



**The
Dartmouth
Institute**
for Health Policy
& Clinical Practice

The Dartmouth Atlas of Health Care: 2018 Data Update



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The period since 2010 has been one of transition for health care in America. In addition to reforming the insurance market and increasing the number of people with insurance coverage (both private and Medicaid), the 2010 Patient Protection and Affordable Care Act (or the ACA) included provisions intended to both improve the quality and reduce the cost of health care. Among these were a renewed focus on primary and preventive care, including screening for patients with chronic diseases such as diabetes,¹ and on reducing both unnecessary hospitalizations² and readmissions after patients leave the hospital.³ While not explicitly included in the ACA, programs established via the Centers for Medicare & Medicaid Services (CMS) Innovation Center, created under the law, have also focused on improving the quality of end-of-life care via reimbursement for advance care planning and improving the availability and quality of hospice care.⁴

The emphasis on these goals is partially reflected in the Dartmouth Atlas Project's 2018 data update. While reimbursements to hospitals and skilled nursing facilities for inpatient services decreased as a proportion of overall Medicare reimbursements between 2011 and 2018, the proportion spent on hospice services remained unchanged. Use of hospice, however, increased among enrollees with serious chronic illnesses. Chronically ill Medicare enrollees were less likely to die in the hospital in 2018 than in 2011, and they spent fewer days in the hospital during their last six months of life, but they visited a larger number of different physicians as they neared the end of life. There was a small reduction in readmissions within 30 days of discharge following a medical admission; the magnitude of this decrease was greater for specific conditions targeted by CMS. The percentage of Medicare enrollees having a primary care visit increased slightly, as did rates of breast cancer screening and diabetes management screening tests. Data for these measures and more are available from the Dartmouth Atlas website: data.dartmouthatlas.org.

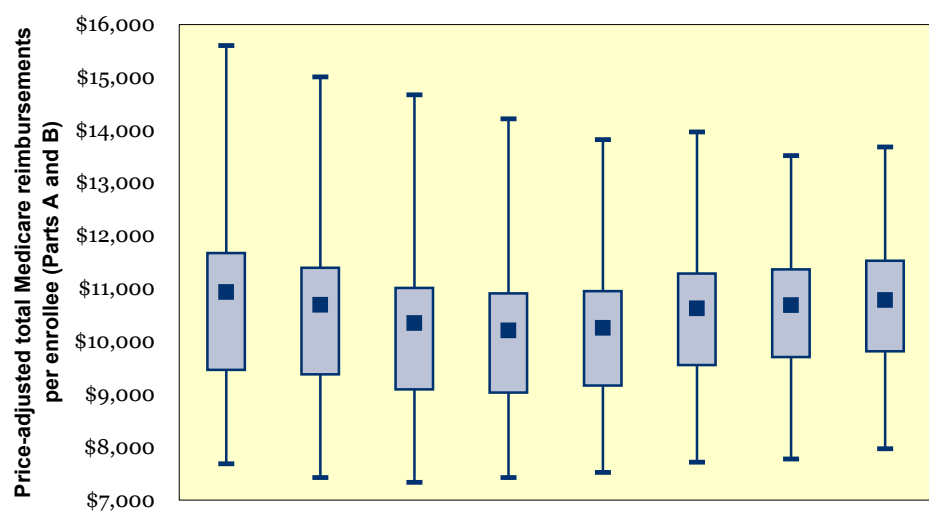
While we experienced delays in processing the 2018 data, the 2019 Atlas report is already in progress; we plan to focus on racial and ethnic disparities in health and health care among Medicare enrollees. In light of the COVID-19 pandemic, we are planning a 2020 Atlas report that will document the tragic regional patterns of mortality, as well as expenditures and utilization, among the older (age 65+) population.



Medicare Reimbursements

Changes in Variation among Hospital Referral Regions

Total Medicare reimbursements for enrollees in fee-for-service Medicare (not including the Part D prescription drug program) remained relatively constant between 2011 and 2018 after adjusting for inflation. The national average reimbursement rate was \$10,936 per enrollee in 2011 (2018 dollars) and \$10,786 per enrollee in 2018. The variation in total reimbursement rates among the 306 hospital referral regions (HRRs) in the United States also decreased between 2011 and 2018; the rate varied about twofold in 2011 and by a factor of 1.72 in 2018 after adjusting for regional differences in age, sex, race, and prices. The change in the interquartile ratio was minimal, however, indicating that the reduced variation was mostly due to a decrease in the highest rates (Figure 1).



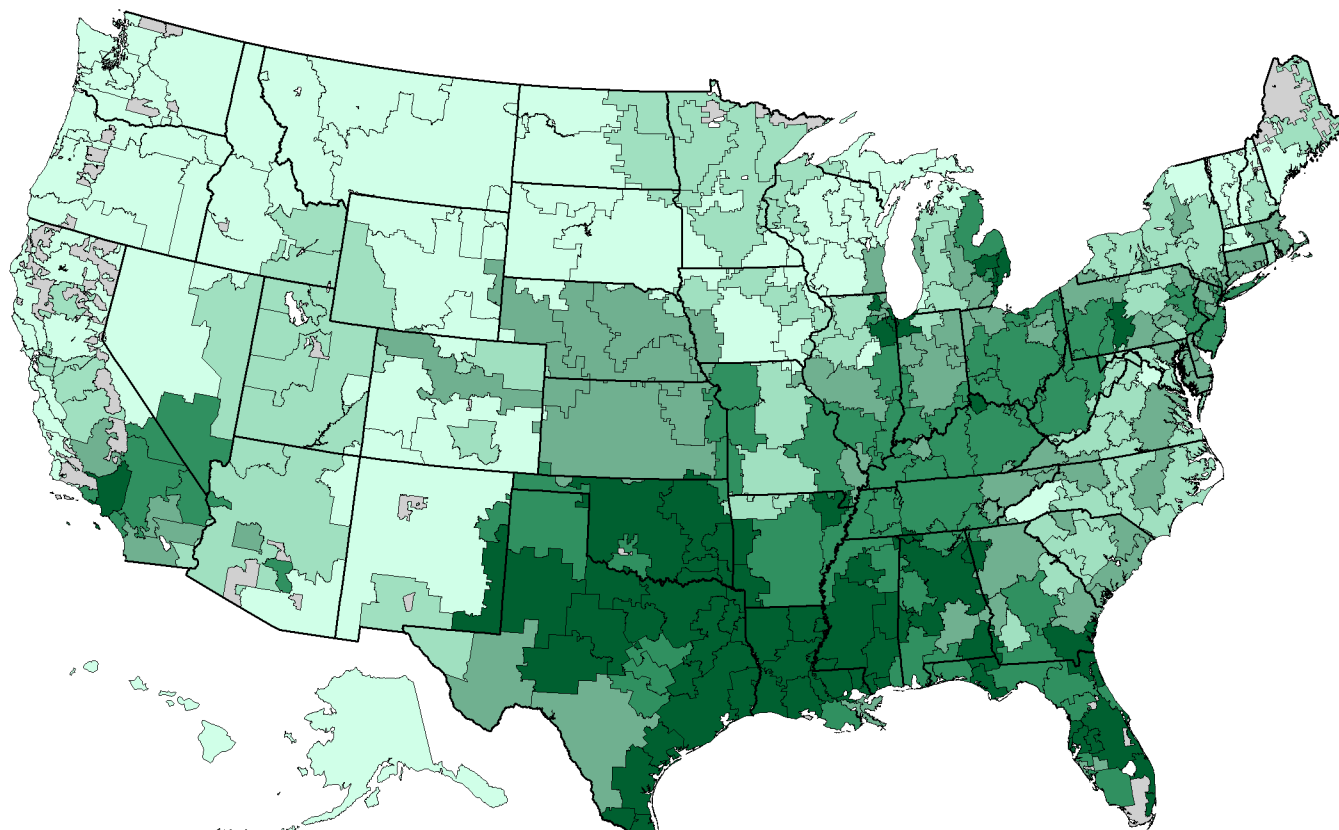
	2011	2012	2013	2014	2015	2016	2017	2018
U.S. average	\$10,936	\$10,693	\$10,349	\$10,212	\$10,258	\$10,628	\$10,688	\$10,786
Extremal ratio	2.03	2.02	2.00	1.91	1.84	1.81	1.74	1.72
Interquartile ratio	1.23	1.22	1.21	1.21	1.20	1.18	1.17	1.18
Coefficient of variation	13.8	13.5	13.0	12.9	12.1	11.8	11.4	11.5

Figure 1. Hospital Referral Region (N=306) Variation in Total Medicare Reimbursements per Enrollee (2011-18)

The figure shows the annual variation in Medicare reimbursements per enrollee from 2011 to 2018. The dashes at each end of the vertical lines show the highest and lowest rates, and the table gives the ratio of the highest to lowest value (extremal ratio). The top line of each gray box represents the rate at the 75th percentile among HRRs, and the bottom line shows the rate at the 25th percentile; the table gives the ratio of these values (interquartile ratio). The blue squares show the national average for each year. All spending measures are expressed in 2018 dollars using the GDP deflator to adjust for inflation.

There was considerable variation in the changes in Medicare spending across HRRs. While Miami remained the region with the highest reimbursements per enrollee in 2018 (\$13,678), this represented a decrease of 12% from the inflation-adjusted reimbursement rate in 2011 (\$15,603). The rate in the HRR with the second highest reimbursements in 2011—McAllen, Texas—declined 11%, from \$15,039 per enrollee to \$13,372 in 2018. These declines can be attributed in part to efforts by federal strike forces targeting fraudulent behavior in these regions.⁵ Meanwhile, Medicare reimbursements per enrollee increased more than 15% in Rochester, New York (\$8,713 to \$10,344) and Mason City, Iowa (\$8,588 to \$9,963) from 2011 to 2018.

As shown in Map 1, there is considerable variation across the U.S. with regard to overall Medicare expenditures that is not a consequence of differ-

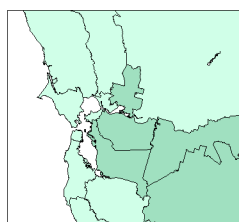


ences in age, sex, race, or Medicare reimbursement rates. In addition to Miami, Medicare reimbursement rates in 2018 were also high for enrollees living in the Munster, Indiana (\$13,622), Monroe, Louisiana (\$13,619), Los Angeles (\$13,514), and Wichita Falls, Texas (\$13,402) HRRs. Medicare spent much less per capita for enrollees in Santa Cruz, California (\$7,967), Honolulu (\$8,090), Grand Junction, Colorado (\$8,101), Burlington, Vermont (\$8,202), and Anchorage (\$8,251) (Map 1).

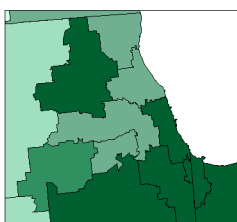
Price-Adjusted Total Medicare Reimbursements (Parts A & B) per Enrollee
by Hospital Referral Region (2018)

- \$11,800 to \$13,678 (60)
- \$11,025 to < \$11,800 (61)
- \$10,350 to < \$11,025 (61)
- \$9,600 to < \$10,350 (62)
- \$7,967 to < \$9,600 (62)
- Not populated

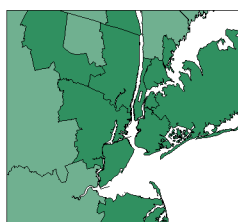
Map 1. Price-Adjusted Total Medicare Reimbursements per Enrollee by Hospital Referral Region (2018)



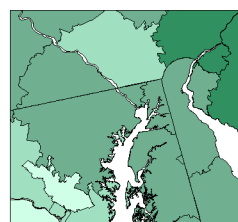
San Francisco



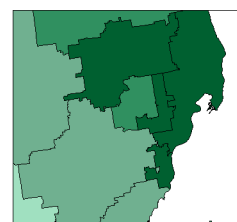
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New York



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Detroit

Changes in Spending by Program Component

Between 2011 and 2018, the percent of total Medicare reimbursements paid to hospitals and skilled nursing facilities for services delivered during inpatient stays decreased from 48% to 42%, while reimbursements to outpatient facilities increased from 12% to 19% of overall spending. These changes could reflect efforts to reduce the number of preventable hospitalizations and instead treat patients in less expensive settings. Reimbursements for physician, hospice, and other services (home health services and durable medical equipment) remained relatively constant (Figure 2).

Despite the lack of increase in hospice spending as a proportion of overall reimbursements, use of hospice services during the last six months of life rose among Medicare enrollees with serious chronic illnesses. The percent of chronically ill Medicare decedents enrolled in hospice during the last six months of life grew from 49% of those dying in 2011 to 56% in 2018. The number of days these patients spent receiving hospice services increased more than 20%, from about 22 to 26 days. However, this change in hospice use was far from uniform across HRRs. In McAllen, Texas, there was an increase of more than 70% in the percent of chronically ill Medicare enrollees using hospice during the last six months of life—from 30.5% of those dying in 2011 to 52.2% in 2018—though the region still ranked in the bottom half

of HRRs in 2018. By contrast, the rate of hospice use in Bismarck, North Dakota—already among the lowest-ranked HRRs in 2011, at 24.4%—declined to 22.5% in 2018. The percent of chronically ill decedents dying in 2018 who used hospice services during the last six months of life was also low in Minot, North Dakota (22.8%) and several regions in New York, including Elmira (22.8%), Syracuse (25.0%), and the Bronx (26.4%). Rates of hospice use were about three times higher in Ormond Beach, Florida (73.1%), Ogden, Utah (71.6%), Provo, Utah (71.5%), and Mesa, Arizona (71.1%) (Map 2).

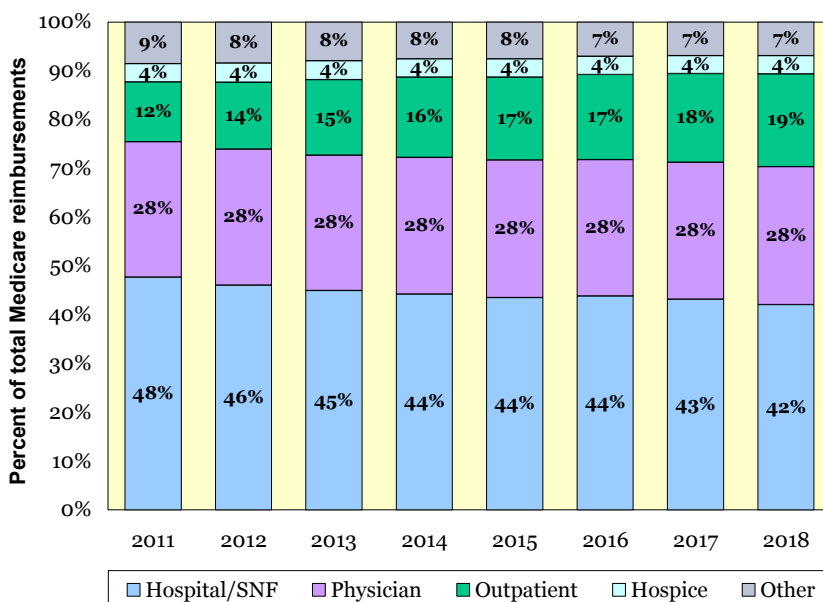
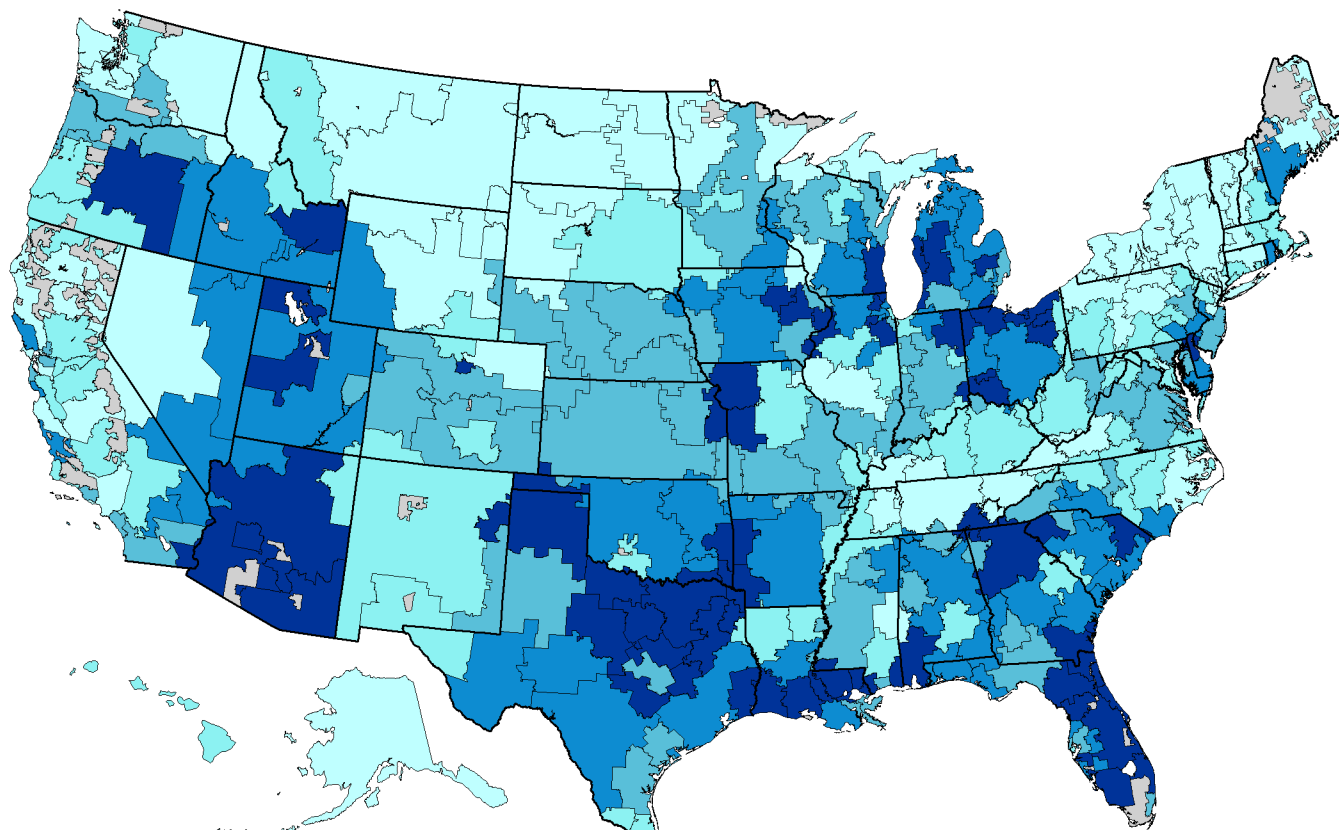
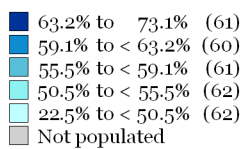


Figure 2. Percent of Total Medicare Reimbursements by Program Component (2011-18)

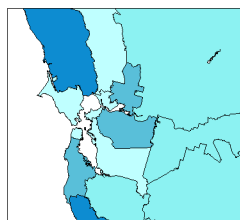


**Percent of Chronically Ill
Decedents Enrolled in Hospice
during the Last Six Months of Life**

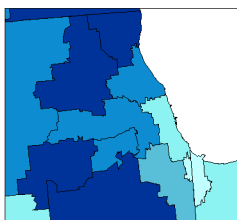
by Hospital Referral Region (2018 deaths)



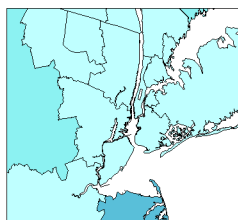
**Map 2. Percent of Chronically Ill Patients
Enrolled in Hospice during the Last Six
Months of Life by Hospital Referral Region
(2018 deaths)**



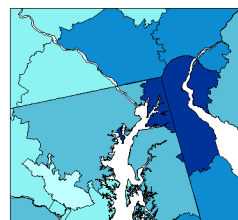
San Francisco



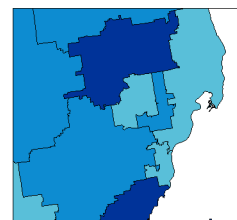
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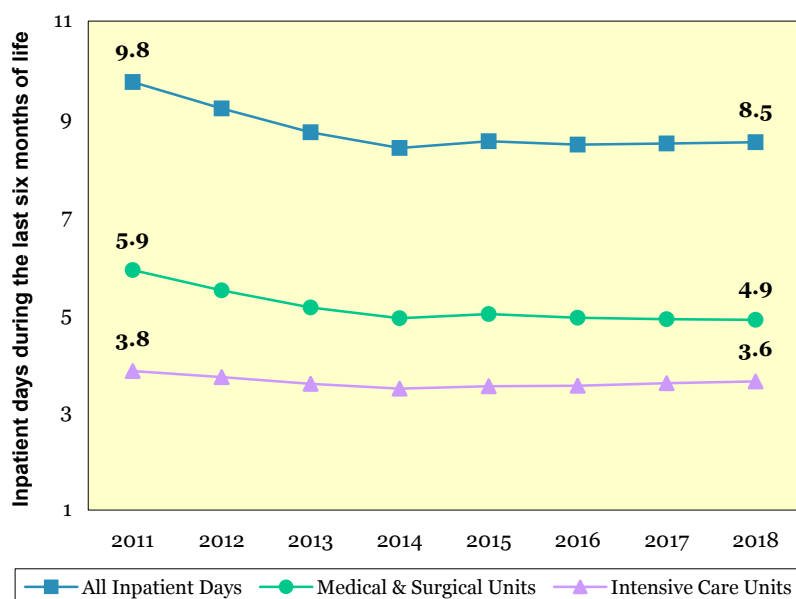
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End-of-Life Care for Patients with Chronic Illness

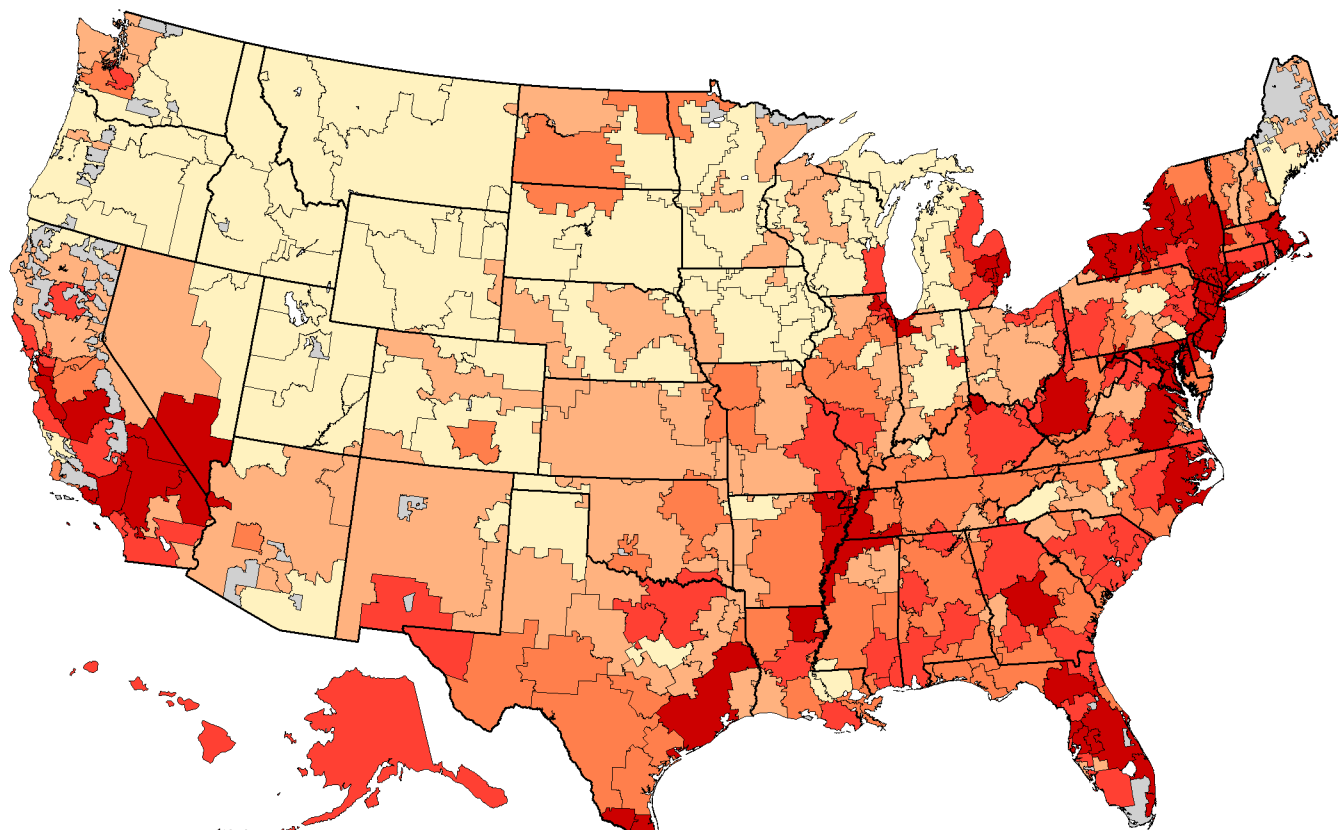
Hospital Utilization

The increase in use of hospice services among Medicare enrollees with serious chronic illness was accompanied by a reduction in the intensity of hospital utilization during the last six months of life. The percent of chronically ill Medicare patients dying in the hospital decreased from 24.1% in 2011 to 20.4% in 2018, and the percent of patients having a hospitalized death whose final admission included an intensive care stay declined from 16.3% to 14.9%. The number of days that chronically ill patients spent in the hospital during the last six months of life decreased from 9.8 to 8.5 days, though the number of days spent in intensive care remained relatively flat (Figure 3). While chronically ill patients dying in 2018 spent fewer days in the hospital during the last six months of life than in 2011 in most HRRs, this was not the case for every region. Medicare decedents in Santa Rosa, California spent more than two additional days in the hospital during the last six months of life in 2018 (8.5 days) than in 2011 (6.2 days) on average, while those in Olympia, Washington (6.7 to 7.9 days, 2011 to 2018) and Bend, Oregon (4.4 to 5.5 days) spent one additional day in the hospital. By contrast, the amount of time that decedents in Johnstown, Pennsylvania spent in the hospital during the last six months of life decreased by more than three days between 2011 and 2018, from 11.9 to 8.2.



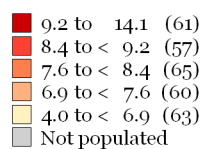
Chronically ill Medicare patients who died in 2018 spent about two weeks in the hospital during their last six months of life in the New York City metropolitan HRRs of Manhattan (14.1 days), the Bronx (13.9), and East Long Island (13.8). Chronically ill patients in Utah HRRs spent fewer than 5 days in the hospital at the end of life: Ogden (4.0), Provo (4.4), and Salt Lake City (4.8) (Map 3).

Figure 3. Inpatient Days per Chronically Ill Medicare Enrollee during the Last Six Months of Life (2011-18 deaths)

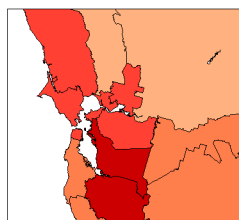


Inpatient Days per Chronically Ill Medicare Enrollee during the Last Six Months of Life

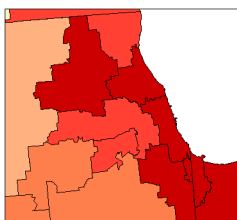
by Hospital Referral Region (2018 deaths)



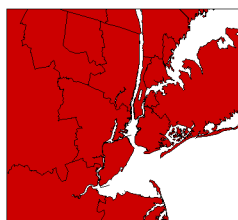
Map 3. Inpatient Days per Chronically Ill Medicare Enrollee during the Last Six Months of Life by Hospital Referral Region (2018 deaths)



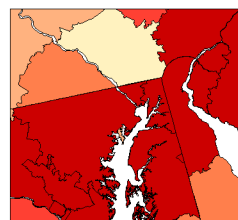
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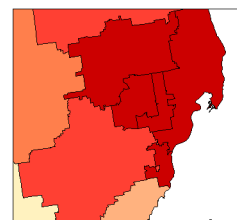
Chicago



New York



Washington-Baltimore



Detroit



Physician Utilization

The overall number of physician visits also declined, from 28.8 visits per chronically ill Medicare decedent during the last six months of life for those dying in 2011 to 26.3 visits in 2018. However, the number of different physicians seen by chronically ill patients increased from about 10 in 2011 to about 12 in 2018. The percent of chronically ill patients seeing 10 or more different physicians during the last six months of life increased from an average of 43.2% of patients dying in 2011 to 51.2% in 2018, an increase of more than 18% (Figure 4). This rate increased in all but two HRRs: McAllen, Texas—where the percent seeing 10 or more physicians dropped from 63% to 60%—and New Orleans, where the rate remained about 49%. Meanwhile, the rate increased by more than 70% in Idaho Falls, Idaho (13.5% to 24.8%) and Pueblo, Colorado (32.6% to 56.4%).

The coordination of care for chronically ill patients is more difficult when patients are being seen by many different physicians. The percent of chronically ill Medicare patients seeing 10 or more different physicians during the last six months of life varied more than twofold across HRRs for those dying in 2018, from less than 25% to more than 65%. Rates were particularly high in several regions in New York and New Jersey, including East Long Island,

New York (68.3%), Paterson, New Jersey (67.6%), White Plains, New York (67.3%), Ridgewood, New Jersey (66.8%), and New Brunswick, New Jersey (66.6%). Decedents were much less likely to see 10 or more different physicians in Marquette, Michigan (28.1%), Missoula, Montana (28.8%), Appleton, Wisconsin (30.4%), and Salt Lake City (31.1%). Despite the rapid increase in Idaho Falls, it remained the lowest-ranked HRR in 2018 (Map 4).

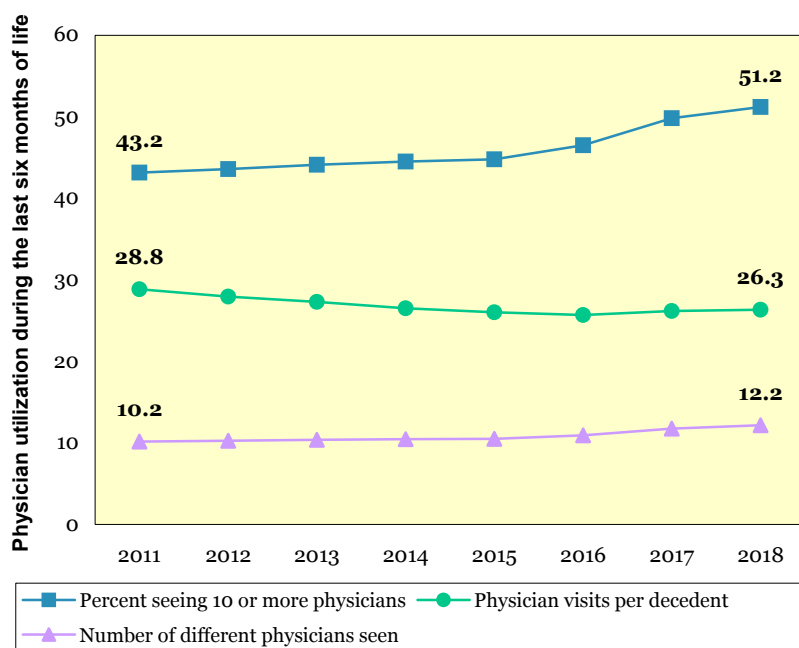
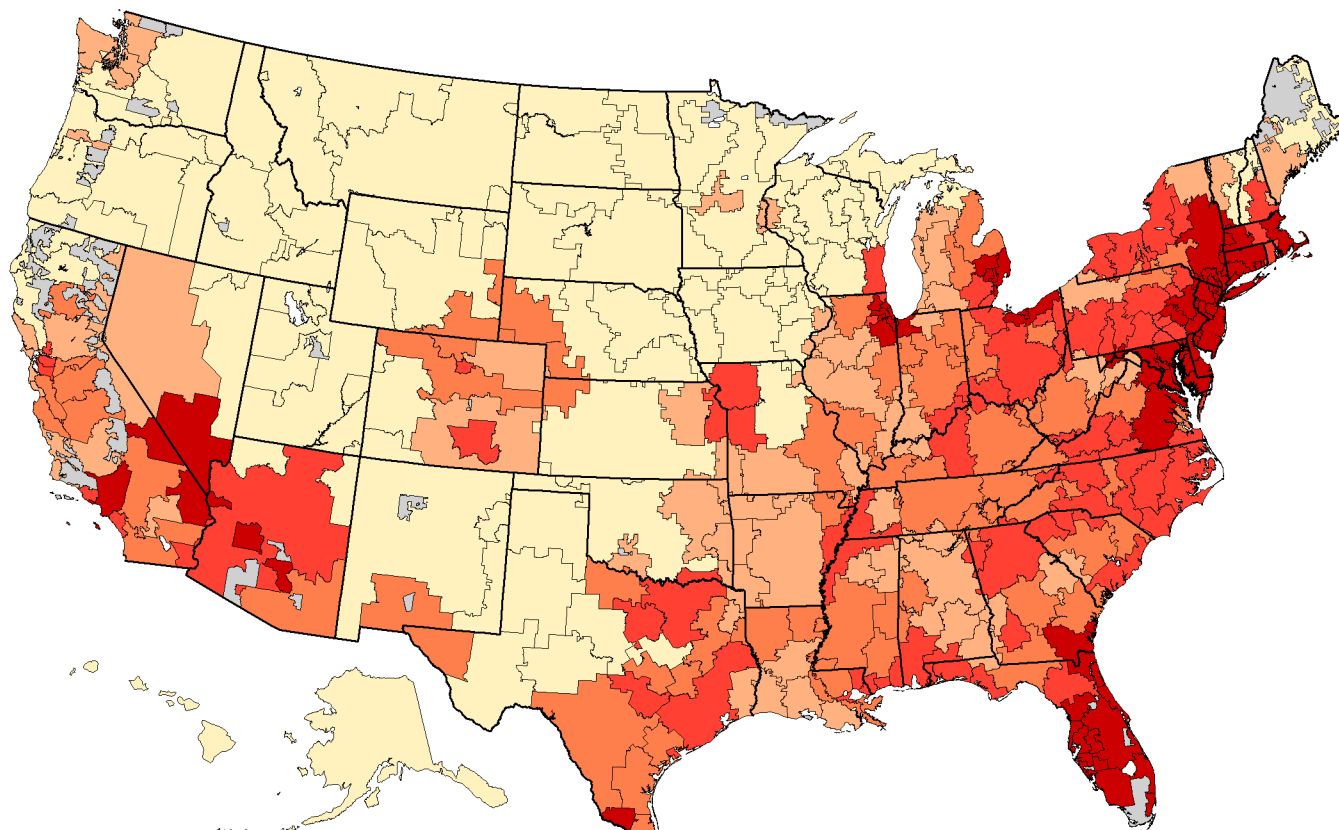
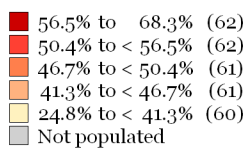


Figure 4. Physician Utilization among Chronically Ill Medicare Enrollees during the Last Six Months of Life (2011-18 deaths)

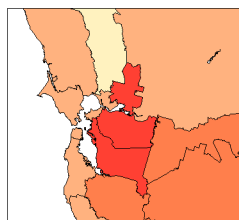


**Percent Seeing 10 or More
Different Physicians during
the Last Six Months of Life**

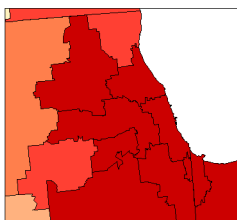
by Hospital Referral Region (2018 deaths)



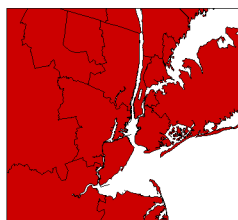
**Map 4. Percent of Chronically Ill Medicare
Enrollees Seeing 10 or More Different
Physicians during the Last Six Months of
Life by Hospital Referral Region (2018 deaths)**



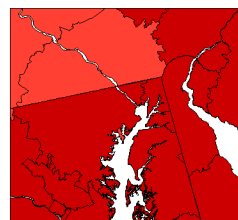
San Francisco



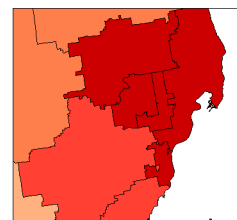
Chicago



New York



Washington-Baltimore



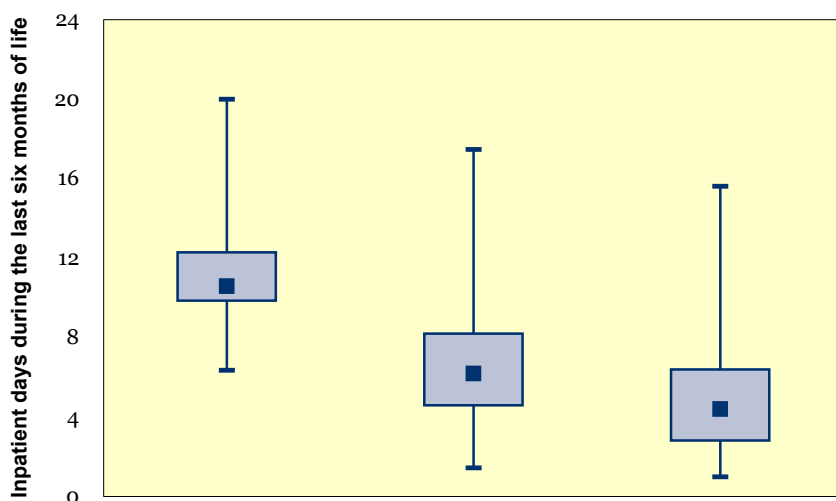
Detroit



Hospital-level Variation

The intensity of care for chronically ill patients varied to an even greater degree across individual hospitals than HRRs. Among the hospitals most heavily used by patients who died in 2018—those with at least 500 decedents who received most of their inpatient care during the last two years of life at these hospitals (N=371)—the average number of days patients with chronic illnesses spent in the hospital in their last six months of life varied more than threefold, from less than one week to nearly three (Figure 5). As the New York City metropolitan HRRs ranked the highest for inpatient days in the regional analysis, it should not be surprising that nine of the top ten general hospitals ranked on this measure are located in the Manhattan and East Long Island regions. Patients who received most of their inpatient care at Mount Sinai Beth Israel Hospital in Manhattan spent an average of 19.1 days in the hospital during the last six months of life; total inpatient day rates were also high at Maimonides Medical Center in Brooklyn (18.8 days),

North Shore University Hospital in Manhasset (18.7), and New York-Presbyterian Hospital in Manhattan (18.5). By contrast, patients spent fewer than seven days in the hospital during the last six months of life at four hospitals, including two in the Salt Lake City region: Intermountain Medical Center in Murray (6.3) and Dixie Regional Medical Center in St. George (6.6). While some of this variation might be the consequence of different patients being served—more seriously ill patients within a region might be sent to tertiary academic medical centers or to hospitals specializing in cancer—there remains considerable variation in utilization across hospitals even after adjusting for patient characteristics.



	All inpatient days	Medical & surgical units	Intensive care units
U.S. average	10.6	6.2	4.4
Extremal ratio	3.15	12.2	15.8
Interquartile ratio	1.25	1.79	2.28
Coefficient of variation	20.4	42.0	50.0

Figure 5. Inpatient Days per Chronically Ill Medicare Enrollee during the Last Six Months of Life among Hospitals with At Least 500 Deaths (N=371) (2018 deaths among enrollees with at least one hospitalization during the last two years of life)

While New York City hospitals ranked highest for total inpatient days, this was not the case for intensive care days. Three hospitals in Florida and three in New Jersey



were among those where patients spent at least 10 days in intensive care during the last six months of life, including Florida Hospital in Orlando (11.6), St. Anthony's Hospital in St. Petersburg (10.2), and Delray Medical Center in Delray Beach (10.0) in Florida; and Kennedy University Hospital in Stratford (10.4), Robert Wood Johnson University Hospital in New Brunswick (10.4), and Riverview Medical Center in Red Bank (10.0) in New Jersey. Chronically ill patients only spent about one day in intensive care at Concord Hospital in Concord, New Hampshire (1.0), Berkshire Medical Center in Pittsfield, Massachusetts (1.0), University of Colorado Memorial Hospital in Colorado Springs (1.0), and St. Luke's Regional Medical Center in Boise, Idaho (1.0).

Among the hospitals used most frequently by chronically ill patients who died in 2018, there were 10 whose patient populations visited a particularly large number of physicians, all located in New York, New Jersey, and Florida. At Delray Medical Center, 85.8% of patients saw 10 or more different doctors during their last six months of life, and the average patient saw 21 doctors; similarly, 82.8% of patients at St. Francis Hospital in Roslyn, New York saw at least 10 doctors, with an average of 25 doctors seen per patient. Less than half of patients saw 10 or more different physicians at Dixie Regional Medical Center in St. George, Utah (47.7%), Intermountain Medical Center in Murray, Utah (48.2%), Mercy Medical Center in Redding, California (49.3%), and Norman Regional Health System in Norman, Oklahoma (49.9%).

Thirty-Day Readmissions Medical Discharges

In 2012, the Centers for Medicare & Medicaid Services (CMS) began penalizing hospitals for excessive readmissions within 30 days of discharge for certain medical conditions and surgical procedures under the Hospital Readmissions Reduction Program (HRRP);³ these penalties were estimated to have amounted to over \$2.5 billion by fiscal year 2018.⁶ The average percent of Medicare enrollees readmitted within 30 days following discharge decreased between 2011 and 2018 for several medical conditions specifically targeted by the HRRP, including heart failure (21.1% to 19.7%), acute myocardial infarction (17.8% to 15.8%), and pneumonia (15.3% to 14.4%). Despite these reductions, the 30-day readmission rate following discharge for any medical condition declined only slightly, from 15.9% to 15.1% (Figure 6). Much of the reduction in 30-day readmission rates occurred between 2011 and 2014, perhaps suggesting that the initial focus on avoiding penalties in the early years of the program has waned.

Across HRRs, the percent of Medicare enrollees readmitted within 30 days of a medical discharge varied by a factor of 1.5 in 2018. More than 17% of patients were readmitted in Miami (17.7%), Metairie, Louisiana (17.5%),

Jonesboro, Arkansas (17.3%), Gainesville, Florida (17.2%), and Dearborn, Michigan (17.2%). Less than 13% of patients were readmitted in 12 HRRs, including Idaho Falls, Idaho (12.1%) and all three HRRs in Utah: Salt Lake City, Provo, and Ogden (all 12.2%) (Map 5). The variation was higher for three of the conditions targeted by CMS. Readmissions within 30 days of discharge varied about twofold for congestive heart failure, from 12.4% to 25.4%; more than twofold for acute myocardial infarction, from 9.2% to 23.1%; and nearly fourfold for pneumonia, from 5.6% to 21.5%.

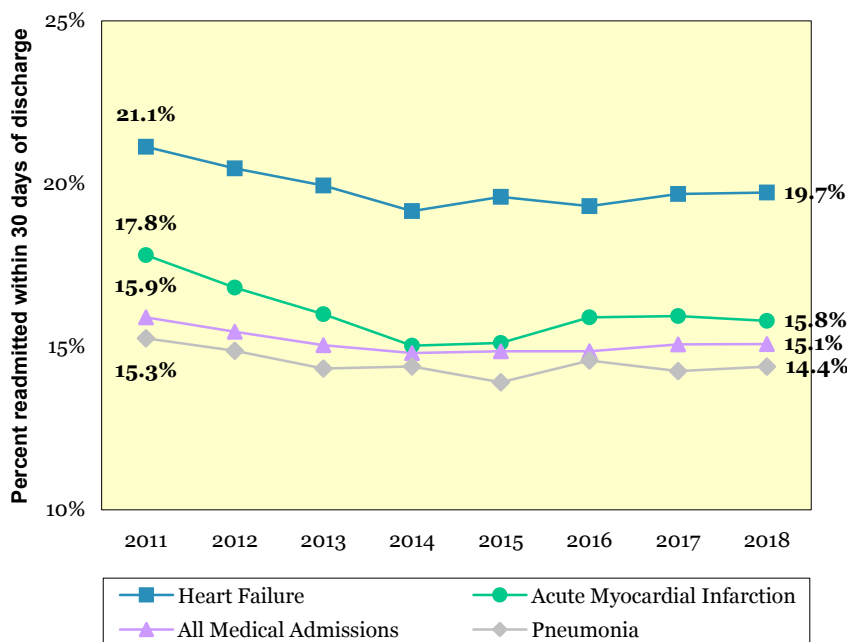
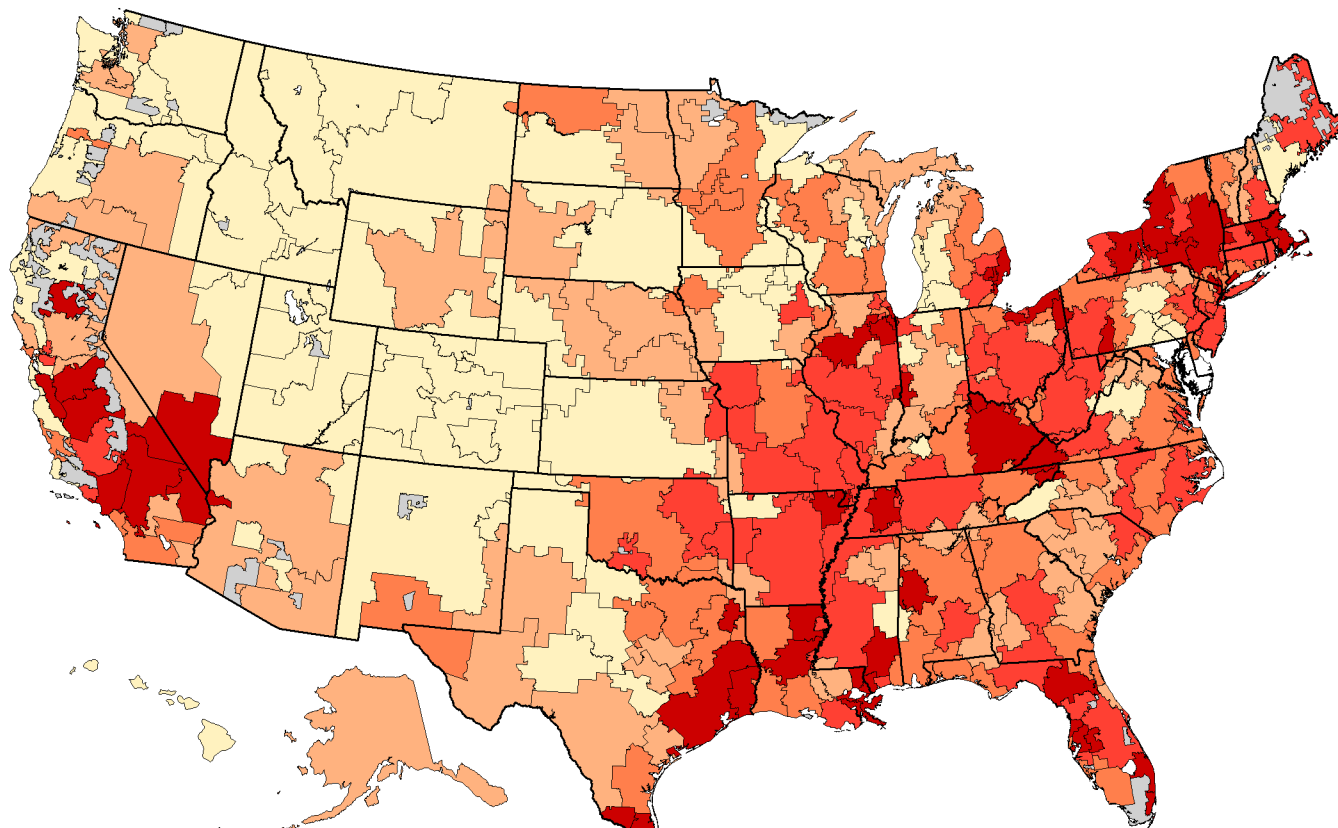
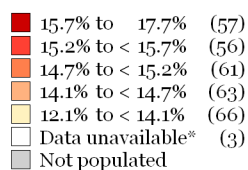


Figure 6. Percent of Medicare Enrollees Readmitted within 30 Days of Discharge Following a Medical Admission (2011-18)

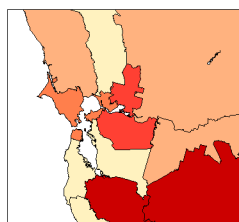


**Percent of Medicare Enrollees
Readmitted within 30 Days
Following Medical Discharge**

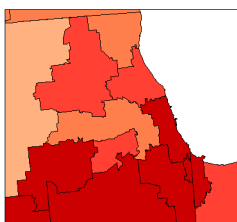
by Hospital Referral Region (2018)



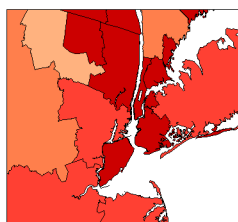
Map 5. Percent of Medicare Enrollees Readmitted within 30 Days of Discharge Following a Medical Admission by Hospital Referral Region (2018)



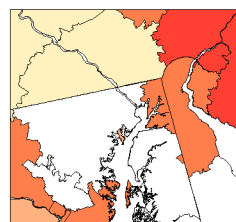
San Francisco



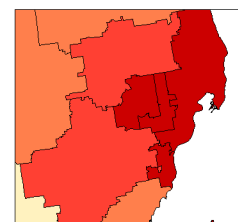
Chicago



New York



Washington-Baltimore



Detroit

*Maryland regions are not reported. Maryland hospitals are exempt from HRRP payment reductions under a separate agreement between CMS and Maryland.³



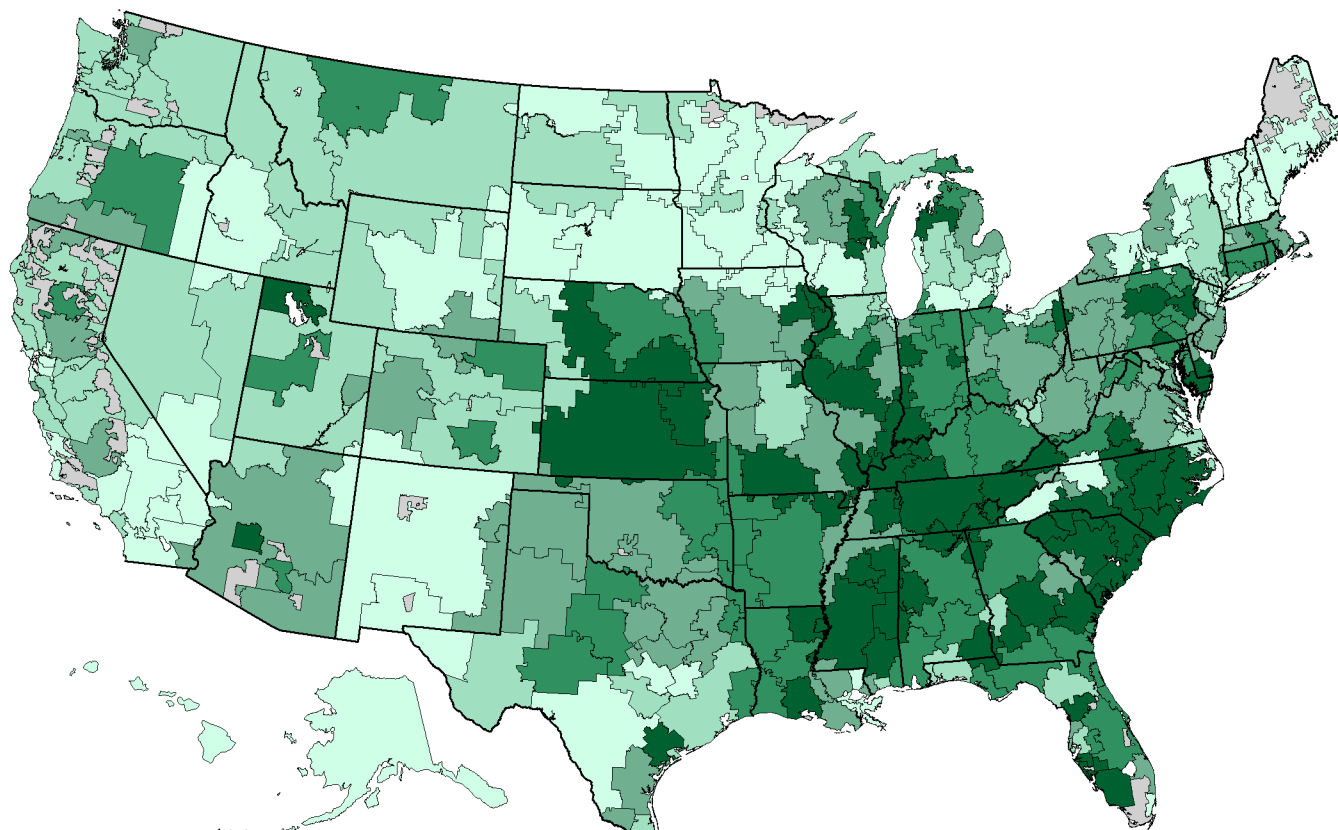
Primary Care and Preventive Services

Percent Seeing a Primary Care Physician

Because primary and preventive services were already largely covered by Medicare, the Affordable Care Act may have had a smaller impact on Medicare enrollees than on populations who gained insurance coverage after its passage. There was a small overall increase in the use of primary care by Medicare enrollees from 2011 to 2018; on average, the percent of enrollees having at least one ambulatory visit to a primary care physician rose from about 78% to 80%, despite a nationwide overall downward trend in the number of primary care visits per person.⁷

The percent seeing a primary care physician in an ambulatory setting varied by a factor of 1.6 across HRRs in 2018. About 90% of enrollees had a primary care visit in Tupelo, Mississippi (90.8%), Albany, Georgia (90.3%), Oxford, Mississippi (90.1%), Wilmington, North Carolina (90.0%), and Hattiesburg, Mississippi (89.8%). Medicare enrollees were less likely than average to see a primary care physician in the Bronx, New York (62.1%), San Francisco (65.9%), Lebanon, New Hampshire (66.0%), Duluth, Minnesota (66.2%), and Miami (66.6%) (Map 6).ⁱ

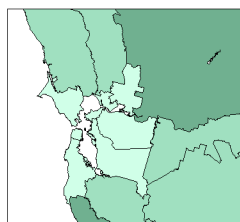
ⁱ These regions were among the lowest with regard to averaging over a longer period. Sudden declines in rates of primary care visits were observed in several regions—for example, Portland, Maine and Elyria, Ohio—between 2015 and 2016. We ruled out several candidates (e.g., shifts in the population covered under fee-for-service Medicare); ultimately, we suspected but could not prove that the declines were due to an increase in the number of primary care alternative payment models, where visits are bundled and thus not necessarily reported in the fee-for-service claims data. Caution should be used in interpreting longitudinal data for primary care measures going forward.



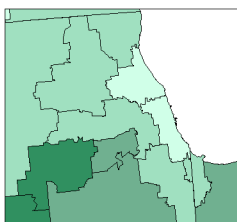
**Percent of Medicare Enrollees
Having an Ambulatory Visit
to a Primary Care Physician**
by Hospital Referral Region (2018)

- 85.3% to 90.8% (62)
- 82.8% to < 85.3% (61)
- 79.6% to < 82.8% (63)
- 75.4% to < 79.6% (60)
- 57.3% to < 75.4% (60)
- Not populated

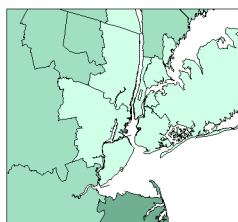
**Map 6. Percent of Medicare Enrollees Having
At Least One Visit to a Primary Care Physician
in an Ambulatory Setting by Hospital Referral
Region (2018)**



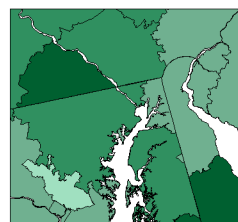
San Francisco



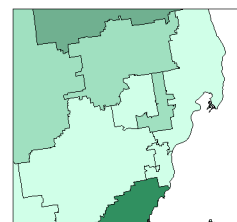
Chicago



New York



Washington-Baltimore



Detroit

Preventive Screening Tests

The National Committee for Quality Assurance (NCQA) recommends that diabetic patients between the ages of 18 and 75 receive annual screening tests in order to manage their condition and reduce the risk of complications, including hemoglobin A1c testing to measure blood glucose levels and retinal examinations to reduce the risk of blindness.⁸ Among Medicare enrollees with diabetes aged 65 to 75, the likelihood of receiving these tests remained relatively static between 2011 and 2018, on average (Figure 7).ⁱⁱ

There was considerable variation in rates of both screening tests for diabetic Medicare enrollees aged 65 to 75 among HRRs in 2018. Just over half had an eye exam in the Texas regions of Odessa (52.2%) and Lubbock (56.2%), while about 80% did so in the Iowa regions of Cedar Rapids (80.6%) and Waterloo (79.5%). The rate for hemoglobin A1c screening was under 70% in Great Falls, Montana (58.6%) and Albuquerque, New Mexico (68.0%) and over 92% in the Wisconsin regions of Neenah (94.1%), Appleton (92.7%), Green Bay (92.2%), and Madison (92.1%).

The percent of female Medicare enrollees aged 67 to 69 having at least one mammogram every two years also showed a slight increase from 2011 to

2018, from about 63% to 65% (Figure 7). The mammography rate rose by more than 20% in Covington, Kentucky (55.6% to 69.4%), Pittsburgh (53.5% to 66.1%), and Sioux City, Iowa (58.2% to 70.1%). A lower percent of female Medicare enrollees received mammograms in 2018 than in 2011 in the California regions of Redding (64.3% to 58.5%) and Salinas (64.3% to 58.8%). In 2018, the rate ranged from about half of women in Odessa, Texas (46.9%), El Paso, Texas (52.6%), and Casper,

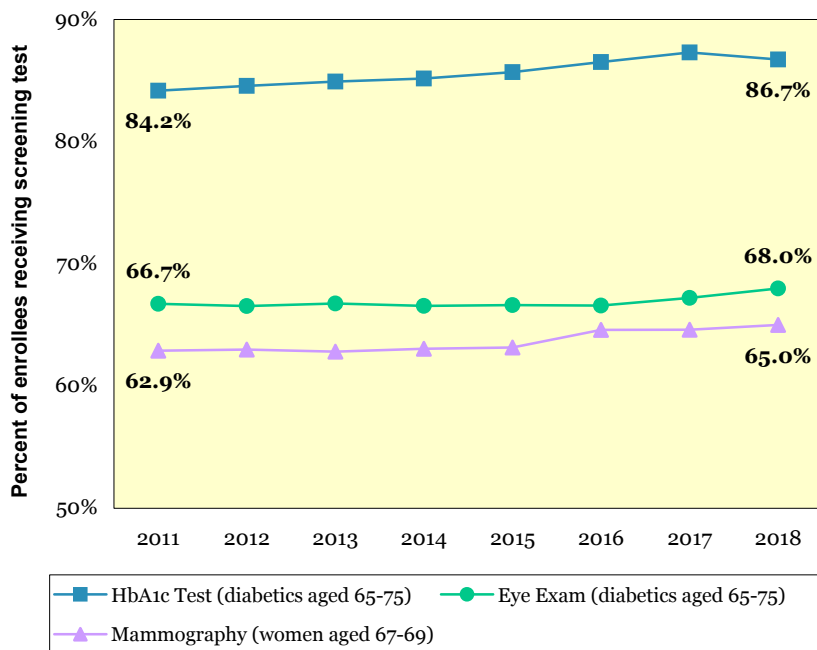
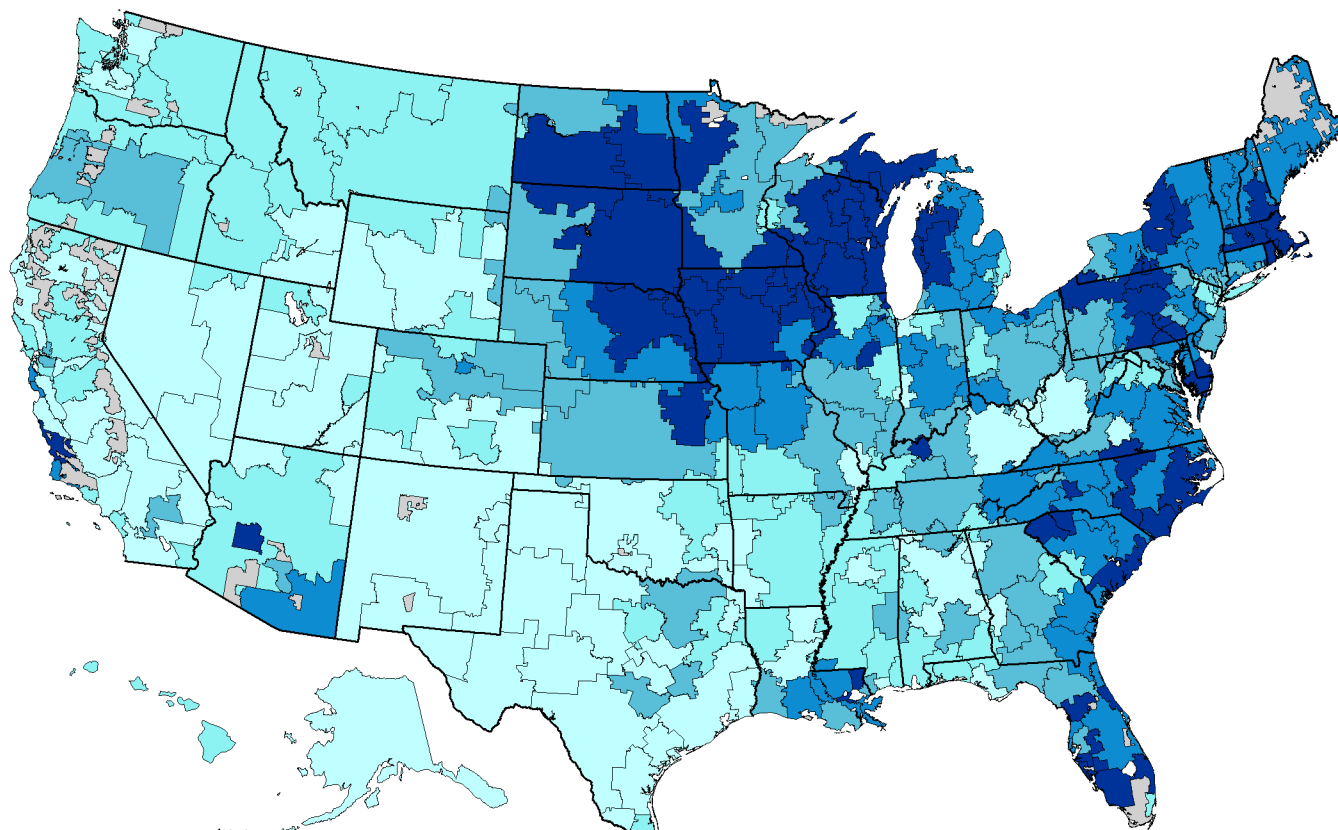


Figure 7. Percent of Medicare Enrollees Receiving Recommended Screening Tests (2011-18)

ⁱⁱ As with primary care visits, we noted large changes in rates of secondary screening for diabetics for a few regions between 2017 and 2018, including substantial decreases in hemoglobin A1c testing in several HRRs in Montana and North Dakota. Again, we could not establish a conclusive explanation for these changes, especially in smaller rural areas; caution should be used in interpreting longitudinal data for these measures.



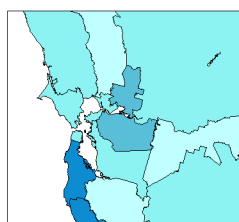
Percent of Female Medicare Enrollees Aged 67-69 Having Mammogram Every Two Years

by Hospital Referral Region (2018)

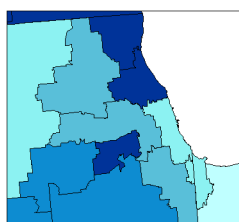
- 69.4% to 78.5% (61)
- 66.5% to < 69.4% (63)
- 63.8% to < 66.5% (61)
- 60.9% to < 63.8% (61)
- 46.9% to < 60.9% (60)
- Not populated

Wyoming (52.7%) to more than three quarters of women in Neenah, Wisconsin (78.5%), Cedar Rapids, Iowa (78.2%), and Boston (77.2%) (Map 7). Although the NCQA revised its quality metric in 2014 to include women aged 70 to 74,⁹ women between the ages of 60 and 69 are most likely to benefit from mammography,¹⁰ so the Dartmouth Atlas has kept this measure constant in order to allow trends to be analyzed.

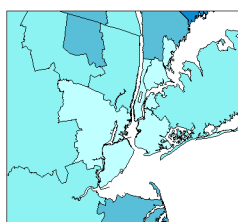
Map 7. Percent of Female Medicare Enrollees Aged 67-69 Receiving At Least One Mammogram in the Last Two Years by Hospital Referral Region (2018)



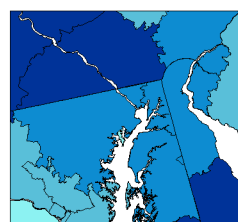
San Francisco



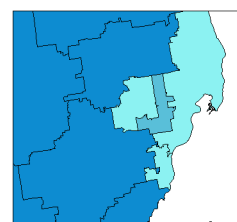
Chicago



New York



Washington-Baltimore



Detroit



Summing Up

This short Atlas report updated measures of Medicare expenditures, end-of-life care, readmission rates, and the quality of ambulatory care using 2018 Medicare claims data. There are some hopeful signs in the trends; inflation-adjusted Medicare expenditures per enrollee were relatively constant—one of the few cases in health care where expenditures per person have *not* grown—while the influence of “outlier” regions such as Miami and McAllen, Texas has diminished. Readmission rates have declined, while quality measures have risen. Despite these aggregate improvements, however, changes over time in expenditures, readmission rates, and quality of care continue to exhibit wide variation, with little change in the interquartile ranges (the ratio of spending and other measures between the 75th to the 25th percentile HRR). Furthermore, the averages mask considerable geographic variability in changes over time. In some regions, for example, rates of mammography rose, while in others they fell. Documenting these changes over time is essential for providers and policymakers to understand whether their efforts to reduce expenditures and improve quality have been successful; a more difficult question is why some regions improved so much, while others did not.

With 2019 data becoming available, a new Atlas focusing on racial and ethnic disparities in health and health care and how these disparities interact with regions¹¹ is under development. The 2020 Atlas report will address the geographic variability in both mortality and expenditures across HRRs that has arisen during the COVID-19 pandemic. As these reports will continue to demonstrate, the influence of place in health and health care has only become more important.



References

1. National Conference of State Legislatures. *The Affordable Care Act: A Brief Summary*. Available from: <https://www.ncsl.org/research/health/the-affordable-care-act-brief-summary.aspx> (Accessed April 16, 2021).
2. Forum on Medical and Public Health Preparedness for Catastrophic Events; Board on Health Sciences Policy; Board on Health Care Services; Institute of Medicine. *The Impacts of the Affordable Care Act on Preparedness Resources and Programs: Workshop Summary*. Washington (DC): National Academies Press (US); 2014 Aug 27. F, Key Features of the Affordable Care Act by Year. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK241401/> (Accessed April 16, 2021).
3. Centers for Medicare & Medicaid Services. *Hospital Readmissions Reduction Program (HRRP)*. Available from: <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Value-Based-Programs/HRRP/Hospital-Readmission-Reduction-Program> (Accessed April 16, 2021).
4. Parikh RB, Wright AA. The Affordable Care Act and End-of-Life Care for Patients with Cancer. *Cancer J*. 2017 May/Jun;23(3):190-193.
5. O'Malley AJ, Bubolz TA, Skinner JS. *The Diffusion of Health Care Fraud: A Network Analysis*. National Bureau of Economic Research, 2021. Working Paper. Available from: <https://www.nber.org/papers/w28560> (Accessed April 29, 2021).
6. American Hospital Association. *Hospital Readmission Reduction Program*. Available from: <https://www.aha.org/hospital-readmission-reduction-program/home> (Accessed April 16, 2021).
7. Ganguli, I., Lee, T.H. & Mehrotra, A. Evidence and implications behind a national decline in primary care visits. *J Gen Intern Med*. 2019 Oct;34(10):2260-2263.
8. National Committee for Quality Assurance. *Comprehensive Diabetes Care* (CDC). Available from: <https://www.ncqa.org/hedis/measures/comprehensive-diabetes-care/> (Accessed April 16, 2021).
9. Onega T, Haas JS, Bitton A, Brackett C, Weiss J, Goodrich M, Harris K, Pyle S, Tosteson AN. Alignment of breast cancer screening guidelines, accountability metrics, and practice patterns. *Am J Manag Care*. 2017 Jan;23(1):35-40.
10. U.S Preventive Services Task force. *Breast Cancer: Screening*. Available from: <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/breast-cancer-screening> (Accessed April 16, 2021).
11. Baicker K, Chandra A, Skinner JS, Wennberg JE. Who you are and where you live: How race and geography affect the treatment of Medicare beneficiaries. *Health Aff (Millwood)*. 2004;Suppl Variation:VAR33-44. doi: 10.1377/hlthaff.var.33.



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