

The Residential Continuum From Home to Nursing Home: Size, Characteristics and Unmet Needs of Older Adults

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Objectives. Older adults with care needs live in a variety of settings—from traditional community housing to nursing homes. This analysis provides new estimates of the size and characteristics of the older population across settings and examines unmet needs for assistance.

Method. Data are from the 2011 National Health and Aging Trends Study ($N = 8,077$). Multinomial logistic regressions focus on people in settings other than nursing homes who are at risk for unmet needs, defined as receiving help or having difficulty with household, self-care, or mobility activities ($N = 4,023$).

Results. Of 38.1 million Medicare beneficiaries ages 65 and older, 5.5 million (15%) live in settings other than traditional housing: 2.5 million in retirement or senior housing communities, nearly 1 million in independent- and 1 million in assisted-living settings, and 1.1 million in nursing homes. The prevalence of assistance is higher and physical and cognitive capacity lower in each successive setting. Unmet needs are common in traditional community housing (31%), but most prevalent in retirement or senior housing (37%) and assisted living settings (42%). After controlling for differences in resident characteristics across settings, those in retirement or senior housing communities have a higher likelihood of unmet needs than those in traditional community housing, while those in independent or assisted living settings have a lower relative likelihood.

Discussion. Substantial numbers of older adults, many with care needs, live in a continuum of settings other than traditional community housing. Unmet needs are prevalent among older adults with limitations across all settings and warrant further investigation and monitoring.

Key Words: Housing—Long-term care—Residential care—Unmet need.

SINCE the 1990s, dramatic shifts have occurred in where older adults with limitations in activities live. Influenced by both public policies and individual preferences, nursing homes are increasingly focused on short-term post-acute care and care for persons with severe health problems and dependencies, rather than on long-term custodial care. Faced with legal requirements to provide care in the least restrictive setting feasible and the high cost of nursing home care, state Medicaid programs have made considerable efforts to increase the use of care in settings other than nursing homes, both to contain spending and to address the preferences of beneficiaries for non-institutional alternatives, although more successfully for younger persons with disabilities. Similar cost concerns and preferences have led to increases in less medically oriented residential alternatives serving primarily an older private-pay clientele. Such settings provide a number of services for those no longer able or willing to perform activities needed to live in traditional community settings.

Consequently, an increasing proportion of older adults with activity limitations are receiving assistance

in residential care settings that provide an alternative to nursing homes.

Over the period from 1992 to 2002, for example, estimates from the Medicare Current Beneficiary Survey (MCBS) indicate that the percentage of adults ages 65 and older living in nursing homes declined from 4.5% to 4.1% whereas the percentage in alternative residential care settings increased from 0.8% to 2.2% (Spillman & Black, 2006; Spillman, Liu, & McGuilliard, 2002). More recent estimates from the provider-based 2010 National Survey of Residential Care Facilities (NSRCF) indicate that there are nearly 730,000 residents of these alternative settings, 90% of whom are age 65 or older (Caffrey et al., 2012; Park-Lee et al., 2011).

Age-restricted settings, such as retirement or senior housing communities, offer another alternative to traditional community living (Glass & Skinner, 2013). Although personal care services are typically not offered directly by the place to residents in these settings, amenities that make it easier to carry out daily activities may be available. In the

early 2000s, the percentage of older adults living in these settings was on par with the percentage in residential care settings. [Spillman and Black \(2006\)](#), for instance, analyzed data from the 2002 Health and Retirement Study (HRS) and found that about 5.9% lived in retirement or other group settings not offering assisted living-type services whereas 6.5% lived in nursing home or alternative residential care settings. Estimates from the 1999 National Long Term Care Survey indicated an even larger share (8%) of the older population in retirement settings (vs. 6.4% in residential care settings).

Despite the potential importance of alternative residential care and other age-restricted settings for housing the older population with care needs, many basic questions about the various options remain. Indeed, relatively little is known at the national level about the size and characteristics of the population in such settings. Even less is known about how residents fare in terms of unmet care needs relative to older persons in traditional community housing with similar activity limitations.

In this study, we use data from a new national survey of Medicare beneficiaries age 65 and older to provide estimates of the size and demographic characteristics of the population across a spectrum of settings: nursing homes, alternative residential care divided into assisted and independent living settings, retirement and senior housing communities, and traditional community housing. We then examine the array of services available in nursing homes and alternative residential care settings before turning to a more detailed examination of the health and functional characteristics of the population living in settings other than nursing homes. In this more detailed examination, we compare characteristics across settings for all persons and for the subset who are either receiving assistance with daily activities or have difficulty performing them without help. Finally, we examine the extent of unmet need among the latter group before and after controlling for other differences across settings.

DATA AND METHODS

Data

Data are from the first (2011) round of the National Health and Aging Trends Study (NHATS). NHATS drew a sample of adults ages 65 and older from individuals in the Medicare enrollment file living in the contiguous United States on September 30, 2010, with oversamples of persons at older ages and Black individuals. Respondents living in all settings other than nursing homes, including those in traditional community housing, retirement and senior housing communities, and those in assisted- and independent-living settings, were interviewed in person. Proxy respondents were interviewed when the sample person could not respond. The proxy response rate was 5.8% among all persons living in settings other than nursing homes and 17.4% for those living in assisted- and independent-living settings. Nursing home residents were not interviewed in the initial

round, but a brief facility questionnaire was completed with a facility representative for nursing home residents and for those in other residential care settings. For details see [Kasper and Freedman \(2012\)](#).

For analysis of the size and characteristics of the full Medicare population age 65 and older in all settings, we draw upon the 8,077 respondents with a completed sample person interview ($N = 7,609$) or living in a nursing home ($N = 468$). For analysis of services available in residential care settings, we focus on the subset of respondents living in nursing homes or in alternative residential care settings ($N = 880$). For analysis of unmet need, we focus on the subset of 4,023 respondents in traditional community settings, retirement, and senior housing communities, or alternative residential care who reported receiving help with or having difficulty performing activities in the last month (described in further detail below).

Measures

Residential care setting and services.—We distinguish among five different residential settings. Among residential care settings, we distinguish nursing homes from alternative residential care settings that include a variety of place types where supportive services, such as personal care, meals, or multiple levels of care are available. These settings range from small personal care homes to large multi-part complexes. Within alternative residential care settings, we further distinguish between assisted living and independent living settings. Although there are no settled definitions for care levels, assisted living typically offers a higher level of care than independent living, including personal care services. Among remaining settings, we distinguish those that are traditional housing from those that are retirement or senior housing communities.

The NHATS identification of residential care relies primarily on an interview with a facility staff member to confirm whether the place was a nursing home or other named type of residential care place. A facility interview was triggered by an affirmative response in the sample person interview to any of three questions about whether the multi-unit or age-restricted place where they lived offered group meals, assistance with medications or activities such as bathing or dressing or had areas with different levels of care the sample person could move to if he/she needed care, or whether the single or attached home where they lived was a group home, board and care, supervised housing, assisted living facility or continuing care retirement community. In cases where an interviewer conducted the facility interview first, the type of setting was first confirmed through the facility interview, and a sample person interview was attempted if the respondent was found to be in a residential care setting other than a nursing home.

For places with more than one level of care, the facility respondent indicated levels of care offered and the level of care in the area where the sample person lived. We classified the sampled person's residence as assisted living if the facility identified it as adult family care home, group

home, board and care home, or assisted living, including the assisted living section of a multi-level place. Remaining place types and independent living areas of multi-level places were classified as independent living.

In addition, the sample person interview included items for those in residential care about whether the sample person had a private kitchen and a private bath. Facility respondents were also asked to indicate whether there were other levels of care in the facility and whether the following services were offered at the respondent's level of care: meals, help with medications, help with bathing and dressing, laundry services, housekeeping services, transportation to medical care providers, transportation to shopping or leisure, recreational facilities, and organized social events/activities.

For settings not identified as nursing home or residential care (independent or assisted) in a facility interview, we distinguished between traditional community housing and age-restricted settings through a question about whether the place the respondent lives is in a retirement or senior housing community.

Health and functioning-related characteristics.—To compare the health and functioning of residents across types of settings, we used elements from several sections of the sample person interview.

For physical and mental health, the interview included questions about whether a doctor had ever told the sampled person that he/she had a heart attack, heart disease, high blood pressure, arthritis, osteoporosis, diabetes, lung disease, stroke, cancer (excluding skin), a broken or a fractured hip. Current symptoms of depression and generalized anxiety were obtained using the previously validated PHQ-4 (Kroenke, Spitzer, Williams, & Löwe, 2009; Löwe et al., 2010). From this information, we created a count of these 12 chronic conditions and symptoms, which ranged in the data from 0 to 10. Respondents also were asked if they had an overnight hospital stay or had knee, hip, cataract, or other surgery in the last 12 months, from which we created a dichotomous variable indicating surgery or hospital stay in the last year.

For cognitive functioning, we constructed an indicator of whether the individual had probable dementia, defined as either having a diagnosis, scoring at an established cutpoint (2 or higher) on the proxy-completed AD8, or scoring 1.5 or more standard deviations below average on two of the three following domains: memory (10-word immediate and delayed recall), orientation (President, Vice President, and date), or executive functioning (clock drawing). See Kasper et al. (2013) for details.

NHATS includes validated self-reported items intended to measure physical capacity (Freedman et al., 2011). The items ask about ability in the last month to carry out, without devices or help from another person, the following pairs of activities: walk 6 blocks/3 blocks, walk up 20 stairs/10 stairs, lift and carry 20 pounds/10 pounds, kneel down/

bend over (without holding on to anyone or anything), put a heavy object on a shelf overhead/reach up over head, open a sealed jar using hands only/grasp small objects). We used these items to create the NHATS Physical Capacity scale for which individuals were given 1 point if they carried out only the easier task and 2 points for the more challenging task (0–12; $\alpha = 0.88$).

Activity limitations were measured over the last month for self-care, mobility and household activities using a validated methodology (Freedman et al., 2011). For each mobility and self-care activity (going outside, getting around inside, getting out of bed, eating, getting cleaned up, using the toilet, and dressing) participants were asked first about use during the previous month of accommodations in the form of assistive devices and environmental features (e.g., canes, walkers, wheelchairs, scooters, grab bars, bath/shower seat, eating, and dressing devices) and help from another person. Respondents who reported ever performing an activity without assistance from another person were asked the level of difficulty they had in the last month doing the activity alone (with the particular devices or environmental features named earlier, if used). For each household activity (doing laundry, shopping for personal items, preparing hot meals, handling banking and bills, and handling medications), NHATS first ascertained how the activity was carried out in the prior month: alone, always with someone else, always by someone else, or it varied. Respondents reporting that anyone had done the activity with or for them were asked whether that was for health or functioning reasons, and respondents who ever performed the activity by themselves in the last month were asked about the level of difficulty they had.

We use the activity limitation measures in two ways. First, we created a subsample of individuals who were “at risk” for unmet need. We define the population at risk as those who either received help in the last month with any self-care, mobility, or household activity (the latter for health or functioning reasons) or had difficulty with at least one of these activities when performed without assistance. We use this sample of 4,023 respondents to the sample person interview to examine consequences related to unmet need. Second, we created indicators of whether the individual received help from another person with only household activities or with any self-care or mobility activities (vs. having difficulty but not receiving help). We use these indicators to control for the level of limitation in our final analysis of the role of demographic, health, and functional characteristics in observed patterns of consequences related to unmet need.

Consequences related to unmet need.—Questions about unmet need—in the form of consequences related to difficulty or lack of help (Allen & Mor, 2007)—were asked for all mobility, self-care, and household activities. For each activity, sample persons who reported receiving help

every time an activity occurred were asked whether there was ever a time in the last month when they had a consequence because there was no one there to help. Those who reported receiving help but not every time the activity occurred or having difficulty were asked whether they had a consequence because it was too difficult to do the activity by themselves. Consequences were having to stay in bed, not being able to go places in their home or building, not being able to leave their home or building, going without eating, going without showering/bathing/washing up, accidentally wetting or soiling their clothes, going without getting dressed, going without clean clothes, going without groceries or personal items, going without a hot meal, going without handling bills and banking matters, and making a mistake in taking their medications. We also created a summary indicator of whether the respondent reported a consequence for any of these activities.

Demographic characteristics.—Age and gender were confirmed with all participants. Race was reported by respondents and/or proxies using eight categories (White, Black, American Indian, Alaskan Native, Asian, Native Hawaiian, Pacific Islander, and other). Respondents giving multiple responses were asked to identify a primary race. NHATS also asked whether participants considered themselves Hispanic or Latino. For this study, we classified responses into: White non-Hispanic, Black non-Hispanic, Hispanic, and all other (including unknown). The latter category consists mainly of respondents identifying as Asian.

The sample person interview also included a question about current marital status, which we dichotomize into married versus all other statuses (cohabiting, widowed, separated/divorced, never married). In the sample person interview NHATS also collects information on the sample person's (and for those who are part of a couple the spouse's or partner's) total income from all sources in the prior year. Respondents who reported they did not know or who refused were offered a set of five bracketed ranges. Fifty-six percent of the sample provided a total income amount and an additional 13% reported a bracketed value instead; NHATS provided imputed values for those missing an exact value. We used this information to create an indicator of having a total income for the prior year in the bottom quartile (<\$15,000). For details see [Montaquila, Freedman, Spillman, and Kasper \(2012b\)](#).

Descriptive statistics and model estimates.—We first present a series of descriptive statistics across settings. We test for differences in the weighted distributions of characteristics using an *F*-test that corrects for the complex design of NHATS. We generate population counts by applying age-specific prevalences to frame totals by age when the sample was drawn.

We use logistic regression models to examine unmet need in all settings among the subset who receive help with

or have difficulty doing any household, self-care, or mobility activities. We report the odds ratios of having an unmet need for those in retirement/senior housing, independent living, and assisted living (relative to those in traditional community housing). We run a separate set of models for a summary indicator of any consequence related to unmet need and for each consequence. We first run models with only residential setting on the right hand side and report the unadjusted odds ratios by setting. We then introduce controls for differences across settings in demographic characteristics (age, sex, minority status, low income, married), health and functioning-related characteristics (count of chronic conditions, probable dementia, physical capacity score, being hospitalized, or having surgery in the last 12 months), and assistance with only household activities or with any self-care or mobility activities (vs. difficulty only). All model estimates are weighted using the NHATS analytic weight, which adjusts for differential probabilities of selection, and non-response and standard errors have been adjusted to account for NHATS' complex design ([Montaquila, Freedman, Spillman, & Kasper, 2012a](#)).

RESULTS

As shown in [Table 1](#), 32.5 million (85%) of the 38 million Medicare beneficiaries ages 65 and older live in traditional community settings. Approximately 3 million older adults (8.5%) are in residential care settings (including nursing homes), and retirement or senior housing communities constitute the remaining 2.5 million (6.6%). Within residential care, one third of older adults are nursing home residents (1.1 million), another third (1.0 million) are in assisted living settings, and just under 1 million are in independent living settings. Using a service-based definition (having either medication management or personal care services available at the sample person's level of care) rather than facility identification of place type yields 1.5 million in assisted- and about 500,000 in independent-living settings (not shown).

Within residential care, about half of respondents in assisted living and in independent living have other levels of care available in the place they live ([Table 2](#)). In contrast, only 22% of individuals in nursing homes have other levels of care available. Individuals in independent living settings are much more likely than those in assisted living settings to report having a private kitchen and bath (93% vs. 38%). Not surprisingly individuals in nursing homes and assisted living facilities almost universally have access to meals, medication management, personal care, laundry housekeeping, and social activities provided by the place (93%–99%). Transportation services are available to approximately 85% of these residents and recreational facilities to about half. In contrast, those identified in independent living most often have access to social activities (90%), meals (76%), recreational facilities (73%), and transportation (69%). Despite the status of “independent,” medication and personal care are available to 33% and 29% of residents in this setting.

Table 1. Demographic Characteristics of the Population Ages 65 and Older by Residential Setting

	Traditional community housing	Retirement or senior housing	Residential care			Total	<i>p</i> Value
			Independent living	Assisted living	Nursing home		
Age group							**
65–69	29.9	20.6	3.8	7.7	3.2	27.2	
70–74	25.6	26.7	15.0	10.8	12.0	24.6	
75–79	19.4	18.8	19.0	8.5	13.9	18.9	
80–84	14.2	17.2	21.8	17.8	19.1	14.8	
85–89	7.9	10.1	23.8	28.8	24.8	9.6	
90+	3.0	6.6	16.5	26.5	26.9	4.9	
Gender							**
Male	44.7	39.3	30.1	26.6	27.0	42.9	
Female	55.3	60.7	69.9	73.4	73.0	57.1	
Race/ethnicity							
Non-Hispanic White	80.1	80.3	85.6	91.4	79.6	80.5	
Non-Hispanic Black	8.3	8.4	5.6	5.1	12.0	8.2	
Non-Hispanic Other	4.6	6.1	5.0	2.0	4.0	4.6	
Hispanic	7.1	5.2	3.8	1.5	4.4	6.6	
<i>N</i> (millions)	32.54	2.52	0.98	1.01	1.10	38.15	
%	85.3	6.6	2.6	2.6	2.9	100.0	
<i>n</i>	6,631	566	223	189	468	8,707	

p-Value for design-based *F*-test; ***p* < .01 **p* < .05.

Table 2. The Residential Care Population Ages 65 and Older: Services Offered

	Independent living	Assisted living	Nursing home	<i>p</i> Value
Other levels of care	49.4	47.5	21.8	**
Private kitchen	93.4	39.9	—	**
Private bath	95.4	72.1	—	**
Private bath and kitchen	93.4	37.5	—	**
At respondent's level of care				
Meals	75.7	97.1	99.3	**
Medications	33.2	94.8	98.6	**
Personal care	28.6	96.1	98.6	**
Laundry	48.5	95.6	99.0	**
Housekeeping	60.6	97.2	99.3	**
Transportation to doctors	58.8	86.4	85.3	**
Other transportation	69.2	81.6	75.8	
Recreation facilities	73.3	54.9	50.7	**
Social activities	89.7	93.4	98.6	**
<i>n</i>	223	189	468	

p-Value for design-based *F*-test; ***p* < .01, **p* < .05.

Remaining tables focus on the subset of older adults living in settings other than nursing homes, that is, in traditional community housing, retirement or senior housing communities, independent living settings, and assisted living settings. Across these four settings, demographic and health- and functioning-related characteristics differ in ways that indicate a spectrum of care needs from lowest to highest (left hand side of Table 3). The number of chronic conditions, prevalence of probable dementia, percentage who have had surgery or a hospital stay, and percentage who receive assistance increase and mean physical capacity scores decrease with care level. The percentage of older adults who are age 85 and older, female, and unmarried also rises with care level, which could indicate lower

availability of informal care resources, as does the percent non-Hispanic white and low-income.

The right hand side of Table 3 focuses on those in each of the four settings who are at risk for unmet need—those who reported receiving help with activities or having difficulty performing them on their own. Among this subgroup, differences across settings are attenuated but remain for all characteristics except for the mean number of chronic conditions and use of acute care in the last year. Especially noteworthy is the marked prevalence of probable dementia among those at risk for unmet need in assisted living settings (43%), twice the rate in any other setting. Proxy responses are also substantially higher in the assisted living setting (32%) than in any other setting (4%–10%).

Tables 4 and 5 examine how unmet need differs across settings among those who are at risk of having an unmet need. The chances of experiencing a negative consequence related to an unmet need for help is highest in assisted living (42%) and in retirement or senior housing (37%), but still substantial in traditional community housing (31%) and independent living settings (27%; Table 4). Moreover, types and levels of unmet need differ by setting. For all settings except assisted living, the most common unmet need is for getting outside whereas in assisted living settings most common is an unmet need for getting to the toilet without soiling or wetting ones clothes. Moreover, the prevalence of unmet need is higher in retirement/senior housing than in traditional community housing for several activities: getting outside, getting cleaned up, dressing, shopping, laundry, and preparing hot meals. In contrast, in assisted living only two consequences are elevated relative to traditional community housing—wetting or soiling clothes (21% vs. 8% in the community) and not being able to shop (6% vs. less than 3%)—and levels of mismanaging medications are

Table 3. Demographic, Health and Functioning-Related Characteristics of the Population Ages 65 and Older by Residential Setting^a

	All residents					Residents receiving help or having difficulty with daily activities				
	Traditional community housing	Retirement or senior housing	Residential care		<i>p</i> Value	Traditional community housing	Retirement or senior housing	Residential care		<i>p</i> Value
			Independent living	Assisted living				Independent living	Assisted living	
Age group (%)					**					**
65–74	55.5	47.3	18.5	18.5		44.4	41.2	16.4	17.9	
75–84	33.6	36.0	40.9	26.3		38.0	35.9	38.2	26.1	
85+	10.9	16.7	40.3	55.3		17.6	22.9	45.5	56.0	
Female (%)	55.3	60.7	69.9	73.4	**	61.2	67.3	72.4	73.8	**
Race/Ethnicity (%)					**					**
Non-Hispanic White	80.1	80.3	85.6	91.4		76.2	76.8	88.8	91.9	
Other	19.5	19.7	14.4	8.6		23.8	23.2	11.2	8.1	
Married (%)	58.0	38.5	27.5	15.9	**	51.4	30.9	22.2	15.3	**
Low income (1st Quartile; %)	22.0	35.8	32.4	45.2	**	29.0	41.7	34.4	44.8	**
Proxy (%)	5.2	4.4	3.4	31.1	**	10.1	8.3	4.3	31.8	**
Chronic conditions (mean; 0–12)	2.6	2.9	3.2	3.3	**	3.4	3.6	3.4	3.3	
Probable dementia (%)	8.8	10.5	15.6	42.6	**	16.9	17.5	19.2	43.4	**
Physical capacity (mean; 0–12)	9.2	8.4	7.2	4.2	**	7.0	6.3	6.4	4.1	**
Surgery or hospital stay last 12 mo. (%)	25.6	28.9	34.3	40.1	**	35.5	36.8	36.0	40.5	
Assistance in last month										
Only household activities (%)	7.4	11.4	38.0	23.5	**	16.7	21.9	47.8	24.0	**
Any self-care, mobility activities (%)	16.1	18.2	23.6	72.6	**	36.5	34.9	29.8	74.1	**
<i>n</i>	6,631	566	223	189		3,337	328	176	182	

^aExcludes residents of nursing home settings.

p-Value for design-based *F*-test; ***p* < .01, **p* < .05.

Table 4. Percentage of the Population Ages 65 and Older Who Received Help or Had Difficulty With Daily Activities Who Experienced a Consequence Related to Unmet Need in the Last Month, By Residential Setting^a

	Traditional community housing	Retirement or senior housing	Residential care	
			Independent living	Assisted living
Any consequence	30.9	37.0*	26.9	41.5**
Consequence related to				
Getting outside	12.3	16.4*	8.4	8.6
Getting around inside	10.6	9.3	4.3*	9.8
Getting out of bed	4.6	7.3	4.3	4.0
Eating	0.6	0.0	0.7	0.0
Getting cleaned up	3.8	8.6**	4.6	5.1
Getting to toilet	7.5	7.1	4.4	21.0**
Dressing	2.8	4.9*	1.9	1.2
Shopping	2.6	6.6**	1.4	6.0*
Laundry	1.6	4.4**	0.8	1.8
Preparing hot meals	3.6	10.2**	2.3	2.6
Managing money	1.8	2.7	2.0	2.0
Managing medications	7.0	9.5	7.4	2.6*
<i>n</i>	3,337	328	176	182

^aExcludes residents of nursing home settings.

***p* < .01, **p* < .05 difference from community, tests for differences are based on unadjusted logistic regression model.

significantly lower in assisted living settings relative to traditional housing (less than 3% vs. 7%). The prevalence of unmet need in independent living settings does not differ from that in traditional housing with one exception: the proportion reporting an unmet need related to getting around inside is significantly lower in independent settings (4% vs. 10%–11% in other settings).

Elevated risks for any consequence in retirement/senior housing (unadjusted OR 1.31; *p* < .05) and in assisted living (unadjusted OR 1.58; *p* < .01) relative to traditional community housing are no longer statistically significant once differences across settings in demographic and health-and-functioning-related characteristics are controlled (Table 5). However, important differences for particular unmet needs

Table 5. Unadjusted and Adjusted Odds Ratios (Relative to Those Living in Traditional Community Housing) for Unmet Need Among the 65 and Older Population Receiving Help or Having Difficulty With Daily Activities

	Unadjusted odds ratios			Adjusted odds ratio		
	Retirement or senior housing	Independent living	Assisted living	Retirement or senior housing	Independent living	Assisted living
Living						
Any consequence	1.31*	0.82	1.58**	1.26	0.82	0.72
Consequence related to						
Getting outside	1.40*	0.66	0.67	1.47	0.86	0.36*
Getting around inside	0.87	0.38*	0.91	0.82	0.35*	0.40*
Getting out of bed	1.63	0.92	0.87	1.96*	2.00	0.81
Getting cleaned up	2.36**	1.21	1.36	2.37**	1.27	0.80
Getting to toilet	0.95	0.58	3.31**	0.94	0.64	1.56
Dressing	1.78*	0.69	0.40	1.89	0.96	0.25*
Shopping	2.64**	0.52	2.35*	2.38**	0.41	1.57
Laundry	2.80**	0.50	1.12	2.49*	0.44	0.85
Preparing hot meals	3.01**	0.63	0.71	2.62**	0.51	0.42
Managing money	1.49	1.12	1.08	1.21	1.28	0.75
Managing medications	1.41	1.07	0.35*	1.41	1.19	0.33*

n = 4,023

***p* < .01, **p* < .05 difference from community, based on logistic regression model. Unadjusted odds ratios are estimated controlling only for the type of setting. Adjusted odds ratios also control for: demographic characteristics (age, sex, minority status, being low income, being married), health and functioning-related characteristics (count of chronic conditions, probable dementia, physical capacity score, being hospitalized or having surgery in the last 12 months), assistance with only household activities (vs. difficulty only), and assistance with any self-care or mobility activities (vs. difficulty only).

remain. The adjusted odds ratio for an unmet need in retirement/senior housing relative to the community remains elevated for getting cleaned up, shopping, laundry, and preparing hot meals (OR ranging from 2.37 to 2.62; *p* < .05) and becomes significant for getting out of bed (OR 1.96; *p* < .05). In assisted living, the adjusted odds ratios for getting outside, getting around inside, dressing, and managing medications indicates a *lower* risk in this setting than in the community (OR ranging from 0.25 to 0.40; *p* < .05); the risk of an unmet need related to toileting is no longer significant and the size of the odds ratio is reduced by more than half after controlling for differences in residents across settings. The odds of having a consequence related to getting around inside in independent living settings remain lower than the odds in traditional community housing (OR 0.35; *p* < .05).

DISCUSSION

This study provides new estimates of the size and characteristics of the 65 and older residential care population in the United States. We find 5.5 million (15%) of older adults live in settings other than traditional community housing: 2.5 million in retirement or senior housing communities and the remaining 3 million divided approximately equally among independent living, assisted living, and nursing home settings.

Our estimate of about 1 million Medicare beneficiaries age 65 or older living in assisted living settings is about 50% larger than the estimate of roughly 650,000 residents age 65 or older produced by the first NSRCF. We believe the difference is plausible, based on the NSRCF's focus on sample to facilities with four or more beds, its somewhat

more stringent service requirements, and possibly to a lesser degree, limitation of the sample frame to state-regulated facilities. NHATS represents all Medicare beneficiaries age 65 or older, identifies the full range of residential types regardless of size, and confirms the type of residential care in a facility interview. This approach of identifying residential care by a combination of named place type and service packages available in the place as a whole and in the area where the sampled person lives was designed to capture a wider range of supportive settings than is possible or practical using a list frame, and moreover provides flexibility for understanding residential transitions as additional annual waves of the NHATS become available.

To place our NHATS estimates in the context of estimates from other national surveys, [Spillman and Black \(2006\)](#) examined the 2002 MCBS and the 1999 NLTCs, both of which also are drawn from Medicare enrollment, and estimated the population in residential care other than nursing homes at 780,000 and 750,000 residents, respectively, a decade ago. Authors' tabulations of the 2004 NLTCs indicate 1 million persons in residential care defined by named place type alone, in that year. The annual growth rate of 7% between 1999 and 2004 estimated from the NLTCs would generate a population of 1.7 million in 2011, very similar to the NHATS estimate of independent and assisted living combined.

The population we identify as residing in assisted living settings also appears reassuringly similar to the population captured by the NSRCF along important dimensions that distinguish persons in these settings from those in other community settings. Notably, about three-quarters

receive help with self-care and mobility activities, nearly 45% have probable dementia, about 90% identify as non-Hispanic white, 60% are age 85 or older (within those age 65+), and nearly 75% are female (Caffrey et al., 2012). We also document that services offered and characteristics of the populations in these settings vary, generally in expected ways, with older adults in assisted living settings much frailer than those living in independent living, age-restricted communities or traditional community housing.

Reports of unmet needs among those receiving help or having difficulty with self-care, mobility, or domestic activities are substantial across all settings, but are highest in retirement/senior housing (37%) and assisted living settings (42%). Our analysis highlights that, even after controlling for differences in residents' characteristics across settings, those in retirement/senior housing settings have a level of unmet need twice that for persons living in traditional community housing for five of the 11 activities that we examined.

Retirement and senior housing settings are diverse and include public housing for seniors as well as retirement communities catering to higher income retirees. Thus, to probe this finding further, we re-estimated final models with a separate category for individuals in publicly subsidized senior housing ($N = 111$). We found the risks of having any unmet need were elevated for older adults in publicly subsidized (OR 1.7; $p < .05$) but not private retirement community settings, with differences most notable for laundry, getting out of bed, and going outside. Others (e.g., Cohen, 2010) have called for improved access to supportive services for older adults in public housing options. NHATS does not currently collect information on services available in retirement and senior housing settings but has plans to expand items to capture services in such settings in future rounds. Future research should examine how the service environment in such settings promotes or impedes older adults' daily needs.

We also found that, once population differences are controlled, risks for unmet need are *not* elevated in assisted living and independent settings relative to the community. For several tasks—getting around inside for both settings and for assisted living also getting outside and managing medications—risks of unmet need, although substantial, are *lower* than in the community. Nevertheless, risks of unmet need related to incontinence in assisted living settings are especially high. Although incontinence programs have received attention in nursing homes (Palmer 2008), further consideration of this issue is clearly needed in assisted living settings (De Gagne, So, Oh, Park, & Palmer, 2013).

We note several limitations. Although NHATS includes the full spectrum of residential options for older adults, for some settings sample sizes are relatively small. As the sample ages and more sample persons transition out of

traditional community settings, the precision of NHATS-based estimates for alternative settings should increase. In addition, responses were provided by proxies more often in assisted living than in other settings, and we cannot rule out that proxies may respond differently than participants regarding unmet needs. However, proxy respondents were most often close family members and we control for proxy in adjusted models, so we think it is unlikely that proxy responses account for findings. Another gap is that the present study does not attempt to measure functioning in nursing homes, but NHATS offers the ability for a future study to do so through linkages to the Minimum Data Set. Finally, we have not incorporated measures of the physical environment into our analysis to determine their role in reducing unmet needs. Other studies suggest this topic may be a fruitful area for future research (Ferris, Glicksman, & Kleban, 2014).

Despite these limitations, this study has added to our understanding of the residential options currently available to older adults with care needs. We conclude that as nursing homes have changed in recent decades to focus on care for the frailest and sickest residents, an increasing proportion of the older population with limitations is living in a spectrum of residential settings. This trend may be cost-effective for public programs and supportive of the health, functioning, and well-being of the older population in terms of ability to live in preferred, less restrictive settings. Nevertheless, unmet needs are prevalent among older adults with limitations across all settings and warrant further investigation and monitoring.

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