iVantage HEALTH ANALYTICS

Rural Relevance Under Healthcare Reform

A Tracking Study Monitoring the Performance of Rural Healthcare Under the Affordable Care Act

April 2014

Quarterly Update Based on Most Recently Available Data and Refined Assessment Framework using the Hospital Strength INDEX™, the 6th Annual National Rural Emergency Department Study, and the 2012 CMS Shared Savings Data File for ACO Development.

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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 most current version of this report and other research findings can be viewed or downloaded for free at: www.ivantagehealth.com/hospital-strength-index/.

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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 2014 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 2014 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.

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 1,246 Critical Access Hospitals; and the industry's largest proprietary rural Emergency Department database; proprietary to iVantage.

For 2014, four concentrations emerged as a result of the data analysis and review phase:

- ***Medicare Clinical Costs and Charges Analysis*** of the most common DRGs to review the scale of utilization and the costs and charges by rural and urban hospitals.
- ***Medicare Spend Per Beneficiary Analysis*** to review the payments for care by Medicare in Rural vs. Urban environments.
- ***Value Analysis*** to review *Quality*, *Outcomes*, and *Patient Satisfaction* of rural hospital care compared with more urban hospitals.
- ***Rural Emergency Department Analysis*** to evaluate access to care, patterns of utilization and operations in rural community emergency departments.

Study Area A: Medicare Clinical Costs and Charges Analysis

Key Findings:

- Critical Access Hospitals (CAHs) served approximately 3% of Medicare inpatients in 2012.
- 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[1] 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**.

CAH charges for 351 common DRGs (CAH and Non-CAH).

- 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 B: Medicare Spending Per Beneficiary Analysis

Key Findings:

Potential savings if urban Medicare spending was at rural levels.

- Approximately **$5.2 billion** in annual savings to Medicare alone could be realized if the average cost per urban beneficiary were equal to the average cost per rural beneficiary.
- Approximately **$1.5 billion** in annual cost differential (savings) occurred in 2012 because the average cost per rural beneficiary was **2.5% lower** than the average cost 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 **Inpatient Hospital Service** payments for rural beneficiaries are approximately **0.1% less** costly than payments for urban beneficiaries.
- 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.

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.

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 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.

1. Total Medicare costs include total direct costs as described below as well as overhead cost.
2. Total Medicare direct costs include all floor ancillary and drug costs.
3. DRGs with less than 50 total cases for CAHs were excluded.

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

Key Findings:

- Neither cohort (urban or rural) dominates performance across the CMS Process of Care topic areas (PN, HF, AMI, SCIP, and OP).
- 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.
- There is no significant performance variation on HCAHPS patient experience survey measures. This reflects a change from the 2013 and 2012 study where rural hospitals outperformed urban hospitals on HCAHPS patient experience survey measures.
- Rural hospitals have higher inpatient and outpatient costs but **lower inpatient and outpatient charges** than urban hospitals.

Why this is important:

Fundamental to healthcare reform is a shift from fee-for-service around volume of patients to *value*-based purchasing. CMS has implemented its Value Based Purchasing (VBP) program with Prospective Payment System (PPS) hospitals, in which CMS withholds a percentage of payments dependent upon hospital performance on Quality, Outcomes and Patient Satisfaction. CMS has increased the number of Value-based measures and the size of these withholdings. Forfeited withholdings may be millions of dollars, which has resulted in an unparalleled emphasis by hospitals on the pursuit of performance improvement in Quality, Outcomes, Safety and Satisfaction.

While many Critical Access Hospitals have voluntarily participated in VBP measures, the rural health landscape has come to consensus on a leading rural-relevant candidate measure set through the Medicare Beneficiaries Quality Improvement Project (MBQIP) emanating from the Federal Office of Rural Health Policy (FORHP). There is significant overlap between the CMS VBP measures and the MBQIP measures including Process of Care Measures and HCAHPS patient satisfaction scores.

Study Area D: Emergency Department (ED) Analysis

Key Findings:

- Patient acuity in rural emergency departments is relatively low compared to urban hospitals, as more than **50% of visits were categorized as low acuity cases** according to the Agency for Healthcare Research Patient Severity Index.
- **More than 50%** of low acuity visits to rural emergency departments are during business hours (9 am to 5 pm), **compared to one third of all visits** to US Emergency departments, as cited in May 2011 Congressional testimony. Peter Cunningham Ph.D., Center for Studying Health System Change - http://hschange.org/CONTENT/1204/1204.pdf
- Rural emergency departments experienced a **14% increase in utilization** between 2007-2013.
- The median Time to Medical Screening for rural Emergency Department patients (20 minutes) is **11 minutes faster** when compared to wait times for all US Emergency Department patients (31 minutes) as reported in a published national benchmark study. “National Hospital Ambulatory Medical Care Survey: 2006 Emergency Department Summary. National Health Statistics Report 2010.” www.cdc.gov/nchs/data/nhsr/nhsr026.pdf
- The median Total Time in the ED for rural patients (100 minutes) is **56 minutes faster** when compared to all US emergency department patients (156 minutes) as reported in a published national benchmark study. “National Hospital Ambulatory Medical Care Survey: 2006 Emergency Department Summary. National Health Statistics Report 2010.” http://www.cdc.gov/nchs/data/nhsr/nhsr026.pdf
- Inpatient Admissions in rural emergency departments (5.2%) is **less than half** the national Inpatient Admission rate (12.5%).

- Transfer rates from the rural emergency department to another facility (3.9%) are **more than double** the published national benchmarks (1.8%) as expected due to the defined role of non-tertiary hospitals such as CAHs.

Why this is important:
Rural emergency departments represent the "front door" for hospitals and are a hallmark of *critical access* points of care in rural America. The rural ED is a critical component of the rural health safety net, and a backstop to entire communities. When compared to urban ED visits, rural ED visits tend to be for low acuity needs, suggesting such visits are viewed as a source of last resort care and may serve to drive healthcare expenditures. Additionally rural communities see a disproportionately higher rate of uninsured patients who may utilize the rural ED as a source of primary care. The fact that more than half of these low acuity visits are during normal business hours further emphasizes the use of the rural ED for primary care.

Conclusion:
Rural healthcare deserves the same performance analysis as all provider performance, 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.

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) first releases the Medicare Provider Analysis and Review annually. This study makes use of the MedPAR file from 2012 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%

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. Ten primary index scores are derived based on the composite scores of their respective components. Aggregate scores across the ten 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.iVantageHealth.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 2013 calendar years (January 1, 2007 through December 31, 2013).

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 these 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

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

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

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

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

Table 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

State	Total ($)	Urban ($)	Rural ($)	Rural Percentage 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

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

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.

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.

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%
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.

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%
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 Specialties by Total Dollars)	Total Dollars for Specialty ($)	Percent of Phys Total	Average Cost Per Beneficiary ($)
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.

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.

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%.

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

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

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

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

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

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

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

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

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

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

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

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 ten 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.
    - **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.

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.

Study Area D – Emergency Department Performance

iVantage Health Analytics' client base represents more than **2%** of all U.S. hospitals, including **9%** of all Critical Access Hospitals (CAHs) in the country. One of its core 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 2013 calendar years (January 1, 2007 through December 31, 2013).

ED Wait Times

- Critical Access Hospitals have an average total Emergency Department throughput time (125 minutes) that is, on average 122 minutes faster – over two hours – when compared to wait times for a national hospital sample (247 minutes) as reported in a 2010 Press Ganey study[1].
- The median **Time to Medical Screening** for rural Emergency Department patients (20 minutes) is 11 minutes faster when compared to wait times for all US Emergency Department patients (31 minutes) as reported in a published national benchmark study.
- The median **Total Time in the ED** for rural Emergency Department patients (100 minutes) is 56 minutes faster when compared to all US Emergency Department patients (156 minutes) as reported in a published national benchmark study.

ED Admissions: Inpatient, Observations and Transfers

- From 2007 to 2013, rural Emergency Departments admitted, on average, approximately 5.2% 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[2].
- Rural Emergency Departments have seen a 37.5% decrease in the average number of inpatient admissions from 2007-2013. In contrast, Emergency Department admissions to observation units have increased 28.7%. Inpatient and observation admissions combined for 8.4% of all ED visits annually being admitted to the hospital from 2007 to 2013 compared to the CDC-reported 12.5% national Emergency Department inpatient admission rate.
- The average transfer rate for Critical Access Hospital Emergency Department patients to another facility of 3.97% is higher than the 1.8% transfer rate reported in the CDC study[3].

Patient Acuity and Access

- From 2007 to 2013 iVantage found that over 54% of all Emergency Department visits to CAHs were categorized as **low acuity cases** according to the Agency for Healthcare Research Patient Severity Index.
- Regarding access to primary care, nearly 50% of these low acuity visits to the rural Emergency Department are during business hours (9 am to 5 pm) compared to one third cited in May 2011 Congressional testimony[6].

[1] "Pulse Report 2010 Emergency Department: Patient Perspective on American Healthcare". Press Ganey. 2010. May 2010. http://www.pressganey.com/researchresources/hospitals/pulseReports.aspx

[2] Niska, Richard, Farida Bhuiya, Jianmin Xu. "National Hospital Ambulatory Medical Care Survey: 2007 Emergency Department Summary. National Health Statistics Report 2010. http://www.cdc.gov/nchs/data/nhsr/nhsr026.pdf

3 National Institute for Healthcare Reform. Non-Urgent Use of Hospital Emergency Departments. May 11, 2011. http://hschange.org/CONTENT/1204/1204.pdf

Patient Satisfaction

From 2007 to 2013, rural Emergency Departments that performed in the top and bottom deciles of **Wait Times to Medical Screening Exam** and **Total Time in the ED** saw positive and negative impact on patient satisfaction in the Emergency Department.

- The median willingness to recommend loyalty score was 25.9% higher for hospitals that on average performed in the top decile of **Total Time in the ED** than hospitals that performed in the bottom decile**.**
- The median overall quality loyalty score was 20.6% higher for hospitals that on average performed in the top decile of **Total Time in the ED** than hospitals that performed in the bottom decile**.**
- The median willingness to recommend loyalty score was 16.5% higher for hospitals that on average performed in the top decile of **Wait time to Medical Screening Exam** than hospitals that performed in the bottom decile**.**
- The median overall quality loyalty score was 14.7% higher for hospitals that on average performed in the top decile of **Wait time to Medical Screening Exam** than hospitals that performed in the bottom decile**.**

Discussion

The four categories of findings contained in this study depict a rural healthcare delivery system profile at odds with conventional wisdom. First, despite lower volumes and utilization, the cost per case is equivalent in rural as compared to urban settings, but charges per case are nearly half that of urban hospitals. Second, quantitative analysis of public and proprietary data reveals that rural beneficiaries consume, on a per capita basis, fewer Medicare resources than their urban counterparts. Third, rural hospitals, on average, tend to have just as high quality and safety, slightly higher patient satisfaction, and lower charges than urban hospital providers. Last, small and rural community hospital Emergency Departments tend to treat patients with lower acuity at a higher rate of efficiency than urban Emergency Departments. These findings provide important insights for healthcare executives focused on the design, development and management of ACOs, most of which will circumscribe a catchment area including rural areas. As a result, we offer the following questions for consideration:

Clinical Cost and Charges Considerations

- What are the contributing factors to higher cost per case in Critical Access Hospitals?
- Does the cost plus model for Critical Access Hospitals adequately cover the cost differential between these groups?
- How can supply chain models impact cost at the rural hospitals?
- What impact do academic and research divisions have on cost and charge?
- Are DRG grouping equivalent between rural and urban?
- With comparable quality and outcomes, and lower charge levels by DRG; are commercial payer contracts equivalent between urban and rural?

Medicare Spend per Beneficiary Considerations

- What factors best explain the variance in per capita rural vs. urban Medicare beneficiary payments?
- Why do rural beneficiaries consume fewer physician services than outpatient services, relative to their urban beneficiary counterparts?

- What are the underlying reasons for the low utilization of physician services among rural beneficiaries, and is this lack of Medicare payment optimal from a public policy standpoint?
- Is there a causal relationship between rural beneficiaries consuming fewer physician resources yet higher outpatient services?
- If lower Medicare payments to rural beneficiaries for physician services are driven by lack of provider availability, then what strategies can/will ACOs employ to fill this gap from a prevention and wellness perspective?
- To what degree does cost-based reimbursement for Critical Access Hospitals impact the total Medicare payments (especially inpatient and outpatient) for rural beneficiaries?
- To what degree is rural beneficiary use of emergency department services for routine primary care a contributing factor to higher average rural beneficiary outpatient Medicare payments?
- Are there strategic opportunities to rebalance the location of services to urban settings, with a particular focus on routine and primary care (yield management)?

Hospital Performance Considerations

- Given performance parity between urban and rural providers, are ACO developers prepared to view rural hospitals as legitimate, credible patient care partners?
- What economic advantage do rural hospitals provide an ACO given that on average rural hospitals have lower costs and lower prices?
- What impact is value based purchasing having on quality and outcomes scores?
- What impact has the Medicare Beneficiary Quality Improvement Project (MBQIP) had on critical access hospital quality scores?
- With national performance averages nearing 100% compliance, are these measures truly reflective of quality of care?
- Should rural hospitals have different benchmarks of quality?

Rural Emergency Department Considerations

- With growing utilization, lower patient acuity, and declining admission levels, rural emergency departments will become an important patient management hub as ACOs become accountable and adopt risk for defined populations outside metropolitan areas.
- How can the significant operational performance advantage exhibited by rural emergency departments be leveraged by urban-based ACOs?
- Are there strategic opportunities to divert suburban emergency department visits to rural providers to decrease costs and wait times?
- If rural emergency departments appear to function increasingly as quasi-primary care practices, what role will they play in ACO development?
- In an ACO that includes small rural and community hospitals, there is significant opportunity (and risk) in the affective management of patient coordination, specifically with appropriate emergency department transfers and admissions. To what extent should questions center on the quality of care at rural emergency departments, the proper location of services for rural residents, and whether care coordination can lower costs and improve care?
- Does the volume of low severity cases during business hours reflect a lack of access to primary care in rural?
- What factor does the uninsured population have on low severity ED utilization?
- Will the “two midnight” rule have an impact on admission rates from the ED?

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 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

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

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

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

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

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.

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