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ABSTRACT

Countering Public Opposition to Immigration: The Impact of Information Campaigns*

Popular sentiment toward immigration is often antagonistic, making the integration of migrants one of the most important yet daunting challenges facing societies in advanced economies. Can information campaigns decrease public opposition to immigration? This paper reports results from a large-scale experiment conducted in Japan, a country with widespread anti-immigration sentiment. Embedded in a comprehension study, we randomly exposed a large national sample of citizens to information pertaining to potential social and economic benefits from immigration. Depending on the treatment, we find that this exposure led to a substantial increase in support for a more open immigration policy. The treatments also motivated citizens to take political action in support of this cause. Notably, while smaller in magnitude, many effects also persisted 10-12 days after the treatment. The results highlight the potential value of combating enmity to incoming foreigners with campaigns that inform the public about key positive impacts of immigration.

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1   Introduction

Immigration has long been the most politically controversial feature of globalization. As the number of people moving to advanced economies has swollen in recent years, far right parties in countries such as Austria, France, the Netherlands and Switzerland, have seen large increases in support by staking out strong positions against immigrants and immigration (Rydgren 2008). Furthermore, acts of hostility toward foreigners, expressions of racism, bigotry, and even violence have escalated sharply.[1] Indeed, many public opinion surveys reveal unprecedented levels of opposition to immigration. How can this antagonism be countered? Are people's opinions on the issue of immigration visceral, or can exposure to its potential benefits decrease public opposition to immigration?

Studies of attitudes on immigration often recognize the challenge of reducing public enmity to immigrants. Indeed, they typically cursorily mention the need to "educate the public" or to "cultivate tolerance" toward immigrants. Yet given the limited state of knowledge on how these goals can be achieved, such proposals amount to little more than hand waving. While historical precedents abound of instances where leaders were able to stoke hostility among the public toward others based on their ethnicity or race, there is very little evidence indicating whether and how one can systematically decrease anti-immigrantion sentiments on a broad scale.

This study begins to address this gap by carrying out a large-scale, systematic assessment of different approaches to influencing attitudes toward immigration. Specifically, we build on a key insight from the literature, namely that opposition to immigration often stems from individuals' sociotropic concerns about the broader social and economic impacts of immigration, rather than from worries that reflect narrow self-interest (Citrin, Green,

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[1]For example, see report by the National Police Chiefs Council on UK statistics of anti-immigrant hate crimes, 2016; See also the 2015 Annual Report on the Protection of the Constitution by the Federal Ministry of the Interior for the corresponding statistics on Germany, as well as the 2016 report by The Bridge Initiative, "When Islamophobia Turns Violent".

Muste, and Wong 1997; Hainmueller and Hopkins 2014). We therefore examine whether informational treatments that speak to those sociotropic concerns and that highlight potential *benefits* from immigration in dealing with key social and economic problems, can sway people's attitudes on the issue. We explore experimentally not only the efficacy of different treatments, but also their effectiveness over time. Our study focuses on Japan, one of the countries with the lowest share of immigrants in the OECD, currently estimated at about 1.8 percent of the population OECD (2015).[2] This state of affairs is often attributed to a broad public opposition to immigration. In fact, despite the country's acute demographic and attendant economic problems — low birth rates, a rapidly aging society, a shrinking population and growing labor shortages — proposals to ease the entry of foreigners have faced strong political opposition.[3]

A key question our study confronts is whether public views on immigration predominantly reflect an instinctive, "visceral" reaction toward the entry and presence of foreigners, or whether immigration attitudes tend to be formed by a more considered assessment of its benefits and costs. The answer is important, as it has clear implications on whether informing people about the potential benefits from immigration can affect their views. We study this question by exposing native citizens to information about various positive impacts of immigration as part of an assessment of school curricula, in which subjects were asked to assess the suitability of different texts for high school students. By randomly assigning participants to different texts, some of which highlight the potential impact of immigration in alleviating certain economic and social problems, we are able to assess the effect of this exposure on immigration-related attitudes. Furthermore, by interviewing some of the participants about their views on immigration 10-12 days after the text-assessment study, we can examine the persistence of the effects of the informational treatment.

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[2]Only Mexico has a lower share of immigrants in the population, and it is not classified as an "advanced economy" by either the IMF or the World Bank.

[3]As Yasutoshi Nishimura, deputy minister in the Cabinet Office, explained in an interview with the *Financial Times*, "We don't use the word immigration. There is still a strong insular mentality". 06/02/2014.

The results reveal a large and significant effect of exposure to the treatments on citizens' support for a more open immigration policy. The magnitude of the effects differs somewhat across treatments, but is systematically positive: exposure to information about immigrants' potential role in addressing Japan's pensions crisis is associated with a 21 percentage point increase in support for allowing more immigrants into the country. In contrast, exposure to information about the impact of immigration on dealing with the country's shrinking population or its shortage of caregivers for the elderly produce somewhat smaller shifts (15 and 19 percentage points, respectively), albeit still highly significant. Given the baseline rate of 29% support in the broad population, these effects represent an increase of between 43 and 72 percent, without doubt substantively large effects.

We observe comparable effects also with respect to increased support for increasing the number of visas for temporary workers. Furthermore, we find that exposure to some of the treatments also elicits an increase in subjects' willingness to mobilize politically on the issue and sign up to a petition to the government stating support for a more immigration-friendly policy. In particular, learning about the potential role of immigration as an antidote to Japan's pensions crisis is associated with a shift of 7 percentage points, representing an increase of 53% above the baseline rate.

Examining these effects 10-12 days after exposure to the information, we find that they decrease in magnitude by between one to two thirds, yet they remain consistently positive and in some of the cases also substantively large. This pattern is especially true with regards to the attitudinal questions, while the effect is less enduring in the context of mobilizing subjects to join the petition.

Exploring the mechanism underlying the effectiveness of the treatments, we ask whether they bring about opinion change as a result of priming certain issues, i.e., by making the issues more salient, or whether instead the effect is driven by exposing people to new information. Examining this question across two comparison sets, our results suggest that the latter

mechanism is likely to be more prominent. This finding has implications on the question of how transferable our results are to other country settings, indicating that the effect of the treatments is likely to be stronger in lower-information environments.

Finally, we explore the effect of how the information about the benefits of immigration is communicated to the public. Specifically, we test the argument that people respond more strongly to information conveyed through exemplars (e.g. a personal story) rather than as statistical evidence (Perloff 2010, Baesler and Burgoon 1994). We compare pairs of treatments in which the immigration-related information made available was similar, with the difference being whether it was told through a personal story or through a more evidence-based report. Our analysis finds the effects to be almost indistinguishable in magnitude. In fact, in one of the comparisons, the personal story was associated with a slightly stronger effect, while the reverse was true in the other. Our experiment therefore does not indicate that conveying information through exemplars systematically magnifies the effectiveness of the treatment.

Our results contribute to the growing research on mass attitudes toward immigration. This body of work primarily offers insights on the factors that account for cross-sectional variation in attitudes toward immigration, and highlights the fact that sociotropic considerations about the broader impact of immigration on society appear to be the more prominent factor. The analysis we present extends this insight by assessing whether exposing people to information that pertains to those sociotropic considerations can bring about *change* in how they think about this complex issue. Our results provide clear evidence that such information treatments can have a considerable effect, one that can also extend beyond the immediate term.

The findings also add to the related literature dealing with prejudice reduction. Insights on this topic have to date been overwhelmingly non-experimental, and those that were experimental were primarily based on lab studies and with children as the subjects. In

fact, non-lab experimental interventions account for only 1% of all studies on the topic (Paluck 2016). By conducting a randomized treatment with a large national population, the study's insights point to the promise of information provision — informing the public about the potential benefits of the group in question — as potentially an effective tool for reducing intergroup hostility on a broad scale.[4] In doing so, the findings also speak to the wider challenge of immigrant integration (Adida, Laitin, and Valfort 2010; Hainmueller, Hangartner, and Pietrantuono 2015).

The paper is structured as follows. The next section reviews the state of knowledge on attitudes toward immigration and on interventions that can affect those attitudes. We then provide context for our study, describing the immigration debate in Japan and the economic considerations to which it relates. The next section describes our experimental design, followed by a presentation of the results. We conclude with a summary of the main findings and discuss how they can be broadened to other immigration contexts.

2 Immigration Attitudes and Change Over Time

In recent years, there has been a sharp increase in research on the determinants of individual attitudes on immigration. Most of the existing body of work utilizes individual-level survey data to assess the main drivers of people's views on immigrants and on immigration policy more broadly. Yet very little work to date has examined whether individuals' attitudes toward immigration can change over time, nor what brings about such change. This is a major lacuna, if we are to devise possible remedies for some of the social problems that can be associated with hostility to immigrants, such as discrimination, poor social integration and support for xenophobic political forces.

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[4]While we explore treatments aimed at reducing opposition to a policy rather than to people, the links between the two challenges are clear, as reducing opposition to immigration almost necessarily involves alleviating some degree of concern about the immigrants themselves.

Research on the determinants of people's attitudes toward immigration has largely focused on two main strands of explanations. The first emphasizes the important role of socio-cultural factors as determinants of people's attitudes. According to this view, individuals reject immigration because foreigners represent different values and traditions, and pose a threat to the "national identity" or the traditional "way of life". Much of the emphasis in this literature is placed on prejudice and stereotyping as the source of hostility to immigration (Citrin, Green, Muste, and Wong 1997, Sides and Citrin 2007). The second strand of explanations is rooted in economic considerations. Its focus is on how attitudes are shaped by individuals' concerns about competition for scarce resources and the consequent distributional effects of immigration. Empirically, it directs scholars to examine competition over resources between immigrants and natives, whether in the labor market (Dancygier and Donnelly 2013; Dustmann and Preston 2006; Malhotra, Margalit, and Mo 2013) or through government social spending and services (Hanson, Scheve, and Slaughter 2007, Facchini and Mayda 2009).

Yet notably, much of the evidence pertaining to the role of economic considerations provides only limited support for explanations centered on self-interest as a determinant of attitudes among the population at large. Such concerns tend to be contained within narrow and concentrated segments of the public, as most citizens do not face economic competition with migrants (Hainmueller, Hiscox, and Margalit 2015). Thus, it is mostly sociotropic concerns about the broader impact of immigration on the country and its economy that underlie opposition to it (Citrin, Green, Muste, and Wong 1997; Hainmueller and Hopkins 2014).

The literature on individual attitudes on immigration offers two additional findings pertinent to this study. First, studies show that the informational environment and elite rhetoric are consequential in shaping public opinion on immigration (Brader, Valentino, and Suhay 2008, Helbling, Reeskens, and Stolle 2015). In particular, the identity of the information

source and the ways in which the media covers the immigrant group in question are both closely tied to the views expressed by the public. Second, higher levels of education are consistently associated with more positive views of immigration. There is still much debate on the factors underlying this "education effect," including whether it captures a difference in the level of information that people possess about immigration. For example, studies on both Europe and the U.S. reveal that people tend to systematically overestimate the number of immigrants in the country, but that more educated respondents are less likely to do so (Citrin and Sides 2008, McLaren and Johnson 2007).

As noted before, however, very little work has been carried out on the question of how attitudes on immigration change. The few exceptions are studies that examine how triggering certain emotions (e.g. anxiety, fear) or situational factors can lead to greater exclusionary attitudes to immigrant minorities (Brader, Valentino, and Suhay 2008; Sniderman, Hagendoorn, and Prior 2004). One recent study does explore reduction in opposition to immigration by focusing on the role of correcting biased beliefs about immigration, such as providing accurate figures regarding the number of immigrants in the country (Grigorieff, Roth, and Ubfal 2016). Indeed, the authors find that correcting such biased beliefs can have a notable impact.[5]

Perhaps the most relevant body of work on countering hostility to immigration is the literature on prejudice reduction. This work includes interventions aimed at easing negative attitudes, intolerance, discrimination and even violence toward a specific outgroup and its members. Yet as recent reviews of the literature indicate, despite the vast body of scholarly work on this issue, practical insights into the effectiveness of these remedial strategies are very limited (e.g. Paluck 2016). Summarizing the state of knowledge to date, Paluck and Green (2009) conclude that, "Due to weaknesses in the internal and external validity of

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[5]In addition to a very different experimental design and setting, the nature of the intervention is different: Grigorieff et al focus on correcting biased beliefs, whereas we examine the impact of providing new information or making preexisting knowledge more applicable.

existing research, the literature does not reveal, whether, when and why interventions reduce prejudice in the world" (p. 360). As the authors note, our lack of understanding of this matter is largely the result of several problematic features that characterize much of the work on the topic, features that our study seeks to address.

First, the vast majority of the research to date on prejudice reduction has utilized non-experimental methods. This includes qualitative studies, cross-sectional analyses and interventions with non-random assignment (e.g. Rudman, Ashmore, and Gary 2001; Gurin, Peng, Lopez, and Nagda 1999). While this work is often illuminating and offers rich, descriptive information that is critical for theory building, by not randomizing the prejudice-reducing treatment these studies lack an adequate comparison group with which to assess the impact of the intervention. This lack of comparison severely limits the causal inference that can be drawn (Shadish 2002).

Second, in almost all studies on prejudice reduction, the experimental interventions were targeted at a very small group of subjects. Moreover, these interventions used methods that rely on close interaction of individuals or groups, such as empathy training (e.g. Batson and Ahmad 2009); stereotype re-trainings (Kawakami, Dovidio, Moll, Hermsen, and Russin 2000), and cooperative learning interventions (Johnson and Johnson 1989). Not only are the interventions of these different studies tested on small samples, they also tend to be difficult and extremely costly to scale up to large populations. Thus, these proposed strategies are often hard to apply in contexts that have to do with large populations.

Finally, when researchers have attempted to employ experimental methods for causally estimating the effect of the intervention, they have mostly done so in lab settings. Only about one in ten studies on prejudice reduction has involved field experiments, and in almost all of them (88%) the interventions where carried out with schoolchildren as the subjects (Paluck 2016). While internally valid, the external validity of these studies e.g. in contexts outside the lab, on adult subjects and not in school, remains an open question.

Our experimental design is intended to address several of these limitations — in research design and inference, scalability, and degree of external validity — and seeks to make headway in each of these fronts. In terms of substance, our experiment builds on two of the insights discussed above: That most people tend to assess the merits of immigration in sociotropic terms; and that in almost all settings the more educated tend to be more supportive of immigration than the less educated. We conjecture that the two findings are perhaps related: the more educated tend also to be better informed about the sociotropic benefits of immigration, leading them to hold relatively less restrictive views on immigration. In what follows, we seek to assess whether providing individuals information about this type of soctropic benefits — particularly to the less informed – would lead to attitude change on immigration policy. Describing the experimental context and design is the task to which we now turn.

3   Economic and Demographic Context

Our experimental study was carried out in Japan. This section provides an overview of recent demographic and economic developments in the country in order to contextualize the findings we report below.

Japan's population is in the midst of a rapid aging process and, in fact, it has already started shrinking: after reaching a peak of 128.1 million in 2008, it has been steadily declining since 2010, and is projected to drop below 100 million by 2050. By that year, the share of over 65 is projected to reach 38.8%, up from 26.7% in 2015.[6] As a result, fewer working age people will support a large population of elderly — from 2.3 working age individuals for each pension-aged person in 2015, by mid-century this figure is projected to decline to only 1.3.

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[6]The population statistics are from "Results of Population Estimates" published by the Ministry of Internal Affairs and Communications and available online www.stat.go.jp/english/data/jinsui/2.htm, and future projections are based on the figures under the scenarios of Medium-Fertility and Medium-Mortality in "Population Projections for Japan (January 2012): 2011 to 2060" by the National Institute of Population and Social Security Research.

The implications of this change are substantial. Japan's aging population is becoming an increasingly heavy burden on the country's public finances. In Fiscal Year 2013, expenditures on social security for the elderly (the sum of all pensions, medical and welfare related expenditures) amounted to 75,642 billion yen, representing 68.4% of total social security expenditures, or more than 20% of national income. Also, according to the OECD, Japan's social expenditure for the old age excluding medical expenses was 10.4% of GDP, compared to the OECD average of 7.4% in 2011. Outlays on the elderly continue to increase, even if a substantial proportion of Japan's pension age population remains in the labor market.[7]

Yet the elderly's high labor market participation is not sufficient to address growing labor shortages in key industries. For example, in March 2016 the active job opening ratio, that is the ratio between the number of active job openings and the number of applicants, was 3.64 for food and drink preparatory (catering and hospitality) workers, 3.62 for domestic support service workers, and 2.25 for motor vehicle drivers.[8]

Despite the worrying trends of societal aging, population shrinkage and worsening labor shortages, Japan has not turned to immigration as a possible solution. In fact, it has staunchly remained the advanced economy with the lowest number of immigrants. As of December 2015, only 2.2 million foreign nationals[9] were living in Japan, representing a meager 1.8% of the total population, less than one sixth of the share of migrants in other large OECD economies such as Germany, the UK, and the US.

Mainland Chinese are currently the largest group of migrants living in Japan, at approximately 670,000, followed by Koreans at 490,000.[10] Historically, Koreans represented the largest group of foreigners, but since the 1990s large numbers have acquired Japanese

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[7]49.0% of those between 65 and 69 years old, 32.4% of those between 70 and 74 years old, and 16.1% of the over 75 years were working in 2015.

[8]Data is taken from "Employment Referrals for General Workers", published by the Ministry of Health, Labour and Welfare and available online at *www.mhlw.go.jp/english/database/db − l/general_workers.html*.

[9]Migrants in Japanese official statistics are defined on the base of nationality rather than country of birth.

[10]These data are from the "Statistics on Foreign National Residents" published by the Ministry of Justice.

citizenship.[11]

Given the characteristics of the Japanese context, we designed the experiment so that the treatment groups will be provided information regarding aging, population shrinkage, labor shortages, and the relative presence of immigrants compared to other advanced economies.

4 Experiment and Empirical Approach

The experiment we administered in Japan was embedded in a study carried out between October and December 2015. It was designed to assess our conjecture that exposure to positive information about immigration can effectively decrease hostility toward immigration. To test this claim, we had subjects take part in a survey that consisted of three parts: (i) background questions, including socio-economic characteristics such as education, occupation, prefecture and municipality of residence; (ii) a randomized treatment providing information on a certain economic effect of immigration (the control group was exposed to a treatment of similar length that dealt with wildlife) and (iii) a series of policy questions, concerning individual's views on immigrants, on the economic effects of migration, and on immigration policy (e.g. views on temporary migration, a skill–selective immigration policy based on a point system etc.).

4.1 Data collection and Experiment Design

The survey experiment was carried out by Cross Marketing Inc., one of the leading marketing research companies in Japan. The company has access to a large sample of 1.8 million online panelists, which has been used for a variety of previous studies, and for which the company maintains information on basic socio-economic characteristics.

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[11]For the number of naturalization applications and approvals, refer to "Transitions of the Numbers of Naturalisation Applicants and Approvals" by the Ministry of Justice, available online at *www.moj.go.jp/MINJI/toukei_t_minj03.html*.

The sample used in our study consisted of 10,000 individuals, who have been surveyed in three rounds. The first round took place in October 2015 and was used to pilot all the treatments on a limited sample of 1,000 respondents. Based on the feedback received, we adjusted some of the texts. The second round of study began during the week starting on November 27, 2015. All individuals contacted in this round received part one of the survey (i.e. the socio demographic questions) as well as the randomized treatment (part ii). Upon completion, a random group of six thousand individuals were also asked the battery of policy questions (part iii). To assess the medium-run effects of information provision, a random group of 3000 individuals were instead shown part (iii) of the questionnaire 10-12 days later (December 8-15, 2015). The survey firm Cross Marketing did not provide a direct monetary payment to participants in the survey, who instead were incentivized through the allocation of "points" for participation. Those points can be exchanged with airline miles or other goods. The randomization procedure was successful, as indicated by the balance tests reported in Table A.4.

The questionnaire involved approximately 45 questions, and to insure that the respondent carefully read the informational treatments, respondents were told that they will be asked a set of factual questions regarding the text. Indeed, examination of the responses reveals that, on average, 69% correctly answered the substantive questions about the topic of discussion and about 82% of the respondents correctly answered questions about the figures cited in the text.

To avoid eliciting social desirability bias or 'demand effects', respondents were not informed about the study's focus on immigration attitudes. Instead, participants were informed that their task was to determine the suitability of two short texts for reading comprehension at the high school entry level. The writing samples they had to evaluate took the form of two newspaper articles of approximately 200 words each.[12] The experimental de-

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[12]To increase the attention paid to each text, the online system required participants to spend at least 30

sign required the control group to read a piece about recent discoveries regarding the planet Pluto. The treated group was instead prompted with a text that pertained to a benefit that immigration offers to Japan. The second piece, to be read by all participants, described the life experiences of a Japanese artist.

After completion of the reading assignment, participants were asked to answer a number of factual questions about the text as well as some 'filler' items. The factual questions were included to increase the participants' engagement with the text, as well as to serve as some form of a manipulation check. The outcome measures, as noted, were then collected in two waves. Two thirds of the sample were asked a set of policy questions, including items pertaining to Japan's immigration policy, at the end of the same study. The final third of the sample did not answer those questions at the end of the survey. Instead, they were interviewed 10-12 days after the original study and asked to take a short survey on social and policy issues. As part of this follow up study, participants were prompted with the same set of outcome measures we collected from the first group of respondents. Figure 1 summarizes the schematic structure of the experiment.

4.2   Treatments and Key Outcomes

The goal of the treatments was to provide individuals with information regarding a specific potential positive impact of immigration on Japan's economy and society. We made a great effort to ensure that the message conveyed in the text was simple and understandable to a non–specialized audience.[13]

The benefits we presented to the participants were related to issues that are potentially meaningful in the Japanese context. We organized the information treatments in four broad groups. The first group was exposed to the *demographic* treatment, which sought to high-

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seconds on each of the texts before being able to proceed to the next screen.

[13]See Supporting Information for the complete texts of the different treatments.

Figure 1: Experiment Design
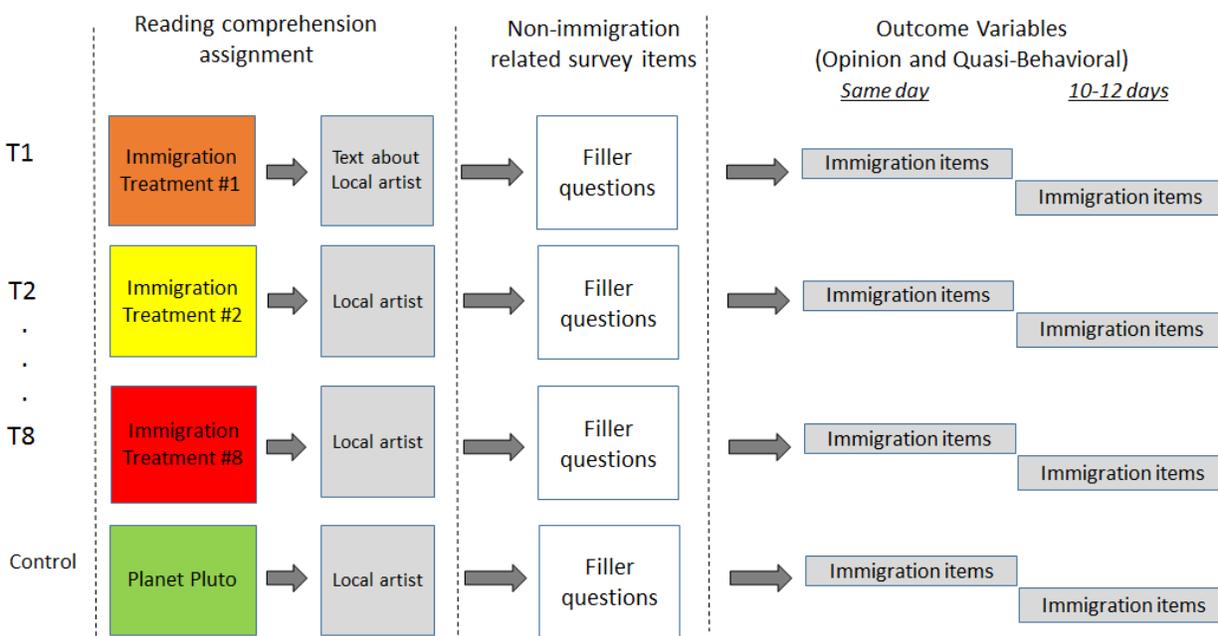
Note: The figure represents the flow of the experimental design. Note that it shows only three treatments, however the actual experiment including eight treatments (as well as control group). Outcome variables were measured in two waves: either as part of the same study in which the interventions were administered, or in a 10-12 day delay.

light the worrying demographic dynamics in Japan, specifically the significant population shrinkage that has begun and is expected to worsen over the next few decades. The objective of this intervention was to make respondents think of immigration's potential to mitigate the problem of a dwindling population. The second set of treatments focused on *labor market shortages*, emphasizing the adverse effect of having too few workers in key sectors of the economy, and how migration can help in addressing this situation. The third group was exposed to the *comparison* treatment, which included information regarding the relative size of migration into Japan as compared to that of other OECD countries. This treatment sought to emphasize the fact that Japan is a country with relatively low levels of migration. Furthermore, we sought to examine whether eliciting conformity with the prevailing norm in other rich countries might affect the views of Japanese respondents regarding the desirable level of immigration.

The fourth intervention focused on the role that immigration can play in tackling *popu-*

lation ageing and its consequences. Given the prominence of the issue for Japan, we devised three sub–treatments to highlight different aspects of the phenomenon. In the first, basic information was provided on the forecast for the old age dependency ratio in 2050 and on the consequences this will have for the sustainability of the existing pension system. In the second, the emphasis was put instead on the effect of population ageing on the growing need of long term care providers, a difficult and thorny issue for many elderly citizens. The third sub–treatment focused instead on the challenges brought about by ageing on the funding of the healthcare system. In all these cases, migration was described as a possible answer to mitigate the problem. See appendix for further details and the complete wording of the informational treatments.

Much of the information we provided in the treatments was new to many of the participants. This is evident based on a set of factual knowledge questions we asked members of the control group at the end of the survey. Responses revealed a striking lack of knowledge on some key issues: 46% of respondents did not know about the country's labor shortage problems and twenty nine percent were unware of the fact that Japan's population has been aging over the past two decades. Yet even among those who answered the factual questions correctly, it is likely that only a certain fraction thought of immigration as a potential antidote to such problems (in fact, only 56% of respondents were aware of the fact that Japan's immigration rate was below the OECD average).

In addition to the four groups described above, which differed in terms of the treatment's content, we also sought to test the effect of the way the information was conveyed. Specifically, we created a further set of treatments that focused on the same substantive issue as described earlier, but rather than describing the information as a summary of statistical data, the treatments conveyed instead the information as part of a personal story about a specific individual. For example, to communicate the idea that immigration can help alleviate Japan's dire need for nurses and longterm caregivers for its elderly population, one of

the treatments included a newspaper story about the struggles of Koharu Ide, a middle aged woman who had to take care full time of her ageing mother who is no longer self-sufficient. In sum, the experimental manipulations varied along three dimensions: (1) the content of the treatment; (2) how the information was conveyed (general vs exemplar); and (3) the length of time for which the effect was examined.

To assess the impact of the treatments on respondents' views on immigration, our study included a number of survey items aimed at gauging different aspects of immigration. Those items were preceded with the note emphasizing that there was "no right or wrong answer". The first was the standard survey question used to elicit general preferences on immigration policy, and read as follows "Overall, do you think that the number of immigrants allowed into Japan should be increased, decreased, or kept at the current level?". Answers on a five-point scale ranged from "Decrease greatly" to "Increase greatly". The second question focused instead on temporary immigration, and was phrased as "Some have proposed increasing the number of visas for temporary workers (including ginou jisshuusei). Overall, do you think that the number of immigrants allowed to Japan temporarily should be increased, decreased, or kept at the current level?"[14]. The possible answers were the same as in the previous question.

In addition to the attitudinal items, we also sought to assess respondents' willingness to actively engage in lobbying their elected officials in support of their preferred immigration policy. To this end, we included an item offering the respondent the option of signing a petition to the government on this matter. The question read "Finally, please select one of the three options below concerning a petition to the government stating your position on immigration (The petition will contain your name, city and opinion on the issue):". The three possible options were: "I would like to join a petition to the government stating MY SUPPORT for increasing the number of immigrants allowed in Japan", "I would like to

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[14]The Japanese term ginou jisshuusei refers to a visa status known as "practical trainees"

join a petition to the government stating MY OPPOSITION to increasing the number of immigrants allowed in Japan" or "No, I do not wish to sign up a petition" (emphases in the original text). Finally, to carry out a placebo test we also elicited participants' views on Japan's commitment to reduce global warming. The question read "Should Japan reduce its greenhouse gas emissions?" and the possible answers were "Yes, Regardless of what other countries do", "Yes, but only if other industrialized countries (such as the UK, Germany and United States) reduce their emissions", "Yes, but only if other Asian countries (such as China, India and South Korea) reduce their emissions", "No, Japan should not reduce its emissions" and "Don't know".

The dependent variable in our empirical analysis, *More Immigrants* is dichotomous and equals one if the respondent has chosen one of the two answers indicating support for either 'increased' or 'greatly increased' immigration into the country, and zero otherwise. The variables *More Temp Visas* and *Sign Pro Petition* are also binary measures and coded in a similar way, indicating the respondent selected one of the two answers supportive of more immigration. The same applies for our placebo variable "Emissions", which was coded as one if the individual was in favor of Japan reducing emissions unconditionally and zero otherwise.

Table 1 reports basic summary statistics for the key outcomes in the two periods. As the table indicates, each information treatment was received by 11% of the sample in the first wave; The same holds true for the control group. As for our dependent variables, on average 45% of the respondents reported being in favor of increasing immigration, whereas 46% reported being in favor of increasing temporary migration (Note that this includes respondents exposed to the treatments). Participants in the study were far less willing to actively engage in the political process by signing a petition in favor of greater immigration – only 17% of the respondents were interested in doing so. Finally, with respect to the placebo outcome, Japanese appear to be committed to taking action against global warming, with 74% of the respondents supporting taking action to reduce emissions.

Table 1: Summary statistics

	Mean	St. Dev.	Min	Max
Short Run Sample				
More Immigrants	0.45	0.50	0.00	1.00
More Temp Visas	0.46	0.50	0.00	1.00
Sign Pro Petition	0.17	0.38	0.00	1.00
Emissions	0.74	0.44	0.00	1.00
Pensions	0.11	0.31	0.00	1.00
Elderly Care (stats)	0.11	0.31	0.00	1.00
Elderly Care (exemplar)	0.11	0.32	0.00	1.00
Healthcare	0.11	0.32	0.00	1.00
Population shrinking	0.11	0.31	0.00	1.00
Labor shortages (stats)	0.11	0.32	0.00	1.00
Labor shortages (exemplar)	0.11	0.31	0.00	1.00
Comparative Facts	0.11	0.31	0.00	1.00
Control	0.11	0.31	0.00	1.00
Observations		6000		
Long Run Sample				
More Immigrants	0.30	0.46	0.00	1.00
More Temp Visas	0.35	0.48	0.00	1.00
Sign Pro Petition	0.14	0.35	0.00	1.00
Emissions	0.71	0.45	0.00	1.00
Pensions	0.20	0.40	0.00	1.00
Elderly Care (stats)	0.21	0.41	0.00	1.00
Elderly Care (exemplar)	0.21	0.41	0.00	1.00
Healthcare	0.18	0.39	0.00	1.00
Control	0.20	0.40	0.00	1.00
Observations		3000		

Due to budget constraints, in the long-run sample only the four age-related treatments were studied. The share of individuals in favor of increasing immigration in Wave II was 30%, and 35% with respect to temporary visas. The share of individuals willing to send a pro migration petition in the second wave was instead 14%. We discuss these differences in detail in the subsequent sections, where we compare the short and long-term effects of the treatments.

5   Results

As mentioned before, the dependent variables in our baseline specifications are dichotomous. Note that measuring a shift in attitudes across a binary indicator is a more demanding measure of the effectiveness of the treatments. Thus, our results are unaffected (and in some cases, stronger) if we use instead the full set of possible values, and are reported in the Appendix. For ease of interpretation, the specification has been estimated using linear probability models, but probit specifications produce similar findings (see Table A.2).

Table 2 presents our main results. We begin by focusing on the short run sample (n=6,000), i.e. the group of individuals which received the informational treatment and was asked the policy questions in the same study. In Column (1) we examine the effect of the information treatment on generic *More Immigrants* attitudes. Our findings indicate that among the non–treated sample, only 29% of the population supported an increase in levels of immigration, a finding that is consistent with the restrictive immigration policy stance currently pursued by the Japanese government. Yet providing information on some of the economic benefits of immigration has a large, positive and significant effect on individual opinions, a finding that holds for all the different treatments. The effect ranges between 12.5% and 21%, indicating that an individual exposed to the information treatment was between 43 and 72 percent more likely to support immigration than an individual in the

broader population. As we can see from the table, the most effective treatments were those in which information was provided on the benefits of immigration for the sustainability of the pension system and for the provision of longterm care services. The least effective, though still significant and substantively large, involved instead the potential benefits of immigration in addressing labor market shortages.

Table 2: Treatment Effects on Binary Outcomes

	(1) More Immigrants	(2) Temp Visas	(3) Petition	(4) Placebo
Pensions	0.210**	0.118**	0.071**	-0.028
	(0.03)	(0.03)	(0.02)	(0.02)
Elderly Care (stats)	0.191**	0.154**	0.052*	0.003
	(0.03)	(0.03)	(0.02)	(0.02)
Elderly Care (personal)	0.211**	0.123**	0.060**	0.005
	(0.03)	(0.03)	(0.02)	(0.02)
Healthcare	0.179**	0.124**	0.036	-0.047*
	(0.03)	(0.03)	(0.02)	(0.02)
Population Shrinking	0.149**	0.070*	0.057**	-0.019
	(0.03)	(0.03)	(0.02)	(0.02)
Labor Shortages (stats)	0.168**	0.128**	0.015	-0.042
	(0.03)	(0.03)	(0.02)	(0.02)
Labor Shortages (personal)	0.125**	0.067*	0.025	-0.038
	(0.03)	(0.03)	(0.02)	(0.02)
Comparative Facts	0.151**	0.075**	0.023	-0.027
	(0.03)	(0.03)	(0.02)	(0.02)
Constant	0.291**	0.366**	0.133**	0.765**
	(0.02)	(0.02)	(0.01)	(0.02)

Analyses in all models based on 6,000 observations. Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$

In column (2) we turn instead to consider the effects of information on attitudes towards increasing the number of temporary migrants. As we can see, the general attitude is more favorable toward temporary migration than towards overall migration: approximately 37% of the population supports expanding greatly or somewhat temporary migration, whereas the same is true only for 29% of the population when it comes to overall migration. At the same time, the effect of exposure to the informational treatments, while still positive and

significant in all cases, is quantitatively smaller, ranging between 7% and 15% or, in terms of our baseline, increasing pro immigration attitudes by between 18 and 42 percent.

Interestingly, some new patterns emerge when it comes to the effectiveness of the treatments in shifting attitudes. While information emphasizing the benefits of immigration for providing longterm care services appears to have a large effect on attitudes toward temporary migration, the second most effective treatment is now the one emphasizing the contribution that migration can make in reducing labor market shortages. This may be explained by the fact that temporary workers are highly relevant for jobs in the sectors suffering key shortages – construction, hospitality – while long-term care workers are expected and required to commit to extended stays, including participation in language classes and later language proficiency tests.

In column (3) of the table, we examine the effectiveness of the treatments on the likelihood that an individual will agree to sign a petition to increase the number of immigrants coming to Japan.[15] Since respondents were told that joining the petition requires providing personal details, this "more costly" measure elicited lower levels of responses than strictly attitudinal questions. Indeed, in the baseline (i.e. control group), only 13 percent of the respondents agreed to sign a pro migration petition. Nonetheless, we find that receiving information on the potential benefits of immigration had an impact also on the willingness to actively engage in the political process. In particular, individuals exposed to three out of the four treatments related to the aging problem, as well as to the population shrinkage issues, were significantly more likely to sign the pro-migration petition. The effects are again quite large: as compared to the baseline rate, exposure to the information on the benefits of immigration increased the likelihood of agreeing to sign the pro–immigration petition by between 39 and 53 percent.

In the last column of Table 2 we present the results of a placebo treatment, in which we

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[15]The dependent variable takes a value of one if the respondent has stated his intention to join a petition to support an increase in the number of immigrants to Japan and zero otherwise.

assess the effects of the information regarding the benefits of immigration on whether or not the individual thinks that Japan should reduce greenhouse emissions.

Figure 2 presents the results on the four outcomes graphically. The figure highlights the fact that the information treatments exert a positive and significant effect on all three immigration outcomes, but not with regard to environmental policy. It also highlights the fact that the information treatments exert a larger effect on attitudinal questions than on a behavioral outcome, in this case willingness to take political action in the form of signing a petition.

Figure 2: The Effects of Information Treatments on Policy Stance
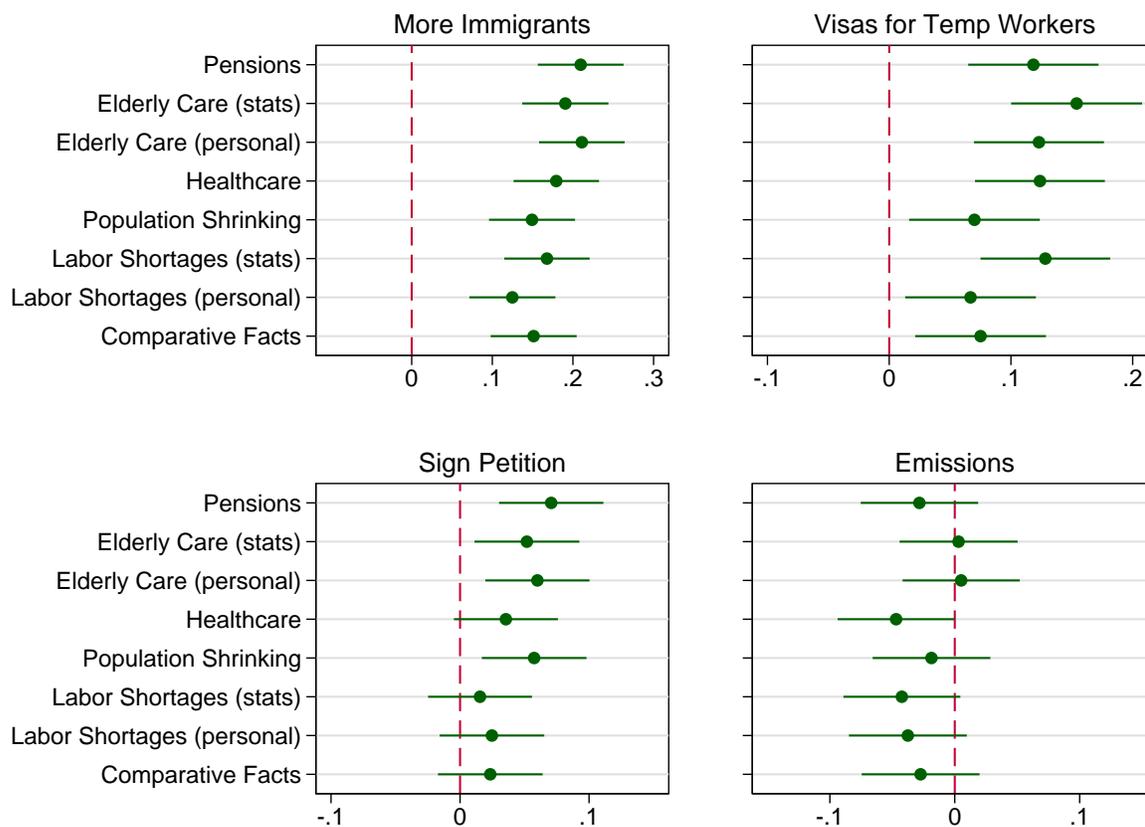
Note: Bars represent 95% confidence intervals. Reported effect pertain to a binary outcome representing support for the policy option. The bottom left panel reports willingness to sign on to a petition to parliament expressing support for a more open immigration policy. Bottom right panel is the effect of the treatment on respondents' support for Japan changing its greenhouse emissions policy.

5.1 Do the Effects Persist?

One key question arising from these findings is the extent to which the interventions are effective in altering views also in the longer run, as opposed to only the immediate term. In discussing the longevity of information treatments, Baden and Lecheler (2012) and Copock (2016) distinguish between three different types of treatments, and argue that the three are likely to differ with respect to the persistence of their effect. Some information treatments make preexisting knowledge more accessible (thereby increasing the weight given to a particular consideration); others make preexisting knowledge more applicable (for example, by linking considerations from two different domains), and yet other treatments provide new information. Whereas the effect of treatments making considerations more accessible are expected to have a fleeting effect, the latter two treatment types should have a more extended effect.

Although the issue of Japan's aging problem is fairly commonly known, it is likely that the specific implications — on sustainability of the pension system, healthcare costs, need for longterm caregivers — are less well known. Furthermore, the idea that immigration could be a relevant factor in addressing these problems is even less obvious, particularly given that discussion of immigration in a favorable context is relatively rare in Japan. Indeed, in section 4.2 we reported findings that revealed a striking lack of knowledge on matters discussed in the treatment. We therefore expect that the information provided in the treatments is mostly not a case of increasing accessibility, but rather an instance of increasing applicability or of providing new information altogether.

To assess whether the impact of the information persists over a longer stretch of time, we designed the experiment such that a randomly chosen subgroup of 3,000 individuals was asked the preference questions only a week and a half later.

The results concerning general attitudes towards immigration (i.e. the *More Immigrants* variable) are reported in the left panel of Figure 3, where we compare short and long run

Figure 3: Short vs. Longer-Run Effect
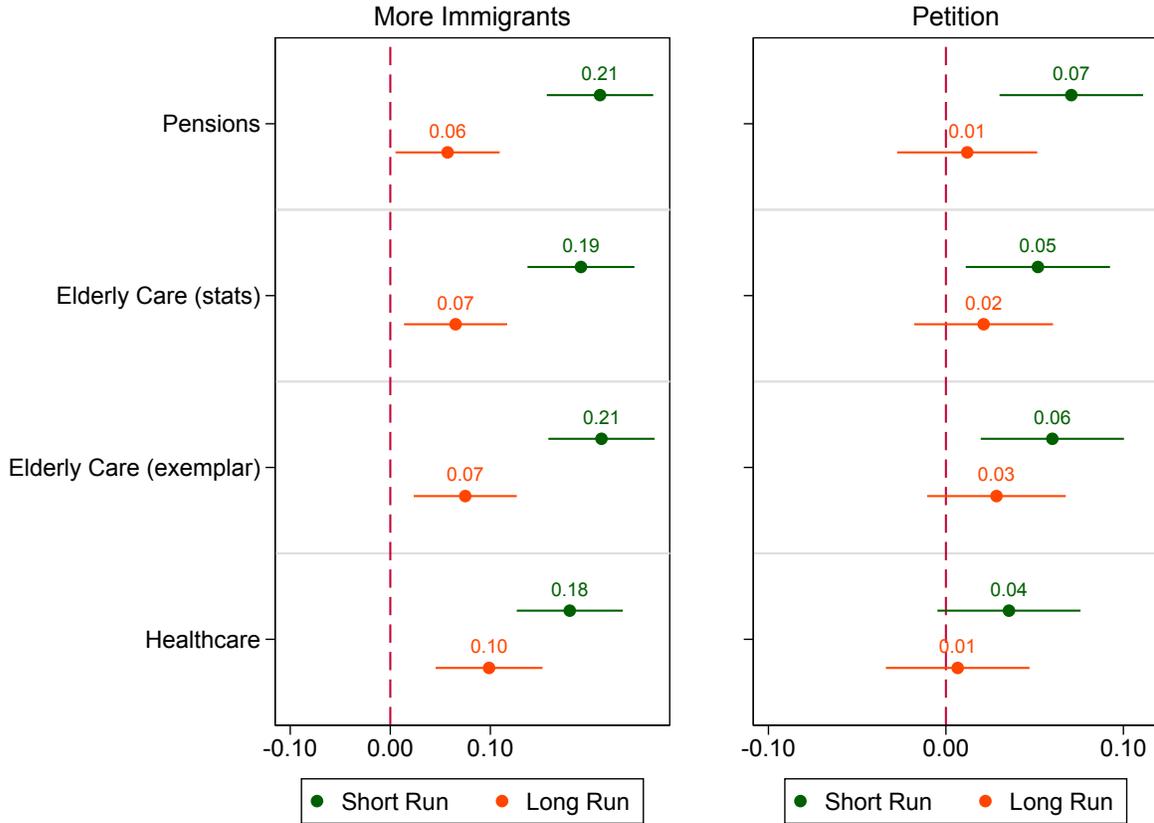
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a pro-immigration stance. Short run (green bar) pertains to the effect of treatment on responses provided within the same day of the intervention; Longer-run effects (red bars) pertain to the impact of the treatment as assessed 10-12 days after the treatment.

effects. As the figure indicates, the longer-run effect is consistently smaller than the short run effect, representing a drop of between 45% and 71%. Yet even so, the effect of the treatments on support for increased immigration is sizable even 10-12 days after the treatment. For example, exposure to information about the pension crisis and the potential of immigration to alleviate the problem is associated with a 6 percentage point increase in support for more immigration, and the effect of information about immigration's impact on sustaining the health-care system is even greater (10 percentage points), representing a 24% and 41% increase above the baseline rate, respectively.

A similar pattern can be disentangled also with respect to change in support for ex-

panding visas for temporary immigrants. In contrast, the effect of time on the decline in the willingness to join the petition is sharper than the shift on the attitudinal measure. In fact, the effect of all four treatments on the behavioral outcome, while still positive, loses significance in the longer run and is statistically indistinguishable from zero. In sum, the treatment effects appear to persist only with respect to changing people's policy positions, but diminish more significantly in their impact on mobilizing citizens to political action.

## 5.2   Does the Mode of Information Matter?

So far we have compared the effectiveness of the treatments along two dimensions: the issue area which was emphasized (e.g., pensions, labor shortages), and the time lag over which the effect was measured. Next, we turn to a third dimension, namely the mode of information provision. A large body of work on persuasion debates whether arguments are more effective in bringing about attitude change when evidence is presented as statistical as opposed to exemplars (or 'story based') (Perloff 2010, Baesler and Burgoon 1994). We therefore explore whether the effectiveness of our treatments varies as a function of how the information is conveyed, and specifically, whether information reported through personal stories has a stronger impact than when the same issue is communicated through a more statistical evidence-based account.[16]

To do so, we turn to compare the magnitude of the effects of two treatments: dealing with the acute labor shortage of workers in the economy, and dealing with the related issue of a growing population of elderly and the role of immigrants as longterm caregivers. In both instances, we generated two versions of the treatment. In the first, we simply provided a news article that summarized the main facts regarding the problem. In the second, we communicated the same problem but as told through the eyes of a specific person. For

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[16]As the literature notes, there are ex ante reasons why each of the two types might be more effective than the other. While exemplars may allow recipients of the information to connect more easily to the argument, statistical evidence may lend the argument a greater aura of credibility (Allen and Preiss 1997).

example, the labor shortage problem was illustrated through the personal struggle of a manager at a transportation company, who describes how his company lost substantial business because much of his truck fleet stood idle due to a shortage of truck drivers. By maintaining the same structure of the article, and focusing on highlighting the same substantive problem, we are able to assess the impact of specific forms of communicating the information.

Figure 4: The Effects of Arguments based on Statistics vs. Exemplars
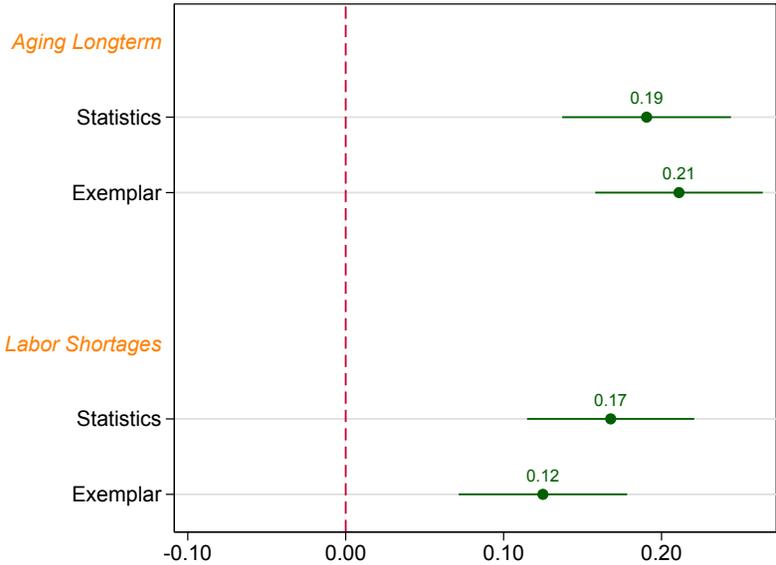
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a pro-immigration stance.

Figure 4 presents the results. As it becomes immediately clear, the mode in which the argument is made does not appear to exert a clear or systematic effect. In fact, the overall impact of the treatments is not statistically different when the information is communicated through an exemplar or a nondescript factual account. Interestingly, the effect of the personal story version was stronger only in the case of the longterm care issue, but not when the issue highlighted was the labor shortage problem. Indeed, in the latter instance, the effect of the factual account was five percentage points *greater*. In both cases, then, the two versions of the treatment had a positive and comparable effect, but the differences between them were

not significant. This comparison, by itself, cannot rule out the possibility that the way the evidence is presented can matter. Yet the analysis does suggest that the mere intervention of exposing citizens to the big economic and social problems that immigration can help address is, by itself, a strong and powerful tool for affecting attitudinal change.

5.3   Mechanism and Effect Heterogeneity

The results reported so far indicate that exposing individuals to information about social and economic issues on which immigration could have a positive impact significantly reduces opposition to immigration. In this section we explore the mechanism, with the aim of shedding light on whether the treatments alter individuals' attitudes primarily by making information that was preexisting more accessible (i.e., by "priming"), or by providing information that creates new and applicable knowledge.[17] The findings reported in section 5.1 indicate that the effects tend to persist over time, a result that is more compatible with the idea that new knowledge is being made available to the respondents. In this section, we further explore this issue by examining effect heterogeneity across groups that are expected to differ in their level of pre-treatment knowledge about the relevant issues.

We begin by comparing the effects of the different treatments on individuals employed in sectors with severe labor shortages (henceforth 'high vacancy' sectors) and others who work in sectors with few shortages ('low vacancy' sectors). The assumption is that the former are more aware of the labor shortage issue, and the potential impact that immigration could have on alleviating this problem at the national level. If the information treatments shift attitudes primarily by providing new information, we should observe the treatments dealing with labor shortage to shift the attitudes of workers in the low vacancy sectors (i.e. individuals less informed about the problem) in a pro-immigration direction as compared to workers in

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[17]As noted earlier, this could be because the information is entirely new or because the information helps make other information more applicable, for example by making logical links between different domains.

the high vacancy sectors (i.e. the more informed). Alternatively, if the treatments shift attitudes primarily by making pre-existing information more accessible, we should expect the opposite pattern of a greater shift in attitudes among the workers in the high-vacancy sectors. Importantly, in both cases we should not expect to observe a differential response to the other information treatments (i.e., those that do not deal with labor shortages) among the low and high vacancy groups.

To test this conjecture we collected information on the ratio between the number of successful job recruitments carried out in a given period, and the number of new openings posted during the same period. We measure the pervasiveness of labor shortages as: (1-recruitments/new openings), and define a sector as a high shortage sector if its labor shortage is in the top quartile of the sector distribution. The results of the analysis are reported in Figure 5 (see also Table A.6 in the Appendix).

Figure 5: Treatment Effect by Exposure to Labor Shortage Problem
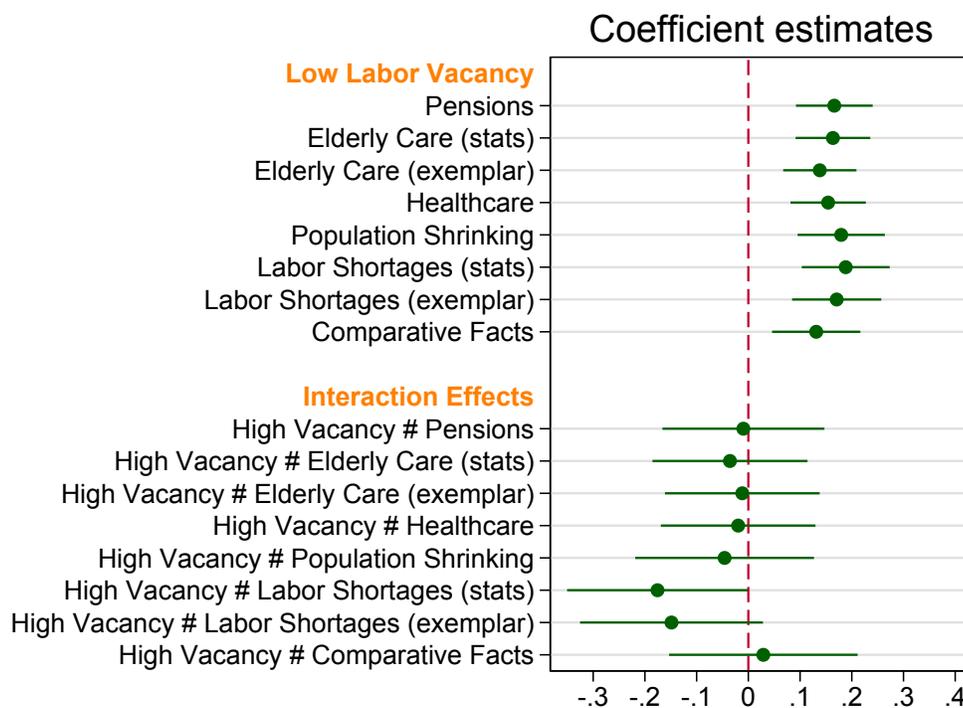
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a pro-immigration stance.
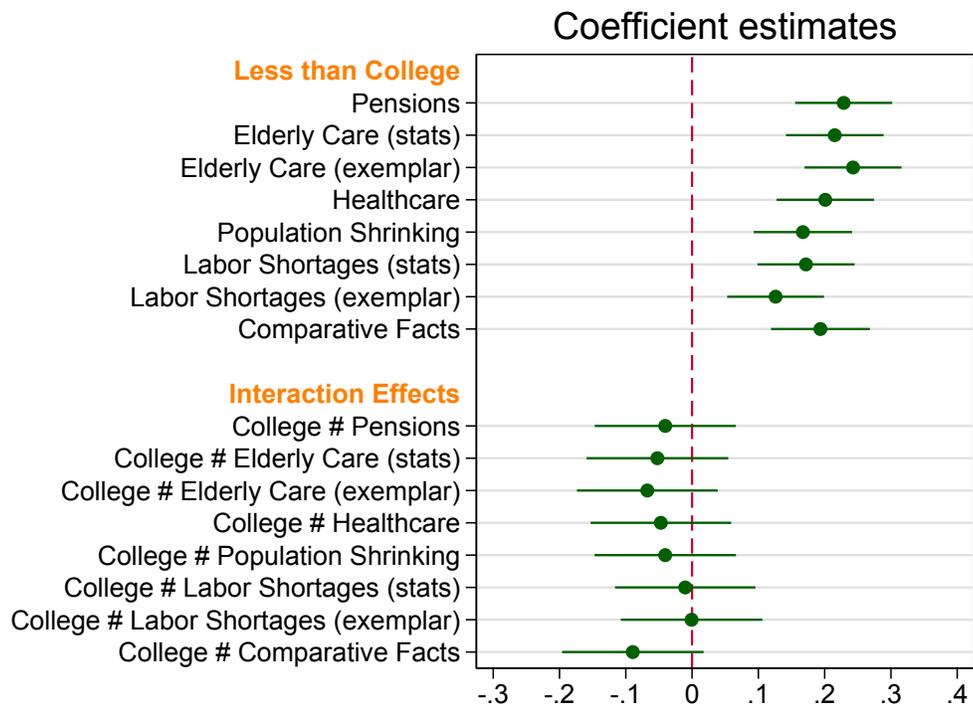
The top panel of the figure presents the effect of the treatments on the baseline group, i.e. individuals working in sectors characterized by low labor vacancy. These effects are consistently positive and highly significant in statistical terms. The bottom panel of the figure reports the coefficient estimates of the interaction effects, illustrating the differential effect of information on workers employed in high vacancy sectors. Here, a noteworthy pattern emerges: in all but two cases, the interactions are substantively and statistically indistinguishable from zero. The only clear distinctions are the two labor shortage treatments, which are *negatively* signed and significant at the 5% and 10% level, respectively. Taken together with the baseline effect, these results indicate that among workers in the high vacancy sectors, no attitudinal shift occurs. In contrast, among the low vacancy workers — who presumably had less prior knowledge about the labor shortage issue — the two treatments dealing directly with this issue produced a sizable change in attitudes by reducing opposition to immigration. This evidence is clearly more consistent with the notion that information treatments bring about a larger attitudinal shift when providing new information about the role of immigration, rather than by making pre-existing information more accessible.

A second, somewhat less direct test compares the effects of the information treatments across groups with different levels of education, which is conventionally used a proxy for level of preexisting knowledge. Indeed, using a range of six factual questions that we asked the control group at the end of the survey, we confirm that the more educated possess somewhat greater knowledge about factual issues relating to immigration and the economy.[18] Focusing on the short run sample, we run a regression in which we interact the treatment indicators with level of educational attainment (junior college versus no college).[19] The results are reported in Figure 6.

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[18]Our questions covered topics such as the share of immigrants in the country, the relative size of the immigrant community compared to other countries, the trend in population aging, and more (See appendix for full details on the wording of the different questions). The results, reported in Figure A.1, indicate that in five of the six items the differences in the respective shares of respondents who knew the correct answer was significant statistically, albeit the substantive difference was limited, ranging from 6%-13%.

[19]In Japan this distinction refers to tertiary vs. non tertiary education.

Figure 6: Treatment Effect by Education Level

Coefficient estimates

Less than College
- Pensions
- Elderly Care (stats)
- Elderly Care (exemplar)
- Healthcare
- Population Shrinking
- Labor Shortages (stats)
- Labor Shortages (exemplar)
- Comparative Facts

Interaction Effects
- College # Pensions
- College # Elderly Care (stats)
- College # Elderly Care (exemplar)
- College # Healthcare
- College # Population Shrinking
- College # Labor Shortages (stats)
- College # Labor Shortages (exemplar)
- College # Comparative Facts

-.3 -.2 -.1 0 .1 .2 .3 .4

Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a pro-immigration stance.

As before, the top panel represents the effect of the treatment on the baseline group, i.e. on individuals with no college degree. As we can clearly see, the effect of the treatments on pro–immigration attitudes is always positive, and statistically significant at the 1% level (see also Table A.6 in the Appendix). The bottom panel reports the parameter estimates for the interaction effects, which capture the differential effect of the treatments across education groups. As the figure indicates, the effects are below statistical significance, yet notably the point-estimates on the interactions are all negative. While not conclusive, these results are consistent with those obtained in the comparison of the high vs. low vacancy sectors, suggesting that the information treatments tend to have a stronger impact on individuals with less pre-existing knowledge about the issue at hand.

6 Discussion

In this paper we have studied whether exposing citizens to information about the potential positive role of immigration in addressing domestic social and economic problems can alter their views on immigration. Focusing on the case of Japan, a country with a comparatively small foreign population and known for a widespread public skepticism toward immigration, we carried out the first large-scale experimental study of the impact of information treatments on reducing opposition to immigration. Our study delivers several results of note. First, we find that exposure to positive information can lead to a sizable increase in support for allowing more immigrants into the country, including the expansion of visas for temporary migrants. Second, it leads also to a change — albeit a smaller one — in a quasi-behavioral measure of active engagement in the form of signing onto a petition to parliament in support of a more immigration-friendly policy. Third, we find that the effects persist after 10-12 days, a striking result given the relatively unobtrusive nature of the experimental intervention.

The results provide support to the conjecture that many people have little exposure to,

and knowledge about, the potential benefits of a more open immigration policy. As our analysis indicate, providing people with even fairly rudimentary information about these potential benefits, particularly if this information is new, can lead to substantial shifts in views. As the public conversation is often dominated by anti-immigration voices, the paucity of politicians or organizations that publicly advocate for a more open immigration policy may mean that information about the potential benefits of immigration is not receiving substantial airing in the public discussion.[20] The fact that information treatments of the type we administered produce such sizable effects, many of which last beyond the immediate term, suggests that campaigns informing the broad public about certain positive impacts of immigration are potentially a powerful tool for countering widespread public hostility toward immigration.

Although the experiment was carried out outside the lab, its external validity beyond the case of Japan must be assessed. Whether we should expect information treatments to have a similar effect in other countries is unclear, as Japan can be seen as both a particularly 'hard' and particularly 'easy' case for our intervention to succeed. On the one hand, the widespread opposition to immigration suggests that it is entrenched in a deeper antagonism toward foreigners, in which case the country's citizens should be less likely to shift their views in response to information about potential benefits of immigration. On the other hand, the very low baseline rate of support for immigration in Japan means that there is more 'room' to shift attitudes in the pro-immigration direction. Moreover, the low rates of immigration in the country may mean that natives have less exposure to immigrants and to the discussion about the merits of immigration. If so, treatments of the nature we administered are more likely to represent newer information to the Japanese public than comparable information would to more informed native populations in other countries. These factors suggest that Japan may actually represent a ceiling effect for the intervention. Which of these accounts is

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[20]Indeed, conversations by the authors conducted as background for this project with Japanese policy makers and experts, confirm that this is very much the case.

correct is of course an empirical question which we hope similar research in other advanced economies would help clarify.

Our findings also speak to the growing body of research on prejudice reduction. As recent reviews of this literature indicate (Paluck and Green 2009), the large majority of work on the topic is non experimental, and the work that is experimental is overwhelmingly done in lab settings, with children as subjects and with high intensity interventions. Thus, the findings in this literature offer little guidance about ways in which prejudice can be decreased, let alone on a broad scale. This study makes headway by providing evidence from an experiment administered on a sizable and representative population of adults, using an intervention that is relatively easy to scale up to large populations. While our results focus on changes in attitudes on immigration, it is likely that the large attitudinal shifts we observe with respect to immigration also correlate with changes in attitudes toward immigrants. If so, one can easily imagine how governments that are interested in creating a public sphere that is more amenable to immigrants can adapt this approach and fund campaigns in the media disseminating this type of information.

Our study indicates that some treatments are more effective than others, and that some have a longer-lasting impact. Moreover, we find some evidence of heterogeneity across the population in receptiveness to the different treatments. To ensure effectiveness of information campaigns, figuring out the specific immigration-related benefits to which native citizens will most relate, and targeting different audiences with group-specific information, is a task that requires further experimentation. As the results of this study indicate, this is a task very much worth pursuing.

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Appendix

Table A.1: Treatment Effects on a Continuous Measure

	More Immigrants	Temp Visas	Petition	Placebo
Pensions	0.350**	0.208**	0.071**	-0.054
	(0.06)	(0.06)	(0.02)	(0.08)
Longterm care (stats)	0.346**	0.250**	0.052*	0.041
	(0.06)	(0.06)	(0.02)	(0.08)
Longterm care (personal)	0.385**	0.223**	0.060**	0.060
	(0.06)	(0.06)	(0.02)	(0.08)
Healthcare	0.333**	0.178**	0.036	-0.149
	(0.06)	(0.06)	(0.02)	(0.08)
Population Shrinking	0.287**	0.134*	0.057**	-0.039
	(0.06)	(0.06)	(0.02)	(0.08)
Labor Shortages (stats)	0.306**	0.197**	0.015	-0.090
	(0.06)	(0.06)	(0.02)	(0.08)
Labor shortages (personal)	0.216**	0.124*	0.025	-0.110
	(0.06)	(0.06)	(0.02)	(0.08)
Comparative Facts	0.318**	0.119*	0.023	-0.072
	(0.06)	(0.06)	(0.02)	(0.08)
Constant	2.003**	2.148**	0.133**	3.096**
	(0.04)	(0.04)	(0.01)	(0.06)
R-squared	0.011	0.005	0.004	0.002
No. obs	6000	6000	6000	6000

Coefficient estimates from probit models. Standard errors in parentheses. * $p < 0.05$.

Table A.2: Treatment Effects on Binary Outcomes: Probit models.

	(1) More Immigrants	(2) Temp Visas	(3) Petition	(4) Placebo
Pensions	0.552*	0.304*	0.284*	-0.089
	(0.07)	(0.07)	(0.08)	(0.07)
Elderly Care (stats)	0.504*	0.393*	0.216*	0.010
	(0.07)	(0.07)	(0.08)	(0.08)
Elderly Care (exemplar)	0.556*	0.315*	0.246*	0.017
	(0.07)	(0.07)	(0.08)	(0.08)
Healthcare	0.476*	0.317*	0.153	-0.146
	(0.07)	(0.07)	(0.08)	(0.07)
Population shrinking	0.400*	0.181*	0.236*	-0.059
	(0.07)	(0.07)	(0.08)	(0.08)
Labor Shortages (stats)	0.447*	0.328*	0.069	-0.132
	(0.07)	(0.07)	(0.09)	(0.07)
Labor Shortages (exemplar)	0.338*	0.173*	0.109	-0.117
	(0.07)	(0.07)	(0.09)	(0.07)
Comparative Facts	0.405*	0.194*	0.103	-0.086
	(0.07)	(0.07)	(0.09)	(0.08)
Constant	-0.550*	-0.343*	-1.114*	0.723*
	(0.05)	(0.05)	(0.06)	(0.05)
Pseudo R-squared	0.011	0.006	0.004	0.002
No. obs	6000	6000	6000	6000

Coefficient estimates from probit models. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.3: Short vs Long Run Effects

	Short Run		Long Run	
	More Immigrants	Petition	More Immigrants	Petition
Pensions	0.210*	0.071*	0.057*	0.012
	(0.03)	(0.02)	(0.03)	(0.02)
Elderly Care (stats)	0.191*	0.052*	0.065*	0.021
	(0.03)	(0.02)	(0.03)	(0.02)
Elderly Care (exemplar)	0.211*	0.060*	0.075*	0.028
	(0.03)	(0.02)	(0.03)	(0.02)
Healthcare	0.179*	0.036	0.099*	0.007
	(0.03)	(0.02)	(0.03)	(0.02)
Constant	0.291*	0.133*	0.246*	0.127*
	(0.02)	(0.01)	(0.02)	(0.01)
R-squared	0.015	0.004	0.005	0.001
No. obs	6000	6000	3000	3000

Coefficient estimates from OLS models. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.4: Balance Tests

Treatment	(1) Age 18-34	(2) Age 35-50	(3) Age 51-65	(4) Age 66+	(5) University	(6) Female	(7) Foreign Born	(8) Dependency Ratio	(9) Unemployment Rate	(10) Foreign Share	(11) Labor Force Participation
Pensions	-0.026	-0.011	0.035*	0.002	-0.066*	0.038*	0.000	-0.020	0.000	0.000	-0.000
	(0.016)	(0.018)	(0.017)	(0.015)	(0.034)	(0.019)	(0.000)	(0.019)	(0.000)	(0.000)	(0.001)
Elderly Care (stats)	-0.025	-0.006	0.033*	-0.002	-0.032	0.027	0.000	0.003	0.000	0.000	0.001
	(0.016)	(0.018)	(0.017)	(0.015)	(0.033)	(0.019)	(0.000)	(0.019)	(0.000)	(0.000)	(0.001)
Elderly Care (exemplar)	-0.041*	-0.008	0.063*	-0.014	-0.036	0.016	0.000	-0.007	0.000	0.000	0.001
	(0.016)	(0.018)	(0.017)	(0.015)	(0.033)	(0.019)	(0.000)	(0.019)	(0.000)	(0.000)	(0.001)
Healthcare	-0.031	0.014	0.009	0.008	0.015	0.009	0.000	-0.022	0.000	0.000	0.001
	(0.016)	(0.018)	(0.017)	(0.015)	(0.034)	(0.019)	(0.000)	(0.019)	(0.000)	(0.000)	(0.001)
Population shrinking	0.013	0.002	0.018	-0.033	0.009	-0.004	0.000	0.021	0.000	0.000	0.001
	(0.019)	(0.021)	(0.020)	(0.017)	(0.040)	(0.022)	(0.000)	(0.022)	(0.000)	(0.000)	(0.001)
Labor shortages (stats)	-0.024	0.003	0.030	-0.008	0.002	0.028	0.000	0.000	-0.000	0.000	0.000
	(0.019)	(0.021)	(0.019)	(0.017)	(0.039)	(0.022)	(0.000)	(0.022)	(0.000)	(0.000)	(0.001)
Labor shortages (exemplar)	-0.006	0.024	0.009	-0.027	-0.037	0.042	0.000	-0.029	0.000	0.000	0.000
	(0.019)	(0.021)	(0.020)	(0.017)	(0.040)	(0.023)	(0.000)	(0.022)	(0.000)	(0.000)	(0.001)
Comparative	-0.012	-0.001	0.019	-0.005	0.014	-0.031	-0.000	-0.016	0.000	-0.000	-0.000
	(0.019)	(0.021)	(0.020)	(0.017)	(0.040)	(0.023)	(0.000)	(0.022)	(0.000)	(0.000)	(0.001)
Constant	0.252*	0.330*	0.230*	0.187*	2.159*	0.493*	0.018*	0.433*	0.032*	0.018*	0.496*
	(0.011)	(0.013)	(0.012)	(0.010)	(0.024)	(0.014)	(0.000)	(0.013)	(0.000)	(0.000)	(0.000)
Observations	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000	10000

Standard errors in parentheses. * $p < 0.05$.

Entries denote coefficients from regressing the experimental treatments on the covariates listed in the column headers.
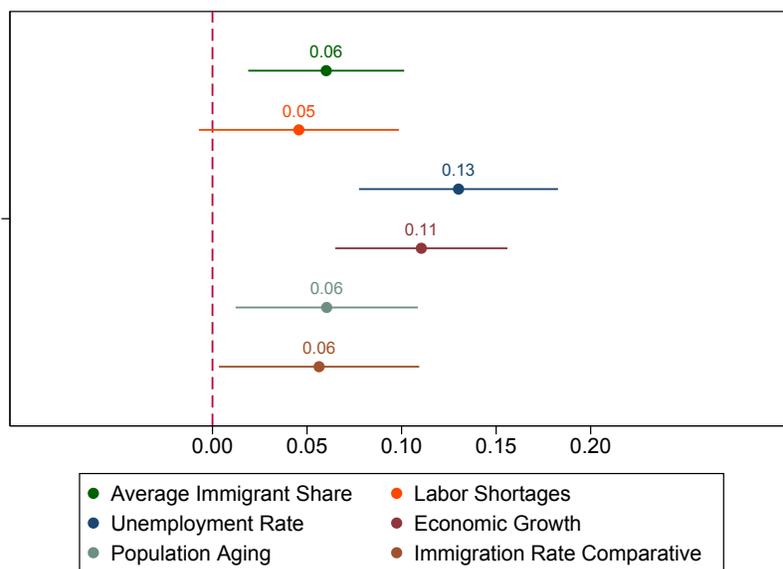
Factual knowledge

Individuals in the control group were asked a series of factual knowledge questions, aimed at eliciting pre–existing information on some important socio–economic features. The exact wording is as follows:

- *Average Immigrant Share* "The share of immigrants in the population is slightly higher in Japan than the average in other advanced economies."

- *Economic Growth* "Japan's economic growth rate has been negative for the past five years."

- *Immigration Rate Comparative* "Japan's immigration rate is the lowest among the advanced economies."

- *Labor Shortages* "Japan has a shortage of workers in certain sectors, such as IT engineers and truck drivers."

- *Population Aging* "The average age of Japan's population has risen in the past two decades."

- *Unemployment Rate* "The official rate of unemployment in Japan is 20% higher than the average in other advanced economies."

Each question had five possible answers: (1) Certainly True (2) Probably True (3) Have no idea (4) Probably False (5) Certainly False. Individuals were coded as being correctly informed about:

- *Average Immigrant Share* if they chose answers (4) or (5);

- *Economic Growth* if they chose answers (1) or (2);

- *Immigration Rate Comparative* if they chose answers (1) or (2);

- *Labor Shortages* if they chose answers (1) or (2);

- *Population Aging* if they chose answers (1) or (2);

- *Unemployment Rate* if they chose answers (4) or (5).

Figure A.1: Effect of education on factual knowledge

Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a correct answer.

Table A.5: Association between education level and factual knowledge

	(1) Average Immigrant Share	(2) Labor Shortages	(3) Unemployment Rate	(4) Economic Growth	(5) Population Aging	(6) Immigration Rate Comparative
College and Above	0.060*	0.046	0.130*	0.110*	0.060*	0.056*
	(0.02)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)
Constant	0.158*	0.519*	0.416*	0.195*	0.679*	0.501*
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
R-squared	0.006	0.002	0.017	0.016	0.004	0.003
No. obs	1368	1368	1368	1368	1368	1368

Coefficient estimates from OLS models. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.6: Heterogeneous Effects

	(1) College and above	(2) High Labor Vacancy
Pensions	0.229*	0.166*
	(0.04)	(0.04)
Elderly Care (stats)	0.215*	0.164*
	(0.04)	(0.04)
Elderly Care (exemplar)	0.243*	0.138*
	(0.04)	(0.04)
Healthcare	0.201*	0.154*
	(0.04)	(0.04)
Population Shrinking	0.167*	0.180*
	(0.04)	(0.04)
Labor Shortages (stats)	0.172*	0.188*
	(0.04)	(0.04)
Labor Shortages (exemplar)	0.126*	0.171*
	(0.04)	(0.04)
Comparative Facts	0.194*	0.131*
	(0.04)	(0.04)
College and above	0.084*	
	(0.04)	
High Labor Vacancy		0.048
		(0.06)
Interactions		
Inter. × Pensions	-0.040	-0.010
	(0.05)	(0.08)
Inter. × Elderly Care (stats)	-0.052	-0.036
	(0.05)	(0.08)
Inter. × Elderly Care (exemplar)	-0.067	-0.012
	(0.05)	(0.08)
Inter. × Healthcare	-0.047	-0.020
	(0.05)	(0.08)
Inter. × Population Shrinking	-0.040	-0.046
	(0.05)	(0.09)
Inter. × Labor Shortages (stats)	-0.010	-0.176*
	(0.05)	(0.09)
Inter. × Labor Shortages (exemplar)	-0.001	-0.149
	(0.05)	(0.09)
Inter. × Comparative Facts	-0.089	0.029
	(0.05)	(0.09)
Constant	0.251*	0.236*
	(0.03)	(0.03)
R-squared	0.018	0.015
No. obs	6000	3204

Coefficient estimates from OLS models. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Figure A.2: Aging: The Pensions Treatment

July 14, 2015

Debate in Japan over immigration controls grows louder

In a recent television program, senior government officials were asked about the issue of immigration: was it time for the country to open its doors to more migrants?

According to current trends, the future Japanese population will become much older on average (due to longer lives, fewer babies). Today there are three people of working age for each retiree, but by 2050, because of population's aging, there will only be one person of working age for each retiree. This means that there will be too few people to fund the pension system. This is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help address the aging of the population and the challenge of funding the pension system.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.3: Aging: Longterm Care Stats Treatment

July 14, 2015

Debate in Japan over immigration controls grows louder

In a recent television program, senior government officials were asked about the issue of immigration: was it time for the country to open its doors to more migrants?

According to current trends, the future Japanese population will become much older on average (due to longer lives, fewer babies). Today there are three people of working age for each retiree, but by 2050, because of population's aging, there will only be one person of working age for each retiree. This means that there will be too few people to provide long-term care for the elderly. This is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help address the aging of the population and the challenge of providing long-term care.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.4: Aging: The Longterm Care Exemplar Treatment

Debate in Japan over immigration controls grows louder

Several times a night, Koharu Ide (61) wakes up to help her 89-year-old mother use the toilet. To make sure she can assist immediately, Koharu sleeps right next to her. This is not a duty that many would enjoy. But Koharu tells me she feels obliged to do it, "because we owe it to our elderly, and I am concerned that there are not enough professionals to take care of them in this country". Worryingly, the lack of nurses and caregivers for our aging population is only getting worse.

According to current trends, in the coming years there will be too few people to provide long-term care for Japan's growing elderly population. This is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help address the aging of the population and the challenge of providing long-term care.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.5: Aging: Healthcare Spending Treatment

July 14, 2015

Debate in Japan over immigration controls grows louder

In a recent television program, senior government officials were asked about the issue of immigration: was it time for the country to open its doors to more migrants?

According to current trends, the future Japanese population will become much older on average (due to longer lives, fewer babies). Today there are three people of working age for each retiree, but by 2050, because of its population's aging, there will only be one person of working age for each retiree. This means that there will be too few people to fund the health care system. This is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help address the aging of the population and the challenge of funding the health care system.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.6: Population Shrinkage Treatment

Debate in Japan over immigration controls grows louder

In a recent television program, senior government officials were asked about the issue of immigration: was it time for the country to open its doors to more migrants?

According to current trends, the future Japanese population will become much smaller (due to fewer babies). Since its recent peak of 128 million, the country's population began to shrink. If nothing changes, there will be 30 million fewer Japanese by 2050. This is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help the country address the issue of population shrinkage.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.7: Labor Shortages Treatment

Debate in Japan over immigration controls grows louder

In a recent television program, senior government officials were asked about the issue of immigration: was it time for the country to open its doors to more migrants?

According to current trends, some professions in Japan will be in short supply, making it difficult for firms to find workers. Already today this is true for some jobs. For instance, half of the truck driver openings advertised cannot be filled, and this is true also for IT engineers. This is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help the country address labor shortages in different professions.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.8: Labor Shortages Exemplar Treatment

July 14, 2015

Debate in Japan over immigration controls grows louder

The exasperation on the face of Akio Nakamura, a manager at Taiho Transportation, was evident. "April should have been a great month for our business as the new orders kept on arriving". But instead of filling those orders, Taiho saw how 10% of their 400 truck fleet stood idle. "The problem is that we don't have enough drivers. However hard we try, we can't find enough new workers to recruit".

Labor shortages are not unique to drivers. "The shortage of IT engineers is so deep that we simply cannot put up with the demand and projects are continuously delayed", said Katashi Tanaka, the director of an IT consulting firm in Tokyo. "I see the frustration among potential customers and I feel helpless. We clearly need more engineers here".

The deepening shortage in labor supply is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country. One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would help the country address labor shortages in different professions.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.9: Comparative Stats Treatment

July 14, 2015

Debate in Japan over immigration controls grows louder

In a recent television program, senior government officials were asked about the issue of immigration: was it time for the country to open its doors to more migrants?

According to current trends, Japan will have far fewer immigrants than any of the other advanced economies. The average rate of immigration among advanced economies is currently 10%, yet in Japan immigrants represent only 1.6% of the total population. Given the similarity between the socio-economic challenges that Japan and other advanced countries face, this is potentially a major problem, and serves as a basis for calls to allow more foreigners into the country.

One recent proposal circulated among policy advisers calls for the number of foreign residents to be increased by 200,000 a year. Such an increase would put the share of foreigners in Japan much closer to that of other advanced economies.

"The question Japan faces is - do we continue to do nothing or do we admit more foreign workers to help deal with the situation?" says Ryusei Sasaki, a researcher from a policy think-tank. "We are at a crossroads."

Figure A.10: Control

Pluto: Slightly larger than previously believed – NASA observed

National Aeronautics and Space Administration (NASA) announced that Pluto is 2,370 km in diameter, slightly larger than previously believed. The announcement followed the observation of the unmanned spacecraft New Horizons, which is approaching Pluto.

In addition to refining Pluto's size, New Horizons also measured three of the dwarf planet's five known moons. Interestingly, Charon, the largest, has a diameter of 1208 km, i.e. about half that of Pluto.

New Horizons plans to closely observe the terrain and the atmosphere of Pluto later this month when it passes it. NASA's team is hoping that "the planet's surface, shrouded in mystery, will be finally be unveiled".

The scientists note that the size of Pluto was difficult to accurately estimate from the distant Earth, because of the materials in Pluto's atmosphere. The previous estimates of the planet were mostly smaller than the new measurement reveals.