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DISCUSSION PAPER SERIES

IZA DP No. 13230

Six-Country Survey on COVID-19

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ABSTRACT

Six-Country Survey on COVID-19*

This paper presents a new data set collected on representative samples across 6 countries: China, South Korea, Japan, Italy, the UK and the four largest states in the US. The information collected relates to work and living situations, income, behavior (such as social-distancing, hand-washing and wearing a face mask), beliefs about the Covid 19 pandemic and exposure to the virus, socio-demographic characteristics and pre-pandemic health characteristics. In each country, the samples are nationally representative along three dimensions: age, gender, and household income, and in the US, it is also representative for race. The data were collected in the third week of April 2020. The data set could be used for multiple purposes, including calibrating certain parameters used in economic and epidemiological models, or for documenting the impact of the crisis on individuals, both in financial and psychological terms, and for understanding the scope for policy intervention by documenting how people have adjusted their behavior as a result of the Covid-19 pandemic and their perceptions regarding the measures implemented in their countries. The data is publicly available.

JEL Classification: I0, J0

Keywords: COVID-19, data, behaviours, health, beliefs, epidemic

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* Survey and data collection protocol were approved by the ethics board at the University of Exeter (application id eUEBS003014v2.0). Research funding from the Creative-Pioneering Researchers Program at Seoul National University, and from the European University Institute are gratefully acknowledged. Individual level data collected in anonymous form is being made publicly available at https://osf.io/aubkc/.

1 Introduction

In the context of the current pandemic, a big challenge has been the lack of adequate information on important elements that should guide policy-making. Not only have there been difficulties measuring the prevalence of the disease and its spread in the population, but governments have also had to make decisions with limited information on associated costs and benefits. Levels of population support for different measures have been difficult to gauge, and the scarcity of data has also hampered research efforts. Epidemiologists and economists have had to make predictions and policy recommendations using very limited information about key parameters.

Large data collection initiatives have now been started across the world (e.g. Jones, 2020; Fetzer et al., 2020; Adams-Prassl et al., 2020). We contribute to this effort by presenting a new data set on representative samples across 6 countries: China, South Korea, Japan, Italy, the UK and the four largest states in the US. The information collected relates to work and living situations, income, behavior (such as social-distancing, hand-washing and wearing a face mask), beliefs about the pandemic and exposure to the virus, socio-demographic characteristics and pre-pandemic health characteristics. In each country, the samples are nationally representative along three dimensions: age, gender, and household income. In the United States, where we ask respondents to identify their race, the sample is also nationally representative for race.

The data were collected in the third week of April 2020. The data set could be used for multiple purposes, including calibrating certain parameters used in economic and epidemiological models, or for documenting the impact of the crisis on individuals, both in financial and psychological terms, and for understanding the scope for policy intervention by documenting how people have adjusted their behavior as a result of the Covid-19 pandemic and their perceptions regarding the measures implemented in their countries.

Our aim in this paper is to introduce the data set, which we will make available for public use. The sample consists of roughly 1,000 individuals in each of the six countries where we collected data. We picked these countries because at the time of data collection there were at different stages of the epidemic. These countries also differ in the measures implemented in response to the epidemic and in the course of the epidemic. South Korea, in particular, has been pointed to as an example of success in managing the spread of the disease through early interventions with comparably small economic disruption.

While the data are unique, they do not offer anything close to a final word on a complex set of issues. They should be combined with other resources coming available to generate a more accurate picture. For example, virus or antibody tests collected alongside the type of survey data we collect here would allow researchers to directly link individual characteristics to behavior and infection rates.

Below, we will highlight some key features of the data, including a description of variables, selected summary statistics along with research projects currently underway that use the data. However, the survey was put together hastily, which was necessary to provide real-time information on a rapidly evolving situation, but also has its downsides. Given the seriousness of the topic, we believe thus it is important to discuss some caveats in an effort to prevent researchers from using our data to draw

unduly strong or unwarranted conclusions.

First, while a core strength of the data set is that we collected information from respondents across several countries, we strongly advise caution in how to interpret cross-country differences. Cross-country variation could arise from nation-specific differences (e.g., culture, institutions or government), the stage of the epidemic at which the data were collected, or country-specific differences in policies. We discuss this issue in more detail below when comparing some variables across countries.

Second, we believe our survey represents a marked improvement in terms of representativeness over surveys using convenience samples or relying on self-selection into this particular type of survey. However, despite balancing the sample on several key socio-demographic characteristics, selection bias remains a concern, meaning it would be problematic to interpret estimated associations as *causal*. For example, income differences in social-distancing behaviors could represent a causal impact of additional income on behavior, but could also represent unobserved factors driving selection into the sample, which vary by income.

Third, we collected data at one point in time, once the pandemic was already underway. Existing surveys that are ongoing (with data collection occurring before and during the pandemic) allow the researcher to observe changes in behavior from before to during (and presumably also after) the pandemic. Our survey collects retrospective information and asks specifically about changes in behavior, which is a useful but problematic substitute (e.g., due to inaccurate recall). The upside is that we were able to ask questions directly pertinent to the current pandemic, such as those on social distancing and beliefs about Covid-19.

Fourth, because the survey was put together quickly, questions were added and dropped midstream. This resulted in some regrettable omissions. For example, we failed to include questions on risk attitudes and highest degree or years of completed education. These kinds of oversights might have been avoided had we had more time and will be corrected in future versions of the survey and data collection efforts.

Despite these limitations, we hope these data help to shed light on some timely and important issues, and we are making them publicly available to accelerate research.

2 Data Collection and Sampling

Our sample consists of approximately 1000 from each of the six countries, for a total of 6082 respondents. The sample is nationally representative along age, gender, and household income. In the United States we sample respondents from the 4 most populous states: California, Florida, New York and Texas. American respondents self-identify their race, and the sample is also nationally representative along this dimension.

Data were collected between April 15 and April 23 with the support of market research companies Lucid for Western countries (Italy, UK and US) and dataSpring for Asian countries (China, Japan and Korea). Before participating in the survey respondents review a consent form that specifies that individual-level data will be made publicly available in anonymized form (excluding a short list of health related variables clearly marked in the survey). Prior to starting data collection, we obtained

approval for this study from the ethics board at the University of Exeter.

Participation was remunerated according to general compensation schemes defined by the companies for their survey panelists. The median time to complete the survey was about 14 minutes. Respondents were prevented from taking the survey multiple times, and they were excluded for completing the survey too quickly (in under 50% of the median response time).

3 Descriptive Statistics

The information we collected is organized around the following themes:

1. Basic demographic characteristics
2. Health-related variables (including variables relevant to Covid-19 vulnerability)
3. Exposure to the disease
4. Behavioral responses to the epidemic and to the governmental recommendations and restrictions
5. Economic impact (such as impact on labor supply, income and expenditure) and non financial impact of the disease
6. Measures of beliefs about the disease and attitudes towards the policy approach taken by the national governments

In the rest of this section we highlight some interesting facts coming out of this survey.

3.1 Socio-demographics

By construction, because our samples are nationally representative along some key socio-demographics, we obtain that each sample is well balanced for gender and household income quintiles. With adequate representation (see Table 1), our data can also be useful for understanding how most at risk groups (like the elderly) and marginalized groups are affected by the pandemic. For the US, where we collect data on race, we also have adequate representation of racial minorities, with e.g. 11% of respondents identifying as African American/Black.

Table 1: Socio-demographic characteristics

	China	Japan	Korea	Italy	UK	US
			Age distribution			
Age above 65	0.117	0.197	0.134	0.172	0.158	0.229
			Gross household income distribution			
Bottom quintile	$\leq$ ¥25.000	$\leq$ ¥1.900.000	$\leq$ ₩15.000.000	$\leq$ €14.000	$\leq$ £15.000	$\leq$ $23.000
	0.201	0.204	0.208	0.163	0.177	0.172
Top quintile	$\geq$ ¥86.001	$\geq$ ¥7.320.001	$\geq$ ₩61.000.001	$\geq$ €50.001	$\geq$ £56.001	$\geq$ $106.001
	0.198	0.162	0.165	0.158	0.214	0.189

Notes: For the income question, respondents choose one of five income brackets, which are obtained by calculating quintiles of the gross household income distribution from the last available wave of nationally representative household surveys (or census data), as available at the Luxembourg Income Study.

3.2 Health

Health data include important variables such as pre-existing conditions of respondents that have been associated with greater risks of experiencing severe complications from the virus, and Covid-19 related symptoms. As Table 2 shows, the share of respondents reporting at least one relevant pre-existing condition is rather high, with Japan (21.2%) and the US (43.8%) recording the minumum and maximum shares respectively. We observe much less variation, though very high levels, in the share of respondents reporting at least one symptom.

Table 2: Pre-existing conditions and symptoms

	China	Japan	Korea	Italy	UK	US
At least 1 relevant pre-existing condition	0.255	0.212	0.269	0.349	0.333	0.438
At least 1 symptom	0.419	0.347	0.498	0.482	0.444	0.429

Notes: Relevant pre-existing conditions include: diabetes, high blood pressure/hypertension, asthma or other chronic respiratory issue, allergies. Relevant symptoms include: dry cough, fever, tiredness, runny nose, sore throat, nasal congestion, aches and pains, diarrhea, loss of smell or taste.

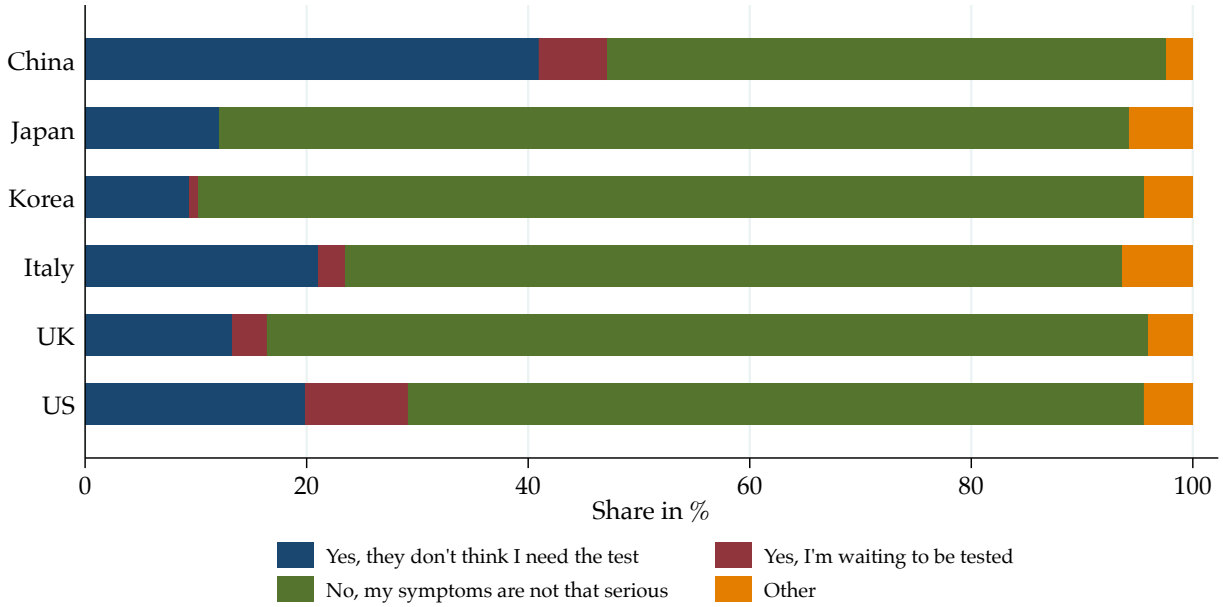


Figure 1: Contacted doctor, conditional on showing any symptom

Figure 1 shows some heterogeneity in how citizens and medical authorities have responded to patients experiencing Covid-19 related symptoms. First, we notice that a much larger share of respondents from China, compared to any other country, have reached out to a doctor after experiencing symptoms. Second, we find that a larger share of people are waiting to be tested in the US and China, suggesting that these countries are facing especially strong mismatch between the demand and supply of testing.

3.3 Exposure

Our data set includes a rich set of variables characterizing exposure, including information on the number of close daily interactions at work and use of public transport during normal times, the number of close daily interactions in the past two weeks, as well as information on household composition and living arrangements. We also elicit information on the job of respondents using a comprehensive list of professions from the US department of labor (O·Net database), which maps professions into risks of exposure to disease and infections.

Living arrangements are potentially an important element in determining the further spread of the disease once measures are relaxed. If the young are allowed back at work, but share their home with older people, it may be difficult to shield the old from the disease. Figure 2 shows the fraction of those age 65 and older who share their home with a younger person (0-18 years old or 18-65). Multi-generation arrangements are common in South Korea, Italy and China, but much less so in the UK, the US and Japan.

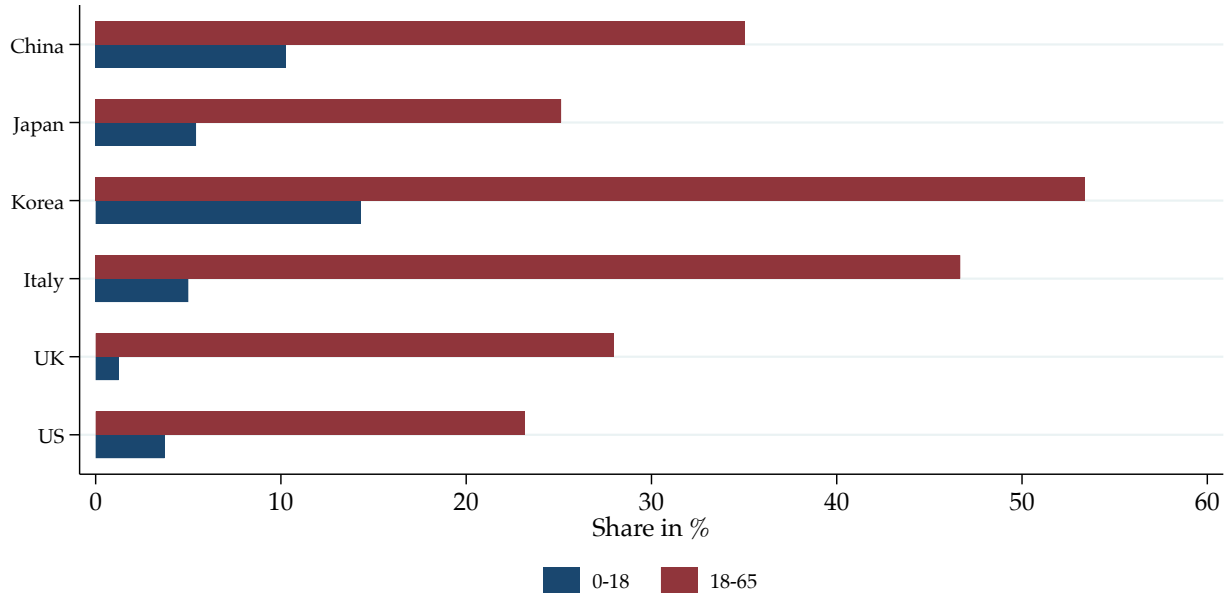
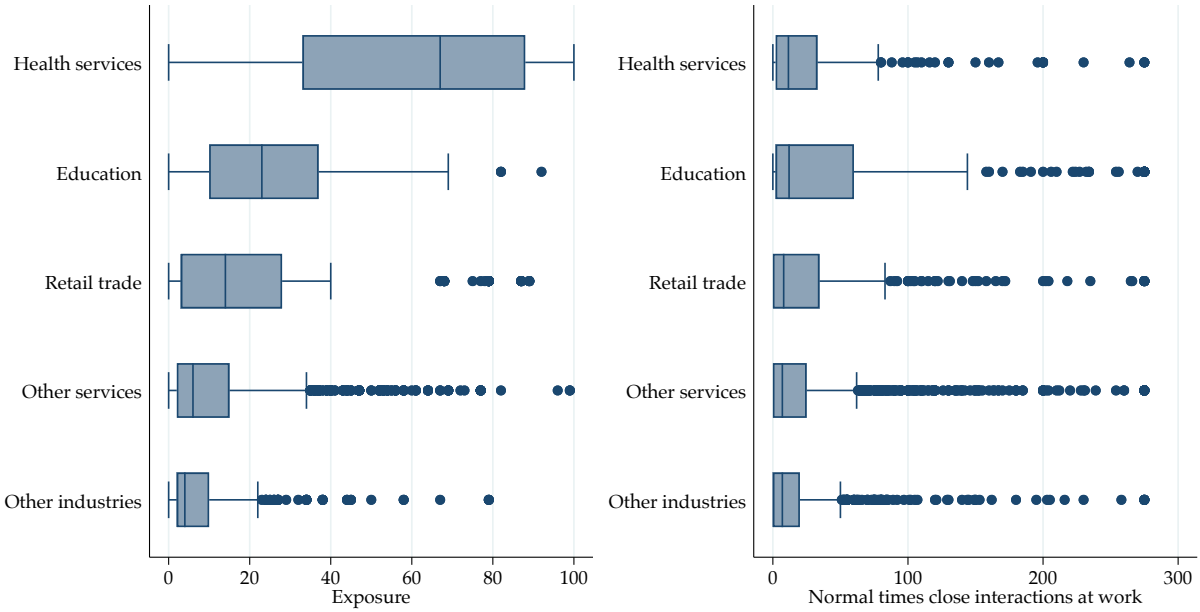


Figure 2: Fraction of 65+ living with children and middle age adults

In Figure 3, we use box plots to report the risks of exposure faced by survey respondents. Risks are measured in two ways. In the left panel, we examine exposure variation by respondent profession. In the right panel, we look at the reported number of daily close contacts at work during normal times. As expected, jobs in groups of industries like health and education appear to put individuals at substantially greater risk of infection according to the professional risk measure from the O·Net database. At the same time, it is interesting to notice that these risks do not closely map to the number of close interactions that respondents report having. Such a disconnect poses a challenge for the calibration of models that treat the spread of infections primarily as a function of the number of contacts and ignore e.g. individual choices that people with different backgrounds might be able to make to mitigate their risks.



Note: Risk of exposure in the left panel is based on the assessment by profession made by O·Net attributes of the risks of exposure to disease and infections. Other services include: (i) accommodation and food, (ii) administrative and support, (iii) arts, entertainment, and recreation, (iv) finance and insurance, (v) government, (vi) information, (vii) management of companies and enterprises, (viii) other (except public administration), (ix) professional, scientific and technical, (x) real estate, rental and leasing, (xi) transportation and warehousing, (xii) utilities, (xiii) wholesale trade. Other industries include: (i) agriculture, forestry, fishing and hunting, (ii) construction, (iii) manufacturing, (iv) mining, quarrying, and oil and gas extraction. The number of close daily interactions at work in normal times is censored at the 99th percentile to constrain the influence of outliers.

Figure 3: Risks of exposure and close in person interactions at work in normal times

3.4 Behavioral response

A distinctive feature of our retrospective data set is that for a large number of individual behaviors, relevant both for the spread of infection and for coping with social isolation due to the pandemic, we collect information on how people typically behave (i) in normal times, (ii) shortly after the beginning of the outbreak of the Covid-19 pandemic, and (iii) at the time of data collection.

We show how these behaviors evolve over time in Figure 4. By and large people have responded to the recommendations to practice social distancing. Interestingly, except for China, there is little response in terms of increasing healthy behavioral habits. On the other hand, there is also substantial variation in response to wearing face masks, with Asian countries being acquainted to and willing to increase the use of such a device, the US and (to a greater degree) Italy fast increasing adoption, and the UK hesitating to adopt face masks.

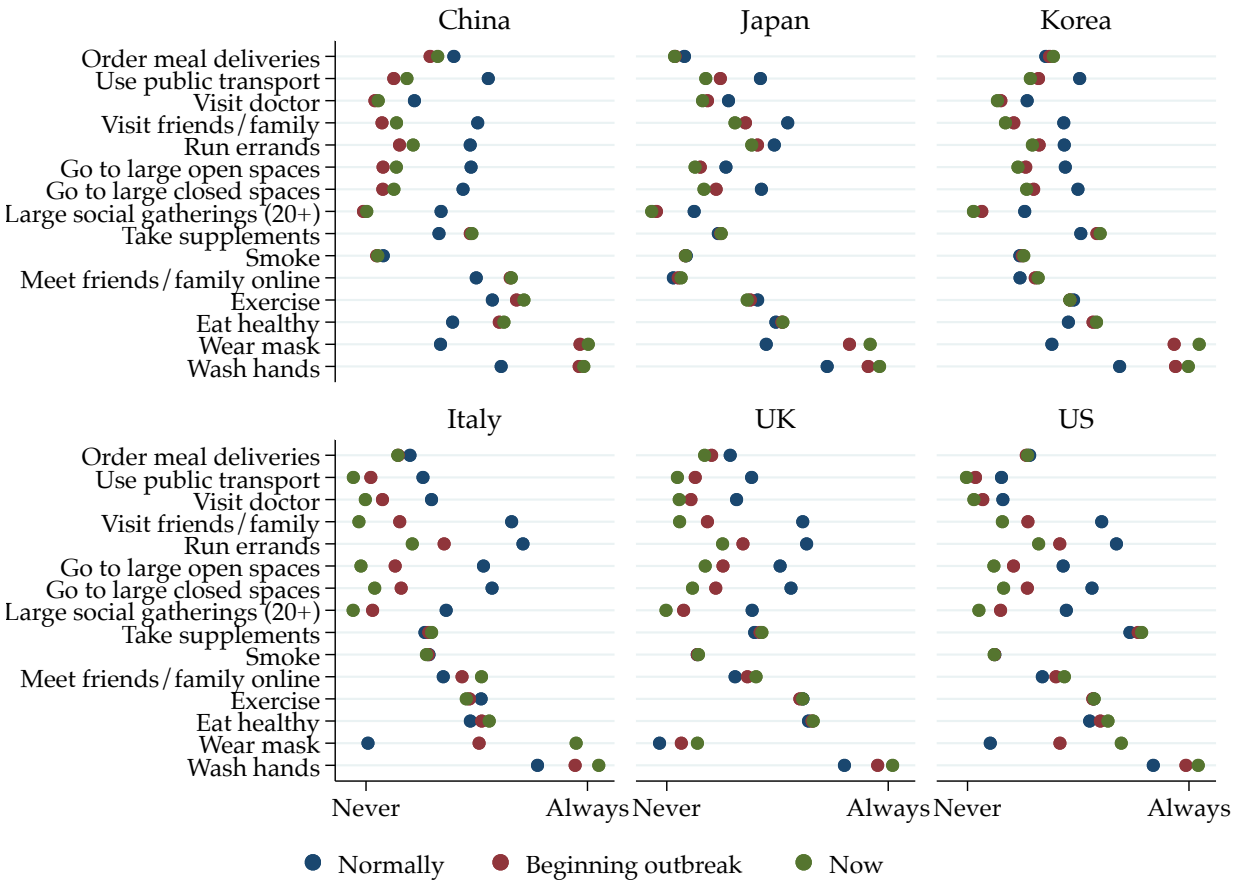


Figure 4: Changes in behavior over time

Another set of variables in the dataset illustrates how, during the pandemic, people have been able to volunteer to support people in need and continue attending religious services. Especially on the latter we observe substantial heterogeneity with a striking 20% of respondents reporting to have attended religious services at least once a week since the outbreak of the pandemic in their country (see Figure A3).

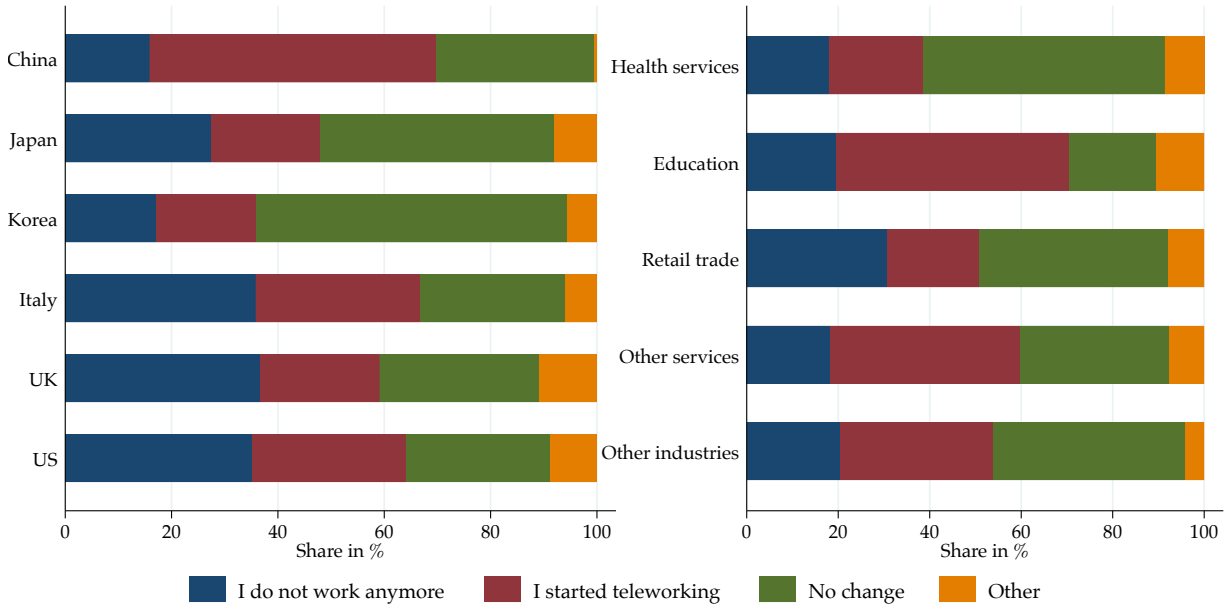
Through the pandemic people are less likely to visit a doctor, and as some of the variables in our data could illustrate, they are also quite concerned about the needed healthcare they had to defer (see Figure A4).

It will be interesting for future research to better understand what are the drivers of behavioral change. Some might have to do with household composition and living arrangements. Some might be driven by economic circumstances, which we discuss in turn.

3.5 Work related behavior and economic effects

In this section of the survey we capture the effects of the pandemic on the economy of the household both qualitatively and quantitatively. For example, we ask respondents to quantify how much of their gross household income was lost in the first quar-

ter of 2020, what are their expected income losses for the second and third quarters, changes in weekly savings and expenses. Qualitatively, we measure e.g. individual ability to reduce in person interactions at work and changes in work arrangements. We also measure both positive and negative non-financial effects of the pandemic on the households.



Note: Other services include: (i) accommodation and food, (ii) administrative and support, (iii) arts, entertainment, and recreation, (iv) finance and insurance, (v) government, (vi) information, (vii) management of companies and enterprises, (viii) other (except public administration), (ix) professional, scientific and technical, (x) real estate, rental and leasing, (xi) transportation and warehousing, (xii) utilities, (xiii) wholesale trade. Other industries include: (i) agriculture, forestry, fishing and hunting, (ii) construction, (iii) manufacturing, (iv) mining, quarrying, and oil and gas extraction.

Figure 5: Changes in the work situation

Here we focus on how the work situation of people who report being employed was affected by the pandemic. In Figure 5, we see vast variation across countries in the share of workers who are currently unable to work, who were able to continue to work remotely and who did not experience any change in work arrangement. In Korea, where contact tracing has been particularly effective, we observe that a large share of workers could continue to work as normal. China has been particularly effective in moving its workers to teleworking arrangements. Western countries in particular have instead struggled the most to maintain their work force productive, as indicated by the high shares of employed respondents that are currently not at work. The right panel of the chart illustrates differences across sectors. As expected, we see pronounced resilience due to the ability to telework in the education sector, where 51% of respondents with a job were able to start teleworking, and high vulnerability of the retail trade sector, in which 31% of employed respondents had to cease working.

3.6 Beliefs

Finally, in this section we capture quantitative beliefs that people have about the severity of the pandemic in their local area, the risks of several kinds of complications that may arise once a person becomes infected, and qualitative beliefs on the effectiveness of different policies that different governments have been implementing to counteract the spread of the virus.

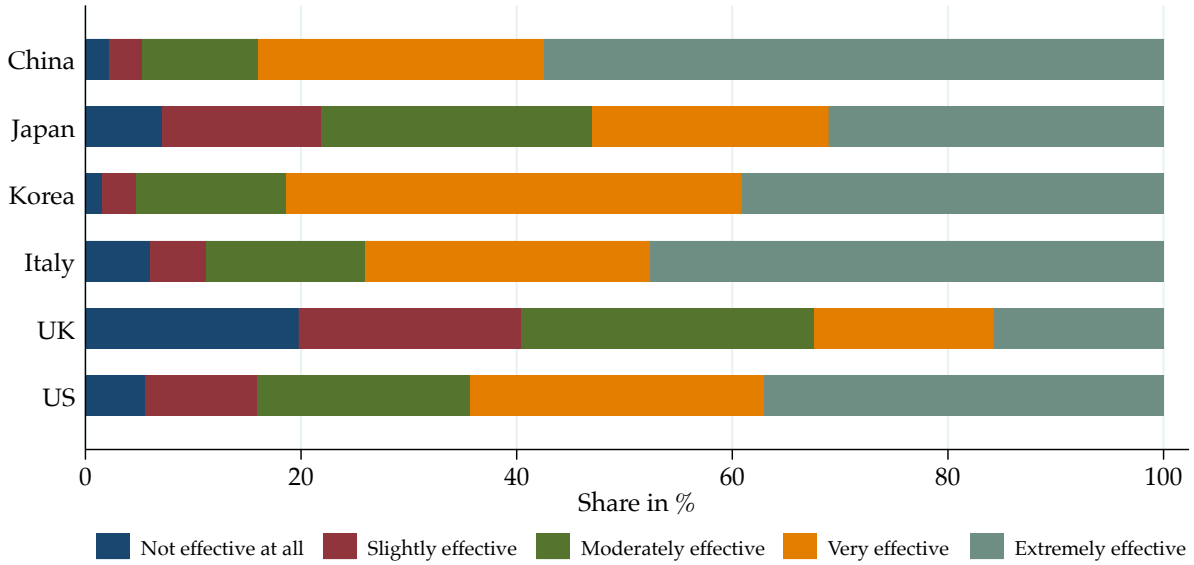
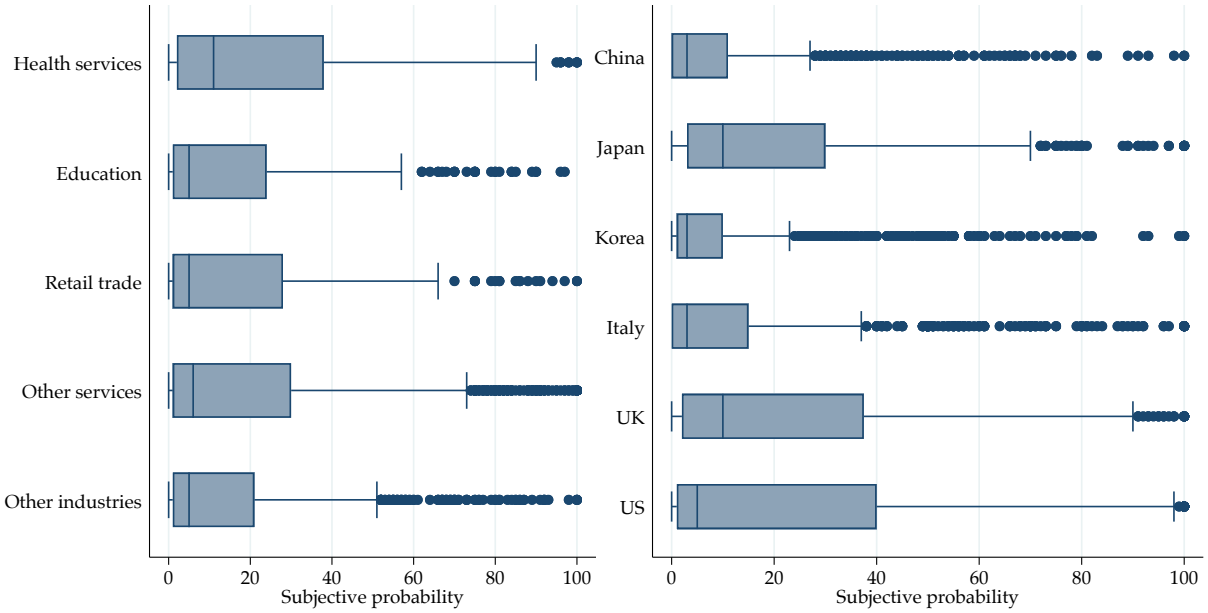


Figure 6: Beliefs on effectiveness of public safety measures: Requiring to wear masks outside

Having beliefs data to combine with behavioral change patterns can greatly help in understanding how to best coordinate the response of the public to tame the pandemic. As an illustration, we come back to the policy of requiring face masks to be worn outside, for which we also have information on how effective the policy is (see Figure 6). As previously pointed out, UK respondents stand out for not wearing face masks as much as people in other countries. As a demand-side explanation for that evidence, we find that people from the UK are especially skeptical of the effectiveness of such policy.



Note: Other services include: (i) accommodation and food, (ii) administrative and support, (iii) arts, entertainment, and recreation, (iv) finance and insurance, (v) government, (vi) information, (vii) management of companies and enterprises, (viii) other (except public administration), (ix) professional, scientific and technical, (x) real estate, rental and leasing, (xi) transportation and warehousing, (xii) utilities, (xiii) wholesale trade. Other industries include: (i) agriculture, forestry, fishing and hunting, (ii) construction, (iii) manufacturing, (iv) mining, quarrying, and oil and gas extraction.

Figure 7: Belief on having been infected with Covid-19

Figure 7 shows how likely people think it is that they have been infected, by industry (left panel) and by country (right panel). Variation across industries is interesting because it again underscores the suggestion from Figure 3 of a weak mapping between sector and (perceived) risk of exposure. Country differences seem largely consistent with official statistics on infections (keeping in mind that for the US we have sampled respondents from the 4 most populous states, which include New York).

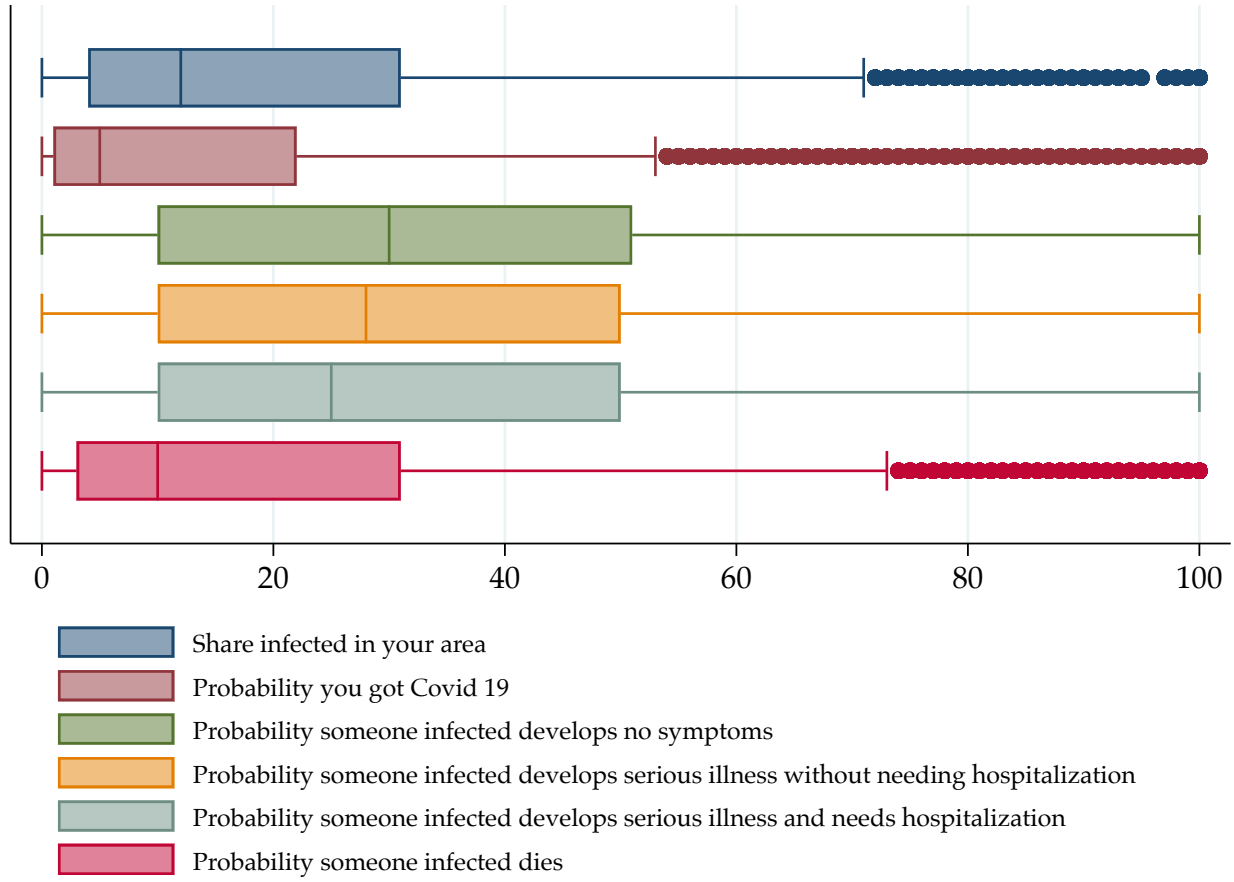


Figure 8: Beliefs related to Covid-19

Figure 8 illustrates the distribution of beliefs on a broad range of Covid-19-relevant events. We caution readers against interpreting levels of reported beliefs literally, as we see that these tend to be inflated.[1] That said, beliefs over complementary events appear largely consistent, in the sense of satisfying *additivity* for the majority of respondents. For example, the median respondent reports believing that about 30% of infected people will be asymptomatic and 10% of infected people die.

4 Ongoing research and additional questions these data can address

There are several projects that we have begun.

[1]The challenges of eliciting subjective beliefs using surveys without incentives for correct responses are well documented (see e.g. Hurd, 2009, for a review). Common techniques to improve accuracy of reported beliefs (such as interactive forms and incentivized procedures) were either not feasible or not practical without fatiguing subjects in an already long survey.

4.1 Beliefs about the pandemic

A burgeoning literature in economics studies subjective beliefs and expectations about key economic phenomena. A subset of this literature focuses on how beliefs, including biases in beliefs, are formed. The Covid-19 pandemic is an interesting context in which to study what drives variation in beliefs as it represents a large and unexpected shock, individuals are tasked with forming beliefs about possibly severe consequences of their behavior, and information about the pandemic is overwhelming and often conflicting and confusing. Using the data set presented in this paper, we aim to examine which factors help to explain variation in beliefs across individuals about pandemic-related phenomena. We pay particular attention to what appear to be biases, such as a reported belief that the Coronavirus has a 100% fatality rate.

4.2 Factors Associated with Social Distancing

Another research question asks what factors are associated with decisions to social-distance or take other measures that are protective and could also slow the spread of infection. In many cases, there are likely to be strong positive externalities to self-protective behaviors, such as social-distancing, along with differences in the economic burden they imply, arising from work arrangements, income, household characteristics, etc. It is therefore crucial to understand who social distances and under what circumstances. This information could be used to shape policy that could slow the spread of illness, which takes account of heterogeneity in household willingness to engage in protective measures.

4.3 Individual Behavior and the Spread of Illness during a Pandemic

An ongoing project is to build a structural model that examines individually optimal self-protecting behavior during an infectious disease pandemic. The framework incorporates features from epidemiology literature to link individual choices to the spread of the disease. The model will be used to assess how potential, counterfactual policies affect the spread of illness through endogenous behavior change. The model will be used to examine behavior during the Covid-19 pandemic. Empirical moments used to estimate the model will come from a variety of sources, including from the data set presented here. This project complements numerous ongoing efforts to incorporate behavior change into epidemiological models of disease spread. To our knowledge, however, no such model has incorporated socio-demographics (other than age), work arrangements, household structure, all of which could affect individual behavior.

5 Conclusion

Despite the limitations and caveats discussed in the Introduction, we believe the data set introduced in this paper can be used to address a number of timely and policy-

relevant questions about behavior during the Covid-19 pandemic. We offer the data set as a public resource and hope it is useful for other researchers. We have endeavored to collect and describe the data with adequate caution and care.

While many of the questions we can address with the data set focus on the here-and-now, the Covid-19 pandemic will eventually run its course. However, it would be short-sighted and naive to think that another virus, perhaps an even more damaging one, will not come about in the future. Indeed, many specialists believe that this virus be cyclical, returning annually. If so, the questions we are addressing now will be important not only as we move through the current crisis, but also as we begin to prepare for the next one. Medical doctors, public health experts, epidemiologists, virologists and so forth have an obvious role to play in such preparations. However, the spread of the virus is not just a biological phenomenon, but is also driven by human behavior, which is the purview of social science. Thus, as we develop policy for future pandemics, social scientists who study behavior—and the policies that affect it—must also play a critical role. One way is through the collection and analysis of the type of data we present here, which shed light on what behavior can be expected of different segments of the population during a pandemic given heterogeneity in the incentives, constraints and circumstances people face.

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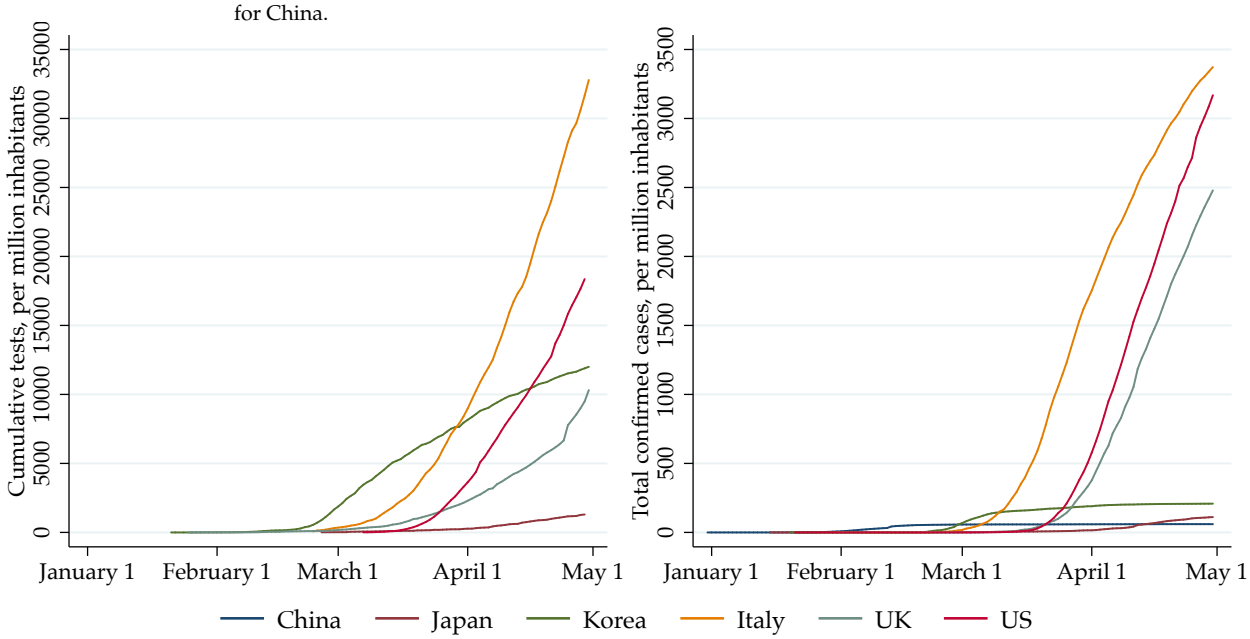
A Surveyed Countries and Policy Variation

As mentioned earlier, we selected these countries because they were at different stages of the epidemic dynamics. They also differ in their policy response to the pandemic.

As of the third week of April 2020 (week of data collection), these countries were at different points in the epidemiological development of the disease. Figure A1 presents summary statistics of key indicators of the spread of the disease and tests conducted, and tracks the evolution over time. These numbers correspond to officially reported numbers, so they should be taken with caution, since there are important differences in measurement and reporting criteria across countries.[2]

	China	Japan	Korea	Italy	UK	US
Cases	83,944	14,088	10,765	203,591	165,221	1,039,909
Deaths	4,637	415	247	27,682	26,097	60,966
Tests		164,255	619,881	1,979,217	687,369	6,024,625

Source: Official sources collated by Our World in Data. Data on testing is not available for China.



Source: Official sources collated by Our World in Data. Data on testing is not available for China.

Figure A1: Covid-19 cases, deaths, and tests for surveyed countries by May 1, 2020

[2]We recommend the Oxford Covid 19 government response tracker website for more details on measurement issues https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker).

We briefly review the trajectory in each country.[3] Covid-19 originated in the Chinese city of Wuhan, the capital of Hubei province. The first cases were linked to a Seafood Market. By the end of January, the number of infections had surged to over ten thousand. On February 12, thousands more cases were confirmed in Wuhan after a change to the diagnosis method, which led to a sudden increase in confirmed cases. As of May 1st 2020, Covid-19 had infected over 84 thousand people and killed around 4,600 across the country. However, it had been the fourth consecutive day that no deaths were registered in the country.

In Japan, the first reported case of Covid-19 was confirmed on January 14, 2020. The first transmission within Japan was recorded on January 28. The number of new cases then increased sharply in February. The upward trend in new cases continued in March with 26 clusters confirmed in multiple prefectures. April saw a further acceleration of the infection rate. Consequently the Japanese government declared a state of emergency for seven prefectures on April 7. Overall, disease spread in Japan followed a slower trajectory in comparison to China, Europe and the United States. In South Korea, the number of cases initially began to increase exponentially because a person who attended several Church services from the Shincheonji Church in the province of Daegu (referred to as "patient 31"). The Korean government has aimed at retracing other members of the Church and testing over 200 thousand Shinchonji church followers. The number of daily new cases has fallen in recent weeks, but small clusters of infections continue to appear across the country and the number of cases imported from abroad is also increasing.

Italy is the first European country to have experienced a surge in confirmed cases towards the end of February. The region most hit by the virus in the country was Lombardy, with about 68 thousand cases.

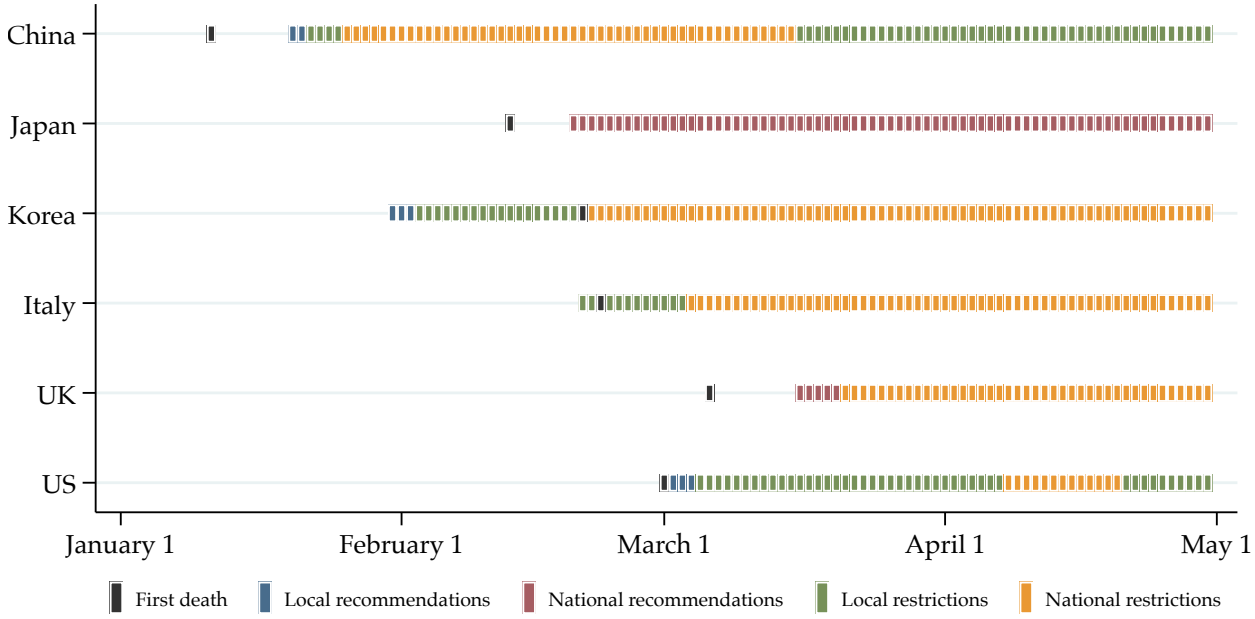
The UK and the US experienced a first surge in cases later in time, around the third week of March. In the UK, London has the highest number of confirmed cases of the virus with 22,072 registered cases as of April 21. In the US, as of April 30, there had been over 1,039,909 cases. The Coronavirus outbreak has now been reported in every state in the US, with the vast majority of cases reported in the state of New York.

The number of confirmed deaths has also widely differed across countries. Japan and South Korea show the lowest overall number of deaths, while Italy, the UK and the US have experienced much higher death tolls.

Countries have taken different approaches to tackle the epidemic. Figure A2 presents an overview of the measures taken over time. China locked down the province of Hubei on January 23d and imposed strict measures across the rest of the country. Japan imposed strict measures towards the end of February, including restrictions on internal travels. South Korea implemented widespread testing very quickly, and tracked contacts of positively diagnosed cases. Italy first locked down several towns in the North of the country, most affected by the epidemic. They then expanded the lockdown to the rest of the country on March 9. In the UK, school closures and travel restrictions were also imposed starting in the fourth week of March. In the US, States have responded differently in terms of measures taken and of timing. Starting in late

[3]The information presented here comes from country specific reports put together by Statista and available on their public website (www.statista.com).

April, some states had already begun to relax measures, allowing some businesses that had been ordered closed to re-open.



Note: This timeline reports the occurrence of five classes of events with the following hierarchy (higher hierarchy events hide lower hierarchy events in the chart): first death, national restrictions, local restrictions, national recommendations, local recommendations. Using data collected from Hale et al. (2020), we focus on recommendations and restrictions (whether implemented locally or country-wide) related to seven policies. Policies under consideration include: school closure, workplace closure, cancellation of public events, restrictions on gathering size, public transport closures, stay-at-home requirements, restrictions on domestic/internal movement.

Figure A2: Recommendations and restrictions

B Additional Figures

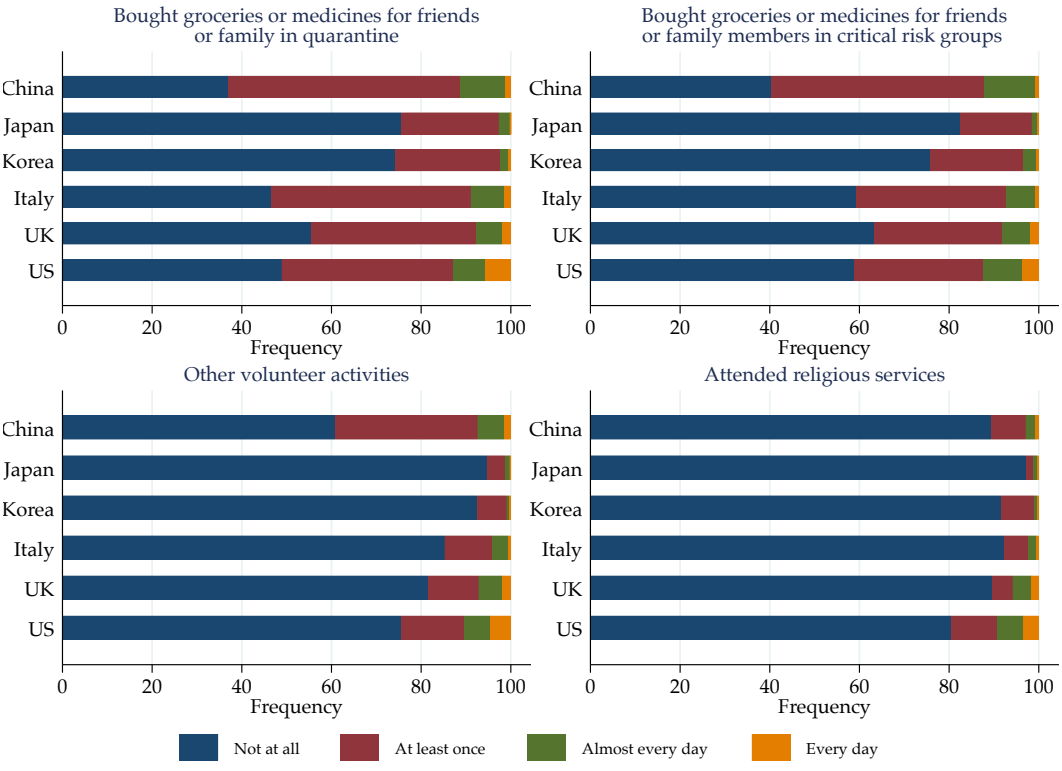


Figure A3: Volunteering and attendance to religious events

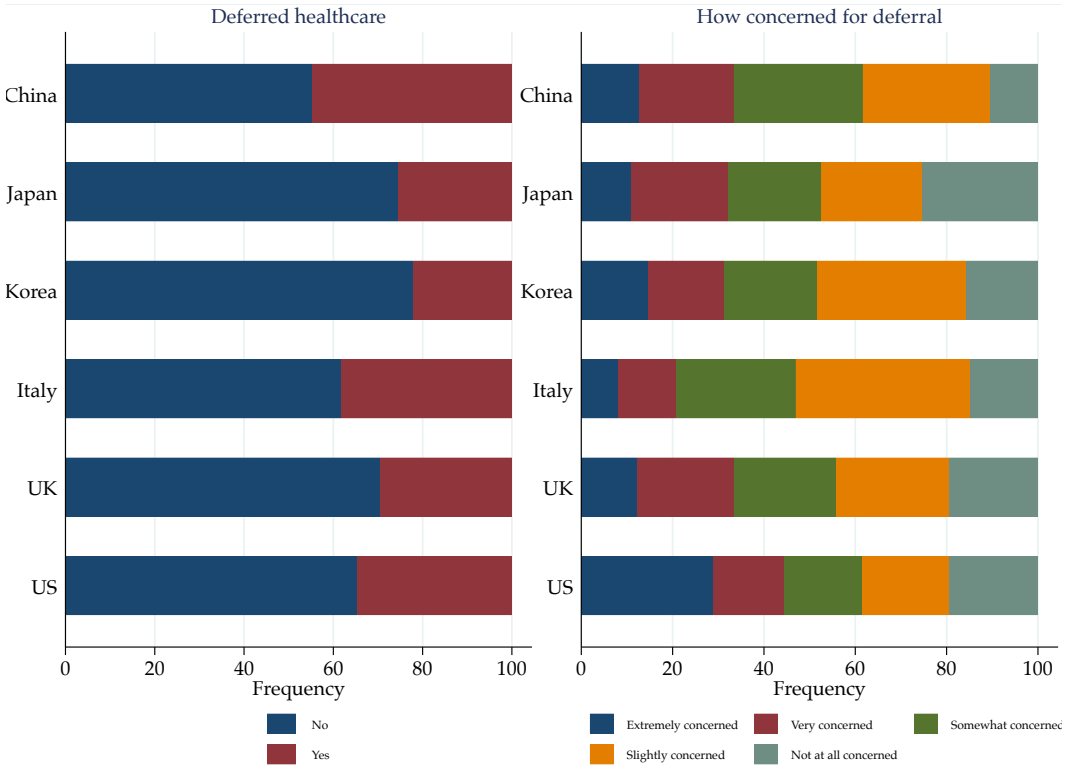


Figure A4: Concerns about having to defer healthcare