DOES EARLY USE OF COMMUNITY-BASED LONG-TERM SERVICES AND SUPPORTS LEAD TO LESS USE OF INSTITUTIONAL CARE?

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EXECUTIVE SUMMARY

Results from the national evaluation of the Money Follows the Person (MFP) demonstration suggested that some Medicaid beneficiaries who used community-based long-term services and supports (LTSS) subsequently had shorter stays when they experienced a period of institutional care (Irvin et al. 2017). In this report, we use Medicaid Analytic eXtract (MAX) data from 2009 through 2014 for 16 states to describe differences in the use of institutional care for Medicaid beneficiaries, not just MFP participants, who initiate LTSS via community-based services compared to those who start with institutional care[1]. The purpose is to understand whether starting care in a community setting is subsequently associated with fewer long institutional stays and, when a long stay occurs, more transitions back to the community and fewer reinstitutionalizations. It also assesses whether care trajectories vary by race and ethnicity.

- Very few beneficiaries who initiated their LTSS use in a community setting experienced a long institutional stay. In contrast, one-half to two-thirds of beneficiaries who initiated their LTSS in an institutional setting had a long stay.
- Among those who experienced a long-term institutional stay, transition rates to the community were slightly higher for beneficiaries who initiated LTSS with community-based services versus institutional care. Early use of community-based services also appears to increase the likelihood beneficiaries will receive community-based LTSS when they transition back to the community. Beneficiaries who initiated their LTSS in a community setting and subsequently had a long institutional stay were three times more likely to transition to community-based LTSS compared to those who started their LTSS in an institution. However, they would be more likely to remain in a nursing home rather than transition back to the community without LTSS.
- Among older adults, beneficiaries who had started their LTSS in a community setting were significantly less likely to be reinstitutionalized after a long institutional stay compared to beneficiaries who started care in an institution.

Medicaid policymakers may find these results helpful when designing programs to divert beneficiaries from long-term institutional care. Early access to community-based LTSS may be an important tool to minimizing the use of institutional care, when institutional care becomes necessary.

[1] We defined community-based LTSS use based on enrollment in a 1915(c) waiver or evidence of any claims for 1915(c) waiver services or for state-plan services (adult day care, home health, private duty nursing, personal care services, or residential care).

About the Money Follows the Person Demonstration

The Money Follows the Person (MFP) rebalancing demonstration, first authorized by Congress as part of the Deficit Reduction Act of 2005 and extended by the Patient Protection and Affordable Care Act of 2010, is designed to rebalance state Medicaid spending on long-term services and supports from institutional-based settings to community settings. Congress authorized up to $4 billion in federal funds to support a twofold effort by state Medicaid programs to (1) transition people living in long-term care institutions to homes, apartments, or group homes of four or fewer residents; and (2) change state policies so that Medicaid funds for long-term care services and supports can "follow the person" to the setting of his or her choice. MFP is administered by the Centers for Medicare & Medicaid Services (CMS), which initially awarded MFP grants to 30 states and the District of Columbia in 2007, another 13 states in February 2011, and 3 more in 2012. CMS contracted with Mathematica Policy Research to conduct a comprehensive evaluation of the MFP demonstration and report the outcomes to Congress.

INTRODUCTION

For Medicaid beneficiaries who require long-term services and supports, services may be provided in the community or the beneficiary may enter an institution such as a nursing home or intermediate care facility for individuals with intellectual or developmental disabilities. Whether the beneficiary receives care in the community or in a facility will depend on the availability of services—that is, institutional beds and community-based LTSS providers—as well as state policies related to delivery of services, availability of community integrated housing, personal preferences, and the availability of family and friends who can provide some assistance. Generally, most people prefer to reside in the community and receive community-based services (Barrett 2014). Recent analyses of participants in the Money Follows the Person (MFP) rebalancing demonstration found high levels of satisfaction after transitioning from institutions back to the community (Irvin et al. 2017). Community-based LTSS is also less costly for Medicaid programs compared to institutional care (Irvin et al. 2017). There have been a number of nationwide and state-level efforts to "rebalance" LTSS systems from institutional care to community-based LTSS, including the MFP demonstration as well as the Balancing Incentive Program. States may prefer expanding community-based services to address disparities in institutional care. Specifically, studies have reported that nursing homes are often segregated, and minorities are more likely to reside in nursing homes of lower quality compared to those of whites (Barton Smith et al. 2007; Fennel et al. 2010), although there has been some improvement recently in nursing home quality for minorities (Li et al. 2015).

Understanding care trajectories that lead to differential use of community-based LTSS and institutional care may identify populations that could benefit either from interventions to reduce admissions to institutional settings or the length of institutional stays or stimulate further investigation of the determinants of which setting type is used for LTSS. This study focuses on Medicaid beneficiaries upon their entry into LTSS; we describe differences in use of institutional care between those who use institutional care immediately upon entry to the LTSS system and those who start with community-based services. Specifically, we explore whether starting with community-based LTSS influences the likelihood of experiencing a long-term institutional care

stay and, when an institutional stay is necessary, the likelihood of transitioning back to the community and then being reinstitutionalized. It also assesses whether initial LTSS use varies by race and ethnicity and whether subsequent care trajectories vary by race and ethnicity.

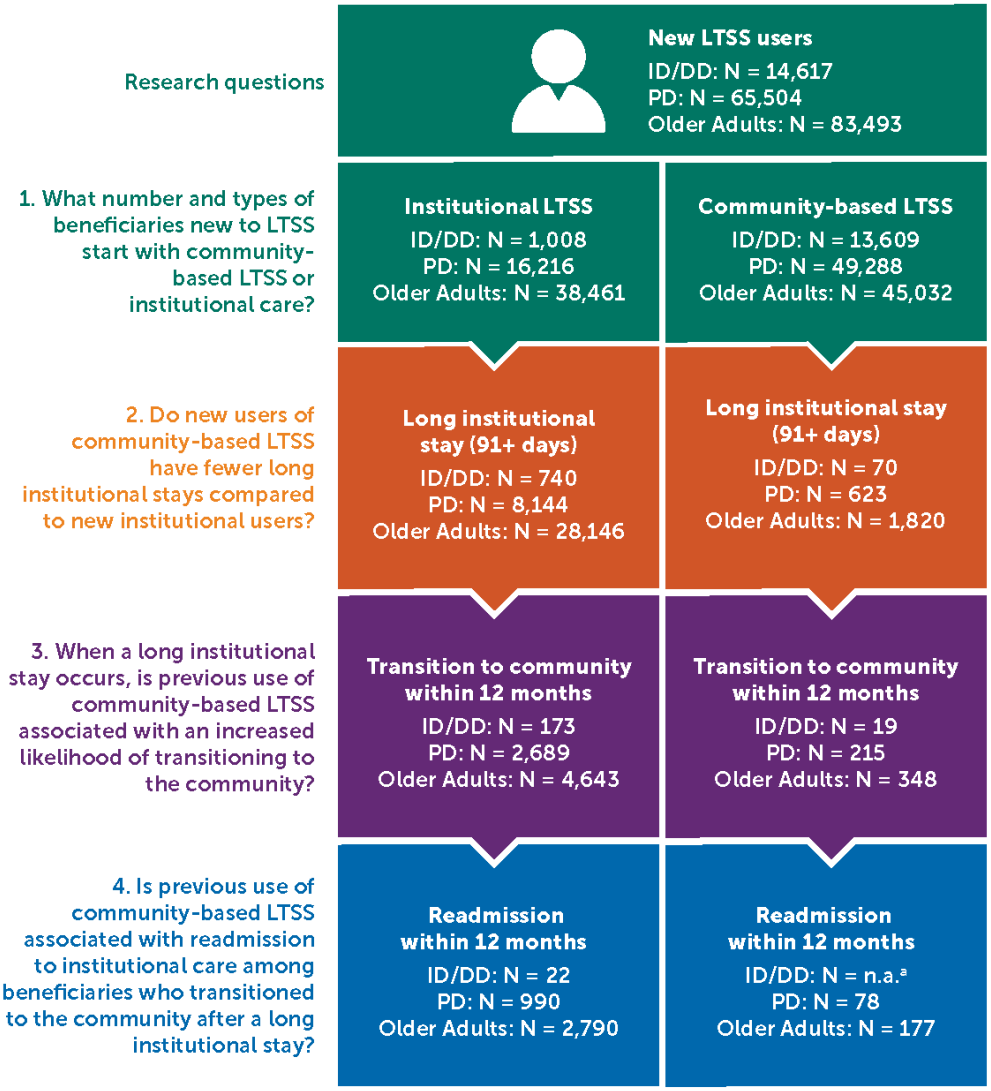
STUDY DESIGN

Figure 1 describes our study design and the relevant trajectories of LTSS use for new LTSS users (the numbers represent the sample sizes we had in the study at each stage of the trajectory). The top section of the figure shows the number of beneficiaries who initiated LTSS. The second section from the top describes whether these new LTSS users initiated care via community-based LTSS or institutional care for each population included in this study—that is, people with intellectual or developmental disabilities, people under age 65 with physical disabilities, and people aged 65 and older (older adults). Moving from the top two sections of the figure to the bottom, there are a series of trajectories that beneficiaries may experience, which also correspond to our research questions and the bottom sections of the figure. These include the following:

- **Long institutional stays.** The third section of the figure from the top describes the share of community-based and institutional LTSS initiators that had a long institutional stay (91 or more days). This component of the study assesses whether new users of community-based LTSS have fewer long institutional stays compared to new institutional users. For new institutional users, a long institutional stay was measured based on the initial stay that prompted inclusion in the sample. For new community-based LTSS users, long institutional stays were identified based on any institutional stays starting within the 12 months after initiating LTSS in the community.
- **Transitions to the community.** The fourth section from the top of Figure 1 focuses on those beneficiaries who had a long stay in both groups. This component of the study assesses whether previous community-based LTSS users have higher rates of transitioning to the community compared to previous institutional care users. We search for transitions to the community within one year of the 91st day of the long stay, including beneficiaries who transitioned to the community with or without community-based LTSS.
- **Reinstitutionalization.** The bottom, fifth section of the figure focuses on those beneficiaries who transitioned to the community. It describes the number of beneficiaries who were subsequently reinstitutionalized within one year of the transition date. This component of the study assesses whether previous use of community-based LTSS compared to institutional care is associated with fewer readmissions to institutional care among beneficiaries who transitioned to the community after a long institutional stay.

For each of the three trajectories, we were also interested in understanding the extent to which these associations varied by race and ethnicity.

Figure 1. Research questions and key outcomes for new long-term care services and support users, by population



Note: New LTSS users are defined as beneficiaries who started using Medicaid-paid LTSS in any month between January 2010 and July 2011 and who had no evidence of LTSS use in the 12 months preceding the first indicated month of LTSS use. For example, a beneficiary who first used LTSS services in April 2010 and had no LTSS use between April 2009 and March 2010 was considered a new LTSS user. We categorized new LTSS users as new institutional users if they had a nursing home claim during the first month of LTSS use. Conversely, new LTSS users were categorized as new community-based LTSS users if they had no nursing home claims in the first month of LTSS use, but they were either enrolled in a 1915(c) waiver or had at least one claim for community-based LTSS in that month. Community-based LTSS claims encompassed state-plan services for adult day care, home health, personal care services, private-duty nursing, and residential care or claims for 1915(c) waiver services.

ID/DD = intellectual or developmental disabilities; LTSS = long-term care services and supports; PD = physical disabilities

[a] We do not report cell sizes smaller than 11.

DATA AND METHODS

We used Medicaid Analytic eXtract files from 2009 to 2014 for 16 states, including 13 states that participated in MFP (Arkansas, California, Connecticut, Georgia, Iowa, Missouri, Mississippi, New Jersey, New York, Pennsylvania, South Dakota, Tennessee, and West Virginia), and 3 states that operated an MFP program for a short period of time or did not participate (Oregon, Utah, and Wyoming).

The analysis sample comprised beneficiaries who newly started using LTSS in any month between January 2010 and July 2011 and who survived at least 36 months after initiating LTSS. Beneficiaries were considered new users if they had no evidence of Medicaid-paid LTSS in the 12 months preceding the first month of LTSS use. For example, a beneficiary who had a claim for LTSS in October 2010 was considered a new user if the beneficiary had no LTSS claims between October 2009 and September 2010. We categorized beneficiaries as "new institutional long-term care users" if they had a claim for a stay in either a nursing home or intermediate care facility for individuals with intellectual or developmental disabilities in the first month of LTSS use. Conversely, we categorized beneficiaries as "new community-based LTSS users" if there was no nursing home claims in the first month of LTSS use and the beneficiary was either enrolled in a 1915(c) waiver and/or had evidence of community-based LTSS use in claims data. We required beneficiaries to survive for at least 36 months for two reasons. First, we wanted to be able to fully observe trajectories over a three-year period for new LTSS users. Second, this requirement helped ensure that the two groups were similar in terms of mortality risk.

We assessed whether there were different trajectories of LTSS use over time between new institutional users and new community-based LTSS users. We did this separately for mutually exclusive groups of "new users" classified by MFP target population as individuals with intellectual or developmental disabilities, individuals under age 65 with physical disabilities, or individuals 65 years or older (older adults). Specifically, we determined the share that had a long institutional stay, defined as 91 days or longer. Among those with a long institutional stay, we assessed the share that transitioned to the community; we looked at transitions overall, as well as whether beneficiaries transitioned to community-based LTSS or not. Among those beneficiaries who transitioned to the community, we assessed differences in rates of reinstitutionalization. The technical appendix provides additional details on our methods.

FINDINGS

1. What share and types of beneficiaries new to LTSS start with community-based LTSS or institutional care?

Older adults are just as likely to start their LTSS in an institutional setting as they are in the community, however, starting LTSS services in the community is much more common among younger adults and individuals with intellectual or developmental disabilities. Figure 1 shows that older adults, compared to the other populations considered, were more equally split between new institutional users (46 percent) and new community-based LTSS users (54 percent). In contrast, about 25 percent of younger adults with physical disabilities and 7 percent of individuals with intellectual or developmental disabilities initiated LTSS via institutional care compared to community-based LTSS.

Several demographic characteristics differed consistently between institutional and community-based initiators across all three populations. First, institutional initiators were older on average than community-based initiators across all populations. The mean age for individuals with intellectual or developmental disabilities was 27 for institutional initiators and 21 for community-based initiators. Similarly, among younger adults with physical disabilities, mean ages were 53 and 42 years, respectively; and for older adults, mean ages were 80 and 77 years, respectively (all comparisons statistically significant at $p < 0.0001$) (Table 1).

Table 1. Characteristics of Medicaid beneficiaries initiating long-term services and supports, by population and institutional and community-based initiation status

	ID/DD			PD			Older adults		
	Institutional LTSS initiators	Community-based LTSS initiators		Institutional LTSS initiators	Community-based LTSS initiators		Institutional LTSS initiators	Community-based LTSS initiators	
Characteristics	**N = 1,008**	**N = 13,609**	**P-value**	**N = 16,216**	**N = 49,288**	**P-value**	**N = 38,461**	**N = 45,032**	**P-value**
Demographic characteristics									
Age, mean (SD)	26.5 (17.8)	20.6 (15.8)	<.0001	52.6 (9.7)	41.7 (18.5)	<.0001	79.8 (8.3)	76.6 (7.5)	<.0001
Categorical age (%)									
0–18	43.8	50.5	<0.0001	0.5	11.8	<0.0001	N/A	N/A	<0.0001
19–34	27.0	31.8		5.8	17.5		N/A	N/A	
35 –44	10.0	6.5		9.9	12.7		N/A	N/A	
45–54	9.8	6.6		32.3	25.2		N/A	N/A	
55–64	6.3	3.5		51.5	31.4		N/A	N/A	
65–74	2.0	1.0		N/A	N/A		29.2	42.9	
75–84	0.8	0.1		N/A	N/A		39.2	40.5	
85+	0.2	0.0		N/A	N/A		31.6	16.6	
Male (%)	55.2	64.5	<0.0001	54.5	38.6	<0.0001	28.2	28.4	0.6072
Race/ethnicity (%)									
White	46.4	52.5	<0.0001	60.1	44.1	<0.0001	72.2	40.5	<0.0001
Black	24.3	13.8		23.2	25.5		13.6	17.4	
Asian	0.5	2.9		1.1	2.0		2.4	15.0	
Other	6.3	2.4		2.3	1.9		2.6	6.4	
Unknown	14.2	14.1		3.6	5.4		0.7	0.6	
Hispanic	8.3	14.2		9.8	21.2		8.5	20.1	
State of residence (%)									
Arkansas	6.9	0.9	<0.0001	2.5	5.2	<0.0001	2.9	5.3	<0.0001
California	22.7	39.2		37.5	47.3		30.5	55.7	
Connecticut	1.1	4.4		12.0	5.5		8.6	5.2	
Georgia	21.6	2.0		9.4	6.1		10.0	3.3	
Iowa	0.3	1.6		1.2	1.5		3.4	4.0	
Mississippi	12.8	0.0		4.0	5.0		4.3	5.2	
Missouri	1.5	0.7		11.1	19.2		8.0	7.3	
New Jersey	3.6	1.7		N/A	N/A		N/A	N/A	
New York	14.1	35.5		N/A	N/A		N/A	N/A	
Oregon	0.0	0.9		0.8	0.2		1.0	0.3	

	ID/DD			PD			Older adults		
	Institutional LTSS initiators	Community-based LTSS initiators		Institutional LTSS initiators	Community-based LTSS initiators		Institutional LTSS initiators	Community-based LTSS initiators	
Characteristics	**N = 1,008**	**N = 13,609**	**P-value**	**N = 16,216**	**N = 49,288**	**P-value**	**N = 38,461**	**N = 45,032**	**P-value**
Pennsylvania	1.8	4.8		5.5	3.9		16.3	9.2	
South Dakota	1.5	1.6		1.1	0.8		1.6	0.5	
Tennessee	3.6	2.2		8.0	0.4		9.5	0.4	
Utah	5.1	1.3		2.6	0.4		0.5	0.4	
West Virginia	3.3	2.3		3.8	4.1		2.9	2.8	
Wyoming	0.2	0.9		0.4	0.5		0.5	0.3	
Enrollment characteristics									
Dually eligible for Medicare and Medicaid (%)	22.5	22.2	0.8002	41.7	32.3	<0.0001	88.3	91.9	<0.0001
HCBS source (%)									
Waiver	N/A	100.0	N/A	N/A	13.7	N/A	N/A	35.2	N/A
State plan	N/A	0.0	N/A	N/A	86.3	N/A	N/A	64.8	N/A
Geographic characteristics									
Rural (%)	29.1	14.1	<0.0001	23.4	28.5	<0.0001	27.7	21.1	<0.0001

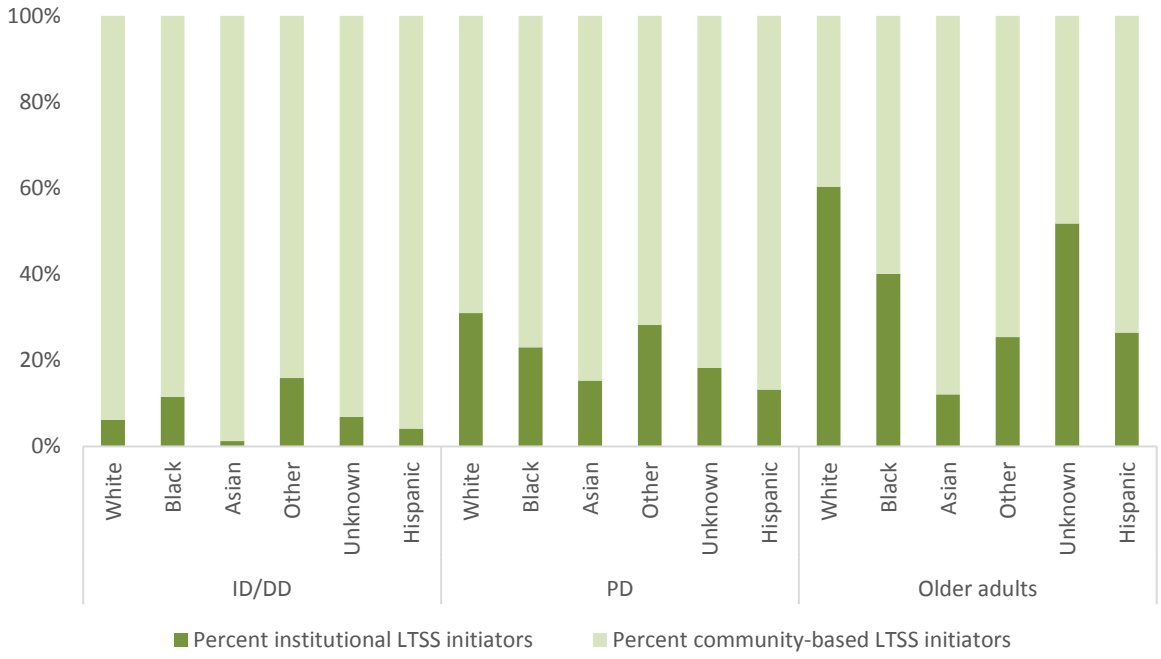
Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.

Note: New LTSS users are defined as beneficiaries who started using Medicaid-paid LTSS in any month between January 2010 and July 2011 and who had no evidence of LTSS use in the 12 months preceding the first indicated month of LTSS use. For example, a beneficiary who first used LTSS services in April 2010 and had no LTSS use between April 2009 and March 2010 was considered a new LTSS user. We categorized new LTSS users as new institutional users if they had a nursing home claim during the first month of LTSS use. Conversely, we categorized new LTSS users as new community-based LTSS users if they had no nursing home claims in the first month of LTSS use, but they were either enrolled in a 1915(c) waiver or had at least one claim for community-based LTSS in that month. Community-based LTSS claims encompassed services for adult day care, home health, personal care services, private-duty nursing, and residential care.

ID/DD = intellectual or developmental disabilities; LTSS = long-term care services and supports; N/A = not applicable; PD = physical disabilities; SD = standard deviation.

In addition, Asian and Hispanic beneficiaries were less likely to initiate institutional care and more likely to initiate community-based LTSS compared to other racial and ethnic groups across all three populations. Among older adults and younger adults with physical disabilities, whites initiated institutional care at a higher rate than other groups, although beneficiaries in the "other" racial category initiated institutional care at a higher rate among beneficiaries with intellectual or developmental disabilities (Figure 2).

Figure 2. Differences across racial/ethnic groups in initiating institutional or community-based long-term services and supports, by population



Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract (MAX) data, 2009–2014.

Notes: Data on race and ethnicity were derived from MAX person summary (PS) records. For beneficiaries who were ever dually eligible during the study period, we used Medicare race and ethnicity data, if available on the PS files, because this is generally considered more reliable. Among the ever dually-eligible beneficiaries, the "other" race category included beneficiaries categorized as "other" or North American Native. Among Medicaid-only beneficiaries, the "other" race category included beneficiaries categorized as American Indian or Native Alaskan, Native Hawaiian or Other Pacific Islander, or beneficiaries with more than one race.

ID/DD = intellectual or developmental disabilities; LTSS = long-term care services and supports; PD = physical disabilities.

2. Do new users of community-based LTSS have fewer long institutional stays compared to new institutional users?

Beneficiaries who start the LTSS use in an institutional setting have longer institutional stays compared those who start in a community setting. A very small fraction of beneficiaries with intellectual or developmental disabilities had a long institutional stay. Among the 13,609 beneficiaries who initiated services via community-based LTSS, less than 1 percent subsequently had a long institutional stay. Of the 1,008 beneficiaries who initiated care in institutions, 73 percent had a long institutional stay. Thus, beneficiaries who initiated institutional care had much

higher rates of long institutional stays in this population. However, the overall rate of long institutional stays among beneficiaries with intellectual or developmental disabilities was low. Across both institutional and community-based LTSS initiators, less than 6 percent of this group had a long stay.

Long institutional stays were relatively more common among younger adults with physical disabilities and older adults compared to those with intellectual or developmental disabilities. However, similar to the group with intellectual or developmental disabilities, the rate of long institutional stays was much lower for community-based initiators compared to institutional initiators. Specifically, among the younger adults with physical disabilities and older adults in the sample who started with community-based LTSS, only 1 percent and 4 percent, respectively, had a long institutional stay. In contrast, 50 percent of younger adults with physical disabilities and 73 percent older adults who started with institutional care had a long stay. Thus, across both institutional and community-based initiators combined, 13 percent of younger adults with physical disabilities and 36 percent of older adults had a long stay. There were some differences by race and ethnicity in the share with a long stay among institutional initiators. Among younger adults with physical disabilities, a larger share of black beneficiaries who initiated LTSS via institutional care had long stays (59 percent) compared to other racial and ethnic groups (range: 42 to 53 percent). Among older adults, larger shares of whites and blacks who initiated institutional care had long institutional stays (79 percent and 77 percent, respectively) compared to other racial and ethnic groups (range: 38 to 53 percent) (Table 2).

Table 2. Percentage of beneficiaries with a long institutional stay, by long-term services and supports initiation status, race and ethnicity, and population

	ID/DD		PD		Older adults	
	Institutional LTSS initiators (N = 1,008)	Community-based LTSS initiators (N = 13,609)	Institutional LTSS initiators (N = 16,216)	Community-based LTSS initiators (N = 49,288)	Institutional LTSS initiators (N = 38,461)	Community-based LTSS initiators (N = 45,032)
All beneficiaries (%)	73	<1	50	1	73	4
By race/ethnicity (%)						
White	81	1	49	1	79	7
Black	75	<1	59	1	77	4
Asian	80	<1	49	1	47	1
Other	24	1	42	2	38	2
Unknown	72	<1	53	1	53	3
Hispanic	66	<1	42	1	41	2

Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract (MAX) data, 2009–2014.

Note: Data on race and ethnicity were derived from MAX person summary (PS) records. For beneficiaries who were ever dually eligible during the study period, we used Medicare race and ethnicity data, if available on the PS files, because this is generally considered more reliable.

ID/DD = intellectual or developmental disabilities; LTSS = long-term care services and supports; PD = physical disabilities.

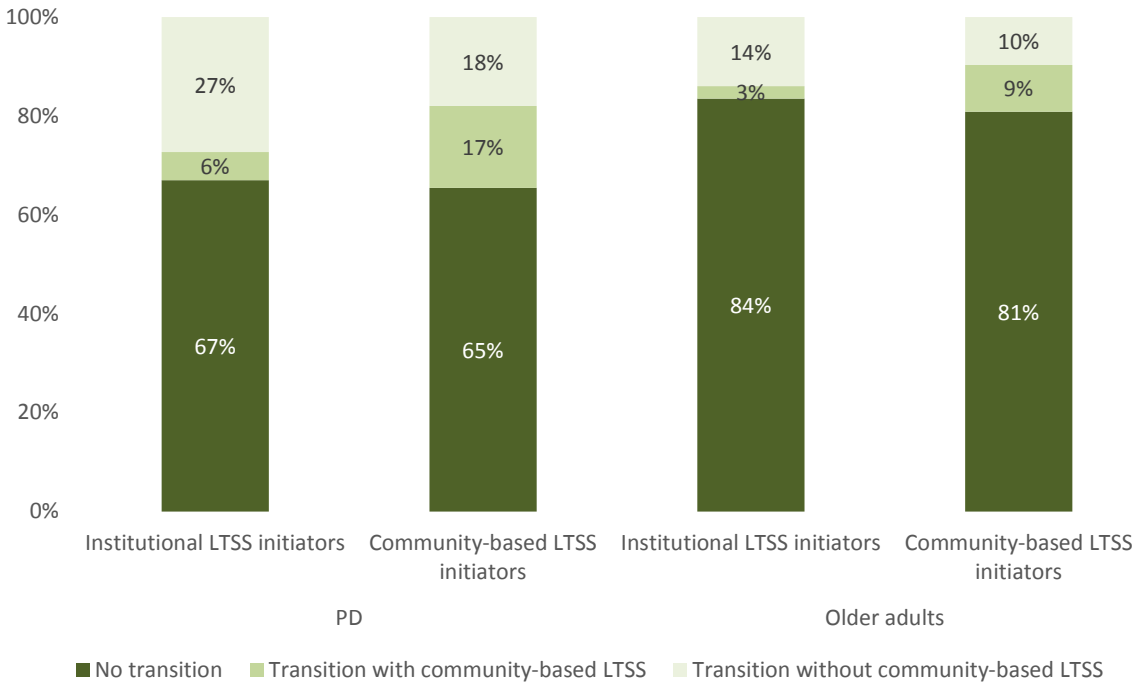
3. When a long institutional stay occurs, is previous use of community-based LTSS associated with an increased likelihood of transitioning to the community?

Among the populations analyzed, use of community-based LTSS before an institutional stay appears to increase the likelihood a beneficiary will transition to the community; upon the transition, previous users of community-based LTSS are more likely to once again use community-based LTSS. The analyses are based on only younger adults with physical disabilities and older adults who transition from nursing homes because too few beneficiaries with intellectual or developmental disabilities in the study sample experienced a long institutional stay.

Notably, most beneficiaries who had an institutional stay of 91 days or longer remained in institutional care and did not transition to the community, regardless of whether they entered the LTSS system through community- or institutional-based services (Figure 3). Specifically, among younger adults with physical disabilities who experienced a long stay, 65 to 67 percent did not transition to the community. Among older adults with a long stay, more than 80 percent did not transition to the community.

Among beneficiaries who started with community-based LTSS, then experienced a long institutional stay, and subsequently transitioned to the community, about half transitioned to community-based LTSS and the other half did not (17 versus 18 percent for young adults with physical disabilities and 9 versus 10 percent for older adults, respectively). In contrast, among beneficiaries who started with institutional-based LTSS, then experienced a long stay, and subsequently transitioned to the community, less than one-fifth transitioned to community-based LTSS (6 versus 27 percent for young adults with physical disabilities and 3 versus 14 percent for older adults). (Figure 3).

Figure 3. Transition to the community after a long institutional stay among new long-term services and supports users, by initiation type and population



Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.

Note: Beneficiaries who transitioned and had at least one claim for community-based LTSS within two months of transition were categorized as having transitioned with community-based LTSS, whereas those who did not start using community-based LTSS within two months of transition were categorized as having transitioned without community-based LTSS.

LTSS = long-term care services and supports.

What the descriptive data suggest holds when we control for observable factors in a regression framework. The regression-adjusted, predicted share of the population that would not transition after a long institutional stay, or transition to community-based LTSS, or transition but without community-based LTSS was very similar to the proportions shown in Figure 3 for both younger adults with physical disabilities and older adults. The regression models confirmed, however, that beneficiaries in both populations who initiated community-based LTSS were significantly more likely to transition to the community with community-based LTSS than to not transition at all, and they were significantly less likely to transition without community-based LTSS than to remain in the institution.

There were few significant differences across racial and ethnic groups in regression models for younger adults with physical disabilities. The exception was that Hispanics and individuals in the "other" racial/ethnic group were significantly less likely to transition without community-based LTSS than to remain in the institution compared to white beneficiaries. In regression models for older adults, blacks, Asians, Hispanics, and beneficiaries in the "other" race and ethnicity category were significantly more likely than whites to transition to the community *with* community-based LTSS than to not transition. In addition, Hispanic and "other" beneficiaries were significantly more likely than whites to transition *without* community-based LTSS than to remain in the institution.

Full regression results for both younger adults with physical disabilities and older adults are available in the technical appendix.

4. Is previous use of community-based LTSS associated with readmission to institutional care among beneficiaries who transitioned to the community after a long institutional stay?

Previous use of community-based LTSS appears to be associated with a lower likelihood of being readmitted to institutional care—but only for older adults. Figure 4 describes the rates of reinstitutionalization among beneficiaries who had a long stay and transitioned to the community. Overall, reinstitutionalization was more frequent among older adults compared to younger adults with physical disabilities. Specifically, between 51 and 60 percent of older adults, depending on how they initiated their LTSS, who had a long stay and transitioned to the community were reinstitutionalized. In contrast, between 36 and 37 percent of younger adults with physical disabilities and who had a long stay and transitioned to the community were reinstitutionalized.

Figure 4. Reinstitutionalization among beneficiaries who had a long stay and transitioned to the community by long-term services and supports initiation status and population

Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.

Note: Among the group of beneficiaries who transitioned to the community (with or without community-based LTSS), we identified those who were reinstitutionalized for at least 60 days and where the new institutional stay started within 365 days of transitioning to the community.

LTSS = long-term care services and supports; PD = physical disabilities.

When other factors are controlled for in a regression framework, we find that the predicted rates of readmission for both populations are similar to the unadjusted rates shown in Figure 4. The regression models confirm that only the association between previous use of community-based LTSS and reinstitutionalization is significant among older adults. The race/ethnicity results suggest that minority groups are less likely to be reinstitutionalized when compared to white beneficiaries. Among younger adults with physical disabilities, black and Asian beneficiaries were significantly less likely to be reinstitutionalized than white beneficiaries, after controlling for how they initiated their LTSS, demographics, and geographic characteristics. Among older adults, all nonwhite race and ethnicity groups were significantly less likely to be reinstitutionalized compared to whites, after controlling for how they initiated LTSS, demographics, and geographic characteristics. Full regression results can be found in the technical appendix.

DISCUSSION

In this study of Medicaid beneficiaries who newly started using LTSS, we found that very few beneficiaries who initiated LTSS via community-based services had a long institutional stay. Although institutional stays were more common among older adults, they were still relatively rare (less than 5 percent). Conversely, beneficiaries who initiated LTSS via institutional care were more likely to have long institutional stays; this was true across all three populations

studied, although the share with a long stay ranged from about 50 percent for younger adults with physical disabilities to 73 percent for beneficiaries with intellectual or developmental disabilities and older adults.

When a long institutional stay occurred, relatively few beneficiaries transitioned to the community, but previous use of community-based LTSS was associated with a greater likelihood of transitioning back to the community with community-based LTSS. The unadjusted transition rates were slightly higher for beneficiaries who initiated LTSS via community-based care versus institutional care for both younger adults with physical disabilities (35 percent versus 33 percent, respectively) and older adults (19 percent versus 16 percent, respectively). Compared to beneficiaries who started with institutional-based care, about three times as many younger and older beneficiaries who started with community-based LTSS and subsequently had a long stay transitioned back to the community with LTSS. The differences held when observable characteristics were controlled for in a regression framework; younger adults with physical disabilities and older adults who initiated LTSS with community-based services were more likely to transition from a long institutional stay, and they were more likely to transition back to community-based LTSS. However, this group was more likely to remain in nursing home care rather than transition without community-based LTSS.

Reinstitutionalization was more common among older adults compared to younger adults with physical disabilities. Among older adults, beneficiaries who had started with community-based LTSS were significantly less likely to be reinstitutionalized compared to beneficiaries who started with institutional care. Among younger adults with physical disabilities, there was no significant association between previous use of community-based LTSS and reinstitutionalization among beneficiaries with a long stay and who transitioned to the community.

The findings from this study suggest that states whose Medicaid LTSS goals include reducing their reliance on nursing home care may want to steer new LTSS users toward community-based LTSS when possible. States may also want to consider whether there are ways to weaken the relationship between age and use of institutional care; as individuals age, institutional care becomes more common, but there are ways, such as early access to community-based supports, that keep beneficiaries in community settings longer. It is unclear whether the increased use of institutional care as beneficiaries age reflects changing preferences or decreasing support in the home and community for frail older adults whose circle of family and friends may not be able to adequately support loved ones in their final years. Additional research in this area may be an important avenue for identifying better community-based approaches to serving beneficiaries whose functioning slowly declines over time.

Racial and ethnic minorities generally used less institutional care compared to whites, both in terms of initial use and downstream utilization. This is consistent with previous research (Feng et al. 2011; Thomeer, Mudrazija, and Angel 2014), even though the share of minority beneficiaries using nursing home care has increased faster in recent periods relative to whites (Fennel et al. 2010; Feng et al. 2011). The extent to which the lower use of nursing home care among racial and ethnic minorities in this study and previous studies reflects better support from family and friends in the community, greater motivation to reside in the community due to lower average quality of nursing homes that serve minority populations, or less access to nursing home care is an interesting question for future research (Thomeer, Mudrazija, and Angel 2014).

Another topic that may be fruitful for further investigation is the role of community-based LTSS for beneficiaries who experience a long institutional stay and who successfully transition from nursing homes to the community. Our study found that beneficiaries with previous use of community-based LTSS were more likely to use community-based LTSS upon moving back to the community but less likely to transition without community-based LTSS than to remain in the nursing home. It is unclear why beneficiaries who initiated LTSS via institutional care had lower rates of community-based LTSS upon transition compared to community-based LTSS initiators. This may reflect unobserved differences in functional status at the time of transition, differences in unmet needs, or other factors, such as higher transition rates to hospice or inpatient care among institutional initiators. We did not assess whether transitions led to hospice or inpatient hospital care, and greater use of these services post-transition among the institutional initiators may explain some of the observed differences in post-transition use of community-based LTSS.

This study contributes to ongoing discussions about the relative importance of early use of community-based LTSS in preventing or minimizing subsequent use of institutional care. We provide evidence that it can, at least among those at risk for long-term nursing care. However, our estimates may also, in part, reflect unobservable factors, such as health status and informal supports from family and friends. Our study also confirms that the likelihood someone uses institutional care increases with age, and once someone enters institutional care it is unlikely they will leave. Probably the most fruitful approaches to reducing the use of institutional care is to reduce the probability that someone enters this type of care in the first place and to take steps to reduce the association of institutional use with age. A well-informed person-centered approach and facilitated access to home and community based services may work to reduce both.

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TECHNICAL APPENDIX

Data

We used data from the Medicaid Analytic eXtract files from 2009 to 2014 for 16 states, including 13 states that participated in MFP (Arkansas, California, Connecticut, Georgia, Iowa, Missouri, Mississippi, New Jersey, New York, Pennsylvania, South Dakota, Tennessee, and West Virginia), and 3 states that either operated an MFP program for a short period of time or did not participate (Oregon, Utah, and Wyoming). We selected states for this study if they had MAX data available over the entire period and—with the exception of New Jersey, New York, and Tennessee—those states that did not have statewide managed LTSS (MLTSS) programs or that expanded MLTSS programs during this period. New Jersey and New York both implemented MLTSS programs for younger adults with physical disabilities and older adults during this timeframe but not for beneficiaries with intellectual or developmental disabilities. Thus, for these two states, we included only beneficiaries with intellectual or developmental disabilities. Tennessee provides virtually all LTSS via MLTSS, but previous Mathematica analyses of this states' LTSS encounter records suggest the data are usable for research. For all states, we used the person summary file to obtain Medicaid enrollment, demographic information, and geographic characteristics, including enrollment in 1915(c) waivers. We also used records from the long-term care claims files to identify nursing home use and the other claims file to identify community-based LTSS use.

Identifying the analysis sample

1. Identifying new users

The analysis sample comprised beneficiaries who newly started using LTSS in any month between January 2010 and July 2011 and who survived at least 36 months after initiating LTSS. Beneficiaries were considered new users if they had no evidence of Medicaid-paid LTSS in the 12 months preceding the first month of LTSS use. For example, a beneficiary who had a claim for LTSS in October 2010 was considered a new user if the beneficiary had no LTSS claims between October 2009 and September 2010. We categorized beneficiaries as "new institutional users" if they had a nursing home claim in the first month of LTSS use. This was true even if the beneficiary also was simultaneously enrolled in a 1915(c) waiver or had evidence of community-based LTSS in claims data. Conversely, we categorized beneficiaries as "new community-based LTSS users" if there were no nursing home claims in the first month of LTSS use and the beneficiary was either enrolled in a 1915(c) waiver, had claims for 1915(c) services, or had claims for state-plan community-based LTSS services (adult day care, home health, private duty nursing, personal care services, or residential care). The latter group could include beneficiaries receiving community-based LTSS under 1915i, 1915j, and 1915k waivers, if they are using state-plan community-based LTSS. However, we are unable to identify which beneficiaries may be receiving services under those authorities.

2. Characterizing new LTSS users

We flagged beneficiaries into targeted populations as defined by the national evaluation of the MFP rebalancing demonstration; specifically, we used the type of 1915(c) waiver the beneficiary was enrolled in, type of institution (intermediate care facility for individuals with intellectual or developmental disabilities, mental hospital for the aged, inpatient psychiatric

facility for patients under 21 years, or nursing home), and age. Beneficiaries were categorized into groups based on these characteristics in the first month of LTSS use. The group with intellectual or developmental disabilities were beneficiaries either enrolled in a 1915(c) waiver for individuals with intellectual or developmental disabilities or began a stay in intermediate care facilities for individuals with intellectual or developmental disabilities. Younger adults with physical disabilities were under 65 years of age and either enrolled in a 1915(c) waiver for people with physical disabilities, had claims for state-plan community-based LTSS, or began a stay in a nursing home. Older adults were 65 and older and either enrolled in a 1915(c) waiver for the aged, had claims for state-plan community-based LTSS, or began a stay in a nursing home. Lastly, those with mental illness were either enrolled in a 1915(c) waiver for people with mental illness or began a stay in a mental hospital for the aged or inpatient psychiatric facility for patients under 21 years.

Someone's classification for the purposes of this study remained constant, even if they switched populations midway through the study period. Thus, a beneficiary who was 64 years old and in the younger adults with physical disabilities group during the first month of LTSS use stayed in this group for all analyses, even though this beneficiary may have turned 65 years old during the period studied. We also flagged and kept constant other characteristics during the first month of LTSS use, including age, gender, race and ethnicity, and dual eligibility status. For race and ethnicity, we used Medicare race and ethnicity data for beneficiaries who were ever dually eligible for Medicare and Medicaid during our study period because Medicare race and ethnicity data are generally considered more complete and reliable than Medicaid data. We also used beneficiary zip code and state data from the first year when they started using LTSS to categorize beneficiaries by state and whether they resided in rural versus nonrural areas.

Exclusion criteria

We required beneficiaries to survive for at least 36 months from the month of LTSS initiation for two reasons. First, we wanted to fully observe trajectories over a three-year period for new LTSS users. Second, this requirement helped ensure that the two groups were similar in terms of mortality risk. In all states except Tennessee, we also excluded beneficiaries from the sample if they enrolled in a comprehensive managed care plan in or after the month of LTSS initiation to ensure that we observed all long-term care utilization. Across all states, we further excluded beneficiaries if they moved out-of-state or otherwise lost Medicaid eligibility in any month during which we were following them across the various trajectories to ensure that we observed all trajectories.

We also excluded the populations with mental illness who transitioned from long-term psychiatric facilities from the study sample; the initial review of the data showed that 99 percent of this group initiated LTSS via institutional care, and the sample was not large enough to compare new institutional users to new community-based LTSS users.

Measuring LTSS service use trajectories

The trajectories of interest included (1) whether the beneficiary had a long institutional stay (defined as 91 days or longer); (2) transition to the community among beneficiaries with a long institutional stay; and (3) reinstitutionalization among beneficiaries who transitioned to the community.

We defined long institutional stays for new institutional users as initial stays that lasted 91 days or longer. For the new community-based LTSS users, we looked over the 12 months following the first LTSS month to identify any stays that started during this timeframe and lasted at least 91 days. Among the subgroup of beneficiaries who had a long stay, we looked for evidence of a transition to the community within 365 days from the 91st day of the long stay. For beneficiaries who transitioned to the community, we also assessed whether they started using community-based LTSS within two months of transition. Finally, among those beneficiaries who transitioned to the community, we searched for any reinstitutionalization within 365 days that lasted at least 60 days. Appendix Table 1 describes the different timeframes used for following new institutional and new community-based LTSS users.

Appendix Table 1. Time period to identify analytic sample and measure outcomes

	New community-based LTSS users		New institutional users	
Steps	**Criteria**	**Dates**	**Criteria**	Dates
Identify analytic sample	• Beneficiaries with a first month of community-based LTSS with no LTSS in prior 12 months	• January 2010–July 2011	• Beneficiaries with a first month of institutional care with no LTSS in prior 12 months	• January 2010–July 2011
Flag beneficiaries with a long institutional stay	• Beneficiaries who had a stay of 91 or more days that started within 365 days of starting LTSS	• April 2010–October 2012	• Beneficiaries whose initial institutional stay lasted 91 days or more	• April 2010–October 2011
Flag beneficiaries who transitioned to community	• Beneficiaries who transitioned to community, with or without community-based LTSS, within 365 days from the 91st day of the long stay	• April 2010–October 2013	• Beneficiaries who transitioned to community, with or without community-based LTSS, within 365 days from the 91st day of the long stay	• April 2010–October 2012
Flag beneficiaries who were reinstitutionalized	• Beneficiaries who transitioned to the community and were reinstitutionalized within 365 days of transition date	• June 2010–October 2014	• Beneficiaries who transitioned to the community and were reinstitutionalized within 365 days of transition date	• June 2010–October 2013

Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.
LTSS = long-term care services and supports.

Analyses

1. Descriptive analyses

We assessed differences in demographic and geographic characteristics of new institutional users versus new community-based LTSS users for each population. We also descriptively compared LTSS service use trajectories between new institutional and new community-based LTSS users by population and by race and ethnicity. For the long-stay component of the trajectories' analyses, we only conducted descriptive analyses. We found that less than 1 percent of those who started with community-based LTSS and who were either individuals with intellectual or developmental disabilities or younger adults with physical disabilities experienced a long institutional stay compared to 73 and 50 percent, respectively, among institutional care initiators in these two populations. Among older adults, 4 percent of community-based LTSS initiators had a long stay versus 73 percent of institutional initiators. Thus, it was clear that initiating community-based LTSS was associated with substantively fewer long-term institutional stays.

2. Regression-adjusted analyses

We fit regression models for younger adults with physical disabilities and older adults to understand whether community-based LTSS initiators had different trajectories of transition to the community and reinstitutionalization compared to institutional initiators. We did not fit regression models for beneficiaries with intellectual or developmental disabilities because there were too few community-based LTSS initiators in this population who had a long institutional stay to conduct multivariable regression analyses.

Among the younger adults with physical disabilities and older adults who experienced a long institutional stay, we used multinomial regression models to evaluate whether initiating LTSS via community-based LTSS rather than institutional care was associated with different rates of transition to the community with or without community-based LTSS. Thus, the outcome variable took one of the following three values: (1) did not transition to the community within 365 days; (2) transitioned to the community within 365 days and began receiving community-based LTSS within two months of transition; or (3) transitioned to the community within 365 days and did not begin receiving community-based LTSS within two months of transition. Conditional on having transitioned to the community, we also fit logistic regression models to test whether LTSS initiation status was associated with reinstitutionalization rates. All regression models adjusted for categorical age (for the younger adults with physical disabilities we used age categories 0–18, 19–34, 35–44, 45–54, and 55–64; for older adults, we used 65–74, 75–84, and 85 and older), gender, race and ethnicity (white, black, Asian, other, unknown, and Hispanic), dual status at initiation, an indicator for whether the beneficiary resided in a rural area, and a series of indicator variables for state of residence.

For the regression analyses of reinstitutionalization, we initially planned to fit models for the full subgroup of beneficiaries who transitioned to the community as well as separate models for beneficiaries who transitioned and started using community-based LTSS and beneficiaries who did not start using community-based LTSS after transition. However, the latter two models both had convergence issues due to small cell counts. We only report regression results for the full set of beneficiaries who transitioned, regardless of community-based LTSS use after transition.

Appendix Tables 2 and 3 show results from the multinomial regression models of transitions to the community with or without LTSS for the population of younger adults with disabilities and older adults, respectively. Appendix Table 4 shows results for the logistic regression models of reinstitutionalization for both populations. For all three of these appendix tables, we transformed the coefficients and associated standard errors to reflect odds ratios and 95 percent confidence intervals for easier interpretation.

Appendix Table 2. Multinomial regression analysis results for younger adults with physical disabilities: Odds ratios for transition to home with or without community-based LTSS versus no transition among beneficiaries with a long institutional stay

Characteristic	Transitioned with community-based LTSS vs. no transition: OR (95% CI)	Transitioned without community-based LTSS vs. no transition: OR (95% CI)
New community-based LTSS user	2.64 (2.06, 3.39)**	0.75 (0.60, 0.93)**
Age 0–18 (reference category)	–	–
Age 19–34	1.17 (0.56, 2.48)	1.71 (0.88, 3.31)
Age 35–44	0.81 (0.39, 1.71)	1.51 (0.79, 2.89)
Age 45–54	0.73 (0.36, 1.47)	1.45 (0.77, 2.74)
Age 55–64	0.63 (0.31, 1.25)	1.09 (0.58, 2.06)
Female	1.16 (0.97, 1.38)	0.87 (0.78, 0.96)**
Dual-eligible	0.93 (0.77, 1.12)	1.55 (1.40, 1.72)**
White (reference category)	–	–
Black	1.17 (0.93, 1.46)	0.98 (0.86, 1.10)
Asian	1.01 (0.45, 2.25)	0.61 (0.36, 1.04)
Other	1.09 (0.62, 1.92)	0.53 (0.35, 0.80)**
Unknown	1.01 (0.62, 1.62)	1.16 (0.89, 1.50)
Hispanic	1.00 (0.72, 1.37)	0.73 (0.60, 0.89)**
Rural	1.24 (0.97, 1.60)	0.91 (0.79, 1.04)

Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.

Note: We measured transition status within one year of the 91-day mark of the long stay. Beneficiaries who did not transition within 365 days of the 91-day mark were categorized as not having transitioned. Beneficiaries who transitioned and had at least one claim for community-based LTSS within two months of transition were categorized as having transitioned with community-based LTSS, whereas those who did not start using community-based LTSS within two months of transition were categorized as having transitioned without community-based LTSS. In addition to the covariates presented in the table, we also adjusted for state of residence (Arkansas, California, Connecticut, Georgia, Iowa, Missouri, Mississippi, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, West Virginia, and Wyoming).

CI = confidence interval; LTSS = long-term care services and supports; OR = odds ratio; PD = physical disabilities.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

Appendix Table 3. Multinomial regression analysis results for older adults: Odds ratios for transition to home with or without community-based LTSS versus no transition among beneficiaries with a long institutional stay

Characteristic	Transitioned with community-based LTSS vs. no transition: OR (95% CI)	Transitioned without community-based LTSS vs. no transition: OR (95% CI)
New community-based LTSS user	3.23 (2.69, 3.87)**	0.82 (0.69, 0.96)*
Age 65–74 (reference category)	–	–
Age 75–84	0.61 (0.52, 0.71)**	0.72 (0.66, 0.78)**
Age 85+	0.30 (0.25, 0.37)**	0.55 (0.50, 0.60)**
Female	1.08 (0.92, 1.26)**	0.82 (0.76, 0.89)**
Dual-eligible	1.17 (0.92, 1.49)	0.97 (0.86, 1.08)**
White (reference category)	–	–
Black	1.55 (1.27, 1.89)**	0.96 (0.87, 1.06)
Asian	2.40 (1.66, 3.47)**	0.94 (0.72, 1.23)
Other	2.27 (1.51, 3.42)**	1.52 (1.19, 1.94)**
Unknown	0.41 (0.10, 1.67)	0.97 (0.63, 1.49)
Hispanic	2.74 (2.18, 3.44)**	1.35 (1.16, 1.57)**
Rural	1.15 (0.94, 1.41)	1.07 (0.98, 1.17)

Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.

Note: We measured transition status within one year of the 91-day mark of the long stay. Beneficiaries who did not transition within 365 days of the 91-day mark were categorized as not having transitioned. Beneficiaries who transitioned and had at least one claim for community-based LTSS within two months of transition were categorized as having transitioned with community-based LTSS, whereas those who did not start using community-based LTSS within two months of transition were categorized as having transitioned without community-based LTSS. In addition to the covariates presented in the table, we also adjusted for state of residence (Arkansas, California, Connecticut, Georgia, Iowa, Missouri, Mississippi, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, West Virginia, and Wyoming).

CI = confidence interval; LTSS = long-term care services and supports; OR = odds ratio.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

Appendix Table 4. Odds ratios for reinstitutionalization among beneficiaries who transitioned by population

	PD population	Older adult population
Characteristic	**OR (95% CI)**	**OR (95% CI)**
New community-based LTSS user	1.17 (0.86, 1.59)	0.77 (0.61, 0.98)*
Age 0–18 (reference category: PD population)	–	N/A
Age 19–34	1.53 (0.52, 4.51)	N/A
Age 35–44	1.56 (0.54, 4.53)	N/A
Age 45–54	2.06 (0.73, 5.83)	N/A
Age 55–64	2.55 (0.91, 7.16)	N/A
Age 65–74 (reference category: older adults)	N/A	–
Age 75–84	N/A	1.46 (1.27, 1.68)**
Age 85+	N/A	2.37 (2.00, 2.81)**
Female	0.90 (0.77, 1.05)	1.02 (0.89, 1.16)
Dual-eligible	1.59 (1.35, 1.87)**	0.88 (0.72, 1.09)
White (ref)	–	–
Black	0.72 (0.59, 0.87)**	0.77 (0.65, 0.92)**
Asian	0.36 (0.13, 0.99)*	0.55 (0.36, 0.84)**
Other	1.07 (0.57, 1.99)	0.54 (0.36, 0.81)**
Unknown	0.93 (0.61, 1.42)	0.37 (0.16, 0.87)*
Hispanic	0.94 (0.69, 1.27)	0.61 (0.48, 0.77)**
Rural	0.94 (0.76, 1.17)	1.10 (0.94, 1.30)

Source: Mathematica Policy Research analyses of Medicaid Analytic eXtract data, 2009–2014.

Note: Among the group of beneficiaries who transitioned to the community (with or without community-based LTSS), we identified those who were reinstitutionalized for at least 60 days and where the new institutional stay started within 365 days of transitioning to the community. In addition to the covariates presented in the table, we also adjusted for state of residence (Arkansas, California, Connecticut, Georgia, Iowa, Missouri, Mississippi, Oregon, Pennsylvania, South Dakota, Tennessee, Utah, West Virginia, and Wyoming).

CI = confidence interval; LTSS = long-term care services and supports; N/A = not applicable; OR = odds ratio; PD = younger adults with physical disabilities.

*Significantly different from zero at the .05 level, two-tailed test.

**Significantly different from zero at the .01 level, two-tailed test.

3. Sensitivity analyses

For the regression analyses described above, we also conducted sensitivity analyses that limited the community-based LTSS initiator group to waiver enrollees only. The rationale was that there may be more heterogeneity in the new community-based LTSS group than the new institutional users group if some state-plan users have not been certified as needing institutional-level care. The exclusion of state-plan-only community-based LTSS initiators from the analysis sample had no material effect on results for older adults. For younger adults with physical disabilities, exclusion of these beneficiaries had no material effect on the multinomial regression models for transitions; for the reinstitutionalization models, exclusion of state-plan initiators increased the magnitude of the coefficient on new community-based LTSS users and it became statistically significant—that is, community-based LTSS initiators were significantly more likely to be reinstitutionalized compared to institutional initiators when that group was limited to the waiver enrollees only.

Limitations

There are several important limitations of these analyses. Most important, we acknowledge that these analyses, including the regression analyses, are purely descriptive. We report associations between LTSS initiation status and various trajectories, but these cannot be interpreted as causal analyses. Many factors may affect the decision to initiate LTSS via community-based LTSS or institutional care, such as presence of specific physical and cognitive limitations, diseases and conditions, social support availability, and housing factors, as well as state Medicaid policies and the availability of LTSS in beneficiaries' local communities. None of these variables were available for these analyses, and we recognize that there may be important differences between the two groups on these characteristics that may explain some of the different trajectories we observe. Even with this key limitation, we believe these analyses are helpful for understanding pathways to long institutional stays, transitions to the community, and reinstitutionalizations.

These analyses also focus on a small subset of LTSS users at a point in time—namely, those new to the LTSS system. Thus, it is unclear how these findings might generalize to other LTSS users. The populations included in the analyses include beneficiaries using LTSS for post-acute care as well as beneficiaries using LTSS unrelated to post-acute care. It is possible that results might differ between these two groups of LTSS users. We note that Medicaid's race and ethnicity data may not be reliable, and that the quality of these data likely vary across states. Finally, we conducted analyses of each node on the LTSS trajectory separately—that is, we analyzed long stays among the full population, then analyzed transitions to the community only among the subset with a long stay, and finally analyzed reinstitutionalization only among the subset with a long stay and transition to the community. It would have been too complicated to fit formal, three-part models for this study. However, future analyses of these trajectories may want to more formally combine these outcomes into a single model or use different analytic approaches, such as Markov models, to better understand the downstream consequences of LTSS initiation status.

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