I. Introduction

Section 14(c) of the Fair Labor Standards Act (FLSA) of 1938 has permitted employers to pay subminimum wages to people with disabilities (PWD) for over eight decades. The policy was originally designed to encourage employment of PWD by providing wage-setting flexibility for individuals with lower measured productivity (Department of Labor, 2008), and it remains in effect today. As of 2024, approximately 40,000 workers with disabilities were employed under 14(c) certificates, earning wages below the federal minimum wage (Department of Labor, 2024). Proponents of subminimum wage employment (SWE) argue that it provides essential employment opportunities for individuals who might otherwise struggle to enter the workforce (Bourne and Subramaniam, 2021). They caution that eliminating subminimum wages could lead to job losses for PWD and increase dependence on public assistance programs. However, critics content that SWE discourages skill development, limits labor market opportunities, and perpetuates dependency on sheltered work settings (Crandell, 2022; U.S. Commission on Civil Rights, 2020).

Previous research suggests that PWD employed under 14(c) face higher poverty rates (Maroto and Pettinicchio, 2023) and may impose greater fiscal costs on taxpayers compared to supporting competitive, integrated employment (Cimera, 2000). Some studies indicate that SWE reduces employer incentives to invest in productivity-enhancing training and workplace accommodations, reinforcing low-wage employment patterns (Crandell, 2022). This practice contributes to persistent wage gaps between individuals with and without disabilities (Yin et al., 2014) and increases reliance on public assistance programs such as SSI and SSDI, as low earnings fail to provide sufficient financial stability (Maroto and Pettinicchio, 2023). In 2023, 22.5% of PWD were employed, compared to 65.8% of those without disabilities, while the unemployment rate for PWD was 7.2%, more than double that of those without disabilities (3.5%) (Bureau of Labor Statistics, 2024).

In response to ongoing policy debates, several states have taken legislative action to phase out subminimum wages for PWD. Vermont was the first state to do so in 2002, transitioning affected workers into competitive employment through partnerships with the University of Vermont (Dague, 2018). New Hampshire followed in 2015, becoming the first state to legislatively eliminate subminimum wages. Since then, states including Alaska, Maryland, Maine, Washington, Hawaii, Rhode Island, and Tennessee have passed similar measures. As of July 2023, fifteen states

had enacted restrictions or eliminations of subminimum wage employment (Association of People Supporting Employment First, 2023)[1] On December 3, 2024, the U.S. Department of Labor proposed a rule to phase out the issuance of new 14(c) certificates, signaling a potential shift in federal labor policy (Office of the Federal Register, 2024).

Despite these recent policy developments, the labor market effects of eliminating subminimum wage for PWD remains uncertain. While research on general minimum wage policies is extensive (Autor, Manning, and Smith, 2016; Derenoncourt and Montialoux, 2021; Cengiz et al. 2019), fewer studies focus on the specific impacts of SWE. Maroto and Pettinicchio (2023) find that subminimum wage workers experience elevated poverty risks, while Avellone et al. (2023) document state-level variation in 14(c) usage, highlighting regional labor market differences. To date, only one study has provided empirical evidence on the effects of eliminating SWE (Kakara et al., 2024). They document some employment gains for individuals with cognitive disabilities in New Hampshire, but no effects in Maryland. However, robust empirical evidence on the broader labor market impacts of these reforms, including from other states that have later eliminated SWE, remains limited, making it difficult to draw conclusions about the overall effects of these policy changes.

This study addresses this gap by providing the first national-level quasi-experimental analysis of the labor market effects of abolishing subminimum wage laws. We utilize data from the Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) and the Outgoing Rotation Group (ORG) spanning from 2008 to 2023. By exploiting the staggered timing of SWE elimination across different states, we employ difference-in-differences and event study methodologies to identify the causal effects of the policy change.

Our findings indicate that the SWE elimination significantly reduced the proportion of PWD earning subminimum wages—by approximately 5.6 percentage points among prime-age adults and 9.2 percentage points among young adults. The impact was particularly pronounced for prime-age individuals with multiple disabilities and young adults with less severe disabilities. However, we find no evidence that SWE elimination affected overall employment rates for PWD. While total income increased for prime-age adults, particularly those with less severe disabilities,

[1] Table 1 provides a list of these states and the years in which they enacted such legislation.

the estimated increases in hourly wages are not statistically significant, suggesting that income gains are primarily driven by increased work hours. Specifically, prime-age adults with less severe disabilities worked approximately 3.3 additional hours per week following SWE elimination. Importantly, we find no evidence that the policy change led to greater reliance on SSI, countering concerns about increased dependency on public assistance programs.

The next section provides a conceptual framework for the anticipated effects of eliminating subminimum wage employment. Section 3 explains the data source, sample selection, and provides summary statistics. Section 4 details the empirical strategy, and the results are reported in Section 5. Section 6 discusses the policy implications and concludes the paper.

II. Conceptual Framework

The elimination of SWE laws can affect the labor market participation of PWD in several ways. To formalize how SWE elimination may influence the choices of PWD, we present a simple theoretical model. Let the utility function of a person with disabilities be represented as $U(c,l)$, where c denotes consumption and l represents leisure. We assume that the marginal utilities of consumption and leisure are both positive, i.e.

$$\partial U/\partial c \geq 0,\ \partial U/\partial l \geq 0$$

An individual decides whether to work ($h > 0$) or not ($h = 0$) based on their preferences and the market wage (w). Government benefits (b) are available to PWD who do not work or whose income from work is insufficient to meet their needs.

The budget constraint is given by:

$$c = w \cdot h + b + E$$

where E represents the entry cost to the labor market, which may include search costs or efforts. We assume that the entry costs are higher after subminimum wage elimination. After the elimination of subminimum wages, the market wage rate increases, and PWD compares their utility from working with their utility from not working. They choose to work if the utility from working is higher:

$$U(w \cdot h + b + E,0) \geq U(b,l)$$

They choose **not** to work if the utility from **not** working is higher:

$$U(w \cdot h + b + E,0) \leq U(b,l)$$

The employment decision condition is given by:

$$U(w \cdot h + b + E, 0) \stackrel{?}{=} U(b, l)$$

1. **Differentiating with Respect to Wage (*w*):**

$$\frac{\partial}{\partial w}\left(U(w \cdot h + b + E, 0)\right) \stackrel{?}{=} \frac{\partial}{\partial w}\left(U(b, l)\right)$$

$$h \cdot \frac{\partial U}{\partial c} \cdot \frac{\partial c}{\partial w} \stackrel{?}{=} 0$$

Since $h > 0$ and $\frac{\partial U}{\partial c} > 0$, the sign of the above equation depends on $\frac{\partial c}{\partial w}$. The sign of $\frac{\partial c}{\partial w}$ in turn depends on the substitution effect and income effect:

- **Substitution Effect:** A higher wage increases the opportunity cost of leisure, leading to more hours worked (*h*). This effect tends to make $\frac{\partial c}{\partial w}$ positive.
- **Income Effect:** A higher wage increases income, allowing individuals to afford more consumption. This effect tends to make $\frac{\partial c}{\partial w}$ negative.

2. **Differentiating with Respect to Entry cost (*E*):**

$$\frac{\partial}{\partial E}\left(U(w \cdot h + b + E, 0)\right) \stackrel{?}{=} \frac{\partial}{\partial E}\left(U(b, l)\right)$$

$$\frac{\partial U}{\partial c} \cdot \frac{\partial c}{\partial E} \stackrel{?}{=} 0$$

Since $\frac{\partial U}{\partial c} > 0$, the sign of the above equation depends on $\frac{\partial c}{\partial E}$. The sign of $\frac{\partial c}{\partial E}$ depends on the specific relationship between entry cost (*E*) and consumption (*c*):

- **Positive Relationship:** If a higher entry cost leads to higher consumption for PWD (e.g., if entry cost represents investment in assistive technologies or accommodations that increase productivity and facilitate employment), then $\frac{\partial c}{\partial E}$ is positive.

- **Negative Relationship:** If a higher entry cost reduces consumption for PWD (e.g., if entry cost represents accessibility barriers or costs associated with job accommodations that act as deterrents to employment), then $\frac{\partial c}{\partial E}$ is negative.

In conclusion, while our theoretical model above provides insights into the potential effects of eliminating subminimum wage on the employment rate of PWD, the outcome remains ambiguous. Only through empirical studies can we ascertain whether the elimination of subminimum wage leads to a significant increase, decrease, or negligible change in the employment rate of PWD.

III. Data

A. Data Source and Sample Selection

Current Population Survey

We use both the CPS Annual Social and Economic Supplement (ASEC) and the CPS Outgoing Rotation Group (ORG) data in our analysis. The CPS-ORG data is used to create indicators for subminimum wage employment and hourly wages, while the remaining outcomes—such as total income, SSI income, employment status, competitive integrated employment status, and hours worked—are derived from the CPS-ASEC data. Below, we provide a detailed description of each dataset.

Jointly conducted by the U.S. Census Bureau and the Bureau of Labor Statistics, the CPS-ASEC, provides annual nationally representative wages and employment data. In June 2008, the CPS-ASEC incorporated six questions to identify disability status, inquiring about difficulties in hearing, vision, cognition, mobility, self-care, and independent living. An individual is classified as having a disability if they report difficulty in any of these areas, and we define severe disability as experiencing difficulty in more than one area. The CPS-ASEC serves as the primary data source for our descriptive analysis of demographic and labor market characteristics of youth and prime working-age adults by disability status and SWE status.

Additionally, the CPS-ORG provides comprehensive data on weekly and hourly wages for wage and salaried workers. Hourly workers report their hourly wages directly, while non-hourly workers provide their weekly earnings and usual weekly hours. Following Autor, Manning, and Smith (2016), we calculate hourly wages for non-hourly workers by dividing their reported weekly earnings by their usual weekly hours using the CPS-ORG sample. This approach is crucial for

accurately identifying individuals earning subminimum wages, as alternative measurement methods can introduce significant measurement errors.[2] The CPS-ORG data has been extensively utilized in economic research to study minimum wage workers (Bernstein and Mishel, 1997; Clemens and Strain, 2022, 2023; EPI, 2019).

Our primary outcome of interest is SWE status, indicating whether the person was employed with an hourly wage below their resident state's effective minimum wage level. Additional outcome variables include employment status, competitive integrated employment (CIE) status, and weekly work hours. CIE is defined as employment where the individual: (i) earns at or above the minimum wage, (ii) is enrolled in a workplace pension plan, (iii) holds a position offering insurance coverage, or (iv) is entitled to paid time off. We also examine wage and income-related outcomes, such as hourly wages, annual income, and SSI, which reflects the pre-tax income received from Social Security.

To examine the impact of SWE elimination, we further restrict the sample using the following criteria: First, we restrict the sample to individuals aged 16 and 54, categorizing younger adults as those aged 16-24 and prime-age workers as those aged 25-54, following the definition of prime-age working people from the Bureau of Labor Statistics. Second, following Autor, Manning, and Smith (2016), we exclude individuals who are self-employed or involved in unpaid family work to ensure that our analysis focuses on wage earners in traditional employment settings, where the effects of SWE elimination are most relevant. Next, we exclude Vermont as this state had eliminated subminimum wages prior to our analysis date. Similarly, we exclude Texas and Illinois as these states have eliminated subminimum wage related to state use contracts[3].

Department of Labor 14(c) Certificate Holder Data

We obtained data on 14(c) certificate holders through a Freedom of Information Act request to the Department of Labor. This dataset contains detailed information on employers

[2] Other methods to impute subminimum wage status include utilizing information on annual income, average weekly work hours, and annual number of weeks worked. Dividing the annual income by the approximate annual work hours leads to large measurement errors in imputing hourly wages.

[3] State use contracts are agreements where state governments procure goods or services from entities that employ people with disabilities, often at subminimum wages. If these states have eliminated subminimum wages within these contracts, it introduces a unique context or policy environment that could confound the analysis. Including such states might make it harder to isolate the effects of broader subminimum wage elimination policies, as their labor market conditions are influenced by these specific state-level reforms.

authorized to pay workers with disabilities below the federal minimum under Section 14(c). The data includes the names of certificate holders, their locations, and the number of workers paid subminimum wages under each certificate, covering the period from 2015 to 2023. We calculate the average number of 14(c) certificates by year and state and merge this information with the CPS data using corresponding year and state identifiers. The 14(c) certificate data provides precise counts of workers employed at subminimum wages specifically under Section 14(c). This level of precision cannot be achieved using CPS data, which does not explicitly capture employment under 14 (c) certificates. However, the CPS data offers a broader scope by including information on workers earning subminimum wages beyond those employed by 14(c) certificate holders. Thus, the two datasets complement each other, with 14(c) certificates data offering a precise count that is likely to be a lower bound of all SWE and CPS data providing a more comprehensive view of the subminimum wage workforce.

B. Descriptive Statistics

Demographic and Labor Market Characteristics by Disability Status

We present the demographic and labor market characteristics of the working-age population by disability status in Table 2, using data from CPS-ASEC. Approximately 7.8% of the working-age population (ages 16-64) reports having a disability, with 4.5% having a single disability and 3.3% reporting multiple disabilities. On average, individuals with disabilities are older and less likely to be married compared to those without disabilities. Non-Hispanic white and Black populations are overrepresented among individuals with disabilities, while Hispanic individuals are underrepresented.

Individuals with disabilities, particularly those with multiple disabilities, experience significant disparities in education and economic outcomes. They are more likely to have a high school-level education or lower and are less likely to hold a bachelor's degree or higher compared to those without disabilities. Labor force participation also reflects these disparities: individuals with one disability participate at approximately 60% of the rate of those without disabilities (calculated as 0.45/0.76), and for those with multiple disabilities, the rate drops to 22% (calculated as 0.17/0.76). Among those in the labor force, individuals with disabilities have lower employment rates, higher unemployment rates, and work fewer hours compared to individuals without disabilities.

Income disparities are similarly substantial. Individuals with one disability earn, on average, less than half of what those without disabilities, while individuals with multiple disabilities earn only about 15% of what their non-disabled counterparts make. In contrast, individuals with disabilities tend to have higher incomes from Social Security benefits, with Social Security Income accounting for approximately 11% of the total personal income for individuals with one disability and 28% for those with multiple disabilities.

Characteristics of Subminimum Wage Employment

To assess the prevalence and status of SWE, we analyze data from the CPS-ORG sample. Table 3 reports the characteristics of earners with disabilities, differentiating between those who report hourly wages below the effective minimum wage and those earning at or above it. Between 2008 and 2023, a total of 2,747 individuals with disabilities in our sample reported earning subminimum hourly wages, compared to 51,266 individuals with disabilities earning at or above the minimum wage.

The data reveal that women with disabilities are approximately 5 percentage points more likely to be employed in SWE than men with disabilities. On average, individuals with disabilities earning subminimum wages are 7 years younger than those earning at or above the minimum wage. Those in SWE are also 21 percentage points less likely to be married, 8 percentage points less likely to be white, 3 percentage points more likely to be Black, and 4 percentage points more likely to be Hispanic. Education levels also differ significantly: individuals in SWE were more likely to have a high school education or less, while those earning at or above the minimum wage were more likely to have attended college or earned a degree.

Disability type is another distinguishing factor. Workers earning subminimum wages are more likely to report disabilities related to memory, mobility, and personal care, while those earning at or above the minimum wage are more likely to report hearing, vision, or physical disabilities. Moreover, those earning subminimum wages are 11 percentage points more likely to report having multiple disabilities.

Individuals in SWE worked an average of 10 fewer hours per week compared to those earning above the minimum wage. Weekly earnings for workers in SWE averaged $250, significantly lower than the $619 reported by those earning at or above the minimum wage. The average hourly wage gap between the two groups was $9.52. Additionally, workers in SWE were

8 percentage points less likely to be union members or covered by union protections and 9 percentage points more likely to hold roles that included overtime, tips, or commissions.

Figure 1 illustrates the percentage of workers reporting wages below their state's effective minimum wage, categorized by disability status. While workers in SWE with a single disability show similar patterns to those without disabilities, individuals with multiple disabilities were more frequently employed in SWE. Figure 2 examines the prevalence of SWE by age group. Echoing the pattern from Table 3, we find that young adults, aged 16-24, were the most likely to report earning subminimum wages. These trends inform our main analysis, which focuses on young adults and prime-aged workers.

Trends in 14(c) Employment and Certificates

The Wage and Hour Division of the Department of Labor issues 14(c) certificates, which are valid for two years before employers have the option to renew. Between 2015 and 2023, employers held 14(c) certificates for an average duration of approximately 4.8 years, with a standard deviation of 2.9 years (ranging from a minimum of 0.4 years to a maximum of 18 years). This likely underestimates the true holding durations, as the data only provides a snapshot covering only the 2015-2023 period.

Figure 3 and Figure 4 illustrate the trends in the number of Section 14(c) employees and employers over the past decade. The data show a steady decline in both the number of workers paid subminimum wages in Section 14(c) settings and the number of 14(c) certificates issued to employers. Specifically, the number of workers paid subminimum wages under Section 14(c) fell sharply from approximately 202,000 in 2015 to around 40,500 in 2024, reflecting an 80% decrease. Similarly, the number of active 14(c) certificates decreased from about 2,000 in 2015 to roughly 750 in 2024, representing a 63% decline.

Comparing Figure 3 and Figure 4 with Figure 1 and Figure 2, we see a steady decline in both the number of 14(c) certificates issued and the number of workers employed under these certificates since 2014. In contrast, the share of workers with disabilities earning subminimum wages in the CPS data has remained relatively stable. This discrepancy likely reflects the fact that workers paid subminimum wages under 14(c) certificates represent only a subset of all workers earning subminimum wages in the broader labor market.

IV. Empirical Strategy

Our empirical strategy employs a difference-in-differences (DID) framework to examine the impact of subminimum wage elimination on annual labor market outcomes for people with disabilities. Specifically, we compare changes in outcomes before and after the policy's implementation in states that have eliminated subminimum wages relative to those that have not. We estimate these comparisons using the following specification implementing the method developed by Sun and Abraham (2021):

$$Y_{ist} = \alpha + \beta_1 SWE_{elimination_{st}} + \beta_2 X_{ist} + \beta_3 X_{st} + \xi_s + \zeta_t + \xi_s \times \zeta_t + \varepsilon_{ist} \#(1)$$

where Y_{ist} represents the labor market outcome of individual i who resided in state s during year t. $SWE_{elimination_{st}}$ indicates the proportion of year t during which SWE was eliminated in state s.[4] X_{ist} are individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school, high school degree, and some college), and number of children in the household. All specifications control for state-level characteristics, X_{st}, which include effective minimum wages and state EITC rates as a percentage of the federal credit. These models are weighted using the according CPS person weights for CPS-ORG data and ASEC weights for CPS-ASEC data.

State fixed effects, denoted by ξ_s, account for both observable and unobservable characteristics of each state that remain constant over time. Year fixed effects, represented by ζ_t, are included to capture time-invariant unobserved heterogeneity that might influence cohorts. The term $\xi_s \times \zeta_t$ allows for state-specific time trends, which have been shown to be important in the extant minimum wage literature (Allegretto et al., 2017).

In addition to the DID analyses, we estimate an event-study model that allows us to assess the evolution of relative outcomes conditional on the control variables.

[4] For example, Alaska's subminimum wage elimination law went into effect on February 16, 2018. Accordingly, the variable for Alaska takes a value of 0.875 in 2018, a value of 1 for in the years 2019-2023, and a value of 0 for all other years.

$$Y_{ist} = \alpha + \sum_{\substack{r=-6 \\ r\neq -1}}^{r=2} \beta_1^r SWE_{elimination_{st}} \times 1[r = t - t_s^*] + \beta_2 X_{ist} + \beta_3 X_{st} + \xi_s + \zeta_t + \xi_s \times \zeta_t + \varepsilon_{ist} \#(2)$$

The event study includes indicator functions $1[r = t - t_s^*]$, representing time relative to the year of SWE elimination (t_s^*) for each state. $SWE_{elimination_{st}}$ equals one if state s had eliminated SWE by year t, and zero otherwise. If a state eliminated SWE at any point during a given year, we code it as having eliminated SWE in that year. The coefficients of interest are β_1^r for each $r \in [-6, 2]$, which measure the change in relative outcomes for year t in treatment states compared to control states. We use the year right before SWE elimination ($t = -1$) as the reference period. All other variables are as defined in Equation (1).

A. Identifying Assumptions

Our identification strategy relies on the key assumption of parallel trends to accurately estimate the impact of subminimum wage elimination. This assumption requires that, in the absence of subminimum wage elimination, trends in the likelihood of working at subminimum wages and other labor market outcomes for people with disabilities would have evolved similarly in both treatment and control states. To validate this assumption, we examine pre-treatment trends using event-study specifications. As shown in Figure 5, the likelihood of working at subminimum wages for individuals with disabilities was largely comparable between treatment and control states in the six years prior to the elimination of subminimum wages, showing no significant differences.[5]

A second assumption underlying our identification strategy is the absence of anticipation effects, which requires that treatment effects are not observed prior to the policy's actual implementation. This assumption is likely to hold in our context for two reasons. First, as previously discussed, the estimated pre-treatment coefficients for up to six years before the elimination of subminimum wages are close to zero and statistically insignificant, indicating no preemptive changes in outcomes attributable to the policy. Second, we conducted an additional

[5] Specifically, the results for prime-age adults, shown in Panels A, C, and E of Figure **5**, indicate no evidence of pre-trends, with nearly all coefficients close to zero and statistically insignificant. In contrast, Panels B, D, and F, which present results for younger adults, reveal less consistent patterns, likely due to the smaller sample size in this subgroup.

analysis using the law enactment dates—rather than the implementation dates—as the treatment period to assess whether the announcement or passage of the law influenced outcomes prior to its implementation. These results also show no significant changes in outcomes following the enactment or announcement of the law, further supporting the validity of this assumption.

V. Results

A. Subminimum Wage Employment

In this section, we assess the effectiveness of state legislation eliminating SWE by evaluating its impact on the likelihood of individuals with disabilities being employed at subminimum wages. We estimate a DID model from Equation (1) using SWE status as the outcome variable. Table 4 presents the results, disaggregated by subgroups: all prime-age adults (ages 25 to 54) with disabilities, younger adults (ages 16 to 24) with disabilities, and each age group by disability severity, proxied by whether they have one or more types of disabilities.

Our estimates show that people with disabilities in states that eliminated SWE were less likely to be in SWE after the reforms. Among prime-age adults with disabilities, SWE status decreased by 5.6 percentage points, while younger adults experienced a larger reduction of 9.2 percentage points. Notably, the declines were most pronounced for prime-age adults with severe disabilities (13.6 percentage points) and younger adults with less severe disabilities (11.7 percentage points).

To further assess changes over time and validate the parallel trends assumption, we estimate an event study model based on Equation (2), with SWE status as the outcome variable. The results, presented in Figure 5, show the impact of SWE elimination on individuals with disabilities in treatment states relative to control states over the six years prior to and two years following the policy change. The year preceding the event ($t = -1$) serves as the omitted category, normalized to zero by construction.

For prime-age adults with disabilities, Panels A, C, and E show no significant differences in the likelihood of SWE between treatment and control states during the six years preceding SWE elimination, as most estimated coefficients are close to zero and statistically insignificant. Post-implementation, the estimated coefficients become negative and statistically significant for certain groups, with SWE status declining by 5 to 10 percentage points for all prime-age adults (Panel A)

and those with multiple disabilities (Panel E) two years after SWE elimination. The decline is more pronounced among individuals with severe disabilities (Panel E) than those with less severe disabilities (Panel C), consistent with the DID results and suggesting that more disadvantaged groups benefit disproportionately from SWE elimination. For younger adults (Panels B, D, and F), the estimated coefficients are less precise, likely due to the smaller sample size. Pre-treatment coefficients for this group are statistically different from zero, suggesting that the parallel trends assumption may not hold. As such, we interpret the findings for younger adults with caution.

To explore heterogeneity, we present additional DID estimates for subpopulations of people with disabilities in Figure 6, focusing on sex, cohort, education, and race, with 95% confidence intervals. Across all subgroups, the point estimates indicate reductions in SWE status post implementation, though wide confidence intervals suggest limited statistical power to detect significant effects.[6] The results suggest larger impacts on women with disabilities, PWD from more recent cohorts, PWD with lower educational attainment, and non-White PWD.

Number of 14(c) certificate holders. The number of 14(c) certificate holders plays a crucial role in shaping the SWE status of PWD, as changes in the issuance or renewal of these certificates likely mediate the effects of SWE elimination on labor market outcomes. To explore this relationship, we conducted an event study analysis using the number of active 14(c) employers from Department of Labor data as the outcome. Figure 7 illustrates the impact of legislative changes on the number of 14(c) certificates, with the analysis conducted at the state-by-year level rather than the individual level (as in the CPS data).

The results in Figure 7 show no significant differences in the number of 14(c) employers or employees between elimination and non-elimination states in the six years prior to legislative change. However, this pattern diverges a few years after the legislative change, with the number of 14(c) employers and employees in elimination states becoming notably smaller than in non-elimination states. Two years post-elimination, the number of 14(c) certificates decreased by an average of 14 certificates, and the number of 14(c) employees dropped by 2,000 workers in elimination states compared to non-elimination states. The decline in the number of 14(c)

[6] Including people without disabilities to increase statistical power yields negative and statistically significant estimated coefficients across most categories.

employers and employees lagged by a couple of years, whereas the impact on total subminimum wage employment (as shown in Figure 5) was more immediate. This discrepancy is expected, as the CPS data captures real-time labor market dynamics among employed individuals, while the issuance and reduction of 14(c) certificates involve administrative processes that take longer to materialize. Employers who currently hold a 14(c) certificate can continue to use it until its expiration date, but they cannot renew or apply for new certificates.

Our analysis indicates that SWE elimination significantly reduced the likelihood of individuals with disabilities being employed at subminimum wages, particularly for prime-aged adults with multiple disabilities and younger adults with less severe disabilities. In addition to individual-level impacts, the policy shift substantially reduced the total number of employers and employees participating in the 14(c) program, as reflected in Department of Labor data. Furthermore, we find that the policy was especially effective in reducing SWE status for PWD who are women, younger, less educated, and non-White.

B. Labor Supply

The previous section demonstrated that eliminating SWE significantly reduced the SWE status of PWD. However, critics argue that such policies could limit employment opportunities for PWD who may struggle to compete in the job market at standard minimum wage rates (Bourne and Subramaniam, 2021). To address this concern, we estimate the effects of SWE elimination on employment rates and other labor supply outcomes for PWD.

Table 5 presents the DID estimates from Equation (1) for employment, competitive integrated employment, and weekly work hours. Panel A reports the estimated effects of eliminating SWE on the employment status of PWD. We observe no significant changes in the employment rates of PWD following SWE elimination, , suggesting that concerns about large-scale job losses may be overstated.[7] Panel B reports the effects on CIE, defined as whether one is employed under the following conditions: 1) earning a wage at or above the minimum wage, or 2) enrolled in a workplace pension plan, or 3) employed in a position offering insurance coverage, or 4) entitled to paid time off. We observe no significant shifts in the CIE status of PWD as a result

[7] The event study estimates, presented in Figure A.1 in the Online Appendix, show no clear evidence that SWE elimination significantly impacted the employment rates of PWD, apart from a temporary increase in employment for prime-age adults with multiple disabilities.

of eliminating SWE. Panel C reports the estimated effects of eliminating SWE on the usual work hours per week reported by PWD. On average, prime-aged adults with disabilities living in states that eliminated SWE worked around 2.1 hours more per week after the elimination compared to those living in states that did not.

We also investigate the impact of SWE elimination on other labor market outcomes, such as labor force participation rates, full-time employment status, and part-time employment status among PWD in Table A.1 of the Online Appendix. Panels A, B, and C present the effects on labor force participation, full-time employment, and part-time employment status respectively. The results show that the SWE elimination does not appear to significantly impact labor force participation rate, the full-time or part-time employment status of PWD.

In summary, we find no short-term evidence that eliminating SWE impacts the overall employment rates or CIE rates of PWD. We do find some suggestive evidence that prime-aged adults with disabilities in states that eliminated SWE work slightly more hours per week than their counterparts in non-elimination states. However, it is difficult to conclude long-term effects of SWE elimination of the employment rates on these populations due to the recent nature of many states' policies and lack of data accrued to evaluate the policy effects.

C. Wages and Income

This section examines the effects of SWE elimination on the wages and income of PWD. Table 6 presents the estimated impacts on hourly wages, log annual income, and log SSI.[8] Panel A shows the results for hourly wages: while the estimates are positive, they are not statistically significant. Panel B reports the effects on log annual wage income. Eliminating SWE led to a 68.5% increase in annual wage income for prime-aged adults with disabilities. This increase is likely driven by both higher hourly wages and more hours worked, with the latter having a statistically significant effect in previous analyses. To assess whether SWE elimination led to greater reliance on government assistance programs, the analysis also examines its effects on SSI income (Panel C). The results indicate no significant change in reliance on government assistance programs

[8] To analyze annual income, we keep individuals with non-zero income and adjust the income to 2019 dollars using CPI data. After normalization, we take the natural logarithm of the annual income.

among PWD post SWE elimination. However, the estimates for SSI income have large standard errors and should be interpreted with caution.

D. Occupational Sorting

Understanding how subminimum wage workers adapt to the elimination of SWE provides critical insights into their labor market transitions and potential barriers to achieving competitive, integrated employment. To explore this, we analyze whether these workers remain in the same occupations following SWE elimination or shift to different sectors. Due to limited sample size, this analysis includes all PWD rather than restricting the sample to only those previously employed under subminimum wage. We classify PWD into 12 distinct occupation groups and estimate Equation (1) separately for each group, as shown in Table 7. The results indicate a significant decrease in PWD employment in administrative, transportation, and farming sectors following SWE elimination. This suggests that the policy may be facilitating a shift away from low-wage service jobs, which have traditionally been associated with subminimum wage employment. However, the results for other occupational groups, such as construction and service work, are not statistically significant, indicating no clear evidence of substantial shifts into these sectors.

VI. Robustness Checks

A. Instrumental Variables Approach using Department of Labor 14(c) Data

Our analysis shows that SWE legislation significantly reduces SWE status for PWD, increases work hours and boosts annual wage income for prime-aged PWD. However, we find no evidence that it affects employment rates or reliance on welfare. Given the likely role of 14(c) certificates in mediating these effects, we estimate the impact of certificate numbers on PWD outcomes using Department of Labor recorded 14 (c) data as a robustness check. We estimate the following equation:

$$y_{ist} = \alpha + \beta \cdot Number\_of\_14(c)certificates_{st} + X'_{ist}\delta + \xi_s + \zeta_t + \epsilon_{ist} \quad (3)$$

where y_{ist} represents labor market outcomes of individual *i* in state *s* at year *t*. $Number\_of\_14(c)certificates_{st}$ denotes the number of 14(c) certificate holders in state *s* and year *t*. X_{ist} includes individual-level control variables, such as sex, age, race and ethnicity, marital status, educational attainment, and the number of children in the household. ξ_s and ζ_t are state and year fixed effects, respectively.

The OLS estimates of Equation (3) may be biased due to unobservable factors such as economic conditions that influence the labor market for PWD and the number of 14(c) certificates issued, or the state's sentiment towards people with disabilities and subminimum wage employment. To address these potential sources of bias, we employ an instrumental variables (IV) strategy, using SWE legislation as an instrument for 14(c) certificate numbers. This approach leverages the fact that the legislation serves as a regulatory stopper, leading to a reduction in 14(c) certificates after the policy becomes effective. The specification for the first stage is:

$$Number\_of\_14(c)certificates_{st} = \delta + \gamma SWE\_elimination\_status_{st} + \epsilon_{st} \quad (4)$$

where $SWE\_elimination_{st}$ equals 1 if state *s* had eliminated SWE by year *t*, and zero otherwise. The validity of the IV strategy requires two key identifying assumptions: the exclusion restriction and the relevance of the instrument. The exclusion restriction requires that SWE legislation affects PWD outcomes solely through changes in the number of 14(c) certificates. To ensure this holds, we examine the motivations for SWE elimination to confirm they do not directly influence PWD outcomes independently of 14(c) certificates. For example, if the legislation were driven by economic factors that also impact employment rates or wages for PWD, the exclusion restriction could be violated.

States have largely eliminated subminimum wage employment for reasons rooted primarily in social and political movements rather than direct economic considerations. Key drivers include advocacy for disability rights, pressure from civil rights organizations, and increasing recognition that subminimum wages perpetuate inequality.[9] Additional factors include federal policy shifts promoting integration in competitive employment settings and public awareness campaigns highlighting the capabilities of PWD.[10] These motivations suggest that the primary force behind SWE elimination is rooted in social equity, rather than economic factors that might confound the relationship between the policy change and PWD outcomes.

The relevance of the instrument is confirmed in the first-stage results reported in Table 8. Without controlling for SWE law enactment (Column 1), the coefficient linking SWE legislation to a decline in 14(c) employers is negative and significant at the 1% level. Controlling for

[9] https://www.ncsl.org/labor-and-employment/trends-in-disability-employment-legislation

[10] Research has shown that individuals who were previously paid subminimum wages often excel in community employment at standard wages when their jobs are tailored to match their skills (Butterworth et al., 2007).

enactment status yields similar results (Column 2), with F-statistics exceeding 10, indicating a strong first stage (Stock and Yogo, 2005).

Tables 9 and 10 present the second-stage IV estimates for the same labor market outcomes examined in Tables 5 and 6. While the DID results from Tables 5 and 6 capture the total impact of SWE elimination on PWD – including those compensated outside of the 14(c) framework – the IV estimates isolate effects mediated specifically through changes in 14(c) employers. The IV estimates show no statistically significant changes in employment status, CIE, weekly work hours, hourly wages, or SSI income for PWD. This contrasts with the DID results, which indicated increased work hours for prime-age PWD, suggesting that the overall effects of SWE elimination may extend beyond just the changes within the 14(c) system.

One notable finding from the IV analysis is a 3.7 percentage point increase in total income for prime-age PWD (Column 1 Panel B of Table 10), representing just 7% of the 52.2 percentage point increase identified in the DID analysis. This suggests that most income gains stem from mechanisms outside the 14(c) system, such as labor market shifts, spillover effects, or expanded employment opportunities for PWD previously earning subminimum wages but not tied to 14(c) certificates.

In summary, the IV estimates highlight that the direct effects of eliminating subminimum wages through 14(c) employers are relatively modest. Meanwhile, the broader impacts observed in the DID estimates emphasize the importance of systemic changes affecting the entire population of PWD. These systemic effects may reflect shifts in employer practices, labor market norms, or changes in alternative employment arrangements.

Additionally, the consistency of the other labor market outcomes across age and disability groups provides an important counterpoint to critics of subminimum wage elimination. Opponents often argue that eliminating subminimum wages would result in job losses for individuals with disabilities and increased reliance on public assistance programs. However, the findings here show no significant negative effects on employment or reliance on public assistance programs, challenging the validity of these concerns. Instead, they support the notion that fair wages and effective job placement can empower individuals with disabilities to thrive in the workforce without increasing dependence on public support. This evidence reinforces the argument for inclusive policies that promote equity in the labor market.

B. Difference-in-Differences with Staggered Treatment Timing

Recent studies highlight that varying treatment effects across cohorts with different treatment timings can complicate the interpretation of event study findings. In our case, there are six treatment cohorts: one state eliminated SWE in 2015, two states in 2018, two states in 2020, two states in 2021, two states in 2022, and two states in 2023. Sun and Abraham (2021) demonstrate that if these cohorts exhibit distinct patterns of time-dependent treatment effects, event study estimates may be biased due to contamination from effects in other time periods. To address this issue, we apply the method introduced by Sun and Abraham (2021) to estimate Equations (1) and (2) , which corrects for biases commonly found in traditional two-way fixed effects and event study models.

VII. Conclusion and Policy Implications

This study provides timely and policy-relevant evidence on the labor market effects of eliminating SWE. Using a difference-in-differences framework and event study analyses, we find that states eliminating SWE experience a significant decline in the proportion of PWD earning subminimum wages, with no measurable reductions in labor force participation, overall employment, or reliance on Supplemental Security Income. These findings suggest that SWE abolition meets its policy objectives without incurring notable employment costs.

Our study contributes to the literature by addressing a critical gap in the empirical analysis of SWE policies, which have received less attention than general minimum wage reforms. The results align with prior evidence from the minimum wage literature, including work by Card and Krueger (1994) and more recent studies by Dube (2019), which find that modest wage floor increases tend to raise earnings without substantial adverse employment effects. Similarly, our findings demonstrate that SWE reforms improve wage outcomes for affected workers without generating observable distortions in labor market participation.

These results also align with historical evidence on wage reforms and employment outcomes. For example, federal minimum wage increases in the 1960s narrowed racial wage gaps (Derenoncourt and Montialoux, 2021), while declining real minimum wages contributed to widening gender pay gaps in low-wage sectors (Autor et al., 2016). Our findings extend this literature by showing that targeted wage policy changes for PWD can improve earnings without adverse employment consequences.

While the results provide robust evidence on the immediate and short-term effects of SWE elimination, this study has several limitations. First, the sample size is constrained by the number of states that have adopted SWE reforms during the study period, limiting the precision of estimates for certain subpopulations and heterogeneous effects. Second, the study focuses on short-term outcomes due to data availability, leaving open questions about longer-term employment trajectories and economic mobility. Future research should examine whether SWE elimination influences career advancement, earnings growth, and labor force attachment over time, providing a more comprehensive assessment of policy impacts.

From a policy perspective, the findings highlight the importance of complementary measures to support PWD transitioning from sheltered or subminimum wage employment. In particular, employer incentives (e.g., wage subsidies), modeled on successful international programs such as Sweden's (Angelov and Eliason, 2018), could further incentivize employers to hire and train workers with disabilities, enhancing labor market integration. Similarly, investments in job training, workplace accommodations, and career advancement opportunities can address barriers to long-term employment and human capital accumulation for PWD. These measures align with calls for comprehensive support systems that prioritize sustained economic independence over temporary job placement (Friedman and Rizzolo, 2020).

In conclusion, this study provides the first national-level empirical analysis of the labor market effects of SWE elimination and demonstrates that targeted wage reforms can improve employment outcomes without reducing labor market efficiency. These findings are particularly relevant as policymakers consider phasing out Section 14(c), offering robust evidence to inform the ongoing debate. Continued policy evaluation, along with investments in workforce development, will be essential to maximizing the long-term benefits of these reforms.

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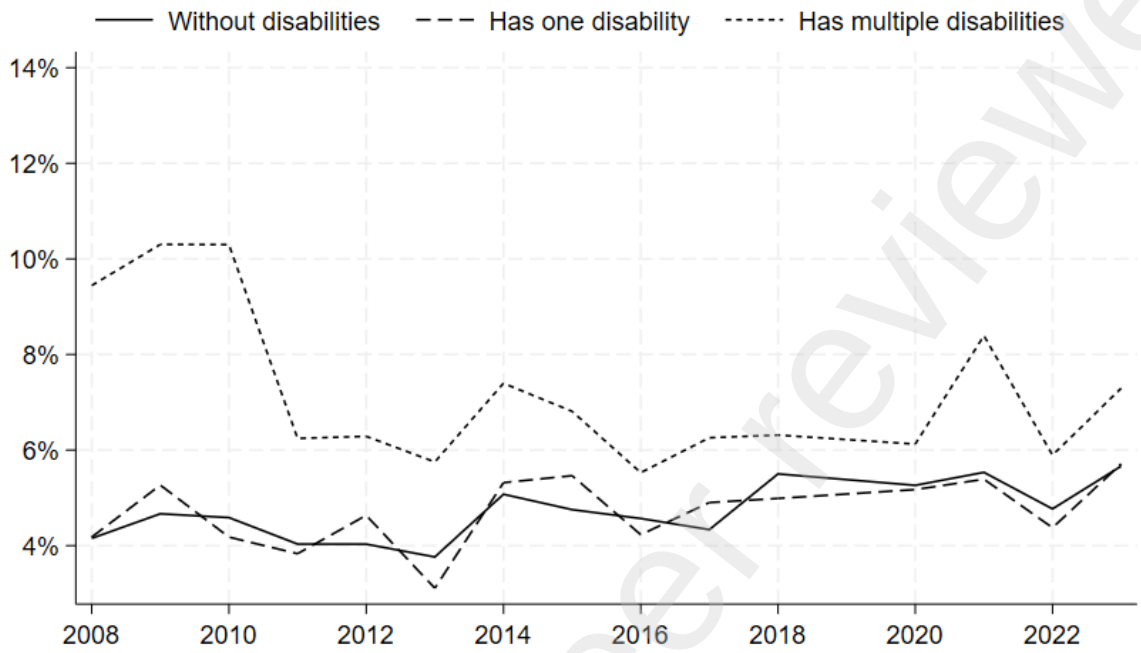
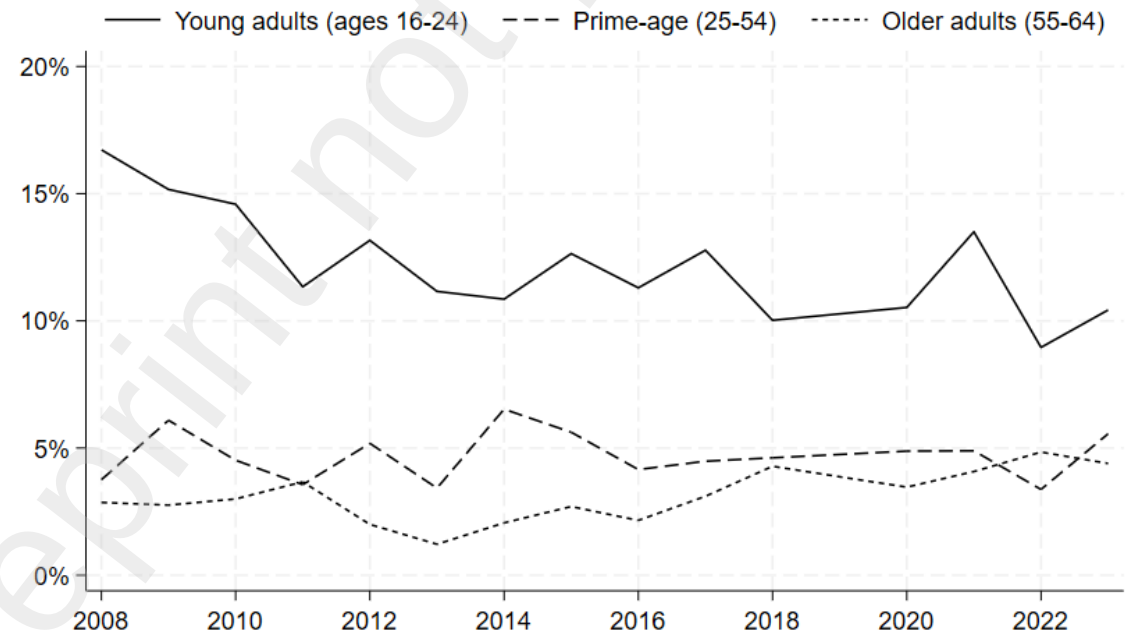
Figures

Figure 1: Share of working-age earners with subminimum wages



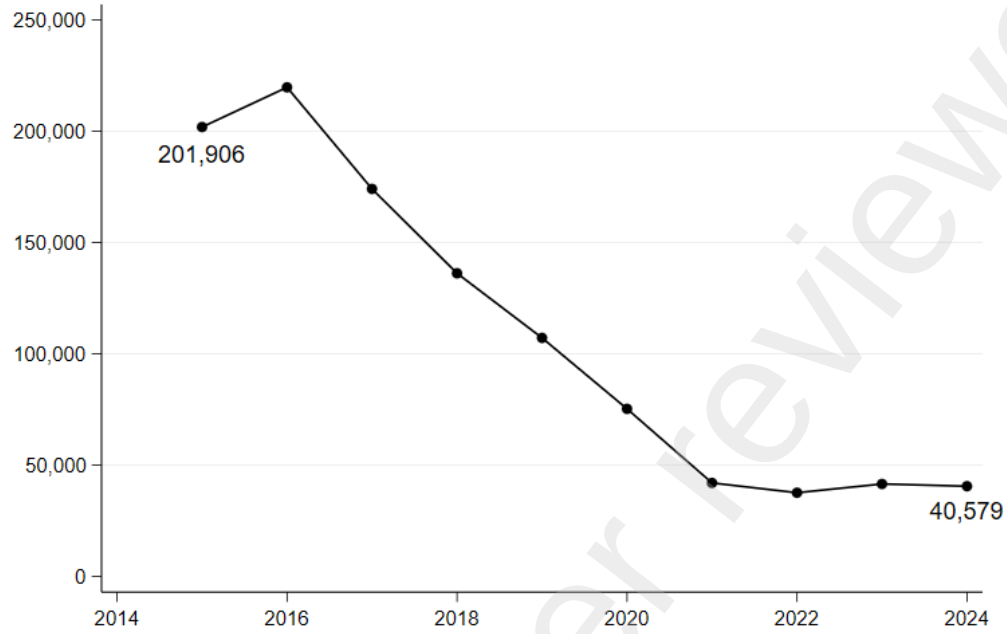
Data source: Current Population Survey Outgoing Rotation Group (CPS-ORG) Earnings Data, 2008-2023, excluding 2019.

Figure 2: Share of working-age earners with disabilities earning subminimum wages by age group



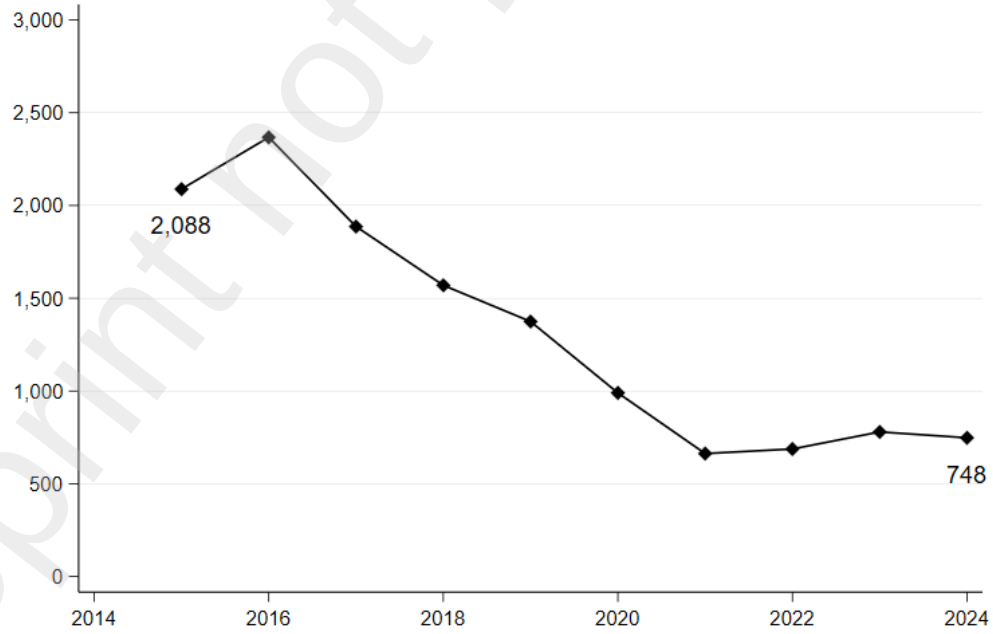
Data source: Current Population Survey Outgoing Rotation Group (CPS-ORG) Earnings Data, 2008-2023, excluding 2019.

Figure 3: Number of Workers Paid Subminimum Wage Under 14(c) Certificates



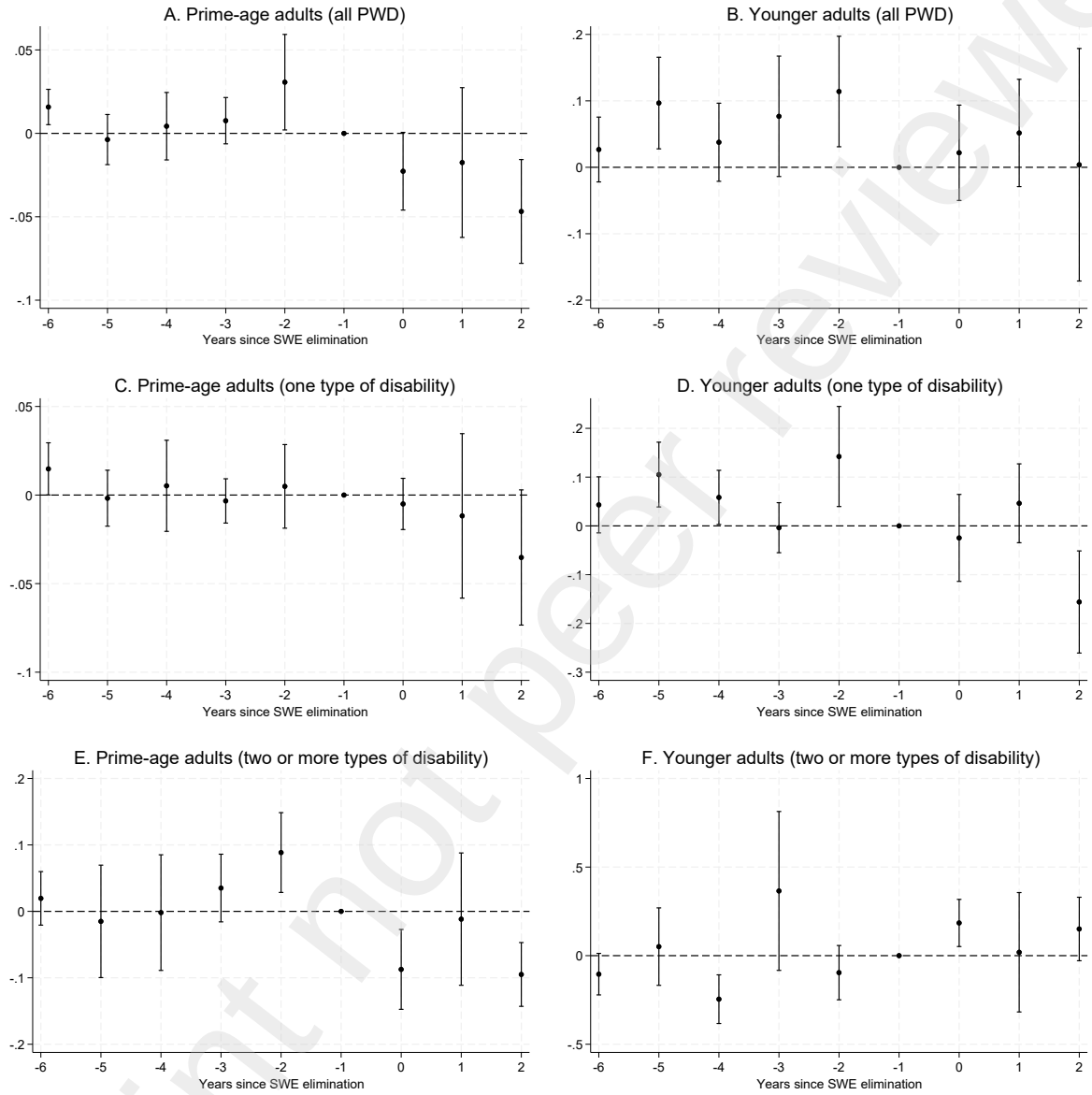
Data source: 14(c) Certificate Holder Data, Department of Labor Wage and Hour Division, 2015-2023

Figure 4: Number of active14(c) Certificates



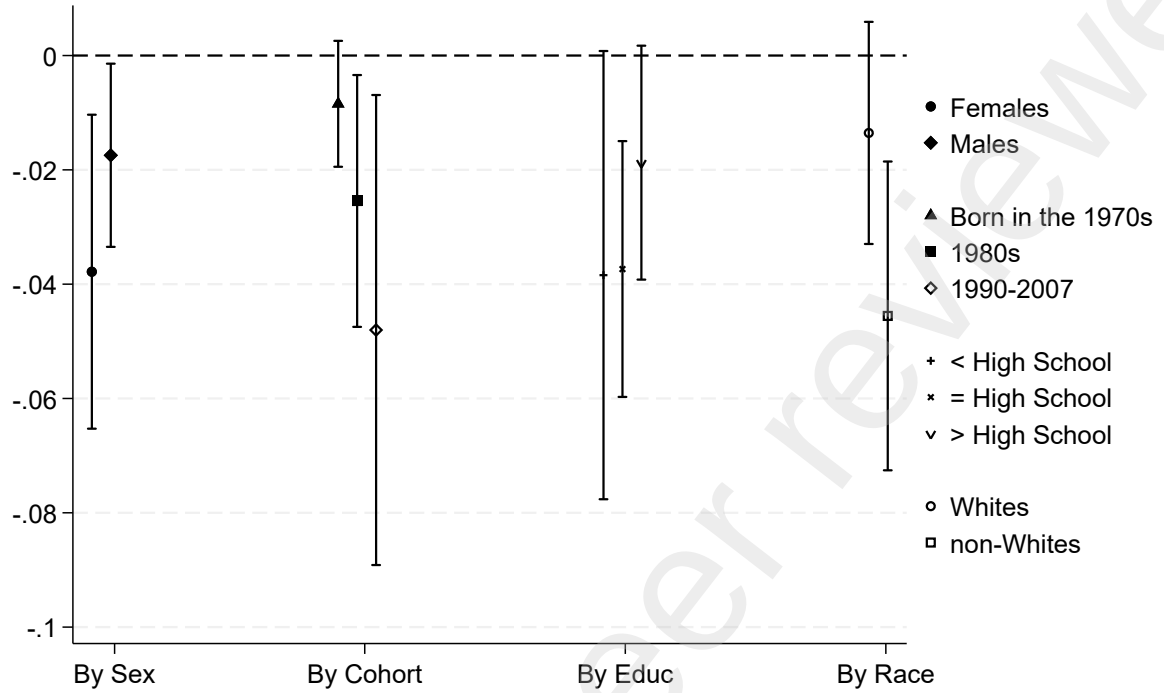
Data source: 14(c) Certificate Holder Data, Department of Labor Wage and Hour Division, 2015-2023

Figure 5: Effects of subminimum wage elimination on subminimum wage employment



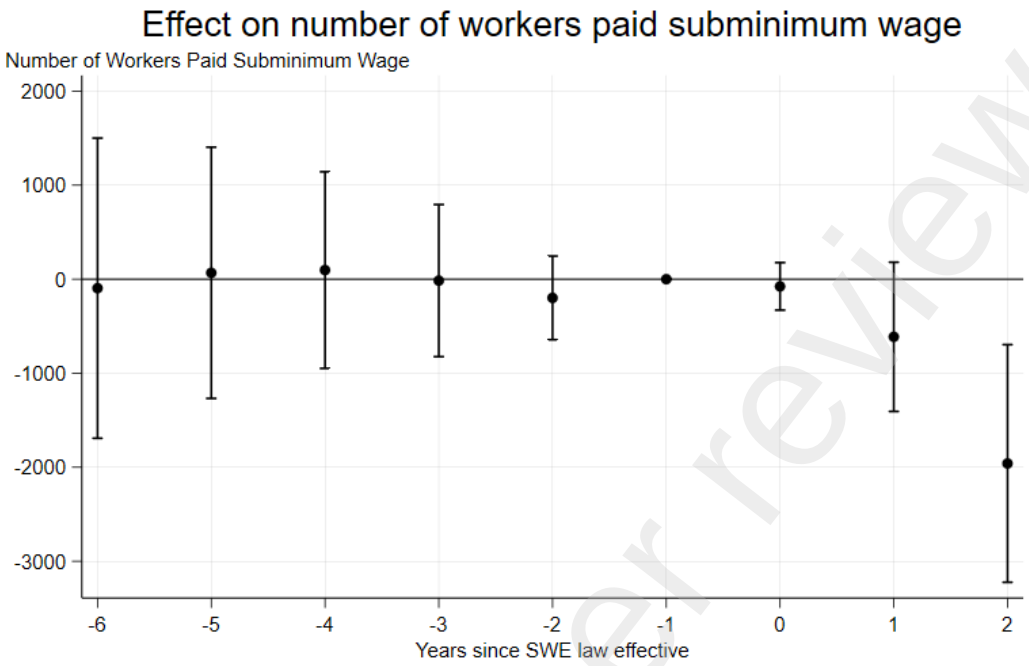
Notes. Data are from CPS-ORG 2009-2023. All regressions include controls for state-level EITC rate, state minimum wage level and individual-level control variables: including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by CPS-ORG earnings weights.

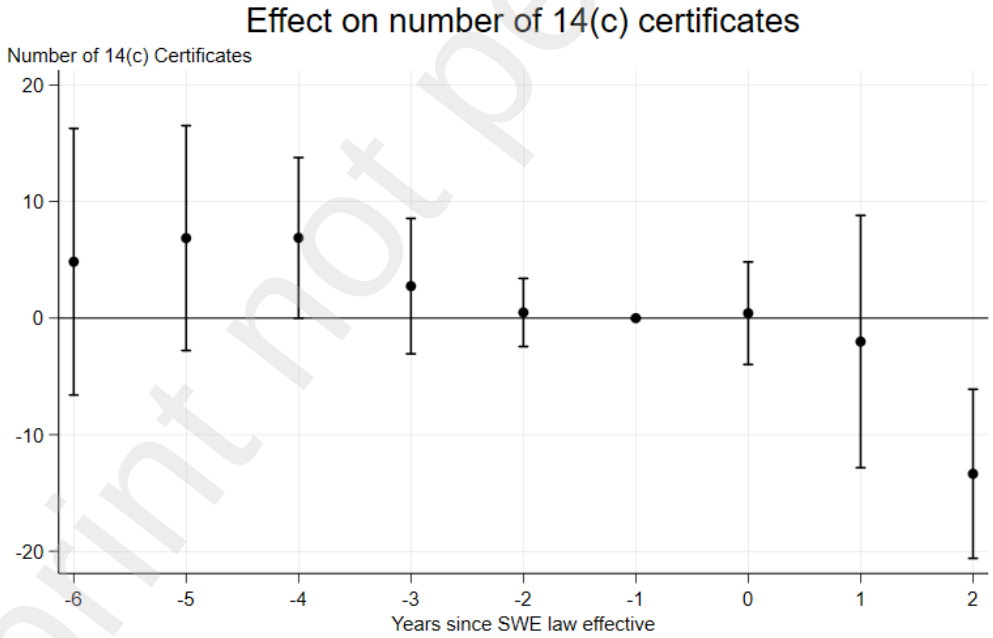
Figure 6: Heterogeneous effects of subminimum wage elimination on subminimum wage employment



Notes. Data are from CPS-ORG 2009-2023. All regressions include controls for state-level EITC rate, state minimum wage level and individual-level control variables: including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by CPS-ORG earnings weights.

Figure 7: Effects of subminimum wage elimination on number of 14(c) workers and employers





Data source: 14(c) Certificate Holder Data, Department of Labor Wage and Hour Division, 2015-2023

Tables

Table 1: State Legislations to Eliminate Subminimum Wage Employment

State	Bill No.	Enacted date	Effective date
Alaska	Public announcement No.18-04	2/16/2018	2/16/2018
California	2021 SB-639	9/27/2021	1/1/2025
Colorado	2021 SB-39	6/29/2021	7/1/2025
Delaware	2021 HB-122	10/20/2021	1/31/2024
Hawaii	2021 SB-793	6/21/2021	6/21/2021
Maine	2020 LD-1874	3/17/2020	3/17/2020
Maryland	2016 SB-417	5/19/2016	10/1/2020
Nevada	2023 AB-259	6/16/2023	1/1/2028
New Hampshire	2015 SB-47	5/11/2015	7/6/2015
Oregon	2019 SB-494	6/21/2019	7/1/2023
Rhode Island	2022 HB-7511	6/15/2022	6/15/2022
South Carolina	2021 S-553	6/1/2022	1/1/2023
Tennessee	2022 SB-2042	4/26/2022	7/1/2022
Virginia	2023 HB-1924	4/12/2023	7/1/2030
Washington	2021 SB-5284	4/16/2021	7/25/2021

Table 2: Characteristics of Working Age Individuals by Disability Status

	No disability	One disability	Multiple disabilities
Demographic Characteristics			
Female	0.51	0.49	0.52
Age	39.06	46.01	47.67
Married	0.51	0.41	0.32
Non-Hispanic White	0.61	0.66	0.63
Non-Hispanic Black	0.12	0.15	0.18
Hispanic	0.18	0.13	0.13
Educational Attainment			
Less than HS degree	0.14	0.18	0.23
HS degree or GED	0.26	0.35	0.38
Some college or associate's	0.28	0.29	0.27
Bachelor's degree or higher	0.32	0.17	0.11
Labor Market Characteristics			
In labor force	0.76	0.45	0.17
Employed	0.94	0.88	0.86
Unemployed	0.06	0.12	0.14
Usual weekly work hours	39.59	37.78	33.09
Income			
Total personal income	$ 42,687	$ 27,200	$ 17,565
Wage and salary income	$ 36,663	$ 17,374	$ 5,640
Social security income	$ 438	$ 3,003	$ 4,977
N	1,620,000	73,502	53,446

Data source: Current Population Survey Annual Social and Economic Supplement (ASEC), 2009-2023

Notes: Employment and unemployment rates are conditional on being in the labor force, and usual weekly work hours are conditional on being employed.

Table 3 : Characteristics of workers with disabilities by SWE status

	In SWE	Not in SWE	Difference
Demographic Characteristics			
Female	0.55	0.50	0.05
Age	37.34	44.40	-7.06
Married	0.20	0.41	-0.21
Non-Hispanic White	0.66	0.74	-0.08
Non-Hispanic Black	0.13	0.10	0.03
Hispanic	0.14	0.10	0.04
Educational Attainment			
Less than HS degree	0.22	0.11	0.11
HS degree or GED	0.42	0.38	0.04
Some college or associate's	0.29	0.36	-0.07
Bachelor's degree or higher	0.07	0.14	-0.08
Disability Type			
Hearing	0.19	0.30	-0.12
Vision	0.13	0.16	-0.02
Memory	0.53	0.32	0.21
Physical	0.28	0.35	-0.07
Mobility	0.26	0.13	0.13
Personal care	0.06	0.05	0.01
Multiple types of disability	0.32	0.22	0.11
Labor Market Characteristics			
Usual weekly work hours	25.72	35.48	-9.77
Weekly earnings	$ 249.8	$ 618.8	-$ 369.0
Hourly wage	$ 7.20	$ 16.72	-$ 9.52
Member of or covered by union	0.04	0.13	-0.08
Receives overtime, tips, or commissions	0.25	0.16	0.09
N	2,747	51,266	54,013

Data source: Current Population Survey Outgoing Rotation Group (ORG) Earnings Data, 2008-2023

Notes: All differences are statistically significant at the 1% level.

Table 4: Effects of eliminating SWE on the SWE status of PWD

	Outcome: Subminimum wage status indicator					
	Prime-age adults (all PWD)	Younger adults (all PWD)	Prime-age adults (one type of disability)	Younger adults (one type of disability)	Prime-age adults (two or more types of disabilities)	Younger adults (two or more types of disabilities)
	(1)	(2)	(3)	(4)	(5)	(6)
SWE law effective	-0.056*	-0.092*	-0.030	-0.117**	-0.136**	0.084
	(0.033)	(0.046)	(0.031)	(0.055)	(0.055)	(0.128)
Observations	28182	6055	21617	4876	6565	1179
R-squared	0.05	0.08	0.04	0.09	0.08	0.19
State and year FE	✓	✓	✓	✓	✓	✓
State-specific linear trend	✓	✓	✓	✓	✓	✓

Notes. Standard errors, clustered on state, are in parentheses. Data are from CPS-ORG 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by CPS person weights.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5: Effects of subminimum wage elimination on labor supply outcomes of PWD

	Prime-age adults (all PWD)	Younger adults (all PWD)	Prime-age adults (one type of disability)	Younger adults (one type of disability)	Prime-age adults (two or more types of disabilities)	Younger adults (two or more types of disabilities)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Outcome: **Employment**						
SWE law effective	-0.002	-0.037	-0.033	-0.050	0.033	0.025
	(0.034)	(0.036)	(0.042)	(0.080)	(0.034)	(0.079)
Observations	58419	11669	33703	7535	24716	4134
Panel B. Outcome: **Competitive Integrated Employment**						
SWE law effective	-0.018	-0.028	-0.049	-0.032	0.019	0.002
	(0.036)	(0.048)	(0.044)	(0.081)	(0.034)	(0.057)
Observations	58419	11669	33703	7535	24716	4134
Panel C. Outcome: **Weekly hours worked**						
SWE law effective	2.118*	-7.662	3.301**	-5.334	-0.367	-7.623
	(1.230)	(9.282)	(1.483)	(7.079)	(4.636)	(15.211)
Observations	14522	2353	11443	1898	3079	455
State and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
State and year FE	✓	✓	✓	✓	✓	✓
State-specific linear trend	✓	✓	✓	✓	✓	✓

Notes. Standard errors, clustered on state, are in parentheses. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6: Effects of subminimum wage elimination on wages and income of PWD

	Prime-age adults (all PWD)	Younger adults (all PWD)	Prime-age adults (one type of disability)	Younger adults (one type of disability)	Prime-age adults (two or more types of disabilities)	Younger adults (two or more types of disabilities)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Outcome: **Hourly wage**						
SWE law effective	0.613	0.618	0.591	0.698	0.516	0.046
	(0.633)	(0.610)	(0.894)	(0.674)	(1.225)	(1.004)
Observations	28182	6055	21617	4876	6565	1179
Panel B. Outcome: **Log total income**						
SWE law effective	0.522**	-0.582	0.502**	-0.717	0.413*	0.160
	(0.196)	(0.396)	(0.236)	(0.650)	(0.208)	(0.441)
Observations	19789	3510	14769	2788	5020	722
Panel C. Outcome: **Log SSI income**						
SWE law effective	-0.076	0.295	-0.158	0.023	-0.035	0.499
	(0.137)	(0.312)	(0.289)	(0.266)	(0.271)	(0.361)
Observations	10617	1764	4350	682	6267	1082
State and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes. Standard errors, clustered on state, are in parentheses. Panels A uses data from the CPS ORG, whereas Panels B and C use data from the CPS ASEC. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ORG earning weights or ASEC weights. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7: Subminimum Wage Elimination and Occupation Sorting Among PWD

	(1) Managerial	(2) Professional	(3) Technicians	(4) Mechanics	(5) Construction	(6) Extractive	(7) Machine	(8) Administrative	(9) Transportation	(10) Sales	(11) Farming	(12) Service
SWE law effective	0.0012	-0.0033	0.0037	-0.0019	-0.0068	-0.0040	0.0028	-0.0144**	-0.0091*	0.0062	-0.0038*	0.0112
	(0.0097)	(0.0116)	(0.0032)	(0.0045)	(0.0062)	(0.0037)	(0.0041)	(0.0062)	(0.0051)	(0.0066)	(0.0023)	(0.0067)
N	116698	116698	116698	116698	116698	116698	116698	116698	116698	116698	116698	116698
r2	0.04	0.09	0.01	0.01	0.01	0.00	0.01	0.02	0.02	0.01	0.00	0.02

Notes. Data are from CPS 2008-2023. Standard errors in parentheses. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by CPS weights. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 8: Association between the number of 14(c) employers and SWE legislations – IV Results First stage

	Outcome: **Number of 14(c) employers**	
	(1)	(2)
SWE law effective	-27.68***	-12.16**
	(3.08)	(5.20)
Observations	400	400
R-squared	0.0198	0.0293
F-test	80.76	51.09
Control for SWE law enacted	No	Yes

Notes. Standard errors, clustered on state, are in parentheses. Data is from DOL 14(c) Certificate Holders. *** p<0.01, ** p<0.05, * p<0.1

Table 9: Association between the number of 14(c) employers and PWD's labor market outcomes – IV Results Second-stage

	Prime-age adults (all PWD)	Younger adults (all PWD)	Prime-age adults (one type of disability)	Younger adults (one type of disability)	Prime-age adults (two or more types of disabilities)	Younger adults (two or more types of disabilities)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Outcome: **Employment status**						
Number of 14(c) employers	-0.042	-0.031	-0.082	-0.051	0.013	0.012
	(0.091)	(0.084)	(0.198)	(0.112)	(0.045)	(0.029)
Observations	29880	6383	17134	4013	12746	2370
Panel B. Outcome: **Competitive Integrated Employment**						
Number of 14(c) employers	-0.044	-0.007	-0.083	-0.014	0.010	-0.011
	(0.100)	(0.033)	(0.209)	(0.057)	(0.038)	(0.064)
Observations	29880	6383	17134	4013	12746	2370
Panel C. Outcome: **Weekly hours worked**						
Number of 14(c) employers	0.791	-14.439	0.844	-2.885	1.399	0.517
	(1.723)	(271.830)	(2.638)	(16.978)	(1.972)	(1.014)
Observations	9335	1641	7318	1322	2017	319
State and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes. Standard errors, clustered on state, are in parentheses. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

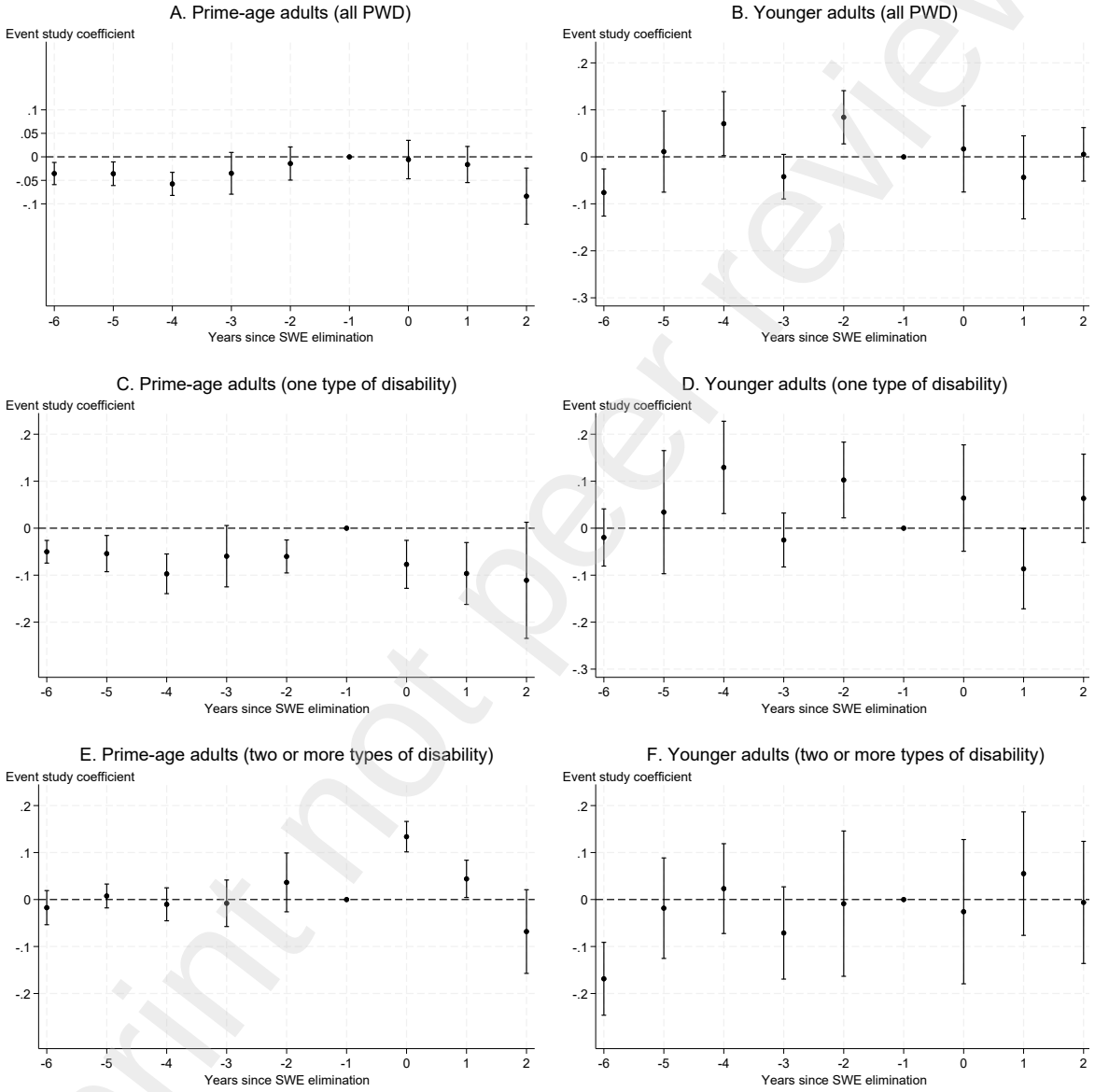
Table 10: Association between the number of 14(c) employers and PWD's wages and income – IV Results Second-stage

	Prime-age adults (all PWD)	Younger adults (all PWD)	Prime-age adults (one type of disability)	Younger adults (one type of disability)	Prime-age adults (two or more types of disabilities)	Younger adults (two or more types of disabilities)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Outcome: **Hourly wage**						
Number of 14(c) employers	0.011	-0.002	0.009	0.004	0.014	-0.012
	(0.011)	(0.011)	(0.012)	(0.010)	(0.017)	(0.031)
Observations	14664	3505	11204	2830	3460	674
Panel B. Outcome: **Log total income**						
Number of 14(c) employers	0.037*	-0.019	0.041	-0.038*	0.014	0.139
	(0.021)	(0.019)	(0.026)	(0.020)	(0.014)	(0.176)
Observations	9739	1782	7263	1402	2476	379
Panel C. Outcome: **Log SSI income**						
Number of 14(c) employers	0.129	0.486	0.403	0.184	-0.127	0.876
	(0.301)	(1.099)	(0.994)	(0.395)	(0.448)	(1.783)
Observations	29880	6383	17134	4013	12746	2369
State and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes. Standard errors, clustered on state, are in parentheses. Panels A uses data from the CPS ORG, whereas Panels B and C use data from the CPS ASEC. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

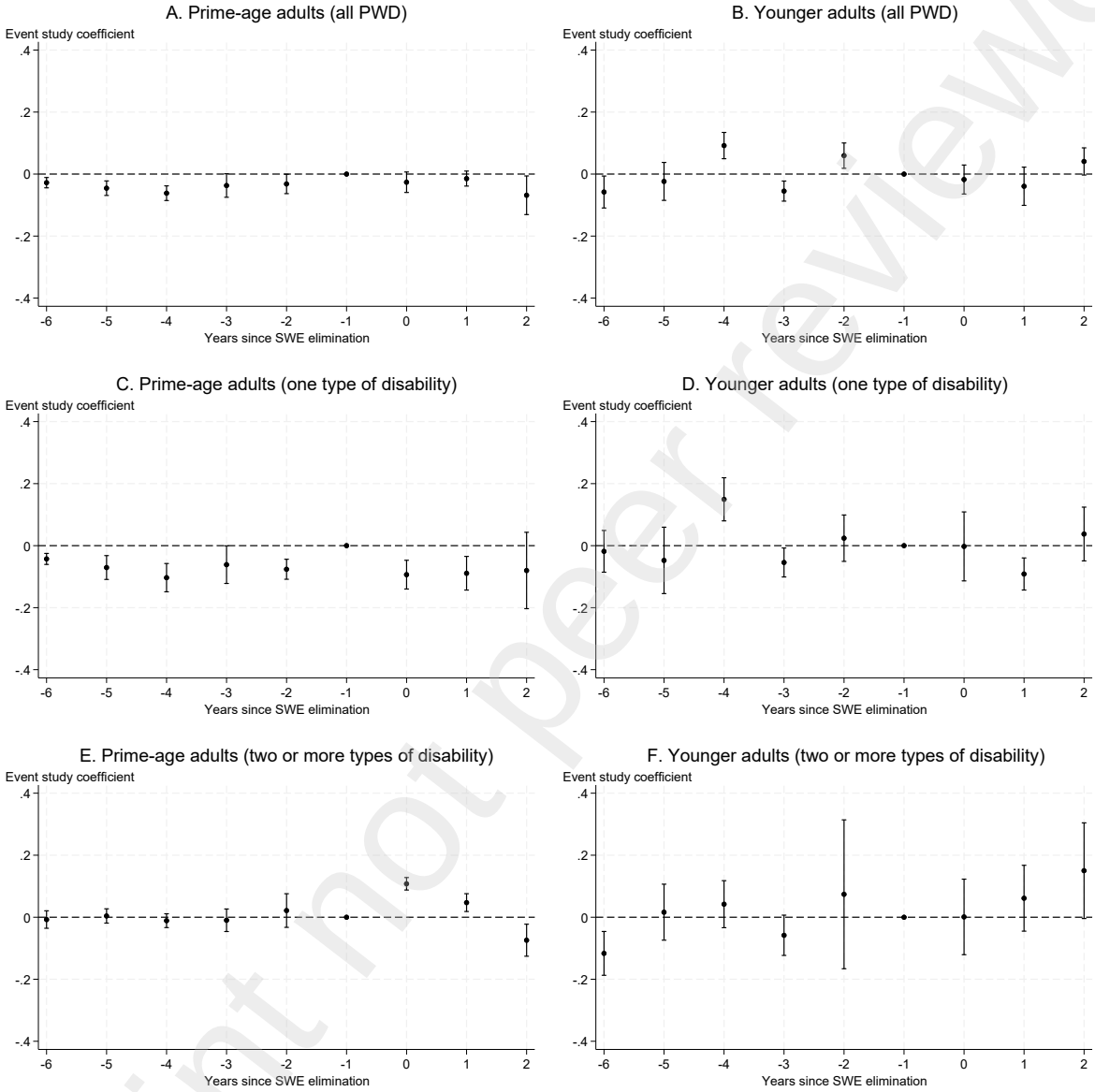
ONLINE APPENDIX

Figure A.1: Effects of subminimum wage elimination on **employment**



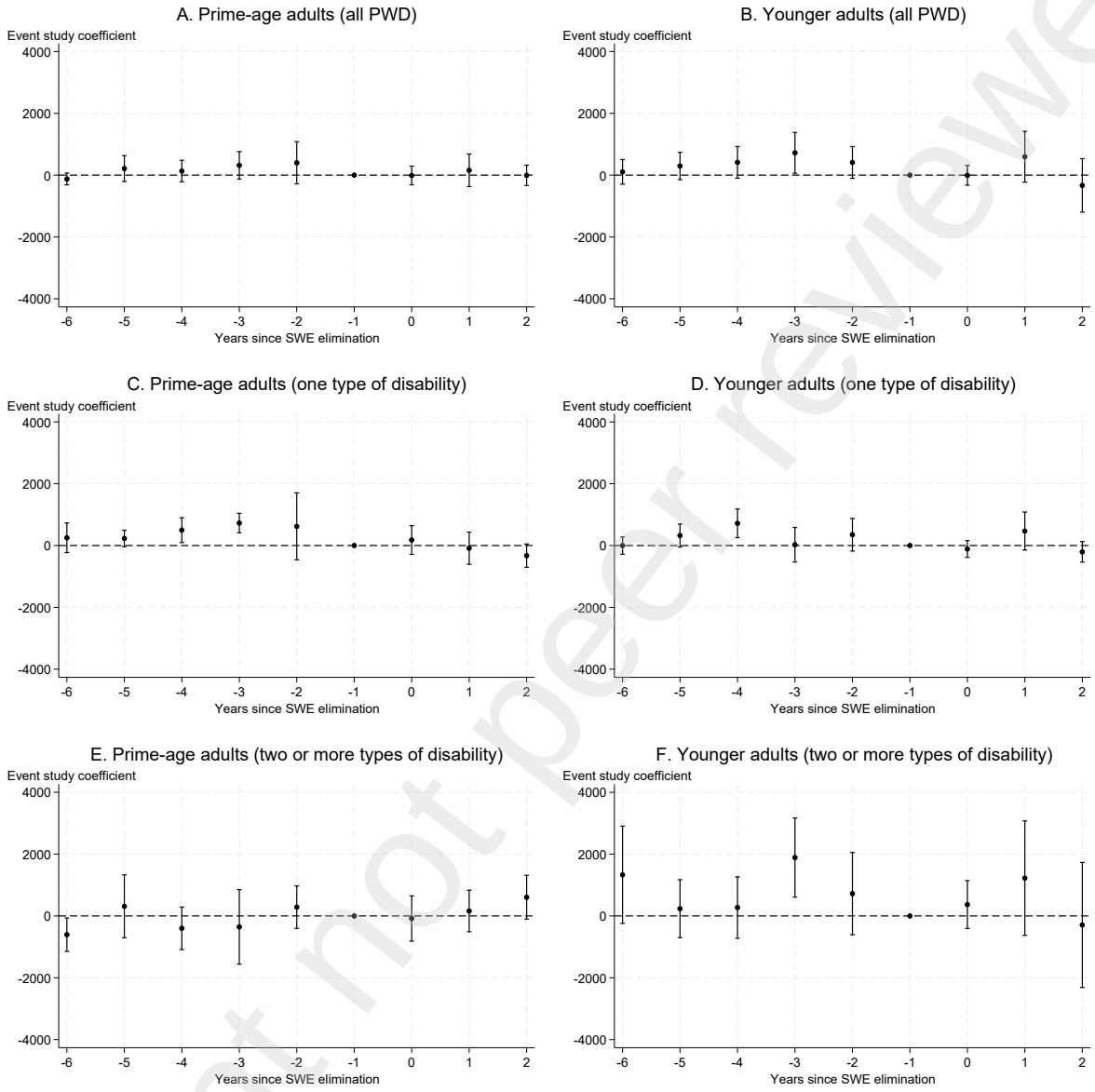
Notes. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights.

Figure **A.2**: Effects of subminimum wage elimination on **competitive employment**



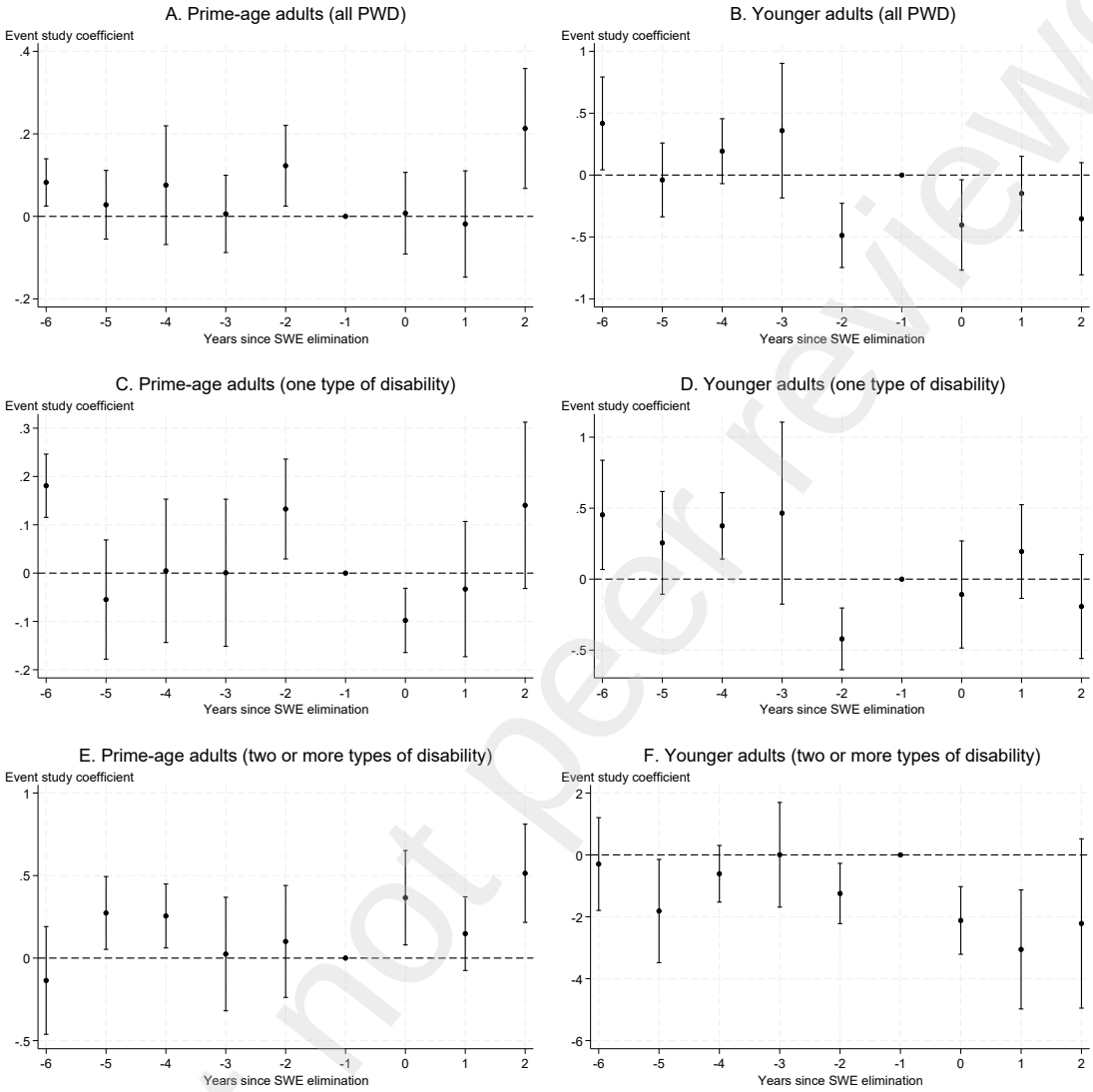
Notes. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights

Figure **A.3**: Effects of subminimum wage elimination on **Social Security income**



Notes. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights

Figure **A.4**: Effects of subminimum wage elimination on log annual wage income



Notes. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights

Table **A.1**: Effects of subminimum wage elimination on labor force participation, full-time, and part-time employment status

	Prime-age adults (all PWD)	Younger adults (all PWD)	Prime-age adults (one type of disability)	Younger adults (one type of disability)	Prime-age adults (two or more types of disabilities)	Younger adults (two or more types of disabilities)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Outcome: **Labor force participation**						
SWE law effective	0.001	-0.050	-0.016	-0.025	0.008	-0.066
	(0.028)	(0.032)	(0.030)	(0.039)	(0.037)	(0.073)
Observations	58419	11669	33703	7535	24716	4134
Panel B. Outcome: **Work full-time (≥ 35 hours)**						
SWE law effective	-0.017	0.003	-0.017	0.019	-0.017	-0.031
	(0.012)	(0.028)	(0.024)	(0.035)	(0.018)	(0.078)
Observations	58419	11669	33703	7535	24716	4134
Panel C. Outcome: **Work part-time (<30 hours)**						
SWE law effective	0.017	-0.003	0.017	-0.019	0.017	0.031
	(0.012)	(0.028)	(0.024)	(0.035)	(0.018)	(0.078)
Observations	58419	11669	33703	7535	24716	4134
State and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes. Data are from CPS-ASEC 2009-2023. Controls include state-level EITC rate, state minimum wage level and individual-level control variables, including sex, age, race and ethnicity, marital status, dummies for educational attainment (less than high school degree, high school degree, bachelor's degree, and some college), and number of children in the household. All specifications are weighted by ASEC weights. *** $p<0.01$, ** $p<0.05$, * $p<0.1$