

Competencies for a Register Based Statistical Institute

Thomas Laitila

*Örebro University, Örebro, Sweden;
thomas.laitila@oru.se*

Data Sources

Data Sources

- Sample Surveys
 - J Neyman (1930ies)

Data Sources

- Sample Surveys
 - J Neyman (1930ies)
- Administrative data
 - Register Surveys
 - Register based sample surveys (Wallgren and Wallgren, 2014)

Data Sources

- Sample Surveys
 - J Neyman (1930ies)
- Administrative data
 - Register Surveys
 - Register based sample surveys (Wallgren and Wallgren, 2014)
- Alternative data sources
 - Big Data

Data Sources

- Sample Surveys
 - J Neyman (1930ies)
- Administrative data
 - Register Surveys
 - Register based sample surveys (Wallgren and Wallgren, 2014)
- Alternative data sources
 - Big Data
- Potentials in use of all data sources?
 - New survey design

- A register based statistical production system?

- A register based statistical production system
 - is not a system using only registers (register survey)

- A register based statistical production system
 - is not a system using only registers (register survey)
 - is a system utilizing all sources of data but is built around a register system

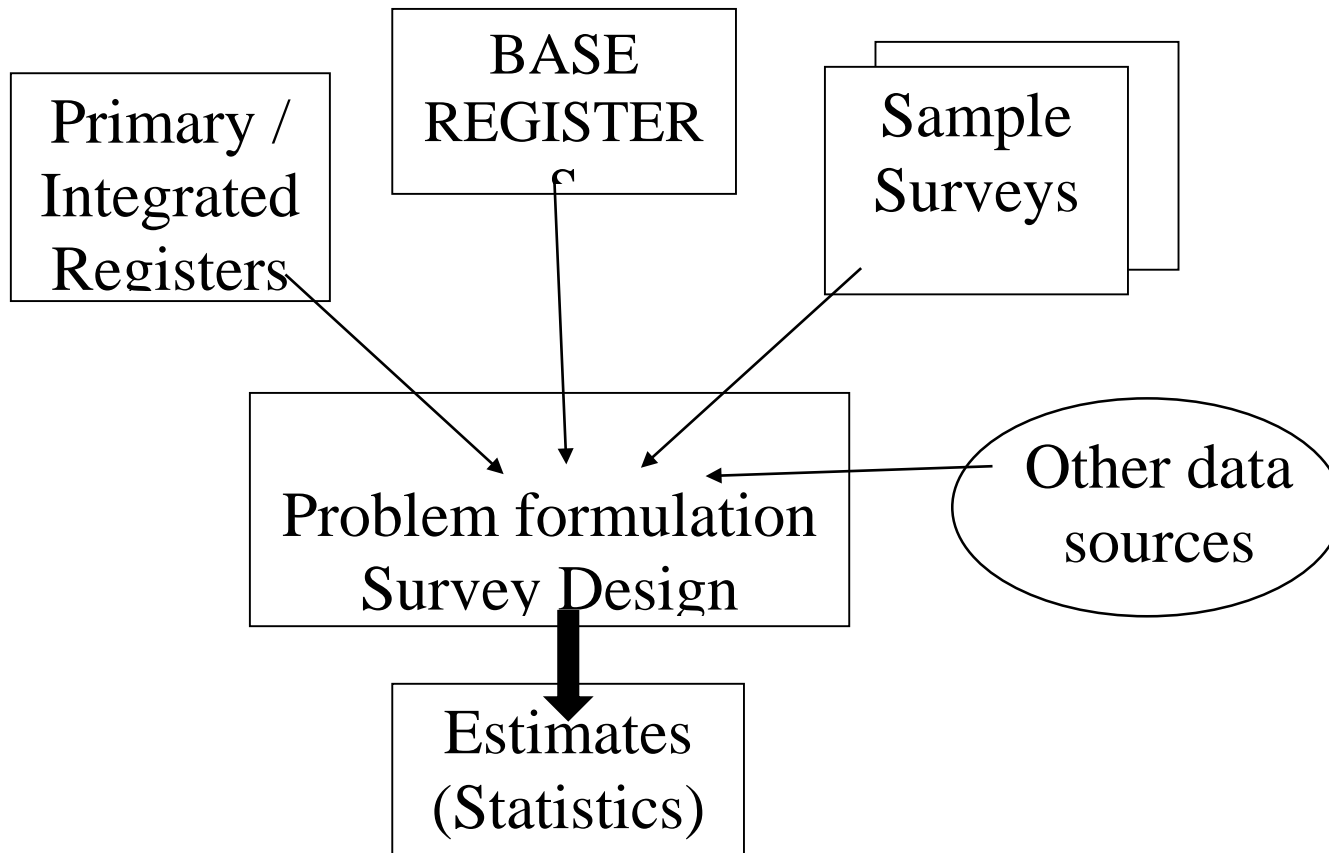


Figure 1: A register based statistics production system in action.

Example

- Statistics on tourism

Example

- Statistics on tourism
- Intercept studies at selected border points

Example

- Statistics on tourism
- Intercept studies at selected border points
- Follows the “old” survey design thinking

Example

- Statistics on tourism
- Intercept studies at selected border points
- Follows the “old” survey design thinking
 - Define population
 - Select a sample
 - Do measurements

Example

- What's the problem?

Example

- What's the problem?
- We need estimates for satellite accounts

Example

- What's the problem?
- We need estimates for satellite accounts
- Estimate $Y_j = \sum_U y_{kj}$ with $\hat{Y}_j = \sum_S d_k y_{kj}$

Example

- Redefine the problem

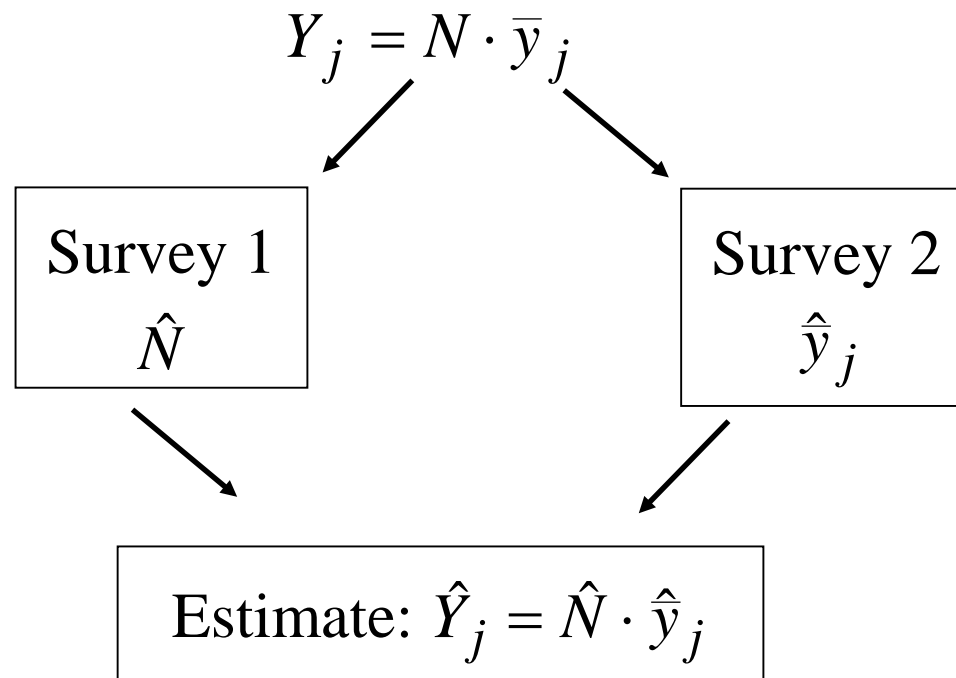
Example

- Redefine the problem

$$Y_j = N \cdot \bar{y}_j$$

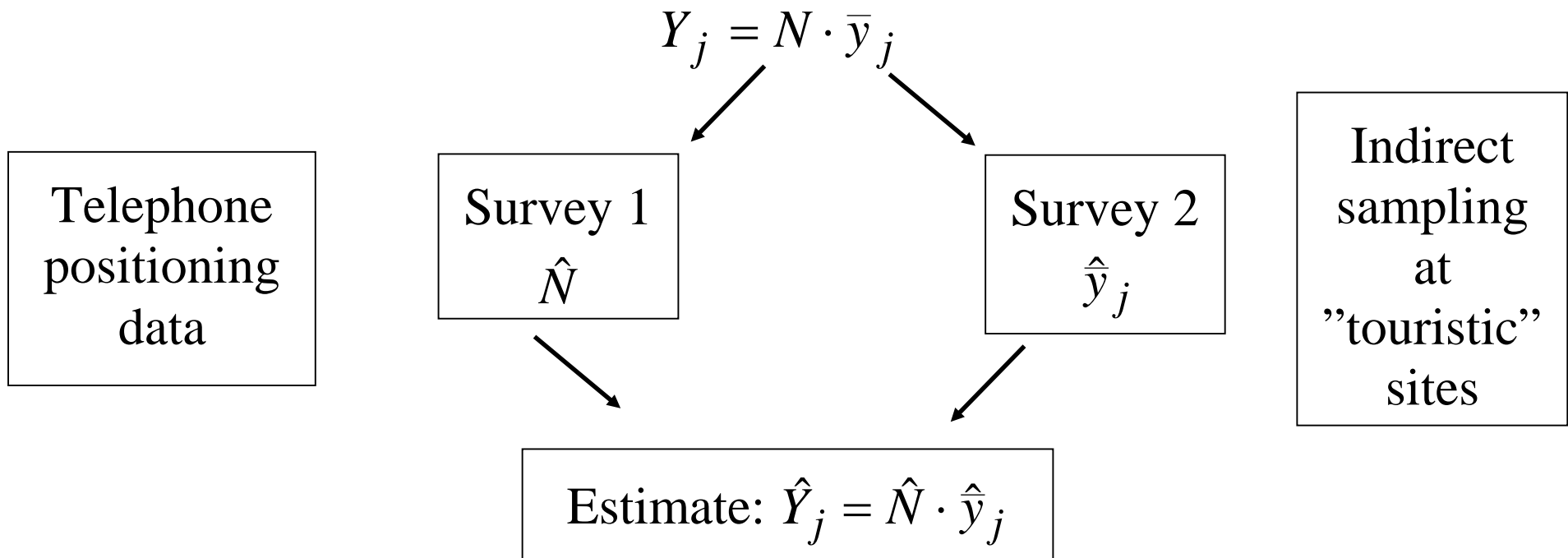
Example

- Redefine the problem



Example

- Redefine the problem



Statistics?

Statistics?

- What is the system to produce?

Statistics?

- What is the system to produce?

Definition of statistics

A *statistic* is an estimate of an unknown population characteristic, accompanied with a quantitative measure of uncertainty that can be given a precise and objective meaning.

Statistics?

- What is the system to produce?

Definition of statistics

A *statistic* is an estimate of an unknown population characteristic, accompanied with a quantitative measure of uncertainty that can be given a precise and objective meaning.

- Why this?

Table 1: Change (%) in number of employees by industry.

Industry	Change	Industry	Change
<i>Frmng/Hntng</i>	6,0	Transport.	-0,5
<i>Electricity</i>	5,6	Banking	1,0
<i>Construction</i>	8,4	Real Estate	4,7
Retail	4,7	<i>Education</i>	6,4
<i>Hotel</i>	15,4	Health Care	4,7

Source: Statistics Sweden, AM 63 SM 0703

Table 2: Change (%) in number of employees by industry.

Industry	95% CI	Industry	95% CI
<i>Frmng/Hntng</i>	-2,5--14,5	Transport.	-3,5--2,5
<i>Electricity</i>	-0,6--11,8	Banking	-2,5--4,5
<i>Construction</i>	4,5--12,3	Real Estate	1,2--8,2
Retail	2,2--7,2	<i>Education</i>	0,3--12,5
<i>Hotel</i>	8,1--22,7	Health Care	-1--10,4

Source: Statistics Sweden, AM 63 SM 0703

Competencies

Competencies

- *Problem formulation and complex survey design*

Competencies

- *Problem formulation and complex survey design*
- *Complex sampling design*

Competencies

- *Problem formulation and complex survey design*
- *Complex sampling design*
- *Estimation using multisource data*

Competencies

- *Problem formulation and complex survey design*
- *Complex sampling design*
- *Estimation using multisource data*
- *Managing large register systems*

Competencies

- *Problem formulation and complex survey design*
- *Complex sampling design*
- *Estimation using multisource data*
- *Managing large register systems*
- *Retrieval and formatting of nonstandard data sources*

Competencies

- *Problem formulation and complex survey design*
- *Complex sampling design*
- *Estimation using multisource data*
- *Managing large register systems*
- *Retrieval and formatting of nonstandard data sources*
- *Communication*

Thanks for Your time!