

# policy brief

## Geographic Variation and Health Care Cost Growth: Research to Inform a Complex Diagnosis

### Summary

The health care reform debate is underway, and while there is disagreement about the components and mechanisms of reform, there is general consensus among policymakers and the American public that reforms must address the rising costs of health care. As policymakers consider various cost containment measures, it is important to understand the drivers of health care costs and growth. To inform these efforts, AcademyHealth convened a meeting, sponsored by the Robert Wood Johnson Foundation's Changes in Health Care Financing and Organization (HCFO) initiative, of HCFO grantees and policymakers. Grantees presented preliminary findings from HCFO-sponsored projects that examined factors contributing to cost growth. Robert Berenson, M.D., Institute Fellow at the Urban Institute, moderated the discussion. This policy brief is based on discussion at the meeting and presents some preliminary findings from the HCFO grants.

The health care reform debate is underway, and while there is disagreement about the components and mechanisms of reform, there is general consensus among policymakers and the American public that reforms must address the rising costs of health care. From a national perspective, the rising cost of health care is consuming a greater portion of the nation's GDP, shifting resources away from other expenditures and undermining the country's economic future. From an individual perspective, health care costs are straining family budgets and limiting utilization of necessary care. In 2006, Medicare and non-Medicare beneficiaries spent 14.1 percent and 4.3 percent of their family budget on health care respectively.<sup>1</sup>

The recent economic downturn has spotlighted the urgent need for the development of measures to decrease future health care spending and growth, or "bend the cost curve." As the unemployment rate rises, individuals lose access to employer-sponsored health insurance, putting greater strain on public programs such as the Children's Health Insurance Program (CHIP) and Medicaid, or become uninsured. While employers are reluctant to discontinue health benefits during a recession, they may change the benefits or shift a greater portion of costs to employees.<sup>2</sup> A poll conducted by the Kaiser Family Foundation in September 2008 found that 30 percent of surveyed individuals reported difficulty paying for health care expenses, including both health insurance premiums and services, as a result of the economy.<sup>3</sup>

In his September 9, 2009 address to a joint session of Congress, President Obama stated, "When health care costs grow at the rate they

have, it puts greater pressure on programs like Medicare and Medicaid. If we do nothing to slow these skyrocketing costs, we will eventually be spending more on Medicare and Medicaid than every other government program combined. Put simply, our health care problem is our deficit problem. Nothing else even comes close. Nothing else."<sup>4</sup> In response, reform proposals have called for efforts to reduce fraud, waste, and abuse, reform health insurance administration, increase efficiency, and reform payment in order to decrease costs.

As policymakers consider various cost containment measures, it is important to understand the drivers of health care costs and growth. To inform these efforts, AcademyHealth convened a meeting, sponsored by the Robert Wood Johnson Foundation's Changes in Health Care Financing and Organization (HCFO) initiative, of HCFO grantees and policymakers. Grantees presented preliminary findings from HCFO-sponsored projects that examined factors contributing to cost growth. Robert Berenson, M.D., Institute Fellow at the Urban Institute, moderated the discussion. This policy brief is based on discussion at the meeting and presents some preliminary findings from the HCFO grants.

### Growth in Health Care Costs

In 2008, health care spending in the United States cost \$7,868 per person or 16.6 percent of GDP.<sup>5</sup> In 2009, this percentage is expected to increase to 17.6 percent.<sup>6</sup> Between 1975 and 2007, health care spending as a percentage of GDP doubled, with the average annual growth rate of health care spending exceeding that of GDP by 2.8 percentage points.<sup>7,8</sup> Between 2008 and 2018, analysts



Robert Wood Johnson Foundation

Changes in Health Care Financing and Organization is a national program of the Robert Wood Johnson Foundation administered by AcademyHealth.

## HCFO Grantees Present Findings on Health Care Costs

A number of grants in the HCFO portfolio examine the underlying factors of health care costs. On August 19, 2009, HCFO convened a group of HCFO grantees to present findings from these studies to a group of policymakers working on health reform. The following grantees presented findings from their HCFO-sponsored work:

- Michael Chernew, Ph.D., Professor, Harvard Medical School
- Anne B. Royalty, Ph.D., Associate Professor, Indiana University-Purdue University Indianapolis
- Richard Kronick, Ph.D., Professor, University of California, San Diego
- Jack Hadley, Ph.D., Professor, George Mason University
- Mythreyi Bhargavan, Ph.D., Director of Research, American College of Radiology
- Vincent Mor, Ph.D., Professor, Brown University School of Medicine

For a description of each study, see Appendix A. Due to the preliminary nature of these findings, and efforts to publish results, only published findings (or findings from publicly available abstracts and presentations) are included in this policy brief. If you would like to contact a grantee to discuss additional findings, please contact HCFO at [hcf0@academyhealth.org](mailto:hcf0@academyhealth.org).

predict that the health care growth rate will continue to exceed growth in GDP at 6.2 percent versus 4.1 percent per year respectively.<sup>9</sup> As the growth in health care spending outpaces that of inflation and income, health care services will consume a greater portion of resources and become increasingly less affordable for payers and individuals. In his 2008 testimony to the United States Senate Committee on the Budget, Peter Orszag, Ph.D., then director of Congressional Budget Office (CBO) stated, “No other single factor will exert as much influence over the federal government’s long-term fiscal balance as the future growth rate of costs in the health care sector.”<sup>10</sup> Without reform, and assuming that health care expenditures increase at the present growth rate, health care spending will constitute 25 percent of GDP in 2025 and 49 percent in 2082.<sup>11</sup>

## Understanding the Factors Contributing to Costs

Health care cost increases are a result of numerous factors, including rising prices and personal incomes.<sup>12, 13</sup> Researchers at the Dartmouth Atlas Group believe that supply-side factors, such as the number of specialists and hospitals, may induce greater use of high

cost services when lower cost services may be equally appropriate, resulting in significant geographic variation.<sup>14</sup> Others are more dubious and, of course, supply could be responding to demand. The supply of technology—driven by high rates of technological innovation and widespread diffusion—is often cited as the largest contributor to health care cost growth and induced demand for health care services.<sup>15</sup> Demand-side factors also contribute to costs. A third-party payer system encourages individuals to seek out and receive a greater number of medical services for which they are protected from the full cost of the care they receive.<sup>16</sup> Population factors, particularly increased prevalence of chronic diseases, also induce demand for medical services.<sup>17</sup> The following sections highlight findings from HCFO studies that examine the drivers of health care costs and the proposed policy levers to reign in costs.

## Health Care Costs by Sector

Health care spending in the public and private sectors are roughly equal at 46 and 42 percent respectively.<sup>18</sup> In 2007, spending on Medicare and Medicaid, the two largest public health insurance programs, was 4 percent of GDP.<sup>19</sup> While the magnitude

of spending in the public and private sector is similar, the factors driving costs may vary due to differences in the extent of government oversight and regulation, the populations covered, and administration and management of health plans.<sup>20</sup> Three grants funded by HCFO examine cost drivers in the Medicare, Medicaid, and private sectors.

## Spending Growth in Medicare May Not Result from Inefficiencies

The level of Medicare spending continues to rise each year. Moreover, the rate of growth and the level of costs vary dramatically across different regions of the United States. HCFO grantee, Michael Chernew, Ph.D., Harvard Medical School, and colleagues are comparing differences in spending and spending growth among hospital referral regions (HRRs) and identifying the market characteristics that contribute to spending and growth rates. They focus on the relationship between the prevalence of primary care physicians and spending growth. The findings are consistent with the existing literature, suggesting that areas with a higher proportion of primary care physicians have lower levels of health care costs; however, spending growth rates in these areas are not statistically different than the national average.<sup>21</sup> For example, consider Sioux City, Iowa. In 1995, Sioux City was in the top 2 percent of HRRs in terms of prevalence of primary care physicians. It had low per beneficiary Medicare spending (in the lowest 18 percent of HRRs). In contrast, Sioux City had spending growth well above average (in the 96<sup>th</sup> percentile of HRRs). The results are consistent with the view that areas with more primary care physicians are more efficient than other areas, but that spending growth is not driven by inefficiency. This finding is also consistent with the literature on managed care, which suggests that the impact of managed care on spending at a point in time differs from the impact of managed care on spending growth.

The results in no way diminish the results of previous literature. In particular, efficiencies may be an important source of savings for the system and push the point

where the system is no longer sustainable further into the future. However, even if the proportion of primary care physicians were to rise and spending were to fall, the research suggests the efficiencies likely represent one-time reductions in the level of spending and that subsequent spending growth will remain a concern. A 7 percent one-time savings would delay the time that spending reaches any given level by about two years. In short, although policies that lower spending levels but do not affect spending growth rates may generate substantial benefits to the health care system, they may not ultimately address the overarching problem of financing health care.

### Variations in State Medicaid Spending Result from Differences in the Quantity of Services

Like Medicare, Medicaid costs vary by state. To explain the drivers of cost variation across states, HCFO grantee, Richard Kronick, Ph.D., University of California, San Diego, and colleagues are examining the contributors to variation in Medicaid spending across states, examining Cash-Assistance, Medicaid-Only, Fee-for-Service, Beneficiaries with Disabilities (CAMODs), and comparing the variation in Medicaid to that of Medicare. The researchers are also examining whether more services results in better outcomes for Medicaid beneficiaries. Preliminary findings suggest that the variation in state Medicaid spending is greater than variation in state Medicare spending and that the variation in spending is largely a result of differences in the quantity of services provided rather than the unit price of services.<sup>22</sup> Moreover, variation in inpatient admissions in Medicare and Medicaid are strongly related at the HRR level, while at the state level, there is only a weak correlation. These findings suggest that state Medicaid policies and other state-level factors have strong effects on Medicaid utilization. The supply-side factors emphasized by the Dartmouth researchers clearly have important influences on utilization, but there are many other state-level factors that are important in differentiating those states with high levels of Medicaid utilization from states with lower levels.<sup>23</sup>

### Increases in the quantity of outpatient services are the main contributor to health spending in the private sector

In 2009, the cost of family health insurance premiums increased by 5 percent, while the cost of single coverage remained the same.<sup>24</sup> HCFO grantees M. Kate Bundorf, Ph.D., Stanford University, Anne Royalty, Ph.D., Indiana University-Purdue University Indianapolis, and Laurence Baker, Ph.D., Stanford University, are examining the factors contributing to cost growth in the private sector by decomposing spending as a function of prices and quantities in the outpatient and inpatient setting as well as for prescription drugs. The researchers studied 600,000 employees and their dependents at eight large self-insured firms. The researchers found that in real dollars, inpatient prices did not increase. Rather, the larger contributor to the level of health care spending was the increased quantity of outpatient services. Spending on prescription drugs represented the highest growth in spending; both the price of brand name drugs and the quantity of generic drugs increased.

While the researchers' results for outpatient services and prescription drugs are consistent with the current literature, the finding that inpatient prices did not increase differs from previous findings.<sup>25, 26, 27</sup> The researchers were not able to measure whether there were changes in the intensity of inpatient treatment; the decreased length of stay could have decreased the price of the admission. Moreover, they did not capture the extent of substitution of inpatient services for outpatient services. Their findings suggest that utilization review, cost-sharing changes for select services, and health plan bargaining may be effective in reducing the quantity and/or price of services.

### Drivers of Health Care Costs Across Sectors

#### Technology

Innovation, widespread diffusion, and increased utilization of expensive technology is the primary driver of health care costs and growth. A 2008 CBO report suggested that new technology or new uses of exist-

ing technology comprised approximately 50 percent of total growth in health care spending.<sup>28</sup> Technological innovation has drastically advanced medicine and improved the quality of care; new technologies often confer large benefits on the population. Yet, for some populations, new technologies may only provide marginal benefits. Unlike other industries, technological innovation in health care generally adds costs to the system rather than reduces costs.

Technological innovation is supported by the third-party payment system. Typically, patients only pay a small portion of the cost of technology, if any. Therefore, they are relatively insensitive to actual costs. Moreover, the current payment system induces physicians to prescribe new and costly drugs and procedures or to acquire new technology. Research suggests that an increase in supply of technology stimulates greater demand for and utilization of such technologies, and consequently costs. Bundorf and colleagues found that 35 percent of the increase in the quantity of outpatient services was attributed to the use of new technology.<sup>29</sup>

In recent years, utilization of imaging services has come under scrutiny. In Medicare, the volume of imaging services per Medicare beneficiary increased twice as fast as physician services.<sup>30</sup> At the same time, a greater number of physicians were providing imaging services in their offices, which can result in physician financial self-interest (FSI). In the past decade, physician FSI has increased, and while not necessarily bad, it can have implications on health care costs.<sup>31</sup> HCFO grantee Mythreyi Bhargavan, Ph.D., American College of Radiology, and colleagues are using 2004-2007 Medicare claims data to examine whether physician FSI has an impact on the small area variation of imaging utilization, costs, and non-imaging costs. Preliminary findings suggest that the proportion of physicians with FSI in an HRR are positively and significantly correlated with the number of images ordered and imaging costs.<sup>32</sup>

### Health Status

As the prevalence of chronic disease rises, the demand for health care services is expected to increase. Approximately 25 percent of the U.S. population is obese, which researchers estimated could cost payers an estimated \$147 billion dollars in 2008.<sup>33</sup> Moreover, 83 percent of the Medicare population has at least one chronic disease.<sup>34</sup> While the findings from the Dartmouth Atlas Group conclude that practice intensity drives variation in health spending, a HCFO study led by Jack Hadley, Ph.D., George Mason University, and colleagues is exploring this issue using an alternative methodology. The researchers are examining the factors contributing to geographic variations in Medicare spending and whether increased spending results in better outcomes at the individual level, using the individual Medicare beneficiary as the unit of analysis. While the research is not yet complete, preliminary findings suggest that geographic variation in Medicare spending is significantly influenced by differences in beneficiary health status.<sup>35</sup>

### Waste and Inefficiency

There are few opportunities in health care for policymakers to simultaneously improve quality and reduce costs. One such opportunity includes hospital readmissions. Recent research found that 20 percent of Medicare patients that are discharged from the hospital are readmitted within 30 days of discharge. Hospital readmissions cost the Medicare program an estimated \$17.4 billion in 2004.<sup>36</sup> While some readmissions are medically necessary, others are a result of a break down in the care continuum, such as a lack of coordination between settings, improper discharge instructions, or a failure to reconcile medications.

Many Medicare beneficiaries that are discharged from the acute care setting to a skilled nursing facility (SNF) also are readmitted to the hospital. HCFO grantee Vincent Mor, Ph.D., Brown University, is examining the interstate variation of rehospitalization rates of individuals in SNFs. Nationally, rehospitalization increased

from 18 to 24 percent between 2000 and 2006. In 2006, 30-day SNF rehospitalization rates varied by state from 15 percent to 26 percent. Rehospitalization of those living in nursing homes is consistently higher but reveals similar interstate variation. Preliminary findings suggest that state SNF readmission rates correlate with state readmission rates, and interstate variation is likely a function of SNFs' staffing capacity, culture, and states' bed-hold policies. States differ in how they pay SNFs for holding beds until a resident returns from the hospital; some states, for example, provide 100 percent reimbursement, while others limit the number of days or cap payments. Prior research by Mor found that readmissions from SNFs were more frequent in states with bed-hold policies.<sup>37</sup>

### Policy Levers

Implementing policy levers that appropriately reduce the level and growth rate of health care spending without jeopardizing the quality of patient care is important for the fiscal health of the United States and the physical health of its citizens. As suggested by the work of Michael Chernew, the policy levers that reduce the level of health care costs may differ from those that reduce the growth rate of costs. For example, reducing geographic variation in costs would likely reduce overall costs, but may not address the drivers of cost growth, such as technology. For long-term change, policies that reduce the level of spending should be coupled with policies that decrease the rate of growth in health care spending.

The work of HCFO grantees suggests that numerous policy levers have the potential to contain the level and growth of health care spending. Examples of these policy levers include:

- *Health plan bargaining power*—Policies that provide payers with increased bargaining power for technologies and services, including prescription drugs, may lower prices.
- *Price adjustments*—Ensuring that physician services and technology are priced so that they accurately reflect the cost of production may remove perverse incentives that increase overall health care costs and improve the efficient production and uptake of technology.
- *Utilization review*—Beneficiaries receive approval for select procedures prior to receiving the procedure.
- *Value-based insurance design (VBID)*—Beneficiaries pay lower or no cost-sharing for high value services to encourage movement from low value services to high value services.

### Next Steps

While we have learned much about the drivers of health care costs and cost growth, more research is necessary to inform efforts to reduce future cost growth. In some cases, the work by HCFO grantees supports the current theories on the drivers of health care costs; in other cases, the findings differ from the existing literature, raising more questions. Therefore, research is necessary to reconcile differences between findings.

While work continues on refining our understanding of health care cost drivers, policymakers need to rely on the current evidence base to inform current reform efforts. Given the immediacy of health reform and the desire to reduce the level and growth of health care spending, current research offers evidence for developing policies to improve quality, reduce spending, and increase efficiency. As policymakers move forward in implementing reform, the work of HCFO grantees and other researchers can help anticipate and inform the impact of these policies.

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**Appendix A. Description of HCFO Grants** (also see [www.hcfo.net](http://www.hcfo.net))

Principal Investigator	Institution	Grant Title	Period	Grant Description
Michael Chernew, Ph.D.	Harvard Medical School	Variation in Health Care Cost Growth	March 2008 – August 2009	The researchers will investigate the factors related to variation in cost growth in the Medicare and commercial sectors. Specifically, the researchers will determine: (1) whether the factors related to the rate of growth in the Medicare program are the same factors that are related to the level of cost; (2) whether the factors associated with cost growth in commercial markets are the same as those related to Medicare cost growth; and (3) the extent to which cost growth varies between employers and health plans and what factors are related to that variation in cost growth. While most research and policy initiatives are aimed at managing the level of costs as opposed to cost growth, the researchers suggest that additional attention must be devoted to understanding and developing initiatives relating to the trajectory of cost growth, since the factors related to high levels of costs may not be the same as factors related to cost growth. The objective of this study is to provide knowledge that will support development of cost containment approaches that address cost growth.
Laurence C. Baker, Ph.D., and Anne B. Royalty, Ph.D.  (formerly Kate Bundorf, Ph.D.)	Stanford University	Sources of Health Care Cost Growth	March 2008 – May 2010	The researchers will study the sources of cost growth among the privately insured by analyzing the contributions to higher spending of changes in prices and changes in the number and types of services performed. They will also examine how changes in prices and changes in the number and types of services have differentially affected different categories of spending and different demographic groups. These findings for the privately insured will also be compared to trends in cost growth in public programs. The researchers will explore which policies or benefit designs will be more effective in reducing spending, as well as whether costs are driven more by increased utilization of certain types of services or by increases in the prices of particular services. In addition, the researchers suggest that the findings will be useful in developing policies to expand coverage by identifying the sources of cost increases that may affect coverage rates. The objective of this study is to provide information for policymakers to design interventions to reduce health spending in ways that benefit consumers.
Richard G. Kronick, Ph.D.	University of California, San Diego	Small-Area Variation in Medicaid Utilization and Expenditures: Implications for Cost Containment and Quality of Care	March 2008 – December 2009	The researchers will investigate the variation in Medicaid services and payments and explore the implications of these variations for cost containment options. They will compare the services received and cost of care for Medicaid beneficiaries across state Medicaid programs and across hospital referral regions (HRRs) within states. Specifically, the researchers will determine: (1) how much variation there is across states, across HRRs within states, and in Medicaid expenditures per beneficiary; (2) the extent to which variation in expenditures per beneficiary is due to variation in the rate of use of services, and the extent to which it is a result of variation in the rate of payment per unit of service; and (3) whether variation in the use of services and in expenditures per beneficiary is related to variations in the quality of care or the outcomes of care for Medicaid beneficiaries. The objective of this study is to provide policymakers with an understanding of the impact of policy choices regarding benefit limits and payment rates on costs and utilization, and their implication for quality of care.

Appendix A. Description of HCFO Grants *Continued*

Principal Investigator	Institution	Grant Title	Period	Grant Description
Jack Hadley, Ph.D.	George Mason University	Medical Spending and Health of the Elderly	October 2007 – September 2009	The researchers will assess the marginal contribution of increased medical spending on health status. Specifically, they will explore whether: (1) Elderly people who spend more on medical care have better health outcomes than people who spend less; (2) The marginal effect of medical care spending on health varies across subpopulations of the elderly, stratified by demographic characteristics; and (3) whether medical spending has an effect on health at the margin. The project will build upon prior research, which examined whether Medicare beneficiaries who live in geographic areas with higher average spending have better health outcomes, but did not address the impact on individuals. The objective of this project is to help guide policymakers' decisions about policy options to reduce health care spending.
Mythreyi Bhargavan, Ph.D.	American College of Radiology	Is Small-Area Variation in Health Care Utilization Explained by Physician Financial Self-Interest?	May 2008 – October 2009	The researchers will explore the extent to which small-area variation (SAV) in health care utilization and expenditure is accounted for by SAV in the extent to which physicians have financial self-interest (FSI) in care services, particularly imaging procedures. They will investigate the relationship not only for imaging as a whole but also: 1) for individual imaging modalities—CT, MRI, interventional radiology, ultrasound, nuclear medicine, and radiography; 2) by examining total health costs; 3) by exploring the relation of FSI in coronary revascularization to the volume of cardiac-related procedures; and 4) by determining whether having FSI in both imaging and revascularization has a greater effect than each alone. The objective of the study is to determine whether FSI is one of the causes of utilization variation and whether FSI might be addressed to reduce health care costs without sacrificing quality or access.
Vincent Mor, Ph.D.	Brown University	Impact of State Medicaid Policy Changes on Nursing Home Hospitalization	June 2008 – May 2010	The researchers will examine the effect of changes in state nursing home bed-hold payment policies. Bed-hold policies are designed to prevent facilities from discharging low paying (i.e., Medicaid), costly, or complicated patients and to encourage continuity of residence by continuing to reimburse nursing homes if a resident is transferred to a hospital. The researchers will study the impact of these policies on the rate of hospitalization of nursing home residents, as well as on whether residents return to their originating nursing home following hospital discharge. In particular, they will: 1) describe variation in the rates of hospitalization between 1999 and 2005; 2) describe changes in the pattern of post-hospitalization discharge locations; 3) test the effect of changes in state Medicaid bed-hold payment policies between 1999 and 2005 on the rate of all hospitalizations of long stay nursing home residents; 4) test whether state bed-hold policies differentially affect the occurrence of “potentially avoidable” and “terminal” hospitalizations among nursing home residents; 5) test the effect of changes in state Medicaid bed-hold payment policies between 1999 and 2005 on the discharge location; 6) quantify the financial implications of changes in state bed-hold policies; and 7) examine changes in residents' functional status associated with hospitalization in the periods before and after changes in bed-hold policies. The objective of this study is to inform the debate about how best to address increasing hospitalizations of nursing home residents.

## Endnotes

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