Healthcare Cost-Sharing and the Economic Security of Social Security Disability Insurance Beneficiaries: Medicaid Expansion and the SSDI-Medicare Population

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Abstract

Although a growing literature has focused on the impact of cash benefits of Social Security Disability Insurance (SSDI), beneficiaries also eventually gain coverage by Medicare—one of the few under-65 groups eligible for Medicare. This health care coverage has significant value given the limited health insurance alternatives available to the long-term disabled given their chronic health conditions; however, original Medicare carries with it substantial cost-sharing and premiums. Dual eligibility with Medicaid has been a source of supplemental coverage for the disabled population but, prior to 2014, only for those who could satisfy Medicaid's asset and income tests. State-level Medicaid expansions, beginning in 2014, expanded a supplemental coverage option to a broader swath of the under-65 Medicare population—beneficiaries who resided in the states that expanded Medicaid and had income under 138 percent of the federal poverty line (FPL). In this article, we rely on difference-in-differences techniques to estimate the impact of Medicaid expansion on supplemental coverage for the SSDI-Medicare population, and the subsequent effects on beneficiaries' physician visits and health care spending. We find a statistically robust average increase in Medicaid coverage of 4.0-5.5 percentage points among SSDI-Medicare beneficiaries (an over 10 percent increase relative to baseline Medicaid coverage rates). There is substantial heterogeneity in this increase, however, with disproportionate large increases in coverage among white beneficiaries, beneficiaries with self-care or ambulatory difficulties, rural beneficiaries, and married beneficiaries without children. Although impacts on most other outcomes were statistically insignificant, we found a significant reduction in any out-of-pocket medical spending, consistent with Medicaid's limits on cost-sharing, as well as a decrease in premiums paid by rural beneficiaries. Our findings contribute to the growing literature on the effects of Medicaid expansion, specifically in the smaller body of work examining the effects of increasing coverage on the intensive margin; it also adds to the smaller literature on the structure of health insurance coverage of the disabled-Medicare population.

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Introduction

Social Security Disability Insurance (SSDI) pays cash benefits to 8.2 million disabled workers (SSA 2022). Additionally, two years after eligibility for cash benefits, SSDI beneficiaries gain eligibility for Medicare, thereby accounting for the vast majority of under-65 Medicare-eligible population in the United States.[2] While previous work has focused on behavior and outcomes during the two-year waiting period between cash benefit and Medicare eligibility or the effects of eliminating this waiting period, there is much less research on variation in Medicare coverage itself. Namely, traditional, fee-for-service Medicare carries with it substantial cost-sharing and premiums (Part B premiums amount to over 10 percent of the average monthly SSDI benefit, and coinsurance for physician and other health care services can be as much as 20 percent), as well as no out-of-pocket maximum; thus, Medicare beneficiaries seek out supplemental or alternative coverage. Coverage options include employer-provided insurance (e.g., retiree health insurance), non-group private supplemental coverage (Medigap), private Medicare Advantage plans, or Medicaid.

However, in contrast to the over-65 Medicare population, the SSDI-Medicare population faces additional barriers to accessing these coverage options: Early exit from the labor force generally precludes availability of employer-provided supplemental coverage; additionally, although federal law assures Medigap is guaranteed issue for the over-65 Medicare population, states are responsible for regulating Medigap for SSDI-Medicare beneficiaries, with resulting variation in Medigap access (Armour and O'Hanlon 2019). The result is that approximately 21 percent of SSDI-Medicare beneficiaries go without supplemental or Medicare Advantage

[2] End stage renal disease (ESRD) and amyotrophic lateral sclerosis (ALS) are the only other two groups and are substantially smaller than the 8 million SSDI Medicare beneficiaries, which account for approximately 13 percent of the total Medicare population (Koma et al. 2021).

coverage, in contrast to only 12 percent of the over-65 Medicare population (Cubanski et al. 2016). Although younger than the over 65 population, SSDI-Medicare beneficiaries, by definition, have a long-term health condition that interferes with their lives, and thus have substantial health care needs. Less generous health insurance coverage, and any resulting decreases in health care expenditures associated with cost-sharing, may therefore have a disproportionately negative impact on this population.

Although there is a substantial literature reviewing the impact of the Affordable Care Act's state-level Medicaid expansions on the *uninsured* population, these expansions may also impact the SSDI-Medicare population by increasing rates of supplemental coverage or decreasing expenses or increasing access through substitution from costly Medigap plans or narrow-network Medicare Advantage plans.

There is a long history of estimating the effects of health insurance coverage on a range of outcomes, including health service usage, health status, mortality, and labor market outcomes. Most of this research is based on the impacts of expanded health insurance coverage on the uninsured (extensive margin increases in coverage), although a line of research tracing back to the RAND Health Insurance Experiment (Newhouse et al. 1993; Aron-Dine et al. 2013) examines the impact of generosity coverage (intensive margin increases in coverage) on various outcomes of interest. But an early and consistent finding in this literature was a lack of evidence of a positive effect of health insurance coverage on health outcomes on average (e.g., Newhouse et al. 1993, Finkelstein and McKnight 2008, Baicker et al. 2013; see Levy and Meltzer 2008 and Rutledge 2016 for reviews). Although many of these studies find a substantial monetary benefit due to increased coverage, the marginally covered individual experienced little gain in health or work capacity.

This lack of an average effect on health and work outcomes belies the potential importance of coverage for vulnerable subpopulations, including the elderly, low-income groups, those with chronic health conditions, and those seeking behavioral health services (Card, Dobkins, and Maestas 2009, Andersen 2015). One particular subpopulation for which we would expect positive benefits of health coverage is the long-term disabled, especially given recent quasi-experimental evidence that larger SSDI cash benefits decrease beneficiary mortality (Gelber et al. 2018). Despite Medicare eligibility after two years of SSDI cash benefit eligibility, there are a limited number of prior studies on the role of cost-sharing Medicare in the health of this population.

This study presents an analysis of the impact in varying access to Medicaid on the health of the SSDI-Medicare population. It exploits 2014 Medicaid state expansions to estimate the impact on dual coverage rates, health care expenditures, and physician visits.

We find a statistically robust average increase in Medicaid coverage of 4.0–5.5 percentage points among SSDI-Medicare beneficiaries, an over 10 percent increase relative to baseline Medicaid coverage rate of 38 percent in our sample. There is substantial heterogeneity in this increase, however, with disproportionate large increases in coverage among white beneficiaries, beneficiaries with self-care or ambulatory difficulties, rural beneficiaries, and married beneficiaries without children. Although impacts on most other outcomes were statistically insignificant, we found a significant reduction in any out-of-pocket medical spending, consistent with Medicaid's limits on cost-sharing. Medicaid expansion also decreased premiums paid by rural beneficiaries.

There are two direct policy implications for exploring the effect of increased Medicaid access for the SSDI-Medicare population. First, since the role of government in the health care

sector continues to be an actively discussed area of policymaking, understanding the subpopulations most likely to be helped or hurt by changes in government-provided insurance coverage, by how much, and by which insurance structures, directly informs these discussions. Second, the SSDI population is large and diverse, with over 8 million disabled workers and millions more dependents and survivors (SSA 2022), so understanding the health needs and responses to health insurance coverage can provide insight as to how to optimally design this program and its structure going forward.

Background and Literature Review

Social Security Disability Insurance and Medicare Eligibility

In addition to retirement benefits, the Social Security Administration provides disability coverage for workers in the United States. Coverage and benefit level is determined by prior Social Security-taxable wages, but benefit eligibility requires a health condition or set of health conditions expected to last for at least 12 months or result in death, and which prevent earning at a Substantial Gainful Activity level ($1,180 per month in 2018). The application process can be lengthy, with many stages of potential appeal if rejected, and requires *de facto* labor force exit (Bound 1989). If determined to be disabled, individuals are entitled to monthly cash benefits five calendar months after their disability established onset date. Twenty-four months after initial monthly cash benefit entitlement, SSDI beneficiaries gain eligibility for Medicare coverage. SSDI benefits averaged $1,281 per month in 2020 (SSA 2021). Although this monthly benefit corresponds to a single individual being at 120 percent of the 2020 FPL, beneficiaries' poverty status depends on any earnings they may have (although sustained earnings above the Substantial Gainful Activity level will ultimately lead to benefits being withheld), receipt of income from other public programs or private disability insurance, as well as any income received by other

family members. The result is that SSDI-Medicare beneficiaries in our analyses have a wide range of family incomes and family sizes, placing many below 138 percent of the FPL and others well above.

On its own, fee-for-service Medicare carries with it a range of deductibles and a 20 percent coinsurance rate for physician expenditures. Additionally, there is no lifetime out-of-pocket maximum. As such, most Medicare beneficiaries purchase or otherwise obtain supplemental or private coverage, via Medicaid, Medigap, private Medicare Advantage, employer-provided plans, VA health benefits, or TRICARE. However, this supplemental coverage differs across type of Medicare beneficiary: In 2012, nearly 90 percent of over-65 Medicare beneficiaries had supplemental coverage, while under 80 percent of the under-65 Medicare population had supplemental coverage (Cubanski 2016). Due to the relatively lower assets and income of this population, the SSDI population has historically been substantially more likely to be eligible for Medicaid benefits, with 35 percent of the under-65 Medicare population being dually enrolled in Medicaid compared to 10 percent of the over-65 Medicare population.

Medicaid Expansion

In this paper, we consider the impact of the 2014 ACA Medicaid expansions on applications to SSI and SSDI. The ACA allowed states to expand Medicaid coverage to all low-income adults with household incomes up to effectively 138 percent of the FPL starting in 2014. Twenty-four states and the District of Columbia expanded coverage on or before January 1, 2014, and an additional seven states expanded Medicaid through 2017. In the absence of the ACA Medicaid expansions, SSDI-Medicare beneficiaries would generally be eligible for Medicaid supplemental coverage only if they also satisfied the income and asset tests of Supplemental Security Income

(SSI); the asset limit in particular is $2,000 per individual, which has stayed fixed in nominal terms for over three decades. Our analysis exploits the fact that some states did not expand Medicaid, and thus SSDI-Medicare beneficiaries in these non-expansion states act as controls for SSDI-Medicare beneficiaries in expansion states. We focus on the 14 states that expanded on January 1, 2014 to avoid econometric concerns over difference-in-differences estimation with staggered treatment (Goodman-Bacon 2021).

To the best of our knowledge, we are the first to consider the effect of Medicaid expansions on supplemental coverage and other outcomes of the SSDI-Medicare population. Others who have considered the effect of Medicaid expansions on disability programs have focused on application to and participation in disability programs, as well as changes in employment status among workers with disabilities (Burns and Dague 2017; Chatterji and Li 2016; Hall et al. 2017; Soni et al. 2017; Anand et al. 2018; Hall et al., 2018; Heim et al., 2021). These studies have found effects that vary by state, but generally show modest reductions in SSI participation in response to Medicaid expansions (a 3 to 7 percent reduction); an increase in employment among workers with disabilities; but no measurable impact on SSDI applications. Yet, application and participation are second order effects compared to the direct expansion in supplement coverage eligibility among those already receiving SSDI and covered by Medicare.

Several studies have looked at Medical Expenditure Panel Survey (MEPS) to estimate the impacts of Medicaid expansion on health insurance coverage, access, and utilization of adults with disabilities. A study of newly Medicaid-eligible adults under 65 with disabilities found that Medicaid expansion was associated with a 19.2 percentage point increase in receipt of primary care and a $457 decrease in out-of-pocket spending (Creedon et al., 2022). Another study of adults with disabilities found that Medicaid expansion increased coverage by Medicaid but

resulted in no changes in usual sources of care, unmet needs, or ER or physician visits (Dong, Gindling and Miller, 2022).

A study using the National Health Interview Survey found that Medicaid expansion is associated with an increased share of workers with disabilities, and the share of workers with disabilities reporting cost-related barriers to health care declined (Hill, Shin and Hyde, 2021). Medicaid expansion was also associated with reduced emergency department visits among adults with intellectual and developmental disabilities (Horner-Johnson et al., 2022).

A smaller set of papers has focused on impacts of Medicaid expansion on the health of individuals with disabilities. Among near-elderly, low-income adults, the Medicaid expansion was associated with improved health, including a 12 percent decrease in metabolic syndrome and a 34 percent reduction in compromised activities of daily living (ADLs) (McInerney et al., 2020). The ACA's Medicaid expansion has been previously found to significantly reduce mortality; near-elderly adults in states with expansions experienced a 0.132 percentage point decline in annual mortality (a 9.4 percent reduction over the sample mean) (Miller, Johnson and Wherry, 2021).

However, none of these studies has focused on the disabled Medicare population, which, although covered, still face substantial cost-sharing. The aim of this analysis is to quantify the impact of Medicaid expansion, the stated goal of which was to reduce uninsurance, on the *underinsurance* of this population with chronic health conditions.

Data and Methods

To conduct our analysis, we rely on three separate, nationally representative surveys: the American Community Survey (ACS), the Current Population Survey's Annual Social and Economic Supplement (CPS ASEC), and the 2014 panel of the Survey of Income and Program

Participation (SIPP). In addition to rich sociodemographic data and a small array of disability measures, each of these three data sets fields questions that allow for four necessary sample restrictions:

1) Income and family size, allowing for calculation of a family's income relative to the Federal Poverty Line (FPL)
2) Social Security and Supplemental Security Income receipt and reason for receipt (including age of recipient)
3) Current health care coverage, including Medicare, Medicaid, and other coverage options
4) State of residence.

These sample restrictions allow us to observe our treated population: SSDI recipients covered by Medicare under 138 percent of the FPL but not receiving SSI (which would typically grant Medicaid eligibility), residing in 2014 Medicaid expansion states after 2014. It also allows us to observe two control groups: similar SSDI-Medicare beneficiaries under 138 percent of the FPL in non-expansion states and SSDI-Medicare beneficiaries with higher income, rendering them Medicaid-ineligible even in expansion states.

Each data set has its own advantages and drawbacks. The ACS's chief advantage is its size; given that SSDI-Medicare beneficiaries are less than 5 percent of the population, the large sample size of the ACS—over 20,000 of such individuals per year—allows for greater statistical power in identifying the impact of Medicaid expansion on supplemental Medicaid coverage for this population. However, the ACS is cross-sectional, preventing us from following the same beneficiaries over time. Furthermore, it has no health outcome or utilization measures, limiting its usefulness for analyses of the impact of Medicaid expansion on outcomes other than repeated cross-sectional analyses of changes in supplemental coverage, which we conduct overall and by demographic or policy subgroups.

The CPS ASEC has a more limited sample size and is essentially a repeated cross-section for this analysis; however, it has a richer array of outcome measures than the ACS, including out-of-pocket medical expenditures, health insurance premiums paid, and self-reported health.

The 2014 SIPP's sample size is even smaller, yet it is longitudinal in nature, beginning in 2013 and following respondents through 2017, and elicits similar health measures as the CPS ASEC. This longitudinal structure allows for within-individual measures of policy impact; for some outcome variables, we are thus able to measure impacts on *changes* in medical expenditures by SSDI-Medicare beneficiaries newly covered by Medicaid.

Finally, we note one additional source of heterogeneity: Although all states have programs for low-income Medicare beneficiaries to defray the costs from cost-sharing provisions and premiums (i.e., the Qualified Medicare Beneficiary, Specified Low-Income Medicare Beneficiary, Qualifying Individual, and Qualified Disabled and Working Individuals programs), a simulated instrument we constructed showed there was not substantial heterogeneity across states in the eligibility of these programs.

However, there *is* substantial heterogeneity in states in terms of the availability of Medicaid "buy-in" programs, whereby disabled individuals may "buy into" Medicaid eligibility through paying specified premiums if they satisfy that state's income and asset tests associated with its buy-in program. We group states into three categories according to the stringency of these buy-in restrictions to examine whether Medicaid expansion's effects differed by pre-existing Medicaid buy-in availability. Seven states do not have a buy-in program and thus are grouped in the lowest buy-in eligibility category. To measure the stringency of states with buy-in programs, we construct a simulated instrument-style measure (Gruber 1997), whereby we start with all SSDI-Medicare beneficiaries and their income and assets from the 2013 year of the SIPP. Then, state-

by-state, we calculate what fraction of these beneficiaries would be eligible to buy into Medicaid if they all resided in that state.

Two states had programs that covered less than 20 percent of our SSDI-Medicare beneficiary sample; thus, we group these states with the seven with no buy-in program in the lowest buy-in eligibility category. On the other hand, nine states and DC had buy-in programs that covered over 70 percent of our sample. We thus conduct heterogeneity analyses by buy-in generosity, with the ten states covering 20 percent or less of beneficiaries, nine states and DC covering 70 percent or more, and the 31 states that covered an intermediate number, as three groups for which the impact of Medicaid expansion may vary. Our hypothesis is that states with more generous Medicaid buy-in programs should experience a smaller increase in dual coverage after expansion, since Medicaid was more available to SSDI-Medicare beneficiaries prior to expansion. However, one note is that we are unable to conduct this analysis on the bottom ten states with no or the most stringent buy-in programs, since careful examination of this group indicates that only one state—Hawaii—was both in this group and expanded Medicaid in 2014, and that our entire sample size for that state was 68 individuals.

As noted above, each dataset is nationally representative, and all analyses are based on the individual-level weights provided. In general, we limit our analyses to respondent years 2013 and 2015, so there is one pre-treatment period and one post-treatment period. We conduct additional analyses that include more years for robustness. We limit our sample to SSDI-Medicare beneficiaries ages 25–59, and we estimate three varieties of difference-in-differences models:

Cross-State Difference-in-Differences among SSDI-Medicare Beneficiaries under 138 percent of FPL

$$Y_{it} = \alpha + \beta_T ME_{it} POST_t + \beta_0 ME_{it} + \beta_1 POST_t + \gamma_s + X_{it}\boldsymbol{\Gamma} + \epsilon_{it}$$

That is, the dependent variable is an outcome of interest, including Medicaid coverage, any physician visits, health care expenditures, or health care premiums, depending on the dataset. The coefficient of interest is β_T, which captures the effect of an SSDI-Medicare beneficiary living in a Medicaid Expansion (ME) state after its expansion (POST, which is effectively a year fixed effect). Other coefficients control for the separate baseline contributions of these elements as well as state-fixed effects and a matrix of individual and household characteristics *Xit*. We limit the sample to SSDI-Medicare beneficiaries in families with income at or below 138 percent of the FPL across states that expanded Medicaid in 2014 or have not expanded Medicaid to date. In all analyses, we *exclude* beneficiaries who also receive SSI income, since these individuals automatically have Medicaid coverage in the vast majority of states and thus would not be directly affected by the ACA's Medicaid expansions.

Within-Expansion-State Difference-in-Differences by Income

$$Y_{it} = \alpha + \beta_T ELIG_{it} POST_t + \beta_0 ELIG_{it} + \beta_1 POST_t + \gamma_s + X_{it}\boldsymbol{\Gamma} + \epsilon_{it}$$

We examine the same outcome variables as in the first specification. We limit the sample only to states that expanded Medicaid in 2014. Again, the coefficient of interest is β_T, but which now captures the effect of an SSDI-Medicare beneficiary with income under 138 percent of the poverty line (ELIG) after Medicaid expansion (POST, which is effectively a year fixed-effect), where SSDI-Medicare beneficiaries with income between 200-400 percent of the FPL act as controls; we exclude individuals between 138 percent and 200 percent of the FPL due to concerns over income measurement error as well as endogeneity of poverty status, and thus fidelity of treatment and control groups, in repeated cross-sectional data with a difference-in-differences framework. This specification allows for a placebo test, wherein we limit the sample

to states that *did not* expand Medicaid in 2014, and thus for whom there should be no systematic difference in outcomes. Although individuals between 100 percent and 138 percent of the FPL in non-expansion states generally became eligible for subsidized non-group coverage in ACA marketplaces, current Medicare beneficiaries are not eligible to purchase marketplace plans, and thus we include SSDI-Medicare beneficiaries in this FPL range in our analysis.

Triple Difference-in-Differences

$$Y_{it} = \alpha + \beta_T ME_{it} POST_t ELIG_i + \beta_0 ME_{it} + \beta_1 POST_t + \beta_2 ELIG_i + \beta_3 ME_{it} POST_t + \beta_4 POST_t ELIG_i + \gamma_s + X_{it}\boldsymbol{\Gamma} + \epsilon_{it}$$

We combine these two difference-in-differences analyses into a triple difference approach. The coefficient of interest is β_T, which captures the effect of an SSDI-Medicare beneficiary living in a Medicaid Expansion (ME) state, after its expansion (POST), and eligible for coverage under this expansion due to being under 138 percent of the FPL (ELIG).

Results

Descriptive Statistics

Table 1 provides summary statistics for SSDI-Medicare beneficiaries in the 2013 ACS. We divide these beneficiaries into six subgroups for comparisons. First, we divide them by whether they resided in a state that expanded Medicaid in 2014 versus never expanding Medicaid as of 2022. We further divide these two groups into three coverage status categories: Medicare only, Medicare + Medicaid, or Medicare + other, which includes employer-provided and direct-purchase, as well as VA, TRICARE, or Indian Health Services.

We note here a data limitation: Across our datasets, we do not observe whether an individual is covered by a Medicare Advantage plan or is in traditional Medicare without supplemental

coverage. Both individuals would be classified as "Medicare only;" however, Medicare Advantage and Medicaid are not mutually exclusive, and there are Medicare Advantage plans specifically designed for dually eligible benefits. We leave to future research heterogeneity analyses utilizing data such as the restricted-use Medicare Current Beneficiary Survey to examine whether there were differences in Medicaid dual eligibility in this population for individuals on traditional Medicare versus Medicare Advantage in expansion states.

Comparing across groups, we observe a few differences: Expansion states tend to have SSDI-Medicare beneficiaries who are disproportionately white, urban or suburban, and unmarried. Age, sex, parental status, poverty status, and disability category do not systematically or substantially differ across expansion states.

Even more stark are the differences in the demographics by supplemental coverage status. Medicare-Medicaid dual beneficiaries are more likely to be younger and unmarried; have a cognitive, independent living, or self-care difficulty; and be in poverty, than both Medicare-only and Medicare + other beneficiaries.

Over 60 percent of Medicare + other beneficiaries are married, relative to only approximately 20 percent of Medicare-Medicaid beneficiaries and approximately 40 percent of Medicare-only beneficiaries; these beneficiaries may thus be receiving supplemental coverage through their spouses' insurance. Additionally, less than 20 percent of Medicare + other beneficiaries are under 138 percent of the FPL, compared to over 40 percent of Medicare-only beneficiaries and two-thirds of Medicare-Medicaid beneficiaries. Over 70 percent of Medicare + other beneficiaries are in their 50s, relative to over 60 percent of Medicare-only beneficiaries and over 50 percent of Medicare-Medicaid beneficiaries. Finally, these beneficiaries with other supplemental coverage are also more likely to be white than the other beneficiary groups.

One conclusion from these statistics is that even before expansion, SSDI-Medicare beneficiaries with non-Medicaid supplemental coverage tend to be richer and married and are disproportionately white. Medicare-Medicaid dual-beneficiaries are more likely to have cognitive, independent living, and self-care difficulties, are less likely to be married, and more likely to be in poverty. As the sample sizes indicate, just over a third of all SSDI-Medicare beneficiaries in our sample are dually enrolled in Medicare and Medicaid. We now turn to graphical and difference-in-differences analyses to test whether Medicaid expansion changed the fraction of SSDI-Medicare beneficiaries also enrolled in Medicaid, and whether certain subgroups experienced greater enrollment rates.

Graphical Evidence of Impact of Medicaid Expansion on Dual Coverage

Figure 1, Panels A and B show supplemental coverage over time across 2014 Medicaid expansion states and non-expansion states. One difference across states is clear: Even before 2014, non-expansion states tended to have lower rates of dual Medicare-Medicaid coverage and higher rates of Medicare-only SSDI beneficiaries. Although we see a gradual increase in dual coverage in non-expansion states through the end of the 2010s, this increase happens immediately in 2015 for the 2014 expansion states, providing graphical evidence of the impact of Medicaid expansion on dual coverage of SSDI-Medicare beneficiaries.

Figure 2, Panels A and B provide a more direct comparison by plotting dual coverage rates for 2014 expansion and non-expansion states on the same graphs. Panel A plots the raw averages, whereas Panel B subtracts out from each state's annual dual coverage average from 2009 to 2011, thereby showing the average within-state change in dual coverage status, by expansion status. Graphically, there is little evidence of pre-2014 trend differences; furthermore, we see a dramatic increase in 2015. However, although we see an increase in dual coverage in subsequent

years for expansion states, we also see an increase in non-expansion states. Hence, in our analysis, we focus on the difference in coverage and other outcomes comparing 2015 to 2013, across 2014 expansion and non-expansion states.

One other pattern that emerged from Figure 1 was that the rate of non-Medicaid supplemental coverage has declined since the 2000s in both 2014 expansion and non-expansion states. Figure 3 shows that the driver of this decline has been private health insurance, primarily through a decline in employer/union-provided insurance, likely through respondents' spouses, and, to a lesser extent, through direct-purchase insurance, which would include Medigap plans. There was a slight increase in TRICARE coverage, and VA coverage has stayed relatively flat in this period. We leave to future research the causes of this decline, especially amidst a general recovery in the labor market during this period. We now turn to reporting the estimates from our difference-in-differences analyses.

Difference-in-Difference Estimates of Impacts on Dual Medicaid-Medicare Coverage

Table 2 shows the results of estimating the above regression equations with dual coverage as the outcome variable. We show treatment effects from three specifications, as well as one placebo specification that should be statistically insignificant if our identifying assumption holds. Additionally, we conduct our analyses for all SSDI-Medicare beneficiaries in our ACS sample in 2013 and 2015, as well as separate regressions for a number of subgroups to explore heterogeneity in the impact of Medicaid expansion on dual coverage.

We note first that there is a strong and statistically significant increase in the rate of dual Medicare-Medicaid coverage among those potentially eligible for Medicaid expansion. The first specification, which compares SSDI-Medicare beneficiaries under 138 percent of the FPL in 2014 expansion states versus non-expansion states, in 2013 and in 2015, shows that those

eligible for Medicaid after its expansion reported dual coverage at a rate 4.5 percentage points higher. Given that baseline dual coverage stood at 38 percent in 2013, this effect is an over 10 percent increase in dual coverage rates.

The second specification—comparing within 2014 expansion states but between those under 138 pwexwnr of the FPL and those over 200 percent of the FPL, in 2013 and 2015—estimates a slightly smaller increase of 4.0 percentage points, albeit more precisely estimated and still statistically indistinguishable from the first specification's estimate.

The placebo specification—comparing within non-expansion states, between those under 138 percent of the FPL and those over 200 percet of the FPL, in 2013 and 2015—arrives at a statistically insignificant estimate. Since there was no corresponding Medicaid policy change in these states that would differentially affect these groups, this placebo check is effectively passed.

Our final specification combines the first and second specifications into a triple difference model, arriving at a slightly larger estimate of 5.5 percentage points, which is statistically significant at greater than the 0.01 level. In short, we find a statistically and economically significant increase in dual coverage among those eligible for Medicaid expansion, robust across specifications, and with a research design that passes a placebo check.

The rest of Table 2 provides corresponding estimates by subgroup to explore which types of SSDI-Medicare beneficiaries are driving the increase in overall dual coverage rates. Although we could discuss each result in turn, we focus on the consistently statistically significant results that also pass the placebo specification.

Namely, the only racial/ethnic group that saw measurable increases in dual coverage were non-Hispanic white SSDI-Medicare beneficiaries, accounting for nearly the entire effect.

Given existing racial/ethnic disparities in health care access, quality, cost, and use for the under-65 Medicare population (Na et al. 2017), Medicaid expansion does not appear to have addressed these disparities. If anything, they may be exacerbated if white beneficiaries are now disproportionately covered with lower cost-sharing provisions. However, we note that point estimates for the other racial/ethnic groups are similar to the estimates for non-Hispanic white respondents, and the lack of statistical significance may be due to substantially lower sample sizes for these other groups.

Female SSDI-Medicare beneficiaries appear disproportionately likely to experience increased rates of dual coverage; however, this effect is not significant in the second, within-state specification. Similarly, the point estimate for rural respondents ranges from a marginally significant 5 percentage points to 9.7 percentage points. The placebo check for rural respondents is also marginally significant, thus marginally failing this placebo test, and this estimate is less precisely estimated than the race/ethnicity results above, perhaps due again to sample size issues. However, this result is consistent with previous findings on the disproportionately stronger impact of Medicaid expansion on rural uninsurance rates (Courtemanche et al. 2019).

The most consistently statistically significant result is the increase in dual coverage among married respondents, ranging from 7.1 percentage points to 10.7 percentage points. One explanation for this difference is the pre-expansion household asset limits for Medicaid eligibility; prior to the ACA's expansions, spousal assets counted against SSI and Medicaid eligibility for disabled individuals, whereas after expansion, only income is included. This asset constraint thus appears to be disproportionately binding for married couples.

The estimates for heterogeneity in effect by the presence of one's own child under the age of 18 in the household tell a more complex story. Although the effect of Medicaid expansion

on beneficiaries who do not have children is consistently statistically significant, its magnitude ranges from 3.2 percentage points to 5.1 percentage points. The vast majority of the sample does not have children in the household, and while the estimates for the subsample *with* children under the age of 18 are not consistently statistically significant, the point estimates are substantially larger—3 to 7 percentage points larger—than the estimates for beneficiaries without children. We thus cannot reject that the effect sizes are the same.

There is suggestive evidence that SSDI-Medicare beneficiaries with ambulatory or self-care difficulties are more likely to gain dual coverage; however, the statistical significance of the effect sizes for these groups is not consistent, and there may be general trend differences across poverty groups, as indicated in the placebo specification. We do note that the point estimate for those with cognitive difficulties is consistently near zero across specifications and never statistically significant. In contrast to prior research that has shown that those with psychiatric disabilities are more likely to be impacted by Medigap expansions (Armour and O'Hanlon 2019), we do not find such a pattern here with regards to Medicaid expansion, a topic that is worth future exploration.

Finally, there does appear to be a disproportionate increase in dual coverage in states "in the middle" of the Medicaid buy-in generosity distribution, consistent with Medicaid expansion in these states newly offering Medicaid eligibility to a greater fraction of SSDI-Medicare beneficiaries.

Overall, we find that Medicaid expansion did indeed increase rates of dual coverage among SSDI-Medicare beneficiaries, concentrated among non-Hispanic white, female, rural, and married respondents, with suggestive evidence that these increases may be driven by those with

self-care or ambulatory difficulties. We now turn to impacts on health care expenditures and physician visits.

Health Care Outcomes

We now turn to estimates of the impact of Medicaid expansion on health care expenditures, premiums, and our only measure of utilization: any physician visit in the past year. We note that these analyses are intent-to-treat; given the 10–15 percent increase in dual coverage, the approximate treatment-on-the-treated effect corresponds to these estimated effects scaled up 8 to 10 times.

First, Table 3 shows the outcome measures we focus on in the CPS ASEC: whether there were any out-of-pocket family health care expenditures in the last year, the log of these expenditures, whether the family paid any health care premiums in the past year, and the log of total family premiums paid.

We find that the vast majority of families with SSDI-Medicare have out-of-pocket health care expenditures in our baseline year. Spending is lowest for dually covered beneficiaries and highest for beneficiaries with non-Medicaid supplemental coverage (which, given that these beneficiaries are disproportionately married, may indicate cost-sharing expenditures from spousal insurance plans and/or spousal utilization).

Approximately three-quarters of Medicare + other beneficiaries report paying health care premiums in a given year, whereas less than half of Medicare + Medicaid beneficiaries and Medicare only beneficiaries paid premiums. Conditional on paying premiums, the dually covered beneficiaries pay the least amount.

Table 4 shows the results of our difference-in-differences analysis of the impact of Medicaid expansion on these health care outcome measures in the CPS ASEC. We report results here corresponding to the triple difference model from Specification 3 from Table 2. The only statistically significant effect we find is a 12.3 percentage point reduction in the likelihood of reporting any out-of-pocket health care expenditures. Given the estimated impact on an increase in dual coverage rates from Table 2 and the baseline average from Table 3, if the entirety of this effect is driven by increases in dual coverage, the implication is that nearly every one of these newly dually covered individuals goes from having paid out-of-pocket for health care to no longer paying anything for their health care, although we note that the confidence interval on this estimate encompasses far smaller reductions in the prevalence of out-of-pocket expenditures.

Given the heterogeneous coverage effects from Table 2, we examine whether there is heterogeneity in treatment for groups that saw disproportionate increases in coverage due to Medicaid expansion. We find that non-Hispanic white beneficiaries appear to be the drivers of the overall effect on out-of-pocket costs, with statistically insignificant and lower magnitude point estimates for rural and married beneficiaries. We do see a substantial decline in total premiums paid by rural beneficiaries, but we note the small sample size of 84 driving this result and leave to future research the exploration of these differences.

Our final analysis draws on the 2014 panel of the SIPP, which elicits responses from participants for reference years 2013, 2014, 2015, and 2016. We track similar outcomes as in our CPS ASEC analysis, with the addition of one more measure: whether the respondent reported visiting a physician in the past year. We apply the same sample criteria as in the prior analyses, and like in those analyses, we limit our SIPP analysis to the 2013 and 2015 reference years.

The primary difference between the SIPP and the CPS ASEC and ACS is that the SIPP is structured as a panel survey: Once recruited into the first panel year, all households are reinterviewed over the three subsequent years, subject to sample attrition. Since we can track the same SSDI-Medicare beneficiaries over time, we explore two analytic extensions: First, we conduct analyses of subgroups based on 2013 supplemental coverage status, allowing us to examine the impact of Medicaid expansion on beneficiaries without prior Medicaid coverage or without any supplemental Medicare coverage of any kind. Second, for our continuous variable measures (i.e., out-of-pocket expenditures or premiums paid), we can include individual-level fixed effects, altering the analysis to estimate the impact of Medicaid expansion on changes in spending. We report these analyses in Tables 5 and 6.

In Table 5, we report our results for our triple difference models with state-level fixed effects. The first column "Specification 3: Overall" is the SIPP equivalent of column 1 from Table 4. We find no statistically significant change in the likelihood of visiting a physician in the past year, nor in the likelihood of reporting any health expenditure. However, we find a statistically and economically significant reduction in out-of-pocket health expenditures. Although the CPS ASEC findings were of a reduction on the extensive margin (any expenditures), this SIPP analysis shows a reduction on the intensive margin. Given the differences in survey design, question, and construct (individual as opposed to family), we cannot speak to whether these are inconsistent results or just both suggestive of Medicaid expansion's primary effect being a reduction of out-of-pocket medical expenditures, arising in different outcome measures due to survey idiosyncrasies.

Columns 2 and 3 show the corresponding results when the sample is limited to SSDI-Medicare beneficiaries without Medicaid coverage in 2013 or without any supplemental

coverage in 2013. We find that the effects are even stronger for these groups, again indicating that Medicaid expansion reduced out-of-pocket expenditures among SSDI-Medicare beneficiaries who had limited supplemental coverage in the absence of these expansions.

Table 6 presents the results of specifications that include individual-level fixed effects. Our outcome variables are thus constrained to our continuous variables, and now we are estimating the impact of Medicaid expansion on within-individual changes in health care expenditures or premiums. All the point estimates are negative here, but the only statistically significant ones are for those without Medicaid coverage in 2013. Here, we see a similar reduction in health care expenditures as in Table 5, as well as substantial reductions in premiums paid.

These SIPP-based analyses indicate that Medicaid expansion appears to have decreased out-of-pocket expenditures for SSDI-Medicare beneficiaries who would have been newly eligible for Medicaid coverage, while we see no corresponding drop in the likelihood of seeing a physician.

Conclusion

This analysis shows that ACA Medicaid expansions substantially increased dual Medicaid-Medicare coverage among a subset of disabled Medicare beneficiaries. The beneficiaries most likely to gain dual coverage were disproportionately white, female, rural, married, and childless, as well as having ambulatory or self-care disabilities. There was a measurable decrease in paying any out-of-pocket health care expenditures, although there was no change in the likelihood of visiting a physician. There is suggestive evidence that health care premiums declined, although this evidence depended on subgroup (e.g., rural beneficiaries) and specification. All of these

findings speak to Medicaid expansion's impact on SSDI-Medicare beneficiaries: It increased supplemental coverage and lowered out-of-pocket health care expenses, albeit not uniformly for this long-term disabled population.

This analysis speaks to three areas of policy and research interest: first, the large and growing literature on the many effects of ACA Medicaid expansions; second, the limited supplemental coverage options available to the disabled Medicare population, a population with long-term health conditions for whom traditional Medicare, although providing more insurance, may still result in expensive out-of-pocket health care costs; and third, the sensitivity of physician visits by this population to the structure and extent of health care coverage.

This analysis was preliminary and constrained by the data available. But having established that Medicaid expansion measurably changed the coverage status of hundreds of thousands of SSDI-Medicare beneficiaries, we leave to future research the medium- and long-term impact of this coverage change on the pattern of physician utilization and on any resulting changes to health status.

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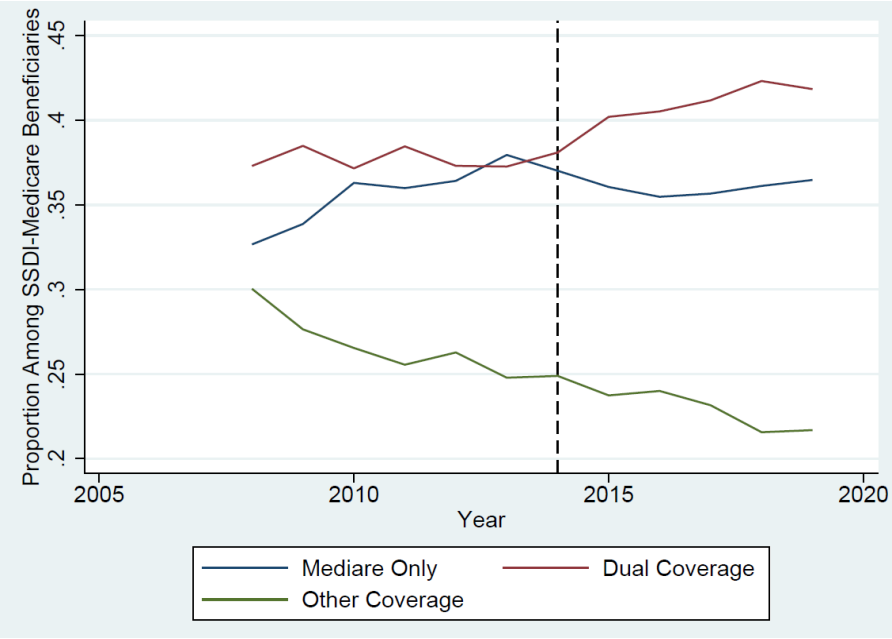
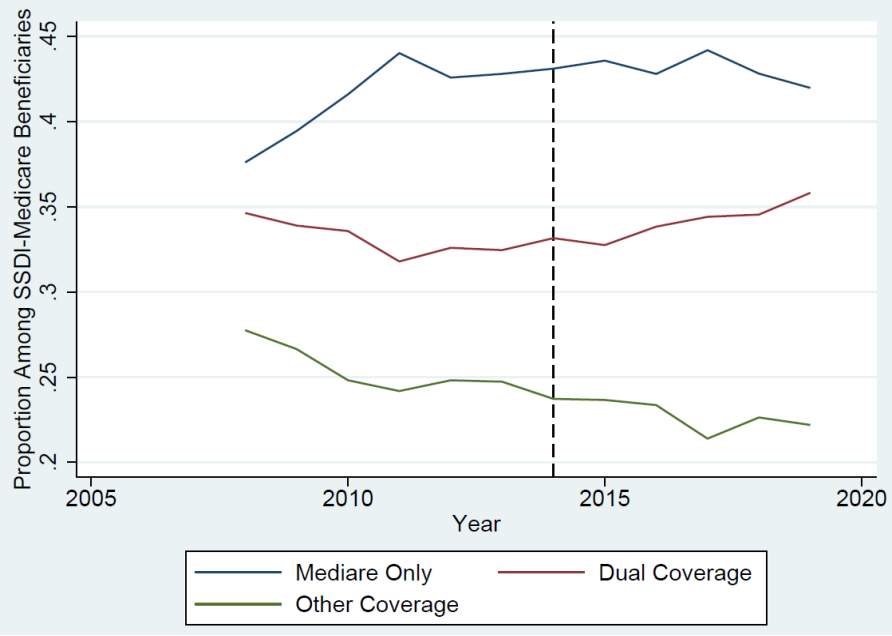
Figure 1: State-Level Trends in SSDI-Medicare Beneficiary Supplemental Coverage Status by Expansion State and Year

Panel A: 2014 Expansion States



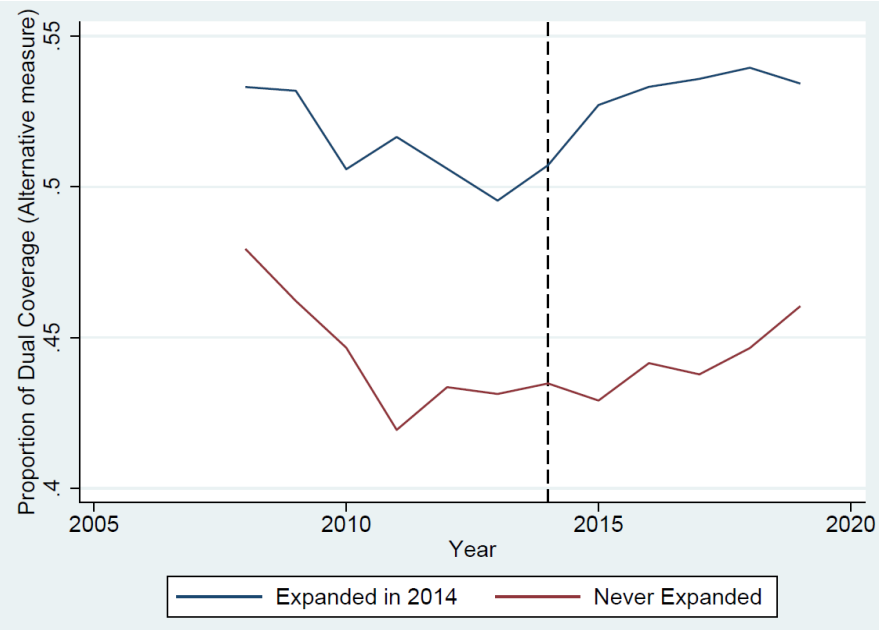
Panel B: Non-Expansion States



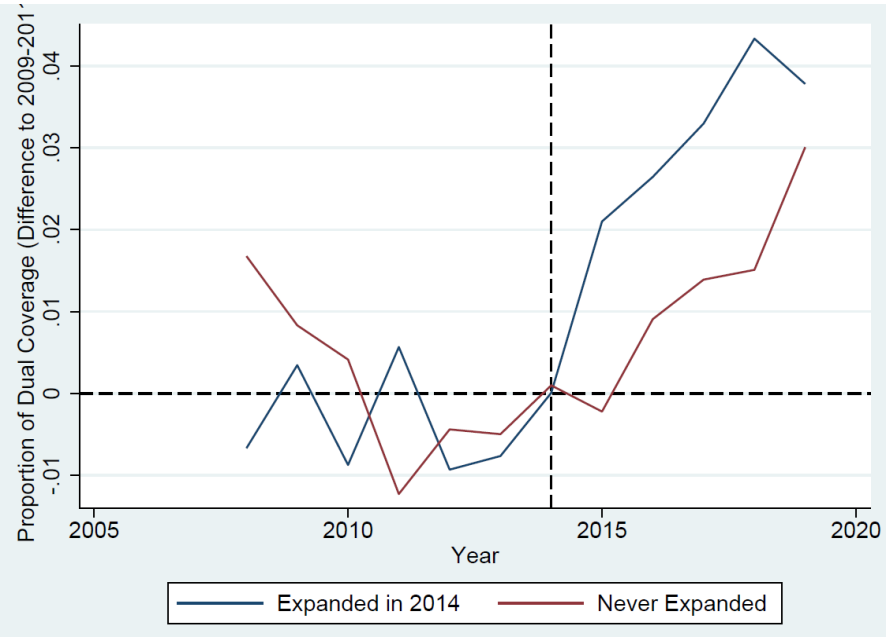
Note: Calculations from ACS, limited to SSDI-Medicare beneficiaries, age 25-59, in 2014 Medicaid expansion states and never-expanded states. “Dual coverage” refers to beneficiaries reporting both Medicare and Medicaid coverage, “Medicare only” refers to beneficiaries reporting only Medicare coverage, and “Other” refers to beneficiaries reporting both Medicare coverage and another, non-Medicaid source of coverage.

Figure 2: State-Level Trends in SSDI-Medicare Beneficiary Dual Coverage Status by Expansion State, Year, and Pre-2014 Adjustment

Panel A: Dual Coverage (Raw)

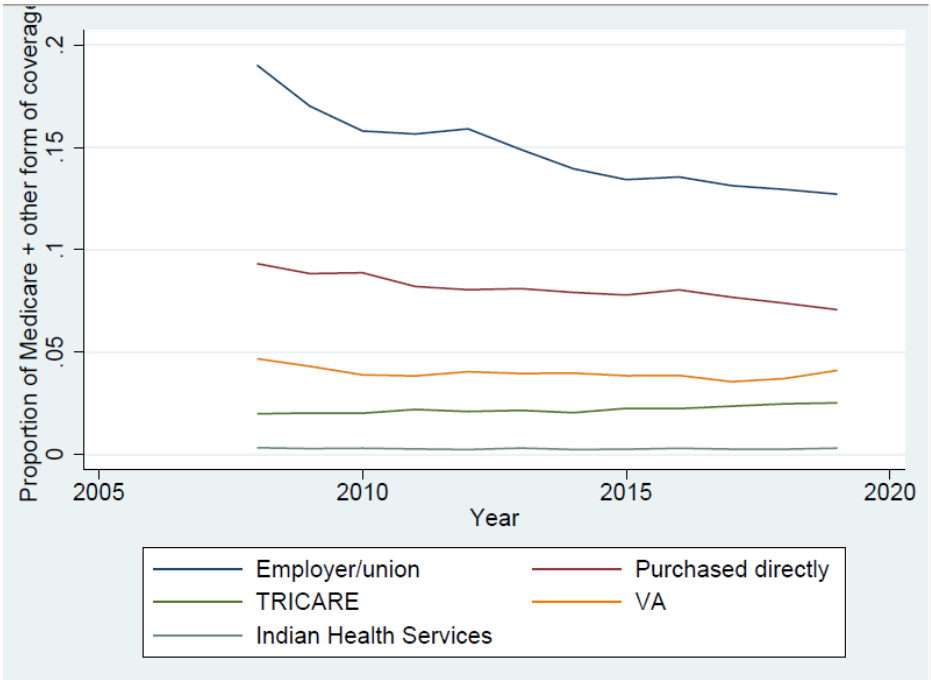


Panel B: Dual Coverage (Minus State-Level 2009-2011 Average)



Note: Calculations from ACS, limited to SSDI-Medicare beneficiaries, age 25-59, in 2014 Medicaid expansion states and never-expanded states. "Dual coverage" refers to beneficiaries reporting both Medicare and Medicaid coverage.

Figure 3: Sources of Non-Medicaid Supplemental Coverage for SSDI-Medicare Beneficiaries, by Year and Type of Coverage



Note: Calculations from ACS, limited to SSDI-Medicare beneficiaries, age 25-59, in 2014 Medicaid expansion states and never-expanded states.

Table 1. Summary statistics for SSDI-Medicare beneficiaries living in states that expanded Medicaid in 2014 and non-expansion states, ACS 2013

	(1) Medicare only, 2014 Expansion	(2) Medicare only, Non-Expansion	(3) Medicare + Medicaid, 2014 Expansion	(4) Medicare + Medicaid, Non-Expansion	(5) Medicare + other, 2014 Expansion	(6) Medicare + other, Non-Expansion
Female	0.471	0.483	0.478	0.538	0.495	0.513
	(0.499)	(0.500)	(0.500)	(0.499)	(0.500)	(0.500)
Non-Hispanic White	0.746	0.683	0.732	0.629	0.813	0.743
	(0.435)	(0.465)	(0.443)	(0.483)	(0.390)	(0.437)
Non-Hispanic Black	0.106	0.201	0.120	0.242	0.070	0.162
	(0.307)	(0.401)	(0.325)	(0.428)	(0.254)	(0.369)
Non-Hispanic Other	0.049	0.030	0.056	0.032	0.057	0.038
	(0.216)	(0.171)	(0.230)	(0.176)	(0.233)	(0.191)
Hispanic	0.099	0.086	0.092	0.097	0.060	0.057
	(0.299)	(0.280)	(0.289)	(0.296)	(0.237)	(0.232)
Urban/Suburban	0.690	0.593	0.719	0.601	0.692	0.610
	(0.463)	(0.491)	(0.449)	(0.490)	(0.462)	(0.488)
Age 25-39	0.118	0.101	0.167	0.154	0.078	0.078
	(0.323)	(0.301)	(0.373)	(0.361)	(0.269)	(0.268)
Age 40-49	0.254	0.246	0.279	0.280	0.198	0.210
	(0.435)	(0.430)	(0.448)	(0.449)	(0.399)	(0.407)
Age 50-59	0.628	0.654	0.554	0.566	0.723	0.712
	(0.483)	(0.476)	(0.497)	(0.496)	(0.447)	(0.453)
Married	0.377	0.427	0.207	0.241	0.611	0.623
	(0.485)	(0.495)	(0.405)	(0.428)	(0.488)	(0.485)
Lives with Child<18	0.115	0.117	0.120	0.111	0.136	0.128
	(0.319)	(0.322)	(0.325)	(0.314)	(0.343)	(0.335)
Cognitive difficulty	0.353	0.333	0.511	0.467	0.305	0.316
	(0.478)	(0.471)	(0.500)	(0.499)	(0.461)	(0.465)
Ambulatory difficulty	0.477	0.528	0.494	0.559	0.512	0.539
	(0.500)	(0.499)	(0.500)	(0.497)	(0.500)	(0.499)
Independent living difficulty	0.385	0.372	0.513	0.516	0.380	0.389
	(0.487)	(0.484)	(0.500)	(0.500)	(0.486)	(0.488)
Self-care difficulty	0.197	0.202	0.293	0.309	0.214	0.231
	(0.398)	(0.402)	(0.455)	(0.462)	(0.410)	(0.422)
Vision difficulty	0.096	0.114	0.128	0.142	0.086	0.104
	(0.295)	(0.317)	(0.334)	(0.349)	(0.280)	(0.305)
Hearing difficulty	0.076	0.077	0.096	0.096	0.090	0.096
	(0.265)	(0.266)	(0.294)	(0.295)	(0.286)	(0.295)
Poverty <= 138	0.418	0.427	0.660	0.679	0.144	0.171
	(0.493)	(0.495)	(0.474)	(0.467)	(0.351)	(0.377)
Observations	4,670	3,502	5,397	3,128	3,409	2,257

Source: ACS 2013; SD in parenthesis

Table 2: Effect of Medicaid Expansion on Dual Coverage, Overall and By Subgroup Populations

	Specification 1: All States, Poverty <= 138, Post*2014 Expansion vs Non-Expansion			Specification 2: 2014 Expansion States, Post*Poverty<=138 vs >200			Placebo Specification: Non-Expansion states, Post*Poverty<=138 vs >200			Specification 3: All States, Post*Expansion* Poverty<=138 vs >200		
	β	se	N	β	se	N	β	se	N	β	se	N
Overall	**0.045****	**(0.02)**	**19,395**	**0.040*****	**(0.01)**	**22,055**	**-0.02**	**(0.02)**	**14,552**	**0.055*****	**(0.02)**	**36,607**
Subgroups:												
Male	0.027	(0.024)	9,887	0.045**	(0.020)	11,293	0.001	(0.026)	7,212	0.044	(0.033)	18,505
Female	0.062**	(0.028)	9,508	0.034	(0.021)	10,762	-0.028	(0.019)	7,340	0.063**	(0.029)	18,102
Non-Hispanic white	0.045**	(0.021)	13,076	0.043***	(0.015)	16,572	-0.004	(0.018)	9,818	0.047**	(0.023)	26,390
Non-Hispanic Black	0.051	(0.043)	3,555	0.037	(0.035)	2,348	-0.065	(0.054)	3,007	0.090	(0.061)	5,355
Non-Hispanic other	0.053	(0.110)	943	0.018	(0.077)	1,194	-0.031	(0.115)	503	0.074	(0.131)	1,697
Hispanic	0.069	(0.059)	1,816	0.002	(0.040)	1,940	-0.050**	(0.019)	1,222	0.043	(0.044)	3,162
Rural	0.070**	(0.027)	6,674	0.050*	(0.027)	6,483	-0.054*	(0.029)	5,577	0.097**	(0.039)	12,060
Urban/Suburban	0.031	(0.023)	12,721	0.036**	(0.013)	15,572	0.003	(0.017)	8,975	0.034	(0.021)	24,547
Age 25-39	0.088	(0.063)	2,477	0.047	(0.045)	2,877	-0.071	(0.069)	1,661	0.127	(0.080)	4,538
Age 40-49	0.063*	(0.034)	5,006	0.052	(0.032)	5,334	0.017	(0.038)	3,526	0.036	(0.048)	8,860
Age 50-59	0.029	(0.023)	11,912	0.029	(0.022)	13,844	-0.018	(0.017)	9,365	0.046*	(0.027)	23,209
Not married	0.029	(0.021)	15,316	0.036	(0.022)	13,959	-0.015	(0.029)	8,660	0.051	(0.035)	22,619
Married	0.105***	(0.038)	4,078	0.071**	(0.031)	8,096	-0.037	(0.024)	5,892	0.107***	(0.039)	13,988
No Children<=18yr	0.040**	(0.016)	16,907	0.032**	(0.014)	19,413	-0.019	(0.013)	12,834	0.051***	(0.019)	32,247
Any Children<=18yr	0.111*	(0.063)	2,487	0.086**	(0.039)	2,642	0.002	(0.057)	1,718	0.080	(0.065)	4,360
Cognitive difficulty	0.007	(0.031)	8,341	0.023	(0.018)	8,951	0.006	(0.032)	5,553	0.019	(0.037)	14,504
Ambulatory difficulty	0.054**	(0.025)	9,966	0.023	(0.023)	10,593	-0.041**	(0.017)	7,685	0.063**	(0.028)	18,278
Independent living difficulty	0.044	(0.033)	8,639	0.010	(0.028)	9,608	-0.021	(0.018)	6,272	0.033	(0.033)	15,880
Self-care difficulty	0.103***	(0.035)	5,160	0.038	(0.035)	5,344	-0.054**	(0.023)	3,608	0.091**	(0.042)	8,952
Vision difficulty	-0.072	(0.048)	2,424	-0.037	(0.053)	2,236	0.064	(0.046)	1,733	-0.098	(0.071)	3,969
Hearing difficulty	0.033	(0.052)	1,784	-0.016	(0.044)	1,876	-0.096	(0.062)	1,312	0.076	(0.075)	3,188
Medicaid Buy-in: middle 31 states	0.043	(0.032)	12,524	0.035**	(0.015)	17,972	-0.024	(0.021)	5,785	0.060**	(0.023)	23,757
Medicaid Buy-in: top 10 states	0.011	(0.030)	3,392	0.071***	(0.016)	3,950	0.024	(0.066)	2,402	0.052	(0.055)	6,352

Note: State fixed effect and control variables are included in all OLS models. Control variables include sex, age, rurality, marital status, education, type of disability, any children of 18 or less years old, and log of per capita family income. "All states" includes 2014 expansion states and non-expansion states. SE clustered at state level. Sample includes SSDI-Medicare beneficiaries age 25-59, excluding those within 139% and 199% of the poverty line, as well as those receiving SSI income, unless noted otherwise. ACS Data from years 2013 and 2015. *** p<0.01, ** p<0.05, * p<0.1

Table 3. Outcome Measures for SSDI-Medicare beneficiaries living in states that expanded Medicaid in 2014 and non-expansion states, CPS ASEC 2013

	(1) Medicare only, 2014 Expansion	(2) Medicare only, Non-Expansion	(3) Medicare + Medicaid, 2014 Expansion	(4) Medicare + Medicaid, Non-Expansion	(5) Medicare + other, 2014 Expansion	(6) Medicare + other, Non-Expansion
Total family health expenditure > 0	0.931	0.916	0.910	0.911	0.996	0.984
	(0.253)	(0.278)	(0.287)	(0.285)	(0.067)	(0.124)
Log (total family health expenditure)	7.089	7.244	6.599	6.796	8.078	8.150
	(1.479)	(1.493)	(1.526)	(1.727)	(1.235)	(1.275)
Premium > 0	0.408	0.455	0.347	0.419	0.737	0.752
	(0.492)	(0.499)	(0.477)	(0.495)	(0.441)	(0.434)
Log (total family premium expenditure)	7.181	7.120	6.941	6.831	7.447	7.727
	(1.300)	(1.190)	(1.340)	(1.494)	(1.332)	(1.139)

Source: CPS ASEC 2013; SD in parenthesis

Table 4: Effect of Medicaid Expansion on Healthcare Outcomes, Overall and By Select Subgroups, CPS ASEC

	Specification 3: Overall			Non-Hispanic White Beneficiaries			Rural Beneficiaries			Married Beneficiaries		
	β	se	N	β	se	N	β	se	N	β	se	N
Family health expenditure > 0	-0.123**	(0.055)	1,170	-0.140**	(0.065)	653	-0.064	(0.066)	339	-0.016	(0.078)	281
Log (family health expenditure)	-0.072	(0.192)	1,039	-0.006	(0.327)	590	0.101	(0.495)	315	0.523	(0.596)	264
Family premium expenditure > 0	-0.023	(0.063)	1,170	-0.046	(0.104)	653	0.103	(0.109)	339	-0.226	(0.175)	281
Log (family premium expenditure)	0.334	(0.307)	311	0.176	(0.402)	172	-1.186***	(0.380)	84	0.641	(0.796)	99

Note: CPS ASEC data used, OLS regressions, individual-weighted. State fixed effects included in all models. Control variables include sex, age, rurality, marital status, education attainment, any children 18 yo or younger, disability types, and log of per capita family income, where relevant. *** p<0.01, ** p<0.05, * p<0.1

Table 5: Effect of Medicaid Expansion on Healthcare Outcomes, State Fixed Effects, SIPP

	Specification 3: Overall			No Medicaid Coverage in 2013			No Supplemental Coverage of Any Kind in 2013		
	β	se	N	β	se	N	β	se	N
Any Physician visit	0.211	(0.162)	768	-0.023	(0.126)	486	-0.089	(0.139)	319
Any individual health expenditure	-0.019	(0.095)	768	0.081	(0.183)	486	0.102	(0.228)	319
Log (Individual health expenditure)	-0.872**	(0.410)	689	-1.331***	(0.447)	436	-1.794***	(0.573)	285
Log (Family health expenditure)	-0.839**	(0.340)	710	-1.101**	(0.405)	452	-1.131**	(0.550)	295
Any Individual Premium Paid	0.109	(0.156)	768	0.204	(0.200)	486	0.116	(0.181)	319
Log (individual premium expenditure)	-1.656	(1.263)	164	-1.880	(1.514)	99	X	X	X
Log (family premium expenditure)	-1.253	(0.831)	285	-1.593	(1.177)	196	X	X	X

Note: 2014 SIPP panel data, OLS regressions, individual-weighted. State fixed effects included in all models. Control variables include sex, age, rurality, marital status, education attainment, any children 18 yo or younger, disability types, and log of per capita family income, where relevant. SEs clustered at state level. "X" indicates insufficient sample size for analysis. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effect of Medicaid Expansion on Healthcare Outcomes, Individual Fixed Effects, SIPP

	Specification 3: Overall			No Medicaid Coverage in 2013			No Supplemental Coverage of Any Kind in 2013		
	β	se	N	β	se	N	β	se	N
Log (Individual health expenditure)	-0.274	(0.479)	440	-1.202**	(0.600)	268	-1.278	(0.823)	174
Log (Family health expenditure)	-0.146	(0.461)	468	-0.651	(0.590)	290	-0.551	(0.753)	186
Log (individual premium expenditure)	-0.873	(0.860)	130	-4.009**	(1.729)	100	X	X	X
Log (family premium expenditure)	-0.918	(0.960)	130	-3.683**	(1.751)	100	X	X	X

Note: 2014 SIPP panel data, OLS regressions, individual-weighted. Individual fixed effects included in all models. SEs clustered at individual level. "X" indicates insufficient sample size for analysis. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 1. Summary statistics for SSDI-Medicare beneficiaries living in states that expanded Medicaid in 2014 and non-expansion states, CPS ASEC 2013

	(1) Medicare only, 2014 Expansion	(2) Medicare only, Non-Expansion	(3) Medicare + Medicaid, 2014 Expansion	(4) Medicare + Medicaid, Non-Expansion	(5) Medicare + other, 2014 Expansion	(6) Medicare + other, Non-Expansion
Female	0.508	0.563	0.491	0.565	0.554	0.512
	(0.500)	(0.497)	(0.501)	(0.498)	(0.498)	(0.502)
Non-Hispanic White	0.638	0.557	0.599	0.500	0.710	0.667
	(0.481)	(0.497)	(0.491)	(0.502)	(0.455)	(0.473)
Non-Hispanic Black	0.167	0.259	0.185	0.323	0.085	0.186
	(0.373)	(0.439)	(0.389)	(0.469)	(0.279)	(0.391)
Non-Hispanic Other	0.095	0.045	0.072	0.089	0.125	0.039
	(0.293)	(0.208)	(0.259)	(0.285)	(0.331)	(0.194)
Hispanic	0.100	0.139	0.144	0.089	0.080	0.109
	(0.301)	(0.346)	(0.352)	(0.285)	(0.272)	(0.312)
Urban/Suburban	0.761	0.705	0.743	0.637	0.781	0.752
	(0.427)	(0.457)	(0.438)	(0.483)	(0.414)	(0.434)
Age 25-39	0.182	0.142	0.239	0.210	0.147	0.155
	(0.386)	(0.349)	(0.427)	(0.409)	(0.355)	(0.363)
Age 40-49	0.273	0.253	0.293	0.250	0.237	0.256
	(0.446)	(0.435)	(0.456)	(0.435)	(0.426)	(0.438)
Age 50-59	0.545	0.605	0.468	0.540	0.616	0.589
	(0.498)	(0.489)	(0.500)	(0.500)	(0.487)	(0.494)
Married	0.353	0.425	0.387	0.323	0.598	0.744
	(0.478)	(0.495)	(0.488)	(0.469)	(0.491)	(0.438)
Lives with Child<18	0.139	0.130	0.284	0.202	0.179	0.171
	(0.346)	(0.336)	(0.452)	(0.403)	(0.384)	(0.378)
Cognitive difficulty	0.265	0.220	0.279	0.258	0.263	0.186
	(0.442)	(0.415)	(0.450)	(0.439)	(0.441)	(0.391)
Ambulatory difficulty	0.384	0.419	0.423	0.476	0.366	0.395
	(0.487)	(0.494)	(0.495)	(0.501)	(0.483)	(0.491)
Independent living difficulty	0.230	0.247	0.311	0.298	0.241	0.225
	(0.421)	(0.432)	(0.464)	(0.459)	(0.429)	(0.419)
Self-care difficulty	0.121	0.108	0.185	0.113	0.089	0.147
	(0.326)	(0.311)	(0.389)	(0.318)	(0.286)	(0.356)
Vision difficulty	0.071	0.078	0.099	0.056	0.054	0.062
	(0.256)	(0.269)	(0.299)	(0.232)	(0.226)	(0.242)
Hearing difficulty	0.061	0.057	0.104	0.105	0.054	0.078
	(0.240)	(0.233)	(0.305)	(0.308)	(0.226)	(0.268)
Poverty <= 138	0.462	0.386	0.523	0.661	0.138	0.078
	(0.499)	(0.487)	(0.501)	(0.475)	(0.346)	(0.268)
Observations	539	332	222	124	224	129

Source: CPS ASEC 2013; SD in parenthesis