

2016

Rural Relevance - Vulnerability to Value

A Hospital Strength INDEX® Study



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Intelligence for the New Healthcare®

iVantage Health Analytics (iVantage) is a leading provider of healthcare analytic and decision support tools. Health system and hospital leadership teams across the country rely on the company's software and services to deliver customized insights on clinical and financial performance, strategic planning, market assessment and contract optimization.

Employing a full array of public, private and proprietary data, iVantage tools and solutions – from Geographic Information Systems (GIS), dashboards and preformatted reports, to custom and guided analytics – are designed to help its clients move from data to action. In addition, iVantage analytics and tools are the basis of continuing thought leadership and insight in the areas of healthcare policy and research.

Rural Leadership

iVantage is at the forefront of helping rural and Critical Access Hospitals successfully navigate the transition from volume to value. Today's rural hospital leaders face unprecedented complexity and uncertainty, and iVantage's unique portfolio of solutions and expertise has helped more than 750 rural and Critical Access Hospitals to integrate sophisticated analytics for benchmarking performance which aid in their strategic decision making process. iVantage helps hospitals deliver high quality care at low cost to maintain their status as the cornerstone of their communities.

The company's Hospital Strength INDEX® is the industry standard for assessing – and benchmarking – rural and Critical Access Hospital performance. INDEX data is the basis of many of rural healthcare's most prominent awards and is used by organizations such as the National Rural Health Association in support of its advocacy and legislative initiatives.

To learn more about iVantage's solutions for rural healthcare or for additional information about the INDEX, please call 207-518-6700 or email inquiry@iVantageHealth.com.

Study Note

For the purpose of this study, iVantage has defined a cohort of hospitals designated as rural by the Office of Rural Health Policy (ORHP), a division of the Health Resources & Services Administration (HRSA), and excluded hospitals with more than 200 beds. The total number of rural hospitals included in the analysis is 2,078.

The Hospital Strength INDEX®

The iVantage Hospital Strength INDEX is the industry standard for assessing – and benchmarking rural and Critical Access Hospital performance. INDEX data is the basis of this study and its results are the foundation for many of rural healthcare’s most prominent awards and is used by organizations such as the National Rural Health Association in support of its advocacy and legislative initiatives.

iVantage aggregates hospital-specific data for 71 performance indicator variables across nine pillars of performance, and calculates each hospital’s percentile rankings compared to all Rural PPS and Critical Access Hospitals (CAHs) in the study group. Aggregate scores across the nine pillars serve as the basis for a single overall rating – the Hospital Strength INDEX.

Unless otherwise noted, data used to produce the INDEX are available from public sources, primarily the federal government. All available data are included. Statistical sampling and data projection methodologies are employed only when necessary. Each INDEX release is based on the most recently available data for each indicator source. All information included in this release (version 4.0) represents the most recently available data as of December 2015.

Data Set	Pillars	Source	Data Available	Dates Contained in File
Service Area File 2014	Inpatient Share, Population Risk	CMS	June 2015	January 2014-December 2014
HCRIS Q3 2015	Cost, Financial Stability	CMS	October 19, 2015	Most recent cost report provided as of 09/30/15
MedPAR 2014 Final	Cost, Charge, Outcomes	CMS	September 2015	October 2013-September 2014
2015 County Health Rankings	Population Risk	Robert Wood Johnson Foundation/University of Wisconsin Population Health Institute	March 2015	Premature Death Rate – 2010-2012 Mental Health Provider Rate – 2014 Preventable Hospital Stays – 2012 Diabetic Monitoring - 2012
Hospital Compare	Quality, Outcomes, Patient Perspectives	CMS	October 8, 2015	Mortality and Readmission – 7/1/2011-6/30/2014 Core Measures – 1/1/2014 – 12/31/2014 HCAHPS – 1/1/2014-12/31/2014
SAF – IP, OP, Physician 2014	Outpatient Share, Population Risk, Cost, Charge	CMS	November 2015	January 2014 – December 2014

INDEX is based on a composite measure of nine pillars of hospital strength:

- Inpatient Share Ranking
- Outpatient Share Ranking
- Population Risk
- Cost
- Charge

- Quality
- Outcomes
- Patient Perspectives
- Financial Stability

Pillars are made up of individual indicator variables that comprise the “indicator level.” Indicators are also grouped into three categories (the “index level” used for reporting purposes): Market, Value and Finance.

What is the State of Rural Healthcare in America?

Each year, starting in 2009, iVantage has conducted objective analysis of rural hospital performance. This research has confirmed that the Rural Health Safety Net functions well and is worthy of the investment Medicare makes to provide “critical access” points of care to the more than 62 million Americans who call rural home (including 23 million seniors).

However, the rural health safety net continues to operate in a complex socioeconomic, demographic, regulatory and reimbursement environment with numerous challenges. Since 2010, more than 60 rural communities have experienced a hospital closure and our 2016 analysis suggests that the situation is worsening for many rural communities. **The Hospital Vulnerability Index™** has identified **673 facilities** which are now vulnerable or at risk for closure. The loss of an immediate – or local – point of care can have a lasting impact on a community. iVantage modeled the potential impact on those communities in the event these 673 hospitals identified as ‘vulnerable’ or ‘at risk’ were to close and estimates:

- **11.7 million** Patient Encounters
- **99,000** Healthcare Jobs Lost
- **137,000** Community jobs Lost
- **\$277 billion** Loss to GDP (10 years)

New in our *2016 Rural Relevance: Vulnerability to Value Study* is the **Health Disparities Index™**, which focuses on vulnerable populations and the hospitals that serve them. iVantage’s research seeks to understand the older, sicker and poorer populations with the greatest health disparities, which are disproportionately represented in rural America. Our disparities research indicates that 671 rural hospitals serve these disadvantaged populations at the bottom quartile of the Health Disparities Index. It’s no surprise that, faced with these challenging circumstances, many rural providers also find themselves on the Hospital Vulnerability Index.

There are 355 hospitals already identified as vulnerable (more than 50 percent of the Vulnerability Index) located within communities identified in the Health Disparities Index, suggesting that the loss of the hospital would further jeopardize the health of the population. In other words, many of the hospitals most at risk of closure are located in communities that can least afford to lose access to care. At the other end of the spectrum are the 109 rural hospitals within the Health Disparities Index that can be seen as “diamonds in the rough” as they demonstrate how exceptional quality care can be delivered compassionately and efficiently in a financially sustainable manner, despite the challenges of serving these communities.

Value Leaders Show the Way

The *2016 Rural Relevance: Vulnerability to Value Study* models the CMS 2017 Value Based Purchasing (VBP) rules and applies these to the Critical Access Hospitals to empirically evaluate how well the Rural Safety Net functions. This analysis serves as further evidence that the value proposition of these facilities remains strong. If these facilities were able to participate in the CMS VBP programs, it would create a net inflow of more than \$137 million to these hospitals. We have been tracking the development of candidate rural VBP measures by the National Quality Forum (NQF) and have included a review of the potential impact in the study.

Across the spectrum of performance indicators, there are rural and Critical Access Hospitals which are writing the blueprint for success as they transition to value-based healthcare. Our research shows that these practice leaders share key attributes that dovetail with the vision of the “New Healthcare” articulated by the “Triple Aim”: Better health for populations, better outcomes for patients and doing so at lower cost. These top performers treat their role in providing top “Quality” as an “All or Nothing” proposition, consistent with Dr. Don Berwick’s challenge that care is a pass/fail: Hospitals must achieve 100 percent measured quality or they fail those patients.

The Challenge of Managing Costs

The healthcare industry is in the midst of its shift from volume to value. Many are already receiving alternative, value-based payments. This transition means that all hospitals will be forced to chase the value curve, offering the best clinical care at the lowest possible cost. Finding opportunities for improvement in these early years is paramount to the success of the rural health safety net of the future, and it will become more and more challenging as peers seek to do the same.

In particular, rural hospitals are striving to improve a key denominator of value: Pricing. Top performing rural hospitals strive to provide the best clinical care at the *lowest cost*. And we see the industry working hard to take 5-6 percent of their costs out of the system each year as they work toward a 5-year target of a 25-30 percent cost reduction. While Rural Health Safety Net hospitals *currently* receive special “cost-based reimbursement” from Medicare (which is typically the largest payor for these facilities), alternative payment models including Accountable Care Organizations and geographic proximity to providers shifting to other value-based programs makes it impossible to maintain these artificially supported/policy supported prices. In fact, the consumer market is accelerating this pressure with high deductible plans that shift the first out-of-pocket dollars to the consumer. Rural hospitals need to be particularly focused on efficiency as their lower volumes often mean higher variable costs.

Furthermore, employers are partnering with payors to form so-called “narrow networks” of preferred providers. These providers are preferred because they offer exceptional value, delivering quality care with great patient satisfaction at the lowest costs. This increased focus on pricing has put enormous pressure on rural hospitals to defend and improve their costs and charges in the face of market forces and may accelerate in the near term.

The Vulnerability Index™

In the fall of 2014, iVantage conducted research based upon the Hospital Strength INDEX, a comprehensive and objective review of hospital performance. The INDEX analysis reviews more than 70 indicators aggregated across areas of Market Strength; Population Risk; Value, including Quality, Patient Safety, Outcomes and Patient Satisfaction; and Financial Stability. The 2014 research reviewed the performance of all rural hospitals compared to the 49 rural facilities that had closed from 2010 to the time of that research and identified **283 rural hospitals** that shared similar characteristics and were therefore considered vulnerable.

In November 2015 iVantage leveraged a fully updated and expanded data set to re-assess the performance of rural hospitals across all indicators, and compare these findings to the performance characteristics of the 62 hospitals which have closed since 2010 (thru year-end 2015). [iVantage research now identifies 673 rural hospitals in the Vulnerability Index.](#) These facilities fall into two groups: **210 hospitals are most vulnerable to closure, while an additional 463 are less vulnerable**, but still very much at-risk. Acknowledging that hospital closures are not solely based on financial performance, but a combination of factors which include loss of market share, patient volume, and declining quality, outcomes and satisfaction, the INDEX strives to provide a holistic view of operations to determine overall stability. The significant increase in the number of hospitals in the Vulnerability INDEX is indicative of the complex – and growing – challenges facing this segment of healthcare.

Policy changes concerning Medicare reimbursement pose a particular threat to the rural health safety net relied upon by millions of Americans for their healthcare needs. Through its research, iVantage has quantified the impact that several of these changes have had (or may have) on rural healthcare institutions. Sequestration, charity care/bad-debt reimbursement cuts, disproportionate share payment cuts, and the uneven adoption of Medicaid expansion under the Affordable Care Act have created significant downward pressure on rural hospital margins.

Additional cuts, which have been proposed - such as the OIG recommendations to reduce CAH reimbursements overall and in targeted areas such as those related to swing-beds – will further deepen the impact. Key policies such as sequestration and bad-debt reimbursement alone represent hundreds of thousands of dollars off the typical bottom line to a rural hospital. Considering the fact that nearly 70 percent of rural hospitals have negative operating margins, it comes as no surprise that our research has revealed additional vulnerable hospitals.

Inside the Vulnerability Index

With the Vulnerability Index, iVantage analyzed facilities designated as rural by the Office of Rural Health Policy (ORHP) a division of the Health Resources & Services Administration (HRSA), and excluded hospitals with more than 200 beds. The total number of rural hospitals included in the vulnerability analysis is 2,078.

Rural Closures



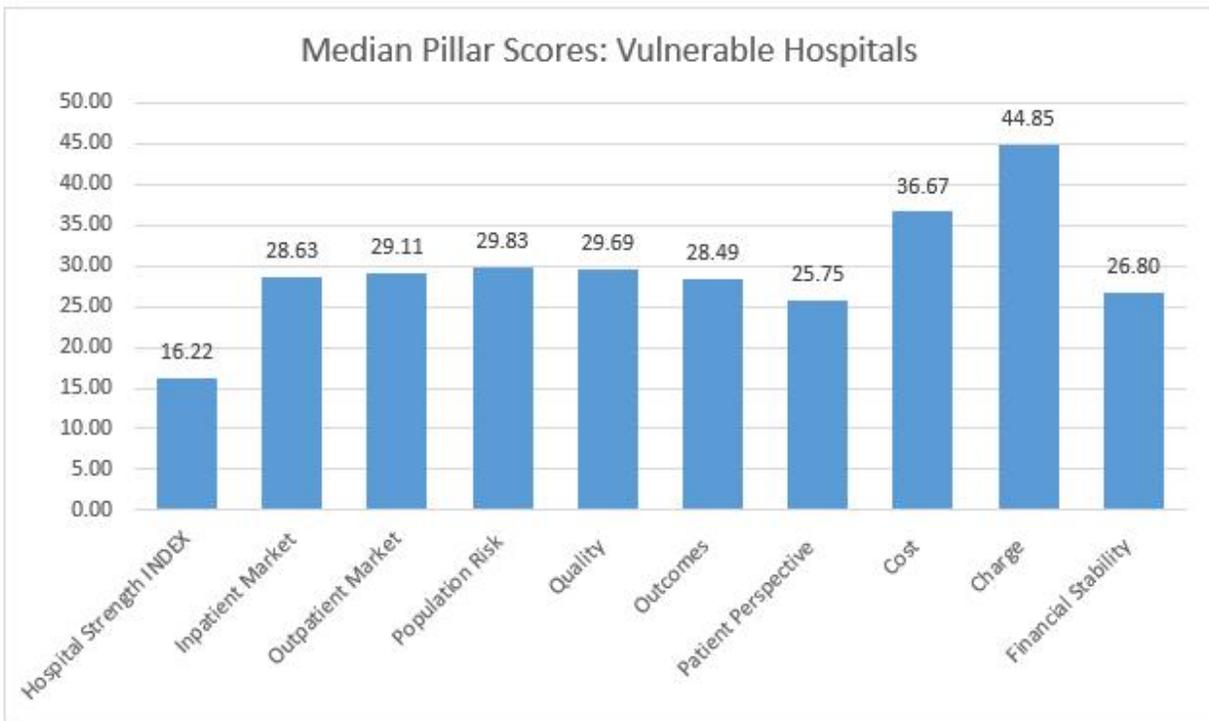
Thru 12/31/15

Based on our analysis, southern states have especially high rates of vulnerability when compared to their total number of rural facilities. States in this region with particularly high rates of vulnerability include Mississippi (79 percent), Louisiana (58 percent), Georgia (53 percent), and Texas (50 percent). Texas and Mississippi are among the states with the largest absolute number of vulnerable facilities (75 and 42, respectively). All 673 vulnerable hospitals are clustered in 42 states; eight states and the District of Columbia have no vulnerable rural facilities at all. Critical Access Hospitals make up 461 (68 percent) of the 673 vulnerable facilities.



Rural Hospital Vulnerability Heat Map





When we use the Hospital Strength INDEX to assess these 673 vulnerable hospitals, there are some areas in which they are performing well but overall they face significant challenges. The median vulnerable hospital charges fairly little for its services (scoring a 45/100 in average inpatient and outpatient charge). These hospitals also score modestly well with regard to Cost, with the median hospital registering a score of 37/100. This means that the vulnerable hospital cohort costs slightly less than the mean and charges even less for services rendered.

However, these facilities underperform in most other areas including “Patient Perspectives,” a rating of hospital performance based on the percentile ranking of a number of Hospital Compare HCAHPS measures, (26/100); Outcomes, a rating of hospital performance based on the percentile rank of a composite average across the six (6) categories of Hospital Compare Outcomes of Care measures; the percentile rank of the AHRQ Patient Safety Indicators Composite Score; and the percentile rank of a proprietary overall Medicare, inpatient, in-hospital, risk-adjusted mortality score. (28/100); and Inpatient Market Share (29/100).

Vulnerable hospitals score a median of 30/100 with regard to Population Risk, indicating they serve especially sick, expensive, and challenged populations. Across the nine pillars of the Hospital Strength INDEX, the median vulnerable hospital earns an overall score of 16.22 out of a possible 100.

Quantifying the Potential Impact of Closure

The loss of these 673 hospitals would mean 11.7 million patient encounters would be at risk, which would in turn place a significant financial hardship for the communities in which they reside.

Furthermore, as part of this research study, we've explored the impact as it relates to healthcare jobs, community jobs and loss in gross domestic product (GDP* loss over 10-year period).



Rural Pressure Point: Sequestration

In March of 2013 a range of Federal spending cuts, collectively known as ‘the sequester,’ went into effect, including a planned two percent cut in almost all Medicare spending. The Congressional Budget Office projected that the cuts would total \$123 billion over a ten-year period. The impact upon rural hospitals will be severe, including:



- **\$2.8 billion** in lost Medicare reimbursement among rural hospitals,
- **7,200 jobs lost** in rural hospitals and communities (sustained over ten years),
- An average reduction in operating margin of 0.6 percentage points,
- At least 30 hospitals shifting from profitable to unprofitable.

The impact of sequestration will not be evenly distributed; as with most policy changes, these spending cuts will create winners and losers. States with especially large rural populations or that depend heavily upon Medicare for revenue will be hit hardest. For instance:

- Southern and Midwestern states will experience especially high rates of job loss, even with populations held equal.
- Iowa, Minnesota and Wisconsin stand to lose more than 300 jobs each.
- Missouri, Georgia, North Carolina, and Mississippi each stand to lose more than 175 jobs, with four hospitals forced into the “red” as a direct result of reimbursement reductions.
- Rural hospitals are the least able to cope with these financial pressures.
- The average rural hospital runs an operating profit margin of -10.28. After sequestration, that margin declines further to nearly -11 percent.
- The majority of job loss will occur at Critical Access Hospitals (3,800 of 7,200).

Rural Pressure Point: Bad Debt

The Patient Protection and Affordable Care Act (PPACA) instituted a series of so called “Bad Debt” cuts as offsets to help pay for the increased coverage for the program. Between 2012 and 2015, CAHs have seen a reduction in their reimbursable bad debt from 100 percent to 88 percent, then to 76 percent, and ultimately to 65 percent. The 35 percent cut for what had previously been seen as “charity care”, largely for the uninsured, has been one of the key factors impacting the worsening financial performance of Critical Access Hospitals. This is especially evident in states that did not expand Medicaid as part of the Act. In these states, hospitals still provide the same level of charity care but cannot seek reimbursement from Medicare for these uncompensated services. In states that have expanded Medicaid, many of the charity care services previously offered, are now offered to newly insured citizens under PPACA.

Further exacerbating the Bad Debt cuts is the rise of so called “Commercial Bad Debt” with the advent and wide adoption of high deductible plans that shift the first \$5,000, \$10,000 or more of healthcare costs on to the individual. Anecdotes from rural hospitals report a significant challenge in collecting these payments from patients in a timely manner, if at all.

To better understand the full ramifications of the Medicare Bad Debt reduction, we examined 1,079 Critical Access Hospitals and the HCRIS Cost Report for each facility. Our research excluded 27 CAHs for which only a partial year of data was available.

Which states would see the greatest impact (and the least)?

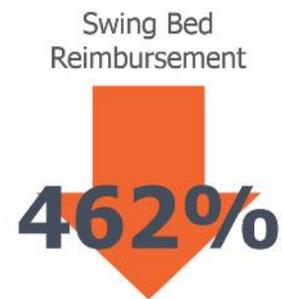
	Lost Revenue	Change to Operating Margin	Healthcare Jobs Lost	Community Jobs Lost	GDP Lost
Highest	\$147K FL	-1.3% TN	2.56 TN	3.53 TN	\$32B IL
Lowest	\$1,700 HI	-0.02% HI	.03 HI	.04 HI	\$15.4M HI

What this means:

In the absence of policy relief many of the most fragile communities that were the original impetus to the development of the “Critical Access” Hospitals system may lose that access. iVantage research points to increasing negative pressure on operating margins and we see a correlation with hospital closures.

Rural Pressure Point: Swing-Bed Reimbursement

In March 2015 the Federal Department of Health and Human Services’ Office of the Inspector General (OIG) published a set of recommendations that put additional negative pressure on the fragile rural health safety net. The OIG recommended that reforms be enacted to lower Critical Access Hospital swing-bed reimbursement rates to match those of alternative facilities (\$275 per day). Critical Access Hospitals depend upon swing-bed patients for large portions of their revenue, and rural patients in turn depend upon CAHs as important providers of this transitional care. Reimbursement cuts could be catastrophic to both hospitals and communities. Based on an analysis of 1,326 CAHs, and holding volumes and costs constant, we uncovered the following.



- Swing-beds are tremendously important to CAHs
- 131 CAHs derive more than 20 percent of their patient revenue from swing-beds.
- The median CAH derives 6.7 percent of their patient revenue from swing-beds.
- The median CAH fills 551 swing-bed days per year. Only 5 CAHs analyzed did not report any swing-bed utilization.
- CAH swing-bed payments (per day) were significantly more than the \$275 rate paid at larger PPS facilities
- The OIG’s \$275/day recommendation would be catastrophic to CAHs’ profit margins.

- CAH swing-bed programs provide a higher level of care than those afforded in alternative facilities.
- The median change in operating margin as a result of these cuts would be -5.37 percentage points. That is, if a CAH was earning a 5.37 percent margin before these cuts, they would earn 0.0 percent profit after.
- More than half of CAHs have negative operating profit margins already, so these cuts would force them even further into the red.
- Job loss as a result of these cuts would be significant
- If hospitals had to match these cuts by cutting salaries, hospitals would be forced to cut more than 24,000 jobs. The median hospital would need to cut nearly 17 jobs.
- Hospital job loss could result in a further 34,000 jobs being lost in the communities surrounding these CAHs based upon established community impact research.

Additional Resources

As part of this year's Rural Relevance Study release, iVantage is making available state-level data for each of the study's Points of Emphasis. Visit www.iVantageINDEX.com to request your data packet.

The Health Disparities Index™

Population health analysis in the U.S. shows that there are three variations in the baseline health of communities that are tightly correlated: income, education and lifestyle choices. Health disparity refers to a higher burden of illness, injury, disability, or mortality experienced by one population group compared to another. These health disparities have been a longstanding challenge, resulting in some groups receiving less or lower quality health care than others and experiencing poorer health outcomes. The good news is that more Americans than ever before have access to the health care they need because of the Affordable Care Act. However, gaps and unmet needs still remain a challenge for health providers.

iVantage has identified twelve especially relevant measures of health and access in communities across the country. By attributing county-level scores to particular facilities, we can see which hospitals in America serve particularly challenged markets, and which have the odds stacked in their favor. Each measure is weighted equally, and hospitals who serve multiple counties are attributed scores according to their inpatient Medicare market share in each county. The twelve metrics that compose the Health Disparities Index are as follows:

- Adult Obesity Rate: Percent of adults with a BMI greater than or equal to 30
- Child Poverty Rate: Percentage of children under age 18 living in poverty
- Unemployment: Number of people age 16+ unemployed and looking for work
- Uninsured: Percentage of residents under age 65 without health insurance
- Costs: Composite Medicare spend per beneficiary in each hospital's market (inpatient, outpatient, and physician)
- Smoking: Percentage of adults who report currently smoking
- Housing Problems: Percentage of households reporting at least 1 severe housing problem (e.g. overcrowding, high costs, lack of plumbing)
- Mental Health Providers: Number of mental health providers per 100,000 residents
- High School Graduation Rate
- Diabetes Screening Rate: Percentage of diabetic Medicare enrollees receiving HbA1c screening
- Primary Care Physicians: Number of primary care physicians per 100,000 residents
- Dental Providers: Number of dentists per 100,000 residents

Our research focuses specifically on hospitals in markets with the greatest health disparities – thus linking populations to the hospitals that serve them.

We first looked at all communities ranking in the bottom quartile of iVantage's Health Disparities Index, and linked these to hospital service areas that served these populations. From this list, we cross-walked the Health Disparities Ranking with facility overall Hospital Strength INDEX ranking.

Communities that had a bottom quartile Health Disparities ranking often saw hospitals with poor performance on the Hospital Strength INDEX. In fact, of the 673 hospitals identified as vulnerable to hospital closure, more than half (355) were located in communities with the highest health disparities. This means that many of the most vulnerable communities in America are served by hospitals that are also vulnerable to closure. Were these populations to lose access to critical acute care and outpatient

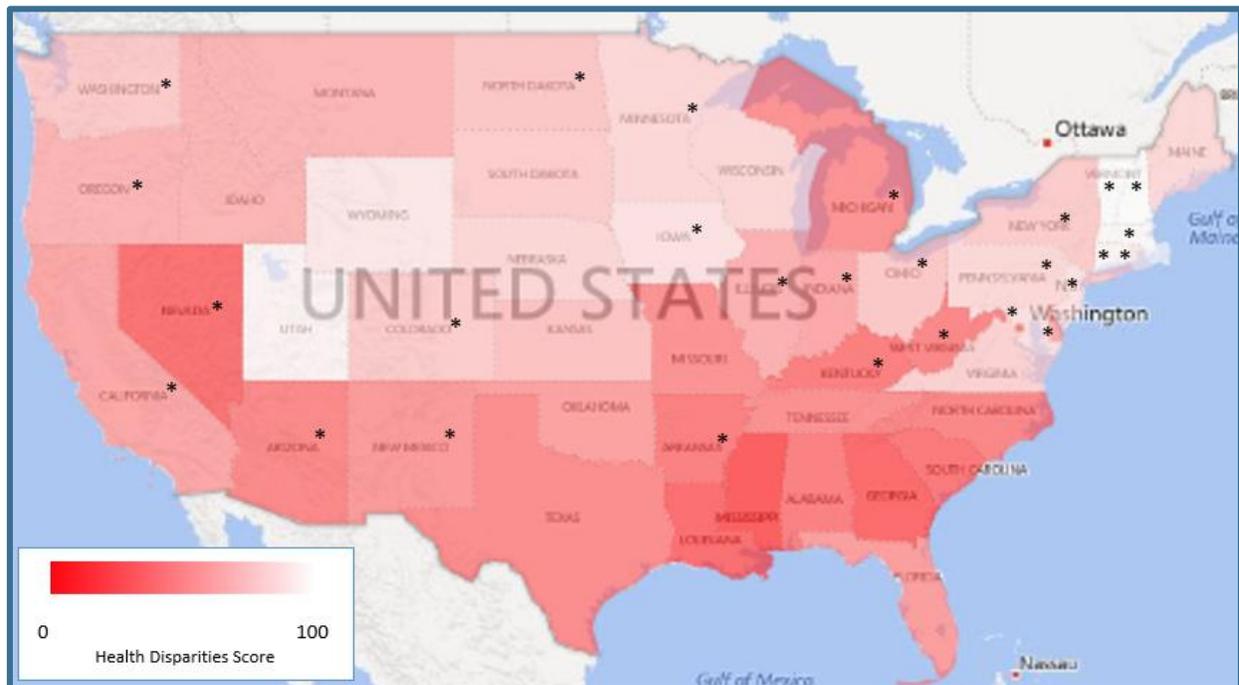
services provided by their local hospitals, many of these communities would face even greater challenges.

On the other hand, we found 109 Top performers, hospitals that demonstrated exemplary performance measured by the Hospital Strength INDEX, that were located in these communities with the greatest health disparities. These facilities and their strategic and operational management may provide insight into opportunities for improvement.

Where are the most challenged communities?

- 991 hospitals are located in the 25 percent most-challenged communities in America. Of these, 671 (68 percent) are rural, while 320 (32 percent) are urban. Among the 671 rural facilities, 359 (54 percent) are Critical Access Hospitals.
- Among the 671 rural hospitals in these most challenged communities, iVantage has already identified 355 as vulnerable to closure based on current hospital performance.
- Cross-walking iVantage's Health Disparities Index and Hospital Strength INDEX shows that many communities in danger of losing their hospitals are already struggling. **Future hospital closures will disproportionately affect populations who need these facilities the most. Further, they will likely increase health disparities in the oldest, sickest, and poorest rural communities.**
- 628 hospitals (63 percent) are located in states which have not expanded Medicaid. 363 (27 percent) are located in states that have expanded Medicaid.
- The states with the highest concentrations of challenged communities are predominantly located in the South. Southern states make up eight of the top nine states with the highest concentrations of challenged communities. In Mississippi, more than 96 percent of all hospitals are located in especially challenged communities (bottom quartile of Health Disparities Index). In Louisiana, Georgia, South Carolina, Arkansas, Kentucky, and Alabama more than 50 percent of each state's hospitals are located in communities with high levels of health disparities.
- In most southern states, more than 70 percent of all rural hospitals serve especially challenged communities.
- Other states with especially high concentrations of health disparities include Nevada, Arizona, and Texas.

Health Disparities Index Heat Map



*Medicaid Expansion States

Where are the Top Performing Hospitals?

Geographically, these hospitals are located in 27 states, with the vast majority of top performers located in the South and the Midwest. Michigan and North Carolina had the highest number of top performers with a total of 11 apiece. Texas also had a high number of top performers with 10, followed by Georgia with 9.

- 671 rural hospitals are located in the most challenged communities in America, versus just 320 urban hospitals. Of those 671 rural hospitals, 71 achieve top performer status (11 percent). In comparison, 38 urban hospitals (12 percent) achieved Top Performer Status.
- Among hospitals performing in the bottom quartile of the Health Disparities INDEX, Maine and Maryland had the highest percentage of top performers. However, each state had only one facility in the bottom quartile of the Health Disparities Index.
- Oregon, Illinois, Colorado, Ohio, Michigan, North Carolina, Indiana, and Idaho also had a high percentage of top performing facilities, with over 20 percent of bottom quartile hospitals qualifying as top performers.
- States with small proportions of top performers include Texas, New York, California, Mississippi, Louisiana. California, despite having 49 hospitals fall in the bottom quartile of the Health Disparities Index is home to zero top performers. Texas, Mississippi, and Louisiana are similarly home to many hospitals in the bottom quartile of Health Disparities, but less than 10 percent of those hospitals achieve top performer status.
- 37 percent of bottom quartile hospitals are located in Medicaid expansion states, while 63 percent are located in states that did not expand Medicaid. However, hospitals in Medicaid expansion state are overrepresented among the top performers, accounting for 44 percent of top performers, while hospitals in Non-Expansion States make up 56 percent. This may indicate

that hospitals in expansion states are better able to overcome challenges related to health disparities.

Medicaid Expansion	Number of Top Performers	Percent of Top Performers	Number of Bottom Quartile Hospitals (Health Disparities)	Percent of Bottom Quartile Hospitals
State Did Not Expand Medicaid	61	56 percent	628	63 percent
State Expanded Medicaid	48	44 percent	363	37 percent

Who are the Top Performers?

The 109 top performers are a diverse group of hospitals, made up of CAHs, rural, urban, and safety net facilities.

	Rural	CAH	Rural PPS	Urban	Urban Safety Net
Number of Top performers	71	24	47	38	7

65 percent of the top performers are rural facilities – of which, 34 percent are Critical Access Hospitals, while 66 percent are Rural PPS facilities. Seven top performing facilities meet iVantage’s definition of an ‘Urban Safety Net’ facility. *

Cohort Analysis

Different types of hospitals demonstrate varying abilities to provide excellent service and succeed in challenged communities. iVantage examined the INDEX scores for a number cohorts of hospitals and compared them to their respective Health Disparities scores. These cohorts included Critical Access Hospitals, Urban Safety Net Hospitals, Rural PPS facilities, and Urban hospitals. This analysis uncovered the following:

- The median Rural PPS hospital registers an INDEX score of 57.13, while scoring just a 34.74 in the Health Disparities INDEX. This indicates that these hospitals are adept at rising above challenging conditions and populations to provide high levels of service.
- CAHs also demonstrate an ability to provide high levels of service despite serving challenged communities. The median CAH registers a slightly higher INDEX score than Health Disparities score.
- While rural hospitals often succeed despite serving communities that struggle, urban hospitals underperform compared to their communities. The median urban hospital serves a community with a 57.43 in the Health Disparities INDEX, representing above-average health factors. However, the median urban hospital scores just a 48.43 in the Hospital Strength INDEX, representing below-average hospital performance.

- Hospitals in states that did not expand Medicaid under the Affordable Care Act serve especially challenged communities, registering just a 39.51 median Health Disparities score. Hospitals in these states overcome these challenges more often than not, with a median INDEX score of 48.32.
- States where expansion did occur are generally healthier with a median Health Disparities score of 59.05. Hospitals in these states underperform given the relative strength of their communities, earning a median INDEX rank of 51.64 at the median.

*Health Disparities Index Research note:

1. “Safety Net Hospitals” are those with shares of Medicaid patients more than one standard deviation greater than their respective state medians.

Rural Healthcare Value

Spotlight: Medicare Spending Per Beneficiary

As providers seek to evaluate and ultimately assume risk for populations in this transition from volume to value-based models, understanding the current payment for care *per Medicare beneficiary* (by setting, service line and product) is necessary to identify where opportunities exist. Exposing this market utilization experience at the local level – combined with market-specific health and wellness attributes of the population – reveals a new paradigm for providers to collaborate across geography, settings of care and service areas. Population health economic assessments will provide a means of better identifying risk, coordinating care and delivering the appropriate care to the right patient at the right time.

While the vulnerability of the rural health safety net is clear, our study seeks to establish the *value* of this system. An evaluation of Medicare's current spend per beneficiary illustrates great variation across the country, but an overall trend of lower relative spending on rural beneficiaries points to the value of this system. These findings are significant enough to call into question policies focused on cutting rural safety net programs as a means of saving Medicare dollars. In many cases, services may be *shifted* further from those who depend upon them at greater cost to the system.

We see variation not only as it relates to the total payment per *Medicare beneficiary*, but also between the broad categories of these payments. This research evaluated the Medicare "spend" in areas of Inpatient (by MDC), Outpatient (by Service Type), and Physician (by Specialty). Within this Rural Relevance Study, comparisons between rural and urban zip codes have been aggregated to demonstrate the variation between these two important cohorts as well as others.

Our key findings include:

- **~\$5.2 billion** in annual savings to Medicare alone could be realized if the average spend per urban beneficiary were equal to the average spend per rural beneficiary.
- **~\$1.5 billion** in annual spend differential (savings) occurred in 2012 because the average spend per rural beneficiary was **2.5 percent lower** than the average spend per urban beneficiary.
- **~\$6.8 billion** per year is the existing and potential differential between Medicare beneficiary payments for rural vs. urban including the opportunity for savings if all urban populations could be treated at the rural equivalent.
- Per-capita **Physician Service** payments for rural beneficiaries are **~19 percent less** costly than payments for urban beneficiaries, and
- Per-capita **Outpatient Service** payments for rural beneficiaries are **~13 percent costlier** than payments for urban beneficiaries.
- Per-capita **Inpatient Hospital Service** payments for rural beneficiaries are **~1 percent less** costly than payments for urban beneficiaries

When it comes to discussion of quality, iVantage has used an expansive definition to pursue an analysis of "quality" through the lens of the "Value Equation." The Hospital Strength INDEX utilizes publicly

available data sets to quantify overall hospital performance in nine pillars. Of particular continued relevance for the value equation are:

- **QUALITY** as indicated by the CMS Process of Care and Outcome Measures and includes Patient safety, readmissions, and mortality. Patient Satisfaction as demonstrated through HCAHPS scores.
- **PRICE** is indicated through cost and charge ratios (HCRIS) which are then applied to inpatient (MedPAR) and outpatient (Standard Analytical File) charges (case mix and wage adjusted).
- **Process of Care Measures:** Each individual topic area is indexed across the range of national performance for each measure. The INDEX scores are averaged to produce a single composite score. All available data are used in the calculation of composite scores. Missing data within measure sets are ignored.
- **Heart Attack (AMI):** For all hospitals performing at the 75th percentile, performance is statistically the same, regardless of a rural or urban designation. This has shifted since the previous year, where on average rural hospitals at the 75th percentile outperformed their urban peers by 13 percent. For hospitals performing at the 50th percentile, urban hospitals outperformed rural hospitals by an average of 8 percent, and this number stays consistent to previous Rural Relevance studies. When evaluating at the median level, rural hospitals have a slight edge on their urban hospital peers, by <1 percent.
- **Heart Failure (HF):** For all hospitals that perform at the 75th percentile, urban hospitals had a slightly better performance than their rural peers - though the performance variance is minimal. At the 75th percentile, urban hospitals outperform rural hospitals by nearly 3 points. Similarly, when evaluating hospital performance at the 50th percentile, urban hospitals outperform their rural hospital peers by 26 percent. At the median level, there is no difference in performance between rural and urban hospitals.
- **Pneumonia (PN):** For all hospitals performing at the 75th percentile, urban hospitals continue to perform better than their rural peers, by 8 percent, though there is improvement among those rural hospitals performing at the 75th percentile. Conversely, the performance gap between urban and rural has increased for hospitals performing at the 50th percentile; urban hospitals outperform rural hospitals by 29 percent. There is no difference at the median level between rural and urban hospitals.
- **Surgical Care Improvement Program (SCIP):** For all hospitals performing at the 75th percentile, rural hospitals continue to outperform their urban peers, by an average of 3 percent. For all hospitals performing at the 50th percentile, urban hospitals outperform their rural peers by an average of 2 percent. There is no difference at the median level.

- **Outpatient (OP):** For all hospitals performing at the 75th percentile, urban hospitals outperform their rural peers by an average of 2 percent. Similarly, at the 50th percentile, urban hospitals outperform their rural peers by an average of 7 percent.

Process of Care Findings:

- Urban hospitals outperformed their rural hospital peers on three out of five measures, though there is a reduction in performance variance since the prior year's reporting
- Rural hospitals continue to outperform their peers for SCIP Process of Care measures
- There is marked improvement at the 75th percentile for rural hospital performance on Heart Failure measures
- Performance gaps remain at 50th percentile level at an unfavorable level for rural hospitals, most notably for heart failure and pneumonia

Outcome of Care Measures - Each individual measure is indexed across the range of national performance for that measure. The index scores are averaged to produce a single composite score. All available data are used in the calculation of composite scores. Missing data within measure sets are ignored.

- **30-Day Readmission Rates for AMI, HF, and PN:** There continues to be no statistical variation in the performance of rural vs. urban hospitals which perform at both the 75th and 50th percentile.
- **30-Day All-Cause Mortality Rates for AMI, HF, and PN:** For hospitals performing at the 75th and 50th percentile, there is no variation in the performance of rural hospitals vs. urban hospitals.

Outcomes of Care Findings:

- There continues to be no significant performance variation for 30-day readmission rates at both the 75th and 50th percentile between rural and urban hospitals;
- There is no significant performance variation for 30-day mortality rates for AMI, HF, and PN between rural and urban hospitals.

Hospital Compare Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS)

Measures - This year's study expands the patient satisfaction measures to include 10 HCAHPS measures.

- % Respondents Who Would Definitely Recommend
- Patients who gave their hospital a rating of 9 or 10 on a scale from 0 (lowest) to 10 (highest)
- Patients who reported that their room and bathroom were "Always" clean
- Patients who reported that their nurses "Always" communicated well
- Patients who reported that their doctors "Always" communicated well
- Patients who reported that they "Always" received help as soon as they wanted
- Patients who reported that their pain was "Always" well controlled
- Patients who reported that staff "Always" explained about medicines before giving it to them
- Patients who reported that YES, they were given information about what to do during their recovery at home
- Patients who reported that the area around their room was "Always" quiet at night

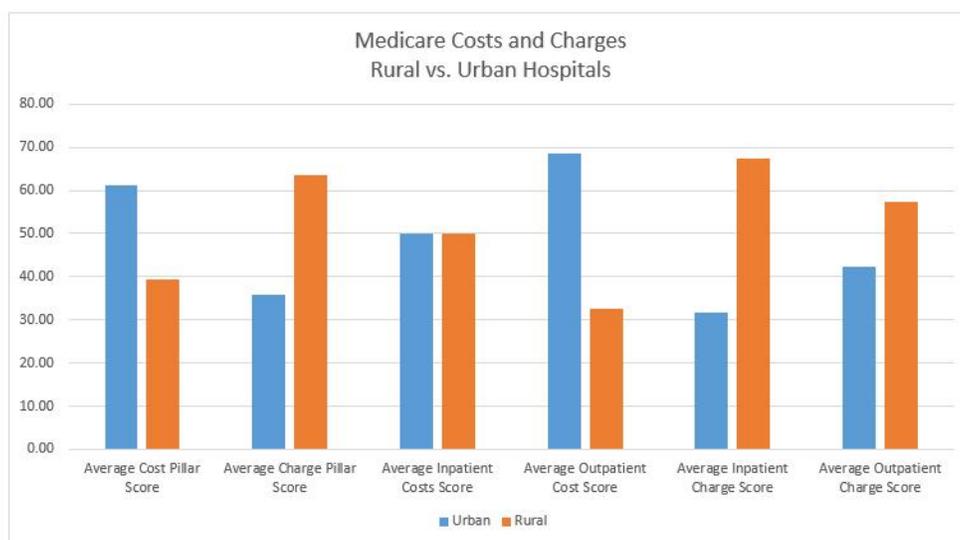
Spotlight: Costs and Charges

In a broad-based analysis of Medicare costs and charges among acute care hospitals, rural facilities charge far less than their urban counterparts. Using a normalized ranking of average inpatient and outpatient Medicare charges (case-mix and wage-adjusted), rural hospitals earned an average rank of 63.48 (of 100). This indicates that two-thirds of all hospitals in the nation charge more than the average rural hospital, while just one-third charge less. Urban hospitals, conversely, earned an average score of just 35.84, indicating relatively high charges. Using a normalized rank of average inpatient charges, rural hospitals scored a 67.41 and a 57.26 among outpatients, indicating exceedingly low charges, especially on the inpatient side.

Rural hospitals struggle, however, with regard to cost. Examining average Medicare inpatient and outpatient costs, rural hospitals score just a 32.53 on the outpatient side, while urban hospitals earn a 68.42. Rural facilities do achieve cost parity on the inpatient side, earning an average score of 49.92, compared to the average urban score of 50.12. The average combined cost rank for rural hospitals is 39.48.

Our key findings include:

- Rural hospitals charge far less than their urban counterparts. This difference is especially apparent in the inpatient setting, but also holds true among outpatients.
- Urban hospitals outperform rural facilities with respect to costs. However, by some metrics, rural hospitals perform just as well, especially among inpatients. Among their Medicare patients, rural hospitals demonstrate the same inpatient average costs as urban facilities. Rural hospitals also demonstrate low charges for important procedures such as pneumonia, urinary tract infection, and heart failure.



Cost Differential: Common Procedures (Outpatient)

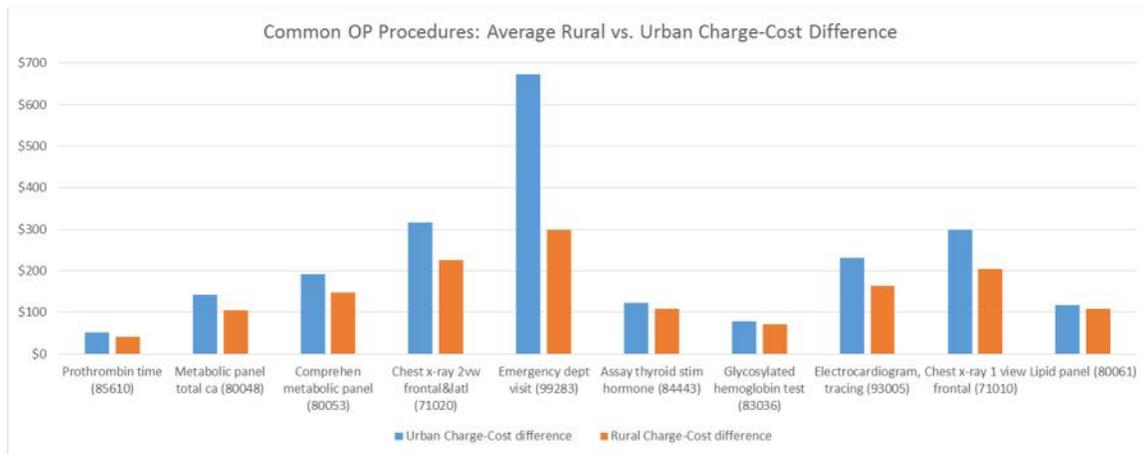
HCPCS CODE	DESC	Rural Average Charge	Urban Average Charge	Charge Difference	% Charge Difference
85610	Prothrombin time	\$54.58	\$59.84	-\$5.26	-10%
80048	Metabolic panel total ca	\$133.91	\$162.70	-\$28.79	-21%
80053	Comprehen metabolic panel	\$186.62	\$220.72	-\$34.10	-18%
71020	Chest x-ray 2vw frontal&latl	\$280.99	\$361.53	-\$80.53	-29%
99283	Emergency dept visit	\$490.93	\$826.37	-\$335.45	-68%
84443	Assay thyroid stim hormone	\$140.39	\$143.77	-\$3.38	-2%
83036	Glycosylated hemoglobin test	\$93.71	\$92.13	\$1.58	2%
93005	Electrocardiogram, tracing	\$211.86	\$264.11	-\$52.25	-25%
71010	Chest x-ray 1 view frontal	\$245.96	\$333.64	-\$87.69	-36%
80061	Lipid panel	\$138.01	\$137.08	\$0.93	1%

When we look at the urban-rural **charge** differential for a selected group of common outpatient procedures, in 8 of 10 cases, average rural charges are lower than average urban charges. The exceptions to this are HCPCS 83036 Glycosylated hemoglobin test and HCPCS 80061 Lipid Panel, with average rural charges that are 2 percent and 1 percent higher than average urban charges respectively. The greatest charge differential is for HCPCS code 99283, Level 3 Emergency Department visit, where average rural charges are 68 percent lower than average urban charges, and rural hospitals charge \$335 less than urban hospitals.

With **costs**, average rural costs are higher than average urban costs for all analyzed procedures. The greatest cost differential is for HCPCS 85610, Prothrombin time, where average rural costs are 38 percent higher than average urban costs. The smallest cost differential is for HCPCS 71010, Chest x-ray 1 view frontal, where average rural costs are 15 percent higher than average urban costs.

HCPCS CODE	DESC	Rural Average Cost	Urban Average Cost	Cost Difference	% Cost difference
85610	Prothrombin time	\$12.94	\$8.05	\$4.89	38%
80048	Metabolic panel total ca	\$28.77	\$20.41	\$8.36	29%
80053	Comprehen metabolic panel	\$39.12	\$28.08	\$11.03	28%
71020	Chest x-ray 2vw frontal&latl	\$55.62	\$44.64	\$10.99	20%
99283	Emergency dept visit	\$193.19	\$153.09	\$40.10	21%
84443	Assay thyroid stim hormone	\$31.85	\$20.88	\$10.97	34%
83036	Glycosylated hemoglobin test	\$21.79	\$13.82	\$7.98	37%
93005	Electrocardiogram, tracing	\$49.13	\$33.06	\$16.07	33%
71010	Chest x-ray 1 view frontal	\$42.04	\$35.92	\$6.12	15%
80061	Lipid panel	\$30.25	\$19.22	\$11.03	36%

Cost/Charge Differential: Common Procedures (Outpatient)



This analysis looks at the difference between average charges and average costs for urban and rural hospitals across a selected group of common outpatient procedures. The charge-cost differential is lower for rural hospitals across all analyzed procedures; as compared to urban hospitals, rural hospitals have higher costs but lower charges. The greatest difference in charge-cost differential between urban and rural facilities is observed for HCPCS 99283, Level 3 ER Visit, where urban hospitals charges are almost \$700 more than costs. At rural hospitals however, charges for Level 3 ER Visits are less than \$297 greater than costs.

HCPCS CODE	DESC	Urban Charge-Cost difference	Rural Charge-Cost difference
85610	Prothrombin time	\$51.80	\$41.64
80048	Metabolic panel total ca	\$142.28	\$105.14
80053	Comprehen metabolic panel	\$192.63	\$147.50
71020	Chest x-ray 2vw frontal&latl	\$316.89	\$225.37
99283	Emergency dept visit	\$673.28	\$297.74
84443	Assay thyroid stim hormone	\$122.89	\$108.54
83036	Glycosylated hemoglobin test	\$78.31	\$71.91
93005	Electrocardiogram, tracing	\$231.05	\$162.73
71010	Chest x-ray 1 view frontal	\$297.73	\$203.91
80061	Lipid panel	\$117.86	\$107.76

Cost Differential: Common Procedures (Inpatient)

DRG + DESC	Rural Average Charge	Urban Average Charge	Charge Difference	% Charge Difference
470: Major Joint Replacement w/o CC or MCC	\$50,120.89	\$55,228.14	-\$5,107.25	-10%
871: Septicemia or Severe sepsis W/O MV 96+ Hours W MCC	\$34,004.52	\$53,980.92	-\$19,976.39	-59%
194: Simple Pneumonia & Pleurisy W CC	\$18,659.01	\$29,316.07	-\$10,657.05	-57%
690: Kindey and Urinary Tract Infecitons W/O MCC	\$14,076.33	\$23,644.89	-\$9,568.56	-68%
392: Esophagitis, Gastroent & Misc Digest Disorders W/O MCC	\$15,275.75	\$24,439.55	-\$9,163.80	-60%
292: Heart Failure & Shock W CC	\$18,268.06	\$28,254.10	-\$9,986.04	-55%
885: Psychoses	\$21,188.86	\$28,246.60	-\$7,057.74	-33%
190: COPD W MCC	\$22,639.17	\$34,645.97	-\$12,006.80	-53%
641: Nutritional & Misc Metabolic Disorders W/O MCC	\$12,761.13	\$22,155.59	-\$9,394.46	-74%

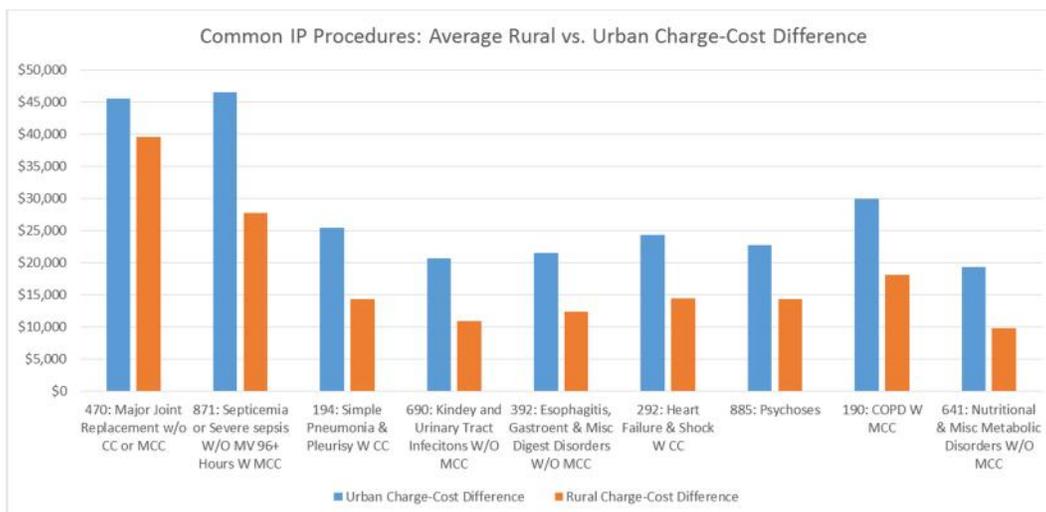
When we look at the urban-rural charge differential for a selected group of common inpatient procedures, average rural charges are lower than average urban charges. The greatest relative charge differential is for DRG 641: Nutritional & Misc. Metabolic Disorders W/O MCC, where average rural charges are 68 percent lower than average urban charges. The greatest absolute charge differential is for DRG 871: Septicemia or severe sepsis W/O MV 96+ Hours W MCC where on average, rural hospitals charge \$19,976 less than urban hospitals. The lowest relative charge difference is for DRG 470: Major joint replacement w/o CC or MCC where on average rural hospitals charge 10 percent less than urban hospitals.

With regard to costs, average rural direct costs are lower than average urban direct costs for 3 of 9 analyzed DRGs. Of these 3 services lines, the greatest relative direct cost differential is for DRG 871: Septicemia or severe sepsis W/O MV 96+ Hours W MCC, where average rural direct costs are 20 percent lower than average urban direct costs; for this DRG, rural direct costs are on average \$1,259 lower than urban direct costs.

Of all analyzed service lines, the greatest direct cost differential is for DRG 885: Psychoses, where average rural direct costs are 21 percent higher than average urban direct costs; for this DRG, rural direct costs are on average \$1,415 higher than urban direct costs. The lowest relative direct cost difference is for DRG 641: Nutritional & misc metabolic disorders w/o MCC where on average rural hospitals cost 1 percent, or \$19, more than urban hospitals.

DRG + DESC	Rural Average Direct Cost	Urban Average Direct Cost	Direct Cost Difference	% Cost Difference
470: Major Joint Replacement w/o CC or MCC	\$10,637.55	\$9,762.64	\$874.91	8%
871: Septicemia or Severe sepsis W/O MV 96+ Hours W MCC	\$6,247.49	\$7,507.31	-\$1,259.82	-20%
194: Simple Pneumonia & Pleurisy W CC	\$4,310.37	\$3,953.24	\$357.13	8%
690: Kindey and Urinary Tract Infecitons W/O MCC	\$3,158.31	\$3,023.27	\$135.04	4%
392: Esophagitis, Gastroent & Misc Digest Disorders W/O MCC	\$2,950.80	\$2,917.39	\$33.41	1%
292: Heart Failure & Shock W CC	\$3,877.72	\$3,989.78	-\$112.06	-3%
885: Psychoses	\$6,904.42	\$5,488.70	\$1,415.73	21%
190: COPD W MCC	\$4,511.34	\$4,704.81	-\$193.47	-4%
641: Nutritional & Misc Metabolic Disorders W/O MCC	\$2,926.38	\$2,907.14	\$19.24	1%

Cost/Charge Differential: Common Procedures (Inpatient)



This analysis looks at the difference between average charges and average direct costs for urban and rural hospitals across a selected group of common inpatient procedures. The charge-cost differential is lower for rural hospitals across all analyzed procedures; as compared to urban hospitals, rural hospitals have higher costs but lower charges. The greatest difference in charge-cost differential between urban and rural facilities is observed for DRG 871: Septicemia or severe sepsis W/O MV 96+ Hours W MCC, where urban hospitals charges are \$46,473 greater than costs. At rural hospitals however, charges for DRG 871 are \$27,757 greater than costs.

DRG + DESC	Urban Charge-Cost Difference	Rural Charge-Cost Difference
470: Major Joint Replacement w/o CC or MCC	\$45,465.50	\$39,483.33
871: Septicemia or Severe sepsis W/O MV 96+ Hours W MCC	\$46,473.61	\$27,757.03
194: Simple Pneumonia & Pleurisy W CC	\$25,362.82	\$14,348.64
690: Kindey and Urinary Tract Infecitons W/O MCC	\$20,621.62	\$10,918.02
392: Esophagitis, Gastroent & Misc Digest Disorders W/O MCC	\$21,522.16	\$12,324.95
292: Heart Failure & Shock W CC	\$24,264.32	\$14,390.34
885: Psychoses	\$22,757.90	\$14,284.43
190: COPD W MCC	\$29,941.17	\$18,127.84
641: Nutritional & Misc Metabolic Disorders W/O MCC	\$19,248.44	\$9,834.75

The rural health safety net was established with special “cost-based” reimbursements specifically to buoy and support the delivery of critical access points-of-care in these lower volume higher cost hospitals. iVantage notes large variation among service lines within rural hospitals. Often, rural hospitals maintain *access* to key community services that are used infrequently and therefore they become high cost outliers as there is lower patient volume across which to distribute these costs. However, their significantly lower charge position is further demonstration of the *value* of these facilities to Medicare and consumers. That is, they are not passing along much of the higher costs they bear as a result of lower volumes, to the communities they serve.

iVantage notes incredible variation on costs and charges for similar services rendered. Variations may be generalized by geography with states such as California, Texas, New Jersey and Florida demonstrating above-average pricing, while states such as Hawaii, Montana and Minnesota showing lower-than-average pricing. However, the variation within geographies is also prominent. iVantage has commissioned a study to better understand this local variation and will release the **Pricing Transparency Index™** in March of 2016 and it will become part of this study in the future.

Point of Emphasis: Value Based Purchasing (VBP)

Last year, HHS Secretary Sylvia M. Burwell announced ambitious plans to move from “volume to value in Medicare payments” by accelerating the share of Medicare fee-for-service (FFS) payments tied to quality and value, and reimbursed through alternative payment models. For rural hospitals, the implementation of Medicare’s Value-Based Purchasing (VBP) program has long loomed as a financial time bomb.

CMS intends for 85 percent of all hospital-based Medicare reimbursement to be tied to performance-based metrics by 2016, with that number to rise to 90 percent by 2018. In order to attain those goals, VBP or an analogous program must expand deeper into rural health and include Critical Access Hospitals.

This possibility raises intriguing questions about how well rural and critical access facilities would fare under such a program. The assertion by some that rural VBP would negatively impact this segment are not supported by our research findings. Based on the current performance of rural healthcare, these facilities should welcome these financial incentives. If rural hospitals can keep pace with their peers and achieve Medicare’s chosen performance goals, the research indicates a positive impact to their bottom lines.

Predicted Impact

To model the impact of these proposed changes, iVantage applied current VBP scores for a sample of Critical Access Hospitals to 2017 program rules and payback factors, further assuming that 85 percent of each hospital’s Medicare revenue would be tied to the VBP program. *

Value-based reimbursement policies, by design, create winners and losers. Certain facilities that underperform compared to national benchmarks will likely forfeit significant amounts of Medicare revenue, while those dollars are used to compensate those facilities who excel. These winners and losers will likely be more concentrated in some regions and states more than others.

Under CMS’ 2017 VBP program rules, just three states analyzed -- New Hampshire, Nevada and Vermont -- would forfeit more revenue than they gain back in bonuses. No state would forfeit more than 0.3 percent of its CAHs’ Medicare revenue in net.

All 41 other states analyzed would gain more revenue under this regime than they would forfeit. Five states would boost their CAH Medicare revenue by more than 1 percent (Hawaii, Utah, Florida, Oklahoma, and Colorado).

The 2017 program rules are much more favorable to rural hospitals than the 2016 rules. The 2017 program year sees the addition of a new Process of Care Measure, two new Patient Safety Indicators, and the inclusion of Medicare spending per beneficiary as a measure of cost effectiveness. Using these new parameters, and holding all other things equal, the outlook for CAHs brightens significantly.

- Even states that gain revenue in the aggregate will likely have hospitals who lose revenue, and vice versa.
- States with strong networks of Critical Access Hospitals and high proportions of rural patients (who are often cheaper to treat, from a Medicare spend per beneficiary perspective) will capture more than their fair share of the total bonus revenue pool. Wisconsin, Nebraska, Minnesota, and Illinois would each earn more than 6 percent of the total bonus revenue pool.
- Three states would account for nearly 50 percent of all forfeited CAH Medicare revenues in this analysis (California, New Hampshire, and Vermont).
- Despite the tens of millions in bonus revenues that could be distributed under such a program, even more revenue could be left on the table, nearly \$23 million just among a 588-hospital sample. Vermont, New Hampshire, Nevada, and California are among the states with the most unrealized revenue, as percentages of their total Medicare revenue.

Value-based purchasing measures could provide a financial boost to many CAHs throughout the country. However, these gains would be accompanied by penalties for other hospitals. Any value-based purchasing regime to be imposed upon Critical Access Hospitals should minimize punitive measures and encourage hospitals with more carrot than stick. These facilities are the least able to bear financial penalties, and such regimes would only threaten the rural health safety net further.

*VBP Research Notes

1. Critical Access Hospitals under proposed 2017 VBP rules: 85 percent of Medicare revenue subject to 1.75 percent withholding, with maximum payback factor of 2.58.
2. Analysis is limited to CAHs with reported VBP measure data. N=588 for 2017 Program Year.

Candidate Rural-Relevant VBP Measures

CMS has been working closely with the National Quality Forum to define a set of rural-focused VBP measure domains and develop recommendations for an appropriate reimbursement model. Based on information shared to date, these domains include:

- Hand-Offs & Transitions
- Alcohol/Drug Screening
- Accessibility/Timeliness
- Cost
- Appropriateness

- Advance Directors/End of Life
- Population Health
- Hospital Procedures
- Telehealth

Note: The Cost domain includes three groups; (1) Hip/Knee Replacement Cost of Care, (2) Pneumonia episode of care cost of treatment and (3) Spend per Medicare Beneficiary.

More than 50 percent of rural hospitals are affiliated with larger health systems that actively participate in the Medicare Value Based Purchasing program. Furthermore, many rural hospitals are already participating in other Medicare alternative payment models (APM) including Accountable Care Organizations (ACOs). Other APMs such as bundles are being actively piloted. The market has developed other value based programs including those designed by payors in partnership with employers. For example, the development of so called “Narrow Networks” identifies the top-quality providers at the lowest cost of care. In all these cases, rural hospitals may either be surrounded by or directly influenced by value-based models and must prepare to actively participate.

iVantage has been carefully tracking the developments of the candidate *Rural* VBP indicators by NQF (reviewed here) and notes widespread interest in piloting these programs in 2016-2017. As rural hospitals continue to track *currently accepted* value measures they should actively prepare to ramp up their programs to track and trend *new measures*, such as the “Bundled Cost of Care” for knee replacements. What would it mean if future reimbursements were tied not only to the quality of services rendered, but to the cost of that care?

Additional Resources

As part of this year’s Rural Relevance Study release, iVantage is making available state-level data for each of the study’s Points of Emphasis. Visit www.iVantageINDEX.com to request your data packet.

Study Conclusion

The Rural Relevance Study: Vulnerability to Value has established a baseline for assessing the performance of the rural health safety net across a broad spectrum of characteristics over the past six years. The study is bookended with both analysis of the vulnerability of the safety net providers and the communities they serve, and the value they offer. The study is aligned with the “Triple Aim” of healthcare to improve health for populations, yield better outcomes for patients and lower costs.

VULNERABILITY

The study explores policies that are putting negative pressure on rural hospitals and estimates the *impact* to patients, hospitals and communities. In fact, iVantage notes significant and accumulating negative pressure on rural health providers and sees an increase in vulnerability to closure, potentially jeopardizing the access to care of some 11.7 million patient encounters. The loss of 66 rural hospitals since 2010 is an alarming pace in the context of the last 30 years. This trend is accelerating and iVantage notes 673 rural hospitals vulnerable to closure.

Further, iVantage seeks to establish the relationship between vulnerable hospitals, hospital closures and the population health of the communities they serve with significantly greater health disparities. This study examines the rural health safety net with a new Health Disparities Index linking providers to vulnerable communities with *greater* needs.

VALUE

iVantage has expanded the scope of research each year in evaluation of the value proposition of the rural health safety net. This study systematically explores value in according to the CMS Value Based Purchasing (VBP) program and linked these measures to rural hospitals, most of whom are unable to participate given CAH status. Nonetheless, this research demonstrates that the net impact would be positive as performance is in line with benchmarks or exceeds benchmarks. There is a discussion of the development of candidate rural VBP measures commissioned by CMS and developed by the National Quality Forum with input from rural constituencies.

The study offers an in-depth analysis of the numerators in the value equation: Quality, Outcomes, Safety, and Patient Satisfaction. iVantage sees some erosion in the relative performance of rural hospitals compared to urban in areas of quality, as their peers chase the value curve incentivized by the VBP program. However, across the board there is parity with continued strength in areas of patient satisfaction.

iVantage expanded a robust analysis of the denominator to value by evaluating: Costs, Charges, and the Medicare Spend Per Beneficiary. In particular, common Inpatient DRGs and Outpatient CPT codes were used to establish cohort benchmarks further noting favorable rural hospital position. While costs were slightly higher for rural hospitals or on par with urban cohorts, they charged far less for services provided.

iVantage triangulates Medicare's Spend Per Beneficiary with hospital service areas to deepen the perspective into the denominator of Value of the rural health safety net. Medicare spends less to care for rural beneficiaries than their urban counterparts.

Appendix A: Review of Data Sources

The Rural Relevance study employs four primary data sources: “**Clinical Costs and Charges**” utilizes inpatient cost and charge data to quantify rates of cost and charge for CAHs and Non-CAHs; “**Shared Savings**” utilizes the recent CMS Shared Savings data files to draw Medicare beneficiary payment; “**Hospital Performance**,” which includes the Vulnerability Index and Health Disparity Index utilizes the iVantage Hospital Strength INDEX® to identify and compare rural vs. urban provider performance across several domains (e.g. finance, market, safety and quality, efficiency).

- **Clinical Costs and Charges**

The Center for Medicare Services (CMS) releases the Medicare Provider Analysis and Review annually. This study makes use of the MedPAR file from 2014 which consolidates Inpatient Hospital or Skilled Nursing Facility (SNF) claims data from the National Claims History (NCH) files into stay level records. This data is used to compare costs and charges at a DRG and service line level for all U.S. hospitals. Outpatient data is sourced from the Medicare Outpatient Standard Analytical File for 2014.

- **Shared Savings (Medicare Beneficiary)**

CMS made public its initial set of Shared Savings Program data files in 2011; these previously unavailable data files contain payment amounts for all Medicare beneficiaries at the zip code level for a 12-month period. Each file contains an aggregate dollar amount, reflecting total Medicare payments or allowed charges including deductibles and co-insurance, for each zip code and each service category. Data include payments for inpatient, outpatient and physician services as specified below:

- The Inpatient facility data set includes all Inpatient fee-for-service claims for Federal FY 2012 (10/1/11-9/30/12). Case types are defined as major diagnostic categories ("MDC").
- The Outpatient facility data set includes all outpatient fee-for-service claims for calendar year 2012 (1/1/2012-12/31/2012). Services are defined as outpatient categories.
- The Physician data set includes all physician fee-for-service claims for calendar year 2012 (1/1/2012-12/31/2012). Service area is defined as the physician’s primary specialty as designated in the physician’s Medicare Enrollment Application.

iVantage utilizes the CMS Denominator file to calculate the number of 12-month person years for Medicare beneficiaries at the individual zip code level, and by rural and urban resident cohorts. The table below summarizes the count of Medicare beneficiaries used in this study:

Table A. Count of Medicare Beneficiaries in CMS 2012 Denominator File (Adjusted to Person Years)

Type	Rural	Urban	Total	Rural % of Total
Part A (Hospital Insurance)	8,258,143	28,126,515	35,616,426	23.19%
Part B (Supplemental Medical)	7,703,362	25,082,637	32,077,664	24.01%

Hospital Performance. iVantage Health Analytics released the Hospital Strength INDEX in fall 2011, a comprehensive rating system that compares U.S. general acute-care hospitals across a continuum of financial, value-based and market driven performance indicators. Ratings are based on publicly available data sources, including Medicare Cost Reports, Medicare claims data, Hospital Compare reporting and related sources. In this updated study, iVantage modified the Hospital Strength INDEX to include the most recently available data sets and applied a set of refinements to the methodology based on market feedback and access to new data sets.

The Hospital Strength Index is designed to provide a comprehensive yet straightforward method for comparing hospital performance. The scoring model aggregates hospital-specific data for 66 individual metrics and calculates percentile rankings based on performance in comparison to all hospitals in the study group. Nine primary index scores are derived based on the composite scores of their respective components. Aggregate scores across these indices serve as the basis for a single overall rating – the Hospital Strength INDEX.

For the purpose of the Study, all US general acute care hospitals are divided into two geographic-based cohorts (urban vs. rural) using the industry standard Office of Management and Budget (OMB) geographic designation. Note that hospitals in both cohorts that do not have data for each Hospital Strength INDEX pillar are excluded from this study. For a detailed treatment of the iVantage Hospital Strength INDEX, please visit www.iVantageINDEX.com and refer to the Methodology.

Shared Savings

iVantage Health Analytics has analyzed Medicare Spend by Beneficiary for Inpatient, Outpatient and Physician services.

Table 1 shows the distribution of Medicare dollars for all beneficiaries. Based on the most recent Shared Savings data files, Medicare payments to all beneficiaries for all services (inpatient, outpatient and physician) totaled \$271 billion with inpatient and outpatient payments representing 66.5% of total expenditures. Medicare payments to rural residents totaled \$60.7 billion, or 22.4% of total expenditures.

Table 1. Distribution of Medicare Payments, by Total Dollars, by Service Type (Urban vs. Rural)

SVC TYPE	URBAN		RURAL		TOTAL	
	\$	%	\$	%	\$	%
Inpatient	103,161,031,724	77.21%	30,445,893,747	22.79%	133,606,925,471	49.19%
Outpatient	34,887,402,642	74.16%	12,157,454,337	25.84%	47,044,856,979	17.32%
Physician	72,811,366,759	80.06%	18,132,270,202	19.94%	90,943,636,961	33.48%
Total	210,859,801,125	77.64%	60,735,618,286	22.36%	271,595,419,411	100.00%

As illustrated in **Table 2**, per-beneficiary Medicare payments to rural residents are less for inpatient and physician services, but are higher for outpatient services, compared to their urban counterparts. Of note, the per-capita payments for Physician Services to rural beneficiaries are 19.1% **less** than their urban counterparts. This percentage difference translates into a payment differential of \$557 per Medicare beneficiary. Conversely, the per-capita payments for Outpatient Services to rural beneficiaries are 13.2% **more** than their urban counterparts. This percentage difference translates into a payment differential of \$184 per Medicare beneficiary.

Table 2. Distribution of Medicare Payments, by Per-Capita Dollars, by Service Type (Urban vs. Rural)

SVC TYPE	URBAN	RURAL	TOTAL		RURAL DIFFERENCE (\$ AND PERCENTAGE OF URBAN)	
	\$	\$	\$	%	\$	%
Inpatient	3,695	3692	3,694	49.19%	(3)	-0.08%
Outpatient	1,395	1579	1,439	19.16%	184	13.19%
Physician	2,912	2355	2,781	37.03%	(557)	-19.13%
Total	7,552	7365	7,510	100.00%	(187)	-2.48%

Table 3 displays the payments and differential rates (rural vs urban) for the top ten states determined by the highest total payments. Among the ten states with the highest total Medicare payments, six register lower rural spend rates than urban rates. California and Michigan have a much higher differential rate meaning rural is much less costly than urban. In three states the urban rate is higher than the rural rate, while one state does not have any rural population. Florida is a notable outlier, with a rural rate more than \$1,200 higher than its urban rate.

Table 3. Top 10 - Medicare Payments, by State

State	Total Payments (\$)	Urban Payments (\$)	Rural Payments (\$)	Difference – Rural, Urban Rates (\$)
CA	21,977,061,945	21,006,120,400	970,941,545	-1118
FL	20,771,717,075	18,910,361,225	1,861,355,850	1,276
TX	20,511,457,459	16,421,503,848	4,089,953,611	193
NY	16,512,416,141	14,950,635,317	1,561,780,824	-903
IL	13,419,545,853	11,090,883,754	2,328,662,099	-366
PA	11,168,180,245	8,989,971,471	2,178,208,774	-90
MI	11,054,979,002	8,767,887,898	2,287,091,104	-1572
OH	10,033,106,887	7,740,272,050	2,292,834,837	-310
NJ	9,408,924,451	9,408,924,451		N/A
NC	9,393,524,187	5,747,625,297	3,645,898,890	552

Inpatient Medicare Beneficiary Analysis

Among the three service areas (inpatient, outpatient and physician), Medicare payments for all (urban and rural) inpatient services consume the highest percentage of dollars (49.19% of total expenditures).

The top ten most utilized Medical Diagnostic Categories (MDC) represent 87.90% of total inpatient Medicare payments. **Table 4** displays the top ten Inpatient MDCs by total dollars, percent of Inpatient total and per beneficiary spend. Circulatory diagnoses is the most costly diagnosis for inpatient services consuming 20.43% of the total inpatient spend with a per beneficiary spend of \$755.

Table 4. Comparison of Inpatient (Rural and Urban) Medicare Payments, Total Dollars, by Service Type

Inpatient (Top 10 - MDC Total Dollars)	Total Dollars (\$)	Percent of IP Total	Per Beneficiary (\$)
IP_MDC_05_CIRCULATORY	27,292,645,751	20.43%	755
IP_MDC_08_ORTHOPEDIC	18,550,778,756	13.88%	513
IP_MDC_04_RESPIRATORY	16,742,491,582	12.53%	463
IP_MDC_06_DIGESTIVE	11,687,586,901	8.75%	323
IP_MDC_18_INFECT_PARASITIC	10,532,974,290	7.88%	291
IP_MDC_01_NERVOUS	8,774,336,331	6.57%	243
IP_MDC_23_HEALTH_STATUS	7,079,870,727	5.30%	196
IP_MDC_11_KIDNEY	6,947,912,478	5.20%	192
IP_MDC_TRANSPLANT	5,050,618,019	3.78%	140
IP_MDC_19_MENTAL	4,781,698,426	3.58%	132

Table 5 shows the top ten states determined by highest inpatient Medicare spend. The ten highest payment states represent 47.49% of total Medicare inpatient spend. Total spend attributed to rural residents of these states are 82.64% less than payments made to urban residents. North Carolina's rural inpatient Medicare spend is approximately 40% of their total inpatient Medicare spend. Texas, Pennsylvania, Michigan and Ohio hover around 20% of their inpatient Medicare spend in their rural market. New Jersey doesn't have a rural market for Medicare spend.

Table 5. Top Ten Inpatient Medicare Payments, Total Dollars, by State

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	RURAL PERCENT OF STATE TOTAL
CA	10,987,247,123	10,488,779,752	498,467,371	4.54%
TX	10,340,554,693	8,291,841,658	2,048,713,036	19.81%
FL	8,744,268,879	7,944,072,699	800,196,180	9.15%
NY	8,482,586,633	7,705,880,171	776,706,462	9.16%
IL	6,589,057,026	5,432,243,058	1,156,813,968	17.56%
PA	5,612,754,052	4,529,363,684	1,083,390,369	19.30%
MI	5,488,150,563	4,386,915,830	1,101,234,733	20.07%
OH	5,101,011,908	3,950,873,586	1,150,138,323	22.55%
NC	4,451,533,925	2,689,073,387	1,762,460,538	39.59%
NJ	4,363,918,421	4,363,918,421	0	0.00%

Table 6 displays the total, urban and rural spend per Inpatient Medicare services for the bottom ten states determined by the lowest total Inpatient Medicare spend. This table shows that the most rural states have the lowest Inpatient Medicare spend. Vermont's rural Inpatient Medicare spend is 73.62% of their total Medicare spend. Montana's (a frontier state) rural Inpatient Medicare spend is 67.24% of their total Medicare spend.

Table 6. Bottom Ten Inpatient Medicare Payments, Total Dollars, by State

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	RURAL PERCENT OF STATE TOTAL
AK	232,210,604	145,200,668	87,009,936	37.47%
WY	268,681,668	94,826,427	173,855,241	64.71%
HI	296,819,044	199,095,559	97,723,485	32.92%
ND	312,666,192	130,068,669	182,597,524	58.40%
VT	341,939,409	90,210,690	251,728,719	73.62%
DC	357,243,959	357,243,959	0	0.00%
MT	376,497,900	123,340,956	253,156,944	67.24%
SD	385,926,433	155,748,355	230,178,078	59.64%
RI	406,913,451	406,913,451	0	0.00%
ID	507,908,396	287,733,753	220,174,644	43.35%

Table 7 displays the top ten states determined by the percentage of urban variation to rural for the total inpatient Medicare spend. Michigan has an urban rate of spend per beneficiary that is 20.79% higher than the rural rate for inpatient Medicare spend in that state.

Table 7. Top Ten States by Total Inpatient Medicare payments Per-Beneficiary by Urban Variation to Rural

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	DIFFERENCE: RURAL, URBAN RATES* (%)
MI	4,223	4,445	3,521	20.79%
WY	3,338	3,796	3,132	17.49%
NY	4,058	4,120	3,527	14.39%
CA	3,520	3,545	3,071	13.37%
MA	3,701	3,704	3,271	11.69%
VT	3,076	3,375	2,981	11.67%
NV	3,558	3,607	3,294	8.68%
NH	2,911	3,020	2,767	8.38%
CT	3,572	3,601	3,307	8.16%
OH	4,049	4,102	3,876	5.51%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Table 8 displays the bottom ten states determined by the urban variation to rural inpatient Medicare spend. New Mexico has a rural inpatient Medicare spend per beneficiary that is 22.95% more expensive than urban spend in that state.

Table 8. Bottom Ten States by Total Inpatient Medicare Payments Per-Beneficiary by Urban Variation to Rural

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	DIFFERENCE: RURAL, URBAN RATES* (%)
NM	2,935	2,667	3,279	-22.95%
AZ	3,263	3,195	3,847	-20.41%
GA	3,466	3,307	3,920	-18.54%
FL	3,670	3,620	4,253	-17.49%
VA	3,267	3,157	3,687	-16.79%
LA	4,564	4,338	5,029	-15.93%
ME	2,962	2,772	3,187	-14.97%
OR	2,566	2,430	2,788	-14.73%
SC	3,458	3,337	3,785	-13.43%
ID	2,918	2,775	3,129	-12.76%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Outpatient Medicare Beneficiary Findings

Among the three service areas (inpatient, outpatient and physician), Medicare payments for all (urban and rural) outpatient services consume the lowest percentage of dollars (17.32% of total expenditures). The top ten most utilized outpatient service lines represents 80.58% of total outpatient Medicare payments. **Table 9** displays the top ten Outpatient service lines by total dollars, percent of outpatient total and per beneficiary spend. Imaging and Cardiovascular are the two most costly service lines for outpatient services consuming 15.19% of the total outpatient spend with a per beneficiary spend of \$219 each.

Table 9. Comparison of Outpatient Medicare Payments, Total Dollars, by Service Type

OUTPATIENT - (TOP 10 SERVICE LINES BY TOTAL DOLLARS)	TOTAL DOLLARS FOR SERVICE LINE (\$)	PERCENT OF OP TOTAL	AVERAGE COST PER BENEFICIARY (\$)
OP_IMAGING	7,146,789,840	15.19%	219
OP_CARDIOVASCULAR	7,146,707,305	15.19%	219
OP_DRUGS_VACCINES	6,015,752,566	12.79%	184
OP_E_M	5,125,115,061	10.89%	157
OP_EYE	2,756,928,452	5.86%	84
OP_GI	2,324,272,362	4.94%	71
OP_NERVE_NEURO	2,302,531,826	4.89%	70
OP_MUSCULOSKELETAL	2,177,272,791	4.63%	67
OP_RADIATION	1,535,051,338	3.26%	47
OP_DRUG_ADMINISTRATION	1,377,205,685	2.93%	42

Table 10 shows the top ten states determined by total outpatient Medicare spend, urban and rural spend and rural percentage of total spend. The ten states with the highest outpatient Medicare payments account for nearly 49% of all outpatient Medicare payments in the nation. Payments to rural beneficiaries account for approximately 20% of all Medicare payments in these ten states. North Carolina is the 9th most expensive state when looking at total outpatient Medicare payments and has the highest percentage of spend in the rural market in their state (38.64%).

Table 10. Top Ten Outpatient Medicare Payments, Total Dollars, by State

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	RURAL PERCENT OF TOTAL
CA	3,329,851,862	3,134,486,467	195,365,395	5.87%
TX	3,277,203,989	2,536,801,349	740,402,640	22.59%
FL	2,877,134,232	2,607,772,288	269,361,943	9.36%
IL	2,372,065,464	1,899,311,382	472,754,083	19.93%

NY	2,152,481,970	1,825,183,253	327,298,717	15.21%
MI	1,985,413,672	1,483,959,390	501,454,282	25.26%
PA	1,938,897,701	1,501,040,977	437,856,724	22.58%
OH	1,882,418,314	1,429,402,264	453,016,050	24.07%
NC	1,793,607,499	1,100,519,341	693,088,158	38.64%
GA	1,350,583,928	959,650,105	390,933,823	28.95%

Table 11 displays the total, urban and rural spend per outpatient Medicare services for the bottom ten states determined by the lowest total outpatient Medicare spend. This table shows that the most rural states have the lowest outpatient Medicare spend. Vermont and Wyoming's rural outpatient Medicare spend is 68.95% and 68.85%, respectively, of their total Medicare spend.

Table 11. Bottom Ten Outpatient Medicare Payments, Total Dollars, by State

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	RURAL PERCENT OF TOTAL
DC	75,467,362	75,467,362	0	0.00%
AK	85,342,916	48,032,127	37,310,789	43.72%
WY	101,582,487	31,638,794	69,943,692	68.85%
HI	110,084,291	75,545,636	34,538,655	31.37%
RI	151,475,111	151,475,111	0	0.00%
VT	166,926,869	51,834,389	115,092,480	68.95%
DE	191,207,368	123,520,366	67,687,002	35.40%
ND	195,348,335	92,449,950	102,898,385	52.67%
SD	203,046,946	89,792,856	113,254,090	55.78%
MD	210,153,482	189,197,181	20,956,300	9.97%

Table 12 displays the top ten states determined by the percentage of urban variation to rural for the total outpatient Medicare spend. Massachusetts has an urban rate of spend per beneficiary that is 49.13% higher than the rural rate for outpatient Medicare spend.

Table 12. Top Ten States by Total Outpatient Medicare Payments Per-Beneficiary by Urban Variation to Rural

STATE	TOTAL	URBAN	RURAL	DIFFERENCE: RURAL, URBAN RATES* (%)
MA	1,633	1,636	1,097	49.13%
VT	1,639	2,109	1,489	41.64%
ND	2,161	2,556	1,897	34.74%
SD	1,776	1,950	1,659	17.54%
MT	1,585	1,758	1,503	16.97%
NH	1,601	1,705	1,467	16.22%
WI	1,597	1,670	1,443	15.73%
IA	1,401	1,449	1,361	6.47%
ME	1,634	1,679	1,582	6.13%
OR	1,268	1,296	1,225	5.80%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Table 13 displays the bottom ten states determined by the urban variation to rural outpatient Medicare spend. New York has a rural outpatient Medicare spend per beneficiary that is 31.63% more expensive than urban spend.

Table 13. Bottom Ten States by Total Outpatient Medicare Payments Per-Beneficiary by Urban Variation to Rural

STATE	TOTAL	URBAN	RURAL	DIFFERENCE: RURAL, URBAN RATES* (%)
NY	1,181	1,124	1,644	-31.63%
AK	1,341	1,186	1,613	-26.47%
MD	315	308	391	-21.23%
VA	1,389	1,326	1,617	-18.00%

NV	1,101	1,069	1,260	-15.16%
FL	1,322	1,304	1,526	-14.55%
TX	1,451	1,411	1,605	-12.09%
AL	1,546	1,476	1,672	-11.72%
PA	1,526	1,487	1,676	-11.28%
GA	1,450	1,404	1,577	-10.97%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Physician Medicare Beneficiary Findings

Among the three service areas, Medicare payments for physician services consume 33.48% of total expenditures. The top ten most utilized physician specialty services represent 62.33% of total physician Medicare payments. **Table 14** displays the comparison of physician Medicare payments by total spend, percent of total physician spend, and average cost per beneficiary. Internal Medicine is the highest cost specialty which is 13.25% of the total specialty spend and has a cost per beneficiary of \$368.

Table 14. Comparison of Physician Medicare Payments, Total Dollars, by Service Type

PHYSICIAN (TOP 10 SPECIALITIES BY TOTAL DOLLARS)	TOTAL DOLLARS FOR SPECIALITY (\$)	PERCENT OF PHYS TOTAL	AVERAGE COST PER BENEFICIARY (\$)
PHY_INTERNAL_MEDICINE	12,049,396,375	13.25%	368
PHY_OPHTHALMOLOGY	7,750,250,544	8.52%	237
PHY_CARDIOLOGY	6,876,331,193	7.56%	210
PHY_FAMILY_PRACTICE	6,596,397,011	7.25%	202
PHY_HEMATOLOGY_ONCOLOGY	6,055,677,666	6.66%	185
PHY_DIAGNOSTIC_RADIOLOGY	4,993,164,362	5.49%	153
PHY_ORTHOPEDIC_SURGERY	3,930,575,396	4.32%	120
PHY_DERMATOLOGY	3,175,047,031	3.49%	97
PHY_EMERGENCY_MEDICINE	3,028,483,872	3.33%	93
PHY_NEPHROLOGY	2,236,340,979	2.46%	68

Table 15 shows the top ten states determined by total physician Medicare spend, urban and rural spend and rural percentage of total spend. The ten states with the highest physician Medicare payments account for 56.24% of all physician Medicare payments in the nation. Payments to rural beneficiaries

account for approximately 13% of all Medicare payments in these ten states. North Carolina has the 9th highest total physician Medicare spend and the highest percentage of rural dollars for the state (37.81%) among the top ten states.

Table 15. Top Ten Physician Medicare Payments, Total Dollars, by State

State	Total (\$)	Urban (\$)	Rural (\$)	Rural Percent of Total
FL	9,150,313,964	8,358,516,237	791,797,727	8.65%
CA	7,659,962,960	7,382,854,181	277,108,779	3.62%
TX	6,893,698,777	5,592,860,841	1,300,837,936	18.87%
NY	5,877,347,538	5,419,571,893	457,775,645	7.79%
IL	4,458,423,363	3,759,329,315	699,094,048	15.68%
NJ	3,707,791,537	3,707,791,537	0	0.00%
PA	3,616,528,492	2,959,566,810	656,961,682	18.17%
MI	3,581,414,767	2,897,012,678	684,402,088	19.11%
NC	3,148,382,763	1,958,032,569	1,190,350,195	37.81%
OH	3,049,676,664	2,359,996,201	689,680,463	22.61%

Table 16 displays the total, urban and rural spend per outpatient Medicare services for the bottom ten states determined by the lowest total physician Medicare spend. This table shows that the most rural states have the lowest physician Medicare spend. Vermont's rural physician Medicare spend is 69.61% of their total Medicare spend. Montana and Wyoming have a rural physician Medicare spend of approximately 62% each.

Table 16. Bottom Ten Physician Medicare Payments, Total Dollars, by State

STATE	TOTAL (\$)	URBAN (\$)	RURAL (\$)	RURAL PERCENT OF TOTAL
AK	109,051,789	78,584,354	30,467,435	27.94%
WY	143,816,765	53,597,076	90,219,689	62.73%
VT	148,020,025	44,980,861	103,039,164	69.61%
ND	159,272,839	68,976,169	90,296,670	56.69%
DC	177,371,057	177,371,057	0	0.00%
HI	189,164,933	133,870,737	55,294,196	29.23%
SD	214,414,353	89,077,114	125,337,239	58.46%
MT	228,509,874	86,252,994	142,256,880	62.25%
ID	260,725,872	158,832,500	101,893,372	39.08%
RI	261,508,508	261,508,508	0	0.00%

Table 17 displays the top ten states determined by the percentage of urban variation to rural for the total physician Medicare spend. California has an urban rate of spend per beneficiary that is 34.38% higher than the rural rate for outpatient Medicare spend.

Table 17. Top Ten States by Total Physician Medicare payments per-Beneficiary by Urban Variation to Rural

STATE	TOTAL	URBAN	RURAL	DIFFERENCE: RURAL, URBAN RATES* (%)
CA	2,714	2,766	1,815	34.38%
AK	1,714	1,941	1,317	32.15%
NY	3,225	3,338	2,299	31.13%
NH	1,754	2,027	1,402	30.83%
CO	2,294	2,450	1,747	28.69%
NV	3,012	3,159	2,264	28.33%
MI	2,967	3,180	2,310	27.36%
VT	1,453	1,831	1,333	27.20%
AZ	3,103	3,189	2,402	24.68%
WY	1,933	2,327	1,757	24.50%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Table 18 displays the bottom ten states determined by the urban variation to rural physician Medicare spend. Only three states exhibit higher per-beneficiary physician payments in rural areas than urban areas (Florida, New Mexico and North Carolina). Forty-seven states and the District of Columbia have lower rural physician payments than urban; the differences range from a low of 0.37% to a high of 34.38%.

Table 18. Bottom Ten States by Total Physician Medicare Payments Per-Beneficiary by Urban Variation to Rural.

STATE	TOTAL	URBAN	RURAL	DIFFERENCE: RURAL, URBAN RATES* (%)
FL	4,203	4,178	4,485	-7.35%
NM	1,943	1,915	1,977	-3.24%
NC	2,605	2,598	2,617	-0.73%
GA	2,938	2,941	2,930	0.37%
LA	2,648	2,658	2,628	1.13%
TN	2,680	2,703	2,641	2.29%
DE	2,764	2,786	2,720	2.37%
OK	2,355	2,383	2,323	2.52%
WV	2,294	2,330	2,258	3.09%
SC	2,736	2,761	2,671	3.26%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Medicare Beneficiary Payments for Rural Populations

Top Ten and Bottom Ten States in Terms of Rural Percentage of Medicare Payments

The percentage of rural payments made to Medicare beneficiaries varies widely among states. Tables 20 and 21 identify the Top Ten and Bottom Ten states ranked according to the percentage of rural payments compared to total payments for all three services (inpatient, outpatient and physician).

As seen throughout the beneficiary findings and in [Table 19](#), Vermont is the most “rural state” when determining the percentage of rural Medicare payments in the state. Vermont spends 71.53% of their Medicare dollars in the rural market. Montana and Wyoming spend approximately 65% of their Medicare dollars in the rural market.

Table 19. “Rural States” - Top Ten States (Rural Medicare Payments as a Percentage of Total Medicare Payments)

State	Total Payments (\$)	Total Rural Payments (\$)	Difference (\$)	Rural Percent of Total
VT	656,886,303	469,860,363	187,025,940	71.53%
MT	826,786,759	538,187,930	288,598,829	65.09%
WY	514,080,919	334,018,622	180,062,297	64.97%
MS	3,691,503,988	2,261,714,226	1,429,789,762	61.27%
SD	803,387,732	468,769,407	334,618,325	58.35%
ND	667,287,366	375,792,579	291,494,787	56.32%
NE	1,683,705,516	893,151,036	790,554,480	53.05%
IA	2,947,592,746	1,536,979,403	1,410,613,343	52.14%
KY	5,116,755,425	2,549,126,292	2,567,629,133	49.82%
WV	2,347,363,000	1,166,573,190	1,180,789,810	49.70%

As shown in **Table AA** New Jersey, Rhode Island and the District of Columbia do not have any spend in the rural market as they don't have “rural markets”. Massachusetts spends the least percentage of Medicare dollars in the rural market (0.45%).

Table AA. “Urban States” - Bottom Ten States (Rural Medicare Payments as a Percentage of Total Medicare Payments)

State	Total Payments (\$)	Total Rural Payments (\$)	Difference (\$)	Rural Percent of Total
NJ	9,408,924,451	0	9,408,924,451	0.00%
RI	819,897,070	0	819,897,070	0.00%
DC	610,082,378	0	610,082,378	0.00%
MA	6,377,451,307	28,518,104	6,348,933,203	0.45%
CA	21,977,061,945	970,941,545	21,006,120,400	4.42%
MD	5,958,725,491	455,495,316	5,503,230,175	7.64%

FL	20,771,717,075	1,861,355,850	18,910,361,225	8.96%
NY	16,512,416,141	1,561,780,824	14,950,635,317	9.46%
CT	3,311,493,666	315,779,424	2,995,714,242	9.54%
AZ	4,495,459,157	476,007,719	4,019,451,438	10.59%

Table BB displays the top and bottom five states determined by the lowest and highest spend, respectfully, per Medicare beneficiary. Hawaii has the lowest spend per Medicare beneficiary at \$4,880. Hawaii's urban spend rate is 54.09% higher than their rural spend rate.

Florida has the highest spend per Medicare beneficiary at \$8,718. Florida's urban spend rate is 90.16% higher than their rural spend rate.

Of the top and bottom five states, Montana is the only state with rural spend where the rural spend is higher than the urban spend.

Table BB. Top Five and Bottom Five States, Total (IP, OP, Physician) Cost Per Beneficiary

	State	Cost Per Beneficiary	Total Payments (\$)	DIFFERENCE – RURAL, URBAN RATES* (%)
Top 5	HI	4,880	596,068,268	54.09%
	OR	5,286	2,074,023,686	37.07%
	MT	5,450	826,786,759	-86.48%
	NM	5,873	1,400,552,719	7.90%
	NH	5,896	1,319,160,216	35.56%
Bottom 5	MN	8,232	3,643,263,672	46.81%
	MI	8,506	11,054,979,002	73.92%
	DC	8,520	610,082,378	N/A
	LA	8,608	4,671,511,434	46.53%
	FL	8,718	20,771,717,075	90.16%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Table CC displays the top and bottom five states determined by the lowest and highest difference between rural and urban rates of spend per Medicare beneficiary, respectfully. Vermont has the highest difference of spend per beneficiary. Vermont's spend per beneficiary in the urban setting is 20.45% higher than in the rural setting. That means if all urban Medicare patients in Vermont cost the same as rural Medicare patients Medicare would save \$160 million.

Table CC. Top Five and Bottom Five States, Total (IP, OP, physician) Variation (rural vs. urban) in Cost Per Beneficiary

	State	Spend Per Beneficiary	Total Payments (\$)	Difference - Rural, Urban Rates * (%)
Top 5	VT	5,909	656,886,303	20.45%
	MI	8,506	11,054,979,002	17.69%
	MA	6,955	6,377,451,307	17.01%
	WY	6,387	514,080,919	16.51%
	CA	7,042	21,977,061,945	15.75%
Bottom 5	VA	6,934	7,108,318,612	-8.69%
	LA	8,608	4,671,511,434	-9.93%
	GA	7,514	7,587,767,118	-12.62%
	FL	8,718	20,771,717,075	-14.81%
	NM	5,873	1,400,552,719	-18.38%

*States are rank-ordered according to how much greater urban spend rates are than rural spend rates, expressed as a percentage of each state's urban rate.

Summary of ACO Data File Management

iVantage maintains an extensive data warehouse infrastructure, managing public and proprietary databases for hospitals and health systems across the country. There were four sources of data for this analysis:

- The current public CMS Shared Savings Data Files
- The CMS 2012 Denominator file
- Wage indices by Core-Based Statistical Area (CBSA) from the Federal Register files accompanying the Fiscal Year 2012 Inpatient Prospective Payment Rules, (FY 2012 Final Rule Wage Index Tables dated July 29, 2012)
- ZIP Code to county cross reference file from ESRI, Inc., a national provider of demographic and geographic information system (GIS) products widely used by the federal government.

In support of the ACO Data File portion of this study, iVantage performed the following data management processes:

1. Downloaded the most recent public **CMS Shared Savings Data Files**, dated May 25, 2012 from <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Calculations.html> . These data are organized into the following files:

Physician file: This data set includes all physician fee-for-service claims for calendar year 2012 (1/1/2012-12/31/2012). Claims selected for the data set contain at least one of the specialty codes on the Physician Specialty file available on this web page. Claims are final action and the line allowed charges are aggregated by the beneficiary zip code on the claim and summarized by specialty category.

Inpatient facility file: This data set includes all Inpatient fee-for-service claims for Federal FY 2012 (10/1/2011-9/30/2012) and covers facilities paid under the Inpatient Prospective Payment System (IPPS), Critical Access Hospitals (CAHs), the Inpatient Rehabilitation Facility Prospective Payment System (IRF), Inpatient Psychiatric Prospective Payment System (IPS), Long Term Care Hospital Prospective Payment system (LTCH), Indian Health Service Hospitals (IHS), Children's Hospitals (to extent for which the CMS has data available), Cancer Hospitals and TEFRA Hospitals. Claims are final action and total payments include the Medicare Claim payment amount, the Beneficiary Inpatient Deductible Amount, the Beneficiary Part A Coinsurance Liability Amount and the Beneficiary Blood Deductible Liability Amount. Payments are aggregated by the beneficiary zip code on the claim.

Outpatient facility file: This data set includes all outpatient fee-for-service claims for calendar year 2012 (1/1/2012-12/31/2012) for facilities that include Ambulatory Surgical Centers (ASCs), Outpatient

Prospective Payment Systems (OPPS) facilities, Critical Access Hospitals (CAHs), Comprehensive Outpatient Rehabilitation Facilities (CORFs), Community Mental Health Centers (CMHCs), End-Stage Renal Disease facilities (ESRD), Federally Qualified Health Centers (FQHCs), Outpatient Rehabilitation Facilities (ORFs) and Rural Health Clinics (RHCs). Claims are final action and include any co-payments and/or deductibles that apply. Medicare Payments (and line allowed charge amounts in the case of ASCs) are aggregated by the beneficiary zip code on the claim.

Each file contains an aggregate dollar amount, reflecting total Medicare payments or allowed charges including deductibles and co-insurance, for each zip code.

- a. Aggregated and organized individual zip codes into long write up for Core Based Statistical Area (CBSA) designations
- b. Assigned Rural or Urban designations to zip code groups based on CBSA designation, with Rural defined as all Rural CBSA areas and all Micropolitan CBSA areas that are not part of an Urban CBSA
- c. Summed Total Medicare Payments at the CBSA level and applied a Wage Index Adjustment to calculate adjusted Medicare payments

2012 CMS Denominator file licensed from CMS under a CMS Data Use Agreement. This file contains one record for every person covered by Medicare at any time during calendar year 2010. This file shows, for every person, the number of months of eligibility for Part A (HI, Hospital Insurance), Part B (SMI, Supplemental Medical Insurance), and Part C (HMO participation).

- a. Summarized the number of months covered in Part A, Part B, and Part C for each person, dividing by 12 to get Person Years in Parts A, B, and C.
- b. Assigned the ZIP code to the county, then the county to the CBSA assigned by ESRI. If the CBSA was designated as a Metropolitan CBSA, it was considered Urban. If the CBSA was designated as a Micropolitan CBSA or Rural, it was considered Rural for the purposes of this analysis.
- c. Summarized the number of Person Years in Parts A, B, and C by county, CBSA, Rural/Urban, and State, excluding the HMO Person Years from Parts A and B Person Years as their payments were excluded from the Shared Savings data.

Total Spending per Medicare Beneficiary, by State

State	Total Rate (\$)	State Rank	Rural Rate (\$)	Urban Rate (\$)
AK	5,943	8	5,953	5,937
AL	7,825	40	8,012	7,723
AR	7,461	31	7,744	7,212
AZ	7,163	25	7,219	7,156
CA	7,042	22	5,982	7,100
CO	6,261	12	5,954	6,343
CT	7,161	24	6,819	7,199
DC	8,520	49		8,520
DE	7,239	27	7,438	7,145
FL	8,718	51	9,893	8,617
GA	7,514	33	8,194	7,276
HI	4,880	1	4,934	4,856
IA	6,384	13	6,271	6,511
ID	6,020	9	6,178	5,912
IL	7,876	41	7,576	7,942
IN	7,550	35	7,189	7,667
KS	7,186	26	7,347	7,076
KY	7,810	39	7,818	7,802
LA	8,608	50	9,165	8,337
MA	6,955	21	5,777	6,961
MD	7,768	38	7,858	7,761
ME	6,085	10	6,086	6,085

MI	8,506	48	7,312	8,884
MN	8,232	47	8,352	8,170
MO	7,524	34	7,501	7,537
MS	7,974	44	7,934	8,039
MT	5,450	3	5,226	5,923
NC	7,270	28	7,617	7,065
ND	6,808	19	6,456	7,323
NE	6,633	17	6,680	6,581
NH	5,896	5	5,344	6,317
NJ	8,034	45		8,034
NM	5,873	4	6,434	5,435
NV	7,065	23	6,469	7,175
NY	7,899	42	7,091	7,994
OH	7,964	43	7,727	8,037
OK	7,502	32	7,765	7,285
OR	5,286	2	5,374	5,232
PA	7,634	36	7,562	7,652
RI	6,725	18		6,725
SC	7,391	29	7,818	7,233
SD	6,454	15	6,360	6,590
TN	7,417	30	7,663	7,276
TX	8,202	46	8,357	8,164
UT	6,153	11	6,106	6,162
VA	6,934	20	7,403	6,811
VT	5,909	6	5,565	6,996
WA	5,928	7	5,732	5,976
WI	6,616	16	6,424	6,706
WV	7,721	37	7,837	7,610
WY	6,387	14	6,017	7,207

Total Spending by Setting of Care, by State

State	Total Dollars (\$)	State Rank	IP Total Dollars (\$)	OP Total Dollars (\$)	Physician Total Dollars (\$)
AK	426,605,309	51	232,210,604	85,342,916	109,051,789
AL	5,454,597,230	18	2,526,636,546	997,816,906	1,930,143,778
AR	3,474,638,466	28	1,757,797,919	663,259,617	1,053,580,930
AZ	4,495,459,157	22	2,048,100,216	715,413,575	1,731,945,367
CA	21,977,061,945	1	10,987,247,123	3,329,851,862	7,659,962,960
CO	2,760,830,746	32	1,289,592,682	568,788,788	902,449,276
CT	3,311,493,666	29	1,651,895,933	573,105,906	1,086,491,828
DC	610,082,378	48	357,243,959	75,467,362	177,371,057
DE	1,099,897,122	41	519,585,809	191,207,368	389,103,945
FL	20,771,717,075	2	8,744,268,879	2,877,134,232	9,150,313,964
GA	7,587,767,118	11	3,499,830,109	1,350,583,928	2,737,353,081
HI	596,068,268	49	296,819,044	110,084,291	189,164,933
IA	2,947,592,746	30	1,414,520,502	601,237,137	931,835,107
ID	1,047,705,369	42	507,908,396	279,071,100	260,725,872
IL	13,419,545,853	5	6,589,057,026	2,372,065,464	4,458,423,363
IN	6,463,154,680	13	3,214,174,385	1,265,718,622	1,983,261,673
KS	2,848,664,176	31	1,368,453,181	566,196,891	914,014,104
KY	5,116,755,425	19	2,628,670,305	1,015,642,188	1,472,442,932
LA	4,671,511,434	21	2,476,903,997	890,909,894	1,303,697,543
MA	6,377,451,307	14	3,394,019,200	1,311,846,974	1,671,585,134
MD	5,958,725,491	17	3,634,641,439	210,153,482	2,113,930,571
ME	1,431,485,532	37	696,790,296	353,294,361	381,400,876
MI	11,054,979,002	7	5,488,150,563	1,985,413,672	3,581,414,767
MN	3,643,263,672	27	2,028,744,447	831,415,848	783,103,376
MO	6,088,516,499	15	3,015,796,965	1,308,274,257	1,764,445,278
MS	3,691,503,988	26	1,907,447,393	702,702,134	1,081,354,461
MT	826,786,759	43	376,497,900	221,778,986	228,509,874
NC	9,393,524,187	10	4,451,533,925	1,793,607,499	3,148,382,763
ND	667,287,366	46	312,666,192	195,348,335	159,272,839
NE	1,683,705,516	36	820,666,184	336,063,477	526,975,855
NH	1,319,160,216	39	651,231,586	318,740,838	349,187,792
NJ	9,408,924,451	9	4,363,918,421	1,337,214,493	3,707,791,537
NM	1,400,552,719	38	699,952,964	284,191,647	416,408,108
NV	1,894,369,480	35	954,047,311	251,617,212	688,704,958
NY	16,512,416,141	4	8,482,586,633	2,152,481,970	5,877,347,538
OH	10,033,106,887	8	5,101,011,908	1,882,418,314	3,049,676,664

OK	3,999,358,323	25	2,045,905,934	807,788,594	1,145,663,795
OR	2,074,023,686	34	1,006,938,263	434,344,501	632,740,922
PA	11,168,180,245	6	5,612,754,052	1,938,897,701	3,616,528,492
RI	819,897,070	44	406,913,451	151,475,111	261,508,508
SC	5,044,908,727	20	2,360,441,109	931,964,038	1,752,503,579
SD	803,387,732	45	385,926,433	203,046,946	214,414,353
TN	6,068,459,356	16	2,944,862,448	1,117,746,910	2,005,849,998
TX	20,511,457,459	3	10,340,554,693	3,277,203,989	6,893,698,777
UT	1,207,287,900	40	517,026,130	276,918,484	413,343,286
VA	7,108,318,612	12	3,348,785,661	1,279,195,124	2,480,337,827
VT	656,886,303	47	341,939,409	166,926,869	148,020,025
WA	4,480,335,885	23	2,135,761,680	958,362,116	1,386,212,088
WI	4,324,566,817	24	2,141,998,014	947,247,474	1,235,321,329
WV	2,347,363,000	33	1,257,816,584	446,695,092	642,851,323
WY	514,080,919	50	268,681,668	101,582,487	143,816,765

Total Spending – Urban/Rural Comparison, by State

State	Total Dollars(\$)	Total Dollar Rank	Rural Dollars (\$)	Urban Dollars (\$)	Rural Percent of Total	Rural Percent Rank
AK	426,605,309	51	154,788,160	271,817,149	36.28%	21
AL	5,454,597,230	18	1,972,082,681	3,482,514,549	36.15%	22
AR	3,474,638,466	28	1,689,103,272	1,785,535,194	48.61%	11
AZ	4,495,459,157	22	476,007,719	4,019,451,438	10.59%	42
CA	21,977,061,945	1	970,941,545	21,006,120,400	4.42%	47
CO	2,760,830,746	32	555,020,806	2,205,809,939	20.10%	35
CT	3,311,493,666	29	315,779,424	2,995,714,242	9.54%	43
DC	610,082,378	48		610,082,378	0.00%	49
DE	1,099,897,122	41	363,778,593	736,118,529	33.07%	26
FL	20,771,717,075	2	1,861,355,850	18,910,361,225	8.96%	45
GA	7,587,767,118	11	2,142,561,930	5,445,205,188	28.24%	30
HI	596,068,268	49	187,556,336	408,511,931	31.47%	27
IA	2,947,592,746	30	1,536,979,403	1,410,613,343	52.14%	8
ID	1,047,705,369	42	434,747,558	612,957,811	41.50%	16
IL	13,419,545,853	5	2,328,662,099	11,090,883,754	17.35%	39
IN	6,463,154,680	13	1,512,771,558	4,950,383,122	23.41%	31
KS	2,848,664,176	31	1,189,166,715	1,659,497,461	41.74%	15
KY	5,116,755,425	19	2,549,126,292	2,567,629,133	49.82%	9
LA	4,671,511,434	21	1,627,671,443	3,043,839,991	34.84%	23
MA	6,377,451,307	14	28,518,104	6,348,933,204	0.45%	48
MD	5,958,725,491	17	455,495,316	5,503,230,175	7.64%	46
ME	1,431,485,532	37	655,605,354	775,880,178	45.80%	14
MI	11,054,979,002	7	2,287,091,104	8,767,887,898	20.69%	34
MN	3,643,263,672	27	1,264,984,107	2,378,279,564	34.72%	24
MO	6,088,516,499	15	2,065,319,355	4,023,197,144	33.92%	25
MS	3,691,503,988	26	2,261,714,226	1,429,789,762	61.27%	4
MT	826,786,759	43	538,187,930	288,598,829	65.09%	2
NC	9,393,524,187	10	3,645,898,890	5,747,625,297	38.81%	18
ND	667,287,366	46	375,792,579	291,494,787	56.32%	6
NE	1,683,705,516	36	893,151,036	790,554,480	53.05%	7
NH	1,319,160,216	39	516,938,170	802,222,047	39.19%	17
NJ	9,408,924,451	9		9,408,924,451	0.00%	50
NM	1,400,552,719	38	671,466,246	729,086,473	47.94%	12
NV	1,894,369,480	35	269,855,894	1,624,513,586	14.25%	41
NY	16,512,416,141	4	1,561,780,824	14,950,635,317	9.46%	44
OH	10,033,106,887	8	2,292,834,837	7,740,272,050	22.85%	32
OK	3,999,358,323	25	1,872,253,503	2,127,104,820	46.81%	13
OR	2,074,023,686	34	801,033,000	1,272,990,686	38.62%	19
PA	11,168,180,245	6	2,178,208,774	8,989,971,471	19.50%	37
RI	819,897,070	44		819,897,070	0.00%	51
SC	5,044,908,727	20	1,444,413,788	3,600,494,939	28.63%	29

SD	803,387,732	45	468,769,407	334,618,324	58.35%	5
TN	6,068,459,356	16	2,274,979,780	3,793,479,575	37.49%	20
TX	20,511,457,459	3	4,089,953,611	16,421,503,848	19.94%	36
UT	1,207,287,900	40	204,557,719	1,002,730,181	16.94%	40
VA	7,108,318,612	12	1,575,753,613	5,532,564,999	22.17%	33
VT	656,886,303	47	469,860,363	187,025,940	71.53%	1
WA	4,480,335,885	23	851,114,188	3,629,221,697	19.00%	38
WI	4,324,566,817	24	1,351,393,370	2,973,173,447	31.25%	28
WV	2,347,363,000	33	1,166,573,190	1,180,789,810	49.70%	10
WY	514,080,919	50	334,018,622	180,062,297	64.97%	3