

University of Richmond

## UR Scholarship Repository

---

Honors Theses

Student Research

---

Spring 2013

### The future of geography in health policy : the applicability of the Dartmouth Atlas to health reform in the United States

Catherine Chase Eager  
*University of Richmond*

Follow this and additional works at: <https://scholarship.richmond.edu/honors-theses>



Part of the [Political Science Commons](#)

---

#### Recommended Citation

Eager, Catherine Chase, "The future of geography in health policy : the applicability of the Dartmouth Atlas to health reform in the United States" (2013). *Honors Theses*. 1.  
<https://scholarship.richmond.edu/honors-theses/1>

This Thesis is brought to you for free and open access by the Student Research at UR Scholarship Repository. It has been accepted for inclusion in Honors Theses by an authorized administrator of UR Scholarship Repository. For more information, please contact [scholarshiprepository@richmond.edu](mailto:scholarshiprepository@richmond.edu).

---

# The Future of Geography in Health Policy

---

The Applicability of  
the Dartmouth Atlas  
to Health Reform in  
the United States

---

Catherine Chase Eager

---

*Honors Thesis in Political Science*  
*University of Richmond*  
*May 2013*

*Advisor: Dr. Rick Mayes*



## Table of Contents

<b>Introduction.....</b>	<b>3</b>
<b>The Dartmouth Atlas Project .....</b>	<b>7</b>
Introduction.....	7
Dartmouth Atlas Research .....	8
Effective Care.....	11
Preference-Sensitive Care .....	13
Supply-Sensitive Care .....	15
End-of-Life Care .....	17
The Dartmouth Atlas Findings .....	18
<b>The Dartmouth Atlas Project and Health Reform .....</b>	<b>21</b>
The History of Spatial Variation as a Policy Focus.....	21
The Dartmouth Atlas and the Recent Health Reform Debate.....	22
Policy Proposals Developed from the Dartmouth Atlas .....	24
The Dartmouth Atlas Project and the Affordable Care Act.....	25
The Continuing Debate .....	28
<b>Criticism of the Dartmouth Atlas Project.....</b>	<b>29</b>
Introduction.....	29
Opposing Views on the Causes of Variation .....	30
The Problem of Local Variation .....	32
Potential Effect of Quality and Outcomes .....	37
Conflict over How to Approach the “Problem” .....	39
Reservations: Conclusion.....	42
<b>Moving Forward: Addressing Concerns.....</b>	<b>43</b>
Quality of Care.....	43
Local Variation .....	48
Policies Must Have Focus on the Triple Aim.....	48
Institute of Medicine Recommendations.....	51
<b>Conclusion.....</b>	<b>58</b>
Going Forward .....	58

## **Introduction**

Regardless of political ideology, most policy makers agree that the United States health care system is severely flawed and significant reform is crucial.<sup>1</sup> However, consensus ends there. Numerous reform efforts have been made over the past few decades, but the only major successful reform has been through the passage of the Patient Protection and Affordable Care Act in March 2010.<sup>2</sup> With each reform effort there are many conflicting proposals considered and much controversy arises. The Affordable Care Act, as the law is more commonly called, is a controversial law and does not have unanimous support.<sup>3</sup> However, to many, this landmark legislation is the first step towards the reformation of a critically flawed system.<sup>4</sup>

In 2011, national health expenditures totaled \$2.7 trillion in the United States.<sup>5</sup> Per capita health spending was \$8,680. Health spending per capita in the United States far exceeds that of every other developed country.<sup>6</sup> For example, while in 2009 the United States spent \$7,960 per capita on health care, Japan spent \$2,878 per capita, the United Kingdom spent \$3,487 per capita, Canada spent \$4,363 per capita, and Germany spent \$4,218 per capita.<sup>7</sup> Some Americans hold the misconception that we rightfully spend more on health care because our system is the premier system in the world.<sup>8</sup> However, this is unfortunately far from the truth.<sup>9</sup> Although their

---

<sup>1</sup> Bipartisan Policy Center. *Improving Quality and Value in the U.S. Health Care System*. Report. August 2009. <http://bipartisanpolicy.org/sites/default/files/BPC8-09-PCHC%20Qual%20rpt-8-20-09.pdf>.

<sup>2</sup> "Global Health." Timeline: History of Health Reform Efforts in the U.S. – Kaiser Health Reform. Accessed April 28, 2013. <http://healthreform.kff.org/flash/health-reform-new.html>.

<sup>3</sup> Gross, Wendy, Tobias Stark, Jon Krosnick, Josh Pasek, Gaurav Sood, Trevor Tompson, Jennifer Agiesta, and Dennis Junias. "Americans' Attitude Toward The Affordable Care Act." 2012. <http://www.stanford.edu/dept/communication/faculty/krosnick/docs/2012/Health%20Care%202012%20-%20Knoweldge%20and%20Favorability.pdf>.

<sup>4</sup> "The Affordable Care Act: An Important First Step." The Affordable Care Act. Accessed April 28, 2013. <http://www.ama-assn.org/ama/pub/advocacy/topics/affordable-care-act.page>.

<sup>5</sup> Hartman, Micah. "National Health Spending In 2011: Overall Growth Remains Low, But Some Payers And Services Show Signs Of Acceleration." *Health Affairs* 32, no. 1 (January 2013): 87-99.

<sup>6</sup> Ibid.

<sup>7</sup> The Commonwealth Fund. *Explaining High Health Care Spending in the United States: An International Comparison of Supply, Utilization, Prices, and Quality*. Report. 2012.

<sup>8</sup> Young, Jeffrey. "American Health Worse Than Other Nations: Report." *The Huffington Post*, January 09, 2013. Accessed April 28, 2013.

ranking methodology has been subject to criticism, the World Health Organization ranks the United States health care system 37<sup>th</sup> in the world, out of 190 nations.<sup>10</sup> In addition, health care spending in the United States grows significantly each year, and controlling spending is and will continue to be a goal in every reform effort.

One of the main contributors to the massive health expenditures of the United States is the Medicare system. Medicare, created in 1965, is a national health insurance program for the elderly and the disabled.<sup>11</sup> Medicare includes four parts: A, B, C and D.<sup>12</sup> Part A covers traditional hospital care, while Part B covers outpatient services.<sup>13</sup> Part C, known as Medicare Advantage, offers the option to opt out of traditional Medicare and enroll in a private plan.<sup>14</sup> Lastly, Part D covers prescription drugs.<sup>15</sup> Medicare is the largest health insurance program in the United States and covers over 39 million people over the age of 65 and an additional eight million disabled individuals.<sup>16</sup> The program cost the United States approximately \$500 billion in 2010.<sup>17</sup> Further, Medicare's costs continue to grow, taking up a greater portion of the deficit.<sup>18</sup> Medicare reform efforts have been made in recent years, but no significant successful reform or overhaul has been made. The most significant reform included small scale changes through the Affordable Care Act. As a result, Medicare spending has slowed in recent years, but spending

---

<sup>9</sup> Ibid.

<sup>10</sup> World Health Organization. *The World Health Report 2010: Health Systems: Improving Performance*. Report. 2000.

<sup>11</sup> Kaiser Family Foundation. *Medicaid: A Primer*. Report. 2010. <http://www.kff.org/medicare/upload/7615-03.pdf>.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

<sup>16</sup> Institute of Medicine. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition*. Report Brief. June 2011. Accessed August 2012.

<sup>17</sup> Kaiser Family Foundation. *Medicaid: A Primer*. Report. 2010. <http://www.kff.org/medicare/upload/7615-03.pdf>.

<sup>18</sup> Ibid.

still remains very high.<sup>19</sup> Therefore, Medicare reform remains a key area of reform and will remain under the spotlight in the future.

There have been various ideas and proposals about how to address the problem Medicare poses for the future. One realm of ideas in particular that has gained significant attention in recent years involves research from the Dartmouth Atlas of Health Care. The Dartmouth Atlas aims to inform policy through asserting that higher spending is not correlated with better quality care or outcomes.<sup>20</sup> Therefore, reducing resources can achieve savings without forfeiting access to or quality of care.<sup>21</sup> The Dartmouth Atlas has produced numerous atlases and research articles, and it makes interactive data-driven maps available on its website. As the research has gained popularity in recent years, opposition to its research has also formed.

In this thesis, I aim to offer a significant understanding of the Dartmouth Atlas of Health Care, as well as to shed light on the numerous reservations that have developed in opposing the findings asserted in the Dartmouth Atlas. The reservations fall into one of four categories: whether variation can be explained by warranted factors, concern that there is significant local variation within regions, the idea that using the Dartmouth Atlas as policy guidance will forfeit quality of care, and how to address the existence of variation. This thesis will examine these four categories of concern. In assessing those reservations as well as the evaluative study of the Dartmouth Atlas by the Institute of Medicine, I will develop guidance for using the Dartmouth Atlas to influence policy for Medicare reform. Overall, there are limitations to the ways in which

---

<sup>19</sup> United States. Congressional Budget Office. *How Have CBO's Projections of Spending for Medicare and Medicaid Changed Since the August 2012 Baseline?* By Doug Elmendorf. February 2013. <http://www.cbo.gov/publication/43947>.

<sup>20</sup> The Dartmouth Institute. "FAQ - Dartmouth Atlas of Health Care." FAQ - Dartmouth Atlas of Health Care. Accessed April 28, 2013. <http://www.dartmouthatlas.org/tools/faq/>.

<sup>21</sup> Ibid.

the Dartmouth Atlas can be applied to policy, and I aim to shed light on and offer a greater understanding of its potential effect on the health care system.



## **The Dartmouth Atlas Project**

### **Introduction**

The Dartmouth Atlas of Health Care, which was founded by Dr. John Wennberg, is a research project affiliated with the Dartmouth Institute for Health Policy and Clinical Practice, and was first published in 1996.<sup>22</sup> The primary focus of the Dartmouth Atlas Project is researching variation in health care trends across the United States that contribute to the country's massive health care expenditures each year and identifying the existence and cause of unwarranted variation.<sup>23</sup> Wennberg began his research in Vermont, where he famously discovered large variations in health care services between Hospital Service Areas in Vermont.<sup>24</sup> This research was referred to as Small Area Variation and was first published in *Science Magazine* in 1973.<sup>25</sup> In this research, he found a discrepancy between tonsillectomy rates and discovered that the variation simply resulted from one physician's preference to perform tonsillectomies as a precautionary measure while the physician in the other town only performed them when he deemed important.<sup>26</sup> He found that such variation could exist due to a lack of scientific uncertainty of best practices for many conditions.<sup>27</sup> These findings inspired Wennberg to engage in further research, which culminated in the publication of his research in a book, *Tracking Medicine: A Researcher's Quest to Understand Health Care*, in 2010. Soon after his 1973 small area variation study was published, John Wennberg joined the Dartmouth team, and

---

<sup>22</sup> "History." The Dartmouth Institute: Where Knowledge Informs Change. Founded in 1988 by Dr. John E. Wennberg. Accessed March 2013. <http://tdi.dartmouth.edu/about/history>.

<sup>23</sup> The Dartmouth Institute. "FAQ - Dartmouth Atlas of Health Care." FAQ - Dartmouth Atlas of Health Care. Accessed April 28, 2013. <http://www.dartmouthatlas.org/tools/faq/>.

<sup>24</sup> Wennberg, J., and A. Gittelsohn. "Small Area Variations in Health Care Delivery: A Population-based Health Information System Can Guide Planning and Regulatory Decision-making." *Science* 182, no. 4117 (December 14, 1973): 1102-108. doi:10.1126/science.182.4117.1102.

<sup>25</sup> "History." The Dartmouth Institute: Where Knowledge Informs Change. Founded in 1988 by Dr. John E. Wennberg. Accessed March 2013. <http://tdi.dartmouth.edu/about/history>.

<sup>26</sup> Ibid.

<sup>27</sup> Ibid.

in 1988 the Center for Evaluative Clinical Sciences was formed at Dartmouth.<sup>28</sup> One focus of the Center was further researching the spatial variation, which John Wennberg oversaw as director of the center. As Wennberg's small area variation research became widely recognized and referenced, he was encouraged to publish it officially, and in 1996, the Center published the first Dartmouth Atlas of Health Care.<sup>29</sup> In 2007 Wennberg stepped down as director and was succeeded by James Weinstein.<sup>30</sup> That year, the Center was restructured and renamed to "The Dartmouth Institute for Health Policy and Clinical Practice", which it remains as today.<sup>31</sup> The Dartmouth Atlas remains dedicated to identifying unwarranted variation in health care spending in the United States and aims to provide research that can prove influential in health care reform.

### **Dartmouth Atlas Research**

In its early years, the Dartmouth Institute for Health Policy and Clinical Practice released its research in the form of a printed atlas. Today, the Dartmouth Atlas Project has taken significant strides to keep up with the ever-advancing era of technology, and it now makes its findings available to the public on the internet, both in the form of interactive maps and research studies. The Dartmouth Atlas Project aims to produce significant research that can inform policy makers and health care practitioners in how to better direct the health care industry in the future.<sup>32</sup> The Dartmouth Atlas "documents variation in the care of chronic illness in the last two years of life; Medicare reimbursements, post-acute care, hospital use, medical discharges, surgical procedures, high-quality and effective care, and end-of-life care".<sup>33</sup> Through its research, the Dartmouth Atlas Project has identified three categories of unwarranted geographic

---

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid.

<sup>31</sup> Ibid.

<sup>32</sup> The Dartmouth Institute. "FAQ - Dartmouth Atlas of Health Care." FAQ - Dartmouth Atlas of Health Care. Accessed April 28, 2013. <http://www.dartmouthatlas.org/tools/faq/>.

<sup>33</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

variation in health care practices in the United States: effective care, preference-sensitive care, and supply-sensitive care.<sup>34</sup> It has also expanded its research base to examine areas such as the physician workforce, end-of-life care, and accountable care in order to further study the connection to unwarranted variation in health care.<sup>35</sup> Its research aims to prove that there is significant overutilization and overspending in health care across the country that can be curbed by looking to low-spending areas and emulating that at which they excel.<sup>36</sup>

The Dartmouth Atlas Project primarily uses data from Medicare Parts A and B because it is the largest available uniform data set in health care, and there are no similar and streamlined sets of data in the private sector due to differences in record-keeping and data collection.<sup>37,38</sup> In its research, it utilizes the small area analysis methodology because it aims to focus on the populations of small geographic areas in which people in a defined area use the same hospital.<sup>39</sup> In doing so, it can better detect geographic trends by defining the regions in which people use health care in similar frequencies and quantities. The Dartmouth Atlas Project examines data at three levels: hospital referral regions (HRRs), hospital service areas (HSAs), and primary care service areas (PCSAs).<sup>40</sup> There are 306 HRRs, which are defined geographic areas that encompass a health care market for specialized care at a major referral center.<sup>41</sup> HRRs are

---

<sup>34</sup> The Dartmouth Institute. "FAQ - Dartmouth Atlas of Health Care." FAQ - Dartmouth Atlas of Health Care. Accessed February 24, 2013. <http://www.dartmouthatlas.org/tools/faq/>.

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

<sup>37</sup> McGlynn, Elizabeth A., Steven M. Asch, John Adams, Joan Keesey, Jennifer Hicks, Alison DeCristofaro, and Eve A. Kerr. "The Quality of Health Care Delivered to Adults in the United States." *New England Journal of Medicine* 348, no. 26 (June 26, 2003): 2635-645. doi:10.1056/NEJMsa022615.

<sup>38</sup> Philipson, Thomas, Seth A. Seabury, Lee M. Lockwood, Dana P. Goldman, and Darius N. Lakdawalla. "Geographic Variation in Health Care: The Role of Private Markets." *Brookings Papers on Economic Activity* 2010, no. 1 (Spring 2010): 325-55. doi:10.1353/eca.2010.0006.

<sup>39</sup> The Dartmouth Institute. "FAQ - Dartmouth Atlas of Health Care." FAQ - Dartmouth Atlas of Health Care. Accessed February 24, 2013. <http://www.dartmouthatlas.org/tools/faq/>.

<sup>40</sup> The Dartmouth Institute. "Data By Region - Dartmouth Atlas of Health Care." Data By Region - Dartmouth Atlas of Health Care. Accessed February 24, 2013. <http://www.dartmouthatlas.org/data/region/>.

<sup>41</sup> Dartmouth Medical School Center for the Evaluative Clinical Sciences. *The Dartmouth Atlas of Health Care*. Chicago: American Hospital Publishing, 1996.

delimited based on the population that uses a specific major referral center.<sup>42</sup> There are 3,436 HSAs, which are geographic boundaries of hospital health care markets on the local level.<sup>43</sup> Essentially, HSAs are groups of zip codes that use the same hospital for general hospital care.<sup>44</sup> Finally, there are 6,542 PCSAs, which are formed from zip codes in which most patients see one of a few primary care providers.<sup>45</sup> The Dartmouth Atlas primarily uses Hospital Referral Regions in its analysis.

Despite the fact that Medicare has the only truly reliable, uniform, and widespread data that allows for analysis, Medicare is one of the most important programs in which to consider variation. Medicare spending continues to consume a large component of federal spending, and endangers the future of America's deficit if it continues growing at its current rate.<sup>46</sup> In 2010, 15.1 percent of the federal budget was comprised of Medicare spending, and it is projected to account for 17.4 percent by the year 2020.<sup>47</sup> Medicare covers some of the most costly patients in the United States: the elderly and the disabled.<sup>48</sup> Therefore, Medicare beneficiaries generally take more prescriptions, require more procedures, and are hospitalized more often. Thus, the Dartmouth Atlas finds it important to research variation among Medicare beneficiaries in order to identify any areas of unwarranted variation in which unnecessary care is being given and spending can be reduced.<sup>49</sup>

---

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> Ibid.

<sup>45</sup> The Dartmouth Institute. "Primary Care Service Area (PCSA) - Dartmouth Atlas of Health Care." Primary Care Service Area (PCSA) - Dartmouth Atlas of Health Care. Accessed April 29, 2013.

<http://www.dartmouthatlas.org/data/topic/topic.aspx?cat=13>.

<sup>46</sup> Goldberg, Lee, and Sabiha Zainulbhai. *Health Care Spending Trends: Medicare and Private Health Insurance*. Issue brief no. 4. October 2012.

[http://www.nasi.org/sites/default/files/research/Healthcare\\_Spending\\_Trends.pdf](http://www.nasi.org/sites/default/files/research/Healthcare_Spending_Trends.pdf).

<sup>47</sup> Ibid.

<sup>48</sup> Kaiser Family Foundation. *Medicaid: A Primer*. Report. 2010. <http://www.kff.org/medicare/upload/7615-03.pdf>.

<sup>49</sup> The Dartmouth Institute. "Medicare Spending - Dartmouth Atlas of Health Care." Medicare Spending - Dartmouth Atlas of Health Care. Accessed April 29, 2013.

<http://www.dartmouthatlas.org/keyissues/issue.aspx?con=1339>.

## **Effective Care**

Effective care signifies services that are scientifically backed to be of the highest value for the treatment of a condition.<sup>50</sup> In these instances, scientific and clinical research has proven that these services are the best option for the treatment of a specific condition.<sup>51</sup> The benefits patients receive from effective care services outweigh any risks to such an extent that those services should undoubtedly be given to patients with applicable conditions over any other treatment.<sup>52</sup> Although effective care is backed by strong scientific evidence and thus the best treatment for such conditions is widely available, effective care is still underused across the country.<sup>53</sup>

Prominent examples of effective care include beta blockers for heart attack patients and eye exams for diabetes patients.<sup>54</sup> Scientific research has proven that beta-blockers are the best treatment to prevent future heart attacks in heart attack patients.<sup>55</sup> Therefore, beta blockers are categorized as effective care and heart attack patients should always be prescribed with beta blockers over any other service.<sup>56</sup> Although these treatments have been proven to be effective care, such that there is no better alternative, the use of beta blockers for heart attack patients are widely underutilized.<sup>57</sup> Another example of effective care involves eye examinations for diabetes patients. Receiving eye examinations every other year is an effective care service for diabetes patients.<sup>58</sup> However, there is wide underutilization of this service, and the variation across

---

<sup>50</sup> The Dartmouth Institute. "Effective Care - Dartmouth Atlas of Health Care." Effective Care - Dartmouth Atlas of Health Care. Accessed February 24, 2013. <http://www.dartmouthatlas.org/keyissues/issue.aspx?con=2939>.

<sup>51</sup> Ibid.

<sup>52</sup> The Dartmouth Institute. "Effective Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>53</sup> Ibid.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.

<sup>56</sup> The Dartmouth Institute. "Effective Care - Dartmouth Atlas of Health Care." Effective Care - Dartmouth Atlas of Health Care. Accessed February 24, 2013. <http://www.dartmouthatlas.org/keyissues/issue.aspx?con=2939>.

<sup>57</sup> Ibid.

<sup>58</sup> Ibid.

Hospital Referral Regions is great.<sup>59</sup> The Dartmouth Atlas Project found that less than half of Medicare beneficiaries with diabetes received eye examinations in many Hospital Referral Regions.<sup>60</sup> This underuse and resulting variation of effective care in the United States is one area that the Dartmouth researchers have identified to be a potential avenue towards savings in our health care system.

The findings of effective care underuse and variation in the United States are not exclusively Dartmouth Atlas findings. In a study performed by researchers for the RAND Corporation, they came across similar findings, which were published in the *New England Journal of Medicine*<sup>61</sup>. They too found stark variations in the use of effective care across regions. As referenced by the Dartmouth Atlas Project, this study found many examples of how health outcomes and status could improve if effective care were more widely used.<sup>62</sup> For example, they found that hypertension patients were treated with less than 65% of effective care services.<sup>63</sup> If hypertension was better treated with effective care, incidences of heart disease, stroke, and death could be largely decreased, as hypertension is associated with over 68,000 preventable deaths each year.<sup>64</sup> Thus, the increased utilization of effective care could drastically increase outcomes and decrease spending across the United States.

The Dartmouth Atlas Project performs research to understand the explanation behind the underuse of effective care. They have found wide variation in the use of effective care across

---

<sup>59</sup> Ibid.

<sup>60</sup> The Dartmouth Institute. "Effective Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>61</sup> McGlynn, Elizabeth A., Steven M. Asch, John Adams, Joan Keesey, Jennifer Hicks, Alison DeCristofaro, and Eve A. Kerr. "The Quality of Health Care Delivered to Adults in the United States." *New England Journal of Medicine* 348, no. 26 (June 26, 2003): 2635-645. doi:10.1056/NEJMsa022615.

<sup>62</sup> The Dartmouth Institute. "Effective Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>63</sup> The Dartmouth Institute. "Effective Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>64</sup> Ibid.

regions, and through research they have discovered that “spending is inversely correlated with the likelihood of receiving recommended care.”<sup>65</sup> Thus, regions that spend more on health care are less likely to give effective care services.<sup>66</sup> Therefore, there is a substantial amount of spending that is wasted on less effective services each year. This means that there is significant potential to decrease spending without diminishing the use of effective care, as many skeptics worry. The Dartmouth Atlas Project identifies the causes of variation in effective care to include lack of care coordination as well as a lack of systems that identify all patients that need such treatment.<sup>67</sup> Hence, investing in such improvements could lead to cost reduction across the country.

### **Preference-Sensitive Care**

The second category of unwarranted variation in health care researched by the Dartmouth Atlas is known as preference-sensitive care. Preference-sensitive care is care where there is no defined best treatment, and where each treatment choice can result in varied outcomes.<sup>68</sup> With preference-sensitive care, patients choose the treatment they believe to be best for them, while weighing risks and possible benefits.<sup>69</sup> Such decisions should reflect the preferences of the patients, but they often do not. A prominent example is the surgical options for patients with early stage breast cancer.<sup>70</sup> These options usually involve either a mastectomy or a lumpectomy.<sup>71</sup> There are significant consequences of each choice, but there is no medical proof

---

<sup>65</sup> Ibid.

<sup>66</sup> Ibid.

<sup>67</sup> Ibid.

<sup>68</sup> The Dartmouth Institute. "Preference-Sensitive Care - Dartmouth Atlas of Health Care." Preference-Sensitive Care - Dartmouth Atlas of Health Care. Accessed February 25, 2013.

<sup>69</sup> Ibid.

<sup>70</sup> The Dartmouth Institute. "Preference-Sensitive Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>71</sup> Ibid.

that either yields a significantly higher success rate than the other.<sup>72</sup> The Dartmouth Atlas found significant variation in the rates of these two procedures across regions, where some regions had virtually no incidences of lumpectomies, while in another region 50% of Medicare patients with early-stage breast cancer did.<sup>73</sup> They also found that the variation in these rates was not due to patient preferences, but instead because many women were not given the choice or were consulted to choose one procedure over another by their physician.<sup>74</sup> These Dartmouth Atlas findings lead to the conclusion that the medical opinions of physicians on a local level have a strong influence on the rates of treatments.<sup>75</sup>

The Dartmouth Atlas Project has identified two factors that cause variation in preference-sensitive care. One factor is that physicians often suggest surgery when there are other alternatives available, simply based on personal experience or belief, because other alternatives do not often have the strong clinical backing that surgery does.<sup>76</sup> These alternatives are often not inferior, but they may not be performed because a physician believes that the most invasive surgery is best, although there is no clinical proof that surgery is the best treatment.<sup>77</sup> The second factor responsible for variation of preference-sensitive care lies in the fact that in these situations the patient often shifts the treatment decision to the physician, as they assume the physician knows best.<sup>78</sup> Thus, geographic variation exists based on the preferences of the physicians making the decisions. The Dartmouth Atlas Project has identified the solution to this unwarranted variation to lie in a shift to shared-decision making and the patient being better

---

<sup>72</sup> Ibid.

<sup>73</sup> Ibid.

<sup>74</sup> Ibid.

<sup>75</sup> Ibid.

<sup>76</sup> The Dartmouth Institute. "Preference-Sensitive Care - Dartmouth Atlas of Health Care." Preference-Sensitive Care - Dartmouth Atlas of Health Care. Accessed February 25, 2013.  
<http://www.dartmouthatlas.org/keyissues/issue.aspx?con=2938>.

<sup>77</sup> Ibid.

<sup>78</sup> Ibid.



informed on his or her options.<sup>79</sup> Adopting such a solution could result in savings and better outcomes based on patient satisfaction, according to the Dartmouth Atlas findings.

### **Supply-Sensitive Care**

The third category of unwarranted variation, supply-sensitive care, is particularly relevant to the problems associated with the United States health care system. Supply-sensitive care refers to the phenomenon in health care in which supply drives demand.<sup>80</sup> Here, the incidence is determined by capacity rather than scientific evidence, and thus capacity determines the rate of utilization of resources.<sup>81</sup> With supply-sensitive care, there is often no scientific theory to support the rate of utilization. Supply-sensitive care includes “physician visits, diagnostic tests, hospitalizations and admissions to intensive care among patients with chronic illnesses.”<sup>82</sup> The overuse of supply-sensitive care is prominently evident in the care of chronically ill patients.<sup>83</sup> According to the Dartmouth Atlas Project, the most influential factors that determine the variation of this type of care are supply resources such as the number of hospital beds, ICU beds, physicians, specialists, and high-end medical equipment such as CT scanners.<sup>84</sup> Much of what the Dartmouth Atlas focuses on involves the relationship between supply resources and the utilization of supply-sensitive care, because so many Medicare patients suffer from one or more chronic conditions.<sup>85</sup>

---

<sup>79</sup> Ibid.

<sup>80</sup> The Dartmouth Institute. "Supply-Sensitive Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>81</sup> Ibid.

<sup>82</sup> Ibid.

<sup>83</sup> Ibid.

<sup>84</sup> Ibid.

<sup>85</sup> The Dartmouth Institute. "Conclusion - Dartmouth Atlas of Health Care." Conclusion - Dartmouth Atlas of Health Care. Accessed May 01, 2013. <http://www.dartmouthatlas.org/pages/conclusion>.

The Dartmouth Atlas Project has found that “variation in the use of supply-sensitive care ‘explains’ most of the variations in Medicare’s per capita spending among U.S. regions.”<sup>86</sup> They have found that higher-spending regions do not yield higher quality care, and thus they dismiss the idea that greater spending is not wasted because it is used to give better care.<sup>87</sup> Higher spending regions generally spend more by utilizing services at a greater rate, rather than performing services at a similar rate, but spending more to give better quality care.<sup>88</sup> The Dartmouth Atlas Project found that “compared to low-intensity regions, patients with hip fractures, colon cancer and heart attacks that were loyal to academic medical centers in high-intensity regions had higher mortality rates and worse ‘score cards’ on measures of quality.”<sup>89</sup> Thus, there is a lot of wasted money spent on care that does not yield better outcomes or better quality, which means that there is a great potential for savings.

There is a large variation in supply-sensitive care across the United States, and much of it is unwarranted.<sup>90</sup> The Dartmouth Atlas Project research has found that often, greater utilization of care does not yield greater health outcomes.<sup>91</sup> These findings have the potential to be pivotal in the current debate over Medicare, because “more than 50 percent of Medicare spending is used to buy visits to physicians, diagnostic tests and hospitalizations, mostly for patients for chronic illnesses.”<sup>92</sup> Therefore, if the Dartmouth Atlas findings hold up to scrutiny and are found to be applicable to health reform, especially Medicare reform, the United States could save billions of dollars each year.

---

<sup>86</sup> The Dartmouth Institute. "Supply-Sensitive Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>87</sup> Ibid.

<sup>88</sup> Ibid.

<sup>89</sup> Ibid.

<sup>90</sup> Ibid.

<sup>91</sup> Ibid.

<sup>92</sup> Ibid.

The Dartmouth Atlas suggests that the solutions to the unwarranted variation in supply-sensitive care include better coordinated care and a greater emphasis on home and hospice care, all while moving away from the fee-for-service payment system and towards a pay for performance payment model.<sup>93</sup> The current fee-for-service payment model incentivizes physicians to see more patients, test more, and do more procedures because that is how physicians are rewarded.<sup>94</sup> Thus a new payment system must place an emphasis on quality and outcome, so greater attention is paid to the treatment of a patient, rather than on how many patients a doctor can see. According to the Dartmouth researchers, reform that addresses supply-sensitive care must also focus on accountability, involve increased regulation, such as through the use of Certificate of Need laws, and greater information on cost-effective and best practice treatments must be made available to serve as guidance for health care professionals.<sup>95</sup> One pertinent issue that we must first address is whether their findings are influenced only by supply, and whether policy makers can take their findings and formulate a well-structured and successful policy based on the data and relationships they have covered on the local level.

### **End-of-Life Care**

The Dartmouth Atlas also focuses on the unwarranted variation that exists in end-of-life care in its analysis. Approximately ninety percent of beneficiary deaths are linked to nine chronic illnesses: congestive heart failure, chronic lung disease, cancer, coronary artery disease, renal failure, peripheral vascular disease, diabetes, chronic liver disease, and dementia.<sup>96</sup> Thirty-two percent of Medicare spending is associated with patients with chronic illnesses during their last

---

<sup>93</sup> Ibid.

<sup>94</sup> Ibid.

<sup>95</sup> Oxford Analytica. "Health Care Reforms Needed." *Forbes*, February 3, 2009.

<sup>96</sup> The Dartmouth Institute. "End-of-Life Care - Dartmouth Atlas of Health Care." End-of-Life Care - Dartmouth Atlas of Health Care. Accessed February 25, 2013. <http://www.dartmouthatlas.org/keyissues/issue.aspx?con=2944>.

two years of life.<sup>97</sup> Therefore, this care is extremely important to analyze as a potential area where costs can be cut. Addressing end-of-life care through policy is also a very controversial topic, and therefore a careful and detailed analysis is crucial. Often, patients today receive the most extreme measures to extend their life, but research shows that this is not always what they truly prefer.<sup>98</sup> In a study conducted by the Robert Wood Johnson Foundation, fifty-five percent of patients who preferred to die at home died in a hospital instead.<sup>99</sup> The Dartmouth Atlas looks at patterns of care among patients with chronic illnesses during the last two years of their life to identify areas that can be addressed in this debate.<sup>100</sup>

### **The Dartmouth Atlas Findings**

The main focus of the Dartmouth Atlas research has been on supply-sensitive care. Through their research, they have found that the amount of resources in health care is positively correlated with the amount of care given.<sup>101</sup> Regions with more hospital beds and equipment have greater numbers of hospital admissions and tests performed, and thus spend at a higher rate.<sup>102</sup> This idea alone does not seem far out, because one would assume that more care would mean that the patients in those regions are receiving better care. However, the Dartmouth Atlas asserts that more care does not necessarily result in better outcomes and better care. According to the Dartmouth Atlas, “the findings are remarkably consistent: higher spending does not result in better quality of care, whether one looks at the technical quality and reliability of hospital or ambulatory care.”<sup>103</sup> In their report, they compared supply, quality, and outcomes, shown in Table 1.

---

<sup>97</sup> Ibid.

<sup>98</sup> Ibid.

<sup>99</sup> Ibid.

<sup>100</sup> Ibid.

<sup>101</sup> Ibid.

<sup>102</sup> The Dartmouth Atlas. *Health Care Spending, Quality and Outcomes: More Isn't Always Better*. Report. 2009.

<sup>103</sup> Ibid.

	<b>Higher-Spending Regions Compared to Lower-Spending Ones</b>
<b>Health care resources</b>	<ul style="list-style-type: none"> <li>• Per capita supply of hospital beds 32% higher</li> <li>• Per capita supply of physicians 31% higher overall: 65% more medical specialists</li> </ul>
<b>Technical Quality</b>	<ul style="list-style-type: none"> <li>• Adherence to evidence-based care guidelines worse</li> </ul>
<b>Health Outcomes</b>	<ul style="list-style-type: none"> <li>• Mortality higher following acute myocardial infarction, hip fracture, and colorectal cancer diagnosis</li> </ul>
<b>Physician perceptions of Quality</b>	<ul style="list-style-type: none"> <li>• More likely to report poor communication among physicians and inadequate continuity with patients</li> <li>• Greater difficulty obtaining inpatient admissions or high-quality specialist referrals</li> </ul>
<b>Patient-reported quality of care</b>	<ul style="list-style-type: none"> <li>• Worse access to care and greater waiting times</li> <li>• No difference in patient-reported satisfaction with ambulatory care</li> <li>• Worse inpatient experience</li> </ul>

Table 1. Relationship Between Regional Differences in Spending and the Content, Quality, and Outcome of Care. The Dartmouth Institute for Health Policy and Clinical Practice.

A few examples of low-cost, high-quality hospitals and health systems can be referenced to exemplify the findings of the Dartmouth researchers. Among them are the Billings Clinic in Montana, Geisinger Clinic in Pennsylvania, the Marshfield Clinic in Wisconsin, Kaiser Permanente in California, the Mayo Clinic in Minnesota, Group Health Cooperative in Washington, and Intermountain Healthcare in Utah.<sup>104</sup> These hospitals or health systems all are able to control costs while still producing superior quality health care and health outcomes.<sup>105</sup> Table 2 shows Hospital Referral Regions where these hospitals, or where at least one hospital in a health system, are located. This table also includes the Hospital Referral Region of McAllen, Texas, which was the region referred to in Atul Gawande’s article *The Cost Conundrum*. The chart shows the drastic difference in Medicare reimbursements between these low cost regions and McAllen. It is also notable that McAllen has the highest number of medical discharges, and the ratio of medical specialists to medical discharges is extremely high, meaning that their specialists see more patients and they are admitted for medical purposes at a much higher rate than other Hospital Referral Regions. Readmission rates are important to look at as a measure of

<sup>104</sup> The Dartmouth Institute for Health Policy and Clinical Practice. *Improving Quality and Curbing Health Care Spending: Opportunities for Congress and the Obama Administration*. Report. 2008.

<sup>105</sup> Ibid.

quality of care, because often readmissions are an indicator of poor quality care or poor follow-up care after discharge.<sup>106</sup> In these cases, the patient must be readmitted because there have been complications in their post-discharge or post-op care, and often this stems from poor care in the initial inpatient care episode. As seen in table 2, McAllen has the highest percentage of readmissions for both medical and surgical discharges. However, the percent of surgical discharges readmitted within thirty days is drastically higher than the other Hospital Referral Regions. This is a particularly important indicator of quality, often more so than readmissions for medical discharges, because it is an indicator that the surgery was done poorly, which has resulted in the patient not healing or developing problems after discharge. Such findings evidence the idea that costs can be cut without forfeiting care, but it must be determined how this can be done appropriately. Health reform efforts in recent history have begun to address this, and it is imperative that policy makers understand the potential application of findings regarding supply-sensitive care before using the Dartmouth Atlas as a guiding doctrine for Medicare reform.

HRR	Acute Care Hospital Beds per 1,000 Residents	Medical Specialists per 100,000 Residents	Total Reimbursements per Enrollee (Parts A&B)	Medical Discharges per 1,000 Enrollees	Surgical Discharges per 1,000 Enrollees	% of Medical Discharges Readmitted Within 30	% of Surgical Discharges Readmitted Within 30
Billings, MT	2.6	39.1	\$6,539	221	103.6	15.5%	10.3%
Marshfield, WI	2.2	40.9	\$6,975	223.3	100.8	15.7%	10.9%
Danville, PA	2.1	14.0	\$7,122	235.1	88.6	14.2%	11.4%
Rochester, MN	2.7	71.2	\$7,206	218.7	93.4	14.5%	9.8%
Seattle, WA	1.6	52.2	\$7,320	159.4	77.1	15.1%	9.9%
Salt Lake City, UT	2.1	43.1	\$7,108	146.6	85.9	12.9%	9.9%
McAllen, TX	3.1	23.4	\$15,695	267.4	89.0	16.5%	13.1%

Table 2. Data by Region, 2010. The Dartmouth Institute for Health Policy and Clinical Practice.

<sup>106</sup> Benbassat, Jochanan, and Mark Taragin. "Hospital Readmissions as a Measure of Quality of Health Care." *The Journal of the American Medical Association: Internal Medicine* 160, no. 8 (April 2000). <http://archinte.jamanetwork.com/article.aspx?articleid=415392>.

## **The Dartmouth Atlas Project and Health Reform**

### **The History of Spatial Variation as a Policy Focus**

Spatial variation in health care spending has been a serious consideration of policy makers and researchers focusing on health reform since the 1980s.<sup>107</sup> The Dartmouth Atlas research has been the most highly regarded spatial variation research among other studies, and has played a role in both President Clinton and President Obama's health reform agendas.<sup>108</sup> After the publication of his small area analysis study, Wennberg testified in a hearing on Capitol Hill various times.<sup>109</sup> He and his research began to receive increasing attention from lawmakers, and in 1987, John Wennberg worked with Senator Durenberger, then chair of the Senate Finance Committee Subcommittee on Health, to create the Patient Outcome Research Teams that would further perform outcomes research addressing variation.<sup>110</sup> As the findings of the Dartmouth Institute became more acclaimed, politicians became more willing to use it as a basis for policy proposals. President Bill Clinton worked with researchers from the Dartmouth Institute in constructing his health reform agenda. H.R.3600 of the 103<sup>rd</sup> Congress.<sup>111</sup> Although it never passed into law, it contained a section, section 5008, that created regional professional foundations that focused on promoting collaboration among practitioners, creating a greater use of quality research and findings, and ensured a greater involvement of the patient in the decision making process.<sup>112</sup> The Dartmouth Atlas was first published in 1996, which contained all of Wennberg and The Dartmouth Institute's research, and this official publication of the findings in

---

<sup>107</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

<sup>108</sup> Ibid.

<sup>109</sup> Ibid.

<sup>110</sup> Ibid.

<sup>111</sup> Ibid.

<sup>112</sup> U.S. Congress. House. *Health Security Act*. By Richard Gephardt. 103rd Cong. H. H.R.3600.

one source brought even more attention to the topic.<sup>113</sup> Going forward, academics and practitioners alike continually referenced the Dartmouth Atlas for health policy, which eventually resulted in it gaining significant attention from the Obama administration.

### **The Dartmouth Atlas and the Recent Health Reform Debate**

Although the Dartmouth Atlas was well regarded for its research and proposals long before 2009, it came into the spotlight for the recent health reform after the release of Dr. Atul Gawande's *New Yorker* article, "The Cost Conundrum," in July 2009.<sup>114</sup> Gawande's article showcased two demographically similar towns in Texas, McAllen and El Paso, which varied drastically in their health care spending and utilization.<sup>115</sup> Both McAllen and El Paso have similar public health indicators, unemployment rates, and medical technology, but McAllen has the second highest health spending of any region in the United States.<sup>116</sup> McAllen also is outperformed by El Paso in terms of quality of care.<sup>117</sup> Gawande found that the real difference in the health spending between the two towns stemmed from the overutilization of care, which evolved from the "entrepreneurial" culture of the doctors.<sup>118</sup> He found that in different communities around the country, the behavior of the doctors influences the attitude of the entire medical community.<sup>119</sup> He also noted that the United States' fee-for-service payment system promotes a focus on profit and overutilization because it rewards for quantity, rather than quality.<sup>120</sup> In his research he reached out to the Dartmouth Atlas and found that states with higher

---

<sup>113</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

<sup>114</sup> Pear, Robert. "Health Care Spending Disparities Stir a Fight." *The New York Times*, June 09, 2009. Accessed October 2012.

<sup>115</sup> Gawande, Atul. "The Cost Conundrum." *The New Yorker*, June 2009. Accessed September 2012.

<sup>116</sup> Ibid.

<sup>117</sup> Ibid.

<sup>118</sup> Ibid.

<sup>119</sup> Ibid.

<sup>120</sup> Ibid.



Medicare spending generally had lower quality rankings.<sup>121</sup> One discrepancy that Gawande's findings uncover regarding the Dartmouth Atlas research is that he found that the culture of the doctors had a significant effect on the utilization rates, while the Dartmouth Atlas concludes that tangible factors of supply and the current policy framework influence the utilization rates.<sup>122</sup>

After Gawande's article was released, it immediately was picked up and followed by policy-makers, including the Obama administration. "The research has become phenomenally influential on Capitol Hill since it was popularized by Peter R. Orzag, as director of the Congressional Budget Office and then as President Obama's budget director."<sup>123</sup> The CBO report on geographic variation in health care in February 2008 highlighted the findings of the Dartmouth Atlas and is another major factor in the resulting attention the research has received.<sup>124</sup> The report notes that after accounting for prices, severity of illness, income and patient preference, a significant portion of geographic variation in health care spending remains unexplained.<sup>125</sup> Importantly, it found that it is possible to reduce spending in high-spending regions without compromising the quality of care.<sup>126</sup> Overall, they found that Medicare spending could be reduced by 29 percent if medium- and high-spending regions were targeted to reduce their spending to be that of low-spending regions.<sup>127</sup> This report noted the various factors that contribute to geographic variation, specifically noting residual variation, which is the variation that is not accounted for by variation in prices, health status, demographics, and personal

---

<sup>121</sup> Ibid.

<sup>122</sup> Ibid.

<sup>123</sup> Pear, Robert. "Health Care Spending Disparities Stir a Fight." *The New York Times*, June 09, 2009. Accessed October 2012.

<sup>124</sup> United States of America. Congressional Budget Office. *Geographic Variation in Health Care Spending*. February 2008. Accessed October 2012.

<sup>125</sup> Ibid.

<sup>126</sup> Ibid.

<sup>127</sup> Ibid.

preferences.<sup>128</sup> The CBO report referred to various studies conducted over the past few decades that have highlighted the following as the cause of this unwarranted variation: medical uncertainty, financial incentives, and the supply of medical resources.<sup>129</sup> The Dartmouth Atlas was referenced in the discussion of supply of medical resources, and the CBO affirmed a relationship between supply and health care spending.<sup>130</sup> However, it is important to note that the report did suggest some discrepancies in the findings. Overall, the report produced by Peter Orzag was seen to be extremely influential in the health policy debate and viewed as support for the Dartmouth Atlas Project's research and findings. Yet, the uncertainties that the report pointed to are important and must be considered in evaluating the research from a policy standpoint.

#### **Policy Proposals Developed from the Dartmouth Atlas**

President Obama found the findings so central to the health policy debate that he made it required reading for his staff and various Democratic senators.<sup>131</sup> The idea that greater spending does not yield better quality care became central in the health reform debate, and the Dartmouth Atlas Project research was also cited numerous times to support various proposals by lawmakers.<sup>132</sup> Some proposals suggested taking the spending from high-cost areas and using it to help the uninsured, based on findings that higher spending is unwarranted to an extent, while other proposals involved excluding low-spending Hospital Referral Regions from mandatory Medicare payment cuts.<sup>133</sup> In Summer 2009, the Senate Finance Committee proposed to cap Medicare payments in "areas where per-beneficiary spending is above a certain threshold,

---

<sup>128</sup> Ibid.

<sup>129</sup> Ibid.

<sup>130</sup> Ibid.

<sup>131</sup> Pear, Robert. "Health Care Spending Disparities Stir a Fight." *The New York Times*, June 09, 2009. Accessed October 2012.

<sup>132</sup> Ibid.

<sup>133</sup> Ibid.

compared with the national average.”<sup>134</sup> However, there were many wary politicians who did not want to use the Dartmouth Atlas research because they believed that it did not provide enough evidence on why the variation exists.<sup>135</sup> At the time of the health reform debate, Senator John Kerry was skeptical, saying, “There is too much uncertainty about the Dartmouth study to use it as a basis for public policy... Researchers can’t explain why some areas of the country spend more on health care than others.”<sup>136</sup> Politicians from high-spending states or areas were often defensive and unsupportive of the Dartmouth Atlas Project findings.<sup>137</sup> Even today, politicians and health care professionals and researchers question the validity and applicability of the Dartmouth Atlas Project findings.

### **The Dartmouth Atlas Project and the Affordable Care Act**

The final health reform proposal that passed into law through the Patient Protection and Affordable Care Act (PL 111-148) and the Health Care and Education Reconciliation Act (PL 111-152) (commonly referred to as the Affordable Care Act or the PPACA) included a few, but not the complete recommendations made by the Dartmouth Atlas researchers.<sup>138,139</sup> Because the Dartmouth Atlas has currently only done extensive research on Medicare data, most of the recommendations that were included were incorporated into the sections that involved reforming Medicare.<sup>140</sup> Even the provisions that were included were not included to the extent that the Dartmouth Atlas researchers believe is necessary to a successful reformation of America’s health

---

<sup>134</sup> Ibid.

<sup>135</sup> Ibid.

<sup>136</sup> Ibid.

<sup>137</sup> Ibid.

<sup>138</sup> *Patient Protection and Affordable Care Act*. Public Law 111-148.

<sup>139</sup> *Health Care and Education Reconciliation Act of 2011*. Public Law 111-152.

<sup>140</sup> Goodman, David, Elliott Fisher, Chiang-Hua Chang, and Robert Wood Johnson Foundation. *After Hospitalization: A Dartmouth Atlas Report on Readmissions Among Medicare Beneficiaries*. Report. February 2013. <http://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf404178>.

care system.<sup>141</sup> The Affordable Care Act created the Center for Medicare and Medicaid Innovation, commonly referred to as the Innovation Center, which focuses on developing and testing various models of health care delivery and payment that will yield high quality and cost-efficient care.<sup>142</sup> The Innovation Center establishes demos that hospitals and health care organizations can apply to participate in and then CMS evaluates the demos to determine whether any may be used on a larger-scale to achieve positive results.<sup>143</sup> An example of an Innovation Center demonstration is the Bundled Payments for Care Improvement Model.<sup>144</sup> This model focuses on bundling payments for episodes of care and increasing payment rewards based on outcome, rather than paying for the quantity of care, like our current payment model does.<sup>145</sup> Thus, there would be less pressure to over-utilize care, which would reduce unwarranted variation. However, this is only currently a demonstration model that the Innovation Center is testing, so it has not truly been applied on a scale that could lead to significant reductions in spending and overutilization across the country. The Dartmouth Atlas recommends that coordinated care is one step that must be taken in order to correct for the variation in supply-sensitive care.<sup>146</sup> One way that this can be accomplished, and was highlighted in Gawande's article, is through the formation of Accountable Care Organizations.<sup>147</sup> Accountable Care Organizations were incorporated into the Affordable Care Act, but only as voluntary programs

---

<sup>141</sup> Kaul, Anubhav, Peter Bhandari, and Thom Walsh. "What Does the Dartmouth Atlas Have to Say About the Politics of the ACA?" *The Health Care Blog* (web log), December 27, 2012. <http://thehealthcareblog.com/blog/2012/12/27/what-does-the-dartmouth-atlas-have-to-say-about-the-politics-of-the-aca/>.

<sup>142</sup> The Patient Protection and Affordable Care Act, Pub. L. No. 111th-111-148, § 3201 (U.S. Government Printing Office 2010).

<sup>143</sup> Ibid.

<sup>144</sup> "Bundled Payments for Care Improvement (BPCI) Initiative: General Information." Home. Accessed March 01, 2013. <http://innovation.cms.gov/initiatives/bundled-payments/>.

<sup>145</sup> Ibid.

<sup>146</sup> The Dartmouth Institute. "Supply-Sensitive Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>147</sup> Gawande, Atul. "The Cost Conundrum." *The New Yorker*, June 2009. Accessed September 2012.

through the Medicare Shared Savings Program, as one of the Innovation Center models.<sup>148</sup>

Accountable Care Organizations are health organizations that coordinate the care that patients receive among all the doctors and health care professionals that are involved throughout the treatment of a patient, from admission to discharge.<sup>149</sup> They do this through greater integration of information and better collaboration and communication among health care professionals.<sup>150</sup> An example of an Accountable Care Organization is the Mayo Clinic.<sup>151</sup> Accountable Care Organizations aim to limit unnecessary care by providing bonuses to doctors that give higher quality care and yield greater outcomes while reducing costs.<sup>152</sup> Although Accountable Care Organizations were included in the Affordable Care Act, the Dartmouth Atlas researchers believe there must be a much greater integration of Accountable Care Organizations in our health care system in order for it to be able to yield proper results.<sup>153</sup> The Affordable Care Act provided initial steps to including provisions the Dartmouth researchers believe to be necessary to reform, but they would argue that these provisions must be implemented on a wider scale in order for reform to have a substantial effect on reducing cost and improving quality of health care in the United States.

---

<sup>148</sup> *Patient Protection and Affordable Care Act*. Public Law 111-148, §3022.

<sup>149</sup> Fisher, E. S., and S. M. Shortell. "Accountable Care Organizations: Accountable for What, to Whom, and How." *JAMA: The Journal of the American Medical Association* 304, no. 15 (October 19, 2010): 1715-716. doi:10.1001/jama.2010.1513.

<sup>150</sup> *Ibid.*

<sup>151</sup> Gawande, Atul. "The Cost Conundrum." *The New Yorker*, June 2009. Accessed September 2012.

<sup>152</sup> Fisher, E. S., and S. M. Shortell. "Accountable Care Organizations: Accountable for What, to Whom, and How." *JAMA: The Journal of the American Medical Association* 304, no. 15 (October 19, 2010): 1715-716. doi:10.1001/jama.2010.1513.

<sup>153</sup> The Dartmouth Institute. "Accountable Care - Dartmouth Atlas of Health Care." *Accountable Care - Dartmouth Atlas of Health Care*. Accessed May 01, 2013. <http://www.dartmouthatlas.org/keyissues/issue.aspx?con=2943>.

## The Continuing Debate

The Dartmouth Atlas Project findings have received very mixed feelings from lawmakers, health care professionals, and various stakeholders.<sup>154</sup> Some, such as President Obama, are strong supporters of its findings and believe them to be vital to the reformation of our health care system.<sup>155</sup> Others, such as the Association of American Medical Colleges, believe the Dartmouth Atlas findings do not fully explain unwarranted variation or do not think that the findings of one academic research center is evidence enough to apply to public policy.<sup>156</sup> Furthermore, academic researchers have devoted time to researching the data and Dartmouth Atlas findings in order to uncover its significance and validity, and evaluate whether its findings are a viable guide to health reform.<sup>157</sup> Therefore, looking beyond the Dartmouth Atlas findings was necessary in order to evaluate the implications or effects of applying the findings to public policy and to discover which areas hold up to scrutiny and which do not.

---

<sup>154</sup> Pear, Robert. "Health Care Spending Disparities Stir a Fight." *The New York Times*, June 09, 2009. Accessed October 2012.

<sup>155</sup> Ibid.

<sup>156</sup> AAMC. *Geographic Differences in Health Care Spending*. Report. Accessed October 2012. <https://www.aamc.org/linkableblob/70266-5/data/geographicdifferences-data.pdf>.

<sup>157</sup> Zhang, Yuting, Ph.D., Seo Hyon Baik, Ph.D., A. Mark Fendrick, M.D., and Katherine Baicker, Ph.D. "Comparing Local and Regional Variation in Health Care Spending." *The New England Journal of Medicine* 367, no. 18 (November 1, 2012): 1724-31. Accessed January 23, 2013. doi:10.1056/NEJMsa1203980.

## Criticism of the Dartmouth Atlas Project

### Introduction

As the Dartmouth Atlas findings have become more prevalent and have begun playing a greater role in the policy arena, many have further assessed its validity and applicability to health policy reform.<sup>158</sup> Many politicians during the time of the recent health reform argued that the Dartmouth Atlas findings could not be followed as the sole guidance because the Dartmouth Institute is the only institution that has produced such significant results.<sup>159</sup> Therefore, it was necessary for other academic and policy institutions to take a vested interest and further evaluate the work of the Dartmouth Atlas Project. There are a few major areas of concern regarding the Dartmouth Atlas Project and its applicability to policy. First, there is question over the causes of spatial variation in health care spending, and many believe the variation can be explained by many other warranted factors.<sup>160</sup> Second, there is a major concern that there is local variation within the regions defined and used by the Dartmouth Atlas that could lead to ineffective policies or even produce results drastically different than expected.<sup>161</sup> Third, there is skepticism regarding the effects on quality and outcomes if policies were to be developed from the Dartmouth Atlas Project findings.<sup>162</sup> Finally, there is criticism about how the existing variation should be approached.

The *New York Times* took issue with the Dartmouth Atlas research during the summer of 2010, and released a front-page article attacking the research that had been central to the health

---

<sup>158</sup> Bach, Peter B. "A Map to Bad Policy — Hospital Efficiency Measures in the Dartmouth Atlas." *New England Journal of Medicine* 362, no. 7 (February 18, 2010): 569-74. doi:10.1056/NEJMp0909947.

<sup>159</sup> Pear, Robert. "Health Care Spending Disparities Stir a Fight." *The New York Times*, June 09, 2009. Accessed October 2012.

<sup>160</sup> AAMC. *Geographic Differences in Health Care Spending*. Report. Accessed October 2012. <https://www.aamc.org/linkableblob/70266-5/data/geographicdifferences-data.pdf>.

<sup>161</sup> Zhang, Yuting, Ph.D., Seo Hyon Baik, Ph.D., A. Mark Fendrick, M.D., and Katherine Baicker, Ph.D. "Comparing Local and Regional Variation in Health Care Spending." *The New England Journal of Medicine* 367, no. 18 (November 1, 2012): 1724-31. Accessed January 23, 2013. doi:10.1056/NEJMsa1203980.

<sup>162</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

reform efforts that took place earlier that year.<sup>163</sup> The article, written by Reed Abelson and Gardiner Harris, criticized the Dartmouth Atlas research and researchers for failing to include quality metrics in their analysis, for not properly adjusting for price, and for not having significant evidence to support their claim that cheaper care is better care.<sup>164</sup> Shortly after this article was produced, the Dartmouth Atlas responded to defend itself, to which the *New York Times* again responded, ending in a final response from the Dartmouth Atlas researchers.<sup>165</sup> The *New York Times* article touched on many of the main areas of criticism addressed by other concerned parties, opening up opportunity for skepticism to develop outside the world of academia and health policy.<sup>166</sup> These reservations deserve legitimate consideration and may prove to have a significant impact on the Dartmouth Atlas Project's role in the health policy debate.

### **Opposing Views on the Causes of Variation**

There are many who do not accept the Dartmouth Atlas Project's assertion that a great percentage of variation in health care spending is unwarranted.<sup>167</sup> Many believe that variation can be explained by merited factors, and thus applying the Dartmouth Atlas Project's findings to policy would be detrimental and harmful to patient care.<sup>168</sup> Many stakeholders, including hospital and physician groups, have such reservations with the findings of the Dartmouth Atlas. The Association of American Medical Colleges issued a brief addressing their concerns with the

---

<sup>163</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

<sup>164</sup> Ibid.

<sup>165</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds to "Critics Question Study Cited in Health Debate," by Reed Abelson and Gardiner Harris." News release, June 7, 2010. Dartmouthatlas.org. [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

<sup>166</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

<sup>167</sup> AAMC. *Geographic Differences in Health Care Spending*. Report. Accessed October 2012. <https://www.aamc.org/linkableblob/70266-5/data/geographicdifferences-data.pdf>.

<sup>168</sup> Ibid.



Dartmouth Atlas.<sup>169</sup> They too were concerned with the size of Hospital Referral Regions, and argued that there was much variation within states and within Hospital Referral Regions.<sup>170</sup> They believe that the variation identified by the Dartmouth Atlas can be explained by various factors, and therefore, no significant unwarranted variation exists.<sup>171</sup> They argue that the fact that physician payments and hospital reimbursements are already price-adjusted adds to the variation identified by the Dartmouth Atlas.<sup>172</sup> They also argue that the Dartmouth Atlas includes Indirect Medical Education (IME) payments and Disproportionate Share Hospital (DSH) payments in its analysis, which contributes to variation as well. Indirect Medical Education payments are payments that are given to teaching hospitals to help pay for the higher-cost of care given at such hospitals.<sup>173</sup> Disproportionate Share Hospital payments are payments made to hospitals that serve poorer and sicker communities.<sup>174</sup> The Association of American Medical Colleges believes that because these are included, some areas are inherently “punished” for receiving higher payments to offset the greater amount of care they give.<sup>175</sup> They also argue that areas with sicker patients spend more on the care of those patients, and therefore those areas naturally have higher levels of spending.<sup>176</sup> The concern is that policies will unfairly punish such regions for spending at higher rates when they are not spending wastefully.<sup>177</sup>

Dr. Sandra Tanenbaum also shared concern over the lack of concrete evidence that variation targeted through policies is truly unwarranted, as she argued that developing policies based on the Dartmouth Atlas could be detrimental to the health care system if these variations

---

<sup>169</sup> Ibid.

<sup>170</sup> Ibid.

<sup>171</sup> Ibid.

<sup>172</sup> Ibid.

<sup>173</sup> Ibid.

<sup>174</sup> Ibid.

<sup>175</sup> Ibid.

<sup>176</sup> Ibid.

<sup>177</sup> Ibid.

are not actually a problem.<sup>178</sup> Tanenbaum pointed out that further investigation must be done to ensure that the variation targeted is actually unwarranted, because higher spending where better outcomes are achieved should not be targeted.<sup>179</sup> To address this, more research including quality outcomes could be performed and published in order to establish the relationship between higher spending and worse outcomes in order to support the Dartmouth Atlas Project findings.

Abelson and Harris of the *New York Times* also questioned the Dartmouth Atlas Project's findings of unwarranted variation, and believed that flaws in Dartmouth's analysis led them to overlook legitimate causes of variation.<sup>180</sup> For example, they argue that the Dartmouth Atlas does not adjust for inflation, and therefore their analyses are seemingly flawed and therefore cannot be used to influence policy.<sup>181</sup> Failing to adjust for price could produce results that show much higher rates of potential savings. Therefore, it is argued by failing to adjust prices and adjust for inflation, the Dartmouth Atlas is largely over-stating the amount of unwarranted variation that exists in health care in the United States.<sup>182</sup>

### **The Problem of Local Variation**

The reservation about the existence of local variation within regions deserves significant attention and highlights a problem that geographers deal with on a regular basis. An issue commonly encountered in geographic research and cartography is that maps often generalize and therefore can lead viewers to form inaccurate conclusions.<sup>183</sup> The type of map that has the greatest potential to mislead is a choropleth map, which is a map that shades the areas within

---

<sup>178</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

<sup>179</sup> Ibid.

<sup>180</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

<sup>181</sup> Ibid.

<sup>182</sup> Ibid.

<sup>183</sup> Stoter, Jantien, Dirk Burghardt, Cécile Duchêne, Blanca Baella, Nico Bakker, Connie Blok, Maria Pla, Nicolas Regnauld, Guillaume Touya, and Stefan Schmid. "Methodology for Evaluating Automated Map Generalization in Commercial Software." *Computers, Environment and Urban Systems* 33, no. 5 (2009): 311-24. doi:10.1016/j.compenvurbsys.2009.06.002.

defined geographic boundaries to show different values of a variable across a geographic area.<sup>184</sup>

This is the type of map that the Dartmouth Atlas Project uses to show its data and it uses Hospital Referral Regions as the primary defined geographic areas in which the measure is displayed. For example, the Dartmouth Atlas displays the percentage of patients readmitted within 30 days of discharge from all surgical discharges by Hospital Referral Region across the United States.<sup>185</sup> The resulting map shows variation by shading according to defined classes of percentiles, as shown in Figure 1.

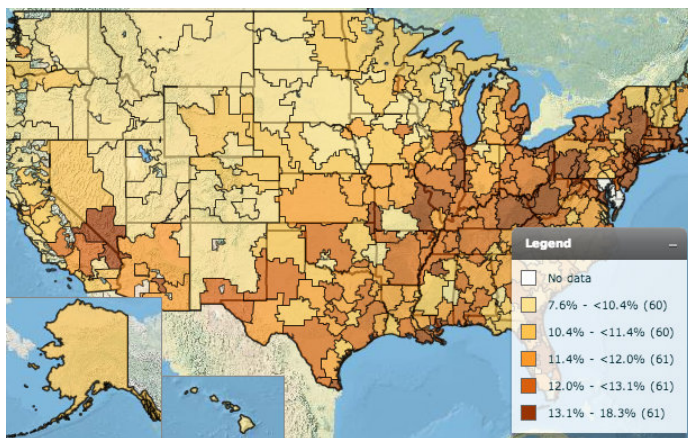


Figure 1. Percent of Patients Readmitted within 30 Days of Discharge, by Cohort. Cohort: All Surgical Discharges. Region Level: HRR. 2010. The Dartmouth Institute for Health Policy and Clinical Practice.

The problem with generalization lies in the fact that using larger geographic areas to display data leads to the assumption that the entire area contains or has a uniform value, when that is often incorrect. There is often much variation locally within a region, just as there is within a state.

<sup>184</sup> ESRI. "Choropleth Map." GIS Dictionary. Accessed March 2013.

[http://support.esri.com/en/knowledgebase/GISDictionary/term/choropleth map.](http://support.esri.com/en/knowledgebase/GISDictionary/term/choropleth%20map)

<sup>185</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "Percent of Patients Readmitted within 30 Days of Discharge, by Cohort." The Dartmouth Atlas of Health Care. Accessed February 2013.

[http://www.dartmouthatlas.org/data/map.aspx?ind=192.](http://www.dartmouthatlas.org/data/map.aspx?ind=192)

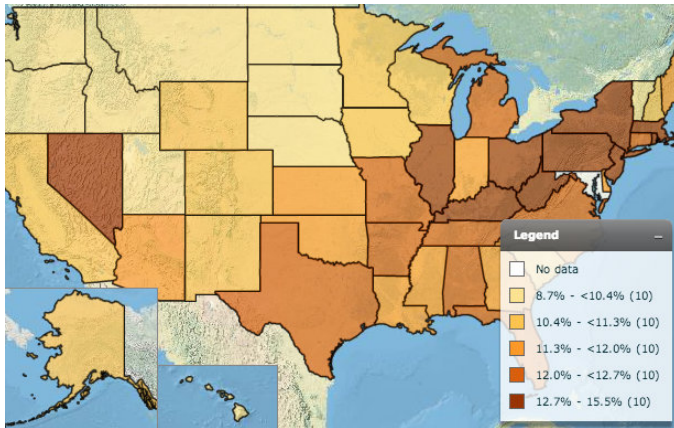


Figure 2. Percent of Patients Readmitted within 30 Days of Discharge, by Cohort. Cohort: All Surgical Discharges. Region Level: State. 2010. The Dartmouth Institute for Health Policy and Clinical Practice.

Figure 2 shows the problem of generalization as created from this choropleth map showing the same data from Figure 1, but using a different geographic area to display the data. If one were to look at Texas in Figure 2, they would see that Texas falls in the second highest class of readmittances. One could then draw the conclusion that Texas does a poor job ensuring that their patients receive the best quality care and successfully recover. Therefore, they might conclude that a policy should address this problem for the whole state. However, when looking at Figure 1, one sees large variation of readmission rates across Hospital Referral Regions within Texas. There are many Hospital Referral Regions that indicate poor readmission rates, but there are also many that fall into lower classes, all within one state. For this reason, geographers often discourage using larger boundaries to display data so that people are not lead to conclusions that are incorrect.<sup>186</sup> Geographers deal with this issue all the time in advising policies in many different fields and practices.<sup>187</sup> In relation to the criticism of the Dartmouth Atlas, Hospital Referral Regions may be too large and generalize data by overlooking important variation on a local level, such as by Hospital Service Area.

<sup>186</sup> Bутtenfield, Barbara Pfeil., and Robert Brainerd. McMaster. *Map Generalization: Making Rules for Knowledge Representation*. Harlow, Essex, England: New York, NY, 1991.

<sup>187</sup> Ibid.

Research done by the University of Pittsburgh's Department of Health Policy and Management in the School of Public Health focuses on this very problem.<sup>188</sup> In their research, they used a sample of Medicare prescription drug and medical claims data to evaluate variation across both Hospital Referral Regions and Hospital Service Areas.<sup>189</sup> They found "substantial local variation in health care (drug and nondrug) utilization and spending," which highlights a problem with such policy proposals previously mentioned that were designed to target high-spending Hospital Referral Regions.<sup>190</sup> Specifically, they found that,

"Many of the low-spending HSAs were located in high-spending HRRs, and many of the high-spending HSAs were in low-spending HRRs. For drug spending, only 50.7% of the HSAs located within the borders of the highest-spending quintile of HRRs were in the highest-spending quintile of HSAs; conversely, only 51.5% of the highest-spending HSAs were located within the borders of the highest-spending HRRs. Similar patterns were observed for nondrug spending."<sup>191</sup>

Therefore, targeting high-spending Hospital Referral Regions may undeservedly punish lower-spending Hospital Service Areas within the high-spending Hospital Referral Regions. In only focusing on high-spending Hospital Referral Regions, high-spending Hospital Service Areas that are located in low-spending Health Referral Regions may slip by without having to work to reduce spending or improve quality.<sup>192</sup> From their findings, they concluded that using Hospital Referral Regions as the basis for health reform policies that target variation might result in policies that inaccurately address the problems or needs of local areas within the regions, due to

---

<sup>188</sup> Zhang, Yuting, Ph.D., Seo Hyon Baik, Ph.D., A. Mark Fendrick, M.D., and Katherine Baicker, Ph.D. "Comparing Local and Regional Variation in Health Care Spending." *The New England Journal of Medicine* 367, no. 18 (November 1, 2012): 1724-31. Accessed January 23, 2013. doi:10.1056/NEJMsa1203980.

<sup>189</sup> Ibid.

<sup>190</sup> Ibid.

<sup>191</sup> Ibid.

<sup>192</sup> Ibid.

problems associated with generalization.<sup>193</sup> Policies will only be effective if they target the correct area, and as their findings suggest, targeting Hospital Referral Regions may lead to ineffective policies, or even policies that punish the low-spending hospitals and overlook the high-spending ones. They suggest that Hospital Service Areas may be a more appropriate target for health policies, because they are the local health care markets for Medicare beneficiaries.<sup>194</sup> Policies should focus on local areas because that is the key to influencing factors such as primary care practices, and even potentially avoidable hospitalizations.<sup>195</sup> Therefore, this research highlights one major problem with the Dartmouth Atlas Project proposals that could result in an ineffective or even harmful policy in health reform.

Implications of a policy that focuses on Hospital Referral Regions have the potential to be substantial, and therefore health policy reform based on suggestions from the Dartmouth Atlas of Health Care must take into consideration variation on the local level. In ignoring the variation at the local level, some hospitals may be wrongly punished while others may slip by without stricter regulation or pressure to change.<sup>196</sup> The University of Pittsburgh research does not lead to the conclusion that policies should never be made on the regional level; however, local variation should be a factor that is carefully evaluated in the policy development process. They also note that they did not find what the proper geographic area should be, but that local variation plays a significant role. This research, like the Dartmouth Atlas, is just the findings of one institute, so it also may need further research to lead to totally infallible conclusions. They also point out potential limitations of their research, which includes that “it is difficult to use these data for

---

<sup>193</sup> Ibid.

<sup>194</sup> Ibid.

<sup>195</sup> Ibid.

<sup>196</sup> Ibid.

forecast the effect of different policy levers on spending patterns.”<sup>197</sup> The important lesson taken from this is the need to evaluate the implications of policies that disregard variation on a local level, and future policies may need to have a focus on the local level, or a combination that involves each.

### **Potential Effect of Quality and Outcomes**

There is much concern with the potential negative effect on quality of care and outcomes if policies developed from the Dartmouth Atlas Project were to be adopted in the United States. Most concern stems from the development of proposals that aim to cap spending or reduce reimbursements in high-spending regions.<sup>198</sup> Other concern comes simply from the disbelief in the Dartmouth Atlas Project idea that higher-spending is negatively correlated with higher-quality care and outcomes. Concern has come from academia and journalists alike, and much attention has been paid to this reservation.

Many opponents believe that by adopting the Dartmouth Atlas findings as policy, they will be limiting resources. Thus, through limiting resources, the patients will be limited in their care.<sup>199</sup> A lot of attention centered on this topic of rationing in the health reform debate leading up to the passing of the Affordable Care Act.<sup>200</sup> Many believe that in reducing the care a patient receives, they are losing their freedom of choice in medical care, or even that a policy that aims to reduce utilization will drastically limit their ability to receive care.<sup>201</sup> Therefore, the Dartmouth Atlas Project’s proposal that aims to reduce unwarranted variation in order to reduce health care costs strikes its opponents as a massive attack on patient choice. Further, they believe

---

<sup>197</sup> Ibid.

<sup>198</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

<sup>199</sup> Ibid.

<sup>200</sup> Singer, Peter. "Why We Must Ration Health Care." *The Times Magazine*, July 2009.

<sup>201</sup> Leonhardt, David. "Health Care Rationing Rhetoric Overlooks Reality." *The New York Times*, June 17, 2009. <http://www.nytimes.com/2009/06/17/business/economy/17leonhardt.html>.

that “to reduce variation because higher rates of spending do not create higher rates of health is to disregard what may be happening to actual patients.”<sup>202</sup> Therefore, the effect of reducing variation on patient access and care is a big potential reservation of the Dartmouth Atlas of Health Care.

In the unforgiving article that attacked the Dartmouth Atlas, *New York Times* journalists claimed that quality was not included in the research and analysis done by the Dartmouth Atlas, and that they determined good and bad care simply by looking at utilization and reimbursement rates.<sup>203</sup> The article read “for all anyone knows, patients could be dying in far greater numbers in hospitals in beige regions [low spending] than hospitals in the brown ones [high spending].”<sup>204</sup> They took issue with this because many reform efforts looked at the Dartmouth Atlas maps and aimed to reduce spending in those dark brown areas to be more like the beige regions.<sup>205</sup> Therefore, they claimed that such policies could be harmful to the health of patients, because more spending could mean better care, and the Dartmouth Atlas did not take quality metrics into consideration.<sup>206</sup> They were concerned with the way the Dartmouth Atlas ranks hospitals as well, because they claimed that “the atlas’s hospital rankings do not take into account care that prolongs or improves lives.”<sup>207</sup> According to them, the Dartmouth Atlas overlooked whether life-saving measures were being taken, which may cost more and be justifiable.<sup>208</sup> Therefore, if this were the case, the concern would be that hospitals would be punished for giving better, yet more expensive care.

---

<sup>202</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

<sup>203</sup> Ibid.

<sup>204</sup> Ibid.

<sup>205</sup> Ibid.

<sup>206</sup> Ibid.

<sup>207</sup> Ibid.

<sup>208</sup> Ibid.



The *New York Times* article uses Wisconsin as a case study example to disprove the work of the Dartmouth Atlas.<sup>209</sup> The Dartmouth Atlas ranks two hospitals, Bellin and St. Mary's, fourth and 11<sup>th</sup> respectively among Wisconsin's hospitals.<sup>210</sup> They claim that this ranking was made purely according to reimbursement and utilization rates.<sup>211</sup> They cite two other rankings that differ from the Dartmouth Atlas's. First, Wisconsin Collaborative for Healthcare Quality ranks Bellin second and St. Mary's 15<sup>th</sup> for quality of heart attack care.<sup>212</sup> The second ranking, Medicare's ranking, ranks Bellin fifth and St. May's 67<sup>th</sup> in the state.<sup>213</sup> These rankings attempt to show flaws in the Dartmouth Atlas rankings, showing that when quality is considered, different results are produced. Therefore, they believe that the Dartmouth Atlas doesn't properly account for quality in their analysis and development of their proposals, and by doing this, policymakers adopting their ideas could formulate policies that are harmful to the care of patients.

### **Conflict over How to Approach the “Problem”**

As the Dartmouth Atlas Project findings have become more prevalent in policy discussions, many have argued over what to do about the problem that the Dartmouth Atlas highlights. There are some that do not believe that variation is a problem, and there are others that disagree over the different plans to approach it. There are some who question the validity of Wennberg's research, referencing its lack of accreditation by renowned journals and

---

<sup>209</sup> Ibid.

<sup>210</sup> Ibid.

<sup>211</sup> Ibid.

<sup>212</sup> Ibid.

<sup>213</sup> Ibid.

institutions.<sup>214</sup> Others do not believe that the variation is caused by supply or payment incentives or physician preference.<sup>215</sup>

One primary criticism stemming from these critics is that reducing variation is not the solution, as suggested in recent decades.<sup>216</sup> Dr. Sandra Tanenbaum, an Associate Professor at Ohio State University, suggests that because variation is a statistic that in itself is not a problem, but instead is an indication of other problems.<sup>217</sup> Therefore, Tanenbaum suggests policies focusing on simply reducing the variation of spending are not correctly addressing the true problems in the health care industry. She believes that by applying the Dartmouth Atlas findings to policy, we are incorrectly labeling the problem as variation, rather than looking to the true sources of the problem.<sup>218</sup> Therefore, policy-makers that treat variation as the problem then develop policies that aim to reduce variation. With this argument, she is specifically attacking policies such as the ones developed during health reform that aimed to cap spending in high-spending regions. She notes that by “calling cost and quality problems ‘variation,’ [it] not only predisposes us to a solution called ‘reducing variation’; it mobilizes audiences, creates ideological space, and reinterprets past policy struggles.”<sup>219</sup> Essentially, she claims that the mistake that policymakers have made is diagnosing the variation in spending and utilizations across the United States as a problem, and because they have done that, they have set up the assumption that the solution to the problem is to reduce variation.<sup>220</sup> She asserts that the real problem is not variation, and continuing to address variation as a policy problem will not fix the

---

<sup>214</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

<sup>215</sup> AAMC. *Geographic Differences in Health Care Spending*. Report. Accessed October 2012. <https://www.aamc.org/linkableblob/70266-5/data/geographicdifferences-data.pdf>.

<sup>216</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

<sup>217</sup> Ibid.

<sup>218</sup> Ibid.

<sup>219</sup> Ibid.

<sup>220</sup> Ibid.

United States' health care system.<sup>221</sup> Her point is essentially that policies that simply aim to reduce spending in high-spending regions will not fix the problems that exist within that region.<sup>222</sup> This is a legitimate reservation, as simply limiting the amount of care a hospital can give without any guidance will not result in better quality care.

Similarly, the *New York Times* article shared a similar concern to Tanenbaum. They were concerned that policymakers are approaching the Dartmouth Atlas research in an incorrect manner, and are formulating policies by improperly approaching the findings.<sup>223</sup> They shared significant concern with the difference between the maps they produce and the reports and research published in scholarly journals.<sup>224</sup> They believed that their research was performed with meticulous statistical analysis, but that the maps, which are often referred to by Congress, do not do the same. This is a problem because the maps are more popularly referenced, and they may not be displaying appropriate guidance for policy-makers. They even argue that their statistical research does not often prove the results shown on the map to be correct.<sup>225</sup> This reservation is similar to one expressed by Tanenbaum, because they argue the policy arena has transformed the findings of the Dartmouth Atlas and is shaping them into policy in an overly-broad and ineffective manner.

Tannenbaum's article brings into light the question of whether "uniformity in the medical system 'would be a sad mistake.'"<sup>226</sup> Can all hospitals operate like top-ranking hospitals such as the Mayo Clinic? Variation is a natural statistic that occurs in every aspect of life. Our country has been built partially on the idea of competition and individual success. Therefore, would it

---

<sup>221</sup> Ibid.

<sup>222</sup> Ibid.

<sup>223</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

<sup>224</sup> Ibid.

<sup>225</sup> Ibid.

<sup>226</sup> Tanenbaum, Sandra J. "Reducing Variation in Health Care: The Rhetorical Politics of a Policy Idea." *Journal of Health Politics, Policy and Law* 38, no. 1 (February 2013). doi:10.1215/03616878-1898774.

even be possible for every hospital to operate on the same level as and achieve similar results to the Mayo Clinic? Yet, in a country where advanced medicine is crucial to our survival, should we settle on the idea that some hospitals will inevitably give better care than others? These questions are ones that must be considered in an analysis of the Dartmouth Atlas research and policy proposals, as the future of our health care system could be influenced by the concept of reducing variation.

### **Reservations: Conclusion**

The main reservations of the Dartmouth Atlas of Health Care stem from the idea that reducing variation is not the appropriate manner to reform our nation's health care system. There are concerns that aiming to reduce spending in high-spending areas would compromise the quality of care. Further, there are reservations about the work of the Dartmouth Atlas because they are thought to not take quality and outcomes into account when evaluating or ranking hospitals and regions, and that they are overlooking the fact that many hospitals may be spending more in order to yield better results. There are other concerns that the policy proposals inspired by the Dartmouth Atlas primarily focus on reducing variation, when that is not the correct focus to achieving a better health care system. Finally, a large reservation is that the primary level of analysis of the Dartmouth Atlas is Hospital Referral Regions. Due to its prominence in the Dartmouth Atlas research, many policy proposals use that geographic level of aggregation. There is concern that there is significant variation within Hospital Referral Regions, which could result in overlooking some high-spending hospitals and punishing some low-spending hospitals, simply because they are within a region that yields different rates overall. All of these reservations deserve to be further investigated, because if they hold up to scrutiny, formulating reform policies based on the Dartmouth Atlas research could be potentially harmful.

## **Moving Forward: Addressing Concerns**

### **Quality of Care**

The Dartmouth Atlas team bounced back with a strong response to *The New York Times* unforgiving, harsh attack on its research. In their response, they took direct quotes from the article and responded directly to each one, proving them to be false or misrepresented.<sup>227</sup> First, they asserted that the claim that quality measures are excluded from the Dartmouth Atlas research is blatantly false.<sup>228</sup> The Dartmouth Atlas takes into account the following quality measures in their research: patient satisfaction, Medicare measures of hospital quality, percent of patients that die in the hospital, and measures of quality for specific treatments.<sup>229</sup> The Dartmouth Atlas developed their research based on the findings that hospitals and regions that spent less produced better quality care, and vice versa. The proposals they set out based on their findings revolve around the triple aim: improving patient care quality and satisfaction, patient health, and lowering per capita health care costs.<sup>230</sup> According to the Dartmouth Atlas Project researchers, quality of care is a major focus and desired goal of policy suggestions made by the Dartmouth Atlas, and is far from ignored in their analyses.

In their independent analysis, the Dartmouth Atlas has used quality metrics to prove their theory.<sup>231</sup> Regardless of its level of accuracy, the assertion that they outright exclude quality metrics from their analysis is false. They have produced numerous reports, maps, and Hospital Referral Region data “that specifically describe[s] the percentage of patients who die in the

---

<sup>227</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds to "Critics Question Study Cited in Health Debate," by Reed Abelson and Gardiner Harris." News release, June 7, 2010. Dartmouthatlas.org. [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

<sup>228</sup> Ibid.

<sup>229</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds to "Critics Question Study Cited in Health Debate," by Reed Abelson and Gardiner Harris." News release, June 7, 2010. Dartmouthatlas.org. [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

<sup>230</sup> Ibid.

<sup>231</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds to "Critics Question Study Cited in Health Debate," by Reed Abelson and Gardiner Harris." News release, June 7, 2010. Dartmouthatlas.org. [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

hospital, [and] measures such as the quality of treatments for diabetics, patient satisfaction, and Medicare measures of quality.”<sup>232</sup> The following maps evidence not only the use of quality metrics, but an apparent relationship between higher spending and lower quality ratings.

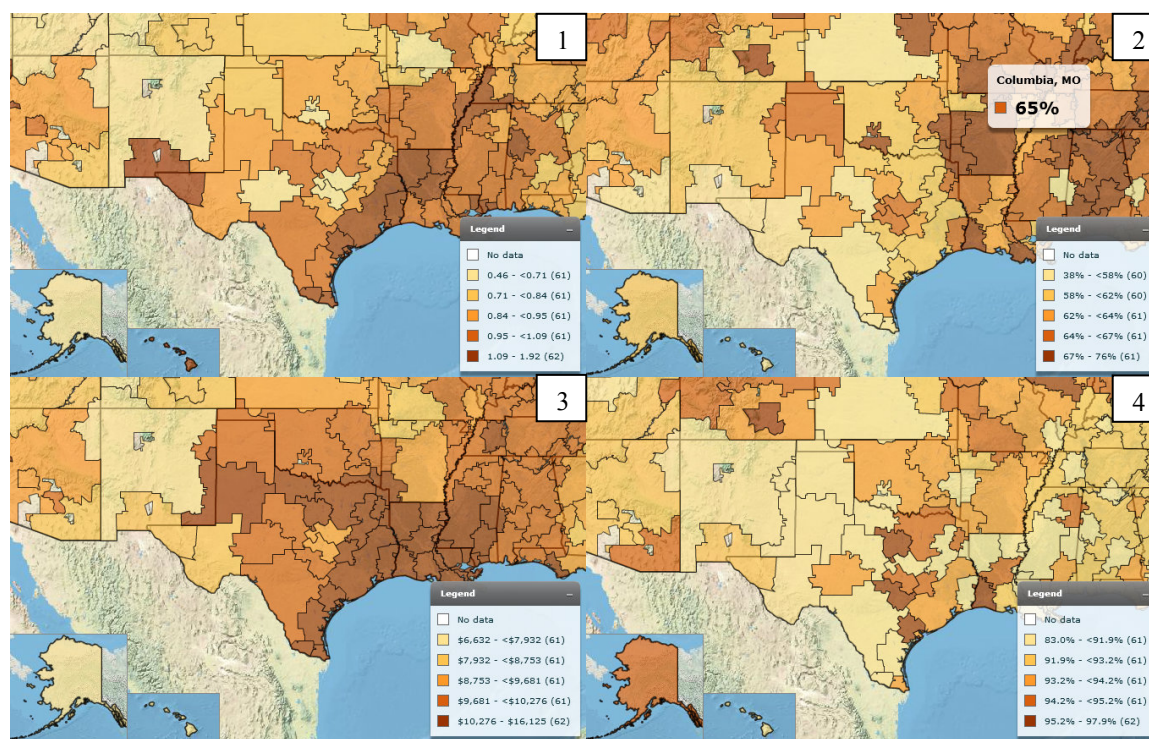


Figure 3. Maps evidencing relationship between higher utilization of health care and lower quality outcomes, 2007. (1) Hospital Care Intensity Rating; (2) Patient Satisfaction, HCAHPS Survey; (3) Medicare Payments per Enrollee, Price, Age, Sex & Race Adjusted; (4) CMS Hospital Compare Score. The Dartmouth Institute of Health Policy and Clinical Practice.

Two of the maps above show quality indicators that are used in the Dartmouth Atlas research.

The patient satisfaction rating, shown in Map 2 of Figure 3, shows the percentage of patients that rated the hospital overall with a score of 9 or 10 in the Hospital Consumer Assessment of Healthcare Providers and Systems Survey. Map 4 of Figure 3 shows the CMS Hospital Compare Summary Quality Score. This score was developed through the Hospital Quality Alliance

<sup>232</sup> Ibid.

Program, which is the only program of its kind to nationally report quality performance data.<sup>233</sup> This score was calculated by using “10 indicators of the quality of care for acute myocardial infarction, congestive heart failure, and pneumonia,” and then measures were reported of how the hospital performed in these indicators and summary scores were created how their performance on each clinical condition.<sup>234</sup> The summary score is an indication of the percentage of patients who satisfied quality criteria overall in all the categories combined.<sup>235</sup> The Hospital Care Intensity rating, shown in Map 1 of Figure 3, is calculated as a ratio of the number of inpatient days per enrollee to the number of physicians the patient sees during their stay.<sup>236</sup> In looking at Figure 3, there is an apparent relationship. In areas with high HCI Index scores, meaning the patients are visited by a higher number of physicians during their inpatient stay, there are also high reimbursement rates per enrollee, which evidences the obvious relationship between higher utilization and higher spending. Many critics of the Dartmouth Atlas argue that these are the only two types of factors used by the Dartmouth Atlas researchers.<sup>237</sup> However, Maps 2 and 4 of Figure 3 show the use of quality metrics, and their apparent relationship. In those regions of high HCI indexes and high reimbursement rates, there are lower rates of high patient satisfaction and lower hospital compare summary quality scores. Therefore, quality is a factor in the analysis done by the Dartmouth Atlas and their analysis is not done solely based on utilization rates.

Claims made by skeptics, including Tannenbaum and *The New York Times*, which devalue the research of the Dartmouth Atlas due to the lack of consideration of quality metrics

---

<sup>233</sup> Jha, Ashish, Zhonghe Li, John Orav, and Arnold Epstein. "Care in U.S. Hospitals--- The Hospital Quality Alliance Program." *The New England Journal of Medicine*, July 2005, 265-74.

<sup>234</sup> Ibid.

<sup>235</sup> Ibid.

<sup>236</sup> The Dartmouth Institute. "Customize Report." Hospital Care Intensity Index, Last Two Years of Life, by Component. Accessed May 01, 2013. <http://www.dartmouthatlas.org/data/table.aspx?ind=6>.

<sup>237</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

are not legitimate to some extent, but should still be considered legitimate reservations. Many studies have highlighted this topic as an area of concern, so it is necessary to consider this area of controversy going forward. The Dartmouth researchers consider data that serve as indicators for quality in their analysis to argue that health care spending can be cut while still yielding high-quality health care.<sup>238</sup> They note that they do not simply look at high-spending regions and assert that they are over-utilizing care without looking into factors indicative of quality to evidence this claim.<sup>239</sup> However, although the Dartmouth Atlas has proven that quality indicators are in fact included in its analysis, it may not be included to the extent necessary to prove a significant connection between higher-spending and low-quality care and poor outcomes. The research methods used by the Dartmouth Atlas and by others critiquing the Dartmouth Atlas vary from study to study, so it may be important to note that findings can widely differ from one another. Further, many of the quality metrics used by the Dartmouth Atlas are self-reported by patients as patient-satisfaction ratings.<sup>240</sup> This may not be the best indication of quality of care or outcomes for many reasons, including the potential errors that can arise from self-reporting and the fact that there is no way to ensure the feedback of every patient. Although the Dartmouth Atlas uses quality metrics in their analysis, they may not be included to the extent necessary to prove true correlation, and the metrics used may be flawed or may not be the most accurate indicator of quality. Policies formulated from the Dartmouth Atlas findings should ensure that quality is a consideration and a main goal, along with reducing costs. The Dartmouth Atlas uses quality metrics in its analysis, but it may not be to the extent necessary, or the correlation may not be as strong as needed to influence policy, as many opponents argue. This should be considered as

---

<sup>238</sup> Ibid.

<sup>239</sup> Ibid.

<sup>240</sup> The Dartmouth Institute. "Customize Report." How Do Patients Rate the Hospital Overall?, by Response. Accessed May 01, 2013. <http://www.dartmouthatlas.org/data/map.aspx?ind=150>.



policymakers use the Dartmouth Atlas Project as guidance, and they should examine quality metrics to a greater extent.

Many policymakers have often taken the message of the Dartmouth Atlas to mean that all high-cost health systems yield low-quality care. It should be noted that not all regions shown follow the pattern of higher-utilization, lower-quality exactly. The Dartmouth Atlas does not assert that all high-spending areas yield poor outcomes. In fact, it is important to not confuse “the idea of correlation (high spending hospitals tend to do poorly on most measures of quality and outcomes) with causation (if a hospital spends more money, outcomes for those patients will get worse).”<sup>241</sup> The Dartmouth Atlas does not assert causation, but instead correlation.<sup>242</sup> Therefore, there exists a relationship between spending and quality measures; yet, they do not assert that the more a hospital spends the worse quality care they give. Further, there are some examples of high spending hospitals that yield excellent outcomes. Operating under this assumption could lead to the punishment of high-spending hospitals that yield excellent outcomes, which could cause them to have to reduce spending that does affect the quality of care delivered. This would result from a policy that capped spending in high spending areas, because it was assumed that they were delivering poor quality care. However, the fact that the pattern between high spending and poor outcomes occurs to a great extent suggests that there is much room to reduce waste, and subsequently, spending. This is one reason why policies cannot simply aim to reduce spending in high-spending regions. Policies should instead be developed based on the idea that many areas are able to provide high quality care for low cost, but not with the assumption that all high-spending areas provide poor care and low-spending regions provide superior care. Such policies

---

<sup>241</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds- Again- to Mr. Abelson and M. Harris of the *New York Times*." News release, June 22, 2010. Dartmouthatlas.org. [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

<sup>242</sup> Ibid.

must target ways to reduce wasteful spending and unwarranted care, rather than simply capping spending. In order to preserve and improve quality of care, policies should address factors that cause the current trends, and use them to guide hospitals to follow in the footsteps of those that do achieve superior results without aggressively spending or over-utilizing care.

### **Local Variation**

The concern that local variation exists to a certain degree within regions, which have been used as the geographic level targeted in recent policies, is a legitimate reservation. Due to the substantial amount of local variation within regions, creating policies that use Hospital Referral Regions as the level of analysis will result in ineffective or harmful health policy. Hospitals within regions vary in their utilization and spending, and operate under different management and different missions. This would unfairly punish some hospitals while letting others go unpunished undeservedly. Therefore, policies should not use regions as a target level, and instead focus on the hospital-system level, because that dictates how a hospital operates. The issue of local variation does not need to be addressed if policies are properly developed with components aimed at achieving the triple aim. It is important for policymakers moving forward to understand the implications of targeting spending at regional levels, because of the significant amount of variation within regions. Policies instead should not aim to simply target a geographic area that spends a lot, but should include ways by which spending can be reduced while quality is improved. The concern with local variation would be a legitimate concern for policies that target high-spending regions, but such policies are not an effective means to solve the problems associated with the United States health care system.

### **Policies Must Have Focus on the Triple Aim**

Tannenbaum's reservation with the concept that the solution to the problem with our health care system is to reduce variation is legitimate, yet does not disprove the Dartmouth Atlas

research. The writers at *The New York Times* also expressed concern over this, worrying that policy-makers focused too much on the maps that lack statistical detail and thus have developed a varied view of the Dartmouth researchers' intentions.<sup>243</sup> The Dartmouth Atlas researchers acknowledged that this was a concern of theirs as well.<sup>244</sup> As previously addressed, there is much concern with the quality of care being forfeited if policies aim to reduce unwarranted variation. Tannenbaum argued that as variation in health care has been labeled as a problem, policy makers have concluded the solution to be reducing variation. She argues that this will compromise patient care and quality. There is legitimacy in this reservation, because many policies that have been developed from their findings aim to target areas of high-spending. With that single focus, such policies have the potential for failure. In reality, it is the policy arena that has shifted the focus and goals to limiting variation rather than it stemming from the Dartmouth Atlas.

Although the Dartmouth Atlas establishes a relationship between high utilization and lower quality, it does not outline the solution to our health care crisis to be to simply reduce variation by capping spending or reducing reimbursements. Such policies give no guidance to hospitals in how to operate more efficiently under budget restraints, especially when they have previously been spending at high rates. Simply capping spending or reducing physician payments has a definite potential to result in diminished quality of care or patient access. Therefore, this is a legitimate reservation. Further, the problem is not that in high spending-areas there are more physicians or specialists; instead, it is that the current payment model incentivizes them to see as many patients as they can in order to make the most money. The current focus is on quantity, rather than quality. Reducing the resources in high-spending regions is not the goal

---

<sup>243</sup> Harris, Reed and Abelson Gardiner. "Critics Question Study Cited in Health Debate." *The New York Times*, June 03, 2010. <http://www.nytimes.com/2010/06/03/business/03dartmouth.html?pagewanted=all>.

<sup>244</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds- Again- to Mr. Abelson and M. Harris of the *New York Times*." News release, June 22, 2010. [Dartmouthatlas.org](http://www.dartmouthatlas.org). [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

of the Dartmouth Atlas researchers. The problem is that our health care system is set up in such a way that where there are more resources, higher utilization of those resources is promoted, which does not necessarily produce superior health outcomes. Thus, there should be a shift in focus towards quality which will result in lower utilization in areas with higher numbers of physicians or hospital beds. More is not always better, but our policies should not make it a primary goal to reduce resources because this will not achieve the desired results. Correctly formulated policies can produce the outcome of reduced variation through goals of improving care and reducing spending. Instead of focusing on reducing variation, the focus should be on what highly efficient regions are doing right, or identifying what high-spending regions are doing wrong. From this, policies can correctly address the problems that the Dartmouth Atlas identifies without forfeiting patient care or access.

Often the Dartmouth research has been misinterpreted to be very black and white. Some believe that they are asserting that lower cost hospitals always perform better, and higher cost hospitals always perform worse when it comes to quality and outcomes. Truthfully, the Dartmouth research can be misleading in that way; they do advocate strongly for less care and less spending being the key to better health care.<sup>245</sup> This may be the cause of policies that have developed around the idea that reducing utilization is the solution to the problems of our health care system. However, the Dartmouth researchers do note that “more spending does not necessarily result in better health care quality, access to care, or health outcomes.”<sup>246</sup> They do not assert that high spending always results in lower quality care, but that there are prevalent

---

<sup>245</sup> The Dartmouth Institute. "FAQ - Dartmouth Atlas of Health Care." FAQ - Dartmouth Atlas of Health Care. Accessed April 28, 2013. <http://www.dartmouthatlas.org/tools/faq/>.

<sup>246</sup> The Dartmouth Institute for Health Policy and Clinical Practice. "The Dartmouth Atlas Responds- Again- to Mr. Abelson and M. Harris of the *New York Times*." News release, June 22, 2010. Dartmouthatlas.org. [http://www.dartmouthatlas.org/downloads/press/Factual\\_errors\\_NYT\\_article.pdf](http://www.dartmouthatlas.org/downloads/press/Factual_errors_NYT_article.pdf).

examples where this occurs.<sup>247</sup> Therefore, policy-makers cannot simply look at high-spending regions and assume that they are being wasteful. Instead, policy-makers should develop policies that focus on how the rest of the nation can operate like the low-cost regions that yield better quality and outcomes.

The Dartmouth Atlas research does not suggest that reducing variation is the solution. Instead, this has been an idea developed by policy makers. The Dartmouth Atlas project has outlined ways to improve quality and cut costs that ultimately reduce unwarranted variation that can be applied to health reform. In order for policies to be successful, they must be comprised of components that have been proven to achieve cost-cutting and quality-enhancing results, so they can be replicated on a large scale. In doing this, ultimately unwarranted variation will be significantly reduced. However, reducing variation must be the end result rather than the means to meet that end.

### **Institute of Medicine Recommendations**

Soon after the Dartmouth Atlas became a consideration during the recent health reform debate, Kathleen Sebelius, the Secretary of the Department of Health and Human Services, and Congress asked the Institute of Medicine to deliver advice on the geographic adjustment of Medicare payments.<sup>248</sup> The Institute of Medicine is a private non-profit organization that aims to work as an outside, non-political and non-partisan source of influence for policy-makers, stakeholders, and the general public.<sup>249</sup> In response to Congress's request in Section 1157 of The Affordable Care Act, the Institute of Medicine developed a committee with the purpose of

---

<sup>247</sup> The Dartmouth Institute. "Supply-Sensitive Care: A Dartmouth Atlas Project Topic Brief." The Dartmouth Atlas Project. Accessed September 10, 2012.

<sup>248</sup> Newhouse, Joseph, Ph.D., and Alan Garber, Ph.D., M.D. "Geographic Variation in Medicare Services." *The New England Journal of Medicine*, March 28, 2013. doi:10.1056/NEJMp1302981.

<sup>249</sup> "About the IOM." - Institute of Medicine. Accessed April 12, 2013. <http://www.iom.edu/About-IOM.aspx>.

analyzing and evaluating the geographic variation in Medicare spending.<sup>250</sup> The Institute of Medicine has released various reports over the past few years to address these issues. Their first study involved examining geographic adjustment in Medicare payment, which they unfurled in a two phase recommendation.<sup>251</sup> Their second topic of assessment, which is still underway, is the geographic variation in health care spending and promoting high-quality care.<sup>252</sup> These reports serve as an analysis of much of the research of the Dartmouth Atlas Project, and evaluate geographic indicators in Medicare policy, in order to guide policymakers as they move forward in considering the Dartmouth Atlas research in future reform efforts.

Their first report, appropriately titled *Geographic Assessment in Medicare Payment*, “is a technical assessment of the data sources, methods, and payment areas used for the hospital wage index and the geographic practice cost indexes.”<sup>253</sup> In phase I of the recommendation, the Institute of Medicine focused on the accuracy of the methods by which prices are adjusted.<sup>254</sup> The Institute of Medicine made recommendations for improving payments based on geographic adjustments. The Institute of Medicine recommended that Medicare should move beyond using two sets of cost indexes, and integrate the hospital wage index and the geographic practice cost indexes, so that there would only be one set of labor markets and payment areas used in the Medicare system.<sup>255</sup> The also recommended that the hospital wage index should apply to facilities such as skilled nursing facilities and home health agencies, rather than only to acute-

---

<sup>250</sup> Newhouse, Joseph, Ph.D., and Alan Garber, Ph.D., M.D. "Geographic Variation in Medicare Services." *The New England Journal of Medicine*, March 28, 2013. doi:10.1056/NEJMp1302981.

<sup>251</sup> Institute of Medicine. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition*. Report Brief. June 2011. Accessed August 2012.

<sup>252</sup> Institute of Medicine. *Geographic Adjustment in Medicare Payment: Phase II: Implications for Access, Quality, and Efficiency*. Report Brief. July 2012. Accessed August 2012.

<sup>253</sup> Institute of Medicine. *Geographic Adjustment in Medicare Payment: Phase I: Improving Accuracy, Second Edition*. Report Brief. June 2011. Accessed August 2012.

<sup>254</sup> Ibid.

<sup>255</sup> Ibid.

care hospitals.<sup>256</sup> In doing so, the payment system would be more uniform and record-keeping would be more streamlined. The desired outcome would then be to better adjust for geographic differences in prices, because providers at all of those facilities operate in the same local market. They also advocated for the development of a new data source that records office rent costs, so that this could factor into payments to account for that aspect of cost of living based on geographic location.<sup>257</sup> The Institute of Medicine urged that Phase I recommendations would help improve the accuracy of geographic adjustments in Medicare payments and would promote the greater coordination of care within local markets.<sup>258</sup>

The Institute of Medicine issued the second phase of its recommendations during the summer of 2012. In this report, they looked at the effect of the recommendations made in Phase I.<sup>259</sup> Incidentally, they found that their previous recommendations would have little effect on utilization levels. They argued that geographic adjustments should only be used in order to improve the accuracy of Medicare payments, but should not become a significant avenue pursued to improve the Medicare system.<sup>260</sup> They noted that “geographic variations in the distribution of physicians, nurses, and physician assistants should be addressed through other means, as should local shortages of providers that create access problems for beneficiaries.”<sup>261</sup> Therefore, geographically adjusting payments should not be used to address resource variation in health care.

The Institute of Medicine’s second study, the *Geographic Variation of Medicare Spending for Hospitals and Providers*, involves looking closely at the realm of research of the

---

<sup>256</sup> Ibid.

<sup>257</sup> Ibid.

<sup>258</sup> Ibid.

<sup>259</sup> Institute of Medicine. *Geographic Adjustment in Medicare Payment: Phase II: Implications for Access, Quality, and Efficiency*. Report Brief. July 2012. Accessed August 2012.

<sup>260</sup> Ibid.

<sup>261</sup> Ibid.

Dartmouth Atlas Project. The interim report was released in March 2013, and the final report is expected to be released during the summer of 2013. The specific purpose of this report is to advise Congress as Medicare reform remains a hot topic, and will continue to be addressed by the 113<sup>th</sup> Congress.<sup>262</sup> The preliminary report focuses only on Medicare Parts A, B, and D.<sup>263</sup> This report will be crucial to the future of the Dartmouth Atlas Project's influence on health policy, as the Institute of Medicine is highly regarded, and Congress has requested this report in order to inform them on the applicability of the Dartmouth Atlas to policy.<sup>264</sup> Although the final report will include an analysis on the validity of the assertions made in the interim report, the interim report did not have positive feedback about the Dartmouth Atlas.

The Institute of Medicine's interim report on geographic variation in Medicare spending included five main findings and points of criticism to recommend against using geographic variation in Medicare spending to advise future policy. First, the Institute of Medicine found that most variation across Hospital Referral Regions is associated with post-acute care spending, which includes home health services, skilled nursing facilities, rehabilitation facilities, long-term care facilities, and hospice care.<sup>265</sup> They found that any remaining variation is accounted for by acute care inpatient services, and therefore, most inpatient services have little influence on variation.<sup>266</sup> This presents a problem with policymakers naming health care spending variation to be a blanket problem, because inpatient care is a major component of reform efforts aiming to reduce variation. If most inpatient care does not explain the variation in spending, such reform efforts would be largely ineffective, and may even harm inpatient services by wrongfully

---

<sup>262</sup> Newhouse, Joseph, Alan Garber, and Robin Graham. *Interim report of the Committee on Geographic Variation in Health Care Spending and Promotion of High-Value Health Care: Preliminary Committee Observations*. Report. March 2013.

<sup>263</sup> Ibid.

<sup>264</sup> Ibid.

<sup>265</sup> Newhouse, Joseph, Ph.D., and Alan Garber, Ph.D., M.D. "Geographic Variation in Medicare Services." *The New England Journal of Medicine*, March 28, 2013. doi:10.1056/NEJMp1302981.

<sup>266</sup> Ibid.



limiting them. Further, the Institute of Medicine’s second finding was that the wide variation in post-acute care spending is likely indicative of fraud.<sup>267</sup> They point to examples such as Miami, where billing rates for post-acute care services are extremely high. Such extreme billing rates in areas like Miami, where medical fraud is a known issue, lead to the possible conclusion that there is a high presence of people involved in identity theft, and are billing at a falsely high rate.<sup>268</sup> Thus, if many high-spending regions have an element of fraud involved in billing, then the variation that exists cannot be used to suggest that the region is wastefully spending and utilizing services.<sup>269</sup> Instead, there should be greater policy efforts to combat fraud in Medicare. Overall, the fact that the majority of variation can be explained by post-acute services, and further, that some of that may involve fraud, leads to the conclusion that attacking variation as a widespread policy problem will not lead to large savings in Medicare, and may even lead to limiting patient access and unfairly punishing types of care that do not contribute to variation.

The committee also found there to be a lot of variation within an area, especially variation in provider behavior.<sup>270</sup> Their third finding was that within a region, there was a lot of variation in physician behavior.<sup>271</sup> Therefore, it would be unfair to adjust reimbursements according to a geographic unit, such as Hospital Referral Regions. This would result in some conservative physicians in high-spending areas to be punished via lower reimbursements, even though they are not over-utilizing care. Further, they found that “more than half the variation in admissions and visits among HSAs nationally could be attributed to variation among HSAs within an HRR.”<sup>272</sup> Therefore, adjusting payments according to regions assumes that all

---

<sup>267</sup> Ibid.

<sup>268</sup> Ibid.

<sup>269</sup> Ibid.

<sup>270</sup> Ibid.

<sup>271</sup> Ibid.

<sup>272</sup> Ibid.

physicians operate with the same mindset, and that because they are located within a high-spending region, they must be overly-aggressive about utilizing care. Such policies would unfairly punish and reward physicians based on the average spending in their region.<sup>273</sup> The fourth area that the committee evaluated was the spending on common medical conditions. From their study, they found that “spending for one condition within an HRR was not strongly correlated with spending for another” condition.<sup>274</sup> Therefore, the assumption that in high-spending regions, physicians are aggressively utilizing care across the board is false. Policies that aim to simply cut reimbursements for a region based on a value-index would be punishing some specialties where physicians do not over-utilize care within regions that are supposedly low-value. Further, these findings indicate that much variation exists at a very local level, and may be influenced by the hospital or health system in which the provider works.<sup>275</sup> The Institute of Medicine recommends that “reimbursement adjustments would be most likely to have the intended effects if targeted at clinical decision-making units rather than entire geographic areas.”<sup>276</sup>

The final observation of the committee involved the relationship between an area’s spending specific to certain medical conditions and quality indicators for those conditions.<sup>277</sup> This observation essentially derailed the premises upon which the Dartmouth Atlas built its research. The Institute of Medicine committee found little existence of correlation between the spending for a condition and quality indicators.<sup>278</sup> Further, they found some conditions to be positively correlated with spending, while others were inversely correlated. This leads to the

---

<sup>273</sup> Ibid.

<sup>274</sup> Ibid.

<sup>275</sup> Ibid.

<sup>276</sup> Ibid.

<sup>277</sup> Ibid.

<sup>278</sup> Ibid.

conclusion that policies that target high-spending areas may in fact unfairly punish some practice areas or certain treatments for which higher spending yields better outcomes. Because the correlation was so indiscernible, policies should not be based upon the assumption that more spending is bad and therefore it should be targeted. In effect, “uniform changes in an area’s reimbursement might affect beneficiaries with different conditions differently.”<sup>279</sup> Conclusively, the Institute of Medicine does not advocate making broad reimbursement levels based on the overall spending or utilization level of a region because there is variation within a region based on the type of service, the provider, the specialty area, and the condition.

---

<sup>279</sup> Ibid.

## **Conclusion**

### **Going Forward**

Going forward, effective policies that are developed based on the findings of the Dartmouth Atlas must not focus on targeting high spending areas, but instead include criteria that are evidenced to drive low-spending areas toward efficiency. It has been widely proven that there is too much variation within Hospital Referral Regions to make policies that broadly aim to target an entire region for overall high levels of spending. Many studies have shown that there is much variation at the local level within regions, and efficient local areas within high-spending regions would be unfairly punished. It has also been prove that even at the individual physician level, there is a lot of variation. Variation also exists in the treatment of various conditions in an area, so policymakers cannot make the assumption that all specialties are operating under the same level of utilization. Most importantly, quality indicators have been a big reservation of the Dartmouth Atlas research, and man studies have proven the lack of correlation between spending and outcomes. Thus, policies that aim to cap Medicare spending or cut reimbursements on the regional level would be harmful to patient care because physicians and practices within regions are far from homogenous. Further, as quality indicators still remain questionable in relation to spending and utilization, such policies would be formulated without enough evidence. The Dartmouth Atlas research is not delegitimized because of these findings because the policies that have been formed based on the Dartmouth Atlas findings have often resulted from misinterpretation of their work. They have produced many significant research studies and articles that serve as guidance for the medical field. However, policies cannot be formed from the broad interpretation of their research.

Regardless of its flaws, the Dartmouth Atlas research still sheds light on a few high-quality, low-cost health care systems in the United States. The Dartmouth Atlas brought into

attention the outliers that exist in our health care system. From this, we can formulate health reform policies comprised of the successful aspects of these outliers so that when replicated on a large scale, the waste that exists in our current system can be diminished. There is still a lot of room to learn from these systems, and it is important to understand that their existence means that there is the potential to cut costs without forfeiting quality. Instead of policies that broadly interpret the findings of the Dartmouth Atlas, effective policies can be developed based on other proposals of the Dartmouth Atlas. In addition to producing maps that show significant variation in health care spending and utilization in the United States, the Dartmouth Atlas Project has identified aspects of effective low-cost, high-quality health systems that can serve as guidance for policy. This is especially important, because as the Institute of Medicine suggested, behavior may be better influenced on a clinical decision-making level, rather than the regional. Policies need to strive for improved care coordination, an increased focus on quality, increased shared-decision making, increased data availability and transparency, and the increased use of health information systems. Such policies that promote these include bundled payment programs or payment systems that are quality-based, accountable care organizations, better shared-decision making, a greater dissemination of medical guidance for care, and a greater system of record-keeping and information sharing. These are all proven aspects of the outliers identified by the Dartmouth Atlas, and can serve as guidance for policymakers as they aim to reform Medicare.

Although there has been a lot of criticism regarding the Dartmouth Atlas Project in recent years, it still has substantial guidance to contribute to health reform, just with some limitations. Going forward, policies need to focus more on the factors that cause the high-value health systems, according to the Dartmouth Atlas, to operate on the efficiency level that they do, rather than focusing on controlling the spending. The following are guiding principles I have developed

from analyzing and researching both the Dartmouth Atlas and its opponents' reservations: (1) Policies should assess quality and enact measures that aim to cut costs in areas that are proven to be waste and/or yield low quality outcomes; (2) Policies should not target regions and instead should focus on addressing health care at the system level rather than at the regional level; and (3) Policies should not aim to simply cut or cap spending and should instead put forth means through which focus shifts towards outcomes and efficiency, thus ultimately reducing unwarranted variation. These principles should be taken into consideration alongside the successful aspects and policies demonstrated by the positive deviants that exist in our health care system when developing future policy. Successful Medicare reform will yield the ultimate result of cutting costs and improving quality, but only with those serving as the ultimate goal. To get there, the immediate goals must focus on ways to improve hospital and health systems and aid them in operating more efficiently, in a more patient-centered manner, and with a focus on quality, which are all advocated by the Dartmouth Atlas. Thus, under the right circumstances and when considered in a way that demonstrates a true understanding of the meaning of the research, the Dartmouth Atlas still has strong potential in guiding our Medicare and even our entire health care system towards claiming a spot as a premier health care system in the world.