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## The Interaction of Metropolitan Area Costs and the Federal Earned Income Tax Credit: One Size Fits All?

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**THE INTERACTION OF METROPOLITAN  
AREA COSTS AND THE FEDERAL EARNED  
INCOME TAX CREDIT: ONE SIZE FITS ALL?**

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## **Abstract**

The Federal Earned Income Tax Credit (EITC) contributed to increasing employment rates for single women during the 1990s. This paper expands on what is known about the labor supply response to the EITC by exploiting differences in the cost-of-living faced by potentially eligible recipients in different geographic areas. Using the 1993 EITC expansion, we demonstrate that the labor supply response varies considerably with metropolitan area cost-of-living. We identify an increase in labor force participation among single mothers of as much as 10 percentage points in the lowest-cost metropolitan areas. There is no discernable participation response in metropolitan areas with the highest housing costs, where approximately 40 percent of the population lives. We find little response along the intensive margin, regardless of the costs in the metropolitan area. We conclude that the welfare-enhancing effects of the EITC are undermined by the interaction of the program's fixed national rules and geographic variation in wages and cost-of-living. In addition, our findings suggest that the federal EITC does little to reduce joblessness in many of the nation's largest cities.

Special thanks go to Stacy Dickert-Conlin, Andrew Hanson, Jeffrey Kubik, and Tim Smeeding for helpful comments and guidance. We would also like to thank participants at the IZA Workshop on Labor Income Taxation. We are grateful to Yong Chen and Stuart Rosenthal for use of their quality-adjusted rental cost data. Martha Bonney provided valuable editorial assistance. Any remaining errors are our own.

**JEL Codes:** H24, H31, I31, J22, R23

**Keywords:** EITC; Cost-of-Living; Tax Reform; Labor Supply

*"Among the 122 large cities...the average EITC (for all earners) in 2003 ranged from roughly \$1,200 in Cambridge, MA, to \$2,284 in McAllen, along the Texas-Mexico border."*

“The New Safety Net: How the Tax Code Helped Low-Income Working Families During the Early 2000s” (Berube, 2006)

## **Introduction**

The federal Earned Income Tax Credit (EITC) is a wage subsidy available to lower-income, working families. Since its inception in 1975, major expansions in 1986, 1993, and 2001 contributed to large increases in the size of the benefit and the number of potential beneficiaries. By 2008, the EITC was worth up to \$4,800 and families with earnings as high as \$38,000 qualified for some credit.<sup>1</sup>

Policymakers intend for the EITC to reward work by altering the labor supply incentives of the potentially eligible. Estimates of the effect of the EITC on labor supply consistently find large positive effects on the decision to work but no effect on the decision of how much to work. Previous studies, however, fail to adequately address the influence of geographic differences in both wages and the cost-of-living. Cost differences make the credit more (or less) valuable across geographic areas. With a nationally uniform *benefit structure*, the EITC is more valuable in a geographic area with a low cost-of-living relative to an area where the cost-of-living is high.

In addition, the nationally uniform *eligibility rules* effectively treat equivalent workers differently across geographic areas because, although net wages may equalize across areas for specific worker-types, gross wages vary considerably.<sup>2</sup> EITC eligibility based on gross income, therefore, results in variation in EITC benefits across geographic areas. In general, low-skilled workers in high-cost areas earn higher gross wages and are more likely to end up on the phase-

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<sup>1</sup> A small credit for very low-income childless workers was added in 1993.

<sup>2</sup> Albouy (2008) – discussed further below – examines the broader issue of the economic consequences of a nationally uniform federal income tax code in the face of regional differences in wages and cost-of-living.

out portion of the EITC schedule or off the schedule completely than similar workers in low-cost areas. For example, a single mother working full-time as a janitor in a high-cost city (Cambridge, MA) may have earnings that place her on the phase-out portion of the credit. In contrast, with a lower wage in a low-cost city (McAllen, TX), her annual earnings would place her on the phase-in portion. The single mother in this example would qualify for different credit amounts depending on whether she lived in the high-cost city or the low-cost city.

Local costs are critical to analyzing the EITC because earnings and the bundle of goods and service available for purchase with earnings are realized in specific local labor markets. We address differences across geographic areas by including a measure of location-specific prices – housing costs of the Metropolitan Statistical Area (MSA) – to examine heterogeneous effects of the EITC across geographic areas. Using the 1993 EITC expansion, we find that the effect of the EITC on labor supply depends on the housing costs in the worker’s local labor market. The EITC contributed to an approximately 10 percentage point increase in the participation of single women in low-cost areas. We find no evidence of a participation effect for single women in the highest-cost metropolitan areas, where nearly 40 percent of the population lives. We find some evidence of differences in the hours decision across cost areas, but our results are not robust to the selection of our sample or to the choice of our reform period.

This paper proceeds as follows: Section II discusses how the EITC affects labor supply decisions, the theory behind wage differences across local areas, and the relevant literature on the EITC. Section III provides our data and methodology. Section IV provides our estimates for participation and hours worked decision. Section V discusses the implications of the findings, and Section VI concludes.

## Section II: Theory and Literature

### *The EITC and Labor Supply*

The structure of the EITC (displayed in Figure 1) includes a “phase-in,” “plateau,” and “phase-out” region. Earnings in the phase-in region receive a constant rate subsidy, up to the maximum credit. Earnings in the plateau region receive the maximum credit. Once earnings reach the phase-out region, the credit decreases at a constant rate for each additional dollar of earned income until the credit is completely eliminated.

In the standard static model of labor supply, the EITC shifts out the budget constraint and provides unambiguously positive incentives on labor force participation.<sup>3</sup> However, this shifted budget constraint also creates EITC-induced kinks. As a result, the impact of the EITC on hours worked is ambiguous owing to negative income effects (assuming that leisure is a normal good) over the entire schedule but substitution effects that vary across the regions of the credit.

The phase-in region contains positive substitution effects that encourage additional hours of work by increasing the hourly return to work; no substitution effect exists in the plateau region; a negative substitution effect in the phase-out region reduces the hourly return to work. As a result, the net effect varies across regions: in the phase-in region, the net effect is theoretically ambiguous while in the plateau and phase-out regions the net effect is unambiguously negative.<sup>4</sup> Thus, the overall effect of the EITC on hours worked becomes an empirical question that depends on the distribution of beneficiaries across the schedule and the relative magnitudes of the income and substitution effects.

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<sup>3</sup> This is the case for single women. Married couples eligible for the EITC face more complex participation decisions.

<sup>4</sup> For incomes greater than the phase-out region, the EITC may induce a taxpayer to reduce her hours to receive a credit.

## *Regional Differences in the Cost-of-living*

The EITC is expected to have different impacts on labor supply across MSAs due to variation in the cost-of-living, particularly the considerable geographic variation in housing costs. The causes and consequences of this geographic variation have been the subject of considerable interest, both in the economics literature and in policy debates.<sup>5</sup> In fact, a National Academy of Science (NAS) commissioned study recommended that the federal poverty threshold be adjusted to reflect differences in housing costs and other prices across geographic areas (Citro and Michael, 1995).<sup>6</sup> The NAS study noted that wages tended to be higher in areas with a high cost-of-living.

We find empirical support for this relationship between wages and the cost-of-living. We use 1990 quality-adjusted annual rental housing costs data provided by Chen and Rosenthal (2008) to measure the cost-of-living.<sup>7</sup> Using the Current Population Survey (CPS) Outgoing Rotation Group data for 1990-1995, we estimate average hourly wages of single, female household heads ages 18 to 49 by deciles of the MSA quality-adjusted rental housing costs. In the first panel of Table 1, we show estimates for selected industry and occupations that employ the greatest numbers of single women. Wages for nursing aids were \$5.51 in the lowest-cost decile and \$8.32 in the highest decile; average wages in eating and drinking establishments were

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<sup>5</sup> See Rosen (1979), Roback (1988), and Hoynes (2000).

<sup>6</sup> These recommendations to adjust the poverty threshold to differences in housing costs or other price differences across geographic areas were not ultimately adopted due to a variety of reasons, including measurement problems, lack of data, and political constraints. The NAS did conclude, however, that “the available data suggest that areas with higher prices are also areas with higher income levels: for example, a cost-of-housing index that we calculated for states correlates highly with state median family income.” (Citro and Michael, 1995; 184)

<sup>7</sup> Chen and Rosenthal construct their measure by estimating a hedonic regression controlling for structural characteristics of housing units in each MSA from the 1990 Census. From these estimates, Chen and Rosenthal report housing costs for each MSA relative to the mean, ranging from \$3,785 below the mean to \$6,152 above the mean. For ease in interpretation, we transform Chen and Rosenthal’s measure into a positive value for all MSAs by adding \$4,000 to each value. The new range of quality adjusted rent, which we refer to as our rental costs, is \$215 to \$10,152.



\$4.12 in the lowest decile and \$5.54 in the highest. After controlling for demographic and labor market characteristics, a regression of hourly wages on average rent yields a coefficient of 0.00031, suggesting \$1,000 in higher quality-adjusted annual rents is associated with \$.31 higher hourly wages (which translates to \$645 in annual earnings for full-time, full-year workers). Separate regressions by occupation and industry groups (included in the second panel of Table 1) yield similar results.

Black, et al. (2007) proposed one model of how local prices influence wages.<sup>8</sup> In this model, there are two types of cities, low- and high-amenity, and two types of workers, low- and high-skilled. Assuming that amenities are luxuries and that low-skilled workers have a lower willingness to pay for amenities than high-skilled workers, the low-skilled must receive a higher wage in a high-amenity city to have the same utility level across cities. The willingness of high-skill workers to pay for the amenities raises rents in the high-amenity cities. The higher rent must be offset through higher wages if low-skill workers are also to reside in high-amenity cities. Equilibrium sorting implies that wages, and therefore incomes, will differ across cities for the same skill types and that low-skill types will have higher wages in high-cost cities.

#### *The EITC, Labor Supply, and Cost-of-living*

Geographic variation in wages implies that low-skilled workers will face different EITC treatment based on where they live. To show this empirically, in the period before the EITC expansion of 1993, we examine the incomes of employed single women relative to the EITC schedule for different MSAs in Table 2.<sup>9</sup> The top panel of Table 2 contains estimates for all single women while the bottom panel displays estimates only for single women with a high

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<sup>8</sup> Black et. al. (2007) are specifically concerned with the variation in the returns to education, contrasting earnings of college graduates with high school graduates, but the logic of the model applies to wages as well.

<sup>9</sup> We measure adjusted gross from the prior year income information in the March CPS for 1990 to 1993.

school degree or less. In the early 1990s, 12.6 percent of single females in MSAs in the lowest quarter of the rental cost distribution have incomes too high to be on the EITC schedule compared to 32.1 percent in the top quarter of MSAs. For low-educated women, the figures are 6.3 percent and 18.3 percent, respectively. In addition, about 60 percent of eligible workers in the lowest quarter of the rental cost distribution fall in the phase-in and plateau regions of the credit, where the benefit is larger, compared to 42 percent in the top quarter.

We can unambiguously predict that an expansion of the EITC will have a greater impact on labor force participation in low-cost areas than in high-cost areas for three reasons. The first two of these reasons follow directly from our estimates in Table 2. Workers in low-cost areas have lower wages. These lower wages result in annual incomes that are more likely to make these workers income-eligible for the EITC. Secondly, once income-eligible for the credit, workers in low-cost areas are more likely to receive larger benefits because their incomes are more likely to place them on the phase-in or plateau region rather than the phase-out region. Finally, related to the variation that exists in wages, geographic variation also exists in housing prices. As a result, any given nominal benefit will have different purchasing power across metropolitan areas. EITC benefits to a worker in a low-cost area have greater purchasing power – and, thus, these benefits are a greater real incentive – than the same nominal benefit to a worker in a high-cost area.

It is less clear how variation in MSA costs will affect the decision of how many hours to work because of offsetting income and substitution effects. With a larger share of low-skilled workers directly impacted by the EITC, hours in low-cost areas should be more responsive overall to the policy change. And with a larger share of workers located in the phase-in region of the credit, low-cost areas should be more likely to have positive responses on the hours worked

decision. At the same time, however, the income effect should be greater in low-cost areas because the nominal benefit has greater purchasing power. Finally, the mix of incentives faced by workers on different portions of the credit makes it difficult to make strong predictions about responses in hours of work to the EITC. In short, we expect the hours worked decision to be less responsive to the cost-of-living than the participation decision.

### *Previous EITC Literature*

A large literature studying the labor supply response to the EITC, fully reviewed in Hotz and Scholz (2003) and Eissa and Hoynes (2006), emerged after the pioneering work of Eissa and Liebman (1996). Eissa and Liebman examine the EITC expansion in the Tax Reform Act of 1986 (TRA86) with a difference-in-difference analysis. Because only families with children could receive the credit, Eissa and Liebman use single mothers as the treatment group and single, childless women as the control group. They find that the 1986 expansion of the EITC increased the labor force participation of single mothers by 2.8 percentage points relative to single women without children. Depending on their specification, they estimate no change or a small, positive change in the hours worked of single mothers relative to single women without children.

The findings of Eissa and Liebman's difference-in-difference approach are largely consistent with other approaches. A large increase in participation is found using a variety of econometric methodologies, samples, and expansion periods: a panel dataset of California welfare recipients (Hotz, et al., 2006); models including welfare use (Grogger, 2003); simulation studies (Dickert, et al., 1995; Scholz, 1996); and structural modeling with extensive controls for all tax and benefit changes over the 1984 to 1996 period (Meyer and Rosenbaum, 2001). In

contrast, almost no study finds a substantial change in the hours worked of recipients.<sup>10</sup> Eissa and Liebman (1996) and Eissa and Hoynes (2006) posit a number of reasons for the inability of the EITC to influence the hours worked by a recipient: labor market norms and institutions which allow for only part-time or full time work, measurement error, and a lack of knowledge about the exact structure of the EITC.

To our knowledge, no examination of the labor supply response to the EITC rigorously considers cost-of-living differences across geographic areas. Meyer and Rosenbaum (2001) control for the state cost-of-living in their structural model, but they do not report estimates for this variable, nor do they interact it with their tax change variables. Other EITC work that examines geographic variation focuses on take-up of the credit and suggests that urban areas have lower utilization rates than other areas (Maynard and Dollins, 2002; Berube and Tiffany, 2004; Hirasuna and Stinson, 2004). In short, few analyses consider the effect of geographical differences on the EITC despite documented differences in participation and average credit size across state and metropolitan areas (Berube, 2006).

### **Section III: Methodology and Data Sources**

#### *Estimation Strategy*

We consider the EITC expansion included in the Omnibus Budget Reconciliation Act of 1993 (OBRA93), which increased the maximum credit, extended EITC eligibility to those with higher incomes, and created a small credit for childless workers. These EITC increases were implemented in steps from 1994 through 1996 by adjusting five credit parameters, details of

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<sup>10</sup> The one exception we are aware of is Wu (2005), which shows different effects on the phase-in and phase-out regions of the EITC schedule, which cancel out to produce no overall effect on hours.

which are contained in Table 3. Potential recipients faced more generous benefits in 1994, 1995, and 1996 as a result of OBRA93.

We use the familiar difference-in-difference estimator to measure how an affected group (low-educated, single mothers) changes its labor supply relative to an unaffected group (low-educated, single women without children). We choose this sample for several reasons. Low-educated workers are more likely to have earnings in the EITC range; single parents are the largest group of workers eligible for the EITC; women almost always head single parent families, and; unmarried individuals allow us to avoid intra-household bargaining decisions that affect married individuals. While OBRA93 extended EITC eligibility to those without children, the credit is quite small and available only to those extremely low incomes, less than one-third of that for single adults with children. Our identifying variation comes from group differences in tax schedules faced by single mothers and single women without children. For identification, we require that differential trends in labor force participation and hours of work do not exist between single mothers and single women without children.

Unlike previous work, we allow for heterogeneous effects across local areas by interacting our cost-of-living measure by the difference-in-difference estimator. Our coefficient of interest is the heterogeneous effect of the EITC across metropolitan areas. This is not the standard triple-difference estimator because the addition of the cost-of-living variable does not provide us an additional control group. Instead, it allows us to explore differential responses across areas.

## *Data*

The data we use are from the 1990 through 1995 monthly CPS.<sup>11</sup> The CPS is a monthly survey of approximately 50,000 households which provides current demographic, labor market, geographic, and income information for responding households. We construct tax units from the sample by matching children age 18 and under, as well as full-time students age 19 to 24, to their mothers. We limit our sample to single (never married, widowed, or divorced) women, ages 16 to 40, who are heads of tax units. In our main results, we further limit our sample to those with a high school degree or less. We drop the self-employed, as well as unpaid agriculture workers, and those with negative unearned income. We drop from the sample those who report attending school full-time and those who report an illness or disability that prohibits work.

For each tax unit, we merge on unemployment rates in each MSA and an MSA cost-of-living measure.<sup>12</sup> For those tax units residing outside of an MSA, we merge on the state's non-MSA value for unemployment rates and cost-of-living. Our cost-of-living measure is the 1990 quality-adjusted housing costs provided by Chen and Rosenthal (2008). Chen and Rosenthal construct their cost measure by estimating a hedonic regression controlling for structural characteristics of housing units in each MSA and state non-MSA from the 1990 Census. From these estimates, Chen and Rosenthal report housing costs for each MSA and non-MSA relative to the mean, ranging from \$3,785 below the mean to \$6,152 above the mean. For ease in interpretation, we transform Chen and Rosenthal's measure into a positive value for all MSAs by adding \$4,000 to each value. The new range of quality-adjusted rent, which we refer to as our rental costs, is \$215 to \$10,152. Appendix B includes a full listing of rental costs for these MSAs

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<sup>11</sup> We do not include summer months (June, July, and August) in our data because the geographical variables are not available in June, July, or August 1995 as a result of the CPS redesign. We do not include data from 1996 because of the work mandates that were associated with welfare reform legislation in 1996.

<sup>12</sup> Details on the creation of MSAs that are consistent over the 1990 to 1995 period are included in Appendix A.

and non-MSA. Our use of geographic variation forces us to drop observations without a basic geographic identifier (MSA or state non-MSA) because we cannot assign unemployment rates or rental costs.

Table 4 presents summary statistics of the characteristics of our full sample, as well as our treatment and control groups in Columns 1 through 3 and across cost-of-living areas in Columns 4 through 7. Overall, our sample of childless women is more likely to have received a high school degree than our sample of single mothers. Single mothers are more likely to be nonwhite and live in MSAs with slightly lower average rental costs. Single mothers have much lower levels of labor force participation but, conditional upon working, their earnings, hours of work and unemployment rates are similar.

Looking across metropolitan areas, higher-cost areas have more single women who have received their high school degree. The highest-cost areas are much more likely to have implemented a waiver to the state's Aid to Family with Dependent Children (AFDC) program. Despite the work mandates associated with welfare waivers, the highest-cost areas have lower levels of labor force participation. Conditional upon working, the differences in wages across local areas is nearly two dollars: hourly earners in the lowest quarter have average hourly wages of \$5.99 while in the highest quarter, average hourly wages are \$7.76. Similarly, conditional upon working, average weekly earnings are \$70 higher in the highest quarter than in the lowest.

Other than differences in wages and earnings across areas, women in different quarters of the rental cost distribution appear roughly comparable in the number of children they have. Conditional on having any children, the number of children a woman has is not associated with the cost-of-living. Mothers in the lowest quarter of rental costs have, on average, 1.81 children. In the highest quarter of rental costs, mothers have on average 1.87 children. With these small

differences, we expect that mothers in different areas would not qualify for different EITC benefits based solely on their demographic characteristics. Differences in EITC eligibility arise from differences in incomes.

## **Section IV: Results**

### *Participation Estimates*

We estimate how the effect of the EITC on labor force participation differs across local areas with the probit equation:

$$(1) \Pr(\text{LFP} = 1) = \Phi(\alpha + \beta Z + \gamma_0 \text{treatment} + \gamma_1 \text{post} + \gamma_2 (\text{treatment} * \text{post}) + \gamma_3 (\text{treatment} * \text{post} * \text{cost}) + \gamma_4 \text{cost})$$

Our dependent variable, LFP, is a dichotomous variable equal to 1 if the respondent reported working last week and 0 if not. The difference-in-difference estimator,  $\gamma_2$ , measures how low-educated, single mothers change their labor force participation relative to low-educated, single women without children after 1993.<sup>13</sup> Our main coefficient of interest,  $\gamma_3$ , measures the heterogeneous effect of the EITC across local areas. Our independent variables ( $Z$ ) control for observable differences between our treatment and control groups, as well as covariates associated with labor force participation. These include age, age squared, number of preschool age children, number of dependents,<sup>14</sup> the number of dependents squared, an indicator for more

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<sup>13</sup> Technically the interaction terms in a probit model are not straightforward to interpret. The coefficient on the interaction terms does not simply capture the marginal effect, but also includes additional terms that are conditional on the interacted variables as well as any other independent variables. We also performed Linear Probability Models (LPM) in addition to probit models. Our LPM results (not reported here) are similar to our probit results. We chose to report results from probit regressions for ease of comparison with other estimates in the literature. We also used the inteff procedure, described in Ai, et al. (2004), to obtain correct marginal effects (and standard errors) for the difference-in-difference variable in the probit equation. These results were nearly identical to the results obtained from calculating the mean marginal probit effects via Gelbach's (2004) margfx procedure, as well as results from LPM models. All are available upon request.

<sup>14</sup> We defined a dependent as a child under the age of 18 or between the ages of 18 and 24 and in school full time.



than one child, race, MSA unemployment rate, and educational attainment. We also control for the month of implementation of AFDC policy waivers. Standard errors are clustered at the MSA level. All reported estimates from the participation equations are the mean marginal effects.<sup>15</sup>

We present estimates of the mean marginal effects from our probit regressions in Table 5. We first estimate the effect of the EITC on labor market participation similar to prior work. We find that low-educated single mothers increased their employment rate by 4.7 percentage points relative to low-educated single women without children as a result of the 1993 expansion, in Column 1 of Table 5. This estimate is larger than the roughly three percentage point participation increase estimated by Meyer (2002) and Meyer and Rosenbaum (2001) for the 1993 expansion. Neither study, however, limits their sample by education. When we expand the sample to include all women, in Column 4, our estimates are nearly identical. Controls for education, age, race, and the local unemployment rate have the expected sign.

We explore whether the EITC participation effect differs systematically by local areas in Column 2 of Table 5. We begin by creating dichotomous variables for MSA in cost quarters, based on the distribution of quality-adjusted rental costs, omitting the first cost quarter. Interacting these dichotomous variables with the difference-in-difference variable demonstrates that the lowest cost quarter has a 7.3 percentage point increase in labor force participation. The estimate for the second cost quarter implies that the increase in these areas is 2.3 percentage points more than the lowest cost quarter, although the point estimate is insignificant. The third cost quarter implies a slightly lower response than the first cost quarter, although again it is insignificant. The estimate for the highest cost quarter is almost equal in magnitude and opposite

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<sup>15</sup> We employed the `margfx` command to calculate the mean of the marginal effects, as opposed to calculating the marginal effect evaluated at the mean (Gelbach, 2004).

in sign to the lowest cost quarter. In sum, the increase in labor force participation in the bottom three quarters of rental costs is 7.3 percentage points while the highest quarter of rental costs shows no response on participation.

To take advantage of the full variation in costs we interact the difference-in-difference estimator with our continuous measure of rental costs in Column 3. The difference-in-difference estimator rises to 10.2 percentage points. However, each \$1,000 increase in our quality-adjusted rental costs reduces participation by one percentage point. These results again suggest no effect of the EITC on participation in the highest-cost areas.

The local cost-of-living may systematically impact all covariates associated with labor force participation, such as the cost of child care, conditions in the local labor market, and returns to education. The summary statistics in Table 4 demonstrates some differences in the observable characteristics of individuals in each metropolitan area in education and race. Additionally, the implementation of an AFDC waiver is positively correlated with high-cost MSAs, suggesting that states that implemented a waiver tend to contain high-cost MSAs. Using the distribution of rental costs, we split the sample of low-educated women into quarters by cost-of-living. We further split the highest rent quarter in half (75<sup>th</sup> to 87<sup>th</sup> percentile and 88<sup>th</sup> percentile and above) to determine if differences in MSAs at the upper tail of the distribution drove the lack of a participation effect found in Column 3 in the most expensive areas. We test to determine if we should pool these cost-of-living areas or estimate each area separately. A Wald test strongly rejects pooling ( $p=0.000$ ).

We rerun our participation equation separately for each of these cost-of-living areas and report the results in Table 6. Overall, the expansion of the EITC results in more low-educated single women entering the labor force in lower-cost areas than the higher-cost areas. We

hypothesize that the prevailing wage in lower-cost areas may still be low enough so that those entering the labor market will capture substantial benefits from the EITC. The second (Column 2) and third (Column 3) quarter of rental costs have the largest and most significant effects: an increase in employment of 6.3 and 7.0 percentage points, respectively. Meanwhile, the first quarter (Column 1) has a slightly smaller response, with a rise in participation of 4.7 percentage points. Above the 75<sup>th</sup> percentile of rent (Columns 4 and 5), the EITC has no significant effect on participation.

We test whether each of these point estimates are significantly different from each other. We cannot conclude that the estimates in the first three quarters (Columns 1 through 3 of Table 6) are different from one another at the 10 percent significance level. However, virtually all of the point estimates in the first three quarters are significantly different at the 10 percent significance level from the point estimates from the 75<sup>th</sup> to 87<sup>th</sup> percentile (Column 4), as well as the point estimate from MSAs above the 87<sup>th</sup> percentile (Column 5). The one exception to these findings is that we cannot conclude that the point estimate from the lowest quarter of MSAs (Column 1) is statistically different from the point estimate from MSAs above the 87<sup>th</sup> percentile. The p-value from this Chi-Squared test is 0.24.

### *Robustness Checks*

We perform several tests to explore whether our results are dependent on our methodological considerations, and if the identifying assumptions of the difference-in-difference estimator are valid. First, we expand our sample to all women, regardless of education level for each specification. The difference-in-difference, not including our cost-of-living variable, falls from 4.7 to 3.1 percentage points (Column 4 of Table 5). When we include the heterogeneous effects using dichotomous variables for each cost quarter in Column 5, our heterogeneous effect

shows the same pattern as our baseline estimates but with smaller magnitudes. Participation increased by 4.3 percentage points in the lowest quarter, 7.1 points in the second quarter, and 4.3 percentage points in the third quarter. Again, there was no change in participation in the highest rent quarter. Results using the continuous cost-of-living measure (Column 6 of Table 5) imply that areas with the very highest-costs (roughly above the 85<sup>th</sup> percentile) actually had a reduction in employment of single mothers relative to single, childless women as a result of the EITC.

When we split all single women, regardless of education, into quarters of the rental cost distribution and further split the top quarter in half, the same pattern of results is again apparent in Columns 6 through 10 of Table 6. The largest response is in the second quarter of costs (Column 7) with an almost 6 percentage point increase in labor force participation. The lowest quarter (Column 6) and third quarter (Column 8) display a similar response of roughly 3 percentage points. Unlike our sample of low-educated women, single women in MSAs in the 75<sup>th</sup> to 87<sup>th</sup> percentile of the rental cost distribution also show a labor force participation response of 3 percentage points (Column 9). In MSAs above the 87<sup>th</sup> percentile (Column 10), there is no response in labor force participation.

Next, we check the robustness of our cost measures with two different measures of housing costs: Housing and Urban Development (HUD) Fair Market Rent data from 1990 and median rent data from the 1990 Census.<sup>16</sup> Both measures suggest the same magnitude and pattern of results as our quality-adjusted rental cost data.<sup>17</sup> (The distribution of these two

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<sup>16</sup> The HUD fair market rent data provides estimates the price for a two-bedroom unit from a series of separate regional surveys. The Census median rent data includes all types of rental housing, regardless of the number of rooms. Thus, the Census data may introduce variation in the median rent arising from the mix of types within the rental market while the HUD data controls for the rental size and, to some extent, the quality of the rental housing stock.

<sup>17</sup> These results are not included, but are available on request.

alternative housing cost measures, compared with our positive quality-adjusted measure is included in Appendix C.)

Finally, we test the validity of the identifying assumption in the difference-in-difference estimator – that the policy change under consideration is the only group and time-varying factor (outside of the additional covariates) impacting the dependent variable is valid – in two ways. First, we conduct a placebo test by running the same regressions from equation 1 during years when there was no policy change. If the change in the EITC is causing single mothers to increase their labor force participation, we shouldn't see a change in labor force participation in years when the policy is not changing. We limit the sample to observations in 1990 and 1991, treating 1990 as our “pre” period and 1991 as our “post” period (Columns 1 and 2 of Table 7).<sup>18</sup> The difference-in-difference estimates, as well as the heterogeneous effects, from the placebo tests are small and insignificant. In contrast, limiting the sample to 1993 and 1994 we continue to find large and significant results for our variables of interest (Columns 3 and 4 of Table 7).

Second, we explore whether the expansion of state-level EITC policies adopted in the mid-1990s could be driving the geographic patterns in labor supply response we observe.<sup>19</sup> (We are already controlling for the adoption of welfare-reform waivers which vary across states and impact the labor force participation of single mothers.) To test the impact of these policies, we run additional regressions including a variable to reflect refundable state-level EITCs. Whether

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<sup>18</sup> Because of annual inflation-based adjustments, there are small changes to some EITC parameters every year during this period and since. Between 1990 and 1991 there were some additional changes in phase-in and phase-out rates from OBRA90, but these changes were relatively small, especially compared to those contained in OBRA93 (Table 3 and Figure 1.)

<sup>19</sup> Data on state EITC policies is from Leigh (2007) Table 2.

the state policies are coded as a simple dummy variable, the state credit rate, or the maximum dollar amount of the state EITC, our coefficients of interest are unaffected.<sup>20</sup>

### *Hours Results*

While EITC participation varies by cost-of-living, as we predicted, we do not have a clear prediction about a change in hours of work arising from the EITC in different MSAs. To estimate the effect on hours worked for those working, we again adopt a difference-in-difference strategy. We use the same covariates as in our participation equation but our dependent variable is hours worked last week. Our equation is:

$$(2) \text{ Hours} = \alpha + \beta Z + \gamma_0 \text{ treatment} + \gamma_1 \text{ post} + \gamma_2 (\text{treatment} * \text{post}) \\ + \gamma_3 (\text{treatment} * \text{post} * \text{cost}) + \gamma_4 \text{ cost}$$

We drop women who did not report working last week. Our independent variables ( $Z$ ) are identical to those in the participation equation and include age, age squared, number of preschool-age children, number of dependents, the number of dependents squared, an indicator for more than one child, race, MSA unemployment rate, educational attainment, and the month of implementation of welfare policy waivers. Standard errors are clustered at the MSA level.

We begin with the standard difference-in-difference strategy seen in the literature for our sample of low-educated single women. As in other work, we find no effect of the EITC on the hours worked per week in column 1 of Table 8. However, when we look at heterogeneous effects in each cost quarter (column 2) of the distribution of housing costs with the lowest-cost quarter serving as the omitted group, we do begin to find significant responses in the lowest and highest-

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<sup>20</sup> These results are not included, but are available on request. The coefficients on the state EITC covariates are uniformly negative, suggesting that states with refundable EITC policies in the mid-1990s were those with lower rates of female labor force participation.

cost quarters. In the lowest-cost quarter, single mothers increased their hours of work by 1.3 hours per week, relative to single women without children. In the highest-cost quarter, single mothers reduced their hours of work by 0.6 hours per week, relative to single women without children.

These results demonstrate that women in different MSAs may face different incentives from the EITC. As in our earlier example of janitors in different cities, working single mothers in the lower-cost areas are more likely to have annual earnings that place them in the phase-in portion of the credit. The estimates suggest that in the lowest-cost areas the substitution effect outweighs any negative income effect created by the structure of the EITC. In contrast, a working single mother in the highest-cost areas is more likely to face the high marginal tax rates arising from the phase-out of the credit. In these areas, the substitution and income effects work in concert, reducing the labor supply of working single mothers.

In Column 3 of Table 8, we use a continuous measure of housing costs interacted with the difference-in-difference estimator. The difference-in-difference estimator rises to an increase of 1.7 hours per week. However, each \$1,000 increase in our quality adjusted rental costs reduces weekly hours by 0.4. Thus, single mothers in the very highest rental cost areas behave differently than those in other areas. Single mothers living in MSAs at or above the 85<sup>th</sup> percentile of costs reduce their hours of work in response to the EITC.

As in our participation estimates, we again divide the sample into four quarters based on the rental cost distribution and divide the highest quarter in half. We report the estimates from these regressions in Columns 1 through 5 of Table 9. Our results are less robust when we run sub-samples separately, possibly because of the small sample sizes for each estimate. However, we find the same pattern of results: our difference-in-difference estimates changes from a

positive signed coefficients in Columns 1 through 3 to negative signed coefficients in Columns 4 and 5 when the subsample changes from below the 75<sup>th</sup> percentile to above the 75<sup>th</sup> percentile.

Although the coefficients seem small, the labor supply responses at the lower tail of the cost-of-living distribution are not trivial. For a full-time single mother in a low-cost area working full-year, our estimates suggest that there was an increase of 68 to 86 hours of work per year. In contrast, single mothers in a high-cost area may have reduced their annual hours of work between 20 to 30 hours. Additionally, our results demonstrate the need to estimate the effect within a local labor market to understand the labor supply response to the EITC. The effect of the EITC on the intensive margin is dependent on the local wages facing potential recipients.

#### *Robustness Checks*

We check the robustness of the hours worked results to ensure our results are not driven by our methodology and that the identifying assumptions are valid. Overall, the hours worked estimates are less robust than our participation estimates. Expanding our sample to include all employed single women, regardless of education level, provides estimates that are smaller and less significant in Columns 4 through 6 of Table 8 and Columns 6 through 10 of Table 9. This suggests that our findings of the hours response in the directions predicted are a result of selecting our sample on the low-educated. We also consider the performance of the regressions using alternative measures of housing costs. The results do not change when using either the HUD Fair Market Rent or the median rental data from the 1990 Census.

We test the identifying assumption of the difference-in-difference estimator by performing placebo tests. As in our participation results, we create two sub-samples 1990-1991 and 1993-1994 where the first year in each is our “pre” period and the second period is the



“post” period. In this case, our 1990-1991 subsample and our 1993-1994 subsample each have small and insignificant results. These tests also suggest that our results are not robust.

We also estimate our equation with a Heckman selection model to correct for selecting our sample on those working last week.<sup>21</sup> The results from the Heckman model (Table 10) provide still weaker support for the influence of cost-of-living on the impact of the EITC on hours worked. Columns 1 through 3 include second stage results of the Heckman model for low-educated women. The simple difference-in-difference (Column 1) is small and not significant. The regression including an interaction between the difference-in-difference and quarters of the rent distribution, however, does show a positive (though not significant) effect on hours worked in the lowest quarter of the rent distribution (.2 hours per week), and a negative and significant (nearly one hour per week) effect in the highest-cost quarter. The interaction between the DD variable and a continuous measure of rent (Column 3) and the separate regressions by cost group (Columns 4 through 8) all have signs suggesting the same pattern of positive impacts on hours in lower-cost regions and negative impacts in higher-cost areas. None of these coefficients, however, are significant.

The lack of robustness to our hours worked results is not surprising. Almost no study has found robust effects on the hours of work decision. This could be either because of measurement error, the lack of continuous hours of work choices for low-income workers, or lack of knowledge by recipients as to how a particular number of hours worked translates into EITC eligibility. While we find that there is some hours worked response in our sample of low-educated single women, our precision is limited by our small sample sizes of in each MSA.

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<sup>21</sup> The second stage of the Heckman model excludes the following variables that were included in the previous equations: the number of children under 18, the number of children under 18 squared, and an indicator for the presence of a second child.

## **Section V: Discussion**

Our results suggest that the EITC has had little impact on the labor supply of low-income women in higher cost-of-living areas such as Boston, New York City, Los Angeles, and San Francisco. The absence of an impact in these areas is particularly troubling if the policy goal of the EITC is to create incentives for single parents to work rather than rely on the social safety net. While the high-cost areas where the EITC produces no labor supply response account for 13 to 25 percent of MSAs, they account for as much as 40 percent of the total population, rendering a federal policy essentially ineffective for a large share of country. Second, these high-cost areas include many large metropolitan regions that are widely believed to have serious problems with poverty and joblessness. Whether the size of the credit is insufficient to overcome the fixed costs of work in higher cost-of-living areas, or the nationally fixed eligibility rules are incompatible with the local wage structure, or some other reason, the EITC seems to be unsuccessful at changing the labor market decisions of low-skilled workers in these areas.

Our findings also raise concerns regarding the welfare and efficiency impacts of the EITC. Since its inception one argument in support of the EITC has been its efficiency-enhancing properties. By offsetting relatively high taxes on the labor of low-paid workers and the steep marginal tax rates faced by those contemplating leaving public assistance, it reduces distortions in behavior (Ventry, 2001 and Hoffman and Seidman, 1990). Indeed, Eissa et al. (2008) find that the EITC has improved welfare. Eissa et al. study a series of EITC reforms, including the reform contained in OBRA93, and evaluate welfare gains by contrasting the EITC to a lump sum benefit, taking into account the interactions with other tax and transfer programs. The ultimate welfare gains of the EITC result from welfare improvements along the extensive margin

outweighing welfare losses along the intensive margin and those caused by the use of distortionary taxes to finance the benefit.<sup>22</sup>

While the welfare improvements of the EITC depend on positive responses along the extensive margin, our findings suggest that there is no such response in high-cost areas. If anything, our results suggest no change in participation and fewer hours worked in high-cost areas, which imply welfare losses. In other words, in the highest-cost areas, EITC benefits were largely windfall gains to those who would be working regardless of the EITC. Moreover, these EITC beneficiaries may have reduced their hours of work in response to the policy. In low-cost areas, however, large increases in employment, and possible increases in hours worked, may have produced even larger welfare improvements than those suggested by Eissa et al. (2008). If a large portion of the country experiences welfare losses because the program rules and benefits are not compatible with the local labor market, there would appear to be considerable room for improvement.

The imbalance in the value of the EITC between low- and high-cost regions may cause additional welfare losses, not considered by Eissa et al. (2008), by creating incentives for low-skilled workers to relocate from high-cost to low-cost metropolitan areas. Under a spatial equilibrium with geographic differences in the cost-of-living, gross wages will vary across areas for given worker types. Their real wages, however, should be equal. A major reform to the EITC, which is based on gross wages, would disturb that equilibrium and provide an incentive for

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<sup>22</sup> Eissa, et al. (2008) show that calculating the welfare gains of the EITC depends on correctly measuring labor supply responses on both the intensive and extensive margins. The response along each margin is related to a different tax wedge, and impacts welfare in opposite directions. As the EITC lowers the average tax rate, employment increases, which generates a host of positive public budget externalities and increases welfare. The change in marginal tax rates, which influence the intensive margin, varies across the schedule. Overall, changes in the intensive margin are found to be welfare decreasing, as hours of work reductions (and related negative public budget externalities) along the phase-out region swamp increases along with phase-in region.

lower-income households to relocate to low-cost regions. In particular, households may seek to move to a lower-cost area to realize a similar after-tax income but fewer hours devoted to work. Albouy (2008) explores similar incentives arising from federal income tax deductions and shows that the size of these distortions can be considerable. We plan to examine if the EITC induced low-skilled workers in high-cost areas to migrate to low-cost areas in future work.

If policymakers intend to alter the labor supply decisions of low-skilled women, these conclusions are cause for concern. The appropriate policy remedy (if any), however, is not clear. The EITC is already complicated to claim, which may contribute to errors in claiming the credit or reduced participation rates (Holtzblatt and McCubbin, 2004). Introducing regional differences in the federal credit could exacerbate these problems and make it more costly to administer.

States could play an important role in addressing geographic imbalances. Although not very widespread during the period we study, state-level EITCs have become increasingly common.<sup>23</sup> By 2007, twenty one states (including the District of Columbia) had adopted refundable EITCs to supplement the federal policy and three additional states had non-refundable state EITC policies (Levitis and Koulis, 2007). While some of the higher-cost states have adopted relatively generous credit programs – the state EITC is set at 30 percent of the federal benefit in New York and 35 percent in Washington, D.C. – in most, it remains a small share of the federal credit. Many high-cost states, including California, Connecticut, and Hawaii, lack refundable EITCs. Furthermore, no state has modified its credit to adjust for cost differences within a state, which can be substantial.

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<sup>23</sup> In the mid-1990s only five states had refundable EITC programs in place: Maryland, Minnesota, New York, Vermont, and Wisconsin. Our analysis generally ignores these state programs, which were quite small at the time. Furthermore, with many of the highest cost areas in California, Connecticut, Hawaii, New Jersey, and Massachusetts, the pattern of state EITCs shows little relationship to a state's cost-of-living. By 2007, however, twenty states and the District of Columbia had adopted refundable EITCs to supplement the federal policy. Three additional states had EITC programs that were not refundable.

Local EITCs may represent the best opportunity for addressing the issues associated with cost-of-living differences. While only a few localities have recently adopted supplemental EITC policies, they have been implemented in high-cost areas: New York City, San Francisco, and Montgomery County, MD (Holt, 2006). In two of these cases, the size of the local benefit is noteworthy: 16 percent of the federal credit in San Francisco and 20 percent of the federal credit in Montgomery County, MD. The local credit in New York City, however, is set at only five percent of the federal EITC benefit.

Insufficient purchasing power of the federal EITC benefit in high-cost areas is only part of the cost-of-living problem. Unless eligibility rules reflect local wage levels, fewer workers will be impacted in high-cost areas, workers will be treated differently by the policy depending on where they live, and incentives to relocate will remain.

## **Section VI: Conclusion**

The federal EITC affects the labor decisions of the potentially eligible. We replicate the estimates in the literature of the intensive and extensive labor supply effects of the EITC using the 1993 expansion as a natural experiment. We contribute to the literature by taking into account local price differences. We find that the credit has differential effects across geographic areas, particularly for the participation decision. The effects of the EITC on labor market participation of single women are greatest in lower-cost areas. We demonstrate that estimates of the labor supply response to the EITC that do not account for the specific prices and local labor markets of potential beneficiaries will not fully capture the behavioral response.

We suggest that the welfare gain from the 1993 expansion is distributed unevenly across metropolitan areas. In fact, metropolitan areas with the very highest costs may have experienced

a welfare loss for each EITC dollar spent while low-cost areas overwhelmingly benefited from the credit. Improved policy targeting to populations that did not benefit from the 1993 expansion may be necessary to address geographic imbalances.

## APPENDIX A. Data Description

### *MSAs over time in the CPS*

Cost-of-living and unemployment rates in this study are based on information in MSAs and non-MSA areas. There is one non-MSA area for every state, except New Jersey. Any observations which do not report a basic geographic identifier (MSA or non-MSA) are dropped from the data.

MSA definitions, which are based on at least 50,000 persons residing in a geographic area, were updated following the 1990 Census and implemented in the CPS in 1994. To link geographic units in 1994 and 1995 to the equivalent geographic units before 1994 requires constructing consistent geographic definitions over this period. The major changes to the MSA definitions include: 1) new Primary Metropolitan Statistical Areas (PMSAs) were created from several MSAs and tracking the separate MSAs that were discontinued; 2) collapsing of multiple adjacent MSAs into a single MSA; 3) creation of new MSAs out of previously non-MSA areas, and: 4) downgrading areas from MSA to non-MSA.

To make the geography in the CPS consistent between 1990 and 1995 we had to make two basic changes. For previously distinct MSAs that were consolidated into PMSAs or larger MSAs, we applied the new consolidated definition on the early 1990s geography. Any MSAs that were created out of, or returned to, non-MSA regions were classified as non-MSA in all years.

Also during this period there was a major sample redesign in the CPS. In addition to the adoption of the new MSA definitions, and changes to some of the basic questions, the CPS also changed its sample frame. Some MSAs were dropped from the survey, while others were added. Areas that were either added to or dropped from the survey are included in the non-MSA region; added regions are included in non-MSA in the mid-1990s, while dropped regions are included in non-MSA in the early-1990s when they are still in the survey.

Twenty-three MSAs are excluded in Chen and Rosenthal's data, but are included in the CPS. These few MSAs are assigned the quality-adjusted rent measure of the closest substitute – based on geographic proximity, median household income, total population, unadjusted median home price, and unadjusted median rent from the 1990 Census. MSAs with missing values (and the 'donor' MSA in parenthesis) include: Burlington, VT (from Manchester, NH); Charleston, WV (from Huntington-Ashland); Columbus, GA-AL (from Macon, GA); Evansville-Henderson, IN-KY (from Louisville, KY); Fargo-Moorhead, ND-MN (from St. Cloud, MN); Fitchburg-Leominster, MA (from Worcester, MA); Fort Smith AR-OK (from Fayetteville-Springdale, AR); Fort Walton Beach, FL (from Pensacola and Jacksonville, FL); Gadsden, AL (from Florence, AL); Huntsville, AL (from Decatur, AL); Lake Charles, LA (from Beaumont-Port-Arthur, TX); Laredo, TX (from McAllen-Edinburg-Pharr-Mission, TX); Lawton, TX (from Lubbock, TX); Naples, FL (from Palm Beach-Boca-Delray, FL); Panama City, FL (from Pensacola, FL); Portland, ME (from Manchester, NH); Portsmouth-Rochester, NH-ME (from Lawrence-Haverill MA/NH); Poughkeepsie/Dutchess, NY (from Orange, NY); Sioux City IA-NE (Waterloo-Cedar Falls, IA); Sioux Falls, SD (from Wichita, KS and Tulsa, OK); Tallahassee, FL (from Tampa-St.Petersburg-Clearwater, FL); Topeka, KS (from Kansas City, MO-KS); Wheeling, WV-OH (from Pittsburgh-Beaver Valley, PA).

## Appendix B: Chen and Rosenthal's 1990 Quality Adjusted Rent and Our Rental Costs

<u>Metropolitan Areas</u>	<u>Quality Adjusted Rent</u>	<u>Our Rental Costs</u>
San Francisco-Oakland-Vallejo, CA	6,152	10,152
San Jose, CA	5,795	9,795
Honolulu, HI	5,792	9,792
Santa Cruz, CA	5,452	9,452
Oxnard-Ventura-Simi, CA	5,413	9,413
Anaheim-Santa Ana-Garden Grove, CA	5,413	9,413
Stamford, CT	5,328	9,328
Ventura-Oxnard-Simi Valley, CA	5,295	9,295
Los Angeles-Long Beach, CA	4,897	8,897
Santa Barbara-Santa Maria-Lompoc, CA	4,814	8,814
Salinas-Sea Side-Monterey, CA	4,767	8,767
Bergen-Passaic, NJ	4,733	8,733
Oakland, CA	4,577	8,577
Danbury, CT	4,523	8,523
Santa Rosa-Petaluma, CA	4,521	8,521
Nassau Co, NY	4,317	8,317
Connecticut Non-MSA	4,128	8,128
Boston, MA	4,038	8,038
Middlesex-Somerset-Hunterdon, NJ	3,820	7,820
Bridgeport, CT	3,805	7,805
San Diego, CA	3,804	7,804
New London-Norwich, CT/RI	3,738	7,738
Newark, NJ	3,727	7,727
Hartford-Bristol-Middleton-New Britain, CT	3,631	7,631
Hawaii Non-MSA	3,484	7,484
New York-Northeastern NJ	3,425	7,425
Vallejo-Fairfield-Napa, CA	3,187	7,187
Monmouth-Ocean, NJ	3,178	7,178
Jersey City, NJ	3,115	7,115
Lowell, MA/NH	3,109	7,109
Massachusetts Non-MSA	2,985	6,985
New Haven-Meriden, CT	2,856	6,856
Washington, DC/MD/VA	2,802	6,802
Poughkeepsie/Dutchess, NY	2,771	6,771
Orange, NY	2,771	6,771
Rhode island Non-MSA	2,740	6,740
Nashua, NH	2,638	6,638
Brockton, MA	2,594	6,594
Fitchburg-Leominster, MA	2,560	6,560
Worcester, MA	2,560	6,560
Trenton, NJ	2,479	6,479
Sacramento, CA	2,424	6,424
Burlington, VT	2,420	6,420
Portland, ME	2,420	6,420
Manchester, NH	2,420	6,420
Portsmouth-Rochester, NH-ME	2,414	6,414
Lawrence-Haverhill, MA/NH	2,414	6,414
New Jersey Non-MSA	2,351	6,351
Riverside-San Bernardino CA	2,297	6,297
Waterbury, CT	2,289	6,289
New Hampshire Non-MSA	2,169	6,169
Stockton, CA	2,100	6,100



Providence-Fall River-Pawtucket, MA/RI	2,074	6,074
Modesto, CA	2,073	6,073
Springfield-Holyoke-Chicopee, MA	1,860	5,860
Seattle-Everett, WA	1,811	5,811
California Non-MSA	1,760	5,760
Anchorage, AK	1,638	5,638
Alaska Non-MSA	1,593	5,593
Chicago-Gary-Lake, IL	1,472	5,472
Atlantic City, NJ	1,420	5,420
New Bedford, MA	1,348	5,348
Reno, NV	1,343	5,343
Merced, CA	1,320	5,320
Santa Fe, NM	1,002	5,002
Naples, FL	995	4,995
West Palm Beach-Boca Raton-Delray Beach, FL	995	4,995
Wilmington, DE/NJ/MD	976	4,976
Miami-Hialeah, FL	974	4,974
Ann Arbor, MI	957	4,957
Vermont Non-MSA	953	4,953
Fresno, CA	798	4,798
Allentown-Bethlehem-Easton, PA/NJ	760	4,760
Yuba City, CA	750	4,750
Bakersfield, CA	739	4,739
Boulder-Longmont, CO	723	4,723
Albany-Schenectady-Troy, NY	710	4,710
Sarasota, FL	702	4,702
Chico, CA	693	4,693
Fort Lauderdale-Hollywood-Pompano Beach, FL	669	4,669
Bellingham, WA	615	4,615
Philadelphia, PA/NJ	597	4,597
Redding, CA	569	4,569
Las Vegas, NV	530	4,530
Baltimore, MD	519	4,519
Visalia-Tulare-Porterville, CA	363	4,363
Minneapolis-St. Paul, MN	349	4,349
Nevada Non-MSA	340	4,340
Bremerton, WA	312	4,312
Atlanta, GA	284	4,284
Lancaster, PA	216	4,216
Maine Non-MSA	155	4,155
Albuquerque, NM	141	4,141
Rochester, NY	126	4,126
Madison, WI	83	4,083
Dallas-Fort Worth, TX	58	4,058
Raleigh-Durham, NC	35	4,035
Phoenix, AZ	-28	3,972
Milwaukee, WI	-28	3,972
Norfolk-VA Beach-Newport News, VA	-38	3,962
Fort Pierce, FL	-74	3,926
Austin, TX	-117	3,883
Maryland Non-MSA	-131	3,869
Tacoma, WA	-136	3,864
Denver-Boulder-Longmont, CO	-184	3,816
Orlando, FL	-211	3,789
Fort Myers-Cape Coral, FL	-245	3,755
Vineland-Millville-Bridgetown, NJ	-329	3,671

Reading, PA	-411	3,589
Medford, OR	-422	3,578
Lexington-Fayette, KY	-433	3,567
Bradenton, FL	-457	3,543
Fort Worth-Arlington, TX	-476	3,524
Tucson, AZ	-477	3,523
Olympia, WA	-491	3,509
Hagerstown, MD	-503	3,497
New Orleans, LA	-503	3,497
Richmond-Petersburg, VA	-520	3,480
Portland-Vancouver, OR	-533	3,467
Binghamton, NY	-548	3,452
Kenosha, WI	-575	3,425
Syracuse, NY	-582	3,418
Melbourne-Titusville-Cocoa-Palm Bay, FL	-624	3,376
Colorado Springs, CO	-626	3,374
Nashville, TN	-654	3,346
New York Non-MSA	-682	3,318
York, PA	-684	3,316
St. Louis, MO-IL	-699	3,301
Buffalo-Niagara Falls, NY	-716	3,284
Racine, WI	-719	3,281
Yuma, AZ	-733	3,267
Cleveland, OH	-766	3,234
Columbus, OH	-786	3,214
Bryan-College Station, TX	-793	3,207
Fort Collins-Loveland, CO	-844	3,156
Cincinnati OH/KY/IN	-850	3,150
Charlotte-Gastonia-Rock Hill, SC	-894	3,106
Tallahassee, FL	-905	3,095
Tampa-St. Petersburg-Clearwater, FL	-905	3,095
Champaign-Urbana-Rantoul, IL	-907	3,093
Daytona Beach, FL	-933	3,067
Houston-Brazoria, TX	-935	3,065
Colorado Non-MSA	-950	3,050
Harrisburg-Lebanon-Carlisle, PA	-974	3,026
Utica-Rome, NY	-998	3,002
Greensboro-Winston Salem-High Point, NC	-1,005	2,995
Grand Rapids, MI	-1,025	2,975
Rochester, MN	-1,031	2,969
Detroit, MI	-1,055	2,945
State College, PA	-1,072	2,928
Hamilton-Middleton, OH	-1,077	2,923
Eugene-Springfield, OR	-1,119	2,881
Salt Lake City-Ogden, UT	-1,130	2,870
Delaware Non-MSA	-1,130	2,870
Topeka, KS	-1,131	2,869
Kansas City, MO-KS	-1,131	2,869
Fort Smith AR-OK	-1,136	2,864
Fayetteville-Springdale, AR	-1,136	2,864
Killeen-Temple, TX	-1,137	2,863
Jacksonville, NC	-1,139	2,861
Greeley, CO	-1,140	2,860
Memphis, TN/AR/MS	-1,166	2,834
Dayton-Springfield, OH	-1,168	2,832
Indianapolis, IN	-1,178	2,822

Lafayette-W. Lafayette, IN	-1,189	2,811
Bloomington, IN	-1,191	2,809
Lansing-E. Lansing, MI	-1,192	2,808
Lorain-Elyria, OH	-1,199	2,801
Columbia, SC	-1,216	2,784
Little Rock-North Little Rock, AR	-1,230	2,770
Wilmington, NC	-1,231	2,769
Green Bay, WI	-1,231	2,769
Appleton-Oshkosh-Neenah, WI	-1,274	2,726
Washington Non-MSA	-1,283	2,717
Arizona Non-MSA	-1,294	2,706
Galveston-Texas City, TX	-1,301	2,699
Savannah, GA	-1,316	2,684
Des Moines, IA	-1,337	2,663
Charleston-North Charleston, SC	-1,342	2,658
Florida Non-MSA	-1,344	2,656
Fayetteville, NC	-1,355	2,645
Wichita, KS	-1,357	2,643
Akron, OH	-1,384	2,616
Oregon Non-MSA	-1,391	2,609
Sioux Falls, SD	-1,410	2,590
Boise City, ID	-1,412	2,588
Gainesville, FL	-1,413	2,587
Burlington, NC	-1,442	2,558
San Antonio, TX	-1,460	2,540
Tulsa, OK	-1,466	2,534
Salem, OR	-1,476	2,524
Gary-Hammond-East Chicago, IN	-1,476	2,524
Corpus Christi, TX	-1,482	2,518
Jackson, MS	-1,482	2,518
Jacksonville, FL	-1,485	2,515
Rockford, IL	-1,496	2,504
Montgomery, AL	-1,503	2,497
Elkhart-Goshen, IN	-1,504	2,496
Kalamazoo-Portage, MI	-1,506	2,494
Sheboygan, WI	-1,510	2,490
Omaha, NE/IA	-1,537	2,463
Oklahoma City, OK	-1,546	2,454
Provo-Orem, UT	-1,554	2,446
Hickory-Morgantown, NC	-1,566	2,434
Springfield, IL	-1,578	2,422
Lawton, TX	-1,582	2,418
Lubbock, TX	-1,582	2,418
Amarillo, TX	-1,617	2,383
Lincoln, NE	-1,619	2,381
Virginia Non-MSA	-1,626	2,374
Asheville, NC	-1,629	2,371
El Paso, TX	-1,633	2,367
Scranton-Wilkes-Barre, PA	-1,637	2,363
Baton Rouge, LA	-1,661	2,339
Yakima, WA	-1,672	2,328
Bloomington-Normal, IL	-1,696	2,304
Roanoke, VA	-1,735	2,265
Columbus, GA-AL	-1,737	2,263
Macon-Warner Robins, GA	-1,737	2,263
Clarksville-Hopkinsville, TN/KY	-1,740	2,260

Springfield, MO	-1,769	2,231
Augusta-Aiken, GA-SC	-1,773	2,227
Janesville-Beloit, WI	-1,774	2,226
Fort Walton Beach, FL	-1,800	2,200
Evansville-Henderson, IN-KY	-1,814	2,186
Louisville, KY/IN	-1,814	2,186
Tyler, TX	-1,827	2,173
Cedar Rapids, IA	-1,832	2,168
Las Cruces, NM	-1,833	2,167
Wheeling, WV-OH	-1,863	2,137
Pittsburgh-Beaver Valley, PA	-1,863	2,137
Lafayette, LA	-1,878	2,122
Brazoria, TX	-1,885	2,115
Shreveport, LA	-1,898	2,102
Abilene, TX	-1,920	2,080
Waco, TX	-1,933	2,067
Toledo, OH/MI	-1,933	2,067
South Bend-Mishawaka, IN	-1,938	2,062
Utah Non-MSA	-1,952	2,048
Columbia, MO	-1,955	2,045
Gadsden, AL	-1,965	2,035
Birmingham, AL	-1,965	2,035
Ocala, FL	-1,972	2,028
Spokane, WA	-1,981	2,019
Greenville-Spartanburg-Anderson SC	-2,009	1,991
Biloxi-Gulfport, MS	-2,034	1,966
Tuscaloosa, AL	-2,050	1,950
Lakeland-Winterhaven, FL	-2,052	1,948
Benton Harbor, MI	-2,060	1,940
Canton, OH	-2,066	1,934
Fargo-Moorhead, ND-MN	-2,074	1,926
St. Cloud, MN	-2,074	1,926
Fort Wayne, IN	-2,076	1,924
Chattanooga, TN/GA	-2,078	1,922
Panama City, FL	-2,105	1,895
Pensacola, FL	-2,105	1,895
Billings, MT	-2,145	1,855
Richland-Kennewick-Pasco, WA	-2,146	1,854
Knoxville, TN	-2,151	1,849
New Mexico Non-MSA	-2,159	1,841
Wisconsin Non-MSA	-2,179	1,821
Montana Non-MSA	-2,181	1,819
Wausau, WI	-2,210	1,790
Wyoming Non-MSA	-2,282	1,718
Davenport, IA Rock Island-Moline, IL	-2,282	1,718
Peoria, IL	-2,308	1,692
Monroe, LA	-2,320	1,680
Williamsport, PA	-2,324	1,676
Flint, MI	-2,341	1,659
Georgia Non-MSA	-2,344	1,656
Mobile, AL	-2,350	1,650
Wichita Falls, TX	-2,355	1,645
Alexandria, LA	-2,374	1,626
North Carolina Non-MSA	-2,385	1,615
Idaho Non-MSA	-2,389	1,611
Pascagoula-Moss Point, MS	-2,424	1,576

Mansfield, OH	-2,484	1,516
Erie, PA	-2,490	1,510
Texas Non-MSA	-2,499	1,501
Youngstown-Warren, OH-PA	-2,519	1,481
Pueblo, CO	-2,527	1,473
Charleston, WV	-2,547	1,453
Huntington-Ashland, WV/KY/OH	-2,547	1,453
Pennsylvania Non-MSA	-2,551	1,449
Odessa, TX	-2,551	1,449
Michigan Non-MSA	-2,558	1,442
Eau Claire, WI	-2,580	1,420
Longview-Marshall, TX	-2,594	1,406
Jackson, MI	-2,605	1,395
Ohio Non-MSA	-2,647	1,353
Jamestown-Dunkirk, NY	-2,653	1,347
Indiana Non-MSA	-2,661	1,339
Huntsville, AL	-2,663	1,337
Decatur, AL	-2,663	1,337
Anderson, IN	-2,682	1,318
Saginaw-Bay City-Midland, MI	-2,731	1,269
Sioux City IA-NE	-2,733	1,267
Waterloo-Cedar Falls, IA	-2,733	1,267
South Carolina Non-MSA	-2,747	1,253
Illinois Non-MSA	-2,751	1,249
Decatur, IL	-2,759	1,241
Lima, OH	-2,800	1,200
Arkansas Non-MSA	-2,808	1,192
Battle Creek, MI	-2,813	1,187
Brownsville-Harlingen-San Benito, TX	-2,819	1,181
Minnesota Non-MSA	-2,843	1,157
Anniston, AL	-2,858	1,142
Muncie, IN	-2,914	1,086
Joplin, MO	-2,923	1,077
Houma-Thibodaux, LA	-2,972	1,028
Lake Charles, LA	-2,997	1,003
Beaumont-Port Arthur-Orange, TX	-2,997	1,003
Florence, AL	-3,012	988
Johnson City-Kingsport-Bristol, TN/VA	-3,013	987
Iowa Non-MSA	-3,022	978
Florence, SC	-3,035	965
Duluth-Superior, MN/WI	-3,071	929
Oklahoma Non-MSA	-3,094	906
Missouri Non-MSA	-3,132	868
Danville, VA	-3,151	849
Tennessee Non-MSA	-3,190	810
Kansas Non-MSA	-3,196	804
Alabama Non-MSA	-3,201	799
Louisiana Non-MSA	-3,214	786
Terre Haute, IN	-3,217	783
North Dakota Non-MSA	-3,230	770
Mississippi Non-MSA	-3,242	758
Sharon, PA	-3,324	676
South Dakota Non-MSA	-3,356	644
Kentucky Non-MSA	-3,357	643
Nebraska Non-MSA	-3,472	528
West Virginia Non-MSA	-3,477	523

Johnstown, PA	-3,592	408
Laredo, TX	-3,632	368
McAllen-Edinburg-Pharr-Mission, TX	-3,632	368
Altoona, PA	-3,786	214

## Appendix C: Distribution of Housing Cost Data

	Quality-Adjusted Rental Costs	HUD Fair Market Rent: 2 Bedroom Apartment	Census Median Rent
1st Decile	1,190	425	371
2nd	1,656	449	401
3rd	2,066	477	421
4th	2,449	506	460
5th	2,775	554	501
6th	3,131	602	525
7th	3,877	635	533
8th	4,973	703	626
9th	6,771	747	671
10th	9,920	930	855

Note: The first column provides the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008). Chen and Rosenthal report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. The middle column provides the 1990 HUD fair market rent values for each MSA. The HUD data provides the price for a two-bedroom unit from a series of separate regional surveys. The final column provides median rent data from the 1990 Census. The Census data includes all types of rental housing, regardless of the number of rooms. Thus, quality-adjusted rent best controls for the quality of the housing stocks by taking into account all housing characteristics. The Census data may introduce variation in the median rent arising from the mix of types within the rental market while the HUD data controls for the rental size and, to some extent, the quality of the rental housing stock.

## References

- Ai, Chunrong, Norton, Edward C., Wang, Hua, 2004. Computing Interaction Effects and Standard Errors in Logit and Probit Models. *Stata Journal* 4 (2), pp. 154-167.
- Albouy, David Y., 2008. The Unequal Geographic Burden of Federal Taxation. NBER Working Paper, vol. 13995.
- Berube, Alan, 2006. The New Safety Net: How the Tax Code Helped Low-Income Working Families During the Early 2000s. The Brookings Institution.
- Berube, Alan, Tiffany, Thacher. 2004. The 'State' of Low-Wage Workers: How the EITC Benefits Urban and Rural Communities in the 50 States. The Brookings Institution.
- Black, Dan, Kolesnikova, Natalia, Taylor, Lowell, 2007. Earnings Functions when Wages and Prices Vary by Location. St. Louis Federal Reserve Bank Working Paper, 2007-031A.
- Chen, Yong, Rosenthal, Stuart, 2008. Local Amenities and Life Cycle Migration: Do People Move for Jobs or Fun?" *Journal of Urban Economics*, forthcoming.
- Citro, Constance F., Michael, Robert T., 1995. *Measuring Poverty: A New Approach*. Washington, D.C.: National Academy Press.
- Dickert, Stacy, Houser, Scott, Scholz, John Karl. The earned income tax credit and transfer programs: a study of labor market and program participation. In: J. Poterba, Editor, *Tax Policy and the Economy* (9th ed.) (1995), pp. 1–50.
- Eissa, Nada, Liebman, Jeffrey B. 1996. Labor Supply Response to the Earned Income Tax Credit. *Quarterly Journal of Economics* 111 (2), 605-637.
- Eissa, Nada, Hoynes, Hilary. Behavioral Responses to Taxes: Lessons from the EITC and Labor Supply. In: J. Poterba, Editor, *Tax Policy and the Economy* (20th ed.) (2006), pp. 74-110.
- Eissa, Nada, Kleven, Henrik, Kreiner, Claus, 2008. Evaluation of four tax reforms in the United States: Labor Supply and welfare effects for single mothers. *Journal of Public Economics* 92 (3-4), 795-816.
- Gelbach, Jonah, 2004. Files to calculate mean marginal effects for probit and logit models. <http://www.glue.umd.edu/~gelbach/>
- Grogger, Jeffrey T., 2003. The Effects of Time Limits, the EITC, and Other Policy Changes on Welfare Use, Work, and Income Among Female-Headed Families. *Review of Economics and Statistics* 85 (2), 394-408.



Hirasuna, Donald P., Stinson, Thomas F. Stinson, 2004. Urban and Rural Differences in State Earned Income Tax Credit Programs: Minnesota's Experience. Rural Poverty Research Center Working Paper, vol. 04-08.

Hoffman, Saul D., Seidman, Laurence S., 1990. The Earned Income Tax Credit: Antipoverty Effectiveness and Labor Market Effects. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Holt, Steve, 2006. The Earned Income Tax Credit at Age 30: What We Know. The Brookings Institution.

Holtzblatt, Janet, McCubbin, Janet, 2004. Issues Affecting Low-Income Filers. In: Aaron, Henry J., Slemrod, Joel (Eds.) The Crisis in Tax Administration. Washington, DC: Brookings Institution, 148-187.

Hotz, Joseph V., Mullin, Charles, Scholz, John Karl, 2006. Examining the Effect of the Earned Income Tax Credit on the Labor Market Participation of Families on Welfare. NBER working paper, vol. 11968.

Hotz, Joseph V., Scholz, John Karl, 2003. The Earned Income Tax Credit. In: Moffitt, Robert (Ed.) Means-Tested Transfer Programs in the United States. Chicago: University of Chicago Press, 141-197.

Hoynes, Hilary, 2000. Local Labor Markets and Welfare Spells: Do Demand Conditions Matter? Review of Economics and Statistics 82 (3), 351-368.

Leigh, Andrew. 2005. Who Benefits from the Earned Income Tax Credit? Incidence Among Recipients, Coworkers and Firms. Research School of Social Sciences Australian National University Working Paper, vol. 494.

Levitis, Jason, Koulisch, Jeremy. 2007. A Majority of States with Income Taxes Have Enacted State Earned Income Tax Credits. Center on Budget and Policy Priorities.

Maynard, Mike, Dollins, David, 2002. Participation in the Earned Income Tax Credit Program for Tax Year 1996. Research Report. SBSE Research.

Meyer, Bruce D, 2002. Labor Supply at the Extensive and Intensive Margins: The EITC, Welfare, and Hours Worked. American Economic Review 92 (9), 373-79.

Meyer, Bruce D., Rosenbaum, Dan T, 2001. Welfare, the Earned Income Tax Credit, and the Labor Supply of Single Mothers. Quarterly Journal of Economics 116 (3), 1063-1112.

Roback, Jennifer, 1988. Wages, Rents and Amenities: Differences between Workers and Regions. Economic Inquiry 26 (1), 23-41.

Rosen, Sherwin, 1979. Wage-based Indices of Urban Quality of Life. In Mieszkowski, Peter, Straszheim, Mahlon (Eds.): Current Issues in Urban Economics. Baltimore: Johns Hopkins Univ. Press, 74-104.

Scholz, John Karl, 1996. In-Work Benefits in the United States: The Earned Income Tax Credit. *The Economic Journal* 106: 156-169.

Ventry, Dennis J., 2001. The Collision of Tax and Welfare Politics: The Political History of the Earned Income Tax Credit. In Meyer, Bruce D., Holtz-Eakin, Douglas (Eds.): *Making Work Pay: The Earned Income Tax Credit and Its Impact on America's Families*. New York: Russell Sage Foundation, 15-66.

Wu, Ximing, 2005. Labor Supply and Income Effects of the Earned Income Tax Credit and Welfare Programs. Unpublished Manuscript.

Figure 1. EITC Schedule: 1990, 1993, and 1996  
Head of Household Filer with 2 Children

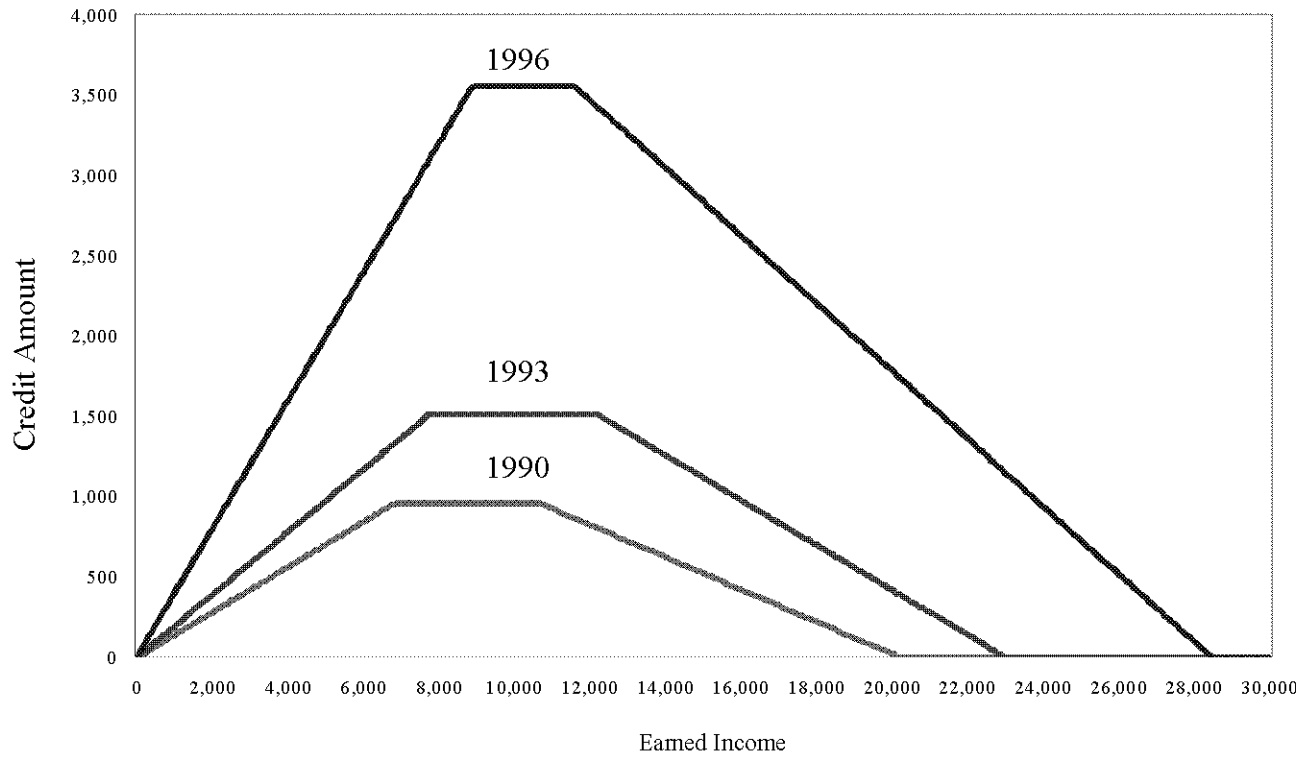


Table 1. Average Hourly Wage for Specific Occupations and Industries by Rental Cost Decile (1990-93)

Decile of the Rent Distribution	Quality-Adjusted Rental Costs	Occupations			Industries		
		Cashier	Secretary	Nursing Aids, Orderlies, Attendants	Eating & Drinking Places	Hospitals	Elementary & Secondary Schools
1st	\$1,190	\$4.47	\$6.40	\$5.51	\$4.12	\$9.09	\$6.58
2nd	1,656	4.82	7.02	5.59	4.25	9.89	6.65
3rd	2,066	4.94	6.98	6.20	4.39	9.82	8.07
4th	2,449	4.83	7.39	6.07	4.17	10.30	7.02
5th	2,775	5.30	7.59	5.78	4.52	11.00	7.27
6th	3,131	5.22	8.11	6.47	4.39	10.86	7.96
7th	3,877	5.33	8.06	6.45	4.43	11.18	8.27
8th	4,973	5.65	8.62	7.20	4.66	12.07	8.64
9th	6,771	5.90	9.34	7.57	5.13	12.40	9.68
10th	9,920	6.37	10.01	8.32	5.54	14.22	10.68

Coefficient from regression of hourly wages on annual quality-adjusted rent							
All Industries & Occupations	Occupations			Industries			
	Cashier	Secretary	Nursing Aids, Orderlies, Attendants	Eating & Drinking Places	Hospitals	Elementary & Secondary Schools	
0.00031*** (.00002)	.00031*** (.00002)	.00024*** (.00004)	.00042*** (.00005)	.00037*** (.00002)	.00019*** (.00003)	.00048*** (.00008)	

Note: The first column provides the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who Chen report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. Hourly wage, industry, and occupation data come from the 1990-1993 Current Population Survey (CPS) Outgoing Rotation Groups (ORG). Regression of hourly wages on monthly rent include controls for age, age squared, local unemployment rate, education, industry, Number of Dependents under age 5, number of dependents, welfare reform variables, year effects, and education by industry effects. All regressions are run separately by industry and occupation groups and weighted by the CPS-ORG household weight. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 2. Distribution of Employed Single Women, aged 18 to 49, across EITC Schedule (1990-1993)

	Rental Cost Distribution				
	All Areas	Bottom Quarter	Second Quarter	Third Quarter	Top Quarter
<b>Panel A. All Education Levels</b>					
Phase-in	33.7%	45.0%	36.1%	32.5%	29.0%
Plateau	13.9%	16.8%	16.3%	13.1%	12.4%
Phase-out	26.8%	25.6%	27.1%	28.0%	26.6%
Off Schedule	25.6%	12.6%	20.4%	26.4%	32.1%
<b>Panel B. High School Degree or Less</b>					
Phase-in	39.7%	49.0%	41.9%	38.1%	34.9%
Plateau	17.1%	18.9%	19.3%	16.2%	15.9%
Phase-out	29.2%	25.8%	27.0%	30.6%	31.0%
Off Schedule	14.0%	6.3%	11.7%	15.2%	18.3%

Note: Data from the 1990-1993 March Current Population Survey (CPS) which, in addition to the demographic and labor market information provided in the regular monthly survey, provides additional information on prior year income and labor supply. We assign single females to each region of the schedule based on this prior year income and demographic characteristics. We include only those females who report working non-zero hours in the current year and in the prior year. The metropolitan area costs are based on the distribution of (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008).

Table 3: EITC Parameters before and after Omnibus Budget Reconciliation Act (OBRA) 1993

	Phase-In Region Credit Rate	Phase-Out Region Credit Rate	Income Amounts for Plateau Region		Ending Income	Maximum benefit
			Begin Plateau	End Plateau		
<i>Workers Without Children</i>						
1990	0	0	0	0	0	0
1991	0	0	0	0	0	0
1992	0	0	0	0	0	0
1993	0	0	0	0	0	0
1994	7.65	-7.65	4,000	5,000	9,000	306
1995	7.65	-7.65	4,100	5,130	9,230	314
1996	7.65	-7.65	4,220	5,280	9,500	323
<i>Workers with 1 Child</i>						
1990	14	-10	6,810	10,730	20,264	953
1991	16.7	-11.93	7,140	11,250	21,250	1,192
1992	17.6	-12.57	7,520	11,840	22,370	1,324
1993	18.5	-13.21	7,750	12,200	23,050	1,434
1994	26.3	-15.98	7,750	11,000	23,755	2,038
1995	34	-15.98	6,160	11,290	24,396	2,094
1996	34	-15.98	6,330	11,610	25,078	2,152
<i>Workers with 2 or more Children</i>						
1990	14	-10	6,810	10,730	20,264	953
1991	17.3	-12.36	7,140	11,250	21,250	1,235
1992	18.4	-13.14	7,520	11,840	22,370	1,384
1993	19.5	-13.93	7,750	12,200	23,050	1,511
1994	30	-17.68	8,425	11,000	25,296	2,528
1995	36	-20.22	8,640	11,290	26,673	3,110
1996	40	-21.06	8,890	11,610	28,495	3,556

Source: Urban-Brookings Tax Policy Center. Dollar amounts unadjusted for inflation.

Table 4: Summary Statistics for Low-Educated, Single Women (Weighted)

	All Single Women	With Dependents	Without Dependents	By Rental Cost Distribution			
				Lowest Quarter	Second Quarter	Third Quarter	Highest Quarter
Age	31.276 (9.568)	31.575 (7.994)	31.056 (10.573)	31.602 (9.628)	30.901 (9.563)	31.332 (0.962)	31.184 (9.492)
Less than High School	0.318 (0.466)	0.365 (0.482)	0.282 (0.450)	0.325 (0.469)	0.313 (0.464)	0.290 (0.454)	0.336 (0.472)
High School Graduate	0.682 (0.466)	0.635 (0.482)	0.718 (0.450)	0.675 (0.469)	0.687 (0.464)	0.710 (0.454)	0.664 (0.472)
Nonwhite	0.307 (0.461)	0.392 (0.488)	0.245 (0.430)	0.267 (0.442)	0.296 (0.456)	0.344 (0.475)	0.305 (0.460)
Preschool Children	0.301 (0.647)	0.710 (0.834)	-	0.269 (0.600)	0.293 (0.660)	0.310 (0.651)	0.315 (0.662)
Number of Dependents	0.779 (1.134)	1.836 (1.045)	-	0.805 (1.124)	0.777 (1.107)	0.777 (1.126)	0.766 (1.155)
AFDC Waivers	0.311 (0.463)	0.301 (0.459)	0.318 (0.466)	0.237 (0.425)	0.118 (0.323)	0.213 (0.410)	0.495 (0.500)
MSA Unemployment Rate	0.059 (0.022)	0.060 (0.023)	0.058 (0.021)	0.061 (0.020)	0.054 (0.021)	0.048 (0.016)	0.068 (0.022)
(Positive) Quality-Adjusted Rental Costs	4,175.05 (2496.40)	4,068.14 (2436.09)	4,253.78 (2537.05)	1,259.13 (409.84)	2,379.26 (242.78)	3,496.50 (517.79)	6,938.16 (1591.30)
Labor Force Participation	0.599 (0.490)	0.512 (0.500)	0.662 (0.473)	0.601 (0.490)	0.626 (0.484)	0.628 (0.483)	0.565 (0.496)
Observations	59,708	24,973	34,735	13,347	7,213	15,406	23,742
Number of Dependents for Mothers	1.836 (1.045)	1.836 (1.045)	-	1.811 (1.011)	1.809 (0.994)	1.826 (1.032)	1.870 (1.092)
Observations	24,973	24,973		5,860	3,029	6,516	9,568
Hours Worked Last Week, if Working	36.828 (11.352)	36.628 (11.525)	36.941 (11.251)	36.806 (11.816)	36.388 (11.048)	37.472 (11.625)	36.460 (10.921)
Observations	36,877	12,770	24,107	8,134	4,793	10,011	13,939
Hourly Earnings, if Working and Paid	6.938 (3.108)	6.998 (3.044)	6.850 (3.131)	5.992 (2.368)	6.448 (2.806)	6.964 (3.122)	7.756 (3.420)
Observations	17,010	5,965	11,045	3,996	2,325	4,822	5,867
Weekly Earnings, if Working	302.509 (190.155)	303.505 (195.250)	301.940 (187.180)	264.351 (170.900)	276.348 (165.761)	302.668 (172.850)	335.005 (2.165)
Observations	35,595	12,335	23,260	7,823	4,631	9,691	13,450

Note: Authors' calculations based on the 1990-1995 monthly Current Population Survey (CPS). All summary statistics are weighted by the CPS household weight. Single women are considered low-educated if they have a high school degree or less. (Positive) quality-adjusted rental cost data are 1990 measures from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value.

Table 5. Mean Marginal Effects from Probit Estimates on Labor Force Participation

	Low-educated women						All Women					
	(1)		(2)		(3)		(4)		(5)		(6)	
Treatment	0.035		0.037		0.036		0.015		0.018		0.017	
	(0.024)		(0.024)		(0.024)		(0.017)		(0.017)		(0.017)	
Post	-0.080	***	-0.079	***	-0.081	***	-0.060	***	-0.057	***	-0.060	***
	(0.021)		(0.021)		(0.02106)		(0.013)		(0.013)		(0.013)	
Treatment*Post	0.047	***	0.073	***	0.102	***	0.031	***	0.043	***	0.063	***
	(0.010)		(0.018)		(0.015)		(0.006)		(0.011)		(0.010)	
Treatment*Post			0.023						0.028			
*2nd Cost Qtr			(0.027)						(0.018)			
Treatment*Post			-0.015						-0.009			
*3rd Cost Qtr			(0.026)						(0.017)			
Treatment*Post			-0.076	***					-0.041	***		
*4th Cost Qtr			(0.023)						(0.016)			
Treatment*Post					-0.00001	***					-0.00001	***
*Rental Costs					(0.000)						(0.00000)	
High School Graduate	0.243	***	0.242	***	0.242	***	0.177	***	0.177	***	0.176	***
	(0.013)		(0.013)		(0.013)		(0.008)		(0.008)		(0.008)	
Some College							0.237	***	0.237	***	0.237	***
							(0.008)		(0.008)		(0.008)	
College Degree							0.264	***	0.263	***	0.263	***
							(0.007)		(0.007)		(0.007)	
Beyond College							0.241	***	0.240	***	0.240	***
							(0.006)		(0.006)		(0.006)	
Nonwhite	-0.117	***	-0.118	***	-0.118	***	-0.079	***	-0.080	***	-0.079	***
	(0.013)		(0.013)		(0.013)		(0.008)		(0.008)		(0.008)	
Age	0.024	***	0.024	***	0.024	***	0.016	***	0.016	***	0.016	***
	(0.004)		(0.004)		(0.004)		(0.003)		(0.003)		(0.003)	
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)	
Number of Dependents	-0.114	***	-0.116	***	-0.11407	***	-0.069	***	-0.070	***	-0.069	***
	(0.029)		(0.030)		(0.029)		(0.022)		(0.023)		(0.022)	
Dependents Squared	0.012	***	0.012	***	0.012	***	0.007	**	0.007	**	0.007	**
	(0.004)		(0.004)		(0.004)		(0.003)		(0.003)		(0.003)	
Preschool Children	-0.088		-0.087		-0.08583		-0.082		-0.082		-0.081	
	(0.009)		(0.009)		(0.009)		(0.007)		(0.007)		(0.007)	
Second Child	0.033		0.034		0.032		0.011		0.012		0.010	
	(0.027)		(0.028)		(0.028)		(0.019)		(0.019)		(0.019)	
Unemployment Rate	-1.774	***	-1.672	***	-1.761	***	-1.322	***	-1.197	***	-1.321	***
	(0.262)		(0.275)		(0.261)		(0.156)		(0.168)		(0.156)	
AFDC Waiver	-0.001	***	-0.001	***	-0.001	***	0.007	***	0.006	***	0.007	***
	(0.016)		(0.015)		(0.01529)		(0.009)		(0.009)		(0.009)	
Rental Costs	-0.000				0.000		-0.000	**			-0.00000	
	(0.000)				(0.000)		(0.000)				(0.00000)	
Second Cost Quarter			0.009						-0.000			
			(0.020)						(0.014)			
Third Cost Quarter			0.015						0.018			
			(0.018)						(0.011)			
Fourth Cost Quarter			0.020						0.002			
			(0.020)						(0.012)			
Time Trend?	Yes		Yes		Yes		Yes		Yes		Yes	
Observations	59,708		59,708		59,708		121,434		121,434		121,434	

Note: Data are from the 1990-1995 monthly surveys of the Current Population Survey (CPS). The dependent variable is labor force participation. Rental cost data is the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. Reported coefficient estimates represent the mean marginal effects. All regressions are weighted with CPS household weight. Clustered standard errors are in parentheses. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.



Table 6. Mean Marginal Effects from Probit Estimates on Labor Force Participation, by Cost of Living

	Low-educated, Single Women										All Single Women									
	By Rental Cost Distribution Percentiles										By Rental Cost Distribution Percentiles									
	0-25th		25th-50th		50th-75th		75th-87th		Above 87th		0-25th		25th-50th		50th-75th		75th-87th		Above 87th	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(6)	(7)	(8)	(9)	(10)	(6)	(7)	(8)	(9)	(10)
Treatment	0.097 (0.066)	0.057 (0.086)	-0.006 (0.037)	0.160 (0.051)	***	-0.075 (0.054)					-0.010 (0.057)	0.049 (0.050)	0.013 (0.025)	0.065 (0.047)	-0.037 (0.037)					
Post	-0.056 (0.040)	-0.224 (0.060)	***	-0.080 (0.040)	**	-0.052 (0.036)					-0.067 (0.027)	**	-0.147 (0.035)	***	-0.051 (0.026)	*	-0.075 (0.025)	***	-0.001 (0.026)	
Treatment*Post	0.047 (0.020)	**	0.063 (0.024)	***	0.070 (0.017)	***	0.008 (0.021)				0.030 (0.012)	**	0.059 (0.015)	***	0.036 (0.013)	***	0.031 (0.013)	**	0.011 (0.016)	
High School Graduate	0.293 (0.024)	***	0.247 (0.023)	***	0.224 (0.028)	***	0.288 (0.031)	***	0.174 (0.021)	***	0.227 (0.017)	***	0.178 (0.014)	***	0.154 (0.017)	***	0.203 (0.019)	***	0.137 (0.014)	***
Some College											0.272 (0.018)	***	0.224 (0.019)	***	0.225 (0.014)	***	0.260 (0.021)	***	0.201 (0.013)	***
College Degree											0.288 (0.013)	***	0.221 (0.013)	***	0.244 (0.012)	***	0.277 (0.018)	***	0.260 (0.017)	***
Beyond College											0.258 (0.017)	***	0.224 (0.015)	***	0.230 (0.010)	***	0.245 (0.012)	***	0.228 (0.017)	***
Nonwhite	-0.102 (0.031)	***	-0.105 (0.030)	***	-0.140 (0.023)	***	-0.138 (0.028)	***	-0.081 (0.027)	***	-0.086 (0.024)	***	-0.081 (0.021)	***	-0.087 (0.015)	***	-0.087 (0.018)	***	-0.054 (0.016)	***
Age	0.021 (0.008)	***	0.026 (0.009)	***	0.015 (0.007)	**	0.013 (0.006)	*	0.047 (0.008)	***	0.013 (0.007)	*	0.018 (0.007)	***	0.012 (0.005)	**	0.012 (0.006)	*	0.027 (0.005)	***
Age Squared	-0.000 (0.000)	**	-0.000 (0.000)	**	-0.000 (0.000)	*	-0.000 (0.000)		-0.001 (0.000)	***	-0.000 (0.000)	*	-0.000 (0.000)	**	-0.000 (0.000)	**	-0.000 (0.000)	*	-0.000 (0.000)	***
Number of Dependents	-0.181 (0.076)	**	-0.101 (0.106)		-0.049 (0.040)		-0.297 (0.075)	***	-0.024 (0.086)		-0.047 (0.066)		-0.081 (0.065)		-0.051 (0.030)	*	-0.158 (0.069)	**	-0.015 (0.055)	
Dependents Squared	0.019 (0.012)		0.012 (0.015)		0.006 (0.004)		0.034 (0.010)	***	-0.004 (0.011)		0.004 (0.010)		0.010 (0.010)		0.006 (0.004)	*	0.017 (0.011)		-0.003 (0.008)	
Preschool Children	-0.050 (0.018)		-0.098 (0.026)		-0.100 (0.018)		-0.061 (0.019)		-0.118 (0.020)		-0.057 (0.017)		-0.084 (0.019)		-0.081 (0.012)		-0.071 (0.012)		-0.115 (0.016)	
Second Child	0.096 (0.049)	**	0.008 (0.083)		-0.019 (0.050)		0.150 (0.057)	***	-0.029 (0.089)		0.011 (0.044)		-0.015 (0.056)		-0.005 (0.030)		0.077 (0.043)	*	-0.015 (0.049)	
Unemployment Rate	-1.227 (0.600)	**	-2.221 (0.645)	***	-1.605 (0.491)	***	-1.401 (0.317)	***	-2.862 (0.874)	***	-1.337 (0.297)	***	-1.793 (0.358)	***	-1.318 (0.344)	***	-0.840 (0.202)	***	-1.489 (0.595)	**
AFDC Waiver	0.024 (0.023)	***	-0.002 (0.039)	***	-0.061 (0.013)	***	0.017 (0.020)	***	0.032 (0.035)	***	0.024 (0.015)	***	0.012 (0.025)	***	-0.014 (0.010)	***	-0.002 (0.014)	***	0.019 (0.021)	***
Time Trend?	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Observations	13,236		7,077		14,868		10,538		13,989		22,539		14,099		31,014		22,367		31,415	

Note: Data are from the 1990-1995 monthly surveys of the Current Population Survey (CPS). The dependent variable is labor force participation. Rental cost data is the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. Reported coefficient estimates represent the mean marginal effects. All regressions are weighted with CPS household weight. Clustered standard errors are in parentheses. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 7. Mean Marginal Effects from "Placebo" Regressions on Labor Force Participation

	Low-Educated Women							
	1990 to 1991				1993 to 1994			
	(1)		(2)		(3)		(4)	
Treatment	0.028		0.029		0.023		0.025	
	(0.020)		(0.020)		(0.059)		(0.059)	
Post	0.011		0.009		-0.052	***	-0.051	***
	(0.008)		(0.008)		(0.011)		(0.011)	
Treatment*Post	-0.015		-0.020		0.031	**	0.044	**
	(0.012)		(0.018)		(0.014)		(0.021)	
Treatment*Post *2nd Quarter			0.016				0.061	*
			(0.025)				(0.033)	
Treatment*Post *3rd Quarter			0.025				-0.015	
			(0.020)				(0.032)	
Treatment*Post* 4th Quarter			-0.016				-0.049	*
			(0.020)				(0.027)	
High School Graduate	0.235	***	0.235	***	0.257	***	0.256	***
	(0.011)		(0.011)		(0.017)		(0.017)	
Nonwhite	-0.126	***	-0.126	***	-0.108	***	-0.109	***
	(0.014)		(0.014)		(0.016)		(0.016)	
Age	0.032	***	0.032	***	0.025	***	0.024	***
	(0.003)		(0.003)		(0.005)		(0.006)	
Age Squared	-0.000	***	-0.000	***	-0.000	***	-0.000	***
	(0.000)		(0.000)		(0.000)		(0.000)	
Number of Dependents	-0.096	***	-0.097	***	-0.086		-0.088	
	(0.022)		(0.023)		(0.073)		(0.074)	
Dependents Squared	0.009	***	0.009	***	0.008		0.008	
	(0.003)		(0.003)		(0.011)		(0.012)	
Preschool Children	-0.119	***	-0.120	***	-0.080	***	-0.079	***
	(0.007)		(0.007)		(0.012)		(0.012)	
Second Child	0.032	*	0.033	*	0.014		0.014	
	(0.018)		(0.018)		(0.052)		(0.052)	
Unemployment Rate	-3.079	***	-2.796	***	-4.068	***	-4.024	***
	(0.545)		(0.572)		(1.005)		(1.012)	
AFDC Waiver					0.002		0.002	
					(0.016)		(0.015)	
Rental Costs	-0.000	*			0.000			
	(0.000)				(0.000)			
Second Cost Quarter			0.010				-0.039	
			(0.017)				(0.026)	
Third Cost Quarter			-0.001				0.007	
			(0.015)				(0.023)	
Fourth Cost Quarter			-0.015				0.018	
			(0.016)				(0.022)	
Month Effects?	Yes		Yes		Yes		Yes	
Obs.	25,762		25,762		23,401		23,401	

Note: Data are from the 1990, 1991, 1993, and 1994 monthly surveys of the Current Population Survey (CPS). The dependent variable is labor force participation. Rental cost data is the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. Reported coefficient estimates represent the mean marginal effects. All regressions are weighted with CPS household weight. Clustered standard errors are in parentheses. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 8: Difference-in-Difference Estimates on Hours worked per Week for Single Women, Conditional on Working

	Low-educated women			All Women		
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.368 (0.872)	-0.323 (0.874)	-0.327 (0.880)	-0.189 (0.615)	-0.182 (0.617)	-0.219 (0.613)
Post	-0.777 (0.687)	-0.760 (0.686)	-0.775 (0.687)	-0.071 (0.464)	-0.007 (0.456)	-0.050 (0.462)
Treatment*Post	0.359 (0.379)	1.254 (0.600)	** 1.726 (0.630)	*** 0.317 (0.243)	0.688 (0.369)	* 0.215 (0.408)
Treatment*Post *2nd Quarter		-1.121 (0.956)			-1.476 (0.701)	**
Treatment*Post *3rd Quarter		-0.406 (0.864)			-0.288 (0.562)	
Treatment*Post* 4th Quarter		-1.900 (0.832)	**		-0.214 (0.509)	
Treatment*Post* Rental Costs			-0.0035 (.00015)	**		0.000 (0.000)
High School Graduate	2.306 (0.343)	*** 2.297 (0.341)	*** 2.279 (0.340)	*** 2.302 (0.337)	*** 2.312 (0.339)	*** 2.292 (0.339)
Some College				2.989 (0.357)	*** 2.970 (0.357)	*** 2.981 (0.359)
College Degree				4.844 (0.397)	*** 4.833 (0.398)	4.857 (0.398)
Beyond College				6.465 (0.510)	*** 6.464 (0.513)	*** 6.489 (0.513)
Nonwhite	-0.330 (0.335)	-0.344 (0.332)	-0.344 (0.336)	-0.331 (0.229)	-0.347 (0.229)	-0.320 (0.229)
Age	1.102 (0.131)	*** 1.097 (0.130)	*** 1.091 (0.131)	*** 1.083 (0.102)	*** 1.086 (0.102)	*** 1.088 (0.102)
Age Squared	-0.014 (0.002)	*** -0.014 (0.002)	*** -0.014 (0.002)	*** -0.014 (0.001)	*** -0.014 (0.001)	*** -0.014 (0.001)
Number of Dependents	-0.415 (0.981)	-0.408 (0.986)	-0.407 (0.986)	-0.743 (0.702)	-0.741 (0.704)	-0.737 (0.700)
Dependents Squared	0.009 (0.123)	0.007 (0.125)	0.008 (0.123)	0.021 (0.098)	0.021 (0.099)	0.020 (0.098)
Preschool Children	-0.120 (0.319)	-0.123 (0.322)	-0.112 (0.319)	-0.255 (0.237)	-0.267 (0.239)	-0.256 (0.239)
Second Child	-1.032 (1.016)	-1.070 (1.016)	-1.079 (1.018)	-0.336 (0.645)	-0.347 (0.644)	-0.344 (0.645)
Unemployment Rate	-36.560 (7.968)	*** -34.12 (9.246)	*** -35.88 (8.177)	*** -32.38 (5.672)	*** -27.64 (6.697)	*** -30.49 (5.893)
AFDC Waiver	-0.090 (0.327)	-0.113 (0.350)	-0.045 (0.340)	-0.304 (0.268)	-0.282 (0.283)	-0.197 (0.274)
Rental Costs	-0.003 (0.005)		0.000 (0.000)	-0.007 (0.004)	*	-0.000 (0.000)
2nd Cost Qtr		-0.225 (0.664)			0.105 (0.477)	
3rd Cost Qtr		0.357 (0.514)			0.308 (0.381)	
4th Cost Qtr		0.412 (0.527)			-0.490 (0.398)	
Constant	19.047 (2.157)	*** 18.521 (2.123)	*** 18.736 (2.171)	*** 19.706 (1.673)	*** 18.942 (1.658)	*** 19.647 (1.660)
Time Trend?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36,877	36,877	36,877	88,440	88,440	88,440
R-squared	0.05	0.05	0.05	0.05	0.05	0.05

Note: Data are from the 1990-1995 monthly surveys of the Current Population Survey (CPS). The dependent variable is hours worked last week. Rental cost data is the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. All regressions are weighted with CPS household weight. Clustered standard errors are in parentheses. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 9: Difference-in-Difference Estimates on Hours worked per Week for Single Women, Conditional on Working, by Cost of Living

	Low-educated, Single Women					All Single Women														
	By Rental Cost Distribution Percentiles					By Rental Cost Distribution Percentiles														
	0-25th	25th-50th	50th-75th	75th-87th	Above 87th	0-25th	25th-50th	50th-75th	75th-87th	Above 87th										
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)											
Treatment	-1.928 (3.530)	-2.745 (3.112)	-0.365 (1.267)	3.592 (2.107)	* (1.577)	1.724 (1.577)	0.156 (2.033)	-0.645 (1.701)	-1.511 (0.955)	3.116 (1.153)	*** (1.537)	0.937 (1.537)								
Post	1.502 (1.316)	-1.375 (1.526)	-0.176 (1.381)	-5.186 (2.052)	** (1.246)	-0.149 (1.246)	1.618 (1.257)	0.249 (1.120)	1.080 (0.865)	-2.044 (1.111)	* (0.916)	-1.308 (0.916)								
Treatment*Post	0.910 (0.668)	0.507 (1.021)	1.344 (0.676)	* (0.843)	-0.131 (1.035)	-1.751 (1.035)	* (1.035)	0.641 (0.387)	-0.920 (0.750)	0.681 (0.455)	0.061 (0.482)	0.222 (0.676)								
High School Graduate	2.645 (0.727)	*** (0.760)	3.698 (0.664)	*** (0.664)	2.920 (0.664)	*** (0.780)	1.351 (0.780)	* (0.812)	0.957 (0.812)	2.556 (0.723)	*** (0.766)	3.794 (0.667)	*** (0.667)	3.000 (0.667)	*** (0.774)	1.360 (0.774)	* (0.860)	1.106 (0.860)		
Some College																				
College Degree																				
Beyond College																				
Nonwhite	-0.570 (0.754)	-1.990 (0.725)	*** (0.687)	-0.056 (0.687)	0.029 (0.790)	0.270 (0.656)	0.048 (0.590)	-1.081 (0.663)	-0.374 (0.472)	0.077 (0.463)	-0.229 (0.440)	0.937 (0.440)								
Age	0.950 (0.295)	*** (0.300)	1.146 (0.236)	*** (0.236)	1.060 (0.336)	*** (0.271)	1.464 (0.271)	*** (0.271)	1.046 (0.271)	*** (0.221)	1.184 (0.221)	*** (0.231)	1.378 (0.191)	*** (0.191)	0.914 (0.236)	*** (0.236)	1.416 (0.209)	*** (0.209)	0.854 (0.209)	*** (0.209)
Age Squared	-0.011 (0.004)	** (0.004)	-0.015 (0.004)	*** (0.003)	-0.013 (0.003)	*** (0.005)	-0.019 (0.005)	*** (0.004)	-0.013 (0.004)	*** (0.003)	-0.018 (0.003)	*** (0.003)	-0.011 (0.003)	*** (0.003)	-0.019 (0.003)	*** (0.003)	-0.019 (0.003)	*** (0.003)	-0.010 (0.003)	*** (0.003)
Number of Dependents	1.012 (3.832)	1.308 (3.805)	1.180 (1.534)	1.018 (2.315)	-5.020 (2.315)	** (1.917)	-2.580 (1.917)	-1.615 (2.094)	-0.971 (2.215)	1.114 (1.068)	-4.060 (1.241)	*** (1.241)	-2.187 (1.986)							
Dependents Squared	-0.358 (0.526)	-0.140 (0.509)	-0.074 (0.116)	0.572 (0.218)	** (0.218)	0.768 (0.358)	** (0.358)	-0.029 (0.297)	0.278 (0.333)	-0.182 (0.094)	* (0.175)	0.479 (0.175)	*** (0.397)	0.312 (0.397)						
Preschool Children	0.127 (0.662)	0.713 (0.866)	-0.280 (0.716)	-0.235 (0.658)	-0.909 (0.628)	-0.909 (0.628)	0.072 (0.460)	0.606 (0.650)	-0.272 (0.506)	-0.931 (0.417)	** (0.417)	-0.841 (0.702)								
Second Child	0.824 (2.433)	-1.663 (3.046)	-2.994 (2.121)	2.094 (2.724)	** (1.717)	-2.527 (1.717)	1.927 (1.343)	-0.788 (2.084)	-2.549 (1.164)	** (1.305)	1.504 (1.305)	0.419 (1.172)								
Unemployment Rate	-16.320 (13.987)	-56.280 (31.613)	* (17.007)	-66.966 (17.007)	*** (16.810)	-23.960 (16.810)	-29.162 (23.261)	-22.393 (11.888)	* (18.010)	-28.169 (14.389)	*** (11.543)	-24.016 (17.520)	** (17.520)	-29.691 (17.520)	* (17.520)					
AFDC Waiver	0.272 (0.653)	0.073 (1.862)	-0.485 (0.404)	0.110 (0.730)	-0.178 (0.563)	-0.178 (0.563)	-0.112 (0.539)	-0.015 (0.903)	-0.878 (0.404)	** (0.679)	-0.247 (0.679)	0.118 (0.448)								
Constant	21.232 (5.355)	*** (5.213)	18.305 (3.806)	*** (3.806)	22.408 (4.430)	*** (4.430)	8.283 (3.747)	* (3.747)	20.101 (3.747)	*** (3.807)	18.066 (3.807)	*** (4.150)	12.796 (2.996)	*** (2.996)	23.809 (2.996)	*** (2.958)	11.779 (2.958)	*** (3.594)	22.350 (3.594)	*** (3.594)
Time Trend?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Obs.	8068	4704	9660	6418	8027	15614	10632	23481	16285	22428										
R <sup>2</sup>	0.04	0.07	0.06	0.07	0.05	0.06	0.08	0.05	0.07	0.05										

Note: Data are from the 1990-1995 monthly surveys of the Current Population Survey (CPS). The dependent variable is hours worked last week. Rental cost data is the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. All regressions are weighted with CPS household weight. Clustered standard errors are in parentheses. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 10: Estimates from Heckman Models of Hours Worked Last Week for Low-educated Women

	All Areas						By Rental Cost Distribution Percentiles									
	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
Treatment	-1.053	***	-1.061	***	-1.061	***	-0.599	*	-1.766	**	-1.097	***	-0.645		-1.372	***
	(0.193)		(0.193)		(0.194)		(0.312)		(0.711)		(0.350)		(0.462)		(0.416)	
Post	-0.747	***	-0.737	***	-0.752	***	-0.581		-1.028		-0.688		-1.152	**	-0.406	
	(0.247)		(0.246)		(0.246)		(0.514)		(0.732)		(0.494)		(0.466)		(0.537)	
Treatment*Post	-0.171		0.203		0.279		-0.213		0.305		0.303		-0.448		-0.837	
	(0.282)		(0.397)		(0.404)		(0.486)		(0.813)		(0.492)		(0.642)		(0.732)	
Treatment*Post*2nd Quarter			-0.486													
			(0.601)													
Treatment*Post*3rd Quarter			-0.136													
			(0.542)													
Treatment*Post*4th Quarter			-0.796	*												
			(0.454)													
Treatment*Post*Rental Costs					0.000											
					(0.000)											
Preschool Children	-0.318	*	-0.342	**	-0.323	*	-0.307		-0.038		-0.036		-0.742	*	-0.516	
	(0.173)		(0.173)		(0.172)		(0.348)		(0.678)		(0.266)		(0.428)		(0.414)	
Age	1.062	***	1.066	***	1.062	***	1.031	***	1.251	***	1.024	***	0.887	***	1.100	***
	(0.054)		(0.055)		(0.055)		(0.132)		(0.149)		(0.108)		(0.111)		(0.100)	
Age Squared	-0.013	***	-0.013	***	-0.013	***	-0.013	***	-0.016	***	-0.013	***	-0.011	***	-0.014	***
	(0.001)		(0.001)		(0.001)		(0.002)		(0.002)		(0.002)		(0.002)		(0.001)	
High School Grad	2.289	***	2.319	***	2.295	***	2.261	***	2.009	***	3.141	***	1.997	***	1.751	***
	(0.220)		(0.219)		(0.217)		(0.471)		(0.540)		(0.407)		(0.592)		(0.404)	
Nonwhite	-0.759	***	-0.769	***	-0.748	***	-0.699	*	-2.040	***	-0.914	***	-0.764	*	0.082	
	(0.163)		(0.164)		(0.164)		(0.378)		(0.494)		(0.231)		(0.459)		(0.322)	
Unemployment Rate	-25.44	***	-23.87	***	-25.72	***	-20.30	***	-37.49	***	-29.92	***	-16.88	**	-21.88	**
	(3.43)		(3.82)		(3.55)		(6.22)		(11.97)		(11.47)		(7.34)		(8.56)	
Rent Percentile	0.007	**					-0.017		-0.037		0.033		-0.036		-0.020	
	(0.003)						(0.024)		(0.040)		(0.026)		(0.046)		(0.048)	
AFDC Waiver	-0.011		0.008		0.021		0.408		-0.514		0.023		-0.069		0.262	
	(0.199)		(0.215)		(0.207)		(0.479)		(0.611)		(0.303)		(0.557)		(0.353)	
Second Cost Quarter			0.035													
			(0.349)													
Third Cost Quarter			0.769	***												
			(0.250)													
Fourth Cost Quarter			0.592	**												
			(0.250)													
Rental Costs					0.000	*										
					(0.000)											
Constant	18.378	***	18.080	***	18.515	***	18.518	***	17.875	***	17.506	***	24.427	***	19.854	***
	(0.973)		(0.998)		(0.963)		(2.120)		(2.834)		(2.444)		(4.827)		(5.058)	
Time Trend	Yes		Yes		Yes		Yes		Yes		Yes		Yes		Yes	
Obs.	59,708		59,708		59,708		13,236		7,077		14,868		10,538		13,989	

Note: Data are from the 1990-1995 monthly surveys of the Current Population Survey (CPS). Results are from the second stage of the Heckman Model. Variables excluded from the second stage of the Heckman Model include Number of Dependents under 18, the Number of Dependents squared, and an indicator variable for the second child. The dependent variable is hours worked last week. Rental cost data is the (positive) quality-adjusted rental measures in 1990 from Chen and Rosenthal (2008), who report quality adjusted rent in each MSA relative to the mean. To ensure all rental values are positive, we transform their data by adding \$4,000 to each value. All regressions are weighted with CPS household weight. Clustered standard errors are in parentheses. Statistical significance is denoted as follows: \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.