Classifying Hospitals
January 27, 2009 at 12:00 pm ET

AHRQ Quality Indicators (QI) Learning Institute
Mamatha Pancholi, QI Project Officer, Center for Delivery, Organization, and Markets, AHRQ
Douglas Staiger, PhD, Dartmouth College
Jeffrey Geppert, EdM, JD, Battelle Memorial Institute
Agenda

- Welcome
- Key choices in classifying hospitals
- Examples from public reports
- Assigning hospitals to categories: the role of uncertainty
- Advanced topic: Using probabilities to assign categories
- Questions and discussion
Tentative Webinar Schedule

Orientation:
October - Designing Your Reporting Program

Measures/Data/Analysis:
November - Selecting Measures & Data
December - Key Choices in Analyzing Data for the Report
Today - Classifying Hospitals

Reporting/Disseminating/Promoting:
February - Displaying the Data
March - Web Site Design & Content
April - Marketing & Promoting Your Report

Evaluation:
May - Evaluation of Public Reporting Program

Closing:
June - Highlights From the Learning Institute
Agenda

- Welcome
- Key choices in classifying hospitals
- Examples from public reports
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- Advanced topic: Using probabilities to assign categories
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Learning Objectives

You will learn how to:

- Identify the key choices and common methods used to classify hospitals into performance categories
- Describe the advantages and disadvantages of each method
- Describe the role of uncertainty when classifying hospitals
- Advanced topic: understand how probability might be used to classify hospitals
What does it mean to “classify”?

- Assigns hospitals to a category of performance based on certain criteria
  - For example, one-star, two-star, three-star
- Makes a normative judgment about how a hospital should perform
- Implies a benchmark: a standard of performance
- Sometimes implies a punishment for failing to meet the standard or a reward for exceeding the standard
Classifying Hospitals

Why classify hospitals?

- Inform choices when comparing performance
  - Results in decisions based on “meaningful” differences
  - Incorporate trade-offs (e.g. quality vs. cost)
- Create incentives to improve performance
- Learn about best practices
- Reflect system-wide goals
- Communicate organizational “value-added”
  - The difference between actual and expected performance
Categories of Performance

Types of categories

- Relative: Worse than average, average, better than average
  - Compared to “peer” performance
- Absolute: Low performance, medium performance, high performance
  - Compared to “highest achieved” performance
- Change: Increased performance, same performance, decreased performance
  - Compared to the hospital’s own historical performance
## Categories of Performance

<table>
<thead>
<tr>
<th>Category</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative</td>
<td>Comparative reporting</td>
<td>Quality improvement</td>
</tr>
<tr>
<td>Absolute</td>
<td>Quality improvement</td>
<td>Pay-for-performance</td>
</tr>
<tr>
<td>Change</td>
<td>Pay-for-performance</td>
<td>Comparative reporting</td>
</tr>
</tbody>
</table>
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# Example: Florida Health Finder

<table>
<thead>
<tr>
<th>Hospital Name</th>
<th>Cases</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayfront Medical Center - 100032</td>
<td>259</td>
<td>Higher than Expected 10.48%</td>
</tr>
<tr>
<td>Saint Petersburg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bert Fish Medical Center - 100014</td>
<td>91</td>
<td>As Expected 6.71%</td>
</tr>
<tr>
<td>New Smyrna Beach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bethesda Memorial Hospital - 100002</td>
<td>360</td>
<td>Higher than Expected 14.51%</td>
</tr>
<tr>
<td>Boynton Beach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blake Medical Center - 100213</td>
<td>279</td>
<td>As Expected 5.49%</td>
</tr>
<tr>
<td>Bradenton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boca Raton Community Hospital - 100160</td>
<td>252</td>
<td>Lower than Expected 3.55%</td>
</tr>
<tr>
<td>Boca Raton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brandon Regional Hospital - 100243</td>
<td>238</td>
<td>As Expected 4.88%</td>
</tr>
<tr>
<td>Brandon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brooksville Regional Hospital - 100071</td>
<td>103</td>
<td>As Expected 6.21%</td>
</tr>
<tr>
<td>Brooksville</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broward General Medical Center - 100039</td>
<td>262</td>
<td>As Expected 6.34%</td>
</tr>
<tr>
<td>Fort Lauderdale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calhoun - Liberty Hospital - 100112</td>
<td></td>
<td>Too few cases</td>
</tr>
<tr>
<td>Blountstown</td>
<td></td>
<td>Too few cases</td>
</tr>
<tr>
<td>Campbellton - Graceville Hospital - 100138</td>
<td></td>
<td>Too few cases</td>
</tr>
<tr>
<td>Graceville</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cape Canaveral Hospital - 100177</td>
<td>134</td>
<td>As Expected 8.31%</td>
</tr>
<tr>
<td>Cocoa Beach</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Example: Iowa Healthcare Collaborative

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>National Risk-Adjusted Rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Iowa Statewide Risk-Adjusted Rate</td>
<td>1.16%</td>
<td>1.29%</td>
<td>1.41%</td>
<td>1.11%</td>
<td>1.35%</td>
<td>1.26%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Iowa Statewide Volume</td>
<td>8929</td>
<td>9474</td>
<td>9531</td>
<td>10348</td>
<td>9236</td>
<td>47518</td>
<td></td>
</tr>
<tr>
<td>Ames</td>
<td>Mary Greeley Medical Center</td>
<td>167</td>
<td>351</td>
<td>220</td>
<td>230</td>
<td>968</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bettendorf</td>
<td>Trinity at Terrace Park</td>
<td>111</td>
<td>381</td>
<td>299</td>
<td>791</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cedar Rapids</td>
<td>Mercy Medical Center</td>
<td>355</td>
<td>324</td>
<td>331</td>
<td>246</td>
<td>1563</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cedar Rapids</td>
<td>St. Luke’s Hospital</td>
<td>552</td>
<td>409</td>
<td>543</td>
<td>566</td>
<td>479</td>
<td>2549</td>
<td>★</td>
</tr>
<tr>
<td>Clinton</td>
<td>Mercy Medical Center</td>
<td>73</td>
<td>155</td>
<td>164</td>
<td>145</td>
<td>565</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Council Bluffs</td>
<td>Alegent Health Mercy Hospital</td>
<td></td>
<td>45</td>
<td>87</td>
<td>132</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Council Bluffs</td>
<td>Jennie Edmundson Hospital</td>
<td>115</td>
<td>117</td>
<td>122</td>
<td>122</td>
<td>102</td>
<td>578</td>
<td></td>
</tr>
<tr>
<td>Davenport</td>
<td>Genesis Medical Center</td>
<td></td>
<td>1841</td>
<td>2507</td>
<td>1873</td>
<td>9786</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Des Moines</td>
<td>Iowa Lutheran Hospital</td>
<td>225</td>
<td>285</td>
<td>317</td>
<td>311</td>
<td>256</td>
<td>1394</td>
<td></td>
</tr>
<tr>
<td>Des Moines</td>
<td>Iowa Methodist Medical Center</td>
<td>730</td>
<td>740</td>
<td>660</td>
<td>571</td>
<td>512</td>
<td>3213</td>
<td></td>
</tr>
</tbody>
</table>
Example: Oregon

Abdominal Aortic Aneurysm (AAA) Repair Death Rate (IQI 11)

STATE (554)
REGION 2 - PDX METRO AREA (297)
- Kaiser Sunnyside Med Ctr (41)
- OHSU Hospital (61)
- Providence Portland Med Ctr (34)
- Providence St. Vincent Med Ctr (85)
REGION 3 - VALLEY (147)
- St. Vincent's Med Ctr (27)
Example: Massachusetts
Welcome

Key choices in classifying hospitals

Examples from public reports

Assigning hospitals to categories: the role of uncertainty

Advanced topic: Using probabilities to assign categories

Questions and discussion
Uncertainty

Why is there uncertainty?

- Inference to the general population

What is the role of uncertainty?

- In comparative reporting, uncertainty decreases the chances for a good decision
  - A decision not based on actual or meaningful differences in performance

- In pay-for-performance, uncertainty decreases the incentives to improve performance
  - A given level of effort may not result in as much improvement as expected
Addressing uncertainty

- Computing a “confidence interval”
  - Each patient is a separate measure of the hospital’s performance (the “sample” of N patients)
  - Compute the mean and variance from the sample
  - Compute the standard error (SE) as $\sqrt{\text{variance}/N}$
  - Lower bound = mean – 1.96 * SE
  - Upper bound = mean + 1.96 * SE
  - Confidence interval is “(lower bound, upper bound)”

- Test of “statistical significance”
  - If the benchmark falls within the confidence interval
Uncertainty Example: Below Average

Probability

Hospital Performance

Population
Hospital
Uncertainty

Uncertainty Example: Average

Hospital Performance

Probability

Population

Hospital
Uncertainty

<table>
<thead>
<tr>
<th>IQI 15</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Freq.</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below</td>
<td>235</td>
<td>11.31</td>
<td>235</td>
<td>11.31</td>
</tr>
<tr>
<td>Average</td>
<td>1747</td>
<td>84.07</td>
<td>1982</td>
<td>95.38</td>
</tr>
<tr>
<td>Above</td>
<td>96</td>
<td>4.62</td>
<td>2078</td>
<td>100.00</td>
</tr>
</tbody>
</table>
Uncertainty

<table>
<thead>
<tr>
<th>PSI #6</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Freq.</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below</td>
<td>38</td>
<td>1.50</td>
<td>38</td>
<td>1.50</td>
</tr>
<tr>
<td>Average</td>
<td>2302</td>
<td>90.67</td>
<td>2340</td>
<td>92.16</td>
</tr>
<tr>
<td>Above</td>
<td>199</td>
<td>7.84</td>
<td>2539</td>
<td>100.00</td>
</tr>
</tbody>
</table>
### IN-HOSPITAL MORTALITY, HIP FRACTURE

<table>
<thead>
<tr>
<th>IQI #19</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Freq.</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below</td>
<td>48</td>
<td>2.52</td>
<td>48</td>
<td>2.52</td>
</tr>
<tr>
<td>Average</td>
<td>1786</td>
<td>93.90</td>
<td>1834</td>
<td>96.42</td>
</tr>
<tr>
<td>Above</td>
<td>68</td>
<td>3.58</td>
<td>1902</td>
<td>100.00</td>
</tr>
</tbody>
</table>
If you would like to pose a question to any of the speakers, please post it in the Q&A box on the right-hand side of your screen and press send.
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An alternative approach to confidence intervals is to calculate a probability that a hospital is above or below the benchmark.

The method provides more useful information that may reflect how consumers actually make decisions.

For example, say a weather forecast provides a 20% chance of rain and an 80% chance of sunshine.

- Whether this information impacts a consumer’s decision depends on what else the consumer might know other than the forecast.
- Is the consumer planning a picnic or staying indoors?
Probabilities

- The probability that a hospital is in the bottom half of hospitals may be more or less important to a consumer.
- The importance may depend on what else the consumer might know about that hospital that would tend to confirm or contradict that ranking.
- Information from physician recommendations, other sources of quality information.
Probability by Performance Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>Hospital A: 10%</td>
</tr>
<tr>
<td>Middle</td>
<td>Hospital A: 50%</td>
</tr>
<tr>
<td>Bottom</td>
<td>Hospital A: 20%</td>
</tr>
</tbody>
</table>
Both hospitals are most likely in the “average” category

However, Hospital A is more likely to be in the “above average” category

Hospital B is more likely to be in the “below average” category

A consumer might want to select Hospital A over Hospital B if the consumer had other information that would also lead the consumer to select Hospital A
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Questions and discussion

If you would like to pose a question to any of the speakers, please:

- Post it in the Q&A box on the right-hand side of your screen and press send

  OR

- Click the “raise your hand” button to be un-muted and verbally ask a question
QILI Newsletter

What's New on the Extranet

- Care should be taken with data and diagnosis elements – Planning Committee member Kim Grisby from the Florida Hospital Association addressed how member programs link patents to data. Five members have replied to date. A PowerPoint presentation given by Susan Moline from Texas Tech University Health Science Center about the AHRQ NHQI Readmissions Conferences that addressed this issue was also posted.

- 17 states have implemented/used the ICD-10 diagnosis codes, which presents Jeff Coopert, of health IT, many challenges. Because the December 2015 is a technical legislative deadline, a lot of questions.

- GDC ICD-10-CM official guidelines for coding and recording – During the webinar, about selecting measures on November 17th, states asked questions about how to become familiar with ICD-10 codes. Jeff Coopert, of health IT, suggested these guidelines, which have been posted in a document called “Administrative Data Resources.”

- AHRQ draft model reports – During the webinar about selecting measures, states mentioned AHRQ’s Model Public Reports. The DRAFT are posted in their own field.


- AHRQ Bulletin Board – AHRQ Bulletin Board is available for members to share information and resources. Members can post announcements, blog posts, and articles relevant to quality improvement and patient safety.

Upcoming Events

Key Choices in Analyzing Data Webinar

Monday, December 15th at 12:00 pm ET

AHRQ Quality Indicators Learning Institute (AQLI) Newsletter

December's Program Profile:

Texas Department of State Health Services

The latest issue, as well as a link to the AHRQ Quality Indicators Learning Institute (AQLI) Newsletter, can be found at https://www.library.qi.net.
Next Webinar

Displaying the Data

February 24, 2009

Shoshanna Sofaer, Baruch College
Susan McBride, Texas Tech University

You are welcome to invite others from your organization
For More Information

- QI Learning Institute Web Forum: [https://ahrqqili.webexone.com/](https://ahrqqili.webexone.com/)
- QI Learning Institute E-Mail: [QualityIndicatorsLearning@ahrq.hhs.gov](mailto:QualityIndicatorsLearning@ahrq.hhs.gov)
- QI Support E-Mail: [support@qualityindicators.ahrq.gov](mailto:support@qualityindicators.ahrq.gov)