

**THE SURVEY OF INCOME AND  
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**LOCAL LABOR MARKETS AND LOCAL  
AREA EFFECTS ON WELFARE  
DURATION: EVIDENCE FROM SIPP**

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# LOCAL LABOR MARKETS AND LOCAL AREA EFFECTS ON WELFARE DURATION: EVIDENCE FROM SIPP<sup>1</sup>

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## I. Introduction and Background

Policy makers have long been concerned with the causes and consequences of welfare program use. In the last few years the debate has been put in terms of whether welfare programs lead to dependency. A number of studies have investigated the dynamics of welfare use. Using longitudinal data on individuals and hazard models, researchers have sought to understand why some persons or groups experience longer spells of welfare receipt than others. Policy variables such as benefit levels are generally found to have small to moderate effects on durations, and measures of labor market conditions, such as unemployment rates, are generally found to have small or mixed effects. A problem with previous studies is that they do not adequately account for local labor market conditions or other local area effects. This omission likely biases the estimated effects of policy and labor market variables. This paper incorporates relevant labor market area and other local area information in the estimation of welfare duration models using data from the Survey of Income and Program Participation (SIPP). We ask how these characteristics affect welfare spell duration, and how their inclusion affects the impacts of other policy variables.

A longer version of this paper that includes further discussion and results is available from Fitzgerald.

### Conceptual Model

Conceptual models of welfare use based on a discrete choice framework suggest several reasons why neighborhood and local labor market effects might be important. The usual model that underlies estimation of exit rates from AFDC assumes that a woman on AFDC chooses between the option of staying on or getting off welfare. Based on this framework, the exit from AFDC would depend on the value of the welfare option relative to job or marriage options through time. This in turn depends on (a) personal characteristics such as mother's age and education (affecting her wage), number and age of her children (affecting the value of home production and cost of child care), the availability of other income when off welfare (property income or child support), (b) policy parameters such as the AFDC benefit level and other state welfare program characteristics, and (c) environmental variables that reflect job prospects, marriage prospects, and so on.

Research on the ways women leave welfare (Bane and Ellwood, 1983 and Ellwood 1986) tell us that new jobs, increased earnings, and marriage are the primary routes off of welfare. Local area conditions thus have several points of impact on choices. Local labor market conditions (unemployment rates, employment growth, and industrial structure) affect the frequency of job offers and the value of those offers. The local availability of potential spouses and their "quality" (i.e. income) affect marriage offers. This point is raised by Wilson and Neckerman (1986) who

argue that lack of "marriageable" employed men in urban centers, particularly for blacks, leads to increased female headship and welfare use.

### Past Welfare Duration Studies

Local labor market or other local conditions have not been used in recent welfare duration studies. Most studies use state level measures of labor market conditions, or marriage markets, due to residence data limitations. Studies include O'Neill, Bassi, and Wolf (1987), Blank (1989) and Long and Doyle (1989). These studies do not find strong labor market effects. Exceptions include Long (1990) who uses SIPP and finds unemployment reduces exit rates, and Fitzgerald (1991) who also uses SIPP and finds unemployment rates matter for blacks but not whites. Fitzgerald also uses a state level measure of spouse availability and finds it matters for whites, not blacks.

Even though state-level labor market effects have not been found to be consistently strong in welfare duration studies, studies of youth employment by Cain and Gleason (1991), Cain and Finnie (1990), and Acs and Wissoker (1991) all find SMSA level unemployment rates to have significant effects on employment outcomes. Thus use of local measures may be key.

### Local Labor Markets

Before discussing the exact specification used, we need some discussion of local labor markets. This paper will use two types of local areas. The first is county of residence. The second is a "Labor Market Area", or LMA, that is an aggregate of counties. One could use an SMSA as a definition of a labor market or the aggregates used by the Bureau of Labor Statistics. We chose a different definition described in Tolbert and Killian (1987). This method divides the U.S. into 382 labor market areas based on the relative strength of commuting ties among counties. Unlike some other definitions, these LMA's exhaust all counties in the U.S. and can cross state boundaries. The LMA's tend to look like the more familiar SMSA's in urban areas, but LMA's also group rural counties.

For policy analysis, local area labor market characteristics are valuable in two ways. They are policy relevant since to some extent they can be altered by policy. Second, they are exogenous to the individual, subject to the qualification below. Thus we can interpret estimated coefficients (partial derivatives) as indicating the behavioral response to policy adjustment of these variables.

The qualification is that local area characteristics are potentially endogenous in two ways: (a) residence choice is potentially endogenous, and (b) the measured characteristics may reflect unmeasured local characteristics that also affect spell length (omitted variables). The latter biases policy conclusions since altering a measured characteristic such as unemployment may not alter the omitted

characteristics.

Returning to residence choice, to the extent that people choose where to live along with choosing welfare reciprocity the estimated effects of the local traits are biased by this endogeneity. To the extent that welfare recipients are not very mobile, endogeneity is less of a problem.

## II. Data and Sample Description

### A. SIPP

The next section will describe the empirical model and construction of variables. This section describes the data. SIPP is a longitudinal sample of households representing the non-institutionalized population of the U.S. It includes monthly information on income, use of government programs, labor force participation, and demographic characteristics. Interviews are conducted every four months during the panel asking about activity in the previous four months. Each year a new panel is introduced. Each panel is interviewed eight times<sup>2</sup> which potentially gives 32 months of data. We work with the 1984 and 1985 Longitudinal Research Files which have been longitudinally edited for consistency (SIPP, 1989, pp. B-1 to B-19). The 1984 panel includes about 20,000 households and spans June 1983 to March 1986. The 1985 panel includes about 15,000 households and spans October 1984 to July 1987. For more details on SIPP, see Nelson, McMillen, and Kasprzyk (1985).

### B. Welfare Reciprocity

We selected a subsample of unmarried women with children (female heads of families) who received welfare or foodstamps at any time during a panel. We selected this group because female heads are of primary policy interest, and secondly, because the welfare data on this group may be more reliable.<sup>3</sup> Welfare receipt can be defined in a number of ways. We code a woman as a recipient if she reports receiving either AFDC or General Assistance. This definition includes women who misreport their AFDC receipt as General Assistance, a known problem (Marquis and Moore, 1989). Based on earlier work and an administrative data check, this definition more accurately identifies the AFDC population of female heads than using AFDC receipt alone. Details are in the longer paper.

A spell of welfare receipt is defined as the length of time that a woman continuously receives welfare income (AFDC or General Assistance). One month gaps of nonreceipt were eliminated to produce a continuous spell over the gap. The spell can occur at any time during a panel. To further guard against misreporting, we performed consistency checks to insure that the woman was categorically AFDC eligible, i.e. unmarried and a parent or guardian.<sup>4</sup> Persons who miss interviews during the panel or refuse to answer specific items may have data imputed to them. For the main results given in the text, we excluded all imputed reciprocity data from our analysis. Persons who missed interviews were considered censored at that interview. Work reported elsewhere (Fitzgerald and Zuo, 1991) suggests that results using imputed data would be quite similar.

## III. Empirical Model

### A. Hazard Models

We use discrete hazard models for two events: (1) exits from spells of welfare receipt, and (2) reentry rates for persons who leave welfare, have a period of non-receipt, then return. To avoid econometric difficulties in working with left censored spells, we exclude them and work with complete and right censored spells. We work only with the first observed (complete or right censored) spell of receipt for the exit rate hazards, and the first observed (complete or right censored) spell of non-receipt for the reentry hazard. Thus we work with new entrants into reciprocity or non-reciprocity.

Table 1 shows sample sizes and information on spell lengths. The median welfare duration of 11-12 months agrees with Ruggles (1989) and Long (1990). An earlier paper, Fitzgerald (1991), obtained a longer median length of 20 months for two reasons: (1) the earlier work coded out up to three month gaps while we code out only one month gaps, and (2) the earlier work did not include reported General Assistance cases, which tend to have shorter spells, while this paper includes such cases. (The hazard models for the two samples are very similar.) The median duration off welfare exceeds 25 months, relatively long, but 24 percent of cases are back on welfare after four months off. These results agree with Long (1990).

### B. Discrete Hazard Model

A discrete time hazard model assumes that failure and censoring times are observed in intervals. Define the discrete time hazard rate as

$$P_i(t) = \text{Prob}(T_i = t \mid T_i \geq t, X_i(t))$$

where  $T_i$  is a discrete random variable for (uncensored) spell length, and  $X_i(t)$  are the covariates at time  $t$ . (See Allison, 1982.) The sample likelihood function is the product of individual likelihood pieces which distinguish censored spells from completed spells. For most of our work, we chose to specify the hazard as a logit form:

$$P(t) = 1/(1 + \exp(-\alpha(t) - \beta'X(t))).$$

### C. Variables

The conceptual model laid out at the beginning of the paper suggests a relevant set of covariates for the model. The local area variables were chosen to capture the strength of the local labor market, and other local characteristics such as sex-ratios and racial composition. These variables were computed at both the county level and at the Labor Market Area (LMA) level. These variables were matched to SIPP individuals using county of residence information available on internal Census files.<sup>5</sup>

The county data came from the 1988 City County Data Book. The LMA variables are weighted averages of the counties within the LMA, with weights depending on the measures. For example, racial composition is weighted by county population, unemployment rates are weighted by size of the labor force, etc. If a county had a missing data item, data from the remaining counties within the LMA were used to get LMA values. The missing county data was then replaced by the corresponding LMA data.

A few notes are in order. The urban residence dummy, URBAN, indicates residence in a large SMSA

(population greater than 250,000). We expect that welfare use is more common, hence less stigmatized, in larger urban areas. Other Income was included as a dummy variable because including it as a linear continuous variable always produced a small coefficient with a large standard error. State welfare program information came from the Committee on Ways and Means (1987). We include AFDC-U, a dummy indicating that the state has the AFDC-Unemployed Parent program that allows aid to two-parent families with the primary earner unemployed or disabled. We chose AFDCMAX, the maximum benefit level for a family of four, as our benefit measure. While it might be more accurate to use the benefit adjusted by family size, this would add some endogeneity to the benefit measure since family size could potentially depend on the benefit level. We include family size through number of children, NKIDS. A dummy for having kids aged less than 6, YKID, reflects increased value of home time and increase cost of child care if working.

We had a large number of local variables to choose from, and we experimented with a number of combinations before selecting the ones presented below. We began with a specification that included the proportion of blacks in county population (CBLACK) to measure local segregation, LMA unemployment rate (LUNEM) for general labor market conditions, and LMA sex-ratio (LSEXRT) for the marriage market. We added county per capita income (CPCINC) and county per capita retail sales (CSALES) since these were found important by Cain and Gleason for youth employment. Generally, we grouped variables into sets measuring similar things (unemployment rate and change in employment, for example), and picked one. Our selection was based on overall fit (value of the log-likelihood), and an assessment of the relative precision (size of standard errors) of the combinations. We also compared the fit of the same variable measured at the county and LMA level, and picked the one with the best fit. Overall, we found the local area coefficients were somewhat sensitive to the inclusion on other local area characteristics (reflecting multi-colinearity), but that the remaining (non-local) coefficients were not very sensitive to which local area variables were included.

#### IV. Welfare Exit and Reentry Rates

##### A. Welfare Exit Hazard: All Races

This section and the next consider exit rates; section C considers reentry rates. We begin by looking at results pooled by race, then separately by race. We should first caution that our standard errors do not adjust for the multi-stage, clustered sample design of SIPP. We also treat the sample of person months as independent, ignoring heterogeneity due to within spell correlations. Adjustment for either of these effects would increase our standard errors.<sup>6</sup>

In Table 2, the first column shows exit hazards with urban residence and other local variables. The variables BLACK and HISP (a dummy for hispanic origin) both have large negative effects on exit rates. (HISP is statistically different from zero at just over the 10 percent level.) The

column labelled "Resulting Change in Hazard" shows the change in the hazard from the base case hazard, shown at the bottom of the column, for the change in the independent variable shown in parentheses; it indicates the size of the effect.<sup>7</sup>

Education has a moderate positive impact. NKIDS has a significant negative effect, as expected, and YKID has a large negative coefficient with some precision (it is about 1.5 times its standard error). AFDC has a significant, but moderate sized, negative impact. AFDC-U has a small, insignificant on exits. Urban residence has a large negative coefficient indicating that spells will be longer in large urban areas. Other income and age have small, imprecise coefficients. In all of our specifications, age has small effects. The six steps of the hazard are not shown. The time dummies correspond to months 5-8, 9-12, 13-16, 17-20, and 20 plus, respectively. They fluctuate some, but show a downward trend, consistent with either heterogeneity or state dependence. We do not attempt to separate these explanations here.

Among the local area variables, the effects are not large. The variable LUNEM has a significant negative effect, as expected, while LSEXRT has a significant positive impact, also as expected if it proxies marriage prospects. Both change the hazard by about 12 percent of its base value for a one standard deviation change. The remaining county variables are less precisely estimated, which in part reflects their colinearity. Overall, the state welfare parameters and local area characteristics are important, but the size of the individual effects is not very large.

##### B. Exit Hazard Rates by Race

When the sample is split by race, an interesting pattern emerges. Local area characteristics are important and significant for blacks, but not for whites. In general, the model looks better for blacks than whites. Since whites make up 60 percent of the sample, this explains why the pooled results were not very strong. Table 4 shows the results for blacks. The largest effects on exits are from NKIDS (negative), AFDCMAX (negative), AFDC-U (positive), and URBAN (negative). Whereas a positive sign on AFDC-U could indicate increased marriage options, this explanation seems unlikely for black heads given their very low marriage rate. AFDC-U may proxy omitted location or state welfare policy characteristics.

When we add the local area variables, all have significant (and large) impacts except for LSEXRT. In particular, CSALES has a big positive effect on exits, as we expect if high per capita sales indicate availability of low-skill retail or service jobs. All variables have the signs we expect with the exception of a negative sign on county per capita income. We had expected that per capita income would also reflect the health of the labor market, but it may reflect cost of living that would make it harder to leave welfare. It is also very collinear with CSALES. A higher proportion black in the county increases the exit rate for blacks, a result that needs further investigation.

When we look at whites, we see that only NKIDS, YKID, and perhaps HISP are estimated with much

precision. In terms of size of effect, NKIDS, YKID, HISP, and URBAN have large partials. The local area variables are uniformly statistically insignificant, and nearly all are practically insignificant. The LMA unemployment rate and sex-ratio have a small/moderate size. This differs from Fitzgerald 1991, which used a more accurate sex-ratio of single men to single women by age, race, and state, in that Fitzgerald found the sex-ratio important for whites, but not blacks.

In short, local area characteristics are important for blacks, along with state welfare parameters and other income. For whites, local area characteristics are not important, but number of kids and presence of young kids slows exit. One conjecture consistent with this evidence is that labor markets are more important for blacks as a route off of welfare, and our local area characteristics measure labor market strength. For whites, marriage may be a more important route, and kids impede marriage, but our local variables are too crude to accurately measure marriage options.

#### C. Welfare Reentry Hazard

For the reentry hazards, we expect the signs of the coefficients to change with positive signs indicating a faster return to welfare. For the pooled by race sample in Table 2, this basically holds true, confirming our earlier results.

When we split the sample by race, not shown here, the results are not as consistent as for welfare exits. The separate results by race suffer from small samples of completed spells of non-receipt, and consequently, are more suspect than the welfare spell data. We find that the local area variables matter for reentry for whites, but not for blacks. Whites who stay off welfare longer live in urban areas with low percentage blacks, low per capita income, and high per capita sales. Blacks who stay off longer live in non-urban areas. We are puzzled by the difference. We are also puzzled by why the local area measures matter for reentry for whites, but not blacks. We thus have a weak conclusion that local area characteristics could be important for reentry, but the evidence is mixed.

#### V. Conclusion

This paper uses data from SIPP to investigate the role of local labor market conditions and other local variables on welfare durations and recidivism. We find that local area characteristics do influence welfare exit and reentry rates, although evidence on the latter is not as strong. The effects vary by race, as well as by whether we consider exit rates or reentry rates. Generally, local area characteristics strongly affect exit rates for blacks, but reentry rates for whites.

Among local area characteristics, urban residence is a key. Blacks who live in an SMSA with population greater than 250,000, defined as URBAN in this study have longer spells on welfare and shorter spells off. Whites in urban areas have longer spells on and off, that is, less turnover. The proportion black in the county of residence, an indicator of segregation, has smaller mixed effects. County sales, perhaps indicating the availability of low-skill jobs, have a large effect: a strong positive effect on exit rates for

blacks, and negative effects for reentry rates for whites. Sales have smaller, less precise effects in other cases. High LMA unemployment rates reduce exits, particularly for blacks. The LMA sex-ratio, a proxy for marriage prospects, is measured crudely; it is marginally significant, and positive as expected for the pooled exit hazard, but not elsewhere.

The remaining coefficients are consistent with previous work. Race and hispanic ethnicity have large impacts. Education has small to moderate impacts, while number and age of children have large impacts. We find that the inclusion of local area characteristics makes the AFDC benefit level variable larger and more precisely estimated. Thus conditioning on the local characteristics improves estimates of benefit effects, although the AFDC maximum benefit and AFDC-U dummy are proxying for all relevant features of a state's welfare system.

Overall, we think that the inclusion of local area characteristics improves our understanding of welfare use. Local environments, particularly urban residence, are important determinants of welfare durations.

#### Notes

1. This research was undertaken while we were in the American Statistical Association/ Census Research Fellow Program at the U.S. Bureau of the Census. The program is supported by NSF grant SES 87-13643 and the Census Bureau. All opinions and conclusions are those of the authors, and do not reflect the views of the NSF or Census Bureau.
2. Half of the 1984 panel was interviewed nine times, and half eight, with 15 percent of the sample cut at interviews 5 and 6. The longitudinal research files contain information from eight interviews.
3. Problems with misreporting of reciprocity have been documented by Coder and Ruggles (1988) and others. Preliminary data work showed that many married couples with income and many men report receiving AFDC in the 1984 Panel. These persons would ordinarily be ineligible. The sample of female heads is categorically eligible due to being unmarried with children.
4. We eliminated spells where (1) for more than one month of the spell, the woman has no children living with her, and (2), the woman was married for other than the first or last month of the spell. We allowed the one-month inconsistencies in order to prevent timing of reported events within a month from causing us to drop spells.
5. We had access to internal files because we were Census employees while part of the ASA/NSF/Census Fellowship program. 6. Cain and Gleason (1991) estimated similar logits from SIPP for employment hazards for youth. They estimated standard errors using a replication technique and found the adjusted standard errors were between one and two times the ordinal standard errors, with many about 1.6 times. The degree of clustering between my AFDC sample and his sample of youth could differ, but we do not know. They used multiple spells per person which would increase the clustering in their sample relative to ours.
7. The base case hazard has continuous variables set at their mean, and dummy variables set at their modes.

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Table 1. Spells of Welfare Reciprocity and Non-Reciprocity by Unmarried Female Heads

Months	Welfare Spells			Non-Welfare Spells		
	Cummul. Percent Complete	Cummul. Percent Censored	Survival Probability	Cummul. Percent Complete	Cummul. Percent Censored	Survival Probability
2	28	10	.86	14	11	.95
4	55	29	.72	61	33	.76
6	66	35	.65	72	36	.71
12	89	64	.48	93	63	.59
18	94	80	.41	99	75	.54
25	100	92	.30	100	92	.52
31	--	100	--	--	100	--
Sample Count	264	269	533	193	351	544
Median Duration			11-12			>25

Note: First observed spell of that type from pooled 1984 and 1985 panels of SIPP. Welfare reciprocity is either AFDC or General Assistance.

Table 2. Welfare Exit/Re-entry Hazard

Var. Name	Assumed Change in Ind. Var.	Exit Hazard Rate				Re-entry Hazard Rate			
		Model 1 All Races		Model 2 Blacks		Model 3 Whites		Model 4 All Races	
		Coef. (Std Err)	Percent Change in Hazard	Coef. (Std Err)	Percent Change in Hazard	Coef. (Std Err)	Percent Change in Hazard	Coef. (Std Err)	Percent Change in Hazard
CONST		-5.0329** (2.0510)		-6.7601** (3.3192)		-3.9153 (3.0200)		-2.9105 (2.0860)	
AGE	+1	0.00756 (0.00939)	0.71	0.0400*** (0.0140)	4.03	-0.0144 (0.0123)	- 1.30	-0.0063 (0.0110)	- 0.61
BLACK	0 to 1	-0.4016** (0.1621)	-31.84	—	—	—	—	0.0578 (0.2008)	5.80
HISP	0 to 1	-0.3560 (0.2341)	-28.78	-0.3658 (0.6587)	-30.42	-0.3315 (0.2583)	-26.39	-0.2750 (0.2568)	-23.62
EDU	+1 S.D.	0.0466 (0.0301)	11.26	0.0478 (0.0733)	12.17	0.0405 (0.0351)	9.35	-0.0813*** (0.0315)	-18.63
WKIDS	2 to 3	-0.1472** (0.0679)	-13.03	-0.1620 (0.1046)	-14.82	-0.2065** (0.0925)	-17.30	0.1147* (0.0649)	11.84
YKID	0 to 1	-0.2589 (0.1688)	-21.83	0.3602 (0.2936)	42.74	-0.6825*** (0.2082)	-47.17	0.3316 (0.2057)	38.08
OTHDM	0 to 1	-0.0627 (0.1979)	- 5.76	0.7498** (0.3410)	9.32	-0.3308 (0.2520)	-26.35	-0.5296** (0.2402)	-40.56
AFDCMAX	+1 S.D.	-0.1293* (0.0687)	-16.62	-0.2848** (0.1204)	-34.16	-0.0738 (0.0907)	- 9.52	0.1380* (0.0802)	21.21
AFDCU	0 to 1	0.0645 (0.1915)	6.27	1.0076*** (0.3876)	69.23	-0.1581 (0.2311)	-13.51	-0.1230 (0.2324)	-11.34
URBAN	1 to 0	-0.3931** (0.1761)	44.35	-0.6097* (0.3427)	82.46	-0.3848* (0.2182)	41.13	-0.0401 (0.2084)	3.99
CBBLACK	+1 S.D.	0.00469 (0.00542)	7.05	0.0167* (0.00924)	28.95	-0.00162 (0.00717)	- 2.25	0.0105* (0.00631)	16.36
CPCINC	+1 S.D.	-0.0285 (0.0543)	- 5.71	-0.2162* (0.1213)	-37.34	0.00437 (0.0640)	0.87	0.0359 (0.0625)	7.71
CSALES	+1 S.D.	0.0893 (0.0759)	12.02	0.5219*** (0.1972)	0.25	0.00851 (0.0841)	1.05	-0.0693 (0.0861)	- 8.93
LSEXRT	+1 S.D.	0.0355 (0.0218)	12.71	0.0372 (0.0315)	14.08	0.0341 (0.0328)	11.71	0.0008 (0.0221)	0.29
LUNEM	+1 S.D.	-0.0504* (0.0293)	-11.77	-0.0910* (0.0523)	-21.04	-0.0408 (0.0377)	- 9.33	0.00463 (0.0353)	1.15
Base Hazard Rate			0.0547		0.00997		0.0875		0.0227
Sample Size		4699		1899		2800		4883	
-2*Log Liklihd		1950.88		682.54		1233.41		1509.82	

Note: Author's computation. Sample of first observed complete or right censored spell by unmarried mothers on AFDC or General Assistance from 1984 and 1985 Panels of SIPP. Standard errors are shown in parentheses. Stars indicate the coefficient was significantly different from zeros at a 10 percent level (\*), 5 percent level (\*\*), or 1 percent level (\*\*\*)