Data for Nutrition

Webinar Q&A Responses

Measuring Food Insecurity in the Era of COVID-19: Practical insights from data collection activities in four global contexts

06 May 2020

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496 live participants

Sampling/Survey Methodology Questions

Q: Please explain your sampling design. How did you define your target respondents? How many people were included in your samples?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): As part of ongoing program implementation and monitoring, our frontline workers (FLWs) (n=1,500) register households and household members into a "community mapping census" using a commcare application on their mobile phones. These household lists are used to set targets and prioritize households for interventions; send SMS to households in the 1000-day period; and create a sampling frame for random selection of households for ongoing monthly district-specific monitoring surveys. During the COVID-19 lockdown, our FLWs are using the mobile numbers from their households as a sampling frame. One of their 15-20 intervention communities is randomly selected each week and the target respondents are households in the 1000-day period from that community (target:10-15 per day). In total, this means reaching 80,000-100,000 households per week with our tele-counselling; the food security questions are added into that job aid.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): The Vermont survey sample was based on a goal of achieving a 95% confidence level for a +/- 2% confidence

interval. This would have required a sample size of at least 2390 out of Vermont's adult population of 506,631. Ultimately, 3953 people responded, and 734 were excluded from analysis because they had postal codes outside of Vermont or did not fill in any survey responses. 3219 respondents were therefore eligible for analysis. For the national survey, we plan to collect a nationally representative sample of 1000 eligible adults, to achieve a +/-3.1% confidence interval at a 95% confidence level (based on an adult population of 209,100,000 in the U.S.)

We have uploaded the most recent version of our survey and methodology to the Harvard Dataverse, which can be found at: https://doi.org/10.7910/DVN/4KY9XZ

A pre-print version of our manuscript of the findings from the Vermont survey is available at: https://doi.org/10.1101/2020.05.09.20096412

Answer from Divya (IDinsight, India): We had a pre-existing sample of 27,000 randomly selected households (1,000 per district) from voter rolls in 27 districts in India. These households were part of a panel and had been surveyed by us before. Of the 1,000 households per district, we obtained about 800 phone numbers which formed the sample for the phone survey.

Q: Do you anticipate a social desirability bias in your interviews given the expectations from the sampled population?

Answer from Ed (University of South Carolina): Concerns about social desirability bias in assessing experiences of food insecurity have been raised from the introduction of this method of assessment. Validation data and long use of this method support that, when respondents do not expect to receive something as a consequence of their response, the method is accurate. So, the interviewing protocol has to make clear that this is a survey to understand their situation and that it will not affect services available or provided in any way.

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Yes, I think social desirability bias is always present when we survey households in low-income settings about these types of insecurities, and that this bias is potentially higher during emergency times. This is an important research question as we have little quantification of social desirability bias

for food and nutrition security indicators, and much less how it varies by relationship with the person/organization conducting the survey; degree of a crises; etc.

Q: For surveys that will be repeated, how did you decide on the frequency of data collection?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Our idea was to get an understanding of the food security situation across our intervention sites on a regular basis throughout the lockdown period. As our COVID-19 reporting to USAID is weekly, we set weekly tele-counselling targets for our FLWs and hence, the frequency of data collection (integrated into their tele-counselling) would also be weekly. It is important to note, however, that these are not the same households being called every week, but rather a different sub-sample of households as each FLWs' supervision area is quite large. Data collection is happening on a daily basis, but the random sampling is of a slightly different community each week.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): We are planning to repeat the national survey at one month, three months, six months, and one year after the initial survey is implemented. We chose these intervals because we anticipate that the shorter-term impacts to food security from the COVID-19 pandemic will be most observable in the first few months after the beginning of the pandemic in the U.S. We are aiming to collect data at six months and one year later to capture some of the medium- and longer-term impacts to food security. Funding permitting, we will also implement follow-up surveys at the state level in participating U.S. states.

Answer from Divya (IDinsight, India): Given the rapidly evolving situation of the pandemic and regular changes in policy, we decided to collect data monthly for at least the first four months. Some indicators are being tracked every round—such as job losses and food security—whereas other indicators—such as "knowledge levels"—were only asked in the first round.

Q&A continued on next page.

Q: How can you effectively target 'new' respondents (i.e. those that are not part of your projects, people unreached in earlier rounds)? What is the most efficient way to reach them/ensure higher rates of participation?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): We are unable to reach new 1000-day households until our FLWs can move around and register new households into our data systems.

A**nswer from Erin (Johns Hopkins Center for a Livable Future, USA):** New respondents will be reached through subsequent surveys that will be administered in states and nationally.

Answer from Divya (IDinsight, India): We have not tried to target new respondents as yet, however, we are building a database of new respondents by asking our current respondents if they can provide us additional phone numbers of community members as well as community leaders.

Q: Are respondents given an incentive for participation?

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): Participants in the Vermont survey were offered an incentive of being entered in a raffle to win a certificate to a grocery store.

Answer from Kusum (WFP mVAM, Global): Yes, usually respondents are given US $ 0.50 incentive if they complete the survey.

Answer from Divya (IDinsight, India): Respondents were given Rs. 20.

Q&A continued on next page.

Q: What do you use to capture data during telephone interviews? What types of data collection procedures do you use to improve data quality? (For example, what do you do if a call drops during mobile data collection?)

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): For data quality, we are using standard tools that were rolled out as part of the job aid; areas and households to call are randomly selected. In non-COVID-19 monitoring, FLWs read from their phones and enter answers directly into their mobile app. In this case, where they are speaking with their phones, they (1500 FLWs) enter answers into their diaries and send a photo to the district supervisor (42 field coordinators) who enters the data into excel to send to Kathmandu on a weekly basis for integration into our DHIS2 system.

Our phone interviews are not recorded. We chose 2 questions with yes/no responses rather than scales, because of concerns about FLW "multi-tasking" (between asking questions and listening to/writing answers)—the simpler the better!

FLWs already know the families they are calling and can communicate with them in local languages. If a call drops, the FLW can call the family again.

Answer from Kusum (WFP mVAM, Global): Data collection tool of our providers is similar to Open Data Kit (ODK) and KoBo toolbox. The tool is designed in a way to minimize the errors in data collection (for example: skip logics, error messages, constraints, etc.). We also run data quality checks to monitor the performance of the operator.

Since we usually do a large volume of surveys with a huge database of phone numbers, we move to another household if a call drops and it's not possible to reach them even after calling them back.

Answer from Divya (IDinsight, India): We use SurveyCTO to collect data. To maintain data quality, our Data on Demand team employs audio audits, high frequency checks, and regularly maintains a dashboard. Audio audits were conducted for 40% of the recordings that respondents consented to (overall 20% of respondents). Audio auditors filled out forms in which they entered responses they heard as well as rated surveyors on some qualitative

factors. This enabled the team to track mismatches and how surveyors were doing overall. We also employed high frequency checks on outliers, logical outliers, don't know/refusals. A dashboard of productivity and quality was created that team leaders could regularly view and use to provide feedback during their surveyor debriefs. If a call dropped, the surveyor would first try calling the household back, however, if they were unable to reconnect, they would mark the form as "half complete" and indicate that the call dropped.

Q: How do you account for variable phone access and internet connectivity? Do you think the method of data collection you chose (phone, online) led to a representative sample or biases your results? What populations/groups do you assume you are missing?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Mobile phone ownership is high (85%+) among households with a child 0-5 years across Nepal. Of course, the poorest of the poor may not own this asset and may be missing from this type of survey, but we do think the bias is minimal given growth in mobile phone ownership in the last few years.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): We recognize that an online survey may not have captured the experience of those without internet, particularly people with lower incomes and who are aged over 65. However, a 2019 Pew Research Center study found that approximately 90% of adults in the U.S. do use the internet. In Vermont, the U.S. Census Bureau estimates that 81% of the population has an internet use plan. Given social distancing rules in place at the time of data collection and the need to rapidly collect responses, we chose to implement the survey online. Participants for the U.S. national survey will be recruited using a Qualtrics survey panel. We will set recruitment quotas for gender, age, household income, and race to achieve a nationally representative sample.

Answer from Divya (IDinsight, India): We account for variable phone access by adjusting weights in our analysis accordingly—we have data from all respondents who were surveyed before to be able to do that. Our survey response rate was 57%.

Question Selection/Refinement Questions

Q: How could Food Insecurity Experience Scale (FIES) be better adapted to fit the COVID-19 context? It is very focused on economic barriers, with most questions referring to "lack of income or other resources" as the stressor. However, with COVID-19, it seems the barriers to food access are broader, including aspects of physical access as well.

Answer from Ed (University of South Carolina): Regarding the conditional phrase in the FIES, we have some experience changing the conditional phrase for seniors and children. Seniors can have barriers besides money and children may not know the monetary situation. In the FIES, the most common phrase is "because of a lack of money or other resources" because the presumption is that food will be physically available in the environment. With COVID-19, it could be modified to something like "because of a lack of money or other resources, or because food is not available". Another option would be to generalize it to "because you could not get food". These modifications are untested.

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): We specifically did not ask about worry around money to buy food, but rather access to food for the reason you mention. For example, worry about not being able to buy more food could be about availability, mobility restrictions, money etc., so we do not get into the reasons for the worry, but included all.

I'm keen to compare the Household Food Insecurity Access Scale (HFIAS) to the two questions we are using and other tools being used during COVID-19 to understand variation.

Answer from Divya (IDinsight, India): It is true that FIES is limited in that it focuses on economic barriers. We had not tried adapting it to address other barriers, however, we added other food security related questions related to price changes/market availability of certain food items.

Q: Do you think surveys could accommodate more qualitative data collection?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Qualitative data collection (and even more quantitative, since this are only two questions) would be great—the challenge for a program like ours is balancing limited phone time with a family on COVID-19 related information; standard Suaahara II (IYCF, WASH, etc.) counselling; and data collection. Another challenge is how to aggregate qualitative data and make use of it in a timely manner.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): We have included some options for participants to provide qualitative data in their responses, although that has not been the primary focus of our data collection. For example, the Vermont qualitative responses have yielded rich data on experiences accessing food assistance during COVID-19.

Answer from Kusum (WFP mVAM, Global): This has been explored by various agencies. We collect a few open-ended responses, but the challenge is the analysis of qualitative data, considering the volume of our surveys.

Answer from Divya (IDinsight, India): Definitely think that surveys could accommodate more qualitative data collection. They add color and can provide some reasons for the quantitative findings. Furthermore, information from qualitative surveys can help craft future quantitative questions. Surveyors should be experienced in qualitative work and trained in establishing rapport with respondents. Also, the length of the survey should not be too long—our teams kept the interviews between 15 to 25 minutes. Our teams have conducted qualitative interviews with respondents in the past.

Q: Do you have recommendations on how to capture changes in diet quality in these surveys?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Measuring changes in diet quality would be tricky, unless you want to ask about whether specific types of foods (e.g. dark green leafy vegetables; eggs; meat; etc.) are being consumed or perhaps some of the HFIAS questions.

Answer from Divya (IDinsight, India): During this round, we are asking respondents whether their consumption of different food groups have increased, decreased, or stayed the same before and after lockdown. A recommended module is the FANTA Household Dietary Diversity Score for Measurement of Household Food Access.

Q: Can you clarify the recall period for the questions asked?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): In our survey, we did not ask a specific recall period, but rather if they are "currently worried."

Ethics Concerns

Q: One challenge with rapid research at this time is ethical approvals. Given how long an IRB review usually takes and the fact that (in some places) IRBs are not meeting due to social distancing guidelines, how did each of you deal with that challenge?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Given that ours is happening as part of an intervention and a job aid, we did not apply for ethics. Our entire monitoring system, however, including the original listing of the households and individuals had already received local ethics approval.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): The Johns Hopkins Bloomberg School of Public Health IRB has been processing IRB approvals during the COVID-19 stay-at-home order in Maryland and has prioritized projects related to COVID-19. Because of this, we have been able to apply for and receive IRB approval. The University of Vermont partners also received IRB approval for the Vermont study. Both the national survey and the Vermont survey were deemed "exempt" from human subjects research, which expedited the IRB review process.

Answer from Divya (IDinsight, India): We care deeply about ethical challenges around reaching out to respondents who may already be in difficult situations in the context of COVID-19.

We deploy carefully piloted consent processes and respondents are informed that they can stop the survey at any point. As our survey was not highly invasive and we were not seeking publication, we did not seek external IRB approval. However, we sought internal approval from our internal ethics committee.

Q: For those that used mobile phone data collection, were there ethical issues with sharing contact numbers? Could you elaborate on how you navigated requests for access to your phone database?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Requests for access to phone numbers and other socio-economic and demographic information on the 11 million people we have registered have come from both government and non-government stakeholders, primarily those interested in using the information to target aid. We have been able to deal with this by explaining ethics and informed consent.

Answer from Kusum (WFP mVAM, Global): We have various protocols around sharing of phone numbers. When we use the phone number database of our service provider, we do not receive the phone numbers. When we have to share our phone numbers, it is done through a secure and encrypted data transfer system.

Answer from Divya (IDinsight, India): We do not share the phone numbers outside the organization, and there is a stipulation in surveyors' contracts against sharing respondents' phone numbers.

Q: Would a physical visit to respondents, with some personal protection equipment (e.g. mask, face shields) and good physical distance between respondents and interviewers, be unethical under any circumstances during the pandemic?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): This is dependent on country and organization protocols, as well as maintaining staff safety and security. As lockdowns begin to ease in some places, there will likely be a change in protocols to enable

some type of “physical distanced” programming and monitoring.

Results and Data Use Questions

Q: How can we think about analyzing/interpreting the data compared to previous surveys/available data in these contexts? What is the implication of using modified or shortened scales like some of these examples? How do we compare current findings to previous findings that used a full version of the instrument?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): The question about interpreting findings from modified/shortened/invented scales is an important one. Hopefully, soon, research will be funded to validate some of this tool (and even validated tools, such as the HFIAS) being asked via mobile phone.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): We used the U.S. Department of Agriculture’s validated 6-item food security module to capture food insecurity among participating households. This is the shortest of the USDA’s food security modules, which we used because it has less respondent burden, and to accommodate for the many other questions in our survey that captured other aspects of food access such as physical barriers to getting food and experiences with food assistance programs during the pandemic. More information on the USDA food security scale and how it compares to longer version can be found here.

Answer from Divya (IDinsight, India): During Round 1, we asked some questions similar to other COVID-19 surveys conducted in India, such as job loss/decreased earnings, relief, and knowledge questions. That way we could compare our findings to findings from other geographies within India. Comparability is trickier using modified/shortened scales, and this is a limitation to keep in mind. Since we wanted some comparability, we ensured that we kept some of the same questions within shortened scales. However, understanding how the scale is constructed/interpreted is important, as select items of a scale may not always be comparable.

Q: Do any of the surveys identify households that are relatively protected from food insecurity? Did you refer respondents who reported food insecurity to available resources/support? If the respondents had questions about COVID-19, how were those be addressed?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): We are planning to link the COVID-19 food security responses to the household's original socio-economic and demographic data and should be able to see if certain types of households are more protected from food security in crises. Since our food security "survey" is part of a COVID-19 tele-counselling intervention, the purpose of the phone call is to answer questions on health, nutrition, family planning, WASH, social stigma, migration, etc. related to COVID-19.

Our FLWs have a protocol to follow for referral if any COVID-19 issues emerge during the conversation. Also, the collected information is being reported to government and other stakeholders to understand trends in the prevalence of food insecurity overall (60% of the country is covered) and by location; based on responses given, households identified as food insecure are referred into local government food relief efforts.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): Our survey aims to be representative of the state or national population, respectively, which means that our data does include responses from higher income households and those who are not experiencing food insecurity.

We provided resources at the end of the survey for participants with information on where they could find food assistance. Because we did not collect personal identifiers beyond zip code and age, and email only for those who entered the gift card raffle, we did not follow up with specific participants afterward who indicated they were food insecure. We also aim to share our results with food assistance organizations and governments/policymakers in the U.S. to inform policies to address food insecurity in the COVID-19 response and planning for future crises.

Answer from Divya (IDinsight, India): Our surveys find widespread food insecurity that appears largely consistent across the entire distribution of socio-economic status—suggesting that

all groups, irrespective of their pre-existing privileges, were impacted by the lockdown. We did, however, find state-level differences that suggest that location and local contexts may affect food insecurity more than household-level characteristics. We will be looking at more expansive measures of resilience and deprivation in our subsequent data collection activities.

We did not have systems in place to refer respondents. At the end of the survey, the protocol for surveyors was to provide respondents with national/state helpline numbers, general information on national government relief, as well as COVID-related information, such as symptoms and precautions.

Q: How have preliminary findings been disseminated? Have they influenced policymakers' COVID-19 response and nutrition interventions for target populations?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Preliminary findings have been shared with USAID, government, and other stakeholders. The major use to date is to monitor which geographic areas that may be experiencing higher levels of food insecurity to enable planning for food aid. Specifically, those individuals who are discovered to be at risk of food insecurity by these surveys are immediately linked into local government food aid distribution schemes.

Answer from Erin (Johns Hopkins Center for a Livable Future, USA): We shared briefs of the preliminary results from the Vermont survey. They were shared with food assistance organizations working in Vermont as well as other partners in our network who work on food security. Links to resources and findings are included above on page 1.

Answer from Kusum (WFP mVAM, Global): We have been publishing and disseminating weekly dashboards/snapshots here. In some countries, we have collaborated with the government for the data collection. Other countries, governments use the data for various analyses.

Answer from Divya (IDinsight, India): Our client is a national ministry in India. We have shared our preliminary findings with our government client, which have been shared with other ministries and district-level government officials. We have also shared findings with

development partners. The findings illuminate the economic impacts of the crisis as well as COVID-19 knowledge gaps which help inform policies and communication strategies.

Q: Were you using an already developed PPI for India and, if so, was it specific to the 8 state context in which you applied the survey?

Answer from Divya (IDinsight, India): The score calculation was country-specific. "The questions, responses, and weights on the PPI scorecard and look-up table are derived from each country's most recent national household expenditure or income survey."

Q: Since Suhaahara's effort is focused on pregnant and lactating women, and children under 2 within the 1000-day period, how will the information you have collected help design any targeted nutritional intervention for these population groups?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): The findings are immediately used by connecting anyone who is experiencing food insecurity directly to local government relief efforts (about 5,000 households per week). The focus is on 1000-day households as that is Suaahara's main focus, but some of our COVID-19 interventions (e.g. SMS about stigma, handwashing frequently) have been done for the entire community regardless of 1000-day status. Our learnings about food and nutrition insecurity in these populations during COVID-19 continue and guide our programming efforts, which are adapting daily. We work closely with government and other stakeholders to share our findings and guide their efforts as well. Continuing to monitor IYCF, access to maternal, newborn, and child health services, and so on are also important.

Q&A continued on next page.

Other Questions

Q: Is a key lesson to develop systems that can be used for different (e.g. longer/shorter term) purposes?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): Yes, I think the lesson for us has been that there are many unintended benefits to having strong electronic data systems that are flexible to adapt to emerging situations.

Q: Do you know any food insecurity monitoring based on food vendors perceptions?

Answer from Ed (University of South Carolina): I do not know of any such method.

Q: For adding questions to existing research, do you think it is possible to ask three key questions using text messaging to existing research sites where communication to date with beneficiaries is via two-way text messages?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): This would be possible if communication was already 2-way text with households. In Nepal, vendors would charge the beneficiary to reply to the text which is one reason we haven't gone this route despite interest. Another major challenge is that qualitative research we have conducted, and a trial baseline dataset, are revealing that MANY households who have phones do not read or send SMS. This makes SMS a challenging means of communication as phones are thought of for oral communication and for Facebook.

Q&A continued on next page.

Q: How can you use social media or more interactive media to collect relevant information on food and nutrition security?

Answer from Kenda (Suaahara II, Helen Keller International, Nepal): We are also using Radio, Facebook, YouTube, etc. but for our COVID-19 related interventions and households can ask questions there (call-in, Facebook messenger, etc.) about food security and any other relevant topics. This is separate for us than monitoring data, because it is much harder to track who is being reached/engaging and because the bias is much greater for internet reach than mobile phone reach, for now in Nepal.

Resources

Findings

Niles MT, Bertmann F, Belarmino EH, Wentworth T, Biehl E, Neff RA. The Early Food Insecurity Impacts of COVID-19. medRxiv 2020: 2020.05.09.20096412 https://doi.org/10.1101/2020.05.09.20096412

HungerMap Dashboard. World Food Program. https://static.hungermapdata.org/hungermap/reports/hunger_covid_weekly_snapshot.pdf

Data collection tools

Commcare. Dimagi. https://www.dimagi.com/commcare/

KoBo toolbox. Harvard Humanitarian Iniative. https://www.kobotoolbox.org/

Open Data Kit. https://opendatakit.org/

Qualtrics. Qualitrics XM. https://www.qualtrics.com/

SurveyCTO. Dobility, Inc. https://www.surveycto.com/

Survey Examples

Coates J, Swindale A, Bilinksy P. *Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access: Indicator Guide (v3)*. Washington, DC; United States Agency for International Development Food and Nutrition Technical Assistance (FANTA) Project. August 2007. http://www.fao.org/fileadmin/user_upload/eufao-fsi4dm/doc-training/hfias.pdf

Food Insecurity Experience Scale (FIES). Food & Agriculture Organization of the United Nations. http://www.fao.org/in-action/voices-of-the-hungry/fies/en/

Food Insecurity Experience Scale (FIES) Data4Diets Indicator Profile. International Dietary Data Expansion Project (INDDEX). https://inddex.nutrition.tufts.edu/data4diets/indicator/food-insecurity-experience-scale-fies

Household Food Insecurity Access Scale (HFIAS) Data4Diets Indicator Profile. International Dietary Data Expansion Project (INDDEX). https://inddex.nutrition.tufts.edu/data4diets/indicator/household-food-insecurity-access-scale-hfias

Niles MT, Neff RA, Biehl, Bertmann F, Belarmino EH, Acciai F, Ohri-Vachaspati P. Food Access and Food Security During COVID-19 Survey- Version 2. 2020, Harvard Dataverse, V2. https://doi.org/10.7910/DVN/4KY9XZ

Swindale A, Bilinsky P. *Household Dietary Diversity Score (HDDS) for Measurement of Household Food Access: Indicator Guide (v.2)*.Washington, DC; United States Agency for International Development Food and Nutrition Technical Assistance (FANTA) Project. September 2006. https://www.fantaproject.org/monitoring-and-evaluation/household-dietary-diversity-score

U.S. Household Food Security Survey Module: Six-Item Short Form. Economic Research Service, United States Department of Agriculture. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools/#six

Other Resources

Butcher L, Bergemann R, Lanthorn H, Maqbool S, Nagpal K. I just called to say I want to interview you. IDinsight Blog. May 5, 2020. https://medium.com/idinsight-blog/i-just-called-to-say-i-want-to-interview-you-41df1a83b950

Internet/Broadband Fact Sheet. Pew Research Center. June 12, 2019. https://www.pewresearch.org/internet/fact-sheet/internet-broadband/

Poverty Probability Index. Frequently Asked Questions. https://www.povertyindex.org/faq-page