

# Measures of Productivity

President's Report to the Board of Trustees

July 22, 2016



**PennState**

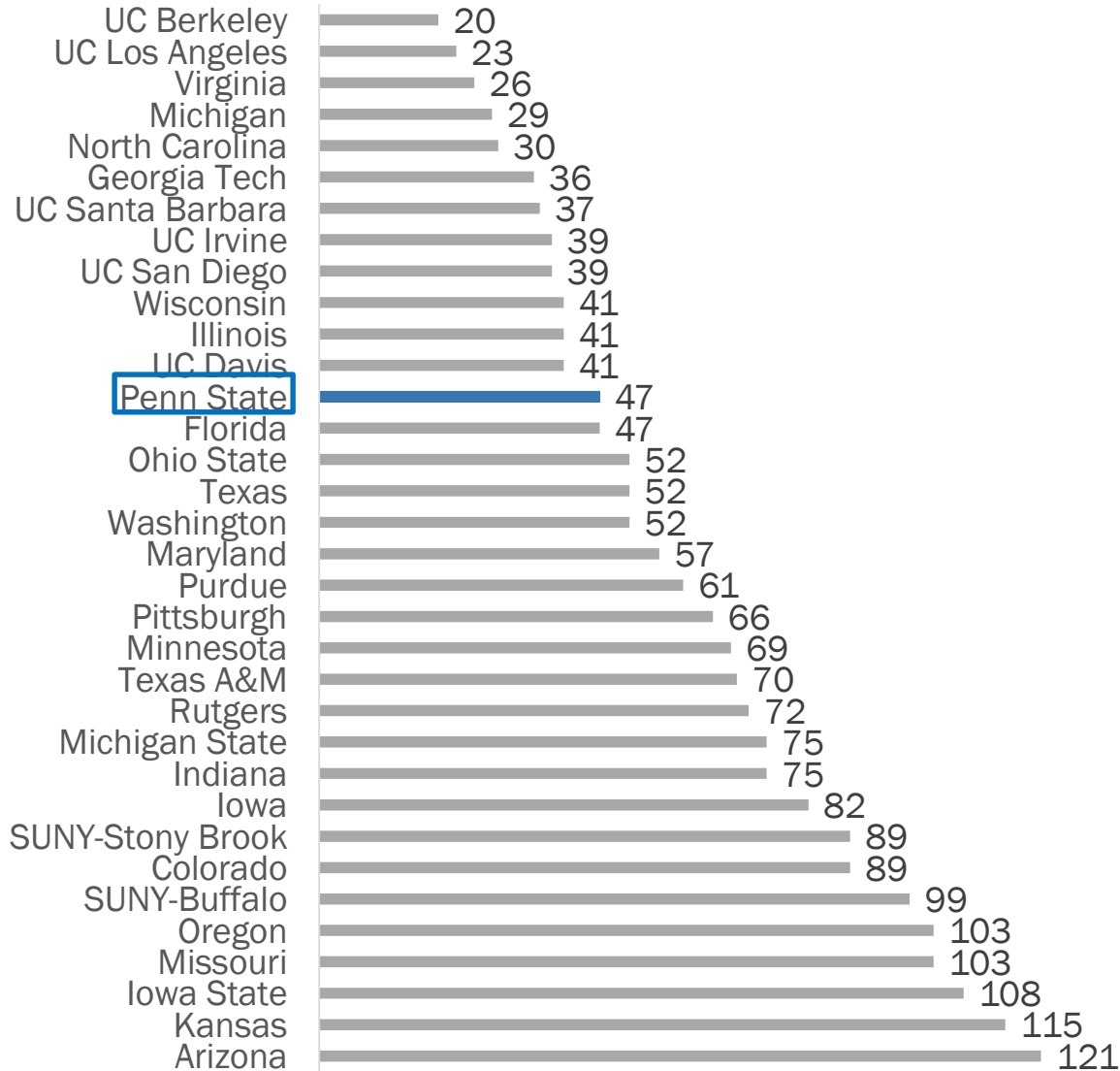
# Member of AAU Since 1958

- The Association of American Universities (AAU) represents 62 leading research universities distinguished by the breadth and quality of their research and graduate education programs.
- Membership is very selective, drawing from 2,300+ colleges and universities in US and Canada.
- AAU universities award nearly half of all US doctoral degrees; 55% of those are in science and engineering.



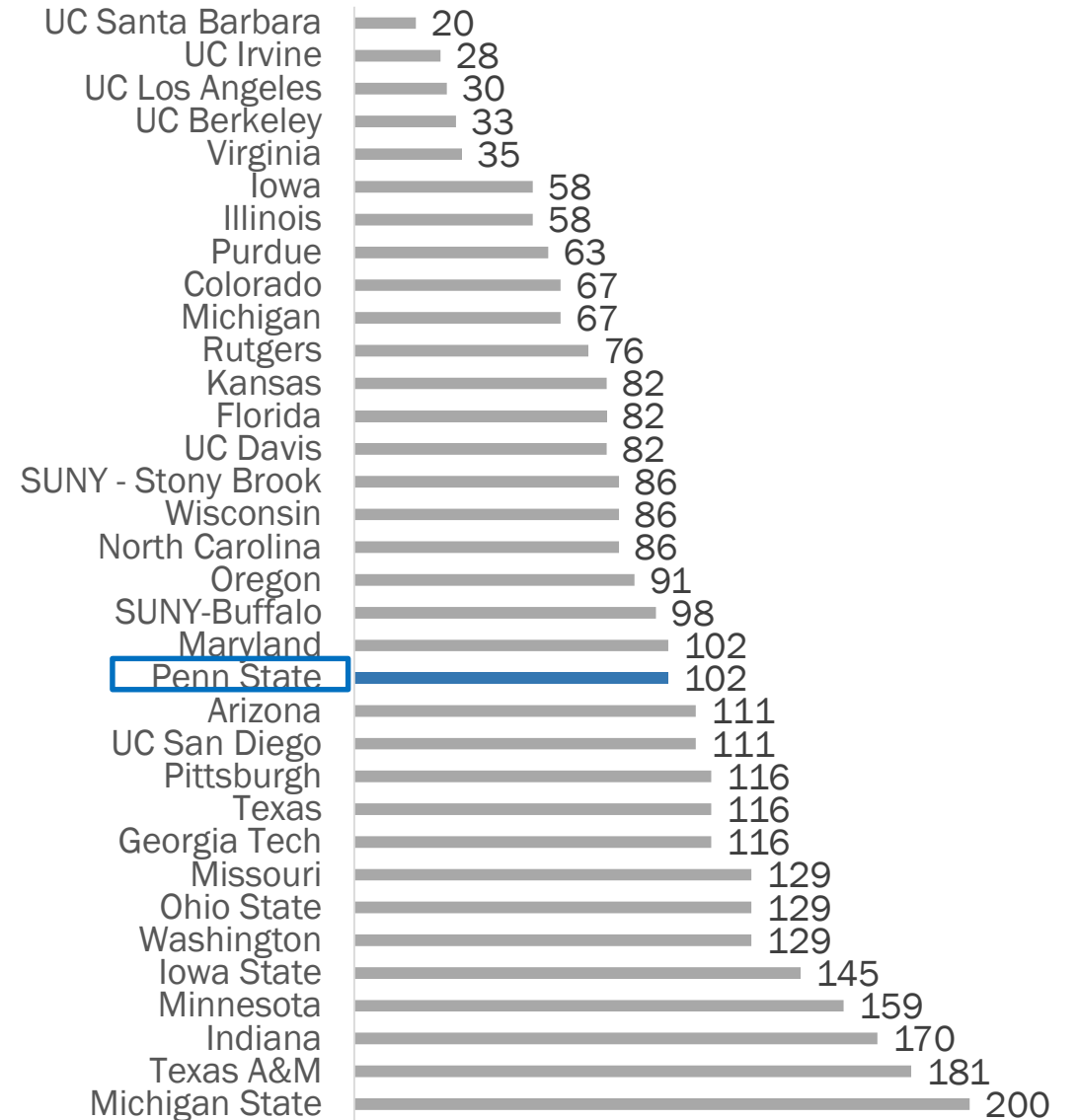
# Ranking of AAU Public Universities

## 2016 *US News*



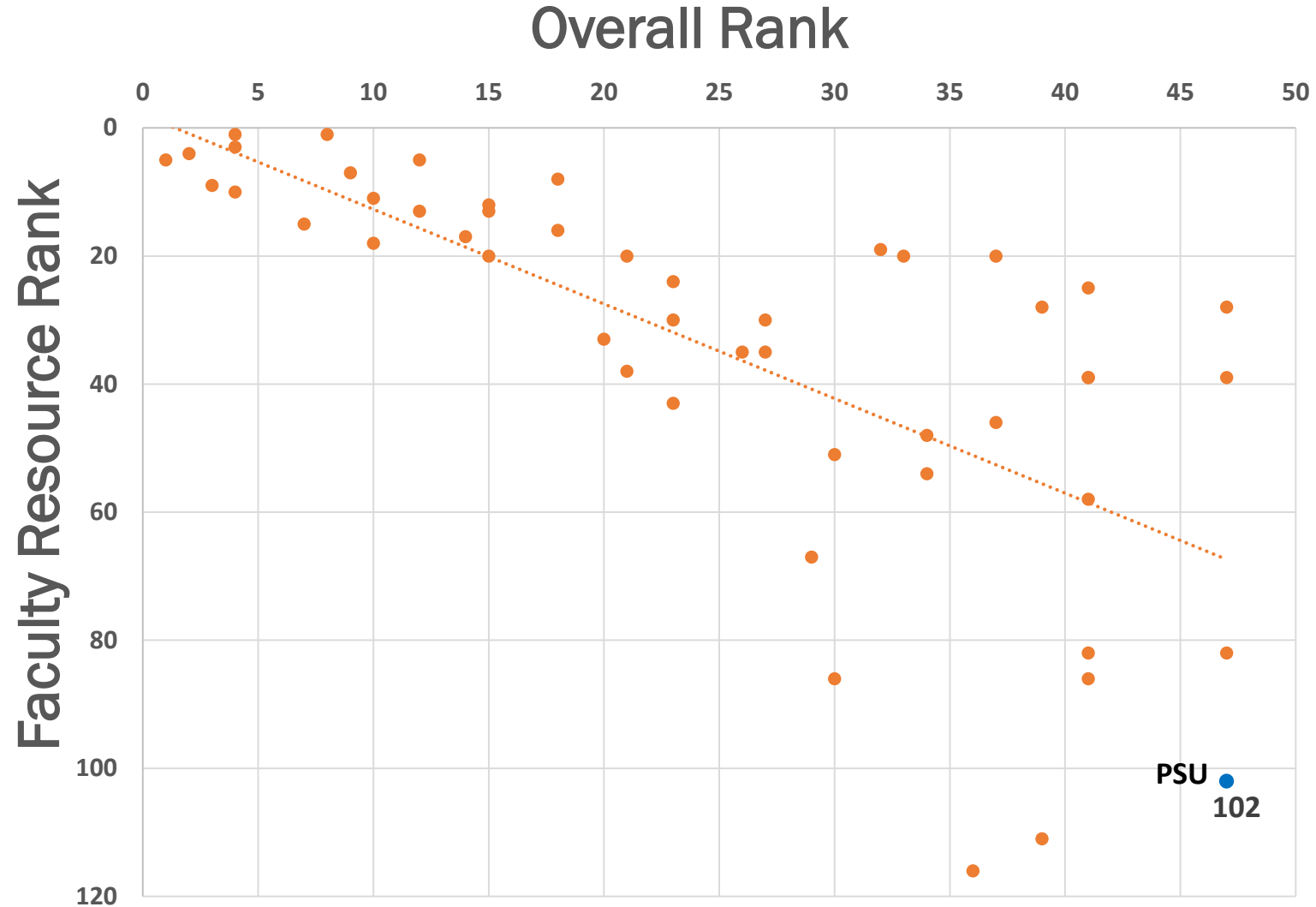
# Faculty Resource Rank

## 2016 *US News*



# 2016 *US News & World Report* College Rankings

Includes Publics and Privates



# 2015-16 Average Faculty Salary by Rank (AAU Publics)

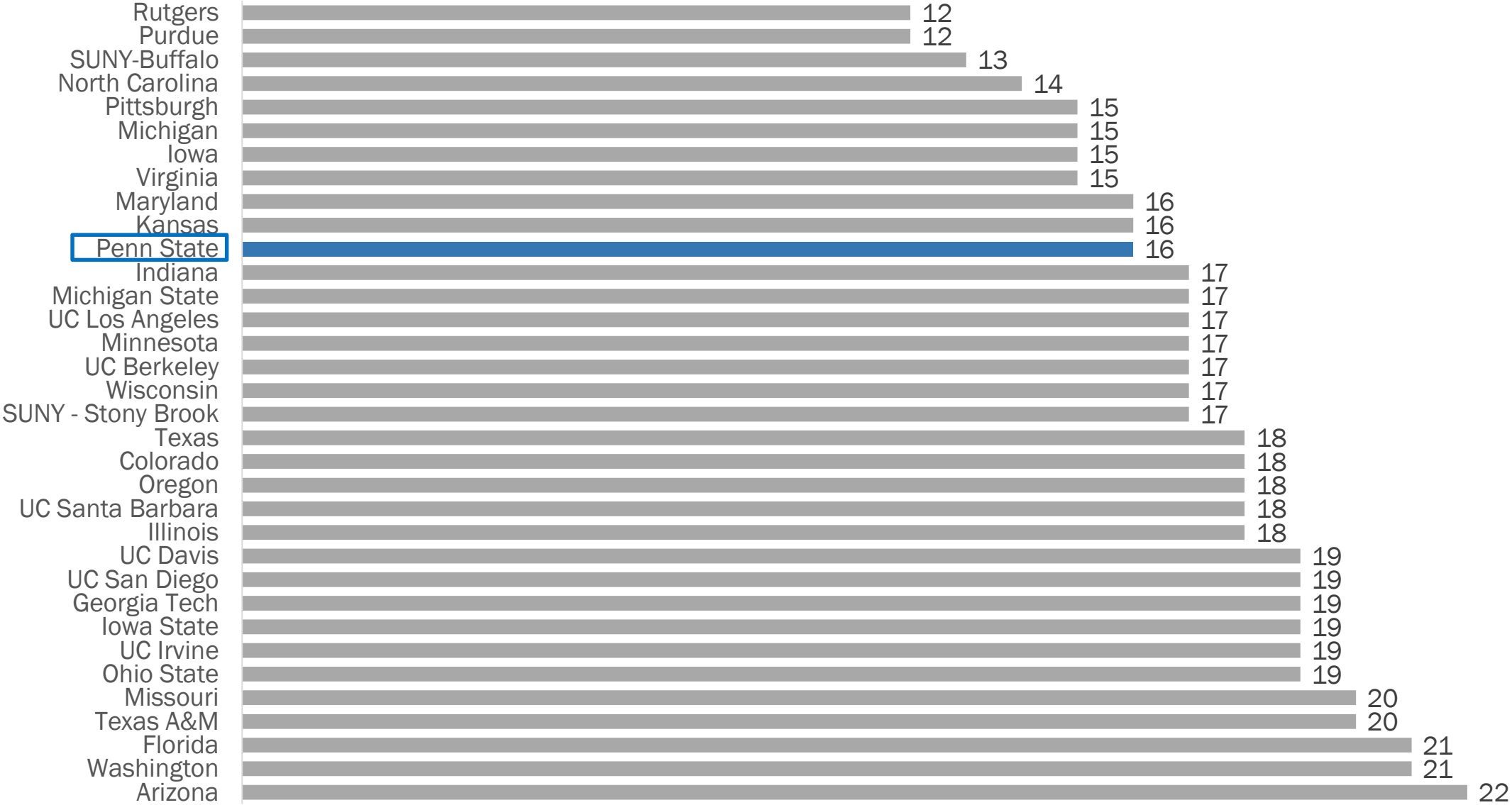
Institution	Professor	Institution	Associate Professor	Institution	Assistant Professor
UC Los Angeles	\$187,817	UC Los Angeles	\$122,630	UC Berkeley	\$109,550
UC Berkeley	178,881	UC Berkeley	115,915	Georgia Tech	99,454
Michigan	167,500	Michigan	111,600	Washington	98,100
Virginia	164,948	Virginia	111,283	UC Los Angeles	97,898
UC Santa Barbara	161,332	UC San Diego	107,956	Michigan	95,300
UC San Diego	159,770	Georgia Tech	107,028	Virginia	94,888
UC Irvine	159,416	Maryland	106,606	Texas	93,880
Rutgers	158,800	UC Davis	104,996	UC San Diego	92,305
Texas	154,809	Washington	104,800	Indiana	91,756
Maryland	154,515	Wisconsin	104,100	Illinois	91,256
Georgia Tech	154,427	Rutgers	104,000	UC Irvine	90,739
UC Davis	151,448	SUNY - Stony Brook	103,564	Maryland	89,679
<b>Penn State</b>	<b>150,905</b>	North Carolina	101,800	UC Davis	89,266
North Carolina	150,600	UC Irvine	101,658	<b>Penn State</b>	<b>89,145</b>
SUNY - Stony Brook	150,381	<b>Penn State</b>	<b>101,510</b>	SUNY - Stony Brook	88,438
Illinois	147,957	Texas	100,478	Wisconsin	87,700
Pittsburgh	146,278	UC Santa Barbara	100,241	Colorado	87,509
Ohio State	145,472	Illinois	99,515	North Carolina	87,100
Michigan State	145,416	Pittsburgh	98,195	Texas A&M	86,946
Indiana	138,792	Ohio State	97,952	Ohio State	85,966
Texas A&M	138,415	Michigan State	97,191	Minnesota	85,804
Minnesota	137,950	Colorado	96,354	UC Santa Barbara	85,651
SUNY-Buffalo	137,718	Texas A&M	96,149	Purdue	84,884
Iowa	136,810	Minnesota	95,835	Oregon	84,344
Purdue	134,763	Purdue	95,361	Iowa	83,815
Colorado	134,364	SUNY-Buffalo	94,635	Rutgers	83,500
Florida	133,924	Indiana	94,065	SUNY-Buffalo	82,252
Wisconsin	133,800	Iowa	93,414	Iowa State	82,001
Washington	133,800	Iowa State	92,425	Pittsburgh	80,157
Oregon	127,486	Oregon	91,499	Florida	79,095
Iowa State	126,722	Florida	89,261	Kansas	76,830
Kansas	125,963	Arizona	86,923	Michigan State	76,597
Arizona	124,528	Kansas	82,604	Arizona	76,352
Missouri	122,967	Missouri	80,803	Missouri	69,606

# Teaching Excellence

- Senior faculty in the classrooms
- Low student/teacher ratio (16:1 at UP; average 15:1 at CC)
- Penn State emphasizes/rewards teaching excellence in the tenure review process



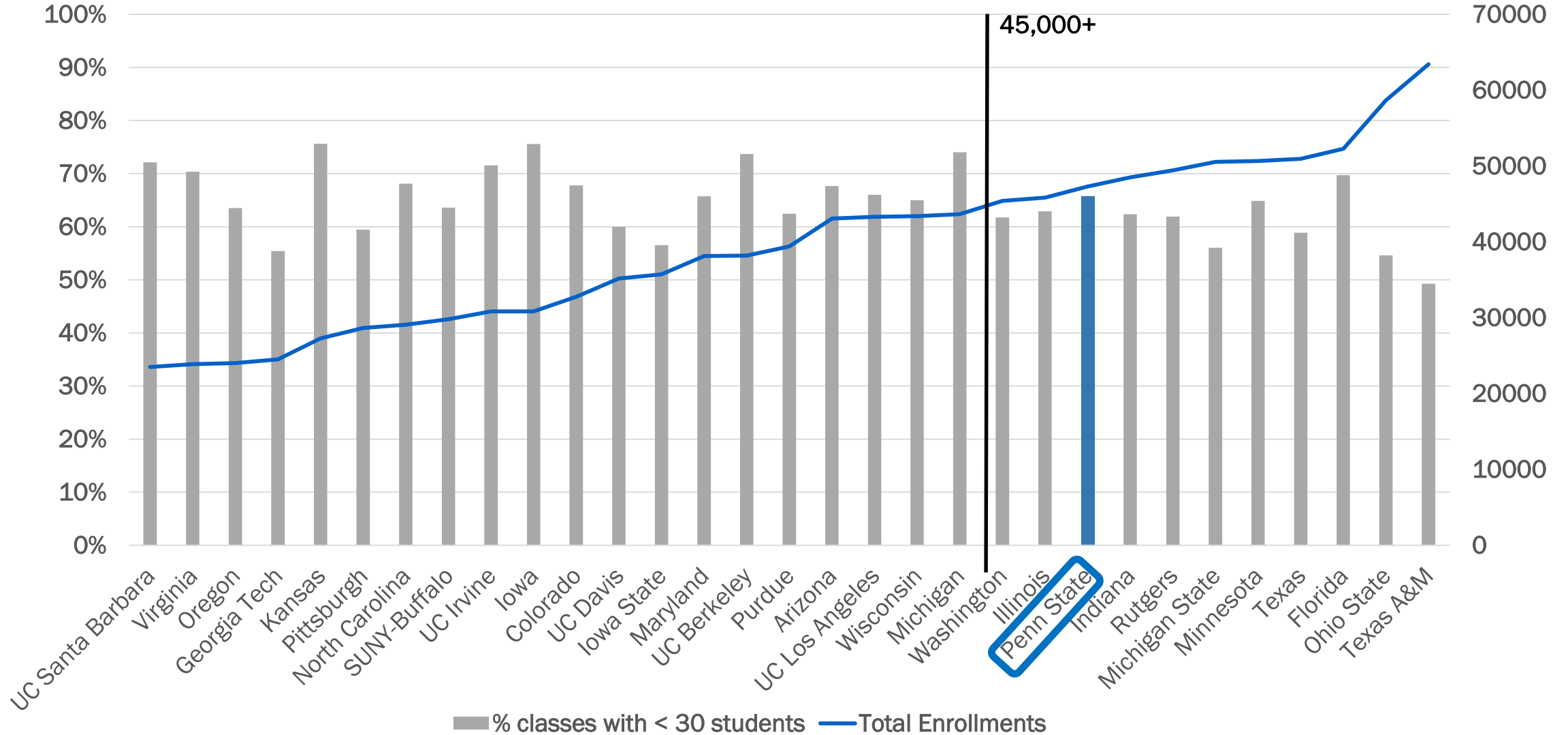
# 2015-16 Student to Faculty Ratio (AAU Publics)



Source: Institution's Common Data Set (2014-15 data used when 2015-16 not available)

# 2015-16 Class Section Size vs. Enrollment

## % of Classes with < 30 Students (Select AAU Publics\*)

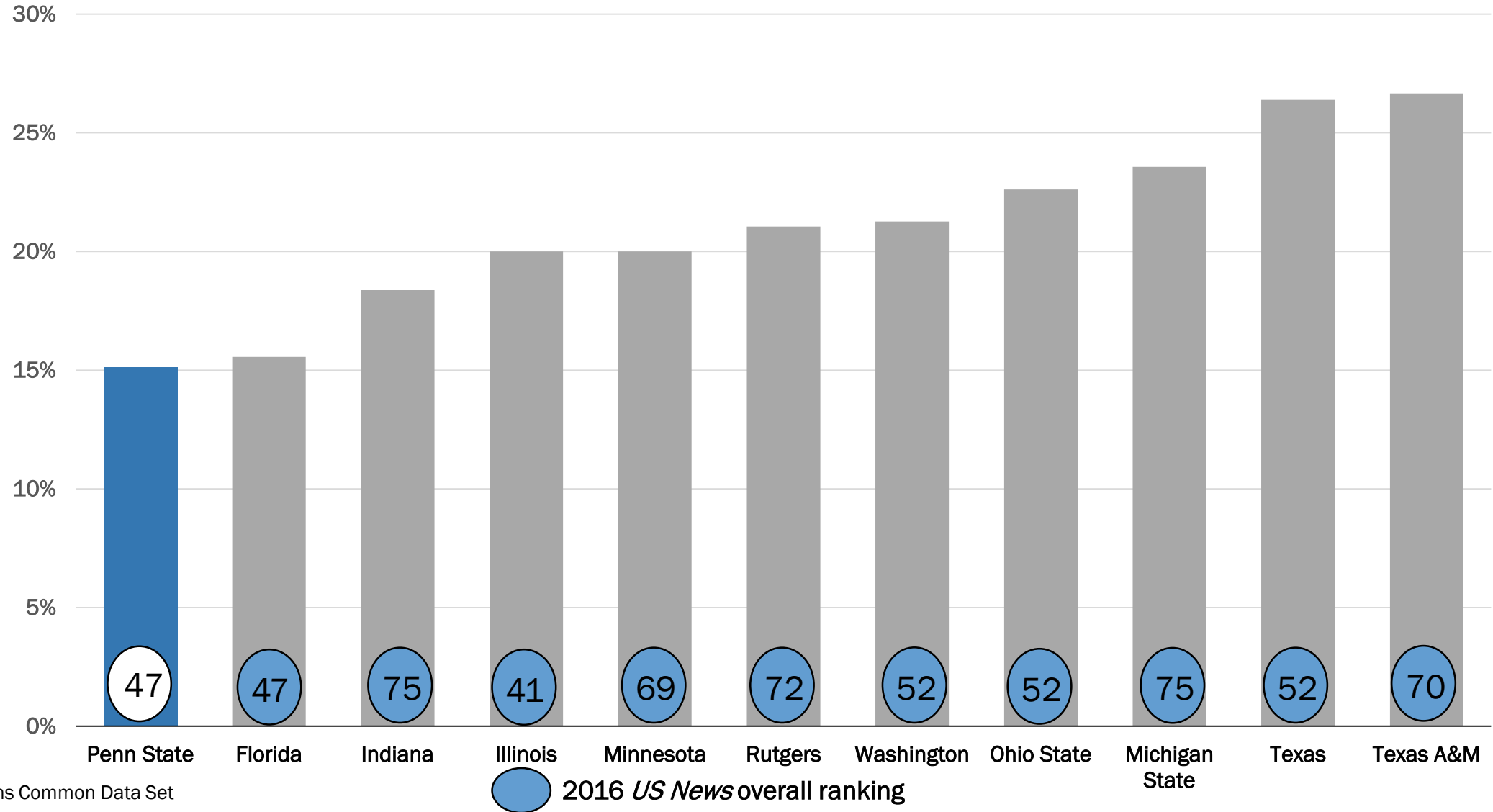


Source: Institution's Common Data Set \*Data unavailable for SUNY - Stony Brook, UC San Diego, Missouri



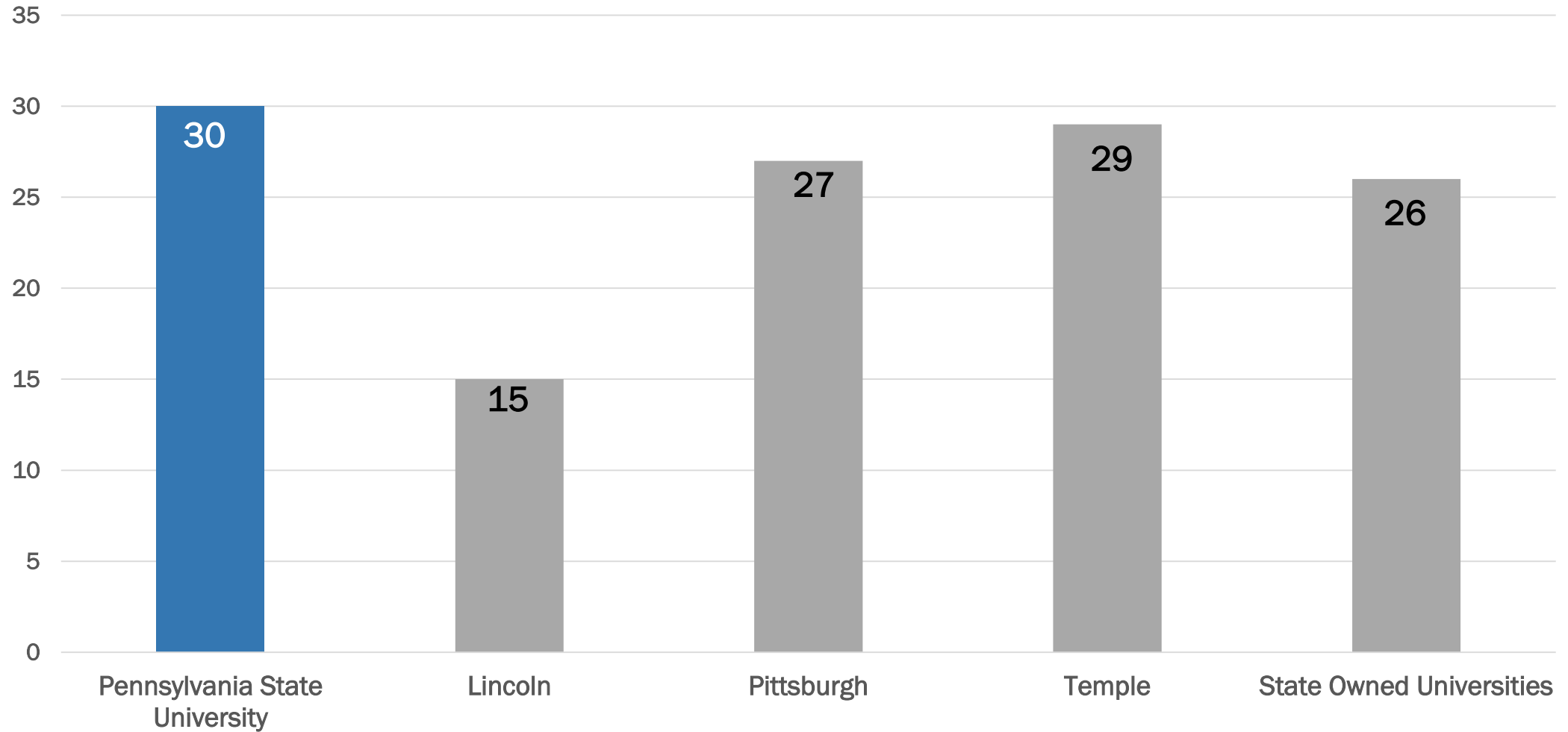
# % of Classes with > 50 Students 2015-2016

AAU Publics with Enrollment over 45,000



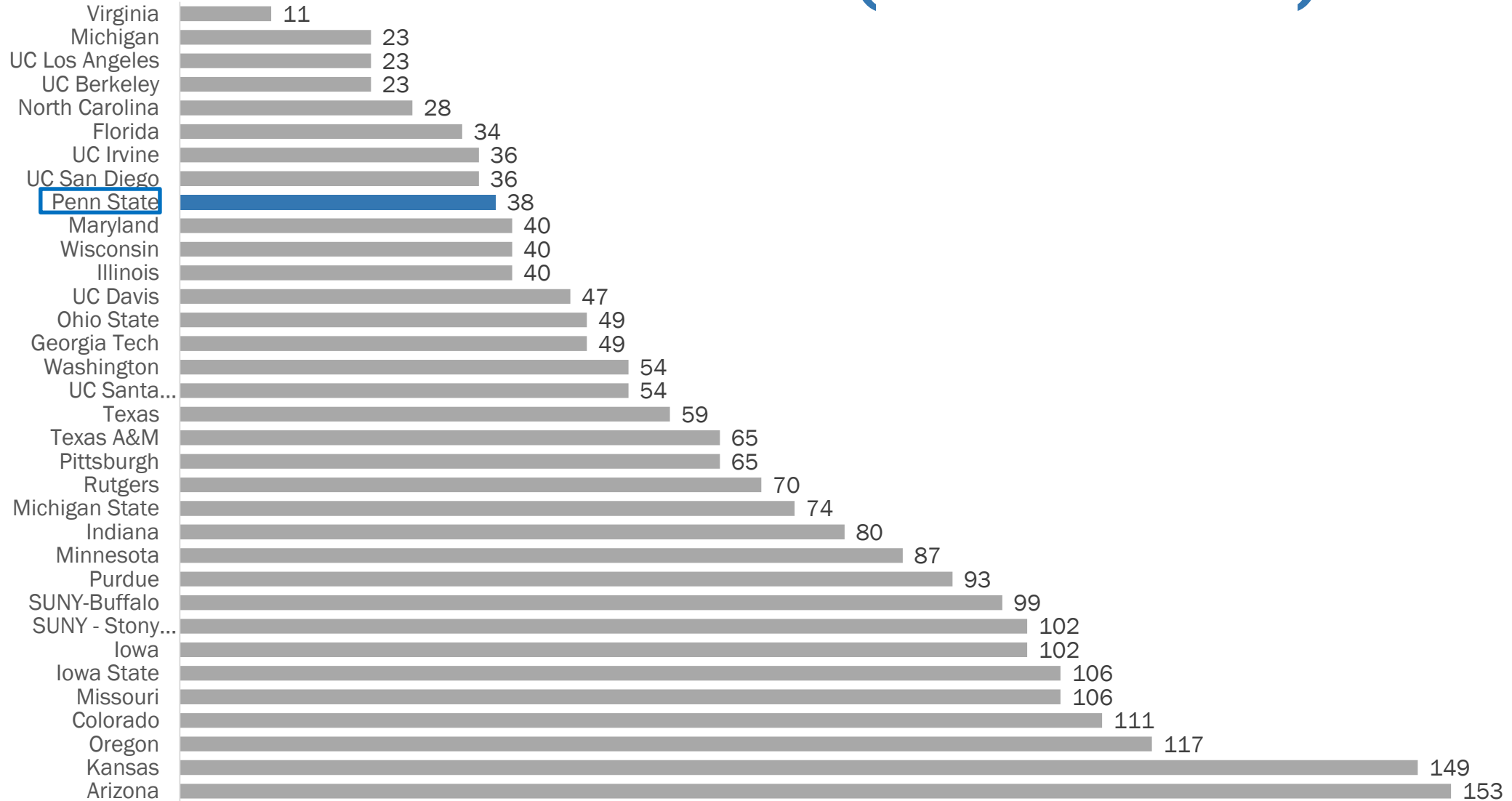
Source: Institutions Common Data Set

# Average Undergraduate Class Size 2014-15



# Graduation & Retention Rank

## 2016 *US News* (AAU Publics)



# Outstanding Faculty (a few examples)

- Laurie Grobman (Berks) named 2014 Outstanding Baccalaureate Professor of the Year by the Carnegie Foundation for the Advancement of Teaching
- Laura Guertin (Brandywine) given 2015 Distinguished Teacher Award by the PA Geographical Society
- Rebecca Strzelec (Altoona) named 2016-17 Penn State Laureate
- Michael De Rosa (Brandywine) honored by American Chemical Society for 50 years of service
- Simon Brooner (Harrisburg) received Kenneth Goldstein Award for Lifetime Academic Leadership from the American Folklore Society

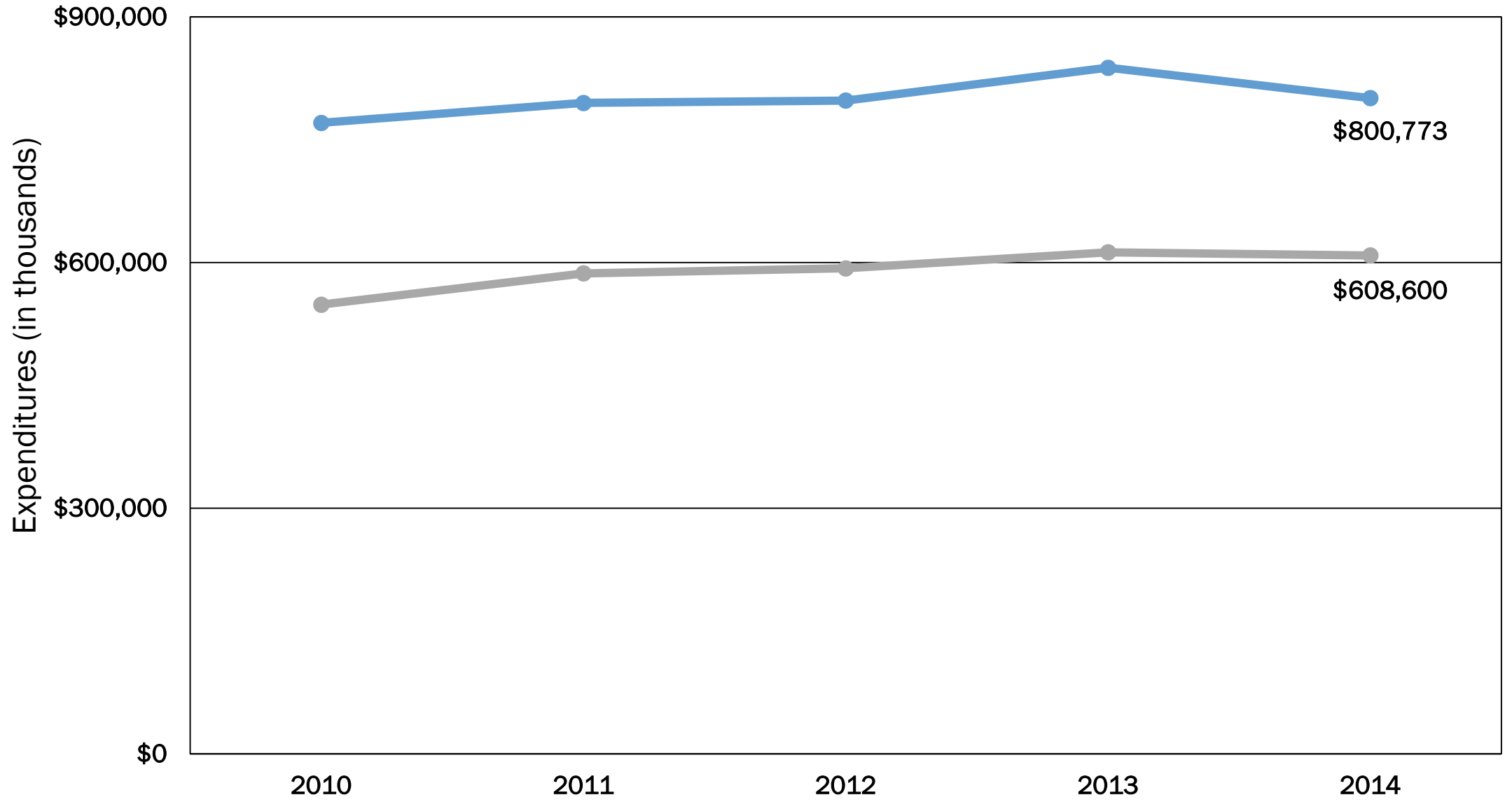


# Research Excellence

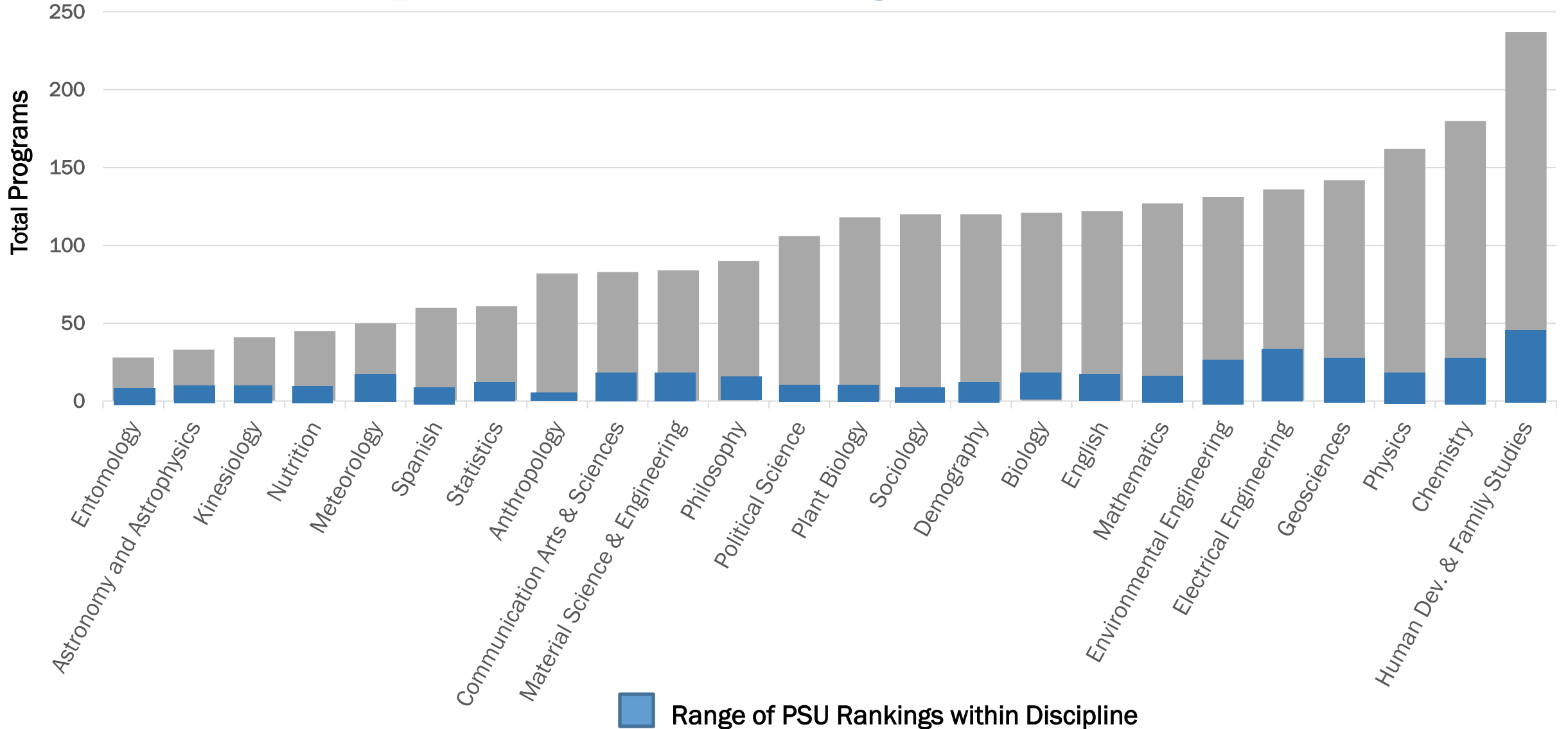
- 6 years of research expenditures of \$800+ million
- 10 disciplines rank in the top 10 of National Science Foundation Total Science and Engineering Research Expenditures; Penn State ranks 20<sup>th</sup> overall.
- Penn State University Libraries rank 9<sup>th</sup> among North American research libraries.
- Ranked in Top 20 Doctoral/Research Institutions for receiving Fulbright Awards.
- Penn State Children's Hospital has been ranked among the top 50 U.S. hospitals in six specialties.



# Annual Research & Development Expenditures



# Penn State Research Doctorate Programs Ranking within the Top 10% of Total Programs in the Field



# Penn State Research Doctorate Programs Ranking within the Top 10% of Total Programs Ranked in the Field

Dimensional	Category of Faculty Research Activity	
Anthropology	Astronomy and Astrophysics	Biology
Chemistry	Communication Arts & Sciences	Demography
Electrical Engineering	English	Entomology
Environmental Engineering	Geosciences	Human Development & Family Studies
Kinesiology	Materials Science and Engineering	Mathematics
Meteorology	Nutritional Sciences	Philosophy
Physics	Plant Biology	Political Science
Sociology	Spanish	Statistics



# Penn State Research Doctorate Programs Ranking within the Top 10% of Total Programs Ranked in the Field

Dimensional Category of Student Support and Outcomes		
Anthropology	Art History	Astronomy & Astrophysics
Bioengineering	Cell and Molecular Biology	Chemical Engineering
Communication Arts & Sciences	Comparative Literature	Demography
English	Environmental Engineering	Forest Resources
French	Genetics	Human Development & Family Studies
History	Mechanical Engineering	Meteorology
Microbiology & Immunology	Neuroscience	Nursing
Pathobiology	Petroleum and Mineral Engineering	Pharmacology
Philosophy	Physics	Plant Pathology
Political Science	Rural Sociology	Sociology
Soil Science	Spanish	Statistics

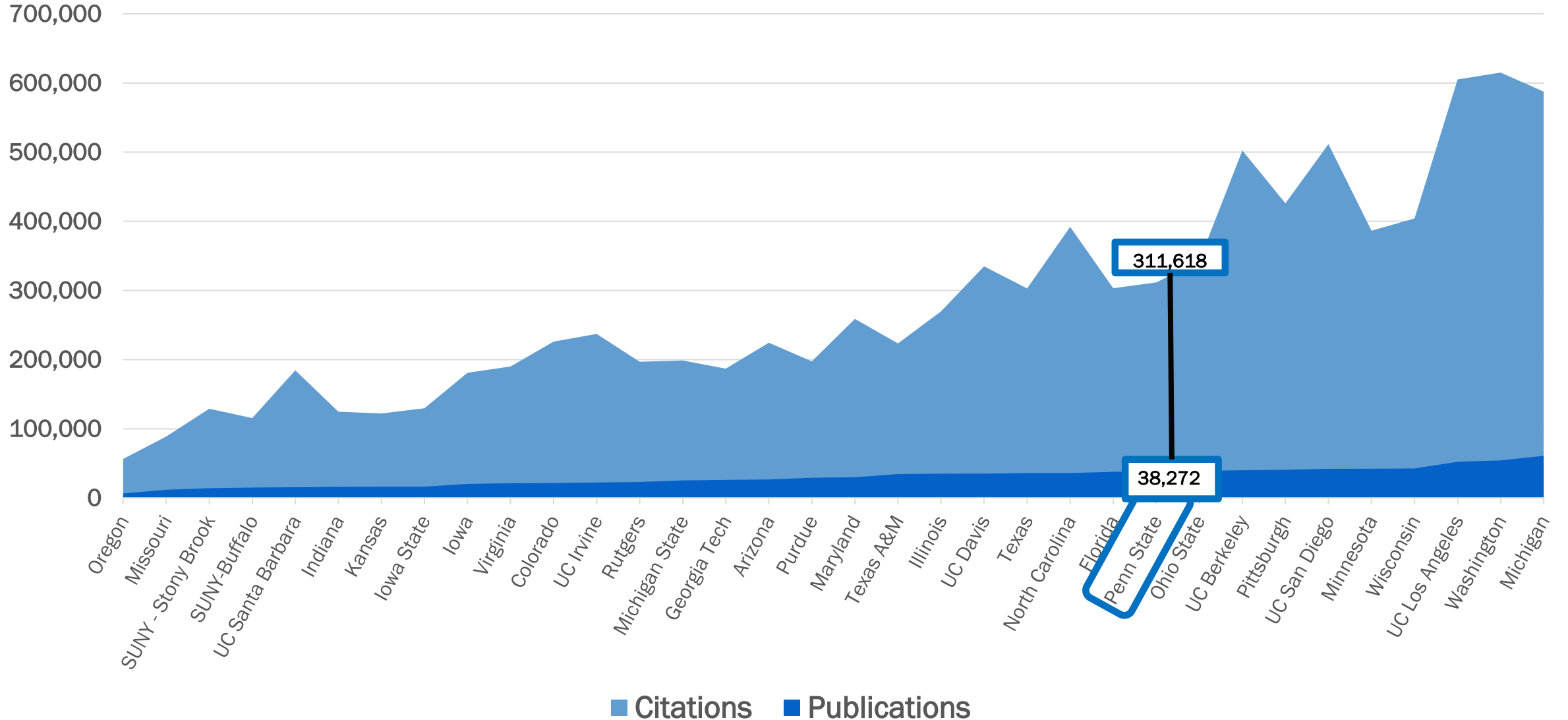
# Metrics on Research Dissemination

## Penn State Ranks in Top 5 of Each Category

Rank (Scholarly output)	Energy: Policy, Economics and Law	Fossil Fuels, Combustion, Turbo., Carbon Capture	Renewable energy (All types) and nuclear	Dist., efficiency, grid, storage, smart build	Energy and the Environment (including Climate)
1	Massachusetts Institute of Technology	Texas A and M University	Massachusetts Institute of Technology	Georgia Institute of Technology	<b>University of California at Berkeley</b>
2	<b>University of California at Berkeley</b>	University of Texas at Austin	<b>University of California at Berkeley</b>	Massachusetts Institute of Technology	Texas A and M University
3	Texas A and M University	<b>Pennsylvania State University</b>	<b>Stanford University</b>	University of Michigan	<b>Pennsylvania State University</b>
4	University of Illinois at Urbana-Champaign	<b>Stanford University</b>	Georgia Institute of Technology	<b>University of California at Berkeley</b>	University of Wisconsin
5	<b>Pennsylvania State University</b>	Massachusetts Institute of Technology	<b>Pennsylvania State University</b>	<b>Pennsylvania State University</b>	<b>Stanford University</b>

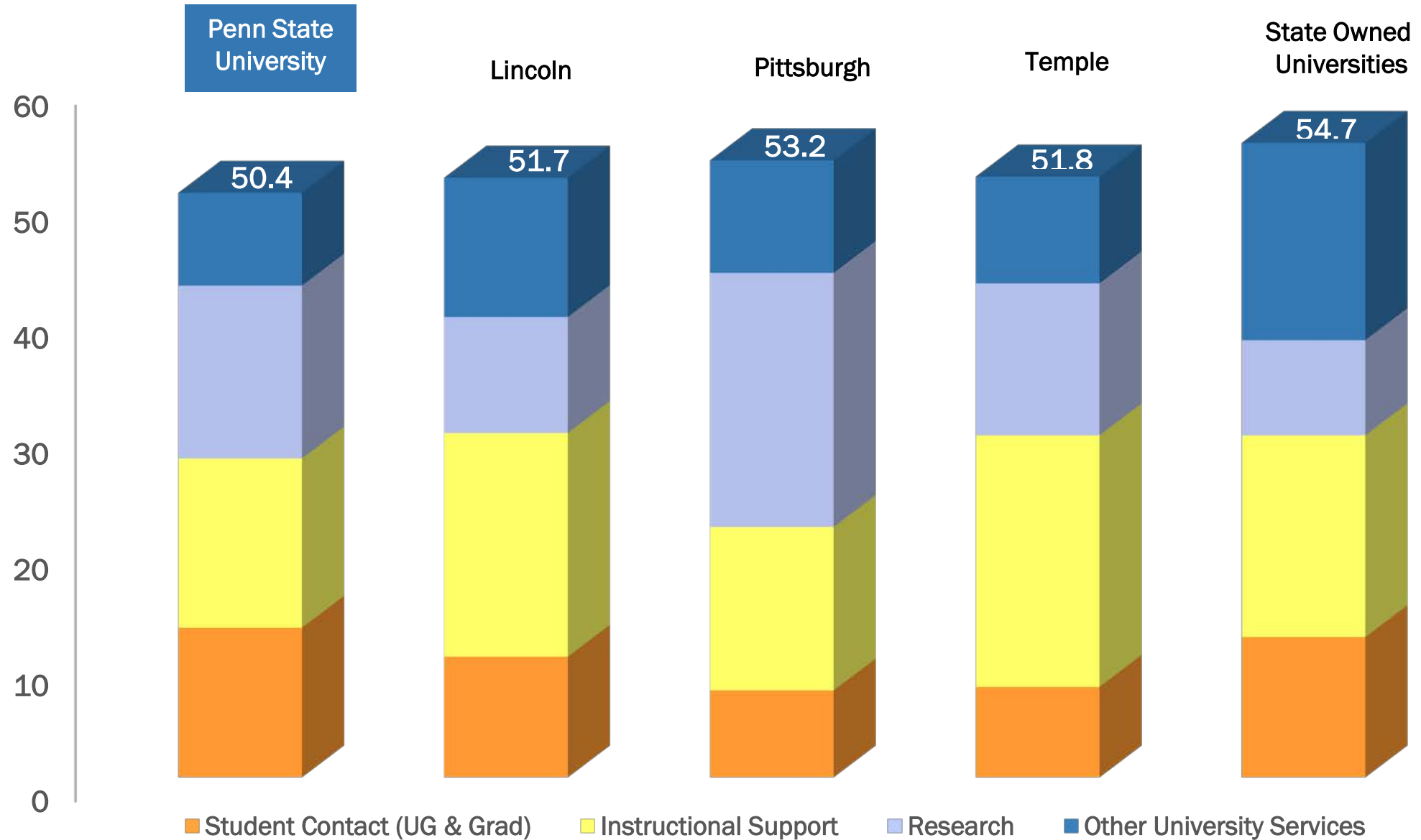
# Publications and Citations

## AAU Publics: Years 2011-2015



# Average Weekly Hours by Type of Activity

## Full-Time Faculty 2014-15



# **The Intersection of Teaching and Research**

*Research+Teaching+Outreach = Land-Grant Mission*

- Penn State offers undergraduates opportunities to conduct research with world-class researchers in many disciplines.
- Over the last 5 years, nearly 8,000 students completed an undergraduate research course prior to graduation
- In 2015-16, 610 awards supported 974 undergraduate student research experiences.
- 50+ Erickson Discovery Grants (\$3,500 each) are awarded each summer.
- Faculty incorporate research-based new knowledge into curriculum.

# Student Engagement in Research

2015-16 YTD

	Student Wage Costs	Undergrad Students
Federal	\$ 734,244	447
Industrial	691,575	356
University	223,746	100
Commonwealth	<u>96,770</u>	<u>71</u>
<b>Total</b>	<b>\$1,746,334</b>	<b>974</b>

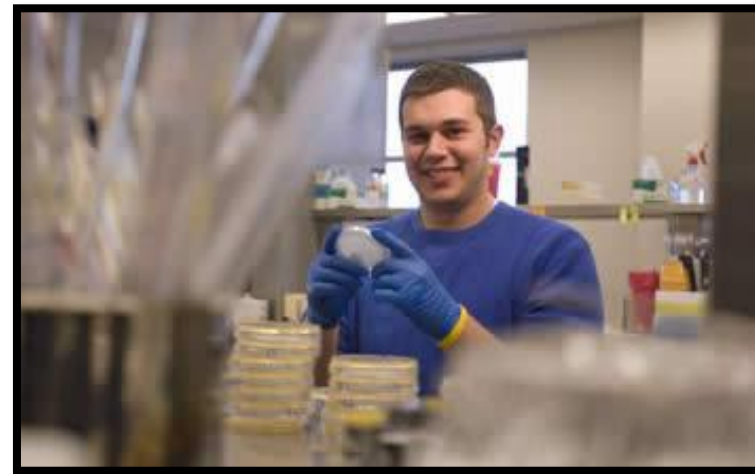
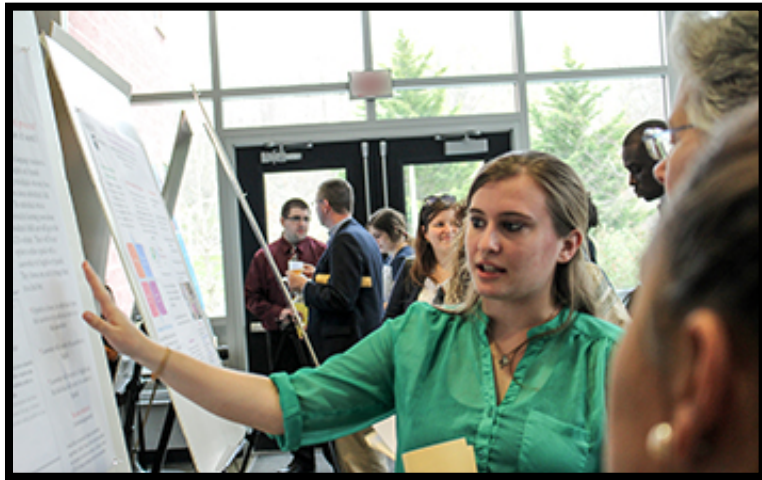
**Number of projects involving undergraduate students:**

- Federal 324
  - Industrial 217
  - Commonwealth 36
  - PSU 33
- Total 610

Number of NSF Projects 86

# Research Engagement at Commonwealth Campuses

- Student participation in supervised research
  - 261 sections in AY 2015-16 with 793 total enrollments
- Faculty participation in sponsored awards
  - \$62 million (as of June 2016)



# Other CC Ranking Highlights

- *US News* ranked Penn State's online iMBA degree and online graduate business programs, administered at Penn State Behrend, as 7<sup>th</sup> in the nation.
- Penn State Shenango was ranked in “best bang for buck” by *Washington Monthly*.
- 17 Commonwealth Campuses were named “Military Friendly” schools.
- 2 campuses (DuBois and Schuylkill) named to the President's Higher Education Community Service Honor Roll, a federal award.



# Summary of Productivity at Penn State

- Faculty doing more with less as indicated by our top 50 *US News* ranking as compared to our faculty resource ranking.
- Excelling in teaching as reflected in our retention/graduation rates and our actual graduation rates vs. the predicted rates as calculated in the *US News* rankings.
- Excelling in research as reflected in the results of national rankings and results produced.
- Compensation is commensurate with the quality of faculty.
- Penn State has maintained an excellent student-faculty ratio.
- Penn State faculty spend fewer hours involved in the bureaucracy noted as “Other University Service.”

***Looking Ahead:  
The Strategic Plan and Capital Campaign  
will promote even higher levels of  
productivity and excellence.***

# Discussion Questions?

