Measuring Single-Year Poverty Transitions:
Opportunities and Limitations

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Abstract

Over the period from 2009 to 2012, the median length of a poverty spell was 6.2 months. While longitudinal data over multiple years has the benefit of capturing a greater number of poverty spells and reducing the proportion of spells affected by left or right-censoring, researchers and policymakers must wait years for data to be released, and the impact of sharp swings in the economy is masked over extended periods.

The biggest limitation in providing single-year estimates of poverty spell dynamics relates to issues of spell capture and censoring. As researchers shorten the observation period, they capture fewer poverty spells and a greater proportion of spells are unable to be assigned "true" start and end dates as spells begin prior to the start of the observation period or continue beyond the end of the observation period.

Analysis within single calendar years from 2009 to 2012 captures approximately 20 to 35 percent fewer spells when compared to the 4-year period, and left-censoring increases by approximately 240 to 265 percent. Further, the traditional practice of dropping left-censored poverty spells from duration estimates introduces an unexplored amount of bias, as approximately 55 to 60 percent of observed spells are excluded due to left-censoring.

This research presents estimates of single-year poverty dynamics across various demographic groups over the period 2009 to 2012. Findings suggest that small differences in medians across calendar years combined with relatively high standard errors limit the conclusions that can be drawn by comparing year-to-year changes. Additionally, while the characteristics of left-censored spells captured within a single calendar year are comparable with left-censored spells observed over the 4-year period, the increased capture of left-censored spells within single calendar years leads to greater bias when excluding left-censored spells, and often prohibits the assignment of median spell durations.

Keywords: SIPP, Poverty, Spells, Measurement, Transitions, Left-Censoring, Calendar-Year

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[1] This report is released to inform interested parties of ongoing research and to encourage discussion of work in progress. The views expressed on methodological or operational issues are those of the author and are not necessarily those of the U.S. Census Bureau. Any error or omissions are the sole responsibility of the author. All data are subject to error arising from a variety of sources, including sampling error, non-sampling error, model error, and any other sources of error. For further information on SIPP statistical standards and accuracy, see http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html.

Background

Measuring the incidence and severity of poverty is often presented and understood by the public through the use of static measures based on cross-sectional survey data, whereby respondents are surveyed at a single point in time and report their incomes for the previous 12 months or calendar year. Data from U.S. Census Bureau surveys such as the Current Population Survey (CPS) and American Community Survey (ACS) provide authoritative measures on the number of individuals experiencing poverty based on family income over a 12-month period, as well as the depth of poverty as measured through families annual income-to-poverty ratio deficit. These cross-sectional surveys allow policymakers to review year-to-year changes in poverty rates and severity for given geographies or demographic groups.

These annual poverty measures from the CPS and ACS are supplemented by understanding how individuals experience poverty from month to month over the course of a calendar year (CY) or longer. In some cases, families may experience poverty briefly, for a few months of the CY, although their annual income places them above their annual poverty threshold. Alternatively, some families experience chronic poverty, persisting in every month of the CY. The repeated collection of data over an extended period, available as a monthly longitudinal series through the U.S. Census Bureau's Survey of Income and Program Participation (SIPP), supplements policymakers' understanding of how different groups experience poverty, and their relative difficulty escaping poverty once they have entered.

Official Census Bureau SIPP reports contain a wealth of information on the dynamics of poverty across years and by detailed demographic groups. However, unlike estimates from the CPS or ACS, poverty estimates from the SIPP have not historically been released at consistent annual intervals. This is due to a number of factors, primarily the alternative data collection methodology used in the SIPP, as well as a preference among researchers to observe poverty transitions across successive years, which necessitates biennial or triennial releases.

The most recent Census Bureau SIPP poverty report (P70-137) covers the 3-year period from 2009 to 2011, and was released in January 2014 (Edwards 2014). This lag between data collection and release was up to 5 years for estimates in CY 2009. Even if Census researchers preferred to release stand-alone annual estimates for CY 2009, this would have required the collection, editing, review, and public release of 4 individual SIPP interviews, referred to as "waves," as well as the creation and release of the CY 2009 replicate weight file, which was not available until June of 2011.

However, new changes in the 2014 SIPP Panel data collection methodology will alter the interview reference period, changing the interview schedule from every 4 months to a single annual interview referencing the full CY. Since each wave of the 2014 SIPP Panel will reference an entire CY, analysts will no longer need to combine multiple waves to create CY estimates, and CY replicate weights will be released at the same time as the edited data. Initial plans for public use data releases from the 2014 SIPP Panel call for publishing topical briefs to coincide with data releases. These briefs would be less comprehensive than official P-70 series reports, but would summarize major statistics of interest based on the wavely CY file releases.

This has prompted research into how estimates of poverty dynamics might be calculated at an annual level in order to provide faster reporting and facilitate more timely policy interventions related to promoting poverty exits among at-risk populations. While there are a number of statistics that are traditionally included in official SIPP reports, this research focuses on the calculation of annual estimates of median poverty spell durations. Knowing how many months individuals are likely to remain in poverty once they enter is a valuable metric for designing policy interventions, and this measure reflects the unique value of the SIPP's longitudinal design.

Estimates of median poverty spell length are regularly included in official Census Bureau releases, and similar estimates are often calculated and cited by outside researchers using both the SIPP as well as alternate longitudinal surveys such as the Panel Study of Income Dynamics (PSID). Estimates of median poverty spell durations have been included in official SIPP poverty reports since 1990. However, these estimates have always been based on a multi-year reference period, 2 years (P70-55, P70-63), 3 years (P70-42, P70-123, P70-137), or 4 years (P70-91).

Although estimates of median poverty spell length have never been produced annually, other estimates related to the dynamics of poverty have been calculated for overlapping annual and multi-year periods, and illustrate that the reference period (the time period examined) makes a difference both in the calculation and interpretation of the estimate. For example, SIPP reports also estimate the number of individuals who experience poverty for at least 2 consecutive months over a reference period, i.e., have at least one poverty spell. Estimates of this "episodic" poverty rate over the 4-year period from 2009 to 2012 are higher than annual episodic poverty rates for CYs within the same period. The episodic poverty rate over the 4-year period from 2009 to 2012 is 34.5 percent, compared to annual rates of 23.0 percent in 2009, 23.2 percent in 2010, 23.8 percent in 2011 and 23.1 percent in 2012.[2,3] Alternatively, measures of chronic poverty, those in poverty every month of a reference period, are lower when calculated over multi-year periods than for a single CY within the same reference period. The 4-year chronic poverty rate from 2009 to 2012 is 2.7 percent, while the rate in 2009 is 7.2 percent, 8.1 percent in 2010, 8.3 percent in 2011, and 8.4 percent in 2012.[2,4]

Similar considerations emerge when calculating single-year estimates of poverty spell length. By shortening the reference period, the likelihood of observing poverty spells decreases, and those that are observed span a greater proportion of the reference period, leading to increased concerns related to censored spell start and end months. This research explores to what extent those issues emerge, and how estimates of median poverty spell length are impacted by comparing annual estimates from CYs 2009, 2010, 2011, and 2012 to estimates spanning the entire 4-year period.

It's important to note that the estimates of median poverty spell length presented here are unrelated to the reporting of the official poverty rate. The Office of Management and Budget (OMB) does not mandate the reporting of median poverty spell durations, and no federal or state funding is allocated based on this measure. However, the measure does serve as a valuable resource to members of the academic and policy community, and this research is rooted in efforts to better serve those populations by providing routine and comparable year-to-year estimates that allow for valid statistical comparisons of the changing economic environment. While this research makes comparisons across 4-year and single-year estimates to evaluate differences across the two measures, annual estimates of median poverty spell length are not intended to be comparable with historic estimates based on multi-year periods. The expectation going into this research is that single-year spell duration estimates would constitute a separate data series that would correspond with the release of the 2014 SIPP Panel data.

Literature

Previous research has highlighted the need to supplement cross-sectional surveys with longitudinal data in order to understand the dynamic nature of poverty. As suggested by Bane and Ellwood (1986), measuring the "persistence" of poverty via spell durations allows policymakers to understand the long-term nature of poverty as well as better capture the incidence of short poverty spells, which are underrepresented in cross-sectional poverty estimates. In their seminal paper, Bane and Ellwood (1986) find that while many people enter poverty for a brief period, individuals who are in the midst of long poverty spells account for the majority of the individuals found to be in poverty at a given point in time, causing cross-sectional poverty estimates to over-represent the chronically poor while failing to capture the characteristics of the episodically poor.

By using longitudinal data, most commonly referenced through the Panel Study of Income Dynamics (PSID), the Survey of Income and Program Participation (SIPP), and the National Longitudinal Survey of Youth (NLSY), researchers are able to supplement cross-sectional estimates of poverty with analysis related to the dynamics of poverty, often measured through spell entry and exit probabilities as well as durations (Cellini, McKernan, and Ratcliffe 2008).

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[2] Note: Panel and yearly estimates are based on different samples. The 4-year panel estimates include only respondents in the panel for 48 months whereas CY estimates include respondents in sample for 12 months. The numbers of respondents in each sample are as follows: 41,858 in the 4-year panel, 73,695 in 2009, 67,452 in 2010, 64,691 in 2011, and 60,893 in 2012.

[3] The only statistical difference in episodic poverty rates across CYs is for 2009 (23.0 percent) and 2011 (23.8 percent).

[4] The chronic poverty rate in 2009 (7.3 percent) is lower than the rate in 2010 (8.1 percent), 2011 (8.3 percent), and 2012 (8.4 percent). There is no statistical difference in chronic poverty rates in 2010, 2011, or 2012.

Researchers have used a variety of methods to measure poverty entries, exits, and durations, with the method often depending on the data source and whether data is published at an annual or monthly level (McKernan and Ratcliffe 2005). Interviews for the PSID are conducted biannually[5] and poverty status is assigned based on annual family income, while the NLSY is conducted annually with measures of poverty similarly based on annual family income. Alternatively, SIPP interviews are conducted every 4 months, and poverty status is assigned at the monthly level. Even as the 2014 SIPP Panel is redesigned to alter the interview schedule from every 4 months to an annual interview, data will continue to be collected at the monthly level allowing for the assignment of monthly poverty status.[6]

Both the choice of survey and level of reporting have significant implications for the measurement of poverty dynamics. As summarized in "Measuring Poverty: A New Approach" (1995) research using annual data from the PSID (Duncan, Smeeding and Rodgers 1992) produce longer spell durations than estimates based on monthly data from the SIPP (Ruggles 1988) as the monthly reporting in the SIPP allows for the capture of intra-year poverty spells. Additionally, estimates derived from SIPP data further vary based on the length of reference period used, with shorter reference periods leading to higher poverty rates (David and Fitzgerald, 1987; Engel 1989; Lerman and Yitzhaki, 1989) and a reduced capture of short spells of poverty (Ruggles 1988).

In their review of the academic literature on longitudinal measurement of poverty transitions and durations, Cellini, McKernan, and Ratcliffe (2008) summarize the datasets and reference periods used in a number of research studies. However, for each study included in their literature review, the reference period covered at least a 2-year period, even when researchers used data from the SIPP which provided monthly poverty estimates. While a number of studies have examined the dynamics of poverty over a multi-year period, and how those estimates vary from annual poverty rates, this research contributes to the literature by utilizing SIPP monthly poverty data to evaluate the feasibility of measuring poverty dynamics *within* a single CY, and evaluates how those estimates vary from multi-year estimates of spell durations.

This research also contributes to the existing poverty dynamics literature by paying particular attention to the issue and implications of censoring. As the reference period is shortened to a single CY, observed poverty spells extend for a longer proportion of the reference period, and therefore a greater proportion of poverty spells are underway in the first calendar month or continue through the last calendar month. If researchers are unable to observe a poverty entry during the reference period, it is impossible to know how long a poverty spell was underway before the individual is observed in the survey. These poverty spells that are underway at the beginning of the observation period are referred to as "left-censored," as the start date of the spell is truncated to an unknown degree by the limited observation period of the survey. Alternatively, poverty spells that continue through the end of the observation period, in this case December of the CY, are referred to as "right-censored" as the observed spell length is similarly truncated to an unknown extent, as a true exit is not observed within the observation period.

The censoring of poverty spells is described by Iceland (1997) as one of the most serious and persistent methodological challenges in measuring poverty dynamics. Because the correct identification of transitions into and out of a poverty spell are critical to measuring spell durations, estimates of spell length are dependent on both the degree to which the observed spells are censored, as well as how those censored cases are handled when calculating durations.

There is general agreement among researchers that the consequences of right-censored cases may be more easily dismissed. As discussed by Iceland (1997) the application of statistical techniques related to survival analysis and lifetable methods provide generally accepted controls for right-censored cases and allow for the estimation of spell length with reasonable and generally agreed upon assumptions. However, there remains a lack of consensus on how to handle left-censored spells. As Iceland (1997) summarizes, the most common methods for dealing with left-censored spells are often unsatisfying at best, and at worst can lead to known selection bias.

One approach has been to apply sophisticated models to estimate durations for left-censored spells based on assumptions about transition probabilities applied outside the observation period. However, the probability of

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[5] Prior to 1999 the PSID conducted annual interviews.
[6] For more information on the 2014 SIPP redesign, see http://www.census.gov/programs-surveys/sipp/about/re-engineered-sipp.html

entering or exiting poverty is known to fluctuate based on the very variable attempting to be calculated, the length of time an individual is in poverty. Previous research from Bane and Ellwood (1986), Stevens (1994), Duncan, Smeeding and Rodgers (1988), and Iceland (1996) have shown that the hazard rate for transitioning out of poverty is not constant, and that exit probabilities decline as spells progress.

Iceland (1997) illustrates that the most common method for handling left-censored cases, simply discarding them from the sample, leads to estimates that underestimate spell duration, as left-censored spells are more likely to include individuals in long-term poverty. More importantly, discarding left-censored poverty spells disproportionately omits spells from more disadvantaged demographic groups, such as individuals who are Black, younger, less educated, female, or in families headed by a single individual, leading to known selection bias. As Iceland (1997) observes, the issue of underestimating spell duration is a concern even when including left-censored poverty spells, as their true durations are known to be longer than observed within the survey.

Despite the implications of simply discarding left-censored spells, much of the most eminent research on poverty spells has excluded left-censored spells. (Bane and Ellwood,1986, 1994; Stevens, 1994) Similarly, the Census Bureau has historically excluded left-censored spells when producing reports of median poverty spell length. However, analysts typically produce estimates both including and excluding left-censored spells in order to provide some context on the impact that excluding left-censored spells has on the published estimates.

Although Iceland (1997) recognizes that ignoring left-censored cases is a common practice when producing estimates of spell durations, and that this practice introduces known bias on estimates of spell duration, there has been little discussion regarding the extent to which this methodology may be considered reasonable.

Conceivably, there is a finite limit to the practice of simply excluding left-censored cases to produce estimates of spell durations. Obviously if all spells are left-censored, estimates can not be produced under this methodology. However, there has been limited discussion as to where the threshold for using this methodology lies. Recent Census Bureau reports have produced estimates of median spell length over the period from 2009 to 2012 where 28.4 percent of observed spells are excluded due to left-censoring, and estimates covering 2005 to 2007 where 29.5 percent of spells a excluded (Edwards 2014).

By shortening the reference period to a single year, this research will confront the issue of left-censoring to a greater extent than estimates derived from a multi-year reference period. As such, this research hopes to initiate a discussion as to where the boundary may exist for when the practice of simply excluding left-censored spells becomes unfeasible, as opposed to simply ill-advised.

Data

The data for this research come from the 2008 Panel of the Survey of Income and Program Participation (SIPP). The SIPP is a longitudinal nationally representative household survey conducted by the U.S. Census Bureau, and is unique in providing data on household composition and income at a monthly level. Prior to the 2014 SIPP redesign, SIPP interviews were conducted at 4-month intervals over the course of a panel, with panels typically lasting from 3 to 4 years.

The 2008 SIPP Panel reference period spans May 2008 to November 2013.[7] The 2008 SIPP Panel is the most recent panel for which data is currently available. The 2014 SIPP Panel, which will cover the reference period of January 2013 to December 2016, is currently in the field. The first 2 waves of data are in processing and not yet released to the public. The 2014 SIPP Panel will be the first production SIPP Panel to reflect the redesigned SIPP survey methodology, most notable for the change to an annual interview schedule.[8] This research utilizes data collected in the 2008 SIPP Panel to evaluate the feasibility of creating annual measures of median poverty spell length in the 2014 SIPP Panel. As such, this research is limited to CYs with complete coverage in the 2008 SIPP Panel, CYs 2009 to 2012.

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[7] There were 52,000 eligible household in sample in Wave 1 and 42,000 were interviewed. For more information on the SIPP, see http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements.html.

[8] For more information on the 2014 SIPP redesign, see http://www.census.gov/programs-surveys/sipp/about/re-engineered-sipp.html

Each SIPP Panel sample is initially based on a representative sample of households. All individuals usually residing in the sampled household are interviewed in Wave 1, and become SIPP sample members. Subsequent SIPP interviewers return to the sampled household and re-interview original sample members, as well as anyone who may have joined their household, such as a new spouse or child. If original sample members move from the original household, field interviewers obtain their new address and the original sample member as well as any new household members are interviewed at the new address. If all original SIPP sample members relocate from the original sample household, the new occupants of the address are not included in the sample. New household members become part of the SIPP sample as long as they are residing in the same household as an original sample member.[9]

Although the SIPP sample allows individuals to transition in and out of sample based on their residency, deriving estimates of annual and multi-year poverty spell durations requires respondents to have a valid interview in each month of the reference period. Therefore, the universe for estimates in CYs 2009, 2010, 2011, and 2012 is limited to respondents with a valid interview in each of the 12 months of a given CY while estimates spanning 2009 to 2012 are limited to respondents with a valid interview in all 48 months of the period.[10]

Methods

The Census Bureau defines a poverty spell as a period of 2 or more consecutive months in poverty, with multiple poverty spells separated by 2 or more months not in poverty, permitting individuals to record multiple poverty spells over a reference period.[11] Therefore, the minimum length of a poverty spell is 2 months, while annual estimates may have a maximum spell length of 12 months and 4-year estimates may have a maximum spell length of 48 months. As individuals may experience more than a single poverty spell over the reference period, this research will present both person and spell level estimates, depending on the measure of interest.

This research uses the official OMB poverty definition. Monthly poverty thresholds are based on family composition in the reference month, with the corresponding annual threshold divided by 12 and adjusted using the Consumer Price Index (CPI) in the reference month. Therefore, monthly poverty status reflects monthly changes in both family composition and income over the reference period.[12] A poverty spell is defined as left-censored if it is observed in month 1 of the reference period, and is considered right-censored if it continues through the last month of the reference period.

To understand the implications of shortening the reference period on the capture of poverty spells, this research compares the percent of individuals with an observed poverty spell, as well as the frequency of spells captured per person across single and multi-year reference periods. Descriptive analysis is similarly used to evaluate observed poverty spell durations as a proportion of the reference period as well as the percent of spells that are left or right-censored within the reference period. This research also looks at correlation between censoring rates and spell durations to investigate the differential impact of left-censoring across disadvantaged demographic groups.

When calculating median poverty spell durations, alternate measures exclude and include left- censored cases. Differences when excluding versus including left-censored spells are compared across annual and 4-year estimates to evaluate the extent that the increased presence of left-censored spells leads to greater underestimation of durations when dropping those cases to calculate annual medians. Right-censored spells are included in all calculations. The methodology used to calculate median spell length in this research is consistent with official Census Bureau reports. Using SAS software, the nonparametric life-table method produces estimates of median spell length, by grouping spell observations into single month intervals.

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[9] For more information on the SIPP sample or survey design, see http://www.census.gov/programs-surveys/sipp/methodology.html.

[10] The unweighted number of respondents in each sample are as follows: 41,858 in the 4-year panel, 73,695 in 2009, 67,452 in 2010, 64,691 in 2011, and 60,893 in 2012.

[11] Periods of poverty separated by only one month are considered a single poverty spell, and the single month out of poverty is included when measuring the spell duration.

[12] For more information on how the Census Bureau measures poverty, see http://www.census.gov/hhes/www/poverty/about/overview/measure.html.

By flagging right-censored spells, and applying the life-table method, right-censored spells are controlled for in the calculation of effective interval sample sizes. As discussed by Allison (2010), right-censoring is presumed to be "non-informative." If all spell observations are at risk of being censored over a consistent period, which is satisfied in this case, the fact that a spell is censored in a given month does not provide any insight as to the risk of exiting poverty in that month. (Allison 2010)

The life-table method assumes that right-censored spells are censored at the midpoint of the interval i, in this case defined as monthly, and therefore only one-half of right-censored cases contribute to calculating the number at risk of exiting poverty in a given month. Therefore, the effective sample size in a given month (Equation 1) is equal to the effective sample size of the previous month, minus 1) those spells with an observed exit from poverty in the previous month, 2) half of the right-censored poverty spells from the previous month, and 3) half of the right-censored poverty spells from the current month.

$$n'_i = n'_{i-1} - d_{i-1} - \frac{1}{2} w_{i-1} - \frac{1}{2} w_i \tag{1}$$

In Equation 1, d is the number of observed exits from poverty and w is the number of censored spell exits. Alternatively, the unadjusted sample size can be expressed in Equation 2 as the number of individuals entering the interval, unadjusted for those right-censored within the interval.

$$n_i = n'_{i-1} - d_{i-1} - \frac{1}{2} w_{i-1} \tag{2}$$

The conditional probability of exiting a poverty spell in interval i is defined in Equation 3 as the number of exits in the interval divided by the effective sample size.

$$\hat{q}_i = \frac{d_i}{n'_i} \tag{3}$$

The survival rate in month t (i.e., the probability a poverty spell will continue to month t or beyond) is defined in Equation 4 below as the dependent probability of surviving in all prior intervals before t.

$$\hat{S}(t_i) = \prod_{j=1}^{i-1} (1 - \hat{q}_j) \tag{4}$$

The likelihood of a poverty exit occurring at some period within a month, conditional on the spell lasting to the beginning of that month, is referred to as the hazard rate. The hazard rate is calculated at the midpoint of a given interval denoted as t_{mi} and defined in Equation 5 below.

$$\hat{h}(t_{mi}) = \frac{d_i}{b_i(n_i - \frac{w_i}{2} - \frac{d_i}{2})} \tag{5}$$

As defined in Equation 5, b_i is the length of the interval, in this case one month. Life-table estimates of median spell length are interpreted as the median residual life at interval 0, providing the estimated median number of months an individual is expected to remain in poverty at the time a spell begins (month 0). The calculation of median spell length is defined in Equation 6.

$$\widehat{M}_i = t_i + \frac{\hat{S}(t_i) - \frac{1}{2}}{\hat{S}(t_i) - \hat{S}(t_{i+1})} \tag{6}$$

The median $\widehat{M}_i$ is assigned where $\hat{S}(t_i)$ is greater than or equal to 50 percent and $\hat{S}(t_{i+1})$ is less than 50 percent. If there is no interval with a survival rate ($\hat{S}_t$) less than 50 percent, the median survival time at interval 0 cannot be

determined. In these cases, fewer than half of poverty spells are predicted to end by the close of the observation period. (Zhang 1993; Allison 2010)

To determine where the threshold might lie for producing annual estimates of median poverty spell length, this research uses simple logit and ordinary least squares (OLS) regressions to model both the ability to produce an estimate of annual median spell length, as well as the variation in estimates when including versus excluding left-censored cases. Since median spell lengths are calculated across demographic groups, logit and OLS regressions are not run at the individual or spell level, but are instead modeled across the 44 population groups for which estimates are typically calculated in Census Bureau P70 report series (see Table 4). Therefore, the probability of producing an estimate for a given population may be modeled on the censoring rate or 4-year median spell duration as measured across all individuals included in that demographic group for a given estimate.

For all estimates in this research, standard errors are calculated with replicate weights. Estimates of median spell length as well as differences across medians apply a grouping factor when calculating standard errors to account for the fact that individuals may experience more than one poverty spell. Standard errors for these estimates are inflated by an additional factor $\sqrt{g}$, where g is defined in Equation 7 below. In Equation 7, n represents the number of individuals with at least one spell, and m_i is the number of spells experienced an individual (i) during the reference period.[13]

$$g = \frac{\sum_{i=1}^{n} m_i^2}{\sum_{i=1}^{n} m_i} \qquad (7)$$

When reporting spell medians or differences across medians, estimates are suppressed if the standard error is greater than 30 percent of the estimate. Statistical comparisons are based on t-tests using a 90 percent confidence threshold unless otherwise stated. Using a 90 percent threshold for statistical confidence guarantees a relative standard error (RSE) of less than 61 percent, therefore in some cases estimates may be statistically significant, but remain suppressed due to a RSE between 30 and 61 percent.

Findings

Spell Capture

As previously discussed, researchers are more likely to observe poverty spells over longer reference periods. (Ruggles 1988) Consistent with past Census Bureau releases, the episodic poverty rate, defined as the percent of individuals who experience at least a single spell of poverty lasting 2 or more months, is approximately 11 percentage points higher when measured over the 4-year period from 2009 to 2012 than when measured in any of the individual CYs over that period (see Table 1). However, because of differences in the universe criteria for CY and 4-year estimates, the unweighted number of individuals experiencing at least a single poverty spell is higher in the CY estimates.[14] Year-to-year changes in the episodic poverty rate from 2009 to 2012 are not significant, although the episodic poverty rate in 2009 (23.0 percent) is lower than the rate in 2011 (23.8 percent).

Additionally, the experiences of individuals observed experiencing poverty over the course of a single CY vary from those observed experiencing poverty over the 4-year period, as observation over a single year provides less opportunity for individuals to both exit as well as re-enter poverty. Although the unweighted number of individuals experiencing poverty is higher in the CY estimates, the unweighted number of observed CY poverty spells is approximately 20 to 35 percent lower due to the reduced capture of multiple poverty spells (see Table 1).

Previous research has shown that shorter reference periods lead to higher measures of chronic poverty, defined as individuals who experience a single spell of poverty that spans the entire reference period (Edwards 2014). Of

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[13] For further information on SIPP statistical standards and accuracy, see http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html.

[14] The four-year panel estimates include respondents in the panel for 48 months whereas calendar year estimates include respondents in sample for 12 months. The numbers of respondents in each sample are as follows: 41,858 in the four-year panel, 73,695 in 2009, 67,452 in 2010, 64,691 in 2011, and 60,893 in 2012.

poverty spells observed over the 4-year period from 2009 to 2012, 5.3 percent lasted the entire 48-month reference period, and 15.0 percent of poverty spells continued for over half the reference period (over 24 months).[15] When shortening the reference period to a single year, chronic poverty increases sharply, with approximately one-third of poverty spells lasting the entire 12-month reference period and approximately half of observed spells lasting for the majority of the reference period (over 6 months) (see Table 2).

Of individuals experiencing poverty over the 4-year period from 2009 to 2012, nearly half of those individuals (45.5 percent) experienced multiple poverty spells. Given that poverty spells are defined as a period of 2 consecutive months in poverty separated by 2 consecutive months out of poverty, it is possible for an individual to record a maximum of 12 distinct poverty spells over a 48-month period. From 2009 to 2012, a maximum of 8 spells are observed, and only 5.0 percent of ever-poor individuals experience more than 3 distinct poverty spells. By shortening the reference period to a single CY, it is possible for individuals to experience a maximum of 3 poverty spells, and in each of the CYs from 2009 to 2012 the maximum is observed. However, approximately 90 percent of individuals who experience poverty within a CY experience only a single spell within the year (see Table 1).

Given that poverty spells observed within a single CY are more likely to be an individuals only spell over the period, the calculation and interpretation of median spell length varies from 4-year estimates. Previous research has shown that spell durations for individuals with many repeated poverty spells, are by definition constrained to be shorter than poverty spells for individuals experiencing fewer poverty exits and re-entries (Edwards 2015). Therefore, spells measured within a single CY might be expected to be longer than those measured over an extended reference period because the estimate may fail to capture the high frequency short spells that shorten median spell lengths when doing calculations over a multi-year reference period. However, the interpretation of median spell length also changes based on the reduced probability that an individual experiencing poverty will go on to experience a secondary spell within the reference period. Given the expectation that that this measure is more fully capturing the *only* poverty spell an individual will experience, the interpretation may shift to regard longer durations less severely in this context.

Considerations related to poverty spell capture raise important conceptual questions when measuring poverty spells within a single CY. Given that fewer spells are captured, and the majority of individuals experience only a single, prolonged poverty spell, estimates based on a single-year reference period are not comparable with those based on longer multi-year reference periods. Additionally, by shortening the reference period, the traditional benefits associated with the longitudinal study of poverty begin to erode. By shortening the reference period to a single CY, poverty estimates increasingly reflect the bias associated with cross-sectional surveys, whereby individuals experiencing short poverty spells are underrepresented, and the majority of individuals observed in poverty are in the midst of a chronic spell.

Spell Censoring

Obtaining accurate estimates of median poverty spell length necessitates the complete observation of poverty spells. When the full duration of spells are unobserved due to censoring, spell durations are underestimated and, as shown by Iceland (1997), the bias introduced by censoring is not uniform across populations.

The largest concerns when using the life-table methodology relate to the presence of left-censored spells, those spells underway at the beginning of the observation period. Typically, the Census Bureau drops left-censored spells when publishing median poverty spell durations. However, estimates including left-censored cases are also reported in order to provide context for interpreting estimates, allowing data users to evaluate the degree to which durations may be underestimated.

Of poverty spells observed over the 4-year period from 2009 to 2012, 22.5 percent are underway in the first observed month, January 2009. These spells may have begun on or before January 2009, and I am unable to determine the extent that spell durations are censored by the observation period. Of left-censored spells observed over the 4-year period, 23.5 percent are both left and right-censored, meaning the poverty spell lasted the entire reference period. However, only 5.3 percent of all spells captured over the 4-year period are both left and right-

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[15] Note: This discussion of observed spell length does not control for left or right-censoring, poverty spells may have begun before they are first observed, or continued past the last reference month.

censored, and the majority of poverty spells (60.2 percent) have both an observed beginning and end month, i.e., are uncensored, allowing for confidence in assessing spell durations (see Table 3) .

When observing poverty spells within a single CY, the percent of spells where a true beginning and end month are observed declines dramatically. Approximately 20 percent or fewer of poverty spells captured within a single CY from 2009 to 2012 have an observed start and end date within the reference period, compared to 60.2 percent of spells observed over the 4-year reference period. Of spells observed within a single CY, approximately 55 to 60 percent of spells are left-censored, with the majority of left-censored spells spanning the entire reference period. Approximately one-third of all poverty spells observed within a single CY are both left and right-censored, compared to only 5.3 percent of spells measured over a 4-year reference period (see Table 3).

Rates of overall left-censoring as well as cases both left and right-censored are lower in CY 2009 than in subsequent CYs. However, a greater percentage of poverty spells in CY 2009 are right-censored but not left-censored. Rates of uncensored spells across CYs are not statistically different.

Consistent with Iceland (1997), I find that increased left-censoring within a CY is associated with populations that are traditionally economically disadvantaged. There is a strong positive association (Pearson's r=0.83) between the median length of poverty spells when measured over the 4-year period from 2009 to 2012, and the percent of poverty spells that are left-censored within a single CY. Additionally, when measured over the 4-year period, demographic groups with a higher percentage of left-censored spells have larger discrepancies in estimated medians when including versus excluding left-censored spells (Pearson's r =0.84 for estimates with significant differences, and r=0.69 when treating non-significant differences as 0). Correlation among these variables suggests that the underestimation of median spell length increases as a greater percent of left-censored spells are excluded, and that poverty spells experienced by traditionally disadvantaged populations are disproportionately underestimated when left-censored spells are excluded from estimates.

Spell Durations

This research represents the first attempt to measure and publish single-year estimates of median poverty spell durations based on monthly poverty status. Consistent with traditional Census Bureau methodology, the following discussion will first report median spell durations with left-censored spells excluded, followed by a discussion of how those estimates vary when left-censored spells are included in the calculations.

When left-censored spells are excluded, estimates of poverty spell durations are interpreted as the median length of time an individual who enters poverty within the reference period is expected to remain in poverty. Using this definition, the median length of a poverty spell in 2009 is 7.9 months, declining to 6.2 months in 2010. However, although the decline in median poverty spell length from 2009 to 2010 is significant at the 90 percent confidence level, the RSE of the difference is greater than 30 percent, making the estimated difference in spell lengths across years unreliable. From 2010 to 2011 and from 2011 to 2012, the median length of a poverty spell is statistically unchanged.

Estimates of median poverty spell duration (excluding left-censored spells) over the 4-year reference period are correlated with measures of episodic and chronic poverty (Pearson's r=0.61 and 0.78 respectively). However, year-to-year trends across these measures vary over the period from 2009 to 2012. From 2009 to 2010 the chronic poverty rate increased from 7.3 to 8.1 percent, and was statistically unchanged across later calendar years (see Table 1); this is inconsistent with trends in median poverty spell durations, which declined from 2009 to 2010. However, rates of left-censoring are higher in 2010 than in 2009, which does support an increase in chronic poverty rates over the period from 2009 to 2010, and further emphasizes the limitations of median spell length estimates when excluding left-censored spells. Year-to-year changes in the episodic poverty rate are not statistically significant across the entire reference period.

Unlike CY estimates of the episodic or chronic poverty rate, CY estimates of median spell length do not vary dramatically from estimates over the 4-year reference period. CY estimates of overall median poverty spell length

are longer than 4-year estimates in CYs 2009 and 2012[16], but are not statistically different from 4-year estimates in CYs 2010 or 2011 (see Table 4 to Table 9). Given that these estimates exclude left-censored spells, and estimates of spell duration are calculated based on month-to-month exit probabilities, the calculation from month 1 to 12 of a poverty spell is independent of the full duration of the reference period. This differs from episodic and chronic poverty estimates, where the estimate is relative to the duration of the reference period.

The relationship across CY and 4-year estimates also appears to vary across years. Simple regression models for CY median spell length based on 4-year medians by demographic group generate a slope fairly close to 1 in CYs 2009, 2010, and 2011, indicating that the difference across 4-year and CY estimates is constant across advantaged and disadvantaged demographic groups.[17] However, in CY 2012, the slope is 0.5 and more advantaged demographic groups with shorter median spell poverty durations when measured over the 4-year period appear to have larger increases in spell lengths when measured in CY 2012. However, while the regression models are significant, they are based on estimates for all demographic groups, even when differences across 4-year and CY estimates are not significant. As shown in Table 9, there are very few significant differences across 4-year and CY estimates, primarily limited to CY 2009, and the majority of differences are deemed unreliable due to high standard errors.

Trends in CY estimates across demographic groups are generally consistent with previous estimates based on a multi-year reference period. However, conclusions are often less definitive due to large standard errors as well as the inability to derive estimates for particularly disadvantaged groups where more than 50 percent of poverty spells are predicted to continue through the end of the CY observation period.

While previous research (Edwards 2014) has shown that the median spell length for non-Hispanic Whites is shorter than spell lengths for Blacks, I am unable to make statistical comparisons across these populations in CYs 2009 or 2010. In CY 2009 the relative standard error associated with the median spell length for Blacks is greater than 30 percent, indicating that the estimate is unreliable. Alternatively, in CY 2010, no median estimate for Blacks is produced, as more than half of all poverty spells experienced by Blacks, even when excluding left-censored cases, are predicted to continue beyond the end of the 12-month reference period. Estimates of median poverty spell length for Blacks are calculated for CYs 2011 and 2012, but the standard errors associated with the estimates remain relatively large (a RSE of 0.27 in CY 2011 and .13 in CY2012 compared to 0.08 across the 4-year period) and differences across non-Hispanic Whites and Blacks are not statistically significant. There are no statistical differences in estimates of median spell length across White, non-Hispanics, and Hispanics in CYs 2010 to 2012, although, median spell durations for White, non-Hispanics are shorter than Hispanics in CY 2009 (6.8 and 8.3 months respectively). However, unlike comparisons across non-Hispanic Whites and Blacks, the lack of significant differences across non-Hispanic Whites and Hispanics is generally consistent with previous research (Edwards 2014) as well as estimates over the 4-year period (see Table 4 to Table 8).

Individuals with one or more years of college experience shorter poverty spells than individuals with a high school diploma in each CY from 2009 to 2012, while individuals with a high school diploma have shorter poverty spells than those without a high school diploma in CY 2010. Comparisons to individuals with less than a high-school diploma is limited to CYs 2010 and 2011 as estimates of median poverty spell length for this population are determined to be unreliable in CYs 2009 and 2012. Median duration estimates for individuals without a high school diploma in CY 2011 are associated with a RSE of 24 percent (compared to 7 percent in CY 2010) leading to non-significant differences in median spell lengths between those with or without a high school diploma in CY 2011 (see Table 4 to Table 8).

Unlike estimates based on the 4-year reference period from 2009 to 2012, there is no statistical difference in the median length of poverty spells between individuals aged 65 and over and children under age 18 in CY 2011. Comparisons in other CYs are limited by a failure to derive reliable median spell length estimates for individuals aged 65 and over (see Table 4 to Table 8).

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[16] The standard error of the difference in medians across the 4-year reference period and CY 2012 is greater than 30 percent of the estimate.

[17] The coefficient in CY 2009 (0.81) is statistically different from 1, however, coefficients in CYs 2009, 2010, and 2011 are not statistically different from one another.

Individuals in married-couple families generally have shorter CY poverty spells than individuals in female-householder, no husband present families or unrelated individuals.[18] However, there are some unusual findings in CY 2012, whereby spell durations for individuals in married-couple families increase by 2.4 months over CY 2011, making estimates of poverty spell durations for married-couple families in CY 2012 statistically similar to individuals in female-householder families and unrelated individuals. Annual, episodic, and chronic poverty rates do not show increases in poverty rates for married-couple families from CY 2011 to 2012, and the RSE of the increase is greater than 30 percent, casting some concern over the strength of the conclusions that may be drawn based on estimates of single-year spell durations (see Table 4 to Table 8).

Year-to-year trends across demographic groups are largely consistent with the overall population, characterized by a lack of significant or reliable estimates of year-to-year change. Single-year changes in median poverty spell durations are not significant or unreliable for the majority of demographic groups shown in Table 9. There is only one demographic group where there is a reliably significant change across CYs; from 2009 to 2010 the median length of poverty spells for those living in the South declines by 2.4 months (see Table 9). However, it is difficult to reconcile this large decline in median poverty spell lengths with inconsistent trends in the annual, episodic, and chronic poverty rates for Southerners over this period, none of which show a decline (Edwards 2014).

These findings generate obvious concerns in making comparisons across particularly disadvantaged groups where more than half of CY poverty spells continue through the duration of the reference period, or where there is high variability in estimates of the median. However, in cases where CY median spell estimates excluding left censored spells are obtained, the average RSE across demographic groups in single CYs is not statistically different from the average RSE across demographic groups over the 4-year period, indicating that when CY median spell length estimates can be assigned, they aren't universally more variable from estimates over the 4-year period.[19]

The Impact of Left-Censored Spells

When left-censored spells are excluded from estimates of median poverty spell durations, the resulting statistic can be interpreted as the median duration of spells that *begin* in a given reference period. However, this definition may not be suitable for all purposes, and interpreting changes in durations across years may be misleading if durations decline while rates of left-censoring increase substantially. Estimates also create an overly optimistic representation for demographic groups with high rates of chronic poverty. Therefore, it is the general practice of the Census Bureau to produce alternate estimates including left-censored spells in order to gauge their impact on estimated medians.

Over the 4-year period from 2009 to 2012, 22.5 percent of all observed poverty spells are initially excluded from duration estimates due to left-censoring. Treating those spells as beginning in January 2009, the first observed month, is not a perfect solution, as the application of a blanket start date creates unequal truncation across spells. However, while these spell lengths continue to be underestimated to an unknown extent, the resulting measure of median spell length more appropriately captures the number of months poverty spells lasted over a given reference period, and provides a general measure to evaluate the impact of censoring. Over the 4-year period from 2009 to 2012, the median length of *all* observed poverty spells was 7.9 months, 1.7 months longer than when excluding left-censored spells (see Table 10).

As discussed, demographic groups with higher rates of left-censoring tend to be more economically disadvantaged, as individuals experiencing long-term poverty are more likely to have their poverty spells censored by the observation period. Demographic groups that have higher rates of left-censoring also have greater differences across 4-year median spell length estimates when including versus excluding left-censored cases. Given that left-censored spells are more likely to represent periods of extended poverty, excluding these spells underestimates spell durations for the most vulnerable populations. Approximately 34.3 percent of poverty spells experienced by individuals living in families with a female-householder no husband present and related child under the age of 18 are left-censored over the 4-year observation period from 2009 to 2012. When including left-censored spells for this demographic group, the median length of their poverty spells increases by 3.8 months. Alternatively, only 14.3 percent of spells experienced by individuals engaged in full-time employment at the start of the 4-year reference period are left-

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[18] Comparisons to individuals in female householder, no husband present families are limited to CYs 2009, 2011, and 2012, as estimates of median poverty spell length in CY 2010 are suppressed due to a RSE greater than 30 percent.

[19] This excludes estimates that are suppressed due to a RSE greater than 30 percent.

censored, and spell durations for this population increase only 0.1 months when including these left-censored spells. There are no demographic groups over the 4-year period where median poverty spell durations are shorter when including left-censored spells (see Table 10).

Evaluating the extent that median spell durations are underestimated when excluding left-censored spells within a CY is more complicated. As shown in Figure 1, life-table survival curves based only on left-censored spells indicate that survival curves are largely consistent for left-censored poverty spells whether they are observed within a single CY (in yellow) or over the 4-year period (in blue). Figure 1 graphs the probability that a left-censored poverty spell will continue ("survive") to a given month or longer. For example, 100 percent of spells last to month 2 or longer, as this is the defined minimum spell length. From months 3 to 48, the probability of a spell continuing from month to month declines gradually over time, at a rate that is largely consistent across CY and 4-year estimates.[20] A constant line at the median highlights the point at which the survival curve crosses the 50 percent survival threshold, i.e., 50 percent of poverty spells last to this month or longer. As shown in Figure 1, the median poverty spell duration for left-censored poverty spells observed over the 4-year period from 2009 to 2012 is approximately 16 months. However, in each of the CYs from 2009 to 2012, over 50 percent of left-censored poverty spells survive past the last calendar month, therefore no median is determined.

Survival curves based on life-table estimates where left-censored spells are excluded, as shown in Figure 2, are also fairly consistent across CYs and 4-year estimates.[21] As previously discussed, median poverty spell durations excluding left-censored spells in CYs 2009 and 2012 (7.9 and 7.5 months respectively) [22] are longer than spells measured over the 4-year period, while for CYs 2010 and 2011 there is no significant difference from the 4-year median (6.2 months). More clearly shown in Figure 2 is the steep decline in survival rates across months 2 to 3, 4 to 5, and 8 to 9, which is pronounced in both the 4-year and CY survival curves. The survival curves shown in Figure 2 reinforce the fact that when the beginning of poverty spells are observed, many individuals (approximately 40 to 45 percent) will be observed exiting the spell before month 5. Comparisons across Figure 1 and Figure 2 highlight this difference with left-censored spells; since the observation period fails to capture the start of left-censored poverty spells, these spells have likely already progressed beyond the initial months where the majority of exits are observed, capturing these most prolonged spells with the least likelihood of exit.

Alternate ways to visualize poverty exits are shown in plots of the hazard rate, i.e., the conditional probability of exiting a poverty spell in a given month, over the course of the observation period. Plots of the hazard rate more clearly illustrate the large increases in exit probabilities in months 2, 4, and 8 for non-left-censored spells, which appear as pronounced spikes in both the 4-year and CY hazard functions.[21,23] Of spells with an observed entry into poverty, approximately 30 to 33 percent of spells continuing to month 4 will end before progressing to month 5. When spells are left-censored (Figure 1) the probability of exiting a poverty spell in a given month never surpasses 10 percent in either the 4-year or CY estimates.

Figure 3 shows the final survival curves when estimating median spell length when including and excluding left-censored cases. Survival curves where left-censored cases are excluded (shown in green and red) are consistent across Figure 3 and Figure 2, and estimates where left-censored cases are included (shown in yellow and blue) vary from Figure 1 as the estimates in Figure 3 are not based solely on left-censored spells, but all spells regardless of left-censoring. As shown in Figure 3, when including left-censored spells in estimates of spell durations over the 4-year period, the survival curve (in blue) moves outward, as a greater proportion of spells survive across each monthly interval, and the median spell duration increases by 1.7 months.[24] Differences in 4-year survival curves are relatively small until after month 4, and as shown by the hazard rates in Figure 3, this may be attributed to less

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[20] Although the slope of the survival curves are appear similar across CY and 4-year estimates, there are statistical differences in the survival curves for left-censored spells across all estimates.

[21] Although the survival curves and hazard functions appear similar across CY and 4-year estimates, there are statistical differences when excluding left-censored spells across all estimates except CYs 2010 and 2011.

[22] There is no statistical difference in median poverty spell durations in 2009 (7.9 months) and 2012 (7.5 months).

[23] The observance of these spikes are strongly linked to the interview methodology of the SIPP, whereby months across 4-month interviews account for a disproportionate number of transitions into and out of poverty as opposed to months within the 4-month reference period.

[24] There are statistical differences in the survival curves across all estimates except comparisons across CY 2009 left-censored included and CY 2011 left-censored included as well as CY 2010 left-censored excluded and CY 2011 left-censored excluded.

pronounced seam effects when left-censored spells are included, although the decline in survivorship from month 4 to 5 remains prominent.

CY survival curves and hazard functions (see Figure 3) including left-censored spells (shown in yellow) vary more distinctly from estimates where left-censored spells are excluded (shown in green) and estimates including left-censored spells do not show the same pronounced exit probabilities in months 4 or 8. While the survival curves and hazard functions for left-censored spells shown in Figure 1 are fairly consistent across 4-year and single CY estimates, the impact of including those spells in the overall estimates vary. This is due to the fact that only 22.5 percent of spells over the 4-year-period are left-censored, while approximately 55 to 60 percent of spells within the single CYs are left-censored. For each of the single CYs from 2009 to 2012, I am unable to estimate median spell durations when including left-censored spells due to unassigned or unreliable estimates of the median.[25]

Without producing CY estimates of median spell duration when including left-censored spells, it is difficult to evaluate the direct impact of excluding those cases. Based on the survival curves, it is evident that including left-censored spells in CY estimates leads to more prolonged poverty spell durations than in the 4-year estimates, not due to unique characteristics of the left-censored spells captured within a single CY, but due to their increased frequency.

Differences across medians when excluding and including left-censored spells are reported in Table 10 for select demographic groups. However, for many demographic groups, estimates of median spell length when including left-censored spells continue to be unassigned or suppressed due to high RSEs. For those demographic groups where CY medians are assigned when including left-censored spells, there is no population shown in Table 10 where median spell durations are shorter when left-censored spells are included. CY differences across medians are larger than 4-year differences for all demographic groups except for individuals in two-person families in CY 2009. Demographic groups with larger differences across estimates over the 4-year year reference period generally have larger differences across medians when measured within a single CY (Pearson's r=0.58)[26] (see Table 10).

Given that CY median spell durations when including left-censored spells are frequently unassigned, this research explores the probability of assigning a valid medians when including and excluding left-censored spells based on the presence of left-censoring among demographic populations.

With the percent of left-censored spells the sole predictor in a logistic model, findings suggest that for every 10 percentage point increase in the rate of left-censoring, the probability of failing to assign a reliable estimate of median spell length when excluding left-censored spells increases by a factor of 4.8. However, when left-censored spells are included in calculations of the median, the probability of failing to assign a valid median increases by a factor of 280.8 for every 10 percentage point increase in left-censoring. Even with CY left-censoring rates as high as 60 percent, when left-censored spells are excluded there is only a 12.0 percent predicted probability of failing to assign a reliable median. Alternatively, when trying to produce estimates of spell length when 60 percent of spells are left-censored there is a 93.0 percent predicted probability of failing to assign a median.

Conclusions

In cases where CY median spell length estimates are obtained, the average RSE of CY estimates across demographic groups is not statistically different from the average RSE over the 4-year period, indicating that when CY median spell length estimates can be assigned, they aren't universally more variable from estimates over the 4-year period.[27] This is an encouraging finding given the reduced capture of non-left censored spells within a single CY. However, there is also an increased likelihood that median spell durations will not be assigned within a CY due

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[25] In CYs 2009 and 2011 overall medians are assigned when using base weights, but not with select replicate weights, leading to large standard errors and suppressed estimates. In CY 2010 and 2012 more than half of poverty spells are predicted to survive past the reference period.

[26] Note: The correlation coefficient of 0.58 is based on observations with significant differences across medians when including versus excluding left-censored spells in both the 4-year and CY estimates (n=39). When treating non-significant differences as 0, there is no significant relationship among 4-year and CY differences.

[27] This excludes estimates that are suppressed due to a RSE greater than 30 percent.

to survival rates greater than 50 percent through the entire reference period or a RSE greater than 30 percent, conditions which are not observed in estimates over the 4-year period.

There are limited year-to-year changes in median poverty spell lengths over the 4-year period. There is a statistically significant decline in spell lengths from 2009 to 2010, but a RSE greater than 30 percent limits the conclusiveness of this finding. Year-to-year interpretations must also reflect the fact that estimates exclude left-censored spells. For example, chronic poverty rates increased from 2009 to 2010, while median poverty spell lengths declined. However, left-censored 2010 chronic poverty spells are excluded from estimates of spell durations, therefore the interpretation of year-to-year comparisons are limited to individuals who *enter* poverty over the period.

The biggest concern with estimates of CY median spell lengths relate to the handling of left-censored spells. Approximately 55 to 60 percent of poverty spells observed within CYs 2009 to 2012 began before January of the CY. The impact of excluding these spells when producing estimates of median spell length varies across demographic groups, with traditionally disadvantaged groups more likely to experience left censoring. The survival characteristics of left-censored spells observed within a calendar year do not differ dramatically from left-censored spells observed over the 4-year reference period.[28] However, because of the increased frequency of left-censoring in CY estimates, medians including left-censored spells are often unassigned given that more than 50 percent of all poverty spells continue through the end of reference period. In each of the CYs from 2009 to 2012, overall estimates of spell length when including left-censored spells are unassigned or unreliable.

The direct impact of including left-censored poverty spells can only be compared for the most advantaged demographic groups, where medians are known to be least distorted by dropping left-censored spells. Demographic groups with higher rates of left-censoring are found to have larger differences across medians when including versus excluding left-censored spells, and those differences are generally larger in CY estimates than over the 4-year period. Based on these findings, CY estimates of median poverty spell length appear a poor candidate for annual publication, as even when excluding left-censored spells, select demographic groups continue to experience prolonged poverty spells that cannot be assigned a median within the reference period.

Next Steps

The redesign of the 2014 SIPP Survey should motivate researchers to consider alternate ways of measuring and publishing estimates given that changes in the interview reference period will lead to the release of calendar year aligned wavely files. There are many potential opportunities to be realized by the more predicable and frequent reporting of poverty dynamics at the annual level. Given the findings in this research, poverty briefs released to coincide with the public use release of the 2014 SIPP files will not include measures of median poverty spell length, but will include measures of monthly poverty, average monthly poverty, annual poverty, CY episodic poverty, and CY chronic poverty. Official P-70 reports will continue to be released, and will provide multi-year estimates of episodic poverty, chronic poverty, and poverty dynamics, including median spell lengths as well as entry and exit rates.

This research indicates that estimates of the median may not be the most reasonable metric for measuring poverty dynamics within a single CY. However, there may be other more informative measures on poverty dynamics that could be reported in annual briefs. For example, survival rates could instead be used to report the percent of poverty spells within the CY that lasted for more than 6 months. This would provide a measure of hardship that could be produced including and excluding left-censored spells, as well as for all demographic groups. Further, the reporting of poverty spell censoring rates within the CY is also an informative measure in itself; reporting the percent of observed spells that are carried forward from the previous year, began within the calendar year, and ended within the calendar year.

An issue that this research has not discussed at length is the issue of multiple spell capture. Over a multi-year period, measures of median spell durations provide an estimate for how long individuals should expect to remain in poverty once they enter. However, these measures do a poor job at capturing the dynamics of poverty at the person level over the period, as individuals may experience multiple poverty spells, and comparisons of median spell length

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[28] While the slope of the survival curves are not dramatically different CY and 4-year estimates, there are statistical differences in the survival curves for left-censored spells across all estimates.

across demographic groups are misleading if some demographic groups are more likely to experience repeated poverty spells (Edwards 2015). Given that the majority of poverty spells observed within a CY represent individual's only poverty spell, it maybe more reasonable to transition from a spell based measure of poverty dynamics to one calculated at the person level, similar to the episodic or chronic poverty rate.

It's also important to conclude by noting that this research is based on data from the 2008 SIPP Panel, and that there is strong evidence of seam bias in the timing of poverty exits. Hazard rates model the conditional probability of exiting a poverty spell in a given month, and show pronounced spikes in exit probabilities on interview seams, which are every 4 months in the 2008 SIPP Panel. This tendency for individuals to report transitions in poverty status across interviews rather than within interviews raises concerns for future estimates based on the 2014 SIPP Panel, where interviews are conducted every year. Evaluating the capture and timing of poverty transitions as measured in the 2014 SIPP Panel remains an area of necessary research.

Table 1. Poverty Spell Capture: Episodic and Chronic Poverty

Spell Capture (Person Level)	2009-2012			2009			2010			2011[1]			2012		
	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err
Never Poor	28,214	65.5	0.4	57,092	77.0	0.3	51,946	76.8	0.3	49,713	76.2	0.3	47,240	76.9	0.3
At Least 1 Poverty Spell (episodic)	13,644	34.5	0.4	16,603	23.0	0.3	15,506	23.2	0.3	14,978	23.8	0.3	13,653	23.1	0.3
1 Spell	7,582	54.5	0.8	15,202	91.3	0.5	14,047	90.3	0.5	13,731	91.5	0.4	12,622	92.2	0.4
2 Spells	3,805	28.1	0.7	1,389	8.6	0.4	1,428	9.5	0.5	1,212	8.2	0.4	978	7.4	0.4
3 Spells	1,624	12.5	0.5	12	0.1	0.1	31	0.2	0.1	35	0.2	0.1	53	0.5	0.1
4 Spells	472	3.7	0.3												
5 Spells	117	0.9	0.1												
6 Spells	27	0.2	0.1												
7 Spells	8	0.1	0.0												
8 Spells	9	0.1	0.0												
Total Spells (Spell Level)	22,827			18,016			16,996			16,260			14,737		

Note: Panel and yearly estimates are based on different samples. The four-year panel estimates include only respondents in the panel for 48 months whereas calendar year estimates include respondents in sample for 12 months. The numbers of respondents in each sample are as follows: 41,858 in the four-year panel, 73,695 in 2009, 67,452 in 2010, 64,691 in 2011, and 60,893 in 2012.

[1] The 2008 SIPP longitudinal weights and corresponding replicate weights for Calendar Year 2011 and Panel Year 2011 have been re-released. These revised weights correct for additional editing and take into account cases that were found to be listed in error in later waves. Estimates in this table use corrected weights and therefore may vary from those published in P70-137 "Dynamics of Economic Well-Being: Poverty 2009-2011."

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 2. Observed Poverty Spell Durations

"Observed" Spell Duration (Spell Level)	2009-2012			2009			2010			2011			2012		
	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err
2	3,498	15.4	0.6	2,436	13.8	0.5	2,455	14.8	0.5	2,256	14.2	0.5	2,120	14.6	0.6
3	2,042	9.0	0.3	1,957	10.9	0.4	1,713	10.4	0.5	1,553	9.6	0.4	1,307	9.2	0.4
4	4,257	18.7	0.5	2,414	13.6	0.5	2,307	13.9	0.5	2,181	13.5	0.5	1,841	12.3	0.5
5	955	4.3	0.3	1,062	6.2	0.4	942	5.5	0.3	839	5.7	0.4	707	4.8	0.3
6	857	4.0	0.3	933	5.3	0.3	843	4.9	0.3	753	4.6	0.3	576	3.9	0.3
7	781	3.4	0.2	907	5.1	0.3	685	4.1	0.3	645	3.9	0.3	708	4.8	0.3
8	1,513	6.7	0.3	916	5.2	0.3	731	4.1	0.3	816	4.7	0.3	642	4.2	0.4
9	540	2.5	0.2	514	3.1	0.2	526	3.0	0.2	549	3.5	0.3	469	3.2	0.3
10	487	2.1	0.2	528	2.7	0.2	437	2.5	0.2	486	3.0	0.3	547	3.6	0.3
11	504	2.3	0.2	613	3.3	0.2	512	3.1	0.2	545	3.4	0.3	535	3.7	0.3
12	770	3.3	0.2	5,736	30.9	0.7	5,845	33.7	0.7	5,637	33.8	0.7	5,285	35.5	0.8
13	347	1.5	0.1												
14	284	1.2	0.1												
15	219	1.0	0.1												
16	523	2.4	0.2												
17	284	1.2	0.1												
18	197	0.8	0.1												
19	202	0.8	0.1												
20	345	1.4	0.1												
21	189	0.8	0.1												
22	139	0.6	0.1												
23	184	0.8	0.1												
24	231	0.9	0.1												
25	119	0.6	0.1												
26	142	0.6	0.1												
27	155	0.7	0.1												
28	176	0.8	0.1												
29	146	0.7	0.1												
30	130	0.5	0.1												
31	88	0.5	0.1												
32	134	0.6	0.1												
33	83	0.4	0.1												
34	93	0.4	0.1												
35	62	0.3	0.1												
36	80	0.3	0.1												
37	91	0.4	0.1												
38	70	0.3	0.1												
39	81	0.4	0.1												
40	59	0.2	0.1												
41	86	0.3	0.1												
42	68	0.3	0.1												
43	63	0.3	0.1												
44	69	0.3	0.1												
45	80	0.3	0.1												
46	85	0.4	0.1												
47	73	0.3	0.1												
48	1,246	5.3	0.3												
Total Spells	22,827	100.0		18,016	100.0		16,996	100.0		16,260	100.0		14,737	100.0	

Note: Panel and yearly estimates are based on different samples. The four-year panel estimates include only respondents in the panel for 48 months whereas calendar year estimates include respondents in sample for 12 months. The numbers of respondents in each sample are as follows: 41,858 in the four-year panel, 73,695 in 2009, 67,452 in 2010, 64,691 in 2011, and

Note: Counts of spell frequency are unweighted, percents are weighted using replicate weights.

Note: Observed spell length does not control for left or right-censoring, poverty spells may have begun before they were first observed, or continued past the last reference month.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 3. Frequency of Spell Censoring

	2009-2012			2009			2010			2011[1]			2012		
	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err	n	Percent	Std. Err
Left-Censored	5,150	22.5	0.5	10,001	54.7	0.7	9,996	58.4	0.7	9,728	59.6	0.7	8,679	58.9	0.7
Only Left Censored	3,904	17.2	0.4	4,265	23.8	0.5	4,151	24.8	0.6	4,091	25.8	0.7	3,394	23.4	0.7
Left & Right Censored	1,246	5.3	0.3	5,736	30.9	0.7	5,845	33.7	0.7	5,637	33.8	0.7	5,285	35.5	0.8
Only Right Censored	4,055	17.3	0.4	4,645	26.2	0.6	3,866	23.1	0.6	3,614	21.9	0.6	3,459	22.9	0.6
Not Censored	13,622	60.2	0.6	3,370	19.1	0.6	3,134	18.4	0.6	2,918	18.5	0.6	2,599	18.2	0.6

Note: Panel and yearly estimates are based on different samples. The four-year panel estimates include only respondents in the panel for 48 months whereas calendar year estimates include respondents in sample for 12 months. The numbers of respondents in each sample are as follows: 41,858 in the four-year panel, 73,695 in 2009, 67,452 in 2010, 64,691 in 2011, and 60,893 in 2012.

Note: Frequency counts are unweighted, percents are weighted using replicate weights.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 4. Median Spell Length: 4-Year 2009-2012

Characteristics[1]	2009-2012[2]						
			Left Censored Included			Left Censored Excluded		
	Pct. Left Censored	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.
All People With One or More Poverty Spell	22.5	0.5	22,827	7.9	0.3	17,677	6.2	0.3
Race and Hispanic Origin								
White	20.9	0.5	17,286	7.1	0.4	13,656	5.8	0.4
White, non-Hispanic	19.7	0.6	12,430	6.8	0.4	9,970	5.4	0.4
Black	29.4	1.4	3,679	9.9	1.3	2,571	8.2	0.6
Hispanic	24.5	1.0	5,195	8.2	0.4	3,914	6.4	0.5
Non-Hispanic	21.8	0.6	17,632	7.7	0.3	13,763	6.0	0.4
Age								
Under 18 years	27.4	0.9	6,943	8.5	0.3	5,069	6.6	0.5
18 to 64 years	20.3	0.5	13,970	7.1	0.3	11,121	5.8	0.2
65 years and over	21.5	1.1	1,914	8.9	0.7	1,487	8.4	0.2
Sex								
Male	21.0	0.6	10,409	7.1	0.3	8,219	5.7	0.3
Female	23.8	0.6	12,418	8.3	0.2	9,458	6.6	0.3
Educational Attainment (people 18 years and over)								
Less than 4 years of high school	27.0	0.9	3,685	9.5	1.0	2,684	8.2	0.3
High school graduate, no college	20.1	0.7	4,622	8.1	0.2	3,669	6.9	0.5
One or more years of college	17.5	0.6	7,577	5.7	0.3	6,255	4.9	0.0
Disability Status (people 15 to 69 years)								
With a work disability	24.5	0.9	3,447	9.0	0.5	2,583	8.1	0.2
With no work disability	19.5	0.5	12,328	6.5	0.3	9,942	5.3	0.3
Residence								
Metropolitan	22.2	0.6	17,598	7.5	0.4	13,725	5.9	0.3
Nonmetropolitan	23.5	1.2	5,229	8.5	0.3	3,952	7.3	0.7
Region								
Northeast	24.1	1.3	2,981	8.0	0.7	2,297	6.2	0.8
Midwest	21.6	1.0	5,284	7.4	0.6	4,144	5.8	0.7
South	24.1	0.8	9,643	8.3	0.2	7,296	7.1	0.5
West	19.6	0.9	4,919	6.7	0.7	3,940	5.1	0.4
Family Status								
In families	21.9	0.6	17,898	7.5	0.4	13,977	6.0	0.3
With related children under 18 years	23.8	0.7	13,936	8.1	0.3	10,622	6.4	0.4
In married-couple families	17.5	0.7	11,197	6.1	0.4	9,198	5.1	0.4
With related children under 18 years	18.0	0.9	8,496	6.4	0.5	6,935	5.5	0.5
In families with a female hhldr., no husb. present	30.6	1.1	5,496	10.8	1.2	3,814	8.1	0.5
With related children under 18 years	34.3	1.3	4,518	12.1	1.0	2,963	8.2	0.5
In families with a male hhldr., no wife present	19.2	1.9	1,205	7.4	1.3	965	6.6	1.7
With related children under 18 years	20.5	2.1	922	8.0	1.3	724	7.1	1.7
Unrelated individuals	24.3	0.8	4,929	8.4	0.2	3,700	6.8	0.6
Employment and Labor Force Status (people 18 years and over)								
Employed full-time	14.3	0.7	3,764	4.9	0.1	3,220	4.7	0.1
Employed part-time	18.8	0.9	2,995	6.7	0.3	2,435	5.7	0.4
Unemployed	20.0	1.0	1,882	7.9	0.4	1,517	7.1	0.5
Not in labor force	25.7	0.7	6,705	9.1	0.5	4,973	8.2	0.1
Marital Status (people 18 years and over)								
Married	16.5	0.6	6,817	5.8	0.4	5,650	5.0	0.1
Separated, divorced, or widowed	22.2	0.7	4,176	8.7	0.2	3,223	8.1	0.2
Never married	23.2	0.7	4,891	8.0	0.3	3,735	6.3	0.4
Family Size								
1 person (unrelated individual)	24.3	0.8	4,929	8.4	0.2	3,700	6.8	0.6
2 people	20.2	1.0	4,015	7.0	0.7	3,199	5.0	0.4
3 people	23.5	1.2	3,320	7.4	0.6	2,527	6.1	0.9
4 people	21.9	1.4	3,931	7.7	0.7	3,086	5.9	0.6
5 people	21.7	1.5	3,484	8.1	0.7	2,719	6.6	0.8
6 or more people	22.6	1.6	3,148	7.5	1.0	2,446	6.4	0.6

[1] Characteristics based on demographics at beginning of spell.

[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 5. Median Spell Length: CY 2009

Characteristics[1]	Pct. Left Censored	Std. Err.	2009[2] Left Censored Included			Left Censored Excluded		
			Unwgtd. Spells	Median Spell Length (months)	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.
All People With One or More Poverty Spell	54.7	0.7	18,016	x	x	8,015	7.9	0.3
Race and Hispanic Origin								
White	53.0	0.8	13,066	11.1	0.5	6,040	7.2	0.5
White, non-Hispanic	51.4	0.8	9,273	9.8	0.5	4,418	6.8	0.6
Black	62.2	1.5	3,345	Δ	Δ	1,220	x	x
Hispanic	56.9	1.6	4,206	Δ	Δ	1,784	8.3	0.4
Non-Hispanic	53.9	0.7	13,810	11.2	0.4	6,231	7.7	0.4
Age								
Under 18 years	59.3	1.2	6,274	Δ	Δ	2,527	8.2	0.3
18 to 64 years	52.1	0.7	10,480	10.4	0.4	4,952	7.3	0.5
65 years and over	56.3	1.6	1,262	Δ	Δ	536	x	x
Sex								
Male	52.7	0.8	8,153	10.6	0.5	3,796	7.5	0.5
Female	56.5	0.8	9,863	Δ	Δ	4,219	8.1	0.2
Educational Attainment (people 18 years and over)								
Less than 4 years of high school	60.2	1.2	2,954	Δ	Δ	1,156	x	x
High school graduate, no college	51.3	1.0	3,498	x	x	1,661	8.1	0.4
One or more years of college	49.1	0.8	5,290	8.6	0.2	2,671	5.9	0.4
Disability Status (people 15 to 69 years)								
With a work disability	58.5	1.0	2,612	Δ	Δ	1,059	8.7	1.7
With no work disability	51.1	0.7	9,236	9.4	0.4	4,485	7.1	0.5
Residence								
Metropolitan	54.4	0.8	13,938	11.3	0.4	6,288	7.6	0.5
Nonmetropolitan	56.2	1.5	4,078	Δ	Δ	1,727	x	x
Region								
Northeast	57.3	1.5	2,639	10.6	1.3	1,133	6.0	1.3
Midwest	54.3	1.3	4,068	Δ	Δ	1,806	7.6	0.7
South	55.8	1.1	7,127	Δ	Δ	3,087	8.4	0.3
West	51.7	1.4	4,182	10.8	0.7	1,989	6.5	1.0
Family Status								
In families	53.5	0.9	13,927	11.4	0.4	6,365	7.6	0.5
With related children under 18 years	55.6	1.1	11,453	Δ	Δ	5,000	8.1	0.4
In married-couple families	47.0	1.2	7,659	8.3	0.3	4,005	5.9	0.6
With related children under 18 years	47.7	1.4	5,929	8.7	0.4	3,064	6.0	0.8
In families with a female hhldr., no husb. present	63.6	1.3	5,232	Δ	Δ	1,851	8.6	0.4
With related children under 18 years	65.9	1.4	4,688	Δ	Δ	1,558	8.8	0.6
In families with a male hhldr., no wife present	48.3	2.9	1,036	9.7	1.1	509	x	x
With related children under 18 years	52.3	3.3	836	x	x	378	Δ	Δ
Unrelated individuals	58.5	0.8	4,089	Δ	Δ	1,650	8.5	0.3
Employment and Labor Force Status (people 18 years and over)								
Employed full-time	43.8	1.2	2,288	7.6	0.3	1,270	5.2	0.4
Employed part-time	49.5	1.2	2,201	9.0	0.5	1,108	7.6	0.7
Unemployed	48.0	1.5	1,581	9.0	0.5	830	7.0	0.5
Not in labor force	60.7	0.7	5,303	Δ	Δ	2,046	8.8	0.3
Marital Status (people 18 years and over)								
Married	45.9	1.1	4,524	8.0	0.3	2,416	5.8	0.4
Separated, divorced, or widowed	56.2	1.0	3,087	Δ	Δ	1,307	8.6	0.3
Never married	56.0	0.8	4,131	Δ	Δ	1,765	8.0	0.5
Family Size								
1 person (unrelated individual)	58.5	0.8	4,089	Δ	Δ	1,650	8.5	0.3
2 people	52.1	1.3	2,925	9.5	0.5	1,387	6.8	0.8
3 people	52.6	1.7	2,797	x	x	1,289	8.1	0.8
4 people	51.6	1.8	3,199	Δ	Δ	1,501	7.7	1.0
5 people	54.7	2.6	2,568	Δ	Δ	1,147	7.8	1.4
6 or more people	57.7	2.6	2,438	x	x	1,041	8.1	1.6

[1] Characteristics based on demographics at beginning of spell.

[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.

Δ Median spell length undetermined given that more than half of spells "survive" past month 11.

x This estimate has been determined to be unreliable due to a relative standard error greater than 30 percent of the estimate.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 6. Median Spell Length: CY 2010

Characteristics[1]	Pct. Left Censored	Std. Err.	Left Censored Included			Left Censored Excluded		
			Unwgtd. Spells	Median Spell Length (months)	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.
All People With One or More Poverty Spell	58.4	0.7	16,996	Δ	Δ	7,000	6.2	0.5
Race and Hispanic Origin								
White	56.5	0.8	12,226	10.8	0.6	5,256	5.8	0.4
White, non-Hispanic	54.2	0.9	8,582	9.4	0.5	3,858	5.8	0.5
Black	66.0	1.5	3,181	Δ	Δ	1,069	Δ	Δ
Hispanic	61.7	1.3	4,012	Δ	Δ	1,534	6.0	0.7
Non-Hispanic	57.3	0.8	12,984	11.7	3.5	5,466	6.4	0.6
Age								
Under 18 years	63.0	1.0	5,945	Δ	Δ	2,205	6.6	0.7
18 to 64 years	55.7	0.7	9,875	10.8	0.5	4,365	5.9	0.3
65 years and over	60.8	1.8	1,176	Δ	Δ	430	x	x
Sex								
Male	57.2	0.8	7,745	11.3	0.4	3,316	6.0	0.4
Female	59.6	0.7	9,251	Δ	Δ	3,684	6.5	0.7
Educational Attainment								
(people 18 years and over)								
Less than 4 years of high school	64.7	1.1	2,772	Δ	Δ	963	8.6	0.6
High school graduate, no college	56.7	1.0	3,311	x	x	1,415	7.0	0.6
One or more years of college	51.4	0.8	4,968	8.6	0.2	2,417	5.0	0.3
Disability Status								
(people 15 to 69 years)								
With a work disability	62.8	1.2	2,472	Δ	Δ	903	8.3	0.4
With no work disability	54.4	0.8	8,656	9.6	0.4	3,971	5.5	0.3
Residence								
Metropolitan	57.4	0.7	12,972	x	x	5,538	6.0	0.5
Nonmetropolitan	62.5	1.5	4,024	Δ	Δ	1,462	6.8	0.8
Region								
Northeast	60.6	1.6	2,410	Δ	Δ	968	8.3	0.6
Midwest	58.3	1.3	3,752	10.6	0.9	1,553	6.4	1.2
South	59.7	1.2	7,004	Δ	Δ	2,776	6.0	0.6
West	55.2	1.2	3,830	x	x	1,703	5.6	0.6
Family Status								
In families	57.8	0.8	13,217	x	x	5,568	6.0	0.5
With related children under 18 years	59.8	0.9	10,927	Δ	Δ	4,385	6.2	0.6
In married-couple families	51.7	1.2	7,380	8.2	0.4	3,552	5.0	0.4
With related children under 18 years	52.9	1.4	5,801	8.6	0.5	2,729	5.1	0.5
In families with a female hhldr., no husb. present	65.7	1.3	4,906	Δ	Δ	1,681	x	x
With related children under 18 years	68.1	1.4	4,358	Δ	Δ	1,386	x	x
In families with a male hhldr., no wife present	61.6	2.7	931	x	x	335	7.4	1.0
With related children under 18 years	62.0	3.1	768	x	x	270	7.6	0.9
Unrelated individuals	60.5	0.9	3,779	Δ	Δ	1,432	7.3	0.8
Employment and Labor Force Status								
(people 18 years and over)								
Employed full-time	47.9	1.2	2,168	7.1	0.5	1,145	4.8	0.1
Employed part-time	50.1	1.3	1,967	9.6	0.9	995	5.7	0.6
Unemployed	56.6	1.4	1,615	9.6	0.7	702	6.4	0.7
Not in labor force	63.4	0.8	5,064	Δ	Δ	1,807	8.5	0.2
Marital Status								
(people 18 years and over)								
Married	50.5	1.1	4,200	7.9	0.3	2,076	5.0	0.2
Separated, divorced, or widowed	60.7	1.0	2,909	Δ	Δ	1,110	8.1	0.4
Never married	58.4	0.8	3,942	Δ	Δ	1,609	6.6	0.9
Family Size								
1 person (unrelated individual)	60.5	0.9	3,779	Δ	Δ	1,432	7.3	0.8
2 people	55.7	1.3	2,589	10.6	1.0	1,142	6.4	1.1
3 people	55.8	1.7	2,492	x	x	1,092	5.4	0.9
4 people	59.0	1.7	3,062	Δ	Δ	1,281	6.0	0.8
5 people	58.3	2.0	2,497	x	x	1,042	8.1	0.9
6 or more people	60.3	2.2	2,577	Δ	Δ	1,011	5.1	0.7

[1] Characteristics based on demographics at beginning of spell.

[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.

Δ Median spell length undetermined given that more than half of spells "survive" past month 11.

x This estimate has been determined to be unreliable due to a relative standard error greater than 30 percent of the estimate.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 7. Median Spell Length: CY 2011

Characteristics[1]	Pct. Left Censored	Std. Err.	2011[2] Left Censored Included			Left Censored Excluded		
			Unwgtd. Spells	Median Spell Length (months)	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.
All People With One or More Poverty Spell	59.6	0.7	16,260	x	x	6,532	6.5	0.4
Race and Hispanic Origin								
White	57.3	0.8	11,844	10.4	0.6	5,011	6.2	0.4
White, non-Hispanic	56.0	0.9	8,255	9.5	0.4	3,593	6.2	0.5
Black	69.8	1.4	2,907	Δ	Δ	887	8.0	2.2
Hispanic	60.8	1.6	3,917	Δ	Δ	1,527	6.3	0.8
Non-Hispanic	59.2	0.7	12,343	11.5	2.8	5,005	6.6	0.5
Age								
Under 18 years	64.8	1.0	5,440	Δ	Δ	1,935	7.1	0.7
18 to 64 years	56.6	0.7	9,545	10.2	0.4	4,125	6.1	0.4
65 years and over	62.2	1.5	1,275	Δ	Δ	472	8.4	0.5
Sex								
Male	57.9	0.7	7,411	10.4	0.5	3,105	6.3	0.4
Female	61.2	0.7	8,849	Δ	Δ	3,427	6.7	0.5
Educational Attainment (people 18 years and over)								
Less than 4 years of high school	63.6	1.3	2,601	Δ	Δ	925	8.6	2.1
High school graduate, no college	59.1	1.1	3,438	x	x	1,417	6.7	0.5
One or more years of college	52.7	0.9	4,781	8.6	0.3	2,255	5.0	0.2
Disability Status (people 15 to 69 years)								
With a work disability	61.1	1.3	2,469	Δ	Δ	944	x	x
With no work disability	55.7	0.8	8,335	9.1	0.3	3,693	5.5	0.5
Residence								
Metropolitan	58.9	0.8	12,284	11.4	0.5	5,017	6.2	0.4
Nonmetropolitan	62.4	1.4	3,976	Δ	Δ	1,515	8.3	0.4
Region								
Northeast	58.5	1.7	2,252	Δ	Δ	959	6.0	1.4
Midwest	60.6	1.6	3,525	x	x	1,397	7.4	0.6
South	60.8	1.1	6,742	Δ	Δ	2,612	6.1	0.7
West	57.6	1.4	3,741	10.3	1.2	1,564	6.3	0.8
Family Status								
In families	59.2	0.8	12,679	11.4	0.4	5,176	6.2	0.5
With related children under 18 years	61.5	0.9	10,255	Δ	Δ	3,967	6.6	0.5
In married-couple families	52.8	1.1	7,159	8.3	0.4	3,357	5.0	0.5
With related children under 18 years	54.4	1.3	5,575	8.7	0.6	2,549	5.5	0.8
In families with a female hhldr., no husb. present	69.4	1.3	4,568	Δ	Δ	1,415	8.4	0.4
With related children under 18 years	71.7	1.4	3,916	Δ	Δ	1,118	x	x
In families with a male hhldr., no wife present	55.5	2.7	952	x	x	404	8.2	1.7
With related children under 18 years	57.7	3.3	764	x	x	300	x	x
Unrelated individuals	61.1	1.0	3,581	Δ	Δ	1,356	8.1	0.6
Employment and Labor Force Status (people 18 years and over)								
Employed full-time	47.3	1.4	2,236	7.1	0.3	1,181	4.8	0.1
Employed part-time	54.5	1.4	1,759	8.7	0.3	821	6.6	0.6
Unemployed	60.6	1.5	1,358	10.9	0.7	535	7.4	1.1
Not in labor force	62.7	0.8	5,236	Δ	Δ	1,925	8.2	0.3
Marital Status (people 18 years and over)								
Married	50.8	1.1	4,104	8.0	0.4	1,991	5.0	0.2
Separated, divorced, or widowed	62.4	0.9	2,941	Δ	Δ	1,106	8.1	0.7
Never married	59.5	1.0	3,775	x	x	1,500	7.3	0.7
Family Size								
1 person (unrelated individual)	61.1	1.0	3,581	Δ	Δ	1,356	8.1	0.6
2 people	56.3	1.4	2,535	10.5	0.7	1,111	5.4	0.9
3 people	61.7	1.8	2,397	x	x	936	7.2	0.9
4 people	59.4	2.0	2,885	x	x	1,179	5.8	0.9
5 people	60.9	2.2	2,434	x	x	954	6.2	1.3
6 or more people	57.2	2.7	2,428	x	x	996	6.2	1.0

[1] Characteristics based on demographics at beginning of spell.

[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.

Δ Median spell length undetermined given that more than half of spells "survive" past month 11.

x This estimate has been determined to be unreliable due to a relative standard error greater than 30 percent of the estimate.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 8. Median Spell Length: CY 2012

Characteristics[1]	2012[2]						
			Left Censored Included			Left Censored Excluded		
	Pct. Left Censored	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.	Unwgtd. Spells	Median Spell Length (months)	Std. Err.
All People With One or More Poverty Spell	58.9	0.7	14,737	Δ	Δ	6,058	7.5	0.6
Race and Hispanic Origin								
White	56.8	0.8	10,599	Δ	Δ	4,563	7.1	0.9
White, non-Hispanic	54.7	1.0	7,425	10.9	1.9	3,359	7.0	1.2
Black	65.1	1.7	2,796	Δ	Δ	980	8.0	1.0
Hispanic	61.4	1.6	3,452	Δ	Δ	1,301	8.8	1.1
Non-Hispanic	58.0	0.9	11,285	Δ	Δ	4,757	7.1	0.7
Age								
Under 18 years	62.9	1.1	4,891	Δ	Δ	1,823	8.3	0.5
18 to 64 years	56.5	0.7	8,610	x	x	3,756	6.5	0.5
65 years and over	60.9	1.7	1,236	Δ	Δ	479	x	x
Sex								
Male	57.1	0.9	6,610	Δ	Δ	2,849	6.7	0.8
Female	60.5	0.8	8,127	Δ	Δ	3,209	8.1	0.5
Educational Attainment								
(people 18 years and over)								
Less than 4 years of high school	65.7	1.4	2,270	Δ	Δ	790	x	x
High school graduate, no college	56.5	1.0	3,264	Δ	Δ	1,407	8.2	0.6
One or more years of college	53.2	0.9	4,312	9.5	0.6	2,038	4.9	0.1
Disability Status								
(people 15 to 69 years)								
With a work disability	64.0	1.2	2,262	Δ	Δ	800	8.6	0.8
With no work disability	54.8	0.8	7,496	10.6	0.4	3,431	6.1	0.6
Residence								
Metropolitan	58.0	0.8	11,195	Δ	Δ	4,754	6.9	0.8
Nonmetropolitan	62.4	1.5	3,542	Δ	Δ	1,304	8.4	0.3
Region								
Northeast	60.3	1.7	2,150	Δ	Δ	867	7.7	1.0
Midwest	59.3	1.6	3,181	Δ	Δ	1,315	7.1	1.6
South	58.2	1.3	6,221	Δ	Δ	2,593	8.1	0.6
West	58.7	1.6	3,185	Δ	Δ	1,283	6.7	1.2
Family Status								
In families	58.1	0.9	11,529	Δ	Δ	4,859	7.8	0.6
With related children under 18 years	60.2	1.0	9,225	Δ	Δ	3,690	8.2	0.5
In married-couple families	53.8	1.2	6,396	10.3	0.7	2,926	7.4	1.3
With related children under 18 years	55.5	1.4	4,959	11.1	2.1	2,196	8.0	1.2
In families with a female hhldr., no husb. present	64.2	1.4	4,290	Δ	Δ	1,579	7.8	0.7
With related children under 18 years	66.4	1.5	3,604	Δ	Δ	1,232	8.2	1.5
In families with a male hhldr., no wife present	58.1	3.3	843	Δ	Δ	354	8.6	0.7
With related children under 18 years	60.5	3.7	662	Δ	Δ	262	x	x
Unrelated individuals	61.7	1.0	3,208	Δ	Δ	1,199	6.0	0.7
Employment and Labor Force Status								
(people 18 years and over)								
Employed full-time	46.4	1.4	2,021	7.6	0.4	1,093	4.8	0.1
Employed part-time	50.9	1.4	1,600	9.3	0.6	797	7.4	0.9
Unemployed	61.9	1.5	1,144	Δ	Δ	451	6.6	0.9
Not in labor force	64.1	0.9	4,859	Δ	Δ	1,754	8.8	0.5
Marital Status								
(people 18 years and over)								
Married	51.8	1.2	3,628	9.6	0.7	1,728	7.2	1.2
Separated, divorced, or widowed	60.7	1.1	2,771	Δ	Δ	1,098	6.2	1.1
Never married	59.2	1.1	3,447	Δ	Δ	1,409	6.8	0.5
Family Size								
1 person (unrelated individual)	61.7	1.0	3,208	Δ	Δ	1,199	6.0	0.7
2 people	54.6	1.6	2,320	10.6	2.7	1,066	6.2	1.9
3 people	58.3	1.7	2,162	Δ	Δ	926	6.7	1.4
4 people	58.0	1.9	2,623	Δ	Δ	1,098	6.6	1.0
5 people	60.4	2.2	2,279	Δ	Δ	899	x	x
6 or more people	59.2	2.4	2,145	Δ	Δ	870	x	x

[1] Characteristics based on demographics at beginning of spell.

[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.

Δ Median spell length undetermined given that more than half of spells "survive" past month 11.

x This estimate has been determined to be unreliable due to a relative standard error greater than 30 percent of the estimate.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

Table 9. Differences in Median Spell Duration (Left-Censored Excluded): Panel and Year-to-Year Differences

Characteristics[1]	Difference Across 4-Year and CY Estimates[2]								CY Year-to-Year Differences[2]					
	2009		2010		2011		2012		2009 to 2010		2010 to 2011		2011 to 2012	
	Diff.	SE	Diff.	SE	Diff.	SE	Diff.	SE	Diff.	SE	Diff.	SE	Diff.	SE
All People With One or More Poverty Spell	1.8	0.5	.	.	.	.	x	x	x	x	.	.	.	.
Race and Hispanic Origin														
White	x	x	.	.	.	.	.	.	x	x	.	.	.	.
White, non-Hispanic	x	x	.	.	.	.	.	.	.	.	.	.	.	.
Black	.	.	Δ	Δ	.	.	.	.	Δ	Δ	Δ	Δ	.	.
Hispanic	x	x	.	.	.	.	.	.	x	x	.	.	x	x
Non-Hispanic	x	x	.	.	.	.	.	.	x	x	.	.	.	.
Age														
Under 18 years	x	x	.	.	.	.	x	x	x	x	.	.	.	.
18 to 64 years	x	x	.	.	.	.	.	.	x	x	.	.	.	.
65 years and over	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Sex														
Male	x	x	.	.	.	.	.	.	x	x	.	.	.	.
Female	1.6	0.4	.	.	.	.	x	x	x	x	.	.	x	x
Educational Attainment (people 18 years and over)														
Less than 4 years of high school	.	.	.	.	.	.	.	.	.	.	.	.	.	.
High school graduate, no college	x	x	.	.	.	.	x	x	x	x	.	.	x	x
One or more years of college	.	.	.	.	.	.	.	.	x	x	.	.	.	.
Disability Status (people 15 to 69 years)														
With a work disability	.	.	.	.	.	.	.	.	.	.	.	.	.	.
With no work disability	x	x	.	.	.	.	.	.	x	x	.	.	.	.
Residence														
Metropolitan	x	x	.	.	.	.	.	.	x	x	.	.	.	.
Nonmetropolitan	.	.	.	.	.	.	.	.	.	.	x	x	.	.
Region														
Northeast	.	.	x	x	.	.	.	.	.	.	.	.	.	.
Midwest	x	x	.	.	x	x	.	.	.	.	.	.	.	.
South	x	x	.	.	.	.	.	.	-2.4	0.7	.	.	x	x
West	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Family Status														
In families	x	x	.	.	.	.	x	x	x	x	.	.	x	x
With related children under 18 years	x	x	.	.	.	.	x	x	x	x	.	.	x	x
In married-couple families	.	.	.	.	.	.	.	.	.	.	.	.	x	x
With related children under 18 years	.	.	.	.	.	.	.	.	.	.	.	.	x	x
In families with a female hhldr., no husb. present	.	.	.	.	.	.	.	.	.	.	.	.	.	.
With related children under 18 years	.	.	.	.	.	.	.	.	.	.	.	.	.	.
In families with a male hhldr., no wife present	.	.	.	.	.	.	.	.	.	.	.	.	.	.
With related children under 18 years	Δ	Δ	.	.	.	.	.	.	Δ	Δ	.	.	.	.
Unrelated individuals	x	x	.	.	x	x	.	.	.	.	.	.	x	x
Employment and Labor Force Status (people 18 years and over)														
Employed full-time	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Employed part-time	x	x	.	.	.	.	x	x	x	x	.	.	.	.
Unemployed	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Not in labor force	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Marital Status (people 18 years and over)														
Married	.	.	.	.	.	.	.	.	x	x	.	.	x	x
Separated, divorced, or widowed	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Never married	x	x	.	.	.	.	.	.	.	.	.	.	.	.
Family Size														
1 person (unrelated individual)	x	x	.	.	x	x	.	.	.	.	.	.	x	x
2 people	x	x	.	.	.	.	.	.	.	.	.	.	.	.
3 people	x	x	.	.	.	.	.	.	x	x	.	.	.	.
4 people	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5 people	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6 or more people	.	.	.	.	.	.	.	.	.	.	.	.	.	.

[1] Characteristics based on demographics at beginning of spell.
[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.
Δ Median spell length undetermined given that more than half of spells "survive" past month 11.
x This estimate has been determined to be unreliable due to a relative standard error greater than 30 percent of the estimate.
. Difference is not statistically significant at the 90 percent confidence level.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

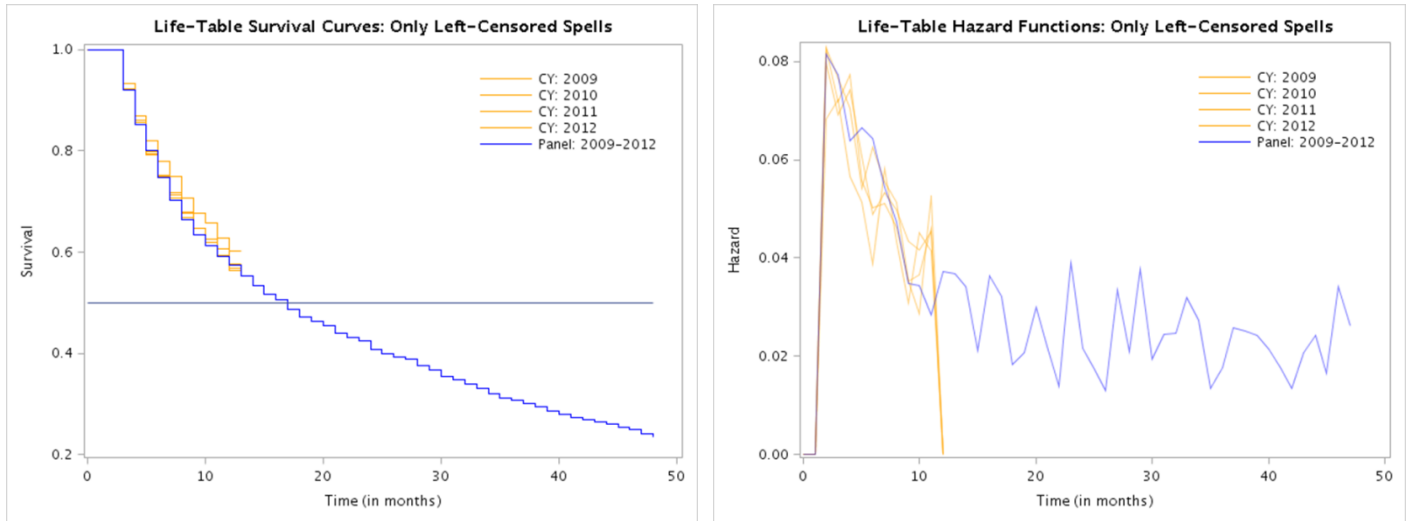Figure 1. Life-Table Survival Curves and Hazard Functions: Only Left-Censored Spells

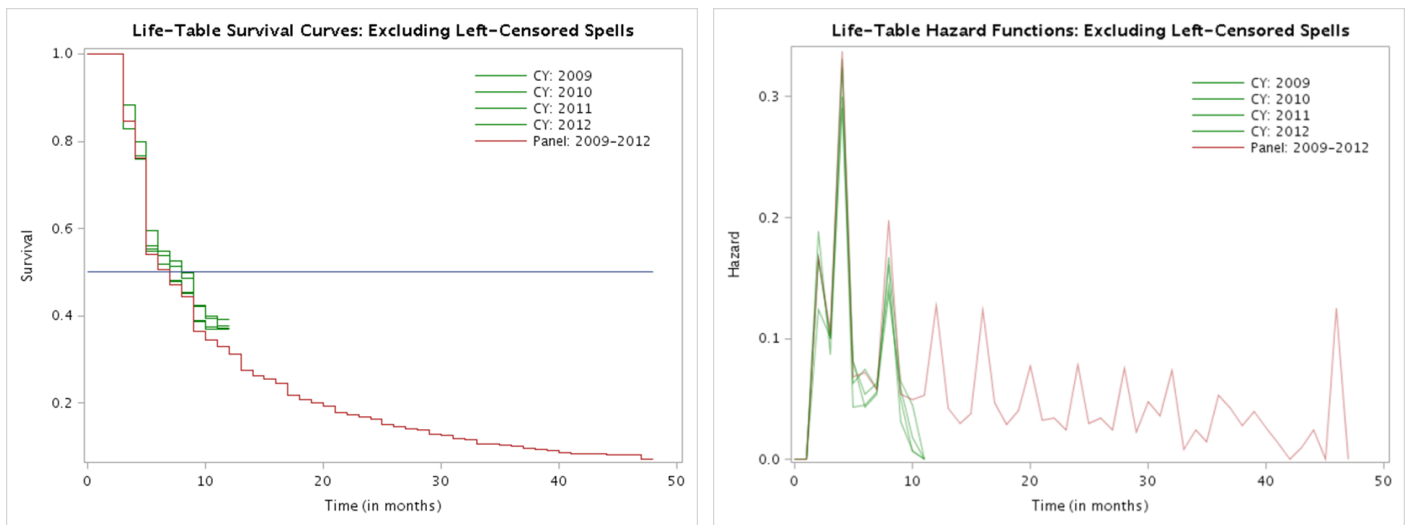Figure 2. Life-Table Survival Curves and Hazard Functions: Excluding Left-Censored Spells

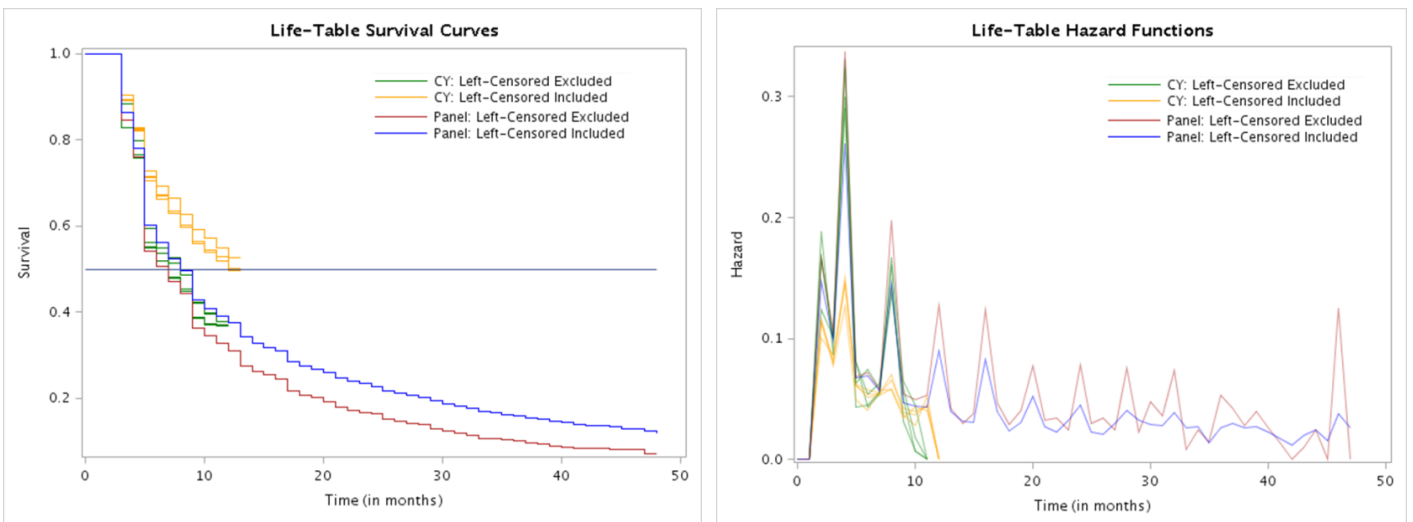Figure 3. Life-Table Survival Curves and Hazard Functions: All Spells

Table 10. Differences in Median Spell Durations: Left-Censored Spells Included and Excluded

Characteristics[1]	2009-2012[2] Medians L.C. In	L.C. Out	Diff.	SE	CY 2009[2] Medians L.C. In	L.C. Out	Diff.	SE	CY 2010[2] Medians L.C. In	L.C. Out	Diff.	SE	CY 2011[2] Medians L.C. In	L.C. Out	Diff.	SE	CY 2012[2] Medians L.C. In	L.C. Out	Diff.	SE
All People With One or More Poverty Spell	7.9	6.2	1.7	0.2	x	7.9	.	.	Δ	6.2	Δ	Δ	x	6.5	.	.	Δ	7.5	Δ	Δ
Race and Hispanic Origin																				
White	7.1	5.8	1.3	0.2	11.1	7.2	3.8	0.5	10.8	5.8	4.9	0.6	10.4	6.2	4.1	0.6	Δ	7.1	Δ	Δ
White, non-Hispanic	6.8	5.4	1.3	0.2	9.8	6.8	2.9	0.6	9.4	5.8	3.7	0.6	9.5	6.2	3.3	0.6	10.9	7.0	x	x
Black	9.9	8.2	x	x	Δ	x	Δ	Δ	Δ	Δ	Δ	Δ	Δ	8.0	Δ	Δ	Δ	8.0	Δ	Δ
Hispanic	8.2	6.4	1.7	0.3	Δ	8.3	Δ	Δ	Δ	6.0	Δ	Δ	Δ	6.3	Δ	Δ	Δ	8.8	Δ	Δ
Non-Hispanic	7.7	6.0	1.6	0.2	11.2	7.7	3.5	0.4	11.7	6.4	x	x	11.5	6.6	4.9	1.3	Δ	7.1	Δ	Δ
Age																				
Under 18 years	8.5	6.6	1.8	0.3	Δ	8.2	Δ	Δ	Δ	6.6	Δ	Δ	Δ	7.1	Δ	Δ	Δ	8.3	Δ	Δ
18 to 64 years	7.1	5.8	1.3	0.2	10.4	7.3	3.0	0.4	10.8	5.9	4.9	0.5	10.2	6.1	4.1	0.4	x	6.5	.	.
65 years and over	8.9	8.4	.	.	Δ	x	Δ	Δ	Δ	x	Δ	Δ	Δ	8.4	Δ	Δ	Δ	x	Δ	Δ
Sex																				
Male	7.1	5.7	1.3	0.2	10.6	7.5	3.1	0.4	11.3	6.0	5.3	0.5	10.4	6.3	4.1	0.5	Δ	6.7	Δ	Δ
Female	8.3	6.6	1.7	0.2	Δ	8.1	Δ	Δ	Δ	6.5	Δ	Δ	Δ	6.7	Δ	Δ	Δ	8.1	Δ	Δ
Educational Attainment (people 18 years and over)																				
Less than 4 years of high school	9.5	8.2	x	x	Δ	x	Δ	Δ	Δ	8.6	Δ	Δ	Δ	8.6	Δ	Δ	Δ	x	Δ	Δ
High school graduate, no college	8.1	6.9	1.2	0.3	x	8.1	.	.	x	7.0	.	.	x	6.7	.	.	Δ	8.2	Δ	Δ
One or more years of college	5.7	4.9	x	x	8.6	5.9	2.7	0.4	8.6	5.0	3.6	0.3	8.6	5.0	3.6	0.3	9.5	4.9	4.6	0.6
Disability Status (people 15 to 69 years)																				
With a work disability	9.0	8.1	x	x	Δ	8.7	Δ	Δ	Δ	8.3	Δ	Δ	Δ	x	Δ	Δ	Δ	8.6	Δ	Δ
With no work disability	6.5	5.3	1.3	0.2	9.4	7.1	2.3	0.4	9.6	5.5	4.0	0.4	9.1	5.5	3.5	0.5	10.6	6.1	4.5	0.6
Residence																				
Metropolitan	7.5	5.9	1.6	0.2	11.3	7.6	3.7	0.5	x	6.0	x	x	11.4	6.2	5.2	0.5	Δ	6.9	Δ	Δ
Nonmetropolitan	8.5	7.3	x	x	Δ	x	Δ	Δ	Δ	6.8	Δ	Δ	Δ	8.3	Δ	Δ	Δ	8.4	Δ	Δ
Region																				
Northeast	8.0	6.2	x	x	10.6	6.0	4.5	1.3	Δ	8.3	Δ	Δ	Δ	6.0	Δ	Δ	Δ	7.7	Δ	Δ
Midwest	7.4	5.8	1.6	0.5	Δ	7.6	Δ	Δ	10.6	6.4	x	x	x	7.4	.	.	Δ	7.1	Δ	Δ
South	8.3	7.1	1.2	0.3	Δ	8.4	Δ	Δ	Δ	6.0	Δ	Δ	Δ	6.1	Δ	Δ	Δ	8.1	Δ	Δ
West	6.7	5.1	1.6	0.5	10.8	6.5	4.3	0.9	x	5.6	x	x	10.3	6.3	4.0	1.1	Δ	6.7	Δ	Δ
Family Status																				
In families	7.5	6.0	1.5	0.2	11.4	7.6	3.7	0.5	x	6.0	x	x	11.4	6.2	5.2	0.5	Δ	7.8	Δ	Δ
With related children under 18 years	8.1	6.4	1.7	0.2	Δ	8.1	Δ	Δ	Δ	6.2	Δ	Δ	Δ	6.6	Δ	Δ	Δ	8.2	Δ	Δ
In married-couple families	6.1	5.1	1.0	0.2	8.3	5.9	2.4	0.5	8.2	5.0	3.2	0.4	8.3	5.0	3.3	0.5	10.3	7.4	x	x
With related children under 18 years	6.4	5.5	0.9	0.2	8.7	6.0	2.7	0.6	8.6	5.1	3.5	0.5	8.7	5.5	3.3	0.7	11.1	8.0	x	x
In families with a female hhldr., no husb. present	10.8	8.1	x	x	Δ	8.6	Δ	Δ	Δ	x	Δ	Δ	Δ	8.4	Δ	Δ	Δ	7.8	Δ	Δ
With related children under 18 years	12.1	8.2	3.8	0.8	Δ	8.8	Δ	Δ	Δ	x	Δ	Δ	Δ	x	Δ	Δ	Δ	8.2	Δ	Δ
In families with a male hhldr., no wife present	7.4	6.6	.	.	9.7	x	.	.	x	7.4	.	.	x	8.2	.	.	Δ	8.6	Δ	Δ
With related children under 18 years	8.0	7.1	.	.	x	Δ	Δ	Δ	x	7.6	.	.	x	x	.	.	Δ	x	Δ	Δ
Unrelated individuals	8.4	6.8	1.6	0.4	Δ	8.5	Δ	Δ	Δ	7.3	Δ	Δ	Δ	8.1	Δ	Δ	Δ	6.0	Δ	Δ
Employment and Labor Force Status (people 18 years and over)																				
Employed full-time	4.9	4.7	0.1	0.0	7.6	5.2	2.5	0.3	7.1	4.8	2.3	0.4	7.1	4.8	2.4	0.3	7.6	4.8	2.8	0.4
Employed part-time	6.7	5.7	1.0	0.2	9.0	7.6	x	x	9.6	5.7	3.9	0.8	8.7	6.6	2.1	0.6	9.3	7.4	x	x
Unemployed	7.9	7.1	x	x	9.0	7.0	2.0	0.5	9.6	6.4	3.1	0.8	10.9	7.4	3.6	1.0	Δ	6.6	Δ	Δ
Not in labor force	9.1	8.2	x	x	Δ	8.8	Δ	Δ	Δ	8.5	Δ	Δ	Δ	8.2	Δ	Δ	Δ	8.8	Δ	Δ
Marital Status (people 18 years and over)																				
Married	5.8	5.0	x	x	8.0	5.8	2.2	0.3	7.9	5.0	2.9	0.3	8.0	5.0	3.0	0.3	9.6	7.2	x	x
Separated, divorced, or widowed	8.7	8.1	0.6	0.2	Δ	8.6	Δ	Δ	Δ	8.1	Δ	Δ	Δ	8.1	Δ	Δ	Δ	6.2	Δ	Δ
Never married	8.0	6.3	1.8	0.2	Δ	8.0	Δ	Δ	Δ	6.6	Δ	Δ	x	7.3	.	.	Δ	6.8	Δ	Δ
Family Size																				
1 person (unrelated individual)	8.4	6.8	1.6	0.4	Δ	8.5	Δ	Δ	Δ	7.3	Δ	Δ	Δ	8.1	Δ	Δ	Δ	6.0	Δ	Δ
2 people	7.0	5.0	2.0	0.6	9.5	6.8	2.7	0.7	10.6	6.4	4.2	1.2	10.5	5.4	5.1	0.8	10.6	6.2	x	x
3 people	7.4	6.1	x	x	x	8.1	x	x	x	5.4	x	x	x	7.2	.	.	Δ	6.7	Δ	Δ
4 people	7.7	5.9	1.8	0.4	Δ	7.7	Δ	Δ	Δ	6.0	Δ	Δ	x	5.8	x	x	Δ	6.6	Δ	Δ
5 people	8.1	6.6	x	x	Δ	7.8	Δ	Δ	x	8.1	.	.	x	6.2	.	.	Δ	x	Δ	Δ
6 or more people	7.5	6.4	.	.	x	8.1	.	.	Δ	5.1	Δ	Δ	x	6.2	.	.	Δ	x	Δ	Δ

[1] Characteristics based on demographics at beginning of spell.

[2] The universe for the 4-year analysis is all individuals in the poverty universe why had a valid interview all 48 months from 2009 to 2012 with a valid panel weight. The universe for the annual analysis is all individuals in the poverty universe who had a valid interview all 12 months of the calendar year with a valid calendar year weight.

Δ Median spell length undetermined given that more than half of spells "survive" past month 11.

x This estimate has been determined to be unreliable due to a relative standard error greater than 30 percent of the estimate.

. Difference across medians is not statistically significant at the 90 percent confidence level.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2008 Panel. For information on confidentiality protection and sampling and nonsampling error, see <http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements/source-accuracy-statements-2008.html>.

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