

CAPTURE/RECAPTURE —MULTIPLE SYSTEMS ANALYSIS—

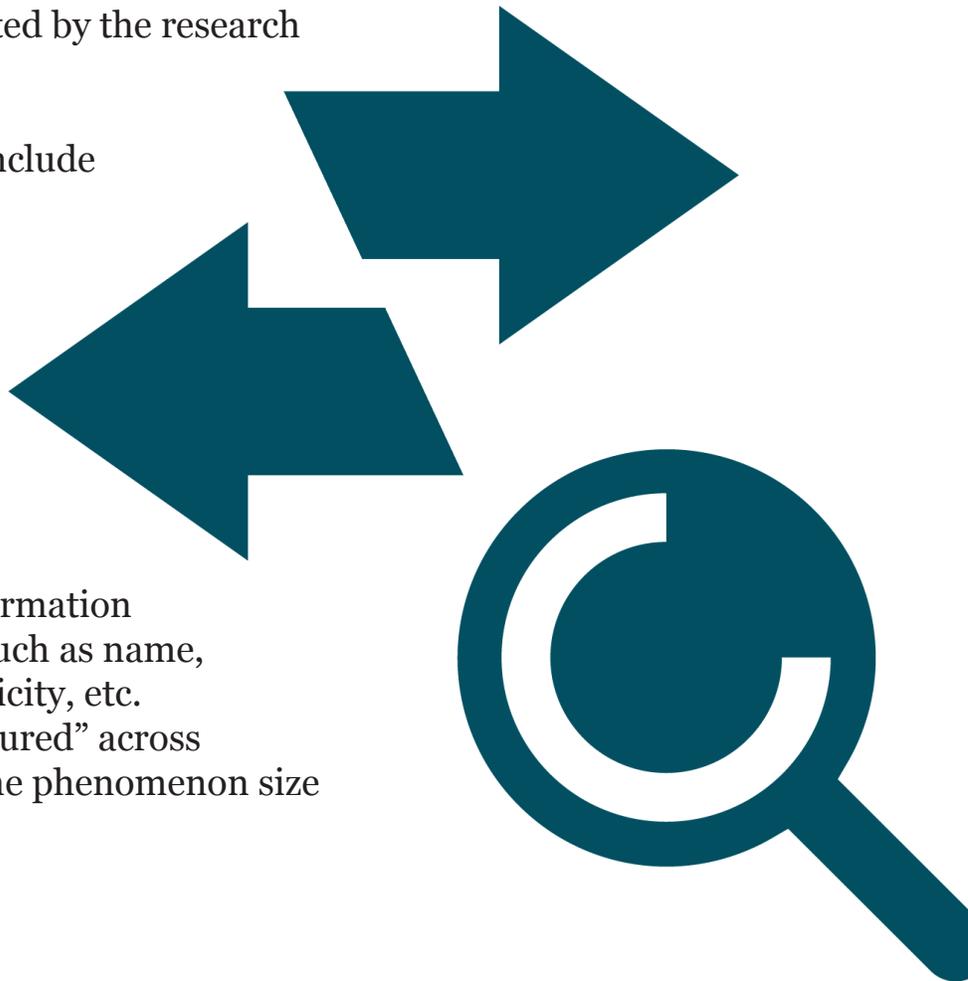
The origins of the capture re-capture method (CRC, also known as contact re-contact, multiple systems analysis, multiple record systems analysis) come from wildlife biological research where a researcher would “capture” an animal, mark it, and then release it back into the wild.

The researcher would then return for another survey of the animals and record how animals from the first sweep were “recaptured.” This information led to statistical estimates of a wild animal’s population size.

This basic concept is applied to social sciences using a similar method of direct observation or secondary analysis. CRC uses registers of potential members of a population (e.g. trafficking victims) to estimate what segment of the population is affected by the research phenomenon.

Some examples of data registers include governmental data registers, NGO participation files, media reports, academic reports, researcher observations, etc. Each case on a register (or observation set) is given a unique identifier which will mark the individual across multiple datasets.

Different personal identifying information (PII) characteristics can be used such as name, government ID number, age, ethnicity, etc. The amount of individuals “recaptured” across multiple sets is used to estimate the phenomenon size using statistical methods.



ASSUMPTIONS

- Each individual has an equal probability of being “captured” within the study.
- Researchers can correctly identify individual participants across the multiple lists used.
- Each data list or observation set is independent of each other.
- The study population is stable and not expected to change during the course of the study (closed population).

ASSUMPTION COMPLICATIONS

- **Negative dependence:** When a case’s inclusion in one data source lowers the chances of that case being captured in another second data source. Bales et al. (2015) found that cases in NGO data sources were missing from governmental records due to confidentiality standards.
- **Positive dependence:** When lists recording cases are not truly independent (e.g. early school enrollment records and vaccination records). In that example, vaccination can be a requirement for school enrollment therefore creating a dependence between the databases.

PREVIOUS USES

Forced Labor

Bales, Hesketh, & Silverman (2015); International Labor Organization (2012); Van Dijk & Van der Heijden (2016)

Individuals Engaged in Commercial Sex

Brunovskis & Tyldum (2004); Steinfatt, Baker, & Beesey (2002)

Children Outside Family Care

Hatloy & Huser (2005); Pullum et al. (2012)

PROS

- Estimates a population size—strengthening a limitation of Respondent Driven Sampling.
- Can be a cost-effective method using secondary data analysis.

CONS

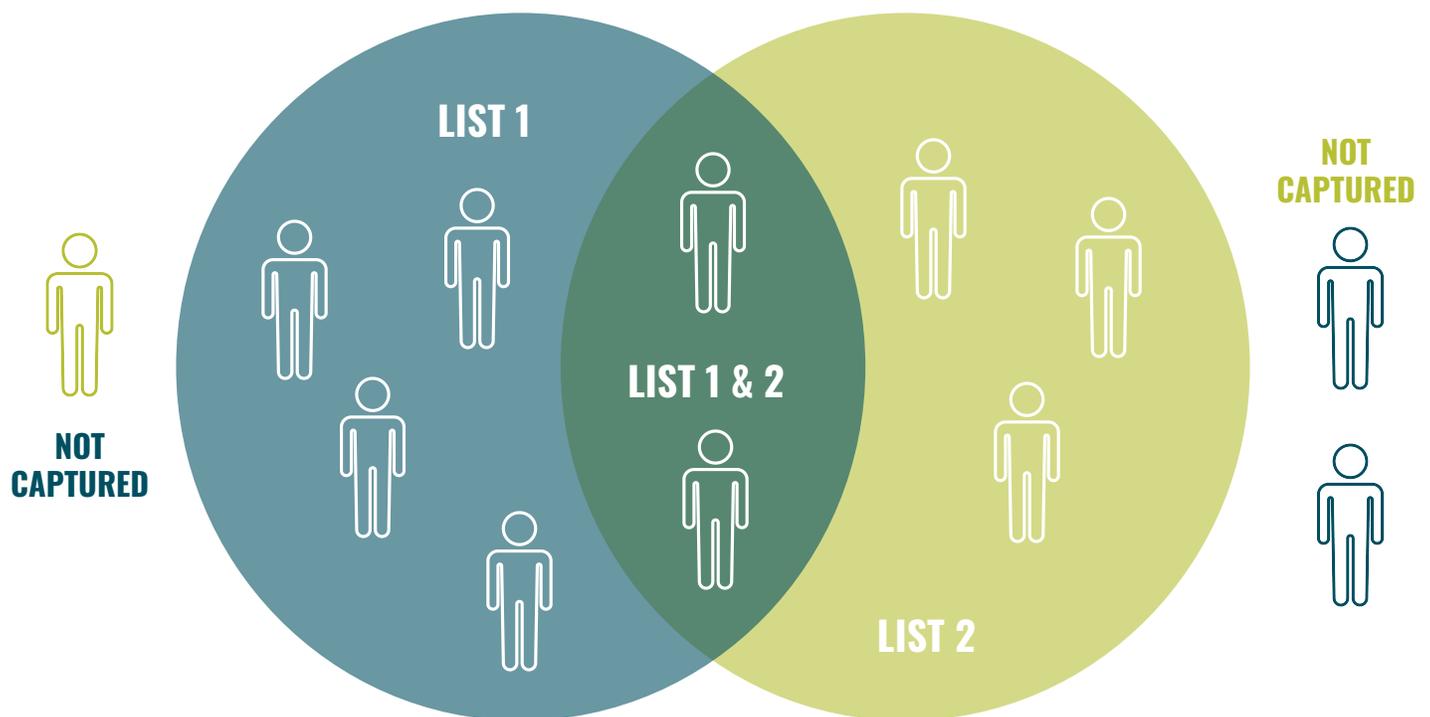
- Using multiple datasets is preferred, but there can be difficulty in matching individuals across sets created by different agencies with varying privacy regulations.
- Many CRC methods rely on population interaction with administrative registries or NGOs, but hidden populations are often hesitant to interact with these entities leading to underestimation of population numbers.

A NOTE ABOUT DATA REGISTRIES

- The registers are collected around the same time or from similar data sources.
- Using multiple data registries can increase the likelihood of independence of observations. If only one or two data sources are used, the assumption of independence can be difficult to uphold and entire sub-groups can be excluded.
- Multiple identifiers have added advantage of data desegregation which helps identify sub-groups and ensures that these groups have an equal chance.

PAST IDENTIFYING MARKER EXAMPLES

- Steinfatt et al. (2012) used 4 variables (age, ethnicity, indentureship, and location) to create a unique profile for each case between researcher and taxi driver observations.
- ILO (2012) used 72 variables from datasets compiled from media reports, NGO use, government registries, etc.



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