The Media under Autocracy:
Essays on Domestic Politics and Government Support in Russia

Georgiy Syunyaev

Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
under the Executive Committee
of the Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2022

Abstract

The Media under Autocracy: Essays on Domestic Politics and Government Support in Russia

Georgiy Syunyaev

A free and competitive media environment is the cornerstone of political accountability. News media provide citizens with the information necessary to assess policy performance and attribute it to the correct political actors. Many non-democratic governments attempt to manipulate citizens' beliefs about the competence and performance of political leaders by controlling the news media. In this dissertation, I investigate the extent to which this strategy is effective. I conduct a series of online experiments in Russia, a prominent modern autocracy. The three chapters of this dissertation illuminate how the public reacts to the coverage of domestic politics by state-controlled media; whether independent local media in an otherwise controlled media environment can give rise to partial accountability; and how citizens' prior experiences, knowledge, and beliefs moderate what citizens learn from the news.

Chapter 1 studies a kind of coverage produced by many state-owned media: messages that target citizens' perceptions of whether the central or the local government is responsible for policy outcomes. I report results from a survey experiment with over 4,000 respondents in Russia. The experiment randomly assigned respondents to watch news reports from Russia's popular 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 governments. My findings suggest that even though the reports did not shift beliefs about the locus

of policy responsibility, they improved policy performance perceptions and increased government support. One explanation for these findings is that citizens know that the central government would only associate itself with local policies if the performance is high. I show that my findings are consistent with a Bayesian learning model in which citizens can be aware of biased media reporting strategy and update positively on policy performance and government competence when they observe central government associating itself with the policy. The broader implication is that propaganda can be effective not despite, but because citizens know that news outlets are controlled by the government.

In Chapter 2, I focus on the effects of independent news outlets in an otherwise controlled media environment. Existing empirical evidence suggests that such news outlets can decrease support for the government, encourage collective action and ultimately lead to regime change. In this chapter, I show that the information provided by media outlets that are not controlled by the government can have limited effects on citizens' beliefs. I rely on data from an experiment conducted in one of the largest cities in Russia, Novosibirsk. I show residents pre-recorded local news reports on one of the most salient policy issues, healthcare delivery. Despite high compliance rates, the effects of exposure to local independent media reports are limited. I also find no evidence for treatment effect heterogeneity across a number of dimensions. Overall, these findings cast doubt on the ability of independent local media to bring about partial accountability.

Chapter 3 investigates another type of coverage that is common in state-controlled media environments: messages that attribute successes in macroeconomic policy to an authoritarian leader. I propose a simple model of belief-updating in which citizens are simultaneously uncertain about the government's competence and the bias of the media source. Since macroeconomic performance is difficult to observe for citizens, the model in this chapter allows the media outlet to *lie* about government competence. The model makes predictions about the types of citizens who are most and least susceptible to being persuaded. I derive hypotheses about the effects of propaganda on citizens' beliefs about government competence and media bias. To test the model's predictions, I design

and implement an online panel experiment that uses news reports from the leading state-owned TV channel in Russia. Contrary to the model's predictions, I find that positive policy events presented by biased media can backfire and lead citizens to worsen their perception of policy performance and government competence.

Table of Contents

List of Figures

List of Tables

Acknowledgements

This dissertation is a product of countless hours and sleepless nights spent in New York, Moscow, Novosibirsk, and Berlin, and there is no way I would make it through without the help and support of many colleagues, mentors, friends, and family. Thank you for all your help.

First, I would like to thank my advisors. Learning from you, having discussions about, and working with you on various projects is what inspired me to start this dissertation and helped me finish it. Tim Frye supported me even before I started my graduate studies at Columbia by encouraging me to apply for Ph.D. programs and helping me with a semester visit to New York. Throughout my time at Columbia, Tim supported this dissertation project in numerous ways by challenging my initial ideas, encouraging me to conduct fieldwork, helping with funding, and providing feedback on manuscripts. But beyond that, Tim always showed me by his example what it takes to truly understand the context you are studying. Spending a lot of time in the country or region, knowing the language fluently, giving back to the community by founding research institutions and helping young scholars, encouraging the exchange of ideas and not extortion of data. All of this inspired me to continue my research and gave it its true purpose, for which I will always be grateful to Tim.

Macartan Humphreys has been another constant source of inspiration. Coming to Columbia from a different field, I knew little about Macartan before starting my graduate studies. I was fortunate to take a class that Macartan taught in my second year, and ever since, I have known I would like to work with him and learn from him as much as possible. True passion for scientific discovery combined with a deep understanding of methodological foundations allows Macartan to not question

the premise of what his students do or their abilities but rather help them see their research from a completely new angle. By that virtue, Macaran made me rethink many parts of this dissertation and my approach to answering the questions that I care about. I am also truly grateful to Macartan for believing in me and for his emotional and professional support throughout the last seven years.

No one probably affected this dissertation project methodologically as much as Don Green did. Don completely changed my approach to empirical research, and ever since I audited his class on field experiments, I have been captivated by the idea of putting careful and theoretically grounded design at the core of my research. By his example and during discussions we had, Don showed me that this could only be done by thinking through your theoretical expectations, extensive piloting, and meticulous attention paid to details of your intervention before you even start the data collection. All of this directly impacted three chapters of this dissertation, and without Don's continuous encouragement, it would not be possible. Thank you, Don, for that.

This dissertation would also not be possible without the inspiration and support provided by Michael Ting. In the first year of the program, Mike's exceptional ability to motivate and explain complex game-theoretic concepts in his class revived my long-standing passion for formal modeling and appreciation for its clarity, conciseness, and self-consistency. Thanks to Mike, all of the theoretical underpinnings of my empirical work are strongly grounded in formal thinking. I know that Mike always believed that I could go further and build formal models that go beyond the clear statement of empirical hypotheses. Thank you, Mike, for this belief and your support throughout these years. I know that when this dissertation is turned into a book, it will have a formal model at its core (that also will not be a signaling game).

Beyond my core set of advisors, I would like to thank John Marshall, Carlo Prato, Ben Goodrich, Arturas Rozenas, Jordan Gans-Morse, Scott Gehlbach, and Holger Kern, who at various stages provided extensive comments and supported further development of the chapters of this dissertation.

While working on this dissertation, I often questioned the importance and relevance of the topics and context that I studied. And it is crucial that in these times, there was always a strong, creative, and

supportive community of scholars of Russia who helped me regain my confidence. I'm especially grateful to Quintin Baezer, Ora John Reuter, Moah Buckley, David Szakonyi, Anton Shirikov, Olga Gasparyan, Denis Stukal, Guzel Garifullina, Anton Sobolev, Amanda Zadorian, Israel Marques II, Nikita Zakharov, Koen Schoors, Bryn Rosenfeld, Alexey Makarin, Evgeniya Mitrokhina, and Gulnaz Sharafutdinova.

I was also always fortunate to have institutional and professional help provided by the International Center for Studies of Institutions and Development at the Higher School of Economics (Moscow) and the Harriman Institute at Columbia. Thank you to Andrey Yakovlev, Olga Masyutina, Valeriya Kotelnikova, Katya Borisova, and Alexander Cooley for believing in my potential and supporting me in spending extensive time in Russia during my fieldwork.

Special thanks go to the organization in Russia, which made my field research possible. I'm grateful to Marina Shestakova and Alexander Bayanov from Tayga.info, and Anton Donskikh from Online Market Intelligence for this.

The last year of working on the dissertation would not be possible without constant support from members of the Institutions and Political Inequality unit at the WZB Berlin. Alex Scacco, Nina McMurry, Julio Saul Solís Arce, Sampada KC, Manuel Bosancianu, and Hanno Hilbig, you became my new academic family, and without you, I wouldn't be able to finish this dissertation.

One of the primary reasons for choosing the Columbia Ph.D. program for me was its student community. And indeed, it turned out that without constant support (both emotional and professional) from my peers at various stages, I would not be able to go through these years. Thank you for being there, Anselm, Jasper, Tara, Abhit, Katya, Graeme, Salif, Daniel, Giovanna, Ahmed, Zara, and Jackie. Thank you to everyone who spent countless hours in various discussions on the 8th floor.

Anna and Tom are my Columbia family, and I cannot thank you guys enough for all our time together. Beyond all the emotional support, you contributed to this dissertation in numerous ways and were always my best advocates, even during the hardest times in the program. Thank you for that! Also, thank you to Egor and Renata for always making me feel in touch with home while being

far away. Thank you also to Viviana, Ben, Justin, and Umberto. Cristy, thank you for all the time we spent together trying to forget how hard academic pursuit is. Throughout my graduate journey, I was also fortunate to have the undivided support of my family. Despite often not understanding the specific purpose of what I am doing, Elena, Ravil, and Dasha always encouraged me to pursue my professional goals, and I cannot be thankful enough for that. My friends in Moscow, Dima, Nastya, Daniil, Ira, Sergey and Anya, Nastya Replyanskaya, and Asiya always were there for me and allowed me to forget about the academic struggles when I needed them the most.

Finally, I wanted to thank Lily for guiding me through these last years and showing me how to handle stress by being open about it. Finishing this dissertation would not be possible without you by my side. I am so fortunate that I met you during the hardest time of this journey, and I hope I can repay you by doing the same for you in the coming years.

For Elena, Ravil and Dasha.

For all investigative journalists who remain in Russia and continue to fight to protect our right to an alternative view.

Introduction

On August 20th, 2021, the Russian Ministry of Justice issued a verdict in which it recognized the main opposition news outlet *TV Rain* as a foreign agent. While this status change did not directly affect the ability of the channel to continue broadcasting, it effectively prevented it from receiving domestic funding or being publicly cited by other media sources in Russia.

TV Rain, among other prominent independent news outlets such as *Meduza*, *VTimes.io*, *The Insider* and *Project Media*, became the latest victims of attempts by the Russian government to suppress the freedom of the domestic press and further solidify its control over the media environment.[1] To what degree does its control over the news media help the Russian government to maintain its popularity? This question is at the core of this dissertation.

Attempts to control the media environment are common in non-democratic regimes. Such attempts range from large-scale online censorship (King et al., 2013) and restrictions on internet access (Chen and Yang, 2019) in China to media outlet take-overs in Venezuela (Knight and Tribin, 2019), direct repression in China (Qin et al., 2018) and Russia (Crabtree et al., 2015) and bribing of journalists in Peru (McMillan and Zoido, 2004) and Russia (Crabtree et al., 2015).

The effects of such control may be complex. Restrictions on media freedoms will likely result in greater exposure of citizens to propaganda produced by state-controlled outlets. Such an increase in exposure, however, can be a "double-edged sword" from the perspective of autocrats. On the one

[1] https://meduza.io/feature/2021/08/27/meduza-dozhd-novaya-gazeta-forbes-i-drugie-redaktsii-potrebovali-chtoby-vlasti-ostanovili-kampaniyu-protiv-nezavisimyh-smi.

hand, greater consumption of pro-government news can lead citizens to believe the government's narrative and improve their support for the government. On the other hand, greater exposure to propaganda may also increase citizens' awareness of the state's control over the media which may in turn lead citizens to discount the information that they receive. Little is known about the relative importance of these effects (Enikolopov and Petrova, 2015).

Moreover, even where media freedoms are restricted, a limited set of independent media outlets often remain. In many cases, these outlets are confined to the local level or use non-traditional formats such as social media. In principle, such alternative news outlets may play an important role in maintaining government accountability, at least at the sub-national level. Indeed, existing evidence suggests that independent local media can encourage collective action and government sanctioning (Larreguy and Marshall, 2019). Studies of the effects of local media in non-democratic regimes, however, remain scarce (Larreguy et al., 2014; Martin and McCrain, 2019).

The first chapter in the dissertation focuses on the effects of news reports that concern two critical policy domains – natural disaster prevention and road infrastructure. As part of an online survey experiment among over 4,000 residents of four regions in Siberia, I assigned citizens to watch one of three news reports. All news reports were produced by the main state-owned TV channel, *Rossia-1*. The first two news reports discuss which political actors are responsible for disaster prevention and road infrastructure, respectively. The third news report serves as a placebo control condition and covers events that are irrelevant to policy or government performance. I estimate the effects of state-owned news about responsibility for policy outcomes on citizens' beliefs about policy performance and responsibility, as well as on citizens' support for different levels of government.

State-owned media in autocratic settings often aim to project an image of central government competence while shifting blame for policy failures to other levels of government. To achieve this goal, state-owned media outlets tend to broadcast news reports that show central government officials who monitor local government performance. Both treatment reports used in this chapter share this structure. The attribution of policy responsibility is crucial for the popularity of authoritarian

governments. Public policy performance cannot be easily blamed on actors that are external to the political system, and citizens are likely to attribute responsibility to one of the government levels. Assessing the effectiveness of this blame shifting strategy among different segments of the population hence is crucial for understanding the extent to which an authoritarian government can use propaganda to maintain power and support.

I show that coverage of domestic policy issues by state-owned media in an authoritarian country can influence both citizens' attitudes about those policies and their overall support for the government. My results indicate that both central and local governments can benefit from such media coverage, with the local government experiencing a higher increase in popularity. I rely on a simple rational updating framework to explain these patterns. My model suggests that such updating can happen *not despite, but because* citizens know that the media outlet is captured by the government and thus pursues its interests in their media coverage.

In line with existing work on the 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 a policy issue that has recently gained national prominence can prevent citizens from updating their beliefs. The same does not appear to be the case for policy issues for which performance is continuously low. Direct experience with road infrastructure, a continuous problem in Russia, does not appear to limit the degree to which citizens learn from government-controlled news coverage. 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 I find that citizens who do not usually consume propaganda and instead rely on independent news sources are most susceptible to pro-government persuasion. This result supports the notion that citizens' learning process is well captured by rational belief updating: if citizens understand the strategy employed by government-controlled media outlets, they can rationally extract information about policy performance and responsibility from biased news reports and update their evaluations of government performance

accordingly.

In the second chapter I provide evidence of the effects of local independent media coverage in an authoritarian context. Specifically, I report results from an online experiment conducted on a sample of residents of Novosibirsk, the third-largest city in Russia. The intervention consisted of showing residents reports on public healthcare policy. I scripted and prepared the reports in partnership with a prominent independent local media outlet, *Tayga.info*. The experiment was designed to shed light on two questions. First, I sought to understand whether news reports that attribute responsibility for policy outcomes to different tiers of government shift how citizens attribute blame and credit. Second, I aimed to shed light on whether trust in local media and prior beliefs moderate the effects of such reports.

The chapter documents that independent local media reporting on policy and responsibility might have limited effects in non-democratic settings. None of the news reports that I study in this chapter appears to have shifted citizens' perceptions of government performance. This result runs counter to existing empirical evidence that paints a more rosy picture of the ability of independent media to promote political accountability.

I employ several strategies to assess the robustness of my conclusion that exposure to independent news reports had limited effects on citizens' views. First, I provide evidence that none of the core assumptions needed for my design to yield unbiased treatment effects appears to be violated. Second, I document that participants in the study show high levels of treatment report comprehension as measured by post-treatment manipulation checks. Finally, I show that the apparent absence of effects does not appear concentrated among specific subgroups. I do not find any evidence of treatment effects even among subgroups that we would most expect to be affected, such as those who frequently consume and trust local media, those who report an intention to participate in local and national politics, or those whose prior beliefs about responsibility are wrong.

In the third chapter I move away from the focus on reports that seek to shift blame for an underperforming policy. Instead, I focus on the ability of state-owned media to attribute credit for high policy

performance. The theory and empirical strategy in this chapter differ from the previous chapters of this dissertation . Instead of focusing on local policy issues that are likely to be observed by citizens in their daily lives, I hone in on the coverage of overall policy performance, namely the national budget and economic growth. The limited ability of citizens to base their beliefs about macroeconomic policy issues on their personal experiences may allow the government to provide false information rather than selectively report facts. This assumption is reflected in a simple model that I build to derive predictions about the likely effects of the news reports that I study in this chapter.

Again, the chapter makes use of an online panel experiment in Russia. The experimental intervention consists of showing respondents news reports from *Channel 1*, a prominent state-owned news outlet in Russia, that cover macroeconomic issues. To study whether and how citizens attribute good economic performance to government actors, I include two treatment arms. In the first treatment arm, respondents are exposed to a news report that explicitly attributes positive macroeconomic policy trends to President Vladimir Putin. The second treatment arm consists of the same news reports but cuts out footage of President Vladimir Putin. The experiment allows me to test how citizens simultaneously update their views on government competence and media bias.

The experiment yields mixed results. I find little support for the predictions of my model I develop when looking at the effects of economic news that also show the President on citizens' beliefs about media bias. Moreover, I find consistent adverse effects of economic news on the evaluation of the economy, suggesting that even positive events covered in biased media can backfire. Yet, this negative updating on policy performance does not appear to translate into lower support for the government even when the news reports directly mention President Putin. Overall, analyses in this chapter suggest that coverage of macroeconomic issues in state-owned media is limited in its ability to generate support for authoritarian governments.

This dissertation aims to advance our understanding of the effects of news coverage produced by both state-owned media outlets and local independent media. The three chapters of this dissertation

are similar in several aspects. First, throughout the dissertation, I rely on evidence from experiments that expose participants to news reports on domestic policy issues in Russia. In doing so, I paint a comprehensive picture of how citizens react to the provision of potentially biased information about various domestic issues – a core strategy used by informational autocrats (Guriev and Treisman, 2019). Second, in each chapter, I explore the moderating role of citizens' prior beliefs about media bias. This focus allows me to contrast citizens' reactions to information from sources that are known to be captured by the government with citizens' reactions to information that is provided by independent sources. Finally, I rely on a rational updating approach to explain the empirical patterns I observe. This allows me to explore how contextual assumptions about citizens beliefs and types of media reporting can affect the citizens' learning from the media, without departing from the rationality assumption.

The chapters of this dissertation also differ in important ways. In chapter 1, I focus on the effect of news coverage on local road infrastructure and forest fires. Both of these are policy issues that citizens are likely to have encountered in their daily lives. Chapter 3, on the other hand, explores the effect of news coverage on macroeconomic growth – a policy issue that affects citizens lives in much more indirect ways. This diversity in treatments allows me to explore how personal experiences with a policy moderate learning from potentially biased news reports. Second, I study the effects of news reports from both national state-owned media (chapters 1 and 3) as well as local independent media (chapter 2). Finally, I consider different kinds of strategies that media outlets use to frame which political actors are responsible for a given policy. Chapter 1 is based on news reports that attempt to shift blame for the low quality of service delivery to local governments. Chapter 3, on the other hand, considers news reports that aim to give credit for high macroeconomic performance to the central government. In sum, this dissertation provides evidence on the effects of a broad spectrum of news coverage on domestic politics that are common in authoritarian regimes.

Taken together, this dissertation's findings present a more complicated picture of the effects of media coverage in non-democratic regimes than is commonly assumed. Positive effects of news

reports by state-owned media turn out to be concentrated among those who are a priori most aware of the pro-government media bias. Credit claiming does not appear to affect government support or may even backfire. Coverage by independent local media appears to have limited effects on citizens' beliefs, possibly due to low demand. These findings add nuance to existing evidence on the impact of exposure to news reports produced by state-owned and independent media. One important takeaway is that there are limits to autocrats' abilities to maintain support by controlling the content of news reports. Citizens in autocratic settings do not appear to be naive consumers who simply adjust their beliefs in accordance with government propaganda. At the same time, citizens do not always disregard biased news entirely. In fact, in some instances, it is exactly citizens' awareness of the fact that news reports are biased that seems to allow them to learn from the information provided in a controlled media environment. Another key insight supported by this dissertation is that effects of media reports are likely to vary with citizens' prior beliefs and exposure to media content. The survey experiments presented here have allowed me to isolate the importance of such treatment effect heterogeneity in a highly controlled one-shot setting. The next step towards understanding the role of news media in autocracies will be to take a more dynamic approach that traces citizens' media diet and beliefs over time.

Chapter 1: Is Propaganda Effective? Evidence on Framing of Responsibility by State-Owned Media in Russia

1.1 Introduction[1]

Modern-day autocrats tend to avoid harsh repression of opposition and instead 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 an image of fear and discourage opposition.

One of the prominent tools that aids autocrats in achieving this goal seem to be the 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 et al., 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, 2015b). While it seems clear that autocrats attempt to use all of these strategies, evidence of 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.

[1]The study is covered by the Columbia University Morningside IRB protocol #IRB-AAAS4473. The Pre-Analysis Plan for the study was registered at AEA Registry (#AEARCTR-0005693) after data collection, but prior to any analyses.

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, 2015a; Qin et al., 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, 2007; Enikolopov et al., 2011; Adena et al., 2015; Chen and Yang, 2019; Kronick and Marshall, 2018).

On the other hand, it is tough 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 an authoritarian state owns the outlet. This feature of media effects studies leads scholars to either focus on overall exposure to biased media as discussed above or resort to the 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 with 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. Notably, the design of these studies, while giving evidence for the effects pure exposure to performance information has on government support, abstracts from the possible moderating factor: beliefs about the bias of the information source. The latter is crucial for understanding the potential effects of biased media in an authoritarian setting, where the extent and direction of bias of state-owned media

outlets can be widely known to the public.

This chapter 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 management and road infrastructure. In a three-arm online survey experiment among over 4,000 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. In contrast, the third news report covers events irrelevant to policy or government performance and thus serves as a placebo control condition. Comparing the differences in post-treatment beliefs across conditions, I estimate the effects of watching state-owned news about responsibility on citizens' beliefs about policy performance and responsibility and their overall support for the government at different levels.

The design of the study has several unique features that make it particularly suitable for answering questions about the 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 the image of central government competence while shifting blame for policy to other levels of government. To achieve this goal, state-owned media often broadcasts news reports showing 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 chapter 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 an authoritarian government can use propaganda to project an 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 management 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 national 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 making sure that the public was aware that responsibility for the policy was 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 challenging. The responsibility for maintenance of road infrastructure, as with forest fires prevention, lies predominantly with the local government. Unlike forest fires prevention, this policy had no significant shocks in 2019. However, the *Rossia-1* TV channel still covered this policy multiple times in the context of a federal project on road quality. 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 of the quality of natural disaster management.

The empirical analysis in the chapter yields four main results. First, when looking at the whole sample, state-owned media coverage on both policies appears to have a moderately positive effect with evidence of a slight increase in policy satisfaction and support for all government levels.

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. Those citizens shift their perception of the 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 the federal government more at the baseline. Looking at the heterogeneity of the effects by immediate prior 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 the 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 government support among those who watch pro-government media less frequently.

These findings suggest that there are limits to the ability of the 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. Moreover, contrary to existing accounts of biased media effects on polarization of public attitudes (Prior, 2013), I find that the impact of the pro-government media is the strongest among citizens who rely on independent media more than on pro-government media. To reconcile this evidence 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).

This chapter 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 et al., 2015; Enikolopov et al., 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 chapter is organized as follows. In Section 1.2 I briefly introduce the context of the study. Section 1.3 lays out theoretical expectations based on the pre-registered Bayesian updating model presented and states predictions about the expected effects of biased media coverage of policy responsibility. Section 1.4 details sample enrollment, experimental design and measurement of outcomes. Section 1.5 reports results of the empirical analyses. Section 1.6 presents a revised version of the Bayesian updating model that provides possible explanation for observed empirical results and discusses possible alternative explanations. Section 1.7 concludes.

1.2 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 yje Siberian Federal District of Russia: Novosibirsk, Irkutsk and Kemerovo oblasts and Krasnoyarskiy Krai.[2] 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 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.

1.2.1 News coverage by state-owned media

As suggested by the ranking of press freedom (149 out of 178, see RSF (2020)), the Russian media environment is severely restricted: many media outlets, especially TV, are either censored (Proekt

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

Media, 2019a) 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 which is less controlled by the government, is 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 of 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). 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 more than 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 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 the 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).

1.2.2 Forest fires and road quality

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 these 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 government's 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, 2019b).

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 management 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 management 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.

1.3 Theoretical framework

In this chapter I rely on rational learning framework to explain how citizens in non-democratic regimes can update their beliefs about media bias, policy performance and government support (Kamenica and Gentzkow, 2011; Gehlbach and Sonin, 2014; Hill, 2017). Importantly, I depart from the common assumption that perception of bias of media source can prevent citizens from learning from them (Gentzkow and Shapiro, 2006). Instead, I argue that understanding of nature of media bias can allow citizens to effectively learn from state-owned media coverage about actual government performance.

I use simple Bayesian updating framework laid out in the Pre-Analisis Plan to form predictions about effects of treatment news reports about natural disaster management and road infrastructure quality.[3] To resemble the experimental setting of this project, the model I propose aims to capture partial-equilibrium in which media outlet strategy is assumed to be fixed. Following the literature I assume retrospective voting logic and focus on four main outcomes: policy performance, policy responsibility, and government competence. Importantly, I assume that citizens updating on policy

[3]Full model setup is presented in the Appendix A.4.

and government evaluations is mediated by their beliefs about the bias of the media outlet from which they receive a policy message. I assume that citizens are aware that there are two main reasons for state-owned media to attribute responsibility for domestic policy to local (regional or municipal) government. On the one hand, it could be due to objective allocation of responsibility for the policy, if state-owned media reporting is not controlled by the central government. On the other hand, it could be that the government controls state-owned media reporting and thus such media over-reports local government responsibility when policy performance is low and under-reports it when policy performance is high.

As a result upon observing state-owned media reports on responsibility citizens simultaneously update their beliefs about media bias, government performance, policy performance and policy responsibility. Moreover, the extent and direction of belief updating in the model depends on the prior beliefs about all of those parameters. The results of the model can be summarized in the three predictions presented below.

Prediction P1 states that as long as the treatment news reports include information on policy responsibility and attribute it to the local government, citizens are expected to infer that such reports are coming from unbiased media or from biased media when the policy performance is low and the central government attempts to shift blame towards the other levels of government. Unbiased media reports true allocation of responsibility for the policy regardless of this policy performance. Thus, citizens are expected to change their beliefs about policy performance only if they believe that media is at least partially biased in favor of the central government. The assumption that at least some citizens believe media to be biased is plausible in the context of this study and will be tested using baseline media bias evaluations discussed in the following sections.

Prediction P1 (Policy Performance). Regardless of prior beliefs about policy performance news coverage that attributes responsibility for policy performance to local government has *negative* effect on the beliefs about respective policy performance compared to the news coverage that does not mention policy.

A similar logic can explain predictions regarding the updating of beliefs about policy responsibility. In this case both biased and unbiased media reports are expected to reflect the true allocation of responsibility: Unbiased media always reports the truth, while biased media only reports local government responsibility when policy performance is low. As a result, as long as at least some citizens believe that policy performance is low, citizens will shift their beliefs about policy responsibility towards the local government upon observing treatment news reports. Prediction P2 summarizes this logic.

Prediction P2 (Responsibility Attribution). For any prior beliefs about policy responsibility, news coverage that attributes responsibility for policy performance to the local government has a *positive* effect on the attribution of policy responsibility to the local government and a *negative* effect on the attribution of responsibility to the central government.

Finally, the model allows me to state conditions under which we can expect blame-shifting by the central government to work as expected: Central government evaluation increases or remains the same, while local government evaluation decreases. The model assumes that citizens form their beliefs about government according to their beliefs about policy responsibility and retrospective evaluations of policy performance. Thus blame-shifting works when citizens' change their beliefs about responsibility more than their beliefs about policy performance. This in turn happens when beliefs about media bias are not very high, allowing citizens to shift their beliefs about policy responsibility towards the local government. Prediction P3 states the expected changes in evaluations of the government at different levels upon observing treatment news reports.

Prediction P3 (Government Competence). For any prior beliefs about government competence news coverage that attributes responsibility for policy performance to the local government has a *negative* effect on local government evaluation and a *positive* effect on central government evaluation.

One of the main limiting assumptions of the Bayesian updating framework above is that it presumes

that news reports do present novel information to citizens. There are several factors highlighted in the literature that might lead to a violation of this assumption.

First, higher levels of exposure to specific media outlets can make citizens more or less susceptible to the features of the 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 are thus less likely to change their beliefs upon receiving the information about policy responsibility (Qin et al., 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 their beliefs about policy performance and responsibility more. 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 the control group in the experiment who report higher frequency of state-owned media viewership at baseline, are more likely to attribute responsibility to the local government, are more satisfied with policy performance and the state of affairs, and are more supportive of government at all levels.

Beyond the 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 state-owned media does reflect citizens' interest in news overall, its moderating role for the effects of responsibility-shifting coverage is 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 et al., 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 the 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 policy responsibility and performance, and as a consequence, about government competence, upon viewing biased media news coverage that attributes policy responsibility to the 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 the 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 policy in their 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 of 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 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 the effects of policy responsibility news coverage:

Prediction P5 (Prior Policy Exposure).

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

Finally, to further advance our understanding of the effects of state-owned media persuasion, I use a unique feature of this study to compare the effects of pro-government news coverage across policy domains. Specifically, I look at a policy that experienced a recent increase in exposure, natural disaster management, and a 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 the local government. In addition, the news coverage on both policies used in the study shares a similar structure and presentation. As a result, I claim that the main differences in the updating of beliefs about those two policies upon exposure to news reports are due to the recent shock of exposure to one of them, the large scale forest fires that happened in Siberia in 2019.

To 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 (Relative Policy Importance).

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

Overall, the discussion in this section suggests that while there are theoretical reasons to expect that biased media coverage can shift perceptions of responsibility for 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 an image of competence and to persuade citizens about allocation of responsibility for policy across government hierarchy.

1.4 Empirical strategy

In this section I lay out the design of the online survey experiment that was conducted to test the predictions discussed in the previous section. The description of the experimental design includes details on the sample enrollment, on selection of treatment and placebo news reports, on random

assignment and estimation procedures, and on measurement strategy. More details on the design of the study can be found in Appendix A.1.

1.4.1 Sample

Data for this project come from an online survey experiment conducted among adult residents of four regions of Russia: Novosibirsk, Irkutsk and Kemerovo oblasts and Krasnoyarskiy Krai. Given the theoretical expectations discussed in the 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, 2019a). 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 their 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 1.1 shows the locations of the forest fires over the Summer 2019 related to the location of the study participants aggregated at the municipal level.

Second, the regions included in the study vary substantially in terms of the quality and satisfaction with the 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, the country's capital), but only 39% of citizens residing in the Irkutsk region are satisfied with the quality of local roads. As can be seen in Appendix A.1.9, the regions in the study are indeed quite heterogeneous in terms of road quality satisfaction with respondents from Kemerovo reporting the least prior exposure to issues with road infrastructure (mean of 0.55) and respondents from Novosibrisk and Irkutsk reporting the most (mean of 0.71 and 0.60, respectively). Finally, all four regions participate in the 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.[4]

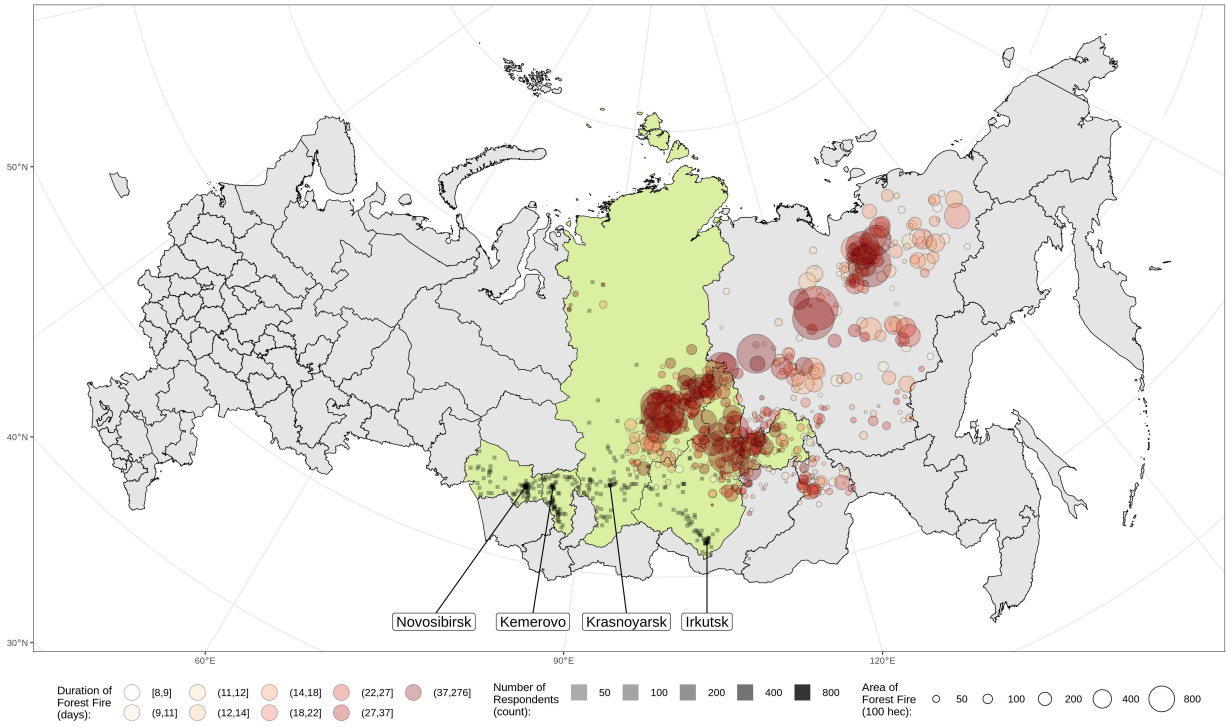


Figure 1.1: Spatial distribution of the sample and forest fires in Siberia in 2019

The sample was enrolled using Online Market Intelligence (OMI), a survey company similar to Amazon Mechanical Turk in a Russian context with pool of respondents (~ 1 million respondents in Russia and other Post-Soviet countries) enrolled for regular surveying. While not representative of the overall population of Russia or any of the regional populations, in the four regions where the study took place, the OMI pool includes respondents in all main socio-demographic groups. At the same time as can be seen in Appendix A.1.5, the sample in each region is skewed towards an 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 the 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 the majority of the sample was collected between 24th and 27th of December. A total

[4]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.

of 4423 respondents reached the treatment assignment stage of which 225 dropped out after the treatment was assigned.[5] To summarize patterns of sample enrollment, in Appendix A.1.4 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 the highest rates of daily enrollment after the full start of the survey on December 24th. Table A.3 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 the regional capitals. The median respondent reported having income sufficient for everyday life but not for major home appliance purchases, was female and had higher education. Somewhat surprisingly for an online sample, less than 10% of the sample was below 24 y.o., but the sample included respondents in all of the main age brackets.

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

1.4.2 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.[6] 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),

[5] See Appendix A.2.2 for discussion of threats to inferences posed by attrition.

[6] See Appendix A.2.1 for details on randomization and its implementation in the survey.

- 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 the primary responsibility for forest fires is on regional and municipal governments rather than on the federal government. The report on road infrastructure covered the general assembly of all heads of regions in Russia where again Dmitry Medvedev points out that the primary responsibility for the improvement of road quality under the High Quality and Safe Roads national program is on regional and municipal governments and the federal government only allocates. Finally, the placebo report shown to participants in the control condition, unlike Fires and Roads reports, covered an 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 Appendix A.1.1. The placebo report was used to avoid violation of the excludability assumption due to change in attitudes induced by exposure to the *Rossia-1* news broadcast itself. In addition, all news reports were edited to have similar duration (around 1 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 A.2 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 an attention check implemented in the survey right before treatment assignment and rates of guessing the study aim ("assessing effects of news reports on support for the government"). Moreover, observed rates of failing the attention check and guessing the 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 the experimental news reports.

Overall, I do not observe any irregularities that would suggest that the 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 the Fires and Roads reports.

1.4.3 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 Appendix A.1.3. 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 the 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.

Measuring the allocation of policy responsibility presented the 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). The 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 a scaled ranking given to each level of the government as an outcome with a specific focus on the federal government, given that I do not have distinct theoretical predictions for each of the local government levels (municipal or regional).[7]

[7]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.

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.[8]

I measure government performance at different levels using standard questions about satisfaction with government performance on a 4-point scale. To avoid evaluations of specific politicians, especially at the federal level (Frye et al., 2016; Sirotkina and Zavadskaya, 2020), all questions asked respondents to evaluate the 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 a more fine grained measurement of government performance and thus allows me to capture smaller treatment effects which are common for media interventions (DellaVigna and Gentzkow, 2010). 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.

In addition, the survey included questions 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.

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 the main moderating variables:

[8]Importantly, I do not observe evidence of heterogeneity in the relationship between retrospective and prospective evaluation of responsibility across treatments.

- For prior news consumption from pro-government media I construct an average score of frequency of news consumption from three main state-owned federal TV channels, *Rossia-1*, *Channel 1* and *NTV*.[9] 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 a matrix question that asked whether respondents or their relatives experienced issues with each of the main policies of interest in the past 6 months.[10] 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.[11]

To increase statistical power I transform the 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.1.6.

1.4.4 Estimation

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

Since there was only one round of measurement, I measure the ITT effects of any treatment report, s, relative to placebo report, l, using the following OLS specification[12]

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

[10] 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.

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

[12] This assumption simplifies the interpretation of the results but does not substantially change the estimates of the effects.

$$\mathbf{Y}^K = \alpha_l^K + \sum_{s \neq l} \tau_{s,l}^K \mathbf{Z}_s + \varepsilon, \tag{1.1}$$

where $\mathbf{Y}^K$ is a vector of measures of outcome K, $\mathbf{Z}_s$ denotes the indicator respondents who were assigned to view video report s. In equation (1.1), the 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 (1.1), for robustness I estimate a similar model equation adjusted for a set of covariates selected using a lasso procedure from the set of pre-treatment covariates listed in Appendix A.1.8.

The p-values for hypothesis testing and 95% confidence intervals reported below are computed using parametric HC2 standard errors implemented in the `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 the 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 moderator variables I use equation (1.1) on sub-samples of data defined by the value of moderator $\mathbf{R}$. The differences between conditional effects (heterogeneous effects) are estimated using the following specification

$$\mathbf{Y}^K = \alpha_l^K + \nu^K \mathbf{R} + \sum_{s \neq l} \tau_{s,l}^K \mathbf{Z}_s + \sum_{s \neq l} \pi_{s,l}^K \mathbf{Z}_s \times \mathbf{R} + \varepsilon, \tag{1.2}$$

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

1.5 Results

In this section I discuss the empirical results of testing of Predictions P1 to P6. I start by presenting the main estimates of the effects of responsibility reporting on policy evaluation, attribution of responsibility, government evaluation, and several supplementary outcomes. Next I investigate the possible role of moderators discussed in Section 1.3, 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 (1.1) with indicators for both treatments included. As a result, all effect estimates (unless noted otherwise) represent the average effect of one of the treatment news reports compared to the placebo control news report. In Appendix A.3, I report tables with estimates of effects adjusted for covariates.

1.5.1 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. 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 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 any of the two public policies should be negative for that policy performance and for attribution of responsibility to local (municipal or regional) government. For the evaluation of government competence at different levels, I expect negative effects on municipal and regional governments' evaluations and null or positive effects on evaluation of the federal government. Looking at Figure 1.2 and Table A.11 we can see that I do not find support for those predictions.

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 management. This suggests that in the overall sample policy

Figure 1.2: ITT estimates and 95% confidence intervals for effects of forest fires and roads news reports on policy performance, responsibility attribution and government competence evaluation

responsibility coverage *is* effective at improving perceptions of policy performance and counters my initial expectations. As noted before, the treatment news reports for the study were selected and edited to contain information only on policy responsibility and possibly on low performance. Thus, I expected that the treatment would have a negative or, for those who already incorporated similar information in their evaluations of the policies, null effect on policy performance evaluation.

Second, in the middle panel of Figure 1.2, I find that in the overall sample citizens hardly change their perception of responsibility in reaction to news reports that focus on the responsibility of the local government in addressing the public policy issues. Again, this result is surprising given that both treatment news reports included direct information on responsibility allocation for respective policy.

Third, for the overall government competence (bottom panel of Figure 1.2), I find that citizens increase their evaluation of government at all levels after exposure to both treatment reports in similar fashion: Average satisfaction with government performance increases by 2.8%-4.5% compared to placebo control group with statistically significant effects of forest fires report on any local government evaluation only. This result does not support the blame-shifting updating logic I proposed and suggests that news coverage on policy responsibility can potentially increase support for the government.

I also look at the effects of treatment reports on additional outcomes related to evaluation of media bias and policy evaluation shown in Figure A.6. 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 the treatment reports, and there is no evidence of change in the perception of main issues with either natural disaster management or road quality.

Overall results reported in this section contradict my prior expectations about the direction and magnitude of the effects of state-owned media coverage of policy responsibility on the main outcomes of interest. Moreover, I find evidence that despite being exposed to news coverage that focuses on underperforming public policies and shifting of the blame for them, citizens improve

both their evaluations of respective policies and all levels of government. To reconcile these findings I revise the pre-registered model of rational learning to fit the empirical findings I observe and provide further suggestive evidence in Section 1.7.

1.5.2 Who can be persuaded?

Even though the results in the previous section contradict my initial expectations based on the model of Bayesian updating, we can still test the predictions discussed in Section 1.3 regarding the factors moderating learning from pro-government media. Specifically, regardless of the direction of belief updating, there are reasons to believe that the effects of pro-government coverage of policy responsibility can be disproportionately driven by updating 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 management issues.

To see whether this is the case I first test predictions of Prediction P4 about the role of prior media consumption. Figure 1.3 shows the estimated effects of pro-government coverage on responsibility for natural disaster management 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).

One result stands out immediately from Figure 1.3: 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 the federal government. Table A.13 shows that the updating of beliefs in this subgroup for policy responsibility and federal government competence upon viewing the treatment news reports is significantly different from the rest of the sample at least at the 10% level.

This finding shows that pro-government media is mostly effective among those who are *a priori* less

Figure 1.3: ITT estimates and 95% confidence intervals for effects of responsibility reporting by prior media consumption

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 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 the 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 (the two last columns of estimates in each

panel of Figure 1.3) have at least a 40% higher approval of federal government and on average are 15% less likely to attribute responsibility for either of the policies to the federal government. While observational, this pattern combined with the null effects of the treatment reports suggests that citizens who consume government media converged to the beliefs about policy and government competence likely desired by the federal government and thus additional news coverage only confirms their prior beliefs.

Second, those citizens, who at 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:[13] 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 the federal government at 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 management and road quality, and for public policy, that is often ranked by citizens in Russia as the most important, health care. An index of policy exposure for each policy is calculated as the average of frequency of issues with the policy respondent faced in her daily life over the past

[13]Political knowledge is approximated using an 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.

6 months and the relative priority given by the respondent to the policy.

As stated in Predictions P5 and P6 I expect citizens with less prior exposure to be more susceptible to pro-government persuasion: To shift responsibility attribution for specific policy away from the federal government, to potentially improve satisfaction with the policy, and to increase evaluation of government at all levels. Figure 1.4 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, the left column of the panels in Figure 1.4 provides evidence for the importance of prior exposure to forest fires and natural disaster management in general. Respondents who had less immediate experience with natural disaster management issues in the recent past and placed lower priority on 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 management away from the federal government (Table A.14 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 theoretical expectations. 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 baseline are much more unsatisfied with the policy performance than 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.

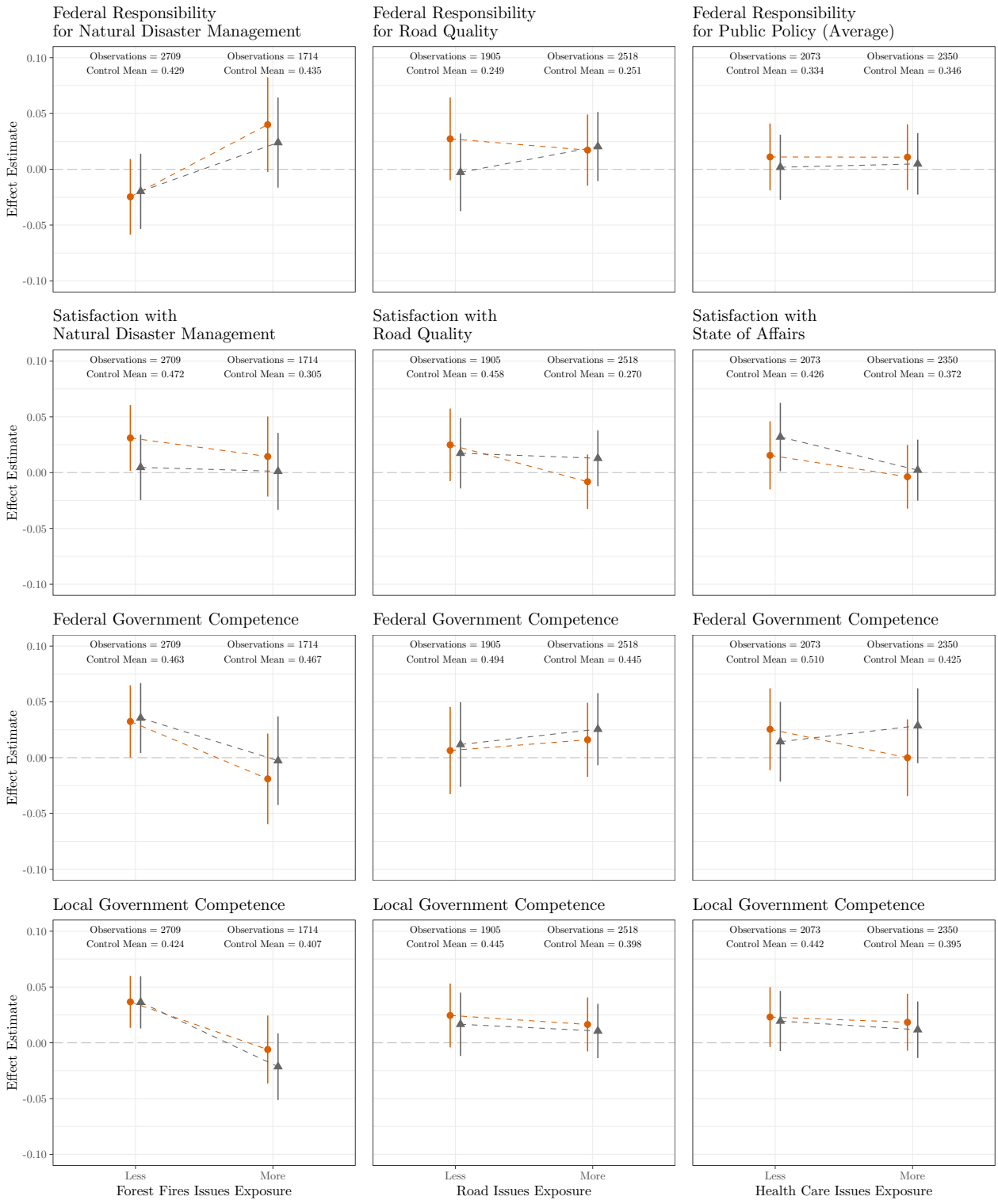


Figure 1.4: ITT estimates and 95% confidence intervals for effects of responsibility reporting by prior policy exposure

Second, as we turn to the middle and right columns of Figure 1.4, 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.[14] 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.

One of the key differences between the natural disaster management quality and roads infrastructure highlighted earlier is the type of issues that citizens experience with each of them: While poor road quality is a widely known and perennial issue in Russia, issues with natural disaster management are seasonal and widely discussed when they happen. Moreover this distinctive feature of natural disaster management 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 crises 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 a 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

[14]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.

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.

1.5.2.1 Interaction between immediate exposure and media consumption

To complete the main analyses of effect heterogeneity of pro-government media persuasion I combine results from the previous two sections and look at the interaction between prior media exposure and direct policy experience. In Figure 1.5 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 the 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 the federal government are concentrated among citizens who are at the same time less likely to watch pro-government media in the first place (comparing the left half across two panels in the third row). Again, if we take into account self-selection into the consumption of specific news sources, the population level effects of pro-government coverage 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 seem to reward the local government for higher perceived policy performance (the third estimate in each panel in the first column).

Beliefs about policy performance, responsibility and government performance held by citizens assigned to the 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

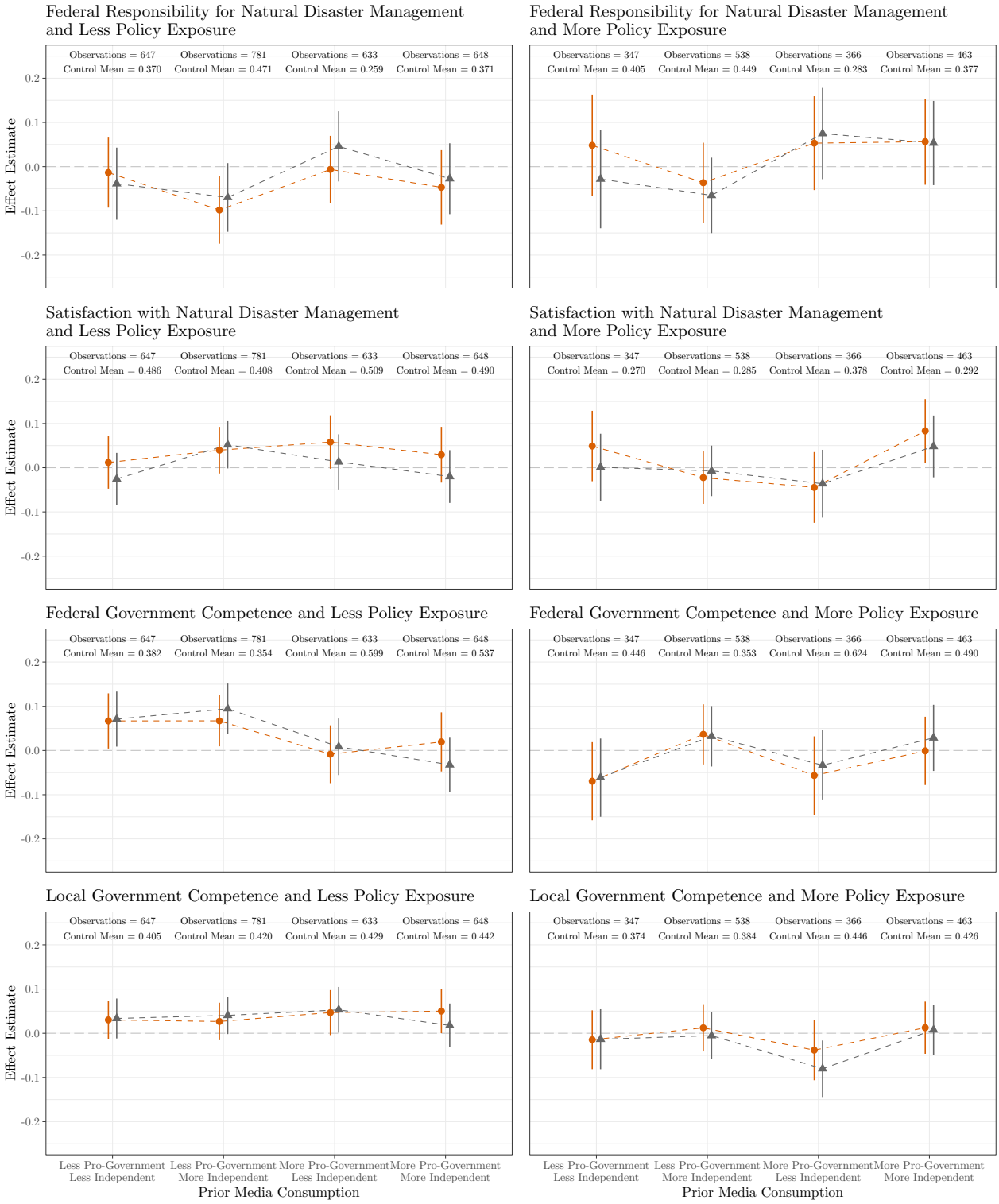


Figure 1.5: ITT estimates and 95% confidence intervals for effects of responsibility reporting by prior exposure to natural disaster issues and prior media consumption

pro-government media reach certain levels, the effectiveness of persuasion drops and while it does not seem to erode 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 the retrospective nature of government evaluation often assumed in the empirical and theoretical literature.

1.6 Discussion

In this section, I discuss possible explanations for the observed empirical patterns. First, I present a revised model of Bayesian updating that provides a possible explanation for the main treatment effects reported in Section 1.5.1. The revised model allows for the possibility that pro-government media reporting on policy responsibility is used to signal higher policy performance. This model also provides new intuition on how state-owned media can be used to project to the public an image of competence and to maintain popular support. Second, I contrast the intuition provided by the revised model with several alternative explanations.

1.6.1 Revised model of Bayesian updating

Consider a representative citizen's Bayesian updating problem upon receiving a message about policy responsibility from a possibly biased news media outlet. The message serves as a signal about a combination of public policy performance (θ), responsibility for the policy being on local government (ρ), the 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. The extent of media bias is given by $\beta \in [0, 1]$, i.e., a 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 et al., 2016) and finds empirical support in various contexts (DellaVigna and Gentzkow, 2010; Huang, 2015b, 2018).

In addition, I make two other key assumptions concerning beliefs about government competence and biased media coverage strategy. First, I assume that the citizen forms her evaluation of government competence by combining her beliefs about the allocation of responsibility for specific policy and beliefs about performance in that policy. This assumption implies that the 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

$$\gamma_L \equiv \rho(2\theta - 1) + O_L \tag{1.3}$$

$$\gamma_C \equiv (1 - \rho)(2\theta - 1) + O_C \tag{1.4}$$

where γ_j denotes an evaluation of the competence of government at level j by a representative citizen, while O_j denotes the evaluation of respective government level performance in all other relevant policy domains.[15] While being a necessary simplification, equations (1.3) and (1.4) reflect the standard assumption in the models of accountability based on retrospective voting (Fiorina, 1981; Fearon, 1999; Persson et al., 1997; Besley, 2006). Equations (1.3) and (1.4) also implicitly assume that specific policy is important for 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 by a significant portion of the population (Levada Center, 2020a) and thus are likely to be considered by citizens when forming beliefs about government competence.

Second, the message space of a state-owned media outlet includes three possible ways in which it can cover responsibility for domestic policy: (a) mention central government only (C), (b) mention local government only (L), or (c) mention both levels of the government (CL). This assumption departs from the pre-registered model, which assumed that the possible message space of the state-owned media coverage includes only the first two types of messages with biased media using C for credit claiming and L – for blame-shifting.

Examples of message C include reports on meetings among central government officials or central government officials reporting on macroeconomic policy. As previously discussed, such messages

[15] Richer model can introduce weights citizens attach to the policy, i.e. $\forall j \in \{\mathrm{L}, \mathrm{C}\} : \gamma_j \equiv \omega\rho(2\theta - 1) + O_j$, 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.

are common for the state-owned media in Russia. Messages of type L are rarely broadcast on national TV channels and include coverage of local disaster events when the blame is solely attributed to the responsible level of government. Unlike the first two messages, messages of type CL can be used by the government to claim credit and shift blame. If the policy performance is high, then the central government has 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 the current state of affairs. Examples of such messages include news reports that mention central government officials monitoring local policy performance or the presence of central government officials at the events where local government responsibilities are being discussed. This type of coverage is common on Russian state-owned TV channels, such as *Channel 1* or *Rossia-1*.

Overall the likelihood of observing each type of responsibility coverage as perceived by a representative citizen can be expressed as follows:

$$\Pr(m = L \mid \theta, \rho, \beta) \equiv \beta\rho(1-\theta), \tag{1.5}$$

$$\Pr(m = C \mid \theta, \rho, \beta) \equiv (1-\beta)(1-\rho) + \beta(1-\rho)\theta, \tag{1.6}$$

$$\Pr(m = CL \mid \theta, \rho, \beta) \equiv (1-\beta)\rho + \beta\Big[\underbrace{\rho\theta}_{\substack{\text{credit-claiming by} \\ \text{central government}}} + \underbrace{(1-\rho)(1-\theta)}_{\substack{\text{blame-avoidance by} \\ \text{central government}}}\Big]. \tag{1.7}$$

The core new assumption of the revised model compared to the model in Appendix A.4 is that the messages used in the intervention in this chapter represent messages of type CL that citizens expect to be reported by biased media for both credit-claiming and blame-shifting reasons.[16] The likelihood of reporting message CL shown in the Equation (1.7) is expressed as a sum of unbiased and biased media reporting probabilities weighted by the beliefs about media bias. It captures three possible reasons citizens can expect media to report CL. If the media is unbiased, CL is reported

[16]Since two other types of messages are never reported in the experimental part of the chapter, the results presented here are robust to changes in respective likelihoods as long as the sum of all possible message probabilities remains equal to 1.

when the local government is indeed responsible.[17] If the media outlet is at least partially biased ($\beta > 0$), then there is a chance that it reports CL in an attempt to claim credit towards the central government for high performance achieved by the local government ($\theta = 1$ and $\rho = 1$) or to shift blame away from the central government for low performance ($\theta = 0$ and $\rho = 0$).

Representative citizen is assumed to be a priori uncertain about media bias and policy performance and responsibility. Thus we can replace ρ, θ, β, as well as γ_C and γ_L with respective prior expectations and apply the Bayes rule to derive posterior beliefs about all parameters upon observing message CL. Note that while ρ and θ are binary parameters reflecting state of the world, $\mathbb{E}[\rho] = \Pr[\rho = 1]$ and $\mathbb{E}[\theta] = \Pr[\theta = 1]$ represent continuous prior beliefs about those parameters held by representative citizen.

In the empirical part of the study, I assume that a placebo news report that did not cover any public policy responsibility does not affect the evaluation of any of the policy-related beliefs.[18] Hence the estimates presented in the Section 1.5 pertain to the differences between posterior and prior beliefs about the respective parameters.

$$\Delta^{\rho} \equiv \mathbb{E}[\rho \mid m = CL] - \mathbb{E}[\rho] = \frac{\mathbb{E}[\rho](1 - \mathbb{E}[\rho])(1 - 2\,\mathbb{E}[\beta](1 - \mathbb{E}[\theta]))}{\mathbb{E}[\rho] - \mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])}, \tag{1.8}$$

$$\Delta^{\theta} \equiv \mathbb{E}[\theta \mid m = CL] - \mathbb{E}[\theta] = \frac{\mathbb{E}[\theta](1 - \mathbb{E}[\theta])\,\mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)}{\mathbb{E}[\rho] - \mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])}, \tag{1.9}$$

$$\Delta^{\beta} \equiv \mathbb{E}[\beta \mid m = CL] - \mathbb{E}[\beta] = -\frac{(2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])\,\mathrm{Var}[\beta]}{\mathbb{E}[\rho] - \mathbb{E}[\beta](2\,\mathbb{E}[\rho] - 1)(1 - \mathbb{E}[\theta])}. \tag{1.10}$$

Equations (1.8) to (1.10) provide new insights into how exposure to news reports on policy responsibility from state-owned media can affect citizens' beliefs about policy and media bias. First, from equations (1.9) and (1.10) it is straightforward to see that if citizens a priori believe that local government is likely to be responsible for policy ($\mathbb{E}[\rho] > 0.5$), her policy performance evaluation

[17] This is likely when a nationwide media outlet that is not expected by viewers to report on local issues without mentioning, at least nominally, federal government officials.

[18] Given that the space of possible topics that can be covered by the media is large, it is reasonable to assume that absence of coverage on the 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 the magnitude of belief updating.

improves upon watching the news reports, while her beliefs about media bias decrease. In this case, coverage of policy responsibility is unlikely to be due to an attempt by the central government to shift the blame and either reflects unbiased reporting or credit-claiming by biased media. This relationship between priors on responsibility and change in beliefs about policy performance is shown on Figure 1.6. Black dots in the figure represent values of prior beliefs, arrows represent direction and relative magnitude of updating, and colors represent direction of updating on the local government responsibility. From the figure, it is also clear that the magnitude of learning about policy performance is highest when citizens are initially uncertain about policy performance ($\mathbb{E}[\theta] \approx 0.5$) and believe media to be biased ($\mathbb{E}[\beta] = 0.8$).

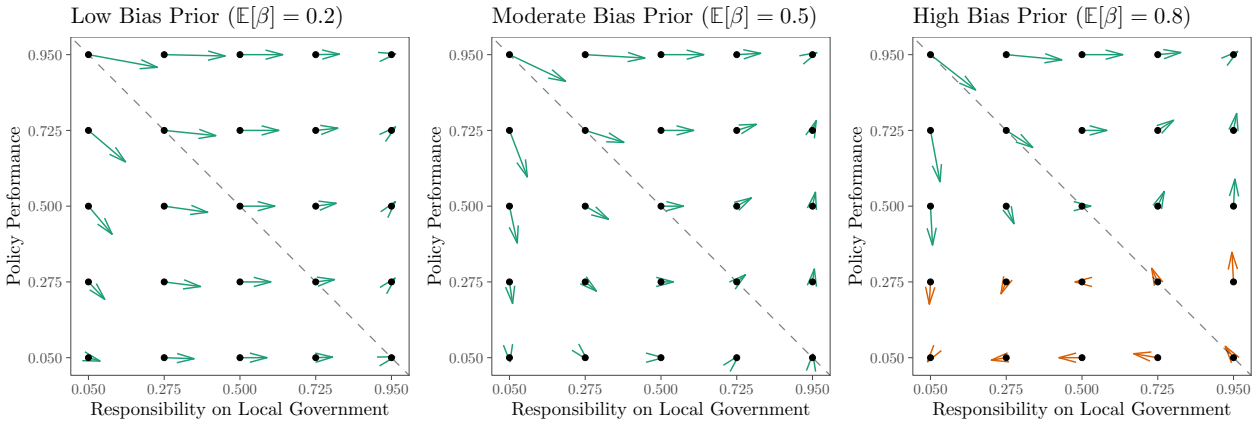


Figure 1.6: Phase diagrams of simultaneous updating on policy responsibility (ρ) and performance (θ) upon observing message $m = CL$ given different priors about media bias

The relationship between updating about responsibility and priors held by citizens implied by equation (1.8) and shown on Figure 1.6 is more complex. The direction of updating depends on prior beliefs about both media bias and policy performance. We can see that patterns similar to the ones observed in the Section 1.5 emerge when prior beliefs about local government responsibility are high while prior beliefs about policy performance are moderate or low. In this case, citizens are more inclined to believe that news reports that attribute responsibility to local government are due to unbiased coverage or biased media credit claiming in favor of the central government.

Equations (1.3) and (1.4) link updating of beliefs about policy performance and responsibility to change in citizens' evaluation of the government. Figure 1.7 shows the simulated dynamic of

updating of beliefs about competence of central and local government implied by Equations (1.8) and (1.9) given relatively high prior beliefs about media bias ($\mathbb{E}[\beta] = 0.8$).

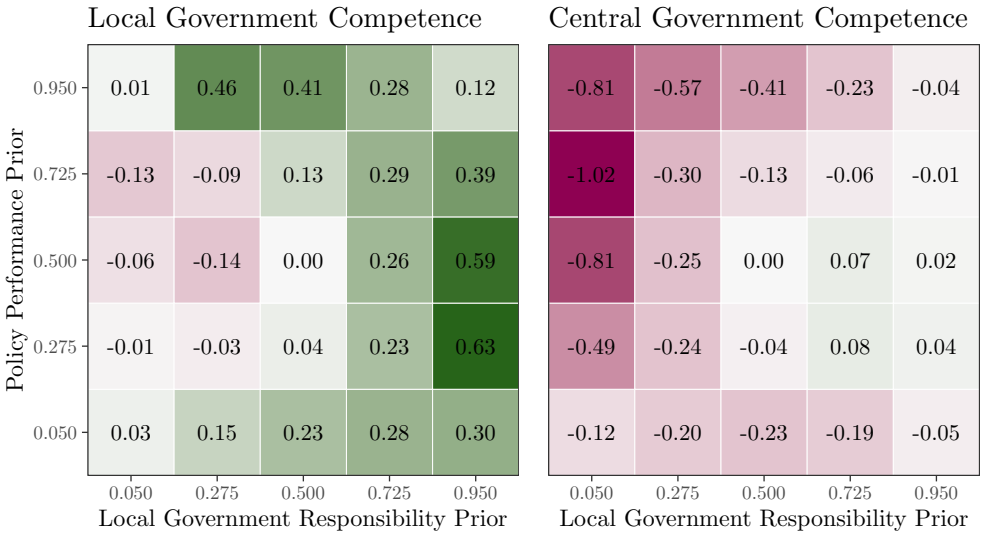


Figure 1.7: Simulation of the effect of report $m = CL$ on beliefs about government competence given priors on policy performance, $\mathbb{E}[\theta]$, and responsibility, $\mathbb{E}[\rho]$

Dynamics of government evaluation updating suggest that while being effective in changing beliefs about policy performance and the allocation of responsibility, the news reports on policy responsibility can increase support for the central government only among citizens who are less satisfied with policy performance (bottom part on both panels of Figure 1.7). Moreover, for moderate and high prior beliefs about media outlet bias, the positive effect of the news reports is only observed among those who are already fairly certain that the local government is responsible for policy. In addition, when prior beliefs about media bias are relatively high pro-government media coverage of policy responsibility can simultaneously improve support for central and local governments due to an increase in policy evaluation.

Overall, the revised model presented above provides one possible explanation for the empirical results presented in Section 1.5.1. It shows that when citizens a priori believe policy performance to be low, attribute responsibility to local government, and believe media to be biased in favor of the central government, the following patterns of updating can emerge: (a) satisfaction with policy performance can increase, (b) change in responsibility attribution to local government can

be negligible, and (c) both central and local government evaluations can increase, with a larger increase in local government evaluation. Notably, all of these predicted effects 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 a large domestic audience.

The revised model also provides an important and novel insight into the effects of pro-government media. Even rational citizens that are aware that the news reports they watch come from the state-owned media outlet can improve their evaluation of policy performance and government competence thus allowing for rational persuasion (Kamenica and Gentzkow, 2011; Truex, 2016). Moreover, this updating happens precisely because of citizens' awareness of the state-owned media's possible blame-shifting and credit-claiming strategies. Importantly, these effects could still be moderated by prior media consumption patterns and pocketbook evaluations in line with the findings in Section 1.5.2 and existing empirical evidence (Arias et al., 2018; Rosenfeld, 2018).

To further motivate the revised model presented above, we can look at additional supportive evidence provided by the experimental data collected for the project. First, baseline levels of beliefs about media bias, policy responsibility, and policy evaluation approximated by the control group means reported in Figure 1.2 confirm that the sample in the study is likely to exhibit patterns of positive updating we observe. Respondents, on average, hold moderate prior beliefs about policy performance (0.405 and 0.347 for natural disaster management and roads quality, respectively), high beliefs about local government responsibility (0.534 and 0.625 for natural disaster management and roads quality, respectively) and believe *Rossia-1* TV channel to be captured by the government (0.732). As a result, we can expect that the average beliefs of a respondent in the placebo group correspond to the bottom-right part in the third panel of Figure 1.6 and the bottom-right part of both panels on Figure 1.7.

Second, the intuition about citizens inferring positive policy performance due to awareness about media bias finds qualitative support in the open-ended summaries written for both of the treatment

video reports by respondents who, at baseline, agree with the statement that media in Russia is captured by the government:[19]

- "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 the 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 quality of the roads. That is good." (Male, 35, Kemerovo)

We can see that many respondents, despite being aware of the government's capture of the media environment, note that the treatment news reports mention future improvements in the quality of both road infrastructure and natural disaster management 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 (see Figure 1.8).

Overall, this section, combined with the Section 1.5.1 provides some initial evidence that counters the conventional 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 tend to update their beliefs more precisely because they know that pro-government media will not associate the federal government with low policy outcomes. While suggestive, these results warrant further investigation and testing of the revised model of Bayesian updating presented here.

[19]See Appendix A.1.3 questions `BLmediabias1-BLmediabias4` for exact wording.

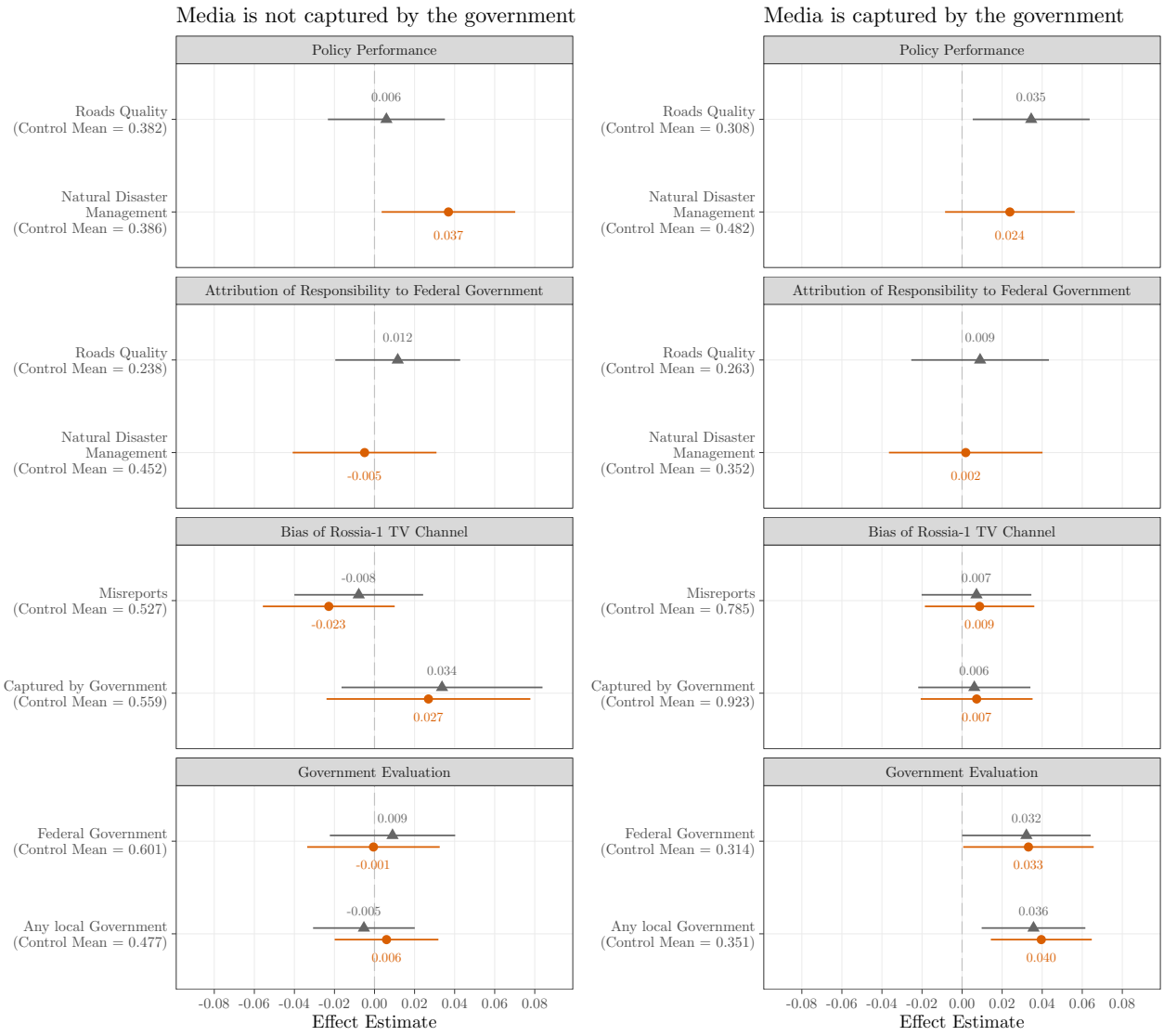


Figure 1.8: ITT estimates and 95% confidence intervals for effects of forest fires and roads news reports on the main outcomes by prior beliefs about media bias in Russia

1.6.2 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.

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 the 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 federal and municipal or regional governments. To do so, I substitute survey measures of responsibility and policy performance into equations (1.3) and (1.4). 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 Bayesian persuasion theory, I expect these two measures to correspond closely to the overall government evaluation change at different levels.

In Figure A.8 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 1.5 above. While not perfectly aligned, it is clear that the direction of effects of both treatment reports on predicted blame/credit for natural disaster management 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, a common critique of survey experiments that use placebo control groups as a benchmark for comparison is that placebo conditions can directly affect the outcomes of interest. In this study, I intentionally rely on a placebo control condition as a benchmark since I aim to estimate the effects of the content of news reports on public policy compared to the overall effects of state-owned media exposure. Thus the main concern is that watching a news report from *Rossia-1* TV channel that did not mention or discuss any public 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 the birthday of a prominent Russian actor did not make citizens mention any policy-related issues in their summaries (see Table A.10 and Table A.8). Moreover, a cursory look at the summaries of the placebo news report suggests that respondents almost universally viewed it as positive news as opposed to 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, the 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 chapter, but not discussed in-depth, is that pro-government responsibility coverage on one policy affects evaluations of other policies. Evidence of such spillover effects becomes clear if we look again at the Figure 1.4: Effects of watching either of the 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 the ordering of policy-related questions: Given the 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 a similar fashion. This is unlikely to be the case since the ordering of sections of the survey that asked about policy specific attitudes was randomized in the study, and I find no strong support for ordering effects (see Table A.15) 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 1.4 and in the Figure 1.5: Coverage on road infrastructure quality appears to shift attitudes about natural disaster management 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.

1.7 Conclusions

In this chapter, I show that coverage of domestic policy issues by state-owned media in an authoritarian country can influence citizens' attitudes about those policies and their overall support for the government. Moreover, I show that both central and local governments can benefit from such media coverage, with the local government experiencing a higher popularity increase. 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 the competence of the government.

Crucially, in the chapter, I show that such updating can happen *not despite but because* citizens know

that the 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 that explains the patterns of updating I observe. The fact that changes in blame and credit for policy predicted by the model correspond to the changes in the overall evaluation of the government provides 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.

In line with the previous theoretical and empirical literature on the 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 the 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 exposure type and its strength matter for creating immunity to authoritarian propaganda.

Another important moderating factor is prior media consumption. Here 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 update their government evaluations 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 news processing. Instead, the observed prior beliefs suggest that these citizens might have already incorporated 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 increase their government support.

A few interesting questions arise from additional patterns observed in this study. First, there is potential for significant spillovers across policies in the effects of propaganda. For example, as long as citizens did not personally suffer from forest fires recently, they update they tend to change their beliefs about natural disaster management policy performance even after viewing news reports 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. A critical 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 rather than its value.

[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.

Chapter 2: Limits of Independent Media: Experimental Evidence on Local Coverage of Healthcare in Russia

2.1 Introduction[1]

Over the past two decades, scholars have established — both theoretically and empirically — that access to new and independent media can lower support for non-democratic regimes (Enikolopov et al., 2011; Chen and Yang, 2019), improve government accountability (Snyder Jr and Strömberg, 2010; Ferraz and Finan, 2011; Gehlbach and Sonin, 2014; Qin et al., 2017; Larreguy et al., 2014; Knight and Tribin, 2019), increase citizens' political knowledge (Chen and Yang, 2019) and encourage collective action (Little, 2016; Reuter and Szakonyi, 2015; Smyth and Oates, 2015; Enikolopov et al., 2020).

All of these effects can be anticipated by non-democratic governments, which therefore creates incentives for such governments to capture the media environment and use it as a propaganda tool to boost their support (Guriev and Treisman, 2019). In countries like Russia and China, all major TV and newspaper outlets are directly owned or indirectly controlled by the government and political elites. Moreover, these governments actively attempt to censor or push out of business the remaining independent or opposition outlets. In Russia, the government has declared independent media outlets "foreign agents," which makes it harder for these outlets to receive financial contributions or secure advertisement contracts. In China, the government uses extensive online censorship to silence opposition or discontent.

[1]I gratefully acknowledge funding provided by the Harriman Institute Russian Studies Research Grant (Columbia University). The project is covered by the Columbia University Morningside IRB protocol #IRB-AAAR9146. The Pre-Analysis Plan (PAP) for the study was registered at the AEA Registry (#AEARCTR-0003578) after data was collected, but prior to any data analyses.

However, such rigid control over the media environment can be a double-edged sword in terms of the monitoring that is required to maintain government control (Egorov and Sonin, 2011). Moreover, open propaganda can make it harder for the government to use captured media since citizens might stop consuming information from such outlets or ignore it (Gehlbach and Sonin, 2014). In some cases, government propaganda can worsen citizens' perceptions of the regime (Huang, 2018). These empirical patterns can explain why, in countries like China or Russia, to a varying extent, we observe relatively more freedom of the press at the local level compared to the national level (Litvinenko and Nigmatullina, 2020; Qin et al., 2017). Such an uneven strategy allows governments to become full "informational autocrats" (Guriev and Treisman, 2019) in that they control the nationwide narrative, but also are able to create an image of effective local policy responsiveness and to reap the benefits of local surveillance and monitoring. In their study of local newspapers in China, Qin et al. (2017) show that the local media's lack of pro-government news coverage can be explained not just by the strategic behavior of central government but also by market pressures.

In this chapter, I build on this evidence by analyzing the effects of local media coverage in an authoritarian context. To date, there are few studies on the effects of local media[2], especially in authoritarian contexts where media have relatively more freedom at the sub-national level. In fact, it is this feature of the authoritarian media landscape that makes it especially important to understand whether local media have the potential to change citizens' beliefs about government performance, thereby enabling citizens to hold politicians accountable, at least at regional or municipal levels.

I report results from a 2×2 factorial experiment embedded in an online survey conducted in August-September 2018 on a representative sample of residents of Novosibirsk, the third-largest city in Russia. As part of the experiment, residents were shown news reports on public healthcare policy that I scripted and prepared in partnership with a prominent independent local media outlet called *Tayga.info*. The factorial design of the experiment allows me to shed light on (1) whether the framing of responsibility leads citizens' to rationally attribute blame and credit for public policy

[2]Notable exceptions include several studies on anti-corruption campaigns in Latin America (Larreguy et al., 2014; Ferraz and Finan, 2011) that find that such campaigns are usually more effective in localities with higher presence of local media.

outcomes to different tiers of government; and (2) whether trust in local media and prior beliefs about policy performance and responsibility moderate the effects of such framing.

The existence of local political competition in a relatively free but sparse media environment in the Novosibirsk region provides a best case scenario for independent local media to be able to change beliefs about salient policy outcomes like quality of public healthcare provision. In addition, the controlled setting of the experiment that was embedded in a survey and the short cooling-off period between treatment and outcome measurement make it likely that observed treatment effects in this study would, if anything, overstate the effects that independent local media can have in more natural environments (Incerti, 2020).

This is why it is especially striking that I find no support for a rational updating framework that I outline in the chapter and that I pre-registered prior to data analysis. Moreover, I find that *both performance and responsibility focused reporting on a salient public policy issue fail to shift citizens' beliefs about policy performance and about which politicians are responsible for it*. To investigate the robustness of these results, I show that there is no treatment effect heterogeneity across a number of dimensions, including prior beliefs about the policy discussed in the intervention's media reports. I also provide evidence that these findings can be attributed to the effects of reporting itself: I demonstrate that respondents exert relatively high levels of treatment comprehension, do not have a lot of prior knowledge about the issue covered in the reports and do consume local media frequently. I also show that attrition or treatment imbalance do not present strong threats to experimental validity.

Overall, my findings suggest that, even though a significant portion of local media coverage focuses on issues in local service delivery, citizens do not necessarily learn about policy performance and responsibility from such media reporting. More importantly, even if citizens react to news from local media through mechanisms that are not captured by their beliefs about policy performance and responsibility, the analyses I present show that such mechanisms fail to change citizens' overall evaluations of the government. As a result, the findings in this chapter cast doubt on the view that

local independent media can promote accountability in non-democratic settings.

By focusing on the effects of independent media on beliefs about policy performance and responsibility as well as on overall government approval in a non-democratic setting this chapter makes several contributions.

First, many experimental studies of accountability in non-democratic and weak democratic states focus on the effects of performance information on the punishment of politicians by respective constituencies (see e.g. Dunning et al., 2019). While important, these studies do not explicitly address the second most important prerequisite for citizens to hold politicians accountable, the correct attribution of responsibility. The factorial design used in this study, which exposes citizens to performance and/or responsibility information, allows me to study not just the separate effects of responsibility information, but also the possible interplay between performance and responsibility information in shaping citizens' attribution of blame and credit for policy outcomes to key political actors.

Second, studies of media effects often focus on overall performance indicators, such as economic performance, which cannot be further separated into policy domains for which the responsibility is clearly assigned to particular political actors (Rosenfeld, 2018; Truex, 2016). While oftentimes better measured, such "catch-all" performance indicators do not allow us to predict when citizens are supposed to punish or reward politicians. This paper's focus on a specific but salient public policy, healthcare provision, allows me to (a) identify the level of government that is *de jure* responsible for the policy covered in media reports, and (b) form theoretical predictions about how allocation of responsibility should affect overall evaluation of government at different levels.

Finally, empirical evidence on the effects of media, that is not captured by the government, is often based on overall exposure to a particular news outlet (Enikolopov et al., 2011; Peisakhin and Rozenas, 2018; Chen and Yang, 2019; Knight and Tribin, 2019). In this chapter, the focus on effects of exposure to media reports with specific content allows me to assess the effectiveness of specific strategies that can be used by independent local media in a non-democratic setting.

The rest of the chapter is organized as follows. Section 2.2 motivates the selection of Novosibirsk as the location for this study and describes the local independent media environment. Section 2.3 lays out the simple formal model of Bayesian updating that was used to form predictions about the effects of media reporting. Section 2.4 details the design of the intervention, while Section 2.5 describes sample selection procedures, maps theoretical predictions into empirical hypotheses and explains estimation procedures. Section 2.6 describes the experimental results. Section 2.7 discusses the results and concludes.

2.2 Local independent media and public policy in Novosibirsk

The contextual features of a given study can bear on the effects of independent media reporting on citizens' beliefs about public policy. In this section, I briefly review the reasons for selecting the city of Novosibirsk in Russia as the location of the study and the local media landscape in the region.

2.2.1 Politics and public healthcare

The study was conducted in the city of Novosibirsk, the largest municipality of Russia and the third largest city (after Moscow and Saint-Petersburg). Unlike other major cities, Novosibirsk presents a unique opportunity for assessing the use of media to frame the allocation of responsibility between municipal and regional governments.

First, the city of Novosibirsk accounts for more than 60% of the regional economy and more than 55% of its population, making support of its citizens crucial for both municipal and regional political elites.

Second, due to the 2014 reform of the municipal electoral system (Beazer and Reuter, 2019), Novosibirsk became one of the few remaining cities in Russia that has direct popular elections for the mayoral office. Moreover, unlike many other cities, where the reform transferred *de facto* policy-making power at the municipal level to non-elected city managers, the mayoral office in Novosibirsk retained its policy-making power (see, e.g., BBC Russia, 2018). As a result, Novosibirsk became

one of the few major cities in Russia where mayor and governor have grounds to seek popular support for public policy performance.

Finally, the mayor of Novosibirsk, Anatoly Lokot', is a member of the Communist party (CPRF), which is officially opposed to the dominant party, United Russia, and historically has had strong support in the regions of Siberia.[3] Moreover, during the data collection for the study, Mayor Lokot' intended to run for governor in the elections in September 2018 against the United Russia (UR) candidate and interim governor Andrei Travnikov who was supported by the federal government.

In this study, instead of focusing on citizens' overall evaluation of the economy[4], I focus on evaluations of a specific salient policy outcome, quality of public healthcare provision. Based on recent survey data collected by *Tayga.Research*[5], healthcare quality is mentioned by a majority of the residents of Novosibirsk (56%) as their primary public policy concern. Analogously, a nationally representative survey conducted by Levada Center (2018) shows that affordable healthcare is ranked in the top 10 of the main concerns of Russian citizens. The importance of healthcare policy for citizens of Novosibirsk was also confirmed by the participants of a focus group discussion conducted in June 2018 in which participants ranked public healthcare as the most important responsibility of local government.

The allocation of responsibility for public healthcare provision in the Novosibirsk region had recently shifted. Prior to 2012, the fiscal responsibility for the provision of public healthcare in the city of Novosibirsk was at the municipal level. In 2012, it was re-allocated along with the corresponding share of income tax by the regional legislature to the purview of the regional government. This shift in responsibility did not receive extensive local media coverage. As a result, very few citizens of Novosibirsk correctly attribute responsibility for public healthcare provision to the regional government (Regnum, 2018). The same is true in the baseline data of this study, in which only 27% of respondents see the regional government as responsible for healthcare provision

[3] See RBC (2016) for the discussion of the "Red Belt" revival prior to the 2016 legislative elections in Russia.

[4] Many studies of the effects of media on government evaluations focus on all-encompassing measures of performance, such as GDP per capita or unemployment (Rozenas and Stukal, 2019, Rosenfeld (2018); Truex, 2016).

[5] This is a sub-unit of the Tayga.info media outlet which is used in the intervention in this project

in Novosibirsk (see Appendix B.4.1).

The Novosibirsk municipality plays a crucial economic role in the region: Both the mayoral and governor's offices have real policy power vested in them, there is no alliance between the two local levels of government, and public healthcare is a salient issue and uncertainty about which government level is responsible for public healthcare policy remains widespread. Due to these features, the political environment in the city of Novosibirsk presents a best case scenario for finding effects of reporting on responsibility for public healthcare. It is reasonable to expect that reporting on responsibility occurs in this context and that citizens will be attentive to information on both responsibility and policy outcomes.

2.2.2 Independent local media

Russia's federal media environment, especially in terms of TV, newspaper and radio[6] is under tight control of the federal government. Recent years have thus seen a surge in the number of local media outlets that are not captured by the government (Dovbysh and Lehtisaari, 2020), especially in regions that are far removed from Moscow.[7] Many of these outlets are owned by local businessmen and purposefully avoid coverage of nationwide events to escape attention of federal authorities. This allows them to retain editorial independence from the government control in their coverage of local, regional or municipal, issues. As a result local independent media in many regions in Russia provides critical assessment of both policy issue and government performance (Litvinenko and Nigmatullina, 2020). Moreover, there is a stable trend, especially among younger cohorts, to switch to online news media (Levada Center, 2020b), which allows citizens to combine local and federal news consumption.

The local media landscape in the Novosibirsk region resembles this general trend for more unbiased media reporting with private outlets like *NGS* dominating the online media market. The presence

[6] See Lipman et al. (2018) as well as detailed accounts of Russian government control over federal media by Meduza (2016) and Proekt Media (2019b).

[7] For example, the recently created Sindikat-100 independent media association includes many prominent local media outlets based in Siberia and in the Far East of Russia alongside nationwide outlets like Novaya Gazeta or Meduza (Interfax, 2020).

of media that are independent from the government in the region can be partially attributed to the presence of business interest groups that are not directly controlled by municipal or regional governments.[8] In an interview with me, the editor of NGS claimed that the outlet's strategy is demand oriented and based on the audience's interest in specific topics. Nontheless, outlets like NGS do not openly confront municipal or regional governments. Their reporting strategy does not include in-depth analyses of policy issues and government performance; a majority of reports consist of short and factual coverage of current events.

On the contrary, there are several outlets in Novosibirsk that focus not just on event reporting, but also publish longer-form investigative reports on policy issues in the region. One of the most prominent news outlets of this kind, *Tayga.info*, is the most cited news source in the Novosibirsk region according to a ranking published by the media agency Medialogia (2021). At the same time, the audience of Tayga.info is small with only 12% of respondents in the baseline survey of this study having visited the outlet's website in the past month (while 91% of respondents report reading local news at least once a week). While the journalistic quality of investigative media outlets such as Tayga.info is higher, the demand for such reporting remains low, potentially preventing these outlets from acquiring popularity and trust from the audience.

This discussion shows that the media environment in Novosibirsk is relatively free with Tayga.info being a trusted source among local media outlets. At the same time, the Tayga.info brand might not be widely recognized by the public due to a lack of direct exposure. This latter feature might complicate the way in which respondents update their beliefs in this experiment, because respondents may have little prior knowledge about the possible bias of the outlet. I discuss this possibility in Section 2.7.

[8] See the discussion of Alexey Navalny's investigation on the construction industry in Novosibirsk by BBC Russia (2020).

2.3 Theory and predictions

To derive predictions about how the experimental intervention will affect the outcomes of interest – beliefs about policy performance, policy responsibility, media bias and government evaluation – I develop a simple formal model of Bayesian updating. I then derive comparative statics that will be tested empirically in the experimental part of the study.

2.3.1 Model of Bayesian updating

Consider a representative citizen who learns about the competence of three elected officials at different levels of government, Mayor, Governor and President, the policy performance and the allocation of responsibility for this policy from a news media report.[9] Let $\theta \in \{0, 1\}$ denote the policy performance, where $\theta = 0$ denotes low performance and $\theta = 1$ denotes high performance. Assume that the responsibility for the policy lies upon one of the three levels of government and is given by $\rho \in \{M, G, P\}$, where M, G and P denote mayor, governor and president, respectively.[10] For simplicity, I also assume that the citizen's evaluation of the competence of politicians at different levels is binary and given by the vector $\gamma \equiv \{\gamma_M, \gamma_G, \gamma_P\}$, where $\gamma_{i \in \{M,G,P\}} \in \{0, 1\}$.

From citizen's perspective a message m about policy reported by a media outlet can include two pieces of information: (1) information about the quality of services, and (2) information about the allocation of responsibility for the policy. Thus, the space of possible media reports is given by $\{\emptyset, 0, 1\} \times \{\emptyset, M, G\}$, where $\emptyset$ denotes the absence of the respective type of information in the report.[11] For example, the message $m = 0G$ denotes that the report mentions low policy performance and that the report attributes the responsibility for this policy to the governor's office.

[9] In the formal framework I use the terms mayor, governor and president as catch-all terms for municipal, regional and federal levels of government respectively. I also use policy performance to refer to quality of public service provision, e.g., quality of public healthcare.

[10] The model considers all three levels of the government for which I have empirical measures of policy responsibility and competence evaluation. That said it is unlikely that beliefs about federal government competence or responsibility can be affected by news reports on local issues. Therefore it can be omitted from the model without losing the main intuition about attribution of blame to either municipal or regional government.

[11] I assume that the local media outlet is not expected by the citizens to report on any policy that is in the purview of the federal government or the President only. This assumption reflects the discussion of local media reporting strategy in Russia.

In the empirical context of this study, such a message describes the low quality of public healthcare (primarily access to public hospitals) and mentions that the governor and regional ministry of healthcare are responsible for public healthcare provision.

Given the discussion in the previous section, I assume that the media outlet can be viewed as either independent or captured by one of the levels of the government. Moreover, the mayor's preferences over policy reporting are not necessarily aligned with those of the governor or the president. At the same time, I assume that the governor's and the president's preferences are identical. This assumption resembles the structure of possible media biases in many regions of Russia, like Novosibirsk, where governors are directly selected by the central government, while mayors of cities are not.[12] Thus, I assume for simplicity that the media can be biased in favor of either the mayor or the governor. Denote the bias of the media source by $\beta \in \{I, M, G\}$, where $\beta = I$ stands for an unbiased (*independent*) local media outlet, while $\beta = M$ and $\beta = G$ denote media outlets that are captured by the mayoral or governor's office, respectively.

An important assumption in the model is that the local media outlet *does not lie*, e.g., if the true state of the world is $0G$, then the media outlet does not report any messages that portray policy performance as high, $\theta = 1$, or attribute responsibility to the municipal government, $\rho = M$. This assumption is motivated by the ability of citizens to directly observe many of local policy outcomes, which has been documented in the existing empirical literature (Rozenas and Stukal, 2019; Rosenfeld, 2018; Field et al., 2018).[13]. It also is plausible that the specific policy considered in this study, public healthcare provision, is observed by citizens frequently in their daily lives given the discussion in the previous section. As a result, the space of possible messages that can be sent by the media given the state of the world $\theta\rho$ is given by $\Omega \equiv \{\emptyset, \theta, \rho, \theta\rho\}$.

I also assume that the media outlet, regardless of its bias, perfectly observes the state of the world

[12]This assumption is especially plausible in Novosibirsk region at the time of this study as the acting governor, Andrey Travnikov, was appointed by the president shortly before the study took place and because the president personally endorsed the governor in his campaign.

[13]In the context of the study, the quality of public healthcare provision in Novosibirsk is low, i.e. $\theta = 0$, and the primary responsibility lies with the governor of the region, i.e. $\rho = G$. Hence, the media report only includes $m_{\beta=0} \in \{\emptyset, 0, 0G, G\}$.

and reports on a specific public policy with probability π. This in turn implies that the probability of media not reporting on public service provision ($m = \emptyset$) is equal to $(1 - \pi)$. This assumption is made to prevent citizen's from learning about policy related parameters when they are not exposed to media messages about that policy. It is also likely to hold if we consider citizen's updating from a single news report, as opposed to continuous exposure to a media outlet.

If the citizen observes the media outlet report related to a specific policy, the likelihood of this report depends on her beliefs about media bias. If the media outlet is believed to be unbiased (or independent) its likelihood of reporting any possible message about this policy does not depend on true state of the worls. For simplicity I assume that citizen expects unbiased media to report any possible message with equal probability, but the results presented here are robust to any non-degenerate set of probabilities. The reporting strategy of a media outlet conditional on it being unbiased is given by the following set of equations:

$$\begin{aligned} &\Pr(m = \emptyset \mid \beta = I) = (1 - \pi), \\ &\forall l \in \{\theta, \rho, \theta\rho\} : \Pr(m = l \mid \beta = I) \quad = \frac{\pi}{3}. \end{aligned} \tag{2.1}$$

If the citizen believes that the local media outlet is biased ($\beta \neq I$), it can either be captured by the mayor, or by the governor. The bias of the media outlet restricts the set of possible messages that the outlet can report given the true state of the world, i.e., a biased outlet reports the state of the world *selectively*. This means that the probability of observing a specific message from a captured media outlet depends not just on the true state of the world, but also on the direction of the bias of the media outlet. Specifically, if a citizen believes the media outlet to be captured by the mayor, I assume that its reporting strategy is:

$$
\begin{aligned}
\Pr(m = \emptyset \mid \beta = M) &= (1 - \pi), \\
\Pr(m = \theta \mid \beta = M) &= \frac{\pi}{3}\mathbb{1}_{\Omega_M} + \pi\mathbb{1}_{\Omega_{-M}}, \\
\Pr(m = \rho \mid \beta = M) &= \frac{\pi}{3}\mathbb{1}_{\Omega_M}, \\
\Pr(m = \theta\rho \mid \beta = M) &= \frac{\pi}{3}\mathbb{1}_{\Omega_M}.
\end{aligned}
\tag{2.2}
$$

where $\Omega_M \equiv \{1M, 0G\}$ and $\Omega_{-M} \equiv \{0M, 1G, 0P, 1P\}$ stand for sets of states of the world that are favorable and unfavorable for the mayor respectively. Essentially, I assume that the state of the world is *unfavorable* for the mayor if it implies blame being attributed to the mayor or credit being assigned to other levels of government. The set of *favorable* states of the world is complementary to the unfavorable set. It is clear that if we define favorable and unfavorable sets of reports for the governor, Ω_G and Ω_{-G}, they will not coincide with Ω_M and Ω_{-M}. Specifically, $\Omega_G \equiv \{0M, 1G\}$ and $\Omega_G \equiv \{1M, 0G, 0P, 1P\}$.

The reporting strategy of a media outlet that is biased in favor of the governor mirrors expression equation (2.2) and is given by:

$$
\begin{aligned}
\Pr(m = \emptyset \mid \beta = G) &= (1 - \pi), \\
\Pr(m = \theta \mid \beta = G) &= \frac{\pi}{3}\mathbb{1}_{\Omega_G} + \pi\mathbb{1}_{\Omega_{-G}}, \\
\Pr(m = \rho \mid \beta = G) &= \frac{\pi}{3}\mathbb{1}_{\Omega_G}, \\
\Pr(m = \theta\rho \mid \beta = G) &= \frac{\pi}{3}\mathbb{1}_{\Omega_G}.
\end{aligned}
\tag{2.3}
$$

Importantly, as in Equation (2.1), the model is also robust to changes in probabilities of certain policy related reports by biased media as long as policy performance only is reported with higher probability when the state of the world is unfavorable to respective actor. E.g. it is important that $m = \theta$ is reported more likely by the media captured by the mayor when the state of the world is in Σ_{-M}. Multiplying each of the Equations (2.1) to (2.3) by respective indicator of the media bias gives the total likelihood with which citizens expect to observe certain messages.

The model allows me to derive the posterior beliefs that citizen holds upon observing reports from a potentially biased media. A priori, the citizen is aware of the media reporting strategies given by the likelihoods presented above, but is uncertain about the following parameters: (1) policy performance, θ, (2) allocation of responsibility across levels of government, ρ, (3) bias of the local media outlet, β, and (4) overall performance of all levels of government, $\gamma \equiv \{\gamma_M, \gamma_G, \gamma_P\}$. I assume that the citizen holds prior beliefs about the parameters above and upon observing message m updates her beliefs about all of those parameters according to the Bayes' rule.

2.3.2 Predictions

My empirical strategy allows me to estimate the difference in average changes in beliefs about the four parameters described above between two time periods across treatment and control reports. Thus, the experimental estimates will pertain to the changes in beliefs rather than posterior beliefs themselves. Specifically, the quantity of interest can be expressed as

$$\Delta^{K}_{m_T, m_C} \equiv [\Pr(K|m_T) - \Pr(K)] - [\Pr(K|m_C) - \Pr(K)] = \Pr(K|m_T) - \Pr(K|m_C), \qquad (2.4)$$

where K is an event of interest for which beliefs are measured pre and post treatment (e.g. $\theta = 1$, $\rho = G$, etc.), while m_T and m_C are treatment and control reports being compared. In addition, the factorial design of the experiment allows me to estimate the marginal effects of reports that contain, respectively, responsibility information and performance information:

$$\Delta^{K}_{L} \equiv (\Pr(K|L) - \Pr(K)) - (\Pr(K|\neg r) - \Pr(K)) = \Pr(K|L) - \Pr(K|\neg L), \qquad (2.5)$$

where $L \in \{\{0, 0G\}, \{G, 0G\}\}$ denotes the set of all reports in the study, which either cover the allocation of responsibility, or public healthcare performance. $-L$ in this case denotes $\{\emptyset, 0, G, 0G\} \setminus M$. Note that, since the probability of receiving any of the messages is kept constant in the study, I can

rewrite equation (2.5) for $M = \{0\,, 0G\}$ as

$$\Delta^{K}_{\{0\,,0G\}} = \frac{\Pr\left(K|m=0\,\right) + \Pr\left(K|m=0G\right)}{2} - \frac{\Pr\left(K|m=\emptyset\right) + \Pr\left(K|m=\ G\right)}{2},$$

and analogously for $M = \{\,G, 0G\}$ as

$$\Delta^{K}_{\{\,G,0G\}} = \frac{\Pr\left(K|m=\ G\right) + \Pr\left(K|m=0G\right)}{2} - \frac{\Pr\left(K|m=\emptyset\right) + \Pr\left(K|m=0\,\right)}{2}.$$

Using these expressions, I derive predictions about the effects of responsibility and performance information on the outcomes of interest.[14] Table B.1 summarizes the predictions I test in the experiment, which follow directly from the theoretical framework above. The only additional assumptions needed are that citizens' prior beliefs are such that all possible combinations of parameter values have non-zero probability and that prior beliefs about the competence of the pool of politicians, $\Pr[\overline{\gamma} = 1]$, are equivalent to the prior beliefs about policy performance, $\Pr[\theta = 1]$.

In the Table B.1 panel, *Primary outcomes* correspond to the first-order effects of the media reports, while *Secondary outcomes* correspond to downstream effects of the treatment on respondents' overall evaluation of the government. This overall evaluation is presumed to be a function of the allocation of responsibility, policy performance and media bias. Thus, the predicted effects in the two panels will be tested as separate theories.

Given the predictions above and the comparative statics, I form the following testable hypotheses for the empirical analyses below:

Prediction PRIM1 (Policy Performance). Any news report that contains negative performance information, $m \in \{0\,, 0G\}$, has a negative effect on the evaluation of public healthcare policy outcomes compared to a report that does not contain such information, i.e., $\Delta^{\theta}_{0\,,\emptyset} < 0$, $\Delta^{\theta}_{0G,\emptyset} < 0$,

[14] The full derivation of these results is shown in Appendix B.1.

$\Delta^{\theta}_{0G,G} < 0$, $\Delta^{\theta}_{\{0,0G\}} < 0$. In addition, there is no effect of responsibility coverage on the evaluation of public healthcare provision if both of the reports that are being compared cover negative performance information, i.e., $\Delta^{\theta}_{0G,0} = 0$.

The intuition behind the Prediction PRIM1 is as follows. Due to the *no lying* assumption, any report that reports low performance (0 or $0G$) has a negative (or at least non-positive) average effect on the evaluation of healthcare quality when compared to the placebo condition ($\emptyset$). For the same reason, the effect of any performance information (0 or $0G$) is also negative. Since I presume that any reporting on performance is truthful, I expect full updating upon observing the report. Hence, there should be no difference in the evaluation of healthcare quality acrosss groups that received the same performance information (0 vs. $0G$). Finally, even though a responsibility only report allows for learning about performance (due to the strategy followed by a biased media outlet), report G does not allow for full learning; hence, citizens update more upon observing $0G$ that upond observing the G report.

Prediction PRIM2 (Knowledge of Responsibility). Any news report that contains information about the governor's responsibility for public healthcare provision, $m \in \{G, 0G\}$, increases knowledge of the true allocation of responsibility for public healthcare policy compared to the report that does not contain such information, i.e., $\Delta^{\rho=G}_{G,\emptyset} > 0$, $\Delta^{\rho=G}_{0G,\emptyset} > 0$, $\Delta^{\rho=G}_{0G,0} > 0$, $\Delta^{\rho=G}_{\{G,0G\}} > 0$. In addition, there is no effect of negative performance information on the knowledge of the true allocation of responsibility if both reports that are being compared cover the allocation of responsibility, i.e., $\Delta^{\rho=G}_{0G,G} = 0$.

The logic behind Prediction PRIM2 mirrors the one behind Prediction PRIM1.

Prediction PRIM3 (Media Bias). Any news report that contains information about the governor's responsibility for public healthcare provision, $m \in \{G, 0G\}$, increase the belief that the media outlet is not biased when compared to the report that does not contain such information, i.e. $\Delta^{\beta=I}_{G,\emptyset} > 0$,

$\Delta^{\beta=I}_{0G,\emptyset} > 0$, $\Delta^{\beta=I}_{0G,0} > 0$, $\Delta^{\beta=I}_{\{G,0G\}} > 0$. In addition, a report that covers performance information only ($m = 0$) increases the belief that the media outlet is biased compared to the report that does not cover any public healthcare information, i.e. $\Delta^{\beta=I}_{0,\emptyset} < 0$.

Prediction PRIM3 is due to the assumption that information on the allocation of responsibility is less likely to come from a biased local media, since such an outlet would report on responsibility only when the information is *favorable*, while an unbiased media outlet would report on responsibility more often. Interestingly, the opposite is true about reports that cover low performance only: Due to the unwillingness of biased media outlets to attribute responsibility for low public policy outcomes, a citizen who observes the performance only message is more likely to believe that the media outlet is biased.

Predictions PRIM1 to PRIM3 pertain to beliefs regarding parameters that the media reports cover directly. My experimental design also makes it possible to identify changes in downstream outcomes, namely respondents' overall evaluation of the government, as given in equation (B.14).

Prediction SEC (Government Competence). A news report that attributes low public healthcare quality to the regional government ($m = 0G$) has a negative effect on the evaluation of the regional government when compared to any other experimental message ($m \in \{\emptyset, 0, G\}$), i.e., $\Delta^{\gamma_G=1}_{0G,\emptyset} < 0$, $\Delta^{\gamma_G=1}_{0G,0} < 0$, $\Delta^{\gamma_G=1}_{0G,G} < 0$. Conversely, a full message ($m = 0G$) has a positive effect on the evaluation of the federal and municipal governments when compared to a media report that covers only low public policy performance ($m = 0$) and no effect when compared to a media report that covers only the allocation of responsibility ($m = G$), i.e., $\Delta^{\gamma_M=1}_{0G,G} = \Delta^{\gamma_P=1}_{0G,G} = 0$ and $\Delta^{\gamma_M=1}_{0G,0} > 0$, $\Delta^{\gamma_P=1}_{0G,0} > 0$. Finally, a report that covers policy performance only ($m = 0$) has a strong negative effect on the evaluation of the federal government, when compared to other messages, i.e., $\Delta^{\gamma_P=1}_{0,\emptyset} < 0$ and $\Delta^{\gamma_P=1}_{\{0,0G\}} < 0$.

The intuition for the first part of this prediction is straightforward. A full media report that covers low public policy outcomes and attributes responsibility to the regional government necessarily

worsens the overall evaluation of the regional government as long as citizens put a non-zero weight on public healthcare provision in their evaluation of the government and trust that local media are unbiased with positive probability. Also, intuitively as long as the media report attributes responsibility to the regional government, a statement of low public policy performance does not affect the evaluation of the municipal and federal governments, since policy performance is clearly attributed to the governor. On the contrary, when compared to the performance only media report, a full report that attributes performance to the governor necessarily improves the evaluations of the mayor and the president, since citizens now attribute less responsibility for policy outcomes to those levels of government. Finally, the least trivial part of Prediction SEC states that the performance only report has a negative effect only on the evaluation of the federal government. This is due to the assumed behavior of the biased media outlet, which is unlikely to attribute any outcomes to the federal government, thereby making it disproportionately likely that a message 0 is sent when the responsibility in fact lies at the federal level of government.

In addition to the predictions above, I also derive predictions about the main effects of media reporting change with prior beliefs about the main parameters of the model. These comparative statics can be tested directly using tests of treatment effect heterogeneity, but are omitted from the chapter for brevity.[15]

2.4 Design of the intervention

To test the predictions in the Section 2.3.2 I conduct a panel 2×2 factorial randomized controlled trial among residents of the city of Novosibirsk, Russia.

In the experiment I showed a randomly selected group of Novosibirsk residents who were enrolled in the study during a baseline survey two short video reports. I partnered with the *Tayga.info* media outlet to develop a script and to record the reports such that they allow me to test separate effects

[15] Given that for some of the comparative statics the sign of the partial derivative depends on the value of the model parameters I only state predictions for which treatment effect heterogeneity is at least weakly monotonic and for which the overall effect in the Table B.1 is unidirectional. A summary of all heterogeneous treatment effects predicted by the model is presented in Prediction HET.

of performance and responsibility information. The video reports were administered during an endline survey prior to outcome measurement. The outcome survey was conducted either online or in person on a tablet. In total, there are four equally sized, non-overlapping experimental groups in the study (see Figure B.1 for the experimental design), where each group was administered different combinations of video reports. Each respondent is exposed to two video reports, each of which is approximately 60 seconds in length

For three of the experimental groups, one of the video reports included information about the quality of public healthcare provision in the city and/or about the *de jure* allocation of responsibility between regional and municipal governments for this policy. The last experimental group instead received a report on a topic *not related* to local policy outcomes: A discussion organized by a local historical society about prisoner camps in the region in the 1950s. This last experimental group serves as a placebo control group, since it is assumed that the discussion of historical events will not affect views about current public policy outcomes. The second video for every subject is used as a *filler* in that it aims to distract respondents' attention from the main video about public healthcare provision. The filler also ensures that the intervention more closely resembles actual news broadcasts on TV, which usually cover multiple topics. The filler report covered events in Novosibirsk State University during a visit by the President of Russia. The filler also helps address concerns about experimenter demand effects. I assume that the filler does not have an effect on the outcomes of interest.[16] The transcripts of the treatment, placebo and filler reports can be found in Appendix B.2.

To measure baseline (pre-treatment) and endline (post-treatment) attitudes, I conducted a panel survey that consisted of a phone survey at baseline and an in-person or online survey with the same respondents at endline. The mode of the endline interview (online versus in person) was based on respondents' preferences. Phone and in-person components of both rounds of data collection were conducted by the survey company *Tayga.Research*. The in-person interviews were conducted using

[16]The latter assumption was supported in a focus group conducted prior to the baseline survey. During the focus group, I assessed how respondents perceived and whether they understood the video reports.

the SurveyCTO Collect app on tablets. The online endline interviews was conducted using the SurveyCTO web interface and were filled out by respondents privately. Both endline and baseline surveys ask three types of questions: 1) basic socio-economic characteristics (age, gender, average income of the household, level of education) 2) patterns of viewership and consumption of local media (specifically, news about public medical services, public education, and road quality) 3) political attitudes (specifically, evaluation of public policy outcomes in Novosibirsk and evaluation of the performance of local, regional and federal government in terms of those policies). The full question wording and the corresponding information sheets can be found in the Appendix B.2.

For measurement of the primary parameters from the Section 2.3, I rely on a battery of three direct questions on policy performance, policy responsibility and media bias:

1. How would you characterize the current quality of public healthcare services in Novosibirsk? (5-point Likert scale)
2. In your opinion which of the following levels of government is primarily responsible for the following policy in Novosibirsk: quality and access to public healthcare services? (option to choose one of three levels of government)
3. Do you agree or disagree that the local media describes the situation in the Novosibirsk objectively? (5-point Likert scale)

The first question is used to approximate beliefs about policy performance, $\Pr[\theta = 1] \equiv \mathbb{E}[\theta]$. For the measure to resemble the probability scale in the analyses I transformed the outcome variable to lie on the interval $[0, 1]$.

The responses to the second question are used to measure individual beliefs about the allocation of responsibility for public healthcare provision, $\forall i \in \{M, G, P\} : \Pr[\rho = i]$. It is straightforward to see that, since the question has only three answer options, and the question asks about "primary" responsibility, the only possible belief triplets that can result from this question are $(1, 0, 0)$, $(0, 1, 0)$, $(0, 0, 1)$. Formally beliefs can be a draw from 3-dimensional simplex. While my outcome measure is thus an imprecise measure of beliefs, it adequately captures beliefs about the allocation of

responsibility in the context of the study, where the correct allocation of responsibility for public healthcare provision lies at one level (regional) and most citizens have an imprecise knowledge of the allocation of responsibility.[17] In the theory, I focus only on $\Pr[\rho = G] \equiv \mathbb{E}[\mathbb{1}_{\rho=G}]$. Since this evaluation reflects whether an individual knows the true allocation of responsibility, the final measure is binary $\{0, 1\}$.

The response to the third question was used to approximate individual beliefs about media bias, $\forall i \in \{I, M, G\} : \Pr[\beta = i]$. As with the allocation of responsibility, instead of measuring the whole simplex of possible beliefs, I construct a coarse measure of local media unbiasedness, $\Pr[\beta = I] \equiv \mathbb{E}[\mathbb{1}_{\beta=I}]$. As with the policy performance beliefs, I map the five point Likert scale of the original question to the probability measure interval $[0, 1]$. Notice that I do not measure beliefs about the direction of the media's bias, $\Pr[\beta = M]$ and $\Pr[\beta = G]$, which were a part of the formal framework. Thus, in the empirical analysis, I focus only on predictions related to beliefs about the unbiasedeness of local media coverage.

Finally, to measure how respondents evaluate the overall performance of municipal, regional and federal governments, I use the following set of questions

1. How satisfied are you with the performance of the following government officials on a five point scale, where 1 stands for completely unsatisfied, and 5 – for completely satisfied ...

- ... mayor of the Novosibirsk, Anatoliy Lokot?
- ... acting governor, Andrey Travnikov?
- ... president Vladimir Putin?

The five point Likert scale responses are used to measure respondents' overall government evaluations, $\forall i \in \{M, G, P\} : \Pr[\gamma_i = 1]$, and as in the case of policy performance, is rescaled to the $[0, 1]$ interval.

The order of the primary outcome questions was randomized using simple random assignment to

[17] This assessment is based on a conversation with diverse participants of a focus group in June 2018 as well as on the baseline survey.

mitigate the effect that the ordering of questions can have on individual responses. The design of the study also includes multiple features that address two major concerns in panel experimental studies: External validity and attrition. To address concerns with *external validity*, the baseline survey was conducted on a random sample of citizens residing in the city of Novosibirsk. Random sampling was implemented using random digit dialing based on a database that includes both land-lines and cell-phones. The resulting baseline sample is representative at the city level by gender and aggregate age groups. To address concerns about large rates of *attrition*, the baseline survey included questions about the willingness of respondents to participate in an in-person or online survey a couple of weeks later and also offered each individual a small compensation of 150 rubles or (if the respondent refused the 150 rubles compensation) 200 rubles (2.5 and 3.3 USD respectively). This feature makes it possible to test whether baseline characteristics as well as treatment effect sizes differ systematically among those who are willing to participate in the follow-up survey online or in person and among those who request a higher compensation. 88% of respondents enrolled at baseline agreed to participate in the endline survey for the smaller compensation and 82% agreed to take the endline survey online (see Appendix B.4.1 for a detailed description). The final sample for the study prior to treatment assignment included only those respondents who agreed to participate in the endline survey.

2.5 Empirical strategy

2.5.1 Sample enrollment and assignment

The study sample was enrolled by phone from the pool of adult residents of the city of Novosibirsk (Russia) from 18 to 64 y.o. whose phone numbers appear in publicly available phone books that are used bythe *Tayga.Research* company. The respondents were chosen using random digit dialing based on an available list of cell and land-line phones. Upon pick-up of the phone, the baseline interviewers read the information sheet script to the prospective respondents and asked if they would agree to continue. Next, the participants were screened based on their gender, age group, residence status in the city of Novosibirsk and willingness to participate in the endline survey for a small

compensation (2.5 to 3.3 USD). As was mentioned above, the screening was used to achieve age and gender representativeness at the city level based on municipal statistics from 2017, as well as to mitigate high attrition rates characteristic of panel studies in the Russian context. If the respondent satisfied the screening criteria, interviewers recorded the main baseline question responses in the *SurveyCTO* web survey form.

At endline, respondents who had agreed to participate in the endline survey at baseline were again presented with the information sheet script and were asked if they agree to participate in the study. Both baseline and endline information sheets can be found in Appendix B.2.

The assignment to one of the four experimental groups was conducted using complete random assignment within blocks. The blocks of size 4 were constructed using an optimal algorithm on Mahalanobis distances by a number of baseline characteristics: gender, age group, media unbiasedness evaluation, knowledge of the allocation of responsibility for public healthcare provision, support for the acting governor, and whether the respondent preferred the offline or online mode of the endline survey. The resulting structure of experimental assignments and the baseline sample size is shown in Figure B.1.

The baseline phone survey was administered from the 1st until the 15th of August, 2018. The treatment and the endline survey were administered together from the 16th of August until the 14th of September, 2018, depending on respondents' availability. Out of $1,526$ respondents enrolled in the baseline survey, $1,125$ responded to the endline survey which corresponds to an attrition rate of 26%. This attrition rate is non-negligible but normal for similar studies conducted in non-democratic contexts. The overall characteristics of the baseline sample as well as tests of balance in terms of treatment assignments and attrition are reported in Appendices B.3.3 and B.4.1. We can see that treatment assignment and attrition do not seem to be systematically associated with baseline sample characteristics. In addition, we can see that the distribution of most individual characteristics and prior beliefs about key parameters allow for testing of my theory (i.e., not highly skewed and with substantive variation around the mean).

2.5.2 Estimation

For estimation, I follow the Standard Operating Procedures (Lin et al., 2016) in terms of how I test hypotheses unless explained otherwise below.

Let Y_{it} be the observed value of outcome K for individual i observed at time $t \in \{0, 1\}$, where 0 denotes the baseline survey measurement, and 1 – the endline survey measurement. In all main specifications, the outcome variables that are measured on five point Likert scales are treated as numeric variables. Let $Z_{im} = 1$ denote an indicator that individual i received video report $m \in \{\emptyset, 0\,,\, G, 0G\}$. Since data was collected only for two periods, the effect of each treatment report ($m \in \{0\,,\, G, 0G\}$) compared to the placebo control message ($\emptyset$) can be estimated using the following lagged dependent variable OLS specification:[18]

$$Y_{i1} = \alpha + \sum_{m \in \{0\,,\, G, 0G\}} \tau_m Z_{im} + \zeta Y_{i0} + \varepsilon_i, \tag{2.6}$$

where i denotes respondent, τ_m is the estimate of the effect of treatment report m on the outcome of interest, namely $\Delta^K_{m,\emptyset}$ in Table B.1. Note that we can change the comparison group in the equation above to $m = 0$ and $m = G$ respectively to estimate $\Delta^K_{0G,0}$ and $\Delta^K_{0G,G}$ from Table B.1. The p-values for the tests of interest are computed using parametric $HC2$ standard errors implemented in the `estimatr` package in R.

I supplement the 4-arm design estimates with estimates of marginal effects of each type of information, *any performance* and *any responsibility*. This estimation strategy results in greater statistical power to identify the effects of specific types of information due to the factorial design of the study. For the estimation of marginal effects, I rely on an OLS specification similar to equation (2.6):

[18] All estimates presented in the chapter are also accompanied by estimates from analogous models with block fixed effects that were pre-registered. I run and report both specifications, since the model with block fixed effects effectively drops all blocks in which at least one of the treatment arms is missing an observation. This is due to blocks having only one observation in each of the treatment arms.

$$Y_{i1} = \alpha + \tau_M Z_{iM} + \zeta Y_{i0} + \varepsilon_i. \tag{2.7}$$

Here Z_{iM} is an indicator for assignment of individual i to one of the messages in the set M. In this specification, τ_M corresponds to the effects from the last two rows of Table B.1.

As stated in the PAP, to test for heterogeneous treatment effects I use specifications of the OLS model in equation (2.7), which include interaction terms. Let Z_{im} and Z_{iM} again indicate whether individual i received message m or another message from the set M. To test the prediction that the effect of a particular type of media report changes with baseline characteristic X, I use the following OLS specification:

$$Y_{i1} = \alpha + \tau_m Z_{im} + \mu_m Z_{im} X_i + \kappa X_i + \zeta Y_{i0} + \varepsilon_i. \tag{2.8}$$

Here the parameters of interest are μ_m for all $m \in \{0\,,\, G, 0G\}$, which provide estimates of effect heterogeneity. In addition to the tests of effect heterogeneity, I discuss a test of the differences-in-variation between treatment groups and the placebo control group. This test relies on randomization inference and the naive plug-in estimator discussed in Ding et al. (2016).

All variables in the analyses below were rescaled to range from 0 to 1. This allows me to further relate the empirical results to the theoretical expectations. While I pre-registered that I will report p-values from one-tailed tests where theory predicts positive or negative effects of treatment, I resort to reporting two-tailed p-values given that I observe largely null effects. Tests of directional hypotheses do not change the results reported below. Moreover, to quantify the reliability of the estimated null effects, I supplement the discussion with minimal detectable effect (MDE) estimates based on the estimated standard errors and the conventional multiplicator of 2.8 proposed by Bloom (1995) assuming 80% power and 5% significance levels.

Finally, following Lin et al. (2013), I re-estimate all analyses below adjusting for a number of centered covariates and including a full battery of interactions with treatment indicators.[19] This adjustment was not pre-registered, but also does not substantively change effect estimates.

2.5.3 Hypotheses

This section maps the predictions of the formal model in Section 2.3 into testable hypotheses and describes the procedures used to test them.

The three types of specifications above allow me to estimate the effects of interest $\{\tau_m, \tau_M, \mu_m\}$ and form the basis for testing the predictions from Section 2.3. The following hypotheses follow directly from Table B.1:[20]

Hypothesis PRIM (Primary effects). Based on the theoretical predictions and empirical procedures described above, the expected signs of the direct effects on primary outcomes are presented in Panel 1, Columns 1–3 in Table 2.1

Hypothesis SEC (Secondary effects). Based on the theoretical predictions and empirical procedures described above, the expected signs of the direct effects on secondary outcomes are presented in Panel 1, Columns 4–6 in Table 2.1

[19] I use sample centered individual responses to the following survey questions where they are not redundant: Prior evaluation of public HC; Responsibility for healthcare being attributed to the governor; Is local media coverage unbiased; Mayor, Governor and President competence; Visited Tayga.info media outlet; Voted in last President elections; Involved in politics; Weight of healthcare in politicians' evaluation; Importance of local vs. National issues; Used public healthcare in the last 6 months; Notes access as main problem of HC; Heard recently about issues in healthcare from local media; Has higher education; Age; Income.

[20] Throughout the table I assume
xi_G =
xi_M =
xi_P =
xi.

Table 2.1: Testable hypotheses about $\{\tau_m, \tau_M\}$

	Primary Outcomes			Secondary Outcomes		
	HC Quality ($\theta = 1$)	HC Responsibility on Governor ($\rho = G$)	Trust Local Media ($\beta = I$)	Governor Competence ($\gamma_G = 1$)	Mayor Competence ($\gamma_M = 1$)	President Competence ($\gamma_P = 1$)
Responsibility Only vs. Placebo ($\tau_{G,\emptyset}$)		> 0	> 0			
Performance Only vs. Placebo ($\tau_{0,\emptyset}$)	< 0		< 0			< 0
Full Report vs. Placebo ($\tau_{0,\emptyset}$)	< 0	> 0	> 0	< 0		
Full Report vs. Performance Only ($\tau_{0G,\emptyset}$)	$= 0$	> 0	> 0	< 0	> 0	> 0
Full Report vs. Responsibility Only ($\tau_{0G,G}$)	< 0	$= 0$		< 0	$= 0$	$= 0$
Any Performance ($\tau_{\{0,0G\}}$)	< 0					< 0
Any Responsibility ($\tau_{\{G,0G\}}$)		> 0	> 0			

2.6 Results

This section reports the estimates of the main intent-to-treat (ITT) effects. In sum, I find that none of the treatments has effects on the main outcomes of interest that are statistically significantly different from zero. This is true for both *primary outcomes*, i.e., beliefs about policy performance, responsibility for public healthcare and media bias, and for *secondary outcomes*, i.e., respondents' evaluations of different levels of government. I also show evidence of treatment compliance that supports the claim that the apparent absence of treatment effects on the outcomes of interest is not due to poor administration of the treatment. Finally, I show that there is no evidence for treatment effect heterogeneity, strengthening the evidence that independent media reporting may not have had an effect across the study population.

Each specification reported in the section was estimated twice (w/ and w/o block fixed effects). Stars denote α-levels of 0.01, 0.05, 0.1 and 0.15 for two-tailed hypotheses tests of no effect.

2.6.1 Local media does not affect beliefs about policy

Table 2.2 reports estimates of the effect of the individual treatment arms on the primary outcomes of interest. In addition, Tables B.7 and B.8 in the Appendix compare the effects of the full reports to the effects of performance information only and responsibility information only. Table 2.3 reports similar estimates across the factorial dimensions of the design: any responsibility and any performance information.

Table 2.2: ITT effect estimates on primary outcomes

	HC Quality	HC Quality	HC Responsibility on Gov.	HC Responsibility on Gov.	Trust Loc. Media	Trust Loc. Media
Responsibility Only (G)	0.001	-0.001	0.014	0.021	-0.043**	-0.037**
	[0.015]	[0.014]	[0.039]	[0.038]	[0.019]	[0.018]
Performance Only (0)	-0.003	-0.003	-0.053	-0.036	-0.032+	-0.013
	[0.015]	[0.014]	[0.040]	[0.036]	[0.020]	[0.018]
Full Report (0G)	-0.012	-0.011	-0.002	0.003	-0.033*	-0.023
	[0.015]	[0.014]	[0.040]	[0.038]	[0.019]	[0.019]
Observations	1126	1126	1125	1125	1126	1126
Adj. R-squared	0.306	0.309	0.078	0.083	0.216	0.195
Control ($\emptyset$) Mean	0.399	0.399	0.301	0.301	0.513	0.513
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Benchmark is Placebo control ($\emptyset$ report) that does not mention any responsibility allocation for or perfomance in public HC. Responsibility Only corresponds to G report that attributes responsibility for HC policy to governor of Novosibirsk, Performance Only – 0 report that mentions low public HC outcomes, Full Report – 0G report that includes both responsibility and performance information. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

From columns 1-2 of Tables 2.2, B.7 and B.8 we can see that the estimated effects of all treatments on the evaluation of public healthcare performance are very close to zero and are statistically insignificant. The signs of the estimates do not correspond to the theoretical predictions as well.

Looking at the overall effects of particular types of information reported in columns 1-2 of Table 2.3, we see that I fail to reject the null hypothesis of no effect even for higher powered tests about the effects of a given type of information (information about, respectively, responsibility or performance). These estimated null effects here are quite reliable with MDE across specifications being as low as 3.1 p.p. on a 0 to 1 scale.

I observe similar patterns for the second primary outcome of interest, attribution of responsibility for public healthcare to the governor (which corresponds to the *de jure* allocation of responsibility). We can see that responsibility information from reports seem to have caused a positive shift in the knowledge of the true allocation of responsibility when compared to placebo and performance only information (row 1 in Tables 2.2 and B.7 and row 2 in Table 2.3), but not enough to reach even the 15% significance level. Surprisingly, while still not statistically significant, performance information seems to decrease knowledge of the true allocation of responsibility despite the fact that the performance script did not mention explicitly any of the government representatives and focused only on the issue of access to public health centers (row 2 in Table 2.2 and row 1 in Tables 2.3 and B.8). This effect is especially striking when comparing performance only to the placebo treatment. Note that, due to responsibility attribution being measured on a binary scale, minimal detectable effect sizes for this outcome are significantly larger than for the healthcare policy evaluation above with at least 7.3 p.p. for factorial treatment analyses (on a $[0, 1]$ scale).

Table 2.3: ITT effect estimates on primary outcomes across factorial dimensions

	HC Quality	HC Quality	HC Responsibility on Gov.	HC Responsibility on Gov.	Trust Loc. Media	Trust Loc. Media
Any Performance	-0.008	-0.007	-0.035	-0.027	-0.011	0.000
	[0.011]	[0.010]	[0.028]	[0.026]	[0.014]	[0.013]
Any Responsibility	-0.004	-0.004	0.032	0.030	-0.022^{+}	-0.023*
	[0.011]	[0.010]	[0.028]	[0.026]	[0.014]	[0.013]
Observations	1126	1126	1125	1125	1126	1126
Adj. R-squared	0.307	0.310	0.079	0.084	0.215	0.195
Control ($\emptyset$) Mean	0.399	0.399	0.301	0.301	0.513	0.513
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Any Performance is an indicator of exposure to the treatment that included performance information (0 or $0G$). Any Responsibility is an indicator of exposure to the treatment that included responsibility information (G or $0G$). $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Estimates of effects on trust in local media are also inconsistent with the predictions of the model, but approach statistical significance. Columns 5-6 in Tables 2.2, 2.3, B.7 and B.8 suggest that, consistent with my expectations, performance information does have a small negative effect on trust in local media (row 2 in Table 2.2 and row 1 in Table 2.3). At the same time, responsibility information seems to have even larger negative effects on trust in local media. These estimates reach statistical significance at the 5% level. This pattern is surprising given that my theory suggests that the lower probability of observing coverage of responsibility by biased media outlets should lead citizens to improve their trust after observing news reports on policy responsibility (rows 1 and 3 in Table 2.2 and row 2 in Table 2.3. Both of those estimates are quite imprecise and would not survive a multiple comparison adjustment for false discovery rates. The minimal effect size estimates for this outcome suggest that I have power to detect effects as low as 3.9 p.p on a 0 to 1 scale.

Overall this subsection documents precisely estimated null effects on the primary outcomes of

interest suggesting that the information contained in the experimental reports failed to change citizens' beliefs about the issues discussed in them. At best, I find possible negative effects of reporting on trust in local media, including the outlet that was used in the experiment.

2.6.2 Local media does not affect government evaluation

Given that I found no evidence of treatment effects on *primary beliefs*, I expect the treatment to not affect respondents' evaluations of the government as well. That said, observing no effects in this case does not provide additional evidence for the hypothesis that citizens base their evaluation of the government on their beliefs about policy performance, the allocation of responsibility and media bias. The reason is that I cannot distinguish between there simply not being any treatment effects on these primary outcomes and these primary outcomes not mattering for how citizens' overall evaluations of different levels of government.

Indeed, estimates reported in Tables 2.4, 2.5, B.9 and B.10 show no strong effects of the treatment on evaluations of government at all levels. The minimal detectable effect size in the most powered factorial specification ranges from 3.4 to 4 p.p. on a 0 to 1 scale. Moreover, the signs of the estimated effects are again not consistent with the theoretical expectations.

Table 2.4: ITT effect estimates on government evaluation

	Mayor Competence	Mayor Competence	Governor Competence	Governor Competence	President Competence	President Competence
Responsibility Only (G)	-0.018	-0.020	0.026	0.035**	-0.023	-0.020
	[0.018]	[0.017]	[0.018]	[0.017]	[0.020]	[0.019]
Performance Only (0)	0.004	0.003	0.001	0.007	-0.021	-0.021
	[0.018]	[0.017]	[0.017]	[0.017]	[0.020]	[0.019]
Full Report ($0G$)	0.023	0.016	0.009	0.015	-0.023	-0.026+
	[0.018]	[0.017]	[0.017]	[0.017]	[0.019]	[0.017]
Observations	1126	1126	1126	1126	1126	1126
Adj. R-squared	0.442	0.412	0.409	0.396	0.598	0.597
Control ($\emptyset$) Mean	0.492	0.492	0.522	0.522	0.534	0.534
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Benchmark is Placebo control ($\emptyset$ report) that does not mention any responsibility allocation for or perfomance in public HC. Responsibility Only corresponds to G report that attributes responsibility for HC policy to governor of Novosibirsk, Performance Only – 0 report that mentions low public HC outcomes, Full Report – $0G$ report that includes both responsibility and performance information. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Estimates of effects of the responsibility only treatment are closest to being statistically significant (row 1 in Table 2.4 and row 2 in Table 2.5). Here, I find weak evidence for a shift in support away from the municipal to the regional government induced by news reports that mention that the regional government is responsible for healthcare policy. These results might suggest that respondents shift credit for healthcare policy performance from the municipal to the regional government. Moreover, the signs of the estimated effects of the full report and any performance information on support for the mayor (row 3 in Table 2.4 and row 1 in Table 2.5) are generally consistent with my expectations about shifting blame for policy performance away from the mayor.

That said, this explanation is not consistent with the absence of updating about responsibility as a result of the full report, as discussed in the previous section, and with the estimates of treatment

effect heterogeneity by respondents' prior evaluations of healthcare policy reported in Figure B.5. Moreover, as before, adjusting p-values for multiple comparisons would render all estimates statistically insignificant.

Table 2.5: ITT effect estimates on government evaluation across factorial dimensions

	Mayor Competence	Mayor Competence	Governor Competence	Governor Competence	President Competence	President Competence
Any Performance	0.022*	0.020+	-0.008	-0.007	-0.010	-0.013
	[0.013]	[0.012]	[0.012]	[0.012]	[0.014]	[0.013]
Any Responsibility	0.001	-0.004	0.017	0.021*	-0.013	-0.013
	[0.013]	[0.012]	[0.012]	[0.012]	[0.014]	[0.013]
Observations	1126	1126	1126	1126	1126	1126
Adj. R-squared	0.441	0.411	0.410	0.396	0.598	0.597
Control ($\emptyset$) Mean	0.492	0.492	0.522	0.522	0.534	0.534
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Any Performance is an indicator of exposure to the treatment that included performance information (0 or $0G$). Any Responsibility is an indicator of exposure to the treatment that included responsibility information (G or $0G$). $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Overall, I find weak evidence for the effects of information about performance and responsibility on government evaluations. While the direction of the estimated effects is generally consistent with my theoretical expectations, the precision of the estimates combined with the inconsistent effects documented in the previous subsection suggest two things. First, local independent media reporting on public policy is limited in its ability to change how citizens evaluate the government by changing citizens' beliefs about policy performance and responsibility. Second, local media reporting also does not seem to strongly affect citizens' government evaluation through other mediating factors that I do not observe.

2.6.3 Manipulation checks are satisfied

Two concerns that may undermine the interpretation that the findings above indicate a failure of local news content to change citizens' beliefs and government evaluations are low statistical power to detect effects of a weak intervention and issues with treatment administration or treatment report comprehension (Diaz et al., 2020).

To address the first concern, I first note that survey experiments are typically expected to yield larger effects than analogous field experiments (see, e.g., Incerti, 2020, for a meta-analysis of information interventions). Hence, if anything, my results suggest that the similar interventions would produce even smaller effects in less controlled, but more realistic environments. Moreover, the minimal detectable effect size estimates discussed above suggest that my estimates are quite precise.

To address the second concern about a possible violation of the Stable Unit Treatment Value Assumption (SUTVA), I rely on a number of treatment comprehension measures embedded in the endline survey that allow me to test whether respondents reacted to and recalled the information from the reports in the expected way.

The intervention was designed such that low performance reporting should be perceived as strongly negative. Moreover, I expect that respondents' open-ended summaries of videos that contain such reports will include statements related to issues with access to public healthcare services. For information on responsibility, the expectation was that reports will be perceived as neutral or slightly negative, while open-ended summaries will mention the allocation of responsibility for and not the quality of public healthcare.

Tables B.11 and B.12 report estimated of treatment effects on measures of understanding and comprehension of the video reports. Both tables report estimates from a model with block fixed effects, but the results remain substantively similar if I exclude fixed effects or adjust for covariates. Columns 3-6 in both tables rely on simple 1-gram frequency measures constructed based on a stemmed corpus of words used in respondents' open-ended question responses. To the identify

correct words for each type of report, I rely on 1-grams that occur most frequently in the open-ended responses of respondents who were exposed to a particular report.

Table 2.6: Manipulation checks

	Negative video attitude	Baseline questions are similar	Treat gist correct	Treat new info correct	Filler gist correct	Filler new info correct	Treat gist words	Treat new info words	Filler gist words	Filler new info words	Treat duration	Mentioned responsibility	Mentioned performance
Responsibility Only (G)	0.391***	-0.042	0.013	0.025**	0.002	0.010	0.190***	0.118+	0.069	-0.034	-0.066	0.324***	0.085***
	[0.064]	[0.046]	[0.013]	[0.012]	[0.018]	[0.010]	[0.057]	[0.075]	[0.056]	[0.074]	[0.099]	[0.031]	[0.026]
Performance Only (0)	0.897***	-0.028	0.052***	-0.009	-0.022	0.011	0.208***	0.030	0.043	0.023	-0.225**	0.084***	0.492***
	[0.059]	[0.046]	[0.014]	[0.011]	[0.018]	[0.010]	[0.059]	[0.077]	[0.057]	[0.071]	[0.105]	[0.025]	[0.033]
Full Report ($0G$)	0.644***	-0.020	-0.007	-0.023**	-0.012	0.020*	0.303***	0.198***	-0.031	0.035	0.054	0.218***	0.375***
	[0.062]	[0.046]	[0.013]	[0.010]	[0.018]	[0.011]	[0.061]	[0.074]	[0.060]	[0.072]	[0.098]	[0.029]	[0.032]
Observations	1111	1126	1120	1120	1126	1126	1119	1126	1125	1125	1122	1126	1126
Adj. R-squared	0.178	-0.045	0.102	0.134	0.029	-0.014	0.052	0.028	0.007	-0.025	0.066	0.139	0.230
Control ($\emptyset$) Mean	-0.191	0.556	0.163	0.081	0.280	0.092	1.758	1.064	1.952	1.157	6.192	0.011	0.000
Block FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Benchmark is Placebo control ($\emptyset$ report) that does not mention any responsibility allocation for or perfomance in public HC. Responsibility Only corresponds to G report that attributes responsibility for HC policy to governor of Novosibirsk, Performance Only – 0 report that mentions low public HC outcomes, Full Report – $0G$ report that includes both responsibility and performance information. + - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

First, we can notice that, as expected, respondents evaluated reports that contain low healthcare performance information more negatively than the placebo report or reports that ponly contain information about responsibility, while the placebo treatment report was perceived as largely neutral.[21]

Estimates across columns 2, 5, 6, 9 and 10 suggest that there are no systematic differences across experimental groups in terms of how respondents recall the baseline survey (direct question) and in terms of their responses to the filler video report. These placebo tests confirm, that, while there are differences in how respondents perceive the experimental videos, these differences do not reflect overall differences in how the videos were perceived across groups.

Looking across columns 3, 4, 7, 8 and 11 we can see that the only striking difference in respondents' perceptions of the treatment information (either on responsibility or performance) when compared to the placebo report is in the number of words that respondents used in open-ended gists and in their descriptions of new information. This, if anything suggests that the treatment information caused respondents to focus more on the topic of the report, and thus can be interpreted as a sign of strong treatment comprehension.

Crucially, estimates in columns 12 and 13 allow me to directly test for treatment compliance. We can see that respondents who received performance (responsibility) information indeed were likely to mention performance (responsibility) related keywords in their summaries of the respective news reports. Note that the lists of keywords that I used to identify responsibility or performance were not overlapping.[22]

Finally, Tables 2.7 and B.13 reports additional tests that use the "buffer" questions that separate outcome measurement from treatment in the endline survey. Negative and occasionally significant

[21] The respective outcome in column 1 was measured on a $[0, 1]$ scale, where 1 corresponds to the most negative evaluation.

[22] The lists of translated keywords that I used are as follows. For responsibility: *municipal, novosibirsk, healthcare, return, must, management, responsibility, governor, travnik[ov], power, city*. For performance: *issue, que, appointment, impossible, workload, doctor, medic, hospital*. All keywords for the factorial analyses were selected from lists of 1-gram frequencies generated based on the corpus of summaries by respondents who received the responsibility only or the performance only reports respectively.

estimates of the effects of the treatment reports on the importance of healthcare and education issues in individual voting decisions suggest that reports by local independent media might in fact discourage respondents from retrospective voting based on policy performance, rather than allow them to correctly attribute policy performance.

Table 2.7: ITT effect estimates on ancillary outcomes and placebo tests

	Weight on HC	Weight on HC	Local issues importance	Local issues importance	Intend to part. in local elec.	Intend to part. in local elec.	Education quality	Education quality	Weight on education	Weight on education
Responsibility Only (G)	-0.025	-0.010	-0.011	-0.001	-0.022	-0.018	-0.022	-0.007	-0.044*	-0.014
	[0.023]	[0.023]	[0.023]	[0.022]	[0.027]	[0.026]	[0.019]	[0.019]	[0.025]	[0.023]
Performance Only (0)	-0.002	0.000	0.008	0.013	-0.050*	-0.036	0.008	0.016	-0.051**	-0.036+
	[0.024]	[0.022]	[0.022]	[0.021]	[0.029]	[0.027]	[0.019]	[0.018]	[0.025]	[0.024]
Full Report ($0G$)	-0.038+	-0.025	0.019	0.024	-0.003	-0.001	-0.027+	-0.015	-0.054**	-0.031
	[0.025]	[0.023]	[0.023]	[0.021]	[0.028]	[0.026]	[0.019]	[0.018]	[0.025]	[0.025]
Observations	1126	1126	1126	1126	1126	1126	1125	1125	1125	1125
Adj. R-squared	0.249	0.228	0.166	0.162	0.520	0.508	0.114	0.000	0.043	0.000
Control ($\emptyset$) Mean	0.576	0.576	0.442	0.442	0.717	0.717	0.582	0.582	0.519	0.519
Block FE	yes	no	yes	no	yes	no	yes	no	yes	no

Benchmark is Placebo control ($\emptyset$ report) that does not mention any responsibility allocation for or perfomance in public HC. Responsibility Only corresponds to G report that attributes responsibility for HC policy to governor of Novosibirsk, Performance Only – 0 report that mentions low public HC outcomes, Full Report – $0G$ report that includes both responsibility and performance information. + - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Overall, the findings in this section suggest that the apparent failure of the treatment reports to shift policy beliefs and government evaluations cannot be attributed to issues with the administration of the treatment or to strong differences across experimental groups in terms of their understanding of reports.

2.6.4 No treatment effect heterogeneity

We may also worry that the null effects of the treatment are due to high levels of effect heterogeneity, where positive treatment effects among some respondents are cancelled out by negative effects among others.

Keeping in mind limited statistical power to identify treatment effect heterogeneity, I here rely on the factorial specification in equation (2.8). Figures B.2 to B.7. I show estimated interaction terms for all main outcomes of interest and a battery of pre-treatment covariates. Bars in the plots show

95% confidence intervals.

Overall, analyses of treatment effect heterogeneity provide further support for the absence of treatment effects on main outcomes with virtually no statistically significant differences across a number of pre-treatment characteristics. Notably, I do not find evidence for treatment effects on main outcomes being heterogeneous even by prior beliefs about those same outcomes — e.g., I observe no differences in estimated treatment effects on changes in public healthcare evaluations across those who at baseline were more or less satisfied with the quality of healthcare. We may have expected such comparisons to be especially likely to produce treatment effect heterogeneity due to floor or ceiling effects, especially given that my measures are relatively coarse.

In Table 2.8, I report a randomization inference test of the differences-in-variances across all main outcomes and all individual group comparisons. To reconstruct the schedule of potential outcomes for the test, I use the naive "plug-in" estimator of the differences in variances across groups described in Ding et al. (2016). The null hypothesis for all tests is that there are no differences in the variance of outcomes between the placebo and treatment groups. Thus, rejecting the null hypothesis would constitute evidence for the existence of treatment effect heterogeneity across some dimension not measured by the pre-treatment characteristics studied above.

Table 2.8: Naive randomization inference test of heterogeneous treatment effects using plug-in method

Comparison	Δ HC Quality	Δ HC Responsibility on Gov.	Δ Trust Loc. Media	Δ Mayor Competence	Δ Governor Competence	Δ President Competence
Responsibility Only vs Placebo	0.2958	0.8334	0.4344	0.0420	0.7746	0.3214
Performance Only vs Placebo	0.4876	0.0870	0.4904	0.1238	0.6986	0.5394
Full Report vs Placebo	0.3958	0.5862	0.2252	0.1186	0.5826	0.1984

Table reports the p-values from the naive randomization inference test of equal variances between Placebo control and each of the treatment groups based on 5000 permutations of treatment assignment. The schedule of potential outcomes is constructed using estimated differences in means between respective groups.

As we can see with only one out of 18 differences being significant at the 5% α-level based on a

randomization distribution generated with 5000 permutations of the treatment, I find no evidence for treatment effect heterogeneity even beyond the measured covariates.

2.7 Discussion

This chapter documents that independent local media reporting on policy-related issues might have limited effects in a non-democratic setting and ultimately fail to shift citizens' perceptions of government performance. The empirical evidence I provide casts doubt on the ability of independent media to promote political accountability. This finding runs counter to studies that previously documented such an ability theoretically and empirically (Strömberg, 2015; Zhuravskaya et al., 2020).

To further probe the apparent absence of an effect of media reporting, I first show that there is no evidence for violations of core assumptions underlying my empirical strategy. In addition, I show that despite null effects on policy and government evaluations, participants in the study show relatively high levels of treatment report comprehension as measured by post-treatment manipulation checks.

I then show that null findings are not concentrated in specific subgroups, but rather apply to all subgroups observed in this study, including those who frequently consume and trust local media, those who report an intention to participate in local and national politics, and those who have wrong beliefs about responsibility. The latter finding is especially surprising given that one of the factorial dimensions of the experiment in the study contained factual information on the correct allocation of responsibility for public healthcare, about which the majority of the sample was uncertain or misinformed.

The robust null findings presented in this chapter cast doubt on the ability of the independent media to affect citizens' beliefs and support for the government in an environment otherwise heavily controlled by the state. Most of the existing evidence on the effects of independent media in non-democratic regimes focuses on exposure to media that is located and operates in a relatively

free environment where the scale of the coverage is not constrained by the government itself, thus allowing for more open criticism of the government at all levels (Larreguy and Marshall, 2019). This chapter adds to this evidence by looking at the effects of the media that follows independent editorial policy but is constrained by the competition from the well-funded state-owned media and by the restrictions imposed by the government. Thus the inability to report on certain topics and reach a broad audience might be among potential explanations and warrant further investigation.

It is also important to note that the intervention design in this chapter allows us to conclude that the limited effects of independent media extend across different types of information. While the specific policy covered by the media was held constant, I show that discussion of both crucial aspects of this policy (performance and responsibility allocation) fails to change citizens' beliefs. Thus, when provided by local independent media, even the information directly pertaining to citizens' well-being, e.g., quality of public healthcare, fails to change citizens' perception of the relevant policy.

Several factors could have contributed to these findings.

First, an important assumption underlying my theoretical framework is that citizens have a specific understanding of the possible directions of local media bias. It is possible that citizens have a different understanding in that they perceive the local media as captured by non-government interest groups. This is plausible in the Novosibirsk region where the study took place: private business interests in the region are historically strong and largely uncontrolled by political elites.

Moreover, the absence of strong beliefs about local media bias might imply that learning from local media news reports is not possible. Noting that only a small share of the sample reported visiting the Tayga.info website in the past month, this explanation is plausible in the context of this study. Maybe citizens saw the media outlet as independent or discarded the provided information as unverifiable because they were uncertain about the outlet's reporting strategy. Overall, these explanations may cause respondents to update less, which would explain the apparent absence of treatment effects. In this case, the news reports used in this study mau have been akin to a simple

informational intervention about government and policy performance that has previously been shown to have limited effects (Dunning et al., 2019). The impact of prior exposure to a media outlet on how much citizens can learn from the outlet's new reports thus remains an important topic for future research.

Second, citizens' beliefs about the possible strategies of biased media outlets can depart from the set of strategies assumed in the chapter. Specifically, citizens may expect biased outlets to engage in non-truthful reporting and reporting about the central government. While it is unlikely in the Russian context that the media itself misreports information on domestic policy issues and instead selectively reports truthful information (Rozenas and Stukal, 2019), it is possible that citizens discount information coming from local media as possibly false. If we allow for strategic misreporting such that biased media only report positive policy outcomes (a common assumption in the formal literature on the topic), we would expect citizens to update more strongly in a positive direction upon receiving a negative policy report. Hence, this account is not in line with the results presented in this chapter. This is especially true because I have shown that respondents perceived the treatment reports as negative.

Relatedly, it could be that the results in this chapter are explained by the inability of the general population to recognize the local media outlet. Thus, citizens may have been unable to infer the reliability of the information they observed.[23] If so, this study's results may suggest that persistent independent media effects documented in the literature can be limited to established and recognizable outlets, rather than new or specialized outlets with a small audience and low brand recognition (Larreguy and Marshall, 2019). This assertion warrants further investigation of how citizens' past experiences with a particular media outlet can affect how much they learn from the information the outlet provides.

Finally, it is possible that the intervention in this study is too weak to shift beliefs about policy, especially when the policy is salient and important to citizens, as is the case with public healthcare

[23] I discuss this possibility in the next chapter of this dissertation when analyzing the effects of state-owned media reporting.

provision in the Novosibirsk region in Russia. There are recent innovative studies that allow researchers to both encourage subjects to consume certain media repetitively and at the same time trace closely their news consumption over time (Chen and Yang, 2019). I plan to further investigate the effects of long-term exposure to independent media to directly address this issue.

Chapter 3: Evaluating Government Performance on the Economy: Evidence from State-Owned Media

3.1 Introduction[1]

One of the central strategies in modern autocrats' survival kit is manipulating the information that citizens use to evaluate their governments and coordinate protest behavior (Guriev and Treisman, 2015). Evidence from multiple contexts indicate that autocrats manipulate the media to undermine citizens' collective action (King et al., 2013), monitor and sanction local officials (Lorentzen, 2014), appear as competent economic managers (Rozenas and Stukal, 2019), or signal their administrative or coercive capacity (Huang, 2015b). Yet, to what degree and how are citizens persuaded by news reports that are aired by state-controlled media?

There is substantial empirical evidence suggesting that partisan media in democracies or state-controlled media in autocracies – biased media, in general terms – have an effect on a wide range of attitudes and behaviors (DellaVigna and Kaplan, 2007; Kern and Hainmueller, 2009; DellaVigna and Gentzkow, 2010; Enikolopov et al., 2011; Kern, 2011; Huang, 2015b,a; Chiang and Knight, 2011; Durante and Knight, 2012; Yanagizawa-Drott, 2014; Cantoni et al., 2017; Chen and Yang, 2019). At the same time, there is a smaller and somewhat more ambiguous set of empirical findings suggesting that the effects of biased information are heterogeneous across different news sources, contexts and individuals (DellaVigna et al., 2014; Adena et al., 2015; Peisakhin and Rozenas, 2018).

[1]This chapter is based on a project co-authored with Arturas Rozenas (NYU, ar199@nyu.edu) and Denis Stukal (HSE University, dstukal@hse.ru). We gratefully acknowledge the funding provided by the Jordan Center for the Advanced Study of Russia (NYU). The initial study is covered by the NYU IRB Protocol #RB-FY2017-779 and Columbia University Morningside IRB protocol #IRB-AAAS4473. The Pre-Analysis Plan (hereafter, PAP) for the project was registered at EGAP Registry (Registration ID 20180304AC) prior to the beginning of the endline data collection.

Despite this growing attention to the topic, our understanding of the mechanisms behind the persuasive effects of biased media remains incomplete in several important ways. First, by virtue of focusing on the effects of the general consumption of particular media sources, existing studies cannot identify the specific features of information that end up being persuasive. State-controlled media may broadcast various types of information: it may praise the incumbent leader's policies, or present a rosy image of the state of affairs without attributing the credit to the incumbent, or it can show the leader *looking* at things or *doing things* like meeting happy factory workers, innovative entrepreneurs, or lambasting his ministers for poor performance. To better understand the mechanisms of persuasion, it is important to focus on the effects of particular *types of messages* as opposed to the general consumption of a specific media source, which contains a large number of compounded informational "treatments."

In this chapter, I study the mechanics of "persuasion through propaganda" with the goal of addressing the above questions. The basis of my theoretical argument is that biased media impacts citizens' beliefs on two dimensions – the content of the message and the type of sender. Upon observing a message from potentially biased media, the citizen makes a simultaneous inference about the state of the world in which the media is reporting and the credibility of the media sources itself. I refer to this process as "dual updating."

The theory and empirical strategy in this chapter differ from the previous chapters of this dissertation in two important dimensions. First, instead of focusing on local policy issues that are likely to be observed by citizens in their daily lives, I focus on the coverage of overall policy performance, namely the nationwide budget and economic growth. The limited ability of citizens to base their beliefs on their personal experiences allows the government to provide false information via state-owned media rather than selectively report facts. This assumption features into my theoretical framework and affects the predictions I draw about the magnitude and direction of the updating about government competence and media bias.

Second, an authoritarian government that controls the media environment can be interested in both

shifting responsibility to the local government for poor policy performance and claiming credit for high economic performance. While the former is the focus of other parts of this dissertation, in this chapter I focus on the latter.

I build a simple formal representation of the dual updating process that yields a number of structured predictions about how citizens react to potentially false information about government competence. In the model, the citizen can infer that the media is more biased relative to her prior, and yet she can be persuaded by the content of the message. In addition, exposure to biased media induces a negative correlation between the citizen's beliefs about the regime's competence and its media bias. In other words, via exposure to potentially biased information, the citizen will associate the presence of biased media with government incompetence.

I also show how the citizen's prior profile affects belief-updating on two dimensions: the citizen's updating on competence is weaker when her prior on media bias is high, and her updating on media bias is weaker when her prior on competence is high. Finally, I identify how the effects of biased media (difference between the posterior and prior) depend on the prior profiles. I expect to observe treatment effects of biased media only among the set of citizens with low priors on competence and media bias.

To test the predictions of the above model, I rely on a 4-arm online panel experiment in Russia. The experimental intervention consists of showing respondents the news reports from Channel 1, a prominent state-owned news outlet in Russia that covers economic issues. To study whether and how citizens attribute good economic performance to government actors, I include an additional treatment arm that consists of the same news reports but cuts out footage of President Vladimir Putin. Overall, the experiment allows me to test the main theoretical predictions with regard to dual updating on government competence and media bias. Moreover, the panel structure of the experiment allows me to look at heterogeneous treatment effects by priors on both parameters.

The experiment yields mixed results. On the one hand, I find weak support for the model I develop when looking at the effects of economic news that also shows the President on citizens' beliefs about

media bias. On the other hand, I find consistent negative effects of economic news on the evaluation of economy, suggesting that even positive events covered in biased media can backfire. Moreover, I find that this negative updating on policy performance does not lead to lower support for the government even when the news reports directly mention President Putin. I argue that these findings can be attributed to the experimental treatments rather than differences in comprehension. Overall, the analyses in this chapter suggest that credit-claiming for macroeconomic issues in state-owned media is limited in its ability to generate support for authoritarian governments.

The remainder of the chapter proceeds as follows. In the Section 3.2 I introduce the model of dual updating and form theoretical predictions. Section 3.3 describes the experimental design. Section 3.4 describes the empirical strategy and presents the main estimation results, and Section 3.5 concludes.

3.2 A Model of dual belief updating

In this section I present a simple model that captures the relationship between prior beliefs about government competence and media bias, and the extent to which citizens learn from pro-government media. The model departs from the previous chapters of this dissertation by explicitly allowing a media outlet to *lie* about government competence. This important feature reflects the strategy of credit-claiming for macroeconomic policy, a strategy frequently employed by propaganda in non-democratic regimes, and allows me to form predictions about the effects of this strategy on government evaluation.

Consider a citizen who learns about the competence of the incumbent leader from a state-controlled news media outlet, which the citizen *suspects* to be biased in favor of the incumbent. Let $\theta \in \{0, 1\}$ denote the type of the leader where $\theta = 0$ means that the leader's competence is low and $\theta = 1$ means that the leader's competence is high. A media source reports a message $m = \{0, 1\}$ about the leader's type. The message $m = 0$ means "the leader is incompetent" and the message $m = 1$ means "the leader is competent." I refer to $m = 1$ as good news and to $m = 0$ as bad news (from the vantage

point of the government). In the context of state-controlled media, the message $m = 1$ that the leader is competent could mean that the media reports good economic news and then attributes this news to the actions and policies of the government (Rozenas and Stukal, 2019). To send a positive message about the competence of the leadership, the media could also compare the economic performance of the country under the incumbent's rule with its neighbors (Kayser and Peress, 2012) or argue that the current political system can produce better economic growth than its alternatives (Huang, 2015a).

The media has a level of pro-incumbent bias equal to $\beta \in [0, 1]$. The media is more likely to report that the government is competent when the government is actually competent ($\theta = 1$) and/or when the media is biased. I follow (Gehlbach and Sonin, 2014) and model the probability that the media reports the "high competence" message as

$$\Pr(m = 1|\theta) = \theta + \beta(1 - \theta).$$

An impartial media source with $\beta = 0$ always reports the truth about the leader's type, $m = \theta$. A biased media with $\beta > 0$ reports that the leader is competent when she is in fact competent, and with the probability β the media reports that the leader is competent even if the leader is not competent.[2]

I am interested in exploring how the citizen updates her beliefs after observing a message from the media. Consider first the case where the citizen knows the degree of media bias and updates only about the leader's competence. The posterior expectation that the leader's competence is high is

$$\mathbb{E}(\theta|m, \beta) = \frac{m\,\mathbb{E}(\theta)}{\mathbb{E}(\theta) + \beta\,\mathbb{E}(1 - \theta)}. \tag{3.1}$$

That is, if the media reports bad news ($m = 0$), the citizen immediately infers that the leader's quality is low irrespective of media bias: since the media would never lie that the leader's competence is low

[2]One could formulate a slightly more general model where $\Pr(m = 1|\theta) = \beta_1\theta + \beta_0(1 - \theta)$ where $0 < \beta_1 < \beta_0$ so that the media could also misreport that the leader is incompetent when she in fact is competent ($m = 0$ when $\theta = 1$). Such an assumption would make the model slightly richer but would not affect the key results, so I use a simpler model where $\beta_1 = 0$ and $\beta_0 = \beta$.

(when it is in fact high), the bad news must be credible. However, since the media would sometimes lie that the leader has high competence (when the true competence is low), the high competence message is not fully credible: the citizen cannot fully infer whether she observes high competence message because the leader is of high competence or because the leader is of low competence but the media is lying about it. In the limit, as the bias β approaches one, the posterior belief that the leader is competent $\mathbb{E}(\theta|m = 1, \beta)$ collapses to the prior belief $\mathbb{E}(\theta)$.

In what follows, I focus on the non-trivial case of how beliefs are updated following the high competence message from the media as is mostly the case in the environments with state-controlled media. While it is interesting to investigate theoretically how citizens would update beliefs following an expected critical message from the state-controlled media, testing the predictions of such theory experimentally would be difficult. One could only evaluate the effects of critical messages using deception, for example, by taking a critical message from the independent media and presenting it as if it were broadcasted by the state-owned media. Since the use of deception in experiments is ethically problematic, I limit my predictions and experiment to consider the effects of messages that were or could be actually broadcasted, that is, positive messages. To put it differently, I am interested in the effects of propaganda as it is rather than 'artificial' propaganda that could exist in a counter-factual world.

The assumption that the citizen knows the extent of the media bias is unsatisfying for several reasons. First, it obviously lacks realism. Even though citizens can have a general idea that a particular media source is biased in a particular direction, the exact magnitude of that bias is most likely uncertain. The very fact that citizens often have diverse beliefs about the extent of media bias attests to the fact that it cannot be treated as a known fixed quantity.

Second, and more importantly, assuming that citizens know the magnitude of media bias prevents me from learning how they could endogenously *infer* the amount of bias in a media source from the content of the message they observe. For example, a study of television consumers in Russia shows that "Viewers expect commercial and governmental involvement in shaping the news. They believe

it is the viewer's responsibility to extract significance and correct for bias" (Mickiewicz, 2004). The commonly invoked psychological notion that people accept or reject information based on its consistency with their priors implies that people may evaluate the plausibility of information directly from its content rather than on the basis of a pre-fixed belief about the degree of bias attached to a particular source of information.

To capture these ideas, I allow the citizen to simultaneously update her beliefs about the competence of the media as well as its bias, and I refer to this process as *dual updating*. Formally, suppose that in addition to being uncertain about the leader's competence θ, the citizen is uncertain about the degree of media bias $\beta \in B \subseteq [0, 1]$. Let F represent the citizen's prior belief about the media bias β. In this case, the posterior expectation of the leader's competence cannot condition on the media bias β as if it were known. Instead, by the law of iterated expectations, the posterior expectation about the leader's competence is equal to

$$\mathbb{E}(\theta|m = 1) = \int_B \mathbb{E}(\theta|m = 1, \beta) dF(\beta|m = 1), \tag{3.2}$$

where $F(\beta|m = 1)$ is the citizen's posterior belief about the extent of the media bias given the high competence message. If the citizen a posteriori thinks that the media is heavily biased (the distribution $F(\beta|m = 1)$ has a lot of weight on large values of β), then she will have a lower posterior on the leader's competence. By Bayes' theorem, the citizen's posterior belief about the extent of media bias is given by

$$F(\beta|m = 1) = \frac{\Pr(m = 1|\beta)F(\beta)}{\int_B \Pr(m = 1|\beta) dF(\beta)}, \tag{3.3}$$

where $\Pr(m = 1|\beta) = \pi + \beta(1 - \pi)$ is the ex ante probability that the media sens a high competence message conditional on media bias (but not conditional on the true competence of the leader). Plugging the above into equation (3.2), we can write the citizen's posterior expectation about the

competence of the leader as follows:

$$\begin{aligned}\mathbb{E}(\theta|m=1) &= \int_B \frac{\mathbb{E}(\theta)}{\Pr(m=1|\beta)} \frac{\Pr(m=1|\beta)}{\int_B \Pr(m=1|\beta)dF(\beta)} dF(\beta) \\ &= \frac{\int_B \mathbb{E}(\theta)dF(\beta)}{\int_B (\mathbb{E}(\theta) + \beta\,\mathbb{E}(1-\theta))dF(\beta)} \\ &= \frac{\mathbb{E}(\theta)}{\mathbb{E}(\theta) + \mathbb{E}(\beta)\,\mathbb{E}(1-\theta)}. \end{aligned} \tag{3.4}$$

The expression shows how exactly the posterior updating on the competence depends on the citizen's priors on competence and media bias. The higher the citizen's prior expectation that the media is biased, the less she is going to be persuaded by the media's message that the leader is competent. A citizen who a priori believes media to be biased, $E(\beta) = 1$, will not update her beliefs on competence, $E(\theta|m=1) = \mathbb{E}(\theta)$. The citizen who a priori does not think the media is biased, $E(\beta) = 0$, will update her beliefs strongly in favor of the incumbent $E(\theta|m=1) = 1$. The updating on competence depends only on the first moment of the prior distribution of β; that is, what matters is not how uncertain the citizen is about the media bias but only how much bias she expects from the media.

The dual-updating model also allows me to predict how the citizen will update her beliefs about the media bias given the high competence message. Given the posterior distribution over the media bias in equation 3.3, the posterior expectation about the extent of media bias is equal to

$$\begin{aligned}\mathbb{E}(\beta|m=1) = \frac{\int_B \beta \Pr(m=1|\beta)dF(\beta)}{\int_B \Pr(m=1|\beta)dF(\beta)} &= \frac{\mathbb{E}(\theta)\,\mathbb{E}(\beta) + \mathbb{E}(\beta^2)\,\mathbb{E}(1-\theta)}{\mathbb{E}(\theta) + \mathbb{E}(\beta)(1-\mathbb{E}(\theta))} \\ &= \frac{\mathbb{E}(\theta)\,\mathbb{E}(\beta) + [Var(\beta) + \mathbb{E}(\beta)^2]\,\mathbb{E}(1-\theta)}{\mathbb{E}(\theta) + \mathbb{E}(\beta)\,\mathbb{E}(1-\theta)}. \end{aligned} \tag{3.5}$$

The citizen's posterior about the extent of media bias depends on three quantities: the prior

expectation about the leader's competence, the prior expectation about the extent of media bias, and the prior uncertainty about media bias (prior variance). The citizen will update more strongly in favor of thinking that the media is biased when she is a priori more uncertain about the extent of media bias, that is, when $Var(\beta)$ is large. Notice that since the random variable β is bounded in the unit interval, it is the case that $Var(\beta) \leq \mathbb{E}(\beta)\,\mathbb{E}(1-\beta)$ and so $Var(\beta) < \min\{\mathbb{E}(\beta), \mathbb{E}(1-\beta)\}$, which implies that updating on media bias will be weak when $\mathbb{E}(\beta)$ is very small or very large.

This model allows me to draw a number of predictions. First, we can show that the dual-updating from the possibly biased media can improve government evaluation, but at the expense of lowering trust in media:

Prediction P1 (Dual updating from high competence news). For any non-degenerate priors, that is, $Var(\beta) > 0$ and $0 < \mathbb{E}(\theta) < 1$, following the high competence message, the citizen will update that the government is more competent and that the media is more biased relative to her priors:

$$\mathbb{E}(\theta|m=1) > \mathbb{E}(\theta),$$

$$\mathbb{E}(\beta|m=1) > \mathbb{E}(\beta).$$

On the one hand, the above prediction is quite intuitive: the citizen observes the high competence message and since the high competence message is more likely to be generated when the government is competent, she infers that the government is more likely to be competent than she thought ex ante. Similarly, since the high competence message is also more likely to be reported when the media is biased, the citizen must also believe that the media she is facing is more biased than she had thought beforehand. On the other hand, it is interesting that the two inferences appear as mutually inconsistent and yet plausible from the point of view of Bayesian updating: the citizen simultaneously becomes more skeptical about the media source, and at the same time she is, at least partially, persuaded by it. It is as if citizens were saying, "we are more convinced than before that you are a liar, and we are also more convinced than before that what you are telling us is true."

The next prediction shows the moderating role of the prior beliefs on the extent of updating from high competence news:

Prediction P2 (The role of priors). The updating on competence is weaker when the citizen's prior about media bias is strong:

$$\frac{\partial}{\partial \mathbb{E}(\beta)} \mathbb{E}(\theta|m=1) < 0.$$

The updating on media bias is weaker when the citizen's prior about the competence is low:

$$\frac{\partial}{\partial \mathbb{E}(\theta)} \mathbb{E}(\beta|m=1) > 0.$$

Another way of stating this prediction is that people will update their beliefs about the competence and the media bias heterogeneously. While the first part of the observation is very intuitive (the citizen will discount information if she expects it to be coming from a biased source), the second part is more interesting: the citizen becomes more critical about the media source when she hears a message that contrasts starkly with her prior. In principle, one could call this "confirmation bias", but these simple results show that no behavioral assumptions are needed to explain these kinds of outcomes – they are fully consistent with the orthodox Bayesian reasoning.

Citizens' priors on competence and media bias are independent. However, note that

$$\begin{aligned}
\mathbb{E}(\theta\beta|m=1) &= \sum_{\theta=0}^{1} \int_B P(\theta=z,\beta|m=1)d\beta \\
&= \int_B \beta P(\theta,\beta|m=1)d\beta \\
&= \int_B \beta\, \mathbb{E}(\theta|m=1,\beta)dF(\beta|m=1) \\
&= \int_B \beta \frac{\pi}{\mathbb{E}(\theta)+\mathbb{E}(\beta)\,\mathbb{E}(1-\theta)} F(\beta) \\
&= \mathbb{E}(\beta)\,\mathbb{E}(\theta|m=1). \qquad (3.6)
\end{aligned}$$

The above inequality taken together with the result in Prediction P1 implies that the posterior covariance between the leader's competence and media bias is negative since

$$\begin{aligned} Cov(\theta, \beta | m = 1) &= \mathbb{E}(\theta\beta | m = 1) - \mathbb{E}(\theta | m = 1)\, \mathbb{E}(\beta | m = 1) \\ &= \mathbb{E}(\theta | m = 1)[\mathbb{E}(\beta) - \mathbb{E}(\beta | m = 1)] < 0. \end{aligned}$$

The third prediction I draw helps us understand how news reports from state-owned media induce relationship between beliefs about government competence and about media bias:

Prediction P3 (Posterior correlation). After a high competence message is observed, the citizen's beliefs about the competence and the media bias will be negatively correlated even though they are independent a priori.

To put it differently, after observing the media message, the citizen will tend to think that a high competence leader should have media with low bias and that a low competence leader should have media with high bias – even though a priori the citizen did not think that media bias and leader competence are correlated. This makes intuitive sense: a person who thinks that the state-owned media is highly biased should also think that the government is more likely to be incompetent, for why else would they have media that lies about its competence. This means that if we take a sample of citizens from a non-democratic regime, most of whom had been exposed to state-controlled media in some shape and form, we should observe a negative correlation between their views on media bias on the one hand and their views on the leader's competence on the other. Given that the media outlet I use in the intervention in this chapter is widely known in Russia, this predicted correlation in posterior beliefs might already be present in the population due to prior exposure. This in turn might limit our ability to learn about

To provide more intuition on the three observations above, I show in Figure 3.1[3] how the citizen

[3]The points on the diagram show the location of a citizen's prior on competence (x-axis) and media bias (y-axis). The arrow heads show the location of the posterior beliefs.

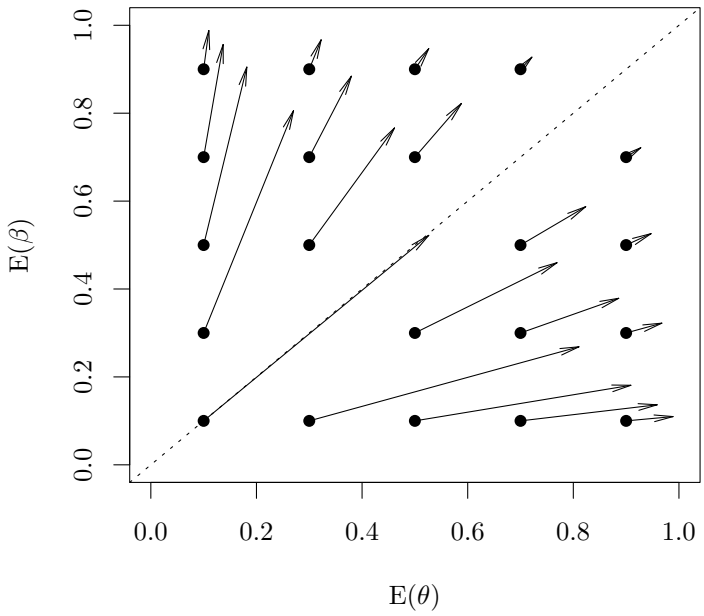


Figure 3.1: Belief-updating relative to the prior

would update her beliefs about the leader's competence and media bias depending on her initial beliefs on these two dimensions. The initial (prior) beliefs are depicted as black dots, and the arrow heads point to the location of the posterior beliefs on the two dimensions. In all cases, the arrows are pointing in the upwards direction meaning that posterior competence and bias are higher than the prior ones (Prediction P1). Furthermore, a citizen with a low prior on competence and higher prior on media bias, will update stronger that the media is biased and weaker that the government is competent, and *vice versa*: the arrows above the 45 degree line are pointing more upwards and those below the 45 degree line are pointing more downwards (Prediction P2). In general, the stronger the citizen's inference on bias, the weaker is her inference on competence, and *vice versa*. If we compare the locations of posteriors for different citizens, we see that citizens who believe that the media is biased are a posteriori less convinced that the government is competent, whereas the citizens who are convinced that the government is competent will see the media as more credible – the posterior beliefs are negatively correlated (Observation 3).

The next prediction that I draw from the model concerns the treatment effect of the high competence message, that is, the difference between the citizen's posterior and her prior.

Prediction P4 (Treatment effects of high competence news). The predicted treatment effects of high competence message on the citizen's beliefs about the competence and the media bias are, respectively,

$$\Delta_\theta \equiv \mathbb{E}(\theta|m=1) - \mathbb{E}(\theta) = \frac{\mathbb{E}(1-\beta)\ \overbrace{\mathbb{E}(1-\theta)}^{\text{Ceiling effect}}}{1-\mathbb{E}(\beta)+\mathbb{E}(\beta)/\underbrace{\mathbb{E}(\theta)}_{\text{Credibility effect}}},$$

$$\Delta_\beta \equiv \mathbb{E}(\beta|m=1) - \mathbb{E}(\beta) = \frac{Var(\beta)\,\mathbb{E}(1-\theta)}{\mathbb{E}(\theta)+\mathbb{E}(\beta)\,\mathbb{E}(1-\theta)}.$$

Consider the treatment effect on competence, Δ_θ. The citizen's prior on competence has two competing effects on the strength of the treatment effect. On the one hand, there is a mechanical ceiling effect: the higher the citizen's prior on competence, the less she can update upwards, so the treatment effect for such a citizen is bound to be lower. On the other hand, there is a less straightforward "credibility effect" of the prior on competence: the more the citizen is convinced a priori that the government is competent, the more credible she will find the reporting that the government is competent. In turn, by virtue of not inferring that the media is biased, the citizen will be more persuaded that the government is competent.

Figure 3.2 displays the treatment effects on competence for a set of prior profiles of the citizen. Individuals who are a priori convinced that the media is biased (upper row) will not be swayed by the message, irrespective of their priors about the leader's competence. When the citizen has a low prior on media bias, persuasion becomes possible, but the degree to which the citizen is persuaded depends on her prior about competence. Interestingly, the citizen's prior on competence has a non-monotonic effect on the treatment effect on competence: the citizen with a low prior on competence will remain unswayed because of the credibility effect whereas the citizen with a high prior on competence will remain unswayed because of the ceiling effect. Thus, persuadable citizens are those with low priors on media bias and intermediate priors on competence.

While interesting, the above prediction is difficult to test empirically: identifying the non-monotonic

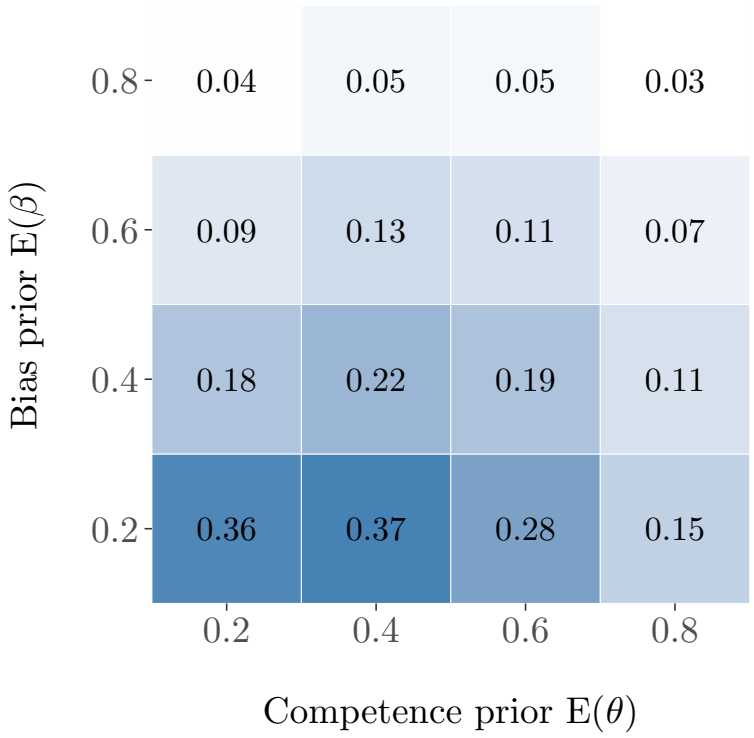


Figure 3.2: Treatment effects on competence ($\mathrm{E}(\theta|m = 1) - \mathrm{E}(\theta)$) given the priors

effects of priors would require a large sample of citizens with low priors on media bias and extensive variation in priors on competence. However, as the next prediction shows, the prior on one dimension has a monotonic (hence, empirically more tractable) effect on the treatment effect magnitude on another dimension:

Prediction P5 (Heterogeneity of treatment effects). The treatment effect of the high competence message on beliefs about competence is decreasing in the prior on media bias and the treatment effect of the high competence message on beliefs about media bias is decreasing in the prior on competence:

$$\frac{\partial \Delta_\theta}{\partial \, \mathbb{E}(\beta)} < 0,$$
$$\frac{\partial \Delta_\beta}{\partial \, \mathbb{E}(\theta)} < 0.$$

In other words, I expect a monotonic relationship between an individual's prior on media bias and

her updating on competence, and between the prior on competence and updating on media bias.

To summarize, my expectations about the treatment effects of exposure to state-controlled media are as follows:

1. **Average treatment effects**:

    - The effects of media messages about high government competence should be non-negative. Formally, for priors on competence and media bias drawn from a non-degenerate joint distribution G, I expect:

$$\int \int \triangle_{\theta}(\mathbb{E}(\theta), \mathbb{E}(\beta))\, \mathrm{d}G \geq 0,$$
$$\int \int \triangle_{\beta}(\mathbb{E}(\theta), \mathbb{E}(\beta))\, \mathrm{d}G \geq 0.$$

    - If the prior distribution G is such that there are few persuadable citizens, then the treatment effects averaged over that population may be too close to zero to be detected in my experiment. Conversely, these average treatment effects might be sizable if the distribution of priors G is such that many citizens are skeptical about the government's competence, but continue to believe that the state-controlled media outlet is not biased.

2. **Role of priors**:

    - The treatment effect of the message on the subject's evaluation of media bias is decreasing in the subject's prior on government's competence.
    - The treatment effect of the message on the subject's evaluation of the government's competence is decreasing in the subject's prior that the media is biased.

I now turn to the discussion of the experiment designed to test the above predictions.

3.3 Experimental design

3.3.1 Intervention

To test the predictions described above I designed an online panel experiment which allows me to infer changes in beliefs about the contents of the media report, media bias and competence of politicians. I make use of two survey rounds (baseline and endline) and assign repsondents using simple random assignment to one of the four experimental groups (*Pure Control*, *Placebo*, *Economy*, *Economy+Leader* [4]) administered during th endline survey.

The intervention consisted of showing respondents short video reports coming from the *Channel 1*, the main state-owned TV channel in Russia. Like other state-owned TV channels in Russia, Channel 1's coverage of domestic politics broadly consists of two types of reports. The first type reports on macroeconomic policies and selectively attributes successes in those policies to the government. The second type focuses on discussion of regional level issues, where federal officials frequently appear to monitor local issues and effectively shift perceptions of responsibility towards local governments. In this chapter I focus on the former type of coverage, while the latter type is discussed in-depth in the first chapter of this dissertation. The key distinction between the two types of coverage is related to direct exposure of citizens to the issues discussed in the respective reports. While macroeconomic policy performance is unlikely to be directly observed by citizens, local service delivery often affects citizens' daily lives. This in turn makes it harder for media to *lie* about local policy issues compared to the macroeconomic performance. I explore the implications of the ability of media to misreport policy performance in their news reports for the ability of citizens to learn from them in the previous section.

The following two boxes show transcripts of the news broadcasts that respondents saw if they were assigned to either economy or economy+leader conditions:

> *Broadcaster: To begin with, on a topic that concerns everybody:* ***[Vladimir Putin and the head of the Federal Tax Service Mikhail Mishustin talked today about]*** *taxes and duties* ***[in the***

[4] To make the results more readable I also refer to those experimental conditions as C, P, E, EL respectively

Kremlin]*. Budget income has been growing: plus almost 20 %, or over 2 billion rubles, during the first 10 months of this year, and mostly from non-oil-related sources. Another important issue that concerns business circles: some of them can be set free from the mandatory use of online cash registers. Aleksandra Cherepnina is reporting.*

Broadcaster: Another important topic is the raise of the minimum wage. Aleksandra Cherepnina is reporting. Reporter: Numbers illustrate the fact that the economy has been growing. ***[Here is some data from the Ministry of the Economic Development reported at the meeting with the President:]*** *the left column is the forecast for 2017, the right column is what we have by now. The GDP growth is already higher than the forecast, and the inflation rate is going down faster than experts thought.* ***[Putin: Russian economy is no longer in crisis and is speeding up. In this context, we have to do everything to preserve these dynamics.]***

The only difference between the two conditions is that the economy+leader treatment included the parts of the report shown in bold above, namely the parts that mentioned President Vladimir Putin. While not directly discussed in the theoretical framework, I included the report mentioning President Putin to enhance the effects of performance information by directly including information about whom the performance is attributed to.

I also include a placebo condition in which respondents were asked to watch one report coming from Channel 1 discussing issues not directly related to the economic performance:

Broadcaster: One the most solemn ceremonies has just finished in the Kremlin. President Putin awarded State Orders. All the invited guests whose number amounts to 50 people achieved very high results in different fields: astronauts and scholars, artists and aviators. It's not only a special day for them, it's also a sign that the state has recognized their achievements. Putin: Every generation needs people who are capable of inspiring, setting goals, doing heroic things. They are here today.

This condition was included to test whether any observed effects of economic coverage may be an artifact of pure exposure to Channel 1 coverage. If I find no evidence for differences in views of respondents who watched the placebo report and those who did not watch any report (pure control condition), I can pool these conditions to improve power to identify effects of economic coverage.

In principle, it is possible that both of treatment conditions (economy and economy+leader) could have an impact on the citizens' evaluation of the government's competence. I expect the economy+leader treatment, however, to be the most important given it actually provides good economic news and attributes that news to President Putin.

3.3.2 Sample

The sample consists of 1092 Russian adults enrolled during the baseline survey via *Anketolog*, a Russian platform for online surveys that has a large pool of available respondents (over 70000 people meeting the basic eligibility criteria). As is common in similar platforms, every respondent received a small financial compensation for their participation in surveys offered by the platform and determined by the company itself.

Table C.1 shows that my sample over-represents young, highly educated, urban-dwellers with average income. The majority of the sample supports President Putin (more than 70%), frequently consumes news from the federal state-owned TV (more than 70%) despite often considering it to be biased (average media bias score of 0.48 on $[0, 1]$ scale). Finally, a majority of the sample is fairly skeptical both about the current state of economy (average of 0.39 on $[0, 1]$ scale) and about leadership policy competence (average of 0.40 on $[0, 1]$ scale). Overall, while not representative at the national level, the sample does not have extreme levels of baseline beliefs about the main outcomes of interest and also includes all basic socio-demographic groups.

3.3.3 Random assignment

Given that I aimed to pool placebo and pure control conditions in all analyses, I used simple random assignment using the following vector of probabilities $p = \left\{\frac{1}{6}, \frac{1}{6}, \frac{1}{3}, \frac{1}{3}\right\}$ corresponding to pure control, placebo, economy and economy+leader conditions respectively.

As a result, 180 respondents were assigned to the pure control condition, 175 assigned to the placebo condition, 366 assigned to the economy condition, and 371 assigned to the economy+leader condition. In the Table C.3 I present balance test results which show whether there are systematic differences in pre-treatment characteristics between all pooled pure control and placebo groups and two main treatment groups. I observe no evidence of imbalance in baseline characteristics across all experimental conditions.

3.3.4 Measurement

In the baseline survey, every respondent regardless of the experimental assignment received an identical questionnaire with background questions and questions measuring the outcome variables of interest. The background questions include gender, age, education, region, type of settlement (rural/urban with subcategories), and income. I also ask a number of questions about news consumption: respondents' main sources of news, the frequency of watching federal TV channels, and respondents' perception of media bias. Finally, at the end of the baseline survey I ask five questions measuring pre-treatment levels of the outcomes of interest pertaining to bias of the media and government competence. Where possible, I use the exact same wording as employed by *Levada Center*, the leading independent survey research company in Russia with long experience in measurement of public opinion on political and economic issues. The full questionnaire is given in the Appendix C.4.

My main outcome of interest is the variable measuring the economic competence of the government corresponding to the individual beliefs about θ in the model above. This outcome of interest is

measured on a 4-point Likert scale using the following question:

- Policy Competence: *To what extent are you satisfied with the current economic policy of the country's leadership?*
    1. Definitely disagree
    2. Rather disagree than agree
    3. Rather agree than disagree
    4. Definitely agree

    NA. Hard to tell

The last option "Hard to tell", is a standard "Don't know" in Russian opinion surveys, and I treat it as missing values.

I also employ two auxiliary questions to measure the respondent's perceptions of the leadership:

- Putin's Merit: *Do you agree that most of the credit for economic achievements of Russia and the growth of the well-being of people goes to President Vladimir Putin?*
    1. Definitely disagree
    2. Rather disagree than agree
    3. Rather agree than disagree
    4. Definitely agree

    NA. Hard to tell
- Putin Support: *Would you please tell us whether you overall approve or disapprove Vladimir Putin's performance as the President of Russia?*
    1. Approve
    2. Disapprove

In contrast to the main outcome question, these two auxiliary questions directly mention the name of Russian President Putin, and the treatment news reports (at least in the economy+leader condition) specifically attribute good economic news to Mr. Putin. The Russian word leadership (*rukovodstvo*) used in the question on economic policy satisfaction is more general than president, but given

how much power is centralized in Russia, leadership is typically equated with the President's office. Although the questions ask about the overall approval of the President, it is plausible to expect that the overall approval might also be impacted by the media messages to the extent that evaluations of leader's economic activities play an important role in his overall evaluation. In general, I expect stronger effects of the economic news reports on direct evaluation of economic competence compared to the overall evaluation. Thus, I use these auxiliary questions to look for evidence for spillovers of evaluation of competence in economic management into the overall evaluation.

The second main outcome of interest is an individual's evaluation of the fairness of Russian state-controlled television channels as far as the coverage of economic affairs is concerned.

- TV Bias: *To what extent do you agree with the claim that the federal TV (Channel 1, Rossia-1, Rossia-24) describes the economic situation in the country truthfully?*
    1. Definitely disagree
    2. Rather disagree than agree
    3. Rather agree than disagree
    4. Definitely agree

    NA. Hard to tell

The expression "federal TV" is a standard reference to "state-controlled television" in Russia. The three channels mentioned in the parentheses are the main state-controlled television channels and include Channel 1, the outlet that the treatment reports come from. I use inverted answers to this question to measure a person's beliefs about the media bias (corresponding to the parameter β in the model above).

I also include two questions related to direct evaluation of the economic performance both retrospectively and prospectively:

- Current Economy: *How would you characterize the current economic situation in Russia?*
    1. Very bad

2. Bad
3. Medium
4. Good
5. Very good

NA. Hard to tell

- Future Economy: *In your opinion, what is going to happen in Russian in terms of its economy in the next couple months?*
  1. The situation will worsen significantly
  2. The situation will somewhat worsen
  3. The situation will somewhat improve
  4. The situation will improve significantly

Those two questions aim to provide additional measures of the government performance without directly referencing the country's leadership. The theory does not give direct predictions for the effects of media coverage on economy performance evaluation. Yet, it may be that citizens see the economic performance as a proxy for the incumbent's competence. Hence, my predictions for the government competence (θ) extend to the analyses that explain variation in responses to these two questions. In addition, given that the future economy question was framed relative to the current evaluation of the economy, in the analyses I construct this outcome as the sum of the current economy question rescaled to range from 0 to 1 and the future economy question rescaled to range from -1 to 1. This outcome thus represents the direct future economy evaluation.

In the endline survey, the three experimental groups respondents were asked to watch the treatment news reports they were assigned to. To allow testing of video comprehension, respondents who receive any news report were asked to summarize the video in $2-3$ sentences. In addition, I asked them about whether they believe the news mentioned in the video is good, neutral, or bad for the Russian economy. This allows me to test whether respondents' perceptions of the news align with those assumed by the experimental design. Respondents were then asked to answer the same five

questions described above.

To facilitate interpretation, all outcomes are rescaled to range from 0 to 1.

3.3.5 Issue with the endline data collection

During the implementation of the experiment I encountered an issue that posed a threat to an internal validity of the analyses presented below. The baseline survey was launched on March 2, 2018 and concluded as planned within 24 hours. I then followed up with the same respondents a week later by launching the endline survey on March 9, 2018. Prior to the second round, respondents were randomly assigned to one of the experimental groups. Given the absence of randomization tools in the *Anketolog* online survey platform, I instead aimed to simultaneously launch 4 different versions of the endline survey – one for each of the randomly assigned groups.

Unfortunately, upon launch of the endline survey on March 9, all respondents assigned to economy+leader condition received the baseline survey that resembled the endline survey for the pure control condition. As a result, all respondents in this condition who completed the survey in the first two hours of its roll out received no treatment. After the issue was discovered, the data collection was stopped temporarily and all respondents from the pure control and economy+leader conditions who did not finish the endline survey by that time were re-assigned to the pure control condition. In total, the pure control condition was completed by 231 respondents. I refer to this re-assignment as *fix* in the analyses below. Table 3.1 summarizes number of respondents who completed the endline survey in each combination of assigned and received experimental conditions. After the fix the endline data collection resumed with no pure control condition and concluded on March 19, 2018.

Table 3.1: Number of observations by combination of assigned and received experimental condition

Experimental condition		Observations	
Assigned	Received	Before fix	After fix
Control	Control	77	0
Control	Economy+Leader	0	78
Placebo	Placebo	70	71
Economy	Economy	135	169
Economy+Leader	Control	154	0
Economy+Leader	Economy+Leader	0	156

This technical issue and the way it was resolved resulted in two potential problems for the causal inferences I make. First, because the survey was unavailable to the respondents for some time and then was re-launched with no notification, the rest of the sample took much longer to respond to the survey than expected (see Figure 3.3 for the timeline of data collection by group). Second and more importantly, the way the issue was resolved created a drastic imbalance in the timing of endline data collection across experimental conditions. Specifically, everyone who received the pure control condition took up the survey prior to the fix, while those who received the economy+leader condition did so after the fix. Given that the random assignment procedure was not violated if I restricted analyses to only before-fix or only after-fix samples, I report the analyses below for those subsamples separately.

Given that the timing of the endline survey take-up might be related to factors that confound the relationship between treatment and the outcomes of interest, pooled analyses on the whole study sample can over- or under-estimate effects that rely on economy+leader or pure control groups observed outcomes, even if I include fixed effects for before/after fix in the respective model.

I address this issue by first looking at the baseline covariate balance between the before and after fix

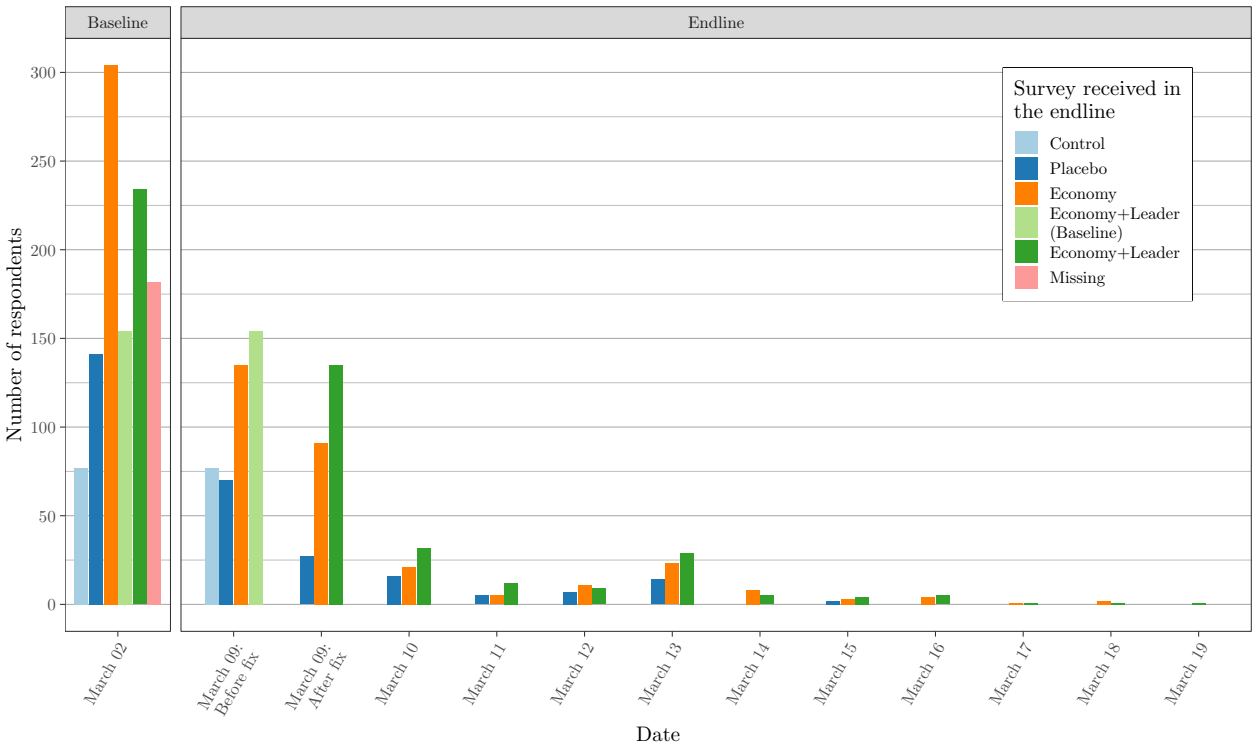


Figure 3.3: Breakdown of take-up of the baseline and endline surveys by day and group

subsamples. Looking at the Table 3.2 we can see that there is no evidence for strong differences between those who took the endline survey before the issue was resolved and those who took it after. The only significant difference I observe suggests that those who took up the endline survey early are more likely to have higher education which warrants further investigation of treatment effect heterogeneity.

Second, in the analyses below I also look at the evidence for the differences in effects of the economy treatment compared to placebo treatment over time since assignment to these conditions was not undermined by the issue described above. If I find no support for treatment effect heterogeneity around the issue fix, I can be more confident that the effects of all other experimental comparisons I look at are not explained by the differences in treatment effects over time.

Table 3.2: Covariate balance before and after implementation issue fix

	Std. Means		Before vs After fix	
Variable	Before fix	After fix	Std. Diff	P-value
News from federal TV	0.742	0.714	-6.283	0.373
News from TV Rain	0.056	0.049	-2.982	0.687
News from radio	0.221	0.242	4.951	0.482
News from newspapers	0.173	0.183	2.544	0.72
News from social media	0.646	0.642	-0.896	0.9
Frequently uses federal TV	0.560	0.573	3.336	0.638
Independent news only	0.168	0.156	-3.306	0.65
Pro-government news only	0.242	0.272	6.643	0.345
Female	0.646	0.615	-6.457	0.363
Log(Age)	3.538	3.539	0.436	0.951
Education level	7.242	7.133	-8.312	0.254
Income level	0.484	0.494	4.938	0.474
Age: 18-29	0.367	0.328	-8.215	0.258
Age: 30-39	0.346	0.398	10.569	0.135
Age: 40-49	0.162	0.160	-0.474	0.947
Age: 50+	0.125	0.114	-3.595	0.624
Has higher education	0.681	0.602	**-15.997**	**0.022**
Lives in 1 mil.+ city	0.471	0.511	8.065	0.26
TV Bias	0.490	0.485	-1.774	0.802
Policy Competence	0.408	0.415	2.447	0.731
Putin Support	0.702	0.701	-0.195	0.978
Putin's Merit	0.551	0.580	9.446	0.193
Current Economy	0.405	0.402	-1.447	0.839
Proportion of Significant Differences				**0.043**

Significance at $\alpha = 0.05$ in bold. p-values are for the two-tailed weighted t-test of differences in means between respective subsamples.

Overall, preliminary analyses suggest that the estimation of the treatment effects on the pooled sample using time fixed effects will not produce biased estimates of the treatment effects, especially for the comparisons that include the economy+leader condition. I further investigate this issue in

the next section.

3.4 Results

3.4.1 Empirical strategy

Let Y_{it} be the observed outcome for individual i observed at time $t \in \{0, 1\}$, where $t = 0$ refers to the baseline observation and $t = 1$ refers to the endline observation. In the baseline specifications, the outcome variables that are measured on the Likert scale are treated as numeric variables. Let $T_{ij} = 1$ denote an indicator that individual i received treatment $j = \{P, EL, E\}$. The causal parameters of interest are estimated using the following lagged dependent variable OLS specification:[5]

$$Y_{i1} = \alpha + \sum_{j \in \{P,EL,E\}} \tau_j T_{ij} + \eta Y_{i0} + \varepsilon_i, \tag{3.7}$$

where as before β_j is the estimate of the effect of treatment j on the outcome of interest. As discussed in the Section 3.3.5 I also estimate the model above controlling for the time of the implementation issue fix.

Note that equation (3.7) corresponds to the full model that estimates effects of all treatments compared to the pure control condition. In addition, I estimate similar specifications for other comparisons between experimental conditions by changing the treatment indicators I am using. Specifically, I estimate the models pooling pure control and placebo conditions as pooling economy and economy+leader conditions.

I follow the Standard Operating Procedures (Lin et al., 2016) in testing of hypotheses in cases that are not explicitly stated above.

My primary interest is in the average treatment effects of the economy and economy+leader treatments on the evaluations of competence and bias. From Prediction P4 above, I draw the

[5]The alternative to this specification is the OLS model that uses difference scores between endline and baseline as dependent variable. Following discussion by (DeclareDesign Blog, 2019) I use lagged dependent variable instead, given that I do not observe any evidence of treatment assignment imbalance.

following hypotheses about the average treatment effects with respect to main outcomes of interest:

Hypothesis H1 . For the comparison of government competence ($comp$) and media bias evaluations ($bias$) across economy (economy+leader) group and pure control group I expect

$$\tau_E^{comp} > 0;\ \tau_E^{bias} > 0;\ \tau_{EL}^{comp} > 0;\ \tau_{EL}^{bias} > 0$$

To test predictions about the conditional effects given in the Prediction P5, I employ the following interactive specifications:

$$Y_{i1} = \gamma + \sum_{j \in \{P,EL,E\}} \delta_{1j} T_{ij} + \sum_{j \in \{P,EL,E\}} \delta_{2j} T_i \times X_i + \delta_3 X_i + \eta Y_{i0} + \varepsilon_i. \tag{3.8}$$

Here, X_i represents the individual baseline evaluations of media bias and government competence by respondent i. Given Prediction P5, I form the following hypotheses:

Hypothesis H2 . For heterogeneity of the effects of treatment on government competence evaluations ($comp$) with respect to prior beliefs about media bias I expect $\delta_2^{comp} < 0$. Analogously, for heterogeneity of the effects of treatment on beliefs about media bias ($bias$) with respect to prior beliefs about government competence I expect $\delta_2^{bias} < 0$.

I also use equation (3.8) to estimate heterogeneous treatment effects with respect to other baseline characteristics to explore whether these characteristics affect the effects of treatment on outcomes of interest. Specifically, as noted in Section 3.3.5 I use this model to look for evidence of differences in effects of the economy treatment compared to the placebo treatment before and after the fix replacing X with the indicator for time of take-up of endline survey.

My final set of hypotheses concerns the comparisons between the effects of messages with direct attribution (economy+leader treatment) versus messages without a direct attribution of high competence to the leadership. The model itself cannot inform us which of these are most likely to work, so

my expectations about these hypotheses are less grounded in theory. Because Russian state-owned media, however, frequently attributes high competence to the Russian government, my expectation is that its effects are going to be larger than those of the economy treatments. These hypotheses can be tested using equation (3.7) restricting the sample to the respective experimental conditions:

Hypothesis H3 . For the comparison between economy+leader and economy (placebo) conditions I expect

$$\forall z \in \{comp, bias\} : \tau^z_{EL} > 0$$

In addition to the direct comparison across all experimental conditions, below I report the estimates from regressions, where both placebo and pure control groups are pooled together and serve as a control group.

3.4.2 No differences between placebo and pure control

I start by looking at the differences between placebo and pure control conditions. As mentioned earlier, if I find no evidence of differences between outcomes across these two groups, I will focus on the specifications that pool those two groups as a benchmark in the main treatment effect estimation.

First, in Table 3.3 I show estimates of placebo and economy treatment effects compared to the pure control group on the subsample of respondents who finished the endline survey prior to the fix of the implementation issue. In this subsample, there is no threat to random assignment. Results reported in the first row of the table provide no evidence for the treatment effects of the placebo news report except for an imprecisely estimated positive effect on the support for the President Putin. Moreover, these null effects are fairly precisely estimated with minimal detectable effect sizes (MDE) estimated as 2.8 times the standard error (Bloom, 1995) ranging from 5 (economy evaluation) to 8.7 (support for the President) percentage points on a $[0, 1]$ scale or from 8.7% (future economy) to 15% (policy competence) of the control group mean.

Table 3.3: Main ITT effect estimates among those who finished endline before issue fix

	TV Bias	Policy Competence	Putin Support	Putin's Merit	Current Economy	Future Economy
Placebo (P)	0.009	0.010	0.046^{+}	-0.005	0.024	0.020
	[0.023]	[0.028]	[0.031]	[0.029]	[0.018]	[0.018]
Economy (E)	0.018	0.014	-0.008	0.002	-0.022	0.006
	[0.023]	[0.022]	[0.029]	[0.024]	[0.017]	[0.017]
Observations	394	415	436	396	417	417
Adj. R-squared	0.607	0.518	0.669	0.533	0.459	0.583
Control (C) Mean	0.538	0.391	0.658	0.541	0.412	0.462

The analyses are conducted on the subsample of those, who finished endline survey before the fix of implementation issue. There are no respondents who received Economy+Leader in this subsample. Benchmark is the Pure Control group. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Second, using the naive plug-in randomization inference test of differences-in-variances of observed outcomes between the pure control and placebo groups (Ding et al., 2016), I can look for evidence of heterogeneous treatment effects across placebo news reports. The results for this comparison, among others, are reported in the first row of the Table C.4. Here as well, I fail to reject the null of no differences in variance of main outcomes between the two groups at the conventional significance level of $\alpha = 0.05$.

Overall, I find no strong evidence for effects of placebo treatment except for the support for the President Putin. This latter finding is perhaps not surprising given that the placebo video report mentioned Mr. Putin in the context of the national award ceremony, which should not affect my main outcomes of interest related to leadership competence and economic policy. I thus focus on the estimates that pool pure control and placebo groups as a benchmark since such a specification has higher statistical power.

3.4.3 No differences in treatment effects before and after fix

I next provide additional evidence for the absence of differences between subsamples before and after the implementation issue fix. To do so, I estimate the heterogeneous effects by timing the endline take-up using a model similar to equation (3.8) and subsetting to placebo and economy groups only. Since assignment to those groups was not affected by the implementation issue, I can use them to test timing heterogeneity in treatment effects. Estimates reported in row 3 of the Table 3.4 while quite imprecise (lowest MDE of 12.1% of baseline mean) show that the treatment effects are not significantly different before and after the issue was fixed.

Table 3.4: ITT estimates of the differences in treatment effects before and after fix of implementation issue

	TV Bias	Policy Competence	Putin Support	Putin's Merit	Current Economy	Future Economy
Economy (E)	0.010	0.006	-0.057*	0.009	-0.044**	-0.013
	[0.027]	[0.030]	[0.034]	[0.031]	[0.019]	[0.020]
After fix	-0.034	0.017	-0.019	-0.015	-0.006	0.021
	[0.032]	[0.036]	[0.044]	[0.036]	[0.020]	[0.021]
Economy (E) x After fix	0.033	-0.044	0.005	0.013	0.012	-0.031
	[0.040]	[0.043]	[0.055]	[0.045]	[0.027]	[0.027]
Observations	395	412	445	392	428	428
Adj. R-squared	0.576	0.514	0.629	0.538	0.563	0.624
Placebo (P) Mean	0.509	0.400	0.752	0.542	0.441	0.492

The analyses are conducted on the subset of two experimental groups which were not affected by the implementation issue: Placebo and Economy. Benchmark is the Placebo group. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

These results, together with evidence discussed in the Section 3.3.5, suggest that the estimates from pooled specifications that use the received (instead of assigned) treatment indicator and control for issue fix timing can be interpreted causally.

3.4.4 Main results

I now move to the discussion of the main experimental results. I first look at the treatment effects estimates from the lagged dependent variable OLS regressions of my main outcome variables on all treatment groups present after the implementation fix using the placebo group as a benchmark.

The outcomes I focus on include beliefs about media bias (*TV bias*), satisfaction with the economic policy of the country's leadership (*policy competence*), presidential approval (*Putin approval*), evaluation of the current state of the economy (*economy current*), and the predicted expectation of the state of the economy in the upcoming months (*economy future*). From the first row of Table 3.4 reported above, we already can see that the economy treatment that does not mention the country leadership possibly decreased presidential support and the evaluation of the current state of the economy compared to the placebo report.

The results in Table 3.5 also suggest similar patterns. While quite imprecise due to the small sample size, we see that economy only news reports that did not mention the leadership continue to have negative estimated effects on the economy evaluation (both current and future), approaching statistical significance. I also find negative but imprecisely estimated effects on policy competence and positive effects on beliefs about media bias. Across the board, I find that effects of news reports on the economy that mention the leadership have similar but weaker effects.

These results are only partly consistent with my theory. While I expected that positive messages can increase beliefs about media bias, my theory did not predict negative treatment effects of the positive messages. I predict that at most positive news delivered by media perceived as biased are fully discarded by rational individuals.

Table 3.5: Main ITT effect estimates among those who finished endline after issue fix

	TV Bias	Policy Competence	Putin Support	Putin's Merit	Current Economy	Future Economy
Economy (E)	0.040	-0.037	-0.046	0.024	-0.033*	-0.042**
	[0.030]	[0.030]	[0.043]	[0.032]	[0.019]	[0.019]
Economy+Leader (EL)	0.041	-0.012	-0.008	0.026	-0.030*	-0.016
	[0.030]	[0.029]	[0.042]	[0.031]	[0.018]	[0.019]
Observations	427	441	474	415	462	462
Adj. R-squared	0.513	0.517	0.540	0.487	0.536	0.559
Placebo (P) Mean	0.526	0.373	0.676	0.521	0.411	0.470

The analyses are conducted on the subsample of those, who finished endline survey after the fix of implementation issue. There are no respondents who received Pure Control in this subsample. Benchmark is the Placebo group. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

The estimates of the treatment effects using the full sample and including an indicator of endline take-up after the issue fix presented in the Table 3.6 draw a similar picture: I still observe no evidence of the effects on leader's competence and find positive but imprecisely estimated effects on beliefs about media bias. At the same time, I again observe patterns of lower current economy evaluation. Nevertheless, the fact that patterns uncovered in Table 3.5 are confirmed by the model that has greater statistical power make these estimates more plausible.

Table 3.6: Main ITT effect estimates controlling for timing of endline survey

	TV Bias	Policy Competence	Putin Support	Putin's Merit	Current Economy	Future Economy
Economy (E)	0.024	-0.004	-0.030	0.010	-0.029**	-0.014
	[0.017]	[0.017]	[0.023]	[0.019]	[0.012]	[0.012]
Economy+Leader (EL)	0.030	0.011	0.003	0.016	-0.027*	0.005
	[0.024]	[0.023]	[0.033]	[0.025]	[0.016]	[0.017]
Observations	821	856	910	811	879	879
Adj. R-squared	0.557	0.517	0.602	0.511	0.501	0.569
Control (C) Mean	0.528	0.387	0.716	0.547	0.423	0.482

The analyses are conducted on the full sample. To address concern about self-selection into Economy+Leader condition due to implementation issue all models control for the indicator of finishing endline after fix. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Note that the limited evidence for updating I observe could be driven by the pre-existing correlation between beliefs about government competence and media bias. As discussed in the theoretical framework, frequent exposure to the media outlet (that I observe in the sample with respect to Channel 1 viewership) can form two clusters of citizens: those who believe government to be competent and media to be objective, and those who believe government to be incompetent and media to be biased. As shown in Figure 3.4 this prediction finds some support among viewers of state-owned TV in the study sample with high negative correlation (-0.52) between prior beliefs about government competence and media bias. That said, a majority of the sample lies in the middle range of both priors, suggesting that prior exposure to channels like Channel 1 does not induce extreme polarization of beliefs.

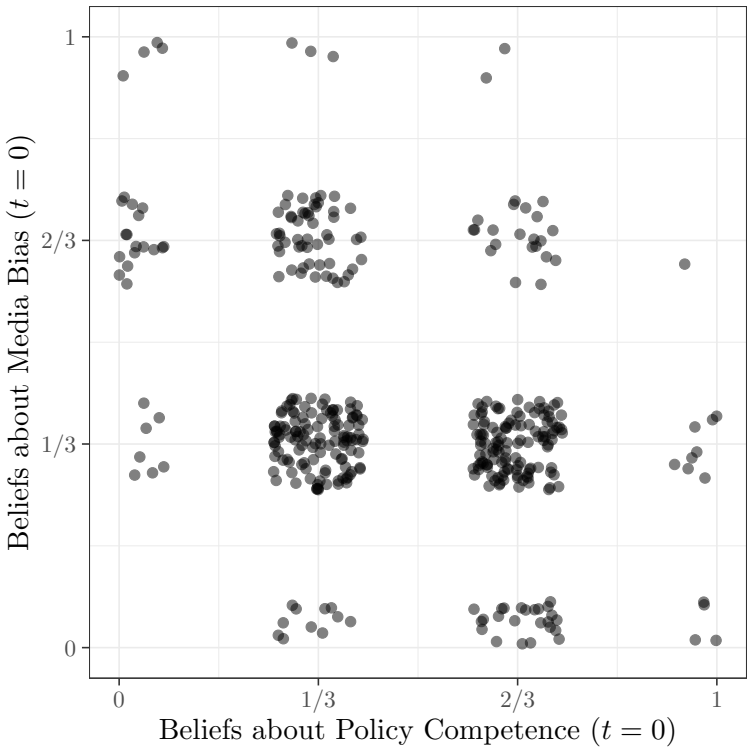


Figure 3.4: Correlation between prior beliefs about government competence and media bias among frequent consumers of state-owned TV

3.4.5 Manipulation checks

To make sure that the results I reported so far can be attributed to the effects of the information contained in the treatment news reports, rather than asymmetries in treatment administration or low rates of comprehension of the news reports, I can conduct several manipulation checks.

First, after each of the videos embedded in the endline survey in placebo, economy and economy+leader conditions, I asked respondents to summarize the video contents and then choose whether the video describes positive, neutral or negative events for the Russian economy. Based on these questions, I construct three measures of video comprehension: whether the information covered was evaluated positively ($[-1, 1]$ scale), the number of words in the video gist (log count), and the share of the 10 most frequent 1-grams used in the corresponding video gists ($[0, 1]$ scale). For the first measure the expectation was that the treatment videos that cover economy (with or without leader) should be viewed as more positive for the economy of Russia compared to the

placebo report that does not mention the economy directly. For the measures related to the length of the video gists and the words mentioned in them, I expected that there should be no differences across placebo, economy and economy+leader treatments which would suggest that it is not the case that any of the treatment videos were better understood by respondents.

Second, I look at the time that respondents spent on completing the endline survey (log seconds), assuming that watching each video and responding to questions after it should increase average time spent by respondents in each of the treatment groups.

Table 3.7: ITT effect estimates on supplementary outcomes

	Video 1 positive	Video 2 positive	Video 1 gist words	Video 2 gist words	Video 1 gist correct words	Video 2 gist correct words	Survey taken time
Economy (E)	-0.312***		-0.063		0.043**		0.989***
	[0.063]		[0.061]		[0.019]		[0.052]
Economy+Leader (EL)	-0.136*	0.066	-0.074	0.090*	0.018	-0.033*	0.948***
	[0.071]	[0.060]	[0.070]	[0.053]	[0.023]	[0.019]	[0.082]
Placebo (P)							0.616***
							[0.059]
Observations	679	538	679	538	679	538	910
Adj. R-squared	0.031	0.006	0.000	0.002	0.004	0.002	0.334
Benchmark Mean	0.539	0.553	1.950	1.733	0.229	0.268	4.893

The models are estimated on relevant experimental group subsamples and control for the timing of implementation issue fix. E.g. since only Economy and Economy+Leader received second video, models with dependent variables related to Video 2 use Economy group as benchmark. Video positive is answer to question whether video watched covers positive news for the Russian economy. Video gist words is log of number of stemmed words used to summarize respective video. Video gist words correct is share of most common words in respective experimental group that were used by respondent to summarize video. Survey taken time is log of total number of seconds respondent spent to fill in endline survey. Differences in number of observations across columns are due to differences in groups included in the model estimation. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table 3.7 reports the results of the manipulation checks. Looking at the first two columns I see that the news reports that mentioned President Putin in the context of economic news were perceived more positively by respondents when compared to the economic coverage that does not mention country leadership. Moreover, both reports that discuss economic issues (on taxation and budget

income) were perceived by respondents as less positive for the Russian economy compared to the placebo report that covered an award ceremony held by President Putin. Both of these findings are surprising given that the placebo news report did not cover economic issues directly, but they might account for some of the puzzling results I observed so far.

In Tables 3.3 and C.6 I estimate weak positive effects of the placebo treatment both on the support for the President and on the economy evaluation, as opposed to weak negative effects of the economy treatment. The effects of the placebo video are consistent with the evaluation of the report itself reported as the benchmark mean in the first column of Table 3.7 (0.54 on $[-1, 1]$ scale). Moreover, the evaluation of economy without leadership coverage is close to neutral (0.23 on $[-1, 1]$ scale), suggesting it might have caused either a neutral or even a negative reaction compared to other coverage that can come from the state-owned media. Combined with the positive evaluation of the second treatment video (on economic growth) in economy and economy+leader groups (column 2 in Tables 3.7 and C.7) the weak negative treatment effects I observe for these treatments can be thus caused by the strong negative reaction to the first report that were then partly cancelled out by the second report.[6]

Looking at the rest of Table 3.7, we see small but significant differences in the overlap (less than 1 more common word used) and length (within 1 extra word used) of gists written by respondents across treatment conditions. These effects are not large enough in magnitude to suggest differences in comprehension of the experimental news reports. Finally, looking at column 7, we see that respondents in all treatment groups respondents did indeed take longer to complete the endline survey (by roughly 1.9 minutes in placebo and almost 3.5 minutes in economy and economy+leader treatments). These differences in completion times suggest respondents did not "click through" the experimental news reports. On average, it took more than 1.5 minutes for respondents to finish watching news report and answer the related questions.

[6]Notably, for the first treatment video in economy and economy+leader conditions frequent 1-grams mentioned in respondents' gists included "tax" and "duty". On the contrary, the gists for the second video in those conditions frequently mentioned "economy", "growth" and "GDP". This again suggests that respondents focused on "negative" tax collection issues in the first video, while in the second video they focused on "positive" economic growth.

Overall, the manipulation checks shed new light on the differences I observe in treatment effects on beliefs about government competence and media bias. I find evidence that the coverage of taxation and budget issues without attribution to the President was perceived by respondents as much more negative than either the discussion of issues unrelated to economy (placebo group) or discussion of economic growth (second video in economy conditions). This likely led to *cancelling* of treatment effects of positive news by negative news in the economy and economy+leader conditions. This in turn resulted in lower treatment effects.

Given that the news report on economic growth and the placebo report were evaluated similarly, the differences that I observe when pooling placebo and pure control conditions as a benchmark in estimation can be plausibly attributed to effects of the "negative" treatment video discussing tax collection.

3.4.6 Heterogeneous treatment effects

To conclude the analyses, I test for heterogenous effects by economic news. In these analyses, I rely on the specification from equation (3.8) using difference scores as the dependent variable and focus on the effects of the prior beliefs about government competence and media bias. To improve statistical power, I simplify prior beliefs measurement by creating a set of indicators such that respective prior is above sample median at the baseline.

Given the discussion in the previous section about the negative perception of one of the treatment news reports, I expect that economic news that do not mention leadership will exhibit heterogeneous effects inconsistent with my theory. At the same time, the effects of economic news that mention the President should be more consistent with my theory given that the videos I used were perceived more positively. Figure 3.5 plots direct and interaction term estimates and corresponding 95% confidence intervals for the effects of economic news on main outcomes of interest across a set of prior beliefs.

First, in each panel in the top row, we see that the negative effects on perceptions of the economy

Figure 3.5: Heterogeneous treatment effects by prior beliefs about competence and media bias

evaluation that I observed earlier persist in the heterogeneous effects model, especially for the economy only treatment. For the economy and leadership treatment, I find weaker effects and negative interaction effects by prior evaluation of the media bias. This latter finding is partly consistent with my theory, as I expected the higher beliefs about media bias to lower the updating about government competence from economic news.

The estimates of heterogeneity by priors on government competence in the next three rows of the panels draw a mixed picture with the estimates often changing sign depending on which measure I use to approximate prior beliefs about government competence. One exception is the effects of economy only news on beliefs about President Putin's responsibility for economic achievements. Here I observe a divergence of beliefs about government competence across levels of prior beliefs related to economic performance. Here again, economic news that mentions the President exhibits effect estimates that are statistically insignificant but more consistent with my theory: heterogeneity by priors about government competence is estimated to be close to zero with negative estimates of heterogeneity by prior beliefs about media bias.

Finally, looking at effects on the changes in beliefs about media bias, I see no evidence for heterogeneity by priors on government competence, but I do observe evidence of ceiling effects with a positive effect of economic news among those who a priori trust media more that disappear in the rest of the sample. These findings are also supported by estimates of effect heterogeneity on evaluation of the first treatment video reported in the third row of panels in Figure C.1, where I observe that negative video perceptions are concentrated among those who at the baseline trust state-owned TV more.

Overall, I find that the effects of economic news that mentions the country's leadership are more consistent with my theory: those who at baseline believe the media to be more biased have smaller changes in evaluation of the government, economy and media bias due to the treatment. These effect estimates often remain insignificant possibly due to power issues. The effects of economic news without attribution, however, remain less consistent with my expectations: there are precisely

estimated negative effects on the economy evaluation among those who a priori believe government to be incompetent and I observe a strong divergence of treatment effects on the evaluation of the President's merit for economic policy. I attribute these results to the possible negative perception of the first treatment video that is not explained by my theoretical framework.

3.5 Discussion

The results presented above draw a mixed picture. While I do find some support for the predictions formed in Section 3.2 of the chapter, the evidence is often inconsistent across specifications and treatment arms. Despite the issue with the implementation of the experiment, the additional evidence I provide suggests that the patterns I observe do reflect true causal effects of the treatment videos with no strong evidence for self-selection into the treatment and evidence for high levels of treatment comprehension. Nevertheless, I observe several relationships that call for additional explanations and an extension of my theory.

First, the theory in the chapter suggests that the treatment effects of economic news, regardless of whether they mention the country's leadership, should move in a similar direction. In addition, I expect the treatment news reports which mention both economic policy and leadership to have a stronger effect on the outcomes of interest than the economy only reports.

While the former is generally true when we look at the overall effects of treatments, once I look at treatment effect heterogeneity and manipulation checks, it becomes clear that those hypotheses do not find support in data. Specifically, I find that reports on economic policy without attribution have stronger effects on economy and government evaluation. Moreover, I see that the perceptions of treatment video reports change drastically if I remove the mention of the leadership from the report. This observation suggests that perceptions of the politicians that appear in the media reports on policy might have spillovers on updating about policy itself. This effect is understudied in the literature on persuasion and warrants further investigation.

Second, I find that even the news covering positive trends in the domestic economy can cause

citizens to lower their evaluation of the economy and possibly of the government. According to the logic of updating presented in this chapter and chapter 1 of this dissertation, such "reverse" effects of news messages can be related to individuals' prior beliefs about media bias. Hence my findings go against the conventional view that messages from non-trustworthy media should be disregarded by individuals (Truex, 2016) and again reinforces the logic of rational updating from biased media described in the first chapter of this dissertation.

One explanation for the effects I observe can be that the high prior exposure to the news outlet used in the intervention, Channel 1, can suppress the ability of the economic news reports to shift citizens' beliefs further. I find support for this explanation when looking at the joint distribution of prior beliefs about government competence and media bias among frequent viewers of state-owned media. Moreover, the effects of treatments on positive learning about media bias appear to be the strongest among those for whom beliefs about media bias and government competence are positively correlated. According to the theoretical predictions, those are the citizens who are less persuaded by the prior exposure to the media.

Another potential explanation for the weak effects of the experimental treatments in some cases is that the effects of media are mediated not only by prior beliefs about the country's leadership and media bias but also by the extent to which individuals base their evaluations on personal experiences as opposed to media reporting (Rosenfeld, 2018). In other words, the policy issues that citizens encounter in their daily lives are more likely to draw their attention and change their policy and government evaluations. I find preliminary evidence for this argument when looking at the differences in the evaluation of news that cover tax collection as opposed to the news that covers overall economic growth. It is straightforward to see the implications of pocketbook evaluations for my argument: The higher the weight citizens place on their own experiences, the lower the effects of media reports should be. A more comprehensive model would include the possibility that it is harder for the state-owned media to *lie* about government policy competence if the citizens are more likely to observe the policy outcomes. Such model would also combine the theoretical framework in

this chapter with the framework proposed in chapter 1 of this dissertation, where I explicitely make assumption about media's inability to misreport local policy outcomes. Given that more observable economy issues were mixed with the less observable ones in the experiment, I plan to explore this possible source of heterogeneity in the effects of state-owned media in the future development of this chapter.

Overall, the results in this chapter complement findings in the first chapter of this dissertation by studying the effects of another type of commonly used state-owned media coverage in a non-democratic context. Surprisingly, I find that the coverage of positive trends in the economy, whether it attributes it to the government or not, has limited, if not negative, effects on perceptions of the economy and on support for the government. This observation poses a question as to why state-owned media in Russia or similar authoritarian contexts even chooses to provide such reports. Despite the evidence that propaganda is popular and effective at maintaining and even boosting government support, this dissertation suggests that the actual effects of the news coverage provided in state-owned media outlets might be a result of the nuanced learning process by citizens who are often aware of government control of the media. My future research will aim to further understand to which extent citizens in authoritarian regimes factor in pro-government media bias in their belief updating and how more independent news coverage can change beliefs about state-owned media bias.

References

M Adena, R Enikolopov, and M Petrova. Radio and the Rise of the Nazis in Prewar Germany. *\ldots Quarterly Journal of \ldots*, 2015.

Eric Arias, Horacio Larreguy, John Marshall, and Pablo Querubín. Priors rule: When do Malfeasance Revelations Help or Hurt Incumbent Parties? Working Paper 24888, National Bureau of Economic Research, August 2018.

BBC Russia. 10 rossiiskih gorodov gde vse escho vybiraut merov, 2018. URL https://www.bbc.com/russian/features-43632483.

BBC Russia. Komanda navalnogo vypustila film, kotorii on snimal v sibiri. o chem on?, 2020. URL https://www.bbc.com/russian/news-53977140.

Quintin H Beazer and Ora John Reuter. Who is to blame? political centralization and electoral punishment under authoritarianism. *The journal of politics*, 81(2):648–662, 2019.

Timothy Besley. *Principled agents?: The political economy of good government*. Oxford University Press on Demand, 2006.

Timothy Besley and Andrea Prat. Handcuffs for the grabbing hand? media capture and government accountability. *American economic review*, 96(3):720–736, 2006.

BKDRF. Bezopasniye i Kachestvennye Dorogi. 2020. URL https://bkdrf.ru/map.

Howard S Bloom. Minimum detectable effects: A simple way to report the statistical power of experimental designs. *Evaluation review*, 19(5):547–556, 1995.

Davide Cantoni, Yuyu Chen, David Y Yang, Noam Yuchtman, and Y Jane Zhang. Curriculum and ideology. *Journal of Political Economy*, 125(2):338–392, 2017.

Change.org. Trebuyem vvestu rezhim ChS na vsei territorii Sibiri po lesnym pozharam! (Iyul 2019). 2019. URL https://tinyurl.com/y24fravx.

Yuyu Chen and David Y Yang. The impact of media censorship: 1984 or brave new world? *American Economic Review*, 109(6):2294–2332, 2019.

Chun-Fang Chiang and Brian Knight. Media bias and influence: Evidence from newspaper endorsements. *The Review of Economic Studies*, 78(3):795–821, 2011.

Dennis Chong and James N Druckman. Framing Public Opinion in Competitive Democracies. *American Political Science Review*, 101(04):637–655, November 2007. doi: 10.1017/S0003055407070554.

C Crabtree, C Fariss, and H Kern. Truth Replaced by Silence: Private Censorship in Russia. *NYU CESS 8th Annual Experimental . . .*, 2015.

DeclareDesign Blog. Use change scores or control for pre-treatment outcomes? depends on the true data generating process, 2019. URL https://declaredesign.org/blog/use-change-scores-or-control-for-pre-treatment-outcomes-depends-on-the-true-data-generating-process.html.

Stefano DellaVigna and Matthew Gentzkow. Persuasion: empirical evidence. *Annu. Rev. Econ.*, 2 (1):643–669, 2010.

Stefano DellaVigna and Ethan Daniel Kaplan. The fox news effect: Media bias and voting. *The Quarterly Journal of Economics*, 122(3):1187–1234, 2007.

Stefano DellaVigna, Ruben Enikolopov, Vera Mironova, Maria Petrova, and Ekaterina Zhuravskaya. Cross-border effects of foreign media: Serbian radio and nationalism in croatia. *American Economic Journal: Applied Economics*, 6(3):103–132, 2014.

Gustavo Diaz, Christopher Grady, and James H Kuklinski. Survey experiments and the quest for valid interpretation. In *The SAGE Handbook of Research Methods in Political Science and International Relations*, pages 1036–1052. SAGE Publications Ltd, 2020.

Peng Ding, Avi Feller, and Luke Miratrix. Randomization inference for treatment effect variation. *Journal of the Royal Statistical Society: Series B: Statistical Methodology*, pages 655–671, 2016.

Olga Dovbysh and Katja Lehtisaari. Local media of post-soviet countries: Evidence from belarus, russia, and ukraine. *Demokratizatsiya: The Journal of Post-Soviet Democratization*, 28(3): 335–343, 2020.

Thad Dunning, Guy Grossman, Macartan Humphreys, Susan D Hyde, Craig McIntosh, and Gareth Nellis. *Information, accountability, and cumulative learning: Lessons from Metaketa I*. Cambridge University Press, 2019.

Ruben Durante and Brian Knight. Partisan control, media bias, and viewer responses: Evidence from berlusconi's italy. *Journal of the European Economic Association*, 10(3):451–481, 2012.

Georgy Egorov and Konstantin Sonin. Dictators and their viziers: Endogenizing the loyalty–competence trade-off. *Journal of the European Economic Association*, 9(5):903–930, 2011.

Ruben Enikolopov and Maria Petrova. Media Capture: Empirical Evidence. In Simon P. Anderson, Joel Waldfogel, and David Strömberg, editors, *Handbook of Media Economics*, volume 1 of *Handbook of Media Economics*, pages 687–700. North-Holland, January 2015. doi: 10.1016/B978-0-444-63685-0.00017-6.

Ruben Enikolopov, Maria Petrova, and Ekaterina Zhuravskaya. Media and political persuasion: Evidence from russia. *The American Economic Review*, 101(7):3253–3285, 2011.

Ruben Enikolopov, Koen Schors, Nikita Zakharov, and Michael Rochlitz. Independent Media and Elections. 2018.

Ruben Enikolopov, Alexey Makarin, and Maria Petrova. Social media and protest participation: Evidence from russia. *Econometrica*, 88(4):1479–1514, 2020.

James D Fearon. Electoral accountability and the control of politicians: selecting good types versus sanctioning poor performance. *Democracy, accountability, and representation*, 55:61, 1999.

Claudio Ferraz and Frederico Finan. Electoral accountability and corruption: Evidence from the audits of local governments. *The American Economic Review*, 101(4):1274–1311, 2011.

Anjalie Field, Doron Kliger, Shuly Wintner, Jennifer Pan, Dan Jurafsky, and Yulia Tsvetkov. Framing and agenda-setting in russian news: a computational analysis of intricate political strategies. *arXiv preprint arXiv:1808.09386*, 2018.

Morris P Fiorina. *Retrospective voting in American national elections*. Yale University Press, 1981.

Timothy Frye. Economic Sanctions and Public Opinion: Survey Experiments From Russia. *Comparative Political Studies*, 52(7):967–994, June 2019. ISSN 0010-4140. doi: 10.1177/0010414018806530.

Timothy Frye, Scott Gehlbach, Kyle L Marquardt, and Ora John Reuter. Is Putin's popularity real? *Post-Soviet Affairs*, 33(1):1–15, March 2016.

Scott Gehlbach and Konstantin Sonin. Government control of the media. *Journal of Public Economics*, 118:163–171, 2014.

Scott Gehlbach, Konstantin Sonin, and Milan W Svolik. Formal models of nondemocratic politics. *Annual Review of Political Science*, 19:565–584, 2016.

Matthew Gentzkow and Jesse M Shapiro. Media bias and reputation. *Journal of political Economy*, 114(2):280–316, 2006.

Sergei Guriev and Daniel Treisman. How modern dictators survive: An informational theory of the new authoritarianism. Technical report, National Bureau of Economic Research, 2015.

Sergei Guriev and Daniel Treisman. Informational autocrats. *Journal of Economic Perspectives*, 33 (4):100–127, 2019.

Seth J Hill. Learning together slowly: Bayesian learning about political facts. *The Journal of Politics*, 79(4):1403–1418, 2017.

H Huang. International Knowledge and Domestic Evaluations in a Changing Society: The Case of China. *American Political Science Review*, 2015a.

Haifeng Huang. Propaganda as signaling. *Comparative Politics*, 47(4):419–437, 2015b.

Haifeng Huang. The pathology of hard propaganda. *The Journal of Politics*, 80(3):1034–1038, 2018.

Trevor Incerti. Corruption information and vote share: A meta-analysis and lessons for experimental design. *American Political Science Review*, 114(3):761–774, 2020.

Interfax. Rossiiskie izdaniya ob'edinilis v sindikat-100, 2020. URL https://www.interfax.ru/russia /697240.

Emir Kamenica and Matthew Gentzkow. Bayesian Persuasion. *American Economic Review*, 101 (6):2590–2615, October 2011.

Mark Andreas Kayser and Michael Peress. Benchmarking across borders: electoral accountability and the necessity of comparison. *American Political Science Review*, 106(3):661–684, 2012.

Holger Lutz Kern. Foreign media and protest diffusion in authoritarian regimes the case of the 1989 east german revolution. *Comparative Political Studies*, 44(9):1179–1205, 2011.

Holger Lutz Kern and Jens Hainmueller. Opium for the masses: How foreign media can stabilize authoritarian regimes. *Political Analysis*, 17(4):377–399, 2009.

Gary King, Jennifer Pan, and Margaret E Roberts. How censorship in china allows government criticism but silences collective expression. *American Political Science Review*, 107(02):326–343, 2013.

Gary King, Jennifer Pan, and Margaret E Roberts. How the chinese government fabricates social media posts for strategic distraction, not engaged argument. *American political science review*, 111(3):484–501, 2017.

Brian Knight and Ana Tribin. Opposition media, state censorship, and political accountability: Evidence from chavez's venezuela. Technical report, National Bureau of Economic Research, 2019.

Dorothy Kronick and John Marshall. Opposition media and political accountability: Evidencefrom venezuela. Technical report, Working paper, 2018.

Horacio Larreguy and John Marshall. *The Incentives and Effects of Independent and Government-Controlled Media in the Developing World*. Oxford University Press, August 2019. ISBN 978-0-19-086080-6. doi: 10.1093/oxfordhb/9780190860806.013.13.

Horacio A Larreguy, John Marshall, James M Snyder, et al. Revealing malfeasance: How local media facilitates electoral sanctioning of mayors in mexico. Technical report, National Bureau of Economic Research, 2014.

Levada Center. Naibolee trevozhaschie problemi, 2018. URL https://www.levada.ru/2018/04/24/naibolee-trevozhashhie-problemy-3/.

Levada Center. Rossiskiy Medilandshaft - 2019. 2019. URL https://www.levada.ru/2019/08/01/21088/.

Levada Center. Samiye Ostrie Problemi. 2020a. URL https://www.levada.ru/2020/03/05/samye-ostrye-problemy-4/.

Levada Center. Rossiiskii medialandshaft 2020, 2020b. URL https://www.levada.ru/2020/04/28/rossijskij-medialandshaft-2020/.

Winston Lin and Donald P Green. Standard operating procedures: A safety net for pre-analysis plans. *PS: Political Science & Politics*, 49(3):495–500, 2016.

Winston Lin, Donald P Green, and Alexander Coppock. Standard operating procedures for don green's lab at columbia. Technical report, Columbia University, 2016. URL https://alexandercoppock.com/Green-Lab-SOP/Green_Lab_SOP.html.

Winston Lin et al. Agnostic notes on regression adjustments to experimental data: Reexamining freedman's critique. *The Annals of Applied Statistics*, 7(1):295–318, 2013.

Maria Lipman, Anna Kachkaeva, and Michael Poyker. Media in russia: Between modernization and monopoly. In *The New Autocracy: Information, Politics, and Policy in Putin's Russia*, pages 159–190. 2018.

Andrew T Little. Communication technology and protest. *The Journal of Politics*, 78(1):152–166, 2016.

Anna Litvinenko and Kamilla Nigmatullina. Local dimensions of media freedom: A comparative analysis of news media landscapes in 33 russian regions. *Demokratizatsiya: The Journal of Post-Soviet Democratization*, 28(3):393–418, 2020.

Peter Lorentzen. China's strategic censorship. *American Journal of Political Science*, 58(2): 402–414, 2014.

Peter L Lorentzen. Regularizing rioting: Permitting public protest in an authoritarian regime. *Quarterly Journal of Political Science*, 8(2):127–158, 2013.

Gregory J Martin and Joshua McCrain. Local news and national politics. *American Political Science Review*, 113(2):372–384, 2019.

John McMillan and Pablo Zoido. How to subvert democracy: Montesinos in peru. *The Journal of Economic Perspectives*, 18(4):69–92, 2004.

Medialogia. Reitingi Regionalnyh SMI. 2020. URL https://www.mlg.ru/ratings/media/regional/.

Medialogia. Top-20 samikh citiruemih smi novosibirskoy oblasti, 2021. URL https://www.mlg.ru/ratings/media/regional/8420/.

Mediascope. Reitingi auditorii smi. 2020. URL https://mediascope.net/data/.

Meduza. 12 newsrooms in 5 years, 2016. URL https://meduza.io/en/feature/2016/05/18/12-newsrooms-in-5-years.

Ellen Mickiewicz. Does 'trust' mean attention, comprehension and acceptance? *Mass media and political communication in new democracies*, 2004.

Moscow Times. How the Kremlin and the Media Ended Up in Bed Together. URL https://www.themoscowtimes.com/2015/03/11/how-the-kremlin-and-the-media-ended-upin-bed-together-a44663.

Leonid Peisakhin and Arturas Rozenas. Electoral effects of biased media: Russian television in ukraine. *American Journal of Political Science*, 62(3):535–550, 2018.

Torsten Persson, Gerard Roland, and Guido Tabellini. Separation of powers and political accountability. *The Quarterly Journal of Economics*, 112(4):1163–1202, 1997.

Markus Prior. Media and Political Polarization. *Annual Review of Political Science*, 16(1):101–127, 2013. doi: 10.1146/annurev-polisci-100711-135242.

Proekt Media. Povelitel Kukol. 2019a. URL https://www.proekt.media/portrait/alexey-gromov/.

Proekt Media. Master of puppets: The man behind the kremlin's control of the russian media, 2019b. URL https://www.proekt.media/en/portrait-en/alexey-gromov-eng/.

Bei Qin, David Strömberg, and Yanhui Wu. Why does china allow freer social media? protests versus surveillance and propaganda. *Journal of Economic Perspectives*, 31(1):117–40, 2017.

Bei Qin, David Strömberg, and Yanhui Wu. Media bias in china. *American Economic Review*, 108 (9):2442–76, 2018.

RBC. Kprf pered vyborami gosdumi nashla v regionah *krasnii poyas*, 2016. URL https://www.rbc.ru/politics/29/01/2016/56aa28279a794705c07f2d32.

RBC. Pozhari v Sibiri. Chto vazhno znat. 2019a. URL https://www.rbc.ru/society/29/07/2019/5d3eeeee9a7947963aa2faad.

RBC. Rossiyane nazvali sobitia i lyudey goda. 2019b. URL https://www.rbc.ru/politics/26/12/2019/5e0210e89a7947f497b56b40.

RBC. V Irkutskoi oblasti vsled za pavodkom vveli rezhim ChS ia-za lesnyh pozharov, 2019c. URL https://www.rbc.ru/rbcfreenews/5d285f819a7947e421c59bea.

Regnum. Ocheredi, plesení nehvatka lekarstv: chto skrivaet novosibirskaya medicina, 2018. URL https://regnum.ru/news/2401857.html.

Ora John Reuter and David Szakonyi. Online social media and political awareness in authoritarian regimes. *British Journal of Political Science*, 45(1):29–51, 2015.

Ria Novosti. Greenpeace zayavil o neobhodimosti sokrashcheniya zon kontrolya lesnyh pozharov. 2015. URL https://ria.ru/20190730/1557012514.html.

Bryn Rosenfeld. The popularity costs of economic crisis under electoral authoritarianism: Evidence from russia. *American Journal of Political Science*, 62(2):382–397, 2018.

Rosgosstrah. Kachestvo zhizni v rossiyskih gorodah v 2016 godu. 2016. URL http://www.rgs.ru/upload/medialibrary/a5c/life_quality_2016.pdf.

Arturas Rozenas and Denis Stukal. How autocrats manipulate economic news: Evidence from russia's state-controlled television. *The Journal of Politics*, 81(3):982–996, 2019.

RSF. Freedom of Press, 2020. 2020. URL https://rsf.org/en/ranking.

Elena Sirotkina and Margarita Zavadskaya. When the party's over: Political blame attribution under an electoral authoritarian regime. *Post-Soviet Affairs*, 36(1):37–60, January 2020. ISSN 1060-586X, 1938-2855. doi: 10.1080/1060586X.2019.1639386.

Regina Smyth and Sarah Oates. Mind the gaps: Media use and mass action in russia. *Europe-Asia Studies*, 67(2):285–305, 2015.

James M Snyder Jr and David Strömberg. Press coverage and political accountability. *Journal of political Economy*, 118(2):355–408, 2010.

David Strömberg. Media and politics. *Annu. Rev. Econ*, 7:173–205, 2015.

TASS. Putin poruchil Medvedevu lichno controlirovat ispolnenie nazionalnyh proektov. 2018. URL https://tass.ru/politika/5940764.

Transparency International. Sibirskie Dorogi. 2017. URL https://transparency.org.ru/special/dorogi sibiri/.

Daniel Treisman. Presidential Popularity in a Hybrid Regime: Russia under Yeltsin and Putin. *American Journal of Political Science*, 55(3):590–609, 2011. ISSN 1540-5907. doi: 10.1111/j.1540-5907.2010.00500.x.

Rory Truex. Bias and Trust in Authoritarian Media. *SSRN Electronic Journal*, 2016.

David Yanagizawa-Drott. Propaganda and conflict: Evidence from the rwandan genocide. *The Quarterly Journal of Economics*, 129(4):1947–1994, 2014.

Ekaterina Zhuravskaya, Maria Petrova, and Ruben Enikolopov. Political effects of the internet and social media. *Annual Review of Economics*, 12:415–438, 2020.

Appendix A: Chapter 1

A.1 Additional study details

A.1.1 Experimental news reports

A.1.1.1 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.1.1.2 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.1.1.3 Placebo (P) report

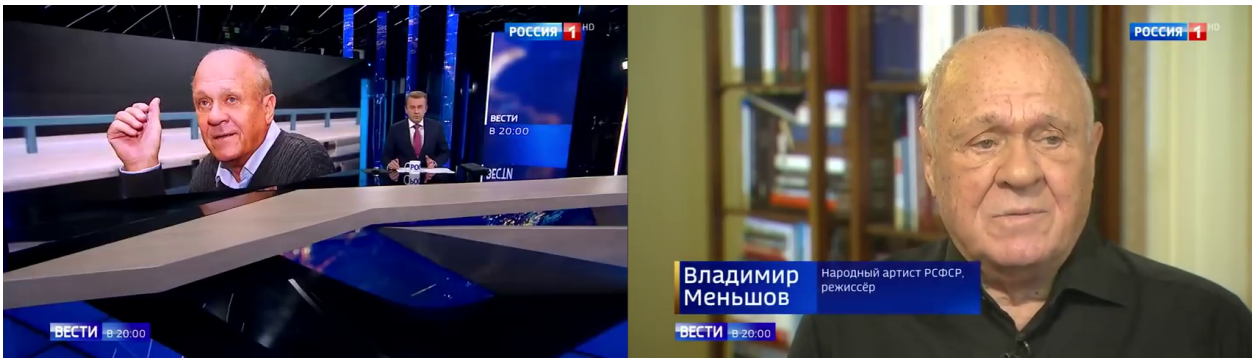


Figure A.3: Screenshots from the placebo report: Broadcaster – on the left, Director Vladimir Menshov – on the right

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.1.2 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.1.3 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 Novosibirsk* (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.1.4 Survey take-up over time

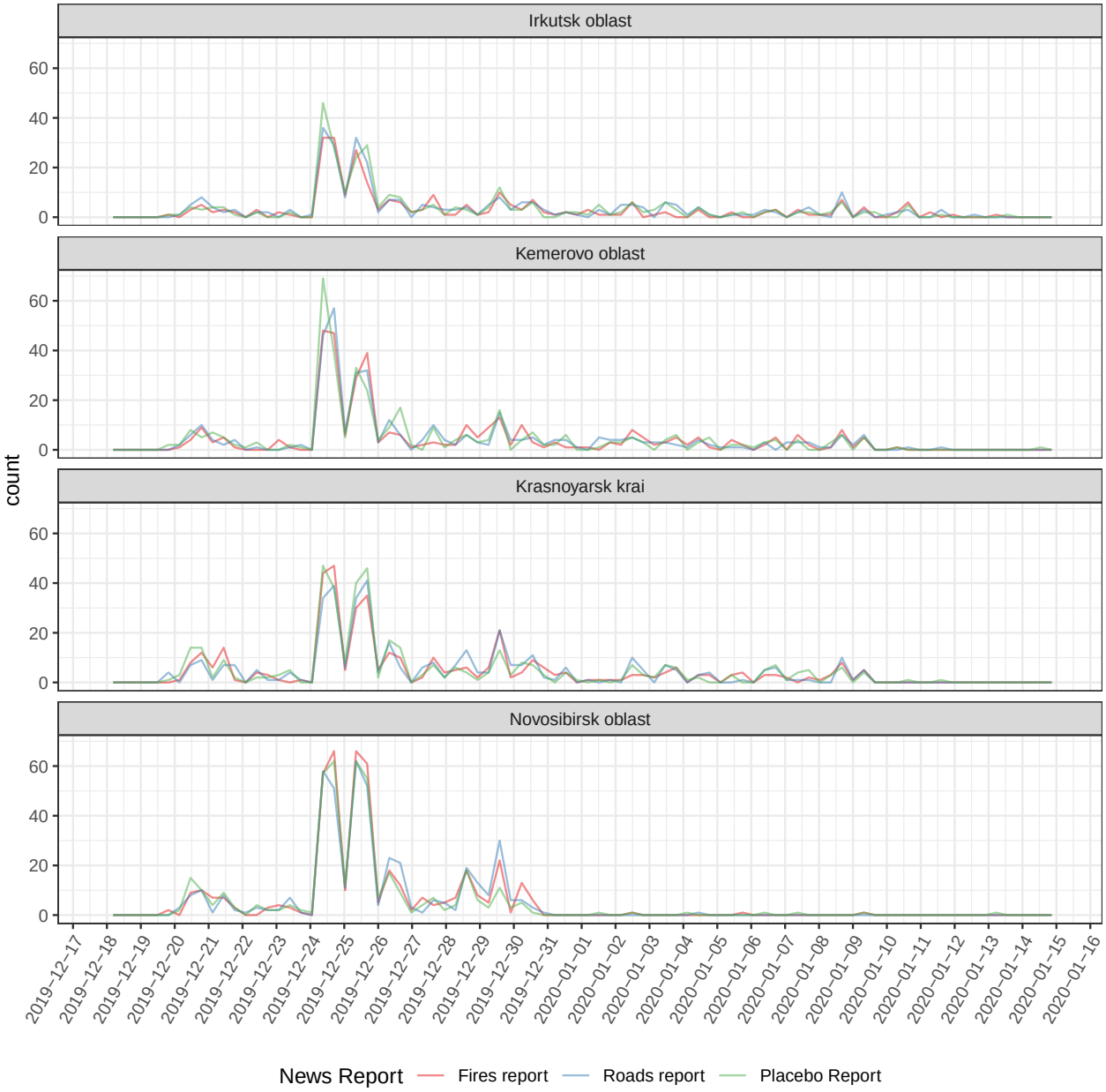


Figure A.4: Plots of treatment take-up by region and experimental group

A.1.5 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

Table A.2: Summary statistics for pre-treatmet variables (Continued)

Variable	N	Mean	SD	Min	25 %	Median	75 %	Max	Missing	Unique
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.3: 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	0.459	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	0.571	0.495	0.000	0.000	1.000	1.000	1.000	0	2
Age: 45-54	4423	0.361	0.190	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.1.6 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.1.7 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 A.2.2 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.1.8 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 $\mathbf{X}$ included in Equation (1.1) can vary based on the number of covariates selected by the procedure.

A.1.9 Regional heterogeneity

Table A.4: 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)	0.186	0.213	0.200	0.234	-0.176	-0.114
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.5: 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.4 and A.5 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 Irkutsk, and between Kemerovo and Novosibirsk. *KRA* corresponds to Krasnoyarsk, *IRK* – to Irkutsk, *KEM* – to Kemerovo, and *NSK* – to Novosibrisk.

A.2 Threats to inference

A.2.1 Randomization

The resulting structure of the sample and experimental assignment is shown in the Figure A.5.

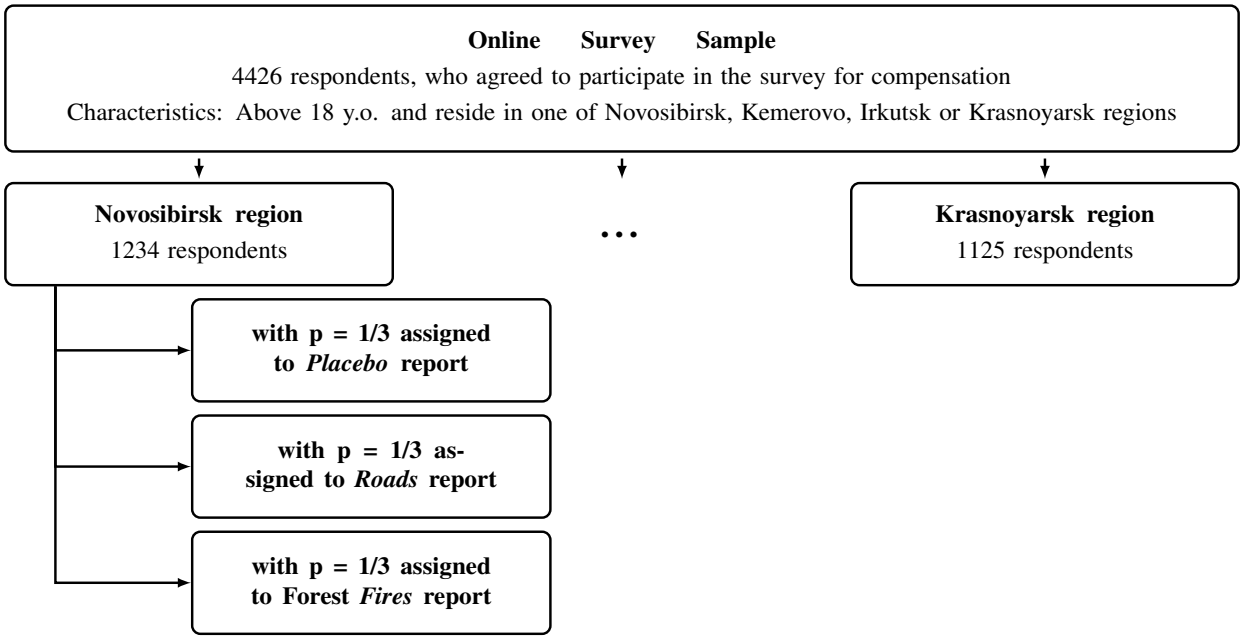


Figure A.5: Structure of the sample enrolled for the Online survey experiment and split into blocks by region. Each block includes respondents assigned to each of the treatment conditions with equal probability (simple random assignment).

In the figure each block includes respondents assigned to each of the treatment conditions with equal probability.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.

A.2.2 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.

A.2.3 Treatment balance

Table A.6: Balance on Pre-Treatment Variables

	Mean			Roads vs. Placebo		FF vs. Placebo		FF vs. Roads	
Variable	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)	0.561	0.556	0.546	-0.016	0.672	-0.047	0.216	-0.031	0.414
Independent TV consumption (average)	0.208	0.212	0.205	0.02	0.599	-0.017	0.654	-0.037	0.332
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	0.936	-0.028	0.465	0.008	0.824	0.036	0.341
Proportion of Significant Differences					**0.026**		**0.051**		**0.128**

Table A.7: Balance on pre-treatment covariates

	Mean			Roads vs. Placebo		FF vs. Placebo		FF vs. Roads	
Variable	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**

Significance at at least 5% level in bold.

A.2.4 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 A.2.3 that there is no evidence for systematic differences in attentiveness between main treatment groups in the study.

A.2.5 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 (1.1).

Table A.8: 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 A.9: 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.

First in Tables A.8 and A.9 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 A.9. First, it seems 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 A.10 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 A.10: 20 most frequent 2-grams (2 word phrases) in the gists of experimental videos

Placebo Report			Roads Report			Forest Fires Report		
2-gram	Count	Frequency	2-gram	Count	Frequency	2-gram	Count	Frequency
vladimir menshov	252	0.0195	remont dorog	367	0.0227	lesn pozhar	276	0.0196
80 let	136	0.0105	stroitelstv dorog	196	0.0121	naselen punkt	202	0.0144
vladimir mensh	117	0.0090	regionaln vlast	123	0.0076	tushen pozhar	167	0.0119
snyal 5	90	0.0069	plokh dorog	96	0.0059	regionaln 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
menshov 80	67	0.0052	federaln byudzhet	85	0.0052	tush pozhar	114	0.0081
5 film	60	0.0046	problem dorog	79	0.0049	dmitr medved	109	0.0078
rezhisser menshov	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 menshov	42	0.0032	stroitelstv remont	69	0.0043	pozhar naselen	81	0.0058
ispoln 80	42	0.0032	dorog ross	64	0.0040	borb pozhar	73	0.0052
menshov film	40	0.0031	vydel deng	63	0.0039	rasprostranen pozhar	69	0.0049
rezhisser vladimir	40	0.0031	drug region	56	0.0035	medved priletel	66	0.0047
film kotor	39	0.0030	federaln 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	deng remont	51	0.0031	pozhar dolzhn	47	0.0033
mensh snyal	32	0.0025	dorog deng	50	0.0031	naselën punkt	46	0.0033
yubil vladimir	32	0.0025	nats proyekt	49	0.0030	borb 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.

A.2.6 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 (1.1) and two-tailed p-value. As can be seen in column 5 of the Table A.9 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%.

A.3 Additional results

A.3.1 ITT estimates for policy issues and media bias

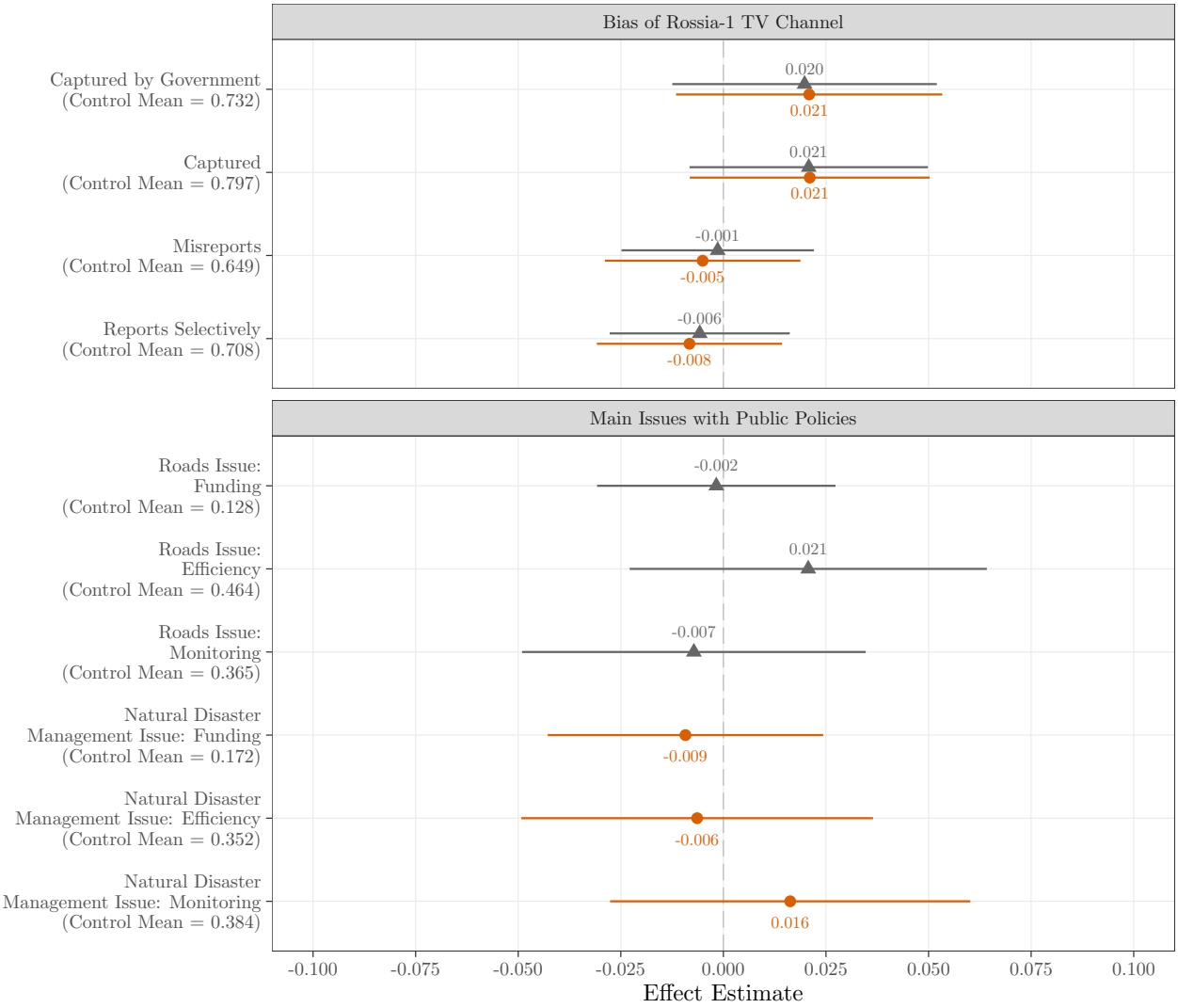


Figure A.6: ITT estimates and 95% confidence intervals for effects of forest fires and roads news reports on perception of main issues and bias of the news source (*Rossia-1*).

A.3.2 Main ITT estimates

Table A.11: ITT 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 A.12: ITT 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.

A.3.3 Heterogeneity by media consumption

Table A.13: 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	0.010	-0.005	-0.006	0.020	0.010	-0.030**	0.017	-0.009	-0.005	0.006	0.008	0.004	0.002	0.022*
	[0.016]	[0.011]	[0.015]	[0.014]	[0.010]	[0.015]	[0.013]	[0.014]	[0.010]	[0.016]	[0.012]	[0.015]	[0.013]	[0.013]
Fires report	0.015	0.004	-0.019	0.046***	0.005	-0.051***	0.017	0.028*	0.000	0.027*	0.039***	-0.003	0.015	0.026**
	[0.016]	[0.011]	[0.015]	[0.015]	[0.011]	[0.015]	[0.013]	[0.015]	[0.010]	[0.016]	[0.012]	[0.015]	[0.013]	[0.013]
Roads report x Less	-0.044	0.035*	0.009	-0.033	0.010	0.023	0.010	0.053**	0.031	0.049*	0.014	0.053**	0.029	-0.011
exposure	[0.029]	[0.020]	[0.027]	[0.026]	[0.019]	[0.028]	[0.023]	[0.025]	[0.021]	[0.028]	[0.021]	[0.027]	[0.024]	[0.023]
Fires report x Less	-0.054*	-0.001	0.056**	-0.081***	-0.001	0.083***	-0.021	0.008	0.007	0.007	-0.033	0.055**	0.005	0.002
exposure	[0.029]	[0.019]	[0.027]	[0.027]	[0.019]	[0.029]	[0.023]	[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.

A.3.4 Heterogeneity by natural disaster prevention exposure

Table A.14: Heterogeneous effects on main outcomes by prior exposure to natural disaster management issues

	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 Less	-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***
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 Less	-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*
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.

A.3.4.1 Interaction between personal experiences with road quality and media consumption

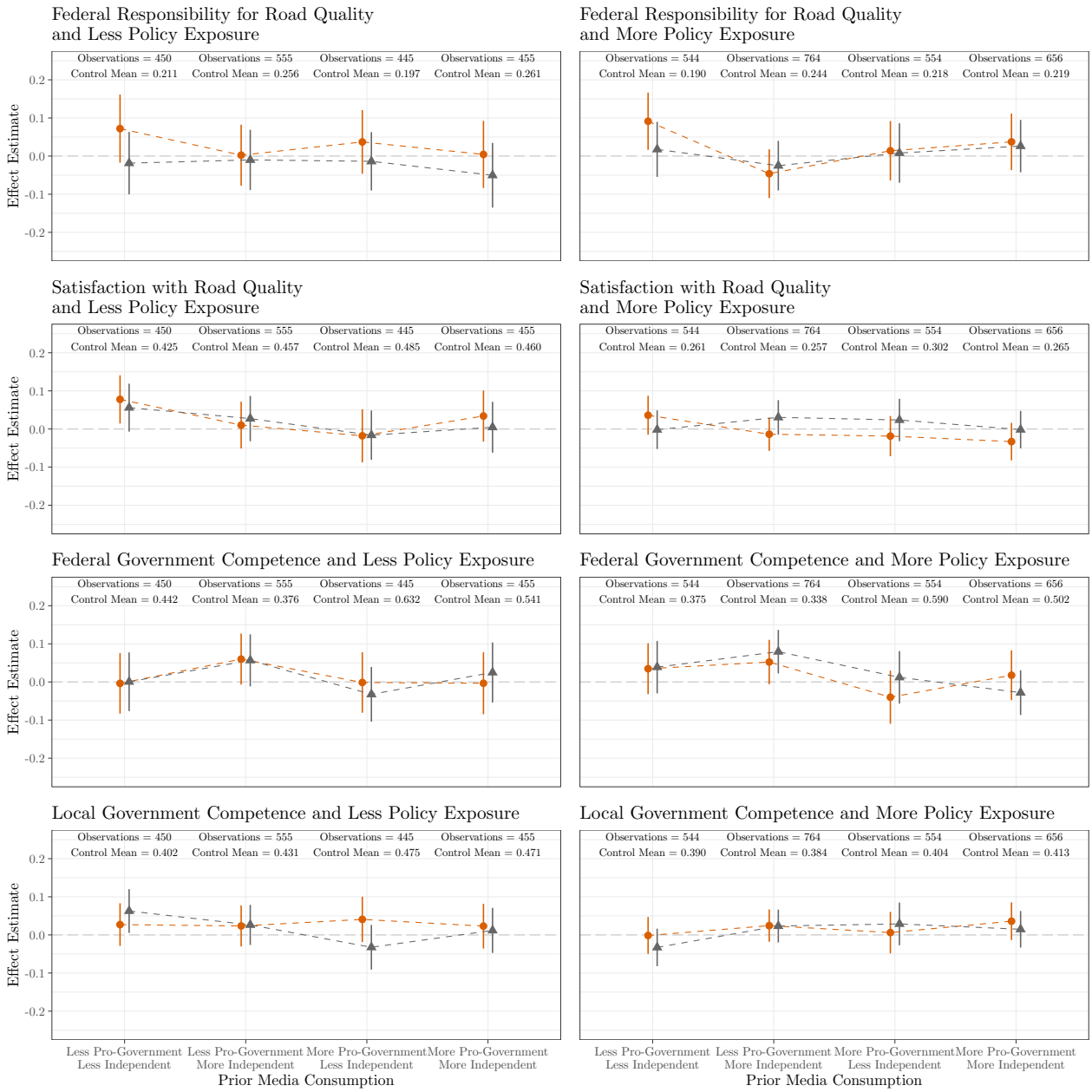


Figure A.7: ITT estimates and 95% confidence intervals for effects of responsibility reporting by prior exposure to issues with road quality and prior media consumption

A.3.4.2 Comparison of government evaluation and predicted blame/credit

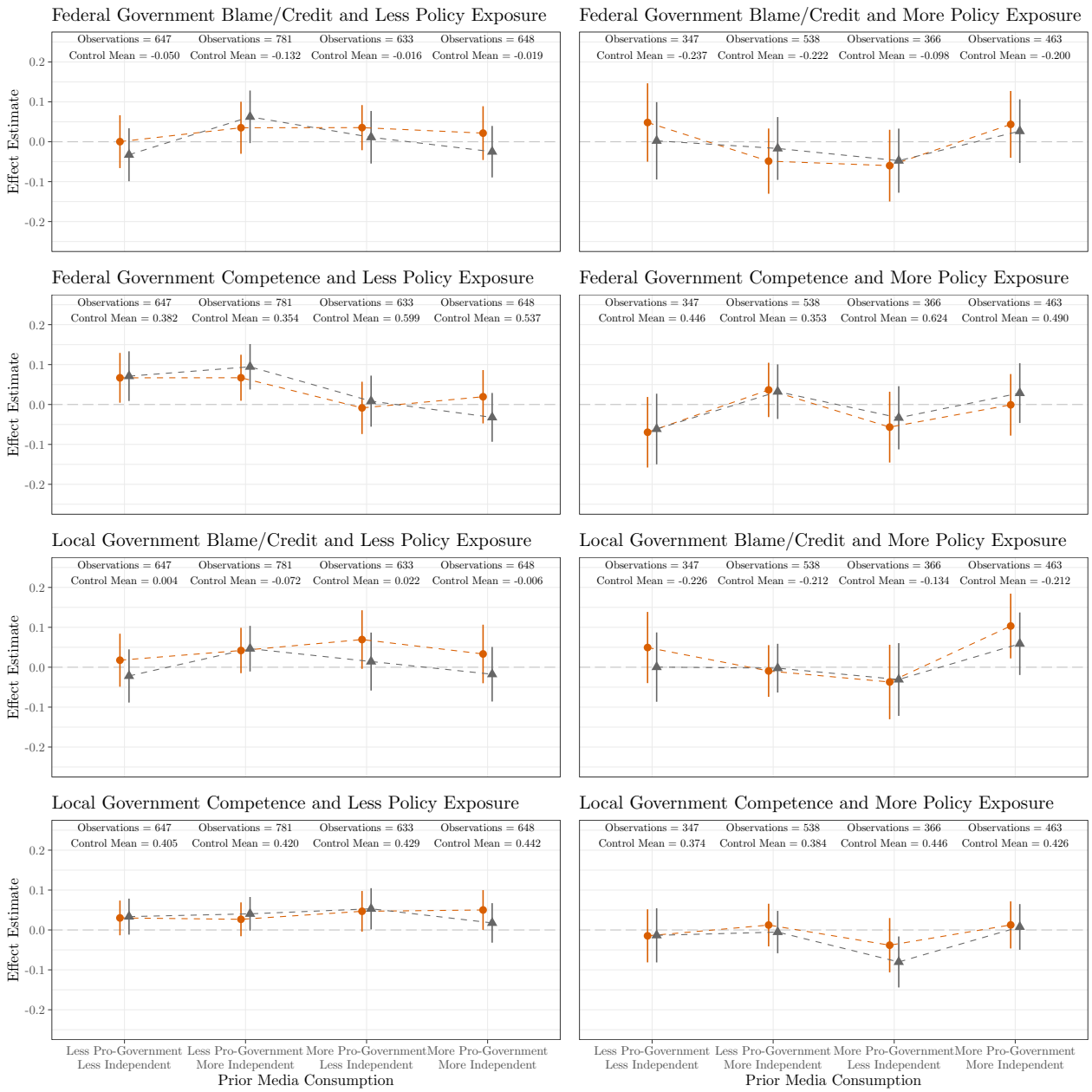


Figure A.8: ITT estimates and 95% confidence intervals for effects of responsibility reporting on government competence and predicted blame/credit

A.3.5 Heterogeneity by order of policy related questions

Table A.15: 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 Roads	-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
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.

A.4 Pre-registered model of Bayesian updating

Consider a representative citizen who updates the following beliefs about primary outcomes related to contents of news report simultaneously according to the Bayes rule:

1. Beliefs about quality of road infrastructure and quality of natural disaster prevention policy, denoted θ_{R} and θ_{D} respectively,
2. Responsibility attribution between two levels of government, called Local and Central hereafter, for the two policies, denoted by $\rho_{\mathrm{R},j}$ and $\rho_{\mathrm{D},j}$ respectively with $j \in \{L, C\}$,
3. Belief about strength of media bias in favor of central government, given by $\beta \equiv \beta_C$.

Given that the predictions of the model symmetric for both policies policy I drop policy subscript $k \in \{\mathrm{R}, \mathrm{D}\}$. I assume that $\theta \in \{0, 1\}$, i.e. that the policy outcome is either *"good"* (1) or *"bad"* (0); $\forall j \in \{L, C\}: \ \rho_j \in 0, 1$, i.e. policy responsibility can be attributed to any of the two levels of

government considered in the model; $\beta \in [0, 1]$, i.e. media outlet can be fully independent ($\beta = 0$), or biased in favor of the central government ($\beta > 0$). In addition, I assume that $\rho \equiv \rho_L \equiv 1 - \rho_C$, which essentially implies that all responsibility for any policy is distributed between the two levels of government.

To resemble the study design, I assume that given that media outlet decided to report on particular policy, the set of possible reports consists of responsibility for policy outcome being attributed to one of the two levels of government, $m \in \{L, C\}$. The overall reporting strategy of the media outlet, given that it decides to report on the policy, is given by:

$$\begin{aligned} \Pr(m = L \mid \theta, \rho, \beta) \equiv \\ \rho \quad + \beta(1-\theta)(1-\rho) \quad - \quad \beta\theta\rho \quad = \\ \underbrace{(1-\theta)\rho}_{\substack{\text{blame received by} \\ \text{local government}}} + \underbrace{\theta\rho}_{\substack{\text{credit claimed by} \\ \text{local government}}} + \underbrace{\beta(1-\theta)(1-\rho)}_{\substack{\text{blame avoided by} \\ \text{central government}}} - \underbrace{\beta\theta\rho}_{\substack{\text{credit lost to} \\ \text{central government}}}. \end{aligned} \tag{A.1}$$

Equation (A.1) shows that the media reporting strategy is conditional on the policy performance and relative bias of the outlet in favor of the central government. It is straightforward to see that unbiased media outlet ($\beta = 0$) according to Equation (A.1) always truthfully reports responsibility for policy outcomes, i.e. $\mathbb{1}[m = L] = \rho$. The second to last term of the equation (A.1) represent blame-shifting strategy of the central government in case when policy performance is low: Local government has chances to be reported responsible by biased media outlet ($\beta > 0$) for bad policy outcomes ($\theta = 0$) even if it is *not* responsible for the policy ($\rho = 0$). Given that the space of reports consists of only two possible messages, the opposite is true for the likelihood of reporting C. Analogously, last term of the equation (A.1) represent credit-claiming strategy of the central government: Biased media ($\beta > 0$) might attribute responsibility for good policy outcomes ($\theta = 1$) to central government even if the local government is in fact responsible ($\rho = 1$). Again, the opposite in this case is true for the likelihood of reporting responsibility to the central government C.

As stated above I look at how representative citizen updates her beliefs after observing a message

about responsibility for policy from the media. Consider first the case where the citizen knows the degree of media bias and updates only about the policy responsibility allocation. The posterior expectation that responsibility for policy is at local level (L) given each of the possible

$$\mathbb{E}[\rho \mid m = L, \theta, \beta] = \frac{(1 - \beta\theta)\,\mathbb{E}[\rho]}{\beta(1 - \theta) + (1 - \beta)\,\mathbb{E}[\rho]}, \tag{A.2}$$

$$\mathbb{E}[\rho \mid m = F, \theta, \beta] = \frac{\beta\theta\,\mathbb{E}[\rho]}{\beta\theta + (1 - \beta)\,\mathbb{E}[\rho]}. \tag{A.3}$$

In the limit, if media outlet is unbiased ($\beta = 0$), then any report that attributes policy responsibility to one of the levels of government is fully revealing, and upon observing it, citizens learn whether it is local or central government that is responsible for it. However, as long as media is at least partially biased, i.e. $\beta > 0$, there is a small chance that responsibility is being misreported by the media outlet in favor of the central government, and thus the message m is not fully credible: Citizen cannot perfectly infer whether the news report she observes reflects the true allocation of responsibility for policy covered, or the attempt of the media to deflect blame from or gain credit for central government. As the bias β approaches one, the posterior belief about responsibility for policy k, $\mathbb{E}[\rho \mid m, \theta, \beta]$ collapses to the prior belief $\mathbb{E}[\rho]$.

Another intuition that follows from Equation (A.2) suggests that if policy performance is good ($\theta = 1$) message that attributes responsibility to the local government (L) is fully revealing. This is due to the assumption that media, if biased, favors federal government and thus responsibility for high policy performance can be reported at the local level only when it is indeed at that level. In the opposite case (reporting L when $\theta = 0$) the message is not fully revealing, since biased media outlet is more likely to report observed message.

In what follows, I focus on the non-trivial case of how beliefs are updated following the critical reports that attribute policy outcomes in low performing public policy (road construction and natural disaster relief) to *local* government (L). While the model allows to study richer set of news reports, the empirical part of this study allows to estimate the effects of attribution to local government only. In addition, these types of messages along with positive messages that aim to gain credit for

central government account for majority of nationwide state-owned media coverage on economic and political events in non-democratic settings like Russia. In other words, in this project I focus on theoretical evaluation and empirical estimation of the effects of observed propaganda reporting, rather than hypothetical propaganda reporting that might exist in a counter-factual world.

Equations (A.2) and (A.3) assume that citizens know both bias of the media outlet and specific public policy performance. While realistic for those citizens, who know or follow political and economic news, it is likely that majority of population has at least some degree of uncertainty about one or both. Specifically in Russian and other similar contexts it was shown that citizens take into account degree of bias of the source into account when evaluating the information they observe (Mickiewicz, 2004; Truex, 2016). This in turn implies that citizens in weak democratic contexts might directly *infer* the extent of bias from observing media outlet coverage. Updating is even more likely for policy performance, as this information might be directly or inplicitely covered in the news reports they observe.

To capture the simultaneous updating on primary outcomes, policy performance, responsibility allocation and media bias, I introduce beliefs about policy performance and media bias in addition to beliefs about responsibility. Formally, suppose that representative citizen is also uncertain about the degree of media bias in favor of central government $\beta \in [0, 1]$ and let $f_{\mathcal{B}}$ represent the PDF of citizen's prior belief about the media bias in favor of the central government with support $\mathcal{B} \subseteq [0, 1]$. Representative citizen is also uncertain about the policy performance, θ, prior to exposure to news report with some probability assigned to both *good* ($\theta = 1$) and *bad* ($\theta = 0$) policy outcomes. The posterior expectation about the allocation of responsibility for policy given the newly introduced beliefs by the law of iterated expectations can be expressed as

$$\mathbb{E}[\rho \mid m = L] = \int_{\mathcal{B}} \left[\begin{array}{l} \mathbb{E}[\rho \mid m = L, \theta = 1, \beta] \Pr(\theta = 1 \mid m = L) + \\ \quad \mathbb{E}[\rho \mid m = L, \theta = 0, \beta] \Pr(\theta = 0 \mid m = L) \end{array} \right] f_{\mathcal{B}}(\beta \mid m = L) \, \mathrm{d}\beta, \tag{A.4}$$

where $f_\beta(\beta \mid m = L)$ is the representative citizen's posterior belief about the extent of the media bias given the message that attributes policy responsibility to local government. Analogously, $\Pr(\theta \mid m = L)$ corresponds to citizen's posterior belief about the policy performance given the message that attributes policy responsibility to local government.

By Bayes' theorem, the citizen's posterior belief about the extent of media bias is given by

$$f_{\mathcal{B}}(\beta \mid m = L) = \frac{\Pr(m = L \mid \beta) f_{\mathcal{B}}(\beta)}{\int_{\mathcal{B}} \Pr(m = L \mid \beta) f_{\mathcal{B}}(\beta)\, \mathrm{d}\beta}, \tag{A.5}$$

$$\mathbb{E}[\theta \mid m = L] = \Pr(\theta = 1 \mid m = L) = \frac{\Pr(m = L \mid \theta = 1) \Pr(\theta = 1)}{\sum_{j \in \{0,1\}} \Pr(m = L \mid \theta = j) \Pr(\theta = j)}, \tag{A.6}$$

where $\Pr(m = L \mid \beta)$ and $\Pr(m = L \mid \theta = 1)$ are *ex ante* probabilities that the media reports local responsibility conditional on media bias and on good policy performance and directly follow from the equation (A.1). Plugging equations (A.5) and (A.6) into equation (A.4), we can derive the representative citizen's posterior expectation about the policy responsibility:

$$\begin{aligned}
&\mathbb{E}[\rho \mid m_K = L] = \\
&= \int_{\mathcal{B}} \left[\frac{\mathbb{E}[\rho]}{(1-\beta)\,\mathbb{E}[\rho] + \beta} + \frac{\beta(1 - \mathbb{E}[\rho])}{(1-\beta)\,\mathbb{E}[\rho] + \beta}\, \mathbb{E}(\theta \mid m = L) \right] f_{\mathcal{B}}(\beta \mid m = L)\, \mathrm{d}\beta \\
&= \int_{\mathcal{B}} \left[\frac{\mathbb{E}[\rho](1 - \beta\,\mathbb{E}[\theta])}{(1-\beta)\,\mathbb{E}[\rho] + \beta(1 - \mathbb{E}[\theta])} \right] \frac{((1-\beta)\,\mathbb{E}[\rho] + \beta(1 - \mathbb{E}[\theta]))\, f_{\mathcal{B}}(\beta)}{\int_{\mathcal{B}} \Pr(m = L \mid \beta) f_{\mathcal{B}}(\beta)\, \mathrm{d}\beta}\, \mathrm{d}\beta \\
&= \frac{\mathbb{E}[\rho](1 - \mathbb{E}[\beta]\,\mathbb{E}[\theta])}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])}.
\end{aligned} \tag{A.7}$$

Equation (A.7) shows how exactly the posterior updating on the allocation of responsibility for policy depends on the citizen's priors on the policy performance and on the media bias in favor of central government. If citizen beliefs *a priori* that policy performance is good, $\mathbb{E}[\theta] \to 1$, then she strongly updates her beliefs about policy responsibility regardless of the extent of media bias, i.e. $\mathbb{E}[\rho \mid m = L] \to 1$. As was mentioned before this is due to media bias favoring only central

government, but no local government. On the contrary, when prior belief that representative citizen holds is that policy performance is bad, $\mathbb{E}[\theta] \to 0$, then she will update strongly her beliefs about responsibility *only* if her prior beliefs about media bias are also low, i.e. $\mathbb{E}[\beta] \to 0$.

For the role of prior beliefs about media bias, the intuition that follows from the equation (A.7) is different. The higher the citizen's prior expectation that the media outlet sending the message favors central government, $\mathbb{E}[\beta] \to 1$, the less she is going to be persuaded by the media's message that attributes responsibility to the local government, $(\mathbb{E}[\rho \mid m = L] - \mathbb{E}[\rho]) \to 0$. On the contrary, if *a priori* representative citizen is expects that the media is fairly impartial, $\mathbb{E}[\beta] \to 0$, then she will strongly update her beliefs about allocation of responsibility upon observing message L, i.e. $\mathbb{E}[\rho \mid m = L] \to 1$.

Interestingly, these observations imply that for the citizen, who *a priori* believes that media is biased in favor of central government, their prior beliefs about policy performance do not affect change in their responsibility attribution upon observing public policy news reports. Note that the updating does not depend on the degree of prior certainty about either media bias or policy performance, but only on the expectation about those quantities.

The model above also allows us to generate predictions about updating about policy performance and media bias, two other primary outcomes of interest. Using equations (A.5) and (A.6) and taking expectation over the support of corresponding parameters we can get:

$$\begin{aligned}
\mathbb{E}[\theta \mid m = L] &= \int_{\mathcal{B}} \frac{(1-\beta)\,\mathbb{E}[\rho]\,\mathbb{E}[\theta]}{(1-\beta)\,\mathbb{E}[\rho] + \beta(1-\mathbb{E}[\theta])} f_{\mathcal{B}}(\beta \mid m = L)\,\mathrm{d}\,\beta \\
&= \frac{(1-\mathbb{E}[\beta])\,\mathbb{E}[\rho]\,\mathbb{E}[\theta]}{(1-\mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1-\mathbb{E}[\theta])} \qquad \text{(A.8)} \\
\mathbb{E}[\beta \mid m = L] &= \int_{\mathcal{B}} \beta \frac{\Pr(m = L \mid \beta) f_{\mathcal{B}}(\beta)}{\int_{\mathcal{B}} \Pr(m = L \mid \beta) f_{\mathcal{B}}(\beta)\,\mathrm{d}\,\beta}\,\mathrm{d}\,\beta \\
&= \frac{\mathbb{E}[\beta]\,\mathbb{E}[\rho] + \left(\mathrm{Var}[\beta] + \mathbb{E}^2[\beta]\right)(1-\mathbb{E}[\rho]-\mathbb{E}[\theta])}{(1-\mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1-\mathbb{E}[\theta])} \qquad \text{(A.9)}
\end{aligned}$$

Finally, equations (A.7) to (A.9) allow us to get the expressions for the main quantity of interest in the empirical part of the project: The degree of updating upon observing news report that attributes policy responsibility to the local government, L:

$$\begin{aligned}
\Delta^{\rho} \equiv \mathbb{E}[\rho \mid m = L] - \mathbb{E}[\rho] &= \frac{\mathbb{E}[\rho](1 - \mathbb{E}[\beta]\,\mathbb{E}[\theta])}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])} - \mathbb{E}[\rho] \\
&= \frac{(1 - \mathbb{E}[\rho])(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho]}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])}, \qquad \text{(A.10)} \\
\Delta^{\theta} \equiv \mathbb{E}[\theta \mid m = L] - \mathbb{E}[\theta] &= \frac{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho]\,\mathbb{E}[\theta]}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])} - \mathbb{E}[\theta] \\
&= -\frac{(1 - \mathbb{E}[\theta])\,\mathbb{E}[\beta]\,\mathbb{E}[\theta]}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])}, \qquad \text{(A.11)} \\
\Delta^{\beta} \equiv \mathbb{E}[\beta \mid m = L] - \mathbb{E}[\beta] &= \frac{\mathbb{E}[\beta]\,\mathbb{E}[\rho] + \left(\mathrm{Var}[\beta] + \mathbb{E}^2[\beta]\right)(1 - \mathbb{E}[\rho] - \mathbb{E}[\theta])}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])} - \mathbb{E}[\beta] \\
&= \frac{\mathrm{Var}[\beta](1 - \mathbb{E}[\rho] - \mathbb{E}[\theta])}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])}. \qquad \text{(A.12)}
\end{aligned}$$

As a secondary outcome, upon updating on primary outcomes citizens update their overall evaluation of politicians at different levels according to their beliefs about responsibility allocation and policy performance. Importantly, I assume that citizens only punish/reward government based on policies for which they believe respective level of government to be responsible. More formally, the overall evaluation of politician at level $j \in \{\mathrm{L}, \mathrm{C}\}$ is assumed to be given by

$$\gamma_j \equiv \rho_j(2\theta - 1) + O_j \qquad \text{(A.13)}$$

where γ_j denotes evaluation of politician at level j by representative citizen while O_j denotes the evaluation of respective government level performance in all other relevant policy domains. Importantly both policies covered in the intervention media reports are assumed to be part of citizen evaluation of the government at different levels. Equation (A.13) implies that government at level j can only be punished by citizens based on performance in policies for which they are considered to be responsible.

Upon observing news report m citizen first updates her beliefs about primary outcomes, including policy performance and responsibility allocation, and then updates her beliefs about government competence at each level according to equation (A.13). Thus we can express the extent of updating on government competence as follows:

$$\begin{aligned}\Delta^{\gamma_L} &\equiv \mathbb{E}[\gamma_L \mid m = L] - \mathbb{E}[\gamma_L] \\ &= \frac{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho]\,\mathbb{E}[\theta] - \mathbb{E}[\rho](1 - \mathbb{E}[\theta])}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])} - \mathbb{E}[\rho](2\,\mathbb{E}[\theta] - 1), \qquad \text{(A.14)} \\ \Delta^{\gamma_C} &\equiv \mathbb{E}[\gamma_C \mid m = L] - \mathbb{E}[\gamma_C] \\ &= -\frac{(1 - \mathbb{E}[\rho])(1 - \mathbb{E}[\theta])\,\mathbb{E}[\beta]}{(1 - \mathbb{E}[\beta])\,\mathbb{E}[\rho] + \mathbb{E}[\beta](1 - \mathbb{E}[\theta])} - (1 - \mathbb{E}[\rho])(2\,\mathbb{E}[\theta] - 1). \qquad \text{(A.15)}\end{aligned}$$

Note that equations (A.14) and (A.15) implicitly assume that beliefs about responsibility and performance for policies not covered in the media message are unaffected by reporting on policy k. This is likely the case in the context of the study given that there exists multitude of public policies for which different levels of government might be responsible and citizens are likely to be unaware about intradependency between performance and responsibility for different policies. In addition, the since it is assumed that responsibility for policies covered in media reports can only be assigned to central or local government, I assume that messages do not affect evaluation of any other political actors.

The proposed intervention aims to induce shock to beliefs about allocation of responsibility for specific policy (infrastructure or natural disaster prevention) between different levels of government, ρ_j. Importantly the two treatment reports used in the intervention correspond to $m_D = L$ and $m_R = L$ and low policy performance for both policies. While not fully representative of reporting strategy employed by state-owned media outlet in Russia, these reports are good example of blame-shifting by central government, which is why low policy performance is being attributed to the local government by state-owned media in the first place. The placebo report described in the

previous section is denoted by $m_P \equiv \emptyset$, i.e. that the report contains no public policy performance or responsibility information.

It is assumed that the placebo m_P report has no systematic effect on any policy evaluations and thus can serve as a benchmark for estimation of the effects of treatment reports that directly cover public policy. More formally, I assume that $\mathbb{E}[\xi \mid m_P] = \mathbb{E}[\xi]$, where ξ represents any of the parameters of interest discussed above. As for the bias of the media, since placebo report used in the study is coming from the same outlet as the treatment reports, there is a chance that citizens exposed to placebo message will update their beliefs about media bias. That said, since placebo report does not mention or discuss any economic or political events, it is unlikely that citizens will update specifically beliefs about β, extent of bias in favor of the central government.

Appendix B: Chapter 2

B.1 Derivation of the model predictions

B.1.1 Model predictions for the main outcomes

Table B.1: Effects of media reports on the outcomes of interest predicted by the model

	Primary Outcomes			Secondary Outcomes		
	HC Quality ($\theta = 1$)	HC Responsibility on Governor ($\rho = G$)	Trust Local Media ($\beta = I$)	Governor Competence ($\gamma_G = 1$)	Mayor Competence ($\gamma_M = 1$)	President Competence ($\gamma_P = 1$)
Responsibility Only vs. Placebo ($\Delta^K_{G,\emptyset}$)	$\gtrless 0$	> 0	> 0	$\gtrless 0$	$\gtrless 0$	$\gtrless 0$
Performance Only vs. Placebo ($\Delta^K_{0,\emptyset}$)	< 0	$\gtrless 0$	< 0	$\gtrless 0$	$\gtrless 0$	< 0
Full Report vs. Placebo ($\Delta^K_{0G,\emptyset}$)	< 0	> 0	> 0	< 0	$\gtrless 0$	$\gtrless 0$
Full Report vs. Performance Only ($\Delta^K_{0G,0}$)	$= 0$	> 0	> 0	< 0	> 0	> 0
Full Report vs. Responsibility Only ($\Delta^K_{0G,G}$)	< 0	$= 0$	$\gtrless 0$	< 0	$= 0$	$= 0$
Any Performance ($\Delta^K_{\{0,0G\}}$)	< 0	$\gtrless 0$	$\gtrless 0$	$\gtrless 0$	$\gtrless 0$	< 0
Any Responsibility ($\Delta^K_{\{G,0G\}}$)	$\gtrless 0$	> 0	> 0	$\gtrless 0$	$\gtrless 0$	$\gtrless 0$

In the table $\gtrless 0$ corresponds to no sign predicted by the model for the respective group comparison, $= 0$ - to prediction of no differences between the groups, and > 0, < 0 - to prediction of the respective sign of the differences between the groups.

B.1.2 Updating on performance (θ)

After receiving the media message, the citizen simultaneously updates on all of the four types of parameters listed above. It is straightforward to see that the citizen's posterior belief about the performance $\mathbb{E}[\theta|m]$ is intrinsically related to her posterior belief about the media bias $\Pr[\beta = I|m]$ and allocation of responsibility $\Pr[\rho = i|m]$. Hence, the citizen's posterior about the leader's type is a convex combination of his posterior belief about the media bias and the allocation of responsibility. For the purposes of this study, I focus here on the updating of the beliefs upon observing $m \in \{\emptyset, 0, 0G, G\}$ as those messages directly map into news reports received by experimental groups in the study.

If the citizen does not receive a message about the public healthcare provision ($m = \emptyset$), it is straightforward to see that

$$\mathbb{E}[\theta|m = \emptyset] = \mathbb{E}[\theta] \Pr_{\emptyset}[\beta = I] + \mathbb{E}[\theta](1 - \Pr_{\emptyset}[\beta = I]) = \mathbb{E}[\theta], \tag{B.1}$$

where $\Pr_{\emptyset}[\beta = I] \equiv \Pr[\beta = I|m]$ and $i \in \{M, G, P\}$. The second part of the RHS of the equation above obtains from the fact that no reporting is equally likely to come from media outlet regardless of it's bias. The updating on the performance becomes less trivial if the media reports some information. If the media reports low performance only ($m = 0$), the citizen updates her beliefs about the performance as follows:

$$\mathbb{E}[\theta|m = 0] = \mathbb{E}[\theta|m = 0, \beta = I] \Pr_0[\beta = I] + \mathbb{E}[\theta|m = 0, \beta \neq I](1 - \Pr_0[\beta = I]) = 0. \tag{B.2}$$

If media reports low performance and responsibility ($m = 0G$), the citizen updates her beliefs about the performance as follows:

$$\mathbb{E}[\theta|m = 0G] = \mathbb{E}[\theta|m = 0G, \beta = I] \Pr_{0G}[\beta = I] + \mathbb{E}[\theta|m = 0G, \beta \neq I](1 - \Pr_{0G}[\beta = I]) = 0. \tag{B.3}$$

Finally if media reports responsibility only ($m = G$), the citizen updates her beliefs about the performance as follows

$$\begin{aligned}
\mathbb{E}[\theta|m = G] &= \Pr[\theta = 1] \Pr_G[\beta = I] + \Pr_G[\beta = G] \\
&= \Pr[\theta = 1] \Pr[\beta = I|m = G] + \Pr[\beta = G|m = G] \\
&= \frac{\mathbb{E}[\theta](\Pr[\beta = I] + \Pr[\beta = G])}{\Pr[\beta = I] + \mathbb{E}[\theta] \Pr[\beta = G] + (1 - \mathbb{E}[\theta]) \Pr[\beta = M]}
\end{aligned} \tag{B.4}$$

Thus, updating on performance is quite trivial: In the first case there is no information about performance in the message, while in the last two cases reports are fully revealing, given that I assume the media does not *lie*. Updating upon observing G in equation (B.4) is less trivial and depends on the relationship between priors about the possible

bias of the media. This is due to assumption that if the media is biased in favor of mayor, G signals low performance, while the opposite holds when media is biased in favor of the governor.

B.1.3 Updating on responsibility (ρ)

Analogous to performance the citizen's posterior belief about the responsibility $\forall i \in \{P, G, M\} :\ \Pr[\rho = i|m]$ is a function of her posterior belief about the media bias $\Pr[\beta = I|m]$ and performance $\Pr[\theta = 1|m]$. Given that correct attribution of responsibility in the context of the experiment is $\rho = G$, I focus on updating of belief about this event upon observing media report, since this quantity maps directly into survey measure that verifies whether respondent correctly attributes public healthcare outcomes to the governor.

If the citizen does not receive a message about the public healthcare provision ($m = \emptyset$), the posterior expectation about the responsibility allocation is given by

$$\mathbb{E}\left[\mathbb{1}_{\rho=G}|m = \emptyset\right] = \Pr[\rho = G]\Pr_{\emptyset}[\beta = I] + \Pr[\rho = G](1 - \Pr_{\emptyset}[\beta = I]) = \mathbb{E}\left[\mathbb{1}_{\rho=G}\right]. \tag{B.5}$$

If the media reports responsibility (either $m = G$ or $m = 0G$), given that reporting is always truthful, the citizen updates her belief about the responsibility as follows

$$\mathbb{E}\left[\mathbb{1}_{\rho=G}|m = G\right] = 1, \tag{B.6}$$

$$\mathbb{E}\left[\mathbb{1}_{\rho=G}|m = 0G\right] = 1. \tag{B.7}$$

Finally the least trivial case is if media reports performance only ($m = 0$). In this case the citizen posterior expectation about responsibility is given by

$$\begin{aligned}
\mathbb{E}\left[\mathbb{1}_{\rho=G}|m = 0\right] = {} & \Pr[\rho = G]\Pr_0[\beta = I] + \Pr[\rho = G|m = 0, \beta = G]\Pr_0[\beta = G] + \\
& \Pr[\rho = G|m = 0, \beta = M]\Pr_0[\beta = M] \\
= {} & \frac{(\Pr[\beta = I] + 3\Pr[\beta = G] + \Pr[\beta = M])\Pr[\rho = G]}{(\Pr[\beta = I] + \Pr[\beta = M] + 3\Pr[\beta = G])\Pr[\rho = G]} \\
& + (\Pr[\beta = I] + 3\Pr[\beta = M] + \Pr[\beta = G])\Pr[\rho = M] \\
& + (\Pr[\beta = I] + 3\Pr[\beta = M] + 3\Pr[\beta = G])\Pr[\rho = P]
\end{aligned} \tag{B.8}$$

Updating on responsibility allocation is very similar to the one on performance: Absence of message ($m = \emptyset$) is uninformative, while any report that contains information about responsibility allocation is fully revealing ($m = G$ or $m = 0G$) due to *no lie* assumption. The least trivial updating is when media reports $m = 0$. In this case the direction of

updating depends on the relationship between beliefs about bias of the media: The higher is the prior belief that media is biased in favor of the mayor, the lower is the posterior belief about responsibility being on governor. This effect is due to media outlet favoring mayor reporting performance only with lower probability than the media outlet biased in favor of governor.

B.1.4 Updating on bias of the media (β)

Now I derive the updating of the belief about bias of the media upon observing messages $m \in \{\emptyset, 0\,, 0G,\ G\}$. I focus specifically on the belief about media outlet unbiasedness, since this quantity maps directly onto question asked in the survey for the study. If the citizen does not receive a message about the public healthcare provision ($m = \emptyset$), the posterior belief about the bias of the media is

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = \emptyset\right] = \Pr\left[\beta = I\right]. \tag{B.9}$$

If the media reports responsibility only, $m = G$, the citizen updates her beliefs about the bias of the media as follows

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = G\right] = \frac{\Pr\left[\beta = I\right]}{\Pr\left[\beta = I\right] + \mathbb{E}\left[\theta\right]\Pr\left[\beta = G\right] + (1 - \mathbb{E}\left[\theta\right])\Pr\left[\beta = M\right]}. \tag{B.10}$$

If media reports performance only, $m = 0$, the citizen updates her beliefs about the performance to

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = 0\right] = \frac{\Pr\left[\beta = I\right]}{\begin{array}{r}\Pr\left[\beta = I\right] \\ + (\Pr\left[\rho = M\right] + 3\Pr\left[\rho = G\right] + 3\Pr\left[\rho = P\right])\Pr\left[\beta = G\right] \\ + (\Pr\left[\rho = G\right] + 3\Pr\left[\rho = M\right] + 3\Pr\left[\rho = P\right])\Pr\left[\beta = M\right]\end{array}}. \tag{B.11}$$

Finally if media reports full message, $m = 0G$, the citizen updates her beliefs about the bias of the media to

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = 0G\right] = \frac{\Pr\left[\beta = I\right]}{\Pr\left[\beta = I\right] + \Pr\left[\beta = M\right]}. \tag{B.12}$$

Overall, it is clear that citizen update her belief about media independence the most when she observes full report that covers both performance and responsibility. The relationship between the extent of updating upon observing only one piece of information (either performance or responsibility) depends on the prior beliefs about performance and responsibility respectively, but given equations (B.10) and (B.11) it is straightforward to see that probability of media being unbiased upon observing G is greater or equal to the similar probability upon observing \$0 , \$. This is because

citizens are aware that information about responsibility for public policy outcomes is much more likely to come from unbiased media outlet.

B.1.5 Updating on competence (γ)

The updating on the competence of different levels of government is more complicated than updating on responsibility allocation, performance, or media bias, since competence evaluation combines responsibility attribution and performance evaluation. Formally, I define competence as follows

$$\forall i \in \{M, G, P\} : \ \gamma_i \equiv \begin{cases} \omega\theta + (1-\omega)\overline{\gamma}_i, \text{if } \rho = i, \\ \overline{\gamma}_i, \text{if } \rho \neq i, \end{cases} \tag{B.13}$$

where $\overline{\gamma}_i \equiv \begin{cases} 0, \ p = 1 - \xi_i \\ 1, \ p = \xi_i \end{cases}$ is a random variable that represents the beliefs citizen has about overall competence of the government at level i excluding the public healthcare policy, and $\xi_i \in (0,1)$ is presumed to be exogenous. $\omega \in (0,1)$ is the weight citizen puts on public healthcare policy in her evaluation of the government. It is straightforward to see that $\forall i \in \{M, G, P\} : \ \gamma_i \in (0,1)$. I can write expected competence of politician at level i as given by

$$\begin{aligned} \mathbb{E}[\gamma_i] &= \mathbb{E}[\omega]\,\mathbb{E}[\theta|\rho = i]\Pr[\rho = i] + \xi_i(1 - \mathbb{E}[\omega])\Pr[\rho = i] + \xi_i \Pr[\rho \neq i] \\ &= \mathbb{E}[\theta]\,\mathbb{E}[\omega]\Pr[\rho = i] + \xi_i(1 - \mathbb{E}[\omega]\Pr[\rho = i]). \end{aligned}$$

The last equality in the expression above is due to the assumption that outcome of public policy, θ, is independent of allocation of responsibility, ρ. Essentially expectation about competence of politician at level i is a weighted sum of expected policy outcome and beliefs about competence of the pull of politicians. The posterior expected competence is thus given by

$$\mathbb{E}[\gamma_i|m] = \mathbb{E}[\omega]\,\mathbb{E}[\theta|m]\Pr[\rho = i|m] + \xi_i(1 - \mathbb{E}[\omega]\Pr[\rho = i|m]) \tag{B.14}$$

I can now follow the same procedure to derive the updating on competence of the leader upon observing one of the media messages of interest, $m \in \{\emptyset, 0, 0G, G\}$. I already derived all the expressions for the conditional expectations and probabilities in the equation (B.14), and thus can write down the expression for the expected competence of the government at level i upon observing media report.

If the citizen does not receive a message about the public healthcare provision ($m = \emptyset$), the posterior belief about

responsibility allocation is

$$\forall i \in \{M, G, P\} : \mathbb{E}\left[\gamma_i | m = \emptyset\right] = \mathbb{E}\left[\omega\right] \mathbb{E}\left[\theta\right] \Pr\left[\rho = i\right] + \xi_i (1 - \mathbb{E}\left[\omega\right] \Pr\left[\rho = i\right]). \tag{B.15}$$

If the media reports responsibility only ($m = G$), the citizen updates her beliefs about the competence of level i to

$$\mathbb{E}\left[\gamma_M | m = G\right] = \xi_M, \tag{B.16}$$

$$\begin{aligned}\mathbb{E}\left[\gamma_G | m = G\right] &= \mathbb{E}\left[\omega\right] \mathbb{E}\left[\theta | m = G\right] + \xi_G (1 - \mathbb{E}\left[\omega\right]) \\ &= \frac{\mathbb{E}\left[\omega\right] \mathbb{E}\left[\theta\right] \left(\Pr\left[\beta = I\right] + \Pr\left[\beta = G\right]\right)}{\Pr\left[\beta = I\right] + \mathbb{E}\left[\theta\right] \Pr\left[\beta = G\right] + \left(1 - \mathbb{E}\left[\theta\right]\right) \Pr\left[\beta = M\right]} + \xi_G (1 - \mathbb{E}\left[\omega\right]),\end{aligned} \tag{B.17}$$

$$\mathbb{E}\left[\gamma_P | m = G\right] = \xi_P. \tag{B.18}$$

$\Pr\left[\rho = G | m = G\right] = 1$ implies that equation (B.17) is equivalent to equation (B.4). Equations (B.16) and (B.18) are due to $\Pr\left[\rho = M | m = G\right] = \Pr\left[\rho = P | m = G\right] = 0$. If media reports responsibility only ($m = 0G$), the updating of beliefs about competence changes compared to the case of responsibility only reporting only for the competence of the governor

$$\mathbb{E}\left[\gamma_G | m = 0G\right] = 0 + \xi_G (1 - \mathbb{E}\left[\omega\right]), \tag{B.19}$$

This is due to report being fully revealing, i.e. $\mathbb{E}\left[\theta | m = 0G\right] = 0$.

Finally, if media reports responsibility only ($m = 0$), the citizen updates her beliefs about the performance as follows:

$$\mathbb{E}\left[\gamma_i | m = 0\right] = \xi_i \left(1 - \mathbb{E}\left[\omega\right] \Pr\left[\rho = i | m = 0\right]\right), \tag{B.20}$$

where expressions for $\Pr\left[\rho = i | m = 0\right]$ for any $i \in \{M, P, G\}$ is given by equation (B.8).

B.1.6 Predicted heterogeneous treatment effects

Prediction HET (Treatment Effect Heterogeneity). The signs of partial derivatives of the treatment effects $\Delta^K_{0,\emptyset}$, $\Delta^K_{G,\emptyset}$, $\Delta^K_{0G,\emptyset}$, $\Delta^K_{0G,0}$, $\Delta^K_{0G,G}$ and $\Delta^K_{\{0,0G\}}$, $\Delta^K_{\{G,0G\}}$ for events $K \in \{\theta = 1, \rho = G, \beta = I, \gamma_G = 1, \gamma_M = 1, \gamma_P = 1\}$ with respect to the main parameters measured prior to the treatment ($\mathbb{E}[\theta]$, $\Pr[\rho = G]$, $\Pr[\rho = M]$, $\Pr[\rho = P]$, $\Pr[\beta = I]$, ξ_M, ξ_G, ξ_P and $\mathbb{E}[\omega]$) are given in the Table B.2.

Table B.2: Heterogeneous effects of media reports on outcomes of interest predicted by the model

		Primary outcomes			Secondary outcomes		
	$K =$	$(\theta = 1)$	$(\rho = G)$	$(\beta = I)$	$(\gamma_G = 1)$	$(\gamma_M = 1)$	$(\gamma_P = 1)$
$\partial\Delta^K_{0,\emptyset}/$		$\partial\mathbb{E}[\theta] < 0$		$\partial \Pr[\rho = G] > 0$; $\partial \Pr[\rho = M] > 0$			
$\partial\Delta^K_{G,\emptyset}/$			$\partial \Pr[\rho = G] < 0$				
$\partial\Delta^K_{0G,\emptyset}/$		$\partial\mathbb{E}[\theta] < 0$	$\partial \Pr[\rho = G] < 0$	$\partial \Pr[\beta = I] > 0$	$\partial\mathbb{E}[\theta] < 0$; $\partial\xi_G < 0$; $\partial\mathbb{E}[\omega] < 0$		
$\partial\Delta^K_{0G,0}/$			$\partial \Pr[\rho = G] < 0$; $\partial \Pr[\rho = M] < 0$; $\partial \Pr[\beta = I] < 0$	$\partial \Pr[\rho = G] < 0$; $\partial \Pr[\rho = M] < 0$	$\partial \Pr[\rho = G] > 0$; $\partial \Pr[\rho = M] > 0$; $\partial \Pr[\beta = I] > 0$; $\partial\xi_G < 0$; $\partial\mathbb{E}[\omega] < 0$	$\partial \Pr[\rho = G] > 0$; $\partial \Pr[\rho = M] > 0$; $\partial \Pr[\beta = I] < 0$; $\partial\xi_M > 0$; $\partial\mathbb{E}[\omega] > 0$	$\partial \Pr[\rho = G] < 0$; $\partial \Pr[\rho = M] < 0$; $\partial\xi_P > 0$; $\partial\mathbb{E}[\omega] > 0$
$\partial\Delta^K_{0G,G}/$		$\partial\mathbb{E}[\theta] < 0$; $\partial \Pr[\beta = I] < 0$			$\partial\mathbb{E}[\theta] < 0$; $\partial \Pr[\beta = I] < 0$; $\partial\mathbb{E}[\omega] < 0$		
$\partial\Delta^K_{\{0,0G\}}/$		$\partial\mathbb{E}[\theta] < 0$					
$\partial\Delta^K_{\{G,0G\}}/$			$\partial \Pr[\rho = G] < 0$; $\partial \Pr[\rho = M] < 0$; $\partial \Pr[\beta = I] < 0$				

Predictions assume non-trivial priors, i.e. all possible event combinations have non-zero prior probability. $\Delta^K_{m_T,m_C}$ and Δ^K_M are defined in equations (2.4) and (2.5) respectively. Each column in the table corresponds to particular event beliefs which are used as an outcome of interest, each row corresponds to comparative statics for comparison between respective experimental groups, and within each cell semicolon is used to separate baseline (pre-treatment) beliefs for which the comparative statics are drawn.

Intuitively for the performance evaluation, it is straightforward to see that the higher is the prior belief about the performance, the larger in magnitude is the negative effect of observing any report that contains information about low policy performance ($m \in \{0, 0G\}$) on the posterior performance

evaluation. On the contrary, for the knowledge of allocation of responsibility (specifically for the knowledge that regional government is primarily responsible for the public health provision), the higher is the citizen's belief that regional government is responsible prior to observing the media report, the lower is the positive effect of any report that cover responsibility allocation ($m \in \{G, 0G\}$) on the posterior knowledge. For the beliefs about media independence, since the biased media is disproportionately likely to not report on responsibility if the responsibility lies at federal government, the lower is the prior citizen's belief that the federal government is responsible, the higher is the posterior belief that the report was produced by the independent local media.

As for the secondary outcomes, overall support for different levels of government, the most intuitive comparative statics in the Prediction HET concern weight citizens put on the public healthcare in their evaluation of the government, $\mathbb{E}[\omega]$, and prior evaluation of different government levels for its performance in anything but the public health provision, ξ_i. The weight put on the public health provision always inflates the corresponding treatment effect sizes, both negative for the regional government and positive for municipal and federal government. Evaluations of government for non public healthcare performance has similar effect when we compare those who received full report covering performance and responsibility to any other individual message. As for the comparative statics with respect to beliefs about allocation of responsibility and media independence, they directly follow from the updating about the allocation of responsibility according to the equation (B.14) for the effect of full report compared to performance only report. Analogously the comparative statics with respect to performance follow from updating on performance as the updated performance evaluation linearly enters in the equation (B.14).

B.2 Additional study details

B.2.1 Information sheets

B.2.1.1 Baseline survey (phone)

Dear Respondent,

You are invited to participate in a phone survey conducted by agency "Tayga.Research" 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 the city of Novosibirsk. It should take approximately 5 minutes to complete the phone survey.

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. Besides this phone survey we offer you an opportunity to participate in an in-person survey which will be conducted in the next 2-3 weeks for a compensation of 150-200 rubles. However, you will receive a monetary compensation for your participation only if you complete both phone and in-person surveys and answer all of their questions.*

CONFIDENTIALITY *To contact you for the next round of surveys we will have to collect your phone and email during this survey. The data collected will be securely stored on a private server using SSL and 2048-bit encryption key to protect its transit and storage. The anonymity of your responses is secured by the agency "Tayga.Research" according to its "Policies of Personal Data Processing". 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 Novosibirsk" to Georgiy Syunyaev at g.syunyaev@columbia.edu.*

ELECTRONIC CONSENT *By choosing "Yes", 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.*

B.2.1.2 Endline survey (in-person/online)

Dear Respondent,

You are invited to participate in a in-person survey conducted by agency "Tayga.Research" 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 the city of Novosibirsk. It should take approximately 20 minutes to complete the in-person survey.

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. You will be provided with compensation of 150-200 rubles for participation in the survey. However, you will receive a monetary compensation for your participation only if you complete the in-person survey and answer all of their questions.*

CONFIDENTIALITY *The data collected will be securely stored on a private server using SSL and 2048-bit encryption key to protect its transit and storage. The anonymity of your responses is secured by the agency "Tayga.Research" according to its "Policies of Personal Data Processing". 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 Novosibirsk" to Georgiy Syunyaev at g.syunyaev@columbia.edu.*

ELECTRONIC CONSENT *By choosing "Yes", 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.*

B.2.2 Baseline survey (phone)

1. Screening
    - What is your name?
    - Your gender?
    - How old are you?
    - What is the highest level of education you received?
    - How would you characterize your family material well-being?
    - Do you reside permanently in Novosibirsk for at least 12 months?
    - Which district of Novosibirsk do you reside in?
2. Importance of policy
    - To which extent do you agree with the statement that news about Novosibirsk are more important than federal or foreign news?
    - Do you plan to vote in regional elections in September?
3. Public medical services
    - Did you use public health centers in the past 6 months?
    - Were you overall satisfied with the services provided?
    - Imagine tomorrow there will be elections for the executive office (e.g. mayoral or governor), how much of a weight will quality of medical services play in your decision for whom to vote?
    - How would you characterize the current quality of public healthcare services in Novosibirsk?
4. Media bias
    - How many days a week (approximately) you watch or read news about your city?
    - What is your main source of news about Novosibirsk?
    - To which extent do you agree with the claim that the local media describes the situation in the Novosibirsk objectively?
    - How often in the last month have you heard about quality of public healthcare in Novosibirsk from the media?
5. Policy responsibility allocation in Novosibirsk
    - In your opinion which of the following levels of government primarily responsible for the following policy in Novosibirsk . . .

- . . . quality and access to public healthcare services?
- . . . quality and access to public education?
- . . . quality and repairs of roads and pedestrian walkways?

6. Government evaluation

    - Please, evaluate the performance of the following government officials . . .
    - . . . mayor of the Novosibirsk, Anatoliy Lokot?
    - . . . acting governor, Andrey Travnikov?
    - . . . president Vladimir Putin?

B.2.3 Endline survey (in-person/online)

1. Cross-check with baseline

    - What's your name?
    - Do you reside permanently in Novosibirsk for at least 12 months?
    - Which district of Novosibirsk do you reside in?
    - Your gender?
    - What's your name?
    - Please, provide the phone number used in the previous survey?
    - What is the highest level of education you received?
    - How would you characterize your family material well-being?

2. Pre-treatment characteristics

    - Did you vote in the last president elections in March 2018?
    - How often do you follow political news about the region and the city?
    - Have you visited Tayga.info website in the past month?
    - Did you use public healthcare centers in the past 6 months?
    - How often in the past month did you hear about quality of public health services in Novosibirsk from media?
    - Which of the following problems you consider to be the most important for the public healthcare provision in Novosibirsk?
    - Did you, or any of your friends and relatives study in Novosibirsk State University over the past 6 months?
    - Were you, or any of your friends and relatives employed at Akademgorodok over the past 6 months?
    - How often in the past month did you hear about Novosibirsk Akademgorodok from media?
    - Which of the following events took place in Novosibirsk Akademgorodok this year?

3. News report 1 (Main)

    (∅) Placebo Control

    - Please, watch the following news report and write a 1-2 sentence(s) gist of it:

    > *Broadcaster:* *Historically, Siberia is a land of exile and hard labor. The greatest scope of repression was achieved in the era of Stalinism. Special settlements in the Narym, the Great Terror, the network of GULAG camps – for many Siberians this is not just empty words from textbooks, but the memory of one's own family. The best way to understand*

the problem is to help events where people not only express their point of view, but also hear each other. One of such events was a discussion organized by the Novosibirsk Open University and the publication of Taiga.info in the regional library, where historians, politicians, lawyers, philosophers and psychologists took part. With the blessing of the Tomsk diocese of the ROC, the event was accompanied by a photo exhibition "And the light shines in the darkness" about the persecution of the church prepared by the Orthodox St. Tikhon University. As the organizer of the event said, there should be no dispute "for" or "against" Stalinism, but the question of how to overcome it.

- How would you evaluate the information in the video fragment that you just watched from the perspective of quality of living in Novosibirsk?
- Did you learn anything new from the video report you just watched?

(0) Performance Only Treatment

- Please, watch the following news report and write a 1-2 sentence(s) gist of it:

Broadcaster: *If in our city anyone talks about healthcare, the object of criticism is often not the quality of medical services. Patients are dissatisfied with the non-working electronic record, the workload of doctors and queues. Any resident of Novosibirsk who has come to the district clinic may face a whole complex of shortcomings in the outpatient care system. For example, in 2018 in the Leninsky, Zaeltsovsky, Oktyabrsky and Central areas there were situations when people were forced to come at four in the morning to get to the doctor. Particularly difficult was the situation in the polyclinic No.18 on the Shirokaya street, where such queues, according to patients, lasted more than a month.*

- How would you evaluate the information in the video fragment that you just watched from the perspective of quality of living in Novosibirsk?
- Did you learn anything new from the video report you just watched?

(G) Responsibility Only Treatment

- Please, watch the following news report and write a 1-2 sentence(s) gist of it:

Broadcaster: *Temporarily acting governor Andrey Travnikov recently conducted a check of polyclinics in Novosibirsk and was dissatisfied with the queues and work of call centers of polyclinics. Representatives of the regional leadership, which is responsible for quality of healthcare system in the city, emphasize that Novosibirsk is a developing city, where the burden on social infrastructure grows from year to year. So the tender for the construction of seven new polyclinics, put forward last autumn, fell through, and the solution to the problem is postponed. According to the city authorities, polyclinics fall out of the primary focus of the regional authorities and it is important to return management of this part of healthcare system to the municipality.*

- How would you evaluate the information in the video fragment that you just watched from the perspective of quality of living in Novosibirsk?
- Did you learn anything new from the video report you just watched?

(0G) Performance and Responsibility Treatment

- Please, watch the following news report and write a 1-2 sentence(s) gist of it:

Broadcaster: *If in our city anyone talks about healthcare, the object of criticism is often not the quality of medical services. Patients are dissatisfied with the non-working electronic record, the workload of doctors and queues. Any*

resident of Novosibirsk who has come to the district clinic may face a whole complex of shortcomings in the outpatient care system. For example, in 2018 in the Leninsky, Zaeltsovsky, Oktyabrsky and Central areas there were situations when people were forced to come at four in the morning to get to the doctor. Particularly difficult was the situation in the polyclinic No.18 on the Shirokaya street, where such queues, according to patients, lasted more than a month. Temporarily acting governor Andrey Travnikov recently conducted a check of polyclinics in Novosibirsk and was dissatisfied with the queues and work of call centers of polyclinics. Representatives of the regional leadership, which is responsible for quality of healthcare system in the city, emphasize that Novosibirsk is a developing city, where the burden on social infrastructure grows from year to year. So the tender for the construction of seven new polyclinics, put forward last autumn, fell through, and the solution to the problem is postponed. According to the city authorities, polyclinics fall out of the primary focus of the regional authorities and it is important to return management of this part of healthcare system to the municipality.

- How would you evaluate the information in the video fragment that you just watched from the perspective of quality of living in Novosibirsk?
- Did you learn anything new from the video report you just watched?

4. News report 2 (Filler)

   - Please, watch the following news report and write a 1-2 sentence(s) gist of it:

     Broadcaster: Akademgorodok is the rightful pride of our country. Novosibirsk State University and the Siberian Branch of the Academy of Sciences - this is what makes Novosibirsk known in the world. Many of those who worked and studied in Akademgorodok successfully work in leading world companies and scientific centers. But in recent years, scientists have not felt confident in the future due to the reform of the Academy of Sciences, attempts to put fundamental research into project financing, as well as leakage of personnel. Therefore, with great impatience, the scientists waited for Vladimir Vladimirovich Putin to arrive in February this year. Within the framework of the visit, the Russian president met with the leadership of the Siberian branch of the Russian Academy of Sciences and answered the questions of scientists about the implementation of the "May decrees". The problems of Akademgorodok and the development of Siberian science were also discussed. In particular, the head of state supported the project "Akademgorodok 2.0", which is designed to combine scientific research with the introduction of inventions in the production. The visit concluded with Vladimir Putin meeting with young scientists who linked their future with science and innovations.

   - How would you evaluate the information in the video fragment that you just watched from the perspective of quality of living in Novosibirsk?
   - Did you learn anything new from the video report you just watched?

5. Media bias

   - To which extent do you agree with the claim that the local media describes the situation in the Novosibirsk objectively?
   - To which extent do you agree with the claim that news about Novosibirsk are more important than federal or foreign news?
   - Do you plan to vote in Novosibirsk region governor elections in September 2018?

6. Importance of public service provision

   - How would you characterize the current quality of public healthcare services in Novosibirsk?
   - Imagine tomorrow there will be elections for the executive office, how much of a weight will quality of public healthcare services play in your decision for whom to vote?

- How would you characterize the current quality of public education and science centers in Novosibirsk?
- Imagine tomorrow there will be elections for the executive office, how much of a weight will quality of public education play in your decision for whom to vote?

7. Policy responsibility allocation in Novosibirsk

    - In your opinion which of the following levels of government primarily responsible for the following policy in Novosibirsk . . .
    - . . . quality and access to public healthcare services?
    - . . . quality and access to public education?
    - . . . quality and repairs of roads and pedestrian walkways?

8. Government evaluation

    - Please, evaluate the performance of the following government officials . . .
    - . . . mayor of the Novosibirsk, Anatoliy Lokot?
    - . . . acting governor, Andrey Travnikov?
    - . . . president Vladimir Putin?

B.3 Threats to inference

B.3.1 Randomization

The assignment to one of the four experimental groups was conducted using block complete random assignment. The blocks of size 4 were constructed using optimal greedy algorithm on Mahalanobis distances by a number of baseline characteristics: Gender, age group, prior beliefs about local media, correct responsibility attribution for public healthcare provision, support for acting governor, and whether respondent agreed to offline/online mode of endline survey. I rely on `blockTools` package in `[R]` to implement the block random assignment as shown in the chunk below.

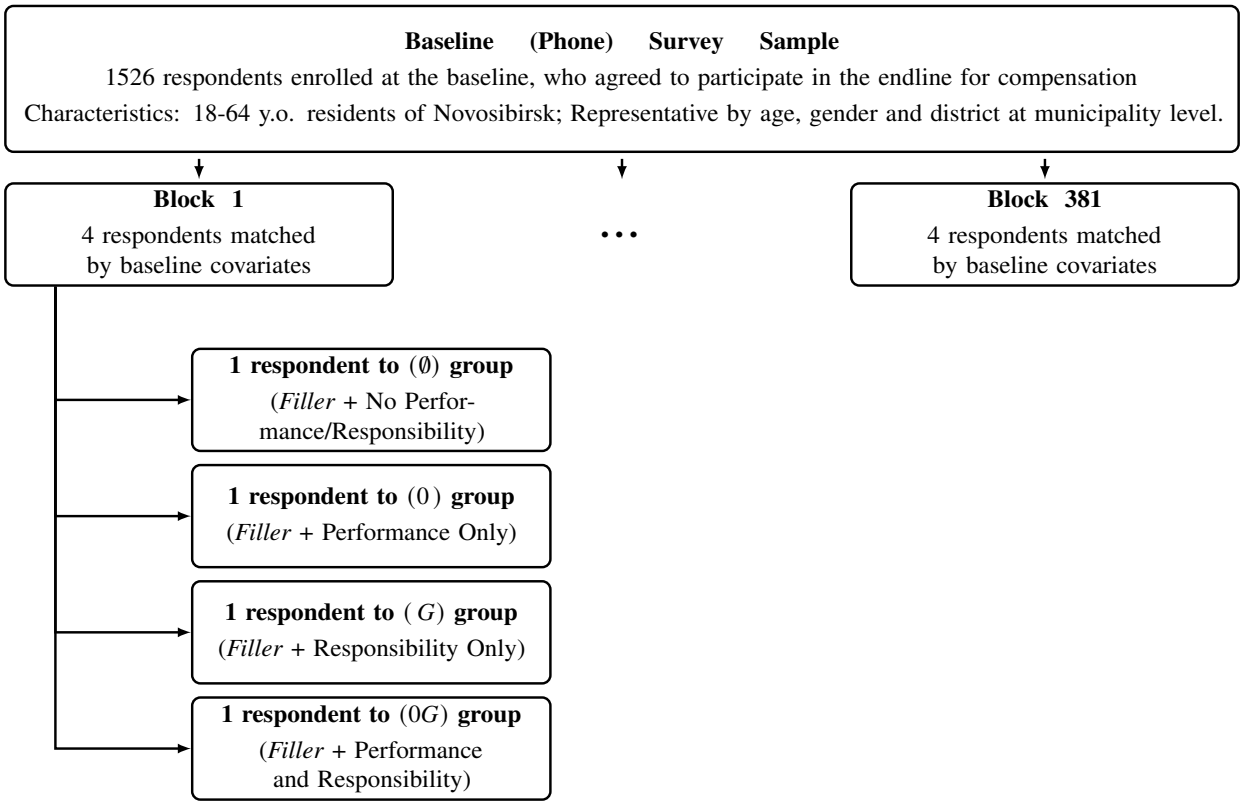
```
## set seed
set.seed(19871223)

## block variables
block_vars <- c("b_female", "b_age_group", "b_n3", "b_part_r2_off_online",
                "b_knows_medical", "b_eval_governor")

## assign treatment
assignment <-
  nsk1 %>%
  dplyr::mutate_at(vars(block_vars), funs(as.numeric)) %>%
  as.data.frame() %>%
  blockTools::block(data = .,
                    n.tr = 4,
                    id.vars = "id",
                    block.vars = block_vars,
                    seed.dist = seed,
                    verbose = FALSE) %>%
  {.$blocks[[1]]} %>%
  dplyr::as_data_frame() %>%
  dplyr::mutate(block_id = 1:n()) %>%
  tidyr::gather(key = "unit", value = "id", -`Max Distance`, -block_id) %>%
  dplyr::rename(block_dist = `Max Distance`) %>%
  dplyr::select(-unit) %>%
  dplyr::mutate(treat = randomizr::block_ra(blocks = block_id,
                                            num_arms = 4, conditions = c("00", "01", "10", "11")))
```

The resulting structure of experimental assignment and total baseline sample size is shown in the Figure B.1. Each block includes one respondent assigned to each of the treatment condition in the endline.

Figure B.1: Structure of the baseline sample enrolled for the phone interview and split into blocks of size four. Each block includes one respondent assigned to each of the treatment condition in the endline.



Importantly, during the endline survey, based on the verification of survey records in SurveyCTO, 21 out of the 1125 respondents who started the survey were administered experimental condition that they were not assigned to. Given that the rate of non-compliance with treatment assignment is below 2%, I report initial assignment in the analyses in the chapter, but additional robustness checks show that exclusion of those who did not comply with the experimental assignment does not affect the results.

B.3.2 Drop-out and attrition

Given the structure of the survey instrument, respondents in the study are considered to be missing if they did not participate in the second wave of the survey. This is due to the fact that the block random assignment was conducted after baseline but prior to the beginning of the endline survey. That said, given that the treatment was administered during the endline survey, there are few substantive reasons to believe that treatment assignment could have affected drop-out between the waves.

Drop-out rate in the experiment is roughly 25% with 391 out of 1525 respondents who were enrolled at the baseline failing to take part in the endline survey. Given the relatively short length of post-treatment outcome measurement, I encountered negligible rates of post-treatment attrition with only 9 respondents not finishing the endline survey after they received the treatment.

Nevertheless following Lin and Green (2016) I conduct the following two tests to assess relationship between the treatment assignment and observed drop-out and attrition using an indicator for respondents who do not have responses to some or all of the post-treatment questions and conducted:

1. A two-tailed unequal-variances t-test of the hypothesis that treatment does not affect the attrition rate. 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 block random assignment to 4 experimental conditions. As is shown below all eight possible tests (including the ones across factorial dimensions) yielded p-values much higher than 0.05.

Table B.3: P-values for two-tailed t-tests of unequal attrition rates for all possible pairs of experimental conditions

(G) vs (··)	(0·) vs (··)	(0G) vs (··)	(G) vs (0·)	(0G) vs (0·)	(0G) vs (G)	(0G) + (G) vs (0·) + (··)	(0G) + (0·) vs (G) + (··)
0.749	0.773	0.964	0.979	0.727	0.721	1	0.962

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: b_female, b_age_group, b_educ, b_income_group,b_part_r2_off_online, b_eval_mayor, b_eval_governor, b_eval_president, b_med_quality, b_local_news_obj, b_local_news_freq, b_local_part, b_eval_mayor_other, b_eval_governor_other, b_eval_president_other. This list contains baseline measurements of respondents' socio-demographic status, media viewership and trust, public healthcare policy exposure, as well as evaluation of the government at different levels. Thus covariates used for the test include the baseline measurement of outcomes of interest. I perform an F-test of the hypothesis that all the coefficients for treatment-by-covariate interactions are zero, and again rely on randomization inference to conduct this test. The test yielded p-values of 0.5285 well above 0.05.

None of the tests provide evidence for the interdependence between attrition and treatment assignment, so in the chapter I report naive estimates among the respondents for whom specific outcome is observed.

B.3.3 Treatment balance

Table B.4: Covariate balance across treatment conditions

	Std. Means				(0·) vs (··)		(·G) vs (··)		(0G) vs (··)	
Variable	Placebo	Performance Only	Responsibility Only	Full Report	Std. Diff	P-value	Std. Diff	P-value	Std. Diff	P-value
Endline Online	0.842	0.829	0.829	0.849	-2.047	0.807	-3.478	0.676	9.184	0.295
Female	0.545	0.554	0.573	0.532	1.825	0.829	5.681	0.503	-1.164	0.89
Income	0.508	0.510	0.482	0.500	1.767	0.82	-13.574	0.09	-2.691	0.735
Has higher education	0.627	0.625	0.641	0.604	2.66	0.754	2.773	0.744	-2.096	0.803
Age: [18,24]	0.108	0.114	0.103	0.133	2.361	0.777	-1.419	0.868	8.501	0.289
Age: (24,34]	0.348	0.321	0.313	0.327	-5.08	0.551	-7.426	0.386	-2.014	0.811
Age: (34,44]	0.237	0.246	0.270	0.248	2.676	0.749	7.619	0.357	3.596	0.666
Age: (44,54]	0.183	0.179	0.189	0.176	-0.762	0.928	1.484	0.86	-1.126	0.894
Age: (54,64]	0.125	0.139	0.125	0.115	2.195	0.793	-0.27	0.975	-9.61	0.278
Mayor performance	0.513	0.525	0.509	0.541	3.627	0.654	-1.333	0.874	10.699	0.2
Governor performance	0.552	0.574	0.563	0.564	7.594	0.37	4.569	0.581	2.614	0.752
President performance	0.538	0.520	0.514	0.528	-6.198	0.458	-6.696	0.418	-2.202	0.789
Mayor is responsible for HC provision	0.384	0.421	0.363	0.424	7.497	0.371	-4.26	0.616	7.184	0.39
Governor is responsible for HC provision	0.290	0.268	0.302	0.277	-4.598	0.591	2.644	0.753	-3.276	0.699
President is responsible for HC provision	0.326	0.311	0.335	0.299	-3.6	0.672	1.768	0.834	-4.555	0.592
Mayor is responsible for education	0.358	0.386	0.359	0.428	3.93	0.64	0.21	0.98	10.704	0.199
Governor is responsible for education	0.229	0.243	0.242	0.205	3.515	0.674	2.937	0.726	-5.108	0.551
President is responsible for education	0.412	0.371	0.399	0.367	-7.079	0.406	-2.775	0.743	-6.71	0.429
Mayor is responsible for roads	0.513	0.579	0.544	0.590	11.927	0.161	6.402	0.45	15.432	0.069
Governor is responsible for roads	0.276	0.239	0.256	0.266	-7.294	0.398	-4.518	0.598	-4.186	0.622
President is responsible for roads	0.211	0.182	0.199	0.144	-7.195	0.407	-3.044	0.722	-16.355	0.07
Quality of public HC provision	0.442	0.440	0.430	0.438	-1.393	0.87	-5.604	0.503	-1.9	0.825
Local media is objective	0.522	0.540	0.542	0.535	5.605	0.5	7.682	0.347	1.822	0.825
Weight of quality of public HC	0.442	0.515	0.464	0.495	**21.145**	**0.015**	6.395	0.453	14.595	0.09
Importance of local events	0.481	0.490	0.534	0.503	1.924	0.812	**17.089**	**0.039**	6.62	0.427
log(Mayor non-HC performance)	0.363	0.379	0.367	0.385	7.065	0.388	1.957	0.814	12.025	0.153
log(Governor non-HC performance)	0.341	0.354	0.341	0.353	8.087	0.335	0.285	0.973	5.897	0.475
log(President non-HC performance)	0.331	0.330	0.319	0.327	-1.309	0.874	-7.032	0.388	-1.423	0.864
Proportion of Significant Differences						**0.036**		**0.036**		**0**

Significance at $\alpha = 0.05$ in bold. p-values are for the two-tailed weighted t-test of differences in means between Placebo control group and one of the treatment groups.

B.4 Additional results

B.4.1 Summary statistics for baseline characteristics

Table B.5: Summary statistics for the main outcomes of interest measured in baseline survey

Variable	Obs.	Mean	Std. Dev.	Min	25 %	50 %	75 %	Max	Missing	Unique Values
Government evaluation (γ_i)										
Performance of the Mayor	1525	0.520	0.283	0.00	0.25	0.50	0.75	1.00	0	5
Performance of the Governor	1525	0.562	0.247	0.00	0.50	0.50	0.75	1.00	0	5
Performance of the President	1525	0.537	0.345	0.00	0.25	0.50	0.75	1.00	0	5
Responsibility allocation (ρ)										
Mayor is responsible for HC provision	1525	0.412	0.492	0.00	0.00	0.00	1.00	1.00	0	2
Governor is responsible for HC provision	1525	0.272	0.445	0.00	0.00	0.00	1.00	1.00	0	2
President is responsible for HC provision	1525	0.316	0.465	0.00	0.00	0.00	1.00	1.00	0	2
Responsibility allocation for Other Policies										
Mayor is responsible for quality of education	1525	0.399	0.490	0.00	0.00	0.00	1.00	1.00	0	2
Governor is responsible for quality of education	1525	0.226	0.419	0.00	0.00	0.00	0.00	1.00	0	2
President is responsible for quality of education	1525	0.375	0.484	0.00	0.00	0.00	1.00	1.00	0	2
Governor is responsible for quality of roads	1525	0.555	0.497	0.00	0.00	1.00	1.00	1.00	0	2
Mayor is responsible for quality of roads	1525	0.260	0.439	0.00	0.00	0.00	1.00	1.00	0	2
President is responsible for quality of roads	1525	0.185	0.388	0.00	0.00	0.00	0.00	1.00	0	2
Policy performance (θ)										
Quality of public healthcare services	1525	0.430	0.216	0.00	0.25	0.50	0.50	1.00	0	5
Media independence ($\beta = I$)										
Local media is objective	1525	0.534	0.258	0.00	0.50	0.50	0.75	1.00	0	5
Weight on policy performance (ω)										
Weight of quality of public HC	1525	0.485	0.343	0.00	0.00	0.50	0.75	1.00	0	5
Predicted government evaluation w/o HC (ξ_i)										
Log(Performance of the Mayor w/o HC)	1525	0.377	0.184	0.00	0.32	0.38	0.48	1.00	0	36
Log(Performance of the Governor w/o HC)	1525	0.346	0.147	0.00	0.29	0.29	0.40	1.00	0	35
Log(Performance of the President w/o HC)	1525	0.333	0.180	0.00	0.16	0.40	0.50	1.00	0	39

All variables are measured in the baseline survey or endline survey prior to the treatment (EL). Exact wording can be found in the survey instrument in the Appendix.

Table B.6: Summary statistics for pre-treatment characteristics

Variable	Obs.	Mean	Std. Dev.	Min	25 %	50 %	75 %	Max	Missing	Unique Values
Endline: Online	1525	0.816	0.387	0.00	1.00	1.00	1.00	1.00	0	2
Endline: Lower compensation	1525	0.880	0.325	0.00	1.00	1.00	1.00	1.00	0	2
Socio-demgraphic characteristics										
Female	1525	0.538	0.499	0.00	0.00	1.00	1.00	1.00	0	2
Income	1521	0.499	0.191	0.00	0.50	0.50	0.50	1.00	4	5
Has higher education	1525	0.591	0.492	0.00	0.00	1.00	1.00	1.00	0	2
Age: [18,24]	1525	0.140	0.347	0.00	0.00	0.00	0.00	1.00	0	2
Age: (24,34]	1525	0.313	0.464	0.00	0.00	0.00	1.00	1.00	0	2
Age: (34,44]	1525	0.249	0.433	0.00	0.00	0.00	0.00	1.00	0	2
Age: (44,54]	1525	0.164	0.370	0.00	0.00	0.00	0.00	1.00	0	2
Age: (54,64]	1525	0.134	0.341	0.00	0.00	0.00	0.00	1.00	0	2
HC policy exposure										
Used public HC recently (EL)	1126	0.704	0.457	0.00	0.00	1.00	1.00	1.00	399	2
Access is major HC problem (EL)	1126	0.437	0.496	0.00	0.00	0.00	1.00	1.00	399	2
Often exposed to HC news (EL)	1126	0.506	0.239	0.00	0.50	0.50	0.75	1.00	399	5
Local media consumption										
Local media consumption	1525	0.616	0.369	0.00	0.29	0.71	1.00	1.00	0	8
Local online media consumption	1395	0.671	0.470	0.00	0.00	1.00	1.00	1.00	130	2
Local TV consumption	1395	0.571	0.495	0.00	0.00	1.00	1.00	1.00	130	2
Visited Tayga.Info recentl (EL)	1126	0.120	0.325	0.00	0.00	0.00	0.00	1.00	399	2
Interest in politics										
Follows politics (EL)	1126	0.623	0.224	0.00	0.50	0.75	0.75	1.00	399	5
Voted in last president elec. (EL)	1126	0.705	0.456	0.00	0.00	1.00	1.00	1.00	399	2

All variables are measured in the baseline survey or endline survey prior to the treatment (EL). Exact wording can be found in the survey instrument in the Appendix.

B.4.2 Performance, responsibility and bias

Table B.7: ITT effect estimates on primary outcomes for comparison of full report to performance information only

	HC Quality	HC Quality	HC Responsibility on Gov.	HC Responsibility on Gov.	Trust Loc. Media	Trust Loc. Media
Full Report (0G)	-0.005	-0.008	0.037	0.038	0.008	-0.009
	[0.017]	[0.015]	[0.045]	[0.036]	[0.023]	[0.019]
Observations	563	563	562	562	563	563
Adj. R-squared	0.309	0.308	-0.010	0.107	0.109	0.178
Performance Only (0) Mean	0.393	0.393	0.261	0.261	0.506	0.506
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Benchmark is Performance only treatment (0 report) that does not mention any responsibility allocation but mentions problems with access to public HC in Novosibirsk. Full Report corresponds to 0G report that attributes responsibility to the governor and covers low public HC quality. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table B.8: ITT effect estimates on primary outcomes for comparison of full report to responsibility information only

	HC Quality	HC Quality	HC Responsibility on Gov.	HC Responsibility on Gov.	Trust Loc. Media	Trust Loc. Media
Full Report ($0G$)	-0.011	-0.011	-0.025	-0.018	0.012	0.014
	[0.017]	[0.015]	[0.043]	[0.038]	[0.023]	[0.019]
Observations	563	563	562	562	563	563
Adj. R-squared	0.342	0.292	0.125	0.073	0.196	0.189
Responsibility Only (G) Mean	0.390	0.390	0.327	0.327	0.484	0.484
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Benchmark is Responsibility only treatment (G report) that attributes HC quality responsibility to governor of Novosibirsk region. Full Report corresponds to $0G$ report. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

B.4.3 Evaluation of government

Table B.9: ITT effect estimates on government evaluation

	Mayor Competence	Mayor Competence	Governor Competence	Governor Competence	President Competence	President Competence
Full Report ($0G$)	0.020	0.013	0.013	0.008	0.010	-0.006
	[0.020]	[0.018]	[0.018]	[0.016]	[0.020]	[0.018]
Observations	563	563	563	563	563	563
Adj. R-squared	0.436	0.411	0.495	0.411	0.661	0.628
Performance Only (0) Mean	0.502	0.502	0.546	0.546	0.497	0.497
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Benchmark is Performance only treatment (0 report) that does not mention any responsibility allocation but mentions problems with access to public HC in Novosibirsk. Full Report corresponds to $0G$ report that attributes responsibility to the governor and covers low public HC quality. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table B.10: ITT effect estimates on government evaluation

	Mayor Competence	Mayor Competence	Governor Competence	Governor Competence	President Competence	President Competence
Full Report ($0G$)	0.041*	0.037**	-0.006	-0.020	-0.002	-0.007
	[0.021]	[0.018]	[0.018]	[0.016]	[0.022]	[0.018]
Observations	563	563	563	563	563	563
Adj. R-squared	0.382	0.372	0.456	0.410	0.612	0.627
Responsibility Only (G) Mean	0.469	0.469	0.564	0.564	0.495	0.495
Block FE	yes	no	yes	no	yes	no

All regressions include dependent variable measured at the baseline as a covariate. Benchmark is Responsibility only treatment (G report) that attributes HC quality responsibility to governor of Novosibirsk region. Full Report corresponds to $0G$ report. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

B.4.4 Additional manipulation checks

Table B.11: Manipulation checks across factorial dimensions

	Negative video attitude	Baseline questions are similar	Treat gist correct	Treat new info correct	Filler gist correct	Filler new info correct	Treat gist words	Treat new info words	Filler gist words	Filler new info words	Treat duration	Mentioned responsibility	Mentioned performance
Any Performance (0)	0.573***	-0.003	0.016+	-0.029***	0.067***	0.039***	0.160***	0.070	-0.028	0.046	0.027	0.009	0.413***
	[0.046]	[0.032]	[0.010]	[0.008]	[0.011]	[0.007]	[0.042]	[0.053]	[0.040]	[0.051]	[0.078]	[0.019]	[0.022]
Any Responsibility (G)	0.070+	-0.017	-0.023**	0.006	0.090***	0.038***	0.143***	0.153***	-0.002	-0.011	0.170**	0.255***	0.009
	[0.046]	[0.032]	[0.010]	[0.008]	[0.012]	[0.007]	[0.040]	[0.054]	[0.040]	[0.052]	[0.077]	[0.020]	[0.021]
Observations	1111	1126	1120	1120	1525	1525	1119	1134	1125	1125	1130	1525	1525
Adj. R-squared	0.123	-0.045	0.087	0.128	0.107	0.061	0.051	0.032	0.004	-0.024	0.034	0.137	0.263
Control ($\emptyset$) Mean	-0.191	0.556	0.163	0.081	0.280	0.092	1.758	1.064	1.952	1.157	6.192	0.011	0.000
Block FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Any Performance is an indicator of exposure to the treatment that included performance information (0 or $0G$). Any Responsibility is an indicator of exposure to the treatment that included responsibility information (G or $0G$). + - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table B.12: Manipulation checks across factorial dimensions

	Negative video attitude	Baseline questions are similar	Treat gist correct	Treat new info correct	Filler gist correct	Filler new info correct	Treat gist words	Treat new info words	Filler gist words	Filler new info words	Treat duration	Mentioned responsibility	Mentioned performance
Any Performance (0)	0.582***	-0.009	0.018*	-0.024***	0.086***	0.042***	0.159***	0.083+	-0.035	0.047	0.042	0.003	0.410***
	[0.043]	[0.030]	[0.010]	[0.008]	[0.011]	[0.006]	[0.040]	[0.051]	[0.038]	[0.048]	[0.076]	[0.019]	[0.023]
Any Responsibility (G)	0.077*	-0.020	-0.016*	0.013+	0.107***	0.044***	0.159***	0.202***	0.023	0.044	0.215***	0.257***	0.020
	[0.043]	[0.030]	[0.010]	[0.008]	[0.011]	[0.006]	[0.040]	[0.051]	[0.038]	[0.048]	[0.076]	[0.021]	[0.021]
Observations	1111	1126	1120	1120	1525	1525	1119	1134	1125	1125	1130	1525	1525
Adj. R-squared	0.143	-0.001	0.004	0.009	0.115	0.082	0.026	0.014	-0.001	0.000	0.006	0.143	0.263
Control ($\emptyset$) Mean	-0.191	0.556	0.163	0.081	0.280	0.092	1.758	1.064	1.952	1.157	6.192	0.011	0.000
Block FE	no	no	no	no	no	no	no	no	no	no	no	no	no

Any Performance is an indicator of exposure to the treatment that included performance information ($\emptyset$ or $\emptyset G$). Any Responsibility is an indicator of exposure to the treatment that included responsibility information (G or $\emptyset G$). $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table B.13: ITT effect estimates on ancillary outcomes and placebo tests across factorial dimensions

	Weight on HC	Weight on HC	Local issues importance	Local issues importance	Intend to part. in local elec.	Intend to part. in local elec.	Education quality	Education quality	Weight on education	Weight on education
Any Performance (0)	-0.008	-0.007	0.019	0.019	-0.016	-0.010	0.001	0.004	-0.030*	-0.026+
	[0.017]	[0.016]	[0.016]	[0.015]	[0.020]	[0.019]	[0.013]	[0.013]	[0.017]	[0.017]
Any Responsibility (G)	-0.030*	-0.018	0.000	0.006	0.012	0.009	-0.028**	-0.019+	-0.023	-0.005
	[0.017]	[0.016]	[0.016]	[0.015]	[0.020]	[0.019]	[0.013]	[0.013]	[0.018]	[0.017]
Observations	1126	1126	1126	1126	1126	1126	1125	1125	1125	1125
Adj. R-squared	0.250	0.228	0.167	0.162	0.519	0.507	0.114	0.000	0.043	0.000
Control ($\emptyset$) Mean	0.576	0.576	0.442	0.442	0.717	0.717	0.582	0.582	0.519	0.519
Block FE	yes	no	yes	no	yes	no	yes	no	yes	no

Any Performance is an indicator of exposure to the treatment that included performance information (0 or $0G$). Any Responsibility is an indicator of exposure to the treatment that included responsibility information (G or $0G$). $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

B.4.5 Treatment heterogeneity

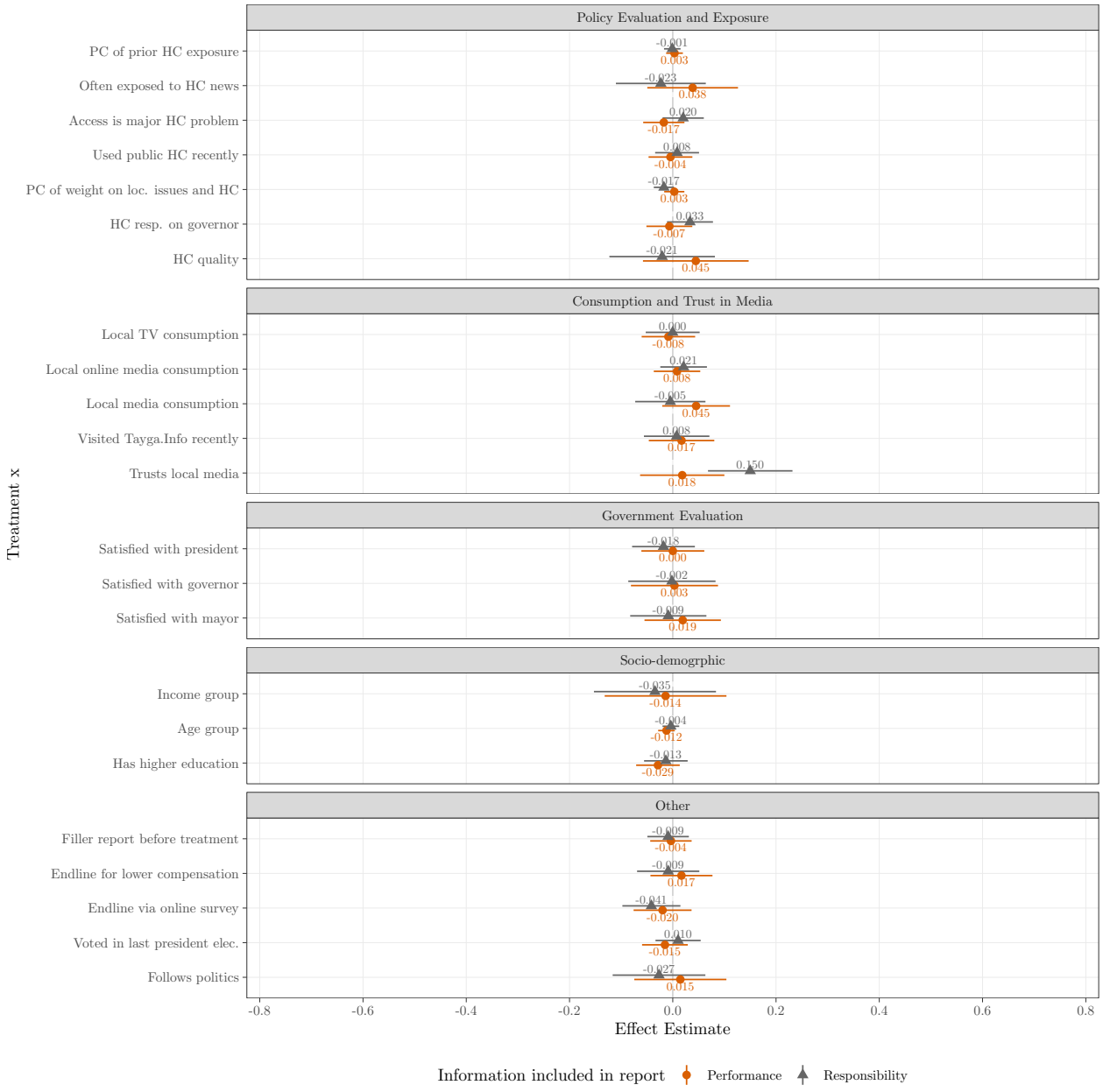


Figure B.2: Heterogeneity of treatment effects on healthcare quality evaluation

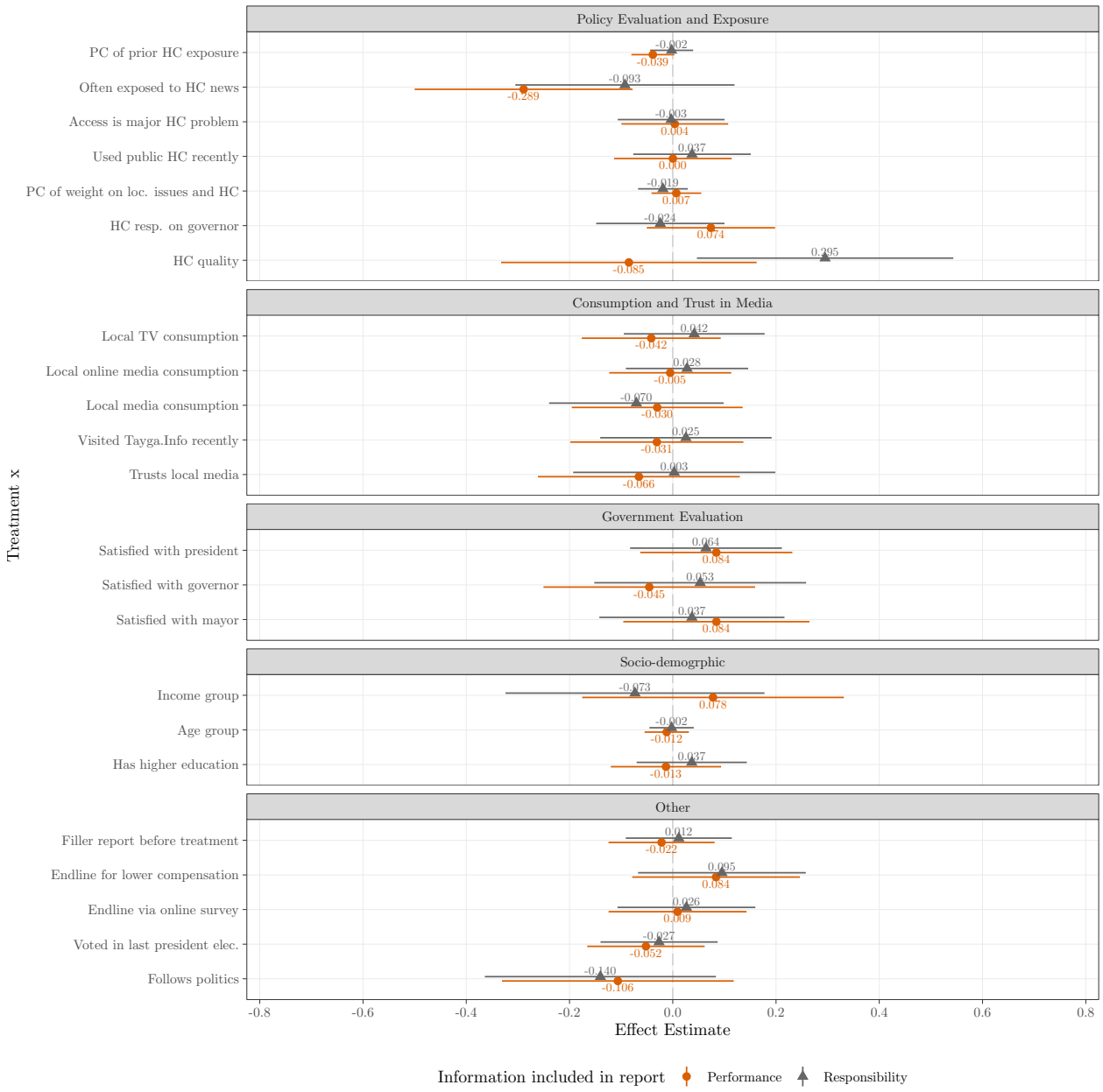


Figure B.3: Heterogeneity of treatment effects on assignment of responsibility for public healthcare to regional governor

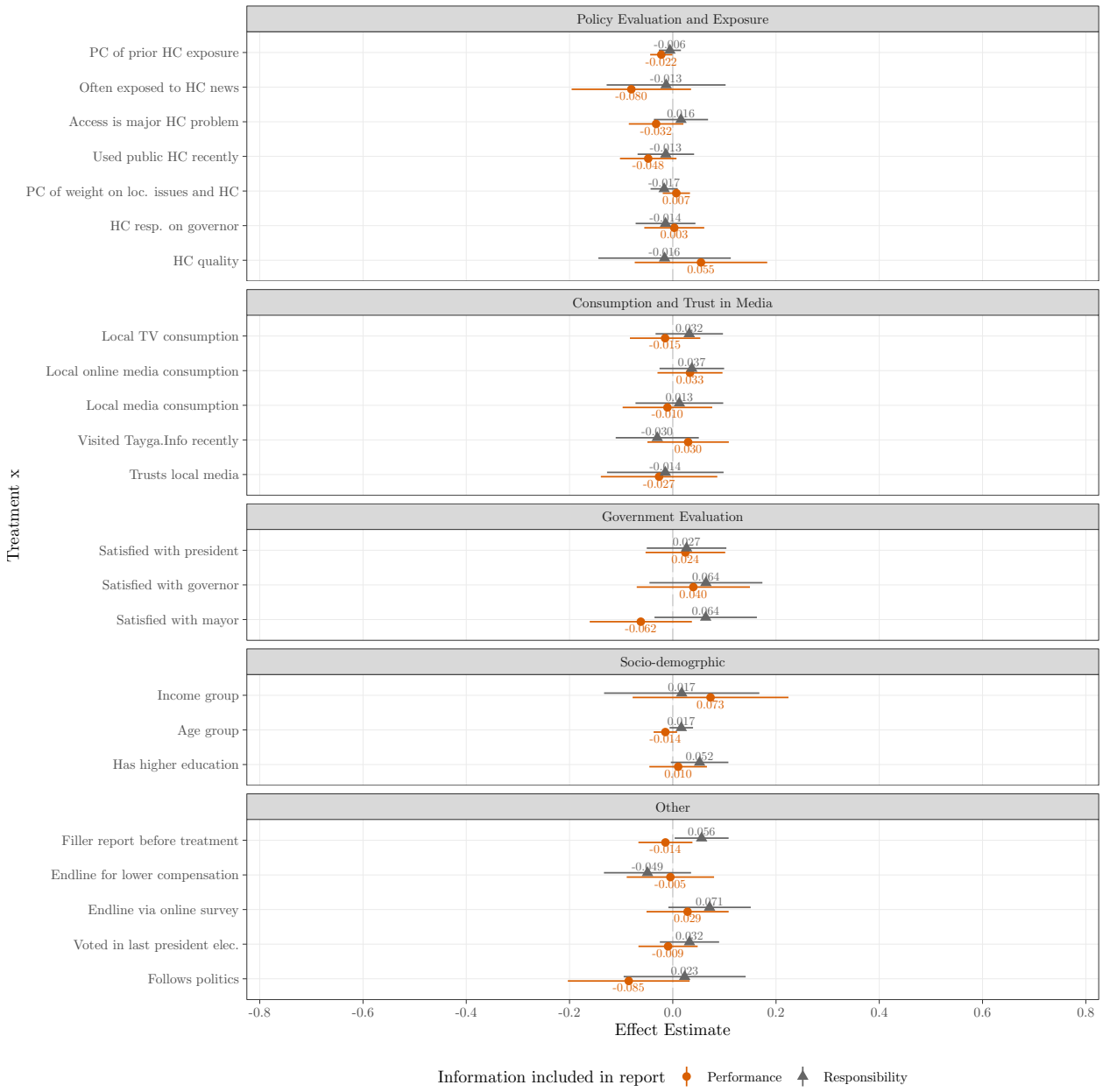


Figure B.4: Heterogeneity of treatment effects on trust in local media

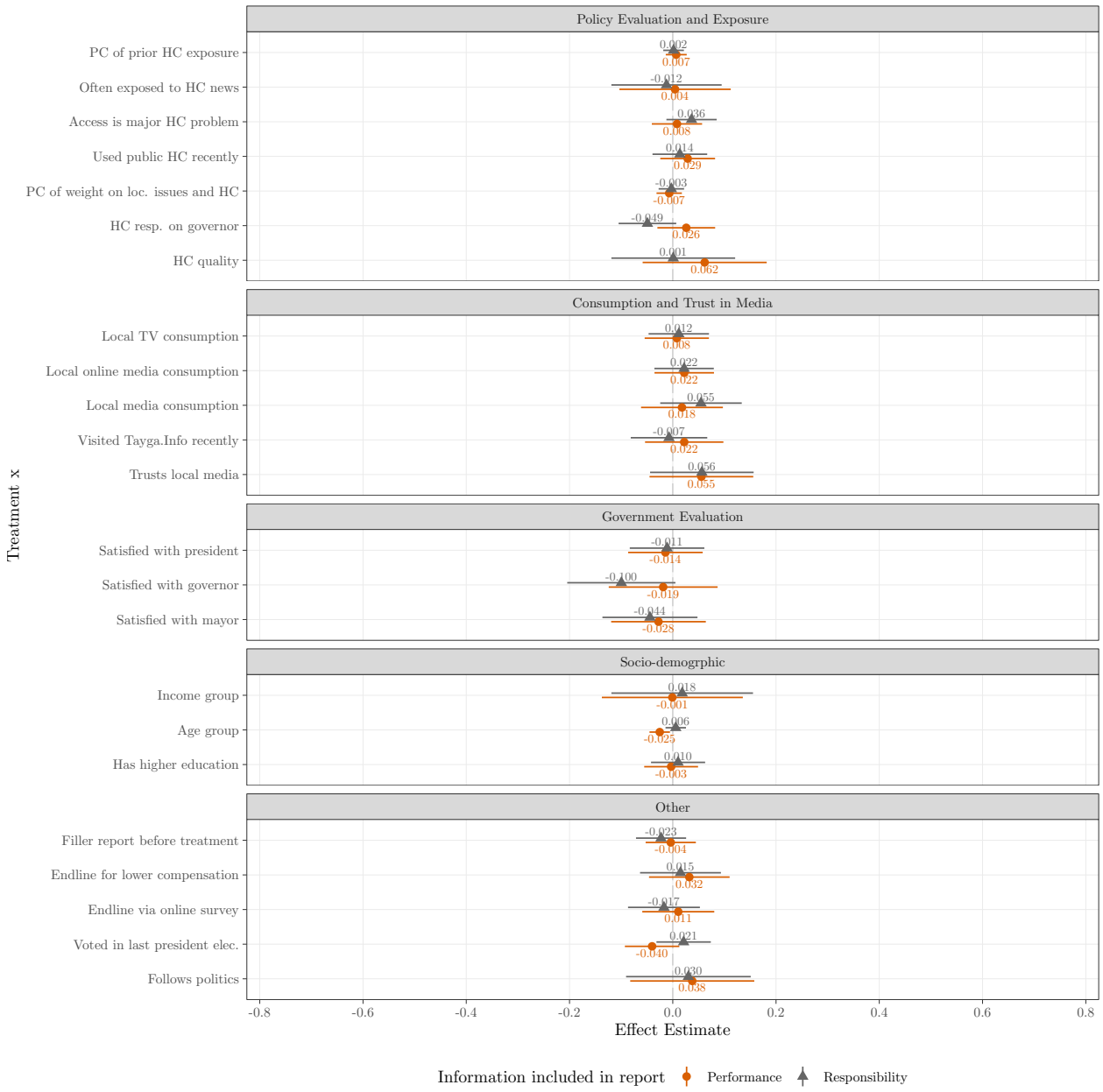


Figure B.5: Heterogeneity of treatment effects on satisfaction with mayor's performance

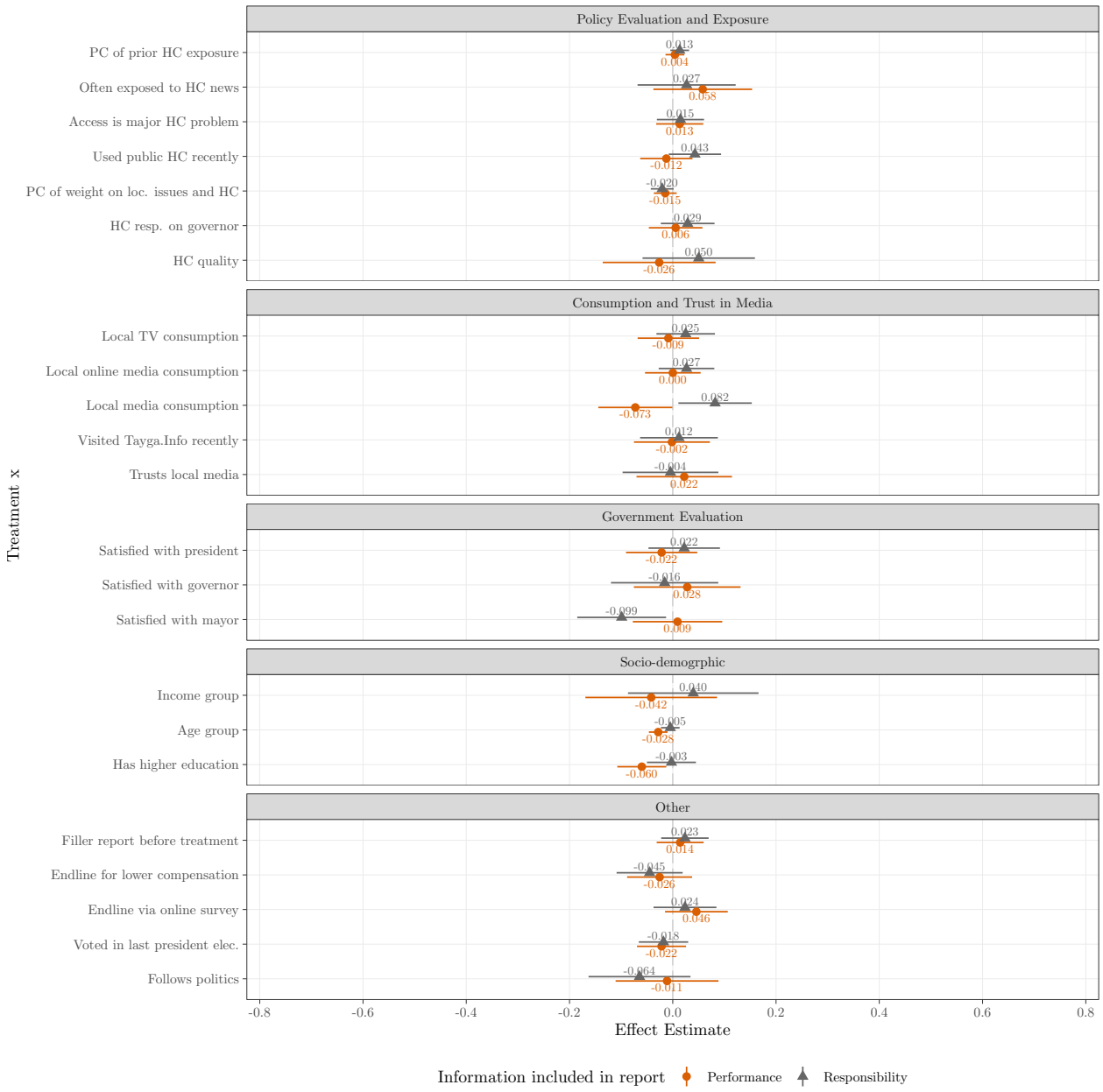


Figure B.6: Heterogeneity of treatment effects on satisfaction with governor's performance

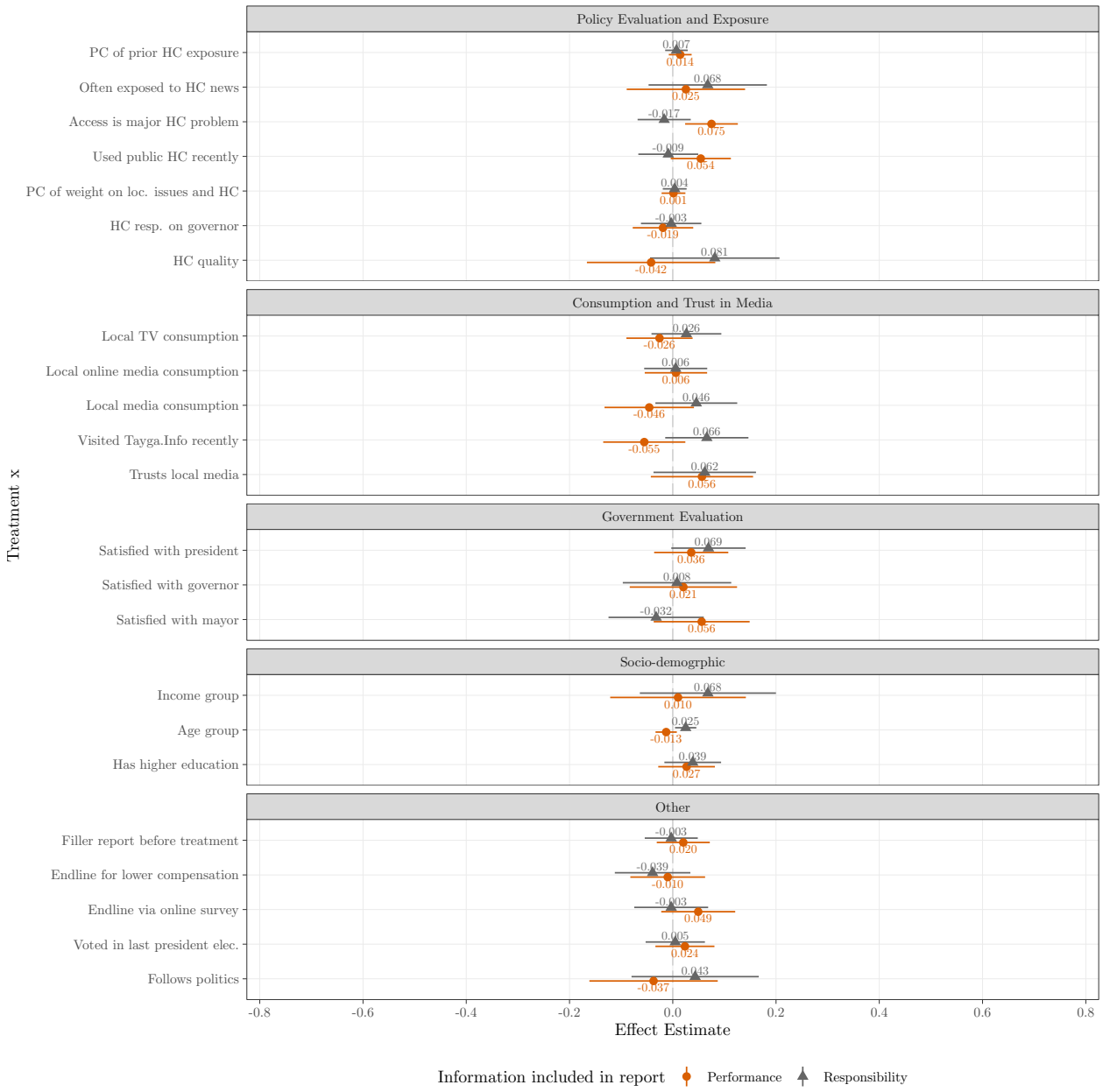


Figure B.7: Heterogeneity of treatment effects on satisfaction with president's performance

Appendix C: Chapter 3

C.1 Baseline summary statistics

Table C.1: Baseline summary statistics

Variable	Obs.	Mean	Std. Dev.	Min	25 %	50 %	75 %	Max	Missing	Unique Values
Socio-demographics										
Female	910	0.635	0.482	0.00	0.00	1.00	1.00	1.00	0	2
Log(Age)	910	3.542	0.293	2.94	3.33	3.53	3.76	4.39	0	50
Age: 18-29	910	0.338	0.473	0.00	0.00	0.00	1.00	1.00	0	2
Age: 30-39	910	0.373	0.484	0.00	0.00	0.00	1.00	1.00	0	2
Age: 40-49	910	0.171	0.377	0.00	0.00	0.00	0.00	1.00	0	2
Age: 50+	910	0.118	0.322	0.00	0.00	0.00	0.00	1.00	0	2
Education level	910	7.169	1.335	1.00	6.00	8.00	8.00	8.00	0	8
Has higher education	910	0.632	0.483	0.00	0.00	1.00	1.00	1.00	0	2
Income level	905	0.484	0.189	0.00	0.50	0.50	0.50	1.00	5	5
Lives in 1 mil.+ city	910	0.482	0.500	0.00	0.00	0.00	1.00	1.00	0	2
Media consumption										
Frequently uses federal TV	892	0.551	0.394	0.00	0.14	0.57	1.00	1.00	18	8
Independent news only	910	0.174	0.379	0.00	0.00	0.00	0.00	1.00	0	2
Pro-government news only	910	0.248	0.432	0.00	0.00	0.00	0.00	1.00	0	2
News from federal TV	910	0.707	0.456	0.00	0.00	1.00	1.00	1.00	0	2
News from TV Rain	910	0.179	0.384	0.00	0.00	0.00	0.00	1.00	0	2
News from radio	910	0.232	0.422	0.00	0.00	0.00	0.00	1.00	0	2
News from newspapers	910	0.647	0.478	0.00	0.00	1.00	1.00	1.00	0	2
News from social media	910	0.048	0.215	0.00	0.00	0.00	0.00	1.00	0	2
Outcomes of interest at baseline										
Policy Competence	883	0.402	0.281	0.00	0.33	0.33	0.67	1.00	27	4
Putin Support	910	0.701	0.458	0.00	0.00	1.00	1.00	1.00	0	2
Putin's Merit	847	0.566	0.317	0.00	0.33	0.67	0.67	1.00	63	4
TV Bias	859	0.497	0.305	0.00	0.33	0.33	0.67	1.00	51	4
Current Economy	890	0.396	0.207	0.00	0.25	0.50	0.50	1.00	20	5
Future Economy	890	0.454	0.228	0.00	0.25	0.50	0.62	1.00	20	9

All variables are measured in the baseline survey. Exact wording can be found in the survey instrument in the Appendix.

C.2 Threats to inference

C.2.1 Drop-out and attrition

Given the structure of the survey instrument, respondents in the study are considered to be missing if they did not participate in the second wave of the survey. This is due to the fact that the block random assignment was conducted after baseline but prior to the beginning of the endline survey. That said, given that the treatment was administered during the endline survey, there are few substantive reasons to believe that treatment assignment could have affected drop-out between the waves.

Drop-out rate in the experiment is roughly 17% with 182 out of 1092 respondents who were enrolled at the baseline failing to take part in the endline survey. Given the relatively short length of post-treatment outcome measurement, I encountered zero post-treatment attrition.

Nevertheless following Lin and Green (2016) I conduct the following two tests to assess relationship between the treatment assignment and observed drop-out and attrition using an indicator for respondents who do not have responses to some or all of the post-treatment questions and conducted:

1. A two-tailed unequal-variances t-test of the hypothesis that treatment does not affect the attrition rate. 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 4 experimental conditions with probabilities used in the experiment. As is shown below all six possible tests yielded p-values much higher than 0.05.

Table C.2: P-values for two-tailed t-tests of unequal attrition rates for all possible pairs of experimental conditions

C vs P	C vs E	C vs EL	P vs E	P vs EL	E vs EL
0.169	0.354	0.427	0.495	0.42	0.872

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 all baseline variables related to respondents media consumption and socio-demographic characteristics. I perform an F-test of the hypothesis that all the coefficients for treatment-by-covariate interactions are zero, and again rely on randomization inference to conduct this test. The test yielded p-values of 0.4013 well above 0.05.

None of the tests provide evidence for the interdependence between attrition and treatment assignment, so in the chapter I report naive estimates among the respondents for whom specific outcome is observed.

C.2.2 Treatment balance

Table C.3: Covariate balance across treatment conditions

	Std. Means				*P* vs *C*		*E* vs *C*		*EL* vs *C*	
Variable	Control	Placebo	Economy	Economy+Leader	Std. Diff	P-value	Std. Diff	P-value	Std. Diff	P-value
News from federal TV	0.761	0.692	0.721	0.732	-14.993	0.217	-8.959	0.386	-6.505	0.529
News from TV Rain	0.052	0.033	0.058	0.056	-10.488	0.457	2.517	0.807	1.533	0.883
News from radio	0.246	0.200	0.229	0.242	-11.519	0.378	-4.179	0.7	-1.08	0.919
News from newspapers	0.216	0.192	0.167	0.164	-6.262	0.626	-13.324	0.244	-14.261	0.212
News from social media	0.664	0.658	0.655	0.617	-1.227	0.922	-1.919	0.857	-9.667	0.353
Frequently uses federal TV	0.577	0.536	0.597	0.547	-10.145	0.41	5.221	0.624	-7.595	0.468
Independent news only	0.127	0.158	0.182	0.160	8.584	0.477	14.3	0.142	8.984	0.367
Pro-government news only	0.239	0.242	0.267	0.264	0.665	0.958	6.457	0.535	5.692	0.583
Female	0.634	0.650	0.647	0.602	3.272	0.796	2.707	0.801	-6.546	0.533
Log(Age)	3.542	3.524	3.534	3.547	-5.975	0.616	-2.481	0.805	1.67	0.867
Education level	7.224	7.167	7.155	7.204	-4.321	0.729	-5.103	0.624	-1.461	0.889
Income level	0.485	0.481	0.506	0.479	-2.149	0.874	11.088	0.329	-3.328	0.762
Age: 18-29	0.328	0.358	0.353	0.346	6.225	0.617	5.087	0.63	3.645	0.729
Age: 30-39	0.396	0.400	0.368	0.353	0.91	0.942	-5.65	0.6	-8.847	0.411
Age: 40-49	0.179	0.117	0.163	0.171	-19.368	0.161	-4.41	0.687	-2.148	0.841
Age: 50+	0.097	0.125	0.116	0.130	8.427	0.482	5.998	0.554	9.819	0.315
Has higher education	0.649	0.642	0.632	0.643	-1.576	0.9	-3.615	0.733	-1.277	0.904
Lives in 1 mil.+ city	0.463	0.525	0.516	0.468	12.426	0.323	10.548	0.323	1.143	0.914
TV Bias	0.483	0.494	0.474	0.499	4.286	0.75	-2.739	0.8	5.4	0.613
Policy Competence	0.391	0.403	0.421	0.416	4.598	0.728	10.803	0.322	8.912	0.404
Putin Support	0.724	0.725	0.705	0.677	0.25	0.984	-4.04	0.701	-10.093	0.327
Putin's Merit	0.555	0.572	0.571	0.564	5.552	0.661	5.287	0.627	2.751	0.79
Current Economy	0.381	0.410	0.420	0.396	14.966	0.226	17.749	0.07	7.067	0.469
Proportion of Significant Differences						**0**		**0**		**0**

Significance at $\alpha = 0.05$ in bold. p-values are for the two-tailed weighted t-test of differences in means between respective experimental groups.

C.3 Additional analyses of treatment effects heterogeneity

C.3.1 Naive randomization inference test of difference-in-variances

Table C.4: Naive randomization inference test of heterogeneous treatment effects using plug-in method

Comparison	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Before fix: Placebo vs Control	0.274	0.969	0.177	0.574	0.089
After fix: Economy+Leader vs Economy	0.673	0.887	0.482	0.834	0.354
Pooled: Economy vs Placebo	0.191	0.769	0.732	0.776	0.013
Before vs after fix: Placebo	0.201	0.814	0.157	0.961	0.660
Before vs after fix: Economy	0.645	0.693	0.465	0.425	0.647

Table reports the p-values from the naive randomization inference test of equal variances between sample subgroups based on 1000 permutations of treatment assignment. The schedule of potential outcomes is constructed using estimated differences in means between respective groups.

Table C.5: Naive randomization inference test of differences in variances of baseline beliefs

Comparison	TV Bias ($t = 1$)	Policy Competence ($t = 1$)	Putin Support ($t = 1$)	Putin's Merit ($t = 1$)	Current Economy ($t = 1$)
Placebo vs Control	0.042	0.270	0.549	0.890	0.368
Economy vs Control	0.908	0.720	0.840	0.886	0.157
Economy+Leader vs Control	0.989	0.733	0.648	0.473	0.156

Table reports the p-values from the naive randomization inference test of equal variances between sample subgroups based on 1000 permutations of treatment assignment. The schedule of potential outcomes is constructed using estimated differences in means between respective groups.

C.3.2 Main effects of treatment without pooling placebo and pure control

Table C.6: Main ITT effect estimates controlling for timing of endline survey

	TV Bias	Policy Competence	Putin Support	Putin's Merit	Current Economy	Future Economy
Placebo (P)	-0.003	0.023	0.048^{+}	-0.010	0.016	0.030*
	[0.022]	[0.024]	[0.030]	[0.025]	[0.016]	[0.016]
Economy (E)	0.023	0.007	-0.006	0.005	-0.021	0.001
	[0.021]	[0.020]	[0.028]	[0.023]	[0.016]	[0.015]
Economy+Leader (EL)	0.028	0.026	0.035	0.009	-0.017	0.024
	[0.028]	[0.027]	[0.038]	[0.031]	[0.020]	[0.020]
Observations	821	856	910	811	879	879
Adj. R-squared	0.556	0.517	0.602	0.510	0.500	0.570
Control (C) Mean	0.545	0.376	0.684	0.551	0.407	0.472

The analyses are conducted on the full sample. To address concern about self-selection into Economy+Leader condition due to implementation issue all models control for the indicator of finishing endline after fix. Benchmark is the Pure Control group. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

C.3.3 Effects on supplementary outcomes using placebo as benchmark

Table C.7: ITT effect estimates on supplementary outcomes using placebo as benchmark for the second video

	Video 1 positive	Video 2 positive	Video 1 gist words	Video 2 gist words	Video 1 gist correct words	Video 2 gist correct words	Survey taken time
Economy (E)	-0.312***	0.012	-0.063	-0.213***	0.043**	0.039**	0.989***
	[0.063]	[0.063]	[0.061]	[0.059]	[0.019]	[0.020]	[0.052]
Economy+Leader (EL)	-0.136*	0.104+	-0.074	-0.109*	0.018	0.006	0.948***
	[0.071]	[0.069]	[0.070]	[0.066]	[0.023]	[0.022]	[0.082]
Placebo (P)							0.616***
							[0.059]
Observations	679	679	679	679	679	679	910
Adj. R-squared	0.031	0.003	0.000	0.021	0.004	0.005	0.334
Benchmark Mean	0.539	0.539	1.950	1.950	0.229	0.229	4.893

The models are estimated on relevant experimental group subsamples and control for the timing of implementation issue fix. E.g. since only Economy and Economy+Leader received second video, models with dependent variables related to Video 2 use Placebo group Video 1 as benchmark. Video positive is answer to question whether video watched covers positive news for the Russian economy. Video gist words is log of number of stemmed words used to summarize respective video. Video gist words correct is share of 10 most common words in respective experimental group that were used by respondent to summarize video. Survey taken time is log of total number of seconds respondent spent to fill in endline survey. Differences in number of observations across columns are due to differences in groups included in the model estimation. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

C.3.4 Tables for main heterogeneity estimates

Table C.8: Heterogeneity of effects on main outcomes by baseline evaluation of tv bias ($t = 0$)

	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Economy (E)	0.047**	-0.009	-0.004	0.030	-0.045**
	[0.023]	[0.026]	[0.028]	[0.025]	[0.019]
Economy+Leader (EL)	0.060**	0.026	0.014	0.031	-0.018
	[0.029]	[0.032]	[0.040]	[0.032]	[0.023]
TV Bias ($t = 0$)	-0.098***	0.016	0.057*	0.039+	0.017
	[0.021]	[0.023]	[0.030]	[0.025]	[0.017]
E x TV Bias ($t = 0$)	-0.054+	-0.001	-0.071	-0.051	0.016
	[0.033]	[0.034]	[0.050]	[0.041]	[0.026]
EL x TV Bias ($t = 0$)	-0.058+	-0.052	-0.068	-0.041	-0.054**
	[0.039]	[0.037]	[0.055]	[0.047]	[0.027]
Observations	821	821	859	780	834
Adj. R-squared	0.090	-0.004	0.000	-0.004	0.012

The analyses are conducted on the full sample controlling for the indicator of timing of the implementation issue fix. Dependent variables are difference scores between endline and baseline evaluations. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table C.9: Heterogeneity of effects on main outcomes by baseline evaluation of policy competence ($t = 0$)

	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Economy (E)	0.034^{+}	-0.018	-0.043	-0.024	-0.033**
	[0.023]	[0.020]	[0.035]	[0.026]	[0.015]
Economy+Leader (EL)	0.036	0.011	0.006	0.006	-0.026
	[0.029]	[0.025]	[0.046]	[0.033]	[0.019]
Policy Competence ($t = 0$)	0.022	-0.159***	-0.051*	-0.058**	-0.010
	[0.024]	[0.022]	[0.028]	[0.026]	[0.019]
E x Policy Competence ($t = 0$)	-0.006	0.031	0.027	0.098**	-0.017
	[0.036]	[0.034]	[0.043]	[0.038]	[0.028]
EL x Policy Competence ($t = 0$)	0.001	-0.011	-0.014	0.036	-0.022
	[0.044]	[0.036]	[0.049]	[0.045]	[0.031]
Observations	810	856	883	800	861
Adj. R-squared	-0.001	0.115	0.002	0.002	0.008

The analyses are conducted on the full sample controlling for the indicator of timing of the implementation issue fix. Dependent variables are difference scores between endline and baseline evaluations. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table C.10: Heterogeneity of effects on main outcomes by baseline evaluation of putin support ($t = 0$)

	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Economy (E)	0.006	0.009	-0.044	-0.066*	-0.032+
	[0.033]	[0.028]	[0.047]	[0.038]	[0.021]
Economy+Leader (EL)	0.015	0.037	0.060	-0.021	-0.034
	[0.037]	[0.032]	[0.063]	[0.048]	[0.026]
Putin Support ($t = 0$)	-0.016	0.015	-0.205***	-0.032	-0.020
	[0.021]	[0.022]	[0.036]	[0.027]	[0.016]
E x Putin Support ($t = 0$)	0.040	-0.025	0.020	0.115**	-0.009
	[0.038]	[0.035]	[0.052]	[0.045]	[0.026]
EL x Putin Support ($t = 0$)	0.036	-0.038	-0.079	0.063	0.005
	[0.042]	[0.036]	[0.065]	[0.052]	[0.029]
Observations	821	856	910	811	879
Adj. R-squared	-0.001	-0.005	0.106	0.005	0.007

The analyses are conducted on the full sample controlling for the indicator of timing of the implementation issue fix. Dependent variables are difference scores between endline and baseline evaluations. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. + - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table C.11: Heterogeneity of effects on main outcomes by baseline evaluation of putin's merit ($t = 0$)

	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Economy (E)	0.047^{+}	-0.043^{+}	-0.006	-0.033	-0.039**
	[0.032]	[0.028]	[0.042]	[0.032]	[0.019]
Economy+Leader (EL)	0.025	0.030	-0.018	0.013	-0.055**
	[0.040]	[0.032]	[0.054]	[0.039]	[0.022]
Putin's Merit ($t = 0$)	0.019	-0.014	-0.020	-0.193***	-0.013
	[0.023]	[0.023]	[0.032]	[0.024]	[0.017]
E x Putin's Merit ($t = 0$)	-0.026	0.052^{+}	-0.035	0.067*	-0.001
	[0.037]	[0.035]	[0.051]	[0.039]	[0.025]
EL x Putin's Merit ($t = 0$)	0.008	-0.022	0.042	0.007	0.035
	[0.043]	[0.037]	[0.060]	[0.044]	[0.028]
Observations	776	810	847	811	826
Adj. R-squared	-0.002	-0.001	-0.001	0.114	0.005

The analyses are conducted on the full sample controlling for the indicator of timing of the implementation issue fix. Dependent variables are difference scores between endline and baseline evaluations. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table C.12: Heterogeneity of effects on main outcomes by baseline evaluation of current economy ($t = 0$)

	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Economy (E)	0.010	-0.003	-0.028	-0.049	-0.035*
	[0.028]	[0.025]	[0.046]	[0.035]	[0.019]
Economy+Leader (EL)	0.034	0.000	-0.029	-0.006	-0.043*
	[0.033]	[0.030]	[0.053]	[0.043]	[0.022]
Current Economy ($t = 0$)	-0.037*	-0.023	-0.008	-0.061**	-0.095***
	[0.021]	[0.023]	[0.032]	[0.026]	[0.016]
E x Current Economy ($t = 0$)	0.032	-0.007	-0.015	0.111***	0.000
	[0.035]	[0.034]	[0.051]	[0.041]	[0.024]
EL x Current Economy ($t = 0$)	0.002	0.019	0.051	0.048	0.019
	[0.040]	[0.037]	[0.057]	[0.046]	[0.027]
Observations	810	847	890	799	879
Adj. R-squared	0.001	-0.003	-0.002	0.004	0.081

The analyses are conducted on the full sample controlling for the indicator of timing of the implementation issue fix. Dependent variables are difference scores between endline and baseline evaluations. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. $^{+}$ - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

Table C.13: Heterogeneity of effects on main outcomes by baseline evaluation of bias+competence ($t = 0$)

	Δ TV Bias	Δ Policy Competence	Δ Putin Support	Δ Putin's Merit	Δ Current Economy
Economy (E)	0.113***	0.011	-0.037	-0.030	-0.035+
	[0.035]	[0.035]	[0.047]	[0.035]	[0.023]
Economy+Leader (EL)	0.082*	0.038	0.006	0.024	-0.026
	[0.043]	[0.043]	[0.058]	[0.046]	[0.027]
Bias+Competence ($t = 0$)	0.040*	-0.042+	0.008	-0.026	-0.005
	[0.023]	[0.027]	[0.033]	[0.028]	[0.019]
E x Bias+Competence ($t = 0$)	-0.116***	-0.034	-0.002	0.053	-0.007
	[0.038]	[0.039]	[0.053]	[0.042]	[0.027]
EL x Bias+Competence ($t = 0$)	-0.067+	-0.056	-0.036	-0.026	-0.023
	[0.045]	[0.044]	[0.062]	[0.050]	[0.030]
Observations	810	821	843	774	822
Adj. R-squared	0.009	0.019	-0.004	-0.003	0.005

The analyses are conducted on the full sample controlling for the indicator of timing of the implementation issue fix. Dependent variables are difference scores between endline and baseline evaluations. Benchmark is pooled Pure Control and Placebo groups. All specification use endline as the dependent variable and control for the baseline value of the respective variable. Differences in number of observations across columns are due to treatment of don't know responses to respective questions as missing. + - $p < 0.15$, * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. All p-values are for two-sided tests of null hypothesis of no effect.

C.3.5 Plot of effect heterogeneity estimates on supplimentary outcomes

Figure C.1: Heterogeneous treatment effects on supplementary outcomes by prior beliefs about competence and media bias

C.3.6 Plots of effect heterogeneity estimates by baseline characteristics

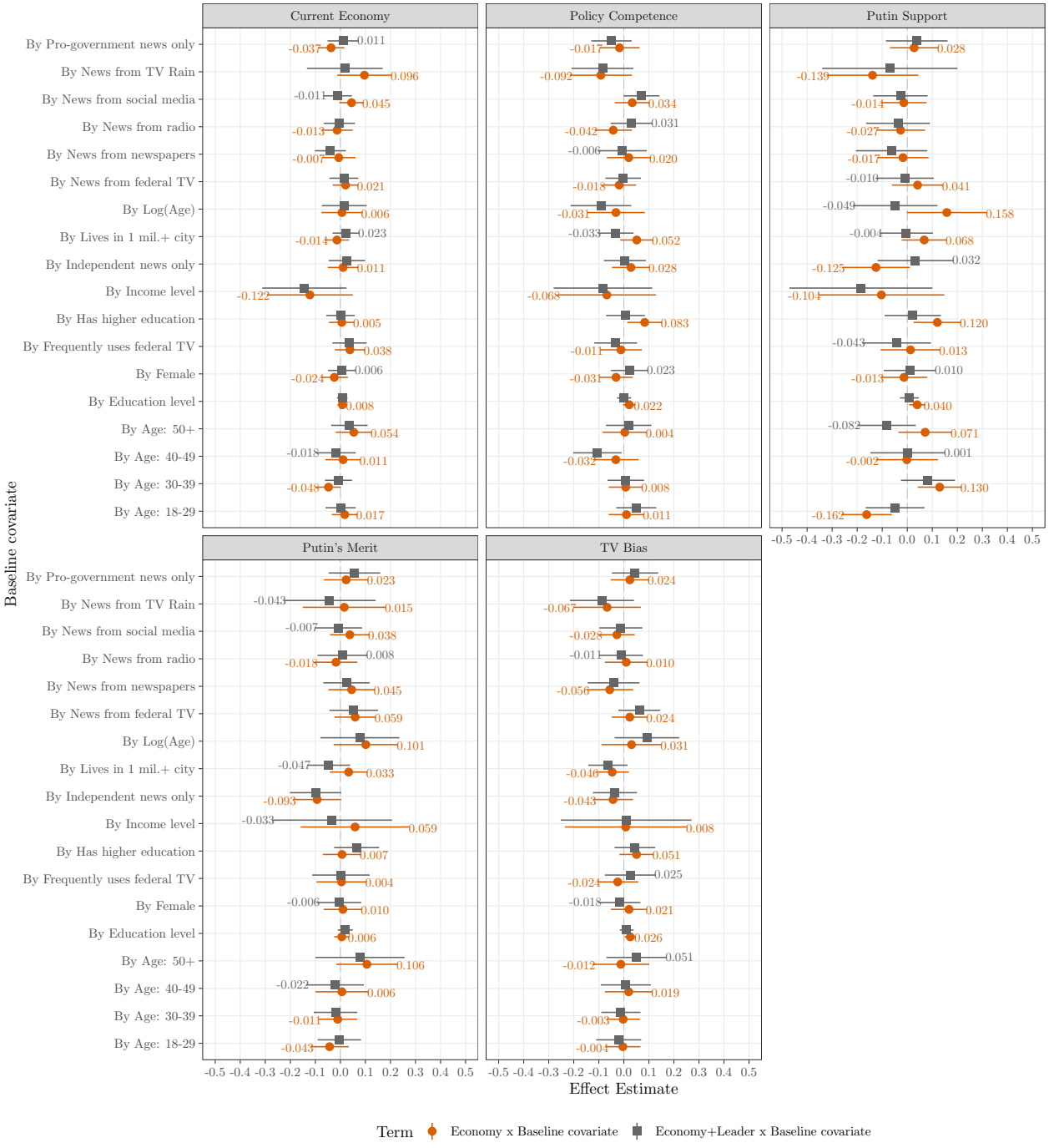


Figure C.2: Heterogeneous treatment effects on main outcomes by baseline characteristics

Figure C.3: Heterogeneous treatment effects on supplementary outcomes by baseline characteristics

C.4 Survey instruments

C.4.1 Baseline questionnaire

Comment: Below is the survey instrument used at the baseline. In this round all respondents received the same questionnaire.

1. Your gender?
    - female
    - male
2. How old are you? Choose from the list
3. Your education:
    - elementary or less (incomplete middle school not finished)
    - incomplete middle school (7-8, now 9 grades)
    - professional secondary education based on incomplete middle school
    - secondary education (10, now 11 grades)
    - professional secondary education based on middle school
    - professional secondary education
    - incomplete higher education (at least 3 years of college)
    - higher education (college finished)
4. What is the region of your residence? Choose from the list
5. What type of area do you live in?
    - rural, village
    - urban-type settlement
    - town with less than 100 000 people
    - city with more than 100 000, but less then 1 mln people
    - city with over 1 mln people
6. What is your main source of news about the country and the world? (Choose all appropriate answers)
    - Channel One, Rossiya-1, Rossiya-24
    - TV Channel Dozhd
    - Radio
    - Newspapers and magazines
    - Social media (VK, Facebook, Twitter, etc) and messengers (Telegram, etc)
    - Other

6a. [Only if "Other" was selected among responses to the previous questions] You selected the option "Other" as your main source of news about the country and the world. What sources exactly did you mean?

7. How many days a week (approximately) you watch news on Channel One, Rossiya-1, or Rossiya-24?
    - 0 (don’t watch them at all)
    - 1
    - 2
    - 3
    - 4
    - 5

- 6
- 7 (every day)

8. To what extent do you agree with the claim that the federal TV (Channel One, Rossiya-1, Rossiya-24) describes the economic situation in the country truthfully?
    - Definitely agree
    - Rather agree than disagree
    - Rather disagree than agree
    - Definitely disagree
    - Hard to tell
9. Would you please tell us whether you overall approve or disapprove Vladimir Putin's performance as the President of Russia?
    - approve
    - disapprove
10. How would you characterize the current well-being of your family?
    - very good
    - good
    - medium
    - bad
    - very bad
    - hard to tell
11. How would you characterize the current economic situation in Russia?
    - very good
    - good
    - medium
    - bad
    - very bad
    - hard to tell
12. In your opinion, what is going to happen in Russian in terms of its economy in the next couple months?
    - the situation will improve significantly
    - the situation will somewhat improve
    - the situation will somewhat worsen
    - the situation will worsen significantly
13. To what extent are you satisfied with the current economic policy of the country's leadership?
    - Completely satisfied
    - Overall satisfied
    - Not completely satisfied
    - Completely unsatisfied
    - Hard to tell
14. Do you agree that most of the credit for economic achievements of Russia and the growth of the well-being of people goes to President Vladimir Putin?
    - Definitely agree
    - Rather agree than disagree

- Rather disagree than agree
- Definitely disagree
- Hard to tell

C.4.2 Endline questionnaire

Comment: Below is the survey instrument used at the endline. In this round, respondents are randomly assigned to four experimental conditions (including pure control). First, they answer a set of identical questions; then 3 out of 4 experimental groups (P, E and EL) receive treatment videos that differ across groups; then they receive another set of identical questions.

1. Your gender?
    - female
    - male
2. How old are you? Choose from the list
3. Your education:
    - elementary or less (incomplete middle school not finished)
    - incomplete middle school (7-8, now 9 grades)
    - professional secondary education based on incomplete middle school
    - secondary education (10, now 11 grades)
    - professional secondary education based on middle school
    - professional secondary education
    - incomplete higher education (at least 3 years of college)
    - higher education (college finished)

.....

Placebo group (P)

4a. Please, watch the attached short news fragment and choose the option "Video watched". *[Video: Broadcaster: One the most solemn ceremonies has just finished in the Kremlin. President Putin awarded State Orders. All the invited guests whose number amounts to 50 people achieved very high results in different fields: astronauts and scholars, artists and aviators. It's not only a special day for them, it's also a sign that the state has recognized their achievements. Putin: Every generation needs people who are capable of inspiring, setting goals, doing heroic things. They are here today.]*
    - Video watched

5a. Please, summarize in 2-3 sentences the main idea of the video you just watched:

6a. How would you evaluate the information in the video fragment that you just watched from the perspective of Russian economy?
    - Negative (it is bad news for Russian economy)
    - Neutral (neither good nor bad for Russian economy)
    - Positive (it is good news for Russian economy)

Economy only group (E)

4b. Please, watch the attached short news fragment and choose the option "Video watched". *[Video: Broadcaster: To begin with, on a topic that concerns everybody: Taxes. Budget income has been growing: plus almost 20%, or over 2 billion rubles, during the first 10 months of this year, and mostly from non-oil-related sources. Another important issue that concerns business circles: some of them can be set free from the mandatory use of online cash registers. Aleksandra Cherepnina is reporting.]*

- Video watched

5b. Please, summarize in 2-3 sentences the main idea of the video you just watched:

6b. How would you evaluate the information in the video fragment that you just watched from the perspective of Russian economy?

- Negative (it is bad news for Russian economy)
- Neutral (neither good nor bad for Russian economy)
- Positive (it is good news for Russian economy)

7b. Please, watch the attached short news fragment and choose the option "Video watched". *[Video: Broadcaster: Another important topic is the raise of the minimum wage. Aleksandra Cherepnina is reporting. Reporter: Numbers illustrate the fact that the economy has been growing. The left column is the forecast for 2017, the right column is what we have by now. The GDP growth is already higher than the forecast, and the inflation rate is going down faster than experts thought.]*

- Video watched

8b. Please, summarize in 2-3 sentences the main idea of the video you just watched:

9b. How would you evaluate the information in the video fragment that you just watched from the perspective of Russian economy?

- Negative (it is bad news for Russian economy)
- Neutral (neither good nor bad for Russian economy)
- Positive (it is good news for Russian economy)

Economy+Leader group (EL)

4c. Please, watch the attached short news fragment and choose the option "Video watched". *[Video: Broadcaster: To begin with, on a topic that concerns everybody: Vladimir Putin and the head of the Federal Tax Service Mikhail Mishustin talked today about taxes and duties in the Kremlin. Budget income has been growing: plus almost 20%, or over 2 billion rubles, during the first 10 months of this year, and mostly from non-oil-related sources. Another important issue that concerns business circles: some of them can be set free from the mandatory use of online cash registers. Aleksandra Cherepnina is reporting.]*

- Video watched

5c. Please, summarize in 2-3 sentences the main idea of the video you just watched:

6c. How would you evaluate the information in the video fragment that you just watched from the perspective of Russian economy?

- Negative (it is bad news for Russian economy)
- Neutral (neither good nor bad for Russian economy)
- Positive (it is good news for Russian economy)

7c. Please, watch the attached short news fragment and choose the option "Video watched". *[Video: Broadcaster: Another important topic is the raise of the minimum wage. Aleksandra Cherepnina is reporting. Reporter: Numbers illustrate the fact that the economy has been growing. Here is some data from the Ministry of the Economic Development reported at the meeting with the President: the left column is the forecast for 2017, the right column is what we have by now. The GDP growth is already higher than the forecast, and the inflation rate is going down faster than experts thought. Putin: Russian economy is no longer in crisis and is speeding up. In this context, we have to do*

everything to preserve these dynamics.]

- Video watched

8c. Please, summarize in 2-3 sentences the main idea of the video you just watched:

9c. How would you evaluate the information in the video fragment that you just watched from the perspective of Russian economy?

- Negative (it is bad news for Russian economy)
- Neutral (neither good nor bad for Russian economy)
- Positive (it is good news for Russian economy)

. . . . . .

10. (7. for P and 4. for C) To what extent do you agree with the claim that the federal TV (Channel One, Rossia-1, Rossia-24) describes the economic situation in the country truthfully?
    - Definitely agree
    - Rather agree than disagree
    - Rather disagree than agree
    - Definitely disagree
    - Hard to tell
11. (8. for P and 5. for C) To what extent are you satisfied with the current economic policy of the country's leadership?
    - Completely satisfied
    - Overall satisfied
    - Not completely satisfied
    - Completely unsatisfied
    - Hard to tell
12. (9. for P and 6. for C) Would you please tell us whether you overall approve or disapprove Vladimir Putin's performance as the President of Russia?
    - approve
    - disapprove
13. (10. for P and 7. for C) Do you agree that most of the credit for economic achievements of Russia and the growth of the well-being of people goes to President Vladimir Putin?
    - Definitely agree
    - Rather agree than disagree
    - Rather disagree than agree
    - Definitely disagree
    - Hard to tell
14. (11. for P and 8. for C) How would you characterize the current economic situation in Russia?
    - very good
    - good
    - medium
    - bad
    - very bad
    - hard to tell
15. (12. for P and 9. for C) In your opinion, what is going to happen in Russian in terms of its economy in the next couple months?

- the situation will improve significantly
- the situation will somewhat improve
- the situation will somewhat worsen
- the situation will worsen significantly