DISCUSSION PAPER SERIES

IZA DP No. 6680

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June 2012

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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ABSTRACT

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The Earned Income Tax Credit (EITC) is the largest anti-poverty program in the U.S. In 1993, the EITC benefit levels were changed significantly based on the number of children in the family such that families with two or more children experienced an exogenous expansion in their incomes. Using data from the National Longitudinal Survey of Youth 1979 cohort, we employ a triple differences plus Fixed-Effects framework to examine the effect of this change on the probability of smoking among low-educated mothers. We find that the probability of smoking for white and Hispanic low-educated mothers of two or more children decreased statistically significantly relative to those with only one child, and the results are robust to various specification tests. These results provide new evidence on the protective effect of income on health through changes in health behaviors, and therefore have important policy implications.

JEL Classification: I12, I38

Keywords: smoking, EITC, low-income mothers

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1 Introduction and Review of Previous Literature

In recent decades, policymakers have expanded Medicaid with the goal of improving the health of mothers and their children, and economists have conducted a variety of studies to determine whether such expansions have improved health outcomes for recipients (e.g., Currie and Gruber, 1996a, b). Lately, researchers have expanded the scope of research on welfare reform to determine if it too has led to better health behaviors/outcomes for recipients (Bitler et al., 2005; Corman et al., 2010). Yet the Earned Income Tax Credit (EITC), currently the nation's largest anti-poverty program in terms of dollars spent, has received little attention with respect to its potential benefits on the health or health-related behaviors of recipients. In this paper, we examine the effect of income on maternal smoking using an exogenous change in income brought about by the 1993 EITC expansions.

Health is an important consumption and investment good, and income is one key component in the health production function (Grossman, 1972). The existence of a positive income/health gradient is well-known (Adda et al., 2009; Deaton, 2002) and has been documented for a wide array of health outcomes and health-related behaviors in the U.S. including smoking (Chaloupka and Werner, 2000). Whether or not income is the *cause* of better health, however, is difficult to determine. It is possible that reverse causality exists (i.e. poor health causes low income) or that a third factor such as diligence or an ability to delay gratification causes both good health and high income.[1] Our work, by exploiting an exogenous increase in income, contributes to the literature by providing new evidence on the existence of a causal link between income and health.

A large literature has been devoted to analyzing the determinants of smoking,[2] because it is well known that smoking is highly costly to both the society and the smokers themselves and is a leading preventable cause of morbidity and mortality in the United States and around the world (McGinnis and Foege, 1993; Mokdad, et al, 2004). Women

[1]See Deaton, 2002, Adda et al., 2006, or Evans and Garthwaite, 2010 for more discussion of the issues involved in disentangling correlation from causation in the relationship between income and health.

[2]See, for example, Chaloupka and Grossman, 1996, Chaloupka and Warner, 2000, and DeCicca, Kenkel and Mathios, 2008.

are less likely to smoke than men in the U.S., but high school dropouts and persons with family income less than $35K are much more likely to smoke than college graduates and persons with higher family incomes (Cawley and Ruhm, 2011). A young woman who smokes at age 24 could incur over $3K more medical expenditures than her non-smoking counterparts in her life (Sloan et al., 2004). Maternal smoking is of particular importance because it is not only detrimental for the mothers who smoke but is also linked to negative health consequences for their children at various stages of their lives (Rosenzweig and Schultz, 1983; Evans and Ringel, 1999; Evans et al., 1999; Brook et al., 2000; Florence, Adams, and Ayati, 2007; Walker, Tekin, and Wallace, 2009; Markowitz et al, 2011).

We therefore focus on maternal smoking in this paper, with the goal of determining whether smoking by low-educated mothers indeed declined following an exogenous increase in their incomes due to more generous EITC benefits. Theoretically, when income increases, cigarette consumption might increase or decrease. On the one hand, when income rises, individuals may wish to consume more cigarettes because they are a source of utility. On the other hand, income may also increase the demand for health (Grossman, 1972), which in turn lower the demand for cigarette since cigarette consumption is detrimental to health (Cawley and Ruhm, 2011).

The empirical evidence on the causal effect of income changes on smoking in developed countries has pointed to a reversed relationship between income and cigarette consumption. Early studies on demand for cigarette (for example, Ippolito et al., 1979; Fujii, 1980) found that cigarette was a normal good, that is cigarette consumption and income moved in the same direction. More recent studies, however, are more likely to find that cigarette smoking has become an inferior good, with smoking declines as income rises (Wasserman et al., 1991; Townsend et al., 1994). For example, Blaylock and Blisard (1992) found that for low-income women in the US, income has a significant and negative impact on cigarette demand with income elasticity of -0.04 evaluated at sample means. Using an Instrumental Variable strategy, Mullahy (1997) found that a $1,000 increase in family income statistically significantly lowered cigarette consumption

by 1.3 cigarette per day (or 0.0065 packs per day, p. 592, Table 1). /footnoteThere are still recent a few studies which find a positive relationship between income and cigarette consumption (for example, Adda et al. (2006)). For an overview of studies on the effects on cigarette consumption of income, as well as other determinants, see Chaloupka and Warner (2000). Here, we contribute to this discussion by exploring the 1993 EITC expansion which created an exogenous income differential by generating a clear separation of benefit levels for families based on the number of children, with families of two or more children receiving substantially more in benefits than those with only one child.

As noted at the beginning, a considerable amount of work has been done on the EITC and poverty reduction (Scholz, 1994; Neumark and Wascher, 2001; Meyer, 2010), labor force participation (Hotz and Scholz, 2003; Eissa and Leibman, 1996; Meyer and Rosenbaum, 2001; Cancian and Levinson, 2006; Eissa, Kleven, and Kreiner, 2008), educational attainment for children of EITC recipients (Miller and Zhang, 2009; Dahl and Lochner, 2010), and marriage (Ellwood, 2000 and Dickert-Conlin, 2002). However, its potential health effects have received little attention. We know of only three papers that have examined the effect of the EITC on the health of recipients (Evans and Garthwaite, 2010; Schmeiser, 2010; and Cowan and Tefft, 2011).[3]

The papers that are most closely related to ours are those of Evans and Garthwaite (2010) and Cowan and Tefft (2011). Evens and Garthwaite (2010) examined the effects of the EITC expansion on women's health using data from the Behavioral Risk Factor Surveillance Survey (BRFSS) and the National Health Interview Survey (NHANES), and found that the number of days with poor mental health and the fraction reporting excellent or very good health improved and risky levels of biomarkers fell for mothers of two or more children relative to the mothers with only one child, following the 1993 EITC expansion.

Cowan and Tefft (2011) examined the effect of EITC expansion on women's smoking behavior using BRFSS. They found that EITC expansion leads to a significant decline in the likelihood of smoking among young, unmarried women with less than a college

[3]Baughman (2005) examines the effect of the EITC on the probability of having health insurance.

degree. In our research, we use the framework of Evans and Garthwaite (2010) to consider, like Cowan and Tefft (2011), the effect of EITC expansion on smoking behavior. Our dataset, the National Longitudinal Survey of Youth 1979 (NLSY79), provides us with several advantages.

First, the NLSY79 is a longitudinal data set that allows us to purge our estimates of individual time-invariant heterogeneity, which cannot be easily achieved by using cross sectional or pooled cross sectional data. Another advantage is that we can identify with confidence whether or not the household has an EITC eligible child using the NLSY79 household roster which provides information on each child's age in the household. Our estimates are therefore less likely to be subject to bias caused by measurement errors. Similar to Cowan and Tefft (2011), our research, by focusing on a health behavior, provides a mechanism for explaining why such health benefits from increased income as identified by Evans and Garthwaite (2010) may occur – namely women may cease to smoke. Another notable difference between our approach and that of Cowan and Tefft is our identification of who is eligible for the EITC. We use those mothers with a high school education or less, which is more consistent with the literature (e.g. Evans and Garthwaite, 2010). Cowan and Tefft consider those with less than a college degree as EITC eligible.

Based on a triple differences plus Fixed-Effects (DDD+FE) model, our empirical results show that the exogenous and positive income shock generated by the 1993 EITC expansion significantly reduced the probability of smoking for white and Hispanic low-educated mothers of two or more children. The results for black and Hispanic mothers are statistically insignificant. Our falsification checks support that our EITC measure is capturing the variation in EITC policy, instead of picking up other time-varying factors that could be correlated with smoking. Furthermore, it appears that much of this is working through the labor market.

The rest of this paper proceeds as follows. In the second section, we present details of the EITC with a focus on the 1993 expansion. Following that we discuss our data and econometric models and then our empirical results. We offer concluding comments

and some discussions in the final section.

2 The Earned Income Tax Credit (EITC) and the Omnibus Reconciliation Act of 1993

The federal Earned Income Tax Credit (EITC) is a refundable tax credit that provides cash payments to individuals with positive earnings. Since its inception in 1975, the EITC has grown into one of the nation's largest anti-poverty programs in terms of the amount of money the federal government transfers to low income individuals who qualify for the credit. In 2009, over 25 million people received nearly $58 billion in EITC payments.[4]

The EITC has a three-phase structure, and these three phases are separated by recipients' income levels. For low income recipients, the EITC provides cash transfers as a percentage of earned income and these transfers increase with recipients' income. Once the maximum benefit is reached, the benefits the recipients receive stay constant over a range of income. The third phase begins once a certain amount of earned income is reached and the benefits start to decrease with income. Different income cutoff points and rates of increase/decrease in benefits affect how generous the EITC is to low income families and individuals.

The EITC policy has undergone several changes over time. The focus of this paper is on the impact on health behaviors of a particular EITC expansion. Specifically, in 1993, the Omnibus Reconciliation Act (OBRA93), signed by then President Clinton, dramatically increased the difference in benefits between families with two or more children and those with only one child. The difference was first created as part of the Omnibus Reconciliation Act of 1990, but on a much smaller scale. Because of this policy change, the maximum benefits for families with two or more children more than doubled and for the first time a meaningful separation was created for eligible families based on the

[4]http://www.eitc.irs.gov/central/abouteitc/, last accessed 01/10/2011.

number of children as reported in Table 1.[5]

The credit has three parameters that policymakers can manipulate: the credit rate (column 1), the maximum amount of the credit (column 2) and the phase out rate/range (columns 3, 4 and 5). As is clear from Table 1, back in 1991, the difference in maximum benefits between families with one child and families with two or more children was less than $40. In 1996, however, this difference jumped to over $1,400. This general structure is still in place today.[6] Because of this policy change, we are able to provide empirical evidence on the effect of income on health behaviors for EITC-eligible mothers.

Note that the typical family might not receive the full EITC benefit. Indeed, research has shown that the average difference in EITC benefits between mothers with one versus those with two or more children is $480 (Hotz et al., 2006). While the magnitude of this difference in income may appear small in absolute terms, whether it could be a relatively large income shock to low-educated mothers with two or more children under the age of 19 in the household is an empirical question.

3 Data

We use data from the 1979 National Longitudinal Survey of Youth (NLSY79) to examine the effect of the 1993 EITC expansion on smoking among low income mothers. The NLSY79 sampled 12,686 individuals who were between the ages of 14 and 21 in 1979 and has followed them ever since, with annual interviews until 1994 and interviews every other year following that through 2008. The NLSY79 respondents have reported data on their labor market experience, births, and marriages every year and in several years they have reported various health behaviors. Important for our purposes, the respondents were asked about their smoking behavior in 1992 and 1998, shortly before and after the

[5]Tax Policy Center http://www.taxpolicycenter.org/taxfacts/displayafact.cfm?Docid=36, accessed 1/14/2011.

[6]See 1040 instruction for the difference in maximum benefits for tax year 2010, http://www.irs.gov/pub/irs-pdf/i1040gi.pdf (last accessed, 01/10/2011).

change in the EITC. [7] If a mother smoked daily or at least occasionally in 1992 and/or 1998, she is defined as a smoker in our study.

The NLSY79 is the only dataset of which we are aware that allows us to examine the 1993 EITC expansion using women who were in their childbearing years at that time and for whom we have longitudinal information – i.e. we can observe the same mothers before and after the expansion and therefore purge our estimates of any time invariant heterogeneity by the use of Fixed-Effects estimation — an important feature of these data that we exploit in the analyses that follow. The NLSY79 also oversamples civilian blacks, Hispanics, and the economically disadvantaged non-black/non-Hispanic population, which likely expands our pool of EITC-eligible mothers.[8] In addition, unlike in the BRFSS, we are able to more accurately measure the number of EITC-eligible children (under 19 years of age and in the household) using the NLSY79 household roster. The mothers in our sample were 27 to 35 years old in 1992 and 33 to 41 years old in 1998.

A key question within our research framework is how to restrict the sample to include people *likely* to be eligible for the EITC. Although the EITC is an income-based benefit, previous literature indicates that there are important labor supply consequences of the program (see Section 1 for citations). So an income-based criterion is inappropriate as this would select the sample based on an outcome that would potentially contaminate our results due to sample selection bias.

We employ the same strategy used by Evans and Garthwaite (2010) and use education to denote who is EITC eligible. In particular, we regard those mothers with less than 13 years of education as eligible for the EITC and those with 13 or more years of education

[7] 1996 would have been a better "after" year for our study. Unfortunately, NLSY79 did not ask any question on cigarette smoking in 1996. Data on smoking is collected in the 1994 survey year but as Evans and Garthwaite caution, using this as an after period is not correct. "The EITC expansion was passed in 1993 and became effective with tax year 1995, but because so few people collect their EITC benefits as the advanced EITC and nearly all take the EITC as a refund on their federal taxes (which is received in the following calendar year), we consider 1996 as the first year when eligible families with two or more children were receiving dramatically greater EITC payments." (Evans and Garthwaite, 2010, p.11) To keep the before and after years clean, we focus on data from 1992 and 1998.

[8] See http://www.bls.gov/nls/handbook/2005/nlshc3.pdf for a description of the NLSY79 (last accessed on 05/10/2012). We thank an anonymous referee for pointing this out to us.

as ineligible. A few women obtained more years of education between 1992 and 1998, which gave them more than 12 years of education and therefore made them very unlikely to be eligible for EITC benefits. We exclude those women in our estimation to avoid contamination of the estimation results. There are also some women in our data who switched treatment status from 1992 to 1998; i.e., they went from having one EITC eligible child (control group) in 1992 to having two or more EITC eligible children (treatment group) in 1998 or vice versa.[9] We exclude these women from our sample for the same reason. We also exclude a few observations with missing information on important variables. The sample derivation process is described in Appendix Chart 1.

4 Econometric Models

As explained in the Introduction, we exploit the unique feature of the EITC expansion during 1993 - 1995 to identify the effects of income on health-related behaviors, smoking in particular, for EITC-eligible mothers. Our baseline econometric model for EITC-eligible mothers therefore is a straightforward difference-in-differences (DD) framework as follows:

$$\begin{aligned} S_{it} &= \beta_0 + AFTER_{it}\beta_1 + 2KIDS_{it}\beta_2 + AFTER_{it}2KIDS_{it}\delta_{dd} \\ &+ X_{it}\beta_x + \sum_{m=1}^{50} State_m\lambda_m + \varepsilon_{it} \end{aligned} \tag{4.1}$$

where S_{it} denotes the smoking behavior of mother i at time t, and equals 1 if this mother smokes, and 0 otherwise. ε_{it} is the mean-zero idiosyncratic error term. $AFTER_{it}$ is a binary variable indicating whether the EITC expansion is effective: if the smoking behavior is measured after 1995, then $AFTER_{it} = 1$, and 0 otherwise. $2KIDS_{it}$ is also a binary variable which equals 1 if mother i has two or more children at time t, and 0 otherwise. Because this expansion only affects mothers with two or more children and

[9]We might also worry that the EITC provided incentives for mothers to have more children. However, research indicates that the EITC expansions in 1993 not only did not encourage fertility but had a small reduction in higher-order fertility among white women (Baughman and Dickert-Conlin, 2009).

not those with only one child, δ_{dd} is the main parameter of interest and captures the effect of EITC expansion on EITC-eligible mothers' smoking behavior in this framework.

To account for the effects of other explanatory variables on smoking behaviors, we also include a set of covariates (X_{it}) that describes the mothers and a set of state dummy variables ($State_m$). X_{it} includes a binary variable equal to one if the mother reports that she is currently married, family income, family income missing, age, Hispanic or not, urban or not, education dummies, and number of children in the household. The set of state dummy variables ($State_m$) controls for differences in smoking patterns by states (e.g., sentiment towards maternal smoking). These state fixed effects also allow us to control for variation in welfare benefit levels across states as well as variation in the generosity of public health insurance programs such as Medicaid. The mid-1990s was a time of great change in welfare programs in the U.S., so these state fixed effects are particularly important controls. Note that these state fixed effects can only deal with state-level time-invariant heterogeneity, while various time-varying differences across states in labor market trends, welfare reforms, and smoking policies may have also affected women's smoking behaviors. We therefore include in X_{it} state-level unemployment rates (as a measure of labor market trends), AFDC maximum benefits (as a measure of welfare reform), and cigarette taxes (as a measure of smoking policies).

As mentioned in the Introduction, the data set we use, NLSY79, is a longitudinal data set, which allows us to control for time-invariant individual fixed effects as specified in the following expanded DD model:

$$\begin{aligned} S_{it} &= \beta_0 + AFTER_{it}\beta_1 + 2KIDS_{it}\beta_2 + AFTER_{it}2KIDS_{it}\delta_{dd} \\ &+ X_{it}\beta_x + \sum_{m=1}^{50} State_m\lambda_m + \alpha_i + \varepsilon_{it}, \end{aligned} \tag{4.2}$$

where α_i measures the individual fixed effects or unobserved individual heterogeneity. The inclusion of α_i is important, because omitted variable bias will likely result otherwise if α_i is correlated with any of the control variables.

Furthermore, it is critical for our DD model to assume that our treatment group —

EITC-eligible mothers with two or more children — would have experienced the same changes in smoking behaviors over time as the control group — EITC-eligible mothers with only one child — had there not been the EITC expansion (which is the treatment in our empirical setting). If, for any reason, this assumption does not hold, which means that our treatment group would have experienced different trends in smoking behaviors than the control group, then our estimate of the effect of the EITC expansion, δ_{dd}, would be biased.

As with any DD model, it is not possible to directly test the validity of this assumption, so we try to reduce the potential bias by exploring a triple differences specification where high-educated mothers, who were unlikely to be eligible for the EITC and therefore not subject to the policy intervention, form the comparison group. That is, we use the differential trends in health behaviors for high-educated mothers with two or more children versus high-educated mothers with only one child to deal with the potential bias, provided that these differential trends for high-educated mothers were similar to those for low-educated mothers during the time period of interest.

Now, we have a triple difference and individual Fixed-Effects (DDD+FE) model which is applied to both the EITC-eligible low-educated mothers and EITC non-eligible high-educated mothers:

$$\begin{aligned} S_{it} &= \beta_0 + AFTER_{it}\beta_1 + 2KIDS_{it}\beta_2 + ELIG_{it}\beta_3 \\ &+ AFTER_{it}2KIDS_{it}\beta_4 + AFTER_{it}ELIG_{it}\beta_5 + 2KIDS_{it}ELIG_{it}\beta_6 \\ &+ AFTER_{it}ELIG_{it}2KIDS_{it}\delta_{ddd} \\ &+ X_{it}\beta_x + \sum_{m=1}^{50} State_m\lambda_m + \alpha_i + \varepsilon_{it}, \end{aligned} \tag{4.3}$$

where β_2 is the effect of being a mother with two or more kids, β_3 is the effect of being eligible for EITC (i.e., with low education), and δ_{ddd} is the effect of EITC expansion on the health behaviors of low-educated mothers with two or more children.

To further show that the estimated δ_{ddd} indeed captures the income effect on health behaviors, we also conduct certain falsification tests. Specifically, in this test, we exclude

mothers with only one child and focus only on mothers with two or more children. Mothers with three or more children will be considered as the 'treatment' group, while those with exactly two children will form the 'control' group. Everything else in the falsification test is the same as in Equation (4.3). So, the model for falsification test is:

$$\begin{aligned} S_{it} &= \beta_0 + AFTER_{it}\beta_1 + 3KIDS_{it}\beta_2 + ELIG_{it}\beta_3 \\ &+ AFTER_{it}3KIDS_{it}\beta_4 + AFTER_{it}ELIG_{it}\beta_5 + 3KIDS_{it}ELIG_{it}\beta_6 \\ &+ AFTER_{it}ELIG_{it}3KIDS_{it}\delta_{ddd} \\ &+ X_{it}\beta_x + \sum_{m=1}^{50} State_m\lambda_m + \alpha_i + \varepsilon_{it} \end{aligned} \tag{4.4}$$

According to the way the EITC expansion works, we should only observe differential trends in health behaviors when we compare EITC-eligible mothers with only one child to those with two or more children. No significantly differential trends in health behaviors should be observed if we compare mothers with exactly two children to those with more than two children, because the 1993 expansion did not create any income differential between these two groups. So, if δ_{ddd} is statistically significant in model (4.3) for mothers with two or more children versus those with just one child, but not significant in model (4.4) which compares mothers with three or more children to those with exactly two children, then we have some confidence that the changes in smoking behavior we observe are indeed due to the exogenous increase in income created by the 1993 EITC expansion.

5 Results

Table 2 reports sample means for the mothers by their years of education (i.e., EITC eligibility) and their number of EITC-eligible children (i.e., their treatment status) in the household. Note that there is a significant difference in income between low-educated and high-educated mothers regardless of the number of children in the household. The total net family income for the latter is almost double that of the former. This difference is consistent with Evans and Garthwaite (2010) and indicates that our use of education

as a measure of EITC eligibility is indeed valid. We also report p-values for tests of significance across the means for one child versus two or more children families within each education group.[10]

Because of well-known differences in family formation and smoking behavior across race (Yunzal-Butler and Joyce and Racine, 2009; Chaloupka and Pacula, 1999), we produce estimates for two subsamples: white and Hispanic mothers and black and Hispanic mothers. Notice that the racial groups do not add up to 100 percent (Table 2). Because Hispanics can be either black or white due to the question design in NLSY79, we include them in both the black and white samples and control for Hispanic ethnicity in our estimation. Table 3 reports sample means by race for all mothers in our sample. All mothers have similar numbers of EITC-eligible children in the household, are of similar age, and have similar years of education on average. Compared to white and Hispanic mothers, however, black and Hispanic mothers are much less likely to be married and much more likely to be separated, divorced, or widowed. Black and Hispanic mothers also have significantly lower family incomes, and are less likely to be smokers.

Before reporting our estimation results, it is instructive to consider what the average family received in terms of the EITC benefits. Table 4 shows the EITC benefits received by EITC-eligible families in our sample by the numbers of EITC-eligible children in the households for years 1992 and 1998. As is clear from the table, in 1992, the difference in benefits between these two kinds of families was rather small; in 1998, however, the mean difference in benefits between families with only one child and those with two or more children was almost $800 in our sample.[11]

Table 5 reports the difference-in-differences (DD) estimation results for the smoking behavior of low-educated mothers using models based on equations (4.1) and (4.2).[12]

[10]Note that the statistics reported in Table 2 are qualitatively consistent with Table 2 in Evans and Gaithwaite (2010, p.57) on sample characteristics for women aged 21-40 with children by their education status (<= high school vs. college graduate). Both tables are indicative of the validity of using education as a measure of EITC eligibility.

[11]Numbers in Table 4 are calculated based on families' earnings in the previous year and the EITC parameters. Details are available upon request.

[12]It could also instructive to look at some raw numbers describing smoking behavior before and after the EITC expansion for the control and treatment groups by race. Appendix Table 1, providing

The first two columns report the DD results using the Probit model[13], and the last two columns show the DD+FE results using the linear probability model.[14]

For all the columns in Table 5, we use the binary dependent variable which equals 1 if the mother smokes at the time of interview and 0 if not. The shared set of covariates includes age, education, Hispanic or not, currently married or not, living in an urban area, residential state, family income, a dummy variable equal to one if family income missing[15], state level cigarette taxes, AFDC maximum benefit level, and unemployment rate, and number of children in the household.

For white and Hispanic mothers, this exogenous increase in income significantly reduced their probability of smoking in both estimation methods we use here. For example, in the Probit model (column 1), this income increase leads to a 7.60 percentage point reduction in the probability of cigarette smoking for low-educated white and Hispanic mothers with two or more children compared to those with only one child, and this reduction is statistically significant at 10% level. As explained in the Econometric Models section, the estimates might suffer from omitted variable bias if we do not account for the unobserved individual heterogeneity, and we deal with this problem using Fixed-Effects estimation based on Equation (4.2) by exploiting the panel nature of the data set, and the DD+FE results are reported in the last two columns of Table 5.[16] For white and Hispanic mothers, this linear DD+FE model (column 3) shows that this income increase significantly reduces their probability of smoking by 5.75 percentage points, significant at 10% level. For black and Hispanic mothers, however, Table 5 (columns 2 and 4) shows that the effect of EITC expansion on their smoking behavior was negative or slightly positive but never statistically significant.

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these raw means, shows that without controlling for any covariates, white and Hispanic mothers in the treatment group experienced a much lower probability of smoking after the policy change.

[13]Results are shown as marginal effects. Probit coefficients exhibit the same pattern of significance and are available upon request.

[14]The DD results using the Ordinary Least Squares (OLS) estimation are reported in Appendix Table 2 They are qualitatively the same as those from Probit.

[15]We impute family income for those with missing income using race, age, marital status, number of children in the household and education.

[16]The Hausman test rejects the Random Effects model, and these results are available upon request.

Table 6 reports estimation results of the triple differences (DDD) + FE model, where we pool together the low-educated mothers with their high-educated counterparts and use one additional variable, ELIG, to control for their EITC eligibility. The dependent variable and the set of covariates are the same as those in Table 5. The first two columns of Table 6, based on Equation (4.3), show the estimation results which are similar to those of Table 5. That is, for black and Hispanic mothers (column 2), even though the EITC expansion leads to a lower probability of cigarette smoking, the effect is not statistically significant at conventional levels.

For white and Hispanic mothers (column 1), however, the income increase through EITC expansion decreases the probability of cigarette smoking for EITC-eligible mothers with low education and two or more children compared to their counterparts with high education and/or only one child. The magnitude of this effect, 11.1 percentage points, is slightly greater than what we find in Table 5, and is statistically significant at the 5% level.[17]

The last two columns of Table 6 present the results of the falsification test. As previously discussed, we use this falsification test to provide further validity to our estimation results for the protective effects of income on health behavior, by focusing only on the mothers with two or more children. For this test, the 'control' group contains the mothers with exactly two children, and the 'treatment' group becomes mothers with more than two children. Because the EITC expansion provides the greatest differential treatment for eligible mothers with one child versus those with two or more children, we should not expect to see any significant effect of the expansion for the 'treatment' group compared to the 'control' group in the falsification test, and it is exactly what we see in the last two columns of Table 6. Specifically, we see that the effect of EITC expansion on the probability of cigarette smoking is statistically insignificant for both white and

[17]There is very little evidence that EITC-eligible families expected the occurrence of this expansion and took it into consideration before it actually took effect. However, if it were indeed the case, that is, if families with two or more children indeed were aware of this policy and responded to it before 1993, then the effect we find would be biased towards zero, which means the actual effect of this income increase on maternal smoking would have been of even greater magnitude.

Hispanic and black and Hispanic mothers.[18]

As mentioned earlier, $480 extra received by a typical EITC-eligible family with two or more children might not seem substantial in absolute terms. However, our significant and robust results suggest that at least for this group of white and Hispanic low-educated mothers, this income increase does matter for their smoking choices. These results are in a way consistent with Evans and Garthwaite (2010), who find that this EITC expansion increased low-educated women's mental and self-reported health, and improved their biomarkers. Our results are also consistent with those of Cowan and Tefft (2011), even though they use a different data set and a different measure of EITC eligibility. They also find that the EITC expansion leads to lower smoking probability among low-income women.

As part of our effort to explain the significant effect of EITC expansion on mothers' smoking behavior, we also look into the effect of EITC expansion on employment status for the mothers in our sample. As discussed in the Introduction, an income increase itself may lead to higher or lower cigarette consumption due to the utility obtained from smoking cigarettes and the negative association of cigarette smoking with health, respectively. In addition, because the original and main purpose of EITC was to encourage employment for low-income persons and families, any increase in income due to EITC expansion is likely to be accompanied by and work through a change in labor supply (Meyer and Rosenbaum, 2001).

To examine whether it is indeed the case, Table 7 presents our estimation results for employment status. The dependent variable is a binary variable equal 1 if the mother was employed at the time of interview, and 0 otherwise. The rest of the specification is exactly the same as that in Tables 5 and 6. Table 7 shows that EITC expansion indeed increased employment for EITC eligible white and Hispanic mothers in our sample, and this effect is statistically significant at 1% level for the DD+FE model and 10%

[18]Interestingly, this falsification test also shows that the effect we capture in the first two columns of Table 6 based on Equation (4.3) is *not* merely the effect of having another child; otherwise mothers changing from having two to three or more children would also be shown to have significantly lower probabilities of smoking.

level for the DDD+FE model with similar magnitudes. This result is consistent with the literature and is supportive of our hypothesis that EITC expansion may lower the probability of smoking among white and Hispanic mothers at least partially through its employment effect. For black and Hispanic mothers in our sample, the effect of EITC expansion on employment is of smaller magnitude and lower statistical significance.

We conduct several robustness checks. The two most important ones are as follows. First, as we explained in the data section, we pool Hispanic mothers with white mothers and black mothers separately, because back in 1979 black, white, and Hispanic were the only three categories of race/ethnicity in the NLSY79. To confirm that our results are not sensitive to the way we deal with race and ethnicity, in Table 8, we present our DD (Probit), DD+FE, and DDD+FE results for non-Hispanic black, non-Hispanic white, and Hispanic mothers separately. Table 8 clearly shows that non-Hispanic white mothers experienced a statistically significant decrease in the probability of smoking after the EITC policy change (except for the DD+FE model where the coefficient is significant at 11%), while non-Hispanic black and Hispanic mothers did not. The magnitude of the reduction in smoking probabilities is slightly greater here than found in Tables 5 and 6. Table 9 further confirms that non-Hispanic white mothers were indeed more likely to be employed after the policy change. Second, welfare benefits may change with marital status because change in marital status may lead to change in household size. We therefore estimate our model excluding all the mothers who changed their marital status between 1992 and 1998. Results are robust and shown in Table 10. Some of the other robustness checks we conduct are: excluding state dummy variables, excluding variables controlling for state-level differences in labor market conditions, welfare reforms, and smoking policies, and changing the functional forms for some of the independent variables such as age, education, and marital status. Results are robust to all these changes and available upon request.

6 Discussion and Conclusions

Our results estimation demonstrate that an exogenous increase in income such as that brought about by the 1993 expansion in the EITC can have a protective effect on the health of low-educated white and Hispanic mothers by reducing their probability of smoking. This result is robust to controlling for time-invariant heterogeneity through the use of Fixed-Effects estimation. This result is also commensurate with most of the income/health gradient literature and, given that we explore an exogenous increase in income, lends support to the hypothesis that the increase in income is the cause of the reduced smoking among this group and that part of this reduction likely works through increased labor force participation. It may be that when a woman become employed it is harder for her to smoke due to workplace bans on smoking[19] or other institutional features of the job and this makes it easier for her to quit.[20] This result is also consistent with the finding in the literature on unemployment and smoking behavior, where it is found that unemployment rates are negatively associated with cigarette consumption (Ruhm, 2005; Charles and DeCicca, 2008).

Nevertheless, it remains puzzling why this result does not also apply to black and Hispanic women. Research suggests that smoking cessation is harder for black women as compared to white women (Piper et al., 2010), and that black women who start smoking as adults are less likely to quit than are white women who started smoking as adults (Thompson et al, 2011).

There is also evidence that those with higher incomes are more successful at quitting when they try to quit (Adler and Newman, 2002). Sample means by race (Table 3) do

[19]According to Farrelly, Evans, and Sfekas (1999), by 1992, nearly 82% of indoor workers faced some restriction on workplace smoking and 47% worked in 100% smoke-free environment. They further conclude that a 100 smoke-free working environment actually lowered the smoking prevalence by 6 percentage points and the average daily cigarette consumption among smokers by 14% relative to workers facing minimal or no restrictions.

[20]It would be interesting to examine the income effect on the use of other substances such as marijuana, hard drugs and alcohol. However, the NLSY79 does not provide us with enough information to conduct such analyses. Similarly, it could also be interesting to look into the effect of this EITC expansion on the *number* of cigarettes smoked by low-educated mothers. However, substantially fewer respondents answered the questions concerning the actual number of cigarettes smoked, and analysis using this substantially smaller sample reveals no statistically significant results.

show that income is lower for our black and Hispanic sample than for our white and Hispanic sample and yet income is controlled for in our models and we still see significant results for white and Hispanic mothers but not for black and Hispanic ones.

It is also possible that the social capital resources aimed at helping smokers quit may be distributed differentially by race (perhaps geographically for example). Another possible difference could be that the quality of education might differ by race. For example, rates of smoking fell far more quickly among the more educated following the U.S. surgeon general's report on the health dangers associated with smoking (Adler and Newman, 2002). Our measure of education is a quantity measure but school quality varies widely in the U.S. If such quality is associated with race then this might be an explanation for our differential finding by race.

Overall our results have important policy implications because they provide evidence of a mechanism by which health may be improved while labor force participation is encouraged.[21] As Evans and Garthwaite (2010) note: "Any existence of a causal relationship between health and income will be useful for understanding the full effect of a broad range of income support programs" (p. 6). Our findings provide evidence of such a causal relationship.

[21] A word of caution is warranted here: Schmeiser (2010) finds that increase in family income through changes in EITC benefits significantly increases women's BMI and their probabilities of becoming obese.

Table 1. Earned Income Tax Credit Parameters, 1975-2000 (Dollar amounts unadjusted for inflation)

Calendar Year	Credit rate (percent)	Minimum income for maximum credit	Maximum credit	Phaseout Rate (percent)	Phaseout range	
					Beginning income	Ending income
1975–78	10	4,000	400	10	4,000	8,000
1979–84	10	5,000	500	12.5	6,000	10,000
1985–86	11	5,000	550	12.22	6,500	11,000
1987	14	6,080	851	10	6,920	15,432
1988	14	6,240	874	10	9,840	18,576
1989	14	6,500	910	10	10,240	19,340
1990	14	6,810	953	10	10,730	20,264
1991						
One child	16.7	7,140	1,192	11.93	11,250	21,250
Two children	17.3	7,140	1,235	12.36	11,250	21,250
1992						
One child	17.6	7,520	1,324	12.57	11,840	22,370
Two children	18.4	7,520	1,384	13.14	11,840	22,370
1993						
One child	18.5	7,750	1,434	13.21	12,200	23,050
Two children	19.5	7,750	1,511	13.93	12,200	23,050
1994						
One child	26.3	7,750	2,038	15.98	11,000	23,755
Two children	30	8,425	2,528	17.68	11,000	25,296
1995						
One child	34	6,160	2,094	15.98	11,290	24,396
Two children	36	8,640	3,110	20.22	11,290	26,673
1996						
One child	34	6,330	2,152	15.98	11,610	25,078
Two children	40	8,890	3,556	21.06	11,610	28,495
1997						
One child	34	6,500	2,210	15.98	11,930	25,750
Two children	40	9,140	3,656	21.06	11,930	29,290
1998						
One child	34	6,680	2,271	15.98	12,260	26,473
Two children	40	9,390	3,756	21.06	12,260	30,095
1999						
One child	34	6,800	2,312	15.98	12,460	26,928
Two children	40	9,540	3,816	21.06	12,460	30,580
2000						
One child	34	6,920	2,353	15.98	12,690	27,413
Two children	40	9,720	3,888	21.06	12,690	31,152

Table 2. Sample means by EITC eligibility and number of EITC eligible children in household

	Years of Education ≤12			Years of Education ≥13		
	One EITC eligible child	Two or more EITC eligible Children	P-value	One EITC eligible child	Two or more EITC eligible Children	P-value
Smoker	0.444	0.326	0.000	0.203	0.166	0.048
Married	0.471	0.608	0.000	0.589	0.777	0.000
Age	33.839 (3.481)	33.874 (3.607)	0.830	34.306 (3.521)	34.599 (3.512)	0.083
Years of Education	11.555 (1.107)	11.331 (1.477)	0.000	15.054 (1.643)	14.847 (1.626)	0.008
Real Total Net Family Income ($)10K	2.738 (2.361)	3.482 (6.086)	0.002	5.243 (6.646)	6.850 (11.393)	0.001
Income Missing	0.151	0.163	0.488	0.185	0.157	0.119
Black / Hispanic	0.416	0.559	0.000	0.528	0.465	0.008
White / Hispanic	0.737	0.681	0.006	0.628	0.714	0.000
Hispanic	0.153	0.240	0.000	0.156	0.179	0.211
White	0.584	0.441	0.000	0.472	0.535	0.008
Black	0.263	0.319	0.006	0.372	0.286	0.000
Real cigarette tax in state of residence	24.217 (14.605)	26.869 (14.738)	0.000	27.211 (14.720)	28.171 (14.661)	0.172
Real AFDC benefits (max for family of 3 in state of residence) (1000's of $)	0.381 (0.162)	0.401 (0.168)	0.007	0.386 (0.167)	0.397 (0.160)	0.150
Unemployment rate in state of residence	5.896 (1.989)	5.983 (1.912)	0.317	5.922 (1.870)	5.932 (1.912)	0.904
Urban Residence	0.686	0.727	0.046	0.794	0.734	0.004
# EITC eligible children in the household	1	2.715 (0.976)	0.000	1	2.517 (0.772)	0.000
# of Children in the Household	1.022 (0.146)	2.779 (1.006)	0.000	1.014 (0.132)	2.543 (0.794)	0.000
N	647	2,161		627	1,425	

Standard deviations for continuous variables are in the brackets.

Table 3: Means by Race	White and Hispanic	Black and Hispanic
	Mean (Std Dev)	Mean (Std Dev)
Smoker	0.2783	0.2405
Employed	0.6762	0.6603
Married	0.7512	0.4814
Family Income ($10K)	5.4081	3.3614
	(8.9405)	(6.2018)
Missing Family Income	0.1464	0.1874
Age years	34.2723	33.8915
	(3.5606)	(3.5969)
Hispanic	0.2887	0.3927
Number of kids in HH	2.2045	2.3887
	(1.0345)	(1.1880)
Number of EITC eligible kids in HH	2.1750	2.3300
	(1.0163)	(1.1494)
Education in year	12.9071	12.5324
	(2.4380)	(2.2975)
Education less than 13 years	0.5798	0.5980
Urban residence	0.7009	0.8223
State Real AFDC benefits family of 3, $100	0.4214	0.3843
	(0.1655)	(0.1762)
State unemployment rate	5.9736	6.1599
	(1.9724)	(1.8483)
Real state cigarette taxes	28.9441	26.5236
	(14.3225)	(14.3994)
N	3360	2470

Standard deviations for continuous variables are in the brackets.

Table 4. Real EITC benefits for EITC eligible women by number of EITC eligible children in household

	Years of Education ≤12	
Calculated EITC benefits (1992 $)	One EITC eligible Child	More than one EITC eligible Child
1992	469.7944 (840.3383)	327.8068 (722.1589)
1998	791.4757 (1251.302)	1111.208 (1737.201)

Source: Author's calculations from the NLSY79.

Table 5 Y=1 if smoker, Sample is mothers with less than 13 years of education	Probit		DD + FE	
	White/Hispanic	Black/Hispanic	White/ Hispanic	Black/Hispanic
More than 1 EITC elig. kid x 1998 (DD)	-0.0760*	-0.0328	-0.0575*	-0.00985
	(0.0411)	(0.0473)	(0.0336)	(0.0321)
Year = 1998	-0.0673	-0.0103	-0.0104	-0.0446
	(0.0930)	(0.118)	(0.212)	(0.227)
Married	-0.155***	-0.144***	-0.0467	0.0382
	(0.0270)	(0.0269)	(0.0303)	(0.0316)
Family Income ($10K)	-0.000749	0.000172	-0.00211	-0.00212
	(0.00210)	(0.00287)	(0.00165)	(0.00232)
Income missing	-0.0182	-0.0285	-0.0153	0.00341
	(0.0329)	(0.0307)	(0.0300)	(0.0287)
Hispanic	-0.239***	-0.0513		
	(0.0316)	(0.0369)		
Number of Children in HH Household	0.00307	-0.00397	0.0532**	-0.00951
	(0.0125)	(0.0111)	(0.0223)	(0.0224)
AFDC benefits, Real $1000	-0.114	0.159	-0.250	0.0586
	(0.327)	(0.389)	(0.197)	(0.222)
State unemployment rate	-0.0272	0.000671	-0.00872	-0.00616
	(0.0291)	(0.0378)	(0.0183)	(0.0266)
State cig. Tax	-7.68e-05	0.000292	0.000369	0.000168
	(0.00162)	(0.00201)	(0.000955)	(0.00121)
Constant			0.451	-0.548
			(1.185)	(1.135)
Observations	1,927	1,434	1,948	1,477
R-squared			0.074	0.113
Number of ID			1,091	821

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.DD indicates coefficient on year=1998* treated (more than 1 EITC eligible child). Models include stated fixed effects and controls for age, urban and education.

Table 6. Sample is all mothers	DDD+FE		DDD+FE Falsification test	
Y=1 if smoker	White/Hispanic	Black/Hispanic	White/Hispanic	Black/Hispanic
DDD	-0.111**	-0.0430	0.0607	0.0687
	(0.0496)	(0.0495)	(0.0409)	(0.0505)
Year 1998	-0.171	0.000357	-0.0257	0.0125
	(0.140)	(0.178)	(0.0305)	(0.0413)
Educ <13 years * 1998	0.0987**	0.0695	-0.0424	-0.0134
	(0.0451)	(0.0429)	(0.0288)	(0.0355)
More than 1 EITC elig. kid in 1998 (DD)	0.0591*	0.0372		
	(0.0340)	(0.0389)		
Married	-0.0594**	0.00482	-0.0563*	0.0221
	(0.0257)	(0.0227)	(0.0310)	(0.0278)
Family Income ($10K)	-0.000523	0.000532	-0.000545	0.000612
	(0.000725)	(0.00184)	(0.000783)	(0.00206)
Income missing	0.0177	0.00730	0.00504	0.00763
	(0.0227)	(0.0203)	(0.0258)	(0.0239)
Number of Children in HH	0.0373**	-0.00255	0.0369**	-0.0138
	(0.0149)	(0.0187)	(0.0166)	(0.0204)
AFDC benefits, Real $1000	-0.199	-0.189	-0.0862	-0.0349
	(0.136)	(0.162)	(0.152)	(0.187)
State unemployment rate	-0.0106	0.0101	-0.00720	0.0105
	(0.0121)	(0.0179)	(0.0133)	(0.0232)
State cig. Tax	0.000229	0.000625	-0.000231	4.51e-05
	(0.000622)	(0.00104)	(0.000720)	(0.00122)
Constant	0.116	0.823	0.242	0.295
	(0.669)	(0.895)	(0.736)	(0.984)
Observations	3,360	2,470	2,489	1,870
R-squared	0.074	0.099	0.081	0.119
Number of ID	1,961	1,404	1,396	1,026

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Models include stated fixed effects and controls for age, urban and education. DD is the coefficient on the interaction 1998 * more than 1 EITC eligible child. DDD is the coefficient on the triple difference interaction, i.e. year=1998 * eligible * education <13 years.

Table 7: Y=1 if employed	Probit		DD + FE		DDD+FE	
VARIABLES	WHITE/ HISP	BLACK/HISP	WHITE/ HISP	BLACK/HISP	WHITE/ HISP	BLACK/HISP
DDD					0.119*	-0.00960
					(0.0675)	(0.0748)
Year = 1998 (after)	-0.0298	-0.0517	-0.207	-0.216	0.106	-0.00259
	(0.0932)	(0.138)	(0.273)	(0.365)	(0.217)	(0.265)
Educ <13 years * 1998 (elig * after)					-0.0491	0.109*
					(0.0585)	(0.0639)
More than 1 EITC elig. kid * 1998 (DD)	0.137***	0.0805	0.126***	-0.0406	0.000725	-0.0316
	(0.0414)	(0.0548)	(0.0460)	(0.0550)	(0.0504)	(0.0524)
Married	0.0316	0.132***	-0.0483	0.0137	-0.0600*	0.00901
	(0.0277)	(0.0379)	(0.0438)	(0.0518)	(0.0358)	(0.0385)
Family Income ($10K)	0.0109**	0.0208*	0.00219**	0.00222***	0.000682	0.000116
	(0.00439)	(0.0121)	(0.000900)	(0.000857)	(0.00110)	(0.00253)
Income missing	-0.0174	-0.102***	0.0578	-0.0557	0.0367	-0.0151
	(0.0324)	(0.0371)	(0.0433)	(0.0443)	(0.0336)	(0.0322)
Number of Children in Household	-0.0883***	-0.0621***	-0.0275	-0.0461*	-0.0642***	-0.0532**
	(0.0123)	(0.0127)	(0.0312)	(0.0269)	(0.0245)	(0.0219)
AFDC benefits, Real $1000	0.310	0.243	0.341	0.234	0.310	0.0707
	(0.317)	(0.429)	(0.251)	(0.347)	(0.204)	(0.262)
State unemployment rate	-0.00810	-0.0180	-0.0332	-0.0314	-0.0327*	-0.0270
	(0.0288)	(0.0445)	(0.0225)	(0.0326)	(0.0175)	(0.0240)
State cig. tax	0.000200	0.00238	-0.000501	0.00104	0.000354	8.81e-05
	(0.00155)	(0.00204)	(0.00104)	(0.00134)	(0.000861)	(0.00122)
Hispanic	0.00677	0.0593				
	(0.0318)	(0.0421)				
Constant			-0.0437	-1.984	1.084	0.198
			(1.422)	(1.836)	(1.110)	(1.394)
Observations	1,940	1,452	1,948	1,477	3,360	2,470
R-squared			0.143	0.181	0.110	0.131
Number of ID			1,091	821	1,961	1,404

Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1 Models include stated fixed effects and controls for age, urban and education.

DD is the coefficient on the interaction 1998 * more than 1 EITC eligible child. DDD is the coefficient on the triple difference interaction: year=1998 * eligible * education <13 years

Table 8. Models by Race/Ethnicity		Probit			DD + FE			DDD+FE	
Y=1 if smoker	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
DDD							-0.119**	-0.00278	-0.131
							(0.0595)	(0.0637)	(0.0809)
Year 1998	-0.102	-0.0658	0.0649	-0.0904	-0.357	0.255	-0.263	-0.211	0.234
	(0.112)	(0.160)	(0.183)	(0.230)	(0.322)	(0.294)	(0.168)	(0.244)	(0.253)
Educ <13 years * 1998							0.0907*	0.0331	0.137*
							(0.0539)	(0.0541)	(0.0724)
More than 1 EITC elig. kid * 1998 (DD)	-0.100**	-0.00404	-0.0443	-0.0734	0.0160	-0.0316	0.0543	0.0118	0.109
	(0.0504)	(0.0649)	(0.0655)	(0.0468)	(0.0456)	(0.0485)	(0.0387)	(0.0475)	(0.0678)
Married	-0.123***	-0.101**	-0.168***	-0.0702	0.0823*	-0.0161	-0.0753**	0.0284	-0.0401
	(0.0343)	(0.0478)	(0.0399)	(0.0431)	(0.0425)	(0.0483)	(0.0347)	(0.0260)	(0.0406)
Family Income ($10K)	-0.00276	-0.0159	-0.00405	-0.00101	0.00180	-0.00309	-0.000272	0.00431	-0.00177
	(0.00243)	(0.0149)	(0.00529)	(0.000933)	(0.00195)	(0.00296)	(0.000778)	(0.00328)	(0.00179)
Income missing	-0.00662	-0.0211	-0.0549	-0.0113	0.00873	-0.0157	0.0236	-0.00782	0.0150
	(0.0429)	(0.0428)	(0.0428)	(0.0431)	(0.0392)	(0.0437)	(0.0312)	(0.0265)	(0.0333)
Number of Children in Household	-0.000727	-0.0170	0.0130	0.0696**	-0.0401	0.0383	0.0428**	-0.0250	0.0325
	(0.0170)	(0.0155)	(0.0154)	(0.0329)	(0.0298)	(0.0256)	(0.0215)	(0.0265)	(0.0216)
AFDC benefits, Real $1000	0.00600	1.157	-0.133	-0.246	0.477	-0.222	-0.0119	0.239	-0.442**
	(0.448)	(0.767)	(0.499)	(0.286)	(0.554)	(0.232)	(0.207)	(0.351)	(0.194)
State unemployment rate	-0.0439	-0.0230	0.0357	-0.0173	-0.0293	0.0282	-0.0201	-0.000737	0.0267
	(0.0348)	(0.0504)	(0.0618)	(0.0205)	(0.0366)	(0.0309)	(0.0131)	(0.0238)	(0.0264)
State cig. tax	0.000235	0.00212	-0.00109	0.000467	0.000516	-0.000225	7.74e-05	0.000747	0.000454
	(0.00215)	(0.00382)	(0.00205)	(0.00108)	(0.00221)	(0.00142)	(0.000670)	(0.00160)	(0.00134)
Constant				0.266	-0.733	0.172	-0.256	-0.463	0.945
				(1.140)	(1.676)	(1.654)	(0.828)	(1.190)	(1.302)
Observations	1,323	834	559	1,331	860	617	2,390	1,500	970
R-squared				0.051	0.084	0.223	0.056	0.055	0.257
Number of ID				753	483	338	1,417	860	544

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Models include stated fixed effects and controls for age, urban and education. DD is the coefficient on the interaction 1998 * more than 1 EITC eligible child DDD is the coefficient on the triple difference interaction: year=1998 * eligible * education <13 years

Table 9: Y=1 if employed by Race/Ethnicity	Probit			DD + FE			DDD + FE		
	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic
DDD							0.166**	-0.0455	0.0234
							(0.0788)	(0.0948)	(0.133)
Year 1998	-0.0271	-0.138	0.00218	0.0151	0.0444	-0.725	0.325	0.222	-0.397
	(0.103)	(0.178)	(0.252)	(0.308)	(0.460)	(0.572)	(0.251)	(0.339)	(0.432)
Educ <13 years * 1998							-0.0849	0.175**	0.0221
							(0.0674)	(0.0810)	(0.120)
More than 1 EITC elig. kid *1998 (DD)	0.152***	0.0940	0.0746	0.172***	-0.0712	-0.0414	0.00518	-0.0398	-0.0578
	(0.0467)	(0.0718)	(0.0929)	(0.0550)	(0.0752)	(0.0874)	(0.0572)	(0.0615)	(0.104)
Married	-0.0374	0.000481	0.150***	-0.0531	0.0408	-0.0213	-0.0786*	0.0336	-0.0269
	(0.0333)	(0.0562)	(0.0509)	(0.0515)	(0.0669)	(0.0808)	(0.0430)	(0.0495)	(0.0630)
Family Income ($10K)	0.0108**	0.0892***	0.0145	0.00259*	0.00121	0.00186*	5.87e-05	-0.00630	0.00310
	(0.00506)	(0.0217)	(0.00905)	(0.00147)	(0.00203)	(0.00105)	(0.00114)	(0.00406)	(0.00252)
Income missing	0.00635	-0.155***	-0.0550	0.0807	-0.116**	0.0127	0.0203	-0.0557	0.0537
	(0.0398)	(0.0494)	(0.0585)	(0.0552)	(0.0554)	(0.0739)	(0.0421)	(0.0387)	(0.0584)
Number of Children in Household	-0.0911***	-0.0439***	-0.0827***	-0.0722*	-0.0743**	0.0190	-0.0842***	-0.0596**	-0.0304
	(0.0162)	(0.0170)	(0.0198)	(0.0418)	(0.0313)	(0.0495)	(0.0324)	(0.0250)	(0.0396)
AFDC benefits, Real $1000	0.594	0.452	0.121	0.618*	0.0636	0.173	0.586**	-0.129	0.150
	(0.416)	(0.871)	(0.633)	(0.338)	(0.765)	(0.474)	(0.280)	(0.492)	(0.366)
State unemployment rate	-0.00789	-0.0399	-0.00326	-0.0409	-0.0263	-0.0217	-0.0316	-0.0268	-0.0252
	(0.0317)	(0.0566)	(0.0835)	(0.0259)	(0.0403)	(0.0550)	(0.0200)	(0.0309)	(0.0430)
State cig. tax	0.000398	0.00873**	-5.59e-05	-0.000589	0.00460	-0.00114	0.000973	0.00119	-0.00103
	(0.00195)	(0.00405)	(0.00248)	(0.00145)	(0.00310)	(0.00151)	(0.00110)	(0.00221)	(0.00148)
Constant				1.365	-1.717	-2.976	2.282*	1.256	-0.871
				(1.629)	(2.336)	(3.031)	(1.291)	(1.764)	(2.155)
Observations	1,323	841	591	1,331	860	617	2,390	1,500	970
R-squared				0.163	0.248	0.188	0.130	0.179	0.167
Number of ID				753	483	338	1,417	860	544

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1Models include stated fixed effects and controls for age, urban and education

DD is the coefficient on the interaction 1998 * more than 1 EITC eligible child DDD is the coefficient on the triple difference interaction: year=1998 * eligible * education <13 years

Table 10. Results for women who did not change marital status between 1992 and 1998

	Y=1 if smoker					
	Probit		DD+FE		DDD+FE	
	White/Hispanic	Black/Hispanic	White/Hispanic	Black/Hispanic	White/Hispanic	Black/Hispanic
More than 1 EITC elig. kid * 1998 (DD)	-0.0550	-0.0222	-0.0652*	-0.0409	0.0455	0.0241
	(0.0467)	(0.0533)	(0.0382)	(0.0368)	(0.0343)	(0.0485)
Year= 1998	-0.0987	-0.0732	0.0570	0.104	-0.147	0.0394
	(0.106)	(0.130)	(0.236)	(0.284)	(0.154)	(0.211)
Married	-0.223***	-0.232***				
	(0.0340)	(0.0305)				
Family Income ($10K)	0.00173	0.00329	-0.000618	0.000653	-5.00e-05	0.00201
	(0.00298)	(0.00261)	(0.00236)	(0.000769)	(0.000809)	(0.00164)
Income missing	0.0114	-0.00804	-0.00479	0.0193	0.0263	0.00986
	(0.0374)	(0.0344)	(0.0324)	(0.0343)	(0.0250)	(0.0252)
Hispanic	-0.248***	-0.0610				
	(0.0357)	(0.0428)				
Number of Children in Household	-0.00107	-0.0163	0.0560**	-0.0278	0.0318**	-0.0130
	(0.0137)	(0.0122)	(0.0250)	(0.0250)	(0.0143)	(0.0208)
AFDC benefits, Real $1000	-0.124	-0.0937	-0.243	0.0245	-0.0790	-0.195
	(0.368)	(0.411)	(0.216)	(0.245)	(0.142)	(0.176)
State unemployment rate	-0.0331	0.00200	-0.00782	-0.0232	-0.0140	0.00529
	(0.0332)	(0.0410)	(0.0207)	(0.0333)	(0.0127)	(0.0222)
State cig. tax	-0.000782	8.89e-05	-0.000316	-0.000359	-0.000246	0.000204
	(0.00192)	(0.00237)	(0.00111)	(0.00103)	(0.000544)	(0.00100)
DDD					-0.111**	-0.0617
					(0.0556)	(0.0608)
Educ <13 years * 1998					0.0930*	0.0907*
					(0.0505)	(0.0537)
Constant			0.868	1.423	0.159	0.991
			(1.312)	(1.482)	(0.745)	(1.017)
Observations	1,480	1,090	1,491	1,130	2,613	1,836
R-squared			0.078	0.116	0.072	0.107
Number of ID			821	619	1,475	1,012

Robust standard errors in parentheses. DD is the coefficient on the interaction 1998 * more than 1 EITC eligible child. DDD is the coefficient on the triple difference interaction: year=1998 * eligible * education <13 years *** p<0.01, ** p<0.05, * p<0.1Models include stated fixed effects and controls for age, urban and education

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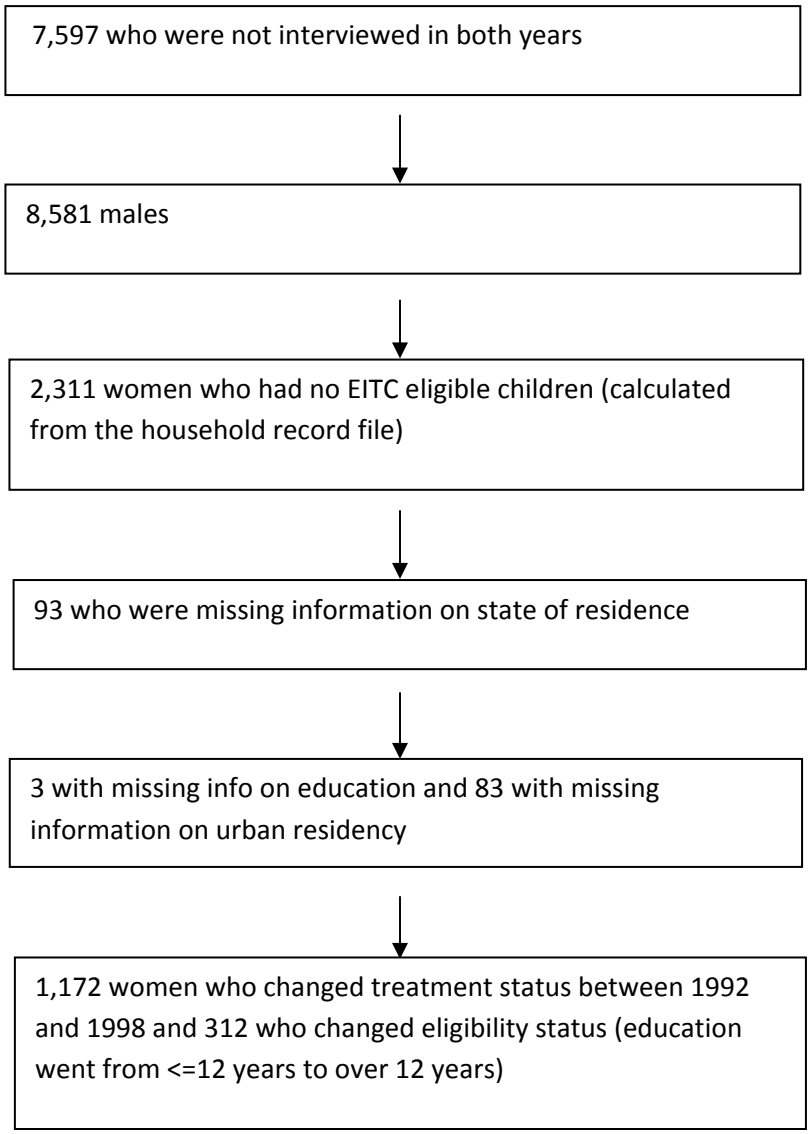
Appendix Chart 1: Sample Creation

We start with the initial sample of 12,686 individuals who were interviewed in 1979. If all respondents had been interviewed in both 1992 and 1998 we would have 25,372 respondents.

From the potential 25,372 respondents we delete the following individuals for a final sample of 4,860 woman years.



Appendix Table 1. Raw Means in Proportions of Smokers by Race and Treatment Status for EITC Eligible Mothers.

	Black and Hispanic		White and Hispanic	
	Not Treated	Treated	Not Treated	Treated
1992	0.386	0.268	0.460	0.344
1998	0.336	0.265	0.466	0.316
1998 - 1992	-0.050	-0.003	0.006	-0.028

Appendix Table 2. OLS Results.

VARIABLES	WHITE and HISPANIC	BLACK and HISPANIC
More than 1 EITC elig. kid in 1998	-0.0742*	-0.0322
	(0.0404)	(0.0474)
Year 1998	-0.0594	-0.0171
	(0.0904)	(0.115)
Married	-0.139***	-0.135***
	(0.0250)	(0.0256)
Family Income ($10K)	-0.000810	0.000268
	(0.00178)	(0.00228)
Income missing	-0.0170	-0.0303
	(0.0298)	(0.0295)
HISPANIC	-0.230***	-0.0577
	(0.0299)	(0.0377)
Number of Children in Household	0.00202	-0.00494
	(0.0113)	(0.0106)
AFDC benefits, Real $1000	-0.104	0.124
	(0.288)	(0.331)
State unemployment rate	-0.0252	-0.00176
	(0.0282)	(0.0367)
State cig. tax	3.71e-05	0.000276
	(0.00141)	(0.00156)
Constant	0.574**	-0.221
	(0.261)	(0.289)
Observations	1,948	1,477
R-squared	0.117	0.123

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Models include stated fixed effects and controls for age, urban and education