The Effect of Dependent Health Insurance Coverage on Parental Health Care Use: Evidence from the Affordable Care Act

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Abstract

The 2010 Dependent Coverage Mandate of the Affordable Care Act (ACA-DCM) required that private insurance plans extend coverage to adult dependents through age 26. Using data from the 2006-2015 Medical Expenditure Panel Survey and a Differences-in-Differences model, this paper evaluates the effect of this policy on parent's health care use. The DiD results show that the ACA-DCM reduced outpatient care use among fathers who reduced their annual office visits by 11%. These effects are driven by a 16% reduction in the number of visits made to diagnosis or treat a health condition. This study also provides a mechanism for these effects by showing that ACA-DCM led to a 6% increase in the share of high deductible family plans using the 2007-2014 National Health Interview Survey and a DiD model. These findings provide new insights regarding the incidence of mandated benefits as well as the intra-family spillover effects.

Keywords: Health insurance, Dependent coverage, Healthcare utilization, High deductible health plans
JEL Codes: H75, I12, I13, I18, J18

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1 Introduction

As of 2021, 62% of working adults cover a dependent on their group plan.[1] Overall, in 2021 nearly one third of all individuals in the U.S are dependents under a private health insurance plan.[2] There is an emerging literature showing the importance of intra-family spillover effects of dependent coverage. This research shows that parent's travel time to work, employment and wages are impacted by mandated dependent coverage (Kim and Koh 2021; Bae, Meckel, and Shi, 2023; Glied and Ko 2023). Another important intra-family spillover to consider is how dependent coverage affects parent's decisions regarding their own health care use. This evidence will allow policymakers to more fully capture the welfare implications of dependent coverage. To provide causal estimates of this spillover effect, this paper leverages the introduction of the 2010 Patient Protection and Affordable Care Act (ACA) dependent coverage mandate (ACA-DCM).

This study investigates how the ACA-DCM affected health insurance coverage and health care use of parents using data from the 2006-2015 Medical Expenditure Panel Survey (MEPS). Following the approach in (Kim and Koh, 2021) this paper compares changes in the health related outcomes of parents with eligible young adults (aged 19–25 years) before and after implementing the ACA-DCM to those of parents with non-eligible young adults (aged 17–18 years and 26–28 years) using a differences-in-differences (DiD) approach. The DiD results show that the ACA-DCM had no effect on coverage rates or overall visit rates of parents, but did lead to a reduction in the number of times fathers went to the doctor. While fathers of eligible young adults had no change in the likelihood of visiting the doctor, they did have 0.45 fewer office visits per year, representing an 11% decline relative to the pre-2010 mean. These effects are driven by a 16% reduction in the number of visits made to diagnosis or treat a health condition; services which are subject to health plan cost-sharing.

[1] Author calculations using 2021 Merivate Commercial Claims and Encounters claims data.
[2] Author calculations using 2022 ASEC data.

Using the National Health Interview Survey (NHIS) and a DiD identification strategy that compares high deductible plan prevalence among family plans relative to employee-only and employee-plus-spouse plans, before and after the ACA-DCM, this paper also identifies an important mechanism for the reduction in health care utilization. These findings indicate that the ACA-DCM led to a 6% rise in the share of high deductible family plans. These results indicate that the the cost of extended dependent coverage was passed on to workers by reducing the generosity of health benefits and explain why the reductions in health care were driven by services that are subject to cost-sharing. These results are robust to a variety of alternative specifications and are not due to selection into high deductible plans by healthier enrollees. These results indicate that the reduction in health care use is driven by the negative income effect found in prior studies, as well as the negative price effect coming from increases in plan deductibles (Gopi Shah, Farid, and Bhattacharya 2016; Kim and Koh 2021). Employers fully shifted the additional cost of expanded dependent coverage to workers through lower wages and higher deductibles, leading to a reduction in parent's own health care use.

This paper makes several contributions to the existing literature on the effects of benefit mandates. First, this paper adds to the emerging literature on the intra-family spillover effects of dependent coverage provision (Kim and Koh 2021; Bae, Meckel, and Shi, 2023). Using the identification strategy from Kim and Koh (2021) this paper is the first to study the health related outcomes of parents impacted by the ACA-DCM. While Kim and Koh (2021) argue no dead weight loss from the ACA-DCM because there was no loss in employment, the present study shows that the ACA-DCM did have welfare implications beyond labor supply. Evidence regarding the effect of the ACA-DCM on the health care use of young adults is mixed. Akosa Antwi et al. (2014) show that the mandate increased young adults' utilization of inpatient care, particularly for mental illness, while Chua and Sommers (2014) do not find any evidence that the provision affected health care use. Sommers et al. (2013) find less delays in getting care. Finally, Barbaresco, Courtemanche,

and Qi (2015) find the ACA-DCM increased the probability of having a primary care doctor but did not lead to any significant change in preventive care utilization. While there is mixed evidence regarding health care use among young adults, this study shows that outpatient health care use declined among less healthy fathers, indicating a loss in family level welfare.

This study also contributes to the literature on the allocation and incidence of benefit mandates by studying how this mandate impacted the generosity of parent's health insurance coverage (Gruber and Krueger 1991; Gruber 1994; Bailey and Depew 2015; Goda, Farid, and Bhattacharya 2016; Kolstad and Kowalski 2016). Gruber and Krueger (1991) and Gruber (1994) show that mandated benefits reduce wages in the cases of maternity benefits and workers' compensation, respectively. Bailey and Depew (2015) find that despite a 2.5–2.8 percent increase in premiums of employer-based family health insurance plans, employee's contributions did not change as a result of the ACA-DCM. Rather, Goda, Farid, and Bhattacharya (2016) and Kim and Koh (2021) find that wages fall when dependent health insurance coverage is mandated and Kolstad and Kowalski (2016) find that wages fall when employer sponsored health insurance (ESHI) is mandated.

These papers indicate that employees pay for the increased cost of health insurance coverage through reduced wages, as in the case of workers' compensation and maternity benefits. Furthermore, Glied and Ko (2023) show that reductions in wages are largest for workers newly insuring a young adult, as opposed to those adding a young adult to an existing family plan. The present study shows that firms and insurers also pass the cost of extended dependent coverage to parents by offering less generous coverage through higher deductible plans. This is an important finding in the context of the marked increase in high deductible health plans (HDHPs). This margin has not been explored in the prior literature and this paper provides the first estimates of the ACA-DCM impact on the growth of high deductible health plans.

The paper proceeds as follows. Section 2 describes the dependent mandate in more detail. Section 3 describes the data. Section 4 outlines the empirical strategy. Section 5 presents the main results and heterogeneous treatment effects. Lastly, Section 6 concludes.

2 Background

The Dependent Coverage Mandate provision of the Patient Protection and Affordable Care Act (ACA-DCM) applied to all plan years beginning on or after September 23, 2010. Under this provision, individuals up to age 26, could remain on their parents' private health insurance plan. The ACA-DCM applied to all insurance plans in the country, including grandfathered plans. Prior to the mandate, most insurance plans ended dependent coverage at age 19 if the dependent was not a full-time student or age 23 for full-time students (Cantor et al. 2011). The estimates from the literature have consistently found that this policy increased dependent coverage rates (Akosa Antwi, Moriya, and Simon 2013; Barbaresco, Courtemanche, and Qi 2015; Sommers et al. 2013; Carpenter et al. 2021; Kim 2022). The exogenous expansion of dependent coverage to this population provides a unique opportunity to study the causal impact of covering dependent young adults on the health-related outcomes of their parents.

A priori, the price and income effects of health insurance for dependents on the health care use of their parents is ambiguous. The cumulative evidence shows that firms pass the cost of dependent coverage onto their workers through reduced wages, as opposed to higher premium contributions (Bailey and Depew 2015; Goda, Farid, and Bhattacharya 2016; Kolstad and Kowalski 2016; Kim and Koh 2021), indicating a negative income effect and a zero price effect when evaluating premiums. However, another plan feature that can be adjusted by firms is plan deductibles. Firms may pass the cost of extended dependent coverage to parents by offering higher deductible plans, which

could reduce health demand through the price effect (Manning et al. 1987).[3]

In addition to the firm's response to this policy the marginal parent may be more likely to take up or remain on their private health insurance policy longer given they can now cover their young adult children. This would lead to increased health care use through the price and income effects. In fact, Bae, Meckel and Shi (2023) show that this policy reduced job switching and exit among parents, indicating that this policy does affect labor market decisions at the extensive margin.

3 Data

The primary data source used in this analysis is the 2006-2015 Medical Expenditure Panel Survey (MEPS). The MEPS is a nationally representative, longitudinal data set on health status, medical conditions, healthcare utilization, and healthcare expenditures for the U.S. civilian, non-institutionalized population.

The MEPS is used to analyze parents health insurance coverage and health care use. Parents' outcomes are matched to each young adult using the information on household relationships. A "treated" parent is the parent of a 19-25 year old and a "control" parent is the parent of a 17-18, or 26-28 year old. The main data limitation is that I can only match young adults to their parents if they live in the same household. In the MEPS data 55% of young adults ages 19-25 live with either or both parents. If young adults' co-residence behavior is affected by their parents' health outcomes after the ACA-DM, this non-random sample selection issue might bias the DiD estimates. Kim and Koh (2021) show that the ACA-DCM had small and statistically insignificant effects on co-residence probabilities, alleviating this concern regarding sample selection.

[3]Since plan deductibles and premiums are inversely related, switching to higher deductible plans may be a way to save on the costs of providing insurance coverage to parents and their dependents.

Health insurance coverage and health care use outcomes are separately defined for each parent to be able to determine if effects differ by parent and to utilize a more representative sample.[4] These main outcomes are (1) being covered by a group health insurance plan, (2) whether or not the parent went to the doctor's office or clinic to get health care for themselves in the last 12 months, and (3) the number of times the parent went to the doctor's office or clinic to get health care for themselves in the last 12 months. In supplementary analysis, I also evaluate (4) whether or not the parent had a general checkup in the past 12 months, (5) the number of check ups, (6) whether or not the parents had a diagnostic or treatment based visit, and (7) the number of diagnostic or treatment based visits. The control variables include child's age, race, ethnicity, family income, as well as parental characteristics such as age, marital status, health status and education dummies.[5]

Table 1 presents the descriptive statistics for parent's health insurance coverage, health care use, child/parent demographics, and family socioeconomic background for treated and control families before and after the ACA-DM. Parents in the treatment and control groups have similar rates of private health insurance coverage and the descriptive analysis shows little change in their respective coverage rates over time. Despite having identical health status, treated parents had more outpatient doctor visits than control parents before the ACA-DCM.

After 2010 mothers in the treatment and control group had little to no change in their health care use. In contrast, father's in the treatment and control groups reduced their yearly outpatient visits, with declines being largest for fathers in the treatment group. Declines for both groups were entirely due to reductions in diagnosis/treatment based visits. Father's in the control group had 18% fewer visits, while father's in the control group had 22% fewer visits. Health status did not change over time for the treatment or control group, suggesting that reduced health care use among fathers is driven by declining ability to pay for services as opposed to a change in the need

[4]While only 44% of young adults ages 19-25 live with both parents, 55% live with either or both parents.

[5]In a separate analysis I find the ACA-DCM did not impact parent's health status. These results are available upon request.

for the services. Table 1 also shows that child demographics and family socioeconomic background are very similar across treated and control families. These comparable pre-reform characteristics provide support for interpreting different changes in health care outcomes as the effects of the ACA-DM. To identify a potential mechanism for the main effects I supplement the analysis with data on high deductible health care coverage from the National Health Interview Survey.

The data set used for the analysis of high deductible health plans is the 2007-2014 National Health Interview Survey (NHIS).[6] The NHIS is a rich source of publicly available micro data that can be used to identify individual-level information on health insurance plan design. Importantly for this analysis the NHIS has data on whether an individual is covered by a high deductible health plan (HDHP). For each individual I observe their health insurance status, what type of coverage they have, and how they obtain it. For individuals who are policy holders there is information on who else in the household is covered by their policy. Using this information, I define whether the policy holder has an employee-only plan, an employee-plus-spouse plan, or a general family plan.

Employee-only plans only cover the policyholder and employee-plus-spouse cover the policy holder and spouse and are not directly impacted by the ACA-DCM.[7] Family plans are the plans directly impacted by the ACA-DCM and include plans that cover the policyholder and child or plans that cover the whole family (the policy holder, child, and spouse). A limitation of the NHIS is that the policy holder does not report if individuals outside the household are covered by the insurance policy. Therefore, I can only accurately define a plan as a family plan if it covers someone in the home, but cannot identify cases in which the policy covers a someone outside the home.[8]

[6]Data on plan deductibles only become available in 2007.

[7]The sample excludes spouses and policyholders younger than 26.

[8]Bailey and Depew (2015) used both NHIS and SIPP data to estimate effects of the ACA-DCM on premiums. Their results using SIPP data, which does have information on coverage of family members outside the household, were nearly identical to those using the NHIS, indicating that only focusing on family plans that cover individuals in the same household does not bias results. The SIPP cannot be used for the present analysis because data on deductibles is not available.

The sample used for this analysis is 26-64 year old policy holders that either have a group family coverage plan, an employee-plus-spouse, or an employee-only coverage plan. Policyholders under 26 are excluded to avoid changes in the risk pool arising from young adults affected by the ACA-DCM exiting employment and enrolling onto their parent's family plan (Cantor et al. 2012b; Antwi et al. 2013; Depew 2015). Those with a family coverage plan are "treated", while those with a single or an employee-plus-spouse plan are the "control" group. Control variables include dummies for the policyholder's age, race, ethnicity, education, and poverty status. The outcome of interest is whether the policyholder's health insurance plan is a high deductible plan.[9] This outcome captures the cost sharing burden for policy holders. Using this outcome to capture the cost sharing burden as opposed to the actual plan deductible amount would be a concern if plan deductibles in HDHPs are not meaningfully higher than those in HDHPs. However, using Marketscan claims data on group plan enrollees from 2013 to 2021, I confirm that the average family plan deductible in a HDHP is twice as large as the deductible in a non HDHP and the individual plan deductible is 2.3 times as large in a HDHP compared to a non HDHP.

The identification assumption for DiD estimation is that contemporaneous time varying effects in the health insurance market that may affect health insurance plan deductibles are constant across the "treated" and "control" plans after conditioning on a set of controls. Using single and employee-plus-spouse plans as the control group in the difference-in-difference model therefore nets out contemporaneous effects of the ACA-DCM and other factors that are not caused by the mandate.

One threat to this identification assumption is young adults affected by the ACA-DCM enrolling onto their parent's family plan. This would make the risk pool of single plans less healthy and thereby lead to a fall in high deductible plan selection among those with single coverage. This would bias the DiD effect upwards. To address this concern the analytic sample excludes poli-

[9]Data on plan deductible amounts is not available in the NHIS.

cyholders under 26 who are directly affected by the ACA-DCM. Another concern is that changes in the share of high deductible family plans may be driven by parent's choices as opposed to the ACA-DCM policy. In particular, research shows that those who choose HDHPs are positively selected and tend to use less care. If healthier parents choose a high-deductible family plan as a way to afford covering their newly eligible dependents this would lead to both a rise in the share of high deductible family health plans and a reduction in health care use. To address this concern, I show that among those with a family plan, policyholder health status is unaffected by the ACA-DCM (Table A2).

Table 2 shows differences in high deductible health plan coverage and policy holder characteristics between those with employee only or employee-plus-spouse plans versus family plans, before and after the ACA-DCM. Before 2010, 18% of policyholders covered by "treated" and "control" plans had a high deductible health plan (HDHP). HDHP coverage rose for both group over time, but rose 2 percentage points more for family plan policy holders, providing some suggestive evidence that HDHP coverage was impacted by the ACA-DCM. Table 2 also demonstrates that there are cross-sectional differences in demographics among policy holders across plan type, highlighting the importance of controlling for these factors. Compared to policy holders of the control group plans, policy holders of family plans are 5 years younger, 24% less likely to be female, twice as likely to be married, and 5 percentage points more likely to have at least a bachelors degree.

4 Empirical Strategy

To estimate how the effect of ACA-DCM on parent's health insurance coverage and health care use, I estimate the following Difference-in-Differences (DiD) model:

$$\mathbf{Y}_{iat} = \beta_{DiD} Treat_a \cdot Post_t + \gamma \mathbf{X'}_{it} + \mu_t + \omega_a + \varepsilon_{iat} \tag{1}$$

where $\mathbf{Y}_{iat}$ represents the health related outcomes of young adult i's parents. $Treat_a$ is 1 for the parents of young adults aged 19–25 years and 0 for the parents of young adults aged 17–18 and 26–28 years. $Post_t$ takes the value of 1 if the calendar year is 2011 or later, and 0 otherwise.[10] ω_a indicate the young adult's age-fixed effects and μ_t are year-fixed effects. Finally, X'_{it} denotes the parent and child demographic and health backgrounds as well as the household socioeconomic characteristics. These include race and gender of the child, parent health, marital, and education status, family income, and parental age fixed effects. The parameter of interest β_{DiD} shows the effects of the ACA-DCM on parents' health related outcomes. The wild cluster bootstrap-t procedure is used to compute standard errors due to the small number of clusters.[11]

The key identification assumption for DiD estimation is parallel pre-reform trends between the treatment and control group. In Table A1 I show the results from estimating the pre-reform differences in the slopes of parents' outcomes between the treatment and control groups using the following specification:

$$\mathbf{Y}_{iat} = \beta_1 Treat_a \cdot Year_t + \gamma \mathbf{X'}_{it} + \mu_t + \omega_a + \varepsilon_{iat} \tag{2}$$

The only difference between equation (1) is that $Post_t$ is replaced with a linear time variable, $Year_t$. The parameter of interest is β_1, which captures the difference in the slopes of the pre-reform trends in treatment and control parents' health outcomes.

In addition to showing that there is no difference in the slopes of the pre-reform trends in treatment and control parents' health outcomes, in Figure 4 I also show event study estimates for all

[10]The years 2010 and prior are defined 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.

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

the main outcomes (insurance coverage and doctor visits) as further evidence that there are no violations of the parallel trends assumption needed to estimate a DID.

To identify the effect of the ACA-DCM on high deductible health plan adoption, I implement the identification strategy used by Depew and Bailey (2015). This differences-in-differences identification strategy uses employee-only and employee-plus-spouse health insurance plans as a control group for family coverage plans.

$$\mathbf{Y}_{irt} = \alpha_0 + \alpha_1(Family_{irt} \cdot Post_t) + \alpha_2 Family_{irt} + \gamma \mathbf{X'}_{it} + \tau_t + \omega_r + \varepsilon_{irt} \tag{3}$$

Y_{irt} is a binary outcome equal to 1 if plan i (family, employee-plus-spouse, or employee-only plan) in region s at time t is a high deductible health plan. $Post_t$ is an indicator variable that takes the value of 1 one for years greater than or equal to 2011. $Family_{irt}$ is an indicator variable that takes the value of one if the plan covers children. ω_r is a region fixed effect that will net out region specific differences between plan types.[12] τ_t is a year fixed effect that captures contemporaneous time shocks that affects family, employee-plus-spouse, and employee-only plans. If firms change any one of the three plan features in anticipation of the ACA-DCM this will be captured in τ_t. White-Huber robust standard errors are shown and the regressions are weighted using the NHIS annual person weight.

[12]The NHIS does not have state identifiers.

5 Results

5.1 Parent's Health Care Utilization

Figure 1 demonstrates the trends in parents' health care use. Panels A and B show the trends in the number of times the father went to the doctor's office or clinic to get health care for themselves in the last 12 months, and the probability of a visit, respectively. Panels C and D show the same trends for mothers. The visual evidence in Figure 1 supports the parallel pre-trends assumption needed for DiD estimation.

Table 3 presents the estimated effects of the ACA-DCM on parent's healthcare use using the specification outlined in Equation (1). Columns 1 and 2 show how the ACA-DCM impacted mother's outpatient healthcare use at the extensive and intensive, respectively. Columns 3 and 4 show the corresponding results for fathers. The results in columns 1 and 2 show that the ACA-DCM did not impact mother's health care use. The estimated effect for $\hat{\beta_{DiD}}$ in column 3 indicates that the ACA-DCM did not effect father's healthcare use at the extensive margin, but the estimated effect in column 4 shows that father's reduced their health care use at the intensive margin. In particular, fathers of ACA-DCM eligible young adults went to an outpatient doctor 0.45 fewer times per year, representing an 11% decline relative to the pre-2010 mean. The ACA-DCM may have only impacted fathers because they are most exposed to any potential effects of this policy given they are 1.5 times more likely to be group policy holders as compared to mothers. Nearly 60% of fathers in the study sample are policy holders while only 40% of mother's are.[13]

Figure 4 presents these findings in the form of an event study to show how the effects evolved over time and to provide evidence of parallel pre-trends. All panels in Figure 4 confirm the results from static DD specification. Furthermore the estimates in Figure 4, Panel C show that the

[13] Author's calculation using MEPS data.

reductions in father's outpatient visits were temporary. Namely, the estimated effects were largest in 2011, where the estimated effect was a reduction of 0.8 visits per year, and then the effects subsided over time and reverted to the pre-2010 mean by 2014.

The reductions in outpatient visits may indicate a loss of welfare if healthy fathers are the ones driving the effect as this may just be father's reducing an over-consumption of health care. To test whether the ACA-DCM resulted in losses in welfare Table 4 shows how the estimated effects of the ACA-DCM varied by parent's health status. The results indicate that there was no change in the likelihood of going to the doctor or the number of visits for mothers or fathers in excellent/very good health. Rather, the result in Column 4 suggests that the ACA-DCM reduced health care use at the extensive and intensive margin among fathers in poor health. The estimated effect in Column 4, panel A suggest that fathers in poor health were 7.7 percentage points (9%) less likely to go to the doctor. Furthermore, the estimated effect in Column 4, panel B suggests that fathers reduced their number of visits per year by 3.5 (38%) after 2010. This suggestive evidence implies that the ACA-DCM reduced health care use by fathers most in need of care and thus reduced family welfare. To further understand how the ACA-DCM parent's health care use in Table 6 show how effects varied by type of service provided.

The estimates in Table 5 show that the reductions in father's health care use is driven by a decline in the number of visits where the main purpose of the visit was to diagnose or treat a health condition. Prior to 2010 fathers of ACA-DCM eligible young adults had 2.5 treatment/diagnosis visits per year. After 2010, the estimate in column 4 shows that they reduced their diagnosis/treatment based visits by 0.4 per year, representing a 16% decline. In contrast, the estimate in column 3 shows that the ACA-DCM did not affect the number of doctors visits that were checkups. Services rendered as part of a checkup appointment are generally preventative and are not subject to health plan cost-sharing due to the ACA. In contrast, most diagnosis and treatment based services are subject to health plan cost-sharing. Since the reductions in father's health care use stem from a

reduction in services that are subject to cost-sharing this suggests that a change in cost-sharing after the ACA-DCM may be a plausible explanation for the observed effects. In the next set of results I explore two potential mechanisms that could reflect increased in cost sharing for health care services; (1) loss of coverage and (2) firms increasingly offering high-deductible family health plans.

5.2 Potential Mechanisms: Insurance Coverage and Plan Generosity

Table 4 shows the results using the MEPS to study how the ACA-DCM impacted private health insurance coverage for young adults, their mothers, and their fathers. The sample used to estimate the effect reported in Column 1 is 17-28 year old young adults living with either their mother or father. The sample used to estimate the effect reported in Column 2 is mothers living with co-resident children aged 17-28. The sample used to estimate the effect reported in Column 3 is fathers living with co-resident children aged 17-28. [14] All regressions control for child demographic characteristics, family poverty status, as well as region, (parental and child) age and year fixed effects.

The results in Table 6 indicate that the ACA-DCM increased the private insurance coverage rate of 19-25 year old young adults by 7 percentage points, representing a 10% increase relative to the pre-2010 mean. This estimate is consistent with prior studies estimating the take-up effect of the ACA-DCM. While young adult's private health insurance coverage rose as a result of the mandate, their was no change in their parent's private health insurance coverage. These results show that the main channel for increased young adult coverage is being added to parent's existing group policies, rather than parents joining the labor force to be able to provide coverage their children. This is consistent with prior findings showing the ACA-DCM had negligible impacts on parent's labor force participation rates at the extensive margin (Kim and Koh 2021), but the marginal parent

[14] All results in Table 6 are robust to using a sample of young adults that live with both parents.

does stay in their job for longer (Bae, Meckel, and Shi, 2023). The event study estimates shown in Figure 4, panels A and D confirm these static DD results. While parents may not have lost coverage as a result of the ACA-DCM, they may face a higher cost-sharing burden if their employers are more likely to offer a high-deductible family health plan after 2010 as a way to pass the cost of extending coverage to older dependents to their employees.

Using data from the NHIS, I show how the ACA-DCM impacted high deductible health plan coverage in Table 7. Column 1 of Table 7 includes policy holder demographic controls, region and year fixed effects, while column 2 further controls for region by year fixed effects. Appendix Table A3 and the event study estimates in Figure 5 provide evidence for the validity of the parallel pre-trends assumption needed for DiD estimation. Furthermore, Figure 3 shows that the prevalence of high deductible health plans was trending at the same rate across plan type pre-reform.[15]

The results in Table 7 show that the ACA-DCM led to an increased share of high deductible health plans that cover children relative to employee only and employee plus spouse plans. This result is significant at the one and five percent levels depending on the specifications and is robust across the two specifications. The results from columns 1 and 2 indicate that there was a 1.1-1.2 percentage point (base of 18), or 6% increase in the share of family plans that cover dependents being high deductible health plan, relative to control group plans. From 2006 to 2014, the share of workers enrolled in a HDHP rose by 17 percentage points.[16]. The increase in HDHPs due to the ACA-DCM represents 7% of this effect ($= 1.2/17$). The event study estimates in Figure 5 show that the prevalence of high deductible family health plans began rising in 2012 and persisted through 2014, suggesting that it took employers time to adjust to the added costs of the ACA-DCM. This timeline for firms adjusting to the ACA-DCM is consistent with the evidence from the event study estimates for working hours presented in Kim and Koh (2021). These authors show

[15]For this reason controlling for plan linear trends does not change the results.

[16]https://www.healthsystemtracker.org/indicator/access-affordability/percent-covered-workers-high-deductible-health-plans/

that the working hours of the parents of ACA-DCM eligible youth were not reduced before 2012.

One concern with attributing changes in the prevalence of high-deductible family plans and reductions in health care use to the ACA-DCM is that this pattern of results may be due to healthier enrollees who use less healthcare services selecting into high-deductible family plans. To address this possibility, in Appendix Table A2, I restrict the sample to policyholders with a high deductible health plan, employ the estimation strategy outlined in equation (3) and use policy holder health status as the outcome to show how the ACA-DCM impacted the health status of policy holders with a high-deductible health plan.

The results from this exercise indicate that enrollees in worse health are actually more likely to have a high-deductible family plan after 2010. In particular, the health profile of enrollees is constant except for those in fair health. The estimate in Column 3 of Table A2 shows that enrollees in fair health are one percentage point more likely to have a high deductible family plan as opposed to a high-deductible employee-only or employee-plus-spouse plan. This selection pattern works against my main findings of reductions of health care, indicating that the reductions in health care can be attributed to rising health care cost burden, and not selection into higher deductible plans by healthier individuals. In the next section, I show that my main results regarding health care use are robust to alternative control groups.

5.3 Robustness Check

The specification outlined in Equation (1) used the control group (young adults aged 17–18 and 26–28 years) following Kim and Koh (2021). If the main results represent the actual effects of the ACA-DCM, the results should be insensitive to control groups with slightly different age ranges for young adults. In Appendix Table A4, I consider the five alternative control groups of young adults whose age ranges are slightly different from that of the baseline control group: young

adults aged i) 14–18 years, ii) 15–18 and 26 years, iii) 16–18 and 26–27 years, iv) 18 and 26–29 years, and v) 26–30 years. These results confirm the conclusions from the main model, namely, the ACA-DCM reduced father's health care use primarily through the intensive margin.

6 Conclusion

This paper investigates the effects of the ACA-DM on parent's health related outcomes. I show that the reform reduced father's outpatient health care use by 11% and increased the share of high deductible family plans by 6%. These effects are statistically significant at the five percent level and are robust to alternative specifications. These effects are driven by reductions in diagnosis and treatment based visited among sicker fathers as a result of increases in cost-sharing. This points to an unintended consequence of the ACA-DCM. The results add to the literature on the incidence of mandated benefits by showing that firms not only passed on the cost of dependent coverage through lower wages but they also reduced the generosity of family plans. These findings also further our understanding of the intra-family spillover effects of dependent coverage by showing that parent's cut back on their own health care to finance health benefits for their children.

The findings from this study can inform policymakers about the potential consequences of other health benefits mandates like the employer mandate. A limitation of this study is that the sample is limited to young adults living with at least one parent. While the ACA-DCM did not impact parental co-residence among young adults, the findings from this sample may not necessarily generalize to young adult dependents living outside a parent's household. In addition, this study could only study family plans that cover members of the same household due to similar data limitations. These limitations are not unique to this paper, therefore future research that studies these outcomes using data that link parents and children, regardless of co-residence status would be a major value-added.

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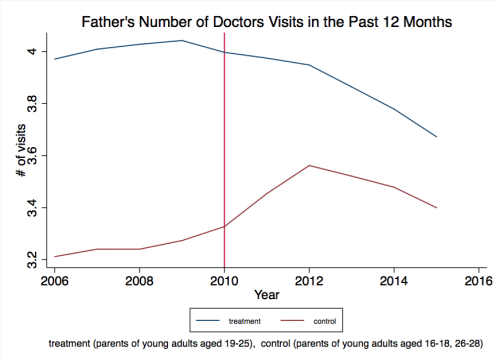
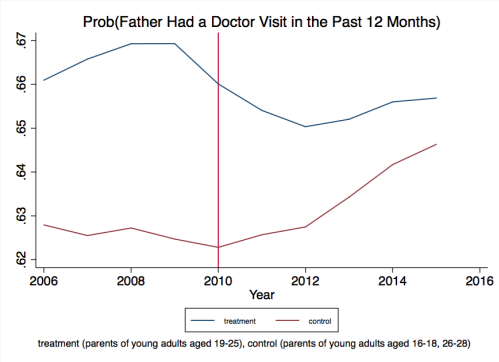
Figures

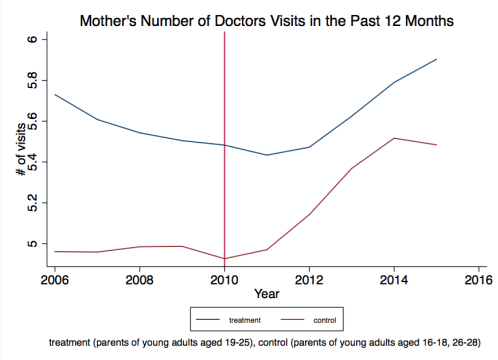
Panel A: Trends in Father's Yearly Office Visits



Panel B: Trends in Share of Fathers Having an Office Visit



Panel C Trends in Mother's Yearly Office Visits



Panel D: Trends in Share of Mothers Having an Office Visit

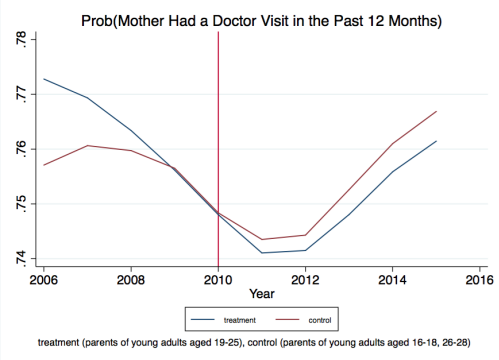
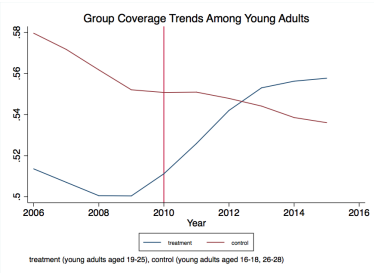
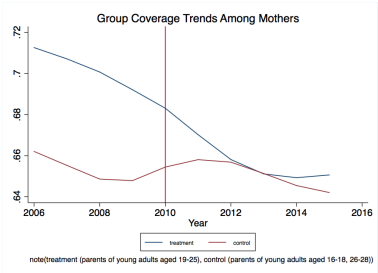


Figure 1: Changes in # of Outpatient Visits and Prob(Visit) Among Parents from 2006-2015 By ACM-DCM Treatment Status, Weighted using MEPS Final basic annual weights.

Panel A



Panel B



Panel C

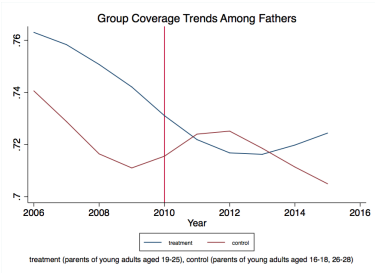


Figure 2: Changes in Group Health Insurance Coverage Among Parents and Young Adults from 2006-2015 By ACA-DCM Treatment Status, Weighted using MEPS Final basic annual weights.

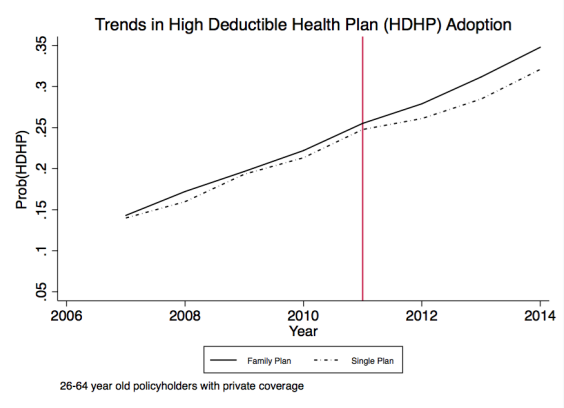
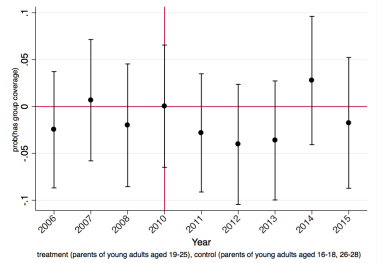
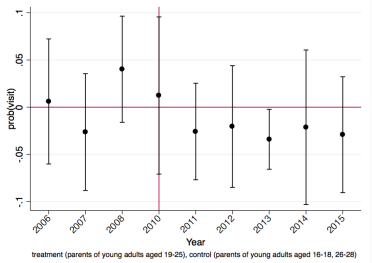


Figure 3: High Deductible Health Plan Coverage from 2007-2014 By Type of Health Plan, Weighted using NHIS final annual person weight.

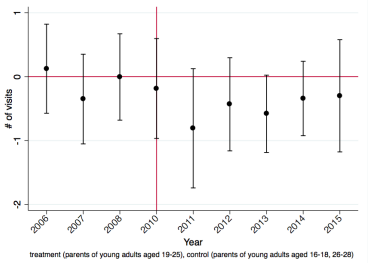
Panel A: Father's Group Health Insurance Coverage



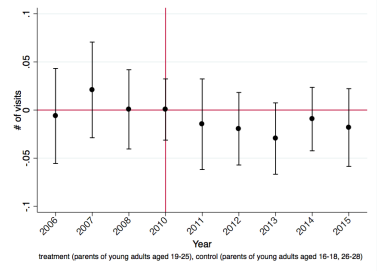
Panel B: Prob(Father has Office Visit)



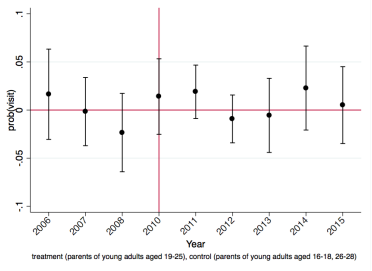
Panel C Father's Number of Visits



Panel D: Mother's Group Health Insurance Coverage



Panel E: Prob(Mother has Office Visit)



Panel F Mother's Number of Visits

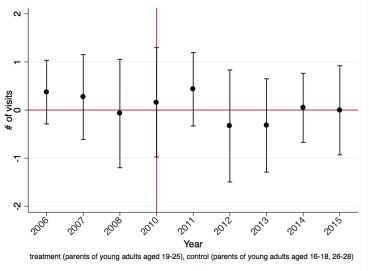


Figure 4: Event-studies for Parents' Health Related Outcomes

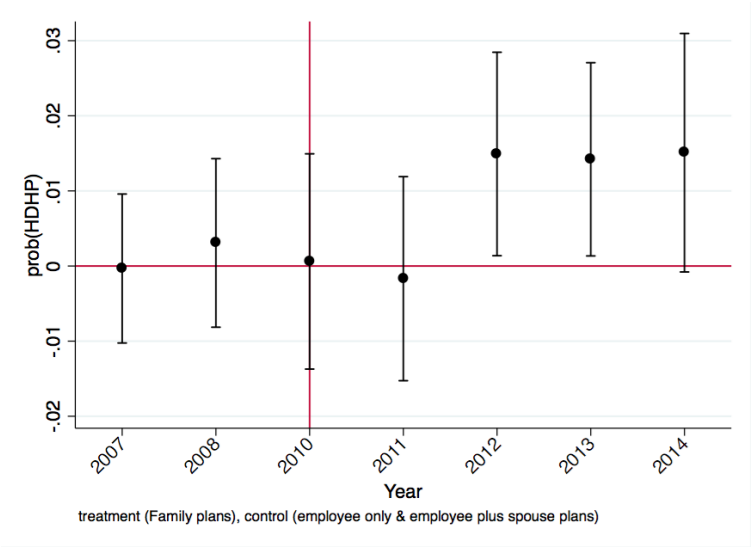


Figure 5: Event-study for HDHP adoption

Tables

Table 1: MEPS Summary Statistics

	ACA=0	ACA=1	ACA=0	ACA=1
	Control (Children Ages 17,18, 26-28)		Treated (Children Ages 19-25)	
	(1)	(2)	(3)	(4)
Family Group Coverage				
Young Adult Has Group Coverage	0.65	0.67	0.56	0.64
Mother Has Group Coverage	0.73	0.73	0.78	0.75
Father Has Group Coverage	0.74	0.74	0.78	0.75
Parent's Health Care Use				
Mother's # of Doctors Appointments	5.3	5.3	5.7	5.9
Father's # of Doctors Appointments	3.6	3.3	4.3	3.8
Mother's # of Checkups	1.1	1.1	1.2	1.3
Mother's # of Diagnoses/Treatment Appointments	3.1	2.9	3.4	3.4
Father's # of Checkups	0.8	0.8	0.9	0.9
Father's # of Diagnoses/Treatment Appointments	2.2	1.8	2.7	2.1
Parent's Health Status				
Father's Health is Excellent/Very Good	0.55	0.57	0.54	0.56
Father's Health is Good	0.33	0.31	0.33	0.31
Father's Health is Fair/Poor	0.11	0.11	0.12	0.12
Mother's Health is Excellent/Very Good	0.55	0.57	0.55	0.56
Mother's Health is Good	0.34	0.32	0.33	0.32
Mother's Health is Fair/Poor	0.11	0.10	0.11	0.11
Child/Parent Demographics and Socioeconomic Characteristics				
Young Adult's Age	19.0	17.2	21.2	21.2
Mother's Age	46.4	45.6	48.8	49.6
Father's Age	48.8	48.0	50.9	51.7
Young Adult if Female	0.46	0.48	0.45	0.45
Young Adult is White	0.83	0.80	0.82	0.80
Young Adult is Black	0.09	0.09	0.09	0.09
Young Adult is Hispanic	0.20	0.22	0.17	0.22
Mother is High-school Dropout	0.17	0.15	0.15	0.16
Mother is High-school Grad	0.38	0.24	0.35	0.25
Mother has Some College	0.17	0.26	0.15	0.26
Mother has College Degree	0.17	0.22	0.23	0.23
Mother has Graduate Degree	0.11	0.07	0.11	0.06
Father is High-school Dropout	0.19	0.17	0.16	0.18
Father is High-school Grad	0.34	0.28	0.33	0.28
Father has Some College	0.15	0.21	0.16	0.21
Father has College Degree	0.18	0.20	0.21	0.19
Father has Graduate Degree	0.10	0.06	0.14	0.07
Family Income	99,875	98,970	108,936	106,321
# of Observations	2,587	7,301	3,663	5,046

Note: The data is from 2006-2015. ACA=0 refers to 2006-2010 and ACA=1 refers to 2011 to 2015. Weighted using MEPS Final basic annual weights. Sample is parents with co-resident children ages 17-28.

Table 2: NHIS Summary Statistics

	ACA=0	ACA=1	ACA=0	ACA=1
	Single Plans		Family Plans	
	(1)	(2)	(3)	(4)
Has a HDHP	0.18	0.28	0.18	0.30
Age	46	47	41	42
Female	0.46	0.46	0.37	0.39
Married	0.49	0.49	0.83	0.83
White	0.84	0.82	0.83	0.82
Black	0.11	0.11	0.10	0.10
Below poverty line	0.13	0.12	0.10	0.09
High School Dropout	0.06	0.06	0.04	0.04
High School Graduate	0.25	0.22	0.21	0.18
Some College	0.30	0.30	0.30	0.29
College Degree	0.25	0.27	0.28	0.29
Graduate Degree	0.14	0.15	0.17	0.20
Excellent or Very Good Health	0.68	0.68	0.76	0.76
Good Health	0.25	0.25	0.20	0.21
Fair Health	0.06	0.06	0.03	0.03
Poor health	0.01	0.01	0.00	0.00
# of Observations	40,371	50,254	25,588	31,035

Note: [a] The data is from 2007-2014. ACA=0 refers to 2007-2010 and ACA=1 refers to 2011 to 2014. The unit of observation is an individual with a employer sponsored health insurance plan (in their own name). Weighted using NHIS final annual person weight.

Table 3: Effect of ACA-DCM on Parent's Health Care Use

Outcome	Mother's Prob(Outpatient Doctor Visit)	Mother's # of Visits	Father's Prob(Outpatient Doctor Visit)	Father's # of Visits
	(1)	(2)	(3)	(4)
DD	0.008	-0.188	-0.018	-0.445**
	(0.005)	(0.155)	(0.012)	(0.199)
Outcome Mean of Treatment Group Pre-2010	0.77	5.6	0.76	4.1
# of Observations	36,345	36,345	24,552	24,552

Note: [a] The data is from the 2006-2015 MEPS. The sample in columns (1) and (2) is mothers living with their co-resident children ages 17-28. The sample in columns (3) and (4) is fathers living with their co-resident children ages 17-28. Each regression includes controls for child/parent demographics, family economic characteristics, as well as region and year fixed effects. Regressions are weighted using the using the MEPS Final basic annual weight. [b] Standard errors are presented in parentheses. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table 4: Heterogeneous Effects of ACA-DCM on Parent's Health Care Use by Parents Health Status

	Mother's Health Care Use		Father's Health Care Use	
	Excellent/Very Good /Good Health	Fair/Poor Health	Excellent/Very Good /Good Health	Fair/Poor Health
	(1)	(2)	(3)	(4)
Panel A		Prob(Had an Outpatient Visit)		
DD	-0.0205	0.00704	-0.0384	-0.0774*
	(0.0171)	(0.0204)	(0.0283)	(0.0371)
Outcome Mean of Treatment Group Pre-2010	0.75	0.86	0.63	0.86
Panel B		# of Outpatient Visits		
DD	-0.424	1.291	-0.519	-3.481*
	(0.297)	(0.744)	(0.380)	(1.603)
Outcome Mean of Treatment Group Pre-2010	4.8	9.5	3.1	9.1
# of Observations	23,452	5,394	15,881	2,904

Note: [a] The data is from the 2006-2015 MEPS. The sample is 16-28 year old young adults living with either or both parents. Each regression includes controls for child/parent demographics, family economic characteristics, as well as region and year fixed effects. [b] Standard errors are presented in parentheses. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table 5: Heterogeneous Effects of ACA-DCM on Parent's Health Care Use by Service Category

	Mother's Health Care Use		Father's Health Care Use	
	(1)	(2)	(3)	(4)
Panel A	Prob(Got a Checkup)	Prob(Diagnosis/Treatment Visit)	Prob(Got a Checkup)	Prob(Diagnosis/ Treatment Visit)
DD	0.00881	0.00423	-0.01607	-0.0172
	(0.00624)	(0.00766)	(0.01938)	(0.0118)
Outcome Mean of Treatment Group Pre-2010	0.51	0.58	0.38	0.49
Panel B	# of Checkups	# of Diagnosis/Treatment Visits	# of Checkups	# of Diagnosis/ Treatment Visits
DD	-0.0447	-0.118	-0.0571	-0.401***
	(0.0299)	(0.0721)	(0.0518)	(0.110)
Outcome Mean of Treatment Group Pre-2010	1.1	3.4	0.8	2.5
# of Observations	36,345	36,345	24,552	24,552

Note: [a] The data is from the 2006-2015 MEPS. The sample is 16-28 year old young adults living with either or both parents. Each regression includes controls for child/parent demographics, family economic characteristics, as well as region and year fixed effects. [b] Standard errors are presented in parentheses. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table 6: Effect of ACA-DCM on Group Health Insurance Coverage

	(1) Young Adult	(2) Mother	(3) Father
DD	0.071***	-0.007	-0.002
	(0.016)	(0.008)	(0.013)
Outcome Mean of Treatment Group Pre-2010	0.56	0.78	0.78
# of Observations	29,635	28,052	18,803

Note: [a] The data is from the 2006-2015 MEPS. The dependent variable in column (1) is a binary variable equal to one if the 16-28 year old young adult has private coverage. The dependent variable in column (2) is a binary variable equal to one if the young adult's mother has private coverage. The dependent variable in column (3) is a binary variable equal to one if the young adult's father has private coverage. The sample in column (1) is young adults living with either their mother, father, or both. The sample in column (2) is young adults living with at least their mother. The sample in column (3) is young adults living with at least their father. Each regression includes controls for child/parent demographics, family economic characteristics, as well as region and year fixed effects. [b] Standard errors are presented in parentheses. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table 7: Effect of ACA-DCM on High-Deductible Health Plan (HDHP) Enrollment

	(1) Prob(HDHP)	(2) Prob(HDHP)
DD	0.012***	0.011**
	(0.004)	(0.005)
# of Observations	147,332	147,332
Controls	X	X
Region FE	X	X
Year-Region FE		X

Note: [a] Data Source: NHIS, 2007-2014. The unit of observation is 26-64 year old policy holders of an employer sponsored health insurance plan. The dependent variable is a binary variable equal to one if the individual has a high deductible health plan (HDHP). Each regression includes an indicator for a family plan and a year fixed effect. Additional fixed effects are in the bottom of the table. [b] Standard errors are presented in parentheses. The NHIS does not have state identifiers. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Appendix

Table A1: Testing Parallel Pre-Reform Trends in Parent's Health Care Use

Outcome:	Mother's Health Care Use		Father's Health Care Use	
Outcome:	Prob(Visit)	# of outpatient visits	Prob(Visit)	# of outpatient visits
	(1)	(2)	(3)	(4)
DD	-0.00183	-0.0686	-0.00612	-0.0693
	(0.00397)	(0.0816)	(0.00591)	(0.0886)
# of Observations	17,049	17,049	11,658	11,658

Note: [a] Data Source: MEPS, 2006-2010. Each regression includes controls for child/parent demographics, family economic characteristics, as well as region and year fixed effects. [b] Standard errors are presented in parentheses. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table A2: Effect of ACA-DCM on HDHP Policy Holder Health Status

	(1)	(2)	(3)	(4)
Health Status:	Excellent/very Good	Good	Fair	Poor
DD	-0.014	0.002	0.011**	0.002
	(0.010)	(0.011)	(0.005)	(0.002)
# of Observations	34,528	34,528	34,528	34,528

Note: [a] Data Source: NHIS, 2007-2014. The unit of observation is 26-64 year old policy holders of an employer sponsored health insurance high deductible health plan. Each regression includes an indicator for a family plan and a year fixed effect. Additional fixed effects are in the bottom of the table. [b] Standard errors are presented in parentheses. The NHIS does not have state identifiers. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table A3: Testing Parallel Pre-Reform Trends in High-Deductible Health Plan (HDHP) Coverage

	(1) Prob(HDHP)	(2) Prob(HDHP)
Treat x Year	-0.000595	-0.000456
	(0.00305)	(0.00305)
# of Observations	65,959	65,959
Controls	X	X
Region FE	X	X
Year-Region FE		X

Note: [a] Data Source: NHIS, 2007-2010. Each regression includes an indicator for a family plan and a year fixed effect. Additional fixed effects are in the bottom of the table. [b] Standard errors are presented in parentheses. The NHIS does not have state identifiers. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.

Table A4: Effect of ACA-DCM on Parent's Health Care Use Using Alternative Control Groups

Outcome:	Mother's Health Care Use		Father's Health Care Use	
Outcome:	Prob(Visit)	# of outpatient visits	Prob(Visit)	# of outpatient visits
	(1)	(2)	(3)	(4)
A. Alternative Control Group 1: Young Adults Aged 14-18 years				
DD	0.002	-0.277**	-0.032*	-0.458***
	(0.007)	(0.133)	(0.017)	(0.170)
# of Observations	39,291	39,291	26,637	26,637
B. Alternative Control Group 2: Young Adults Aged 15-18 and 26 years				
DD	0.002	-0.290**	-0.033*	-0.467**
	(0.006)	(0.131)	(0.017)	(0.204)
# of Observations	35,766	35,766	24,179	24,179
C. Alternative Control Group 3: Young Adults Aged 16–18 and 26–27 years				
DD	0.002	-0.158	-0.029	-0.384***
	(0.006)	(0.159)	(0.023)	(0.141)
# of Observations	32,235	32,235	21,663	21,663
D. Alternative Control Group 4: Young Adults Aged 18 and 26–29 years				
DD	0.001	0.064	-0.027	-0.599***
	(0.010)	(0.181)	(0.021)	(0.182)
# of Observations	24,761	24,761	16,531	16,531
E. Alternative Control Group 5: Young Adults Aged 26–30 years				
DD	-0.0118	0.255	-0.0184	-0.495**
	(0.0165)	(0.454)	(0.0145)	(0.213)
# of Observations	21,139	21,139	14,023	14,023

Note: [a] The data is from the 2006-2015 MEPS. The sample in columns (1) and (2) is young adults living with at least their mother. The sample in columns (3) and (4) is young adults living with at least their father. Each regression includes controls for child/parent demographics, family economic characteristics, as well as region and year fixed effects. [b] Standard errors are presented in parentheses. [c] * 0.10, ** 0.05 and ***0.01 denote significance levels.