CAPI Overview

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A short contemporary history of interview modes

- PAPI: Paper-Assisted Personal Interviewing
- PMASI: Postal Mail-Assisted Self Interviewing
- CATI: Computer-Assisted Telephone Interviewing
- EMASI: Electronic Mail-Assisted Self Interviewing
- **CAPI: Computer-Assisted Personal Interviewing**
- CAWI: Computer-Assisted Web Interface

Coming soon:

- ARBPIR: Administrative-Records-Based Personal Information Retrieval

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How did CAPI develop in the US?

- The story of CAPI is about making the process of data capture, aggregation, and tabulation more reliable and efficient.

- For the first 8 - 10 Censuses in the US, the process involved three things:
  - Enumerators visiting every community in the country
  - Local officials tabulating these enumerators
  - National officials tabulating the local reports

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How did CAPI develop in the US?

- Between 1890 and 1970, machines and computers began to facilitate the work of aggregation and tabulation:
  - The Seaton Device and The Hollerith Machine
  - The UNIVAC I and FOSDIC

- Since 1970, computers have moved into the realm of enumeration culminating in handheld devices that allow data capture, i.e. CAPI.

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Early Censuses

The first U.S. Census in 1790 was considerably different from the Census of 1890, just 100 years later.

1790 Census

- Conducted by the marshals of the judicial districts of the U.S. and any assistants they wanted to employ.
- Asked about only 6 items.
- Completed in approximately 1.5 years.

1890 Census

- Conducted by 46,804 enumerators.
- Captured four general schedules of questions (population, agriculture, manufacturing, and mortality) and eight supplemental schedules.
- Official count completed in approximately 6 months. Final bulletin report in 1895. Final published volume in 1897.

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Early Censuses

1790 Census

- The marshals aggregated their districts and sent the results to the President.
- No standard sheets for enumeration or consistent methods of aggregation.
- The final report comprised just 56 pages reproduced directly from the marshals' reports with a summary at the beginning.

1890 Census

- Used the Hollerith machine to tabulate.
- The final results comprise 21,410 pages with a 3-part compendium, an abstract, and a statistical atlas.
- Illustrated with maps and diagrams.
- The Hollerith machine allowed a complete tabulation 3+ years faster than after the 1880 Census.

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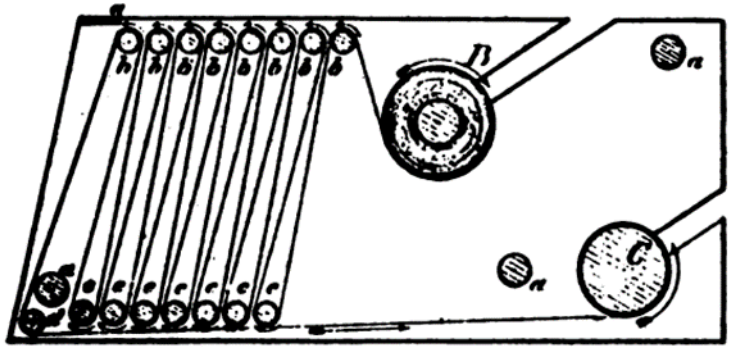
Tabulating Machines Make the Case for Automation

- The first tabulating machine used in the US Census, the Seaton Device, was a machine in the sense that it involved machine-like components.
  - The Seaton Device assisted hand-tallying and probably was not much more efficient than hand-tallying.
- The Hollerith Machine was much more like what we think of as automation. It used an electric circuit to move dials which kept track of the count.



Hollerith Machine

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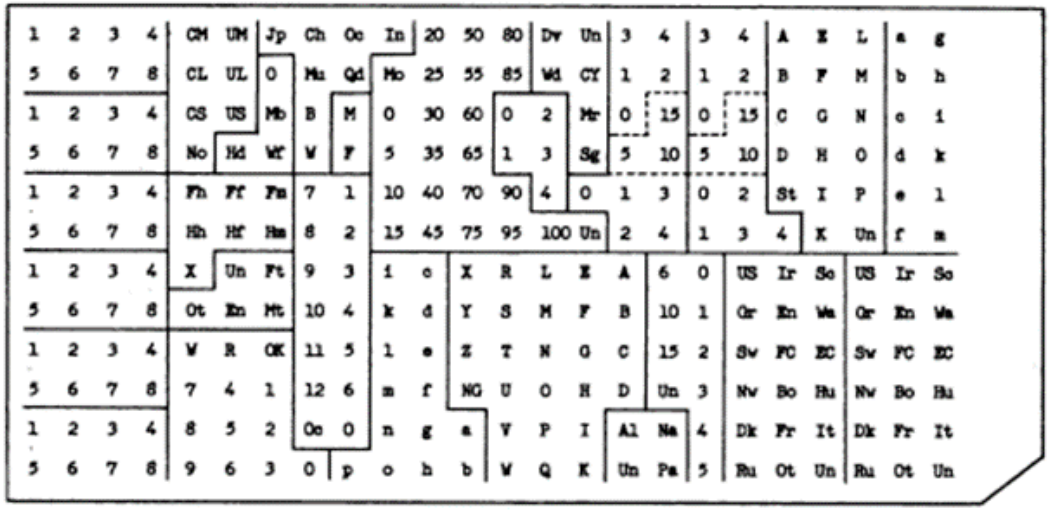
Tabulating Machines Make the Case for Automation

- An example of a punch card coding system used with the Hollerith Machine. This would represent a single individual.



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Computers Arrive in a Big Way

- The UNIVAC and FOSDIC systems started the transition to computer data capture.
- UNIVAC I (console at right) continued use of punch cards to tabulate census results. It was used to help tabulate the 1950 and 1960 censuses and to calculate the weights used in several surveys.
- The UNIVAC demonstrated that punch card creation was now the biggest limiting factor in the census process.

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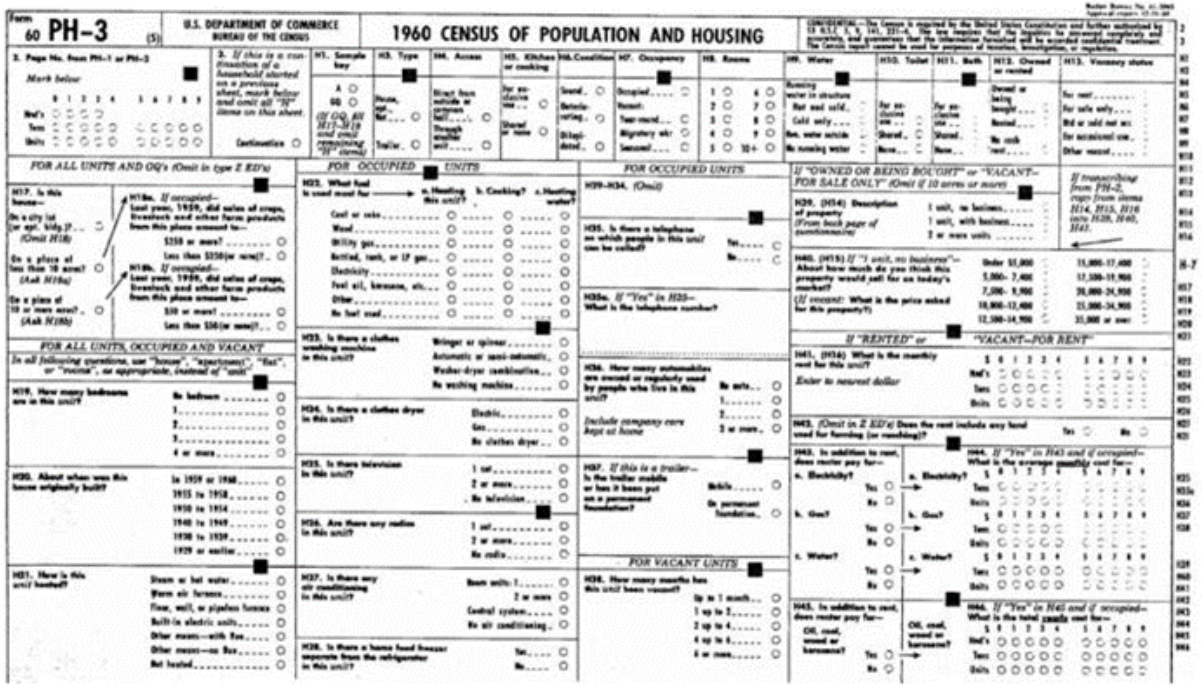
Computers Arrive in a Big Way

- The FOSDIC was the first step toward automating data capture. In 1970, the forms used by the census could be scanned directly by the FOSDIC.
  - The FOSDIC version of the 1960 Population and Housing Census form is at the right.


Form 60 PH-3 (5) U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

1960 CENSUS OF POPULATION AND HOUSING

Computers Bring the Census to You

- As computers have become better, direct entry into the computer has become feasible.
- CAPI is the culmination of a long history of automation in censuses and data collection. Along with other computer-assisted methods, it has been used by the U.S. Census Bureau in its surveys since the 1990's, particularly for economic and business surveys.
- Other computer-assisted methods include diskettes, e-mail, and web forms.

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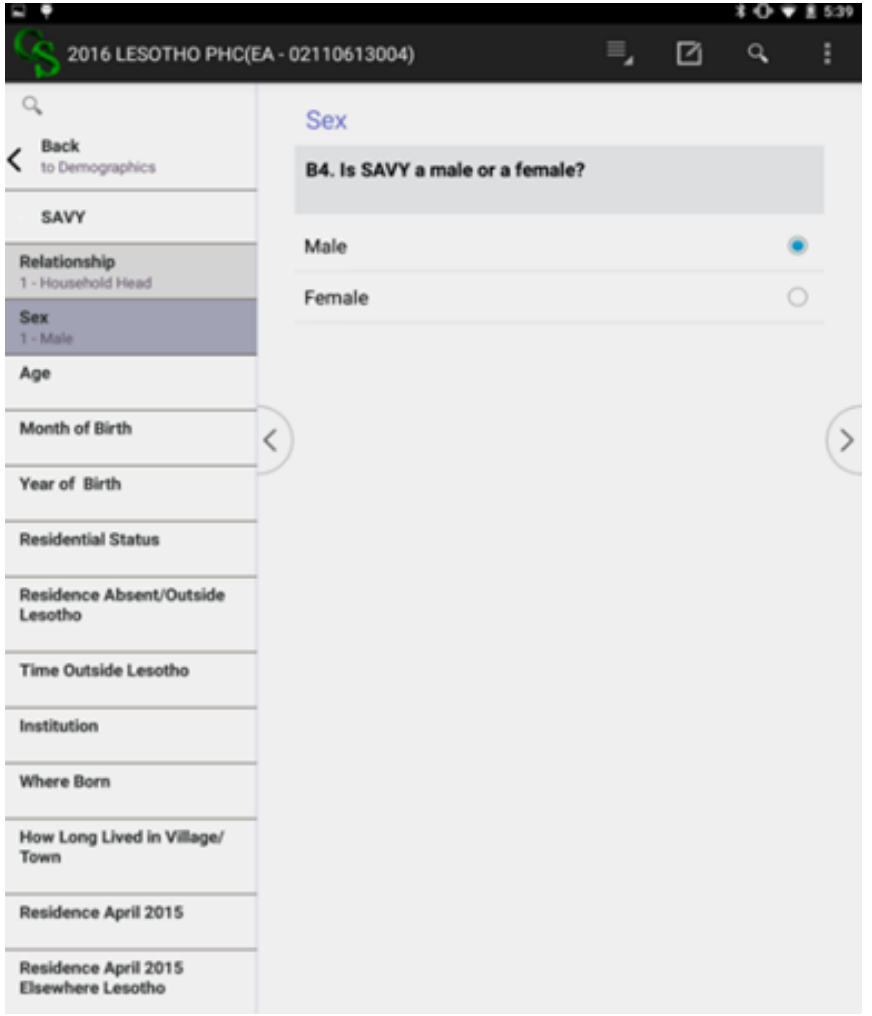
Computers Bring the Census to You

- As smartphones have matured, programs like CSPro have expanded where CAPI can be used. CSPro (screenshot at right) allows enumerators to easily capture data in the field.



Additional CAPI Characteristics

Mobile data capture allows users to take advantage of additional features that can be programmed on mobile devices. These include:

- Integrated maps and Global Positioning System (GPS).
- Computerized case management.
- Automated skip patterns.
- Concurrent processing for data collection, data capture, editing, and consistency and non-response checks.
- Automated coding.
- Ability to preload questionnaire responses and customize questions.

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Advantages of using mobile data capture

- Improves data quality.
- Improves field management and real-time monitoring of enumeration activities.
- You can reduce time and costs by eliminating a separate process for data capture, automated coding, and reducing the volume of post-enumeration data verification.

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Advantages of using mobile data capture

- Decreases the time between data collection and publication of results.
- It can reduce the costs of data capture, questionnaire printing, storage, and transportation. However, the increase in equipment costs can outweigh the savings.
- You can use GPS features and digital mapping capabilities.

Disadvantages of using mobile data capture

- High equipment costs with limited long-term use.
- More time is needed during the preparation stage.
- You need more qualified programmers.
- It requires enumerators with technological capabilities, more training and field support.
- The effect of questionnaire segmentation can counteract improvements in data quality.
- Technological issues could interfere with the enumeration.
- There are more infrastructure limitations to consider.

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Respondent Reaction

- Varies by country/context
- If it is the first time a NSO intends to implement CAPI, care should be taken to anticipate and mitigate potential opposition
- Can profoundly impact the potential success of Census or survey

Respondent Reaction

If CAPI use is new to the context:

- Develop an introduction strategy for:
  - Local collaborators
  - Stakeholders
  - Census/survey respondents

- Involve local collaborators in census/survey design, if possible, to facilitate its adoption

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Respondent Reaction

CAPI – Opportunity and Risk

- Technology, computerization can stimulate census/survey respondent interest and add legitimacy to the interviewers. Interviewers might also be more motivated to use technology in such setting.

- At the same time and in certain cultures, the use of technology can raise suspicion among respondents.

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