



**HOW DO MEDICAID POLICIES FOR
HOME- AND COMMUNITY-BASED SERVICES IMPACT
THE JOBS AND WAGES OF THE FORMAL CARE WORKFORCE?**

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CRR WP 2026-3
October 2026

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Abstract

Over the past few decades, long-term care delivery has shifted from institutions to home- and community-based services (HCBS). Medicaid plays a major role in determining how and where care is provided; and states have increasingly sought federal waivers to allow more Medicaid spending on HCBS. This paper focuses on how such waivers might have incidentally affected the labor market outcomes for formal caregivers, specifically nurses and health aides, by moving service delivery from institutions to the community. To test for such impacts, the analysis uses newly collected data on Medicaid waiver services and labor force data from the *American Community Survey*.

This paper explores the impacts of Medicaid coverage of various HCBS, which can each be covered at one of three levels – general coverage; coverage with “self-direction,” which lets recipients pick their providers; and coverage that allows family members to be paid providers. In terms of labor outcomes, it considers employment, hours worked, and earnings for both nurses and aides. Out of all of these different combinations, only a small fraction suggest a causal effect between a specific service policy and the labor outcomes. Such limited impacts are not surprising given that such effects were not the intent of Medicaid waivers. In addition, Medicaid generally reimburses at below-market prices, leading to less scope for changes in employment or wages.

That said, from the limited instances where effects do appear, some patterns emerge. In particular, most effects from the waivers were negative – primarily reducing earnings for aides or increasing unemployment for nurses through policies that allow care recipients to choose their providers and pay family members to provide care. Both these dimensions – that the effects that do show up seem driven by self-direction and family provision of services; and that aides respond on the earnings margin while nurses respond more on employment – should guide future research into the mechanisms by which self-direction and family-care policies might unintentionally affect labor force outcomes for formal caregivers.

Introduction

Caregiving for older individuals is among the most consequential challenges facing an aging society. Overall, the U.S. population continues to age steadily, and the share of the older population ages 85+ – the group most likely to need long-term care – is starting to rise rapidly. The severity and length of long-term care needs is often substantial. Overall, nearly 1 in 5 older Americans will experience the kind of severe need that most people dread – high-intensity care for three years or more – and more than half will have moderate or low needs for some duration of time (Chen, Munnell, and Wettstein 2025).

Long-term care is also expensive. The median cost of a private room in a nursing home is about \$130,000 a year (CareScout 2026), putting institutional care out of reach for the vast majority of older households, and most people do not want it in any case as they prefer to remain in their own home. Therefore – due to both costs and preferences – patients, families, and policymakers have pushed care into less restrictive settings.

Medicaid sits at the center of that shift, covering close to half of all spending on formal long-term services and supports (LTSS). Some of this coverage is provided under special waivers from the Centers for Medicare and Medicaid Services, allowing states to cover certain services using Medicaid funds in ways that modify the basic state Medicaid plan. Thus, states have used Section 1915(c) waivers to expand home-and community-based services (HCBS) well beyond what their state plans require. Spending on HCBS has increased from less than 5 percent of Medicaid LTSS expenditures in 1985 to almost 65 percent today (Carpenter et al. 2025), and waivers targeted to older adults have taken on greater importance in recent decades as waiver coverage and spending have expanded (Skira, Wang, and Konetzka 2022).

A state's chosen HCBS policies are likely driven in part by what care recipients (also called “participants”) need and want: the level of care they qualify for, the settings they prefer, and what advocates and policymakers support. Common services covered include home modifications, meal delivery, day services (such as respite care), helping participants with specific day-to-day personal care or healthcare needs, and round-the-clock assistance. The workers who provide HCBS include both formal caregivers – mainly nurses or aides – and informal caregivers – typically family members such as spouses and adult children.

Most participants receive Medicaid HCBS from formal caregivers, but the formal care workforce has not expanded in-step with the growth in Medicaid funding for these services. One

mechanism might be substitution of workers from institutional care to the increasingly supported community-based care. However, broad shortages within the long-term care workforce have been documented from several directions. Home care workers per 100 HCBS participants fell 11.6 percent between 2013 and 2019 (Kreider and Werner 2023); long-term care employment remains below pre-pandemic levels; and the hours of care provided by nursing aides in institutional settings declined by 10 percent from 2015 to 2023 (Chidambaram and Burns 2024). A key driver of the limited supply of care workers is the poor pay in the sector. These are the workforce dynamics that have been at play as Medicaid policy has continued to shift towards HCBS.

The question is, what role might specific HCBS policies play in the labor force activity of nurses and personal care aides? A priori, it is hard to predict. Aides are lower-wage workers, and their employment, hours, and earnings show meaningful year-to-year variability – suggesting less overall attachment to the labor market or at least to their occupation. At the same time, the labor force behavior of those who work as aides may not be tied exclusively to the medical sector. The likely alternative to a home care job is retail, food service, or warehouse work rather than another clinical position. Therefore, a state that adds a service and raises demand for paid personal assistance may find that the labor arrives from outside the sector and leaves again, with little trace in the wages or hours of the workers already in it.

Nurses show nearly the opposite pattern. Their employment, hours, and earnings barely move from year to year, which is itself a reason to expect small estimates. But nurses are strongly attached to the medical sector, so a change in Medicaid policy might be expected to have some impact.

On the other hand, for both aides and nurses, Medicaid already reimburses service providers at below market-clearing rates, suggesting that a shift in demand may not be likely to affect wages or employment. Moreover, Medicaid HCBS waiver policies were never aimed at impacting the labor force outcomes of formal caregivers, so any effects may be incidental. In the end, whether any effects exist, which factors dominate, in which occupation, and on which labor force margin are empirical questions.

To date, studies on the workforce consequences of changing HCBS policies relate outcomes to aggregates – total HCBS expenditures, the HCBS share of LTSS spending, or the share of direct care workers employed in home settings. Those measures cannot distinguish

between a state that – for example – adds round-the-clock services and a state that adds home-delivered meals, even though the two might have opposite implications for the demand for paid hands-on assistance. At the same time, studies that document specific HCBS waiver policies simply describe the policies without estimating what they do.

This paper is a first attempt to fill that gap by using newly collected HCBS policy details – extracted mainly from 1915(c) waiver applications. These data cover over 750 waiver applications going back to 2006, spanning 92 waiver programs that target aged or aged/disabled populations across 45 states and the District of Columbia; and we have made them available in a public-use database.¹ Crucially, the data document which of the Medicaid HCBS service categories are covered in each state-year. Sixty different possible services are typically clustered into 17 high-level service categories. Moreover, each service can be covered at one of three coverage-levels: general coverage; coverage with “self-direction,” which lets recipients pick their providers; and coverage that allows family members to be paid providers. The data document the coverage level for each service category-state-year.

The HCBS data are linked to state-year measures of employment, hours worked, and labor income for aides and nurses in the *American Community Survey* (ACS) from 2006 through 2024. These labor force metrics are our outcome measures and are used for both nurses and aides. We exploit changes in HCBS waiver policy within states over time using the Local Projection Differences-in-Differences (LP-DID) approach developed by Dube et al. (2025).

The paper proceeds as follows. The second section provides background on Medicaid HCBS policy and the formal care workforce. The third section reviews the related literature. The fourth section describes the two main data sources. The fifth section sets out the empirical strategy. The sixth section presents the results, and the final section takes stock of which of the 17 service categories, at the three possible coverage levels, have in impact on each of the three labor outcomes for nurses and for aides, respectively. In the end, only a small fraction of the hypotheses tested – 12 out of 234 – revealed a causal relationship between waiver service policies and the labor market outcomes for nurses and aides.² That said, from the limited instances where effects from the waivers do appear, some patterns emerge. Most of the impacts

¹ <https://crr.bc.edu/medicaid-hcbs-waiver-dataset>

² $17 \times 3 \times 3 \times 2 = 306$ potential hypotheses; however, due to limited policy variation we can only estimate effects for 234 of these relationships.

were negative – primarily reducing earnings for aides or increasing unemployment for nurses through policies that allow participants to choose their providers and pay family members to provide care. Both these dimensions – the fact that what effects there are seem driven by self-direction and family provision of services; and that aides respond on the earnings margin while nurses tend to respond on employment – should guide future research into the mechanisms by which self-direction and family-care policies might unintentionally affect labor force outcomes for formal caregivers.

Background

This section provides more detail on the changing nature of long-term care through Medicaid HCBS policy and the potential implications for the formal care workforce.

Medicaid HCBS Policy

Federal law requires every state Medicaid program to cover some home health services, and 33 states also elect to cover personal care services (Mohamed, Burns, and Watts 2026). All these services must be made available to everyone who meets the state's general Medicaid eligibility rules, including need-based criteria, which makes them expensive to expand. Section 1915(c) waivers offer states a way around that constraint by allowing states to offer designated services to a target population – for example, adults 65 and older who meet an institutional level-of-care standard – and to cap the number of participants and/or restrict the geographic area served. Importantly, for a waiver to be approved, the state must demonstrate to CMS that serving waiver participants in the community is expected to cost no more – on average per person – than serving that same population in an institution. The ultimate effect of these waivers has been a wholesale shift in Medicaid's long-term care spending patterns. Based on the most recent CMS report on LTSS trends, the share of Medicaid LTSS spending on HCBS – for both waiver and non-waiver services – has increased from less than 5 percent in 1985 to almost 65 percent as of 2023 (Carpenter et al. 2025).

CMS generally approves a state's waiver application for three to five years. At the end of the period, the state can apply to renew the waiver for another three-to-five-year window. Between renewals, states routinely apply for waiver amendments to add or modify waiver services, adjust provider qualifications, or change participant limits. The applications for the

most common waiver – 1915(c) – are highly structured documents that contain detailed information about the waiver and the overall Medicaid program.

The official Medicaid HCBS classification system includes more than 60 specific services that are organized into 17 broad categories, which range from the commonly provided, such as “home-based services” and “day services” to the rarely offered “rent and food expenses for live-in caregivers” (see Table 1). The types of services may differ greatly in their implications for formal caregivers. For example, home-based services – which include personal care, homemaking, chores, and home health – are typically delivered by aides. Nursing and other health and therapeutic services are delivered by nurses. Home-delivered meals, non-medical transportation, and equipment and technology provide a way to substitute capital or logistical support for hands-on time. Caregiver support – principally respite – is aimed at any informal caregiver rather than the participant. And services supporting self-direction of care by the participant are purely administrative: they fund the financial management and counseling infrastructure that lets a participant hire and supervise their own workers.

For the purposes of this paper, the most important information in a waiver enumerates every covered service, records the HCBS category it falls into, states whether the service may be participant-directed, specifies whether a relative or legally responsible person may be paid to provide it, and lists the provider types and qualifications required. This structure is what makes it possible to systematically extract the data needed for our analysis.

Waivers and the Formal Care Workforce

Waiver policies are often determined based on what the target population needs, what the budget neutrality calculation will bear, and the preferences of advocates and the state legislature. The implications for the formal caregiving workforce are, at most, a secondary consideration. That said, the discourse around HCBS often touches upon three aspects of waiver policy that could potentially impact formal caregivers. The first, as noted above, is simply which HCBS categories are covered. The second is whether the state permits participants to direct the provision of covered services – i.e., select their own caregivers. Under a self-directed arrangement the participant – or a representative – becomes the employer of record, setting the schedule and budget for services. Participant-directed care, however, may undo some of the benefit from coordinated care and could raise concerns about the effective use of available care

and possibly increase demand for care overall – especially in states where self-directed care can be provided by family members.³ This last point leads to the third aspect of waiver policy often discussed, which is whether the state permits family members to be paid for providing the covered services. Roughly two dozen states allow payment to family caregivers for at least one service, and Thunell, Parrish, and Miller (2025) find that these states have a lower use of formal care alone and greater reliance on family care.

Against this policy backdrop sits a workforce under strain – particularly due to a shortage of aides. Medicaid spending on home health and on other health, residential, and personal care more than tripled between 2006 and 2024.⁴ At the same time, ACS data show that the proportion of aides and nurses only grew from 4 to 5 percent of the national labor force over that period, possibly due to substitution of care workers from the institutional to the community-based setting. Unsurprisingly, the number of home care workers per 100 HCBS participants fell by 11.6 percent between 2013 and 2019 (Kreider and Werner 2023).

One reason for this pattern is that the relative pay of home care workers does not seem to have risen much with the increased demand. Based on the ACS, real earnings for aides have grown 15 percent since 2006, roughly in line with the national average, leaving their pay at just under half the average for all workers (see Figure 1). Similarly, Figure 2 shows that the unemployment rate of aides has remained virtually the same as the national average (nurses have consistently experienced near full employment). Whether states' HCBS policy choices have played any role in the labor force picture for formal caregivers is the question of this paper.

Literature Review

Two strands of the health policy literature motivate our research question. The first documents the growth and distribution of Medicaid HCBS. Skira, Wang, and Konetzka (2022) chart the expansion of waivers for older adults and the substantial variation across states in what those waivers cover. Ghosh-Dastidar et al. (2024) evaluate the Affordable Care Act's Balancing Incentive Program with a synthetic control design and find that participating states raised HCBS as a share of LTSS spending by about 5.2 percentage points relative to comparable non-

³ Relatedly, self-direction has been shown in some studies to also increase the supply of caregiving, by incentivizing family caregivers to provide care. See, for example, Howes (2008).

⁴ Authors' calculations from Centers for Medicare & Medicaid Services (2024), Tables 13, 14, and 15.

participants. Keese and Keohane (2024) show that rebalancing from institutional care to HCBS has been concentrated in large metropolitan areas, with rural counties ranking persistently lower in HCBS penetration. Shen et al. (2026) document that Medicaid funds direct care for about 26 percent of older adults who are eligible for both Medicaid and Medicare, with fourfold variation across states, and that states covering personal care through the state plan have higher utilization. Miller, Parrish, and Thunell (2025) provide the closest antecedent to our data effort, systematically documenting family care policies in 1915(c) waivers for older adults from 2010 to 2019 across 46 states.

The second strand – the one this paper joins – concerns HCBS’ impact on formal and informal caregivers. On the informal side, Zai (2026) finds that HCBS expansions temporarily increase the likelihood of providing any informal care by 5 percentage points, and Thunell, Parrish, and Miller (2025) find that waivers permitting payment to family caregivers shift care away from formal-only arrangements, particularly for people with dementia, Medicaid beneficiaries, and rural residents. Micheltore, Wiersma Strauss, and Wiemers (2024) show the reverse channel operating through the tax code: a \$500 increase in the generosity of the Earned Income Tax Credit reduces intensive informal care provided by adult children to parents by 13 to 24 hours per month. Altındağ, Greve, and Truskinovsky (2026) find, in Danish administrative data, that parental dementia has no meaningful effect on adult children's labor supply or earnings but does spill over into mental health, although the Danish institutional setting is quite different from the U.S. environment.

On the formal side, Kreider and Werner (2023) document that home care employment growth slowed after 2013 even as HCBS participation accelerated. Kim, Gonalons-Pons, and Dill (2026) use pooled ACS data for 2008-2012 and 2018-2022 and find that a larger home-care share of the direct-care workforce is associated with lower average direct-care wages – driven by composition, as employment shifts toward lower-paying home care jobs, rather than by within-occupation wage declines. Miller et al. (2025) ask directly whether rising HCBS expenditures benefit home care workers and find limited pass-through. Orji (2025) reviews the policy landscape and argues that mandated HCBS funding could mobilize an existing informal workforce. However, the existing literature does not attribute effects to specific HCBS policy choices, because the existing HCBS data were always too coarse to distinguish spending on different specific HCBS.

Data

The analysis combines two data sources: a new dataset of Medicaid HCBS policies extracted from Section 1915(c) waiver applications, and state-year aggregates of labor market outcomes for aides and nurses from the ACS.

Medicaid HCBS Policy Database

Our HCBS policy data cover over 750 waiver applications going back to 2006, spanning 92 waiver programs that target aged or aged/disabled populations across 45 states and the District of Columbia.⁵ Because section 1915(c) waiver applications – the most common application – are highly structured documents, the policy content is extracted programmatically using a trained AI-assisted process. (This new database is publicly available on the website of the Center for Retirement Research at Boston College.)⁶

From each waiver application, we start by relating the service covered to one of the 17 broad HCBS categories. We extract the broad HCBS category for each covered service, whether each service may be self-directed by the participant, whether a relative can provide each service under participant self-direction, any stated limits on the amount or duration of each service, what type of provider can provide each service, and the qualifications for each provider type. Fields for the broad HCBS categories were added to the waiver application template partway through our analysis period, so only about 46 percent of the 10,895 service records carry an explicit category code. We assign the rest in two steps: first by taking, for each service title, the modal category among the records that do carry a code, and then by hand-coding the 384 remaining service titles that no coded record matches. As a result, every service listed in each waiver is classified into one of the 17 broad HCBS service categories. In addition to the service-level data, we collect – among other things – the waiver’s effective date, submission date, scheduled duration (approved waivers remain in-force for up to 5 years before they must be renewed or else expire), and whether the waiver limits the number of participants.

⁵ Five states (Arizona, Hawaii, Rhode Island, Tennessee, and Vermont) provide HCBS for older and physically disabled people mainly through Section 1115 demonstrations rather than 1915(c) waivers. Four states (Delaware, New Jersey, New Mexico, and Texas) moved these services into Section 1115 waivers between 2012 and 2014, and are in the data only prior to the transition.

⁶ <https://crr.bc.edu/medicaid-hcbs-waiver-dataset/>

We then convert application-level data into year-by-year data for each state to create a state-year panel. First, each waiver application is assigned a start and end date constructed from a combination of its approved effective date, submission date, and scheduled duration.⁷ Then, a state is coded as covering category *k* in year *t* if any of its waiver applications covers a service in that category. Similarly, the flexibility of beneficiaries to choose their formal provider or family members to provide the service is also established on a year-by-year basis by state.

While the year-by-year data for each state is central to the empirical analysis, the easiest way to see the importance of various categories is to look at the number of states that included a service in one of the 17 categories at any time during the period 2006-2024 (see Table 2). More than 40 states provided coverage for four service categories – home-based services (45 states), day services (44 states), equipment, technology, and modifications (44 states), and caregiver support (42 states). In sharp contrast, only 9 states ever offered services for participant training, and only 1 state offered services in the form of rent and food expenses for live-in caregivers. Allowing self-direction of covered services is less common than coverage: home-based services were self-directed in 34 states; caregiver support and services supporting self-direction were offered in only 18 states; and most other categories involved fewer than 10 states. Finally, self-directed family care is even less common and concentrated in the same few categories as self-direction.⁸ Crucially for identification, all three of these service-level policies (coverage, self-direction, family care) change frequently. Excluding rent and food expenses for live-in caregivers, which only one state ever covered (Wisconsin), the panel records between 7 and 21 changes in coverage per category, between 1 and 17 changes in self-direction-, and up to 18 changes in family-care policy.⁹

Additionally, when looking over time, our data suggest some high-level HCBS policy stabilization since the global financial crisis. The number of service categories covered by each state has averaged about ten since 2011. Similarly, since 2011, just over 30 states have offered self-direction of services each year and – among those states – the number of self-directed

⁷ For each waiver program, if an application's end year coincides with the subsequent application's start year, the year is assigned to the earlier document unless that document ends before April 1.

⁸ Interestingly, but not shown in Table 2, participant caps on waiver services are the exception rather than the rule, applying to only 22 percent of covered state-years.

⁹ Note that, overall, roughly a quarter of these changes are removals of policies rather than additions.

services has steadily averaged about 3 each year. For family care, the number of states has hovered around 20 with the number of family-provided services hovering around 2.

Labor Market Data

Labor force outcomes for nurses and personal care aides come from the IPUMS extract of the ACS, aggregated to state-year cells for 2006 through 2024. Because nurses and aides account for roughly 5 percent of the labor force combined, we use the ACS instead of the CPS to produce more reliable state-year data for these two occupations.¹⁰

We define nurses as registered nurses, nurse practitioners and anesthetists, and licensed practical and vocational nurses. We define aides as home health aides, personal care aides, nursing assistants, and orderlies, together with the closely related medical assistant and phlebotomist occupations.¹¹ We construct three labor force outcomes – the share of labor force participants who are unemployed, the usual hours worked, and labor income. Hours worked and labor income include both employed and unemployed individuals, with the unemployed assigned zeros. Measuring across the full labor force keeps the sample independent of the policy, since conditioning on employment would make the set of workers observed depend on what policies the state had just changed. Labor income is expressed in real 2025 dollars based on the CPI-U.

Table 3 reports descriptive statistics. In the analysis period, the aide unemployment share averages about 6.1 percent compared to 1.7 percent for nurses. Aides average 33.2 hours a week and \$27,306 a year across the full labor force, while nurses average 36.9 hours and \$74,214. Importantly, the cross-state variation in labor income is substantial, with a standard deviation of \$4,073 for aides and \$9,591 for nurses. Compared to the national average, aide unemployment tracks the overall rate closely, rising to 9.5 percent in the Great Recession and 6.9 percent in 2021 (during the early phase of COVID); nurse unemployment stays below 3 percent throughout. Real earnings for both groups are close to flat until 2021 and rise modestly thereafter.

¹⁰ The sample is restricted to labor force participants, and cells are person-weighted means using the ACS person weight.

¹¹ The occupation codes are adjusted at the 2010 and 2018 census occupational recodes so that the definitions are consistent over time. Individuals are assigned their occupation at the time of the interview, which would include their last occupation if they are not working at that time.

Methodology

The methodology takes advantage of the fact that different states, through waivers, expanded or contracted their coverage of HCBS at different times. Specifically, the empirical exercise asks: for states in which the service was introduced in year t , how did the labor market outcome of interest change in the following year relative to a comparison group whose outcomes remained stable during that same length of time.

The analytical approach we adopt was informed by the econometrics literature. In this literature, relatively recent research has shown two-way fixed effects estimates of staggered treatments to be badly biased when treatment effects are heterogeneous across cohorts or over time, because already-treated units serve as controls (de Chaisemartin and D'Haultfoeuille 2020; Callaway and Sant'Anna 2021; Borusyak, Jaravel, and Spiess 2024). Therefore, this paper uses the local projections difference-in-differences (LP-DiD) approach of Dube et al. (2025) to accommodate non-absorbing treatments – a requirement for our analysis because states can both add and remove HCBS policies over time.

The LP-DiD is akin to an event-study approach as it estimates each period's effect (rather than an average effect across multiple periods), on a carefully selected sample to avoid contamination of control state-years for a given time's policy change by states that were treated closely before or after the policy change in question. Rather than tracing out the path of effects before and after treatment in a single equation, LP-DiD estimates a separate equation for each time horizon relative to a policy change. Specifically, it asks: for states in which treatment status changed at time t , how did the outcomes of interest move by period $t+h$, relative to a “clean” comparison group whose outcomes remained stable during that same stretch of time?

The advantage of this approach is its flexibility to address the negative-weighting problem from dynamic treatment effects under staggered adoption, as well as accommodating non-absorbing treatments, with an additional assumption that treatment effects stabilize over time. Intuitively, this method allows previously treated units to also serve as potential controls or treated units in the analysis, as long as treatment changes happened sufficiently long ago and effects have already stabilized.

Formally, for each HCBS service category $k \in \{1, \dots, 17\}$, let $D_{s,t}^k \in \{0,1\}$ indicate that the policy for category k is covered under state s 's Medicaid program as of year t . Let $\Delta D_{s,t}^k = D_{s,t}^k - D_{s,t-1}^k$ denote a change in that coverage between waves $t-1$ and t . For a given policy of

interest for k , and for each horizon h (with $h = -1$ the omitted reference period), we estimate the following equation at the individual level:

$$Y_{i,t+h} - Y_{i,t-1} = \beta_h^j \Delta D_{s(i),t}^j + \sum_{k \neq j} \sum_{\tau=\min(t,t+h)}^{\max(t,t+h)} \delta_{h,\tau}^k \Delta D_{s(i),\tau}^k + X_{i,t-1}' \gamma_h + \lambda_t^h + \varepsilon_{i,t}^h \quad (1)$$

The dependent variable is the long difference in the outcome in state i , measured h waves after (or, for $h < 0$, before) a year in which the state's waiver policy – that is, coverage of service category j – may have changed, relative to the year immediately preceding the change. In our analysis, we include three outcomes each for nurses and aides: the average unemployment rate in the state, average labor income in the state, and the average hours worked per week.

$\Delta D_{s(i),t}^j$ denotes whether i 's state, $s(i)$, has changed the policy of interest for category j at time t . For example, if the policy is coverage of category j , $\Delta D_{s(i),t}^j$ equals 1 if the state added coverage of category j , -1 if it removed coverage, and 0 if coverage remained unchanged. $\Delta D_{s(i),\tau}^k$ is a set of controls for coverage changes in the 16 other HCBS categories between time $t-1$ and $t+h$. We include these because it is possible for states to change their policies for more than one category at the same time.¹² For simplicity, we assume that effects from multiple policy changes are additive – i.e., that no interaction effects exist.¹³ Finally, the equation also includes a vector of state-specific statistics consisting of various economic factors that change over time – such as state revenue, the federal Medicaid reimbursement rate to states (FMAP), the average state unemployment rate, and the average wage in the state.¹⁴

The coefficient of interest, β_h^j , is the average state-level effect of a policy change in j on the outcome at time horizon h . Because each horizon is estimated separately rather than pooled into one dynamic specification, the resulting coefficients trace out an event-study path. The coefficient at $h=0$ is the policy's treatment effect.¹⁵ The coefficients at $h = -3$ and $h = -2$ serve as a test of pre-trends. The control sample for these estimations is limited to states that have not

¹² For example, a state renewing its waiver might decide to simultaneously add respite care and remove transportation assistance.

¹³ This assumption allows us to keep the full sample of state-years by simply controlling for changes in the other 16 service categories. Another way to handle simultaneous policy changes would be to restrict the sample to state-years where only category j changed, discarding any observation touched by a concurrent change elsewhere. But, given that states may bundle several categories into a single waiver amendment, that restriction would leave us with few usable comparisons.

¹⁴ The long difference obviates the state fixed effect from the standard two-way fixed effects setting.

¹⁵ For simplicity, we assume that the treatment effect kicks in and stabilizes immediately, i.e. no dynamic treatment effects over time. This assumption allows us to estimate effects on the largest sample possible.

experienced any change in policy j in the year prior to time $t+h$. If these pre-period coefficients are not statistically significantly different from zero, it suggests similar trajectories in treated and comparison states before the policy change at $h=0$.

The ideal indicator of policy impact is an event-study path with small and insignificant coefficients for the pre-periods and large significant coefficients at $h = 0$. But, this strict threshold likely understates the true impact of the HCBS policies and should be interpreted as a lower bound for the policy impact. First, many waivers back-date the effective dates of their policy changes – effectively resetting prior policy in subsequent waiver amendments. In these cases, we assume that the changes start when the amendment is submitted – but back-dating implies that the policy was in effect beforehand (even if only informally). Second, even if our designated treatment period is appropriate, anticipation of the policy is likely high among the formal caregiving workforce. Home care agencies, hospitals, and professional provider organizations advocate for and against certain policy changes and are likely to be aware of future policy. For these two reasons it is possible that the policy impact could surface prior to our designated treatment period.

Results

In total, 306 event-study paths conceptually exist when combining across 17 service categories, 3 service-level policies (coverage, coverage with self-direction, and coverage with use of family), 3 labor force outcomes (unemployment, hours, and earnings), and 2 occupation groups (nurses and aides). However, only 234 paths could be created due to a lack of sufficient policy variation. Of those 234 paths, only 12 suggest a causal policy effect between a specific waiver service policy and the labor market outcomes – 4 for aides and 8 for nurses (see Table 4).¹⁶ This finding should not be surprising, as detailed in the discussion section below.

That said, some patterns do emerge from the small number of instances where a statistically significant causal relationship was found. Specifically, the majority of waiver policy effects tended to negatively impact labor force outcomes by either reducing earnings for aides or increasing unemployment for nurses – and stemmed primarily from self-direction and family-

¹⁶ See Appendix Tables A1 through A6 for all the event-time paths that could be estimated across every service category, outcome, and occupation under each of the three policies. We classify an event-time path as suggesting causal policy impact if it has statistically insignificant coefficients at the 5-percent level for $h = -3$ and $h = -2$ and a significant coefficient at $h = 0$.

care waiver policies. Only three effects were positive – producing relatively small increases in nurses’ wages and hours.

Impact on Aides

For aides, all of the policy effects negatively impacted labor market outcomes, with three reducing earnings and one increasing unemployment. Covering participant training reduces aides’ earnings – explained by the fact that participant training is meant to help care recipients become more self-sufficient and require less help from aides. Aides’ earnings also drop when self-directed home-delivered meals are covered, perhaps because aides are often responsible for meal prep. In addition, covering equipment, technology, and modification reduces annual earnings when it can be provided by family – explained by the fact that home modifications make certain tasks done by aides, like helping someone up and down stairs, less necessary. Finally, self-directed caregiver support increases unemployment by a full 2 percentage points – because this service is a way to support informal caregivers, thus requiring less help from aides.

Impact on Nurses

For nurses, eight waiver policies have a statistically significant impact on labor force outcomes. These effects were somewhat more mixed – five policies increased unemployment, while two increased earnings and one increased hours. Interestingly, none of the positive effects involved direct care services commonly provided by nurses. This outcome likely reflects the fact that nurses often serve as either the case manager, needs evaluator, or service delegator for waiver participants. For example, home and vehicle modifications often require a documented professional evaluation of need. And, “services supporting self-direction” can often involve nurses doing the initial assessment, developing the service plan, training the participant to function as an employer, and making routine home visits.¹⁷ For these reasons, non-direct-care services could still result in the positive labor force outcomes for nurses.

Still, most of the effects negatively impacted nurses’ labor force outcomes – increasing their unemployment by roughly 1 to 4 percentage points due to self-directed and/or family-provided policies for day services, home services, or non-medical transportation. One reason for

¹⁷ In particular, self-directed attendant models rely on a nurse’s delegation of certain health maintenance tasks to other unlicensed attendants, with the nurse assessing, training, and periodically re-evaluating

this pattern could be that these service policies allow some individuals, who would otherwise have gone to a nursing home, to remain at home, which reduces nursing staff requirements because home-based care tends to use fewer nursing hours per person than a facility does.

Discussion

Overall, the limited impact of Medicaid HCBS policies on the formal care labor market is perhaps unsurprising. These policies were never intended to increase employment in the healthcare sector – a strongly growing field – on the one hand, nor are they likely to lead to more efficient deployment of workers on the other, as home care cannot benefit from the economies of scale present in nursing institutions. Rather, the stated goal has always been to preserve the freedom of patients to choose the setting of their care and preserve their dignity to the extent possible.

Furthermore, as discussed earlier, labor force outcomes for many formal caregivers – particularly aides – are unlikely to respond to changes to most HCBS policies on either the employment or the wage dimensions. Aides tend to be low-skill and they face a competitive market for their labor across multiple sectors of the economy, not just healthcare. Additionally, Medicaid already reimburses service providers at below market-clearing rates, which means that a shift in demand is unlikely to affect wages or employment. Thus, the more limited response of aides to the different HCBS policy choices is to be expected.

At the same time, though, the small number of statistically significant causal relationships we found do offer a few key takeaways. Nurses appear more sensitive to waiver policies than aides; the labor force outcomes of aides respond to different policies than those of nurses; and covering self-directed and family-provided services tends to reduce labor force outcomes for both. This final finding suggests further research into the mechanisms by which self-direction and family-care policies – which generally expand demand for care – might negatively impact labor force outcomes for formal care workers.

Conclusion

This paper addresses whether the service-level policies a state writes into its Medicaid 1915(c) waivers – which services it covers, whether participants may direct them, and whether relatives may be paid to provide them – impact the formal labor market for the workers who

often deliver that care. To answer that question, we created a new dataset that specifies not only the share of total spending covered by waivers but also the specific services covered.

Conceptually, the analysis required examining 306 hypotheses, as a result of combining across 17 service categories, 3 service-level policies (service coverage, service coverage with self-direction, and service coverage with use of family), 3 labor force outcomes (unemployment, hours, and income), and 2 occupation groups (nurses and aides). Because of a lack of policy activity, only 234 equations were estimated.

The results show that – of the 234 equations – only 12 revealed a causal relationship between waiver service policies and the labor market outcomes for nurses and aides. This finding should not be surprising. Changes in Medicaid policies were never intended to increase employment or earnings in the healthcare sector, but rather to enable patients to choose the setting for their care and preserve their dignity.

That said, from the limited number of instances where effects do appear, some patterns emerged. Most of the effects were negative – primarily reducing earnings for aides or increasing unemployment for nurses through self-direction and family-care policies. Only three effects were positive – generating relatively small increases in nurses' wages and hours. These findings suggest further research into the mechanisms by which self-direction and family-care policies – which generally expand demand for Medicaid-covered care – might impact labor force outcomes for nurses and aides (who have very different levels of compensation and specialization) in different ways.

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Table 1. *HCBS Service Categories*

No.	Broad category	Representative specific services
1	Case management	Case management
2	Round-the-clock services	Group living; in-home round-the-clock services
3	Supported employment	Job development; ongoing supported employment; career planning
4	Day services	Prevocational services; day habilitation; education; day treatment; adult day health; adult day services; community integration
5	Nursing	Private duty nursing; skilled nursing
6	Home-delivered meals	Home-delivered meals
7	Rent and food expenses for live-in caregivers	Rent and food expenses for live-in caregivers
8	Home-based services	Home-based habilitation; home health aide; personal care; companion; homemaker; chore
9	Caregiver support	Respite (in home and out of home); caregiver counseling or training
10	Other mental health and behavioral	Mental health assessment; assertive community treatment; crisis intervention; behavior support; peer specialist; counseling; psychosocial rehabilitation; clinic services
11	Other health and therapeutic	Health monitoring and assessment; medication management; nutrition consultation; physician and dental services; physical, occupational, speech, hearing, language, respiratory, and cognitive rehabilitative therapies
12	Services supporting self-direction	Information and assistance in support of participant direction, including financial management services
13	Participant training	Participant training
14	Equipment, technology, and modifications	Personal emergency response system; home and vehicle accessibility adaptations; equipment and technology; supplies
15	Non-medical transportation	Non-medical transportation
16	Community transition services	Community transition services
17	Other services	Goods and services; interpreter; housing consultation

Note: The categories follow the order used by Medicaid.

Source: Peebles and Bohl (2013).

Table 2. *Number of States Covering Medicaid HCBS Categories in 1915(c) Waivers at Any Time During 2006-2024*

No.	HCBS category	Number of states during 2006-2024 that:		
		covered service	covered service with self-direction	covered service with family care
1.	Home-based services	45	34	24
2.	Day services	44	6	2
3.	Equipment, technology, and modifications	44	12	3
4.	Caregiver support	42	18	13
5.	Round-the-clock services	39	6	4
6.	Home-delivered meals	38	3	0
7.	Case management	33	6	0
8.	Community transition services	33	5	1
9.	Non-medical transportation	30	8	5
10.	Other health and therapeutic	30	6	2
11.	Nursing	27	10	0
12.	Services supporting self-direction	24	18	9
13.	Other services	24	14	3
14.	Other mental health and behavioral	15	2	1
15.	Supported employment	11	4	4
16.	Participant training	9	3	0
17.	Rent and food for live-in caregivers	1	1	0

Notes: The categories here are ordered by most to least frequently covered. These data cover 718 state-years spanning 45 states and the District of Columbia during the period 2006-2024.

Source: Authors' tabulations from Section 1915(c) waiver applications.

Table 3. *Descriptive Statistics for Aides and Nurses, State-Year Cells, 2006-2024*

	Mean	Standard deviation
Panel A. Outcomes		
<i>Aides</i>		
Unemployment share	0.061	0.030
Weekly hours worked, unemployed at zero	33.2	1.8
Real annual earnings, unemployed at zero (\$)	27,306	4,073
<i>Nurses</i>		
Unemployment share	0.017	0.012
Weekly hours worked, unemployed at zero	36.9	1.4
Real annual earnings, unemployed at zero (\$)	74,214	9,591
Panel B. Workforce composition		
<i>Aides</i>		
Share working full time (%)	65	7
Share foreign born (%)	14	13
Share of state labor force (%)	2.26	0.55
<i>Nurses</i>		
Share working full time (%)	79	7
Share foreign born (%)	10	9
Share of state labor force (%)	2.60	0.56
Panel C. Control variables		
Overall state unemployment rate (%)	5.55	2.26
State government revenue per capita (\$)	1,589	558
Federal Medical Assistance Percentage	0.625	0.091
Share of labor force age 65 or older	0.054	0.011
Foreign-born share of labor force	0.106	0.075
Overall real annual earnings (\$)	55,805	8,140

Notes: Aides are home health aides, personal care aides, nursing assistants, and orderlies, together with medical assistants and phlebotomists; nurses are registered nurses, nurse practitioners and anesthetists, and licensed practical and vocational nurses. Earnings are deflated by the CPI-U and expressed in 2025 dollars. “Unemployed at zero” indicates that unemployed labor force participants are assigned zero for hours and earnings.

Sources: Authors’ calculations from the U.S. Census Bureau, *American Community Survey* (ACS) (2006-2024) and the estimation-sample descriptives.

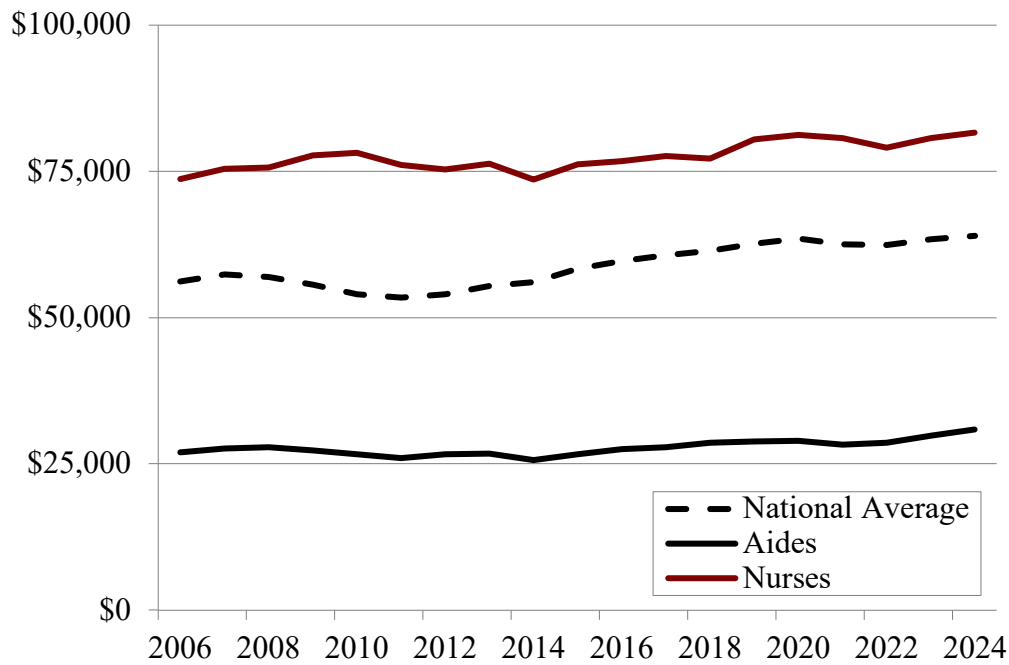
Table 4. *Causal Effect of Service-level Waiver Policy on Formal Caregiving Workforce*

Workers	Policy	HCBS category	Outcome	h = 0
Aides	Covered	Participant training	Annual earnings (\$)	-2,043**
	Self-directed	Caregiver support	Unemployment rate	0.020**
		Home-delivered meals	Annual earnings (\$)	-8,666***
	Family care	Equipment, technology, and modifications	Annual earnings (\$)	-2,047***
Nurses	Covered	Caregiver support	Annual earnings (\$)	5,755**
		Services supporting self-direction	Annual earnings (\$)	4,798***
	Self-directed	Day services	Unemployment rate	0.007**
		Home-based services	Unemployment rate	0.009**
		Non-medical transportation	Unemployment rate	0.038***
	Family care	Day services	Unemployment rate	0.014**
		Non-medical transportation	Unemployment rate	0.039***
		Equipment, technology, and modifications	Weekly hours worked	1.554***

Notes: Lists the 12 category-outcome pairs whose event-time path is insignificant at $h = -3$ and $h = -2$ and significant at $h = 0$, out of 234 pairs with a complete path (96 under coverage, 84 under self-direction, and 54 under family care). ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

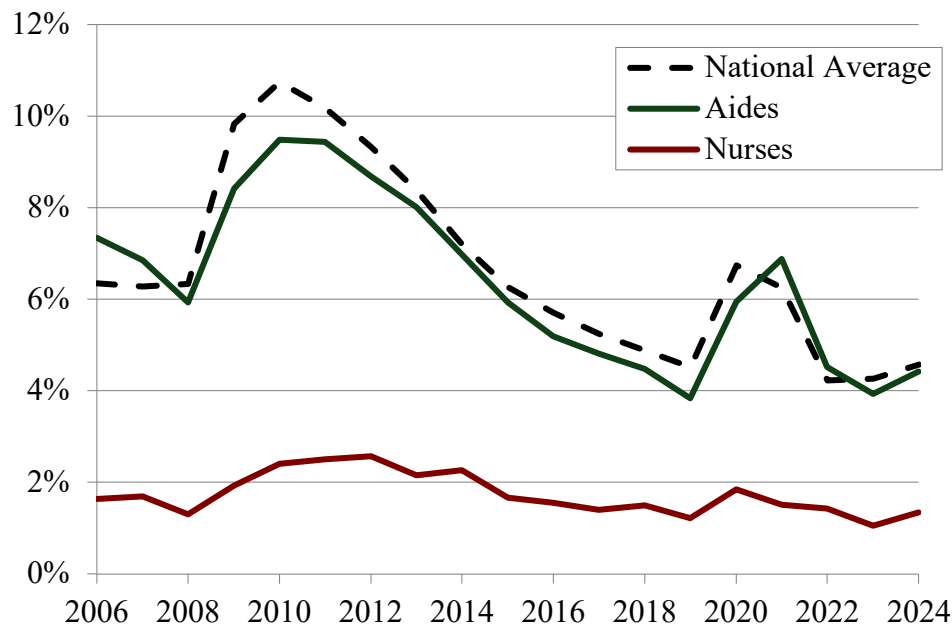
Figure 1. *Real Wages by Occupation, 2006-2024*



Notes: Earnings are in 2025 dollars. Computed across the full labor force, with unemployed individuals assigned zero earnings.

Source: Authors' calculations from the ACS (2006-2024).

Figure 2. *Unemployment Rate by Occupation, 2006-2024*



Source: Authors' calculations from the ACS (2006-2024).

Appendix

Table A1. *Effect of Covering an HCBS Category on Aides*

HCBS category	-3	-2	0	+1
<i>Panel A. Unemployment share</i>				
Case management	0.001	0.008	0.015	0.010
Round-the-clock services	-0.005	0.011	0.002	0.006
Supported employment	-0.007	0.004	0.007	-0.003
Day services	0.024***	0.019	0.019**	0.009
Nursing	-0.001	0.018*	-0.005	0.000
Home-delivered meals	0.016	0.000	0.027*	0.011
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-0.024	-0.012	0.012	0.015
Caregiver support	-0.012	-0.005	-0.019	-0.015
Other mental health and behavioral	0.008	0.024*	-0.011*	-0.001
Other health and therapeutic	-0.012	-0.009	-0.003	-0.009
Services supporting self-direction	-0.002	-0.005	-0.028*	-0.014
Participant training	0.007	0.018**	0.004	-0.004
Equipment, technology, and modifications	-0.002	-0.033*	-0.033*	-0.025**
Non-medical transportation	0.022*	0.005	0.015	0.014
Community transition services	-0.014	0.003	-0.014	-0.024***
Other services	0.017*	0.002	-0.000	0.011*
<i>Panel B. Weekly hours worked</i>				
Case management	1.064	1.806	0.905	0.253
Round-the-clock services	0.111	-0.519	0.219	0.116
Supported employment	-1.628	-1.685***	-1.374	-1.738***
Day services	-0.926**	-0.499	-0.923	-0.682
Nursing	0.549	-1.462**	-0.037	-0.153
Home-delivered meals	-0.267	0.299	-0.889	-1.049*
Rent and food for live-in caregivers	—	—	—	—
Home-based services	1.905	0.574	0.522	-0.070
Caregiver support	1.100	0.059	1.260	-0.501
Other mental health and behavioral	-1.603*	-1.330	0.913	0.162
Other health and therapeutic	0.453	0.320	-0.721	0.522
Services supporting self-direction	1.069	-1.028	1.026*	-0.212
Participant training	-0.605	-0.956	-0.171	0.174

HCBS category	-3	-2	0	+1
Equipment, technology, and modifications	-0.899	1.766	2.516	1.368*
Non-medical transportation	-0.416	0.278	0.575	-0.171
Community transition services	1.528**	0.172	-0.104	0.393
Other services	-1.077	-0.829**	-0.192	-0.812*
<i>Panel C. Annual earnings (2025 dollars)</i>				
Case management	206	512	-665	-891
Round-the-clock services	931	-587	19	-355
Supported employment	-663	-3,087*	-2,490*	-1,303
Day services	2,176	-1,239	2,735	-601
Nursing	-779	-1,123	474	203
Home-delivered meals	67	29	-1,390	-1,328
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-3,996	-349	-503	2,249
Caregiver support	-1,438	667	639	-1,465
Other mental health and behavioral	-4,041**	-1,646	810	545
Other health and therapeutic	2,545**	1,482	795	438
Services supporting self-direction	445	-988	1,214	-614
Participant training	-1,691	-2,111	-2,043**	-1,909
Equipment, technology, and modifications	-2,983	4,022**	2,186	1,783
Non-medical transportation	-1,941	13	606	-1,523
Community transition services	1,335	331	-373	-739
Other services	-2,119	-1,696*	-941	-1,608*

Notes: Each coefficient is the difference from $h = -1$, the year before the policy change. Unemployment-share coefficients are in share units. Em dashes mark categories with too little variation to estimate. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

Table A2. *Effect of Covering an HCBS Category on Nurses*

HCBS category	-3	-2	0	+1
<i>Panel A. Unemployment share</i>				
Case management	-0.009	-0.010	-0.008	-0.001
Round-the-clock services	-0.000	0.000	0.003	-0.001
Supported employment	-0.011	-0.007	-0.008	-0.013
Day services	0.007	-0.000	-0.004	0.014
Nursing	-0.002	0.001	0.000	0.004
Home-delivered meals	-0.013	-0.007	0.004	0.005
Rent and food for live-in caregivers	—	—	—	—
Home-based services	0.008	0.010	0.010	0.009
Caregiver support	-0.022 **	0.015	-0.004	0.009
Other mental health and behavioral	0.002	-0.001	-0.007	-0.001
Other health and therapeutic	0.000	0.002	0.005	0.004
Services supporting self-direction	-0.003	0.016 *	0.009 *	0.012 *
Participant training	-0.007	-0.004	0.002	-0.003
Equipment, technology, and modifications	0.013	0.011 *	0.011	0.003
Non-medical transportation	-0.004	0.016 **	-0.002	0.007
Community transition services	-0.014 *	-0.009	0.004	-0.005
Other services	-0.002	0.010 *	-0.001	-0.005 *
<i>Panel B. Weekly hours worked</i>				
Case management	0.782 *	0.061	0.164	0.215
Round-the-clock services	0.532	0.619 ***	0.466 *	0.562 *
Supported employment	0.459	-0.731 *	0.262	0.282
Day services	0.607	-0.295	0.259	-0.840
Nursing	0.451	0.288	-0.161	-1.014 **
Home-delivered meals	0.738	-0.331	-0.148	0.479
Rent and food for live-in caregivers	—	—	—	—
Home-based services	1.129	-1.244	-0.700	-1.551
Caregiver support	1.781	-1.492 *	1.182 **	-0.497
Other mental health and behavioral	-0.504	-0.085	0.100	0.331
Other health and therapeutic	1.081 **	0.674 *	0.024	0.285
Services supporting self-direction	0.281	-0.366	0.400	-0.094
Participant training	0.462	0.298	0.096	-0.316
Equipment, technology, and modifications	-0.713	-0.375	-0.145	0.875

HCBS category	-3	-2	0	+1
Non-medical transportation	0.508	-0.482	0.531	-0.465
Community transition services	0.840 **	0.207	0.068	-0.686 **
Other services	-0.002	0.500	0.123	0.501 *
<i>Panel C. Annual earnings (2025 dollars)</i>				
Case management	3,609	6,729 **	3,316 ***	4,157 **
Round-the-clock services	-60	-310	-52	-603
Supported employment	-725	-3,330 *	-198	1,927
Day services	252	2,416	5,096 *	-2,867
Nursing	160	525	-1,419	-665
Home-delivered meals	1,459	2,112	-1,959	-531
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-7,329	-2,052	-4,678	-3,731
Caregiver support	7,677	-4,454	5,755 **	1,015
Other mental health and behavioral	-4,603 **	-5,795 **	-224	491
Other health and therapeutic	4,890 **	2,289 *	-1,512	-2,192
Services supporting self-direction	2,864	639	4,798 ***	615
Participant training	161	700	-1,716	-4,443 ***
Equipment, technology, and modifications	3,228	4,296	3,607 *	5,307 ***
Non-medical transportation	6,248	1,062	5,937 *	3,245 **
Community transition services	3,949	-297	1,333	-665
Other services	359	-566	2,051	2,055 **

Notes: Each coefficient is the difference from $h = -1$, the year before the policy change. Unemployment-share coefficients are in share units. Em dashes mark categories with too little variation to estimate. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

Table A3. *Effect of Permitting Self-Direction of an HCBS Category on Aides*

HCBS category	-3	-2	0	+1
<i>Panel A. Unemployment share</i>				
Case management	0.004	-0.000	0.003	-0.005
Round-the-clock services	-0.002	-0.000	-0.018	0.005
Supported employment	0.008	0.025	0.002	0.001
Day services	-0.031 **	-0.012	-0.003	-0.011
Nursing	0.010	0.002	-0.012	-0.022 **
Home-delivered meals	-0.029	-0.098 ***	-0.024	-0.001
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-0.007	-0.002	-0.001	-0.006
Caregiver support	0.018	0.015	0.020 **	-0.003
Other mental health and behavioral	—	—	0.019	0.070 ***
Other health and therapeutic	0.001	-0.009	-0.013	-0.014
Services supporting self-direction	-0.021 ***	-0.005	-0.033 ***	-0.022 *
Participant training	—	0.029 ***	0.029 ***	0.004
Equipment, technology, and modifications	-0.006	0.019	-0.004	-0.029 **
Non-medical transportation	-0.012	0.065 ***	0.016	0.009
Community transition services	-0.026	-0.009	-0.014	-0.031 ***
Other services	-0.006	0.007	0.004	0.016
<i>Panel B. Weekly hours worked</i>				
Case management	0.197	-1.087 *	-0.602	0.774
Round-the-clock services	1.115 **	0.206	1.106 **	1.413 **
Supported employment	-1.305 **	-0.121	-2.347 ***	-2.442 ***
Day services	1.563 *	0.208	-0.909 **	-2.783 **
Nursing	-1.165 **	0.811	0.478	-0.181
Home-delivered meals	-6.064 ***	1.470	-1.252	-1.222
Rent and food for live-in caregivers	—	—	—	—
Home-based services	0.205	-1.028	-0.167	0.382
Caregiver support	-1.319 **	-0.932 *	-0.690	-0.675
Other mental health and behavioral	—	—	-1.593	-2.055
Other health and therapeutic	-1.604	-0.067	-0.350	-1.605 **
Services supporting self-direction	0.821 **	-0.044	1.759 **	0.745
Participant training	—	0.173	-0.918	0.765
Equipment, technology, and modifications	-1.456 *	0.362	-0.157	0.672

HCBS category	-3	-2	0	+1
Non-medical transportation	5.776 ***	-0.542	2.421 **	3.747 **
Community transition services	1.789 **	-2.029	0.176	2.918 ***
Other services	0.534	0.492	0.449	0.674
<i>Panel C. Annual earnings (2025 dollars)</i>				
Case management	816	545	-1,426	2,284 *
Round-the-clock services	7,292 ***	2,521 *	2,930	2,069 **
Supported employment	-1,963	-2,723	-1,260	-3,137 **
Day services	268	955	-1,173	-1,549
Nursing	-1,279	-853	-1,665	-4,827 ***
Home-delivered meals	-8,326	-7,105	-8,666 ***	-7,071 **
Rent and food for live-in caregivers	—	—	—	—
Home-based services	1,120	549	2,659 *	2,776 ***
Caregiver support	-524	156	-1,779 *	-562
Other mental health and behavioral	—	—	-1,640	-836
Other health and therapeutic	-263	-1,106	-2,794	-7,417 ***
Services supporting self-direction	812	33	1,239	154
Participant training	—	1,984 ***	-338	211
Equipment, technology, and modifications	-3,351 *	2,071	-876	-675
Non-medical transportation	4,724	7,280 **	5,129 *	9,191 ***
Community transition services	328	-1,508 *	58	3,073
Other services	-2,378	-1,000	-2,540	-1,164

Notes: Each coefficient is the difference from $h = -1$, the year before the policy change. Unemployment-share coefficients are in share units. Em dashes mark categories with too little variation to estimate. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

Table A4. *Effect of Permitting Self-Direction of an HCBS Category on Nurses*

HCBS category	-3	-2	0	+1
<i>Panel A. Unemployment share</i>				
Case management	0.008	0.020	0.007	0.004
Round-the-clock services	-0.010	0.010 ***	0.018 ***	0.008
Supported employment	-0.004	-0.003	-0.009 *	-0.010
Day services	-0.003	0.004	0.007 **	-0.006
Nursing	0.000	0.002	0.001	-0.002
Home-delivered meals	-0.005	-0.019 *	-0.033 **	-0.020
Rent and food for live-in caregivers	—	—	—	—
Home-based services	0.003	0.010	0.009 **	0.014 *
Caregiver support	-0.000	-0.000	-0.002	0.007
Other mental health and behavioral	—	—	-0.029 **	-0.003
Other health and therapeutic	-0.010	-0.001	0.001	0.001
Services supporting self-direction	-0.006	-0.000	-0.000	0.001
Participant training	—	-0.023 ***	-0.018 ***	-0.011 **
Equipment, technology, and modifications	0.002	0.001	0.004	-0.001
Non-medical transportation	0.008	0.001	0.038 ***	-0.004
Community transition services	-0.024 ***	-0.017 ***	-0.005	-0.016 *
Other services	-0.007	-0.017 **	-0.007	-0.008
<i>Panel B. Weekly hours worked</i>				
Case management	0.481	0.320	-0.100	-0.298
Round-the-clock services	1.025 ***	-0.623 *	-0.746	0.039
Supported employment	-0.433	-1.584 ***	0.109	0.518
Day services	0.255	0.341	0.158	1.036
Nursing	-0.691 *	0.008	-0.559	-0.488
Home-delivered meals	-0.010	-0.573	1.445	3.593 ***
Rent and food for live-in caregivers	—	—	—	—
Home-based services	0.401	-0.232	-0.114	-1.211 *
Caregiver support	-0.158	0.349	0.247	0.173
Other mental health and behavioral	—	—	-1.246	-0.021
Other health and therapeutic	-0.286	-0.310	0.206	0.266
Services supporting self-direction	0.170	0.607	-0.260	-0.292
Participant training	—	1.558 ***	-0.169	0.034
Equipment, technology, and modifications	-0.392	0.226	0.454	-0.222

HCBS category	-3	-2	0	+1
Non-medical transportation	1.384 *	1.556 **	-1.661 **	-1.937 **
Community transition services	0.917	0.125	-0.238	0.069
Other services	0.521	0.828	-0.199	0.445
<i>Panel C. Annual earnings (2025 dollars)</i>				
Case management	7,248 ***	861	3,989	1,650
Round-the-clock services	6,983 ***	433	344	1,179
Supported employment	-2,749	-4,598 **	-2,079	4,484
Day services	4,124	5,389 ***	2,746	6,564
Nursing	-758	2,277 **	-41	-1,415
Home-delivered meals	-8,122	6,082	2,840	2,470
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-4,571 *	-3,331 ***	-471	-4,865 **
Caregiver support	1,075	-81	-220	-1,518
Other mental health and behavioral	—	—	436	-713
Other health and therapeutic	-903	-1,618	-757	6,814*
Services supporting self-direction	646	938	2,493	-831
Participant training	—	9,295 ***	5,513 ***	4,920 ***
Equipment, technology, and modifications	3,959	-1,751	1,306	2,097
Non-medical transportation	8,423 **	5,888 **	2,381	6,892
Community transition services	3,932 ***	-1,106	-666	324
Other services	-3,391	2,292	-82	-2,212

Notes: Each coefficient is the difference from $h = -1$, the year before the policy change. Unemployment-share coefficients are in share units. Em dashes mark categories with too little variation to estimate. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

Table A5. *Effect of Permitting Family Members to Provide an HCBS Category on Aides*

HCBS category	-3	-2	0	+1
<i>Panel A. Unemployment share</i>				
Case management	—	—	—	—
Round-the-clock services	-0.085 ***	-0.106 ***	-0.086 ***	-0.021
Supported employment	0.042 ***	0.060 ***	0.040 ***	0.008
Day services	-0.088 ***	-0.161 ***	-0.070 ***	-0.097 ***
Nursing	—	—	—	—
Home-delivered meals	—	—	—	—
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-0.004	-0.010	-0.001	-0.003
Caregiver support	-0.011	-0.007	0.008	-0.005
Other mental health and behavioral	—	—	—	—
Other health and therapeutic	-0.102 ***	-0.168 ***	-0.116 ***	-0.011
Services supporting self-direction	-0.009 **	0.008	-0.006	-0.010
Participant training	—	—	—	—
Equipment, technology, and modifications	-0.010 *	-0.010	-0.010	-0.014
Non-medical transportation	-0.003	0.053 ***	0.011 **	0.012 **
Community transition services	-0.104 ***	-0.150 ***	-0.140 ***	—
Other services	—	-0.005	0.054 ***	0.006
<i>Panel B. Weekly hours worked</i>				
Case management	—	—	—	—
Round-the-clock services	1.859 **	0.956	2.655 ***	-0.263
Supported employment	-2.892 ***	-1.705 **	-2.743 ***	-2.302 ***
Day services	-3.464 ***	1.010	-1.315 **	0.666
Nursing	—	—	—	—
Home-delivered meals	—	—	—	—
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-0.301	-0.799	-0.541	-0.510
Caregiver support	0.091	0.027	-0.532	-0.362
Other mental health and behavioral	—	—	—	—
Other health and therapeutic	-3.252 ***	1.309	1.769 *	-0.578
Services supporting self-direction	0.381	0.403	0.528	0.959 **
Participant training	—	—	—	—
Equipment, technology, and modifications	-1.057	-0.296	0.168	0.437

HCBS category	-3	-2	0	+1
Non-medical transportation	3.703 ***	0.304	0.348	-0.479
Community transition services	-1.594 **	2.705 ***	3.276 ***	—
Other services	—	3.987 ***	-2.706 ***	-2.741 ***
<i>Panel C. Annual earnings (2025 dollars)</i>				
Case management	—	—	—	—
Round-the-clock services	3,145 *	4,869 ***	8,404 ***	-286
Supported employment	-1,564	-2,659 **	195	-56
Day services	-1,472	-4,289 ***	-1,016	-2,687*
Nursing	—	—	—	—
Home-delivered meals	—	—	—	—
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-2,272	-1,079	-1,361	-979
Caregiver support	636	5	-729	-1,046
Other mental health and behavioral	—	—	—	—
Other health and therapeutic	-1,119	-4,735 ***	-2,333	-5,797***
Services supporting self-direction	1,172	857	454	-385
Participant training	—	—	—	—
Equipment, technology, and modifications	-1,626	-1,621	-2,047 ***	641
Non-medical transportation	81	3,127 ***	596	-1,187
Community transition services	-3,560 *	3,957 ***	5,845 ***	—
Other services	—	1,538 ***	-4,088 ***	-3,327***

Notes: Each coefficient is the difference from $h = -1$, the year before the policy change. Unemployment-share coefficients are in share units. Em dashes mark categories with too little variation to estimate. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

Table A6. *Effect of Permitting Family Members to Provide an HCBS Category on Nurses*

HCBS category	-3	-2	0	+1
<i>Panel A. Unemployment share</i>				
Case management	—	—	—	—
Round-the-clock services	-0.039***	-0.012	-0.001	-0.015
Supported employment	0.005	-0.003	0.001	0.003
Day services	-0.015	-0.012	0.014**	-0.015*
Nursing	—	—	—	—
Home-delivered meals	—	—	—	—
Rent and food for live-in caregivers	—	—	—	—
Home-based services	0.001	0.013*	0.002	0.013*
Caregiver support	-0.001	-0.003	-0.004	0.004
Other mental health and behavioral	—	—	—	—
Other health and therapeutic	-0.026**	-0.018	-0.020**	0.020**
Services supporting self-direction	-0.003	-0.003	-0.006	-0.010*
Participant training	—	—	—	—
Equipment, technology, and modifications	0.012	-0.000	-0.004	-0.003
Non-medical transportation	-0.001	-0.001	0.039***	0.007**
Community transition services	-0.018**	-0.019*	0.018**	—
Other services	—	0.012***	-0.009***	0.030***
<i>Panel B. Weekly hours worked</i>				
Case management	—	—	—	—
Round-the-clock services	2.389***	-0.839**	0.629	2.140***
Supported employment	-0.472	-1.243**	-0.128	-0.367
Day services	-2.589***	-1.462*	2.804***	1.555**
Nursing	—	—	—	—
Home-delivered meals	—	—	—	—
Rent and food for live-in caregivers	—	—	—	—
Home-based services	0.116	-0.313	-0.345	-1.027*
Caregiver support	0.010	0.340	-0.064	0.010
Other mental health and behavioral	—	—	—	—
Other health and therapeutic	-1.672**	-1.289*	0.257	2.191***
Services supporting self-direction	-0.260	-0.093	-0.448	0.200
Participant training	—	—	—	—
Equipment, technology, and modifications	0.619	0.464	1.554***	1.239**

HCBS category	-3	-2	0	+1
Non-medical transportation	0.957 ***	0.722 ***	-1.310 ***	-1.972 ***
Community transition services	-1.056 **	-1.062 **	-0.346	—
Other services	—	-3.985 ***	1.099 ***	-4.565 ***
<i>Panel C. Annual earnings (2025 dollars)</i>				
Case management	—	—	—	—
Round-the-clock services	8,155 ***	8,625 ***	4,405 **	2,163
Supported employment	-6,311 ***	-8,959 ***	-3,240	-370
Day services	-2,244	9,652 ***	3,918 **	2,032
Nursing	—	—	—	—
Home-delivered meals	—	—	—	—
Rent and food for live-in caregivers	—	—	—	—
Home-based services	-2,437	47	1,577	-2,220
Caregiver support	1,690	786	-173	-1,511
Other mental health and behavioral	—	—	—	—
Other health and therapeutic	-1,820	5,737 **	4,670 *	-512
Services supporting self-direction	829	1,444	1,324	8
Participant training	—	—	—	—
Equipment, technology, and modifications	3,032 **	2,797 **	3,214 ***	936
Non-medical transportation	5,308 ***	1,626	-4,488 ***	502
Community transition services	3,716 *	19,837 ***	6,448 **	—
Other services	—	-1,055	620	-2,060 *

Notes: Each coefficient is the difference from $h = -1$, the year before the policy change. Unemployment-share coefficients are in share units. Em dashes mark categories with too little variation to estimate. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Sources: Authors' estimates from Section 1915(c) waiver applications and the ACS (2006-2024).

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