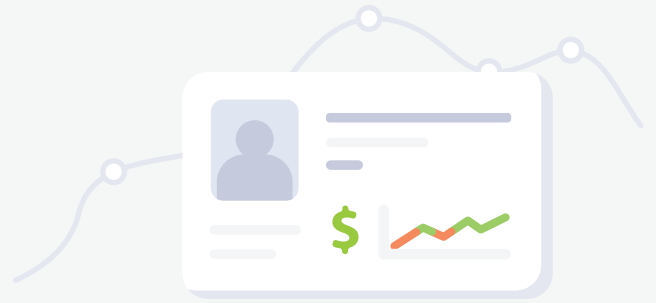
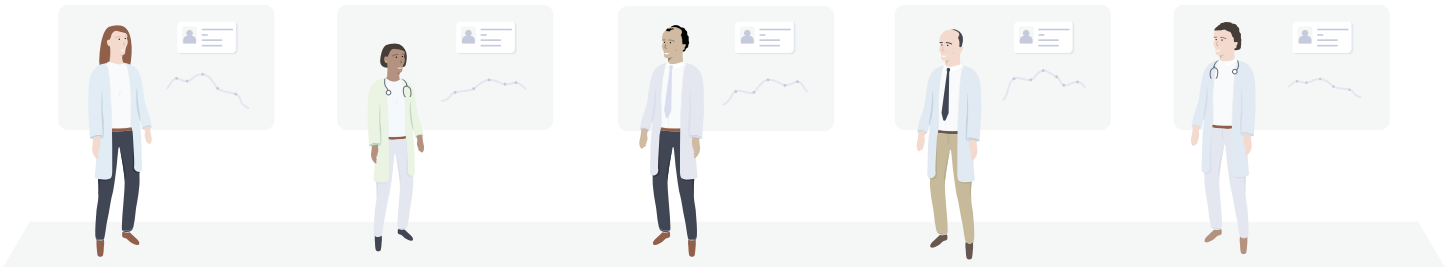


Which physician specialties  
have the most inpatient

# COST VARIATION



Previous studies have demonstrated the extent of cost variation among hospitalists and general internists, both across different hospitals and within the same hospital (see, e.g., JAMA 2017), but the same cannot be said for more targeted specialists such as cardiology or pulmonology. It's assumed that hospitalists and other generalists have a greater degree of cost variation than do specialists, but to our knowledge, no prior study has measured the variance in cost by provider specialty.



As a result of the work we do to present costs, risks, and other key data in the clinical workflow, Illumicare is uniquely able to collect and analyze the real-time cost (actual wholesale cost; not charge) of every order for a medication, lab, and radiology test, who ordered it (by provider/type) and the patient's acuity (MS-DRG) as documented by dozens of acute care hospitals across the country.

## Methodology

To study the variation in physician practice patterns among inpatients, we:

- Selected a subset of hospitals with reliable, verified provider sub-specialties;
- Applied the same cost per medication dose, lab test, and radiology test across all facilities, so that this analysis would highlight (in)consistency of practice patterns;
- Looked only at medication, lab and radiology orders where the subject provider/sub-specialist was the ordering provider;
- Required a provider to have a minimum of 10 patient admissions in a subject DRG;
- Required a minimum of 5 sub-specialists with sufficient patient volume in that DRG in order for a DRG to be included
- Removed, for different reasons, Student, Emergency Medicine, Family Medicine and a few other subspecialties from the analysis.

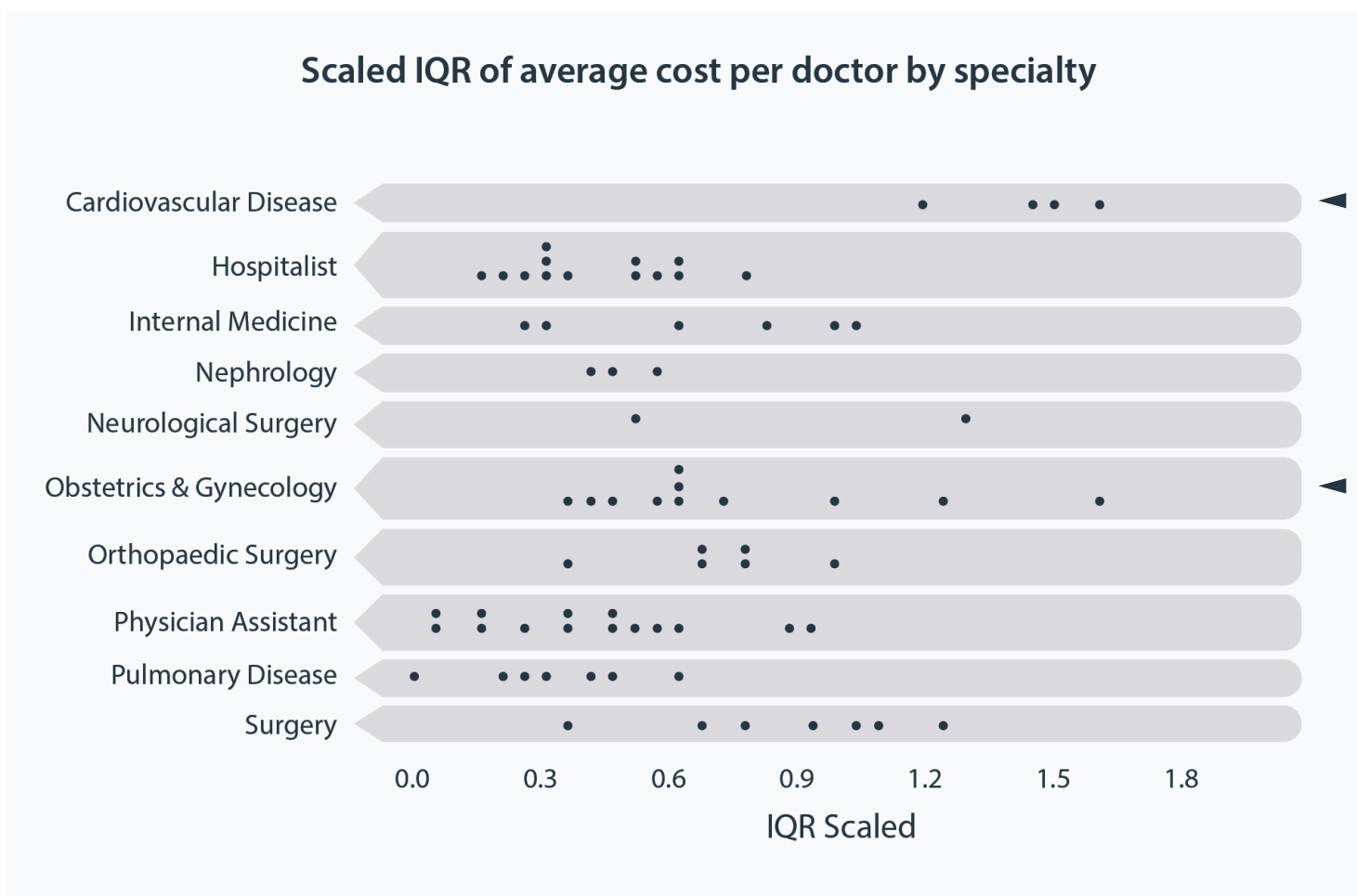
For each DRG/provider sub-specialty combination that met volume criteria, we calculated the mean spend on med/lab/rad by each sub-specialist, for that DRG. We then calculated the inter-quartile range (IQR) of all sub-specialists' mean spending in that DRG. Because the inter-quartile range is a dollar figure that depends on the cost of that particular DRG, to compare across different DRGs, we scaled the IQRs by dividing the IQR by the average cost in that sub-specialty for that DRG. A scaled-IQR of 0 means no variation around the mean spend for that DRG. The higher the number above 0, the greater the variation of sub-specialists around the mean for that DRG.

For example, in DRG 247 (Perc Cardiovasc Proc with Drug-Eluting Stent without MCC), across all Cardiovascular Disease providers with sufficient volume revealed the following:

- The average med/lab/rad spend per admission (Cardiovascular providers only) was \$108.59;
- The range was \$6.85 to \$353.52;
- The 25th percentile was \$8.82;
- The 75th percentile was \$228.24, representing an inter-quartile range of \$219.41;
- Dividing the IQR by the average cost yields a scaled IQR of 1.51.

### On a Relative Basis...

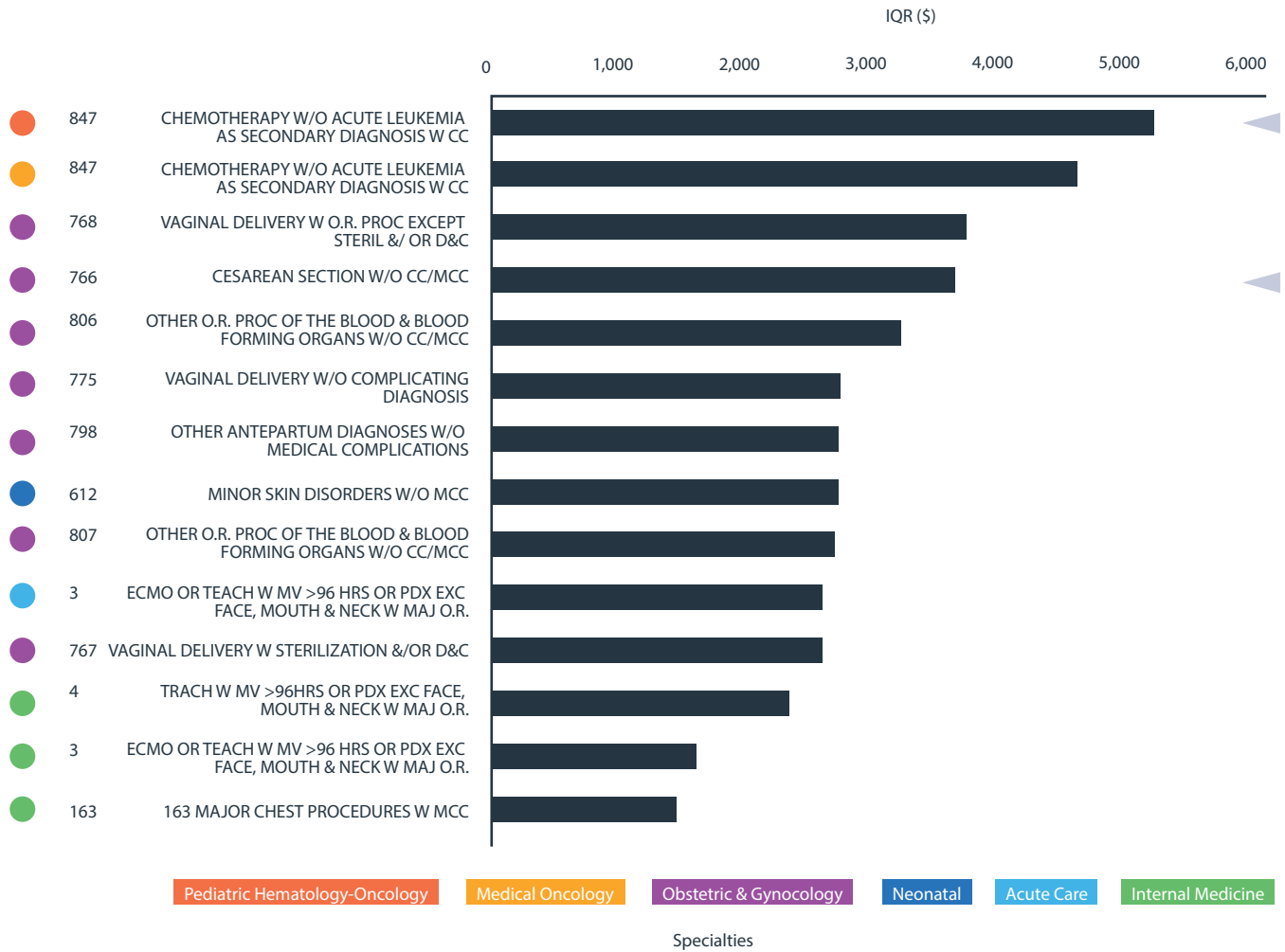
Below are the DRGs (each blue dot represents a DRG) across all provider sub-specialties that met the inclusion criteria. On a scaled basis, Cardiology and OB/GYN have the greatest variation across the DRGs they regularly see.



### On an Absolute Basis...

Some Sub-specialty/DRG combinations have very large absolute dollar inter-quartile ranges. The top fifteen such pairs are below. For example, in DRG 847, we looked at the med/lab/rad wholesale inpatient spend by just Pediatric Hematology-Oncologists. Using the IQR eliminates outliers on the high and low end. Even still, there is a \$5,438 variation per admission between the 25% percentile and the 75% percentile.

While the variation in spend on oncology patients (even within the same DRG) may be understandable, one might wonder why there is a \$3,885 IQR for OB/GYN orders on Cesarean Section without complications or comorbidities or a \$2,983 IQR for OB/GYN orders on vaginal delivery without complicating diagnosis.

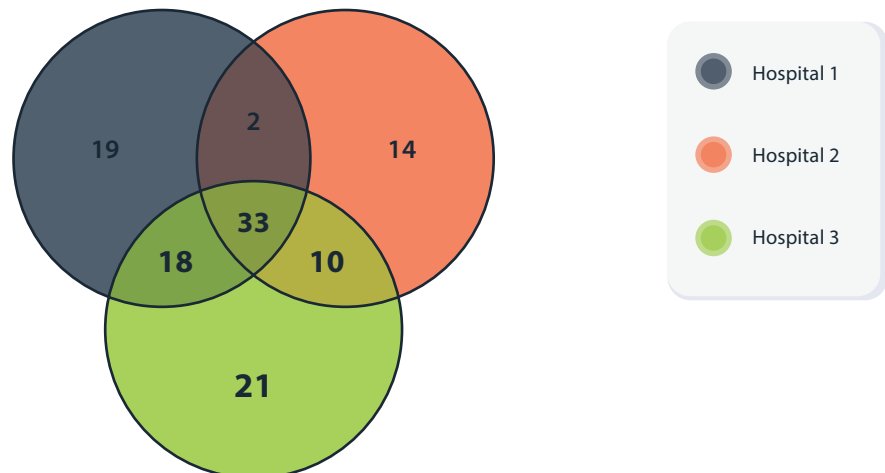


### Digging Deeper...

The variation in spend among the same sub-specialists taking care of the same type of patients is rooted in differing practice patterns of those providers. As one example of this, the Venn diagram below represents the medications ordered by cardiologists at three similar academic medical centers. For this diagram, we compressed all the combinations of drug, strength and route (e.g., HALOPERIDOL LACTATE 5 MG/ML INJ SOLN) into just the drug represented (e.g., HALOPERIDOL).

As the diagram indicates, **only 33 of the medications were ordered by cardiologists in all three hospitals,**

whereas **54 of the medications were ordered by cardiologists at only one of the three hospitals.**



## **Conclusion**

Considerable variation exists in how different providers take care of the same type of patients. Those differences result in significant differences in spending on medications, labs and radiology. IllumiCare's clients have found it valuable to understand variation in their own hospitals, recognize the areas with the most opportunity, and use the combination of real-time, provider-facing solutions and management-facing analysis to drive positive change.

## **About IllumiCare**

Founded in 2014 in Birmingham, Ala. by a visionary physician and team of hospital IT experts, IllumiCare is dedicated to helping clinicians become better stewards of system and patient resources. Its Smart Ribbon® platform brings clinicians critical, patient-specific data in a focused view for expedited clinical decision making at the point of care, without disrupting clinical workflow. Hospitals around the country are seeing the benefits of decreasing harmful overutilization: Immediately after go-live, providers drop their spend per admission by \$170. To learn more, visit [www.illumicare.com/ereports](http://www.illumicare.com/ereports).