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

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February 2022

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 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). Previous research has focused almost exclusively on the impacts of the EITC on households with children (see Hoynes and Rothstein, 2017, for a recent 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, 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), and more.

In large part, this focus on households with children is because the maximum amount of the Federal credit is far lower for those without children, just $529 in 2019, as compared to $6,557 for filers with three or more children. Further, the credit for childless adults is fully phased out at $15,570 for single filers in 2019, 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]

[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.

In this paper, we exploit the EITC's age-25 eligibility criterion for this group 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. 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, and 2008 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.[2]

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 likely to be lowest for the group we examine (Crandall-Hollick *et al.*, 2021). 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).[3]

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

[2] 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).

[3] 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.

the extent that they take up the credit.[4] 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.[5] But they do shed light on the degree to which the EITC currently affects behavior. In Section 2, we discuss 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. In 1992, the federal EITC became more generous for families with two or more children relative to one child families. In the mid-1990s, the generosity of the EITC increased; in 2009, the EITC expanded for families with three or more children relative to families with two or less children. The federal EITC for childless adults was introduced in 1994, and its generosity has not been expanded since, except for inflation adjustments and 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).

Our sample is drawn from the 2001, 2004, and 2008 panel of the Survey of Income and Program Participation (SIPP). Each panel surveys a set of households for several years,

[4] 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.

[5] 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.

conducting interviews every four months and covering activities since the previous interview, including labor force participation and employment status in each week.[6]

We construct our eligibility measure by finding respondents' ages on the last day of the calendar year.[7] 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, and 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 data.

Full-time students under the age of 24 are eligible to be claimed as a dependent by others, and filers with children can be considered "childless" if the child lives with them for less than six months or is claimed as a dependent on another return.[8] We therefore 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, and those under 18 or over 65. Otherwise, we impose no restrictions on the sample. Altogether, our data consist of 98,255 annual observations on 31,103 individuals, of whom 2,671 were, at their oldest, between the ages of 23 and 28 during the sample period.

60.7% of the entire sample reports being in the labor force in every week about which they were asked in a given year, and 27.9% report not being in the labor force in any week about which they were asked; the figures for employment status are 55.4% and 31.7%, respectively. The overall proportion of weeks in the labor force is 67.3%, and 62.8% for employment. 65.0% of the sample had earned income at any point in 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.

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

[7] 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.

[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."

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

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 24 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 (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 also 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 -0.0042 (s.e. = 0.018), both statistically and economically insignificant. Similar results are seen in Figure 3, which measures the discontinuity for employment. The measured effect for that outcome is 0.0033 (s.e. = 0.020). Table 2 shows results for labor force participation, while Table 3 shows those for employment.

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 mothers. Figures 4 and 5 show the results for labor force participation and employment, respectively, in the following year. The discontinuities are negative, though noisy and statistically insignificant, 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 0.0038 (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.[9] 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 0.014 (s.e. = 0.010).

Finally, we examine results by gender. Figures 8 and 9 estimate the discontinuity in labor force participation for women and men, respectively. There are no meaningful patterns; both discontinuities are small.

4 Conclusion

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

[9] 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.

those who were just outside of the eligibility range, we find no impacts on labor force participation or employment, 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.

References

Bastian, J. (2020). The rise of working mothers and the 1975 earned income tax credit. *AEJ: Economic Policy*.

Bhargava, S. and D. Manoli. (2015). Psychological frictions and the incomplete take-up of social benefits: evidence from an IRS field experiment. *American Economic Review*, 105(11), 3489-3529.

Calonico, S, M. Cattaneo, M. Farrell, and R. Titiunik. rdrobust: software for regression-discontinuity designs. *The Stata Journal*, 17(2), 372-404.

Chetty, R., J. Friedman, and E. Saez. (2013). Using differences in knowledge across neighborhoods to uncover the impacts of the EITC on earnings. *American Economic Review*, 103(7), 2683-2721.

Clemens, J., and M. Wither. (2021) "When is tinkering with safety net programs harmful to beneficiaries?." *Southern Economic Journal*.

Clemens, J. (2021). "How do firms respond to minimum wage increases? understanding the relevance of non-employment margins." *Journal of Economic Perspectives* 35, no. 1: 51-72.

Crandall-Hollick, M. (2021) The 'Childless' EITC: Temporary Expansion for 2021 Under the American Rescue Plan Act of 2021. Congressional Research Service document IN11610. Retrieved from https://crsreports.congress.gov/product/pdf/IN/IN11610.

Crandall-Hollick, M., G. Falk, and C. Boyle. (2021) The Earned Income Tax Credit (EITC): How it Works and Who Gets it. Congressional Research Service document R43805. Retrieved from https://crsreports.congress.gov/product/pdf/R/R43805.

Cranor, T., Kotb, S., and Goldin, J. (2019). Does informing employees about tax benefits increase take-up?: Evidence from EITC notification laws. National Tax Journal, 72(2):1–8.

Eissa, N., & Liebman, J. B. (1996). Labor supply response to the earned income tax credit. *The quarterly journal of economics*, *111*(2), 605-637.

Ham, J. C., Li, X., & Shore-Sheppard, L. (2007). Correcting for seam bias when estimating discrete variable models, with an application to analyzing the employment dynamics of disadvantaged women in the SIPP. *Los Angeles, CA: University of Southern California*.

Hoynes, H. and A. Patel. (2018). Effective policy for reducing poverty and inequality? The earned income tax credit and the distribution of income. *Journal of Human Resources*, 53(4), 859-890.

Hoynes, H. and J. Rothstein. (2016). Tax policy toward low-income families. National Bureau of Economic Research Working Paper No. 22080.

Internal Revenue Service. (2019). Earned income tax credit & other refundable credits. Retrieved from https://www.eitc.irs.gov/eitc-central/about-eitc/about-eitc.

Kleven, H. (2019). The EITC and the extensive margin: a reappraisal. National Bureau of Economic Research Working Paper No. 26405.

Kopczuk, W. and C. Pop-Eleches. (2007). Electronic filing, tax preparers and participation in the earned income tax credit. *Journal of Public Economics*, 91(7-8), 1351-1367.

Kuka, E. and N. Shenhav. (2020). Long run effects of incentivizing work after childbirth. National Bureau of Economic Research Working Paper No. 27444.

Lee, D. and T. Lemieux. (2010). Regression discontinuity designs in economics. *Journal of Economic Literature*, Vol. 48, 281-355.

Leigh, A. (2010). Who benefits from the earned income tax credit? Incidence among recipients, coworkers and firms. *The BE Journal of Economic Analysis & Policy*, *10*(1).

Linos, E., A. Prohofsky, A. Ramesh, J. Rothstein, and M. Unrath. (Forthcoming). Can nudges increase take-up of the EITC? Evidence from multiple field experiments. *American Economic Journal: Economic Policy*.

Meyer, B. D. (2002). Labor supply at the extensive and intensive margins: The EITC, welfare, and hours worked. *American Economic Review*, *92*(2), 373-379.

Meyer, B. D., & Rosenbaum, D. T. (2001). Welfare, the earned income tax credit, and the labor supply of single mothers. *The quarterly journal of economics*, *116*(3), 1063-1114.

Neumark, D. and P. Shirley. (2017). The long -run effects of the earned income tax credit on women's earnings. National Bureau of Economic Research Working Paper No. 24114.

Neumark, D. and K. Williams. (2020). Do state earned income tax credits increase participation in the federal EITC? National Bureau of Economic Research Working Paper No. 27626.

Schanzenbach, D. and M. Strain. (2021) Employment effects of the earned income tax credit: taking the long view. In *Tax Policy and the Economy*, vol. 35, R. Moffitt, ed. University of Chicago Press.

Wingender, P., & LaLumia, S. (2017). Income effects on maternal labor supply: Evidence from child-related tax benefits. *National Tax Journal*, *70*(1), 11-52.

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

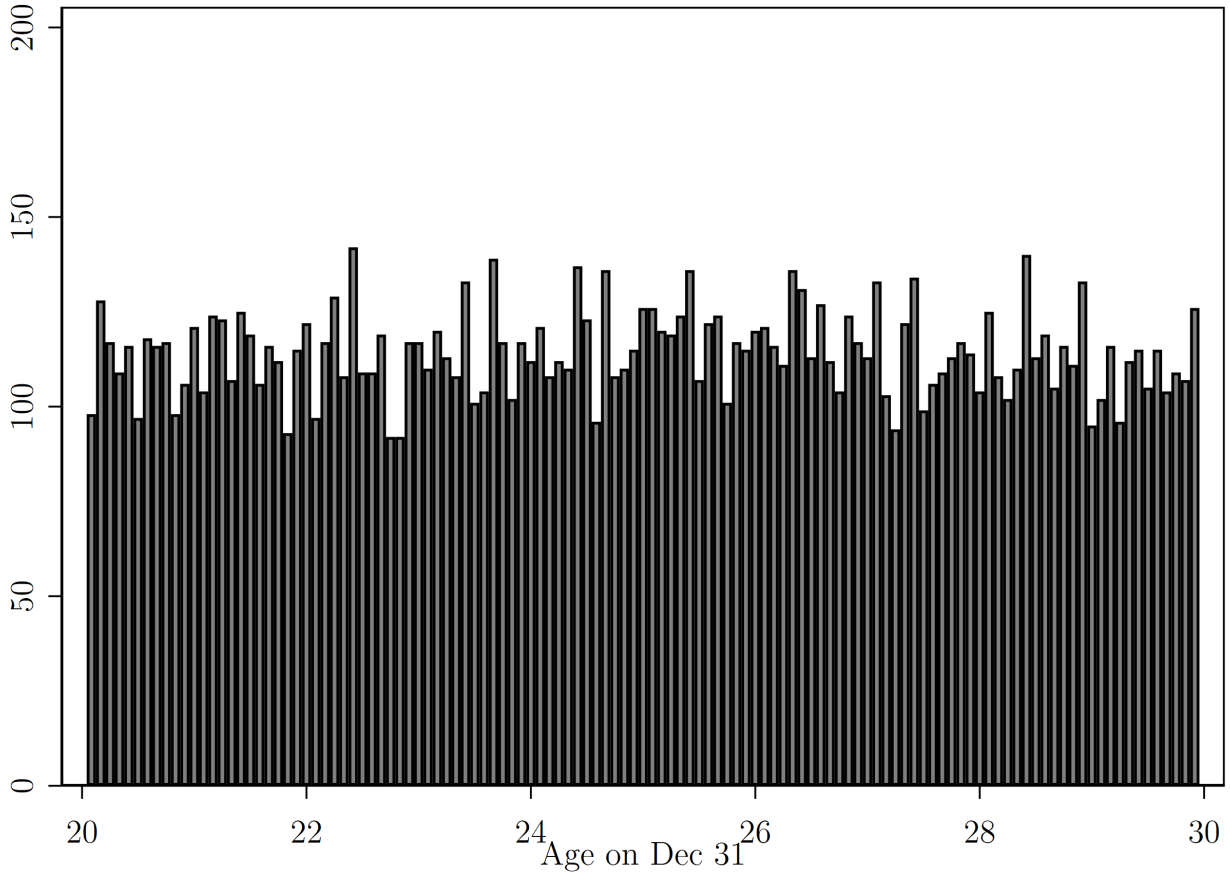
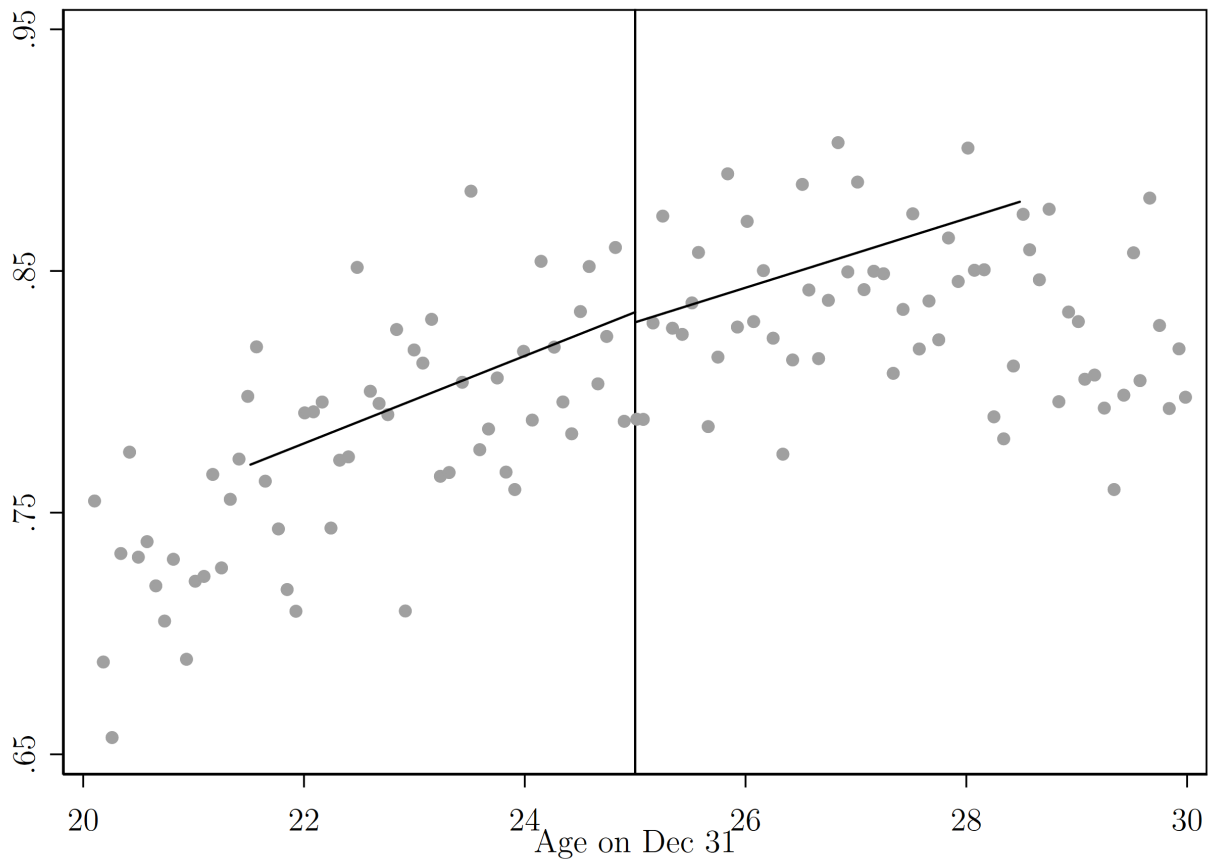
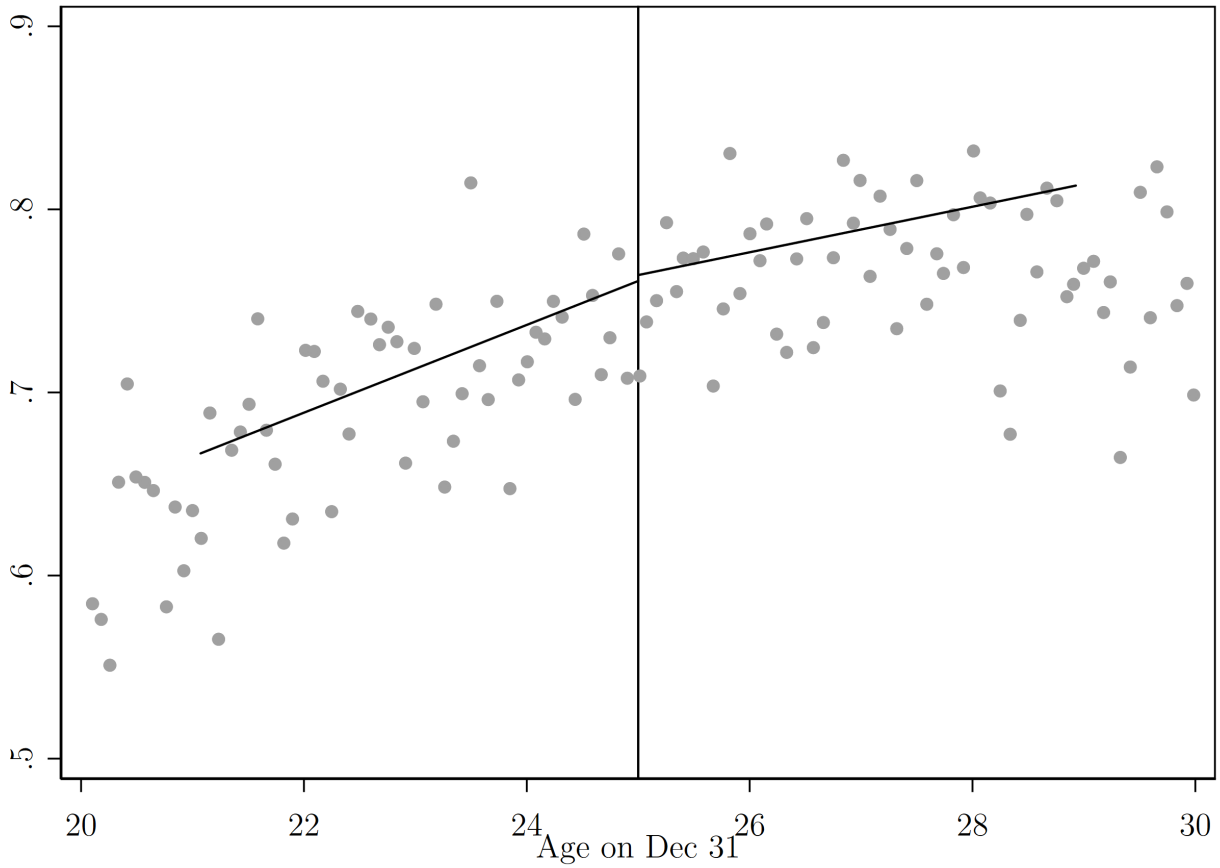


Figure 2: Labor Force Participation



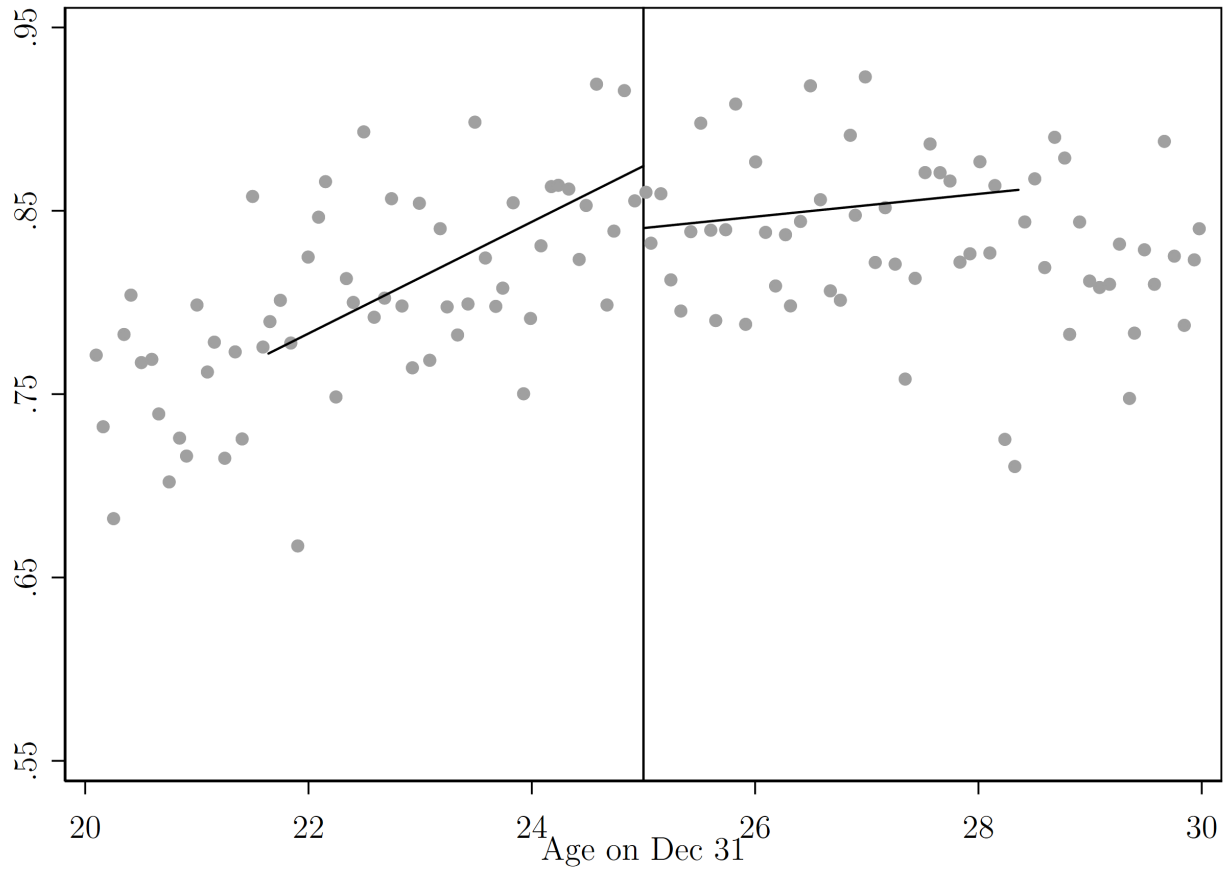
This figure shows results for the share of weeks in the labor force, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The bandwidth is MSE-optimal.

Figure 3: Employment



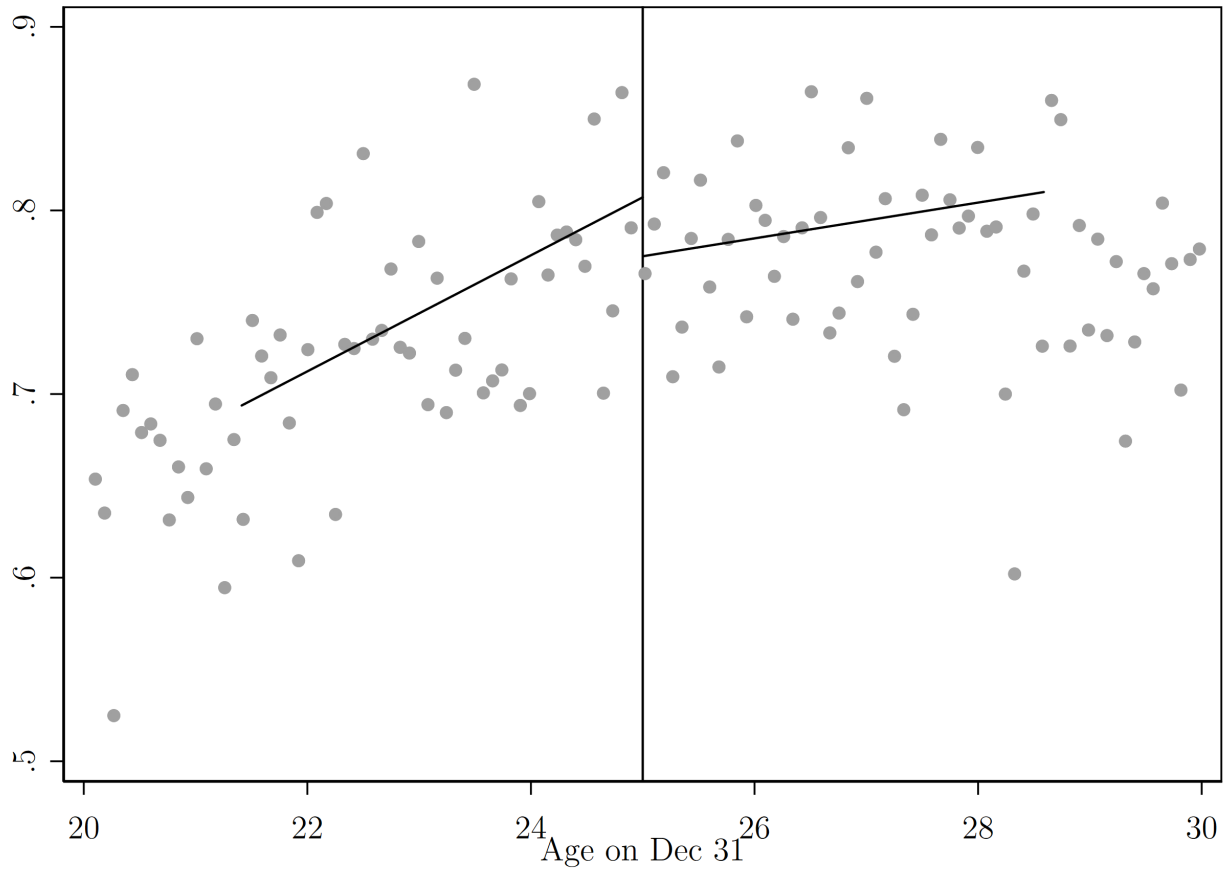
This figure shows results for the share of weeks employed, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The bandwidth is MSE-optimal.

Figure 4: Following-Year Labor Force Participation



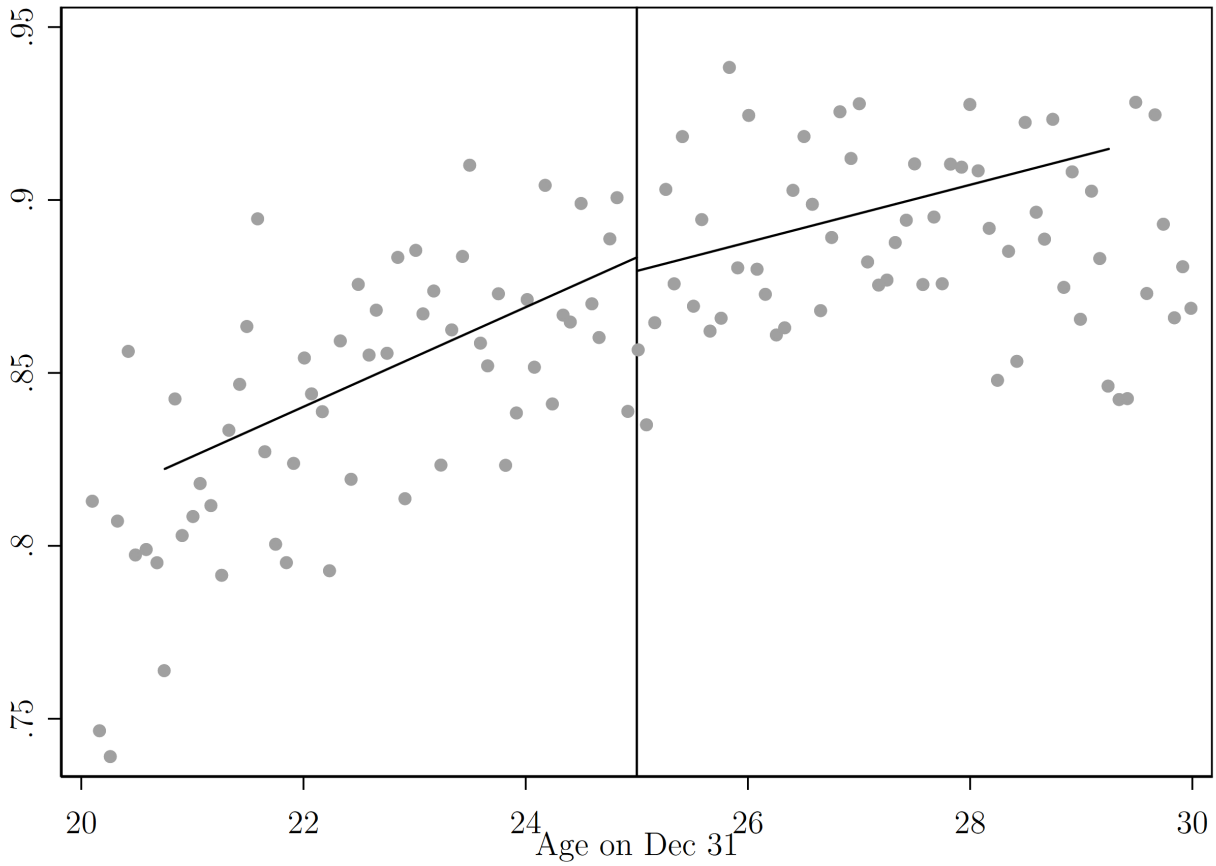
This figure shows results for the share of weeks in the labor force in the year following the age used as the running variable, weighted using SIPP weights and estimated using a triangular kernel. The bandwidth is MSE-optimal.

Figure 5: Following-Year Employment



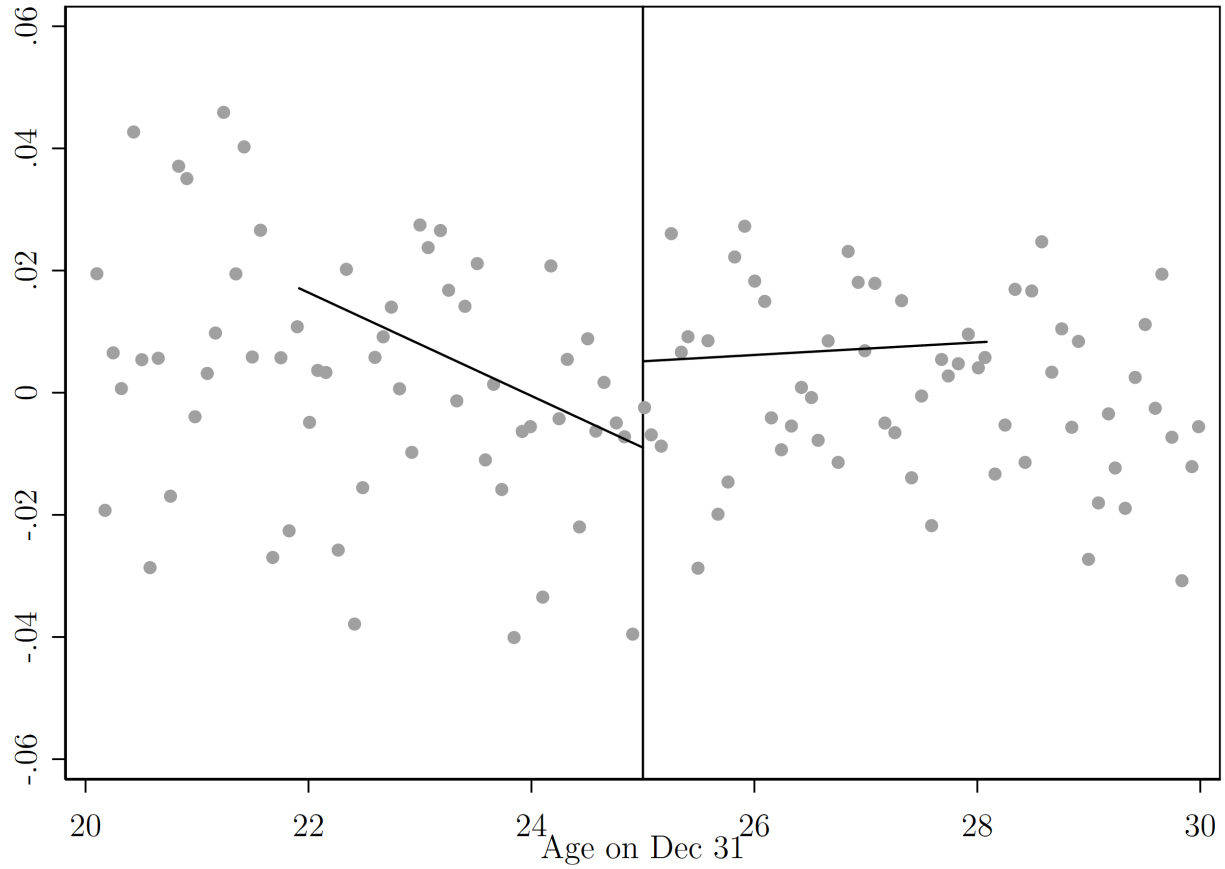
This figure shows results for the share of weeks employed in the year following the age used as the running variable, weighted using SIPP weights and estimated using a triangular kernel. The bandwidth is MSE-optimal.

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



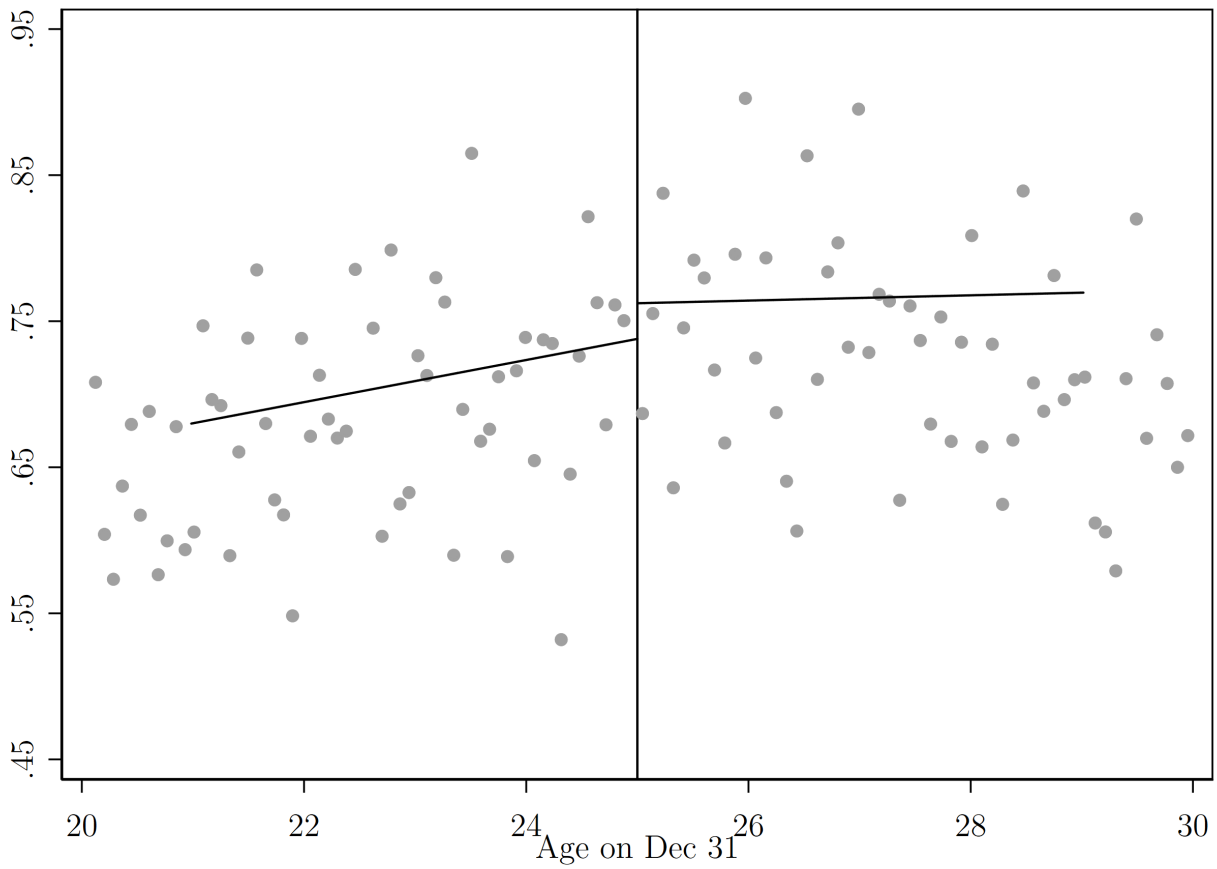
This figure shows results for the share of weeks in the labor force for individuals who were ever in the labor force during the sample period, weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st of that year. The bandwidth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

Figure 7: Labor Force Participation (Residualized)



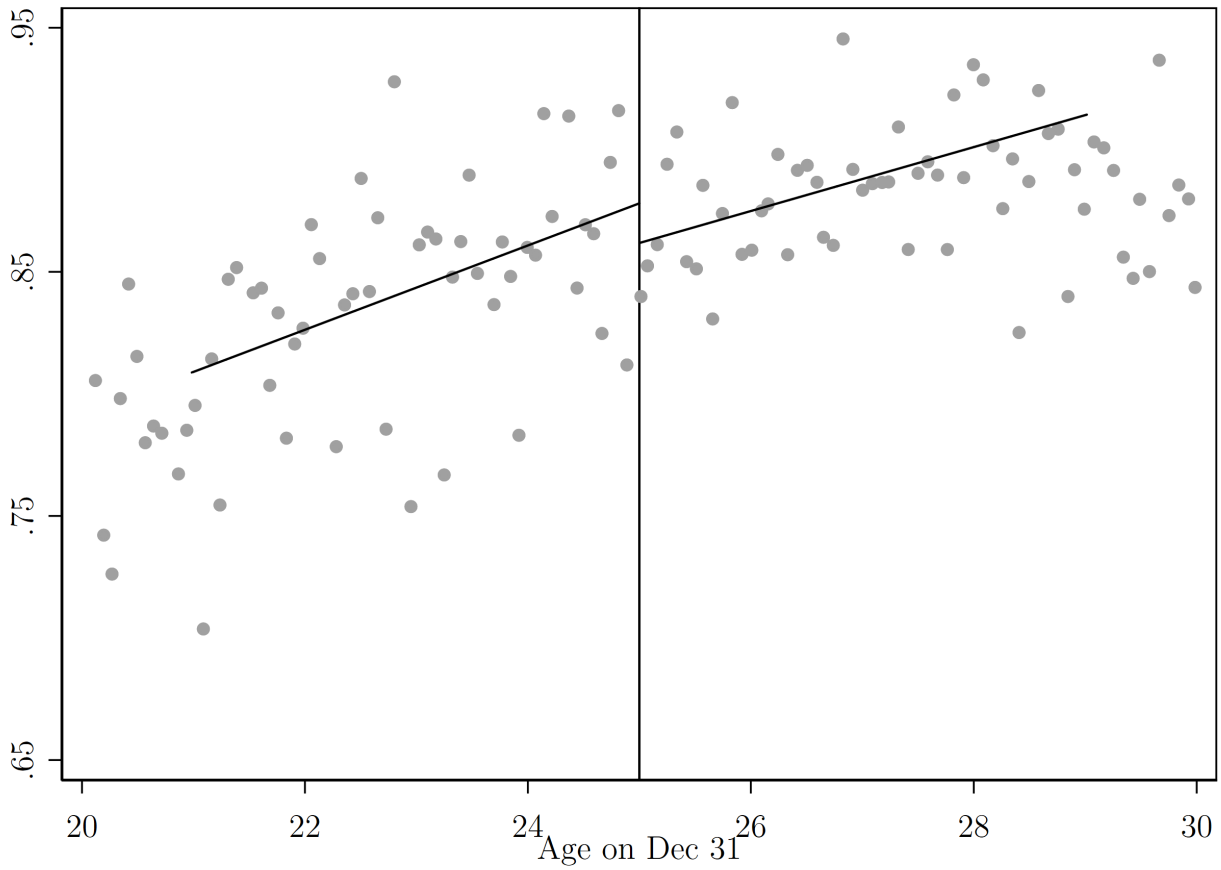
This figure shows results for the share of weeks in the labor force, residualized to remove individual fixed effects as well as state-year fixed effects. The estimation is weighted using SIPP weights and estimated using a triangular kernel. The running variable is the individual's age on December 31st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

Figure 8: Labor Force Participation (Females)



This figure shows results for the share of weeks in the labor force for 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 bandwidth is MSE-optimal.

Figure 9: Labor Force Participation (Male)



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 bandwidth is MSE-optimal.

Table 1: Summary Statistics

	Mean	Standard Error
Observations for persons		
Female	0.465	0.499
Ever married	0.457	0.498
Ever in the labor force	0.766	0.423
Ever employed	0.731	0.443
Observations for person-years		
Share of weeks in the labor force	0.673	0.448
Share of weeks employed	0.628	0.460
Married	0.469	0.499
Age on December 31st	47.1	13.4

The first set of summary statistics uses 31,103 observations at the individual level. The second set of summary statistics uses 98,255 observations at the individual-year level.

Table 2: Labor Force Participation

	(1) Linear	(2) Quadratic	(3) Following Year (Linear)
Estimated discontinuity at age 25	-0.0042	-0.0095	-0.0195
	(0.0183)	(0.0212)	(0.0182)
Number of observations used	9,579	13,162	5,985

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 2: Employment

	(1) Linear	(2) Quadratic	(3) Following Year (Linear)
Estimated discontinuity at age 25	0.0033	0.0022	-0.0321
	(0.0202)	(0.0236)	(0.0245)
Number of observations used	10,978	14,036	6,130

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.