HOSPITAL STRENGTH INDEX™

Vulnerability to Value

Rural Relevance under Healthcare Reform

2015

iVantage® HEALTH ANALYTICS

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About iVantage Health Analytics

iVantage is a leading advisory and business analytic services company applying Accelerated Healthcare Transformation™ and the VantagePoints™ platform to drive sustained, evidence-based results. The company's unique combination of technology, content, and expert advisory services accelerates decision making for the new healthcare.

The study and other research findings can be viewed or downloaded for free at: www.ivantageindex.com. For additional information, contact Amy Weickert, Director of Marketing at: AWeickert@iVantageHealth.com.

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Rural Relevance under Healthcare Reform

iVantage Health Analytics first developed the *Rural Relevance under Healthcare Reform Study* in 2011 as a means of quantifying the rural hospital value proposition and offering analytic transparency around the landscape's defining factors. Few – if any – studies examining the rural healthcare landscape leverage as broad a cross section of empirical content and expertise as the ***Rural Relevance under Healthcare Reform Study***.

The 2015 Study reveals that rural hospitals have achieved a significant level of comparative performance, including demonstrated: quality, patient satisfaction and operational efficiency, for the type of care most relevant to rural communities. Acknowledging that not all care is equal, and that complex care cases are appropriately referred to tertiary care centers, the findings of the 2015 Rural Relevance Study challenges the notion that rural hospitals are: more costly, more inefficient and maintain lower quality and satisfaction. Importantly, as the industry seeks to address the new healthcare through innovative delivery models, the achievements of rural healthcare must be recognized as a key component for integration into broader strategies for patient-centered care under the Affordable Care Act.

The rural health safety net is vulnerable to unintended policy consequences, many resulting from a lack of institutional memory regarding the creation of critical access points-of-care for the 80 million Americans that call frontier and rural communities home. This study shows that, while greatly challenged, health leaders in these areas can excel in the industry transition from 'volume to value'. Findings examine the extent of rural hospital vulnerability and focus on the value proposition that they provide.

Policy changes concerning Medicare reimbursement pose a particular threat to the critical points-of-access that millions of rural Americans depend upon for their healthcare needs. iVantage has quantified the impact that several of these changes have (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 ACA (intended to address some of these cuts) has lead to significant downward pressure on rural hospital margins that may be dangerously underwater. iVantage is also tracking additional proposed cuts such as the OIG recommendations to reduce CAH reimbursements overall and in targeted areas such as Swing-beds.

Fifty rural hospitals have closed this decade and iVantage has identified 283 additional rural hospitals at risk of closure based on more than 60 performance characteristics. If these vulnerable hospitals were to close, the impact would be significant: 700,000 Medicare patients alone would have to seek care farther from home, 86,000 jobs could be lost in rural communities and it would result in an estimated $10.6 billion loss to the GDP.

In compiling this year's study, iVantage leveraged the most current MedPAR data files and Medicare Shared Savings data files; the Hospital Strength INDEX, the first nationwide hospital rating system to evaluate community and rural hospitals including 1,326 Critical Access Hospitals; and the industry's largest rural Emergency Department database; proprietary to iVantage.

For 2015, five concentrations emerged as a result of the data analysis and review phase:

- Vulnerability:
  - Rural Margins
  - Impact of policy
  - Current closures
  - Modeling of impact of policy recommendations
- ACO Shared Savings Analysis:
  - Rural-urban comparison of the spend per beneficiary
  - Inpatient Spend by Major Diagnostic Categories
  - Outpatient Spend by Service Type
  - Physician Spend by Specialty
- Quality:
  - Process of Care
  - Outcomes of Care
  - Patient Safety
  - Patient Satisfaction
- Pricing Transparency: Cost and Charge Study
  - Inpatient Total Cost
  - Inpatient Direct Cost
  - Outpatient Costs by BETOS categories
  - Outpatient Imaging Costs
  - Outpatient Imaging Charges
- Modeling of CAH Value-Based Purchasing with CMS 2017 Program Year Rules
  - Evaluation of Minimum Participation Thresholds
  - CAH Value Based Purchasing Withhold
  - CAH Value Based Purchasing Payments/Bonus
  - CAH Value Based Purchasing Penalties/Opportunities

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VULNERABILITY:

Sequester, Swing-beds, Hospital Closures and Medicaid Expansion

The rural health safety net is under ever-increasing financial pressure. Challenges are mounting from all sides, from the federal government, from the market and from population pressures. Policy changes concerning Medicare reimbursement pose a serious threat to the critical points of access that millions of rural Americans depend upon for their healthcare needs. iVantage has quantified the impact of several of these changes on rural healthcare institutions and has also identified several hundred rural hospitals at risk of closure. The following section outlines the methodologies and key findings of those analyses.

Sequestration

In March of 2013 a range of Federal spending cuts, collectively known as 'the sequester,' went into effect, including a planned 2% 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.

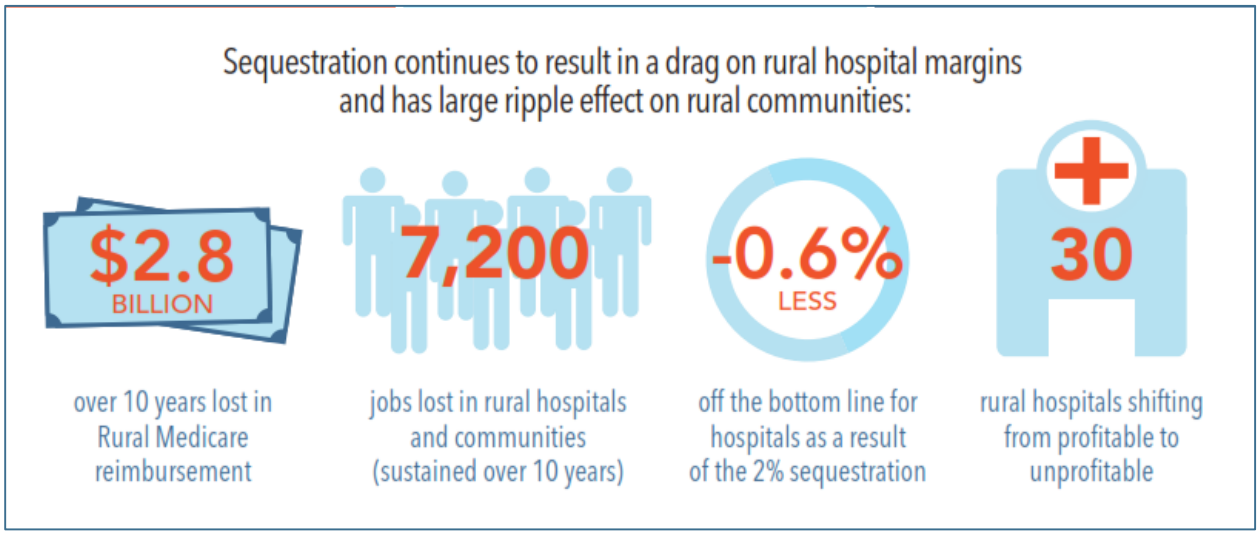

Figure 1: Impact of sequestration

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:

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- 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%.
- The majority of job loss will occur at Critical Access Hospitals (3,800 of 7,200).

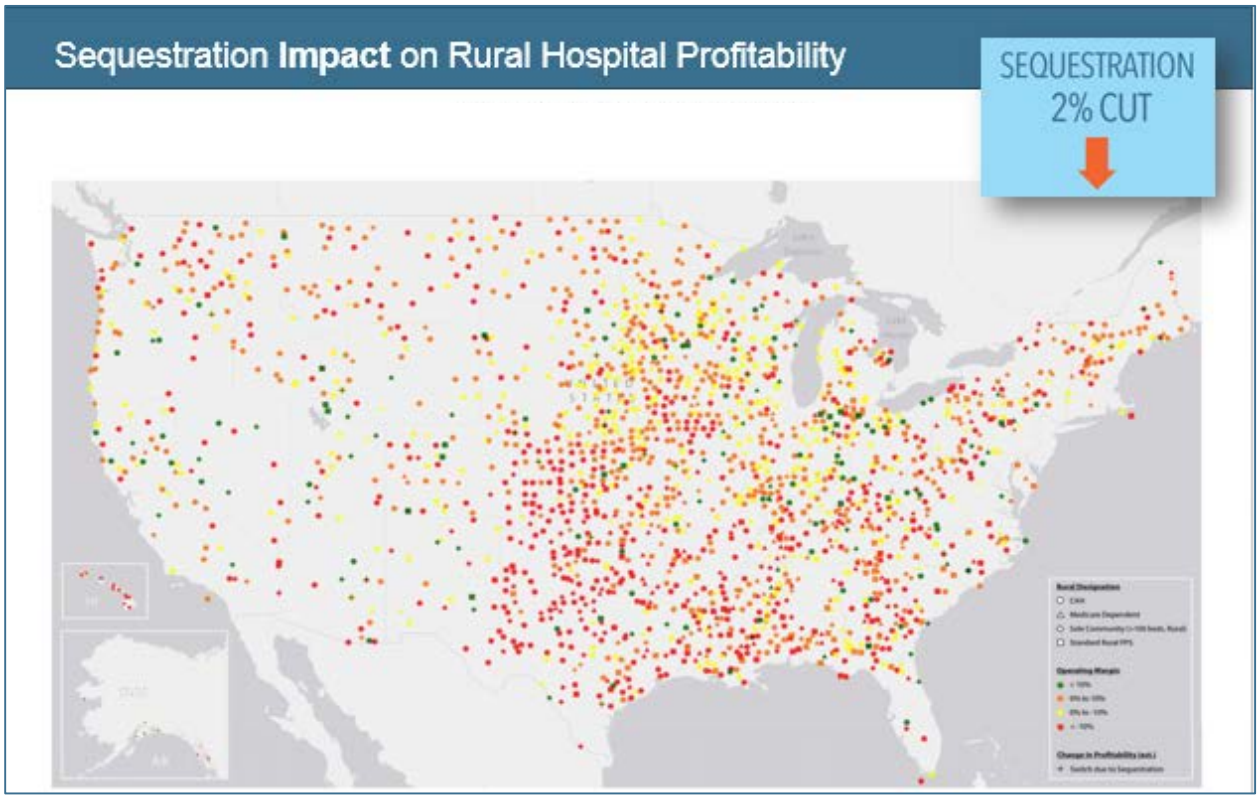


Figure 2: Sequestration impact on hospital margin

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 could potentially be fatal to many rural hospitals. 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 findings.

Key Findings:

- Swing-beds are tremendously important to CAHs
  - 131 CAHs derive more than 20% of their patient revenue from swing-beds.
  - The median CAH derives 6.7% 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.
  - 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% margin before these cuts, they would earn 0.0% 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.

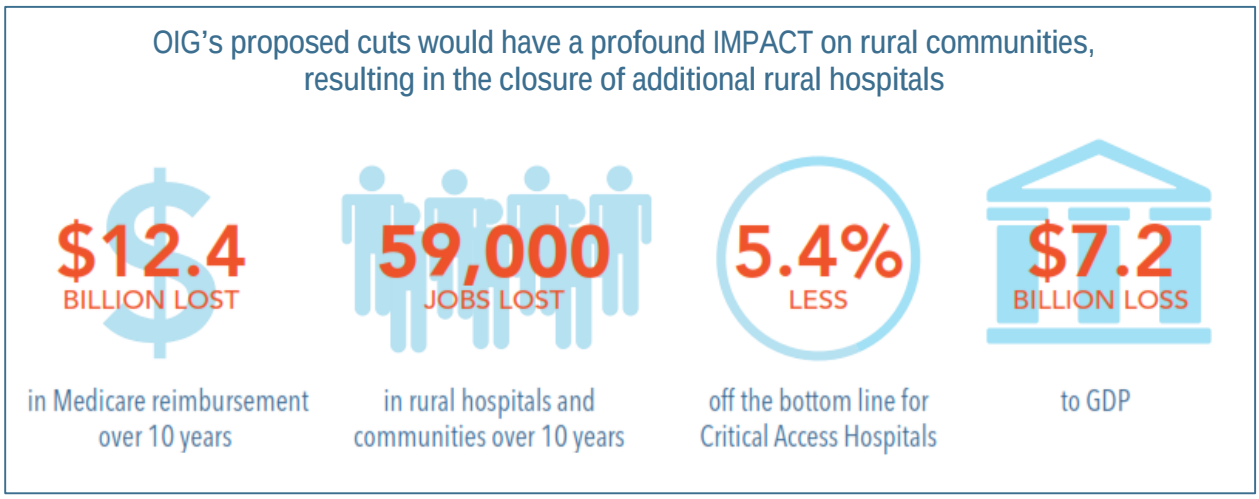


Figure 3: Potential impact of OIG cuts

Vulnerability INDEX

Challenges including those outlined above have combined to force 50 rural hospitals to close this decade. Utilizing data from the Hospital Strength INDEX™, iVantage has identified 283 rural hospitals that match the profile of these shuttered facilities, and who thus may be at risk of closure themselves.

The Hospital Strength INDEX uses publicly available data sets to quantify overall hospital performance in nine pillars, incorporating more than 60 individual measures. The INDEX analyzes all general acute-care hospitals in the country, numbering more than 4,300 facilities, 1,300 of which are Critical Access Hospitals. Facilities are ranked according to a comprehensive set of indicators that measure all relevant aspects of hospital performance, including market ranking, quality measures, population health metrics, and financial performance.

These vulnerable rural hospitals exhibit strikingly low levels of performance across a number of pillars and indicators. The numerous challenges facing rural healthcare are exerting pressure on many different aspects of these hospitals' health. The following findings come from the Hospital Strength INDEX Version 3.0 (February 2015). These facilities:

- Have a median Overall INDEX Score of 10.76 (of a possible 100).
- Have high costs but charge very little for their services, evidenced by a median charge score of 21.97 and a median cost score of 56.89
- Do a relatively good job of capturing outpatient business, but struggle to capture inpatients, with a median score of just 25.70
- Struggle with quality, registering a median Quality score of just 11.28
- Serve populations that are especially sick and expensive to treat, evidenced by a Population Risk score of 28.13
- Are overextended financially and struggling to make ends meet, borne out in a Financial Stability score of just 22.32.

We see the most similarity between these vulnerable hospitals and their peer facilities who have been forced to close in their balance sheets. The rural facilities who have recently shut their doors showed symptoms of their ill health in their finances before they closed. The hospitals we have identified as vulnerable also perform poorly on a number of financial metrics.

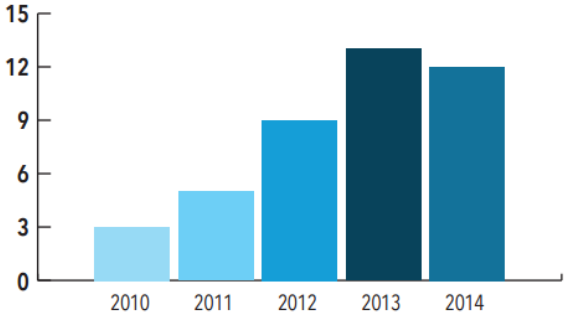


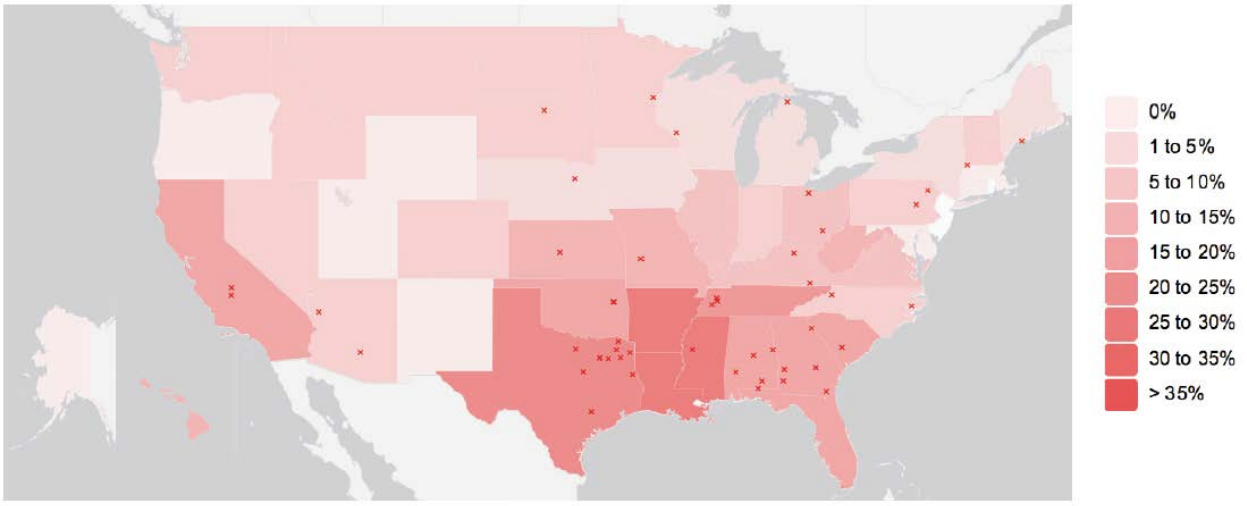
Figure 4: Escalation of closures

For the reporting period of Fiscal Year 2013, these vulnerable hospitals reported:

- Operating profit margins 131 percent lower than the national median

- Cash flow margins 76 percent lower than the national median
- Significantly higher percentages of Medicare patients than the national median
- A median Debt Service Coverage Ratio 85 percent lower than the national median, indicating higher levels of debt compared to income
- 59 percent fewer Days Cash on Hand than the national median

HOSPITAL VULNERABILITY INDEX: RURAL CLOSURES AND RISK OF CLOSURES



Darker shades indicate higher exposure to vulnerability.

*Denotes closed facilities

Medicaid Expansion under the ACA

Medicare payment cuts to hospitals such as those for "Charity Care" also known as Bad Debt were intended to be offset by expansion of health insurance coverage through Medicaid Expansion. Based upon the Supreme Court Ruling in *National Federation of Independent Business (NFIB) v. Sebelius* some states opted out of this expansion. This study begins tracking the influence of the ACA on hospital vulnerability and will trend this as policy impact expands over the coming years.

With a similar number of rural hospitals in each the Medicaid Expansion states and the Medicaid Non-Expansion States the Vulnerability INDEX was compared across both cohorts. With a smaller cohort of states (22 vs. 28), Non-Expansion states have a higher number of rural hospitals evaluated in this study (1194 vs. 1030). These states have more than twice the number of vulnerable rural hospitals.

Medicaid Expansion States (28)

The study evaluated 1030 rural hospitals in Medicaid Expansion states and determined that 85 (8.3%) were Vulnerable.

Medicaid Expansion States

State	Vulnerable Hospitals	Rural Hospitals for Study	% Vulnerable
CT	0	5	0.0%
DE	0	3	0.0%
MA	0	5	0.0%
MD	0	5	0.0%
NJ	0	0	
NM	0	26	
OR	0	31	0.0%
RI	0	0	
MI	1	63	1.6%
NY	1	44	2.3%
IA	4	96	4.2%
WA	2	44	4.5%
CO	2	43	4.7%
AZ	1	20	5.0%
ND	2	38	5.3%
IN	3	53	5.7%
PA	3	52	5.8%
NH	1	17	5.9%
MN	6	97	6.2%
NV	1	15	6.7%
VT	1	13	7.7%
OH	7	63	11.1%
IL	9	79	11.4%
KY	9	70	12.9%
HI	2	13	15.4%
WV	6	33	18.2%
CA	10	51	19.6%
AR	14	51	27.5%
Totals	85	1030	8.3%

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Medicaid Non-Expansion States (22)

The study evaluated 1194 rural hospitals in Medicaid Non-Expansion states and found 198 (16.6%) were Vulnerable.

Medicaid Non Expansion			
State	Vulnerable Hospitals	Rural Hospitals for Study	% Vulnerable
AK	**0**	**14**	**0.0%**
UT	**0**	**21**	**0.0%**
WY	**0**	**25**	**0.0%**
NE	1	72	**1.4%**
WI	2	76	**2.6%**
ME	1	24	**4.2%**
MT	3	48	**6.3%**
ID	2	31	**6.5%**
NC	4	62	**6.5%**
SD	4	46	**8.7%**
VA	4	33	**12.1%**
KS	17	102	**16.7%**
SC	5	27	**18.5%**
MO	12	64	**18.8%**
OK	15	73	**20.5%**
AL	9	43	**20.9%**
FL	7	32	**21.9%**
GA	17	70	**24.3%**
TN	15	56	**26.8%**
TX	42	153	**27.5%**
LA	16	57	**28.1%**
MS	22	65	**33.8%**
Totals	**198**	**1194**	**16.6%**

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VALUE:

Medicare Spending, Quality, Costs, Charges, Value Based Purchasing, Top 100 CAHs

Medicare Spending Per Beneficiary

Key Findings:

- Approximately $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.
- Approximately $1.5 billion in annual spend differential (savings) occurred in 2012 because the average spend per rural beneficiary was 2.5% lower than the average spend per urban beneficiary.
- Approximately $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 approximately 19% less costly than payments for urban beneficiaries, and
- Per-capita Outpatient Service payments for rural beneficiaries are approximately 13% more costly than payments for urban beneficiaries.
- Per-capita Inpatient Hospital Service payments for rural beneficiaries are approximately 1% less costly than payments for urban beneficiaries

Why this is important:

Healthcare reform represents a shift to payment for value in place of volume and the assumption of risk by providers for populations. As providers seek to evaluate and ultimately assume risk for populations, understanding the current payment for care *per Medicare beneficiary*, by setting, service line and product is a starting point for understanding where opportunity exists within the new healthcare. 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 vulnerability of the rural health safety net is clear and may be accelerating, this 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. It calls into question policy aimed at 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.

iVantage observes variation not only at the total payment per *Medicare beneficiary*, but also between the broad categories of these payments. The iVantage research evaluated the Medicare "spend" in areas of Inpatient (by MDC), Outpatient (by Service Type), and Physician (by Specialty). Within this Rural

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Relevance Study, comparisons between rural and urban zip codes have been aggregated to demonstrate the variation between these two important cohorts and many others. iVantage has also produced state companion tables that cascade this analysis to a more local level. These are available upon request.

$$\text{VALUE} = \frac{\text{QUALITY}}{\text{PRICE}} \quad \text{OR} \quad \frac{\text{Process of Care, Outcomes of Care (Patient Safety, Readmissions, Mortality) and Patient Satisfaction}}{\text{Costs \& Charges}}$$

iVantage has used an expansive definition to pursue an analysis of "quality" through the lens of the "Value Equation" above. 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

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%. For hospitals performing at the 50th percentile, urban hospitals outperformed rural hospitals by an average of 8%, and this number stays consistent to last year's reporting. When evaluating at the median level, rural hospitals have a slight edge on their urban hospital peers, by <1%.

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%, down from the year prior's reporting of 18%. Similarly, when evaluating hospital performance at the 50th percentile, urban hospitals outperform their rural hospital peers by 26%, up from last year's reporting of 18%. 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%, though there is improvement among those rural hospitals performing at the 75th percentile; the percentage difference from last year's report was 10%. Conversely, the performance gap between urban and rural has increased for hospitals performing at the 50th percentile; urban hospitals outperform rural hospitals by 29% (this difference was 18% in the previous year's reporting). There is no difference at the median level between rural and urban hospitals.

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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%. Note, the performance difference in the prior year's report was 3.5%. For all hospitals performing at the 50th percentile, urban hospitals outperform their rural peers by an average of 2%, remaining consistent with last year's reporting. 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%. Similarly, at the 50th percentile, urban hospitals outperform their rural peers by an average of 7%. Note that the difference between performance at both the 75th and 50th percentiles has changed since prior year reporting, the average difference for the 75th percentile was 5% and 5.5% for the 50th percentile.

Process of Care Findings:

- Urban hospitals outperformed their rural hospital peers on 3 out of 5 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 who 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. This has changed since the prior year's report, where rural hospitals had a slightly better performance (2% on average) than their urban hospital peers.

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 continues to take the patient satisfaction measure, "Would Recommend", indexed across the range of national performance on a scale from 0 to 100. Missing data within measure sets are ignored.

- "Would Definitely Recommend"- There is no significant variation in patient satisfaction between rural and urban hospitals performing at the 75th percentile; rural hospitals outperformed urban hospitals by 1%, while at the 50th percentile, urban hospitals outperformed rural hospitals by 1%.

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Costs

Medicare Adjusted Inpatient and Outpatient Cost & Charge Analysis Findings:

- Rural hospitals continue to have higher adjusted costs than their urban hospital peers, in both the Inpatient and Outpatient settings, across all quartiles;
- Rural hospitals continue to have lower adjusted charges than their urban hospital peers in both the Inpatient and Outpatient settings, across all quartiles.

Inpatient:

Medicare Case-Mix Adjusted Average Inpatient Costs and Charges - An overall average cost-to-charge ratio is computed for each hospital based on total charges and costs as report in the Medicare Hospital Cost Report Information System. To calculate Inpatient average costs and charges, a hospital's cost-to-charge ratio is applied to MedPAR Inpatient charge data at the claim/patient level and adjusted based on the CMS-assigned case weight and wage index value for that claim's MS-DRG code.

Key Findings:

- Medicare Inpatient Cost: The average case-mix and wage index adjusted Medicare inpatient costs remain higher at rural hospitals in comparison to their urban hospital peers, across all quartiles. At the 75th percentile, rural hospital costs are 4% higher than that of urban hospitals, and has increased since the prior year's reporting (was 0.5%). At the 50th percentile, rural hospital cost are 10.5% higher than that of urban hospitals, and has increased since the prior year's reporting (was 4%).
- Medicare Inpatient Charges: The average case-mix and wage index adjusted Medicare inpatient charges remain lower at rural hospitals in comparison to their urban hospitals, across all quartiles. At the 75th percentile, rural hospital charges are 38% lower than their urban peers, similar to last year's reporting of 40%. Most notably, at the 50th percentile, rural hospital charges are 42% lower than their urban hospital peers, and this remains consistent with last year's reporting as well.

Outpatient:

Medicare Case-Mix Adjusted Average Outpatient Costs and Charges - To calculate Outpatient average costs and charges, a hospital's cost to charge ratio is applied to Medicare Outpatient Standard Analytical File charge data at the claim/HCPCS (Healthcare Common Procedure Coding System) level (no data sampling) and adjusted based on the CMS assigned case weight and wage index value for that claim's Ambulatory Payment Classification (APC) code.

Key Findings:

- Medicare Outpatient Cost: The average case-mix and wage index adjusted Medicare outpatient costs continue to remain higher for rural hospitals in comparison to their urban hospital peers across all quartiles. At the 75th percentile, rural hospital costs are, on average, 52% higher than their urban hospital peers. Similarly, at the 50th percentile, rural hospitals costs are, on average, 65% higher than their urban hospital peers, and at the 25th percentile, rural hospitals are 72% higher.
- Medicare Outpatient Charges: The case-mix and wage index adjusted Medicare outpatient charges remain on average, to be lower in rural hospitals across all quartiles. At the 75th percentile, rural

hospital charges were on average 14% lower than those of their urban hospital peers. Similarly, at the 50th and 25th percentiles, charges were on average lower by 18% and 27% respectively.

BETOS Categories by CAH Claims, Avg. Wage Adjusted Cost Rates and Difference in CAH and non-CAH Wage Adjusted Cost Rates.

Table 1 compares the total outpatient cost rates for CAHs and non-CAHs grouped by Berenson-Eggers Type Service (BETOS) category. Overall, CAHs had a lower average wage adjusted cost rate for most BETOS categories. Most notably, CAHs had a 30% lower average wage adjusted cost rate than non-CAHs for the procedures category. A notable exception to the general trend was the evaluation and management category where CAHs had a significantly higher (78%) average wage adjusted cost rate than non-CAHs.

Top BETOS Categories by CAH Claims, Avg. Cost Rate and Difference in CAH and non-CAH Cost Rates

BETOS Category	Total CAH Claims	CAH Average Cost Rate	non-CAH Average Cost Rate	Difference between CAH and non-CAH rates
Evaluation and Management	3,369,930	891	500	392
Imaging	1,784,371	739	801	-62
Procedures	1,007,090	1,463	2,096	-633
Tests	285,421	396	397	
Other	77,557	104	72	
Exceptions/Unclassified	779	257	622	

Table 1

BETOS Categories by CAH Claims, Avg. Wage Adjusted Charge Rates and Difference in CAH and non-CAH Wage Adjusted Charge Rates.

Table 2 compares the total outpatient wage adjusted charge rates for CAHs and non-CAHs grouped by BETOS category. Overall, CAHs had a lower average wage adjusted charge rate for most BETOS categories. Most notably, CAHs had a 66% lower average wage adjusted charge rate than non-CAHs for the procedures category.

Top BETOS Categories by CAH Claims, Avg. Charge Rate and Difference in CAH and non-CAH Charge Rates

BETOS Category	Total CAH Claims	CAH Average Charge Rate	non-CAH Average Charge Rate	Difference between CAH and non-CAH rates
Evaluation and Management	3,369,930	1,085	990	95
Imaging	1,784,371	1,571	2,831	-1,260
Procedures	1,007,090	3,054	9,019	-5,965
Tests	285,421	815	1,480	-665
Other	77,557	187	11,483	
Exceptions/Unclassified	779	494	2,637	

Table 2

Top BETOS Codes by CAH Claims, Avg. Wage Adjusted Cost Rates and Difference in CAH and non-CAH Wage Adjusted Cost Rates.

Table 3 compares the total outpatient wage adjusted cost rates for CAHs and non-CAHs grouped by individual BETOS codes for the top 10 BETOS codes by CAH claim volume. Overall, CAHs had a higher average wage adjusted cost rate for most of the top 10 individual BETOS codes. Most notably, the average wage adjusted cost rate for office visits at CAHs was nearly two times the average rate at non-CAHs. The average wage adjusted cost rate for emergency room visits however, was slightly lower (4%) at CAHs than at non-CAHs.

Top BETOS Codes by CAH Claims, Avg. Cost Rate and Difference in CAH and non-CAH Cost Rates

BETOS Code	Total CAH Claims	CAH Average Cost Rate	non-CAH Average Cost Rate	Difference between CAH and non-CAH rates
Office Visits - Established	1,667,174	824	305	520
Emergency Room Visit	1,414,316	1,011	1,051	-40
Standard Imaging - Musculoskeletal	463,412	197	170	27
Minor Procedures-Other (Medicare fee schedule)	422,114	948	1,075	-127
Advanced Imaging - CAT/CT/CTA: Other	301,417	1,653	1,374	279
Standard Imaging - Chest	262,401	230	190	40
Echography/ultrasonography - Other	119,996	359	279	80
Advanced Imaging - MRI/MRA: Other	115,459	1,211	1,192	19
Minor Procedures - Musculoskeletal	114,591	589	540	
Echography/ultrasonography - Heart	113,558	1,143	1,081	

Table 3

Top BETOS Codes by CAH Claims, Avg. Wage Adjusted Charge Rate and Difference in CAH and non-CAH Wage Adjusted Charge Rates

Table 4 compares the total outpatient wage adjusted charge rates for CAHs and non-CAHs grouped by individual BETOS codes for the top 10 BETOS codes by CAH claim volume. Overall, CAHs had lower average wage adjusted charge rates for all of the top 10 individual BETOS codes. Most notably, CAHs had a 55% lower average wage adjusted charge rate for minor procedures than non-CAHs. CAHs had a 5% and 29% lower average wage adjusted charge rate than non-CAHs for office visits and emergency room visits respectively.

Top BETOS Codes by CAH Claims, Avg. Charge Rate and Difference in CAH and non-CAH Charge Rates

BETOS Code	Total CAH Claims	CAH Average Charge Rate	non-CAH Average Charge Rate	Difference between CAH and non-CAH rates
Office Visits - Established	1,667,174	253	265	-12
Emergency Room Visit	1,414,316	2,017	2,827	-809
Standard Imaging - Musculoskeletal	463,412	412	601	-190
Minor Procedures - Other (Medicare fee schedule)	422,114	1,880	4,182	-2,302
Advanced Imaging - CAT/CT/CTA: Other	301,417	3,554	4,708	-1,154
Standard Imaging - Chest	262,401	467	695	-228
Echography/ultrasonography - Other	119,996	762	1,031	-269
Advanced Imaging - MRI/MRA: Other	115,459	2,570	4,356	-1,786
Minor Procedures - Musculoskeletal	114,591	1,240	1,988	
Echography/ultrasonography - Heart	113,558	2,422	4,151	

Table 4

Top 10 individual CPT codes by CAH Claims, Avg. Wage Adjusted Cost Rate and Difference in CAH and non-CAH Wage Adjusted Cost Rates.

Table 5 compares the total outpatient wage adjusted cost rates for CAHs and non-CAHs grouped by individual CPT code for the top CPT codes by CAH claim volume. Overall, CAH average cost performance was mixed for the top 10 CPT codes. The average wage adjusted cost rate for CAHs was significantly higher for CPT codes 99212 (outpatient office visits, low severity and with a physician) and 99211(outpatient office visits, low severity and without a physician). CAHs had a lower average wage adjusted cost rate however, for CPT codes 96365 (Injection and Infusion Administration and Bundled Services and Supplies) and 99284 (Emergency Room Visit, High Severity - Non Life Threatening).

Top 10 individual CPT codes by CAH Claims, Avg. Cost Rate and Difference in CAH and non-CAH Cost Rates

CTP Code	CPT Description	Total CAH Claims	CAH Average Cost Rate	non-CAH Average Cost Rate	Difference between CAH and non-CAH rates
99213	Office or Other Outpatient Visit, Low to Moderate Severity	631,615	397	109	288
99214	Office or Other Outpatient Visit for Established Patient	440,455	320	142	178
99283	Emergency Room Visit, Moderate Severity	439,841	568	598	-30
99284	Emergency Room Visit, High Severity - Non Life Threatening	437,195	1,065	1,231	-166
99285	Emergency Room Visit, High Severity - Life Threatening	364,008	1,727	1,758	-31
99211	Office or Other Outpatient Visit, Low Severity w/o Physician	306,418	1,537	832	705
71020	Chest X-Ray with Preventive Medicine Services	249,366	222		
99212	Office or Other Outpatient Visit, Low Severity with Physician	237,975	2,087		
99282	Emergency Room Visit, Low to Moderate Severity	146,285	389		
96365	Injection and Infusion Administration and Bundled Services and Supplies	135,232	1,315	1,696	-381

Table 5

Top 10 individual CPT codes by CAH Claims, Avg. Wage Adjusted Charge Rate and Difference in CAH and non-CAH Wage Adjusted Charge Rates.

Table 6 compares the total outpatient charge rates for CAHs and non-CAHs grouped by individual CPT code for the top CPT codes by CAH claim volume. Overall, CAH average charge performance was mostly lower for the top 10 CPT codes. Most notably, CAHs had a significantly lower average wage adjusted charge rate (over 60%) for CPT code 96365 (Injection and Infusion Administration and Bundled Services and Supplies).

Top 10 individual CPT codes by CAH Claims, Avg. Charge Rate and Difference in CAH and non-CAH Charge Rates

CTP Code	CPT Description	Total CAH Claims	CAH Average Charge Rate	non-CAH Average Charge Rate	Difference between CAH and non-CAH rates
99213	Office or Other Outpatient Visit, Low to Moderate Severity	631,615	227	217	10
99214	Office or Other Outpatient Visit for Established Patient	440,455	339	283	56
99283	Emergency Room Visit, Moderate Severity	439,841	936	1,299	-363
99284	Emergency Room Visit, High Severity - Non Life Threatening	437,195	2,200	3,154	-954
99285	Emergency Room Visit, High Severity - Life Threatening	364,008	3,844	5,671	-1,826
99211	Office or Other Outpatient Visit, Low Severity w/o Physician	306,418	206	298	-91
71020	Chest X-Ray with Preventive Medicine Services	249,366	451	587	-136
99212	Office or Other Outpatient Visit, Low Severity with Physician	237,975	195	259	-63
99282	Emergency Room Visit, Low to Moderate Severity	146,285	501		
96365	Injection and Infusion Administration and Bundled Services and Supplies	135,232	2,581		

Table 6

CAH-Specific Analysis

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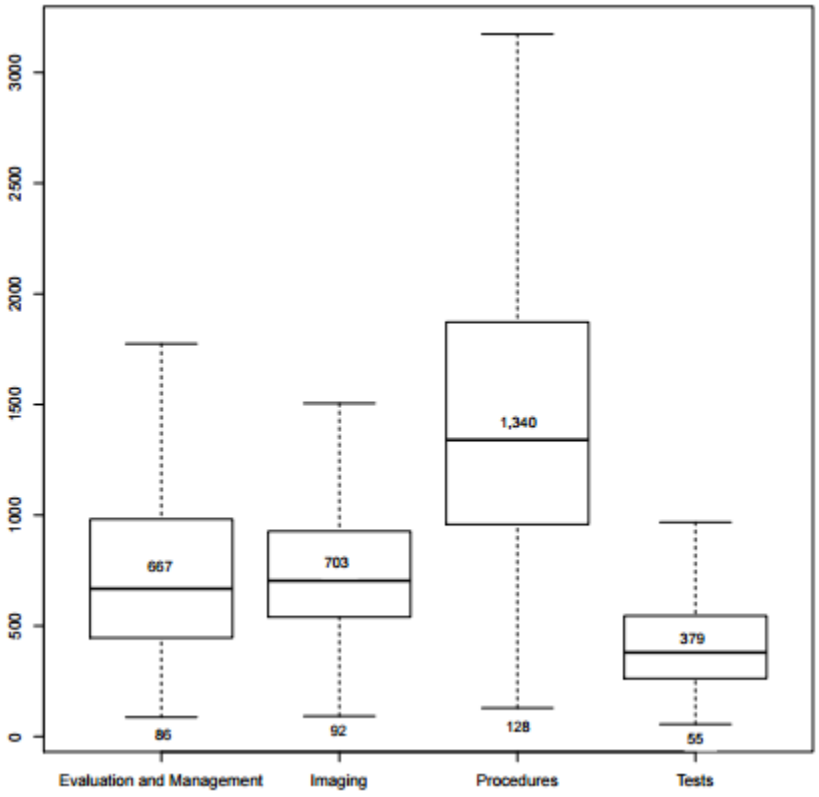

Facility-level Average Charges (Outpatient) by BETOS Category
[outliers excluded]

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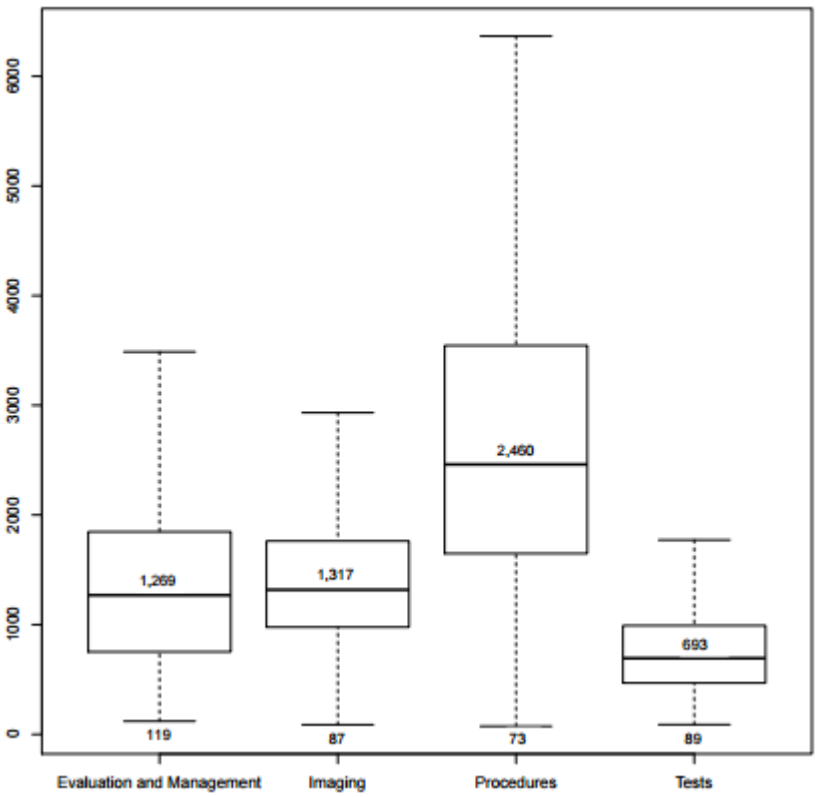
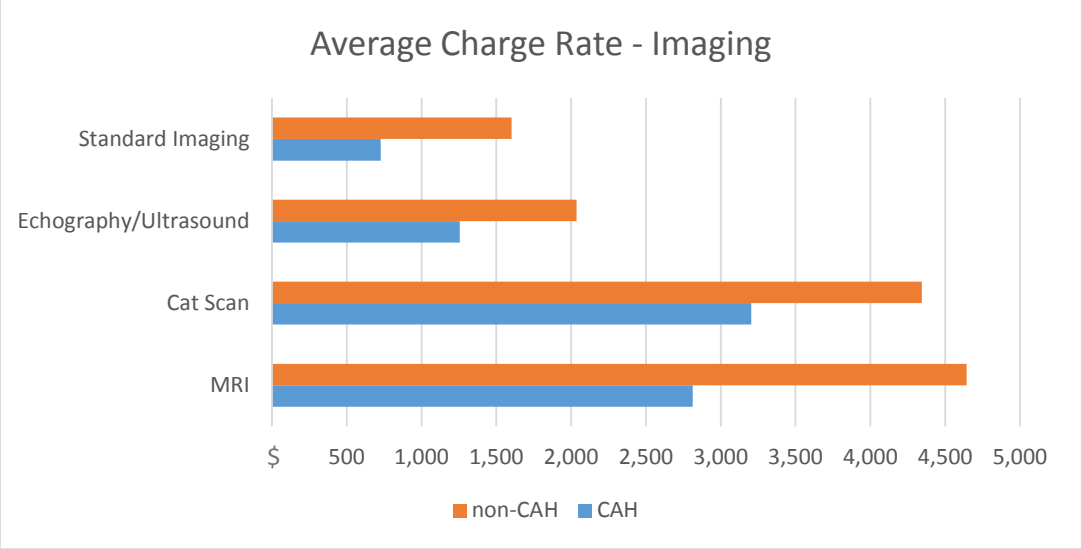


Outpatient Spotlight: Imaging

Average Charge Rate – CAH v Non-CAH

	MRI	Cat Scan	Echography/Ultrasound	Standard Imaging
CAH	2,812	3,203	1,255	727
non-CAH	4,644	4,345	2,036	1,603



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Value Based Purchasing (VBP) Analysis

CAH Performance Under Current VBP Programs

In January, 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 that are tied to quality and value and reimbursed through alternative payment models. For rural hospitals in America, the implementation of Medicare's Value-Based Purchasing (VBP) program has long loomed as a financial time bomb. CMS announced that new goals have been set for expanding the program which links hospital performance to Medicare reimbursement and it ushers in major changes for the country's Critical Access Hospitals.

CMS now intends for 85% of all hospital-based Medicare reimbursement to be tied to performance-based metrics by 2016, with that number to rise to 90% by 2018. In order to attain those goals, VBP or an analogous program will need to expand deeper into the rural space, very likely to include Critical Access Hospitals.

Do value-based reimbursement policies deserve their ominous reputation? Preliminary analysis suggests not. In fact, based on the current performance of rural healthcare, these institutions should actually welcome the introduction of such measures. If rural hospitals can keep pace with their peers and achieve Medicare's chosen performance goals, they will see immediate benefits to their bottom line.

Findings: Predicted Impact

To model the impact of these proposed changes, iVantage applied current VBP scores for a sample of 588 Critical Access Hospitals to 2017 program rules and payback factors, further assuming that 85% 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 who 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% 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% (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.

Table H: States that Gained Revenue

State	Net Earned Revenue	2012 Medicare Revenue	% Earned Dollars of Medicare Revenue
HI	25755.18323	1560000	1.65%
UT	80262.91349	5163466.666	1.55%
FL	124088.4855	9782933.334	1.27%
OK	174104.3253	13734466.67	1.27%
CO	202491.1215	20313733.33	1.00%
SD	116545.2708	11866400	0.98%
NE	623139.8111	63627866.67	0.98%
TN	60666.19425	6312933.334	0.96%
LA	129158.2049	13664400	0.95%
TX	228597.3859	24326600	0.94%
SC	48074.76758	5158933.333	0.93%
MA	111063.2149	13299133.33	0.84%
WI	715482.5088	86043066.67	0.83%
WY	107037.5643	13040666.67	0.82%
KY	128320.2738	16280600	0.79%
MS	175789.7765	22353400	0.79%
NM	78379.90041	10102400	0.78%
IL	494407.0556	65981266.67	0.75%
WV	132815.5924	19340000	0.69%
KS	251020.5311	36759133.33	0.68%
MN	550294.6449	81088066.67	0.68%
IA	470388.389	69970133.33	0.67%
AK	30164.37974	4495466.667	0.67%
WA	174676.4647	26418333.33	0.66%
ID	188428.7334	30762133.33	0.61%
GA	86015.41678	14183000	0.61%
OH	404094.375	69155733.33	0.58%
MO	155078.8053	26664800	0.58%
MI	301360.7831	54292666.66	0.56%
NY	75132.56876	13665333.33	0.55%
VA	67888.05394	13674866.67	0.50%
IN	292223.5454	63399466.67	0.46%
ND	72645.22043	18511400	0.39%
OR	132719.9471	36101933.33	0.37%
AR	76166.15064	21613800	0.35%
MT	125045.1732	35851400	0.35%
ME	146883.3768	47174466.67	0.31%
NC	90175.39064	34079466.67	0.26%
AZ	16322.82765	7839000	0.21%
PA	37773.98416	24009266.67	0.16%
CA	80564.49928	78305466.66	0.10%

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Table I: States that Lost Revenue

State	Net Lost Revenue	2012 Medicare Revenue	% Lost Dollars of Medicare Revenue
NH	(72,659.80)	43,447,533.33	0.17%
NV	(8,145.57)	7,458,800.00	0.11%
VT	(90,394.79)	29,859,666.67	0.30%

- Even states that gain revenue in the aggregate will likely have hospitals who lose revenue, and vice versa.

Table J: Count of Winners and Losers

State	Losers	Winners	Total Hospitals	% Losers	% Winners
AK	0	1	1	0%	100%
AR	2	9	11	18%	82%
AZ	1	5	6	17%	83%
CA	4	8	12	33%	67%
CO	0	9	9	0%	100%
FL	0	4	4	0%	100%
GA	2	8	10	20%	80%
HI	0	1	1	0%	100%
IA	5	35	40	13%	88%
ID	1	9	10	10%	90%
IL	2	23	25	8%	92%
IN	3	16	19	16%	84%
KS	2	19	21	10%	90%
KY	1	9	10	10%	90%
LA	1	6	7	14%	86%
MA	0	3	3	0%	100%
ME	3	9	12	25%	75%
MI	2	23	25	8%	92%
MN	2	36	38	5%	95%
MO	2	7	9	22%	78%
MS	1	11	12	8%	92%
MT	7	10	17	41%	59%
NC	2	6	8	25%	75%
ND	4	13	17	24%	76%
NE	4	45	49	8%	92%
NH	5	4	9	56%	44%
NM	0	5	5	0%	100%
NV	4	2	6	67%	33%
NY	1	9	10	10%	90%
OH	4	20	24	17%	83%
OK	1	11	12	8%	92%
OR	2	11	13	15%	85%
PA	3	8	11	27%	73%
SC	0	3	3	0%	100%
SD	0	16	16	0%	100%
TN	0	5	5	0%	100%
TX	0	16	16	0%	100%
UT	0	7	7	0%	100%
VA	1	3	4	25%	75%
VT	4	2	6	67%	33%
WA	0	13	13	0%	100%
WI	3	33	36	8%	92%
WV	1	9	10	10%	90%
WY	1	5	6	17%	83%

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- 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% of the total bonus revenue pool.

Table K: Bonus for Winners

State	Sum of Net Bonus	Sum	% Total	Withold	Net of Withold
WI	743703.9447	8572053.897	8.68%	1279890.6	-536186.67
NE	630400.6329	8572053.897	7.35%	946464.52	-316063.88
MN	560167.1094	8572053.897	6.53%	1206185	-646017.88
IL	538726.303	8572053.897	6.28%	981471.34	-442745.04
IA	498330.9181	8572053.897	5.81%	1040805.7	-542474.82
OH	437114.8425	8572053.897	5.10%	1028691.5	-591576.69
CA	370171.1688	8572053.897	4.32%	1164793.8	-794622.65
MI	348571.0017	8572053.897	4.07%	807603.42	-459032.41
IN	329559.5979	8572053.897	3.84%	943067.07	-613507.47
KS	257738.7527	8572053.897	3.01%	546792.11	-289053.36
TX	228597.3859	8572053.897	2.67%	361858.17	-133260.79
CO	202491.1215	8572053.897	2.36%	302166.78	-99675.662
ID	188982.7823	8572053.897	2.20%	457586.73	-268603.95
MS	184464.8316	8572053.897	2.15%	332506.83	-148041.99
ME	180344.344	8572053.897	2.10%	701720.19	-521375.85
OK	175687.5768	8572053.897	2.05%	204300.19	-28612.615
WA	174676.4647	8572053.897	2.04%	392972.71	-218296.24
MO	173640.7694	8572053.897	2.03%	396638.9	-222998.13
MT	163800.4489	8572053.897	1.91%	533289.57	-369489.13
OR	159168.4171	8572053.897	1.86%	537016.26	-377847.84
NC	152732.1014	8572053.897	1.78%	506932.07	-354199.97
LA	137844.2982	8572053.897	1.61%	203257.95	-65413.652
WV	132980.1559	8572053.897	1.55%	287682.5	-154702.34
KY	129138.0372	8572053.897	1.51%	242173.93	-113035.89
FL	124088.4855	8572053.897	1.45%	145521.13	-21432.648
SD	116545.2708	8572053.897	1.36%	176512.7	-59967.429
WY	111309.7578	8572053.897	1.30%	193979.92	-82670.159
MA	111063.2149	8572053.897	1.30%	197824.61	-86761.393
ND	104512.2067	8572053.897	1.22%	275357.08	-170844.87
GA	90206.26534	8572053.897	1.05%	210972.13	-120765.86
NY	88745.7103	8572053.897	1.04%	203271.83	-114526.12
NH	88078.61867	8572053.897	1.03%	646282.06	-558203.44
PA	86481.55699	8572053.897	1.01%	357137.84	-270656.28
UT	80262.91349	8572053.897	0.94%	76806.567	3456.34683
AR	79358.41002	8572053.897	0.93%	321505.28	-242146.86
NM	78379.90041	8572053.897	0.91%	150273.2	-71893.3
VA	72016.26152	8572053.897	0.84%	203413.64	-131397.38
TN	60666.19425	8572053.897	0.71%	93904.883	-33238.689
SC	48074.76758	8572053.897	0.56%	76739.133	-28664.366
VT	40001.49164	8572053.897	0.47%	444162.54	-404161.05
AZ	30169.20325	8572053.897	0.35%	116605.13	-86435.922
AK	30164.37974	8572053.897	0.35%	66870.067	-36705.687
HI	25755.18323	8572053.897	0.30%	23205	2550.18323
NV	7141.098026	8572053.897	0.08%	110949.65	-103808.55

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- Three states would account for nearly 50% of all forfeited CAH Medicare revenues in this analysis (California, New Hampshire, and Vermont).

Table L: Forfeit for Losers

State	Sum of Net Bonus	Sum	% Total	Withold
CA	-289606.6696	-1162011.247	24.92%	1164793.8
NH	-160738.4185	-1162011.247	13.83%	646282.06
VT	-130396.279	-1162011.247	11.22%	444162.54
NC	-62556.71075	-1162011.247	5.38%	506932.07
PA	-48707.57283	-1162011.247	4.19%	357137.84
MI	-47210.2186	-1162011.247	4.06%	807603.42
IL	-44319.2474	-1162011.247	3.81%	981471.34
MT	-38755.2757	-1162011.247	3.34%	533289.57
IN	-37336.05254	-1162011.247	3.21%	943067.07
ME	-33460.96713	-1162011.247	2.88%	701720.19
OH	-33020.46752	-1162011.247	2.84%	1028691.5
ND	-31866.98625	-1162011.247	2.74%	275357.08
WI	-28221.43593	-1162011.247	2.43%	1279890.6
IA	-27942.52917	-1162011.247	2.40%	1040805.7
OR	-26448.46993	-1162011.247	2.28%	537016.26
MO	-18561.9641	-1162011.247	1.60%	396638.9
NV	-15286.67252	-1162011.247	1.32%	110949.65
AZ	-13846.3756	-1162011.247	1.19%	116605.13
NY	-13613.14154	-1162011.247	1.17%	203271.83
MN	-9872.464431	-1162011.247	0.85%	1206185
LA	-8686.093304	-1162011.247	0.75%	203257.95
MS	-8675.055072	-1162011.247	0.75%	332506.83
NE	-7260.821811	-1162011.247	0.62%	946464.52
KS	-6718.221636	-1162011.247	0.58%	546792.11
WY	-4272.193487	-1162011.247	0.37%	193979.92
GA	-4190.848556	-1162011.247	0.36%	210972.13
VA	-4128.207583	-1162011.247	0.36%	203413.64
AR	-3192.259385	-1162011.247	0.27%	321505.28
OK	-1583.251475	-1162011.247	0.14%	204300.19
KY	-817.763405	-1162011.247	0.07%	242173.93
ID	-554.0489008	-1162011.247	0.05%	457586.73
WV	-164.5634748	-1162011.247	0.01%	287682.5

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- 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.

Table M: Medicare Revenue

State	Sum of '12 Medicare Revnue	Unrealized Bonus Revenue	Unrealized Bonus as % of State Total CAH Medicare Revenue
VT	29859667	792,171.60	2.65%
NH	43447533	1,093,785.45	2.52%
NV	7458800	183,446.02	2.46%
CA	78305467	1,759,809.73	2.25%
PA	24009267	526,503.81	2.19%
AZ	7839000	167,913.27	2.14%
NC	34079467	710,777.27	2.09%
ME	47174467	961,834.53	2.04%
MT	35851400	717,552.36	2.00%
AR	21613800	431,812.18	2.00%
OR	36101933	715,765.74	1.98%
ND	18511400	362,418.96	1.96%
IN	63399467	1,197,822.42	1.89%
VA	13674867	253,505.50	1.85%
NY	13665333	246,036.93	1.80%
MI	54292667	974,652.62	1.80%
MO	26664800	471,610.66	1.77%
OH	69155733	1,221,238.25	1.77%
GA	14183000	247,320.54	1.74%
ID	30762133	534,558.31	1.74%
WA	26418333	446,220.41	1.69%
AK	4495466.7	75,490.33	1.68%
IA	69970133	1,174,084.67	1.68%
MN	81088067	1,355,477.64	1.67%
KS	36759133	612,911.00	1.67%
WV	19340000	321,722.76	1.66%
IL	65981267	1,056,317.66	1.60%
NM	10102400	159,051.76	1.57%
MS	22353400	349,571.01	1.56%
KY	16280600	254,314.53	1.56%
WY	13040667	199,450.70	1.53%
WI	86043067	1,306,744.67	1.52%
MA	13299133	201,499.67	1.52%
SC	5158933.3	73,173.06	1.42%
TX	24326600	343,138.53	1.41%
LA	13664400	191,989.36	1.41%
TN	6312933.3	87,703.52	1.39%
NE	63627867	872,274.13	1.37%
SD	11866400	162,344.80	1.37%
CO	20313733	274,932.40	1.35%
OK	13734467	148,689.98	1.08%
FL	9782933.3	105,834.91	1.08%
UT	5163466.7	41,091.46	0.80%
HI	1560000	10,908.72	0.70%
		23,395,473.78	

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Conclusion

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.

Notes:

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

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Emergency Department Performance and its Relevance for VBP Programs in the Rural Space

For the past eight years, iVantage has amassed patient encounter-level data for over 3.3 million Emergency Department visits through the proprietary EDManage™ platform. For this portion of the Rural Relevance Study, iVantage analyzed its proprietary EDManage database for visits spanning between 2007 and 2014 calendar years (January 1, 2007 through December 31, 2014).

ED Wait Times:

- Critical Access Hospitals have an average total ED throughput time of 127 minutes, for the time period of 2007-2014, and continues to remain well below the 247 minutes reported for the national hospital sample in a 2010 Press Ganey study.
- The median ED throughput time between 2007-2014 for the cohort is 101 minutes, remaining below the median ED throughput time of 133 minutes as measured in the most recent Hospital Compare (measure identifier OP-18b).
- Critical Access Hospitals within the EDManage database have an average Time to Medical Screening of 31 minutes, on par with the Hospital Compare database average of 28 minutes (measure identifier OP-20).

ED Admissions: Inpatients, Observations, and Transfers:

- From 2007-2014, Rural Emergency Departments admitted, on average, 4.9% of their visits to their hospital's general acute/inpatient unit. The CDC cites an average of 12.5% of all Emergency Department visits within the US are admitted to their inpatient units.
- From 2007-2014, Rural Emergency Departments have admitted to observation, on average, 3.2% of their ED cases. The 2014 admit to observation rate is slightly higher than the historical trend, at 3.4%, and is consistent with what is to be expected with CMS's implementation of the Two Midnight Rule.
- The combination of Emergency Department cases admitted for inpatient care or deemed as observation status equates to 8.1% of all Emergency Department cases between 2007-2014, remaining below the CDC cited average of 12.5%
- The average transfer rate from Critical Access Hospital Emergency Departments, between 2007 and 2014 is 4.1%, and remains above the transfer rate reported in the CDC study.
    - National Institute for Healthcare Reform. Non-Urgent Use of Hospital Emergency Departments. May 11, 2011. http://hschange.org/CONTENT/1204/1204.pdf

Patient Acuity and Access

- From 2007 to 2014, iVantage has found that 61% of all Emergency Department visits to CAHs were categorized as low acuity cases (ESI of 4 or 5); an increase from last year's report of 54%.
- Regarding access to primary care, 47% of low acuity cases came to CAH Emergency Departments during normal business hours (9 am to 5 pm), consistent with the prior year's reporting and

remaining well above the one-third of all low acuity cases cited in a May 2011 Congressional testimony.

Conclusion

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.

Notes:

- Critical Access Hospitals under proposed 2016 VBP rules: 85% of Medicare revenue subject to 1.75% withholding, with maximum payback factor of 2.58.
- Analysis is limited to CAHs with reported VBP measure data. N= 607 for 2016 Program Year. N=588 for 2017 Program Year.

CANDIDATE RURAL-RELEVANT VBP MEASURES:

Candidate: Process of Care Measures as VBP

As focus continues to shift towards the imminent progression of Value Based Purchasing models within the rural healthcare space, there will be a need for surveillance around process of care measures both within the Emergency Department and Outpatient settings. Though there are no definitive measures set now, the data outlined below provides insight into just a few of the possible measures that are candidates for the impending VBP for Rural measures, and how rural hospitals perform in comparison to urban hospitals. The following measures come from the most recent data available within *Hospital Compare* as of Dec 18th, 2014.

Note: CMS has contracted with the National Quality Forum to convene a working group to recommend Rural-focused Value Based Purchasing measures as well as to make recommendations to the development of a reimbursement model.

CANDIDATE Hospital Compare Measures- Timely and Effective Care

Acute Myocardial Infarction (AMI)

- OP-4 Aspirin at Arrival: Most recent reporting shows that urban hospitals have better consistency in giving aspirin to outpatients with chest pain or possible heart attack within 24 hours of arrival; urban hospitals have an average rate of 96% while rural hospitals averaged 94%.

- OP-5 Median Time to ECG: Reporting urban hospitals have a slight edge over rural hospitals for the median time to ECG; urban hospitals had an average time of 8.2 minutes, while rural hospitals were slightly higher at 8.8 minutes.

Emergency Department Throughput

- ED-1b Median time from ED arrival to ED departure for admitted emergency department patients: For the average time patients spent in the ED before they were admitted to the hospital as an inpatient, rural hospitals performed significantly better than their urban hospital peers. Rural hospitals have an average time of 194 minutes, which is 26% lower than the average urban hospital's time.
- OP-20 Door to diagnostic evaluation by a qualified medical professional: Similarly, rural hospitals had a shorter average time that patients spent in the ED before they were seen by a healthcare professional. The most recent reported data shows that rural hospitals had an average time of 29 minutes, while urban hospitals had an average time of 36 minutes.
- OP-18b Median time from ED arrival to ED departure for discharged ED patients: The most recent reported data shows that rural hospitals had a quicker average ED throughput time to discharge than their urban hospital peers. The rural hospital average time is 106 minutes, while the urban hospital average is 143 minutes.
- OP-21 Median time to pain medication for long bone fractures: The average time it takes for patients presenting in the ED to wait before receiving pain medication for broken bones is less in rural hospitals than in urban hospitals, according to the most recently reported data. Rural hospitals had an average time of 58 minutes, while urban hospitals were 11 minutes longer, at 69 minutes.

As it stands, rural hospitals continue to have a slight performance edge in comparison to their urban hospital peers in regards to ED throughput measures and timeliness of care. However, should AMI measures be included, current performance in the rural space indicates that there would be a potential for more dollars to be withheld from rural hospitals in comparison to urban hospitals.

PRICING TRANSPARENCY: Medicare Costs and Charges Analysis

Pricing Transparency:

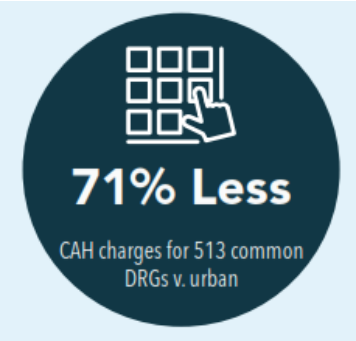
Pricing transparency is becoming more and more relevant for a number of key reasons:

1. The FY 2015 Inpatient Prospective Payment Systems (IPPS) rules also promotes price transparency. Hospitals must publicize a list of their standard charges or provide their policies for allowing the public to view a list of those charges in response to an inquiry.
2. High deductible plans are common with commercial insurance: The National Business Group on Health Survey in June 2014 demonstrated an increase in high deductible offerings from the nation's largest employers. 81% would offer such plans in 2015 up from 72% in 2014. Further, 32% said high deductible instruments would be the *only* plan they would offer employees in 2015 up from 22% in 2014.
3. Media attention from *Time Magazine's* "Bitter Pill", *The New York Times* "Pay Until it Hurts" and others by *The Wall Street Journal*, *USA Today*, and all the major television news outlets has created an awareness among patients that struggle to understand their medical bills, let alone hospital finance and reimbursement.

Rural hospitals, especially CAHs, have incentives and reimbursement models that may be at odds with pricing transparency. Low volume services that are essential may be necessarily more expensive in remote locations. Further, CAHs are reimbursed based on cost, which is diametrically opposed to these new forces and serves to "set them up for failure" in the realm of public perception.

This study looks at relative COSTS and CHARGES for rural hospitals and focuses attention on CAHs. New in the 2015 study is an exploration of OUTPATIENT costs and charges, of particular importance given the higher volumes of services offered in rural hospitals. In particular, iVantage focused upon IMAGING as a comparator between rural and non-rural hospitals.

Key Findings:



- Critical Access Hospitals (CAHs) served approximately 3% of Medicare inpatients in 2013
- Total Wage Adjusted Medicare Charges for CAHs were $5.2 billion, accounting for less than 1% of Total Medicare Charges. Charges for all non-CAHs were $591 billion.
- Total Wage Adjusted Medicare Costs at CAHs were $3.4 billion; non-CAHs represented $162 billion in Total Wage Adjusted Medicare Costs. CAHs accounted for 2% of Total Medicare Costs.
- Total Wage Adjusted Medicare Direct Costs at CAHs were $1.7 billion; non-CAHs represented $91 billion in Total Wage Adjusted Direct Medicare Costs[2]. CAHs accounted for 1.8% of Total Medicare Direct Costs.
- For the purposes of the cost and charge analysis iVantage examined the 351 DRGs that are common to both CAHs and non-CAHs[3].
    - CAH average charge per case ($13,374) is 63% less than the average charge per case for non-CAHs ($36,298).

- CAH average total cost per case ($8,836) is nearly 13% lower than the average cost per case for non-CAHs ($10,124).
- CAH average direct cost per case ($4,353) is 22% lower than the average direct cost per case for non-CAHs ($5,595).
- If non-CAHs charged the same rate for these services as CAHs, there would be over $207 billion less in Medicare charges.

- For comparison iVantage examined the ten most common DRGs by case volume and found a subset of six DRGs that are common to both CAHs and non-CAHs (see Table 1 below).

Table 1

194 - Simple pneumonia & pleurisy w CC
690 - Kidney & urinary tract infections w/o MCC
392 - Esophagitis, gastroent & misc digest disorders w/o MCC
470 - Major joint replacement or reattachment of lower extremity w/o MCC
292 - 603 - Cellulitis w/o MCC Heart failure & shock w CC

Analysis of six top DRGs by case volume common to both CAHs and non-CAHs:

- CAH median Charge/Case: $15,736 or 51% less than the charge/case for non-CAHs ($32,207) for these six (6) DRGs.
- CAH median Total Cost/Case: $9,710 or 1.6% higher than the cost/case for non-CAHs ($9,554) for these six (6) DRGs.
- CAH Direct Cost/Case: (Includes *Floor* and *Ancillary* but no *Overhead*) $4,879, approximately 10% lower than the cost/case for non-CAHs ($5,400) for these six (6) DRGs.
- Total Inpatient Medicare Charges would be $17 billion lower if all non-CAHs charged the CAH per case rate of $15,736 for these six (6) DRGs.

Why this is important:

Healthcare reform is predicated upon payment transparency and increased competition resulting from consumer choice. National publications such as *Time*, *The New York Times* and *The Wall Street Journal* have all conducted extensive reporting on the subject of costs and charges, including the identification of wide variation and reporting of exceptionally high charges. In traditional healthcare, provider-payer negotiated arrangements as a percentage of charges are already beginning to collapse toward Medicare payments. The new healthcare is looking at new transparency while at the same time squeezing those payments through tighter regulation and seeking reduced variation. The open market has adopted the development of "Centers of Excellence" and the use of Narrow Networks of providers that offer exceptional care at low costs and with defined charges.

Study Area A ("OP Costs and Charges") utilizes outpatient cost and charge data from the 2013 standard analytical file to quantify rates of cost and charge for Critical Access Hospitals. The file contains outpatient cost and charge data compiled by the Centers for Medicare & Medicaid Services Health Care Common Procedure Coding System (HCPCS) procedure codes and the BETOS code to which each procedure code is assigned.

CAHs serviced over 6.5 million outpatient Medicare claims in 2012. This represents nearly 7% of the outpatient Medicare claims for 2013. More than half of outpatient volume for Critical Access Hospitals can be attributed to the Evaluation and Management BETOS category. Over 90% of these cases fall into the office and emergency room visits BETOS codes.

The average wage adjusted OP cost for CAHs was $907 vs $850 for non-CAHs. The average wage adjusted OP charge rate for CAHs was $1,499 vs $3,133 for non-CAHs.

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Study Conclusion:

Rural healthcare deserves the same performance analysis as all providers, as it plays a vital role for communities across America; serving nearly 80 million of the population. The services provided in rural America are similar to those needed in any major metropolitan area, yet the volumes and economic resources provide little economies of scale, making for little benefit from scale. Nonetheless, these communities benefit from having institutions that are concerned for the population and the community benefits and needs, regardless of scale, reimbursement and people's ability to pay. Rural healthcare is an important piece of the puzzle for larger and more integrated care delivery models and systems. Transfers out need to end up in capable referral centers and more complex care needs to end up in more appropriate acute, chronic or extended stay facilities. They are the spokes of any "hub and spoke" care delivery model, and an important resource to leverage.

Rural relevant findings reveal that rural hospitals do focused and good work overall. They are cost and price efficient, have comparable outcomes and provide essential primary care. Something the industry is short of offering. iVantage sees rural healthcare as a key component of the larger system, and one where advancements in performance analytics, population health and care effectiveness is easy to define and monitor.

The value we see in the rural health safety net is exemplified in this year's list of the Top 100 Critical Access Hospitals, determined through the Hospital Strength INDEX™ analysis. These top hospitals were found to have better performance than their peers in managing population risk, they have high quality, outcomes and patient satisfaction and lower costs and charges than their peers.

Value Leaders: 2015 Top 100 Critical Access Hospitals

PLUMAS DISTRICT HOSPITAL	CA
RIO GRANDE HOSPITAL	CO
GRAND RIVER MEDICAL CENTER	CO
GUNNISON VALLEY HOSPITAL	CO
HEART OF THE ROCKIES REGIONAL MEDICAL CE	CO
STEELE MEMORIAL MEDICAL CENTER	ID
CARIBOU MEMORIAL HOSPITAL	ID
ST LUKES MCCALL	ID
BONNER GENERAL HOSPITAL	ID
ABRAHAM LINCOLN MEMORIAL HOSPITAL	IL
HILLSBORO AREA HOSPITAL	IL
DECATUR COUNTY MEMORIAL HOSPITAL	IN
IOWA SPECIALTY HOSPITAL - BELMOND	IA
JONES REGIONAL MEDICAL CENTER	IA
HAWARDEN COMMUNITY HOSPITAL	IA
JACKSON COUNTY REGIONAL HEALTH CENTER	IA
HEGG MEMORIAL HEALTH CENTER	IA
SIOUX CENTER HEALTH	IA
CLARKE COUNTY HOSPITAL	IA
AVERA HOLY FAMILY HOSPITAL	IA
ORANGE CITY AREA HEALTH SYSTEM	IA
CHEROKEE REGIONAL MEDICAL CENTER	IA
JEFFERSON COUNTY HEALTH CENTER	IA
WINNESHIEK MEDICAL CENTER	IA
MYRTUE MEDICAL CENTER	IA

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RAWLINS COUNTY HEALTH CENTER	KS
NEMAHA VALLEY COMMUNITY HOSPITAL	KS
GRAHAM COUNTY HOSPITAL	KS
NORTON COUNTY HOSPITAL	KS
GREELEY COUNTY HEALTH SERVICES	KS
MORRIS COUNTY HOSPITAL	KS
WALDO COUNTY GENERAL HOSPITAL	ME
REDINGTON FAIRVIEW GENERAL HOSPITAL	ME
MARTHAS VINEYARD HOSPITAL INC	MA
SPARROW CLINTON HOSPITAL	MI
ASPIRUS GRAND VIEW HOSPITAL	MI
LAKE VIEW MEMORIAL HOSPITAL	MN
MAYO CLINIC HEALTH SYSTEM - ST JAMES	MN
ORTONVILLE AREA HEALTH SERVICES	MN
PIPESTONE COUNTY MEDICAL CENTER	MN
NEW ULM MEDICAL CENTER	MN
PERRY COUNTY MEMORIAL HOSPITAL	MO
PIKE COUNTY MEMORIAL HOSPITAL	MO
PHILLIPS COUNTY MEDICAL CENTER	MT
FRANCES MAHON DEACONESS HOSPITAL	MT
LIVINGSTON HEALTHCARE	MT
BARRETT MEMORIAL HOSPITAL	MT
BEARTOOTH BILLINGS CLINIC	MT
COMMUNITY HOSPITAL OF ANACONDA	MT
CENTRAL MONTANA MEDICAL CENTER	MT
BRODSTONE MEMORIAL HOSP	NE
JEFFERSON COMMUNITY HEALTH CENTER	NE
BOONE COUNTY HEALTH CENTER	NE

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YORK GENERAL HOSPITAL	NE
MEMORIAL HEALTH CARE SYSTEMS	NE
CHERRY COUNTY HOSPITAL	NE
GORDON MEMORIAL HOSPITAL DISTRICT	NE
THE MEMORIAL HOSPITAL	NH
VALLEY REGIONAL HOSPITAL	NH
MONADNOCK COMMUNITY HOSPITAL	NH
ANDROSCOGGIN VALLEY HOSPITAL	NH
SPEARE MEMORIAL HOSPITAL	NH
ELIZABETHTOWN COMMUNITY HOSPITAL	NY
TRANSYLVANIA REGIONAL HOSPITAL, INC	NC
SANFORD MAYVILLE	ND
SAKAKAWEA MEDICAL CENTER - CAH	ND
CARRINGTON HEALTH CENTER	ND
PEMBINA COUNTY MEMORIAL HOSPITAL	ND
ASHLEY MEDICAL CENTER	ND
WEST RIVER REGIONAL MEDICAL CENTER-CAH	ND
JAMESTOWN REGIONAL MEDICAL CENTER	ND
H B MAGRUDER MEMORIAL HOSPITAL	OH
GALION COMMUNITY HOSPITAL	OH
PEACEHEALTH COTTAGE GROVE COMMUNITY MEDI	OR
WALLOWA MEMORIAL HOSPITAL	OR
PEACE HARBOR MEDICAL CENTER	OR
PROVIDENCE HOOD RIVER MEMORIAL HOSPITAL	OR
GRANDE RONDE HOSPITAL	OR
MUNCY VALLEY HOSPITAL	PA
MADISON COMMUNITY HOSPITAL - CAH	SD
SANFORD HOSPITAL WEBSTER - CAH	SD

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ST MICHAELS HOSPITAL - CAH	SD
SANFORD VERMILLION HOSPITAL	SD
HANSFORD COUNTY HOSPITAL	TX
PORTER HOSPITAL, INC	VT
WHITMAN HOSPITAL AND MEDICAL CENTER	WA
TRI-STATE MEMORIAL HOSPITAL	WA
KITTITAS VALLEY COMMUNITY HOSPITAL	WA
CALUMET MEDICAL CTR	WI
TOMAH MEM HOSPITAL	WI
MEMORIAL HEALTH CTR	WI
ST MARYS HOSPITAL SUPERIOR	WI
BLACK RIVER MEMORIAL HOSPITAL	WI
HUDSON HOSPITAL	WI
GOOD SAMARITAN HEALTH CTR	WI
MAYO CLINIC HEALTH SYSTEM RED CEDAR	WI
RICHLAND HOSPITAL	WI
LANGLADE HOSPITAL	WI
MINISTRY DOOR COUNTY MEDICAL CENTER	WI
STAR VALLEY MEDICAL CENTER	WY

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Review of Data Sources

This study employs four primary data sources: Study Area A ("Clinical Costs and Charges") utilizes inpatient cost and charge data to quantify rates of cost and charge for CAHs and Non-CAHs; Study Area B ("Shared Savings") utilizes the recent CMS Shared Savings data files to draw Medicare beneficiary payment; Study Area C ("Hospital Performance") 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) and Study Area D ("Emergency Department Performance"), a proprietary Emergency Department visit-level data store warehoused by iVantage's EDManage application.

Study Area A – 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 2013 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.

Study Area B – Shared Savings

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%

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Study Area C – 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 the 10 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 iVantage Methodology.

Study Area D – Emergency Department Performance. iVantage's client base represents over 2% of all U.S. hospitals, including 9% of all Critical Access Hospitals (CAHs) in the country. One of the company's products is EDManage a web-based application that collects, reports and benchmarks data for individual Emergency Department visits. For the past seven years, patient encounter-level data for over 3.3 million Emergency Department visits have been warehoused, aggregated and indexed. For this portion of the Rural Relevance Under Healthcare Reform study, iVantage analyzed its proprietary EDManage™ database for visits spanning between the 2007 and 2014 calendar years (January 1, 2007 through December 31, 2014. Other sources of data and analysis are as follows:

Study Area A – Clinical Costs and Charges

Study Area A ("Clinical Costs and Charges") utilizes inpatient cost and charge data to quantify rates of cost and charge for Critical Access Hospitals (CAHs) and non-CAHs. iVantage Health Analytics, utilizing these public data sets, analyzed total and direct costs per case for all inpatient DRGs and the top ten DRGs for CAHs by case volume. Total costs include floor, ancillary, overhead, support and other costs while direct costs include floor and ancillary costs. Below is a summary of our findings for **all** inpatient DRGs:

- CAHs served 386,395 Medicare inpatients in 2012, who represent 2.8% of all Medicare inpatients. Non-CAHs served 13,310,278 Medicare inpatients, accounting for 97.18% of Medicare Inpatients.
- Total Wage Adjusted Medicare Charges for CAHs were $5,228,016,641, while charges for all non-CAHs were $591,901,226,239. CAHs accounted for less than 1% of Total Medicare Charges.
- Total Wage Adjusted Medicare Costs at CAHs were $3,440,669,755; non-CAHs represented $162,880,664,171 in Total Wage Adjusted Medicare Costs. CAHs accounted for 1.9% of Total Medicare Costs.
- Total Wage Adjusted Medicare Direct Costs at CAHs were $1,695,665,337; non-CAHs represented $91,583,378,122 in Total Wage Adjusted Direct Medicare Costs. CAHs accounted for 1.7% of Total Medicare Direct Costs.
- Critical Access Hospitals reported a Total Cost per Case of $8,904 and a Direct Cost per Case of $4,388. Non-CAHs reported a Total Cost per Case of $12,237 and a Direct Cost per Case of $6,880. Critical Access Hospitals' Total Cost per Case was 27% less than that of non-CAHs.
- Critical Access Hospitals reported a Total Charge per Case of $13,530. Non-CAHs reported a Total Charge per Case of $44,469. Critical Access Hospitals' Total Charge per Case was nearly 70% less than that of non-CAHs.

Table B lists the Top ten Inpatient DRGs by CAH volume. Six of the Top ten DRGs were also among the Top ten DRGs by volume among non-CAHs.

Table B. Top Ten Inpatient DRGs by CAH Volume

Inpatient - Top Ten DRGs by CAH Volume	DRG Name	CAH Volume
194	Simple pneumonia & pleurisy w CC	22,769
690	Kidney & urinary tract infections w/o MCC	18,432
195	Simple pneumonia & pleurisy w/o CC/MCC	17,794
392	Esophagitis, gastroent & misc digest disorders w/o MCC	15,611
192	Chronic obstructive pulmonary disease w/o CC/MCC	14,732
641	Nutritional & misc metabolic disorders w/o MCC	14,603
470	Major joint replacement or reattachment of lower extremity w/o MCC	12,016
292	Heart failure & shock w CC	10,598
603	Cellulitis w/o MCC	10,309
293	Heart failure & shock w/o CC/MCC	9,606

Table C compares the total costs per case for CAHs and non-CAHs by each of the top ten inpatient DRGs. Total costs include floor, ancillary, overhead, support and other costs. Non-CAHs had lower total costs per case than CAHs in the top ten inpatient DRGs. The difference in total cost per case was most pronounced in DRG 470 (Major joint replacement or reattachment of lower extremity w/o MCC), where CAHs cost $5,426 more per case than non-CAHs. Critical Access Hospital cases were also significantly more expensive than those of their non-CAH counterparts with regard to DRG 195 (Simple pneumonia & pleurisy w/o CC/MCC), costing $2,566 more than non-CAH cases.

Table C. Top Ten DRGs by CAH Volume, Total Cost per Case and Variance

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Inpatient - Top Ten DRGs by CAH Volume	DRG Name	CAH Volume	Total Cost per Case, CAH	Total Cost per Case, PPS	Total Cost per Case Difference
194	Simple pneumonia & pleurisy w CC	22,769	9,576	7,602	1,975
690	Kidney & urinary tract infections w/o MCC	18,432	6,830	5,717	1,114
195	Simple pneumonia & pleurisy w/o CC/MCC	17,794	8,056	5,489	2,566
392	Esophagitis, gastroent & misc digest disorders w/o	15,611	5,977	5,428	549
192	Chronic obstructive pulmonary disease w/o	14,732	7,029	5,364	1,665
641	Nutritional & misc metabolic disorders w/o	14,603	6,214	5,303	911
470	Major joint replacement or reattachment of lower	12,016	21,810	16,384	5,426
292	Heart failure & shock w CC	10,598	8,673	7,492	1,181
603	Cellulitis w/o MCC	10,309	7,776	6,178	1,597
293	Heart failure & shock w/o CC/MCC	9,606	6,751	5,135	1,616

Table D compares the Direct Costs per Case for CAHs and non-CAHs by each of the top ten DRGs. Direct costs are defined as floor and ancillary costs. Non-CAHs had lower direct costs per case than CAHs in all top ten inpatient DRGs. The difference in direct cost per case was most pronounced in DRG 470 (Major joint replacement or reattachment of lower extremity w/o MCC), where CAHs cost $2,232 more per case than non-CAHs. Critical Access Hospital cases were significantly more expensive than their non-CAH counterparts with regard to DRG 195 (Simple pneumonia & pleurisy w/o CC/MCC), costing $1,056 more than non-CAH cases.

Table D. Top Ten Inpatient DRGs by CAH Volume, Direct Costs per Case and Variance

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Inpatient - Top Ten DRGs by CAH Volume	DRG Name	CAH Volume	Direct Cost per Case, CAH	Direct Cost per Case, PPS	Direct Cost per Case Difference
194	Simple pneumonia & pleurisy w CC	22,769	4,640	3,996	645
690	Kidney & urinary tract infections w/o MCC	18,432	3,234	2,952	282
195	Simple pneumonia & pleurisy w/o CC/MCC	17,794	3,898	2,842	1,056
392	Esophagitis, gastroent & misc digest disorders w/o	15,611	2,878	2,831	47
192	Chronic obstructive pulmonary disease w/o	14,732	3,374	2,797	577
641	Nutritional & misc metabolic disorders w/o	14,603	2,949	2,759	189
470	Major joint replacement or reattachment of lower	12,016	12,103	9,870	2,232
292	Heart failure & shock w CC	10,598	4,165	3,974	192
603	Cellulitis w/o MCC	10,309	3,692	3,166	526
293	Heart failure & shock w/o CC/MCC	9,606	3,247	2,697	550

Table E compares the charges per case for CAHs and non-CAHs by each of the top DRGs. Critical Access Hospitals charged less than non-CAHs for all of the top ten inpatient DRGs. The difference is most pronounced in DRG 292 (Heart failure & shock w/CC), with CAHs charging $13,919 dollars less per case than non-CAHs. Critical Access Hospitals also charged significantly less for DRG 392 (Esophagitis, gastroent & misc digest disorders w/o MCC), charging $13,054 less per case than non-CAHs.

Table E. Top Ten Inpatient DRGs by CAH Volume, Charges per Case and Variance

Inpatient - Top Ten DRGs by CAH Volume	DRG Name	CAH Volume	Charge per Case, CAH	Charge per Case, PPS	Charge per Case Difference
194	Simple pneumonia & pleurisy w CC	22,769	13,429	26,309	(12,881)
690	Kidney & urinary tract infections w/o MCC	18,432	8,918	20,710	(11,792)
195	Simple pneumonia & pleurisy w/o CC/MCC	17,794	10,595	19,040	(8,445)
392	Esophagitis, gastroent & misc digest disorders w/o MCC	15,611	8,353	21,407	(13,054)
192	Chronic obstructive pulmonary disease w/o CC/MCC	14,732	10,010	19,291	(9,281)
641	Nutritional & misc metabolic disorders w/o MCC	14,603	8,017	18,906	(10,889)
470	Major joint replacement or reattachment of lower extremity w/o MCC	12,016	48,242	52,395	(4,153)
292	Heart failure & shock w CC	10,598	11,954	25,873	(13,919)
603	Cellulitis w/o MCC	10,309	10,205	20,915	(10,710)
293	Heart failure & shock w/o CC/MCC	9,606	9,036	18,121	(9,085)

Table F lists states that have the highest direct cost excess per case when compared to the 65th percentile of all CAHs and all DRGs. If all Critical Access Hospitals performed at the 65th percentile of direct cost per case in each DRG, hospitals could save nearly half a billion dollars.

California, Washington, and Alaska had the highest direct cost excess per case when compared to the 65th percentile of all CAHs.

Table F. Top Ten States with Highest Direct Cost Excess for all DRGs

Inpatient - Top Excess CAH states *vs other CAHs	Total Excess	Volume	Excess per case, CAH
CA	$ 34,907,500	10,020	$ 3,484
WA	$ 28,736,365	10,684	$ 2,690
AK	$ 3,635,005	1,361	$ 2,671
HI	$ 617,448	257	$ 2,403
ID	$ 16,176,572	7,052	$ 2,294
MN	$ 46,255,970	21,062	$ 2,196
NE	$ 26,283,505	12,470	$ 2,108
OR	$ 20,916,954	10,265	$ 2,038
NV	$ 5,582,527	2,952	$ 1,891
NM	$ 3,805,281	2,075	$ 1,834

Table G lists states that have the lowest direct cost excess per case when compared to the 65th percentile of all CAHs. Tennessee, Kentucky and Oklahoma had the lowest direct cost excess per case when compared to the 65th percentile of all CAHs.

Table G. Top Ten States with Lowest Direct Cost Excess for all DRGs

Inpatient - Lowest Excess CAH states *vs other CAHs	Total Excess	Volume	Excess per case, CAH
TN	$ 1,494,153	4,595	$325
KY	$ 5,041,400	12,645	$399
OK	$ 4,013,270	7,272	$552
AR	$ 6,141,914	10,651	$577
MS	$ 5,447,333	8,837	$616
VA	$ 2,633,461	3,988	$660
PA	$ 3,509,918	5,189	$676
MO	$ 9,294,391	13,545	$686
WV	$ 3,980,830	5,717	$696
NY	$ 2,031,569	2,884	$704

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Study Area B – Shared Savings

iVantage Health Analytics has analyzed Medicare Spend by Beneficiary for Inpatient, Outpatient and Physician services. Study Area B discusses each of these areas in detail.

Table H 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 H. 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 I, 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 I. 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 J 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 J. 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 K 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 K. Comparison of Inpatient (Rural and Urban) Medicare Payments, Total Dollars, by Service Type

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Inpetient (Top 10 - MDC Total Dollars)	Total Dollars ($)	Percent of IP Total	Per Beneficiart ($)
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 L 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 L. Top Ten Inpatient Medicare Payments, Total Dollars, by State

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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 M 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 M. Bottom Ten Inpatient Medicare Payments, Total Dollars, by State

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

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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 O 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.

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Table O. 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 P 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.

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Table P. 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 Q 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 Q. 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%

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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 R 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%, respectfully, of their total Medicare spend.

Table R. 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 S 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.

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Table S. 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 T 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 T. 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%

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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 U 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 U. 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 V 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 V. 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 W 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.

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Table W. 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 X 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.

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Table X. 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 Y 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%.

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Table Y. 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 T and U 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 Study Area B and in Table Z, 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 Z. "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%

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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.

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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.

Study Area C – Value Analysis (Quality, Outcomes, and Patient Satisfaction)

The Hospital Strength INDEX utilizes publicly available data sets to quantify overall hospital performance in nine pillars. Of particular importance to ACO development are clinical quality as indicated by CMS Process of Care and Outcome Measures, patient satisfaction as demonstrated through HCAHPS scores and cost efficiency as revealed though Medicare Cost Reports. The sections below summarize the performance variation between rural and urban hospitals according to these relevant measure sets.

- Hospital Compare 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.

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- Heart Attack (AMI): In summary, top performing rural hospitals, defined as the 75th percentile of hospitals, outperform top performing urban hospitals. However, at the median level, urban hospitals perform better than their rural counterparts on AMI measures: At the 75th percentile, rural hospitals outperform urban hospitals by nearly 13% and at the 50th percentile, urban hospitals outperform rural hospitals by 9%.

- Heart Failure (HF): In summary, urban hospitals perform better than their rural counterparts on HF measures: At the 75th percentile, rural hospitals underperform urban hospitals by nearly 18% and at the 50th percentile, rural hospitals underperform urban hospitals by nearly 32%.

- Pneumonia (PN): In summary, urban hospitals perform better than their rural counterparts on PN measures: At the 75th percentile, rural hospitals underperform urban hospitals by nearly 10% and at the 50th percentile, rural hospitals underperform urban hospitals by 18%.

- Surgical Care Improvement Program (SCIP): In summary, top performing rural hospitals outperform urban hospitals but at the median level, urban hospitals perform nominally better than their rural counterparts on SCIP measures: At the 75th percentile, rural hospitals outperform urban hospitals by 3.5% and at the 50th percentile, rural hospitals underperform urban hospitals by nearly 3%.

- Outpatient (OP): In summary, urban hospitals perform better than their rural counterparts on OP measures: At the 75th percentile, rural hospitals underperform urban hospitals by 5% and at the 50th percentile, rural hospitals underperform urban hospitals by over 5.5%.

FINDING: Neither the rural nor urban cohort dominates performance across the CMS Process of Care topic areas.

- Hospital Compare Outcomes 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: In summary, there is no statistical variation in the performance of rural vs. urban hospitals: At the 75th percentile, rural and urban hospitals have similar performance (< 1% variation) and at the 50th percentile, rural and urban hospitals have similar performance (<1% variation).

    - 30-Day All-Cause Mortality Rates for AMI, HF and PN: In summary, there is slight variation in the performance of rural vs. urban hospitals: At the 75th percentile, rural hospitals outperform urban hospitals by nearly 2%. Rural hospitals outperform urban hospitals by 2.9% at the median level and by 2.3% at the 25th percentile.

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FINDING: There is no significant performance variation on 30-day readmission rates at the benchmark levels for the two hospital study groups. Rural hospitals slightly outperform urban hospitals for 30-day all-cause mortality rates.

- Hospital Compare Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) Measures – The "Would you recommend?" question is indexed across the range of national performance on a scale of 0 to 100. Missing data within measure sets are ignored.

    - "Definitely Recommend" – In summary, there is no significant performance variation on HCAHPS patient experience survey measures: At the 75th percentile rural hospitals perform at the same level as urban hospitals. At the median and 25th percentile break points, rural hospitals underperform urban hospitals by 1%.

FINDING: There is no significant performance variation on HCAHPS patient experience survey measures.

- Medicare Case-Mix Adjusted Average Inpatient Costs and Charges – An overall average cost-to-charge ratio is computed for each hospital based on total charges and costs as reported in the Medicare Hospital Cost Report Information System. To calculate Inpatient average costs and charges, a hospital's cost-to-charge ratio is applied to MedPAR Inpatient charge data at the claim/patient level and adjusted based on the CMS-assigned case weight and wage index value for that claim's MS-DRG code.

    - Medicare Inpatient Costs. In summary, on a case-mix and wage index adjusted basis, average Medicare inpatient costs are higher for rural hospitals than urban hospitals. This is consistent across all quartiles although to varying degrees of significance. At the 25th percentile, rural hospitals have 9% higher costs than urban hospitals; at the 50th percentile, rural hospitals have over 4% higher costs than urban hospitals; and, at the 25th percentile, rural hospitals have 0.5% higher costs than urban hospitals.

    - Medicare Inpatient Charges. In summary, on a case-mix and wage index adjusted basis, average Medicare inpatient charges are significantly lower for rural hospitals than urban hospitals. This is consistent across all quartiles. Specifically, at the 75th percentile, rural hospitals have nearly 40% lower charges than urban hospitals; at the 50th percentile, rural hospitals have 44% lower charges than urban hospitals; and, at the 25th percentile, rural hospitals have 46% lower charges than urban hospitals.

- Medicare Case-Mix and Wage Index Adjusted Average Outpatient Costs and Charges – To calculate Outpatient average costs and charges, a hospital's cost-to-charge ratio is applied to Medicare Outpatient Standard Analytical File charge data at the claim/HCPCS (Healthcare Common Procedure Coding System) level (no data sampling) and adjusted based on the CMS-assigned case weight and a wage index value for that claim's Ambulatory Payment Classification (APC) code.

- Medicare Outpatient Costs. Average case-mix and wage index adjusted Medicare outpatient costs are higher for rural hospitals compared to urban hospitals. This is consistent across all quartiles. Specifically, at the 75th percentile, urban hospitals have nearly 33% lower costs than rural hospitals; at the 50th percentile, urban hospitals have 37% lower costs than rural hospitals; and, at the 25th percentile, urban hospitals have nearly 40% lower costs than rural hospitals.

- Medicare Outpatient Charges. In summary, on a case-mix and wage index adjusted basis, average Medicare outpatient charges are significantly lower for rural hospitals than urban hospitals. This is consistent across all quartiles. Specifically, at the 75th percentile, rural hospitals have 12% lower charges than urban hospitals; at the 50th percentile, rural hospitals have 14% lower charges than urban hospitals; and, at the 25th percentile, rural hospitals have 21% lower charges than urban hospitals.

FINDING: Rural hospitals have higher inpatient and outpatient costs but lower inpatient and outpatient charges than urban hospitals.

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Appendix A

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.

Appendix B

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

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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

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Appendix C

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

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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

Appendix D

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

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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

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