

# Career Paths of the Marginally Employed - Evidence From Welfare Reform

Ariella Kahn-Lang \*

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## Abstract

I analyze the career effects of inducing employment among single mothers through welfare reform. I compare the career trajectories of a cohort of women who were single mothers in 1984, before major welfare reform policy changes, to a cohort of women who were single mothers in 1998. Women in the 1998 cohort have higher employment rates than women in the 1984 cohort, but the effect is not sustained once children age out of benefit eligibility. I develop a likelihood weighting technique with which I identify the single mothers who were most likely to have been induced into employment (marginal employees). I find that 24 percent of marginal employees reach \$25,000 annual earnings and only five percent reach \$40,000, suggesting minimal career growth. However, wage growth varies substantially based on occupation.

## 1 Introduction

Most research on employment incentivizing policies evaluates how effective the policy is at inducing short-run employment among the target population. However, to evaluate

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\*Kahn-Lang: Mathematica Policy Research. AKahn-Lang@mathematica-mpr.com. I am indebted to Jeffrey Liebman for his substantial guidance and mentorship on this project. I also thank Christopher Avery, Edward Glaeser, Ryan Hill, Shulamit Kahn, Lawrence Katz, Kevin Lang, Jonathan Roth, Amanda Pallais, Adrienne Sabety, and participants in the Harvard Labor Workshop for their helpful comments.

the full impact of these policies both on the target population and the costs to the state, it is crucial to also consider the long term impacts. In this paper, I estimate the long term impacts of policy changes in the late 1980s and early 1990s on the large group of employees induced into employment, the marginal employees.

In the late 1980s and early 1990s, a collection of changes in benefits and tax structures designed to transition people from direct aid into employment. I refer to these changes cumulatively as “welfare reform.” Due to low income thresholds and dependent requirements, the changes primarily impacted single parent households, which are overwhelmingly headed by single mothers. The changes included a huge expansion of the Earned Income Tax Credit (EITC), which supplements earned income for recipients. This was coupled with a transition of direct aid programs from Aid to Families with Dependent Children (AFDC) to Temporary Assistance for Needy Families (TANF), which restricted the duration of benefit eligibility and substantially restricted access. Medicaid expansions also gave more low income families access to benefits. There were also substantial expansions of job training programs, affordable childcare options, and food stamps. Consistent with the intended effects of these changes, labor market participation of single mothers increased from 54 percent in 1984 to 71 percent in 2002.

I use the natural experiment caused by these reforms to estimate the long-term impacts of employment inducing policies. I examine whether single mothers induced into employment by the policy changes experienced sustained employment and earnings growth. If marginal employees are induced into “stepping stone” jobs, they will develop human capital and familiarity with employment, thus increasing wages and sustained labor market attachment (Jovanovic and Nyarko, 1997). In contrast, if marginal employees are induced into “dead end” jobs which require few skills and do not increase human capital, there will be no “career effects” of marginal employment and they will not experience wage growth or sustained labor market attachment. Determining whether marginal employees obtain dead-end or stepping stone jobs is crucial to understanding the lasting impacts of employment inducing policies and therefore the full impact of policies.

To do this, I combine data from the 1984 and 1996 panels of the Survey of Income and Program Participation (SIPP) with annual data from the Social Security Administration (SSA). This unique dataset allows me to identify single mothers, and to follow their earnings for the study period. I focus on two cohorts of women who were single mothers in 1984 and in 1998. I follow each cohort for 10 years, 1984-1993 and 1998-2007, respectively. The 1984 cohort was largely unaffected by welfare reform in the period studied. In contrast, the 1998 cohort was exposed to all of the policy reforms.

I first look at whether there is a sustained impact of obtaining marginal employment on employment once the changes to benefits which induced employment are no longer relevant. For most benefits associated with welfare reform, eligibility expires when the youngest child turns 18<sup>1</sup>. Due to intertemporal substitution and wealth effects, the lifecycle model of earnings predicts employment for single mothers will drop below counterfactual levels once eligibility expires, if there are no sustained wage effects. In contrast, if marginal employment has career effects, there may actually be sustained employment effects beyond eligibility driven by increased human capital and thus increased wages and by increased labor market attachment due to familiarity and reduced job search costs.

Comparing the employment patterns of single mothers in the 1998 and the 1984 cohorts, I find that single mothers with no college and a child under age 18, and therefore generally eligible for benefits, have higher employment rates in the 1998 cohort than in the 1984 cohort. However, among those with an oldest child who is 18 years or older, the employment rates of the 1998 cohort dip below the rate among the 1984 cohort. Therefore there are no sustained employment effects beyond eligibility. I note that in the 1984 cohort, employment increases steadily with the age of the youngest child. Therefore, it appears that the lack of a sustained impact on labor market participation is largely driven by the fact that many women who were induced

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<sup>1</sup>One exception to this is that if a child is under 24 and enrolled full time in school, parents are still eligible for the EITC.

into employment through welfare reform policies simply entered the labor force earlier than they otherwise would have in the absence of these policies. Therefore, only some of the impact, if any, is driven by labor market drop outs.

Although there is no evidence of sustained labor market attachment, marginal employees may experience wage growth during the period of eligibility. To evaluate this, I analyze both overall earnings patterns and at earning patterns by age of youngest child. I find no evidence that welfare reform policies increased the share of single mothers earnings at least \$40,000, a level above which they would no longer receive benefits, or at least \$25,000, a level suggesting stable employment.

While there are no aggregate impacts on sustained labor market attachment or wage growth, this is a setting in which there is likely substantial treatment effect heterogeneity. If policies shifted the labor supply curve right, this likely led to decreased wages for some single mothers. Some marginal employees may have experienced wage growth but it was is offset by other workers earning less. Wage decreases may also have deterred potential later labor market entrance. To look for heterogeneity in treatment effects, I use the treatment effects framework of Imbens and Angrist (1994) with marginal employment as the treatment and welfare reform the instrument for treatment. Thus marginal employees are the compliers, since they were induced into employment by welfare reform.

I develop a technique I term “likelihood weighting” in which I estimate the probability that each single mother in the 1998 cohort was a complier. I first use probit to estimate the likelihood that each sample member worked in the cohort base years, 1984 or 1998, separately, based on demographics and work history. From this, I estimate the likelihood that a given single mother would have worked in 1984 ( $P_{1984}$ ) and similarly in 1998 ( $P_{1998}$ ). I then define the likelihood weight for each single mother in the 1998 cohort who was working in the base year (1998) as  $1 - \frac{P_{1984}}{P_{1998}}$ . To estimate outcomes for compliers, I weight the outcomes of single mothers working in the base year by the associated likelihood weights. This reduces bias due to selection, and leads to unbiased estimates if compliers and always takers have equivalent outcomes conditional on

observables. I describe the likelihood weighting technique in more detail in section 6.2.

Using this approach, I analyze earnings growth among single mothers in the 1998 cohort who were marginal employees in 1998 (compliers). I find that only a small portion of compliers realized earnings. Although their labor market participation was largely sustained, only a small share of compliers reached earnings representing self sufficiency. Only 24 percent of compliers were earning at least \$25,000 and only five percent were earnings at least \$40,000 by 2007 - ten years after the base year of marginal employment.

Using the likelihood weighting technique, I find that the five most common occupations obtained by compliers were service occupations, sales, “operators, fabricators and laborers,” “administrative support occupations (other),” and “secretaries, typists and information clerks.” Performing the analysis separately for each of these occupations, I find that compliers who became “secretaries, typists, and information clerks” and other administrative occupations experienced substantially more earnings growth than those in the top three occupations.

## 2 Marginal Jobs

There is a substantial literature on the returns to labor market experience for the general population. In his seminal paper on the returns to schooling and experience, Mincer (1974) found that earnings rise significantly with experience. This result has been confirmed in more recent data in numerous studies (e.g. Lemieux, 2006, Heckman et al., 2006). There are many reasons to believe that this pattern of wage growth might not apply equally to all subgroups of employees. For example, Olivetti (2006) shows that there are differences in returns to experience between men and women. Similarly, Altonji and Pierret (2001) illustrate that the returns to experience differ for blacks and whites. One reason for heterogeneity in the returns to employment is that employees may develop human capital differently in different jobs. Jovanovic and Nyarko (1997) define some jobs as stepping-stone jobs, in which less experienced

employees develop human capital that can be applied to future positions, and therefore raise future expected earnings. Connolly and Gottschalk (2001) argue that there are also dead-end jobs, in which employees develop little or no human capital that will increase future expected wages.

Some researchers have hypothesized that low skill workers may be more likely to obtain dead-end jobs relative to stepping stone jobs (Connolly and Gottschalk, 2000, Gladden and Taber, 2009). If there is heterogeneous learning ability, individuals with lower learning ability will have lower human capital growth through experience. Empirical evidence on this is mixed. Connolly and Gottschalk (2000) find that the returns to experience are substantially smaller for the least educated. In contrast, Gladden and Taber (2009) estimate that wage growth among low skill workers is at least as high as it is for medium skill workers.

In this paper, I focus on the subgroup of the population who are induced into employment through the changing structure of government benefits and taxes. These marginal employees are likely to have very different career trajectories and wage profiles than the average worker. The majority of research on the effect of employment on marginal employees has focused on the impact of temporary job placements. Autor and Houseman (2006) look at welfare-to-work programs in Michigan. They find that placing welfare recipients into temporary jobs improves their likelihood of escaping poverty in the short term, but they find no long term effects. They do find persistent effects of placing welfare recipients into direct-hire jobs. De Graaf-Zijl et al. (2011) similarly find that there is no long term impact of obtaining temporary employment during an unemployment spell. In contrast, Heinrich et al. (2005) find substantial long term impacts of temporary employment on long term wage growth for welfare recipients. Booth et al. (2002) also find that women who start fixed-term temporary work contracts experience career growth and eventually catch up to their peers.

Some studies have looked directly at employees induced into employment through changes in social security net programs. Card et al. (2001) estimates that welfare leavers induced into employment through the “Self Sufficiency Program” in Canada

experienced wage growth rates consistent with comparable workers. Similarly, Lydon and Walker (2005) find that wage growth among recipients of the Working Families Tax Credit in the UK exceeded previous wage growth rates. Neumark and Shirley (2017) use data from the Panel Study of Income Dynamics to investigate the impacts of exposure to the EITC on earnings at age 40. They find some evidence of positive impact on earnings but are substantially limited by a small sample size. Their method also does not differentiate effects by when EITC exposure occurred.

In the paper that is the most similar to mine, Dahl et al. (2009) analyze the one, three and five year earnings growth rates of single mothers starting in 1997, immediately following the EITC expansion. Dahl et al. take advantage of the fact that the EITC expansions from 1994-1997 were substantially greater for single mothers with two or more children than for single mothers with only one child. They therefore use a difference-in-differences approach, comparing changes in earnings for single mothers with only one child to those with two or more. My study differs from this study in a number of ways. First, I focus specifically on whether labor market attachment from marginal jobs extends beyond eligibility for the programs which induced employment. Second, I use statistical techniques to directly identify the earnings and employment trajectories of single mothers most likely to have been induced into marginal employment. This allows me to paint a more complete picture of the long-term earnings associated with marginal jobs. This also allows me to distinguish between earnings growth among compliers and delayed impacts of the EITC. I also use the cohort of women who were single mothers in 1984 as a comparison.

### **3 The Welfare Reforms of the late 1980s and early 1990s**

Between the mid 1980s and 1990s, the US tax and welfare system underwent dramatic changes designed to incentivize low income parents, especially single mothers, to work.

This was widely believed to be prompted by an increasing public concern that the welfare system incentivized parents not to work and that recipients were taking advantage of the system (Grogger and Karoly, 2005). These changes were characterized broadly by a shift away from direct aid programs, such as Aid to Families with Dependent Children (AFDC), more commonly known as welfare. In replacement came huge expansions to the Earned Income Tax Credit (EITC) as well as expansions to Medicaid and job readiness programs. This section provides a brief overview of the changes. For more a more detailed description see Meyers and Rosenbaum (2000) and Grogger and Karoly (2005).

### 3.1 The Earned Income Tax Credit

The expansion of the Earned Income Tax Credit (EITC) was arguably the most impactful change to the tax system for single mothers. The EITC is a tax credit which targets low income parents of children under age 18, or under age 24 and enrolled in school full time. Figure 1 shows the EITC schedule in 1996. The EITC is characterized by three income brackets of eligibility: the phase-in, the plateau, and the phase-out range. In the phase-in range, which in 1996 was \$0 to \$6,330 for families with one child, the value of the tax credit increases proportionally to income earned. For example, in 1996, one-child families earning less than \$6,330 received an EITC tax credit equal to 34 percent of their income. One-child families earning in the plateau range, \$6,330 to \$11,610 in 1996, received the maximum EITC tax credit, which in 1996 was \$2,152. In the phase-out range, for each additional earned dollar of income, EITC tax credit decreases. For example, in 1996, for each additional dollar earned over \$11,610, the EITC tax credit decreased by 15.98 cents until the full tax credit was exhausted at \$25,078 of earned income. While all parents of qualifying children are eligible to receive benefits, because the EITC is calculated based on combined parental income, the primary beneficiaries are single mothers<sup>2</sup>.

Although the EITC was first introduced in 1975, prior to 1986 the EITC was a

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<sup>2</sup>Meyer and Rosenbaum (2001) estimate that in 1996, single parents received two thirds of EITC benefits.



relatively minor program. Figure 2 shows per capita spending on the EITC between 1980 and 2010. Between 1986 and 1996, through three major expansions, the EITC spending increased dramatically from 2 billion to 28.8 billion. First, the Tax Reform Act of 1986 increased the amounts of the EITC credits and indexed them to inflation. Second, as part of the Omnibus Budget Reconciliation Act of 1990 (OBRA), EITC credits were increased again and additional credits were introduced including credits for recipients with more than one child, supplemental credits for young children, and supplemental credits for health insurance. Lastly, under the Omnibus Budget Reconciliation Act of 1993, EITC credits were once again expanded, by 9 percent for families with one child and 69 percent for families with two or more children. This increase was phased in between 1994 and 1996 (Liebman, 1998).

### **3.2 Direct Cash Assistance**

The late 1980s and early 1990s also brought changes to the Aid to Families with Dependent Children program (AFDC), commonly known as welfare, which provided direct cash aid to parents of dependent children who were unemployed or out of the workforce. Although states were required to provide AFDC, there was an exception made through the 1962 Social Security Act which allowed states to apply for waivers to implement experimental, pilot, or demonstration projects (Grogger and Karoly, 2005). This exception was barely used prior to the late 1980s, but between 1987 and 1996 there were 111 waivers approved for 45 states. These waivers typically allowed states to implement time restrictions or work requirements (Meyer and Rosenbaum, 2001). Figure 2 shows total spending on AFDC (later TANF) between 1980 and 2010. As the number of state waivers grew, the rapid growth in AFDC spending slowed between 1992 and 1996.

In 1996 through the signing of the Personal Responsibility and Work Opportunities Reconciliation Act (PRWORA), the AFDC was replaced with Temporary Assistance for Needy Families (TANF). Consistent with its name, TANF included limits on the amount of time families could collect aid and mandatory work-related activity re-

quirements (Loprest, Schmidt and Witte, 2000). TANF also encouraged work through financial incentives, increases in child-care subsidies, and an intentional shift in culture. PRWORA also provided states with increased control over the provision of subsidies which led to increased variation among states. As Figure 2 shows, PRWORA resulted in an immediate decline in welfare spending in 1996.

### 3.3 Other Policy Changes

In addition to EITC expansion and welfare restructuring, there were many smaller scale policy changes which were part of the broader efforts to incentivize employment of single mothers during the late 1980s and early 1990s. These policies were implemented at both the state and federal level. There were also policies which were not directly intended to increase employment but likely still impacted the employment rates of single mothers. This section briefly discusses some of these changes.

Between 1988 and 1996 there were significant expansions to Medicaid, which previously had been largely limited to AFDC recipients. In 1988, the Medicare Catastrophic Coverage Act required states to extend coverage to all families with a child under age 1 living under 75 percent of the poverty line (Meyer and Rosenbaum, 2001). A series of expansions followed which expanded coverage for working mothers including adding coverage for pregnant women, increasing the income cut off for eligibility, and increasing eligibility to working families with children under 18 (Meyers and Rosenbaum, 2001). At the state level, many states AFDC waivers included changes to Medicaid eligibility. The cumulative impact of these changes can be seen in Figure 2, which shows total Medicaid spending and enrollees between 1980 and 2010. Between 1989 and 1993 spending on Medicaid more than doubled and the number of enrollees increased by 46%.

There were also substantial changes to the provision of food stamps in the 1990s which directly impacted single mothers. At the national level, large changes to the food stamps programs came as part of PRWORA in 1996. These changes included eliminating most legal immigrants from eligibility, reducing maximum benefits, and

putting restrictions on means tested eligibility (US Department of Agriculture Food and Nutrition Services). PRWORA also included a requirement that all states switch to electronic benefit systems (EBT) deliver by 2002. This was believed to be both convenient and reduce the stigma associated with using food stamps (Kornfeld, 2002). Since food stamp programs are administered at the state level, these changes were implemented at the state level. Individual states also made changes to changes to food stamps programs in the 1990s including changing food stamps eligibility through AFDC waivers and applying working or time limit restrictions (Kornfeld, 2002). Figure 2 shows the cumulative impact of these changes on food stamp spending between 1980 and 2010.

The late 1980s and early 1990s also saw increases in the availability of affordable child-care, which was seen as key for enabling employment of single mothers of children under school age. In 1988, the Family Support Act expanded state requirements to provide child-care for working parents receiving AFDC. In 1990, the Omnibus Reconciliation Act expanded this through Child Care and Development Block Grants to include low income families not receiving AFDC but who were considered at risk of going on AFDC. Funding for these programs was consolidated and combined with previous programs as part of PRWORA to create a single child-care block grant. PRWORA also included an over 25 percent increase in total funding for child-care programs. For a more detailed description of changes to child-care funding see Loprest, Schmidt and Witte (2000).

Job training programs specifically targeting beneficiaries of AFDC also expanded in the late 1980s and early 1990s. The Family Support Act of 1988 abolished the Work Incentive Program (WIN), which was considered to be ineffective. In its place, states were required to establish Job Opportunities and Basic Skills (JOBS) training programs which were to be approved by the Secretary of Health and Human Services (Institute for Poverty Research, 1988). In 1996, PRWORA included a requirement that at least 25 percent of people receiving cash assistance were working. In some cases, participating in job training met this requirement. However, PRWORA also put strict

length and eligibility restrictions on job training programs (Negrey et al., 2000).

### **3.4 The Effect of Welfare Reform on the Employment of Single Mothers**

By nearly all accounts, the policy changes that combined to make up welfare reform were highly successful at increasing the employment of single mothers. Figure 3 shows the share of single mothers, married women, and other single women who were employed from 1980 to 2010. Between 1993 and 2001 the share of single mothers who were employed jumped from 58% to 72%, in contrast to a much more gradual increase among married women and very little change among other single women.

A large literature analyzes the employment effects of individual components of welfare reform. Many studies focus directly on the employment effects of the EITC and consistently find substantial positive impacts on employment (Eissa and Liebman, 1996, Hotz and Scholz, 2003, Meyers, 2010). Most studies find that employment effects are primarily on the extensive margin, inducing single mothers into employment rather than impacting the number of hours worked (Eissa and Hoynes, 2011). However, Chetty, Friedman and Saez (2013) find a substantial impact on the intensive margin in areas with high awareness of the EITC. Hotz and Scholz (2003) and Meyers (2010) review this literature in more detail. Numerous other studies have focused directly on the impact of the changes to AFDC/TANF in the late 1980s and early 1990s. Grogger and Karoly (2005) provide an in-depth summary of much of this research, concluding that there were positive employment effects of the changes. Two studies focused on the impact of Medicaid and find small positive effects on labor market participation although Yelowitz (1995) finds effects that are statistically significant while Ham and Shore-Sheppard (2001) do not. Given the large variation in job training and childcare programs across states, the aggregate effects of these programs are more difficult to study. Therefore, studies on these programs have generally been conducted at the state

level with mixed results<sup>3</sup>.

As Figure 3 shows, the employment rates of single mothers peaked in 2001. Some research has examined whether this increase could be consistent with the impacts of welfare reform, given that the reforms were all implemented by 1997. Liebman (1998) points out that the EITC is distributed as part of the annual tax refund so many recipients may not even become aware of their additional earnings until the year after they are earned. Chetty et al. (2013) further argue that the dispersion of knowledge of the EITC is likely to take time. They show that the take up of the EITC was faster in areas with high rates of eligibility for the EITC.

A limited number of studies have tried to directly decompose the causes of the rise in labor force participation of single mothers using differential exposure to policy changes to identify the impact of individual changes. Meyer and Rosenbaum (2001) evaluate the impact of changes to the EITC, cash assistance programs, Medicaid, job training, and child-care on changes in the employment rates of single mothers between 1984 and 1996. They find that over 60 percent of the increase can be explained by the EITC. They also find a substantial impact of changes to cash assistance programs and a smaller impact of child-care programs. Surprisingly, they find non-negligible negative impacts of job training and Medicaid benefits on employment. Fang and Keane (2004) build on this using data through 2002 and adding additional policy changes such as work requirements for receiving TANF. They find that the top drivers of the employment increase were the EITC (33 percent of increase), macroeconomic changes (25 percent of increase), TANF work requirements (17 percent of increase), and TANF time limits (10 percent of increase).

For the purposes of this study, I am not able to separate the relative impacts of each of these programs. I do assume that the increase in employment was driven by policy changes, which is necessary for the assumption that that the incremental employees were marginal, in other words that they would not have been employed were it not for

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<sup>3</sup>For example, Kemple et al. (1995) and Vinokur et al. (1991) found positive impacts of pilot JOBS programs.

welfare reform.

## 4 Data

I use data from the Survey of Income and Program Participation (SIPP) matched to administrative data from the Social Security Administration (SSA). The SIPP is a household-based survey administered in a series of multi-year periods of approximately four years each. Respondents are interviewed every four months over the course of the panel period. For this paper, I compare women who were single mothers in 1984 and 1998. To do this, I use data from the 1984 and 1996 panels of the SIPP that were previously matched to data from the SSA by social security number. The matched data includes SSA data from the Summary Earnings Records (SER)<sup>4</sup> the Master Beneficiary Records (MBR) and the Supplemental Security Record (SSR). The SER data include annual earnings data for all individuals covered by Social Security from 1951 through 2007. SER annual earnings amounts are capped at the Social Security taxable maximum. This allows me to track annual earnings of all participants beyond the approximately four year range of the SIPP panel. I supplement this data with data on receipt of disability insurance from the MBR data and receipt of SSI payments from the SSR data. All results are presented in real 2007 dollars, the last year of my study period. This data is uniquely suited for this purpose because it provides the largest available sample of single mothers with data on earnings for a long enough panel. For example, my data includes a larger panel than the Panel Study of Income Dynamics (PSID) and is not subject to selective attrition. Although the IRS tax data includes a larger panel, data is not available to researchers prior to the expansions of welfare reform and only includes limited demographic information.

My sample includes single mothers who were between the ages of 18 and 59 in 1984 or 1998. These cohorts of single women were chosen so that the first cohort, 1984,

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<sup>4</sup>Matched data also includes uncapped earnings from the MEF database. I rely only on the SER data because the MEF data is not available until 1978. Further, for the purposes of this study, capped earnings do not impose any limitations to the analysis.

was largely unaffected by welfare reform and the second, 1998, was subject to all of the major changes from welfare reform. My sample period is 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort. I choose these time period for two reasons. First, the major increases in employment for single mothers started in 1994. Therefore, my sample of single women in the 1984 cohort were overwhelmingly not induced into marginal employment in the sample period. In contrast, most of the employment increase was realized by 1998. Second, the SER data was only to available to me through 2007. I chose to limit the study to women ages 18 to 59 to identify women who are likely to be out of high school but not yet retired. I define single mothers as unmarried women with at least one child under 18 years old in the household in 1984 or 1998. There are 1,860 women who were single mothers in 1984 and 3,415 women who were single mothers in 1998 in the SIPP data. I refer to these two groups as the 1984 cohort and the 1998 cohort. In some analyses I also use women who were either married mothers or childless in 1984 or 1998 for comparison.

Some single mothers in the SIPP panel were not matched to the SSA data. Participants who chose not to provide social security numbers could not be matched. Second, for some participants there was no SSA data available. This indicates no earned income or receipt of SSA benefits between 1951 and 2007. Given that I am not able to distinguish between these two reasons for respondents not matching, I exclude all unmatched respondents. Overall, 6% of single mothers in the 1984 cohort and 15% of single mothers in the 1998 cohort were not matched to social security data. The increase in non-matches was driven by differences in the methods for collecting data on social security numbers between the 1984 and 1996 surveys<sup>5</sup>.

To address potential bias in my results driven by unmatched single mothers, I compare the match rates of single mothers by demographic characteristics. Table 1 shows the match rates by age, race, and education. The share of respondents in the 1998 cohort who were not matched to SSA data was higher than the 1984 cohort in all demographic groups. I do find that younger and more educated respondents are

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<sup>5</sup>Information based on conversations with data administrators.

less like to be matched. Although these differences are statistically significant, the differences in match rates are relatively small in magnitude. In the 1984 cohort, the match rate in my sample is fairly balanced across age, education and race and there is no sign of trends or significant differences in match rates. These results suggest that bias due to systematic matching is likely small.

My matched sample of single mothers contains approximately 1,700 women in the 1984 cohort and 2,900 women in the 1998 cohort<sup>6</sup>. Table 2 provides demographic information on my sample. Single mothers in the 1984 and 1998 cohorts are very similar in race, number of children, and child ages. Single mothers in the 1998 sample are approximately one year older than those in the 1984 cohort. Consistent with national trends, single mothers in the 1998 are more likely to have at least some college education. To address this, and to focus on the group most likely to be impacted by welfare reform, I limit my sample to only single mothers with no college education in my primary analysis. However, given that this may suggest that the composition of my groups changed between cohorts, I also include results for the full sample of single mothers. I consider someone to be employed in a given year if they receive at least \$5,000<sup>7</sup> in income in that year<sup>8</sup>. I find that, consistent with increases in labor market participation in this time period, single mothers in the 1998 cohort are approximately 18 percentage points more likely to be working in 1998 than single mothers in the 1984 cohort in 1984.

To analyze the impact of welfare reform on the single mothers in my sample, I compare trends in employment for the two cohorts. Given that this is a cohort analysis, each cohort is getting older and more likely to be employed over time. This can be seen clearly in the left panel of Figure 4, which shows the share of single mothers with no college education who are employed by year relative to the cohort base year. For the

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<sup>6</sup>Sample sizes rounded to the nearest hundred for confidentiality.

<sup>7</sup>Real income defined in 2007 dollars

<sup>8</sup>An alternative would be to define employment as having positive earnings. There is a significant portion of the sample who have positive but trivial earnings, which are unlikely to represent true employment. If, instead, I define employment as any earnings, I find that employment rates were 82 percent for single mothers in the 1998 cohort and 65 percent for single mothers in the 1984 cohort.



1984 cohort, employment rose steadily from 42% in 1979 to 45% in 1984. For the 1998 cohort, employment rose much more dramatically from 38% in 1993 to 62% in 1998. The right panel of Figure 4 shows that a similar pattern existed for the full sample of single mothers, with employment rising from 46% in 1979 to 52% in 1984 for the 1984 cohort and from 49% in 1993 to 69% in 1998 for the 1998 cohort. I therefore consider the incremental employees in the 1998 cohort likely to have been induced into employment by welfare reform policies and associated labor market conditions.

Lastly, I note that there are some minor restrictions on publication of results using this data to protect confidentiality. Specifically, all calculations included in this paper represent data from at least seven respondents. In the cases where there estimates are based on fewer than seven respondents, results are redacted. These are clearly indicated in the tables.

## **5 Labor Force Attachment**

### **5.1 Theory**

One hope of policy makers in designing policies to encourage employment is that the beneficiaries will develop attachment to the labor force. This will lead beneficiaries to continue employment after the direct impact of the benefit is no longer relevant. I refer to this labor force attachment as the “career effects” of obtaining marginal employment because the labor force attachment is indicative of a marginal employee developing a career, as opposed to simply obtaining temporary employment. One method I use to estimate the career effects is to look at whether there are employment effects of welfare reform on single mothers once they are no longer eligible for family benefits such as the EITC and cash assistance.

In the absence of career effects, theory predicts that marginal jobs will lead to lower employment once eligibility for the employment-inducing program expires, compared to the counterfactual. The lifecycle model of earnings suggests a theoretical model

where an agent chooses working hours and consumption in each period to maximize lifetime utility (MaCurdy, 1981). The policies in welfare reform increased the marginal value of working both through increases in post-tax wages and decreases in the benefits for non-workers. The lifecycle model therefore predicts that there will be a negative employment effect following eligibility expiration for two reasons. First, there will be intertemporal substitution so workers will substitute from working post eligibility to working during eligibility. Second, there may be wealth effects of earning more money during eligibility which would lead to lower utility of additional earned income after eligibility.

Outside of the context of the lifecycle model, traditional theory on wages predicts that there will be negative impacts of inducing marginal employment on labor market participation after eligibility. If welfare reform shifted the labor supply curve of single mothers to the right, standard theory suggests that this will lead to lower base wages for single mothers and competing workers. There is some empirical evidence that this was the case (Leigh, 2010, Rothstein, 2008). Lastly, from a behavioral perspective, there is substantial evidence that individuals are averse to taking a perceived pay cut<sup>9</sup>. Therefore, it is possible that single mothers will be less likely to work post eligibility because it is seen as a cut in wages.

In the presence of career effects of marginal employment, theory may predict the opposite, that a program inducing employment will also increase employment after eligibility ends. In the lifecycle model, this may enter the equation in one of two ways. First, if the workers develop human capital, this may increase the value of future wages. Second, even in the absence of wage growth, there may be career effects of obtaining marginal employment. This is because there are costs to obtaining employment, for example as job search costs and start-up costs. Removing these costs may increase employment following eligibility. Similarly, marginal employment may impact future employment through simple path dependence, or a change in the perception of the labor-leisure trade off.

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<sup>9</sup>See, for example, Kahn (1997), Kaur(2018).

## 5.2 Empirical Test

To test for the presence of career effects, I compare employment patterns of the 1984 cohort of single mothers and the 1998 cohort, during and after eligibility for benefits. Most of the welfare reform policies in the late 1980s and early 1990s only impacted families with dependent children. For the EITC, a child can be a qualified dependent child if they are under 19 years at the end of the year or if they are under 24 at the end of the year and enrolled full time in school. To qualify for cash assistance through TANF a family must include a child under 19 years old. Similarly, changes to Medicaid primarily impacted families with dependent children. I therefore estimate eligibility for programs based on the age of a respondents youngest child in the base year. Of course, it is possible that some of the women in my sample gave birth to children during my sample period but after the base year, which I do not observe due to data availability. I expect this to be more likely among women with younger children in the base year.

For single mothers in the 1984 cohort, the likelihood of working increased steadily as their youngest children aged. This can be seen in the first panel of Figure 5, which shows the share of single mothers with no college working during our sample period by the age of their youngest child in each cohort. Only 33% of single mothers with no college education in the 1984 cohort were working when their youngest child was two years old compared to 73% of single mothers when their youngest child was twenty three. Employment patterns for the 1998 cohort were very different. For single mothers with no college in the 1998 cohort whose youngest child was at least two, employment rates grew very slowly with the age of their youngest children, from 58 percent at child age two to a peak of 68 percent at child age 17. Most notably, the employment rates of the 1998 cohort are higher than those the 1984 cohort at all child ages through age 19 when the two lines cross. Following eligibility, employment rates continue to rise with youngest child age for the 1984 cohort but actually start to slowly fall for the 1998 cohort.

Taking the employment patterns for the 1984 cohort to represent counterfactual employment patterns for the 1998 cohort in the absence of welfare reform suggests that

there were no career effects of marginal jobs. Employment levels for single mothers with no college whose youngest children were 19-25 in the 1998 cohort were actually lower than those for the 1984 cohort. This is consistent with theoretical predictions from a model with no career effects that welfare reform could unintentionally lower employment for women who are no longer eligible. The second panel of Figure 5 reinforces this. For the full sample of single mothers, including those with some college education who are more likely to have dependent children still in school, employment for the 1998 cohort remains higher than for the 1984 cohort through youngest child age 22.

Although these results are suggestive that there are limited, if any, career effects of obtaining marginal employment, many other factors may influence the raw trends in employment patterns. For example, impacts of mother's age and underlying economic condition may impact trends differentially in the 1984 and 1998 cohort. Therefore, I use a regression model to test for the difference in employment rates between the 1984 and 1998 cohort at each youngest child age. I estimate the following model:

$$Y_{iC} = \sum_{j=1}^{26} a_j \mathbb{1}_{C=j} + \beta_1 U_{iC} + \beta_2 O_{iC} + \gamma X_{iC} + \epsilon$$

Where  $Y$  is a dummy variable equal to one if respondent  $i$  is employed in the year that her youngest child is age  $C$ ,  $a_j$  is the coefficient on a dummy variable for the youngest child's age,  $U$  is a dummy for having a child under age 18 and being in the 1998 cohort,  $O$  is a dummy for having a youngest child age 18 or over and being in the 1998 cohort, and  $X_{iC}$  are is a vector of control variables. I control for basic demographic characteristics including race, number of children, educational attainment, and disability status. To account for mother aging with child aging, I also control for mother's age using dummies for ten year age group. To address economic conditions I control for the unemployment rate calculated by state and year. I cluster standard errors at the individual level.

If career effects are dominant for marginal jobs, I expect  $\beta_2$ , the coefficient on

having a youngest child no longer eligible for family benefits in the 1998 cohort, to be positive. Instead, I find a statistically significant negative coefficient on employment following eligibility. Column 1 of Table 3 presents the results of this regression for women with no college. Controlling for observable factors, women whose youngest child is age 18 or older are 6 percentage points less likely to work in the 1998 cohort than the 1984 cohort. This contrasts to single mothers with a child under age 18 who are ten percentage points more likely to work in the 1998 cohort than the 1984. Results for the full sample, in column 2 of Table 3, are similar. I therefore conclude that there are no sustained career effects of obtaining marginal employment, and that, in fact, policies designed to incentivise employment actually decreased employment for single mothers following eligibility.

To understand the dynamics of this more, I separate treatment effects even further by replacing child age categories in my model with individual minimum child age treatment effects. To do this I adjust the model to be:

$$Y_{iC} = \sum_{j=1}^{26} a_j \mathbb{1}_{C=j} + \sum_{k=1}^{26} \beta_k \mathbb{1}_{C=j} \mathbb{1}_{t=1998} + \gamma X_{iC} + \epsilon$$

Where  $\beta_k$  is the coefficient on a dummy variable for the youngest child's age interacted with a dummy for being in the 1998 cohort. All other variables remain the same.

The results of this regression are presented in Figure 6 which shows the coefficients on the interactions between youngest child age and being in the 1998 cohort for single mothers. Coefficients on dummies for the 1998 cohort are statistically significant for all youngest child ages under 13. The coefficients remain close to zero for youngest child ages 14-20 and then drop statistically significantly below zero. These results are consistent with descriptive evidence that there were no career effects of obtaining marginal employment. In fact, single mothers in the 1998 cohort were less likely to be employed following eligibility for family benefits than the 1984 cohort.

In the absence of career effects, I expected the employment gap between the 1984 and 1998 cohorts to fall when eligibility for family benefits expired when the youngest

child was 18. Instead, I find that the employment gap actually decreased at much earlier children's ages until it was nearly zero by age 14. One explanation for this is that welfare reform policies actually only induced employment for single mothers with children under age 14. This is plausible if the cost of working is higher for mother of young children, if, for example, they have to pay for childcare or have a personal preference to spend more time with younger children. This suggests that although there are no sustained employment effects of welfare reform post eligibility, this may be driven not only by marginal employees dropping out of the labor force following eligibility, but also by the policy inducing marginal employment among single mothers who otherwise would have entered the labor force once their children were older.

One potential concern with this analysis is that year-specific economic factors may impact trends, despite I controlling for the unemployment rate. Further, although I control for mother's age group, there may be within group impacts that I am underpowered to test because of limited sample size. To address this concern, I perform the same analysis on the population of women who are single mothers in the Current Population Survey. This analysis does not contain issues related to a cohort aging over time and allows me the power to perform the analysis at the year level. Figure 7 shows the results of this analysis. The analysis is limited to single mothers with a cohabiting youngest child under age 18 due to a lack of information on children no longer living with their mother. This chart shows clearly that the patterns prior to age 18 found in Figure 5 hold for each individual year within each cohort. This provides strong supportive evidence that the finding of no sustained labor force attachment is not driven by economic or age related factors.

Although the primary purpose of this analysis is to estimate the career impacts of marginal jobs, this analysis also provides clear and compelling evidence of the labor market impacts of welfare reform. Specifically, the fact that the increase in labor market participation of single mothers is limited only to those eligible for family benefits provides evidence that policy changes were the driving factor behind increases in employment.

## 6 Wage Path of Marginal Employees

Although the analysis above suggests that there is no sustained impact of induced employment post-eligibility, there may still be wage growth among women still eligible for benefits. Further, this analysis may obscure heterogeneity between women. Some single mothers may have experienced wage growth and increased labor market attachment, even if others dropped out once their eligibility expired. Also, by shifting the supply curve of single mothers to the right, welfare reform likely reduced base wages. Therefore, there may have been a negative impact for the group of single mothers who were not induced into marginal employment but would have entered the labor force once their children were no longer eligible. I use this section to dig deeper into the wage growth and career paths of marginal employees.

### 6.1 Wage Growth by Child Age

Given the wide range of jobs and career paths available to single mothers, it is likely that there are heterogeneous effects of obtaining marginal employment. It is possible that some jobs are “dead end” jobs, which offer little or no wage growth, and others are “stepping stone” jobs which offer employees a career path and wage growth. In this case, there may be negative impacts on employment following benefits eligibility for single mothers induced into dead end jobs but not stepping stone jobs. If enough of the marginal jobs are dead end jobs, the overall impact of obtaining a marginal job on employment following eligibility may be negative.

If single mothers who obtain stepping stone jobs experience wage growth, there may be an overall increase in the long term wages of single mothers who are employed. I assume that the single mothers who were induced into dead end jobs during eligibility for family benefits would also have entered dead end jobs if they entered employment following eligibility in the counterfactual scenario. Therefore there should be no impact of marginal employment in dead end jobs on the share of single mothers earning higher wages. For example, if all marginal dead end jobs pay under \$25,000 per year, then

there would be no impact of inducing employment into dead end jobs on the share of single mothers who make at least \$25,000 per year. If stepping stone jobs lead to wage growth, inducing marginal employment into stepping stone jobs will lead to a greater share of single mothers earning over \$25,000 per year, even following benefit eligibility.

To estimate whether marginal employees obtain stepping stone jobs, I analyze whether there was an increase in single mothers reach earnings thresholds following welfare reform. Figure 9 shows the share of single mothers earnings achieving four annual earnings thresholds in the Current Population Survey (CPS): \$5,000, \$15,000, \$25,000 and \$40,000. The first, \$5,000 represents any employment. The second, \$15,000 represents earnings firmly in the plateau range of the EITC. The third, \$25,000 represents earnings in the phase out range of the EITC. The last, \$40,000 represents earnings beyond the scope of the EITC and largely beyond eligibility for benefits associated with welfare reform. For comparison, the share of single women without children achieving these annual earnings thresholds are also included. For both the \$5,000 and \$15,000 thresholds, the share of single mothers reaching this level sharply increases between 1994 and 2001, consistent with the strong impact of welfare reform. For the \$25,000 there is a smaller but visible increase in the share of single mothers reaching this threshold during welfare reform. By the \$40,000 threshold, there is no visible change in the rate of increase or increase relative to single women. This is suggestive evidence that some marginal employees experienced limited earnings growth, but few if any achieved substantial growth to at least \$40,000.

To explore this further, I look at the share of single mothers achieving these annual earnings thresholds by the age of their youngest child. Figure 8 shows the share of single mothers with no college earning a salary of at least \$15,000, \$25,000, and \$40,000 per year in the 1984 cohort and 1998 cohort by the age of their youngest child. Similar to employment patterns, for the 1984 cohort the probability of achieving each income threshold steadily increases with child's age for the 1984 cohort. In contrast, the probability of earning at least \$15,000 or \$25,000 per year increases for the 1998 cohort until the youngest child is about 15 and then this rate plateaus. A single mother with



no college and with a child under 16 in the 1998 cohort is approximate six percentage points more likely to make \$15,000 per year and three percentage points more likely to make \$25,000 per year than her counterpart in the 1984. However, as the children age, the two rates converge and then the 1984 cohort pulls ahead and becomes even more likely to earn above \$15,000 and \$25,000. The results for earning at least \$40,000 per year show no meaningful difference between the two cohorts until the youngest child is 22 years old when the 1984 cohort starts earning more. To understand wage growth controlling for covariates, I regress earning \$25,000 on cohort before and after eligibility for benefits as described in section 4. Table 4 presents the results. Controlling for covariates, there is no statistically significant difference in the likelihood of achieving this earning threshold during eligibility. For women with no college, the point estimate on this is actually negative. There is also no statistically significant difference in the likelihood of earning \$25,000 following eligibility for either sample and the point estimates are negative.

These results suggest that the marginal jobs induced by welfare reform were overwhelmingly dead end jobs as opposed to stepping stone jobs. Taken at face value, the lower levels of earnings for the 1998 cohort following benefit eligibility suggests that there may actually have been a negative impact of welfare reform on wages. During eligibility I see a larger share of single mothers achieving \$25,000 in annual earnings. However, after controlling for covariates these results are not statistically significant and the point estimates are negative. Therefore, I argue that there was negligible, if any, impact on single mothers earning at least \$25,000.

## 6.2 Career paths

Despite the fact that there is minimal overall earnings growth among the population of marginal employees, it is possible that this obscures heterogeneity among single mothers. For example, it is possible that wages grow for some single mothers but that wages for the group are depressed overall. In this section I look in more detail into the wage paths of marginal employees. How do careers develop for marginal employees? Do

their wages grow at all? Is there any sustained labor market attachment? To answer these questions, I first have to identify who the marginal employees are. I define a marginal employee as someone who was induced into marginal employment because of the policy changes of welfare reform. Using the treatment effect framework created by Imbens and Angrist (1994), I consider employment in the base year (1984 and 1998) to be the treatment, denoted as  $D$ , and welfare reform to be the instrument for inducing employment, denoted as  $Z$ . I define compliers as women who were induced into the labor market by the welfare reform policies. Consistent with the treatment effects framework, any career impact of marginal employment that I find will only identify the local average treatment effect, or the effect of treatment on compliers. However, given that the focus of my paper is the impact of marginal employment, not overall employment, I see this as an advantage not a disadvantage.

## Likelihood Weighting

To identify the career paths of compliers, I develop a method of weighting employment outcomes for single mothers to match the distribution of compliers which I call “likelihood weighting”. This weights career outcomes of single mothers by the likelihood of being a complier. The likelihood weight for each single mother in the 1998 cohort is considered to be the probability that she is a complier, or that she was induced into the labor market because of welfare reform policies. To do this, I take advantage of the rich demographic information and work history data that I have on each woman. To estimate the probability that each woman is a complier, I first estimate the following probit regression model separately for the 1984 and 1998 cohort.

$$P(D_{it} = 1) = \Phi(\alpha_t + \beta_t X_{it} + \gamma_t W_{it} + \epsilon_{it}) \quad (1)$$

Here,  $D_{it}$  is an indicator for whether person  $i$  in cohort  $t$  was working in the cohort base year.  $X_{it}$  contains a set of demographic characteristics listed below in Table 5. I include dummy variables for age categories of both mother’s age and youngest child

age due to limited sample size.  $W_{it}$  is a set of variables describing the woman's work history leading up to the base year. These include dummy variables for working in each of the ten years prior, a dummy equal to one if the woman was working in all five of the years prior to the base year, and the log of the woman's salary in the year prior to the base year.

I use the results of these analyses to estimate the probability of person  $i$  working in year  $t$  as

$$P_t(i) = \Phi(\alpha_t + \beta_t X_{it} + \gamma_t W_{it}) \quad (2)$$

I can therefore estimate  $P_{1984}$  and  $P_{1998}$  for each single mother in my dataset based on their covariates. Using these, I calculate the probability that a given single mother is an always taker, someone who would have worked regardless of welfare reform. Conditional on a single mother working in 1998, I define

$$P_{AT} = \frac{P_{1984}}{P_{1998}} \quad (3)$$

It follows that the probability of being a complier for a single mother given that she is working in 1998 is

$$P_c = 1 - \frac{P_{1984}}{P_{1998}} \quad (4)$$

There are a very small number of cases when  $P_{1984} > P_{1998}$ . In this case, I set  $P_c = 0$ . Table 5 presents the average marginal effects at the mean for covariates for each of the probit regression analyses. The marginal impacts of covariates in 1984 and 1998 regressions generally point in the same directions. However, there are some covariates that have more or less of an impact in 1998 than in 1984. For example, number of children and age categories have fairly similar impacts on working for the 1984 and 1998 cohorts. In contrast, work history variables impact likelihood of working more in the 1998 cohort.

To estimate the career paths of compliers, I use the weights calculation from the

probit analyses,  $P_c$ , to reweight outcomes for working single mothers in the 1998 cohort. This follows from the logic that, if compliers are randomly selected on observables, this will weight outcomes to the true distribution of compliers.

The “likelihood weight” is calculated using the rich set of variables available in my data, and therefore allows for strong identification of the likelihood that a single mother is a compliers. However, this strategy does not adjust for unobserved differences between single mothers which affect both employment in the base year and career path. In other words, although I have a rich set of covariates, there is still risk of omitted variable bias. If compliers are negatively selected based on unobservables, this will lead me to estimate the outcomes for compliers as closer to “always takers” than the true values. Therefore, the bias likely goes in the direction of over-estimating wages for compliers.

## Results

To illustrate the career trajectories of compliers, I look at the employment and wages of single mothers who were induced into marginal employment by welfare reform, my complier group. For comparison, I also show outcomes for the full population and for always takers those who would have worked regardless of welfare reform. I also show outcomes for compliers in the 1984 cohort, defined as single mothers who were not working but would have been in the presence of welfare reform policies. Although this is not a perfect counterfactual given that there were also differences in economic conditions in these periods, some readers may find this to be a useful comparison.

I first focus on the long term employment effect of marginal employment. Even in the absence of career effects, I expect there to be a sustained impact of marginal employment on future employment simply because most single mothers in my dataset continue to be eligible for benefits related to welfare reform. In other words, the incentives that induced employment are still relevant. Figure 10 shows the employment patterns for single mothers induced into marginal employment in the base year, 1998. The results suggest that most marginal employees are still working nine years following

marginal employment. Even the first year after the base year, 1998, employment rates for compliers are slightly lower than those for always takers. However, in the long run this difference does not grow quickly. By 2007, 71 percent of compliers were still working. This contrasts with a 42 percent<sup>10</sup> working rate for compliers from the 1984 cohort in 1993.

The fact that most single mothers who are induced into marginal employment continue to have sustained employment does not directly imply that there are career effects. If marginal jobs are simply dead end jobs, marginal employees may continue to earn low wages. In contrast, if single mothers develop human capital, they may actually experience wage growth. To test this, I consider three earnings thresholds and estimate the share of women who reached these thresholds: \$15,000, \$25,000, and \$40,000.

Figure 11 shows the share of compliers who achieve each of the three earnings thresholds. Although compliers are less likely than always takers to earn at least \$15,000, approximately half of compliers end up making at least \$15,000 in any year following 1998. This compares to approximately 60 percent of always takers with only high school education and 70 percent of always takers in the full population. The threshold of \$15,000 is unlikely to be suggestive of “stepping stone” jobs, as there is minimal growth in the share of single mothers reaching this threshold. In other words, single mothers earnings at least \$15,000 were likely induced into employment at this level.

There is evidence that some compliers do realize earnings growth. Among compliers with only high school education, 24 percent have reached \$25,000 in earnings by 2007, relative to only 13 percent who made at least \$25,000 in 1998. However, only five percent of compliers realized earnings of at least \$40,000 by 2007. This is relative to 3 percent of compliers who were earnings at least \$40,000 in 1998. In other words, only about two percent of single mothers induced into employment below \$40,000 had earned out of the range of the EITC within 10 years. This also suggests that three percent

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<sup>10</sup>43 percent when not focusing on the high school only sample

of compliers were induced directly into employment above the range of eligibility of benefits. This could be explained either by those individuals having been induced into employment prior to 1998 and experienced earnings growth. It is also possible that this is due to a small fraction of single mothers who were misinformed about the structure of benefits or underestimated their potential annual income.

Lastly, I consider the impact of marginal employment on the use of Social Security and disability benefits. If marginal employees develop an attachment to the labor force, or if they develop human capital, they may be less likely to turn to alternative income sources in the future. My results confirm this. By 2007, the last year of my analysis, I estimate that six percent of marginal employees were using social security or disability benefits. This estimate is in contrast to the estimated twelve percent of compliers in the 1984 cohort who I estimate to have taken social security or disability by 1993. Of course, changes in disability policy and economic conditions suggest that this may not represent the true counterfactual.

## 7 Occupations

In this section I analyze the occupations that are obtained by marginal employees. I do this because understanding the nature of marginal jobs contributes to the understanding of how employment inducing policies impact workers. Further, this allows me to analyze heterogeneity in earnings growth and career impacts by occupation. Because there is no occupation information in the SSA data, I consider the occupation reported by the respondent to the SIPP. As a result, I can only consider the occupation in the base year. Therefore, if I see earnings growth, I am unable to distinguish between growth within the occupation and growth by switching occupations. Nonetheless, this analysis allows me to consider which occupations are conducive to long term earnings growth. To estimate the occupations induced for marginal employees, I use the same likelihood weighting method described in section 6.

Table 6 show the breakdown of occupations obtained by employees induced into

employment (compliers). The most common category of employment, accounting for 32 percent of marginal employees, is service occupations. Service occupations includes home cleaners, food preparation, home health aids, protective service occupations, and other personal and household service occupations. The next most common occupation is sales, accounting for 16 percent of compliers. Other common occupations are “operators, fabricators, and laborers” with 11 percent of compliers, “secretaries, typists and information clerks” with six percent of compliers, and other administrative support occupations with nine percent of compliers. I note that 9 percent of compliers report being unemployed or in the military. This is probably driven by women who earned at least \$5,000 in the base year but were unemployed at the time that the survey was collected.

I next look at how earnings growth for marginal employees varies by occupation. Due to sample size and reporting restrictions, I present results only for the five most commonly obtained occupations and then all other occupations combined. I focus on two key statistics that are indicative of earnings growth - whether a marginal employee earned \$25,000 and \$40,000 between 1998 and 2007. The results are in Table 6. I find that “secretaries, typists and information clerks” and other administrative support occupations are associated with more income growth than the other occupations. 66 percent of “secretaries, typists and information clerks” and 71 percent of other administrative support occupations achieved \$25,000 in earnings compared to approximately 40 percent for the top three occupations. The discrepancies are even larger when looking at marginal employees who achieved \$40,000 in earnings. I find that 22 percent of “secretaries, typists and information clerks” and 28 percent of other administrative support occupations achieved \$40,000 compared to eight percent for service occupations, seven percent for sales, and six percent for “operators, fabricators and laborers”. Compliers in occupations outside of the five most common performed only slightly better than those in the top three occupations.

This analysis also illustrates that marginal employees have lower earnings growth even within occupations. For example, while only 42 percent of compliers in service

occupations ever earned \$25,000, 52 percent of single mothers in service occupations overall reached this threshold. Similarly, although marginal employees in “secretaries, typists and information clerks” and other administrative occupations experience more earnings growth than other marginal employees, they still have less earnings growth than single mothers in these occupations overall. For example, 81 percent of single mothers who were ‘secretaries, typists and information clerks’ achieved \$25,000 and 42 percent achieved \$40,000 in earnings. Similarly, overall 87 percent of single mothers in other administrative support occupations achieved \$25,000 and 44 percent achieved \$40,000.

## 8 Conclusion

The findings in this paper suggest that single mothers induced into employment through welfare reform policy changes experience limited career effects. There are no sustained impacts of inducing single mothers into marginal employment beyond the period of eligibility. During eligibility, single mothers induced into employment experienced limited earnings growth. Ten years after I identify single mothers as having employment induced by welfare reform policies, less than 25 percent are earnings \$25,000 and only five percent are earnings \$40,000. I do find some heterogeneity in earnings growth, suggesting that women who obtain administrative positions experience greater earnings growth.

These results are key to understanding the impact of implementing policies designed to move single mothers into employment. Policies such as the EITC can be expensive, but some of these costs could be offset if the policy led to increases in the amount of future tax revenue collected. Instead, my findings suggest that there will be little impact of policies inducing employment for single mothers on future tax revenue. Therefore, I argue that on the margin of employment effects, welfare reform policies should primarily be evaluated on the short term impacts.

These results can be informative for considering policy proposals to induce employ-



ment among populations beyond single mothers, such as prime age men. This may be crucial for policies designed to address the labor force participation of prime age men, which has been declining for decades. However, there are reasons that the results of this study may not translate to prime age men. First, one key finding of this study is that the labor market participation rates of single mothers were increasing steadily with the age of the youngest child prior to welfare reform. Therefore, I find that much of the policy impact was just inducing single mothers into employment earlier than they would have entered the workforce without these policies. There may not be a similar impact on prime age men, who are less likely to be out of the workforce to focus on childcare. Second, the occupations analysis describes the roles that single mothers most frequently take when entering the labor force. These job titles are more commonly associated with females. Given that there is heterogeneity in earnings trajectories by occupation, these results may not generalize to the occupations taken by male marginal employees.

## References

1. Altonji, J. G., and Pierret, C. R. (2001). Employer learning and statistical discrimination. *The Quarterly Journal of Economics*, 116(1), 313-350.
2. Autor, D., and Houseman, S. N. (2010). Do temporary-help jobs improve labor market outcomes for low-skilled workers? Evidence from "Work First". *American Economic Journal: Applied Economics*, 2(3), 96-128.
3. Booth, A. L., Francesconi, M., and Frank, J. (2002). Temporary jobs: stepping stones or dead ends?. *The economic journal*, 112(480), F189-F213.
4. Chetty, N., Friedman, J., and Saez, E. (2013). Using Differences in Knowledge Across Neighborhoods to Uncover the Impacts of the EITC on Earnings. *American Economic Review*, 103(7), 2683-2721.
5. Connolly, H., and Gottschalk, P. (2000). Returns to Tenure and Experience Revisited—Do Less Educated Workers Gain Less from Work Experience?. *Working*

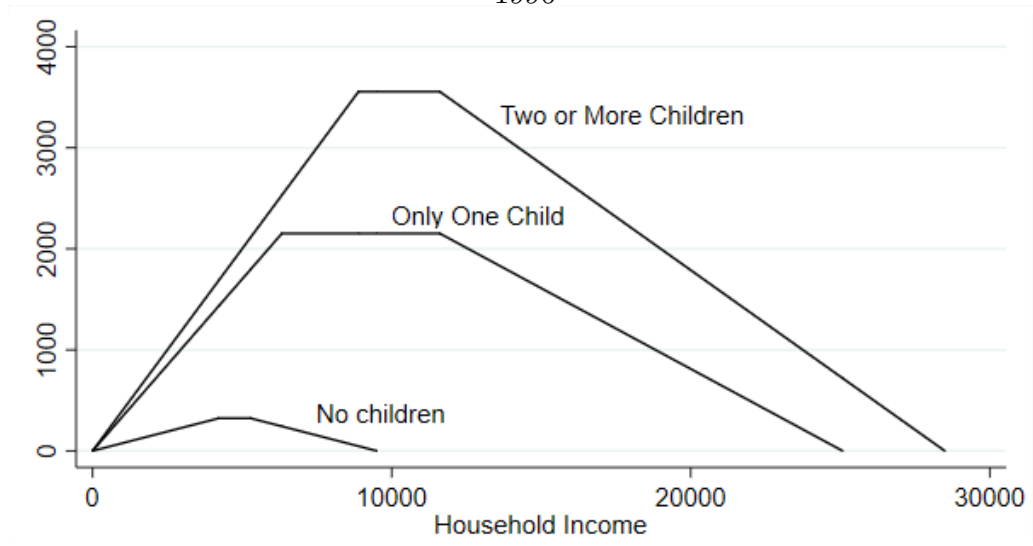
- Papers in Economics, 147.
6. Connolly, H., and Gottschalk, P. (2001). Stepping-stone jobs: theory and evidence. Working Papers in Economics, 176.
  7. Card, D., Michalopoulos, C., and Robins, P. K. (2001). Measuring wage growth among former welfare recipients (No. 2001-5).
  8. Dahl, M., DeLeire, T., and Schwabish, J. (2009). Stepping stone or dead end? The effect of the EITC on earnings growth. *National Tax Journal*, 329-346.
  9. de Graaf-Zijl, M., Van den Berg, G. J., and Heyma, A. (2011). Stepping stones for the unemployed: the effect of temporary jobs on the duration until (regular) work. *Journal of population Economics*, 24(1), 107-139.
  10. Eissa, N., and Hoynes, H. (2011). Redistribution and Tax Expenditures: The Earned Income Tax Credit. *National Tax Journal*, 64(2), 689-729.
  11. Eissa, N., and Liebman, J. (1996). Labor Supply Response to the Earned Income Tax Credit. *The Quarterly Journal of Economics*, 111(2), 605-637.
  12. Fang, H., and Keane, M. P. (2004). Assessing the impact of welfare reform on single mothers. *Brookings Papers on Economic Activity*, 2004(1), 1-116.
  13. Gladden, T., and Taber, C. (2009). The relationship between wage growth and wage levels. *Journal of Applied Econometrics*, 24(6), 914-932.
  14. Grogger, J., and Karoly, L. A. (2005). Welfare reform: Effects of a decade of change. Harvard University Press.
  15. Heinrich, C. J., Mueser, P. R., and Troske, K. R. (2005). Welfare to temporary work: Implications for labor market outcomes. *Review of Economics and Statistics*, 87(1), 154-173.
  16. Hotz, V., and Scholz, J. (2003). The Earned Income Tax Credit. In *Means-Tested Transfer Programs in the United States* (pp. Means-Tested Transfer Programs in the United States, Chapter 4). University of Chicago Press.

17. Imbens, G., and Angrist, J. (1994). Identification and Estimation of Local Average Treatment Effects. *Econometrica*, 62(2), 467.
18. Jovanovic, B., and Nyarko, Y. (1997, June). Stepping-stone mobility. In *Carnegie-Rochester Conference Series on Public Policy* (Vol. 46, pp. 289-325). North-Holland.
19. Kornfeld, R. (2002). Explaining recent trends in food stamp program caseloads. Washington, DC: US Department of Agriculture, Economic Research Service.
20. Ham, J., and Shore-Sheppard, L. (2001). The impact of public health insurance on labor market transitions. *Williams College Department of Economics Working Paper*, 2.
21. Heckman, J. J., Lochner, L. J., and Todd, P. E. (2006). Earnings functions, rates of return and treatment effects: The Mincer equation and beyond. *Handbook of the Economics of Education*, 1, 307-458.
22. Institute for Poverty Research (1988) The Family Support Act of 1988. *Focus* (Madison), 11(4), 15.
23. Kahn, S. (1997). Evidence of nominal wage stickiness from microdata. *The American Economic Review*, 87(5), 993-1008.
24. Kaur, S. (2018). Nominal Wage Rigidity in Village Labor Markets. *American Economic Review*. Forthcoming
25. Leigh, A. (2010). Who benefits from the earned income tax credit? Incidence among recipients, coworkers and firms. *B.E. Journal of Economic Analysis and Policy*, 10(1), 1-41.
26. Lemieux, T. (2006). The Mincer equation thirty years after schooling, experience, and earnings. In *Jacob Mincer a Pioneer of Modern Labor Economics* (pp. 127-145). Springer, Boston, MA.
27. Liebman, J. (1998). The Impact of the Earned Income Tax Credit on Incentives and Income Distribution. *Tax Policy and the Economy*, 12, 83-119.

28. Loprest, P., Schmidt, S., and Witte, A. (2000). Welfare Reform under PRWORA: Aid to Children with Working Families? *Tax Policy and the Economy*, 14, 157-203.
29. Lydon, R., and Walker, I. (2005). Welfare to work, wages and wage growth. *Fiscal Studies*, 26(3), 335-370.
30. MaCurdy, T. E. (1981). An empirical model of labor supply in a life-cycle setting. *Journal of political Economy*, 89(6), 1059-1085.
31. Mincer, J. (1974). Schooling, Experience, and Earnings. *Human Behavior and Social Institutions* No. 2.
32. Meyer, B., and Rosenbaum, D. (2000). Making Single Mothers Work: Recent Tax and Welfare Policy and its Effects. *National Tax Journal*, 53(4), 1027-1061.
33. Meyer, B., and Rosenbaum, D. (2001). Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers. *The Quarterly Journal of Economics*, 116(3), 1063-1114.
34. Meyer, B. (2010). The Effects of the Earned Income Tax Credit and Recent Reforms. *Tax Policy and the Economy*. National Bureau of Economic Research 24(1), 153-180.
35. Negrey, C., Um'rani, A., Golin, S., and Gault, B. (2000). Job Training Under Welfare Reform: Opportunities for and Obstacles to Economic Self-Sufficiency Among Low-Income Women. *Georgetown Journal on Poverty Law and Policy*, 7, 347-421.
36. Neumark, D., and Shirley, P. (2017). The Long-Run Effects of the Earned Income Tax Credit on Womens Earnings NBER Working Paper w24114
37. Olivetti, C. (2006). Changes in women's hours of market work: The role of returns to experience. *Review of Economic Dynamics*, 9(4), 557-587.
38. Rothstein, J. (2008). The Unintended Consequences of Encouraging Work: Tax Incidence and the EITC. IDEAS Working Paper Series from RePEc, IDEAS Working Paper Series from RePEc, 2008.

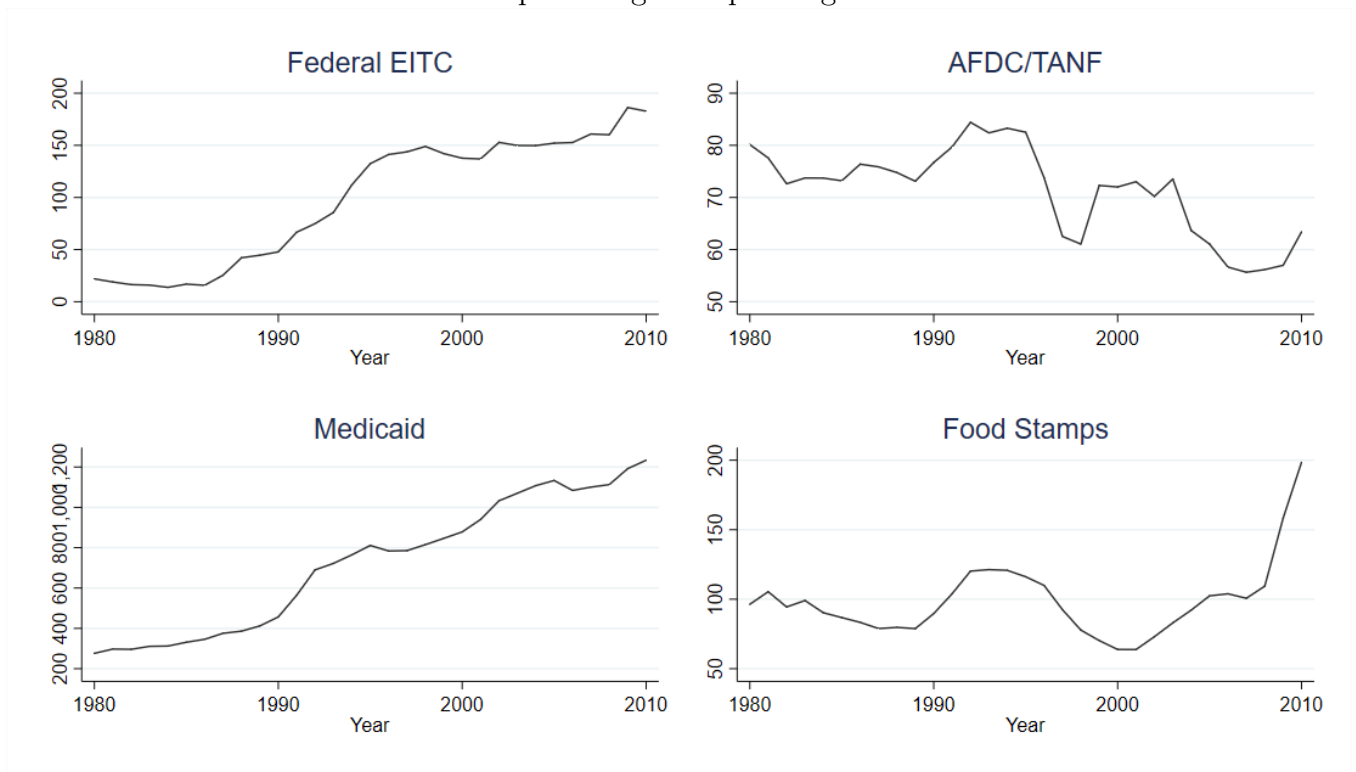
39. Yelowitz, A. (1995). The Medicaid Notch, Labor Supply, and Welfare Participation: Evidence from Eligibility Expansions. *The Quarterly Journal of Economics*, 110(4), 909.

Figure 1  
 Earned Income Tax Credit Schedule  
 1996



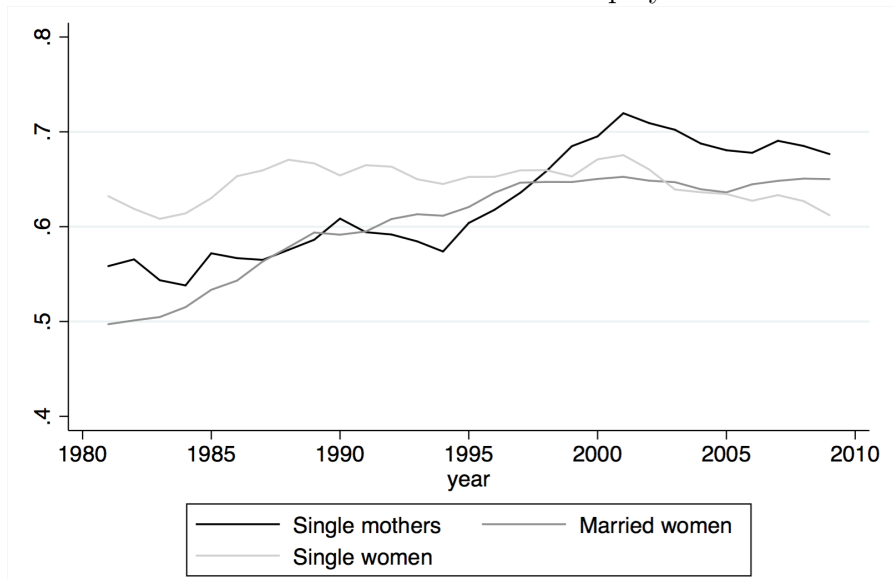
Source: Liebman (1998)

Figure 2  
 Per Capita Program Spending



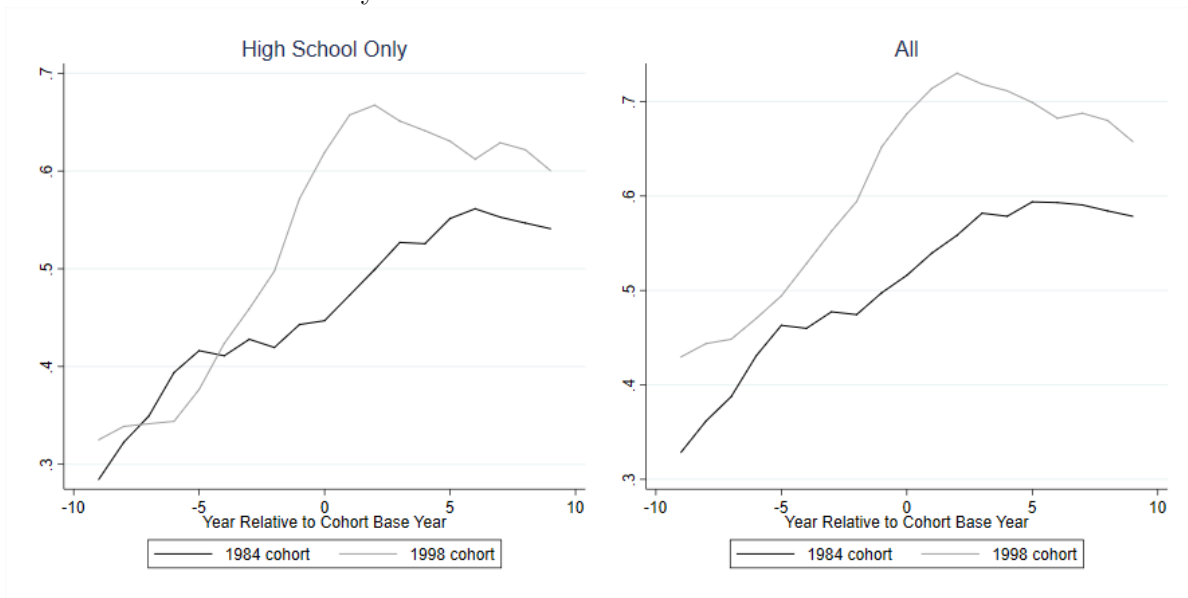
Note: Shown in 2007 real dollars.  
 Sources: EITC: 1980-1998: Background Material and Data on Programs within the Jurisdiction of the Committee on Ways and Means (2004 Green Book). 1999-2010: IRS SOI Bulletin Historical Table 1 AFDC/TANF: 1980-1993: Office of the Assistant Secretary for Planning and Evaluation. 1994-2010: Congressional Budget Office. Medicaid: MACStats: Medicaid and CHIP Data Book, December 2016. Exhibit 10 Food Stamps: USDA Food and Nutrition Service

Figure 3  
Share of Women who are Employed



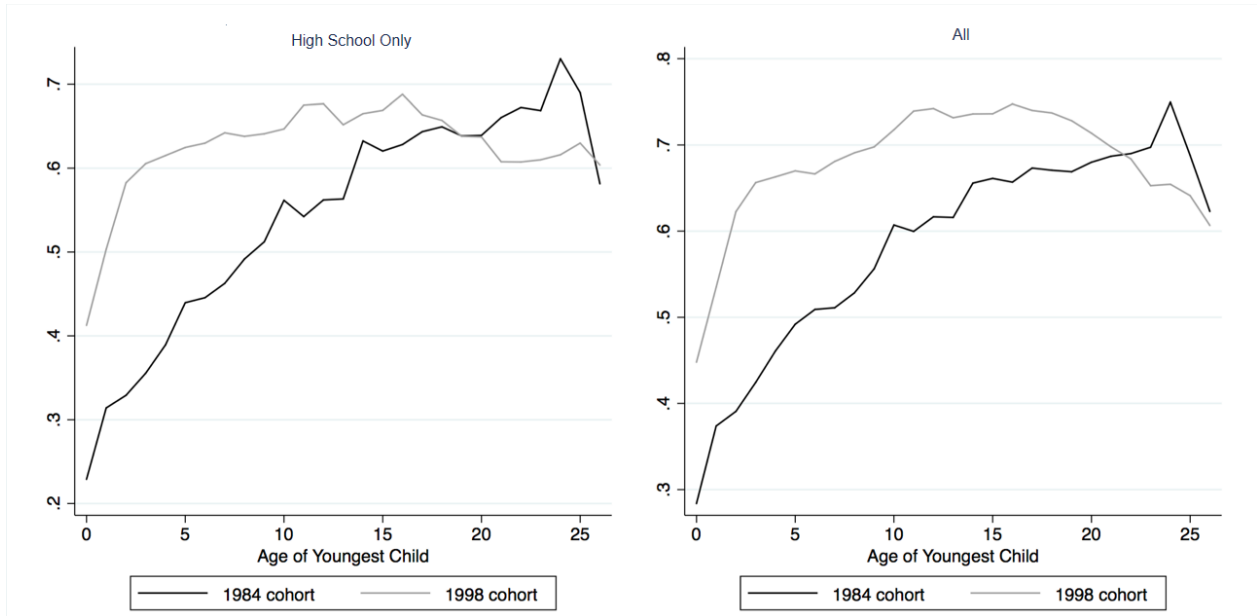
Note: Employment defined as annual earnings of at least \$5,000 in real income.  
Source: Current Population Survey

Figure 4  
Employment Rate  
By Year Relative to Cohort Base Year



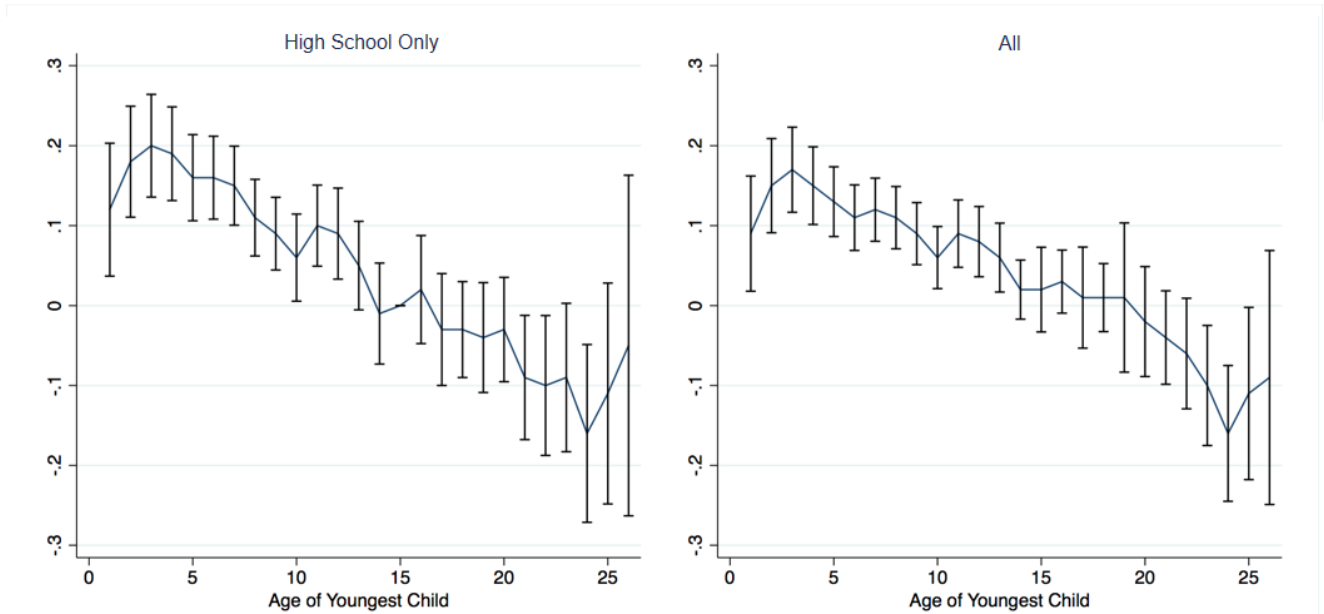
Notes: Employment defined as annual earnings of at least \$5,000 in real income. Year relative to cohort base year defined for 1984 and 1998 cohort as the number of years distance from the base year, 1984 or 1998.

Figure 5  
 Employment Rate  
 By Age of Youngest Child



Notes: Employment defined as annual earnings of at least \$5,000 in real income. Time period for sample is 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort. Sample in each year is limited to single mothers in the 1984 and 1998 cohort between ages 18 and 59.

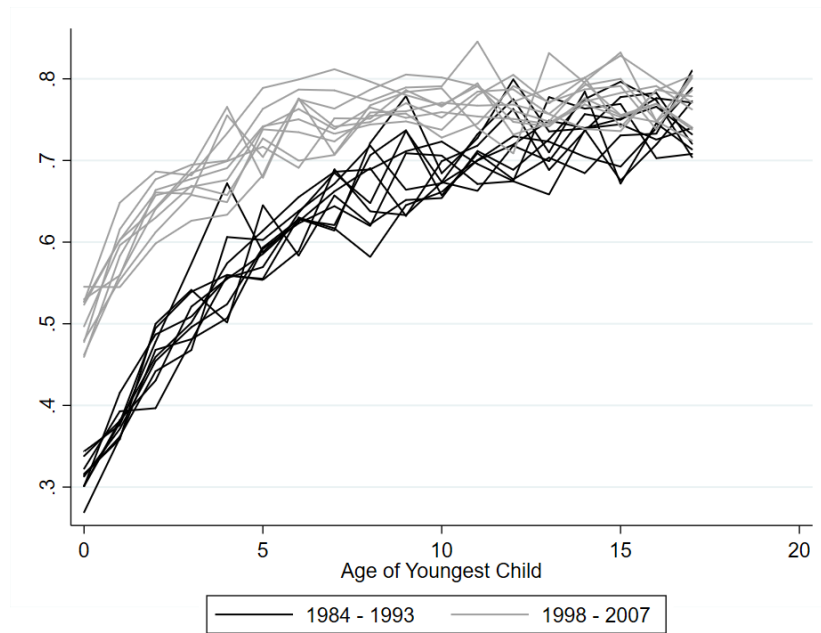
Figure 6  
 Coefficients on Youngest Child Age Dummy Variables Interacted with 1998 Cohort  
 Dependent Variable: Employment



Notes: Coefficients are based on a regression of employment on dummy variables for youngest child age interacted with being in the 1998 cohort, youngest child age dummy variables, and a vector of controls including age, race, number of children, educational attainment, and unemployment rate. Regression is based on time periods 1984-1993 and 1998-2007.

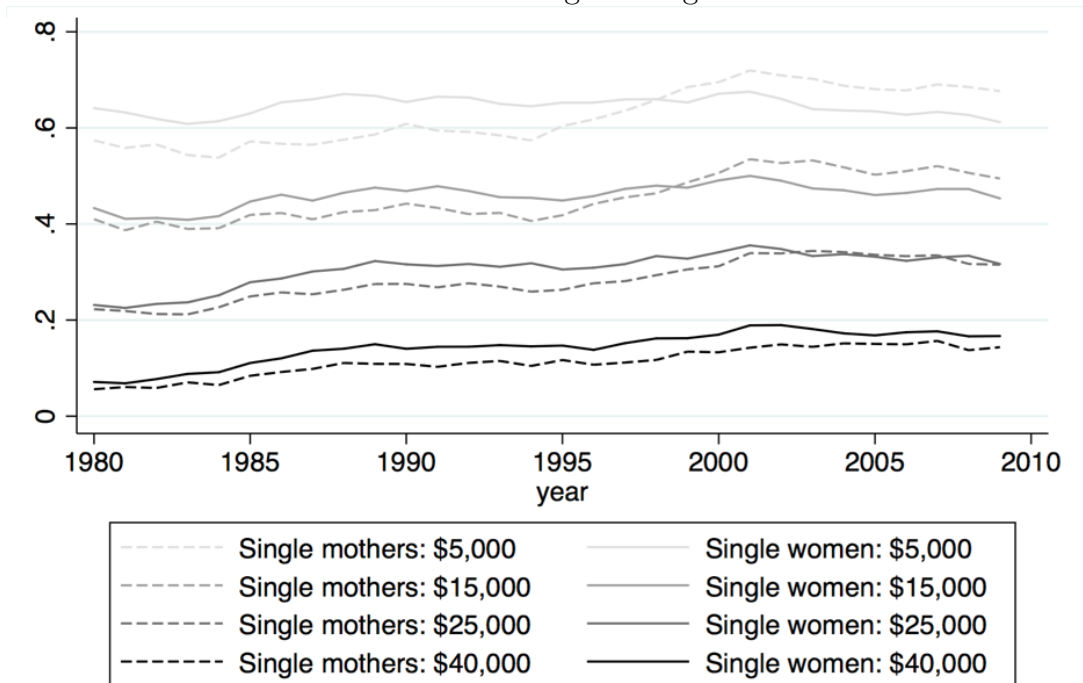


Figure 7  
 Employment Rate  
 By Age of Youngest Child



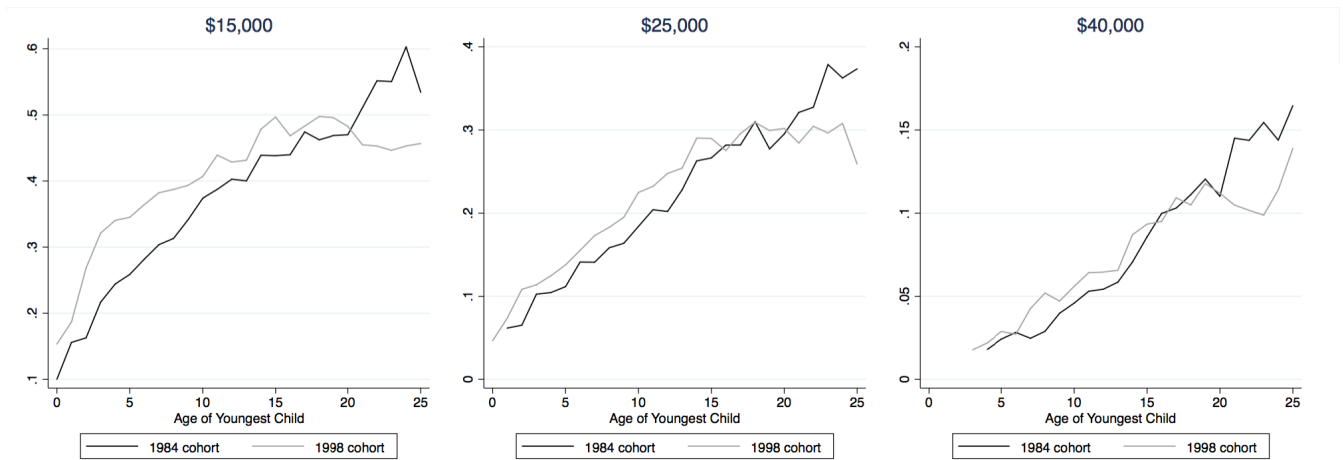
Notes: Analysis limited to single mothers ages 18-59 with a cohabiting child under age 18.  
 Source: Current Population Survey

Figure 8  
 Share of Women Reaching Earnings Thresholds



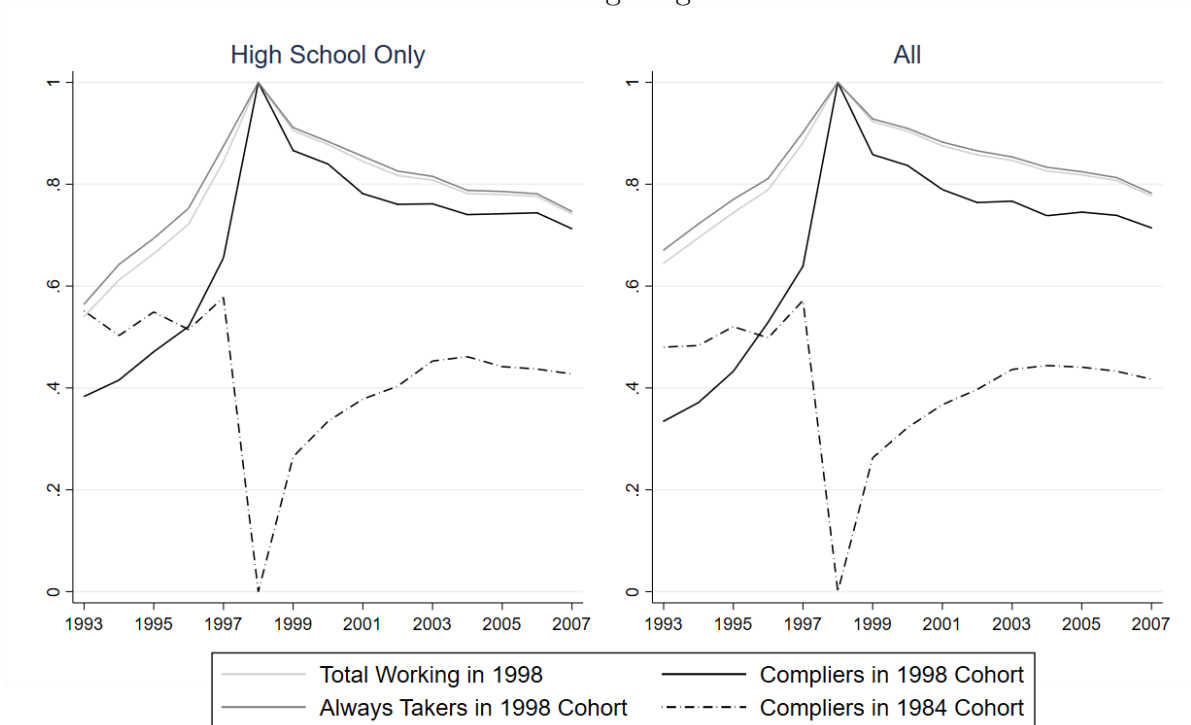
Notes: Analysis limited to women ages 18-59.  
 Source: Current Population Survey

Figure 9  
Share of Single Mothers Reaching Earnings Thresholds  
By Youngest Child Age



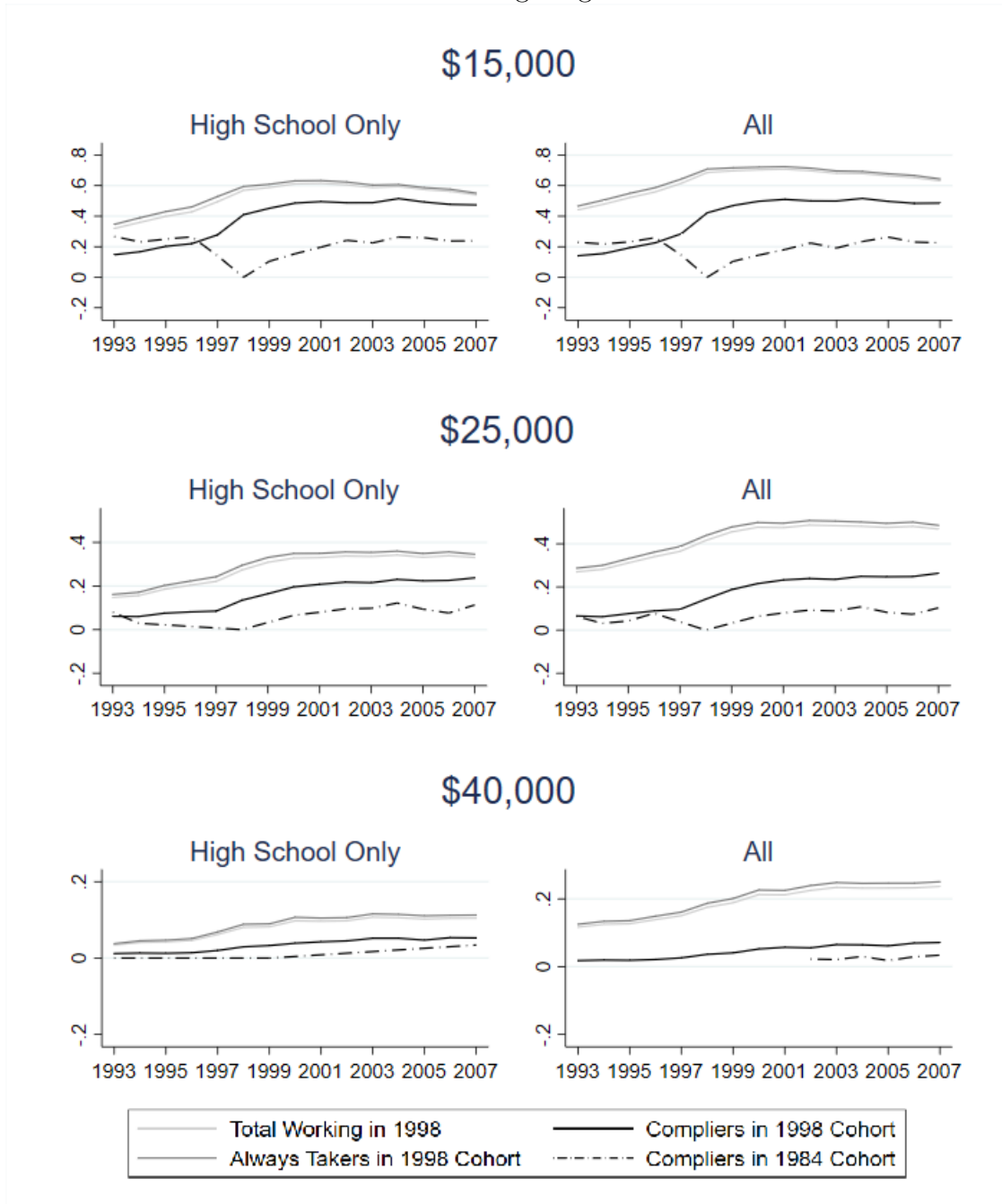
Notes: Time period for sample is 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort. Sample in each year is limited to single mothers in the 1984 and 1998 cohort between ages 18 and 59.

Figure 10  
Employment Rates  
Likelihood Weighting Results



Note: Estimates based on likelihood weighting technique, described in section 6.2. Employment defined as annual earnings of at least \$5,000 in real income.  
Source: SIPP data matched to SSA SER earnings data.

Figure 11  
 Share of Single Mothers Reaching Earnings Thresholds  
 Likelihood Weighting Results



Note: Estimates based on likelihood weighting technique, described in section 6.2. Analysis considered in 2007 real dollars.  
 Source: SIPP data matched to SSA SER earnings data

Table 1  
Share of SIPP Single Mothers Not Matched to SSA Data

	1984	1998
All	6.3	15.2
<i>Age</i>		
20-29	6.4	17.7
30-39	6.0	17.3
40-49	6.5	12.7
50-59	7.7	14.1
<i>Education</i>		
Less than high school degree	7.8	12.1
High school degree	5.6	13.0
College - less than four years	5.1	17.1
College - four years or more	7.2	16.4
<i>Race</i>		
White	5.9	14.5
Black	6.5	16.2

Note: Respondents were considered unmatched if there were no record of them in any year of earnings, 1976-2007. Source: SIPP data matched to SSA SER earnings data.

Table 2  
Single Mother Summary Statistics

	1984	1998
N	1,743	2,897
Average age	33.1	34.4
<i>Education</i>		
Less than high school degree	.313	.210
High school degree	.407	.369
College - less than four years	.205	.328
College - four years or more	.075	.093
<i>Race</i>		
White	.632	.645
Black	.349	.318
Other	.020	.037
<i>Children</i>		
Number of children	1.8	1.7
Youngest child age	6.9	7.1
Oldest child age	9.1	9.1
Employed	.503	.676

Note: Employment is defined as receiving over 5,000 dollars in earnings in the calendar year. Source: SIPP data matched to SSA SER earnings data.

Table 3  
Regression Results  
Dependant Variable: Employment

	High School Only	All Women
1998 Cohort * Child under 18	0.1*** (.02)	0.09*** (.01)
1998 Cohort * Child 18 plus	-0.06** (.03)	-0.03 (.02)
Unemployment rate	-0.02*** (.00)	-0.02*** (.00)
<i>Number of children</i>		
2	0 (.00)	0.01 (-.03)
3	-0.06*** (.02)	-0.07*** (-.02)
4	-0.12*** (.04)	-0.1*** (-.03)
5	-0.06 (.05)	-0.08 (.05)
6	-0.18 (.10)	-0.16 (.09)
<i>Age group</i>		
20-29	0.04 (.04)	0.04 (.04)
30-39	0.11*** (.04)	0.1*** (.04)
40-49	0.06 (.04)	0.07 (.04)
50-59	-0.13** (.06)	-0.07 (.05)
Hispanic	-0.02 (.02)	-0.02 (.02)
<i>Race</i>		
Black	-0.04*** (.02)	-0.03** (.01)
American Indian	0.01 (.05)	-0.02 (.05)
Asian or Pacific Islander	0.06 (.06)	0.06 (.04)
<i>Education</i>		
No high school degree	-0.19*** (.02)	-0.25*** (.02)
High school degree only	(0.00)	-0.06*** (.02)
Less than 4 years of college	(0.00)	0 (.00)
Disability	0.13*** (.04)	0.08 (.03)
Child age dummies	YES	YES

Note: Regression based on sample of single mothers in the 1984 and 1998 cohorts. Sample includes the years 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort. Employment is defined as receiving over 5,000 dollars in earnings in the calendar year. Source: SIPP data matched to SSA SER earnings data.

Table 4  
Regression Results  
Dependant Variable: Earning At Least \$25,000

	High School Only	All Women
1998 Cohort * Child under 18	-0.01 (.02)	0.02 (.01)
1998 Cohort * Child 18 plus	-0.05 (.03)	-0.01 (.04)
Unemployment rate	-0.01*** (.00)	-0.01*** (.00)
<i>Number of children</i>		
2	-0.01 (.01)	-0.01 (.02)
3	-0.06*** (.02)	-0.07*** (.02)
4	-0.08*** (.03)	-0.05 (.03)
5	-0.05 (.04)	-0.05 (.04)
6	-0.1*** (.03)	-0.12*** (.04)
<i>Age group</i>		
20-29	0.02 (.02)	0 (.00)
30-39	0.1*** (.02)	0.08*** (.02)
40-49	0.08*** (.02)	0.08*** (.02)
50-59	-0.02 (.04)	-0.01 (.03)
Hispanic	-0.02 (.02)	0.02 (.02)
<i>Race</i>		
Black	-0.06*** (.01)	-0.05*** (.01)
American Indian	-0.07 (.06)	-0.12** (.05)
Asian or Pacific Islander	0.06 (.05)	0.01 (.04)
<i>Education</i>		
No high school degree	-0.17*** (.01)	-0.43*** (.02)
High school degree only	(0.00)	-0.27*** (.02)
Less than 4 years of college	(0.00)	-0.14*** (.03)
Disability	-0.01 (.04)	-0.03 (.04)
Child age dummies	YES	YES

Note: Regression based on sample of single mothers in the 1984 and 1998 cohorts. Sample includes the years 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort.  
Source: SIPP data matched to SSA SER earnings data.

Table 5  
Marginal Impact at the Mean  
Probit Analysis  
Dependent Variable: Working in Base Year

	High School Only		All	
	1984	1998	1984	1998
<i>Education</i>				
No High School Degree	-	-	-	-
High School Degree	.43	.36	.21	.34
Some College	.00	.00	.41	.36
College Degree	.00	.00	.31	.20
<i>Age</i>				
18-19	-	-	-	-
20-29	.38	.35	.34	.30
30-39	.33	.36	.38	.37
40-49	.18	.20	.19	.25
50-59	.05	.04	.05	.05
<i>Race</i>				
White	-	-	-	-
Black	.37	.35	.36	.34
American Indian, Aleut, or Eskimo	***	.02	***	.02
Asian or Pacific Islander	.01	.02	.01	.02
Hispanic	.11	.17	.09	.13
<i>Children</i>				
1	-	-	-	-
2	.29	.30	.30	.30
3	.15	.13	.15	.11
4	.04	.05	.03	.04
5	.01	.02	***	.01
6	***	.01	***	.00
7	***	***	***	***
8	***	***	***	***
9	***	***	***	***
10	***	***	***	***
<i>Youngest Child Age</i>				
0-4	-	-	-	-
5-9	.22	.25	.23	.26
10-14	.21	.19	.23	.22
15-17	.12	.11	.12	.13
Disability	.00	.00	.00	.00
	.04	.02	.04	.02

\*\*\* Excluded due to small sample size to protect respondent confidentiality.

Note: Probits run separately on samples of single mothers in the 1984 and 1998 cohorts. Sample includes the years 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort.

Source: SIPP data matched to SSA SER earnings data.

Table 6  
 Marginal Impact at the Mean  
 Probit Analysis  
 Dependent Variable: Working in Base Year  
 (Continued)

	High School Only		All	
	1984	1998	1984	1998
<i>Work History</i>				
Log Compensation in Previous Year	5.22	6.89	5.77	7.60
Working all Five Preceding Years	.25	.28	.29	.38
<i>Working</i>				
1 Year Prior	.44	.57	.50	.65
2 Years Prior	.42	.50	.48	.59
3 Years Prior	.43	.46	.48	.56
4 Years Prior	.41	.42	.46	.53
5 Years Prior	.42	.38	.46	.49
6 Years Prior	.39	.34	.43	.47
7 Years Prior	.35	.34	.39	.45
8 Years Prior	.32	.34	.36	.44
9 Years Prior	.29	.33	.33	.43
10 Years Prior	.27	.30	.31	.40

\*\*\* Excluded due to small sample size to protect respondent confidentiality.

Note: Probits run separately on samples of single mothers in the 1984 and 1998 cohorts. Sample includes the years 1984-1993 for the 1984 cohort and 1998-2007 for the 1998 cohort.

Source: SIPP data matched to SSA SER earnings data.



Table 7  
Occupations Analysis of Compliers  
Likelihood Weighting

Occupation	Share of Compliers	Achieved \$25,000	Achieved \$40,000	Share of Compliers	Achieved \$25,000	Achieved \$40,000
Service occupations	.32	.42	.06	.31	.44	.08
Sales	.16	.38	.08	.17	.38	.07
Operators, fabricators and laborers	.11	.41	.04	.10	.42	.05
Administrative support occupations (other)	.09	.71	.25	.10	.76	.29
Secretaries, typists and information clerks	.06	.66	.22	.06	.67	.22
<i>Not top five</i>	.26	.37	.10	.25	.44	.16
Unemployed-Military	.09			.09		
Freight, stock and material handlers"	.05			.05		
Executive, admin and manager occupations	.02			.03		
Precision production, craft and repair occupations	.02			.02		
Transportation and material moving occupations	.02			.01		
Teachers	.01			.01		
Technicians and related support occupations	.01			.01		
Professional specialty occupations (other)	.00			.01		
Health diagnosis occupations	.00			.01		
Farming, forestry and fishing occupations	.01			.01		
Social, recreational or religious leaders	.00			.01		
Management related occupations	.00			.01		
Other	.02			.00		

Note: Estimates based on likelihood weighting technique, described in section 6.2. Analysis considered in 2007 real dollars.  
Source: SIPP data matched to SSA SER earnings data