

# The Relationship between Income and Material Hardship

July 3, 2006

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## Abstract

This paper examines the relationship between income and the extent of material hardship and explores other factors that might affect hardship. Using panel data from the Women's Employment Study (WES), we examine the incidence of material hardship from 1997 to 2003 among current and former welfare recipients. We then consider the extent to which alternative income measures are associated with these hardships. We show that hardship decreases monotonically across quintiles of the disposable income distribution. This decrease is even more noticeable when we measure income as the average across the 6-year study period—those in the bottom quintile are 25 percent more likely to experience hardship than those in the second quintile. This relationship arises, in large part, because income is also correlated with other factors—both observable and unobservable—that affect material hardship. Consistent with ethnographic research suggesting that informal resources play an important role in helping disadvantaged families make ends meet, we find that the relationship between income and hardship is weak in individual fixed effects models. Our results indicate that other observable factors, such as measures of mental health or long-run income, might help identify those families who are at the greatest risk of experiencing material hardship.

Keywords: Material hardship, income, well-being

The Women's Employment Study was supported by grants from the Charles Stewart Mott, Joyce, and John D. and Catherine T. MacArthur Foundations and the National Institute of Mental Health (R24-MH51363). The authors thank Rebecca Blank and Steven Haider for helpful comments on a previous draft.

## **I. Introduction**

Both policy makers and researchers commonly use income as a proxy for material well-being. Means-tested transfer programs that explicitly aim to prevent material hardship, such as Food Stamps, housing assistance, Medicaid, and energy assistance, rely on measures of current income to target benefits to disadvantaged families.<sup>1</sup> Policy makers rely on the official poverty measure, based on money income, not only to gauge the extent of deprivation, but also to determine how the federal government should allocate billions of dollars for programs designed to help the neediest (Citro and Michael, 1995). Researchers often evaluate the effectiveness of government programs that target the poor using measures of current income and studies of inequality typically rely on income to measure relative well-being.<sup>2</sup>

This paper aims to provide a better understanding of the relationship between income and the extent of material hardship and to explore other factors that might affect hardship experiences. Using data from the Women's Employment Study (WES), a survey that includes panel data on both income and hardships, we examine the incidence of material hardships from 1997 to 2003 among current and former welfare recipients. We then consider the extent to which different measures of income are associated with these hardships, distinguishing between past, current, and future income, as well as measures of transitory and long-run resources. The WES also allows us to analyze the relationship between hardship and other personal characteristics that are typically not available in household surveys, such as measures of physical and mental health and access to credit.

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<sup>1</sup> For example, an explicit goal of the Food Stamps program is to alleviate hunger and malnutrition (Food Stamp Act, PL 88-525).

<sup>2</sup> A recent exception is Meyer and Sullivan (2004) who use consumption to evaluate the effects of recent changes in tax and welfare policy. Also, see Gruber (1997, 2000). Other studies examine consumption inequality (Cutler and Katz 1991; Krueger and Perri 2003; and Autor, Katz, and Kearney 2004), or inequality in material hardship (Mayer and Jencks 1993).

We show that hardship decreases monotonically across quintiles of the income distribution for several different income measures in this sample of current and former welfare recipients. Those in the bottom quintile of disposable income are 18 percent more likely to experience a material hardship than those in the second quintile. This difference is larger when quintiles are based on average disposable income over the panel—families in the bottom quintile are 25 percent more likely to experience hardships than those in the second quintile. Regressions that control for observable characteristics also show that hardship decreases as current income increases. These estimates suggest that doubling current income is associated with a 3.3 percentage point decrease in the likelihood of experiencing a hardship—a drop of about 10 percent. Results are similar when we adjust for the under-reporting of transfer income using administrative data instead of self reports for welfare and Food Stamps. We also find that the relationship between pre-tax money income and hardship is slightly weaker than that of disposable income.

After conditioning on average income over the panel, there is little evidence of a relationship between current income and hardship, while a significant relationship between average income and hardship remains. Models that include individual fixed effects indicate that the relationship between transitory income and hardship is weak. We discuss a number of potential explanations for this result. This weak relationship cannot entirely be explained by the intertemporal substitution of income or by the misreporting of transfer income, but it is consistent with ethnographic research suggesting that informal, typically unmeasured, resources play an important role in helping the disadvantaged make ends meet.

We conclude that measures of long-run resources and other observable characteristics are better than current income measures at identifying those households at greatest risk of hardship.

Characteristics such as having a mental health disorder or not having a checking account are significantly related to hardship, even after controlling for unobserved heterogeneity. We also find that lagged mental health is significantly related to hardship. While these effects should not be interpreted as causal, the significant relationships between hardship and characteristics such as a mental health disorder indicate that material hardship may result from events beyond a shortfall in economic resources.

The structure of this paper is as follows: In the next section, we discuss previous research on the relationship between income and material hardship. Section III describes the WES, presents descriptive results including trends in income and hardship, and outlines our methods. We present our empirical results in Section IV and discuss the relationship between income and hardship in Section V. We offer conclusions in Section VI.

## **II. Previous Research on Hardship**

There are several reasons for expecting a strong link between income and material hardship. Families with low income are less able to meet their basic needs and hence more likely to experience material hardships. In addition, empirical measures of material hardship are designed to capture unfavorable economic circumstances.<sup>3</sup> Nonetheless, past research finds a weak relationship between income and hardship. Using a Chicago-based panel survey of income and material hardship in 1983 and 1985, Mayer and Jencks (1989) show that income explains only 14 percent of the variation in the number of material hardships a family experiences.<sup>4</sup> They conclude that income poverty does not provide reliable information on the distribution of

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<sup>3</sup> For a survey of measures of material hardship and related empirical research, see Ouellette et al. (2004). Mayer and Jencks (1989) show that hardship is related to self-reported happiness.

<sup>4</sup> Mayer and Jencks examine measures of food insufficiency, unpaid rent, crowded housing, eviction, having utilities shut off, housing problems, lack of health insurance, and unmet medical or dental needs.

material hardship. Similarly, Short (2005) notes that poor families and those experiencing material hardships are distinct groups.<sup>5</sup>

Measures of long-run resources may be more highly correlated with material well-being than current income, particularly if families can substitute income intertemporally or if long-run resources are measured with less error than current resources. Mayer (1997) shows that families with low average income over a five-year period score about a third of a standard deviation lower on an index of living conditions than families with low current income.<sup>6,7</sup> Meyer and Sullivan (2003) show that current consumption is more closely associated with measures of material well-being than is current income and conclude that for disadvantaged families, consumption is better measured than income. Using the 1996 Survey of Income and Program Participation (SIPP), Iceland and Bauman (2005) find that poverty spells are associated with hardship, but when they control for a family's average income while not in poverty, the magnitude of this association is reduced.<sup>8</sup> Mayer and Jencks (1989) find that variation in permanent income does not explain variation in hardship, but their measure of permanent income is an average over just two periods.

This paper contributes to the existing literature in several ways. First, we analyze panel data that include multiple measures of both income and hardship over a period of more than six years. Previous research has relied on cross-sectional income data or panels spanning less than

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<sup>5</sup> Also, see Beverly (1999), Edin and Lein (1997) and Rector (1999).

<sup>6</sup> Mayer analyzes data from the 1968-1972 PSID. Her living conditions index included information on vehicle and home ownership, food expenditures, health insurance, whether the house was clean or needed major repairs.

<sup>7</sup> Permanent income is a better predictor than current income of different child and adult outcomes. Mayer (1997) shows that income measured over five years has a higher correlation with child outcomes than when measured for a single year. However, relative to other parental characteristics, the effect of five-year average income is small. Using data from the National Longitudinal Survey of Youth (NLSY), Blau (1999) shows that the effect of permanent income, measured as average family income from 1979 to 1991, on child outcomes is larger than that of current income, but the effect of permanent income is smaller than the effect of other attributes, including race, gender, or mother's attributes. See Dahl and Lochner (2005) for a summary of this literature.

<sup>8</sup> Other outcomes have been shown to be weakly related to poverty. For example, Bhattacharya, Currie, and Haider (2004) show that current poverty status has little predictive power for nutritional outcomes among school-age children, but that it is related to nutrition for preschoolers and adults.

three years. With these data, we can distinguish between the effects of short-run and long-run income and control for unobservable characteristics that may affect hardship with fixed effects models. Second, we explore how the relationship between income and hardship varies for different income measures, including money income and disposable income that accounts for the receipt of tax credits and non-cash transfers. Third, by matching survey and administrative data on means-tested transfers, we examine the extent to which underreporting of transfer income in surveys might explain the weak relationship between income and hardship. Lastly, we incorporate a rich set of observable characteristics not typically available, including access to credit, drug use, and mental health. As we show in Section IV, these characteristics are important correlates of material hardship.

### **III. Data and Methods**

#### **A. The Women's Employment Study (WES)**

The WES sample was systematically selected from the February 1997 caseload of single mother welfare recipients between the ages of 18 and 54 in one urban Michigan county.<sup>9</sup> Sample members were interviewed in their homes five times over a period of about 6 years, in the fall of 1997, 1998, 1999, 2001, and 2003. In each wave, respondents provided detailed information on their income in the previous month and the previous calendar year, self-reports of hardship during the 12 months prior to the interview, and a variety of individual and family characteristics. The WES contains self-reported information on monthly employment status and administrative records on receipt of cash assistance and Food Stamps for each of the 79 months from February 1997 through August 2003. The Data Appendix contains detailed information on the variables used in our analyses.

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<sup>9</sup> Information on the universe of single female-headed welfare cases in the study county were provided by the Michigan Family Independence Agency. Only Caucasian and African American females were included, as the county's caseload had very few members of other racial/ethnic groups.

As mentioned above, with five waves that span 79 months, the WES is longer than other surveys that collect information on material hardship.<sup>10</sup> The WES also includes data on mental and physical health, illegal drug use, access to credit, and car and home ownership. Further, we have access to the amount and receipt of cash assistance and Food Stamps for each respondent for each month of the panel from administrative records from Michigan's Family Independence Agency.

The first WES interviews took place shortly after the passage of the 1996 Personal Responsibility and Work Reconciliation Act (PRWORA), allowing us to evaluate their well-being following this dramatic reform. Following PRWORA, there was a sharp increase in employment for single mothers and significant decreases in welfare income. Unfortunately, due to a lack of an appropriate comparison group for the WES sample, our inferences regarding the effects of welfare reform findings are suggestive rather than causal.

Although our sample is restricted to residents of a single county, the characteristics of these mothers are quite similar to those found within nationally-representative samples. Trends in the receipt of cash assistance and employment for WES respondents are comparable to those at the national level.<sup>11</sup> Furthermore, the macroeconomic conditions and nature of welfare reforms to which the WES sample were exposed were similar to those in other states that contained a majority of the TANF caseload in 1997 (Turner et al., 2006).

We derive three measures of household income. Using the definition of money income the Census Bureau uses to determine official poverty rates, we construct a measure of pre-tax

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<sup>10</sup> In comparison, SIPP panels span, at most, five years. The SIPP's Adult Well-Being module, which collects data on experiences of material hardship, is only administered once during the panel.

<sup>11</sup> Seefeldt and Orzol (2005) compare WES respondents to a similar sample from the 1996 SIPP. At the start of both panels, 100 percent received cash welfare; by February 2000, 21.5 percent of WES and 31 percent of SIPP respondents were still receiving cash assistance. At the start of the panel, 42 percent of WES respondents and 35 percent of SIPP respondents were employed. Fifty-one months later, 71 percent of WES and 51 percent of SIPP respondents reported working.

income.<sup>12</sup> “Money income” includes the respondent’s own earnings, the earnings from her spouse, cash welfare benefits, unemployment insurance, workers’ compensation, Social Security (SSDI) and Supplemental Security Income (SSI), and child support payments. Respondents report their income from each of these sources for the month prior to each interview.

The second, broader measure of disposable income subtracts income and payroll taxes, and adds Food Stamps, cash transfers from friends and family, earnings from all other household members, the Earned Income Tax Credit (EITC) and other tax credits, and income from other sources.<sup>13, 14</sup> The third measure substitutes administrative record-adjusted income on TANF and Food Stamp receipt for self-reported income from these sources. Additionally, this measure uses imputed earnings based on the respondent’s report of employment status for each month and self-reported wage rate at each survey. See the Data Appendix for more details.

We examine the relationship between income and hardship using both short-run and long-run measures of income. Our long-run income measures are defined as the average within a household across all waves of the panel.<sup>15</sup> All income measures are equivalence-scale adjusted for family size and composition using the scale recommended by Citro and Michael (1995).<sup>16</sup>

We focus on four measures of material hardship, measured in the 12 months prior to the interview for the first wave and for the months between interviews for subsequent waves:

whether a respondent experienced food insufficiency, whether her utilities were shut off, whether

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<sup>12</sup> For details on official poverty statistics, see [www.census.gov/hhes/www/poverty/povdef.html#2](http://www.census.gov/hhes/www/poverty/povdef.html#2).

<sup>13</sup> Federal and state income taxes, payroll taxes, the EITC and other tax credits are calculated using TAXSIM (Feenberg and Coutts, 1993).

<sup>14</sup> WES respondents also report total household income for the previous calendar year. This may differ from monthly income if the survey month does not reflect the respondent’s typical month for income. However, income in the prior month is based on responses to many questions about specific income sources, while the annual measure is based on responses to only two questions regarding total household earnings and total income from all other sources. Monthly income is less susceptible to recall error (Eisenhower, Mathieowetz, and Morganstein 1991; Groves, 1989).

<sup>15</sup> Only families that participated in three or more waves are included in our analyses, so income is averaged over three to five waves.

<sup>16</sup> The recommended scale is  $(\text{number of adults} + \text{number of children} * 0.7)^{0.7}$ . We standardize this scale to reflect a family with one adult and two children.

she had been evicted, and whether she had been homeless.<sup>17</sup> We also define two summary measures: whether a respondent has experienced any of these four hardships and the total number of hardships experienced. The four hardships were measured in all five waves. We also consider other hardships reported in some waves, including whether a respondent's telephone was disconnected because she was unable to pay the bill, whether she or her children went without proper winter clothing due to cost constraints, and whether she needed to see a doctor or dentist but could not afford to go.<sup>18</sup> These hardship measures are described in more detail in the Data Appendix.

Stacking five waves of data yields an unbalanced panel of 3191 observations from 753 unique respondents. We restrict the sample to the 2978 respondents who completed at least three interviews. Some control variables are not available in all waves. Thus, specifications that include access to credit (not available in the second wave) include 2355 observations, and specifications that include whether the respondent has a checking account (not available in the first wave) include 2348 observations.

## **B. Descriptive Results**

Table 1 summarizes the characteristics of our baseline sample ( $N = 2978$ ). At a typical interview, nearly one-third of all respondents had experienced at least one of the four material hardships since the previous interview. This is comparable to the incidence of hardship among poor households in the U.S. (Beverly, 2001), but significantly higher than the incidence for all households: 12.2 percent of all households are food insufficient, 4.6 percent are food insufficient

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<sup>17</sup> Our measure of food insufficiency is different from food insecurity; recent studies have challenged the validity of this latter measure (National Research Council, 2006; Bhattacharya et al., 2004).

<sup>18</sup> There is little consensus on the most appropriate measures of hardship. The most common include a lack of basic needs such as hunger, food insufficiency, homelessness, eviction, having utilities shut off, or failing to see a doctor when needed. Other research uses questions about consumer durables and housing and neighborhood conditions. We do not examine such measures because their variation may reflect heterogeneity in preferences rather than material well-being. For a survey of measures of hardship, see Ouellette et al. (2004).

with hunger, 0.4 percent have been evicted, and 2.2 percent have had utilities cut off (Ouellette et al. 2004). Experiences of food insufficiency and having utilities shut off, 22 and 10 percent respectively, are similar to those Mayer and Jencks (1989) report from a survey of Chicago residents which over sampled poor families. Eviction, at 8 percent, is more prevalent in the WES than in the Mayer and Jencks study.<sup>19</sup>

WES respondents are a disadvantaged group, whose mean disposable income of \$18,624 in 2003 dollars is approximately 125 percent of the poverty line.<sup>20</sup> More than one quarter have not graduated from high school, nearly a quarter report having poor health, and close to 30 percent meet the diagnostic screening criteria for one of the mental health disorders that were measured at all five waves. As shown in Columns 2 and 3 of Table 1, respondents who reported experiencing any of the four hardships have significantly lower levels of income than those who do not experience a hardship; the former are also less educated, more likely to meet the diagnostic screening criteria for a mental health problem and to use drugs, and are less likely to be married, to own a car or home or have access to credit.

The percentage of WES respondents experiencing material hardships falls over the post welfare reform years (Table 2) from 0.38 in 1997 to 0.27 in 2001. Hardship increased between 2001 and 2003 to 0.31. The decrease in food insufficiency drives much of the decline in any hardship. Average disposable income increases by 32 percent in real terms over the sample period, from \$15,300 to \$20,259, consistent with trends reported for a nationally-representative sample of low-skilled single mothers (Meyer and Sullivan, 2006). When total income is decomposed into its various components, there are noticeable differences over time by source of

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<sup>19</sup> Mayer and Jencks report rates of food insufficiency, utilities shut off, and eviction of 22.4 percent, 7.4 percent, and 1.0 percent respectively. For hardship rates for other samples, see Boushey et al. (2001), Iceland and Bauman (2004) or Ouellette et al. (2004).

<sup>20</sup> This is based on the poverty line for a family with one adult and two children in 2003 (\$14,824).

income. Cash welfare and Food Stamp receipt drops sharply, whereas average earnings increase by about 60 percent. Consequently, measures excluding Food Stamps, such as money income, grow at a faster rate. Our imputed measure of disposable income grows by 37 percent and our measure of money income by 49 percent.

### C. Methodology

To investigate the relationship between income and material hardship, we estimate pooled cross-section and fixed effects models of the following form:

$$H_{it} = \beta_0 + \beta_1 Y_{it} + \beta_2 X_{it} + \gamma_t + \varepsilon_{it}. \quad (1)$$

For most of our results,  $H_{it}$  is a binary variable indicating whether family  $i$  in year  $t$  experiences one of the hardships, although we also examine the number of hardships and the incidence of specific hardships.  $Y_{it}$  is a measure of income in year  $t$  for family  $i$ .  $X_{it}$  includes other observable characteristics that may affect hardship.

Previous studies have shown that the incidence of hardship varies across family types, such as married couples, cohabiting partners, and single parents (Ouellette et al. 2004; Lerman 2002). Thus,  $X_{it}$  includes indicators for whether the mother is married, whether a cohabiting partner is present, other demographic characteristics such as race, employment status, and the number of children present, and measures of human capital, including indicators for educational attainment and a quadratic in age. We include health measures, not available in most surveys, such as indicators for mental health disorders, drug use, and physical health status. To examine how the relationship between income and hardship differs for current and long-run income measures, in some specifications, we also include average income across the panel.

In some specifications we consider measures of income uncertainty, such as the variance of income over the panel. We also include measures that reflect credit constraints, such as an

indicator for perceived access to credit, defined as whether the respondent could borrow several hundred dollars if needed, and measures of asset holdings including home ownership, car ownership, and having a checking account.<sup>21</sup> See the Data Appendix for more discussion of these covariates. To capture time effects that affect all respondents similarly, such as macroeconomic conditions, we include year dummies,  $\gamma_t$ .<sup>22</sup> We estimate models with and without individual fixed effects. In the pooled cross-section models we correct the standard errors to allow for within household dependence over time.

## **IV. Empirical Results**

### **A. Cross-Tabulations**

Figures 1 through 4 document a strong negative relationship between measures of income and hardship. Figure 1 shows that hardship decreases monotonically across quintiles of the disposable income distribution. The incidence of any hardship is 18 percent higher in the bottom quintile than in the second quintile.<sup>23</sup> This is a sizable difference given how tight the income distribution is for this sample—disposable income between the 20<sup>th</sup> and 40<sup>th</sup> percentiles differs by less than \$4,000. All of the specific hardships in Figure 1 are likewise decreasing in income. Food insufficiency is 22 percent higher in the bottom quintile than in the second quintile. Homelessness is more than twice as high.

Hardships fall across quintiles of money income (Figure 2), although the decline is not significant between all quintiles—there is little difference in the incidence of hardship between the second and third quintiles, for example. Differences in the incidence of hardship are most

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<sup>21</sup> Some studies use asset holdings to identify constrained households. For example, see Zeldes (1989).

<sup>22</sup> The coefficients on the time dummies are small and not statistically significant; findings do not change when these dummies are excluded.

<sup>23</sup> The correlation coefficients for income and hardship in the WES are smaller in absolute value than those of Mayer and Jencks (1989), but they are consistent with those in recent studies, such as Short (2005), Federman et al. (1996), Beverly (2000), and Boushey et al. (2001).

evident when comparing households across quintiles of the distribution of long-run disposable income (Figure 3), which is measured as average household income across all waves of the WES. The incidence of any hardship is about 25 percent higher in the bottom quintile than in the second quintile.

Other hardships, which are not available in all survey waves, are shown in Figure 4. Similar to the previous figures, the fraction reporting having their phone service cut off falls monotonically across quintiles of income. Those in the bottom quintile are 13 percent more likely to have their phone shut off than those in the second quintile, and more than twice as likely as those in the top quintile. However, the pattern is quite different for the other two hardships. The fraction reporting not being able to afford a doctor, for example, is higher in the top quintile of disposable income than in the bottom quintile. One potential explanation for this pattern is that those with higher income are less likely to be eligible for Medicaid and may lack access to private health insurance. Alternatively, variation across households in exposure to some hardships may reflect heterogeneity in preferences rather than material well-being.

## **B. Pooled Cross-Section Results**

Table 3 presents probit estimates of the relationship between any hardship and contemporaneous disposable income. The bivariate results in Column 1 are consistent with those from Figure 1—disposable income is negatively related to hardship. The point estimate indicates that doubling disposable income decreases the probability of experiencing any of the four hardships by 7.4 percentage points—a decrease of 23 percent at the mean. As we add controls for other observable characteristics, the magnitude of the coefficient on disposable income decreases noticeably, but remains significant (Column 2). This estimate suggests that doubling current income is associated with a 3.3 percentage point decrease in the likelihood of

experiencing a hardship—a drop of about 10 percent. Adding an indicator for having a checking account (Column 3) has little effect on the point estimate for current income, but when access to credit, measured as the respondent’s perception that she can borrow from friends or family, is included (Column 4) the point estimate for income is no longer significant. However, the loss of significance of income appears to result from the loss in observations rather than the inclusion of additional controls.<sup>24</sup>

In Columns 5 and 6, we include a measure of long-run resources in addition to current disposable income. After controlling for average income over the panel, current disposable income is not significant. These results suggest that, among families with the same long-run resources, those with higher current income are no more likely to experience hardships than those with lower current income.<sup>25</sup> However, holding current income fixed, the probability of experiencing a hardship is significantly higher for those with low average income than for those with higher average income. The probability of experiencing a hardship is 14.4 percentage points greater for a family with an average income of \$10,000 than for a family with average income of \$20,000. Note, however, that these estimates do not control for unobserved differences across households, and households with different long-run resources are likely to differ in unobservable ways that affect hardship. We address this issue by estimating fixed effects models in the following subsection. We also consider specifications that include lags and leads of disposable income because income in one period may affect the likelihood of experiencing hardship in another period (See Section IV).

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<sup>24</sup> For example, estimation of the specification in Column (2) for the sample in Column (4) yields results similar to those reported for Column (4), suggesting that the loss of wave three (1999) observations, rather than the inclusion of access to credit, causes the point estimate on income to be insignificant.

<sup>25</sup> This contrasts with Mayer and Jencks (1989) who find that current income is significant after controlling for long-run income, calculated using a two-year average of income.

The results in Table 3 suggest that observable characteristics are strongly related to hardship.<sup>26</sup> Women who do not finish high school are significantly more likely to experience a hardship than more educated women; the difference ranges from about 10 to 14 percentage points across our specifications. Having a mental health disorder increases the probability of experiencing a hardship by 16 to 19 percentage points. That we find similar estimates for lagged values of mental health (not reported) suggests that this is not entirely due to reverse causality—i.e. that exposure to material hardship causes mental health problems.<sup>27</sup> The probability of experiencing hardship is 13 to 15 percentage points greater for those who report illegal drug use. Respondents who own a car or a house are significantly less likely to experience hardship. The estimates in Column 4 also show that access to credit and having a checking account are significantly related to hardship. The probability of experiencing a hardship is 17.1 percentage points higher for those without access to either formal or informal credit. Note that the effects of these observables are typically much higher than the effects of a doubling of disposable income shown in columns 1 and 2, 7.4 and 3.3 percentage points, respectively. In addition,  $R^2$ s from bivariate regressions indicate that many of these characteristics explain more of the variation in hardship than does income. For example, having a mental health disorder explains more than four times as much of the variation in hardship as does current disposable income.

### **C. Individual Fixed Effects Results**

The pooled cross-section results are likely to be biased because higher and lower income households differ in important, but unobserved, ways that are likely to affect hardship. For example, some households may be more resourceful at avoiding hardship than other households,

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<sup>26</sup> Previous studies show that demographic characteristics are correlated with material hardship. Lerman (2002) shows that married couples are less likely to experience hardship than cohabiting couples, after controlling for income, education, and other characteristics. Mayer and Jencks (1989) show that homeownership, the ability to borrow money, and family structure have stronger relationships with hardship than does income.

<sup>27</sup> Other studies have argued that food insufficiency affects mental health. See Heflin and Ziliak (2006).

and perhaps resourcefulness is correlated with income. To address these concerns, we estimate individual fixed effects models that control for all time-invariant characteristics of the household. In this case, the error term from Equation 1 includes an individual specific component,  $\varepsilon_{it} = \delta_i + \eta_{it}$ , and  $\delta_i$  is correlated with other covariates. The fixed effects estimates examine how deviations of current income from average income over the panel are related to hardship. Results from these specifications (Table 4) do not suggest that material hardship responds substantially to transitory changes in income.<sup>28</sup> The estimate in Column 2, for example, indicates that doubling transitory income is associated with a decrease in the likelihood of material hardship of 2 percentage points (marginally significant). This estimate is no longer significant for specifications that include controls for having a checking account (column 3) and is much smaller for specifications that include perceived access to credit (column 4). However, as was the case with the pooled cross-section results, the lack of significance of income appears to result from the loss in observations rather than the inclusion of additional controls. The fixed effect results indicate that much of the correlation between income and hardship is driven by observable and unobservable characteristics that are correlated with both income and hardship. We discuss this further in Section V.

Some observable characteristics are strongly related to hardship, even after including individual fixed effects. For example, the likelihood of experiencing hardship is about 10 percentage points higher for women who move from not meeting to meeting the screening criteria for a mental health problem between waves. The probability of hardship is about 10 percentage points lower for those who gain a checking account.<sup>29</sup>

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<sup>28</sup> The results in Table 4 are estimates from linear probability models with individual fixed effects and are qualitatively similar to those from conditional logit models.

<sup>29</sup> There is a fair amount of within individual variation in these covariates across waves. The proportion meeting the screening criteria for a mental health disorder decreases between Wave 1 (1997) and Wave 4 (2001), from 0.34 to

#### **D. Other Specifications and Robustness**

Policy makers and researchers often use measures of resources other than disposable income to gauge the well-being of the poor. For example, the official poverty rate is based on pre-tax money income, which does not include in-kind transfers such as Food Stamps or tax credits such as the EITC. In Columns 1 through 3 of Table 5, we re-estimate some regressions from Table 3 using pre-tax money income instead of disposable income as our independent variable of interest. The relationship between money income and experiences of hardship is smaller than that between disposable income and hardship. The estimates in Column 2, for example, indicate that doubling money income decreases the probability of experiencing any hardship by 1.3 percentage points, less than half the magnitude of the effect of doubling disposable income shown in Table 3. The estimates are small and not significant in Column 3 when we include both the log of income and average money income. The point estimate on average money income, for example, is less than half the magnitude of the estimate for average disposable income reported in Table 3. These results indicate that more comprehensive income measures do a better job of predicting which households face the greatest risk of hardship than measures of money income, and suggest that components not included in pre-tax money income, such as the EITC or Food Stamps, have important effects on material hardship.

Another mediating factor in the relationship between income and hardship may be that in survey data, income is measured with error, especially among poor families and those receiving a substantial share of income from public transfers. Income sources, such as welfare and Food Stamps, are significantly under-reported in national surveys; this under-reporting increased significantly during the 1990s (Meyer and Sullivan 2003, 2006; Roemer 2000; Bound et al.

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0.27, and increases between Wave 4 and Wave 5 (2003), to 0.31. The proportion of respondents with a checking count varies as well, increasing from 0.60 in Wave 2 (1998) to 0.70 in Wave 5 (2003).

2001). Measurement error in our fixed effects models is of concern if this error is time-varying. We address misreporting of public transfer income by linking our data with administrative records for TANF and Food Stamps.

When we impute disposable income, the results are very similar to those reported in Table 3 (Columns 5 through 7 of Table 5). The effect of current disposable income on hardship is small but significant, and the effect of average income is somewhat larger. That these results do not differ noticeably from the non-imputed measure may be due to the fact that the under-reporting of TANF and Food Stamps is quite small in the WES as compared to other national surveys (see Data Appendix).

Nevertheless, attenuation bias may still affect our estimates if other components of income besides public transfers are measured with error. As another approach to correct for measurement error, we estimated an IV model that instruments for disposable income using different sources of potentially exogenous variation in income, including a change in health status or the loss or gain of a partner. Implicitly, this procedure assumes that these events only affect hardship through their effect on income. First stage results indicate that these instruments are jointly significant. Estimates from these IV models are similar to those reported earlier, suggesting that the relationship between current income and hardship is weak. The estimates are very similar when a subset of the instruments is used (Results available upon request).

We also examine whether our results are sensitive to the measure of material hardship. In Table 6, we present estimates for five different measures of hardship. The results for the number of hardships (Column 1) are consistent with those reported for any hardship, which is not surprising given that 73 percent of families reporting hardships in the past year report only one of the four main hardships. In fixed effects models, the point estimate for disposable income is

small and insignificant. The fixed effects estimate of the relationship between income and food insufficiency (Column 4) is significant and larger than the point estimate in Column 2 of Table 4.<sup>30</sup> This estimate is smaller (-0.02) and insignificant once controls for access to credit and having a checking account are added (results not shown). The estimates are very small for the relationship between income and other, less frequent hardships such as having utilities shut off, eviction, and homelessness (Columns 5 through 10).

As was the case for our results using any hardship as the dependent variable, the results in Table 6 show that observable characteristics are important predictors of individual hardships. For example, the probability of experiencing each of the four hardships is significantly higher for those who meet the screening criteria for a mental health disorder. The probability of having utilities shut off increases by 5 percentage points for those who move from not meeting to meeting the screening criteria for a mental health disorder (Column 6). This difference is large given that only 10 percent of the sample experiences this hardship. We also find that exposure to specific hardships is significantly greater among those who do not own a car. Other fixed effects specifications (not reported) indicate that the likelihood of experiencing these specific hardships is significantly lower for families with a checking account.

We considered a number of additional specifications to verify that our results are robust. For example, we verify that our results are not sensitive to the estimation procedure; estimates from logit and linear probability models yield results similar to the probit estimates reported in Tables 3, 5 and 6, and conditional logit models yield results qualitatively similar to the linear probability model results in Tables 4 and 6. We also estimate the models in Table 4 for a sample

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<sup>30</sup> Others have examined the relationship between income and food insufficiency. Using data from the 1991 and 1992 SIPP panels, Gundersen and Gruber (2001) show that food-insufficient households are more likely to have experienced a negative income shock. Using a model which includes individual fixed effects, Corcoran et al. (2004), using the WES data, find that income has no effect on food insufficiency.

of women in the bottom half of the distribution of average disposable income to determine if the relationship between income and hardship is particularly strong for the most disadvantaged. These results are similar to those reported in Table 4. For example, for this truncated sample, results for the specification in Column 2 of Table 4 suggest that transitory income has a small but significant effect on hardship (coefficient = -0.032), but this estimate is not significant once controls for access to credit and having a checking account are added, as is the case in Column 3 of Table 4.<sup>31</sup>

Income need not have a contemporaneous effect on hardship. For example, a transitory shortfall in income may cause one to fall behind in rent in the current period, which leads to eviction in a subsequent period. In results not reported, we find that hardship is more closely related to contemporaneous income than to income in other periods. We also estimate the effect of income and other observable characteristics at the first wave on the number of hardships experienced in any of the following four waves. These results are similar to those reported earlier. We find that the effect of current income on the number of hardships experienced in the future is small. In addition, respondents meeting the criteria for a mental health disorder or without access to credit at Wave 1 are significantly more likely to experience hardships in the subsequent four waves.

## **V. Discussion**

Although we found that income is not a significant predictor of material hardship in fixed effects specifications, the strong relationship between income and hardship that is evident in cross-tabulations and in bivariate OLS specifications has important implications. Income is correlated with a number of observable and unobservable characteristics that are important

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<sup>31</sup> Results are qualitatively similar for specifications that look at income for the bottom quartile or bottom decile. Results are also similar for models that include an indicator for being in the bottom decile, quartile, or quintile of the income distribution rather than a continuous measure of income.

predictors of material hardship, suggesting that it provides a useful, albeit imperfect, indicator of which families face the greatest risk of hardship.<sup>32</sup> Thus, income is a practical measure to use for eligibility for transfer programs that aim to prevent material hardship.

We also found that other observable factors help to identify families at greatest risk of experiencing hardships. For example, long-run resources are more strongly related to hardship than is current income and characteristics, such as having a mental health disorder or having a checking account, are also strong predictors.

Our fixed effects results indicate that the relationship between changes in transitory income and material hardship is weak, consistent with previous research that found that income is not related to a number of outcomes for poor families (Mayer, 1997). There are several potential explanations for this weak relationship. The permanent income hypothesis suggests that some families may avoid hardships by borrowing or dissaving when income is temporarily low. However, data on assets and liabilities for similar samples of women suggest that most do not have sufficient liquidity to buffer against even modest shortfalls in income (Edin and Lein, 1997; Shapiro and Wolff, 2001; Meyer and Sullivan, 2003; Sullivan, 2006). WES respondents are likely to face liquidity constraints. Those with a checking account (about two-thirds of respondents) are significantly less likely to experience hardship, even after controlling for individual fixed effects. Additionally, only 24 percent report having a credit card.<sup>33</sup>

Ethnographic research provides the most plausible explanation for the weak relationship between reported income and hardship. Through detailed interviews with welfare-reliant single

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<sup>32</sup> Others argue that consumption is a better measure of material well-being than income (Meyer and Sullivan, 2003). Unfortunately, it is difficult to test whether consumption is more closely related to material hardship because most data sets that measure total consumption do not measure material hardships.

<sup>33</sup> As a more direct test of the permanent income hypothesis, we also estimated models that included an interaction of self-reported access to credit with current income (not reported); however, estimates from these models were very imprecise.

mothers, Edin and Lein (1997) show that reported income accounts for only about 60 percent of total resources. The remainder is accounted for by typically unreported “survival strategies,” such as informal or illegal work, purchasing stolen goods at a discount, or through in-kind transfers from family, friends or partners. They document that about 32 percent of all cash income for their welfare-reliant respondents comes through informal networks of employment and private transfers. Respondents in the WES do report information on some of these strategies, such as access to informal credit, but other strategies are not asked (particularly non-cash private transfers) or are likely to go unreported or under-reported.

In a measurement model, one could specify the resources necessary to avoid material hardship as having two components: primary income sources ( $Y$ ) that are reported on surveys and informal sources ( $\lambda$ ) that are typically not reported. Edin and Lein (1997) conclude that  $\lambda$  is large, particularly for welfare-reliant single mothers. Moreover, it is likely that  $\lambda$  and  $Y$  are negatively correlated. For example, those with little income from formal sources such as earnings or government transfers are more likely to have informal resources.

Evidence from the WES supports this hypothesis. For example, regressions of receiving help from charity on disposable income and other demographic characteristics indicate that income and help from charity have a negative and significant relationship.<sup>34</sup> If  $\lambda$  and  $Y$  are negatively correlated, then estimates of the effect of  $Y$  on material hardship are likely to be small even in fixed effects models.<sup>35</sup>

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<sup>34</sup> In addition, income is negative and significant in regressions where the dependent variable is an indicator for engaging in any making-ends-meet activity including help from charity, engaging in illegal activity, or pawning possessions.

<sup>35</sup> The weak relationship between reported income and hardship may also result from heterogeneity in preferences for material hardship rather than heterogeneity in well-being. For example, some families facing a shortfall in resources may choose to lower food consumption, leading to food insufficiency, while others may choose to forgo consumption of other goods and services that may not be captured by material hardship measures. Thus, heterogeneity in preferences is an important limitation of studies that use material hardship to measure well-being.

The reason for the weak relationship between reported income and hardship has important implications for the measurement of the well-being of the poor in surveys. On the one hand, if measurement error from questions regarding primary sources of income (labor market earnings, public transfers, etc.) plays an important role, then surveys should improve the accuracy of responses to income questions. On the other hand, if informal resources account for the weak relationship, then surveys must do a better job of collecting information on informal sources of support.

## **VI. Conclusions**

We have shown that hardship decreases monotonically across quintiles of the income distribution for our sample of current and former welfare recipients. Those in the bottom quintile of disposable income are 18 percent more likely to experience hardship than those in the second quintile; for average disposable income over the panel, those in the bottom quintile are 25 percent more likely to experience hardships than those in the second quintile. Regression estimates suggest that doubling current income is associated with a 3.3 percentage point decrease in the likelihood of experiencing a hardship—a drop of about 10 percent.

After conditioning on average income over the panel, there is little evidence of a relationship between current income and hardship, although there is a significant relationship between average income and hardship. Models that include individual fixed effects indicate that the relationship between transitory income and hardship is weak, which is consistent with ethnographic research suggesting that informal resources play an important role in helping disadvantaged families make ends meet. Other observable factors, such as mental health disorders and having a checking account, are strongly associated with the risk of hardship. A

family meeting the diagnostic screening criteria for a mental health disorder is about 10 percentage points more likely to experience material hardship than other comparable families.

As a single measure, income provides a useful, albeit imperfect, indicator of which families face the greatest risk of hardship; it is a practical measure to use for eligibility for transfer programs that aim to prevent material hardship. However, welfare agencies, training programs, and other service providers should consider gathering information on other observable characteristics which we have shown can identify those families at high risk of experiencing material hardship.

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## **Data Appendix**

### **A. Additional Information on the Women's Employment Study (WES)**

#### *Nonresponse*

For a panel study of this length, the WES has very high response rates at each of the five waves: 86 percent, 92 percent, 91 percent, 91 percent, and 93 percent, respectively. The Wave 5 (2003) sample size, 536 observations, is 71 percent of the Wave 1 (1997) sample of 753 observations. For a discussion of attrition in the sample, see Cadena and Pape (2006).

#### *Underreporting*

To examine the extent of underreporting of transfer income, we first compare respondents' self-reported receipt of welfare and Food Stamp benefits in the month prior to an interview with administrative records of the receipt of these benefits. In 1997, only 5.1 percent of WES respondents who received TANF according to administrative records reported receiving no benefits and 4.3 percent of those who received Food Stamps reported no receipt. These omission rates fell over the course of the panel. By the fifth wave, the omission rates for TANF and Food Stamps were 0.9 and 2.2 percent, respectively. These rates are much smaller than those found in national surveys including the SIPP and CPS (Meyer and Sullivan, 2003).

### **B. Variable Definitions and Notes**

*Measures of Income:* All income measures are adjusted for inflation and reported in constant 2003 dollars. We use the equivalence scale recommended by Citro and Michael—(number of adults + number of children\*0.7)<sup>0.7</sup>—and standardize this scale to reflect a family with one adult and two children. Correlations between the different income measures are presented in Table A1.

*Disposable Income:* This is an annualized measure based on the respondent's self reported income for the month prior to the interview from the following sources: own earnings, earnings of other household members, cash welfare benefits (TANF), Food Stamps, child support, Social Security (SSDI) and Supplemental Security Income (SSI), unemployment insurance/workers' compensation, transfers from friends and family, and income from other sources, minus taxes and plus tax credits (calculated using NBER's Taxsim and annualized money income).

*Disposable Income (Imputed):* This income measure subtracts from disposable income the respondent's reported value of Food Stamps and TANF. We then add total TANF dollars received based on administrative data available for each month. We also add a regression predicted measure of Food Stamps because we observe Food Stamps receipt for the entire panel, but we only observe dollars of Food Stamps received in the administrative records for Waves 4 and 5 (2001 and 2003, respectively). We first regress the dollar amount of Food Stamps received on annualized family money income, number of children in the household, number of individuals in the household, and a quadratic in age, using Waves 4 and 5 administrative data. Using estimates from this regression, we predict a value of Food Stamps for each month in Waves 1 through 3 (1997 through 1999) that, according to the Food Stamps administrative records, the respondent received Food Stamps.

We also impute earnings for each respondent who reports working. This measure subtracts own earnings, calculated from a single month, and then adds an imputed a value of earnings based on reported earnings at the closest interview for months worked in the 12 months prior to the respondent's interview. This measure takes advantage of self-reported data on employment status for each month over the entire panel, rather than assuming that earnings are constant each month and equal to the earnings reported for the month prior to the interview.

*Money Income:* Money income is based on the U.S. Census Bureau's definition of money income, and includes income from the following sources: the respondent's self reported own earnings, earnings from other household members for married respondents (other household member earnings are ignored for non-married respondents), cash welfare benefits, Food Stamps, unemployment insurance/workers' compensation, Social Security and SSI, and child support payments.

*Average Income:* For all income measures, average income is calculated as the average of current income over all waves of the panel for each respondent. Only respondents who participated in at least three waves are included in our analyses. Thus, the average is over 3 to 5 observations of income spanning up to 79 months.

*Hardships:* For the first interview, all hardships were measured over the 12 months prior to the interview. In waves 2 through 5, hardships were measured over the period between interviews. Correlations between the different hardship measures are presented in Table A2. All hardship

measures, except for food insufficiency, are based on an affirmative response to a single question as shown below.

*Food Insufficiency:* A respondent is coded as experiencing food insufficiency according to her answer to the question “Which of the following best describes the amount of food your household has to eat - enough to eat, sometimes not enough to eat, or often not enough to eat?” Respondents who answered “sometimes not enough” or “often not enough” were designated as food insufficient.

*Utilities Shut Off:* “Has your gas or electricity been turned off at any time in the last year/since [the last interview date] because you couldn’t afford to pay the bill.”

*Evicted:* “Have you been evicted in the last year/since [the last interview date]?”

*Homeless:* “Have you ever been homeless in the last year/since [the last interview date]?”

*Can’t Afford Doctor:* “Was there any time in the last year/since [the last interview date] that you needed to see a doctor or dentist but could not afford to go?” Respondents were only asked this question in Waves 3 through 5.

*Phone Turned Off:* “Has your phone been disconnected, or have you gone without a phone at any time in the last year/since [the last interview date] because you could not afford to pay the bill?” Respondents were only asked this question in Waves 3 through 5.

*Can’t Afford Clothing:* “Did you or your children go without proper winter clothing at any time in the last year/since [the last interview date] because you could not afford it?” Respondents were only asked this question in Waves 3 through 5.

*Education:* Those with a GED are included with the high school graduate category.

*Number of children in household:* This includes all care-given children, both related and unrelated, in the respondent’s household.

*Mental health:* A respondent is coded as having a mental health disorder if she meets the diagnostic screening criteria for major depression, alcohol dependence, or post-traumatic stress disorder in the 12 months prior to the interview. The measurement and scoring of disorders is based on criteria from the revised third edition of the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R).

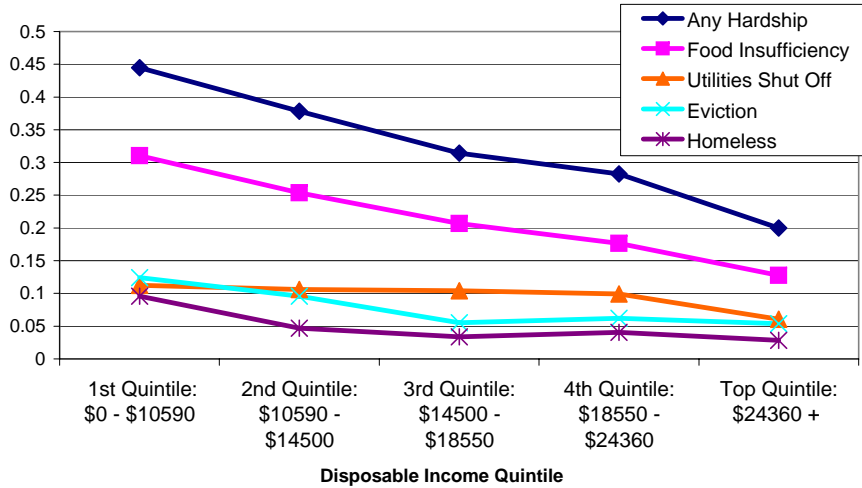
*Illegal drug use:* This indicator is equal to one if the respondent reports any illegal drug use in the 12 months prior to the interview.

*Change in marital/cohabiting status:* A respondent is coded as losing a partner if she reported living with her husband or cohabiting with a romantic partner at the prior interview but is not living with her husband or partner at the current interview. A respondent is considered to have gained a husband or romantic cohabiter if she did not report living with such a person in the previous interview, and reports living with a husband or cohabiting at the current interview.

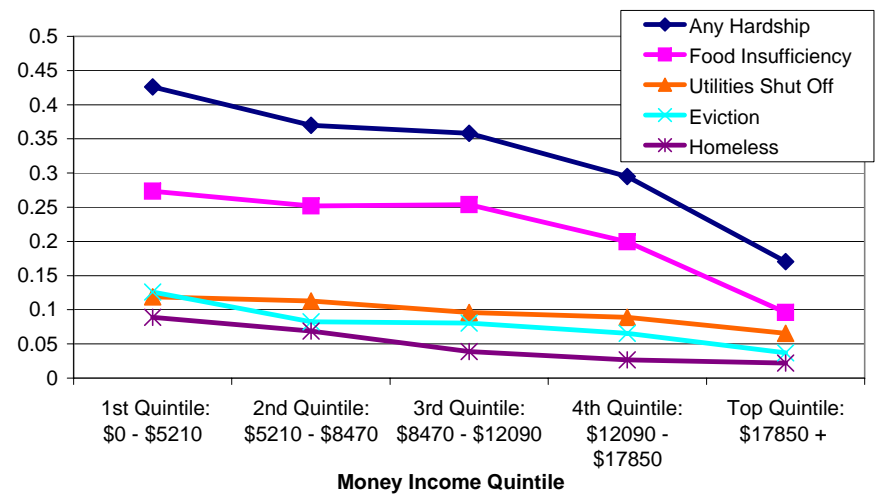
*Change in health status:* A respondent is coded as having experienced a change in health status if she did not have a health barrier at the last interview, but does at the current interview. Having a health barrier is defined by having an age-specific physical limitation and self reported fair/poor health.

*Access to credit:* We consider a respondent to have access to credit if she answers “yes possibly,” “yes probably,” or “yes definitely” to the question “Is there someone you could turn to if you needed to borrow several hundred dollars for an emergency?” This question is not asked in the third wave of WES. We also constructed a stricter definition--whether the respondent answered “yes probably” or “yes definitely”—but results were similar.

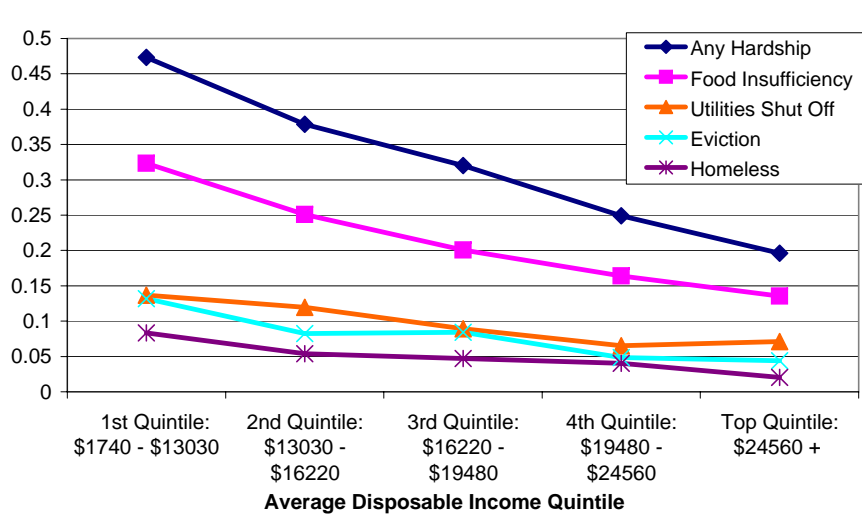
**Figure 1: Fraction Experiencing Hardships By Quintile of Disposable Income**



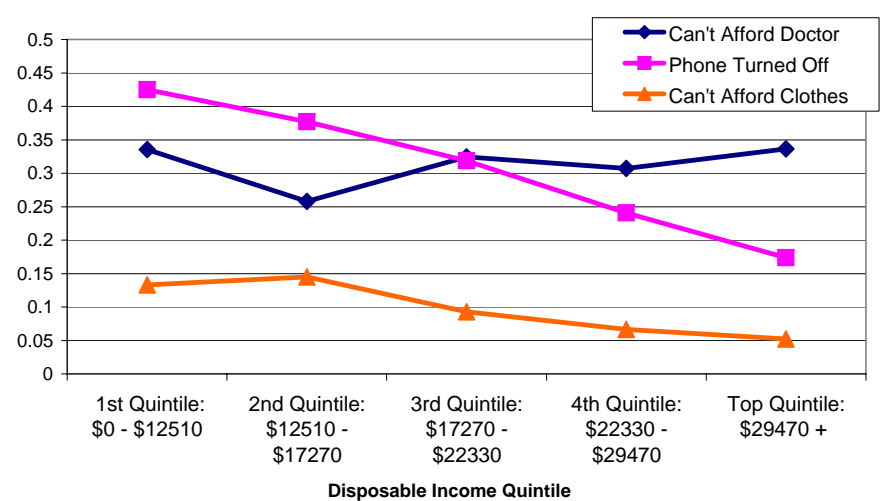
**Figure 2: Fraction Experiencing Hardships By Quintile of Money Income**



**Figure 3: Fraction Experiencing Hardships By Quintile of Average Disposable Income**



**Figure 4: Fraction Experiencing Hardships By Quintile of Disposable Income**



Source: Women's Employment Study (WES), Wave 1 - Wave 5 (1997, 1998, 1999, 2001, 2003)  
 Notes: Dollar figures are in constant 2003 \$. See Data Appendix for more details.

**Table 1: Descriptive Statistics**

	All (1)	Any Hardship (2)	No Hardship (3)
<b>Hardships</b>			
Any Hardship	0.32	1.00	0
Food Insufficiency	0.22	0.66	0
Utilities Shut Off	0.10	0.30	0
Evicted	0.08	0.24	0
Homeless	0.05	0.15	0
Number of Hardships (out of 4)	0.44	1.35	0
<b>Income Measures</b>			
Disposable Income	\$18,624	\$16,171	\$19,800 **
Disposable Income (Imputed)	17,260	15,402	18,151 **
Money Income	12,549	9,950	13,795 **
<b>Family Characteristics</b>			
Age	32.5	32.5	32.5
Race = African American	0.55	0.55	0.55
Less than HS Diploma	0.27	0.38	0.22 **
HS/GED Only	0.38	0.36	0.38
Greater than HS	0.35	0.26	0.40 **
Number of Children in HH	2.35	2.45	2.30 **
Any Mental Health Disorder	0.29	0.43	0.22 **
Any Drug Use	0.17	0.25	0.13 **
Married	0.16	0.11	0.18 **
Cohabiting	0.19	0.18	0.19
Not Married or Cohabiting	0.66	0.72	0.63 **
Employed	0.65	0.56	0.68 **
Poor Health	0.23	0.31	0.19 **
Owns Car	0.78	0.66	0.83 **
Owns Home	0.24	0.17	0.28 **
Access to Credit (N = 2355)	0.74	0.60	0.80 **
Checking Account (N = 2348)	0.67	0.54	0.73 **
Observations	2978	965	2013

*Source:* Women's Employment Study (WES), Wave 1 - Wave 5 (1997, 1998, 1999, 2001, 2003)

*Notes:* \*  $p < 0.05$ ; \*\*  $p < 0.01$  denote significance of a test of the difference in means between respondents who experienced a hardship and respondents who experienced no hardships. All income values are reported in constant 2003 dollars and are adjusted for family size, standardized to a family with one adult and two children. Noted differences in sample size are due to missing values for some variables. See Data Appendix for more details.

**Table 2: Trends in Hardship and Income**

	1997	1998	1999	2001	2003	Change
<b>Hardship Measures</b>						2003 - 1997
Any Hardship	0.38	0.33	0.33	0.27	0.31	-0.06
Food Insufficiency	0.25	0.23	0.23	0.17	0.19	-0.06
Utilities Shut Off	0.09	0.10	0.09	0.08	0.12	0.03
Evicted	0.09	0.07	0.08	0.08	0.07	-0.02
Homeless	0.07	0.04	0.04	0.04	0.06	-0.01
Number of Hardships (out of 4)	0.51	0.44	0.44	0.36	0.43	-0.07
<b>Income Measures</b>						2003/1997
Disposable Income	\$15,300	\$17,002	\$18,503	\$19,738	\$20,259	1.32
Food Stamps	\$2,127	\$1,736	\$1,252	\$1,308	\$1,373	0.65
TANF	\$2,889	\$1,502	\$949	\$912	\$747	0.26
Earnings	\$5,559	\$7,198	\$8,156	\$8,808	\$8,813	1.59
Disposable Income (Imputed)	\$15,239	\$17,481	\$18,965	\$20,047	\$20,886	1.37
Money Income	\$10,167	\$9,894	\$12,859	\$15,118	\$15,189	1.49
Observations	629	619	626	570	534	

Source: WES, 1997-2003.

Notes: See notes to Table 1.

**Table 3: Probit Estimates for Disposable Income**

Dependent Variable: Any Hardship (Marginal Effects Reported)

	(1)	(2)	(3)	(4)	(5)	(6)
Log Disposable Income	-0.074 (0.018)**	-0.033 (0.013)**	-0.029 (0.013)*	-0.018 (0.011)	-0.018 (0.012)	-0.004 (0.016)
Average Log Disposable Income					-0.144 (0.039)**	-0.110 (0.046)*
Variance of Log Disposable Income					-0.010 (0.005)	-0.005 (0.007)
Age		0.008 (0.011)	0.010 (0.012)	0.009 (0.011)	0.008 (0.011)	0.016 (0.014)
Age Squared		-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
No High School Degree		0.144 (0.033)**	0.127 (0.036)**	0.138 (0.035)**	0.115 (0.034)**	0.104 (0.039)**
High School Grad		0.065 (0.028)*	0.059 (0.030)*	0.059 (0.029)*	0.052 (0.028)	0.039 (0.033)
Race = African American		-0.058 (0.026)*	-0.072 (0.027)**	-0.060 (0.027)*	-0.074 (0.027)**	-0.088 (0.030)**
Number of Children		0.022 (0.008)*	0.020 (0.009)*	0.023 (0.009)*	0.014 (0.009)	0.015 (0.010)
Married		-0.071 (0.033)*	-0.057 (0.034)	-0.093 (0.033)**	-0.066 (0.033)*	-0.076 (0.036)*
Cohabiting		-0.036 (0.028)	-0.030 (0.031)	-0.036 (0.030)	-0.031 (0.029)	-0.011 (0.035)
Health Status		0.085 (0.027)**	0.071 (0.028)*	0.086 (0.029)**	0.072 (0.027)**	0.059 (0.032)
Mental Health Disorder		0.181 (0.023)**	0.183 (0.025)**	0.164 (0.025)**	0.186 (0.023)**	0.166 (0.028)**
Illegal Drug Use		0.139 (0.030)**	0.132 (0.032)**	0.153 (0.034)**	0.135 (0.029)**	0.151 (0.040)**
Own a Car		-0.128 (0.028)**	-0.130 (0.032)**	-0.106 (0.030)**	-0.111 (0.028)**	-0.090 (0.036)*
Homeowner		-0.068 (0.028)*	-0.066 (0.028)*	-0.075 (0.029)**	-0.062 (0.028)*	-0.070 (0.030)*
Have a Checking Account			-0.090 (0.025)**			-0.063 (0.029)*
Have Access to Credit				-0.181 (0.026)**		-0.171 (0.029)**
Observations	2978	2978	2348	2355	2978	1726

Source: WES 1997-2003

Notes: All models include year fixed effects. Standard errors in parentheses allow for within household dependence; \* significant at 5%; \*\* significant at 1%. See Data Appendix for more details.

**Table 4: Individual Fixed Effects Estimates**

Dependent Variable: Any Hardship

	(1)	(2)	(3)	(4)
Log Disposable Income	-0.028 (0.011)*	-0.019 (0.011)	-0.014 (0.012)	0.002 (0.014)
Age		0.004 (0.016)	0.017 (0.020)	0.029 (0.026)
Age Squared		-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
No High School Degree		0.068 (0.055)	0.030 (0.064)	0.072 (0.078)
High School Grad		0.007 (0.032)	0.012 (0.037)	-0.002 (0.045)
Number of Children		0.009 (0.011)	0.010 (0.013)	0.018 (0.017)
Married		-0.058 (0.038)	-0.094 (0.045)*	-0.116 (0.054)*
Cohabiting		-0.068 (0.027)*	-0.051 (0.031)	-0.061 (0.040)
Health Status		0.011 (0.025)	-0.016 (0.029)	-0.033 (0.036)
Mental Health Disorder		0.107 (0.021)**	0.101 (0.024)**	0.085 (0.030)**
Illegal Drug Use		0.036 (0.027)	0.029 (0.031)	0.032 (0.039)
Own a Car		-0.054 (0.025)*	-0.059 (0.031)	-0.037 (0.041)
Homeowner		-0.017 (0.027)	0.008 (0.031)	-0.025 (0.037)
Have a Checking Account			-0.098 (0.027)**	-0.110 (0.034)**
Have Access to Credit				-0.016 (0.031)
Observations	2978	2978	2348	1726

*Source:* WES 1997-2003.

*Notes:* All models include year fixed effects. Standard errors in parentheses allow for within household dependence; \* significant at 5%; \*\* significant at 1%. See Data Appendix for more details.

**Table 5: Probit Estimates for Other Measures of Income**  
 Dependent Variable: Any Hardship (Marginal Effects Reported)

	Money Income			Imputed Disposable Income		
	(1)	(2)	(3)	(4)	(5)	(6)
Log Income	-0.026 (0.005)**	-0.013 (0.005)**	-0.001 (0.007)	-0.084 (0.018)**	-0.033 (0.016)*	0.001 (0.025)
Average Log Income			-0.062 (0.032)			-0.119 (0.059)*
Age		0.009 (0.011)	0.016 (0.014)		0.009 (0.011)	0.017 (0.014)
Age Squared		-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)	-0.000 (0.000)
No High School Degree		0.147 (0.033)**	0.122 (0.040)**		0.147 (0.033)**	0.108 (0.039)**
High School Grad		0.066 (0.028)*	0.046 (0.033)		0.065 (0.028)*	0.038 (0.033)
Race = African American		-0.054 (0.026)*	-0.078 (0.030)**		-0.053 (0.026)*	-0.083 (0.030)**
Number of Children		0.023 (0.008)**	0.017 (0.010)		0.022 (0.009)*	0.017 (0.010)
Married		-0.067 (0.033)*	-0.063 (0.038)		-0.074 (0.033)*	-0.079 (0.036)*
Cohabiting		-0.047 (0.028)	-0.018 (0.035)		-0.041 (0.028)	-0.012 (0.035)
Health Status		0.084 (0.027)**	0.065 (0.032)*		0.086 (0.027)**	0.061 (0.032)
Mental Health Disorder		0.182 (0.023)**	0.160 (0.028)**		0.182 (0.023)**	0.166 (0.028)**
Illegal Drug Use		0.139 (0.030)**	0.155 (0.040)**		0.141 (0.030)**	0.151 (0.040)**
Own a Car		-0.131 (0.028)**	-0.099 (0.037)**		-0.130 (0.028)**	-0.096 (0.037)**
Homeowner		-0.068 (0.028)*	-0.070 (0.030)*		-0.068 (0.028)*	-0.068 (0.030)*
Have a Checking Account			-0.068 (0.030)*			-0.064 (0.030)*
Have Access to Credit			-0.173 (0.029)**			-0.171 (0.029)**
Observations	2978	2978	1726	2978	2978	1726

Source: WES 1997-2003.

Notes: Imputed disposable income uses estimates of TANF and Food Stamps from state administrative records instead of from self-reports. See Data Appendix for more details.

**Table 6: Other Measures of Hardship**

Dependent Variable: Model:	# of Hardships		Food Insufficiency		Utilities Shut Off		Eviction		Homelessness	
	OLS	FE	Probit	FE	Probit	FE	Probit	FE	Probit	FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log Disposable Income	-0.022 (0.020)	-0.035 (0.018)	-0.025 (0.012)*	-0.028 (0.011)**	0.003 (0.007)	-0.004 (0.009)	0.001 (0.006)	0.001 (0.006)	-0.001 (0.003)	-0.005 (0.006)
Average Log Disposable Income	-0.137 (0.057)*		-0.067 (0.032)*		-0.040 (0.019)*		-0.025 (0.016)		-0.009 (0.009)	
Variance of Log Disposable Income	-0.007 (0.009)		-0.009 (0.005)		0.001 (0.002)		-0.002 (0.002)		-0.000 (0.001)	
Age	0.012 (0.015)	0.016 (0.014)	0.019 (0.009)*	0.021 (0.008)*	-0.005 (0.007)	-0.005 (0.007)	-0.004 (0.004)	-0.008 (0.005)	0.009 (0.003)**	0.007 (0.004)
Age Squared	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)**	-0.000 (0.000)*
No High School Degree	0.174 (0.049)**	0.212 (0.048)**	0.090 (0.030)**	0.098 (0.026)**	0.026 (0.019)	0.037 (0.018)*	0.031 (0.016)*	0.046 (0.015)**	0.016 (0.010)	0.029 (0.014)*
High School Grad	0.040 (0.035)	0.050 (0.034)	0.040 (0.025)	0.033 (0.020)	0.008 (0.015)	0.005 (0.014)	0.009 (0.013)	0.012 (0.012)	-0.003 (0.007)	-0.001 (0.009)
Race = African American	-0.068 (0.037)		-0.037 (0.023)		-0.033 (0.013)*		-0.020 (0.011)		0.009 (0.006)	
Number of Children	0.012 (0.013)	0.013 (0.014)	0.013 (0.008)	0.014 (0.008)	0.009 (0.004)	0.007 (0.005)	-0.003 (0.004)	-0.003 (0.004)	-0.004 (0.002)	-0.005 (0.004)
Married	-0.078 (0.042)	-0.071 (0.037)	-0.053 (0.027)	-0.039 (0.024)	-0.019 (0.016)	-0.016 (0.017)	-0.014 (0.015)	0.005 (0.014)	-0.015 (0.006)**	-0.019 (0.007)**
Cohabiting	-0.035 (0.043)	-0.042 (0.040)	-0.040 (0.023)	-0.048 (0.022)*	-0.001 (0.016)	-0.002 (0.017)	0.004 (0.013)	0.013 (0.015)	-0.000 (0.007)	-0.005 (0.011)
Health Status	0.166 (0.043)**	0.146 (0.039)**	0.080 (0.023)**	0.070 (0.021)**	0.014 (0.014)	0.018 (0.015)	0.025 (0.012)*	0.031 (0.014)*	0.025 (0.008)**	0.034 (0.013)**
Mental Health Disorder	0.291 (0.037)**	0.246 (0.033)**	0.142 (0.021)**	0.120 (0.019)**	0.051 (0.013)**	0.050 (0.014)**	0.028 (0.011)**	0.026 (0.012)*	0.047 (0.010)**	0.060 (0.011)**
Illegal Drug Use	0.243 (0.047)**	0.172 (0.040)**	0.095 (0.026)**	0.065 (0.022)**	0.046 (0.017)**	0.041 (0.018)*	0.051 (0.014)**	0.052 (0.016)**	0.019 (0.009)*	0.032 (0.014)*
Own a Car	-0.189 (0.042)**	-0.166 (0.042)**	-0.065 (0.024)**	-0.055 (0.022)*	-0.029 (0.016)	-0.032 (0.017)	-0.033 (0.012)**	-0.048 (0.016)**	-0.023 (0.009)**	-0.038 (0.014)**
Homeowner	-0.078 (0.034)*	-0.078 (0.032)*	0.008 (0.025)	0.017 (0.020)	-0.013 (0.016)	-0.006 (0.015)	-0.063 (0.009)**	-0.066 (0.011)**	-0.019 (0.005)**	-0.021 (0.007)**
Observations	2978	2978	2978	2978	2978	2978	2978	2978	2978	2978

Source: WES 1997-2003.

Notes: See notes to Table 4.

**Table A1: Correlations between Income Measures**

	Current Income Measures			Average Income Measures		
	Disposable Income	Disposable Income (Imputed)	Money Income	Disposable Income	Disposable Income (Imputed)	Money Income
<b>Current Income Measures</b>						
Disposable Income	1	0.59028	0.52951	0.48174	0.43079	0.39149
Disposable Income (Imputed)		1	0.37151	0.44944	0.50198	0.39152
Money Income			1	0.30754	0.28518	0.39273
<b>Average Income Measures</b>						
Disposable Income				1	0.91623	0.76897
Disposable Income (Imputed)					1	0.75804
Money Income						1

**Table A2: Correlations between Hardship Measures**

	Food Insufficiency	Utilities Shut Off	Evicted	Homeless
Food Insufficiency	1	0.14459	0.12123	0.11947
Utilities Shut Off		1	0.18451	0.12611
Evicted			1	0.31605
Homeless				1