RUTGERS

THE STATE UNIVERSITY
OF NEW JERSEY

Strategic Plan
Fact Book

September 25, 2013

Context for this material

The purpose of this material is to provide a diagnostic of Rutgers' position compared to its peers in three areas

- Undergraduate and graduate (masters, professional, and doctoral) educational emphasis, expressed as percent degrees conferred by institution
- Overall university performance using different ranking methodologies
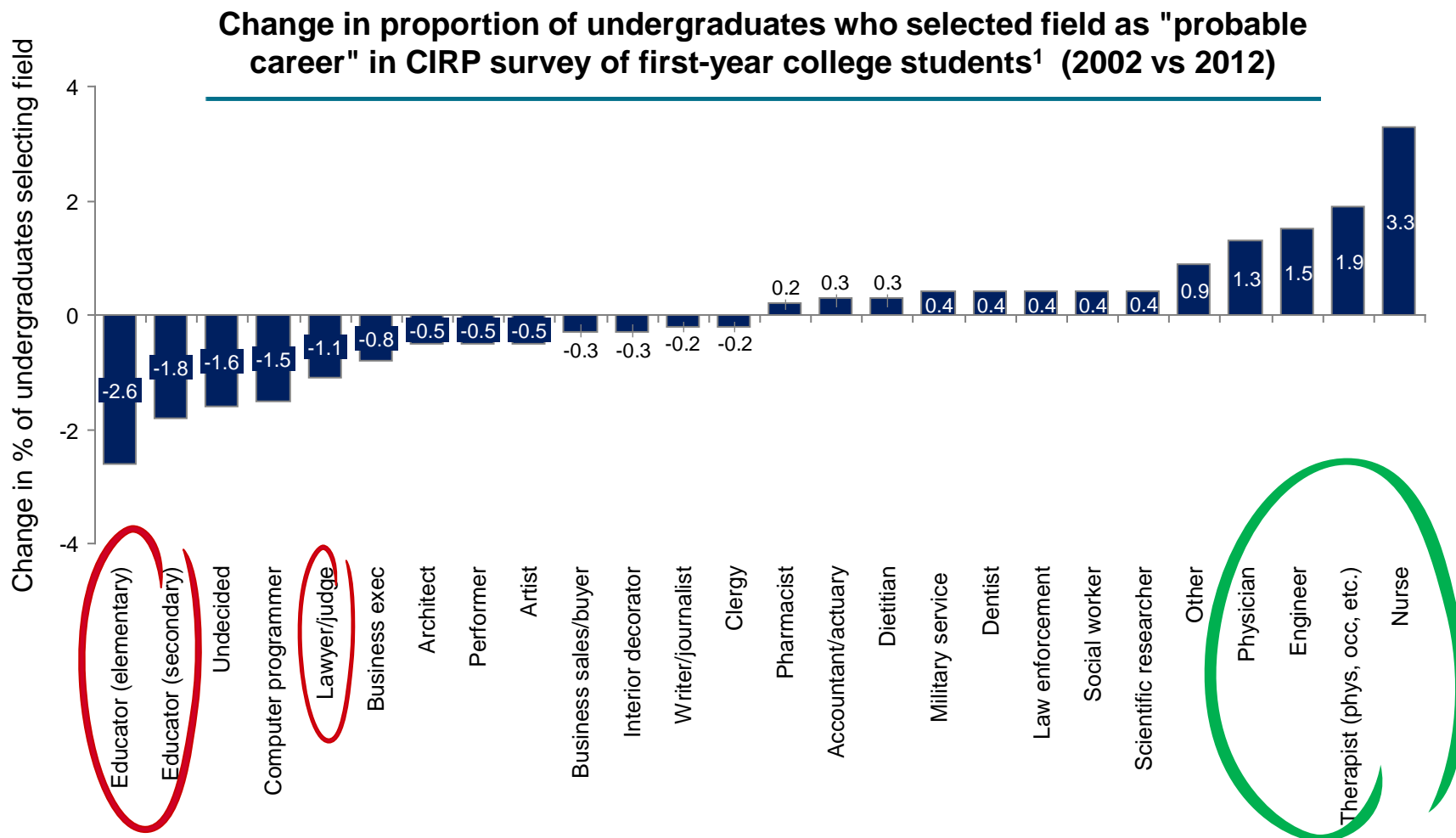- Ranking of academic programs in key reported academic disciplines

This fact-base can be used in strategy refinement discussions throughout this year, augmenting the toolkit campuses and schools can reference during their planning

Note that the following data limitations place some constraints on this analysis

- Rutgers-Newark and Rutgers-Camden could not be included in all rankings
- Underlying data driving each ranking is not publicly available in all instances when a campus is ranked
- With exception of Business and Engineering, undergraduate rankings by discipline are not available
- Data on the underlying drivers of disciplinary rankings is not publicly available

# Trends in Student Demand and Workforce Needs

Health occupations and engineering are growing areas of interest for undergraduates

Change in proportion of undergraduates who selected field as "probable career" in CIRP survey of first-year college students[1] (2002 vs 2012)

Change in % of undergraduates selecting field

Field	Change
Educator (elementary)	-2.6
Educator (secondary)	-1.8
Undecided	-1.6
Computer programmer	-1.5
Lawyer/judge	-1.1
Business exec	-0.8
Architect	-0.5
Performer	-0.5
Artist	-0.5
Business sales/buyer	-0.3
Interior decorator	-0.3
Writer/journalist	-0.2
Clergy	-0.2
Pharmacist	0.2
Accountant/actuary	0.3
Dietitian	0.3
Military service	0.4
Dentist	0.4
Law enforcement	0.4
Social worker	0.4
Scientific researcher	0.4
Other	0.9
Physician	1.3
Engineer	1.5
Therapist (phys, occ, etc.)	1.9
Nurse	3.3

1. CIRP survey is conducted annually by the Higher Education Research Institute at UCLA and administered to first-year students at colleges and universities nationwide
Source: The American Freshman 2012 and 2002, published by the Higher Education Research Institute at UCLA.

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Nationally, employers face biggest challenge filling occupations in health, sciences, business and engineering
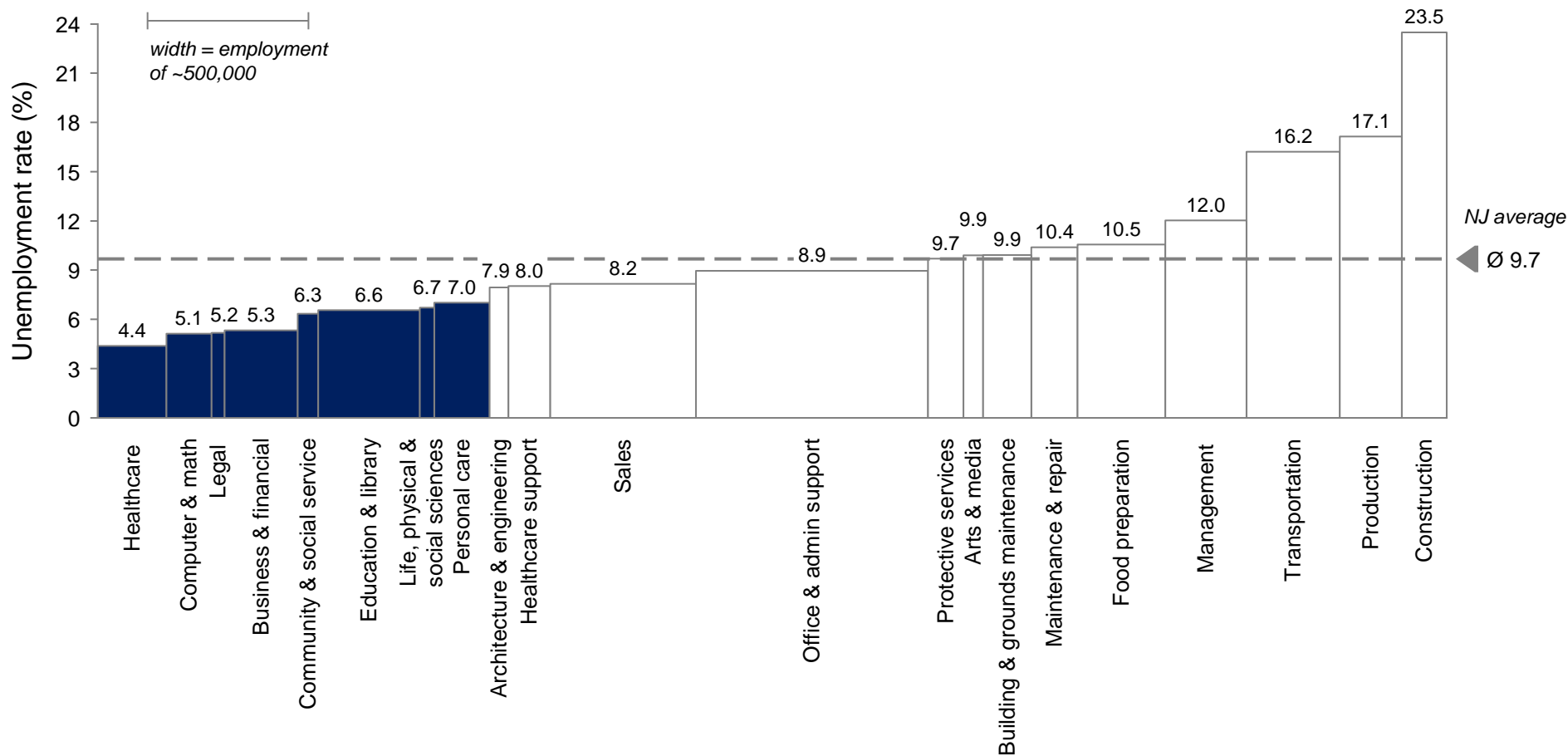
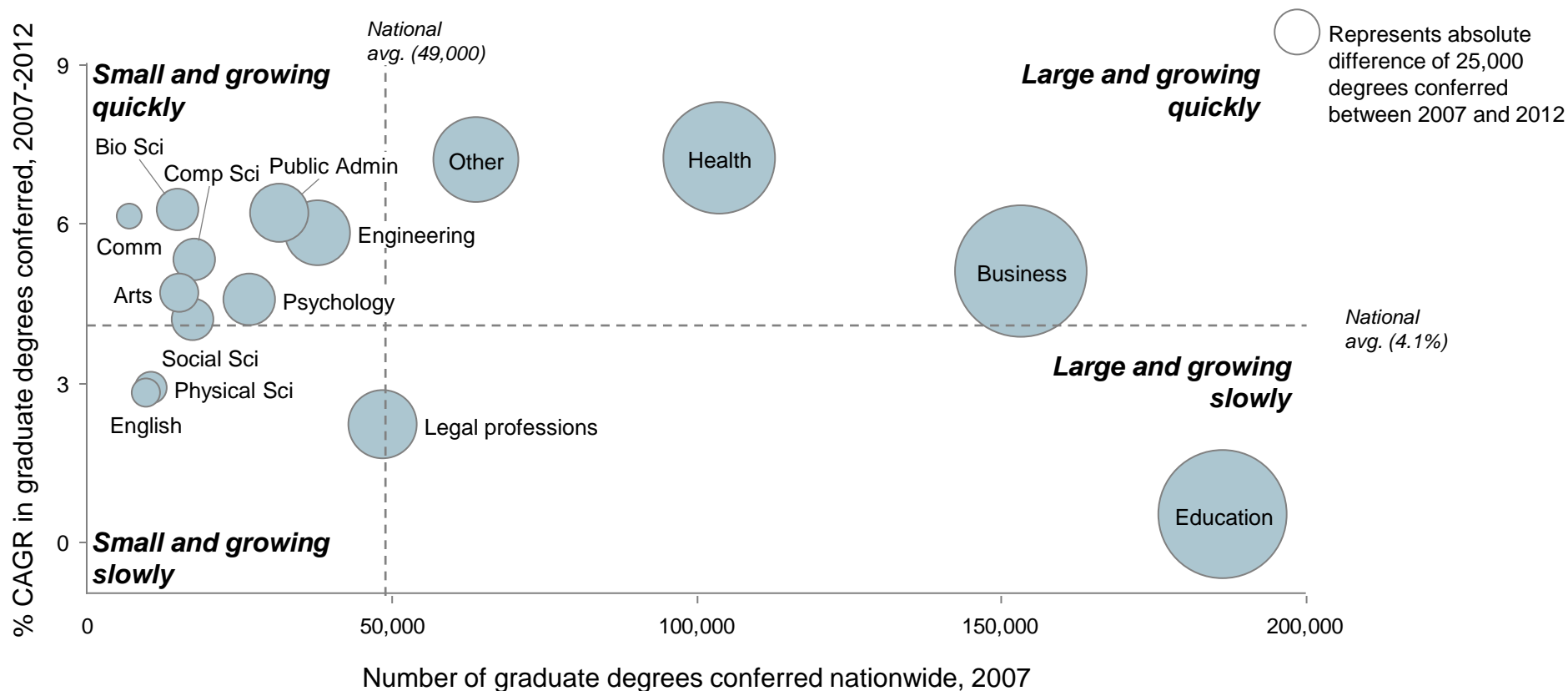National unemployment rate by occupation, 2012
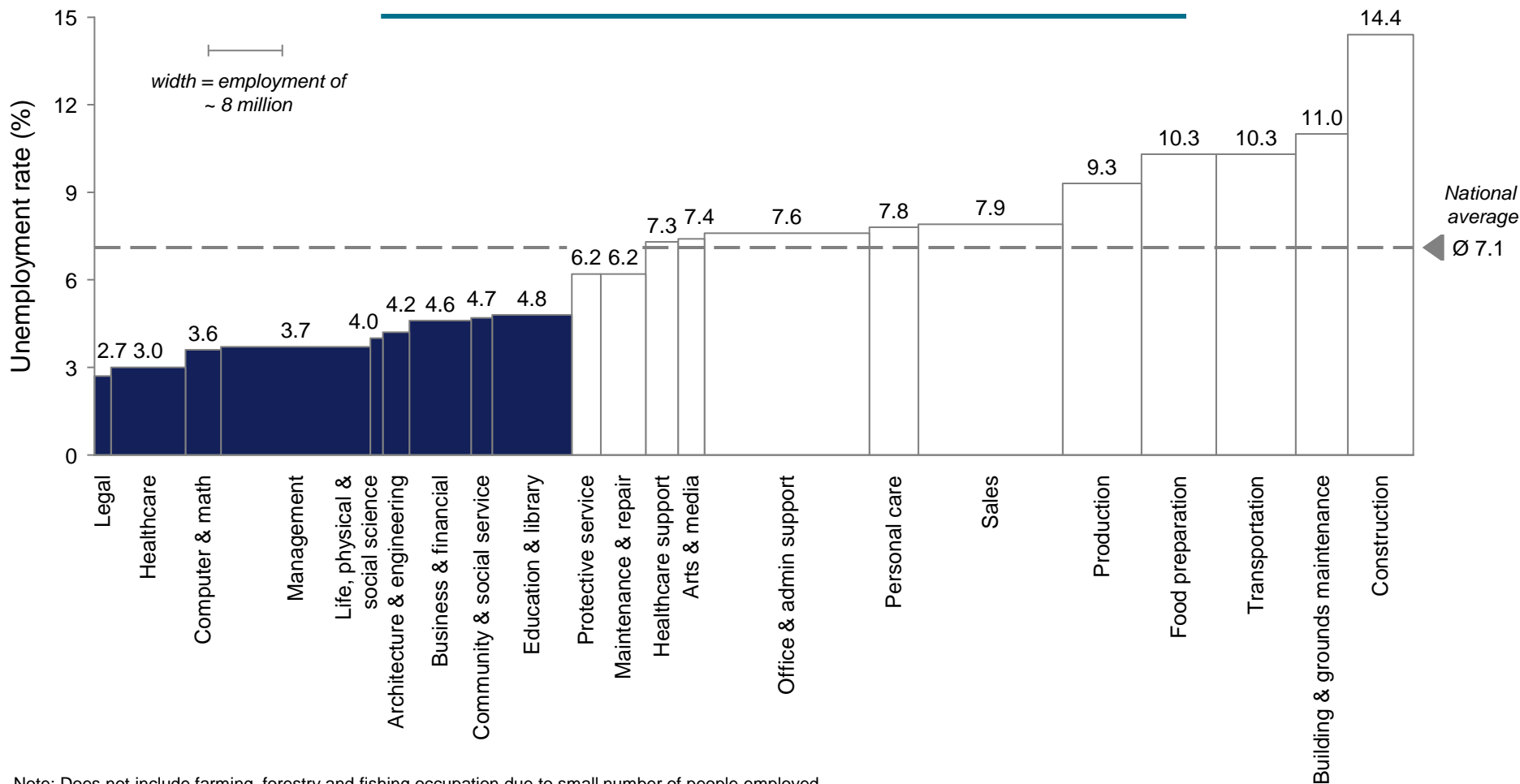
Note: Does not include farming, forestry and fishing occupation due to small number of people employed.
Source: Bureau of Labor Statistics

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NJ employers face biggest challenge filling jobs related to healthcare, computers & math, legal, and business & finance

New Jersey unemployment rate by occupation, 2011

width = employment of ~500,000

Unemployment rate (%)

NJ average
Ø 9.7

Occupation	Rate
Healthcare	4.4
Computer & math	5.1
Legal	5.2
Business & financial	5.3
Community & social service	6.3
Education & library	6.6
Life, physical & social sciences	6.7
Personal care	7.0
Architecture & engineering	7.9
Healthcare support	8.0
Sales	8.2
Office & admin support	8.9
Protective services	9.7
Arts & media	9.9
Building & grounds maintenance	9.9
Maintenance & repair	10.4
Food preparation	10.5
Management	12.0
Transportation	16.2
Production	17.1
Construction	23.5

Note: Does not include farming, forestry and fishing occupation due to small number of people employed.
Source: Demand Occupations List 2011, State of New Jersey Labor and Workforce Development.

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Graduate: health degrees large, growing nationwide; business, public admin, engineering, and biosciences also drive growth

**Number and CAGR in graduate degrees conferred nationwide, 2007-2012**

Small and growing quickly

Large and growing quickly

Large and growing slowly

Small and growing slowly

National avg. (49,000)

National avg. (4.1%)

Represents absolute difference of 25,000 degrees conferred between 2007 and 2012

Bio Sci
Comp Sci
Public Admin
Other
Health
Comm
Engineering
Arts
Business
Psychology
Social Sci
Physical Sci
English
Legal professions
Education

% CAGR in graduate degrees conferred, 2007-2012

Number of graduate degrees conferred nationwide, 2007

Note: Graduate degrees include all masters, professional and doctoral degrees.
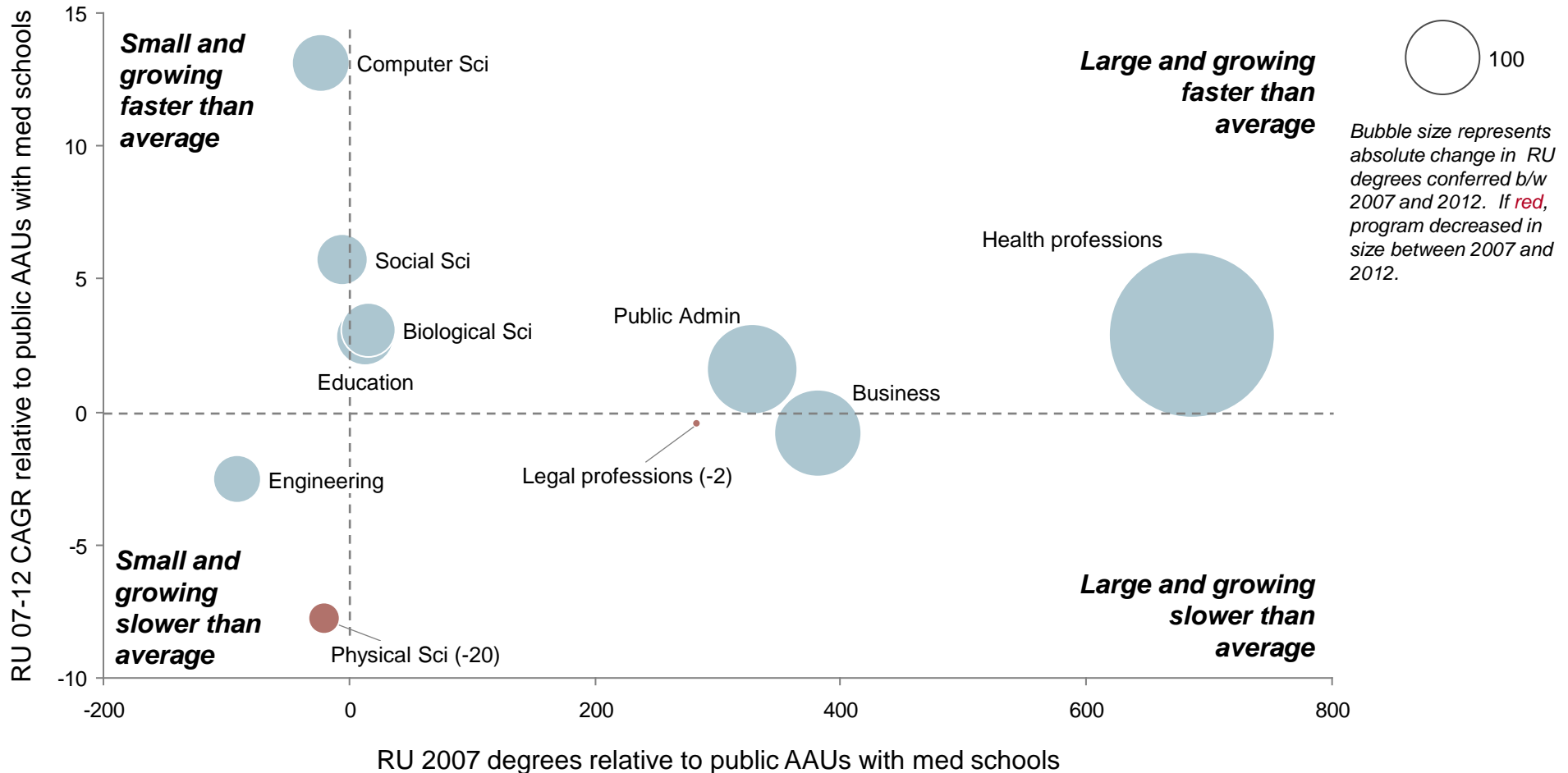Source: IPEDS.

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Undergrad: nationwide, health is large and growing rapidly; biological sciences, public admin, engineering, & psychology are also growing

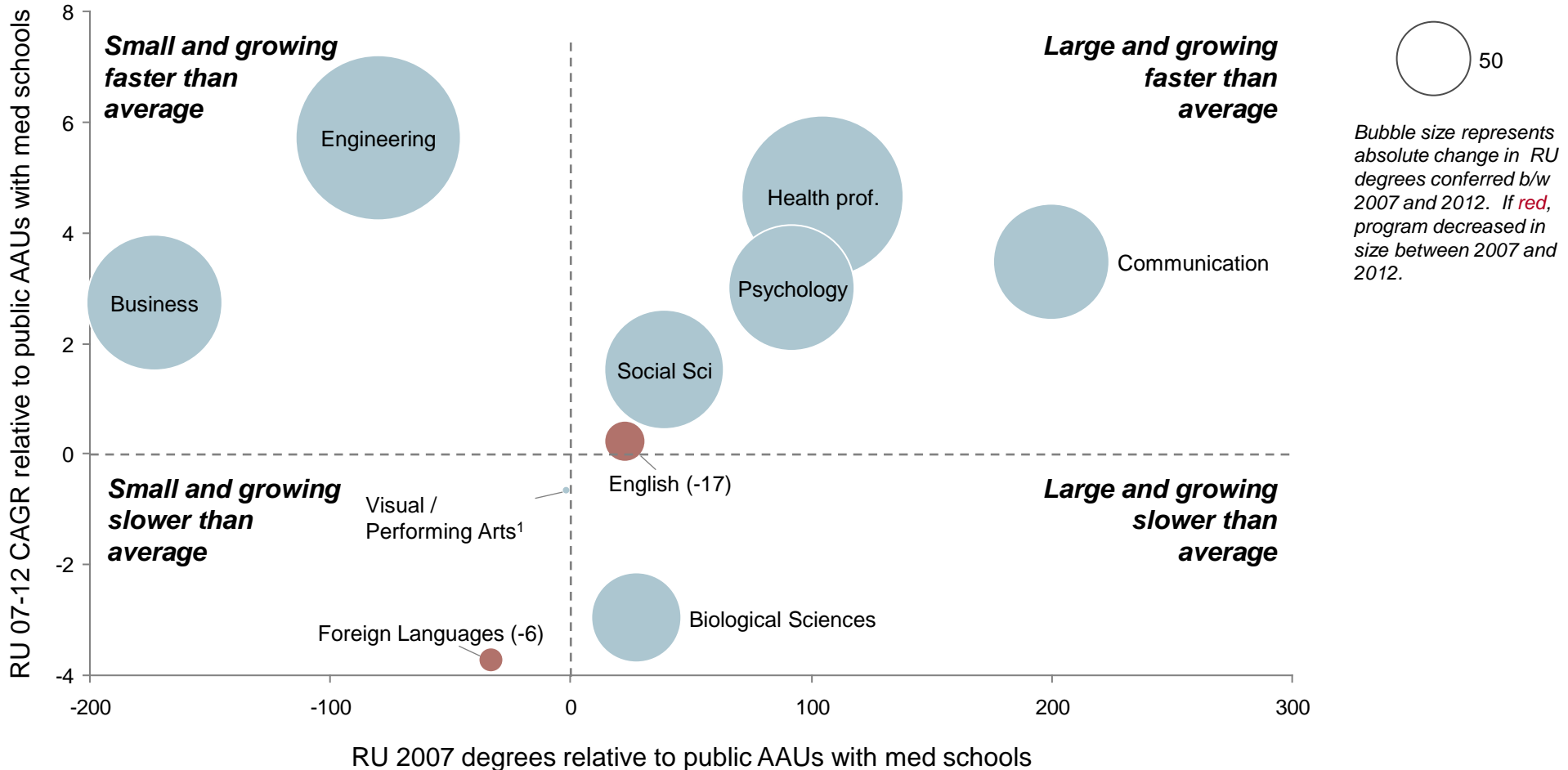**Number and CAGR in undergraduate degrees conferred nationwide, 2007-2012**
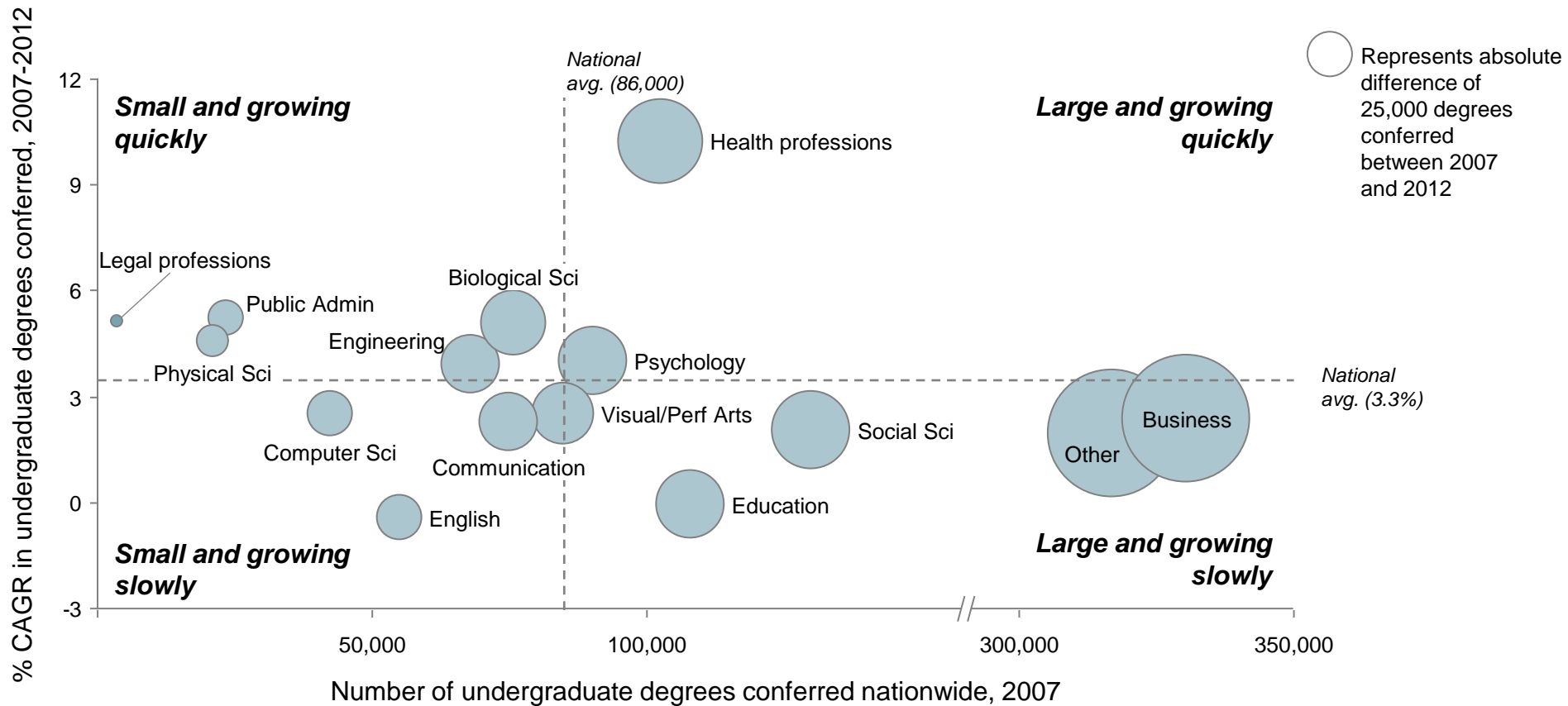
Graduate: at RU (3 campus + RBHS), health and public admin are large & growing faster than average

Small and growing faster than average

Computer Sci

Social Sci

Biological Sci

Education

Large and growing faster than average

100

Bubble size represents absolute change in RU degrees conferred b/w 2007 and 2012. If red, program decreased in size between 2007 and 2012.

Health professions

Public Admin

Business

Engineering

Legal professions (-2)

Small and growing slower than average

Large and growing slower than average

Physical Sci (-20)

RU 07-12 CAGR relative to public AAUs with med schools

RU 2007 degrees relative to public AAUs with med schools

Note: Disciplines shown are top 10 disciplines by % of degrees conferred at public AAUs with medical schools in 2012. Averages are for those top 10 disciplines only.
Source: IPEDS

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Undergrad: at RU-NB + RBHS, majority of top disciplines are larger and growing faster than public AAUs with med schools

Bubble size represents absolute change in RU degrees conferred b/w 2007 and 2012. If red, program decreased in size between 2007 and 2012.

1. Program grew by only 1 degree.
Note: Disciplines shown are top 10 disciplines by % of degrees conferred at public AAUs with medical schools in 2012.
Source: IPEDS

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Rutgers' performance in rankings

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Context

In our discussions so far, we defined two sets of peer and aspirant institutions, drawing from public institutions that are members of the AAU

- <u>Aspirants</u>: Berkeley, UCLA, UCSD, Illinois, Michigan, UNC, UVA, Washington, Wisconsin
- <u>Peers</u>: refers either to all remaining public AAUs or all remaining public AAUs with medical schools (as noted)

This analysis examines Rutgers' performance by campus across five rankings, where data is available, with these limitations:

- Newark and Camden not ranked separately in all methodologies
- Rankings not available for all years; most recent data and longest time period consistently available used for this analysis

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Among US institutions, Rutgers-NB largely matches peers, but trails aspirants across five ranking methodologies

US News and World Report

Top American Research Universities Synthesis Ranking

Academic Ranking of World Universities

Times Higher Education World University Ranking

QS World University Ranking

— Rutgers NB — Aspirants — Peers
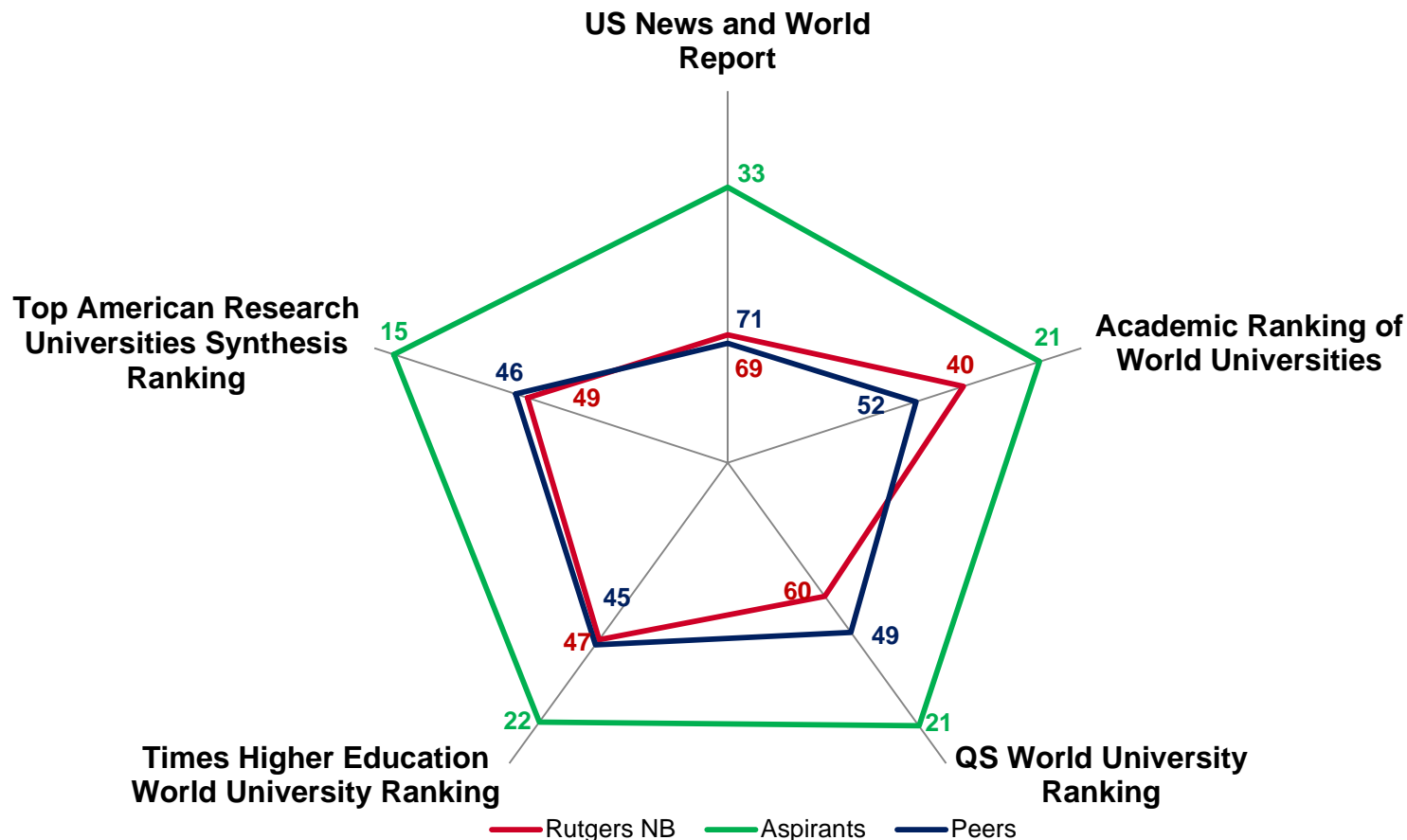
1. ARWU ranking among set of worldwide institutions is 31 for the aspirant average, 61 for Rutgers and 87 for peer average 2. QSWU ranking among the set of worldwide institutions is 53 for the aspirant average, 197 for the peer average, and 260 for Rutgers-NB 3. THE ranking among the set of worldwide institutions is 36 for aspirant average, 99 for RU-NB, and 119 for peer average 4. Lombardi rankings (published by Measuring University Performance) look at ~740 institutions across 9 dimensions, of which we show one here (federal research spend). Note there is a 2-year lag between year of the report and the data used (e.g. the current 2011 rank is based on 2009 data). Note: New Brunswick is ranked #198 in according to the national rankings provided by Forbes, while the aspirant average ranking is #75 and peer average is #180; Forbes rankings have been excluded from this analysis due to inconsistencies.
Source: Academic Ranking of World Universities website, Washington Monthly website, US News and World Report website, Times Higher Education World University Ranking website, QS World University Ranking website. The Top American Research Universities: 2011 Annual Report (Center for Measuring University Performance) by Lombardi et. al.

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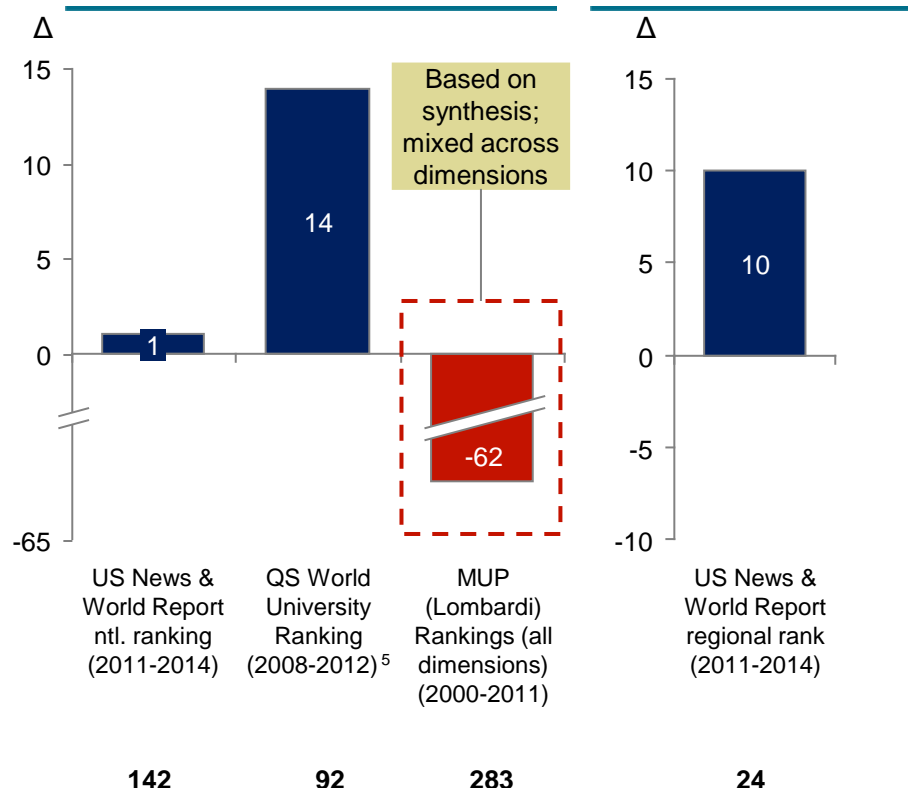
Trend in ranking for Rutgers among US institutions
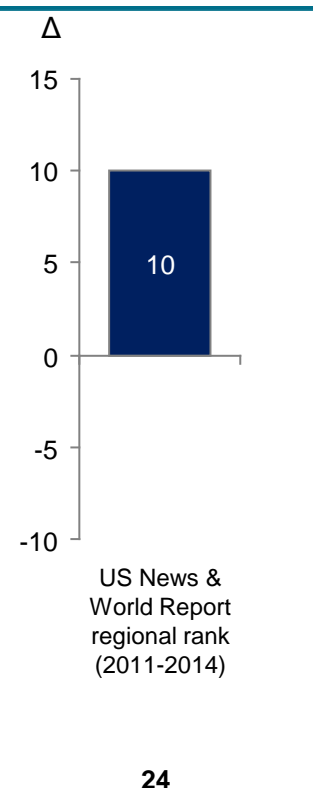# Mixed results for RU-NB and Newark, Camden improving

Change in ranking for New Brunswick[1]
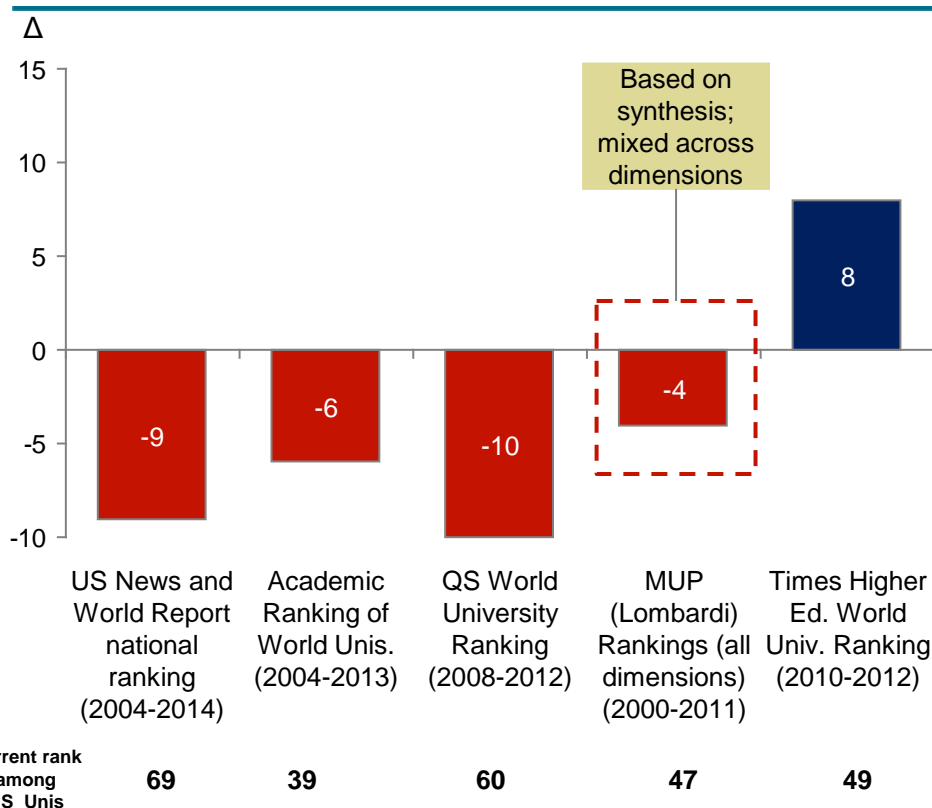
Change in ranking for Newark[2]
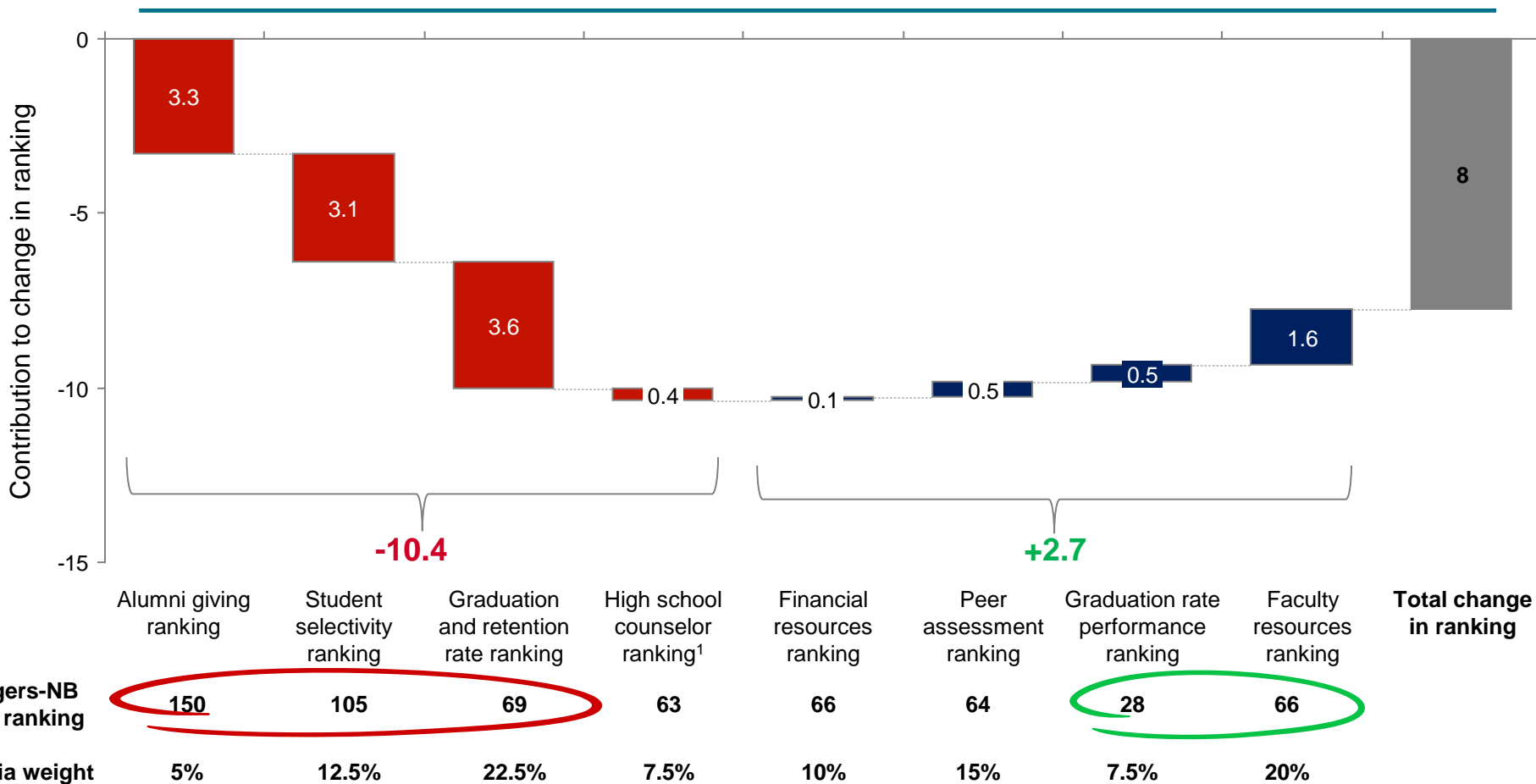
Change in ranking for Camden[3]

Current rank among US Unis	69	39	60	47	49		142	92	283		24

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Student selectivity, alumni giving, and student outcomes were the biggest drivers of decline in RU-NB's US News ranking

Rutgers-New Brunswick US News and World Report ranking change (2004 vs. 2013)

Rutgers-NB 2013 ranking	150	105	69	63	66	64	28	66
	Alumni giving ranking	Student selectivity ranking	Graduation and retention rate ranking	High school counselor ranking[1]	Financial resources ranking	Peer assessment ranking	Graduation rate performance ranking	Faculty resources ranking
Criteria weight	5%	12.5%	22.5%	7.5%	10%	15%	7.5%	20%

1. High school counselor ranking is based only on data for 2011-2013 as data were not available for 2004-2010. Note: 2013 ranks used because underlying drivers of 2014 rank not available.
Source: US News and World Report, BCG analysis

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When normalized for size, Rutgers-NB + RBHS ranks below average on all Lombardi dimensions compared to public AAUs

Rutgers-NB standalone 2011 Report

Ranking dimension	Bottom Quartile	3rd Quartile	2nd Quartile	Top Quartile
Federal Research / Full-Time Faculty	■			
National Academy / Full-Time Faculty			■	
Endowment Assets / Students	■			
Doctorates Awarded / Graduate students		■		
Annual Giving / Students	■			
Total Research / Full-Time Faculty	■			
Postdoctoral Appts. / Graduate students	■			
Faculty Awards / Full-Time Faculty		■		

Rutgers-NB + RBHS 2011 Report

	Bottom Quartile	3rd Quartile	2nd Quartile	Top Quartile
	■			
		■		
	■			
		■		
	■			
		■		
	■			
	■			

◯ = declining   ◯ = improving

Note: Dimensions and rankings account for university size by dividing each dimension by its relevant factor. Report year uses lagging data, so the 2011 report uses 2009 numbers for both research categories and postdoctoral appointment measurements; the 2011 report uses 2010 numbers for all other measurements.
Source: Measuring University Performance (Lombardi et. al.), IPEDS, BCG analysis

All aspirants have strong reputation in at least one of the top five graduate disciplines; top 25 in most others

| | Top 10 | Top 20 | Top 50 | Below 50 |
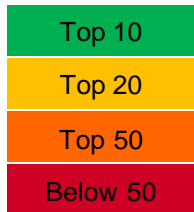
Aspirant	National rank	Education rank	Business rank	Medical rank	Law rank	Engineering rank
Berkeley	20	12	7	n/a[1]	9	3
UVA	23	22	12	26	7	38
UCLA	23	8	14	13	17	16
Michigan	28	11	14	8	9	9
UNC	30	37	20	22	31	79
UCSD	39	n/a[2]	73	15	n/a[3]	14
Wisconsin	41	10	34	29	33	18
Illinois	41	19	47	n/r	47	5
Washington	52	12	23	12	28	25
Rutgers – all campuses	69	47	61	80[4]	86[5]	51

1. The medical school for Berkeley is UCSF (ranked #4 in the nation). 2. There is a department of education at UCSD that sits in the Division of Social Sciences; education may not be separately ranked because there is no school of education . 3. UCSD does not have a law school. 4. Medical school ranking is based on RWJ Medical School (#80). 5. Law school ranking is listed for School of Law in Newark (#86).
Source: US News and World Report.

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Rutgers is strong in some areas, but lags in key largest disciplines

*Rutgers at or near aspirant group in **math, physics** – but lags in **chemistry** and **biological sciences***

*Rutgers lags peers in critical **large** disciplines*

*Rutgers equals best in class in key **humanities** disciplines*

***Social sciences** around the average of peer schools*

Legend:
— Rutgers
···· Peer average
--- Aspirant average

Axes: Education, Business, Law [1], Engineering, Medical [2], Public Health, Pharmacy, Physical Therapy [3], Nursing, History, English, Library and Information Studies, Fine Arts, Public Affairs, Political Science, Economics, Sociology, Social Work, Psychology, Statistics, Math, Physics, Computer Science, Biological Sciences, Chemistry

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RU-New Brunswick's disciplinary graduate programs have mostly fallen in US News rankings over time

Change in RU-NB disciplinary rankings from 2004/2005 to 2013

Change in ranking

	Engineering	Education	History	English	Pharmacy	Economics	Business
	-9	-5	-3	-1	-1	0	3
2013 rank	51 out of 147	47 out of 278	20 out of 129	17 out of 138	26 out of 87	48 out of 80	61[1] out of 105
2012 degrees	230	381	16	32	198	26	853[2]
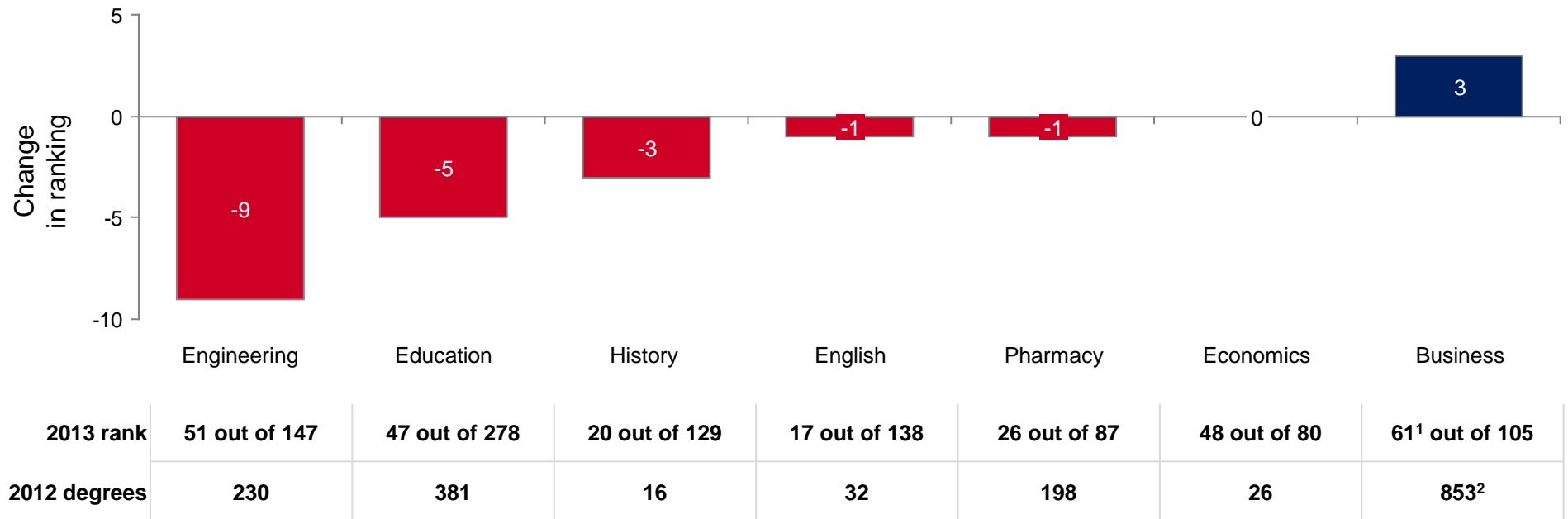
Note: Not all graduate programs are ranked in every year. All disciplines shown were ranked in 2005, except for engineering which was ranked in 2004. Rankings shown over total number of programs ranked and published. 1. Newark's 2013 business ranking is conflated with New Brunswick's. 2. The number of business degrees is inclusive of all masters and doctoral degrees at New Brunswick and Newark combined.
Source: US News and World Report data provided by Rutgers; IPEDS.

For graduate programs, RBS & SPAA are improving at Newark, while other disciplines are declining in Newark & Camden

Change in RU-Newark disciplinary rankings from 2004/2005 to 2013

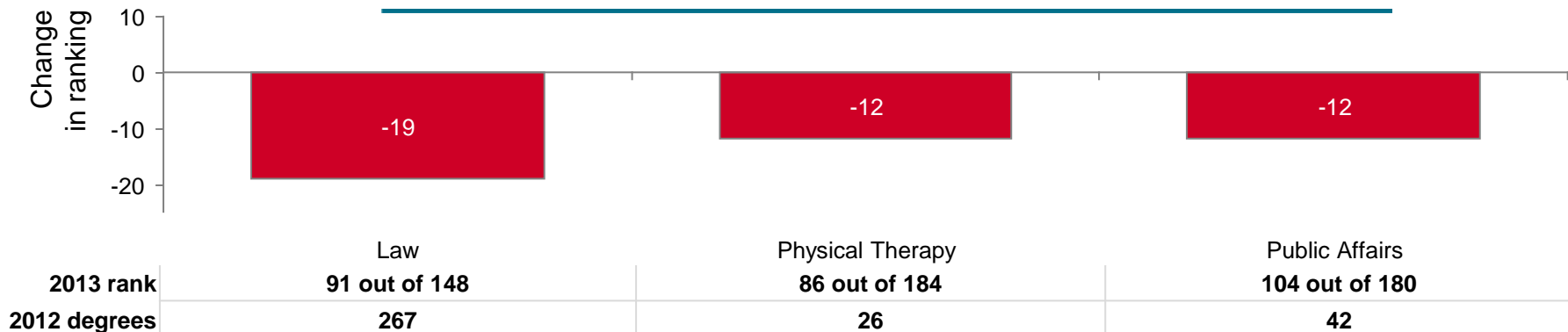|	Law	Nursing	Bio Sciences	Public Affairs	Business
2013 rank	86 out of 148	79 out of 449	130 out of 233	23 out of 180	61[1] out of 105
2012 degrees	243	84	22	85	853[2]
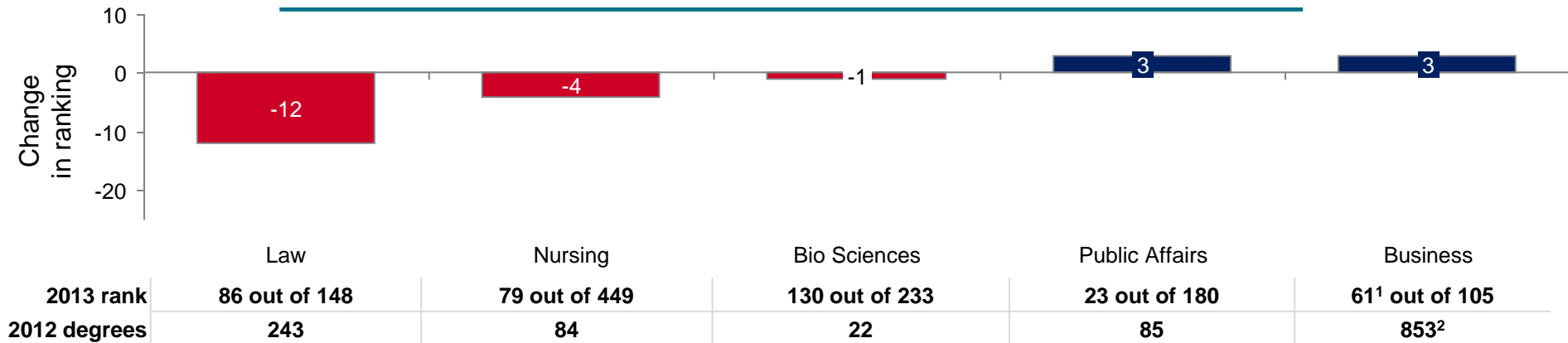
Change in RU-Camden disciplinary rankings from 2004 to 2013

	Law	Physical Therapy	Public Affairs
2013 rank	91 out of 148	86 out of 184	104 out of 180
2012 degrees	267	26	42

Note: Not all graduate programs are ranked in every year; base year for calculating change in rankings is 2004 or 2005. Rankings shown over total number of programs ranked and published.
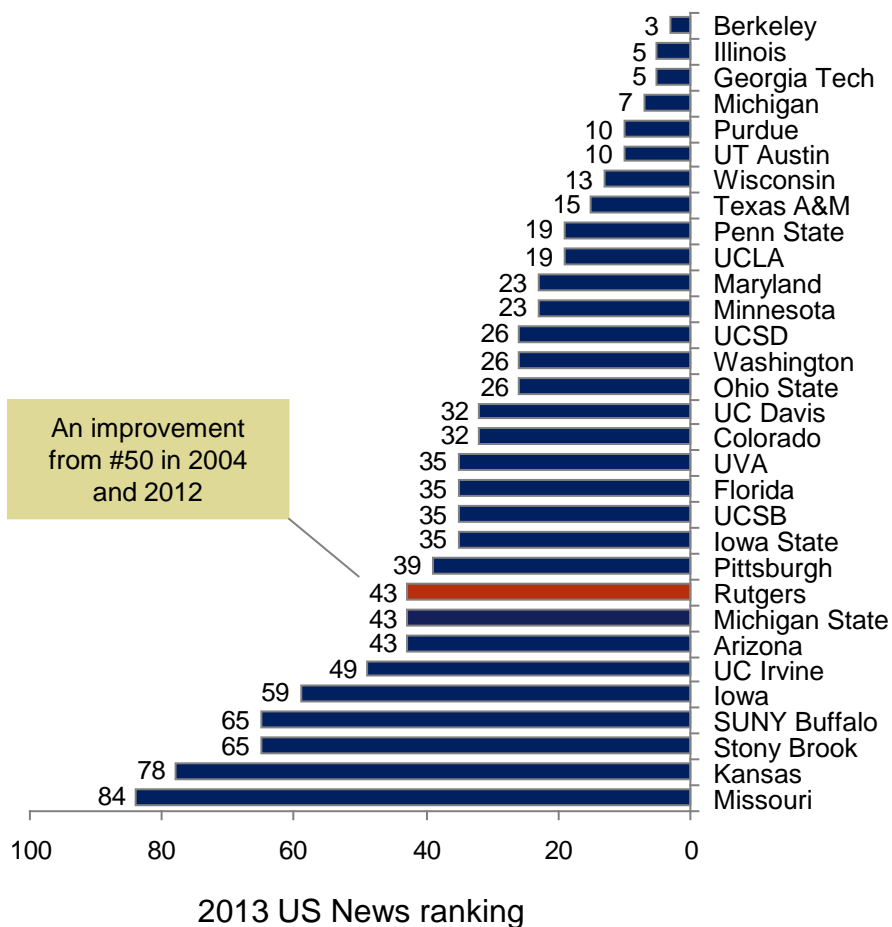1. Newark's 2013 business ranking is conflated with New Brunswick's. 2. The number of business degrees is inclusive of all masters / doctoral degrees at NB and Newark combined.
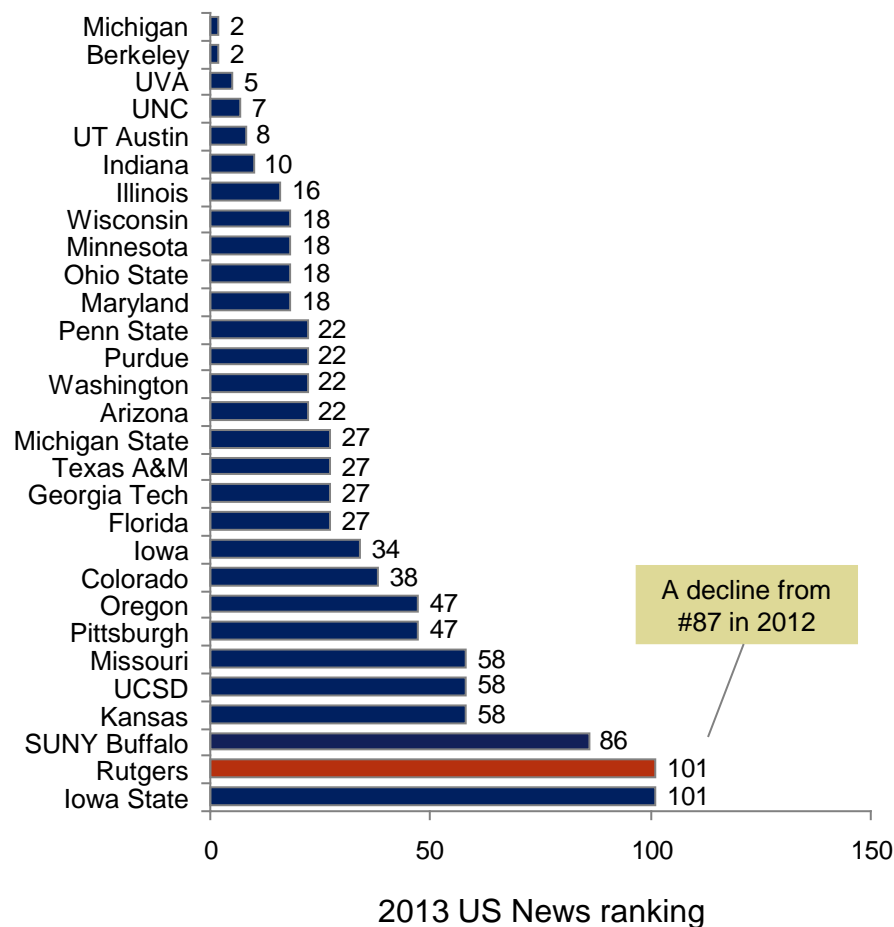Source: US News and World Report data provided by Rutgers, IPEDS.

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For undergraduates, New Brunswick ranked in bottom quartile for engineering and last in business among public AAUs
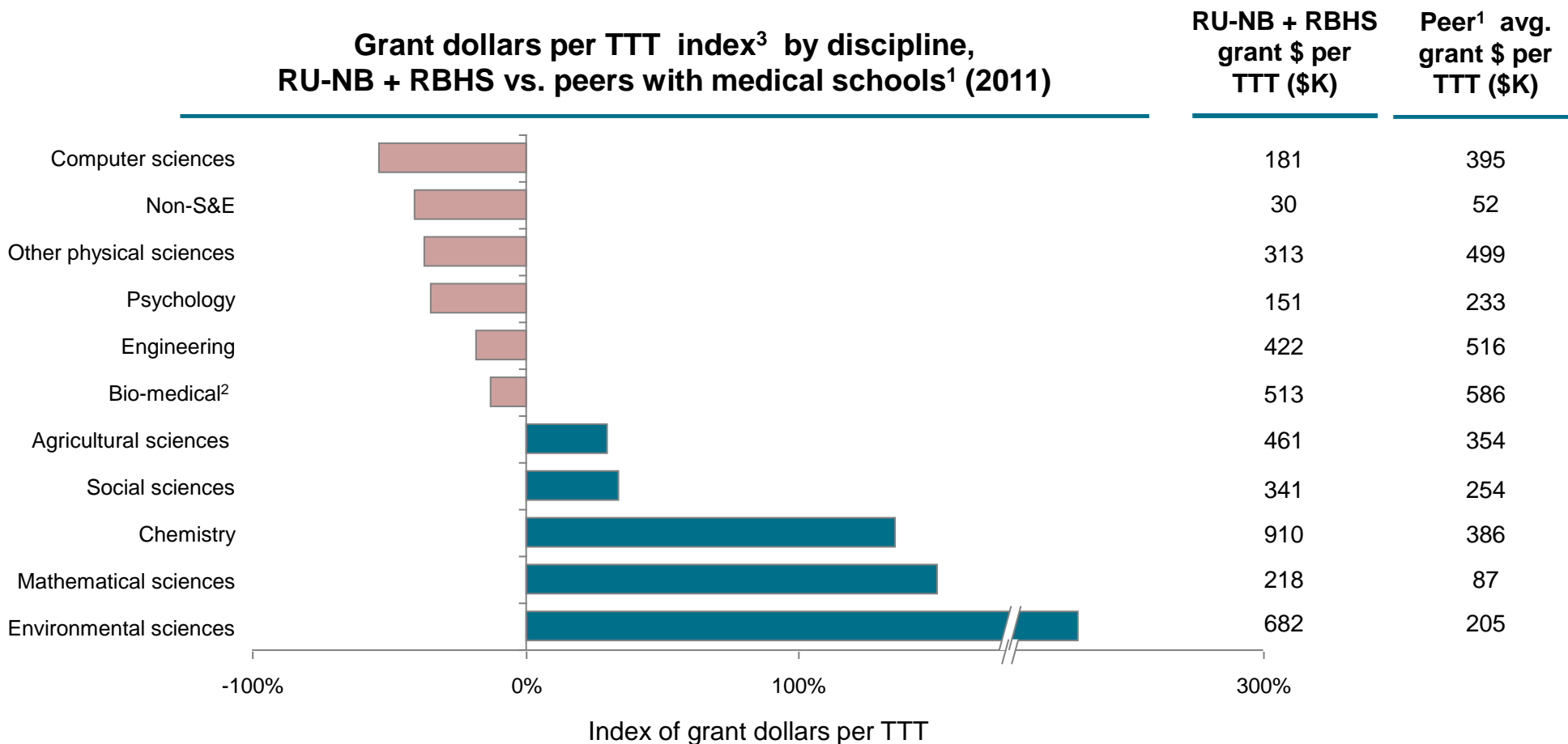
Ranking for undergraduate engineering program

Rank	School
3	Berkeley
5	Illinois
5	Georgia Tech
7	Michigan
10	Purdue
10	UT Austin
13	Wisconsin
15	Texas A&M
19	Penn State
19	UCLA
23	Maryland
23	Minnesota
26	UCSD
26	Washington
26	Ohio State
32	UC Davis
32	Colorado
35	UVA
35	Florida
35	UCSB
35	Iowa State
39	Pittsburgh
43	Rutgers
43	Michigan State
43	Arizona
49	UC Irvine
59	Iowa
65	SUNY Buffalo
65	Stony Brook
78	Kansas
84	Missouri

An improvement from #50 in 2004 and 2012

2013 US News ranking

Ranking for undergraduate business program

School	Rank
Michigan	2
Berkeley	2
UVA	5
UNC	7
UT Austin	8
Indiana	10
Illinois	16
Wisconsin	18
Minnesota	18
Ohio State	18
Maryland	18
Penn State	22
Purdue	22
Washington	22
Arizona	22
Michigan State	27
Texas A&M	27
Georgia Tech	27
Florida	27
Iowa	34
Colorado	38
Oregon	47
Pittsburgh	47
Missouri	58
UCSD	58
Kansas	58
SUNY Buffalo	86
Rutgers	101
Iowa State	101

A decline from #87 in 2012

2013 US News ranking

Note: No rankings are provided for undergraduate engineering for UNC, Indiana, and Oregon; no rankings are provided for undergraduate business programs for UCLA, SUNY-Stony Brook, UCI, UCD and UCSB. No data available for other undergraduate programs. Source: US News and World Report

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Combined RU grant productivity lags behind peers in engineering and bio-med but higher in chemistry and other smaller fields

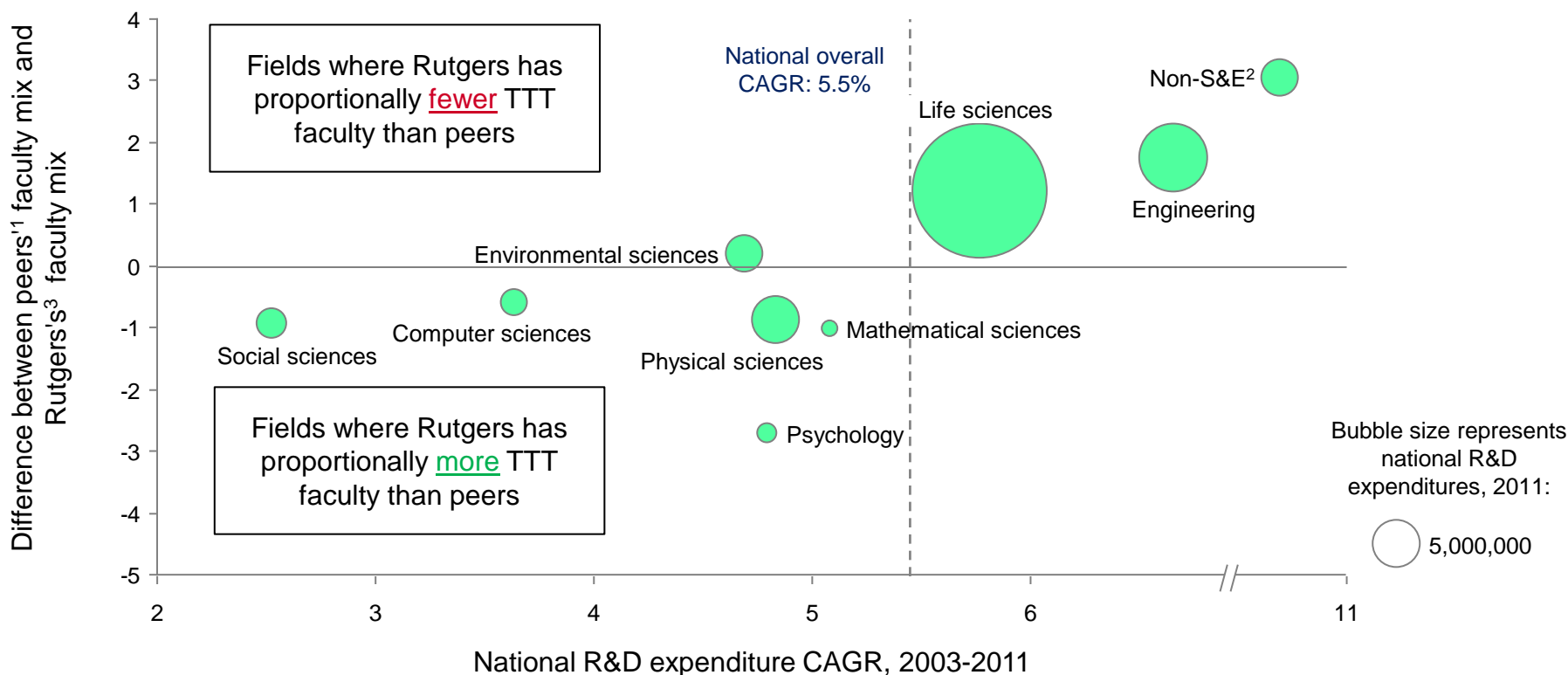**Grant dollars per TTT index[3] by discipline, RU-NB + RBHS vs. peers with medical schools[1] (2011)**

Discipline	RU-NB + RBHS grant $ per TTT ($K)	Peer[1] avg. grant $ per TTT ($K)
Computer sciences	181	395
Non-S&E	30	52
Other physical sciences	313	499
Psychology	151	233
Engineering	422	516
Bio-medical[2]	513	586
Agricultural sciences	461	354
Social sciences	341	254
Chemistry	910	386
Mathematical sciences	218	87
Environmental sciences	682	205

Index of grant dollars per TTT

1. Comparison is only to public AAU institutions with medical schools for which AAUDE data was available for 2011: Michigan State, Ohio State, SUNY-Buffalo, and the Universities of Michigan, Florida, Iowa, Pittsburgh, and Virginia 2. Includes faculty and expenditures from biological sciences, health sciences, and other life sciences 3. Index represents Rutgers-NB's grants per TTT divided by peer average grants per TTT, minus one
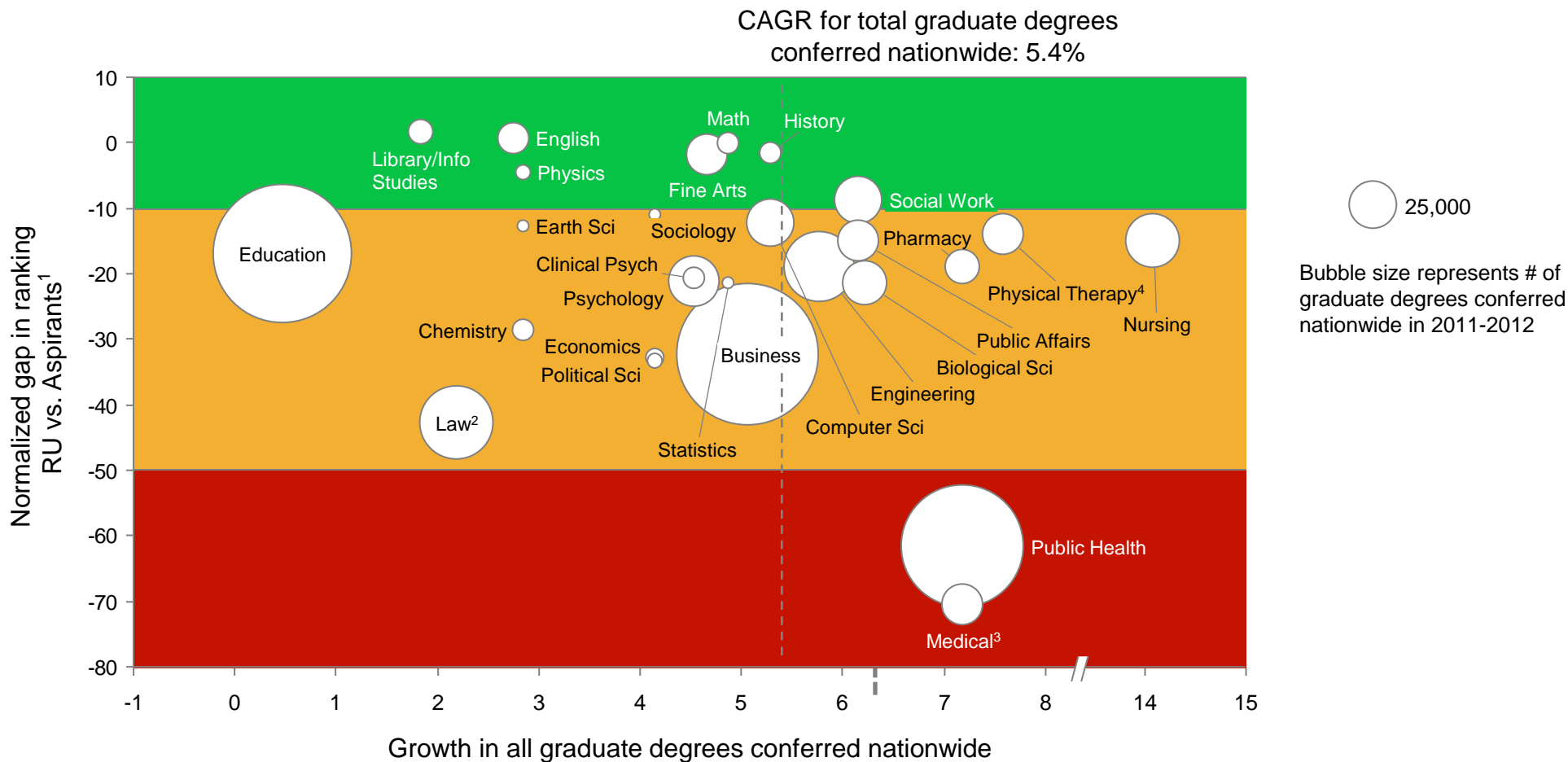
Source: AAUDE database, NSF database

Relative to peers with medical schools, RU has proportionally fewer faculty in fastest-growing research fields

Difference in faculty mix vs. peers with med schools and national R&D CAGR, by field of funding (2004-2011)

Difference between peers'[1] faculty mix and Rutgers's[3] faculty mix

Fields where Rutgers has proportionally **fewer** TTT faculty than peers

National overall CAGR: 5.5%

Non-S&E[2]

Life sciences

Engineering

Environmental sciences

Computer sciences

Social sciences

Mathematical sciences

Physical sciences

Fields where Rutgers has proportionally **more** TTT faculty than peers

Psychology

Bubble size represents national R&D expenditures, 2011:

5,000,000

National R&D expenditure CAGR, 2003-2011

1. Comparison is only with public AAU institutions with medical schools for which AAUDE data was available for 2011: Michigan State, Ohio State, SUNY-Buffalo, and the Universities of Michigan, Florida, Iowa, Pittsburgh, and Virginia   2. CAGR is between 2004 and 2011 and includes the following disciplines with their respective CAGRs: education (6.7%), business (9%), humanities (9.5%), social work (14.4%), communications (12%) and other non-S&E (20.1%). 3. Includes RBHS estimates.
Source: AAUDE database, NSF database.

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Rankings gap exists for Rutgers' graduate programs in large, growing disciplines

CAGR for total graduate degrees conferred nationwide: 5.4%

Bubble size represents # of graduate degrees conferred nationwide in 2011-2012

25,000

Normalized gap in ranking RU vs. Aspirants[1]

Growth in all graduate degrees conferred nationwide

Education, Library/Info Studies, English, Physics, Math, History, Fine Arts, Social Work, Earth Sci, Sociology, Pharmacy, Clinical Psych, Psychology, Physical Therapy[4], Chemistry, Economics, Political Sci, Business, Public Affairs, Biological Sci, Engineering, Computer Sci, Statistics, Law[2], Nursing, Public Health, Medical[3]

Nine universities surpassed Rutgers-NB in US News rankings since 2004

Change in US News ranking for institutions surpassing Rutgers-NB since 2004

Source: US News and World Report.
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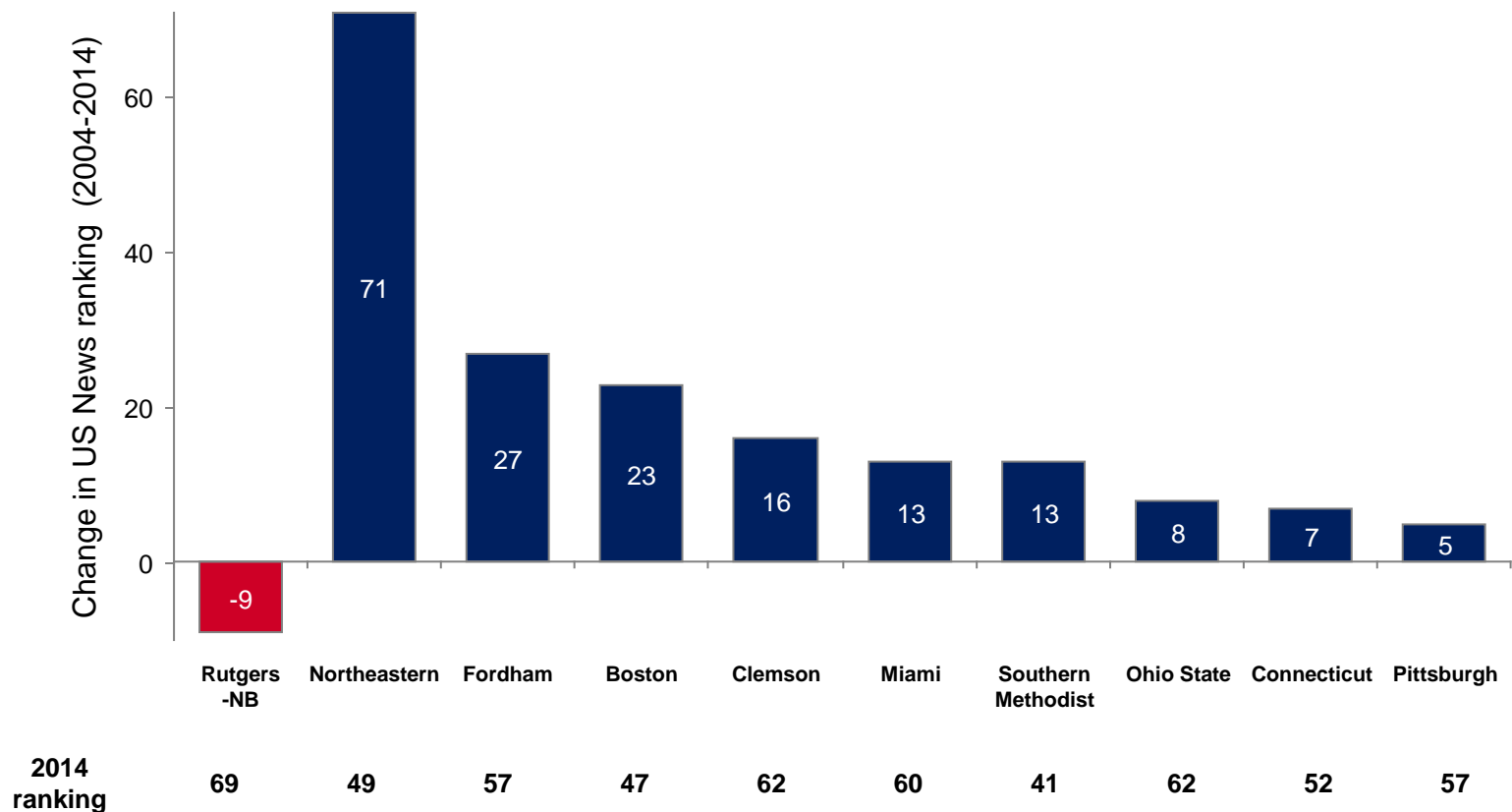
Institutions that improve in rankings typically emphasize student selectivity, fundraising, and targeted investments

Improve student selectivity and outcomes	• These two criteria comprise ~35% of US News' weighted ranking • Some universities have improved selectivity by trading off overall enrollment – given Rutgers' commitment to access this may be only be employed selectively • Some evidence suggests that Rutgers is historically more successful in graduating a higher percentage of students than expected
Fundraising is critical	• Both increased annual giving and large one-time gifts provide the necessary funds to invest in key opportunities • Rutgers alumni giving rates are far below average of public AAUs – though this is an area of opportunity, also viewed as challenging to improve historically
Invest in targeted areas	• Becoming a leader in a given field can attract top faculty, top students, and publicity; success in a few areas may have virtuous spillover effects elsewhere • To realize full benefits, it is critical to focus on disciplinary areas that are aligned with student, employer, and funder interests

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