

# “Do voice and social information contribute to changing views about rent control policy?”

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## *Abstract*

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Citizens' ability to make informed and thoughtful choices when voting for policy proposals rests on their awareness of and access to accurate information about the costs and benefits that each proposal entails. We study whether specific 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 to test whether giving voice, aggregate social information and disaggregate social information increase the effect of a video explaining the evidence on the consequences of rent control policies. While voice and aggregate social information do not have an additional effect relative to a control group that is shown the same video, supplying disaggregate social has an additional impact on updating beliefs. Furthermore, we find that changes in beliefs widely translate into intended voting and recommending the video. Finally, although ideological position and a zero-sum mentality are correlated with the initial misconception, these two factors do not thwart the disposition to update beliefs after receiving experts' information.

*JEL Classification:* A1, A2, C9, D83, D9.

*Keywords:* Misconceptions, Policy beliefs, Communication, Social information, Online experiments, Refutation.

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## *Acknowledgements*

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The authors acknowledge financial support from the Spanish Ministry of Economy and Competitiveness PID2020-112739GA-I00 (Lopez-Mayan), PID2020-114251GB-I00 (Brandts and Lopez-Mayan), PID2021-124713OB-I00 (Busom) and the Spanish Agencia Estatal de Investigación (AEI), through the Severo Ochoa Programme for Centres of Excellence in R & D (Barcelona School of Economics CEX2019-000915-S) (Brandts). This work complies with the ethical requirements of Universitat Autònoma de Barcelona (CEEAH approval, Num. 5999). We are also grateful to Enrique Fatás for a useful discussion.

# 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 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 such that the knowledge gap is reduced, this information may be rejected or neglected by many people. Psychological biases that affect the human mind when processing counter-intuitive or disproving information may drive this rejection (Nyhan, 2020); social and affective processes may also contribute to explain the spread and stickiness of misperceptions or of misinformation (Ecker et al., 2022; Bénabou and Tirole, 2016). Significant examples of the relevance of this problem are the resistance to COVID fighting measures and to climate change policies. Experiments find that informational corrections often do not work or have limited effects on beliefs, policy support and behavior (Lewandowsky, 2021; Pennycook et al., 2020; Douenne and Fabre, 2022; Dechezleprêtre et al., 2022). Effective communication must then take into account the existence of unfounded beliefs that, when widely shared, reduce the support for, and may even prevent, the implementation of socially beneficial policies.

We focus on the belief that rent control allows more families to find affordable housing. It can be qualified as a misconception because it is contradicted by solid and increasing empirical research that shows that rent controls tend to reduce the amount of rental housing.<sup>1</sup> This belief is widespread across countries, as shown in several polls.<sup>2</sup> It is also hard to dispel. Previous research about the effectiveness of using 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). Transmitting the same information using a visual format is rather successful (Brandts et al., 2024). The mechanism seems to be that the refutational video has a higher ability to capture the attention of participants than a text. Still, about one third of participants stick to their initial misconception after being exposed to the visual message.

Strictly informational corrections may have a limited effect when the message does not account for some social factors present in natural environments, especially when they involve topics sensitive to personal political views or worldviews. In natural environments people can typically

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<sup>1</sup>See, for example, Sims (2007); Mora-Sanguinetti (2011); Asquith (2019); Diamond et al. (2019); Kholodilin and Kohl (2020); Monrás and García-Montalvo (2021); Ahern and Giacoletti (2022).

<sup>2</sup>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.

express their criticism or approval of the information they receive as such and of particular aspects of it. Also, they know what others think about the issue in question. This can, in turn, affect beliefs and behavior (Dellavigna et al., 2017; Bursztyn and Jensen, 2017).

In this paper we study whether providing scientific information in a visual format in combination with two specific factors of the social context that are present in natural environments, 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 express the motivation for their views on rent control, and on the information they receive. Research finds that the feeling of being listened to may facilitate a higher acceptance of the other side's views, in a variety of contexts (Haaland and Roth (2022), Voelkel et al. (2021), Bruneau and Saxe (2012), Hager et al. (2022)).

The second social factor we consider is giving participants information about how other people change their opinion in the same situation. Existing studies find that receiving social information can affect 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). Knowing that others change their mind when receiving the same information, may reduce the potential perceived threat to the individual's social image. This may facilitate a change in his/her belief and behavior in order to be aligned with the group's change (Nauroth et al., 2017; Ecker et al., 2023).

We design a pre-registered on-line survey experiment where we add the two social factors explained above to the same video as in Brandts et al. (2024). Introducing these factors allows us to capture social aspects, not previously considered, that are present in natural environments in which people receive information. To test the role of these social factors on participants' change in beliefs, we elicit beliefs on rent controls before and after each intervention; the outcome of interest is the change in beliefs. We sequentially introduce these social factors in separate conditions to test the effectiveness of each one. The experiment consists of four conditions. The first one is our benchmark, where participants are exposed exclusively to a refutation video. This video adopts the refutational communication approach, which explicitly states the unfounded belief, presents the arguments and evidence that contradict it and considers participants' fairness concerns about access to housing.

In the second condition, called the voice condition, each participant is asked to indicate the motivation for her initial belief before watching the video, and to give feedback about the video after watching it. The third and fourth conditions add, to the voice element, information about how other people who have previously watched the video change their beliefs about the effects of rent control. In the third condition, the social information provided is aggregate. In the fourth condition, the social information the participant receives discloses the change in beliefs of two distinct groups of people, who differ in their initial belief and in the motivation 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 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)). 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. We explore whether changes in beliefs translate into these intended behaviors.

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. We explore here the role of ideology and a zero-sum mindset in influencing the initial misconception and in preventing belief update.

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 for the rent-control policy. Third, we add to the still scarce empirical evidence on the relationship between ideology 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 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 motivation underlying the beliefs of different groups of participants, does contribute to a further, significant reduction of the misconception. Thus, combining a visual message format 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 updating 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. In our view, this is a very hopeful result, as it signals that ideology and a zero-sum worldview do not make citizens more resistant to scientific information with respect to rent control policies. In sum, these individual traits do not stand in the way of accepting expert information and updating beliefs about rent control.

## 2 Experimental framework

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.<sup>3</sup>

### 2.1 Research hypotheses

We have three pre-registered hypotheses. 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. (2022) 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 perceptions of being heard by the party—either by sharing their opinion about some issues with the party, or by providing advice—are strongly positively associated with willingness to participate in the campaign as well as their level of identification with the party. In a laboratory experiment, Li et al. (2020) find that in a dictator game, the degree of giving increases when recipients are allowed to give messages to their first-stage dictators. Studies in experimental

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<sup>3</sup>Anonymized versions of the pre-registrations are available here: [https://aspredicted.org/blind.php?x=4W2\\_M44](https://aspredicted.org/blind.php?x=4W2_M44) and here: [https://aspredicted.org/blind.php?x=SWV\\_MM4](https://aspredicted.org/blind.php?x=SWV_MM4).

social psychology find that when people feel they are not being heard, conflict and tension increase, especially when political topics are involved (Bruneau and Saxe, 2012; Voelkel et al., 2021). This evidence on the impact of voice in a variety of situations suggests that giving voice to participants in our experiment 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.* Giving social information, that is, informing participants about how other people updated 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 been shown to affect voting (Dellavigna et al., 2017), and 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 been updated, may reduce the cost that deviating from opinions initially shared by others may involve, as the social information provided makes opinion change more socially acceptable. By changing one's mind, individual behavior would be thus in line with the information about social behavior. 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. Similarly, Andre et al. (2022) show that informing participants about the true share of people who think that global warming should be fought increases the individual willingness to act against climate change.

The third hypothesis refers to the association between participants' inclination to analytical reasoning—measured with an expanded version of the cognitive reflection test—and the change in beliefs. Our hypothesis is that *higher scores of the CRT will be associated with a higher change away from the misconception.* Even though in our case scientific information about rent control is provided in a visual format, following the arguments, and assessing their strength and consistency, still requires some cognitive effort. The CRT is intended to capture these skills. In the experiments conducted in Brandts et al. (2024) participants with higher CRT scores—more analytical—are found to be more accepting of the evidence and reduce the misconception. Here, we study whether this association is affected when including social elements.



## 2.2 Conditions

To test these hypotheses, we conduct an on-line survey experiment where participants are randomly allocated to three treatment conditions and a benchmark condition. 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 refutation video (RV condition) without any added social factor. This condition is an active control group since participants also receive information about evidence on the effects of rent control (they watch the same video as in the other conditions). In contrast to a passive control group that receives no information, having an active control group allows to isolate priming effects from true belief updating. It also allows for a cleaner estimation of treatment effects when treatments may bring about changes in attention or emotions ([Haaland et al., 2023](#)). The video can be found at the following link: [https://youtu.be/s5sr\\_vOrRMc](https://youtu.be/s5sr_vOrRMc). The video informs, in a refutational tone, about the negative effects of rent controls found in studies performed by social scientists. It also refers to their negative distributional effects. 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.<sup>4</sup> The content of the video reflects the elements of 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.<sup>5</sup>

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<sup>4</sup>The corresponding experiment was pre-registered at [AsPredicted Registry #69831](#), and conducted in July 2021. The anonymized pre-registration is available here: <https://aspredicted.org/blind.php?x=4n78sy>

<sup>5</sup>For more details about the refutational approach, see [Brandts et al. \(2024\)](#) and appendix B.2 therein.

The first treatment 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 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 two other treatment conditions add social information to the voice condition. In 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](#)). Social information can be of different sorts and here we study two possibilities. In one of them, the information we supply about other people’s reaction to the video is quite aggregate (condition RVVS1, for refutation video, voice and social information type 1), and in the second one, it is more disaggregate (condition RVVS2, for refutation video, voice and social information type 2). This information is provided in images and text. In condition RVVS1, participants see a screen showing the distribution of beliefs before and after other people have watched the same video (see Appendix [D.7](#)). This aggregate social information is taken from the benchmark condition (RV), which was run before RVVS1. In condition RVVS2 we give participants more disaggregate social information. This information is taken from the pooled RVV and RVVS1 conditions, conducted

before RVVS2, where participants were asked about the motivation for their belief. In particular, we show the distribution of beliefs of two different groups of people. The first group refers to 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 in the RVV and the RVVS1 conditions, see Table 4. The second group 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 in the RVV and the RVVS1 conditions, see Table 4. Participants are informed about how the distribution of beliefs has changed after watching the video for these two groups of people (see Appendix D.7). We believe that the way information about others’ reactions is presented, whether aggregate or disaggregate, may have a different effect on participants, because the latter may allow participants to better identify with people who are more like them.

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. As we explain below, we tell participants that 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

<b>Benchmark</b>	<b>Voice</b>	<b>Voice &amp; Social Information 1</b>	<b>Voice &amp; Social Information 2</b>
<b>RV</b>	<b>RVV</b>	<b>RVVS1</b>	<b>RVVS2</b>
Initial Instructions	Initial Instructions	Initial Instructions	Initial Instructions
Demographics	Demographics	Demographics	Demographics
Initial Opinion	Initial Opinion	Initial Opinion	Initial Opinion
	<i>Motives</i>	<i>Motives</i>	<i>Motives</i>
Video	Video	Video	Video
Comprehension	Comprehension	Comprehension	Comprehension
	<i>Video Feedback</i>	<i>Video Feedback</i>	<i>Video Feedback</i>
CRT	CRT	CRT	CRT
		<i>Social Information 1</i>	<i>Social Information 2</i>
Final Opinion	Final Opinion	Final Opinion	Final Opinion
	<i>Support+Recommend</i>	<i>Support+Recommend</i>	<i>Support+Recommend</i>
			<i>Ideology+ZeroSum</i>
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, that it is designed by university professors, 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. We think that the way instructions are written encourages participants to collaborate candidly. 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. 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. In our case we believe that if they were present, they would affect all conditions similarly. There is no reason, ex–ante, why it should be higher in one condition than in another. Since our purpose is to compare outcomes across conditions, results are unlikely to be affected by it. 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.<sup>6</sup> 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.<sup>7</sup> Recruitment and the on–line experiment were run by the professional survey company Playstudies in June 28–30, 2022 for the RVV and RVVS1 conditions and in March 7–9, 2023 for the RVVS2 condition.

### 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

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<sup>6</sup>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.

<sup>7</sup>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 Sociológicas*, 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.

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 above, 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:

$$y_i = \alpha + \beta D_i + \gamma CRT_i + \delta X_i + \varepsilon_i \quad (1)$$

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 treatment and zero otherwise;  $\beta$  is the treatment effect;  $CRT_i$  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 unbalances 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.

To test for the second hypothesis we estimate equation (1) by comparing the change in beliefs of participants in the RVVS1 and RVVS2 conditions—exposed to the refutational video, to the “voice” blocks and to the respective “social information” block—relative to the change in beliefs of participants in the RV condition. In this specification,  $D_i$  is a dummy variable equal to one if the participant is in the RVVS1 (RVVS2) condition and zero if she/he is in the RV. We carry out the estimation both unconditional and conditional to the initial belief. For completeness, we also compare the change in beliefs of participants in the RVVS1 and RVVS2 conditions to that of participants in the RVV condition to analyze whether social information has a differential effect with respect to voice.

To test for the third hypothesis we add participants’ CRT scores to the regressions above.

## 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).<sup>8</sup> 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 treatments, 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). 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

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<sup>8</sup>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.



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 benchmark, the average is higher in the three treatment conditions, although the difference is small and only significant for the RVV and the 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 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. Therefore, in all specifications, in addition to the vector of socio-demographic characteristics, we also account for the participant's relative time on the video screen.

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 in Table 4 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 capture the participant's attention to the social information provided (see Appendix [D.7](#)). The RVVS1 condition includes one question asking about the colors used in the image to represent the number of people who agree and those who disagree. Around 93% of participants answer this question correctly. The RVVS2 condition includes two questions, both about the color used to represent the number of people who disagreed after watching the video. The first question refers to the first image, which shows the final distribution in the group of people who initially agreed with the statement. The second question refers to the second image, which shows the final distribution in the group of people who initially disagreed with the statement. The percentage of participants who give the correct answer in each question 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. Treatments RVV and RVVS1 do not have an additional effect beyond the RV (columns (1) and (4)). In contrast, treatment RVVS2 fosters a substantial additional change in beliefs in the right direction compared to the RV (column (7)). For each pairwise comparison, in columns (2), (5) and (8) we add the CRT scores; results for the treatment effects do not change.

A higher performance in the CRT is significantly associated—at the 5% significance level—with higher disengagement from the misconception in the RVV and RVVS2 conditions. Adding the relative time variable (columns (3), (6) and (9)), which accounts for differences in the time spent on the video screen relative to the median in the corresponding condition, does not substantially change results. The estimated effect of the RVVS2 remains positive and significant, although its magnitude is now slightly smaller (0.27), accounting for about 12% of the average initial belief in the benchmark condition (2.13, see Table B.2 in Appendix B). Relative time is, in all cases, positively correlated with repealing the misconception. A potential mechanism is that spending relatively more time on the video screen may be associated with paying more attention to the video content, and thus promoting a better understanding of the workings of a rent control policy.<sup>9</sup> 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.

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. Estimation results in Table 6 indicate that receiving disaggregate social information may make disagreeing with the initial opinion more acceptable to the individual when knowing that others also do so.

Therefore, relative to the RV, RVVS2 induces an additional move 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

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<sup>9</sup>The importance of the time spent on the treatment screen in the belief update is in line with findings in Alfaro et al. (2023) in relation to the beliefs about the effects of trade policy.

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, RVV1 and RVV2 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 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.<sup>10</sup>

In Table 7, we estimate 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.

Regarding the role of the CRT, we find that the change in beliefs is significantly correlated with CRT scores in two out of three comparisons to the RV benchmark (Table 5) and when comparing across social factors (Table 7). Table 6 shows that this significant association is driven mostly by participants who initially agree with the statement in two out of the three comparisons. 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.<sup>11</sup> The fact that we find a positive

<sup>10</sup>Regressions are run for each condition separately and pooling them all. Results are available upon request.

<sup>11</sup>This finding is in line with results in Brandts et al. (2024).

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.

To summarize, our results regarding the pre-registered hypotheses are the following:

Result 1: We do not find support for hypothesis 1. The voice treatment does not have a significant differential effect on beliefs relative to the benchmark, the video only condition.

In contrast to some previous research where giving voice affects behavior in some settings, in our case voice does not contribute to changing beliefs more than in a setting without voice. 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. Very aggregate information does not affect beliefs. By contrast, conveying information that details the behavior of people by motivation—disaggregate information—does affect beliefs. A possible interpretation is that by giving detailed information that reflects the heterogeneity in motives and beliefs, a participant may better identify his/her reference group, and thus feel reassured in changing his/her belief like others in that group.

Result 3: We find support for hypothesis 3. The inclination to analytical reasoning is associated to the ability to disengage from the misconception.

## 5 Further insights

In this section we study, as pre-registered, whether the change in beliefs is associated with intended actions (voting in a hypothetical referendum; recommending the video), with ideology and with a psychological trait, the zero-sum mindset.

### 5.1 Beliefs and intended behavior

A natural concern is whether beliefs translate into intended behavior. Recall that 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 update 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, updating beliefs widely translates into intended behavior, in contrast to findings in Barrera et al. (2020).<sup>12</sup>

We now 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 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. We believe

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<sup>12</sup>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.

this is a positive result, as it indicates that people do not oppose sharing 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.

## 5.2 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, in our sample, initial beliefs about rent control and updating 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.<sup>13</sup> 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.<sup>14</sup> 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 current prime minister, Pedro Sánchez (socialist party), obtains the highest score and Santiago Abascal (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

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<sup>13</sup>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](https://www.cis.es/cis/opencm/ES/11_barometros/depositados.jsp)

<sup>14</sup>The poll we refer to can be found here: [https://www.cis.es/cis/export/sites/default/-Archivos/Marginales/3380\\_3399/3398/es3398mar.pdf](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.

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.<sup>15</sup> 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 updating 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.<sup>16</sup> 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 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

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<sup>15</sup>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).

<sup>16</sup>Regressions control for socio-demographic variables and for the relative time spent on the video screen.



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.<sup>17</sup>

### 5.3 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 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 initial 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

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<sup>17</sup>We have also run the same regressions with the full sample of participants. Results are very similar; the table with these estimates is included in Appendix B, Table B.8.

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 updating beliefs 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.

## 6 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 update beliefs regarding the effects of rent control on the availability of affordable housing when evidence-based information is delivered through a direct, simple video that combines images and text, and addresses prior beliefs and concerns. 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 a 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 interpretation 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. On an additional, hopeful note, we find that ideology and zero-sum thinking do not stand in the way of updating beliefs when scientific information is conveyed jointly with disaggregate social information.

To sum up, science-based visual messages that address fairness concerns and inform about how other similar people react to information can touch a broad population. In this respect, 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. We believe that these are encouraging results for social sciences.

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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) <sup>†</sup>								
					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.<sup>†</sup>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 (st. dev.)	0.45 (0.29)	0.44 (0.27)	0.44 (0.27)	0.40 (0.27)	0.01	0.01	0.05**
<i>Comprehension questions:</i>							
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
<i>Average time (minutes) spent in:</i>							
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 quest. screen	1.33	1.56	1.42	1.54	-0.24***	-0.09	-0.21***
Motive rent control opi screen	–	0.61	0.68	0.64	–	–	–
Video screen	3.26	3.93	3.33	4.01	-0.67**	-0.08	-0.75***
Comprehension questions 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 identity screen	–	0.00	0.82	1.98	–	–	–
Social feedback screen	–	–	–	0.14	–	–	–
Final opinion quest. screen	1.08	1.38	1.19	1.31	-0.30***	-0.11	-0.23*
Referendum screen	–	0.25	0.26	0.23	–	–	–
Ideology screen	–	–	–	2.13	–	–	–
Closing screen	0.17	0.16	0.13	0.14	0.01	0.03**	0.03
<i>Relative time in video screen</i> <sup>†</sup>	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: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . <sup>†</sup> Average of the deviations to the median time spent in 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 (0.10)	-0.08 (0.10)	-0.12 (0.10)	-	-	-	-	-	-
RVVS1	-	-	-	-0.00 (0.11)	-0.00 (0.11)	-0.01 (0.10)	-	-	-
RVVS2	-	-	-	-	-	-	0.31*** (0.11)	0.32*** (0.10)	0.27*** (0.10)
CRT score	-	0.44** (0.20)	0.43** (0.20)	-	0.29 (0.20)	0.19 (0.19)	-	0.47** (0.19)	0.38** (0.19)
Relative time	-	-	0.05** (0.02)	-	-	0.08*** (0.03)	-	-	0.06*** (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 (0.10)	-	-	-0.41 (0.42)	-	-	0.40** (0.20)	-	-
RVVS1	-	0.04 (0.11)	-	-	-0.46 (0.52)	-	-	0.26 (0.22)	-
RVVS2	-	-	0.24** (0.11)	-	-	-0.40 (0.48)	-	-	0.65*** (0.22)
CRT score	0.45** (0.20)	-0.01 (0.20)	0.51** (0.20)	0.25 (0.72)	-0.29 (0.69)	0.53 (0.78)	0.58 (0.39)	0.72* (0.41)	0.29 (0.42)
Relative time	0.04* (0.02)	0.07*** (0.03)	0.06*** (0.02)	0.02 (0.02)	0.06 (0.05)	0.03 (0.05)	0.11** (0.05)	0.05 (0.03)	0.06 (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 (0.10)	0.11 (0.10)	0.14 (0.10)	-	-	-	-	-	-
RVVS2	-	-	-	0.34*** (0.10)	0.37*** (0.10)	0.37*** (0.10)	0.22** (0.10)	0.23** (0.10)	0.20* (0.10)
CRT score	-	0.41* (0.21)	0.40* (0.21)	-	0.63*** (0.20)	0.62*** (0.20)	-	0.47** (0.19)	0.39** (0.19)
Relative time	-	-	0.04** (0.02)	-	-	0.03** (0.02)	-	-	0.06*** (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 <sup>†</sup>						
	All participants			Participants initially agreeing		
	RVV	RVVS1	RVVS2	RVV	RVVS1	RVVS2
Initial belief	-0.12*** (0.02)	-0.13*** (0.02)	-0.10*** (0.02)			
Change in beliefs	-0.12*** (0.02)	-0.09*** (0.02)	-0.09*** (0.02)	-0.24*** (0.02)	-0.23*** (0.02)	-0.20*** (0.02)
Final belief	-0.27*** (0.02)	-0.27*** (0.02)	-0.23*** (0.02)	-0.27*** (0.02)	-0.28*** (0.02)	-0.24*** (0.02)
B. Recommending the video <sup>††</sup>						
	All participants			Participants initially agreeing		
	RVV	RVVS1	RVVS2	RVV	RVVS1	RVVS2
Initial belief	-0.02 (0.02)	-0.01 (0.02)	0.02 (0.01)			
Change in beliefs	0.05*** (0.01)	0.04*** (0.01)	0.03*** (0.01)	0.06*** (0.02)	0.04** (0.02)	0.04*** (0.01)
Final belief	0.05*** (0.02)	0.04** (0.01)	0.06*** (0.02)	0.06*** (0.02)	0.04*** (0.02)	0.07*** (0.02)
N	359	350	353	284	268	281

<sup>†</sup>Dependent variable: Dummy variable equal 1 if the participant reports that she/he would support rent controls in a hypothetical referendum, and 0 otherwise. <sup>††</sup>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 <sup>†</sup>	Leaders assessment	Party closest to own ideas <sup>†</sup>	Vote intention <sup>†</sup>	Political self-definition <sup>†</sup>
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 <sup>2</sup>	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 <sup>†</sup>	Leaders assessment	Party closest to own ideas <sup>†</sup>	Vote intention <sup>†</sup>	Political self-definition <sup>†</sup>
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 <sup>2</sup>	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. <sup>†</sup>: 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*** (0.06)	-0.22*** (0.06)			-0.02 (0.08)	-0.03 (0.08)		
Retirement and jobs	0.05 (0.05)		-0.01 (0.05)		-0.01 (0.07)		-0.03 (0.07)	
Digitalization and jobs	-0.09 (0.06)			-0.11* (0.06)	-0.05 (0.07)			-0.06 (0.07)
Ideology scale	0.10*** (0.03)	0.10*** (0.03)	0.13*** (0.03)	0.14*** (0.03)	0.03 (0.04)	0.03 (0.04)	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.

Los precios de la mayoría de productos y servicios son resultado de la interacción de muchos compradores y muchos vendedores




Frame 1: “Prices of most products and services are the outcome of the interaction between many buyers and many sellers”.



A veces las instituciones públicas establecen un tope máximo al precio cuando los compradores consideran que es demasiado alto

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

La investigación económica indica que esto llevará, tarde o temprano, a una reducción de la cantidad ofrecida por los vendedores



Veamos el caso de las viviendas de alquiler...

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...”.

En muchas ciudades españolas los alquileres han subido notablemente en los últimos años




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

Muchas familias y jóvenes tienen dificultades para poder pagar el alquiler




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


La dificultad de acceso a una vivienda digna para muchas familias y jóvenes constituye un problema social grave



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



La natural preocupación por este problema lleva a muchas personas a creer...




... que la solución sería regular los alquileres estableciendo un tope máximo

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



Sin embargo, numerosas investigaciones de los científicos sociales desmienten esta creencia

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




Al contrario de lo que parece, los topes a los alquileres no garantizan un mayor acceso a la vivienda precisamente para los colectivos más vulnerables

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

¿Qué ha ocurrido en las ciudades donde se ha llevado a cabo?

*Nueva York* *Estocolmo*  
*Berlín* *El Cairo* *San Francisco*



Numerosos estudios científicos demuestran que esta medida ha creado varios problemas importantes en esas ciudades

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”.



Por ejemplo, los investigadores suecos Andersson y Söderberg, muestran que en Estocolmo...

(Fuente: Andersson y Söderberg, “Elimination of rent control in the Swedish rental housing market: Why and how?”, *Journal of Housing Research*, 2012)

... se han producido listas de espera de hasta 10 años para encontrar una vivienda de alquiler

(Fuente: Agencia Municipal de Vivienda de Estocolmo)




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)”.

Las investigaciones también muestran que...

**1**

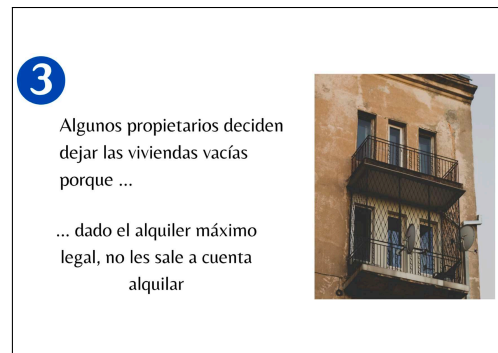
Suele aparecer un mercado negro, con sobornos para avanzar en la cola, o alquileres ilegales a precios más altos del tope



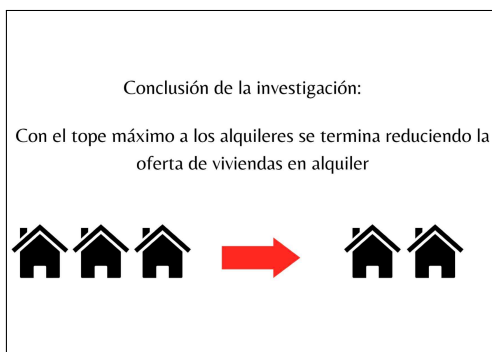
Frame 12: “This research also shows that... A black rental market often brings about, with bribes to advance a position in the queue, or illegal sublets at prices above the ceiling”.



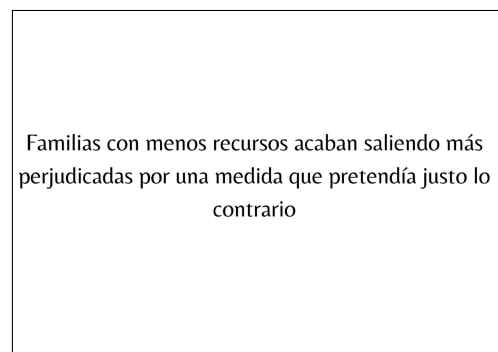
Frame 13: “Some owners decide to sell instead of renting”.



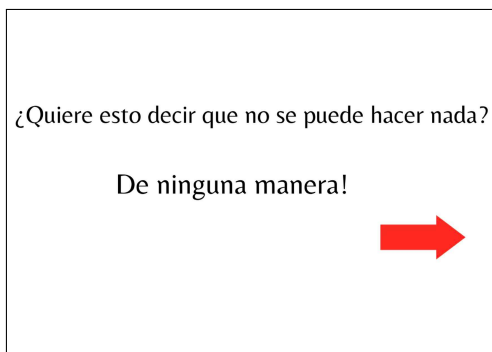
Frame 14: “Some owners decide to leave properties empty because... ..they consider that renting at the legal price ceiling is not worthwhile for them”.



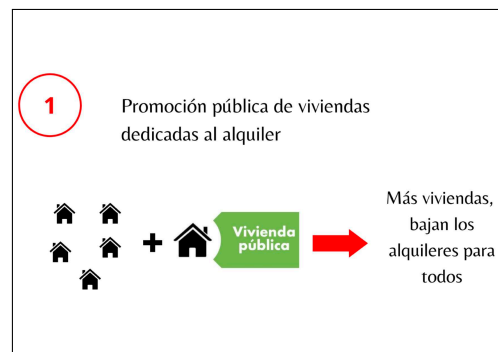
Frame 15: “Conclusion of the research: with rent ceilings the supply of rental housing ends up falling”. Animated frame.



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

2

Poniendo un impuesto a propietarios de terrenos sin utilizar




Más viviendas, bajan los alquileres para todos

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


3

Ayudas directas a las familias con una renta por debajo de cierto nivel



Ayuda solo a los que lo necesitan

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



Estas son las principales **POLÍTICAS ALTERNATIVAS** que proponen las investigaciones de los científicos sociales, y que no tienen los efectos contraproducentes de poner topes al alquiler

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)			
<i>Education level:</i>							
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***
<i>Labor status:</i>							
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**
<i>Province:</i>							
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***
<i>Home ownership:</i>							
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***
<i>Household:</i>							
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
<i>Town size:</i>							
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: Correlation: relative time with 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)
<i>Education level:</i>				
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 TEEd.	0.37	-0.22	0.23	-0.31
	(0.41)	(0.52)	(0.45)	(0.47)
<i>Labor status:</i>				
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)
<i>Province:</i>				
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)
<i>Home ownership:</i>				
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)
<i>Household composition:</i>				
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)
<i>Town size:</i>				
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: Correlation: initial belief with CRT and socio-demographic variables

	RV	RVV	RVVS1	RVVS2
CRT score	0.07 (0.23)	0.46* (0.23)	-0.11 (0.25)	0.36* (0.22)
Female	-0.34*** (0.11)	-0.42*** (0.12)	-0.44*** (0.12)	-0.35*** (0.12)
Non-Spanish	0.38 (0.24)	-0.10 (0.22)	-0.16 (0.28)	-0.16 (0.20)
Age	0.02** (0.01)	0.01 (0.01)	0.00 (0.01)	0.02*** (0.01)
<i>Education level:</i>				
Compulsory	0.62 (0.73)	-0.23 (0.54)	-0.48 (0.82)	-0.18 (0.47)
Upper secondary	0.59 (0.73)	-0.09 (0.54)	-0.87 (0.81)	-0.17 (0.47)
Tertiary	0.57 (0.73)	0.02 (0.54)	-0.77 (0.81)	0.17 (0.46)
Enrolled in TEd.	0.04 (0.18)	-0.08 (0.16)	-0.17 (0.20)	0.20 (0.19)
<i>Labor status:</i>				
Unemployed	0.00 (0.19)	0.28 (0.21)	0.31 (0.20)	-0.13 (0.17)
Not in labor force	0.14 (0.17)	0.45*** (0.16)	0.36** (0.18)	0.09 (0.16)
<i>Province:</i>				
Barcelona	-0.46 (0.30)	0.14 (0.39)	0.07 (0.35)	-0.37 (0.32)
Madrid	-0.06 (0.27)	-0.03 (0.36)	-0.08 (0.35)	-0.18 (0.32)
Valencia	-0.09 (0.24)	-0.12 (0.32)	0.07 (0.30)	-0.21 (0.30)
Other	-0.11 (0.25)	-0.00 (0.34)	-0.20 (0.31)	-0.40 (0.29)
<i>Home ownership:</i>				
Mortgage	0.07 (0.15)	0.14 (0.15)	0.04 (0.15)	0.07 (0.15)
Tenant	-0.22 (0.17)	0.03 (0.17)	-0.31 (0.20)	0.05 (0.18)
Other	0.25 (0.23)	0.07 (0.21)	0.09 (0.26)	0.18 (0.21)
<i>Household composition:</i>				
Single parent	-0.06 (0.21)	-0.44* (0.23)	-0.21 (0.23)	-0.20 (0.20)
Childless couple	-0.16 (0.21)	-0.30 (0.23)	-0.26 (0.22)	0.07 (0.24)
Couple with children	0.09 (0.18)	-0.22 (0.21)	-0.34* (0.21)	-0.05 (0.20)
Other	0.01 (0.22)	-0.09 (0.28)	0.07 (0.29)	-0.50** (0.23)
<i>Town size:</i>				
Medium	0.20 (0.18)	-0.19 (0.17)	-0.34* (0.18)	-0.13 (0.21)
Large	0.19 (0.19)	-0.16 (0.17)	-0.35* (0.19)	-0.15 (0.20)
Constant	1.02 (0.90)	2.19*** (0.75)	3.63*** (0.89)	1.86*** (0.68)
N	362	359	350	353
R <sup>2</sup>	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
<i>Convincing video:</i>			
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
<i>Video comprehensibility:</i>			
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
<i>Video duration:</i>			
Too long	0.08	0.06	0.06
Just right	0.91	0.91	0.91
Too short	0.02	0.03	0.03
<i>Recommending the video</i>			
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

	Mean	S.d.	% Don't know	% No answer
<i>Ideological 1-10 scale</i> (Far left = 1; Far right =10)	4.94	2.02	3.4	4.53
<i>Political leaders assessment:</i>				
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
	%			
<i>Party closest to own ideas:</i>				
PSOE	18.41			
PP	15.58			
Podemos	15.01			
Nationalist party	7.37			
VOX	5.38			
Ciudadanos	4.50			
Other	4.00			
None - Don't know	26.30			
No answer	3.40			
<i>Vote intention:</i>				
PSOE	18.13			
PP	18.70			
Podemos	15.01			
VOX	8.22			
Nationalist party	6.80			
Ciudadanos	1.40			
Other	5.40			
None - Don't know	23.20			
No answer	3.10			
<i>Political self-definition:</i>				
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: Association between change in beliefs and ideology indicators (RVVS2 condition)

	1-10 scale <sup>†</sup>	Leaders assessment	Party closest to own ideas <sup>†</sup>	Vote intention <sup>†</sup>	Political self-definition <sup>†</sup>
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 <sup>2</sup>	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. <sup>†</sup>: 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 degree of agreement with zero-sum statements (%). RVVS2 condition

	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; e) 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)

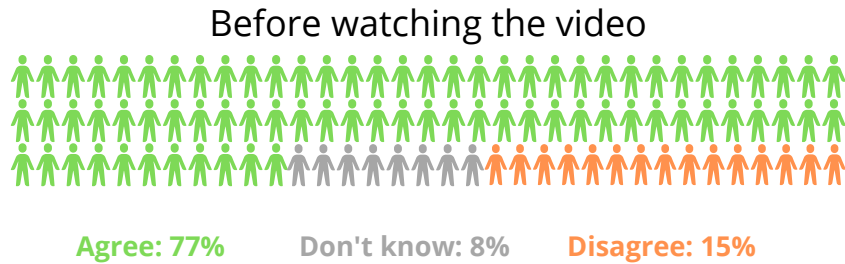
Adapted version: A developer buys a plot to build a public sport center. In the plot there is a hole measuring 3 meters deep x 3 meters wide x 3 meters long. How many cubic meters of dirt are there in the hole?

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)

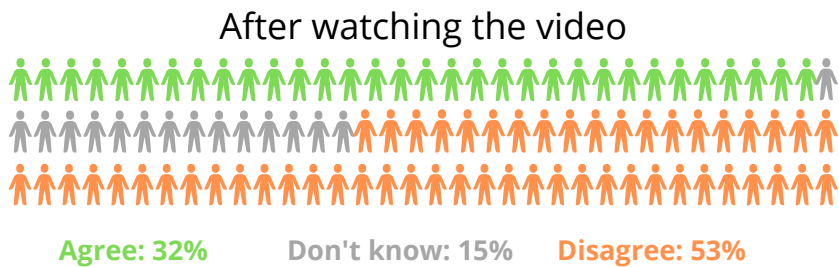
Adapted version: Someone buys a videogame for €60, sells it for €70, buys it back for €80, and sells it finally for €90. How much has this person made?

## D.7 Social information

In condition RVVS1 participants are shown the following screen:



“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.”



“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 AGREED 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



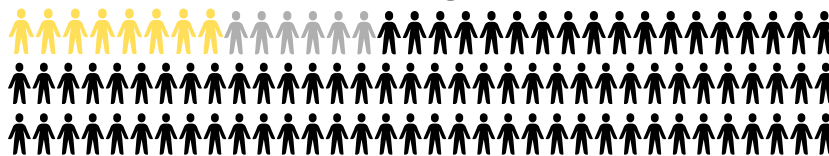
Agree with control: 43% Don't know: 11% Disagree with control: 46%

CASE 2. PEOPLE WHO BEFORE WATCHING THE VIDEO DISAGREED 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
<i>Housing:</i>		
Rent control	Yes	Yes
Online platforms for vacation rentals	Yes	Yes
Housing investment funds	Yes	No
Affordable housing	No	Yes
<i>Attitudes towards science:</i>		
Mistrust statistics	Yes	No
Trustworthy information source	Yes	No
Disagreement among scientists	No	Yes
Social sciences knowledge	No	Yes
<i>Fairness</i>		
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

The logo for UBIREA, featuring the text 'UBIREA' in a bold, white, sans-serif font inside a white rounded rectangle. The background of the slide is a solid blue color with a large, faint, circular pattern of fine white lines in the upper left and lower right corners.

## UBIREA

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The logo for AQR, featuring a small green circle with a white dot inside, followed by the text 'AQR' in a bold, white, sans-serif font inside a white rounded rectangle.

## AQR

Grup de Recerca Anàlisi Quantitativa Regional  
*Regional Quantitative Analysis Research Group*

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