Geographic Variation in Medicare Spending. Researchers continue to study why Medicare spending per beneficiary varies significantly from one part of the country to another.

**WHAT’S THE ISSUE?**
While geographic variation in Medicare spending per beneficiary is itself well documented, the causes of that variation, whether it is appropriate, and what can be done to reduce spending in high-cost areas are less clear. This brief describes the research on geographic variation in Medicare spending and different interpretations of what it suggests for Medicare payment policy.

**WHAT’S THE BACKGROUND?**
Medicare is the largest single payer in the United States, providing health insurance for 52 million elderly and disabled beneficiaries. Three out of four Medicare beneficiaries are in traditional fee-for-service (FFS) Medicare, which covers a wide range of acute and post-acute care services including inpatient and outpatient hospital services, physician visits, stays in skilled nursing facilities, home health care, durable medical equipment, and prescription drugs. The types of services covered by FFS Medicare are essentially the same across the country.

Despite consistent benefits, the amount that Medicare spends per beneficiary in its traditional program is not constant nationwide. John Wennberg and researchers at the Dartmouth Institute focused attention on geographic variation in Medicare spending with publication of the first *Dartmouth Atlas of Health Care* in 1996. They demonstrated that marked differences in spending occur at both state and regional levels. The *Dartmouth Atlas* evaluates regional spending by looking at Hospital Referral Regions (HRRs), which are determined by where patients in an area are referred for major cardiovascular surgical procedures and neurosurgery. Raw spending numbers from the Centers for Medicare and Medicaid Services (CMS) show that in 2012, Medicare spent an average of $9,503 nation-wide per beneficiary but spending varied considerably from one HRR to another. Medicare spent almost 2.5 times as much per beneficiary in Miami, Fla. ($15,957), than it spent in Grand Junction, Colo. ($6,569). (See Exhibit 1.)

Some health care researchers and policy makers have suggested that reducing this geographic variation could provide an opportunity for reducing overall health care spending. In 2009 Peter Orszag, then director of the Office of Management and Budget, cited estimates suggesting that if high-cost areas adopted the practice patterns and associated spending of the lowest-cost areas, health care spending could be reduced by 29 percent or $700 billion per year.
Others have asked: What if beneficiaries in high-spending areas are not receiving too much care but, rather, beneficiaries in low-spending areas are receiving too little? Or, if the variation in spending is driven by differences in the health status or needs of the population in different parts of the country, would reducing payments based on geography mean beneficiaries in high-cost areas will no longer have access to necessary care?

Understanding the cause of geographic variation is critical to determining the appropriateness of adjusting Medicare spending by geographic location.

**WHAT’S IN THE RESEARCH?**

Researchers have considered numerous possible factors that could drive variations in spending, including the amount Medicare pays for services, the health status of beneficiaries, and the types of services provided. They have also looked at whether the spending patterns seen in the Medicare population are consistent with spending on patients with other types of insurance.

**DIFFERENCES IN MEDICARE PAYMENT:** Medicare does not pay the same amount for the same service in different parts of the country. Medicare payment rates vary to reflect differences in input costs such as wages and rents in different areas. Payments are also adjusted to reflect differences in the characteristics of the healthcare provider, such as additional payments to teaching hospitals and hospitals that care for the poor populations (called disproportionate-share hospitals [DSH]), and to physicians practicing in areas with a shortage of health professionals. Which areas have the highest and lowest spending per beneficiary changes somewhat when spending is standardized for these differences in Medicare payment rates. (See Exhibit 2.)

In a 2010 *Health Affairs* article, Daniel J. Gottlieb and colleagues concluded that differences in Medicare payments account for only a small share of the variation in spending. Other research done by MedPAC (2011) and James D. Reschovsky and colleagues (2013) found that payment differentials can explain a greater portion of geographic variations, but even after standardizing for those differences in payments, spending still varies considerably both between states and HRRs.

**VARIATIONS IN BENEFICIARY HEALTH STATUS:** The health status of beneficiaries varies across parts of the country and can contribute to differences in use of services and Medicare spending. Sicker beneficiaries are generally expected to use more services and have higher costs. The best way to control for differences in patient health when comparing spending in different areas is controversial.

Some researchers use diagnosis-based condition indicators derived from claims data to construct measures of patient health. Using claim diagnosis codes and health measures called hierarchical condition categories (HCCs) that were developed by the CMS to adjust Medicare payments to managed care plans, Reschovsky and colleagues (2013) concluded that as much as 85 percent of the area differences in price-adjusted spending could be explained by variation in patient health, after making adjustments for possible bias in the use of claims-based health indicators.

Other researchers argue that the diagnosis codes on Medicare claims are more likely to be driven by the environment in which the patient is being treated than to be an independent measure of patient health. Yunjie Song and others found that beneficiaries living in regions with a higher intensity of services are more likely to have common chronic illnesses reported on their claims. They argued that this indicates “reverse causation”—the greater use of diagnostic tests and interventions makes it more likely that disease is identified, rather than that more tests and interventions are needed to treat a sicker population. Instead
of using diagnosis codes, Dartmouth researchers controlled for health status by focusing on how much is spent to care for beneficiaries in the months immediately prior to their deaths, on the assumption that persons near death are equally ill. Areas are classified as high or low cost based on spending levels for this population. Still, others have questioned this approach in part because it does not take into account whether the care provided in those six months prolongs or improves life.

However, a 2013 Institute of Medicine report that reviewed recent research concluded that variation in cost is not correlated with better health outcomes and that there is an “inconsistent relationship between health care quality and cost.”

**VARIATION IN THE USE OF SERVICES:** The amount and type of health care services provided to Medicare beneficiaries varies in different parts of the country. Differences in service use may reflect diverse approaches to treating conditions taken by local physicians as well as other factors such as patient incomes and care preferences or state policies.

For example, after a hospital stay, a beneficiary could receive postacute care in a skilled nursing facility (SNF), through a home health agency, or through outpatient providers. The availability of family support and the presence of SNFs and home health agencies in a community—which may be affected by state regulations—can influence in which setting and at what cost the postacute services are provided.

Utilization could also be driven by the desire to maximize use of health care resources in the community and to avoid having those resources sit idle. Increased usage driven by excess provider capacity is called “induced demand” and is often cited as a potential cause of geographic variation. In a 2003 study in the *Annals of Internal Medicine*, Elliott Fisher and colleagues determined that spending variations were explained by a greater frequency of physician visits, more frequent use of specialist consultations, more frequent tests and minor procedures, and greater use of hospital and intensive care. This study is often cited as evidence of induced demand. However, others note that physicians and hospitals may locate where patients are sicker, so that this correlation could be misleading.

More recently, Reschovsky and colleagues (2012) found that utilization by type of service varies across regions and that high-spending areas are more likely to have high utilization. However, that high usage is not necessarily for the same services. The mix of services varies not only between high- and low-cost areas, but also within high-cost areas and low-cost ones. These variations suggest that payment reforms based on geography would not necessarily address the underlying causes of the greater costs in all areas. Instead, the authors recommended that certain categories of services that have a disproportionate impact on area variation compared to their contribution to overall Medicare spending—such as durable medical equipment and home health services—should be targeted for further research and intervention.

**SPENDING PATTERNS ARE SPECIFIC TO MEDICARE:** When researchers look at health care spending for different populations, such as people with private insurance or those covered by Medicaid, they do not find the same patterns seen in Medicare spending. Richard Kronick and Todd P. Gilmer found that variation in Medicaid and Medicare spending is similar at the HRR level but not at the state level and that state spending patterns for people with private insurance differed notably from those for people with Medicare or Medicaid. The authors suggested that the similarity of Medicare and Medicaid spending across regions is caused by supply factors—for example, the number of hospital beds or specialists available in an area—but that the differences in spending at the state level indicate other factors, such as income levels within the state, may also play a role. States with lower income levels are likely to have less-generous Medic-

**EXHIBIT 2**

Five Hospital Referral Regions (HRRs) with the Highest and Lowest Standardized Per Capita Medicare Spending in 2012

<table>
<thead>
<tr>
<th>Highest per capita HRR</th>
<th>2012 standardized per capita spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miami, Fla.</td>
<td>$13,960</td>
</tr>
<tr>
<td>McAllen, Texas</td>
<td>$12,211</td>
</tr>
<tr>
<td>Monroe, La.</td>
<td>$12,141</td>
</tr>
<tr>
<td>Detroit, Mich.</td>
<td>$11,613</td>
</tr>
<tr>
<td>Harlingen, Texas</td>
<td>$11,473</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lowest per capita HRR</th>
<th>2012 standardized per capita spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugene, Ore.</td>
<td>$6,146</td>
</tr>
<tr>
<td>Grand Junction, Colo.</td>
<td>$6,063</td>
</tr>
<tr>
<td>Bend, Ore.</td>
<td>$6,011</td>
</tr>
<tr>
<td>Honolulu, Hawaii</td>
<td>$5,739</td>
</tr>
<tr>
<td>Anchorage, Alaska</td>
<td>$5,690</td>
</tr>
</tbody>
</table>

aid coverage, which may lead to less Medicaid spending and usage overall.

Luisa Franzini and colleagues focused on McAllen and El Paso, Texas, two communities featured in a high-profile *New Yorker* article by Atul Gawande that contrasted the two areas’ Medicare spending for the elderly. Franzini et al. found that spending and usage for people insured by Blue Cross and Blue Shield of Texas were much more similar across the two communities than the Medicare spending figures highlighted by Gawande. They concluded that use of mechanisms such as prior authorization by private insurers may explain some of the differences in utilization between the Medicare and privately insured populations. Building on the work of Michael E. Chernew et al., the Institute of Medicine (IOM) and others found that for private insurance the primary driver of geographic differences in spending among regions are differences in the prices negotiated by health plans with area providers, especially hospitals.

### WHAT'S NEXT?

Studies indicate that there is no single answer to addressing variation in Medicare spending by region. Even after multiple factors are considered, some geographic differences remain unexplained. This remaining variation may reflect differences in the efficiency of local health care systems, but how the federal government should address this variation or promote greater efficiency is still under debate.

In July 2013 the IOM finalized a report that considered creation of a geographic value index to encourage high-value care. A geographic value index would reflect the cost of care delivered in an area as well as the health benefits of that care and would be used to adjust Medicare payments to providers serving in the area.

The IOM recommended *against* creation of such an index because health care decisions are typically made at the provider level, not at the level of larger geographic units. In its analysis, the IOM found that significant variation exists when smaller and smaller units are studied—for example, hospitals within an HRR do not provide uniformly high- or low-quality care. As a result, a geographic value index would be a “poorly targeted mechanism for encouraging value improvement” because it would miss the variation in provider performance that exists within regions. Consequently, it would penalize high-value providers in high-spending areas and reward low-value providers that happen to practice in low-spending areas.

Instead, the IOM recommended that CMS continues investigating possible payment reforms that focus on providing incentives for clinical decision makers to improve care coordination and health outcomes. Such efforts would be targeted to all regions and include accountable care organizations, patient-centered medical homes, increased payment bundles, and value-based purchasing.


Reschovsky JD, Ghosh A, Stewart KA, Chollet DJ, "Durable Medical Equipment and Home Health among the Largest Contributors to Area Variations in Use of Medicare Services," Health Affairs (Millwood) 31, no. 5 (2012): 956–64.

Reschovsky JD, Hadley J, Romano PS, "Geographic Variation in Fee-for-Service Medicare Beneficiaries’ Medical Costs Is Largely Explained by Disease Burden," Medical Care Research and Review 70, no. 5 (2013): 542–63.