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Do giving voice and social information help in revising a misconception about rent control?

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Abstract

Citizens' ability to make informed and thoughtful choices when voting for policy proposals rests on their exposure to accurate information about the costs and benefits that each proposal entails. We study whether certain social factors affect the disposition to drop a misconception, the belief that rent control increases the availability of affordable housing. We design an on–line experiment where all participants watch a video explaining the scientific evidence on the consequences of this policy. We test whether letting them give feedback (giving voice) and informing them about others' change of beliefs (social information) helps in reducing the misconception. Giving voice does not have an additional effect relative to a benchmark group that only watches the video. Social information further reduces the misconception when it specifies how different groups of people have responded to the video, but not when these distinctions are not made. Additionally, changes in beliefs translate into intended voting against the policy, and into recommending the video. Finally, ideological position and a zero–sum mentality are correlated with the initial misconception, but these two factors do not hinder the disposition to dropping it following the intervention.

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1. Introduction

Citizens' ability to make informed and thoughtful decisions when assessing and voting for policy proposals rests on their understanding of accurate information about the costs, risks and benefits that each proposal entails. Scientific knowledge can provide evidence in this regard, contributing to better societal choices. In democracies, direct communication between scientists and the public is important, since it is ultimately up to citizens, through their votes, to decide whether to endorse or reject specific policy proposals. Sometimes, though, scientific consensus about an issue clashes with commonly held worldviews by citizens. In these cases, even if scientific information is communicated in an accessible way, it may be rejected or neglected by many people.

The purpose of our research is to study the comparative effectiveness of different informational interventions to communicate to the public scientific findings about how a particular policy works, when a large proportion of the public holds unfounded beliefs about it. It is thus a practical question that we address with the aim of increasing the acceptability of scientific evidence. We focus on the case of rent controls because, while the consensus reached in academic research about its overall negative effects is very high, this policy is strongly supported by the public. Housing affordability has become, indeed, an important problem in many cities in the world, growing into a priority in the public agenda, and many people believe that a rent control policy will increase the access to affordable housing. This belief can be qualified as a misconception because it is contradicted by solid and increasing empirical research that shows that rent controls actually reduce the amount of rental housing over time, worsening the housing problem.[1] Yet, this belief is widespread across countries, as shown in several polls.[2] It is also hard to dispel. Previous research about the effectiveness of interventions that use a written format to provide scientific evidence has shown a limited success in reducing the prevalence of this misconception (Müller and Gsottbauer, 2022; Brandts et al., 2022; Dolls et al., 2022). This situation is similar to what a number of experimental studies find about the effect of providing people with information relative to CO_2 emissions and climate change policies. Such corrections often do not work or have limited effects on misperceptions and on support for these policies (Douenne and Fabre, 2022; Dechezleprêtre et al., 2022; Imai et al., 2022).

Our starting point is the body of previous experimental evidence in economics and cognitive, political and communication psychology, which has found that when scientific, or evidence–based information challenges pre–existing beliefs and perceptions, this information is often ignored or rejected by large segments of the public. Research in psychology indicates that a combination

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[1]See, for example, Sims (2007); Mora-Sanguinetti (2011); Asquith (2019); Diamond et al. (2019); Kholodilin and Kohl (2020); Monràs and García-Montalvo (2023); Ahern and Giacoletti (2022); Kholodilin (2024).

[2]Support for rent control reached 75% of respondents in Spain, in a poll conducted by 40dB in 2023; 71% in Germany, in a poll conducted in 2020 by Infratest dimap; and 71% in the UK, in a poll conducted by Ipsos Mori in 2019.

of cognitive, social and affective processes may explain resistance to misinformation corrections (see, for example, Pennycook and Rand (2019); Pennycook et al. (2020); Nyhan (2020); Ecker et al. (2022, 2023)). In economics, cognitive ability, biases and motivated reasoning have been acknowledged to affect belief updating and decision–making. As Bénabou and Tirole (2016) explain, beliefs often fulfill important individual psychological needs. They have value attached to them, so individuals may be resistant to opposing evidence. The desirability of some beliefs prevails over accuracy —need to know the truth— because they satisfy ideological, religious or social identity needs. They are motivated beliefs, characterized by the fact that they are emotionally charged. When evidence challenges this type of beliefs, they trigger a fighting response (Bénabou, 2015). Two recent experimental articles study cognitive biases and motivated beliefs in information processing in a Bayesian framework. Thaler (2024) develops a theoretical model of motivated reasoning and designs an experiment to test how people reason about factual questions that have a numerical answer, in the context of assessing fake and true news. He finds evidence of deviations from Bayesian updating for politicized topics such as climate change, gun control and immigration. Similarly, Lois et al. (2024) set a Bayesian benchmark for unbiased belief updating, so as to identify motivated reasoning as directional deviations from this benchmark. Looking at the neural responses to messages about foreign criminality, coming from in–group or out–group sources, they find a common neural basis of motivated reasoning across ideologically opposing groups. Since cognitive biases, motivated reasoning, and cognitive ability, may explain the stickiness of unfounded beliefs, as both the economics and psychology literature document, an open empirical question is how to deliver information to people in a way that overcomes these barriers to processing scientific information. As we mentioned above, our approach consists in comparing different communication interventions, and is not designed to identify particular biases in information processing.

Note that most of the work referred to above focuses on factual misinformation and on believing and spreading fake news. We are concerned, instead, about misconceptions about a causal relation, i.e., the effects of a policy. For example, a misperception of the tax burden in a country is not the same as a misconception about how taxes influence economic activity and income distribution. Misconceptions in this regard may be harder to correct because they require more analytical effort than factual corrections, and involve stronger affective and identity concerns. Empirical findings show that a specific strategy, a refutational correction, is more effective than plain corrections to reduce misconceptions (Tippett, 2010; Chan et al., 2017; Ecker et al., 2020; Weil et al., 2020; Lewandowsky, 2021). This approach attempts to help people revise their false beliefs through a message designed to induce slow, analytical processing of information by adding key elements to a plain correction. These elements are stating the misconception, providing arguments as to why it is unfounded, emphasizing the scientific evidence, reassuring about the credibility of

the correction source, and showing empathy towards the values and concerns that underlie the misconception. These elements must be embedded in the refutational communication aimed at deterring unfounded beliefs.

Based on the literature that studies the refutational approach, in our previous research (Brandts et al., 2022, 2024) we adopt this approach to communicate the adverse effects of rent capping, and test its effectiveness to reduce the widespread misconception about this policy. We there investigate, first, the effect of a refutational text compared to a non–refutational (plain) text, and, in the second article, to a refutational, visual format (a video). Both texts did reduce the prevalence of the misconception although the refutational text did not have a significantly different impact over a non–refutational one. The video format, instead, induced a higher reduction of the misconception. The mechanism seems to be that the refutational video has a higher ability to capture the participants' attention than a text. Still, about one third of participants stick to their initial misconception.

In this paper we build on the findings of our previous experiment in Brandts et al. (2024). We now test whether adding to a refutational visual correction two elements of the social context that are present in the natural environment where people typically receive information, affects the disposition to change unfounded beliefs about the rent–control policy. The first social factor we consider is giving participants voice, that is, allowing them to indicate the motivation for their views on rent control, and express their opinion about the information they receive. Previous research finds that, in different situations, the feeling of being listened to may facilitate a higher acceptance of the other side's views (Haaland and Roth (2022), Voelkel et al. (2021), Bruneau and Saxe (2012), Hager et al. (2023)). The second social factor we consider is giving participants information about how other people changed their opinion after watching the same video. Receiving social information about others' behavior has been found to affect own behavior in other domains, such as household water consumption, energy consumption, contributions to public goods and driving behavior (Chen et al., 2010; Allcott, 2011; Ferraro and Price, 2013; Chen et al., 2017).

We design a pre–registered on–line survey experiment where we add these two social factors to the video used in Brandts et al. (2024). We elicit beliefs on rent controls before and after each intervention; the outcome of interest is the change in beliefs. The experiment consists of four conditions. The first condition is our benchmark, where participants are exposed exclusively to the refutational video. In the second condition, we add the first social factor—giving voice—to the benchmark. Each participant is asked to indicate the motivation for her/his initial belief before watching the video, and to give feedback about the video after watching it. In the third and fourth conditions we add, to the voice factor, the second social factor, consisting of giving information about how other people who have previously watched the video changed their beliefs about the effects of rent control. The difference between the third and fourth conditions is the type of social

information that participants receive after watching the video. In the third condition, the social information provided is aggregate, that is, it tells participants how a whole group has changed beliefs. In the fourth condition, the social information is provided in a more disaggregate way, as it discloses the change in beliefs of two distinct groups of people, who are defined according to their initial agreement or disagreement with the statement on rent controls, and on the main motive behind it. In summary, in our experiment we proceed sequentially, adding to the basic visual refutational message factors that have an increasing social dimension in order to test the effectiveness of each one. In the voice condition the participant only gives feedback to the researchers. In the voice and social information conditions the participant both gives and receives feedback. We also study whether the individual propensity to reason analytically as measured by the cognitive reflection test (CRT) is associated with the disposition to disengage from the misconception in each treatment. We can thus assess whether this association is affected by the inclusion of the two social factors.

In addition to testing the effect of the social factors described, we expand our analysis in several directions. First, we study whether changes in beliefs are related to intended behavior. Previous research suggests that changing beliefs about facts does not necessarily translate into support for corresponding policies (Barrera et al. (2020), Stantcheva (2021), Ferrario and Stantcheva (2022), Haaland and Roth (2022), Douenne and Fabre (2022)). For our purpose, after the treatments we ask participants how they would vote in a referendum about rent control and whether they would recommend the video to family and acquaintances. Second, we explore whether two individual traits, ideology and a zero–sum mentality are associated to initial beliefs about the effects of rent controls, as well as to resistance to abandoning the misconception. Several studies have shown that ideology and political views play a significant role in shaping perceptions, beliefs and preferences for a variety of policies (Kahan, 2013; Alesina et al., 2018; Barrera et al., 2020; Laméris et al., 2020; Dechezleprêtre et al., 2022). Recent research by Chinoy et al. (2023) finds that in the US a zero–sum mindset, a worldview according to which benefits to one person or group tend to come at the cost of others, is strongly correlated with certain views about the role of the government, redistribution and immigration policies. In the last condition, we include several questions and items to measure participants' ideology and propensity to zero–sum thinking with the purpose of studying whether these features are associated with beliefs and with changes in beliefs.

Four main features distinguish the content of this paper from existing related research. First, the introduction of elements of the social context into the information treatments. Such elements are absent in previous work on correcting beliefs about the effects of rent control (Brandts et al., 2022, 2024; Müller and Gsottbauer, 2022; Dolls et al., 2022). Second, we provide new evidence on whether a change in beliefs translates into intended support in a vote for the rent–control policy. Third, we add to the still scarce empirical evidence on the relationship between ideology

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and disposition to change the belief about rent control. Unlike Müller and Gsottbauer (2022); Dolls et al. (2022), we use several indicators of ideology to explore both the correlation between ideology and initial beliefs, and between ideology and disposition to change beliefs. And fourth, we contribute new evidence on the association between a zero–sum mentality, initial beliefs and change in beliefs. Our work is relevant for an emerging and growing research on people's perceptions about how policies work and how to change them when they are opposed to evidence, such as Binetti et al. (2024) and with interventions to enhance critical thinking, such as List et al. (2024).

Our results show that giving voice to participants does not lead to a significant change in beliefs compared to just providing information through the refutational video in the benchmark condition. Giving voice and jointly letting participants know about others' reaction to the same information in an aggregate way does not induce an additional change in beliefs compared to either the benchmark or to the voice only condition. However, adding disaggregate social information that describes the change in beliefs of separate groups of participants, does contribute to a further, significant reduction of the misconception. Thus, combining a refutational visual message with social information that mirrors the diversity of initial opinions of citizens seems to be an important part of an effective communication strategy.

At an exploratory level, we find that revising beliefs in line with experts' consensus is correlated with reduced support for rent control in a hypothetical referendum. Interestingly, we also find that ideology and a zero–sum mentality, although significantly correlated with initial opinion, are not associated with the change in beliefs. Ideology and a zero–sum worldview, thus, do not stand in the way of accepting scientific information and changing beliefs in the case of the rent control policy.

2. Experimental framework

2.1. Research hypotheses

We set out to test three hypotheses regarding the comparative effectiveness of distinct informational interventions that aim at reducing the misconception about the effects of rent control. They are grounded on prior research in psychology and in economics, as described next.

Our first hypothesis is that *letting participants express their opinion about the refutation video and the information it contains, and about the motives of their initial belief, will reduce the misconception more than just letting them watch the video, without asking for their feedback.* Giving citizens the chance to express their opinions letting them feel heard, has been found to affect their behavior in different settings. For instance, Hager et al. (2023) conduct a natural field experiment with a major European party to test whether giving party supporters more voice increases their engagement in the party's electoral campaign. They find that the perception of being heard by the

party—either by sharing their opinion about some issues with the party, or by providing advice—is strongly positively associated with the participants' willingness to participate in the campaign and with their level of identification with the party. In the setting of a laboratory experiment, Li et al. (2020) test the effect of voice on indirect reciprocity. They find that in a dictator game, the degree of giving increases when recipients are allowed to write messages to the first–stage dictator immediately after an interaction affects a subsequent interaction of the first recipient, this time as a dictator, with an unrelated party. According to studies in experimental social psychology, when people feel they are not being heard, conflict and tension increase, especially when political topics are involved. In Bruneau and Saxe (2012), positive attitude change towards the out–group was observed when cross–group pairs of participants involved in ideological conflict interacted via video and text in a brief, structured, face–to–face exchange. In Voelkel et al. (2021), receiving a fair chance to voice one's opinions in a discussion of political topics with political out–group members reduce political prejudice. This evidence on the impact of being heard in a variety of situations suggests that, in our experiment, giving voice to participants may affect their disposition to review their initial incorrect belief.

Our second hypothesis is that, *in addition to giving voice to participants, informing them about how other people reacted to the video (the proportion of people that abandoned the misconception after watching the same video), will further induce participants holding the misconception to abandon it.* There are different ways of providing this social information, and we test two of them, as we explain in the next section. This hypothesis is motivated by evidence from studies that find that receiving social information affects behavior in a variety of domains such as household water consumption (Ferraro and Price, 2013), energy consumption (Allcott, 2011), contributions to public goods (Chen et al., 2010), and driving behavior (Chen et al., 2017). Social information may facilitate a change in the participant's belief in order to align with the group's change (Nauroth et al., 2017; Ecker et al., 2023). Giving social information, that is, informing participants about how other people changed their beliefs after watching the same video, may work through several channels. Relying on social information can be a way of learning about the environment through others (social learning); it can also be used to act similarly to other individuals in the same situation, that is, to comply with the behavior or norm of a group (conformity). Social image concerns have also been shown to affect voting behavior (Dellavigna et al., 2017), welfare take–up and contributions to public goods, among other domains of behavior (Bursztyn and Jensen, 2017). For example, if the individual identifies with a particular political ideology, party or group, holding a different view from her reference group on some issues or policies may be perceived as a threat to her social acceptance by other group members. In our case, learning that others' opinions have moved away from the misconception after watching the same video, may reduce the cost that deviating from opinions initially shared by others involves, as the social information pro-

vided makes opinion change more socially acceptable. Results of an experimental study by Ecker et al. (2023) on perceptions about the impact of refugees on the Australian economy suggest that providing social information jointly with refutative information can reduce false claims, and that this combination is more effective than using each strategy individually.[3]

The third hypothesis is also based on empirical research in cognitive psychology and economics. It states that *higher scores of the CRT will be associated with a higher change away from the misconception.* Understanding scientific reasoning and evidence about causal relations requires cognitive effort, especially when people have misconceptions. The individual inclination to analytical thinking may thus affect the extent to which people revise their beliefs, as previous evidence shows. Measuring this trait through the CRT, Pennycook and Rand (2019), Pennycook et al. (2020) and Tappin et al. (2020) find that an individual's ability to discern fake news from real news, and to revise beliefs about political issues, are positively correlated with higher propensity to use analytical thinking (higher CRT scores). Our third hypothesis here is also founded on our previous findings on the misconception about the rent–control policy and the role of the CRT. In Brandts et al. (2024), where we test the effectiveness of visual against written messages, we find that the correlation between CRT scores and initial beliefs is not significant. This indicates that higher or lower CRT scores are not correlated to lower or higher propensities to hold the unfounded belief. The initial prevalence of the misconception, thus, crosses the reflective–intuitive thinking scale, as measured by the CRT. However, our previous findings show that participants with higher CRT scores are more likely to accept the information provided and reduce the misconception. Here, we test whether adding the social factors affects the relationship between CRT scores and belief change.

2.2. Conditions

To test these hypotheses, we conduct an on–line survey experiment where participants are randomly allocated to three treatment conditions and to a benchmark condition. The experiment was approved by the ethics committee of the Universitat Autònoma de Barcelona (Ethics Committee on Animal and Human Experimentation, Number CEEAH 5999) on May 24, 2022. The experiment's hypotheses and procedure were pre–registered at AsPredicted Registry, Wharton Credibility Lab (University of Pennsylvania) on June 27, 2022, #101174 and on February 27, 2023, #123371.[4]

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[3]Other studies, such as, Andre et al. (2022) or Bursztyn et al. (2020) focus on a related, but different question, i.e., whether informing participants about the share of people who comply with a social norm affects others' beliefs or behaviors. Note though that unlike these studies, our purpose is not to correct misperceptions about social norms; we therefore do not ask participants about what they think others' beliefs or changes in beliefs are, before or after the interventions.

[4]Anonymized versions of the pre–registrations are available here: https://aspredicted.org/blind.php?x=4W2_M44 and here: https://aspredicted.org/blind.php?x=SWV_MM4.

We elicit participants' pre– and post–treatment beliefs about the rent–control policy. The exact statement all participants have to express, on a five–level scale, their degree of agreement with is "Establishing rent controls, such that rents do not exceed a certain amount of money, would increase the number of people who have access to housing facilities." This statement is the same as in Brandts et al. (2024), which we maintain for comparison purposes.

In the benchmark condition participants are exposed only to the refutational video (RV condition) without any added social factor. The video can be found at the following link: https://youtu.be/s5sr_vOrRMc. It informs, using a refutational approach, about the overall negative effects of rent controls found in the studies that analyze this issue (see our discussion in the introduction). It is the same video used in Brandts et al. (2024), consisting of twenty–one frames that combine some text with images that illustrate the arguments and reinforce the text.[5] The content of the video reflects the elements of the refutational communication style: (i) activating the misconception, (ii) stating the belief is incorrect, (iii) showing the scientific evidence about the negative, unintended effects of rent controls, (iv) connecting with recipient's values regarding fairness, and (v) stating that alternative effective policies exist. The video is 2 minutes and 42 seconds long.

Appendix A shows the frames of the RV. Frames one to three provide a brief introduction to markets and price controls. Frames four to six describe facts regarding the problem of housing access. Frame seven to nine activate the misconception, stating that many people believe that rent control would be a solution (first refutational element), and affirming that research shows that the belief is incorrect (second refutational element). Frames ten to fifteen explain the negative effects of rent controls as shown by the scientific evidence (third refutational element). Frame eleven, in particular, explains the case of the effects of rent regulation in Stockholm, citing the study by Andersson and Söderberg (2012). The video addresses readers' potential fairness concerns in frames four to six and in frame sixteen. Finally, frames seventeen to twenty–one explain policy alternatives to rent controls.[6]

The second condition, the voice condition (RVV henceforth, for refutation video and voice), adds the voice factor to the RV condition. At two points of the experimental session, participants are asked to give feedback and express their thoughts and motivations. First, right after expressing their initial belief about rent controls, participants are asked to indicate the motivation for that belief. Each participant has to choose one of four potential reasons as the most important one. Response choices vary depending on the participant's initial belief (see these questions in Appendix D.3). If a participant is in agreement or total agreement with the statement on rent controls, the

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response options are: a) because everybody must be able to live with an affordable rent; b) to prevent speculating with housing; c) to allow people to keep on living in their neighborhood; d) other reasons. Option a) is meant to capture distributional concerns; option b) is intended to reflect an ideological position critical of markets; option c) reflects a concern for emotional attachment to a community. If the participant's initial belief is disagreement or total disagreement, the options are: a) because the housing market must work freely; b) because rent controls are unfair to owners; c) because it will make it harder to find rental housing; d) other reasons. Option a) is meant to capture an ideological position in favor of free markets; option b) is meant to capture distributional concerns; option c) reflects an understanding of how the housing supply would react to the policy. In addition, all participants are given free space to write any comments they wish after selecting their motivation. If the participant's response to the statement on rent controls is "do not know", the participant does not have to choose a pre–selected option, but is given free space to explain his/her choice. We thus give room for the participant to express an opinion freely. The second point of the experimental session where participants are given voice is right after watching the video. Participants are asked to give their opinion about its content: its persuasiveness, ease of comprehension, and duration. Here again all participants are given free space to type any comments they wish (see the questions in Appendix D.5).

The other two conditions add social information to the voice condition. In both these conditions, participants are informed about how other people who watched the same video changed their beliefs. Participants receive this additional information after completing the voice blocks and before they are asked to give their final opinion on rent controls (see section 2.3). The difference between these two conditions is the extent of detail the information contains. In the third condition, the information we supply about other people's reaction to the video is aggregate (condition RVVS1, for refutation video, voice and social information type 1). In the fourth condition, the social information provided is more disaggregate (condition RVVS2, for refutation video, voice and social information type 2). This information is given through images and text in both cases. In condition RVVS1, participants see a screen showing the distribution of initial and final beliefs—i.e. before and after watching the same video—of the whole benchmark group (RV) (see Appendix D.7). This aggregate social information is thus taken from the benchmark condition that was run before RVVS1.

In condition RVVS2 we provide disaggregate social information to participants. By disaggregate information we mean that we show them the distribution of final beliefs (after watching the video) of two distinct subsets of people. These subsets are defined by jointly conditioning on their agreement or disagreement with the statement, and on the main motive for doing so. The conditional distributions of final beliefs for these two groups are obtained from the pooled RVV and RVVS1 conditions, which are conducted before RVVS2. The first subset consists of

people who initially agree with the rent control statement because their main motive to do so is that "everybody must be able to live with an affordable rent". This is the most frequent response among those who agree with the statement in the RVV and RVVS1 conditions, see Table 4. The second subset refers to people who disagree with the rent control statement because their main motive to do so is that "it will make it harder to find rental housing". This is the most frequent response among those who disagree with the statement in the RVV and RVVS1 conditions (see Table 4). Participants are informed about the distribution of final beliefs after watching the video for these two subsets of people (see Appendix D.7). This more detailed information reveals to participants in RVVS2 the proportion of people, among those who have the same initial belief and motive, who forsake the misconception after receiving the same video. This higher detail may allow participants in RVVS2 better identify their reference group —those who initially think alike and for a similar reason. In RVVS2 we do not additionally show the aggregate initial and final distribution of beliefs so as to not disproportionately increase the cognitive load of processing social information. This way, both in RVVS1 and RVVS2 participants see two representations of distributions on their respective screens, although the distributions correspond to different groups. We believe that the way information about others' reactions is presented, whether aggregate or disaggregate, may have a different effect on participants' beliefs. As we explain below, we use a between–subject design in the experiment and therefore, participants assigned to each condition only see the social information provided in that condition.

In addition, on the same screen where participants see the social information —aggregate or disaggregate, depending on the condition—, they are asked to answer some questions about the colors used in the figures that display the distribution of beliefs (see the questions in Appendix D.7). The purpose of these questions is to check whether participants pay attention to the information given, although their answers do not affect their final payment. The only incentivized questions are the comprehension questions that follow the video.

2.3. Procedure

Table 1 shows the sequence of steps of the experiment in each condition, and highlights the differences across conditions. In addition to common initial instructions, blocks included in all conditions are the demographic questions, the initial opinion questions, the refutation video, the video comprehension questions, the cognitive reflection test and the final, post–treatment opinion questions. The content of the blocks is fully described in Appendix D.

Table 1: Experimental steps by condition

Benchmark	Voice	Voice & Social Information 1	Voice & Social Information 2
RV	**RVV**	**RVVS1**	**RVVS2**
Initial Instructions	Initial Instructions	Initial Instructions	Initial Instructions
Demographics	Demographics	Demographics	Demographics
Initial Opinion	Initial Opinion	Initial Opinion	Initial Opinion
	Motives	*Motives*	*Motives*
Video	Video	Video	Video
Comprehension	Comprehension	Comprehension	Comprehension
	Video Feedback	*Video Feedback*	*Video Feedback*
CRT	CRT	CRT	CRT
		Social Information 1	*Social Information 2*
Final Opinion	Final Opinion	Final Opinion	Final Opinion
	Support+Recommend	*Support+Recommend*	*Support+Recommend*
			Ideology+ZeroSum
Payment	Payment	Payment	Payment

Text in normal font designates the blocks of the questionnaire that are included in all conditions. Text in italics designates blocks specific to some conditions. The blocks *Motives* and *Video Feedback* reflect the treatment in the voice condition (RVV). *Social Information 1* and *Social Information 2* are the treatment blocks added to the former in the social information conditions (RVVS1 and RVVS2).

In the initial instructions, participants are told that the study they are about to participate in is designed by social scientists who are professors at several universities with the purpose of understanding the current society. They are told that they will be asked to complete several tasks to that end, and that if they complete all of them, they will receive a six euro payment. They are also told that this payment does not depend on their answers to the questions, with only one exception. The exception is that one of the tasks —the comprehension questions asked after watching the video— will allow them to obtain two additional euros if their answers are correct (see the initial instructions in section D.1.1 in Appendix D).

Furthermore, initial instructions contain a statement intended to make it clear to participants that the survey has strictly scientific purposes, and that there are no other interests involved. We also stress that we are interested in participants' sincere personal opinions and that there are no correct or incorrect answers. This distinguishes our work from studies in which people are asked about their perceptions about quantitative economic facts, where there is a quantitative true benchmark, such as the share of immigrants or the degree of inequality. Since in our case there are no correct or incorrect answers (answers are personal opinions), we do not need to incentivize correctness. An indicator that participants declare their true opinion is that initial beliefs in our study show a very similar distribution to that found in polls recently conducted in Spain about the rent control policy and in our previous studies on this issue (Brandts et al., 2022, 2024). We only incentivize with an extra payment correct responses to the comprehension questions

in each condition to induce participants to pay attention to the information treatment, as this is an essential aspect of the experiment. Finally, participants are informed that their personal identification data will be anonymous and confidential. If participants agree to the terms, they sign the consent form.

After the initial instructions, participants see a screen with the socio–demographic questions, followed by the initial opinion questionnaire, which includes the key statement on rent controls described in section 2.2. This questionnaire is the same across conditions and, in addition, to the statement on rent controls, it includes another five statements, two related to housing, two on attitudes towards science, and one about fairness (see Appendix D.2).

Participants in the RVV, RVVS1 and RVVS2 conditions answer a question to indicate their motivation for their initial belief just after the initial opinion block and before watching the video (*Motives* block). The next step in all the conditions is the refutation video. Participants can pause the video and re–watch it as many times as they wish but once they move to the next screen, they cannot go back to the video. Two comprehension questions follow (see the questions in Appendix D.4). Then, participants move to the next screen, where they are asked to give their opinion about the video (*Video feedback* block).

An eight–item CRT follows to provide a measure of analytical versus intuitive thinking of participants in all conditions. Next, in the RVVS1 and RVVS2 conditions, participants receive the corresponding social information (*Social Information 1* and *Social Information 2* block, respectively). The final opinion block contains the statement about rent control and five additional statements. As in the initial opinion questionnaire, two statements are related to housing, two on attitudes towards science, and one about fairness. Table C.1 shows the statements included in each opinion block. The purpose of adding statements to our key statement and of varying them across initial and final opinion blocks is to obfuscate the focus on rent controls and to avoid repeating previous answers.

In the RVV, RVVS1 and RVVS2 conditions, participants are asked some additional questions after they have given their final opinion. Therefore these questions are intended to explore how final beliefs about rent control translate into a voting intention in a hypothetical referendum about the policy, and into the decision of recommending the video to their acquaintances (see Appendix D.9). This exploration has been planned and included in the pre–registrations #101174 and #123371. Finally, we add an additional block of questions in the RVVS2 condition, with the aim of exploring the association between beliefs about rent control and the ideology and extent of a zero–sum mindset of participants (see Appendix D.10). The idea of including this block emerged after the other conditions had been executed, and was included in the pre–registration #123371.

One concern related to survey experiments is the potential experimenter demand effects. There is no reason, ex–ante, to suspect that it would be higher in one condition than in another. Since

what we do is to compare the relative effectiveness of social factors across conditions, potential experimenter demand effects are unlikely to drive the results. Recall that to lessen potential experimenter demand effects, both initial and final opinion blocks include other questions. In addition, this is a between–subject design, which is less prone to exhibiting these effects (Haaland et al., 2023).

The targeted sample size per treatment condition is 350 subjects, the same sample size as for the benchmark condition, RV. The latter, in turn, was determined by the goal of reaching a statistical power of around 80% as explained in Brandts et al. (2024). The targeted total sample size is, therefore, 1400 observations. Final recruitment exceeds this number by 22 participants, which we keep. Participants are distributed as follows: 359 in the RVV condition, 350 in the RVVS1 condition, 351 in the RVVS2 condition, that add to the 362 already available for the RV condition from the previously pre–registered experiment, as explained in section 2.2.[7] Recruitment rules are identical in the four conditions: gender–balanced pool, with at least 20% of participants older than thirty years of age. Table B.1 in Appendix B shows that the socio–demographic composition of each condition is balanced in gender and age, and quite balanced in remaining dimensions.[8] Recruitment and the on–line experiment were conducted by the professional survey company Playstudies. The conditions were run in three waves for budgetary constraints: in July 6, 2021 the benchmark —video— condition; in June 28–30, 2022 the RVV and RVVS1 conditions and in March 7–9, 2023 the RVVS2 condition. Aggregate growth rates of GDP and employment were positive and similar all three years. Housing affordability has been, and still is, an important social concern over this whole period, as reflected by its preeminence in the media and in political debates in the Spanish Congress, and in the government's approval, in May 2023 —two months after running RVVS2—, of a housing act that allows the establishment of rent controls. As we

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[7]Before starting the experiment, participants' profiles were checked to make sure they fulfilled the required characteristics. Filters for previous participation were applied, so the final pool was composed of inexperienced participants only. Procedures to avoid fraud and profile duplication were applied.

[8]Our sample is relatively representative of the adult population in Spain, and similar to the samples of opinion surveys conducted by the *Centro de Investigaciones Sociologicas*, CIS (Sociological Research Center) in Spain, the public entity in charge of regularly conducting polls on a range of socio-economic and political topics. In the adult sample used in their Barometer of March 2023, 52% of people are women, 20% younger than 34 years of age, 4% non-Spanish. The distribution by education levels is as follows: primary or less 8.4%, compulsory 13%, upper secondary 34%, tertiary 44%. By employment status: 54% are employed; 9% are unemployed, and 36% not in the labor force. With respect to housing, 47% are owners, 29% have a mortgage, 19% are tenants, and other 5.4%. CIS does not collect information on household composition, municipality size and province of residence. The 2020 Household Survey conducted by the Spanish Statistics Institute, shows that the distribution of household composition is as follows: single person 26%, single parent 10.4%, childless couple 21%, couple with children 33%. According to the 2021 Census, the distribution of the population by town size is: 20% small, 40% medium and 40% large; the share of population living in Valencia is around 6%. Therefore, our sample for each treatment is quite representative of the Spanish population for gender, non-Spanish, education, labor status, home ownership, and less so for household composition and town size. Two dimensions in which our sample shows larger differences are age distribution (our sample is younger) and province of residence (our sample has a much higher proportion living in Valencia). We should mention that our limited budget did not allow for a complete stratification of the sample to obtain a fully representative sample of the adult Spanish population. Nevertheless, the level of representativeness of our sample is quite high in many important dimensions.

show in section 4.1, in all waves the pre–treatment distributions of beliefs about rent control are very close. We are thus quite confident that the socio–economic environment was quite stable and unlikely to affect the experiment.

3. Analysis

The main outcome of interest is the change in beliefs, measured as the difference between a participant's degree of agreement with the statement on rent controls after the intervention and her degree of agreement before the intervention. We transform the original responses in the five–point scale into numerical values as follows: 5 (totally disagree), 4 (disagree), 3 (do not know), 2 (agree), and 1 (totally agree). Hence y_i takes values between -4 (a change from totally disagree pre–intervention to totally agree post–intervention) and 4 (a change from totally agree pre–intervention to totally disagree post–intervention). That is, a positive value obtains when the response varies from agreement towards disagreement with the misconception. If the participant provides the same response in both questionnaires, the change is zero.

To test the hypotheses stated in section 2.1, we estimate a baseline regression model where the dependent variable is each participant's opinion change, and the independent variable of interest is a dummy variable representing her being assigned to one of the four conditions. The baseline regression is the following:

$$y_i = \alpha + \beta D_i + \gamma CRT_i + \delta X_i + \varepsilon_i \tag{1}$$

where y_i is the change in beliefs; D_i is a dummy variable equal to one if the participant is exposed to a given condition and zero otherwise; CRT_i is the score obtained in the cognitive reflection test and X_i is a vector of participants' socio–demographic characteristics. These are gender, age, education level, employment situation, household composition, housing tenancy status, location and town size (Table B.1 details the categories considered for each variable). We include these variables to account for some imbalances in the socio–demographic composition across conditions, as discussed in section 2.3.

To test for the first hypothesis we estimate equation (1) by comparing the change in beliefs of participants in the RV condition—exposed only to the video—relative to the change in beliefs of participants in the RVV condition—exposed to the video and the "voice" blocks—both unconditional and conditional to the initial belief. Hence D_i is a dummy variable equal to one if the participant is in the RVV condition, and zero if she/he is in the RV, and the estimate for β measures the impact of adding the " voice" blocks relative to the video only.

To test for the second hypothesis we estimate two specifications of equation (1). In the first, D_i is a dummy variable equal to one if the participant is in the RVVS1 condition, and zero if she/he

is in the RV. In the second specification, D_i is a dummy variable equal to one if the participant is in the RVVS2 condition, and zero if she/he is in the RV. In both specifications, we carry out the estimation both unconditional and conditional on the initial belief. Therefore, the estimate for β in the first specification informs us about the impact of providing participants with both voice and aggregate social information in addition to watching the video relative to only watching the video. The estimate for β in the second specification informs us about the impact of providing participants with both voice and disaggregate social information in addition to watching the video relative to only watching the video.

In addition, to analyze whether each type of social information has a differential effect with respect to voice, we compare the change in beliefs of participants in the RVVS1 and RVVS2 conditions, respectively, to that of participants in the RVV condition. We also compare the change of beliefs of participants in RVVS2 with that of RVVS1 to assess whether the extent of detail of social information makes a significant difference with respect to aggregate information.

To test for the third hypothesis, regressions above include CRT scores, as shown in equation (1).

For the exploratory analysis in sections 5, 6 and 7 we perform an additional set of regressions. In section 5 we examine whether initial, final and the change in beliefs is associated with intended behavior in two respects. First, regarding the direction of participants' vote in a hypothetical referendum proposing rent controls. And second, their willingness to recommend the video with their acquaintances. For each of these decisions separately we estimate a set of specifications where the dependent variables are, respectively, a dummy variable equal to 1 if the participant reports she/he would vote yes to rent control, and 0 otherwise; and in the second case, the dependent variable is equal to 1 if the participant reports she/he would recommend the video, and 0 otherwise.

In sections 6 and 7, we further examine whether initial beliefs about rent control, and the change in beliefs, is correlated with participants' ideology and with a zero–sum mentality. To this end we perform several regressions where initial beliefs, and change in beliefs, are the respective dependent variables, and ideology and zero–sum indicators are independent variables, as explained in detail below.

4. Results

4.1. Descriptive results

Table 2 reports the distribution of the degree of agreement with the statement about rent controls before and after each intervention. The distribution of initial beliefs is very similar in all four conditions: about 77% to 80% of participants agree or totally agree with the statement—that is,

hold the misconception—while only 15% to about 19% disagree (see Panel A). These numbers are in line with findings from Brandts et al. (2022, 2024).[9] The average of initial beliefs in the five–point scale is very close in all conditions, around 2.1, with a standard deviation of about 1.1 (see table B.2 in Appendix B).

After the interventions, the share of participants who disagree or totally disagree with the statement increases substantially in all four conditions, tripling the initial proportion in the first three conditions, and more than quadrupling it in the RVVS2 condition. This is mainly driven by the share of those who agree or totally agree, which drops by 42 to 54 percentage points (pp), depending on the condition (see Panels B and C in Table 2). The share of participants who repeal the misconception is highest in the RVVS2 condition, followed by the RVVS1, RV and RVV conditions. Panel C also shows the t–tests of the difference in means between the final and initial opinions. Differences in all four conditions are significant at the 1% level. The magnitude of the increase in disagreeing ranges from 35 pp to 48 pp.

Table 3 shows a number of participants' performance indicators over the experiment, mainly CRT scores, average time spent on each screen and responses to comprehension questions. The CRT score is measured as the percentage of correct answers of the eight items included in the test. The mean score is around 0.45 in all conditions, in line with the average CRT score in Brandts et al. (2024) and in Mosleh et al. (2021). The percentage of participants answering both comprehension questions correctly ranges between 73% (RVV) and 85% (RVVS2).[10] On average, participants spend around 13 minutes to complete all screens in the RV condition. Average time spent on all screens is longer in the RVV, RVVS1, and RVVS2 conditions, as expected, because these treatments add additional blocks of questions to the RV condition, as explained in section 2.2. Condition RVVS2 has the longest average time because it also includes the zero–sum and ideology block. More important than the total time spent on the experiment is the time spent on the video screen, which can be considered as a proxy for attention to the information. Average time spent on the video screen is higher than the actual video duration (2.42 minutes) in all conditions. Recall that participants are allowed to pause and re–watch the video. This suggests that many participants in all four conditions pay attention to the video. Compared with the RV

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[9]These percentages are also similar to the support to rent controls found in polls conducted in Spain, Germany, the UK or the USA. A recent poll in Spain conducted in 2023 by 40dB on behalf of the media Cadena Ser/El País found that 75% of respondents support rent control (https://cadenaser.com/nacional/2023/04/10/mas-de-la-mitad-de-los-hipotecados-y-el-70-de-quienes-viven-en-alquiler-sufren-ya-estres-financiero-cadena-ser/). In Germany, 71% of respondents to a poll conducted by Infratest dimap in 2020 were in favor of the rent cap in Berlin. In the UK the support for rent controls reached 71% in a poll conducted in December 2019 by Ipsos MORI, with only 9% of people opposing them. In a poll conducted by the Institute of Governmental Studies (IGS) of UC Berkeley in 2017, 60% of the state's registered voters favored rent control, while 26% opposed them.

[10]This table shows some differences between the benchmark condition (RV) and, respectively, RVV, RVVS1, RVVS2 are significant. To keep this table short, we do not include the tests of differences in means across the pairwise comparisons of the three treatment conditions. For the indicator of both comprehension questions correct, these pairwise tests show that the difference between RVV and RVVS2, and between RVVS1 and RVVS2 is statistically significant at 1% level, while the difference between RVV and RVVS1 is not significant.

benchmark, the average is higher in the three treatment conditions, although the difference is small and only significant for the RVV and RVVS2 conditions.

In order to account for potential differences in the time spent on the video screen across conditions, we create a new variable, relative time, that measures the difference between the time a participant spends on this screen and the median time spent by participants in her/his condition. Median time on the video screen ranges from 3.07 minutes (in the RVVS1 condition) to 3.32 minutes (in the RVVS2 condition). We use the relative time variable as a proxy for individual attention intensity relative to the time participants in her/his condition spent on the video screen. Table 3 shows that the average of participants' relative time on the video screen is significantly different with respect to the RV for RVV and RVVS2, and not significant for RVVS1. The small significant differences in some dimensions in the composition of the sample of participants in RVV and RVVS2 relative to RV may drive the observed differences in time spent on the treatment screen relative to the median time spent by each pool of participants. In the tables below we show estimation results from a specification that adds this variable to equation (1). The purpose is to assess to what extent the results change once we account for differences in the attention to the video, which may be correlated, in turn, with differences in answering correctly both comprehension questions across conditions. Findings in Brandts et al. (2024) support that adding the relative time on the treatment screen is positively correlated with the change away from the misconception and that reduces estimated treatment effects.

Panel A in Table 4 shows the distribution of the motives for agreeing with the statement on rent control in the three conditions that include this block (RVV, RVVS1 and RVVS2). Notice that the "Motives" block is part of the voice treatment and therefore is not part of the RV condition. Most participants (64-71%) choose the motive intended to capture distributional concerns ("Because everybody must be able to live with an affordable rent"). About 26 to 35% choose the motive that reflects an ideological anti–market view of housing markets ("To prevent speculating with housing"). Avoiding neighborhood displacement does not appear to be an important motive for the majority of participants (below 2% in the three conditions). Panel B shows the distribution of the motives for disagreeing with the statement. In this case there is not a clearly dominant motive across conditions as in Panel A. The most frequent choice in conditions RVV (35%) and RVVS1 (46%) is "Because it will make it harder to find rental housing", which we label the efficiency concern. In the RVVS2 condition the most frequent choice is "Because the housing market must work freely", with 36%, which is the motive that reflects an ideological pro–market view. In the three conditions, about 20 to 25% choose the answer "Because rent controls are unfair to owners", a distributional motive.

After choosing the motive for agreeing (or disagreeing) with the statement, participants are given free space to add any comment they wish, in their own words. Figures C.1 and C.2 in

Appendix C show the word clouds of the comments in Spanish for participants who added a comment after, respectively, agreeing or disagreeing with the statement (148 participants out of a total of 833 agreeing or totally agreeing; 53 out of 173 disagreeing or totally disagreeing). The size of each word indicates its frequency in the whole set of participants' comments. Those who agree with a policy of rent control and add a comment often emphasize that the reason is that rents are too high relative to wages, or that high rents prevent the emancipation of young people, or that access to housing is a constitutional right, or that rent control may prevent speculation. Therefore, the words that stand out in Figure C.1 are House (*Vivienda*), Rent (*Alquiler*), To live (*Vivir*), Right (*Derecho*), All (*Todos*), Decent (*Digna*), Able to (*Poder*). Participants who disagree with the statement and add a comment in the free space provided often highlight that owners should be free to set the price, or that owners will not be interested in renting out, that the market would determine the price, or that payments in black would appear. The most prominent words in Figure C.2 are Price (*Precio*), Supply (*Oferta*), House (*Vivienda*), Freely (*Libre*), Market (*Mercado*).

As for the questions included in the video feedback block, Table B.6 in Appendix B shows that more than 80% of participants in all treatments find the arguments presented in the video very or quite convincing, the video itself easy or quite easy to understand, and its duration to be just right. Finally, close to 90% would recommend it to their acquaintances. 212 participants add a comment about the video in the free space provided, making suggestions such as adding a voice or music, improving the images, or adding more evidence.

As explained in section 2.2, both the RVVS1 and RVVS2 conditions include some questions to check the participant's attention to the social information provided (see Appendix D.7). In the RVVS1 condition around 93% of participants answer the question included correctly. In the RVVS2 condition the percentage of participants who give the correct answer in each question included is 78% and 88%, respectively. Percentages are somewhat lower than in the RVVS1 condition, possibly because the disaggregate information provided in the RVVS2 condition is a bit more complex than the aggregate information in the RVVS1 condition.

4.2. Estimation results

Table 5 displays estimated treatment effects, comparing separately each treatment to the benchmark condition, RV. For each comparison, we present the results from three specifications where we sequentially add the CRT score and relative time. Therefore, results in columns (2), (5) and (8) correspond to the estimation of equation (1). In columns (1), (4) and (7) we show estimates excluding CRT scores, so the comparison between the specification with and without the CRT score helps clarifying the role of this trait in the effect of the corresponding treatment on the misconception revision. In columns (3), (6) and (9) we add relative time as an additional control

variable. As discussed in section 4.1, this variable accounts for differences in the time spent on the video screen, which may be associated with differences in attention to the video content, and thus lead to a different degrees of understanding the workings of a rent control policy. The positive and significant estimates of relative time in all the three comparisons is in line with previous findings in Brandts et al. (2024) and also with findings in Alfaro et al. (2023), which highlight the role of attention in relation to people's beliefs about the effects of trade policy.[11]

Columns (1) to (3) show that the "voice" treatment (RVV) does not have an additional significant effect beyond the RV. The inclusion of relative time does not change the estimated, non–significant, effect of RVV. It only slightly reduces the estimated coefficient of the CRT score from 0.44 to 0.43. These estimates indicate that a higher performance in the CRT is significantly associated—at the 5% significance level—with higher disengagement from the misconception. Columns (4) to (6) in Table 5 show that adding aggregate social information to voice (condition RVVS1) does not trigger a higher change of beliefs than the benchmark condition. This result is robust to excluding the CRT score (column (4)) and to including relative time (column (6)). In contrast, providing disaggregate social information (condition RVVS2) fosters a significant additional change in beliefs in the right direction compared to the RV (column (8)). Controlling for relative time does not substantially change the estimated treatment effect, which remains positive and significant (column (9)). Its magnitude (0.27) accounts for about 12% of the average initial belief in the benchmark condition (2.13, see Table B.2 in Appendix B). Performance in the CRT is not significantly associated to the change in beliefs in RVVS1 but it is in RVVS2.

Table 6 reports estimated treatment effects conditional on initial beliefs about rent controls. For participants initially agreeing with the rent–control statement, we do not find that the treatments RVV or RVVS1 have a significant differential impact with respect to the RV. In contrast, the treatment with voice and disaggregate social information (RVVS2) induces a significant change towards disagreeing. None of the treatments has a significant effect on the change of belief of participants who initially answer "Do not know". For those who initially disagree, both voice (RVV), and voice and disaggregate social information (RVVS2) contribute to reaffirm them in their opinion, or to move them towards totally disagree. These conditional results show that the overall significant positive effect of the RVVS2 displayed in Table 5 is driven by a positive effect on both those who initially agree and on those who initially disagree with the statement. This Table also shows that the significant association between the CRT score and revising the misconception

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[11]We should note that we do not interpret the results on the relative time variable in a causal way. The amount of time spent on the video screen is a participant's decision and, therefore, it can be correlated with individual characteristics. To shed some light on this, Table B.4 shows that, although relative time is not systematically correlated with most observed participant's characteristics across conditions, it shows a significant association with the propensity for analytical thinking (CRT score) in two out of four conditions. Importantly, relative time is not significantly correlated with initial opinion, except weakly so in the RV condition, where a lower degree of agreement with the statement is associated with lower relative time on the video screen. Nevertheless, we cannot disregard that relative time might be correlated with unobserved individual variables.

is driven mostly by participants who initially agree with the statement in two out of the three comparisons.

Therefore, relative to the RV, RVVS2 induces an additional change away from the misconception by those who initially hold it, and it has an additional reaffirming effect for those who initially do not hold it. Table B.3 in Appendix B, which shows the transition of participants from their initial to the final belief in each condition, describes these patterns. For instance, Panel D shows that, in the RVVS2 condition, only 8% of participants who initially totally agree with the statement stick to this opinion, while about 54% of them shift towards disagreeing or totally disagreeing. Similarly, 59% of participants who initially agree switch to some form of disagreement. Finally, 51% of participants who initially disagree persist in this opinion, while 43% move towards totally disagreeing, a stronger position. In comparison, Panel A (RV) shows that the shift among those initially agreeing with the misconception is smaller, while the shift towards agreeing among those who initially disagree is larger.

We also study whether participants with different motives for their initial belief have a different propensity to change this belief after the treatment. For the RVV, RVVS1 and RVVS2 conditions, and conditional on initially agreeing or disagreeing, we regress the change in beliefs on motives, introduced as dummy variables, on CRT scores, relative time and socio–demographic controls. We find that the motivation participants declare for initially agreeing or disagreeing with rent controls is not correlated with changing their beliefs. That is, for participants who agree with the statement, whether their motivation reflects distributional concerns or an ideological attitude critical of markets, is not significantly associated to their change in beliefs. For participants who disagree, the change in beliefs is not associated to their motivation, whether it is related to an ideological attitude, or to an understanding of how housing supply works, or to distributional concerns.[12]

Finally, in Table 7, we show the differential impact of adding the two types of social information to voice in columns (1) to (6), and the differential impact of the two alternative ways to give social information in columns (7) to (9). Adding aggregate social information to voice does not make a significant difference in the change of beliefs. However, supplying social information in a disaggregate way additionally contributes to reducing the misconception relative to only giving voice, with an estimated coefficient of 0.37, significant at the 1% level. Consistently, giving disaggregate social information induces a positive change in beliefs relative to giving aggregate social information. These results further support findings in table 5 that show that disaggregate information is what makes a difference. A higher propensity to analytical thinking is associated to a higher change away from the misconception in all the comparisons.

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[12]Regressions are run for each condition separately and pooling them all. Results are available upon request.

4.3. Discussion

Our results regarding the pre–registered hypotheses are the following:

Result 1: We do not find support for hypothesis 1. Giving voice to participants through asking them for their motivation for their belief, and for their feedback after watching the video, does not contribute to reduce the misconception beyond the effect that watching it already has.

This result differs from other existing evidence. In Bruneau and Saxe (2012), participants of opposing groups—Mexican immigrants vs White Americans; Israeli vs Palestinians—interact by pairs through a text chat window over a live video interface (Skype). This is, thus, an on–line face–to–face encounter, which is quite different from our setting, where participants do not interact in this fashion with each other or with the team of researchers. The intervention by Hager et al. (2023) is closer to our setting in that it gives voice to participants through an on–line survey that asks them about their opinions. The authors contact a political party to conduct the survey. They find that giving the party's supporters the opportunity to voice their opinions increases their engagement in canvassing activities in the party's campaign. In contrast to our case, this intervention collects the party supporters' opinions but does not challenge their views; these are already aligned with those of the party. Voelkel et al. (2021) find that being included in a political discussion by political outgroup members reduces prejudice toward this outgroup, in an imagined interaction. The effectiveness of giving voice (being heard) seems thus context specific and to depend on the way participants interact.

The effectiveness of giving voice (being heard) seems thus to be context specific, and to depend on the precise way participants interact or relate with the other party. Note also that voice does not backfire, i.e. it does not lead to participants to strengthen their belief in the misconception. Voice may have a positive effect on well–being, but we do not have information about this effect.

Result 2: We find nuanced support for hypothesis 2. The treatment combining voice and aggregate social information, RVVS1, does not have a significant differential effect on beliefs relative to the benchmark, the video only. However, the treatment combining voice and disaggregate social information, RVVS2, has a significant effect.

This result shows that the precise content of social information matters. Aggregate information does not affect beliefs, but conveying information that details the behavior of people according to their initial belief and motivation—disaggregate information—does affect beliefs. Identifying which particular mechanisms drives this is beyond the scope of this paper as our experiments here are not designed to that end. We can suggest, however, potential mechanisms underlying our findings. One possibility is that the differential effect between RVVS1 and RVVS2 is explained by the latter facilitating the identification with the reference group. The comparison between panels C and D in Table B.3 in Appendix B, where we map belief transitions, suggests this is a plausible explanation. It shows that participants who initially disagree or totally disagree with

the misconception are less likely to switch to agreeing with it after treatment RVVS2 than in RVVS1. And of those who initially agree, a higher proportion in RVVS2 than in RVVS1 move towards totally disagreeing. Different priors about the proportion of people who have forsake the misconception may be another mechanism. Some participants may compute the mean of the conditional percentages shown in RVSS2 and seeing a majority disagrees they decide to do so too. Social learning, social image concerns, conformity, and compliance, are some other potential mechanisms than may explain why people react to social information. The exploration of these potential mechanisms is left to further research.

Result 3: We find support for hypothesis 3. The inclination to analytical reasoning is associated with a higher disengagement from the misconception.

Initial beliefs, in contrast, are only weakly correlated with CRT scores in two out of the four conditions (see Table B.5 in Appendix B). Thus, the rent–control misconception is initially held regardless of the individual propensity to analytical thinking. However, this propensity is associated with a higher tendency towards moving away from the misconception, in line with results in Brandts et al. (2024). The fact that we find a positive correlation between the CRT score and the relative time spent on the video screen (see Table B.4 in Appendix B) suggests a possible explanation for the positive association between the CRT score and the change in beliefs. This finding indicates that participants with a higher tendency for analytical thinking spend more time on the screen, which, in turn, suggests that they pay more attention to the message. This allows us to speculate that if we could induce those participants with lower CRT scores to spend more time on the video this might lead them to a stronger revision of the misconception.

One possible concern about our results is the fact that the conditions were run in consecutive years. However, as discussed in section 2.3, housing affordability has been an important social concern over this whole period, and the distribution of initial beliefs is similar across conditions. Societal narrative over those years should arguably have made people more reluctant to change their view with respect to the rent–control policy. Differences about motivations for initial beliefs across conditions, shown in Table 4, suggest that fairness concerns have increased among those who believe that the policy has positive effects on housing availability, while speculation becomes less important. This rise of the fairness motivation is consistent with the societal narratives in favor of rent controls, as people perceive that this policy is effective to increase affordable rental housing. Among those who disagree, the ideological factor —the housing market must work freely— seems to have become more salient, which may also reflect the increasing ideological polarization of the political debate. However, if anything, the evolution of the societal narrative over this period would have reassured people in their misconception, acting against the effectiveness of our treatment, especially in condition RVVS2, which was the last one carried out.

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5. Beliefs and intended behavior

A natural concern is whether beliefs translate into intended behavior. As pre–registered, in our experiment —after eliciting their final opinion— we ask participants in RVV, RVVS1 and RVVS2 conditions to state how they would vote in a hypothetical referendum about rent controls. The percentage of participants who would support this policy is around 31% in RVVS2; 40% in RVVS1, and 47% in RVV. These percentages are substantially lower than the percentage of participants who initially agree with the statement about rent controls, as shown in Table 2. This simple description also shows that the treatment with disaggregate social information, RVVS2, has the lowest intended support for the policy.

To study the correlation between beliefs and intended voting in the referendum, we estimate a set of linear probability models of the intended vote (dummy variable equal to 1 if the participant would vote in favor of rent controls, and 0 otherwise) on initial beliefs, change in beliefs and final beliefs, respectively. All regressions account for the CRT score and socio–demographic variables; and regressions on change in beliefs and on final beliefs also control for the relative time on the video screen. Panel A of Table 8 shows, not surprisingly, that initial beliefs are negatively correlated with intended support. Initial disagreement with the rent control statement predicts lower support. After watching the video, participants revise their beliefs towards abandoning the misconception as discussed in section 4.2, and this translates into intended behavior since both the change in beliefs and final beliefs are significantly and negatively correlated with support for the policy in the referendum. Note that the last three columns show that this negative correlation is mainly driven by the group of interest (those who initially hold the misconception). Hence, final beliefs and voting intentions are consistent. We can conclude that, in our case, revising beliefs widely translates into intended behavior, in contrast to findings in Barrera et al. (2020).[13]

We also explore another instance of intended behavior, the correlation between beliefs and participants' willingness to recommend the video to their acquaintances. The latter is measured through a dummy variable equal to 1 if the participant reports that she/he is willing to recommend it, and 0 otherwise. We use a linear probability model and separately regress the willingness to recommend on the initial belief, on the change in beliefs and on the final belief. Each regression controls for socio–demographic variables and CRT scores, and regressions on the change in beliefs and on the final belief also control for the relative time on the video screen. The first three columns in Panel B of Table 8 show that the willingness to recommend is not significantly correlated with

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[13]We also explore whether the correlation between intended support and beliefs may differ by home ownership status. We split the sample between tenants and owners (where ''owners" includes those with and without mortgages) and estimate the same specifications as above, conditioning on initially agreeing with the statement. Results are basically the same as those in the last three columns of Table 8 for both groups. Thus, home ownership status does not affect the correlation between final opinion and intended support for the policy. For the sake of brevity, these estimates are not included but they are available upon request.

initial beliefs. However, the correlation between recommend and, respectively, the change in beliefs and the final belief is significant and positive. This indicates that the intensity in moving away from the misconception after watching the video predicts a higher propensity to recommend information to others. Moreover, the last three columns show that initially agreeing with the misconception does not, as such, prevent participants from recommending the video. This is a positive result, as it indicates that people do not oppose sharing scientific information that does not align with their initial beliefs. At the same time, those who depart more from the unfounded belief, i.e., are more convinced by the video, are more likely to recommend it.

6. Ideology

A representative survey experiment about rent control conducted in Germany by Müller and Gsottbauer (2022) finds that support for rent control is positively correlated with a left–leaning ideological position. Dolls et al. (2022) also find that being left–wing is positively correlated with having misperceptions about the quantity effects of rent control. Here we study whether, as pre–registered, initial beliefs about rent control and changing beliefs are correlated with ideology.

We use the data from the RVVS2 condition, where the questionnaire included an ideology block, as shown in Table 1. We collect information on a range of indicators of political ideology and political party preferences, in addition to the standard self–assessment on a left–right scale used in previous studies (see Appendix D.10). In particular, we ask participants to rate the main political leaders, to indicate which party is closest to his/her ideas, and to state their voting intentions.[14] We decided to collect a set of indicators instead of one measure in order to minimize the potential lack of response on this sensitive topic, and to explore the robustness of our findings to alternative measures of ideology.

The distribution of these indicators, shown in Table B.7 in Appendix B, is very close to that obtained in the poll conducted by the Spanish Sociological Research Center in March 2023, when the RVVS2 condition was run.[15] We thus can be confident that our sample is also quite representative in the ideological dimension. Overall, the percentage of participants not answering these questions is low. In the left–right scale, where 1 is far–left and 10 is far–right, the mean is 4.94, slightly leaning towards the left, with very few extreme values (indeed, the median is equal to 5). Only about 4.5% of participants choose not to answer this question, whereas 3.4% answer not to know. Most participants also provide their assessment of the main political leaders. The prime minister, Pedro Sánchez (socialist party), obtains the highest score and Santiago Abascal

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[14]The questions we use to identify political position are based on those of the Spanish Political Opinion Barometer conducted by the Spanish Sociological Research Center. For more information, see https://www.cis.es/cis/opencm/ES/11_barometros/depositados.jsp.

[15]The poll we refer to can be found here: https://www.cis.es/cis/export/sites/default/-Archivos/Marginales/3380_3399/3398/es3398mar.pdf. It is based on 3787 phone interviews to a sample of the population 18 years of age or older, stratified by age, gender and regions.

(far–right party) the lowest one. When asked which party was closest to the participant's own ideas, PSOE (left–wing), PP (right–wing) and Podemos (far–left–wing) are the choice of about 50% of participants; 3.4% do not answer the question, and about 26.3% answer "don't know" or that none of the parties is close. Regarding vote intention, 3.1% do not answer, and 23.2% answer that they would not vote for any of the parties. The distribution of vote intention is quite similar to the distribution of responses for the closest party. Finally, regarding political self–definition, about one third self–defines as progressive, 14% as conservative, and 14% liberal (in the European sense); 11.9% do not answer, while 15% do not know.

To explore the correlation between ideology and initial beliefs, we regress the latter on each of the indicators of ideology separately. Table 9 shows the results, where columns correspond to the estimation for each indicator.[16] We find that ideology, when measured using the left–right scale, is significantly correlated with initial opinion: a one point increase in this scale (a move towards the right) is associated with a 0.13 point increase in the disagreement with the statement. When regressing initial beliefs on participants' assessment of the main political leaders, however, the only significant correlation, which is positive, is that of *Arrimadas*, the leader of a center–liberal party at that time. When ideology is measured through the party declared to be closest to own ideas, initial beliefs are not significantly correlated with ideology except for *Podemos* or the category nationalist party. The negative coefficients indicate that participants who consider those parties to be closest to their own ideas tend to agree with the statement on rent controls. This is consistent with the fact that the *Podemos* party has strongly supported the rent–control policy. When estimating the correlation between initial beliefs with vote intention, we do not find any significant coefficient. Finally, in the last column, initial beliefs are significantly associated to self–defining as progressive (with a negative sign) and liberal in European sense (with a positive sign). The manner in which ideology is related to initial beliefs is broadly consistent across the different measures of political ideology. Overall these results suggest that although left–leaning participants are somewhat more likely to hold the misconception, the belief is also shared by participants who endorse political parties to the right of the ideological spectrum.

We now analyze whether belief revision is correlated with indicators of ideology in the group of participants of interest, i.e., those who initially hold the misconception. Table 10 shows the results, where each column corresponds to a separate estimation.[17] We find that ideology, when measured using the left–right scale, is not significantly correlated with moving away from the misconception. When the change in beliefs is regressed against the leader assessment indicator, we find only a weak, positive association with participants who positively value the *VOX* leader (far–right). When

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[16]Regressions control for socio–demographic variables and include a dummy variable to account for "None" and "Don't know" responses to ideology measures. Results are not affected when including a dummy variable to account for the small number of missing responses (results not shown in the Table, but are available upon request).

[17]Regressions control for socio–demographic variables and for the relative time spent on the video screen.

ideology is measured through the party declared to be closest to own ideas, we unexpectedly find a negative and significant association with *Ciudadanos* (center–liberal); these participants move closer towards the misconception. When looking at the correlation with vote intention, we find that both left wing parties, *PSOE* and *Podemos*, exhibit a weak negative correlation with the change in beliefs (significant at the 10% level), suggesting that these participants tend to strengthen their initial belief. We do not find a significant correlation between the change in beliefs of participants who initially agree and self–definition as conservative or progressive. These results suggest that ideology does not appear to be a strong barrier in changing one's mind with respect to rent controls, at least when information is provided as in our treatment.[18]

7. Zero–sum mindset

The massive support for rent control—around 70% or more of respondents in polls in several countries, and close to 80% in our data—suggests that behind it there are factors that cross ideological and party lines. As we show above, ideology is only moderately correlated with holding the misconception. Among other factors that may contribute to this misconception is a type of worldview whereby an individual perceives that gains for one party or group come at the expense of another party's losses. This is a psychological trait known as zero–sum thinking, the belief that there is a fixed amount of resources or opportunities, such as land or the number of jobs. Evidence suggests that this trait influences views about fairness, the role of government, and policies (Johnson et al., 2022; Chinoy et al., 2023).

To explore, as pre–registered, whether this worldview is correlated with the misconception about rent control, we measure the inclination towards a zero–sum mindset using the extent of participants' agreement with three statements. The statements, included only in the questionnaire for the RVVS2 condition (see Table 1), are shown in Appendix D.10. The first statement (*Income*), adapted from Chinoy et al. (2023), says that gains of an income group come at the expense of another group. We add a second and third statements that are currently prominent in the public debate. The second statement (*Retirement and jobs*) refers to the loss of jobs for young people at the expense of old people if retirement age increases. The third one (*Digitalization and jobs*) enunciates that digitalization is likely to lead to more job destruction than creation. Respondents report their degree of agreement with each statement separately on a 5–point scale, where 1 is totally disagree, the middle option is do not know, and 5 is totally agree. Table B.9 in Appendix B shows that a large majority of participants (74%) agree or strongly agree with the *Income* statement, 60% with *Retirement and jobs*, and 58% with *Digitalization and jobs*.

We estimate the association between zero–sum thinking and initial beliefs by regressing ini-

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[18]We have also run the same regressions with the full sample of participants, i.e., unconditional to the initial beliefs. Results are very similar; these estimates are shown in Table B.8, included in Appendix B.

tial beliefs on participants' responses to the zero–sum statements, and control for participants' ideology using, for parsimony, the variable ideology scale. Column (1) in Table 11 shows the association between initial beliefs and the three zero–sum indicators. They are jointly included in the regression since responses to all three are positively but weakly correlated (between 0.14 and 0.20). The negative sign of the *Income* zero–sum indicator shows that believing that the wealth of an income group comes at the expense of another group, the higher the agreement with rent control. The other two zero–sum indicators, *Retirement and jobs* and *Digitalization and jobs*, are not significantly correlated with the initial belief. Ideology remains significant and the coefficient is consistent with findings shown in Table 9. Column (5) shows the same type of regression where the dependent variable is the change in beliefs for those who initially hold the misconception. None of the three coefficients is significant, hinting that a zero–sum mentality does not stand in the way of revising the misconception about rent control.

Although the three zero–sum indicators are only weakly correlated, we show, for robustness, separate regressions with each of them (columns (2) to (4) for initial beliefs and columns (6) to (9) for change in beliefs). The pattern of results does not change. We also assess the sensitivity of results to an alternative measure of zero–sum thinking, the sum of each participant's responses to the three statements. Consistent with results in Table 11, the aggregate indicator, not shown for brevity, is negatively and significantly correlated with initial beliefs, but not correlated with the change in beliefs. To summarize, estimation results in Table 11, indicate that zero–sum thinking is associated with initial rent control beliefs, even after accounting for the ideology.

A question that arises is how zero–sum thinking (in particular, the income zero–sum indicator, the more relevant one), ideology and the misconception about rent control are related. Figure 1 suggests that this relationship is U–shaped: although a zero–sum mentality is more frequent among left leaning participants, those on the far right also share this trait. This observation is in line with Chinoy et al. (2023), who find that in the case of the US, individuals with highest zero–sum worldviews show more sympathy towards the attack to the Capitol, both among Democrats and Republicans.

8.   Conclusions

In this paper we investigate how to communicate to citizens research–based consensus among economists about the consequences of a certain policy, rent control, based on state of the art empirical evidence. This is often more challenging than correcting factual misperceptions, because it involves communicating scientific knowledge about causal relations among variables. The challenge is even stronger when scientific consensus contradicts popular beliefs, as in the case of the rent–control policy, and touches on sensitive socio–economic issues, such as access to affordable housing. Information that confronts beliefs about how the world works may threaten an

individual's social image, and thus lead to the rejection of solidly grounded refutations.

The purpose of our research is to find effective communication formats to convey existing social research evidence to citizens so that they can make informed decisions regarding their support for policies. Our analysis shows that people do revise their beliefs regarding the effects of rent control on the availability of affordable housing when evidence–based information is delivered through a refutational, simple video that combines images and text, and addresses initial beliefs and concerns, including those related to fairness values. Importantly, we show that combining the video with disaggregate social information about how different groups of people reacted to the same video boosts the impact of the visual message that confronts initial beliefs. People do care about how others respond to defying information. In contrast, giving people voice only, in the sense of letting them express the motivation for their opinions, or giving them aggregate social information about how others react to the video, does not have a significant effect over just delivering the visual message. A possible mechanism is that by giving people disaggregate social information, they can more easily self–identify with his/her group and change behavior accordingly in order to be aligned with the group's change. Finally, we find that ideology and zero–sum thinking do not stand in the way of changing unfounded beliefs when scientific information is conveyed jointly with disaggregate social information. Our evidence is in line with recent work by Green et al. (2023) regarding the ability of science–based, moral frame, and social norm messages about politicized issues to move behavioral intentions.

Our results provide novel evidence on the effectiveness of adding disaggregate social information when delivering a refutational video tailored to the rent controls case. We consider, however, that they can be seen as generalizable knowledge, as they can inspire the design of communication messages aimed at correcting the public's misunderstanding of the workings of other policies, such as those related to immigration, trade, and carbon taxes. Combining a visual message that adopts a refutational approach to explain how a policy works with providing disaggregate social information may also be an effective communication method in these other settings.

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Figures

Figure 1: Zero-sum thinking and belief in rent control by ideology
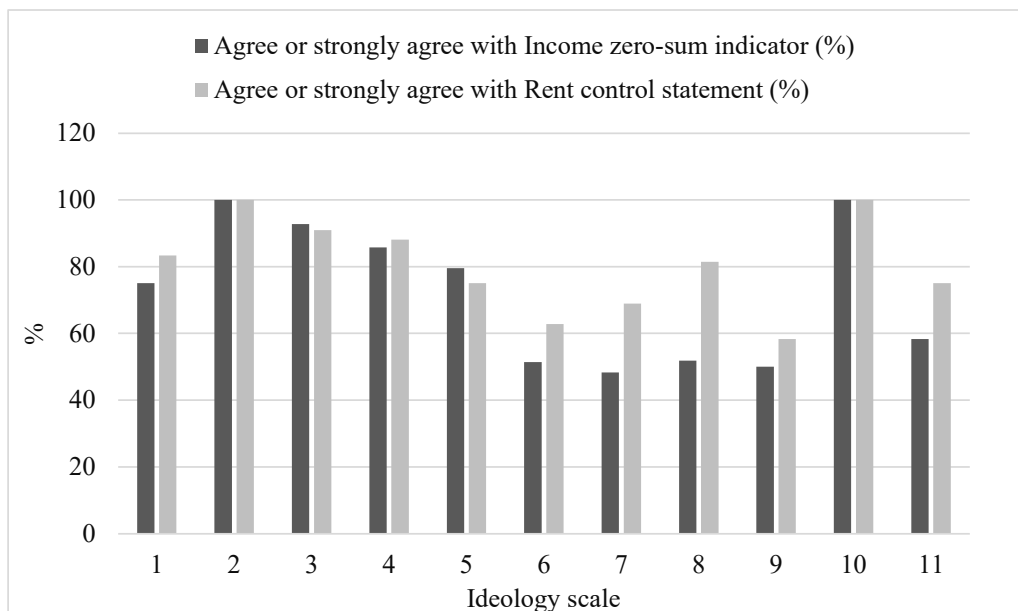
Note: Sample = 353 participants in the RVVS2 condition (Refutational video + voice + disaggregate social information). Ideology scale: 1 = far left; 10 = far right; 11 = Don't know. Income zero–sum indicator: "In Spain there are different groups of people according to their income levels. If a group becomes more wealthy, this usually comes at the expense of other groups". Rent control statement: "Establishing rent controls, such that rents did not exceed a certain amount of money, would increase the number of people who have access to housing facilities".

Tables

Table 2: Prevalence of the misconception and change of beliefs

	A. Initial beliefs (%)							
	Totally agree	Agree	Disagree	Totally disagree	Do not know	Sum agree	Sum disagree	N
RV condition	29.01	48.34	10.22	4.70	7.73	77.35	14.92	362
RVV condition	31.48	47.63	11.14	4.18	5.57	79.11	15.32	359
RVVS1 condition	32.57	44.00	14.00	4.57	4.86	76.57	18.57	350
RVVS2 condition	31.73	47.88	10.48	4.53	5.38	79.61	15.01	353

	B. Final beliefs (%)							
	Totally agree	Agree	Disagree	Totally disagree	Do not know	Sum agree	Sum disagree	N
RV condition	8.01	24.31	35.64	17.40	14.64	32.32	53.04	362
RVV condition	9.47	27.86	37.33	13.09	12.26	37.3	50.42	359
RVVS1 condition	4.86	25.71	44.29	12.29	12.86	30.57	56.58	350
RVVS2 condition	4.82	20.68	43.63	19.26	11.61	25.50	62.89	353

	C. Change in beliefs (percentage points)†			
	Do not know	Sum agree	Sum disagree	N
RV condition	6.91***	-45.03***	38.12***	362
RVV condition	6.69***	-41.78***	35.10***	359
RVVS1 condition	8.00***	-46.00***	38.01***	350
RVVS2 condition	6.23***	-54.11***	47.88***	353

RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. †Difference between percentage of participants answering a given level of agreement in the corresponding final and initial questionnaires. Significance levels of t–tests of the difference in means between final and initial questionnaires: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Participants' performance indicators by condition. Means and t–tests

	RV	RVV	RVVS1	RVVS2	RV − RVV	RV − RVVS1	RV − RVVS2
CRT score	0.45	0.44	0.44	0.40	0.01	0.01	0.05**
(st. dev.)	(0.29)	(0.27)	(0.27)	(0.27)			
Comprehension questions:							
Question 1 correct	0.88	0.79	0.82	0.92	0.08***	0.05**	-0.04*
Question 2 correct	0.86	0.78	0.79	0.90	0.08***	0.06**	-0.04*
Both questions correct	0.83	0.73	0.75	0.86	0.10***	0.08**	-0.03
Average time (minutes) spent in:							
All screens	13.40	17.13	16.45	21.09	-3.73***	-3.05***	-7.69***
Instructions screen	0.69	0.70	0.72	0.65	-0.01	-0.04	0.04
Sociodemographic quest. screen	1.50	1.54	1.41	1.47	-0.04	0.09	0.03
Initial opinion screen	1.33	1.56	1.42	1.54	-0.24***	-0.09	-0.21***
Motive screen	–	0.61	0.68	0.64	–	–	–
Video screen	3.26	3.93	3.33	4.01	-0.67**	-0.08	-0.75***
Comprehension quest. screen	0.72	0.93	0.86	0.81	-0.21**	-0.14	-0.09
Video opinion screen	–	0.52	0.53	0.60	–	–	–
CRT screen	4.82	5.70	5.22	5.57	-0.88***	-0.40	-0.75***
Social information screen	–	–	0.82	1.98	–	–	–
Final opinion screen	1.08	1.38	1.19	1.31	-0.30***	-0.11	-0.23*
Referendum screen	–	0.25	0.26	0.23	–	–	–
Ideology–Zero sum screen	–	–	–	2.13	–	–	–
Closing screen	0.17	0.16	0.13	0.14	0.01	0.03**	0.03
Relative time on video screen[†]	0.12	0.78	0.27	0.69	-0.66**	-0.15	-0.57***
N	362	359	350	353			

RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. CRT: Cognitive Reflection Test. CRT takes values between 0 and 1; it is computed as the percentage of correct answers to the eight questions included in the test. Significance levels of t–tests of the difference in means: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. [†]Average of the deviations to the median time spent on the video screen in each condition.

Table 4: Motivation for initial belief (%)

A. Initial belief: Agree or Totally agree	RVV	RVVS1	RVVS2
Because everybody must be able to live with an affordable rent	64.08	64.93	71.17
To prevent speculating with housing	34.51	32.46	25.62
To allow people to keep on living in their neighborhood	1.06	1.12	1.78
Other	0.35	1.49	1.42
N	284	268	281

B. Initial belief: Disagree or Totally disagree	RVV	RVVS1	RVVS2
Because the housing market must work freely	30.91	29.23	35.85
Because rent controls are unfair to owners	20.00	24.62	22.64
Because it will make it harder to find rental housing	34.55	46.15	28.30
Other	14.55	0.00	13.21
N	55	65	53

RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information.
RVVS2: Refutational video + voice + disaggregate social information.

Table 5: Estimated treatment effects on revising the misconception

	RVV vs RV			RVVS1 vs RV			RVVS2 vs RV		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RVV	-0.08	-0.08	-0.12	–	–	–	–	–	–
	(0.10)	(0.10)	(0.10)						
RVVS1	–	–	–	-0.00	-0.00	-0.01	–	–	–
				(0.11)	(0.11)	(0.10)			
RVVS2	–	–	–	–	–	–	0.31***	0.32***	0.27***
							(0.11)	(0.10)	(0.10)
CRT score	–	0.44**	0.43**	–	0.29	0.19	–	0.47**	0.38**
		(0.20)	(0.20)		(0.20)	(0.19)		(0.19)	(0.19)
Relative time	–	–	0.05**	–	–	0.08***	–	–	0.06***
			(0.02)			(0.03)			(0.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	721	721	721	712	712	712	715	715	715
R^2	0.04	0.05	0.06	0.06	0.06	0.09	0.06	0.07	0.08

Dependent variable: belief change after intervention; it takes values between -4 and 4 (positive values indicate a change away from the misconception). RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. See the set of control variables in Table B.1 in Appendix B.

Table 6: Estimated treatment effects on revising the misconception. Conditional on initial belief

	Agree			Do not know			Disagree		
	RVV vs RV	RVVS1 vs RV	RVVS2 vs RV	RVV vs RV	RVVS1 vs RV	RVVS2 vs RV	RVV vs RV	RVVS1 vs RV	RVVS2 vs RV
RVV	-0.16	–	–	-0.41	–	–	0.40**	–	–
	(0.10)			(0.42)			(0.20)		
RVVS1	–	0.04	–	–	-0.46	–	–	0.26	–
		(0.11)			(0.52)			(0.22)	
RVVS2	–	–	0.24**	–	–	-0.40	–	–	0.65***
			(0.11)			(0.48)			(0.22)
CRT score	0.45**	-0.01	0.51**	0.25	-0.29	0.53	0.58	0.72*	0.29
	(0.20)	(0.20)	(0.20)	(0.72)	(0.69)	(0.78)	(0.39)	(0.41)	(0.42)
Relative time	0.04*	0.07***	0.06***	0.02	0.06	0.03	0.11**	0.05	0.06
	(0.02)	(0.03)	(0.02)	(0.02)	(0.05)	(0.05)	(0.05)	(0.03)	(0.05)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	564	548	561	48	45	47	109	119	107
R^2	0.11	0.10	0.12	0.50	0.53	0.38	0.34	0.18	0.28

Dependent variable: belief change after intervention; it takes values between -4 and 4 (positive values indicate a change away from the misconception). RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. All regressions include the same control variables as in Table 5.

Table 7: Comparing across social factors

	RVVS1 vs RVV			RVVS2 vs RVV			RVVS2 vs RVVS1		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
RVVS1	0.10	0.11	0.14	–	–	–	–	–	–
	(0.10)	(0.10)	(0.10)						
RVVS2	–	–	–	0.34***	0.37***	0.37***	0.22**	0.23**	0.20*
				(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
CRT score	–	0.41*	0.40*	–	0.63***	0.62***	–	0.47**	0.39**
		(0.21)	(0.21)		(0.20)	(0.20)		(0.19)	(0.19)
Relative time	–	–	0.04**	–	–	0.03**	–	–	0.06***
			(0.02)			(0.02)			(0.02)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	709	709	709	712	712	712	703	703	703
R^2	0.04	0.05	0.06	0.05	0.07	0.07	0.06	0.06	0.08

Dependent variable: belief change after intervention; it takes values between -4 and 4 (positive values indicate a change away from the misconception). RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. See the set of control variables in Table B.1 in Appendix B.

Table 8: Beliefs and intended behavior

| | A. Support for the policy[†] | | | | | |
| | All participants | | | Participants initially agreeing | | |
	RVV	RVVS1	RVVS2	RVV	RVVS1	RVVS2
Initial belief	-0.12***	-0.13***	-0.10***			
	(0.02)	(0.02)	(0.02)			
Change in beliefs	-0.12***	-0.09***	-0.09***	-0.24***	-0.23***	-0.20***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Final belief	-0.27***	-0.27***	-0.23***	-0.27***	-0.28***	-0.24***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)

| | B. Recommending the video[††] | | | | | |
| | All participants | | | Participants initially agreeing | | |
	RVV	RVVS1	RVVS2	RVV	RVVS1	RVVS2
Initial belief	-0.02	-0.01	0.02			
	(0.02)	(0.02)	(0.01)			
Change in beliefs	0.05***	0.04***	0.03***	0.06***	0.04**	0.04***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Final belief	0.05***	0.04**	0.06***	0.06***	0.04***	0.07***
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
N	359	350	353	284	268	281

[†]Dependent variable: Dummy variable equal 1 if the participant reports that she/he would support rent controls in a hypothetical referendum, and 0 otherwise. [††]Dependent variable: Dummy variable equal 1 if the participant reports that she/he is willing to recommend the video with their acquaintances, and 0 otherwise. Each cell shows a separate regression. All regressions include socio-demographic control variables and CRT score. Regressions of support (recommend) on change in beliefs and on final beliefs also control for relative time on video screen. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Initial beliefs and ideology indicators (RVVS2 condition)

	1-10 scale[†]	Leaders assessment	Party closest to own ideas[†]	Vote intention[†]	Political self–definition[†]
Ideological scale (Far left = 1; Far right = 10)	0.13*** (0.03)				
Pedro Sánchez (PSOE)		-0.04 (0.04)			
Alberto Núñez Feijóo (PP)		0.02 (0.04)			
Yolanda Díaz (Podemos)		-0.05 (0.03)			
Santiago Abascal (VOX)		-0.03 (0.03)			
Inés Arrimadas (Ciudadanos)		0.14*** (0.04)			
Íñigo Errejón (Más País)		-0.04 (0.03)			
PSOE			-0.17 (0.16)		
PP			0.28 (0.20)		
Podemos			-0.30* (0.18)		
Ciudadanos			0.59 (0.36)		
Nationalist party			-0.42** (0.20)		
VOX			-0.37 (0.27)		
Other			-0.15 (0.25)		
PSOE				-0.20 (0.17)	
PP				0.26 (0.19)	
Podemos				-0.28 (0.19)	
Ciudadanos				0.67 (0.57)	
Nationalist party				-0.30 (0.23)	
VOX				-0.03 (0.29)	
Other				-0.23 (0.22)	
Conservative					0.09 (0.21)
Progressive					-0.26* (0.16)
Liberal (European)					0.83*** (0.22)
Other					-0.28 (0.18)
N	337	309	341	342	311
R^2	0.18	0.23	0.17	0.16	0.26

RVVS2: Refutational video + voice + disaggregate social information. Sample = 353 participants in the RVVS2 condition. Dependent variable: Initial degree of agreement with the statement on rent controls. Each column represents a separate regression that controls for CRT score and socio-demographic variables. [†]: Regressions include a dummy variable to account for "None" and "Don't know" responses. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. PSOE: socialist party, or labor party; PP: conservative party; Podemos: coalition of left and far left–wing parties; VOX: far right–wing party; Ciudadanos: center liberal party (European sense); Other includes other minority parties. Other in Political self–definition includes nationalist, feminist, ecologist.

Table 10: Change in beliefs and ideology, conditional on initially agreeing (RVVS2 condition)

	1-10 scale[†]	Leaders assessment	Party closest to own ideas[†]	Vote intention[†]	Political self–definition[†]
Ideological scale (Far left = 1; Far right = 10)	0.04 (0.04)				
Pedro Sánchez (PSOE)		-0.04 (0.05)			
Alberto Núñez Feijóo (PP)		-0.02 (0.05)			
Yolanda Díaz (Podemos)		0.05 (0.04)			
Santiago Abascal (VOX)		0.07* (0.04)			
Inés Arrimadas (Ciudadanos)		-0.04 (0.05)			
Íñigo Errejón (Más País)		-0.02 (0.05)			
PSOE			-0.31 (0.23)		
PP			-0.26 (0.26)		
Podemos			-0.33 (0.23)		
Ciudadanos			-1.09** (0.47)		
Nationalist party			0.01 (0.28)		
VOX			0.29 (0.35)		
Other			0.19 (0.30)		
PSOE				-0.39* (0.23)	
PP				-0.30 (0.26)	
Podemos				-0.42* (0.22)	
Ciudadanos				-0.52 (0.75)	
Nationalist party				0.02 (0.30)	
VOX				0.11 (0.34)	
Other				0.10 (0.30)	
Conservative					-0.10 (0.26)
Progressive					0.10 (0.21)
Liberal (European)					-0.21 (0.33)
Other					0.35 (0.24)
N	268	243	273	273	245
R^2	0.17	0.21	0.21	0.22	0.20

RVVS2: Refutational video + voice + disaggregate social information. Sample = 353 participants in the RVVS2 condition. Dependent variable: change in beliefs. Each column represents a separate regression that controls for CRT score and socio-demographic variables. [†]: Regressions include a dummy variable to account for "None" and "Don't know" responses. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. PSOE: socialist party, or labor party; PP: conservative party; Podemos: coalition of left and far left–wing parties; VOX: far right–wing party; Ciudadanos: center liberal party (European sense); Other includes other minority parties. Other in Political self–definition includes nationalist, feminist, ecologist.

Table 11: Zero–sum thinking, initial beliefs and change in beliefs (RVVS2 condition)

	Initial belief				Change in beliefs (initially agreeing)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Income	-0.21***	-0.22***			-0.02	-0.03		
	(0.06)	(0.06)			(0.08)	(0.08)		
Retirement and jobs	0.05		-0.01		-0.01		-0.03	
	(0.05)		(0.05)		(0.07)		(0.07)	
Digitalization and jobs	-0.09			-0.11*	-0.05			-0.06
	(0.06)			(0.06)	(0.07)			(0.07)
Ideology scale	0.10***	0.10***	0.13***	0.14***	0.03	0.03	0.04	0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.04)
N	337	337	337	337	268	268	268	268
R^2	0.23	0.22	0.18	0.20	0.17	0.17	0.17	0.17

Total sample = 353 participants in the RVVS2 condition (Refutational video + voice + disaggregate social information). Dependent variable columns 1 to 4: initial beliefs. Dependent variable columns 5 to 8: change in beliefs of participants initially agreeing with rent control (sample = 281 participants). Each column represents a separate regression that controls for CRT score, socio-demographic variables and a dummy variable to account for "None" and "Don't know" responses in ideology scale. Regressions of change in beliefs control for relative time on video screen. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

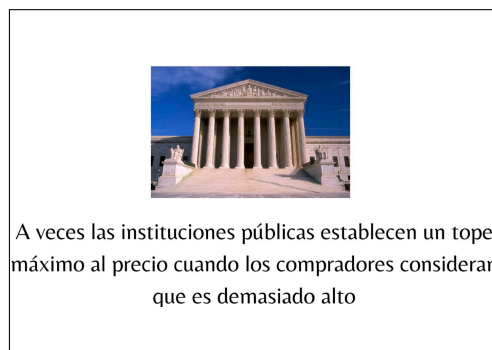# Appendices

A.   The refutational video

This appendix shows the slideshow from the video. Each slide includes below the English translation. We used https://www.canva.com/ to develop the video.
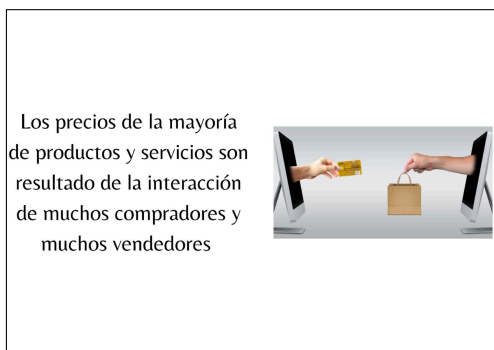
Frame 1: "Prices of most products and services are the outcome of the interaction between many buyers and many sellers".

Frame 2: "Sometimes public institutions set a price ceiling when buyers consider that the price is too high". Animated frame
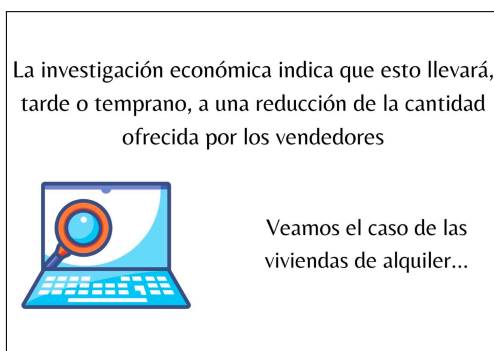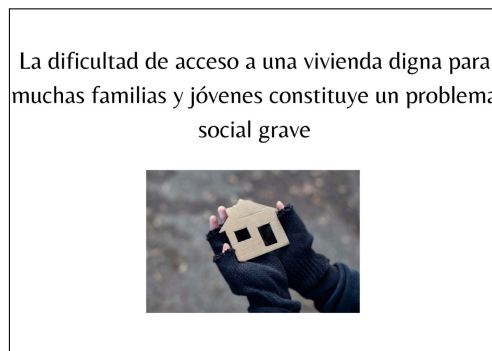

Frame 3: "Economic research shows that, sooner or later, this will lead to a drop in the quantity supplied by sellers". "Let's see the case of rental housing...".

Frame 4: "Rents have increased substantially in recent years in many Spanish cities".

Frame 5: "Many families and young people struggle to pay rents".

Frame 6: "The difficulty many families and young people have in accessing decent housing is a serious social problem".

Frame 7: "The natural concern for this problem drives many people to think... ...that the solution would be regulating rents through a price ceiling". Animated frame

Frame 8: "However, plenty of research by social scientists refutes this belief".

Frame 9: "Contrary to what it seems, rent ceilings do not guarantee more access to housing precisely for people who are the most needy".

Frame 10: "What has happened in cities where it has been carried out?". "Many of the scientific studies show that it has brought about several important problems in those cities".

Frame 11: "For instance, Swedish researchers Andersson and Söderberg show that in Stockholm... (Source: [...])". "...waiting lists of about 10 years or more to find a house to rent have arisen (Source: Stockholm Housing Agency)".

Frame 12: "This research also shows that... A black rental market often brings about, with bribes to advance a position in the queue, or illegal sublets at prices above the ceiling".

Frame 13: "Some owners decide to sell instead of renting".

Frame 14: "Some owners decide to leave properties empty because... ....they consider that renting at the legal price ceiling is not worthwhile for them".

Frame 15: "Conclusion of the research: with rent ceilings the supply of rental housing ends up falling". Animated frame.

Frame 16: "Low–income families are often most harmed by a policy that intended just the opposite".

Frame 17: "Does this mean that nothing can be done? No way!".

Frame 18: "Development of public rental housing". "More housing, rents bring down for everybody". Animated frame

Frame 19: "Taxing unused land". [P11], extracted from first sentence. "More housing, rents bring down for everybody". Animated frame.

Frame 20: "Direct support to families whose income falls below a certain threshold". "Support only to those who need it". Animated frame

Frame 21: "These are the main ALTERNATIVE POLICIES that research by social scientists recommends, and without the damaging effects of rent ceilings".

B. Additional results

Table B.1: Characteristics of participants in each condition. Means and t–tests

	RV	RVV	RVVS1	RVVS2	RV – RVV	RV – RVVS1	RV – RVVS2
Female	0.48	0.49	0.50	0.50	-0.00	-0.02	-0.02
Non-Spanish	0.08	0.08	0.06	0.07	-0.00	0.01	0.01
Age	30.99	32.25	31.94	33.68	-1.26	-0.95	-2.69***
(st. dev.)	(11.51)	(10.51)	(11.28)	(11.27)			
Education level:							
Primary or less	0.01	0.02	0.01	0.01	-0.01	0.00	-0.00
Compulsory	0.12	0.14	0.10	0.13	-0.03	0.02	-0.01
Upper secondary	0.37	0.36	0.33	0.34	0.01	0.04	0.03
Tertiary	0.50	0.47	0.56	0.52	0.03	-0.06	-0.02
Enrolled in TEd.	0.41	0.34	0.35	0.31	0.07**	0.06*	0.11***
Labor status:							
Employed	0.5	0.60	0.55	0.57	-0.10***	-0.05	-0.07*
Unemployed	0.12	0.09	0.12	0.13	0.04	0.00	-0.00
Not in labor force	0.35	0.30	0.32	0.27	0.06	0.03	0.08**
Province:							
Alicante	0.06	0.05	0.06	0.08	0.01	0.00	-0.02
Barcelona	0.06	0.10	0.08	0.13	-0.05**	-0.02	-0.07***
Madrid	0.16	0.15	0.15	0.14	0.01	0.01	0.02
Valencia	0.42	0.34	0.38	0.25	0.08**	0.04	0.17***
Other	0.31	0.35	0.33	0.40	-0.04	-0.02	-0.09***
Home ownership:							
Owner	0.38	0.30	0.35	0.37	0.08**	0.03	0.01
Mortgage	0.26	0.30	0.33	0.25	-0.04	-0.07**	0.01
Tenant	0.18	0.24	0.22	0.28	-0.07**	-0.04	-0.10***
Other	0.18	0.15	0.10	0.10	0.03	0.08***	0.09***
Household:							
Single	0.14	0.14	0.15	0.13	-0.01	-0.02	0.00
Single parent	0.17	0.16	0.17	0.20	0.01	-0.00	-0.03
Childless couple	0.13	0.18	0.14	0.16	-0.05**	-0.01	-0.04
Couple with children	0.37	0.40	0.41	0.35	-0.03	-0.04	0.02
Other	0.19	0.12	0.12	0.15	0.07***	0.07**	0.04
Town size:							
Small	0.14	0.15	0.15	0.12	-0.02	-0.02	0.01
Medium	0.40	0.43	0.40	0.36	-0.03	-0.00	0.04
Large	0.47	0.42	0.45	0.52	0.05	0.02	-0.05
N	362	359	350	353			

RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. TEd.: Tertiary education. Significance levels of t–tests of the difference in means: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2: Initial and final beliefs. Descriptive statistics

	Initial belief		Final belief		N
	Mean	Sd.	Mean	Sd.	
RV condition	2.13	1.09	3.30	1.24	362
RVV condition	2.09	1.09	3.17	1.24	359
RVVS1 condition	2.14	1.15	3.33	1.13	350
RVVS2 condition	2.08	1.09	3.52	1.16	353

RV: Refutational video. Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Beliefs are measured in a 1 to 5 scale, where 1 is totally agree and 5 is totally disagree.

Table B.3: From before to after. Mapping belief transitions

A. RV							
t-1	Tot_agree	Agree	Don't_know	Disagree	Tot_disag	Total	N
Tot_agree	8.99	24.72	14.61	37.08	14.61	100	89
Agree	5.81	25.16	16.77	34.19	18.06	100	155
Don't_know	6.9	10.34	13.79	51.72	17.24	100	29
Disagree	10	26.67	13.33	33.33	16.67	100	60
Tot_disag	13.79	27.59	6.9	27.59	24.14	100	29
B.RVV							
t-1	Tot_agree	Agree	Don't_know	Disagree	Tot_disag	Total	N
Tot_agree	17.05	27.27	11.36	31.82	12.5	100	88
Agree	5.73	35.67	14.01	33.76	10.83	100	157
Don't_know	13.04	8.7	26.09	43.48	8.7	100	23
Disagree	7.25	20.29	7.25	50.72	14.49	100	69
Tot_disag	9.09	18.18	4.55	36.36	31.82	100	22
C. RVVS1							
t-1	Tot_agree	Agree	Don't_know	Disagree	Tot_disag	Total	N
Tot_agree	16.05	18.52	13.58	41.98	9.88	100	81
Agree	1.36	31.97	13.61	42.86	10.2	100	147
Don't_know	0	16.67	8.33	58.33	16.67	100	24
Disagree	2.63	23.68	11.84	46.05	15.79	100	76
Tot_disag	0	27.27	13.64	40.91	18.18	100	22
D. RVVS2							
t-1	Tot_agree	Agree	Don't_know	Disagree	Tot_disag	Total	N
Tot_agree	8.04	24.11	14.29	39.29	14.29	100	112
Agree	4.14	23.67	13.02	44.97	14.2	100	169
Don't_know	5.26	21.05	15.79	52.63	5.26	100	19
Disagree	0	5.41	0	51.35	43.24	100	37
Tot_disag	0	0	0	31.25	68.75	100	16

RV: Refutational video. Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information.

Table B.4: Regression of relative time on initial opinion, CRT and socio-demographic variables

	RV	RVV	RVVS1	RVVS2
Initial opinion	-0.19*	-0.15	-0.10	0.01
	(0.11)	(0.19)	(0.15)	(0.13)
CRT score	1.11***	-0.65	0.99	1.55***
	(0.42)	(0.99)	(0.85)	(0.54)
Female	0.69***	0.15	0.90**	0.51
	(0.26)	(0.47)	(0.43)	(0.45)
Non-Spanish	0.52	1.07	-0.28	0.34
	(0.66)	(1.04)	(0.52)	(0.54)
Age	-0.02*	0.03	-0.00	0.01
	(0.01)	(0.03)	(0.01)	(0.03)
Education level:				
Compulsory	-0.92	-0.62	0.32	1.86
	(0.89)	(2.03)	(1.02)	(1.15)
Upper secondary	-0.99	-0.61	1.09	1.73**
	(0.88)	(2.12)	(0.95)	(0.78)
Tertiary	-0.78	0.06	0.77	1.50*
	(0.87)	(2.04)	(0.87)	(0.79)
Enrolled in TEd.	0.37	-0.22	0.23	-0.31
	(0.41)	(0.52)	(0.45)	(0.47)
Labor status:				
Unemployed	0.04	1.60	-0.00	0.02
	(0.47)	(1.38)	(0.51)	(0.40)
Not in labor force	0.07	0.66	-0.15	0.12
	(0.36)	(0.53)	(0.42)	(0.74)
Province:				
Barcelona	-0.85	-0.64	-0.69	0.25
	(0.89)	(0.73)	(0.60)	(0.62)
Madrid	-1.43*	0.10	0.02	0.40
	(0.81)	(0.80)	(0.67)	(0.59)
Valencia	-0.49	0.33	0.01	0.64
	(0.73)	(0.63)	(0.54)	(0.54)
Other	-0.74	0.15	-0.02	0.24
	(0.74)	(0.72)	(0.59)	(0.45)
Home ownership:				
Mortgage	0.44	0.37	-0.51	0.65
	(0.32)	(0.53)	(0.45)	(0.59)
Tenant	0.07	0.60	-0.55	0.11
	(0.42)	(0.63)	(0.53)	(0.42)
Other	0.15	-0.04	-0.27	0.75
	(0.43)	(0.64)	(0.69)	(0.57)
Household composition:				
Single parent	-0.53	-1.39*	0.60	0.74
	(0.45)	(0.83)	(0.84)	(0.62)
Childless couple	0.56	-0.47	0.47	0.47
	(0.48)	(0.84)	(0.71)	(0.48)
Couple with children	0.22	-0.33	0.04	0.16
	(0.37)	(0.88)	(0.50)	(0.41)
Other	-0.12	1.35	-0.75	-0.05
	(0.49)	(1.20)	(0.62)	(0.50)
Town size:				
Medium	-0.15	-1.70*	-0.98	0.75*
	(0.43)	(0.89)	(0.72)	(0.42)
Large	-0.27	-1.81**	-0.29	0.24
	(0.47)	(0.89)	(0.71)	(0.35)
Constant	1.77	1.56	-0.40	-3.37*
	(1.40)	(2.11)	(1.40)	(1.81)
N	362	359	350	353
R^2	0.14	0.07	0.07	0.06

RV: Refutational video. Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.5: Regression of initial belief on CRT and socio-demographic variables

	RV	RVV	RVVS1	RVVS2
CRT score	0.07	0.46*	-0.11	0.36*
	(0.23)	(0.23)	(0.25)	(0.22)
Female	-0.34***	-0.42***	-0.44***	-0.35***
	(0.11)	(0.12)	(0.12)	(0.12)
Non-Spanish	0.38	-0.10	-0.16	-0.16
	(0.24)	(0.22)	(0.28)	(0.20)
Age	0.02**	0.01	0.00	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Education level:				
Compulsory	0.62	-0.23	-0.48	-0.18
	(0.73)	(0.54)	(0.82)	(0.47)
Upper secondary	0.59	-0.09	-0.87	-0.17
	(0.73)	(0.54)	(0.81)	(0.47)
Tertiary	0.57	0.02	-0.77	0.17
	(0.73)	(0.54)	(0.81)	(0.46)
Enrolled in TEd.	0.04	-0.08	-0.17	0.20
	(0.18)	(0.16)	(0.20)	(0.19)
Labor status:				
Unemployed	0.00	0.28	0.31	-0.13
	(0.19)	(0.21)	(0.20)	(0.17)
Not in labor force	0.14	0.45***	0.36**	0.09
	(0.17)	(0.16)	(0.18)	(0.16)
Province:				
Barcelona	-0.46	0.14	0.07	-0.37
	(0.30)	(0.39)	(0.35)	(0.32)
Madrid	-0.06	-0.03	-0.08	-0.18
	(0.27)	(0.36)	(0.35)	(0.32)
Valencia	-0.09	-0.12	0.07	-0.21
	(0.24)	(0.32)	(0.30)	(0.30)
Other	-0.11	-0.00	-0.20	-0.40
	(0.25)	(0.34)	(0.31)	(0.29)
Home ownership:				
Mortgage	0.07	0.14	0.04	0.07
	(0.15)	(0.15)	(0.15)	(0.15)
Tenant	-0.22	0.03	-0.31	0.05
	(0.17)	(0.17)	(0.20)	(0.18)
Other	0.25	0.07	0.09	0.18
	(0.23)	(0.21)	(0.26)	(0.21)
Household composition:				
Single parent	-0.06	-0.44*	-0.21	-0.20
	(0.21)	(0.23)	(0.23)	(0.20)
Childless couple	-0.16	-0.30	-0.26	0.07
	(0.21)	(0.23)	(0.22)	(0.24)
Couple with children	0.09	-0.22	-0.34*	-0.05
	(0.18)	(0.21)	(0.21)	(0.20)
Other	0.01	-0.09	0.07	-0.50**
	(0.22)	(0.28)	(0.29)	(0.23)
Town size:				
Medium	0.20	-0.19	-0.34*	-0.13
	(0.18)	(0.17)	(0.18)	(0.21)
Large	0.19	-0.16	-0.35*	-0.15
	(0.19)	(0.17)	(0.19)	(0.20)
Constant	1.02	2.19***	3.63***	1.86***
	(0.90)	(0.75)	(0.89)	(0.68)
N	362	359	350	353
R^2	0.08	0.10	0.12	0.12

RV: Refutational video. RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.6: Opinions about the video

	RVV	RVVS1	RVVS2
Convincing video:			
Very much	0.28	0.28	0.37
Quite	0.55	0.55	0.51
Unclear	0.13	0.14	0.08
Barely	0.04	0.03	0.04
Not at all	0.01	0.01	0.00
Video comprehensibility:			
Easy	0.49	0.47	0.59
Quite easy	0.34	0.37	0.32
Neither hard nor easy	0.15	0.14	0.07
Quite difficult	0.02	0.01	0.01
Difficult	0.01	0.01	0.00
Video duration:			
Too long	0.08	0.06	0.06
Just right	0.91	0.91	0.91
Too short	0.02	0.03	0.03
Recommending the video			
Yes	0.88	0.89	0.92
No	0.04	0.03	0.03
Do not know	0.08	0.07	0.05
Observations	359	350	353

RVV: Refutational video + voice. RVVS1: Refutational video + voice + aggregate social information. RVVS2: Refutational video + voice + disaggregate social information.

Table B.7: Ideology. Descriptive statistics

	Mean	S.d.	% Don't know	% No answer
Ideological 1-10 scale	4.94	2.02	3.4	4.53
(Far left = 1; Far right =10)				
Political leaders assessment:				
Pedro Sánchez (PSOE)	3.85	2.59	1.7	0.85
Alberto Núñez Feijóo (PP)	3.69	2.92	8.22	1.7
Yolanda Díaz (Podemos)	4.1	2.69	5.38	1.42
Santiago Abascal (VOX)	2.57	2.42	2.83	1.42
Inés Arrimadas (Ciudadanos)	3.07	2.16	7.65	1.42
Íñigo Errejón (Más País)	3.59	2.58	4.82	2.27

	%
Party closest to own ideas:	
PSOE	18.41
PP	15.58
Podemos	15.01
Nacionalist party	7.37
VOX	5.38
Ciudadanos	4.50
Other	4.00
None - Don't know	26.30
No answer	3.40
Vote intention:	
PSOE	18.13
PP	18.70
Podemos	15.01
VOX	8.22
Nacionalist party	6.80
Ciudadanos	1.40
Other	5.40
None - Don't know	23.20
No answer	3.10
Political self–definition:	
Conservative	13.60
Progressive	32.01
Liberal (European)	14.45
Other	13.03
Don't know	15.01
No answer	11.90

N = 353 participants in the RVVS2 condition. Political party acronyms are as follows: PSOE is the Spanish socialist party, or labor party; PP is the conservative party; Podemos is a coalition of left and far left–wing parties; Ciudadanos is a center liberal party in European sense; VOX is a far right–wing party. Other in Vote Intention includes other minority parties. Other in Political self–definition includes nationalist, feminist, ecologist.

Table B.8: Regression of change in beliefs on ideology indicators (RVVS2 condition)

	1-10 scale[†]	Leaders assessment	Party closest to own ideas[†]	Vote intention[†]	Political self–definition[†]
Ideological scale (Far left = 1; Far right = 10)	-0.02 (0.04)				
Pedro Sánchez (PSOE)		-0.00 (0.05)			
Alberto Núñez Feijóo (PP)		0.02 (0.04)			
Yolanda Díaz (Podemos)		0.06 (0.04)			
Santiago Abascal (VOX)		0.07* (0.04)			
Inés Arrimadas (Ciudadanos)		-0.15*** (0.04)			
Íñigo Errejón (Más País)		0.02 (0.05)			
PSOE			-0.04 (0.21)		
PP			-0.26 (0.24)		
Podemos			-0.11 (0.22)		
Ciudadanos			-0.94*** (0.33)		
Nationalist party			0.23 (0.30)		
VOX			0.57 (0.38)		
Other			0.41 (0.31)		
PSOE				-0.02 (0.22)	
PP				-0.22 (0.24)	
Podemos				-0.07 (0.23)	
Ciudadanos				-0.43 (0.51)	
Nationalist party				0.28 (0.32)	
VOX				0.23 (0.35)	
Other				0.45 (0.28)	
Conservative					0.04 (0.26)
Progressive					0.21 (0.21)
Liberal (European)					-0.65*** (0.25)
Other					0.37 (0.24)
N	337	309	341	342	311
R^2	0.09	0.14	0.15	0.12	0.17

RVVS2: Refutational video + voice + disaggregate social information. Sample = 353 participants in the RVVS2 condition. Dependent variable: change in beliefs. Each column represents a separate regression that controls for CRT score and socio-demographic variables. [†]: Regressions include a dummy variable to account for "None" and "Don't know" responses. Robust standard errors in parentheses. Significance levels: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. PSOE: socialist party, or labor party; PP: conservative party; Podemos: coalition of left and far left–wing parties; VOX: far right–wing party; Ciudadanos: center liberal party (European sense); Other includes other minority parties. Other in Political self–definition includes nationalist, feminist, ecologist.

Table B.9: Distribution of the degree of agreement with zero–sum statements (%)

	Totally disagree	Disagree	Do not know	Agree	Totally agree	Total
Income	3.40	18.98	3.97	52.12	21.53	100
Retirement and jobs	3.40	23.51	13.31	44.76	15.01	100
Digitalization and jobs	4.25	23.23	14.45	40.79	17.28	100

Total sample = 353 participants in the RVVS2 condition (Refutational video + voice + disaggregate social information). *Income* refers to the statement: "In Spain there are different groups of people according to their income levels. If a group becomes more wealthy, this usually comes at the expense of other groups". *Retirement and jobs* refers to the statement: "Considering jobs and occupation level in a country, if retirement age is increased, this will likely come at the expense of young people, who will not be able to find a job". *Digitalization and jobs* refers to the statement: "As digitalization increases, more jobs will be destroyed than created".

C. Other figures

Figure C.1: Word cloud – Agreement with Rent Control statement

Note: 148 out of 833 participants who agree or strongly agree with the rent control statement in conditions RVV, RVV1 and RVV2, write a comment in the free space provided in the questionnaire, right after the question about the motives for agreeing with the statement.

Figure C.2: Word cloud – Disagreement with Rent Control statement

Note: 53 out of 173 participants who disagree or strongly disagree with the rent control statement in conditions RVV, RVV1 and RVV2, write a comment in the free space provided in the questionnaire, right after the question about the motives for disagreeing with the statement.

D. Instructions and questionnaires

D.1. Instructions to participants

Instructions are identical across conditions.

D.1.1. Initial instructions

You are about to participate in an activity to gather opinions about economic and social issues.

To complete the different tasks that you will face you will receive an **economic compensation of 6 EUROS**. This amount **will be paid to you through PayPal**. The tasks should take you about 20 minutes, but you can take more time if you wish. You have a total of one hour to complete everything.

One of the activities we will ask you to do will allow you to **EARN 2 EXTRA EUROS** in case you do it correctly. Hence, if you do this task activity correctly you will receive an economic compensation of in **TOTAL** $6 + 2 = 8$ **EUROS**. We will inform you about whether you have obtained the 2 extra euros after you will have completed all the tasks that we will ask you to do.

In this activity that you are about to begin we will ask you, first, to provide us with some socio–demographic information.

Subsequently, we will ask you opinion about some economic and social issues. There is no correct or incorrect answer for these questions. We just ask you about your sincere opinion, and your answers will not influence your final payment.

Then we will present to a short text (video). We will appreciate that you watch it carefully and then answer two questions directed a checking the comprehension of the the video. If you respond correctly to the two questions you will receive 2 euros extra in your final payment.

Subsequently, we will present some economic situations to you. Your responses to these situations will not influence your final payment.

Finally, we will ask you opinion about some economic and social issues. There is no correct or incorrect answer for these questions. We just ask you about your sincere opinion, and your answers will not influence your final payment.

All your responses will be anonymized.

This activity is part of social research project carried out by professors from several universities. Your effort and attention in answering all questions will be very valuable for the success of this study, contributing to a better understanding of our society.

We thank you in advance for your collaboration!

D.1.2. Other instructions

- Before opinion questionnaires:

We next will show you several statements about economic and social issues. Please read them carefully and choose the option that best matches your current opinion. There is no correct or incorrect answer for these questions. We just wish to know your sincere opinion, and your answers will NOT AFFECT your final payment.

- Before the video:

We next will show you a video. Please watch it carefully. You may pause it and replay it if you wish. You will next be presented with two questions. These questions refer to the video, but to answer them you will not be able to view the video again. If your answers to both questions are correct, you will additionally win 2 euros at the end. You therefore will have the chance to win a total of 8 euros.

Press PLAY to start the video.

- Before the comprehension questions:

Next you will see 2 questions about the video you just have watched. Please indicate, for each question, which of the statements you think is correct. If your answers to both questions are correct, you will additionally win 2 euros at the end. You therefore will have the chance to win 8 euros in total. After finishing the questionnaire, we will tell you how many are correct as well as the amount you have won.

- Before CRT:

We next will show you some economic situations. Please read them carefully and answer the questions. Your answers DO NOT AFFECT your final payment.

- Before receiving social information:

The video you watched a few minutes ago has been shown to other people. We next show you what was their opinion after watching the video.

- Before the final opinion questionnaire:

You will see next some statements about economic and social issues. Please read them carefully and choose the option closer to your personal opinion at this moment. There are no correct or incorrect answers. We only wish to know your sincere opinion, and your answers WILL NOT AFFECT the final payment.

- Before ideology and zero–sum mindset questions

To wind up, we present the last set of opinion questions. Please read them carefully and choose the option that is closest to your personal opinion right now. There are no correct or incorrect answers. We only wish to know your sincere opinion. Recall that, as we pointed out at the beginning, that your personal data and answers are totally anonymous and will be undisclosed to researchers.

D.2.   Initial opinion

- *Rent control*:

  Establishing rent controls, such that rents did not exceed a certain amount of money, would increase the number of people who have access to housing facilities.

- *Online platforms for vacation rentals*:

  Online platforms for renting vacation apartments, like Airbnb or Wimdu, are one of the main cause of the rising rents.

- *Housing investment funds*:

  Housing investment funds own most of the housing for rent.

- *Trustworthy information source*:

  Of the following options, indicate your most trustworthy source for social and economic information: a) participants in radio and tv debate shows; b) politicians; c) civil servants; d) social scientists who work at universities; d) journalists.

- *Mistrust statistics*:

  Economic statistics do not reflect, in general, the true economic situation.

- *Equal opportunities*:

  National and regional governments in Spain should guarantee equal opportunities for children from low–income families and children from high–income families

D.3. Motives

- For participants who respond "totally agree" or "agree" to the statement about rent control:

We would like to know what is the main reason why you agree with the statement about rent control. Please choose one of the options we show below. Although you may have more than motive, we ask you to choose the most important for you.

a) because everybody ought to live with an affordable rent

b) to prevent speculating with housing

c) to allow people to stay in their neighborhood

d) other reason

You may use this space below to make any comment you wish.

- For participants who respond "totally disagree" or "disagree" to the statement about rent control:

We would like to know what is the main reason why you disagree with the statement about rent control. Please choose one of the options we show below. Although you may have more than motive, we ask you to choose the most important for you.

a) because the housing market must work freely

b) because rent control is unfair to owners

c) because it will make finding a rental home harder

d) other reason

You may use this space below to make any comment you wish.

- For participants who respond "Do not know":

If you wish, you may use the space below to explain the main reason why you responded "Do not know" to the statement about rent control.

D.4. Comprehension questions

- Question 1 (correct answer is C):

  The text/video exposes that:

  A. Rents in Spain have increased up to the price ceiling.

  B. If the Government or the City council establishes a rent capping, many people will have easier access to housing.

  C. Establishing a rent capping may create problems and not achieve its objective of facilitating access to housing.

- Question 2 (correct answer is B):

  The text/video suggests that:

  A. Rental vacation apartments have mostly contributed to the increase in rents in certain areas.

  B. Regulating rents through a price ceiling may lead to different forms of corruption.

  C. Setting a rent capping will guarantee that all low–income people may access to housing.

D.5. Video Feedback

We next would like to know your opinion about the video you just watched.

1. How convincing you think are the arguments presented in the video?

Very much / Quite / Unclear / Barely / Not at all

2. Have you found the video easy or hard to understand?

Easy / Quite easy / Neither hard nor easy / Quite difficult / Difficult

3. About the duration of the video, you think it is...

Too long / Just right / Too short

4. If you wish, you can use the space below to make any additional comment about the video.

D.6. Cognitive Reflection Test

The test contains adapted versions of the three initial Frederick (2005) (F) statements, of four statements taken from Thomson and Oppenheimer (2016) (TO), and of one from Toplak et al. (2014) (T).

1. A bat and a ball cost £1.10 in total. The bat costs a dollar more than the ball. How much does the ball cost? (F)

Adapted version: A bat and a ball cost €1.10 in total. The bat costs one more euro than the ball. How much does the ball cost?

2. If it takes 5 machines 5 minutes to make 5 widgets, how long would it take 100 machines to make 100 widgets? (F)

Adapted version: If it takes 5 machines 5 minutes to make 5 items , how long would it take 100 machines to make 100 items?

3. In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake? (F)

Adapted version: In Europe the demand for electric kick scooters is expanding. Every month, demand doubles. If it takes 48 months for demand to reach its full potential, how many months will it take for demand to reach one half of its potential?

4. If you're running a race and you pass the person in second place, what place are you in? (TO)

Adapted version: Your business appears in a sales ranking chart. If next year your business surpasses the business in second place, what place will you be in?

5. A farmer had 15 sheep and all but 8 died. How many are left? (TO)

Adapted version: A fruit store has bought 15 tomato boxes, and all but 8 have been damaged. How many are left?

6. Emily's father had three daughters. The first two are named April and May. What is the third daughter's name? (TO)

Adapted version: The family who owns the firm FOC, which produces firecrackers and pyrotechnic products, owns a total of three firms. The first two are named PIM and PAM. How is the third one named?

Note: PIM, PAM, PUM is a popular onomatopoeic expression in Spanish that represents shots or explosions. It also refers to a game in which you try to knock down balls in a row.

7. How many cubic feet of dirt are there in a hole that is 3' deep x 3' wide x 3' long? (TO)

Adapted version: A developer buys a plot to build a public sport center. In the plot there is a hole measuring 3 meters deep x 3 meters wide x 3 meters long. How many cubic meters of dirt are there in the hole?

8. A man buys a pig for €60, sells it for €70, buys it back for €80, and sells it finally for €90. How much has he made? (T)

Adapted version: Someone buys a videogame for €60, sells it for €70, buys it back for €80, and sells it finally for €90. How much has this person made?

D.7. Social information

In condition RVVS1 participants are shown the following screen:

Before watching the video

Agree: 77%   Don't know: 8%   Disagree: 15%
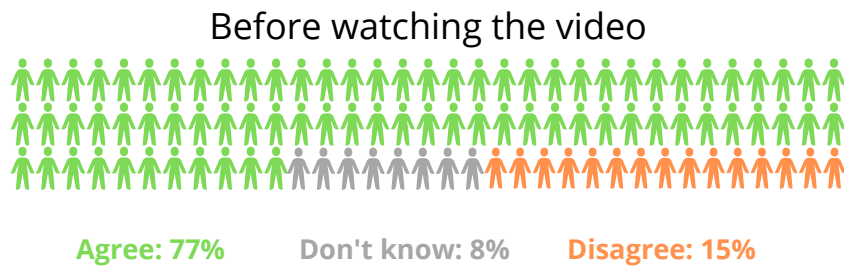
"In a similar survey, this video has been shown to other people. Before watching it, 77 out of 100 people agreed with the idea that rent control would allow more people to have access to housing, while 15 out of 100 disagreed."

After watching the video

Agree: 32%   Don't know: 15%   Disagree: 53%
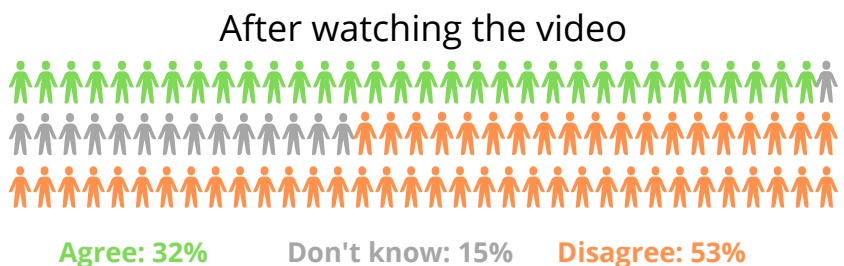
"However, after watching the video, 32 out of 100 people agreed with rent control and 53 out of 100 people disagreed."

"Indicate the colors used in the image representing the number of people who agree and those who disagree:
a) Green and grey
b) Green and orange
c) Orange and grey"

Note: Correct answer is option b.

In condition RVVS2 participants are shown the following screen:

"The video you watched a few minutes ago has been shown to other people. We show you next what did this people think after watching the video.

CASE 1. PEOPLE WHO BEFORE WATCHING THE VIDEO <u>AGREED</u> THAT RENT CONTROL WOULD ALLOW MORE FAMILIES TO HAVE ACCESS TO HOUSING.

Most of these people motivated their opinion on the idea that everybody ought to be able to live with affordable rents.

Among people with this motivation, after watching the video, 43 out of 100 still agreed with rent control. But 46 out of 100 changed their mind and disagreed with rent controls. The following image illustrates this information:

After watching the video

Agree with control: 43%   **Don't know: 11%**   **Disagree with control: 46%**
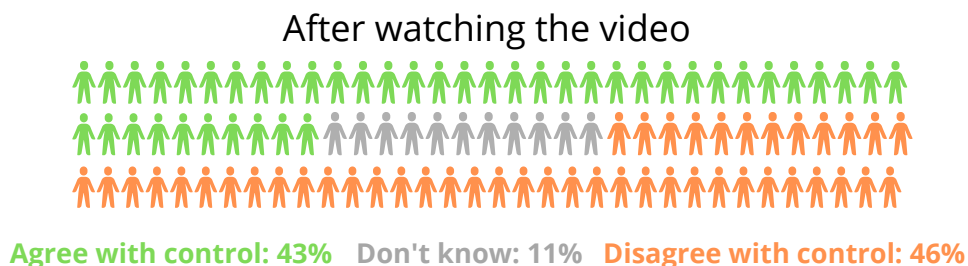
CASE 2. PEOPLE WHO BEFORE WATCHING THE VIDEO <u>DISAGREED</u> THAT RENT CONTROL WOULD ALLOW MORE FAMILIES TO HAVE ACCESS TO HOUSING.

Most of these people motivated their opinion on the idea that rent control would make it harder to find rental housing.

Among people with this motivation, after watching the video, 8 out of 100 changed their mind and agreed with rent controls. But 86 out of 100 still disagreed with rent control. The following image illustrates this information:

After watching the video

Agree with control: 8%   **Don't know: 6%**   **Disagree with control: 86%**
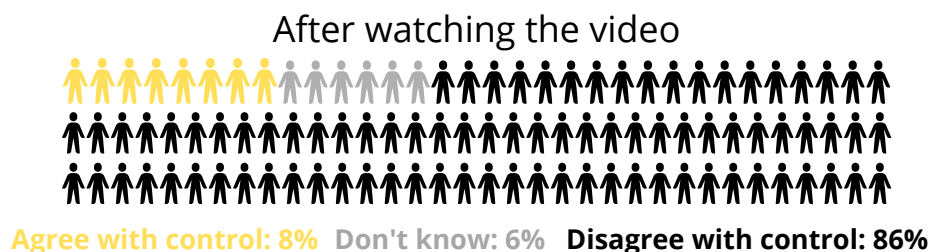
1) Before watching the video, some people agreed with the idea that rent control would allow more people to have access to housing. Indicate which color is used in the image to depict the number of people who disagreed after watching the video:

a) Black
b) Green
c) Orange

2) Before watching the video, some people disagreed with the idea that rent control would allow more people to have access to housing. Indicate which color is used in the image to depict the number of people who disagreed after watching the video:

a) Black
b) Green
c) Orange

Note: Correct answers are options c) and a), respectively.

D.8.   Final Opinion

- *Disagreement among scientists*:

  Disagreement among scientists on some topics shows that science reflects more scientists' opinion than objective facts.

- *Rent control*:

  Establishing rent controls, such that rents did not exceed a certain amount of money, would increase the number of people who have access to housing facilities.

- *Social sciences knowledge*:

  Scientific knowledge from social sciences is the best starting point for the elaboration of rules and social regulations.

- *Affordable housing*:

  Government should guarantee that everybody can buy a house.

- *Online platforms for vacation rentals*:

  Online platforms for renting vacation apartments, like Airbnb or Wimdu, are one of the main cause of the rising rents.

- *Equal opportunities*:

  National and regional governments in Spain should guarantee equal opportunities for children from low–income families and children from high–income families

Table C.1: Statements included in the opinion questionnaires

	Initial opinion	Final opinion
Housing:		
Rent control	Yes	Yes
Online platforms for vacation rentals	Yes	Yes
Housing investment funds	Yes	No
Affordable housing	No	Yes
Attitudes towards science:		
Mistrust statistics	Yes	No
Trustworthy information source	Yes	No
Disagreement among scientists	No	Yes
Social sciences knowledge	No	Yes
Fairness		
Equal opportunities	Yes	Yes

D.9. Support and recommend

If your town or city were to hold a referendum proposing to establish rent controls, how do you think you would vote?

In favor / Against / Would not vote

Would you recommend this video to your acquaintances?

Yes / No / Do not know

D.10. Zero–sum mindset and Ideology

Please indicate to which extent you agree or disagree with the following statements:

[After each statement, respondents choose one of the following five options: (1) Totally disagree, (2) Disagree, (3) Do not know, (4) Agree, (5) Totally agree.]

1. In Spain there are different groups of people according to their income levels. If a group becomes more wealthy, this usually comes at the expense of other groups.

2. Considering jobs and occupation level in a country, if retirement age is increased, this will likely come at the expense of young people, who will not be able to find a job.

3. As digitalization increases, more jobs will be destroyed than created.

In a democratic system, political parties and their representatives put forward social and economic policies. We next display some questions about your assessment of some of them in Spain.

1. The following table shows a list of some political leaders. On a scale from 1 (very bad) to 10 (very good), what is your assessment of each of them?

[A list including the prime minister and the leaders of the main political parties follows]

2. Which party is closest to your own ideas?

[A list of 23 political parties follows; other possible answers are Other party, None, Don't know, Does not answer]

3. If political elections to the national Parliament were to be held tomorrow, which party or coalition would you vote for? [Same list and options as above follows]

4. When talking about politics, the terms left and right are usually used. On a 1 to 10 scale, where 1 is "the farthest to the left", and 10 "the farthest to the right", where would you stand?

5. How would you define yourself in politics, in the following classification:

Conservative / Christian–Democrat / Liberal (in European sense) / Progressive / Social–Democrat / Socialist / Communist / Nationalist / Feminist /Ecologist / Other (write what you believe) / Do not know / Do not answer