



Home Health Chartbook 2018: Prepared for the Alliance for Home Health Quality and Innovation

Avalere Health | An Inovalon Company
September 2018

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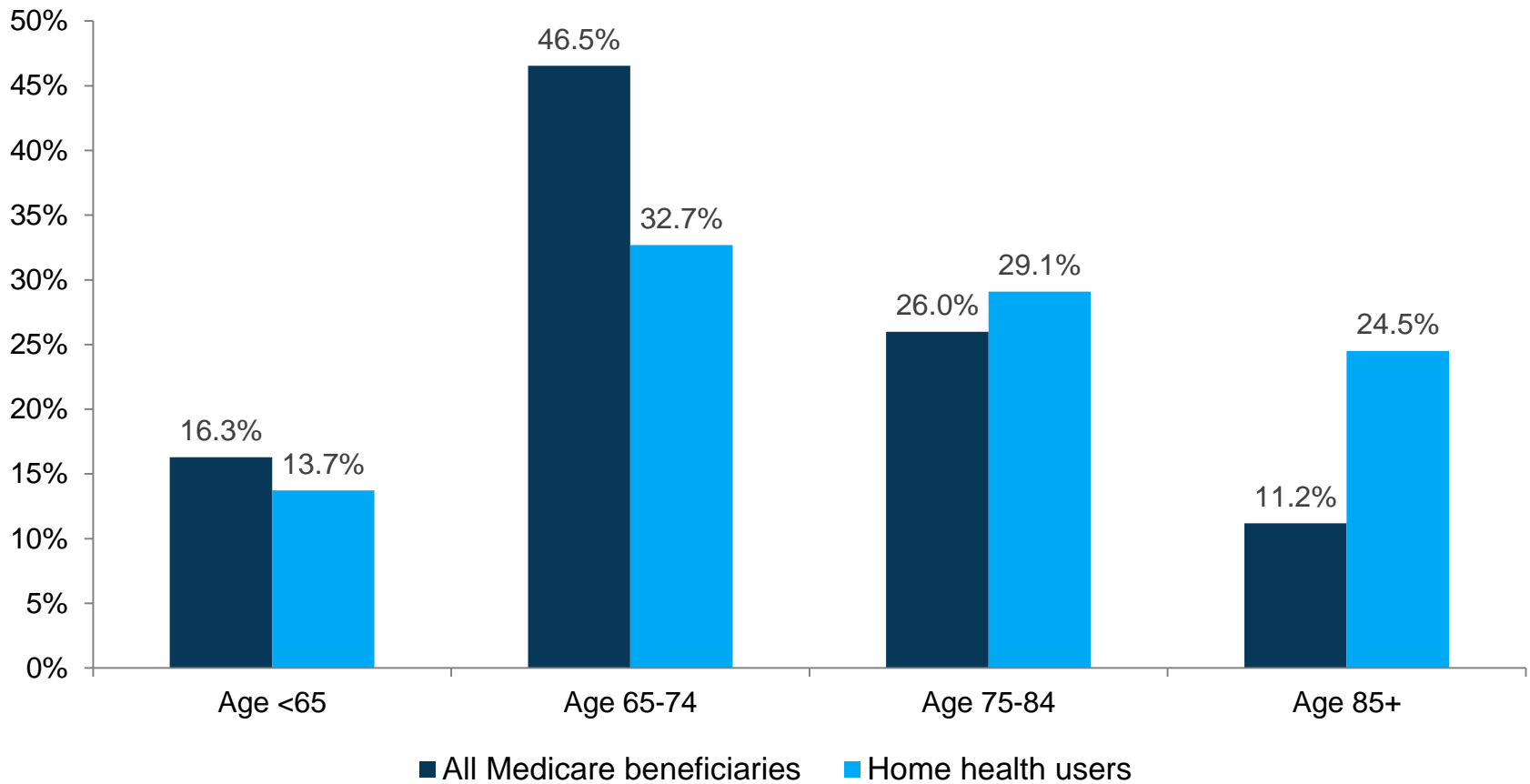
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Section 1: Demographics of Home Health Users

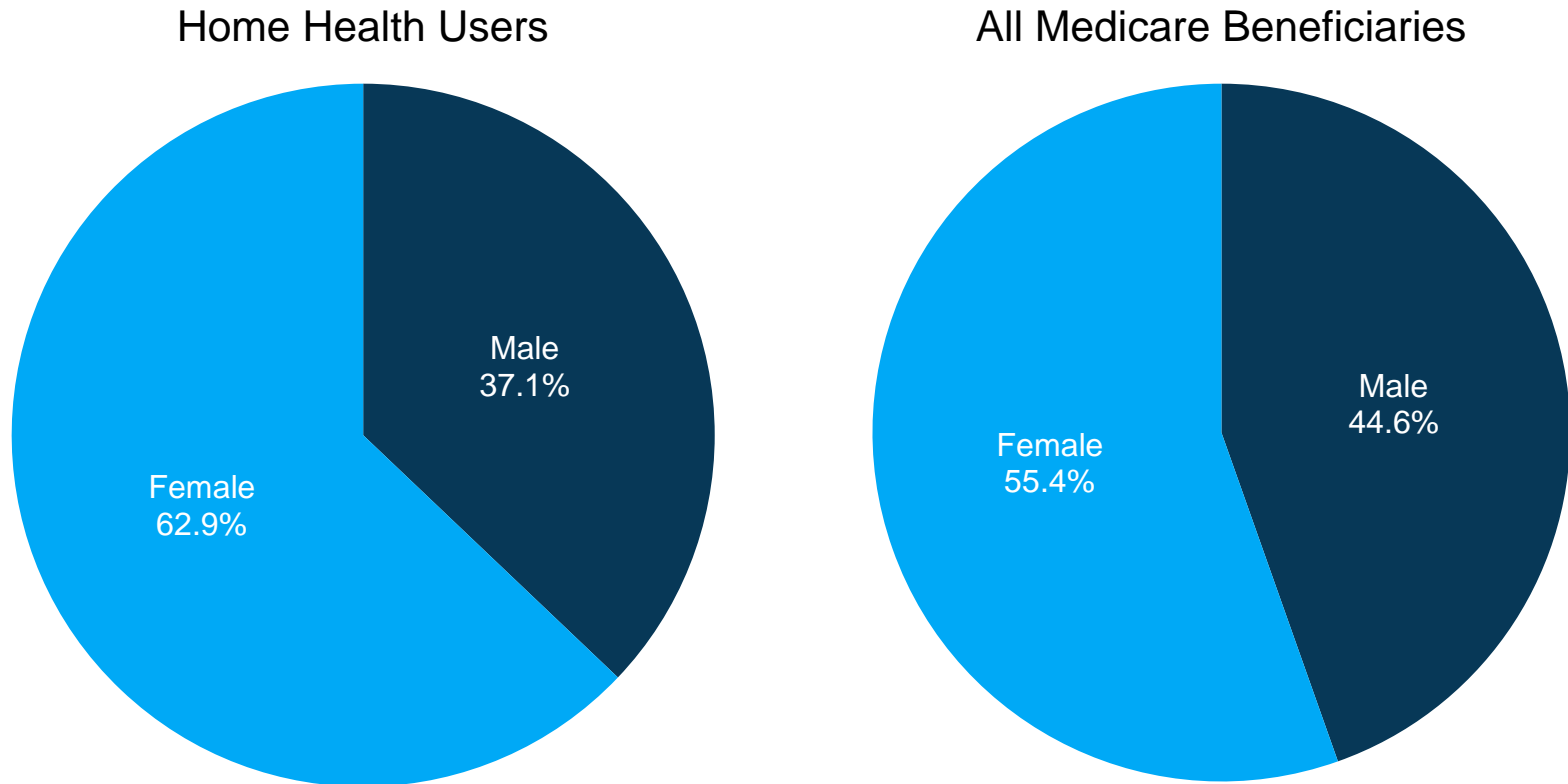
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Demographics of Home Health Users

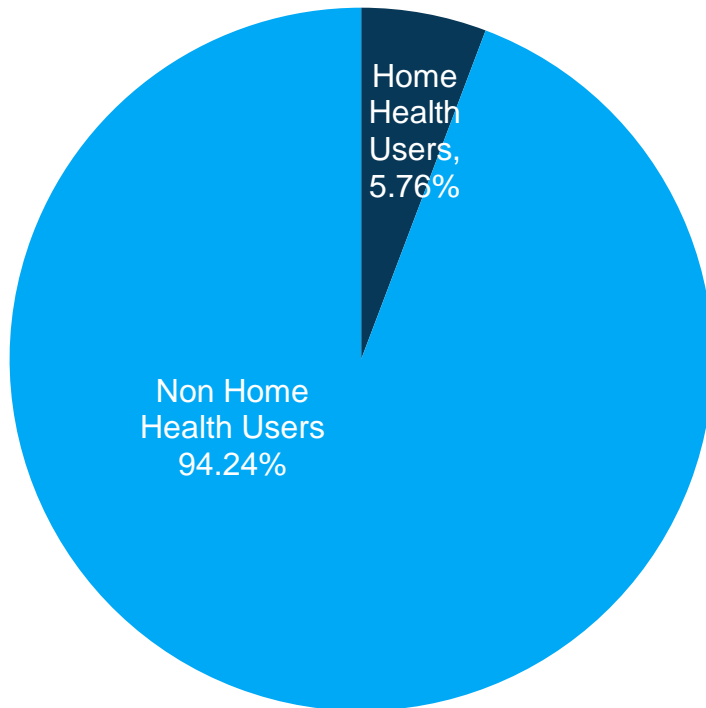
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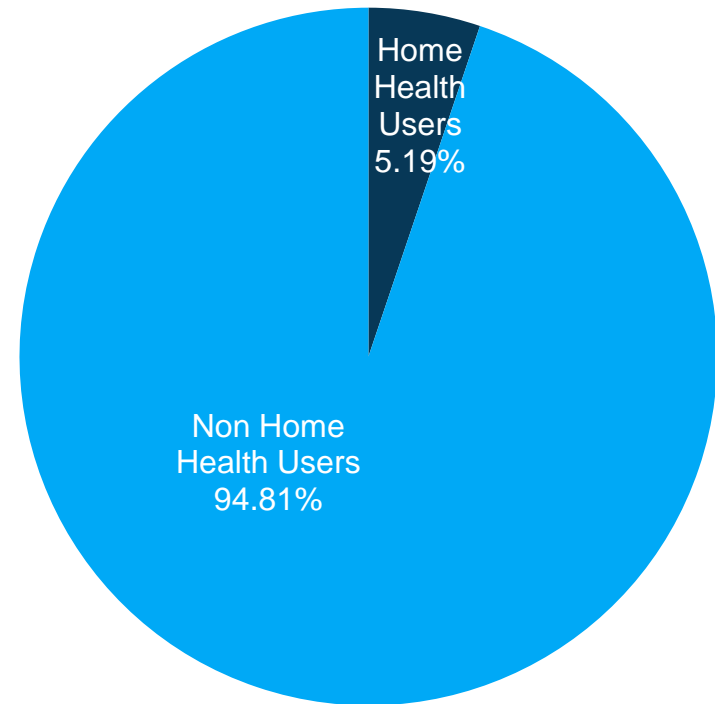
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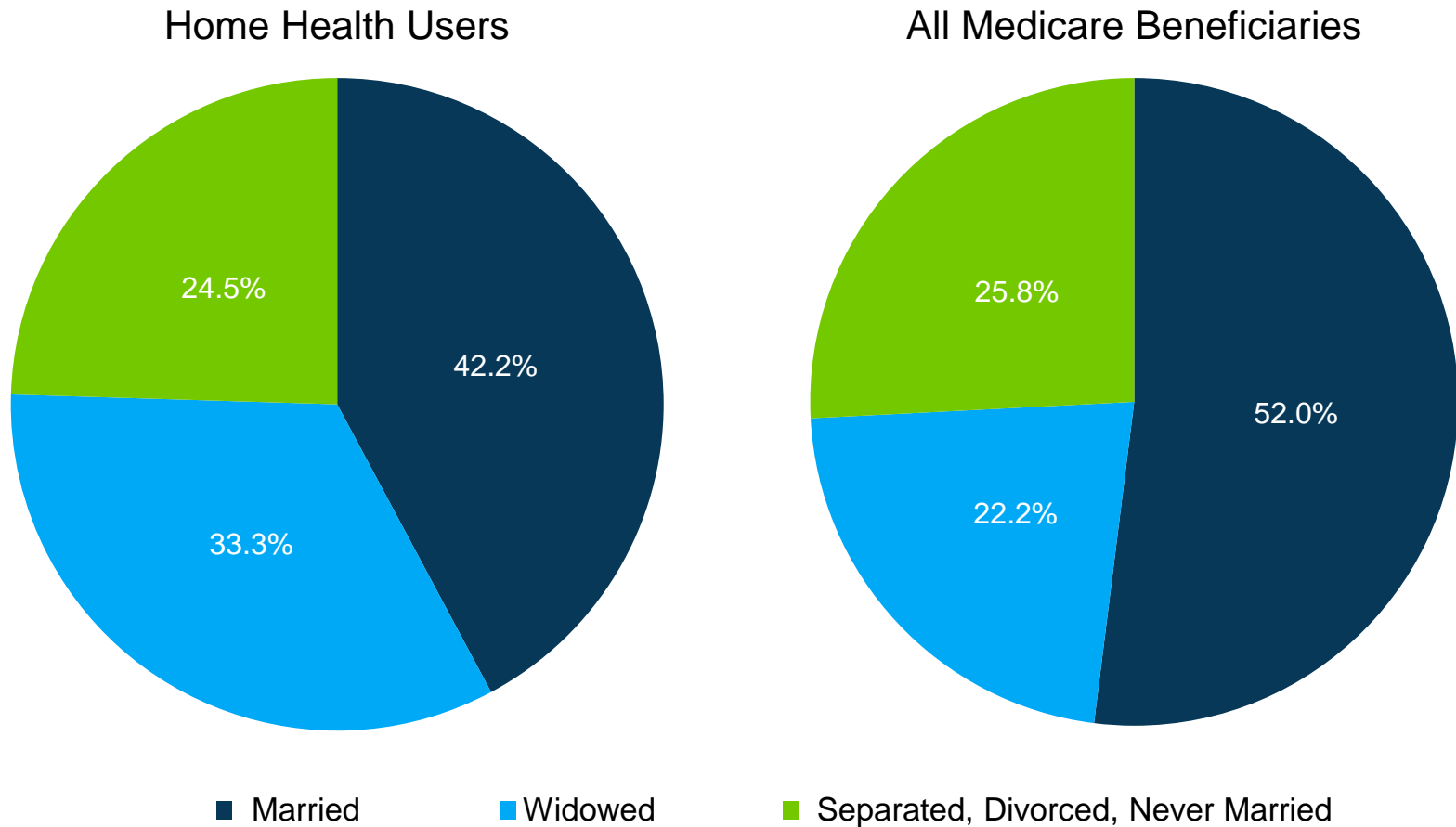
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Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

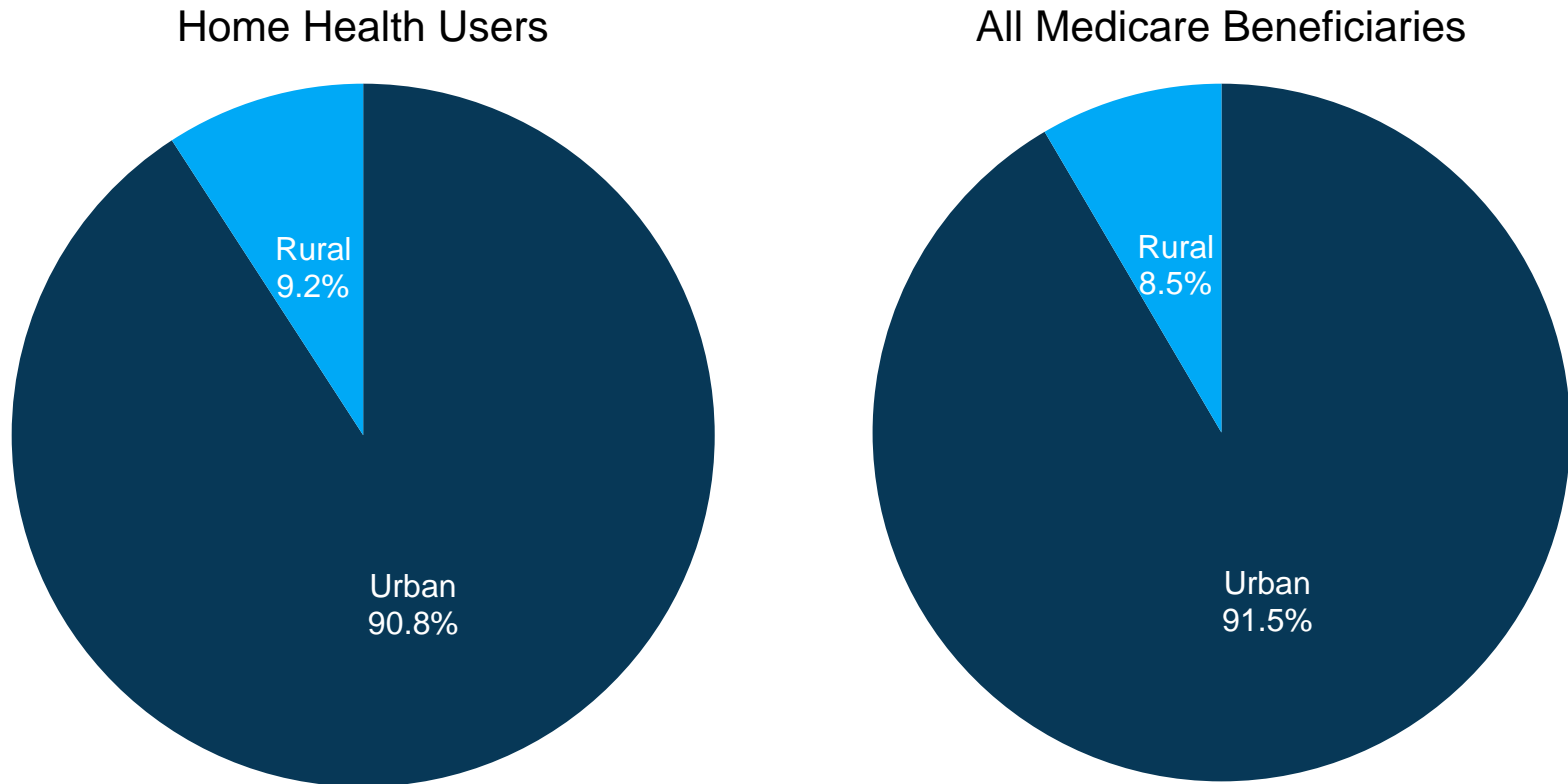
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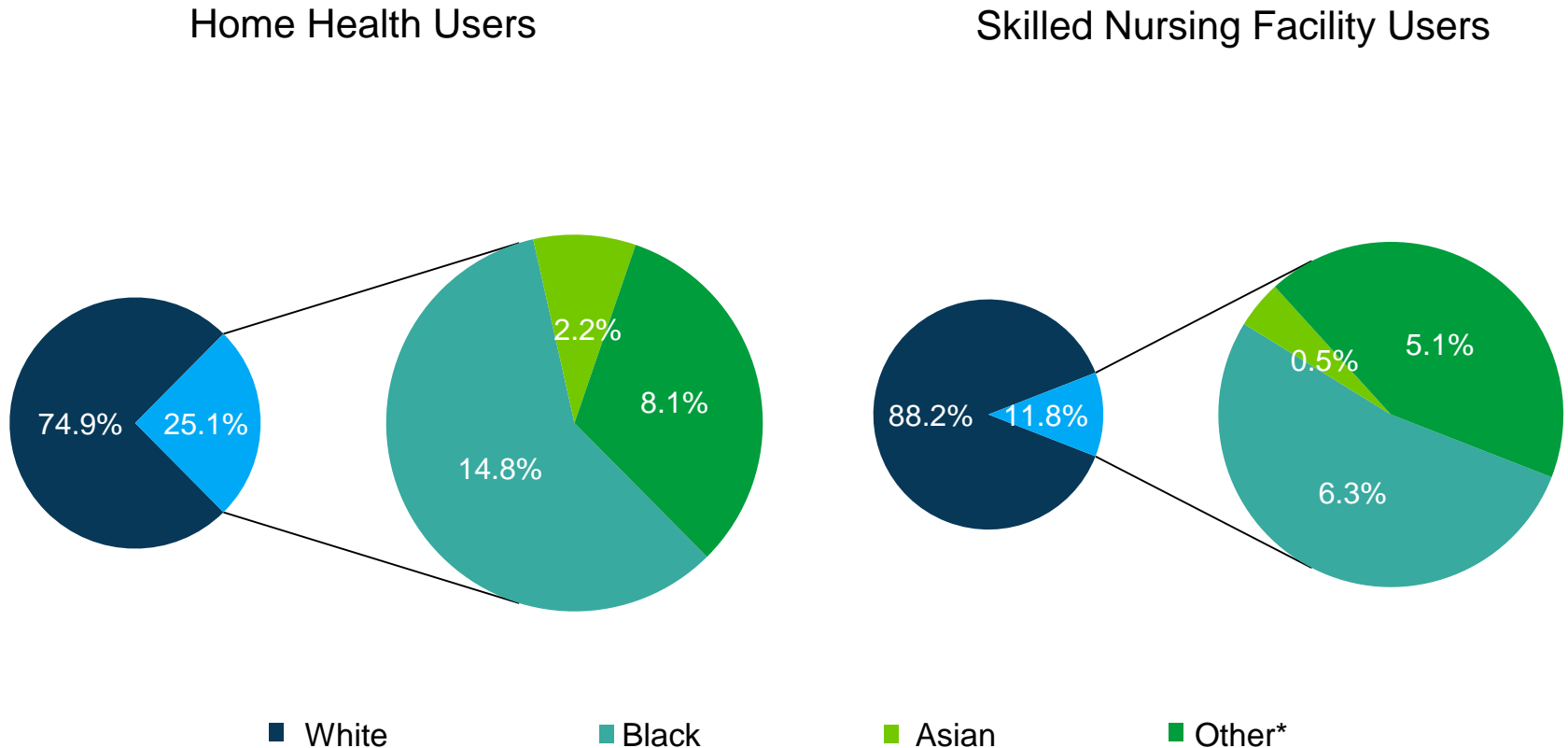
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Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Demographics of Home Health Users

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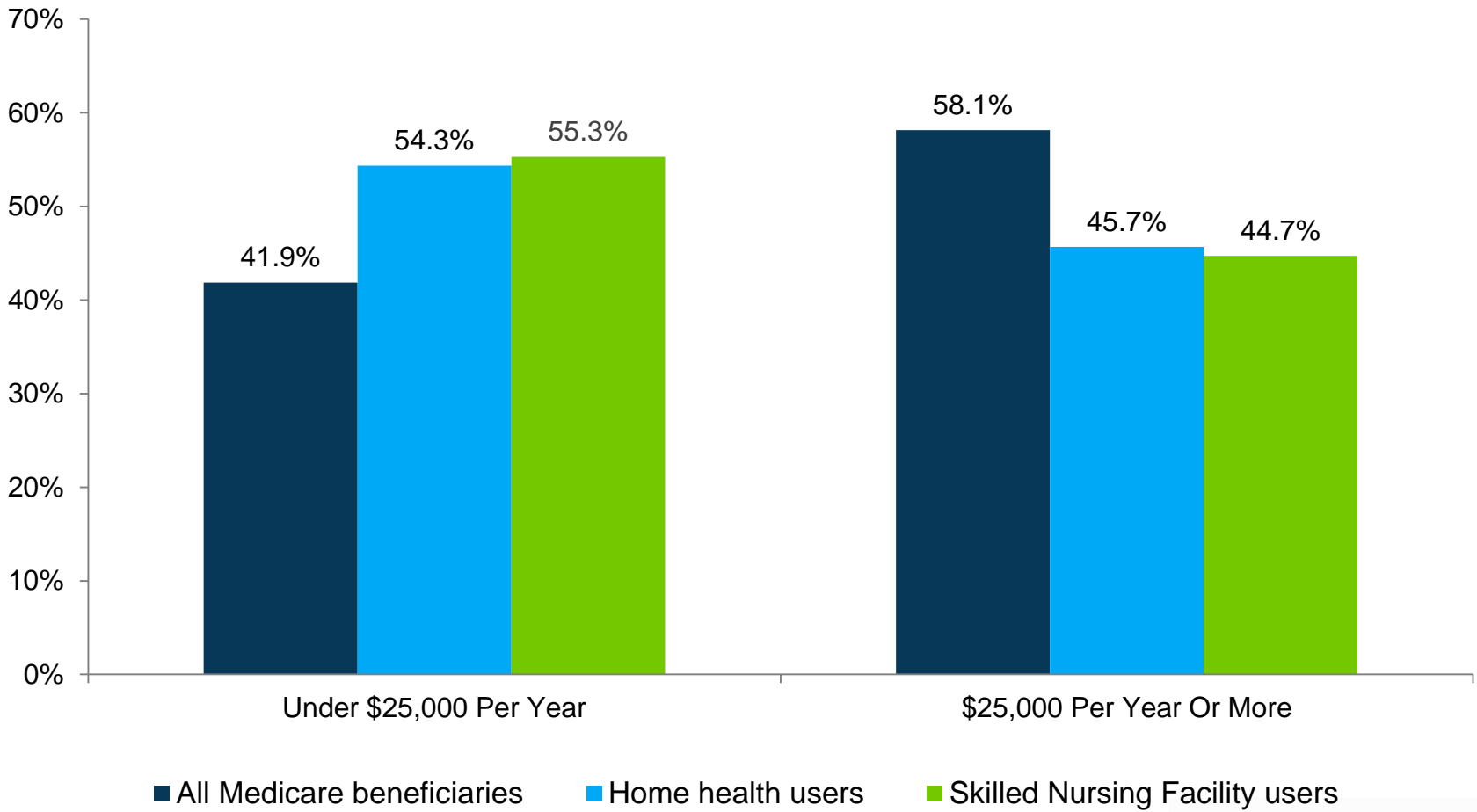


Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*Other includes American Indian, Alaska Native, Native Hawaiian, Pacific Islander, Other race, and More than one race.

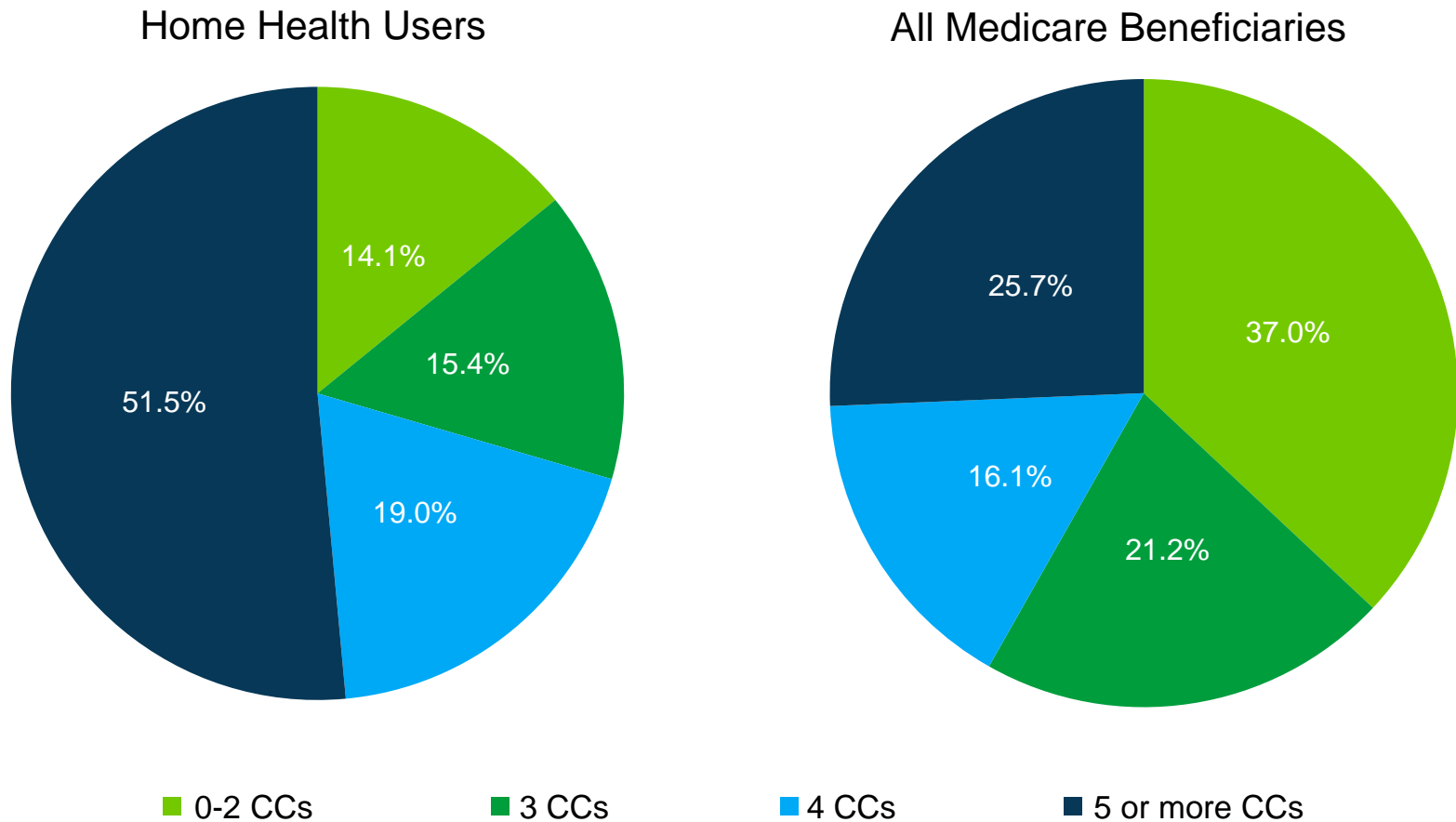
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Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015. Totals may not sum to 100 percent due to rounding.

Demographics of Home Health Users

Table 1.9: Selected Characteristics of Medicare Home Health Users and All Medicare Beneficiaries, 2015

	All Medicare Home Health Users	All Medicare Beneficiaries
Age 85+	24.5%	11.2%
Live alone	36.4%	30.0%
Have 3 or more chronic conditions	85.9%	63.0%
Have 2 or more ADL limitations*	32.9%	11.7%
Report fair or poor health	46.2%	25.6%
Are in somewhat or much worse health than last year	41.7%	20.3%
Have incomes at or under 200% of the Federal Poverty Level (FPL)**	62.5%	48.2%
Have incomes under 100% of the Federal Poverty Level (FPL)**	28.7%	19.2%

Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*ADL = Activities of daily living, such as eating, dressing, and bathing. Limitations with at least 2 ADLs is considered a measure of moderate to severe disability and is often the eligibility threshold for a nursing home level of care.

**In 2015, 100 percent of FPL for a household of 1 was \$11,770, a household of 2 was \$15,930, a household of 3 was \$20,090, and household of 4 was \$24,250. 200 percent of FPL was double each amount.

Demographics of Home Health Users*

Table 1.10: Average Annual Living Expenses for Households with Incomes under 200 Percent of the Federal Poverty Level (FPL)** with at Least One Individual 65 Years or Older, 2016

Living Expense	2015			2016		
	One-Person Elderly Household	Two-Person Elderly Household	All Elderly Household Sizes	One-Person Elderly Household	Two-Person Elderly Household	All Elderly Household Sizes
Housing	\$6,200	\$8,852	\$7,720	\$7,014	\$8,261	\$7,847
Food	\$2,372	\$4,495	\$3,655	\$2,451	\$4,505	\$3,619
Transportation	\$1,492	\$4,141	\$2,925	\$1,705	\$3,795	\$2,822
Health Care (out-of-pocket costs)	\$1,984	\$4,212	\$2,963	\$2,187	\$3,847	\$2,887
Total	\$12,048	\$21,699	\$17,263	\$13,358	\$20,408	\$17,175

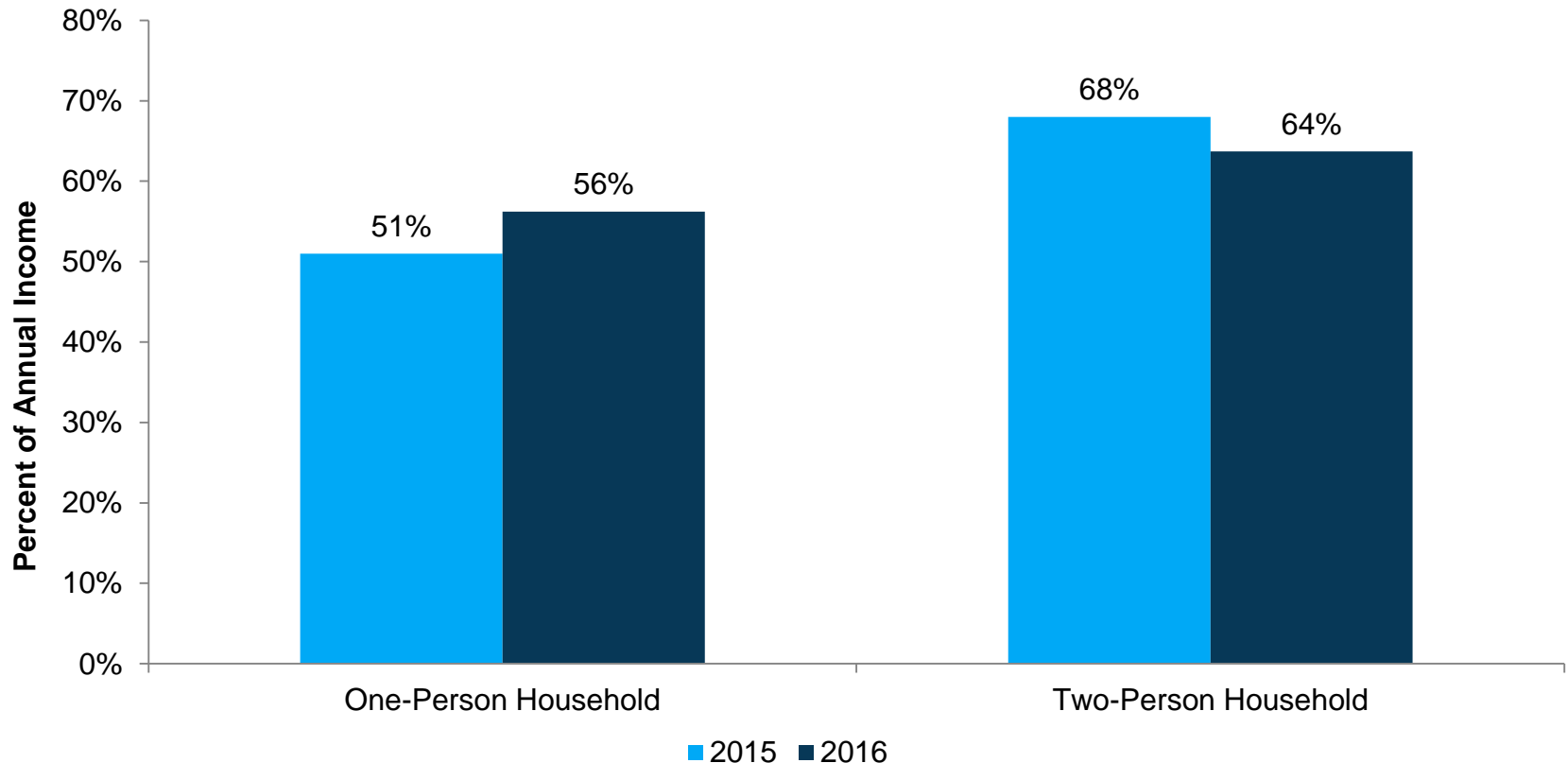
Source: Avalere analysis of the 2016 Bureau of Labor Statistics Consumer Expenditure Survey. The analysis includes households with one or more individuals age 65 or older and annual incomes below 200 percent of the Federal Poverty Level.

*This analysis includes, but is not limited to, home health users.

**In 2016, 200 percent of the Federal Poverty Level was \$23,760 for a one-person household and \$32,040 for a two-person household.

Demographics of Home Health Users*

Chart 1.11: Average Annual Living Expenses, as a Percentage of Income, for One- And Two-Person Households at 200 percent of the Federal Poverty Level (FPL)** with at Least One Individual 65 Years or Older, 2016



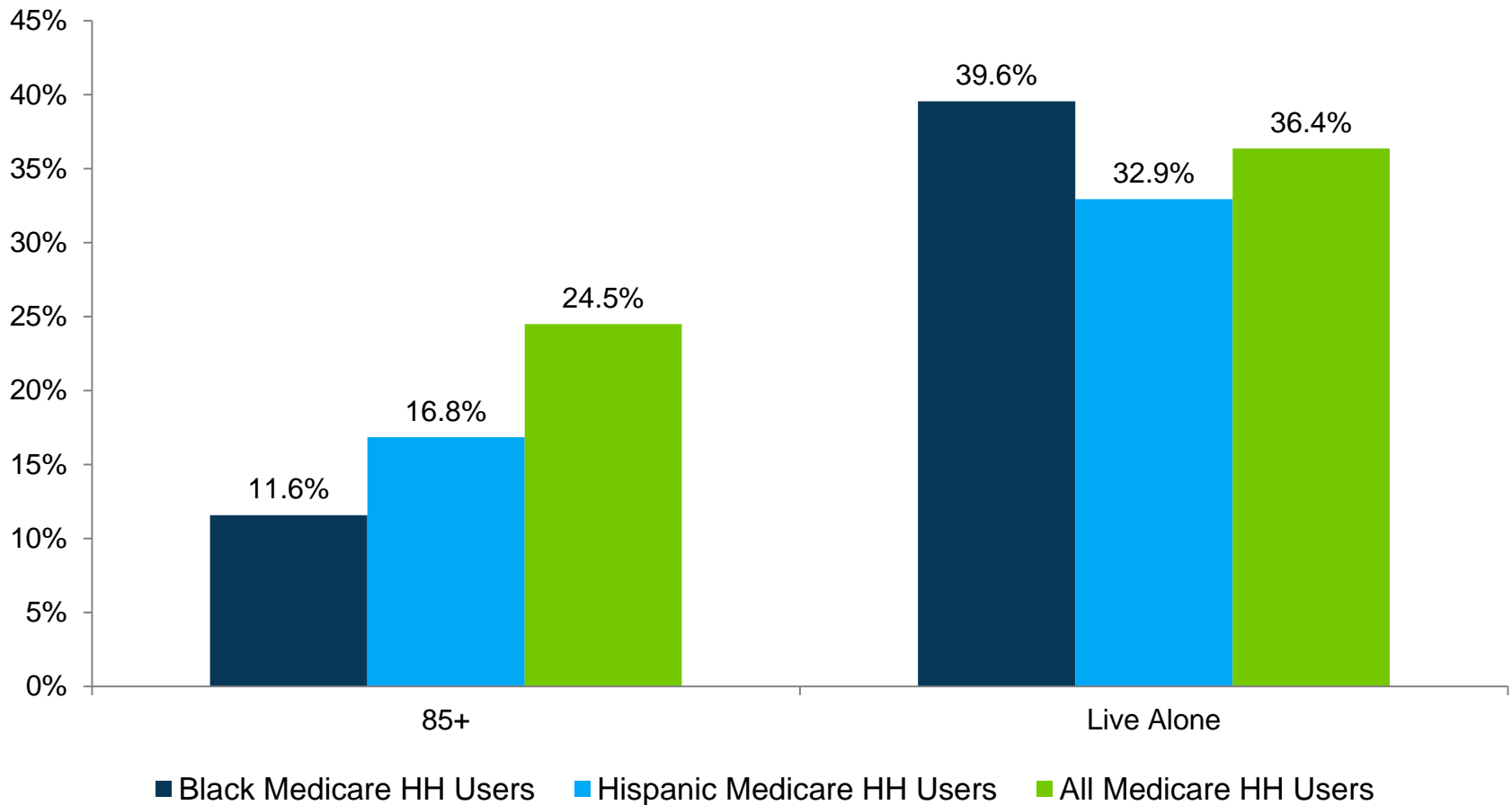
Source: Avalere analysis of the 2016 Bureau of Labor Statistics Consumer Expenditure Survey. The 2016 average annual living expenses are for one-person or two-person households, respectively, under 200 percent of the Federal Poverty Level with at least one individual 65 years or older.

*This analysis includes, but is not limited to, home health users.

**In 2016, 200 percent of the Federal Poverty Level was \$23,760 for a one-person household and \$32,040 for a two-person household.

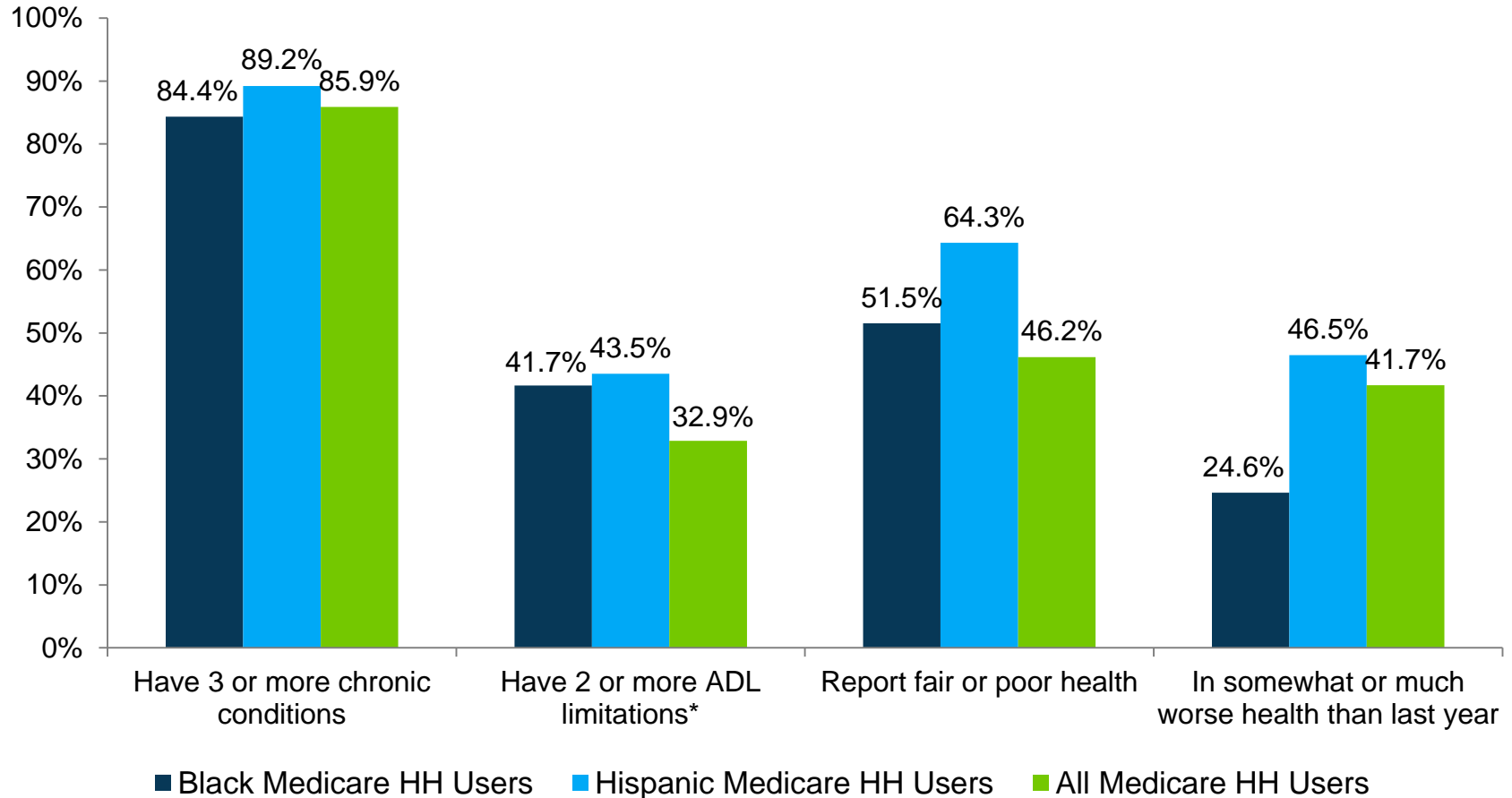
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Demographics of Home Health Users by Race and Ethnicity

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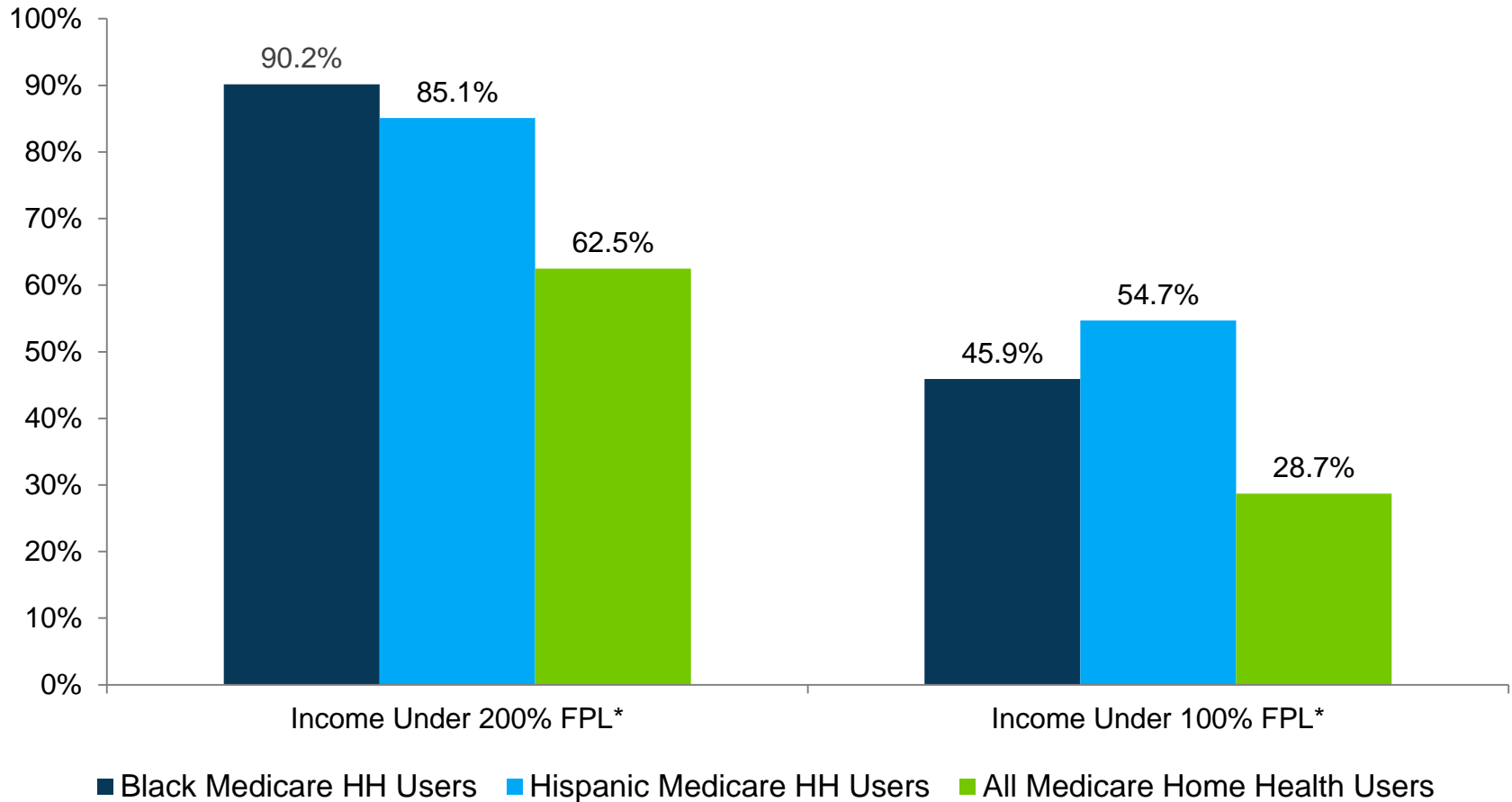


Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*ADL = Activities of daily living, such as eating, dressing, and bathing. Limitations with at least 2 ADLs is considered a measure of moderate to severe disability and is often the eligibility threshold for a nursing home level of care.

Demographics of Home Health Users by Race and Ethnicity

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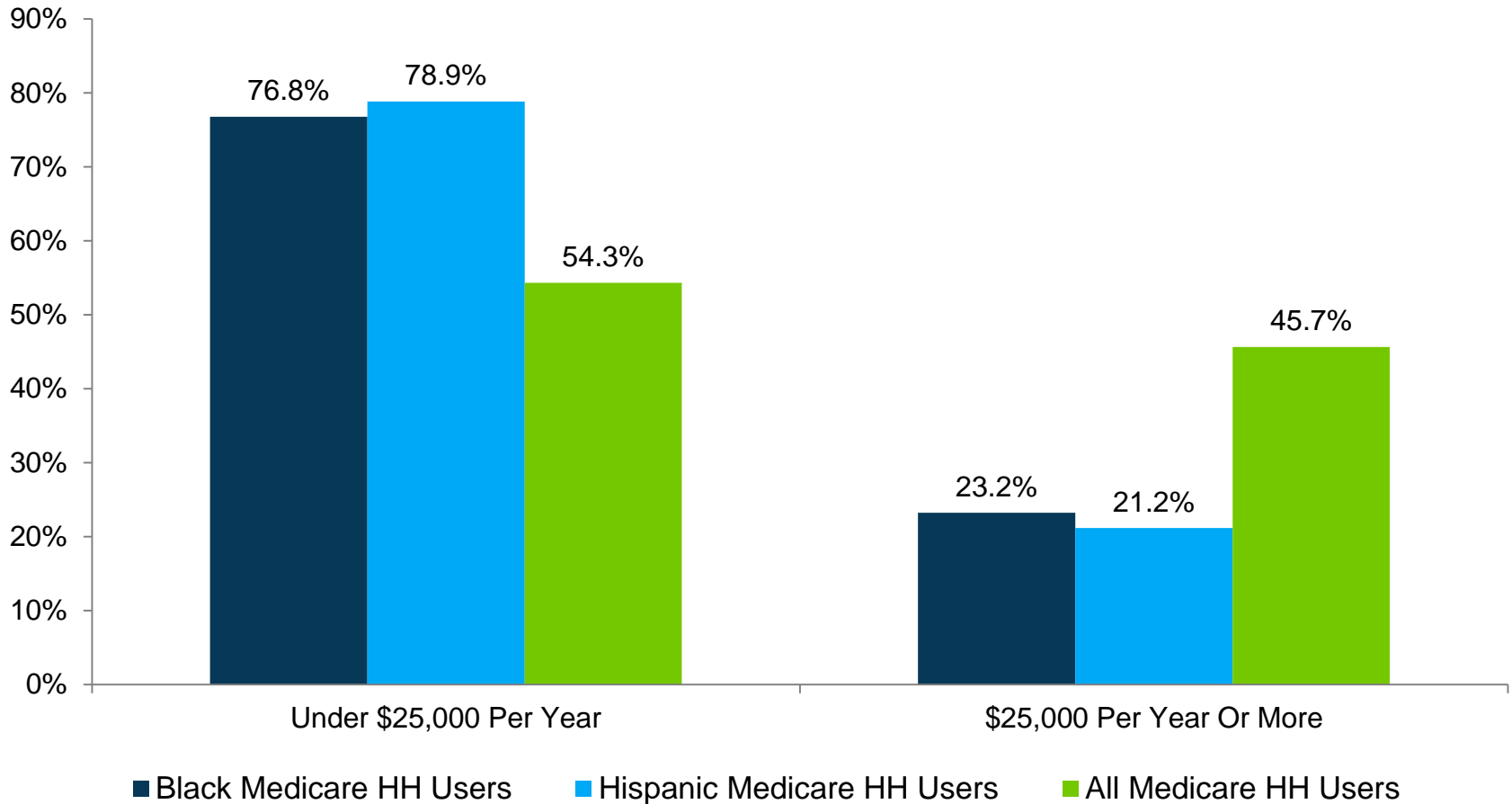


Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*In 2015, 100 percent of FPL for a household of 1 was \$11,770, a household of 2 was \$15,930, a household of 3 was \$20,090, and household of 4 was \$24,250. 200 percent of FPL was double each amount.

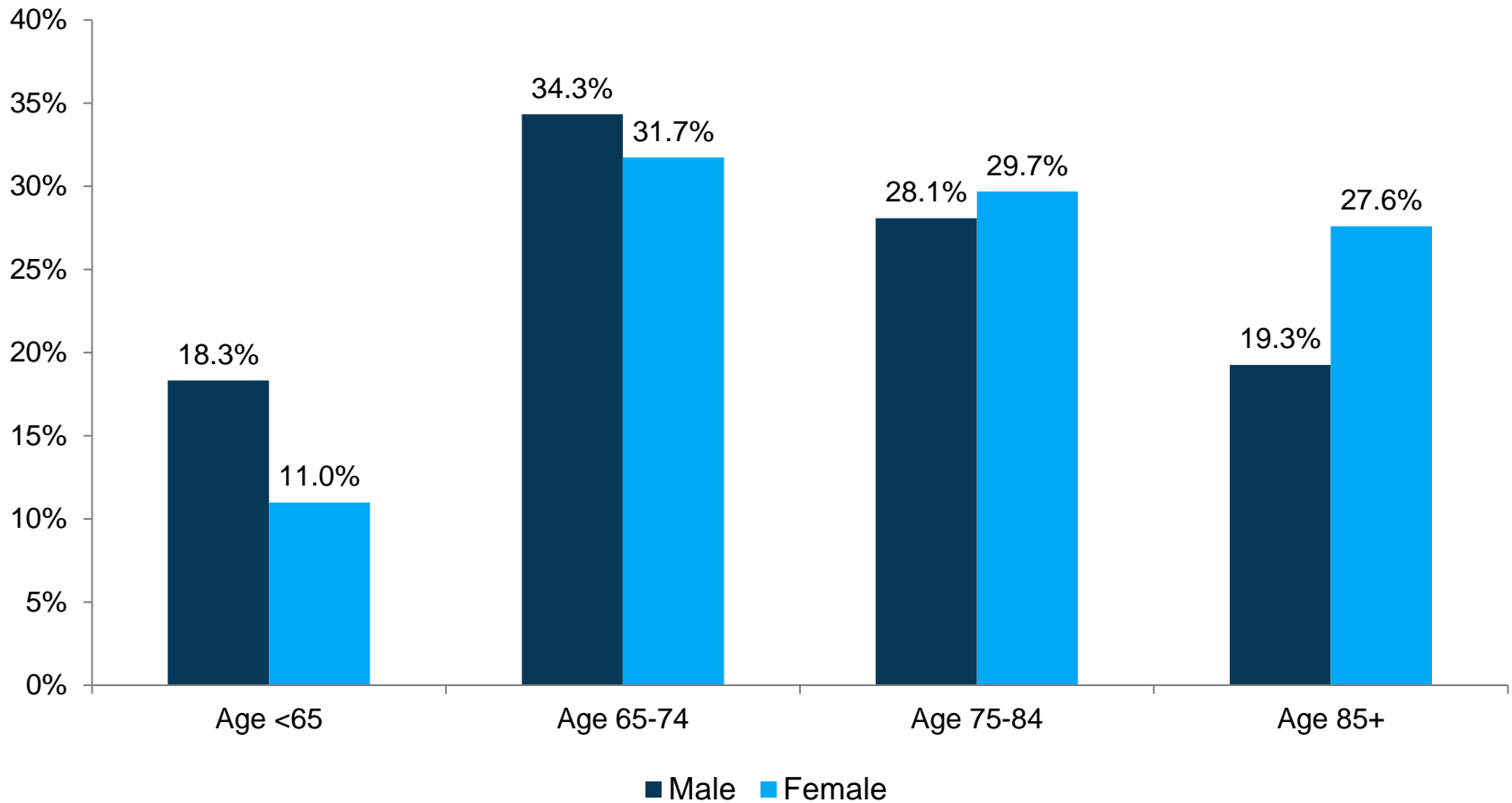
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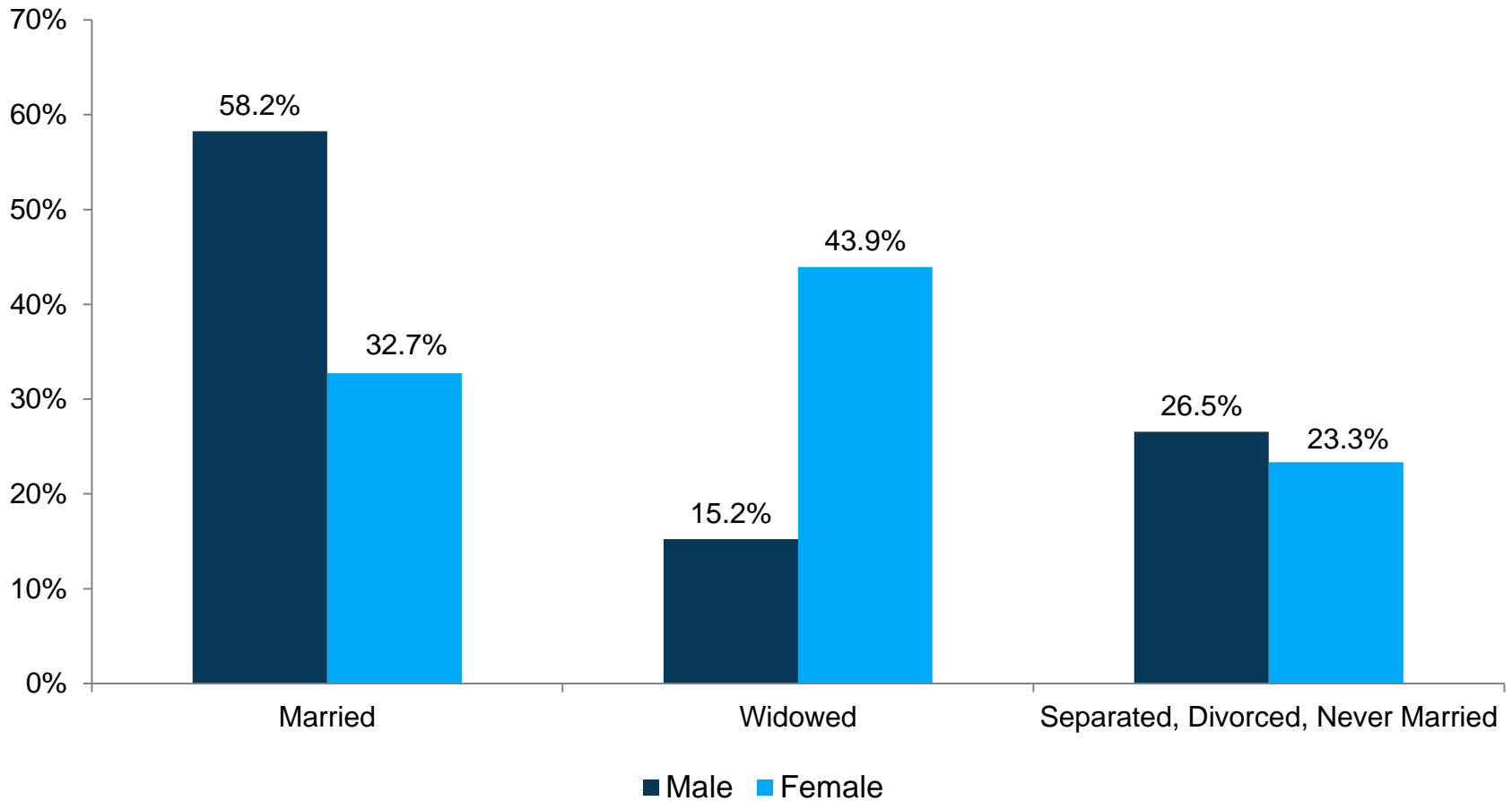
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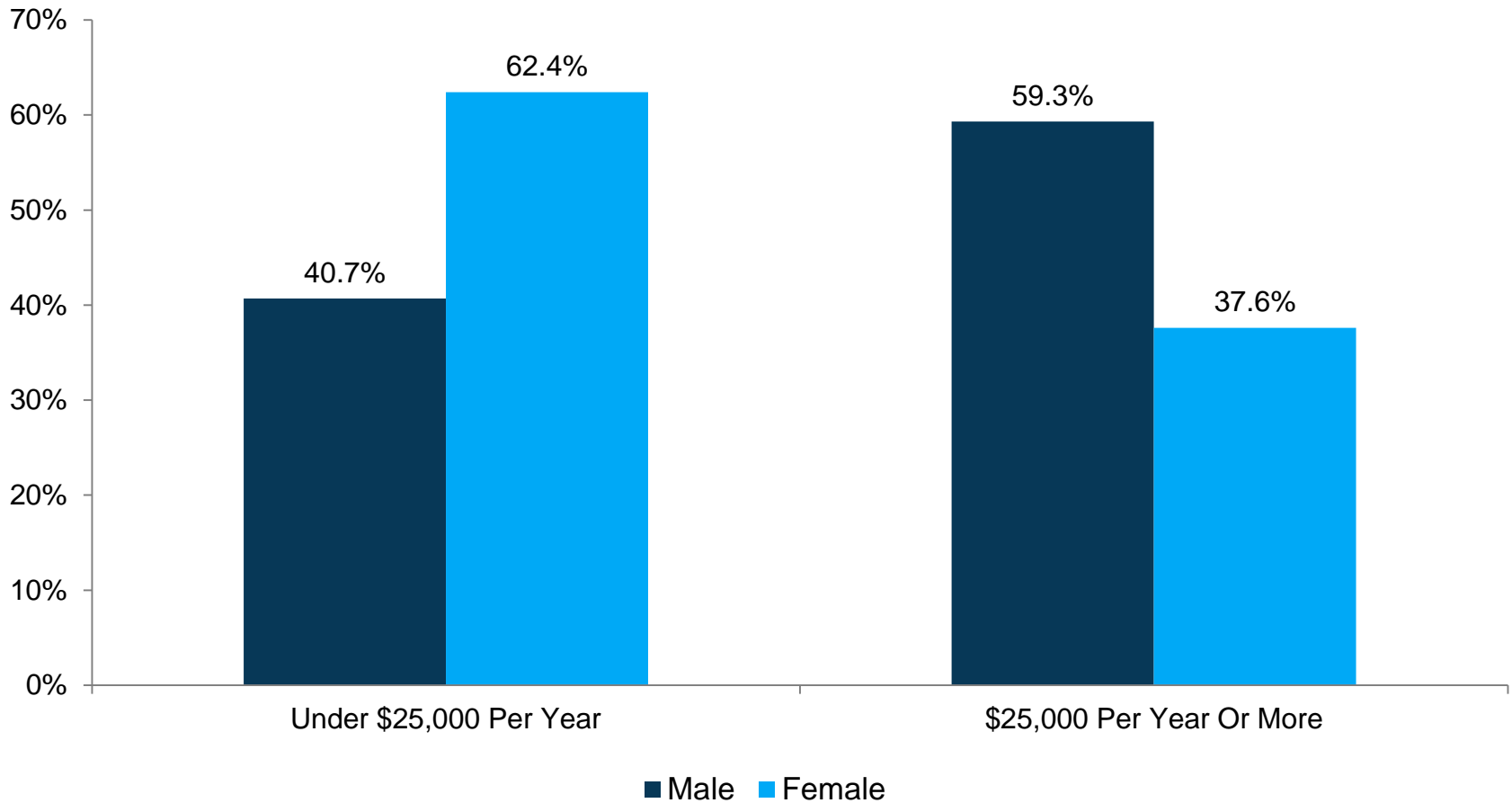
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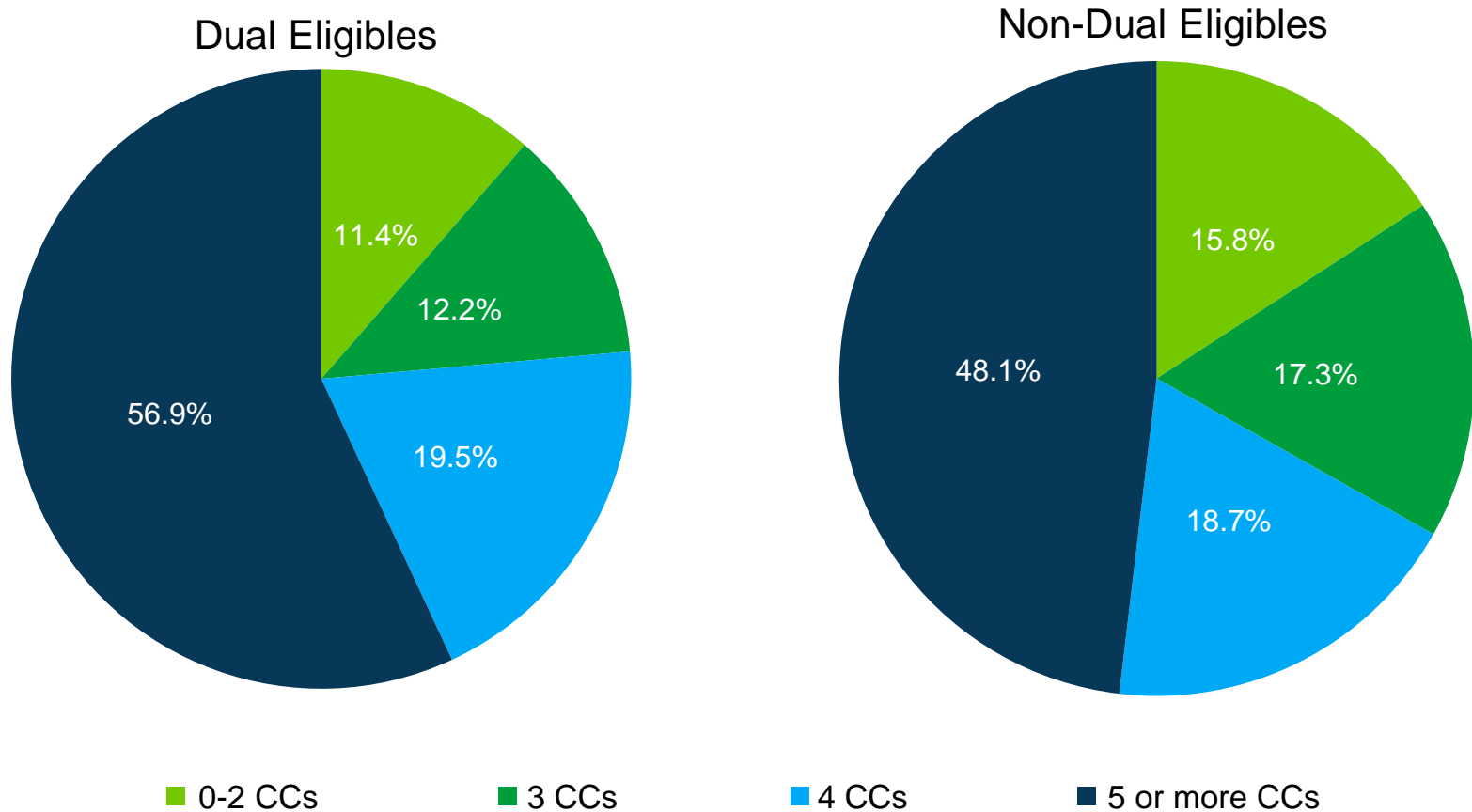
Demographics of Home Health Users by Sex

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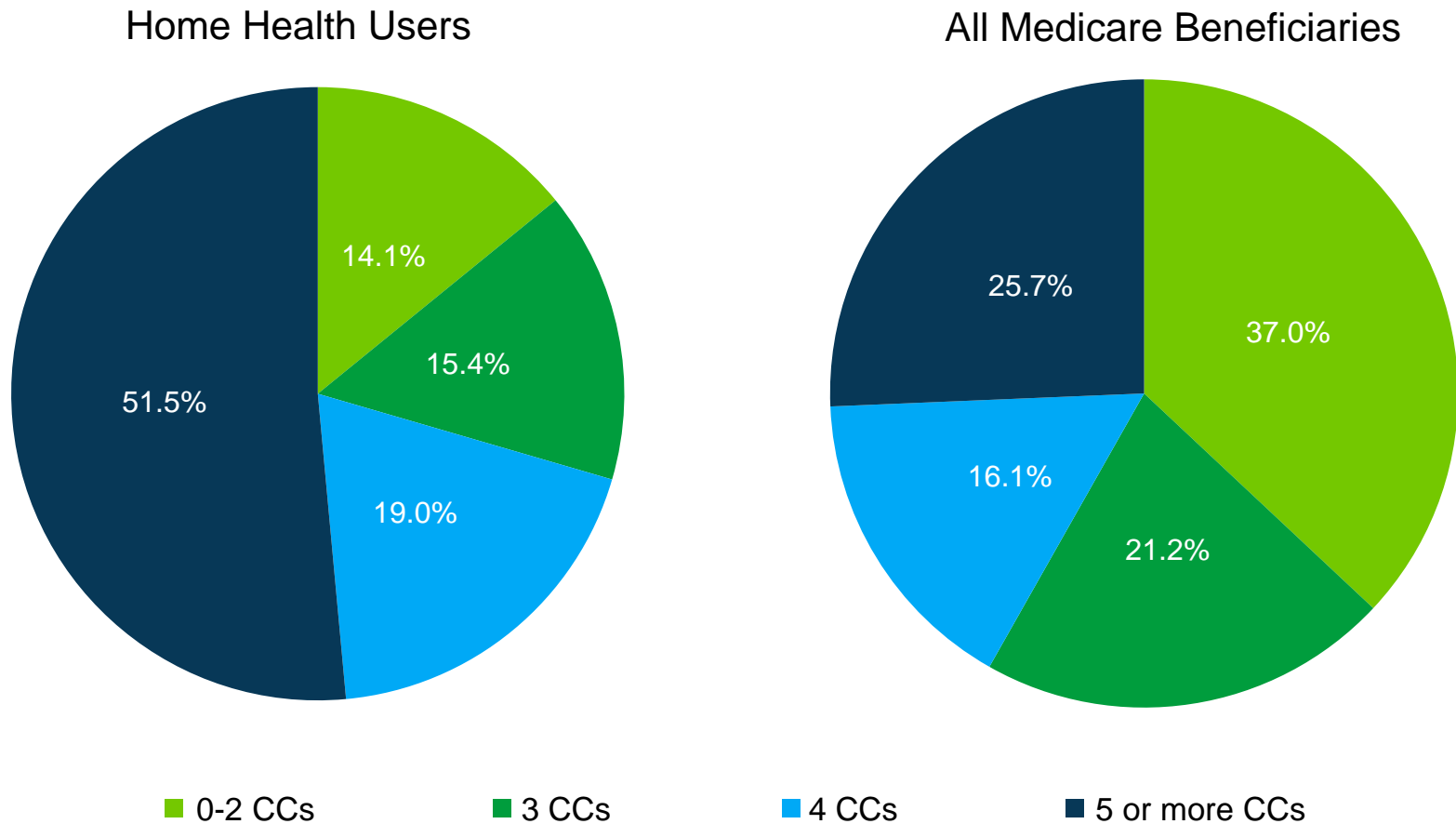
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Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.
Note: Dual eligibles are defined as individuals with any state buy-in at any point during the year.
Totals may not sum to 100 percent due to rounding.

Demographics of Home Health Users Compared to All Medicare Beneficiaries

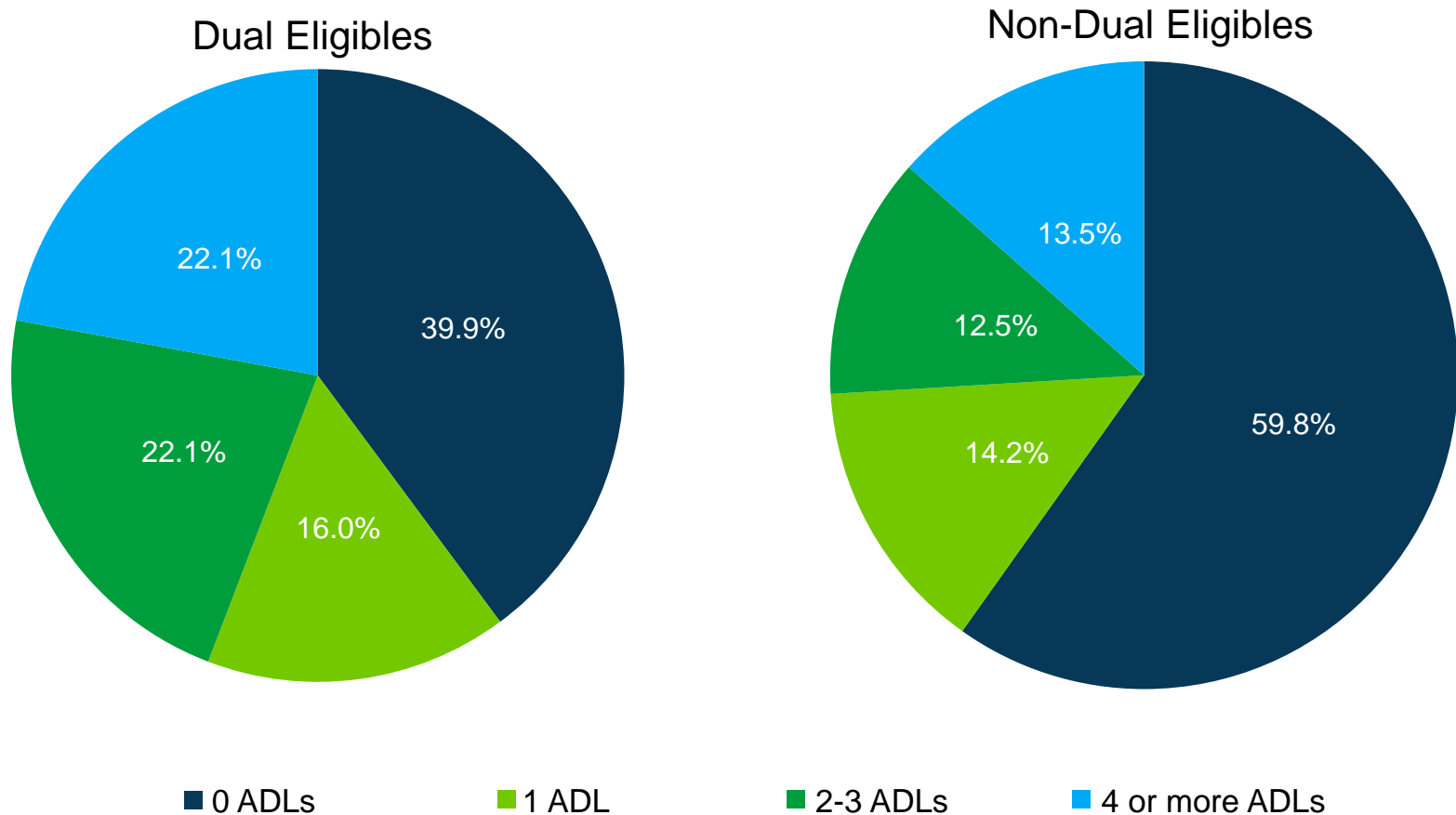
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Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.
Totals may not sum to 100 percent due to rounding.

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Chart 1.21: Percentage of Home Health Users by Dual Eligible Status and Number of Activities of Daily Living (ADLs) with Which They Require Assistance, 2015



Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

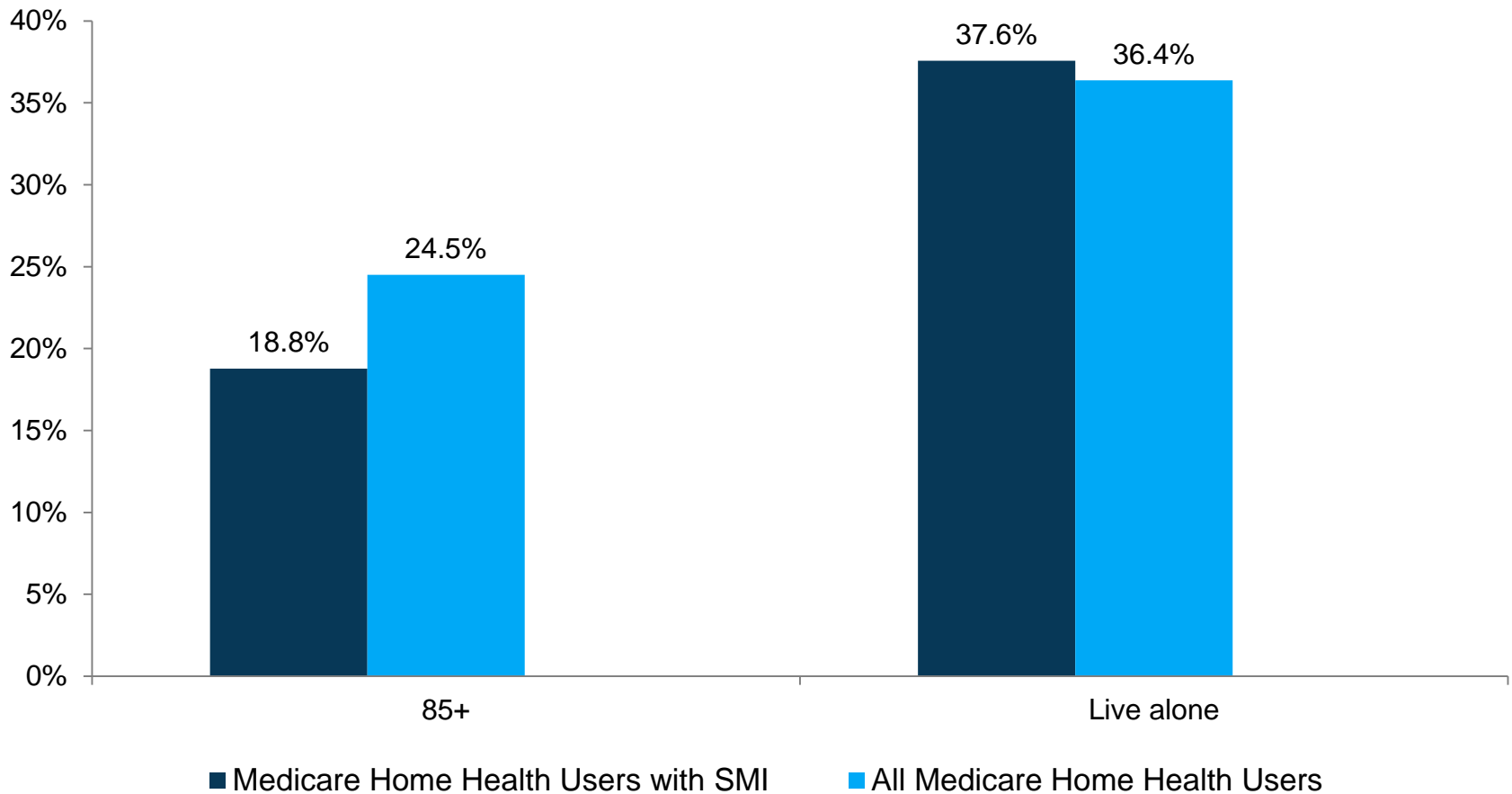
Note: Dual eligibles are defined as individuals with any state buy-in at any point during the year. Beneficiaries were classified as requiring assistance with an ADL (bathing, walking, transferring, dressing, toileting, and eating) if they reported needing at least stand-by assistance with that ADL.

Totals may not sum to 100 percent due to rounding.

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Demographics of Home Health Users by Severe Mental Illness (SMI)*

Chart 1.22: Selected Characteristics of All Medicare Home Health Users and Medicare Home Health Users with SMI, 2015

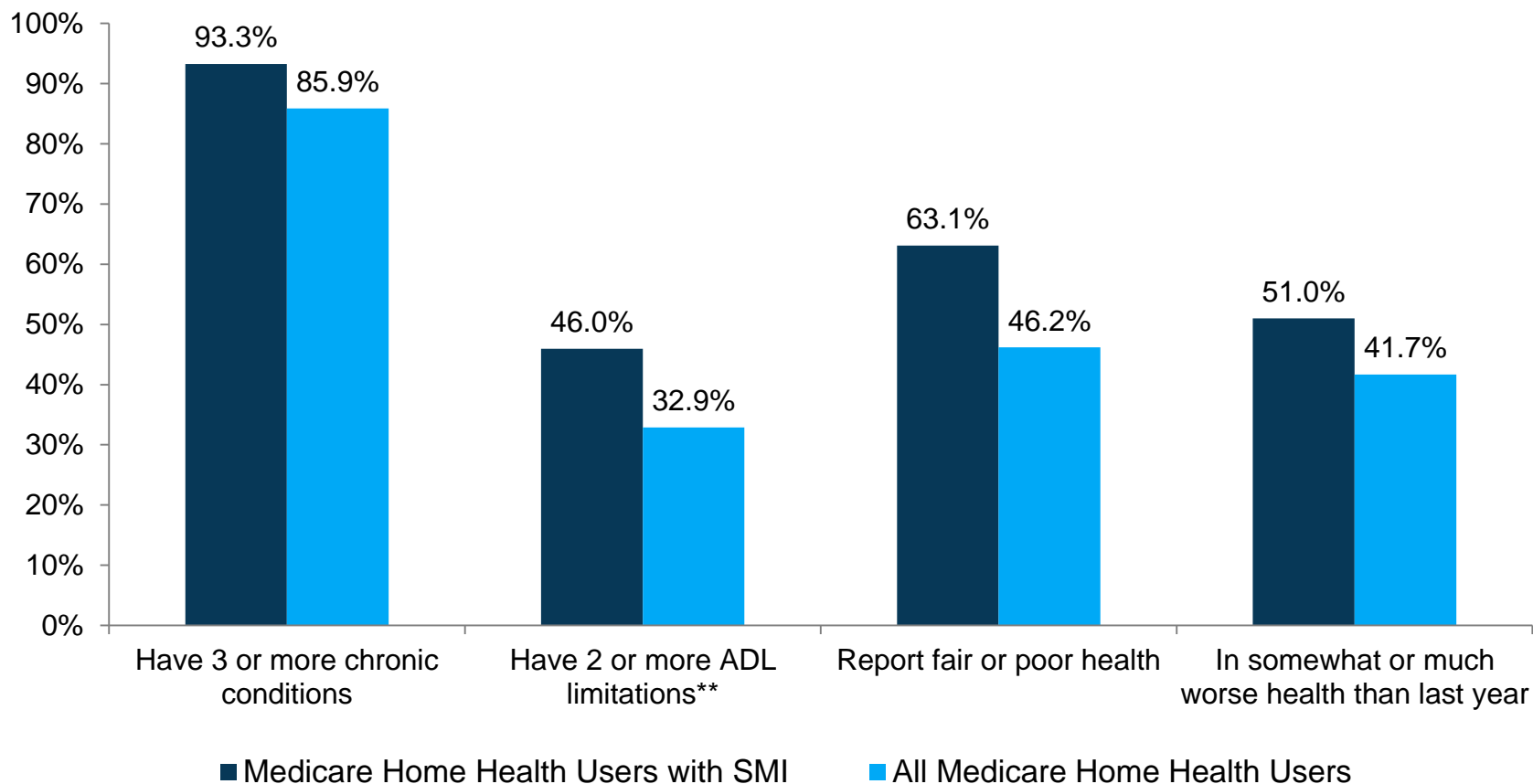


Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*Severe mental illness (SMI) is defined as having major depression or another mental illness, including bipolar disorder, schizophrenia, and other psychoses.

Demographics of Home Health Users by Severe Mental Illness (SMI)*

Chart 1.23: Selected Characteristics of All Medicare Home Health Users and Medicare Home Health Users with SMI, 2015



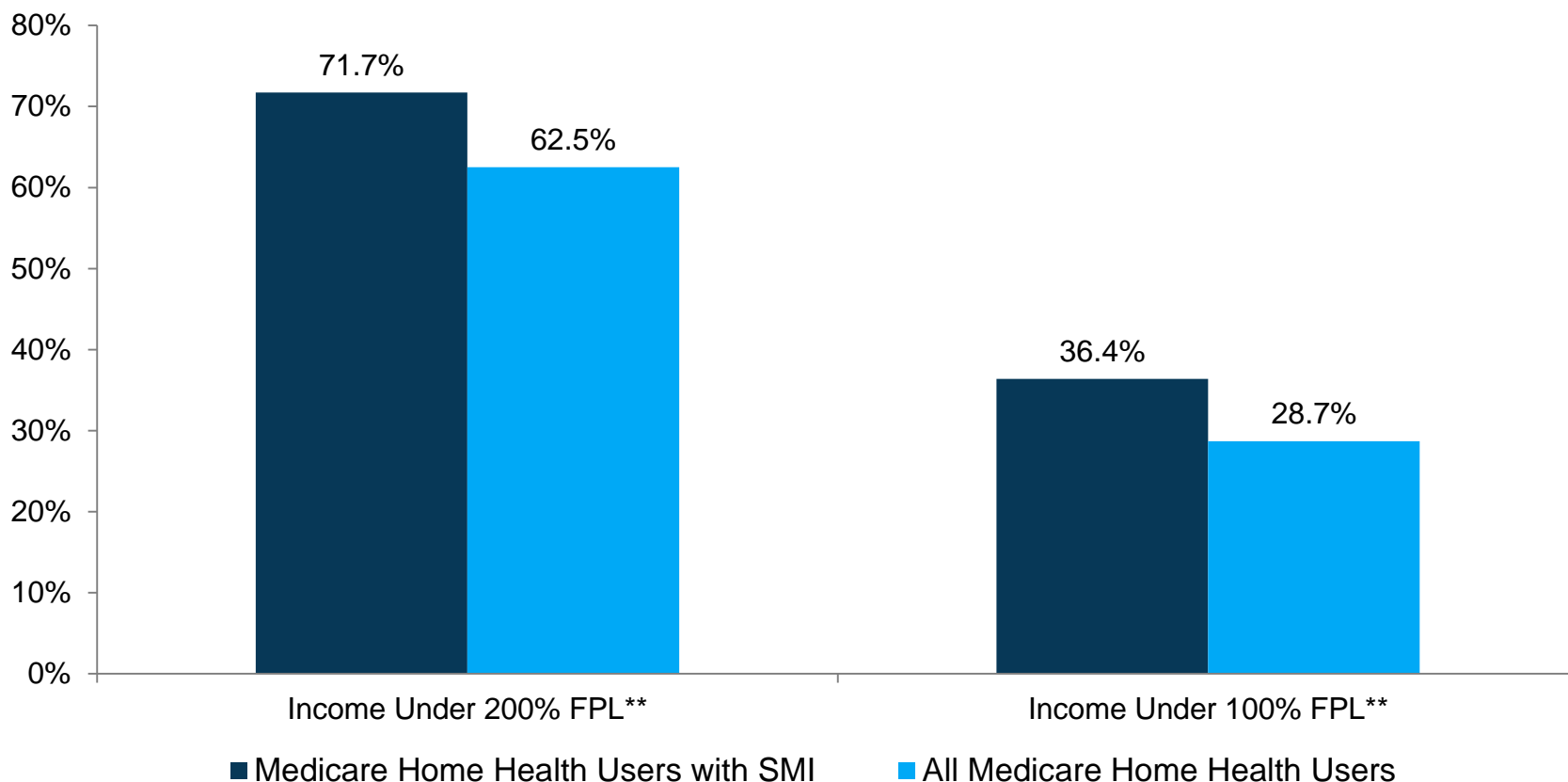
Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*Severe mental illness (SMI) is defined as having depression or another mental disorder, including bipolar disorder, schizophrenia, and other psychoses.

**ADL = Activities of daily living, such as eating, dressing, and bathing. Limitations with at least 2 ADLs is considered a measure of moderate to severe disability and is often the eligibility threshold for a nursing home level of care.

Demographics of Home Health Users by Severe Mental Illness (SMI)*

Chart 1.24: Selected Characteristics of Medicare Home Health Users with SMI and All Medicare Home Health Users, 2015



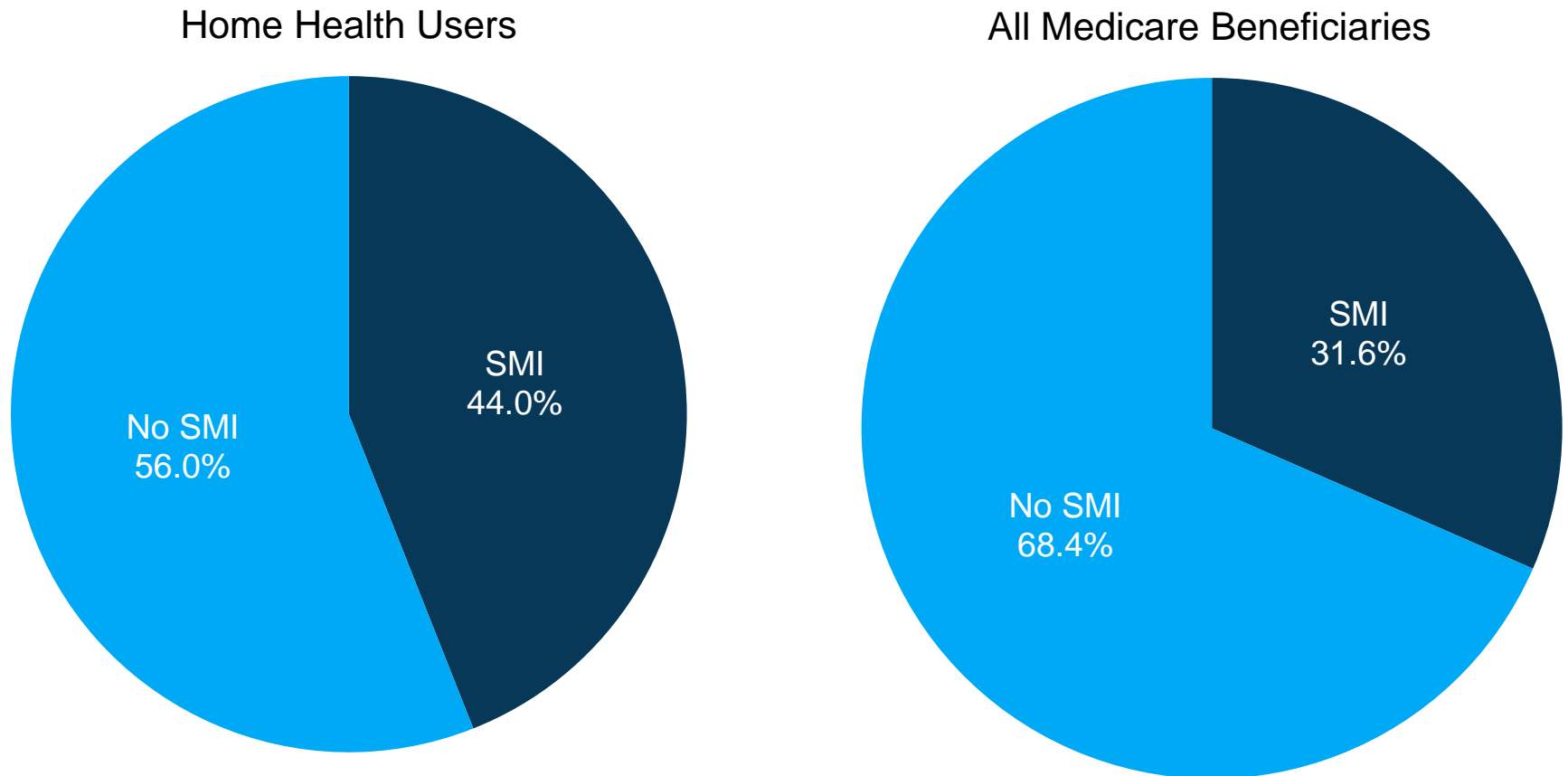
Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*Severe mental illness (SMI) is defined as having depression or another mental disorder, including bipolar disorder, schizophrenia, and other psychoses.

**In 2015, 100 percent of FPL for a household of 1 was \$11,770, a household of 2 was \$15,930, a household of 3 was \$20,090, and household of 4 was \$24,250. 200 percent of FPL was double each amount.

Demographics of Home Health Users by Severe Mental Illness (SMI)*

Chart 1.25: Percentage of Medicare Home Health Users with SMI Compared to the Percentage of Medicare Beneficiaries with SMI, 2015

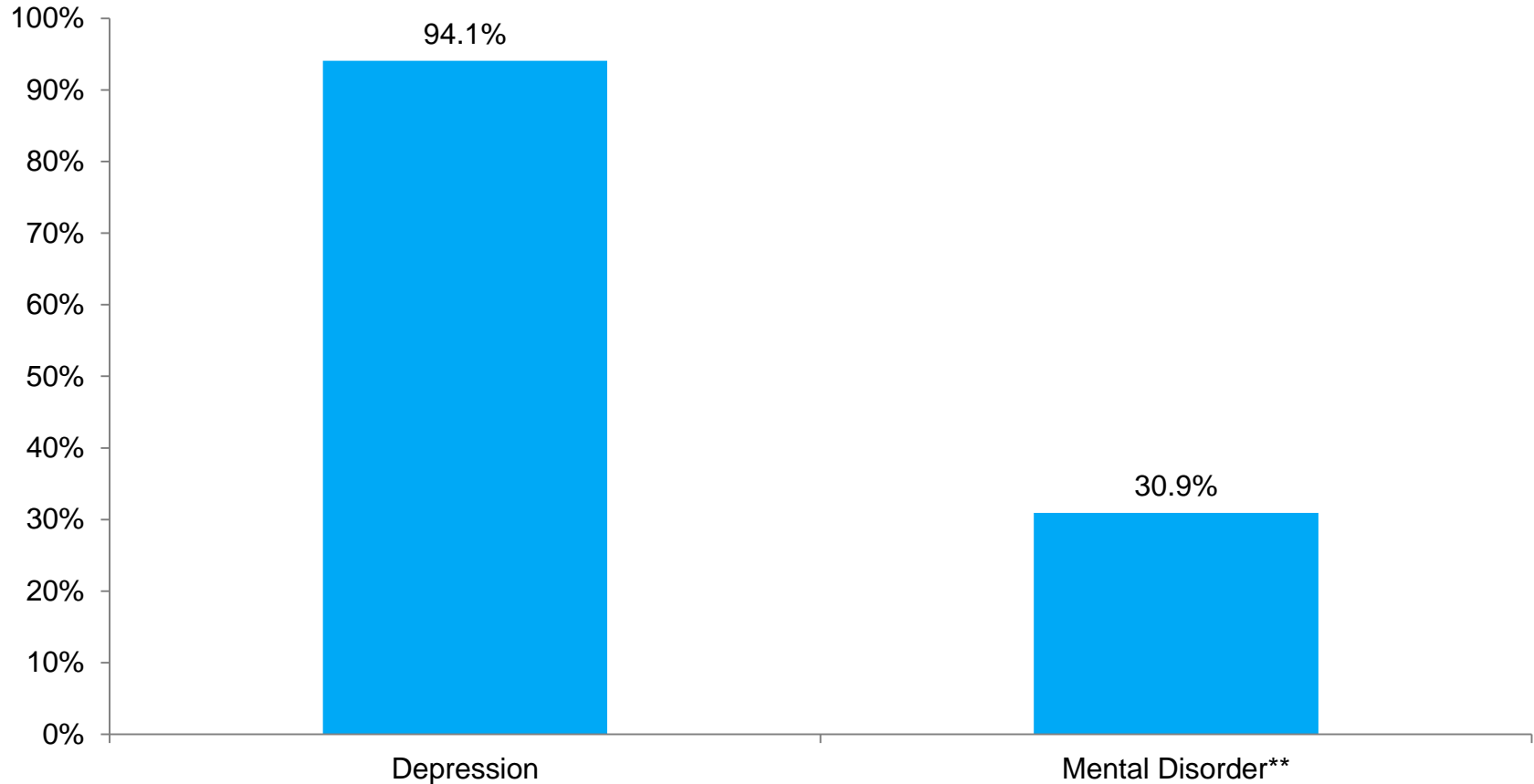


Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*Severe mental illness (SMI) is defined as having depression or other mental disorder, including bipolar disorder, schizophrenia, and other psychoses.

Demographics of Home Health Users by Severe Mental Illness (SMI)*

Chart 1.26: Breakdown of Medicare Home Health Users with SMI by Type of SMI, 2015



Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care file, 2015.

*Severe mental illness (SMI) is defined as having depression or other mental disorder, including bipolar disorder, schizophrenia, and other psychoses.

**Mental disorder includes bipolar disorder, schizophrenia, and other psychoses besides depression.

Demographic Trend of Home Health Users

Table 1.27: Selected characteristics of Medicare Home Health Users, 2011 – 2015

	2011	2012	2013	2015
Have 3 or more chronic conditions	83.2%	85.9%	85.1%	85.9%
Have 2 or more ADL limitations*	28.7%	34.2%	31.9%	32.9%
Have incomes under 200% of the Federal Poverty Level (FPL)**	64.5%	67.9%	67.2%	62.5%
Have incomes under 100% of the Federal Poverty Level (FPL)**	34.8%	32.6%	31.2%	28.7%
Are dual eligibles***	29.9%	29.9%	31.7%	38.1%
Have SMI****	26.3%	27.0%	27.2%	44.0%

Note: CMS did not release a 2014 Medicare Current Beneficiary Survey

Source: Avalere analysis of the Medicare Current Beneficiary Survey, Access to Care files, 2011 – 2015.

*ADL = Activities of daily living, such as eating, dressing, and bathing. Limitations with at least 2 ADLs is considered a measure of moderate to severe disability and is often the eligibility threshold for a nursing home level of care.

**100 percent of FPL for a household of 1 was \$10,890 in 2011, \$11,170 in 2012, \$11,490 in 2013, and \$11,770 in 2015 . 200 percent of FPL was double each amount.

***Dual eligibles are defined as individuals with any state buy-in at any point during the year. Beneficiaries were classified as requiring assistance with an ADL (bathing, walking, transferring, dressing, toileting, and eating) if they reported needing at least stand-by assistance with that ADL.

****Severe mental illness (SMI) is defined as having depression or other mental disorder, including bipolar disorder, schizophrenia, and other psychoses.



Section 2: Clinical Profile of Home Health Users

Clinical Profile of Home Health Users

Table 2.1: Top 20 Most Common Diagnosis Related Groups (MS-DRGs) for Beneficiaries Discharged from Hospital to Part A Home Health Episodes, 2017

MS-DRG	Number of Home Health Part A Claims, 2017	Percent of Total Home Health Part A Claims, 2017
Major Joint Replacement or Reattachment of Lower Extremity w/o MCC	159,905	8.55%
Septicemia or Severe Sepsis w/o MV 96+ hours w MCC	86,385	4.62%
Heart Failure & Shock w MCC	47,596	2.55%
Heart Failure & Shock w CC	41,161	2.20%
Hip & Femur Procedures Except Major Joint w CC	35,349	1.89%
Intracranial Hemorrhage or Cerebral Infarction w CC or TPA in 24 hrs	30,463	1.63%
Simple Pneumonia & Pleurisy w MCC	29,793	1.59%
Septicemia or Severe Sepsis w/o MV 96+ hours w/o MCC	27,725	1.48%
Chronic Obstructive Pulmonary Disease w MCC	27,669	1.48%
Kidney & Urinary Tract Infections w/o MCC	27,205	1.45%
Simple Pneumonia & Pleurisy w CC	27,130	1.45%
Renal Failure w CC	26,670	1.43%
Cellulitis w/o MCC	24,912	1.33%
Pulmonary Edema & Respiratory Failure	23,978	1.28%
Spinal Fusion Except Cervical w/o MCC	21,215	1.13%
Renal Failure w MCC	20,498	1.10%
Chronic Obstructive Pulmonary Disease w CC	19,099	1.02%
Esophagitis, Gastroent & Misc Digest Disorders w/o MCC	18,685	1.00%
G.I. Hemorrhage w CC	17,886	0.96%
Infectious & Parasitic Diseases w O.R. Procedure w MCC	17,191	0.92%
Total for Top 20 MS-DRGs	730,515	39.07%

Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Data for beneficiaries with a Part A home health episode and a prior short-term acute care hospital stay in 2017.

Note: CC is complication or comorbidity. MCC is major complication or comorbidity.

Clinical Profile of Home Health Users

Table 2.2: Top 20 Primary International Classification of Diseases, Version 10 (ICD-10) Diagnoses for All Home Health Claims, 2017

ICD-10 Diagnosis	Number of Medicare Home Health Claims, 2017	Percent of Total Medicare Home Health Claims, 2017
Type 2 diabetes mellitus	476,414	7.14%
Orthopedic aftercare	411,532	6.17%
Other chronic obstructive pulmonary disease	325,916	4.89%
Encounter for other postprocedural aftercare	294,781	4.42%
Essential (primary) hypertension	240,484	3.61%
Hypertensive heart disease	235,536	3.53%
Pressure ulcer	234,035	3.51%
Other disorders of muscle	214,329	3.21%
Sequelae of cerebrovascular disease	214,061	3.21%
Hypertensive heart and chronic kidney disease	153,108	2.30%
Abnormalities of gait and mobility	150,213	2.25%
Heart failure	126,611	1.90%
Fracture of femur	117,367	1.76%
Atrial fibrillation and flutter	116,486	1.75%
Other disorders of urinary system	96,450	1.45%
Dorsalgia	95,455	1.43%
Parkinson's disease	94,661	1.42%
Other disorders of veins	92,306	1.38%
Osteoarthritis of knee	79,532	1.19%
Encounter for fitting and adjustment of other devices	76,964	1.15%
Total for Top 20 Primary ICD-10 Diagnoses	3,846,241	57.67%

Clinical Profile of Home Health Users

Table 2.3: Percent of Medicare Home Health Users with 3 or More Chronic Conditions Compared to All Medicare Beneficiaries, by State, 2017

State	Percent of HH Users with 3+ CCs	Percent of Medicare Beneficiaries with 3+ CCs	State	Percent of HH Users with 3+ CCs	Percent of Medicare Beneficiaries with 3+ CCs
Alabama	91.14%	23.10%	Montana	90.25%	29.88%
Alaska	87.41%	25.53%	Nebraska	90.11%	31.09%
Arizona	87.05%	15.48%	Nevada	84.83%	15.34%
Arkansas	90.42%	26.86%	New Hampshire	91.76%	36.03%
California	87.49%	15.76%	New Jersey	89.07%	20.99%
Colorado	85.78%	17.83%	New Mexico	88.12%	22.30%
Connecticut	89.51%	23.91%	New York	89.26%	17.60%
Delaware	90.69%	31.67%	North Carolina	90.72%	24.05%
D.C	88.24%	23.85%	North Dakota	94.62%	45.29%
Florida	87.00%	17.88%	Ohio	92.65%	24.69%
Georgia	90.12%	20.76%	Oklahoma	91.52%	31.45%
Hawaii	86.54%	11.00%	Oregon	89.01%	17.03%
Idaho	87.79%	24.89%	Pennsylvania	90.28%	21.61%
Illinois	92.56%	29.81%	Rhode Island	89.08%	19.11%
Indiana	92.74%	28.05%	South Carolina	89.42%	24.60%
Iowa	92.15%	33.10%	South Dakota	93.37%	40.91%
Kansas	91.20%	30.69%	Tennessee	90.77%	19.58%
Kentucky	91.19%	28.99%	Texas	90.70%	21.21%
Louisiana	90.78%	26.91%	Utah	82.79%	17.17%
Maine	92.91%	31.93%	Vermont	89.85%	38.45%
Maryland	89.78%	25.32%	Virginia	89.74%	26.51%
Massachusetts	90.15%	27.47%	Washington	88.95%	21.75%
Michigan	92.05%	27.80%	West Virginia	93.62%	34.82%
Minnesota	89.60%	27.13%	Wisconsin	92.43%	23.14%
Mississippi	90.76%	32.39%	Wyoming	86.33%	27.65%
Missouri	91.65%	27.84%			

Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

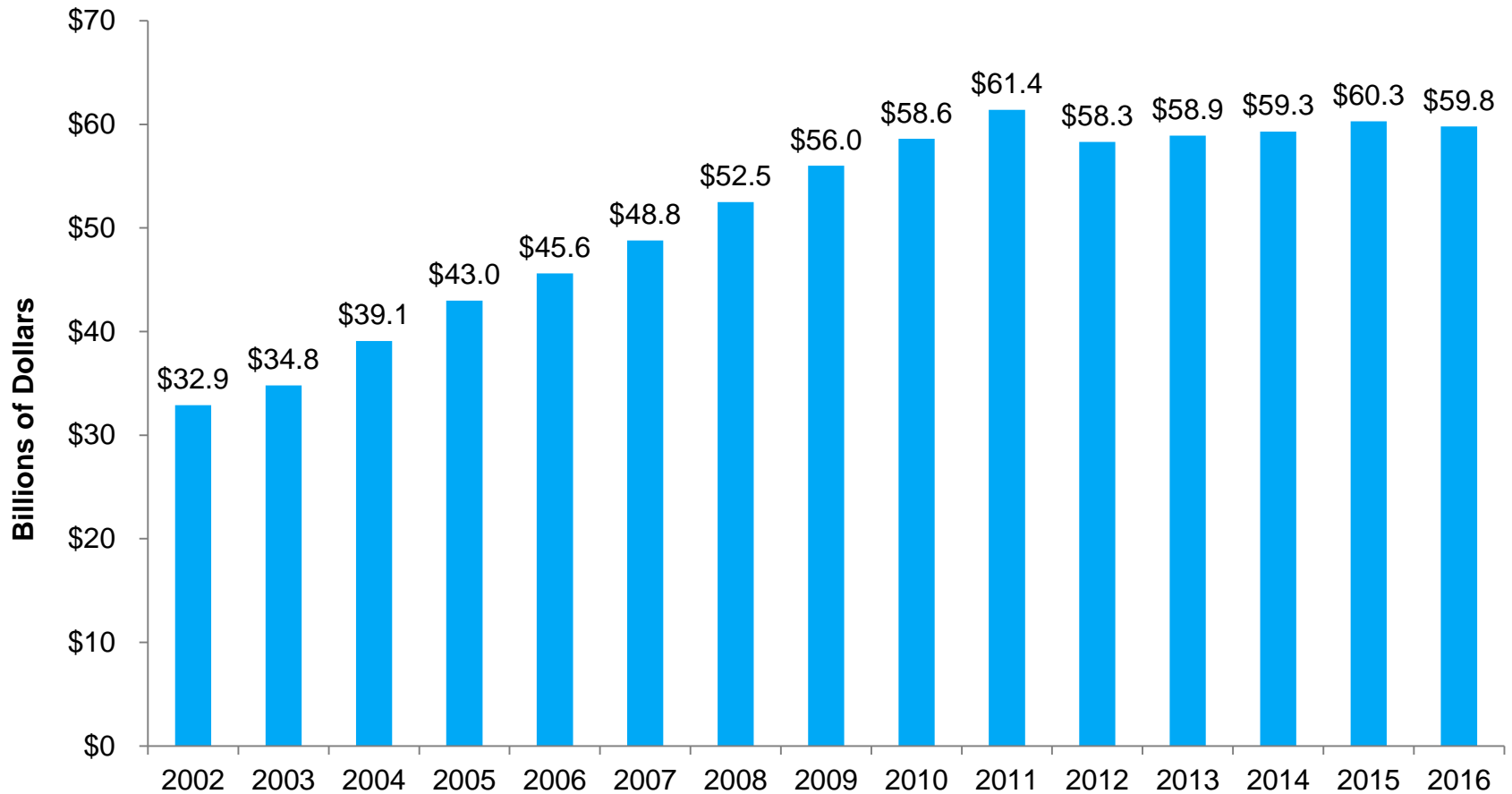
Note: Having a chronic condition is defined as having a Medicare claim with a chronic condition listed in 2017. Medicare beneficiaries without any claims in 2017 are categorized as having no chronic conditions in 2017. Chronic conditions are defined by the Centers for Medicare and Medicaid Services' Chronic Conditions Data Warehouse.



Section 3: Post-Acute Care Market Overview

Post-Acute Care Market Overview

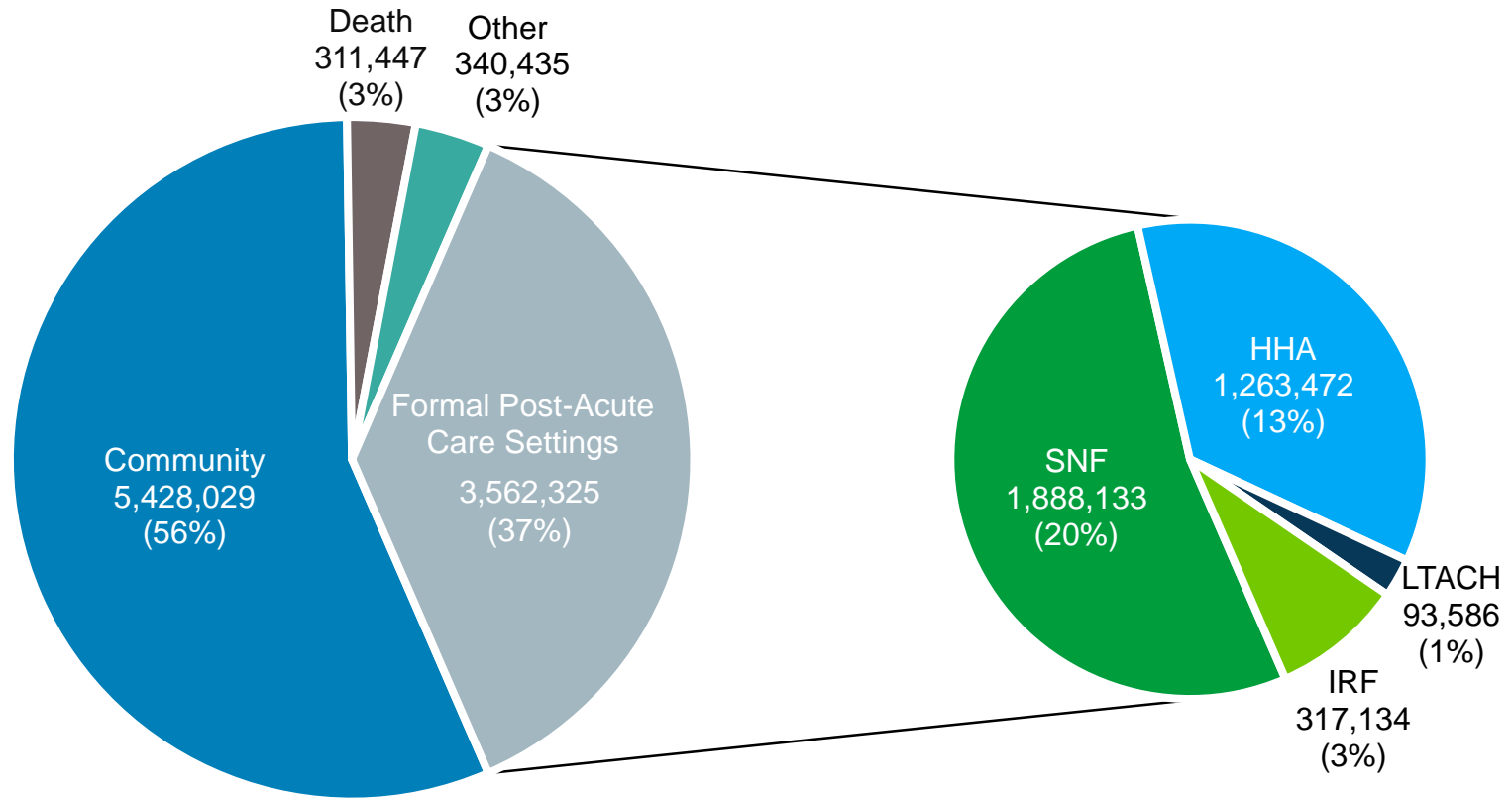
Chart 3.1: Total Medicare Post-acute Care Expenditures, Billions of Dollars, 2002-2016



Source: Medicare Payment Advisory Commission. A Data Book: Health Care Spending and the Medicare Program, June 2017 and June 2018.

Post-Acute Care Market Overview

Chart 3.2: Initial Patient Destinations Following an Inpatient Hospital Stay for Medicare Beneficiaries, 2017



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Hospital: Short-Term Acute Care Hospital (STACH).

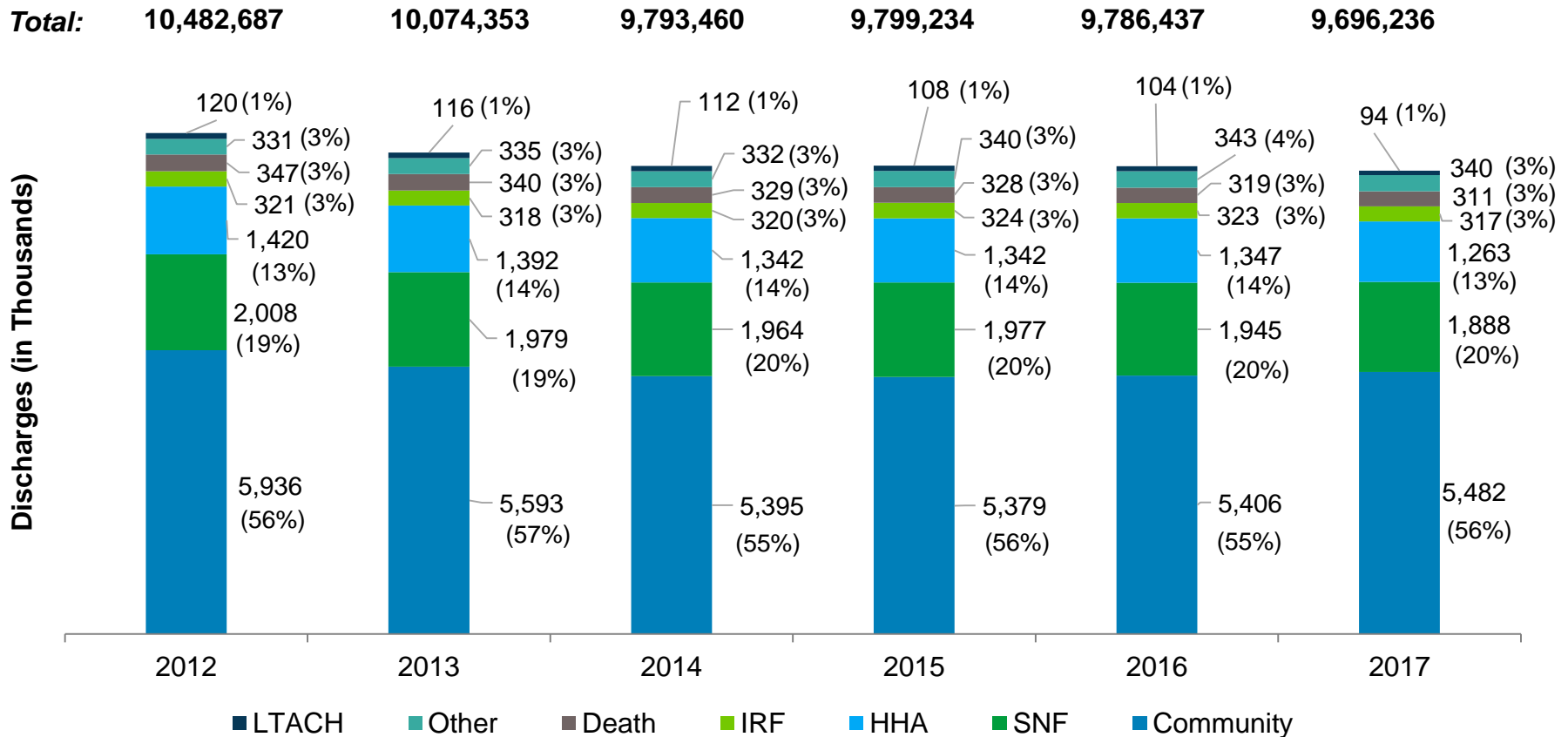
Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

Formal Post-Acute Care Settings: Settings designated as post-acute care by Medicare. Includes skilled nursing facilities (SNF), home health agencies (HHA), inpatient rehabilitation facilities (IRF), and long-term acute care hospitals (LTACH).

Other: Hospice, a different Inpatient Hospital, or other Inpatient Hospitals such as Inpatient Psychiatric Facilities.

Post-Acute Care Market Overview

Chart 3.3: Initial Patient Destinations Following an Inpatient Hospital Stay for Medicare Beneficiaries, 2012 – 2017



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2012-2017.

Hospital: Short-Term Acute Care Hospital (STACH).

Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

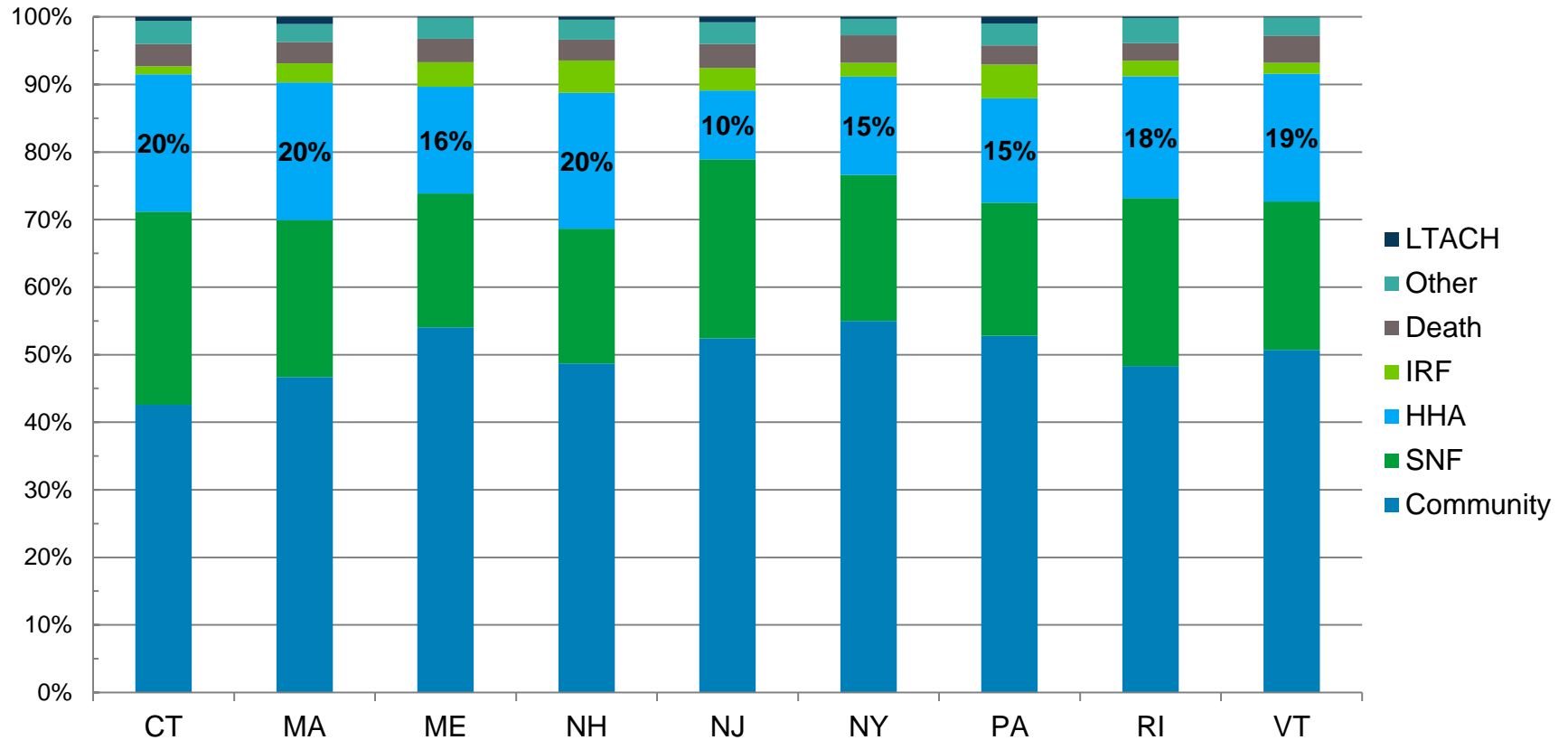
Formal Post-Acute Care Settings: Settings designated as post-acute care by Medicare. Includes skilled nursing facilities (SNF), home health agencies (HHA), inpatient rehabilitation facilities (IRF), and long-term acute care hospitals (LTACH).

Other: Hospice, a different Inpatient Hospital, or other Inpatient Hospitals such as Inpatient Psychiatric Facilities.

Percentages may not sum to 100 percent due to rounding.

Post-Acute Care Market Overview

Chart 3.4: Initial Patient Destinations Following an Inpatient Hospital Stay for Medicare Beneficiaries in 2017, for States in Northeastern Region



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Note: U.S. Census Bureau defines which states are in the Northeast Region; includes CT, MA, ME, NH, NJ, NY, PA, RI, VT.

Hospital: Short-Term Acute Care Hospital (STACH).

Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

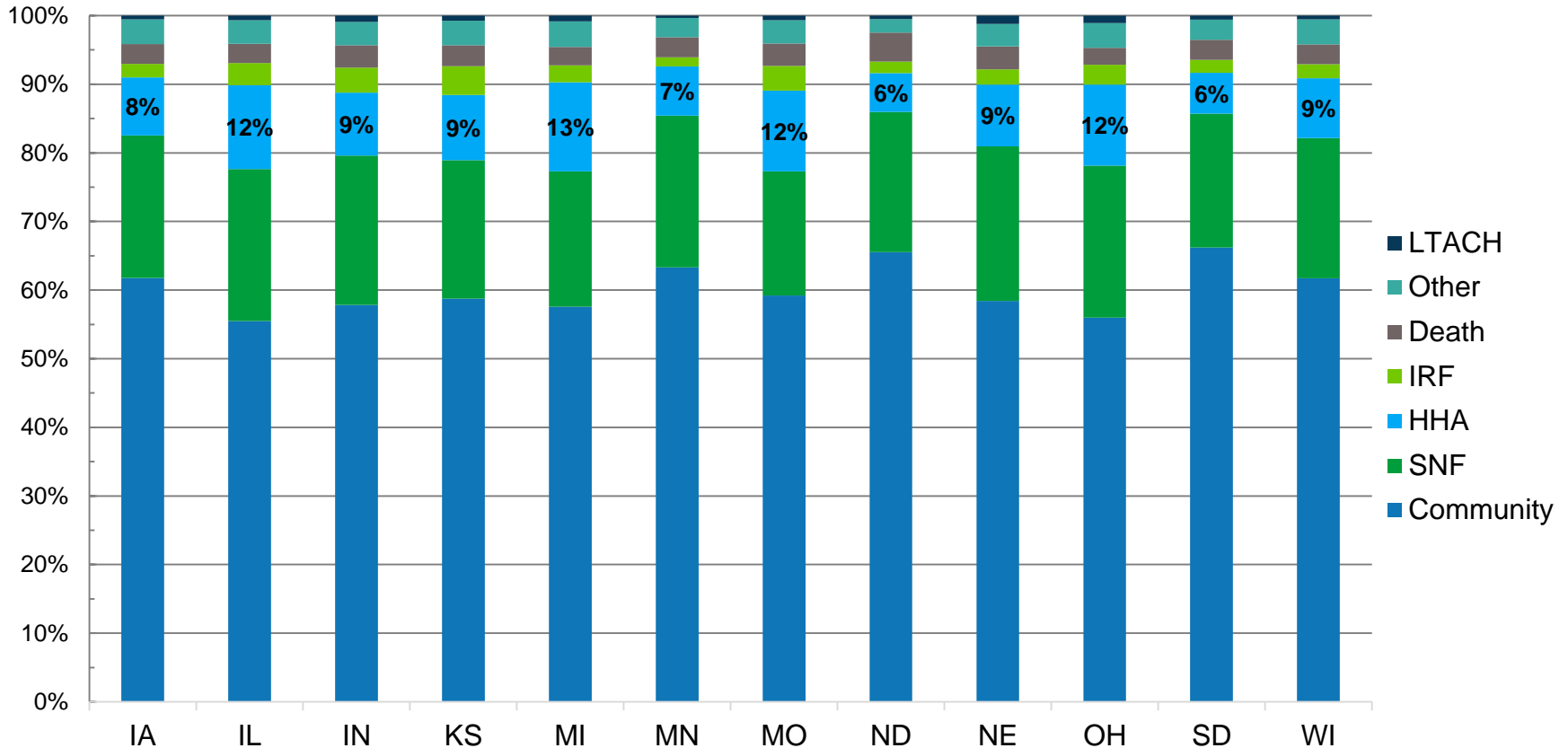
Formal Post-Acute Care Settings: Settings designated as post-acute care by Medicare. Includes skilled nursing facilities (SNF),

home health agencies (HHA), inpatient rehabilitation facilities (IRF), and long-term acute care hospitals (LTACH).

Other: Hospice, a different Inpatient Hospital, or other Inpatient Hospitals such as Inpatient Psychiatric Facilities.

Post-Acute Care Market Overview

Chart 3.5: Initial Patient Destinations Following an Inpatient Hospital Stay for Medicare Beneficiaries in 2017, for States in Midwestern Region



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Note: U.S. Census Bureau defines which states are in the Midwestern Region; includes IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI.

Hospital: Short-Term Acute Care Hospital (STACH).

Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

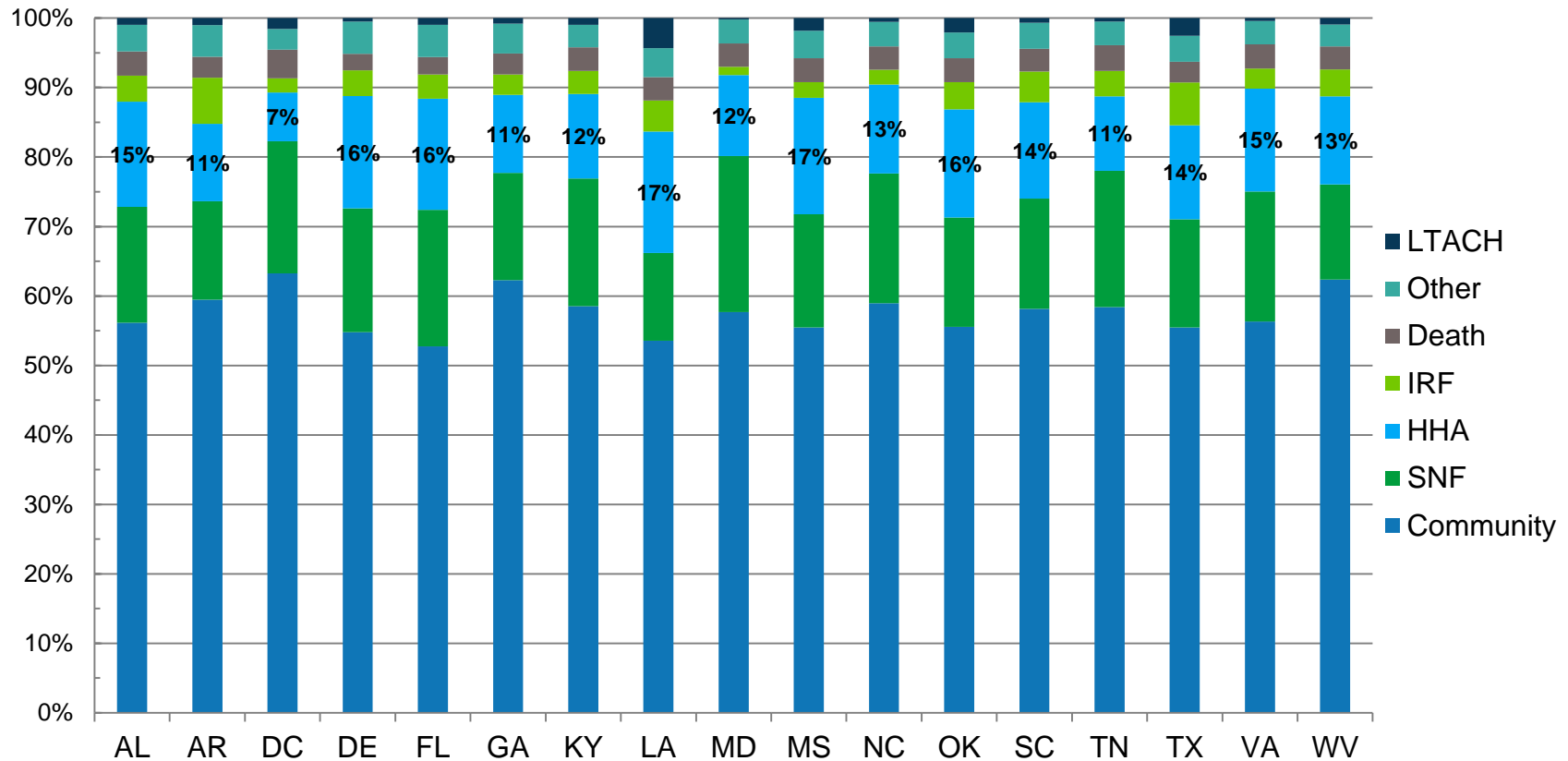
Formal Post-Acute Care Settings: Settings designated as post-acute care by Medicare. Includes skilled nursing facilities (SNF),

home health agencies (HHA), inpatient rehabilitation facilities (IRF), and long-term acute care hospitals (LTACH).

Other: Hospice, a different Inpatient Hospital, or other Inpatient Hospitals such as Inpatient Psychiatric Facilities.

Post-Acute Care Market Overview

Chart 3.6: Initial Patient Destinations Following an Inpatient Hospital Stay for Medicare Beneficiaries in 2017, for States in Southern Region



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Note: U.S. Census Bureau defines which states are in the Southern Region; includes AL, AR, DC, DE, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV.

Hospital: Short-Term Acute Care Hospital (STACH).

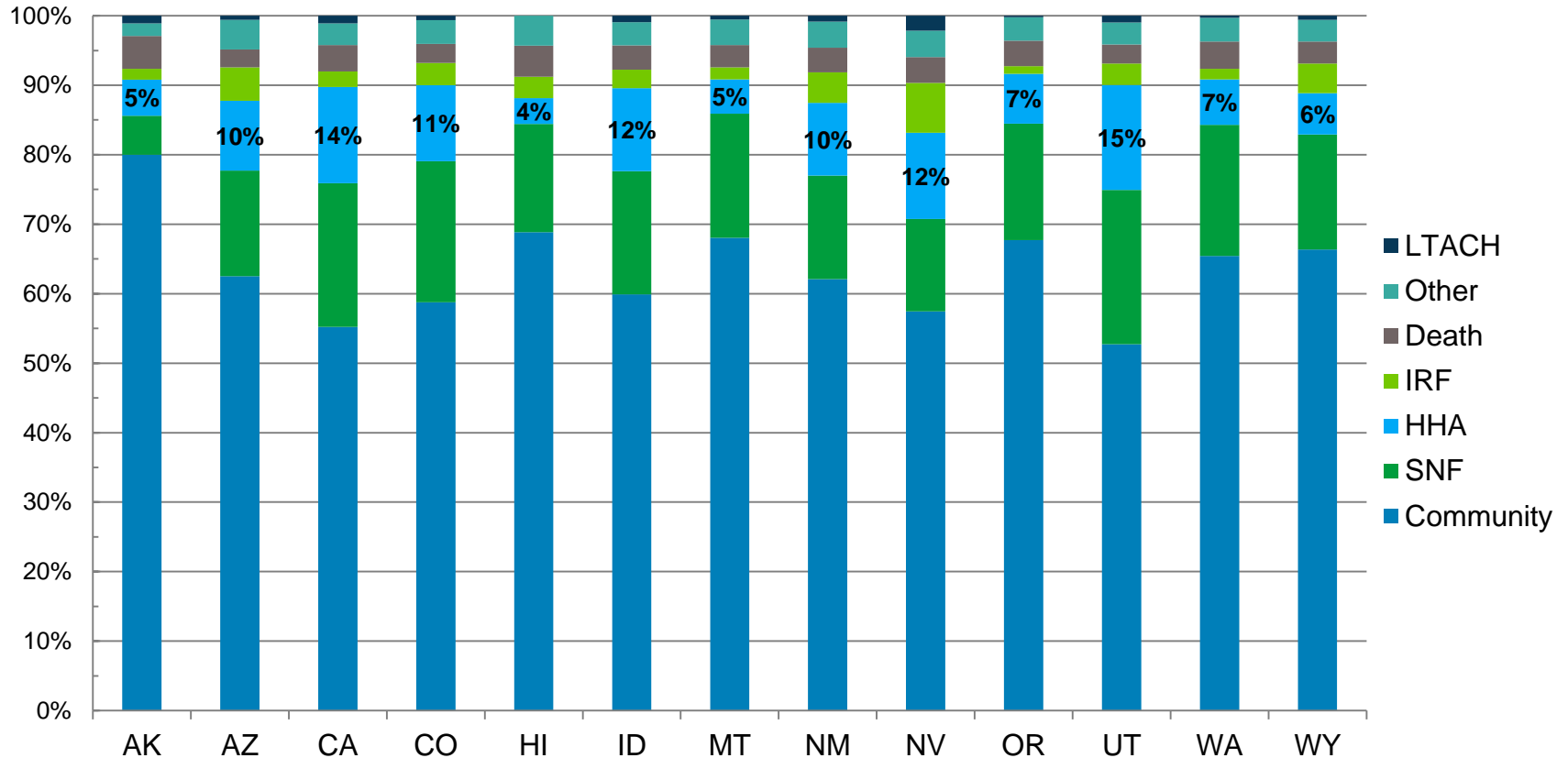
Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

Formal Post-Acute Care Settings: Settings designated as post-acute care by Medicare. Includes skilled nursing facilities (SNF), home health agencies (HHA), inpatient rehabilitation facilities (IRF), and long-term acute care hospitals (LTACH).

Other: Hospice, a different Inpatient Hospital, or other Inpatient Hospitals such as Inpatient Psychiatric Facilities.

Post-Acute Care Market Overview

Chart 3.7: Initial Patient Destinations Following an Inpatient Hospital Stay for Medicare Beneficiaries in 2017, for States in Western Region



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Note: U.S. Census Bureau defines which states are in the Western Region; includes AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, UT, WA, WY.

Hospital: Short-Term Acute Care Hospital (STACH).

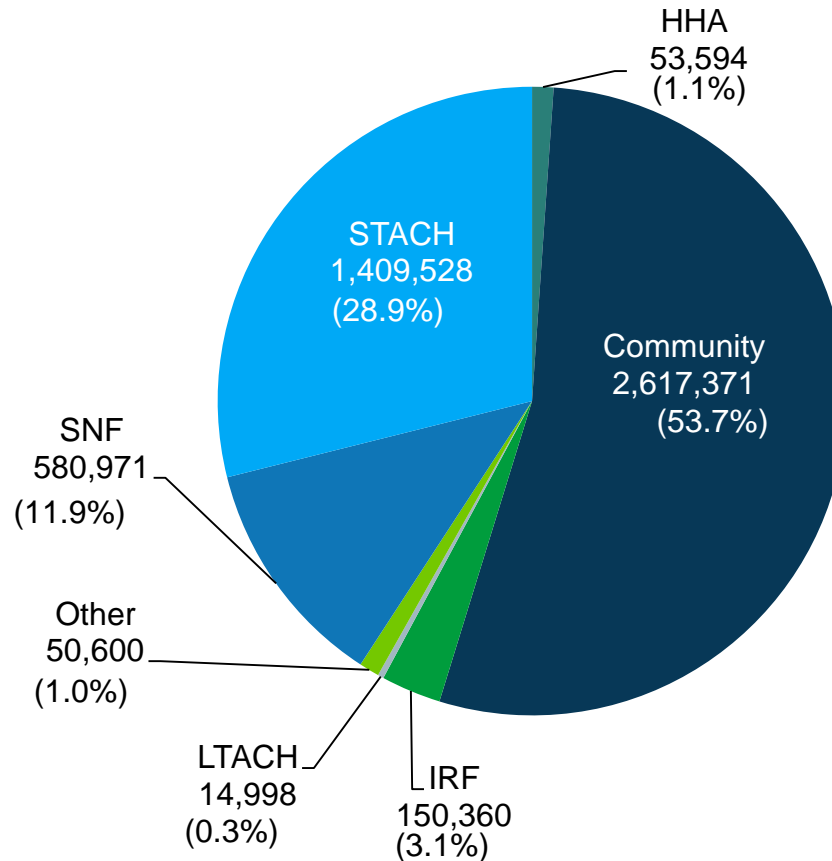
Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

Formal Post-Acute Care Settings: Settings designated as post-acute care by Medicare. Includes skilled nursing facilities (SNF), home health agencies (HHA), inpatient rehabilitation facilities (IRF), and long-term acute care hospitals (LTACH).

Other: Hospice, a different Inpatient Hospital, or other Inpatient Hospitals such as Inpatient Psychiatric Facilities.

Post-Acute Care Market Overview

Chart 3.8: Distribution of Care Settings Prior to Home Health Episodes, 2017



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

Note: Analysis includes care setting in three days prior to home health episode.

SNF: Skilled nursing facility, HHA: Home health agency, IRF: Inpatient rehabilitation facility, LTACH: Long-term acute care hospital, Hospital: Short-term acute care hospital (STACH).

Community: Discharges to the community without skilled home health care; includes individuals living at home, assisted living facilities, and retirement communities.

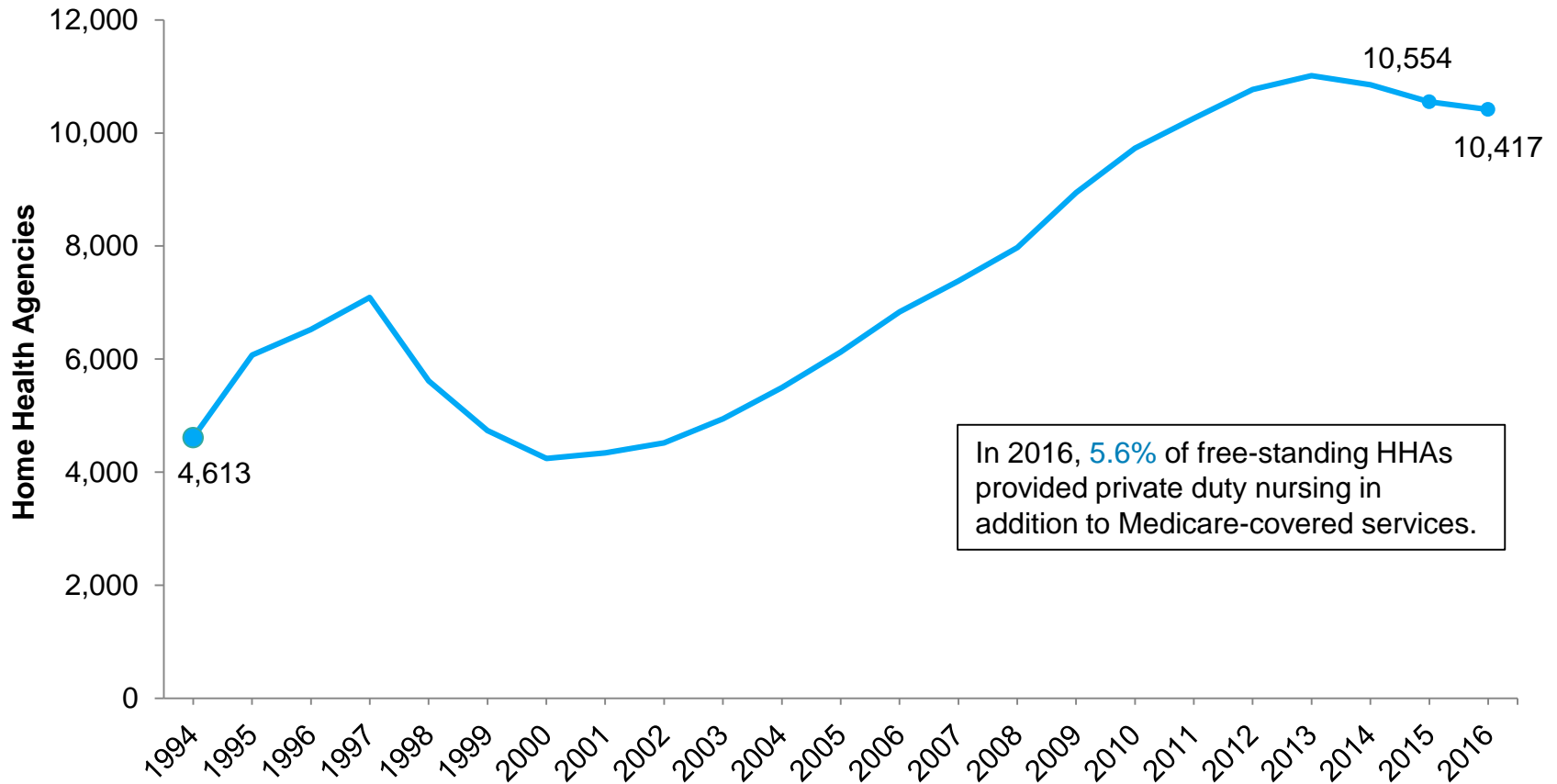
Other: Hospice, another inpatient hospital, or other inpatient hospitals such as inpatient psychiatric facilities.



Section 4: Organizational Trends in Home Health

Organizational Trends in Home Health

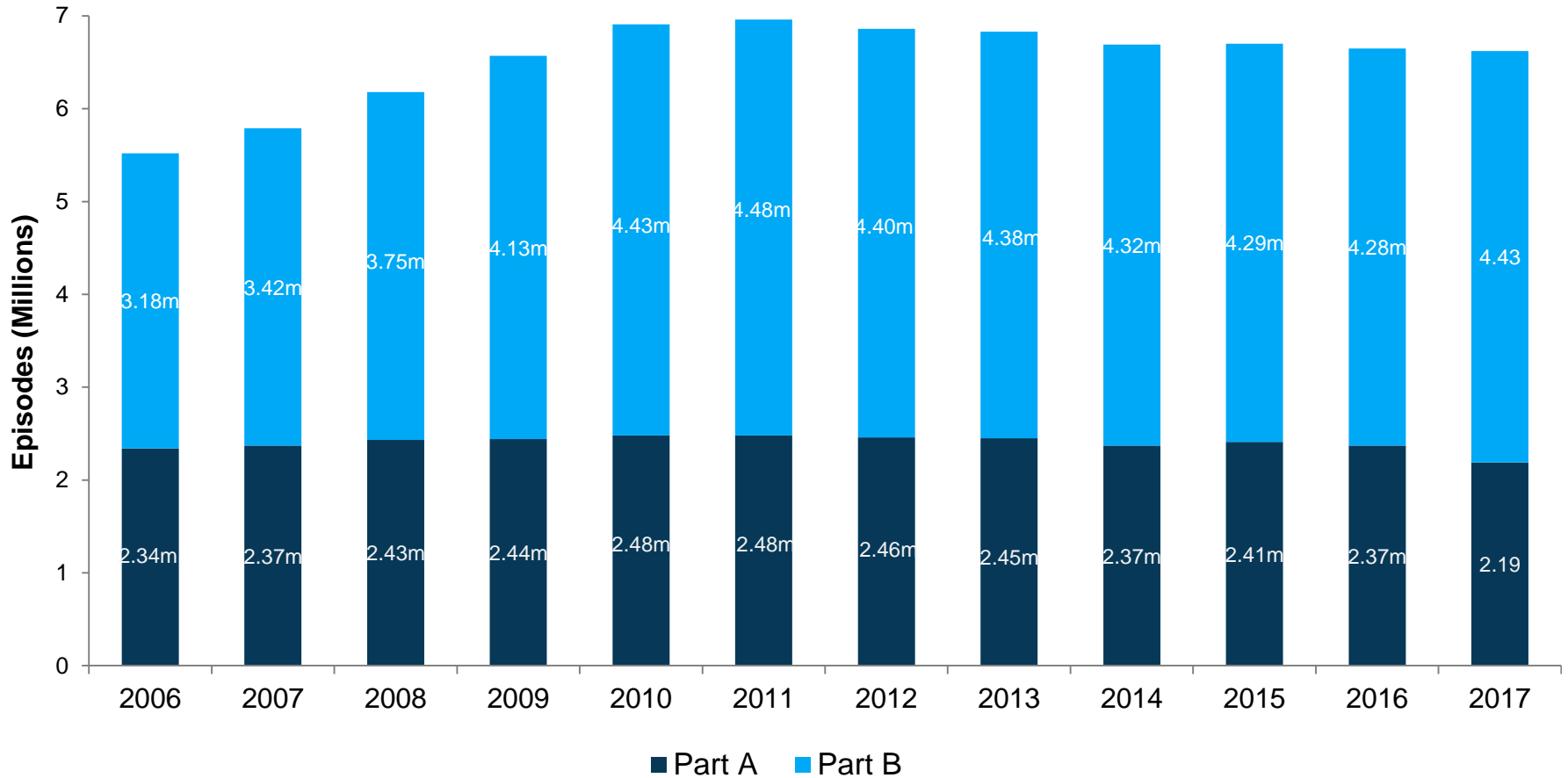
Chart 4.1: Number of Medicare-Certified Free-Standing Home Health Agencies (HHAs), 1994-2016



Source: Medicare Cost Reports from the Centers for Medicare and Medicaid Services.

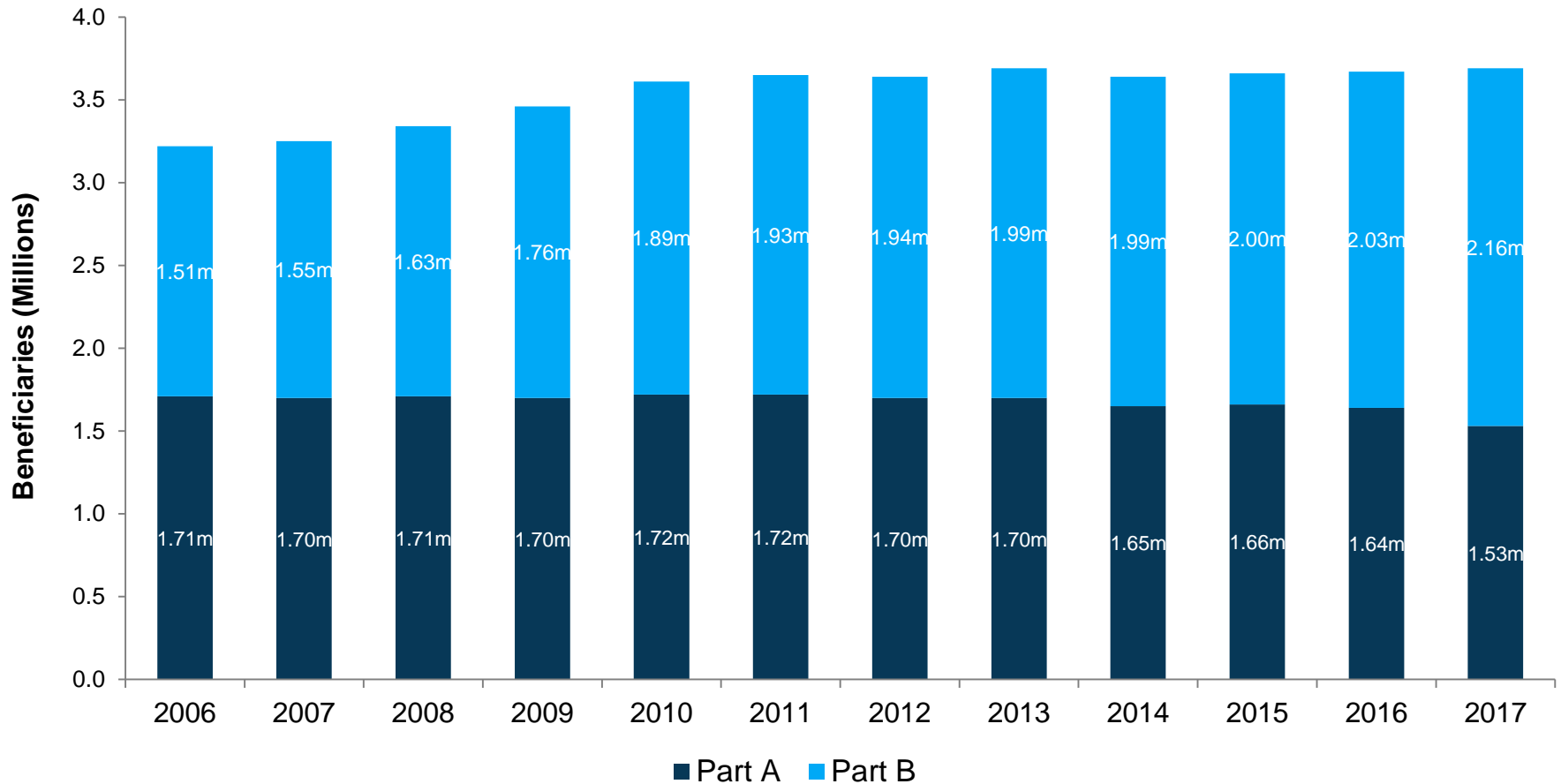
Organizational Trends in Home Health

Chart 4.2: Number of Medicare Part A and Part B Home Health Episodes, in Millions, 2007-2017



Organizational Trends in Home Health

Chart 4.3: Number of Medicare Part A and Part B Beneficiaries with a Home Health Episode, in Millions, 2006-2017



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2006 – 2017.

Note: Beneficiaries are double-counted if they had both a Part A and a Part B home health episode during the year.

Organizational Trends in Home Health

Table 4.4: Number of Medicare Beneficiaries with a Home Health Episode, by State, 2017

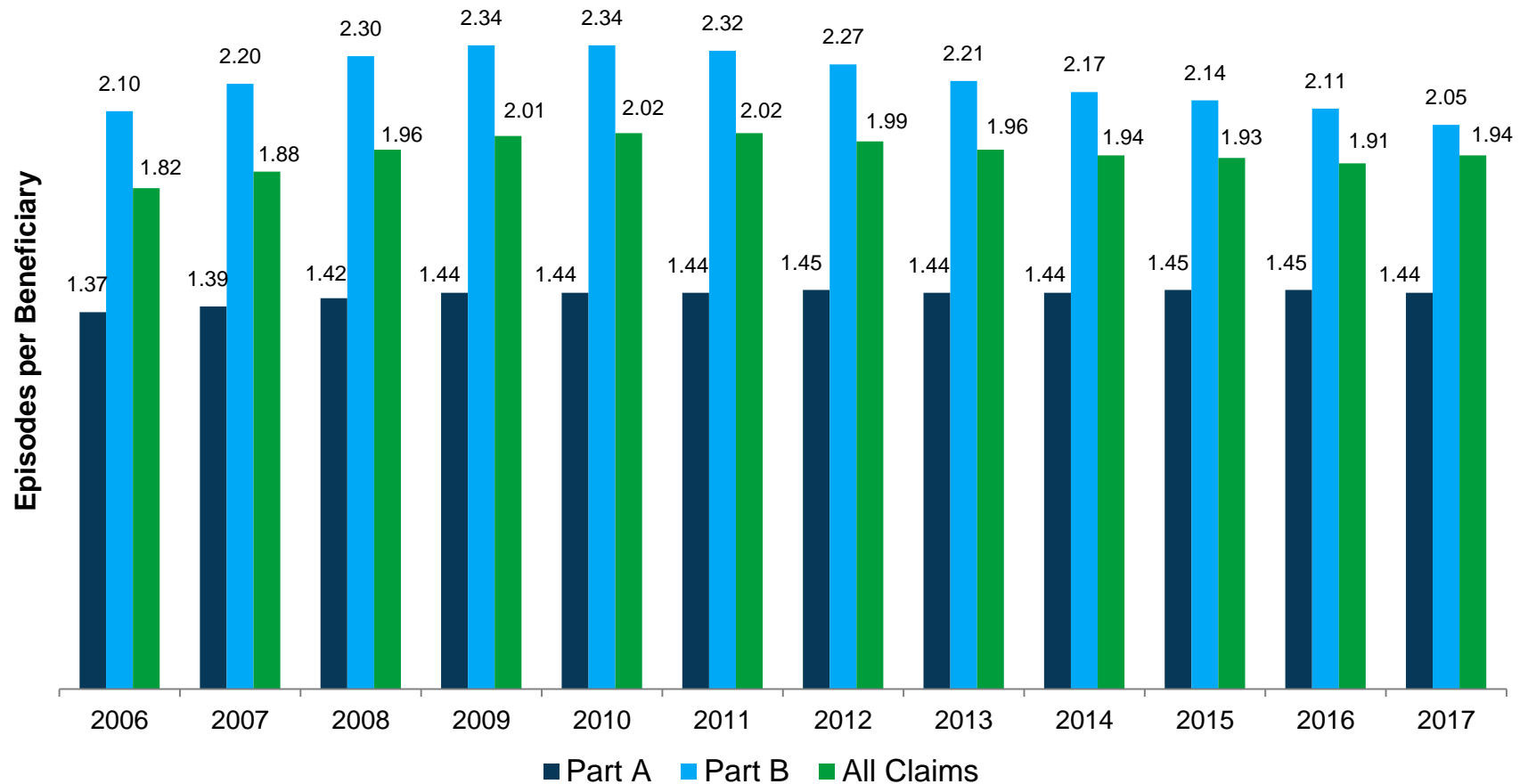
State	Number of Beneficiaries	State	Number of Beneficiaries	State	Number of Beneficiaries
Alabama	67,871	Kentucky	57,978	North Dakota	3,834
Alaska	2,511	Louisiana	65,725	Ohio	122,196
Arizona	45,127	Maine	19,567	Oklahoma	69,013
Arkansas	37,649	Maryland	72,190	Oregon	24,198
California	330,044	Massachusetts	110,885	Pennsylvania	144,196
Colorado	36,950	Michigan	134,471	Rhode Island	12,314
Connecticut	53,632	Minnesota	41,095	South Carolina	61,072
Delaware	15,154	Mississippi	56,316	South Dakota	5,442
District of Columbia	5,850	Missouri	60,862	Tennessee	71,225
Florida	305,466	Montana	6,427	Texas	300,894
Georgia	83,010	Nebraska	16,024	Utah	22,870
Hawaii	3,790	Nevada	30,094	Vermont	11,242
Idaho	15,415	New Hampshire	22,442	Virginia	100,522
Illinois	153,928	New Jersey	95,675	Washington	47,109
Indiana	61,766	New Mexico	17,604	West Virginia	26,093
Iowa	24,915	New York	171,845	Wisconsin	37,313
Kansas	29,726	North Carolina	107,354	Wyoming	4,082
				Total U.S.*	3,430,542

Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2017.

*Total includes 7,569 other or unknown beneficiaries (i.e. beneficiaries from US territories or beneficiaries not attributed to a specific state).

Organizational Trends in Home Health

Chart 4.5: Number of Home Health Episodes per Medicare Home Health User by Part A, Part B, and all Claims, 2006-2017

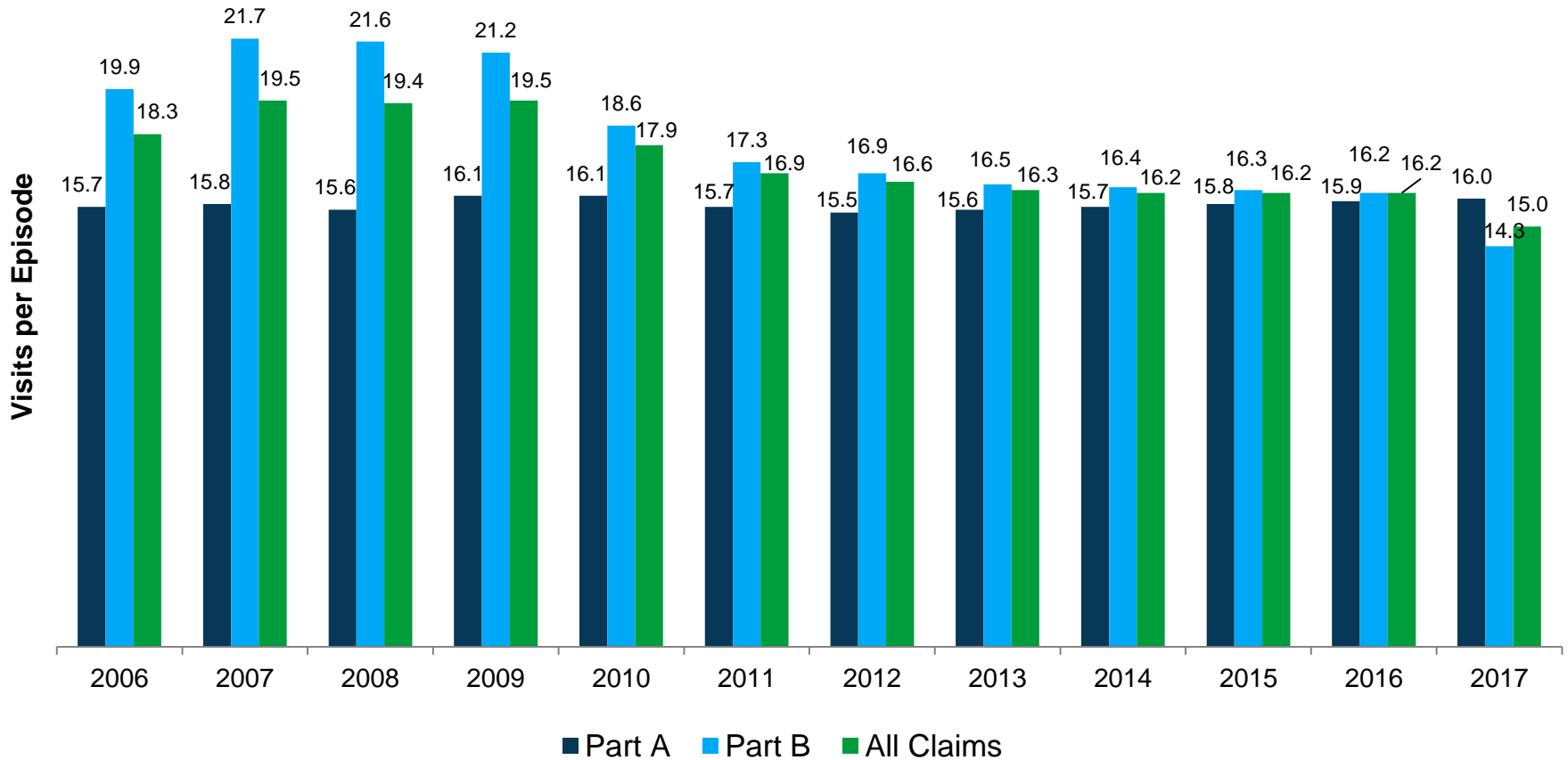


Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2006 – 2017.

Note: These data reflect the number of home health episodes for Medicare beneficiaries with at least one Part A or Part B home health episode.

Organizational Trends in Home Health

Chart 4.6: Number of Home Health Visits per Episode by Part A, Part B, and all Claims, 2006-2017



Source: Avalere Health, LLC analysis of Medicare Standard Analytic Files, 2006 – 2017.

Note: These data reflect the number of home health episodes for Medicare beneficiaries with at least one Part A or Part B home health episode.



Section 5: Economic Contribution of Home Health Agencies

Economic Contribution of Home Health Agencies

Table 5.1: Impact of Home Health on Employment, by State, 2017

State	Estimated Number of HH Employees ¹	Multiplier for Employment ²	Estimated Jobs Created by HH Industry ³	State	Estimated Number of HH Employees ¹	Multiplier for Employment ²	Estimated Jobs Created by HH Industry ³
Alabama	12,818	1.6133	20,679	Montana	2,808	1.382	3,881
Alaska	2,392	1.3022	3,115	Nebraska	3,195	1.5176	4,849
Arizona	22,081	1.5277	33,733	Nevada	4,871	1.5549	7,574
Arkansas	6,627	1.415	9,377	New Hampshire	3,911	1.5142	5,922
California	80,866	1.5449	124,930	New Jersey	49,166	1.481	72,815
Colorado	18,696	1.6091	30,084	New Mexico	14,065	1.3949	19,619
Connecticut	15,587	1.4439	22,506	New York	204,508	1.3427	274,593
Delaware	3,797	1.4549	5,524	North Carolina	42,624	1.5146	64,558
D.C.	8,456	1.1413	9,651	North Dakota	709	1.4084	999
Florida	74,497	1.6571	123,449	Ohio	64,001	1.5251	97,608
Georgia	25,572	1.6347	41,803	Oklahoma	13,561	1.4855	20,145
Hawaii	4,603	1.4168	6,522	Oregon	5,765	1.5314	8,829
Idaho	8,276	1.4065	11,640	Pennsylvania	60,271	1.5782	95,120
Illinois	43,537	1.4964	65,149	Rhode Island	4,856	1.4386	6,986
Indiana	20,828	1.5385	32,044	South Carolina	15,271	1.5156	23,145
Iowa	7,203	1.5076	10,859	South Dakota	1,720	1.3502	2,322
Kansas	7,334	1.558	11,426	Tennessee	20,517	1.6609	34,077
Kentucky	8,724	1.5774	13,761	Texas	263,608	1.5413	406,299
Louisiana	20,974	1.4937	31,329	Utah	8,060	1.6562	13,349
Maine	4,228	1.4926	6,311	Vermont	2,397	1.4357	3,441
Maryland	21,238	1.4788	31,407	Virginia	29,805	1.4323	42,690
Massachusetts	47,181	1.516	71,526	Washington	11,510	1.5235	17,535
Michigan	39,761	1.5247	60,624	West Virginia	7,204	1.391	10,021
Minnesota	24,826	1.4475	35,936	Wisconsin	13,454	1.4678	19,748
Mississippi	7,188	1.5261	10,970	Wyoming	619	1.3499	836
Missouri	21,533	1.5184	32,696	Total U.S.	1,407,299	N/A	2,114,008

1 Quarterly Census of Employment and Wages (QCEW) collected by the U.S. Bureau of Labor Statistics, 2017.

2 U.S. Bureau of Economic Analysis multipliers, 2016.

3 Avalere calculation.

Note: The QCEW collects employment data monthly. All states report employment figures on privately owned home health agencies, including for-profit and non-profit organizations. Alabama, Arkansas, Illinois, Iowa, Minnesota, Missouri, North Carolina, Ohio and Virginia submit employment figures for their government-owned facilities, which are included in this analysis. The QWEC does not include jobs for HHA contractors, but the multiplier is intended to account for such jobs.

Economic Contribution of Home Health Agencies

Table 5.2: Impact of Home Health on Labor Income, by State, 2017

State	Estimated Home Health Total Wages ¹	Multiplier for Earnings ²	Estimated Impact of HH Payroll on Labor Income ³	State	Estimated Home Health Total Wages	Multiplier for Earnings	Estimated Impact of HH Payroll on Labor Income
Alabama	\$558,780,742	1.5384	\$859,628,293	Montana	\$72,502,446	1.4322	\$103,838,003
Alaska	\$49,044,285	1.4084	\$69,073,971	Nebraska	\$104,744,129	1.5236	\$159,588,155
Arizona	\$666,163,212	1.6448	\$1,095,705,251	Nevada	\$228,244,034	1.5067	\$343,895,286
Arkansas	\$229,667,969	1.4689	\$337,359,280	New Hampshire	\$165,991,446	1.5394	\$255,527,232
California	\$3,191,983,592	1.6633	\$5,309,226,309	New Jersey	\$1,483,126,897	1.6587	\$2,460,062,584
Colorado	\$664,656,176	1.7052	\$1,133,371,711	New Mexico	\$275,505,665	1.4427	\$397,472,023
Connecticut	\$674,166,737	1.5268	\$1,029,317,774	New York	\$5,591,108,983	1.5208	\$8,502,958,541
Delaware	\$151,407,958	1.4439	\$218,617,951	North Carolina	\$1,186,403,306	1.6623	\$1,972,158,216
D.C.	\$218,779,815	1.1996	\$262,448,266	North Dakota	\$29,381,108	1.4146	\$41,562,515
Florida	\$2,835,540,867	1.6528	\$4,686,581,945	Ohio	\$1,768,783,936	1.6638	\$2,942,902,713
Georgia	\$853,595,232	1.73	\$1,476,719,751	Oklahoma	\$414,693,325	1.561	\$647,336,280
Hawaii	\$137,913,884	1.526	\$210,456,587	Oregon	\$213,929,978	1.5441	\$330,329,279
Idaho	\$186,258,658	1.4603	\$271,993,518	Pennsylvania	\$2,277,868,551	1.6423	\$3,740,943,521
Illinois	\$1,281,368,199	1.7474	\$2,239,062,791	Rhode Island	\$162,962,117	1.4975	\$244,035,770
Indiana	\$664,414,026	1.5956	\$1,060,139,020	South Carolina	\$464,745,267	1.6008	\$743,964,223
Iowa	\$276,146,773	1.4661	\$404,858,784	South Dakota	\$53,328,876	1.4218	\$75,822,996
Kansas	\$257,906,259	1.5325	\$395,241,342	Tennessee	\$809,571,503	1.6936	\$1,371,090,297
Kentucky	\$419,294,200	1.5398	\$645,629,209	Texas	\$5,378,250,284	1.7698	\$9,518,427,353
Louisiana	\$637,666,214	1.5282	\$974,481,508	Utah	\$284,743,138	1.6703	\$475,606,463
Maine	\$146,540,805	1.5328	\$224,617,746	Vermont	\$88,274,829	1.4426	\$127,345,268
Maryland	\$799,730,436	1.5588	\$1,246,619,804	Virginia	\$851,493,299	1.5655	\$1,333,012,760
Massachusetts	\$1,803,321,667	1.5816	\$2,852,133,549	Washington	\$460,379,859	1.5584	\$717,455,972
Michigan	\$1,371,512,451	1.6205	\$2,222,535,927	West Virginia	\$226,329,761	1.4074	\$318,536,506
Minnesota	\$744,023,348	1.6367	\$1,217,743,014	Wisconsin	\$445,088,219	1.5589	\$693,848,025
Mississippi	\$304,741,810	1.4635	\$445,989,639	Wyoming	\$21,161,866	1.3395	\$28,346,320
Missouri	\$650,749,412	1.6088	\$1,046,925,654	Total U.S.	\$42,833,987,549	N/A	\$69,482,544,895

1 Quarterly Census of Employment and Wages (QCEW) collected by the U.S. Bureau of Labor Statistics, 2017.

2 U.S. Bureau of Economic Analysis multipliers, 2016.

3 Avalere calculation.

Note: The QCEW collects wage data quarterly. All states report employment figures on privately owned home health agencies, including for-profit and non-profit organizations. Alabama, Arkansas, Illinois, Iowa, Minnesota, Missouri, North Carolina, Ohio and Virginia submit wage data for their government-owned facilities, which are included in this analysis. The QWEC does not include wage data for HHA contractors, but the multiplier is intended to account for such wages.

Economic Contribution of Home Health Agencies

Table 5.3: Impact of Home Health on Output, by State, 2016

State	Estimated Home Health Expenditures ¹	Multiplier for Output ²	Estimated Impact of HH Spending on Output ³	State	Estimated Home Health Expenditures	Multiplier for Output	Estimated Impact of HH Spending on Output
Alabama	\$478,191,571	1.9928	\$952,940,162.69	Montana	\$1,044,559,808	1.7731	\$1,852,108,996
Alaska	\$1,851,051,033	1.7564	\$3,251,186,034	Nebraska	\$118,771,494	1.9341	\$229,715,947
Arizona	\$392,535,215	2.1772	\$854,627,670	Nevada	\$737,167,874	1.9368	\$1,427,746,738
Arkansas	\$375,894,558	1.8605	\$699,351,825	New Hampshire	\$210,386,718	1.9345	\$406,993,106
California	\$2,616,636,559	2.2408	\$5,863,359,201	New Jersey	\$580,724,806	2.2457	\$1,304,133,697
Colorado	\$1,946,186,242	2.3091	\$4,493,938,651	New Mexico	\$657,311,471	1.7917	\$1,177,704,963
Connecticut	\$697,367,925	1.9868	\$1,385,530,593	New York	\$1,863,203,897	2.0273	\$3,777,273,260
Delaware	\$176,263,434	1.8359	\$323,602,038	North Carolina	\$721,116,602	2.2287	\$1,607,152,571
D.C.	\$146,294,606	1.2938	\$189,275,961	North Dakota	\$8,037,143	1.7581	\$14,130,101
Florida	\$2,394,135,349	2.1875	\$5,237,171,076	Ohio	\$4,316,153,558	2.2265	\$9,609,915,897
Georgia	\$610,844,630	2.3532	\$1,437,439,583	Oklahoma	\$485,958,069	2.0043	\$974,005,758
Hawaii	\$36,442,048	1.9856	\$72,359,331	Oregon	\$217,394,370	1.993	\$433,266,979
Idaho	\$630,550,628	1.8104	\$1,141,548,857	Pennsylvania	\$1,793,098,896	2.1999	\$3,944,638,261
Illinois	\$1,406,790,370	2.4154	\$3,397,961,460	Rhode Island	\$149,097,413	1.906	\$284,179,669
Indiana	\$503,868,118	2.1085	\$1,062,405,927	South Carolina	\$280,845,768	2.124	\$596,516,411
Iowa	\$283,388,946	1.851	\$524,552,939	South Dakota	\$30,325,504	1.7562	\$53,257,650
Kansas	\$235,857,073	2.0122	\$474,591,602	Tennessee	\$764,667,641	2.2906	\$1,751,547,698
Kentucky	\$336,277,414	1.9999	\$672,521,200	Texas	\$3,524,702,442	2.4534	\$8,647,504,971
Louisiana	\$544,139,250	1.939	\$1,055,086,006	Utah	\$285,272,021	2.243	\$639,865,143
Maine	\$263,110,465	1.9486	\$512,697,052	Vermont	\$160,372,308	1.7774	\$285,045,740
Maryland	\$703,246,767	2.039	\$1,433,920,158	Virginia	\$678,945,500	2.0631	\$1,400,732,461
Massachusetts	\$1,492,846,184	2.0781	\$3,102,283,655	Washington	\$343,099,097	2.0397	\$699,819,228
Michigan	\$2,882,842,066	2.1279	\$6,134,399,632	West Virginia	\$179,271,580	1.7191	\$308,185,773
Minnesota	\$506,008,919	2.1675	\$1,096,774,332	Wisconsin	\$344,998,936	2.0018	\$690,618,870
Mississippi	\$317,039,506	1.852	\$587,157,165	Wyoming	\$31,155,833	1.6279	\$50,718,581
Missouri	\$439,287,060	2.119	\$930,849,280	Total U.S.	\$41,793,734,685	N/A	\$89,054,309,863

1 CMS Medicare Cost Reports for Home Health Agencies, 2016.

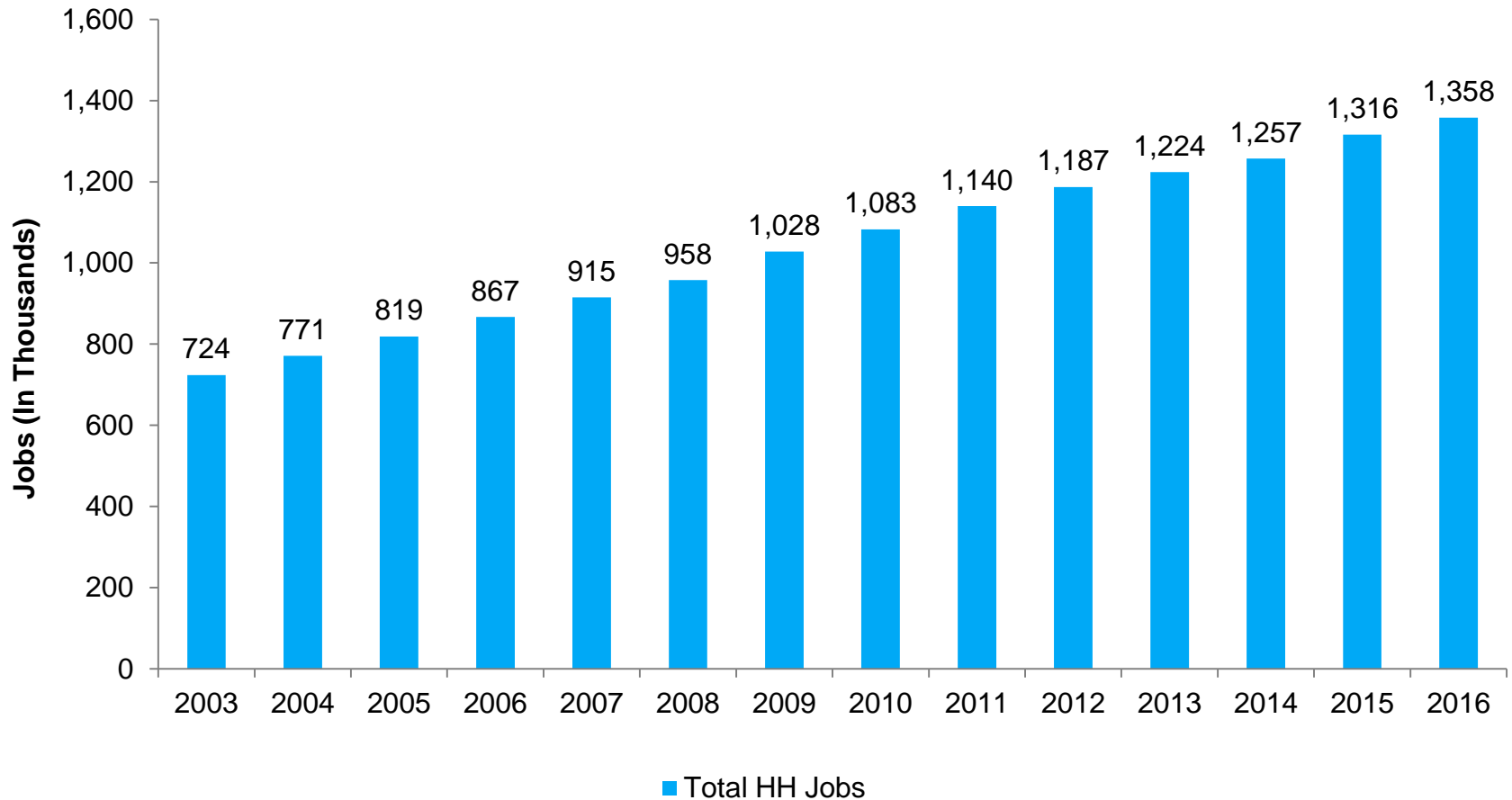
2 U.S. Bureau of Economic Analysis multipliers, 2016.

3 Avalere calculation.

Note: All Medicare-certified home health agencies are required to submit an annual cost report, which includes cost and charges by cost center in total and for Medicare. Cost report data do not include expenditures from HHA contractors, but the multiplier is intended to account for such figures.

Economic Contribution of Home Health Agencies

Chart 5.4: Impact of Home Health on Jobs, Nationally, 2003 - 2016



Source: Quarterly Census of Employment and Wages (QCEW) collected by the U.S. Bureau of Labor Statistics. Private, NAICS 6216 Home health care services, 2016 Annual Averages, All establishment sizes.

Note: This chart reports employment data for privately-owned facilities only, including for-profit and non-profit organizations, and does not include employment from government-owned facilities. Output is not adjusted by U.S. Bureau of Economic Analysis multipliers. 2014 employment data in Chart 6.4 differs from data in Table 6.1 because Chart 6.4 does not include employment from government-owned facilities, which are included in Table 6.1.



Section 6: Outcomes

Outcomes: Readmissions Among Post-Acute Care Users

Table 6.1: 30-day Readmission Rates for Top 20 Most Common MS-DRGs Discharged from Hospital to Selected Post-Acute Care (PAC) Settings, by Setting, 2017

MS-DRG	% of Home Health Users Readmitted Within 30 Days	% of SNF Users Readmitted Within 30 Days
Major Joint Replacement or Reattachment of Lower Extremity w/o MCC	4.02%	7.22%
Septicemia or Severe Sepsis w/o MV >96 Hours w MCC	20.34%	21.76%
Heart Failure & Shock w MCC	23.79%	24.68%
Hip & Femur Procedures Except Major Joint w CC	7.45%	10.82%
Chronic Obstructive Pulmonary Disease w MCC	21.42%	22.11%
Intracranial Hemorrhage or Cerebral Infarction w CC or TPA In 24 Hrs	12.24%	13.78%
Kidney & Urinary Tract Infections w/o MCC	17.51%	13.25%
Pulmonary Edema & Respiratory Failure	21.85%	24.32%
Septicemia or Severe Sepsis w/o MV >96 Hours w/o MCC	16.12%	16.89%
Renal Failure w CC	22.47%	18.39%
Renal Failure w MCC	24.81%	22.50%
Kidney & Urinary Tract Infections w MCC	20.03%	16.12%
Infectious & Parasitic Diseases w O.R. Procedure w MCC	21.53%	26.53%
Simple Pneumonia & Pleurisy w MCC	18.49%	18.18%
Intracranial Hemorrhage Or Cerebral Infarction w MCC	17.97%	20.25%
Cellulitis w/o MCC	14.42%	13.49%
Heart Failure & Shock w CC	20.52%	19.71%
Simple Pneumonia & Pleurisy w CC	14.72%	14.63%
G.I. Hemorrhage w CC	18.82%	18.62%
Misc Disorders Of Nutrition, Metabolism, Fluids/Electrolytes w/o MCC	19.59%	15.21%
Average Rate Across All MS-DRGs**	17.15%	17.41%

**Includes all MS-DRGs, including those not listed

*Analysis includes Medicare Part A claims only.

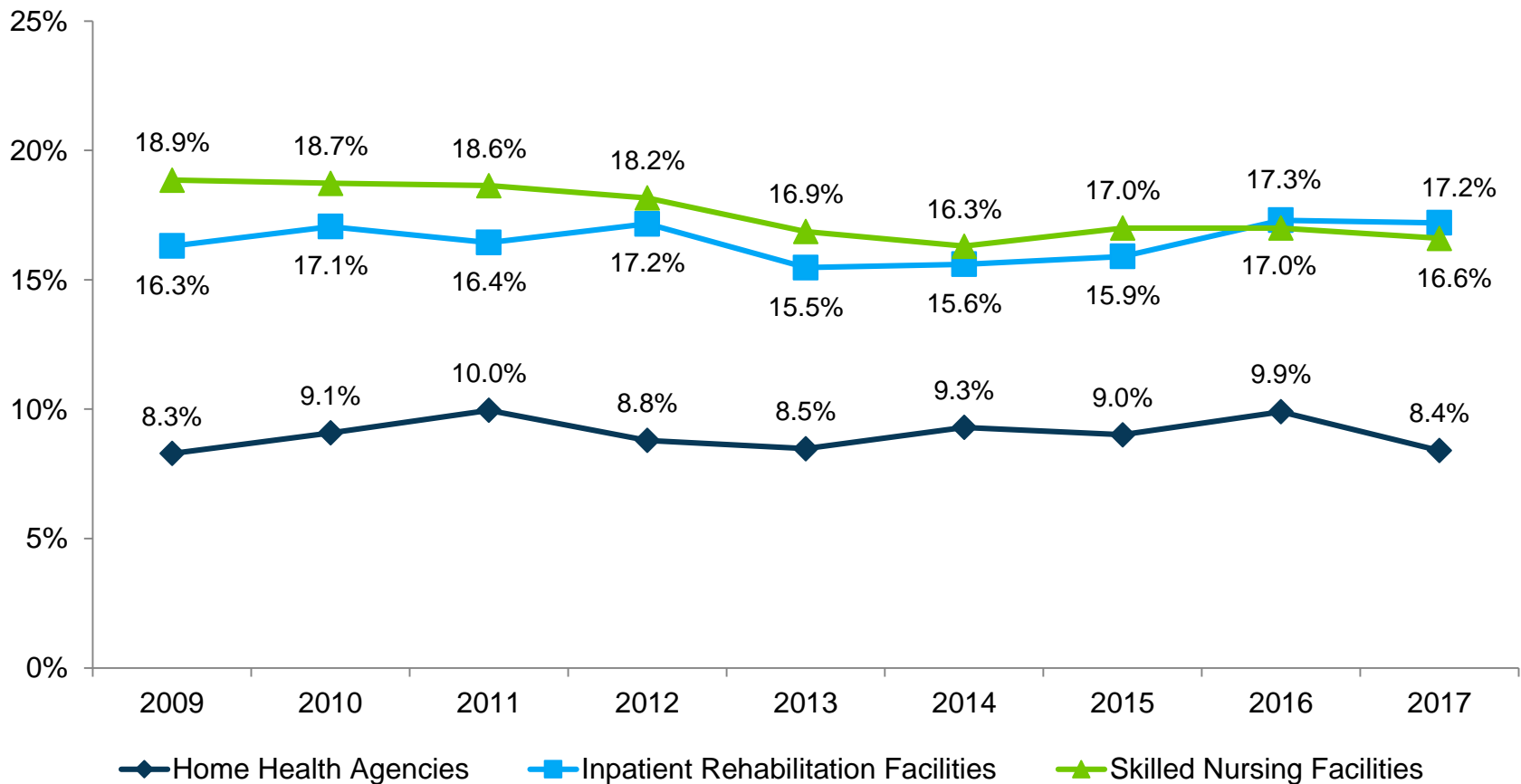
Source: Avalere Health, LLC, analysis of Medicare Standard Analytic Files, 2017.

Note: CC is complication or comorbidity. MCC is major complication or comorbidity.

SNF: Skilled Nursing Facilities

Outcomes: Major Joint Readmissions Among Post-Acute Care Users

Chart 6.2: 30-day Readmission Rates for MS-DRG 469 Discharged from Hospital to Selected PAC Settings, by Care Setting, 2009 - 2017



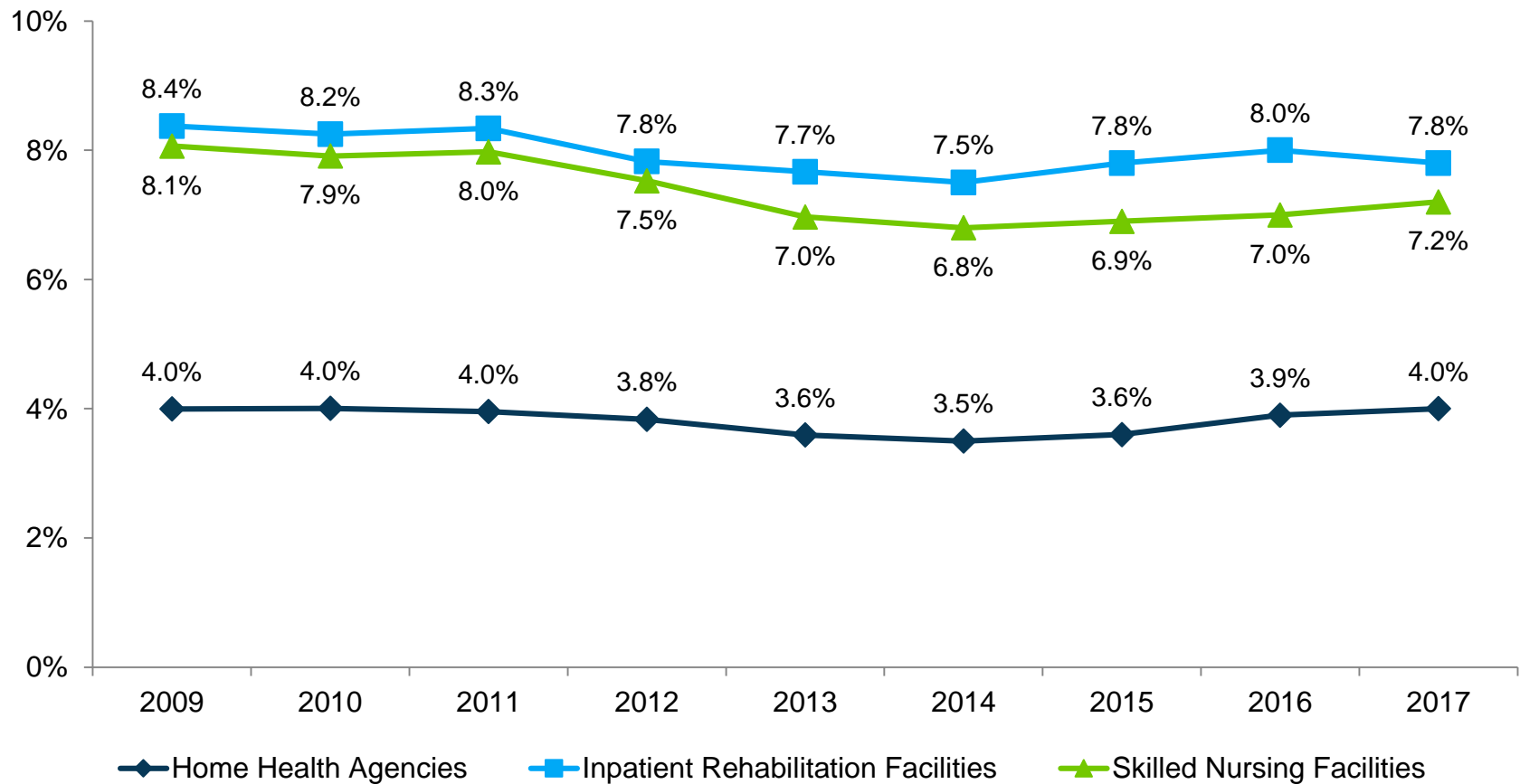
Source: Avalere Health, LLC, analysis of Medicare Standard Analytic Files, 2009 – 2017.

*Analysis includes Medicare Part A claims only.

MS-DRG 469: Major joint replacement or reattachment of lower extremity with major complication or comorbidity.

Outcomes: Major Joint Readmissions Among Post-Acute Care Users

Chart 6.3: 30-day Readmission Rates for MS-DRG 470 Discharged from Hospital to Selected PAC Settings, by Care Setting, 2009 - 2017



Source: Avalere Health, LLC, analysis of Medicare Standard Analytic Files, 2009 – 2017.

*Analysis includes Medicare Part A claims only.

MS-DRG 470: Major joint replacement or reattachment of lower extremity with out major complication or comorbidity.

Outcomes: Quality of Home Health Care

Table 6.4: National Averages for How Often Home Health Team Met Quality Measures Related to Patient Care, 2011 - 2017

Measure	2011	2012	2013	2014	2015	2016	2017
Checked patients for pain	98%	99%	99%	99%	99%	99%	N/A
Checked patients for the risk of developing pressure sores	98%	98%	99%	99%	99%	99%	N/A
Treated heart failure symptoms	98%	98%	98%	98%	98%	98%	N/A
Treated patients' pain	97%	98%	98%	98%	99%	99%	N/A
Checked patients for depression	97%	97%	98%	98%	98%	98%	98%
Checked patients' risk of falling	95%	94%	98%	98%	98%	99%	99.5%
Included treatments to prevent pressure sores in the plan of care	95%	96%	97%	98%	98%	98%	N/A
Took doctor-ordered action to prevent pressure sores	94%	95%	96%	97%	97%	98%	N/A
For diabetic patients, got doctor's orders, gave and educated about foot care	91%	93%	94%	95%	95%	96%	97%
Taught patients (or their family caregivers) about their drugs	89%	92%	93%	93%	94%	96%	98%
Began care in timely manner	90%	92%	92%	92%	92%	92%	93%
Determined whether patients received a flu shot for the current flu season	67%	69%	72%	73%	71%	69%	76%
Determined whether patients received a pneumococcal vaccine (pneumonia shot)	65%	68%	71%	73%	72%	73%	80%

N/A indicates measures removed from CMS Home Health Quality Reporting Program beginning in 2017
 Source: Centers for Medicare and Medicaid Services, Medicare Home Health Compare.

Outcomes: Quality of Home Health Care

Table 6.5: National Averages for Patient Outcomes while in Home Health Care, 2011 – 2017

Measure	2011	2012	2013	2014	2015	2016	2017
Wounds improved or healed after operation	88%	89%	89%	89%	89%	90%	91%
Got better at bathing	65%	66%	67%	68%	69%	71%	74%
Had less pain when moving around	66%	67%	68%	68%	68%	70%	74%
Breathing improved	63%	64%	65%	65%	66%	70%	73%
Got better at walking or moving around	56%	59%	61%	63%	64%	66%	71%
Got better at getting in and out of bed	54%	55%	57%	59%	59%	62%	68%
Got better at taking drugs correctly by mouth	47%	49%	51%	53%	53%	56%	61%
Had to be admitted to hospital	27%*	17%	16%	16%	16%	16%	16%
Needed any urgent, unplanned care in the hospital emergency room – without being admitted to the hospital	N/A	12%	12%	12%	12%	12%	13%

Source: Centers for Medicare and Medicaid Services, Medicare Home Health Compare.

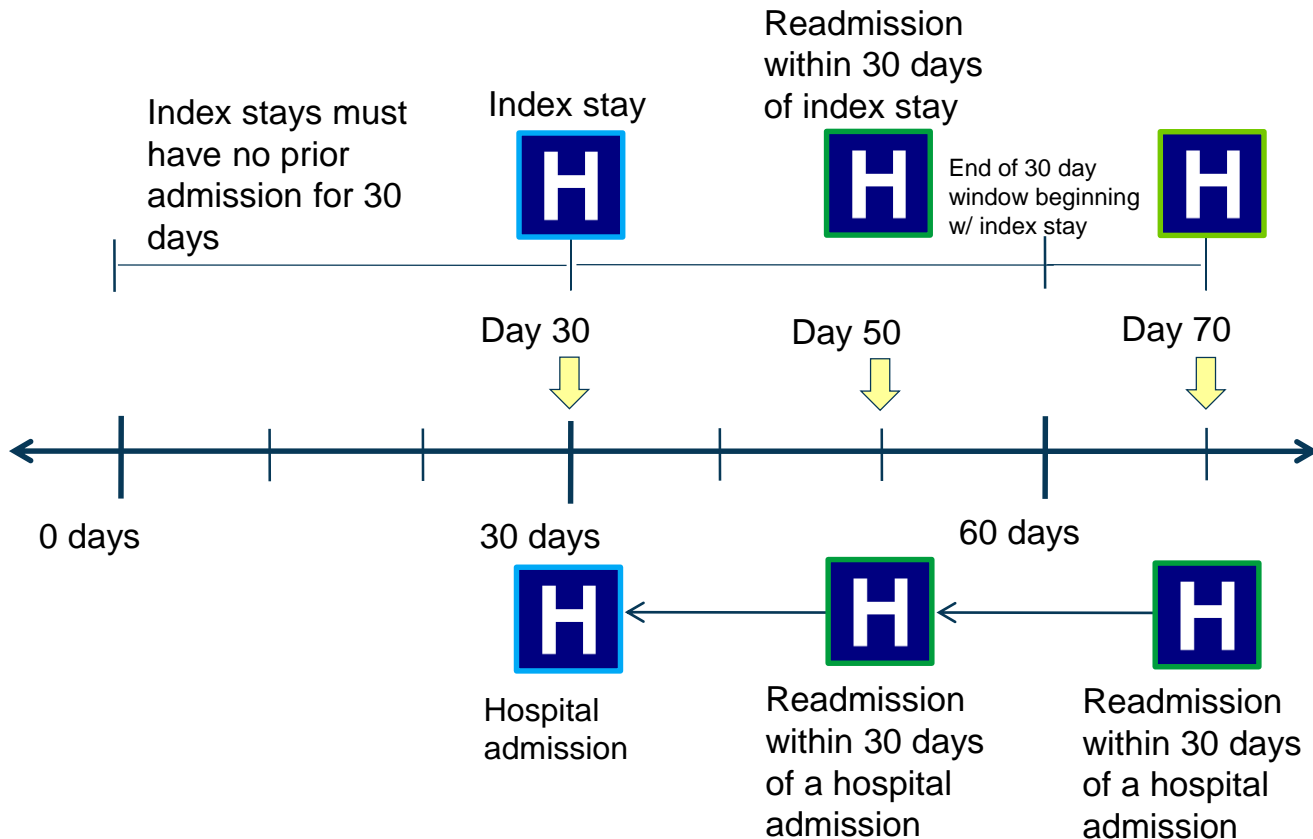
*In 2011, CMS calculated hospital admissions using OASIS data that captured every time a home health patient went to the hospital, regardless of length of stay in home health, and that accounted for all payer sources. Beginning in 2012, CMS calculated hospital admissions based on claims that only included Medicare fee-for-service beneficiaries and that adjusted for repeat hospital admissions by the same beneficiary during an episode.



Appendix: Readmission Rate Methodology

Methodology: Calculating Readmission Rates

The ACA methodology defines a readmission as an admission to a short-term acute care hospital (STACH) within 30 days of an initial, or 'index', admission to a STACH. To be considered an index admission, there must be no other STACH admission in the prior 30 days. These data are based on raw Medicare claims and no risk-based or geographic adjustments have been applied.



Using the Affordable Care Act (ACA) methodology, this episode of care results in **one** 30-day readmission

Without defining index stays as above, this episode of care results in **two** 30-day readmissions