Subsidy Measurement Issues: Measures of Duration, Dosage and Stability

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What are the key measurement issues with regard to subsidy duration and stability?

1. Sample: Who to include / exclude when looking at participation over time.

2. Censoring: Missing information on start or end date of a spell of subsidy use.

3. Unit of analysis: Family or child

4. Definition of a gap in service

5. Appropriate analytic methods

6. Administrative and survey data: Advantages and limitations

Measures of subsidy use, duration, stability and "dosage"

- Length of a spell (measured in months or weeks)
- Number of spells
- Models of the probability of:
  - Subsidy take-up
  - Exit from subsidy
  - Return to subsidy
- Cumulative months of subsidy use over a fixed period of time

Analysis of "spell data" is different from either cross-sectional or time-series data analysis. Special attention must be paid to issues related to who is included (and excluded) even when using population or administrative data.

1. Who to Include and Exclude in a Study of Participation over Time

- Each month of participation is a unit of observation, and some families have more units (months) than others.

- A **point-in-time** or stock sample is based on the families receiving subsidy at a point in time (one month or one year for example).

- An **entry cohort** or flow sample is based on the families who enter the subsidy system during a period of time, that is, they begin spells of participation.

- These two approaches to sampling yield <u>very</u> different results in terms of spell length.

Example to compare the 2 approaches

Two hospital beds

　　　1) One patient in for 30 days
　　　2) 30 patients, in for 1 day each

Point-in-time approach

On any particular day, two patients are in the two beds, and the mean spell length for these two patients is:

$(30 + 1)/2 =$ **15.5 days**

Entry cohort approach

At the end of the month, the average spell length for the 31 patients who were in the beds that month is:

$30 * 1$ day $+ 1 * 30$ days $=$
$60/31 =$ **1.9 days**

Measures of subsidy spell length differ dramatically depending on the approach

Median length of subsidy spell (months)	Point-in-time approach	Entry cohort approach
Oregon	11.3	3.9
Texas	16.5	5.7

% of persons

Legend: ■ Persons beginning a spell   □ Point-in-time
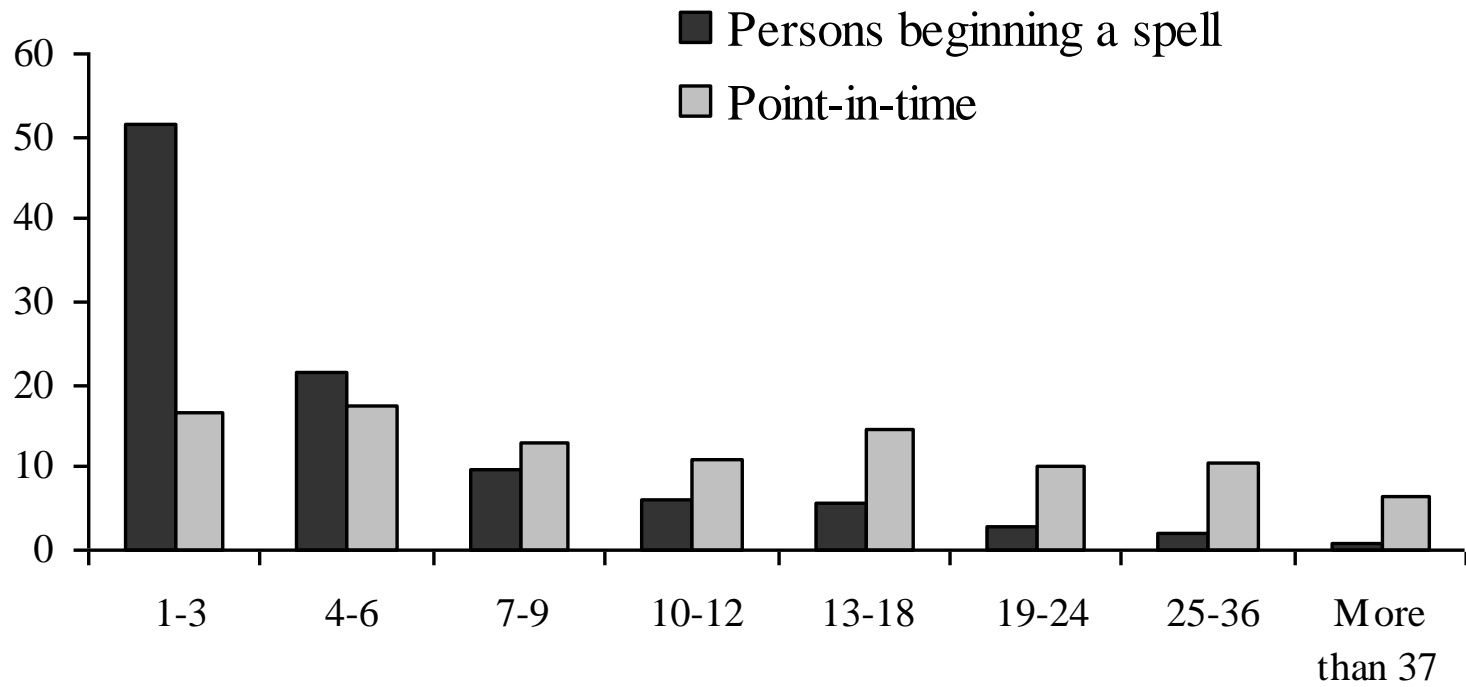
Spell length in months

2. Censoring: Spells that begin before the observation period or end after it

- Using completed spells only (those for which the spell start and end are observed) biases the measures of spell duration.

- Most studies of cash assistance receipt or child welfare exclude "left-censored spells", that is, those with start dates prior to the observation period.

- Spells that are right-censored, that is, whose end date is after the end of the observation period, should be included and event-history analysis methods used to account for the right censoring. A simple mean will likely overstate the average spell length.

3. Unit of analysis: Family vs. child

- Depending on the question of interest, subsidy participation may be measured at the family level or the child level

- Another issue is whether to select a focal child or all children in a family.
  - The subsidy participation of children from the same family is likely to be highly correlated, though participation may end for one child while continuing for others.

- Another measurement issue is whether to use characteristics as of the first month of a spell, the current month, or perhaps an average.

4. Definition of a gap in service

- Subsidy participation should be defined based on when the child was cared for rather than when payment was made.

- How long a period of time without subsidized care should be used to define a break in subsidy participation?

- Eligibility versus payment: If copay exceeds the amount owed to the provider, is the family still considered to be on subsidy?

5. Appropriate Analytical Methods

- Event history or survival analysis methods should be used to account for censoring of spells that continue past the observation window.

- Latent transition analysis is another useful analytic tool for analysis of spell durations.

- Studies should compare alternative methods and provide results to allow other researchers to understand the impact of choice of methods.

6. Data Sources: Administrative Data and Survey Data

- Administrative data is often used for studies of subsidy duration because it provides a consistent measure and large number of time units (weeks or months) in which to observe families.

- Survey data relies on parent recall and accurate reporting of subsidy usage, and often are difficult to collect over time.

- But administrative data tells us little about the reasons why families leave the subsidy program, or why they return.

Key Objective: Comparability of Study Findings

To ensure that findings from different studies are comparable, we should

- Reach consensus on the appropriate methods to use for studying subsidy continuity and dosage.

- In each study, provide details on how the sample was constructed and how censored spells were dealt with.

- Use comparable analytic methods and provide results using different methods.