Business Intelligence Community of Experts:

Rankings, Benchmarking &
External Data Collection

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Medical School Administration
University of Michigan Medical School

November 2007


UMMS 15-Year Average Rank: 10.0
UMMS 10-Year Average Rank: 9.2
Agenda

I. The USNWR Rankings of Medical Schools
   - Deconstructing the Rankings
   - Global Findings
   - Reverse Engineering

II. External Data Collection & Survey Coordination

III. Benchmarking Considerations

IV. Discussion

U-M Medical School advances to 7th in nation, says U.S. News & World Report

ANN ARBOR, Mich. — The University of Michigan Medical School has been ranked No. 11 among the nation's 125 fully accredited medical schools, according to the annual "Best Graduate Schools" rankings released today by U.S. News & World Report. In 2003 the school was ranked No. 9.

The magazine ranked U-M in the top 10 for four medical specialties -- family medicine (No. 6), geriatrics (No. 4), internal medicine (No. 8) and women's health (No. 7). U-M was also ranked in pediatrics (15).

Among separate rankings of primary care-oriented and osteopathic schools, U-M ranked 29th. Overall, the University of Michigan ranked 12th in the biological sciences.

"The innovative contributions and unique sets of strengths among our faculty impact every aspect of research, clinical services and education at Michigan," says Allen S. Lichter, M.D., dean of the U-M Medical School. "Their efforts are what sustain Michigan's national and international reputation."
The 2007 Rankings: Overview

- 2007 Best Graduate Schools:
  - Published in April, 2006
  - School surveys submitted by November, 2005 and based on FY2005 data.
  - All data self-reported

- Medical Schools ranked on two lists: Research and Primary Care

- 2007 research ranking based on a weighted average of 8 metrics

"In most cases information requested on this survey is the same as that you provide to the Association of American Medical Colleges (AAMC). U.S. News asks you for this data because the AAMC data are not available to us."

http://www.usnews.com/usnews/edu/grad/rankings/about/07med_meth.php
The Research Rank Methodology: Weighting the Criteria

U.S. News & World Report Ranking Criteria: Weights by Year

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</table>

- Faculty to Student Ratio
- Acceptance Rate
- Mean Undergrad GPA
- Mean MCAT
- NIH Awards per Faculty
- Total NIH Awards
- "Residency Reputation"
- "Academic Reputation"

The Methodology: 2007 Weights

<table>
<thead>
<tr>
<th>Academic Reputation</th>
<th>Residency Reputation</th>
<th>Total NIH Awards</th>
<th>NIH Awards per Faculty</th>
<th>Avg. MCAT</th>
<th>GPA</th>
<th>Acceptance Rate</th>
<th>Faculty-Student Ratio</th>
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</table>

NIH Awards per Faculty = NIH $ / Faculty Count
NIH $ / Faculty Count / Total Med Students = NIH $ / Med Student

Well, not quite...
The distribution of each metric is standardized about the mean and then weighted; and NIH Awards / Faculty are averaged over two years.
Other Recent Critiques

America’s Best Medical Schools: A Critique of the U.S. News & World Report Rankings
William C. McGlue, PhD, and James A. Thompson

2001 Academic Medicine
* Critique of methodology
* Suggestions for alternatives
“The medical school rankings have no practical value and fail to meet standards of journalistic ethics.”

2004 AAMC Article
* Interview with USNWR
* Examines use of rankings and questions the lack of complexity
* Medical Student perspective

Rating the Rankings: Medical Education Weighs in on the U.S. News Guide to Grad Schools
By Gary Samuels
Some might argue that rankings have become just another form of the “publish or perish” syndrome; they can be seen in the titles of many top-selling college and professional sports rankings, America’s most “famous cities” rankings, bestseller book rankings, movie “box office” rankings, to name just a few examples. The public has become accustomed to the simplicity and apparent practicality of this kind of nearly year-round, easily digestible information.
But for some, the problem starts when the attempt to rank or define an institution, a city, or an artwork ends up unfairly depicting a set of very complex facts that cannot be easily quantified and compared.

I. The USNWR Rankings: Methodology & 2007 Overview

II. Michigan Medical School’s Rank

III. Global Findings 2001-2007

IV. Reverse-engineering the Rankings: An Exercise

V. Rankings Scenarios & Dashboard: What if…?
Michigan: Research “Rank” by Criteria

<table>
<thead>
<tr>
<th>Academic Reputation</th>
<th>Residency Reputation</th>
<th>Total NIH Awards</th>
<th>NIH Awards per Faculty</th>
<th>Avg. MCAT</th>
<th>GPA</th>
<th>Acceptance Rate</th>
<th>Faculty-Student Ratio</th>
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<tr>
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<td>10%</td>
<td>13%</td>
<td>6%</td>
<td>1%</td>
<td>10%</td>
</tr>
</tbody>
</table>

2007 UMMS Rank by Criteria:

#8  #6  #11  #21  #9  #19  #33  #15

Michigan – Academic Reputation

2007 Academic Reputation Score:

“In the fall of 2005, medical and osteopathic school deans, deans of academic affairs, and heads of internal medicine or the directors of admissions were asked to rate programs on a scale from “marginal” (1) to “outstanding” (5). Survey populations were asked to rate program quality for both research and primary-care programs separately on a single survey instrument. Those individuals who did not know enough about a school to evaluate it fairly were asked to mark “don’t know.” A school’s score is the average of all the respondents who rated it. Responses of “don’t know” counted neither for nor against a school. About 54 percent of those surveyed responded.”

UMMS Academic Reputation Rank

UMMS Academic Reputation Score

<table>
<thead>
<tr>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
<td>7</td>
<td>8</td>
<td>8</td>
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<td>9</td>
</tr>
</tbody>
</table>

2001 2002 2003 2004 2005 2006 2007

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<tr>
<th>2001</th>
<th>2002</th>
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<th>2005</th>
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<tbody>
<tr>
<td>4.5</td>
<td>4.5</td>
<td>4.4</td>
<td>4.4</td>
<td>4.5</td>
<td>4.4</td>
<td>4.4</td>
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</tbody>
</table>

2001 2002 2003 2004 2005 2006 2007
Michigan – Residency Reputation

2007 Residency Reputation Score:

“In the fall of 2005, residency program directors were asked to rate programs on two separate survey instruments. One survey dealt with research and was sent to a sample of residency program directors in fields outside primary care, including surgery, psychiatry, and radiology. The other survey involved primary care and was sent to residency directors in the fields of family practice, pediatrics, and internal medicine. Survey recipients were asked to rate programs on a scale from “marginal” (1) to “outstanding” (5). About 28 percent of those surveyed for research medical schools responded.”

Michigan – NIH Awards

2007 NIH Awards:

“Total Research Activity (.20) measured by the total dollar amount of National Institutes of Health research grants awarded to the medical school and its affiliated hospitals, averaged for 2004 and 2005. An asterisk indicates schools that reported only research grants to their medical school in 2005.”
Michigan – NIH Awards per Faculty

**2007 NIH Awards:**
*Total Research Activity (.20) measured by the total dollar amount of National Institutes of Health research grants awarded to the medical school and its affiliated hospitals, averaged for 2004 and 2005. An asterisk indicates schools that reported only research grants to their medical school in 2005.*

<table>
<thead>
<tr>
<th>UMMS Total NIH Awards per Faculty Rank</th>
<th>UMMS Total NIH Awards per Faculty $</th>
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<tbody>
<tr>
<td>2001 2002 2003 2004 2005 2006 2007</td>
<td>$ thousands</td>
</tr>
<tr>
<td>21 22</td>
<td>$166</td>
</tr>
</tbody>
</table>

Michigan – Average MCAT Score

**2007 MCAT:**
*Mean MCAT Score (.13 in the research medical school model, .0975 in the primary-care medical school model) the mean composite Medical College Admission Test score of the 2005 entering class.*

<table>
<thead>
<tr>
<th>UMMS MCAT Rank</th>
<th>UMMS Average MCAT Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 5 4 7 9</td>
<td>11.2 11.1 11.1 11.4 11.5 11.4 11.4</td>
</tr>
</tbody>
</table>
Michigan – Average GPA

2007 GPA:
"Mean Undergraduate GPA (.06 in the research medical school model, .045 in the primary-care medical school model) the mean undergraduate grade-point average of the 2005 entering class."

UMMS GPA Rank

UMMS Average GPA

Michigan – Acceptance Rate

2007 Acceptance Rate:
"Acceptance Rate (.01 in the research medical school model, .0075 in the primary-care medical school model) the proportion of applicants to the 2005 entering class who were offered admission."

UMMS Acceptance Rate Rank

UMMS Acceptance Rate
Michigan – Faculty to Student Ratio

**2007 Faculty-Student Ratio:**

"Faculty Resources (.10 in the research medical school model, .15 in the primary-care medical school model) resources were measured as the ratio of full-time science and clinical faculty to full-time M.D. or D.O. students in 2005."

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**UMMS Faculty-Student Ratio**

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
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<tbody>
<tr>
<td>2001</td>
<td>20</td>
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<tr>
<td>2002</td>
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<td>2003</td>
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<td>2004</td>
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<td>2005</td>
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<td>2006</td>
<td>15</td>
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<td>2007</td>
<td>15</td>
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**UMMS Faculty-Student Ratio**

![Chart showing UMMS Faculty-Student Ratio from 2001 to 2007]

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**Michigan: Research “Rank” by Criteria**

<table>
<thead>
<tr>
<th>Year</th>
<th>Academic Reputation Rank</th>
<th>Residency Reputation</th>
<th>Total NIH Awards</th>
<th>NIH Awards per Faculty</th>
<th>Avg. MCAT</th>
<th>Avg. GPA</th>
<th>Acceptance Rate</th>
<th>Faculty-Student Ratio</th>
<th>Overall Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>9</td>
<td>4</td>
<td>15</td>
<td></td>
<td>9</td>
<td>36</td>
<td>18</td>
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<tr>
<td>2002</td>
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<td></td>
<td>8</td>
<td>39</td>
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<tr>
<td>2003</td>
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<td>8</td>
<td>39</td>
<td>25</td>
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<td>2004</td>
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<td>2006</td>
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<td>2007</td>
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<td>8</td>
<td>39</td>
<td>25</td>
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</table>

**Key Movements 2005 to 2007**

- Residency Reputation: #3 to #6
- Average MCAT and GPA: #4 to #9 and #11 to #19
- Faculty-Student Ratio improved from #19 to #15
- Introduction of the NIH Awards per Faculty metric
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Global Findings: Tiers?

<table>
<thead>
<tr>
<th>University</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>Avg Rank</th>
<th>Range</th>
<th>Top 10 Appearances (out of 7)</th>
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<tbody>
<tr>
<td>Harvard University (MA)</td>
<td>1</td>
<td>1</td>
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<td>Johns Hopkins University (MD)</td>
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<td>Washington University in St. Louis</td>
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<td>4</td>
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<td>4.9</td>
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<td>7</td>
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<tr>
<td>University of California–San Francisco</td>
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<td>9</td>
<td>6</td>
<td>5.9</td>
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<tr>
<td>Columbia U. College of Physicians and Surgeons (NY)</td>
<td>8</td>
<td>6</td>
<td>6</td>
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<td>8</td>
<td>11</td>
<td>7.7</td>
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<td>6</td>
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<tr>
<td>Stanford University (CA)</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>8.7</td>
<td>4</td>
<td>6</td>
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<td>University of Michigan–Ann Arbor</td>
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<td>5</td>
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<td>11</td>
<td>9</td>
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<td>11</td>
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<td>9.3</td>
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<td>Baylor College of Medicine (TX)</td>
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<td>Cornell University (Ithaca, NY)</td>
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<td>11</td>
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<td>14</td>
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<td>Vanderbilt University (TN)</td>
<td>16</td>
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<td>16</td>
<td>14</td>
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<td>16</td>
<td>16</td>
<td>17.4</td>
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<td>U. of Texas Southwestern Medical Center–Dallas</td>
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<td>18</td>
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<td>Mayo Medical School (IL)</td>
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<td>15</td>
<td>19</td>
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<td>23</td>
<td>23</td>
<td>18.7</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>University of Chicago (Pritzker)</td>
<td>18</td>
<td>17</td>
<td>18</td>
<td>21</td>
<td>22</td>
<td>19</td>
<td>17</td>
<td>19.0</td>
<td>5</td>
<td>0</td>
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</table>
Reverse-engineering the 2007 Rankings

- Indicators were standardized about their means, and standardized scores were weighted, totaled, and rescaled so that the top school received 100; other schools received their percentage of the top score.

- Reverse-engineering the 2007 results: close but not perfect
  - US News published only 65 schools’ data for the research rankings, but it appears as if standardized data base on all schools that submit (~125)
  - Although not mentioned, US News appears to exclude some outlier data....
The USNWR ranking methodology, like other ranking methodologies, has many unique issues:

- Variables do not measure quality: 40% weighted towards reputation
- Rankings reduce complexity to a single number
- Annual shifts in methodology cause unnecessary movements
- Based on self-reported data w/o audits

Understanding how the rankings are calculated provides some well needed perspective on their ultimate utility

- Reacting to negatively or positively annual swings in rank of little real meaning… but the press releases will still be written!

- The self-reported nature of the data call into question the reliability of using ranking data for benchmarking

- Despite all the flaws, it is critical to pay close attention to the annual survey process; and to understand methodology changes and definitions

- Obligation to provide the most accurate data
Survey Coordination

The Survey Process

Old process...

- Hand distributed; annual submissions not stored electronically
- Survey coordinators scattered around Med School Administration
- Interpretation of definitions and timing varied

New process...

- Central clearinghouse w/ electronic gathering and storage
- Coordination with other publicly displayed data (data card, website, etc.)
- Temporal analyses to ensure consistency
- Working towards consolidation of internal data requests for application to multiple surveys
Benchmarking Considerations

Benchmarking Data Efforts

- Creation of one-stop data set of peer data – the Medical School Benchmark Database (MSBD):
  - External NIH data already collected in our Oracle databases
  - Plan to incorporate naming standards and load AAMC, LCME and USNWR data (among others), including data on school governance profiles, students, space utilization and financials
- Allows for refined development of cohorts
- Coupled with our work on the national AAMC data & benchmarking committee