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ABSTRACT

The Effects of the Affordable Care Act Dependent Coverage Mandate on Parents' Labor Market Outcomes*

We examine the labor market impacts of the Affordable Care Act dependent mandate (ACA-DM), which has significantly increased dependent children's health insurance coverage through parents' employer-sponsored health benefits. Using data from the American Community Survey, we find that the ACA-DM reduced parents' annual wages by about $2,600. However, the probability of employment and working hours only decreased marginally. The back-of-the-envelope calculation indicates that the magnitude of the estimated wage impact is similar to the increased insurance premium of a family plan due to the ACA-DM. These findings imply that a deadweight loss associated with the expansion of dependent health coverage is likely to be small as an increase in employers' labor costs is offset by a reduction in parents' wages without significant reductions in labor inputs.

JEL Classification: I18, J32, H51

Keywords: The Affordable Care Act dependent mandate, dependent health insurance coverage, parents' labor market outcomes, deadweight loss

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1. Introduction

The Patient Protection and Affordable Care Act (ACA) legislated in March 2010 has been the largest healthcare reform in the United States since the introduction of Medicare in 1965. One of its key provisions was to extend dependent coverage up to the 26th birthday of children. Before the ACA reform, children's healthcare coverage via their parents lapsed upon turning the age of 19, and thus, about one third of young adults aged 19–25 years were uninsured (Antwi et al., 2013). After implementing the ACA dependent coverage mandate (ACA-DM), the insurance coverage rate among young adults aged 19–25 years increased significantly (O'Hara & Brault, 2013; Schwartz & Sommers, 2012; Sommers et al., 2013). Much of this increase came from their parents' employer-sponsored health insurance (ESHI) (Antwi et al., 2013).

A direct consequence of the ACA-DM to employers is an increase in labor costs as they are required to provide additional dependent coverage for employees with children aged 19–25. In response to this burden, employers may reduce wages or labor inputs, such as the number of employees or work hours, which leads to a deadweight loss in the labor market. However, Summers' (1989) seminal work on the incidence of ESHI implies that parents could accept lower wages in return for extended dependent coverage. If the wages are fully adjusted to the employer's increased health insurance costs, employment or working hours will not decrease, and thus there will be no efficiency loss.[1]

This study investigates how the ACA-DM affected wages and labor inputs of parents with children aged 19–25 years, using data from the American Community Survey (ACS). For the identification, we compare changes in the labor market outcomes of parents with eligible young adults (aged 19–25 years) before and after implementing the ACA-DM to those of parents with non-eligible young adults (aged 17–18 years and 26–28 years) using a difference-in-differences (DID) approach.

The DID analysis results show that the ACA-DM reduced the annual wages of parents with children aged 19–25 years by approximately $2,600. By contrast, the ACA-DM marginally decreased the probability of employment by 0.4 percentage points, weekly working hours by 0.45 hours, and the probability of full-time work by 0.1 percentage points. The back-of-the-envelope calculation indicates that the reduced amount of wages is almost equivalent to

[1] Depew and Bailey (2015) found little evidence that workers paid higher premiums for dependent coverage after the ACA-DM.

the increased insurance premium of a family plan due to the ACA-DM, implying the full shift of the additional cost of expanded dependent coverage to workers. The results are robust to a variety of alternative specifications. The majority of employer-sponsored health plans is renewed at the beginning of each year (Cronin, 2012). However, the contracts for wages and work hours may not necessarily be renewed simultaneously. This timing discrepancy implies a potential lagged response in labor market outcomes to the ACA-DM reform. Consistent with this conjecture, our event-study design analysis provides evidence that the ACA-DM had lagged effects on parents' wages, while there was little evidence of lagged changes in labor inputs. Our findings suggest that the extended provision of dependent health coverage to children aged 19–25 years via the ACA reform did not cause a significant deadweight loss in the labor market for parents with young adult children as they accept lower wages in return for their children's health coverage.

This study is related to the impact of dependent health coverage on labor market outcomes. Several empirical studies examining the labor market impacts of workers' *own* health benefits documented that mandated health benefits decrease workers' wages with ambiguous impacts on labor inputs depending on workers' valuation of health benefits (Gruber and Kreuger, 1991; Gruber, 1994; Baicker and Chandra, 2006; Lahey, 2012; Kolstad and Kowalski, 2016). While this literature provides important insights on the role of health benefits in the labor market, these findings cannot be directly applied to understand the labor market impacts of dependent health benefits. For example, workers' demand for dependent coverage can be lower than that of their own coverage, particularly when dependent children are healthy (e.g., young adults aged 19–25 years). We contribute to this literature by providing novel evidence on the impacts of dependent health coverage for children on parents' labor market outcomes.

This study is also related to the scant literature estimating the labor market impact of the ACA-DM (Antwi et al., 2013; Kim, 2016; Goda et al., 2016; Yörük & Xu, 2019). While the literature mainly focuses on young adults' labor market outcomes, Goda et al. (2016) is close to our work in that they also examined the earnings of workers with children eligible for extended dependent coverage under the ACA-DM. Using data from the Survey of Income Program Participation (SIPP) 2008 panel, the authors compared changes in labor market outcomes between states with and without pre-existing dependent coverage mandates before the ACA for the identification. They found no evidence that the ACA-DM reduced earnings of parents with eligible young adults. We argue that the difference between our results and theirs is likely driven by the difference in the identification strategy. The underlying presumption of Goda et al. (2016) is that the effects of the ACA-DM on young adults' health insurance coverage would be greater in states without such dependent mandates. However, Antwi et al. (2013) showed that this was not the case because it was difficult for young adults to satisfy several conditions under those state-level mandates prior to the ACA. Hence, it was not surprising that Goda et al. (2016) found no evidence of the wage reduction among parents with eligible young adults given the lack of the first-stage effect.[2] We contribute to the literature by providing novel evidence on how the ACA-DM affects parents' labor market outcomes using an alternative identification strategy.

The remainder of this study is organized as follows. Section 2 provides a brief background of the ACA-DM and the conceptual framework of this study. Sections 3 and 4 describe the empirical strategy and data, respectively. Section 5 presents the empirical results, and section 6 concludes.

2. Background

2.1. The Affordable Care Act dependent mandate

Before the ACA-DM, parents' health insurance generally covered young adults as dependents until their 19th birthday. In addition, the means-tested public health insurance program (Medicaid and CHIP) also stops its coverage at 19 (Goda et al., 2016). Thus, this age group before they were covered under the ACA-DM had the lowest rate of health insurance coverage among US citizens (Levy, 2007). Although many states extended dependent coverage to include young adults aged 19–25 years in different forms before the ACA, it was not clear whether the state-level expansion was effective in reducing the uninsured rate among young adults for the following reasons (Antwi et al., 2013). First, there were several restrictions for young adults to become eligible (marital status, student enrollment, prior insurance status, state residency, and age). Second, the state-level mandates were inapplicable to self-insured plans. Third, potential beneficiaries could have been unaware of the state provisions.

One of the earliest provisions of the ACA was to mandate that insurers extend the dependent coverage of young adults up to 26 years, effective from the next plan renewal date

[2] Using the ACS data and the identification strategy based on Goda et al. (2016), we find no differential impact of the ACA-DM on annual wages of parents with children aged 19–25 years between states with and without state-level dependent mandates prior to the ACA reform. The results are reported in Table A1**.**

after September 22, 2010 (the United States Public Health Service Act, 2010, Section 2714). Unlike the prior state-level dependent mandates, the ACA-DM covers young adults regardless of co-residence status with their parents; marital, student, or tax-dependent status; or other limitations. This new law was widely promoted, and employers were required to notify workers when children were eligible to be added to family plans (Antwi et al., 2013). As a result, several studies found that the ACA-DM has significantly increased young adults' health insurance coverage since 2011, mainly through parents' ESHI coverage, while reducing young adults' private and government-provided health insurance coverage (Antwi et al., 2013; O'Hara and Brault, 2013; Sommers et al., 2013).

Health benefits are a part of workers' benefits package. According to the U.S. Bureau of Labor Statistics (2020), health insurance accounts for 26% of total benefits among civilian workers in the United States. Employers contribute approximately 75–80% of the total health insurance premium (Liu and Jin, 2015). With the expansion of dependent coverage, more parents can choose family plans instead of individual plans or subscribing to no plan at all. This can increase employers' cost of offering health benefits, as family plans are more expensive than individual plans. For example, the average annual costs incurred by employers on offering health benefits is approximately $11,000 for family plans and $4,500 for individual plans.[3]

To offset these increased costs, employers might contribute less to family plans than to individual plans or ask workers to pay the additional costs of health benefits (Cutler and Reber, 1998). However, Depew and Bailey (2015) found little evidence that the ACA-DM lowered employers' contributions to family plans. Alternatively, employers can incentivize or force workers to enroll in higher-cost-sharing health plans such as high-deductible health plans because such plans are generally cheaper than low-cost-sharing plans (Koh, 2018). However, using data from the National Health Interview Survey, 2008-2015, we find that the ACA-DM did not increase parents' enrollment in high deductible plans.[4]

[3] These numbers are based on the authors' calculation using the Employer Health Benefits Survey (2011–2013) from the Kaiser Family Foundation.

[4] Using the same DID specification in this study, we estimate that the ACA-DM's impact on parents' enrollment in high deductible health plans increased by 0.07 percentage points (with p-value of 0.98).

2.2. Conceptual framework

We provide a brief overview of the theoretical model of the labor market impacts of the ACA-DM based on Summers (1989) and Gruber and Kruger (1991). The goal is to highlight possible consequences of extended dependent coverage to the labor market.

Figure A1 illustrates that a deadweight loss caused by dependent health benefits mandated to employers can differ from that caused by the public provision of dependent health benefits due to the associated wage offsets. The ACA-DM can shift the labor demand curve downward from LD_0 to LD_1. If parents' labor supply does not change, employment would decrease from L_0 to L_1 and wages would reduce from W_0 to W_1. However, if parents value their children's dependent coverage, their labor supply will shift outward from LS_0 to LS_1, and employment will decrease less from L_0 to L_2, whereas wages will decrease by a greater amount from W_0 to W_2. Despite increasing labor costs, fewer parents would lose their jobs as they accept lower wages in return for their children's health benefits. As a result, the deadweight loss of mandated dependent benefits might be smaller than that of the public provision of dependent benefits.

3. Empirical Strategy

For the identification of the impact of extended dependent health coverage via the ACA reform on parents' labor market outcomes, we compare changes in the labor market outcomes of parents of young adults aged 19–25 years (treatment group) to those of parents of young adults aged 17–18 and 26–28 years (control group). We use the following DID specification to implement this research design:

$$y_{i,a,t} = \alpha + \beta_{DID} \cdot Treat_a \cdot Post_t + \mu_t + \theta_a + X'_{i,t}\gamma + \varepsilon_{i,a,t} \qquad (1)$$

where i, a, and t indicate a young adult, the age of the young adult, and a calendar year, respectively; $y_{i,a,t}$ represents labor market outcomes of young adult i's parents such as annual wages, probability of employment, weekly working hours, and probability of full-time work; $Treat_a$ is 1 for the treatment group and 0 for the control group; $Post_t$ takes the value of 1 if a calendar year is 2011 or later, and 0 otherwise[5]; μ_t and θ_a indicate the year-fixed effects and

[5] We define the years 2010 and prior as the pre-reform period, because the ACA-DM became effective on plan renewal after September 22, 2010 and health insurance plans are generally renewed at the beginning of the year.

young adults' age fixed effects, respectively; $X_{i,t}$ denotes parents' demographic characteristics. The parameter of interest is β_{DID}, which captures the effects of the ACA-DM on parents' labor market outcomes. For statistical inference, we use the wild cluster bootstrap-t procedure due to the small number of clusters (Cameron et al., 2008).[6] In addition, we conduct complementary statistical inference using the Fisher's (1935) permutation test, which generates a distribution of test statistics under the null hypothesis by estimating the effects of a randomly permuted treatment.

The key identification assumption in our DID approach is the parallel pre-reform trends between the treatment group and the control group. To test the validity of this assumption, we first demonstrate trends in labor market outcomes between the treatment and control groups and examine whether they are similar during the pre-reform period. As a supplementary test, we estimate the difference in the slopes of parents' labor market outcomes between the treatment and control groups during the pre-reform period using the following specification:

$$y_{iat} = \alpha_0 + \alpha_1 Treat_a * Year_t + \delta_a + \theta_t + X_{it}'\alpha_2 + \varepsilon_{iat} \qquad (2)$$

in which we use the same notations as in equation (1). The only difference is that $Post_t$ is replaced with a linear time variable, $Year_t$. The parameter of interest is α_1, which captures the difference in the slopes of the pre-reform trends in parents' labor market outcomes between the treatment and control groups. We also use the wild cluster bootstrap-t procedure to compute standard errors due to the small number of clusters.

Although ESHI plans are generally renewed in January each year (Antwi et al., 2013), wages or employment contracts might not be simultaneously renewed. This implies that employers may not adjust parents' labor market outcomes immediately. Thus, there could be lagged responses in parents' labor market outcomes. To examine this possibility, we consider the following event-study approach:

$$y_{i,a,t} = \alpha + \sum_{k \neq 2010} \beta_k \cdot Treat_a \cdot 1[t = k] + \mu_t + \theta_a + X'_{i,t}\theta + \epsilon_{i,a,t} \qquad (3)$$

[6] In the DID approach, researchers generally calculate standard errors clustered at the unit of treatment status (i.e., young adults' age). However, there are only 12 age groups in our case. Cameron et al. (2008) showed that clustered standard errors may be underestimated if the number of clusters is small.

in which we follow the same notations as in equation (1) except that $Post_t$ is replaced with $1[t = k]$, which indicates whether a calendar year is k. The parameters of interest are β_ks, which capture the dynamic effects of the ACA-DM on parents' labor market outcomes compared to 2010.

One concern about identifying the effects of the ACA-DM is that the reform overlaps with business cycles. The Great Recession lasted from December 2007 to June 2009. If the recession and its recovery affected the treatment group and the control group differently, it would be difficult to disentangle the effects of the ACA-DM from those of the Great Recession. To address this issue, besides examining the parallel pre-reform trend, we include macroeconomic conditions, such as state GDP, parents' job characteristics such as industry and occupation types, state-specific linear time trends, and interaction terms between treatment status and state GDP as additional control variables in our robustness checks.

4. Data

We use the ACS data from 2006 to 2016 for the empirical analysis. The ACS is a nationally representative, large-scale annual survey of the US population, providing information on health insurance coverage (since 2008); labor market outcomes such as annual wages, employment, and working hours; and demographic characteristics.

To construct parents' labor market outcomes, we calculate the sum of wages, joint probability of employment, sum of weekly working hours, and joint probability of full-time work (weekly working hours ≥ 30 hours).[7] We convert the nominal values of parental wages for each year into real values for 2013 using the Consumer Price Index for All Urban Consumers. One limitation of the ACS' health insurance coverage data is that it does not allow us to identify whether a respondent is the policyholder or a dependent. Thus, we assume that changes in parents' labor market outcomes are due to changes in the policyholder's labor market outcomes. To alleviate this limitation, we conduct a robustness check by restricting the sample to single parents.

Then, we match parents' labor market outcomes to each young adult using the information on household relationships. The key data limitation is that we can identify

[7] The ACS provides information on annual wages and other income measures of the previous year. To avoid unnecessary confusion, we use 1-year lagged values when estimating the effects of the ACA-DM on parents' wages.

relationships only between individuals within the same household. Thus, we cannot match parents' labor market outcomes to young adults if they do not live with their parents.[8] If young adults' co-residence behavior is affected by their parents' labor market outcomes after the ACA-DM, this non-random sample selection issue might cause bias to our DID estimates. To address this issue, we estimate the effects of the ACA-DM on the probability of young adults living with their parents using the regression specification (1). Table A2 shows that the estimated effects on the co-residence probability are small in magnitude and statistically insignificant when using the baseline control group. This result implies that there is little concern regarding the sample selection.[9]

There could be random errors in defining treatment status because some families may have both eligible and non-eligible young adults but their parents' labor market outcomes would not vary within the family. For robustness checks, we conduct regression analyses (i) using a dataset aggregated at the family level, defining the alternative treatment group if a family has a child aged between 19–25 years, and (ii) excluding those families with both eligible and non-eligible young adults.

For the control variables, we include parents' demographics, such as the average age and its square[10], and the joint probabilities of college-education, race, and ethnicity. Table 1 presents the descriptive statistics for young adults' health insurance coverage and parents' labor market outcomes and demographics before the ACA-DM. Panel A shows that young adults aged 19–25 years have a lower health insurance coverage rate than those in the baseline control group (17–18 and 26–28 years), as dependent coverage generally ended at 19 years before the reform. Panels B and C show that the treatment and control groups have similar values for parents' ESHI coverage, labor market outcomes such as annual wages, employment probability, working hours and full-time work status, and demographics. These similar pre-reform parental characteristics provide a favorable setting for interpreting different changes in labor market outcomes as the effects of the ACA-DM.

[8] In the ACS data, we find that 43.1% of young adults aged 19-25 live with their parents.

[9] To further examine the magnitude of the sample selection bias, we estimate the probability of living with parents controlling for observable characteristics such as gender, marital status, race, ethnicity, health conditions, year fixed effects, age fixed effects, and state fixed effects via a logit specification. We use the estimated probability as an inverse probability weight or parametric controls for the sample selection and re-estimate specification (1). The estimation results, reported in Table A3, remain robust.

[10] As we use parents' average ages, age fixed effects cannot be included in a straightforward manner. As a robustness check, we round off parents' average ages upwards and use age fixed effects instead of the parametric controls. The results are robust.

5. Empirical Results

5.1. Effects of the ACA-DM on young adults' health insurance coverage

First, we document the relationship between the ACA-DM and young adults' health insurance coverage. Panel A of Figure 1 demonstrates the trends in health insurance coverage of all young adults observed in the ACS data. Consistent with the previous findings in the literature (e.g., Antwi et al., 2013), newly eligible young adults aged 19–25 years experienced a sharp increase in any health insurance coverage compared to non-eligible young adults aged 17–18 or 26–28 years. Panel A indicates that this increase appears to be due to increases in private insurance and ESHI coverage. We estimate the effects of the ACA-DM on young adults' health insurance coverage using the regression specification (1). Panel A of Table 2 confirms the findings from graphical evidence. The ACA-DM increased the coverage of young adults in any health insurance by six percentage points and those with private and ESHI coverage by eight percentage points. The effect on those with private and ESHI coverage are greater than that on those with any health insurance coverage because the ACA-DM decreased young adults' public health insurance coverage. All estimates are statistically significant at the 1% level.

Then, we examine the effects of the ACA-DM on young adults' health insurance coverage using the baseline sample—young adults living with their parents. If the sample selection issue is negligible, the estimates would be robust to our inability to match parents' labor market outcomes with young adults not living with their parents. Panel B of Figure 1 shows the trends in health insurance coverage of young adults living with their parents. The trends appear to be similar to those in panel A. There are clear increases in any health insurance coverage, mainly through ESHI coverage. Consistent with these findings, panel B of Table 2 indicates that the estimated effects of the ACA-DM on young adults' health insurance coverage are similar to those in panel A. The results provide additional evidence that the sample selection in our study is not likely to play a significant role in estimating the effects of the ACA-DM.

5.2. Effects of the ACA-DM on parents' labor market outcomes

Figure 2 demonstrates the trends in parents' labor market outcomes. Panels A to D show the trends in annual wages, the probability of employment, weekly working hours, and the probability of full-time work, respectively. Panel A shows that the annual wages of the treatment group become lower than those of the control group after 2011. This provides descriptive evidence that the ACA-DM reduced parents' wages. Panels B to D show little evidence of differential changes in parents' labor inputs such as the probability of employment, weekly working hours, and the probability of full-time work. These patterns provide graphical evidence that the ACA-DM did not decrease workers' labor input.

It is noteworthy that the trends for annual wages have a U shape, reflecting the impact of the Great Recession. If the treatment and control groups experienced different macroeconomic shocks, it would be difficult to isolate the effects of the ACA-DM from the effects of a business cycle such as the Great Recession. However, their annual wage trends are parallel during the Great Recession. In addition, Table 1 shows that the treatment and control groups have similar pre-reform labor market and demographic characteristics, implying that both groups would experience similar effects from a business cycle. Then, we formally test the parallel pre-reform trend assumption using the regression specification (2). Table 3 indicates that the estimated differences in labor market outcomes during the pre-reform period are statistically insignificant. The results imply that the treatment and control groups might have experienced similar macroeconomic shocks during the Great Recession.

Panel A of Table 4 presents the estimated labor market impacts of the ACA-DM using the baseline specification. Column (1) shows that the ACA-DM decreased parents' annual wages by approximately $2,600, about 4% of the average wage during the pre-reform period in Table 1. The estimate is statistically significant at the 1% level.[11] Columns (2)–(4) present the estimated effects of the ACA-DM on parents' labor input. The reform reduced parents' probability of employment, working hours, and their probability of full-time work by approximately 0.4 percentage points, 0.5 hours (about 30 minutes), and 0.1 percentage points, respectively. Compared with the averages of labor inputs reported in Table 1, the estimates are small in magnitude, although those for the probability of employment and working hours are statistically significant at the 5% and 10% levels, respectively. The results imply that the reduction in annual wages offset an increase in labor costs due to the ACA-DM, and thus, there was little decrease in labor input. As a result, the deadweight loss in the parents' labor market was likely to be small.

To assess how much of the added cost to cover expanded dependent coverage mandated by the ACA reform is shifted to workers, we refer to the finding of Baily and Depew (2015) in

[11] We also examine the effects of the ACA-DM on parents' wages by parents' ESHI coverage. If the dependent mandate reduced parents' wages due to employers' increasing costs on health benefits, these effects could be larger among parents with ESHI coverage than those without it. Consistent with this conjecture, we find that the ACA-DM had larger, negative impacts on annual wages among parents with ESHI coverage (-$2656.8 with p-value of 0.004) than those without ESHI (-$890.2 with p-value of 0.313).

which the authors find that the ACA-DM increased health insurance premium of family plans by $398 using data from the Medical Expenditure Panel Survey (MEPS). Our baseline estimate on wage impacts of the ACA-DM is $2636, and the share of workers with employer-sponsored family plans who have children aged 19–25 years is 15.9% (using the SIPP data).[12] This implies that the saved labor costs via wage cut is $419 (=$2636*0.159) and the size of wage cut is almost equivalent to the increase in employers' costs of providing family plans. The p-value of the difference between the two estimates is 0.44.

We conduct several specification checks in panels B to G of Table 4. First, our estimates would be insensitive to the choice of control variables if our baseline estimates capture the causal effects of the ACA-DM. In Panel B, we exclude all control variables. Second, we examine the sensitivity of our baseline results due to potential random errors in defining the treatment group as discussed in Section 4. In Panel C, we use a dataset aggregated at the household level and define an alternative treatment group if a family has any child aged 19–25 years.[13] In Panel D, we exclude families with both eligible and non-eligible children. Third, some policies do not drop young adults aged 26 years from their parents' insurance until the policy is renewed, and thus, they might not constitute an appropriate control group. In panel E, we exclude them from the control group. Fourth, some parents in the baseline sample are too old, thus less likely to be affected by the ACA-DM; therefore, we exclude parents aged 65 years or above from the sample in panel F.[14] Finally, the ACA individual mandate was introduced in 2014, which may have contributed to an additional increase in young adults' health insurance coverage. To rule out its labor market impacts, we exclude samples between 2014 and 2015 from the regression analysis in panel G.

Overall, we find that our baseline results remain robust under these alternative specifications. The ACA-DM reduced parents' wages by approximately $2,300–$3,600, statistically significant at the 1% level. The estimated impacts on labor inputs are small. The ACA-DM reduced parents' probability of employment by 0.1–0.6 percentage points (p-values:

[12] The ACS does not provide information about dependent coverage.

[13] As the unit of analysis is a household, we do not use standard errors clustered at the level of young adults' ages. Instead, we calculate standard errors corrected for heteroskedasticity.

[14] We restrict the sample to parents aged 65 years or above and estimate the labor market impacts of the ACA-DM. All estimates are small in magnitude and are statistically insignificant. The results are available upon request.

0.006–0.483), weekly working hours by 0.4 to 0.6 hours (p-values: 0.0002–0.096), and the probability of full-time work by 0.01 to 0.1 percentage points (p-values: 0.06–0.22).[15]

As workers' health insurance contracts are generally renewed in January each year, employers can identify workers who choose a family plan. However, workers' wages or employment contracts might not be renewed every year. Thus, there could be some lagged effects of the ACA-DM on workers' labor market outcomes. To test this conjecture, we estimate the yearly impact of the ACA-DM using the regression specification (3). Figure 3 shows the estimated labor market impact, $\hat{\beta}_k$s, with 95% confidence intervals. We standardize the estimated labor market impact in 2010 to zero, as indicated by the horizontal lines. Panel A shows the estimated effects of the ACA-DM on parents' wages. Before the ACA-DM, $\hat{\beta}_k$s are statistically insignificant during the pre-reform period except for 2008, which provides additional evidence for the parallel pre-reform trends assumption. After the ACA-DM, $\hat{\beta}_k$s are negative and gradually decrease, implying lagged adjustments to workers' wages. Panels B–D show the effects of the ACA-DM on parents' labor inputs such as the probability of employment, weekly working hours, and the probability of full-time work. Similar to the findings of the baseline analyses, $\hat{\beta}_k$s are generally close to zero and statistically insignificant, providing little evidence of lagged responses to labor inputs.

5.3. Robustness checks

Using alternative control groups

We re-estimate the labor market impacts of the ACA-DM using alternative control groups. In the baseline specification, we arbitrarily chose the control group (young adults aged 17–18 and 26–28 years) following the literature. If our baseline results capture the effects of the ACA-DM, the results could be insensitive to using other control groups with slightly different age ranges for young adults.

Figure 4 shows the trends of parents' labor market outcomes using the four alternative control groups in panels A–D. All graphs show similar patterns to those of Figure 2. There are

[15] As discussed in Section 4, we cannot identify the actual policyholder of dependent coverage from the ACS data. To alleviate this issue, we restrict the sample to single parents. The effects of the ACA-DM on wages are -$1,174 (p-value = 0.002), on employment is -0.004 (p-value= 0.172), on working hours is 0.004 (p-value of 0.972), and on full-time work is -0.001 (p-value=0.786). Marital status can be correlated with individuals' socioeconomic status: Single parents are likely to have lower socio-economic status and are less likely to be covered by ESHI than other married parents. Thus, the effects of the ACA-DM on single parents' wages can be smaller than the baseline estimates.

clear differential changes in parents' annual wages between the treatment and alternative control groups after the ACA-DM. However, there are little differential changes in parents' labor inputs such as the probability of employment, weekly working hours, and the probability of full-time work. It is noteworthy that the trends of labor market outcomes do not seem to be parallel during the Great Recession when using the oldest control group in panel D. We formally test the parallel pre-reform trends assumption. Table A4 shows that the differences in labor market outcomes between the treatment and alternative control groups are statistically insignificant except for panel D, which uses the oldest control group.

Then, we re-estimate the effects of the ACA-DM on parents' labor market outcomes using the alternative control groups. Panels A–D of Table 5 show that the labor market impacts of the ACA-DM are robust when using the alternative control groups. The ACA-DM reduced parents' annual wages by $2,403–$3,150 (p-values: 0.005–0.01). It decreased the probability of employment by 0.2–1.1 percentage points (p-values: 0.006–0.214), weekly working hours by 0.3–1.3 hours (p-values: 0.009–0.167), and the probability of full-time work by 0.1–0.3 percentage points (p-values: 0.121–0.241).[16] The results provide additional evidence that sample selection bias by young adults' co-residence status with parents would not be an issue in our estimation.

Controlling for effects of the Great Recession

We test the robustness of our baseline results by including additional controls for macroeconomic conditions. We argued above that the treatment and control groups may have experienced similar recession shocks because they have similar labor market characteristics and the trends of their labor market outcomes during the Great Recession are parallel. If our baseline results are not biased due to the Great Recession, the results would be robust when including additional controls for macroeconomic conditions.

Table 6 shows the estimated labor market impact of the ACA-DM after including additional controls for macroeconomic conditions. In panel A, we include state gross domestic product (GDP) and state fixed effects. In panel B, we add a state-specific linear trend and interaction terms between state GDP and treatment status to control for state-specific economic trends and economic shocks varying by treatment status. In panel C, we add parents' industry

[16] However, interpreting the results of panel D as the causal effects of the ACA-DM should be cautious because panel D of Figure 4 and Table A4 indicate that the parallel pre-reform trends assumption does not hold when using the oldest control group.

fixed effects and occupation fixed effects, because recession shocks can vary across industry and occupation types. Panels A–C show that the estimated effects of the ACA-DM on parents' labor market outcomes are robust to the additional controls for macroeconomic conditions. The ACA-DM reduced parents' annual wages by approximately $2,000–$2,500 (p-values: 0.004–0.006). It decreased the probability of employment by 0.2–0.4 percentage points (p-values: 0.008–0.028), weekly working hours by 0.4–0.5 hours (p-values: 0.066–0.068), and the probability of full-time work by 0.1 (p-values: 0.133–0.263).

Permutation test

We consider an alternative method for statistical inference based on a permutation test. To construct an empirical sampling distribution under the null hypothesis, we conduct the following Monte Carlo simulation. First, we exclude the actual treatment group from the sample. Second, we randomly assign both fake treatment status and post-period status to the remaining sample. Third, we estimate the placebo treatment effects of the ACA-DM on parents' labor market outcomes and store estimates. Finally, we repeat this procedure 1,000 times.

Panels A–D in Figure 5 present the distributions of the placebo treatment effects on annual wages, the probability of employment, weekly working hours, and the probability of full-time work, respectively. The vertical lines indicate the baseline estimates from panel A of Table 4. Except for full-time work status, the panels show that the baseline estimates are located at the left tails of the distributions, which implies that a baseline estimate is unlikely to be observed if the true effects of the ACA-DM on parents' labor market outcomes are null. We also report the alternative *p*-values calculated as $2\times min(1-t, t)$, in which t is the percentile ranking of the baseline estimates in the distributions, at the bottom of each figure. These alternative *p*-values show that the baseline estimates are statistically significant when using the alternative sampling distribution.

6. Concluding Remarks

We investigate the labor market impacts of the ACA-DM. We find that the reform reduced parents' wages by about $2600 (or about 4% of the pre-reform level annual wages), while labor inputs measured by the probability of employment, working hours, and the probability of full-time work only decreased marginally. Our back-of-the-envelope calculation indicates that the size of the wage reduction is close to the increased insurance premium of a family plan due to the ACA-DM. Our findings imply that a deadweight loss of expanding dependent health insurance coverage via a mandate is likely to be small as an increase in employers' labor costs is offset by a reduction in parents' wages without significant reductions in labor inputs. Much of existing studies in the health insurance literature focuses on the labor market impacts of workers' *own* health benefits. This study contributes to the literature by estimating the labor market impacts of workers' *dependent* benefits.

Finally, we acknowledge a limitation of this study that we can observe only a sample of young adults living with their parents. We found evidence that the reform did not affect young adults' co-residence status with parents and also that the baseline results are robust to the use of alternative control groups and controlling for the co-residence probability. Nonetheless, it might be difficult to g

eneralize the findings of this study to the labor market outcomes of parents not living with young adults because they are likely to have different characteristics from our sample as shown in Table A5. Hence, it could be a fruitful avenue for future research to replicate our study using large-scale data on labor market outcomes that can link parents and children.

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Tables and Figures

Table 1. Descriptive Statistics before the ACA-DM

	Treat (aged 19–25) (1)	Control (aged 17–18, 26–28) (2)
A. Young Adults' Health Insurance Coverage		
Pr(Any health insurance)	0.68	0.81
Pr(Any private health insurance)	0.58	0.64
Pr(Employer sponsored health insurance)	0.49	0.56
B. Parents' Labor Market outcomes		
Pr(Either of parents is covered by ESHI)	0.70	0.69
Sum of annual wage (in 2013$)	68121.2	68920.7
Pr(Either of parents is Employed)	0.89	0.88
Sum of Working hours per week, conditional on employment	62.60	62.11
Pr(Either of parents is Full-time worker), conditional on employment	0.97	0.97
C. Parents' Characteristics		
Average age	49.59	48.12
Pr(Either of parents is White)	0.72	0.73
Pr(Either of parents is Hispanic)	0.19	0.18
Pr(Either of parents went to college)	0.75	0.77
Pr(Single parent)	0.31	0.32

Data source: The ACS, 2006-2010.

Note: We use the sample of young adults aged 17-28 years who live with their parents

Table 2. Effects of the ACA-DM on Young Adults' Health Insurance Coverage

Dep. Vars.	Any HI coverage (1)	Any private HI coverage (2)	ESHI coverage
A. Sample 1: all young adults			
Treat×Post	0.06***	0.08***	0.08***
	(0.00)	(0.00)	(0.00)
Observations	5,219,596	5,219,596	5,219,596
R-squared	0.09	0.08	0.05
B. Sample 2: young adults living with parents			
Treat×Post	0.08***	0.10***	0.11***
	(0.00)	(0.00)	(0.00)
Observations	2,510,169	2,510,169	2,510,169
R-squared	0.10	0.08	0.06

Data source: The ACS, 2008-2016

Notes: To estimate the effects of the ACA-DM, we use regression specifications (2). For dependent variables, we use dummy variables indicating young adults' any HI coverage, any private HI coverage, and ESHI coverage in panels A to C, respectively. For control variables, we use young adults' race, ethnicity, gender, and marital status. The *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3. Testing Parallel Pre-reform Trends

Dep Vars.	Annual wages (1)	Pr(Employed) (2)	Working Hours (3)	Pr(Full-time) (4)
Treat×Year	-505.7	-0.001	-0.03	-0.0002
	(0.277)	(0.488)	(0.676)	(0.401)
Observations	964,222	947,911	843,683	843,683
R-squared	0.08	0.06	0.06	0.01

Data source: The ACS, 2006-2010

Notes: For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. The *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4. Effects of the ACA-DM on Parents' Labor Market Outcomes

Dep Vars.	Annual wages (1)	Pr(Employed) (2)	Working Hours (3)	Pr(Full-time) (4)
A. Baseline				
Treat×Post	-2636.1***	-0.004**	-0.478*	-0.001
	(0.005)	(0.034)	(0.070)	(0.180)
Observations	1,948,358	1,936,273	1,711,440	1,711,440
R-squared	0.08	0.055	0.058	0.012
B. No control				
Treat×Post	-3582.7***	-0.006***	-0.613**	-0.001*
	(0.002)	(0.007)	(0.016)	(0.092)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.01	0.005	0.006	0.001
C. Family level analysis				
Treat×Post	-2550.0***	-0.001	-0.387**	-0.001
	(0.0001)	(0.483)	(0.0002)	(0.120)
Observations	1,621,687	1,475,062	1,306,192	1,306,192
R-squared	0.075	0.042	0.057	0.012
D. Excluding families with both eligible and ineligible young adults				
Treat×Post	-3320.8***	-0.005***	-0.562*	-0.001*
	(0.003)	(0.006)	(0.034)	(0.220)
Observations	1,448,608	1,441,232	1,275,425	1,275,425
R-squared	0.08	0.046	0.060	0.012
E. Excluding 26 years				
Treat×Post	-2641.9***	-0.004**	-0.413*	-0.001
	(0.009)	(0.027)	(0.096)	(0.119)
Observations	1,832,007	1,823,609	1,621,534	1,621,534
R-squared	0.09	0.043	0.059	0.013
F. Using parents younger than 65 years				
Treat×Post	-2634.3***	-0.005**	-0.482*	-0.001*
	(0.006)	(0.018)	(0.054)	(0.060)
Observations	1,892,983	1,883,334	1,678,040	1,678,040
R-squared	0.08	0.033	0.057	0.012
G. Excluding years after 2014				
Treat×Post	-2351.1***	-0.005**	-0.457*	-0.0001
	(0.008)	(0.030)	(0.092)	(0.578)
Observations	1,530,826	1,516,377	1,345,678	1,345,678
R-squared	0.08	0.044	0.059	0.012

Data source: The ACS, 2006-2016

Notes: We use the whole sample in columns (1) and (2) and restrict the sample to those whose parents are employed in columns (3) and (4). For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. To control for macroeconomic conditions, we include state fixed effects, state specific GDP levels and trends, and interaction terms between state level GDP and treatment status in panel C, the *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 5. Effects of the ACA-DM on Parents' Labor Market Outcomes
Using Alternative Control Groups

Dep. Vars.	Annual wages (1)	Pr(Employed) (2)	Working Hours (3)	Pr(Full-time) (4)
A. Alternative Control Group 1: Young Adults Aged 15 – 18 and 26 years				
Treat×Post	-2429.5***	-0.002	-0.348*	-0.001
	(0.005)	(0.180)	(0.116)	(0.234)
Observations	2,544,555	2,546,252	2,276,151	2,276,151
R-squared	0.09	0.047	0.055	0.012
B. Alternative Control Group 2: Young Adults Aged 16 – 18 and 26-27 years				
Treat×Post	-2690.2***	-0.003**	-0.390*	-0.001
	(0.01)	(0.03)	(0.09)	(0.17)
Observations	2,205,187	2,200,216	1,964,001	1,964,001
R-squared	0.09	0.04	0.06	0.01
C. Alternative Control Group 3: Young Adults Aged 18 and 26-29 years				
Treat×Post	-2611.2***	-0.006**	-0.664**	-0.001
	(0.007)	(0.022)	(0.043)	(0.241)
Observations	1,639,971	1,622,372	1,421,536	1,421,536
R-squared	0.08	0.061	0.059	0.013
D. Alternative Control Group 4: Young Adults Aged 26-30 years				
Treat×Post	-3147.2***	-0.011***	-1.312***	-0.003
	(0.005)	(0.006)	(0.009)	(0.121)
Observations	1,402,508	1,379,600	1,196,799	1,196,799
R-squared	0.08	0.069	0.060	0.014

Data source: The ACS, 2006-2016

Notes: We use the whole sample in columns (1) and (2) and restrict the sample to those whose parents are employed in columns (3) and (4). For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. The *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis.
*** p<0.01, ** p<0.05, * p<0.1

Table 6. Effects of the ACA-DM on Parents' Labor Market Outcomes
Including Controls for Macroeconomic Conditions

Dep. Vars.	Annual wages (1)	Pr(Employed) (2)	Working Hours (3)	Pr(Full-time) (4)
A. Including state GDP and fixed effects				
Treat×Post	-2526.7***	-0.004***	-0.479*	-0.001
	(0.006)	(0.012)	(0.068)	(0.133)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.10	0.05	0.06	0.01
B. Adding state specific time trend and an interaction term between state GDP and treatment status				
Treat×Post	-2482.5***	-0.004**	-0.476*	-0.001
	(0.004)	(0.028)	(0.069)	(0.263)
Observations	1,948,358	1,936,273	1,711,440	1,711,440
R-squared	0.100	0.059	0.061	0.013
C. Adding industry and occupational fixed effects				
Treat×Post	-2034.7***	-0.003***	-0.426*	-0.001
	(0.005)	(0.008)	(0.066)	(0.146)
Observations	1,844,561	1,831,342	1,620,514	1,620,514
R-squared	0.23	0.28	0.13	0.05

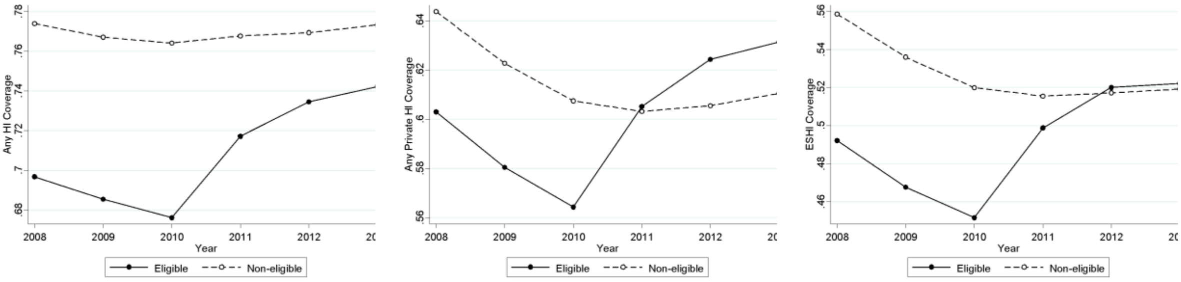
Data source: The ACS, 2006-2016

Notes: We use the whole sample in columns (1) and (2) and restrict the sample to those whose parents are employed in columns (3) and (4). For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. The *p*-values using the wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Figure 1. Trends of Young Adults' HI Coverage

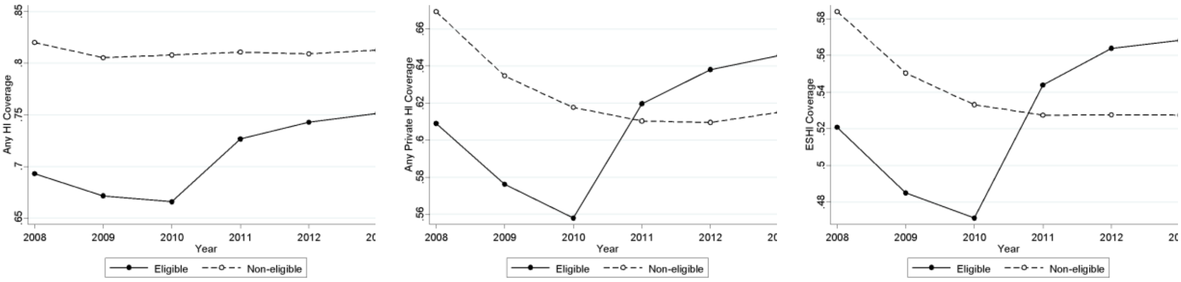
A. All young adults

Any HI coverage | Any private HI coverage | ESHI coverage



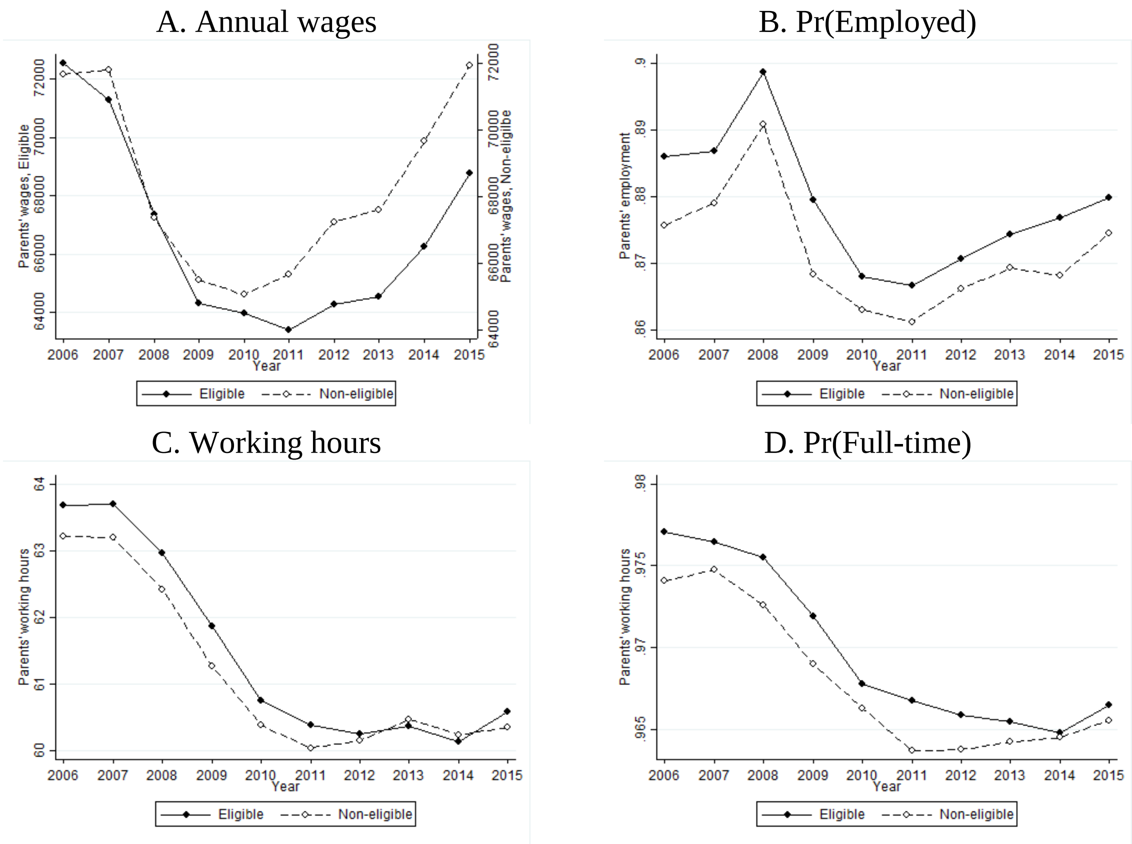
B. Young adults living with parents

Any HI coverage | Any private HI coverage | ESHI coverage



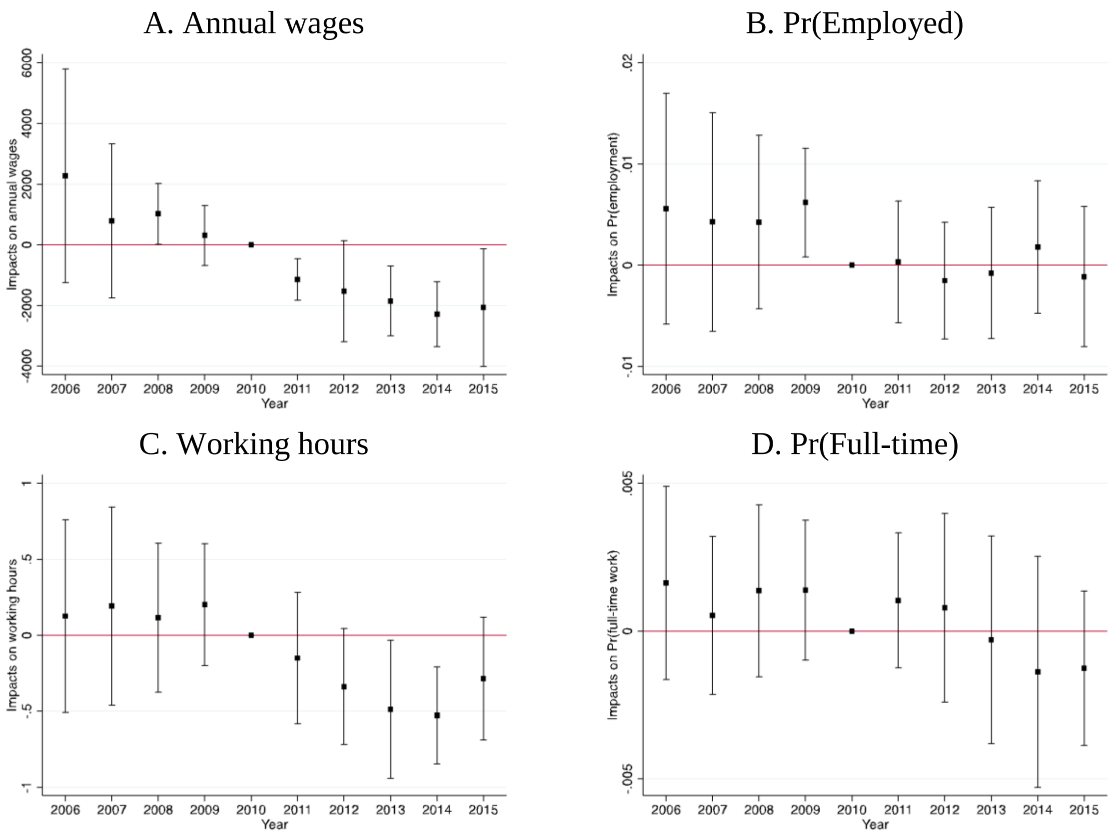
Data source: The ACS, 2008-2013
Notes: We use the sample of individuals aged 17 to 28 years.

Figure 2. Trends of Parents' Labor Market Outcomes



Data source: The ACS, 2006-2016
Note: We use the sample of young adults aged 17-28 years who live with their parents.

Figure 3. Event-study for Parents’ Labor Market Outcomes



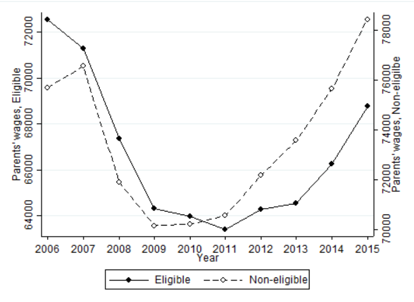
Data source: The ACS, 2006-2016

Notes: We use the whole sample in panels A and B, and restrict the sample to those whose parents are employed in panels C and D. For the dependent variable, we use parents’ annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents’ demographics such as the average age and age squared, race, Hispanic status, and college education dummies. Standard errors are corrected for heteroskedasticity and clustered at young adults’ age level. The vertical bar represents 95 % confidence interval.

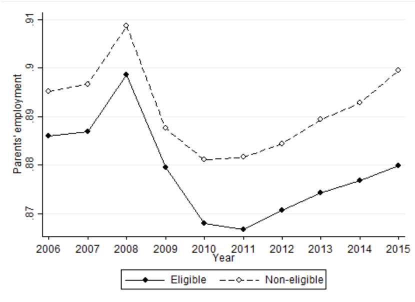
Figure 4. Trends of Parents' Labor Market Outcomes
Using Alternative Control Groups

A. Alternative Control Group 1: Young Adults Aged 15 – 18 and 26 years

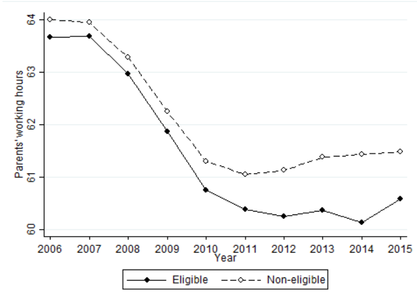
Annual wages



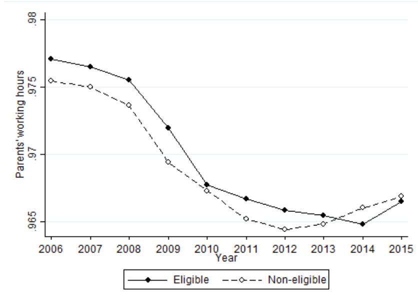
Pr(Employed)



Working hours

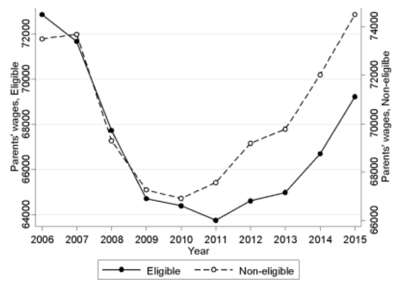


Pr(Full-time)

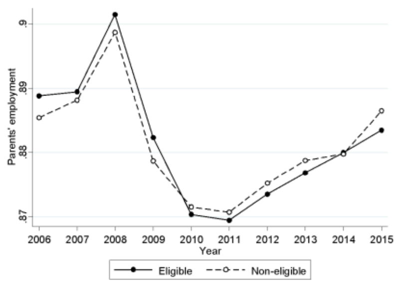


B. Alternative Control Group 2: Young Adults Aged 16 – 18 and 26-27 years

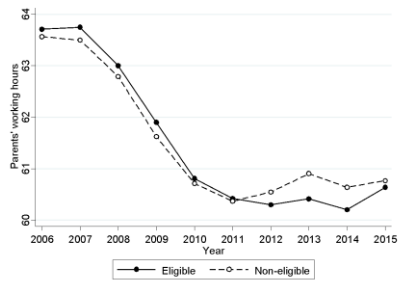
Annual wages



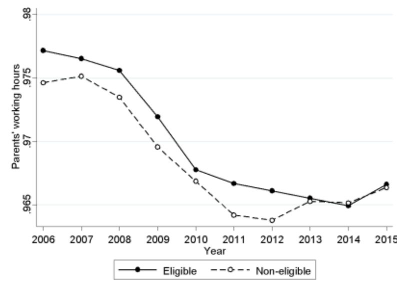
Pr(Employed)



Working hours

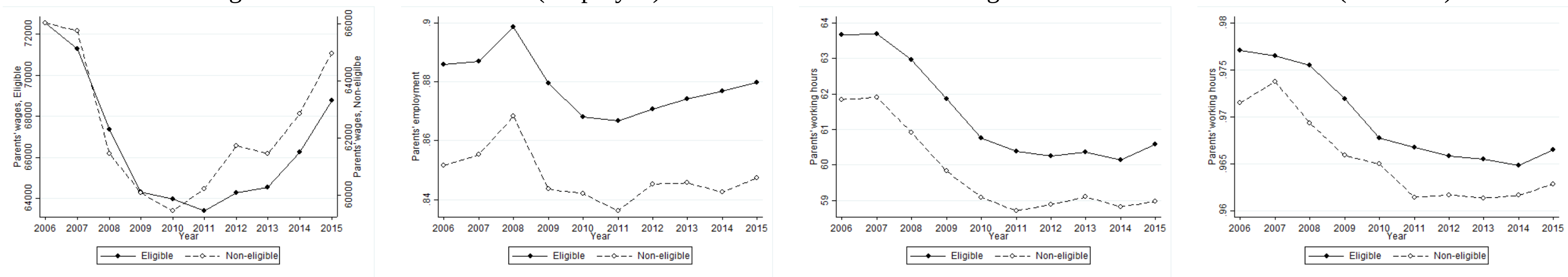


Pr(Full-time)



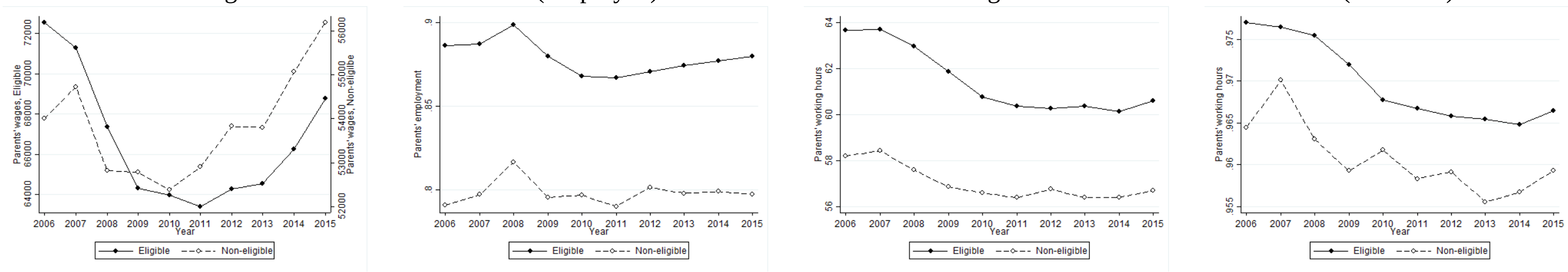
C. Alternative Control Group 3: Young Adults Aged 18 and 26-29 years

Annual wages | Pr(Employed) | Working hours | Pr(Full-time)



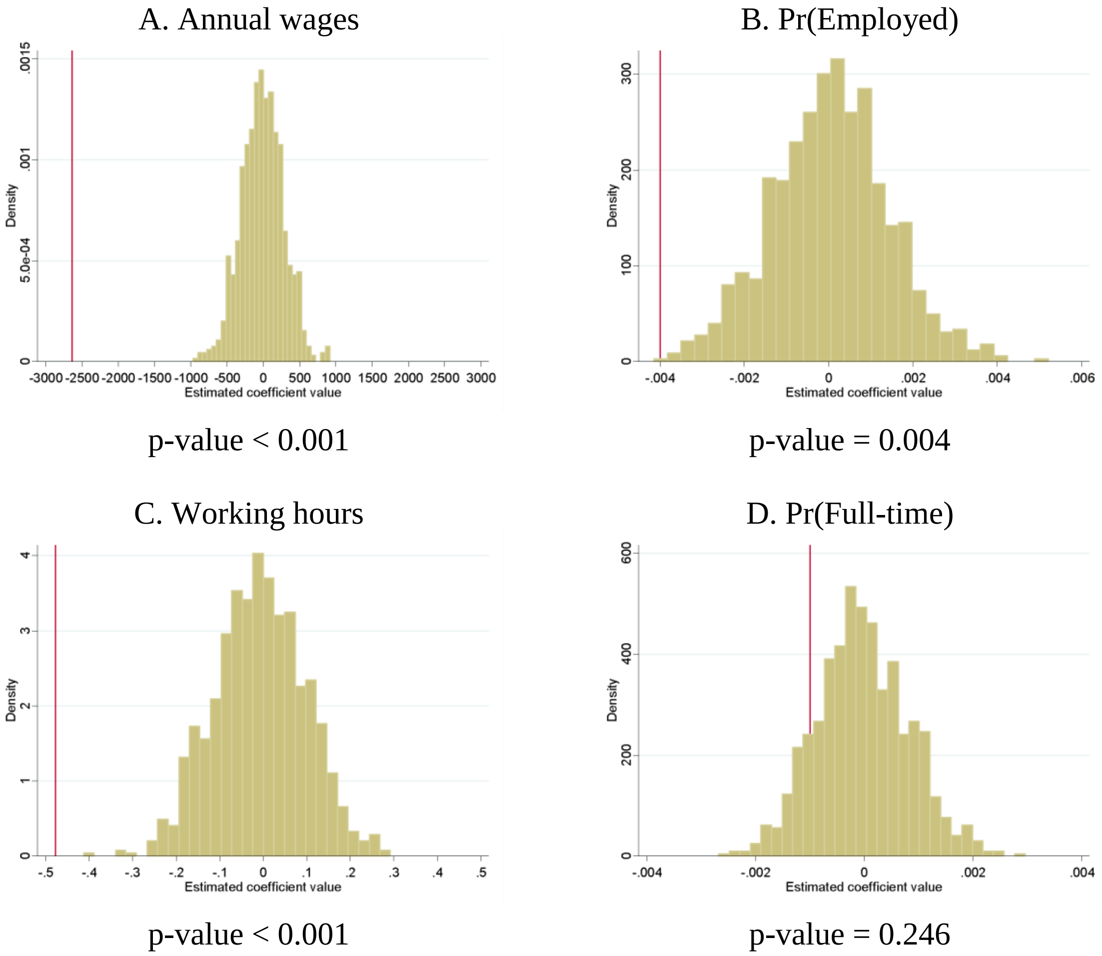
D. Alternative Control Group 4: Young Adults Aged 26-30 years

Annual wages | Pr(Employed) | Working hours | Pr(Full-time)



Data source: The ACS, 2006-2016

Figure 5. Permutation Test



Data source: The ACS, 2006-2016

Notes: The vertical red lines represent the DID estimates of the baseline specification reported in Table 4 Panel A. We use the whole sample in panels A and B, and restrict the sample to those whose parents are employed in panels C and D. For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies.

Appendix Tables and Figures

Table A1. Heterogeneous Effects of the ACA-DM on Parents' Labor Market Outcomes by States Expanded Dependent Coverage Prior to the Affordable Care Act

	Parents' annual wages (1)	Pr(Parents' employed) (2)	Parents' working hours (3)	Pr(Parents' full-time work) (4)
State×Treat×Post	-305.95	0.001	0.291**	0.001
	(0.596)	(0.500)	(0.038)	(0.279)
Treat×Post	-2445.73***	-0.005***	-0.640**	-0.002*
	(0.00001)	(0.008)	(0.031)	(0.064)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.09	0.044	0.059	0.012

Data source: The ACS, 2006-2015

Notes: State denotes a binary indicator for states expanded dependent coverage before the ACA dependent coverage mandate. We only report estimates of the triple differences and DID terms. We use the whole sample in columns (1) and (2) and restrict the sample to those whose parents are employed in columns (3) and (4). For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. The *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A2. Effects of the ACA-DM on the Probability of Living with Parents

Dependent Variable:	Pr(Living with parents) (1)
Treat×Post	0.015
	(0.129)
Avg. prob. of coresidence	0.41
Observations	4,518,741
R-squared	0.202

Data source: The ACS, 2006-2016

Notes: We include all young adults in the analysis regardless of their co-residence status. For the dependent variable, we use the probability of living with parents. For control variables, we use young adults' demographics such as the age fixed effects, race, Hispanic status, and marital status. The *p*-values of the wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table A3. Effects of the ACA-DM on Parents' Labor Market Outcomes
Adjusting the Co-residence Probability

Dep. Vars.	Annual wages (1)	Pr(Employed) (2)	Working Hours (3)	Pr(Full-time) (4)
A. Using the estimated co-residence probability as an inverse weight				
Treat×Post	-2,570.8***	-0.004	-0.63*	-0.002*
	(0.009)	(0.210)	(0.076)	(0.079)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.08	0.05	0.06	0.01
B. Including the linear term of the estimated co-residence probability				
Treat×Post	-2,396.4***	-0.004**	-0.51**	-0.001
	(0.009)	(0.034)	(0.049)	(0.107)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.09	0.04	0.06	0.01
C. Including the linear and quadratic terms of the estimated co-residence probability				
Treat×Post	-2,525.4***	-0.004*	-0.41	-0.001
	(0.004)	(0.099)	(0.227)	(0.249)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.09	0.04	0.06	0.01
E. Including the linear and quadratic terms of the estimated co-residence probability and interaction with treatment dummy				
Treat×Post	-2,532.3***	-0.004**	-0.41	-0.001
	(0.001)	(0.044)	(0.137)	(0.190)
Observations	1,912,244	1,900,873	1,686,902	1,686,902
R-squared	0.09	0.04	0.06	0.01

Data source: The ACS, 2006-2016

Notes: We use the whole sample in columns (1) and (2) and restrict the sample to those whose parents are employed in columns (3) and (4). For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. The *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis.
*** p<0.01, ** p<0.05, * p<0.1

Table A4. Testing Parallel Pre-reform Trends
Using Alternative Control Groups

Dep. Vars.	Annual wages (1)	Pr(Employed) (2)	Working Hours (3)	Pr(Full-time) (4)
A. Alternative Control Group 1: Young Adults Aged 15 – 18 and 26 years				
Treat× Year	-505.9	-0.0001	-0.02	-0.0001
	(0.150)	(0.858)	(0.715)	(0.871)
Observations	1,280,171	1,274,242	1,145,378	1,145,378
R-squared	0.09	0.05	0.06	0.01
B. Alternative Control Group 2: Young Adults Aged 16 – 18 and 26-27 years				
Treat× Year	-456.2	-0.00	-0.01	0.00
	(0.22)	(0.69)	(0.90)	(0.94)
Observations	1,102,553	1,092,170	980,512	980,512
R-squared	0.09	0.04	0.06	0.01
C. Alternative Control Group 3: Young Adults Aged 18 and 26-29 years				
Treat× Year	-594.6	-0.002	-0.08	-0.0004
	(0.408)	(0.435)	(0.523)	(0.156)
Observations	800,379	781,264	689,911	689,911
R-squared	0.08	0.06	0.06	0.01
D. Alternative Control Group 4: Young Adults Aged 26-30 years				
Treat× Year	-1630.1***	-0.01***	-0.32**	-0.0009***
	(0.006)	(0.003)	(0.013)	(0.009)
Observations	671,896	651,046	569,378	569,378
R-squared	0.08	0.07	0.06	0.01

Data source: The ACS, 2006-2010

Notes: We use the whole sample in columns (1) and (2) and restrict the sample to those whose parents are employed in columns (3) and (4). For the dependent variable, we use parents' annual wage, joint probability of employment, total working hours, and joint probability of full-time status. For control variables, we use parents' demographics such as the average age and age squared, race, Hispanic status, and college education dummies. The *p*-values of a wild-cluster bootstrap-t procedure are calculated from 999 repetitions and are reported in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Table A5. Average Characteristics of Young Adults Aged 19 to 25 Years by Co-residence Status

Variables	Living with parents (1)	Not living with parents (2)
A. Health Insurance Coverage		
Pr(Any health insurance)	0.68	0.69
Pr(Any private health insurance)	0.58	0.58
Pr(Employer sponsored health insurance)	0.49	0.46
B. Demographics and health conditions		
Male	0.55	0.49
White	0.69	0.72
Hispanic	0.19	0.18
College	0.47	0.50
Ambulatory difficulty	0.02	0.01
Independent living difficulty	0.03	0.01
Self-care difficulty	0.01	0.01
Vision or hearing difficulty	0.02	0.02
C. Labor market outcomes		
Pr(Employed)	0.61	0.66
Weekly working hours	31.3	35.7
Full-time worker	0.71	0.80
Annual wages	10,645	16,199

Data source: The ACS, 2006-2010.
Note: We use the sample of young adults aged 19-25 years old

Figure A1. Graphical Model of the ACA-DM and Parents' Labor Market Outcomes