

# 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

# Major international Rankings

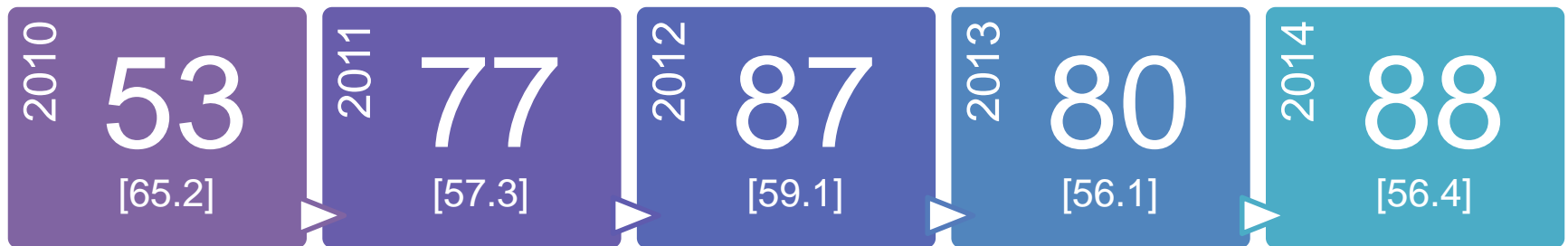
- Times Higher Education World University Rankings
- Quacquarelli Symonds (QS) World University Rankings
- Academic Ranking of World Universities (ARWU)/Shanghai



# 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 (%)
Teaching: The Learning Environment (30%)	Reputation of institution's prestige in teaching	15
	Staff-to-student ratio	4.5
	Ratio of doctoral to bachelor's degrees awarded	2.25
	Number of doctorates awarded, scaled against institutional size as measured by number of academic staff	6
	Institutional income scaled against academic staff	2.25
Research: Volume, Income, Reputation (30%)	Reputation for research excellence among its peers	18
	Research income, "scaled against staff and normalized for purchasing-power parity"	6
	Number of papers publicized 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
Industry income: Innovation (2.5%)	Research income an institution earns from industry, scaled against number of academic staff	2.5
International Outlook: People, Research (7.5%)	Ratio of international to domestic students	2.5
	Ratio of international to domestic staff	2.5
	Proportion of a university's total research journal publications that have at least one international co-author	2.5

33%

30%

8.5%

# 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 are 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 Oceania (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://higherstrategy.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 (no details on normalization provided)
- Additional publications data included (same period of time—same publications):
  - Number of papers publicized 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.

# 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

## Tufts in the QS rankings



# QS Methodology

Indicator	Source	Weight (%)
Academic reputation	Global Academic Reputation Survey	40
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
International faculty ratio	% of faculty that are “international”	5
International student ratio	% of students that are “international”	5

**50%**

**20%**

# 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 (Five possibilities)
  - Respondents rank 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





# ARWU Methodology

Criterion	Indicator	Weight	
Quality of Education	Number of Nobel Prizes and Field Medals awarded to institution or its Alumni	10%	<b>30%</b>
	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%	<b>20%</b>
	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%	<b>40%</b>
	Number of papers published in Nature and Science	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

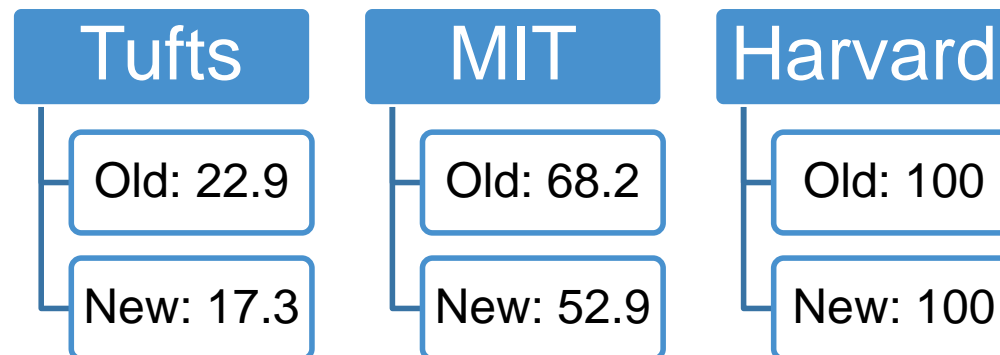
- The total number of the alumni of an institution winning Nobel Prizes and Fields Medals
    - Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution
    - The more recent the award, the more it counts
    - If someone receives more than one prize/medal, he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

# Communications & Analysis

- Evolving strategy
- Began with written memos
- Analysis
- Tables and graphs
- Extensive written report
  - PPT summary
- Tableau

# 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 are 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.



	Academic Reputation of World Universities (Shanghai) http://www.shanghairanking.com/index.html		Times Higher Education http://www.timeshighereducation.co.uk/world-university-rankings/			QS World Rankings http://www.topuniversities.com/university-rankings/world-university-rankings/2011			US News http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/national-universities/data			
Tufts' Scores	World rank: Between 102-150 (out of 1,000+)		World rank: 53 (out of 200) North American rank: 33 (out of 200)		Overall Score 65.2 (Top score is 96.1)	World rank: 174 (out of 700)		Overall score 50.57 (Top score is 100)	National rank: 29 (in National Universities cat.)		Overall score 74 (Top score is 100)	
RANKING CATEGORIES	Weight	Tufts' Score	Weight	Overall Weight	Tufts' Score	Weight	Tufts' Score	Rank	Weight	Overall Weight	Tufts' Score/Data	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 <i>Nature &amp; Science</i>	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 for reputational survey, but score is less than 4.8 (top score is 100)							
Staff (Faculty) to student ratio			15% of Teaching category	4.5%		20%	60 (top score 100)	181	(Part of Faculty Resources category)			
Ratio of PhDs to Bachelors degrees			7.5% of Teaching category	2.3%								
PhDs awarded to academic staff ratio			20% of Teaching category	6.0%								
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 for reputational survey, but score is less than 6.3 (top score is 100)							
Research income to staff indicator			17.5% of Research category	5.25%								
Research volume to staff indicator			15% of Research category	4.5%								
Public research income as % of 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 (Reputation Survey)						40%	No score shown - but less than 36.2 (of 100)	301+				
Employer Reputation Index						10%	No score shown - but less than 13.5 (of 100)	301+				
UNDERGRADUATE ACADEMIC REPUTATION									22.5%		77 (highest score 98)	35 above us
Peer assessment survey									66.7% of Academic Reputation category	15.0%		
High school counselor survey									33.3% of Academic Reputation category	7.5%		
SELECTIVITY - FALL ENTERING CLASS									15.0%			20
Acceptance rate									10% of Selectivity cat.	1.5%	24%	
High school class standing in top 10%									40% of Selectivity cat.	6.0%	85%	
SAT/ACT									50% of Selectivity cat.	7.5%	1350-1500	
FACULTY RESOURCES									20.0%			29
Faculty compensation									35% of Faculty cat.	7.0%		
% Faculty with terminal degrees									15% of Faculty cat.	3.0%	~84%	
% Full-time faculty									5% of Faculty cat.	1.0%	84%	
Student/Faculty ratio									5% of Faculty cat.	1.0%	9/1	
% Classes <20									30% of Faculty cat.	6.0%	69%	
% Classes > 50									10% of Faculty cat.	2.0%	5%	
GRADUATION & RETENTION RATES									20.0%			19
Average graduation rate									80% of Graduation cat.	16.0%	91%	
Average freshmen retention rate									20% of Graduation cat.	4.0%	97%	
FINANCIAL RESOURCES PER STUDENT									10.0%	10.0%	29	
AVERAGE ALUMNI GIVING RATE									5.0%	5.0%	20%	45
GRADUATION RATE PERFORMANCE									7.5%	7.5%	0 (predicted=actual=91%)	

# Comparison of Methodologies (Sept 2011)

	Academic Reputation of World Universities (Shanghai) <a href="http://www.shanghairanking.com/index.html">http://www.shanghairanking.com/index.html</a>		Times Higher Education <a href="http://www.timeshighereducation.co.uk/world-university-rankings/">http://www.timeshighereducation.co.uk/world-university-rankings/</a>			QS World Rankings <a href="http://www.topuniversities.com/university-rankings/world-university-rankings/2011">http://www.topuniversities.com/university-rankings/world-university-rankings/2011</a>		
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PhDs awarded to academic staff ratio			20% of Teaching category	6.0%				
Institutional income to academic staff indicator			7.5% of Teaching category	2.3%				
<b>RESEARCH</b>			30%		52.3 (top score is 99.3)			
Reputational survey			65% of Research category	19.5%	Tufts not in list of top 100 for reputational survey, but score is less than 6.3 (top score is 100)			
Research income to staff indicator			17.5% of Research category	5.25%				
Research volume to staff indicator			15% of Research category	4.5%				
Public research income as % of total research			2.5% of Research category	0.75%				
<b>INTERNATIONAL MIX</b>			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 (Reputation Survey)						40%	No score shown - but less than 36.2 (of 100)	301+
Employer Reputation Index						10%	No score shown - but less than 13.5 (of 100)	301+

# Major report on Rankings, International & Domestic

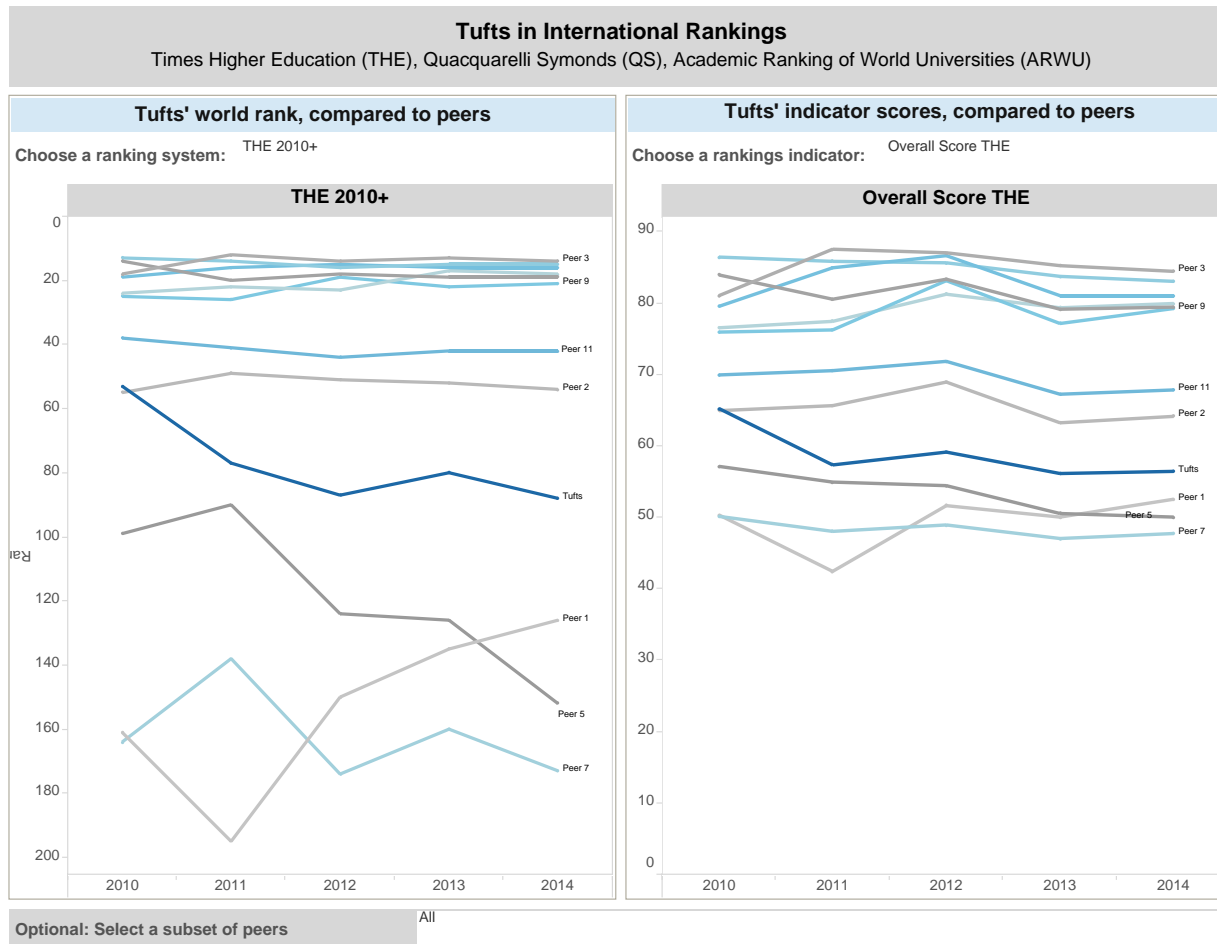
- Report Objectives:
  - What do these different ranking systems assess?
  - How valid are these rankings?
  - What are the data sources?
  - Have the methodologies changed since last year's rankings?
  - Where does Tufts rank? In general? In comparison to its peers?
- Rankings included:
  1. [US News and World Report](#)
  2. [Times Higher Education](#)
  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](#)
  9. [Payscale Salary Report](#)

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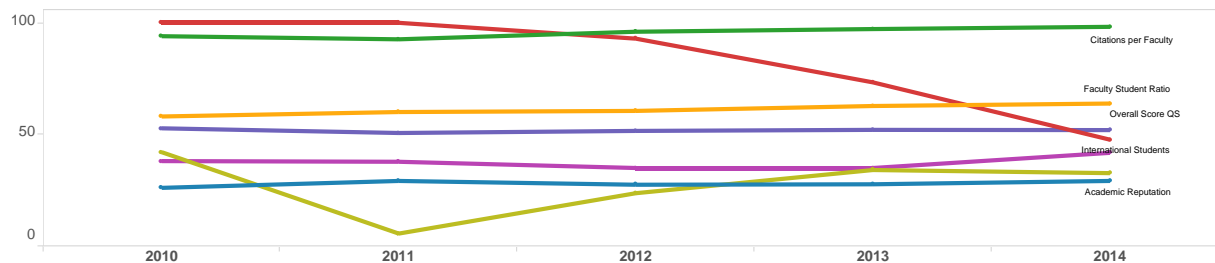
# Tableau: Tufts versus Peers



# Tableau: Tufts' Scores

Tufts' Scores in International Rankings - Historical					
Times Higher Education (THE), Quacquarelli Symonds (QS), Academic Ranking of World Universities (ARWU)					
Select ranking system:	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



# 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?

# 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?
  - [jessica.sharkness@tufts.edu](mailto:jessica.sharkness@tufts.edu)
  - [dawn.terkla@tufts.edu](mailto:dawn.terkla@tufts.edu)
- A copy of this presentation will be uploaded to our website (and to NEAIR's)

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

