CANDOUR Pre-Registration: COVID-19 Vaccine Preference and Opinion Survey

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Abstract

This pre-registration report set out an analysis plan for the COVID-19 vaccine preference and Opinion Survey (or CANDOUR study). The study involves samples of residents from each of our 13 countries who were selected to reflect the population distribution on key socio-economic variables; age; gender; income; education; and region. In each country we interview between 1200 and 1500 respondents via an anonymous online survey. The analysis of the survey is divided into 4 sections: Isolating the individual characteristics that the public considers important for prioritizing the allocation of a COVID-19 vaccine; Double-bounded contingent valuation experiments to ascertain the willingness to pay for a vaccine privately and willingness to pay higher taxes to prevent future pandemics; Person trade-off experiment using double-bounded contingent valuation experiment design to estimate preferences for prioritizing vaccine allocation according to age and contribution to the economy; Measuring the impacts of COVID-19 on perceived impact on health-related quality of life and implications for health inequalities. The purpose of this document is to outline analyses plans in a blinded fashion after pilot testing, but prior to analysis of the data.

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1 Measurement

Conjoint Our goal is to isolate the individual characteristics that the public considers important for prioritizing the allocation of a COVID-19 vaccine. Does the public, for example, consider high risk of death the most important consideration in allocating a vaccine? We should ideally observe many members of the public (randomly selected) being randomly assigned potential vaccine recipients and then making a real choice as to who would get the vaccine. If we observed a sufficiently large number of these decisions we could then draw reasonable conclusions as to what recipient characteristics the public favored in their allocation decisions. But of course we are unlikely to observe actual random assignment of potential vaccine recipients to randomly selected "citizen decision makers" Accordingly, we designed a conjoint experiment with "quasi-randomly" selected citizens from each of the countries in our study.

The conjoint technique was initially developed by market researchers to identify the relative influence of different product features on consumer choice Greenetal1971. Conjoint designs have gained increasing popularity as a means for identifying causal effects of different choices in a wide variety of survey experiments covering various fields in the social sciences (Hainmueller, Hopkins and Yamamoto, 2013). They have frequently been employed in survey experiments in which respondents are asked to make choices amongst different "candidates" – examples here include environmental migrants (Spilker, Koubi and Böhmelt, 2020) and asylum seekers (Bansak, Hainmueller and Hangartner, 2016) Awad et al. (2018) employed conjoint experiments, that generate 40 million decisions, to determine the ethical principles the public thinks should guide machine behavior.[1] At least in the case of policy-oriented survey experiments, evidence suggests that the weight given to attribute characteristics in conjoint survey experiments map quite closely to the actual policy choices made by the population (Hainmueller, Hangartner and Yamamoto, 2015).

In the conjoint experiment our subjects make 8 binary choices over hypothetical vaccine recipients that have randomly assigned characteristics that are considered likely criteria for prioritizing the vaccine allocations. An important condition here is that we identify a reasonably complete set of criteria that the average citizen might employ for making this choice.

Hence, this is a stated preference experiment in which quasi-randomly selected subjects from the

[1] Other recent policy-related illustrations of conjoint experiments include (Beiser-McGrath and Bernauer, 2019)

population are asked to choose between two vaccine allocation candidates that differ on attributes that we are likely to be employed as criteria for vaccine allocation by national health authorities.[2] By randomly assigning the values of these critical attributes across respondents, and over the different binary options subjects choose from, we are able to estimate the relative importance of each item for the resulting choice.

The outcome of interest in this experiment is the subject's expressed preference over two possible candidates for receiving the COVID-19 vaccine. Subjects are shown the profiles of two vaccine candidates – Person A and Person B (those exact choice names are provided). The subjects are simply asked "Which of the Persons do you think should get the vaccine immediately?", as well as to rate Person A and Person B separately on a 7-point scale as to whether they should get Very Low or Very High Priority for the vaccine. Screenshots of the conjoint treatments are presented in the Online Appendix (Figure **??**-**??**). Each vaccine candidate has five attributes and each attribute has a varying number of possible values. The values associated with each attribute are randomly assigned to each of the two vaccine candidates for each choice set presented to the subjects.

A properly specified conjoint experiment includes the most salient choice attributes that are likely to affect the choice made by the respondents. The five attributes of the conjoint design correspond to the factors we believe drive preferences for vaccine allocation priorities. Table 1 summaries the attributes and values for the conjoint experiment. The attributes and their associated values are: risk of death (low, medium, and high), risk of contracting/transmitting COVID-19 (high, medium, low), the person's income category (highest 20 percent income level, average, and lowest 20 percent income level), occupation status (eight key and non-key and now-working categories), and age (25, 40 65 and 79).

We recover the causal estimates of specific characteristics of potential vaccine recipients with logistic regression (with standard errors clustered by participant). For each choice option we regress their binary decision on dichotomous variables representing the attribute values of the potential vaccine recipient. Since we are interested in the relative effects of levels within models, the logistic coefficients are sufficient to demonstrate the difference in relative magnitude and the direction of any causal effect within and between attributes. Note that these coefficients should not be directly

[2] As can be seen in the experiment screenshot in the Online Appendix (Figure **??**), respondents were asked to rate their selected vaccine candidates on a 7-point scale, as well as choose which of the two potential vaccine recipients they would select for the vaccine. All analysis in the main paper focuses on the forced choice component.

Table 1: Conjoint Experiment Treatments

Risk of COVID-related Death*
Average risk of COVID-19 death
Moderate (Twice the average risk of COVID-19 death)
High (Five times the average risk of COVID-19 death)
Risk of catching and transmitting the COVID-19 virus
Average risk of catching and transmitting the COVID-19 virus
Moderate risk (Twice the average risk of catching and transmitting the COVID-19 virus)
High risk (Five times the average risk of catching and transmitting the COVID-19 virus)
Income level
Lowest 20% income level
Average income level
Highest 20% income level
Occupation status
Not working
Non-Key worker: Can work at home
Non-Key worker: Cannot work at home
Key worker: Education and childcare
Key worker: Health and social care
Key worker: Factory worker
Key worker: Water and electricity service
Key worker: Police and fire-fighting
Age category
25 years old
40 years old
65 years old
79 years old

*Reworded for "Vulnerability to developing severe COVID symptoms" for the second pilot.

interpreted as the marginal effect on the probability of choosing a given destination.

Double-bounded contingent valuations

List experiment

2 Conjectures

There is an on-going debate as to what COVID-19 allocation criteria should be prioritized. Model-based efforts identify those prioritization strategies that are likely to generate the highest positive impact on cumulative incidence and mortality. A recent case in point is Bubar et al. (2020) who looked at distribution in the U.S. and Chinazzi et al. (2020) who examined alternative global allocation strategies for the vaccine. While "evidence" based, these models ignore two critical variables: 1) politics – what prioritization schemes will the public support and hence electoral

officials endorse?" and 2) vaccine hesitancy – what sectors of the population will comply? One criterion highlighted by Bubar et al. (2020) and that we do not include in our attributes is serology-informed vaccinations. Another approach has been to ignore data and focus on ethical "first principles", as suggested by Emanuel et al. (2020).

2.1 Vaccine Allocation Priorities

Public preferences regarding the vaccine allocation may not necessarily reflect the "scientific" consensus. They are relevant though because they will play a critical role in the vaccines' successful roll-out. Central governments in most countries will not simply be able to dictate vaccine allocation. COVID-19 vaccines in most countries will be administered by local and state governments; by networks of public and private clinics; by pharmacies and supermarkets. These various stakeholders will need to buy into whatever allocation priorities are proposed and their cooperation cannot be taken for granted. Allocation priorities that are at odds with public preferences and expectations will likely fail.

Allocation Priority Conjectures We explicitly attempt to identify four possible allocation priorities: 1) a preference for equal access to the COVID-19 vaccine; 2) an allocation priority for protecting the vulnerable; 3) an allocation priority for economic efficiency and market mechanisms; and 4) a priority to those most likely to get infected and infect others (labeled super-spreaders).

The conjoint estimation is critical to establishing preferences regarding the vaccine allocation. It will allow us to establish the prevalence of these four preference types in the population. We will estimate the Average Marginal Component Effect (AMCE) of the attribute values in Table 1 for the full global sample and for each country. The relative importance of these attribute values in each country sample will provide an indication of which allocation priorities are most important. The column headings of Table 2 correspond to our four allocation priority types. The first row of Table 2 suggests what patterns in the attribute value weights, from the conjoint experiment, correspond to our four allocation preference types.

The survey includes a series of additional questions that allow us to identify these allocation preference types in the population. Again, the column headings in Table 2 indicate the allocation preference types. Beginning with the second row in Table 2, we identify other questions in the survey

that help identify these allocation preference types. Those who indicate a willingness to pay for a vaccine (Q.7.2-7.6) are what we are calling "efficient/market" types. Similarly, those who select the low bid in the age/productivity willingness to pay question (i.e., indicate a preference for a younger vaccine recipient) are characterized as "efficient/market" types. There are items in the series of Q10.8 agree-disagree question that indicate whether an individual falls in the "protecting vulnerable populations" and "efficient/market" types. Finally, the series of vaccine priority questions (Q10.9) allow us to identify individuals who favor each of our four allocation priority categories.

	Egalitarian	Protecting Vulnerable	Efficiency /Markets	Super Spreader
Conjoint	No effects	Risk/ Age/Trans	Product Occ. Trans/ No income effect	Risk Contract Transmit
WTP Q.7.2-7.6	\$0	\$0	$>$ \$0	
WTP Age/Productive (Q576)	ratio $= 1$	ratio $= 1$	ratio > 1	
Vaccine required (10.8)		✓	✓	
Vaccine priority (10.9)	✓	✓	✓	✓

Table 2: Vaccine Allocation Preferences

[2]

Mandatory Allocations Conjectures. We explore a second dimension of the COVID-19 allocation policies; specifically the extent to which the general public would support government mandated COVID-19 vaccinations. Mandates may be required given growing public antipathy regarding vaccinations. Public opposition to such mandates could make them difficult to implement and prove politically costly for elected governments. We ask a battery of questions designed to construct a scale that measures an underlying preference for freedom of choice versus government mandated COVID-19 vaccines. The variables for the scale are based on the following questions:

- Q. 10.8 All school children should be required by law to have the COVID-19 vaccine.
- Health clinics should be required by law to administer the COVID-19 vaccine to all their registered patients.
- Whether a person gets the COVID-19 vaccine or not should be a matter of personal choice.
- Any individual over the age of 65 should be required by law to get the COVID-19 vaccine.
- Employers should be allowed to require all employees to take the vaccine.
- The government should make the COVID-19 vaccine mandatory for everybody.

The analysis will explore the factors that might explain ambivalence toward government mandated vaccinations. We will be particularly interested in teasing out whether principled reservations about government mandates are at play here versus concerns with, or opposition to, the COVID-19 vaccinations or to vaccinations in general.

Polarized Vaccine Public Conjectures. Our expectation is that the public's preferences on vaccine allocations will be heterogeneous. A more challenging vaccination environment will be one in which the public is very polarized on the issue of vaccine allocation policy. Our analyses will anticipate the possibility of a polarized vaccine public. A polarized public would suggest the following results: 1) the division of population types into opposing allocation preferences – such as "saving lives" versus "efficiency"; 2) similarly, a population split on the issue of government mandated vaccinations; 3) a similar and reinforcing dichotimization of the population on vaccine hesitancy.

2.2 Vaccine Hesitancy

The success of the COVID-19 vaccine effort will require a significant percentage of the population to agree to be vaccinated. We designed the global survey in order to identify 1) the likelihood that different segments of the population would accept the COVID-19 vaccine; 2) explanations for vaccine hesitancy; and 3) a vaccine narrative that would moderate vaccine hesitancy. Table 3 indicates the variables that contribute to these three themes.

	Extent	Side Effects	Efficacy	Anti-Vax	Immunity	Liberty Equity
C-19 Vaccine? (10.1)	✓					
Why Not (10.2)		✓	✓	✓	✓	
C-19 Vaccine - others? (10.7)	✓			✓		
Vaccine imposed? (10.8)	✓					✓
Vaccine priority (10.9)	✓					✓
Vaccine history (10.10)	✓			✓		
Vaccine Opinion? (12.1)		✓	✓	✓		
COVID-19 Opinion? (16.2)		✓	✓	✓		

Table 3: Vaccine Hesitancy

[2]

2.3 Global Equity

The COVID-19 global pandemic raises a number of broader questions regarding the public's support for policies aimed at reducing the social and economic costs of this and subsequent possible pandemics. The project includes a number of measures designed to calibrate public support for such policies. These fall into two categories.

2.3.1 Willingness to pay to mitigate COVID-19 and future pandemics

The COVID-19 pandemic has shed a spotlight on the resilience and efficiency of healthcare systems, and their ability to cope with unexpected crises.

The insight from the concept of 'option value' Weisbrod (1964) is that there can be value in having access to use of a public good or service, even if there is uncertainty as to whether or not it will ever actually be used. The pandemic has presented some obvious examples. Many countries have struggled, for example, with shortages of personal protective equipment, health professionals, intensive care unit (ICU) beds and mechanical ventilators Legido-Quigley et al. (2020). Another potentially major example is biomedical research infrastructure, which has contributed to developing treatments and vaccines.

One potential method for evaluating the option value of building resilience to pandemics is to elicit the public's willingness to pay, for example via taxation. We included a number of questions in the global survey that will enable us to estimate several indicators of the public's willingness to pay for pandemic resilience.

We also plan to conduct a number of secondary subgroup analyses to assess the extent to which any willingness to pay we elicit holds across 'altruistic' and 'non-altruistic' subgroups; subgroups defined according to their 'willingness to take risks with their health;' subgroups defined by equivalised household income level; subgroups defined by political partisanship; highest educational level achieved; and according to experiences with COVID (including lost income).

We hypothesise that, in each country, the willingness to pay these pandemic related taxes will be greater among:

a) The more altruistic half of the sample; b) The half of the sample with highest equivalised household income; c) Those who identify as left/centre politically (versus those who identify as

right politically); d) Those with at least a first degree.

The other subgroup analyses will be exploratory.

Table 4 indicates the questions that will inform these analyses.

Research Themes	Questions
Willingness to pay for health care facilities and medical workers	18.1-18.5
Willingness to pay additional tax on airline tickets in order to fund spending on facilities, testing, and medical workers aimed at preventing the spreading of viruses between countries via air travel	18.9-18.13
Sub-group analyses	
Altruism: Willingness to donate money to a good cause	10.4
Risk: Willingness to take risks with health	10.1
Equivalised household income	22.8; 22.12-22.15
Experiences with COVID, including lost income	14.4 – 14.6
Political partisanship	21.1-21.3; 22.11
Education (University first degree or higher)	22.2

Table 4: Willingness to pay to mitigate COVID-19 and future pandemics

2.3.2 Global Equity: Attitudes towards low and middle income countries being donated vaccine doses by high income countries

While governments need to make decisions at a national level, there also needs to be a coordinated international effort. To date, high-income countries have already ordered vastly more doses than low and middle income countries and international efforts to acquire a similar number of doses for low and middle-income countries are struggling to gain traction. Yet the infectious nature of COVID-19 means that it is in the interests of all countries to ensure it is contained globally. We included a number of questions in the global survey that will enable us to estimate several indicators of the public's attitudes towards the importance of ensuring globally equitable access to a COVID-19 vaccine. As with the willingness to pay analyses, we also plan to conduct a number of secondary subgroup analyses to assess the extent to which attitudes to global equity in vaccine allocation holds across 'altruistic' and 'non-altruistic' subgroups; subgroups defined according to their 'willingness to take risks with their health;' subgroups defined by equivalised household income level; subgroups defined by political partisanship; highest educational level achieved; and according to experiences with COVID (including lost income).

We hypothesise that, in each country, the responses favouring a greater emphasis on vaccine provision for people who need them most, cannot afford to buy them and for poorer countries will be greater among:

a) The more altruistic half of the sample;

b) The half of the sample with highest equivalised household income;

c) Those who identify as left/centre politically versus those who identify as right politically;

d) Those with at least a first degree.

The other subgroup analyses will be exploratory.

Table 5 indicates the questions that will inform these analyses.

Research Themes	Questions
COVID-19 treatments and vaccines should first be provided for: those in the world who need them most; those around the world who cannot afford to buy them; those who live in the country in which they are first developed.	18.6
How much, if any, of the doses the government has purchases should it donate for distribution to poor countries [UK, US, Italy, Spain, France, Australia, Canada and China only]	18.7
How much, if any, of the doses richer countries have bought should they donate for distribution to poorer countries [Chile, India, Brazil, Colombia and Uganda only]	18.8
Sub-group analyses	
Altruism: Willingness to donate money to a good cause	10.4
Risk: Willingness to take risks with health	10.1
Equivalised household income	22.8; 22.12-22.15
Experiences with COVID, including lost income	14.4 – 14.6
Political partisanship	21.1-21.3; 22.11
Education (University first degree or higher)	22.2

Table 5: Attitudes towards low and middle income countries being donated vaccine doses by high income countries

3 Impact of COVID19 on Income Inequality

There is much discussion and interest regarding the impact that COVID-19 is having on inequalities. This interest is heightened by a growing body of evidence that disadvantaged group are generally more vulnerable to suffering severe morbidity and death from COVID-19.

In this study we collect data that will enable us to estimate the impact of the pandemic on income inequality in each country. We will estimate equivalent household income from the survey questions on household income (Q22.8), family size (Q22.12) and composition (Q22.13) using the OECD modified equivalence scale. In addition to the variables needed to construct an equivalised household income variable, we also ask respondents whether they have lost income from a job or business as a result of COVID-19 (Q14.4) and, if so, to indicate what percentage of their income they have lost since the beginning of the pandemic (Q15.5). This will enable us to estimate pre-pandemic income, using Q14.5 to adjust income-upward for estimated losses. We will use this to estimate the effect of the pandemic on income inequalities.

We will estimate income inequality levels in all countries both before the pandemic and in December 2020, during the pandemic. We will estimate inequality using a number of standard inequality indices, including relative (e.g. Gini coefficient; Coefficient of Variation; Mean Log Deviation), intermediate (Krtscha; Intermediate Gini) and absolute (Standard Deviation; Absolute Gini).

We hypothesise that, in each country, inequality has:

a) increased during the pandemic according to relative measures - i.e. the Gini coefficient, Coefficient of Variation and Mean Log Deviation

b) decreased during the pandemic according to absolute measures - i.e. the Standard Deviation and Absolute Gini.

Hypothesis a) is because we expect that people living in a context of greater deprivation have suffered proportionately greater losses to income.

Hypothesis b) is based on our understanding of the properties of the measures and evidence from our prior work that absolute inequality measures typically increase when incomes rise **?** – the converse should apply here as incomes fall during the pandemic.

Some of the inequality measures we propose using (e.g. the Mean Log Deviation) have the

attractive property that they can be decomposed by population subgroup. This will enable us to explore the sources of any changes in inequality that we identify. For example, we will decompose income inequality pre and during pandemic into inequality between and within different genders, ethnicities, education levels and political affiliations. We will investigate this using the Mean Log Deviation, which is decomposable into within-group and between-group components. Our hypotheses in each country are that, relative to pre-pandemic:

a) The proportion of inequality between 'white' and 'black and ethnic minority (BAME)' groups has increased;

b) The proportion of inequality between 'male' and 'female' groups has increased;

c) The proportion of inequality between those who identify as 'left/centre' politically versus those who identify as 'right' politically has increased;

d) The proportion of inequality between those with at least a first degree and those without a first degree has increased.

We will also explore, without prior hypotheses, regional inequality decompositions.

Research themes would include:

- Sub-group analyses
- Political partisanship (21.1-21.3; 22.11)
- Education (University first degree or higher) (22.2)
- Age, gender and Ethnicity (3.1; 3.2 and 22.9)

Income inequality will be decomposed into inequality within and between subgroups defined according to these criteria.

3.1 Polarization

Bipolarization refers to the extent to which a society can be viewed as being bunched together into two broad camps, which differ from one another with regard to some characteristic or characteristics. Some theoretical political economy models have suggested that bi-polarization is a predictor of social conflict and even civil wars Esteban and Ray (1999). In empirical analyses, bi-polarization

has typically been measured with respect to income distribution Roope, Niño-Zarazúa and Tarp (2018).

In recent years, non-income dimensions of polarization have risen to the fore in public discussions. Events such as the 2016 election of Donald Trump as US President, and the Brexit referendum in the UK are widely considered to have split population opinion into two camps with deeply opposed world views. The global surveys in this study provide an unusual opportunity to investigate the extent to which income polarization acts as a proxy for other aspects of polarization.

For each country we will collect data on income and a battery of indicators of other dimensions of polarization, based on the same underlying variables as in Table 4 (e.g. left/right; political party; favourite newspaper; Vaxxer/antivaxxer; education level; attitudes to the virus e.g. masks; altruism; willingness to donate doses to poor countries; willingness to pay taxes for medical research).

Using standard measures of polarization from the literature, we will investigate:

a) whether those countries that have more income polarization are more polarised in these other respects;

b) compare the levels of polarization among the different countries in the sample, in terms of income and a wide range of other indicators.

3.2 Health-related quality of life

A strength of our survey is that we include a module assessing the current and pre-COVID-19 health status of surveyed individuals using a well-validated instrument, the EuroQol 5 Dimensions 5 levels (EQ-5D-5L) questionnaire (Dolan et al., 1995) which can be used to estimate health-related quality of life (HRQoL).[3]

The EQ-5D-5L contains 5 simple questions each concerned with a different area or "domain" of everyday life: mobility, self-care, usual activities such as work, study, housework and leisure activities, pain/discomfort and anxiety/depression. Against each of these questions, the respondent says whether they have no problems, slight problems, moderate problems, severe problems or extreme problems. The answers to these questions provide a description, or profile, of the respondent's health-related quality of life, and a weight or value can then be placed on each profile using the results of large surveys (Dolan et al., 1995; Oppe et al., 2014) in which members of the public were

[3] `https://euroqol.org/eq-5d-instruments/eq-5d-5l-about/(accessed25.11.2020)`

asked how good or bad they thought each described health state was.[4] So each answer can be assigned a weight, ranging from 1 = full health to 0 = dead. The scale actually goes below 0, with some states – such as being in severe pain and immobile - being considered worse than death. The advantages of this questionnaire are that it is quick and easy to fill in, and can be used for virtually any disease area or for general surveys. Another component of the EQ-5D is the Visual Analogue Scale (VAS), which records the respondent's self-rated health on a scale, where the endpoints are labelled 'The best health you can imagine' and 'The worst health you can imagine'. The VAS can be used as a quantitative measure of health outcome that reflect the respondent's own assessment.

Proposed methods To explore the potential impact of COVID-19 on HRQoL of the surveyed individuals, they will be requested to complete two separate EQ-5D-5L questionnaires: one in relation to their current health status at the time of the survey; the other, retrospectively, thinking about their health status prior to the COVID-19 pandemic. The main focus of the analyses will be on the respondents perceived change in their health between pre-COVID-19 pandemic and the time of the survey using both the EQ-5D-5L questions and the VAS.

Descriptive analysis. We will quantify the both downward and upward changes in response categories for each of the EQ-5D-5L questions ("domains") as well as the VAS by country and test for differences. We will also quantify changes in HRQoL by converting the EQ-5D-5L survey responses into health "utility". As HRQoL valuation usually depends on country-specific living standards, cultural values and, more generally, broader macroeconomic circumstances, responses to the EQ-5D-5L questions pre-COVID-19 and at the time of the survey will be given a HRQoL valuation using country specific value sets, whenever available.[5] Retrospective EQ-5D has been used previously in surveys (Violato and Gray, 2019).

We will look at the heterogeneity in responses (i.e. upward and downward perceived health) across a wide range of factors (including age, sex, education, and health conditions including reporting having had COVID-19) and test for differences in changes across these factors. Statistical comparisons of unadjusted changes in HRQoL within countries will be made using t-tests and z-

[4] https://euroqol.org/eq-5d-instruments/eq-5d-5l-about/valuation-standard-value-sets/ (accessed25.11.2020)

[5] https://euroqol.org/eq-5d-instruments/eq-5d-5l-about/valuation-standard-value-sets/ (accessed25.11.2020).

tests. For between countries analysis we will use one value set of choice (to be determined) for all countries, but we will conduct a robustness check by using country-specific value sets where they are available. We will also assess the degree to which between and within country changes in health-related quality of life are related to severity of lockdown.[6]

Impact of COVID-19 pandemic on health inequalities health poverty. The impacts of the pandemic on income-related health inequalities will be quantified using bivariate inequality measures using both rank-dependent and level-dependent indexes (Erreygers, Clarke and Zheng, 2017). We will estimate equivalent household income from the survey questions on household income (Q22.8), family size (Q22.12) and composition (Q22.13) using the OECD modified equivalence scale.

Given the bounded nature of the health variables, the primary emphasis will be on reporting use of absolute inequality measures. We will primarily focus on the pre-pandemic and current reported health across equivalent income to determine if pandemic has impacted on health inequalities. In addition to reporting comparison across countries we will undertake sub-group decomposition (for factors including age, sex, education group, major health conditions) for the levels index as it allows perfect within and between group decomposition (Erreygers et al., 2018). We will also explore estimating the pre-pandemic income.

4 Design

Sample The samples of residents from each of our 13 countries were selected to reflect the population distribution on key socio-economic variables; age; gender; income; education; and region. We adopt different strategies depending on the country. Most samples are generated by our partner Respondi.[7] We monitored sample quotas for each country with target joint distributions on region, gender and education that were obtained from recent census or labor market surveys. Respondi also monitored sample quotas based on marginal benchmark distributions for age, gender, income education and region. In the case of Chile and Uganda we construct the subject pool by recruiting

[6] `https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker` (accessed 25.11.2020) (Oxford COVID-19 Government Response Tracker (OxCGRT)).

[7] Further information on Respondi is here: `https://www.respondi.com/EN/`.

participants using Facebook Ad Manager (Zhang et al., 2018).[8] The India sampling and field work is coordinated by the Delhi-based Centre for Social and Behavioral Change. In each country we interview between 1200 and 1500 respondents. Table 6 summarizes the countries, sample sizes and languages.

	Sample Size	Respondent	Language	Date
Australia	1500	Respondi	English	21-30/11/2020
Brazil	1500	Respondi	Portuguese	21-30/11/2020
Canada	1500	Respondi	English/French	21-30/11/2020
Chile	1500	Santiago CESS	Spanish	21-30/11/2020
China	1500	Respondi	Chinese	21-30/11/2020
Colombia	1500	Respondi	Spanish	21-30/11/2020
France	1500	Respondi	French	21-30/11/2020
India	3500	IPSOS	English	21-30/11/2020
Italy	1500	Respondi	Italian	21-30/11/2020
Spain	1500	Respondi	Spanish	21-30/11/2020
Uganda	1500	Facebook	English	21-30/11/2020
UK	1500	Respondi	English	21-30/11/2020
US	1500	Respondi	English	21-30/11/2020

Table 6: Global Sample Details

[8] The recruitment ad is available in the Online Appendix.
[8]

The Oxford COVID-19 Vaccine Project (CANDOUR) has a very strict no deception rule for all experiments conducted with its subjects; all experiments, including those conducted online, are paid; and the Project has very strict privacy and data protection rules. Subjects in all countries are provided with identical descriptions of the general experimental rules and procedures, all of which are described in detail on the Project web site.[9]

The experiments were implemented on Qualtrics. Subjects are paid for their participation. Note the conjoint components of the survey were not incentivised. Figure 1 presents the distribution of the pre-test survey duration in minutes. The mean completion time in the U.S. pilots was 26 minutes and in the pretest MTurk subjects earned an average of $ 1.5; All participants are 18 or older, each of them signed a consent form before taking part in the survey, and no deception was used.

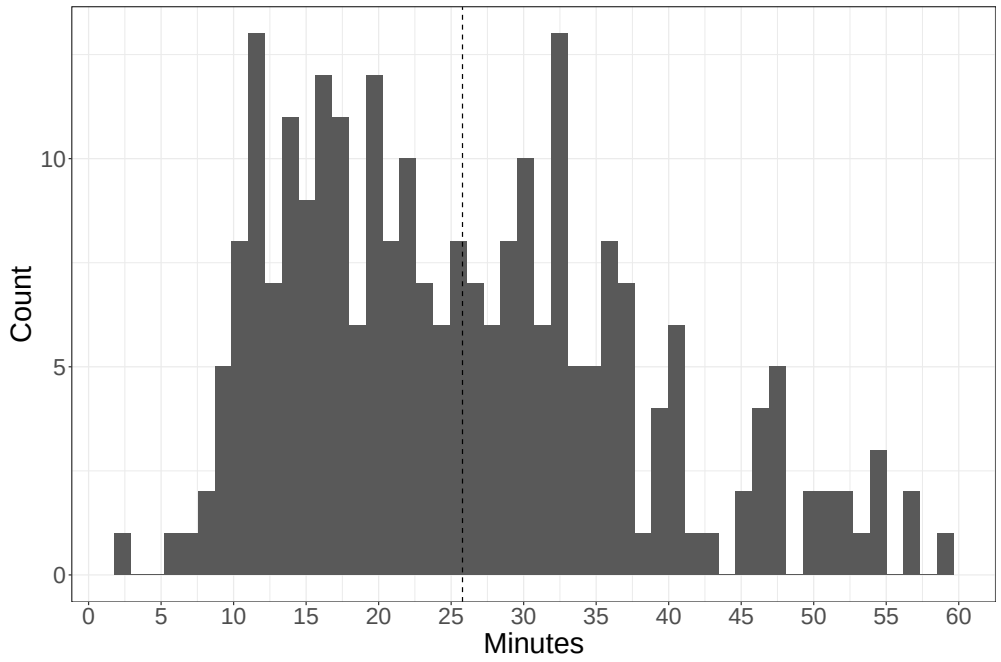

Figure 1: Survey length

[9] www.oxford-candour.com

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