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# ITU Regional Workshop on ICT Statistics

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Getting ICT data through surveys

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## Outline

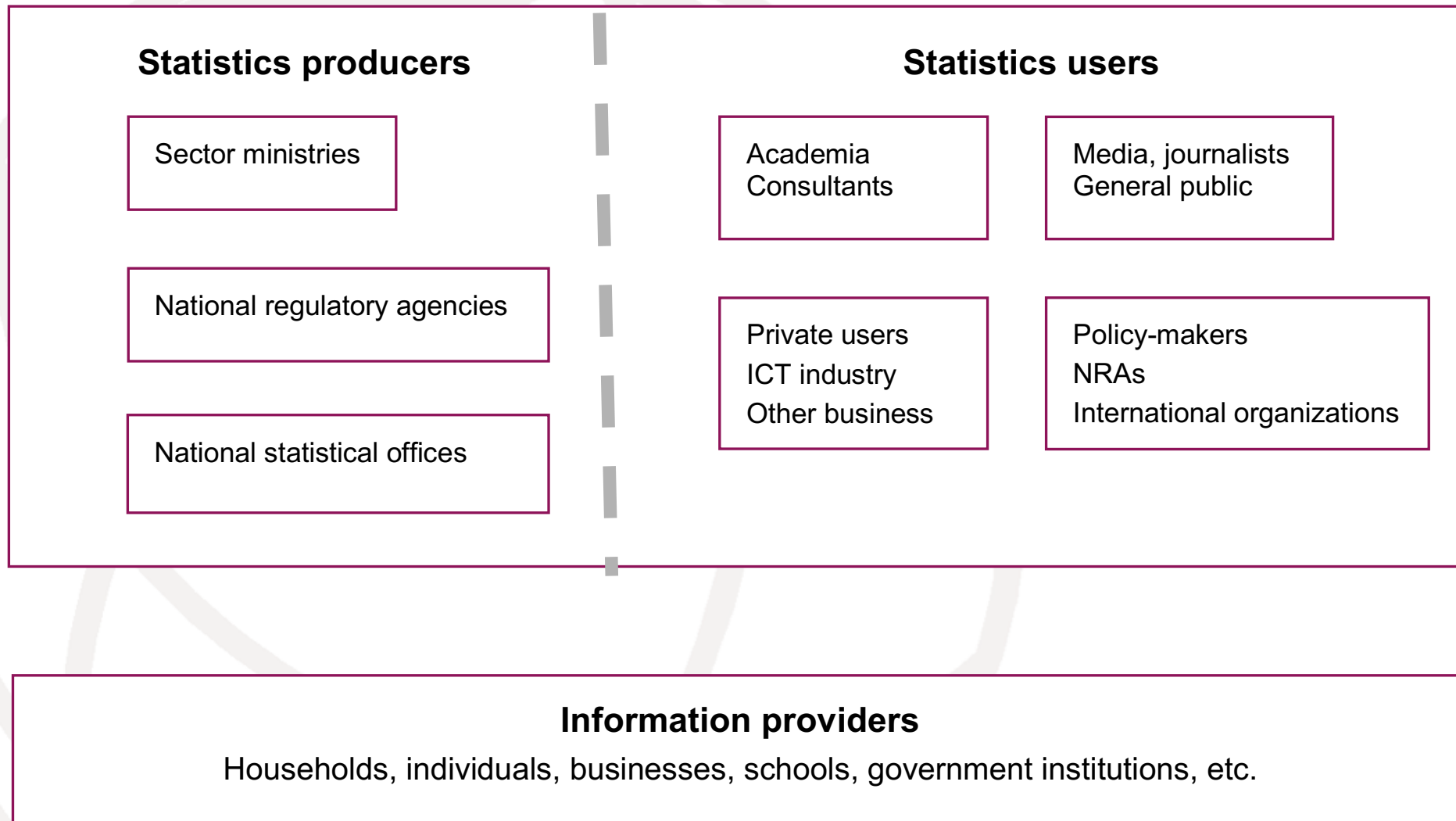
- Collaborating and coordinating for household ICT statistics
- Getting ICT data through surveys: good practices

## Collaborating and coordinating for household ICT statistics

## National coordination of ICT statistics 10<sup>th</sup> WTIM (2012) and 11<sup>th</sup> WTIS (2013)

- **High-level panel debate** triggered numerous interventions from participants – issue is of concern to most involved in production of ICT statistics
- **Recommendations:**
  - Countries should put in place coordination mechanisms
  - NSOs should play an active role
  - Countries should include ICT statistics in NSDS
  - ITU should develop guidelines and models for coordination mechanisms to assist countries
  - Topic needs further discussion in international and regional forums (*therefore included in this workshop*)

## Stakeholders in the ICT statistics system



# Why national coordination on ICT statistics?

- Objective: to produce high-quality official statistics
- ICT statistics are cross-cutting and therefore involve many stakeholders with different competencies and skills
- Statistical data collection and dissemination is often fragmented - data quality suffers, duplication of effort

# Why national coordination on ICT statistics?

- Close data gaps
- Eliminate duplication of work
- Avoid conflicting data and statistics
- Promotes comparability
- Not to burden and confuse data providers and users
- Promote effectiveness

## **Fundamental Principle of Official Statistics - Principle 8**

Coordination among statistical agencies within countries is essential to achieve consistency and efficiency in the statistical system.



# National coordination of ICT statistics

- Different coordination models exist
  - National statistical coordination bodies
  - Formal inter-institutional committees and working groups (involving different Ministries)
  - Multi-year planning
  - National information society observatories

# National statistical coordination bodies

- National Statistical Commissions or Committees (established by statistical law)
- Usually coordinated by NSOs, which may have satellite units in sector Ministries (eg. health, education, agriculture)
- Can establish subject-matter working groups to discuss methodologies etc. (e.g. on ICT)
- Example: Inter Agency Committee on ICT Statistics

# Inter-institutional committees and working groups

- Less institutionalized forms of collaboration among data-producing agencies
- Inter-institutional working groups with clearly defined responsibilities for establishing technical standards (e.g. for data collection and analysis, dissemination of findings)
- Bring together representatives from Ministries, NSOs, NRAs, etc.

## Multiyear plans

- Most national statistical systems are governed by a multiyear program for the production of official statistics
- Multiyear plans should specify which institutions are responsible for each statistical operation, the timeframe and frequency
- Covering different domains including ICT

## National information society observatories

- Objective: to centralize all ICT indicators and disseminate them through one national web portal
- Requires close cooperation with all data producers in the country
- Example: Spain – National Observatory for Telecommunications and the Information Society (ONTSI)

# Getting ICT data through surveys: good practices

## Some preliminaries

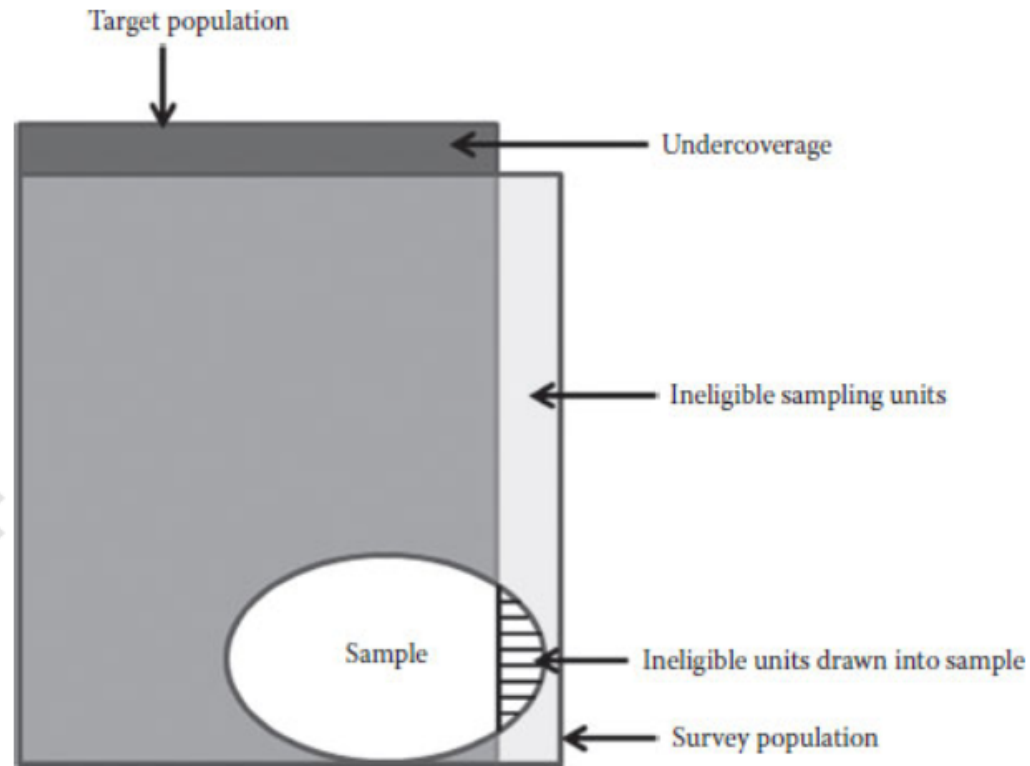
- Primary (1<sup>o</sup>) data vs secondary (2<sup>o</sup>) data / admin records
- Census vs sample survey





## Some preliminaries

- Target population / survey population



*Complex Survey Data Analysis with SAS, Lewis*



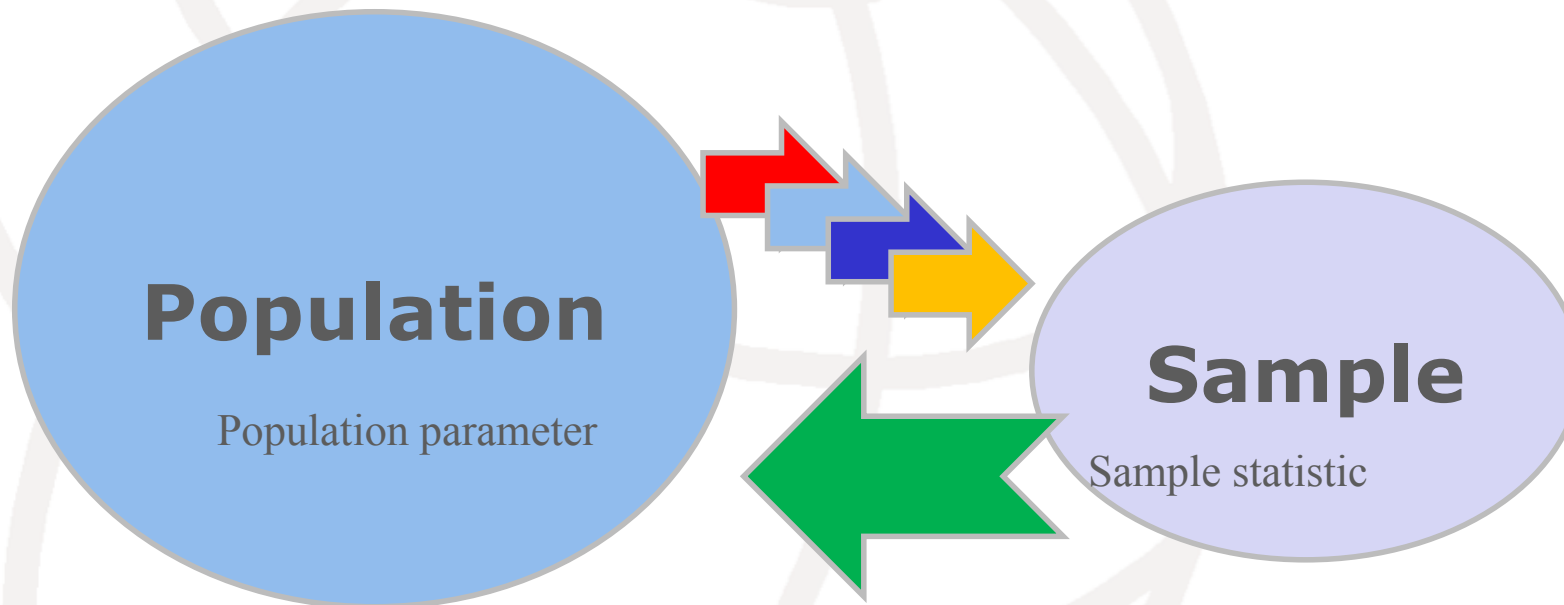
## Some preliminaries

### Sampling

- Simple Random Sampling (SRS)
  - Each statistical unit has the same chance of selection
- Complex sampling
  - Primary sampling Units
  - Strata (eg urban /rural)
  - Cluster
- Sample size and allocation

## Some preliminaries

- Estimation (sample statistic and population parameter)



## Some preliminaries


- Sampling variation / Sampling errors
- Dedicated surveys vs riders

We'd like you to carry these 4 questions in your survey, tabulate them according to our specifications, estimate the population totals, means and proportions and calculate the standard errors for us.



## Some preliminaries

- Data collection methods
  - Direct observation
  - Postal
  - F2F
  - Telephone
  - CATI
  - CAPI
  - CAWI
  - Online



Let's move on to  
good practices

## Good practices

- Surveys usually done by the NSO and assumed as such in this presentation.
- Legal backing to collect data, usually the Statistics Law or Act or some other law that provides for compliance and confidentiality.
- Survey methodology must be scientific and based on probabilistic sampling. The skill to do this is with the statisticians in the NSO.

# Good Practices: Planning of surveys

## ■ Objectives

- A clear statistical statement on the desired information, giving a clear description of the population and geographical coverage. How the results are going to be used. Budget. Stakeholders.

## ■ Survey universe

- Geographical areas ,Target population, exact population sampled to be identified, first stage units, second stage units, comprehensive and mutually exclusive frames for every stage of selection.

## Good Practices: Planning of surveys

- Information to be collected
  - List of questions requiring statistical answers, availability of some required data in existing sources, include supplementary items that are correlated with main items, tabulation plan, tabulation plan to be circulated for comments and improvement
- Survey budget and survey timelines
  - Cost estimates as detailed as possible, every survey step exacts a cost, Survey budget will depend largely on survey design, precision required, geographical coverage, judicious cost control, accountability enhances credibility.

<b>SURVEY COSTING</b>	Estimated units of work (person-months except where otherwise indicated)	Unit cost (relevant unit of currency per person-month, except where otherwise indicated)	Estimated total cost (relevant unit of currency)
<b>I. Planning and preparatory activities</b>			
<b>A. Initial planning and subsequent monitoring (senior staff)</b>			
<b>B. Selection and specification of subject matter</b>			
<b>1. Subject-matter planning</b>			
<b>2. Preparation of tabulation plans</b>			
<b>3. Secretarial and other services</b>			
<b>C. Development of survey design</b>			
<b>1. Initial design planning: survey structure, population coverage, sampling procedures, data-collection methods, etc. (professional staff)</b>			
<b>2. Development of sampling materials:</b>			
a) Cartographic materials (assumes census materials available):			
Personnel costs			
Maps and supplies			
b) Field household listings (2,000 enumeration areas):			
Personnel costs (mainly interviewers)			
Travel costs			
c) Sample selection and preparation from field lists			



## SURVEY COSTING

Estimated  
units of work  
(person-months  
except where  
otherwise  
indicated)

Unit cost  
(relevant unit  
of currency per  
person-month,  
except where  
otherwise  
indicated)

Estimated  
total cost  
(relevant unit  
of currency)

### D. Design and printing of questionnaires and other forms

1. Professional staff
2. Secretarial and other services
3. Printing costs (after pretests)

### E. Pretesting

1. Professional staff planning:
  - a) Initial preparations
  - b) Analysis of results and revision of materials
2. Field supervisor:
  - a) Personnel costs
  - b) Travel costs
3. Interviewers:
  - a) Personnel costs
  - b) Travel costs

<b>SURVEY COSTING</b>	Estimated units of work (person-months except where otherwise indicated)	Unit cost (relevant unit of currency per person-month, except where otherwise indicated)	Estimated total cost (relevant unit of currency)
<b>F. Preparation of instructional and training materials for field use</b>			
<b>1. Professional staff</b>			
<b>2. Secretarial and other services</b>			
<b>3. Reproduction costs</b>			
<b>G. Miscellaneous planning activities (for example, public relations and publicity)</b>			
<b>H. Subtotal components</b>			
<b>1. Senior staff</b>			
<b>2. Professional staff</b>			
<b>3. Technical staff</b>			
<b>4. Service staff</b>			
<b>5. Travel</b>			
<b>6. Printing</b>			
<b>7. Cartography and miscellaneous</b>			
<b>Subtotal</b>			

<b>SURVEY COSTING</b>	Estimated units of work (person-months except where otherwise indicated)	Unit cost (relevant unit of currency per person-month, except where otherwise indicated)	Estimated total cost (relevant unit of currency)
<b>II. Field operations</b>			
<b>A. Training of field supervisors</b>			
1. Personnel costs			
2. Lodging and meals			
3. Travel costs			
<b>B. Training of interviewers</b>			
1. Supervisor costs			
2. Interviewer costs:			
(a) Personnel costs			
(b) Travel costs			
<b>C. Data collection (including quality control)</b>			
1. Supervisor costs			
2. Interviewer costs:			
(a) Personnel costs			
(b) Travel costs			
<b>D. Field administration</b>			
1. Field direction			
2. Travel			
3. Other costs (for example, control and shipment of materials)			

<b>SURVEY COSTING</b>	Estimated units of work (person-months except where otherwise indicated)	Unit cost (relevant unit of currency per person-month, except where otherwise indicated)	Estimated total cost (relevant unit of currency)
<b>E. Subtotal components</b>			
1. Professional staff			
2. Technical staff			
3. Service staff			
4. Travel			
5. Travel subsistence			
6. Interviewing			
7. Miscellaneous			
<b>Subtotal</b>			

<b>SURVEY COSTING</b>	Estimated units of work (person-months except where otherwise indicated)	Unit cost (relevant unit of currency per person-month, except where otherwise indicated)	Estimated total cost (relevant unit of currency)
<b>III. Data processing</b>			
A. Systems planning			
B. Computer programming			
C. Clerical coding			
1. Initial coding			
2. Quality control			
3. Supervision			
D. Key-to-disk operations			
1. Initial keying			
2. Quality control			
3. Supervision			
E. Computer time (including operator and maintenance costs)			
F. Miscellaneous processing costs (supplies, etc.)			
G. Subtotal components			
1. Professional staff			
2. Technical staff			
3. Quality control staff			
4. Service staff			
5. Computing			
6. Miscellaneous			
<b>Subtotal</b>			

<b>SURVEY COSTING</b>	Estimated units of work (person-months except where otherwise indicated)	Unit cost (relevant unit of currency per person-month, except where otherwise indicated)	Estimated total cost (relevant unit of currency)
<b>IV. Data review and publication</b>			
<b>A. Professional time</b>			
<b>B. Publication costs</b>			
<b>V. Survey direction and coordination</b> (continuing oversight over all activities)			
<b>VI. Subtotal</b>			
<b>VII. Evaluation studies and methodological research</b> (may be estimated at 10 per cent of cumulative total)			
<b>VIII. General overhead</b> (may be estimated at 15 per cent of cumulative total for administrative costs, space rental, general supplies and the like)			
<b>IX. Total</b>			

Source: United Nations (1984).

# Timeframe for survey steps

- 1 Meeting with stakeholders (users and producers) 1 month
- 2 Preparatory activities 3 months
- 3 Initial questionnaire design 2 months
- 4 Send questionnaires to user committee members 1 month
- 5 Include in questionnaire agreed suggestions 1 month
- 6 Draft interviewer's and supervisor's manuals 2 months
- 7 Print questionnaires and manuals (coding questionnaire into CAPI) 1 month

# Timeframe for survey steps

8	Make plans for pretest	1 month
9	Train interviewers and supervisors	2 months
10	Conduct the pretest	1 month
11	Revise questionnaire (if need be)	1 month
12	Revise manuals (if need be)	1 month
13	Sample design	1 month
14	Design and test data entry programme (s)	1 month
15	Design and test data cleaning programme (s)	1 month
16	Data collection	3 months



# Timeframe for survey steps

17 Data entry	4 months
18 Design and test tabulation plan	2 months
19 Data cleaning (e.g. range and consistency checks)	2 months
20 Assignment of chapters to authors	2 months
21 Carry out the processing according to plan	1 month
22 Calculate sampling errors among other estimates	1 month

# Timeframe for survey steps

23	Distribution of tabulation to authors	1 month
24	Analysis and report writing	2 months
25	Compilation and tabulation of final report	2 months



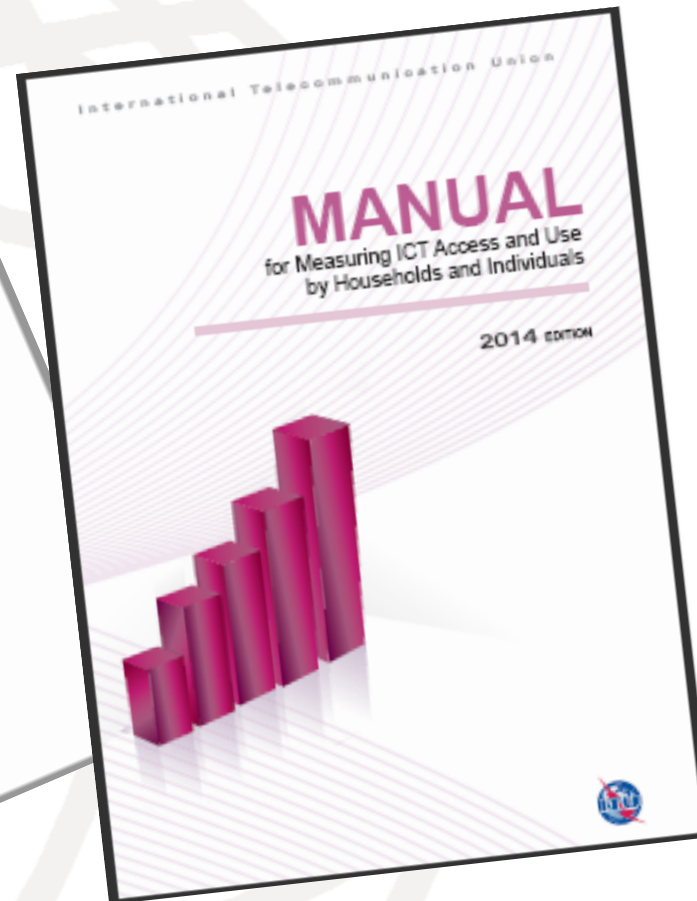
# Good Practices: Execution of surveys

- Data collection methods
  - Direct observation and measurement, mail, personal interview (incl telephone, CATI, CAPI ) online including web and CAWI
  - Response rate
- Questionnaire design
  - Size and format, suited to data collection mode, questions grouped in relevant sections, proper sequencing, easy reading, clear instructions, definitions, operational equivalents pre-testing (pilot)
  - For ICT access and Use by Households and Individuals, use globally accepted standard such as the model questions contained in ***Manual for Measuring ICT Access and Use by Households and Individuals.***
  - Translation into local language must be done by an expert and tested on the ground

# Good Practices: Execution of surveys

- Tabulation and analysis plan
  - Tabulation plans, dummy tables, titles, stubs and captions, substantive variables, background variables, population groups, categories of classification
- Implementation of fieldwork
  - Need for a well-organised and effective field organisation
  - Equipment and materials
  - Management of survey operations, clear well defined line of command
  - Publicity
  - Selection of interviewers
  - Training of interviewers
  - Field supervisors
  - Follow-up of non-respondents
  - Reducing non-response

## 2 mainstays



## International Standard Classifications used in Core Questionnaire

- COICOP- Classification of Individual Consumption According to Purpose by UNSD
- ISCED - International Standard Classification of Education by UNESCO
- ICSE-93 – International Classification of Status in Employment by ILO
- ISCO – International Standard Classification of Occupations by ILO

- Age classes: under 5, 5-9, 10-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75 and over



## Documentation

“Documentation and evaluation of sample designs in particular and survey methodology in general are too often neglected in the rush to release survey findings. This is especially true in countries with little prior experience in conducting household surveys...”

*-UNSD*

## Documentation

### A record of how it went

- Keep careful records of the survey and sampling procedures as they are being carried out operationally in the survey process
- Sample plan, adaptations at various stages of field work
- To make sure the implementation is faithful to the design / record all departures
- For adjustments to be made in analysis
- Indispensable for planning future surveys

## Documentation

### Technical reports

- Fairly brief , user-friendly description of survey methodology, sample plan and implementation
- Limitations
- Comprise the technical section of the various substantive reports on findings
  
- Stand alone more detailed description of survey methodology
- Intended for professional researchers, social scientists and statisticians rather than policy maker / public
- Publish in statistical journal / Present at WTIS
  
- Special office to handle documentation

## References

- Designing Household Survey Samples: Practical Guidelines, UNSD, 2005
- Manual for Measuring ICT Access and Use by Households and Individuals, ITU, 2014
- Complex Survey Data Analysis with SAS, Lewis, 2017

# Thank you

For more information  
<http://www.itu.int/ict>