Limits of Independent Media in Autocracies: Evidence from Local News in Russia*

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Abstract

Open and free media are often seen as crucial for political accountability, particularly in weak democracies and autocracies where they can catalyze regime change. Existing evidence supports this view but typically assumes that independent outlets are well known and trusted by the public. This paper tests that assumption. I field a panel 2x2 factorial experiment in Novosibirsk, Russia's third-largest city, exposing respondents to pre-recorded local news reports on a highly salient issue—public healthcare provision. Despite high treatment compliance, exposure to independent local news had no meaningful effect on beliefs about policy performance, responsibility attribution, or government evaluations. I also find no evidence of treatment effect heterogeneity across key pre-treatment characteristics. These findings suggest that the accountability-enhancing effects of independent media documented in prior work may be limited to outlets with an established reputation and audience.

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1. Introduction

Over the past two decades, scholars 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 citizen's 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 and thus create incentives for them to capture the media environment and start using it as propaganda tools to boost their support (Guriev and Treisman, 2019). In countries like Russia or 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 remaining independent or opposition outlets. In Russia, government declares independent media outlets "foreign agents", that makes it harder for them to receive financial contributions or secure advertisement contracts. In China, government is using extensive online censorship operations to silence opposition or discontent.

However such rigid control over the media environment can become a double-edged sword when it comes to monitoring necessary for control of the government hierarchy (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) or even worsen their perceptions of the regime (Huang, 2018). This can explain why in countries like China or Russia, to a varying extent, we nowadays 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 uneven strategy allows those governments to become full "informational autocrats" (Guriev and

Treisman, 2019) by controlling the nationwide narrative while also creating an image of effective local policy responsiveness and reaping the benefits of local surveillance and monitoring. Moreover, in their study of local newspapers in China, Qin et al. (2017) show that the observed lack of pro-government bias in local media can be explained not just by the strategic behavior of central government but also by market pressures.

In this paper, I build on this evidence and look at the effects of local media coverage in an authoritarian context. To date, there are very few studies on the effects of local media[1], especially in authoritarian contexts, where media has 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 has the potential to change citizens' beliefs about government performance and allow citizens to hold politicians accountable, at least at regional or municipal levels.

I report results from the 2×2 factorial experiment embedded in the online survey conducted on a representative sample of residents of Novosibirsk, the third-largest city in Russia, in August-September 2018. The intervention consisted of showing residents reports on public healthcare policy scripted and prepared by me in partnership with a prominent independent local media outlet, *Tayga.info*. The factorial structure of the experiment allows me to answer (1) whether the framing of responsibility leads citizens' to rationally attribute blame and credit for public policy outcomes to different tiers of government; and (2) whether trust in local media and prior beliefs about the policy performance and responsibility mediate the effects of such framing.

The existence of local political competition and relatively free but sparse media environment in the Novosibirsk region provides the best case scenario for the independent local media to be able to change beliefs about salient policy outcomes like quality of public healthcare

[1]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.

provision. In addition, the controlled setting of the experiment embedded in the 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 rational updating framework I proposed in the paper and pre-registered in the PAP for the project. Moreover, *both performance and responsibility focused reporting on salient public policy issue fail to shift citizens beliefs about policy and politicians responsible for it at all*. To support this conclusion I show that there is also no treatment effect heterogeneity across a number of dimensions including prior beliefs about the policy discussed in the media reports used in the intervention. I also claim that these findings indeed can be attributed to the effects of reporting itself, I show that respondents exert relatively high levels of treatment comprehension, do not have high 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 these findings suggest that even though 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 evaluation of the government. As a result, the findings in this paper cast doubt on the view of local independent media as promoting accountability in non-democratic settings.

By focusing on the effects of independent media on beliefs about policy performance and responsibility as well as government evaluation in non-democratic setting this paper makes several additional key 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., 2018). While important, these studies do not explicitly address second most important prerequisite of ability of citizens to hold politicians accountable, correct attribution of responsibility. The factorial design used in this study that exposes citizens to performance and/or responsibility information allows me to study not just separate effects of responsibility information, but also 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 the media effects often focus on overall performance indicators, such as economic performance, that 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. Focus on 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 independent media is often based on overall exposure to particular news outlet (Enikolopov et al., 2011; Peisakhin and Rozenas, 2018; Chen and Yang, 2018; Knight and Tribin, 2019). In this paper, focus on the effects of exposure to media reports with specific contents allows me to assess effectiveness of specific strategies that can be used by independent local media in non-democratic setting.

The rest of the paper is organized as follows. Section 2 motivates the selection of Novosibirsk, as the location for this study and describes the local independent media environment. Section 3 lays down simple formal model of Bayesian updating that was used to form

systematic predictions about the effects of media reporting in the study. Section 4 detail the design of the intervention, while Section 5 describes sample selection procedures, maps theoretical predictions into empirical hypotheses and explains estimation procedures. Section 6 describes the experimental results. Section 7 discusses the results and concludes.

2. Local independent media and public policy in Novosibirsk

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

2.1. Politics and public healthcare

The study was conducted in the city of Novosibirsk, 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, which 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,

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) that is officially opposed to the dominant party, United Russia, and historically has strong support in the regions of Siberia.[2] Moreover, during the data collection for the study Mayor Lokot' intended to run for the 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 overall evaluation of the economy[3] I focus on a specific salient policy outcome evaluations: Quality of public healthcare provision. Based on the recent survey data collected by *Tayga.Research*[4] healthcare quality was mentioned by majority of the residents of Novosibirsk (56%) as their primary public policy concern. Analogously nationally representative survey conducted by Levada Center (2018), shows that affordable healthcare is ranked among top 10 main concerns of Russian citizens. The importance of healthcare policy for citizens of Novosibirsk was also confirmed by the participants of the focus group in June 2018, where participants in an open discussion ranked public healthcare as the most important responsibility of local government.

The allocation of responsibility for public healthcare provision in Novosibirsk region had recently shifted. Prior to 2012 the fiscal responsibility for provision of public healthcare in the city of Novosibirsk was at the municipal level. In 2012 it was re-allocated by the regional legislature under the purview of regional government together with the corresponding share of income tax. This shift in responsibility allocation that was not

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

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

[4]Sub-unit of Tayga.info media outlet used in the intervention in this project

extensively covered in the local media resulted in very few citizens of Novosibirsk correctly attributing responsibility for public healthcare provision to the regional government (Regnum, 2018). This claim is also supported by the baseline data collected for this study with only 27% of respondents viewing regional government as responsible for healthcare provision in Novosibirsk (see Section D.1).

Overall we can see that Novosibirsk municipality plays crucial economic role in the region, both mayoral and governor's offices have real policy power vested in them, there is no alliance between the two local levels of government, while public healthcare remains a salient issue with uncertainty about allocation of responsibility for it. Due to these features political environment in the city of Novosibirsk presents best case scenario for finding effects of the reporting on responsibility for public healthcare, i.e. we can expect that the reporting on responsibility is contextually adequate while citizens are likely to be more attentive to information on policy outcomes and expect to receive it.

2.2. Independent local media

With almost full control of the federal level media environment in Russia, especially if we consider TV, newspaper and radio[5], recent years saw surge in number of independent media outlets at the local level (Dovbysh and Lehtisaari, 2020), especially in the regions removed from Moscow.[6] While some of these media outlets cover federal events, most of their focus is on the local, regional and municipal, issues, where many outlets critically assess both policy issue and government performance (Litvinenko and Nigmatullina, 2020). Moreover, there is stable trend, especially among younger cohorts, to switch to online

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

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

news media (Levada Center, 2020) which allows citizens to combine local and federal news consumption.

The local media landscape in Novosibirsk region resembles this general trend for more unbiased media reporting with the private outlets like *NGS* dominating the online media market. Presence of media independent from the government in the region can be partially attributed to the presence of business interest groups not directly controlled by municipal or regional governments.[7] While outlets like NGS do not openly confront municipal or regional governments, the editor of the outlet in the interview with me claimed, that their strategy is demand oriented and is based on their audience interest in specific topics. That said their reporting strategy does not include in-depth analysis of the policy issues and government performance, with majority of reports being 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*, according to the ranking published by the media agency Medialogia (2021) remains the most cited news source in Novosibirsk region. At the same time audience of Tayga.info is low with only 12% of respondents in the baseline survey for this study visiting the outlet's website in the past month (while 91% reports reading local news at least once a week). As a results while journalistic quality of more 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.

The discussion above shows that media environment in Novosibirsk is relatively free with Tayga.info being a trusted source among local media outlets. At the same time Tayga.info brand might not be widely recognized by the public due to lack of direct exposure. Given

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

the use of Tayga.info reports in the experimental part of this study, this latter feature might complicate the rational updating process I rely on in the framework in the next section due to weak prior knowledge about possible bias of the outlet. I discuss this possibility in Section 7.

3. Theory and predictions

To lay down all predictions I have regarding beliefs about core outcomes of interest: Performance, responsibility, media bias and government evaluation, I develop simple formal model of the individual Bayesian updating and then derive comparative statics that can be tested empirically in the experimental part of the study.

3.1. Simple model of belief updating

Consider a citizen who learns about the competence of three elected officials at different levels of government, Mayor, Governor and President,[8] quality of public service provision and the allocation of responsibility for it from a news media reporting. Let $\theta \in \{0, 1\}$ denote the quality of public service provision, e.g. public healthcare, where $\theta = 0$ denotes low quality, while $\theta = 1$ denotes high quality of services. Assume that the responsibility for service provision lies upon one of the three levels of government and is given by $\rho \in \{M, G, P\}$, where M, G and P denotes mayor, governor and president. For simplicity assume that the citizen's evaluation of the competence of politicians at different levels is binary for each level and is given by the vector $\boldsymbol{\gamma} \equiv \{\gamma_M, \gamma_G, \gamma_P\}$, where $\gamma_{i \in \{M,G,P\}} \in \{0, 1\}$.

[8] In the formal framework I use terms mayor, governor and president as a catch-all terms for municipal, regional and federal levels of government respectively.

Media outlet reports a message m about the public service provision which can include two pieces of information: (1) Information about quality of provided services, and (2) Information about allocation of responsibility for the services. Thus the space of possible media reports is given by $\{\emptyset, 0, 1\} \times \{\emptyset, M, G\}$, where $\emptyset$ denotes absence of the respective type of information on policy in the report.[9] For example, the message $m = 0G$ in this case denotes the report that mentions low quality of public service provision and that the governors office is primarily responsible for service provision. In the empirical context of this study, such message includes information on low quality of public healthcare (primarily access to public hospitals) and mentions the allocation of responsibility for public healthcare between three tiers of the government (governor and regional ministry of healthcare are *de jure* responsible).

I assume that in a non-democratic regime the media source can be perceived as either independent, or captured by one of the levels of the government. In such context 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 bias in many regions of Russia, like Novosibirsk, where governors are directly selected by the central government, while mayors of cities are not.[10] Thus for simplicity I assume that media can be biased in favor of either mayor or governor. Denote the bias of the media source by $\beta \in \{I, M, G\}$, where $\beta = I$ stands for unbiased (*independent*) local media outlet, while $\beta = M$ and $\beta = G$ denote media outlets captured by mayoral or governors office respectively.

Important assumption in the model is that local media *does not lie*, e.g. if the true state of

[9] I assume here that the local media outlet is not expected to report on any policy that is in purview of the federal government or the President only, since the local media in Russia extremely rarely covers the nationwide news such as responsibilities and performance of the federal government.

[10] 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 president personally endorsed the governor in his campaign.

the world is $0G$, media outlet is not expected to report any messages that include high policy performance, $\theta = 1$, or municipal government responsibility for it, $\rho = M$. This assumption is motivated by the ability of citizens to directly observe local service delivery in their daily lives and finds support in the existing empirical literature (Rozenas and Stukal, 2019; Rosenfeld, 2018; Field et al., 2018).[11], as a result the space of possible messages sent by media given state of the world $\theta\rho$ is given by $\Omega \equiv \{\emptyset, \theta, \rho, \theta\rho\}$

I also assume that media outlet regardless of it's bias perfectly observes the state of the world and reports on a specific public policy with probability π. This in turn implies that probability of media not reporting on public service provision ($m = \emptyset$) is equal to $(1 - \pi)$. To rule out learning from not observing reports on specific policy irrelevant in the context of experimentally administered news reports, I assume that this probability is not affected by bias of the media outlet or the true state of the world.

If the media outlet is *independent* and chooses to report on specific public policy it can report all possible types of messages with equal probability.[12] Hence the reporting strategy of unbiased media outlet can be given by the following set of equations:

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

To the contrary, if 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 further the set of possible messages it can report given the state of the world, i.e. makes it report the state of the world *selectively*. This means that the probability of observing a message from captured media outlet depends not just on the true state of the world, but also on the direction of

[11] 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 on governor of the region, i.e. $\rho = G$. Hence media can report only includes $m_{\beta=0} \in \{\emptyset, 0, 0G, G\}$.

[12] This assumption is made for simplicity and the results generally hold for any non-degenerate set of probabilities.

the bias of the media outlet. Specifically, if media is captured by the mayor, I assume that its reporting strategy is:

$$\begin{aligned}
\Pr(m = \emptyset \mid \beta = M) &= (1 - \pi), \\
\Pr(m = \theta \mid \beta = M) &= \frac{\pi}{3}\mathbb{1}_{\Omega_M} + \pi\mathbb{1}_{\Omega_{-M}}, \\
\Pr(m = \rho \mid \beta = M) &= \frac{\pi}{3}\mathbb{1}_{\Omega_M}, \\
\Pr(m = \theta\rho \mid \beta = M) &= \frac{\pi}{3}\mathbb{1}_{\Omega_M}.
\end{aligned} \tag{2}$$

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 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 the media outlet biased in favor of the governor mirrors the expression equation (2) and is given by:

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

The setup above allows me to derive the posterior beliefs that citizen holds upon observing each of the relevant reports coming from potentially biased media. A priori the citizen is assumed to know all relevant information regarding media reporting strategies described above but is uncertain the following parameters:

1. Performance, θ
2. Responsibility allocation between three levels of government, ρ
3. Bias of the local media outlet, β, and
4. Overall performance of all levels of government, $\boldsymbol{\gamma} \equiv \{\gamma_M, \gamma_G, \gamma_P\}$.

I assume that 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.

3.2. Predictions

The empirical strategy in this project allows to recover difference in average change in beliefs about four main parameters described above between two time periods. 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

$$\Delta^K_{m_T, m_C} \equiv [\Pr(K|m_T) - \Pr(K)] - [\Pr(K|m_C) - \Pr(K)] = \Pr(K|m_T) - \Pr(K|m_C), \quad (4)$$

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 recover marginal effects of presenting responsibility information and performance information:

$$\Delta^K_L \equiv (\Pr(K|L) - \Pr(K)) - (\Pr(K|\neg r) - \Pr(K)) = \Pr(K|L) - \Pr(K|\neg L), \quad (5)$$

where $L \in \{\{0, 0G\}, \{G, 0G\}\}$ denotes set of all reports in the study, which either cover responsibility allocation, or public healthcare performance. $-L$ in this case denotes $\{\emptyset, 0, G, 0G\} \setminus M$. Note, that since probability of receiving any of the messages is kept constant in the study, I can rewrite equation (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 the predictions for the effects of responsibility and performance information on the outcomes of interest.[13] Table A1 summarizes the predictions I test in the experiment, which directly follow from the theoretical framework above under assumption that citizens prior beliefs are such that all possible combinations of parameters have non-zero probability and assuming that prior beliefs about 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 A1 panel *Primary outcomes* correspond to the first-order effects of the media reports, while *Secondary outcomes* correspond to downstream effects of the treatment, since the evaluation of the overall competence of the government is presumed to be a function of responsibility allocation, 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 negative effect on the evaluation of public healthcare policy outcomes compared to the report that does not have such information, i.e. $\Delta^{\theta}_{0\,,\emptyset} < 0$,

[13] Full derivation of the results is shown in Section A.

$\Delta^{\theta}_{0G,\emptyset} < 0$, $\Delta^{\theta}_{0G,G} < 0$, $\Delta^{\theta}_{\{0,0G\}} < 0$. In addition, there is no effect of responsibility coverage in the report for the evaluation of public healthcare provision if both reports in comparison cover negative performance information, i.e. $\Delta^{\theta}_{0G,0} = 0$.

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

Prediction PRIM2 (Knowledge of Responsibility). Any news report that contains information about governor's responsibility for public healthcare provision, $m \in \{G, 0G\}$, has positive effect on the knowledge of allocation of responsibility for public healthcare policy compared to the report that does not have 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 in the report for the knowledge of responsibility allocation if both reports in comparison cover responsibility allocation, 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 governor's responsibility for public healthcare provision, $m \in \{G, 0G\}$, has positive effect on the beliefs about local media objectiveness 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, report that covers performance information only ($m = 0$) has positive effect on the evaluation of media bias compared to the report that does not cover any public healthcare information, i.e. $\Delta^{\beta=I}_{0,\emptyset} < 0$.

Intuitively, the Prediction PRIM3 is due to the assumption that information on allocation of responsibility is less likely to come from the biased local media as it would report on responsibility only when the information is *favorable*, while independent source would report on responsibility more often. Interestingly, the opposite is true when the media reports low performance only: due to unwillingness of biased media to attribute responsibility for low public policy outcomes, the citizen that observes performance only message is more likely to believe that it came from the biased news source thus decreasing her beliefs about local media independence.

Predictions PRIM1 to PRIM3 pertain to beliefs about the events that directly follow from the media reporting on the public policy outcomes. The experimental design I propose also allows to measure changes of the second order beliefs due to effects of treatment media reports, namely overall evaluation of the government that is given by the equation (22).

Prediction SEC (Government Competence). News report that attributes low public healthcare quality to the regional government ($m = 0G$) has negative effect on the evaluation of regional government when compared to any other experimental message ($m \in \{\emptyset, 0, G\}$), i.e. $\Delta^{\gamma_G=1}_{0G,\emptyset} < 0$, $\Delta^{\gamma_G=1}_{0G,0} < 0$, $\Delta^{\gamma_G=1}_{0G,G} < 0$. On the contrary, full message ($m = 0G$) has positive effect on evaluation of federal and municipal government when compared to media report that covers only low public policy performance ($m = 0$) and no effect when compared to media report that covers responsibility only ($m = G$), 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, performance only report ($m = 0$) has 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: full media report that covers low public policy outcomes and attributes responsibility to the regional government necessarily decreases overall evaluation of the regional government as long as citizens put a non-zero weight on the public healthcare provision in their evaluation of the government and trust the local media to be unbiased with positive probability. Also intuitively as long as the media report attributes responsibility to the regional government, statement of low public policy performance does not affect evaluation of municipal and federal government, since the policy performance is clearly attributed to the governor. On the contrary, when compared to performance only media report, full report that attributes performance to the governor necessarily increases evaluations of mayor and 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 performance only report has negative effect only on the evaluation of the federal government. This is due to the assumed behavior of the biased media that is unlikely to attribute any outcomes to the federal government, which makes it disproportionately likely that 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 for the comparative statics of the main effects of the media reporting with respect to prior beliefs about main parameters of the model. These comparative statics can be directly tested using tests of treatment effects heterogeneity, but for omitted from the paper for brevity.[14]

[14]Given that for some of the comparative statics the sign of the partial derivatives depends on the value of the model parameters I only state the predictions for which the treatment effect heterogeneity is at least weakly monotonic and for which the overall effect in the Table A1 is unidirectional. The summary of all predicted heterogeneous treatment effects predicted by the model is presented in Prediction HET.

4. Design of the intervention

To directly test the predictions in the Section 3.2 I conduct a panel 2×2 factorial randomized controlled trial among citizens of the city of Novosibirsk, Russia.

The intervention consisted of showing a random group of Novosibirsk resident enrolled in the study in during the baseline survey, two short video reports scripted and recorded by my in collaboration with the *Tayga.info* outlet. These video reports were administered during the endline survey but prior to the measurement of key outcomes of interest either via online survey, or in person on a tablet. In total there are four equally sized non-overlapping experimental groups in the study (see Figure C1 for the sample treatment assignment structure), where each group was administered different combination of video reports. Each respondent is exposed to two video reports, approximately 60 seconds each.

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 *de jure* allocation of responsibility between regional and municipal government for this policy. The last experimental group instead received a report on topic *not related* to local policy outcomes: Discussion organized by local historical society about prisoner's camps in the region in 1950's. This last experimental group serves as a placebo control group for comparison, since it is assumed that the discussion of historical events is not directly linked to current public policy outcomes. The second video for every subject is used as a *filler*, i.e. aims to distract respondent's attention from the main video about public healthcare provision, and resemble more the actual news broadcasting on the TV, which usually cover multiple topics. The filler report covered events in the Novosibirsk State University during the visit by the President of Russia. In addition, the filler is implemented to address concerns about experimenter demand effects while not having systematic effect on the main outcomes of

interest.[15] The transcripts of the treatment, placebo and filler reports can be found in the Section B.

To measure baseline (pre-treatment) and endline (post-treatment) attitudes I conducted a panel survey consisting of phone survey at the baseline and in-person or online (based on respondent's preferences) survey with the same respondents at the endline. Phone and in-person components of both rounds of data collection were conducted by *Tayga.Research* survey company. The in-person interviews were conducted using SurveyCTO Collect app on tablets by enumerators. The online endline interviews were conducted using 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 the public policy outcomes in Novosibirsk and evaluation of the performance of local, regional and federal government on those policies). Full question wording used in the surveys and corresponding information sheets can be found in the Section B.

For measurement of the primary parameters from the Section 3 I rely on the 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 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)

[15] The latter assumption was supported in the focus group conducted in prior to the baseline data collection, where I checked perception and understanding of video reports used in the study.

The first question is used to approximate individual beliefs about the 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 second question are used to measure the individual beliefs about allocation of responsibility for public healthcare provision, $\forall i \in \{M, G, P\} : \Pr[\rho = i]$. It is straightforward to see that since there are only three options for allocation of responsibility given in the question, and the question asks about "primary" responsibility, the only possible values of the belief probabilities triplet measured with this question are $(1, 0, 0)$, $(0, 1, 0)$, $(0, 0, 1)$. While being an imprecise measure of the beliefs, which in this case formally can be a draw from 3-dimensional simplex, the question above provides more adequate measure of responsibility in the context of the study, where true responsibility for public healthcare provision lies at one level (regional) and citizens have overall imprecise knowledge of allocation of responsibility.[16] In the theory I focus only on $\Pr[\rho = G] \equiv \mathbb{E}[\mathbb{1}_{\rho=G}]$, since this evaluation reflects knowledge of true responsibility allocation, this measure is measured as binary $\{0, 1\}$.

The response to the third question was used to approximate individual beliefs about the bias of the media, $\forall i \in \{I, M, G\} : \Pr[\beta = i]$. As with the responsibility allocation, instead of measuring the whole simplex of possible beliefs, I construct a coarse measure of the local media objectiveness (or independence), $\Pr[\beta = I] \equiv \mathbb{E}[\mathbb{1}_{\beta=I}]$. 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 bias of the media, $\Pr[\beta = M]$ and $\Pr[\beta = G]$, that were a part of the formal framework, and thus in the empirical analysis I focus only on the predictions related to the beliefs about independence of the local media.

Finally, to measure the performance evaluation of municipal, regional and federal govern-

[16] Based on the conversation with diverse group of participants in the focus group in June 2018 as well as on the baseline survey.

ments, 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 response to each of the evaluations is used to measure the overall government evaluations, $\forall i \in \{M, G, P\} : \Pr[\gamma_i = 1]$, and as in case of policu performance, is rescaled to $[0, 1]$ interval.

The order of the primary outcome questions was randomized using simple random assignment to mitigate the effect ordering of questions can have on individual question response. The design of the study also includes multiple features which address two major concerns in the 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 based on random digit dialing from the database including both land-lines and cell-phones. Moreover, the resulting baseline sample is representative at the city level by gender and aggregate age groups. To address the concerns about large rates of *attrition*, the baseline survey included questions about willingness of respondents to participate in in-person or online survey in a couple of week and also offered each individual small compensation of 150 rubles or (if 150 rubles compensation is denied) 200 rubles (2.5 and 3.3 USD respectively). This feature will allow us 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 higher compensation. As a results 88% of respondents enrolled at the baseline agreed to participate in the endline survey for smaller compensation and 82% agreed to

take online endline survey (see Section D.1 for detailed description). Final sample for the study prior to the treatment assignment included only those respondents, who agreed to participate in the endline survey at the baseline.

5. Empirical strategy

5.1. Sample enrollment and assignment

The sample for the study 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 the publicly available phone books used by *Tayga.Research* company. The respondents for contact were chosen using random digit dialing from available list of cell and land-line phones. Upon pick-up of the phone at the baseline interviewers read the information sheet script to the prospective respondents and ask if they 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 the municipal statistics from 2017, as well as to mitigate high attrition rates characteristic of panel studies in Russian context. If the respondent satisfied the screening criteria, interviewers recorded the main baseline question responses in the *SurveyCTO* web survey form.

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

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, media independence evaluation, knowledge of allocation of responsibility for public healthcare provision, support for acting governor, and whether respondent agreed to offline/online mode of endline survey. The resulting structure of experimental assignment and total baseline sample size is shown in the Figure C1.

Baseline phone survey was administered from 1st till 15th of August, 2018. The treatment and the endline survey were administered together from 16th of August till 14th of September, 2018, depending on the respondents availability. Out of 1526 respondents enrolled in the baseline survey, 1125 responded to the endline survey which corresponds to 26% attrition. This rate of attrition is non-negligible, but normal for similar studies conducted in non-democratic contexts. The overall characteristics of the baseline sample as well as the treatment and attrition balance tests are reported in the Sections C.3 and D.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 distribution of most individual characteristics and prior beliefs about key parameters in the theoretical framework, allows for testing of the proposed theory (i.e. not highly skewed and varies substantively around mean).

5.2. Estimation procedures

In estimation I follow the Standard Operating Procedures (Lin et al., 2016) in testing of hypotheses in cases that are not explicitly stated 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 the main specifications, the outcome variables that are measured on the five point Likert scale are treated as numeric variables. Let $Z_{im} = 1$ denote an indicator that individual

i received video report $m \in \{\emptyset, 0, G, 0G\}$ prior to the endline evaluation. Since data was collected only for two periods, the effect of each treatment report ($m \in \{0, G, 0G\}$) compared to placebo control message ($\emptyset$) can be estimated using the following lagged dependent variable OLS specification:[17]

$$Y_{i1} = \alpha + \sum_{m \in \{0, G, 0G\}} \tau_m Z_{im} + \zeta Y_{i0} + \varepsilon_i, \tag{6}$$

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 the Table A1. 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 A1. The p-values for the tests of interest are computed using parametric $HC2$ standard errors implemented in `estimatr` package in R.

I supplement the 4-arm design estimates with the estimates of marginal effects of each of the types of information provided in the treatment reports, *any performance* and *any responsibility*. These estimation strategy has larger statistical power to identify effects of specific types of information due to factorial design of the intervention. For estimation of marginal effects of information I rely on the OLS specification similar to equation (6):

$$Y_{i1} = \alpha + \tau_M Z_{iM} + \zeta Y_{i0} + \varepsilon_i. \tag{7}$$

Here Z_{iM} is an indicator of receipt of one of the messages in the set M by individual i. In this specification τ_M corresponds to the effects from the last two rows of the Table A1.

As stated in PAP to test for heterogeneous treatment effects I use the specifications of OLS model in equation (7) that includes interaction term. Let Z_{im} and Z_{iM} again indicate

[17] All of the estimates presented in the paper are also accompanied by the estimates from the analogous model with block fixed effects that were pre-registered in the PAP. I run and report both model estimates since block fixed effects model 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.

whether individual i received message m or message from the set M. To test the prediction that the effect of particular type of media report changes with the changes in the baseline characteristic X I use the following OLS specification:

$$Y_{i1} = \alpha + \tau_m Z_{im} + \mu_m Z_{im} X_i + \kappa X_i + \zeta Y_{i0} + \varepsilon_i. \tag{8}$$

Here the parameters of interest are μ_m for all $m \in \{0\,,\, G, 0G\}$, which provide estimates of the effect heterogeneity. In addition to the tests of effect heterogeneity with respect to specific variable, in the analyses below I discuss the test of differences-in-variation between treatment groups and placebo control group. This test replies on the randomization inference approach 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. Even though in the PAP I stated that I will report p-values from one-tailed tests where theory predicts positive or negative effects of treatment, I resort to reporting of 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 estimated null effects, in the next section I supplement discussion with minimal detectable effect (MDE) estimates based on the estimated standard errors and 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 the OLS estimates in the specifications above for number of centered covariates and full battery of interactions with treatment indicators.[18] This adjustment was not pre-registered in the

[18]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 governor; Is local media independent; 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

PAP for the study but also does not substantively change the estimates of corresponding effects.

5.3. Hypotheses

This section maps the predictions of formal model in the Section 3 into the testable hypotheses and describes the procedures used to test them.

The three types of specifications above allow to estimate the set of estimates of interest $\{\tau_m, \tau_M, \mu_m\}$ and form the basis for testing the predictions from the Section 3. The following hypotheses follow directly from Table A1:

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

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

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.

Table 1: Testable hypotheses about $\{\tau_m, \tau_M\}$. Throughout the table I assume $\xi_G = \xi_M = \xi_P = \xi$.

	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			

6. Results

This section reports main observed intent-to-treat (ITT) effect estimates. In sum I find that none of the treatments have effects on main outcomes of interest significantly different from zero. This is true for both *primary outcomes*, i.e. performance and responsibility for public healthcare and media bias, and for *secondary outcomes*, i.e. evaluation of different levels of government. I also show evidence for treatment compliance by looking at manipulation checks embedded in the survey instruments that supports the claim that observed null effects on the outcomes of interest are not due to poor administration of treatment. Finally, I show that there is no evidence for treatment effect heterogeneity, strengthening evidence for no effect of independent media reporting across population.

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

6.1. Local media does not affect beliefs about policy

Table 2 reports the estimates of the effect of individual treatment arms on the primary outcomes of interest. In addition Tables D3 and D4 in the Appendix compare the full report effects to the effects of performance only and responsibility only. Table 3 reports similar estimates across factorial dimensions of the treatment: any responsibility and any performance information.

Table 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, D3 and D4 we can see that the estimated effects of all treatments on evaluation of public healthcare 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 overall effects of particular types of information reported in the columns 1-2 of the Table 3 we see that I fail to reject the null of no effect even for higher powered tests of effects of types of information (responsibility or performance). These estimated null effects here are quite reliable with MDE across specifications being as low as 3.1 p.p. on the scale of 0 to 1 scale.

We 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 shifted positively knowledge of responsibility allocation when compared to placebo and performance only information (row 1 in Tables 2 and D3 and row 2 in Table 3), but not enough to reach even 15% significance level. Surprisingly, while still not statistically significant, the performance information seem to shift down the knowledge of responsibility despite the fact that 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 and row 1 in Tables 3 and D4). This effect is especially striking when comparing performance only to 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 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.

The ITT effect estimates on the trust in local media are also inconsistent with the predictions of the model, but approach statistical significance. Columns 5-6 in Tables 2, 3, D3 and D4 suggest that consistent with my expectations, performance information does have small negative effect on the trust in local media (row 2 in Table 2 and row 1 in Table 3). At the same time, responsibility information seem to have even larger negative effects on trust in local media that reach statistical significance at 5% level. This is surprising given that my theory suggests that lower probability of observing coverage of responsibility in the biased local media should lead citizens to improve their trust after observing news reports on policy responsibility (rows 1 and 3 in Table 2 and row 2 in Table 3. Both of those estimates remain quite imprecise and would not survive 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 fairly precisely estimated null effects on primary

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

6.2. Local media does not affect government evaluation

Given that in the previous subsection I find no evidence for the effects of local independent media reporting on *primary beliefs*, I expect treatment to have no effects on evaluations of government as well. That said, observing no effects in this case does not provide additional evidence for the hypothesis that citizens factor in their primary beliefs into their evaluation of government, due to observational equivalence between hypothesis of direct and indirect effects of treatment on evaluation of government.

Indeed, estimates reported in Tables 4, D5, D6 and 5 show that I observe no strong effects of treatment on evaluations of government at all levels. The minimal detectable effect size in the most powered factorial specification range from 3.4 to 4 p.p. on the 0 to 1 scale. Moreover, the signs of the estimated effects are again not consistent with the theoretical expectations.

Table 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.

I observe the effects closest to being statistically significant in the analyses of responsibility only treatment (row 1 in Table 4 and row 2 in Table 5). Here I find weak evidence for shift in support away from the municipal to regional government induced by news reports that discuss regional government responsibility for the healthcare policy. These results might suggest that respondents shift credit for healthcare policy performance from municipal to regional government. Moreover the signs of the estimated effects of full report and any performance information on the support for the mayor (row 3 in Table 4 and row 1 in Table 5) are generally consistent with my expectations about shifting the blame for policy performance away from the mayor.

That said this explanation is not consistent absence of updating about responsibility from

the full report discussed in the previous section and with the estimates of treatment effect heterogeneity by prior healthcare policy evaluation reported in **????**. Moreover, as before, adjusting p-values for multiple comparisons will rule out any statistical significance observed for these outcomes.

Table 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 both performance or responsibility information on government evaluation. While the direction of the estimated updating about mayor and governor competence is generally consistent with the theoretical expectations, the precision of the estimates combined with the inconsistent effects documented in the previous subsection suggest two things. First, the local independent media reporting on public policy is limited in its ability to change evaluation of government through beliefs about policy performance and responsibility. Second, local media reporting also does not strongly affect government evaluation, even though other possible mediating factors I do not observe.

6.3. Manipulation checks are satisfied

Two main concerns with the interpretation of weak findings above as evidence for failure of local media to change citizens' beliefs and government evaluations are low statistical power to detect effects of weak intervention and possible issues with treatment administration or treatment reports comprehension (Diaz et al., 2020).

To address the former concern, we can first note that the overall expectation for the experiments embedded in surveys is that they usually yield larger estimated effects when compared to the analogous field experiments (see, e.g., Incerti, 2020, for meta-analysis of information interventions). This in turn implies that if anything we would expect even lower effects of similar interventions in less controlled, but more realistic, environment of field experiment. Moreover, as suggested by minimal detectable effect size estimates discussed above, the estimated null effects are quite precise, adding to reliability of this result.

To address the latter concern about possible violation of 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 expected way.

The intervention was designed such that low performance reporting will be perceived as strongly negative and the summary of the video will include statements related to issues with access to public healthcare services. For the responsibility information, the expectation was that report will be perceived as neutral or slightly negative, while the open-ended summaries will mention allocation of responsibility for and not the quality of public healthcare.

Tables D7 and D8 report the effects of treatment on measures of understanding and comprehension of the video reports. Both tables report estimates from the model with

block fixed effects, but the results remain substantively similar if I exclude fixed effects or use of covariate adjusted estimator. Columns 3-6 in both tables rely on simple 1-gram frequency measures constructed based on stemmed corpus of words used in open-ended question responses. To identify correct words for each type of report here I rely on most frequent 1-grams from the open-ended responses received from respondents who received that report.

Table 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 the low healthcare performance information was on average evaluated by the respondents more negatively than placebo or responsibility only information, while placebo treatment report that talked about history of Novosibirsk region was perceived as largely neutral.[19]

Estimates across columns 2, 5, 6, 9 and 10 suggest that there are no systematic differences across experimental groups in terms of the recall of the baseline survey (direct question) and responses to the filler video report received by all study participants. These placebo tests confirm, that while there are differences in perception of experimental videos, these differences do not reflect overall differences in perception of any videos across groups.

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

Crucially, estimates in columns 12 and 13 allow me to directly test the treatment compliance. We can see that respondents who received performance (responsibility) information indeed were likely to mention performance (responsibility) related keywords in the summary of respective news reports. Note here, that lists of keywords used to identify responsibility or performance were not overlapping.[20]

Finally, Tables D9 and 7 reports additional tests that use the "buffer" questions that separate outcome measurement from treatment in the endline survey. Negative and occasionally

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

[20]Lists of translated keywords 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 factorial analyses were selected from lists of 1-gram frequencies generated based on the corpus of summaries by respondents who received responsibility only or performance only reports respectively.

significant 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 the policy performance, rather than allow them to correctly attribute policy performance.

Table 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, findings in this section suggest that despite failure of the treatment media reports to shift policy beliefs and government evaluation, these findings cannot be attributed to issues with administration of the treatment or to strong differences across experimental groups in outcomes unrelated to the topic of the reports.

6.4. No treatment effect heterogeneity

Given that we established that citizens received and interpreted the treatment reports according to the initial expectations, the null effects of the treatment observed on the whole sample can be explained by high levels of effect heterogeneity, where the positive treatment effects among some respondents are cancelled out by the negative effects among the others.

Keeping in mind limited statistical power to identify treatment effect heterogeneity, here

I rely on the factorial specification in equation (8). **???????????** show the estimated coefficients for interaction terms across all main outcomes of interest and a battery of pre-treatment covariates. Bars on the plots show corresponding estimated 95% confidence intervals based on the $HC2$ standard errors implemented in `estimatr` package in `R`.

Overall, analyses of treatment effect heterogeneity provide further support for absence of the treatment effects on the main outcomes with virtually no statistically significant differences across number of pre-treatment characteristics. Notably, I do not find evidence for treatment effect heterogeneity on main outcomes even by prior beliefs about those outcomes, e.g. I observe no differences in estimated treatment effects on changes in public healthcare evaluation among those who at the baseline were more satisfied with quality of healthcare and those who were less satisfied. Such comparisons are especially likely to produce treatment effect heterogeneity due to floor or ceiling effects, especially in case of relatively coarse measurement as in this study.

To complete this section in Table 8 I report randomization inference test of differences-in-variances across all main outcomes and all individual group comparisons. To reconstruct schedule of potential outcomes for the test I use naive "plug-in" estimator of differences in variances across groups described in Ding et al. (2016). The null hypothesis for all test is that there are no differences in variance of outcomes between placebo and respective treatment groups. Thus rejecting the null would constitute evidence for existence of treatment effect heterogeneity across some dimension not measured by pre-treatment characteristics studied above.

Table 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 5% α-level based on randomization distribution generated with 5000 permutations of treatment, I find no evidence for treatment effect heterogeneity even beyond the measured covariates.

7. Discussion

This paper documents that independent local media reporting on policy-related issues might have limited learning effects in a non-democratic setting and ultimately fail to shift citizens' perception of government performance. As a result, the empirical evidence I provide casts doubt on the ability of independent media to promote political accountability that was previously documented theoretically and empirically (Strömberg, 2015; Zhuravskaya et al., 2020).

To further support the observed null effects of media reporting, I first show that there is no evidence for violations of core assumptions underlying causal validity of the empirical results I report. In addition, I show that despite null effects on the 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 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, 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 allocation of responsibility for public healthcare, which the majority of the sample did not know.

Several factors could have contributed to these findings.

First, an important assumption underlying my theoretical framework is that citizens have a specific understanding of possible directions of local media bias. Instead, it is possible that the local media can be perceived to be captured by non-government interest groups. This is especially plausible in Novosibirsk region where the study took place: private business interests in the region are historically strong and largely not controlled by the political elites.

Moreover, the absence of formed beliefs about local media bias might imply that learning from the news reports from that local media 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. In this case, citizens either can treat the media outlet as independent or discard the information it provides as unverifiable given uncertainty about media reporting strategy. Overall this would lead to lower expected levels of updating explaining the null findings I report. In this case, the news reports used in this study become akin to a simple informational intervention about government and policy performance that previously had limited effects (Dunning et al., 2018). I leave direct testing of the impact of prior exposure to a media outlet on learning from new reports coming from it to future research.

Second, the citizen's beliefs about possible strategies of biased media can depart from

the set of strategies assumed in the paper. Specifically, we can allow for non-truthful reporting and reporting about the central government. While in the Russian context, it is unlikely that the media itself misreports the information on domestic policy issues but instead selectively reports truthful information (Rozenas and Stukal, 2019), it is possible that citizens discount information coming from local media as possibly false. Introducing strategic misreporting where biased media only reports positive policy outcomes, common assumption in formal literature on the topic, would imply positive higher updating upon receipt of negative policy report and thus would not allow explaining the results observed in this paper, especially given that, as I have shown, respondents did perceive treatment news reports as negative.

Relatedly, it could be that the results in this paper are explained by low recognition of the local media outlet among the general population and thus inability for citizens to infer the reliability of the information they observe. Thus this study results might suggest that strong 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. This assertion warrants further investigation of how citizens' past experience with a particular media outlet can affect how much they learn from the information the outlet provides.

Finally, it is possible that 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 provision in 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 am currently implementing a field experiment on habit formation in Russia's independent media consumption that aims to address this possible issue directly.

A. Derivation of the model predictions

A.1. Model predictions for the main outcomes

Table A1: 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.

A.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 $\Pr\left[\beta = I|m\right]$ and allocation of responsibility $\Pr\left[\rho = i|m\right]$. 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

$$\mathbb{E}[\theta|m = \emptyset] = \mathbb{E}[\theta]\Pr_{\emptyset}\left[\beta = I\right] + \mathbb{E}[\theta]\left(1 - \Pr_{\emptyset}\left[\beta = I\right]\right) = \mathbb{E}[\theta], \tag{9}$$

where $\Pr_{\emptyset}\left[\beta = I\right] \equiv \Pr\left[\beta = I|m\right]$ 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:

$$\mathbb{E}[\theta|m = 0] = \mathbb{E}\left[\theta|m = 0, \beta = I\right]\Pr_0\left[\beta = I\right] + \mathbb{E}\left[\theta|m = 0, \beta \neq I\right]\left(1 - \Pr_0\left[\beta = I\right]\right) = 0. \tag{10}$$

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

$$\mathbb{E}[\theta|m = 0G] = \mathbb{E}\left[\theta|m = 0G, \beta = I\right]\Pr_{0G}\left[\beta = I\right] + \mathbb{E}\left[\theta|m = 0G, \beta \neq I\right]\left(1 - \Pr_{0G}\left[\beta = I\right]\right) = 0. \tag{11}$$

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

$$
\begin{aligned}
\mathbb{E}\left[\theta | m = G\right] &= \Pr\left[\theta = 1\right] \Pr_G\left[\beta = I\right] + \Pr_G\left[\beta = G\right] \\
&= \Pr\left[\theta = 1\right] \Pr\left[\beta = I | m = G\right] + \Pr\left[\beta = G | m = G\right] \\
&= \frac{\mathbb{E}\left[\theta\right]\left(\Pr\left[\beta = I\right] + \Pr\left[\beta = G\right]\right)}{\Pr\left[\beta = I\right] + \mathbb{E}\left[\theta\right] \Pr\left[\beta = G\right] + \left(1 - \mathbb{E}\left[\theta\right]\right) \Pr\left[\beta = M\right]}
\end{aligned} \tag{12}
$$

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 (12) 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.

A.3. Updating on responsibility (ρ)

Analogous to performance the citizen's posterior belief about the responsibility $\forall i \in \{P, G, M\} : \Pr\left[\rho = i | m\right]$ is a function of her posterior belief about the media bias $\Pr\left[\beta = I | m\right]$ and performance $\Pr\left[\theta = 1 | m\right]$. 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

$$
\mathbb{E}\left[\mathbb{1}_{\rho=G} | m = \emptyset\right] = \Pr\left[\rho = G\right] \Pr_{\emptyset}\left[\beta = I\right] + \Pr\left[\rho = G\right]\left(1 - \Pr_{\emptyset}\left[\beta = I\right]\right) = \mathbb{E}\left[\mathbb{1}_{\rho=G}\right]. \tag{13}
$$

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

$$
\mathbb{E}\left[\mathbb{1}_{\rho=G} | m = G\right] = 1, \tag{14}
$$

$$
\mathbb{E}\left[\mathbb{1}_{\rho=G} | m = 0G\right] = 1. \tag{15}
$$

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

$$\begin{aligned}\mathbb{E}\left[\mathbb{1}_{\rho=G}|m=0\right] = &\Pr\left[\rho=G\right]\Pr_0\left[\beta=I\right] + \Pr\left[\rho=G|m=0,\beta=G\right]\Pr_0\left[\beta=G\right] + \\ &\Pr\left[\rho=G|m=0,\beta=M\right]\Pr_0\left[\beta=M\right] \\ = &\frac{\left(\Pr\left[\beta=I\right]+3\Pr\left[\beta=G\right]+\Pr\left[\beta=M\right]\right)\Pr\left[\rho=G\right]}{\left(\Pr\left[\beta=I\right]+\Pr\left[\beta=M\right]+3\Pr\left[\beta=G\right]\right)\Pr\left[\rho=G\right]} \\ &+\left(\Pr\left[\beta=I\right]+3\Pr\left[\beta=M\right]+\Pr\left[\beta=G\right]\right)\Pr\left[\rho=M\right] \\ &+\left(\Pr\left[\beta=I\right]+3\Pr\left[\beta=M\right]+3\Pr\left[\beta=G\right]\right)\Pr\left[\rho=P\right]\end{aligned} \tag{16}$$

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.

A.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

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m=\emptyset\right] = \Pr\left[\beta=I\right]. \tag{17}$$

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

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = G\right] = \frac{\Pr\left[\beta = I\right]}{\Pr\left[\beta = I\right] + \mathbb{E}\left[\theta\right]\Pr\left[\beta = G\right] + (1 - \mathbb{E}\left[\theta\right])\Pr\left[\beta = M\right]}. \tag{18}$$

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

$$\begin{aligned}\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = 0\right] = \frac{\Pr\left[\beta = I\right]}{\Pr\left[\beta = I\right]} \\ + \left(\Pr\left[\rho = M\right] + 3\Pr\left[\rho = G\right] + 3\Pr\left[\rho = P\right]\right)\Pr\left[\beta = G\right] \\ + \left(\Pr\left[\rho = G\right] + 3\Pr\left[\rho = M\right] + 3\Pr\left[\rho = P\right]\right)\Pr\left[\beta = M\right]\end{aligned}. \tag{19}$$

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

$$\mathbb{E}\left[\mathbb{1}_{\beta=I}|m = 0G\right] = \frac{\Pr\left[\beta = I\right]}{\Pr\left[\beta = I\right] + \Pr\left[\beta = M\right]}. \tag{20}$$

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 (18) and (19) 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.

A.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

$$\forall i \in \{M, G, P\} : \gamma_i \equiv \begin{cases} \omega\theta + (1-\omega)\overline{\gamma}_i, \text{if } \rho = i, \\ \overline{\gamma}_i, \text{if } \rho \neq i, \end{cases} \tag{21}$$

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

$$\begin{aligned} \mathbb{E}[\gamma_i] &= \mathbb{E}[\omega]\mathbb{E}\left[\theta|\rho = i\right]\Pr\left[\rho = i\right] + \xi_i(1 - \mathbb{E}[\omega])\Pr\left[\rho = i\right] + \xi_i \Pr\left[\rho \neq i\right] \\ &= \mathbb{E}[\theta]\mathbb{E}[\omega]\Pr\left[\rho = i\right] + \xi_i(1 - \mathbb{E}[\omega]\Pr\left[\rho = i\right]). \end{aligned}$$

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

$$\mathbb{E}[\gamma_i|m] = \mathbb{E}[\omega]\mathbb{E}[\theta|m]\Pr[\rho = i|m] + \xi_i(1 - \mathbb{E}[\omega]\Pr\left[\rho = i|m\right]) \tag{22}$$

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 (22), 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

$$\forall i \in \{M, G, P\} : \mathbb{E}[\gamma_i|m = \emptyset] = \mathbb{E}[\omega]\mathbb{E}[\theta]\Pr\left[\rho = i\right] + \xi_i(1 - \mathbb{E}[\omega]\Pr\left[\rho = i\right]). \tag{23}$$

If the media reports responsibility only ($m = G$), the citizen updates her beliefs about the competence of level i to

$$\mathbb{E}[\gamma_M | m = G] = \xi_M, \tag{24}$$

$$\begin{aligned}\mathbb{E}[\gamma_G | m = G] &= \mathbb{E}[\omega]\mathbb{E}[\theta | m = G] + \xi_G(1 - \mathbb{E}[\omega]) \\ &= \frac{\mathbb{E}[\omega]\mathbb{E}[\theta]\left(\Pr\left[\beta = I\right] + \Pr\left[\beta = G\right]\right)}{\Pr\left[\beta = I\right] + \mathbb{E}[\theta]\Pr\left[\beta = G\right] + (1 - \mathbb{E}[\theta])\Pr\left[\beta = M\right]} + \xi_G(1 - \mathbb{E}[\omega]),\end{aligned} \tag{25}$$

$$\mathbb{E}[\gamma_P | m = G] = \xi_P. \tag{26}$$

$\Pr\left[\rho = G | m = G\right] = 1$ implies that equation (25) is equivalent to equation (12). Equations (24) and (26) 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

$$\mathbb{E}[\gamma_G | m = 0G] = 0 + \xi_G(1 - \mathbb{E}[\omega]), \tag{27}$$

This is due to report being fully revealing, i.e. $\mathbb{E}[\theta | m = 0G] = 0$.

Finally, if media reports responsibility only ($m = 0$), the citizen updates her beliefs about the performance as follows:

$$\mathbb{E}[\gamma_i | m = 0] = \xi_i \left(1 - \mathbb{E}[\omega]\Pr\left[\rho = i | m = 0\right]\right), \tag{28}$$

where expressions for $\Pr\left[\rho = i | m = 0\right]$ for any $i \in \{M, P, G\}$ is given by equation (16).

A.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 A2.

Table A2: 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 (4) and (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 (22) 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 (22).

B. Survey instruments

B.1. Information sheets

B.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.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. 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.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?

C. Threats to inference

C.1. Randomization

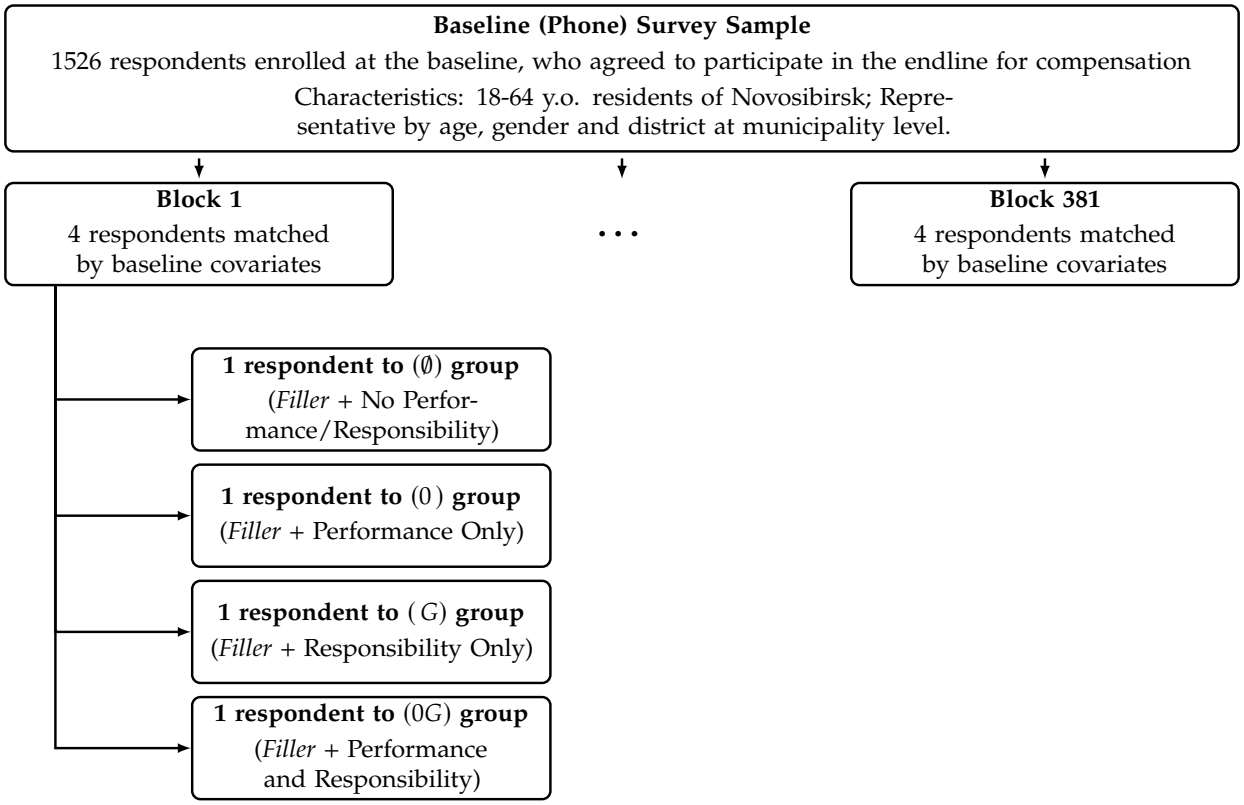
The assignment to one of the four experimental groups was conducted using block complete random assignment. The blocks of size 4 were constructed using optimal greedy algorithm on Mahalanobis distances by a number of baseline characteristics: Gender, age group, prior beliefs about local media, correct 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 C1.

Figure C1: 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 paper, but additional robustness checks show that exclusion of those who did not comply with the experimental assignment does not affect the results.

C.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 C1: P-values for two-tailed t-tests of unequal attrition rates for all possible pairs of experimental conditions

(*G*) vs (··)	(0·) vs (··)	(0*G*) vs (··)	(*G*) vs (0·)	(0*G*) vs (0·)	(0*G*) vs (*G*)	(0*G*) + (*G*) vs (0·) + (··)	(0*G*) + (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 paper I report naive estimates among the respondents for whom specific outcome is observed.

C.3. Treatment balance

Table C2: 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.

D. Supplementary analyses

D.1. Summary statistics for baseline characteristics

Table D1: 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 D2: 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.

D.2. Performance, responsibility and bias

Table D3: 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 D4: 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.

D.3. Evaluation of government

Table D5: ITT effect estimates on government evaluation

	Mayor Competence	Mayor Competence	Governor Competence	Governor Competence	President Competence	President Competence
Full Report (0*G*)	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 0*G* 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 D6: ITT effect estimates on government evaluation

	Mayor Competence	Mayor Competence	Governor Competence	Governor Competence	President Competence	President Competence
Full Report (0*G*)	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 0*G* 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.

D.4. Additional manipulation checks

Table D7: 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 responsi-bility	Mentioned perfor-mance
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 D8: 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 (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 D9: 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.

D.5. Treatment heterogeneity

$data # A tibble: 46 x 9 grouping het_var term estimate std.error p.value conf.low conf.high just 1 Policy Eva~ HC qua~ Perf~ 0.0446 0.0522 3.93e-1 -0.0578 0.147 -0.25 2 Policy Eva~ HC qua~ Resp~ -0.0206 0.0521 6.93e-1 -0.123 0.0816 0.25 3 Policy Eva~ HC res~ Perf~ -0.00664 0.0227 7.70e-1 -0.0511 0.0378 -0.25 4 Policy Eva~ HC res~ Resp~ 0.0333 0.0227 1.42e-1 -0.0112 0.0778 0.25 5 Consumptio~ Trusts~ Perf~ 0.0183 0.0416 6.60e-1 -0.0633 0.0999 -0.25 6 Consumptio~ Trusts~ Resp~ 0.150 0.0417 3.36e-4 0.0682 0.232 0.25 7 Government~ Satisf~ Perf~ 0.0192 0.0377 6.11e-1 -0.0548 0.0932 -0.25 8 Government~ Satisf~ Resp~ -0.00869 0.0376 8.17e-1 -0.0825 0.0651 0.25 9 Government~ Satisf~ Perf~ 0.00327 0.0430 9.39e-1 -0.0810 0.0876 -0.25 10 Government~ Satisf~ Resp~ -0.00171 0.0431 9.68e-1 -0.0862 0.0828 0.25 # i 36 more rows

*layers*layers[[1]] mapping: xintercept = ~xintercept geom_vline: na.rm = FALSE stat_identity: na.rm = FALSE position_identity

$layers[[2]] mapping: xmin = ~conf.low, xmax = ~conf.high geom_linerange: na.rm = FALSE, orientation = NA stat_identity: na.rm = FALSE position_dodge

$layers[[3]] mapping: shape = ~term geom_point: na.rm = FALSE stat_identity: na.rm = FALSE position_dodge

$layers[[4]] mapping: label = ~usefulr::fround(estimate, 3) geom_text: parse = FALSE, check_overlap = FALSE, na.rm = FALSE stat_identity: na.rm = FALSE position_nudge

$scales <ggproto object: Class ScalesList, gg> add: function add_defaults: function add_missing: function backtransform_df: function clone: function find: function get_scales: function has_scale: function input: function map_df: function n: function non_position_scales: function scales: list set_palettes: function train_df: function transform_df: function super: <ggproto object: Class ScalesList, gg>

*mapping*x expr: ^estimate env: 0x11ba01ea0

$y expr: ^het_var env: 0x11ba01ea0

$group expr: ^term env: 0x11ba01ea0

$colour expr: ^term env: 0x11ba01ea0

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$lineend [1] “butt”

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*text*family [1] “ ”

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$vjust NULL

$angle NULL

$lineheight NULL

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$face NULL

$colour NULL

$size NULL

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$vjust [1] 1

$angle NULL

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$debug NULL

$inherit.blank [1] TRUE

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$vjust NULL

$angle NULL

$lineheight NULL

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*axis.text.y.right*family NULL

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$vjust NULL

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$inherit.blank [1] TRUE

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$axis.ticks.y.right NULL

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$axis.ticks.length.x.bottom NULL

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$legend.key.width NULL

*legend.text*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.text.align NULL

*legend.title*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.title.align NULL

$legend.position [1] “bottom”

$legend.direction NULL

$legend.justification [1] “center”

$legend.box NULL

$legend.box.just NULL

$legend.box.margin [1] 0cm 0cm 0cm 0cm

$legend.box.background list() attr(,“class”) [1] “element_blank” “element”

$legend.box.spacing [1] 10points

*panel.background*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*panel.border*fill [1] NA

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$panel.spacing [1] 5points

$panel.spacing.x NULL

$panel.spacing.y NULL

*panel.grid*colour [1] “grey92”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$panel.grid.major NULL

$panel.grid.minor list() attr(,“class”) [1] “element_blank” “element”

$panel.grid.major.x NULL

$panel.grid.major.y NULL

$panel.grid.minor.x NULL

$panel.grid.minor.y NULL

$panel.ontop [1] FALSE

*plot.background*fill NULL

$colour [1] “white”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*plot.title*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.title.position [1] “panel”

*plot.subtitle*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*plot.caption*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust [1] 1

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.caption.position [1] “panel”

*plot.tag*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0.5

$vjust [1] 0.5

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.tag.position [1] “topleft”

$plot.margin [1] 5points 5points 5points 5points

*strip.background*fill [1] “grey85”

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$strip.background.x NULL

$strip.background.y NULL

$strip.placement [1] “inside”

*strip.text*family NULL

$face NULL

$colour [1] “grey10”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 4points 4points 4points 4points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.text.x NULL

*strip.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] -90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.switch.pad.grid [1] 2.5points

$strip.switch.pad.wrap [1] 2.5points

$strip.text.y.left$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] 90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

attr(,“class”) [1] “theme” “gg”
attr(,“complete”) [1] TRUE attr(,“validate”) [1] TRUE

$coordinates <ggproto object: Class CoordCartesian, Coord, gg> aspect: function backtransform_range: function clip: on default: TRUE distance: function draw_panel: function expand: TRUE is_free: function is_linear: function labels: function limits: list modify_scales: function range: function render_axis_h: function render_axis_v: function render_bg: function render_fg: function reverse: none setup_data: function setup_layout: function setup_panel_guides: function setup_panel_params: function setup_params: function train_panel_guides: function transform: function super: <ggproto object: Class CoordCartesian, Coord, gg>

$facet <ggproto object: Class FacetCol, FacetWrap, Facet, gg> attach_axes: function attach_strips: function compute_layout: function draw_back: function draw_front: function draw_labels: function draw_panel_content: function draw_panels: function finish_data: function format_strip_labels: function init_gtable: function init_scales: function map_data: function params: list set_panel_size: function setup_data: function setup_panel_params: function setup_params: function shrink: TRUE train_scales: function vars: function super: <ggproto object: Class FacetCol, FacetWrap, Facet, gg>

$plot_env <environment: 0x11ba01ea0>

*labels*labels$y [1] “Treatment x”

*labels*x [1] “Effect Estimate”

*labels*group [1] “term”

*labels*colour [1] “term”

*labels*xintercept [1] “xintercept”

*labels*xmin [1] “conf.low”

*labels*xmax [1] “conf.high”

*labels*shape [1] “term”

*labels*label [1] “usefulr::fround(estimate, 3)”

attr(,“class”) [1] “gg” “ggplot”

$data # A tibble: 46 x 9 grouping het_var term estimate std.error p.value conf.low conf.high just 1 Policy Eva~ HC qua~ Perf~ -0.0850 0.126 0.500 -0.332 0.162 -0.25 2 Policy Eva~ HC qua~ Resp~ 0.295 0.127 0.0199 0.0467 0.543 0.25 3 Policy Eva~ HC res~ Perf~ 0.0739 0.0633 0.244 -0.0504 0.198 -0.25 4 Policy Eva~ HC res~ Resp~ -0.0241 0.0633 0.703 -0.148 0.100 0.25 5 Consumptio~ Trusts~ Perf~ -0.0657 0.0997 0.510 -0.261 0.130 -0.25 6 Consumptio~ Trusts~ Resp~ 0.00284 0.0998 0.977 -0.193 0.199 0.25 7 Government~ Satisf~ Perf~ 0.0845 0.0919 0.358 -0.0958 0.265 -0.25 8 Government~ Satisf~ Resp~ 0.0371 0.0914 0.685 -0.142 0.216 0.25 9 Government~ Satisf~ Perf~ -0.0455 0.104 0.663 -0.250 0.159 -0.25 10 Government~ Satisf~ Resp~ 0.0531 0.105 0.612 -0.152 0.258 0.25 # i 36 more rows

*layers*layers[[1]] mapping: xintercept = ~xintercept geom_vline: na.rm = FALSE stat_identity: na.rm = FALSE position_identity

$layers[[2]] mapping: xmin = ~conf.low, xmax = ~conf.high geom_linerange: na.rm = FALSE, orientation = NA stat_identity: na.rm = FALSE position_dodge

$layers[[3]] mapping: shape = ~term geom_point: na.rm = FALSE stat_identity: na.rm = FALSE position_dodge

$layers[[4]] mapping: label = ~usefulr::fround(estimate, 3) geom_text: parse = FALSE, check_overlap = FALSE, na.rm = FALSE stat_identity: na.rm = FALSE position_nudge

$scales <ggproto object: Class ScalesList, gg> add: function add_defaults: function add_missing: function backtransform_df: function clone: function find: function get_scales: function has_scale: function input: function map_df: function n: function non_position_scales: function scales: list set_palettes: function train_df: function transform_df: function super: <ggproto object: Class ScalesList, gg>

*mapping*x expr: ^estimate env: 0x11d243510

$y expr: ^het_var env: 0x11d243510

$group expr: ^term env: 0x11d243510

$colour expr: ^term env: 0x11d243510

attr(,“class”) [1] “uneval”

*theme*line $colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$lineend [1] “butt”

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

*rect*fill [1] “white”

$colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*text*family [1] “ ”

$face [1] “plain”

$colour [1] “black”

$size [1] 10

$hjust [1] 0.5

$vjust [1] 0.5

$angle [1] 0

$lineheight [1] 0.9

$margin [1] 0points 0points 0points 0points

$debug [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$title NULL

$aspect.ratio NULL

$axis.title NULL

$axis.title.x$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2.5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.title.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2.5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.x.bottom NULL

*axis.title.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle [1] 90

$lineheight NULL

$margin [1] 0points 2.5points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.y.left NULL

*axis.title.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle [1] -90

$lineheight NULL

$margin [1] 0points 0points 0points 2.5points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text*family NULL

$face NULL

$colour [1] “grey30”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.x.bottom NULL

$axis.text.y$family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 1

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 2points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.y.left NULL

*axis.text.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 0points 2points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.ticks*colour [1] “grey20”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$axis.ticks.x NULL

$axis.ticks.x.top NULL

$axis.ticks.x.bottom NULL

$axis.ticks.y NULL

$axis.ticks.y.left NULL

$axis.ticks.y.right NULL

$axis.ticks.length [1] 2.5points

$axis.ticks.length.x NULL

$axis.ticks.length.x.top NULL

$axis.ticks.length.x.bottom NULL

$axis.ticks.length.y NULL

$axis.ticks.length.y.left NULL

$axis.ticks.length.y.right NULL

$axis.line list() attr(,“class”) [1] “element_blank” “element”

$axis.line.x NULL

$axis.line.x.top NULL

$axis.line.x.bottom NULL

$axis.line.y NULL

$axis.line.y.left NULL

$axis.line.y.right NULL

*legend.background*fill NULL

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.margin [1] 5points 5points 5points 5points

$legend.spacing [1] 10points

$legend.spacing.x NULL

$legend.spacing.y NULL

*legend.key*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.key.size [1] 1.2lines

$legend.key.height NULL

$legend.key.width NULL

*legend.text*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.text.align NULL

*legend.title*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.title.align NULL

$legend.position [1] “bottom”

$legend.direction NULL

$legend.justification [1] “center”

$legend.box NULL

$legend.box.just NULL

$legend.box.margin [1] 0cm 0cm 0cm 0cm

$legend.box.background list() attr(,“class”) [1] “element_blank” “element”

$legend.box.spacing [1] 10points

*panel.background*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*panel.border*fill [1] NA

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$panel.spacing [1] 5points

$panel.spacing.x NULL

$panel.spacing.y NULL

*panel.grid*colour [1] “grey92”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$panel.grid.major NULL

$panel.grid.minor list() attr(,“class”) [1] “element_blank” “element”

$panel.grid.major.x NULL

$panel.grid.major.y NULL

$panel.grid.minor.x NULL

$panel.grid.minor.y NULL

$panel.ontop [1] FALSE

*plot.background*fill NULL

$colour [1] “white”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*plot.title*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.title.position [1] “panel”

*plot.subtitle*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*plot.caption*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust [1] 1

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.caption.position [1] “panel”

*plot.tag*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0.5

$vjust [1] 0.5

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.tag.position [1] “topleft”

$plot.margin [1] 5points 5points 5points 5points

*strip.background*fill [1] “grey85”

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$strip.background.x NULL

$strip.background.y NULL

$strip.placement [1] “inside”

*strip.text*family NULL

$face NULL

$colour [1] “grey10”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 4points 4points 4points 4points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.text.x NULL

*strip.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] -90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.switch.pad.grid [1] 2.5points

$strip.switch.pad.wrap [1] 2.5points

$strip.text.y.left$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] 90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

attr(,“class”) [1] “theme” “gg”

attr(,“complete”) [1] TRUE attr(,“validate”) [1] TRUE

$coordinates <ggproto object: Class CoordCartesian, Coord, gg> aspect: function backtransform_range: function clip: on default: TRUE distance: function draw_panel: function expand: TRUE is_free: function is_linear: function labels: function limits: list modify_scales: function range: function render_axis_h: function render_axis_v: function render_bg: function render_fg: function reverse: none setup_data: function setup_layout: function setup_panel_guides: function setup_panel_params: function setup_params: function train_panel_guides: function transform: function super: <ggproto object: Class CoordCartesian, Coord, gg>

$facet <ggproto object: Class FacetCol, FacetWrap, Facet, gg> attach_axes: function attach_strips: function compute_layout: function draw_back: function draw_front: function draw_labels: function draw_panel_content: function draw_panels: function finish_data: function format_strip_labels: function init_gtable: function init_scales: function map_data: function params: list set_panel_size: function setup_data: function setup_panel_params: function setup_params: function shrink: TRUE train_scales: function vars: function super: <ggproto object: Class FacetCol, FacetWrap, Facet, gg>

$plot_env <environment: 0x11d243510>

*labels*labels$y [1] “Treatment x”

*labels*x [1] “Effect Estimate”

*labels*group [1] “term”

*labels*colour [1] “term”

*labels*xintercept [1] “xintercept”

*labels*xmin [1] “conf.low”

*labels*xmax [1] “conf.high”

*labels*shape [1] “term”

*labels*label [1] “usefulr::fround(estimate, 3)”

attr(,“class”) [1] “gg” “ggplot”

$data # A tibble: 46 x 9 grouping het_var term estimate std.error p.value conf.low conf.high just 1 Policy Eva~ HC qua~ Perf~ 0.0546 0.0654 0.404 -0.0737 0.183 -0.25 2 Policy Eva~ HC qua~ Resp~ -0.0159 0.0654 0.808 -0.144 0.112 0.25 3 Policy Eva~ HC res~ Perf~ 0.00289 0.0296 0.922 -0.0552 0.0610 -0.25 4 Policy Eva~ HC res~ Resp~ -0.0140 0.0295 0.634 -0.0719 0.0439 0.25 5 Consumptio~ Trusts~ Perf~ -0.0265 0.0575 0.644 -0.139 0.0862 -0.25 6 Consumptio~ Trusts~ Resp~ -0.0145 0.0575 0.801 -0.127 0.0984 0.25 7 Government~ Satisf~ Perf~ -0.0619 0.0504 0.220 -0.161 0.0370 -0.25 8 Government~ Satisf~ Resp~ 0.0638 0.0505 0.207 -0.0354 0.163 0.25 9 Government~ Satisf~ Perf~ 0.0398 0.0559 0.476 -0.0698 0.149 -0.25 10 Government~ Satisf~ Resp~ 0.0642 0.0557 0.250 -0.0452 0.174 0.25 # i 36 more rows

*layers*layers[[1]] mapping: xintercept = ~xintercept geom_vline: na.rm = FALSE stat_identity: na.rm = FALSE position_identity

$layers[[2]] mapping: xmin = ~conf.low, xmax = ~conf.high geom_linerange: na.rm = FALSE, orientation = NA stat_identity: na.rm = FALSE position_dodge

$layers[[3]] mapping: shape = ~term geom_point: na.rm = FALSE stat_identity: na.rm = FALSE position_dodge

$layers[[4]] mapping: label = ~usefulr::fround(estimate, 3) geom_text: parse = FALSE, check_overlap = FALSE, na.rm = FALSE stat_identity: na.rm = FALSE position_nudge

$scales <ggproto object: Class ScalesList, gg> add: function add_defaults: function add_missing: function backtransform_df: function clone: function find: function get_scales: function has_scale: function input: function map_df: function n: function non_position_scales: function scales: list set_palettes: function train_df: function transform_df: function super: <ggproto object: Class ScalesList, gg>

*mapping*x expr: ^estimate env: 0x11f137c00

$y expr: ^het_var env: 0x11f137c00

$group expr: ^term env: 0x11f137c00

$colour expr: ^term env: 0x11f137c00

attr(,“class”) [1] “uneval”

*theme*line $colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$lineend [1] “butt”

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

*rect*fill [1] “white”

$colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*text*family [1] “ ”

$face [1] “plain”

$colour [1] “black”

$size [1] 10

$hjust [1] 0.5

$vjust [1] 0.5

$angle [1] 0

$lineheight [1] 0.9

$margin [1] 0points 0points 0points 0points

$debug [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$title NULL

$aspect.ratio NULL

$axis.title NULL

$axis.title.x$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2.5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.title.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2.5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.x.bottom NULL

*axis.title.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle [1] 90

$lineheight NULL

$margin [1] 0points 2.5points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.y.left NULL

*axis.title.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle [1] -90

$lineheight NULL

$margin [1] 0points 0points 0points 2.5points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text*family NULL

$face NULL

$colour [1] “grey30”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.x.bottom NULL

$axis.text.y$family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 1

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 2points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.y.left NULL

*axis.text.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 0points 2points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.ticks*colour [1] “grey20”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$axis.ticks.x NULL

$axis.ticks.x.top NULL

$axis.ticks.x.bottom NULL

$axis.ticks.y NULL

$axis.ticks.y.left NULL

$axis.ticks.y.right NULL

$axis.ticks.length [1] 2.5points

$axis.ticks.length.x NULL

$axis.ticks.length.x.top NULL

$axis.ticks.length.x.bottom NULL

$axis.ticks.length.y NULL

$axis.ticks.length.y.left NULL

$axis.ticks.length.y.right NULL

$axis.line list() attr(,“class”) [1] “element_blank” “element”

$axis.line.x NULL

$axis.line.x.top NULL

$axis.line.x.bottom NULL

$axis.line.y NULL

$axis.line.y.left NULL

$axis.line.y.right NULL

*legend.background*fill NULL

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.margin [1] 5points 5points 5points 5points

$legend.spacing [1] 10points

$legend.spacing.x NULL

$legend.spacing.y NULL

*legend.key*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.key.size [1] 1.2lines

$legend.key.height NULL

$legend.key.width NULL

*legend.text*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.text.align NULL

*legend.title*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.title.align NULL

$legend.position [1] “bottom”

$legend.direction NULL

$legend.justification [1] “center”

$legend.box NULL

$legend.box.just NULL

$legend.box.margin [1] 0cm 0cm 0cm 0cm

$legend.box.background list() attr(,“class”) [1] “element_blank” “element”

$legend.box.spacing [1] 10points

*panel.background*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*panel.border*fill [1] NA

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$panel.spacing [1] 5points

$panel.spacing.x NULL

$panel.spacing.y NULL

*panel.grid*colour [1] “grey92”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$panel.grid.major NULL

$panel.grid.minor list() attr(,“class”) [1] “element_blank” “element”

$panel.grid.major.x NULL

$panel.grid.major.y NULL

$panel.grid.minor.x NULL

$panel.grid.minor.y NULL

$panel.ontop [1] FALSE

*plot.background*fill NULL

$colour [1] “white”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*plot.title*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.title.position [1] “panel”

*plot.subtitle*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*plot.caption*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust [1] 1

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.caption.position [1] “panel”

*plot.tag*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0.5

$vjust [1] 0.5

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.tag.position [1] “topleft”

$plot.margin [1] 5points 5points 5points 5points

*strip.background*fill [1] “grey85”

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$strip.background.x NULL

$strip.background.y NULL

$strip.placement [1] “inside”

*strip.text*family NULL

$face NULL

$colour [1] “grey10”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 4points 4points 4points 4points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.text.x NULL

*strip.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] -90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.switch.pad.grid [1] 2.5points

$strip.switch.pad.wrap [1] 2.5points

$strip.text.y.left$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] 90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

attr(,“class”) [1] “theme” “gg”

attr(,“complete”) [1] TRUE attr(,“validate”) [1] TRUE

$coordinates <ggproto object: Class CoordCartesian, Coord, gg> aspect: function backtransform_range: function clip: on default: TRUE distance: function draw_panel: function expand: TRUE is_free: function is_linear: function labels: function limits: list modify_scales: function range: function render_axis_h: function render_axis_v: function render_bg: function render_fg: function reverse: none setup_data: function setup_layout: function setup_panel_guides: function setup_panel_params: function setup_params: function train_panel_guides: function transform: function super: <ggproto object: Class CoordCartesian, Coord, gg>

$facet <ggproto object: Class FacetCol, FacetWrap, Facet, gg> attach_axes: function attach_strips: function compute_layout: function draw_back: function draw_front: function draw_labels: function draw_panel_content: function draw_panels: function finish_data: function format_strip_labels: function init_gtable: function init_scales: function map_data: function params: list set_panel_size: function setup_data: function setup_panel_params: function setup_params: function shrink: TRUE train_scales: function vars: function super: <ggproto object: Class FacetCol, FacetWrap, Facet, gg>

$plot_env <environment: 0x11f137c00>

*labels*labels$y [1] “Treatment x”

*labels*x [1] “Effect Estimate”

*labels*group [1] “term”

*labels*colour [1] “term”

*labels*xintercept [1] “xintercept”

*labels*xmin [1] “conf.low”

*labels*xmax [1] “conf.high”

*labels*shape [1] “term”

*labels*label [1] “usefulr::fround(estimate, 3)”

attr(,“class”) [1] “gg” “ggplot”

$data # A tibble: 46 x 9 grouping het_var term estimate std.error p.value conf.low conf.high just 1 Policy Eva~ HC qua~ Perf~ 6.18e-2 0.0612 0.313 -0.0584 0.182 -0.25 2 Policy Eva~ HC qua~ Resp~ 9.54e-4 0.0611 0.988 -0.119 0.121 0.25 3 Policy Eva~ HC res~ Perf~ 2.62e-2 0.0285 0.359 -0.0298 0.0821 -0.25 4 Policy Eva~ HC res~ Resp~ -4.91e-2 0.0285 0.0848 -0.105 0.00674 0.25 5 Consumptio~ Trusts~ Perf~ 5.54e-2 0.0512 0.279 -0.0450 0.156 -0.25 6 Consumptio~ Trusts~ Resp~ 5.63e-2 0.0511 0.271 -0.0440 0.157 0.25 7 Government~ Satisf~ Perf~ -2.77e-2 0.0467 0.554 -0.119 0.0640 -0.25 8 Government~ Satisf~ Resp~ -4.42e-2 0.0469 0.346 -0.136 0.0478 0.25 9 Government~ Satisf~ Perf~ -1.86e-2 0.0537 0.729 -0.124 0.0868 -0.25 10 Government~ Satisf~ Resp~ -9.96e-2 0.0534 0.0624 -0.204 0.00519 0.25 # i 36 more rows

*layers*layers[[1]] mapping: xintercept = ~xintercept geom_vline: na.rm = FALSE stat_identity: na.rm = FALSE position_identity

$layers[[2]] mapping: xmin = ~conf.low, xmax = ~conf.high geom_linerange: na.rm = FALSE, orientation = NA stat_identity: na.rm = FALSE position_dodge

$layers[[3]] mapping: shape = ~term geom_point: na.rm = FALSE stat_identity: na.rm = FALSE position_dodge

$layers[[4]] mapping: label = ~usefulr::fround(estimate, 3) geom_text: parse = FALSE, check_overlap = FALSE, na.rm = FALSE stat_identity: na.rm = FALSE position_nudge

$scales <ggproto object: Class ScalesList, gg> add: function add_defaults: function add_missing: function backtransform_df: function clone: function find: function get_scales: function has_scale: function input: function map_df: function n: function non_position_scales: function scales: list set_palettes: function train_df: function transform_df: function super: <ggproto object: Class ScalesList, gg>

*mapping*x expr: ^estimate env: 0x11872c9f0

$y expr: ^het_var env: 0x11872c9f0

$group expr: ^term env: 0x11872c9f0

$colour expr: ^term env: 0x11872c9f0

attr(,"class") [1] "uneval"

*theme*line $colour [1] "black"

$size [1] 0.4545455

$linetype [1] 1

$lineend [1] "butt"

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,"class") [1] "element_line" "element"

*rect*fill [1] "white"

$colour [1] "black"

$size [1] 0.4545455

$linetype [1] 1

$inherit.blank [1] TRUE

attr(,"class") [1] "element_rect" "element"

*text*family [1] " "

$face [1] "plain"

$colour [1] "black"

$size [1] 10

$hjust [1] 0.5

$vjust [1] 0.5

$angle [1] 0

$lineheight [1] 0.9

$margin [1] 0points 0points 0points 0points

$debug [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$title NULL

$aspect.ratio NULL

$axis.title NULL

$axis.title.x$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2.5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.x.top$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2.5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.x.bottom NULL

$axis.title.y$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle [1] 90

$lineheight NULL

$margin [1] 0points 2.5points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.y.left NULL

*axis.title.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle [1] -90

$lineheight NULL

$margin [1] 0points 0points 0points 2.5points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text*family NULL

$face NULL

$colour [1] “grey30”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.x$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.x.bottom NULL

*axis.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 1

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 2points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.y.left NULL

*axis.text.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 0points 2points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.ticks*colour [1] “grey20”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$axis.ticks.x NULL

$axis.ticks.x.top NULL

$axis.ticks.x.bottom NULL

$axis.ticks.y NULL

$axis.ticks.y.left NULL

$axis.ticks.y.right NULL

$axis.ticks.length [1] 2.5points

$axis.ticks.length.x NULL

$axis.ticks.length.x.top NULL

$axis.ticks.length.x.bottom NULL

$axis.ticks.length.y NULL

$axis.ticks.length.y.left NULL

$axis.ticks.length.y.right NULL

$axis.line list() attr(,“class”) [1] “element_blank” “element”

$axis.line.x NULL

$axis.line.x.top NULL

$axis.line.x.bottom NULL

$axis.line.y NULL

$axis.line.y.left NULL

$axis.line.y.right NULL

*legend.background*fill NULL

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.margin [1] 5points 5points 5points 5points

$legend.spacing [1] 10points

$legend.spacing.x NULL

$legend.spacing.y NULL

*legend.key*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.key.size [1] 1.2lines

$legend.key.height NULL

$legend.key.width NULL

*legend.text*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.text.align NULL

*legend.title*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.title.align NULL

$legend.position [1] “bottom”

$legend.direction NULL

$legend.justification [1] “center”

$legend.box NULL

$legend.box.just NULL

$legend.box.margin [1] 0cm 0cm 0cm 0cm

$legend.box.background list() attr(,“class”) [1] “element_blank” “element”

$legend.box.spacing [1] 10points

*panel.background*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*panel.border*fill [1] NA

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$panel.spacing [1] 5points

$panel.spacing.x NULL

$panel.spacing.y NULL

*panel.grid*colour [1] “grey92”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$panel.grid.major NULL

$panel.grid.minor list() attr(,“class”) [1] “element_blank” “element”

$panel.grid.major.x NULL

$panel.grid.major.y NULL

$panel.grid.minor.x NULL

$panel.grid.minor.y NULL

$panel.ontop [1] FALSE

*plot.background*fill NULL

$colour [1] “white”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*plot.title*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.title.position [1] “panel”

*plot.subtitle*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*plot.caption*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust [1] 1

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.caption.position [1] “panel”

*plot.tag*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0.5

$vjust [1] 0.5

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.tag.position [1] “topleft”

$plot.margin [1] 5points 5points 5points 5points

*strip.background*fill [1] “grey85”

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$strip.background.x NULL

$strip.background.y NULL

$strip.placement [1] “inside”

*strip.text*family NULL

$face NULL

$colour [1] “grey10”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 4points 4points 4points 4points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.text.x NULL

*strip.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] -90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.switch.pad.grid [1] 2.5points

$strip.switch.pad.wrap [1] 2.5points

*strip.text.y.left*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] 90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

attr(,“class”) [1] “theme” “gg”
attr(,“complete”) [1] TRUE attr(,“validate”) [1] TRUE

$coordinates <ggproto object: Class CoordCartesian, Coord, gg> aspect: function back-transform_range: function clip: on default: TRUE distance: function draw_panel: function expand: TRUE is_free: function is_linear: function labels: function limits: list mod-ify_scales: function range: function render_axis_h: function render_axis_v: function render_bg: function render_fg: function reverse: none setup_data: function setup_layout: function setup_panel_guides: function setup_panel_params: function setup_params: function train_panel_guides: function transform: function super: <ggproto object: Class CoordCartesian, Coord, gg>

$facet <ggproto object: Class FacetCol, FacetWrap, Facet, gg> attach_axes: function at-tach_strips: function compute_layout: function draw_back: function draw_front: function draw_labels: function draw_panel_content: function draw_panels: function finish_data: function format_strip_labels: function init_gtable: function init_scales: function map_data: function params: list set_panel_size: function setup_data: function setup_panel_params: function setup_params: function shrink: TRUE train_scales: function vars: function super: <ggproto object: Class FacetCol, FacetWrap, Facet, gg>

$plot_env <environment: 0x11872c9f0>

*labels*labels$y [1] “Treatment x”

*labels*x [1] “Effect Estimate”

*labels*group [1] “term”

*labels*colour [1] “term”

*labels*xintercept [1] “xintercept”

*labels*xmin [1] “conf.low”

*labels*xmax [1] “conf.high”

*labels*shape [1] “term”

*labels*label [1] “usefulr::fround(estimate, 3)”

attr(,“class”) [1] “gg” “ggplot”

$data # A tibble: 46 x 9 grouping het_var term estimate std.error p.value conf.low conf.high just 1 Policy Eva~ HC qua~ Perf~ -0.0264 0.0557 0.636 -0.136 0.0830 -0.25 2 Policy Eva~ HC qua~ Resp~ 0.0503 0.0555 0.365 -0.0586 0.159 0.25 3 Policy Eva~ HC res~ Perf~ 0.00558 0.0265 0.833 -0.0464 0.0575 -0.25 4 Policy Eva~ HC res~ Resp~ 0.0289 0.0265 0.276 -0.0231 0.0809 0.25 5 Consumptio~ Trusts~ Perf~ 0.0222 0.0471 0.638 -0.0703 0.115 -0.25 6 Consumptio~ Trusts~ Resp~ -0.00446 0.0473 0.925 -0.0972 0.0883 0.25 7 Government~ Satisf~ Perf~ 0.00922 0.0442 0.835 -0.0774 0.0959 -0.25 8 Government~ Satisf~ Resp~ -0.0990 0.0439 0.0242 -0.185 -0.0129 0.25 9 Government~ Satisf~ Perf~ 0.0279 0.0527 0.596 -0.0754 0.131 -0.25 10 Government~ Satisf~ Resp~ -0.0158 0.0530 0.766 -0.120 0.0882 0.25 # i 36 more rows

*layers*layers[[1]] mapping: xintercept = ~xintercept geom_vline: na.rm = FALSE stat_identity: na.rm = FALSE position_identity

$layers[[2]] mapping: xmin = ~conf.low, xmax = ~conf.high geom_linerange: na.rm = FALSE, orientation = NA stat_identity: na.rm = FALSE position_dodge

$layers[[3]] mapping: shape = ~term geom_point: na.rm = FALSE stat_identity: na.rm = FALSE position_dodge

$layers[[4]] mapping: label = ~usefulr::fround(estimate, 3) geom_text: parse = FALSE, check_overlap = FALSE, na.rm = FALSE stat_identity: na.rm = FALSE position_nudge

$scales <ggproto object: Class ScalesList, gg> add: function add_defaults: function add_missing: function backtransform_df: function clone: function find: function get_scales: function has_scale: function input: function map_df: function n: function non_position_scales: function scales: list set_palettes: function train_df: function transform_df: function super: <ggproto object: Class ScalesList, gg>

*mapping*x expr: ^estimate env: 0x1186887c0

$y expr: ^het_var env: 0x1186887c0

$group expr: ^term env: 0x1186887c0

$colour expr: ˆterm env: 0x1186887c0

attr(,“class”) [1] “uneval”

*theme*line $colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$lineend [1] “butt”

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

*rect*fill [1] “white”

$colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*text*family [1] “ ”

$face [1] “plain”

$colour [1] “black”

$size [1] 10

$hjust [1] 0.5

$vjust [1] 0.5

$angle [1] 0

$lineheight [1] 0.9

$margin [1] 0points 0points 0points 0points

$debug [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$title NULL

$aspect.ratio NULL

$axis.title NULL

$axis.title.x$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2.5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.title.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2.5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.x.bottom NULL

*axis.title.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle [1] 90

$lineheight NULL

$margin [1] 0points 2.5points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.y.left NULL

*axis.title.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle [1] -90

$lineheight NULL

$margin [1] 0points 0points 0points 2.5points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text*family NULL

$face NULL

$colour [1] “grey30”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.x.bottom NULL

$axis.text.y$family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 1

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 2points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.y.left NULL

*axis.text.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 0points 2points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.ticks*colour [1] “grey20”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$axis.ticks.x NULL

$axis.ticks.x.top NULL

$axis.ticks.x.bottom NULL

$axis.ticks.y NULL

$axis.ticks.y.left NULL

$axis.ticks.y.right NULL

$axis.ticks.length [1] 2.5points

$axis.ticks.length.x NULL

$axis.ticks.length.x.top NULL

$axis.ticks.length.x.bottom NULL

$axis.ticks.length.y NULL

$axis.ticks.length.y.left NULL

$axis.ticks.length.y.right NULL

$axis.line list() attr(,“class”) [1] “element_blank” “element”

$axis.line.x NULL

$axis.line.x.top NULL

$axis.line.x.bottom NULL

$axis.line.y NULL

$axis.line.y.left NULL

$axis.line.y.right NULL

*legend.background*fill NULL

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.margin [1] 5points 5points 5points 5points

$legend.spacing [1] 10points

$legend.spacing.x NULL

$legend.spacing.y NULL

*legend.key*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.key.size [1] 1.2lines

$legend.key.height NULL

$legend.key.width NULL

*legend.text*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.text.align NULL

*legend.title*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.title.align NULL

$legend.position [1] “bottom”

$legend.direction NULL

$legend.justification [1] “center”

$legend.box NULL

$legend.box.just NULL

$legend.box.margin [1] 0cm 0cm 0cm 0cm

$legend.box.background list() attr(,“class”) [1] “element_blank” “element”

$legend.box.spacing [1] 10points

*panel.background*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*panel.border*fill [1] NA

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$panel.spacing [1] 5points

$panel.spacing.x NULL

$panel.spacing.y NULL

*panel.grid*colour [1] “grey92”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$panel.grid.major NULL

$panel.grid.minor list() attr(,“class”) [1] “element_blank” “element”

$panel.grid.major.x NULL

$panel.grid.major.y NULL

$panel.grid.minor.x NULL

$panel.grid.minor.y NULL

$panel.ontop [1] FALSE

*plot.background*fill NULL

$colour [1] “white”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*plot.title*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.title.position [1] “panel”

*plot.subtitle*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*plot.caption*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust [1] 1

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.caption.position [1] “panel”

*plot.tag*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0.5

$vjust [1] 0.5

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.tag.position [1] “topleft”

$plot.margin [1] 5points 5points 5points 5points

*strip.background*fill [1] “grey85”

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$strip.background.x NULL

$strip.background.y NULL

$strip.placement [1] “inside”

*strip.text*family NULL

$face NULL

$colour [1] “grey10”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 4points 4points 4points 4points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.text.x NULL

*strip.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] -90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.switch.pad.grid [1] 2.5points

$strip.switch.pad.wrap [1] 2.5points

$strip.text.y.left$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] 90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

attr(,“class”) [1] “theme” “gg”

attr(,“complete”) [1] TRUE attr(,“validate”) [1] TRUE

$coordinates <ggproto object: Class CoordCartesian, Coord, gg> aspect: function backtransform_range: function clip: on default: TRUE distance: function draw_panel: function expand: TRUE is_free: function is_linear: function labels: function limits: list modify_scales: function range: function render_axis_h: function render_axis_v: function render_bg: function render_fg: function reverse: none setup_data: function setup_layout: function setup_panel_guides: function setup_panel_params: function setup_params: function train_panel_guides: function transform: function super: <ggproto object: Class CoordCartesian, Coord, gg>

$facet <ggproto object: Class FacetCol, FacetWrap, Facet, gg> attach_axes: function attach_strips: function compute_layout: function draw_back: function draw_front: function draw_labels: function draw_panel_content: function draw_panels: function finish_data: function format_strip_labels: function init_gtable: function init_scales: function map_data: function params: list set_panel_size: function setup_data: function setup_panel_params: function setup_params: function shrink: TRUE train_scales: function vars: function super: <ggproto object: Class FacetCol, FacetWrap, Facet, gg>

$plot_env <environment: 0x1186887c0>

*labels*labels$y [1] “Treatment x”

*labels*x [1] “Effect Estimate”

*labels*group [1] “term”

*labels*colour [1] “term”

*labels*xintercept [1] “xintercept”

*labels*xmin [1] “conf.low”

*labels*xmax [1] “conf.high”

*labels*shape [1] “term”

*labels*label [1] “usefulr::fround(estimate, 3)”

attr(,“class”) [1] “gg” “ggplot”

$data # A tibble: 46 x 9 grouping het_var term estimate std.error p.value conf.low conf.high just 1 Policy Eva~ HC qua~ Perf~ -0.0420 0.0634 0.508 -0.166 0.0824 -0.25 2 Policy Eva~ HC qua~ Resp~ 0.0813 0.0639 0.203 -0.0440 0.207 0.25 3 Policy Eva~ HC res~ Perf~ -0.0190 0.0299 0.525 -0.0776 0.0396 -0.25 4 Policy Eva~ HC res~ Resp~ -0.00313 0.0298 0.916 -0.0616 0.0554 0.25 5 Consumptio~ Trusts~ Perf~ 0.0565 0.0505 0.263 -0.0425 0.156 -0.25 6 Consumptio~ Trusts~ Resp~ 0.0619 0.0506 0.221 -0.0373 0.161 0.25 7 Government~ Satisf~ Perf~ 0.0560 0.0474 0.237 -0.0369 0.149 -0.25 8 Government~ Satisf~ Resp~ -0.0322 0.0470 0.493 -0.124 0.0600 0.25 9 Government~ Satisf~ Perf~ 0.0206 0.0530 0.698 -0.0834 0.125 -0.25 10 Government~ Satisf~ Resp~ 0.00822 0.0535 0.878 -0.0968 0.113 0.25 # i 36 more rows

*layers*layers[[1]] mapping: xintercept = ~xintercept geom_vline: na.rm = FALSE stat_identity: na.rm = FALSE position_identity

$layers[[2]] mapping: xmin = ~conf.low, xmax = ~conf.high geom_linerange: na.rm = FALSE, orientation = NA stat_identity: na.rm = FALSE position_dodge

$layers[[3]] mapping: shape = ~term geom_point: na.rm = FALSE stat_identity: na.rm = FALSE position_dodge

$layers[[4]] mapping: label = ~usefulr::fround(estimate, 3) geom_text: parse = FALSE, check_overlap = FALSE, na.rm = FALSE stat_identity: na.rm = FALSE position_nudge

$scales <ggproto object: Class ScalesList, gg> add: function add_defaults: function add_missing: function backtransform_df: function clone: function find: function get_scales: function has_scale: function input: function map_df: function n: function non_position_scales: function scales: list set_palettes: function train_df: function transform_df: function super: <ggproto object: Class ScalesList, gg>

*mapping*x expr: ^estimate env: 0x1185b9908

$y expr: ^het_var env: 0x1185b9908

$group expr: ^term env: 0x1185b9908

$colour expr: ^term env: 0x1185b9908

attr(,“class”) [1] “uneval”

*theme*line $colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$lineend [1] “butt”

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

*rect*fill [1] “white”

$colour [1] “black”

$size [1] 0.4545455

$linetype [1] 1

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*text*family [1] “ ”

$face [1] “plain”

$colour [1] “black”

$size [1] 10

$hjust [1] 0.5

$vjust [1] 0.5

$angle [1] 0

$lineheight [1] 0.9

$margin [1] 0points 0points 0points 0points

$debug [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$title NULL

$aspect.ratio NULL

$axis.title NULL

$axis.title.x$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2.5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.title.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2.5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.x.bottom NULL

*axis.title.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle [1] 90

$lineheight NULL

$margin [1] 0points 2.5points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.title.y.left NULL

*axis.title.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle [1] -90

$lineheight NULL

$margin [1] 0points 0points 0points 2.5points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text*family NULL

$face NULL

$colour [1] “grey30”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 2points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.text.x.top*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust [1] 0

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 2points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.x.bottom NULL

$axis.text.y$family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 1

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 2points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$axis.text.y.left NULL

*axis.text.y.right*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 0points 2points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*axis.ticks*colour [1] “grey20”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$axis.ticks.x NULL

$axis.ticks.x.top NULL

$axis.ticks.x.bottom NULL

$axis.ticks.y NULL

$axis.ticks.y.left NULL

$axis.ticks.y.right NULL

$axis.ticks.length [1] 2.5points

$axis.ticks.length.x NULL

$axis.ticks.length.x.top NULL

$axis.ticks.length.x.bottom NULL

$axis.ticks.length.y NULL

$axis.ticks.length.y.left NULL

$axis.ticks.length.y.right NULL

$axis.line list() attr(,“class”) [1] “element_blank” “element”

$axis.line.x NULL

$axis.line.x.top NULL

$axis.line.x.bottom NULL

$axis.line.y NULL

$axis.line.y.left NULL

$axis.line.y.right NULL

*legend.background*fill NULL

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.margin [1] 5points 5points 5points 5points

$legend.spacing [1] 10points

$legend.spacing.x NULL

$legend.spacing.y NULL

*legend.key*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$legend.key.size [1] 1.2lines

$legend.key.height NULL

$legend.key.width NULL

*legend.text*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.text.align NULL

*legend.title*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust NULL

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$legend.title.align NULL

$legend.position [1] “bottom”

$legend.direction NULL

$legend.justification [1] “center”

$legend.box NULL

$legend.box.just NULL

$legend.box.margin [1] 0cm 0cm 0cm 0cm

$legend.box.background list() attr(,“class”) [1] “element_blank” “element”

$legend.box.spacing [1] 10points

*panel.background*fill [1] “white”

$colour [1] NA

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*panel.border*fill [1] NA

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$panel.spacing [1] 5points

$panel.spacing.x NULL

$panel.spacing.y NULL

*panel.grid*colour [1] “grey92”

$size NULL

$linetype NULL

$lineend NULL

$arrow [1] FALSE

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_line” “element”

$panel.grid.major NULL

$panel.grid.minor list() attr(,“class”) [1] “element_blank” “element”

$panel.grid.major.x NULL

$panel.grid.major.y NULL

$panel.grid.minor.x NULL

$panel.grid.minor.y NULL

$panel.ontop [1] FALSE

*plot.background*fill NULL

$colour [1] “white”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

*plot.title*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.title.position [1] “panel”

*plot.subtitle*family NULL

$face NULL

$colour NULL

$size NULL

$hjust [1] 0

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 0points 0points 5points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

*plot.caption*family NULL

$face NULL

$colour NULL

$size [1] 0.8 *

$hjust [1] 1

$vjust [1] 1

$angle NULL

$lineheight NULL

$margin [1] 5points 0points 0points 0points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.caption.position [1] “panel”

*plot.tag*family NULL

$face NULL

$colour NULL

$size [1] 1.2 *

$hjust [1] 0.5

$vjust [1] 0.5

$angle NULL

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$plot.tag.position [1] “topleft”

$plot.margin [1] 5points 5points 5points 5points

*strip.background*fill [1] “grey85”

$colour [1] “grey20”

$size NULL

$linetype NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_rect” “element”

$strip.background.x NULL

$strip.background.y NULL

$strip.placement [1] “inside”

*strip.text*family NULL

$face NULL

$colour [1] “grey10”

$size [1] 0.8 *

$hjust NULL

$vjust NULL

$angle NULL

$lineheight NULL

$margin [1] 4points 4points 4points 4points

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.text.x NULL

*strip.text.y*family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] -90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

$strip.switch.pad.grid [1] 2.5points

$strip.switch.pad.wrap [1] 2.5points

$strip.text.y.left$family NULL

$face NULL

$colour NULL

$size NULL

$hjust NULL

$vjust NULL

$angle [1] 90

$lineheight NULL

$margin NULL

$debug NULL

$inherit.blank [1] TRUE

attr(,“class”) [1] “element_text” “element”

attr(,“class”) [1] “theme” “gg”

attr(,“complete”) [1] TRUE attr(,“validate”) [1] TRUE

$coordinates <ggproto object: Class CoordCartesian, Coord, gg> aspect: function backtransform_range: function clip: on default: TRUE distance: function draw_panel: function expand: TRUE is_free: function is_linear: function labels: function limits: list modify_scales: function range: function render_axis_h: function render_axis_v: function render_bg: function render_fg: function reverse: none setup_data: function setup_layout: function setup_panel_guides: function setup_panel_params: function setup_params: function train_panel_guides: function transform: function super: <ggproto object: Class CoordCartesian, Coord, gg>

$facet <ggproto object: Class FacetCol, FacetWrap, Facet, gg> attach_axes: function attach_strips: function compute_layout: function draw_back: function draw_front: function draw_labels: function draw_panel_content: function draw_panels: function finish_data: function format_strip_labels: function init_gtable: function init_scales: function map_data: function params: list set_panel_size: function setup_data: function setup_panel_params: function setup_params: function shrink: TRUE train_scales: function vars: function super: <ggproto object: Class FacetCol, FacetWrap, Facet, gg>

$plot_env <environment: 0x1185b9908>

*labels*labels$y [1] “Treatment x”

*labels*x [1] “Effect Estimate”

*labels*group [1] “term”

*labels*colour [1] “term”

*labels*xintercept [1] “xintercept”

*labels*xmin [1] “conf.low”

*labels*xmax [1] “conf.high”

*labels*shape [1] “term”

*labels*label [1] “usefulr::fround(estimate, 3)”

attr(,“class”) [1] “gg” “ggplot”

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