

TRENDWATCH

Geographic Variation in Health Care Spending: A Closer Look

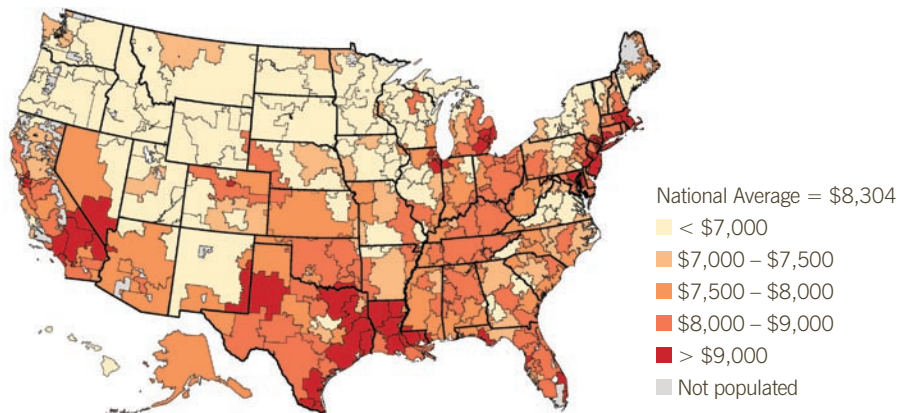
Researchers have long documented variation in health care spending. Variation occurs across geographic areas and among providers, and even populations within a geographic area. Focus on geographic variation has intensified as policymakers struggle to identify strategies to contain costs. While the U.S. has regions with relatively high spending, there also are pockets of very low spending. Legislators and administration officials assert that reducing Medicare spending in high-spending areas of the U.S. to the rates observed in the lowest spending regions could generate significant savings for the health care system without harming quality of care.¹

There is less research exploring the underlying factors that drive variation or identifying effective strategies to optimize resource utilization. Much of our current understanding of variation is from the Dartmouth Atlas Project. (See *Callout Box*.) This research examines spending for Medicare beneficiaries – about 12 percent of the population – that is then used as a proxy for overall health care spending. Other work has studied variation in total health care spending, health insurance premiums and spending for chronic conditions.²

A growing body of research suggests that a complex interplay of variables influences an area's level of spending. Some

Research shows significant variation in health care spending.

Chart 1: Medicare Spending per Beneficiary, by Hospital Referral Region, 2006



Source: The Dartmouth Atlas of Health Care. (2009). *The Policy Implications of Variations in Medicare Spending Growth*.
Link: http://www.dartmouthatlas.org/atlas/Policy_Implications_Brief_022709.pdf.

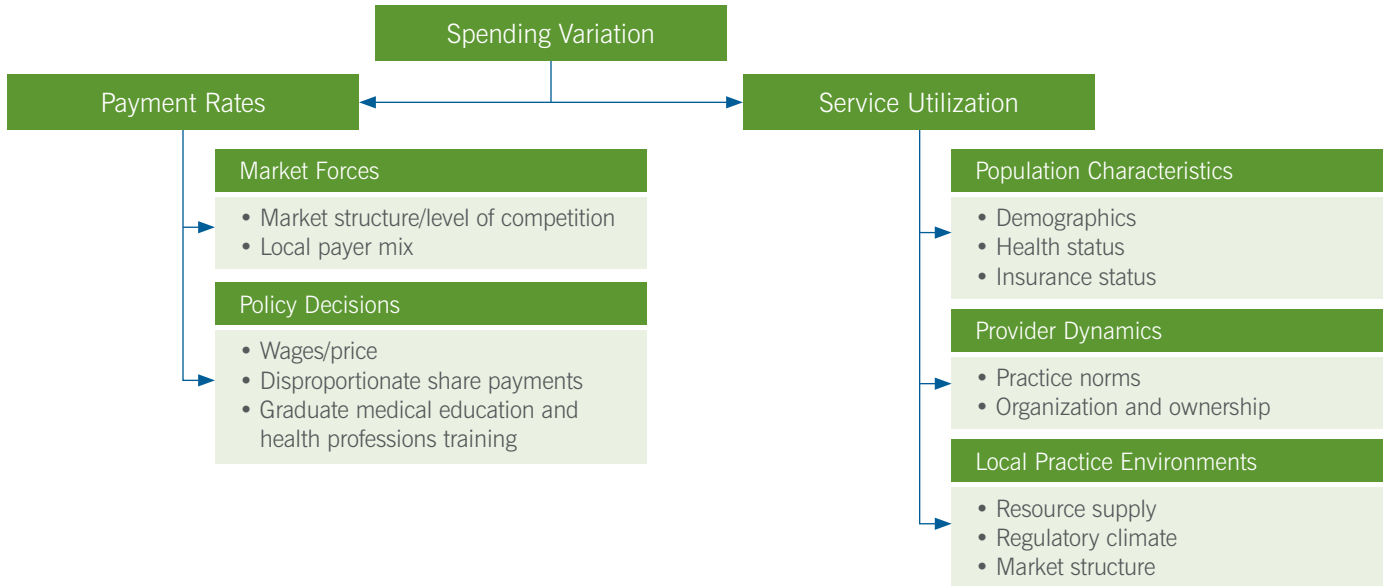
Note: Data adjusted for age, race, and sex but not price. Category definitions as in source document.

factors drive differences in payment levels including policy decisions and market forces. Differences in utilization patterns are driven by other factors, such as the population's burden of disease, race, ethnicity, income and insurance status. Local practice environments – shaped by provider norms, the regulatory climate and market dynamics – also affect spending. Even in cities, regions or states with similar rates of spending, the combination of, and interaction among, the factors that drive variation may be unique.

The existence of spending variation implies an opportunity for cost savings or the realignment of spending in ways that reward efficiency, but realizing this opportunity hinges on the ability to identify more precisely the specific drivers of spending and to design targeted approaches to effect change. Policy proposals that fail to account for these complexities could create unintended consequences for providers, patients and communities.

Spending variation is influenced by many complex factors.

Chart 2: Drivers of Spending Variation



Dartmouth Atlas Project & Methodology – An Overview

The Dartmouth Atlas Project’s analyses of per-beneficiary Medicare spending across regions are cited frequently by policymakers and the media.³ Data are available at the state, hospital referral region (HRR) and hospital service area (HSA) levels – smaller regions that attempt to capture local health care markets – and reflect Medicare program spending on beneficiaries enrolled in the fee-for-service (FFS) program. Enrollees in Medicare Advantage are excluded. Most analyses are adjusted for variation in the age, sex and race (black and non-black only) of Medicare beneficiaries across regions, and some analyses also are adjusted for regional differences in the prices paid by Medicare for services. Professional and laboratory services are adjusted using the Medicare Part B index published by the Centers for Medicare & Medicaid Services (CMS); data for all other services are adjusted using a version of Medicare’s Geographic Practice Cost Index, modified to exclude malpractice costs and to more heavily weight non-physician labor costs. Dartmouth researchers believe this re-weighting makes their price adjuster less sensitive to hospital and physician market conditions and better reflective of non-medical costs of living.⁴ Finally, some analyses are adjusted for regional differences in health status based on HSA-specific mortality and incidence rates for specific conditions (e.g., acute myocardial infarction) that are then aggregated to the HRR level.

Beneficiaries and health care resources (e.g., physicians or hospital beds) are assigned to geographic localities based on their physical location, but are adjusted to reflect where patients actually go for care. For example, if beneficiaries from a neighboring region account for 30 percent of a hospital’s total inpatient days, 30 percent of the hospital’s resources will be allocated to the region where those beneficiaries live. Beneficiaries who travel to another region to receive care remain assigned to the region where they live.⁵

The Dartmouth researchers have focused on variation within three main categories: spending, utilization and resources.

- **Spending** analyses investigate per-beneficiary Medicare expenditures, end-of-life spending and spending on beneficiaries with certain chronic conditions. A recent analysis highlighted regional and state-to-state differences in Medicare spending growth from 1992 to 2006.⁶
- **Utilization** analyses focus on rates of procedures or events across regions, such as the number of ultrasounds per 1,000 beneficiaries or rates of spine surgeries by region.⁷
- **Resource** analyses examine the number of health care personnel and quantity of equipment across regions, such as inpatient hospital beds or physicians and other clinical staff.⁸

Payment Rates: Policy and Market Dynamics Drive Differences

At its simplest level, health care spending is equal to the rate paid for each service multiplied by the number of services provided (utilization). Regional differences in the amount paid for each service can be important drivers of geographic variation in spending. These differences are the result of both market forces and policy decisions.

Market Forces Shape Payment Rates

Rates paid by commercial insurers to providers are negotiated and may reflect regional and/or individual differences in the costs of providing care as well as other factors such as the market dynamics between insurers and providers. Private payer rates also may be affected by “cost shifting” – the practice of passing along shortfalls from underpayments by public programs and the uninsured to private insurers.⁹ This “cost shifting” may cause spending for the privately insured to be greater in a state with a high portion of uninsured and low Medicaid reimbursement compared to a state with a lower portion of uninsured and relatively more generous Medicaid payment rates.

Policy Decisions Introduce Variation in Public Program Rates

Rates for public programs such as Medicare and Medicaid are set by the government. These rates often include adjustments to support specific policy goals such as graduate medical education, care for low-income populations or access

to services for rural populations. Medicare rates also include adjustments for regional labor costs. Medicaid rates – and the specific methodologies used to calculate them – are determined on a state-by-state basis. All of these adjustments can affect regional spending levels. For example, an area with a high concentration of teaching hospitals may have higher Medicare spending than a region with no teaching hospitals.

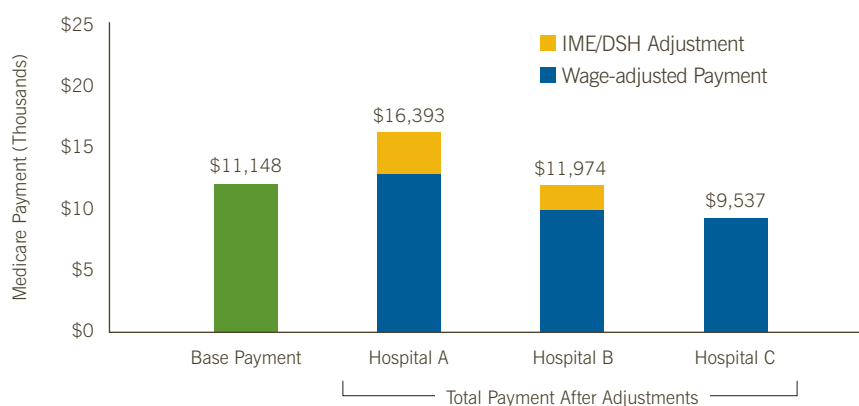
The setting of care also can affect payment rates. Payment policy often recognizes the different cost structures – often reflecting different regulatory requirements – of various sites of care through different payment rates. For

example, a payer’s total payment for a certain procedure may differ when that procedure is performed in a hospital outpatient department versus a freestanding facility or a physician office. CMS pays \$593.76 for a colonoscopy with biopsy in a hospital outpatient department in 2009, but \$398.85 for the same procedure in an ambulatory surgical center.¹⁰ Thus, the availability and use of different types of resources within a geographic area can affect spending levels.

Disaggregating the factors that affect payment rates from those that affect utilization patterns is essential to understanding the reasons for variation

Adjustments for wages and policy objectives contribute to differences in Medicare payment rates.

Chart 3: Medicare Prospective Payments to Acute Care Hospitals for Major Joint Replacement in the Lower Extremity



Source: Avalere Health analysis of FY 2009 Inpatient Prospective Payment System Final Rule and Impact File for MS-DRG 470. Note: IME = indirect medical education. DSH = disproportionate share hospital.

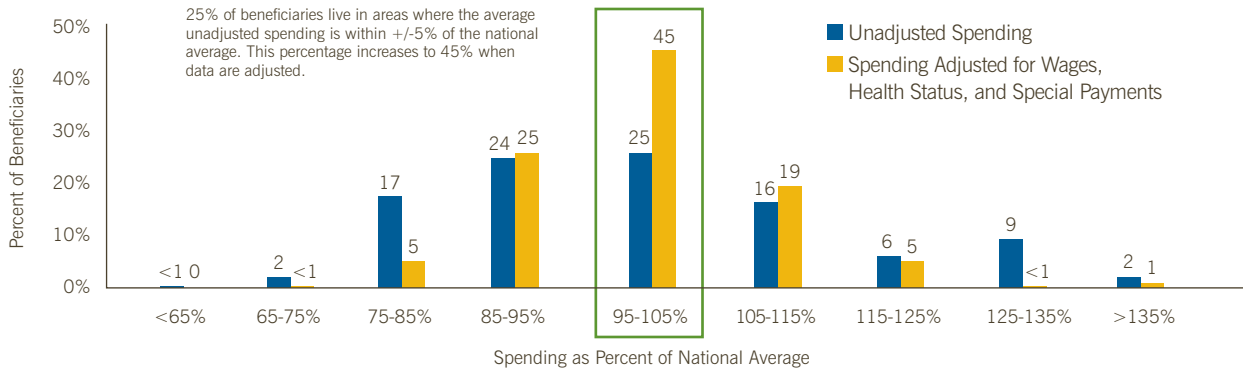
“ ”
from the field

“Variation is still big and still a problem.”

John Bertko, Commissioner, Medicare Payment Advisory Commission¹¹

After MedPAC accounts for payment rate adjustments and beneficiaries' predicted health status, variation in spending across regions shrinks – but substantial differences remain.

Chart 4: Percent of Medicare Beneficiaries Living in Geographic Areas by Level of Spending, 2004 – 2006



Source: Miller, M. (2009). *Measuring Regional Variation in Service Use*. Presentation to the Medicare Payment Advisory Commission.

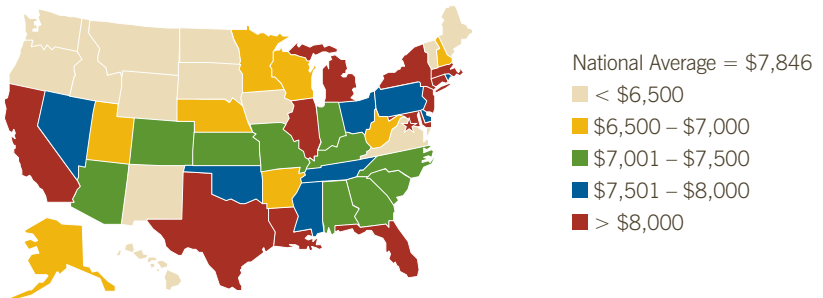
Note: Health status adjustment is based on county-level risk scores published by the Centers for Medicare & Medicaid Services that are intended to predict health status based on claims data and selected demographic variables. Special payments include those to teaching hospitals, hospitals that serve low-income beneficiaries, and certain rural providers. Geographic areas are metropolitan statistical areas and rest of state non-metropolitan areas. Categories as in source document.

in spending across regions. While this may be challenging in the private sector, it is relatively easy for the Medicare FFS population because rates are prospectively set, publicly visible and based on well-documented rules.

The Dartmouth Atlas research sometimes accounts for regional differences in Medicare payment rates, but does not typically account for direct and indirect graduate medical education (DGME and IME) or disproportionate share hospital (DSH) payments. Preliminary analysis by the Medicare Payment Advisory Commission (MedPAC) indicates that the amount of variation in spending is significantly reduced when adjustments are made for input prices, beneficiary health status and policy-driven payments to providers. Its analysis found that the standard deviation – a measure of the spread of a distribution – in Medicare spending was reduced by 40 percent after making these adjustments.¹² However, even when these effects are parsed out, significant variation remains. This variation is due to differences in utilization.

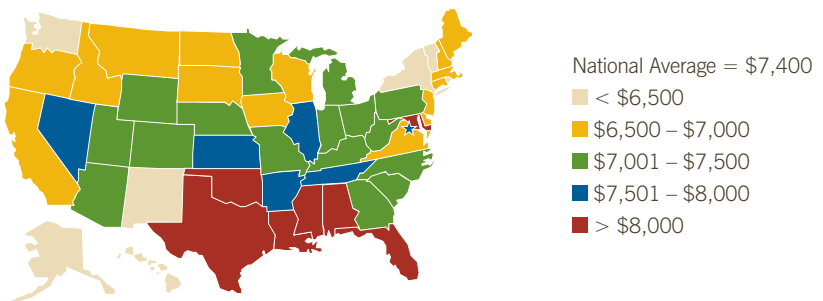
When researchers adjust for payment factors and health status, the number of very high and very low states shrinks.

Chart 5: Unadjusted Medicare Spending per Beneficiary, by State, 2006



Source: THEORI analysis of the Acute Inpatient Prospective Payment System, Physician Fee Schedule and Medicare Advantage data published by the Centers for Medicare & Medicaid Services.

Chart 6: Medicare Spending per Beneficiary Adjusted for Wages, Health Status, and DGME/IME/DSH, by State, 2006



Source: THEORI analysis of the Acute Inpatient Prospective Payment System, Physician Fee Schedule and Medicare Advantage data published by the Centers for Medicare & Medicaid Services.

Note: Adjustment removes teaching and DSH payments and standardizes by the risk score and wage adjustments. DGME= direct graduate medical education. IME= indirect medical education. DSH= disproportionate share payments made to hospitals that may see a greater proportion of low-income beneficiaries.

Service Utilization: Patients, Providers and Markets Create Unique Patterns of Use

Dartmouth and other researchers have documented wide variation in the number

and mix of services consumed in different geographic areas. A region's service use is

determined by multiple, complex factors at the patient, provider and market levels.

Population Characteristics Help Determine Health Care Needs

Many complex and interacting factors determine an individual's health care needs, utilization and spending. Among these are health status and other demographic variables such as insurance status, income and certain risk factors. Many of these factors vary by community, making their consideration important in understanding differences in spending across regions.

Health Status Determines Health Care Needs

Poor health status – particularly the presence of one or more chronic conditions – is strongly linked to higher per beneficiary spending.¹³ Further, health risk factors such as alcohol use, obesity and low activity level greatly increase the probability of developing certain chronic conditions.¹⁴ The prevalence of certain chronic diseases and their risk factors is not uniform across geographic areas. For instance, diabetes, obesity and heart disease are more prevalent in Southern states.¹⁵

Dartmouth researchers do not always adjust for differences in health status, but use one of two approaches when doing so. The first is to use an illness-based adjustment derived from mortality rates and the occurrence of specific conditions such as heart disease or cancer.¹⁶ The second is to focus their analysis on end-of-life spending, reasoning that this equalizes health status across beneficiaries.¹⁷ However, it is unlikely that all beneficiaries were similarly ill and required the same intensity of treatment simply because all eventually

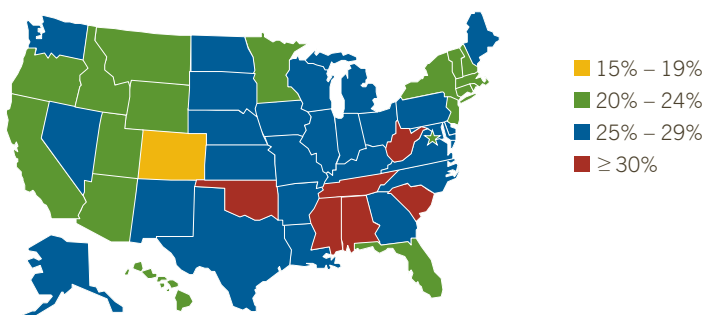
died. Furthermore, such analyses exclude similarly ill beneficiaries who did not die but who might have received more resource-intensive care, thus obscuring possible differences in the benefits of greater resource use. A recent study of five large California hospitals found that institutions that used more resources to care for heart failure patients had lower

mortality rates among these patients. Further, the study's analysis of resource use for both patients who lived and who died resulted in a finding of less variation than the analysis of decedents alone.¹⁸

A comparison of spending by the Veterans Health Administration (VHA) and Medicare points to the contribution that health status makes to variation and

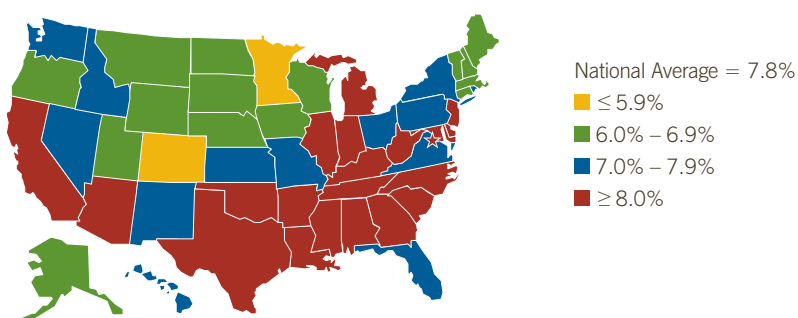
Variation in the burden of chronic conditions and their risk factors contributes to variation in spending patterns.

Chart 7: Percent of Adults Ages 18+ Who Are Obese, by State, 2008



Source: Centers for Disease Control and Prevention. (2009). *Obesity Trends Among U.S. Adults, BRFSS 2008*.
Link: http://www.cdc.gov/obesity/downloads/obesity_trends_2008.ppt.

Chart 8: Percent of Adults Ages 18+ with Diagnosed Diabetes, by State, 2007



Source: Centers for Disease Control and Prevention. (2009). *Percentage of Adults with Diagnosed Diabetes By State, 2007*.
Link: <http://apps.nccd.cdc.gov/DDTSTRS/StateSurvData.aspx>.

the importance of the specific adjustment methodology used. Regional spending by the VHA is set by allocation and not driven by utilization, as is Medicare spending. In 2001, when the VHA adjusted its regional allocations for health status based on only three patient categories, per-person VHA spending varied much less than per-beneficiary Medicare spending. However, after the VHA moved to allocating payments based on 20 health status groupings, variation in VHA spending was almost the same as Medicare.¹⁹

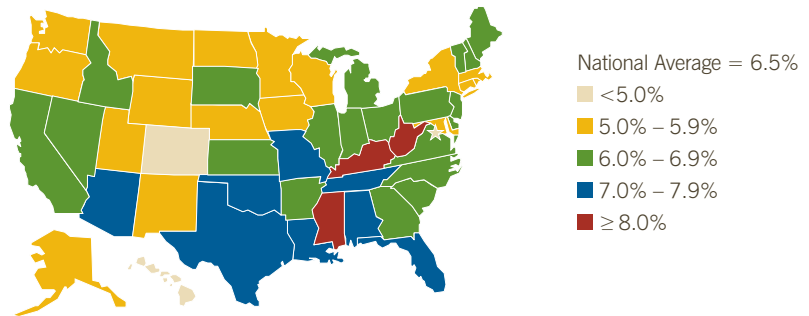
Race, Ethnicity and Genetics Play into Differences among Populations

Regional differences in the racial and ethnic composition of the population are likely drivers of geographic variation in health status and utilization. In 2004, nearly 60 percent of all African-Americans lived in 10 states and about 80 percent of Hispanics lived in nine states.²⁰

Studies of race and genetics identify important differences among populations. For example, African-Americans are more likely than European Americans to have sickle cell disease, while the reverse is true for cystic fibrosis.²¹ Researchers also have documented differential treatment responses by race for certain conditions such as depression and hypertension.²² Compared to similarly ill white patients, African-American heart failure patients realized fewer benefits from ACE inhibitor therapy, both in terms of blood pressure control and hospitalization risk.²³ Research documents differences in spending by race; for example, African-American Medicare beneficiaries have much higher health care spending than white beneficiaries.²⁴ Different spending patterns by race are the result of many factors, including poverty, education and income levels, but the higher burden of disease among some groups likely has spending implications.

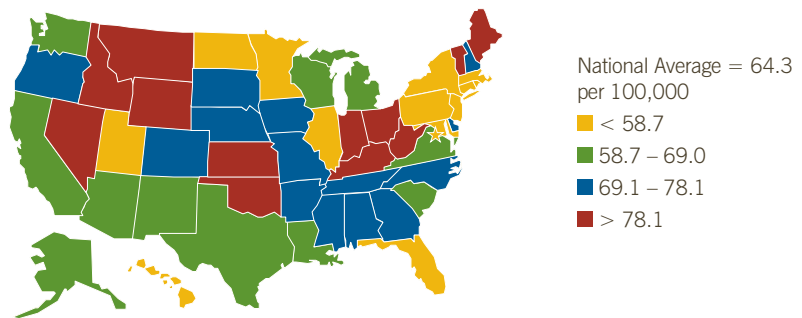
Geographic patterns vary indicating different strategies may be required to address underlying risk factors and associated health issues.

Chart 9: Percent of Population Ages 18+ with Coronary Heart Disease, Angina, or Heart Attack, by State, 2005



Source: Centers for Disease Control and Prevention. (2009). *Prevalence of Heart Disease - United States, 2005*, MMWR 2007. Link: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5606a2.htm>.

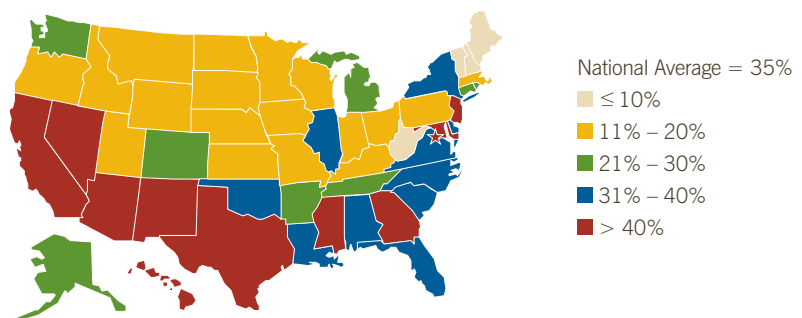
Chart 10: Deaths per 100,000 Adults Ages 25+ Due to COPD, by State, 2005



Source: Centers for Disease Control and Prevention. (2009). *Deaths from Chronic Obstructive Pulmonary Disease - United States, 2000-2005*, MMWR 2008. Link: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5745a4.htm>. Note: COPD = Chronic Obstructive Pulmonary Disease.

In many southwestern states, minority residents make up more than 40 percent of states' populations.

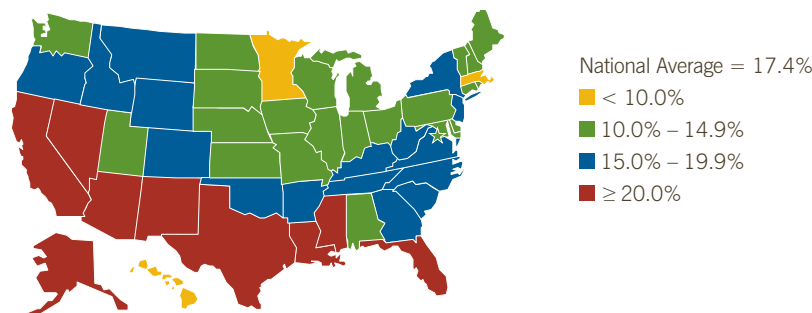
Chart 11: Percent of Population that Is Not White, by State, 2007 – 2008



Source: Kaiser Family Foundation. (2009). *Population Distribution by Race/Ethnicity, States (2007-2008), U.S.* Link: <http://www.statehealthfacts.org/comparable.jsp?ind=6&cat=1&sub=1&yr=134&typ=1>.

Southwestern states have higher rates of uninsured individuals.

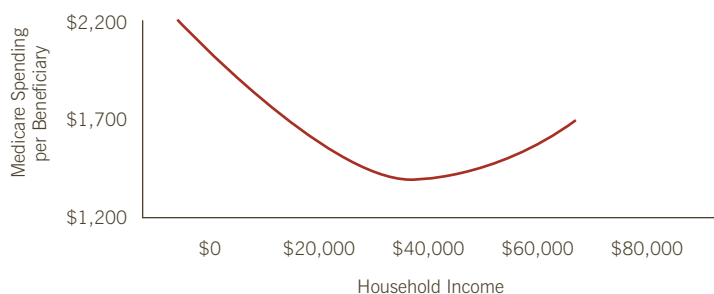
Chart 12: Uninsured Rates for Nonelderly by State, 2007 – 2008



Source: Kaiser State Health Facts. 2009. *Uninsured Rates for the Nonelderly by Age, 2007 – 2008*.
 Link: <http://www.statehealthfacts.org/comparabletable.jsp?ind=139&cat=3>.

Both low-income and high-income beneficiaries incur more spending than those whose incomes are more moderate.

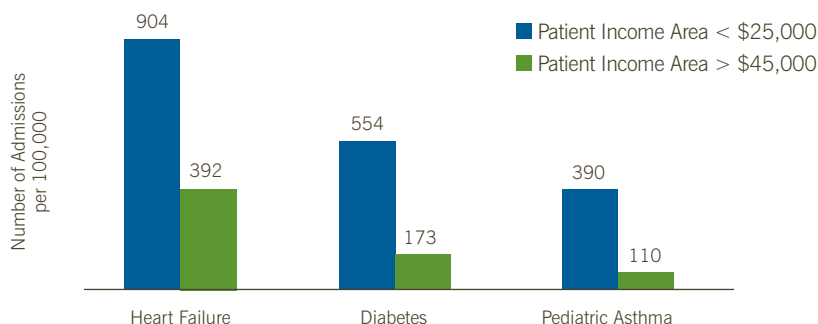
Chart 13: Household Income vs. Medicare Spending per Beneficiary



Source: Cooper, R. (November 2008). *Regional Variation and the Affluence-Poverty Nexus*. Council of Teaching Hospitals, San Antonio, TX.

Patients in low-income areas are admitted more frequently for ambulatory care-sensitive conditions, affecting spending patterns in high-poverty areas.

Chart 14: Hospital Admissions for Ambulatory Care-Sensitive Conditions, by Patient Income Area, 2004



Source: The Commonwealth Fund. (2008). *National Scorecard on U.S. Health System Performance*. New York, NY.
 Note: Rates are adjusted per 100,000 population. Ambulatory care-sensitive conditions are those that can typically be managed in the outpatient setting. Heart failure data are for 2005. Patient income area equal to median income of patient zip code.

Insurance Status, Education and Income Affect Utilization Separately and Together

Insurance status also influences health care needs and utilization. Insurance status is strongly related to health status; 71 percent of individuals with private coverage report being in very good or excellent health, compared to only 15 percent of uninsured individuals.²⁵ Both income and education level are correlated with insurance status; individuals with lower incomes or educational attainment are less likely to have health insurance.²⁶

Rates of uninsurance range from approximately 2.7 percent in Massachusetts²⁷ to 25 percent in Texas,²⁸ while median household income in New Hampshire – \$65,652 per year – is almost twice that in Mississippi.²⁹ These factors also interact with one another. For example, people in households with incomes below \$25,000 per year are more likely to be uninsured than people in households with incomes greater than \$75,000.³⁰

Even among Medicare beneficiaries, insurance status plays an important role. For instance, beneficiaries without insurance prior to becoming Medicare-eligible require more services and incur greater costs than beneficiaries who were previously insured – likely due to their “catching up” on needed care after obtaining Medicare coverage.³¹ Beneficiaries with supplemental (“Medigap”) insurance coverage also tend to use more services, contributing to higher spending, likely because Medigap reduces or eliminates the costs to beneficiaries of seeking care.³²

The relationship between income and health care spending among insured individuals is not straightforward. While the lowest-income Medicare beneficiaries incur the highest levels of spending – perhaps due to greater health needs – spending on higher-income beneficiaries exceeds spending on beneficiaries with

more moderate incomes.³³ The mix of services consumed by patients with varying income levels may be different, however. Across insurance programs, individuals in low-income areas are more likely to be hospitalized for ambulatory care sensitive conditions – those that can be managed on an outpatient basis – such as heart failure or diabetes.³⁴ Higher-income beneficiaries, in contrast, may consume more discretionary care such as preventive services.

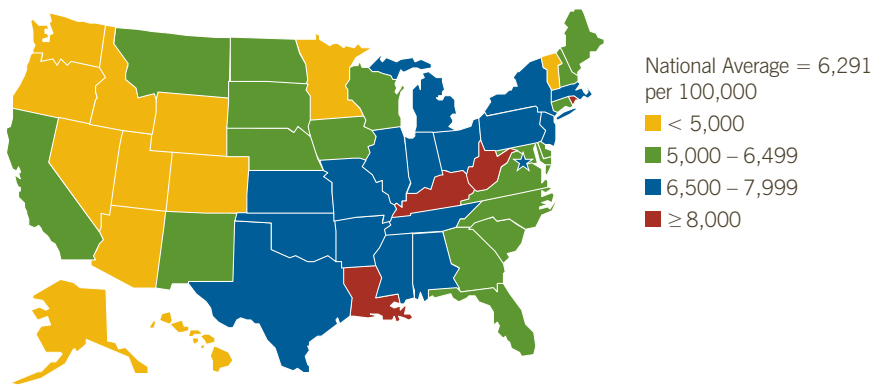
Accounting for Population Differences in Variation Analyses

Unfortunately, Medicare and most other data sources do not permit precise identification of beneficiaries’ ethnic backgrounds; therefore, demographic factors are often left out of variation analyses. The Dartmouth data are adjusted for age, sex and race, but not for other demographic factors. And their adjustment for race is incomplete – beneficiaries are classified only as either black or non-black – thus both categories encompass multiple ethnic groups.

More robust adjustment for health status along with these associated

Western states have lower rates of potentially avoidable hospital admissions.

Chart 15: Hospital Admissions for Ambulatory Care-Sensitive Conditions per 100,000 Medicare Beneficiaries, 2009



Source: The Commonwealth Fund. (2009). *Medicare Hospital Admissions for Ambulatory Care Sensitive Conditions per 100,000 Beneficiaries*. Link: <http://www.commonwealthfund.org/Charts-and-Maps/State-Scorecard-2009/DataByDimension/Table.aspx?ind=27&tf=1&sortch=1&sorttf=1>.
 Note: Includes hospitalizations for diabetes complications, asthma, COPD, hypertension, congestive heart failure, angina, dehydration, bacterial pneumonia, and urinary tract infections.

demographic variables could deepen researchers’ and policymakers’ understanding of the fundamental drivers of spending variation. The Congressional Budget Office (CBO) notes that research indicates 16 percent of spending variation is attributable

to health status alone, likewise the Dartmouth Atlas Project found 18 percent of variation to be explained by an illness-based measure, and other researchers report that health status combined with demographic factors explains about 60 percent.³⁵

Provider Factors Influence What Services Patients Receive

Local practice climates shape when and how providers deliver care. These factors may be shared among providers within a given region, community or facility and can impact spending patterns by influencing the volume of care patients receive. Alternatively, different providers within the same community or even the same facility can have very different spending patterns.

Dynamics Among Physicians and Health Systems Vary

Low-spending areas are often the sites of well-regarded integrated delivery systems. Examples include Scott and White Health System in Temple, Texas; Geisinger Health System in Danville, Pennsylvania; and the Mayo Clinic in Rochester, Minnesota. Their approach to coordinating care and managing utilization within the system

may help prevent unneeded or redundant procedures and tests.³⁶

On the other hand, high levels of physician ownership of health facilities in a market may drive up spending. A recent study found that the entry of physician-owned orthopedic hospitals in Oklahoma boosted market area utilization of complex spinal fusion surgery by 121 percent over a five-year period, with 91 percent of

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from the field

“Health care decisions too often are a matter of guesswork, because we lack good evidence to inform them.”
 Harold Sox, M.D., Editor, *Annals of Internal Medicine*³⁷

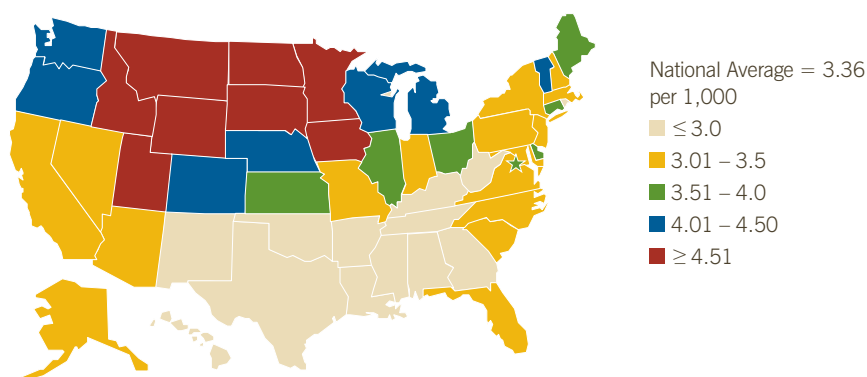
these procedures ultimately performed in physician-owned specialty hospitals rather than full-service hospitals.³⁸ Likewise, a recent study of urological surgery in Florida found that while surgical utilization rates increased by less than 1 percent at the community hospital, rates at the physician-owned ambulatory surgery center rose 53 percent.³⁹

Practice Norms Help Guide Clinical Decisions

Practice norms among physicians shape variation in spending both within and across communities. A recent analysis showed that 82 percent of physicians in high-spending areas would recommend magnetic resonance imaging (MRI) for back pain and mildly abnormal nerve function compared to 69 percent of providers in low-spending areas.⁴⁰ Similarly, hip replacement rates for fractures varied five-fold among hospital referral regions though hospitalization for hip fracture was relatively consistent,⁴¹ and an 11-state study of revascularization rates found that the maximum rate, in Florida, was 54

Use rates for procedures such as hip replacements vary widely, but do not necessarily correlate with spending levels.

Chart 16: Hip Replacements per 1,000 Medicare Beneficiaries, by State, 2005



Source: The Dartmouth Atlas of Health Care. (2005). *Selected Surgical Discharge Rates, State Level*. Link: <http://www.dartmouthatlas.org/data/download.shtml>.

percent higher than the minimum, in Oregon.⁴² The lack of comparative effectiveness information or evidence-based guidelines in many therapeutic areas may encourage reliance on local norms. CBO notes that substantial variation in practice patterns persists even

within the heavily managed Veterans health care system for conditions such as prostate cancer and depression.⁴³ To the extent that evidence on how best to care for a certain patient is unavailable or ambiguous, a certain degree of variation in practice – and spending – is expected.

Local Practice Environments Are Varied and Complex

Regional demographic patterns do not explain all observed differences in health care spending. Local practice environments – including resource supply and regulation – also shape utilization and spending. The same mix of factors does not drive spending in every community; the challenge for researchers and policymakers is to create policies that recognize appropriate differences across communities.

Resource Supply: Driving or Driven by Demand?

Among the more tangible components of a practice environment is the local supply of resources such as acute care beds, health care professionals, long-

Studies suggest resource availability may drive spending, but state comparisons of resources and spending raise questions.

Chart 17: Resource Supply and Medicare Spending, Florida vs. Minnesota, 2006

	Florida	Minnesota
Hospital Beds per 1,000 Residents	2.8	3.0
Registered Nurses per 1,000 Residents	8.0	10.7
Physicians per 1,000 Residents	3.2	3.4
Medicare Spending per Beneficiary (Adjusted for age, sex and race)	\$9,379	\$6,600

Source: Kaiser Family Foundation. (2009). *Hospital Beds per 1,000 Population, 2007; Registered Nurses per 100,000 Population, 2007; Nonfederal Physicians per 1,000 Population, 2008*. Link: <http://statehealthfacts.org/comparecat.jsp?cat=8>. The Dartmouth Atlas of Health Care. (2009). *Total Medicare Reimbursements per Enrollee, 2006*. Link: http://www.dartmouthatlas.org/interactive_map.shtml.

term and home health care, and imaging equipment. Dartmouth researchers suggest that the availability of more resources leads to higher utilization and, therefore, greater spending.⁴⁴ For example, they have concluded that increased capacity results in higher utilization for both MRI and cardiac catheterization procedures.⁴⁵ The availability of certain types of post-acute care facilities also helps determine where discharged patients receive care after hospitalization.⁴⁶ On the other hand, some high-resource regions exhibit lower spending than areas with less capacity. Minnesota’s capacity exceeds Florida’s across a number of dimensions, but total Medicare spending in Minnesota is roughly \$1,000 less per beneficiary even when the data are adjusted.⁴⁷

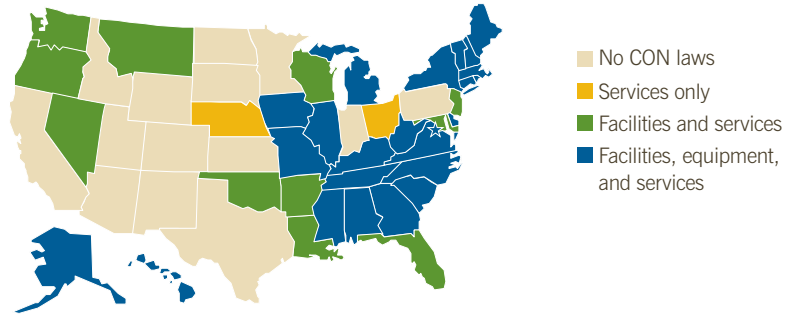
Many factors affecting supply and demand are interrelated, making it difficult to determine whether supply is driving demand or the reverse. Patients in a given community may appear to overuse advanced imaging services once an MRI machine is available. Or, the increased use may represent appropriate utilization if patients and physicians didn’t have access to such tests before.

State-level Regulations Govern Resources and Providers

State regulations also impact the mix and supply of health care services. Certificate of Need (CON) laws regulate the supply of facilities and equipment by requiring providers to demonstrate a need for new capacity prior to purchase or expansion. Not all states have CON laws, and those with such laws do not apply them to the same mix of resources. State scope-of-practice laws dictate which providers may perform which services. For example, 44 states allow nurse practitioners to diagnose patients independently, while the others do not. Similarly, state regulations differ on whether nurse practitioners are permitted to order tests.⁴⁸ Greater use of such

Regulations limiting the local supply of resources vary across states and may impact spending.

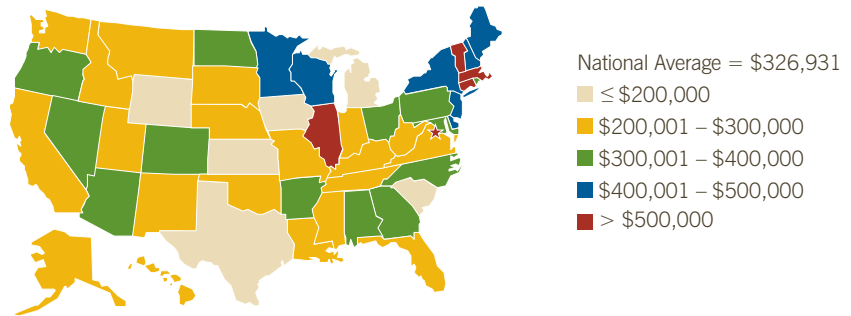
Chart 18: Certificate of Need (CON) Laws, by Regulated Service and State, 2006



Source: National Conference of State Legislatures. (2009). *Certificate of Need: State Laws and Programs*. Link: <http://ncsl.org/default.aspx?tabid=14373>. Note: Facilities include resources such as ambulatory surgery centers. Services include resources such as burn care. Equipment includes resources such as advanced imaging machines.

Differences in local liability climates also may contribute to spending variation.

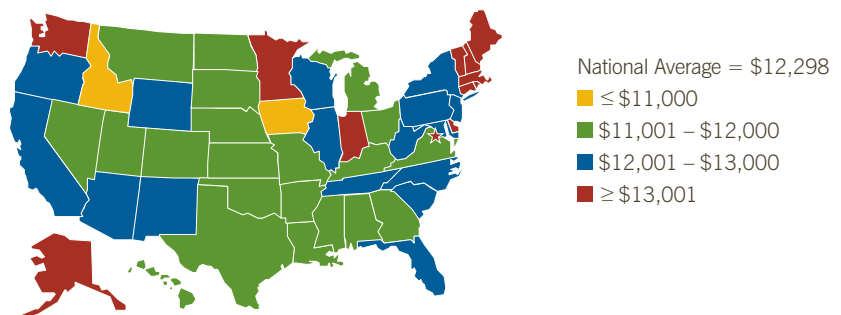
Chart 19: Average Awards for Medical Malpractice Claims, by State, 2008



Source: Kaiser Family Foundation. (2009). *Payments on Medical Malpractice Claims, 2008*. Link: <http://www.statehealthfacts.org/comparemaptable.jsp?cat=8&ind=437>. Note: Includes payments made for out-of-court settlements.

Premium levels for private insurance show a different pattern of variation than Medicare spending levels.

Chart 20: Average Commercial Insurance Premium for Family Coverage by State, 2008



Source: The Commonwealth Fund. (2009). *Paying the Price: How Health Insurance Premiums Are Eating Up Middle Class Incomes*. New York, NY.

lower-cost practitioners may be more feasible in states that place fewer restrictions on the scope of their practice. Finally, many states currently limit medical liability awards.⁴⁹ These caps may have a dampening effect on spending, as providers may be less inclined to order additional services to protect themselves against potential lawsuits.

Consumers and Payers Also Influence Utilization and Spending

The influence of consumers, payers and employers in a community may also impact health care utilization and spending. For instance, strong employer coalitions such as the Buyers Health Care Action Group in Minnesota and

the Pacific Business Group on Health have structured incentives and shared information to encourage providers and members to favor high-quality, efficient care.⁵⁰ Similarly, a dominant insurer may shape regional patterns of utilization through its coverage and payment policies.

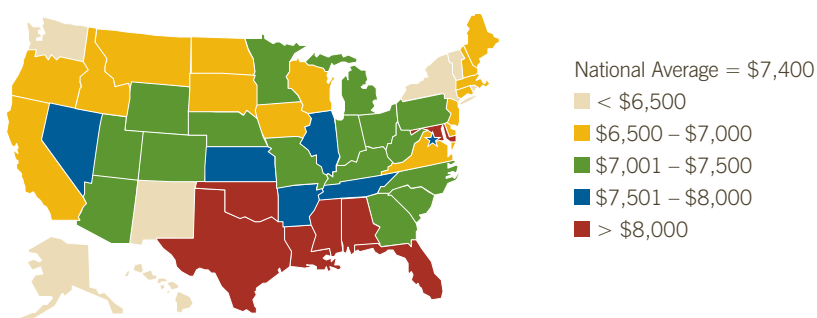
Challenges in Setting Policy

Some policymakers and researchers believe that reducing spending variation can help curb rising health care costs. However, several interesting anomalies in the research findings point to the challenges of developing policies targeted at these regional differences. For example, spending levels and spending growth are not well correlated – meaning that a policy to address one or the other will target different providers and regions. Lincoln, Nebraska’s average spending per beneficiary is approximately \$1,000 less than the national average, but its annual growth rate from 1992 to 2006 is nearly 3 percentage points higher.⁵¹ Further, it is not clear which measure is the more appropriate target.

Another challenge is that “pockets” of low spending and utilization exist within high-spending and -utilization areas and vice versa. This raises the question of how to develop a policy that avoids penalizing lower-cost providers in high-spending areas, or rewarding higher-cost providers in low-spending areas. Differences in spending and utilization are observed both within regions and across types of services. For example, one community may have relatively high hospital spending but low physician spending, or vice versa. Variation within a region highlights the need to consider how broader payment policies will impact local markets and drive behavior at the provider level. The same policy approach may not effectively target both hospitals and physicians.

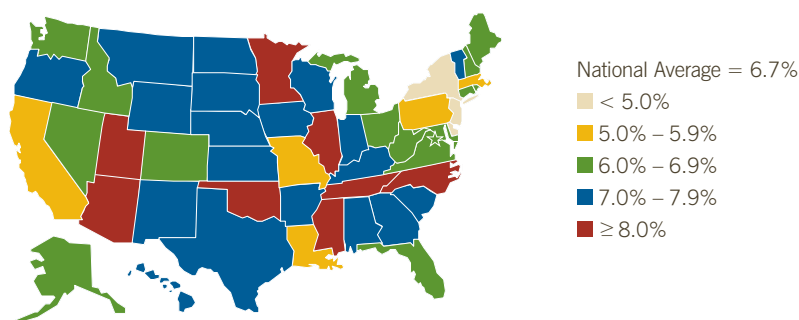
States with low-spending *levels* don’t necessarily exhibit lower spending *growth*.

Chart 21: Medicare Spending per Beneficiary Adjusted for Wages, Health Status, and DGME/IME/DSH, by State, 2006



Source: THEORI analysis of the Acute Inpatient Prospective Payment System, Physician Fee Schedule and Medicare Advantage data published by the Centers for Medicare & Medicaid Services. Note: Adjustment removes teaching and DSH payments and standardizes by the risk score and wage adjustments. DGME= direct graduate medical education. IME= indirect medical education. DSH= disproportionate share payments made to hospitals that may see a greater proportion of low-income beneficiaries.

Chart 22: Compound Annual Growth in Medicare Spending per Beneficiary, Adjusted for Wages, Health Status, and DGME/IME/DSH, by State, 2000 – 2006



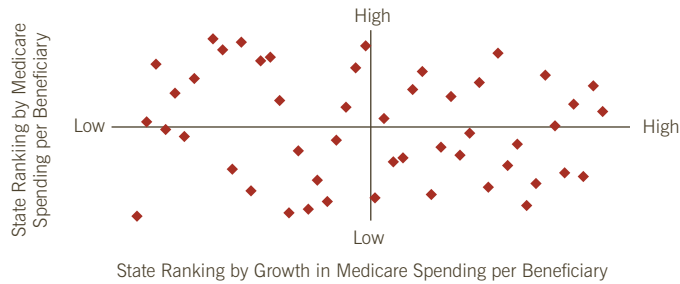
Source: THEORI analysis of the Acute Inpatient Prospective Payment System, Physician Fee Schedule and Medicare Advantage data published by the Centers for Medicare & Medicaid Services. Note: Adjustment removes teaching and DSH payments and standardizes by the risk score and wage adjustments. DGME= direct graduate medical education. IME= indirect medical education. DSH= disproportionate share payments made to hospitals that may see a greater proportion of low-income beneficiaries.

An important consideration is whether Medicare spending data are appropriate proxies for examining variation, or if instead policymakers should consider overall variation in health care spending. Medicare FFS data have several important analytic advantages, but Medicare beneficiaries represent just over 12 percent of the total population.⁵² Furthermore, the data do not capture the approximately 11 million beneficiaries enrolled in private managed care plans through the Medicare Advantage program.⁵³ Medicare Advantage enrollees tend to be clustered geographically – making up nearly 40 percent of the Medicare population in some regions⁵⁴ – and historically have been healthier than their counterparts in FFS Medicare.⁵⁵ Excluding their spending may skew the average in some areas.

In fact, a state’s total per capita health care spending – reflecting public and private payers and the uninsured – appears not to correlate with Medicare spending per beneficiary. Some states ranking high with respect to Medicare spending per beneficiary rank low with respect to overall spending per capita and vice versa. This also suggests that provider behavior and supply are not the sole drivers of variation; if physicians in a community are inclined to order and

There is no discernable relationship between level of spending and growth in spending.

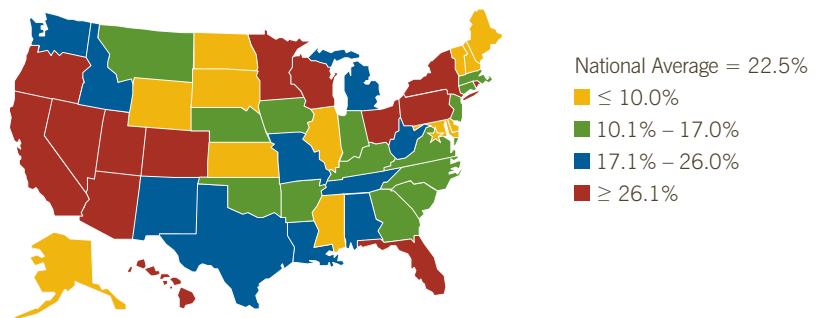
Chart 23: State Ranking by Medicare Spending per Beneficiary, 2006 vs. State Ranking by Growth in Medicare Spending per Beneficiary, 2000 – 2006



Source: The Dartmouth Atlas of Health Care. (2009). *Total Medicare Reimbursement per Enrollee, 2000 and 2006*. Link: http://cecsweb.dartmouth.edu/atlas08/datatools/datab_s1.php. Note: Higher rank indicates higher level of spending or growth. Data adjusted for age, race, and sex but not price.

Data used in spending variation analyses exclude Medicare Advantage participants, who account for up to 40 percent of beneficiaries in some states.

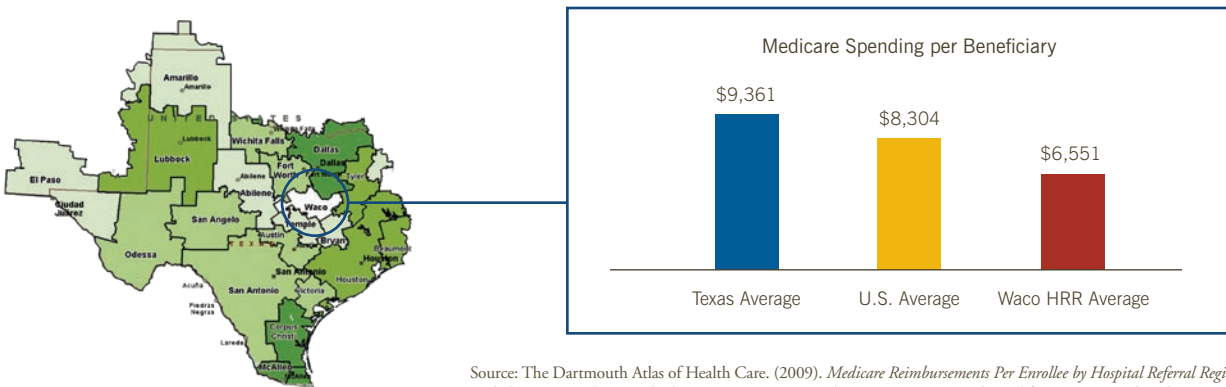
Chart 24: Percent of Medicare Beneficiaries Enrolled in Medicare Advantage Plans, by State, 2009



Source: Kaiser Family Foundation. (2009). *Medicare Advantage Plan Penetration, 2009*. Link: <http://www.statehealthfacts.org/comparabletable.jsp?ind=329&cat=6>.

Even in areas with relatively high spending, pockets of low spending exist. The reverse is true as well.

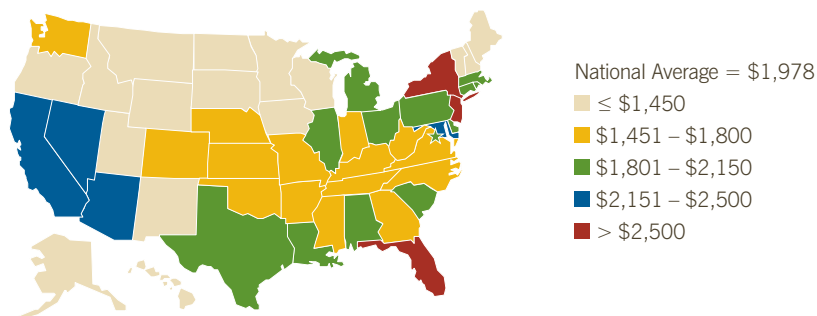
Chart 25: Medicare Spending per Beneficiary, by Hospital Referral Region (HRR), Texas, 2006



Source: The Dartmouth Atlas of Health Care. (2009). *Medicare Reimbursements Per Enrollee by Hospital Referral Region*. Link: http://www.dartmouthatlas.org/interactive_map.shtm. Note: Data are adjusted for age, race, and sex but not price.

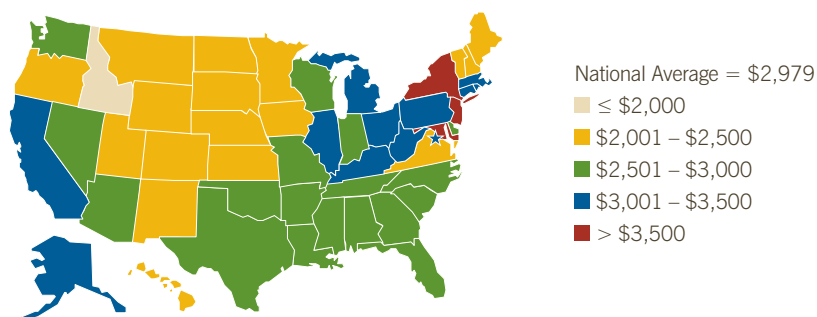
Spending patterns for physician care are different than for hospital care, raising questions about how to target policy interventions.

Chart 26: Medicare Physician Spending per Beneficiary, by State, 2006



Source: The Dartmouth Atlas of Health Care. (2009). *Medicare Reimbursements Per Enrollee by State*.
 Note: Data adjusted for age, race, and sex but not price. Physician spending includes professional and laboratory services.

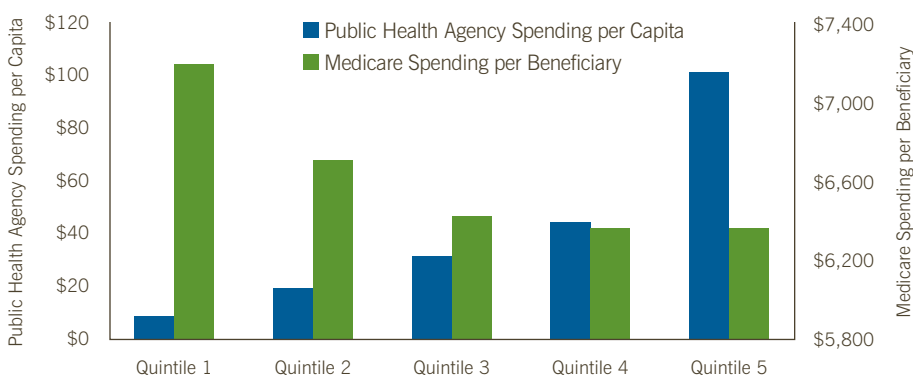
Chart 27: Medicare Hospital Spending per Beneficiary, by State, 2006



Source: The Dartmouth Atlas of Health Care. (2009). *Medicare Reimbursements Per Enrollee by State*.
 Note: Data adjusted for age, race, and sex but not price. Hospital spending includes short stay inpatient hospital reimbursements.

Communities with higher levels of local public health spending have lower levels of Medicare spending.

Chart 28: Public Health Agency Spending per Capita vs. Medicare Spending per Beneficiary, by Quintile of Public Health Agency Spending, 2005



Source: Mays, G., and Smith, S. (2009). Geographic Variation in Public Health Spending: Correlates and Consequences. *Health Services Research*, 44(5), 1796 - 1817.

do more, they would be expected to do so without regard for a patient’s payer.

Further, Medicare spending and commercial health insurance premiums – which both should reflect the practice patterns of the same providers – are not aligned. For example, Maine has one of the lower rates of Medicare spending, but has one of the highest average commercial premiums in the nation.⁵⁶

Another confounding factor is the interaction of other types of health expenditures with Medicare spending. For example, a recent study found that areas with higher public health agency expenditures spend less per Medicare beneficiary than areas with lower public health spending. This may suggest that higher public health spending reduces Medicare spending by preventing injury or illness, or by providing screening, monitoring and other clinical care. Alternatively, reduced access to traditional health care providers may increase the demand for clinical services provided by public health agencies.⁵⁷

Does Spending Variation Influence Quality of Care?

One of the more important questions raised by spending variation research is: do regions that spend more on health care have better quality care? Thus far, we do not have a clear answer. The Dartmouth Atlas Project and other researchers suggest that the answer is “no,” higher spending does not yield better patient care, outcomes or experience.⁵⁸ If true, this finding suggests that “excess” spending in high-cost areas could be eliminated with no negative consequences for patient care. However, some researchers dispute this conclusion. One found that better quality was associated with higher overall and non-Medicare spending in a state.⁵⁹

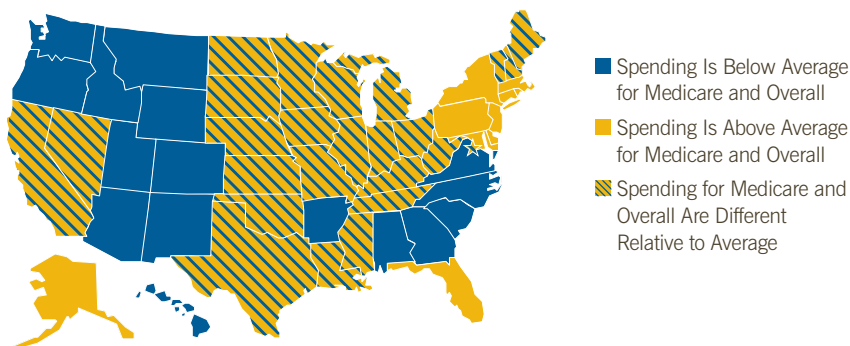
Analyses of spending variation and quality may need to delve beyond region- or state-level comparisons to understand the implications of higher spending in specific clinical situations. For example, an analysis of “visitors” (patients who experienced a health care emergency outside of their home regions) found that patients who had a heart-related emergency hospitalization in high-spending areas had lower mortality rates than similar visitors to lower-spending areas.⁶⁰

Researchers and the media often cite Dartmouth’s end-of-life studies as evidence that higher spending does not produce better outcomes. Methodological questions about this approach aside, conflicting data remain. For example, the Los Angeles hospital referral region scores a 99.3 percent on Dartmouth’s “Hospital Care Intensity” index, indicating high resource use for beneficiaries at the end of life.⁶¹ However, that same region has the 28th lowest Medicare mortality rate out of 307 hospital referral regions.⁶² Similarly, Florida has both a relatively high spending level and a relatively low mortality rate.⁶³

Given conflicting research and local examples that contradict the hypothesized national trend, conclusions about connections between spending and quality would be premature. Understanding the value of health care spending for different patients and clinical scenarios is pivotal to identifying what level of spending is appropriate.

Trends in Medicare spending do not reflect trends in overall health care spending across states.

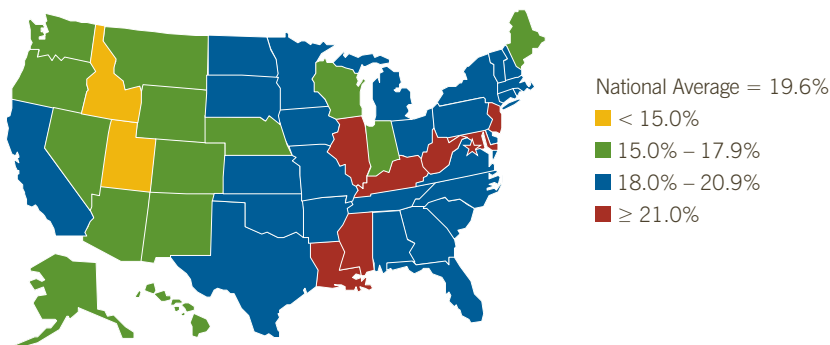
Chart 29: Overall Health Care Spending per Capita vs. Medicare Spending per Beneficiary, by State, 2004



Source: Source: The Dartmouth Atlas of Health Care. (2009). *Total Medicare Reimbursement per Enrollee, 2004*. Link: http://cecsweb.dartmouth.edu/atlas08/datatools/datatb_s1.php and *Health Spending per Capita by State of Residence, 2004*. Link: <http://www.statehealthfacts.org/comparamtable.jsp?ind=596&cat=5#>. Note: Overall refers to total per capita health care spending. Average refers to national average. Medicare data adjusted for age, race, and sex but not price. Overall data adjusted for the flow of residents between states.

Most states have rehospitalization rates between 15 and 21 percent, though variation still exists.

Chart 30: Rate of Rehospitalization within 30 Days after Hospital Discharge, by State, 2003 – 2004



Source: Jencks, S., et al. (2009). Rehospitalizations among Patients in the Medicare Fee-for-Service Program. *New England Journal of Medicine*, 360(14),1418-1428. Note: Rates include hospitalizations for all causes for beneficiaries enrolled in fee-for-service who were discharged between October 2003 and September 2004.

“ ”
from the field

“Perhaps the most compelling evidence suggesting inefficiency in the health sector is that per capita health care spending varies widely within the Medicare program, and yet that variation is not correlated with measures of the quality of care or health outcomes overall.”

Peter Orszag, then director of the Congressional Budget Office⁶⁴

Translating Research into Policy

Variation in health care spending suggests opportunities for reduced utilization and cost savings or the realignment of spending in ways that reward efficiency; an oft-cited figure claims that 30 percent of care is possibly unneeded and could be eliminated.⁶⁵ However, as this *TrendWatch* suggests, greater exploration of the factors

influencing variation is warranted before such estimates – or policies in response – can reasonably be made.

Crafting policies that hold the appropriate stakeholders accountable but avoid a one-size-fits-all strategy will be important to avoiding unintended consequences for patients and

communities while improving the long-term financial stability of the U.S. health care system. Payment policies could address variation via payment rates, but so could public health strategies to reduce obesity or the burden of chronic conditions by targeting the underlying drivers of variation.

POLICY QUESTIONS

- How can researchers and policymakers work together to identify the spending drivers that are amenable to change, and to set policies that aim to produce that change?
- What measures of variation should be given the most attention – cost or utilization, spending levels or growth, Medicare versus overall spending – when considering policies in response?
- At what levels should policymakers focus incentives to encourage appropriate levels of spending (e.g., geographic units, organizations, individuals)?
- How can research be translated into practice to ensure clinicians have the best information possible to guide clinical decision-making?
- What is the appropriate role for research on spending variation in promoting efficiency and cost containment? What other data or research are needed to ensure policymakers have sufficient context for variation data?

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