

Impact of COVID-19 on households and the workforce in India

Survey methodology note

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LIRNEasia is a pro-poor, pro-market think tank whose mission is *catalyzing policy change through research to improve people's lives in the emerging Asia Pacific by facilitating their use of hard and soft infrastructures through the use of knowledge, information and technology.*

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1. Introduction

The COVID-19 related lockdowns, mandating citizens to ‘stay at home’ brought about a host of challenges, from restricted mobility, to large scale job and income loss to disruptions in the provisions of essential services as well as education. To an extent, especially in urban areas, digital technology-driven solutions have been able to bridge the last mile of service delivery and help minimise the disruptions, for example through app-driven delivery services, online schooling, etc.

However, the disparities in access to technology that already existed have become even more apparent in this new context, leading to the potential for further marginalization of the already digitally marginalized. Similarly for workers, new forms of marginalization may have been experienced, with those in jobs where parts (if not in all) can be continued seamlessly from home through digital modes, versus those whose lack of access, connectivity and/or skills may not have been in a position to continue work seamlessly from home.

Given the new ‘normal’ that will be, going forward, it is imperative to understand firstly how these groups continued (or not) operations and/or work in the lockdown period, and what new forms of marginalization (or worsening of previously existing ones) were resulted in. This will give insights to design appropriate mechanisms to be used in the future.

Objectives of the study

The objective of the study was to collect the following regionally comparable data in India:

1. Nationally representative household level data on ICT access and use to enable estimates to be made within a 95% confidence interval with +/-1.7% margin of error
2. Nationally representative household level data on last mile delivery of food, medicine and other essential services during COVID-19 to enable estimates to be made within a 95% confidence interval with +/-1.7% margin of error
3. Nationally representative individual-level data on ICT access and use to enable estimates to be made within a 95% confidence interval with +/-1.7% margin of error
4. Nationally representative individual-level data on the impact of COVID-19 on labour force to enable estimates to be made within a 95% confidence interval with +/-3.0% margin of error

This data was collected by means of face-to-face surveys conducted using Computer Assisted Personal Interviewing (CAPI) and according to the methodology elaborated in this document. The fieldwork was conducted in India by competitively-procured market research company – RTI Global India.

RTI was mainly involved in the fieldwork set-up (including scripting, translating and pilot testing the questionnaire and training of enumerators) and execution as well as dataset delivery. LIRNEasia monitored the companies in most cases being involved in the field

training and monitoring the fieldwork remotely. RTI India's teams visited more than 7,000 households, 350 villages, and wards for data collection after a rigorous training of 3 days.

There were more than 50 teams who were trained for all India data collection. Each survey team comprised of 1 Supervisor and 3 data collectors. A total of 200 data collectors were involved. Each team visited the village/ward for two days to finish listing/mapping on day 1 and the main survey on day 2.

The data collection timeline was affected due to the Covid Pandemic Wave 2, the farmer protests in some regions, and the political disturbance due to elections in some states.

Throughout the data collection, RTI India and LIRNEasia adopted several quality control mechanisms which helped in giving timely feedback to the data collectors to improvise their work. The subsequent sections provide more information on the research design, coverage, field problems, remedial action, quality control mechanisms, etc.

2. Sample size determination

The desired level of accuracy was set to a confidence level of 95% and an absolute precision (relative margin of error) of 5%. The population proportion (p) was set conservatively to 0.5, which yields the largest sample size. The minimum sample size (n) was determined by the following equation

$$n = \left(\frac{Z_a \sqrt{p(1-p)}}{C_p} \right)^2 = \left(\frac{1.96 \sqrt{0.5(1-0.5)}}{0.05} \right)^2 = 384$$

Where,

n = Minimum sample size

Z_a = Z-value for 0.05 level of significance

C_p = Confidence level

p = Population proportion

Inserting the parameters for the survey yields the minimum sample size for simple random sampling; therefore, for our sample design (stratified with multiple levels in some cases) the minimum sample size was multiplied by the design effect variable.

In the absence of empirical data from previous surveys that would have suggested a different value, a value of 2 was used as the design effect for India to consider the additional levels of selection (district and sub-district) in the sample design. This yields then, a minimum sample size of 768 per country for households and individuals.

The actual sample size increased beyond the minimum requirement to compensate for clustering effects, and allow for urban/rural disaggregation of data, as well as gender-based disaggregation and more importantly to have representative data at state level for five states. As per the initial design, sample of 500 households and individuals were allocated for the states of NCT of Delhi, Maharashtra, Assam, Tamil Nadu and Kerala. Therefore, the sample size was increased to 7,500.

However, Kerala fieldwork could not be done on time due to prevailing COVID-19 pandemic situation of the country at the time. Hence, the final achieved sample size was limited to 6,995 households and individuals.

3. Sampling

Survey target groups

The target groups of the study were:

- a) All households
- b) The population over the age of 15 years

Survey respondents

In a selected household, two persons were interviewed:

1. The household head, as identified by the households themselves. If the household head was not available, a suitable alternative was sought out (e.g., spouse or other) who would be able to provide sufficient detail on the household characteristics and other members.
5. A randomly selected individual from the pool of eligible household members, i.e., any household member age over 15 years, which could even include the household head or alternative household representative.

Sample frame and PSU definition

The sample size in India was 7,500 households and individuals. The primary sampling unit (PSU) in India was the ward (urban) and village (rural). The method was developed using data on household numbers in the wards and villages of India available in the National Primary Census Abstract Data. Random sampling was performed in three steps resulting in the selection of 350 PSUs across 22 states in India.

Overview of the sampling procedure

The study methodology ensured national representation through random selection of all sampling units (ward/village, household, individual, etc.), enabled by household listing at the PSU level. Since the number of houses in wards and villages can vary significantly (for instance, some wards in Mumbai can have as many as 100,000 households), wards and villages over a certain size had to be segmented. Thereafter, a segment(s) had to be randomly selected. Thereafter, the listing and mapping of households in the segment could be done, enabling random selection of households.

The methodology involved the following steps:

1. Separation of ward/village sample frame into urban and rural PSUs

2. Sampling the required number of ward/villages from each stratum¹ using probability proportionate to size (PPS).
 - a. Where the ward/village size exceeded a critical number, wards/villages were segmented and a segment was selected randomly, in which the remaining sampling steps were continued with.
3. Mapping, listing and marking all households in the selected PSU or segment – the lists served as the sample frame for simple random selections of households; this was done with the assistance of key informants (e.g., ward / village leader, etc.)
4. Simple random selection of the required number of households (20-25 with about 5 extra households as buffer sample) from each selected PSU / segment
5. Listing all household members or visitors aged over 15 years staying the night at the selected household
6. Simple random selection of one household member or visitor for survey from the household list compiled in Step 5

PSU selection

The selection of PSUs was conducted by LIRNEasia and provided to RTI for fieldwork execution.

PSUs were selected by LIRNEasia in the following way; selected PSUs are depicted in Figure 1.

- Step 1: A sample of 175 districts was randomly selected from the total 501 districts belongs to states excluding (NCT of Delhi, Maharashtra, Assam, Tamil Nadu and Kerala) using PPS sampling
- Step 2: A sample of 10 urban and 8 rural sub-districts was randomly selected from the each states of NCT of Delhi, Maharashtra, Assam, Tamil Nadu and Kerala. A sample of 100 urban and 150 rural sub-districts were randomly selected from selected those 175 districts from rest Indian states using PPS sampling
- Step 3: The sub-districts were split into urban (wards) and rural (villages) strata and required number of wards (150) and villages (225) were selected from the selected sub-districts using PPS.

¹ There were 12 stratum used in this study. 5 states (NCT of Delhi, Maharashtra, Assam, Tamil Nadu and Kerala) divided into urban and rural PSUs and rest India divided into urban and rural PSUs.

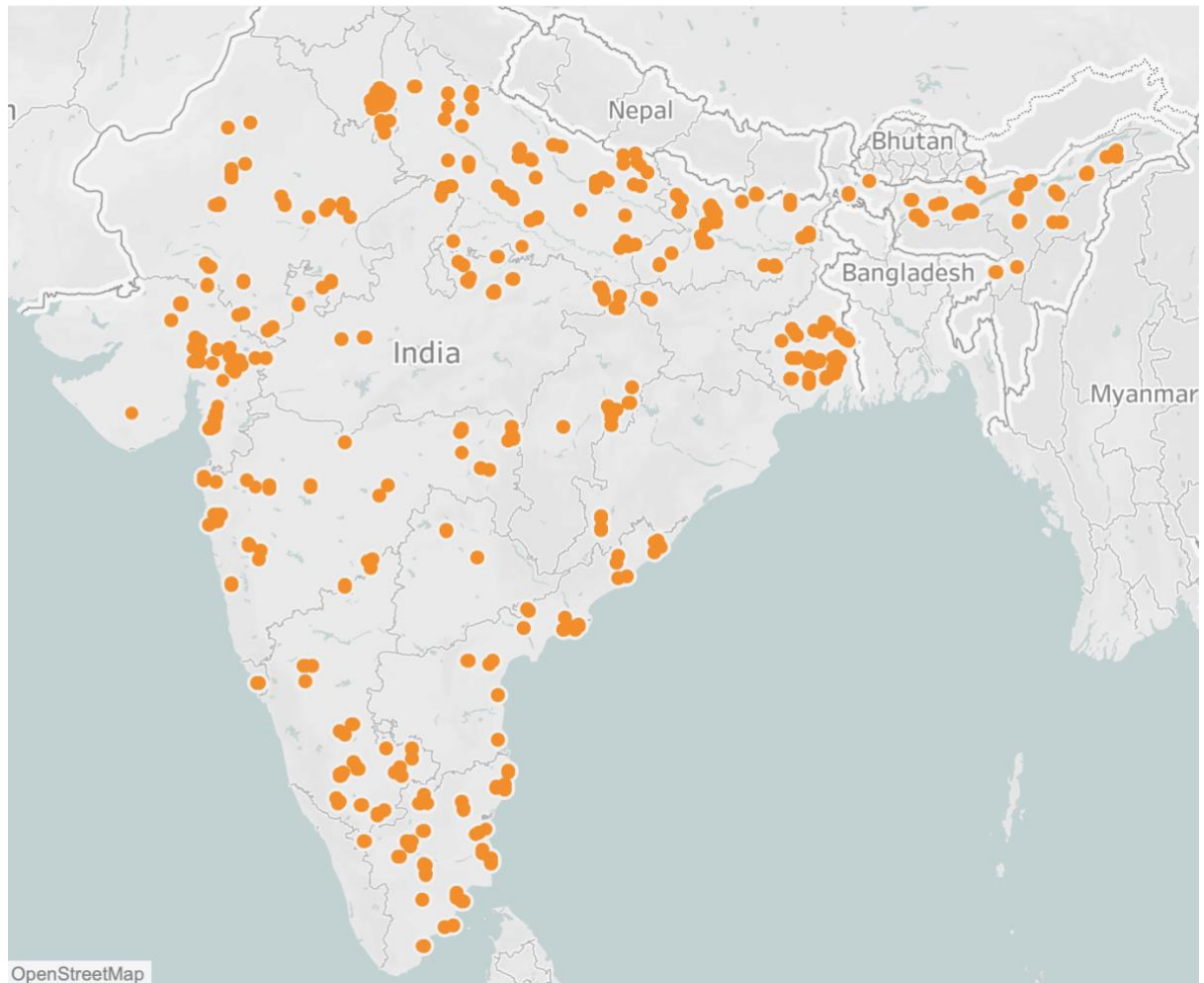


Figure 1: India sample locations

Segmentation, mapping and listing within sample PSUs

For selected PSUs, PSU-level household and population data were not readily available. In order to draw a random sample of households within a PSU, all households within a PSU had to be mapped and listed.

The objective of the mapping and listing of households was to ensure that the list of households covered the entire population living in the PSU. In this way, when the sample was selected from the list of dwellings or households, all eligible households in a PSU had equal chance of being selected for the survey.

This process was mainly used for creating a list of households from which a sample would be chosen for the main survey. This process provided a complete list of occupied residential households in a selected area. This helped in defining the complete range of households, making possible the employment of systematic and equal probability random selection of the households. As an advantage, this helped in circumventing the problem of biased household selection for the main survey.

Households are found in dwellings, dwellings are located in structures and structures in clusters (PSU). The listing operation consisted of visiting each PSU, recording on listing forms a description of every structure together with the names of the heads of the households found in the structure, and drawing a location map of the PSU as well as a layout sketch map of all structures residing in the PSU.

These details helped and guided interviewers to relocate selected households for interview during main survey data collection.

Identifying the village/ward boundaries

When arriving at a PSU, the listing team met with 2-3 key informants (KIs) to verify PSU details (e.g., numbers of households, locations of households, PSU boundaries and access routes, etc.).

- In rural areas, a KI was either one of the following: Sarpanch/ Pradhan/ ASHA/ AWW/ Panchayat member/ Village Secretary/ Senior resident/ school teachers etc.
- In urban areas, KIs were: PRI members/ Ward member/ party office / Municipality officials/ local service provides etc.

The estimates of the number of households in a PSU provided by the KIs were also checked with census 2011 data. If the number varied (more or less than 10%) the figure was validated with another available KI in the PSU. Once validated, the final figure was reported on CAPI device.

Segmentation, mapping and listing was conducted in advance by listing teams and the survey itself was thereafter conducted by the main survey teams.

Mapping

Three types of maps were prepared during the course of the fieldwork:

1. A location map was prepared when the listing team reached a PSU, to depict the main access routes to a PSU, including main roads and main landmarks in the PSU; the purpose of this was to enable the main survey team to relocate the PSU at the time of survey. The mapping layout template is shown in Figure A1.
2. A segment map was prepared to divide the PSU into segments and select the required segment as per study requirement.
3. A layout sketch map was produced in household listing operations, with location or marks of all structures found in the listing operation to help the interviewer to relocate the selected households, as well as ensure that PSU households are not missed out.
4. A sketch map also contains the segment identification information, location information, access information, principal physical features and landmarks such as mountains, rivers, roads and electric poles.

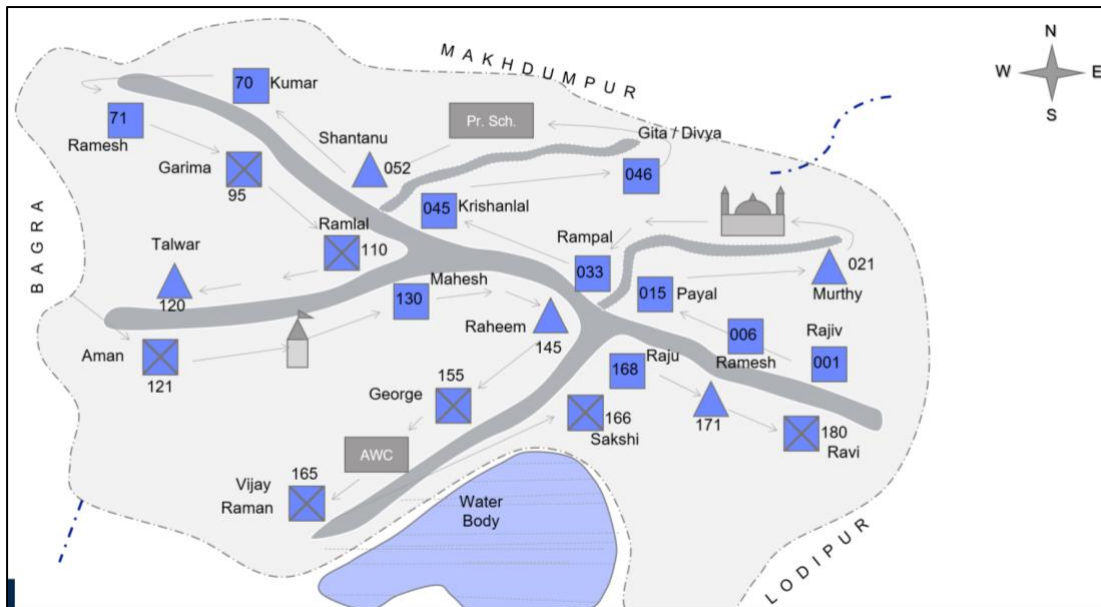


Figure 2. Layout Sketch Map (Example)

Items	Symbol		
Residential Pukka House		Footpath	
Residential Kutch house		Railway line	
Non Residential Pukka		River	
Non Residential Kutch		Pond	
Pukka Road		Well/Tap/Handpump	
Kutch Road		Temple/Mosque/Church/Gurdwara	
		School / Administrative building / post office	

Figure 3. Symbol used for preparing maps

Segmentation

If the total number of estimated households (for villages, include all hamlets) for the year 2020 or 2021 was more than 250, segmentation of the village/ward was done using the below procedure.

1. For segmenting the village/ward, the team used natural boundaries as they exist in the village in the form of landmarks like canals, rivers, ponds, footpaths, major or minor roads, schools that may exist.
2. For each segment, the estimated number of households was collected from key informants.
3. The supervisor drew an indicative map showing the approximate location of the segments and then numbered them sequentially from the northwest corner. While

drawing this map uninhabited areas and isolated households of the village were included as part of a segment.

4. The required number of segments was selected using Pretty Random App in the CAPI device.
5. The segmentation exercise and selected segment detail were plotted on the segmentation template.

The method of segmentation and determination of the number of segments to select was as per the following protocol:

1. If the estimated PSU size was between (251-500 HHs), segments of size approx. 80 to 90 HHs were formed, and 3 segments were selected randomly to ensure the listing of around 250 HHs.
2. If the estimated PSU size was between (501 – 1500 HHs), segments of size approx. 250 HHs were formed, and 1 segment was selected randomly to ensure the listing of around 250 HHs.
3. If the estimated PSU size was more than 1500HHs,
 - a. The PSU was first divided into four quadrants (4 zones i.e., North-East, East-South, South-West, and West-North) and then the number of HHs in each quadrant was estimated
 - b. From the 4 quadrants, one was selected using Pretty Random App
 - c. If the selected quadrant size was above 1500, the above process was repeated until the selected division has 1500 households or less
4. The final selected geographic division was divided into segments of approximately 250 households each. Then, one segment was selected using Pretty Random App to ensure the listing of around 250 HHs.

Listing

A listing format was developed and finalized with LIRNEasia. The listing was performed using CAPI. The details were obtained from each household during the listing process using a listing questionnaire. The data collected through the listing questionnaire included:

1. Structure number
2. Household number
3. Head of the household name
4. Household landmark
5. Address
6. GPS coordinates of the household

(a) State Name and code.....			(b) District Name and code.....		
(c) Sub-district / Tehsil Name and code.....			(d) Type of PSU Urban (1) / Rural (2).....		
(e) PSU (ward/village) name and code.....			(f) Total number of households as per Census 2011.....		
(g) Total number of households as per KI for 2021.....			(h) Number of segments created.....		
(i) Selected segment number FIRST [] SECOND [] THIRD []			(j) Date (DD/MM/YY).....		

COL 1	COL 2	COL 3	COL 4	COL 5	COL 6	COL 7	COL 8	COL 9
SEGMENT NUMBER, Put "0" if no segment	SERIAL NUMBER OF STRUCTURE	HOUSEHOLD ADDRESS / LANDMARK	IS RESIDENTIAL? YES...1 NO...0	SERIAL NUMBER OF HOUSEHOLD IN STRUCTURE	NAME OF THE HEAD OF HOUSEHOLD	REMARKS 0. Eligible Household 1. Refused 2. Permanently Locked 3. Temporary Locked 4. other	[TO BE FILLED LATER] GIVE SERIAL NUMBER TO ELIGIBLE HOUSEHOLDS TICK THE SELECTED HOUSEHOLD USE SRS APP	

Figure 4. Listing Format

Supervisors allocated walking routes to their teams (e.g., Point AB; Point BC, etc.). The team members visited the assigned route to list all the households using Right Hand Rule. The information of the household was entered into the CAPI device, on the listing template, and the Layout sketch map. The team ensured that no house was missed out on listing

Protocols followed by the team

- Structure IDs used by the lister/mappers corresponded with their route. Example: Someone walking A to B used structure IDs AB001, AB002... while someone on BC used IDs BC001, BC002, etc. so that there is no duplication of structure IDs.
- Lister/mapper wrote the structure ID using easily visible chalk or permanent marker on the gate or house wall with consent from the household member.
- Lister/mapper provided at least three to four structure information for each street on the map (starting point, mid-point, and endpoint of street) as assigned by the supervisor.
- Supervisors monitored the entire house listing/mapping operation and ensured that every structure in a segment / PSU had a structure ID.
- Supervisor collected all hard copies of the listing template from the team members and tied them in the order of walking routes (e.g., First tie AB, then BC, then CD....).
- The supervisor assigned serial numbers to the eligible households in a successive order (1,2,3....250) in COL 8

Household and individual selection

After listing of households, a frame of households was formed and 25 households were randomly selected in each PSU/segment (from COL 9). The actual requirement was 20 but selected more considering replacement of households. The main survey team then identified the households, selected the target respondents according to set procedures, and interviewed them.



Figure 5. Drawing of Sample Using SRS App (Example)

Identification of household during main survey

- Maps prepared by the listing team were used by the main survey team to reach the correct PSU / selected segment and identify the selected household for main survey.
- To identify the selected household, the address, landmark, name of head of household, structure number were displayed on CAPI screen.
- The maps prepared by listing mapping teams were used to locate the households, matching the structure number on the map to that on the wall of the household as well as the name of the selected household

Selection of household respondent during main survey

In a selected household, the household head was interviewed on household characteristics; if the household head was not available, a suitable alternative was sought out (e.g., spouse or other) who could provide sufficient detail on the household characteristics and other members.

Selection of individual respondent during main survey

In sample households, all eligible individuals (age over 15 years) were listed with the help of the household head or representative and one was selected automatically (randomly) using the CAPI device. The CAPI device was programmed to flash the selected individual’s details (name, gender, age and relationship to the household head) on the screen and was not allowed to go back after this stage.

If the enumerator failed to reach the relevant respondent on first visit, the enumerator consulted with other members of the household/staff or neighbors about the time availability of the target respondent. In case the selected respondent was not available at the first visit, a minimum of three (3) attempts (first visit +two follow up) were made (at different times of day, or based on an appointment) to reach the target respondent.

Replacement of a selected respondent within a household was not allowed. If required, whole household were replaced by drawing an additional sample from the frame.

Replacement procedures

Strict replacement procedures were set in place, to ensure the randomness of the sample at all levels was preserved. The circumstances under which replacements were allowed are detailed below.

Individual replacement

If a target respondent could not be reached after a minimum of three (3) attempts were made (at different times of day, or based on an appointment) to reach the target respondent, or the target respondent refused to participate in the research, then the household had to be replaced, with a random selection from the list of houses (applying the pre-determined sampling interval). Replacement of respondents within the household (either household or individual respondents) was strictly not allowed.

Household replacement

A household was replaced in the following situations:

- A household head or suitable alternative refused to participate in the survey
- A household head or suitable alternative was unavailable after three (3) attempts to contact them
- A house had been found to be locked/vacant after three (3) attempts to contact the house were made

A household was replaced if the randomly selected individuals from a household either (individual replacement in a household was not permitted):

- Refused to be surveyed
- Was unwell or unable to communicate (e.g., due to sickness or disability)
- Could not be reached, after three (3) consecutive attempts to reach them were made by the enumerator.

If any of these situations arose, the house was replaced with a random selection from the list of houses in the PSU/segment (applying the pre-determined sampling interval).

PSU replacement

In some cases it became impossible to conduct fieldwork in a selected PSU. For example, where security concerns prevented field teams from accessing the selected PSU, local administrative leaders did not allow field teams to conduct research, even entire villages may have migrated for a particular season or lockdown due to COVID-19 pandemic and by the administrative authority. In these cases, the local fieldwork partner (RTI) made requests for

replacement PSUs. LIRNEasia provided random replacements, where the fieldwork partner then proceeded to carry out fieldwork in.

4. Research Instrument

Development, translation and scripting

A structured questionnaire was used to capture the household and individual level data. The English language questionnaire was developed by LIRNEasia; country and regional localization was done by LIRNEasia with input from RTI also.

The questionnaire was translated into 11 languages by RTI, namely: Hindi, Tamil, Marathi, Gujrati, Bengali, Telegu, Assamese, Kannada, Malyalam, Meghalaya, and Oriya. LIRNEasia had the questionnaire translations checked over by external consultants to ensure accurate and context-appropriate translations.

The scripting of the questionnaire was done by RTI. RTI project teams tested the script for all logical and consistency checks before planning for the pilot-test. The bilingual tools and script with login details were also shared with LIRNEasia for comments and feedback before the pilot-test.

Pilot Testing

The pilot-test exercise was conducted in an actual field setting. The pilot-tests were conducted in non-sample locations, and among a range of respondents to ensure those with different literacy levels and both genders were included.

Pilot Goals

The goal of the pilot survey included:

- Estimate realistic median Length of Interview (LOI).
- Test Skipping and Routing.
- Test Language (phrasing).
- Test Translation.
- Test Understanding of the Questions, Cognitive Difficulties and Questions Sensitivities.
- Test Tablet Functionality.

Pilot Approach and Conduct

The pilot survey was conducted between February 26 and February 28 in two locations of Delhi – Deoli (urban village) and Govindpuri (urban slum). The selection of the locations was done to represent the urban and rural mix and socio-economic groups. As part of the pilot strategy, RTI team did the pre-recruitments of the respondents for three reasons:

- Seek greater cooperation of the local community and the respondents due to Covid.

- Seek sufficient time/attention of the respondents given the length of the questionnaire. This helped evaluating the questionnaire thoroughly in all aspects as outlined above.
- Avoid break ups.

Altogether, a sample of 22 was accomplished across both locations. The exercise was led by the senior RTI professionals who were accompanied by ICRIER (the other research partner for this project) team on the ground.

Based on the observations made during the pilot tests, various improvements to the field process as well as the research tools were made.

5. Consent

Prior to the commencement of an interview, the respondent was informed of the following:

1. The objectives of the research
2. That his/her participation was voluntary
3. That he/she could choose to end the interview at any point

Once informed of these, the respondent's written or verbal consent was obtained from the respondent to (1) proceed with the interview; (2) be photographed [if applicable]; and (3) be contacted again for further research. Respondents who refused to be photographed could still be interviewed if they agreed to participate.

Photography

In every PSU, while working, high resolution digital photographs were captured. Proper consent of the relevant community members was taken before taking photographs.

Two-three teams captured photographs during the listing / mapping exercise (structure number on walls, listing household, KI interview or permission) using CAPI devices

Photographs and scanned copies of the three types of maps (location, segmentation and layout sketch) were taken for documentation and verification purposes.

6. Quality Control (QC) Mechanisms

Following are some of the QC procedures that were adopted by for the survey by RTI and LIRNEasia:

1. Experienced research team: RTI India engaged the experienced core team who have conducted similar studies and have delivered large-scale surveys.
2. Translation: Survey Solutions provided a framework for managing and performing translations of the survey questionnaire. Once RTI programmed the English version of the questionnaire, Survey Solutions generated a spreadsheet based on the programmed questionnaire. The spreadsheet listed the questions, response options, and interview instructions in English. The research team shared the excel spreadsheet with the translator along with the specific guidelines to translate the text directly on the spreadsheet. The guidelines provided overall guidance for how to work with the spreadsheet as well as best practices for managing and translating multi-lingual questionnaires.
 - a. The translation process relied on the group approach of translation. In this approach, two translators independently translated the State-specific English questionnaire. Once the two translations were complete, the translators reviewed their translations and jointly produced a final translation. If there were any differences between the two translations, a third translator could act as a mediator (if necessary) to resolve differences.
 - b. After the translation of the questionnaire and discussion guideline was completed, RTI conducted an in-house QC of the translations. Among other things, the in-house QC process ensured:
 - i. Translation of all questions and response options.
 - ii. No alteration of the questionnaire during the translation process.
 - iii. Consistency between repetitive phrases throughout the questionnaire.
 - iv. Fixed any issues e.g., mistranslation, misalignment, HTML tagging, fills, etc.
3. CAPI Programming: After importing the translations into Survey Solutions, the team comprehensively tested the content and logic to ensure the translations were complete and accurate. The testing focused on three major components:
 - a. Specification Review: Before testing the scripted questionnaire, the team compared questionnaire specifications to the programmed instrument. This ensured that questions, response options, and enabling conditions were correctly programmed. The specification review allowed for quick identification of issues, such as skip logic, fills, routing, or question-wording.
 - b. Instrument Testing: RTI staff tested the programmed questionnaire. RTI immediately fixed any deviations from the survey specifications. RTI tested different scenarios to ensure Survey Solutions displayed all questions and response options and that routings were correctly programmed.
 - c. Data Review: A review of data from the test cases determined if there were issues with the instrument routing or administration. RTI delivered a data file

with some dummy cases to LIRNEasia for review and approval before the instrument was finalized.

4. Pilot survey: RTI India first carried out the pilot-test exercise before launching of the main survey. This was done to avoid potential issues that might arise during the survey implementation. A report was submitted to LIRNEasia, and the tools were modified based on the findings.
5. Recruitment: RTI data collection partners screened candidates for field positions based on maturity, friendliness, education level, prior use of tablet devices, and their knowledge of local languages.
6. Training: RTI prepared a field PPT that comprehensively documented all project protocols and procedures and produced a Training Package that contained all the materials for the state-level field training to ensure consistency in the training. RTI staff took active participation in the state-level field training.
 - a. The following points were ensured to impart quality training:
 - i. Adhering to agenda, facilitator guide, and timeline to complete everything on time.
 - ii. Buffer participants to take care of attritions and shortfall if some of the participants did not qualify.
 - iii. Daily debriefing of trainees to improve quality and effectiveness of training etc.
 - iv. Each participant was encouraged to ask questions.
 - v. Daily recap sessions, attendance, and free listing of key terms by trainees were conducted for better understanding and to keep each one on track.
 - vi. Adequate theoretical and practice sessions were provided.
 - vii. Did a full-dress field practice / mock session.
7. Raw data access to LIRNEasia: RTI India made a provision to store raw data and dashboard weekly in LIRNEasia's cloud drive that consisted of respondent's information, and quality indicators. The raw data helped LIRNEasia to give information on data quality indicators and for doing random callbacks or visits.
8. Field verifications: RTI India did surprise visits, conducted back-checks, and provided real-time coaching. RTI's presence in the field helped to close the QC feedback loop and ensured that field teams were working to meet our high standards.
9. Real-time supervision: Supervisors observed 100% of the first three surveys conducted by each interviewer; conducted back-checks on 10% of interviews; conducted daily debriefings; answered questions of the management team about specific cases; checked survey responses on tablets before data transmission
10. Telephonic back-check: RTI India QC team did more than 15% telephonic re-contact to check the authenticity of the data and cross-checked the information on certain indicators.
11. Electronic access of recordings and photographs to LIRNEasia: RTI India stored the interview recordings for the consent variable and photographs of the structure and respondent in LIRNEasia's cloud drive without disclosing the personally identifiable information of the respondents.

12. Survey management oversight: Throughout the fieldwork, State coordinators moved around the country to conduct spot-checks on the performance of the field teams. Additionally, interviews were observed at the beginning of the fieldwork period to ensure that all survey protocols are being followed.
13. Secure CAPI data collection: The tablets used for data collection and the Survey Solutions interviewer application were password protected. Throughout fieldwork, this provided two layers of security for all data stored on an interviewer’s tablets. An additional layer of data security came from the requirement that interviewers transmit completed cases from the field daily (if internet connectivity was available). Transmission of a case from the tablet to a secure cloud service resulted in the automatic removal of the case from the interviewer’s tablet. During the transmission process, cases were encrypted from the interviewer’s tablet to a secure cloud server.
14. Remote data review: RTI India scrupulously inspected the quality of raw data uploaded from the field. RTI India used their comprehensive program to validate the quality of data on the range of quality indicators. Throughout the data collection and every week, RTI India provided a quality control dashboard to the field team and LIRNEasia to identify any specific areas of concern. The following table shows the quality indicators used for quality control.
 - a. Remote Quality Indicators

Remote Quality Indicators	
Interview length	Total number of minutes spent by the interviewer within the case Number of cases with short LoI Number of cases with very long LoI
Response rate	Interviewer-level response rate
Call attempts	Number of call attempts Number of cases completed in the first attempt Number of cases closed before three attempts
Time between interviews	Number of minutes between the end of interview and start of next interview
GPS	Number of missing GPS by the interviewer
Missing data	Number of questions not asked Number of cases closed prematurely
Straight lining	Number of consecutive questions where the response is the same
Odd hour	The number of interviews started at an impossible time
Data related	Continuation rate (flag if less than 50% or more than 80%) Filter questions leading skip of a few sections Percent of Cases Approved by Supervisor, Rejected by Supervisor Number of cases Pending Action by Supervisor Unusual data patterns

15. Data cleaning: After data collection was completed, RTI implemented a series of quality control, edit checks, and edits to prepare the data file for analysis. These steps included (1) translation of string responses from local language to English and back coding of “other specify” responses, (2) ensuring variables were stored as the proper

data type; (3) coding of missing values; (4) recoding legitimate skips and item nonresponse to values; (5) implementing value and variable labels.

7. Mandatory COVID-19 Related Protocols

Since the survey took place while COVID-19 health risks still existed in India, mandatory steps were taken to ensure the safety of all parties related to the survey. The following protocols were issued by RTI with guidance from LIRNEasia's research team.

1. **Physical distancing, minimizing the number of people in close contact with each other:** Project work plans were designed to maintain 6-foot physical distancing wherever practicable. Close contact was minimized through training workers, instructing respondents, and adhering to protocols in the field. Interviews were conducted outdoors or in larger spaces more frequently than originally planned. Hallways and confined spaces were avoided where practicable. The text size on documents or screens was increased to be legible from 6 feet away.
2. **Minimizing shared contact points:** Items that got passed back and forth between people were minimized, and if used, thoroughly cleaned after use and between respondents. Wherever practicable, a work plan and supplies were designed to eliminate more than one respondent from sharing an item. Documents that had to be shown to multiple respondents were laminated to facilitate cleaning between respondents. Manipulatives were single use-only or subjected to disinfection between respondents and before storage.
3. **Preventive hygiene supplies:** Fieldwork partner - RTI provided masks, hand sanitizers, gloves, and face-shields to all its staff, data collectors, and supervisors during the field survey/ travel. It was mandatory to use all items of the kit while traveling and interacting with respondents as per the training provided.
4. **Travel considerations:** Air travel and mass transit were avoided. In the cases where it was required, all precautions and safety measures were taken. Advice was given to always keep a water bottle and some eatables, Glucose-D powder/ ORS liquid, biscuits, etc. during the day.
5. **Health Pledge:** All RTI personnel and all contracted personnel who are public-facing on RTI's behalf, working in-person with RTI staff, or visiting RTI facilities were required to acknowledge and adhere to RTI's Shared Workplace Health Pledge. The health pledge includes home isolation, reporting to HR, Symptomatic and Asymptomatic procedures.
6. **Pre-Work Health Checks:** In addition to the Health Pledge, certain work activities required additional pre-work health checks, such as a daily health affirmation or daily temperature screening. In general, personnel who were expected to be interacting in person with respondents were required to, at a minimum, take their temperature before reporting for work each day, and affirm daily that they are not symptomatic.
7. **Training:** Field staff and in-person data collection personnel were trained on the risk mitigation measures and COVID-19 protocols developed for project execution. Where practicable, training was conducted virtually. Training Records were maintained.

In case of any adverse/unforeseen event in the field: The team immediately reported to the supervisor and the project coordinator or the core research team to get suggestive solutions. The team made a detailed note of the adverse event. Based on the nature of the adverse event, the core team suggested a way to tackle it on the ground. The resolution of the adverse event came on the same day.