

Attachment 6 – UEI Household Survey Methodology

Summary

To effectively evaluate the impact of the Urban Expansion Initiative (UEI), particularly the construction of new arterial roads on the economic and health conditions of the population, a robust survey methodology was employed. A qualified Ethiopian firm (Addis Ababa-based “Amistad Civil Engineering PLC”) was selected as survey partner via a competitive tender process. Locally recruited survey teams were organized for each city, managed by locally based coordinators. Teams included both male and female enumerators. Household surveys were conducted in five languages (Amharic, Oromiffa, Sidama, Tigrinya and Wolayita), with two relevant languages used in each city. Surveys required about two weeks each city, plus two weeks for data entry and cleaning. The firm applied extensive quality assurance measures, with progress reported and discussed weekly with the NYU team, resulting in continuing refinement to the questionnaire and review procedures to ensure high quality data and results.

This methodology focused on collecting high-quality, reliable data. Amistad’s scope of work for the UEI evaluation survey included obtaining consent from households nearest to the points selected by Halton point-generated locations, conducting interviews with household heads, collating the data, and submitting de-identified data tables to other members of the research team for analysis and reporting.

Ongoing refinements were made in collaboration with the supervision of the NYU evaluation team through weekly progress reports and discussions, ensuring that the data and results met the highest standards of quality. The process included comprehensive training for interviewers and supervisors, rigorous supervision, and strong data management practices. Survey field teams-maintained data accuracy through daily checks, detailed checklists, and strict adherence to confidentiality agreements. Data entry was closely monitored, with systematic checks and corrective actions to ensure the integrity of the final dataset.

A standardized process was implemented to ensure household survey participants received incentive payments securely and efficiently. Participants were required to sign a receipt form acknowledging the payment, with these forms securely stored to maintain confidentiality and accountability.

To protect participant privacy, the survey incorporated strong data security measures, using the Open Data Kit (ODK) platform for online data entry and encoding responses. Personal identifiers were separated from survey responses to maintain anonymity, and access to the data was tightly controlled. Informed consent was obtained from all participants, with clear communication about the survey’s purpose and data handling, ensuring that the entire data lifecycle adhered to strict confidentiality and security protocols.

1. Survey Planning

The household survey, designed to assess the impact of the Ethiopia Urban Expansion Initiative, was executed through a comprehensive plan structured into key phases to ensure effective data collection, quality assurance, and successful implementation. Amistad was tasked on the process of obtaining consent from households near the Halton Points, conducting interviews with household heads, collating the data, and submitting de-identified data tables for analysis and reporting. Rigorous quality control measures, overseen by the NYU evaluation team, were enforced throughout the survey. Regular feedback sessions facilitated ongoing refinements to the survey instruments and methodologies.

The structured survey plan included several critical milestones:

- I. **Pre-Survey Preparation:** The survey methodology ensured that all necessary equipment, questionnaires, consent forms, and materials were prepared in advance. Field staff were recruited based on detailed job descriptions outlining the required qualifications and skills. Comprehensive training sessions were conducted for enumerators and supervisors, covering survey protocols, ethical guidelines, and data collection techniques.
- II. **Survey Deployment:** Field teams were organized and assigned specific areas within the cities. Halton Points lists were provided to guide the teams in their survey activities. Enumerators visited households, engaged with respondents, and conducted interviews using the structured questionnaire.
- III. **Quality Assurance and Monitoring:** Throughout the survey, rigorous quality control measures were implemented. Field supervisors performed regular spot checks to ensure adherence to procedures and maintain data quality. Refusals and replacements were managed according to the survey protocol, and completed surveys were reviewed for accuracy and consistency.
- IV. **Data Management and Reporting:** The Household survey data was continuously checked and accurately recorded, daily and periodic reports were submitted to supervisors, who compiled and forwarded team reports to central survey management.
- V. **Survey Completion and Analysis:** Data collection continued until the target number of households was surveyed in each city. Once surveys were completed, the collected data was reviewed for completeness and accuracy, and analysis was conducted using appropriate tools and techniques.

1.1. Sampling and Data Collection

A well-structured sampling procedure was critical for ensuring the accuracy and representativeness of the survey results. Developed in collaboration with Amistad and the NYU team, the survey aimed to evaluate the economic and health impacts of new arterial roads. Technical support from the Mumbai-based “Urban Observatory” involved analyzing satellite imagery from 2013 and 2022. The target population included 4,000 adult household heads or

their spouses residing in urban expansion areas, defined as zones of new construction beyond city boundaries as of 2012. Households were categorized into an impact group (within 500 meters of the new roads) and a control group (300 meters further away).

The study sample comprised 500 households from each of the eight cities, evenly divided between the intervention and control areas. Geospatial analysis of satellite imagery was used to map urban expansion zones and identify new arterial roads within each city. To facilitate random household selection, a Halton point selection method was employed, pinpointing GPS coordinates. The following table summarizes the inclusion and exclusion criteria used to select eligible households, ensuring that the study sample was both relevant and representative of the targeted urban areas.

Table 1-1 HH inclusion and exclusion criteria used for UEI evaluation survey

Study Group	Control Group
Current residence in the expansion area of the city	Current residence in the expansion area of the city
Living within a 0.5 km radius of the arterial road built after 2012 (10-minute walk)	Living far from any new or preexisting major road (farther than a 0.5 km radius)
Informed consent to participate in the study	Informed consent to participate in the study
Head of household or spouse	Head of household or spouse
Age 18+	Age 18+

1.2. Data Collection Method

Data collection was conducted through in-person interviews with the head of the household or their spouse, using a standardized questionnaire tailored to capture essential economic and health information. The questionnaire was carefully designed and translated into the relevant local languages to ensure clarity and comprehension. To safeguard respondents' privacy and confidentiality, the survey tool minimized the collection of personally identifiable information. The data collection process was further strengthened by immediate local data entry and centralized coordination, which minimized errors and enhanced the overall quality of the data. All collected data was systematically entered into the ODK platform by trained data entry teams, ensuring that the survey results were both accurate and reliable.

1.3. Recruitment of Fieldworkers

To support the survey operations, each city's field survey teams were organized. These teams consisted of 10 groups, each with 2 enumerators, supported by 5 supervisors to oversee the fieldwork and ensure adherence to survey protocols, with the survey in each city closely monitored by locally recruited city survey managers and city survey coordinators. Additionally,

Quality Assurance and ODK integration experts from Amistad actively contributed to the field survey quality assurance, monitoring, and ensuring the smooth integration of survey logistics process. This structured approach safeguarded that the survey was conducted efficiently, with high standards of data quality and accuracy.

Recognizing the critical role that skilled and motivated fieldworkers play in ensuring the success of household surveys, Amistad focused on selecting the most qualified candidates. Amistad implemented a rigorous recruitment process for fieldworkers to ensure the successful execution of the household survey for the Urban Expansion Initiative. This process began with crafting detailed job descriptions that emphasized the required qualifications, local knowledge, language proficiency, and prior survey experience. The selection process involved thorough application reviews, interviews, and practical assessments to guarantee that candidates were not only technically skilled but also culturally sensitive, capable of engaging effectively with diverse communities.

The recruitment process involved an application phase, a detailed briefing on the survey's goals and scope, followed by a written test and an interview. The selection process was standardized to ensure that candidates possessed the necessary skills and qualifications, including:

- **Language Proficiency:** Fieldworkers were selected based on their proficiency in the languages spoken in the study areas, including Amharic, Oromiffa, Wolayita, Sidama, and Tigrinya languages.
- **Cultural Familiarity:** Candidates with a deep understanding of the cities and communities where the study was conducted were prioritized.
- **Survey Experience:** Previous experience in conducting and supervising household surveys was a key criterion, particularly experience involving human subjects.
- **Technical Skills:** Proficiency in GPS map navigation and the use of smartphones and tablets for recording interview responses was required.
- **Ethical Standards:** A strong understanding of ethical principles, including the confidentiality of information and respect for participant privacy, was essential.

2. Training of Field Survey team

Following the recruitment of fieldworkers, Amistad conducted comprehensive training for interviewers and supervisors to ensure the successful execution of the UEI impact monitoring study. The training covered the survey's objectives, methodology, and instruments, as well as the roles and responsibilities of the field staff. It also emphasized interviewing and supervision skills, along with the ethical standards and research principles critical to the study's integrity.

2.1. Survey Manual and Training Materials

A detailed survey manual was developed to guide enumerators, supervisors, and team leaders through the technical procedures of the survey. This manual served as a key resource during the training sessions and as a reference throughout the fieldwork. Prior to the survey, the team finalized questionnaires, assembled necessary equipment, and ensured that all recruited field staff were thoroughly prepared.

2.2. Training Workshops

Extensive training was provided to field enumerators and supervisors, covering both technical and ethical aspects of the survey. The training addressed language and cultural barriers, facilitating effective communication with respondents. Rigorous quality control measures, , were implemented throughout the survey process. This included regular feedback sessions, which led to continuous refinements in survey instruments and methodologies. Review procedures were in place to ensure the highest quality of data and results.

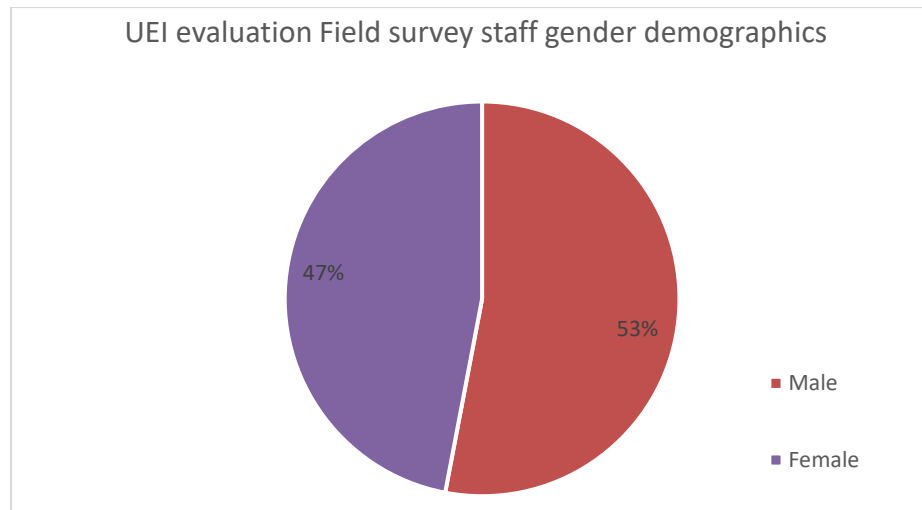
Comprehensive three-day training workshops were conducted for the field survey teams in each of the eight cities where the survey was conducted. The workshops aimed to equip participants with the methodologies and tools needed for effective data collection in the context of urban expansion. Key topics covered during the training included:

- I. **Communication Skills:** Participants were trained in effective communication techniques essential for successful data collection.
- II. **Urban Development and Expansion:** The workshops provided an overview of urban development and expansion, highlighting important concepts and current trends.
- III. **Survey Protocols:** Trainees learned about best practices for administering questionnaires, obtaining informed consent, and ensuring ethical conduct during data collection.
- IV. **Mock Training Sessions:** Practical mock interviews using sample questionnaires allowed participants to practice data collection techniques and troubleshoot potential challenges.
- V. **Data Collection Tools and Procedures:** The training introduced various tools and methods for field data collection, including the use of GPS navigation technology using mobile apps and ensuring accurate response recording.
- VI. **Field Training:** Participants engaged in hands-on field training by visiting randomly selected houses to conduct interviews. Supervisors provided guidance and support during this practical exercise.

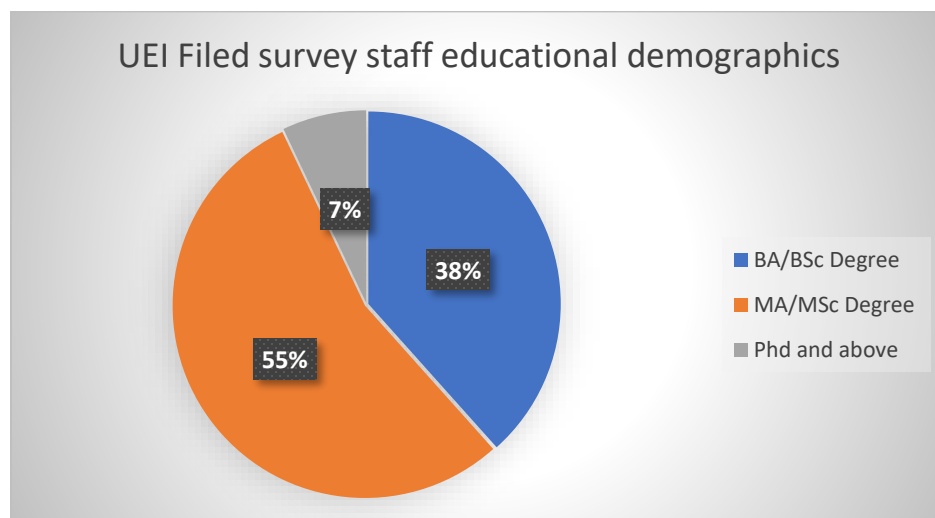
2.3. Field survey team demographics

To achieve high standards of data quality and accuracy, Amistad adhered to best practices by ensuring that respondents were interviewed by fieldworkers of the same gender. The recruitment process was designed to maintain a balanced representation of male and female

fieldworkers, resulting in a field team consisting of 47% women and 53% men across the eight cities surveyed. This gender balance not only enhanced the comfort of respondents but also contributed to the overall effectiveness of the data collection process. The following chart illustrates the gender demographics of the field survey teams employed for the UEI evaluation survey.



In addition to gender balance, the educational background of the survey teams was a key factor in ensuring the quality of the survey. The minimum educational requirement for fieldworkers was a bachelor's degree, reflecting the project's commitment to a highly competent workforce. The recruited team demonstrated a high level of academic achievement, with 38% holding a Bachelor's degree (BA/BSc), 54% possessing a Master's degree (MA/MSc), and 7% having a Postgraduate Diploma (PDD) or higher qualifications. This distribution shows that 61% of the team had advanced degrees, underscoring the expertise and competence among the fieldworkers. The following chart illustrates the educational demographics of the field survey teams employed for the UEI evaluation survey.



3. Supervision and Quality Control

To achieve the objective of UEI household survey data and results met the highest standards of quality, the process began with extensive training for interviewers and supervisors, covering the survey's objectives, methodology, and instruments. The training also emphasized the roles and responsibilities of each participant, along with the development of key interviewing and supervision skills, setting a strong foundation for consistent and accurate data collection.

All personnel involved in data collection and analysis were required to sign confidentiality agreements. These agreements strictly limited their access to the data for the study's purpose only and prohibited them from discussing any findings with third parties. To further enhance data quality, trained supervisors were deployed, each responsible for overseeing a small group of no more than five surveyors. This setup allowed supervisors to provide targeted support and daily feedback to each interviewer, dedicating 50% of their time to ensuring the accuracy and consistency of the data collected.

Supervisors were equipped with a detailed checklist to guide their quality control tasks, which included reviewing interview completion, checking data entry reports, and conducting random follow-up calls to 10% of households to verify the accuracy of recorded responses. Computerized syntaxes were run through the database to detect inconsistencies, and any identified errors prompted a follow-up by the supervisor to confirm and correct the data as needed. Furthermore, supervisors ensured that all interviews were recorded and entered into the ODK software before the field survey completion in all cities.

3.1. Data Cleaning and Entry Process

The data cleaning and entry process was divided into three critical steps to ensure data integrity. The first step involved a pre-data entry review, where each questionnaire was visually inspected to resolve any issues before data entry. The second step took place during data entry, ensuring that all questionnaire responses were accurately recorded in the dataset, with 100% verification of certain critical questions. The third and final step involved post-data entry checks, which included computerized verification of GIS and other data, and manual checking of 20% of the questionnaires against the dataset to identify and correct any incomplete questionnaires or errors introduced by respondents, interviewers, or supervisors.

These comprehensive supervision and quality control measures were vital in achieving the objective of the UEI survey, ensuring that the data collected was of the highest possible quality, free from errors, and capable of supporting a robust evaluation of the initiative's impact.

Field supervisors closely monitored operations through regular spot checks and data verification processes. Supervisors utilized a concise checklist that guided their quality control efforts, including basic rules for completing interviews, reviewing data entry reports, and conducting random calls to 10% of households to confirm that interviews had taken place and that responses were accurately recorded. The data cleaning and entry process was divided into three critical steps to ensure data integrity. The first step involved a pre-data entry review, where each

questionnaire was visually inspected to identify and resolve any incomplete responses, inconsistent responses and error records (outliers) and other related issues through visual check before data entry as presented in the table below.

Table 3-1: Data entry quality control measures for used for UEI evaluation survey

Question No.	Data entry quality control measures performed
	Visual Checking
Q3	All calendar dates were Converted from Ethiopian calendar dates to Gregorian calendar dates.
Q4 & Q5	All records of local time were converted to GMT using a 24hr clock system.
Q8	The recorded HH five digits of the geographic coordinates were checked against the latitude and longitude range of the city provided by Halton point coordinates.
Q9	For events where no response is given the issue was recorded on the report sheet. The appropriate response was then provided by the GIS Expert in accordance with the Halton Points methodology.
All	For events where the questions should have been responded but no answer was recorded, the category ‘no response’ were selected to accurately reflect the missing information.
All PPI Questions Q7; Q24; Q25; Q29; Q30; Q31; Q32; Q33; Q37; Q38 Q40; Q43; Q44; Q47; Q48; Q49; Q50; Q51; Q55; Q56	For all the PPI question numbers. All questionnaires were checked that one of the valid options has been responded for each and every question
Q18	‘More than 10 years’ was selected for responses that responded ‘I have always been at this location’
Q20	Checked for consistency with Q12
Q27	Checked for consistency with Q26
Q59	Checked for consistency with Q58 . If a response is ticked for Q59, Q58 should be ‘yes’ and not ‘no response’.
Q61 – Q80	Checked for consistency. Year of purchase was recorded only when household affirmed ownership of the items. Or, if “year of purchase” recorded then ownership was affirmed as “yes” and not “no response”.
Q62, Q64, Q66, Q68, Q70, Q72,	All dates were Converted Ethiopian calendar year to Gregorian calendar.

Question No.	Data entry quality control measures performed
Q74, Q76, Q78 and Q80	
Q85 and Q86	Checked for consistency with Q84
Q95	Checked for consistency with Q94
Q97 and Q98	Checked for consistency with Q96
Q102 and Q103	Checked for consistency with Q101
Q105	Checked for consistency with Q104
Q106, Q107 and Q108	Checked for consistency with Q105 and Q104
Q109	Checked for consistency with Q104
Q110, Q111 and Q112	Checked for consistency with Q109 and Q104
Q118	Supervisor copied the GPS Coordinate from the time stamp Photo and checked consistency with Q3 – Q8, Q117

The second stage of data cleaning and entry process were conducted thorough verification during data entry to ensure accurate recording of all questionnaire responses, with 100% verification of certain critical questions;

Table 3-2 Validation of data entry

Questions 100% verified during data entry
<ul style="list-style-type: none"> • Location: impact / control and Lat/Long: <ul style="list-style-type: none"> ○ Q8, Q9, Q117, Q118 • Additional checking by mapping software by GIS expert were conducted on all coordinates and impact/control
<ul style="list-style-type: none"> • All PPI Questions: <ul style="list-style-type: none"> ○ Q7; Q24; Q25; Q29; Q30; Q31; Q32; Q33; Q37; Q38 ○ Q40; Q43; Q44; Q47; Q48; Q49; Q50; Q51; Q55; Q56
<ul style="list-style-type: none"> • Income: Q22; Q45; Q57
<ul style="list-style-type: none"> • Food Security: Q26
<ul style="list-style-type: none"> • Water infrastructure: Q35; Q36; Q53; Q54
<ul style="list-style-type: none"> • Economic situation: Q58; Q59, Q60
<ul style="list-style-type: none"> • Health: Q99, Q100; Q101; Q104
<ul style="list-style-type: none"> • Safety: Q114; Q115

The third step for a post-data entry check involving computerized verification of GIS and other data, along with manual checking of 20% of the questionnaires against the dataset for Questions

Q10-Q23 and Q61-Q100 to identify and resolve any remaining errors or incomplete questionnaires.

3.2. Resolving data entry issues

During the Ethiopian Urban Expansion Initiative (UEI) survey, rigorous measures were implemented to address data entry issues, ensuring the reliability and validity of the collected data. Data entry supervisors were responsible for identifying the sources of errors, whether they originated from data entry personnel, interviewers, or respondents.

When an error was detected, the household interview data was traced back to its origin by comparing the entered information with the original questionnaire. If discrepancies persisted, additional callbacks to the household interviewee were conducted to verify the correct information. This thorough approach was crucial in maintaining data accuracy throughout the survey process.

To further uphold data integrity, any instance where the error rate in data entry exceeded 10% triggered a complete re-entry of all data processed by the enumerator responsible. These comprehensive measures underscored the importance of precision and accountability in the data entry process, ensuring that the data collected for the UEI evaluation was both reliable and valid.

4. Data Management and Reporting

4.1 Informed Consent

Participants were fully informed about the survey's objectives, the topics covered, and their expected time commitment. This information was presented clearly to ensure participants understood the survey before providing consent.

Participants provided consent through written forms, which detailed the survey and emphasized that participation was voluntary. In cases where verbal consent was given, the process was recorded using a mobile device, with recordings securely deleted after data transfer. All consent forms were securely stored, ensuring confidentiality.

4.2 Anonymity and Confidentiality

Participants were assured that their responses would be kept confidential and anonymized during analysis and reporting. They were informed of the measures in place to protect their personal information, providing confidence in the survey process.

All survey personnel signed a comprehensive confidentiality agreement that emphasized the importance of maintaining the privacy of the data collected. This agreement outlined strict non-disclosure requirements and underscored the duty to protect data integrity and security.

To ensure the anonymity of participants, personal identifiers such as house locations, names, and phone numbers were separated from survey responses during data entry. This information was

used only for quality assurance purposes, such as verifying the authenticity of interviews. Aggregated and anonymized data were used exclusively for analysis and reporting, safeguarding individual privacy.

4.3 Data Security

The Ethiopian Urban Expansion Initiative (UEI) evaluation survey implemented rigorous data management practices to ensure the security, confidentiality, and integrity of the data collected. By employing advanced tools and stringent procedures, the survey maintained high standards of data quality, protecting participant privacy while enabling reliable and valid analysis. These comprehensive measures were crucial in achieving the survey's objectives and ensuring the integrity of the findings.

The Open Data Kit (ODK) platform was employed for encoding responses from printed questionnaires and online data collection. Regular updates and security patches were applied under strict supervision to mitigate potential vulnerabilities. The data collected via ODK was stored on secure servers with access limited to authorized personnel who had signed confidentiality agreements.

4.4 Data Protection

Personally identifiable information (PII) was handled with the utmost care. PII was collected only when necessary and was kept separate from the primary data set to maintain anonymity. Data was aggregated for analysis to ensure that individual responses could not be traced back to specific participants.

Upon completion of the survey, all records related to the survey system design, data, and responses were permanently erased from all storage systems. Printed materials were securely destroyed to prevent any possibility of data recovery.

Access to the ODK platform and the stored data was controlled through unique user credentials and role-based access. Only approved supervisors and administrators were granted access, and all access attempts were logged for monitoring purposes. This system ensured that unauthorized access was prevented, maintaining the integrity of the data.

4.5 Payment Receipt Process

A standardized process was implemented to ensure participants received their incentive payments securely and efficiently. Participants were required to sign a receipt form acknowledging the payment, with these forms securely stored to maintain confidentiality and accountability.