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Risk Exposure and Acquisition of Macroeconomic Information

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Risk Exposure and Acquisition of Macroeconomic Information

Abstract

We conduct an experiment with a representative sample from the US to study households' demand for macroeconomic information. Respondents who learn of a higher personal exposure to unemployment risk during recessions increase their demand for an expert forecast about the likelihood of a recession. Our findings are consistent with the basic premise of theories of rational inattention that demand for information depends on its expected benefit. Moreover, the fact that perceived risk exposure responds to information highlights frictions in households' knowledge about the personal relevance of particular pieces of information. Our findings inform the modeling of information frictions in macroeconomics.

JEL-Codes: D120, D140, D830, D840, E320, G110.

Keywords: risk exposure, macroeconomic conditions, information acquisition, experiment.

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1 Introduction

Information frictions feature a central role in many theories of expectation formation. In some models these frictions are assumed to be exogenous (Carroll, 2003; Klenow and Willis, 2007; Mankiw and Reis, 2002; Mankiw et al., 2003; Wiederholt, 2015; Woodford, 2003), while according to theories of rational inattention, economic agents with a limited capacity to acquire or process information choose how much attention to pay to different pieces of information (Maćkowiak and Wiederholt, 2009; Maćkowiak et al., 2018; Reis, 2006; Sims, 2003). A basic premise of models of rational inattention is that economic agents' demand for information depends on the expected benefits of information acquisition.

In this paper, we test this premise in the context of exposure to unemployment risk during recessions, and how it affects individuals' demand for a forecast about the likelihood of a recession. Perceived unemployment risk plays an important role in models of spending and saving decisions, investment choices and labor market behavior. Higher exposure to unemployment risk during recessions should increase the expected benefits of acquiring information about the likelihood of a recession, as – depending on individuals' exposure – such information should allow them to predict unemployment risk more accurately and make better economic decisions.

Testing how information acquisition depends on exposure to macroeconomic risk is challenging with observational data. Offering pieces of information to more and less exposed individuals and comparing their demand for this information is problematic as those who are more exposed to macroeconomic risk should already be better informed about pieces of news that are relevant for their macroeconomic outlook to begin with, which may crowd out their demand for additional information. Moreover, more exposed individuals differ from less exposed individuals in many unobservables, such as the cost of acquiring and processing information. To circumvent these identification challenges, we propose an experiment that exogenously varies people's beliefs about their own exposure to macroeconomic risk. This allows us to compare otherwise similar individuals who hold differential beliefs about the relevance of a piece of information to themselves.

We conduct our experiment with an online sample representative of the US population in full-time employment in terms of age, income, region, education and gender. The experiment proceeds as follows: First, we measure respondents' beliefs about the effect of the Great Recession in 2008-9 on the unemployment rate among people with similar characteristics as themselves. We then generate exogenous variation in perceptions of exposure to macroeconomic risk by providing the respondents with data on actual changes in the unemployment rate among people similar to them over the Great Recession. Respondents are randomly assigned to receive information based on data from either the American Community Survey (ACS) or the Current Population Survey (CPS). We exploit differences across the two Census surveys due to sampling variation and procedural differences as a source of exogenous variation in the provided information. Thereafter, we elicit the respondents' perceptions of how exposed they personally are to unemployment risk during recessions. Finally, respondents have to choose between receiving an expert forecast about the likelihood of a recession, a forecast about inflation, a forecast about the return on government bonds, a forecast about government spending, or no forecast.

The main findings of our paper can be summarized as follows: First, information about changes of the unemployment rate among similar individuals during the last recession strongly affects respondents' perceived risk of becoming personally unemployed during the next recession, indicating that individuals are imperfectly informed about their own risk exposure. Consistent with this, a substantial fraction of respondents report that they are uncertain about their group's exposure to macroeconomic risk. This suggests that there exist frictions in households' knowledge about the personal relevance of particular pieces of information. Second, an exogenous increase in perceived unemployment risk during the next recession increases respondents' demand for receiving a forecast about the likelihood of a recession, consistent with the basic premise of models of rational inattention (Maćkowiak and Wiederholt, 2009; Maćkowiak et al., 2018; Reis, 2006; Sims, 2003). We find a corresponding decrease in the likelihood of choosing any of the other forecasts, but no significant effect on the likelihood of choosing no forecast at all.

We contribute to a research effort that aims to better understand how households form macroeconomic expectations, and how these expectations affect their decisions (Andre et al., 2019; Bachmann et al., 2015; Bailey et al., 2019; Coibion et al., 2020b; D'Acunto et al., 2020; D'Acunto et al., 2019a,b; Fetzer et al., 2020; Goldfayn-Frank and Wohlfart, 2020; Kuchler and Zafar, 2019). Our paper complements prior work that uses observational data to study the importance of information rigidities in macroeconomic expectation formation (Coibion and Gorodnichenko, 2012, 2015; Mankiw et al., 2003), and in particular the role of rational inattention (Maćkowiak et al., 2018; Reis, 2006). In a seminal paper, Coibion and Gorodnichenko (2012) show that noisy information models featuring a role for rational inattention better fit US macroeconomic data than alternative models of information rigidities. They also provide evidence that information frictions are largest for less volatile macroeconomic variables, that information frictions were more severe during the period of the Great Moderation, and that the rigidity of expectations drops during recessions. These findings are consistent with the mechanism for which we provide micro evidence in our experiment. Moreover, using a sample of firms, Coibion et al. (2018) find robust evidence that inattention to recent information about inflation is systematically correlated with proxies for incentives to acquire information.

Our paper relates to a series of recent papers which study how information provision affects expectations about inflation (Armantier et al., 2016, 2015; Binder, 2020; Binder and Rodrigue, 2018; Cavallo et al., 2017; Coibion et al., 2020a,c, 2018), house prices (Armona et al., 2019; Fuster et al., 2020), GDP growth (Roth and Wohlfart, 2020), and stock returns (Hanspal et al., 2020).[1] These papers demonstrate that when individuals are exposed to information, the dispersion in expectations decreases, consistent with models of costly information acquisition. Fuster et al. (2020) provide important evidence that people's willingness to pay for information about house prices increases when prediction incentives about future house price changes increase, in support of models of rational inattention. We provide the first direct causal evidence that perceptions of exposure to macroeconomic risk affect the demand for information

[1] Haaland et al. (2020) provide a review of the literature using information experiments.

about different macroeconomic variables.[2] A unique aspect of our design is that we experimentally change the real world benefits of acquiring information, in the context of a risk that should matter for the real world decisions of individuals. This should increase the empirical validity of our test (Maćkowiak et al., 2018).

2 Experimental design and data

2.1 Survey administration

We collected data in September 2019 in collaboration with the widely used online panel provider Luc.id (Haaland et al., 2020). Respondents were recruited through generic invitation forms sent out by email. In the following, we outline the experimental design. The full instructions can be found in appendix section E.

2.2 Design

Prior beliefs about group-level exposure to recessions We start by eliciting some background characteristics of our respondents. We then ask them to think about the effect of the Great Recession in 2008-9 in the US on people with similar characteristics as them, namely people who before the recession had the same occupation, education, age, gender and census division of residence as they have now.[3] Next, we inform all participants what the unemployment rate among people similar to them was in the year 2007, just before the recession. The purpose of this information is to provide respondents with an anchor on unemployment rates that illustrates the relevant scale and allows respondents to meaningfully express their prior beliefs (Ansolabehere et al., 2013). Moreover, this ensures that our information treatment does not shift beliefs about the baseline unemployment rate before the recession. This anchor is based on either the American Community Survey (ACS) or the Current Population Survey

[2]Our work also relates to a broader literature on attention allocation. For a review of both the empirical and theoretical literature, see Gabaix (2019).

[3]We use relatively narrowly defined cells, specifically occupation groups based on 3-digit Census 2000 occupational classifications; educational attainment of below highschool, highschool, and college; 5-year age brackets; and Census divisions of residence.

(CPS) on a random basis, i.e. respondents are, already at this point, prior to the actual information treatment, assigned to one of two randomized (treatment) groups. Subsequently, we elicit the respondents' prior estimate of the unemployment rate among people similar to them in 2010, after the Great Recession, when the unemployment rate peaked. Thereafter, we measure their self-reported confidence in this estimate on a qualitative scale.

Information treatment Next, we provide all respondents with truthful information about the unemployment rate among people with similar characteristics as them in 2010, after the Great Recession. We illustrate this information by means of a bar chart, in which we display i) the pre-recession unemployment rate in the respondent's demographic group which had been provided as an anchor, ii) the respondent's prior estimate of the unemployment rate in her demographic group after the Great Recession, and iii) the actual unemployment rate after the Great Recession in this demographic group (see Figures A.1 and A.2 for an illustration). Those respondents who were randomly assigned to receive the 2007 anchor based on the ACS during the prior belief elicitation now receive the information treatment based on the ACS, and similarly for those exposed to the CPS.[4] Sampling variation and procedural differences across these two randomly assigned data sources allow us to provide similar individuals with differential information on group-level recession exposure in a non-deceptive way. This ultimately aims at inducing exogenous treatment variation in respondents' perceived exposure to macroeconomic risk. We define exposure to macroeconomic risk as the *change* in the group-level unemployment rate from 2007 to 2010. As explained in section 3.2, in our regressions we control for the 2007 anchor to account for the fact that respondents exposed to different information have also seen different anchors.

To illustrate the variation between the two data sources, consider the following hypothetical participant in our experiment: a male, without a High School degree,

[4]Both the ACS and the CPS are official Census surveys. While the ACS has a somewhat higher number of respondents, the CPS is used to calculate unemployment statistics as issued by the BLS. Thus, neither ACS nor CPS dominates the other survey.

from census division Mountain, aged between 18 and 24, with the occupation "Vehicle and Mobile Equipment Mechanics, Installers, and Repairers". Out of 1000 ACS respondents with those characteristics, 58 were unemployed in 2007, while 240 were unemployed in 2010, after the recession. In the CPS, by contrast, 61 out of 1000 people with those characteristics were unemployed in 2007, while 322 out of 1000 were unemployed in 2010. Thus, while the group-level unemployment rate increased by 18.2 percentage points according to ACS data, it increased by 26.1 percentage points according to CPS data. Figures A.1 and A.2 display the information screens for the two different treatment arms for this example. In online appendix A we provide more details on the variation in the signal respondents receive.

Posterior beliefs about own exposure to recessions After the information treatment, we measure participants' perception of their own risk exposure using both qualitative and quantitative questions. First, we ask our respondents to imagine that they still work in the same job as now just before the next recession occurs in the US, and to assess the probability (in percent) that they would become involuntarily unemployed during that recession. Second, we elicit the respondents' agreement on 5-point scales with the following three statements: (i) A recession would adversely affect my job security; (ii) A recession would adversely affect the financial situation of my household; (iii) My job situation depends on the macroeconomic environment.

Outcomes Our main outcome of interest is respondents' demand for a recession forecast. We first inform all participants that the Survey of Professional Forecasters (SPF) is a quarterly expert survey on macroeconomic forecasts for the US economy issued by the Federal Reserve Bank of Philadelphia. We also tell them that experts participating in the survey forecast the change in total federal government spending, the annual rate on 10-year government bonds, and the rate of inflation over the next 12 months, as well as the probability of a decline in real GDP in the first quarter of 2020 compared to the fourth quarter of 2019. Throughout, we add explanations to make these concepts easier to understand. For instance, we tell our respondents that inflation refers to the change in the general price level. The respondents can then

choose between five options, namely receiving the average expert forecast from the most recent wave of the SPF for any of these four variables, or receiving no information. Subsequently, our respondents see the forecast they chose to receive. Finally, we elicit personal unemployment expectations, planned savings behavior and intended job search behavior.

Discussion of the experimental design Our main challenge for identification is that (perceived) exposure to macroeconomic risk is potentially endogenous to individual characteristics. For instance, more exposed individuals may be better informed to begin with, which may crowd out their demand for new information. Alternatively, more exposed individuals may have higher information processing costs and therefore be less likely to acquire relevant information. In our design, respondents are randomly assigned to receive information from the ACS or the CPS, which varies because of sampling variation and procedural differences. As explained in detail in section 3.2, our identification strategy generates exogenous variation in perceived risk exposure in a non-deceptive way by exploiting the component of the provided information that is due to the difference in this noise across the two signals. This allows us to study the causal effect of individuals' perceived risk exposure on their demand for macroeconomic forecasts.

Our identification strategy based on an active control group has several advantages compared to an alternative design that provides a random subset of respondents with information and another subset (a passive control group) with no information (Haaland et al., 2020). First, receiving information about risk exposure may not only shift the level of individuals' beliefs but may also have side-effects, such as reducing their uncertainty about their risk exposure or making recessions and job loss risk more salient. This could be particularly problematic in our setting, since our main outcome is our respondents' demand for information. Such side-effects should arguably be similar across respondents (who all receive information) in our design. Second, identification in the alternative design hinges on the respondent's prior belief, which determines the expected direction and strength of the information treatment. Prior beliefs, however, are likely correlated with other characteristics that, in turn,

determine individuals' demand for information and its elasticity to perceived risk exposure. Moreover, prior beliefs may be measured with error, which could attenuate estimated treatment effects. In our design, the identifying variation is orthogonal to priors.

Previous evidence highlights that large fractions of the population tend to be uninformed about recession forecasts, but revise their beliefs about job loss risk and their consumption plans when provided with such forecasts (Roth and Wohlfart, 2020). Participants in our survey are offered direct and easy access to a recession forecast immediately after an exogenous change in their perceived recession exposure, and it would likely take respondents much more time to look up this information themselves. These points suggest i) that respondents will likely perceive the recession forecast as valuable, and ii) that our setup should be immune to crowd-out of the demand for the recession forecast through information acquisition outside the survey.

Our measure of information acquisition captures changes in behavior along two margins. First, respondents can decide between i) receiving a forecast and ii) not receiving a forecast and thereby more quickly completing the survey (which is required for receiving payment). Second, respondents can choose between forecasts on four different macroeconomic variables – government spending, interest rates, inflation and the likelihood of a recession. We believe that these features capture in a stylized way basic aspects of prominent macroeconomic models of rational inattention. Specifically, agents in such models optimally choose how much attention to pay overall, e.g. how much time to spend on collecting information (Maćkowiak and Wiederholt, 2009, 2015), but also how to allocate attention across different signals (Maćkowiak and Wiederholt, 2009). An increase in a respondent's perceived exposure to recessions should increase his or her expected benefits of receiving the recession forecast, and thereby make the participant more willing to pay the opportunity cost of receiving the recession forecast, which consists both of time and of not receiving the forecasts on other variables.

2.3 Data

Table 1 shows summary statistics of our sample as well as benchmarks from the 2017 American Community Survey. Our sample consists of 1,008 full-time employees and is roughly representative of the corresponding part of the US population in terms of gender, age, region, education and total household income. Our sample also resembles the population along non-targeted dimensions such as occupation and industry of employment, hours worked and log of personal labor earnings. Table 1 also shows that respondents randomly assigned to receive information from the ACS or the CPS are very similar in terms of a large set of observables, including prior beliefs about risk exposure, gender, age, education, income, and region of residence.

3 Beliefs about exposure

3.1 Prior beliefs about risk exposure

Levels of prior beliefs Figure A.3 highlights that there is substantial variation in respondents' prior beliefs about the change in the unemployment rate in their demographic group over the Great Recession. On average, respondents believe that the unemployment rate among people with similar characteristics as themselves increased by 11 percentage points during the last recession. 25 percent of respondents believe that the unemployment rate among individuals similar to themselves did not increase over the Great Recession. This is consistent with the insight that many employees work in a-cyclical or even counter-cyclical industries, which are insulated from economic downturns (Farber, 2015; Hoynes et al., 2012). As shown in Table A1 columns 1-2, those who were personally unemployed during the Great Recession perceive a significantly higher exposure of their demographic groups. Age, income, education, gender, tenure and news consumption are not significantly correlated with priors.

How closely aligned are respondents' beliefs about their group's exposure to the Great Recession with reality? Figure A.4 displays binned scatter plots of respondents' prior belief against the actual change in the unemployment rate in their demographic

group based on the source of information they were allocated to (the ACS or the CPS), and on which the provided anchor of the pre-recession unemployment rate was based. Individuals who are more exposed according to our objective group-level measure estimate significantly stronger increases in their group-level unemployment rate. At the median, respondents perceive a similar increase in their group-level unemployment rate (3 percentage points) as indicated by the data from the ACS or CPS they were subsequently provided with (3.4 percentage points). However, there is a lot of unexplained variation in respondents' beliefs about their group's exposure. Given the importance of sampling variation in the ACS and CPS estimates of unemployment rates in high-dimensional demographic cells, exact quantitative deviations of beliefs from the noisy benchmarks should be interpreted cautiously.[5] That said, the described correlations suggest i) that overall respondents' beliefs seem to be directionally aligned with reality; and ii) that respondents are not perfectly informed about their group's exposure to macroeconomic risk, leaving room for our information treatment to change these beliefs.

Confidence in prior beliefs 66 percent of respondents indicate that they are at least somewhat unsure about their group's exposure to the Great Recession, consistent with frictions in households' knowledge of their own group's exposure to macroeconomic risk. Men, those who follow news about the economy, those who became unemployed during the Great Recession, and those with a college degree exhibit higher confidence in their beliefs about exposure to macroeconomic risk (Table A1 columns 5-8).

3.2 Updating of beliefs about exposure

Specification We next establish that our respondents' perceived exposure to macroeconomic risk is shifted through the randomly assigned information treatment. To do so, we estimate the following empirical specification:

[5]Table A1 columns 3-4 display correlates of absolute deviations from the benchmarks. Those who became unemployed during the Great Recession exhibit larger absolute deviations.

$$\begin{aligned}\text{Perceived exposure}_i = \alpha_0 + \alpha_1 \Delta\text{Unemp_incr} + \alpha_2 \text{Unemp_incr}^{alt} \\ + \alpha_3 \Delta\text{Unemp_2007} + \alpha_4 \text{Unemp_2007}^{alt} + \mathbf{\Pi}^T \mathbf{X}_i + \varepsilon_i\end{aligned} \tag{1}$$

where Perceived exposure$_i$ is a quantitative or qualitative measure of the respondent's posterior belief about his or her exposure to macroeconomic risk. ΔUnemp_incr is the difference between the information shown to the respondent, Unemp_incr^{shown}, and the alternative information that was not shown, Unemp_incr^{alt}.

Our identification strategy relies on the following argument: Both the signal shown to the respondent and the alternative signal are noisy proxies for the true exposure of the respondent's demographic group to the Great Recession:

$$\begin{aligned}\text{Unemp_incr}^{shown} &= \text{Unemp_incr}^{true} + \text{noise}^{shown} \\ \text{Unemp_incr}^{alt} &= \text{Unemp_incr}^{true} + \text{noise}^{alt}\end{aligned}$$

The difference between the two signals should be purely due to noise driven by sampling variation and procedural differences between ACS and CPS:

$$\Delta\text{Unemp_incr} = \text{noise}^{shown} - \text{noise}^{alt}$$

Including both Unemp_incr^{alt} and ΔUnemp_incr into our regressions is equivalent to splitting the displayed information, Unemp_incr^{shown}, into a potentially endogenous and an exogenous component. The coefficient estimate of α_2 on the alternative, non-shown signal Unemp_incr^{alt} captures the effect of information on a higher group-level exposure to the Great Recession to the extent it is driven by true exposure and the noise in the alternative signal. This coefficient cannot be given a causal interpretation because it could capture i) effects of the displayed information, ii) effects of actual exposure not working through the displayed information, or iii) effects of omitted variables that are correlated with actual exposure. By contrast, the coefficient α_1 captures the effect of information about a higher increase in group-level unemploy-

ment to the extent it is driven by the *difference in noise* between the two signals. This difference in noise should only matter for respondents' posterior beliefs because the information was shown to them. It should not be systematically related to respondents' true risk exposure or to omitted variables, as such variables should not vary differentially with the noise in the shown signal and the noise in the alternative signal. Since the shown and the alternative signal are both equally likely to be based on the ACS or on the CPS, they have the same statistical properties.[6] Thus, the coefficient α_1 captures exogenous variation in provided information about group-level unemployment changes over the Great Recession, and can be given a causal interpretation. Throughout the main analysis, we focus on the coefficient estimates of α_1, which is based on the exogenous component of the information.

We similarly split the pre-recession group-level unemployment rate, which was provided as an anchor to facilitate the prior elicitation and is calculated using the same source as for the change in unemployment, into an exogenous part, ΔUnemp_2007, and a potentially endogenous part, Unemp_2007^{alt}. These variables should capture permanent differences in unemployment risk across groups and any potential effect of the anchor itself. Finally, to increase statistical power, we also control for the vector $\mathbf{X}_i$, which includes fixed effects for age group, occupation, gender, education, and census region. We report robust standard errors throughout the analysis.

First-stage treatment effects Does the information change our respondents' perceived risk exposure? As can be seen in Table 2 Panel A column 1, information on a one percentage point higher increase in the unemployment rate among people with similar characteristics during the last recession (driven by the difference in noise between shown and alternative signal) significantly increases respondents' perceived probability of job loss during the next recession by 0.49 percentage points. Figure 1 Panel A illustrates this estimate in a binned scatter plot.[7,8] This indicates that respon-

[6] Figure A.5 shows that the distributions of the two signals are indeed very similar in our sample, and that the difference between them has a mean close to zero.

[7] About one in six workers lost a job during the Great Recession 2008-9 (Farber, 2015). Our median respondent's expected job loss risk during the next recession is slightly higher at 25 percent.

[8] Our estimated learning rate is of comparable size as learning rates in experiments that study how individuals update their expectations about macroeconomic variables in response to the provision of expert

dents perceive data on changes in unemployment rates among similar people during the last recession as relevant for their own personal future exposure to unemployment risk during recessions. We also confirm our findings using qualitative survey measures of risk exposure (Table 2, Panel A, columns 2-5). People who received information indicating a stronger increase in unemployment are more likely to agree that recessions affect their job security and that they are exposed to macroeconomic risk.[9] In Appendix B.1 we discuss the coefficient estimates on the other included variables, such as the alternative signal.

How does updating about personal future risk exposure vary with confidence in prior beliefs about changes in the group-level unemployment rate during the last recession? Table 3 separately estimates the first stage equation 1 among subsamples of respondents who were "very unsure", "unsure" or "somewhat unsure" (Panel A) and who were "very sure" or "sure" (Panel B) about their prior beliefs. Updating of beliefs about personal risk exposure is fully driven by those individuals who were at least somewhat unsure about their prior beliefs, and the effect of the provided information differs significantly across these two groups ($p<0.1$).

Taken together, our first main result can be summarized as follows:

Result 1. *The information provision strongly shifts our respondents' perceived unemployment risk during future recessions. This suggests that there exist frictions in households' knowledge of their own exposure to macroeconomic risk. Changes in beliefs about recession exposure are fully driven by respondents with less confidence in their prior beliefs.*

forecasts or data on past realizations (Armona et al., 2019; Cavallo et al., 2017; Coibion et al., 2020c; Roth and Wohlfart, 2020).

[9]The corresponding treatment effect on perceptions of whether recessions affect the financial situation of the respondent's household is smaller in size and statistically insignificant, potentially due to insurance within the household.

4 Perceived risk exposure and demand for information

4.1 Descriptive evidence on demand for macroeconomic information

There is substantial variation in the demand for different forecasts, even though all respondents were primed on how recessions affect the unemployment rate of their group. While about 25 percent choose to receive the forecast about the likelihood of a recession, an equally large share select the inflation forecast. 17 percent of respondents decide to receive the government spending forecast, and 15 percent choose to receive the interest rate forecast. 18 percent of respondents prefer not to receive any forecast, potentially because they would like to complete the survey more quickly.

Table A2 sheds light on the demographic correlates of the demand for different macroeconomic forecasts. For instance, men are 7.6 percentage points more likely to acquire the recession forecast, in line with their higher exposure to macroeconomic risk (Hoynes et al., 2012). Similarly, those who experienced a phase of unemployment during the Great Recession are around 8 percentage points (p<0.1) more likely to select the recession forecast. Moreover, those with a college degree and those who regularly follow news on the economy are around 8 and 6 percentage points (p<0.01) more likely to pick the recession forecast, respectively.

4.2 Main evidence

Reduced form estimates We estimate the reduced form effect of our information treatment on the respondents' demand for the recession forecast using the following specification:

$$\begin{aligned} \text{Demand for info}_i = \beta_0 + \beta_1 \Delta\text{Unemp_incr} + \beta_2 \text{Unemp_incr}^{alt} \\ + \beta_3 \Delta\text{Unemp_2007} + \beta_4 \text{Unemp_2007}^{alt} + \mathbf{\Pi}^T \mathbf{X}_i + \varepsilon_i \end{aligned} \tag{2}$$

Demand for info$_i$ stands for a set of dummy variables representing the different pieces of information respondents can choose from. The main dummy outcome of interest, RecessionForecast$_i$ takes the value one if the respondent chooses to receive the professional forecast on the likelihood of a recession and zero otherwise. We include the same set of control variables as in the first stage specification 1. We again focus on our estimate of β_1, which captures the effect of the exogenous component of the information driven by the difference in noise between the two signals, and discuss other coefficient estimates in Appendix B.1.

Panel B of Table 2 shows that respondents who learn about a one percentage point higher exposure to unemployment risk among people similar to themselves are 0.6 percentage points more likely to choose the recession forecast ($p < 0.01$, column 1), while their demand for the interest rate forecast is lower ($p < 0.05$, column 3). We find small and noisily measured effects on the likelihood of choosing the government spending forecast (column 2) or the inflation forecast (column 4). Overall, our average estimated treatment effect is driven by how agents allocate attention across different signals (Maćkowiak and Wiederholt, 2009) (column 5) and less by how much attention agents pay overall, i.e. whether they choose any piece of information or none (Maćkowiak and Wiederholt, 2015) (column 6). Figure 1 Panels B-D illustrate our reduced form evidence as binned scatter plots.

Instrumental variables estimates For a more intuitive interpretation of magnitudes, we estimate a two stage least squares model. Specifically, we instrument respondents' posterior belief about their own unemployment risk during the next recession by the exogenous component of the provided information on group-level unemployment risk during the last recession, which is due to the difference in noise between shown and alternative signal:

$$
\begin{aligned}
\text{Demand for info}_i &= \gamma_0 + \gamma_1 \widehat{\text{Perceived exposure}}_i + \gamma_2 \text{Unemp_incr}^{alt} \\
&\quad + \gamma_3 \Delta\text{Unemp_2007} + \gamma_4 \text{Unemp_2007}^{alt} + \mathbf{\Pi}^T \mathbf{X}_i + \varepsilon_i \\
\widehat{\text{Perceived exposure}}_i &= \alpha_0 + \alpha_1 \Delta\text{Unemp_incr} + \alpha_2 \text{Unemp_incr}^{alt} \\
&\quad + \alpha_3 \Delta\text{Unemp_2007} + \alpha_4 \text{Unemp_2007}^{alt} + \mathbf{\Omega}^T \mathbf{X}_i \qquad (3)
\end{aligned}
$$

This specification allows us to quantify the causal effect of an exogenously induced increase in perceived personal unemployment risk during the next recession on the probability of demanding the professional forecast about the likelihood of a recession.

Panel C of Table 2 shows that a one percentage point increase in the perceived likelihood of job loss during the next recession increases respondents' demand for the recession forecast by 1.2 percentage points (column 1, $p < 0.05$). The demand for receiving any of the other forecasts (column 5) or no forecast (column 6) decreases accordingly, but these effects are noisily measured in the IV setup.

What is the economic magnitude of our findings? Relative to the average probability of choosing the recession forecast of 25 percent, the increase by 1.2 percentage points in response to a one percentage point higher perceived exposure corresponds to an increase in information demand by 5 percent. For comparison, having been unemployed during the Great Recession increases information demand by as much as an increase in the perceived risk of becoming unemployed during the next recession by 6 percentage points. Similarly, a 5 percentage points higher unemployment risk has an effect that is comparable to the difference in information demand between those who generally follow news about the economy and those who do not. Thus, the expected benefit of acquiring the forecast has a substantial causal effect on respondents' demand for it.

Taken together, our second main result can be summarized as follows:

Result 2. *People's demand for receiving a forecast about the likelihood of a recession causally increases in their perceived exposure to unemployment risk during recessions, consistent with basic assumptions of rational inattention models.*

In Appendix B.2 we demonstrate that our findings are robust to varying the set of controls, and that experimenter demand effects and numerical anchoring are unlikely to be a concern.

4.3 Treatment effect heterogeneity

We also examine heterogeneity in the treatment effects, starting with the role of confidence in prior beliefs about group-level exposure to the Great Recession. In Table 3 Panels C and D we estimate the reduced-form equation 2 on subsamples of individuals who were more or less confident in their prior beliefs. Receiving information on a higher group-level exposure to the Great Recession significantly increases the demand for the recession forecast, but only significantly so among those who are less confident in their prior. Given that the information treatment changes perceived job loss risk during the next recession only among less confident respondents (see Panel A), this finding suggests that treatment effects on information demand indeed work through changes in perceived exposure to future recessions. In Panel E we report estimates of the IV specification 3 on the subsample of less confident individuals, which confirms a strong causal effect of perceived recession exposure on demand for the recession forecast in this subsample ($p<0.05$).[10] In Appendix B.3 we discuss heterogeneous treatment effects across different demographic groups.

5 Other outcomes

To validate the relevance of our measure of perceived macroeconomic risk exposure, we examine the causal effect of perceived risk exposure on personal unemployment expectations, planned savings behavior and intended job search. Panel A of Table A3 shows reduced form evidence. In this section we focus on Panel B, where we report results from our 2SLS specification (equation 3). A one percentage point higher perceived probability of becoming unemployed during the next recession causes an

[10] We do not report 2SLS results for the subsample of more confident individuals, as we do not have a first stage for this subsample.

increase in respondents' perceived likelihood of becoming unemployed over the next 12 months by 0.47 percentage points (column 1).[11] Similarly, it increases respondents' likelihood of looking for a new job in a different occupation (column 4) or in another industry (column 5) over the next 12 months by 0.53 percentage points and by 0.44 percentage points, respectively.[12] These effects could be driven by a desire to move to a job with lower exposure to macroeconomic risk.

In contrast, respondents' perceived exposure to recessions does not significantly affect their planned precautionary saving (columns 2 and 3). This could be due to a large fraction of respondents exhibiting hand-to-mouth consumption behavior (Kaplan and Violante, 2014). Indeed, 42 percent of our respondents report that they did not engage in precautionary saving over the four weeks before the survey. Alternatively, the lack of significant effects may reflect low statistical power. Taken together, this evidence on other outcomes suggests that perceived exposure to unemployment risk during recessions affects some relevant economic expectations and intended behaviors in expected directions.

6 Conclusion and implications

Our findings have implications for the modeling of information frictions in macroeconomics. First, our main finding that perceived risk exposure increases demand for the recession forecast supports a basic premise of models of rational inattention – that information acquisition depends on its expected benefits (Maćkowiak and Wiederholt, 2009, 2015; Maćkowiak et al., 2018; Reis, 2006; Sims, 2003).

Second, in macroeconomic models of imperfect information, information frictions are usually modeled as infrequent updating of information sets (Reis, 2006) or as re-

[11] Note that this effect in combination with the treatment effect on the perceived probability of becoming unemployed during the next recession (see Table 2) implies a perceived probability of a recession in the coming 12 months of close to 50 percent. While this is higher than the expert forecast of 18 percent, it is in line with evidence that households are generally more pessimistic about the macroeconomy than experts (Das et al., 2020; Roth and Wohlfart, 2020).

[12] Respondents receiving different information about exposure have different probabilities of choosing each forecast. However, our findings on other outcomes remain very similar if we control for the (endogenous) choice of information.

ceiving noisy signals (Maćkowiak and Wiederholt, 2015) about the state of the economy. However, agents are assumed to know the true underlying structure of the economy, including their own exposure to different risks, which guides their decisions about how much attention to pay to different signals about the macroeconomy. Our first stage evidence that households' beliefs about their own risk exposure strongly respond to information suggests that there are important frictions in the context of people's knowledge about their exposure to different risks. These frictions could distort people's beliefs about the expected benefit of acquiring particular pieces of information. Exploring the consequences of frictions in households' knowledge of their own risk exposure in quantitative macroeconomic models could be a fruitful avenue for future research.

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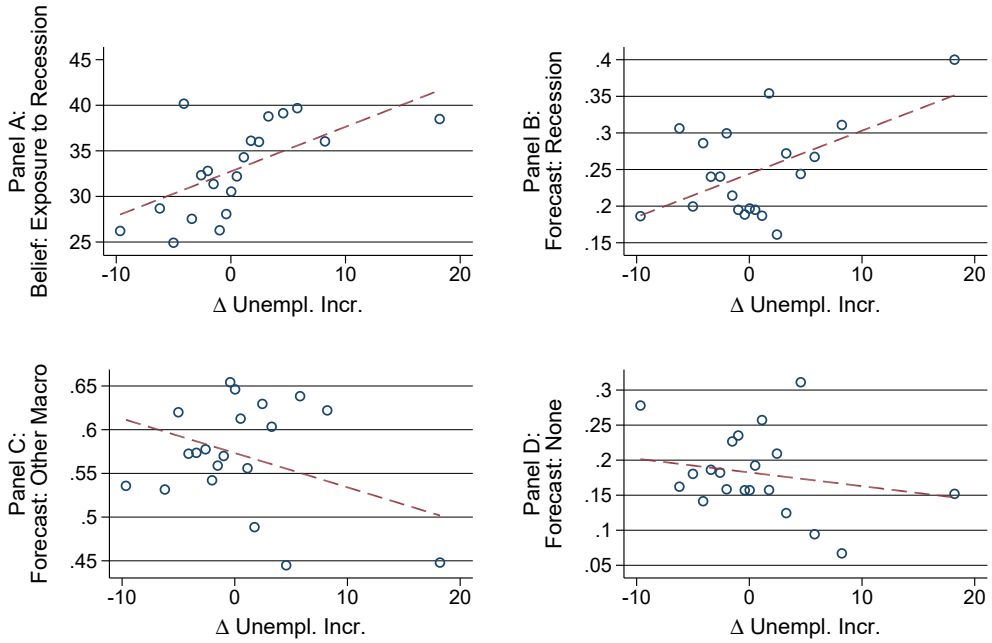
Main figures

Figure 1: Binscatter: Effects of information on perceived risk exposure and demand for macroeconomic forecasts



Notes: This figure shows binned scatter plots of the first-stage specification (equation 1) measuring the effect of the treatment information on perceived recession exposure (Panel A) as well as the reduced form specification (equation 2) measuring the effect of the treatment information on demand for macroeconomic forecasts (Panels B-D). The outcomes are "Belief: Exposure to Recession" – the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now (Panel A) – as well as dummy variables taking value one if the respondent chose the recession forecast (Panel B), if the respondent chose any other (non-recession) forecast (Panel C), or if the respondent chose no forecast (Panel D). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. All plots additionally partial out a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs about group-level exposure to the Great Recession.

Main tables

Table 1: Summary-Balance Table

	ACS	Online Sample					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	2017 Mean	Full Sample Mean	Full Sample Median	Full Sample SD	Info: ACS Mean	Info: CPS Mean	p-value (5) = (6)
Female	0.46	0.49	0.00	0.50	0.49	0.49	0.998
Age	41.73	40.25	37.00	11.38	40.48	40.02	0.513
At least Bachelor's degree	0.37	0.43	0.00	0.50	0.43	0.42	0.921
Log(Household Income)	11	11.00	11.04	1.16	10.99	11.00	0.249
Northeast	0.18	0.17	0.00	0.38	0.18	0.16	0.502
Midwest	0.21	0.24	0.00	0.43	0.23	0.25	0.629
South	0.38	0.41	0.00	0.49	0.41	0.41	0.825
West	0.23	0.18	0.00	0.39	0.18	0.19	0.688
Management, Business and Financial Occupations	0.16	0.25	0.00	0.43	0.25	0.26	0.745
Professional and Related Occupations	0.24	0.22	0.00	0.41	0.21	0.23	0.612
Service Occupations	0.15	0.14	0.00	0.35	0.15	0.13	0.534
Sales and Office Occupations	0.22	0.25	0.00	0.43	0.25	0.25	0.744
Construction, Extraction, and Maintenance Occupations	0.09	0.08	0.00	0.27	0.07	0.08	0.591
Production, Transportation, and Material Moving Occupations	0.13	0.06	0.00	0.24	0.07	0.06	0.485
Other Occupation	0.01	0.00	0.00	0.03	0.00	0.00	0.320
Industry: Construction and Manufacturing	0.18	0.16	0.00	0.37	0.17	0.16	0.807
Industry: Wholesale Trade and Retail Trade	0.13	0.13	0.00	0.33	0.14	0.11	0.093
Industry: Finance, Insurance and Real Estate	0.07	0.12	0.00	0.32	0.13	0.11	0.267
Industry: Professional Services	0.11	0.16	0.00	0.36	0.16	0.16	0.836
Industry: Education and Health Care	0.24	0.13	0.00	0.34	0.12	0.14	0.217
Industry: Leisure and Hospitality and Other Services	0.17	0.20	0.00	0.40	0.19	0.21	0.384
Other Industry	0.10	0.11	0.00	0.31	0.10	0.11	0.591
Log(Personal Labor Earnings)	10.60	10.59	10.65	0.74	10.60	10.59	0.787
Hours Worked	42.38	41.20	45.00	6.51	40.97	41.42	0.271
Tenure at Main Job (Years)		7.95	7.50	7.20	7.76	8.14	0.403
Unemployed during Great Recession 2007-9		0.16	0.00	0.37	0.18	0.14	0.170
Prior Belief Unempl. Incr.		11.00	3.00	16.27	10.78	11.23	0.660
High Confidence in Prior Belief		0.28	0.00	0.45	0.28	0.29	0.873
Unempl. Incr.^{shown}		4.36	3.40	7.62	3.71	5.00	
Unempl. 2007^{shown}		4.05	2.80	4.17	4.25	3.86	
Unempl. Incr.^{alt}		3.87	3.20	7.55	4.23	3.51	
Unempl. 2007^{alt}		4.21	3.00	4.26	3.90	4.51	
Observations		1008	1008	1008	501	507	

Notes: This table displays summary statistics of our full sample (columns 2-4), benchmarks for key demographics from the ACS (column 1) and a balance check between the two treatment arms who have received information calculated from the ACS or from the CPS (columns 5-7). "Unempl. Incr. Shown" indicates the 2007-2010 change in the group-level unemployment rate that was provided to the respondent, and "Unempl. Incr. Alt" indicates the change in the group-level unemployment rate as calculated from the alternative source that was not shown to the respondent. "Unempl. 2007 Shown" and "Unempl. 2007 Alt" denote the 2007 baseline group-level unemployment rate that was provided as anchor and from the alternative source, respectively.

Table 2: First stage, reduced form and IV results

	Belief: Exposure to recession (z)	Agree: Recession affects job security (z)	Agree: Recession affects HH situation (z)	Agree: Exposed to macroeconomy (z)	Index (1)-(4) (z)	
	(1)	(2)	(3)	(4)	(5)	
Panel A: First Stage						
Δ Unempl. Incr.	0.489***	0.012**	0.007	0.013***	0.016***	
	(0.134)	(0.005)	(0.005)	(0.004)	(0.005)	
Observations	1008	1008	1008	1008	1008	
R^2	0.06	0.07	0.04	0.08	0.07	
	Forecast: Recession	Forecast: Government spending	Forecast: Interest rate	Forecast: Inflation rate	Forecast: any other (2)-(4)	Forecast: None
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Reduced Form						
Δ Unempl. Incr.	0.006***	-0.002	-0.003**	0.001	-0.004*	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Observations	1008	1008	1008	1008	1008	1008
R^2	0.07	0.04	0.08	0.04	0.08	0.06
Panel C: IV						
Belief: Exposure to recession	0.012**	-0.004	-0.006*	0.002	-0.008	-0.004
	(0.006)	(0.004)	(0.003)	(0.004)	(0.005)	(0.004)
Observations	1008	1008	1008	1008	1008	1008
First stage F-stat	13.28	13.28	13.28	13.28	13.28	13.28
Mean outcome	0.25	0.17	0.15	0.25	0.57	0.18
St. dev. outcome	0.43	0.37	0.36	0.43	0.50	0.39

Notes: This table shows estimates of the first-stage specification (equation 1) measuring the effect of the treatment information on perceived recession exposure (Panel A), as well as the reduced form specification (equation 2, Panel B) and the IV specification (equation 3, Panel C) measuring the effect of perceived recession exposure on demand for macroeconomic forecasts. The outcome in Panel A column 1, "Belief: Exposure to Recession", denotes the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now. The outcomes in Panel A columns 2-4 are respondents' agreement on categorical scales to verbal statements describing their exposure to macroeconomic risk, and are z-scored using the mean and the standard deviation in the sample. The outcome in Panel A column 5 is the z-scored unweighted average of the outcomes from columns 1-4 (also standardizing the outcome from column 1). The outcomes in Panel A columns 2-5 are z-scored using the mean and the standard deviation in the sample. The outcomes in Panels B and C are dummy variables taking value one if the respondent chose a particular forecast (columns 1-4), if the respondent chose any other (non-recession) forecast (column 5), or if the respondent chose no forecast (column 6). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs about group-level exposure to the Great Recession. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table 3: Heterogeneity by confidence in prior beliefs about group-level risk exposure

	Belief: Exposure to recession	Agree: Recession affects job security (z)	Agree: Recession affects HH situation (z)	Agree: Exposed to macroeconomy (z)	Index (1)-(4) (z)	
	(1)	(2)	(3)	(4)	(5)	
Panel A: Low confidence						
Δ Unempl. Incr. (a)	0.642***	0.017***	0.011**	0.020***	0.018***	
	(0.181)	(0.007)	(0.005)	(0.006)	(0.006)	
Observations	722	722	722	722	722	
Panel B: High confidence						
Δ Unempl. Incr. (b)	0.149	-0.001	-0.005	-0.007	-0.005	
	(0.238)	(0.010)	(0.011)	(0.011)	(0.011)	
Observations	286	286	286	286	286	
p-value (a=b)	0.095	0.117	0.192	0.029	0.064	

	Forecast: Recession	Forecast: Government spending	Forecast: Interest rate	Forecast: Inflation rate	Forecast: Any other (2)-(4)	Forecast: None
	(1)	(2)	(3)	(4)	(5)	(6)
Panel C: Low confidence						
Δ Unempl. Incr. (c)	0.007***	-0.003*	-0.002	0.003	-0.003	-0.004*
	(0.003)	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)
Observations	722	722	722	722	722	722
Panel D: High confidence						
Δ Unempl. Incr. (d)	0.004	-0.001	-0.005	-0.002	-0.009*	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Observations	286	286	286	286	286	286
p-value (c=d)	0.462	0.642	0.443	0.270	0.261	0.096
Panel E: Low confidence (IV)						
Belief: Exposure to recession	0.011**	-0.005*	-0.004	0.004	-0.004	-0.007*
	(0.005)	(0.003)	(0.002)	(0.003)	(0.005)	(0.004)
Observations	722	722	722	722	722	722
First stage F-stat	12.63	12.63	12.63	12.63	12.63	12.63

Notes: This table shows estimates of the first-stage specification (equation 1, Panels A and B), the reduced form specification (equation 2, Panels C and D) and the IV specification (equation 3, Panel E), separately on subsamples of respondents who are at least somewhat unsure (Panels A, C, E) and respondents who are sure or very sure (Panels B and D) about their prior beliefs about their group's exposure to the Great Recession. The outcome in Panels A and B column 1, "Belief: Exposure to Recession", denotes the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now. The outcomes in Panels A and B columns 2-4 are respondents' agreement on categorical scales to verbal statements describing their exposure to macroeconomic risk, and are z-scored using the mean and the standard deviation in the sample. The outcome in Panels A and B column 5 is the z-scored unweighted average of the outcomes from columns 1-4 (also standardizing the outcome from column 1). The outcomes in Panels C-E are dummy variables taking value one if the respondent chose a particular forecast (columns 1-4), if the respondent chose any other (non-recession) forecast (column 5), or if the respondent chose no forecast (column 6). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Online Appendix: Risk Exposure and Attention to the Macroeconomy

Christopher Roth Sonja Settele Johannes Wohlfart

Summary of the online appendix

Section A provides details on the variation between group-level unemployment rates based on the ACS or the CPS, which we exploit for our information treatment. In Section B we discuss additional results. Sections C and D provide additional figures and tables, respectively. Section E presents the experimental instructions.

A Details on treatment variation

The respondents in our experiment are randomly assigned to receive information on the actual change in the unemployment rate in their demographic group between 2007 and 2010 calculated either based on data from the American Community Survey (ACS) or from the Current Population Survey (CPS). This appendix section provides details on the variation in the information calculated from ACS or CPS.

When calculating group-level unemployment rates in 2007 and in 2010 from the ACS and the CPS, we start with the full samples of individuals that are at least 18 years old, are either full-time employed, part-time employed or unemployed (dropping those out of the labor force), and do not work in the armed forces. We define demographic cells based on three groups of highest educational attainment (below highschool, highschool degree, college degree), ten age groups based on age in 2007 (18-24, 25-39, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65 and older), gender (male, female), nine census divisions (New England, Middle Atlantic, South Atlantic, East South Central, West South Central, East North Central, West North Central, Mountain, Pacific) and 92 3-digit occupation groups based on the 2000 Census occupation definition (see `https://www.cdc.gov/niosh/topics/coding/pdfs/2000_Census_Occupation.pdf` for an overview). The occupation is based on the job that an

individual earns most money from, and unemployed individuals indicate the occupation they had in their most recent job.

We next drop all demographic cells with less than 10 individuals in order to still have a meaningful number of respondents to calculate group-level unemployment rates. In the case of the ACS, this removes 37,012 out of 75,508 groups, but the remaining sample still accounts for 95.4 percent of the population (for the CPS this removes 28,021 out of 59,212 groups and leaves us with a sample that accounts for 93 percent of the population). Subsequently, we drop from both datasets demographic cells which are either missing in the ACS or in the CPS in the year 2007 or in the year 2010. The remaining dataset still accounts for about 86 percent of the population. In the beginning of our survey we screen out potential respondents that belong to demographic groups which are missing in the Census data after this procedure. This enables us to use the same level of granularity to calculate group-level changes in unemployment rates for all participants in the actual experiment.

Weighted by the numbers of individuals in the ACS data of the relevant year in the different demographic groups, the ACS gives slightly higher average unemployment rates than the CPS (3.57 percent vs 2.39 percent in 2007 and 7.27 percent vs 6.16 percent in 2010). Our numbers are somewhat smaller than the official BLS numbers (4.6 percent in 2007 and 9.6 percent in 2010) as a consequence of dropping smaller demographic cells, which faced higher unemployment rates. Figure A.6 displays binned scatter plots of group-level unemployment rates in 2007 and in 2010 calculated based on ACS data against unemployment rates based on CPS data using a group-level dataset containing information from both the ACS and the CPS. The figure uses the numbers of individuals in the ACS data of the relevant year in the different demographic groups as weights. There is a strong linear relationship between group-level unemployment rates calculated based on the ACS and rates calculated from the CPS. The slopes are 0.4679 (standard error of 0.0147) in 2007 and 0.4251 (standard error of 0.0105) in 2010 when regressing ACS rates on CPS rates and a constant. However, the R-squared is 0.2393 in 2007 and 0.3079 in 2010, indicating that sampling variation and procedural differences between the surveys provide a substantial degree of variation

that we exploit in the information provision in our experiment.

B Additional results

B.1 Coefficient estimates on other included variables

Table A4 displays the first stage estimates of the effect of the information treatment on perceived personal exposure to recessions. The coefficient estimates on Δ Unempl. Incr. capture the effect of the exogenous component of the information discussed in the main text (Section 3.2). As explained in Section 3.2, the coefficient on the potentially endogenous component of the information, Unempl. Incr^{alt}, captures i) effects of information, ii) effects of actual risk exposure not working through the displayed information, and iii) omitted variables that are correlated with actual risk exposure. The exogenous and the endogenous components of the information have very similar effects on respondents' posterior beliefs about their own risk exposure. This implies that either effects of actual risk exposure not working through the displayed information and effects of omitted variables are small (conditional on the included demographic controls), or that their effects cancel each other out. In addition, the exogenous component of the provided information on the baseline unemployment rate before the recession, Δ Unempl. 2007, increases people's perceived risk of becoming unemployed during the next recession, while the potentially endogenous component, Unempl. 2007^{alt}, has no significant effect. One explanation for the positive effects of the anchor is that respondents might infer from a higher provided baseline unemployment rate to a higher rate of labor market turnover, including a higher job loss rate, in their group.

Table A5 displays the reduced form effects of the information treatment on the demand for the different macroeconomic forecasts. Again, the endogenous and the exogenous components of the provided information have similar effects: information on a higher group-level unemployment rate increases the demand for the recession forecast, and decreases the demand for the interest rate forecast. A higher exogenous component of the provided anchor is also associated with a lower demand for the

interest rate forecast, but has no effect on demand for other macroeconomic forecasts. The potentially endogenous component of the anchor has no effect. Throughout our main analysis, our focus is on the perceived *increase* in unemployment rates during recessions and we control for baseline unemployment rates in all main regressions.

B.2 Robustness and alternative explanations

In this section we present various robustness checks and discuss alternative explanations of our findings.

B.2.1 Different sets of control variables

As explained in section 3.2, our identification strategy relies on decomposing the treatment information into an exogenous and a potentially endogenous component. The exogenous component relies on the difference in noise between the provided and the alternative signal, and should be uncorrelated with omitted variables. To rule out any concerns that our findings are driven by omitted variables, e.g. due to potential imbalances in the treatment assignment, we demonstrate robustness to using different sets of control variables in Tables A8 and A9. Panel A shows our baseline specifications. In Panel B we drop all demographic control variables. In Panel C we include all baseline controls and in addition control for respondents' prior beliefs about their group's exposure to macroeconomic risk. In Panels D and E we control for fixed effects for more or less fine-grained cells based on interactions of gender, age, occupation group and education – the variables that are used to calculate the treatment information. In Panel F we also add respondents' household income to the construction of cells. Although our results naturally become more noisily measured when we control for a higher share of the treatment variation through fine-grained cell fixed effects, they remain similar in magnitude and statistically significant, indicating that omitted variable bias is unlikely.

B.2.2 Experimenter demand effects

It could be possible that treatment effects are confounded by experimenter demand effects, i.e. by respondents guessing the purpose of the study and trying to conform with it depending on the signal they received. We believe that demand effects are unlikely for three reasons. First, recent evidence suggests that participants in online experiments respond only very moderately to explicit signals of experimenter expectations (de Quidt et al., 2018). Second, our use of an active control group design, where every participant is exposed to information, makes differences across respondents receiving different information very subtle. Third, virtually no respondent guessed the actual purpose of our study when asked in a mandatory open text entry question at the end of the survey.

B.2.3 Numerical anchoring

Our estimates of the effects of information on people's perceived probability of becoming unemployed during the next recession could, in principle, be affected by unconscious numerical anchoring (Tversky and Kahneman, 1974). We think that this is unlikely for two reasons: First, we deliberately used a different scale for the quantitative post-treatment beliefs as compared to the information treatment (percent chance of becoming unemployed vs. number of unemployed out of 1,000 individuals). Second, we find very similar patterns using qualitative measures of perceived exposure to macroeconomic risk.

B.3 Heterogeneity across demographic groups

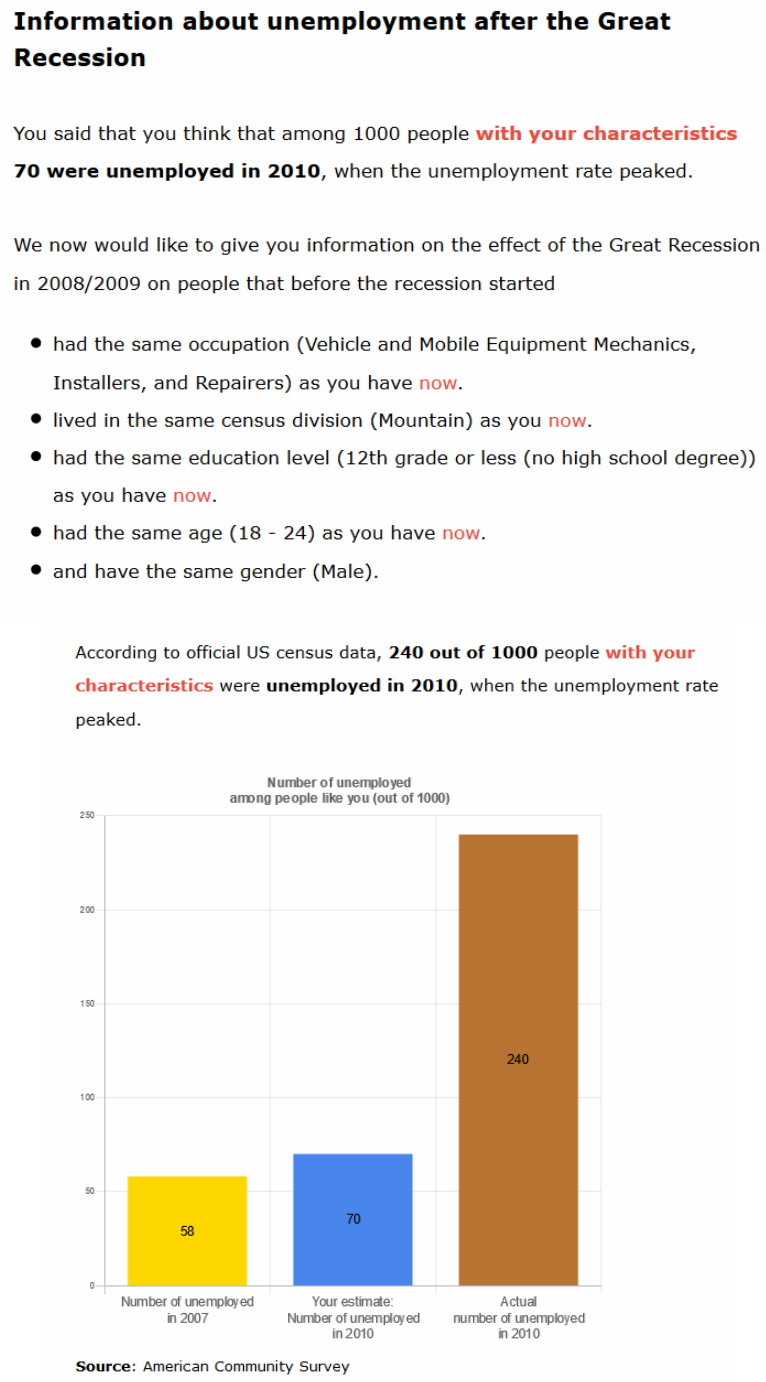
How do changes in perceived risk exposure in response to information vary across demographic groups? Changes in perceived risk exposure are stronger for individuals without a college degree (Panel A of Table A6) and those with lower incomes (Panel C), although not significantly so. These patterns are in line with individuals in these groups being less confident in their prior beliefs. There are no major differences in first stage effects between men and women (Panels E and F), or between younger

and older individuals (Panels G and H).

Which demographic subgroups are driving our main results on information demand? The treatment effect on demand for the recession forecast is driven by individuals with less than a college degree, in line with a stronger first stage among these individuals (Panel A of Table A7). Moreover, the reduced form effect is significant only among younger individuals (Panel G). Differences according to income (Panels C and D) or gender (Panels E and F) are less pronounced.

C Additional figures

Figure A.1: Example Screen of the information treatment: ACS



Notes: This figure displays an example of the information provision in the ACS treatment arm.

Figure A.2: Example Screen of the information treatment: CPS

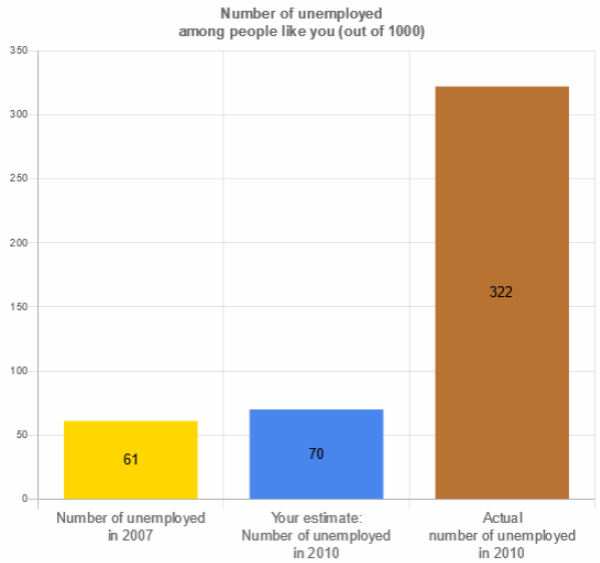
Information about unemployment after the Great Recession

You said that you think that among 1000 people **with your characteristics** **70 were unemployed in 2010**, when the unemployment rate peaked.

We now would like to give you information on the effect of the Great Recession in 2008/2009 on people that before the recession started

- had the same occupation (Vehicle and Mobile Equipment Mechanics, Installers, and Repairers) as you have now.
- lived in the same census division (Mountain) as you now.
- had the same education level (12th grade or less (no high school degree)) as you have now.
- had the same age (18 - 24) as you have now.
- and have the same gender (Male).

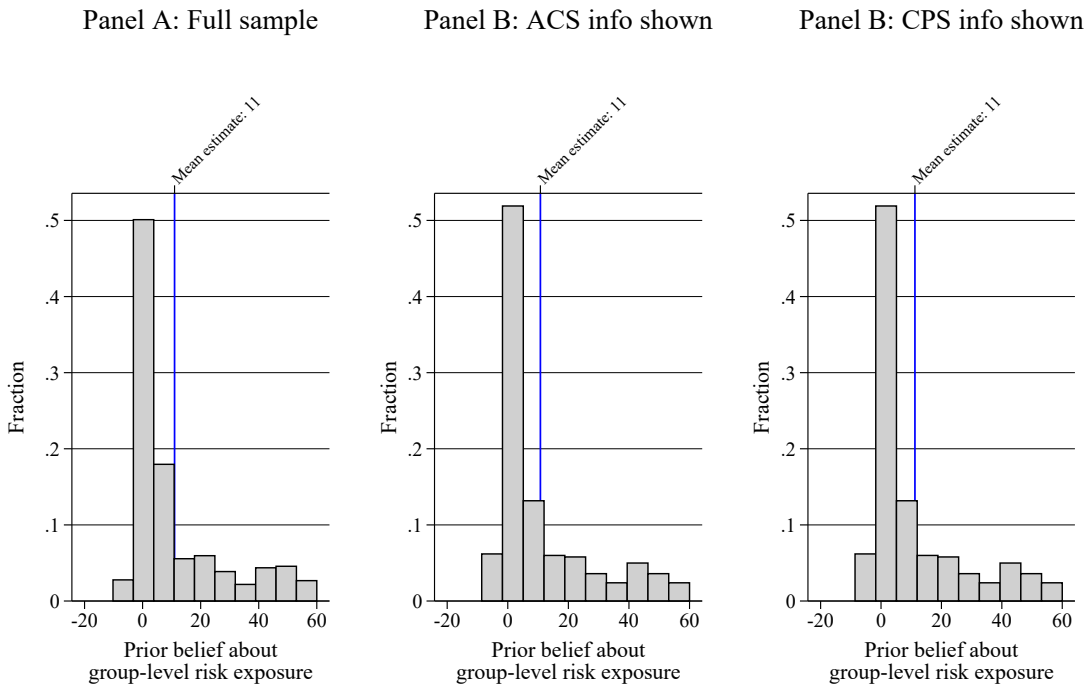
According to official US census data, **322 out of 1000** people **with your characteristics** were **unemployed in 2010**, when the unemployment rate peaked.



Source: Current Population Survey

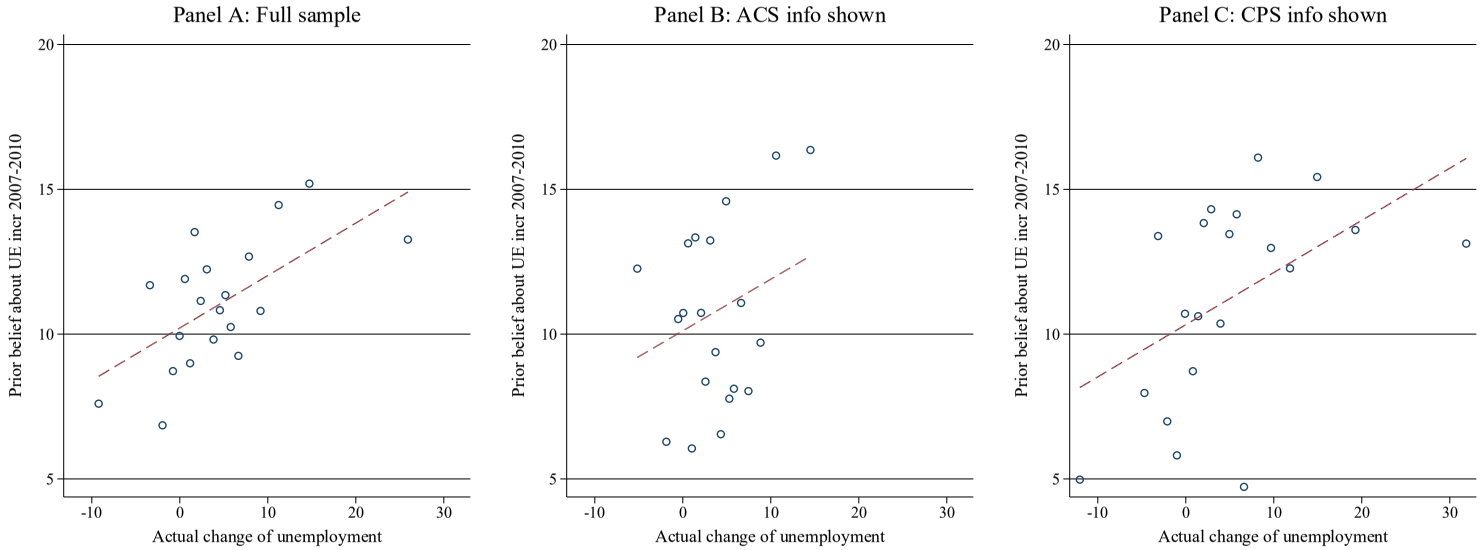
Notes: This figure displays an example of the information provision in the CPS treatment arm.

Figure A.3: Histogram: Prior beliefs about group-level unemployment rate change between 2007 and 2010



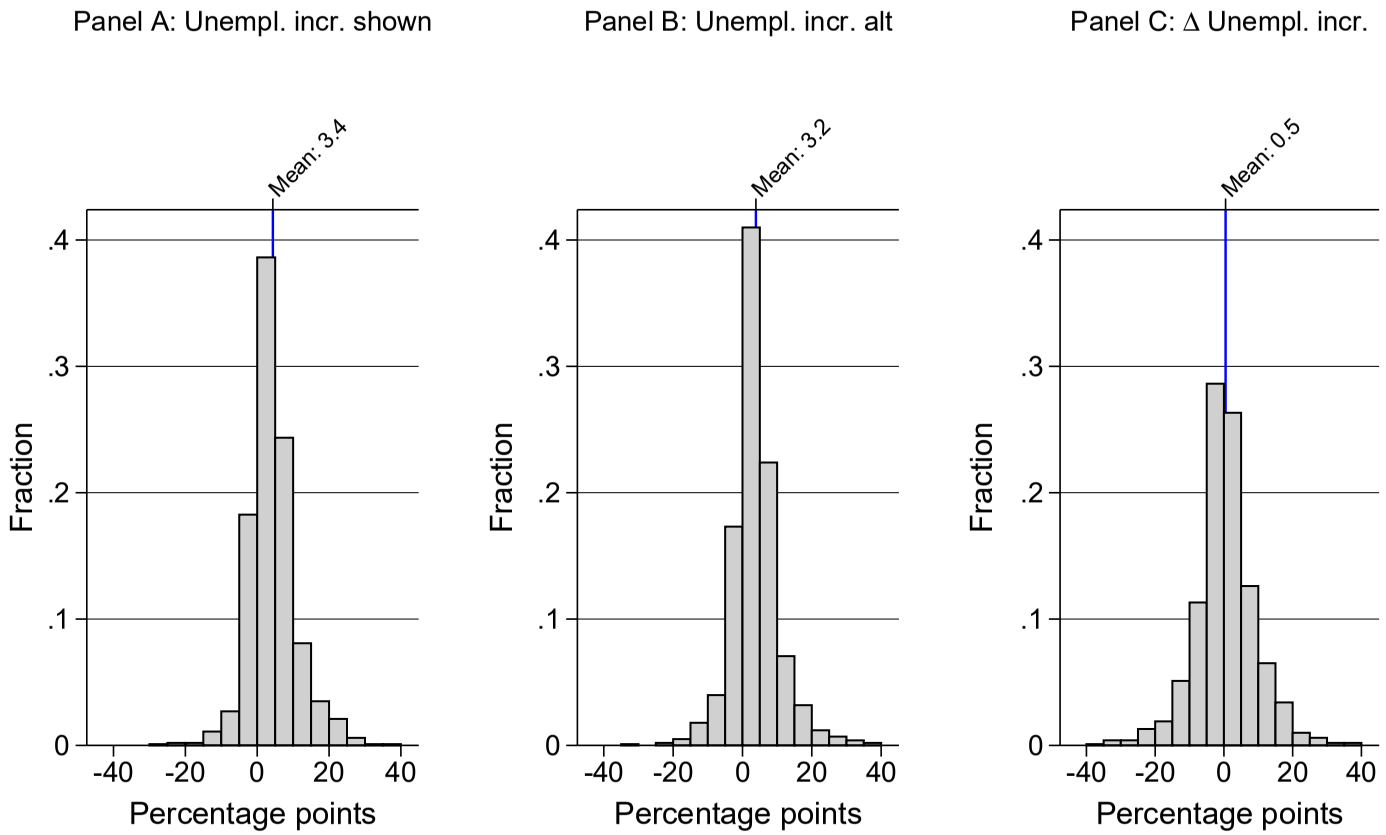
Notes: This figure displays histograms of respondents' prior beliefs about the percentage point change in the unemployment rate among individuals with similar characteristics as themselves (in terms of age, education, gender, occupation and census division of residence) between 2007 and 2010, for the full sample (Panel A) and separately for those 501 respondents who received anchor and information from the ACS (Panel B) and those 507 respondents who received anchor and information from the CPS (Panel C).

Figure A.4: Binscatter: Prior belief and actual group-level unemployment rate change between 2007 and 2010



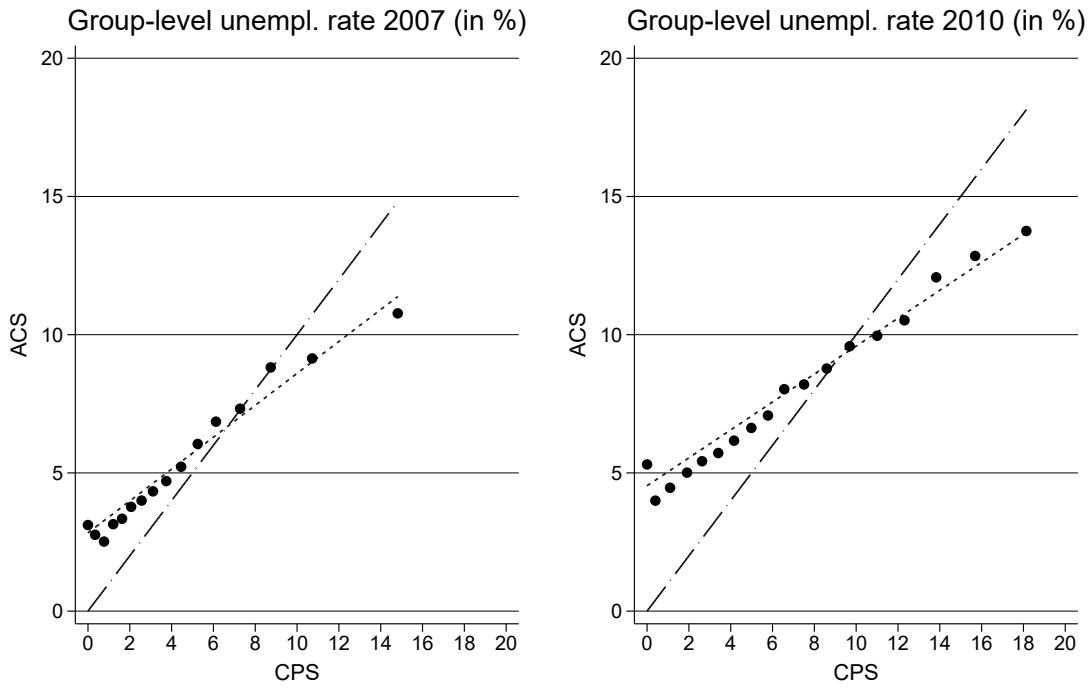
Notes: This figure displays binned scatterplots of respondents' perceived percentage point changes in the unemployment rate among individuals with similar characteristics as themselves (in terms of age, education, gender, occupation and census division of residence) between 2007 and 2010 on the y-axis against the actual percentage point change in the unemployment rate on the x-axis. Panel A is based on the full sample (N=1,008), Panel B is restricted to the respondents who receive the unemployment rate of their demographic group in 2007 based on the ACS as an anchor (N=501), Panel C is restricted to those exposed to the CPS-based anchor (N=507). The outcome on the y-axis is the difference between the respondent's belief about the unemployment rate in her demographic group in 2010 and the anchor she saw about the unemployment rate in the same group in 2007. The x-axis corresponds to the difference between the treatment signal about the unemployment rate in 2010 and the 2007 anchor the respondent receives. All plots partial out the anchor that was shown, i.e. the group-level unemployment rate in 2007. The estimated linear coefficient depicted by the dashed line corresponds to 0.18 (p=0.07) for the full sample (Panel A), 0.18 (p=0.26) for the ACS group (Panel B) and 0.18 (0.02) for the CPS group (Panel C).

Figure A.5: Binscatter: Distributions of shown signal, alternative signal and the difference in signals about change in group-level unemployment rate between 2007 and 2010



Notes: This figure displays histograms on the sample distributions of the shown signal (Panel A), the alternative, non-shown signal (Panel B) and the difference in the two signals (Panel C) about the percentage point change in the unemployment rate among individuals with similar characteristics as the respondents (in terms of age, education, gender, occupation and census division of residence) over the Great Recession.

Figure A.6: Group-level unemployment rates from ACS vs CPS



Notes: This figure displays binned scatter plots and linear fits of group-level unemployment rates calculated based on data from the ACS against rates based on data from the CPS, as well as 45 degree reference lines. The figures are based on group-level datasets containing information on unemployment rates from both surveys. Scatter plots and linear fits are calculated using the numbers of respondents in the demographic cells of the ACS as weights. The figure on the left plots unemployment rates in 2007, while the figure on the right plots unemployment rates in 2010. In 2007, the linear fit has a slope of 0.4679 (robust standard error of 0.0147) and an R-squared of 0.2393. In 2010, the linear fits has a slope of 0.4251 (robust standard error of 0.0105) and an R-squared of 0.3079. Groups with unemployment rates higher than 20 are dropped from the figure to improve readability.

D Additional tables

Table A1: Correlates of prior beliefs about recession exposure and confidence in priors

	Prior UEincr 2010-07 (perc.points)		Prior unempl 2010 (abs. bias pp.)		Confidence Prior (z-scored)		High confidence Prior (Dummy)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-0.391	0.209	0.688	1.095	-0.326***	-0.213***	-0.103***	-0.067**
	(1.026)	(1.102)	(0.872)	(0.924)	(0.062)	(0.063)	(0.028)	(0.029)
Age <40	0.835	0.974	1.353	1.212	0.067	0.138**	0.042	0.067**
	(1.027)	(1.069)	(0.870)	(0.917)	(0.063)	(0.062)	(0.028)	(0.029)
College Degree +	0.209	0.342	-0.209	0.087	0.155**	0.050	0.086***	0.053*
	(1.039)	(1.143)	(0.895)	(0.977)	(0.064)	(0.066)	(0.029)	(0.031)
Inc. < USD75,000	0.408	0.471	0.887	0.533	-0.098	-0.014	-0.037	0.006
	(1.039)	(1.172)	(0.892)	(0.988)	(0.063)	(0.067)	(0.029)	(0.031)
Unempl. Great Rec.	4.961***	4.994***	3.338**	3.500***	0.221***	0.176**	0.032	0.020
	(1.598)	(1.621)	(1.325)	(1.345)	(0.079)	(0.080)	(0.040)	(0.040)
Tenure less 3 years	0.003	-0.287	0.878	0.425	-0.077	-0.018	-0.035	-0.019
	(1.098)	(1.164)	(0.924)	(0.990)	(0.068)	(0.070)	(0.030)	(0.032)
Follow news (z)	0.401	0.406	0.321	0.570	0.204***	0.173***	0.069***	0.056***
	(0.519)	(0.543)	(0.423)	(0.437)	(0.035)	(0.035)	(0.014)	(0.015)
Observations	1008	1008	1008	1008	1008	1008	1008	1008
R^2		0.01		0.01		0.06		0.04
Specification	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate
Mean Outcome		11.00		12.45		0.00		0.28
St.dev. outcome		16.27		13.82		1.00		0.45

Notes: This table shows correlates of respondents' prior beliefs about their group's exposure to the Great Recession, and their confidence in these priors. Columns 1, 3, 5 and 7 show estimated coefficients from bivariate regressions, while columns 2, 4, 6 and 8 show coefficient estimates from multivariate regressions, controlling for all displayed covariates simultaneously. The outcomes are respondents' prior beliefs about the increase in the unemployment rate among people similar to them from 2007 to 2010 (columns 1-2), the absolute difference between their prior about the group-level unemployment rate in 2010 and the actual unemployment rate according to the information shown to the respondent later on based either on ACS or CPS (column 3-4), standardized confidence in the prior based on a 5-point categorical survey question (columns 5-6), and a dummy indicating whether the respondent was sure or very sure in his or her prior (columns 7-8). Inc < USD75,000 refers to the yearly total household income before taxes and deductions in 2018, Unempl. Great Rec. is a dummy that takes value one for those who became unemployed during the Great Recession in 2008-9 and zero otherwise. Tenure less 3 years is a dummy that takes the value one for those who report to have at most three years of tenure at their current job. Follow news is a standardized measure based on agreement with the statement "I usually follow news on the national economy" on a 5-point-scale ranging from "strongly disagree" to "strongly agree". Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A2: Correlates of info acquisition

	Forecast: Recession		Forecast: Government spending		Forecast: Interest rate		Forecast: Inflation rate		Forecast: None	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Female	-0.090***	-0.050*	0.017	0.024	-0.095***	-0.087***	0.059**	0.056*	0.110***	0.057**
	(0.027)	(0.029)	(0.024)	(0.025)	(0.022)	(0.024)	(0.027)	(0.029)	(0.024)	(0.025)
Age <40	-0.029	-0.026	0.028	0.035	0.102***	0.125***	-0.051*	-0.057**	-0.050**	-0.077***
	(0.027)	(0.028)	(0.024)	(0.025)	(0.022)	(0.024)	(0.027)	(0.029)	(0.024)	(0.024)
College Degree +	0.081***	0.071**	-0.022	-0.026	0.038	0.003	-0.033	-0.007	-0.064***	-0.041
	(0.028)	(0.031)	(0.024)	(0.024)	(0.023)	(0.026)	(0.027)	(0.030)	(0.024)	(0.026)
Inc. < USD75,000	-0.010	0.029	0.010	-0.001	-0.050**	-0.038	0.072***	0.074**	-0.021	-0.063**
	(0.028)	(0.031)	(0.024)	(0.025)	(0.023)	(0.027)	(0.027)	(0.030)	(0.025)	(0.026)
Unempl. Great Rec.	0.076*	0.065	0.043	0.046	0.050	0.036	-0.041	-0.035	-0.127***	-0.112***
	(0.039)	(0.040)	(0.034)	(0.035)	(0.033)	(0.033)	(0.036)	(0.036)	(0.025)	(0.025)
Tenure less 3 years	0.004	0.044	-0.006	-0.019	-0.008	-0.022	-0.017	-0.021	0.026	0.018
	(0.029)	(0.032)	(0.025)	(0.027)	(0.024)	(0.027)	(0.029)	(0.031)	(0.027)	(0.028)
Follow news (z)	0.065***	0.054***	0.008	0.014	0.024**	0.014	0.005	0.013	-0.102***	-0.095***
	(0.012)	(0.013)	(0.012)	(0.013)	(0.010)	(0.011)	(0.013)	(0.014)	(0.013)	(0.014)
Observations	1008	1008	1008	1008	1008	1008	1008	1008	1008	1008
R^2		0.04		0.01		0.05		0.02		0.10
Specification	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate	Bivariate	Multivariate
Mean outcome	0.25	0.25	0.17	0.17	0.15	0.15	0.25	0.25	0.18	0.18
St.dev. outcome	0.43	0.43	0.37	0.37	0.36	0.36	0.43	0.43	0.39	0.39

Notes: This table shows correlates of demand for different macroeconomic forecasts. Columns 1, 3, 5 and 7 show estimated coefficients from bivariate regressions, while columns 2, 4, 6 and 8 show coefficient estimates from multivariate regressions, controlling for all displayed covariates simultaneously. The outcomes are dummy variables taking value one if the respondent chose a particular forecast (columns 1-8), or if the respondent chose no forecast (columns 9-10). Inc < USD75,000 refers to the yearly total household income before taxes and deductions in 2018, Unempl. Great Rec. is a dummy that takes value one for those who became unemployed during the Great Recession in 2008-9 and zero otherwise. Tenure less 3 years is a dummy that takes the value one for those who report to have at most three years of tenure at their current job. Follow news is a standardized measure based on agreement with the statement "I usually follow news on the national economy" on a 5-point-scale ranging from "strongly disagree" to "strongly agree". Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A3: Other outcomes

	Prob. personal unempl.	Log(Planned saving)	Planned saving rate	Prob. job search other occ.	Prob. job search other ind.
	(1)	(2)	(3)	(4)	(5)
Panel A: Reduced form					
Δ Unempl. Incr.	0.231*	0.009	0.004	0.261**	0.213*
	(0.118)	(0.008)	(0.018)	(0.129)	(0.126)
Log(Past saving)		0.604***			
		(0.025)			
Past saving rate			0.565***		
			(0.057)		
Observations	1008	1008	1000	1007	1008
R^2	0.09	0.50	0.55	0.11	0.10
Panel B: IV					
Belief: Exposure to recession	0.472***	0.018	0.008	0.533**	0.435**
	(0.180)	(0.017)	(0.036)	(0.236)	(0.220)
Log(Past saving)		0.600***			
		(0.025)			
Past saving rate			0.565***		
			(0.056)		
Observations	1008	1008	1000	1007	1008
First stage F-stat	13.28	12.86	12.65	13.30	13.28
Mean dep. var.	20.69	3.65	3.27	27.71	28.39
SD dep. var.	23.66	2.47	4.88	29.18	29.06

Notes: This table shows estimates of the reduced form specification (equation 2, Panel A) and the IV specification (equation 3, Panel B) measuring the effect of perceived recession exposure on other outcomes. The outcomes are the respondent's perceived probability of becoming personally unemployed over the next 12 months (column 1), the log of the planned amount saved for precautionary reasons over the four weeks after the survey (column 2), the ratio of the planned amount saved for precautionary reasons to household income over the next four weeks (column 3), and perceived probabilities of looking for a new job in a different occupation (column 4) or different industry (column 5) over the next 12 months. "Belief: Exposure to Recession" denotes the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now. "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs about group-level exposure to the Great Recession. Robust standard errors are in parentheses. The specifications in column 2 and 3 additionally control for log household income, and the log amount saved for precautionary reasons (column 2) and the ratio of precautionary saving to income (column 3) over the past four weeks. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A4: Perceived risk exposure: Coefficients on other variables

	Belief: Exposure to recession (z)	Agree: Recession affects job security (z)	Agree: Recession affects HH situation (z)	Agree: Exposed to macroeconomy (z)	Index (1)-(4) (z)
	(1)	(2)	(3)	(4)	(5)
Δ Unempl. Incr.	0.489***	0.012**	0.007	0.013***	0.016***
	(0.134)	(0.005)	(0.005)	(0.004)	(0.005)
Unempl. Incr.^{alt}	0.506***	0.008	0.003	0.014**	0.014**
	(0.176)	(0.007)	(0.007)	(0.006)	(0.007)
Δ Unempl. 2007	0.474*	0.008	0.013	0.019**	0.018*
	(0.275)	(0.011)	(0.010)	(0.010)	(0.010)
Unempl. 2007^{alt}	0.445	-0.012	-0.003	0.004	0.002
	(0.339)	(0.012)	(0.012)	(0.012)	(0.012)
Observations	1008	1008	1008	1008	1008
R^2	0.06	0.07	0.04	0.08	0.07

Notes: This table shows estimates of the first-stage specification (equation 1) displaying coefficient estimates on other variables. The outcome in column 1, "Belief: Exposure to Recession", denotes the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now. The outcomes in columns 2-4 are respondents' agreement on categorical scales to verbal statements describing their exposure to macroeconomic risk, and are z-scored using the mean and the standard deviation in the sample. The outcome in column 5 is the z-scored unweighted average of the outcomes from columns 1-4 (also standardizing the outcome from column 1). The table displays coefficient estimates on: the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information ("Δ Unempl. Incr."); the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information, "Unempl. Incr.^{alt}"); the difference in the baseline unemployment rates in 2007 between shown source and alternative source ("Δ Unempl. 2007"); and the baseline rate according to the alternative source ("Unempl. 2007^{alt}"). All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs about group-level exposure to the Great Recession. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A5: Demand for macroeconomic forecasts: Coefficients on other variables

	Forecast: Recession	Forecast: Government spending	Forecast: Interest rate	Forecast: Inflation rate	Forecast: any other (2)-(4)
	(1)	(2)	(3)	(4)	(5)
Δ Unempl. Incr.	0.006***	-0.002	-0.003**	0.001	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Unempl. Incr.^{alt}	0.008**	-0.003	-0.004*	0.001	-0.002
	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
Δ Unempl. 2007	0.002	0.005	-0.009***	0.005	-0.003
	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Unempl. 2007^{alt}	-0.001	0.007	-0.010**	0.006	-0.002
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)
Observations	1008	1008	1008	1008	1008
R^2	0.07	0.04	0.08	0.04	0.06

Notes: This table shows estimates of the reduced form specification (equation 2) displaying the coefficient estimates on other variables. The outcomes are dummy variables taking value one if the respondent chose a particular forecast (columns 1-4), if the respondent chose any other (non-recession) forecast (column 5), or if the respondent chose no forecast (column 6). The table displays coefficient estimates on: the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information ("Δ Unempl. Incr."); the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information, "Unempl. Incr.^{alt}"); the difference in the baseline unemployment rates in 2007 between shown source and alternative source ("Δ Unempl. 2007"); and the baseline rate according to the alternative source ("Unempl. 2007^{alt}"). All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs about group-level exposure to the Great Recession. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A6: Heterogeneous effects of information on perceived risk exposure

	Belief: Exposure to recession	Agree: Recession affects job security (z)	Agree: Recession affects HH situation (z)	Agree: Exposed to macroeconomy (z)	Index (1)-(4) (z)
	(1)	(2)	(3)	(4)	(5)
Panel A: Below college					
Δ Unempl. Incr. (a)	0.574***	0.015**	0.007	0.015**	0.018***
	(0.175)	(0.007)	(0.007)	(0.006)	(0.007)
Observations	579	579	579	579	579
Panel B: College					
Δ Unempl. Incr. (b)	0.384**	0.011	0.005	0.012*	0.013
	(0.195)	(0.008)	(0.007)	(0.007)	(0.008)
Observations	429	429	429	429	429
p-value (a=b)	0.469	0.696	0.835	0.745	0.624
Panel C: Income $<$ USD75,000					
Δ Unempl. Incr. (c)	0.727***	0.015**	0.009	0.016***	0.021***
	(0.165)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	585	585	585	585	585
Panel D: Income $\geq$ USD75,000					
Δ Unempl. Incr. (d)	0.244	0.010	0.002	0.009	0.010
	(0.201)	(0.009)	(0.007)	(0.008)	(0.009)
Observations	415	415	415	415	415
p-value (c=d)	0.064	0.675	0.451	0.455	0.270
Panel E: Female					
Δ Unempl. Incr. (e)	0.427**	0.007	0.001	0.006	0.010
	(0.193)	(0.007)	(0.006)	(0.005)	(0.006)
Observations	497	497	497	497	497
Panel F: Male					
Δ Unempl. Incr. (f)	0.560***	0.016**	0.013*	0.020***	0.022***
	(0.194)	(0.008)	(0.008)	(0.007)	(0.008)
Observations	511	511	511	511	511
p-value (e=f)	0.627	0.378	0.215	0.112	0.212
Panel G: Age$\leq$37					
Δ Unempl. Incr. (g)	0.491***	0.016**	0.010*	0.015***	0.019***
	(0.177)	(0.007)	(0.006)	(0.006)	(0.007)
Observations	527	527	527	527	527
Panel H: Age$>$37					
Δ Unempl. Incr. (h)	0.507**	0.006	0.005	0.009	0.012
	(0.231)	(0.008)	(0.009)	(0.007)	(0.009)
Observations	481	481	481	481	481
p-value (g=h)	0.957	0.340	0.627	0.470	0.544

Notes: This table shows estimates of the first-stage specification (equation 1) separately on subsamples of respondents without a college degree or with a college degree (Panels A-B), with low or high household income (Panels C-D), who are female or male (Panels E-F), and who are younger or older (Panels G-H). The outcome in column 1, "Belief: Exposure to Recession", denotes the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now. The outcomes in columns 2-4 are respondents' agreement on categorical scales to verbal statements describing their exposure to macroeconomic risk, and are z-scored using the mean and the standard deviation in the sample. The outcome in column 5 is the z-scored unweighted average of the outcomes from columns 1-4 (also standardizing the outcome from column 1). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A7: Heterogeneous effects of information on demand for macroeconomic forecasts

	Forecast: Recession	Forecast: Government spending	Forecast: Interest rate	Forecast: Inflation rate	Forecast: any other (2)-(4)	Forecast: None
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Below college						
Δ Unempl. Incr. (a)	0.008***	-0.002	-0.003	0.001	-0.005	-0.004
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Observations	579	579	579	579	579	579
Panel B: College						
Δ Unempl. Incr. (b)	0.001	-0.002	-0.002	0.002	-0.002	0.001
	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)
Observations	429	429	429	429	429	429
p-value (a=b)	0.084	0.889	0.563	0.883	0.570	0.323
Panel C: Income $<$ USD75,000						
Δ Unempl. Incr. (c)	0.005*	-0.001	-0.001	0.001	-0.001	-0.004
	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Observations	585	585	585	585	585	585
Panel D: Income $\geq$ USD75,000						
Δ Unempl. Incr. (d)	0.006	-0.002	-0.005**	0.001	-0.006*	0.001
	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)
Observations	415	415	415	415	415	415
p-value (c=d)	0.948	0.803	0.191	0.895	0.263	0.323
Panel E: Female						
Δ Unempl. Incr. (e)	0.007**	-0.001	-0.000	0.002	0.001	-0.007**
	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Observations	497	497	497	497	497	497
Panel F: Male						
Δ Unempl. Incr. (f)	0.006*	-0.005*	-0.006**	0.002	-0.009***	0.003
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Observations	511	511	511	511	511	511
p-value (e=f)	0.912	0.224	0.057	0.966	0.036	0.023
Panel G: Age$\leq$37						
Δ Unempl. Incr. (g)	0.007***	-0.002	-0.003	0.001	-0.005*	-0.003
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	527	527	527	527	527	527
Panel H: Age$>$37						
Δ Unempl. Incr. (h)	0.004	-0.001	-0.001	0.002	-0.001	-0.003
	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)	(0.005)
Observations	481	481	481	481	481	481
p-value (g=h)	0.477	0.830	0.555	0.822	0.481	0.976

Notes: This table shows estimates of the reduced-form specification (equation 2) separately on subsamples of respondents without a college degree or with a college degree (Panels A-B), with low or high household income (Panels C-D), who are female or male (Panels E-F), and who are younger or older (Panels G-H). The outcomes are dummy variables taking value one if the respondent chose a particular forecast (columns 1-4), if the respondent chose any other (non-recession) forecast (column 5), or if the respondent chose no forecast (column 6). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. All specifications additionally control for a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table A8: Perceived risk exposure: Robustness to controls

	Belief: Exposure to recession (z)	Agree: Recession affects job security (z)	Agree: Recession affects HH situation (z)	Agree: Exposed to macroeconomy (z)	Index (1)-(4) (z)
	(1)	(2)	(3)	(4)	(5)
Panel A: Main specification					
Δ Unempl. Incr.	0.489***	0.012**	0.007	0.013***	0.016***
	(0.134)	(0.005)	(0.005)	(0.004)	(0.005)
R^2	0.06	0.07	0.04	0.08	0.07
Panel B: No controls					
Δ Unempl. Incr.	0.528***	0.015***	0.008*	0.013***	0.017***
	(0.131)	(0.005)	(0.004)	(0.004)	(0.005)
R^2	0.03	0.01	0.00	0.01	0.02
Panel C: A plus prior belief					
Δ Unempl. Incr.	0.485***	0.012**	0.007	0.013***	0.016***
	(0.135)	(0.005)	(0.005)	(0.004)	(0.005)
R^2	0.06	0.07	0.04	0.08	0.07
Panel D: sex-age-educ-occu-cells					
Δ Unempl. Incr.	0.461***	0.011**	0.006	0.012***	0.014***
	(0.135)	(0.005)	(0.005)	(0.004)	(0.005)
R^2	0.12	0.13	0.10	0.15	0.14
Cell count	55	55	55	55	55
Cell count (N $\geq$ 10)	33	33	33	33	33
Panel E: sex-age-educ-detailed occu-cells					
Δ Unempl. Incr.	0.450***	0.011**	0.007	0.011**	0.015***
	(0.140)	(0.005)	(0.005)	(0.005)	(0.005)
R^2	0.16	0.17	0.14	0.19	0.18
Cell count	110	110	110	110	110
Cell count (N $\geq$ 10)	32	32	32	32	32
Panel F: sex-age-inc-occu-cells					
Δ Unempl. Incr.	0.494***	0.013**	0.007	0.013***	0.016***
	(0.143)	(0.005)	(0.005)	(0.005)	(0.005)
R^2	0.09	0.11	0.09	0.13	0.11
Cell count	56	56	56	56	56
Cell count (N $\geq$ 10)	37	37	37	37	37

Notes: This table shows estimates of the first-stage specification (equation 1) varying the set of control variables. The outcome in column 1, "Belief: Exposure to Recession", denotes the respondent's perceived percent chance of job loss during the next recession conditional on working in the same job as now. The outcomes in columns 2-4 are respondents' agreement on categorical scales to verbal statements describing their exposure to macroeconomic risk, and are z-scored using the mean and the standard deviation in the sample. The outcome in column 5 is the z-scored unweighted average of the outcomes from columns 1-4 (also standardizing the outcome from column 1). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. Panel A includes the baseline set of controls, namely a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs. Panel B excludes these controls. Panel C includes the baseline controls and the respondent's prior belief about the change in the unemployment rate in her group during the Great Recession. In addition to the baseline controls, Panels D-F include fixed effects for different sets of interactions of demographic characteristics: Panel D includes cell fixed effects based on interactions of sex, two age groups, two education groups, and seven occupation groups. Panel E includes cell fixed effects based on interactions of sex, two age groups, two education groups and 22 occupation groups. Panel F includes cell fixed effects based on interactions of sex, two age groups, two income groups and seven occupation groups. In Panels D, E and F, we report the number of demographic cells as well as the number of cells in which we have at least 10 respondents in our sample. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

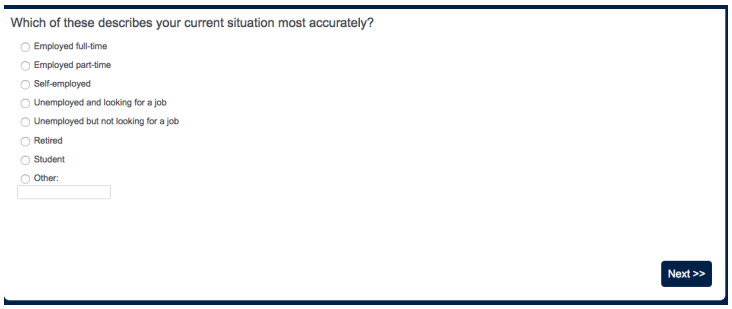
Table A9: Demand for macroeconomic forecasts: Robustness to controls

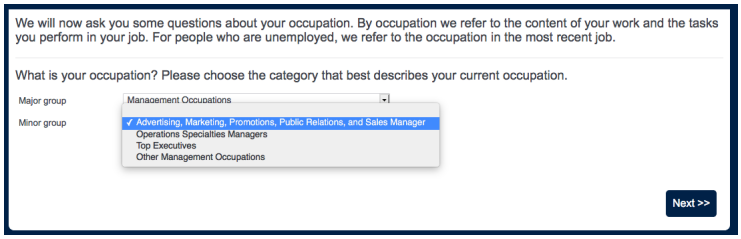
	Forecast: Recession	Forecast: Government spending	Forecast: Interest rate	Forecast: Inflation rate	Forecast: any other (2)-(4)	Forecast: None
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Main specification						
Δ Unempl. Incr.	0.006***	-0.002	-0.003**	0.001	-0.004*	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
R^2	0.07	0.04	0.08	0.04	0.08	0.06
Panel B: No controls						
Δ Unempl. Incr.	0.005**	-0.002	-0.002	0.000	-0.004*	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
R^2	0.01	0.01	0.01	0.00	0.00	0.00
Panel C: A plus prior belief						
Δ Unempl. Incr.	0.006***	-0.002	-0.003**	0.001	-0.004*	-0.002
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
R^2	0.08	0.06	0.08	0.04	0.08	0.06
Panel D: sex-age-educ-occu-cells						
Δ Unempl. Incr.	0.005**	-0.002	-0.002	0.002	-0.003	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R^2	0.11	0.09	0.14	0.09	0.13	0.11
Cell count	55	55	55	55	55	55
Cell count ($N \geq 10$)	33	33	33	33	33	33
Panel E: sex-age-educ-detailed occu-cells						
Δ Unempl. Incr.	0.006**	-0.003	-0.003*	0.002	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
R^2	0.17	0.12	0.18	0.13	0.18	0.16
Cell count	110	110	110	110	110	110
Cell count ($N \geq 10$)	32	32	32	32	32	32
Panel F: sex-age-inc-occu-cells						
Δ Unempl. Incr.	0.006**	-0.002	-0.003*	0.002	-0.003	-0.003
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
R^2	0.11	0.09	0.13	0.09	0.14	0.12
Cell count	56	56	56	56	56	56
Cell count ($N \geq 10$)	37	37	37	37	37	37

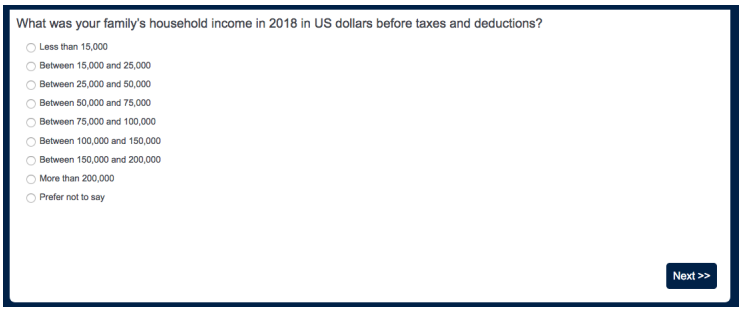
Notes: This table shows estimates of the reduced-form specification (equation 2) varying the set of control variables. The outcomes are dummy variables taking value one if the respondent chose a particular forecast (columns 1-4), if the respondent chose any other (non-recession) forecast (column 5), or if the respondent chose no forecast (column 6). "Δ Unempl. Incr." indicates the difference between the 2007-2010 change in the group-level unemployment rate according to the information shown to the respondent and the change according to the alternative, non-shown information source, i.e. the exogenous component of the provided information. The specifications also control for the increase in the unemployment rate as calculated from the alternative source (the potentially endogenous component of the information), as well as the difference in the baseline unemployment rates in 2007 between shown source and alternative source, and the baseline rate according to the alternative source. Panel A includes the baseline set of controls, namely a polynomial in age, a dummy for college education, dummies for census region of residence, dummies for 1-digit occupation classification, as well as a dummy indicating high confidence in prior beliefs. Panel B excludes these controls. Panel C includes the baseline controls and the respondent's prior belief about the change in the unemployment rate in her group during the Great Recession. In addition to the baseline controls, Panels D-F include fixed effects for different sets of interactions of demographic characteristics: Panel D includes cell fixed effects based on interactions of sex, two age groups, two education groups, and seven occupation groups. Panel E includes cell fixed effects based on interactions of sex, two age groups, two education groups and 22 occupation groups. Panel F includes cell fixed effects based on interactions of sex, two age groups, two income groups and seven occupation groups. In Panels D, E and F, we report the number of demographic cells as well as the number of cells in which we have at least 10 respondents in our sample. Robust standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

E Experimental Instructions

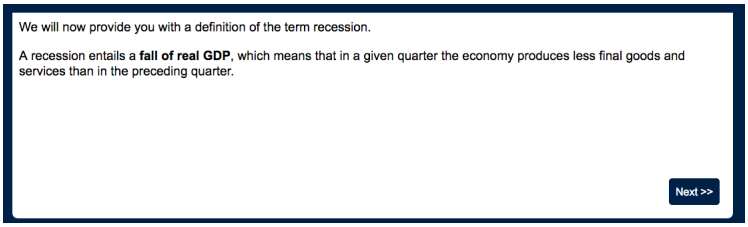
Demographics

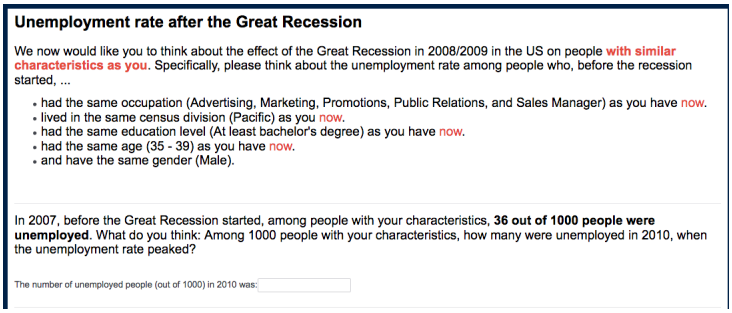


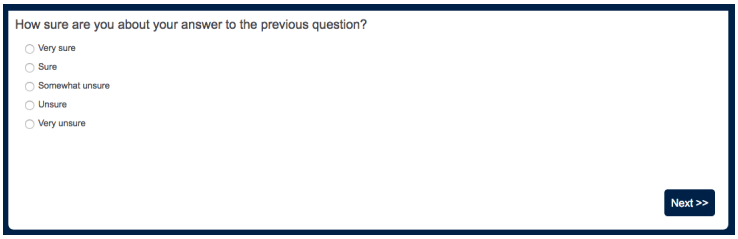



What was your family's household income in 2018 in US dollars before taxes and deductions?
Less than 15,000
Between 15,000 and 25,000
Between 25,000 and 50,000
Between 50,000 and 75,000
Between 75,000 and 100,000
Between 100,000 and 150,000
Between 150,000 and 200,000
More than 200,000
Prefer not to say
Next >>

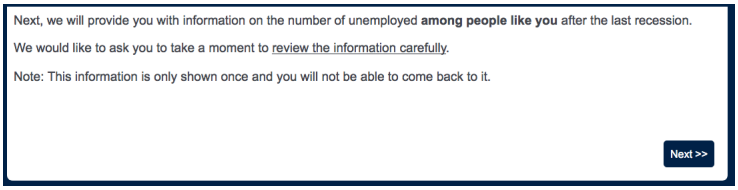
Prior beliefs about own group's exposure to Great Recession







Information provision (transition)



Information provision (ACS)

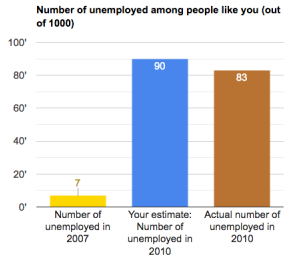
Information about unemployment after the Great Recession

You said that you think that among 1000 people **with your characteristics** **90 were unemployed in 2010**, when the unemployment rate peaked.

We now would like to give you information on the effect of the Great Recession in 2008/2009 on people that before the recession started

- had the same occupation (Advertising, Marketing, Promotions, Public Relations, and Sales Manager) as you have now.
- lived in the same census division (Pacific) as you now.
- had the same education level (At least bachelor's degree) as you have now.
- had the same age (35 - 39) as you have now.
- and have the same gender (Male).

According to official US census data, **83 out of 1000** people **with your characteristics** were **unemployed in 2010**, when the unemployment rate peaked.



Source: American Community Survey

Note: You will be able to go to the next slide after you have spent 15 seconds on this slide.

Information provision (CPS)

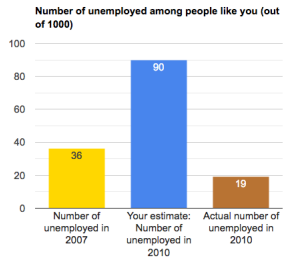
Information about unemployment after the Great Recession

You said that you think that among 1000 people **with your characteristics** **90 were unemployed in 2010**, when the unemployment rate peaked.

We now would like to give you information on the effect of the Great Recession in 2008/2009 on people that before the recession started

- had the same occupation (Advertising, Marketing, Promotions, Public Relations, and Sales Manager) as you have now.
- lived in the same census division (Pacific) as you now.
- had the same education level (At least bachelor's degree) as you have now.
- had the same age (35 - 39) as you have now.
- and have the same gender (Male).

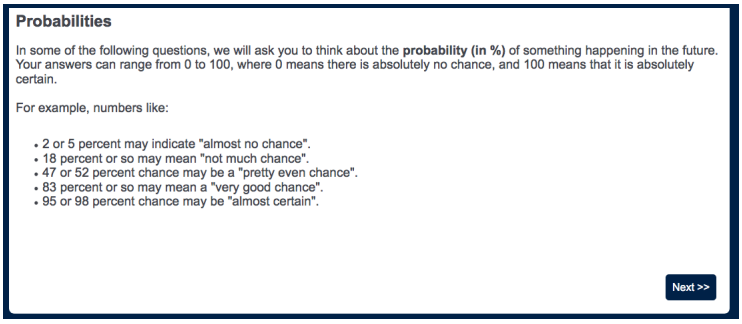
According to official US census data, **19 out of 1000** people **with your characteristics** were **unemployed in 2010**, when the unemployment rate peaked.



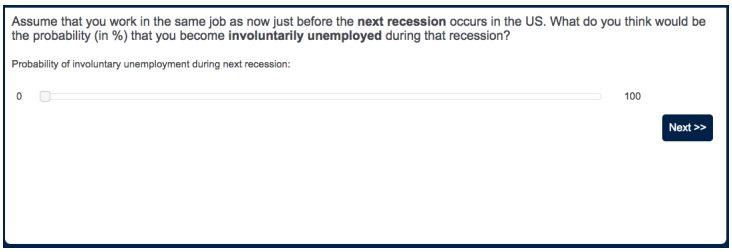
Source: Current Population Survey

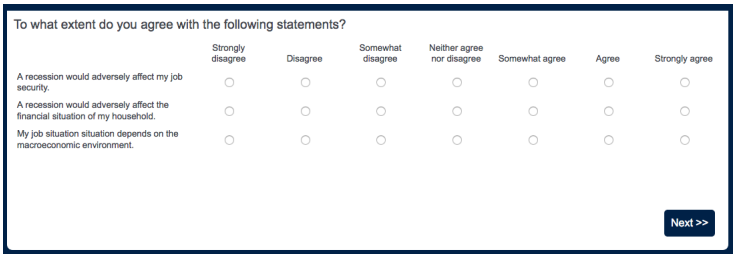
Note: You will be able to go to the next slide after you have spent 15 seconds on this slide.

Probability explanation

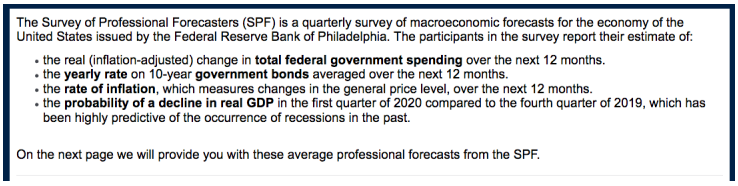


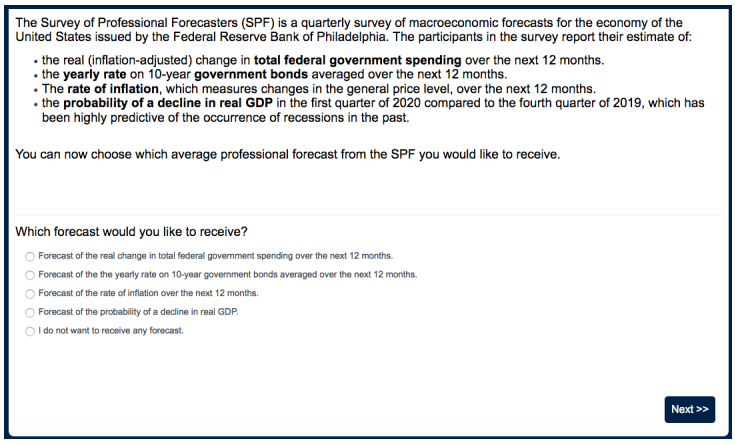
Manipulation checks



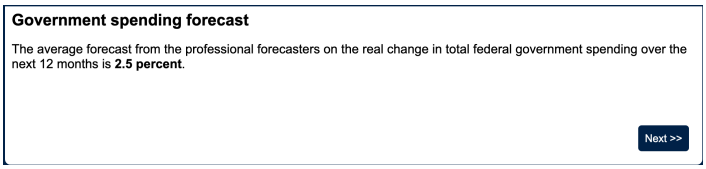


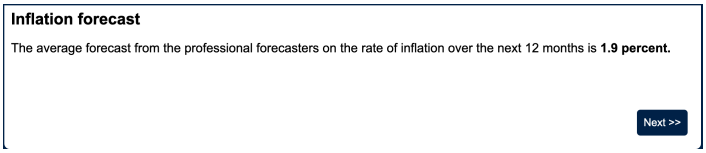
Demand for macroeconomic forecasts

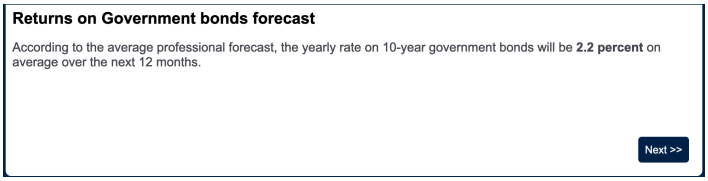


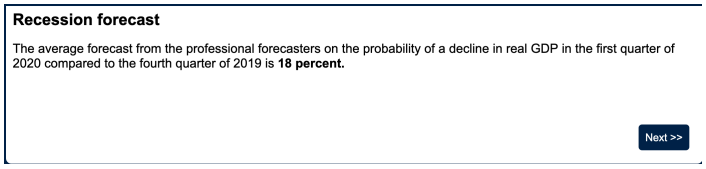


Forecasts

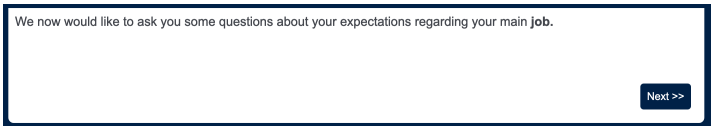


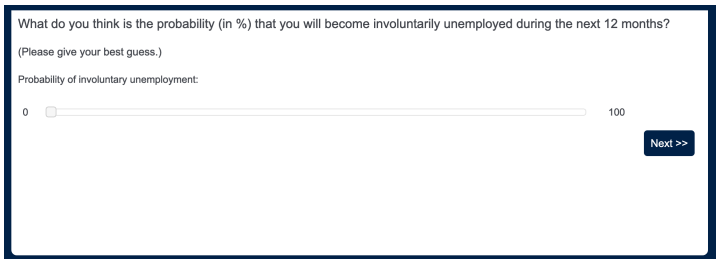


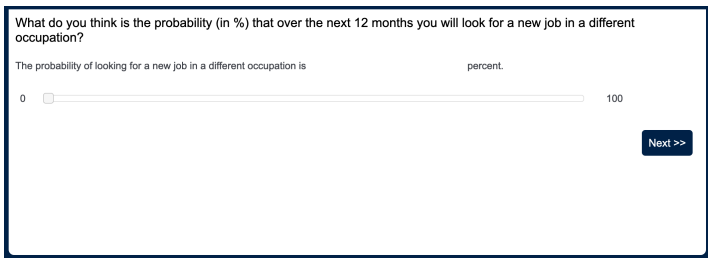




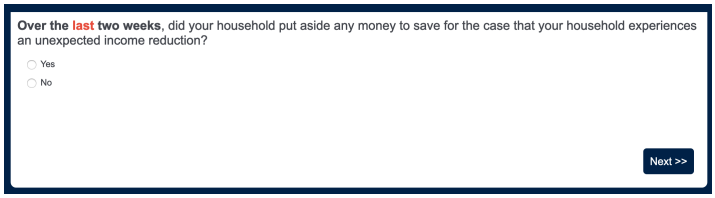
Job market expectations

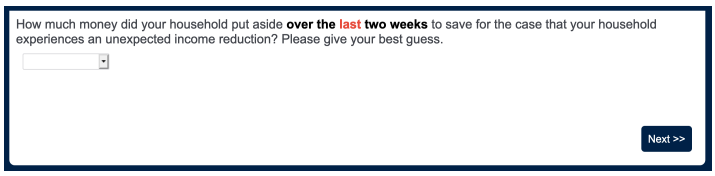


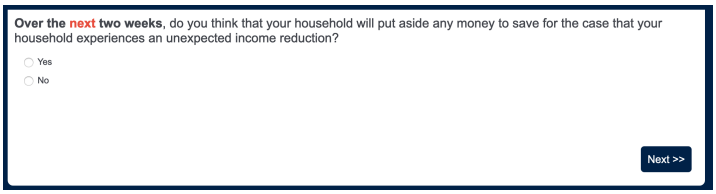


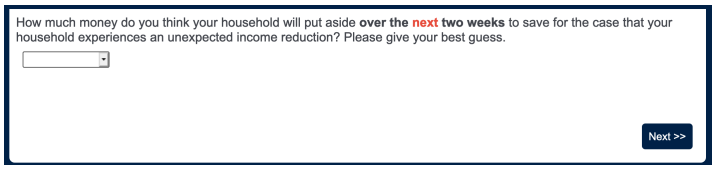


Savings behavior

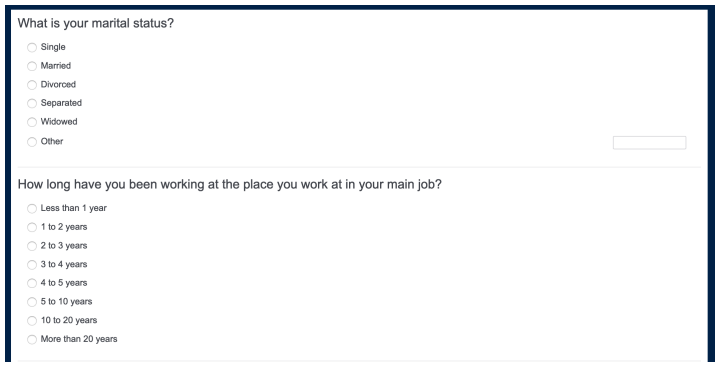


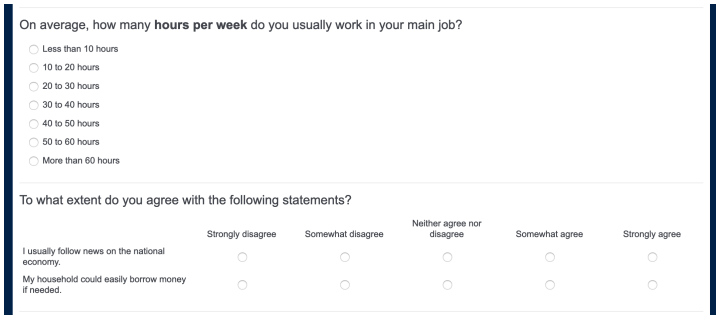


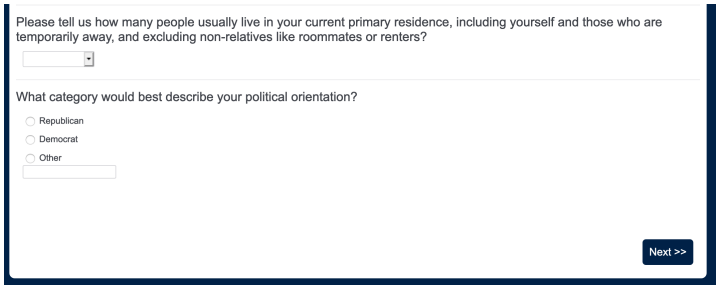


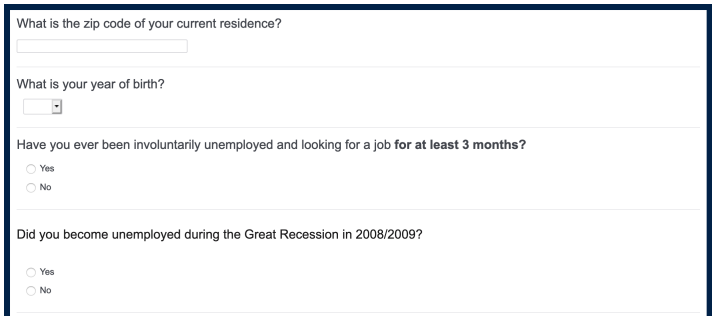


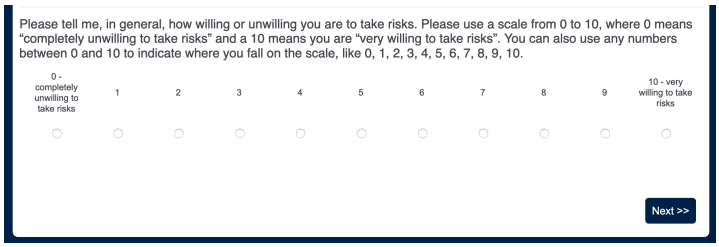
Additional demographics

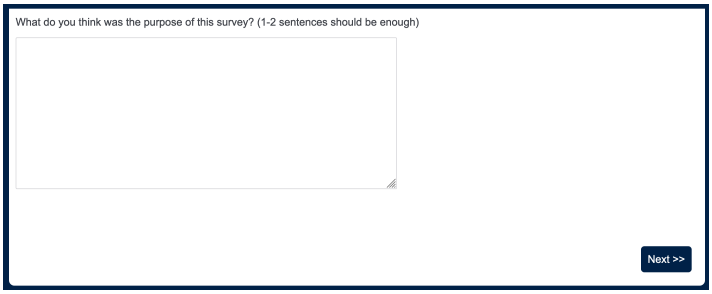









Please tell me, in general, how willing or unwilling you are to take risks. Please use a scale from 0 to 10, where 0 means "completely unwilling to take risks" and a 10 means you are "very willing to take risks". You can also use any numbers between 0 and 10 to indicate where you fall on the scale, like 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
0 - completely unwilling to take risks
1
2
3
4
5
6
7
8
9
10 - very willing to take risks
Next >>


What do you think was the purpose of this survey? (1-2 sentences should be enough)
Next >>