Is Propaganda Effective? Evidence on Framing of Responsibility by State-Owned Media in Russia*

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Abstract

Many autocrats make use of state-owned media to shift blame or claim credit for policy outcomes (Guriev and Treisman, 2019). A particularly common strategy is to send messages that target citizens' perceptions of whether central or local government is responsible for policy outcomes. But how effective is this strategy given that news outlets are known to be under government control? I report results from a survey experiment with over 4,000 respondents in Russia. The experiment randomly assigned respondents to watch news reports from popular Russia's state-owned TV channel, Rossia-1. The reports emphasize the central government's monitoring of road maintenance and natural disaster management – two policies that fall under the purview of local government. My findings suggest that even though the reports did not shift beliefs about the locus of policy responsibility, they did improve perceptions of policy performance and increase government support. I show that these patterns are consistent with a model of Bayesian learning in which citizens are already aware of the bias of news outlets and the locus of policy responsibility. The central intuition is that citizens are aware that the central government would only associate itself with local policies if the performance is high. As a result citizens update positively on policy performance and reward the government. The broader implication is that propaganda can be effective not in spite of but because citizens know that news outlets are government controlled, but its population level effects can be limited by selective exposure.

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1 Introduction

Modern day autocrats tend to avoid harsh repression of opposition and persuade the public that their government is competent. As shown in the recent study by Guriev and Treisman (2019), when discussing domestic matters autocratic leaders are more likely to highlight their achievements in economic performance or public service provision to project an image of competence than to focus on violence and suppression of the discontent to project image of fear and discourage opposition.

One of the prominent tools that aids autocrats in achieving this goal seem to be use of media to control access to and contents of information available to the public. Growing evidence suggests that autocrats attempt to bolster their popularity using control over media and censorship in many ways. They encourage *rally around the flag* (Frye, 2019; Treisman, 2011), undermine the citizens' collective action (King, Pan and Roberts, 2013, 2017) monitor and sanction local officials (Lorentzen, 2013), make themselves appear as competent managers (Rozenas and Stukal, 2019), and signal their administrative capacity (Huang, 2015*a*). While it is seems clear that autocrats attempt to use all of these strategies, evidence on their effectiveness in increasing support for the government is limited.

The main reason for this gap is the severe methodological and substantive challenges faced by researchers who attempt to measure media effects.

On the one hand, exposure to media coverage almost universally has compound effects on the attitudes of the viewers. Media, especially when it is captured by the government in a non-democratic setting, is likely to engage in a combination of the strategies listed above. For example, in Russia, state-owned TV channels cover international relations to encourage patriotism, and domestic economic performance to manage blame and credit (Peisakhin and Rozenas, 2018; Field et al., 2018). Similarly in the context of China, another authoritarian regime that engages in propaganda, there is evidence that the government attempts to use state-owned media to project an image of competence and regime strength (Huang, 2015*a*; Qin, Strömberg and Wu, 2018, Huang (2018)). As a result, while providing evidence for the persistent effects of exposure to biased media in a natural setting, studies of overall exposure to particular media outlets are not well-suited for answering questions about the effects of specific media strategies on support for the government or political parties (DellaVigna and Kaplan, 2006; Enikolopov, Petrova and Zhuravskaya, 2011; Adena, Enikolopov and Petrova, 2015; Chen and Yang, 2019; Kronick and Marshall, 2018).

On the other hand, it is very difficult to control directly how particular media outlets cover domestic or international issues in their news coverage. Moreover, intervention into the editorial process of media outlets is often not feasible, especially if the outlet is owned by an authoritarian state. This feature of media effects studies leads scholars to either focus on overall exposure to biased media as discussed above, or resort to estimation of the effects of exposure to information outside a natural media context. Examples of the latter include several field experimental studies that provide citizens in various contexts to information related to politicians performance or corruption

(Chong and Druckman, 2007; Ferraz and Finan, 2011; Arias et al., 2018; Dunning et al., 2019). Overall this literature suggests that campaigns that provide performance-related information to voters are often ineffective and can even discourage turnout thus inhibiting political accountability. Importantly, the design of these studies, while providing evidence for the effects pure exposure to performance information has on government support, abstracts from the possible moderating factor: beliefs about bias of the information source. The latter is crucial for our understanding of possible effects of biased media in authoritarian setting, where extent and direction of bias of state-owned media outlets can be widely known to the public.

This essay strikes a middle ground between these two strands of literature and provides insight into the effectiveness of state-owned media in persuading citizens about government competence. I do so by focusing on the effects of state-owned media news coverage on responsibility for two critical policy domains: natural disaster prevention and road infrastructure. In a 3-arm online survey experiment among over 4000 residents from four regions of Siberia (Russia) I assign citizens to watch one of the three video news reports coming from the main state-owned TV channel, *Rossia-1*. The first two news reports discuss responsibility for one of the policies, while the third news report covers events irrelevant for policy or government performance and thus serves as placebo control condition. Comparing the differences in post-treatment beliefs across conditions I estimate the effects of watching state-owned news coverage of responsibility on citizens beliefs about policy performance and allocation of responsibility for the policy between the federal, regional and municipal government, information covered in the news reports directly, and on their overall support for government at different levels.

The design of this study has several unique features that make it particularly suitable for answering questions about ability of propaganda to persuade the public about government competence. First, I focus specifically on one of the strategies often used by the state-owned media in autocratic settings: projecting image of central government competence while shifting blame and credit for policy to other levels of government. To achieve this goal, state-owned media often broadcasts news reports that show central government officials who monitor local government performance in particular policy (Rozenas and Stukal, 2019). Both treatment news reports about policy responsibility used in this study share this structure. The management of blame for public policy is crucial for the popularity of authoritarian government since responsibility for public policy performance cannot be easily shifted to external political actors and is likely to be attributed by citizens to one of the government levels. Thus, understanding whether this strategy is efficient and whom it affects the most is crucial for understanding whether authoritarian government can use propaganda to project image of competence.

Second, the choice of two public policies included in the study allows me to assess directly whether the effects of pro-government media persuasion vary across policy domains. I use coverage on natural disaster prevention since all four regions included in the study were affected by the widespread natural forest fires during the Summer of 2019. While being seasonal, in 2019 forest fires in Siberia

became one of the most widely discussed topics by federal media due to a combination of the lack of local government response and unfortunate wind currents that brought smoke from the fires to densely populated areas. As a result of this crisis, the federal government had to intervene and put pressure on the local governments to resolve the issue while also making sure that the public is aware that responsibility for the policy is not at the federal level. The latter presents the essence of the forest fires news report that serves as one of the treatments in the study.

On the contrary, poor quality of roads is an old and persistent issue in Russia, especially in Siberia, where many regions are very sparsely populated and climatic conditions are difficult. The responsibility for maintenance of road infrastructure, as with forest fires prevention, lies predominantly on the local government. Unlike forest fires prevention, this policy had no major shocks in 2019, but the *Rossia-1* TV channel still covered this policy multiple times in the context of the federal project on road quality, where federal officials again put pressure on the local governments for low performance in road maintenance. As a result, the two policies and corresponding treatment news reports are similar in most respects except one: large scale forest fires in 2019 increased visibility to the quality of natural disaster management.

The empirical analysis in the paper yields four main results. On the full sample state-owned media coverage on both policies appear to have moderately positive effect with evidence of small increase in policy satisfaction and in support for all levels of government competence.

Looking at the heterogeneity of the effects by prior media consumption I find, that the effects of pro-government media coverage are concentrated among citizens who watch such media less frequently and rely more on independent news sources: they shift their perception of responsibility away from the central government, slightly improve their perception of policy performance and reward both the central and local government. I attribute the null results among those who watch pro-government media frequently to the saturation of their beliefs due to prior exposure to pro-government coverage, since they tend to assign less responsibility to the federal government, be more satisfied with the policy performance, and support federal government more at the baseline. Looking at the heterogeneity of the effects by prior immediate exposure to issues with specific policy (pocketbook evaluations) I find, that such exposure can reduce the effectiveness of pro-government media persuasion, but only for the policies with recent shock of visibility, e.g. natural disaster management.

Combining the analyses of two moderators, I show that prior media consumption trumps personal experiences: if citizens frequently consume pro-government media, their immediate exposure to the issues with policy does not matter and given similar prior government support in this group, I again attribute this finding to saturation of beliefs due to prior pro-government media consumption. At the same time, pocketbook evaluations continue to matter for the government support among those who watch pro-government media less frequently.

These findings suggest that there are limits to the ability of government to persuade citizens about

their competence by shifting blame and credit for domestic issues (Rozenas and Stukal, 2019). In line with Rosenfeld (2018) I find that pocketbook evaluations can prevent citizens from being persuaded by propaganda, but only if the policy for which blame is being shifted experienced recent shock of exposure.

Contrary to existing accounts of biased media effects on polarization of public attitudes (Prior, 2013) I find that the effects of the pro-government media are the strongest among citizens who rely on independent media more than on pro-government media. The literature on *biased assimilation* (Lord, Ross and Lepper, 1979), *motivated reasoning* (Ditto and Lopez, 1992), or *motivated skepticism* (Taber and Lodge, 2006) finds that people accept information that is close to their priors, and will remain unconvinced by information that contradicts their priors. To reconcile the findings in the paper with the existing literature I present a simple theoretical framework of Bayesian updating about policy performance, responsibility, and government competence in the context of widely acknowledged state capture of the media (Truex, 2016).

As a result, this paper contributes to the literature on the effects of propaganda on people's political attitudes and behaviors by showing that pro-government media can be effective at increasing government support but these effects are highly heterogeneous (Adena, Enikolopov and Petrova, 2015; Enikolopov, Petrova and Zhuravskaya, 2011; Peisakhin and Rozenas, 2018) and depend on citizens prior policy evaluations and media consumption patterns. It also contributes to the literature on Bayesian persuasion (Kamenica and Gentzkow, 2011; Larreguy and Marshall, 2019) by providing empirical evidence of the ability of the government to project an image of competence using captured media. Finally, I contribute to the literature on retrospective voting by providing evidence for simultaneous updating about policy performance, allocation of responsibility and government competence, which in turn suggests that citizens perceptions of policy performance affect their overall evaluation of government.

The rest of the paper is organized as follows. In Section 2 I briefly introduce the context of the study, Section 3 lays down theoretical framework of Bayesian updating and state predictions about the expected effects of biased media coverage of policy responsibility. Section 4 details sample enrollment, experimental design and measurement of outcomes. Section 5 reports results of the empirical analyses and discusses possible alternative explanations. Section 6 concludes and discusses several next steps.

2 State-owned media and public policy in Russia

The empirical part of this study was conducted in December 2019–January 2020 in the four largest regions of Siberian Federal District of Russia: Novosibirsk, Irkutsk and Kemerovo oblasts and Krasnoyarskiy Krai.[1] In this section I introduce the context of the study by first describing the patterns of state-owned media consumption and the types of coverage offered by state-owned media

[1]Hereafter I refer to the study regions as Novosibirsk, Irkutsk, Kemerovo and Krasnoyarsk respectively.

in Russia. Then I describe details of the responsibility and performance in two main policies that were covered in the news coverage used in the study: forest fires prevention and road infrastructure.

2.1 News Coverage by State-Owned Media

As suggested by the ranking of press freedom (149 out 178, RSF, 2020), the Russian media environment is severely restricted: many media outlets, especially TV, are either censored (Proekt Media, 2019) or directly owned by the government. At the same main state-owned federal TV channels remain the primary source of information for majority of Russians even though this share declined over the past ten years from 94% to 72%. Interestingly, despite frequent consumption of federal TV, only 55% of Russians trust the news they receive from the federal TV and this figure declines over time (Levada Center, 2019).

At the same time the consumption of news from the Internet, that is less controlled by the government decentralized and offers more independent news sources, has risen over the past ten years from 6% to 36% for social networks and from 9% to 32% for online media portals. Thus the consumption of news from TV and social media converges over time. Trust into the respective news sources follows similar patterns over time and in 2019 54% of Russian citizens trusted news they receive from TV channels, and 20% – the news they received from social media. Overall, these observations suggest that despite rapidly losing viewers to social media and online news portals, TV remains the main source of news for the majority of Russian citizens and still enjoys relatively high levels of trust.

In turn, among those who watch news on TV the most popular source of news is *Rossia-1* (48%) followed by Channel 1 (47%) and NTV (36%). All three channels are directly owned by the government and gradually lost their independence in the 2000s (Moscow Times, 2015). News coverage on all of these channels now serves as the main tool of TV propaganda employed by the Russian government in projecting a pro-government agenda and framing of events (Field et al., 2018).

Out of the three most popular TV channels, *Rossia-1*, stands out as the main source of information about domestic and local events by offering a large menu of news-related broadcasts that include daily talk-shows and news broadcasts. In each of the four regions included in this study *Rossia-1* was among the most cited local media outlets in 2019 according to the ranking of Medialogia (2020).

The main news broadcast on *Rossia-1*, called *Vesti*, airs at least three times every day including the main prime-time 1 hour broadcast at 8 p.m., and covers both domestic and international events and topics. According to Mediascope (2020) ranking *Vesti* remains one of the most popular broadcasts on Russian TV with audience of ~ 3 million viewers. Over the Fall 2019 I reviewed all of the evening *Vesti* broadcasts aired during the Summer 2019 to analyze the common topics covered and to select the news reports for this study.

The modal evening *Vesti* broadcast includes a mix of coverage on domestic and international events

that starts with the summary of the main events. The first 20-30 minutes of the broadcast almost universally include coverage of international events: Either meetings between federal officials and foreign government officials portrayed in positive or neutral terms, or events that happen in the foreign countries, often portrayed in negative terms. Besides international news, the first segment of the broadcast includes major domestic events and policy-related actions by the federal officials, either the president, Vladimir Putin, or Prime Minister at a time, Dmitry Medvedev, who discuss current policy issues with either cabinet of ministers or regional authorities. It should be said, that given that the management of the regional and local issues in Russia is officially in the direct purview of Prime Minister, in most of the coverage that covers local or regional issues Dmitry Medvedev represents the federal government.

To conclude, the coverage of domestic policy that involves federal government officials comprises a substantial portion of the news coverage broadcast by the state-owned propaganda, that in turn reaches a large domestic audience given the popularity of TV in Russia. It is thus important to understand effects of domestic news coverage on public attitudes beyond theoretical expectations about why authoritarian government might have incentives to broadcast these news (Rozenas and Stukal, 2019).

2.2 Forest Fires Prevention and Roads Construction

In this study I focus on two public policies that in the Russian context are similar in terms of the priority citizens put on them, low policy performance, and the allocation of responsibility, but at the same time vary in one crucial respect: the visibility of policy performance due to a shock in the level of exposure.

Large-scale forest fires in the Siberian Federal District of Russia are common, happen every year during the Spring-Summer season, and are usually concentrated in "control zones" – remote areas, where regular measures of extinguishing forest fires are deemed ineffective and costly by regional authorities who are responsible for management and prevention of natural disasters in their territory. Due to existence of "control zones" in the Summer of 2019, when the wind currents brought the smoke from forest fires happening in remote areas to densely populated areas of Siberian regions, many citizens and activists criticized the local and federal government for inaction, posing a threat to popularity of both levels of government (Ria Novosti, 2015; Change.org, 2019). Widespread discussion by local media and the high visibility of the forest fires consequences to residents of Siberian regions prompted federal government to intervene by providing federal assistance to the most affected regions (including Krasnoyarsk and Irkutsk regions) and sending then Prime Minister, Dmitry Medvedev, to personally oversee the regional governments response to the issue. As a result, during the Summer of 2019 forest fires became widely discussed by the state-owned media, including *Rossia-1* channel, and 38% of Russian citizens named forest fires in Siberia one of the main events that happened in 2019 (RBC, 2019*b*).

On the other hand, the quality of roads is a persistent issue in Russia, and is especially low in the

regions of Siberia and Far East (Transparency International, 2017). Given that many citizens in Russia rank road infrastructure as one of the main issues that government should prioritize, it is not surprising that in 2018 government included "High Quality and Safe Roads" into the list of National Projects planned for 2019-2024, the hallmark of Prime Minister Dmitry Medvedev's last year in office (TASS, 2018). According to the program conditions, the federal government offered each of the participating regions (including all regions in the study, BKDRF, 2020) targeted transfers for regional and local roads maintenance, and regional governments are responsible for the implementation of the program. Perhaps not surprisingly, the pro-government media dedicated a significant portion of its coverage to the National Projects, especially in 2019, when the second stage of the program was planned. It also should be noted that both roads infrastructure and environmental issues are listed among most important issues that should be address by the government, but at the same time are far from the most prioritized policies, like health care or education.

While clearly being different in many respects, natural disaster prevention and road infrastructure, especially in the context of the National Projects, share a common responsibility structure. The key difference between the policies is that due to forest fires in 2019, natural disaster prevention experienced recent shock that exposed many citizens in the regions where the study took place to the performance of the local and regional government in respective policy. On the other hand, many citizens in Russia have direct experience with poor quality of roads on a daily basis, which perhaps makes these experiences stand out less. As a result, I expect citizens direct exposure to bad road quality to matter less for how they react to information about this policy that they receive from the media.

3 Framing of responsibility in autocracies

To understand how pro-government media can affect public perceptions of policy performance, responsibility and government competence, I build a theoretical framework that explains how citizens process information. In this section I present a simple Bayesian updating model that provides an intuition into how citizens can learn from the news broadcasted by state-controlled media and which characteristics make citizens more susceptible to such government persuasion.[2] The model captures main features of the content usually provided by state-owned media in Russia and similar non-democratic contexts, where government uses propaganda to project to the public an image of competence and to maintain popularity.

The model provides several insights. First, even rational citizens who know that the media outlet is owned by and favors federal government can update their beliefs about policy performance and government competence in the direction desired by the government, thus allowing for rational

[2]Model presented in this section departs from the Pre-Analysis Plan by assuming that credit-claiming incentives of biased media outlet increase likelihood of news reports that mention responsibility of local government for public policy. This modification was made to account for possibility of using such reports to signal higher policy performance while still changing citizens perceptions about responsibility allocation.

persuasion (Kamenica and Gentzkow, 2011; Truex, 2016). Second, as a result of learning about the allocation of responsibility and policy performance citizens can improve their beliefs about the competence of the government at different levels, making it possible for the federal government to manage blame and credit for policy by sending signals about public policy responsibility through captured media. Finally, prior beliefs about policy performance, allocation of responsibility for policy and media bias, that can be induced by media consumption patterns and pocketbook evaluations, play a crucial role in the effectiveness of media persuasion (Arias et al., 2018).

3.1 Theoretical Model

Consider a citizen's Bayesian updating problem upon receiving a information about responsibility for a public policy from a possibly biased news media outlet. A representative citizen from a society who is exposed to such information, receives a signal about a combination of public policy performance (θ), responsibility for the policy being on local government (ρ), bias of the information source (β) and competence of two levels of government, local (γ_L) and central (γ_C). For simplicity, I assume that $\theta \in \{0, 1\}$, i.e. that the policy outcome is either "good" ($\theta = 1$) or "bad" ($\theta = 0$); $\rho \in 0, 1$, i.e. policy responsibility can be either on the local ($\rho = 1$) or central ($\rho = 0$) government level.[3]. The extent of media bias is given by $\beta \in [0, 1]$, i.e. media outlet can be fully independent ($\beta = 0$), or biased, which means that it favors central government to some extent ($\beta > 0$). The assumption that citizens can perceive at least some degree of media bias is common in the formal literature (Besley and Prat, 2006; Gehlbach and Sonin, 2014; Gehlbach, Sonin and Svolik, 2016) and finds empirical support in various contexts (DellaVigna and Gentzkow, 2010; Huang, 2015*b*, 2018).

In addition I make two other key assumptions concerning beliefs about government competence and about biased media coverage strategy. First, I assume that citizen forms her evaluation of government competence by combining her beliefs about allocation of responsibility for specific policy and beliefs about performance in that policy. This assumption implies that government at any level can only be blamed or given credit for policy performance in domains for which the respective government level is considered to be responsible. Formally, the overall evaluation of government at both levels is given by

$$\gamma_L \equiv \rho(2\theta - 1) + O_L \tag{1}$$

$$\gamma_C \equiv (1 - \rho)(2\theta - 1) + O_C \tag{2}$$

where γ_j denotes an evaluation of the competence of government at level j by a representative citizen,

[3]This assumption reflects the design of empirical part of this study: Both policies used in the intervention news reports (road infrastructure and natural disaster prevention) are domestic public policies that are in the purview of the Russian government and, unlike foreign affairs, are less likely to be attributed by citizens to political actors outside the government.

while O_j denotes the evaluation of respective government level performance in all other relevant policy domains.[4] While being a necessary simplification, equations (1) and (2) reflect the standard assumption in the models of accountability based on retrospective voting (Fiorina, 1981; Fearon, 1999; Persson, Roland and Tabellini, 1997; Besley, 2006). Equations (1) and (2) also implicitly assume that specific policy is important citizens' perceptions of government competence. This is likely to be true in the context of the study since public policies covered by state-owned media in Russia, such as health care, education, infrastructure and environmental issues, are considered to be important my significant portion of population (Levada Center, 2020) and thus are likely to be considered by citizens when forming beliefs about government competence.

Second, citizens expect a state-owned media outlet to cover public policy in three possible ways: (a) focus on responsibility of central government (C), or (b) mention both levels of government in the context of responsibility for public policy (CL). Examples of the latter coverage include news reports that mention central government officials monitoring local policy performance, or mention nominal presence of central government officials at the events where local government responsibilities are being discussed. Messages like this are common in the news broadcasting on domestic issues by Russian state-owned TV channels, such as *Channel 1* or *Rossia-1*. Arguably, the main aim of such reports is to form citizens beliefs about policy performance and allocation of responsibility: if the policy performance is high, then federal authorities have incentives to invoke credit claiming by *association* (Rozenas and Stukal, 2019), while if it is currently low, they have incentives to show that the issue is being addressed and deny their responsibility for current state of affairs. Given this structure citizens should expect to receive news report that mentions both local and federal officials ($m = CL$) by state-owned media outlet with the following probability

$$\Pr(m = CL \mid \theta, \rho, \beta) \equiv (1-\beta)\rho + \underbrace{\beta\rho\theta}_{\substack{\text{credit-claiming by} \\ \text{central government}}} + \underbrace{\beta(1-\rho)(1-\theta)}_{\substack{\text{blame-avoidance by} \\ \text{central government}}}. \tag{3}$$

Equation (3) includes three terms that account for possible reasons for the media outlet to choose to report CL. First, if it is unbiased it reports CL when local government is indeed responsible.[5] Second if the media outlet is at least partially biased ($\beta > 0$) then there is a chance that it reports CL in attempt to claim credit towards central government for high performance achieved by local government ($\theta = 1$ and $\rho = 1$) or shift blame away from the central government for low performance ($\theta = 0$ and $\rho = 0$).

Applying Bayes' rule to equation (3) it is straightforward to show that exposure to news coverage that aims to shift public perception of policy responsibility leads to simultaneous updating on policy

[4] Richer model can introduce weights citizens attach to the policy, i.e. $\forall j \in \{\text{L}, \text{C}\} : \gamma_j \equiv \omega\rho(2\theta - 1) + O_j$, where ω denotes relative weight given by representative citizen to performance for specific policy compared to all other policy domains considered by representative citizen in their evaluation of government performance.

[5] In this case unbiased media outlet can be expected to report C if central government is responsible and not report L. The latter is likely when the outlet covers national news and is not expected by viewers to report local performance without mentioning, at least nominally, of federal government officials.

performance, local government responsibility, and bias of the media. We can express the extent of the updating by comparing the posterior beliefs about those quantities to the priors:[6]

$$\Delta^{\rho} \equiv \mathbb{E}[\rho \mid m = CL] - \mathbb{E}[\rho] = \frac{\mathbb{E}[\rho](1 - \mathbb{E}[\rho])(1 - 2\,\mathbb{E}[\beta](1 - \mathbb{E}[\theta]))}{\mathbb{E}[\rho] - \mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])}, \tag{4}$$

$$\Delta^{\theta} \equiv \mathbb{E}[\theta \mid m = CL] - \mathbb{E}[\theta] = \frac{\mathbb{E}[\theta](1 - \mathbb{E}[\theta])\,\mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)}{\mathbb{E}[\rho] - \mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])}, \tag{5}$$

$$\Delta^{\beta} \equiv \mathbb{E}[\beta \mid m = CL] - \mathbb{E}[\beta] = -\frac{(2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])\,\mathrm{Var}[\beta]}{\mathbb{E}[\rho] - \mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])}. \tag{6}$$

Equations (4) to (6) provide important insights into how viewership of responsibility-shifting media reports from state-owned media can affect citizens beliefs about public policy. First, from equations (5) and (6) it is straightforward to see that if citizens believe that local government is likely to be responsible for policy ($\mathbb{E}[\rho] > 0.5$), her policy performance evaluation improves upon watching the news reports, while her beliefs about media bias decrease. This is because in this case responsibility-shifting coverage is unlikely to be due to blame-shifting attempt by the central government, thus making unbiased media reporting due to high policy performance more plausible. This relationship between priors on responsibility and change in beliefs about policy performance is shown on Figure 3.1. From the figure, it is also clear that the magnitude of learning about policy performance is highest when citizens are initially hold uninformative priors ($\mathbb{E}[\theta] = 0.5$). On the contrary citizens with more extreme priors change their beliefs about policy performance less. Based on these observations we can form first empirical prediction:

Prediction P1 (Policy Performance)
The following is true about the effects of biased news coverage that attributes responsibility for policy performance to local government, while mentioning central government on updating of beliefs about policy performance:

1. *If prior beliefs about local government responsibility for the policy are high, then biased news coverage increases beliefs about policy performance and vice versa.*
2. *If prior beliefs about local government responsibility and policy performance are high, then the magnitude of updating of beliefs about policy performance decreases in priors about performance and increases in priors about local government responsibility.*

The relationship between updating about responsibility and priors held by citizens implied by equation (4) and shown on Figure 3.1 is more complex. It is clear that the direction of updating depends on prior beliefs about both media bias and policy performance. First, if citizens a priori

[6] In the empirical part of the study I assume that placebo news report that did not cover any public policy responsibility has no effect on evaluation of any of the policy related beliefs. Given that the space of possible topics of media coverage is large, it is reasonable to assume that absence of coverage on particular public policy does not allow citizens to substantially update beliefs related to particular public policy. Thus placebo control group posterior beliefs can approximate prior policy related beliefs and allow for estimation of magnitude of belief updating.

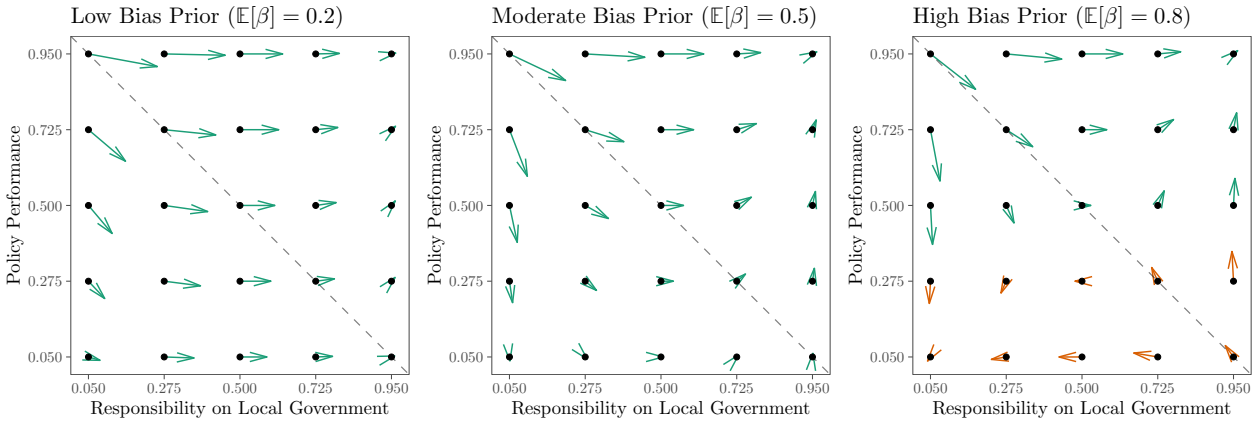

Figure 3.1: Phase diagrams of simultaneous updating on policy responsibility (ρ) and performance (θ) upon observing message $m = CL$ given different priors about media bias. Black dots represent values of priors and arrows represent direction and relative magnitude of updating. Color represents direction of updating on local government responsibility.

trust a media outlet ($\mathbb{E}[\beta] < 0.5$), then they always improve their beliefs about local government responsibility, though the extent of updating decreases with the prior beliefs. This is because citizens believe that media truthfully attributes responsibility to local government rather than attempts to shift blame away from central government. If citizens believe a media outlet to be biased in favor of the central government ($\mathbb{E}[\beta] > 0.5$) then they believe local government to be responsible for policy only when their prior beliefs about policy performance are high. This happens because in this case high beliefs about policy performance help citizens discriminate between blame-shifting and credit-claiming incentives of the media outlet. This result can be summarized in the following prediction:

Prediction P2 (Attribution of Responsibility)
The following is true about the effects of biased news coverage that attributes responsibility for policy performance to local government while mentioning central government on updating of beliefs about responsibility:

- *If a priori beliefs about media outlet bias are low, then biased news coverage increases beliefs about local government responsibility for policy*
- *If a priori beliefs about media outlet bias are high, then biased news coverage increases beliefs about local government responsibility for policy if prior beliefs about policy responsibility are high*
- *If a priori beliefs about local government responsibility and policy performance are high, magnitude of updating of beliefs about local government responsibility decreases in priors about local government responsibility and increases in priors about policy performance.*

As implied by equations (1) and (2), as a result of updating of beliefs about policy performance and responsibility, citizens update their evaluation of government. I specifically look for the combination of prior beliefs that produces positive effects on support of central government, as I assume this is

the effect that state-owned media in Russia pursues when broadcasting news about public policy responsibility. Figure 3.2 shows the simulated dynamic of updating of beliefs about competence of central and local government implied by Equations (4) and (5) given relatively high prior beliefs about media bias ($\mathbb{E}[\beta] = 0.8$).

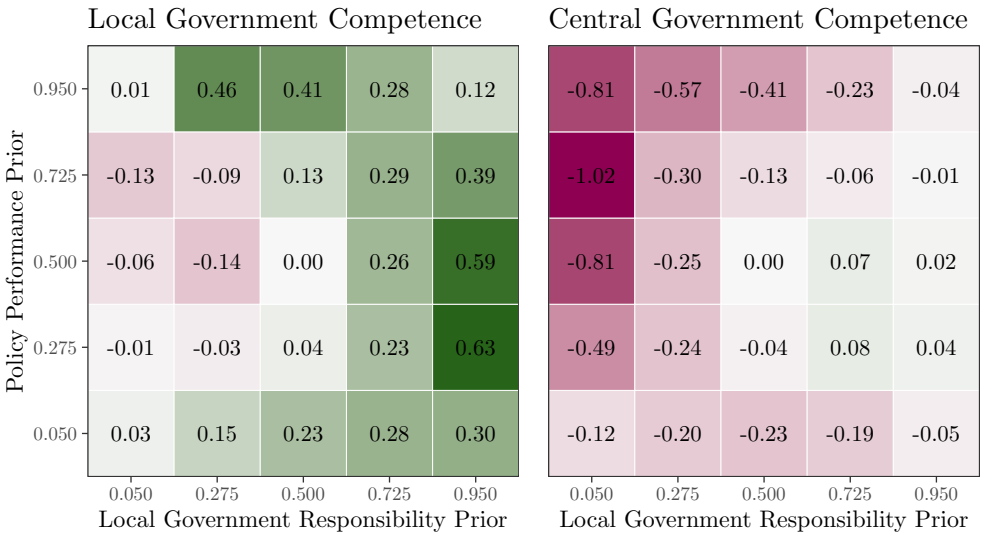

Figure 3.2: Simulation of the effect of responsibility-shifting report ($m = CL$) on beliefs about government competence given priors on policy performance, $\mathbb{E}[\theta]$, and responsibility, $\mathbb{E}[\rho]$. Prior beliefs about bias of the media are assumed to be high, $\mathbb{E}[\beta] = 0.75$. Numbers and colors show the simulated direction and magnitude of updating.

Several patterns emerge:

1. While being effective in changing beliefs about policy performance and the allocation of responsibility, the responsibility-shifting news coverage appears to achieve its goal of increasing support for the central government only among citizens who are less satisfied with policy performance (bottom part on the both panels of Figure 3.2). Moreover for moderate and high prior beliefs about media outlet bias, the positive effect of responsibility-shifting is only observed among those who are already fairly certain that local government is responsible for policy.

2. When prior beliefs about media bias are relatively high, where responsibility-shifting coverage improves support for central government it also improves support for local government. Moreover, the magnitude of the latter effect is larger than the magnitude of popularity gain by central government.

These expectations can be summarized in the following predictions:

Prediction P3 (Government Competence)
The following is true about the effects of biased news coverage that attributes responsibility for policy performance to local government while mentioning central government on updating of beliefs about government responsibility:

- *The evaluation of central government improves when prior beliefs about local government responsibility are high, while prior policy performance evaluation is low*
- *Given moderate or high prior beliefs about media bias, the effect of responsibility-shifting news coverage is always higher for local government than for central government*

Overall, we can see that the central government gains credit for public policy when the magnitude of changes in beliefs about local government responsibility is larger than the magnitude of changes in policy performance satisfaction. This implies that state-owned media outlets that favor the central government in their coverage might specifically use reports that mention local government responsibility to cover public policies for which most citizens have low priors about policy performance and high priors about local government responsibility. The model above implies that in this case responsibility shifting media coverage might achieve multiple goals at the same time: (a) increase support for the central government, (b) improve satisfaction with policy performance, (c) further increase attribution of responsibility to local government, and (d) increase support for local government, that in context of non-democratic regimes, might be appointed by federal government. All of these factors make coverage of public policy responsibility an attractive option for pro-government media, which might explain why state-owned TV channels in Russia often use this type of coverage in their news broadcasts viewed by large domestic audience.

3.2 Limitations of Media Persuasion

One of the main limiting assumption of Bayesian updating framework above is that it presumes that news reports do present novel information to citizens. There are several factors that might lead to a violation of this assumption highlighted in the literature.

First, higher levels of exposure to specific media outlets can make citizens more or less susceptible to the features of coverage provided by that outlet. On the one hand high consumption of pro-government media might inhibit rational updating by citizens due to direct prior exposure to similar coverage. In the framework above this might imply that those citizens have already changed their beliefs about policy responsibility, performance and government competence to reflect pro-government persuasion, and, thus are less likely to change their beliefs upon receiving the responsibility-shifting information (Qin, Strömberg and Wu, 2018; Huang, 2018).

On the other hand, in the hypotheses registered in the Pre-Analysis Plan I followed the studies of media persuasion in the US context that suggest that citizens who decide not to consume slanted media, might be less likely to be persuaded by the information coming from such slanted media, due to rejection of the source (Prior, 2013). I stated that citizens who consume more state-owned media are more likely to trust the source and thus update more their beliefs about policy performance and responsibility. While this logic is plausible, it does not take into account the possibility of immediate prior exposure to responsibility news coverage. Indeed, in the empirical analyses below I show that respondents in control group in the experiment who report higher frequency of state-owned media viewership at the baseline, are more likely to attribute responsibility to the local government, are

more satisfied with policy performance and state of affairs, and are more supportive of government at all levels.

Beyond possibility of direct prior exposure to similar news coverage, patterns of media consumption can reflect citizens' interest in political and economic news. While higher prior news consumption from pro-government media does reflect citizens interest in news overall, its moderating effects for effects of responsibility-shifting coverage are likely to be confounded by prior direct exposure. Thus, consumption of media that is not directly owned or censored by the government can become an important moderating factor. Existing literature suggests that if anything, exposure to independent media in the context of high media capture can be effective at reducing support for the incumbent (Kern and Hainmueller, 2009; Enikolopov, Petrova and Zhuravskaya, 2011; Chen and Yang, 2019). At the same time, as long as the consumption of news beyond pro-government media coverage reflects citizens interest in politics, independent media consumption can lead to rational updating of beliefs upon exposure to pro-government coverage (Truex, 2016) while mitigating chances of prior exposure to responsibility-shifting news. In sum, I expect the following relationship between prior media consumption and effects of responsibility-shifting news coverage:

Prediction P4 (Prior Media Consumption)
Citizens with higher interest in politics and less direct exposure to pro-government news coverage are more likely to change their beliefs about public policy responsibility and performance, and as a consequence about government competence, upon viewing biased media news coverage that attributes policy responsibility to local government.

Second, following the recent study by Rosenfeld (2018), I expect that citizens' immediate experience with the policy, e.g. experience of mismanagement of natural disasters or of poor road quality in the locality where they reside, might hinder the ability of state-owned media to change their beliefs about respective policy performance or responsibility for it. As a result, pro-government media might fail to shift the blame and credit for policy across government hierarchy according to the predictions of rational updating framework among those who experience and note issues with the policy in their everyday life.

There are a number of theoretical reasons to believe that direct policy exposure might make citizens less prone to media persuasion. For example, noticing issues with the public policy in personal life might prompt citizens to acquire more information about the respective policy and thus have more knowledge about policy performance prior to the intervention conducted in this study. Another reason according to Rosenfeld (2018) might be that immediate exposure increases the weight citizens put on the performance in policies they observe personally compared to the ones for which they rely on information they receive from the media. In this study I argue that indeed citizens with more exposure to issues with specific public policy tend to prioritize that policy more and consequentially become less susceptible to pro-government media persuasion. The following prediction summarizes the expectations about the moderating effect of policy exposure on effects of responsibility-shifting coverage:

Prediction P5 (Prior Policy Exposure)

1. *Immediate experience with public policy issues is positively related to the priority citizens put on the respective policy*
2. *Citizens with less immediate experience and who put higher priority on a particular public policy are more likely to change their beliefs about public policy responsibility and performance, and as a consequence about government competence, upon viewing biased media news coverage that attributes policy responsibility to local government.*

Finally, to further advance our understanding of effects of state-owned media persuasion, I use unique feature of this study to compare effects of pro-government news coverage across public policy domains. Specifically, I look at a public policy that experienced recent increase in exposure, natural disaster management, and a public policy that did not, quality of roads. As mentioned, these policies share many features related to policy performance and the allocation of responsibility in the context of this study: both policies are ranked among the main priorities by citizens, especially in the regions of Siberia where the study took place, while responsibility for the management of natural disasters and roads predominantly lies with local government. In addition, the news coverage on both policies used in the study shares similar structure and presentation. As a result, I claim that the main differences in updating of beliefs about those two policies upon exposure to news reports, are due to recent shock of exposure to one of them, large scale forest fires that happened in Siberia in 2019.

To the date, few studies in political science provide systematic comparison of the effectiveness of pro-government media coverage across topics (Huang, 2018). This study takes a step further by arguing that pocketbook evaluations matter the most for policies that experience rare and large shocks of exposure, such as record large forest fires in the Summer of 2019. On the contrary, exposure to issues with persistently under-performing policy, such as road infrastructure quality, does not necessarily inhibits pro-government media from shifting blame and credit across government hierarchy. The following prediction summarizes this argument:

Prediction P6 (Prior Policy Exposure)

1. *Citizens with higher personal exposure and who put higher priority on public policy that experienced recent shocks of exposure are less likely to change their beliefs about public policy responsibility and performance, and as a consequence about government competence, upon viewing biased media news coverage that attributes policy responsibility to local government.*
2. *Prior experience and priority citizens put on public policies that did not experience recent shock of exposure, do not diminish effects of pro-government media persuasion.*

Overall, discussion in this section suggests that while there are theoretical reasons to expect that biased media coverage can shift perceptions of responsibility for public policy performance and consequently improve popular support for government at different levels, it is most effective among

citizens who are less likely to consume biased media in the first place and those who have less personal exposure to the issue. In the following sections I present and discuss the empirical evidence for these claims coming from the Russian context, where state-owned media is being actively used by the federal government to project image of competence and to persuade citizens about allocation of responsibility for public policy across government hierarchy.

4 Empirical strategy

In this section I lay out the design of the online survey experiment that was conducted to test the theory of state-owned media persuasion: I describe the sample used in the study, explain the selection of treatment and placebo news reports, random assignment procedure used in the experiment, and then discuss the measurement strategy. More details on the design of the study can be found in the Appendix A.

4.1 Sample

Data for this project come from from an online survey experiment conducted online among adult residents of four regions of Russia: Novosibirsk, Irkutsk and Kemerovo oblasts and Krasnoyarskiy Krai. Given the theoretical expectations discussed in previous section, the choice of the study locations was driven by two main factors. First, all four regions in this study are located in the Siberian Federal District where during Summer 2019 large scale natural forest fires became one of the main issues due to wind currents that allowed smoke from the fires to cover densely populated areas in the region, and inadequate local government response (RBC, 2019*a*). Two out of four regions, Irkutsk and Krasnoyarsk, had large scale forest fires in their territory and both regional capitals were covered by smoke for several weeks. The other two regions, Novosibirsk and Kemerovo, did not have large scale fires in their territory, but regional capitals were also covered by the smoke from the forest fires exposing citizens to higher health risks. This ensures heterogeneity in the sample in terms of exposure to forest fires in 2019, while preserving geographical continuity between the locations of the study. Figure 4.1 shows locations of forest fires over the Summer 2019 related to the location of the study participants aggregated at municipal level.

Second, regions included in the study vary substantially in terms of quality and satisfaction with quality of roads. According to a recent study (Rosgosstrah, 2016) in Kemerovo 77% of citizens are satisfied with the quality of local roads (ranked above Moscow, country capital), but only 39% of citizens residing in Irkutsk region are satisfied with the quality of local roads. As can be seen in Appendix A.9, regions in the study are indeed quite heterogeneous in terms of terms of road quality satisfaction with respondents from Kemerovo reporting the least prior exposure to issues with road infrastructure (mean is 0.55) and respondents from Novosibrisk and Irkutsk – the most (mean is 0.71 and 0.60, respectively). Finally, all four regions participate in "High Quality and Safe Roads" national program covered in one of the news reports used in the study, which ensures that

the information provided to study participants is relevant.[7]

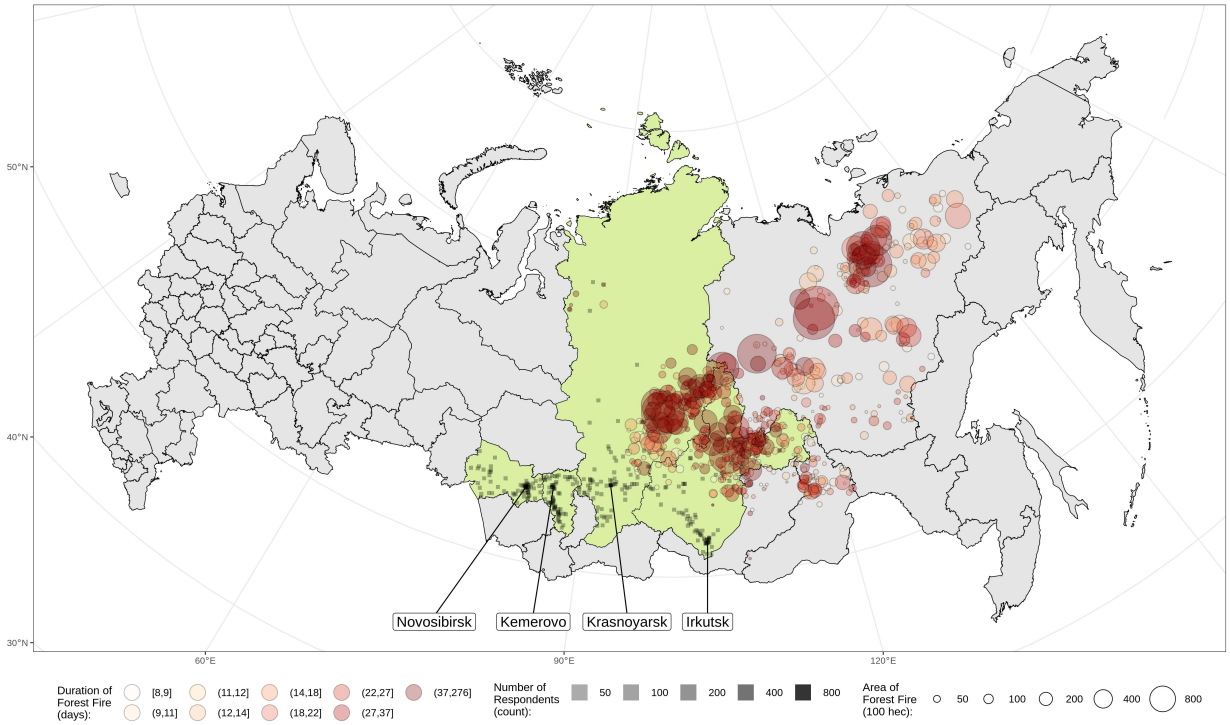

Figure 4.1: Spatial Distribution of the Sample and Forest Fires in Siberia in 2019

The sample was enrolled using Online Market Intelligence (OMI), survey company similar to Amazon Mechanical Turk in a Russian context with pool of respondents (~ 1 million respondents in Russia, Post-Soviet countries) enrolled for regular surveying. While not representative of overall population of Russia or any of the regional populations, in four regions where the study took place OMI pool includes respondents in all main socio-demographic groups. At the same time as can be seen in Appendix A.5 the sample in each region is skewed towards urban, middle aged (25-45 y.o.) and more wealthy and educated population.

Only adult respondents residing in one of the study regions were allowed to participate in the study with requirement that the sample was roughly equally distributed across regions. The data collection for the project was conducted between 17th of December, 2019 and 16th of January, 2020, but majority of the sample collected between 24th and 27th of December. Total of 4423 respondents reached the treatment assignment stage of which 225 dropped out after the treatment was assigned.[8] To summarize patterns of sample enrollment in the Appendix A.4 I show daily enrollment broken down by region and experimental condition. The dynamic of the sample enrollment followed roughly the same pattern across all four regions in the study with Novosibirsk region having highest rates

[7] In addition, two out of four regions have at least some level of government (municipal in Novosibirsk and regional in Irkutsk) controlled by the Communist Party, that in local elections, especially in Siberia, opposes ruling party, United Russia. At the time of the study United Russia members hold the rest of the municipal and regional executive offices.

[8] See Appendix B.2 for discussion of threats to inferences posed by attrition.

of daily enrollment after the full start of the survey on December 24th. Table A.2 presents sample summary statistics for the pre-treatment covariates collected in the study. As expected, more than 90% of the sample resided in the cities, while only 60% of the sample resided in regional capitals. Median respondent respondent reported having income sufficient for everyday life but not for major home appliance purchases, was female and had higher education. Somewhat surprisingly for online sample, less then 10% of the sample was below 24 y.o., but sample included respondents in all of main age brackets.

Importantly for the argument of the study, majority of sample perceive media in Russia as biased, but not necessarily captured by the government but at the same time regularly consume news from both state-owned and more independent Online media (Table A.1). In addition, while majority of respondents reported having at least some exposure to both issues with forest fires and road infrastructure, they still ranked natural disaster prevention and road infrastructure as less important issues than education and health care.

4.2 Experimental design

In the experimental part of the survey respondents were assigned to receive one of the three pre-selected news reports using simple random assignment.[9] Media reports used in the study included edited video excerpts that were chosen from past news broadcasts by *Rossia-1* TV channel and covered the following topics:

- Report on responsibility for prevention of natural forest fires (as a part of overall natural disaster relief policy),
- Report on responsibility for road construction and repairs (as a part of overall transport infrastructure development), and
- Report on the birthday of a prominent Russian actor (as a placebo news report unrelated to domestic policy or government performance).

For the forest fires coverage I use a *Vesti* news report that covered a visit of the Prime Minister of Russia at the time, Dmitry Medvedev, to one of the study regions (Krasnoyarsk), where he states that primary responsibility for forest fires is on regional and municipal governments rather than on federal government. Report on road infrastructure covered the general assembly of all heads of regions in Russia where again Dmitry Medvedev points out that primary responsibility for the improvement of road quality under "High Quality and Safe Roads" national program is on regional and municipal governments and federal government only allocates. Finally, placebo report shown to participants in the control condition unlike Fires and Roads reports covered event unrelated to any public policy or government competence: the birthday of a prominent Russian actor. Full transcripts of the reports can be found in the Appendix A.1. The placebo report was used to avoid violation of excludability assumption due to change in attitudes induced by exposure to *Rossia-1* news broadcast itself. In addition, all news reports were edited to have similar duration (around 1

[9] See Appendix B.1 for details on randomization and its implementation in the survey.

minute) and quality (come from the same evening news broadcast). All of those features facilitate unconfounded estimation of the average effects of the content of media reports on citizens attitudes about public policies.

Appendix B details checks of common threats to inference present in online experiments. I observe few imbalances across experimental condition on pre-treatment characteristics, including the rates of passing of attention check implement in the survey right before treatment assignment and rates of guessing study aim ("estimation of the effects of news reports on support for the government"). Moreover, observed rates of failing attention check and guessing study aim are fairly low, making the estimation of treatment effects more credible. Finally, most manipulation checks are passed by respondents exposed to either treatment condition with few imbalances related to small variations in the length of experimental news reports.

Overall, I do not observe any irregularities that would suggest that inferences made below about intent-to-treat effects can be mainly attributed to information about public policy responsibility provided in the news reports shown to respondents in Fires and Roads reports.

4.3 Measurement

The key outcomes of interest, attitudes about policy performance, the allocation of responsibility, and the evaluation of government competence, are measured using the survey instrument shown in full in the Appendix A.3. Due to restrictions on the the number of questions posed by the threat of respondents' inattentiveness common for online surveys, I mainly rely on specific questions (rather than construction of indexes based on groups of questions) for measurement of outcomes. I scale down all main outcomes and moderators included in the analyses to the interval $[0, 1]$ for the results to correspond better to the theoretical framework of Bayesian updating.

For measurement of individual evaluation of policy performance I rely on the standard satisfaction questions measured on 4-point scale asked for natural disasters prevention and road infrastructure separately. In addition, the survey included question about overall satisfaction with the state of affairs measured on the same scale. Importantly, to avoid measurement error related to uncertainty about policy performance at the macro level, all questions related to policy asked respondents to consider the locality they reside in.

Measuring the allocation of policy responsibility presented main design challenge, since few surveys aim to measure citizens beliefs about the allocation of responsibility for specific policy separately from the overall evaluation of government performance or support for the government. To reflect parameters included in the theoretical framework of responsibility shifting, I asked respondents to rank three main levels of government in terms of responsibility for specific policy both *retrospectively* (in terms of blame or credit, depending on their evaluation of the policy performance) and *prospectively* (in terms of capacity to change policy performance). Requirement to rank different levels of government allowed me to elicit beliefs about relative responsibility evaluation while avoiding

excessive cognitive burden on study participants. In the analyses below I use scaled ranking given to each level of the government as an outcome with a specific focus on federal government, given that I do not have distinct theoretical predictions for each of local government levels (municipal or regional).[10]

In the Pre-Analaysis Plan I stated that for each of the two main policies of interest if responses to two questions that frame responsibility in different terms are significantly correlated, I will use average score to capture overall responsibility evaluation. Otherwise I planned to rely primarily on retrospective evaluation of responsibility since news reports used in the study were aired up to 6 months prior to the study and thus might already have effects on observed policy performance. Given that observed linear correlation between responses to retrospective and prospective attribution of responsibility to federal government ranges from 0.37 ($p = 0.000$) for natural disaster management to 0.39 ($p = 0.000$) for quality of roads, I rely on the average score between the two questions for each of the policies.[11]

I measure government performance at different levels using standard questions about satisfaction with government performance on 4-point scale. To avoid evaluation of specific politicians, especially at federal level (Frye et al., 2016; Sirotkina and Zavadskaya, 2020) all questions asked respondents to evaluate overall performance of government at each of the levels. While being an imperfect measurement of support, and having less relationship to political behavior, such as vote choice, this choice was motivated by two factors. First, performance evaluation allows for more fine grained measurement of government performance and thus allow me to capture smaller treatment effects common for media interventions. Second, even executive heads at each of the levels of the government are not necessarily directly elected in Russian context, making vote choice questions inadequate.

For the analyses of heterogeneous effects by prior media consumption and policy exposure, I rely on the following questions to construct pre-treatment measures of main moderating variables:

- For prior news consumption from pro-government media I construct average score of frequency of news consumption from three main state-owned federal TV channels, *Rossia-1*, *Channel 1* and *NTV*.[12] Given that access to independent TV channels, like *TV Rain* (Enikolopov et al., 2018), in Russia is severely restricted, for measurement of prior independent news consumption I rely on frequency of consumption of news from social media and messenger applications.
- For policy exposure and priorities I rely on a battery of questions that asked respondents to rank several public policies according to their importance and matrix question that asked whether respondents or their relatives experienced issues with each of the main policies of

[10]Note that, due to restriction on the measures of responsibility imposed by ranking question treatment effects estimated for evaluation of responsibility of each of three government levels sum up to zero.

[11]Importantly, I do not observe evidence of heterogeneity in relationship between retrospective and prospective evaluation of responsibility across treatment

[12]Note, that viewership of all three TV channels is highly correlated with all linear coefficients exceeding 0.6.

interest in the past 6 months.[13] In addition, for robustness, I use direct questions about respondents' experience with smoke from forest fires over the Summer 2019 and the region, where respondents reside, to provide alternative measures of exposure to natural disasters.[14]

To increase statistical power I transform measures of pre-treatment moderators to binary variables using median cut-off with higher value representing higher media consumption or policy exposure. Additional details about variable construction are described in Appendix A.6.

4.4 Estimation

For estimation of Intent-To-Treat (ITT) effects of *Roads* and *Fires* reports I follow the Standard Operating Procedures (Lin, Green and Coppock, 2016) as follows:

Since there was only one round of measurement, I measure the ITT effects any treatment report, s, relative to placebo report, l, using the following OLS specification[15]

$$\boldsymbol{Y}^K = \alpha_l^K + \sum_{s \neq l} \tau_{s,l}^K \boldsymbol{Z}_s + \boldsymbol{\varepsilon}, \tag{7}$$

where $\boldsymbol{Y}^K$ is vector of measures of outcome K, $\boldsymbol{Z}_s$ denotes the indicator respondents who were assigned to view video report s. In equation (7) estimate of $\tau_{s,l}^K$ corresponds to one of the estimands of interest, $\Delta_{s,l}^K$. In addition to the baseline specification in equation (7) for robustness I estimate similar model equation adjusted for set of covariates selected using lasso procedure from the set of pre-treatment covariates listed in Appendix A.8.

The p-values for hypothesis testing and 95% confidence intervals reported below are computed using parametric HC2 standard errors implemented in `estimatr` package in `R`. In the Pre-Analysis Plan I specified a number of one-sided hypotheses for testing of predicted effect directions. Given that the theory and its predictions were changed to reflect possibility of positive effects of responsibility shifting coverage on policy performance evaluation, in the analyses below I report results of two-sided confidence intervals and p-values.

To estimate ITT effects conditional on binary measures of pre-treatment moderators variables I use equation (7) on sub-samples of data defined by the value of moderator $\boldsymbol{R}$. The differences between conditional effects (heterogeneous effects) are estimated using the following specification

$$\boldsymbol{Y}^K = \alpha_l^K + \nu^K \boldsymbol{R} + \sum_{s \neq l} \tau_{s,l}^K \boldsymbol{Z}_s + \sum_{s \neq l} \pi_{s,l}^K \boldsymbol{Z}_s \times \boldsymbol{R} + \boldsymbol{\varepsilon}, \tag{8}$$

[13] Both news reports used in the study were aired on *Rossia-1* TV channel in July-August 2019 and thus cover events that happened no more than 6 months prior to the study.

[14] In the Irkutsk region, non-specific question about natural disaster exposure might be more adequate, given that in 2019 this region also experienced large scale floods (RBC, 2019*c*).

[15] This assumption simplifies the interpretation of the analyses. In the future I also plan to assess robustness of the results to model assumptions using ordered logit model for effect estimation.

where $\tau^K_{s,l}$ is the ITT effect estimate among subjects for whom $R_i = 0$. $\pi^K_{s,l}$ is the linear estimate of the change in estimated ITT effects of report s as the value of moderator increase the value of moderator.

5 Results

In this section I discuss the empirical result of testing of Predictions P1 to P6. I start by presenting the main estimates of the effects of responsibility shifting reporting on policy satisfaction, attribution of responsibility, government evaluation, and several supplementary outcomes. Next I investigate the possible role of moderators discussed in Section 3.2, and finally I discuss possible alternative explanations. In presenting results I use dot-whisker plots that show corresponding effect estimates and 95% confidence intervals from the model equation (7) with indicators for both treatments included. As a result all effect estimates unless noted otherwise represent average effect of one of the treatment news reports compared to placebo control news report. In Appendix C, I report tables with estimates of effects adjusted for covariates.

5.1 Main effects

First, I look at the empirical evidence of updating about policy performance, responsibility and government performance according to Predictions P1, P2 and P4 for the whole sample. Given that the design of the study does not allow one to directly test the effects of changes in performance and responsibility evaluations on evaluation of government competence, I look at the effects of responsibility-shifting reports on forest fires in 2019 and on roads infrastructure for each of the outcomes separately. As suggested by the theoretical predictions I expect that the average effects of a news report on specific public policy should be positive for policy performance ($\Delta^\theta > 0$), attribution of responsibility to local (municipal or regional) government ($\Delta^\rho > 0$). For the evaluation of government competence at different levels I also expect positive effects with higher effects concentrated among municipal and regional governments ($\Delta^{\gamma_L} > \Delta^{\gamma_C} > 0$). Looking at the Figure 5.1 and Table C.1 we can see that we find limited support for those hypotheses.

I find that viewing *Rossia-1* news reports that cover responsibility for forest fires and road infrastructure increases evaluation of respective policy performance by 5.7% for roads infrastructure and by 7.2% for natural disaster prevention. This suggests indeed that overall in the sample responsibility-shifting news coverage *is* effective at improving perceptions of policy performance and counters my initial expectations when selecting the news reports for the study. As noted before I expected that both videos will at most inform citizens about low policy performance or for those who already incorporated similar information in their evaluations of the policies (for example due to prior media consumption) will have no effect on policy performance evaluation. So why do citizens improve their policy evaluation upon viewing reports that discuss serious issues: poor quality of local and regional roads or inadequate response to large scale forest fires?

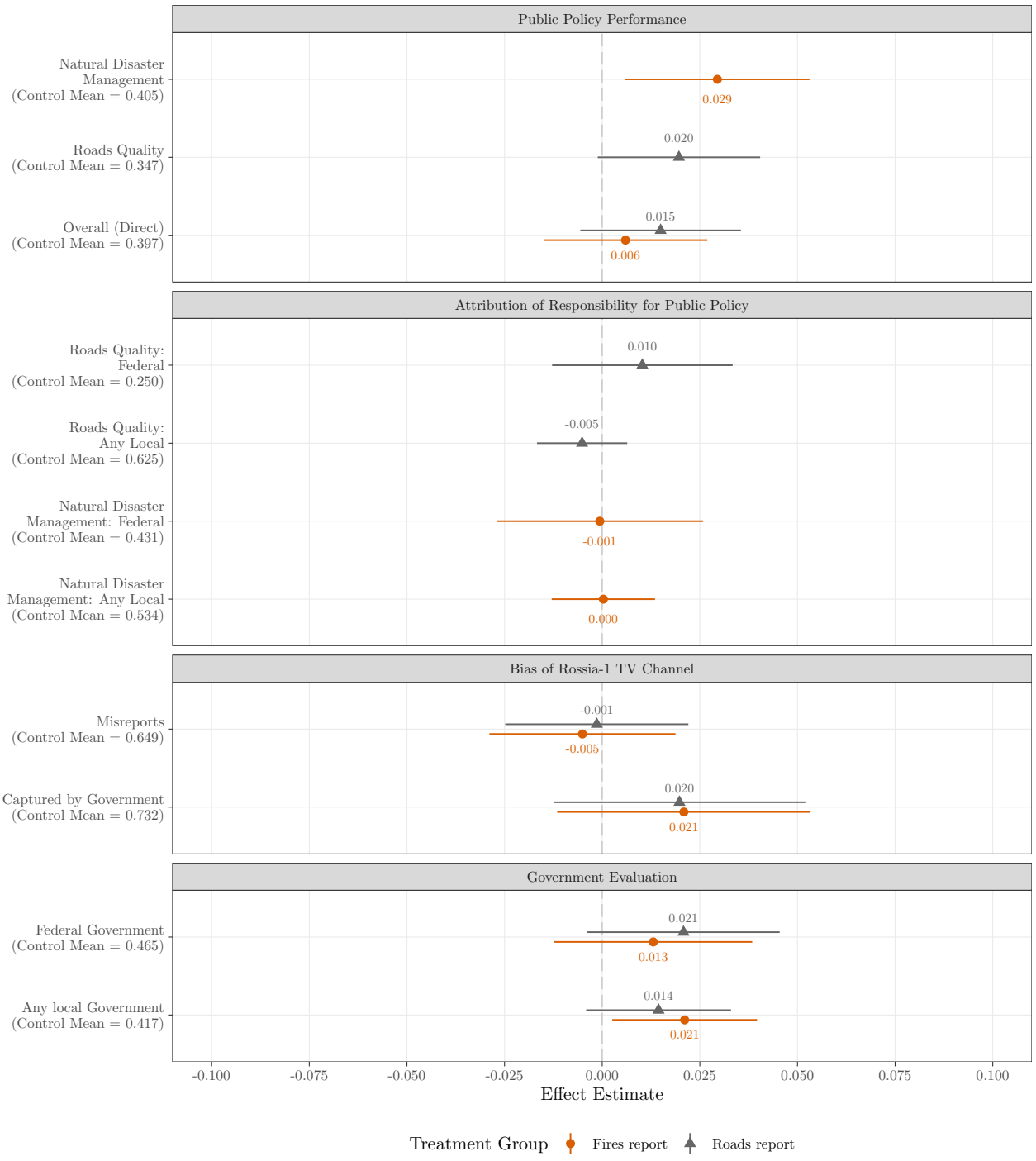

Figure 5.1: ITT Estimates and 95% Confidence Intervals for Effects of Forest Fires and Roads News Reports on Policy Performance, Responsibility Attribution and Government Competence Evaluation.

The result in Prediction P2 suggests that the awareness about the bias of the news source might be at play. If all news reports mention is poor policy performance, it would likely reduce citizens' policy satisfaction reported, but since many citizens might be aware that *Rossia-1* favors federal government in their reporting, coupled with high prior beliefs about local government responsibility, they instead might infer that federal government is trying to claim credit for higher (anticipated) policy performance.

This explanation finds qualitative support in the open-ended summaries written for both of the treatment video reports by respondents who at the baseline agree with the statement that media in Russia is captured by the government:[16]

- "Forest fires became a large scale issue. Dmitry Medvedev personally visits all the affected regions to make sure it is resolved as soon as possible." (Female, 22, Krasnoyarsk),
- "Local governments will have to put down the fires, but federal government is monitoring the issue." (Female, 35, Kemerovo),
- "The heads of the regions are responsible for putting down the fires and they will have to act quickly!" (Male, 19, Krasnoyarsk)
- "Local governments are not very effective at road construction. The federal government is threatening redistribution of funding to speed-up the [program] implementation." (Female, 28, Novosibirsk)
- "They think about the roads quality. That is good." (Male, 35, Kemerovo)

We can see that many respondents, despite being aware of the capture of media environment by the government, note that the report mention future improvements in quality of both road infrastructure and natural disaster prevention policies. Furthermore splitting the sample by the prior beliefs about media environment capture I find that the positive policy performance updating is concentrated among citizens who believe the media environment to be captured by the government (Figure 5.2).

Overall, while not initially expected I find evidence that citizens credit the government at all levels for the management of the issue and to improve their policy evaluation upon viewing news reports that cover that policy.

Second, in the middle panel of the Figure 5.1 I find that overall in the sample citizens hardly change their perception of responsibility in reaction to news reports that focus on responsibility of the local government in addressing the public policy issues. While surprising, especially given that responsibility was mentioned in the summaries of the treatment news reports by majority of respondents who were assigned to watch them, I argue that these patterns can be explained by composition of the sample and heterogeneity in treatment effects: Majority of respondents view local (municipal or regional) government as mainly responsible for these policies (placebo group mean responsibility assigned to any local government is above 0.5 for both policies) and thus can infer

[16] See Appendix A.3 questions `BLmediabias1-BLmediabias4` for exact wording.

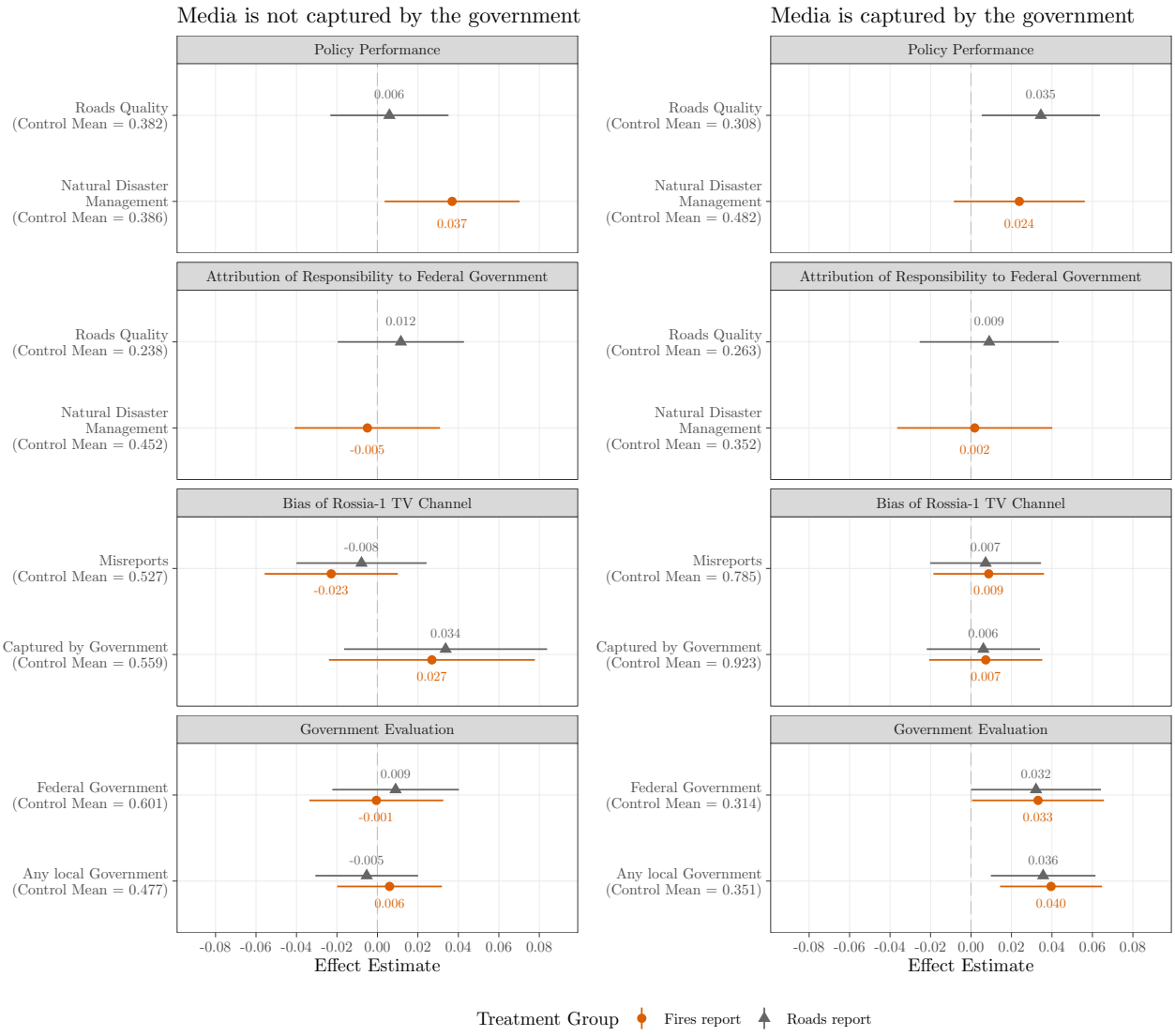

Figure 5.2: ITT Estimates and 95% Confidence Intervals for Effects of Forest Fires and Roads News Reports on the Main Outcomes by Prior Beliefs About Media Bias in Russia.

that federal government is claiming credit by appearing in the news report covering responsibility.

Third, for the overall government competence (bottom panel of Figure 5.1), I find that citizens increase their evaluation of government at all levels after exposure to both treatment report in similar fashion: Average satisfaction with government performance increases by 2.8%-4.5% compared to placebo control group with statistically significant effects of for forest fires report on any local government evaluation only. This suggests that indeed news coverage on policy responsibility can potentially increase support for the government.

Finally, I look at the effects of treatment reports on additional outcomes related to evaluation of bias of the media and policy evaluation shown in Figure C.1. We can see that there is no strong evidence for changes in beliefs about capture of the *Rossia-1* TV channel by the government due to either of treatment reports and there no evidence of change in the perception of main issues with either natural disaster prevention or road quality.

As noted above to reconcile these findings we can turn to the predictions of the theoretical framework shown in Figures 3.1 and 3.2. Given the average baseline beliefs about policy performance ($\mathbb{E}[\theta] \in (0.35, 0.4)$), responsibility assigned to either municipal or regional government ($\mathbb{E}[\rho] \in (0.5, 0.7)$) and bias of the media outlet ($\mathbb{E}[\beta] \approx 0.75$) approximated by placebo control group means[17], the average untreated profile of beliefs corresponds to the bottom-right part of rightmost panel of Figure 3.1 and bottom-right part of both panels on Figure 3.2.

We can see that in this case theory suggests that due to high prior beliefs about local government responsibility and media bias, citizens should expect that a pro-government media outlet attempts to use responsibility news coverage that mentions federal government to signal high policy performance and claim credit for it. As a result citizens should increase their satisfaction with policy satisfaction, slightly increase attribution of responsibility to local government, and as a result reward both local and central government with effect for local government being higher in magnitude.

These expectations correspond to the results we observe on the full sample and among those who believe media environment to be captured by the government, suggesting that citizens might indeed be persuaded about both federal and local government competence using pro-government news coverage. Counter to the common wisdom that citizens who are aware of the media bias are less likely to react to such media reporting, I find support for the argument that those citizens do tend to update their beliefs more precisely because they are aware that pro-government media will not associate federal government with low policy outcomes.

5.2 Who can be persuaded?

As was discussed in Section 3.2 there are reasons to believe that the effects of pro-government coverage of the allocation of policy responsibility can be disproportionately driven by updating

[17] Approximate ranges of prior beliefs are calculated using control group means for each of the policy-related outcomes across policies and beliefs about *Rossia-1* capture by the government.

among citizens who are more likely to be susceptible to government persuasion, namely those with limited prior exposure to state-owned media and limited prior personal experience with the road infrastructure or natural disaster prevention issues.

To look whether this is the case I first test predictions of Prediction P4 about the role of prior media consumption. Figure 5.3 shows the estimated effects of pro-government coverage on responsibility for natural disaster prevention and roads quality across subgroups of the sample with various levels of self-reported prior media consumption. Specifically, I split the sample into four groups by frequency of news consumption from either pro-government (*Channel 1*, *Rossia-1* and *NTV* TV channels) or more independent media (social-media and messengers).

Figure 5.3: ITT Estimates and 95% Confidence Intervals for Effects of Responsibility Reporting by Prior Media Consumption.

One result stands out immediately from the Figure 5.3: Citizens who report less pro-government and more independent media consumption shift their beliefs about policy responsibility towards regional and municipal government while simultaneously increasing their evaluation of federal government competence. Table C.3 shows that the updating of beliefs in this subgroup for policy responsibility and federal government competence upon viewing treatment news reports is significantly different from the rest of the sample at least at 10% level.

This finding shows that blame avoidance and credit claiming using pro-government media is mostly effective among those who are a priori less likely to choose to consume news from such sources. Notably, neither those who do not consume pro-government or independent news (and thus are less likely to be interested in news in general), nor those who frequently watch pro-government media

(regardless of whether they at the same time watch independent news) significantly update their beliefs about policy performance, responsibility or government competence.

I attribute these results to two factors. First, those citizens who choose to watch news from pro-government media at the baseline are more likely to be exposed to messages that attempt to persuade them that federal government is less responsible for policy issues and to project federal government competence. Thus I expect those citizens to hold higher beliefs about government competence and lower beliefs about federal government responsibility even if they were not exposed to treatment news reports about roads or forest fires. This claim finds support if we look at the control group means for all of the outcomes of interest in the subgroups with higher consumption of pro-government media: Respondents in these subgroups (two last columns of estimates in each panel of Figure 5.3) have at least 40% higher approval of federal government and on average 15% less likely to attribute responsibility for either of the policies to federal government. While being purely observational, this pattern combined with null effects of the treatment reports suggests that citizens who consume government media converged to the beliefs about policy and government competence desired by the federal government and thus additional news coverage only confirms their prior beliefs.

Second, those citizens, who at the baseline consume less news from both pro-government and independent sources might be less likely to be persuaded by the responsibility news coverage purely due to a lack of interest in politics. While suggestive, this explanation finds support if we compare prior media viewership to citizens' political knowledge and overall news consumption[18]: Citizens with lower consumption of news from either pro-government or independent sources tend to know less about local politicians (-0.07) and overall consume less news (correlation -0.43).

Overall, looking at the heterogeneity in the sample by prior media exposure I do not find support for the common expectation that citizens who rely predominantly on independent news sources are less susceptible to pro-government media persuasion. On the contrary, these citizens tend to update their beliefs about responsibility and federal government approval the most, likely in the direction desired by the federal government in the first place. In line with Prediction P4 I argue that low updating among those who already consume pro-government news is likely due to lower *room* for change in their beliefs since they are much more supportive of federal government at the baseline.

Next I look at another plausible factor moderating the effects of pro-government media persuasion: pocketbook evaluations due to immediate experience citizens had with policy issues. Here I rely on the indexes of policy exposure constructed for two main policies of interest in this study, natural disaster prevention and road quality, and for public policy, that is often ranked by citizens in Russia as the most important, health care. Index of policy exposure for each policy is calculated as average of frequency of issues with the policy respondent faced in her daily life over the past 6 months and

[18]Political knowledge is approximated using average index of responses to the questions that asked if respondent knows name of the governor and the head of municipality in the region and municipality where she resides.

relative priority given by respondent to the policy.

As stated in the Predictions P5 and P6 I expect citizens with less prior exposure to be more susceptible to pro-government persuasion: Shift responsibility attribution for specific policy away from the federal government, potentially improve satisfaction with policy and increase evaluation of government at all levels. Figure 5.4 shows subgroup analyses of effect heterogeneity across relevant policy outcomes (rows) and specific policy exposure (columns).

Two main results emerge from the analyses of the heterogeneous effects of responsibility news coverage. First, left column of the panels in Figure 5.4 provides evidence for the importance of prior exposure to forest fires and natural disaster prevention in general. Respondents who had less immediate experience with natural disaster management issues in the recent past and put lower priority on the natural disaster management indeed improve their evaluation of government at all levels after watching pro-government news coverage of responsibility. Moreover the same subgroup of citizens shift their perception of responsibility for natural disaster prevention away from the federal government (Table C.4 in the Appendix shows the results of test of heterogeneity).

As with prior media exposure, I explain this pattern of updating as consistent with the Bayesian persuasion framework proposed in this paper. Notably, responsibility news coverage has virtually no effect on posterior beliefs about government competence among those who reported higher prior exposure to natural disasters. To get insight into why this happens, we can again turn to comparison of control group means across outcomes. Perhaps not surprisingly those with higher personal exposure to natural disaster issues at the baseline are much more unsatisfied with the policy performance then those with low prior exposure. At the same time average prior beliefs about responsibility allocation and government competence do not seem to change with the prior policy exposure. This suggests that citizens who had experience with natural disasters are less satisfied with policy performance, but are not necessarily prompted to acquire more information about policy responsibility. In other words, I argue that higher exposure to policy issues directly affect citizens pocketbook evaluations, but does not increase their knowledge about policy.

Second, as we turn to the middle and right columns of Figure 5.4, we can see that there are few differences in updating on policy performance responsibility or government competence given prior experience with road infrastructure or health care issues. The results for health care provide evidence for the absence of spillovers from the experience with irrelevant public policy on the effects of responsibility news reports that cover other policies.[19] More interesting is that even experience with relevant policies appears to not matter for the effects of government responsibility-shifting. Given symmetric measurement of exposure, outcomes and similar media coverage used in the treatment reports, these results suggest that differences in the role of prior exposure stems from differences in policies themselves.

[19]Note that I use question about satisfaction with the state of affairs and average responsibility attribution to federal government as outcomes here, since there were no post-treatment questions related directly to health care.

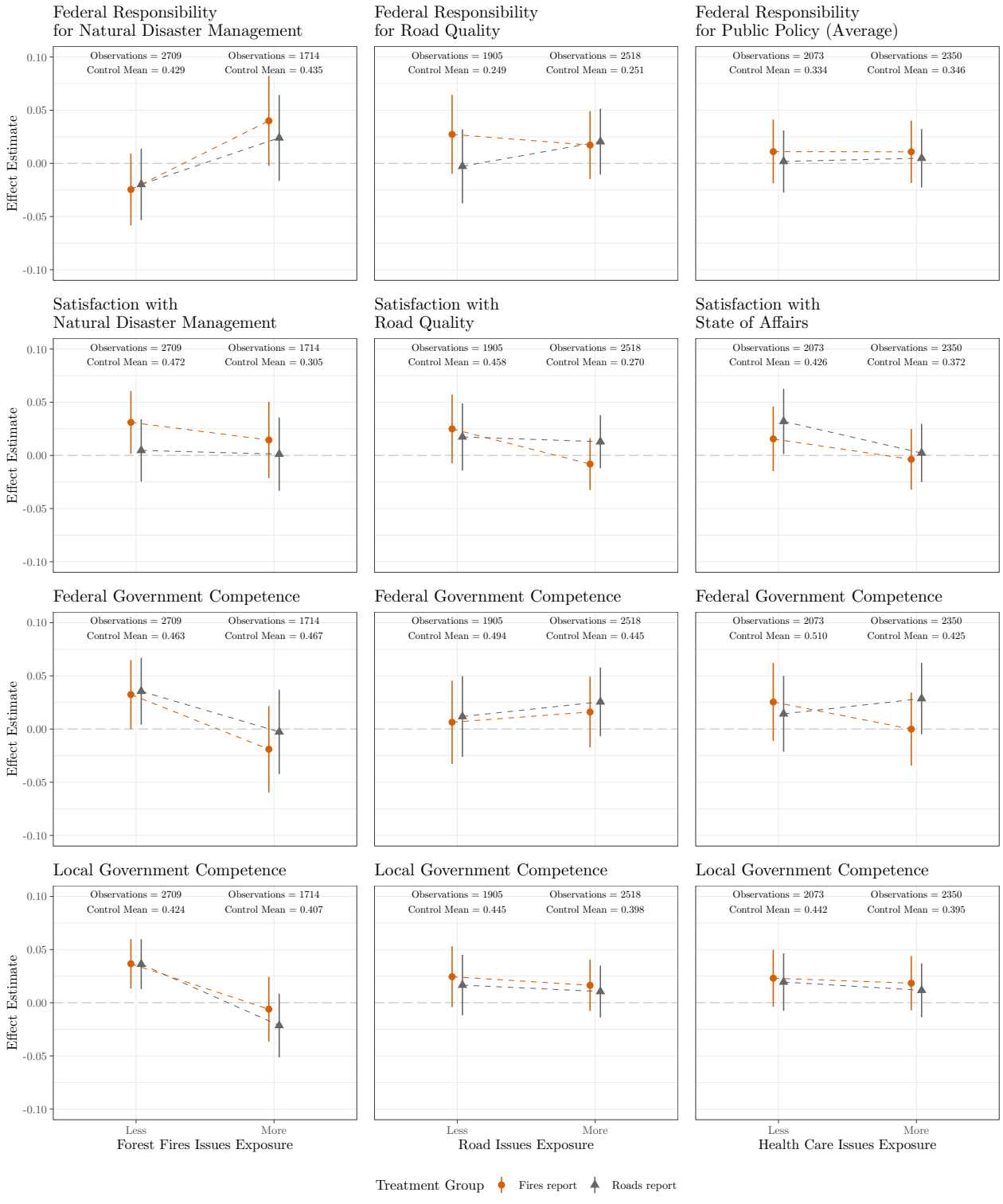

Figure 5.4: ITT Estimates and 95% Confidence Intervals for Effects of Responsibility Reporting by Prior Policy Exposure.

One of the key differences between the natural disaster prevention quality and roads infrastructure highlighted earlier is the type of issues that citizens experience with each of them: While poor road quality is widely known and perennial issue in Russia, issues with natural disaster prevention are seasonal and widely discussed when they happen. Moreover this distinctive feature of natural disaster prevention policy in the context of forest fires that happened in the Summer 2019 was exaggerated by the widespread exposure to the smoke from the fires. Thus I argue that pocketbook evaluations matter for the effectiveness of government persuasion, but only in the policies for which there are recent shocks of exposure. Examples of such recent shocks beyond natural disasters, might include events like economic crises or recent health care and economic crisis caused by the COVID-19 pandemic.

Another difference between the policies that is likely known to the citizens is the visibility of the outcomes: While the outcomes of government efforts in combating forest fires in 2019 were already observed by the citizens, the results of large-scale government program of road repairs likely did not occur by the time the study took place and are likely to go unnoticed by many.

In either case, heterogeneous effects of pro-government persuasion have important implications for our understanding of its overall effectiveness. At first glance the effects of government persuasion on citizens beliefs about responsibility and government competence seem to be similar across policies. In this section I showed that prior personal experiences with the policy, especially for policies that experienced recent shocks of visibility, seem to concentrate among those with less direct exposure. For less visible policies, the effects seem to be spread across sample with smaller (and perhaps negligible) average effects in each of the exposure groups.

5.2.1 Interaction between immediate exposure and media consumption

To complete the main analyses of effect heterogeneity of pro-government media persuasion I combine results from previous two sections and look at the interaction between prior media exposure and direct policy experience. In Figure 5.5 I look at the heterogeneity of responsibility coverage effects across subgroups by prior experience with natural disasters (across rows of panels) and by prior media consumption (within panels).

Analysis of three-way interaction at first sight paints a grim picture for the effectiveness of state-owned media coverage of responsibility that is often used by *informational autocrats* (Guriev and Treisman, 2019). Even for citizens' with less prior immediate experience with forest fires management issues, the positive effects of responsibility coverage on support for federal government are concentrated among citizens who are at the same time less likely to watch pro-government media in the first place (comparing left half across two panels in the third row). Again, if we take into account the self-selection into consumption of specific news sources, the population level effects of responsibility coverage on deflection of blame and claiming of credit for policy are likely to be negligible. The only domain in which responsibility persuasion is likely to be effective is improving approval of local government: Viewers of pro-government media with less prior exposure to policy

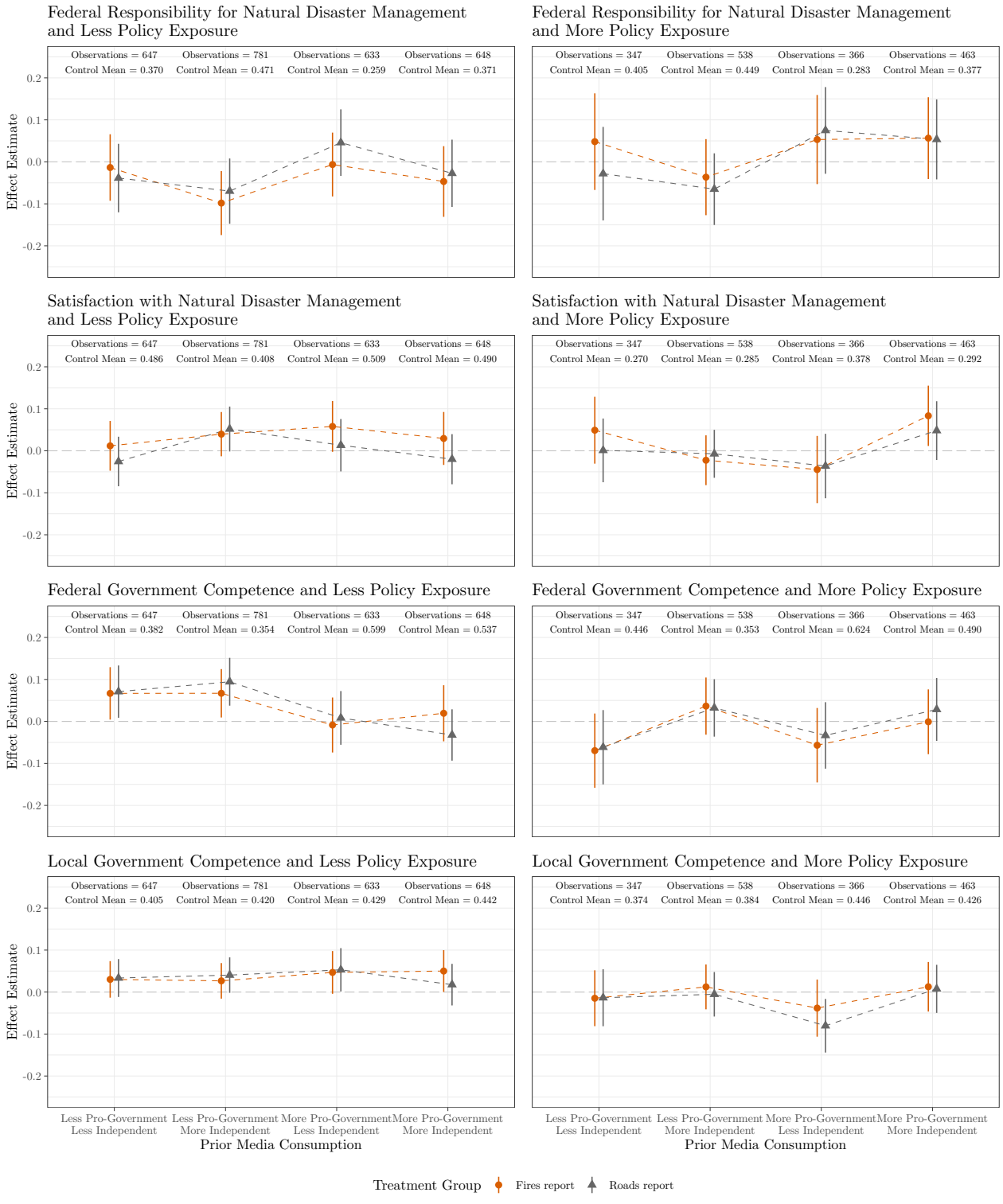

Figure 5.5: ITT Estimates and 95% Confidence Intervals for Effects of Responsibility Reporting by Prior Exposure to Natural Disaster Issues and Prior Media Consumption.

seem to reward the local government for higher perceived policy performance (third estimate in each panel in the first column).

Beliefs about policy performance, responsibility and government performance held by citizens assigned to placebo control who consume more propaganda media suggest that media persuasion can work initially and make citizens believe that government is more competent. Once the beliefs of pro-government media reach certain levels, the effectiveness of persuasion drops and while it does not seem to errode government approval, as suggested by some accounts of effects of propaganda (Huang, 2018), it also fails to further polarize citizens views and at best serves to reinforce the existing beliefs (Prior, 2013).

These results suggest that continuous persuasion by state-owned media in the non-democratic context depends on the *combination* of prior media consumption patterns and personal policy experiences rather than on one of those factors. As was discussed before, existing empirical literature usually considers these factors separately, and there is limited evidence on the interaction of those factors in the media environments dominated by state-owned outlets.

To conclude the discussion of the pro-government media effects on the full sample and across subgroups I look at the evidence above from the perspective of the theory of Bayesian updating. In short, the results presented above are consistent with the effects of Bayesian persuasion among citizens who believe the media source to be biased in favor of the federal government (high $\mathbb{E}[\beta]$), hold moderate beliefs about policy performance (medium $\mathbb{E}[\theta]$) and already believe local government to be largely responsible (high $\mathbb{E}[\rho]$). Notably, even the null results among citizens with high biased media consumption and/or low policy exposure, are generally consistent with the theory of rational updating from biased source as long as we take into account differences in prior beliefs about policy performance and responsibility allocation suggested by comparison of control group means.

The observed simultaneous updating about responsibility allocation and government competence suggests that citizens might combine their beliefs about allocation of responsibility across government hierarchy with policy satisfaction to form their evaluation of the government. This provides additional evidence for retrospective nature of government evaluation often assumed in empirical and theoretical literature.

5.3 Alternative explanations

Several alternative explanations can undermine the interpretation of the results presented above.

First, existing studies of media effects suggest that citizens might directly update their beliefs about government competence without factoring in any information about responsibility or policy performance contained in the news. One of the channels might be through association invoked by the presence of government officials in the news reports (Rozenas and Stukal, 2019) Related concern arises from the measurement of government approval. Given that questions about government at different levels were asked next to each other in the survey instrument, it might be that often

coinciding positive effects of policy media coverage on evaluation of government at different levels is a pure artifact of spillover between measures.

Both of these concerns suggest that in this study the evaluation of government at different levels should not be related to the effects of responsibility news coverage on policy related evaluations, namely policy performance and responsibility. To look more closely at the relationship between blame or credit for specific policy assigned to government at different levels based on policy satisfaction and responsibility attribution and overall government competence evaluation I construct a measure of predicted blame/credit assigned to both federal and any of municipal or regional governments. To do so I substitute survey measures of responsibility and policy performance into equations (1) and (2). As a result based on policy related attitudes I estimate average respondent in placebo control group to assign blame to both federal (mean $= -0.10$, std. dev. $= 0.23$) and any of the municipal or regional governments (mean $= -0.13$, std. dev. $= 0.29$). According to the theory of Bayesian persuasion I expect that these two measures should correspond closely to the change in overall government evaluation at different levels.

In Figure C.3 I present the results of heterogeneous treatment effects of pro-government news reports on government evaluation and predicted blame for natural disaster policy similar to those presented in Figure 5.5 above. While not perfectly aligned, it is clear that direction of effects of both treatment reports on predicted blame/credit for natural disaster prevention coincides with the effects on respective government level competence evaluation. Moreover, correlation between predicted blame/credit and corresponding government evaluation is above 0.4 ($p = 0.000$). While observational, this evidence suggests that the combination of policy responsibility and performance attitudes are associated with overall citizens' government approval.

Second, common critique of survey experiments that use placebo control groups as benchmark for comparison is related to the effects placebo condition can have on the outcomes of interest. In this study I intentionally rely on placebo control condition as a benchmark since I aim to estimate effects of content of policy related news reporting as opposed to overall effects of pro-government media exposure. Thus the main concern is that watching news report from *Rossia-1* TV channel that did not mention or discuss any policy related topics caused respondents to update their beliefs about (a) policy related evaluations, or (b) government competence. Analysis of the contents of news report summaries and topics chosen by respondents to describe the video reports suggests that indeed placebo news report that covered birthday of prominent Russian actor did not make citizens mention any policy related issues in their summaries (see Table B.5 and Table B.3). Moreover, a cursory look at the summaries of the placebo news report suggest that respondents almost universally viewed it as positive news as opposed to many summaries of treatment news reports which often prompted respondents to mention poor policy performance, low government performance or media bias. If positive connotation prompted by placebo news report made respondents by association report higher levels of policy or government satisfaction, positive treatment effects I report for government competence evaluation and policy performance might be underestimates.

Finally, one of the clear patterns that emerge from the analyses in the paper, but not discussed in-depth, is that pro-government responsibility coverage on one policy has effects on evaluations of other policies. Evidence of such spillover effect becomes clear if we look again at the Figure 5.4: Effects of watching either of treatment news reports on main outcomes of interest appear to be similar across various levels of policy exposure. There are two possible explanations for this pattern. On the one hand this could be a pure artifact of ordering of policy related questions: Given similar fashion in which policy related questions are asked in the survey, it is possible that changes in the attitudes about policy that is being discussed first caused respondents to change their attitudes about other policy in similar fashion. This is unlikely to be the case since the ordering of sections of survey that asked about policy specific attitudes was randomized in the study and I find no strong support for ordering effects (see Table C.5 in the Appendix) looking at the effect heterogeneity by ordering of those sections .

On the other hand, similar results for effect heterogeneity across policies covered in the treatment news reports might suggest that priming citizens with one policy issue might change beliefs about public policy performance and responsibility in general. This explanation is consistent with both results presented in Figure 5.4 and in the Figure 5.5: Coverage on road infrastructure quality appears to shift attitudes about natural disaster prevention policy the same way the coverage on forest fires does. This finding is fairly surprising and warrants further investigation of spillovers of pro-government news coverage across policy domains.

6 Conclusion

In this paper, I show that coverage of domestic policies issues by state-owned media in an authoritarian country can influence both citizens attitudes about those policies and their overall support for the government. Moreover, I show that both central and local government can benefit from such media coverage, with local government potentially experiencing higher increse in popularity. I attribute these findings to the common strategy that state-owned media employs in their coverage: Informing citizens about central government monitoring of local officials while shifting the perception of responsibility. This type of coverage might cause citizens to change their beliefs about policy performance and allocation of responsibility and consequentially make them update their beliefs about competence of the government.

Crucially, in the paper I show that such updating can happen *not despite, but because* citizens know that media outlet is captured by the government and thus pursues its interests in their media coverage. To show this I build a simple rational updating framework and find that the patterns of updating I observe are consistent with that theory. The fact that changes in blame and credit for policy predicted by the model correspond to the changes in overall evaluation of the government provide additional evidence that citizens factor their beliefs about policy performance and responsibility into their evaluation of the government – the assumption underlying theory of retrospective voting.

That said, in line with the previous theoretical and empirical literature on effects of biased media I provide evidence that several factors decrease the effectiveness of pro-government media in persuading citizens. One such factor is prior experience with the policy. I show that direct exposure to the issues with policy that had recent shock of visibility, such as forest fires in Russia in 2019, can prevent citizens from updating their beliefs. Interestingly, this does not appear to be the case for policies, that have persistent issues that cannot be addressed momentarily, such as issues with road quality. This finding suggests that type and, perhaps strength, of exposure matter for creating immunity to authoritarian propaganda.

Another important moderating factor is prior media consumption. Here, contrary to the common logic of *motivated reasoning* in processing of biased media, I find that citizens who do not usually consume propaganda and rather use independent news sources are most susceptible to pro-government persuasion. This again suggests that rational processing of the information might be at play: If citizens understand the strategy employed by the biased media, they can rationally infer true policy performance and responsibility and hence update their evaluations of the government accordingly. Moreover, the null effects of exposure to pro-government media coverage among citizens who already use pro-government media frequently, do not necessarily suggest that they are somehow less rational in their processing of news. Instead, the observed prior beliefs suggest that these citizens might have already incorporate information similar to the one contained in the coverage used in the intervention.

Overall, these results suggest that continuous exposure to propaganda might be efficient at projecting an image of government competence, but the effectiveness of this tool might diminish over time as their beliefs reach saturation. Once they do, there is not much *informational autocrats* can do to increase their popularity, since citizens who would be most affected by government persuasion cannot be reached by propaganda due to self-selection. Moreover, even if the government would be able to increase its audience, perhaps by exploring other platforms to broadcast their content[20], only citizens who were not recently exposed to issues with the policy covered in the reports, will improve their support for government.

A few interesting questions arise from additional patterns observed in this study. First, it seems that there is potential for significant spillovers across policies in the effects of propaganda. For example, it appears that as long as citizens did not personally suffer from forest fires recently, they update they tend to change their beliefs about natural disaster prevention policy performance even after viewing news report about roads quality.

Second, the speculative evidence I observe for saturation of beliefs about government performance among frequent viewers of pro-government media warrants further investigation. One important question in this respect is whether the observed null effects among this group are due to limits of updating or due to persuasion having effects on certainty citizens have about the policy performance

[20]For example, all evening news broadcasts by *Rossia-1* are nowadays published on Youtube and thus are accessible for free, at any time, with subtitles and time codes to anyone who has internet access.

rather than about it's value.

A Additional study details

A.1 Experimental news reports

A.1.1 Natural disaster (D) report

Figure A.1: Screenshots from the forest fires report: Correspondent Alexey Golovko – on the left, Prime Minister Dmitry Medvedev – on the right

BROADCASTER: About two hours ago Dmitry Medvedev arrived to Krasnoyarsk and immediately at the airport he held a meeting on the situation with forest fires and the coordination of all who are now involved in their extinguishing. On a direct connection from Krasnoyarsk our correspondent Alexey Golovko. Hello, Lesha. First of all, what measures were discussed and what is the current situation?

CORRESPONDENT: Good evening colleagues, indeed the situation remains tense. That is why Dmitry Medvedev on his way to Chita made a stop here in Krasnoyarsk and held a meeting in the airport building dedicated to fighting forest fires in the Siberian Federal District.

MEDVEDEV: The main task is to prevent the spread of fire to settlements. ***I draw the attention of all regional leaders, as well as heads of municipalities. This is your responsibility, because the forest fires have to be put down here, and not from the windows of the Ministry of Emergency Situations or the Ministry of Natural Resources.***

CORRESPONDENT: Dmitry Medvedev instructed all the results of today's meeting in the form of documents-instructions to be completed by the next morning, when he will arrive to Chita where he will hold a meeting on fighting forest fires in the Far Eastern Federal District. Colleagues?

BROADCASTER: Alexey, thank you. Directly from Krasnoyarsk was reporting Alexey Golovko.

A.1.2 Roads (R) report

Figure A.2: Screenshots from the road construction report: Correspondent Denis Davidov – on the left, Prime Minister Dmitry Medvedev – on the right

CORRESPONDENT: Roads are not just the Russian problem - they are real misfortune, which found reflected even in the literature, and it cannot be solve for centuries. So it is not surprising that "safe and high-quality roads" is a separate national project which is being discussed at the highest levels of government. *[change of frame]* The regional leaders delaying the implementation of the national project had to get nervous. 106 billion rubles are allocated, it's time to sign contracts, but local representatives slow things down. The central government threatens to redistribute funds: they will be taken away from sluggish and sent to those actively constructing roads.

MEDVEDEV: ***I would like all regional leaders to hear this: curators of national projects have the right to redistribute funds. And they will do it.***

CORRESPONDENT: Municipal, and most importantly, remote rural roads are often impossible to pass passing. A fifth of all funds of national projects is allocated to roads construction and repairs; Together, federal and regional budgets will spend more than 4.5 trillion rubles. Denis Davydov, Irina Vinogradova, Irina Kharlamova, Julia Shchedrova, Victor Vinogradov and Konstantin Rodin for Vesti broadcast.

A.1.3 Placebo (P) report

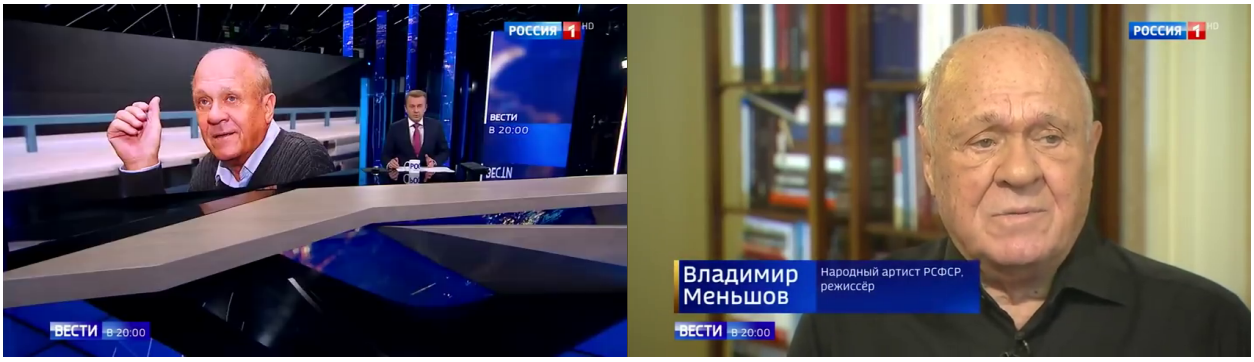

Figure A.3: Screenshots from the placebo report: Broadcaster – on the left, Director Vladimir Menshov – on the right

BROADCASTER: Vladimir Menshov turns 80 today. It's hard to believe that the director shot only 5 movies, but any of them–"Moscow Doesn't Believe in Tears", "Raffle", "Love and Pigeons"– each captures the heart and is an inexhaustible source of catchphrases.

CORRESPONDENT: *[scene from the movie "Happy Kukushkin"]* This is 1970s, after the Moscow Art Theater School and Roma's workshop at the VGIK. Script by Menshov, main role by Menshov–this is now for life together–writing, acting, directing. And the first full feature by Menshov will become, as some say, the cult film of the 70s, "Raffle". *[Scene from the movie "Raffle"]* The author of the famous "This is me a locksmith", among other things - the prosecutor of the Shakhnazarov's "city Zero", and an outraged dad in the "Courier". *[scene from the movie "Courier"]*

MENSHOV: I always believe till the very end that a person can improve.

CORRESPONDENT: Students of VGIK will soon learn about this quality of Menshov: Director starts a new workshop here soon. Ilya Filippov, Pavel Miller, Ivan Ponomarenko, Valeria Popova, Elena Venoshina for Vesti broadcast.

A.2 Information sheet for online survey

Dear Respondent:

You are invited to participate in a phone survey conducted by agency "OMI" in collaboration with Columbia University in the City of New York (New York, USA) for scholarly study titled "Public Attribution of Responsibilities in Russia" (IRB Protocol #IRB-AAAR9146) and devoted to recent events in your region. The survey will include a short video (up to 1 minute long) and should take approximately 20 minutes to complete.

PARTICIPATION AND BENEFITS *Your participation in the survey is completely voluntary. You may refuse to participate in the survey or exit it at any time without any penalties. However, you will receive full monetary compensation from "OMI" agency for your participation only if you complete this survey and answer all of its questions.*

CONFIDENTIALITY *The authors of the study will use all the information obtained during the surveys only in an aggregated form. Columbia University IRB and the US Office of Human Research Protections may obtain access to de-identified data collected during the surveys.*

RISKS *Your participation in the survey does not involve any additional risks for you other than those encountered in day-to-day life.*

CONTACT *If you have questions about the procedures used in this study, you may contact its authors by sending an email with the title "Research Siberia" to Georgiy Syunyaev at g.syunyaev@columbia.edu or Timothy Frye at tmf2@columbia.edu. If you have any questions about your rights or responsibilities as a research participant, please contact the Columbia University Human Research Protection Office at: Phone +1 212-851-7040; Email askirb@columbia.edu.*

ELECTRONIC CONSENT *By clicking "Agree" button below, you confirm that you have heard and agree to the terms of the survey above and allow the authors of the survey to use your responses in a de-personalized and aggregated form.*

A.3 Online survey instrument

First, we would like to ask some questions about you...

`age.` *[Only respondents 18 y.o. or older will be allowed to proceed with the survey]* How old are you?

1) _____ *[Type number]*

`region.` *[Only respondents who reside in Kemerovo, Novosibirsk, Irkutsk and Krasnoyarsk regions will be allowed to proceed with the survey]* Please, choose the region of Russia you reside in

1) *[List of regions]*

`locality.` Please, provide the type and name of settlement you reside in

1) City *[Type name]*
2) Village *[Type name]*
3) Urban-type settlement *[Type name]*

Next, we will ask several questions about your media consumption...

`BLmediatype.` How often do you learn about news in Russia and in the World from the following national media sources?

a) TV channels
b) Radio
c) Newspapers
d) Internet news portals
e) Social Networks and channels in messengers

1) Almost every day or every day
2) Every week
3) Sometimes
4) Never or almost never

`BLmediaview.` How often do you watch news broadcasts from the following national TV channels?

a) Perviy Kanal *[channel logo]*
b) Rossia-1/ Rossia-24 *[channel logo]*
c) Dozhd *[channel logo]*
d) RBC *[channel logo]*
e) NTV *[channel logo]*
f) Euronews *[channel logo]*

1) Almost every day or every day
2) Every week
3) Sometimes
4) Never or almost never

`BLmedialocal.` How often do you learn about local news from the following media sources? [The list of media sources depends on the region, where respondent resides according to Q1]

- Kemerovo region
  a) TV channel *Vesti-Kuzbass* (on channel *Rossia-1*) *[logo]*
  b) TV channel *Kuzbass 24* (on channel *STS*) *[logo]*
  c) Internet portal vse42.ru *[logo]*
  d) Internet portal sibdepo.ru *[logo]*
  e) Newspaper *Kuzbass [logo]*
  f) Newspaper *Komsomol'skaya pravda–Kemerovo [logo]*
- Novosibirsk region
  a) TV channel *Vesti* (on channel *Rossia-1*) *[logo]*
  b) TV channel *Novosibirskie Novosti [logo]*
  c) Internet portal tayga.info *[logo]*
  d) Internet portal ngs.ru *[logo]*

e) Newspaper *Kommersant–Novosibirsk [logo]*
f) Newspaper _ Komsomol'skaya pravda –Novosibirsk_ *[logo]*

- Irkutsk region
  a) TV channel *Vesti-Irkutsk* (on channel *Rossia-1*) *[logo]*
  b) TV channel *Bratskaya Studia Televidenia [logo]*
  c) Internet portal irkutskmedia.ru *[logo]*
  d) Internet portal irk.ru *[logo]*
  e) Newspaper _ Komsomol'skaya pravda – Irkutsk_ *[logo]*
  f) Newspaper *Vostochno-Sibirskaya Pravda [logo]*
- Krasnoyarsk region
  a) TV channel " Vesti Krasnoyarsk" (on channel *Rossia-1*) *[logo]*
  b) TV channel *TVK [logo]*
  c) Internet portal sibnovosti.ru *[logo]*
  d) Internet portal newslab.ru *[logo]*
  e) Internet portal prmira.ru *[logo]*
  f) Newspaper _ Komsomol'skaya pravda –Krasnoyarsk_ *[logo]*
  g) Newspaper *Nash Krasnoyarskiy Krai [logo]*

1) Almost every day or every day
2) Every week
3) Sometimes
4) Never or almost never

`BLmediabias1.` Do you agree that media in Russia covers main economic and political events FULLY and CORRECTLY?

1) Yes, I agree
2) No, I disagree

`BLmediabias2.` *[Only show if in (BLmediabias1) options 2) was chosen]* What best describes how media in Russia covers main economic and political?

1) NOT FULLY, omits some events
2) NOT CORRECTLY, misrepresents some events

`BLmediabias3.` *[Only show if in (BLmediabias1) option 2) was chosen]* What is the main cause of the issue with Russian media coverage you chose?

1) Insufficient financing
2) Low qualification of the journalists
3) Capture by the large business interests
4) Capture by the political interests
5) Other *[Type your answer]*

`BLmediabias4.` *[Only show if in (BLmediabias3) options 4) was chosen]* Which political interests does media represent primarily?

1) Local/municipal government
2) Regional government
3) Federal government

Now we want to ask you a couple of questions about politics...

`BLknowsgovernor.` Do you know, who is the governor of the region you reside in?

1) Alexander Uss *[picture]*
2) Sergey Sokol *[picture]*
3) Sergey Tsivilev *[picture]*
4) Andrey Travnikov *[picture]*
5) Vyacheslav Petrov *[picture]*
6) Sergey Levchenko *[picture]*
7) Andrey Shimkiv *[picture]*

8) Dmitry Sviridov *[picture]*
9) Igor Kobzev *[picture]*
10) Not sure

`BLknowslocal.` Do you know, who is the head of the municipality you reside in?

1) Yes, I do *[Type name]*
2) No, I don't

`BLvalueslocal.` Please, choose the statement you agree with the most

1) Government should focus more on local and regional problems
2) Government should focus more on problems of the country as a whole

`BLgovernorlocal.` Whose interests does the governor of your region primarily represent?

1) Residents of the region
2) Business elites within the region
3) Business elites outside the region
4) Federal government
5) Other *[Type your answer]*

`BLscenario1.` Consider following scenario: *Federal government as a part of education campaign allocated funding for building 20 new schools in region X. Regional government used this funding to hire a subcontractor which built 20 modern school buildings in a very short time.* Which level of government should receive most credit for building of new schools?

1) Federal government, that allocated the funding
2) Regional government, that effectively supervised the project implementation

`BLscenario2negative.` Now consider another scenario: *According to the law, public hospitals repair in the region X are financed from the regional budget. Due to budget deficit, governor of region X requested funding for repairs of 30 hospitals in the region from the federal government. Federal government decided not to allocate additional funding and 30 hospitals in the region remained in emergency state.* Which level of the government is most to blame for the state of public hospitals in the region?

1) Federal government, which did not provide additional funding
2) Regional government, ineffectively manages regional budget

`BLscenario2positive.` Now consider another scenario: *According to the law, public hospitals repair in the region X are financed from the regional budget. Due to budget deficit, governor of region X requested funding for repairs of 30 hospitals in the region from the federal government. Federal government allocate additional funding and 30 hospitals in the region were repaired.* Which level of the government is most to responsible for repairing public hospitals in the region?

1) Federal government, which provided additional funding
2) Regional government, which requested funding and monitored implementation

`BLpolicypriority.` Please range the following public policy issues in order of their priority in your region, where 1 – highest priority and 4 – lowest priority

1) Education (e.g. construction/repair of schools and kindergartens)
2) Infrastructure (e.g. road construction and repair)
3) Healthcare (e.g. hospital construction and repair)
4) Environmental protection (e.g. natural disasters prevention and relief)

`BLpolicyexposure.` How often in the past 6 months did you experienced or heard from relatives about [**poor service at a public hospital / bad quality of roads / natural disasters (for example, forest fires, flooding)**]?

1) Each week or more often
2) Roughly each month
3) Once or twice
4) Never

`BLknowsff.` There were widespread naturally occurring forest fires in Siberia this year. Because of forest fires many localities were covered in smoke, including regional capitals. Did you know about theses forest fires?

1) Yes, I knew about the forest fires
2) No, I did not know about the forest fires

`BLexperienceff.` *[Only show if in (BLknowsff) options 1) was chosen]* Did you notice smoke from naturally occurring forest fires this summer?

1) Yes, the smoke was visible for a long time
2) Yes, but the smoke was visible only a couple days
3) No, I did not notice any smoke

`BLknowsforestfiresregions.` Which regions had largest areas of the forest fires this summer? Choose one or multiple answers

1) Novosibirsk region
2) Omsk region
3) Krasnoyarskiy krai
4) Buryatiya republic
5) Irkutsk region
6) Kemerovo region

`BLcheckattention.` Next we will show you a short (approximately 1 min.) video report and ask a couple questions about it. If you want to proceed, please choose both *Red* and *Green* below

1) Red
2) Blue
3) Green
4) Yellow

Please, watch the following news report from* Vesti *on channel* Rossia-1*:

`(Placebo group):`

- News report from *Vesti* about birthday of an actor

`(Roads group):`

- News report from *Vesti* about road infrastructure issues in Russia mentioning governors responsibilities

`(Forest Fires group):`

- News report from *Vesti* about natural forest fires in Russia mentioning governors responsibilities

`ELvideogist.` Please, in 2-3 sentences summarize the main contents of the report you just watched

1) *[Type your answer]*

`ELvideotopic.` Please choose two phrases that best describe the topic of the report you just watched?

1) Federal authorities
2) Education
3) Local/Municipal authorities
4) Road repairs and construction
5) Healthcare
6) Regional authorities
7) Cultural events
8) Environmental/Natural Disaster

`ELvideoeval.` How would you evaluate quality the news report?

1) Bad, not informative and poorly edited
2) Medium, fairly informative and fairly well edited
3) Good, very informative and well edited

Next we will ask you a couple of questions about your attitudes towards redistribution of wealth in society...

`ELredistrbudget.` Which share of collected taxes should remain at the regional level and which share should be transferred to federal center to potentially be returned to regions at the federal government discretion?

1) 10% to regions / 90% to federal center
2) 20% to regions / 80% to federal center
3) 30% to regions / 70% to federal center
4) 40% to regions / 60% to federal center
5) 50% to regions / 50% to federal center
6) 60% to regions / 40% to federal center
7) 70% to regions / 30% to federal center
8) 80% to regions / 20% to federal center
9) 90% to regions / 10% to federal center

`ELredistratt.` Do you agree with the following statement: *For a society to be fair, the government should reduce differences in the socio-economic conditions of people*

1) Strongly agree
2) Agree
3) Neither agree, nor disagree
4) Disagree
5) Strongly disagree

`ELredistrtarget.` Which three of the following groups of citizens deserve support from the government the most?

1) Retired
2) Disabled
3) Veterans
4) Families with children
5) Natural disaster victims
6) Poor
7) Unemployed
8) Other *[Type your answer]*

`ELlocuscontrol.` Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means *no choice at all* and 10 means *a great deal of choice* to indicate how much freedom of choice and control you feel you have over the way your life turns out

1) 1 – No choice at all
2) 2
3) 3
4) 4
5) 5
6) 6
7) 7
8) 8
9) 9
10) 10 – A great deal of choice

Next few questions will be about about the TV channel* Rossia-1*…

`ELmediabias1.` Do you agree that TV channel *Rossia-1* sometimes withholds information about economic and political events in Russia? 1) Strongly agree 2) Agree 3) Disagree 4) Strongly disagree

`ELmediabias2.` Do you agree that TV channel *Rossia-1* sometimes misrepresents information about economic and political events in Russia?

1) Strongly agree
2) Agree
3) Disagree
4) Strongly disagree

`ELmediabias3.` *[Only show if in either (ELmediabias1) or (ELmediabias2) option 4) was NOT chosen]* What is the main cause of the issue with *Rossia-1* coverage?

1) Insufficient financing
2) Low qualification of the journalists
3) Capture by the large business interests
4) Capture by the political interests
5) Other *[Type your answer]*

Next block of questions will ask about the locality you live in...

`ELsatisoverall.` In general, are you satisfied with the state of affairs in your locality?

1) Very satisfied
2) Satisfied
3) Unsatisfied
4) Very unsatisfied

`ELroadrespblame.` Please rank the following levels of government in Russia in the order of their **responsibility (in terms of blame and credit) for the current** quality of roads where you live?

1) Local officials including the head of municipality
2) Regional officials including the governor of the region
3) Federal officials including the president

`ELroadsatis.` Are you satisfied with the quality of roads where you live?

1) Very satisfied
2) Satisfied
3) Unsatisfied
4) Very unsatisfied

`ELroadgist.` *[Only show if in (ELroadsatis) options 2), 3) or 4) were chosen]* Summarize in short what are the main problems of roads in your locality?

1) *[Type your answer]*

`ELroadreason.` *[Only show if in (ELroadsatis) options 2), 3) or 4) were chosen]* What are the main reasons for issues with roads in your locality?

1) Insufficient public financing
2) Ineffective spending of public funds
3) Poor monitoring by officials
4) Other *[Type your answer]*

`ELroadrespcapacity.` Please rank the following levels of government in Russia in the order of their **capacity to change** quality of roads where you live?

1) Local officials including the head of municipality
2) Regional officials including the governor of the region
3) Federal officials including the president

`ELffrespblame.` Please rank the following levels of government in Russia in the order of their **responsibility (in terms of blame and credit) for the current** natural disasters prevention and relief measures where you live?

1) Local officials including the head of municipality
2) Regional officials including the governor of the region
3) Federal officials including the president

`ELffsatis.` Are you satisfied with natural disasters (e.g. forest fires) prevention and relief where you live?

1) Very satisfied
2) Satisfied

3) Unsatisfied
4) Very unsatisfied

`ELffgist.` *[Only show if in (ELffsatis) options 2), 3) or 4) were chosen]* Summarize in short what are the main problems of natural disasters (e.g. forest fires) prevention and relief in your locality?

1) *[Type your answer]*

`ELffreason.` *[Only show if in (ELffsatis) options 2), 3) or 4) were chosen]* What are the main issue with natural disaster prevention in your locality?

1) Insufficient public financing
2) Ineffective spending of public funds
3) Poor monitoring by officials
4) Other *[Type your answer]*

`ELffrespcapacity.` Please rank the following levels of government in Russia in the order of their **capacity to change** natural disasters prevention and relief measures where you live?

1) Local officials including the head of municipality
2) Regional officials including the governor of the region
3) Federal officials including the president

`ELperformancelocal.` Are you satisfied with the performance of [**head of municipality/ governor of the region**] that you live in?

1) Very satisfied
2) Satisfied
3) Unsatisfied
4) Very unsatisfied

`ELperformancefed.` Are you satisfied with the performance of the president of Russian Federation?

1) Very satisfied
2) Satisfied
3) Unsatisfied
4) Very unsatisfied

Finally, we wanted to ask some more questions about you...

`income.` How would you evaluate your material wellbeing?

1) Not enough money for food
2) Enough money for food, but cannot afford to buy clothes
3) Enough money for food and clothes, but cannot afford to buy long-term appliances
4) Enough money for long-term appliances, but cannot afford to buy a car
5) Enough money for most things, but cannot afford to buy real estate
6) Enough money for most things, including real estate

`female.` What is your gender

1) Female
2) Male

`education.` What is the highest level of education you attained

1) Primary education
2) Secondary basic education
3) Secondary professional education
4) Incomplete graduate education
5) Complete graduate education

Thank you for your time

`ELdemandeffects.` Which of the following statements in your opinion best describes the purpose of this survey?

1) Measurement of mass media preferences
2) Measurement of link between mass media preferences and road construction/natural disaster prevention satisfaction
3) Measurement of the effect of mass media on political preferences
4) Measurement of citizen satisfaction with government performance in public policies
5) Measurement of news report effects on attribution of responsibility for public policy

A.4 Survey take-up over time

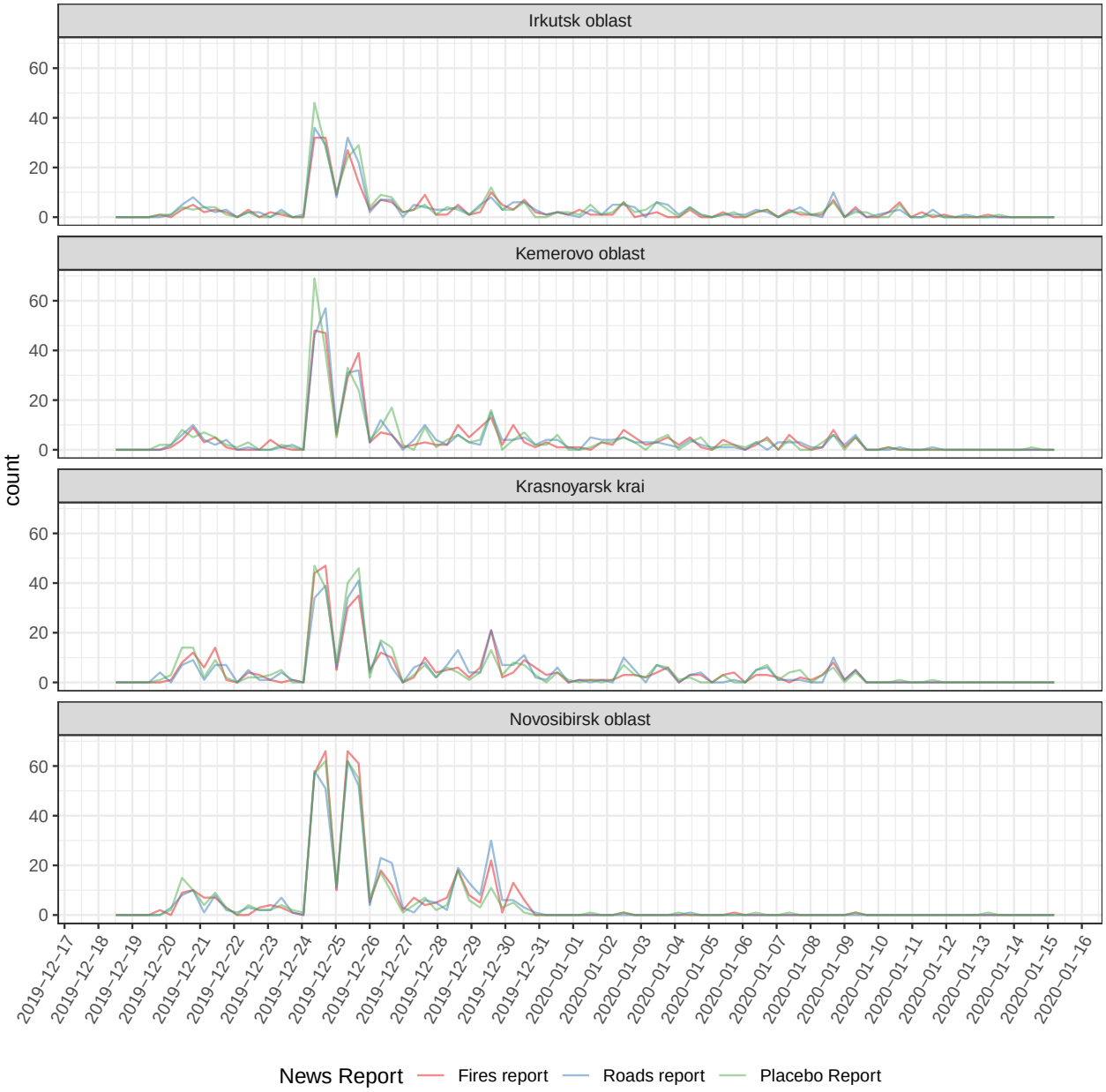

Figure A.4: Plots of Treatment Take-up by Region and Experimental Group.

A.5 Summary statistics

Table A.1: Summary Statistics for Pre-Treatmet Variables

Variable	N	Mean	SD	Min	25 %	Median	75 %	Max	Missing	Unique
Media in Russia biased	4423	0.818	0.386	0	1.000	1.000	1.000	1	0	2
Media in Russia captured by government	4423	0.306	0.199	0	0.167	0.278	0.444	1	0	22
Media in Russia captured	4423	0.552	0.172	0	0.400	0.533	0.667	1	0	20
Education level	4423	0.358	0.193	0	0.238	0.333	0.476	1	0	23
Has higher education	4423	0.523	0.224	0	0.333	0.500	0.667	1	0	15
Any news consumption (average)	4423	0.331	0.471	0	0.000	0.000	1.000	1	0	2
Knows head of municipality	4423	0.277	0.448	0	0.000	0.000	1.000	1	0	2
Knows governor	4423	0.756	0.306	0	0.500	1.000	1.000	1	0	3
Knows governor (approx)	4423	4.197	1.067	1	3.000	5.000	5.000	5	0	5
Citizen knowledge (average)	4423	0.659	0.210	0	0.556	0.667	0.778	1	0	10
TV news consumption	4423	0.674	0.384	0	0.500	1.000	1.000	1	0	3
Online news consumption	4423	0.530	0.499	0	0.000	1.000	1.000	1	0	2
Social network news consumption	4423	0.477	0.328	0	0.333	0.333	0.667	1	0	4
Any online news consumption (average)	4423	0.776	0.299	0	0.667	1.000	1.000	1	0	4
Any offline news consumption	4423	0.557	0.318	0	0.333	0.583	0.833	1	0	15
Rossia-1 news consumption	4423	0.222	0.243	0	0.000	0.333	0.333	1	0	4
Federal news consumption (average)	4423	0.371	0.282	0	0.167	0.333	0.500	1	0	7
Independent TV consumption (average)	4423	0.942	0.234	0	1.000	1.000	1.000	1	0	2
Rossia-1 local news consumption	4423	0.454	0.498	0	0.000	0.000	1.000	1	0	2
Any local news consumption	4423	0.609	0.488	0	0.000	1.000	1.000	1	0	2
Experience w. forest fires	4423	0.979	0.145	0	1.000	1.000	1.000	1	0	2
Experience w. forest fires (bin)	4423	0.207	0.185	0	0.067	0.200	0.333	1	0	20
Any experience w. forest fires	4423	0.900	0.300	0	1.000	1.000	1.000	1	0	2
Named forest fires regions	4423	0.928	0.231	0	1.000	1.000	1.000	1	0	3
Heard about forest fires	4423	0.612	0.487	0	0.000	1.000	1.000	1	0	2
Named forest fires regions (bin)	4423	0.610	0.488	0	0.000	1.000	1.000	1	0	2
Priority on natural disaster prevention	4423	0.513	0.500	0	0.000	1.000	1.000	1	0	2
Priority on roads infrastructure	4423	0.473	0.499	0	0.000	0.000	1.000	1	0	2
Experience w. any policy issues	4423	1.487	1.048	-3	1.000	1.000	2.000	3	0	7
Experience w. natural disaster	4423	0.882	0.322	0	1.000	1.000	1.000	1	0	2
Experience w. road issues	4423	0.721	0.337	0	0.333	1.000	1.000	1	0	4
Forest fires exposure (average)	4423	0.516	0.500	0	0.000	1.000	1.000	1	0	2
Road issues exposure (average)	4423	0.265	0.357	0	0.000	0.000	0.333	1	0	4
Governor represents federal	4423	0.456	0.352	0	0.333	0.333	0.667	1	0	4
Federal oriented	4423	0.616	0.254	0	0.500	0.667	0.833	1	0	7
Attributes positive education to federal	4423	0.569	0.372	0	0.333	0.667	1.000	1	0	4
Positive HC scenario assigned	4423	0.590	0.372	0	0.333	0.667	1.000	1	0	4
Attributes (positive/negative) HC outcome to federal	4423	0.723	0.350	0	0.333	1.000	1.000	1	0	4
Government should put emphasis on domestic issues	4423	0.710	0.347	0	0.333	1.000	1.000	1	0	4

Table A.2: Summary Statistics for Pre-Treatmet Covariates

Covariate	N	Mean	SD	Min	25 %	Median	75 %	Max	Missing	Unique
Income level	4423	0.083	0.275	0.000	0.000	0.000	0.000	1.000	0	2
Krasnoyarsk region	4423	0.285	0.452	0.000	0.000	0.000	1.000	1.000	0	2
Irkutsk region	4423	0.317	0.465	0.000	0.000	0.000	1.000	1.000	0	2
Kemerovo region	4423	0.195	0.396	0.000	0.000	0.000	0.000	1.000	0	2
Novosibirsk region	4423	0.120	0.325	0.000	0.000	0.000	0.000	1.000	0	2
City resident	4423	0.012	0.111	0.000	0.000	0.000	0.000	1.000	0	2
Regional capital resident	4423	0.516	0.500	0.000	0.000	1.000	1.000	1.000	0	2
Age: 18-24	4423	0.461	0.498	0.000	0.000	0.000	1.000	1.000	0	2
Age: 25-34	4423	0.920	0.272	0.000	1.000	1.000	1.000	1.000	0	2
Age: 35-44	4423	0.569	0.495	0.000	0.000	1.000	1.000	1.000	0	2
Age: 45-54	4423	0.362	0.187	0.000	0.250	0.250	0.500	1.000	0	5
Age: 55+	4423	0.194	0.396	0.000	0.000	0.000	0.000	1.000	0	2
Female	4423	0.246	0.431	0.000	0.000	0.000	0.000	1.000	0	2
Pays attention (pre-treat)	4423	0.268	0.443	0.000	0.000	0.000	1.000	1.000	0	2
Assigned positive scenario (pre-treat)	4423	0.028	0.207	0.000	0.000	0.000	0.000	3.000	0	4
Survey speeding index	4423	0.292	0.455	0.000	0.000	0.000	1.000	1.000	0	2
Straightlining index	4423	0.931	0.148	0.000	1.000	1.000	1.000	1.000	0	5
All answers index	4423	0.122	0.056	0.029	0.081	0.118	0.152	0.523	0	221
Meaningless response index	4423	0.629	0.483	0.000	0.000	1.000	1.000	1.000	0	2
Question Speeding index	4423	0.037	0.067	0.000	0.000	0.000	0.100	0.800	0	12
Can afford new car	4423	0.009	0.097	0.000	0.000	0.000	0.000	1.000	0	2

A.6 Details of variable construction

For ease of analysis and interpretation I use the following rules to construct three main types of variables mentioned:

- **Binary moderators** are coded with `1` if the individual response is equal to or above sample median response, and `0` – if below median;
- **Average score** of multiple survey responses constructed using `mean()` and omitting any missing response; the resulting average score is re-scaled to $[0, 1]$ interval with each individual measure mean-imputed.
- **Ordinal** variables are re-coded so that low values correspond to lower levels of corresponding parameter, and high – high levels of corresponding parameter. In addition, all ordinal variables were scaled to $[0, 1]$ interval to closer represent parameters of the theoretical model and for ease of interpretation;

A.7 Item-level missingness

Important feature of the measurement strategy used in the study is that respondents were required to provide an answer to proceed with the survey. This was done to avoid high non-response rates common for online surveys. This feature implies that missingness in responses is observed in the study only for respondents who dropped out and did not finish the survey. Appendix B.2 presents analyses of relationship between dropout rates and assignment to experimental video conditions.

Given that some socio-demographic questions were asked in the end of the survey to avoid respondent fatigue in the beginning of the survey, I use chained equations imputation algorithm implemented in the `mice` package in `R`, to impute missingness for those variables. In addition, due to mistake in conditional logic in the online survey instrument, for roughly 40% of the sample I miss `BLmediabias2` due to random assignment of question ordering in the preceeding questions. Given the random nature of this missingness I use the algorithm on questions `BLmediabias1`–`BLmediabias4` to impute missing responses for `BLmediabias2`.

A.8 Covariate selection

I use lasso regression to select the minimal number of covariates that best predict each outcome, and include only these in our estimation. The pool of covariates includes: `age`, `region_name`, `cities`, `regional_capital`, `income`, `female`, and a number of statistics collected by *EnjoySurvey* platform.

The lasso procedure that I use features a generalized linear model with lasso penalization, and is implemented in the `glmnet` package in `R`. The loss function requires selecting a regularization parameter, λ, that determines the severity of the penalty for including extra covariates. Since this regularization parameter cannot be optimally chosen in advance, we will select it using 10-fold cross-validation.

Specifically, for each outcome, I choose the λ that minimizes the 10-fold cross-validation error averaged over 10 runs (since the folds are chosen at random). Only the covariates retained by the lasso will be included in the covariate-adjusted specification. In other words, for each outcome, the dimentionality of matrix $\boldsymbol{X}$ included in Equation (7) can vary based on the number of covariates selected by the procedure.

A.9 Regional heterogeneity

Table A.3: Differences between regions on pre-treatment attitudes and behaviors

	Mean				KEM/KRA	KRA/IRK
Variable	KRA	IRK	KEM	NSK	Std. Diff	Std. Diff
Media in Russia biased	0.594	0.613	0.640	0.605	0.016	-0.04
Media in Russia captured by government	0.479	0.474	0.486	0.468	0.024	0.003
Has higher education	0.564	0.597	0.590	0.663	-0.124	-0.107
Any news consumption (average)	0.559	0.552	0.546	0.556	-0.009	0.03
Citizen knowledge (average)	0.774	0.670	0.814	0.760	0.227	-0.178
TV news consumption	0.727	0.704	0.705	0.704	0.035	0.036
Online news consumption	0.728	0.712	0.712	0.739	-0.025	-0.016
Social network news consumption	0.732	0.736	0.743	0.696	0.073	0.045
Any offline news consumption	0.390	0.339	0.348	0.351	0.12	0.099
Independent TV consumption (average)	0.135	0.123	0.112	0.149	-0.077	-0.011
Forest fires exposure (average)	0.462	0.528	0.296	0.248	0.086	0.846
Road issues exposure (average)	0.581	0.609	0.554	0.712	-0.416	-0.187
Governor represents federal	0.412	0.427	0.384	0.567	-0.229	-0.131
Federal oriented	0.217	0.227	0.222	0.220	-0.015	0.001

Gray color denotes failure to reject the null of no differences at 5

Table A.4: Differences between regions on pre-treatment covariates

	Mean				KEM/KRA	KRA/IRK
Covariate	KRA	IRK	KEM	NSK	Std. Diff	Std. Diff
Income level	0.360	0.362	0.347	0.386	-0.123	-0.036
City resident	0.916	0.913	0.912	0.937	-0.048	-0.039
Regional capital resident	0.663	0.532	0.387	0.881	-0.452	-0.098
Age: 18-24	0.084	0.090	0.078	0.080	-0.009	0.027
Age: 25-34	0.303	0.295	0.292	0.264	0.048	0.05
Age: 35-44	0.301	0.308	0.330	0.331	-0.014	-0.057
Age: 45-54	0.188	0.199	0.181	0.204	-0.045	-0.001
Age: 55+	0.123	0.108	0.119	0.121	0.015	-0.01
Female	0.568	0.538	0.597	0.577	0.041	-0.061
Pays attention (pre-treat)	0.938	0.927	0.921	0.946	-0.06	-0.008
Assigned positive scenario (pre-treat)	0.513	0.517	0.516	0.515	-0.002	-0.002
Survey speeding index	0.012	0.010	0.010	0.009	0.013	0.016
Straightlining index	0.040	0.042	0.031	0.033	-0.014	0.13
All answers index	0.010	0.007	0.015	0.015	0.006	-0.056
Meaningless response index	0.064	0.025	0.016	0.011	0.115	0.161
Question Speeding index	0.119	0.118	0.119	0.125	-0.054	-0.057
Can afford new car	0.451	0.448	0.416	0.511	-0.105	-0.036

Gray color denotes failure to reject the null of no differences at 5

Tables A.3 and A.4 show means for main pre-treatment covariates and measures of attitudes and behavior and standardized differences and p-values for t-tests of no differences in means between Krasnoyarsk and Irkustsk, and between Kemerovo and Novosibirsk. *KRA* corresponds to Krasnoyarsk, *IRK* – to Irkutsk, *KEM* – to Kemerovo, and *NSK* – to Novosibrisk.

B Threats to inference

B.1 Randomization

The resulting structure of sample and experimental assignment is shown in the Figure B.1.

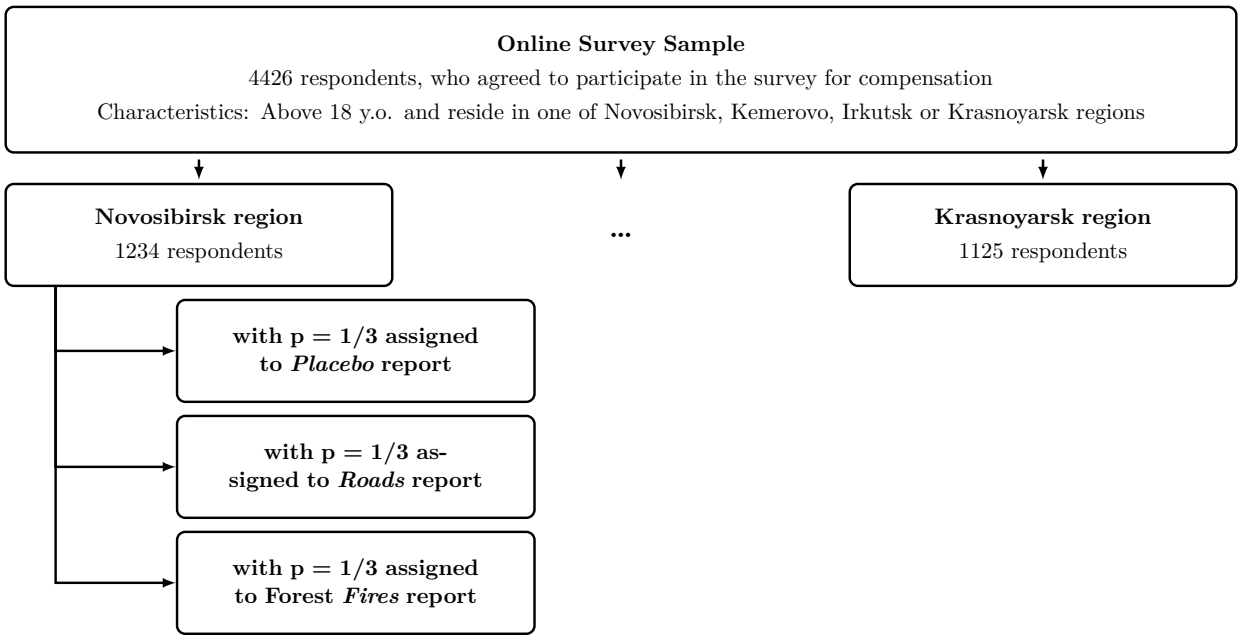

Figure B.1: Structure of the sample enrolled for the Online survey experiment and split into blocks by region. Each block includes respondents assigned to each of the treatment conditions with equal probability (simple random assignment).

Simple random assignment procedure with equal probabilities was implemented using the following PHP code on the online survey platform *EnjoySurvey*

```
$arr=[0,1,2];
shuffle($arr);
$ans=array_shift($arr);
$q->answer($ans);
$q->next();
```

While this code is syntactically correct and was tested using automation tools available on *EnjoySurvey* platform prior to the study, I perform additional check of randomization procedure using randomization inference χ^2 test in R with 10000 permutations on the sample of subjects who reached random assignment stage of the survey (right before assignment to experimental conditions was administered)

```
set.seed(12231987)

obs <- chisq.test(table(sibtv$Rvideo))$statistic

sims <-
  pbapply::pbreplicate(10^5, expr = {
    chisq.test(table(sample(1:3, nrow(sibtv), replace = TRUE)))$statistic
```

```
  })

( pval <- mean(obs <= sim) )
```

The study included three simple random assignment procedures–three video reports, two different wordings of scenario, and random order of policies in responsibility section–I use relevant indicators to conduct the same test of randomization procedure validity replacing `Rvideo`, `Rscenario` and `Rrespgroup` respectively and adjusting the number of conditions. If we reject null hypothesis of group membership being assigned with equal probabilities, the results of the experiment should be taken with caution.

Estimated p-values suggest that while assignment to the treatment assignment to news reports (`Rvideo`) is likely to be produced by chance ($p = 0.684$), the two other random assignment procedures deviate significantly from the distribution generated by simple random assignment (for `Rscenario` – $p = 0.033$; for `Rrespgroup` – $p = 0.020$). Given that in the analyses in this study I focus on news report treatment, I conclude that there is no evidence of threat to the inferences due to non-random assignment.

B.2 Attrition

Given the structure of the survey instrument, respondent in the study is considered to be missing if she dropped out of survey after the treatment video assignment. To assess patterns of attrition I construct an indicator for respondents who do not have responses to some or all of the post-treatment questions. First, it should be noted that the rates of attrition in the study were quite low with only 225 out of 4426 respondents who reached treatment assignment stage of the survey not finishing the survey.

Second, I conducted two tests to assess whether attrition is related to treatment and whether the relationship between baseline covariates and attrition varies across experimental groups:

1. A two-tailed unequal-variances t-test of the hypothesis that treatment does not affect the attrition rate among main households and among neighbors. I conduct this test using randomization inference for each pair of experimental groups, i.e. I compare the observed t-statistic to the distribution of t-statistics under random assignment of treatment using the simple random assignment to 3 treatment groups. The test yielded p-values above 0.05 for each of 3 comparisons between the experimental groups.

2. I regress an attrition indicator on treatment, a set of baseline covariates, and treatment-covariate interactions. The set covariates used for this test includes: `region`, `cities`, `locality_type`, `BLmediatype_tv`, `BLmediaview_fed`, `BLmediabias`, `BLmediabias_lies`, `BLpolicyexposure_ind`, `BLvalueslocal_ind`, `BLscenario1_fed`, `BLattention`. This list contains pre-treatment measurements of media viewership, bias, policy exposure, value for local issues and responsibility attribution to local government as well as respondents region and locality type (urban vs. rural). While these measures do not correspond directly the outcomes of interest prior to the treatment, they approximate them. I perform an F-test of the hypothesis that all the treatment-by-covariate interaction coefficients are zero, and again rely on randomization inference to conduct this test. The test yielded p-values above 0.05.

None of the tests produces a p-value smaller than 0.05, so in the paper I report naive estimates among the respondents for whom specific outcome is observed.

B.3 Treatment balance

Table B.1: Balance on Pre-Treatment Variables

Variable	Mean			Roads vs. Placebo		FF vs. Placebo		FF vs. Roads	
	Placebo	Roads	Forest Fires	Std. Difference	P-value	Std. Difference	P-value	Std. Difference	P-value
Media in Russia biased	0.612	0.612	0.613	0	0.999	0.002	0.948	0.002	0.949
Media in Russia captured by government	0.474	0.471	0.484	-0.007	0.86	0.019	0.625	0.025	0.505
Media in Russia captured	0.512	0.517	0.518	0.01	0.79	0.013	0.73	0.003	0.935
Education level	4.205	4.243	4.214	0.036	0.341	0.009	0.811	-0.027	0.475
Has higher education	0.600	0.615	0.601	0.031	0.414	0.001	0.981	-0.03	0.428
Any news consumption (average)	0.554	0.554	0.552	0.001	0.969	-0.012	0.761	-0.013	0.733
Knows head of municipality	0.601	0.642	0.601	**0.085**	**0.025**	0.001	0.981	**-0.084**	**0.027**
Knows governor	0.912	0.899	0.902	-0.041	0.271	-0.034	0.376	0.008	0.834
Knows governor (approx)	0.937	0.925	0.930	-0.053	0.163	-0.032	0.397	0.021	0.581
Citizen knowledge (average)	0.756	0.771	0.752	0.048	0.205	-0.015	0.686	-0.063	0.097
TV news consumption	0.705	0.716	0.711	0.033	0.376	0.018	0.627	-0.015	0.69
Online news consumption	0.730	0.722	0.720	-0.023	0.54	-0.031	0.408	-0.008	0.824
Social network news consumption	0.727	0.730	0.718	0.009	0.81	-0.025	0.504	-0.034	0.363
Any online news consumption (average)	0.526	0.528	0.519	0.01	0.795	-0.031	0.411	-0.041	0.283
Any offline news consumption	0.361	0.358	0.356	-0.015	0.69	-0.024	0.524	-0.009	0.812
Rossia-1 news consumption	0.594	0.590	0.579	-0.01	0.785	-0.041	0.279	-0.031	0.415
Federal news consumption (average)	0.555	0.553	0.543	-0.007	0.847	-0.038	0.321	-0.03	0.424
Independent TV consumption (average)	0.131	0.133	0.129	0.009	0.805	-0.013	0.73	-0.022	0.552
Rossia-1 local news consumption	0.578	0.565	0.556	-0.035	0.349	-0.061	0.11	-0.025	0.502
Any local news consumption	0.310	0.308	0.302	-0.011	0.772	-0.042	0.266	-0.031	0.415
Experience w. forest fires	0.678	0.690	0.658	0.031	0.417	-0.053	0.16	**-0.083**	**0.028**
Experience w. forest fires (bin)	0.526	0.549	0.516	0.046	0.222	-0.021	0.572	-0.068	0.074
Any experience w. forest fires	0.830	0.831	0.800	0	0.99	**-0.078**	**0.04**	**-0.079**	**0.037**
Named forest fires regions	1.510	1.489	1.456	-0.02	0.589	-0.052	0.168	-0.032	0.4
Heard about forest fires	0.982	0.980	0.975	-0.013	0.738	-0.046	0.23	-0.033	0.381
Named forest fires regions (bin)	0.885	0.886	0.872	0.003	0.927	-0.039	0.303	-0.043	0.26
Priority on natural disaster prevention	0.271	0.257	0.262	-0.038	0.31	-0.026	0.499	0.012	0.741
Priority on roads infrastructure	0.465	0.447	0.462	-0.051	0.174	-0.008	0.835	0.044	0.247
Experience w. any policy issues	0.665	0.663	0.655	-0.011	0.777	-0.047	0.22	-0.036	0.337
Experience w. natural disaster	0.482	0.479	0.474	-0.009	0.81	-0.022	0.556	-0.013	0.727
Experience w. road issues	0.786	0.778	0.773	-0.027	0.474	-0.043	0.258	-0.016	0.674
Forest fires exposure (average)	0.376	0.368	0.368	-0.03	0.433	-0.029	0.441	0	0.994
Road issues exposure (average)	0.625	0.612	0.617	-0.052	0.169	-0.031	0.421	0.021	0.581
Governor represents federal	0.444	0.455	0.462	0.022	0.568	0.036	0.346	0.014	0.706
Federal oriented	0.224	0.213	0.227	-0.047	0.214	0.015	0.698	0.061	0.106
Attributes positive education to federal	0.277	0.269	0.278	-0.018	0.628	0.003	0.944	0.021	0.579
Positive HC scenario assigned	0.494	0.501	0.550	0.015	0.69	**0.113**	**0.003**	**0.098**	**0.01**
Attributes (positive/negative) HC outcome to federal	0.339	0.307	0.350	-0.068	0.07	0.024	0.521	**0.093**	**0.014**
Government should put emphasis on domestic issues	0.944	0.937	0.946	-0.028	0.465	0.008	0.824	0.036	0.341
Proportion of Significant Differences					**0.026**		**0.051**		**0.128**

Note:

Significance at at least 5% level in bold.

Table B.2: Balance on Pre-Treatment Covariates

Variable	Mean			Roads vs. Placebo		FF vs. Placebo		FF vs. Roads	
	Placebo	Roads	Forest Fires	Std. Difference	P-value	Std. Difference	P-value	Std. Difference	P-value
Income level	0.366	0.366	0.362	0.003	0.926	-0.019	0.609	-0.023	0.548
Krasnoyarsk region	0.277	0.264	0.264	-0.029	0.435	-0.03	0.432	0	0.992
Irkutsk region	0.196	0.198	0.179	0.005	0.891	-0.044	0.246	-0.049	0.193
Kemerovo region	0.249	0.244	0.247	-0.013	0.738	-0.006	0.877	0.007	0.858
Novosibirsk region	0.277	0.294	0.310	0.036	0.334	0.072	0.057	0.036	0.341
City resident	0.919	0.921	0.921	0.006	0.864	0.007	0.86	0	0.995
Regional capital resident	0.635	0.629	0.638	-0.013	0.737	0.007	0.849	0.02	0.599
Age: 18-24	0.086	0.079	0.083	-0.027	0.469	-0.012	0.759	0.016	0.678
Age: 25-34	0.288	0.295	0.279	0.016	0.68	-0.021	0.576	-0.037	0.33
Age: 35-44	0.308	0.320	0.326	0.025	0.509	0.039	0.31	0.014	0.718
Age: 45-54	0.203	0.185	0.191	-0.047	0.215	-0.03	0.423	0.016	0.665
Age: 55+	0.114	0.121	0.121	0.023	0.544	0.022	0.567	-0.001	0.975
Female	0.572	0.588	0.556	0.033	0.379	-0.031	0.408	-0.065	0.087
Pays attention (pre-treat)	0.935	0.937	0.931	0.015	0.696	-0.029	0.441	-0.044	0.249
Assigned positive scenario (pre-treat)	0.494	0.501	0.550	0.015	0.69	**0.113**	**0.003**	**0.098**	**0.01**
Survey speeding index	0.012	0.010	0.009	-0.016	0.669	-0.028	0.454	-0.012	0.744
Straightlining index	0.035	0.038	0.036	0.057	0.132	0.014	0.708	-0.043	0.253
All answers index	0.014	0.013	0.009	-0.009	0.818	-0.054	0.159	-0.045	0.234
Meaningless response index	0.032	0.031	0.025	-0.006	0.869	-0.037	0.324	-0.032	0.4
Question Speeding index	0.123	0.120	0.118	-0.061	0.106	**-0.091**	**0.016**	-0.028	0.457
Can afford new car	0.457	0.476	0.445	0.038	0.316	-0.025	0.51	-0.063	0.096
Proportion of Significant Differences					**0**		**0.095**		**0.048**

Note:
Significance at at least 5% level in bold.

B.4 Attention check

Measurement of attitudes on the sample of online panelists, like the one used in this project, oftentimes raises concern that respondents do not pay attention to the survey questions and thus the measurement becomes unreliable.

To address this issue the online survey instrument featured a number of automated and explicit attention checks that allow me to measure respondent's attention. Specifically, survey instrument included simple question (`BLcheckattention`) that asked respondents to choose specific combination of answers prior to showing of experimental news reports. From the summary statistics tables for the pre-treatment variables, we can see that most of the sample correctly selected options specified in the question, which suggests that most of the respondents paid attention to the survey questions right before the treatment.

Inattentiveness of respondents might pose threat to the inferences if it is not equally distributed across main experimental groups. To address this concern, I include attention check measures in the list of covariates for which I check treatment balance. We can see from the tables in Appendix B.3 that there is no evidence for systematic differences in attentiveness between main treatment groups in the study.

B.5 Manipulation checks

Compliance in the context of this study can be defined as either *receipt of the news report by subject* or as *receipt of specific information contained in the reports administered to subject*. Post-treatment section of survey instrument that asks news report comprehension questions provide useful tools to analyze which information subjects picked up from the news reports and how did they perceive them.

Specifically the following questions from the survey can be used to identify the information respondents recall from the reports they were exposed to:

- `ELvideogist` Please, in 2-3 sentences summarize the main contents of the report you just watched
- `ELvideotopic` Please choose two phrases that best describe the topic of the report you just watched?
- `ELvideoeval` How would you evaluate quality the news report?

I use the above questions first to check the possible differences in quality and comprehension of video reports across all experimental groups. This includes use of simple text analysis tools on corpus of video gists collected in `ELvideogist` in the survey to assess any systematic differences in number of words, and number of words related to topic of the report used in the gists.`ELvideoeval` is used to assess whether any of the video reports used was systematically perceived as having worse quality or being less informative.`ELvideotopic` is used to assess whether respondents identified relevant key phrases that describe study videos.

For the open-ended question that asked to provide a summary of the video report I use simple 1-gram frequency tables generated using `ngram` package in `R` to identify the most frequent keywords appearing in the gists provided by respondents in one of the experimental conditions. I then construct a variable percentage of keywords used that appear with frequency above or equal to 0.01 in summaries for each respective news report and use these variables to conduct the manipulation checks.

For all variables I perform simple manipulation checks by estimating equation (7).

First in Tables B.3 and B.4 I look at the manipulation checks. We can see that for the topic of the video, the effects are exactly as we would expect: Those who watched placebo report are more likely to choose culture, education and public event, while those who received treatment reports indeed were more likely to select respective policy and one of the levels of government as main topics of the news report they watched. Notably forest fires report prompted people to think about municipal government slightly more than the roads report. Also, it is important that the rate of guessing the study aim at the end of the survey is not different across experimental groups (column 16) and also in general very low.

Slightly more problematic are the other manipulation checks reported in Table B.4. First, it seems

Table B.3: Manipulation Checks: Video Topics

	Video topic chosen							
	Culture	Education	Public event	Roads	Natural Disaster	Federal Government	Regional Government	Municipal Government
Roads report	-0.935***	-0.113***	-0.805***	0.921***	0.005	0.358***	0.484***	0.081***
	[0.007]	[0.009]	[0.011]	[0.007]	[0.005]	[0.014]	[0.014]	[0.009]
Fires report	-0.934***	-0.114***	-0.722***	0.001	0.885***	0.236***	0.489***	0.155***
	[0.007]	[0.009]	[0.013]	[0.003]	[0.009]	[0.013]	[0.014]	[0.011]
Summary								
Hypotheses	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠
Control mean	0.939	0.120	0.848	0.006	0.013	0.035	0.022	0.018
Observations	4244	4244	4244	4244	4244	4244	4244	4244

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the baseline regression model not adjusted for pre-treatment covariates selected using lasso procedure.

Table B.4: Manipulation Checks: Video Summary Characteristics and Experimenter Demand Effects

	Video Summary				Experimenter Effects
	Gist Symbols (log)	Gist Wordcount (log)	Video Quality	Paid Attantion to Video	Guessed Study Aim
Roads report	0.205***	0.150***	-0.011	0.012***	0.003
	[0.017]	[0.017]	[0.011]	[0.005]	[0.009]
Fires report	0.108***	0.061***	-0.040***	-0.003	-0.003
	[0.016]	[0.016]	[0.012]	[0.005]	[0.009]
Summary					
Hypotheses	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠
Control mean	4.435	2.230	0.698	0.962	0.063
Observations	4244	4244	4240	4244	4199

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the baseline regression model not adjusted for pre-treatment covariates selected using lasso procedure.

that the roads report prompted respondents to write the longest gists (with forest fires report following, and placebo report prompting shortest reviews) as shown in columns 1-2. Second, both roads and forest fires reports promoted respondents to be more focused in their summaries, since the *Gist correct words* represents the share of top 20 most frequent 1-grams within each experimental condition mentioned in respondent's news report gist. In other words, respondents who were exposed to responsibility news reports summarized the report in significantly more similar words, compared to placebo condition. Third, based on columns 6-7 it seems that both policy reports were slightly different from placebo report in terms of quality and attention paid (this is a measure whether both topics of the news report chosen had anything to do with the report itself). Overall though we can conclude that manipulation checks were passed.

In addition, in Table B.5 I look more closely at the phrases most frequently used by respondents to describe each of the news reports used in the study. We can see that for both policy reports regional government and respective policy (road repairs and forest fires) were among 5 most frequently used phrases used, while none of the government or policy was mentioned in the summaries of placebo report.

Table B.5: 20 most frequent 2-grams (2 word phrases) in gists of experimental videos

Placebo Report			Roads Report			Forest Fires Report		
2-gram	Count	Frequency	2-gram	Count	Frequency	2-gram	Count	Frequency
vladimir men shov	252	0.0195	remont dorog	367	0.0227	lesn pozhar	276	0.0196
80 let	136	0.0105	stroitel stv dorog	196	0.0121	naselen punkt	202	0.0144
vladimir men sh	117	0.0090	regional n vlast	123	0.0076	tushen pozhar	167	0.0119
snyal 5	90	0.0069	plokh dorog	96	0.0059	regional n vlast	152	0.0108
akter rezhisser	79	0.0061	dorog region	93	0.0057	krasnoyarsk kra	140	0.0100
rezhisser akter	67	0.0052	denezhn sredstv	90	0.0056	pozhar krasnoyarsk	115	0.0082
men shov 80	67	0.0052	federal n byudzhet	85	0.0052	tush pozhar	114	0.0081
5 fil m	60	0.0046	problem dorog	79	0.0049	dmitr medved	109	0.0078
rezhisser men shov	60	0.0046	sredstv remont	74	0.0046	dopust rasprostranen	104	0.0074
5 kartin	52	0.0040	vydelen sredstv	72	0.0044	mestn vlast	95	0.0068
yubil men shov	42	0.0032	stroitel stv remont	69	0.0043	pozhar naselen	81	0.0058
ispoln 80	42	0.0032	dorog ross	64	0.0040	bor b pozhar	73	0.0052
men shov fil m	40	0.0031	vydel den g	63	0.0039	rasprostranen pozhar	69	0.0049
rezhisser vladimir	40	0.0031	drug region	56	0.0035	medved priletel	66	0.0047
fil m kotor	39	0.0030	federal n vlast	54	0.0033	priletel krasnoyarsk	62	0.0044
nov kurs	39	0.0030	region kotor	52	0.0032	rasprostranen ogn	55	0.0039
snyal pyat	35	0.0027	dorog plokh	51	0.0031	provel soveshchan	52	0.0037
norm norm	34	0.0026	den g remont	51	0.0031	pozhar dolzhn	47	0.0033
men sh snyal	32	0.0025	dorog den g	50	0.0031	naselën punkt	46	0.0033
yubil vladimir	32	0.0025	nats proyekt	49	0.0030	bor b lesn	44	0.0031

For the analysis of 2-gram frequences, all gists for each of the experimental videos were combined and frequency of each possible combination of two consecutive words was counted.

B.6 Experimenter effects

In order to get a sense of the extent to which treatment-related experimenter demand effects may drive the results, I included question that asked respondents to guess the main aim of the study in the end of the survey instrument. The `ELdemandeffects` question in the survey includes the main experimental question as one of the options respondent can choose. I plan to look at the differences in rates of choosing this specific option across experimental groups using indicator of whether relevant option was chosen in question `ELdemandeffects` as an outcome. I test the null hypothesis of no effect of any media report on likelihood of guessing aim of the study using equation (7) and two-tailed p-value. As can be seen in column 5 of the Table B.4 above, only 6.3% of respondents in the control group successfully guessed study aim, and none of the treatment groups exhibit systematically different levels of guessing the study aim compared to the placebo control group. I interpret failure to reject null of no effect in this case as an evidence of absence of experimenter demand effects in the study. Moreover the rate of guessing the study aim in the placebo control group is below 10%.

C Additional results

C.1 ITT estimates for policy issues and media bias

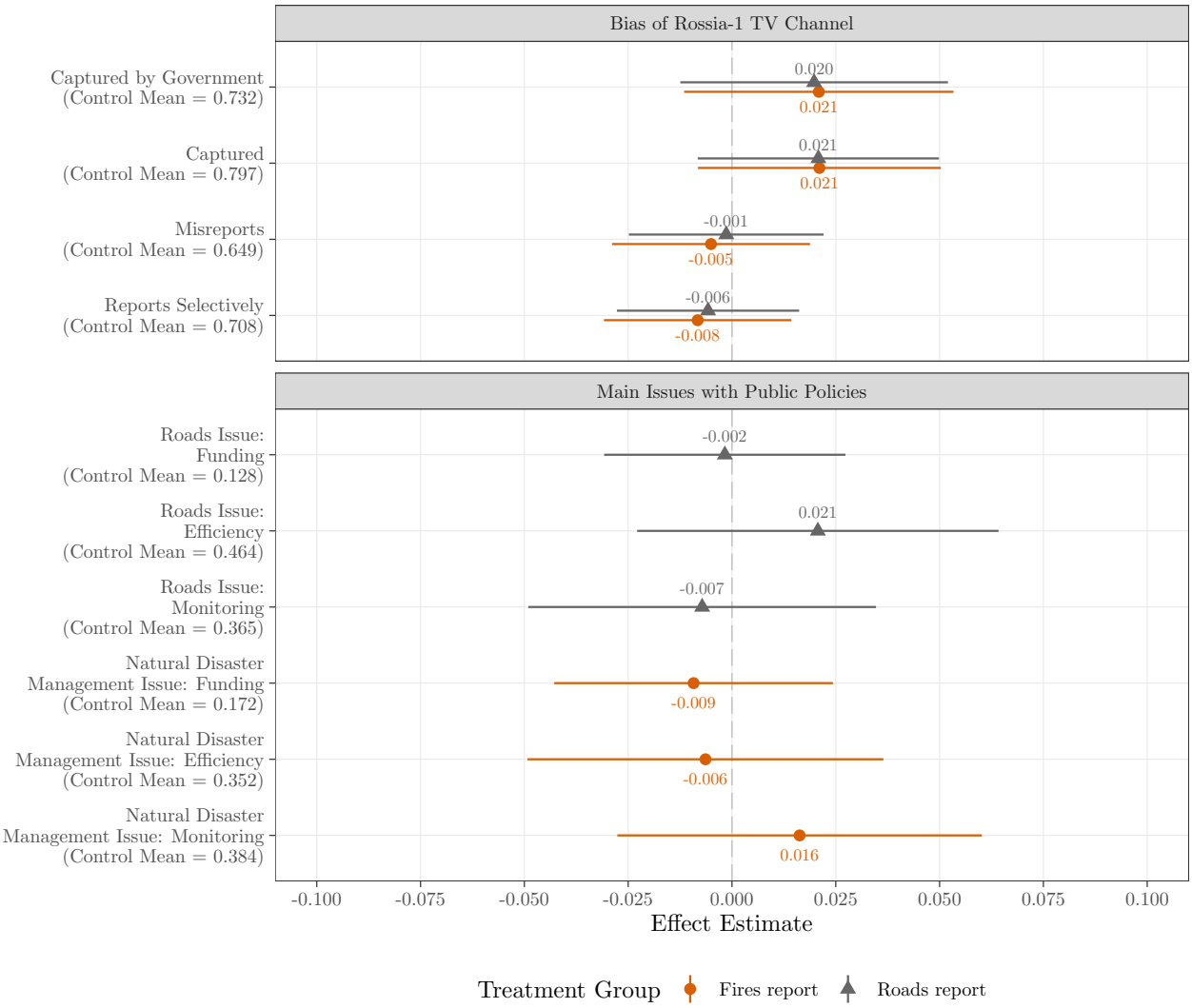

Figure C.1: ITT Estimates and 95% Confidence Intervals for Effects of Forest Fires and Roads News Reports on Perception of Main Issues with Policies and Bias of the News Source (*Rossia-1*).

C.2 Main ITT estimates

Table C.1: Effects on Main Outcomes

	Attributes responsibility to						Policy satisfaction		Credit/Blame on			Competence		
	Fires: Federal	Fires: Regional	Fires: Municipal	Roads: Federal	Roads: Regional	Roads: Municipal	Roads	Fires	Federal	Regional	Municipal	Federal	Regional	Municipal
Roads report	-0.003	0.006	-0.002	0.010	0.013	-0.024*	0.020*	0.007	0.005	0.021	0.012	0.021*	0.011	0.018*
	[0.013]	[0.009]	[0.012]	[0.012]	[0.009]	[0.013]	[0.011]	[0.012]	[0.009]	[0.013]	[0.010]	[0.013]	[0.011]	[0.011]
Fires report	-0.001	0.004	-0.003	0.022*	0.004	-0.026**	0.011	0.029**	0.001	0.029**	0.029***	0.013	0.016	0.026**
	[0.013]	[0.009]	[0.012]	[0.012]	[0.009]	[0.013]	[0.011]	[0.012]	[0.009]	[0.013]	[0.010]	[0.013]	[0.011]	[0.011]
Summary														
Hypotheses	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠
Control mean	0.431	0.701	0.367	0.250	0.691	0.559	0.347	0.405	-0.100	-0.172	-0.100	0.465	0.403	0.431
Observations	4222	4222	4222	4221	4221	4221	4221	4222	4230	4230	4230	4200	4202	4202

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the baseline regression model adjusted for pre-treatment covariates selected using lasso procedure. Dependent variable for responsibility attribution is scaled responsibility rank assigned to federal government for respective policy (based on `ELffblame` and `ELroadblame`). For policy satisfaction – scaled response to direct question about performance overall or for specific policy (based on `ELffsatis`, `ELroadsatis`, `ELsatis`)

Table C.2: Effects on Supplementary Outcomes

	Rossia-1 bias				Blame/Credit for outcome						Policy issue					
	Reports selectively	Misreports	Captured	Captured by government	Roads: Federal	Roads: Regional	Roads: Municipal	Fires: Federal	Fires: Regional	Fires: Municipal	Roads: Finance	Roads: Efficiency	Roads: Monitoring	Fires: Finance	Fires: Efficiency	Fires: Monitoring
Roads report	-0.006	-0.001	0.021	0.020	-0.006	0.011	-0.005	-0.012	0.005	0.007	-0.002	0.021	-0.007	-0.032**	0.005	0.022
	[0.011]	[0.012]	[0.015]	[0.016]	[0.013]	[0.011]	[0.015]	[0.016]	[0.011]	[0.015]	[0.015]	[0.022]	[0.021]	[0.016]	[0.022]	[0.022]
Fires report	-0.008	-0.005	0.021	0.021	0.023*	0.006	-0.030*	-0.015	0.003	0.012	-0.002	-0.004	0.001	-0.009	-0.006	0.016
	[0.012]	[0.012]	[0.015]	[0.017]	[0.014]	[0.011]	[0.015]	[0.016]	[0.011]	[0.015]	[0.015]	[0.022]	[0.021]	[0.017]	[0.022]	[0.022]
Summary																
Hypotheses	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠	≠ / ≠
Control mean	0.708	0.649	0.797	0.732	0.225	0.691	0.584	0.376	0.716	0.407	0.128	0.464	0.365	0.172	0.352	0.384
Observations	4233	4233	4233	4233	4221	4221	4221	4222	4222	4222	3030	3030	3030	2887	2887	2887

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the baseline regression model not adjusted for pre-treatment covariates selected using lasso procedure.

C.3 Heterogeneity by media consumption

Table C.3: Heterogeneous Effects on Main Outcomes by Prior News Consumption

	Attributes responsibility to						Policy satisfaction		Credit/Blame on			Competence		
	Fires: Federal	Fires: Regional	Fires: Municipal	Roads: Federal	Roads: Regional	Roads: Municipal	Roads	Fires	Federal	Regional	Municipal	Federal	Regional	Municipal
Roads report	0.011	-0.003	-0.008	0.018	0.011	-0.029*	0.015	-0.005	-0.004	0.009	0.007	0.001	0.002	0.019
	[0.016]	[0.011]	[0.015]	[0.014]	[0.011]	[0.015]	[0.013]	[0.014]	[0.010]	[0.016]	[0.012]	[0.015]	[0.013]	[0.013]
Fires report	0.016	0.008	-0.024	0.042***	0.003	-0.045***	0.017	0.032**	0.001	0.030*	0.042***	-0.002	0.013	0.027**
	[0.016]	[0.011]	[0.015]	[0.015]	[0.011]	[0.015]	[0.013]	[0.015]	[0.011]	[0.016]	[0.012]	[0.015]	[0.013]	[0.013]
Roads report x	-0.050*	0.030	0.020	-0.025	0.007	0.018	0.015	0.041*	0.029	0.041	0.016	0.069***	0.031	-0.002
Less exposure	[0.029]	[0.019]	[0.027]	[0.026]	[0.019]	[0.028]	[0.023]	[0.025]	[0.020]	[0.028]	[0.021]	[0.027]	[0.024]	[0.023]
Fires report x	-0.059**	-0.013	0.072***	-0.066**	0.003	0.063**	-0.019	-0.006	0.005	-0.001	-0.040*	0.058**	0.009	-0.001
Less exposure	[0.030]	[0.019]	[0.027]	[0.027]	[0.019]	[0.029]	[0.024]	[0.025]	[0.020]	[0.028]	[0.022]	[0.027]	[0.024]	[0.023]
Summary														
Hypotheses	≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠													
Control mean	0.431	0.701	0.367	0.250	0.691	0.559	0.347	0.405	-0.100	-0.172	-0.100	0.465	0.403	0.431
Observations	4222	4222	4222	4221	4221	4221	4221	4222	4230	4230	4230	4200	4202	4202

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the regression model adjusted for pre-treatment covariates selected using lasso procedure. Less exposure corresponds to the group with less then median self-reported news consumption from pro-government TV channels and more than median self-reported news consumption from social-media and messngers.

C.4 Heterogeneity by natural disaster prevention exposure

Table C.4: Heterogeneous Effects on Main Outcomes by Prior Exposure to Natural Disaster Prevention

	Attributes responsibility to						Policy satisfaction		Credit/Blame on			Competence		
	Fires: Federal	Fires: Regional	Fires: Municipal	Roads: Federal	Roads: Regional	Roads: Municipal	Roads	Fires	Federal	Regional	Municipal	Federal	Regional	Municipal
Roads report	0.024	0.010	-0.034*	0.017	0.014	-0.031	0.014	0.001	-0.007	0.024	0.004	-0.003	-0.024	-0.019
	[0.021]	[0.015]	[0.019]	[0.018]	[0.014]	[0.021]	[0.017]	[0.018]	[0.014]	[0.020]	[0.016]	[0.020]	[0.018]	[0.018]
Fires report	0.040*	-0.005	-0.035*	0.042**	-0.009	-0.034	0.006	0.014	-0.019	0.022	0.028*	-0.019	-0.013	0.001
	[0.022]	[0.015]	[0.020]	[0.020]	[0.014]	[0.021]	[0.017]	[0.018]	[0.015]	[0.021]	[0.016]	[0.021]	[0.018]	[0.018]
Roads report x	-0.044	-0.007	0.051**	-0.011	0.000	0.011	0.010	0.004	0.016	-0.010	0.012	0.038	0.055**	0.061***
Less exposure	[0.027]	[0.019]	[0.025]	[0.024]	[0.018]	[0.026]	[0.022]	[0.023]	[0.018]	[0.026]	[0.021]	[0.026]	[0.022]	[0.022]
Fires report x	-0.065**	0.014	0.050**	-0.033	0.021	0.012	0.008	0.017	0.030	0.004	0.000	0.051*	0.044*	0.042*
Less exposure	[0.028]	[0.019]	[0.025]	[0.025]	[0.018]	[0.027]	[0.022]	[0.024]	[0.019]	[0.026]	[0.021]	[0.026]	[0.023]	[0.022]
Summary														
Hypotheses	≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠													
	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠
Control mean	0.431	0.701	0.367	0.250	0.691	0.559	0.347	0.405	-0.100	-0.172	-0.100	0.465	0.403	0.431
Observations	4222	4222	4222	4221	4221	4221	4221	4222	4230	4230	4230	4200	4202	4202

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the regression model adjusted for pre-treatment covariates selected using lasso procedure. Less exposure corresponds to the group with less then median self-reported news consumption from pro-government TV channels and more than median self-reported news consumption from social-media and messngers.

C.4.1 Interaction between personal experiences with road quality and media consumption

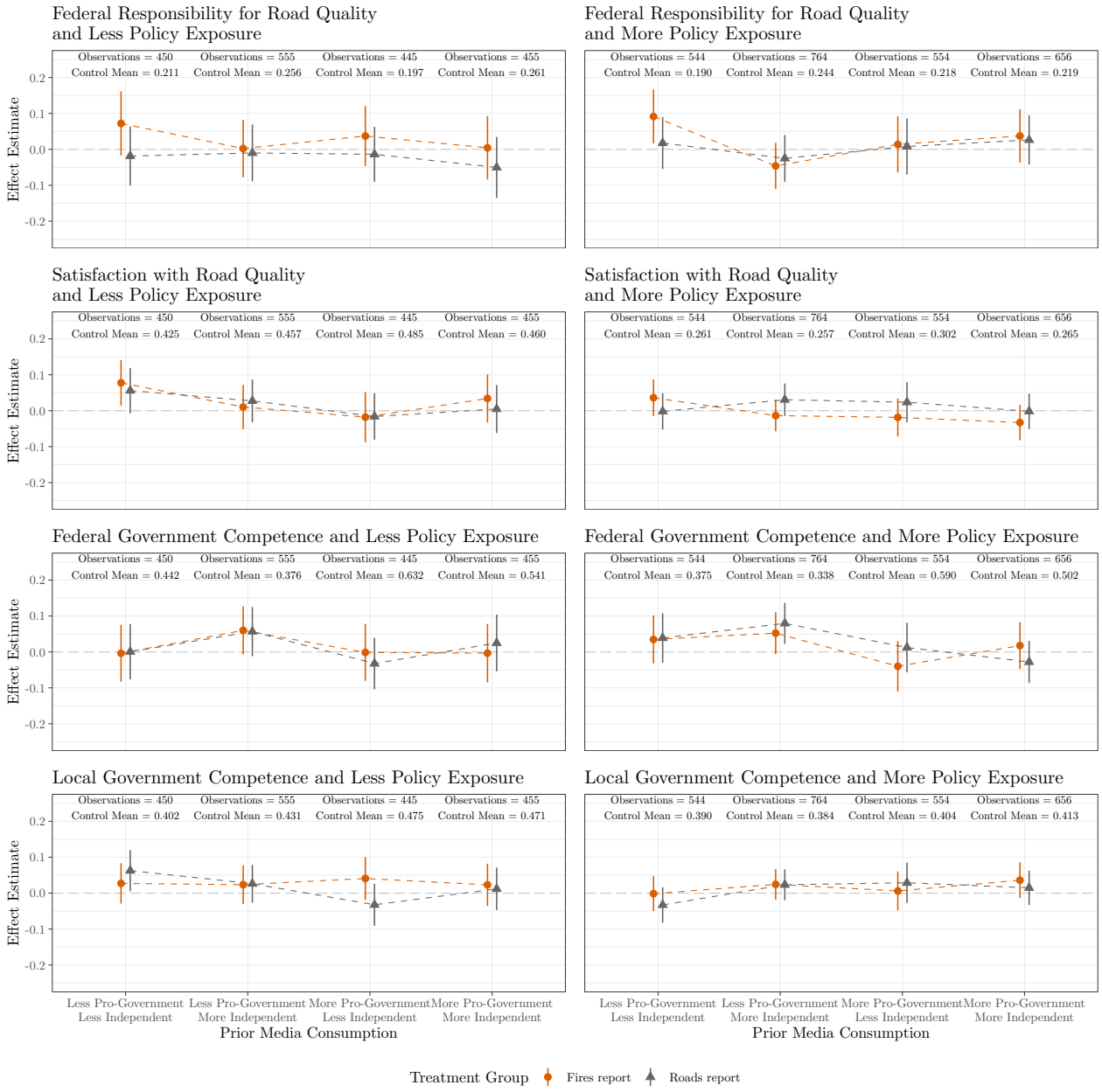

Figure C.2: ITT Estimates and 95% Confidence Intervals for Effects of Responsibility Reporting by Prior Exposure to Issues with Road Quality and Prior Media Consumption.

C.4.2 Comparison of government evaluation and predicted blame/credit

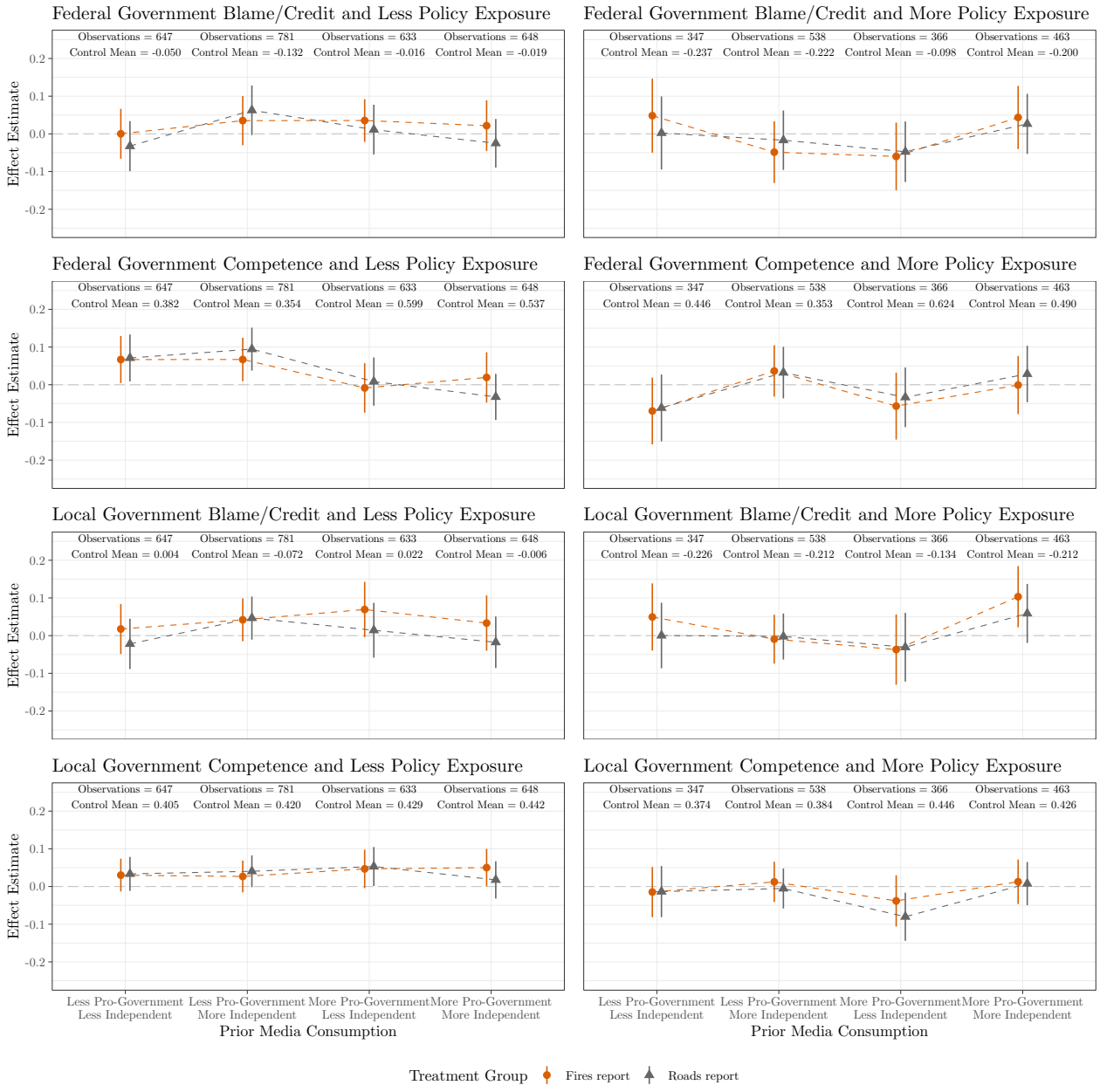

Figure C.3: ITT Estimates and 95% Confidence Intervals for Effects of Responsibility Reporting on Government Competence and Blame/Credit Predicted Based on Changes in Responsibility Attribution and Policy Performance by Prior Policy Exposure.

C.5 Heterogeneity by order of policy related questions

Table C.5: Heterogeneous Effects on Main Outcomes by Order of Policy Related Questions

	Attributes responsibility to						Policy satisfaction		Credit/Blame on			Competence		
	Fires: Federal	Fires: Regional	Fires: Municipal	Roads: Federal	Roads: Regional	Roads: Municipal	Roads	Fires	Federal	Regional	Municipal	Federal	Regional	Municipal
Roads report	-0.019	0.010	0.009	0.002	0.000	-0.001	0.031**	0.015	0.010	0.036**	0.019	0.017	-0.007	0.009
	[0.018]	[0.012]	[0.017]	[0.016]	[0.012]	[0.018]	[0.015]	[0.016]	[0.012]	[0.018]	[0.014]	[0.017]	[0.015]	[0.015]
Fires report	0.004	0.000	-0.004	0.025	0.004	-0.029	0.011	0.043***	-0.003	0.035*	0.046***	0.025	0.014	0.015
	[0.018]	[0.012]	[0.017]	[0.017]	[0.012]	[0.018]	[0.015]	[0.017]	[0.013]	[0.018]	[0.014]	[0.018]	[0.015]	[0.015]
Roads report x	0.032	-0.010	-0.022	0.018	0.029	-0.047*	-0.024	-0.017	-0.012	-0.033	-0.014	0.008	0.036	0.020
Roads first	[0.027]	[0.018]	[0.025]	[0.024]	[0.018]	[0.026]	[0.021]	[0.024]	[0.018]	[0.026]	[0.020]	[0.025]	[0.022]	[0.021]
Fires report x	-0.010	0.007	0.003	-0.008	0.002	0.006	0.000	-0.028	0.009	-0.014	-0.036*	-0.025	0.004	0.023
Roads first	[0.027]	[0.018]	[0.025]	[0.025]	[0.018]	[0.026]	[0.021]	[0.024]	[0.018]	[0.026]	[0.020]	[0.026]	[0.022]	[0.021]
Summary														
Hypotheses	≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠≠ / ≠ / ≠													
	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠	/ ≠
Control mean	0.431	0.701	0.367	0.250	0.691	0.559	0.347	0.405	-0.100	-0.172	-0.100	0.465	0.403	0.431
Observations	4222	4222	4222	4221	4221	4221	4221	4222	4230	4230	4230	4200	4202	4202

* - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. HC2 standard errors in brackets. Directional hypotheses (if more than one) are listed in the order of the estimates presented. The table reports estimates from the regression model adjusted for pre-treatment covariates selected using lasso procedure. Less exposure corresponds to the group with less then median self-reported news consumption from pro-government TV channels and more than median self-reported news consumption from social-media and messngers.

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