Overview of Today's Workshop

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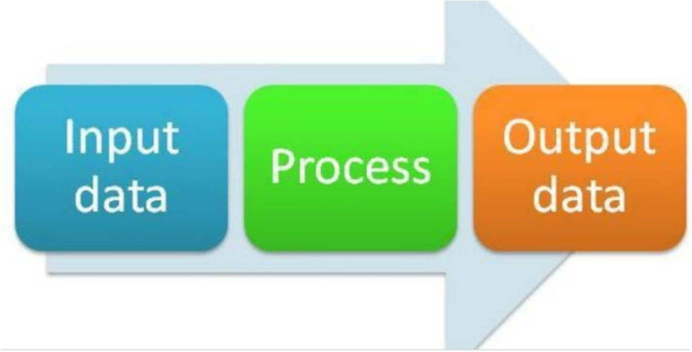
Opinions expressed are those of the author and are not necessarily the views or policies of the United States Census Bureau.

Three Workshops

Reporting on Quality of Integrated Data



Workshop 1: Quality of Input Data

December 1, 2017

Workshop 2: Quality of Data Processing

January 25, 2018

Workshop 3: Quality of Output Data / Synthesis

February 26, 2018

What “Data Processing” Entails

in the Context of Integrated Data

1. Record Linkage

   Exact match, probabilistic match, privacy-preserving record linkage

2. Using Multiple Frames

   Drawing samples from two or more frames to improve coverage or reduce costs

3. Statistical Matching / Data Fusion

   Joining two or more non-overlapping samples by variables shared in common, then applying modeling or imputation techniques to handle the missing values

4. Models for Combining Aggregate Statistics or Estimates

   Combining estimates from different sources at national, subnational or subpopulation levels, as in Small-Area Estimation

What “Data Processing” Entails

in the Context of Integrated Data

5. Dimension Reduction / Feature Extraction

   Techniques for summarizing unstructured data (e.g. images, freeform text)

6. Harmonization

   Combining information across datasets in the presence of mode effects, differing definitions or granularities (e.g. variables measured at differing time periods or levels of geography)

7. Edit and Imputation

   Other types of cleaning after data sources are combined

8. Adjusting for Representativeness

   Making combined data more representative of the intended population (reweighting, benchmarking, poststratification, calibration, …)

What "Data Processing" Entails

in the Context of Integrated Data

9. Estimation

   Computing estimates of population quantities and associated measures of uncertainty

10. Disclosure Avoidance

   Techniques for preventing re-identification or de-anonymization of individual records

11. Provenance and Curation of Metadata

   Preserving information about data sources, dictionaries, audit trails

Prioritizing the Topics

Which of these topics are

- substantially more complicated or qualitatively different when combining multiple data sources?
- less familiar to statisticians and methodologists?
- not well covered by existing standards for quality and transparency?
- not as well covered by existing literature (e.g. on Small Area Estimation or Total Survey Error)?
- not already covered in Workshop 1?

Topic	Priority (L/H)
1. Record linkage	**H**
2. Multiple frames	L
3. Statistical matching / data fusion	**H**
4. Combining aggregate statistics or estimates (as in SAE)	L
5. Dimension reduction / feature extraction	L
6. Harmonization across data sources	**H**
7. Edit and imputation	L
8. Adjusting for representativeness	L
9. Estimation	L
10. Disclosure avoidance	**H**
11. Provenance / curation of metadata	L

Features of Workshop

- Speakers from academia, federal agencies, research firms
- Many are participating from remote locations (WebEx)
- Presentations may be less formal than typical seminar
- Focus less on methods, more on quality issues
- Extra time in each session for questions, comments, open discussion
- Rapporteurs from JPSM will synthesize what we learn

Session 1: Record Linkage

- Main presentation by Rebecca Steorts (Duke University) (40 min)
- Comments and discussion by Bill Winkler (Census Bureau) (10 min)
- Questions, comments, discussion (25 min)