# Labor market spillovers from publicly financed home care: evidence from Medicaid

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**Abstract**

In part due to public financing, an increasing number of functionally-impaired seniors are receiving formal home care. Using the 2000-2016 Health and Retirement Study and a difference-in-difference and triple-difference design, I investigate the effects of a policy adopted in over half of states that increased formal home care utilization among Medicaid-eligible seniors by more than 50%. I show that the policy mainly replaces informal care—particularly from spouses and daughters. For daughters, there is an accompanying increase in labor supply: one additional daughter works full-time for every 2.4-3 whose parent receives formal home care due to the policy.

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# 1 Introduction

An estimated 70% of people who turn sixty-five will need long-term care at some point in their lifetime (Johnson, 2017). In the United States, the majority of this care is provided by unpaid family members, with nursing homes serving as a last resort for those with severe needs or without access to other sources of care. However, the past few decades have seen the emergence of a formal home care industry that offers an alternative to both institutional care and family care. Today, this industry employs over two million aides and generates $135 billion in revenue each year.[1]

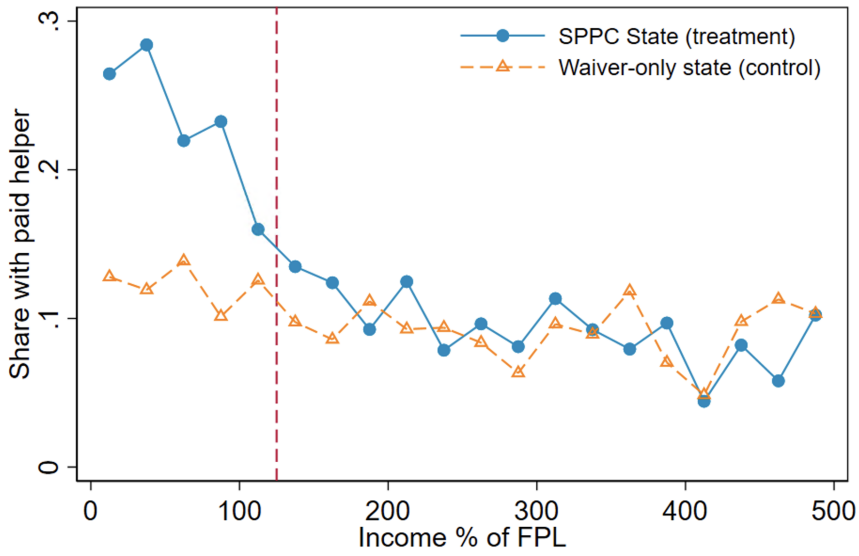
Due to concerns around the moral hazard effects of paying for home care, the government's role has traditionally been limited to paying for nursing home stays through Medicaid once a patient's other resources have been exhausted.[2] However, the dramatic growth of the home care industry is due at least in part to Medicaid policy reforms in recent years that have dramatically expanded Medicaid coverage of home and community-based long-term care. Compared to just $7.5 billion in 1990, Medicaid spent more than $86 billion on home and community-based long-term care in FY2015 (constant 2015 dollars; Eiken et al., 2017; Wenzlow et al., 2016). This paper considers the impacts of this public spending on care recipients and their families.

In order to do this, I propose a novel source of Medicaid policy variation, whether or not a state has a State Plan Personal Care benefit, and show that it generates large variation in rates of home care use across states among Medicaid-eligible seniors. I use this variation to estimate the impact of expanded access to home care on seniors, their families, and government revenues using data from the Health and Retirement Study for the period 2010-2016. I identify the effect of the policy using two sources of variation: (1) policy variation across state Medicaid programs in whether they have elected to cover personal care in their Medicaid State Plan (described in more detail in Section 3), and, (2) income variation across seniors which affects their likelihood of being eligible for Medicaid. These two sources of variation allow me to estimate the effect of the State Plan Personal Care (henceforth, the "SP-PC benefit") benefit using a cross-sectional difference-in-differences design that compares outcomes for low-income older adults who are likely to be eligible

[1] Author's calculations. See Appendix B for details.

[2] Roughly 60% of all nursing home residents are covered by Medicaid (Kaiser Family Foundation, 2017)

Figure 1: Share of functionally-impaired seniors who report having a paid helper by state plan PC policy and income




Notes: Seniors who reported having difficulty with at least one activity of daily living are grouped into 25 percentage point buckets by their countable income (defined using Medicaid rules, see Appendix B) as a percentage of the federal poverty line (FPL). Seniors with income above 500% FPL are not shown in this graph. The x-coordinate represents the midpoint of each bucket's income range, and the y-coordinate represents the share of seniors in this bucket who reported having a paid home helper.

for Medicaid in "treatment" states (states with the SP-PC benefit) to higher-income older adults who are thus unlikely to be eligible for Medicaid in those same states and to low-income older adults in control states (states without the benefit).

Figure 1 previews this identification strategy. The figure graphs average utilization rates of paid home care (I refer to this interchangeably with "formal home care") among functionally impaired seniors as a function of income and whether they live in a state that adopted the SP-PC benefit. Among seniors whose incomes are low enough that they are likely eligible for Medicaid (left of the vertical dashed red line), those living in states adopting the SP-PC benefit have significantly higher levels of paid home care utilization than those living in states that did not adopt the SP-PC benefit. This difference across states becomes negligible at higher income levels. My preferred estimate of this effect—which also controls for individual characteristics such as marital status,

education, chronic conditions, and the senior's degree of functional difficulty—suggests that the SP-PC benefit causes a seven percentage point increase in the probability that a Medicaid-eligible senior with functional impairments uses paid home care, compared to the overall average of 13 percentage points, translating to more than a 50% increase in the formal home care utilization.

The incidence of this care expansion will depend crucially on how the marginal seniors and their families utilize formal home care—whether they use the program to delay or avoid nursing home use, to supplement care from informal caregivers, or to substitute for informal care. I show that in the absence of the policy, most of the marginal recipients of care for this expansion would have otherwise been living in the community and receiving at least some informal care. Thus, this formal home care expansion only slightly reduces the probability that a senior receives no care or nursing home care (and neither of these reductions are statistically significant). Rather, I show that the primary effect of the policy appears to be shifting *who* provides care to seniors living at home, causing eligible seniors to replace care from relatives with care from non-relatives. In particular, I find that husbands and daughters are the most likely to decrease caregiving as a result of the policy.

I then trace the downstream effects of this change in care on both care recipients and the labor market behavior of their families (focusing on children and spouses). I find no evidence that the policy significantly affects the health and well-being of the care recipients—looking at both self-reported subjective well-being measures and measures of adverse events, such as hospitalization or death. This is consistent with the finding that the policy does not significantly increase total care received, but rather replaces one form of care with another. However, I find that the policy significantly increases daughter labor supply. I estimate that the SP-PC benefit causes one additional daughter to work full-time out of every 2.4-3 daughters whose parent receives paid home care as a result of the benefit. I find no effect of the policy on the labor supply of spouses or sons. Cumulatively, my results suggest that expanding access to home care for low-income seniors may benefit not only care recipients, but also families as potential caregivers, with particular benefits accruing to daughters in the form of increased labor supply.

A significant concern with my identification strategy is that there may be omitted variables

at the state-level that may affect outcomes for low-income seniors and their families that are also statistically correlated with states' adoption of the SP-PC benefit. To address this, where the data allow, I also estimate a triple-difference specification that expands the sample to include all seniors with and without ADL impairments and uses a third level of variation, whether or not a senior has an ADL impairment, to identify the treatment group. This allows me to check that the effects I estimate are specific to low-income seniors with ADL impairments, rather than low-income seniors at large, thus narrowing the set of plausible omitted variable threats to the identification. I also show that the effects are robust to both parametric tests (where I show that the effect of interest is robust to including other state-level controls such as average Medicare spending or Democratic vote share) and non-parametric tests (where I randomly simulate treatment states) of potential omitted variable bias.

The finding that daughters of the SP-PC benefit may increase the labor supply of daughters of functionally-impaired seniors has notable equity and efficiency implications. From an equity perspective, this finding is consistent with other work that suggests that providing in-kind care benefits may be an effective tool to combat gender differences in labor force participation and pay (Blau and Kahn, 2017; Olivetti and Petrongolo, 2017). From an efficiency perspective, the finding of a large labor supply effect implies the existence of a significant fiscal externality from financing home care for seniors in the increased income tax revenues from their daughters. I elaborate on this latter effect further with a back-of-the-envelope calculation of the net cost to the government of a policy that would expand access to home care in control (waiver-only) states to the levels in treatment (SP-PC) states. I estimate that the fiscal externality from increased daughter labor supply will result in savings of roughly 15% of the program cost. However, as has been noted by many policymakers and analysts, the larger potential for savings to the government would be if the policy could substantially reduce nursing home use. As I discuss below, the literature's estimates of the size of this substitution effect vary widely. Unfortunately, my own estimate is also imprecise. Taking the point estimate would imply savings through this channel of roughly 40% of the program cost, but this estimate is not statistically significant at conventional levels and should therefore be treated with caution.

Broadly, this work is connected to a body of literature that explores the relationship between social insurance programs and labor markets. In the health insurance context, much of the literature has explored the potential work disincentive effects of publicly funded health insurance on working-age adults (e.g. Baicker et al., 2014; Dague et al., 2017). This paper considers labor market effects in a different context—long term care insurance—where the affected labor market behavior may not be that of the program beneficiaries themselves (the low-income elderly), but instead their potential caregivers (primarly daughters). Related to this question, there is also literature that specifically explores the relationship between caregiving policy and female labor supply. In general, this literature has focused on the effect of childcare policy on maternal labor supply (e.g., Baker et al., 2008; Gelbach, 2002; Havnes and Mogstad, 2011; Bauernschuster and Schlotter, 2015) and cross-country analysis of pro-family policies more broadly (Kleven, 2014; Blau and Kahn, 2013; Kleven et al., 2020). The corresponding literature on eldercare has been more limited, perhaps due to a lack of quasi-experimental policy variation. Two exceptions are Fu et al. (2017) and Løken et al. (2017) which study the effect of specific long-term care policies in Japan and Norway, respectively, and find a positive effect on daughter labor supply, similar to this paper. Other work on the US context has established a negative relationship between elder caregiving and labor supply (see, e.g., Ettner, 1996; Johnson and Lo Sasso, 2006; Van Houtven et al., 2013; Truskinovsky and Maestas, 2018; Fahle and McGarry, 2017), but has not focused on whether long-term care policy can mediate that relationship, the focus of this paper. This paper adds to this literature by proposing a novel and under-studied source of policy variation in the availability of long-term care through Medicaid. One challenge to studying this variation has been the difficulty of comparing states using Medicaid administrative data due to data quality issues and the fact that each state may code and report services differently (Caswell et al., 2021). I overcome this challenge by using data from a nationally representative survey to evaluate differences in access to care.

This paper is also related to the literature on the cost-effectiveness of Medicaid coverage for home and community-based care. Early demonstration projects sponsored by the federal government often highlighted the "woodwork effect", where rather than trading off one-for-one for nursing home care, greater availability of home care would result in people "coming out of the woodwork"

to claim the new benefit and thus increase rather than decrease total costs to the government (Doty, 2000; Kemper et al., 1987; Berkeley Planning Associates, 1984). These early studies had mixed results regarding the magnitude of this effect, ranging from one deferred nursing home admission for every 1.6-16 recipients of home care, depending on the program studied. More recent studies of state-level spending trends have been more favorable as to the potential for home- and community-based care to achieve cost savings (Grabowski, 2006; Kaye et al., 2009; Eiken et al., 2013). However, one limitation of the approach taken in these studies is that they generally compare states based on their realized spending on home- and community-based care, rather than use an ex-ante source of policy variation, so their results may be endogenous to other factors that may contribute to a reduction in nursing home use. This paper uses a specific policy choice for identification—the adoption of the SP-PC benefit—which should be subject to fewer endogeneity concerns. In addition, my data includes higher-income seniors who are unlikely to be eligible for Medicaid, allowing me to control for other state-level factors better than studies that only use Medicaid data. Although my study is not well-powered enough to identify a precise effect on nursing home use, my estimates of this effect are consistent with the existence of significant woodwork effects: significantly more people take up formal home care as a result of the SP-PC benefit than people who would otherwise use nursing home care, suggesting that overall net savings from the program are unlikely. However, this paper highlights that the additional care recipients are likely to be substituting formal home care for informal care, rather than simply consuming more care, which may have different welfare implications. These findings are consistent with other studies that have shown significant elasticities in the use of informal home care (e.g. Bolin et al., 2008; Van Houtven and Norton, 2004; Golberstein et al., 2009; Stabile et al., 2006) and small elasticities of demand for nursing home care (e.g. Grabowski and Gruber, 2007) with respect to public program generosity and formal care availability.

## 2 Conceptual Framework

What are the potential effects of offering subsidized formal home care to low-income seniors? Consider an illustrative model where a family unit consisting of a functionally impaired senior and any potential caregivers (e.g. a spouse and children) jointly maximizes the total utility of its

members. Our thought experiment involves comparing two environments: the control environment in which seniors have only two options for care (a nursing home or unpaid family care), and the treatment environment in which a third option is introduced (paid home care). Because the context for this thought experiment is Medicaid long-term care policy, we assume that care is provided at no cost to the families, except a hassle cost associated with applying for Medicaid (which may be significant, since families may need to deplete their assets, discussed in more detail in Section 3).

In the control environment, each family evaluates the relative utility of using nursing home care or unpaid family care. Families can also choose for the senior to go without care. The total family unit's utility of these three options will depend on the seniors' health status, and the caregiver's opportunity cost of caregiving. In the treatment environment, there are thus three types of people who may take up formal home care: (1) people who previously chose nursing home care, (2) people who previously chose unpaid family care, and (3) people who previously chose no care. The sum of these groups will be the people who "take up" the SP-PC benefit in my study (the compliers), and the empirical question studied by this paper is to estimate the size of these groups.

Both with and without the paid home care option, there are several places where the private choices of individuals may diverge from the socially optimal choices. First, patients do not pay the monetary cost of nursing home care or paid home care, so one may expect greater consumption of both of these options compared to the optimum unless the hassle costs of applying to Medicaid are high enough. However, if a choice of care has health benefits on the margin and decreases future health spending, there may also be under-consumption of this option since the benefit of the cost savings may accrue to the government rather than the individual. Finally, if care choices affect other economic behavior, such as labor supply decisions, private choices will not account for potential fiscal externalities from changes in income tax revenues, again leading to suboptimal care consumption.

The question posed by this paper is who benefits (and by how much) from public financing for home care for low-income seniors, where we consider potential benefits to seniors, their families, and fiscal benefits to the government. In terms of fiscal costs and benefits to the government, those seniors who are moved from choosing nursing home care to choosing paid home care are likely to

have lower Medicaid spending, since the cost of nursing home care generally exceeds the cost of paid home care, leading to lower costs for the government. For the seniors who are moved from choosing family care to choosing paid home care, the expectation should be that costs to the government should increase, since these seniors are now receiving formal care that was previously provided for free by family members. However, if the people who make this switch are switching because they had a high opportunity cost of providing family care due to other outside labor market options, there is the potential of a positive fiscal externality from this switch resulting from more family caregivers being in the labor force.

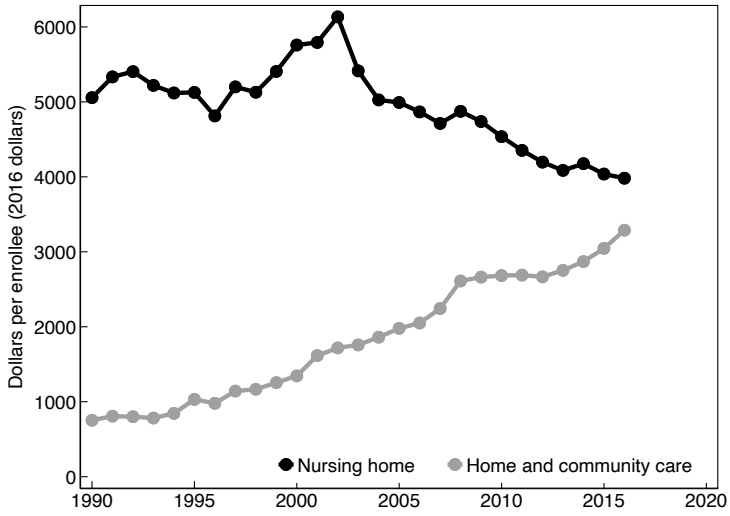
# 3 Background

## 3.1 Trends in Medicaid long-term care delivery

Need for long-term care services is often defined in terms of having difficulty with activities of daily living (ADLs), usually defined as bathing, dressing, toileting, eating, transferring, walking. Kaye et al. (2010) estimate that roughly five million people over the age of 65 have difficulty with one or more of these activities.

An interesting feature of the US healthcare system is that Medicare does not cover long-term care (in general, it will cover nursing home stays or home health visits only for short periods following a hospitalization). Instead, Medicaid is the primary public payer for long-term care. Medicaid's coverage of long-term care dates back to a requirement in its creation in 1965 that it cover nursing home care. Because people living in nursing homes often exhaust their private resources, Medicaid currently funds over 60% of nursing home stays. However, Medicaid is not similarly required to cover other forms of long-term care such as home care. Policymakers at the time were worried about the moral hazard (woodwork) effect discussed above (Smith and Feng, 2010). Many advocates have since argued that this has led to an "institutional bias" in Medicaid long-term care spending, and have argued in support of reforms that increase access to home and community-based services (HCBS). These reforms are commonly referred to as "rebalancing" reforms. These reforms were first passed beginning in the 1970s and 1980s, but Doty (2010) notes

Figure 2: National Medicaid spending on long-term care for aged and physically disabled adults per enrollee (2017 dollars)




Notes: Spending numbers come from CMS-64 reports analyzed in Wenzlow et al. (2016) and adjusted for inflation using CPI-U. Spending is scaled by total aged and disabled enrollment from the Brief Summaries of Medicare and Medicaid reports from CMS, subtracting counts of intellectually and developmentally disabled LTSS recipients from the Residential Information Systems Project. In 2016, there were roughly 14.6 million aged and disabled enrollees.

that growth of these programs was slow until the 1990s.[3] Figure 2 shows how the allocation of Medicaid long-term care spending on the aged and physically disabled changed from 1990 to 2016.[4] Per-enrollee spending on home and community-based care more than tripled between 1990 and 2016 in real dollars. On the other hand, nursing home spending increased over the 1990-2000 decade, but peaked in 2002 and is now substantially below 1990 levels. As a result, the share of long-term care Medicaid spending going toward home and community-based care increased from less than 15% percent in 1990 to over 40% by 2016.

[3]Two factors that accelerated their growth were the Omnibus Reconciliation Act of 1993, which–as a result of the efforts of disability-rights and independent living advocates–removed the requirement that personal care services be prescribed by a physician and supervised by registered nurses, and the Supreme Court's 1999 Olmstead decision, which asserted that states had an obligation to serve people with disabilities in the community if possible.

[4]Most Medicaid long-term care data groups beneficiaries into three broad categories: (1) the aged and physically disabled, (2) intellectually and developmentally disabled, and (3) individuals with serious mental illness. Although this paper is focused specifically on the aged, it is unfortunately quite difficult to isolate spending on the aged from spending on the physically disabled in the available data.

### 3.2 The State Plan Personal Care benefit and Medicaid HCBS coverage

Medicaid spending on home and community-based care (HCBS) can include spending on a variety of services, including personal care, chore services, case management, adult day care, respite care for family caregivers, residential care (excluding room and board), home modifications, home-delivered meals. In this paper, I focus on one of the largest components of HCBS spending: personal care services, i.e. assistance from an aide with ADLs.

States can cover personal care in their Medicaid programs using two primary mechanisms. The first is that personal care is an optional Medicaid benefit, meaning states can elect to cover it in their Medicaid State Plan. If they choose to do so, personal care becomes essentially like an entitlement benefit: as long as a Medicaid enrollee meets the need criteria for services, the state must provide them. The second primary mechanism used by states are 1915(c) waivers, also known as HCBS waivers. This waiver program has several features that allow states more flexibility than the State Plan optional benefit. For example, instead of having to design a one-size-fits-all benefit, states can create several waiver programs covering different services for different groups of people (e.g. people with intellectual disabilities vs. older adults). Additionally, the 1915(c) program allows states to set enrollment and/or cost caps, meaning if demand were to exceed these caps, an enrollee could be put on a waitlist rather than be required to receive services. Currently, all states cover personal care through at least one of these programs.[5] Ex-ante, it is not obvious whether these two mechanisms should induce different rates of personal care utilization among ADL-impaired seniors covered by Medicaid. However, as I previewed earlier in Figure 1, the data indicates that SP-PC states have far higher rates of paid home care utilization than waiver-only states, suggesting that, on balance, the different features of the 1915(c) program relative to the State Plan benefit has led to fewer beneficiaries having access to personal care services.

The Personal Care benefit was introduced in 1975, while the HCBS waiver program was begun in 1983. When the Personal Care benefit was introduced, many states were quick to adopt the benefit because they had already begun to subsidize home care for low-income seniors and the Medicaid

[5]Some states offer both state plan personal care services and waiver services, where the waiver services are generally used to supplement the SP-PC benefit.

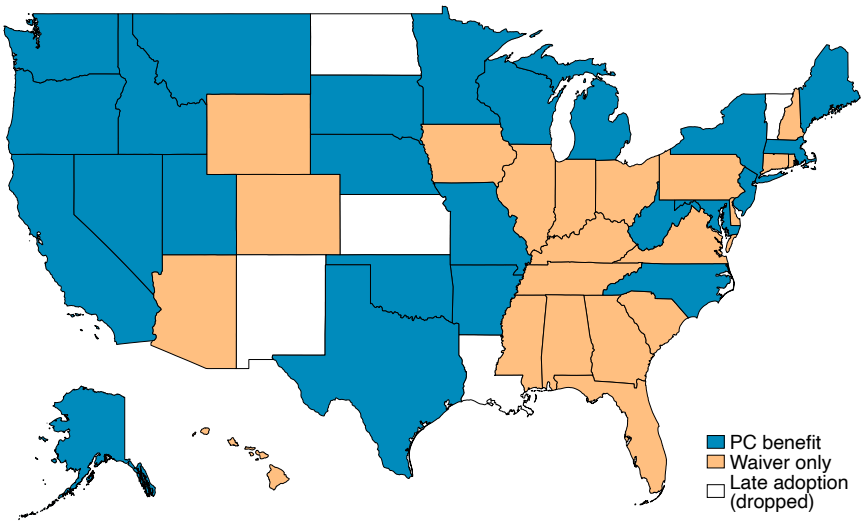
benefit was a way to secure federal funds for these programs (Kennedy and Litvak, 1991). Twenty-five states adopted the Personal Care benefit in the late 1970s and early 1980s and are shown in blue in Figure 3. These states will be the main "treatment" states in the paper. Once the 1915(c) waiver program passed, state adoption of the SP-PC benefit essentially stopped until the late 1990s, but none of the early adoption states retracted the benefit. The light orange states in Figure 3 never adopted the SP-PC benefit and instead cover personal care through waiver programs (I thus refer to these states, which are the main control states in the paper as "waiver-only" states). Finally, five states adopted the Personal Care benefit between 1999 and 2007 and are shown in white.[6] Despite the fact that only 30 states offer this benefit at the time, Medicaid spent $13.8 billion on State Plan Personal Care for the aging and physically disabled in FY2016, out of $46.8 billion on all HCBS services for this population, suggesting that this program is a significant source of care for many frail elderly (Eiken et al., 2017). I drop the late adoption states for the main analysis in the paper, because I expect that due to the fact that these programs take time to grow, the late adoption states are likely to be different from both control and treatment states. In Section 7, I present a version that includes these states as control states before the passage of the benefit, and treatment states after. The gradual, rather than sharp, growth of these programs highlighted in Figure 2 is also the reason that it is necessary to conduct a cross-sectional, rather than time-series analysis.

### 3.3 Medicaid eligibility for seniors

The primary pathway seniors (defined as people aged 65 and up) qualify for Medicaid is if their income and assets are below state-specific thresholds. The federal government requires states to set their income threshold between 74% and 100% of the federal poverty line (FPL) in order for states to receive matching funds, and all states currently set their thresholds in this range. In most states, the asset threshold is usually $2,000 for individuals and $3,000 for couples. It is common for seniors to deplete their assets in order to meet this threshold. Roughly 70% of aged Medicaid enrollees qualify through this pathway (De Nardi et al., 2012). The remaining qualify through

[6] A few factors likely contributed to the resurgent interest in the SP-PC benefit after 1999, including the Olmstead decision, and federal incentives through the 1915(i) program to adopt the benefit.

Figure 3: State variation in inclusion of personal care in the Medicaid State Plan during the analysis period (2000-2016)




Notes: The map shows whether states have chosen to cover Personal Care in their Medicaid State Plan. The states in blue adopted the optional benefit in the 1970s or 1980s, while the late adoption states adopted the benefit between 1999 and 2007. The remaining states (orange) are called "waiver-only" states because they offer personal care through HCBS waivers, but not through their state plans. Two states, FL and NH, adopted the optional benefit but in a very limited fashion (FL adopted the option only for 24-hour care and NH adopted it only for people who are wheelchair-bound) and so are coded as waiver-only states for this analysis.

special eligibility pathways such as medically needy programs, which allow people to count medical costs against their income, and thus allow people with higher incomes to enroll in Medicaid (they still must deplete their assets).[7]

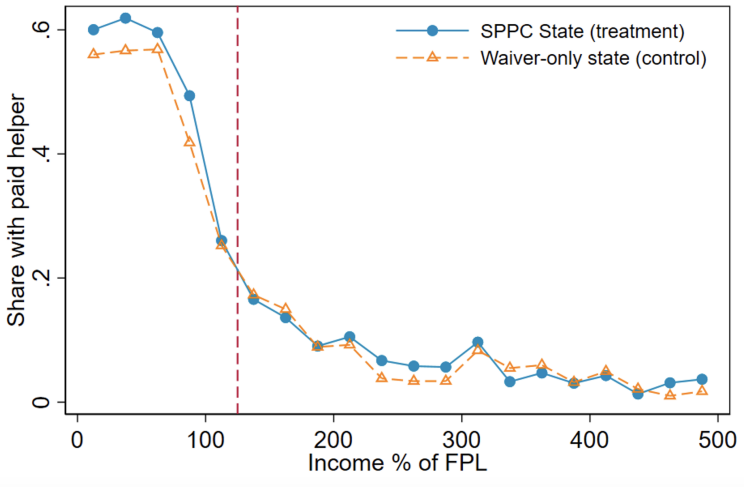
Figure 4 shows how these rules translate into coverage rates for the population of interest in this paper, ADL-impaired seniors, using data from the HRS. Medicaid coverage rates are highest for people whose incomes are between 0 and 75% FPL (around 60%), and decline for people whose incomes are between 75% and 200% FPL before flattening out. These coverage patterns at higher incomes can likely be attributed at least partly to eligibility through the spend-down pathway. It is also well-known that Medicaid take-up is not complete (Bitler and Zavodny, 2017), and that both income and coverage can be subject to measurement error in surveys such as the HRS (Boudreaux et al., 2015). The main identification strategy in the paper is to use a difference-in-differences specification to compare Medicaid-eligible seniors to Medicaid-ineligible seniors across treatment and control states. The figure shows that a range of plausible thresholds to define potential Medicaid eligibility. For my main specification, I select a threshold of 125% FPL to define the set of potentially treated individuals, but I perform sensitivity tests to this choice in Section 7 and in the Appendix.

# 4 Data

The data for this study comes from the 2000-2016 waves of the Health and Retirement Study (HRS), a longitudinal panel study that interviews people in the US who are over the age of 50 every two years from sample entry (usually when they are between 50-56) until death. The HRS includes a broad range of questions related to aging, health, and financial well-being. The first cohorts were interviewed in 1992 and 1993, and new cohorts are added periodically to refresh the sample. Since 1998, the HRS has contained a representative sample of the over 50 population in the US; however, I start my sample in 2000 because the questions about caregiving change slightly

[7]Medicaid uses "countable" income and assets to determine eligibility, which differs from gross income and assets through a number of deductions, such as half of earned income and a primary residence. See Musumeci et al. (2019) for a complete description of state eligibility thresholds. While not all states have medically needy programs, all states without medically needy programs allow potential enrollees to put extra income in a trust in order to qualify for Medicaid if they are in an institution, and all except three states (AL, NV, and WY) also allow trusts to be used for home care (Musumeci et al., 2019).

Figure 4: Rates of reported Medicaid coverage by income among seniors with an ADL difficulty (2000-2016 HRS)




Notes: See notes from Figure 1. The x-coordinate represents the midpoint of each bucket's income range, and the y-coordinate represents the share of seniors in this bucket who reported having Medicaid coverage.

in this year.[8]

The main analysis sample for the paper is all respondent-years where the respondent is 65 or older and reports any difficulty with an ADL because of a health or memory problem. On average, the HRS surveys approximately 10,000 people over 65 in each survey year, and 21% report an ADL difficulty, resulting in a sample size of 21,918 respondent-years across the nine survey years in the sample. For some specifications, I will include the population over 65 with no reported ADL difficulties as a control group. If a respondent reports having difficulty with any ADLs, they are asked to provide additional detail on up to seven people who help them with these ADLs, including the helper's relationship to them, the number of days and hours per day the helper provided help (over the past two months), whether the helper was paid, and if so, an estimate of the out-of-pocket costs the respondent paid. Table B1 in the Appendix summarizes the demographic, family, and health characteristics of seniors with and without ADL difficulties in the HRS.

Table 1 summarizes the living and care arrangements of seniors in the ADL-impaired sample.

[8]Before 2000, respondents were not asked detailed questions about caregiving by spouses.

Table 1: Summary of care received and living arrangements of seniors with ADL impairments

| | All | Single | Partnered |
|---|---|---|---|
| % of sample | 100 | 57 | 43 |
| Live in residential care | 0.15 | 0.23 | 0.08 |
| Nursing home | 0.14 | 0.21 | 0.07 |
| Other residential | 0.01 | 0.02 | 0.01 |
| Live in private housing | 0.85 | 0.77 | 0.91 |
| Residence | | | |
| Living on own | 0.58 | 0.50 | 0.70 |
| Living w/ kid | 0.20 | 0.33 | 0.23 |
| Other | 0.06 | 0.07 | 0.05 |
| Care | | | |
| No help | 0.40 | 0.38 | 0.42 |
| Unpaid only | 0.32 | 0.24 | 0.44 |
| Paid help | 0.13 | 0.16 | 0.08 |

Note: This table reports the share of the sample living in residential care (split into nursing home care, or other residential care) vs. living in private housing (split into living on one's own, defined as alone or with only a spouse/partner, living with one of their children, and other). For people not in residential care, I also group seniors by whether they are receiving some paid help with ADLs, only unpaid help, or no help. N=21,918.

Nearly 60% of ADL-impaired seniors are living alone or with their spouse, 20% live with one of their children, while about 15% of ADL-impaired seniors are in residential care, primarily nursing homes. Of those living at home, almost half of seniors living at home do not receive any help at all, and of those receiving help, most only receive help from unpaid helpers. 13% of ADL-impaired seniors receive some paid help at home. Care choices vary significantly depending on whether or not the senior has a partner: just 8% of ADL-impaired seniors with a partner are in residential care, compared to 23% of singles. Likewise, 8% of partnered seniors receive paid help, compared to 16% of singles.

Table 2 summarizes seniors' relationships to their caregivers and how many hours of care each type of caregiver provides, for ADL-impaired seniors who report receiving some help at home. The average senior receiving help at home has 1.8 helpers, who provide 41 hours of care a week. In

Table 2: Types of caregivers and weekly hours of care for ADL-impaired seniors receiving some help at home

| | | Hours per week | | | | |
|---|---|---|---|---|---|---|
| | Number of helpers | Total | Unpaid | Paid | Co-res | Non co-res |
| Wife | 0.24 | 8.7 | 8.7 | – | 8.7 | – |
| Husband | 0.18 | 6.2 | 6.2 | – | 6.2 | – |
| Daughter | 0.40 | 11.9 | 10.6 | 1.3 | 7.9 | 4.0 |
| Son | 0.21 | 4.3 | 4.0 | 0.3 | 2.9 | 1.4 |
| Other rel. | 0.18 | 3.9 | 3.3 | 0.6 | 2.3 | 1.6 |
| Non-rel | 0.30 | 8.3 | 1.1 | 7.2 | 1.1 | 7.2 |
| Total | 1.80 | 41.0 | 32.5 | 9.3 | 28.5 | 13.9 |

Note: This table reports the average number of helpers and average hours of help with ADLs and IADLs for ADL-impaired seniors receiving help at home (N=10,089). I censor all hours values at 168 hours per week (24 hours per day) so the rows do not always sum perfectly (a respondent may report more than 24 hours of care per day if they report two caregivers who each help for 24 hours per day). Hours are divided into those worked by unpaid vs paid helpers, and co-resident (the helper lives in the same household as the respondent) vs. non-co-resident helpers (the helper lives in a different household than the respondent). Respondents are not asked if their spouse is paid to help, and it is not possible to observe if a helper is only paid for some hours and not others.

Appendix Figure B1 , I show that this distribution of hours of care is actually bimodal: most seniors in my sample receive between 0-2 hours per day (less than 15 hours per week), but roughly 10% receive 24-hour care every day. For this reason, I focus many of my results on care provision along the extensive margin, rather than using hours, which are likely to be heavily influenced by people receiving 24-hour care. Daughters provide almost 30% of all care hours, followed by non-relatives and wives, who each provide roughly 20% of care hours. Overall, most hours of care are provided by unpaid (79% of the total) and co-resident (70% of the total) helpers.

I also construct samples containing all of the children and current partners of every respondent. This is possible because spouses are interviewed for the HRS sample (regardless of age), and respondents are asked to provide fairly rich detail on each of their children, such as the child's age, education level, where they live, and whether the child provides help (e.g. help with ADLs, financial help) or receives help (e.g. help with childcare, financial help) from the respondent, and whether they are working. I summarize these samples in Table B2 and Table B3 in the Appendix.

# 5 Empirical Strategy

I employ two main specifications to study the effects of the SP-PC benefit on seniors and their children. The first is a difference-in-differences specification that exploits state and income variation, and the second is a triple difference specification that adds variation generated by the functional status of the senior in question. Section 5.1 summarizes these strategies for studying the outcomes of seniors, while Section 5.2 outlines the strategies I use to study the children and partners of these seniors.

## 5.1 Effects on seniors

The main empirical strategy in this paper estimates a difference-in-differences specification on the sample of ADL-impaired seniors, where the policy variable of interest is whether or not a state has adopted the State Plan Personal Care benefit, and the treatment group is seniors who have low enough income to likely qualify them for Medicaid. For an ADL-impaired senior $i$ residing in state $s$ and year $t$, this equates to estimating the following equation:

$$Y_{it} = \beta \text{SPPC}_s \text{IncElig}_{it} + \gamma \text{IncElig}_{it} + \delta \lambda_{it} + \tau_s + \mu_t + \epsilon_{it} \tag{1}$$

where $\text{SPPC}_s$ is a state-level variable that indicates whether or not the state has offers personal care through its state plan and $\text{IncElig}_{it}$ is an indicator variable that is equal to 1 if the senior's income is below 125% FPL. The coefficient $\beta$, which multiplies the interaction of these two variables, is the main coefficient of interest. I also include the effect of $\text{IncElig}_{it}$ by itself and state fixed effects $\tau_s$ (which would absorb the effect of $\text{SPPC}_s$ by itself), as well as year fixed effects $\mu_t$, and a vector of controls that vary at the individual or individual-year level $\lambda_{it}$. These variables include demographics (age, sex, race/ethnicity, foreign-born, education), family supports (whether the senior has a partner and/or kids), and measures of health and functioning (numbers of functional difficulties, chronic condition indicators). Summary statistics for all of these variables are presented in Table B1 in the Appendix. I use income eligibility, rather than Medicaid coverage, because the

decision to enroll in Medicaid may be endogenous to the availability of public home care.[9]

Dependent variables $Y_{it}$ include whether seniors receive different types of care, the number of hours of care they receive, living arrangements, and measures of health and well-being. For dependent variables that come from questions that are asked of all respondents and not just respondents with ADL difficulties (i.e. living arrangements and health and well-being questions are asked of all respondents, while the questions about caregiving are only asked of respondents who report having difficulties in this area), it is possible to estimate a triple-difference specification using the sample of all respondents $i$ over 65:

$$\begin{aligned} Y_{it} =& \beta \text{SPPC}_s \times \text{IncElig}_{it} \times \text{ADL}_{it} + \delta_1 \text{IncElig}_{it} \times \text{ADL}_{it} + \delta_2 \text{SPPC}_s \times \text{IncElig}_{it} + \delta_3 \text{SPPC}_s \times \text{ADL}_{it} \\ &+ \gamma \text{IncElig}_{it} + \tau_s + \mu_t + \lambda_{it} + \epsilon_{it}. \end{aligned} \tag{2}$$

Again, $\beta$ is the coefficient of interest, and now multiplies a variable which is equal to 1 if a senior lives in a SP-PC state, is low-income, and has an ADL impairment ($\text{ADL}_{it}$). All one-way and two-way interactions are also included. This specification is advantageous because it eliminates the possibility of omitted variable bias at the State $\times$ Income level; instead, any omitted variables that may bias these estimates must differentially affect low-income ADL-impaired seniors in states with the SP-PC states, a stricter condition. Standard errors for all specifications are clustered at the state-level.

### 5.2 Effects on families

The Medicaid SP-PC benefit may also affect seniors' potential caregivers. To study these effects, I construct analysis samples containing all children and partners of ADL-impaired seniors, and estimate parallel strategies to identify the effect of the policy on caregiving and labor supply for these two groups.

I again make use of both a difference-in-differences and triple difference specification. For the

[9]The primary source of income for seniors in my sample is Social Security retirement benefits, which are unlikely to be significantly affected by one's desire to obtain paid home care.

difference-in-differences specification, the sample is either all spouses $j$ or all children $j$ of an ADL-impaired senior HRS respondent. For dependent variables $Y_{ijt}$ such as whether the spouse or child helps the senior and whether or not the spouse or child is working, I estimate:

$$Y_{ijt} = \beta_g \text{SPPC}_s \text{IncElig}_{it} I(\text{Gender}_{jt} = g) + \gamma_g \text{IncElig}_{it} I(\text{Gender}_{jt} = g) + \delta\lambda_{it} + \pi\eta_{jt} + \tau_{sg} + \mu_t + \epsilon_{it} \quad (3)$$

This is the same equation as Equation (1), except I have added controls $\eta_{jt}$ for demographic characteristics of each spouse or child $j$ (for spouses, I use age, gender, education; for children, I use age, gender, education, marital status, and indicators for whether they have any children and any young children). I also estimate separate coefficients for each of the main effects by gender and include state-gender fixed effects, since there are large gender differences in both labor supply and caregiving. The triple difference specification is likewise akin to Equation (2) except for the inclusion of the same controls $\eta_{jt}$ and the separation of effects by gender.

# 6 Results

## 6.1 Effect of SP-PC benefit on care patterns

Table 3 presents results from a difference-in-difference analysis (equation 1) of the impact of the SP-PC benefit on ADL-impaired seniors' care choices. The columns use mutually-exclusive indicator variables as dependent variables, where the first three columns explore care provided to seniors living at home, and the fourth and fifth columns look at residential care.

The table shows that race/ethnicity is a strong determinant of whether an ADL-impaired senior receives care at home or in residential care, with minority patients significantly less likely to be in residential care. These differences by race and ethnicity have been noted previously in the literature (Konetzka and Werner, 2009). The table also shows that having a spouse or child is also negatively associated with receiving residential care, and positively associated with receiving unpaid help at home. Finally, worse health and functioning measures all decrease the probability that a senior receives no help, but have different effects on which type of care seniors choose: for example, having dementia significantly increases the probability a senior uses nursing home care over other options, while having difficulties with more instrumental activities of daily living (cooking, grocery

shopping, managing medication) significantly increases the probability that a senior receives paid help at home, but only slightly increases the probability a senior is in a nursing home.

The top row shows the main coefficients of interest: the effect of the SP-PC benefit on seniors' care choices. I find that high-eligibility seniors in SP-PC states are 7.1 percentage points more likely to have a paid home helper, more than a 50% increase over the overall average utilization rate of 13 percentage points (column 1). This increase is accompanied by a significant decrease in the probability that a senior is using only unpaid help at home (column 2), suggesting that people who would otherwise have lived at home and received only unpaid help substitute into receiving paid help at home. By contrast, the SP-PC benefit has a smaller negative effect on the probability a senior is receiving no help (column 3) or living in a nursing home (column 4), and neither effect is statistically significant at conventional levels. These results suggest that for the marginal seniors in this sample, paid home care is mostly used to supplement or replace unpaid home care, rather than reaching people who would be without help or living in a nursing home.

To complement these results on extensive-margin care choices, Table 4 reports the effect of the SP-PC benefit on the weekly hours of home care a senior receives. Each column represents estimates from equation 1 where the dependent variables are home care hours from different sources. The first column shows that the Medicaid SP-PC benefit increases the number of paid hours of care among the eligible population by 2.8 hours per week. If we assumed that this increase was entirely due to the extensive margin change in Table 3, this would mean that the average new recipient of paid home care receives 40 hours per week of paid care, which is roughly in line with the average reported in Table 2. The second column shows that the benefit also caused a reduction in unpaid hours equal to roughly 65% of the additional paid hours.[10] Thus, only 35% of the hours paid for by the program accrue as "new" hours of care to the impaired senior.

Columns 3 and 4 show that the substitution from unpaid to paid care appears to correspond to a change in who is providing care to ADL-impaired seniors. The policy increases care provided by non-relatives by 2.2 hours per day, and decreases care provided by relatives by 1.3 hours per day. Columns 5-9 attempt to allocate this reduction in relative care across different types of relatives.

[10]These estimates should be interpreted with some caution because respondents are only asked whether each caregiver was paid or not, but it is possible that some caregivers provided both paid and unpaid care hours.

Table 3: Effect of Medicaid SP-PC benefit on probabilities of receiving help and hours of help received per day among ADL-impaired seniors

| | Care at Home | | | Residential Care | |
|---|---|---|---|---|---|
| | (1) Any Paid Help | (2) Unpaid Only | (3) No Care | (4) Nursing Home | (5) Other |
| $SPPC_s \times IncElig_{it}$ | 0.071*** | -0.050*** | -0.009 | -0.015 | -0.000 |
| | [0.018] | [0.016] | [0.016] | [0.014] | [0.005] |
| $IncElig_{it}$ | -0.011 | 0.035*** | -0.042*** | 0.019* | 0.002 |
| | [0.015] | [0.012] | [0.012] | [0.010] | [0.004] |
| *Demographics* | | | | | |
| Age | 0.003*** | 0.000 | -0.008*** | 0.004*** | 0.001*** |
| | [0.000] | [0.001] | [0.001] | [0.000] | [0.000] |
| Female | 0.008 | 0.025* | -0.027** | -0.005 | -0.001 |
| | [0.016] | [0.014] | [0.012] | [0.013] | [0.004] |
| Black | 0.036*** | 0.037** | 0.006 | -0.075*** | -0.006*** |
| | [0.009] | [0.016] | [0.011] | [0.009] | [0.005] |
| Hisp/Latino | 0.070*** | 0.034** | 0.013 | -0.114*** | -0.006 |
| | [0.015] | [0.015] | [0.019] | [0.009] | [0.005] |
| College degree | 0.028*** | -0.055*** | 0.016 | 0.010** | 0.003 |
| | [0.009] | [0.012] | [0.010] | [0.005] | [0.003] |
| *Family* | | | | | |
| Has male spouse/partner | -0.038*** | 0.182*** | -0.081*** | -0.056*** | -0.004* |
| | [0.011] | [0.011] | [0.011] | [0.009] | [0.002] |
| Has female spouse/partner | -0.049*** | 0.246*** | -0.109*** | -0.081*** | -0.007 |
| | [0.013] | [0.0014] | [0.013] | [0.009] | [0.004] |
| Has son | 0.001 | 0.041*** | -0.0123** | -0.019** | 0.000 |
| | [0.007] | [0.012] | [0.010] | [0.007] | [0.003] |
| Has daughter | 0.004 | 0.042*** | -0.014 | -0.031*** | -0.002 |
| | [0.006] | [0.007] | [0.009] | [0.008] | [0.002] |
| *Health and functioning* | | | | | |
| Dementia | -0.042** | -0.085*** | -0.059*** | 0.187*** | 0.003 |
| | [0.016] | [0.014] | [0.014] | [0.012] | [0.003] |
| Other Cog Impairment | 0.007 | 0.024** | -0.084*** | 0.051*** | 0.003* |
| | [0.008] | [0.011] | [0.011] | [0.006] | [0.002] |
| Stroke History | 0.033*** | 0.006 | -0.069*** | 0.031*** | 0.003 |
| | [0.011] | [0.011] | [0.008] | [0.008] | [0.003] |
| Lung disease | 0.026*** | 0.018 | -0.008 | -0.035*** | -0.001 |
| | [0.008] | [0.011] | [0.010] | [0.008] | [0.002] |
| Heart problem | 0.003 | 0.032*** | -0.015** | -0.021*** | 0.000 |
| | [0.006] | [0.007] | [0.007] | [0.005] | [0.002] |
| Diabetes | 0.002 | 0.033*** | -0.037*** | 0.002 | 0.000 |
| | [0.006] | [0.010] | [0.008] | [0.006] | [0.002] |
| # Mobility Diffs | 0.005*** | 0.029*** | -0.028*** | -0.006*** | 0.001 |
| | [0.001] | ][0.002] | [0.002] | [0.001] | [0.000] |
| # ADL Diffs | 0.022*** | -0.036*** | -0.051*** | 0.066*** | -0.000 |
| | [0.003] | [0.003] | [0.003] | [0.004] | [0.001] |
| # IADL Diffs | 0.043*** | 0.082*** | -0.130*** | 0.007* | -0.002 |
| | [0.004] | [0.004] | [0.003] | [0.004] | [0.001] |
| Constant | -0.260*** | -0.035 | 1.590*** | -0.227*** | -0.078*** |
| | [0.046] | [0.058] | [0.045] | [0.037] | [0.016] |
| Dep. Var. Mean | 0.129 | 0.324 | 0.396 | 0.142 | 0.012 |
| N | 21918 | 21918 | 21918 | 21918 | 21918 |

Notes: Sample includes all senior-year observations where senior reports having at least one ADL difficulty in 2000-2016 panels of HRS. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. State fixed effects were included but omitted from the table. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table 4: Effect of Medicaid SP-PC benefit on hours of care received per day by ADL-impaired seniors, by caregiver type and relationship

| | | | | Relatives | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1) Paid | (2) Unpaid | (3) Non-rel | (4) All | (5) Wife | (6) Husband | (7) Daughter | (8) Son | (9) Other |
| $SPPC_s \times IncElig_{it}$ | 2.844*** | -1.882* | 2.241*** | -1.321 | -0.050 | -0.484 | -0.581 | -0.135 | -0.507 |
| | [0.677] | [1.036] | [0.680] | [1.090] | [0.621] | [0.443] | [0.094] | [0.047] | [0.062] |
| $IncElig_{it}$ | -2.193*** | 0.918 | -1.968*** | 0.776 | -0.672 | -0.160 | 1.166*** | -0.330 | 1.044** |
| | [0.560] | [0.811] | [0.556] | 0.850] | [0.421] | [0.200] | [0.351] | [0.234] | [0.445] |
| Dep. Var. Mean | 4.355 | 13.778 | 3.885 | 14.231 | 3.695 | 2.874 | 4.328 | 1.556 | 2.323 |
| N | 21918 | 21918 | 21918 | 21918 | 21918 | 21918 | 21918 | 21918 | 21918 |

Notes: Sample includes all senior-year observations where senior reports having at least one ADL difficulty in 2000-2016 panels of HRS. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions also contain state fixed effects and demographic and health controls shown in Table 3. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

These estimates are all noisy, but the point estimates suggest that that husbands and daughters can account for most of the reduction in care from relatives.

Finally, I investigate whether the policy's effect on care choices differs based on the type of family support the senior has by reproducing the regressions in Table 3, but interacting the main effects with an indicator for one of three potential family situations: if the senior is partnered, single with kids, or single without kids. Table 5 shows these results. Column 1 shows that seniors with a spouse are the least likely to takeup paid home care in response to the policy, and seniors without a partner or kids are the most likely. The remaining column consider substitution from other forms of care. The signs of these coefficients in the first two rows (partnered seniors, and seniors with kids) generally follow the same pattern as Table 3, where the largest negative effect is on the probability that a senior is receiving only informal care at home. However, interestingly, the estimates for seniors who are single and do not have kids displays a different pattern: for these seniors, there is no evidence of substitution away from informal care at home. Instead, there is a large and statistically significant negative effect on the probability that a senior lives at home and receives no help (column 3), and similarly large, but less precise (and not statistically significant), negative effects on the probability that the senior is in residential care (columns 4 and 5). These results

Table 5: Heterogeneity of effect of Medicaid SP-PC benefit on care choices by whether senior has a partner and/or children

| | Care at Home | | | Residential Care | |
|---|---|---|---|---|---|
| | (1) Any Paid Help | (2) Unpaid Only | (3) No Care | (4) Nursing Home | (5) Other |
| $SPPC_s \times IncElig_{it}$ | | | | | |
| × Partnered | 0.030 | -0.051* | 0.023 | -0.017 | 0.006 |
| | [0.028] | [0.026] | [0.024] | [0.019] | [0.008] |
| × Single with kids | 0.056*** | -0.061*** | 0.005 | 0.000 | -0.002 |
| | [0.021] | [0.019] | [0.020] | [0.016] | [0.005] |
| × Single no kids | 0.160*** | 0.052 | -0.120*** | -0.058 | -0.028 |
| | [0.061] | [0.064] | [0.059] | [0.006] | [0.020] |
| $IncElig_{it}$ | | | | | |
| × Partnered | 0.007 | 0.006 | -0.025 | 0.017 | 0.003 |
| | [0.024] | [0.021] | [0.018] | [0.016] | [0.004] |
| × Single with kids | -0.010 | 0.065*** | -0.056*** | 0.002 | 0.001 |
| | [0.016] | [0.014] | [0.014] | [0.012] | [0.003] |
| × Single no kids | 0.005 | -0.053 | -0.061 | 0.092*** | 0.016 |
| | [0.037] | [0.046] | [0.051] | [0.037] | [0.018] |
| Dep. Var. Mean | 0.129 | 0.324 | 0.396 | 0.142 | 0.012 |
| N | 21918 | 21918 | 21918 | 21918 | 21918 |

Notes: Sample includes all senior-year observations where senior reports having at least one ADL difficulty in 2000-2016 panels of HRS. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions contain state-by-partner/kid status fixed effects and demographic and health controls shown in Table 3. Standard errors are clustered at the state level and reported in brackets. Significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

suggests that the SP-PC benefit may serve different purposes for different seniors: for seniors with family caregivers, the benefit may largely substitute for unpaid care provided by family members, while for seniors without caregivers, the benefit may provide access to care they would otherwise go without and decrease their likelihood of entering a nursing home.

### 6.2 Effects on seniors' living arrangements, health and well-being

Tables 6 and 7 investigate how the changes in care translate into changes in seniors' living arrangements and in seniors' health and well-being.

Beginning with living arrangements in Table 6, Panel A presents results from the same difference-in-differences specification shown above, where each of the columns represents a mutually exclusive category of living arrangement. The results suggest that likely-Medicaid eligible seniors are more than four percentage points more likely to live on their own (column 1) as a result of the SP-PC benefit. This increased rate of living independently appears to be due to reductions in the rates of living with one or more of their children (column 2), living with a non-child household member (column 3), and living in a nursing home (column 4), though none of these effects is statistically significant on their own. Panel B expands the analysis sample to include all HRS respondents over 65 (with and without ADL impairments) and runs the triple difference specification outlined by Equation (2) above. The estimates are all similar in both sign and magnitude; if anything, they are slightly larger in absolute size; for example, the estimated effect on the probability that seniors are living independently using this specification is 6.5 percentage points. This suggests that the differences observed in Panel A are not due to overall differences in the residence patterns of low-income seniors in SP-PC states relative to waiver-only states, but rather are specific to low-income seniors with ADL impairments, making it more plausible that they are related to the existence of the SP-PC benefit.

Table 7 reports the same specifications estimated on measures of senior health and well-being. It is possible to imagine both positive or negative effects from the switch toward more paid home care and less unpaid home care and nursing home care. On the one hand, one might expect that seniors who are able to live independently are happier and healthier than those who rely on family members or nursing homes for care. If paid care is more skilled than care from informal care providers, one might also expect fewer adverse health events or lower mortality as a result of the SP-PC benefit. On the other hand, if paid home care is lower quality, or if seniors prefer receiving care from and living with their children, they may experience negative health and well-being effects. Finally, because the main effect of the policy appears to be to replace one type of care for another, rather than increase the total amount of care provided, it is possible that the policy may not greatly affect senior health outcomes. Columns 1-3 make use of three measures of health and well-being in the HRS: how seniors self-rate their health (poor, fair, good, very good, or excellent),

Table 6: Effect of Medicaid SP-PC benefit on living arrangements of seniors with ADL impairments

| | Living at Home | | | Residential Care | |
|---|---|---|---|---|---|
| | (1) On own | (2) With child | (3) Other | (4) Nursing Home | (5) Other |
| **Panel A. Seniors with ADL impairments** | | | | | |
| $SPPC_s \times IncElig_{it}$ | 0.048*** | -0.021 | -0.012 | -0.015 | -0.000 |
| | [0.014] | [0.013] | [0.011] | [0.014] | [0.005] |
| $IncElig_{it}$ | -0.065*** | 0.035*** | 0.007 | 0.019* | 0.002 |
| | [0.010] | [0.010] | [0.010] | [0.010] | [0.004] |
| Dep. Var Mean | 0.583 | 0.203 | 0.061 | 0.142 | 0.012 |
| N | 21918 | 21918 | 21918 | 21918 | 21918 |
| **Panel B. All seniors** | | | | | |
| $SPPC_s \times IncElig_{it} \times ADL_{it}$ | 0.064*** | -0.036* | 0.001 | -0.027 | -0.000 |
| | [0.024] | [0.019] | [0.013] | [0.019] | [0.007] |
| $SPPC_s \times IncElig_{it}$ | -0.013 | 0.018 | -0.015** | 0.007** | 0.004 |
| | [0.017] | [0.017] | [0.007] | [0.0003] | [0.004] |
| $SPPC_s \times ADL_{it}$ | 0.000 | 0.002 | -0.007 | 0.002 | 0.002 |
| | [0.015] | [0.016] | [0.010] | [0.010] | [0.006] |
| $IncElig_{it} \times ADL_{it}$ | -0.017 | 0.007 | -0.011 | 0.022** | -0.002 |
| | [0.015] | [0.016] | [0.010] | [0.010] | [0.006] |
| $IncElig_{it}$ | -0.043*** | 0.030*** | 0.018*** | -0.003 | -0.001 |
| | [0.013] | [0.013] | [0.005] | [0.002] | [0.002] |
| Dep. Var. Mean | 0.721 | 0.171 | 0.054 | 0.037 | 0.017 |
| N | 95891 | 95891 | 95891 | 95891 | 95891 |

Notes: This table presents two separate regressions, a DD regression using the sample of ADL-impaired seniors, and a DDD regression using the sample of all seniors. Both regressions contain controls for senior age, gender, race/ethnicity, education, marital status, whether they have a son and/or a daughter, cognitive status, history of stroke, and counts of mobility difficulties, ADL difficulties, IADL difficulties, and chronic conditions, as in Table 3. Living on one's own is defined as living alone or with one's partner only. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

their score on the Center of Epidemiological Studies Depression Scale (column 2), and their Diener life satisfaction score (column 3).[11] I convert these scores into binary measures using natural or conventional thresholds described in the table notes and Appendix B. Columns 4-6 use indicators of whether a senior experienced an adverse health event in the two years following the survey in question: whether the senior experiences a decline in functioning, has a hospital stay, or dies. I find no statistically significant impacts of the benefit on any of these outcomes, potentially suggesting that the policy does not greatly impact senior health or well-being. However, the estimates are fairly noisy, so unfortunately, it is not possible to rule out fairly large positive or negative ToT effects. It is also not possible to determine whether the lack of any significant effects reflects the presence of heterogeneous treatment effects, where some seniors experienced positive effects and others experienced negative effects, or near-zero effects for all seniors.

### 6.3 Effects on children and spouses

The evidence thus far indicates that increasing the availability of paid home care reduces the amount of care that ADL-impaired seniors receive from family members. In this section, I study whether this translates into effects on potential caregivers' labor supply or health and well-being. I focus on children and spouses for two reasons: (1) they provide the majority of unpaid care to seniors in my sample, (2) the HRS survey includes questions about their labor supply, unlike, for example, grandchildren.

Table 8 measures the effects of the SP-PC benefit on the caregiving and labor supply of children of ADL-impaired seniors, where Panel A estimates the difference-in-difference specification in Equation (3) using the sample of all children of ADL-impaired seniors in the HRS. As discussed in Section 5, this is the same difference-in-differences specification as above, except each observation is a child of an ADL-impaired senior, and the controls include their demographic characteristics (age, marital status, having young kids) in addition to those of the senior (their parent). The regressions also interact the main effects with the child's gender, given the stark differences in caregiving behavior by gender noted earlier.

[11] The life satisfaction survey is an optional module that was only fielded beginning in 2004. It is completed by roughly 28% of respondents and this sample is non-random (may be subject to selection bias).

Table 7: Effect of SP-PC benefit on health and well-being of seniors with ADL impairments

| | Ratings and assessments | | | Adverse health event in next two years | | |
|---|---|---|---|---|---|---|
| | (1) Good health | (2) Depressed | (3) High life sat. | (4) Func. decline | (5) Hospitaliz. | (6) Mortality |
| **Panel A. Seniors with ADL impairments** | | | | | | |
| $SPPC_s \times IncElig_{it}$ | -0.008 | 0.011 | 0.020 | 0.002 | -0.002 | -0.010 |
| | [0.024] | [0.022] | [0.036] | [0.015] | [0.015] | [0.017] |
| $IncElig_{it}$ | -0.049** | 0.039** | -0.005 | 0.015 | -0.004 | -0.001 |
| | [0.021] | [0.019] | [0.026] | [0.012] | [0.014] | [0.011] |
| Dep. Var. Mean | 0.375 | 0.315 | 0.402 | 0.333 | 0.467 | 0.207 |
| N | 21967 | 16917 | 5110 | 15690 | 15690 | 20086 |
| **Panel B. All seniors** | | | | | | |
| $SPPC_s \times IncElig_{it} \times ADL_{it}$ | -0.010 | 0.029 | 0.010 | 0.010 | 0.010 | -0.017 |
| | [0.027] | [0.024] | [0.043] | [0.016] | [0.020] | [0.018] |
| $SPPC_s \times IncElig_{it}$ | 0.002 | -0.014 | 0.012 | -0.005 | -0.010 | 0.001 |
| | [0.013] | [0.010] | [0.022] | [0.011] | [0.011] | [0.005] |
| $SPPC_s \times ADL_{it}$ | 0.024* | -0.017 | -0.012 | -0.002 | -0.018 | 0.012 |
| | [0.012] | [0.012] | [0.022] | [0.009] | [0.016] | [0.009] |
| $IncElig_{it} \times ADL_{it}$ | 0.048** | 0.019 | 0.086*** | -0.033*** | -0.026 | -0.014 |
| | [0.021] | [0.019] | [0.022] | [0.012] | [0.016] | [0.013] |
| $IncElig_{it}$ | -0.083*** | 0.039*** | -0.069*** | 0.037*** | 0.014 | 0.006** |
| | [0.008] | [0.008] | [0.014] | [0.010] | [0.008] | [0.003] |
| Dep. Var. Mean | 0.705 | 0.134 | 0.583 | 0.186 | 0.317 | 0.080 |
| N | 95891 | 86873 | 26799 | 81452 | 81452 | 89277 |

Notes: Sample includes all senior-year observations where senior reports having at least one ADL difficulty in 2000-2016 panels of HRS and whose incomes are not between 75-150% FPL. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions also contain state fixed effects and demographic and health controls shown in Table 3. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

Column 1 reproduces the first-stage effect of the SP-PC benefit on the probability that a senior receives paid home care (column 1 of Table 3) for the sample of seniors with children. This estimate will help me rescale the remaining estimates into treatment-on-the-treated effects for easier interpretation. For parents of daughters, the effect of the SP-PC benefit (8.0 percentage points) is larger than the overall average effect in Table 3, while for parents of sons, the effect is smaller (5.5 percentage points), despite the baseline probabilities being quite similar, potentially suggesting differential takeup of the benefit among parents with daughters.

The remaining columns examine the caregiving and labor supply decisions of sons and daughters, beginning with whether or not they help their parent with ADLs or IADLs. Overall, 11.4% of daughters whose parents have an ADL difficulty provide unpaid help to that parent, but the SP-PC benefit reduces this rate by 3.1 percentage points, more than a 25% reduction (column 2). The share of sons who provide unpaid help is significantly lower on average (5.5%), and I estimate a small negative decline of 1.3 percentage points that is not statistically significant, though the magnitude of this effect is similar in percent terms to the effect for daughters. A small number of children provide *paid* help to their parents (0.8 percent of daughters, and 0.2 percent of sons of seniors with ADL difficulties). Column 3 finds a statistically significant increase of 0.7 percentage points in this probability for daughters, consistent with Medicaid policies that allow family members to serve as paid care providers, suggesting that roughly a quarter of the decrease seen in column 2 may be attributed to daughters switching from unpaid to paid caregiving, leaving a net decrease in caregiving from daughters of roughly 2.4 percentage points. Column 4 shows that there is also a reduction in the share of daughters who live with the ADL-impaired parent of 1.8 percentage points, from a baseline of 7.4 percentage points, which is consistent with the earlier result that the SP-PC benefit reduces co-residence with children in Table 6.

Finally, columns 5 and 6 look at the effect of the SP-PC benefit on children's labor supply. HRS respondents are asked to report whether each of their children is working full-time, part-time, or not working. I find that daughters are 3.7 percentage points more likely to be working as a result of the SP-PC benefit (column 6), but that the labor supply of sons is unaffected by the policy (in fact, the point estimate is slightly negative). I find no effect of the policy on the share of daughters

or sons working part-time. The survey does not specify whether providing paid care is considered work; however, comparing the sizes of the coefficients in column 3 with column 6 suggests that even if daughters are reported as working when they are paid helpers but not when they are unpaid helpers, this effect cannot explain the entirety of the labor supply effect. Together with column 1, this result implies a treatment-on-the-treated (ToT) effect of one additional daughter working full-time for every 2.4 daughters whose parent receives paid help as a result of the SP-PC benefit. This is a substantial effect that likely reflects significant selection into treatment. In other words, it seems likely that seniors whose use of paid home care is affected by the SP-PC benefit may be seniors whose daughters may be choosing between caring for them and working outside the home.

Panel B re-estimates the co-residence and labor supply effects using the triple-difference specification and the larger sample of all children of seniors in the HRS. Unlike the DD specification in Panel A, this specification is able to account for unobserved factors that might lead to lower co-residence or higher labor force participation among lower-income women in SP-PC states. Reassuringly, I do not find much evidence of omitted variable bias along this dimension (exhibited by the fact that the coefficient on $\text{SPPC}_s \times \text{IncElig}_{it}$ is close to zero), and the DDD estimates of the effect of the SP-PC benefit are similar to the DD estimates in Panel A. Using this specification, I estimate a ToT effect of one additional daughter working full-time per three daughters whose parents are new recipients of paid home care, a slightly smaller but still quite large and significant effect. Together, these results suggest that the SP-PC benefit causes an increase in labor supply among daughters of low-income seniors with ADL difficulties, likely by reducing their caregiving burden. On the other hand, sons experience a slight reduction in caregiving, but no increase in labor supply, suggesting that unlike daughters, sons at the margin of caregiving do not appear to also be at a labor supply margin.

Table 9 turns to the effect on spouses and partners, again interacting the main effects by gender. The first column reproduces the effect on the probability that an senior with ADL impairments is receiving paid help, and again finds substantial heterogeneity based on the gender of their partner. While ADL-impaired seniors with male partners experience a statistically significant increase in their use of paid home care, ADL-impaired seniors with female partners do not, despite similar

Table 8: Effect of Medicaid SP-PC benefit on co-residence, caregiving, and labor supply of children of seniors with ADL impairments

| | Respondent | Child of respondent | | | | |
|---|---|---|---|---|---|---|
| | (1) Receives Paid Help | (2) Provides Unpaid Help | (3) Provides Paid Help | (4) Lives w/ parent | (5) Works PT | (6) Works FT |
| **Panel A. Parent-child pairs where parent is ADL-impaired senior** | | | | | | |
| $SPPC_s \times IncElig_{it}$ | | | | | | |
| × Daughter | 0.080*** | -0.031*** | 0.007*** | -0.018*** | 0.003 | 0.037*** |
| | [0.021] | [0.012] | [0.003] | [0.007] | [0.008] | [0.014] |
| × Son | 0.055*** | -0.013 | -0.001 | -0.005 | 0.000 | -0.026 |
| | [0.025] | [0.008] | [0.001] | [0.010] | [0.008] | [0.019] |
| $IncElig_{it}$ | | | | | | |
| × Daughter | -0.018 | 0.036*** | -0.003 | 0.006 | -0.006 | -0.049*** |
| | [0.018] | [0.009] | [0.002] | [0.006] | [0.006] | [0.011] |
| × Son | 0.003 | -0.010 | -0.001 | 0.005 | 0.003 | -0.041** |
| | [0.020] | [0.008] | [0.001] | [0.007] | [0.006] | [0.018] |
| Daughter Mean | 0.142 | 0.114 | 0.008 | 0.074 | 0.090 | 0.554 |
| Son Mean | 0.140 | 0.055 | 0.002 | 0.073 | 0.049 | 0.673 |
| N | 75757 | 75757 | 75757 | 75757 | 75757 | 71600 |
| **Panel B. Parent-child pairs where parent is any senior** | | | | | | |
| $SPPC_s \times IncElig_{it} \times ADL_{it}$ | | | | | | |
| × Daughter | | | | -0.020*** | 0.001 | 0.031** |
| | | | | [0.007] | [0.010] | [0.015] |
| × Son | | | | -0.005 | 0.003 | -0.020 |
| | | | | [0.010] | [0.008] | [0.020] |
| $SPPC_s \times IncElig_{it}$ | | | | | | |
| × Daughter | | | | 0.000 | 0.000 | 0.011 |
| | | | | [0.006] | [0.008] | [0.010] |
| × Son | | | | 0.004 | -0.002 | -0.009 |
| | | | | [0.008] | [0.005] | [0.011] |
| $SPPC_s \times ADL_{it}$ | | | | | | |
| × Daughter | | | | 0.003 | 0.008 | -0.013 |
| | | | | [0.006] | [0.006] | [0.013] |
| × Son | | | | 0.003 | -0.001 | 0.005 |
| | | | | [0.005] | [0.004] | [0.009] |
| $IncElig_{it} \times ADL_{it}$ | | | | | | |
| × Daughter | | | | 0.001 | 0.013* | -0.051*** |
| | | | | [0.005] | [0.007] | [0.012] |
| × Son | | | | -0.001 | -0.009 | 0.000 |
| | | | | [0.008] | [0.006] | [0.017] |
| $IncElig_{it}$ | | | | | | |
| × Daughter | | | | 0.004 | -0.016*** | -0.010* |
| | | | | [0.004] | [0.006] | [0.006] |
| × Son | | | | 0.001 | 0.014*** | -0.051*** |
| | | | | [0.007] | [0.003] | [0.009] |
| Daughter Mean | | | | 0.057 | 0.101 | 0.612 |
| Son Mean | | | | 0.065 | 0.044 | 0.764 |
| N | | | | 325709 | 325709 | 310446 |

Notes: This table presents two separate regressions, a DD regression using the sample of children of ADL-impaired seniors, and a DDD regression using the sample of children of seniors with and without ADL difficulties. Both regressions contain controls for senior demographics, family, and health, as in Table 3, and also controls for the child's age, sex, marital status, education, and whether they have young kids. The regressions also contain fixed effects at the state-by-child-gender level. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

baseline probabilities of using paid help. Because among partnered ADL-impaired seniors who report receiving some help, almost all (86%) report that their partner helps them, Column 2 uses a slightly different measure of caregiving than for children, namely whether a senior's spouse is their "primary" ADL helper (the person who they report helps them the most). Consistent with the small take-up of the benefit shown in column 1 among seniors with wives, the SP-PC benefit does not cause a significant reduction in primary caregiving. On the other hand, there is a substantial decrease in primary caregiving among husbands. This suggests that while the supply of care by husbands is fairly "elastic" to the availability of paid home care, the supply of care by wives is less so. Columns 3 and 4 then show that in contrast to the effects on daughters, the reduction in husband caregiving does not seem to be related to their labor market behavior, which is unsurprising given that most spouses in this sample are past the usual age of retirement and not working. Together, Tables 8 and 9 show that the SP-PC benefit causes the most increased use of paid home care among seniors with daughters and/or husbands, and that both daughters and husbands significantly reduce their caregiving. However, daughters also increase their labor supply as a result of the policy, while the labor supply of husbands is not affected.

Labor supply is not the only possible benefit of reduced burden for caregivers. For example, other recent work on Medicaid's home care benefits has investigated the effect on caregiver mental and physical health, finding positive mental health effects of receiving the home care benefit (Unger et al., 2021). Due to the structure of the data, I have very limited information on the health and well-being of the sample of children used in the main results of this paper. However, in Appendix A, I present results from an analysis of caregiver health using an alternative sample of children. I do not find any significant effects of the policy on the health and well-being of spouses or children, though the effects for daughters are weakly suggestive of potentially positive effects.

# 7 Robustness Checks

This section probes the robustness of the findings in the paper to potential sources of bias and alternative empirical specifications. In general, the focus will be on three results: (1) the large and positive effect of the SP-PC policy on paid home care utilization, (2) the negative effect on nursing home use (which has important policy relevance, but is not statistically significant), and (3) the

Table 9: Effect of Medicaid SP-PC benefit on use of paid care, care from spouses, and spouse labor supply for partnered ADL-impaired seniors, by gender of impaired senior's partner

| | Impaired senior | Spouse | | |
|---|---|---|---|---|
| | (1) Receives paid help | (2) Is primary helper | (3) Works part-time | (4) Works full-time |
| $PC_s \times IncElig_{it}$ | | | | |
| × Wife | 0.014 | 0.002 | -0.010 | 0.001 |
| | [0.031] | [0.043] | [0.025] | [0.026] |
| × Husband | 0.070* | -0.066* | -0.011 | 0.010 |
| | [0.036] | [0.035] | [0.025] | [0.034] |
| $IncElig_{it}$ | | | | |
| × Wife | 0.0005 | 0.046 | -0.010 | -0.066*** |
| | [0.026] | [0.030] | [0.012] | [0.023] |
| × Husband | -0.006 | -0.019 | -0.018 | -0.021 |
| | [0.026] | [0.026] | [0.021] | [0.022] |
| Wife Mean | 0.096 | 0.443 | 0.055 | 0.113 |
| Husband Mean | 0.074 | 0.379 | 0.042 | 0.089 |
| N | 9302 | 9302 | 9022 | 9302 |

Notes: Coefficients are from OLS estimation of the difference-in-differences specification on the sample of partnered ADL-impaired seniors with state by spouse gender fixed effects. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

positive effect on daughter labor supply.

### 7.1 Omitted variable bias

One threat to the identification strategy in this paper is that other factors may drive differences between treatment and control states in the outcomes of low-income ADL-impaired seniors and their daughters. For example, SP-PC states might be richer states that spend more on all kinds of health care, thus enabling more seniors to live independently and their daughters to work more. While it is not possible to completely rule all confounders, Table 10 summarizes some potential confounders to help us understand the likelihood of this type of bias.

The first row uses data from the Dartmouth Atlas to show that SP-PC states have slightly lower adjusted Medicare spending per enrollee than waiver-only states, but the difference is small and not statistically significant. I also specifically look at Medicare spending on home health care, which may reflect the propensity of providers to recommend home care over inpatient care or the robustness of the supply of aides in a state. Again, I find slightly lower adjusted home health spending in SP-PC states, but the difference is not statistically significant. More broadly, higher income states or states with larger safety nets for low-income individuals may have better outcomes for low-income ADL-impaired seniors and their daughters. The next two rows of Table 10 show that SP-PC states are slightly wealthier than waiver-only states, but have roughly equivalent Democratic voting shares in the past few presidential elections (both of which may proxy for the size of the safety net). Again, these differences are not statistically significant. Finally, the fifth row looks at a measure of cultural attitudes toward female labor force participation "outside the home" from the General Social Survey, and does not find significant differences between treatment and control states. On the other hand, the last two rows look at Medicaid spending on nursing homes and home and community-based care. SP-PC states have almost double as much Medicaid spending per senior on home and community-based care as waiver-only states, and lower nursing home spending (though the second difference is not statistically significant). These differences are likely at least due in part to the adoption of the SP-PC benefit, though they may plausibly reflect other Medicaid long-term care policies as well. For this reason, a more conservative interpretation of the results is that the estimates above reflect the effect of more generous home and community-based

Table 10: Average characteristics of SP-PC states and waiver-only states

| | SP-PC states | Waiver-only states | Difference in means |
|---|---|---|---|
| Medicare spending | 9,854 | 10,205 | -352 |
| Medicare home health spending | 462 | 500 | -38 |
| Median income | 31,115 | 29,757 | 1,358 |
| Dem vote share (2000-2016) | .47 | .47 | 0.002 |
| Share pop favorable twd. female LFP | 0.68 | 0.66 | 0.02 |
| Medicaid NH spending | 3,282 | 3,627 | -346 |
| Medicaid HCBS spending | 2,214 | 1,046 | 1,169* |
| N | 25 | 21 | |

Notes: This table calculates state-level averages of various state characteristics for SP-PC states, waiver-only states, and then calculates the difference-in-means for each variable. Significant differences from a t-test of this difference are marked with an asterisk (*).

care policies in Medicaid.

Taken collectively, Table 10 suggests that there are not large differences between SP-PC states and waiver-only states in many plausible confounders, making it unlikely that these variables are driving the results. Table A1 in the Appendix tests this formally, by running a "horse race" regression that includes the interaction of being in the top half of states for each of these potential confounders with the individual variation in income eligibility and ADL impairments to see if the main effect disappears once these controls are added. I find that including these additional variables does not substantially change the estimates of the main effects.

### 7.2 Sensitivity analyses

Next, I examine the sensitivity of the result to some of the research design decisions I made, by (1) using alternative definitions of the treatment and control income groups, and (2) including late adoption states in the sample.

It would be concerning if the results are sensitive to the particular income threshold I chose to define the treatment group of likely-Medicaid-eligibles. Figure 4 shows that Medicaid coverage appears to decline slowly with income above 75% FPL, which would be fairly consistent with the eligibility rules. If the results are driven entirely by people whose incomes fall between 75-125%

FPL, one might worry that the results are caused by something other than differences in state Medicaid policy. Table 11 drops people from the sample whose incomes are in the "fuzzy" range of potential Medicaid eligibility (75%-150% FPL), thus defining the treatment income group as anyone whose income is below 75% FPL and the control group as anyone whose income is above 150% FPL. In effect, this compares people who are very poor and likely to automatically qualify for Medicaid to people who are almost definitely not eligible for Medicaid. The main results are robust to this specification, and the magnitudes of the estimates are actually larger, consistent with the hypothesis that only some individuals under the looser definition of treatment actually have access to paid home care. In this sample, the nursing home effect is statistically significant, and implies a reduction of one fewer nursing home residents per 2.8 additional people receiving home care. Table A2 in the Appendix presents an alternative specification that drops people whose incomes are above 300% FPL. I do this because one might worry that people with high incomes are not a reasonable control group for people whose incomes are below 0-125% FPL, and may be more likely to participate in the private pay home care market, which could also be affected by geography. The results in this sample are somewhat smaller and less precisely estimated, but still tell the same story.

A second design choice I made was to drop the five late adoption states from the sample, because the programs in those states are likely to be less established, and so the states might look like a mixture of treatment and control states and be harder to interpret. To show that the results are not driven by this decision, Table A3 in the Appendix re-estimates the main results in a sample that includes the five late adoption states, coding them as treated in any years following their adoption of the SP-PC benefit and control before, and shows that this alternative design does not substantially affect the results.

### 7.3 Permutation tests

Finally, we may be concerned that non-homoskedasticity in the errors will lead to over-rejection of the null hypothesis that there is no effect of state Medicaid policy on the use of paid home care, nursing home residence, or female labor supply. While I cluster standard errors at the state level in order to account for this, I also do a randomization test of the main results of the paper to test this

Table 11: Main results estimated on sample that excludes people with incomes between 75-150% FPL

| | (1) Paid Helper | (2) NH Resident | (3) Daughter Works FT |
|---|---|---|---|
| $PC_s \times IncElig_{it}$ | 0.084*** | -0.029* | 0.043* |
| | [0.024] | [0.023] | [0.024] |
| $IncElig_{it}$ | 0.005 | 0.026 | -0.091*** |
| | [0.021] | [0.018] | [0.022] |
| Dep. Var Mean | 0.113 | 0.128 | 0.571 |
| N | 14830 | 14830 | 24248 |

Notes: Sample includes all senior-year observations where senior reports having at least one ADL difficulty in 2000-2016 panels of HRS and whose incomes are not between 75-150% FPL. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions also contain state fixed effects and demographic and health controls shown in Table 3. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

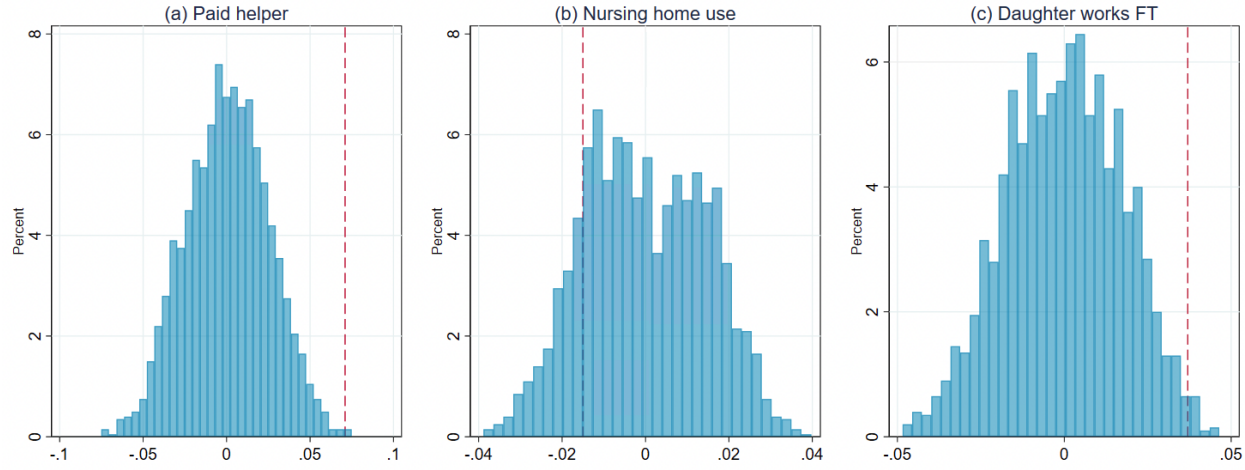
possibility non-parametrically. I run a series of regressions equivalent to my baseline difference-in-differences specification, except in each run, I randomly sample 25 states to be "treatment" states. The estimated coefficients from 2,000 of these regressions are shown in Figure 5, where the red line indicates the coefficient from the regressions using the true assignment of treatment and control states. Each graph also reports the empirical two-sided p-value for the true coefficient: these p-values provide fairly reassuring evidence that the effects on having a paid helper and daughter labor supply are meaningful, but as expected, we cannot reject a null effect on nursing home use.

In Appendix Figure A1, I also provide a non-parametric test of robustness by reporting the results of 46 estimations of the baseline specification on the sample of states excluding each state in turn. This test shows that the results are not driven by any individual state.

### 7.4 Replication of main results in American Community Survey

One downside to using the Health and Retirement Study is that the sample size is relatively small, containing approximately 10,000 people over age 65 each year. On the other hand, the American Community Survey (ACS) surveys a 1% sample of the population, which would equate to about 500,000 adults over 65, each year, but contains substantially less detail. For example, the ACS does not ask any questions about caregiving. However, because the ACS does ask about functional limitations, income, co-residence, and labor supply, so it is possible to replicate a few of the main

Figure 5: Distribution of placebo $\beta$ coefficients from permutation test




Notes: N=2,000 simulations of difference-in-differences specification where $SPPC_s$ is randomly set to be 1 for 25 treatment states in each simulation. True coefficient is marked by the red dashed line. The empirical two-sided p-value for the true coefficient is (a) .0025, (b) .345, (c) .026, respectively.

results of this paper in the larger ACS sample. In Table A4 in the Appendix, I show results of estimating equations 1 and 2 for an ADL-impaired senior's place of residence in the ACS, as well as for the employment status of daughters and sons who are in the same household as an ADL-impaired senior (this is a different sample than in Table 8 because the non-co-resident children are not observed in the ACS). The results are similar in magnitude and in sign to my main specifications. Specifically, I find that the SP-PC benefit causes a significant increase in the probability that an ADL-impaired senior is living alone or with a partner and a significant decrease in the probability they are living in group quarters, most likely a nursing home. I also find a positive effect on the probability that a co-resident daughter of an ADL-impaired senior is employed, and no significant effect on sons.

## 8 Implications for government revenues

This paper evaluates the effect of expanding access to home care by exploiting state-level variation in whether or not personal care is an entitlement in the state's Medicaid program. Roughly, this natural experiment may be similar to the proposed investment in the Build Back Better plan to end

waiver waitlists for HCBS. In this section, I perform a back-of-the-envelope calculation to illustrate how the estimates of this paper could be used to evaluate such a policy.

There are two main ways that the population receiving services may change if access to home care is expanded: (1) people who would otherwise use institutional care may opt to receive formal care at home instead, (2) people who otherwise would not receive any formal care may begin to receive care (the "woodwork" effect). Both populations are substantial at the policy margin that I consider in this paper. At the mean estimates, the SP-PC benefit is associated with 1.5 percent fewer nursing home users per eligible senior, but 7.1 percentage points more home care users, meaning that roughly 20% of the marginal population falls into the first category, and the remaining 80% are part of the "woodwork effect" population. We can map this into government costs by using estimates from the Genworth Cost of Care Survey that put the average price of home care at $23 per hour and the average price of a semi-private room in a nursing home at $90,000 per year. Using the estimate that the SP-PC benefit increases paid care by 2.8 hours per week per eligible senior, this would mean that Medicaid would pay an additional $3,335 per eligible senior for home care services and save $1,350 in nursing home costs each year. This estimate should be viewed more as an illustration, given the noise in the nursing home coefficient, but shows that even with a fairly substantial woodwork effect (80%), the savings from nursing home use can be substantial (more than 40%), given the stark difference in costs per user.

The second source of savings to the government is the fiscal externality from increased labor supply from daughters. To estimate these externalities, I re-weight average earnings among women working full-time in the ACS using the age and education levels of daughters of income-eligible ADL-impaired seniors in my sample. This produces an estimate of $50,000 in annual full-time earnings for the average woman of a similar age and education level to the potential group of affected daughters, which would result in additional federal and state income tax revenues of roughly $10,000. Taking the more conservative DDD estimate of 3.1 percent more daughters working full-time and scaling the estimate by the average number of daughters per eligible senior (1.65), I estimate additional income tax revenues of $515 per eligible senior. The final cost of the program is thus roughly $3,335-$1,350-$515=$1,470 per eligible senior, meaning that the government is able to recover roughly 56%

of the program's cost due to these two offsets. Expressed in terms of participants rather than the eligible population, this means that the program's cost would be roughly $47,000 per participant before taking into account these savings, but only $20,700 per participant after taking into account these savings.

# 9 Conclusion

The lack of comprehensive long-term care insurance in the US means that most elderly are subject to highly uncertain and potentially large long-term care costs as they age and it is likely that Medicaid and families bear a significant portion of these costs. This paper identifies a source of state variation in Medicaid long-term care policy to evaluate the impact of subsidizing home care for low-income seniors with functional difficulties. States that passed this policy have rates of paid home care utilization that are more than 50% higher than states that didn't. Notably, the total amount of care that seniors receive does not increase by much as a result of this paid home care expansion. Rather, I find that this care is often used to replace care from unpaid family members, suggesting that family members may be a significant beneficiary of policies to expand home care. Focusing on daughters, who provide the most care to seniors in my sample, I find that providing low-income seniors access to paid home care reduces the probability that a daughter is caring for their parent, and increases the probability that they are working full-time. For every 2.4-3 daughters of ADL-impaired parents who receive home care as a result of the policy, I estimate that one works full-time as a result of the policy.

Beyond the direct implications for policymakers considering broader investment in home care summarized in Section 8, these results offer a few additional insights for policymakers. First, my results add to recent literature documenting substantial heterogeneity across state Medicaid programs (Garthwaite et al., 2019) and motivate the need for a better understanding of how different state Medicaid policies may affect care and outcomes for Medicaid beneficiaries. In this case, I find that waiver programs result in significantly reduced utilization of home care, relative to offering a state plan benefit. Second, my results suggest that care substitution is likely to be a significant effect of policies that expand access to formal home care for seniors unless the program is targeted very narrowly to people without other family support. However, this care substitution may be

beneficial to the family members who would otherwise be providing this care, and may also result in positive social externalities, such as increased daughter labor supply, as in the case of the policy studied in this paper. Finally, the results follow other literature (summarized in Currie and Gahvari, 2008) in emphasizing the importance of considering how take-up of an in-kind benefit will affect the targeting of that benefit toward potential beneficiaries who have the highest marginal social benefit of program participation. In this case, my results suggest that the take-up of in-kind home care may be concentrated among seniors whose potential caregivers are on a labor supply margin, more so than seniors on the margin of entering a nursing home. However, one would imagine that take-up would be significantly different for other potential long-term care reforms, such as respite payments for family caregivers, paid family leave, or a cash benefit (for example, Lieber and Lockwood (2019) compare the targeting properties of an in-kind home care benefit to a cash benefit). Any comparison of such reforms should be careful to take these potential differences in who takes up the benefit into account.

The COVID-19 pandemic brought issues related to caregiving and labor supply to the forefront. However, it is clear that these issues predate the pandemic. This paper shows that the need to provide long-term care to a parent may be a significant uninsured risk in the population, particularly for women, and that public policy can play a role in insuring this risk.

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# Appendix

## A Additional Analyses

### A.1 Robustness checks

The robustness checks in this section are described in the main text. Table A1 runs a "horse race" regression of other potential state-level variables. Table A2 drops people whose incomes are above 300% FPL. Figure A1 shows the result of re-estimating the effect of the SPPC benefit on the probability an ADL-impaired senior has a paid helper, excluding each state in turn. Table A4 shows the results of using the American Community Survey.

Table A1: Horse race regression of state-level variables against SP-PC benefit

| | (1) Paid Helper | (2) NH Resident | (3) Daughter Works FT |
|---|---|---|---|
| $SPPC_s \times IncElig_{it}$ | 0.068*** | -0.011 | 0.039*** |
| | [0.018] | [0.013] | [0.013] |
| $HighMedicare_s \times IncElig_{it}$ | 0.047** | -0.026** | 0.008 |
| | [0.023] | [0.013] | [0.023] |
| $HighHomeHealth_s \times IncElig_{it}$ | 0.001 | 0.003 | 0.004 |
| | [0.025] | [0.012] | [0.022] |
| $HighMedianIncome_s \times IncElig_{it}$ | 0.006 | -0.012 | 0.007 |
| | [0.023] | [0.016] | [0.017] |
| $HighGSS_s \times IncElig_{it}$ | 0.021 | 0.022 | 0.030** |
| | [0.023] | [0.014] | [0.015] |
| $HighDem_s \times IncElig_{it}$ | -0.004 | -0.007 | -0.037** |
| | [0.022] | [0.014] | [0.017] |
| $IncElig_{it}$ | -0.052* | 0.037** | -0.047*** |
| | [0.026] | [0.016] | [0.022] |
| Dep. Var Mean | 0.129 | 0.142 | 0.554 |
| N | 21918 | 21918 | 33956 |

Notes: This table replicates the DDD specification for three main dependent variables of interest. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

Table A2: Main results estimated on sample of seniors with income < 300% FPL

| | (1) Paid Helper | (2) NH Resident | (3) Daughter Works FT |
|---|---|---|---|
| $PC_s \times IncElig_{it}$ | 0.060*** | -0.015 | 0.028* |
| | [0.019] | [0.015] | [0.015] |
| $IncElig_{it}$ | -0.003 | 0.019 | -0.057*** |
| | [0.014] | [0.010] | [0.010] |
| Dep. Var. Mean | 0.127 | 0.151 | 0.542 |
| N | 17791 | 17791 | 30077 |

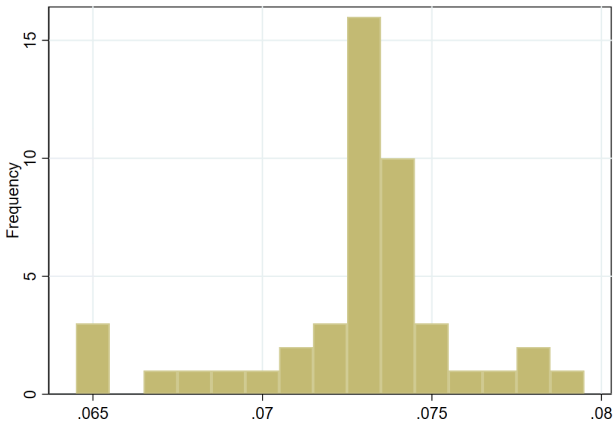
Notes: Sample in columns 1 and 2 includes all senior-year observations where senior reports having at least one ADL difficulty in 2000-2016 panels of HRS and whose incomes are below 300% FPL. In column 3, the sample is all daughters of the senior sample in the previous columns. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions also contain state fixed effects and demographic and health controls shown in Table 3. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

Table A3: Main results estimated including late adoption states

| | (1) Paid Helper | (2) NH Resident | (3) Daughter Works FT |
|---|---|---|---|
| $PC_s \times IncElig_{it}$ | 0.071*** | -0.020 | 0.034** |
| | [0.017] | [0.014] | [0.014] |
| $IncElig_{it}$ | -0.012 | 0.023** | -0.059*** |
| | [0.013] | [0.010] | [0.012] |
| Dep. Var Mean | 0.119 | 0.142 | 0.554 |
| N | 22591 | 22591 | 37239 |

Notes: This table replicates the main results in the paper, but includes seniors living in the late adoption states in the sample rather than excluding them. The main independent variable of interest is $PC_{st}$, which is 1 in all years for all the early adoption states, 0 in all years for all the waiver-only states, and 1 in years following and 0 in years prior to the adoption of the PC benefit for late adoption states. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions also contain state fixed effects and demographic and health controls shown in Table 3. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

Figure A1: DD coefficient on paid home care after leaving out each state individually




Notes: This figure plots the magnitude of the difference-in-difference coefficient estimated in Table 3 of paid home care on $PC_s \times IncElig_{it}$ estimated 51 times, where in each run, a different state (including Washington D.C.) was dropped from the sample. This shows that the result is not driven by one state.

Table A4: Selected results estimated using the American Community Survey

| | Senior living situation | | | | Same-household child LS | |
|---|---|---|---|---|---|---|
| | (1) On own | (2) With kid | (3) Other | (4) Group q | (5) Daughter Emp | (6) Son Emp |
| **Panel A. ADL-impaired seniors** | | | | | | |
| $PC_s \times IncElig_{it}$ | 0.031** | -0.004 | -0.004 | -0.023** | 0.017** | 0.010 |
| | [0.01] | [0.01] | [0.00] | [0.01] | [0.01] | [0.01] |
| $IncElig_{it}$ | -0.072*** | -0.008 | -0.015*** | 0.095*** | 0.017*** | 0.006 |
| | [0.01] | [0.00] | [0.00] | [0.01] | [0.01] | [0.01] |
| Dep. Var. Mean | 0.44 | 0.19 | 0.07 | 0.30 | 0.55 | 0.57 |
| N | 920302 | 920302 | 920302 | 920302 | 127723 | 120772 |
| **Panel B. All seniors** | | | | | | |
| $PC_s \times IncElig_{it} \times ADL_{it}$ | 0.046** | -0.009 | -0.003 | -0.034** | 0.017** | 0.010 |
| | [0.02] | [0.01] | [0.01] | [0.01] | [0.01] | [0.01] |
| $PC_s \times IncElig_{it}$ | 0.000 | 0.002 | -0.001 | -0.001 | 0.006 | 0.003 |
| | [0.01] | [0.01] | [0.00] | [0.00] | [0.00] | [0.01] |
| $PC_s \times ADL_{it}$ | 0.017 | -0.017** | -0.003 | 0.003 | 0.020** | 0.000 |
| | [0.01] | [0.01] | [0.00] | [0.02] | [0.01] | [0.01] |
| $IncElig_{it} \times ADL_{it}$ | -0.094*** | -0.060*** | -0.027*** | 0.181*** | 0.023*** | 0.006 |
| | [0.01] | [0.00] | [0.00] | [0.01] | [0.00] | [0.01] |
| $IncElig_{it}$ | -0.036*** | 0.042*** | -0.007*** | 0.001 | 0.002 | 0.006* |
| | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] |
| Dep. Var. Mean | 0.72 | 0.16 | 0.08 | 0.04 | 0.62 | 0.62 |
| N | 8121311 | 8121311 | 8121311 | 8121311 | 823030 | 928813 |

Notes: This table attempts to replicate some of the main results of the paper using the American Community Survey. The sample for columns 1-4 is all ADL-impaired seniors in the ACS between 2006 (the earliest year in the ACS where seniors living in group quarters were surveyed) and 2016. In the ACS, ADL impairment is self-reported as having difficulty bathing or dressing (a "self-care" difficulty). Group quarters can represent many institutions, including prisons and nursing homes. To calculate income as a percentage of FPL, I sum retirement and social security income for the respondent and their spouse. $IncElig_{it}$ is defined as having income less than 125% of the FPL in that year for a one- or two-person household. The sample for columns 5 and 6 are daughters and sons living in the same household as the ACS ADL-impaired senior respondent, respectively. The dependent variable is whether or not they report being currently employed. Coefficients are from OLS estimation of the difference-in-differences specification with sample survey weights. Regressions also contain state fixed effects and controls for age, race/ethnicity, sex, marital status, and indicators for having difficulty with "independent living," cognitive difficulty and ambulatory difficulty. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

## A.2 Analysis of family health and well-being

In this section, I analyze the effect of the SPPC benefit on potential caregiver health and well-being. This requires two different empirical strategies – one for spouses and partners, and a second for children. Because all spouses are HRS respondents, to estimate effects on spouse health and well-being, we can make use of the same specifications as in the main text. However, as children of HRS respondents are not necessarily HRS respondents themselves, we do not have data on child health or well-being for every HRS respondent's child. Thus, to examine effects on potential child caregivers, I invert the sample selection process, focusing on the sample of HRS respondents who may provide care to a parent (who may or may not be an HRS respondent), rather than focusing on the children of HRS respondents. To identify these child caregivers, I use the fact that the HRS also asks respondents if their parents are alive and if they need help with personal care tasks.

This strategy comes with two major limitations. First, this analysis will only apply to children who are over the age of 50, because this is the inclusion criteria for being interviewed by the HRS. Second, I do not have the granular data on parent income that enabled me to compute a fairly accurate measure of Medicaid income eligibility in the main sample. To address this second limitation, I employ a slightly different strategy to study the effect of the Medicaid SP-PC benefit on child health and well-being: rather than estimating differences among low- and high-income individuals in treatment and control states, I restrict my sample to people for whom the policy is likely to bind, and estimate the difference between the labor supply of children who have or do not have a parent with personal care needs in the two types of states.

My main analysis sample is thus the sample of all HRS respondents under the age of 65 who reported that their family financial situation was poor growing up (given the choices of pretty well off, about average, and poor). This sample differs from the child sample above in two ways: (1) it only includes people over the age of 50,[12] (2) it includes people whose parents have passed away, and (3) the family financial situation restriction. Again, I make this last restriction to limit the sample to people who are likely to be affected by the policy of interest.

My preferred specification to estimate the impact of the SP-PC benefit is again a difference-in-differences specification, but where the two sources of variation are (1) if they livs in a SP-PC state, and (2) if they have any parent who needs help with personal care needs ($\text{ParentDiff}_{jt}$):

$$\begin{aligned} Y_{jt} =& \beta_1 \text{SPPC}_s \times \text{ParentDiff}_{jt} + \beta_2 \text{SPPC}_s \times \text{ParentAlive}_{jt} + \\ & \gamma_1 \text{ParentDiff}_{it} + \gamma_2 \text{ParentAlive}_{it} + \delta\lambda_{it} + \zeta\pi_{jt} + \tau_s + \mu_t + \epsilon_{it} \end{aligned} \tag{4}$$

The coefficient of interest above is $\beta_1$, and the specification also includes an estimate of the effect of having any living parent $\text{ParentAlive}_{jt}$, alone and also interacted with living in a SP-PC state, as well as the same controls and state and year fixed effects as above.

Table A5 summarizes the results of both the child and spouse analyses. In terms of outcome variables, I use the same subjective well-being measures as in Table 7, but does not use the same adverse event measures (functional decline, hospitalization, and mortality). Instead, I measure two additional outcomes: first, whether or not the child or spouse reports ever being diagnosed with a psychiatric issue such as anxiety or depression, and second, whether or not the child or spouse

[12] From the earlier analysis, I estimate that approximately half of the children of ADL-impaired seniors are over 50.

Table A5: Effect of SP-PC benefit on health and well-being of children and partners of seniors with ADL impairments

| | (1) Good health | (2) Depressed | (3) High life sat. | (4) Psych problem | (5) Troubled w/ pain |
|---|---|---|---|---|---|
| **Panel A. Effects on children between 50-65** | | | | | |
| $PC_s \times ParentDiff_{it}$ | | | | | |
| × Daughter | 0.041 | -0.029 | -0.037 | -0.046 | -0.089 |
| | [0.06] | [0.04] | [0.09] | [0.05] | [0.06] |
| × Son | -0.037 | 0.009 | -0.041 | 0.013 | 0.037 |
| | [0.06] | [0.04] | [0.09] | [0.04] | [0.06] |
| $ParentDiff_{it}$ | | | | | |
| × Daughter | -0.103*** | 0.135*** | 0.030 | 0.088** | 0.098* |
| | [0.04] | [0.03] | [0.06] | [0.04] | [0.05] |
| × Son | -0.075* | 0.094*** | -0.018 | 0.026 | 0.096* |
| | [0.04] | [0.03] | [0.07] | [0.03] | [0.05] |
| Dep. Var. Mean | 0.66 | 0.23 | 0.43 | 0.24 | 0.44 |
| N | 16591 | 15754 | 4028 | 16591 | 16591 |
| **Panel B. Effects on spouses** | | | | | |
| $PC_s \times IncElig_{it} \times ADL_{it}$ | | | | | |
| × Wife | -0.060 | -0.007 | -0.013 | -0.048 | 0.009 |
| | [0.054] | [0.042] | [0.081] | [0.041] | [0.047] |
| × Husband | -0.069 | 0.026 | -0.111 | -0.015 | -0.029 |
| | [0.047] | [0.047] | [0.106] | [0.042] | [0.043] |
| Dep. Var. Mean | 0.63 | 0.18 | 0.49 | 0.20 | 0.31 |
| N | 53791 | 49589 | 15928 | 47547 | 53791 |

Notes: Sample in Panel A contains all respondents between the ages of 50 and 65. Sample in Panel B contains all partners of an HRS respondent over 65. Standard errors are clustered at the state level and reported in brackets. Significance: $^{*}\ p < 0.1$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$.

reports being troubled with pain. Panel A reports results using a limited sample of children of ADL-impaired seniors who are over the age of 50 and the alternative specification for this sample (Equation 4). I find no statistically significant impacts of the SP-PC policy on health and well-being for daughters or sons, although the signs and point estimates for daughters are suggestive of potentially positive effects (with the exception of the life satisfaction measure). The second two rows show that having a parent who has personal care needs is associated with significantly worse health and well-being outcomes, particularly for daughters. Panel B looks at effects on the health and well-being of spouses, using the preferred DDD specification for these outcomes, and again finds no statistically significant effects on wives or husbands.

# B Data Appendix

## B.1 Aggregate statistics on the home care industry

I define the home care industry using two NAICS codes: 6216.00 (Home Health Care Services) and 6241.20 (Services for the Elderly and Disabled) and use the Occupational Employment Statistics (OES) data and Economic Census data for these two industries to calculate total home care employment and revenue, respectively. Although this may be a slight overestimate, because the latter industry code may include things like adult day care or other services, the OES indicates that the majority of employment in this industry is in the occupations of "home health aide" and "personal care aide" occupations suggests that it is not a large overestimate. It is also important to note that some of this employment and revenue may be attributable to skilled home health care provided in a post-acute setting, rather than long-term care. The Service Annual Survey measures home health revenue that was paid for by Medicare and private health insurance to be $35B and $15B, respectively. These two payers are likely the largest payers for skilled home health care, and are unlikely to cover a significant amount of long-term care home care, so we can use these revenue estimates to approximate the size of the skilled home health care industry. This would leave roughly $80B in revenue for home care delivered as part of long-term care services.

## B.2 Definitions and construction of variables in the HRS

**ADL difficulty** The main analysis sample in the paper uses respondents who report any difficulty with an activity of daily living (ADL), defined as eating (such as cutting up your food), dressing (including putting on shoes or socks), walking across a room, bathing or showering, getting in or out of bed, using the toilet (including getting up or down) due to a health or memory problem. Respondents are asked about each of these ADLs separately. While eligibility conditions vary by state, it is common to require difficulty with at least one ADL to be eligible for personal care services through Medicaid.

**Caregivers and caregivers** For all ADLs and IADLs, if a respondent indicates that they have difficulty with the activity, they are then asked if anyone ever helps theem with that activity and to identify those helpers, beginning with the helper that helps them the most. Up to seven ADL helpers and six IADL helpers are identified. For each helper, respondents are asked whether or not the helper was paid to help. I define a respondent as having a paid helper if at least one of the ADL or IADL helpers they identify is paid. I identify a child or spouse as a helper if they are one of the ADL or IADL helpers listed by the respondent.

For each helper, respondents are also asked the number of days in the last month that helper helped them, and the approximate number of hours per day the helper spends helping. I use these responses to compute an average number of hours of care per day by dividing the product of these numbers (total hours in the past month) by 30 days. The questions about hours of help that are provided combines help with ADLs, IADLs, and work around the house and managing finances.

Note that because of the way that the question about paid helpers is asked, the estimate of paid hours may be an overestimate because respondents are only asked whether each helper was paid or not, and not how many hours they were paid for. Therefore, if a relative provides some hours of paid care and some hours of unpaid care, all of that relative's hours would be counted as paid.

**Nursing home residence and other residential care** Nursing home residence is reported by the respondent or their proxy. The definition of a nursing home for this question is: "a nursing home or other health facility provides all of the following services for its residents: dispensing of medication, 24-hour nursing assistance and supervision, personal assistance, and room and meals." If respondents answer no to this question, they are also asked if their residence is "part of a retirement community, senior citizens' housing, assisted living, or some other type of housing that offers services for older adults or someone with a disability" and then about which services they use. I define a senior as living in non-nursing home residential care if they report living in this type of housing, and also report using either help bathing, dressing, or eating or nursing care provided by their place of residence.

**Income** I use the cleaned income variables from the RAND HRS Longitudinal File, which applies a consistent imputation and cleaning method across HRS waves to categorize respondents' income and wealth into different sources. My primary income measure includes income from three sources: Social Security retirement, pension income, and income from all annuities. These sources should represent relatively regular income sources for seniors that should be less manipulable for Medicaid eligibility purposes. This limits the potential for bias caused by seniors choosing to lower their income to qualify for Medicaid, which may be endogenous to the Medicaid policy environment in their state. For single seniors, I compare their incomee to the FPL for a one-pereson household. For seniors with a partner, I use the couple's combined income and compare it to the FPL thresholds for a 2-person household.

**Health status controls** I use Langa-Weir scores to code dementia and cognitive impairment. These scores use questions from the cognition surveys to compute a composite cognition score that ranges from 0–27. They classify respondents who score from 0 to 6 as demented, 7 to 11 as CIND (cognitively impaired but not demented), and 12 to 27 as normal. There is also a version of this score for proxy respondents. I also use whether a respondent has ever had a stroke, chronic lung disease, a heart problem (including a heart attack, angina, or congestive heart failure), or diabetes. Finally, I include controls for functional status using the number of ADL difficulties reported, the number of IADL difficulties reported (out of 4: cooking, grocery shopping, making telephone calls, taking medication) and the number of mobility difficulties reported (out of 9 questions about mobility and motor skills).

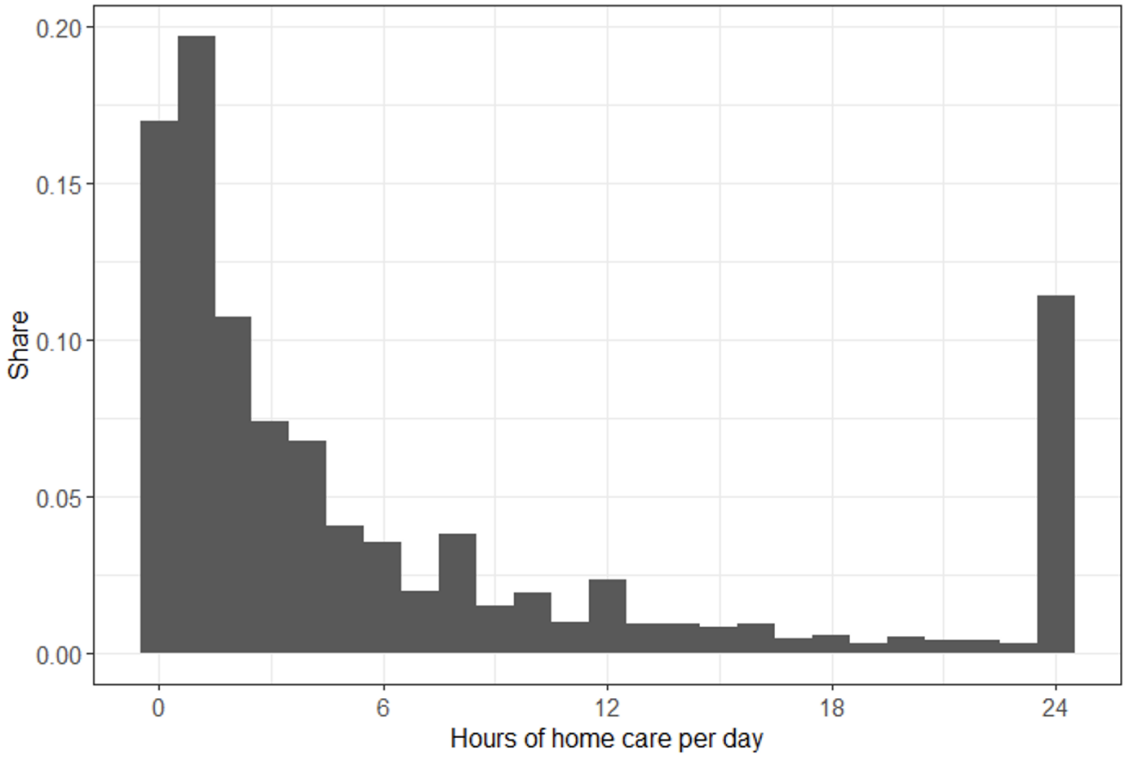
**Health outcomes and subjective well-being** Respondents are asked to rate their overall health (excellent, very good, good, fair, or poor). I use a binary indicator variable of rating one's health as at least good. To measure depression, I use a score of at least 4 on the CES-D 8 instrument which. Life satisfaction is measured using the respondent's answers to the 5-item Satisfaction With Life Scale. Each question is graded on a 7-point scale. I use an average score of 5 to define having high life satisfaction. I measure adverse health events using the next survey (i.e. two years after the year in question). A functional decline in the next two years is defined as an increase in the number of ADLs the respondent reports having difficulty with, a hospitalization is defined as any overnight hospital stay.

Table B1: Sample averages of all control variables for analysis sample seniors by functional status, 2000-2016

| | No ADL difficulty | ADL difficulty |
|---|---|---|
| Live in SP-PC State ($SPPC_s$) | 0.57 | 0.58 |
| Income below 125% FPL ($IncElig_{it}$) | 0.18 | 0.36 |
| **Demographics** | | |
| Age | 74.1 | 78.7 |
| Female | 0.55 | 0.65 |
| Black | 0.08 | 0.12 |
| Hispanic/Latino | 0.05 | 0.08 |
| College degree | 0.25 | 0.16 |
| Rural county | 0.05 | 0.05 |
| **Family structure** | | |
| Has male spouse/partner | 0.27 | 0.19 |
| Has female spouse/partner | 0.35 | 0.23 |
| Has son | 0.75 | 0.73 |
| Has daughter | 0.73 | 0.73 |
| **Health** | | |
| Dementia | 0.06 | 0.25 |
| Other cog impairment | 0.18 | 0.26 |
| Stroke | 0.06 | 0.19 |
| Lung disease | 0.10 | 0.18 |
| Heart problem | 0.28 | 0.43 |
| Diabetes | 0.20 | 0.25 |
| # Mobility difficulties (Max. 9) | 2.0 | 6.3 |
| # IADL difficulties (Max. 4) | 0.1 | 1.0 |
| # ADL difficulties (Max. 6) | - | 2.5 |
| N respondent-years | 73,921 | 21,918 |
| Unique respondents | 18,445 | 9,692 |

Notes: This table summarizes the sample averages of all the primary independent variables that are included in the main analyses of the paper. The sample is all HRS respondent-years where the respondent is at least 65 years old. The left column contains the summary statistics for those respondent-years where the respondent does not report any ADL difficulty, while the right column contains the respondent-years where the respondent reports having difficulty with at least one ADL. Most of these variables are binary variables, and thus the values in the table are proportions. The exception are the last three rows, which summarize the number of mobility, IADL, and ADL difficulties and can take on values of 0-9, 0-4, and 0-6, respectively. More details on how these variables are defined is provided in Appendix B.

Figure B1: Histogram of hours of home care per day received by ADL-impaired seniors




Notes: This figure uses the sample of ADL-impaired seniors in the HRS 2000-2016 waves who report receiving some care at home in the given survey year (N=9,749). Details on the construction of this variable are provided in Appendix B, hours were truncated at 24 hours per day in a small number of cases for people who reported help from multiple helpers.

Table B2: Sample summary statistics for children of senior HRS respondents

| | Parent has no ADL difficulty | Parent has ADL difficulty |
|---|---|---|
| Works part-time | 0.08 | 0.08 |
| Works full-time | 0.74 | 0.65 |
| Step-child of respondent | 0.14 | 0.12 |
| Age | 46.4 | 50.0 |
| Female | 0.50 | 0.51 |
| Partnered | 0.70 | 0.68 |
| Has kids | 0.82 | 0.85 |
| Has young kid ($\leq$ 5 y.o.) | 0.08 | 0.06 |
| No hs deg | 0.07 | 0.13 |
| High school | 0.31 | 0.34 |
| Some college | 0.23 | 0.20 |
| College | 0.20 | 0.15 |
| Post-grad | 0.19 | 0.18 |
| N | 228,120 | 67,133 |
| Unique individuals | 59,792 | 30,684 |

Notes: This table summarizes the sample averages of all the primary independent variables that are included in analyses pertaining to children in the paper. The sample is all children (defined as either biological or step-children, but not children-in-law) of HRS respondents in a given survey year in which the HRS respondent was at least 65 years old. The variables represent information reported by the HRS respondent, and not the child themselves. The left column contains the summary statistics for children in years where the relevant HRS respondent (their parent) does not report any ADL difficulty, while the right column contains statistics for children in years where the respondent reported having difficulty with at least one ADL.

Table B3: Sample summary statistics for spouses and partners of senior HRS respondents

| | Spouse has no ADL difficulty | | Spouse has ADL difficulty | |
|---|---|---|---|---|
| | Men | Women | Men | Women |
| Age | 74.1 | 69.0 | 76.6 | 71.9 |
| Black | 0.04 | 0.06 | 0.09 | 0.08 |
| Hispanic/Latino | 0.06 | 0.05 | 0.08 | 0.08 |
| College degree | 0.32 | 0.23 | 0.21 | 0.18 |
| Dementia | 0.06 | 0.04 | 0.13 | 0.08 |
| Other cog impairment | 0.17 | 0.12 | 0.25 | 0.18 |
| Mobility difficulties (Max. 9) | 2.21 | 2.48 | 3.13 | 3.49 |
| IADL difficulties (Max. 4) | 0.17 | 0.15 | 0.35 | 0.29 |
| ADL difficulties (Max. 6) | 0.32 | 0.29 | 0.60 | 0.58 |
| N | 19,740 | 24,670 | 4,086 | 4,911 |
| Unique individuals | 5,611 | 6,555 | 2,050 | 2,516 |

Notes: This table summarizes the sample averages of all the primary independent variables that are included in analyses of spouses in the paper. The sample is all spouses or partners of HRS respondents in a given survey year in which the HRS respondent was at least 65 years old. Spouses are surveyed in the HRS regardless of their age, and this table represents information reported by the spouse themselves (or their proxy) during this interview. The left column contains the summary statistics for spouses in years where the relevant HRS respondent (their spouse) does not report any ADL difficulty, while the right column contains statistics for spouses in years where their spouse reported having difficulty with at least one ADL.