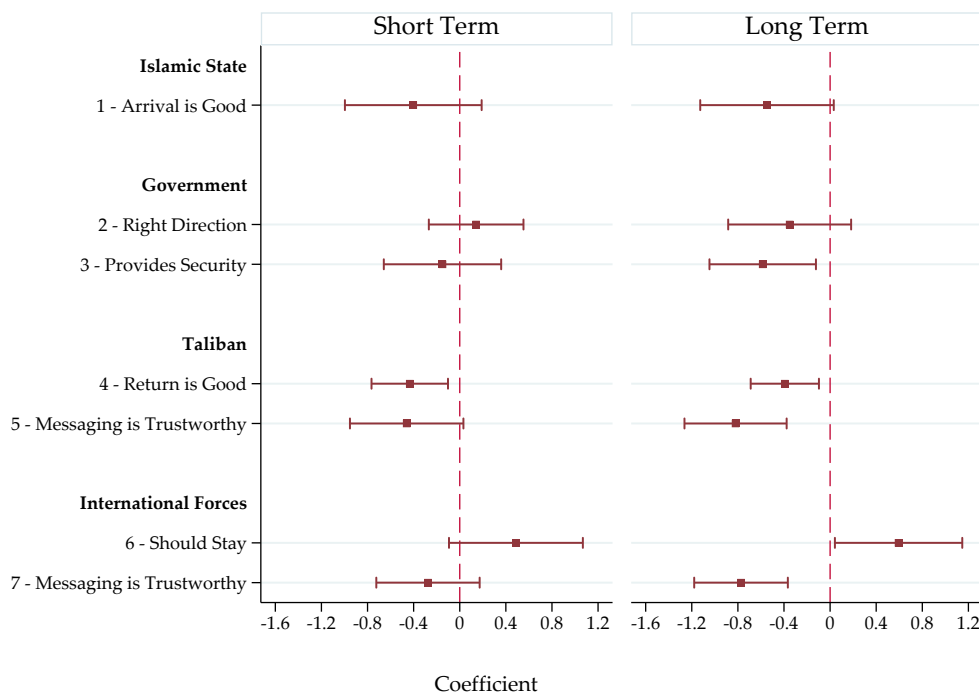
<sup>19</sup>Note Kabul was never part of our radio analysis, as we spatially restrict our DiD tests to provinces with non-zero radio exposure neighboring Nangarhar (where the IS tower was located).

**Fig. C1:** Effects of IS Videos on Public Opinion: Excluding Individual Controls



**Notes:** This exhibit replicates Figure 5 while removing respondent-level controls (age, gender, education, and ethnicity).

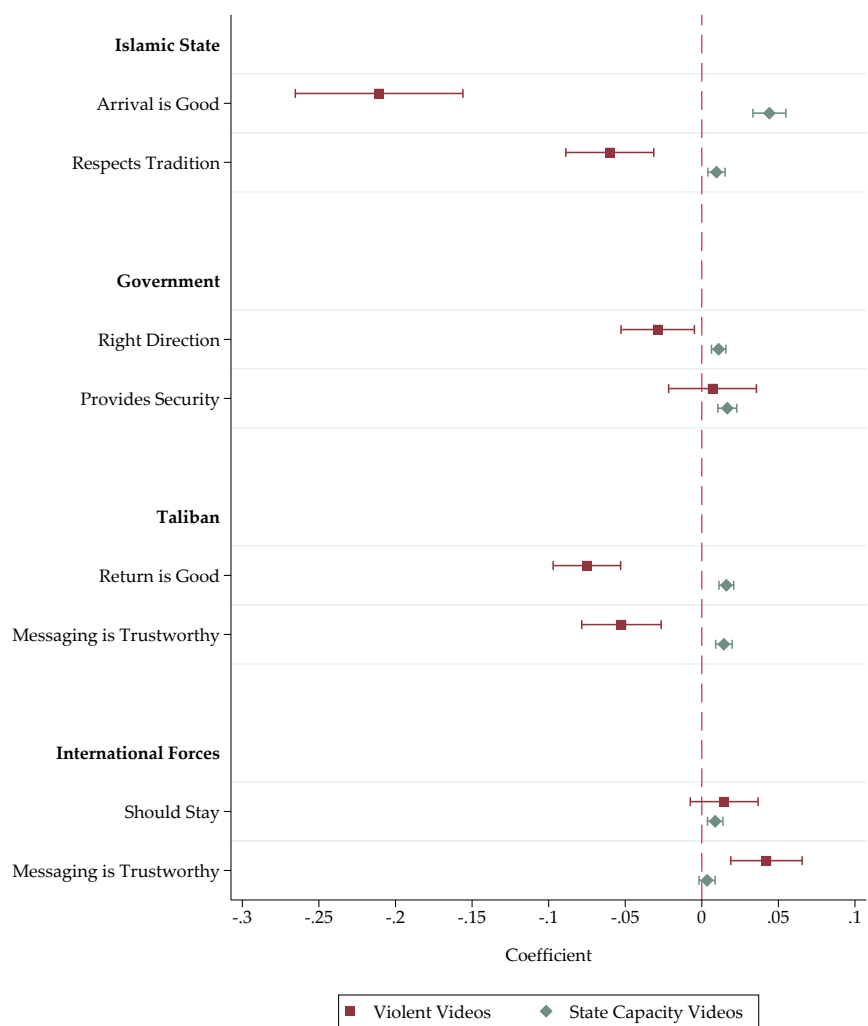
**Fig. C2:** Effects of IS Radio on Public Opinion: Excluding Individual Controls



**Notes:** This exhibit replicates Figure 7 while removing respondent-level controls (age, gender, education, and ethnicity).

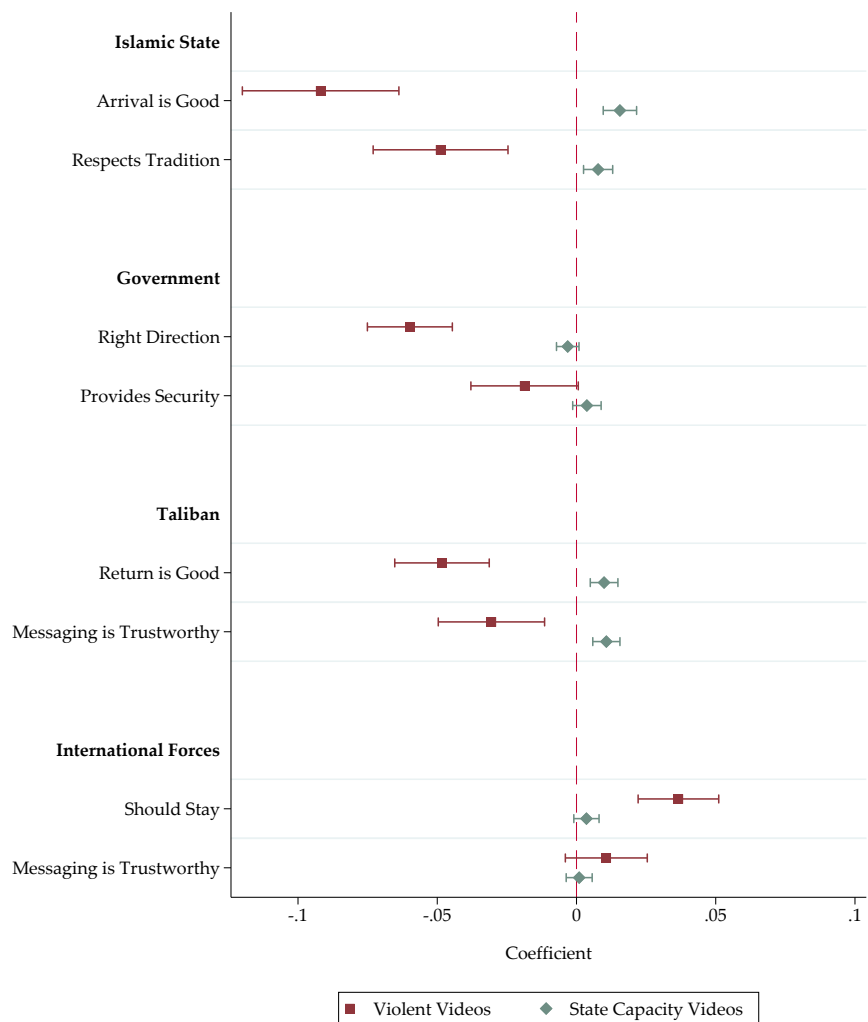


**Fig. C3:** Effects of IS Videos on Public Opinion: Macro Trends



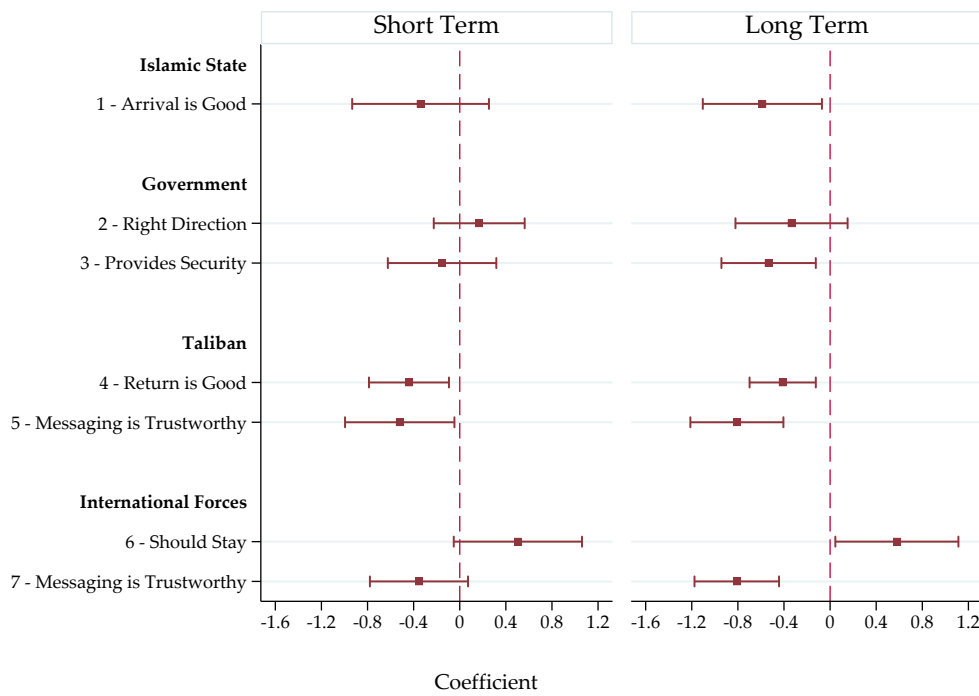
**Notes:** This exhibit replicates Figure 5 while controlling for the following global trends using annual data from World Bank open databases: global GDP, trade (% GDP), FDI inflows and outflows (% GDP), net official development assistance, and official aid received.

**Fig. C4: Effects of IS Videos on Public Opinion: 2G and 3G Coverage**



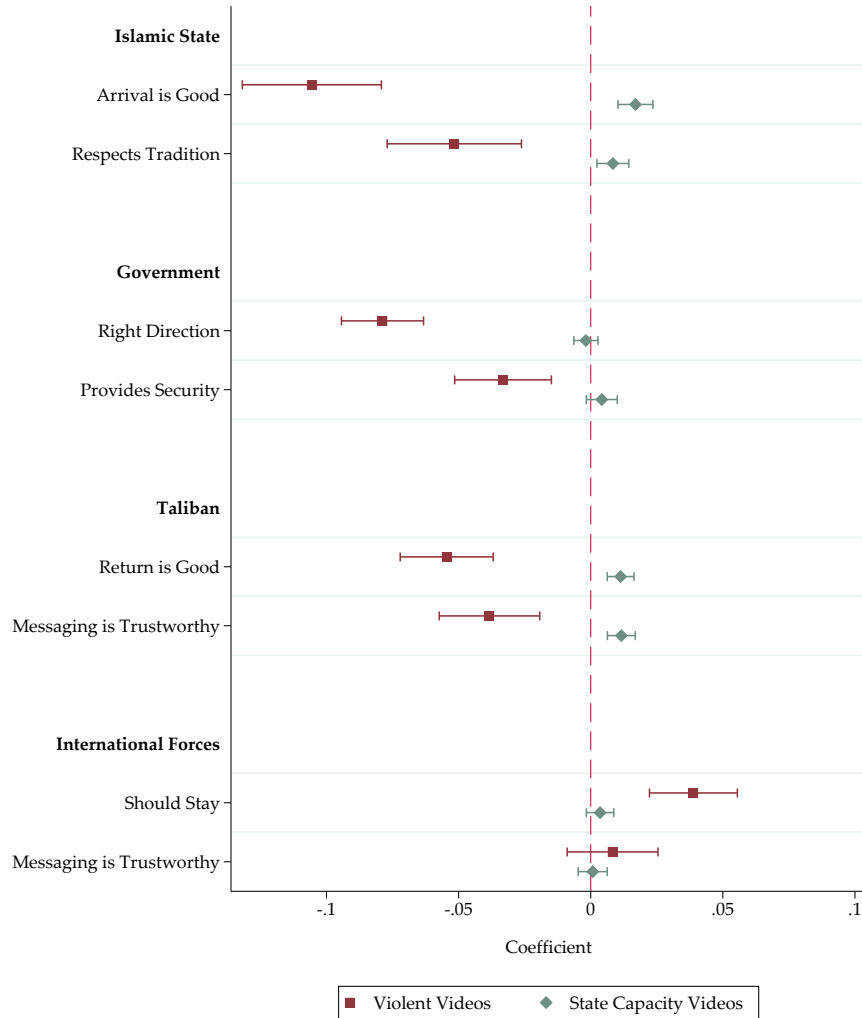
**Notes:** This exhibit replicates Figure 5 while controlling for district-level population share with 2G and 3G coverage.

**Fig. C5:** Effects of IS Radio on Public Opinion: 2G and 3G Coverage



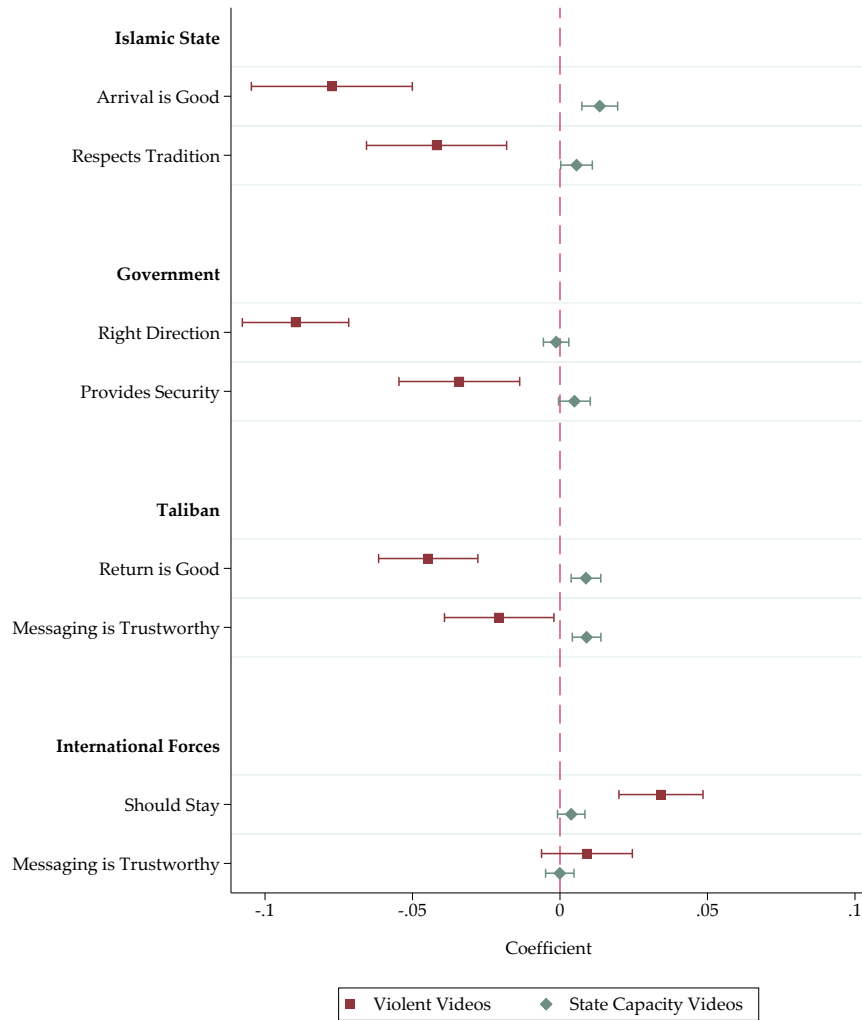
**Notes:** This exhibit replicates Figure 7 while controlling for district-level population share with 2G and 3G coverage.

**Fig. C6:** Effects of IS Videos on Public Opinion: Excluding Kabul



**Notes:** This exhibit replicates Figure 5 while removing Kabul province from the analysis.

**Fig. C7:** Effects of IS Videos on Public Opinion: Excluding Provinces with Radio Signal



**Notes:** This exhibit replicates Figure 5 while removing nearby provinces with IS radio broadcast exposure (Kunar, Laghman, Nangarhar, and Nuristan).

## D Appendix: Photo propaganda

In addition to producing video and radio propaganda, IS also circulated online several captioned photographs from within Afghanistan. As detailed below, analyzing this medium presents several unique challenges. A total of 947 photos taken in Afghanistan were released by IS between 2015 and 2021. For each photo, ICD data include the image, caption, date, and (sparsely populated) keywords. As with videos, we classify each photo according to ‘violence’ or ‘state capacity’. This determination is conducted manually by the research team, based on information contained in the caption and keywords. Only in case of ambiguity, the image source is referenced to check for violent content (e.g. weapons, destruction, death). In general, the classification of photos is conducted to closely mirror the corresponding distinction among videos.

Because these photos are set within Afghanistan, we can leverage spatial variation in this medium of propaganda. By reading captions, we are able to geolocate about half of these photos at the district level. We manually classify 118 photos as state capacity and 306 as violent photos. Spatial variation in the location of photos (aggregated over the sample period) is reflected in Figure D1. For robustness, we replace all photos with photo *batches* defined as one or more photos released on the same day, depicting the same event, and captioned identically. This results in 162 batches with spatial information, of which 27 correspond to state capacity and 135 to violent content.

Daily variation in the release of IS photos is presented in Figure D2, and Figure D3 presents wave-level aggregates to facilitate interpretation of trends and identifying variation. We measure individual exposure to district-level IS photos (or batches) by counting the number of photos (batches) released from the individual’s district since the previous opinion survey and before the individual’s enumeration date (expressed in logarithms).

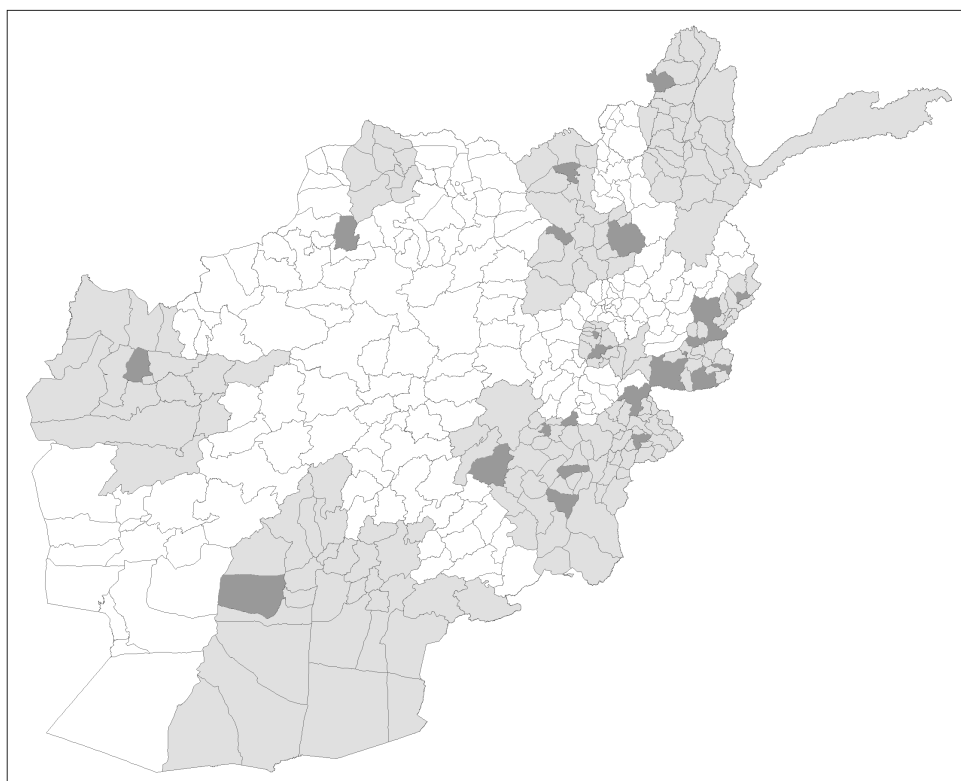
Next we test for the impact of propaganda photos on public opinion within Afghanistan. We focus on photos that are identified at the district level, thereby leveraging temporal and spatial variation to measure our effects of interest. Specifically, we estimate the following model:

$$(2) \quad Y_{ikt} = \alpha_k + \beta^v P_{ikt}^v + \beta^s P_{ikt}^s + \theta X_{ikt} + \omega_k t + \epsilon_{ikt}$$

where familiar terms are defined as in Equation 1.  $P_{ikt}^j$  indicates whether a photo (batch) of type  $j \in \{v, s\}$  was released in district  $k$  since survey wave  $t - 1$  and before the enumeration date of individual  $i$ . The vector of controls  $X$  additionally includes province-level shocks in each survey wave  $t$ , to further control for local IS conflict activity – a particularly important source of confound with respect to domestically released photos.

Figure D4 presents our results for district-level photos (and photo batches) on all opinion outcomes previously examined. Overall, the impact of this subset of domestically sourced photos (or batches) that are linked to specific districts is largely ineffective as compared to global propaganda videos. We find consistent evidence with our video analysis though when it comes to violent content and approval of the government or the Taliban. Imprecise estimates and null effects suggest these captioned photos are largely ineffective at persuading local opinion. This finding may be interpreted broadly as reflecting the greater salience of video content relative to still imagery in more general settings (Berni, Maccioni, and Borgianni, 2020; Brinson and Stohl, 2012; Boivin, Gendron, Faubert, and Poullin, 2017).

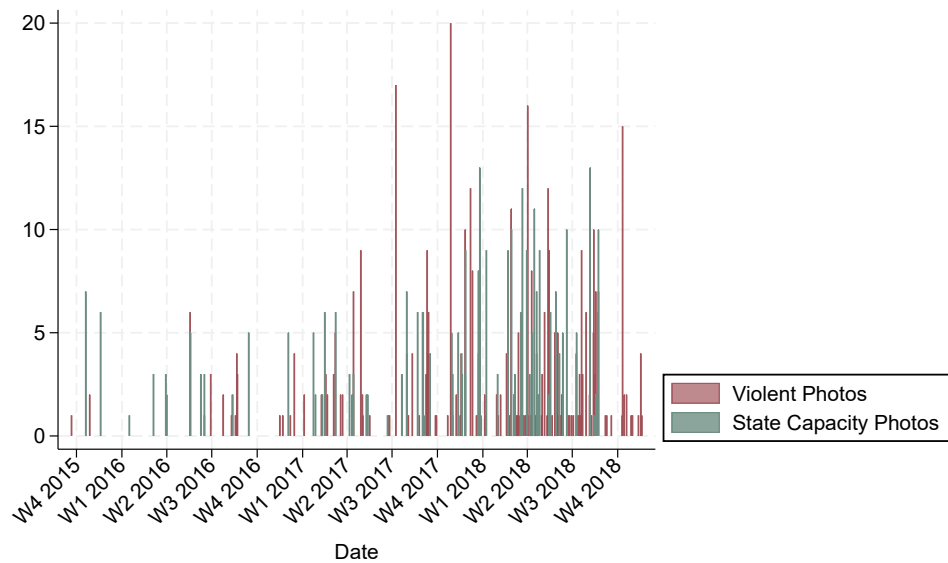
**Fig. D1:** Spatial Distribution of IS Propaganda Photos



**Notes:** This map depicts the spatial distribution of geographic sources for IS photo propaganda. Districts in dark gray are those from which an IS photo was ever sourced. The corresponding provinces are represented in light grey. Data on IS photos in Afghanistan are from the IntelCenter Database (ICD). A total of 315 photo batches were released over a 6-year period, 162 of which can be geolocated at the district level. Photos are manually classified by the authors into ‘violent’ and ‘state capacity’ categories.

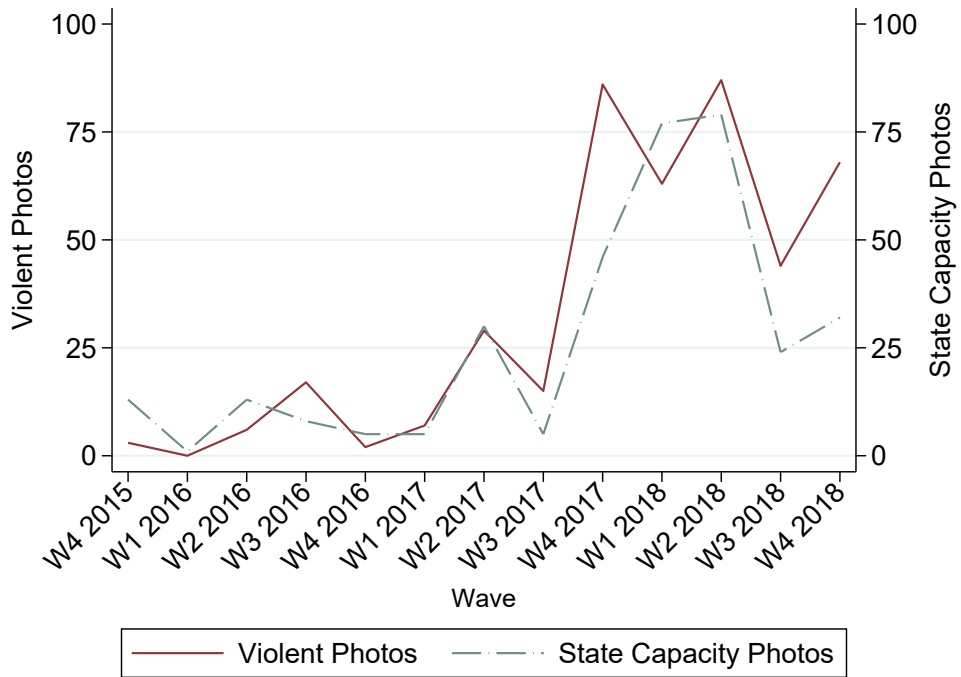


**Fig. D2:** Daily Time Series of IS Photos Release



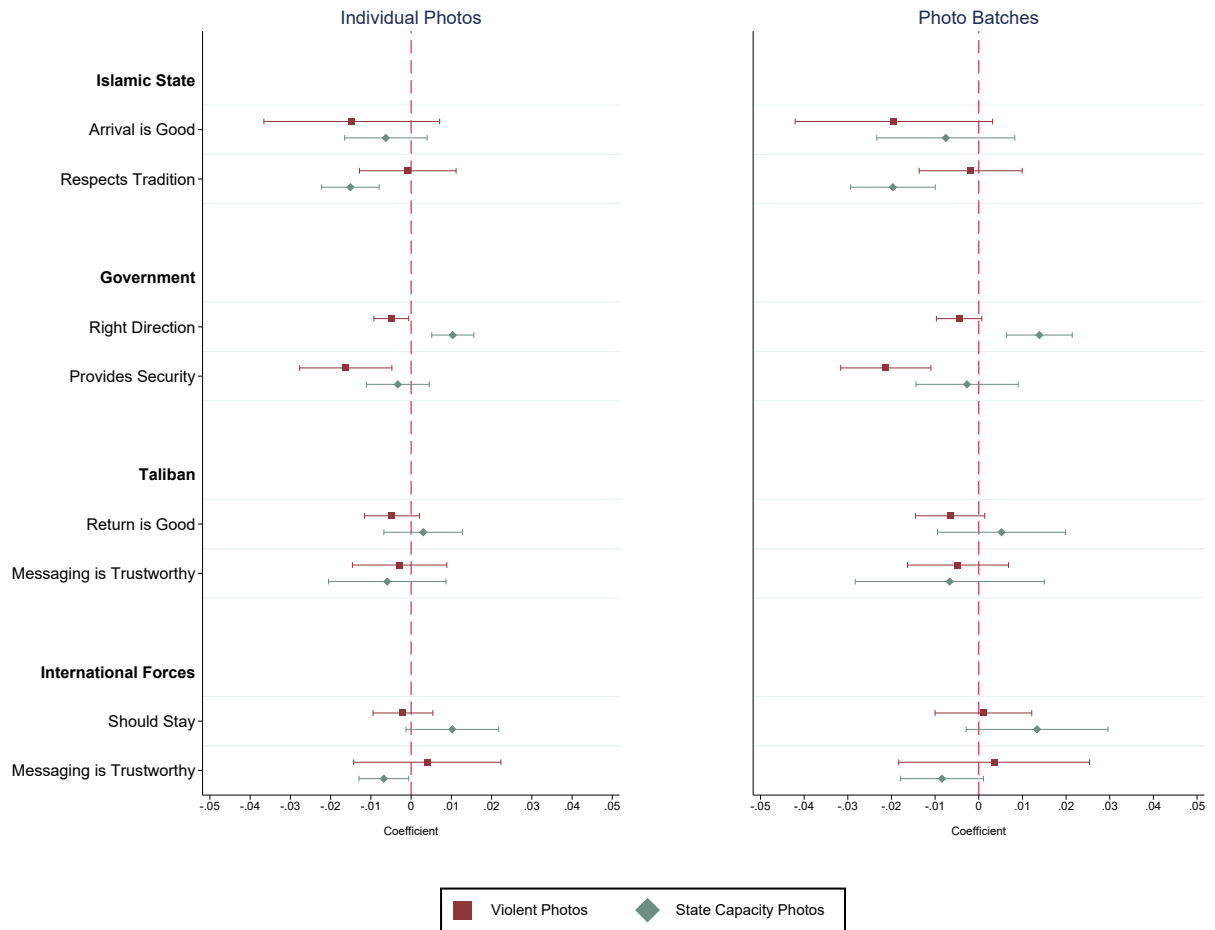
**Notes:** This figure depicts the daily time series of IS propaganda photos released online. Data are from the IntelCenter Database (ICD). A total of 765 were released over a 40-month period. Photos are manually classified by the authors into ‘violent’ and ‘state capacity’ categories.

**Fig. D3:** Online Release of IS Photos



**Notes:** This figure depicts temporal variation in the online release of IS propaganda photos (aggregated by quarter). Data on globally released IS photos are from the IntelCenter Database (ICD). A total of 756 photos were released over a 40-month period. Photos are manually classified by the authors into ‘violent’ and ‘state capacity’ categories.

**Fig. D4: Effects of IS Photos on Public Opinion**



**Notes:** Individual photos (left) and photo batches (right) are expressed as the logarithm of the aggregated amount of photo (batches) released since the end of the prior opinion poll (survey wave). Outcomes are, in descending order, individual responses to the survey questions: *Do you think the arrival of IS would be good or bad for Afghanistan?*; *Does IS respect the religion and traditions of Afghans?*; *Do you believe the GoA is going in the right direction?*; *How well does the GoA do its job securing the country?*; *If the Taliban were to return to power and govern Afghanistan, would it be a good thing for the people and the country?*; *How trustworthy is the messaging of the Taliban?*; *Should international forces leave Afghanistan?*; *How trustworthy is the messaging of the international forces?*. Outcomes are standardized to have a mean of zero and a standard deviation of one. The exact wording for each question and response is provided in Table A1. All models include district fixed effects and district trends. Baseline controls include age, gender, educational attainment, and ethnicity. 90% confidence intervals are based on standard errors clustered at the district level.