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Geographic Variation in Health Care: Changing Policy Directions

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Dating back more than 40 years, a large body of research has identified wide geographic variation in fee-for-service Medicare spending and service utilization. A major early conclusion of geographic variation research was that care is provided much more efficiently in some areas of the United States than in others, with the implication that geography largely determines the care patients receive. As health care spending continues to outpace growth in the nation's economy, approaching one-fifth of gross domestic product, some policy makers have identified reducing unwarranted geographic variation in health care as a way to control spending without compromising access or quality. Analysis of Medicare fee-for-service claims data in particular has contributed to calls for public policies to induce health care providers and patients in high-cost areas to adopt what appear to be the markedly more-efficient practice patterns of low-cost areas.

This Policy Analysis reviews evidence and key inferences from geographic variation research that have helped shape the ongoing policy debate about health care efficiency. More recent research, employing improved data and analytical approaches, indicates that unwarranted geographic variation is less extensive than believed. These findings support the emerging view that payment reforms narrowly targeted by geography would be ineffective in addressing local or national problems of health care costs and quality. A more direct and productive approach to reducing unwarranted variation in health care use and spending would be to focus policy changes on broader payment reform and oversight that can drive greater efficiency in health care delivery in all geographic areas. In other words, while geographic variation research has pushed the twin issues of uneven care and costs to the fore, it's ultimately the broader health care system—not geography—that should be the policy focus. The health reform law includes many avenues to broader system reform, including the creation of accountable care organizations, bundled payments and medical homes, that may help drive higher efficiency and quality.

Health Reform and Geographic Variation

Leading up to federal health reform passage, policy makers and researchers devoted much attention to geographic variation in health care use and spending, largely focused on Dartmouth Atlas of Health Care research that has found fee-for-service Medicare spending on elderly beneficiaries varies as much as 2.5 times across localities.¹ Some have interpreted Dartmouth Atlas findings to mean that care is provided much more efficiently in some areas and that high-cost areas provide care that is no better—and in some cases worse—than in low-cost areas.

As the debate in Congress about health care spending and health reform

began in earnest in late 2008, the Congressional Budget Office (CBO) highlighted work from the Dartmouth Atlas project that estimated Medicare spending would fall by close to 30 percent if spending in medium- and high-cost areas of the country were somehow reduced to the level of low-cost areas.² In policy circles, the idea took hold that modifying payment policies or beneficiary cost sharing in high-cost areas could reduce inefficient spending.

At the same time, highlighting the importance of the earlier geographic variation research, advocates and advisory groups built a case for broader reforms to increase the efficiency and quality of care in Medicare. For example, the Medicare Payment Advisory Commission's (MedPAC) June 2008 Report to the Congress recommended replacing Medicare's fee-for-service payment system with one that "would pay for care that spans across provider types and time (encompassing multiple patient visits and procedures) and would hold providers accountable for the quality of care and the resources used...to improve quality and efficiency."

MedPAC identified a set of crosscutting "tools" necessary for system reform, including comparative effectiveness research, linking payment to quality, measuring resource use and providing feedback to providers.

The 2009 American Recovery and Reinvestment Act (ARRA) marked the first major step in a broader strategy to root out inefficiency and improve quality with \$1.1 billion allocated for comparative effectiveness and outcomes research. The 2010 Patient Protection and Affordable Care Act took up the issue of geographic variation in Medicare spending and utilization in several ways. Broadly, the law adopted some of the approaches recommended by CBO, MedPAC and others to foster greater system efficiency, including new approaches to paying for Medicare services and creating accountable care organizations (ACOs), where a group of providers is responsible for caring for a defined population of Medicare beneficiaries.

Most directly, the law established a precedent for targeting Medicare payment rates to local areas based on "efficiency." The provision was designed to increase payments to a small set of hospitals operating in low-cost areas, reflecting some lawmakers' concerns that high-cost areas receive more than a fair share of Medicare revenue. Relative to the \$132.6 billion Medicare spent on fee-for-service inpatient hospital care in 2009, the extra payments are small—\$150 million in fiscal year 2011 and \$250 million in 2012.

The measure was strongly supported by members of Congress representing Iowa, Minnesota, Washington and Wisconsin, which have historically lower Medicare costs. Ironically, however, the measure did not result in significant

additional funding for some of the hospitals expected by lawmakers.³

Additionally, responding to concerns from representatives of lower-cost areas, HHS Secretary Kathleen Sebelius asked the Institute of Medicine (IOM) to conduct two consensus studies of geographic variation in health care use and reimbursement to help guide policy development on the topic (see box on page 3 for more about the IOM committees).

Redirecting Geographic Variation Policy

To inform the ongoing policy debate, this Policy Analysis reviews health care geographic variation research and the resulting policy implications. The analysis identifies conceptual and technical limitations that make it difficult to draw conclusions about what factors contribute to different patterns of health care use and spending.

Consistent with an emerging consensus in the research community, the analysis points to the need for a policy shift away from narrowly targeting specific geographic areas toward system-wide payment reforms and oversight to encourage greater efficiency in the health care system overall. The analysis, through a Tale of Three Cities, also draws on data from three large metropolitan areas—Miami, Indianapolis and Seattle—to illustrate key points that aid in understanding what factors contribute to geographic variation, including population characteristics and local health system organization.

When is High Spending Okay?

From a policy perspective, some sources of geographic variation in health spending are warranted—or acceptable—while others are not. Warranted sources include input price differences facing medical providers—for example, wages or rent—and the illness burden in different communities. Moreover, if higher spending produced higher quality, it might be warranted. Unwarranted sources of variation include the use of clearly ineffective or inappropriate treatments; the rate of injuries and avoidable complications caused by medical error or mismanagement; and differing levels of fraud.

Other sources of variation can be less clear cut. For example, there may be variation in the use of expensive treatment options, where the evidence of the treatment's relative effectiveness compared to less-expensive options is uncertain. The use of more—or fewer—expensive treatments in a locality may be related to physician preferences or patient preferences, along with financial incentives or resource constraints.

Depending on one's perspective, some sources of variation may be warranted or unwarranted. For example, a larger portion of Medicare beneficiaries receiving end-of-life care in one part of the country may prefer aggressive, no-holds-barred hospital care, while a larger portion of those in another part

of the country may prefer low-cost, palliative care at home. These kinds of patient preferences—sometimes driven by physician preferences—raise larger societal questions about what constitutes appropriate care in a context of limited resources and ever-rising health care costs.

Data Limitations Hinder Understanding

Much of the research on geographic variation in health care use and spending has focused on the fee-for-service Medicare program. The focus is partly because of concerns about spending by the nation's single largest health care payer but mainly because of a more pragmatic constraint: the Medicare fee-for-service program has been the only available source of consistent national claims data that can support detailed analysis of variations across areas and populations. A problem arises, however, when spending patterns in Medicare are assumed to be representative of the entire health care system.

Over time, research has identified a complex set of factors that could explain the wide differences in spending and use of services across geographic areas. Because the relationships among these factors are so complex, it is analytically challenging or impossible to identify their causes. Researchers analyzing geographic variation usually treated easily observable factors—such as age and input prices—as warranted sources of variation and then attributed the unexplained variation as unwarranted.

Researchers have associated the unexplained portion of geographic variation with other measurable factors, such as the supply of specialist physicians or hospitals, potentially leading to incorrect inferences about the causes of geographic variation. For instance, findings that high-cost areas have more physicians per capita might lead to an assumption that too many physicians in an area means they are more likely to prescribe unnecessary care—so-called supplier-induced demand.⁴ However, the association also might be the result of inadequately controlling for area differences in health status or patients' care preferences.

Environmental, demographic and economic factors create challenges for analysts trying to understand how the array of local factors together shape identifiable patterns of Medicare use and spending (see Figure 1). Community-level data to account fully for market-level factors are often incomplete or unavailable. More importantly, many of these factors are not—at least in the short term—likely to change much as a result of reworking the statutory provisions, regulation or administration of Medicare. This makes the task of designing policy that could effectively address unwarranted geographic variation even more difficult.

Institute of Medicine Focuses on Geographic Variations

At the request of the U.S. secretary of Health and Human Services (HHS), the Institute of Medicine (IOM) is conducting two studies addressing geographic variation in Medicare spending. One study is focused on variation in health care spending and utilization across the country for individuals with Medicare, Medicaid, private insurance or no insurance. Specifically, the IOM will examine how variation may or may not be related to factors such as:

- the cost of care, the supply of care, quality of care, and health outcomes;
- diversity within patient populations, patients' current state of health, access to care, insurance coverage and patients' preferences for their care;
- physicians' decisions on what care to give and the availability of reliable medical evidence to guide those decisions; and
- how a geographic area is defined.

To address unwarranted variation in Medicare spending, the IOM has been asked to recommend changes to specific Medicare payment systems that would promote high-value care, especially for high-volume, high-cost conditions. The HHS secretary also has indicated that the administration will urge the Independent Payment Advisory Board authorized by the health reform law to draw on the IOM findings when developing recommendations to lower costs and improve quality of care.

The second IOM study is exploring issues related to Medicare physician payment rates and local adjustments for practice expenses used in setting them.

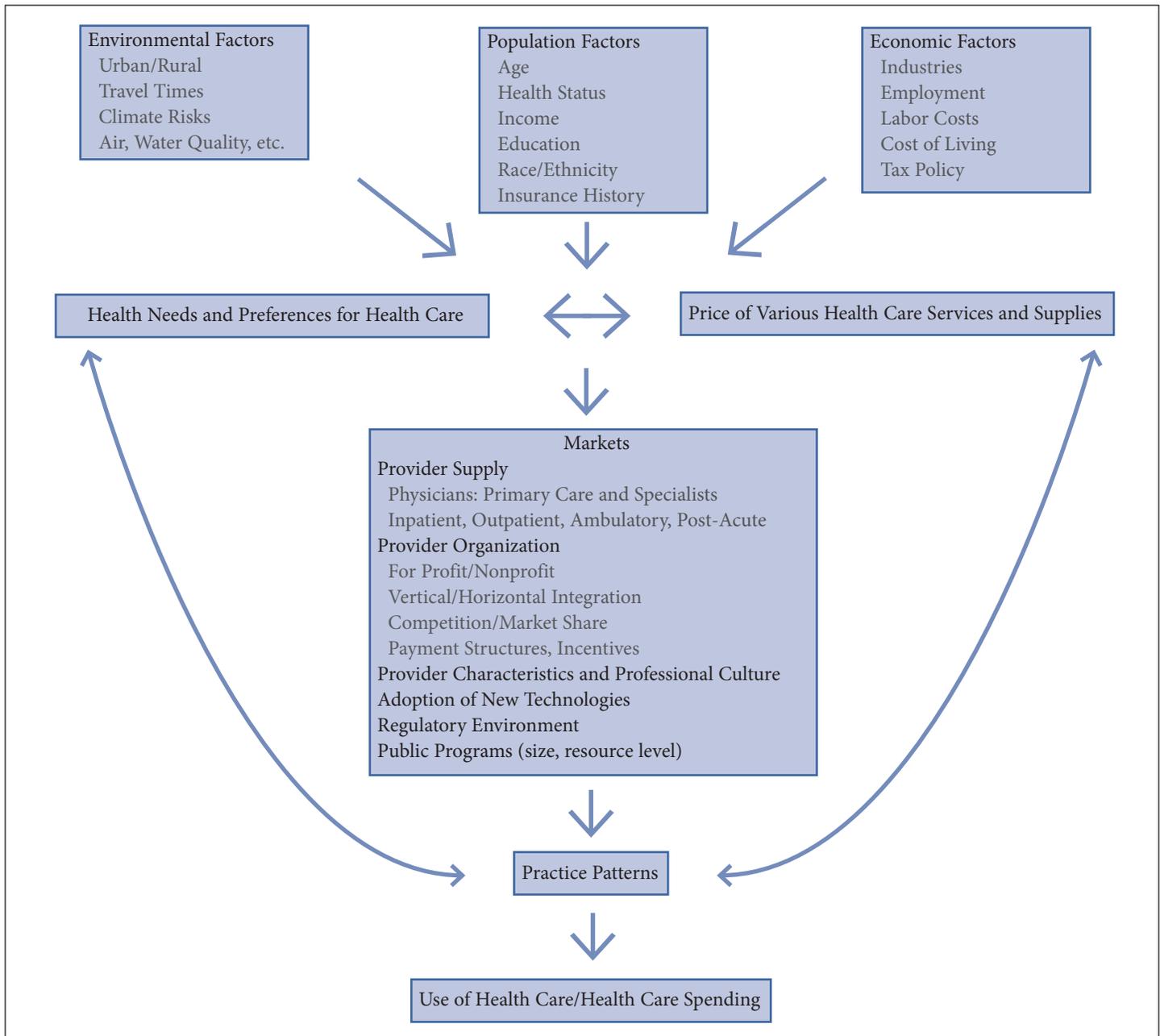
Source: Institute of Medicine

The Geographic Variation Roadmap: Detours and Dead Ends

The complicated structure of health care delivery makes it difficult to measure and compare health care delivery across geographic areas. Growing evidence suggests that failing to adequately address these complexities may overstate both the extent and implications of geographic variation in health care spending and use.

Comprehensive assessment of health status is critical. Over time, as research methods have improved, less geographic variation in health care appears to be unexplained. Although researchers often use different methods that make comparisons difficult, it is clear that analysis of geographic

Figure 1
Explaining Patterns of Medicare Use and Spending



Source: Authors' analysis

variation is extremely sensitive to how comprehensively health status is measured.

For instance, the 1999 Dartmouth Atlas found that Medicare patient demographics, input prices and health status—using age, sex, race and limited health-status indicators—together accounted for only 18 percent of geographic spending variation.⁵ A recent Dartmouth Atlas study that used several individual-level health indicators—self-reported

general health status, diabetes, blood pressure, body-mass index and smoking history—concluded that health alone accounted for 18 percent of geographic spending variation.⁶ Another recent study, using the same dataset and similar methods—but with an additional 14 health measures—found that health status explained 29 percent of geographic variation in Medicare spending.⁷ Recent MedPAC studies, using even more comprehensive health measures, found that health status

explained about 30 percent of the variation, and after accounting for price adjustments in Medicare payment methods, about 45 percent of spending variation across areas.⁸ While some portion of the unexplained variation may reflect inefficient practice patterns or inappropriate care, there is no sound way to attribute the remaining, unexplained variation to any particular cause.

Assessing the significance of health status in geographic spending variation is technically difficult because the variables used in most analyses to adjust for health status generally do not capture differing levels of illness severity or the presence of a wide range of acute and chronic conditions within or across areas. Most health-status measures indicate only the presence or prevalence of specific conditions. As a practicality, information to adjust for health status typically comes from claims data diagnostic codes. Researchers have found that physicians in some areas are more prone to provide diagnostic tests and code more conditions than in other areas. Consequently, claims-based health-status measures might reflect differences in coding and treatment practices across areas and overstate actual population health differences.⁹ Still, for conditions with little diagnostic uncertainty or discretion, such as hip fractures and dislocations, the incidence is still more than 50 percent greater in high-cost areas than in low-cost areas.¹⁰

While using claims-based diagnostic codes to measure health status could overstate the significance of health status in driving Medicare spending variation, inadequately controlling for differences in patient health will explain too little of the variation. To avoid possible bias in the use of diagnostic codes, Dartmouth Atlas researchers have used health care spending during the period preceding death to adjust for health, under the assumption that the populations of people who die are equally sick across geographic areas. However, some criticize this approach for inadequately accounting for patient health because mortality rates differ substantially between high- and low-cost areas, as do the conditions patients have preceding death and patient preferences for end-of-life care.¹¹

The need to adjust adequately for health status in geographic variation research using Medicare data is heightened by the fact that not all beneficiaries are represented in the available claims data. Most studies include only Medicare beneficiaries enrolled in the traditional fee-for-service program. Currently, about a quarter of beneficiaries are enrolled in Medicare Advantage (MA), typically managed care plans, but the percentage of beneficiaries enrolled in these plans varies considerably across areas. Studies have shown that MA plans attract, on average, a healthier population of beneficiaries. If the fee-for-service population in some areas includes a disproportionate number of beneficiaries with serious health condi-

tions, the variation in patient health across geographic areas among fee-for-service enrollees could be exaggerated.

Different patterns of Medicare use and spending are exemplified by three communities—Miami, Indianapolis and Seattle. The communities differ markedly in terms of cost—Miami is a high-cost site, while Seattle is a low-cost site (see Table 1). While Medicare fee-for-service beneficiaries in the three communities have similar profiles with respect to some serious health conditions, including cancer and heart attacks, claims data show higher rates for other conditions, including diabetes, ischemic heart disease and depression among Miami fee-for-service beneficiaries. While these differences might be related to variation in diagnostic or coding practices, they

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may reflect that more than half of Miami beneficiaries are in Medicare Advantage plans, potentially leaving an atypical, less-healthy population in fee-for-service Medicare.

Hard-to-measure, interrelated demographic and economic factors can drive health care demand in different directions.

While Medicare is a national program, the characteristics of beneficiaries, health care markets and delivery systems providing services to Medicare beneficiaries vary substantially across localities. Accounting for these variations is difficult because factors that may drive differences in the need for health care—including physician and patient preferences about when, where and how care is delivered; the unit costs of delivering care; the organization of delivery systems; state regulations; and financial incentives—may interact in different ways, creating an array of substantively different health markets.

Additionally, some markets appear to be extremely different from others, perhaps even aberrant. Miami, for example,

Table 1
The Tale of Three Cities: Patient Health Differences

	MIAMI ¹	INDIANAPOLIS ¹	SEATTLE ¹
BENEFICIARIES ENROLLED IN FEE-FOR-SERVICE (FFS) MEDICARE, 2008	170,300	280,435	210,600
FFS BENEFICIARY HEALTH CONDITIONS, 2008			
HAD A HEART ATTACK	1%	1%	1%
ATRIAL FIBRILLATION	7	8	9
HEART FAILURE	24	18	14
ISCHEMIC HEART DISEASE	54	33	24
DEPRESSION	23	11	10
CHRONIC OBSTRUCTIVE PULMONARY DISEASE	20	12	7
BREAST CANCER	2	2	2
PROSTATE CANCER	4	3	3
LUNG CANCER	1	1	1
AVERAGE STANDARDIZED COST PER BENEFICIARY, ADJUSTED FOR POPULATION HEALTH STATUS²	\$10,145	\$7,428	\$6,401

¹ Medicare data are reported for hospital referral regions (HRRs), which are geographic areas based on where beneficiaries receive inpatient care. The HRRs may differ from standard metropolitan areas; for Indianapolis, the HRR includes several outlying counties that are not part of the official Indianapolis-Carmel metropolitan statistical area. For a description of the Dartmouth methodology for defining geographic areas, see <http://www.dartmouthatlas.org/gettingstarted/faq/researchmethods.aspx>.

² Standardized costs adjust for different prices paid by Medicare for identical services in different geographic areas. Risk adjustment, using hierarchical condition category (HCC) model variables, uses diagnosis from the prior year medical encounter data to estimate health status and likely need for care.

Source: Centers for Medicare and Medicaid Services Chronic Conditions Warehouse, <http://ccwdata.org/index.php>

has attracted a great deal of attention because exceptionally high Medicare spending there appears to be at least in part a result of greater fraud. Miami is included in the three sites discussed because the distinct characteristics of the market highlight how local factors, including population characteristics and provider practice patterns, can confound efforts to address high spending. Miami and Indianapolis have more hospital beds per capita than Seattle, although differences in physician supply are not large across the three sites (see Table 2).

But, Miami differs dramatically in population characteristics, and cultural and other socioeconomic factors can affect how people view and use health care. In 2006-08, for example, about twice the proportion of Miami residents aged 65 and older (15%) were poor compared with Indianapolis (8%) and Seattle (9%). Likewise, Miami beneficiaries are much more likely to be dually eligible for Medicaid. Low-income and dually eligible beneficiaries on average have greater health care needs. People in poor health with limited resources may have more access problems and may be more vulnerable to fraud and abuse.

The following examples illustrate the difficulty of sorting out what drives geographic variation in Medicare spending:

- Lack of health insurance before age 65 appears to be related to increased use of Medicare services after enrollment.¹²

Rates of insurance coverage vary significantly across geographic areas and may influence the treatment of Medicare patients in ways not fully captured by case-mix adjustment for health status. In the Seattle metropolitan statistical area (MSA), for example, 11 percent of area residents under age 65 were uninsured in 2008, compared to 12 percent in the Indianapolis MSA and 28 percent in the Miami MSA, according to the U.S. Census American Community Survey. This may affect the demand for medical care among uninsured people when they become eligible for Medicare and create pressure for physicians to treat their insured patients more intensively to make up for the lack of demand and lost revenue from treating uninsured patients.

- Among Medicare beneficiaries, supplemental insurance—for example, retiree coverage, Medigap or Medicaid—reduces out-of-pocket liability for care. Beneficiaries with supplemental coverage use more services than those without additional coverage,¹³ and supplemental coverage rates vary across the country. In part, differences in coverage are a function of beneficiary income, which affects Medicaid eligibility and the affordability of private supplemental coverage. In addition, there are differences across states in Medicaid eligibility rules. Employer-sponsored retiree cov-

Table 2
The Tale of Three Cities: Differences in Patient Populations and Supply of Medical Providers

	MIAMI-DADE COUNTY	INDIANAPOLIS	SEATTLE
FEE-FOR-SERVICE MEDICARE PATIENTS, 65 AND OLDER			
PATIENTS DUALY ELIGIBLE FOR MEDICAID, 2006	55%	13%	11%
PATIENTS INSTITUTIONALIZED, 2006 ¹	6%	6%	4%
PATIENTS' ANNUAL FAMILY INCOME ²	\$23,400	\$36,700	\$51,700
WHITE PATIENTS, 2006	60%	91%	93%
FEMALE PATIENTS AGED 80 AND OLDER, 2006	28.7%	22.3%	23.4%
HEALTH CARE PROVIDERS			
STAFFED HOSPITAL BEDS PER 1,000 PERSONS, 2006 ³	3.4	3.2	1.7
ACTIVE, NON-FEDERAL PRIMARY CARE PHYSICIANS PER 100,000 PERSONS, 2007 ⁴	92	86	101
ACTIVE, NON-FEDERAL SURGICAL AND MEDICAL SPECIALISTS PER 100,000 PERSONS, 2007 ⁴	167	176	171

¹ Institutionalized patients are identified using a claims-based algorithm by Yun, Huifeng, et al., "Identifying Types of Nursing Facility Stays using Medicare Claims Data: An Algorithm and Validation," unpublished manuscript, University of Alabama at Birmingham (2009).

² Imputed from 2003 Community Tracking Study (CTS) Household Survey, using beneficiary characteristics and economic characteristics for their zip code (in 2002 dollars).

³ American Hospital Association Hospital Statistics, 2006.

⁴ Health Resources and Services Administration Area Resource File, 2007.

Source: Unless otherwise noted, data are derived from authors' analysis of a sample of Medicare beneficiaries who had contact with respondents to the 2004-05 CTS Physician Survey. Beneficiaries without 12 months of FFS claims (e.g., Medicare Advantage enrollees) were excluded. Medicare claims data are from FFS beneficiaries alive in 2006 and include 12 months of claims from calendar year 2006 for non-decedents and claims from the last 12 months of life for beneficiaries who died in 2006. Sites are based on original CTS definitions and consist of either metropolitan statistical areas based on the 1990 Census or primary statistical metropolitan areas (parts of larger consolidated metropolitan areas). Miami includes Miami-Dade County. Seattle includes King and Snohomish counties. Indianapolis includes Marion, Hamilton, Hancock, Johnson, Hendricks, Madison, Morgan and Shelby counties.

erage also varies across areas, reflecting differences in types of employment and industry.¹⁴

- Where people live affects the type and quality of care they receive and how they use health care, but because the distribution of population groups varies widely, it is difficult to identify disparities resulting from local health system organization and practice patterns from disparities related directly to race or ethnicity.¹⁵ Some research suggests that preferences for and views about health care vary across racial and ethnic groups, shaping demand for various services, including end-of-life care, cancer screening and initial care from specialists. Other cultural and religious differences also can affect patient and provider attitudes about use of medical services, particularly expensive end-of-life care. However, other studies have found that patient preferences do not appear to be important factors in regional variation in the use of health care services.¹⁶
- The demand for health care among privately insured people, which is affected by their numbers, income and insurance coverage, has been shown to affect physicians' decisions about whether to treat Medicare patients and how intensively they treat their Medicare patients. Some research suggests that providers may treat Medicare

patients less intensively when demand for their services by privately insured patients is higher.¹⁷

Variation in Medicare provider payments differs from variation in the use of services. Some analyses of Medicare spending variation have not adequately distinguished between the actual use of medical services vs. Medicare payments to providers for these services. Medicare payment policy recognizes that the cost of providing medical services varies across areas because input prices differ, and payments are adjusted accordingly.

But, policy makers also have authorized a variety of extra Medicare payments to some providers to achieve other social goals. Physicians who practice in designated shortage or underserved areas receive a percentage bonus to their fees to motivate more physicians to locate in these areas. Hospitals treating large proportions of low-income patients or engaging in graduate medical education also receive extra payments.

While many studies of geographic variation in Medicare spending make some adjustment for geographic pricing differences, the studies' rigor and completeness vary considerably. Some recent analyses, which comprehensively adjusted for pricing differences, interpreted area cost estimates as measures of service use rather than measures of Medicare program spending. The research indicates that geographic

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Defining area boundaries is confounded by the fact that no matter what method is used, some Medicare beneficiaries cross boundaries to receive an important part of their care.

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variation in service use is less pronounced than variation in Medicare spending. Service use in high-cost areas—90th percentile—was 30 percent higher than in low-cost areas—10th percentile—while the corresponding difference in Medicare spending was 55 percent.¹⁸

Medicare fee-for-service delivery areas are difficult to define. Researchers have found that there is no ideal way to define geographic areas. Most analyses of Medicare geographic variation compare utilization and spending patterns across areas defined by where beneficiaries live, rather than simply where their providers are located.¹⁹ The Dartmouth Atlas group has developed two commonly used approaches to assign Medicare beneficiaries to geographic areas—hospital service areas and hospital referral regions, which basically define areas served by community and tertiary care hospitals, respectively.²⁰ Others have used residents of states or metropolitan areas for comparisons. An alternative approach is to group patients based on the location of their usual source of care physician, because even though physicians account for only about 21 percent of Medicare costs, physicians' treatment and referral decisions determine the vast majority of medical spending.²¹ All approaches involve difficult, and in some cases arbitrary, decisions about assigning patients to a particular geographic area.

Defining area boundaries is confounded by the fact that no matter what method is used, some Medicare beneficiaries cross boundaries to receive an important part of their care. A recent study found that close to 12 percent of the episodes of care for nine conditions—including breast cancer, hip fracture and low-back pain—involved treatment or services delivered in multiple states.²²

Finally, the areas that constitute markets for different kinds of Medicare services can vary considerably. Primary care physicians, for example, often operate within relatively localized markets, while different types of specialist physicians normally operate in larger markets.

Total health spending tells only part of the story. Analyses that focus on total Medicare spending per beneficiary can obscure important differences in what is driving spending

variation across geographic areas. Components of services often have distinct patterns of geographic variation.

Medicare patients in Miami, Indianapolis and Seattle use different mixes of services, even after adjusting for prices and population health (see Figure 2). For example, hospital spending constitutes a much larger portion of total spending in Indianapolis than in Miami. On the other hand, durable medical equipment (DME) spending is far greater in Miami, likely reflecting, at least in part, high levels of DME fraud.

In some instances, the explanations for high spending for particular types of services may reflect patterns of care that have evolved over time in response to local delivery system characteristics, such as the supply of inpatient or specialty facilities. For example, an analysis of geographic variation in Medicare patients' use of post-acute care—skilled nursing facilities, rehabilitation hospitals and home health services—for a variety of medical diagnoses found substantial variation across census regions. The authors suggested this variation was likely the result of multiple factors, including practice styles and supply of services, which in the case of nursing facilities are strongly affected by local regulatory practices.²³ A recent MedPAC analysis also found large variations in post-acute care.²⁴ Variation in the use of specific types of services may be a direct result of state policies to influence the supply of certain types of providers and services.

In some localities, however, there is substantial evidence that at least some of the variation in spending is the result of fraud.²⁵ MedPAC found, for example, that high levels of spending for home health services, hospice and durable medical equipment—three services often subject to fraud and abuse—accounted for a considerable portion of the higher spending levels in some high-cost areas, including areas where the use of other Medicare services was about average. For example, in 2008, adjusted per-capita spending for durable medical equipment in Miami-Dade County was \$2,200, while in neighboring Broward County, spending was \$430 per capita.²⁶

Research on variation in spending components over the course of episodes of illness provides additional evidence that geographic differences in practice patterns are more complicated and harder to interpret than earlier studies suggested. These analyses show that there are differences in the ways that particular services are used to diagnose and treat health conditions that are not evident in comparisons of average annual spending.

For example, a MedPAC analysis found that for certain conditions, average Medicare per-episode spending was significantly higher in Minneapolis, an area with low spending per beneficiary, than in Miami. More detailed analysis found distinct differences in the use of hospital and diagnostic and management services in the two communities.²⁷

Implications of Higher Spending

The basic question about the implications of Medicare spending variation remains unanswered. Does relatively high spending in some areas lead to improved health outcomes or not? Many policy initiatives to reduce Medicare spending variation have been predicated on the belief that individuals in high-utilization areas experience quality of care and health outcomes that are no better—and in some respects worse—than in low-utilization areas. However, the evidence on this crucial point is mixed.

The assertion that “more is not better” is based on snapshot comparisons of Medicare beneficiaries living in high- vs. low-utilization areas.²⁸ Many factors associated with patient health affect both costs and outcomes simultaneously, and these analyses can miss effects on costs or outcomes that play out over time, leaving the findings vulnerable to misinterpretation.²⁹

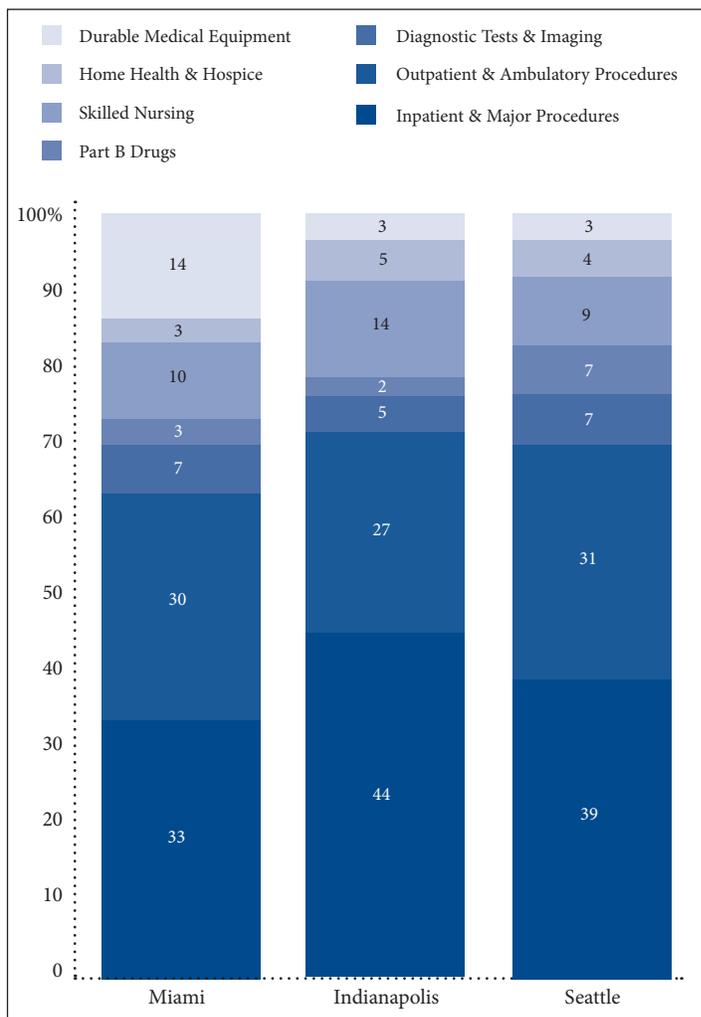
A growing body of research supports the opposite conclusion. Several recent studies found, for example, that patients admitted to higher-intensity, costlier hospitals had better inpatient and post-discharge survival rates.³⁰ Still other studies indicate greater total spending results in better health status and survival rates.³¹

Conflicting findings can arise because researchers use different methodologies, all with their own merits. In general, cross-sectional analyses of spending and outcomes tend to suggest that additional spending is not beneficial. But those cross-sectional analyses are vulnerable to biases—for example, high spending might not produce poor outcomes but instead might reflect inadequately measured health status or some other factor, such as poverty. If more care, at least in some circumstances, leads to better outcomes, then a policy that reduces utilization in a high-cost area will not necessarily transform that area into a high-efficiency area and instead may worsen outcomes (see box on page 10).

Policy Directions: Where Do Geographic Variations Lead?

The best available research does not provide a solid basis for drawing conclusions about how much of the variation in Medicare spending across localities reflects inappropriate or inefficient spending. Recent studies indicate that health status is a more important factor driving variation in spending than previously believed and that demographic and economic factors, as well as the structure of local health care markets, shape patient preferences and provider practice styles in far more complex ways than early analyses suggested. These findings raise questions about whether narrowly targeted geographic policies can drive critically important system-wide improvements in efficiency and quality of care.

Figure 2
The Tale of Three Cities:
Use of Different Types of Medicare Services

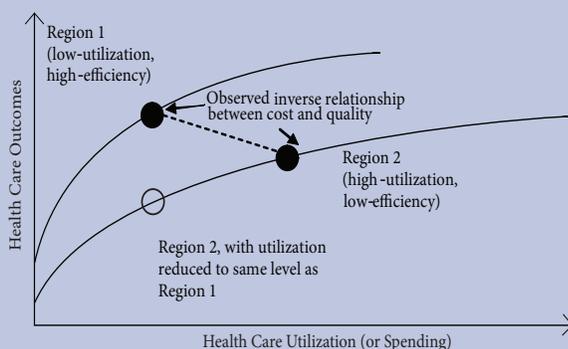


Source: Authors' analysis of data from a sample of Medicare fee-for-service (FFS) beneficiaries who had contact with respondents to the 2004-05 Community Tracking Study (CTS) Physician Survey. Annual per capita values were averaged over the three years (2004-06) to account for year-to-year variations. Beneficiaries without 12 months of FFS claims (e.g., Medicare Advantage enrollees) were excluded. Sites are based on original CTS definitions and consist of either metropolitan statistical areas, based on the 1990 Census, or primary statistical metropolitan areas (parts of larger consolidated metropolitan areas). Miami includes Miami-Dade County. Seattle includes King and Snohomish counties. Indianapolis includes Marion, Hamilton, Hancock, Johnson, Hendricks, Madison, Morgan and Shelby counties.

Fee-for-service payment does not provide a framework for effectively targeting the inefficient use of health services in high-cost areas. To reduce unwarranted geographic variation in health spending, policy makers need levers—specific rules, procedures and systems—that can move providers to adopt more effective and less-costly practice patterns. Some policy proposals directly target providers and patients in high-spending areas. For example, the Congressional Budget Office in 2008 discussed four options focused on high-spending areas: reducing Medicare fees for physicians in areas with unusually

Reconciling Conflicting Findings About Spending and Outcomes

The Congressional Budget Office and others have proposed a simple model of health care utilization and outcomes that reconciles the seemingly conflicting findings on whether more care is better. The multiple production functions model illustrates two hypothetical regions, one (Region 1) with low spending and high quality, and the other (Region 2) with high spending and low quality. In this figure, the curves illustrate the causal relationship between the volume of health care services provided (the horizontal axis) and improvements in health outcomes (the vertical axis). The regions differ in the health outcomes that result from a given volume of services. In Region 1, which is the high-efficiency region, that payoff is large—the curve is steep—while in low-efficiency Region 2 the payoff is small. The solid dots indicate the relationship between utilization and outcomes that would be observed in a snapshot analysis. That relationship, shown by the dashed line, could lead to the conclusion that higher utilization was associated with worse outcomes. But if, based on that conclusion, a policy were put in place that reduces utilization in Region 2 to the same level as in Region 1, outcomes in Region 2 would be even worse (illustrated by the open circle).



Why might the health production functions differ between Regions 1 and 2? First, the populations could differ. Factors such as education and income levels clearly play a role in health outcomes and vary by region. It follows that two regions might receive the same amount and quality of health services but experience very different health outcomes. Second, the providers could differ in the level and nature of their training, professionalism and the extent to which their practice patterns conform to various professional guidelines, protocols, etc. That difference in training and quality could explain why some regions, such as Region 1, experience better health outcomes, even if the volume of care is lower than in other regions.

Source: Authors' analysis

high spending; reducing payments rates for hospitals in areas with a high volume of elective admissions; reducing payment rates across the board in high-spending areas; and imposing a surcharge on Medicare beneficiary cost sharing in high-cost areas and prohibiting Medigap supplemental insurance from covering the surcharge.

The CBO discussion clearly noted, however, that policies that could reduce spending in high-cost areas would not necessarily lead to increased efficiency.³² Effective reforms need to target inefficient practice without deterring appropriate use of health services. The crux of the problem facing policy makers is that Medicare's fee-for-service payment makes it extremely difficult to create incentives to increase efficiency.

Fee-for-service payment poses an obvious obstacle to reducing inappropriate or marginally effective care. In fee-for-service Medicare, providers are paid more to do more. If payments in an area are reduced, providers can respond by increasing the volume—number of services—or intensity of the services. Or, they could change the mix of services they provide to include more complex and costly services that might not provide additional benefit to patients.³³ Providers are paid for what they do regardless of what others do, and there are few incentives to coordinate care.

Moreover, fee-for-service payment does not offer much support to providers even if they want to cooperate to improve efficiency and quality. Under fee for service, providers that improve efficiency will be penalized with reduced revenue.

Further, the fact that there is no operationally good, much less ideal, way to define geographic areas presents a problem for policy making. Patients receive care from multiple providers, sometimes in multiple geographic areas. There is no good way to determine which provider or set of providers should be responsible for the efficiency of care provided to area populations. If the areas are defined too broadly, for example, by states or regions, they would do little to increase accountability. At the same time, defining areas too narrowly, for example, by zip code, could make measures of spending highly volatile and any rewards or penalties driven largely by random fluctuations. Instead of targeting geographic areas to foster accountability, a more-workable approach is to link patients and providers based on where patients receive most of their care, as envisioned with accountable care organizations.

Medicare reforms focused on high-cost areas might have unintended consequences for patients and providers. Policies that would reduce local Medicare payment levels or impose additional costs on beneficiaries in high-cost areas with poor outcomes could threaten patient access and quality of care and penalize efficient providers.

A similar point was made in a 2009 article by researchers

working with the Dartmouth Atlas group: “Cutting spending in Miami will not make it Minneapolis. Miami is not Minneapolis with 30 percent waste added on. Cutting reimbursement alone will not automatically make high-spending areas adopt the systems, culture, and experience of low-spending areas. Rather, we need to change the broader incentives under which medicine is practiced, including removing the incentives to practice without regard to outcomes.”³⁴

Even when it is clear that high spending reflects inefficiency, payment policies that target all providers—or all providers of particular services—in an area would penalize efficient providers along with those responsible for inappropriate, unnecessary or even fraudulent Medicare services.

It is also hard to predict how physicians, hospitals or other providers in local markets might respond to targeted Medicare payment incentives. Patterns of spending observed among the Medicare population do not necessarily reflect patterns for other patient populations, most notably privately insured individuals, so implications of Medicare reforms for broader system change are uncertain. For the privately insured, research so far indicates that more of the variation in spending is attributable to differing reimbursement rates, which are normally negotiated by providers and insurers and often dictated by local market conditions.³⁵ But, there has been limited research to date examining service use variation among the privately insured. The IOM is conducting a study that may help fill this research gap.

Whether and to what extent providers adjust their practices or shift costs to other payers in response to Medicare payment reforms would likely depend on the competitive nature of their local market, including how much market power various players hold. Providers, for example, might alter practice patterns to provide more high-margin services to recoup lost revenue, resulting in even less efficient care. If Medicare policies result in reimbursement levels that are significantly lower than payments from private insurers, providers also might decide that they need to first serve privately insured patients and then, if any spare capacity remains, serve Medicare patients.³⁶ They also might treat their private patients more intensively and their Medicare beneficiaries less intensively, which might accomplish the goal of reducing Medicare spending but could reduce access to care and raise costs for other payers.

Addressing geographic variation through broader payment reform and better oversight to improve efficiency. The work analyzing geographic variation provides potentially useful insights for policies to increase efficiency in fee-for-service Medicare, as well as in health care more generally.

Efforts to identify health care service areas have highlighted the importance of understanding how different types of health services are organized in overlapping but sometimes

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very different geographic configurations. Researchers are just beginning to identify the implications of multiple markets—and people moving among those markets—for reforms designed to create accountable care systems. Geographic variation research is also critical to identifying aspects of clinical care and care management where there is an urgent need for better information on the comparative effectiveness of treatment alternatives. Variation research also has contributed to analytical methods and measures of both health risk and health outcomes that can be applied locally in quality improvement and utilization management. For example, Quality Improvement Organizations, Medicare contractors that work with providers to improve performance, could apply the increasingly sophisticated methods coming out of the research arena to scrutinize practice patterns that could signal inappropriate or substandard care.³⁷

The comparative effectiveness research initiative under ARRA and the array of initiatives set out in the health reform law provide a framework for building on what has been learned about factors that contribute to inefficient health care delivery by exploring, designing, testing and implementing new approaches to organizing and paying for care.

While there are no simple paths to improving the efficiency and value of health care, potentially productive avenues include improving the accuracy of fee-for-service payment systems while moving toward new payment models. Improvements to the fee-for-service system might include fixing distortions in the Medicare payment schedules that make certain services relatively more profitable than others; adjusting payments so that more-expensive services that are no more effective than alternatives are reimbursed at the level of the less-expensive service; and altering payments to encourage use of more-effective services and discourage use of less-effective ones. Alternative payment models might include rewarding providers for care quality and efficiency—known as pay for performance—or paying groups of providers a flat fee to care for patients with certain conditions to create incentives to coordinate care and improve efficiency.

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Rather than trying to eliminate geographic variation by simply paying less in high-cost areas, broader policy reforms that succeed in changing and unifying practice patterns across geographic areas will likely be more effective in reducing unwarranted variation in service use and spending.

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Other possible policy paths include measuring and publicly reporting differences in quality of care across regions and, more importantly, across providers, and increasing enforcement against fraudulent and abusive billing practices.

Rather than trying to eliminate geographic variation by simply paying less in high-cost areas, broader policy reforms that succeed in changing and unifying practice patterns across geographic areas will likely be more effective in reducing unwarranted variation in service use and spending. And, if the inevitable remaining variation reflects different paths to efficient and effective health care for different populations with different health care needs, then policy makers might consider the variation warranted.

Notes

1. Wennberg, John E., Elliot S. Fisher and Jonathan S. Skinner, "Geography and the Debate Over Medicare Reform," *Health Affairs*, Web exclusive (Feb. 13, 2002).
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3. Pear, Robert, "New York to Lead States in Extra Medicare Payments," *New York Times* (May 30, 2010).
4. An overview of research focused on how supply of services is associated with service use is presented in the Dartmouth Center for the Evaluative Clinical Sciences, *Supply Sensitive Care*, Dartmouth Atlas Project Topic Brief, Lebanon, N.H. (Jan. 15, 2007).
5. Wennberg, John E., and Megan M. Cooper, (Eds.), *The Quality of Medical Care in the United States: A Report on the Medicare Program*, The Dartmouth Atlas of Health Care, American Hospital Association, Chicago (1999).
6. Sutherland, Jason M., Elliott S. Fisher and Jonathan S. Skinner, "Getting Past Denial — The High Cost of Health Care in the United States," *New England Journal of Medicine*, Vol. 361, No. 13 (Sept. 24, 2009); adjusting for health at the individual level, rather than at the area level as typically done in the Dartmouth Atlas Project, has the advantage of avoiding potential biases when the distribution of health within a locality is particularly skewed.
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8. Medicare Payment Advisory Commission (MedPAC), *Report to the Congress: Regional Variation in Medicare Service Use*, Washington, D.C. (January 2011); MedPAC uses prospective hierarchical condition category (HCC) model variables developed by the Centers for Medicare and Medicaid Services. Since the HCC uses diagnoses from the prior year, it may understate the role of acute conditions and introduce additional error compared with a similar model using diagnoses from the concurrent year.
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10. Authors' calculation, using claims data for Medicare fee-for-service beneficiaries alive in 2006 and 12 months of claims from calendar year 2006 for non-decedents and claims from the last 12 months of life for beneficiaries who died in 2006. Sites are based on original Community Tracking Study definitions and consist of either metropolitan statistical areas based on the 1990 Census or primary statistical metropolitan areas (parts of larger consolidated metropolitan areas).
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12. McWilliams, J. Michael, et al., "Medicare Spending for Previously Uninsured Adults," *Annals of Internal Medicine*, Vol. 151, No. 11 (Dec. 1, 2009); Hadley, Jack, and Timothy Waidmann, "Health Insurance and Health at Age 65: Implications for Medical Care Spending on New Medicare Beneficiaries," *Health Services Research*, Vol. 41, Issue 2 (April 2006).
13. In addition, patient cost sharing for some services varies across areas. For instance, patient coinsurance payments for Medicare Part B services, including physician care, are based on a percentage of allowed charges or the maximum provider reimbursement permitted by Medicare. Since allowed charges for identical services vary geographically to adjust for local input prices and other factors, the size of patient coinsurance payments (set at 20% of allowed charges after the Part B deductible has been met) also varies across areas in complex ways.
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