

PREDICTING THE EFFECTS OF CHANGES IN WELFARE PAYMENTS ON THE PROBABILITIES OF RECEIVING ALTERNATE SOURCES OF INCOME: THE CASE OF HOMELESS PERSONS IN LOS ANGELES

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This article investigates the role that changes in welfare payments are likely to have on the earnings behavior of homeless persons. Using a cross-sectional random sample of 1,489 homeless persons in Los Angeles, the author analyzes the marginal effect of reducing public transfers on (a) the probability of earning and (b) the level of income from various traditional and nontraditional sources. This procedure allows the author to control for a number of important factors (including background, human capital, and social network variables) that may also influence the probability of earning income. Findings suggest that reducing government benefit income by \$100 increases the probability of receiving income from traditional and nontraditional sources by 1.37% and 2.18% respectively. Among the latter are selling items on the streets and "other" (nonspecified) sources. It is concluded that welfare reform measures may in fact create additional societal costs as former welfare recipients turn to alternative forms of income. (JEL I30, J20, I38)

I. INTRODUCTION

Recent changes to state and federal welfare programs, including those in Wisconsin and California as well as the historic U.S. Welfare Reform Act of 1996, have reflected a new approach to dealing with welfare benefits. In particular, there no longer exists an entitlement to cash welfare under Title IV-A of the Social Security Act (U.S. House of Representatives, 1996). One of the groups most likely to feel the full effects of welfare reforms are the 250,000 to 2 million homeless persons who reside in the United States on any given night (see Burt [1996] for a summary of the "numbers debate"). A question that seems particularly relevant and has heretofore gone unanswered is: What impact might welfare reforms have on income-generating behavior of homeless persons?

Though a popular political emphasis of federal welfare reforms has been to move recipients to work, clearly some are not employable. The new program, which has been turned over to the states in the form

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of Temporary Assistance for Needy Families block grants, imposes a five-year ceiling on individual eligibility. Thus, the ultimate objective is to reduce lifetime welfare benefits paid out (U.S. House of Representatives, 1996). (How the recipients choose to play the eligibility game—either by continuing in the program until no longer eligible or by "saving" their eligibility as an income insurance—is not important for this analysis.) In any case, the first wave of recipients whose eligibility will expire under the new five-year limit will occur during the latter part of 2001.

Further compounding the effects of changes to the former Aid to Families with Dependent Children (AFDC) program are changes that impose restrictions on benefits

ABBREVIATIONS

AFDC: Aid to Families with Dependent Children
DIS: Diagnostic Interview Schedule
GA: General Assistance
GR: General Relief
SSDI: Supplemental Security and Disability Income
SSI: Supplemental Security Income
VA: Veteran's Administration Disability Insurance

from state and local welfare programs, such as General Relief (GR) or General Assistance (GA). In Los Angeles County alone, 6,500 persons lost GR benefits on July 1, 1998, with hundreds more each month expected to lose benefits (Oakes, 1998). Even a new GR "back to work" program implemented in Los Angeles County in December 1998 imposes a number of restrictions, including participation in job training and education, a "good-faith effort to find work" requirement, and limiting GR benefits to just six months. In short, regardless of the current emphasis on work, all recipients may ultimately find their benefits reduced to zero. Further, it may be argued that those who are least likely to feel the effects of welfare reform (i.e., those for whom the five-year time restriction does not bind) are those who were most likely to find a job on their own, without the assistance of the new programs.

Because it has been well documented elsewhere that a large proportion of homeless persons receive public assistance (e.g., 58% in Schoeni and Koegel [1998]), what impact might changes to government programs have on the earnings behavior of this population? For example, what if homeless persons compensate for benefit reductions by substituting panhandling for benefit income? Many major cities throughout the United States (including New York, Seattle, San Francisco, Los Angeles, and even Berkeley, California) have either attempted or actually succeeded in curbing some forms of panhandling (*Economist*, 1994; Shuster and Weinstein, 1997; Impoco, 1995). Though no estimates of social and private costs of panhandling are available, clearly this type of nontraditional earnings behavior is "costly" enough (in terms of quality of life and to private businesses) to warrant city managers' attempts to restrict it. What if reductions in government benefits lead to increases in the level of panhandling, selling drugs, prostitution, or other sources of nontraditional income? (For the purposes of this analysis, it is assumed that these activities impose a net external societal cost.) In short, what if efforts to solve one problem create several others?

The answer to what impact changes in government benefit incomes may have on earnings behaviors of homeless persons hinges on the nature of the relationship between benefit income and other income sources. In particular, will reductions in benefit income

increase the probability of receiving income from some other "substitute" income source? Another possibility is that benefit income and other income sources are complementary. To illustrate this concept, consider someone who begins receiving AFDC. To supplement this income, she may wish to begin earning income from other sources. However, because she would be penalized for earning traditional work-for-pay income, she may be more likely to turn to nontraditional sources. Thus, receiving GR and income from nontraditional sources may complement each other. Similarly, reductions in welfare benefits would reduce the probability of earning income from the other nontraditional sources. On the other hand, if they are unrelated, then reductions in government benefits should have no effect on the probability of earning income from other sources.

Though analyzing these pair-wise relationships may seem to be somewhat of an ad hoc approach, there are a number of reasons why a standard model of earnings (e.g., labor/leisure trade-off or moonlighting models, etc.) is not introduced. First, the whole subject of rationality is difficult with homeless populations, because such a high proportion of the sample are substance abusers and/or mentally ill. Being a drug abuser in particular interacts with income choices in a rather perverse way. Second, the nontraditional income sources do not fit the standard mold. Also, most government benefit income programs come with (different) earnings restrictions, which can complicate the incentive system for earning income. These concerns notwithstanding, there are still important and testable relationships that may exist, even if they do not necessarily fit into classical rational earnings models.

One way to test the relationships among earnings sources is to estimate the effect of cross-sectional variations in government benefit income on the probability of receiving income from each of the sources listed above. (Because the full effect of welfare reform legislation will not take effect until late 2001, current research is clearly somewhat speculative. In time, the full effects of the reforms on homeless persons may be measured using panel data studies.) In this investigation, a multivariate probit estimation is used on a random sample of 1,489 homeless persons in Los Angeles to estimate this relationship.

A Heckman correction model, or "heckit," is then used to estimate the direct income effects. Results from these estimations suggest that reductions in government benefit income may increase the probability of earning income from traditional work for pay, selling items on the streets (like food stamps, vouchers, bus passes, drugs, merchandise, or sexual favors), other (nonspecified) sources and private transfers from friends and relatives. Thus, welfare reform may impose an additional societal cost that has heretofore not been addressed. These results suggest that additional policies designed to prevent an increase in these nontraditional income-generating activities of homeless persons may be warranted.

II. DATA

Data are taken from the Course of Homelessness study, a prospective study of exits from and reentry into homelessness among homeless adults. (See Koegel et al. [1996] and Schoeni and Koegel [1998] for more detailed descriptions of the data). Samples were drawn from two sites, downtown and the West Side of Los Angeles, with the former containing the highest concentration of homeless persons in Los Angeles County and the latter containing the second highest. From October 1990 to September 1991, a total of 1,563 homeless adults were interviewed face to face for an average of two hours, for which they were compensated \$10.¹ A total of 5,342 individuals were approached for screening interviews. Of the 5,342, 89% were invited to participate and 87% of those agreed to do so, giving an overall response rate of 78%. The usual concerns about the 13% who refused to respond apply here.

Individuals were considered to be "homeless" if, at some point in the last 30 days, they had spent at least one night in (1) a setting that was either defined as temporary shelter, not designed for shelter (for example, sleeping on park benches, sidewalks, cardboard boxes, abandoned buildings, under bridges,

etc.), or (2) a program for homeless individuals that defined stays as temporary. Individuals currently living in their own dwelling places but who had not been there for each of the past 30 days were included to avoid excluding people who regularly spend some portion of the month in shelters or on the streets.

The sampling plan for this survey combined elements of Burnam and Koegel's (1988) services-setting approach and Rossi et al.'s (1987) "blitz" sampling approach to draw a probability sample of both sheltered and unsheltered adults in the two study sites. Respondents were sampled in proportion to their numbers in the downtown and West Side areas, as determined by a one-night enumeration. They were also sampled proportionate to their distribution across three nested sampling strata (also determined through sampling surveys): the population using shelter beds, the homeless population using meal facilities but not shelter beds, and the unsheltered population using neither. Respondents were sampled randomly within each of the shelter and meal facilities in the two study areas based on the proportion of individuals served by each facility over a 30-day period and across a stratified probability sample of streets in the dead of night.

The Diagnostic Interview Schedule (DIS) (see Robins et al. [1981]) was used to determine the prevalence of mental illness and substance abuse. The DIS is a psychiatric instrument that allows lay interviewers to collect information that, when scored using a computerized algorithm, yields diagnoses of specific disorders according to the criterion of the American Psychiatric Association's *Diagnostic and Statistical Manual* (3rd edition, revised). The summary measures used for chronic mental illness, substance abuse, and dual diagnosis are operationalized based on these DIS data (see Koegel et al. [1988] for further discussion of this issue).

The Course of Homelessness Study surveyed individuals about, among other things, homelessness history, family background including childhood history, and income sources. Questions about income were for the 30 days prior to the interview. In the next section, more detail is provided about each of the specific income sources about which respondents were asked.

1. Because the emphasis of this study was on income, observations were deleted for which there were incomplete data for any of the income categories. Of the 1,563 observations, 74 had missing values, resulting in a revised sample of 1,489 observations. Schoeni and Koegel (1998) used a different selection criterion, so their data set was slightly different.

III. DESCRIPTION OF SOURCES OF INCOME

The income sources have been divided into two general categories: earned income (traditional and nontraditional) and transfer income (public and private) (Table 1). Traditional earned income is income from work for pay, which, as the name implies, is simply working for paid employment. Nearly one-third (29.8%) earned income from working for pay. The top five work-for-pay occupations are freight, stock, and material handlers; janitors and cleaners; laborers, except construction; guards and police, excluding public service; and sales support occupations. Clearly, even these "traditional" forms of employment are largely low-skilled, non-managerial occupations.

Among the nontraditional earned income sources, the modal response (23.1%) is panhandling. In Los Angeles and other Western cities, panhandling (acquiring income from a variety of means, including sitting or standing on sidewalks and asking passersby for spare change) often takes place at freeway

off-ramps (Williams, 1995) or in the middle of busy intersections (Szymanski, 1993). Recycling income is acquired by collecting recyclable items, for example, bottles, cans, and scrap metal, and then selling them to buyers (see Hill and Stamey [1990] for more detailed account of recycling and other nontraditional income sources of homeless persons). Respondents were each asked the following: "How much money did you get from recycling cans, bottles, newspapers, or other used items that you can return for cash?"

Blood plasma income is acquired by selling one's blood to plasma banks. The process, which takes approximately one hour, involves extracting the whole blood, separating it into its components, then returning the red blood cells back to the donor in a saline solution. In the process, the plasma is extracted and retained by the plasma bank (Wiegand, 1990). Respondents were also asked about income from selling things on the streets (selling items), such as food stamps, vouchers, bus passes, drugs, merchandise, and

TABLE 1
Income of Homeless Persons by Type and Source

Income Source	Number ^a	Percent of Sample Receiving Specified Type of Income ^a	Median \$ Amount	Mean \$ Amount	Standard Deviation
			Received among Recipients of Spec. Type of Income	Received among Recipients of Spec. Type of Income	
Sample total	1489	100.0%	\$256	\$399	560
Any income	1405	94.4	288	423	572
Zero income	84	5.6	0	0	0
<i>Earned income</i>					
Total earned income	1052	70.7	120	288	543
Traditional					
Work for pay	444	29.8	199	352	475
Nontraditional					
Panhandling	344	23.1	24	85	197
Recycling	305	20.5	19	65	193
Blood plasma sales	195	13.1	21	27	21
Selling items	304	20.4	50	218	685
Other sources	140	9.4	41	183	461
<i>Transfer income</i>					
Total transfer income:	1049	70.4	156	278	381
Public transfers	841	56.5	180	297	278
(Govt. benefit income)					
Private transfers	489	32.8	25	85	412
(From friends or relatives)					

^aGroupings in this column are not all mutually exclusive. All dollars expressed are in \$1991.

sexual favors. Sometimes referred to as “hustling,” this activity (or collection of activities) has been documented in the ethnographic literature (e.g., Wiegand [1990]) as an important source of income for homeless persons. The nontraditional income from “anywhere else” (other sources) is a catch-all category for income not already accounted for in the survey. Only 9.4% of the sample reported any income from “other” (unnamed) sources.

It is possible, of course, that some of the income from the latter two categories includes income generated from petty thefts or “fencing” items acquired through illegal means. In a previous empirical investigation by Snow et al. (1989), homeless men were found to have significantly higher arrest rates for property crimes, such as petty thefts of food, cigarettes, alcohol, or saleable small electronics items like calculators. (It should be duly noted that their arrest rate for violent offenses was significantly lower than the appropriate housed population.) Because they were not asked directly about it, however, it is impossible to infer what proportion of income received from “selling items” and “other” sources may come from petty thefts.

Transfer income is divided into public and private transfers. Public transfers include government benefit income received from the following sources: Supplemental Security Income/Disability Insurance (SSI/SSDI), Veterans Administration Disability Income (VA), unemployment income, GR or GA, AFDC, and food stamps. Respondents were asked to provide the total amount of government income, including in-kind transfers, received from all programs combined in the past 30 days, as well as whether they had ever or were currently participating in each of the programs. Over half (56.5%) received public transfer income in the past 30 days, with a median amount of \$180. Approximately one-third (32.8%) received private transfers, which includes income received from friends and family members during the past 30 days.²

2. Admittedly this taxonomy is somewhat arbitrary, but the classification of income from friends and relatives as “transfer income” (and not *nontraditional earned* income) is based on the definition of “to earn,” which implies spending time and effort in the process of acquiring income. The ethnographic descriptions of panhandling (e.g. Goldberg [1995]) seem to suggest that panhandlers spend considerable time and (albeit, differing levels of) effort in acquiring income through this means. On the other hand, acquiring income from

Overall, 94.4% received some income, and 5.6% reported no income at all in the past 30 days. Work for pay has the highest median level of income (among recipients of income from that source), with a median of \$199, followed closely by public transfer income. A distant third is selling goods on the streets with only \$50, then other sources (\$41), private transfers (\$25), panhandling (\$24), blood plasma sales (\$21), and recycling (\$19). In the next section, the empirical models are developed to test the relationship between government benefit income and these income sources.

IV. EMPIRICAL MODEL

As noted above, the research question in this investigation hinges on the relationship between government transfer income (e.g., welfare transfers) and the probability of receiving income from other sources. However, the probability of receiving income from each source may also be explained by a number of other relevant factors, including personal/background, human capital, and social network variables; hence, a multivariate approach is used here. Each income source described above is modeled separately as a dichotomous dependent variable, whereas public transfer (“benefit”) income is an independent, continuous variable. Background variables used in this analysis include age, ethnicity, gender, place of birth, a dummy variable for whether respondents spent the majority of nights (past 30) on the streets, and length of time homeless. The earnings equations rely on previous analyses that have provided both theoretical and empirical support for human capital and social network variables as explanations for variations in earnings. The human capital variables used here (see Mincer [1958, 1974]; Schultz [1960, 1961]; and Becker [1962]), include education, and a variety of health dummies indicating the presence of any mental illness (as determined by the DIS), recent drug abuse, recent alcohol abuse, and

friends and family members would likely involve considerably less time and effort spent in direct acquisition of this income, though a case may be made that indirect “investments” of time and energy in maintaining these relationships is not “costless.” In any case, the distinction does not affect the results of this investigation.

impaired mobility (“not healthy”). (Respondents were considered “not healthy” if they reported that their health limited their ability to [1] walk one block; [2] bend, lift, or stoop; or [3] walk uphill or climb a few flights of stairs.) Social network variables (see Granovetter [1974]; Holzer [1988]; and Montgomery [1991]) included in this analysis are dummies for living as a legal or common-law married couple, having friends who are employed, and having friends who provide material assistance.

There are two parts to this analysis, each reflecting a related, but potentially different outcome. Clearly, policy makers would be most concerned about whether or not these reforms are likely to increase the number of homeless persons who are involved in certain informal activities, including panhandling, selling items on the streets, and so on. One way to do this is to estimate the marginal effect that changes in benefit income have on the probability of earning income from each source. This is modeled using a probit and transforming the coefficients to show marginal effects. More formally, the probit estimation is modeled in the following way:

$$(1) \text{Prob}(y_i=1) = 1 - F(-\beta'x_i) = \Phi(\beta'x_i),$$

where y_i is the dependent (dichotomous) variable, F is the cumulative distribution function (CDF), x_i is a vector of independent variables (including background, human capital, social network variables and the variable of interest—government benefit income), β is a vector of parameter estimates, and Φ is the standard normal CDF. Separate probits are estimated for each of the seven individual income sources as well as three aggregated categories—any earned income and traditional and nontraditional earned income. The marginal effects, dP/dX , are transformed probit coefficients and are calculated (following Madalla [1983], 23) as

$$(2) \quad \delta\Phi(x_i'\beta)/\delta x_{ik} = \phi(x_i'\beta)\beta_k,$$

where ϕ is the standard normal probability density function, x_{ik} is the k th element of the vector of explanatory variables, x_i , and β_k is the k th element of β . The marginals for all dummy variables are calculated for a discrete change from zero to one and all other variables are calculated using the sample means as a starting point.

Additionally, it is helpful to estimate the marginal effects of changes to benefit income on actual earnings levels for each income source. Ordinary least squares methods would likely be biased (upward) because individuals are likely to self-select into income sources for which they are better suited. Heckman (1979, 153) discusses this same phenomenon in terms of the wages of working women, noting that one only observes the wages of women for whom their “market wage exceeds their home wage at zero hours of work.” The heckit model corrects for this bias by including a Heckman correction term in the regression equation, which is derived from a separate selection equation. The heckit regression equation is as follows:

$$(3) \quad y_i = x_i\beta + u_{1i},$$

where y_i is the dependent variable for observation i , x_i is a vector of independent variables, β is a vector of coefficients for observation i and u_{1i} is the error term. The dependent variable is only observed for observation i if

$$(4) \quad z_i\gamma + u_{2i} > 0,$$

where z_i is a vector of independent variables for observation i , γ is the vector of coefficients for observation i , and u_{2i} is the error term. (Equation [4] is the selection equation.) Though not required, two variables included in each selection equation are omitted from the regression equation to improve identification of the model. The results of the estimations are presented in the following section.

V. RESULTS

A. Descriptive Statistics

What are the basic characteristics of this sample, and how does it compare to Los Angeles County as a whole? The mean age of the sample is nearly 37 years old (Table 2). African Americans (non-Hispanic blacks) are overrepresented, comprising only 10.6% of the total Los Angeles County population, yet accounting for well over half of the sample (58.7%). (Los Angeles County data are from Schoeni and Koegel [1998] 298.) Non-Hispanic whites and Hispanics are underrepresented, accounting for 41.0% and

TABLE 2
Descriptive Statistics: Mean, Standard Deviation, and Comparable Los Angeles County Statistics for Independent Variables

Independent Variables	Mean	Standard Deviation	Los Angeles County Means (1990)
<i>Personal characteristics</i>			
Age	36.69	9.774	
Age squared	1442	784.9	
Ethnicity			
White, non-Hispanic	0.2379	0.4260	0.410
Hispanic	0.1514	0.3585	0.373
Other (including Asian)	0.0234	0.1511	0.111
Black, non-Hispanic*	0.5869	0.4926	0.106
Female	0.1759	0.3809	0.501
Spent majority of nights on streets	0.3373	0.4730	
Proportion of life spent in U.S.	0.9069	0.2453	
Length of time homeless (years)	3.538	4.833	
<i>Human capital variables</i>			
Education			
< 12 years of education	0.3629	0.4790	0.299
High school grad*	0.3329	0.4696	0.207
Some college	0.2490	0.4309	0.271
College grad or more	0.0558	0.2287	0.223
Health			
Any recent mental illness	0.1555	0.3626	
Any recent drug abuse	0.1622	0.3694	
Any recent alcohol abuse	0.2308	0.4207	
Not healthy (self-report)	0.2905	0.4542	
<i>Social network variables</i>			
Any living relatives	0.9240	0.2651	
Married or living together	0.1001	0.3002	
Has friends who are employed	0.7534	0.4315	
Has friends who provide mat. support	0.5415	0.4988	
<i>Other variables</i>			
Site dummy (<i>Westside</i> = 1)	0.3040	0.4601	

*Denotes reference or "omitted" categories in estimations. Los Angeles 1990 information from Schoeni and Koegel, 1998, 298.

37.3% of the Los Angeles County population, respectively, yet only 23.8% and 15.1%, respectively, of the sample. Asians and other ethnicities (the "Other" category) account for less than 3% of the sample and are also underrepresented. Only 17.6% of the sample are women, whereas slightly more than half (50.1%) of the adult Los Angeles County residents are female. (Women, who were oversampled, accounted for roughly 26% of the unweighted sample.) One-third of all respondents indicate that their most common place of spending the night in the past month was on the streets. The mean proportion of

lifetime spent in the United States is 0.91, and the mean number of years spent homeless is 3.6.

With respect to the human capital variables, 36% did not complete high school and one-third ended their schooling with a high school diploma. Though these numbers are clearly higher than those for all adults living in Los Angeles County (29.7% and 20.7%, respectively), the striking difference occurs at the other end. Though only 5.6% of respondents completed college or some graduate education, nearly four times that proportion (22.3%) of similar Los Angeles County

residents report the same. Based on results from the DIS, 15.6% have had recent (past two months) mental illness, 16.2% recent drug abuse, and 23.1% recent alcohol abuse. Nearly one-third (29.1%) have self-reported impaired mobility (i.e., “not healthy”).

Among the social network variables, 92% have any living relative; 10% are living together or legally married. Nearly three-fourths (75.3%) have friends who are employed, and 54.2% have friends who provide material support. Because the sample included two different areas, a site dummy variable is also included to account for any geographic-specific variation. Roughly one-third (30.4%) are from the West Side.

B. Estimations of Traditional and Nontraditional Income

The first step of the statistical analysis is to estimate the probit equations for the two aggregated “earned” income categories—traditional and nontraditional income (Table 3) to see if there are any major differences among the characteristics of their recipients. Because the probit coefficients have been converted to show marginal effects (using sample means of the explanatory variables), interpretation of the coefficients is straightforward.³ A two-staged conditional maximum likelihood estimation technique (see Rivers and Vuong [1988]) was used to test for endogeneity of government benefit income for these (and all other) estimations. In each case, the variable violated the null hypothesis of endogeneity (i.e., was in fact *exogenous*).

A quick comparison of traditional versus nontraditional income probits shows the characteristics associated with each are quite different. In fact, there are only three variables with matching signs in both probits—two of which are for personal characteristics and the other is for benefit income. The latter will be addressed below. Regarding the personal characteristics, being female is associated with a lower probability of receiving income from either traditional or nontraditional sources (7.77% and 14.71%,

respectively). Perhaps this is because female respondents were much more likely to be accompanied by one or more children (15.3% versus only 1.8% of men) and hence more likely to meet eligibility requirements for AFDC. They would also have a higher opportunity cost of working, on average. Second, spending a majority of the past 30 nights on the streets is associated with a higher probability of receiving income from either source (8.22% and 16.61%, respectively). It may be that respondents who are spending a majority of nights on the streets are less likely to be participants in a shelter/mission program and hence have more need to generate their own income—regardless of the source.

This is where the similarities end. Because human capital and social network theories are based on earnings from traditional sources, it is not surprising to find the results for the traditional income probit generally support the human capital and social network theories. For example, having some college or having at least a college degree are both associated with a higher probability of receiving work for pay, but these characteristics do not explain the probability of receiving nontraditional income. Similarly, poorer health (any mental illness and self-reported restricted mobility) is associated with a lower probability of receiving traditional income. On the other hand, any recent drug or alcohol abuse is associated with a higher probability of receiving nontraditional income (by about 10% each). Similarly, with respect to social network variables, having a living relative increases the probability of working for pay by 19.47% whereas having a friend who is employed actually *reduces* the probability of receiving any nontraditional income by approximately 12%.

Because human capital and social network theories are theories of earnings *levels*, not the probability of earning income per se, should these theories hold for a dichotomous dependent variable? To the extent that there is a premium in earnings for higher human capital and greater social networks, one would expect the possession of these characteristics to improve the likelihood of receiving income from this source. Thus, a simple classification can be made by sorting the two groups by their earnings behavior. These results suggest that higher-educated individuals with greater social networks are more likely to earn traditional

3. Due to the sigmoidal shape of the probit function, it should be noted that the calculated marginal effects at the means are likely to become smaller with successive incremental increases in government benefit income (Aldrich and Nelson, 1984).

TABLE 3
Marginal Effects on Traditional and Nontraditional Income Using Probit Estimations

Independent Variables	Traditional Income		Nontraditional Income	
	Marginal Effect	Robust SE	Marginal Effect	Robust SE
<i>Personal characteristics</i>				
Age	0.0156	0.0136	0.0304*	0.0157
Age ²	-0.0002	0.0002	-0.0004**	0.0002
White	0.1319**	0.0533	-0.0010	0.0562
Hispanic	0.2195**	0.0843	0.0009	0.0889
Other	-0.1410	0.0797	-0.1699	0.1107
Female	-0.0777*	0.0435	-0.1471**	0.0522
Spent maj. nights on streets	0.0822**	0.0407	0.1661**	0.0442
Proportion of life in U.S.	-0.0785	0.1004	0.1253	0.1270
Length of time homeless	-0.0059	0.0041	0.0083*	0.0045
<i>Human capital variables</i>				
Education				
Elementary education	0.0608	0.0489	-0.0198	0.0538
Some college education	0.0915*	0.0503	-0.0752	0.0557
College graduate (plus)	0.1536*	0.0858	-0.0112	0.0969
Health				
Any mental illness	-0.0862*	0.0475	0.0490	0.0604
Any recent drug abuse	0.0670	0.0514	0.1004*	0.0555
Any recent alcohol abuse	0.0048	0.0437	0.1066**	0.0502
Not healthy (self-report)	-0.1549**	0.0350	0.0156	0.0486
<i>Social network variables</i>				
Any living relatives	0.1947**	0.0419	-0.0612	0.0827
Living as married	0.0147	0.0578	0.0592	0.0645
Friends who are employed	0.0548	0.0430	-0.1207**	0.0486
Friends who provide mat asst.	0.0500	0.0367	0.0162	0.0427
<i>Other Variables</i>				
Site dummy	0.0868*	0.0490	-0.0900*	0.0548
Benefit income (\$ Hundreds)	-0.0137*	0.0084	-0.0218*	0.0122
Log likelihood	-663.6			-792.1
Pseudo R ²	0.1225			0.0864
Number of observations	1263			1263

Notes: The marginal effects, dP/dX , presented here are transformed probit coefficients, using the sample means of the explanatory variables. Marginals for all dummy variables are calculated for discrete change from 0 to 1. ** and * indicate significance at the 0.05 and 0.10 levels, respectively.

income, whereas lower-educated individuals with fewer social networks are more likely to receive their income from nontraditional sources.

Now for the variable of interest, benefit income. These results imply that for each \$100 decrease in benefit income, the probability of receiving traditional income increases by 1.37% and the probability of receiving nontraditional income increases by 2.18%. Thus, individuals may substitute reductions in benefit income with income

from other (traditional and nontraditional) sources. More will be said about the magnitude of these marginal effects below.

C. Estimations for Individual Income Sources

The next step in the analysis is to disaggregate the income sources in order to determine for which nontraditional income sources (and private transfer income) this relationship holds (Table 4). Results from the

TABLE 4
Summary of Marginal Effects on Income Source from Probit and Heckit Estimations

	Any Earned Income	Traditional Income	Any Nontraditional Income	Panhandling	Recycling	Blood Plasma	Selling Items	"Other" Sources	Private Transfers
<i>Probit</i>									
Total benefit income ^a	-0.0264** (0.0096)	-0.0137* (0.0084)	-0.0218* (0.0122)	0.0015 (0.0101)	-0.0088 (0.0070)	-0.0062 (0.0065)	-0.0132* (0.0078)	-0.0257** (0.0058)	-0.0204** (0.0092)
<i>Heckit</i>									
Total benefit income ^a	15.11 (17.60)	7.243 (12.18)	-7.622 (10.52)	15.54** (6.854)	-10.10 (50.04)	0.8509 (1.114)	-13.22 ^b (233.2)	-86.84 (91.42)	-26.27 ^b (10.94)

Notes: Standard errors in parentheses. Heckit results taken from the full income estimation equations and both probit and heckits use the same independent variables as Table 3, with the exception of two additional identification variables in the heckits.

^aTotal benefit income is in hundreds of \$1991.

^bEstimation unreliable due to low Wald test score.

**and * indicate significance at the 0.05 and 0.10 levels, respectively.

probit estimates show that for a \$100 reduction in government benefit income, the probability of selling items increases by 1.32%, and the probability of receiving income from "other" sources increases by 2.57%. This is likely to be very unwelcome news to policy makers, who may be concerned about an increase in the likelihood of homeless respondents' selling items on the streets (including, among other things, drugs and prostitution) and receiving income from "other" sources (which may include petty thefts). Findings also suggest that reducing government benefit income by \$100 increases the probability of receiving private transfers from friends and relatives by 2.04%. (This supports a more general finding by Schoeni and Koegel [1998], that private transfers from friends and relatives buffer declines in income.) Thus, homeless respondents are likely to turn to friends and family members for assistance when benefits are reduced.

Results for the heckit regressions show only one significant relationship between benefit income and the amount of income received from each source—a positive relationship between total benefit income and the amount of panhandling income received. This relationship implies that reducing government benefit income by \$100 may reduce panhandling income by \$15.54. However, further analysis (using interactions of dummies for specific "type of benefit income" and total benefit income) indicates that this relationship is driven largely by two specific sources of benefit income, VA and SSI, and income

from these sources is likely to proxy for personal characteristics that may provide higher returns to panhandling (see Williams [1995]; Szymanski [1993]; and Dawidoff [1994] for ethnographic and descriptive analyses of the panhandling and begging "business"). For example, the level of VA or SSI benefit income may be a proxy for the extent to which one appears to be permanently disabled, a military veteran, or otherwise "worthy" of panhandling income. In any case, to the extent that VA and SSI benefits are left untouched by welfare reform, the impact on panhandling income is likely to be small. Overall, one can infer from Table 4 that if it is income per se that concerns policy makers, then there is little to be concerned about. However, if income-generating *behavior* is what matters, then reductions in welfare benefits may indeed have a significant impact.

The analysis above suggested that differences in specific benefit income sources may have different impacts on earnings levels. Because federal and state and local welfare reform measures have targeted specific programs, including AFDC, food stamps, and GR/GA, might there not be differences in the effects of each program on the probability of receiving income from each source? Respondents were asked only about whether they receive any income—not how much—from each program. Thus, individual probits are estimated using dummy variables for participation in each program (Table 5). Of the 54 coefficients presented

in the table, nearly half (23) are significant and of these, approximately 70% have a negative sign. In particular, participating in AFDC reduces the probability of receiving any nontraditional income by about one-third and selling items on the streets by 12.58%. (Stated differently, nonparticipation in AFDC increases the probability of receiving nontraditional income and selling items on the streets by one-third and 12.58%, respectively.) The impact on the probability of earning income from participation in GR/GA programs is perhaps even stronger. Participation in GR/GA reduces the probability of receiving traditional income by 8%, panhandling by 7.03%, "other" income sources by 6%, and increases the probability of receiving income from blood plasma sales by 5.33%. Participating in the food stamps program reduces the probability of receiving traditional income by 9% and "other" income sources by 5.54%. Participation in food stamps is associated with a higher probability of receiving blood plasma income (5.2%) and selling items on the streets (9.29%). What these results demonstrate is that major changes in these programs could bring about unintended negative consequences as homeless respondents seem likely to turn to alternative (substitute) sources of income.

VI. CONCLUSION

This investigation has attempted to address an important policy question related to welfare reform, namely, how might earnings behavior of homeless persons be affected by a reduction in government benefit income? The results presented here suggest that reducing benefit income by \$100 increases the probability of receiving traditional work-for-pay income by 1.37%. This tends to support the premise of welfare-to-work reforms. However, the same reduction in benefits also increases the probability of selling items on the streets by 1.32% and increases the probability of receiving income from "other" nonspecified sources and private transfers (by 2.57% and 2.04%, respectively). Assuming that selling items on the streets (e.g., food stamps, vouchers, bus passes, drugs, merchandise, or sexual favors) and income generated from "other" sources (which may include fencing and petty thefts) are costly to society, then welfare reforms

may come with additional hidden costs. This is probably not the type of "work" policy makers had in mind when U.S. "welfare-to-work" measures were passed in 1996. An additional note about the magnitude of the marginal effects on probability is that even if the marginal effects are small, this does not necessarily imply that the policy implications are also small. Clearly, a small but significant increase in the amount of homeless persons receiving income from selling items, "other sources," and panhandling (from changes in GR/GA) could have a detrimental impact on society and justify policy measures designed to prevent these increases. Findings also demonstrated that friends and family members of homeless persons can expect to shoulder additional costs as welfare reductions increase the probability of receiving transfers from friends and family.

Do these findings change when comparing specific benefit income programs, such as AFDC versus GR/GA? Though data limited the analysis to a simple yes/no response for each category, results were mixed. Participating in AFDC, for example, reduces the probability of selling items on the streets by 12.58%. Stated another way, eliminating the opportunity to receive income from AFDC may increase the likelihood of selling items on the streets. With respect to GR/GA, participation in these programs is associated with a 7.03% lower probability of panhandling and a 6.00% lower probability of receiving income from "other" nonspecified sources. (Participation is also associated with a 5.33% higher probability of receiving blood plasma income.) Again, assuming that panhandling and "other" income sources create social costs, removing the opportunity to participate in these programs may generate hidden social costs.

The intent of this article has been to investigate the impact that welfare reform may have on homeless persons. Results presented here demonstrate that attempts to reduce benefits to homeless in the form of reducing GR/GA and AFDC income may increase the likelihood that homeless persons turn to alternative "nontraditional" sources of income—sources that may themselves generate additional societal costs of welfare reform. Thus, policies designed to prevent these additional costs may be warranted. For example, additional spending on shelters

TABLE 5
 Marginal Effects on the Probability of Receiving Income from Each Income Source by Participation in Specific Government Benefit Program

	Any Earned Income	Traditional Income	Nontraditional Income	Any Nontraditional Income	Panhandling	Recycling	Blood Plasma	Selling Items	"Other" Sources	Private Transfer
SSI/SSDI	-0.1589** (0.0735)	-0.1523** (0.0464)	-0.1126 (0.0808)	0.1587** (0.0832)	-0.1333 (0.0609)	-0.0896** (0.0275)	-0.1355** (0.0395)	-0.0424 (0.0318)	-0.1484** (0.0565)	
VA	-0.0651 (0.1569)	0.1229 (0.1943)	-0.2870 (0.1871)	0.0537 (0.1956)	-0.1569* (0.0434)	-0.0999** (0.0208)	0.0000 ^a (0.0000)	0.0000 ^a (0.0000)	0.4465** (0.1551)	
Unemployment	0.1908** (0.0497)	-0.0040 (0.1193)	0.1523 (0.1227)	0.0940 (0.1418)	0.2069* (0.1416)	0.1212 (0.1253)	0.1037 (0.1292)	0.0659 (0.0985)	0.1102 (0.1355)	
GR/GA	-0.0726* (0.0451)	-0.0800* (0.0418)	-0.0623 (0.0519)	-0.0703* (0.0349)	-0.0106 (0.0376)	0.0533* (0.0311)	0.0374 (0.0369)	-0.0600** (0.0248)	-0.0655 (0.0448)	
AFDC	-0.2681** (0.1237)	-0.0646 (0.0964)	-0.3398** (0.0924)	0.0000 ^a (0.0000)	-0.1047 (0.0705)	-0.0907 (0.0314)	-0.1258* (0.0480)	-0.0394 (0.0413)	-0.0913 (0.1078)	
Food Stamps	-0.0581 (0.0404)	-0.0904** (0.0392)	-0.0076 (0.0472)	-0.0452 (0.0348)	0.0313 (0.0334)	0.0520* (0.0294)	0.0929** (0.0328)	-0.0554** (0.0235)	0.0131 (0.0407)	

Notes: Derived from probit estimates. Standard errors in parentheses. The marginal effects, dP/dX are calculated using the sample means of the explanatory variables. Marginals for SSI/SSDI, VA, Unemployment, GR/GA, AFDC, and food stamps are calculated for discrete change of dummy variables from 0 to 1.

^aPredicts failure of dependent variable perfectly, so no estimation available.

** and * indicate significance at the 0.05 and 0.10 levels, respectively.

and transitional living programs designed for homeless persons may be one way of supporting those whose welfare eligibility runs out. Specific programs geared towards chemically dependent or mentally ill homeless may also assist those whose eligibility has expired but are temporarily "unemployable."

These results must be taken in their proper context, namely, that the sample only included respondents from one large metropolitan area on the West Coast. Further research is necessary to test whether the results generated here are generalizable to the rest of the country. In addition, as data from states that have already begun the implementation of welfare reforms become available, it may be possible to test whether these predicted results are already occurring there. Ultimately, longitudinal data sets which follow homeless individuals over long periods of time are necessary to track whether these changes in earnings behaviors do occur. Also, attempts to measure societal costs of nontraditional income sources of homeless persons would help improve efficiency in designing policies geared toward homeless persons.

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