Effects of the Earned Income Tax Credit for Childless Adults: A Regression Discontinuity Approach

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Abstract

Most antipoverty policy in the United States focuses on families with children, but efforts to assist childless adults have gained traction in recent years. We examine the impact of the Earned Income Tax Credit on the labor force outcomes of childless adults using the age-25 eligibility discontinuity. We find no impacts on labor force participation or outcomes, which may be due to lack of information about the credit or a lack of behavioral response due to its small size.

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1 Introduction

The Earned Income Tax Credit (EITC) is one of the primary antipoverty tools in the United States, transferring over $60 billion to 25 million low-income working households in 2019 (IRS, 2019). The EITC is thought to encourage employment for low-income households since people only become eligible if they have positive earnings. Previous research has focused almost exclusively on the impacts of the EITC on households with children (see Hoynes and Rothstein, 2017, for a review, and recent work by Wilson, 2018; Kleven, 2019; Kuka and Shenhav, 2020; Neumark and Shirley, 2017; Neumark and Williams, 2020; Schanzenbach and Strain, 2020, *inter alia*). Most studies find positive impacts on employment among single mothers with lower levels of education, and often significant economic and social benefits, such as reductions in recidivism (Agan and Makowsky, 2018), improved mother and infant health (Hoynes et al., 2015; Evans and Garthwaite, 2014; Markowitz et al., 2017), boosts in educational achievement and attainment (Bastian and Michelmore, 2018; Michelmore, 2013), increases in intergenerational mobility (Jones et al., 2020), changes in marriage and fertility (Bastian, 2017; Baughman and Dickert-Conlin, 2009; Maag and Acs, 2015; Eissa and Hoynes, 2000; Holtzblatt and Rebelein, 2000), and more. Studies looking at the employment effects of married couples find that total labor force participation increases for men and decreases for women. Overall, the combined labor supply of married couples seems to decrease because the increases from married men do not offset declines from married women (Eissa and Hoynes, 2004). Research looking at the impacts of the EITC on adults without children, however, is sparse.

In large part, the focus on households with children is because the maximum amount of the Federal credit is far lower for those without children, just $560 in 2022, as compared to $6,935 for filers with three or more children. Further, the credit for childless adults is fully phased out at $16,480 for single filers in 2022, far lower than for those with children. Indeed, childless adults are often used as a control group to measure the impacts of the EITC (Meyer and Rosenbaum, 2001; Hoynes and Patel, 2018; Neumark and Williams, 2020), with the justification that "individuals with no children are essentially ineligible for the EITC" (Chetty *et al.*, 2013) and that "the small credit offered is unlikely to induce a significant behavioral labor supply response" (Neumark and Williams, 2020).

However, childless adults do account for a quarter of EITC recipients – nearly 7 million taxpayers – even as they only receive 3% of EITC payments, with an average claimed credit of $302 (Crandall-Hollick, 2021). And recent policy efforts have emphasized expanding the EITC for childless adults: as part of the response to the coronavirus pandemic, the American Rescue Plan Act reduced the minimum age of eligibility from 25 to 19 for the

2021 tax year, increased the phase-in (and -out) rate, nearly tripled the size of the credit, and expanded the income range (Crandall-Hollick *et al.*, 2021). The proposed Build Back Better Act would make this change permanent.[1]

States play a large role in the EITC program. More than 30 states have their own EITC program, structured as a percentage of the federal credit. In 2022, all but six of those are fully refundable. Generosity ranges widely, from 3 percent to 100 percent of the federal credit (Tax Policy Center, 2022). Combined, the maximum refundable EITC a childless adult could claim for the 2022 tax year ranges from $560 to $1120, depending on the state. Witter (2020) finds that state EITC expansions between 1994 and 2017 led to small but significant increases in employment and labor force participation for younger childless women. Miller *et al.* (2018) similarly find small increases in employment, tax filing, and child support payments among noncustodial parents in response to the NYC Paycheck Plus program (an EITC-like program). These two studies looking at state expansions of the EITC offer promising but incomplete evidence that expanding the federal EITC can lead to increases in employment, labor force participation, as well as positive impacts on tax revenue and children with low-income non-custodial parents.

Rather than exploit variation in state or local EITC eligibility, we use the Federal EITC's age-25 eligibility criterion as a source of identifying variation for both the impacts on labor force participation and employment. Childless adults become eligible for the EITC in the year in which they turn 25, meaning that observationally-similar people born just a few days apart are eligible to receive the credit a full year apart.[2] Recipients cannot manipulate the running variable, birth date, given that individuals in our sample were born before the EITC was introduced for childless adults in 1994. We use the 2001, 2004, 2008, and 2014 waves of the Survey of Income and Program Participation (SIPP) to examine outcomes on either side of this cutoff. That is, we compare outcomes for those turning 25 at the very end of the calendar year – who are eligible for EITC payments based on their labor income in that year – to those who are born shortly afterwards, in the next year, and are thus ineligible until the following year.[3]

[1] In 2016, Speaker Paul Ryan and President Barack Obama proposed nearly-identical plans to lower the eligibility age for that group, expand the eligible income range, and increase the maximum credit amount. No legislative action resulted due to disagreements about paying for the expansion.

[2] Shirley (2020) uses a similar approach around the timing of a first birth (and thus EITC eligibility) to examine mothers' labor supply responses. Barr *et al.* (2022) do so to investigate long-run outcomes for those children.

[3] There is a robust literature on the relationship between the season of birth and attributes such as family socioeconomic status (Buckles and Hungerman, 2013), but these seasonal differences do not show up between December and January births, the discontinuity we exploit in our study (LaLumia and Wingender, 2017).

We find no effects on labor force participation or employment around this cutoff, either in the first year of eligibility or the following year. This effect may be driven by several mechanisms. It may be that the amount of the credit is too low to induce entry into the labor force, as hypothesized in Neumark and Williams (2020). It is also possible that the complexity of the eligibility requirements in particular, and of tax filing in general, reduce participation. While about four-fifths of eligible households take up the EITC, participation is lowest for the group we examine.[4] But Kopczuk and Pop-Eleches (2007) document an increase of nearly 4 million EITC recipients in 1994 "mostly due to extending eligibility to childless individuals." E-filing and assisted preparation also reduces complexity and increases participation (Kopczuk and Pop-Eleches, 2007; Goldin, 2018). While knowledge of the structure of the EITC affects how individuals report their earnings (Chetty *et al.*, 2013), most evidence indicates that providing information to potentially eligible households has little effect on EITC participation (Cranor *et al.*, 2019; Linos *et al.*, forthcoming).[5]

A short-run analysis indicates that the incidence of such a subsidy will be shared between employer and employees if supply increases meaningfully, muting the impact of the transfer. Since we find no such effects, the incidence of the transfer accrues to employees to the extent that they take up the credit.[6] And since there is no change in the eligibility of those *with* children at this age cutoff, there should be little concern about general equilibrium effects that lead to spillovers in this context.

Our findings cannot be extrapolated to measure the impact or incidence of proposals that triple the maximum EITC for childless adults.[7] But they do shed light on the degree to which the current incarnation of the EITC has affected behavior. In Section 2, we discuss

[4] Census documents show that the take-up rate among eligible taxpayers without qualifying children was 64 percent in tax year 2017 (Jones, 2020), a rate that has been fairly consistent over time (Plueger, 2005). Guyton *et al.* (2016) show that about three-quarters of potentially-eligible non-filers have qualifying children.

[5] Bhargava and Manoli (2015) find that additional information can increase EITC participation among those who had already been notified that they failed to claim benefits; about 15% of unclaimed credits were taken up due to that intervention. Clemens and Wither (2021) find complementary evidence that low wage individuals face frictions to adjusting their labor supply in response to moderate changes to their budget constraints.

[6] Leigh (2010) analyzes employment and wage changes using staggered state EITC expansions and differences in demographics during the federal EITC expansion and finds wage losses of 2-5 percent for both eligible and non-eligible workers.

[7] Moreover, if the EITC causes wages to fall, workers may choose to use the additional post-tax income to consume non-wage job attributes, like schedule flexibility. See Clemens (2021), who shows that models incorporating non-wage attributes of jobs can substantially alter the conclusions of incidence analyses of minimum wages, with similar implications for analyses of a wage subsidy like the EITC.

the creation of the data set and our empirical approach. Section 3 presents the results of the regression discontinuity analysis, and Section 4 concludes.

2 Data and Empirical Approach

2.1 Data

The Earned Income Tax Credit was introduced in 1975 for households with at least one dependent, with a modest increase in benefits introduced in 1986. In 1990, the federal EITC became more generous for families with two or more children relative to one child families, phased in over several years. A significant increase was introduced in 1993, and in 2009, the EITC expanded for families with three or more children. The federal EITC for childless adults was introduced in 1994, and its generosity has not been expanded since, except for inflation adjustments and the temporary increase during the 2021 tax year.

In order to qualify for the EITC without a child, tax filers must be between the ages of 25 and 64, have earned income from wages, self-employment, or business, and live in the United States for at least half the year. They cannot be claimed as a dependent on another household's tax return or have investment income above a threshold ($3,650 in 2020; temporarily increased to $10,000 for 2021). Filers with children can still be considered "childless" when filing their taxes if the child lives with them for less than six months or is claimed as a dependent on another return.[8] Indeed, childless adults are diverse in terms of their household structure and family histories. Many are parents without custody of their children or have children who are grown and moved away from home.

In 2022, EITC credit amounts for childless adults are determined as follows, the phase-in rate for the EITC for single childless adults was 7.65% and extends over a range of $0 to $7,320 in annual earnings. Single childless adults with annual earnings between $7,320 and $9,160 are eligible for the maximum EITC of $560. The phase-out rate is the same as the phase-in rate of 7.65% and extends from $9,160 to $16,480 where EITC is becomes $0. In other words, EITC amounts are equal to (0.0765 x Annual Earnings) for those with incomes in the phase-in range, $560 for those eligible for the maximum EITC, and ($560 – (0.0765 x Annual Earnings)) for those with incomes in the phase-out range.

[8] See https://www.irs.gov/credits-deductions/individuals/earned-income-tax-credit/qualifying-child-rules for a full explanation of the rules regarding "qualifying children."

The credit is structured the same for jointly filing married couples except that it begins phasing out at a higher income threshold. [9]

Our sample is drawn from the 2001, 2004, 2008, and 2014 panels of the Survey of Income and Program Participation (SIPP), covering 2000-2016. Each SIPP panel surveys a set of households for several years, conducting interviews every four months and covering activities since the previous interview, including labor force participation and employment status in each week.[10]

We construct our eligibility measure by finding respondents' ages on the last day of the calendar year.[11] Since taxes are filed annually, we aggregate the panel to the individual-year level. Our primary outcome measures are the proportion of weeks in the labor force or employed. Our results are similar when we use month-based observations instead. Since the entry and exit of survey participants into the SIPP panels do not line up perfectly with calendar years, many annualized observations are based on less than a full year's worth of reporting. Our results are unaffected when limiting the sample to observations based on three, six, or nine months of individual data in a given year.

Full-time students under the age of 24 are eligible to be claimed as a dependent by others, so we exclude those with more education than a high school degree. We also exclude all SIPP respondents who had children at any point during the sample, as well as those under 18 or over 65. Otherwise, we impose no restrictions on the sample. Altogether, our data consist of 110,636 annual observations on 36,279 individuals, of whom 7,138 were, at their oldest, between the ages of 20 and 30 (inclusive) during the sample period. These individuals represent 17,577 person-year observations and form the core of our sample; bandwidth selection reduces the size of the sample, depending on the specification.

67.0% of this sample reports being in the labor force in every week about which they were asked in a given year, and 14.5% report not being in the labor force in any week about which they were asked; the percentages for employment status are 57.2% and 21.2%, re-

[9] The EITC for adults with no dependents and a tax filing status of married filing jointly begins its phase-out at a higher level of earnings, \$15,920. The EITC phases out completely for married filers earning greater than \$22,610.

[10] The SIPP was redesigned in 2014 as an annual survey.

[11] About 4% of the sample has different birthdates listed at different points in the sample. Our results are unaffected by using the youngest or oldest listed ages or dropping those individuals from the data.

spectively. The overall proportion of weeks in the labor force is 78.4%, and 70.0% for employment. 82.8% were employed at any point during the sample. See Table 1 for summary statistics.

2.2 Empirical Approach

We rely on the assumption that childless adults who turned 25 just before the end of the tax year are similar to those who turned 25 just after the end of the tax year, with the exception that those born before are eligible to claim the EITC in the following year. Our estimating equation is a simple regression discontinuity around the eligibility cutoff:

$$Y_{it} = \beta_0 + \beta_1 T_{it} + \beta_2 Age_{it} + \beta_3 T_{it} \cdot Age_{it} + \varepsilon_{it}$$

T_{it} is an indicator for being under 25 years of age prior to the end of the of the tax year, and β_1 measures the discontinuity in the outcome Y_{it} for those who were 25 before the first day of the sample year. Age has a linear effect on the outcome on either side of the discontinuity; results are unchanged when using a quadratic. The bandwidth around the cutoff is selected using mean squared error optimal bandwidths and a triangular kernel (Calonico *et al.*, 2017). Since there are generally multiple observations per individual, we cluster the standard errors at the individual level (Calonico *et al.*, 2017). We use sample weights from the SIPP, though the results are unchanged when not using weights. We also estimate the effects after residualizing the outcome variable for state-year effects and individual effects (Lee and Lemieux, 2010); the results are very similar.

Figure 1 shows the distribution of observations by age on December 31st. There does not appear to be any manipulation of the running variable based on this figure. We also examine whether there are discontinuities in gender or if the respondent has ever been married across the cutoff; there are not. Taken together, this suggests that our approach of examining outcomes for those who are just below the age-25 eligibility cutoff at the end of the year to those who are just over it will yield causal estimates of the impacts of the EITC on the labor market outcomes of childless adults.

3 Results

We begin with a simple examination of the effect of age-25 eligibility on the labor force participation of childless adults, shown in Figure 2. It is evident that there is no discontinuity for those who are just barely eligible for the EITC in a given year, based on their age, as compared to those who are just barely ineligible. The estimated discontinuity is -0.0099 (s.e. = 0.019). Similar results are seen in Figure 3, which measures the discontinuity for employment. The measured effect for that outcome is -0.0012 (s.e. = 0.020). Table 2 shows results for labor force participation, while Table 3 shows those for employment.[12]

As discussed above, it is possible that the population around this cutoff is unaware of the EITC and, as such, we would not expect to see any differences in labor market participation in the year in which they turn 25. Those to the right of the cutoff – that is, those who are old enough to qualify – may discover that they had been eligible and adjust their behavior in the *following* year. If so, we would expect labor force participation to increase, as has generally been seen in the EITC literature on single mothers. Figures 4 and 5 show the results for labor force participation and employment, respectively, in the following year. The discontinuities are small, statistically insignificant, and negative, running in the opposite direction of what would be expected. As such, we conclude that there is no evidence for dynamic effects of eligibility; again, these may be driven by lack of information or simply lack of response to the relatively small credit.

Since many people in the sample are never in the workforce, it may be that we are unable to measure a labor force participation response for the margin of those who might actually join the workforce. Figure 6 shows the discontinuity in labor force participation for those who were in the labor force at *any* point during the sample period. The discontinuity is, again, small and statistically insignificant. In the same vein, we limit the sample to those whose lowest level of annual earned income (both individual and spouse, if applicable) in the sample was less than $30,000. Based on the income eligibility criteria, these households were far more likely to be exposed to the EITC. The results are unaffected, with the discontinuity for labor force participation estimated at -0.0028 (s.e. = 0.021).

We also examine results after residualizing the outcome variable, taking out individual fixed effects as well as state-by-year fixed effects.[13] We are therefore looking at within-individual responses to EITC eligibility based on age at the end of the year. The results, in Figure 7, show a statistically insignificant discontinuity of -0.007 (s.e. = 0.013).

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[12] Carr *et al.* (2020) show that imputed values in the SIPP can lead to problems with inference. We also estimate our specifications excluding those with imputed labor force participation values; the conclusions are unchanged.

[13] To examine whether there are different effects of labor supply incentives when labor demand changes with the business cycle, we also estimate the discontinuity for the three panels separately. None are statistically significant.

Figure 8 shows the discontinuity for annualized hours of work, while Figure 9 shows it for earned income (including spousal income, if applicable). The discontinuities are negligible in magnitude. We also examine results by gender and marital status. Figures 10A and 10B estimate the discontinuity in labor force participation for unmarried and married women, respectively, while Figures 11A and 11B show those for men. There are no meaningful patterns or significant differences in effect sizes.

Lastly, we look at annual employment, labor force participation, and hours worked results separately for those with earnings above and below the earnings threshold where the EITC first reaches its maximum. Classic labor theory predicts that workers will work less hours or weeks when their earnings levels are positioned on the plateau or phase-out region of the EITC schedule, presumably because they value leisure time and those portions of the EITC schedule subsidize leisure (Meyer, 2002). To investigate this further, we plot the frequency distribution of single and married earners overlaid with their predicted EITC.[14] Figures 12A and 12B show that there are more earners earning above the phase-in threshold at about $7,000. When we look at employment effects for those earning above or below that threshold separately, we find similar insignificant effect sizes. This suggests that the insignificant negligible effect sizes we find in our main specifications are not the result of an averaging of coefficients from childless populations with opposite labor supply incentives.

4 Conclusions

We examine the impact of the age-25 EITC eligibility cutoff for childless adults, a group whose economic well-being has been the subject of an increased focus for policymakers. Comparing the labor market behavior of those who became eligible in a given year to those who were just outside of the eligibility range, we find no impacts on labor force participation, employment, or hours worked either in the year in which people become eligible or in the following year. These findings could be driven by a lack of information about the credit or a lack of response to it due to its small size. This lack of evidence contrasts with previous studies looking at the impact of state and local EITC expansions on employment for childless adults. One explanation for this difference is that numerous states have changed their EITCs, making them more generous and more visible, while the federal program has not changed since 1994. A large expansion of the federal EITC may have very different effects.

[14] Predicted EITCs are calculated using detailed information on family size, geograpy, and income information from the SIPP panels using the NBER TAXSIM v35 Stata Interface. More information on the TAXSIM can be found at http://taxsim.nber.org/.

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Figure 1: Frequency of Observations by Age on December 31st

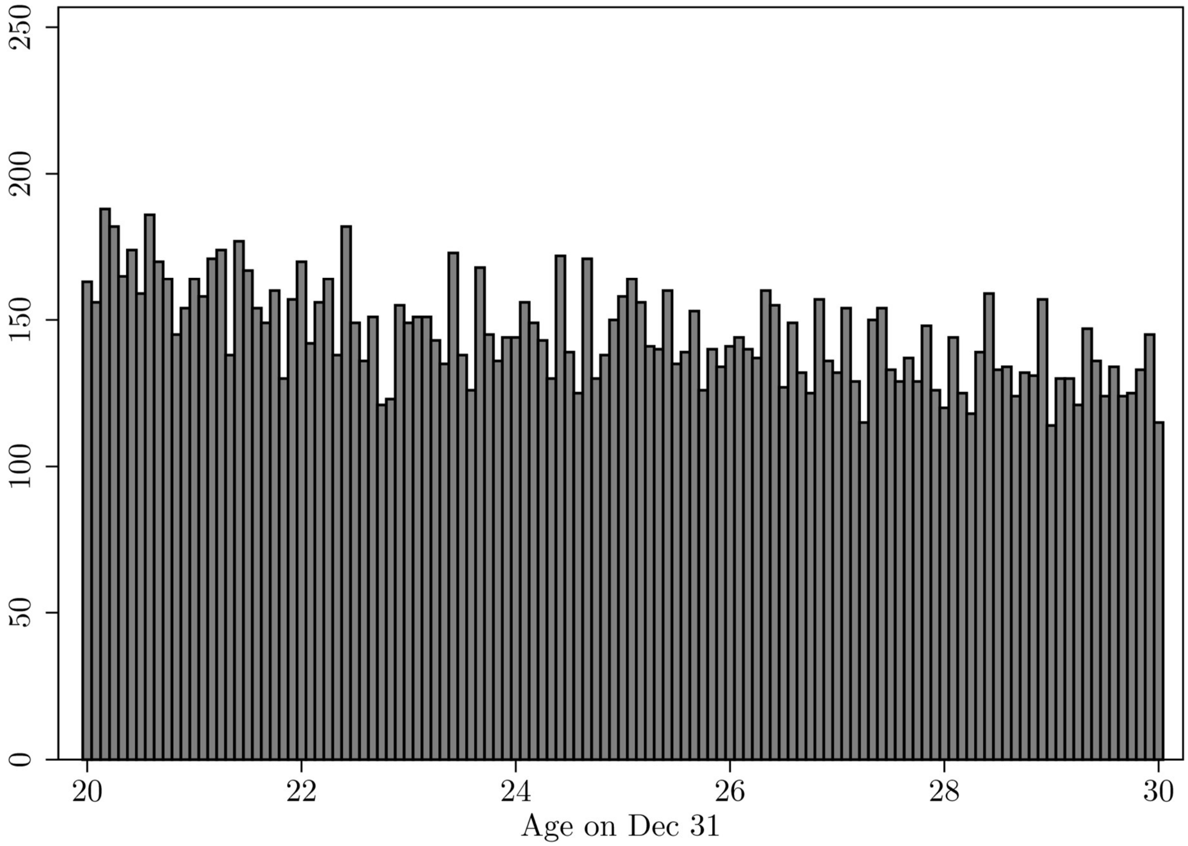
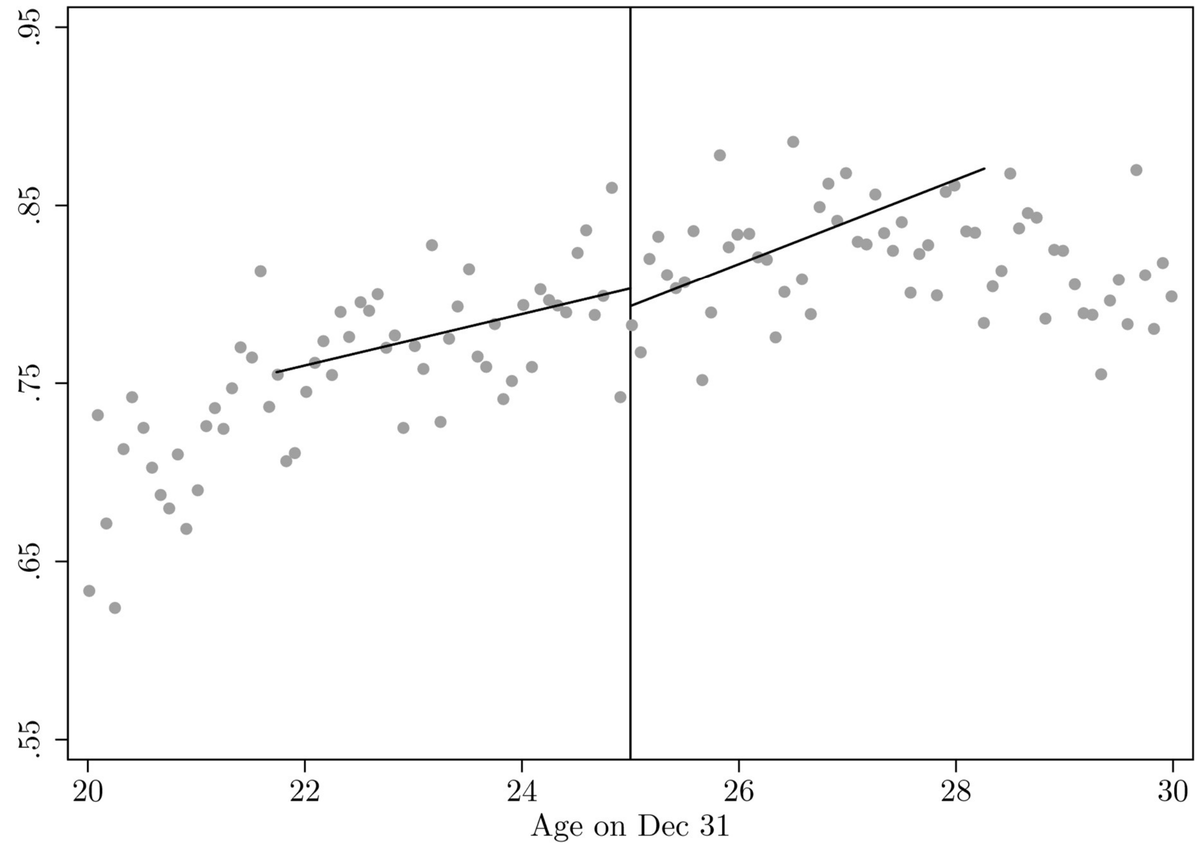
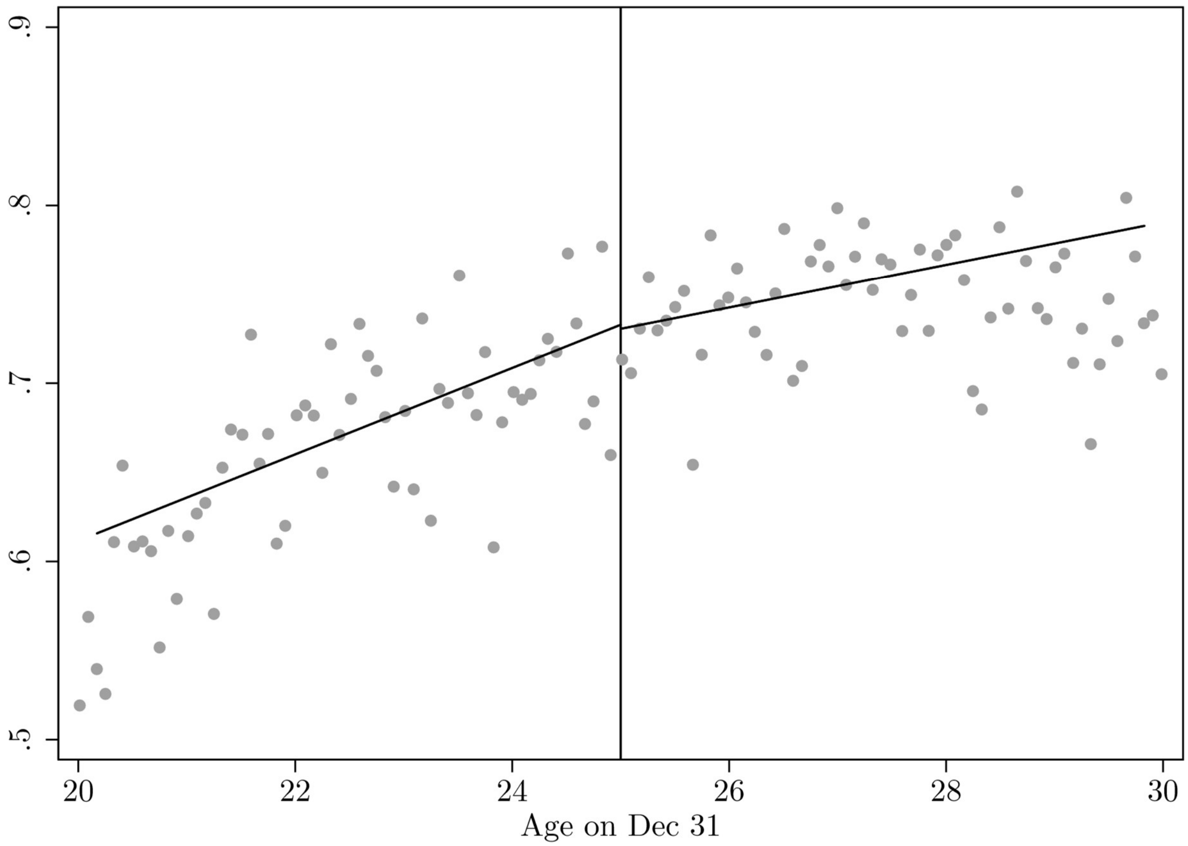


Figure 2: Labor Force Participation



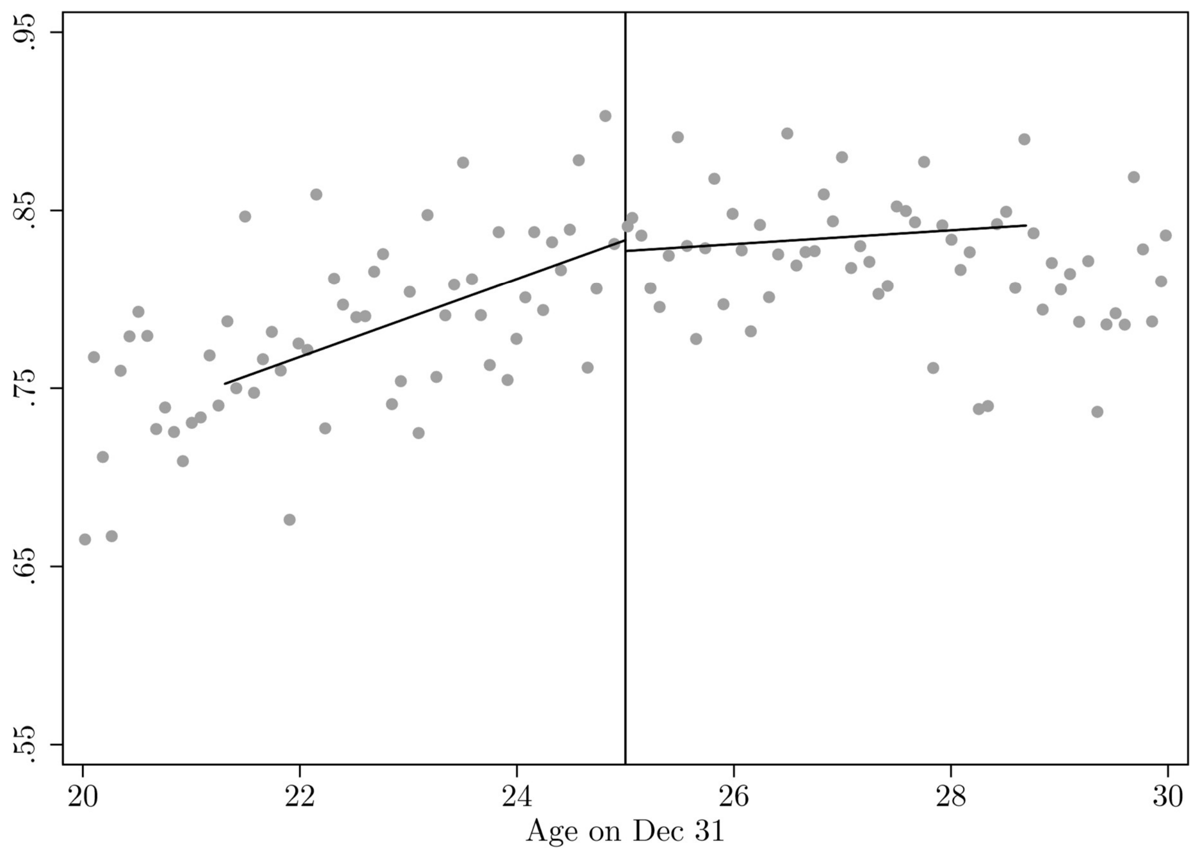
This figure shows results for the share of weeks in the labor force, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 3.26 years, using 11,324 observations.

Figure 3: Employment



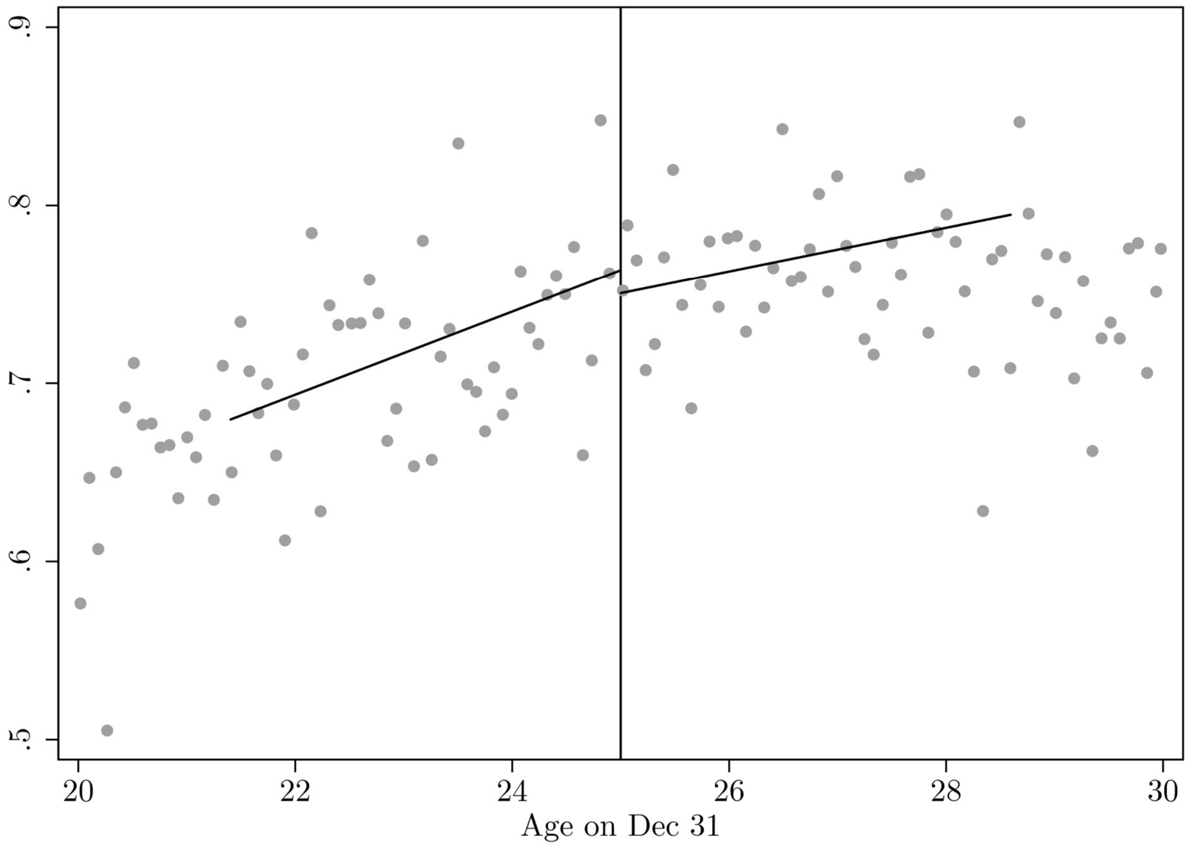
This figure shows results for the share of weeks employed, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 4.02 years, using 13,997 observations.

Figure 4: Following-Year Labor Force Participation



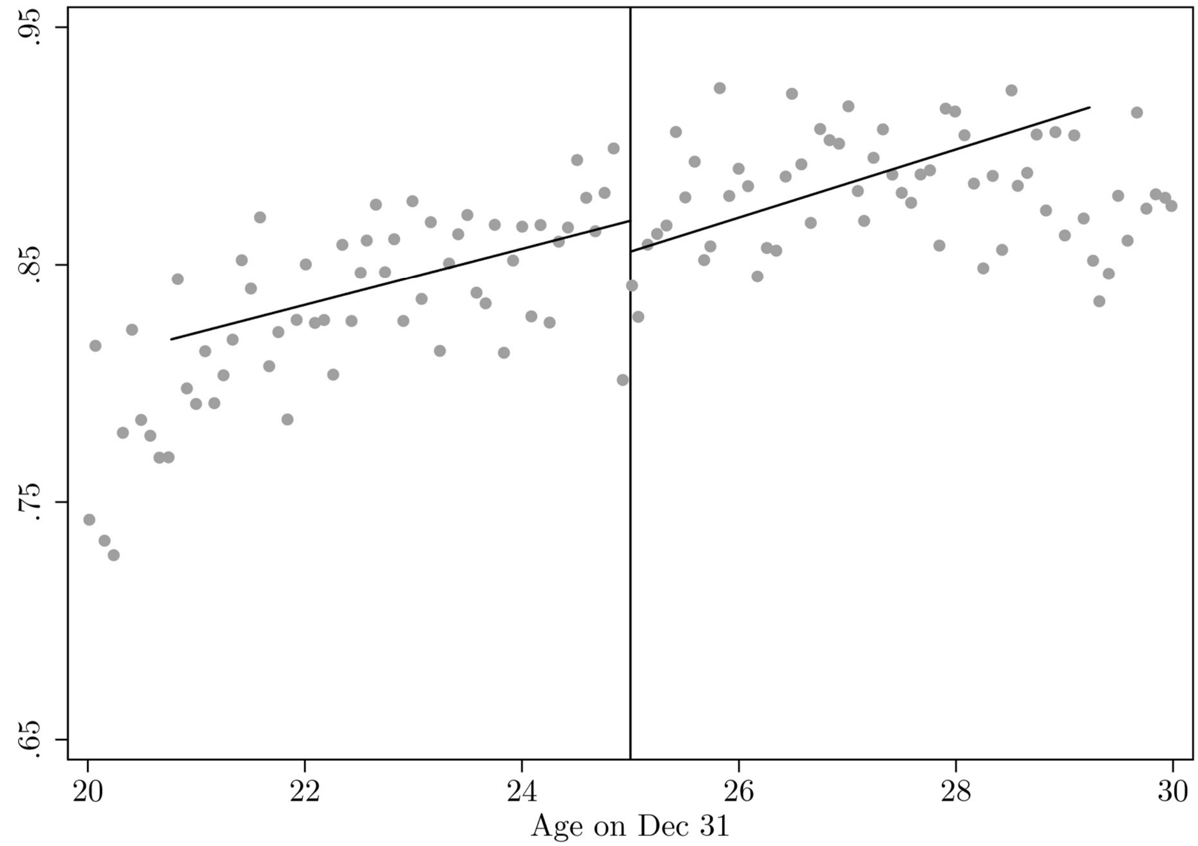
This figure shows results for the share of weeks in the labor force in the year following the age used as the running variable, weighted using SIPP weights and estimated using a triangular kernel. The symmetric bandwidth is MSE-optimal and is 3.69 years, using 7,435 observations.

Figure 5: Following-Year Employment



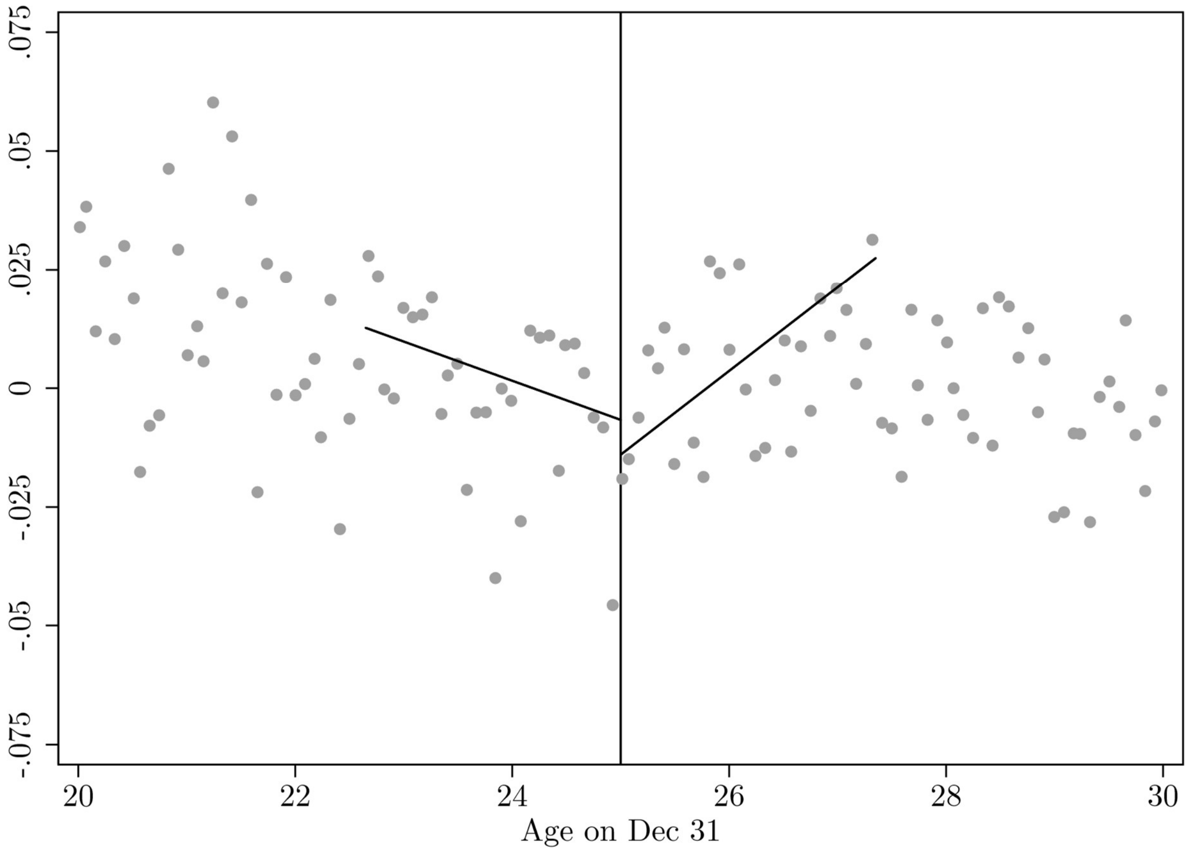
This figure shows results for the share of weeks employed in the year following the age used as the running variable, weighted using SIPP weights and estimated using a triangular kernel. The symmetric bandwidth is MSE-optimal and is 3.60 years, using 7,288 observations.

Figure 6: Labor Force Participation (Ever in the Labor Force)



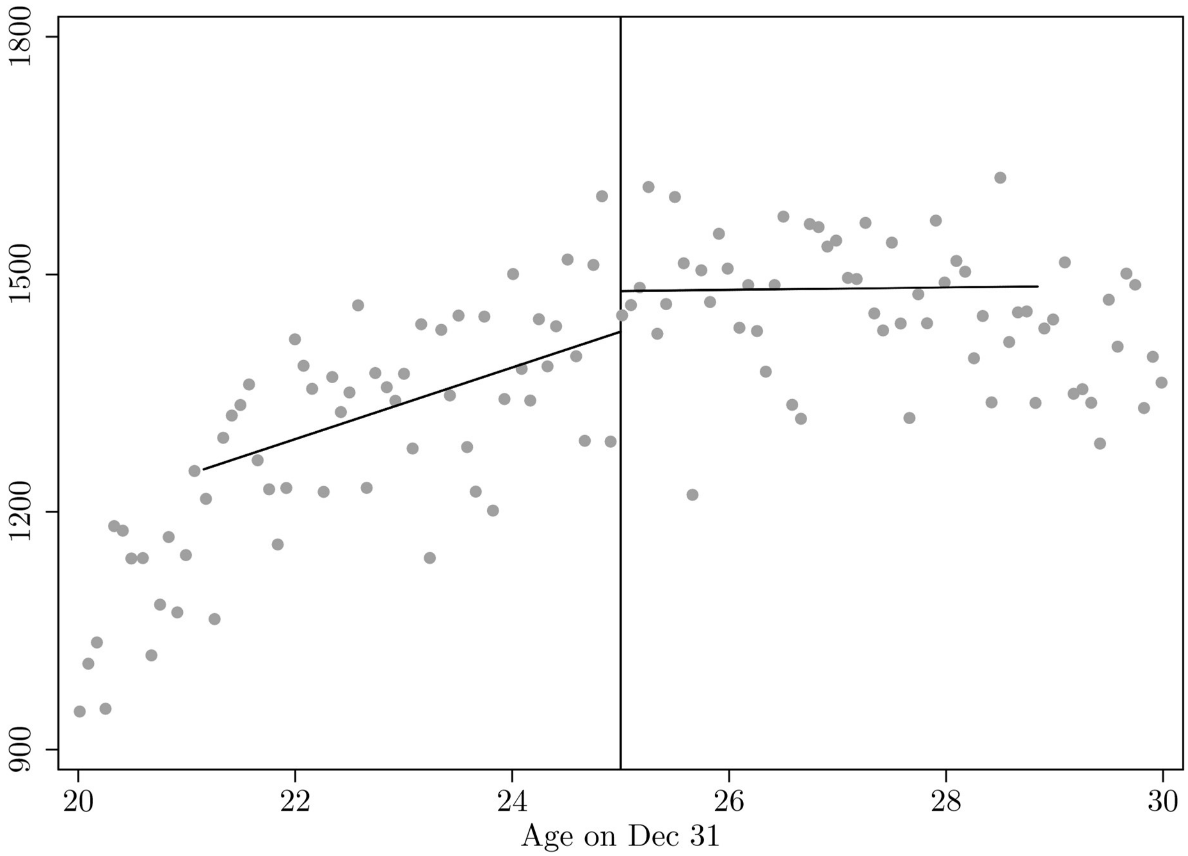
This figure shows results for the share of weeks in the labor force for individuals who were ever in the labor force during the sample period, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 4.31 years, using 13,406 observations.

Figure 7: Labor Force Participation (Residualized)



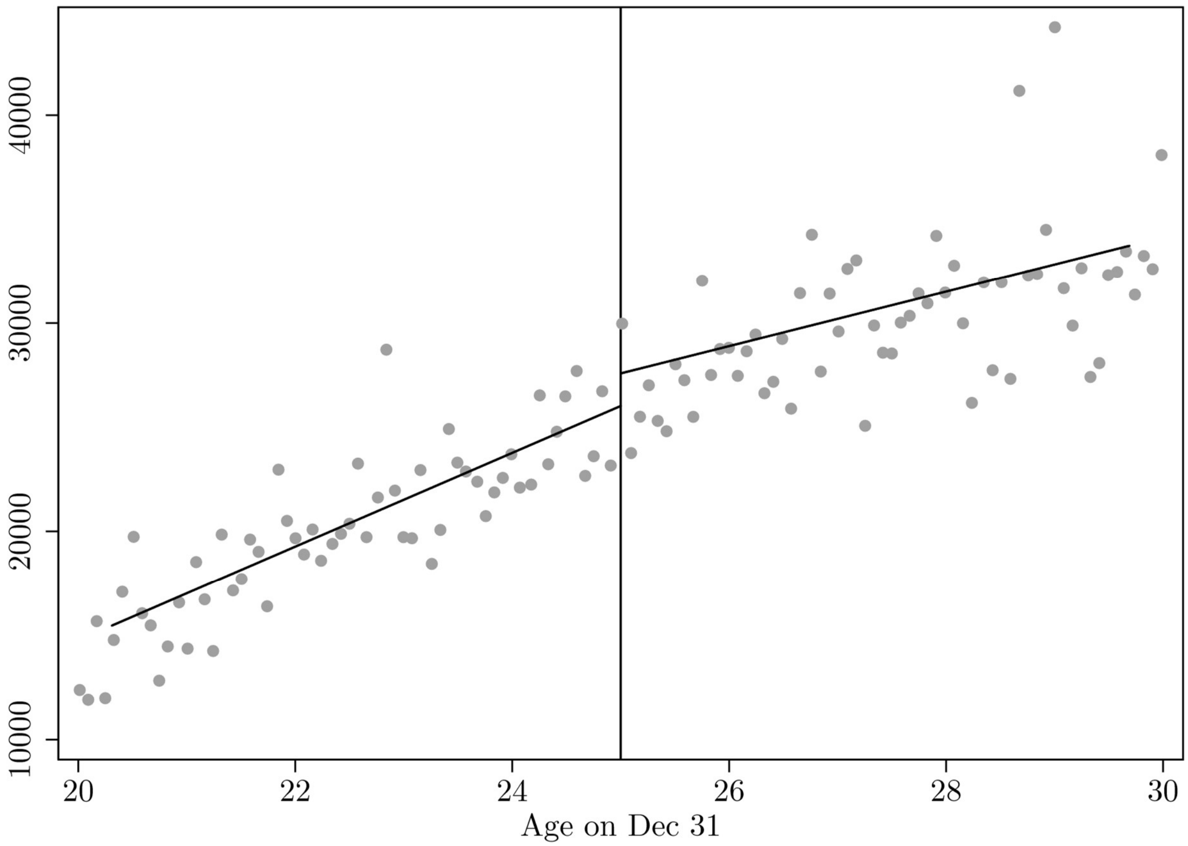
This figure shows results for the share of weeks in the labor force, residualized to remove individual fixed effects as well as state-year fixed effects. The estimation is weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31[st] of that year. The symmetric bandwidth is MSE-optimal and is 2.35 years, using 7,227 observations.

Figure 8: Hours



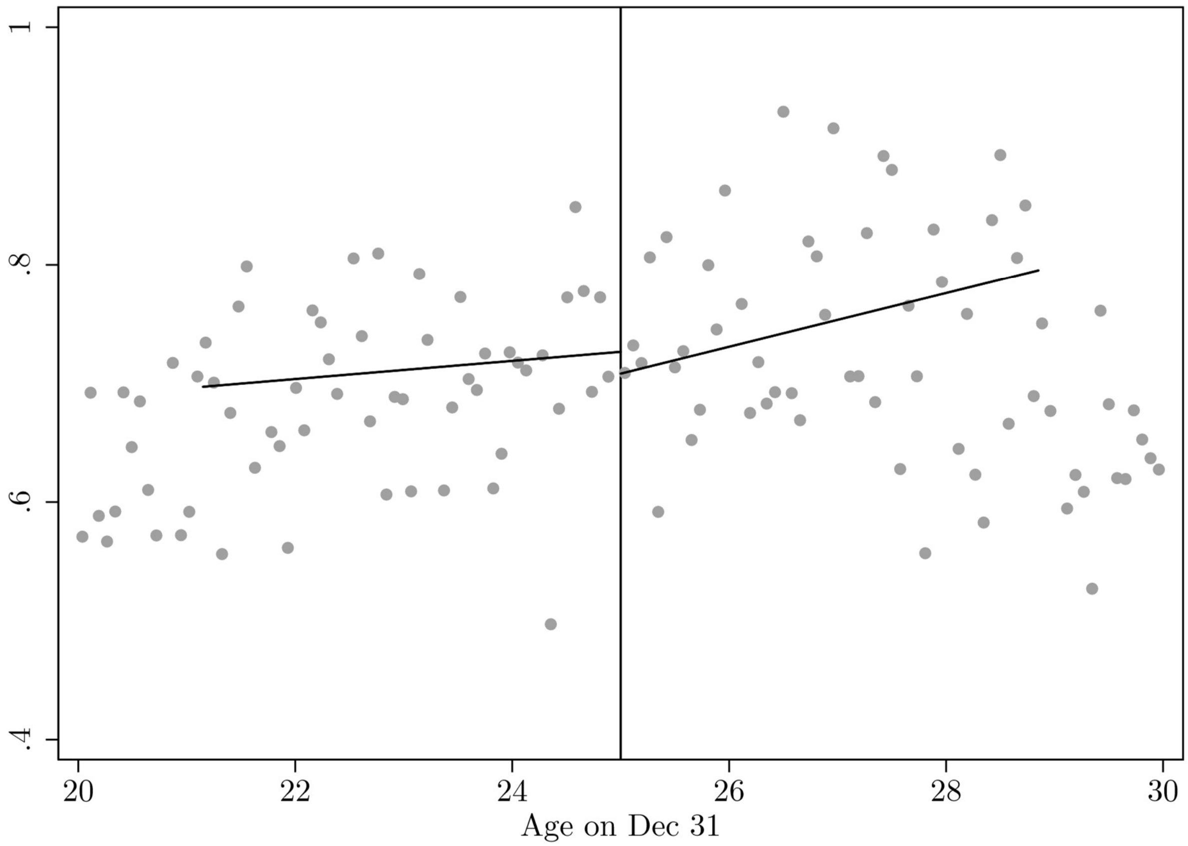
This figure shows results for annual hours worked. The estimation is weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 3.84 years, using 13,404 observations.

Figure 9: Earned Income



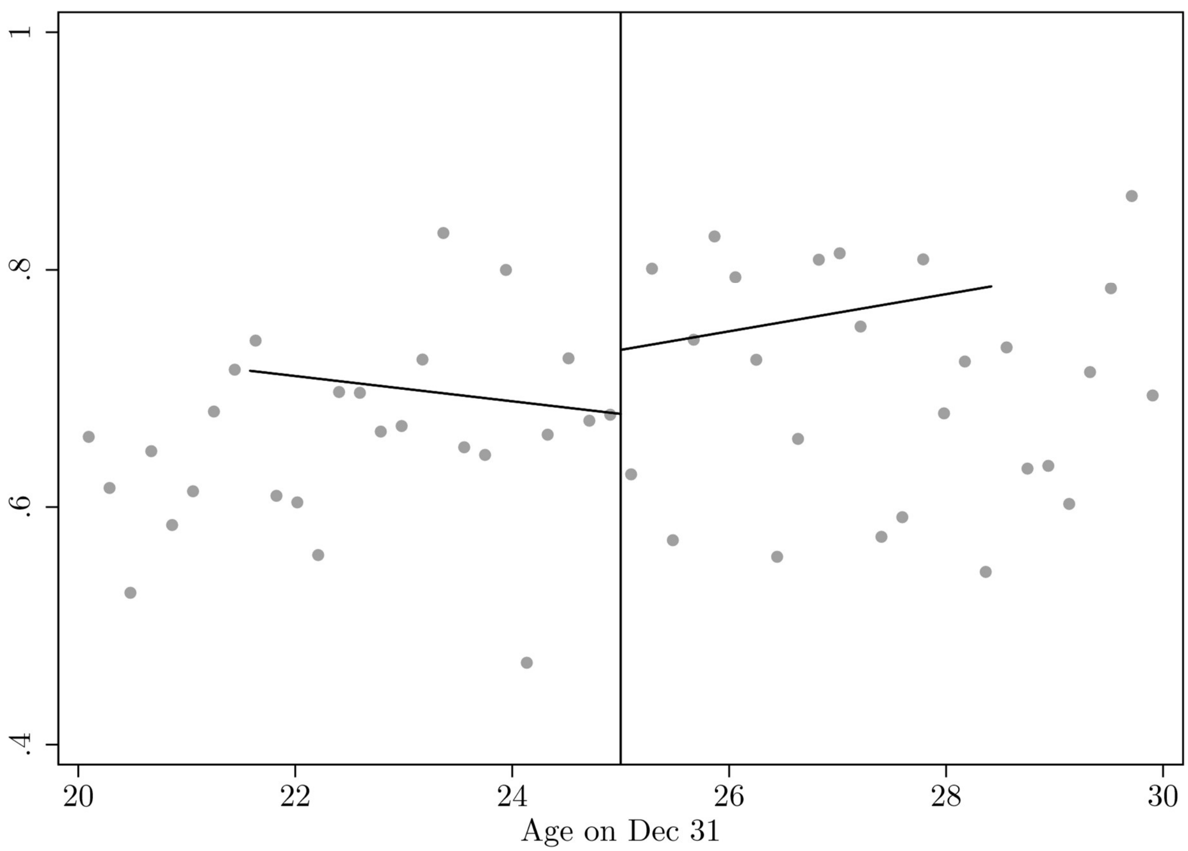
This figure shows results for total earned income (include spousal income, if relevant). The estimation is weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 4.69 years, using 16,357 observations.

Figure 10A: Labor Force Participation (Unmarried Females)



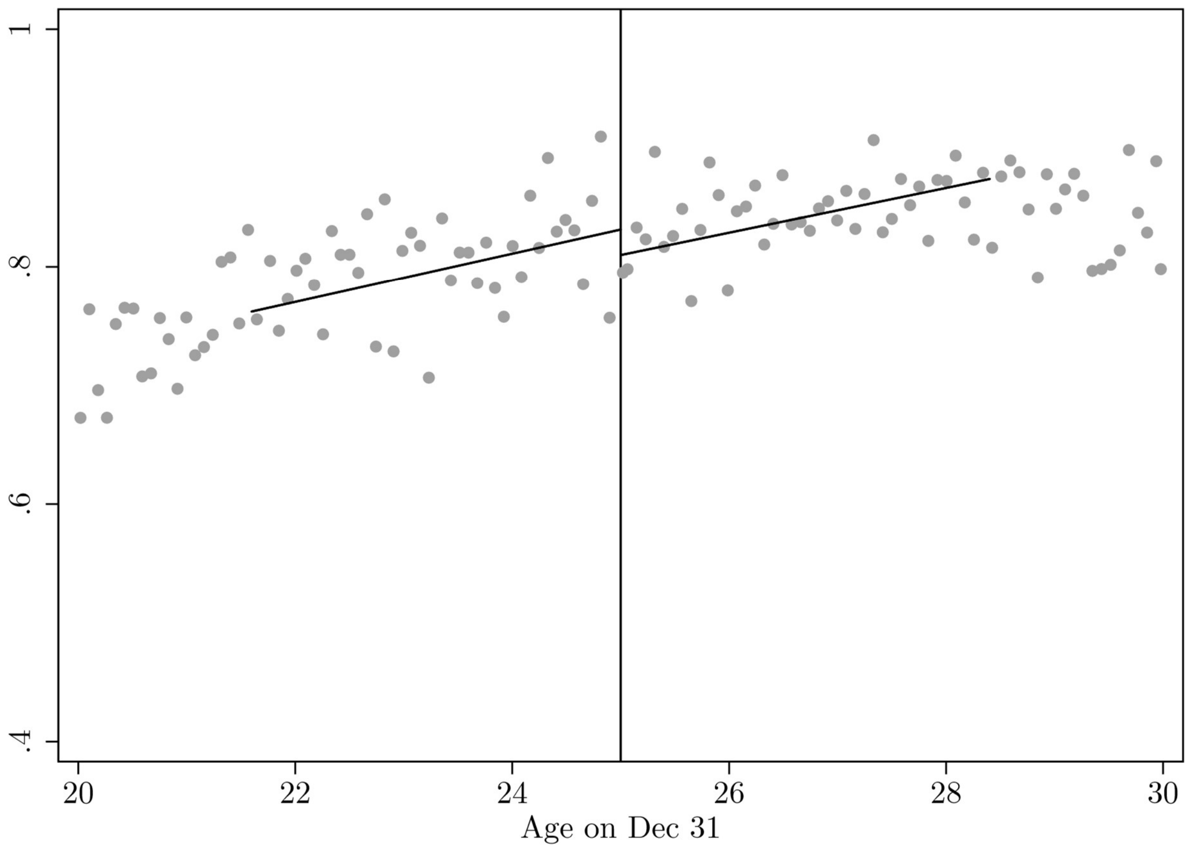
This figure shows results for the share of weeks in the labor force for unmarried females, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 3.85 years, using 3,322 observations.

Figure 10B: Labor Force Participation (Married Females)



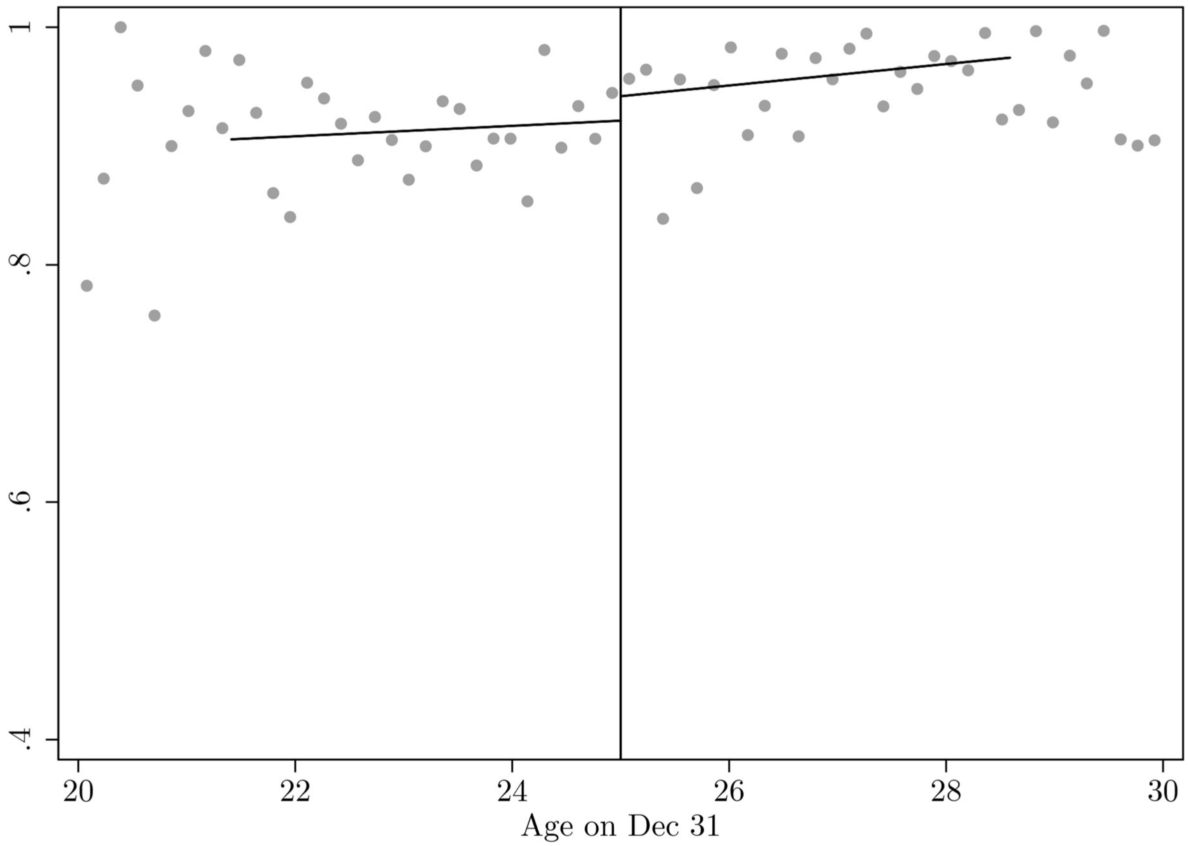
This figure shows results for the share of weeks in the labor force for married females, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 3.42 years, using 896 observations.

Figure 11A: Labor Force Participation (Unmarried Males)



This figure shows results for the share of weeks in the labor force for unmarried males, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 3.40 years, using 6,692 observations.

Figure 11B: Labor Force Participation (Married Males)



This figure shows results for the share of weeks in the labor force for males, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The symmetric bandwidth is MSE-optimal and is 3.59 years, using 1,291 observations.

Figure 12A: Predicted EITC and Income Distribution (Unmarried)

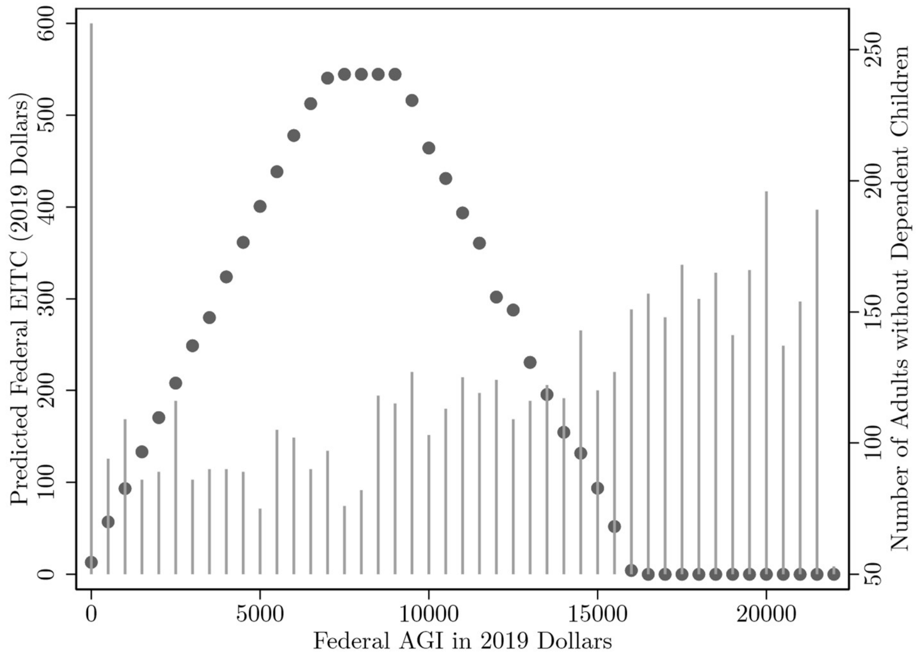


Figure 12B: Predicted EITC and Income Distribution (Married)

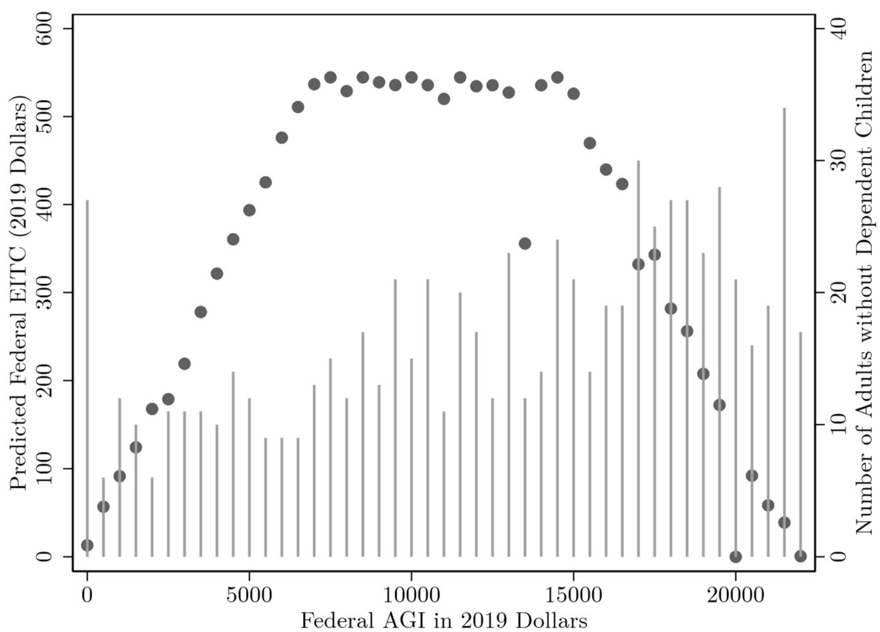


Table 1: Summary Statistics

	Mean		Standard Error
Observations for persons			
Female	0.341		0.474
Ever married	0.166		0.372
Ever in the labor force	0.893		0.309
Ever employed	0.828		0.378
Observations for person-years			
Share of weeks in the labor force	0.783		0.374
Share of weeks employed	0.700		0.417
Married	0.170		0.375
Age on December 31st	24.8		2.92
Hours worked	1360		1068
25th percentile		0	
Median		1632	
75th percentile		2094	
Total Earned income (2019 $)	24,668		31,649
25th percentile		3526	
Median		19,633	
75th percentile		33,414	

The first set of summary statistics uses 5,741 observations at the individual level, limited to those whose maximum age in December was between 20 and 30 years during the entire sample. The second set of summary statistics uses 17,577 observations at the individual-year level, limited to those whose age in December was between 20 and 30 years. The analytical sample used for each specification is a subset of these person-year observations that depend on the optimal bandwidth.

Table 2: Labor Force Participation

	(1) Linear	(2) Quadratic	(3) Following Year (Linear)
Estimated discontinuity at age 25	-0.0099	-0.0165	-0.0061
	(0.0199)	(0.0238)	(0.0226)
Number of observations used	11,324	16,068	7,435

Each column reports the estimated discontinuity in the share of weeks reporting being in the labor force around the age-25 EITC eligibility. Estimates are weighted using SIPP weights and use a triangular kernel and MSE-optimal bandwidth.

Table 3: Employment

	(1) Linear	(2) Quadratic	(3) Following Year (Linear)
Estimated discontinuity at age 25	-0.0012 (0.0201)	-0.0013 (0.0245)	-0.0321 (0.0245)
Number of observations used	13,997	14,036	17,564

Each column reports the estimated discontinuity in the share of weeks reporting being in the labor force around the age-25 EITC eligibility. Estimates are weighted using SIPP weights and use a triangular kernel and MSE-optimal bandwidth.