Technical Webinar on Indicators on ICT access and use by households and individuals *Part 1: Best practices in data collection* 26 March 2025 Online

Use of GSBPM to plan statistical operations

José L. CERVERA-FERRI, Senior Project Manager "Promoting and Measuring Universal and Meaningful Connectivity International Telecommunication Union (ITU) ICT Data and Analytics Division





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https://statswiki.unece.org/display/GSBPM/GSBPM+v5.1

The GSBPM model

Specify needs	Design	Build	Collect	Process	Analyse	Disseminate	Evaluate
1.1 Identify needs	2.1 Design outputs	3.1 Reuse or build collection instruments	4.1 Create frame and select sample	5.1 Integrate data	6.1 Prepare draft outputs	7.1 Update output systems	8.1 Gather evaluation inputs
1.2 Consult and confirm needs	2.2 Design variable descriptions	3.2 Reuse or build processing and analysis components	4.2 Set up collection	5.2 Classify and code	6.2 Validate outputs	7.2 Produce dissemination products	8.2 Conduct evaluation
1.3 Establish output objectives	2.3 Design collection	3.3 Reuse or build dissemination components	4.3 Run collection	5.3 Review and validate	6.3 Interpret and explain outputs	7.3 Manage release of dissemination products	8.3 Agree an action plan
1.4 Identify concepts	2.4 Design frame and sample	3.4 Configure workflows	4.4 Finalise collection	5.4 Edit and impute	6.4 Apply disclosure control	7.4 Promote dissemination products	
1.5 Check data availability	2.5 Design processing and analysis	3.5 Test production systems		5.5 Derive new variables and units	6.5 Finalise outputs	7.5 Manage user support	
1.6 Prepare and submit business case	2.6 Design production systems and workflow	3.6 Test statistical business process		5.6 Calculate weights		1	
 		3.7 Finalise production systems		5.7 Calculate aggregates		 	
Prepara	Preparatory activities		5.8 Finalise data files	 	Final act	ivities	

Implementation activities

Survey planning: identifying information needs

- Consult with stakeholders on plans for the survey, including data requirements
- Consider the consultation mechanisms required
- Constantly have in mind and if necessary review the purpose of the survey
- Consider follow-up activities e.g. further surveys in the future
 - Policy-makers (ministries for Telecommunication, Regulatory Agencies)
 - ICT sector associations (for instance, ICT manufacturing industry associations, telecommunication associations);
 - ICT market studies providers;
 - Universities and ICT-related academic institutions, and
 - Organizations with a more general profile (such as chambers of industry and commerce).

• open events to present survey plans and to

INFORMAL

- motivate users to provide feedback
- user needs and satisfaction surveys,
- ICT sector and academic events

FORMAL

- User-producer forums established by the Statistical Law
- Inter-institutional technical working group on ICT statistics





Design processes

- Consider options for the survey vehicle
 - Examine existing data sources (administrative records, other surveys)
- Plan the survey timeframe
- Adhere to existing statistical standards, including core ICT indicator standards and model questions
- Note: some standards have been updated or are being revised (e.g ISCO, ISCE)



Other international standards which can be used for ICT statistics

Publishing entity	Title	Short description
International Labour Organization (ILO, 1993)	International Standard Classification of Occupations (ISCO)	ISCO is a classification that organizes jobs into a clearly defined set of groups according to the tasks and duties undertaken in the job.
International Labour Organization (ILO, 2013)	International Classification of Status in Employment (ICSE) ²³	ICSE classifies jobs held by persons, with respect to the type of explicit or implicit contract of employment of the person with other persons or organizations.
International Household Survey Network (IHSN, 2013) ²⁴		Maintenance of a catalogue of developing economies' household surveys, and the development of tools for metadata management.
UNCTAD and International Labour Organization (2015)	Global Assessment of Sex-Disaggregated ICT Employment Statistics: Data availability and challenges on measurement and compilation ²⁵	
United Nations Educational, Scientific and Cultural Organization (UNESCO, 2011)	International Standard Classification of Education (ISCED) ²⁶	ISCED is a classification that describes the educational attainment of individuals. The current version (ISCED, 2011) organizes educational attainment into eight levels from early childhood education to doctoral level.
United Nations Statistics Division (2005a)	Household Sample Surveys in Developing and Transition Countries ²⁷	Guidance on conducting household surveys in developing and transition economies, including sample design, survey implementation, non-sampling error, survey costs and data analysis



Building phase: concepts and tools

- Survey scope and units
- Requirements for classificatory data
- Survey design
- Survey implementation
- Post survey processes.

(more details later)



Survey management and budget

• It is rarely possible to achieve good results without significant cost ...

•... yet it is possible to incur significant project costs and still have a poor-quality result without planning

• Avoid some common budget **difficulties**

- underestimating known costs
- omitting some costs
- ignoring or underestimating overhead costs.
- Consider building in human resource capacities.

Consider funding sources

13. We commit, by 2030, to:

(a) Establish and support national digital skills strategies, adapt teacher training and education curricula and provide for adult training programmes for the digital age. Our aim is maximum coverage of basic digital skills for as many as possible, while also advancing intermediate or advanced digital skills (SDGs 4 and 5);

(b) Increase the availability, accessibility and affordability of digital technology platforms, services, software and educational curricula in diverse languages and formats, as well as accessible user interfaces for persons with disabilities (SDGs 4 and 10);

(c) Target and tailor capacity-building for women and girls, children and youth, as well as older persons, persons with disabilities, migrants, refugees and internally displaced process, indigenous Peoples and those in vulne, the situations, and ensure their meaningful engagement in the design and implementation, of programmes (SDGs 5 and 10);

(d) Develop and undertake national digital inclusion surveys with data disaggregated by income, sex, age, race, ethnicity, migration status, disability and geographical location and other characteristics relevant in national contexts, to identify learning gaps and inform priorities in specific contexts (SDGs 5 and 10);

• National Strategies for the Development of Statistics (NSDS)

• The **<u>Global Digital Compact</u>**, adopted by the UN General Assembly in Sept. 2024, provides a high-level advocacy message on the importance of digital inclusion surveys



Staff selection and training

• **Skills** required include people skilled in:

- survey management
- computer systems development, maintenance
- interviewing, supervision, training
- data entry
- data editing
- data manipulation and statistical analysis
- publication writing.
- Some **resources may be centralized** e.g. data entry, data processing.
- Training is an inclusive activity and should use the ideas of experienced staff including colleagues from other countries
- For interviewers:
 - Train for efficiency, effectiveness and to **minimize bias**.
 - Monitor staff performance, especially in the early stages.
- Training should be supported by **training and procedures manuals**.



Key take-aways

- Understand the need for careful planning of ICT household surveys
- Be familiar with the **GSBPM model** for planning surveys which you can use to plan one ICT household survey in your country
- Document survey processes using the GSBPM
- Identify key steps in the preparatory process, such as the **dialogue with users** and the need for planning the budget and for building the necessary skills in the team

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Best practices in household surveys design

José L. CERVERA-FERRI, Senior Project Manager "Promoting and Measuring Universal and Meaningful Connectivity International Telecommunication Union (ITU) ICT Data and Analytics Division





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The GSBPM model: design & build phases

		Overarching Process					
Specify needs	Design	Build	Collect	Process	Analyse	Disseminate	Evaluate
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				5.8 Finalise data files			

Topics of the presentation

• Survey design concepts such as

- ICT survey scope and coverage
- target populations and survey frames
- statistical units
- sample design and selection

- This presentation is based on Chapter 7 of the ITU Manual on measuring ICT access and use by households and individuals 2020
 - It is important to note that much of this material is not ICT-specific, it applies generally to household surveys
 - Recommended reading: draft Handbook of Surveys on Individuals and Households Foundations and Emerging Approaches (2020)

https://unstats.un.org/UNSDWebsite/statcom/session_56/documents/BG-3p-Handbook_of_Surveys_on_Individuals_and_Households-E.pdf



Survey scope and coverage:

- Inclusivity principle: "leave no one behind". NSOs should make efforts to collect data from subgroups likely to be at risk of exclusion.
- The *scope* of a survey refers to the target population to be represented by the survey (= for which estimates will be produced).
 - The recommended *minimum* scope for **households** is all households where at least one member is aged 5+.
 - Ideally, both **urban and rural** households should be included
 - Countries may restrict the household scope for practical reasons
 - for example, to households occupying **private dwellings**
 - The recommended *minimum* scope for *individuals* is people aged 5+
 - As with households, most countries will have other scope limitations such as, the exclusion of individuals in institutions like prisons, members of the armed forces etc.
 - A particular issue is language limitations.
- Coverage is the degree to which the in-scope units are present on the survey frame and are therefore represented in the sample with a non-zero probability.





Definition of household

• For the purposes of the *Manual*, a *household* is defined as a unit:

- consisting of one or more people, who
 - may or may not be related to each other
 - share accommodation
 - make common provision for food.



• UN Statistical Division's **Recommendations for Population and Housing Censuses** (2017, Rev. 3) should be considered for all definitions of households and their characteristics

• Estimating the **number of households** in a country may be challenging



Survey frames

- The **survey frame** (also called *population frame* or *sampling frame*) is a **list** from which units of a survey are selected.
 - Ideally it contains all members of the target population
- Examples of survey frames used for household surveys are:
 - a register of persons,
 - an electoral roll,
 - a population census data file,
 - a list of dwellings
 - a master sampling frame.
- A master sampling frame (or master sample) is a large sample which is used for several surveys.
 - The Population and Housing Census 2020-2021 is an occasion to update the master sampling frame
- Frequently, there is more than one stage of sampling and this requires more than one frame.



Building Multiple Survey frames for multi-stage household surveys

• 1. Stratification of the Target Population

- Divide the entire population into distinct **strata** (e.g., regions, urban/rural, income groups) as **homogeneous** as possible
- Purpose: To ensure representation across key subgroups (e.g. regions, urban/rural).

2. Selecting Clusters from Each Stratum

- Within each stratum, **select clusters** (e.g., villages, census tracts, neighborhoods) using probability sampling.
- Clusters act as primary sampling units (PSUs).

• 3. Selecting Households from Each Cluster

- List or map all dwellings/households within the selected clusters.
- Use last PHC plus updates
- Randomly select households (rather than dwellings) using systematic or simple random sampling.
- Not recommended: non-probabilistic methods such as random routes or snowball sampling

• 4. Selecting Individuals from Each Household

- Inside sampled households, **list all eligible individuals** (e.g., adults, children).
- Select one or more individuals per household, using a random method (e.g., Kish grid, birthday method).
- It is not recommended to have one individual reporting on use of ICT by other household members











Statistical inference: from the sample to the population

- For ICT surveys measurement, there are typically two statistical units: *households* and *individuals*.
- •The household unit
 - refers to information about ICT access in the household.
- •The individual unit
 - provides information on use of ICT.
- The core indicators on ICT access and use require both units (more details later)





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Model survey to households and individuals and data collection methods

José L. CERVERA-FERRI, Senior Project Manager "Promoting and Measuring Universal and Meaningful Connectivity International Telecommunication Union (ITU) ICT Data and Analytics Division





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Types of household surveys to collect ICT indicators

 An important consideration is whether <u>questions are added to an existing</u> <u>survey</u> or <u>a stand-alone survey is conducted</u>.

- Stand-alone household surveys deal with a single topic (such as ICT access and use).
- In the case of an existing survey, there may be more than one <u>survey</u> <u>vehicle</u> available.
 - *Multi-purpose household surveys* collect data on more than one subject via a single survey.
 - Household budget expenditure surveys measure household expenditure and can be used to identify household access to ICT equipment and services.
 - Population censuses can be used to collect ICT access and/or use data.
- Other innovative sources: Administrative records, Big Data → may not provide the required details about household and individuals or not cover unconnected populations.

% of countries submitting data by type of survey



ITU Model survey to households on ICT access and use

• Need to be adapted by countries, taking into account:

- language and culture
- the form of data collection.
- It is important to:
 - retain question meaning and
 - preserve the logic, by using the same populations of households or individuals for each question.

• Variations to model questions:

• can add or split categories.

•**Recommended:** cognitive testing of the questionnaire (will be included in the next revision of the *Manual*)



Structure and logic



Household module:

- HH characteristics
- HH composition
- Utilities (electricity,..)
- Access to devices (fixed, mobile phone, TV), Internet
- Barriers to access to ICT









Individual module:

- Individual characteristics
- Ownership & use of phone
- Use of computers
- Use of Internet (frequency, activities)
- Barriers to use of ICT















Section 1: Household characteristics	
Household number of members	Population: all in-scope households; includes household members outside any individual age scope applied
Household composition (whether there are children under 15)	Population: all in-scope households; includes household members outside any individual age scope applied
Optional questions on topics such as household access to electricity, household income, location (e.g. urban/rural)	Population: all in-scope households



Section 2: Household access to information and communication technology				
Household with a radio (HH1)	Population: all in-scope households			
Household with a television (HH2)				
Household with multichannel television (HH13)	Population: all in-scope households with a TV			
Household with a fixed telephone line (HH3)	Population: all in-scope households			
Household with a mobile telephone (HH3)				
Household with a smartphone (HH3)	Population: all in-scope households with a mobile phone			
Household with a computer (HH4)	Population: all in-scope households			
Household with Internet (HH6)				
Types of Internet access services used by households at	Population: all in-scope households with			
home (HH11)	Internet access at home			
Barriers to household Internet access (HH14)	Population: all in-scope households without Internet access at home			



Section 3: Individual characteristics				
Age				
Sex				
Highest educational level attained	Population: all selected in-scope			
Labour force status	individuals			
Occupation				
Optional questions, for example, income, disability				
status, languages spoken/read				



Section 4: Individual use of information and communication technology				
Individual use of a mobile cellular telephone (HH10)	Population: all selected in-scope individuals			
Individual use of a smartphone (HH10)	Population: all selected in-scope individuals having used a mobile cellular phone			
Possession (ownership) of a mobile phone (HH18)	Population: all selected in-scope individuals			
Possession (ownership) of a smartphone (HH18)	Population: all selected in-scope individuals who have a mobile phone			
Individual use of a computer (HH5)				
Individuals with ICT skills: activities carried out in the last three months at any location (HH15)	Population: all selected in-scope individuals			
Individual use of the Internet (any location, last three months) (HH7)				
Location of individual use of the Internet in the last three months (HH8)	Population: all selected in-scope individuals who used the Internet from any location in the last three months			



Section 4: Individual use of information and communication technology				
Type of connection/portable device used to access the Internet, last three months) (HH17) Frequency of individual use of the Internet in the last three months (HH12) Internet activities undertaken by individuals in the last three months (HH9)	Population: all selected in-scope individuals who used the Internet from any location in the last three months			
Type of goods or services purchased or ordered over the Internet for private use in the last three months (HH20) Mode of payment for goods or services purchased or ordered over the Internet for private use in the last three months (HH21) Mode of delivery for goods or services purchased or ordered over the Internet for private use in the last three months (HH22)	Population: all selected in-scope individuals who used the Internet from any location in the last three months for purchasing or ordering services			
Reasons for not having purchased goods or services over the Internet for private use in the last three months (HH23)	Population: all selected in-scope individuals who did not use the Internet from any location in the last three months for purchasing or ordering services			
Reasons for not having used the Internet in the three last months (HH19)	Population: all selected in-scope individuals who did not use the Internet from any location in the last three months			

** Gateway the European Union



ICT concepts that may be difficult to understand

- •Definition of computer
- •Access by household / access to individual
- Internet access services
- Internet activities related to government organizations
- Internet access using mobile devices
- •Non-aware users of Internet
- Mobile cellular telephones



Data collection techniques

Method	Pros	Cons		
Personal Face-to-Face, Computer Assisted Interviews	 High response rates Interviewer can clarify questions Good for complex topics such as use of Internet 	 Costly and time-consuming Potential interviewer bias Harder in remote areas 		
Personal, Computer Assisted Telephone Interviews	 Faster and cheaper than face-to-face Broad geographic reach Can clarify questions 	 No listing of mobile phones Excludes households without phones Lower response rates Limited to simpler questionnaires (e.g. cannot go through a long list of Internet activities) 		
Self-Enumeration (Paper Questionnaires)	 Cost-effective for large samples Reduces interviewer bias Respondents complete at own pace 	 Lower response rates Literacy required No opportunity for clarification Requires data entry 		
Internet-Based Surveys	 Very cost-effective Fast data collection Easy to automate 	 Excludes households without internet Self-selection bias Lower response rates 		



Key take-aways

•Household surveys on ICT access and use can be based on the ITU model survey. This ensures international comparability.

•Sample selection needs to be representative, inclusive and probabilistic

 Sample selection has implications on weighting individual responses to produce population estimates

•Data collection is better if assisted by computer, and if individuals answer for themselves



We encourage you to go through the Manual!

ITUPublications

International Telecommunication Union Development Sector

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Thank you for your attention!

For questions and feedback: jose.cervera@itu.int

