THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

EXITS FROM POVERTY

A PROPORTIONAL HAZARDS MODEL FROM THE SIPP

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Exits from Poverty: A Proportional Hazards Model from the SIPP Kathleen Short and Martina Shea

There is widespread concern about the persistent nature of poverty. In recent times, poverty is often characterized as a way of life, or a "culture." There is concern that it has become a permanent rather than a temporary state, a condition from which individuals either cannot or will not escape. Other evidence suggests that the vast majority of persons whose incomes fall below the poverty line experience low incomes for only a short period of time. From a policy and a social perspective, the time dimension of poverty is an important one. Yet our current measures of poverty, from the Current Population Survey (CPS), give us no information about these issues. The dynamics of poverty are so complex however that this paper addresses only a portion of the entire issue.

According to the CPS, 32 million people were poor in 1987. This figure represents the number of persons whose annual income fell below their respective poverty thresholds for that year. If we know that 13 percent of the population was in poverty in a given year from the CPS, one may believe that this proportion of the population is poor all of their lives and that they are the same people, or it may mean that everyone is impoverished for some small percentage of their lives. Our public policies will differ depending on our perception of which of these two extremes is closest to the truth.

Also, the CPS measure is a retrospective estimate of annual income. In the reporting of annual income, a few months with below-poverty income, otherwise compensated for in other months, are never observed. Further, when reporting income retrospectively, short spells of low income may not be reported. Thus, retrospectively reported annual poverty estimates would essentially look like cross-section estimates which are subject to length-biased sampling. The cross-section estimate contains a large number of persons who are chronically poor. While only a small proportion of persons whose incomes fall below the poverty line in a given year will be poor for a long period, at any given point in

time, chronically poor persons have a higher probability of being observed as poor. In any cross section, a spell in progress has a probability of being sampled which is positively related to its length[1].

Further, if we examine the individuals whom we observe as poor in a cross-section we may misperceive the kinds of people who are poor because of the over-representation of the chronically poor in these estimates. If, for example, the elderly are more likely to experience longer spells of poverty than other groups, cross-sectional estimates of the poverty population will contain a higher percentage of elderly persons than distributions that examine those beginning spells over time.

This paper examines persons who experience spells of poverty over a two year period using the 1987 panel of Survey of Income and Program Participation (SIPP). The SIPP is a longitudinal survey which follows persons for a period a little longer than two years. The SIPP collects monthly income information every four months. These data allow us to examine fluctuations of income on a subannual basis and for the purposes of this paper, to examine durations in months of income receipt below official poverty thresholds. The paper presents a description of persons who have short versus long spells of poverty, in comparison to distributions of the poor that we observe from the CPS descriptions. This comparison is not straightforward, however, because the CPS income measure is an annual one, while the SIPP income measure is a monthly one.

We present a hazard model of exits from poverty which examines some of the determinants or characteristics associated with exiting poverty. This multivariate analysis of poverty exits allows us to make inferences about biases in the distributions of the poor by characteristic that we currently observe in the CPS.

A final effort of this research is to examine the effect that interview pattern may have on our estimates of durations and other dynamic aspects of poverty. This *is* done by including all persons regardless of interview pattern in the analysis and explicitly testing for differences in estimated poverty exits and durations.

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[1] For a discussion see S.W. Salant, "Search Theory and Duration Data: A Theory of Sorts," Quarterly Journal of Economics Feb. 1977, 91, 39-57.

LITERATURE

Few estimates of poverty durations have been made. A major contribution was by Bane and Ellwood (1986). In this paper the authors, using data from the Panel Study of Income Dynamics (PSID), found that the majority of poor persons at any time are in the midst of a long spell, while most persons who ever become poor will have only a short stay in poverty. They developed a hierarchical classification system of reasons for poverty change including headship change, family composition change, or income change (transfer income or earnings).

Other estimates of poverty durations are by Ruggles (1990). Ruggles uses SIPP to estimate spells of poverty and includes a discussion of short-term versus long-term poverty and introduces poverty spell measures from the SIPP. In her discussion about measuring poverty over the short-term, Ruggles argues that "…very low resources over a period even as short as a month can cause significant hardships if no other sources of support are available." (p.92)

In an earlier paper Ruggles and Williams (1989)had also used SIPP to estimate spells of poverty. In that paper they included measures of assets in their income measure to determine the level of hardship experienced over short periods of time for individuals who have no assets to draw upon in an emergency situation.

In addition to discussing the importance of accounting for time in a measure of poverty, both Ruggles and Ruggles and Williams note the problem of length-biased sampling in cross- sectional annual measures: "This chapter has argued that the period over which poverty is measured has important effects on perceptions of poverty, influencing both our measures of poverty incidence and also our views on the composition of the poverty population." (Ruggles,p.115)

DATA

The data in this paper are from the SIPP 1987 panel longitudinal file. Poverty is determined on a monthly basis by comparing monthly family income with a monthly poverty threshold. Two definitions of a poverty spell are presented here. The first counts a spell even if only one month of below-poverty income is experienced. Conversely, if only one month of above-poverty income is experienced in the midst of two below-poverty income months, that month is counted as break, and the experience is counted as two spells.

The second definition requires at least two consecutive months of poverty to be counted as a spell in the analysis. In addition, separate poverty spells must be separated by at least two months of above poverty income to be considered a new spell. Thus, a series of months of poverty income broken by one month of higher income is counted, in the second definition, as one long spell of poverty.

There is some arbitrariness to these definitions. Examining the incomes reported surrounding a month of low income one often finds very large sums reported by individuals in other months. In her work with SIPP data, Ruggles considers spells of one month duration and spells which last 2 months or more, as well as spells with substantial income changes. After an initial comparison of the two definitions the remainder of the paper employs the second definition.

Most of the estimates presented here are unweighted in order to include persons who miss interviews who would otherwise have a weight of zero. All persons are included in the analysis in order to explicitly test for statistically significant differences in the two groups. We will be interested in comparing the group with a full set of interviews with those who either came into the sample after the first wave or those who subsequently left the sample. Including persons who entered the sample after the first wave may introduce some additional selection bias into the estimates.

ESTIMATES OF DURATIONS OF POVERTY SPELLS

In the 1987 panel file there were 13,219 spells of poverty using our first definition of a spell. Of these spells, 23 percent were in progress at the end of the survey, or were right- censored. The life table estimate of median duration of poverty spells is 1.9 months. (See table 1).

When we use our second definition of poverty spells (including only spells of at least two months duration and counting a poverty exit only after at least two months interruption) we get much longer duration estimates but many fewer spells. Doing this yields a total of 6,836 spells of poverty with a median duration of 4.0 months. (See table 2).

Examination of individual observations of incomes over time shows us that a single month of below-poverty income is not uncommon for persons with otherwise very high income. In the SIPP this could occur based on the timing of income received. Requiring at least 2 months of below-poverty income eliminates at least some of those cases where true hardship would be difficult to justify. Figure

1 shows the survival curves under the two definitions. While choice of definition is quite arbitrary, this second measure is the one we will use for the remainder of this study.

We can compare our cross-sectional poverty estimates with the longitudinal measures by looking at differences in median duration poor by various characteristics. For example, separate estimates of duration of poverty spells by race (weighted) show that poverty spells for Whites (3.9 months) are shorter than for Blacks (5.4months). Our current poverty estimates will then measure a larger percentage of Blacks in the poverty population compared with proportions from our life table distribution.

According to CPS estimates of poverty distributed by race groups, about two-thirds of the poor are White (seetable 3). If, however, we look at beginning spells of poverty using the SIPP, we remove much of the length bias from the distribution, so that persons with longer spells are less overrepresented in the distribution.

If we look at persons who were poor by race we see that the CPS underestimates the proportion of the poor who are White and overestimates the proportion Black. The profile of persons who are poor for at least 17 months using SIPP is similar to the profile of the poor in the CPS. This result suggests that something that behaves like length-sample bias does exist in the CPS measure.

One valuable method that can be used to understand the relative representations of groups of various characteristics is to estimate a hazard ratio, the relative probability of exiting a given state at or just after time t given that the individual is still in that state at time t. In the case of poverty, for example, one can estimate a proportional hazards model to learn the relative differences between groups in their propensity to end a spell of poverty and thus infer the probable over- or under-representation of these groups in cross-section or retrospective annual estimates.

MODEL OF POVERTY EXITS

The model we use is the Cox proportional hazards model, used widely in the analysis of survival data to estimate the effect of covariates on the probability of exiting a particular state, in our case, the state of poverty within a given time t.

The hazard function for an individual with a particular set of-covariates z is assumed to be

$$h(t) = h(t, Z) = h_0(t)\, e^{z/\beta}$$

where $h_0(t)$ is an arbitrary and unspecified baseline hazard function and z is a vector of covariates for each individual and beta is the vector of unknown regression parameters we wish to estimate, assumed to be the same for all individuals.

The hazard ratio or relative risk, in the proportional hazards model, of an exit from poverty at any time t is

$$h(t,Z)/h_0(t) = e^{-z'\beta}/e^{0'\beta} = e^{-z'\beta}$$

The associated survival function is

$$S(t,Z) = s_0(t)e^{z/\beta}$$

where $s_0(t)$ is the baseline survivor function associated with $h_0(t)$.

We assume that leaving poverty is a function of both various demographic characteristics such as race and marital status, and other factors such as education, work experience, receipt of transfer payments. These covariates are associated with the probability of leaving a spell of poverty by a given time t.

The covariates included in the estimation are:

Race. Poverty rates are known to vary by race. Blacks have generally higher poverty rates and have access to fewer resources of all kinds. We expect a lower probability of exit for Blacks. [included in all models.]

Ethnicity. We include an indicator for persons of Hispanic origin to capture differences for such persons. [is included in all models.]

Education. Because education is highly correlated with income we include a dummy variable for no high school diploma and another for some college. The omitted group is high school education. [included in models for adults aged 18-69.]

Sex. The dummy variable is for males. While this indicator may not be important for all persons, we expect it to pick up differences when the analysis is done only for household reference persons. [included in all models]

Age. Poverty rates vary by age. Generally, we find higher rates for children (0-18); however, the elderly (65+) have little opportunity to change their circumstances if they are dire. [included in all models]

Disability. We expect that persons with health problems are less able to improve their economic circumstances than those without a health problem. (This information is only available for persons aged

18 to 69and so is included on7in those models.]

Residence. Two indicators are included, one for nonmetropolitan residence and one for central city. The omitted category is suburban. [included in all models]

Marital status. If an individual was married during the poverty spell an indicator is set to one. [included for adults]

Work experience. If an individual is working during the poverty spell we expect to observe a higher exit rate from those who are not. [included for adults]

Interview pattern. We enter explicitly an indicator of interview pattern to capture differences in the probability of exit by persons who have a complete set of interviews relative to those who do not. This latter group includes persons who leave the sample, persons who enter after wave 1, and those who miss one or more interviews over the panel. [included in all models]

RESULTS

The first regression we discuss is for all persons. In the 1987 panel there were 6,836 unweighted spells of at least two contiguous months of income below the poverty level sometime after the initial month. Results are shown in table 5. Parameter estimates suggest that the hazard ratio for Blacks relative to Whites is .77, holding sex, residence, age, and interview experience constant. Persons in central cities or non- metropolitan areas were not statistically different from persons in suburbs in their probability of leaving a spell of poverty level income. The results here also show that elderly persons had lower exit probabilities than adults aged 16 to 64.

The parameter estimate of the final covariate, interview experience, suggests that persons who are retained in the sample have a higher rate of exit from a spell of poverty than those persons with missing interviews, all else the same. Later we will test the hypothesis that the model as a whole is different for persons who leave the sample or miss interviews than for persons who are retained as respondents.

The next regression takes children and elderly persons out of the sample. This is done in order to include covariates not available for children or persons over the age of 69. Removing these groups from the estimation changes the results only slightly, particularly, statistical significance is reduced for more of the co-variates.

Table 6 shows estimates for non-elderly adults aged 18 to 69 only (n=3771). Removing children from the sample allows us to include measures of labor force experience, education, and

marital status. Removing the elderly also allows us to include a measure of disability derived from the questionnaire and not asked of persons over the age of 69.

The results show that there are some differences in exit probabilities from those estimated for all persons (table6). Being Black no longer matters in exiting from poverty, for non- elderly adults. Hispanics do not differ from non-Hispanics in the probability of leaving poverty, holding sex, residence, education, work experience, and marital status constant. Being disabled does not affect the probability of exiting poverty significantly, nor does being without a high school education. Being male or being married does increase the probability of leaving a spell of poverty in the 28 month period, holding other things constant. In this estimation, it would appear that interview experience has no effect on estimates of poverty exit probabilities.

Finally we examine only reference persons in order to understand poverty dynamics from a family or household perspective (table7). There were 1,959 unweighted spells of poverty experienced by reference persons and for this group relationships are similar as for adults. In contrast to the regression for all persons, Black reference persons have a lower probability of leaving poverty. Males, regardless of education, work experience, race, or other characteristics are more likely to exit poverty than females. In this case as well, interview pattern has no effect on the probability of exit.

EFFECTS OF INTERVIEW PATTERN

Estimated median durations may vary by interview experience; for persons who were fully interviewed with positive panel weights, using the second definition of a poverty spell, median duration for all persons was 4.0 months, while for those with incomplete interview patterns the duration was longer, 4.5 months. This result might suggest that persons included in the survey the entire period are less likely to remain poor than those whom we lose from the sample. However, incorporating a sample design effect in the test for statistical difference, we cannot reject the null hypothesis that the median durations are the same for the two groups. A hazard model analysis will shed

further light on this subject. Figure 3 shows the survival curves

for these two groups.

While the above regression for all persons indicated a significant difference for fully interviewed persons, it did not tell us whether or not the full model is somehow different for fully interviewed persons versus those who miss interviews. A second regression including interaction terms with dummy variables for those persons not normally in our weighted analyses allows us to test the null hypothesis that the estimated coefficients as a group differ for the persons who do not have a full set of interviews. There are 5,030 spells by persons with a full set of interviews and 1,806 spells of poverty by persons with incomplete interview experience.

If the experience of exiting poverty differs significantly for persons who are fully interviewed, are there different relationships by characteristic as well for this group? The results, without incorporating a design effect in our statistical tests, suggest that the set of interaction terms is jointly significant and adds to the explanatory power of the model. The implication is that leaving this group of people out of our weighted analyses leads to biased estimates of the relationships between our covariates and the probability of leaving a spell of poverty for all persons. Unadjusted results suggest that, while parameter estimates conditional upon remaining in the panel are unbiased, inferences about all persons in general may not be warranted. Specifically, these results (seetable 10) suggest that for persons residing in central cities and for children, deletion of persons with incomplete interviews from our analyses is a problem. In both cases including individuals with incomplete interview patterns results in changes in the estimated parameter. For both groups, people who miss interviews are less likely to leave poverty than persons who do not. When, however, we do incorporate a design effect, the coefficients on the interaction terms are not different from zero, either singly or jointly.

Table lOa presents results from estimating probabilities of exiting poverty for persons who were in the sample in the first wave only. This regression looks specifically at attrition bias, that is, differences that arise from original sample persons subsequently leaving the panel. The results presented here, which incorporate a sample design effect, are similar to those above and suggest that the additional interaction terms for sample leavers are not statistical different from zero, either jointly or singly.

Finally, table 11 presents results for fully-interviewed persons. This would be those persons who would be included in our weighted estimates of poverty exits. Earlier results suggest that there may be

some bias in these estimates due to our sample selection criterion. Note that now the coefficient on Hispanic is no longer significant. However, what we learn from this estimation is that Blacks and elderly persons have a lower probability of exiting poverty than other groups, even when we hold sex and residence constant.

SUMMARY

This paper has examined several aspects of the dynamic element of poverty. Most of the issues addressed in this paper are of a technical nature, having to do with estimation of such parameters within the context of a longitudinal survey, specifically the SIPP. We have learned several things from this exercise.

First, our estimates are sensitive to our definition of a spell of poverty. Noise in the income data led us to place some restrictions on the interpretation of the reported data before counting a spell of poverty. Specifically, we required at least two months of low income to count as a spell of poverty. We further required an interruption of at least two months between poverty spells to count a new poverty spell. Comparisons of the estimates under different definitions suggest that this definition, while arbitrary, is reasonable.

Second, our estimates of poverty spells as they differ by race suggest that cross-sectional annual estimates may look like
estimates with length-sample bias. This results in over- representation of groups with lower probabilities of exiting poverty in cross-sectional estimates.

Third, we explored the possibility of some bias in the data stemming from the exclusion of persons with incomplete interview patterns. While including a design effect in our significance tests does not provide evidence, unadjusted estimates suggest that persons residing in central cities and children, whom we do not completely interview, may differ in significant ways from those we retain, in regard to their experience of poverty.

BIBLIOGRAPBY

Bane, Mary Jo, and David T. Ellwood. 1986. "Slipping Into and out of Poverty: The Dynamics of Spells." Journal of Human Resources 21(1):1-23.

Cox, D.R. and Oakes, D. 1984. Analysis of Survival Data. London: Chapman and Hall.

Ruggles, Patricia, and Roberton Williams. 1986. "Longitudinal Measures of Poverty." Review of Income and Wealth 35 (September):225-244.

Ruggles, Patricia. 1990. Drawing the Line. The Urban Institute Press. Washington, D.c.

Salant, Stephen W. 1977. "Search Theory and Duration Data: A Theory of Sorts", Quarterly Journal of Economics, 91 (February):39-57.

U.S. Bureau of the Census. Current Population Report, Series P- 60, No. 163, Poverty in the United States: 1987. U.S. Government Printing Office, Washington, D.C., 1989

Table 1: Life Table Survival Estimates, Poverty Spells (Definition One)
(N=13,219, 23.2% censored)

Interval (months)		Number Failed	Number Censored	Effective Sample Size	Survival	Survival Standard Error	Median Residual Lifetime	Median Standard Error
Lower	Upper							
0	1	4222	733	12853	1.0000	0.0000	1.926	0.0821
1	2	2217	448	8040	0.6715	0.0143	2.539	0.1087
2	3	977	210	5494	0.4863	0.0155	3.114	0.3984
3	4	1227	574	4125	0.3999	0.0154	3.674	0.4008
4	5	312	144	2539	0.2809	0.0146	4.961	0.5930
5	6	243	95	2108	0.2464	0.0143	5.341	1.0690
6	7	218	86	1774	0.2180	0.0140	5.665	0.6985
7	8	262	176	1425	0.1912	0.0136	6.503	1.3705
8	9	108	72	1039	0.1560	0.0130	8.820	1.5709
9	10	85	52	869	0.1398	0.0127	11.257	2.3202
10	11	51	30	743	0.1261	0.0125	12.006	0.8448
11	12	69	85	635	0.1175	0.0123	11.464	0.8514
12	13	29	18	514	0.1047	0.0120		
13	14	30	22	465	0.0988	0.0119		
14	15	25	21	414	0.0924	0.0118		
15	16	17	94	331	0.0868	0.0117		
16	17	16	38	248	0.0824	0.0117		
17	18	3	17	205	0.0771	0.0118		
18	19	8	9	189	0.0759	0.0118		
19	20	4	45	154	0.0727	0.0120		
20	21	6	13	121	0.0708	0.0121		
21	22	6	22	97	0.0673	0.0125		
22	23	11	13	74	0.0631	0.0130		
23	24	0	30	41	0.0537	0.0143		
24	25	0	15	19	0.0537	0.0143		
25	26	0	2	10	0.0537	0.0143		
26		0	9	5	0.0537	0.0143		

Source: SIPP 1987 Panel

Table 2: Life Table Survival Estimates, Poverty Spells (Definition Two)
(N=6,836, 34.0% censored)

Interval (months)		Number Failed	Number Censored	Effective Sample Size	Survival	Survival Standard Errror	Median Residual Lifetime	Median Standard Error
Lower	Upper							
0	1	0	0	6836	1.0000	0.0000	4.037	0.3569
1	2	1208	310	6681	1.0000	0.0000	3.037	0.3609
2	3	772	244	5196	0.8192	0.0135	4.042	0.3379
3	4	1117	641	3982	0.6975	0.0163	4.247	0.2676
4	5	240	139	2475	0.5018	0.0185	6.195	0.6925
5	6	194	93	2119	0.4531	0.0187	6.289	0.5435
6	7	215	90	1833	0.4116	0.0189	6.374	2.3042
7	8	242	179	1484	0.3634	0.0189	7.671	0.9336
8	9	85	73	1116	0.3041	0.0187	8.941	0.9141
9	10	90	38	975	0.2809	0.0186	9.974	1.4932
10	11	70	25	854	0.2550	0.0185	11.103	1.9471
11	12	81	84	729	0.2341	0.0183	11.161	0.4266
12	13	17	31	591	0.2081	0.0181	10.607	0.4215
13	14	29	17	550	0.2021	0.0180	9.709	0.4343
14	15	38	21	502	0.1914	0.0179	8.892	0.4206
15	16	26	100	403	0.1769	0.0178		
16	17	27	29	313	0.1655	0.0178		
17	18	4	19	262	0.1512	0.0179		
18	19	14	14	241	0.1489	0.0179		
19	20	10	62	189	0.1402	0.0181		
20	21	5	11	143	0.1328	0.0183		
21	22	6	25	120	0.1282	0.0187		
22	23	23	10	96	0.1217	0.0192		
23	24	1	44	46	0.0926	0.0211		
24	25	0	1	23	0.0905	0.0214		
25	26	0	8	18	0.0905	0.0214		
26		0	14	7	0.0905	0.0214		

Source: SIPP 1987 Panel

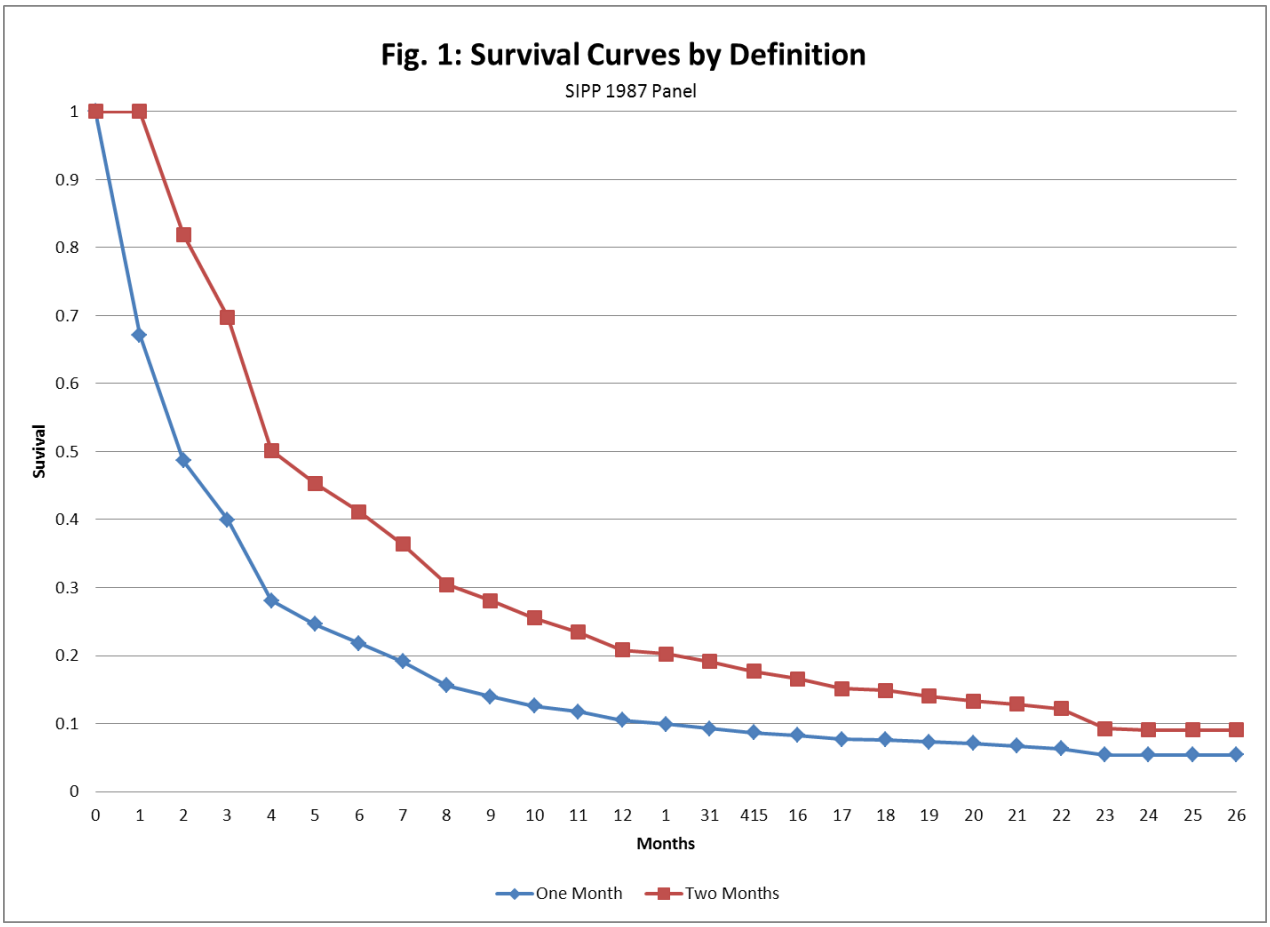
Fig. 1: Survival Curves by Definition
SIPP 1987 Panel
Suvival
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 1 2 3 4 5 6 7 8 9 10 11 12 1 31 415 16 17 18 19 20 21 22 23 24 25 26
Months
One Month
Two Months

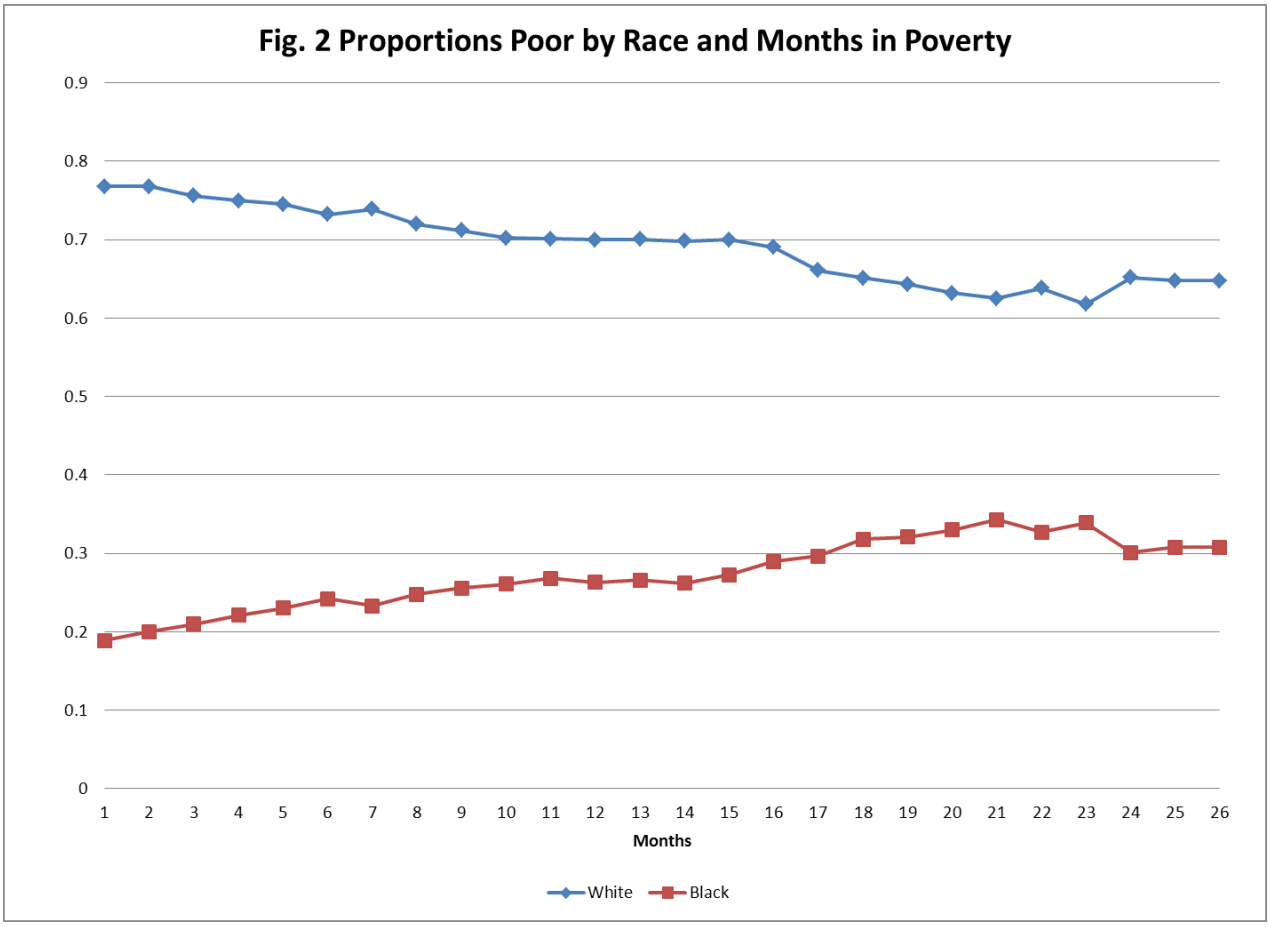
Fig. 2 Proportions Poor by Race and Months in Poverty
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
Months
White
Black

Table 3: Percent Distribution of Poor by Race: CPS and SIPP			
	CPS		SIPP
	1987	*1988*	*1987-88*
Black	65.8	65.3	75.8
White	29.5	29.5	20.0

Table 5: Poverty Exits, All Persons
N = 6, 836
Model Chi-Square = 56.2

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Risk Ratio
Black	-0.256	0.123	4.36*	0.774
Hispanic	-0.202	0.140	2.08	0.817
Male	0.130	0.086	2.27	1.139
Central City	0.036	0.106	0.12	1.037
Nonmetro	-0.122	0.107	1.31	0.885
Child	-0.143	0.091	2.48	0.867
Elderly	-0.406	0.204	4.02*	0.664
Full Interviews	0.190	0.111	2.92*	1.209

Source: SIPP 1987 Panel

Table 6: Poverty Exits, Adults Aged 18-69
N = 3,771
Model Chi-Square = 62.1

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Risk Ratio
Black	-0.204	0.149	1.94	0.813
Hispanic	-0.044	0.170	0.07	0.957
Disabled	-0.147	0.125	1.39	0.863
Male	0.169	0.102	2.73*	1.184
Central City	0.042	0.125	0.11	1.042
Nonmetro	-0.119	0.125	0.90	0.888
No high school	-0.228	0.139	2.69	0.796
College	0.114	0.116	0.96	1.120
Worked	0.255	0.173	2.17	1.290
Married	0.225	0.104	4.65*	1.253
Full Interviews	0.088	0.136	0.42	1.092

Source: SIPP 1987 Panel

Table 7: Poverty Exits, Reference Persons
N = 1,959
Model Chi-Square = 63.8

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Risk Ratio
Black	-0.228	0.134	2.91*	0.796
Hispanic	-0.071	0.160	0.20	0.931
Disabled	-0.166	0.108	2.39	0.847
Male	0.309	0.107	8.36*	1.362
Central City	0.007	0.111	0.00	1.007
Nonmetro	-0.145	0.113	1.63	0.865
No high school	-0.164	0.121	1.83	0.849
College	0.132	0.105	1.56	1.141
Worked	0.238	0.145	2.68	1.269
Married	0.123	0.104	1.39	1.131
Full Interview	0.045	0.131	0.12	1.046

Source: SIPP 1987 Panel

Table 8: Life Table Survival Estimates, Poverty Spells of Persons with Incomplete Interview Patterns (N=1,806, 52.0% censored)

Interval (months)		Number Failed	Number Censored	Effective Sample Size	Survival	Survival Standard Error	Median Residual Lifetime	Median Standard Error
Lower	Upper							
0	1	0	0	1806	1.0000	0.0000	4.478	0.8006
1	2	243	198	1707	1.0000	0.0000	3.478	0.8235
2	3	163	163	1284	0.8576	0.0322	4.736	1.6264
3	4	265	290	894	0.7487	0.0415	4.710	0.7195
4	5	49	46	461	0.5268	0.0526	6.532	1.2011
5	6	17	28	375	0.4708	0.0549	6.325	1.5399
6	7	20	47	321	0.4495	0.0560	5.680	1.5902
7	8	38	71	242	0.4214	0.0572	6.042	2.6625
8	9	14	20	158	0.3551	0.0614	8.226	2.4072
9	10	16	6	131	0.3236	0.0636	7.929	2.4095
10	11	15	5	110	0.2841	0.0659	8.497	1.4122
11	12	10	21	82	0.2452	0.0671	11.023	1.1512
12	13	1	2	60	0.2151	0.0682	10.357	1.1771
13	14	5	7	55	0.2115	0.0682	9.397	1.2145
14	15	1	1	46	0.1921	0.0697	8.613	1.2072
15	16	1	17	36	0.1879	0.0697	7.660	1.3368
16	17	3	3	25	0.1826	0.0709	6.719	1.5635
17	18	0	1	20	0.1602	0.0774	5.968	1.5380
18	19	4	3	18	0.1602	0.0774	4.968	1.6237
19	20	0	2	11	0.1236	0.0854		
20	21	0	0	10	0.1236	0.0854		
21	22	0	2	9	0.1236	0.0854		
22	23	2	5	6	0.1236	0.0854		
23	24	0	1	1	0.0787	0.1109		

Source: SIPP 1987 Panel

Table 9: Life Table Survival Estimates, Poverty Spells of Persons with Complete Set of Interviews (N=5,030, 27.5% censored)

Interval (months)		Number Failed	Number Censored	Effective Sample Size	Survival	Survival Standard Error	Median Residual Lifetime	Median Standard Error
Lower	Upper							
0	1	0	0	5030	1.0000	0.0000	3.961	0.1189
1	2	965	112	4974	1.0000	0.0000	2.961	0.1199
2	3	609	81	3913	0.8060	0.0178	3.950	0.4513
3	4	852	351	3088	0.6805	0.0211	4.153	0.3387
4	5	191	93	2014	0.4927	0.0231	6.002	0.9559
5	6	177	65	1744	0.4460	0.0233	6.208	0.6768
6	7	195	43	1513	0.4007	0.0233	6.459	2.6662
7	8	204	108	1242	0.3491	0.0231	7.852	1.0323
8	9	71	53	958	0.2917	0.0225	9.541	6.1453
9	10	74	32	844	0.2701	0.0223	10.415	1.8978
10	11	55	20	744	0.2464	0.0219	11.348	2.1008
11	12	71	63	648	0.2282	0.0217	11.169	0.5160
12	13	16	29	531	0.2032	0.0212	10.623	0.5077
13	14	24	10	495	0.1970	0.0212	9.734	0.5096
14	15	37	20	456	0.1875	0.0210	8.908	0.5052
15	16	25	83	368	0.1723	0.0207		
16	17	24	26	288	0.1606	0.0206		
17	18	4	18	242	0.1472	0.0206		
18	19	10	11	224	0.1447	0.0206		
19	20	10	60	178	0.1383	0.0207		
20	21	5	11	133	0.1305	0.0210		
21	22	6	23	111	0.1256	0.0213		
22	23	21	5	91	0.1188	0.0219		
23	24	1	43	46	0.0912	0.0237		
24	25	0	1	23	0.0892	0.0240		
25	26	0	8	18	0.0892	0.0240		
26		0	14	7	0.0892	0.0240		

Source: SIPP 1987 Panel

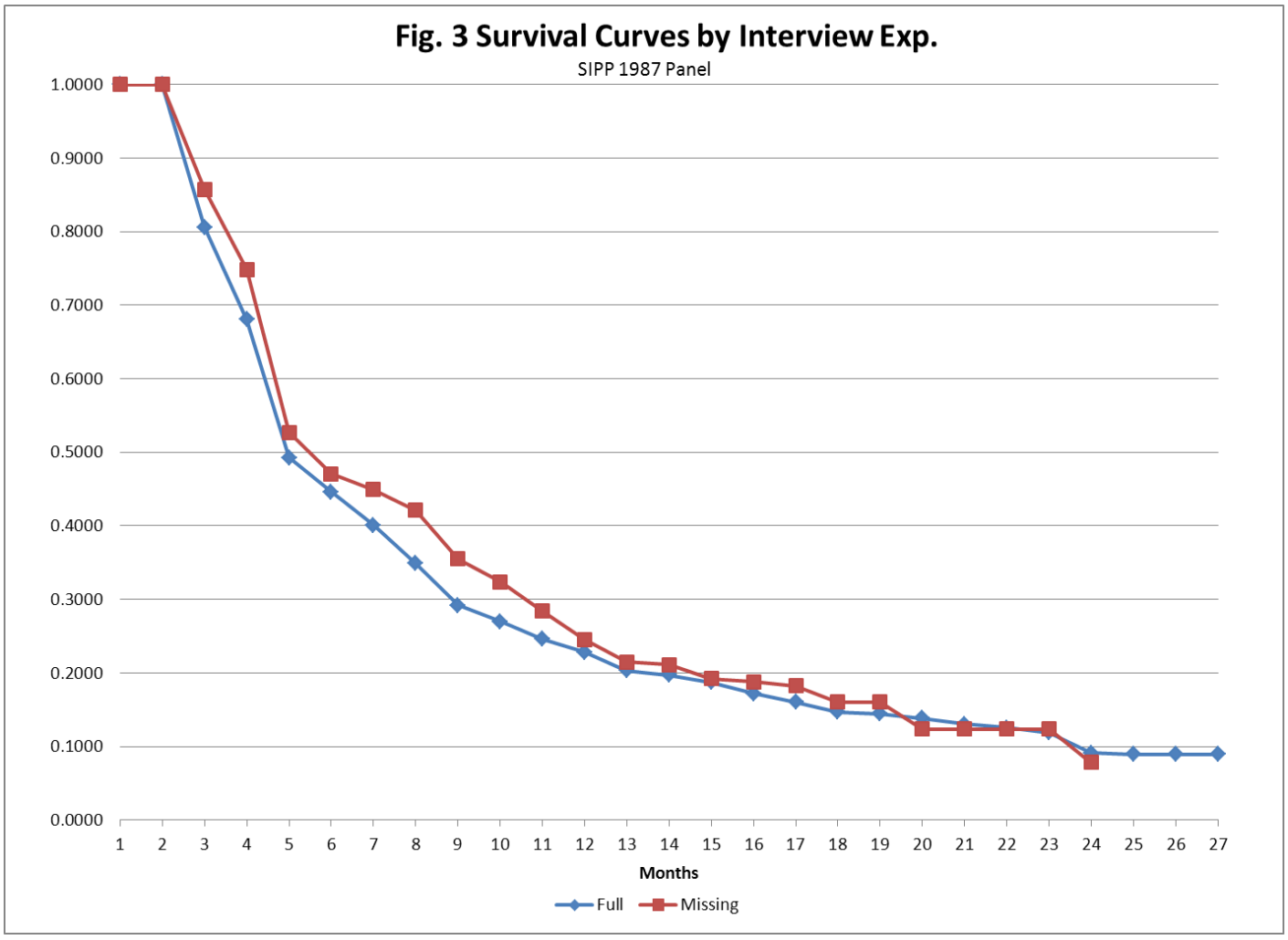
Fig. 3 Survival Curves by Interview Exp.
SIPP 1987 Panel
1.0000
0.9000
0.8000
0.7000
0.6000
0.5000
0.4000
0.3000
0.2000
0.1000
0.0000
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Months
Full
Missing

Table 10: All Persons, Interview Experience Interaction Terms
N = 6,836
Model Chi-Square = 62.4
Joint Significance Test: Chi square = 4.89

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Risk Ratio
Black	-0.313	0.143	4.75*	0.732
Hispanic	-0.273	0.162	2.83*	0.761
Male	0.133	0.095	1.96	1.143
Central city	0.074	0.117	0.41	1.077
Nonmetro	-0.142	0.114	1.54	0.868
Child	-0.091	0.101	0.81	0.913
Elderly	-0.378	0.214	3.11*	0.685
Missint*Black	0.214	0.277	0.59	1.238
Missint*Hispanic	0.274	0.319	0.74	1.315
Missint*Male	-0.026	0.192	0.02	0.975
Missint*Central city	-0.279	0.243	1.32	0.757
Missint*Nonmetro	0.093	0.268	0.12	1.097
Missint*Child	-0.297	0.196	2.30	0.743
Missint*Elderly	-0.189	0.684	0.08	0.828

Source: SIPP 1987 Panel

Table 10a: All Persons, Interview Experience Interaction Terms
N = 6,243
Model Chi-Square = 55.9
Joint Significance Test: Chi square = 3.31

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Risk Ratio
Black	-0.311	0.143	4.66*	0.732
Hispanic	-0.272	0.162	2.82*	0.762
Male	0.132	0.095	1.93	1.142
Central city	0.074	0.117	0.40	1.076
Nonmetro	-0.141	0.114	1.52	0.868
Child	-0.091	0.101	0.81	0.913
Elderly	-0.188	0.107	3.09*	0.828
Attrit*Black	0.219	0.305	0.52	1.245
Attrit*Hispanic	0.313	0.345	0.82	1.367
Attrit*Male	-0.012	0.215	0.00	0.988
Attrit*Central city	0.307	0.260	1.39	0.736
Attrit*Nonmetro	0.066	0.281	0.06	1.068
Attrit*Child	-0.254	0.277	0.84	0.775
Attrit*Elderly	-0.090	0.342	0.07	0.914

Source: SIPP 1987 Panel

Table 11: Poverty Exits, Full Interviewed Persons
N = 5,030
Model Chi-Square = 40.9

Variable	Parameter Estimate	Standard Error	Wald Chi-Square	Risk Ratio
Black	-0.316	0.158	3.98*	0.729
Hispanic	-0.278	0.179	2.40	0.758
Male	0.116	0.106	1.18	1.123
Central City	0.051	0.131	0.15	1.053
Nonmetro	-0.163	0.128	1.63	0.849
Child	-0.104	0.112	0.86	0.902
Elderly	-0.196	0.119	2.73*	0.822

Source: SIPP 1987 Panel