

Countering Opposition to Immigration: The Impact of Information Campaigns

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Abstract

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 highlighting its potential benefits decrease public opposition to immigration? This paper reports results from a large-scale experiment conducted in Japan. Embedded in a comprehension study to a national pool of native citizens, we randomly exposed participants 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 intervention. The results suggest that campaigns that inform the public about key positive impacts of immigration can substantially help reduce enmity to incoming foreigners.

Keywords: Immigration, information campaigns, experiment, public opinion, Japan
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1 Introduction

Immigration has long been the most politically controversial aspect 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 grown in prevalence.¹ Indeed, many public opinion surveys reveal high levels of opposition to immigration. How can this type of antagonism be countered? Is opposition to immigration reflective of an instinctual sentiment toward foreigners, and as such is largely immutable, or does it reflect a more considered assessment of immigration's costs and benefits, in which case new information could potentially change people's stance?

Studies of attitudes on immigration often recognize the challenge of reducing public enmity toward immigrants, and indeed, some mention the need to educate the public or to cultivate tolerance. Yet, given how little we know about how these goals can be achieved, such proposals are of limited practical value. 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-immigration sentiments on a broad scale.

This study helps address this gap by carrying out a large-scale, systematic assessment of different approaches to countering exclusionary attitudes toward immigrants. Specifically, we build on a key insight from the literature, namely that opposition to immigration often stems from individuals' sociotropic concerns about its broader social and economic impacts,

¹For example, see the Home Office's report on UK statistics of anti-immigrant hate crimes "Hate Crime, England and Wales, 2015/16"; 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".

rather than from worries that reflect narrow self-interest (Citrin, Green, Muste et al., 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, a country with a relatively low share of immigrants, currently estimated at about 1.8 percent of the population (OECD, 2015). Yet 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 not been popular among the broad public and confronted strong political opposition.

The nature of public views on immigration — whether they predominantly reflect a gut sentiment or a more measured (albeit subjective) assessment of its overall impact — is an important question, as it has clear implications on whether informing people about potential benefits from immigration can influence their views on the matter. We study this question by exposing native citizens to information about various positive social and economic impacts of immigration. To avoid experimenter demand effects, the information was communicated indirectly, as part of an assessment exercise of school curricula in which subjects were asked to evaluate 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 eliciting some of the participants' views on immigration 10-12 days after the text-assessment study, we can examine the persistence of the effects of the informational treatments beyond the immediate term.

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 and in some cases also substantively large. For example, exposure to information about immigrants' potential role in addressing Japan's pensions crisis is associated with a 21 percentage point increase in support of allowing more immigrants into the country. 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 among the broad population, these effects represent an increase of between 43 and 72 percent, without doubt very sizable effects.

We observe comparable effects also with respect to support for increasing the number of visas for temporary workers. Furthermore, we find that exposure to some of the treatments also elicits a significant increase in subjects' willingness to mobilize politically and sign a pro-immigration petition. Interestingly, we find that a week and a half after exposure to the treatments, their effect decreases in magnitude, yet they remain consistently positive and in some cases also substantively large. This pattern is especially true with regard to the attitudinal questions, while the effect is less enduring in the context of mobilizing subjects to political action.

Exploring the mechanism underlying the effectiveness of the intervention, we ask whether the treatments bring about opinion change as a result of priming certain issues, 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 the more prominent. This finding has potentially significant policy implications, suggesting that the effect of similar interventions might be stronger in lower-information environments.

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, and highlights that sociotropic considerations about the broader impact of immigration on society appear to be the more prominent factor. Our analysis extends this insight by assessing whether exposing individuals to information that pertains to those sociotropic considerations can bring about *change* in their stance on this complex issue. The article's results provide clear evidence that such information treatments can have a considerable effect, one that can also extend beyond the immediate term. These findings help advance a new line of inquiry that explores how exclusionary attitudes toward foreigners can be alleviated in different contexts (Adida, Lo, and Platas, 2018; Bonilla and Mo, 2018).

The findings also add to the literature dealing with prejudice reduction. Scholarly progress on this topic has mostly focused on theoretical contributions. Empirically, the large bulk of studies on prejudice reduction have been observational, and those that were experimental were primarily based on lab studies and with children as the subjects (Paluck and Green, 2009). By conducting a randomized intervention with a large national population, we provide evidence regarding the role of information provision as a potentially effective tool for reducing intergroup hostility on a broad scale.² In doing so, the findings also speak to the wider challenge of immigrant integration (Adida, Laitin, and Valfort, 2010; Hainmueller, Hangartner, and Pietrantonio, 2017).

2 Public Opinion on Immigration and Attitude Change

In recent years, a large body of research has investigated the determinants of individual attitudes on immigration. Most of the existing work utilizes individual-level survey data to assess the main drivers of people's views on immigrants and on immigration policy. Yet

²While 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.

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 gap in our understanding, 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.

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 (Citrin, Green, Muste et al., 1997; Sides and Citrin, 2007). The second is instead rooted in economic considerations, focusing on how attitudes are shaped by individuals' concerns about the distributional effects of immigration (Dancygier and Donnelly, 2013; Malhotra, Margalit, and Mo, 2013; Facchini and Mayda, 2009).

Yet notably, studies of both economic and cultural drivers of immigration attitudes have focused on explaining differences at a given point of time (i.e., among a cross-section of people).³ In contrast, very little attention has been given to the question of whether and how attitudes on immigration *change*. The few exceptions are primarily 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). On the converse effect, two recent studies examine whether correcting biased beliefs about immigration, in particular about the share of immigrants in the country, alleviates exclusionary attitudes (Grigorieff, Roth, and Ubfal, 2016; Hopkins, Sides, and Citrin, 2016). Relatedly, Adida, Lo and Platas (2018) find that informing individuals about the meager number of Syrian refugees accepted into the U.S has only a modest effect on Americans' position on refugee admittance.

Another relevant body of work is the literature on prejudice reduction. Research on this topic includes various interventions aimed at easing negative attitudes, discrimination and

³This is true also with respect to the burgeoning literature on immigration attitudes in Japan, the country of focus in this study (Green, 2017; Nagayoshi, 2011; Tanabe, 2013).

even violence toward a specific outgroup and its members. Yet as recent reviews of the literature indicate, practical insights into the effectiveness of these remedial strategies are limited (Paluck and Green, 2009; Paluck, 2016). As these reviews note, this lack of practical insights is largely the result of several problematic features that characterize much of the extant research. One such feature is the limited use of experimental designs that include a credible control group. Yet even where proper experimental designs were used, most of the interventions carried out were done in lab settings and with children as subjects. Furthermore, the experimental interventions rely on close and enduring interaction of individuals or groups, rendering them difficult and costly to scale up to large populations (Batson and Ahmad, 2009; Johnson and Johnson, 1989).

The experimental design we analyze in this paper takes account of these different issues — research design and inference, scalability and degree of applicability to broader populations — and seeks to make headway in each of these fronts.

3 Theoretical Expectations

Views on some social issues, — e.g., abortion, capital punishment — tend to reflect moral convictions or ‘affective extremity’ (Prislin, 1996) and as such tend to be less movable over time.⁴ Yet views on other issues reflect something more akin to a cost-benefit assessment, and as such are more open to change when new information arises that alters the relative weights of the pros and cons. Immigration is an issue that for some represents the former kind, i.e., an issue that produces visceral reactions that often reflect strong ethnocentric dispositions (Pérez, 2010; Sniderman and Hagendoorn, 2007). Yet we conjecture that this may not be the case among significant segments of the population. Rather, our contention is that views on immigration, even among those who strongly oppose it, are often driven by

⁴The emphasis here is on attitude change within subjects; attitudes across cohorts can of course change (Cook, Jelen, and Wilcox, 1992; Jelen and Wilcox, 2003).

a more considered belief that immigration poses an overall burden on society that exceeds the gains that it provides. In such cases, a change in people's attitude on immigration would seem possible if individuals were to receive new information causing them to revise their cost-benefit calculation.

We therefore posit that exposing people to information about the benefits of immigration can bring about a non-trivial degree of attitude change. This expectation builds on two consistent empirical findings. First, much of the evidence pertaining to the role of economic considerations indicates that 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 et al., 1997; Hainmueller and Hopkins, 2014). In contrast, empirical studies provide only limited support for explanations centered on self-interest (Hainmueller, Hiscox, and Margalit, 2015). The second finding is that higher levels of education are consistently associated with more positive views of immigration. There is ongoing debate on the factors underlying this “education effect,” with one possibility being that the education gap reflects a difference in the level of information that people possess about immigration. Indeed, 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).

We hypothesize that the two findings are partly related. Our conjecture is that the more educated tend also to be better informed about the sociotropic benefits of immigration, leading them to hold relatively less restrictive views. Whereas the potential costs of immigration to the native society are more apparent and intuitive — e.g., competition for scarce resources with natives, a growing presence of foreign-looking people — the potential benefits are sometimes quite complex and difficult to grasp. For example, the potential role that immigration can play in increasing the sustainability of pay-as-you-go pensions system, or in dealing with the implications of an aging society, are examples of sociotropic benefits that require

a fair degree of engagement in the subject, something that not all people are willing to, or can, expend. Our expectation is therefore that providing individuals with information about such type of sociotropic benefits could lead to attitude change even among some immigration skeptics.

In theorizing about the conditions in which the effect of an informational treatment is likely to be stronger, it is worth differentiating among three types of information treatments. The first makes preexisting knowledge more accessible, thereby increasing the weight the individual exposed to the treatment assigns to a particular consideration. The second makes preexisting knowledge more applicable, for example by linking considerations from two different domains. And yet a third type provides information that is entirely new, one that people were not aware of prior to exposure. Earlier research indicates that the effect of treatments that make considerations more accessible tend to have a fleeting effect, whereas the latter two types of treatments tend to have a more enduring impact (Baden and Lecheler, 2012; Coppock, 2016).

Building on this evidence, we expect the effect of treatments highlighting the positive impacts of immigration to be stronger among natives who are less informed on the topic and for whom the information is more likely to be new. Conversely, we expect the effect of an informational intervention to be weaker among the highly educated, who (presumably) are more exposed to the public discussion on economic and political matters. Furthermore, individuals employed in sectors in which foreign labor is a more salient issue are likely to find the content of the treatments less novel and are therefore less likely to be affected by it.

4 Economic and Demographic Context

Our study was carried out in Japan. The country'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, and is projected to drop below 100 million by 2050. By that year, the share of over 65 is expected to reach 38.8%, up from 26.7% in 2015.⁵ 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.

The implications of this change are substantial. Japan's aging population is becoming an increasingly heavy burden on the country's public finances. In 2013, expenditures on social security for the elderly (the sum of all pensions, medical and welfare related expenditures) represented 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.⁶

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.⁷

Despite the worrying trends of societal aging, population shrinkage and worsening labor shortages, Japan has not actively turned to immigration as a possible solution. As of December 2015, only 2.2 million foreign nationals⁸ were living in the country, representing 1.8%

⁵The population statistics are from the Ministry of Internal Affairs and Communications. See appendix for full details.

⁶49.0% 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.

⁷Data 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.

⁸Migrants in Japanese official statistics are defined on the base of nationality rather than country of birth. Mainland Chinese are currently the largest group of migrants living in Japan, at approximately 670,000, followed by Koreans at 490,000 (data from "Statistics on Foreign National Residents" published by

of the total population, lower than the share of migrants in most other OECD economies.

In terms of public opinion on immigration, the evidence on Japan is somewhat mixed. An examination of recent cross-national survey data indicates that in comparison to other OECD countries, the Japanese public holds a relatively benign view of the economic effects of immigration, yet is more suspicious about its potential cultural implications (see appendix Table A.3).

5 Experiment and Empirical Approach

The experiment we administered in Japan was embedded in a study carried out between October and December 2015. Subjects took 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 reading comprehension study: participants were randomly assigned to a treatment that provided information on a certain economic effect of immigration; the control group was exposed to a treatment of similar length about recent discoveries regarding the planet Pluto; 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).

5.1 Data collection and Experiment Design

The experiment was carried out by Cross Marketing Inc., a leading marketing research company. 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.

The sample used in our study consisted of 10,000 individuals, who have been surveyed

the Ministry of Justice).

in three rounds.⁹ The first round took place in October 2015 and was used to pilot all the treatments on 1,000 respondents. Based on the feedback received, we adjusted some of the texts. The second round of study was carried out 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 set 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). Cross Marketing Inc. did not provide direct monetary payments to participants, who instead were incentivized through the allocation of “points”, which 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 respondents carefully read the informational treatments, they were informed 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 in Japanese for reading comprehension at the high school entry level.¹⁰ The writing samples took the form of

⁹The sample size was large in order to provide sufficient power for a design that included seven different sub-treatments spread over several waves. We also conducted post-hoc calculation of achieved power for two alternative values of the effect ($d=0.2$ and $d=0.5$ i.e. small and medium in the literature). The tests show that in all cases, the achieved power was above 95%.

¹⁰The original text was drafted in English and translated into Japanese by a native speaker. The text was also reverse-translated to test for accuracy. The Japanese version can be made available to interested readers.

two newspaper articles of approximately 200 words each.¹¹ The experimental design 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 instead the life experiences of a Japanese artist (see Figure A.17).

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 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 structure of the experiment.

5.2 Treatments and Key Outcomes

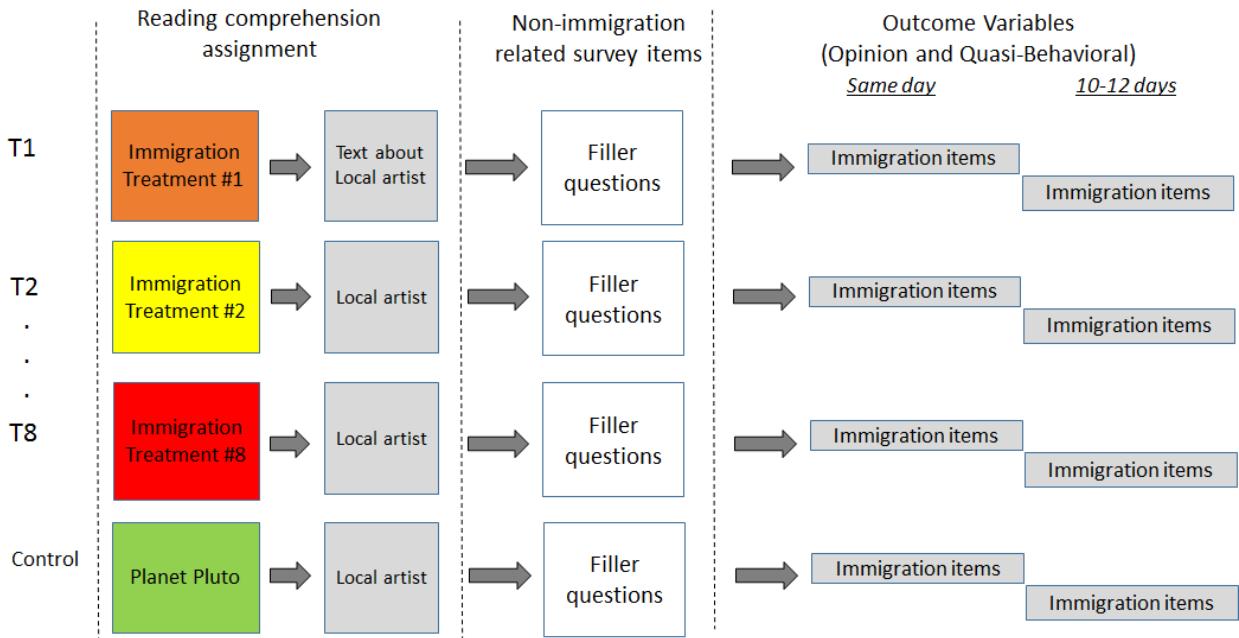
The goal of the treatments was to provide individuals with information regarding a specific potential positive impact of immigration on Japan's economy and society. Great effort was made to ensure that the message conveyed in the text was simple and understandable to a non-specialized audience.¹²

The benefits we presented to the participants were related to issues that are potentially meaningful in the Japanese context. Because this is a first attempt at administering this

¹¹To increase the attention paid to each text, the online system required participants to spend at least 30 seconds on each of the texts before being able to proceed to the next screen.

¹²See 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 with a 10-12 day delay.

type of experiment, we had no clear priors about which specific benefits of immigration are likely to resonate most. We therefore experimented with a range of different information treatments, guided by consultation with local experts.

We organized the treatments in four groups. The first group was exposed to the *demographic* treatment, which sought to highlight 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 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 *population aging* and its consequences.¹³ 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 aging on the growing need for long term care providers. The third sub-treatment focused instead on the challenges brought about by aging 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 exact wording of the informational treatments.

The information provided in the treatments was new to many 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: 46% of the participants did not know about the country's labor shortage problems and 29% were unaware of the fact that Japan's population has been aging over the past two decades. Moreover, even among those who answered the factual questions correctly, it is unclear whether many of them have thought of immigration as a potential antidote to such problems.

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 an additional set of treatments that focused on the same substantive issue as described earlier, but rather than providing the information as a summary of statistical

¹³Note, this issue is related, yet differs, from the one highlighted in the demographic treatment. Whereas the latter speaks to the fact that the population is declining, the aging treatment focuses on the implications of the fact that among the living population, the share of elderly is very high.

data, the treatments conveyed it instead 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 a middle aged woman who had to take care full time of her aging mother. In sum, the experimental manipulations varied along three dimensions: (1) the content of the treatment; (2) how the information was conveyed (statistic vs exemplar); and (3) the length of time for which the effect was examined.

To assess the impact of the treatments on respondents’ views, our study included a number of survey items aimed at gauging different, albeit related aspects of immigration. Those items were preceded with the note emphasizing that there was “no right or wrong answer”. The first was the standard question used to elicit general preferences on immigration policy, asking respondents whether “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 was similar, but focused specifically on the number of temporary immigrants. 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, expressing either their support or opposition for increasing the number of immigrants allowed to enter the country. Finally, as a placebo test, we also elicited participants’ views on Japan’s commitment to reduce global warming.¹⁴

The first 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, and zero otherwise. The variables *More Temp Visas* and *Sign Pro Petition* are also binary measures and coded in a similar way,

¹⁴See appendix for full text of all the survey questions described above.

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 samples, and some basic socio-demographic characteristics. Both the short- and the “longer-run” samples are representative with respect to age, gender and employment status, though the survey participants were somewhat more educated than the Japanese population. Each information treatment (and control) was received by 11% of the sample in the first wave. As for our dependent variables, on average 45% of the respondents supported increasing immigration, whereas 46% supported increasing temporary migration.¹⁵ Participants in the study were far less willing to actively engage in the political process by signing a pro-immigration petition – only 17% were interested in doing so. Finally, respondents appear to be fairly committed to tackling global warming, with 74% supporting taking action to reduce emissions.

Due to budget constraints, in the longer run sample only the four age-related treatments were studied. The share of individuals in favor of increasing immigration and temporary visas in Wave II were respectively 30% and 35%. 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 longer-run effects of the treatments.

6 Results

We begin by presenting the results of our baseline specifications, 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. The dependent variables in these

¹⁵Note that this includes respondents exposed to the treatments.

Table 1: Summary statistics

	Mean	St. Dev.	Min	Max	Population
<i>Short Run Sample</i>					
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	
Average Age	48.3				47
Share of Over 65	0.20				0.26
Percent Females	0.51				0.51
Unemployment Rate	0.03				0.03
Percent Primary Educated	0.02				0.00
Percent Secondary Educated	0.31				0.49
Percent Tertiary Educated	0.67				0.51
Observations	6000				
<i>“Longer Run” Sample</i>					
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	
Average Age	48.8				48
Share of Over 65	0.21				0.26
Percent Females	0.51				0.51
Unemployment Rate	0.03				0.03
Percent Primary Educated	0.03				0.00
Percent Secondary Educated	0.33				0.49
Percent Tertiary Educated	0.64				0.51
Observations	3000				
Source of Population Statistics: Median Age, Share of Over 65, Percent Females, Unemployment Rate: CIA World Factbook; Percent Primary, Secondary and Tertiary Educated: OECD Educational Attainment in the Adult Population (25-64).					

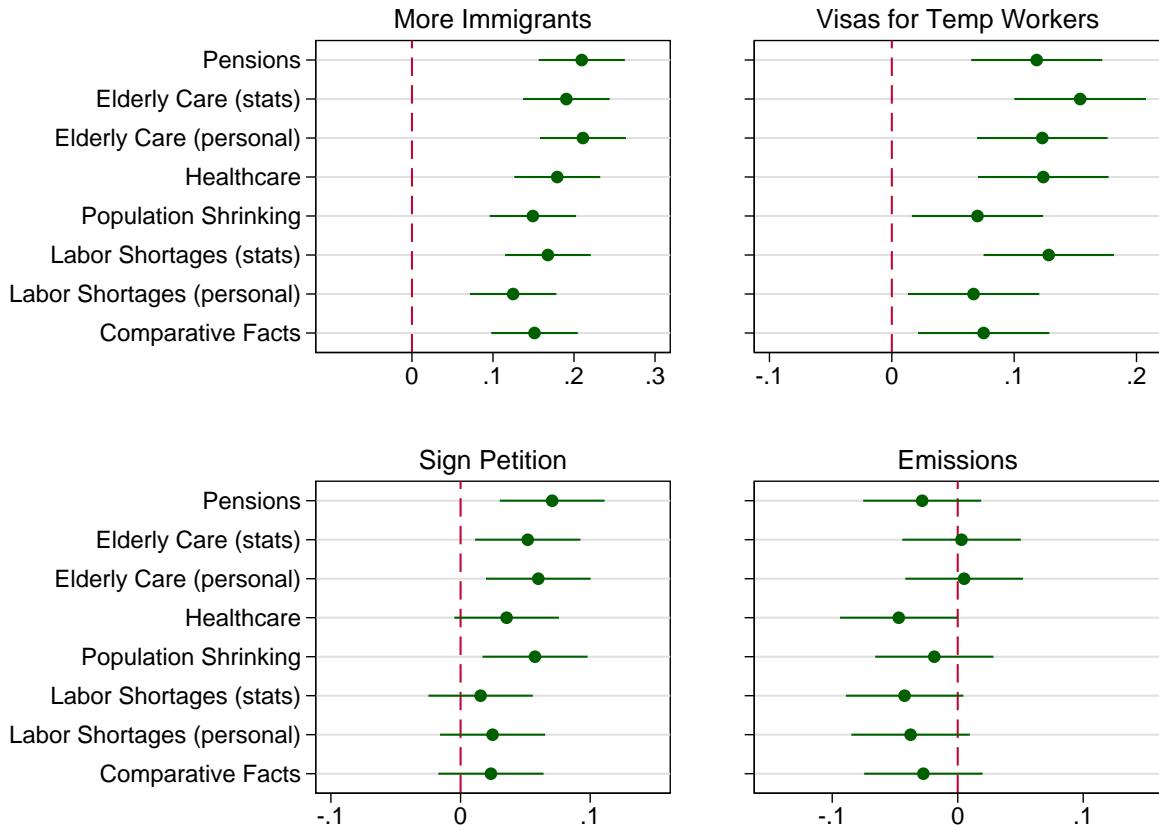
estimations are dichotomous. Figure 2 presents our main results graphically (see appendix Table A.5 for the full regression results, including estimates of the baseline effects). Note that examining a shift in attitudes in a binary indicator is a more demanding measure of the effectiveness of the treatments, and thus our results are unaffected (and in some cases, stronger) if we use instead the continuous measure (see Table A.6).¹⁶ Given the successful randomization across treatment groups (Table A.4), all the results we report below are unaffected by the inclusion of individual level controls (such as age, gender, education).

The upper left hand panel of Figure 2 presents the effect of the information treatment on generic *More Immigrants* attitudes. The baseline rate among the non-treated sample was only 29% of the population supporting an increase in levels of immigration, a finding that is consistent with other survey evidence (see Table A.3). Yet providing information on some of the economic benefits of immigration has a large, positive and significant effect on opinions, a finding that holds for all treatments. The effect ranges between 12.5 and 21 percentage points, indicating that an individual exposed to the information treatments was between 1.43 and 1.72 times more likely to support immigration than an individual in the broader population. 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 benefits of immigration in addressing labor market shortages.

In the upper right panel we examine the effects of information on attitudes towards increasing the number of temporary migrants. The general attitude is more favorable toward temporary migration than towards overall migration, with 37% of the population supporting its expansion, compared to only 29% in favor of an increase in 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 percentage points

¹⁶For ease of interpretation, we present estimates of linear probability models, but probit specifications produce similar findings (see Table A.7).

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.

or, in terms of our baseline, increasing pro immigration attitudes by between 18 and 42 percent.

Interestingly, some new patterns emerge. 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 how migration can reduce labor market shortages. This may be explained by the fact that temporary workers are highly relevant for jobs in 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.

The bottom left panel illustrates the effectiveness of information on the individual willingness to sign a petition to increase the number of immigrants coming to Japan. Since respondents were told that joining the petition required providing personal details, it is not surprising that this costlier 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. Still, 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 (13%), information exposure increased the likelihood of signing the pro-immigration petition by between 39 and 53 percent.

Finally, in the bottom right panel we observe the results of a placebo treatment, in which we assess the effects of the information regarding the benefits of immigration on whether or not the individual thinks that Japan should reduce greenhouse emissions.

Taken together, Figure 2 highlights that the information treatments exert a positive and significant effect on all three immigration outcomes, but not with regard to environmental policy. It also points out that the information treatments exert a larger effect on attitudinal questions than on the behavioral outcome.

Given the sizable number of treatments we administered and the fact that the analysis examined their effect on several outcomes, we re-ran all estimations using two techniques to adjust the p-values for multiple hypothesis testing (List, Shaikh, and Xu, 2016). The results, reported in Table A.8, reveal that on the general immigration question, all the initial results are robust to this adjustment and remain significant at the one percent level. On the temporary visa outcome, two treatments – “population shrinking” and “labor shortages” – drop

just below conventional level of statistical significance. The same is true with the estimate of the effect of the elderly care treatment on the petition outcome. Perhaps more notably, two treatment effects that were marginally significant in the original specification (elderly care personal and healthcare) lose statistical significance when the p-value adjustment is applied. Taken together, the p-value adjustment to multiple hypothesis testing changes little in terms of substantive conclusions, but helps underline the finding that most treatments had a limited impact on participants' willingness to sign the petition.

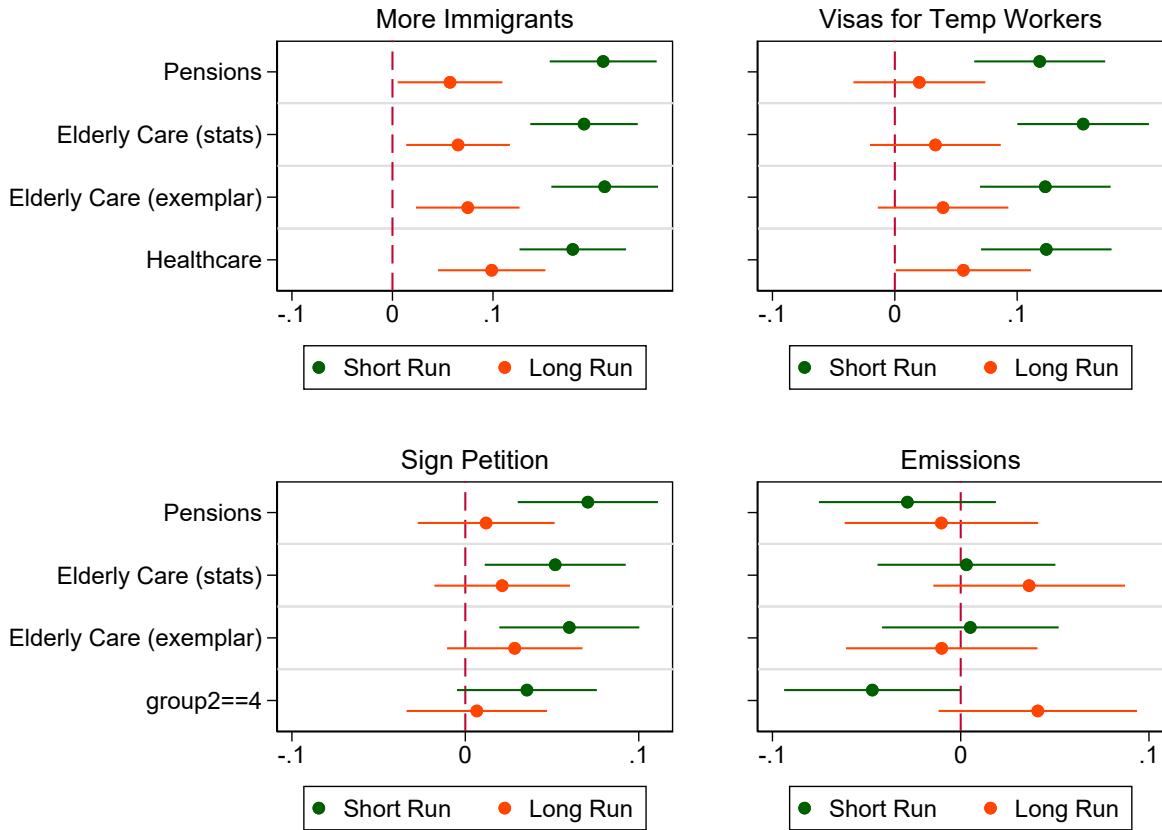
6.1 Do the Effects Persist?

One key question arising from these findings is the extent to which the interventions are effective beyond the very short run. As discussed before, prior research finds that treatments providing entirely new information or making preexisting knowledge more applicable tend to have the most lasting effect. In contrast, informational treatment that “just” make preexisting knowledge more accessible have a more fleeting effect (Baden and Lecheler, 2012; Coppock, 2016).

Although Japan’s aging problem is fairly well known issue, it is likely that some of the specific implications — on sustainability of the pension system, healthcare costs, need for longterm caregivers — are less well understood by the general public. Furthermore, the idea that immigration could be a relevant factor in addressing these problems is even less obvious. Indeed, in section 5.2 we reported findings revealing a notable lack of knowledge on matters discussed in the treatment. We therefore expect that the treatments will not simply provide increased accessibility to information; for some, they may represent new information altogether.

As noted, to assess whether the impact of information persists over a longer stretch of time, a randomly chosen subgroup of 3,000 individuals was asked the preference questions

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.

only ten to twelve days after having been exposed to the treatments.¹⁷ The time period between intervention and re-contact is surely not long enough to be considered a measure of the treatment’s “long run” effect. However, it nonetheless provides some sense of the decay over time.¹⁸ Moreover, as suggested by Coppock’s analysis of 60 dependent variables in 18 survey experiments, the decay rate of survey experimental effects appears to follow a hockey-stick like pattern: it tends to be highly significant in the first 10 days or so, but after that it tends to plateau, leaving treatment effects more or less steady in subsequent

¹⁷To be able to reach the requested sample of 3,000 interviews, the Japanese survey firm included a larger sample in the initial wave and then collected second wave interviews until it reached the required quota.

¹⁸We therefore use the term ‘longer run’, to separate it from both the immediate term and the long run.

measurements (Coppock, 2016).

The results concerning general attitudes (i.e. the *More Immigrants* variable) are reported in the left panel of Figure 3, where we compare short and longer run 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%.¹⁹ Even so, it continues to be sizable ten to twelve 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 observed also with respect to support for expanding 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 statistical significance. In sum, the treatment effects appear to persist with respect to changing people’s policy positions, but diminish quite rapidly in terms of their impact on mobilizing citizens to political action.

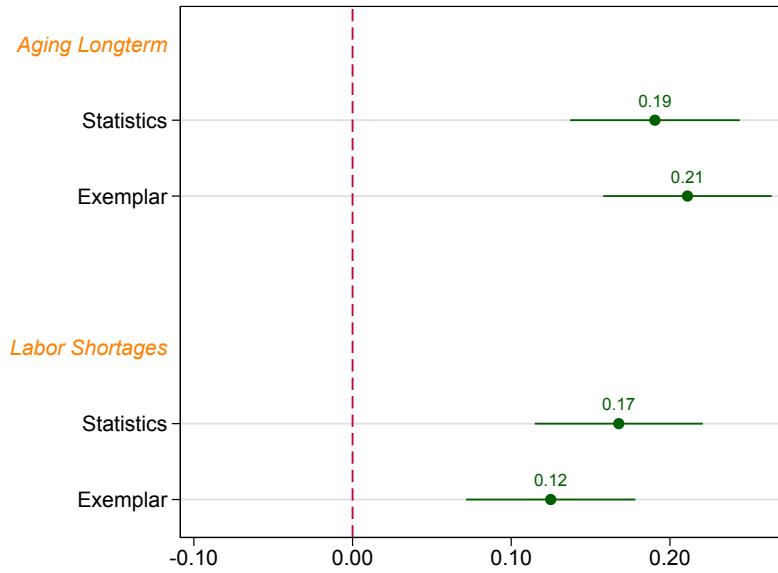
6.2 Does the Mode of Communicating Information Matter?

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

¹⁹In Coppock’s analysis described earlier, the mean decay rate after 10 days was 56%, placing the findings from our experiment in the “moderate” decay rate category.

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.²⁰

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 the figure makes clear, the mode of information transmission did not exert a clear or systematic effect. In fact, the overall impact of the treatments was not statistically different when the information was communicated through an exemplar or a nondescript factual account. 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

²⁰As 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).

change.

6.3 Mechanism and Effect Heterogeneity

The results reported so far indicate that exposing individuals to information about the positive impact that immigration could have on addressing various social and economic challenges significantly reduces opposition to immigration. In this section we explore two potential mechanisms behind this finding. Specifically, we examine whether the treatments alter individuals' attitudes primarily by making preexisting information more accessible, or by providing information that creates new knowledge. The findings reported in section 6.1 indicate that the effects tend to persist over time, a result that is more compatible with the idea that new knowledge is 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.

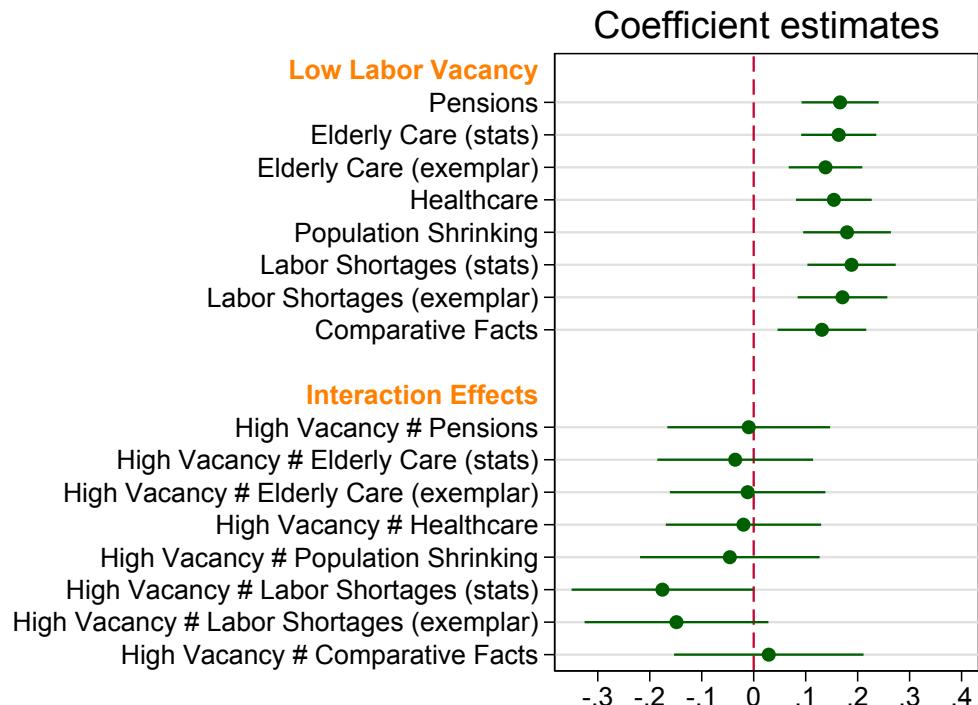
We begin by comparing the effects of the different treatments on individuals employed in sectors with severe labor shortages (henceforth “high vacancy” sectors) and others who work in sectors with few shortages (“low vacancy” sectors).²¹ The assumption is that respondents in the high vacancy group are more aware of the labor shortage issue, and the potential impact that immigration could have on alleviating this problem. If the information treatments shift attitudes primarily by providing new information, we should observe the treatments dealing with labor shortage to have a stronger impact on the attitudes of workers in low vacancy sectors — i.e. individuals less informed about the problem — as compared to workers in 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 workers in the high-vacancy

²¹Individuals were asked to identify their sector of employment from a list of approximately twenty possible alternatives. See Appendix for more details.

sectors. Importantly, in both cases we should not expect to observe a differential response to the other information treatments that do not deal with labor shortages among both 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.²² 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.11 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 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

²²See footnote 7 for the source of this information.

and highly significant. The bottom panel 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. Clearly, this evidence is more consistent with the notion that information treatments bring about a larger attitudinal shift when providing new information, rather than by making pre-existing information more accessible.

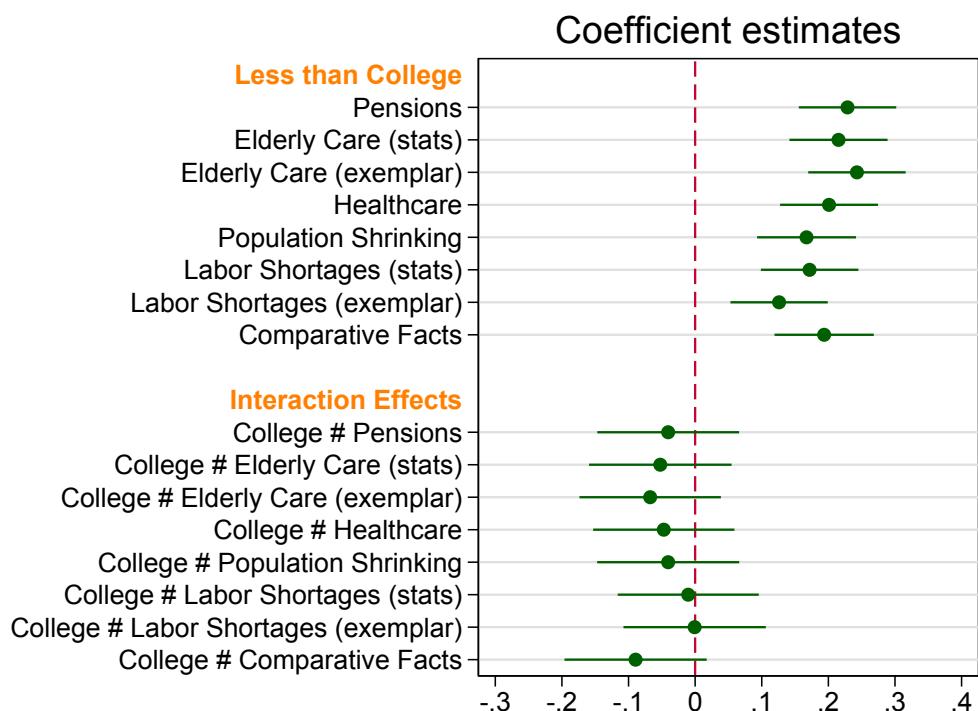
A second, somewhat less direct test compares the effects of the information treatments across groups with different levels of education, which is conventionally used a proxy for the level of preexisting knowledge. Indeed, using a range of six factual questions that we asked the control group at the end of the survey, we confirm that the more educated possess somewhat greater knowledge about factual issues relating to immigration and the economy.²³ We estimated a specification in which we interact the treatment indicators with a dummy capturing whether the respondent had completed tertiary education.²⁴ The results are reported in Figure 6.

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.11 in the Appendix). The bottom panel reports the parameter estimates for the interaction effects, which capture the differential effect of the treatments across education

²³See the Appendix for the wording of the questions, and Figure A.7 for the results.

²⁴In Japan this is typically defined as having completed at least junior college.

Figure 6: Treatment Effect by Education Level



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

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.

7 Discussion

We began the study by asking whether attitudes on immigration predominantly reflect visceral, instinctive convictions, or whether they are borne out of a more considered assessment of the pros and cons. Our results regarding the sizable impact of exposure to information about the benefits of immigration indicate that the attitudes of a significant share of the population in Japan are more reflective of the latter type. This finding is important, as it suggests that information campaigns may be a useful tool for dealing with widespread exclusionary attitudes toward immigrants.

The results also provide support to the conjecture that many people have little exposure to the potential benefits of a more open immigration policy. 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 immigration's potential benefits is not receiving substantial airing in the public discussion. Our analysis indicates that providing people with even fairly rudimentary information about these potential benefits, particularly if this information is new, can lead to substantial shifts in views.

Japan is a major advanced economy with over 100 million residents, and as such represents an important case for testing the effect of information campaigns on public attitudes toward immigrants and immigration. As noted, compared to publics in other OECD countries,

the Japanese hold relatively benign views of immigration’s economic aspects, but are more apprehensive about its potential cultural implications. It is therefore an open question whether similar interventions are likely to have a larger or smaller impact in other contexts. This is ultimately an empirical question which we hope similar research carried out in other countries would help clarify.

Our findings also speak to the body of research on prejudice reduction. As noted, the findings in this literature to date offer limited practical guidance about ways in which prejudice can be decreased on a broad scale. This study makes headway by providing evidence from an experiment administered to a sizable national sample of adults, using an intervention that is relatively easy to scale up to large populations. The impact of the intervention on increasing support for openness toward immigration most likely reflects also some degree of change in attitudes toward the immigrants themselves. One can therefore imagine how a government interested in creating a public environment that is more amenable to immigrants can adapt this approach and fund campaigns in the media disseminating the type of information used in this experiment.

In terms of the policy implications, the results we presented indicate that some treatments are significantly more effective than others, and that some have a longer-lasting impact. Moreover, we find 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 more theorizing and further experimentation. As the results of this study indicate, this is an endeavour worth pursuing.

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Online Appendix - Supplemental Information

Table A.1: Mean comparison, long and short run sample

	Short Run	Long Run	Difference	t-statistics	p values
Age	48.3	48.8	-0.46	-1.26	0.21
Over 65	0.20	0.21	-0.0080	-0.89	0.37
Female	0.51	0.51	-0.0048	-0.43	0.67
Unemployed	0.032	0.034	-0.0026	-0.57	0.57
Primary Educated	0.020	0.027	-0.0071	-2.14	0.032*
Secondary Educated	0.31	0.33	-0.026	-2.52	0.012*
Tertiary Educated	0.67	0.64	0.034	3.15	0.0017**

N=9,000 observations. Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$

Table A.2: Outcome comparison, control group in the long and short run samples

	Short Run	Long Run	Difference	t-statistics	p values
More Immigrants	0.29	0.25	0.045	1.79	0.074
More Temp Visas	0.37	0.32	0.048	1.77	0.076
Sign Pro Petition	0.13	0.13	0.0053	0.28	0.78
Emissions	0.77	0.70	0.067	2.67	0.0076**

N=1253 observations. Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$

Table A.3: Opinion toward economic and cultural implications of immigration (ISSP, 2013)

	Good for Econ	Steal Jobs	Improve Society	Undermine Culture
Belgium	0.21	0.43	0.33	0.45
Taiwan	0.42	0.53	0.51	0.19
Croatia	0.15	0.52	0.24	0.21
Czech Republic	0.17	0.7	0.22	0.38
Denmark	0.37	0.26	0.6	0.34
Finland	0.28	0.3	0.44	0.22
France	0.27	0.35	0.33	0.42
Germany	0.51	0.24	0.64	0.31
Hungary	0.19	0.53	0.34	0.3
Iceland	0.53	0.15	0.74	0.07
Ireland	0.47	0.42	0.66	0.23
Israel	0.28	0.54	0.26	0.39
Japan	0.42	0.17	0.28	0.19
South Korea	0.51	0.26	0.29	0.17
Mexico	0.27	0.34	0.31	0.33
Norway	0.51	0.12	0.48	0.27
Portugal	0.57	0.56	0.6	0.2
Slovak Republic	0.16	0.62	0.24	0.32
Slovenia	0.38	0.42	0.38	0.32
Spain	0.44	0.46	0.5	0.25
Sweden	0.46	0.14	0.59	0.28
Switzerland	0.58	0.28	0.71	0.22
Turkey	0.23	0.65	0.22	0.51
UK	0.32	0.5	0.4	0.42
USA	0.55	0.37	0.66	0.2
Japan's Ranking	15/26	23/26	6/26	23/26

Note: This table summarizes the responses of respondents as recorded in the ISSP 2013 survey. The bottom row lists the relative ranking of Japan among the 26 OECD countries that were included in the survey, whereby the top ranking (i.e. 26/26) implies the most favorable view of immigration. The survey items read as follows and required respondents to describe their agreements-disagreement on a five point scale: *Good for Econ*: “Immigrants are generally good for [COUNTRY’s] economy”; *Steal Jobs*: “Immigrants take jobs away from people who were born in [COUNTRY]”; *Improve Society*: “Immigrants improve [COUNTRY’S NATIONALITY] society by bringing new ideas and cultures”; *Undermine Culture*: “[COUNTRY’s] culture is generally undermined by immigrants.”

Table A.4: Balance Tests

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

Standard errors in parentheses. In all columns N=10,000. * $p < 0.05$.

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

Table A.5: Treatment Effects on Binary Outcomes

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

N=6,000 observations. Standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$

Table A.6: Treatment Effects on a Continuous Measure

	More Immigrants	Temp Visas	Petition	Placebo
Pensions	0.350** (0.06)	0.208** (0.06)	0.071** (0.02)	-0.054 (0.08)
Longterm care (stats)	0.346** (0.06)	0.250** (0.06)	0.052* (0.02)	0.041 (0.08)
Longterm care (personal)	0.385** (0.06)	0.223** (0.06)	0.060** (0.02)	0.060 (0.08)
Healthcare	0.333** (0.06)	0.178** (0.06)	0.036 (0.02)	-0.149 (0.08)
Population Shrinking	0.287** (0.06)	0.134* (0.06)	0.057** (0.02)	-0.039 (0.08)
Labor Shortages (stats)	0.306** (0.06)	0.197** (0.06)	0.015 (0.02)	-0.090 (0.08)
Labor shortages (personal)	0.216** (0.06)	0.124* (0.06)	0.025 (0.02)	-0.110 (0.08)
Comparative Facts	0.318** (0.06)	0.119* (0.06)	0.023 (0.02)	-0.072 (0.08)
Constant	2.003** (0.04)	2.148** (0.04)	0.133** (0.01)	3.096** (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.7: Treatment Effects on Binary Outcomes: Probit Models

	(1) More Immigrants	(2) Temp Visas	(3) Petition	(4) Placebo
Pensions	0.552* (0.07)	0.304* (0.07)	0.284* (0.08)	-0.089 (0.07)
Elderly Care (stats)	0.504* (0.07)	0.393* (0.07)	0.216* (0.08)	0.010 (0.08)
Elderly Care (exemplar)	0.556* (0.07)	0.315* (0.07)	0.246* (0.08)	0.017 (0.08)
Healthcare	0.476* (0.07)	0.317* (0.07)	0.153 (0.08)	-0.146 (0.07)
Population shrinking	0.400* (0.07)	0.181* (0.07)	0.236* (0.08)	-0.059 (0.08)
Labor Shortages (stats)	0.447* (0.07)	0.328* (0.07)	0.069 (0.09)	-0.132 (0.07)
Labor Shortages (exemplar)	0.338* (0.07)	0.173* (0.07)	0.109 (0.09)	-0.117 (0.07)
Comparative Facts	0.405* (0.07)	0.194* (0.07)	0.103 (0.09)	-0.086 (0.08)
Constant	-0.550* (0.05)	-0.343* (0.05)	-1.114* (0.06)	0.723* (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.8: Treatment Effects, Adjusting P-Values for Multiple Hypothesis Testing

	(1) More Immigrants	(2) Temp Visas	(3) Petition	(4) Placebo
Pensions	0.210 (0.0003)***	0.118 (0.0003)***	0.071 (0.001)***	-0.028 (0.233)
<i>Baseline</i>				
<i>Holm (1979)</i>	(0.007)***	(0.010)***	(0.019)**	(1)
<i>List et al. (2016)</i>	(0.0003)***	(0.0003)***	(0.0113)**	(0.7787)
Elderly Care (stats)	0.191 (0.0003)***	0.154 (0.0003)***	0.052 (0.01)**	0.003 (0.8903)
<i>Baseline</i>				
<i>Holm</i>	(0.008)***	(0.0067)***	(0.14)	(0.8903)
<i>List</i>	(0.0003)***	(0.0003)***	(0.107)	(0.8903)
Elderly Care (personal)	0.211 (0.0003)***	0.123 (0.0003)***	0.060 (0.0663)*	0.005 (0.822)
<i>Baseline</i>				
<i>Holm</i>	(0.0077)***	(0.0103)**	(0.7297)	(1)
<i>List</i>	(0.0003)***	(0.0003)***	(0.4427)	(0.967)
Healthcare	0.179 (0.0003)***	0.124 (0.0003)***	0.036 (0.0663)*	-0.047 (0.0513)*
<i>Baseline</i>				
<i>Holm</i>	(0.007)***	(0.010)**	(0.7297)	(0.616)
<i>List</i>	(0.0003)***	(0.0003)***	(0.4427)	(0.3807)
Population Shrinking	0.149 (0.0003)***	0.070 (0.009)***	0.057** (0.0023)***	-0.019 (0.4117)
<i>Baseline</i>				
<i>Holm</i>	(0.0083)***	(0.135)	(0.0397)**	(1)
<i>List</i>	(0.0003)***	(0.105)	(0.03)**	(0.7493)
Labor Shortages (stats)	0.168 (0.0003)***	0.128 (0.0003)***	0.015 (0.4083)	-0.042 (0.0736)*
<i>Baseline</i>				
<i>Holm</i>	(0.0087)***	(0.009)***	(1)	(0.7366)
<i>List</i>	(0.0003)***	(0.0003)***	(0.8503)	(0.4473)
Labor Shortages (personal)	0.125 (0.0003)***	0.067 (0.0127)**	0.025 (0.1903)	-0.038 (0.11)
<i>Baseline</i>				
<i>Holm</i>	(0.0093)***	(0.1647)	(1)	(0.99)
<i>List</i>	(0.0003)***	(0.1233)	(0.741)	(0.558)
Comparative Facts	0.151 (0.0003)***	0.075 (0.0047)***	0.023 (0.24)	-0.027 (0.2463)
<i>Baseline</i>				
<i>Holm</i>	(0.0107)**	(0.0747)*	(1)	(1)
<i>List</i>	(0.0003)***	(0.058)*	(0.7487)	(0.6937)

N=6,000 observations. *P-values* in parentheses; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A.9: Short vs Long Run Effects

	Short Run				Long Run			
	More Immig.	Temp. Workers	Petition	Emissions	More Immig.	Temp. Workers	Petition	Emissions
Pensions	0.210*	0.118*	0.071*	-0.028	0.057*	0.020	0.012	-0.010
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
Elderly Care (stats)	0.191*	0.154*	0.052*	0.003	0.065*	0.033	0.021	0.036
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
Elderly Care (exemplar)	0.211*	0.123*	0.060*	0.005	0.075*	0.039	0.028	-0.010
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
Healthcare	0.179*	0.124*	0.036	-0.047*	0.099*	0.056*	0.007	0.041
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)	(0.02)	(0.03)
Constant	0.291*	0.366*	0.133*	0.765*	0.246*	0.318*	0.127*	0.698*
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)
R-squared	0.015	0.008	0.004	0.002	0.005	0.002	0.001	0.002
No. obs	6000	6000	6000	6000	3000	3000	3000	3000

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

Sector of employment

Employed individuals were asked to report their (high shortage) sector of employment (H), i.e.:

1. Agriculture and forestry
2. Fishery
3. Mining and quarrying of stone and gravel
4. Construction (H)
5. Manufacturing
6. Utility (electricity, gas, heat supply and water)
7. Information and communications (H)
8. Transportation and postal activities
9. Wholesale and retail trade
10. Finance and insurance (H)
11. Real estate and goods rental and leasing
12. Scientific research, professional and technical services
13. Accommodations, eating and drinking services (H)
14. Living-related and personal services and amusement services (H)
15. Education, learning support
16. Medical healthcare and welfare
17. Compound services
18. Services, N.E.C.
19. Public services, N.E.C.
20. Others

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).

Question Wording on Key Items

Items gauging respondents’ views on immigration were preceded with a 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?”²⁵ 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)”. ²⁶. Finally, as placebo test, we also elicited participants’ views on Japan’s commitment to reduce global warming.²⁷.

The first 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.

²⁵The Japanese term ginou jisshuusei refers to a visa status known as “practical trainees”.

²⁶The 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 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” emphasis in the original text)

²⁷See appendix for full text

Sources for Statistics on Japan

The population statistics on Japan cited in section 4 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.

Table A.10: 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* (0.02)	0.046 (0.03)	0.130* (0.03)	0.110* (0.02)	0.060* (0.02)	0.056* (0.03)
Constant	0.158* (0.01)	0.519* (0.02)	0.416* (0.02)	0.195* (0.02)	0.679* (0.02)	0.501* (0.02)
R-squared	0.006	0.002	0.017	0.016	0.004	0.003
No. obs	1368	1368	1368	1368	1368	1368

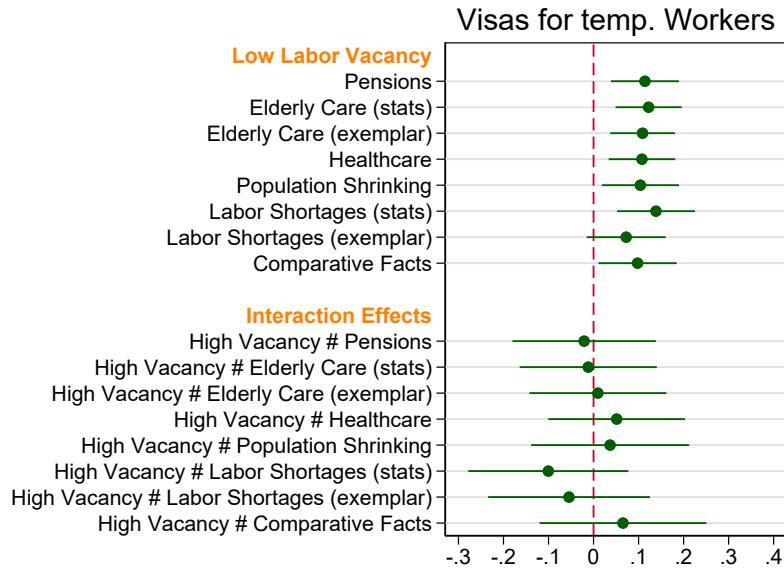
Coefficient estimates from OLS models. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Table A.11: Heterogeneous Effects

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

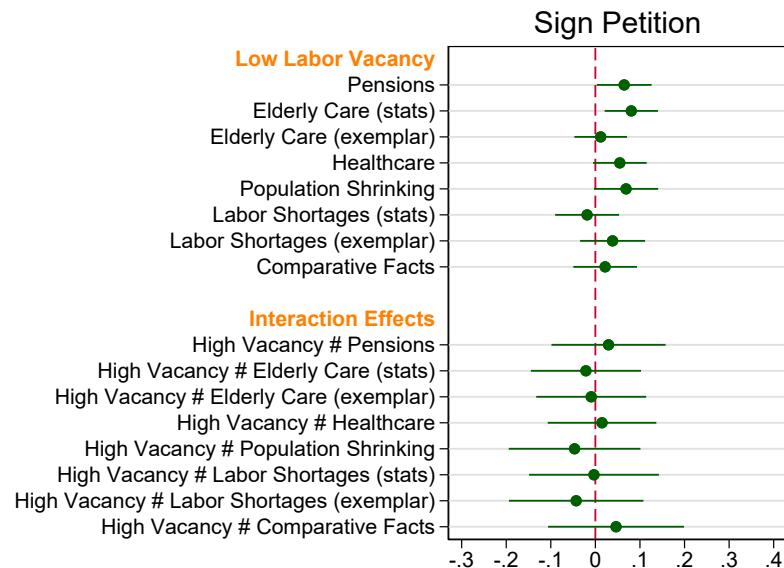
Coefficient estimates from OLS models. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$.

Figure A.1: Treatment Effect by Exposure to Labor Shortage Problem



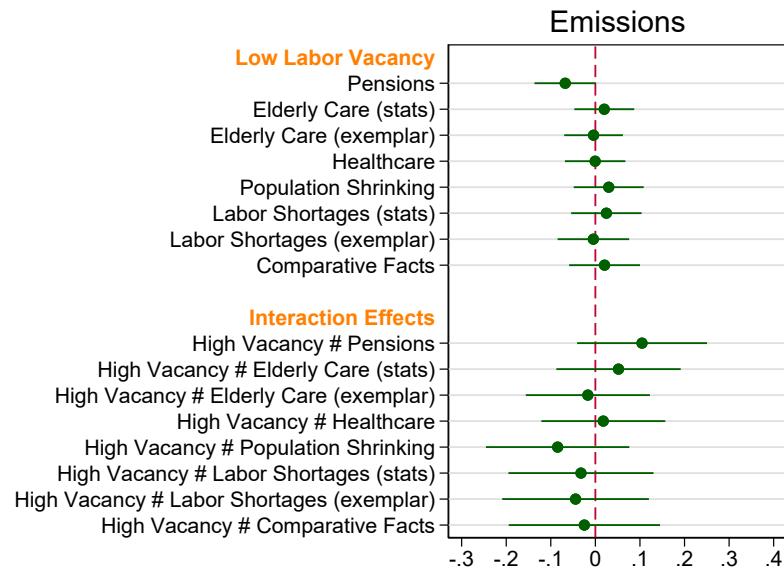
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a correct answer.

Figure A.2: Treatment Effect by Exposure to Labor Shortage Problem



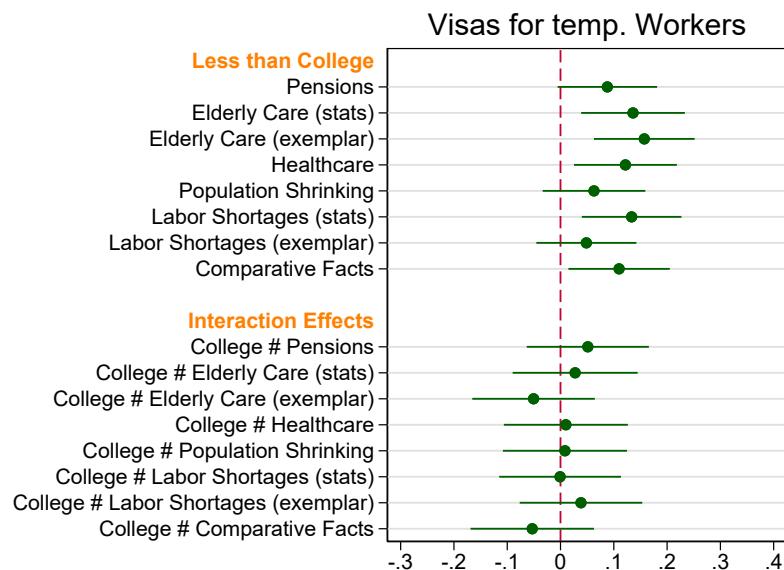
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a correct answer.

Figure A.3: Treatment Effect by Exposure to Labor Shortage Problem



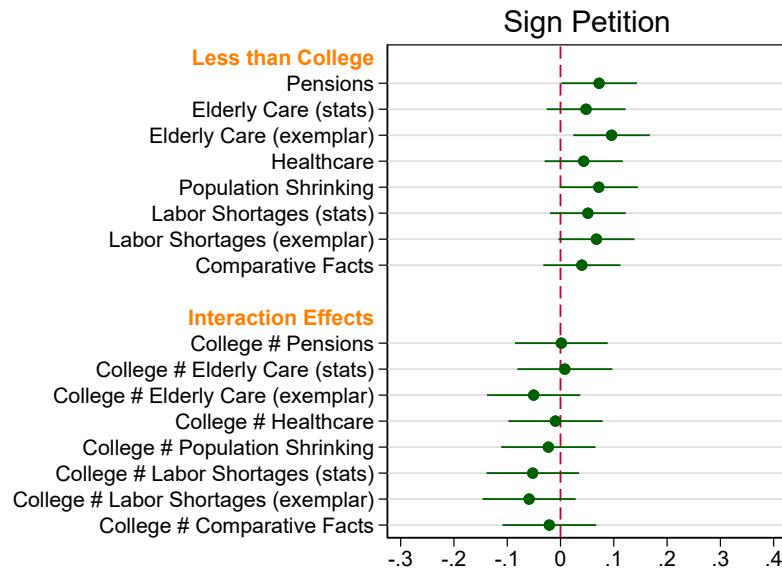
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a correct answer.

Figure A.4: Treatment Effect by Education Level



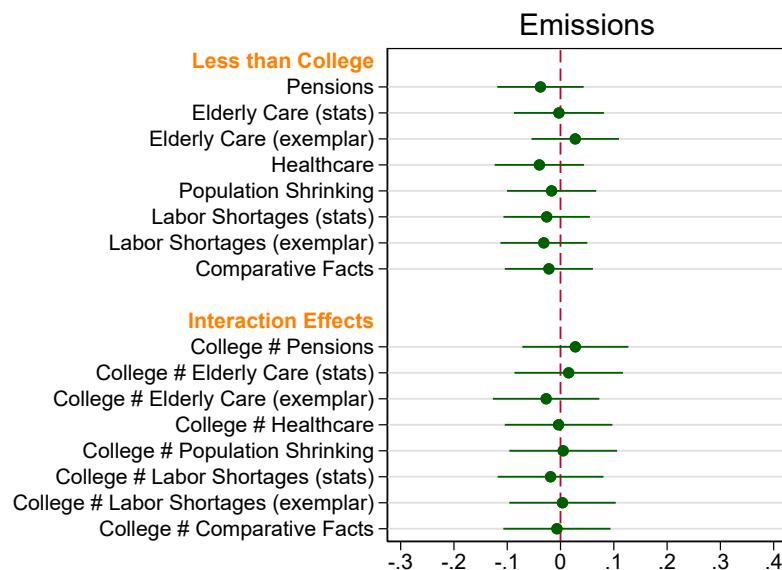
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a correct answer.

Figure A.5: Treatment Effect by Education Level



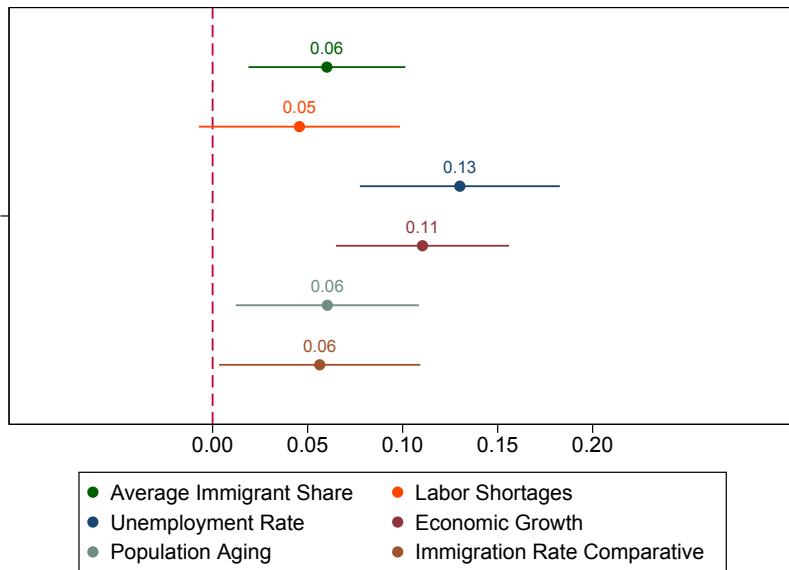
Note: Bars represent 95% confidence intervals. Outcomes are binary, where '1' indicates a correct answer.

Figure A.6: Treatment Effect by Education Level



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

Figure A.7: Effect of education on factual knowledge



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

Figure A.8: 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.9: 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.10: 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.11: 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.12: Population Shrinkage 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 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.13: Labor Shortages 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, 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.14: 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.15: 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.16: Control

July 14, 2015

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.

Figure A.17: Second Text for All Participants

July 14, 2015, 14:45 pm

Handicapped man draws beautiful and detailed trains entirely from memory

Hisashi Fukushima, a 44-year-old man from Hidaka City, was born with a serious learning impediment, but this handicap has in no way gotten the better of him. Fukushima's photographic memory and steady hands have allowed him to recreate many life-like scenes of trains upon their tracks in paintings as well as paper craft. His faithful renditions of Japan's railways have earned him a number of prizes in art exhibitions, and one glance at his work makes it obvious why!

Hisashi Fukushima began drawing trains when he was just three years old. He was so fascinated by the railways and train cars that he saw on his way to the child consultation center in Kawagoe City, he began to draw them.

What sets Fukushima's work apart from all of the others is his drawing method. Fukushima doesn't use reference images for his pictures, nor does he sketch out his ideas in a rough draft. He creates these incredibly detailed paintings based solely on the image that he holds in his mind. With paintings that pass for photographs and miniatures masquerading as real locomotives, there's no denying the true talents that this man possesses