The State of Nursing Facilities in Oregon, 2017

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Executive Summary

Nursing facilities are an integral component of Oregon's long term services and supports continuum, serving residents who need high-level skilled care on a short term or long term basis. This report presents the most recent federal and state data for all licensed nursing facilities that operated in Oregon during State Fiscal Year (SFY) 2017.

Licensed Capacity and Occupancy. There were 11,464 licensed beds in Oregon's 137 nursing facilities in SFY 2017.   The number of beds has decreased gradually since 2000, and the decline accelerated somewhat in SFY 2016 and 2017. Nevertheless, Oregon has the lowest nursing facility occupancy rate among all states, reflecting the state's ongoing commitment to community-based long-term care options, such as assisted living, adult foster care, residential care, and memory care. The total number of resident days per year in Oregon nursing facilities has remained stable at approximately 3 million since 2002. Nursing facilities are concentrated in urban areas, and seven counties had no freestanding nursing facilities.

Admissions, Discharges, and Reentries. There were 41,029 admissions to Oregon nursing facilities in SFY 2017, a 24% increase from 2012. Approximately 1 in 4 admissions was a reentry by a person who had been discharged from the nursing facility less than 30 days before. Almost 95% of admissions were from acute care hospitals. During SFY 2017, Oregon nursing facilities statewide had 40,332 discharges, an increase of 26% from 2012. The large majority of discharges (71%) were to community settings, including home as well as community-based long-term care facilities. Of the 26% of discharges that were to acute care hospitals, more than 9 in 10 returned to a nursing facility within 30 days.

Residents. Over 47,000 individuals resided in an Oregon nursing facility for at least one day during SFY 2017. Most nursing facility residents (58%) were female, and 80% were 65 years of age or older. The nursing facility population is less racially and ethnically diverse than the general Oregon population.

Length of Stay. The average length of stay for residents discharged from Oregon nursing facilities in SFY 2017 was 50 days, but the median length was only 19 days. More than 7 in 10 stays lasted 30 days or less. This reflects the fact that most residents of Oregon nursing facilities are there to receive post-acute care or rehabilitation care after discharge from a hospital. Linkage to hospital discharge data showed that 60% of nursing facility stays were by residents who had been hospitalized for medical conditions, such as infections or pulmonary problems, while 34% had been hospitalized for surgical procedures such as joint replacement.

Acuity of Residents. Most Oregon nursing facility residents required a great deal of assistance with the six basic activities of daily living (ADLs), that is, bed mobility, transferring, eating, dressing, toileting, and bathing. Forty-seven percent of short nursing facility stays involved dependence on five or more ADLs, as did 64% of long stays. In addition, 95% of all nursing facility stays involved at least one chronic medical condition, such as hypertension, hyperlipidemia, and diabetes. Sixty percent of all nursing facility stays involved at least one

acute medical condition, such as anemia or urinary tract infections, and 42% of all stays involved behavioral health conditions such as depression or anxiety.

Payers. Medicaid was the primary payer for 60% of resident days in Oregon nursing facilities during SFY 2017. Traditional (fee-for-service) Medicare paid for 15% of days in 2017, while Medicare Advantage managed care plans paid for 10% of days. Private payers (including commercial insurers, long-term care insurance plans, and self-pay residents) paid for 12% of resident days.

Quality Measures. Oregon nursing facilities performed as well or better than the national average on 15 of 23 specific quality measures defined by the Centers for Medicare and Medicaid Services (CMS). Additionally, nursing facility residents in Oregon were less likely than the national average to receive antipsychotic, antianxiety, or hypnotic medications. Performance on some measures where Oregon nursing facilities did not perform as well as the national average, such as self-reported pain, may reflect the higher proportion of short-stay post-acute acuity residents.

Background

This is the fourth annual report on Oregon nursing facilities funded by the Oregon legislature and prepared by Oregon State University in collaboration with the Oregon Department of Human Services (DHS), the Oregon Health Care Association, and the Oregon Health Authority's Office of Health Analytics. These new annual reports replace those published between 1998 and 2009 by the Office for Oregon Health Policy and Research (OHPR), in collaboration with the Seniors and People with Disabilities Division[1] of the Department of Human Services. The data in those prior reports were based on annual surveys of the state's nursing facilities and are included in this report as trend data.

The purpose of this annual report is to paint a portrait of Oregon's 137 nursing facilities that were in operation in the 2017 state fiscal year to assist in local and statewide planning and policy-making efforts in long-term care services.

In this report, we use data from the Centers for Medicare & Medicaid Services' (CMS) Minimum Data Set (MDS) 3.0 and Nursing Home Compare 3.0, Oregon hospital discharge data, and Oregon provider tax cost and revenue reports. We examine an array of characteristics of the state's nursing facilities, including licensed capacity, bed availability, occupancy, admissions, discharges, readmissions, resident characteristics, length of stay, acuity, payer sources, and quality metrics.

Introduction

Oregon continues to be a bellwether for reform and innovation in long-term services and supports (LTSS) in the United States. LTSS refers to an array of medical, social, and support services for individuals who, for an extended period of time, are dependent on others for assistance. The focus of this report is on nursing facilities, which are an important part of LTSS in Oregon. Nursing facilities provide 24-hour medical care and monitoring for people who need it due to a disability or have been discharged from the hospital but are not yet able to return to the community. Thus, nursing facilities serve two different populations—individuals with post-acute care needs, which are characterized by short stays ($\leq$ 90 days), and individuals with ongoing and indefinite needs, which are characterized by longer or indefinite stays (>90 days). While nursing facilities are the most intensive setting in Oregon's long-term care continuum, they are critical for both short-stay and long-stay individuals with a high need for skilled care. The services offered in nursing facilities are often comprehensive, and include medical treatment, physical, speech and occupational therapy, assistance with the Activities of Daily Living,[2] case management, and social services. Nursing facilities will continue to be an important part of the

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[1] Now called the Aging and People with Disabilities Program. Prior to 1998, the Office of Health Policy also conducted surveys of nursing facilities.

[2] The Activities of Daily Living (ADLs; Katz, 1983) measure the functional impairment of individuals (National Center for Health Statistics, 2006). ADLs commonly refer to assistance with bathing, eating, dressing, mobility, transferring, grooming, and toileting.

state's array of LTSS because of the four percent projected annual growth of the 65 and older population through 2050 (Office of Economic Analysis, 2013).

Research Highlights

This report provides a comprehensive and current look at the state's 137 certified nursing facilities in State Fiscal Year 2017 (SFY), which covers the period of July 1, 2016 to June 30, 2017.[3]

Nursing facilities serve long-term care residents with the most acute needs, such as those receiving post-acute acre after being hospitalized. The state's nursing facility population reflects its continued efforts to direct as many individuals as possible into community-based long-term care options, including assisted living, residential care, and adult foster care.

There were 11,464 licensed beds in Oregon nursing facilities in SFY 2017 (Exhibit 1.0). The number of facilities per county ranged widely, from none in seven counties to 33 in Multnomah County, for an average of 4 facilities per county statewide.

In 2017, 47,252 individuals required services in an Oregon nursing facility for at least one day, representing a 2% increase from 2016. Compared to national averages, the residents of Oregon nursing facilities were more likely to be under age 85 and non-Hispanic white, but less likely to be female. These results suggest that the oldest Oregonians (85 years and older) were more likely to reside in community settings compared to their same age counterparts in other states.

Other notable findings in this report are highlighted below.

Exhibit 1.0. Characteristics of Oregon Nursing Facilities, OR Fiscal Years, 2017

Characteristic	
Total number of facilities	137
Total number of licensed beds	11,464
Average licensed capacity per facility	84
Minimum number of licensed beds	5
Maximum number of licensed beds	214
Average number of facilities per county	4

Sources: Cost Reports, Revenue Statements, and Nursing Home Compare 3.0

Facilities

- The number of facilities ranged widely across counties, with an average of 4 per county.
- Over two-thirds of all facilities (71%) were small- to medium-sized facilities with fewer than 100 beds, accounting for more than half (55%) of all beds statewide.

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[3] Unless otherwise noted, all references to 2016 refer to the State Fiscal Year.

Licensed Capacity & Bed Availability

- The total number of licensed beds has declined consistently (12.7%) over the past 18 years, to 11,464 in 2017. This decline accelerated in 2016 and 2017, which may in part be due to Oregon House Bill 2216 that reimburses quality nursing facilities for voluntarily reducing bed capacity.
- The average number of licensed beds was 84, compared to the national average of 109 in 2014.
- The number of licensed beds by facility ranged from five to 214.
- The number of licensed beds per 1,000 population 75 years and older declined by 8% from 2016 to 40 in 2017, representing a consistent decline of 34% in the last 18 years.
- 80% of licensed beds statewide were staffed and ready for use (i.e., set-up), however, the percentage of set-up beds ranged widely across the state, from a low of 58% in Umatilla County to a high of 100% in Curry, Grant and Lincoln Counties.

Occupancy

- Average occupancy rates decreased from 72% in 2000 to 67% in 2017, which increased 1% from 2016. Oregon continues to have the lowest occupancy rate in the nation.
- Average occupancy rates across counties ranged from 32 to 79%.
- Oregon nursing facilities with less than 50 beds had an average occupancy rate between 4 to 11 percentage points higher than larger facilities of any other size. Facilities with at least 150 beds had the lowest average occupancy rate (61%) compared to facilities of other sizes.
- Between 2010 and 2017, the number of resident days remained relatively stable; however, there was a 2% decrease in resident days from 2016 to 2017.
- Facilities with 50-99 beds accounted for the greatest share of resident days (50%) among all facilities.
- Multnomah, Clackamas, Lane, and Washington Counties had the highest numbers of total resident days, accounting for 26, 11, 10, and 9% of all resident days statewide, respectively.

Admissions, Discharges and Reentries[4]

- 95% of all admissions came from acute care hospitals.
- Facilities with less than 50 beds had the lowest average numbers of admissions and discharges (141 and 137, respectively), whereas facilities with 100 to 149 beds had the highest average numbers of admissions and discharges (438 and 432, respectively).
- 26% of all discharges were to an acute care hospital; 92% of these discharges to hospitals subsequently reentered a nursing facility within a 30-day period.

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[4] An admission refers to an entry into a nursing facility by an individual for the very first time or for the first time after having been discharged from the facility at least 30 days before. A reentry occurs when an individual returns to a facility from which he or she was discharged less than 30 days before. A discharge refers to an individual being released from a nursing facility whether they re-enter or not.

- 71% of all discharges returned to the community.

Residents

- The state's nursing facility population was younger than national estimates, with 80% of nursing facility residents being age 65 or older, compared to 85% of residents nationwide.
- 42% of residents were male compared to 33% of U.S. nursing facility residents.
- Racial/ethnic minority individuals were under-represented in Oregon nursing facilities compared to the Oregon general population and to nursing facilities nationally.
- Racial/ethnic minority residents were younger compared to the state's general nursing facility population.

Length of Stay

- 72% of Oregon nursing facility stays lasted 30 days or less.
- 92% of all nursing facility stays were less than or equal to 90 days, referred to as a "short stay."
- Short- and mid-length stays—meaning stays for less than a full year—averaged 31 days compared to 911 days (or approximately 2.5 years) for long-stays.
- Average lengths of stay were highest for the youngest residents (under age 25) at 147 days.
- The median length of stay in Oregon facilities was 19 days.
- 60% of nursing facility stays linked to hospital discharges were for residents who had been hospitalized for medical conditions, such as infections or pulmonary problems, while 33% had been hospitalized for surgical procedures.
- The overall average nursing facility length of stay was 42 days for stays linked to hospital discharges, with a median of 19 days.

Acuity of Residents

- Average ADLs of nursing facility residents decreased 2.3% from 3.74 in 2012 to 3.53 in 2017.
- 43% of stays involved residents who were somewhat or completely dependent on five ADLs, compared to 23% of all nursing facility residents in the U.S.
- 42%, 49%, and 47% of short-, mid-, and long-stays, respectively, involved dependence on five or more ADLs.
- Stays of residents under 18 years of age had higher levels of complete dependence than stays of other age groups for all ADLs except bed mobility.
- Bathing was the most common ADL need for all stays (74%), followed by toileting (70%) and bed mobility (69%).
- 60% of stays involved at least one acute medical condition, with anemia, urinary tract infections, and transient ischemic attack (TIA) stroke being the most common individual diagnoses.
- 95% of stays involved at least one chronic medical condition, with seven in 10 having hypertension, four in 10 having hyperlipidemia, and nearly three in 10 having diabetes.

- Physical therapy was provided five or more days per week for 82% of short stays.
- Occupational therapy was provided five or more days per week for 77% of short stays.

Payers

- Medicaid was the primary payer for 60% of resident days in Oregon nursing facilities during 2017, a proportion that has remained relatively stable since 2010.
- Medicaid paid for 60, 58, and 66% of resident days in urban areas, large rural cities/towns, and small/isolated rural towns, respectively.
- Medicare Fee-For-Service paid for 15% of Oregon nursing facility resident days in 2017. Medicare Advantage managed care plans paid for 10% of days.
- Private payers (including commercial insurers, long-term care insurance plans, and self-pay residents) paid for 12% of all resident days.

Quality Measures

- Oregon nursing facilities performed the same or better than the national average on 15 of 23 CMS-defined quality measures.
- Oregon facilities' average performance on individual quality measures in 2017 was quite similar to 2016.
- Average rates of vaccination for pneumococcal pneumonia and seasonal flu in Oregon facilities increased compared to 2016, but remain somewhat lower than the average for all nursing facilities nationwide.
- Reported rates of pain were higher in Oregon facilities than nationwide, which may reflect the higher acuity of nursing facility residents in Oregon, particularly residents receiving post-acute care after hospitalization for surgery such as joint replacement, which may increase their need for pain control.
- Nursing facility residents in Oregon were less likely than the national average to receive antipsychotic, antianxiety, or hypnotic medications.
- Rates of several negative outcomes among long stay residents (for example, losing too much weight, urinary tract infections, or falls with major injury) were similar to the national average.
- Short stay residents in Oregon facilities were more likely than the nation al average to visit a hospital emergency department, but less likely to be rehospitalized after entering the nursing facility.

Section 1. Licensed Capacity

Oregon had 137 nursing facilities in SFY 2017, with a total of 11,464 licensed beds (Exhibit 1.1). Seventy-one percent of all facilities had fewer than 100 beds, accounting for more than half (55%) of all beds statewide. The average number of licensed beds was 84, compared to 109 nationally in 2014, the most recent data available (Harrington et al., 2015).

Exhibit 1.1. Licensed Capacity by Facility Size, Oregon 2017
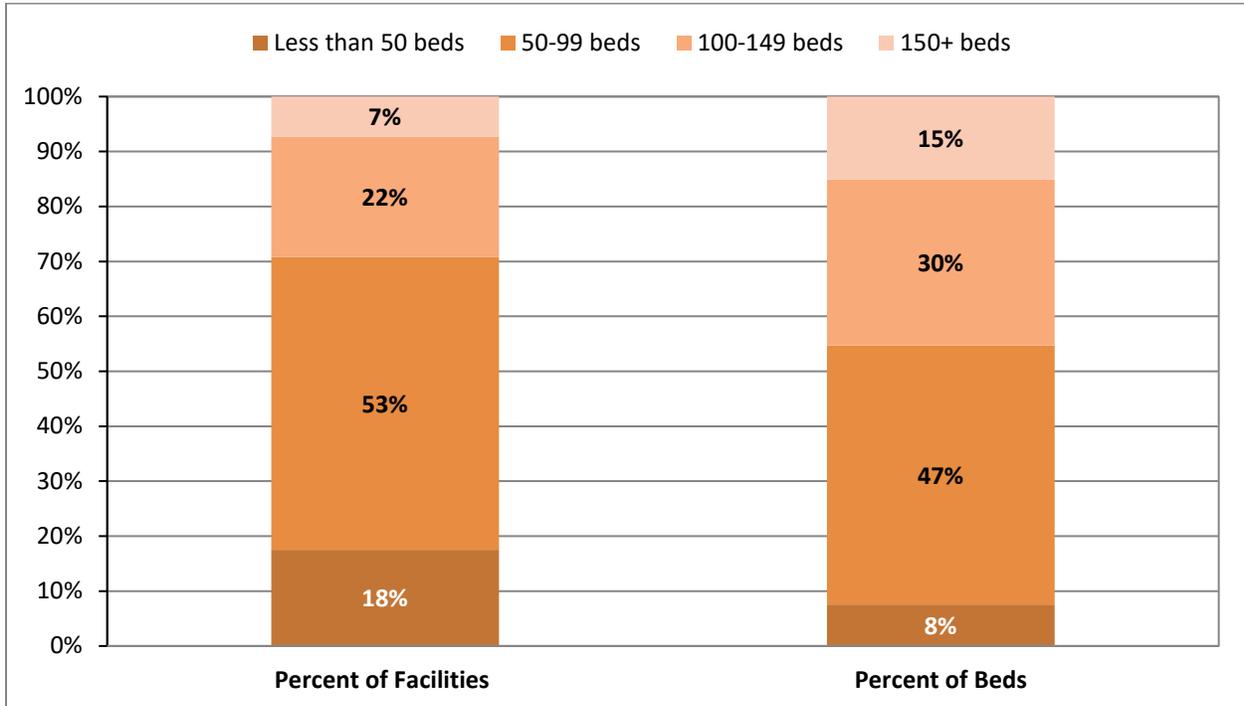
Sources: Cost Reports, Revenue Statements, and Nursing Home Compare 3.0

The total number of nursing facilities in Oregon (137) remained the same from the SFY 2016.[5] Eleven nursing facilities changed ownership at the beginning of or during SFY 2017. No facilities closed or opened during SFY 2017.

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[5] Eleven nursing facilities changed ownership in SFY 2017; however, there were 137 facilities in operation at the end of SFY 2017 (June 30, 2017).

The total number of licensed nursing facility beds in Oregon declined 12.7% over the last 18 years, from 13,127 in 2000 to 11,464 in 2017 (Exhibit 1.2). The total number of licensed beds in 2017 declined slightly (1%) from 2016. The dashed vertical line between 2000-08 and 2009-17 signifies a change in the methodology used to obtain the data reported in this exhibit and in Exhibit 1.3 (page 10). Thus, the trends for these two time periods may not be completely comparable.[6]

One contributor to the decrease in licensed beds was reductions in licensed beds at existing facilities. During 2017, 24 facilities reduced their number of licensed beds, while only one facility increased its number of licensed beds.

The licensed bed capacity reductions observed in 2016 and 2017 may in part be due to Oregon House Bill 2216, enacted in June 2013. This policy reimburses quality nursing facilities that voluntarily reduce bed capacity, with the goal of reducing the growth of system-wide costs for the state.

The long-term decrease in licensed capacity contrasts with the national trend, which has remained relatively stable since 2004 (American Health Care Association, 2014). The decreasing trend in Oregon may reflect our state's continued efforts to direct individuals into home and community-based long-term care options. Oregon has the third lowest number of nursing facility residents per 1,000 population 65 years and older in the United States (AARP, 2014), providing further evidence of the state's commitment to non-institutionalized long-term care.

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[6] Data for the 2000-08 period are based on information used by the state for facility licensing. The trend for 2009-17 come from state and federal data collected as part of the reporting requirements for nursing facility certification and payment.

Exhibit 1.2. Total Number of Licensed Beds in Oregon Nursing Facilities, 2000–2017
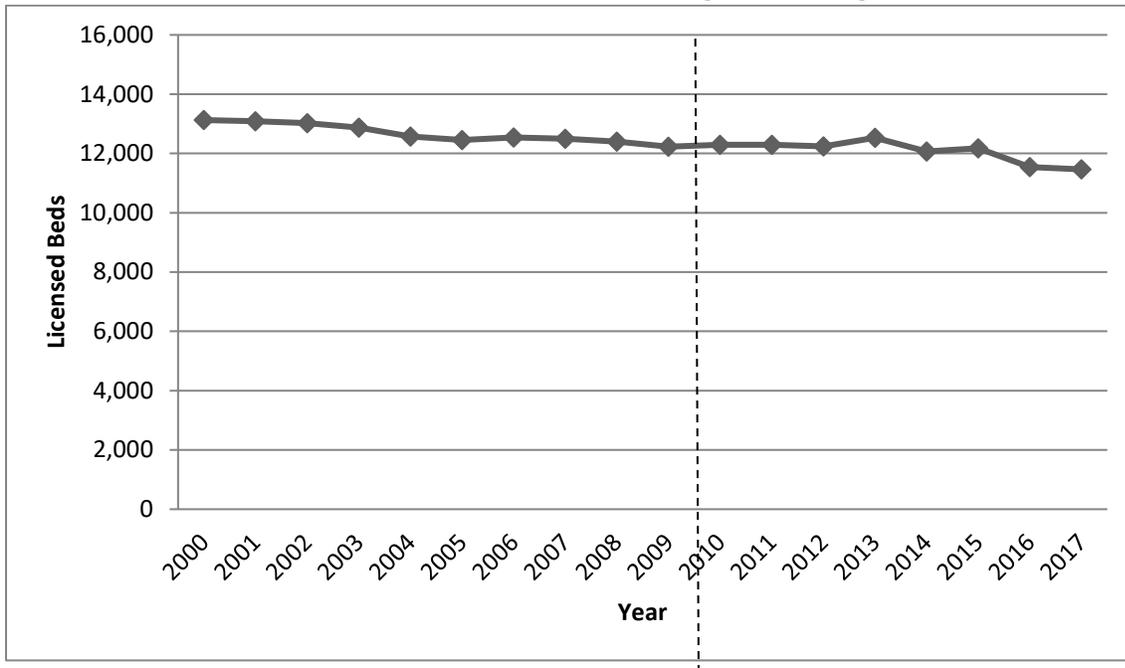
Sources: OHPR Nursing Facility Reports, 2000-08; Cost Reports, Revenue Statements, and Nursing Home Compare 3.0, 2010-15

The number of licensed beds per 1,000 population 75 years and older steadily declined since 2000 (60 vs. 40; Exhibit 1.3). The 34% decrease over the past 18 years reflects the overall reduction in licensed capacity and the growth in the state's older population during this same time period. Over the last six years, the decrease in the number of licensed beds per 1,000 was smaller for the population 75 years and older (16%) than for the population 65 years and older (22%). This reflects faster population growth among individuals in the oldest age categories, consistent with national demographic trends in the U.S. population.

Exhibit 1.3. Licensed Bed Rate per 1,000 Population 65 Years and Older and 75 Years and Older, Oregon 2000–2017
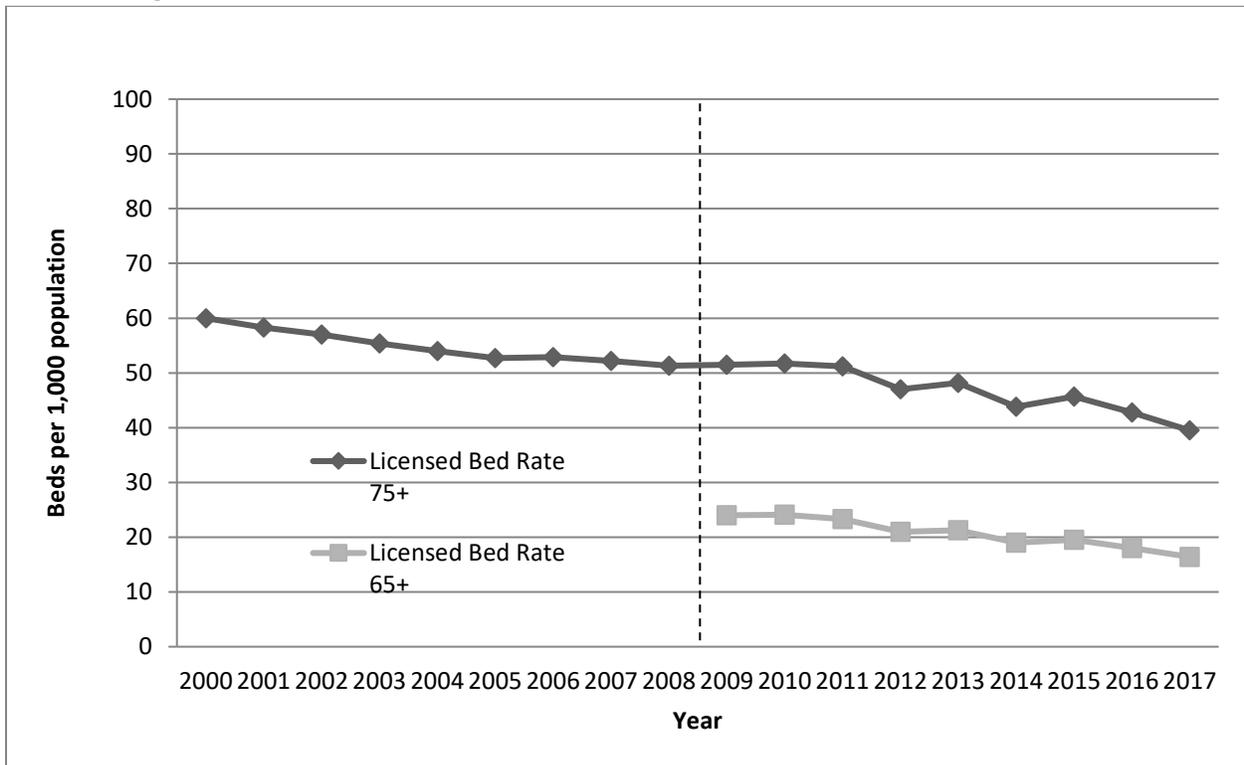
Sources: OHPR Nursing Facility Reports, 2000-08; Cost Reports, Revenue Statements, and Nursing Home Compare 3.0, 2009-17

Section 2. Bed Availability

In 2017, there were 40 licensed beds per 1,000 population 75 years and older in Oregon (Appendix, Table A). This rate varied widely across the state's 36 counties. Seven counties—Baker, Gilliam, Harney, Morrow, Sherman, Wallowa, and Wheeler—had no nursing facilities and thus no beds. Among counties that had nursing facilities, the number of licensed beds per 1,000 population 75 years and older ranged from a low of 11 in Lincoln County to a high of 144 in Wasco County (Appendix, Table A).

Statewide, 80% of licensed beds were staffed and available for use, what we refer to as "set-up." However, the proportion of licensed beds that were "set-up" varied widely across the state. For example, Umatilla County had the lowest percentage of licensed beds that were set-up (58%), followed by Hood River (60%). Three counties had 100% of licensed beds that were set-up: Curry, Grant, and Lincoln. There was approximately a twelve-fold difference in the number of set-up beds per 1,000 adults 75 and older across Oregon, from a low of nine in Jefferson County to a high of 106 in Wasco County (Appendix, Table A).

Section 3. Occupancy

The average occupancy rate[7] statewide decreased from 72% in 2000 to 67% in 2017 (Exhibit 3.1). The average occupancy rate remained relatively stable from 2016 (66%) to 2017 (67%). The dashed line between the 2000-09 and 2010-17 periods signifies a change in the methodology used to obtain the data reported in this exhibit. Thus, the trends for these two time periods may not be completely comparable.[8]

Nonetheless, Oregon's nursing facility occupancy rates rank as the lowest in the nation. This trend may reflect the state's continuing efforts to use home and community-based long-term care services, such as assisted living facilities, adult foster care, home health care, and residential care. The slightly increasing occupancy rates observed in 2016 and 2017 may reflect reduction is licensed bed capacity in those years, in response to Oregon House Bill 2216 or other policies or market forces.

Exhibit 3.1. Average Occupancy Rate, Oregon and U.S. 2000–2017
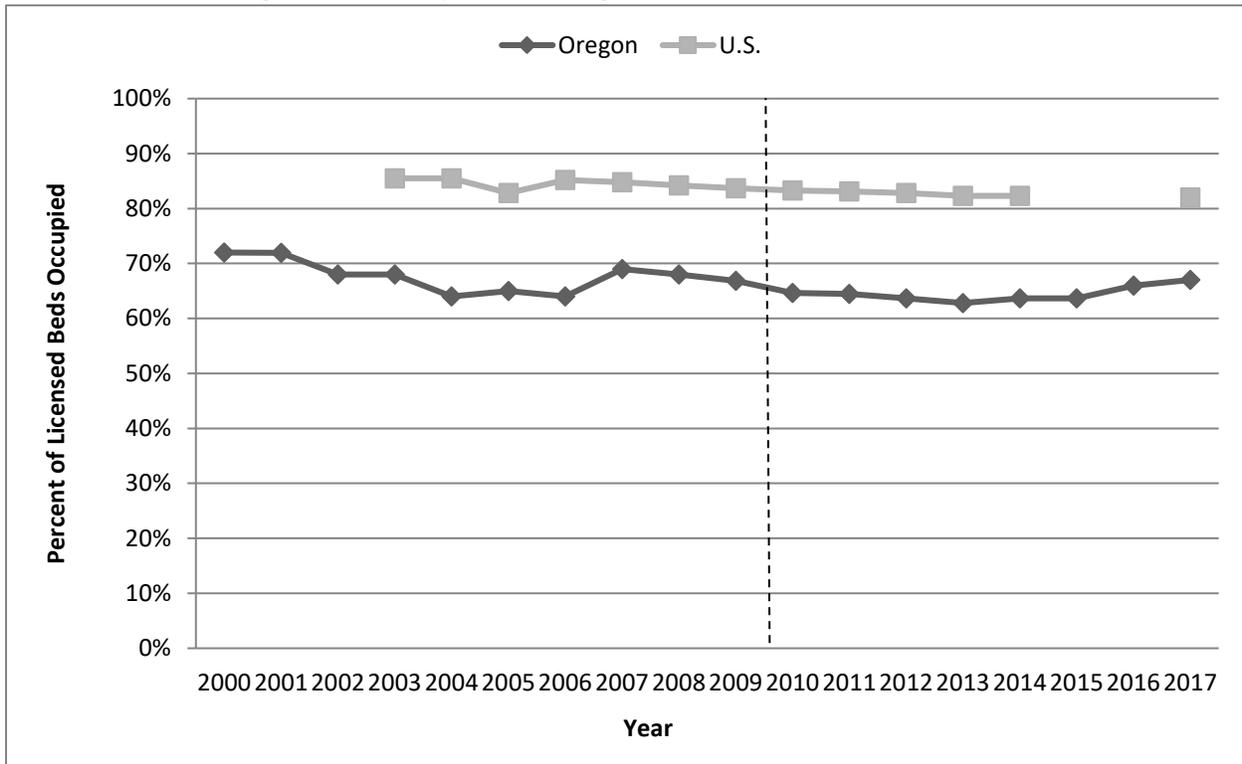
Sources: OHPR Nursing Facility Reports, 2000-08; Cost Reports, Revenue Statements, and Nursing Home Compare 3.0, 2010-17, The Henry J. Kaiser Family Foundation, National Investment Center for Seniors Housing and Care.

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[7] A facility's occupancy rate is the total number of resident days reported by that facility during the fiscal year divided by the total number of bed days available at that facility during the fiscal year. Occupancy rates are adjusted for facility openings and closings during the fiscal year.

[8] Data for the 2000-08 period were collected from annual surveys of the state's nursing facilities, and year-by-year fluctuations reflect variation in responses rates to the survey. Data for 2009 and later years come from state and federal reporting for nursing facility certification and payment, which are not affected by response rates.

In SFY 2017, the average statewide occupancy rate of 67% (Exhibit 3.2) was 15 percentage points lower than the national average (82%) in 2017 (the most current data available), and the lowest rate of any state (Harrington et al., 2015). Smaller nursing facilities, with less than 50 beds, had a higher average occupancy rate (72%) than facilities of any other size. Larger facilities, with 150 or more beds, had the lowest occupancy rate (61%) compared to facilities of other sizes. The occupancy rate slightly increased by three percentage points from 2016 for facilities with 150 or more beds. The rates for other-sized facilities were similar to those in 2016.

Exhibit 3.2. Average Occupancy Rate by Facility Size, Oregon 2017
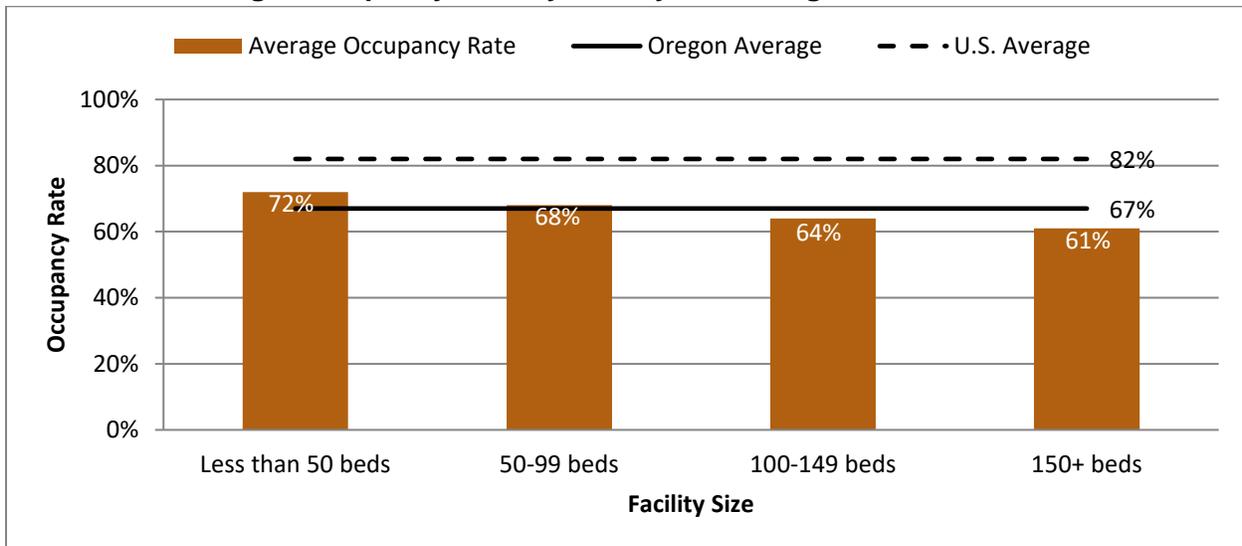
Sources: Cost Reports, Revenue Statements, and Nursing Home Compare 3.0

Average occupancy rates also varied across the state's 36 counties (Appendix, Table A). Klamath (79%), Linn (77%), Jefferson (76%), Crook (74%), Multnomah (74%), Washington (73%), Clackamas (72%), Lincoln (72%), Jackson (70%), Lane (70%), and Marion (68%) counties had an occupancy rates higher than the statewide average (67%). Fourteen counties had rates under 60%, with Clatsop county having the lowest occupancy rate (32%) of all counties statewide.

Overall, the total number of resident days declined between 2000 and 2008, from 3.6 million to 3.1 million (Exhibit 3.3). Since 2009, the number of resident days decreased by 6% from 3.23 million in 2009 to 3.04 million in 2017.

Facilities with 50-99 beds accounted for the greatest share of resident days (50%) for all facilities in 2017 (Exhibit 3.4). However, the smallest- and largest-sized facilities had the fewest number of resident days, representing 10% and 12% of all resident days statewide, respectively. This pattern is consistent with 2016 data. Resident days decreased for facilities with 50-99 beds and 150+ beds. Resident days increased for facilities with less than 50 beds and facilities with 100-149 beds. Facilities with 150+ beds had the largest decrease from 2016 (20%). Facilities with 100-149 beds had the largest increase from 2016 (10%).

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Exhibit 3.3. Number of Resident Days in Oregon Nursing Facilities, 2000–2017
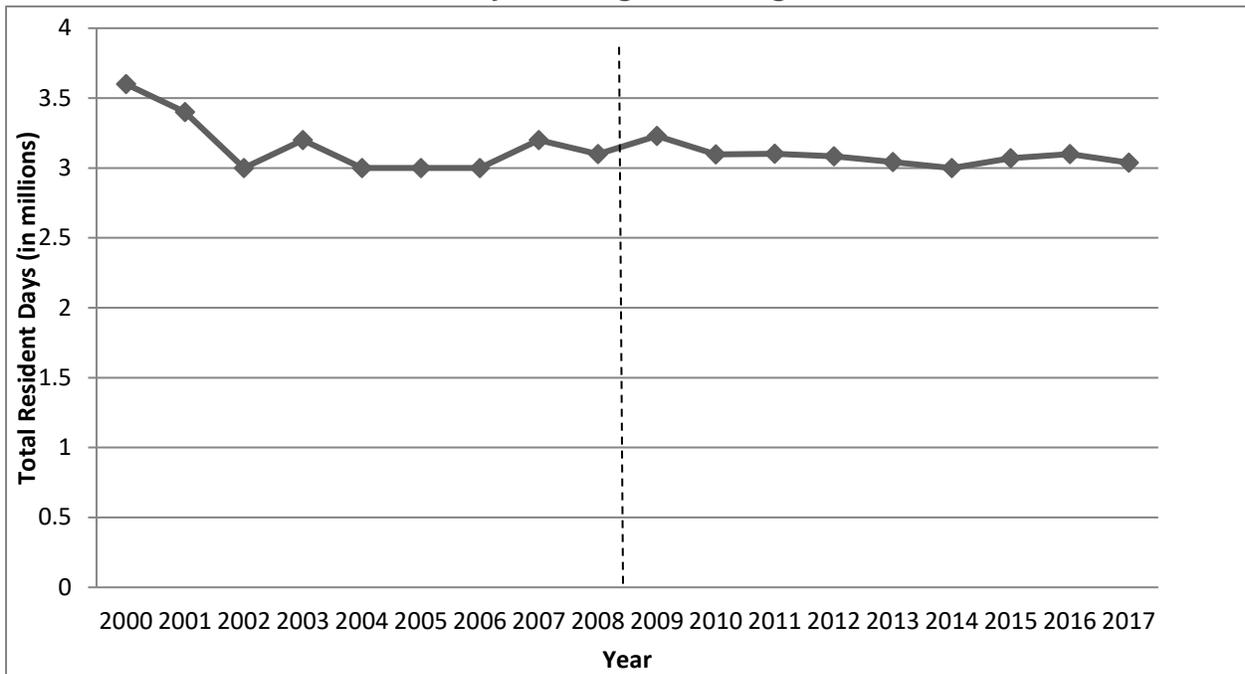
Sources: OHPR Nursing Facility Reports, 2000-08 (adjusted for annual survey response rates); Cost Reports, Revenue Statements, and Nursing Home Compare 3.0, 2009-17

Exhibit 3.4. Total Number of Resident Days by Facility Size, Oregon 2017
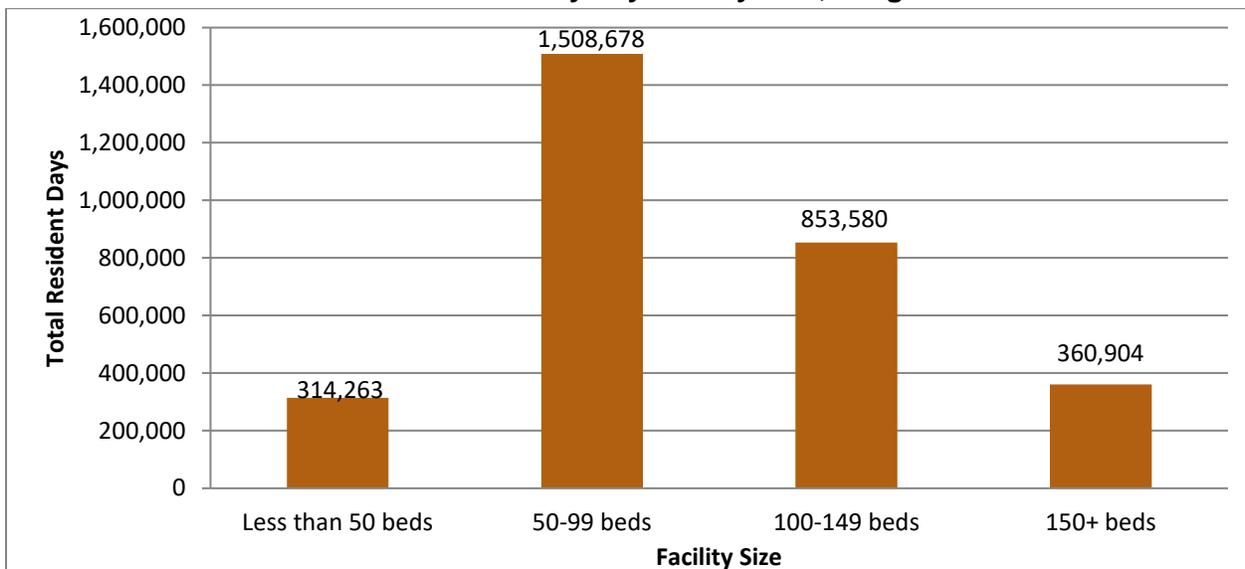
Sources: Cost Reports, Revenue Statements, and Nursing Home Compare 3.0

The total number of resident days also varied by county (Appendix, Table A). Multnomah, Clackamas, Lane, and Washington Counties had the highest numbers of total resident days, accounting for 26, 11, 10, and 9% of all resident days statewide, respectively.

Exhibit 3.5 shows resident days by Rural-Urban Commuting Area (RUCA) categories that we refer to as urbanicity. RUCA categories are defined by U.S. Census tracts, where "urban" refers to an area with population ≥50,000, "large rural city/town" refers to an area with population from 10,000-49,999, and "small and isolated small rural town" refers to a population size of 2,500-9,999.[9] As expected, 86% of all resident days were in urban areas (Exhibit 3.5), compared to 12% and 2% in large rural towns and small rural towns, respectively.

Exhibit 3.5. Total Resident Days by Urbanicity, Oregon 2017
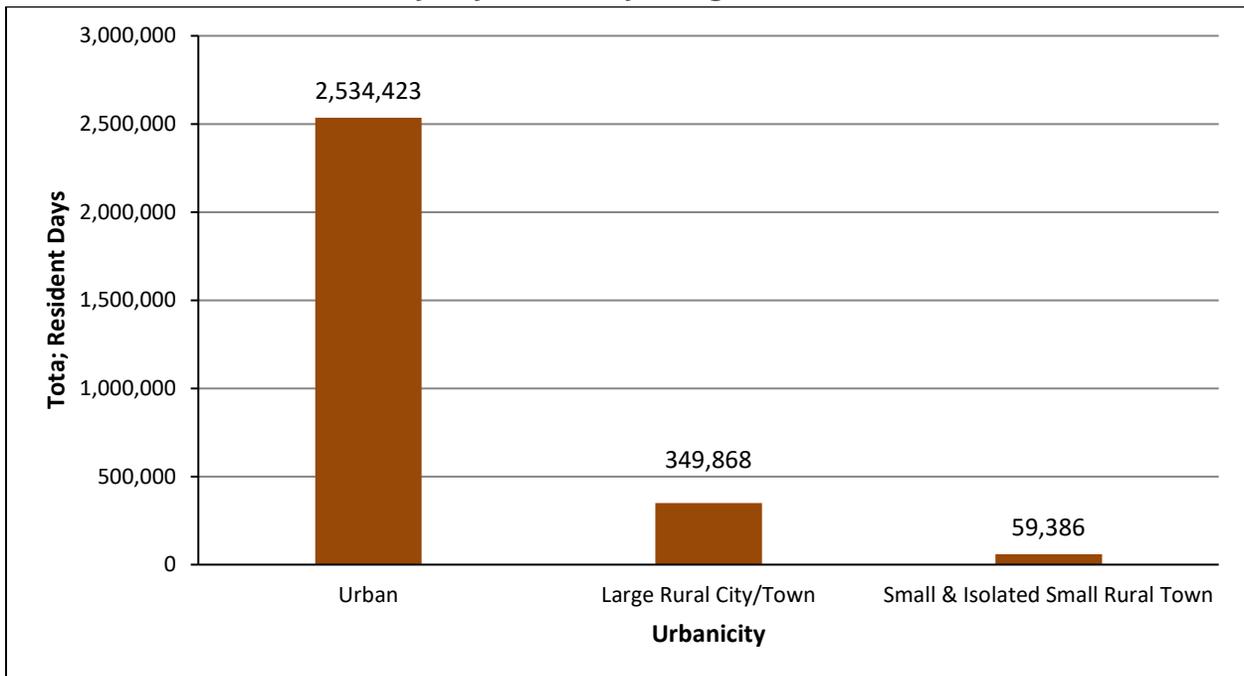
Sources: Cost Reports, Revenue Statements, RUCA 2.0, and Nursing Home Compare 3.0

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[9] See Technical Notes for more detailed information on these definitions.

Section 4. Admissions, Discharges, and Reentries

Methodology

An admission refers to an entry into a nursing facility by an individual. There are two categories of admissions, according to CMS Minimum Data Set (MDS) definitions:

- An <u>entry</u> is when an individual enters a facility for the very first time, or for the first time after having been discharged from the facility at least 30 days before.
- A <u>reentry</u> is when an individual returns to a facility from which he or she was discharged less than 30 days before.

A discharge refers to when a person leaves a nursing facility to return to the community, to be admitted to a hospital, or to go to other destinations. A nursing facility stay is a period of continuous residence in a nursing facility, beginning with an admission and ending with a discharge.

For this report we first identified discharges in the MDS, and then identified the admission date that corresponded to each discharge; the nursing facility stay was constructed as the period from admission to discharge.[10] We also identified reentries directly, using dates of discharge from and reentry to the same facility within 30 days. We excluded from our analyses nursing facility stays for which the MDS does not include a discharge date. See the Technical Notes for further details.

After adjusting the total of 41,029 SFY 2017 admissions for 1,640 admissions that were not included in this report because of no discharge date in the MDS, the total number of nursing facility admissions we report is within 5% of the number of Oregon nursing facility admissions derived from detailed annual cost reports submitted to the Centers of Medicare and Medicaid Services by nursing facilities (Hansen Hunter & Co., 2016).

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[10] As described in the Technical Notes, we began using the current approach for identifying stays in the 2015 report. For persons still residing in a nursing facility on the date the MDS dataset was created for Oregon State University, December 4, 2017, we constructed a stay that began on the admission date and ended on December 4, 2017.

As shown in Exhibit 4.1, the numbers of admissions and discharges have steadily increased from 2012 to 2017. Admissions and Reentries increased from 31,954 in 2012 to 41,029 in 2017. Discharges increased from 32,048 in 2012 to 40,332 in 2017. The percent increases in admissions, discharges, and reentries during this time period were 23.8%, 25.8%, and 45.3%, respectively.

Exhibit 4.1. Trend in Total Admissions, Discharges and Reentries, Oregon 2012–2017 2017
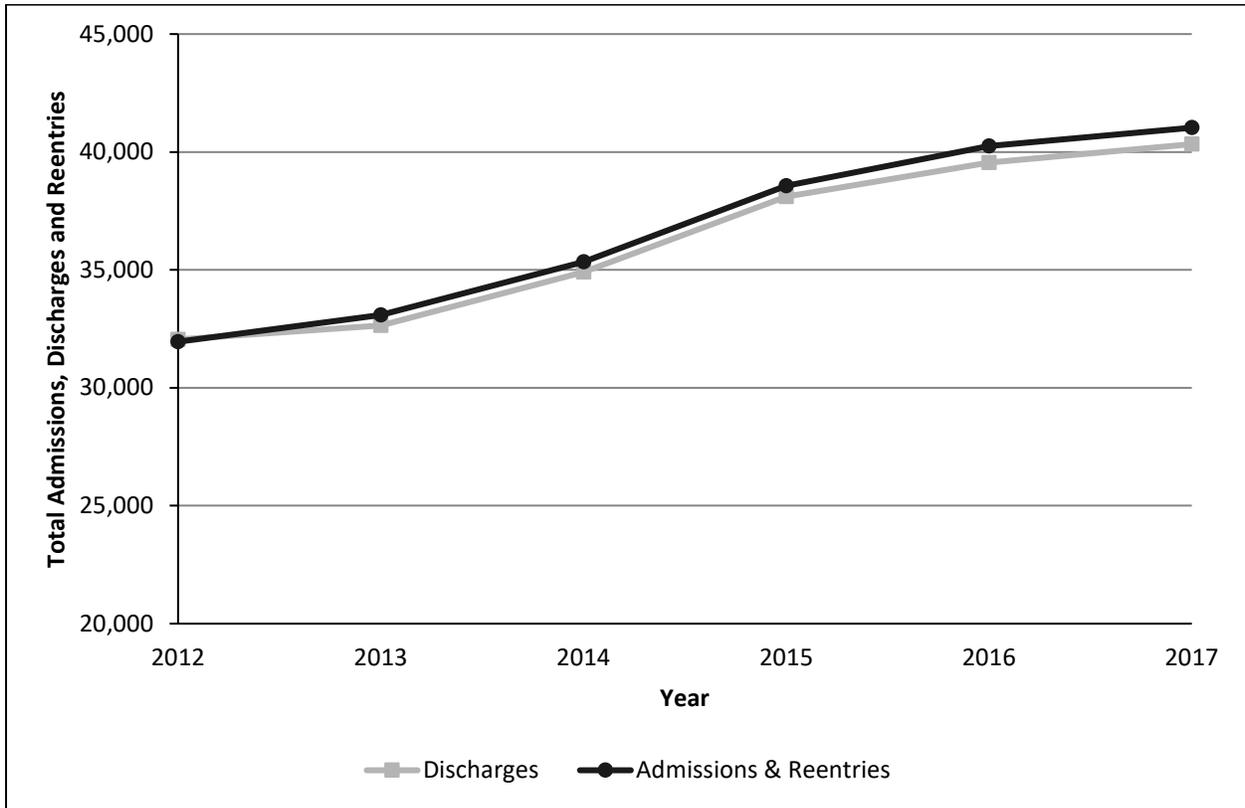
Source: CMS Minimum Data Set

Admissions

In SFY 2017, nursing facilities statewide had 41,029 admissions, based on MDS data. Of these, 9,982 (24.3%) were reentries. Exhibit 4.2 displays the admission source as a percentage of total admissions. Acute hospitals accounted for the highest percentage at 94.7%. Community admission sources contributed 3.4% while another nursing home accounted for 1.2% of total admissions. This pattern has been consistent since 2012 (See Appendix Table B).

Exhibit 4.2. Admission Source as Percentage of Total Admissions, Oregon 2017
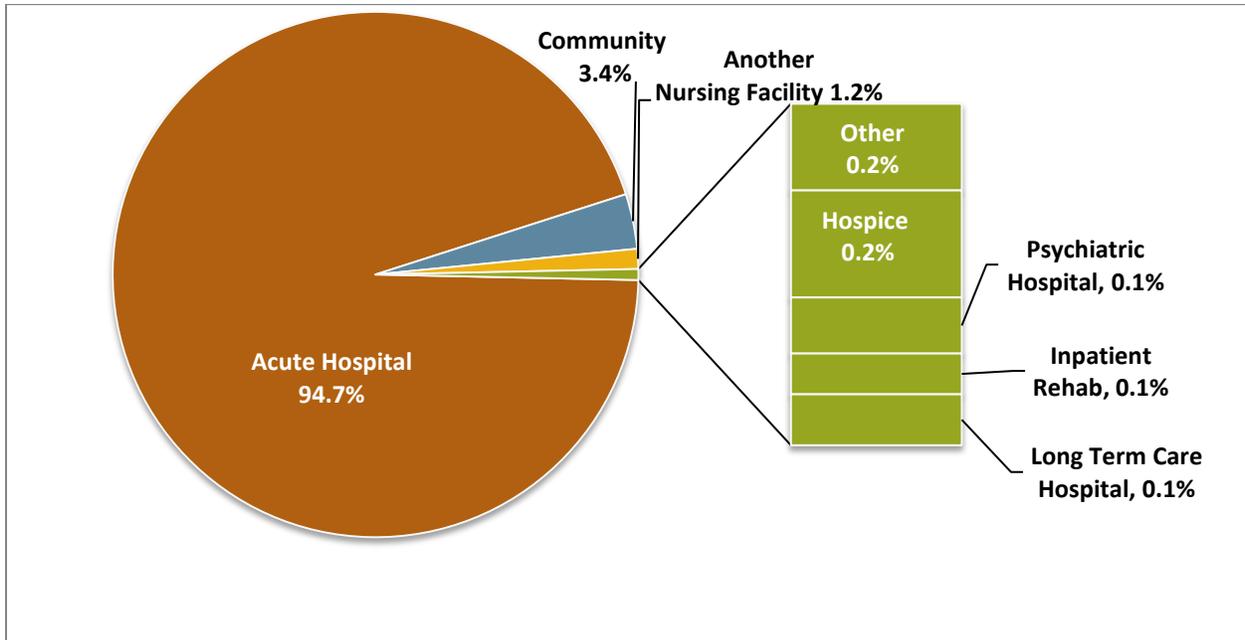
Source: CMS Minimum Data Set

Discharges

In 2017, nursing facilities statewide had 40,332 discharges, based on MDS data. Exhibit 4.3 presents discharge destination as a percentage of total discharges. The majority of individuals discharged from nursing facilities returned to the community (71.1%), which includes other long-term care settings such as assisted living, residential care, and adult foster care. Approximately 1 in 4 discharges from nursing facilities (25.5%) were to acute care hospitals. A small proportion of residents (1.9%) were transferred to another nursing facility or other facility (0.7%), which included long-term care hospitals or facilities not otherwise specified. Inpatient rehabilitation, hospice, and psychiatric hospitals represented less than one percent of all discharges. The distribution of discharge destinations has been very similar since 2012, except that the proportion of discharges to the community has increased slightly, and the proportion to hospital has decreased slightly (see Appendix Table C).

Exhibit 4.3. Discharge Destination as Percentage of Total Discharges, Oregon 2017
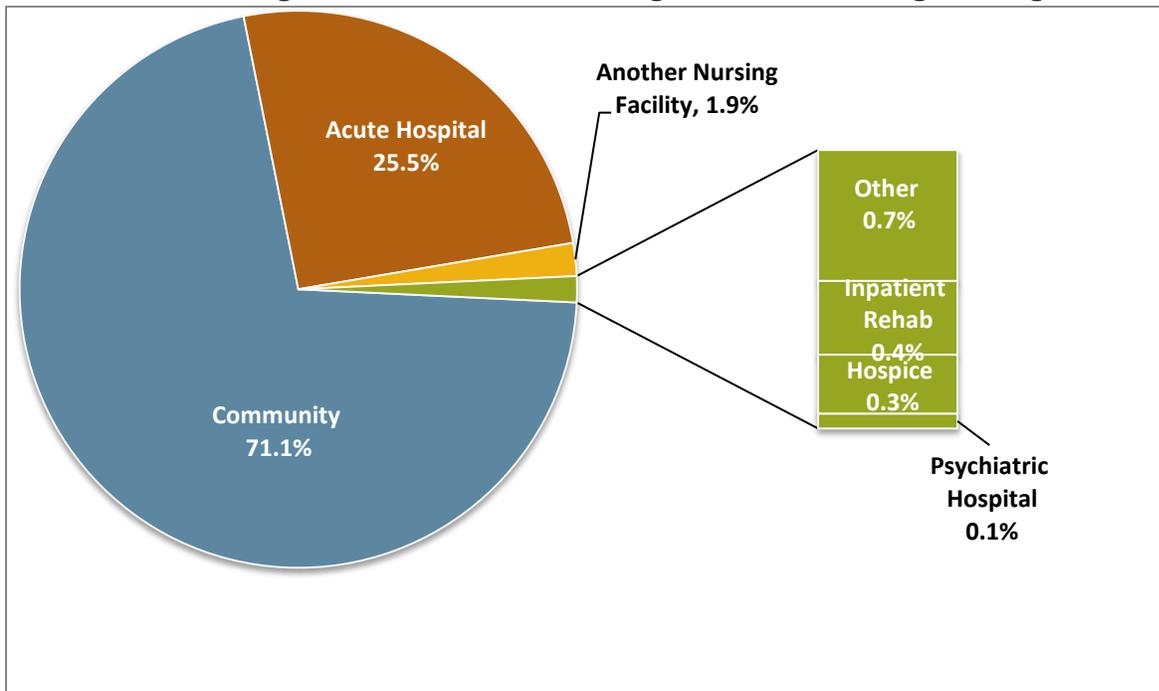
Source: CMS Minimum Data Set

Admissions and Discharges by Facility

Statewide, the average number of admissions per facility was 299 in SFY 2017, and the average number of discharges was 294. However, Exhibit 4.4 shows that the average numbers of admissions and discharges increased with the size of facility up to 100 to149 beds. Facilities with less than 50 beds had the lowest average numbers of admissions and discharges (141 and 133, respectively) and facilities with 100 to 149 beds had the highest average numbers of admissions and discharges (438 and 432, respectively).

Exhibit 4.4. Average Numbers of Admissions and Discharges by Facility Size, Oregon 2017
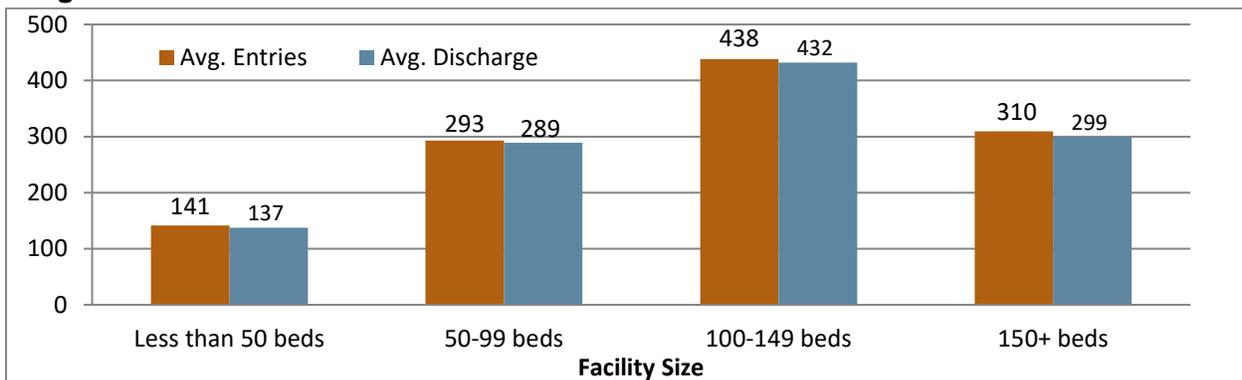
Source: CMS Minimum Data Set

Reentries to Nursing Facilities after Discharge to Acute Hospitals

As mentioned earlier in this section, some individuals return to nursing facilities within 30 days of being discharged. This event, defined as a reentry,[11] may occur as part of a treatment plan or as a result of a new or unexpected health problem. In State Fiscal Year 2017, approximately one in four nursing facility admissions was a reentry, for a total of 9,982 reentries statewide. Ninety-four percent of these reentries (9,421; Exhibit 4.5) were from an acute hospital. Other reentries came from the community (3%), and other places (3%; data not shown).

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[11] In this report we use the term "reentry" to a nursing facility to avoid confusion with "readmission" to an acute hospital.

Exhibit 4.5 shows the numbers of discharges to acute care hospitals, the number of those discharges followed by reentries to nursing facilities, and the percent reentering within 30 days. Of the 10,237 nursing facility discharges to acute care hospitals, 92% reentered the same nursing facility within a 30-day period. Reentry rates varied only modestly by facility size. Facilities with 100 to 149 beds had the highest reentry rate (96%), and facilities with less than 50 beds had the lowest (88%). Some reentries in SFY 2017 were for discharges that occurred in SF 2016.

Exhibit 4.5. Discharges to and Reentries from Acute Hospitals by Facility Size, Oregon 2017

	Number of Discharges to Acute Hospitals	Number of Reentries from Acute Hospitals within 30 Days	Percent Reentering within 30 days
<50 Beds	704	620	88%
50 - 99 Beds	5,370	4,837	90%
100 - 149 Beds	3,270	3,155	96%
150+ Beds	893	809	91%
Total	**10,237**	**9,421**	**92%**

Source: CMS Minimum Data Set

Although directly comparable national data on reentries were not available at the time of this report, it is important to note that residents of Oregon nursing facilities were much less likely to be hospitalized than were nursing facility residents in other states. Compared to other states, Oregon has the second-lowest rate of hospitalization[12] among its long-stay nursing facility residents (AARP, 2014) and the third lowest hospitalization rate[13] among its Medicare-paid nursing facility residents (Office of the Inspector General, 2013).

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[12] This rate includes new hospitalizations and re-hospitalizations.

Section 5. Residents

Exhibit 5.1 shows the composition of Oregon's nursing facility population by age group, which remained relatively stable from SFY 2016. In 2017, the state's nursing facility population was younger on average (75 years) than national estimates, with 80% of nursing facility residents being age 65 or older, compared to 85% of residents nationwide (Centers for Medicare & Medicaid Services, 2014).

Exhibit 5.1. Distribution of Oregon Nursing Facility Residents by Age, 2017

Age Group	Percent
Under 18	0.1
18-24	0.2
25-44	2.0
45-64	17.3
65-74	24.1
75 - 84	28.0
85 and Over	28.3
Total	**100**

Source: CMS Minimum Data Set

Age varied by length of stay, with long stays involving the oldest individuals on average. Exhibit 5.2 shows the trend in median age based on length of stay. Long stayers had a consistent trend in median age (79) from 2012 through 2015 with median age rising from 79 to 80 in 2016 and back to 79 in 2017. Mid-stayers showed a decline in median age from 2012 to 2015. 2016 brought about an increase from 72 to 75 with a decline to 74 in 2017. Short stayers had a slight decrease in median age from 2012 (78) to 2017 (77).

Exhibit 5.2. Trend in Median Age for Short-, Mid-, and Long-Stayers, Oregon 2012 -–2017
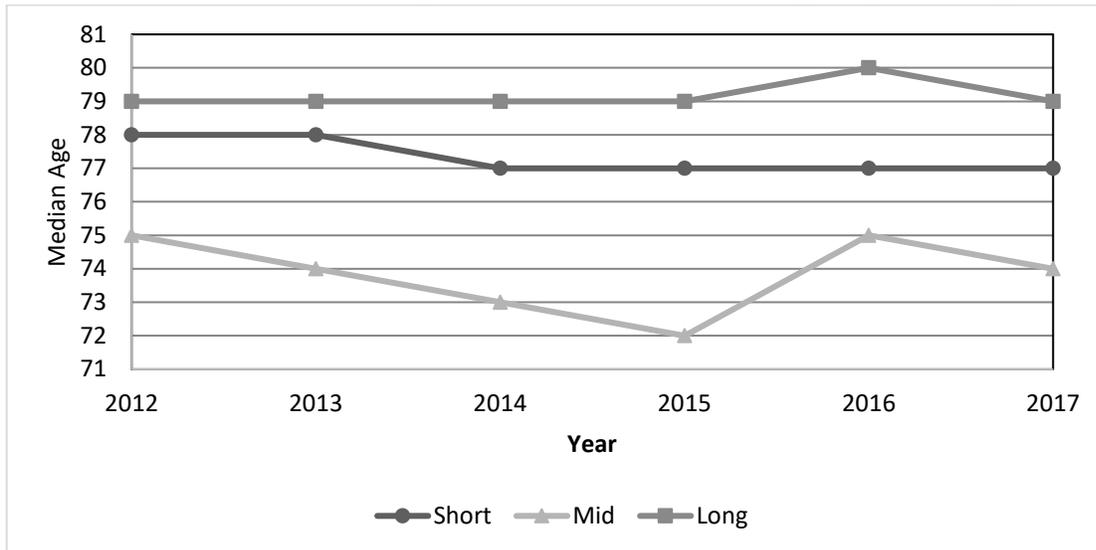
Source: CMS Minimum Data Set

Exhibit 5.3 displays the distribution of Oregon's nursing facility population by marital status. Most of the residents were married (38.1%) or widowed (32.3%). The remaining residents were divorced (15.4%), never married (13.0%) or separated (1.3%).

Exhibit 5.3. Distribution of Oregon Nursing Facility Residents by Marital Status, 2017

Marital Status	Percent
Never Married	13.0
Married	38.1
Widowed	32.3
Separated	1.3
Divorced	15.4
Total	**100.0**

Source: CMS Minimum Data Set

Exhibit 5.4 shows the composition of Oregon's nursing facility population by age and sex. In 2017, the majority (58%) of all residents were women, which was lower than the national average of 67% (Centers for Medicare & Medicaid Services, 2014). The proportion of female residents increased with age, with 67% of residents being female in the oldest age category (85 and older).

Exhibit 5.4. Distribution of Oregon Nursing Facility Residents by Age and Sex, 2017

	Female	Male
Under 18	48%	52%
18-24	42%	58%
25-44	42%	58%
45-64	48%	52%
65-74	54%	46%
75 - 84	60%	40%
85 and Over	67%	33%
Total	58%	42%
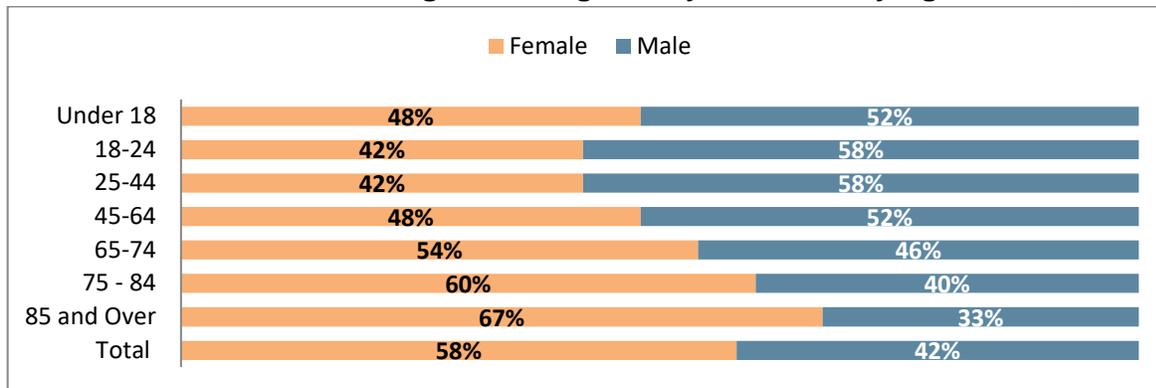
Source: CMS Minimum Data Set

Exhibits 5.5 and 5.6 show the distribution of race/ethnicity for all nursing facility residents and for residents 65 years and older, compared to their counterparts in the general Oregon population. In 2017, the majority of nursing facility residents was non-Hispanic white (83.3%), followed by African American (1.7%) and Hispanic (1.4%). In comparison, the state's general population in 2017 was 76.2% non-Hispanic white, 12.8% Hispanic, 4.1% Asian American, and 1.8% African American or Black. The racial/ethnic composition of Oregon's nursing facility population also differed from that of the U.S. nursing facility population in 2012, where 78%, 13.9%, and 5% of all U.S. nursing facility residents non-Hispanic white, African American, and Hispanic, respectively (Centers for Medicare & Medicaid Services, 2014). The slightly higher proportion of non-Hispanic white residents in the 65+ age category indicates that racial/ethnic minority residents were younger compared to the general nursing facility population.

Exhibit 5.5. Oregon Nursing Facility Residents and General Population by Race/Ethnicity, 2017

Race/Ethnicity	All Nursing Facility Residents	All Oregon Residents
White, Not Hispanic	83.3%	76.2%
American Indian/Alaska Native, Not Hispanic	0.6%	2.4%*
Asian American, Not Hispanic	0.8%	4.1%
African American or Black, Not Hispanic	1.7%	1.8%
Native Hawaiian/ Pacific Islander, Not Hispanic	0.1%	**
Hispanic of any race	1.4%	12.8%
More than 1 race , Not Hispanic	0.4%	3.7%
Unknown	11.7%	**
Total	**100%**	**N/A**

Source: CMS Minimum Data Set; U.S. Census Bureau, 2016 American Community Survey 1-Year Estimates
* This category includes American Indian/Alaska Native alone or in combination with one or more races, not Hispanic.
** The American Community Survey does not provide estimates for the Oregon population in these racial/ethnic groups.

Exhibit 5.6. Oregon Nursing Facility Residents and General 65+ Population by Race/Ethnicity, 2017

Race / Ethnicity	Nursing Facility Residents 65+	Oregon Residents 65+
White, Not Hispanic	84.4%	91.1%
American Indian/Alaska Native, Not Hispanic	0.4%	1.7%*
Asian American, Not Hispanic	0.8%	2.7%
African American or Black, Not Hispanic	1.3%	0.9%
Native Hawaiian/ Pacific Islander, Not Hispanic	0.1%	**
Hispanic of any race	1.1%	3.1%
More than 1 race , Not Hispanic	0.5%	1.4%
Unknown	11.5%	**
Total	**100%**	**N/A**

Sources: CMS Minimum Data Set; U.S. Census Bureau, 2016 American Community Survey 1-Year Estimates
* This category includes American Indian/Alaska Native alone or in combination with one or more races, not Hispanic.
** The American Community Survey does not provide estimates for the Oregon population in these racial/ethnic groups.

The distribution of race/ethnicity was similar by sex, with non-Hispanic whites comprising the majority of all male and female nursing facility residents (data not shown). However, the composition of men and women varied within racial/ethnic categories. The ratio of males to females was roughly equal for non-Hispanic white and Asian American residents. However, there were more males than females for Native American/Alaska Native (1.4:1), African American or Black (1.3:1), Native Hawaiian/Pacific Islander (1.8:1), and Hispanic residents (1.7:1).

Section 6. Length of Stay

Nursing facilities provide 24-hour medical care and monitoring for individuals who need it due to a disability, or have been discharged from the hospital but are not yet able to return to the community. Nursing facilities thus serve individuals with post-acute care needs and those with ongoing needs. The length of a nursing facility stay reflects whether services are needed on a temporary or an indefinite basis. Individuals who enter nursing facilities and remain for 100 or more days are far less likely to return to the community than are those who have shorter stays (AARP, 2014).

In this report, we define short-term nursing facility stays as less than or equal to 90 (<90) days, mid-length stays as 91 to 365 days, and long stays as more than one year. An individual may have more than one nursing facility stay during the fiscal year. To ensure that length of stay data are directly comparable across years, we report length of stay results only for nursing facility stays that had a discharge during the report year.[13] The Technical Notes at the end of this report provide further detail on how length of stay was calculated for this report.

Short- and mid-length stays—that is, stays for less than a full year—averaged 31 days compared to 885 days (or approximately 2.5 years) for long-stays (data not shown).

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[13] In other words, persons who are residents in a nursing facility at the end of the state fiscal year (30 June 2017 for this report) are not included in length of stay results. This approach differs from the 2014 and 2015 reports, in which length of stay was calculated for all residents who spent at least 1 day in a nursing facility during the report year. However, the distributions of length of stay results changed little as a result of the new approach.

Exhibit 6.1 shows the distribution of length of stay for Oregon's nursing facility population. In 2017, 92% of all nursing facility stays were short,[14] while 6% and 2% were mid-length and long, respectively. More than one in three (38%) stays lasted between 14 and 30 days.

Exhibit 6.1. Nursing Facility Length of Stay, Oregon 2017
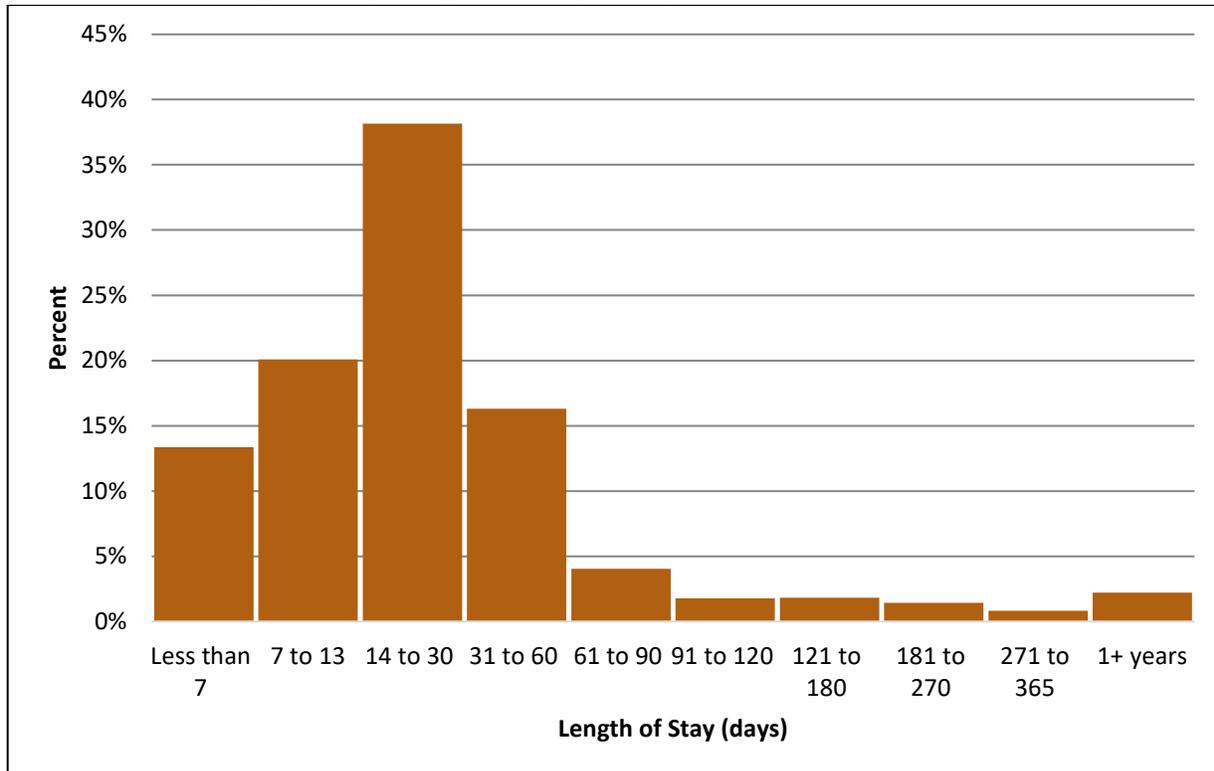
Source: CMS Minimum Data Set

Exhibit 6.1 also shows that 72% of Oregon nursing facility stays lasted 30 days or less. This reflects the dominant role of post-acute care in nursing facility utilization in Oregon. The percentage of new nursing facility stays in Oregon that last 100 days or longer is lower than in any other state (AARP, 2014). The greater utilization of nursing facilities for short stays is likely due to the utilization of home and community-based services and assisted living for ongoing long-term care (American Health Care Association, 2013).

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[14] 3.0% of stays were exactly 7 days. Therefore, 16.3% of stays were 1 to 7 days, and 17.1% of stays were 8 to 13 days.

Exhibit 6.2 shows the average and median lengths of stay in State Fiscal Year 2017. The median length of stay—that is, the number of days for which half of stays were longer and half were shorter—provides further detail about the utilization of nursing facility care in Oregon. Specifically, although the overall average length of stay was 50 days in SFY 2017, the median length of stay was 19 days because a relatively small proportion of residents with very long lengths of stay inflated the average.

Exhibit 6.2 also presents average and median lengths of stay by age group. Average lengths of stay were highest for the youngest (under age 44) age groups. As discussed in Section 7, these age groups have the greatest need for assistance with Activities of Daily Living. The median length of stay is 21 days or less for all age groups, but the average length of stay ranges from approximately 2 to 7 times greater than the median.

Exhibit 6.2. Nursing Facility Length of Stay (Days) by Age, Oregon 2017

Age Group	Average Length of Stay	Median Length of Stay
Under 18	33	10
18-24	147	20
25-44	42	18
45-64	55	18
65-74	48	18
75-84	48	19
85 and Over	52	21
Total	**50**	**19**

Source: CMS Minimum Data Set

Length of stay also varies across facilities. To characterize this variation, we divided nursing facilities into 10 equal-sized groups, or deciles, based on each facility's average length of stay (Exhibit 6.3). Each decile group represents 13 or 14 facilities. The average length of stay increased from 26 days in the first decile group of nursing facilities to 261 days in the tenth decile group of facilities. However, the median length of stay was 27 days or less for facilities in all of the first nine decile groups, reflecting the preponderance of short stays in Oregon nursing facilities, as described above. The tenth decile group has much higher average and median lengths of stay compared to all other groups of nursing facilities. This is consistent with the fact that many facilities in this decile group serve residents with extensive, ongoing care needs including pediatric, enhanced care, or non-dementia behavioral health care needs.

Exhibit 6.3. Nursing Facility Length of Stay by Decile Groups of Facilities, Oregon 2017
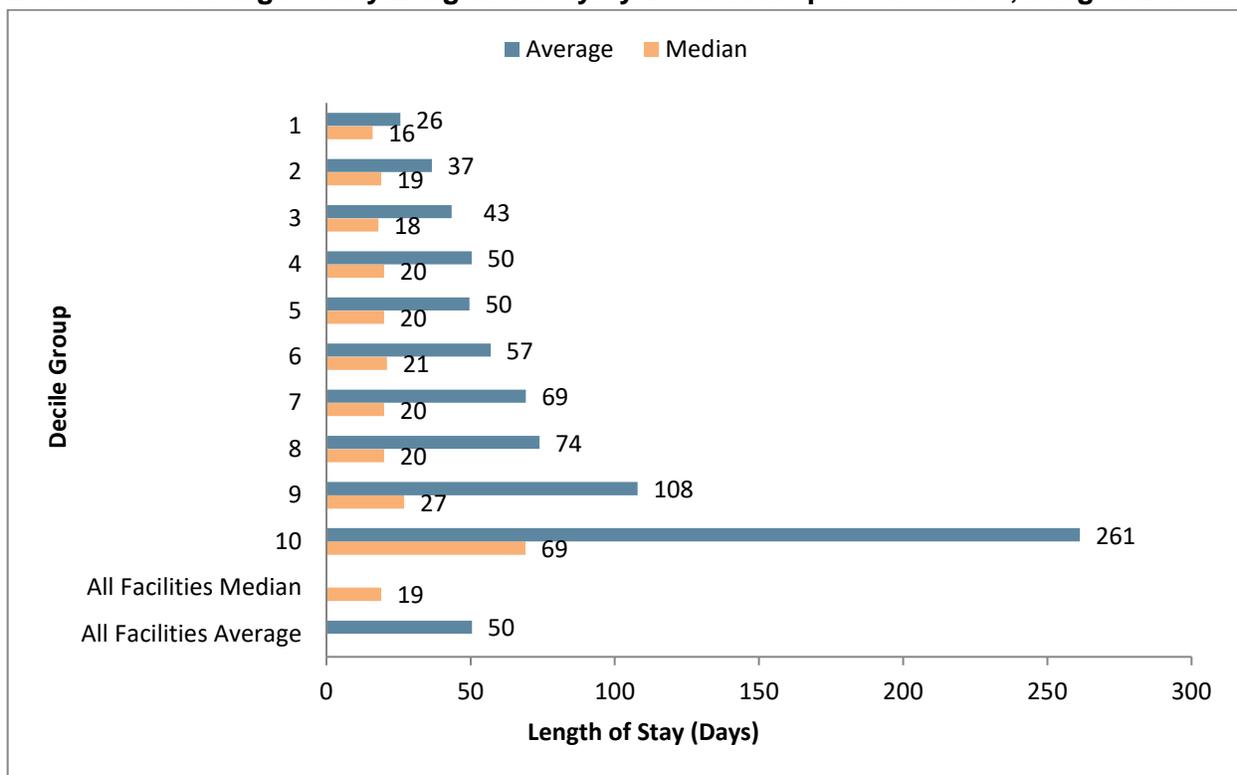
Source: CMS Minimum Data Set

Exhibit 6.4 shows the trend in average length of stay for nursing home residents in Oregon from 2012 to 2017. The average length of stay declined from 55 days in 2012 to 50 days in 2017, indicating a 9% decrease during this time period.

Exhibit 6.4. Trend in Average Length of Stay, Oregon 2012–2017
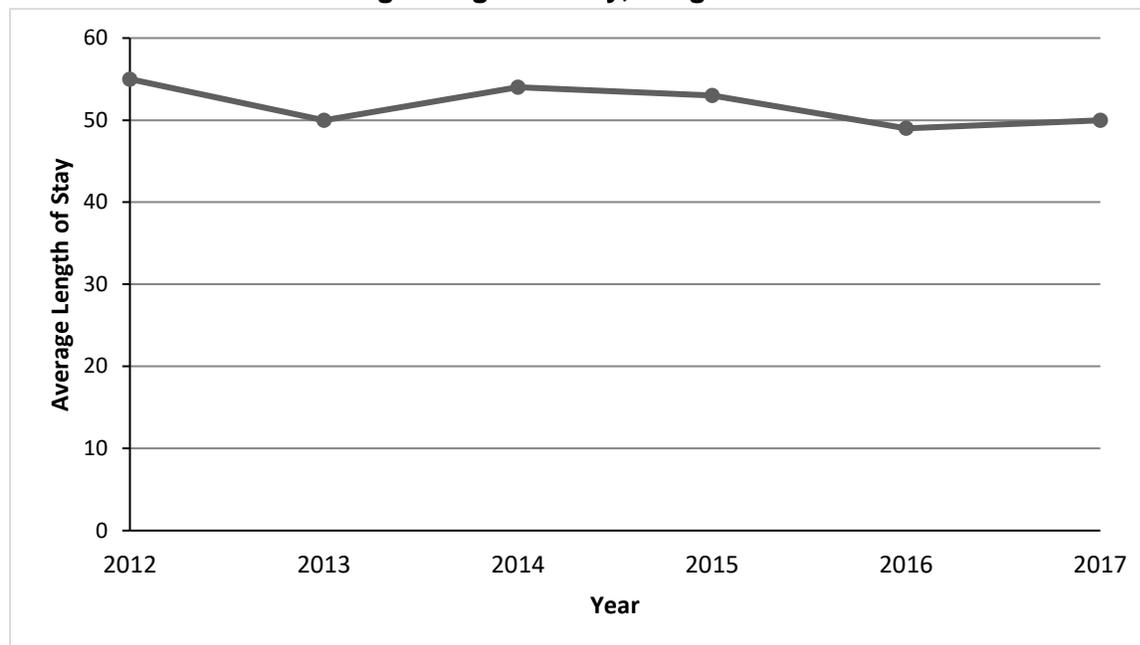
Source: CMS Minimum Data Set

Hospitalizations Linked to Nursing Facility Stays

Although more than nine in 10 entries or reentries to nursing facilities were from hospitals, MDS does not provide information about why these residents were hospitalized. Because nursing facility care often focuses on helping residents recover from conditions for which they were hospitalized, such information is helpful in understanding the mix of clinical needs among nursing facility residents.

We therefore linked MDS data to Oregon hospital discharge data records in a two-step linkage process involving Oregon State University, the Oregon Department of Human Services, and the Oregon Health Authority's Office of Health Analytics. First, hospital discharge records were matched to the MDS by name and date of birth. Second, specific hospital discharge dates were matched to nursing facility entry or reentry dates for individual nursing facility residents in the MDS. Overall, 31,748 hospital discharges were linked to MDS stays, accounting for 77.4% of all SFY 2017 entries or reentries to nursing facilities from hospitals. The Technical Notes provide further details about the linkage process.

Overall, 60% of nursing facility stays linked to hospital discharges were for residents who had been hospitalized for medical conditions, such as infections or pulmonary problems, while 34% had been hospitalized for surgical procedures. Five percent of linked stays were for residents who had been hospitalized for trauma, one percent for behavioral conditions, and one percent were uncategorized. The overall average nursing facility length of stay was 50 days for stays linked to hospital discharges, with a median of 19 days.

The proportions of linked stays with hospital discharges were very similar to 2016 in the medical, surgical, trauma, and other categories. The overall average nursing facility length of stay was stable between 2016 and 2017[15] for residents admitted from a hospital.

Exhibit 6.5 presents more detailed information about the clinical reasons for hospitalizations and the average length of stay for subsequent nursing facility stays. Overall, 26% of linked nursing facility stays followed hospitalizations for orthopedic conditions, and the average nursing facility length of stay was 30 days. Almost four in 10 of these orthopedic hospitalizations were for joint replacement surgery, and had an average nursing facility length of stay of 21 days. Somewhat fewer than one in 10 orthopedic hospitalizations were for spinal fusion, and had a 21 day average nursing facility length of stay. Almost one in four orthopedic hospitalizations were for hip fracture repair, and were followed by a nursing facility length of stay averaging 38 days. Patients who had been hospitalized for infections conditions accounted for 18% of nursing facility stays linked to hospitalizations, and had an average nursing facility length of stay of 52 days. Sepsis accounted for slightly more than half of these hospitalizations, with an average 55 day nursing facility length of stay. Cardiology and cardiac surgery hospitalizations accounted for 9% of linked stays, and had an average nursing facility length of stay of 34 days. Hospitalizations for pulmonary conditions (of which almost half were pneumonia or respiratory failure) preceded 8% of linked stays, with an average nursing facility length of stay of 48 days. Residents who had been hospitalized for a stroke or transient ischemic attack (TIA) made up 5% of linked stays, with an average 47 day nursing facility length of stay.

Exhibit 6.5. Nursing Facility Length of Stay (Days) by Hospital MS-DRG, Oregon 2017

Category of Hospital MS-DRG	Percent of Hospital Discharges	Average Length of Nursing Facility Stay
Orthopedic	26	30
Infectious	18	52
Cardiology & Cardiac Surgery	9	34
Other	8	46
Pulmonary	8	48
Trauma	5	41
Stroke & TIA	5	47
Neurology & Neurosurgery	4	59
Gastroenterology	3	43
General Surgery	3	29
Vascular	3	38
Endocrine	3	45
Renal Failure	2	44
Urology	2	65
Ventilator	1	41
All Discharges	100	42

Sources: CMS Minimum Data Set and Oregon Hospital Discharge Records
Note: Results are shown for nursing facility stays where resident entered from a hospital within SFY 2017 and where MDS data can be linked to hospital discharge data.

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[15] This comparison refers to 2016 lengths of stay calculated according to the same methodology as used in this 2017 report. As described in the Technical Notes, the length of stay results in Section 6 of this report are comparable to those in Section 6 of the 2016 report. The 2016 and 2017 reports present length of stay data for nursing facility residents discharged in the report year (even if they were admitted in prior years).

Section 7. Acuity of Residents

Acuity Measurements

Acuity commonly refers to an individual's requirements for nursing care. Individuals that enter a nursing facility are assessed to identify the level of care needed during their stay. Nursing facilities use acuity information to plan personnel resources, manage costs, and measure quality. For example, many post-acute care patients are discharged from acute care hospitals after surgery or treatment for acute medical conditions, and temporarily require skilled rehabilitation or nursing care that cannot be provided effectively at home or in community-based facilities. Such individuals comprise a significant portion of short-stay nursing facility residents.

There are many measures of acuity. In this section, we report data about several of those indicators: Activities of Daily Living (ADLs), reasons for hospitalization, diagnoses among residents, and therapies received by residents.

Most data in this section are based on facilities' assessments of their residents as reported in the MDS. Beginning with the SFY 2016 report, we changed methodology to capture assessments for calculating Activities of Daily Living (ADL), diagnoses and treatments. Assessments coded as an entry, reentry or annual assessment were identified first. For any stay that did not have one of these coded assessments, the first assessment of the stay was identified and used instead. This approach allows us to use information from all enrollees in SFY 2017 and to characterize acuity among short and mid-length stays at the time residents entered the nursing facility, and among long-stay residents at the time of their annual reassessment. Residents who had more than one stay during SFY 2017 may be counted more than once in the ADL, diagnosis, or treatment measures presented in this section.   See the Technical Notes for further details.

Activities of Daily Living

ADLs (Katz, 1983) measure the extent to which care recipients cannot perform self-care tasks. ADLs are used to characterize levels of caregiving need (National Center for Health Statistics, 2006) of individuals, whether on a temporary or indefinite basis. Once admitted to a nursing facility, residents are assessed for their level of dependence for each ADL, ranging from independence in performing the activity to complete dependence on staff. In this report, we focus on bed mobility, transfer, eating, dressing, toileting, and bathing ADLs.

Exhibit 7.1 displays the trend in average number of ADLs among resident stays from 2012 to 2017. The average number of ADLs declined 2.3%, from 3.74 in 2012 to 3.53 in 2017.

Exhibit 7.1. Trend in Average Activities of Daily Living, Oregon 2012–2017
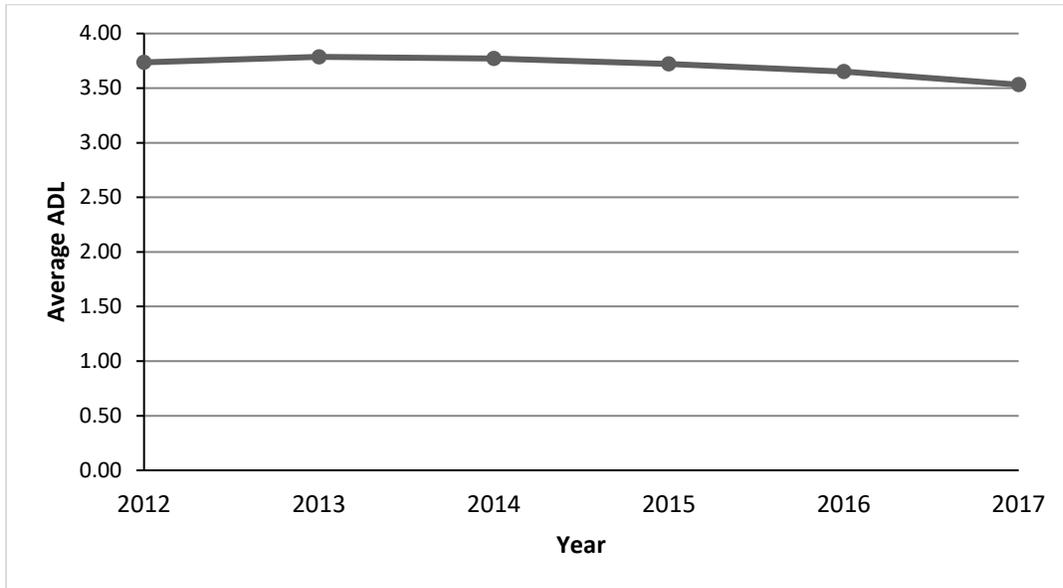
In 2017, stays with dependence on five ADLs represented the highest proportion of short-stays (42%), mid-stays (49%) and long-stays (47%; Exhibit 7.2). These percentages are approximately twice as high than for all nursing facility residents in the U.S (23%; Centers for Medicare & Medicaid Services, 2014). Forty-seven percent and 62% of short and mid-length stays, respectively, involved dependence on five or more ADLs, compared to 64% of long stays.

Exhibit 7.2. Activity of Daily Living (ADLs) Scores by Length of Stay, Oregon 2017
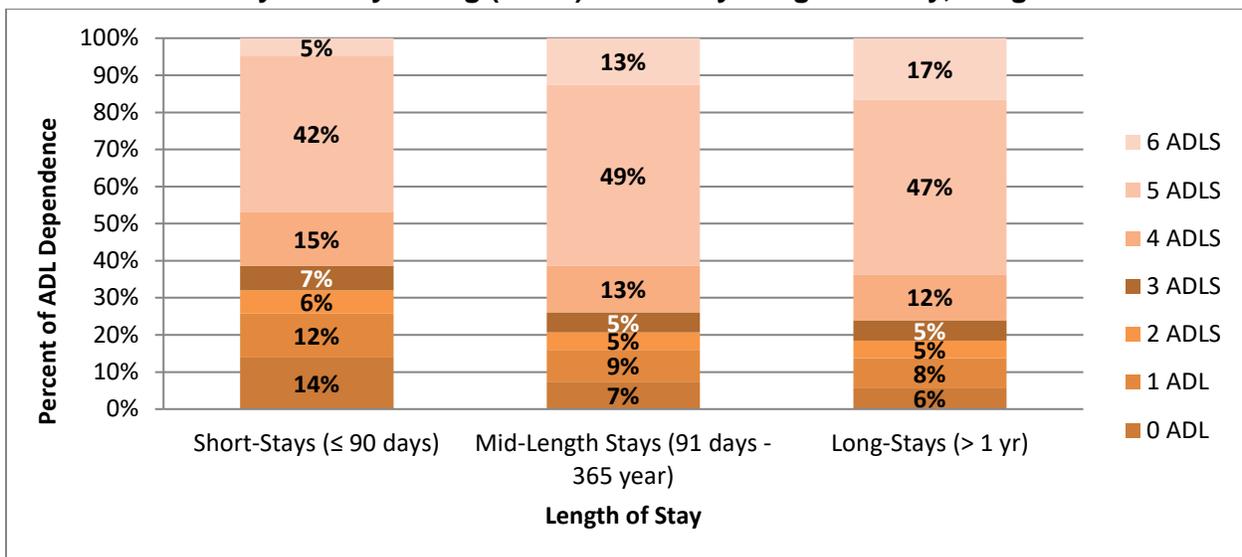
Exhibit 7.3 presents the distribution of dependence on staff for six ADLs. For all ADLs except eating, complete dependence on staff was reported for at least 67% of all stays.

Exhibit 7.3. Distribution of Dependence Level by Activity of Daily Living, Oregon 2017
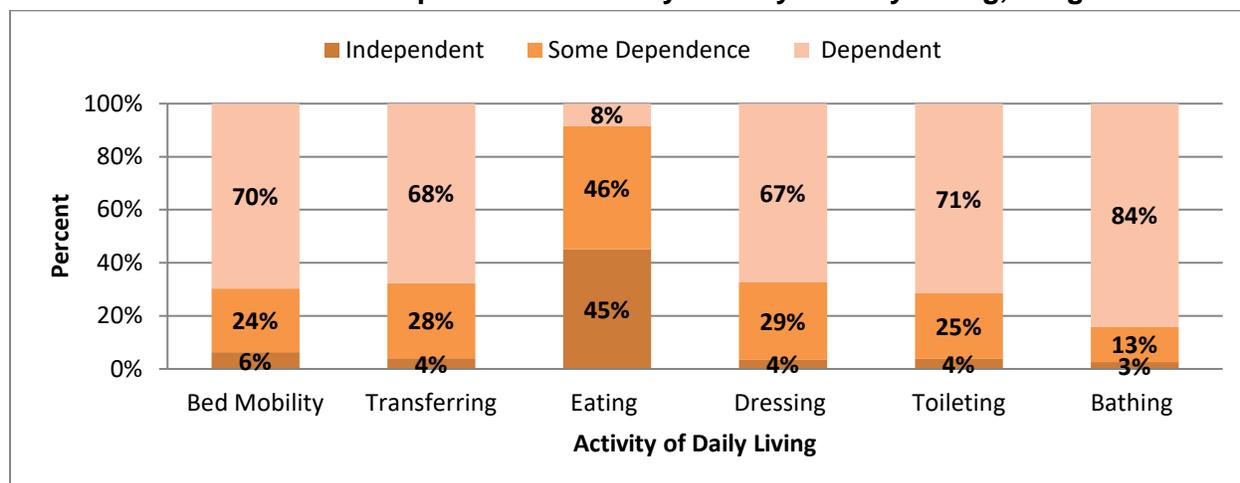
Source: CMS Minimum Data Set

Exhibit 7.4 provides more detail on ADL dependence. In 2017, long stays had the highest proportions of complete dependence in five of six ADLs, compared to other lengths of stay. Mid-length stays had the highest proportions of complete dependence for bed mobility (76%). Stays of individuals under 18 years of age had higher levels of complete dependence than stays of other age groups for all ADLs except bed mobility, followed by individuals age 85 and over for (all ADLs except eating). Bathing was the most common ADL need for all stays. The rates of complete dependence for all ADLs were similar by sex (data not shown).

Exhibit 7.4. Complete Dependence for ADLs by Length of Stay and Age, Oregon 2017

	Bed Mobility	Transferring	Eating	Dressing	Toileting	Bathing
Length of Stay						
Short stay	68%	64%	6%	63%	68%	72%
Mid-length stay	76%	72%	16%	78%	80%	83%
Long stay	75%	73%	20%	81%	82%	88%
Age Group						
Under 18	69%	92%	91%	94%	96%	99%
18-24	71%	67%	48%	56%	72%	68%
25-44	44%	42%	11%	44%	48%	57%
45-64	55%	52%	8%	52%	57%	65%
65-74	66%	62%	7%	62%	67%	72%
75-84	73%	70%	7%	70%	74%	77%
85 and Over	79%	76%	9%	77%	80%	81%
Total Complete Dependence	69%	66%	8%	66%	70%	74%

Source: CMS Minimum Data Set

Clinical Conditions Among Nursing Facility Residents

The number and severity of clinical conditions impact the type and intensity of services received by a nursing facility resident. The MDS provides information about whether a resident had each of 56 specific diagnoses within seven days prior to his or her assessment. We grouped these diagnoses into several major categories, and tabulated whether each stay had one or more diagnoses in each category. Residents who had more than one stay during SFY 2017 may be counted more than once in the ADL measures presented in this report.

Exhibit 7.5 presents the prevalence of each diagnosis category and the most common individual diagnoses. Six in 10 nursing facility stays (60.4%) involved at least one acute medical condition, with anemia, urinary tract infections, and TIA or stroke being the most common individual diagnoses. Nearly all stays (95.0%) involved at least one chronic medical condition, with seven in 10 involving hypertension, four in 10 involving hyperlipidemia, and over three in 10 involving diabetes. Approximately one in four stays involved a cardiac rhythm disorder, gastric ulcer or reflux, arthritis and/or chronic lung disease such as asthma or COPD. Approximately one in five stays involved heart failure, coronary artery disease, and/or kidney problems, including renal failure. One in nine stays involved osteoporosis.

One in 10 stays involved a hip fracture, and nearly one in seven another type of fracture. Approximately, one in seven stays involved neurologic conditions such as seizure disorders or Parkinson's disease. Over four in 10 stays involved one or more behavioral health conditions, with one in three involving depression and one in six involving anxiety. Approximately one in six stays involved dementia.[16] Severely disabling conditions such as full or partial paralysis or traumatic brain injury were present in 6.6% of stays.

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[16] The MDS diagnosis category of "Alzheimer's Disease" shown in Exhibit 7.5 may underestimate the prevalence of Alzheimer's dementia in nursing facility residents. MDS assessments require that a diagnosis be confirmed by a physician within the past 60 days <u>and</u> have a direct relationship to the resident's current functional, cognitive, or mood or behavior status, treatment, monitoring, or mortality risk within the 7 days before the assessment. Diagnoses for which prior physician documentation is not available or that are not being specifically treated may therefore not be captured on an MDS assessment. MDS also provides another possible category of "Non-Alzheimer's Dementia" described as "e.g., Lewy-Body dementia; vascular or multi-infarct dementia; mixed dementia; frontotemporal dementia, such as Pick's disease; and dementia related to stroke, Parkinson's disease or Creutzfeldt-Jakob diseases."

Exhibit 7.5. Percent of Nursing Facility Stays with Specific MDS Diagnoses by Category, Oregon 2017

Category / Specific MDS Diagnosis	Percent of Stays	Category / Specific MDS Diagnosis	Percent of Stays
Acute Medical	**60.4**	**Chronic Medical Cont'd**	
Anemia	22.3	Benign Prostatic Hyperplasia	9.8
UTI	11.5	Cataracts, Glaucoma, Macular Degeneration	9.3
TIA or Stroke	10.4	PAD	6.7
Cancer	10.1	**Fractures**	**22.4**
Pneumonia	8.0	Other Fracture	13.7
Respiratory Failure	8.0	Hip Fracture	10.0
Septicemia	6.6	**Neurologic**	**13.7**
Hyponatremia	6.0	Seizure/Epilepsy	5.6
Malnutrition	5.7	Parkinson's Disease	3.5
DVT	3.9	**Behavioral**	**41.8**
Chronic Medical	**95.0**	Depression	35.1
Hypertension	70.2	Anxiety	16.6
Hyperlipidemia	41.7	**Dementia**	**17.8**
Diabetes	32.0	Non-Alzheimer's	16.0
Atrial Fibrillation	29.7	Alzheimer's	3.2
Ulcer or Reflux Disease	28.4	**Paralysis & TBI**	**6.6**
Asthma, COPD	27.1	Hemi/Para/Quadriplegia	6.2
Arthritis	25.1	Traumatic Brain Injury (TBI)	0.8
Coronary Artery Disease	22.4	**Severe & Persistent Mental Illness (SPMI)**	**5.4**
Heart Failure	22.2	Manic Depression	3.1
Thyroid Disorder	22.1	Schizophrenia	2.2
ESRD	19.2	**None of the Above**	**0.9**
Osteoporosis	11.1		

Source: CMS Minimum Data Set

Notes Percent indicates stays with one or more specific MDS diagnoses in that category. Because diagnoses are not mutually exclusive, percentages add up to more than 100%. Diagnoses that occur in less than 2.5% of stays are not shown individually, but are included in the category. See Technical Notes for a list of all diagnoses.

As shown in Exhibit 7.6, the prevalence of some diagnoses varied by nursing facility length of stay. Acute medical conditions were somewhat more common among mid-stay residents, but the prevalence of chronic medical conditions was high regardless of length of stay. Fractures were much more common among short-stay residents. However, the prevalence of other categories of diagnoses, including neurologic conditions, behavioral health conditions, dementia, paralysis, and Serious & Persistent Mental Illness (SPMI), was markedly higher among residents with longer lengths of stay. The prevalence of some diagnoses also varied by resident age (data not shown). Residents age 75 and older were more likely than younger residents to have had fractures or dementia, but less likely to have suffered from neurologic or behavioral conditions, paralysis, or SPMI.

Exhibit 7.6. Distribution of MDS Diagnosis Categories by Length of Stay, Oregon 2017

Diagnosis Category	Percent of Stays with One or More Diagnoses in Category		
	Short Stay	**Mid Stay**	**Long Stay**
Acute Medical	60%	62%	58%
Chronic Medical	95%	94%	78%
Fractures	24%	15%	13%
Neurologic	11%	23%	24%
Behavioral	39%	51%	53%
Dementia	14%	27%	39%
Paralysis & TBI	5%	15%	14%
SPMI	5%	13%	17%
None of the Above	1%	1%	1%
Total Stays	**37,078**	**2,359**	**895**

Source: CMS Minimum Data Set

Treatments Provided to Nursing Facility Residents

MDS captures information about selected types of treatment provided to nursing facility residents. We measured the number of stays for which specific types of treatment were provided within 7 days prior to the assessment.

As shown in Exhibit 7.7, all short-stay residents received physical and occupational therapy in the period after they entered a nursing facility. For more than eight in 10 short stays, physical therapy was provided five or more days per week. Occupational therapy was provided five or more days per week during over seven of 10 short stays.

Exhibit 7.7. Distribution of Number of Days of Physical and Occupational Therapy within 1 Week Prior to Assessment, Short Stay Residents, Oregon 2017
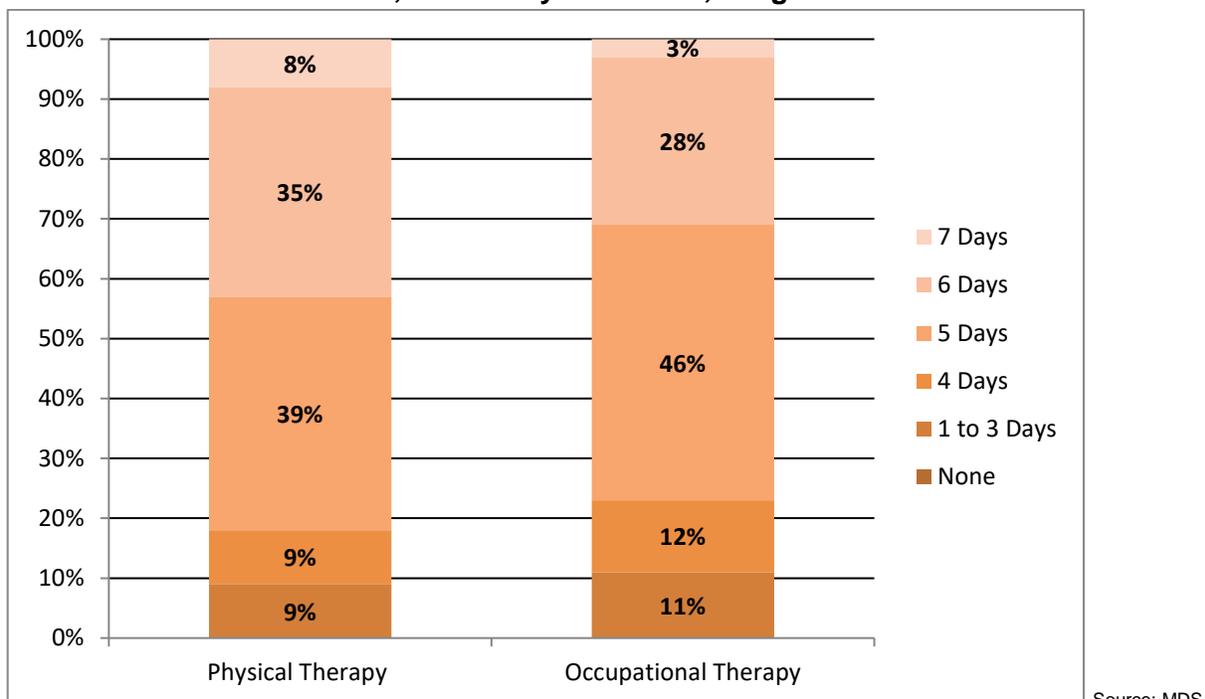
Source: MDS
Minimum Data Set

Additionally, oxygen was administered during 16.4% of nursing facility stays in SFY 2017 (data not shown). BiPAP treatment (to prevent breathing stoppages during sleep for residents with sleep apnea) was provided for 3.3% of stays (data not shown). Dialysis, which indicates the presence of renal failure, was needed for 2.3% of stays (data not shown). The rate of each of these treatments was roughly twice as common among short stays compared to long stays.

Section 8. Payers

Medicaid was the primary payer for 60% of resident days in Oregon nursing facilities during 2017. Private payers (including commercial insurers, long-term care insurance plans, and self-pay residents) paid for 12% of all resident days. Medicare Fee-For-Service (FFS), which covers up to 100 days of skilled nursing facility care per year, paid for 15% of resident days, and Medicare Advantage plans[17] paid for 10%. Other government payers (including the Veterans Administration) paid for the remaining 3% of resident days in 2017.

Exhibit 8.1 breaks down payer sources for Oregon nursing facility resident days by facility location, using the same urbanicity categories described for Exhibit 3.5 (p. 16). In 2017, Medicaid was the predominant payer in urban as well as rural areas, paying for 60% of resident days in urban areas, 58% in large rural cities/towns and 66% in small/isolated rural towns. The proportion of days paid by Medicare FFS was highest (21%) in large rural cities/towns, and the private pay proportion was highest (20%) in small/isolated rural towns.

Exhibit 8.1. Payer Sources for Nursing Facility Care by Urbanicity, Oregon 2017
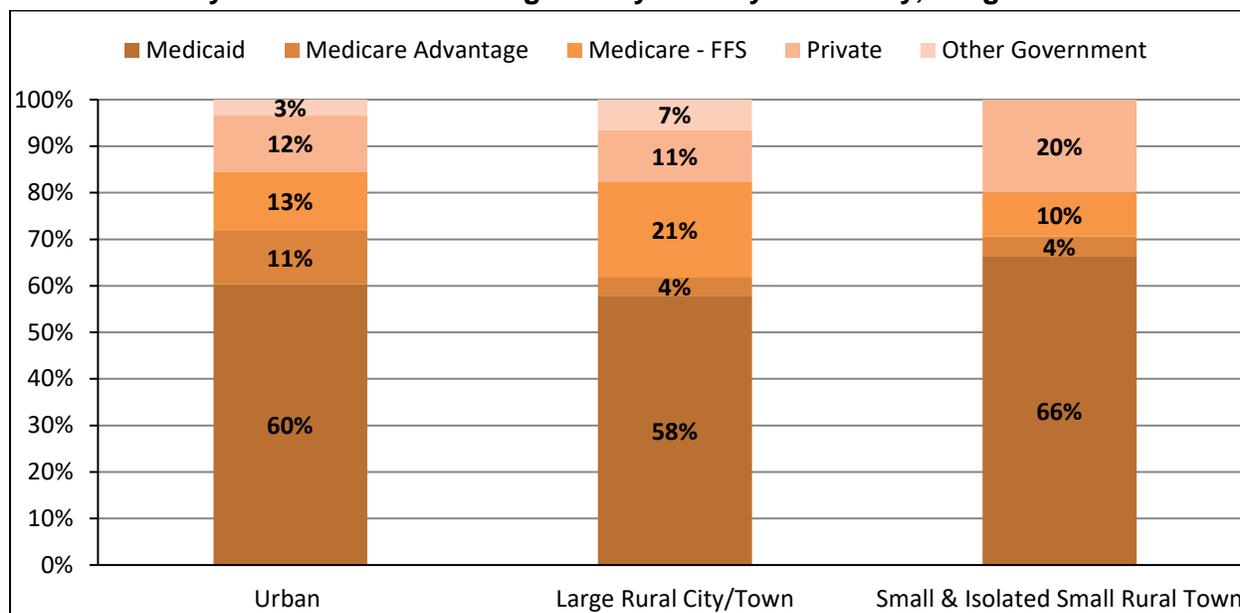
Source: Cost Reports and Revenue Statements

Medicare Advantage, the managed care option for Medicare beneficiaries, is an important payer in the Oregon health care market. At 44% of eligible beneficiaries, Oregon has the third highest rate of Medicare Advantage enrollment among states (Jacobson et. al 2016). Consistent with this, our analyses show that considering the Medicare Advantage and FFS categories together, approximately 4 in 10 Medicare resident days in Oregon Nursing facilities were paid by

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[17] This is the second year that we can report the proportion of resident days paid for by Medicare Advantage, based on enhanced DHS data collection. Prior to 2015, Medicare Advantage days were mostly included in the private payer category.

Medicare Advantage. The lower proportion of Medicare Advantage payment in rural areas likely reflects the lower Medicare Advantage enrollment rates in Oregon's rural areas.

Exhibit 8.2 shows the trend in payer sources at Oregon nursing facilities. The dashed line signifies a 2015 change in DHS data collection to require separate reporting of resident days paid by Medicare Advantage vs. Medicare FFS. Because of this methodological change, data reported for Medicare and private payers for 2015-2017 are not directly comparable to those of prior years. Additionally, the possibility of under-reporting of Medicare Advantage resident days continues to exist. As nursing facilities to gain more experience with the new reporting categories, the proportion of Medicare Advantage versus private payer days may change further in future years.

The share of nursing facility resident days paid for by Medicaid declined slightly between 2010 and 2017 (62 vs. 60%). The apparent sharp decline in the proportion of days paid by private payers in 2015 through 2017 reflects both the improved measurement of Medicare Advantage payment, as well as a slight increase in the proportion of days paid by Medicaid. The proportion of days paid for by Medicare Fee-For-Service remained stable from 2015 to 2017 (15%).

Exhibit 8.2. Payer Sources for Nursing Facility Care, Oregon 2010–2017
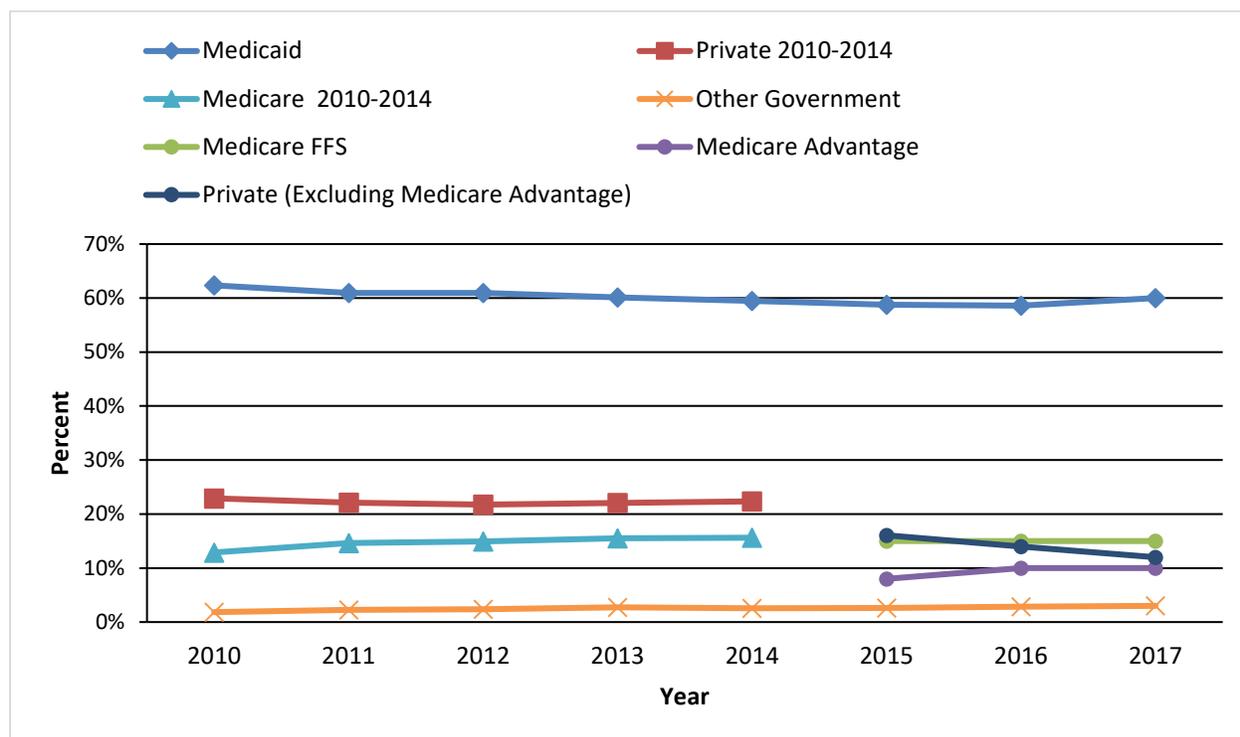
Sources: Cost Reports and Revenue Statements

Note: For years 2010 through 2014, "Medicare" includes Medicare FFS only.

Section 9. Quality Measures

CMS provides data on a wide range of nursing facility quality measures.   These measures are derived from MDS 3.0 assessments and made available via Nursing Home Compare.

Quality measures are calculated separately for short-stay and long-stay residents. In this section, a short stay is defined as lasting 100 or fewer days; a long stay is one that lasts more than 100 days.[18] In SFY 2017, more than 9 in 10 nursing facility stays in Oregon were short stays.

Below we present the average performance level of Oregon nursing facilities on each quality measure, as well as the national average. In order to describe the variation in performance across facilities within our state, we also divide Oregon facilities into four equal groups—or quartiles—for each measure, and present the average performance within each group.[19] For almost every measure presented below, there was wide variation between facilities in the best and lowest performing groups.

Exhibit 9.1 presents 6 measures for which a <u>higher</u> percentage represents better performance. Average rates of vaccination for pneumococcal pneumonia and seasonal flu in Oregon facilities increased compared to 2016, but remain somewhat lower than the average for all nursing facilities nationwide. The proportion of short stay residents whose functional status (specifically, ability to walk or move independently) improved was higher in Oregon than the national average. The proportion of short stay residents discharged to the community was also higher in Oregon than the national average. These last 2 measures were not available in 2016.

Exhibit 9.1. Vaccination Rates, Functional Status, and Discharge Destination by Length of Stay and Specific Nursing Facility Groups, Oregon and U.S. 2017

	All Oregon Facilities	Best	Second	Third	Fourth	All U.S. Nursing Facilities
Long stay						
Seasonal flu vaccine	92%	99%	95%	93%	83%	95%
Pneumococcal vaccine	93%	100%	98%	93%	80%	94%
Short stay						
Seasonal flu vaccine	79%	92%	85%	77%	61%	81%
Pneumococcal vaccine	80%	96%	90%	79%	56%	83%
Improved functional status	71%	82%	75%	69%	57%	67%
Discharged to community	65%	76%	67%	63%	54%	57%

Source: Nursing Home Compare

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[18] This CMS definition is slightly different from the definition of short stay (90 days or less) used in other sections of this report.   Most stays reported as "mid-length" (91 to 365 days) in other sections of this report are included in the long stay category for these quality measures.

[19] The total number of facilities for which a given measure is reported ranged from 110 to 136 facilities, and so the number of facilities in each quartile group also varies somewhat across measures. .

Exhibits 9.2 and 9.3 present 17 measures for which a _lower_ percentage represents better performance. Long-stay measures are shown in Exhibit 9.2, and short stay measures in Exhibit 9.3. Overall, Oregon nursing facilities performed the same or better than the national average on 13 of these 17 quality measures.

The higher overall average rates of reported pain in Oregon facilities than nationwide, for both long stay and short stay residents, may reflect the higher acuity of nursing facility residents in Oregon compared to other states. In particular, a high proportion of Oregon Nursing facility residents are receiving post-acute care after hospitalization for surgery such as joint replacement, which may increase their need for pain control. Reported rates of pain also varied widely across facilities, which may reflect variations in the mix of residents across facilities. In 2017, rates of reported pain decreased for long-stay residents but increased for short stay residents.

Fifteen percent of long stay residents newly received an antipsychotic medication compared to one percent of short stays.[20] These rates are lower than the national average, and are also lower than in 2016. Use of antipsychotic medications among long-stay residents has been the target of a national quality improvement initiative since 2011, and has declined steadily in Oregon nursing facilities over that time period (Centers for Medicare & Medicaid, 2014). Long stay residents in Oregon were also less likely than the national average to receive an antianxiety or hypnotic medication; this measure was not available in 2016.

Rates of several negative outcomes among long stay residents (pressure ulcers, losing too much weight, ongoing catheter use, urinary tract infections, depressive symptoms, falls with major injury, and physical restraint) were similar to the national average, and performance in 2017 was similar to that in 2016. The same pattern was observed for pressure ulcers among short stay residents. Short stay residents in Oregon facilities were more likely than the nation al average to visit a hospital emergency department, but less likely to be rehospitalized after entering the nursing facility; these measures were not available in 2016.

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[20] This measure excludes residents diagnosed with schizophrenia, Huntington's disease, or Tourette's syndrome.

Exhibit 9.2. Quality Measures of Long Stays by Nursing Facility Groups, Oregon and U.S. 2017

Self-reported moderate to severe pain
- Best: 3%
- Second: 7%
- Third: 12%
- Fourth: 22%
- Oregon Average: 11%
- National Average: 6%

Received an antipsychotic medication
- Best: 6%
- Second: 11%
- Third: 15%
- Fourth: 27%
- Oregon Average: 15%
- National Average: 16%

Received an anti-anxiety or hypnotic medication
- Best: 7%
- Second: 12%
- Third: 18%
- Fourth: 27%
- Oregon Average: 16%
- National Average: 23%

Had depressive symptoms
- Best: 0%
- Second: 1%
- Third: 3%
- Fourth: 9%
- Oregon Average: 3%
- National Average: 5%

Help needed with ADLs increased
- Best: 6%
- Second: 10%
- Third: 13%
- Fourth: 19%
- Oregon Average: 12%
- National Average: 15%

Ability to move independently worsened
- Best: 9%
- Second: 16%
- Third: 21%
- Fourth: 27%
- Oregon Average: 18%
- National Average: 18%

Source: Nursing Home Compare

Exhibit 9.2. Quality Measures of Long Stays by Nursing Facility Groups, Oregon and U.S. 2017

Measure	Group	Value
Experienced one or more falls with major injury	Best	0%
	Second	2%
	Third	4%
	Fourth	6%
	Oregon Average	3%
	National Average	3%
Lost too much weight	Best	3%
	Second	6%
	Third	8%
	Fourth	13%
	Oregon Average	8%
	National Average	7%
Had a urinary tract infection	Best	1%
	Second	2%
	Third	4%
	Fourth	9%
	Oregon Average	4%
	National Average	4%
Catheter inserted and left in bladder	Best	0%
	Second	2%
	Third	3%
	Fourth	8%
	Oregon Average	3%
	National Average	2%
High risk patients with pressure ulcers	Best	1%
	Second	4%
	Third	6%
	Fourth	10%
	Oregon Average	5%
	National Average	6%
Was physically restrained	Best	0.0%
	Second	0.0%
	Third	0.0%
	Fourth	1.7%
	Oregon Average	0.4%
	National Average	0.5%

Source: Nursing Home Compare

Exhibit 9.3. Quality Measures of Short Stays by Nursing Facility Groups, Oregon and U.S. 2017

Self-reported moderate to severe pain	Best	7%
	Second	15%
	Third	23%
	Fourth	34%
	Oregon Average	20%
	National Average	14%
Newly received an antipsychotic medication	Best	0%
	Second	1%
	Third	1%
	Fourth	3%
	Oregon Average	1%
	National Average	2%
Pressure ulcers that are new or worsened	Best	0%
	Second	0%
	Third	1%
	Fourth	2%
	Oregon Average	1%
	National Average	1%
Rehospitalized after a nursing home admission	Best	14%
	Second	18%
	Third	22%
	Fourth	27%
	Oregon Average	20%
	National Average	21%
Had an outpatient emergency department visit	Best	9%
	Second	13%
	Third	16%
	Fourth	22%
	Oregon Average	15%
	National Average	12%

Source: Nursing Home Compare

Appendix

Table A. Number of Licensed Beds and Set-Up Beds per 1,000 Population 75 years and Older, Occupancy Rate, and Resident Days by County, Oregon 2017

County	Licensed Beds per 1,000 75+	Set-Up Beds per 1,000 75+	% Beds That Are Set-Up	Occupancy Rate	Resident Days
Benton	33	27	82%	56%	41,380
Clackamas	27	23	85%	72%	324,425
Clatsop	24	23	96%	32%	8,397
Columbia	38	31	82%	58%	27,140
Coos	50	36	74%	51%	83,559
Crook	20	16	82%	74%	11,887
Curry	20	20	100%	54%	11,548
Deschutes	18	15	84%	67%	51,553
Douglas	28	22	77%	58%	59,448
Grant	40	40	100%	43%	6,271
Hood River	82	49	60%	42%	20,172
Jackson	23	19	82%	70%	154,902
Jefferson	13	9	70%	76%	28,152
Josephine	53	42	80%	56%	91,381
Klamath	17	17	99%	79%	27,328
Lake	60	38	64%	45%	7,784
Lane	40	34	84%	70%	303,975
Lincoln	11	11	100%	72%	13,732
Linn	49	48	98%	77%	134,182
Malheur	53	45	85%	34%	13,843
Marion	42	36	86%	68%	240,953
Multnomah	70	59	85%	74%	798,937
Polk	34	30	86%	65%	50,105
Tillamook	21	19	92%	58%	10,564
Umatilla	60	35	58%	48%	46,516
Union	32	25	78%	45%	12,404
Wasco	144	106	74%	62%	84,180
Washington	32	28	89%	73%	285,395
Yamhill	53	41	77%	63%	87,312
Oregon	1186	946	80%	67%	3,037,425

Sources: Cost Reports and PSU Population Estimates for June 30, 2016
Note; Baker, Gilliam, Grant, Harney, Morrow, Sherman, Wallowa, and Wheeler counties not shown because they have no nursing facilities.

Table B. Admission Source as Percentage of Total Admissions, Oregon 2012 – 2017

Admission	2012	2013	2014	2015	2016	2017
	Percent	Percent	Percent	Percent	Percent	Percent
Acute Hospital	93.81	93.21	93.23	93.35	94.09	94.72
Community	4.51	4.69	4.29	4.15	3.82	3.38
Another NF	1.05	1.34	1.44	1.56	1.41	1.23
Other	0.18	0.22	0.41	0.43	0.19	0.17
Hospice	0.19	0.18	0.22	0.17	0.19	0.21
Psych Hospital	0.14	0.15	0.19	0.14	0.09	0.11
Inpatient Rehab	0.11	0.14	0.11	0.13	0.09	0.08
LTCH	0.01	0.07	0.11	0.08	0.13	0.10
ID/DD	0.01	0.00	0.00	0.00	0.00	0.00
Died	0.00	0.00	0.02	0.00	0.00	0.00
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: CMS Minimum Data Set

Table C. Discharge Destination as Percentage of Total Discharges, Oregon 2012 - 2017

Destination	2012	2013	2014	2015	2016	2017
	Percent	Percent	Percent	Percent	Percent	Percent
Community	67.96	69.25	68.72	68.28	70.59	71.07
Acute Hospital	28.50	26.47	26.50	26.74	25.19	25.47
Another NF	1.88	2.13	2.37	2.48	2.12	1.91
Other	0.58	0.96	1.44	1.55	1.16	0.71
Inpatient Rehab	0.48	0.60	0.53	0.49	0.49	0.40
Hospice	0.24	0.29	0.26	0.30	0.32	0.32
Psych Hospital	0.14	0.13	0.11	0.09	0.07	0.08
LTCH	0.01	0.03	0.03	0.04	0.04	0.03
ID/DD	0.01	0.02	0.02	0.03	0.02	0.01
Died	0.20	0.12	0.02	0.00	0.00	0.00
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: CMS Minimum Data Set

Technical Notes

Data Sources and Analyses

This report is based on analyses of data from multiple sources, including:

- Annual Cost Reports and Revenue Statements provided to the Department of Human Services (DHS) by all Oregon nursing facilities

- Assessments of nursing facility residents as reported in the Centers for Medicare & Medicaid Services (CMS) Minimum Data Set (MDS)

- Facility-specific data on nursing facility characteristics and performance from the CMS Nursing Home Compare (NHC) datasets

- Hospital Discharge Data (HDD) for persons discharging from a hospital to an Oregon nursing facility or persons entering a hospital from an Oregon nursing facility

Each of these data sources is described briefly below. Also described are important assumptions or methods used in data analyses whose results are presented in this report.

DHS Cost Reports and Revenue Statements

Each Oregon nursing facility that contracts with DHS to receive Medicaid reimbursement must submit an annual Cost Report that contains data including numbers of beds, resident days, costs, and revenues. DHS uses data from these reports to establish and update Medicaid payment rates.

Each facility that does not contract with Medicaid must submit an annual Revenue Statement, which contains similar information but not data on licensed or setup beds or costs. For these facilities, numbers of licensed beds were obtained from Nursing Home Compare data (see below); numbers of setup beds were estimated based on other facilities of similar size.

The reporting period for Cost Reports and Revenue Statements is the State Fiscal Year (SFY), which begins July 1st and ends June 30th. This report focuses on SFY 2017, which ended June 30th, 2017, but also includes data for SFYs 2009 through 2016. If a facility changed ownership during a year, resident days from partial-year cost reports from the different owners were combined for that facility.

Occupancy rates for each facility were calculated using resident days and number of available bed days from Cost Reports and Revenue Statements. Occupancy rates were adjusted for facilities that increased or decreased the number of licensed beds available during the SFY or were only open for part of the year. If information about when the change in licensed beds occurred was not available, the average of beginning and end of year bed numbers was used. As Revenue Statements do not contain information about the number of licensed beds in a facility, this was obtained from Nursing Home Compare July 2016 and June 2017 (see below). Facilities in operation for less than 2 months of a SFY were excluded from that year. If a data

element, such as number of beds or resident days was missing for a facility for one year, we estimated it based on data from prior and/or subsequent years' reports. If a Cost Report facility did not report set-up beds numbers, they were imputed based on the set-up bed to licensed-bed ratio of other like-sized facilities.

Many sections of the Cost Reports and Revenue Statements provide details by payer and by payment category within payer. We used these detailed data to exclude Assisted Living and Residential Care resident days from our analyses of occupancy rates and of payer sources.

Population data used to calculate nursing facility bed availability rates were obtained from Portland State University's annual population estimates. The numbers of licensed and set-up beds at the beginning of each fiscal year were divided by population estimates for the beginning of that year.

MDS Assessments

CMS mandates that the Minimum Data Set (MDS) assessment questionnaire be completed for all nursing facility residents within 7 days of entry (admission). This assessment includes a wide range of data, including admission source, discharge destination, demographics, ADLs, diagnoses, treatments received, and quality measures. This report is based on Version 3.0 of the MDS questionnaire.

Nursing facility residents are assessed at entry and at discharge. Reassessments are to be performed if there is a significant change in a resident's health status, or quarterly if a resident's stay exceeds 3 months. If the resident is discharged within 7 days, only one assessment need be performed.

MDS data files were provided to Oregon State University (OSU) by DHS. These data files included assessments reported to DHS through December 5, 2017, which permitted analyses of nursing facility stays that extended past the end of SFY 2017. The data received by OSU were de-identified, so that resident names or other unique identifiers were removed. DHS provided a unique random ID number for each person, so that multiple assessments per person could be linked together. Duplicate assessments were removed from the de-identified dataset prior to analyses. OSU created a crosswalk between MDS facility identifiers and DHS report identifiers so that MDS results could be disaggregated by county or facility size.

This report is based only on assessments of residents for whom discharge dates were available in the MDS data. Residents with an uncertain discharge status (that is, no assessment within 150 days of the December 5, 2017 date when the dataset was created) were excluded from analyses. Residents of facilities with unknown or missing facility identification numbers were also excluded from analyses.

This report employs a systematic approach for capturing and counting entries, reentries, discharges, and stays in the MDS data. Entries and reentries into a nursing facility data are captured based on the date of discharge,[21] because while only the final assessment of a stay

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[21] This methodology was first implemented for the SFY 2015 report.

includes a discharge date, all assessments include the date of entry. Therefore, for any discharge assessment, the entrance date associated with that assessment is also used to define the beginning and end of that stay.[22] Residents still enrolled at the time the MDS dataset was created for OSU, December 5, 2017, were assigned this date as their discharge date for the purpose of counting entries and reentries.

Reentries are counted based on the MDS definition of a reentry: if a person is discharged from a nursing facility and then reenters the same facility within 30 days, it is a reentry.[23]

Nursing facility length of stay (LOS) was calculated from the resident's entry or reentry date and discharge date. If a resident was discharged from a nursing facility and subsequently re-entered that facility within 30 days, this was treated as two separate stays.[24] To accurately present trends trend based on multiple years of MDS data, LOS in Section 6 is reported based only on stays that had a discharge in the reported SFY.[25]

Demographic data presented in Section 5 were derived from the discharge assessment. Individuals who had more than one stay during the fiscal were counted only once in exhibits that present demographic data.

The Activities of Daily Living (ADL), diagnoses, and treatment data presented in Section 7 are based on the first assessment of each resident who was enrolled in SFY 2017.[26] This approach allows us to use information from all stays in SFY 2017. It thereby characterizes acuity among short and mid-length stays at those time residents entered the nursing facility, and among long-stay residents at the time of their annual reassessment. However, a resident who had more than one entry or reentry in SFY 2017 may have been counted more than once in these analyses.[27]

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[22] For the 2014 report, any entry or reentry that was coded in MDS as being an entry assessment, or the very first assessment for a resident if no coded entry assessment existed for that resident, was counted as the beginning of a stay. Discharge dates were then filled in to align with those entry or reentry dates. However, this method was determined to undercount total stays because it did not capture all discharges.
[23] The 2014 report counted as reentries only assessments coded as such in MDS.
[24] For the 2014 report, if a resident was discharged from and subsequently re-entered a nursing facility within 30 days, this was counted as one stay. However, the LOS in the 2014 report was calculated from the last entry date (even if it was a re-entry) to the final discharge date.
[25] In the 2014 and 2015 reports, LOS calculations also included residents who remained in the facility through December 5, with their LOS truncated as of that date. However, this method did not produce LOS results that were fully comparable across years.
[26] In the 2015 report, only assessments that were coded as entry, reentry or annual assessments in SFY 2015 were used to capture this information. The 2014 report captured ADLs using the last assessment of a person's first stay in that fiscal year.
[27] In the 2014 report, an individual could have only one ADL score.

<u>Nursing Home Compare (NHC) data</u>

The NHC system reports data collected by CMS during periodic surveys of nursing facilities, which must happen at least every 15 months. Because Oregon facilities that only submit Revenue Statements do not include information on the number of licensed or set up beds, NHC data on licensed beds were used instead. July 2016 NHC data were utilized to fill in beginning of SFY licensed bed numbers for these facilities, and June 2017 data were used to fill in end of SFY licensed bed numbers. These NHC data are for each facility's survey date closest to the relevant SFY.

NHC also reports the percentage of each facility's residents who meet each of several quality measures for each calendar quarter. Quality measure definitions can be found at https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/Downloads/MDS-30-QM-Users-Manual-V10.pdf

Section 9 of this report presents MDS-based quality measures for the weighted four-quarter average of Oregon SFY 2017,[28] derived from the December 2017 report from NHC. Long and short stay measures had differing quarter lengths: long stay measures were calculated from four three-month quarters, and short stay measures from four six-month quarters. The end of each six-month quarter coincided with the end of the calendar quarter. This definition of short stay quarters means that our reported short stay quality measures for SFY 2017rely on some data from the last three months of SFY 201.

Three new MDS-based quality measures were recently added to NHC and therefore included in the 2017 report:

- Long-stay residents who received an antianxiety or hypnotic medication
- Long-stay residents whose ability to move independently worsened
- Short-stay residents who made improvements in function

In addition, three new "claims-based" short stay measures were also recently added to NHC and appear in the 2017 report:

- Short-stay residents who hospitalized after admissions
- Short-stay residents who had an outpatient emergency department visit
- Short-stay residents who were successfully discharged back into the community

These measures are called "claims-based" because the measures calculated form MDS data are risk adjusted based on data reported to CMS from hospitals. This risk adjustment introduces a time lag into the NHC reporting, and so the data for these measures describe the 4-quarters that make up Oregon SFY 2016. Definitions for the claims-based measures can be found at: https://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/CertificationandComplianc/Downloads/New-Measures-Technical-Specifications-DRAFT-04-05-16-.pdf

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[28] This is a change from the three-quarter average used in the SFY 2016 report.

Facilities that reported a measure for less than 20 short-stay residents or 30 long-stay residents during SFY 2017 are excluded from analyses for that measure. This report presents the average of values for all facilities for which NHC reports data for that measure.

Hospital Discharge Data (HDD)

Hospital Discharge Data (HDD) collected by the Oregon Association of Hospitals and Health Systems (OAHHS) capture diagnosis, payer, and demographic information on individuals who spend time in an inpatient hospital in Oregon. HDD data were linked to MDS in a 2-step process. First, using LinkKing software, OHA probabilistically matched persons who, per MDS, had entered or discharged from a nursing facility in SFY 2014 though SFY 2017 to persons who, per the HDD, were discharged from a hospital during calendar years 2013 through 2017. Matching was based on first name, last name, middle initial, date of birth, and sex. Second, we aligned these matched hospital discharges and nursing facility admissions by date; an alignment margin of plus or minus two days was used. At the end of these steps, 31,748 of the 41,029 nursing facility admissions in SFY 2017 were linked to hospital discharges. For 1,640 of the unlinked nursing facility admissions, MDS indicated that the resident had not entered from a hospital; these admissions were excluded from the denominator in calculating the linkage rate. Overall, therefore, we achieved an 82.9% linkage rate between HDD and MDS for SFY 2017. This compares to 83.4% and 80.5% linkage rates in SFY 2016 and 2015, respectively.

Rural Urban Commuting Areas (RUCAs)

Rurality was measured using the Rural-Urban Community Areas-B (RUCA-B) classification. RUCAs utilize distance to a city center and commuting flows to classify rurality and have been found to be very sensitive to demographic changes[29]. To create the analytic file that assigned a rurality to each facility, Census tracts were matched to facility ZIP codes in our data using a ZIP-Tract crosswalk file from the US Census bureau. Because some ZIP codes map onto more than one Census tract and some Census tracts map onto more than one ZIP code, ZIP codes that fell into more than one Census tract were assigned to the largest area grouping.

The Census tract-based RUCA Version 2 codes are based on: a) 2000 Census work commuting information, and b) Census Bureau-defined Urbanized Areas and Urban Clusters.

RUCA-B classifications are as follows:

"Urban": An area with population $\geq$50,000 **or** town of any size with high primary commuting flow (30-49%) to an Urban Core (UC) and/or $\geq$30% secondary flow to an Urban Area (UA)

"Large Rural City/Town": An area with population of from 10,000-49,999 with $\geq$10% primary commuting flow to an UC and/or <29% secondary commuting flow to an UA.

"Small and Isolated Small Rural Town": A city/town core with a population size of 2,500-9,999 with $\geq$10% primary commuting flow to a small UC and/or with 10-29% secondary commuting flow to a UA **or** a town with a population core <2,500 with primary commuting flow to a tract outside a UA or UC and/or with $\geq$10% secondary commuting flow to a UC or 10-29% secondary commuting flow to a UA.

RUCA Definitions:

"Urban Clusters": cities/towns of from 2,500 to 49,999 populations

"Urban Area": cities of 50,000 and greater population

"Primary Flow": the primary commuting destination; assigned by the first digit

"Secondary Flow": second largest share of commuting flow; assigned by the second digit

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Definitions Used in This Report

Admission: This occurs when a person enters a NF and is admitted as a resident. An admission may be:
- An <u>entry</u> into a nursing facility (if the resident has never been admitted to the specified facility before, or if the resident was in the specified facility previously and was discharged and not did not return within 30 days of the discharge); or
- A <u>reentry</u>, which occurs when an individual is discharged from a nursing facility and then returns to the same facility within 30 days of that discharge.

Discharge: A discharge occurs when an individual is released from a nursing facility whether they re-enter or not. This does not include a leave of absence or hospital observational stays of less than 24 hours unless the individual was admitted to the hospital.

Final discharge: A final discharge occurs when an individual is released from the nursing facility and does not return to the same facility within 30 days of that discharge date

Discharge followed by a reentry within 30 days: This occurs when an individual is released from a nursing facility and returns to the same facility within 30 days of the discharge date.

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