We're number 80?! Placing rankings in context for leadership

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Presentation Overview

- Background & Context
- Major international rankings
- Analysis
- Communication Strategies
- Discussion

Background & Context

- Office of Institutional Research & Evaluation (OIR&E)
 responds to the majority of external data requests from
 rankings agencies, magazines, etc.
- New senior leadership
- Increasingly international perspective
- More and more focus on rankings among trustees, advisors, public relations

International Rankings

- Times Higher Education (THE)
 World University Rankings
- Quacquarelli Symonds (QS) World University Rankings
- Academic Ranking of World Universities (ARWU)
- U.S. News & World Report Best Global Universities (new in 2014/15)









Times Higher Education (THE)

- Times Higher Education (THE) World University Rankings
 - Based in the UK
 - In partnership with Thomson Reuters
 - Published annually in October
 - Claim to be "the only international university performance tables to judge world-class universities across all of their core missions teaching, research, knowledge transfer and international outlook."

Tufts in the THE rankings



THE Methodology

Category	Performance Indicator	Percent of Total Score (%)
	Reputation of institution's prestige in teaching	15
Toaching: The	Staff-to-student ratio	4.5
Teaching: The Learning	Ratio of doctoral to bachelor's degrees awarded	2.25
Environment (30%)	Number of doctorates awarded, scaled against institutional size as measured by number of academic staff	6 33%
	Institutional income scaled against academic staff	2.25
	Reputation for research excellence among its peers	18
Research: Volume, Income, Reputation	Research income, "scaled against staff and normalized for purchasing-power parity"	6
(30%)	Number of papers published in academic journals indexed by Thomson Reuters	6
Citations: Research Influence (30%)	Number of times a university's published work is cited by scholars globally.	³⁰ 30 %
Industry income: Innovation (2.5%)	Research income an institution earns from industry, scaled against number of academic staff	2.5
International	Ratio of international to domestic students	2.5
International Outlook: People,	Ratio of international to domestic staff	2.5
Research (7.5%)	Proportion of a university's total research journal publications that have at least one international co-author	2.5 8.3%



Reputation: King of THE

- Reputation is the primary driver of THE rankings (33%)
 - Teaching reputation: 15%; Research reputation: 18%
 - In 2013, there was a correlation of .99 between the two scores*
 - Reputation comes from an international survey
 - The 2014 rankings were based on a survey carried out between March and May 2013, which received 10,536 responses from 133 countries.
 - Most respondents were from North America (25%), Northern Europe (19%), East Asia (13%), Eastern Europe (10%), and Oceana (10%)
 - Survey asks individuals to rate institutions based on a specific field/discipline, on both research as well as teaching
 - Unclear how the survey results are translated into a reputational score, but it likely involves counting the number of times an institution has been identified, and then normalizing the counts using Z-scores and "exponential components"

*http://higheredstrategy.com/times-higher-education-reputation-rankings-2013/



THE: Also heavy on citations

- Citations account for 30% of the overall THE score
- Data are from Thomson Reuters' Web of Science database
- The 2014 rankings included all indexed journals published between 2008 and 2012
 - The data are "fully normalised" to reflect disciplinary differences
- Additional publications data included (same period of time—same publications):
 - Number of papers published in academic journals indexed by Thomson Reuters (6% of total score)
 - Proportion of a university's total research journal publications that have at least one international co-author (2.5% of total score)



THE: Data submitted by institutions

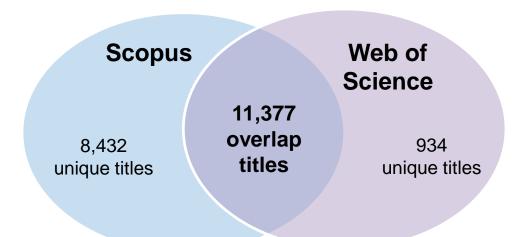
- Counts of students (FTE)
- Counts of faculty (FTE)
- # Degrees granted
- Research income
 - "The amount of income that your institution has acquired during this year specifically for purposes of conducting research."
 - Industry income
 - "The amount of research income acquired from industry or other commercial entities."
- Counts of international students and faculty
 - "Of international/overseas origin": nationality is different from the country in which your institution is based. Does not include naturalized citizens.



Changes to THE for 2015 Rankings

- No longer partnered with Thomson Reuters
 - Collecting data in-house
- New citation/publication supplier: Elsevier
 - Elsevier database of public authors and its "global network" provide the potential population for the reputation survey
- THE 2015 Academic Reputation Survey completed
 - 2015 World Reputation Rankings released March 2015
 - New distribution list:
 - "The questionnaire, administered on behalf of THE by Elsevier, targets only
 experienced, published scholars, who offer their views on excellence in research and
 teaching within their disciplines and at institutions with which they are familiar."
 - 10,507 responses from 142 countries
 - "Some 9,794 responses were valid for the World Reputation Rankings"
 - "Most balanced spread of responses across the disciplines"
 - Relatively fewer responses from North America than previously (18% vs 25%)

Elsevier versus Thomson Reuters Scopus versus Web of science

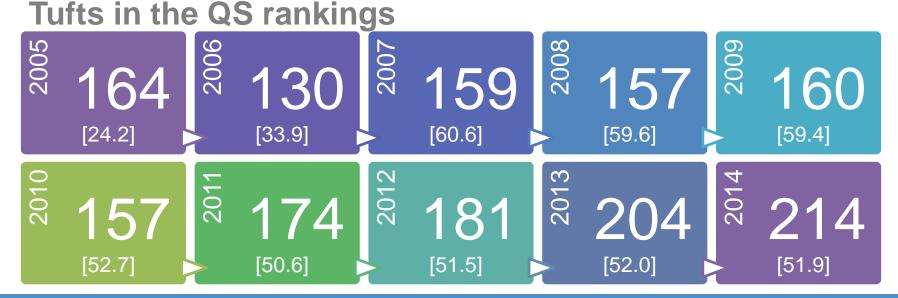


- More international (30% of items are authored by individuals in the US)
- Covers mostly scientific fields; relatively weak in social sciences, especially sociology
- For Tufts, institutional affiliation might be a problem; Tufts has 5 different affiliation IDs in Scopus (Tufts University, School of Medicine, School of Veterinary Medicine, School of Dental Medicine, USDA HNRCA)

- 38% of items are authored by individuals in the US
- Better coverage of social sciences, arts & humanities
- Greater time period of coverage
- For Tufts, only 1 Organization name, with 20+ name variants (including med school, dental school, vet school, etc.)

Major international Rankings: QS

- Quacquarelli Symonds (QS) World University Rankings
 - Based in the UK
 - Published annually in September/October
 - From 2004 to 2009, THE and QS published a joint Times Higher Education—QS World University Ranking. After the collaboration ended, the methodology for the rankings continued to be used by QS



QS Methodology

Indicator	Source	Weight (%)
Academic reputation	Global Academic Reputation Survey	40 50%
Employer reputation	Global Employer Reputation Survey	10
Student-to-faculty ratio	All student FTE/Faculty FTE	20
Citations per faculty	Citations from Scopus for "past 5 years"	20 20 %
International faculty ratio	% of faculty that are "international"	5
International student ratio	% of students that are "international"	5

QS Academic Reputation Survey

- "We ask academics to tell us where the best work is currently taking place within their field of expertise."
 - Many sources are used to invite academics to take the survey
 - Previous respondents; World scientific; Mardev-DM2; Volunteers; Institution-supplied lists
 - Responses from the previous three years are used
 - 2014 results are drawn from 63,676 survey respondents
- Survey mechanics are complicated:
 - Respondents specify country of origin and global regions with which they are familiar (three possibilities); then they specify broad academic fields with which they are familiar (5 possibilities)
 - Respondents list up to 10 domestic institutions and 30 international universities within the geographic regions they have chosen that they consider best in research in the academic fields with which they indicated familiarity
- 85% of reputation score for an institution comes from the international lists; 15% from domestic



QS Employer Reputation

- Employers are asked about "institutions they consider best for recruiting graduates"
 - Many sources are used to invite employers to take the survey
 - Previous respondents; QS databases; QS partners; lists provided by institutions
 - Responses from the previous three years are used
 - 2014 results are drawn from 28,759 survey respondents
 - Similar survey mechanics as academic reputation survey (country, region, subject fields, 10 domestic, 30 international universities)
 - 70% of employer reputation score for an institution comes from the international lists; 30% from domestic

QS Citations

- Citation data comes from Scopus
 - QS suggests that the data have an "emphasis both on medical and life sciences and on institutions from countries where the principal medium of instruction is English."
- Citation counts are from the "last five years"
- Citations are "per faculty member" rather than "per paper"
 - Divide # Citations by faculty FTE
- Since 2011, self-citations have been excluded

QS: Data submitted by institutions

- Counts of faculty
- Counts of students
- Counts of international faculty and students
 - "The term 'international' is hereby determined by citizenship. In case of dual citizenship, the 'deciding' criteria should be 'citizenship obtained through birth', basically first passport obtained."

Academic Ranking of World Universities (ARWU)

- http://www.shanghairanking.com/
- Produced by the Center for World-Class Universities at Shanghai Jiao Tong University
- Last published August, 2014

Tufts in the ARWU rankings 2005 2008 2007 [23.9][23.2][23.0] [23.6][23.0] 2012 2011 [22.6][22.9][23.1][22.7][22.6]

ARWU Methodology

Criterion	Indicator	Weight
Quality of Education	Number of Nobel Prizes and Field Medals awarded to institution or its Alumni	10% 30%
Quality of Faculty	Number of Nobel Prizes and Field Medals awarded to institution's faculty	20%
Quality of Faculty	Number of highly-cited researchers in 21 broad subject categories	20% 20 %
	Number of papers published in Nature and Science	20%
Research Output	Number of papers indexed in Science Citation index and in the expanded Social Science Citation index	20%
Per Capita Performance	Per capita academic performance of an institution (combined score of previous five indicators divided by the faculty FTE)	10%

ARWU Prizes

Nobel Prizes and Fields Medals

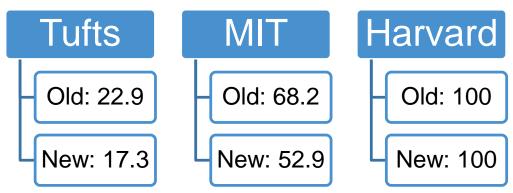
- Alumni
 - The total number of the alumni of an institution winning Nobel Prizes and Fields Medals
 - Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution
 - The more recent the award, the more it counts
 - If someone receives more than one prize/medal, he or she is counted only once.

Staff

- The total number of the staff of an institution winning Nobel Prizes in Physics, Chemistry, Medicine and Economics and Fields Medal in Mathematics
- Staff is defined as those who work at an institution at the time of winning the prize
- The more recent the award, the more it counts
- If prize is shared, "weights are set for winners according to their proportion of the prize."

ARWU Citations

- Citations = # Highly Cited Researchers
 - The number of Highly Cited Researchers selected by Thomson Reuters' ISI Highly Cited index (http://isihighlycited.com/)
 - Thomson Reuters recently changed their highly cited researcher methodology
 - Old list used by ARWU from 2003 to 2013; more than 6,000 researchers
 - Total citations
 - New list (2014) New methodology; 3,000 names.
 - Highly cited papers (~top 1%)
 - Both lists used in 2014 ARWU; equally weighted



ARWU Publications

- Number of papers published in Nature and Science
- Papers indexed in Science Citation Index-Expanded and Social Science Citation index
- Obtained from Thomson Reuters' Web of Knowledge: http://www.webofknowledge.com/

ARWU Data submitted by institutions

None

U.S. News Best Global University Rankings (GUR)

- U.S. News Best Global University Rankings (GUR)
 - In partnership with Thomson Reuters
 - Published for the first time in October, 2014
 - Focuses "specifically on schools' academic research and reputation overall and not their separate undergraduate or graduate programs"

Tufts in the GUR rankings



GUR Methodology

Category	Performance Indicator	Weight (%)
Danielation	Global research reputation	12.5
Reputation	Regional research reputation	12.5 25.0 %
	Publications (number of scholarly papers)	12.5
Bibliometric	Normalized citation impact	10.0
Indicators	Total Citations	10.0 42.5%
(Web of #	# publications among the 10% most cited	10.0
Science)	% of total publications among 10% most cited	12.5
	International collaboration	10.0
PhDs	Number of Ph.D.s awarded	5.0 22.5 %
Awarded	Number of Ph.D.s awarded per faculty member	5.0

GUR Reputation Survey

- Same Academic Reputation survey as used in 2014 THE Rankings conducted by Thomson Reuters
 - 7,993 survey respondents over the previous five years, from 128 countries
 - Largest proportion of respondents came from North America (30%), Western Europe (18%), Eastern Asia (10%), Eastern Europe (9%), and Oceana (7%)
 - GUR uses only Research Reputation questions
 - Respondents are twice asked to list up to 15 institutions they believe produce the best research in their field of study. Choices are first limited to the region of the world in which respondents are most familiar, and then are opened up to include any institution in the world
 - Regional research reputation (12.5%): Based on proportion of times an institution is listed as being best within their region (in a specific field/discipline)
 - Institutions are ranked on a global level based on the proportion of respondents within a given region who named an institution as best for research in that region
 - Global research reputation (12.5%): Based on number/proportion of times an institution is listed as being best in the world (in a specific field/discipline)

GUR Citations & Publications

- GUR bibliometric data is based on Thomson Reuter's Web of Science
- Publications data (Total number of scholarly papers) counts papers published between 2008 and 2012
 - "Total number of scholarly papers (reviews, articles and notes) that contain affiliations to a university and are published in high-quality, impactful journals."
 - Impacted by institution size
- Citations to these publications include the most recent data available
 - For the 2015 edition of the U.S. News Best Global Universities, this cutoff was around April 2014



GUR Citation Indicators

- Normalized citation impact
 - From Thomson Reuters' InCites product
 - Citations are normalized by discipline, year, and publication type
 - NCI has a constant scale (1 represents performance at par with world average, 2 is twice world average), and is "an ideal indicator for benchmarking at all organizational levels (author, institution, region, etc.)"
 - Very highly cited papers can have "an unduly large influence on the NCI value"
- Total Citations
 - "determined by multiplying the publications ranking factor by the normalized citation impact factor."
 - Total citations have been normalized to overcome differences in research area, publication year of the paper and publication type.
- # publications among the 10% most cited
 - Number of papers that have been assigned as being in the top 10 percent of the most highly cited papers in the world for their respective fields
- % of total publications among 10% most cited
 - Percentage of a university's total papers that are in the top 10 percent of the most highly cited papers in the world (per field and publication year)



Communications & Analysis

Communications & Analysis

- Evolving strategy
- Began with written memos
- Analysis
- Tables and graphs
- Extensive written report
 - PPT summary
- Tableau
- More concise PPT focused on international rankings (very similar to this one) – delivered in person

Memo: Simple descriptions

(August 2011)

Times Higher Education- Rankings Summary

Times Higher Education published world university rankings based on thirteen "performance indicators" broken down into 5 separate categories. Each of these categories was worth a total percentage of the university's final score. These categories are: teaching (worth 30% of the overall score), research (worth 30%), citations/research influence (worth 32.5%), industry income (worth 2.5%), and international mix (worth 5%).

Industry income was scored to represent the knowledge transfer activity of a university. This score was based on the institution's research income from industry scaled against the number of academic staff. This category has a low weight in the overall score (2.5%) due to the relatively few number of responses for this category provided by universities.

The teaching category was worth a large percent of the overall score (30%) and was meant to represent the learning environment provided by each university. This broad category was broken into 5 "performance indicators". The largest of these indicators (worth 50% of the teaching score) was a reputational survey on teaching. This came from the Academic Reputation Survey carried out in spring of 2011. Another 15% of the teaching score measures the number of undergraduates admitted by an institution scaled against the number of academic staff. This measure, essentially student to faculty ratio, is meant to represent quality of teaching, assuming that a higher ratio leads to less specialized teaching. Also included in the teaching score is the ratio of PhD to bachelor's degrees awarded by each institution (worth 7.5% of the teaching score). Similarly, another 20% of the teaching score is based on the number of PhDs awarded by an institution, scaled against its size as measured by the number of academic staff. Both of these contributors suggest the continuation of academics through all levels of



Memo: Analysis

Request to outline the factors that are used in the most prominent rankings (Sept 2011)

No factor appears in all four ranking methodologies. However there a several that appear in at least 3 and there are some common emphases that appear in all.

Reputation: Metrics measuring institutional reputation are weighted very heavily in Times Higher Ed (34.5%), QS World (50%), and US News (22.5%). A detailed description of the methodologies used to measure institutional reputation in each of these rankings systems is attached, but briefly, all three measure reputation by assessing how others (primarily faculty, administrators, and other institutional staff) rank Tufts. Given the heavy emphasis on reputational measures in the rankings systems, we might want to consider how to raise the visibility of Tufts University among academics internationally (for the QS World and Times Higher Ed rankings) and Presidents and Provosts domestically (for the US News Best College rankings). The ARWU measure of reputation is more direct: it relies on actual prize recipients (Nobel & Field Medals) among both the faculty and alumni.

Emphasis on Faculty and Faculty Productivity: Some measure of citations/publications is prominent in all of the world rankings. Sixty percent of ARWU model is comprised of citation and publication-related measures, while 32.5% of the Times Higher Ed model and 20% of the QS model are comprised of citation measures.

The Times Higher Ed rankings utilize citation impact data from Thomson Reuter's *Web of Science*; QS utilizes information from *Scopus* (Elsevier). The ARWU rankings use four measures of citation counts and impact: The number of "Highly Cited Researchers" (top 250 researchers in the field) at an institution (from Thomson ISI); the number of papers published by an institution's faculty in *Nature* and *Science*; the number of papers from an institution's faculty indexed in the Science Citation Index-Expanded and Social Science Citation Index (both from Thomson Reuters); and a weighted score of the above measures (plus award recipient data) adjusted by the number of FTE academic staff.



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RADUATION RATE PERFORMANCE (GRADUATION RATE PERFORMANCE									7.5%	7.5%	actual=91%)	

Comparison of Methodologies (Sept 2011)

	Ac	ademic Reputation of World	Times Higher Education				QS World Rankings			
		Universities (Shanghai)	http://www.timeshighereducation.co.uk/world-university-			http://www.topuniversities.com/university-				
	http://www.shanghairanking.com/index.html		rankings/			rankings/world-university-rankings/2011				
T. #1 C	World rank: Between 102-150 (out of		World rank: 53 (out of	World rank: 53 (out of 200) Overall Score 65.2			-	Overall score 50.57		
Tufts' Scores		1,000+)	North American rank: 33	North American rank: 33 (out of		World	rank: 174 (out of 700)	(Top score is 100)		
			Overall							
RANKING CATEGORIES	Weight	Tufts' Score	Weight	Weight	Tufts' Score	Weight	Tufts' Score	Rank		
# of Alumni w/ Nobel Prizes/Field Medals	10%	16.6 (top score is 100)								
# of Staff w/ Nobel Prizes/Field Medals	20%	16.6 (top score is 100)						***************************************		
Highly cited researchers (21 categories)	20%	22.8 (top score is 100)								
Papers published in Nature & Science	20%	15.1 (top score is 100)								
Citations	20%	36.7 (top score is 100)	32.5%	32.5%	83.9 (top score is 99.9)	20%	92.6 (top score 100)	39		
Per capita academic performance	10%	25.1 (top score is 100)								
Industry Income - Innovation			2.5%	2.5%	Tufts did not supply					
TEACHING-LEARNING ENVIRONMENT			30%		64.1 (top score is 99.7)					
Reputational survey			50% of Teaching category	15.0%	Tufts not in list of top 100					
Staff (Faculty) to student ratio			15% of Teaching category	4.5%	for reputational survey,	20%	60 (top score 100)	181		
Ratio of PhDs to Bachelors degrees			7.5% of Teaching category	2.3%	but score is less than 4.8 (top score is 100)					
PhDs awarded to academic staff ratio			20% of Teaching category	6.0%	(top score is 100)					
Institutional income to academic staff										
indicator			7.5% of Teaching category	2.3%						
RESEARCH			30%		52.3 (top score is 99.3)					
Reputational survey			65% of Research category	19.5%	Tufts not in list of top 100					
Research income to staff indicator			17.5% of Research category	5.25%	for reputational survey,					
Research volume to staff indicator			15% of Research category	4.5%	but score is less than 6.3 (top score is 100)					
Public research income as % of					(100 30016 13 100)					
total research			2.5% of Research category	0.75%						
INTERNATIONAL MIX			5%		28.3 (top score is 99.5)					
International to domestic staff ratio			60% of International Mix cat.	3.0%		5%	22 (top score is 100)	100		
International to domestic student ratio			40% of International Mix cat.	2.0%		5%	No score shown	301+		
Academic Peer Review						No score shown - but				
(Reputation Survey)						40%	less than 36.2 (of 100)	301+		
Employer Reputation Index					-	10%	No score shown - but less than 13.5 (of 100)	301+		
Employer Reputation Index						10%	iess than 13.5 (of 100)	301+		



Major report on Rankings, International & Domestic

Report Objectives:

- What do these different ranking systems assess?
- How valid are these rankings?
- What are the data sources?
- Have the methodologies changed since last year's rankings?
- Where does Tufts rank? In general? In comparison to its peers?

Rankings included:

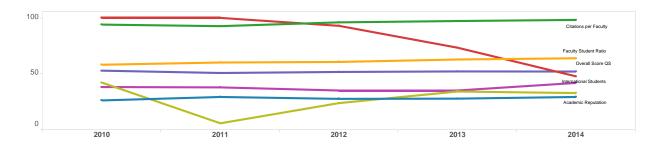
- 1. <u>US News and World Report</u>
- 2. <u>Times Higher Education</u>
- 3. Academic Ranking of World Universities (Shanghai)
- 4. QS (Quacquarelli Symonds)
- 5. Washington Monthly
- 6. Forbes/Center for College Affordability and Productivity
- 7. Princeton Review
- 8. Kiplinger
- Payscale Salary Report



Tableau

Tufts' Scores in International Rankings - Historical Times Higher Education (THE), Quacquarelli Symonds (QS), Academic Ranking of World Universities (ARWU) Select ranking system: QS QS QS QUacquarelli Symonds (QS) 2010 2011 2012 2013 2014 157 174 181 204 214

Tufts' Indicator Scores									
	2010	2011	2012	2013	2014				
Academic Reputation	26.0	29.1	27.4	27.6	29.1				
Citations per Faculty	94.0	92.6	96.0	97.2	98.2				
Employer Reputation	42.0	5.5	23.6	34.0	32.6				
Faculty Student Ratio	58.0	60.0	60.5	62.7	63.8				
International Faculty	100.0	100.0	92.9	73.3	47.6				
International Students	38.0	37.7	34.9	34.9	41.7				
Overall Score QS	52.7	50.6	51.5	52.0	51.9				



Tufts' strengths and weaknesses

Strengths

Citations

- QS: 38th in world
- THE: ~93rd percentile
- GUR: 36th in world for Normalized Citation Impact
- To some extent, publications as well
- Per-capita performance indicators (GUR, ARWU)

Weakness

Reputation!

- THE Research Category (~34th percentile; 60% of the category is reputation); Teaching Category (~44th percentile; 50% of the category is reputation)
- QS Academic Reputation (~401st in world); Employer Reputation (~401st in world)
- GUR Global Research Reputation (255th in world); Regional Research Reputation (377th in world)
- ARWU Nobel Prizes/Fields Medals (~16% of the top school's score for faculty; ~19% for alumni)
 - Papers published in Nature and Science (~16% of the top school)



Data Surprises

- "International"
 - Definitional differences across agencies
 - IPEDS: Non-resident aliens
 - THE: international = nationality is different from the country in which your institution is based. Does not include naturalized citizens.
 - QS: "International' is determined by citizenship. In case of dual citizenship, the 'deciding' criteria should be 'citizenship obtained through birth', basically first passport obtained."
 - At Tufts, difficult to access information about faculty citizenship
- Research income
 - Different offices at Tufts have different definitions.
 - Awards vs. expenditures?

General Conclusions

- Reputation is one of Tufts' primary weaknesses
- Citations and publications are its strengths
- Tufts is striving to improve its counting of international faculty and students

Discussion

- What rankings does your campus focus on?
- How have you communicated with senior leadership about rankings?
- Do you submit data to rankings agencies? What kind of problems have you faced?

Thank You! Questions?

- Questions, Comments?
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- A copy of this presentation will be uploaded to our website

http://provost.tufts.edu/institutionalresearch/

