

AMERICAN ACADEMY
OF ARTS & SCIENCES

Public Research Universities: Why They Matter



A Publication of The Lincoln Project: Excellence and Access in Public Higher Education

© 2015 by the American Academy of Arts & Sciences

All rights reserved.

ISBN: 0-87724-104-X

This publication is available online at <https://www.amacad.org/LincolnProject>.

The views expressed in this publication are those held by the contributors and are not necessarily those of the Officers and Members of the American Academy of Arts & Sciences.

Please direct inquiries to:

American Academy of Arts & Sciences

136 Irving Street

Cambridge, MA 02138-1996

Telephone: 617-576-5000

Fax: 617-576-5050

Email: LincolnProject@amacad.org

Web: www.amacad.org

Cover: The lights on the map represent the locations of Carnegie-classified VHRA and HRA public universities in the United States as of April 2015.

Public Research Universities: Why They Matter



Introduction

In an interconnected and rapidly changing world, the United States requires an educated citizenry to support a constant flow of research and innovation and to sustain its international competitiveness. Public research universities are a foundational piece of the U.S. educational infrastructure that meets this need. As defined by the National Science Board, public research universities are “research intensive, doctorate-granting institutions that receive a share of funding from state and local appropriations and serve as a critical component of the overall higher education landscape.”¹ In 2013, public research universities enrolled approximately four million students

nationwide—an average of about eighty thousand students in each state. These institutions provide high-quality educational opportunities to students at all income levels. Further, public research universities enroll the best and brightest students in every state: 87 percent of entering freshmen are from the top half of their graduating high school class.²

Nearly 75 percent of all students enrolled in postsecondary programs in the United States attend public institutions, ranging from two-year community colleges to comprehensive four-year baccalaureate- and master's-conferring state schools to

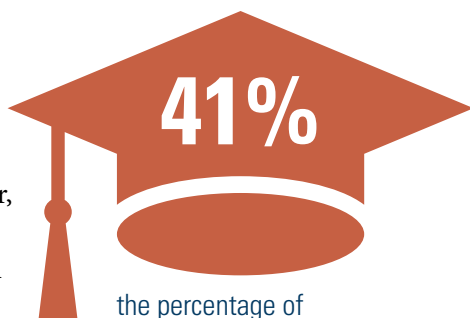
doctoral degree-granting research universities.³ Public research universities serve a distinct and indispensable role in this educational

landscape. In addition to producing research and scholarship, public research universities provide economic development, technical assistance, and extension services to their communities, states, and nation. While other institutions may address these needs individually, public research universities are charged with addressing them together as effectively, efficiently, and affordably as possible.

Although public research universities make up a relatively small percentage of America's nearly five thousand colleges and universities, there is at least one in every state, forming a geographically accessible arena that contributes greatly to the lives of Americans across the country.⁴ Public research universities initiate the fundamental research that drives scientific and technological discovery. They educate and train the skilled workforce of tomorrow. They prepare school teachers and faculty for the classroom. They equip the next generation of leaders with the knowledge, skills, and empathy to lead a twenty-first century democracy. Most important, public research universities are stewards and repositories of human knowledge.

Today, confronted with reduced state and federal investment, public research universities are forced to make difficult choices about

institutional priorities. In this climate, the American Academy of Arts & Sciences created the Lincoln Project: Excellence and Access in Public Higher Education to urge support for public research universities and recommend new strategies to sustain these critical institutions. This report begins the discussion by demonstrating the many ways in which public research universities are a vital public good.



the percentage of all baccalaureate or graduate level degrees/certificates awarded by public research universities in areas of national need (as defined by the federal government)

4 million



The number of students educated annually at public research universities



60% = the percentage of all doctoral degrees awarded by public research universities

Section 1: Public Research Universities Serve the National Interest

Public research universities play a significant role in regional and national economic development. With the demise of many private research laboratories, our nation's universities have become the primary sources of U.S. research, discovery, and innovation.⁵ The biotech industry originated almost entirely from research universities, and countless start-ups and patent grants have sprung from the research clusters that have formed, in conjunction with private counterparts, around the University of California, Berkeley, University of North Carolina, University of Texas, and University of Illinois at Urbana-Champaign.⁶ Further, public research universities regularly engage with community and state governments, providing academic expertise, technical assistance, and critical education and workforce development. They are also major employers: in 2012–2013, public research universities employed over 1.1 million faculty and staff nationwide, and were among the top-five largest employers in twenty-four states.⁷

Every day we benefit from discoveries made or knowledge advanced in public research universities. Public research universities have contributed to the development of antibiotics, the Internet, ATMs, bar codes, computing devices and smartphones, LEDs, laser eye surgery, sonic toothbrushes, and even wet suits.⁸ From malaria treatments in development at the University of California, Berkeley to the Ohio State University's work on the mitigation of environmental risks in agriculture, public research universities continue to produce research that improves our health, grows our economy, and enhances our day-to-day lives in profound ways.

Public research universities advance the cultural vitality of their states and regions. They serve as vibrant cultural centers, producing strong communities whose diverse interests and activities enrich their region.⁹ They provide health care through academic medical centers, and 18 percent of all public research universities have hospitals.¹⁰ They also partner with public school systems to enhance educational opportunities at the K–12 level: 86 percent of public research universities have teacher certification programs approved by the state for initial certification or licensure of teachers.¹¹

In what areas do public research universities contribute?

As one of the top agricultural universities in the world, **the University of California, Davis established the World Food Center** to tackle the major challenges in feeding and nourishing a growing planet in an environmentally sustainable way.

The School of Freshwater Sciences at the University of Wisconsin–Milwaukee is the first graduate school in the nation dedicated to freshwater research, and is one of three such schools in the world.

The multitouch screen technology essential to smartphones, tablets, and other devices was developed at the **University of Delaware**.

The University of Arkansas Cooperative Extension Service reaches more than 166,000 children aged five to eighteen and serves as Arkansas' largest youth education organization.

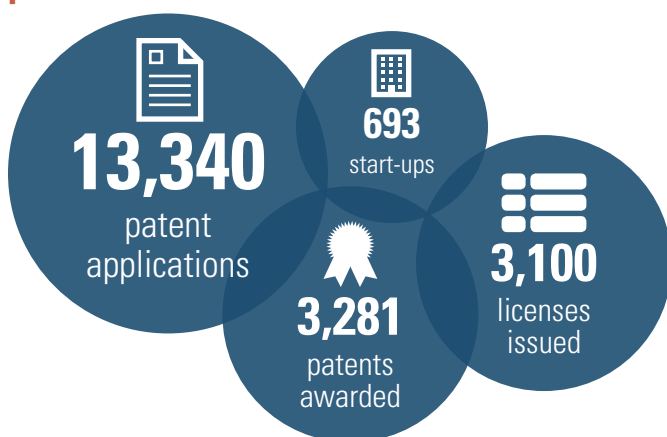
Through its **Biosecurity Research Institute and the forthcoming National Bio and Agro-Defense Facility, Kansas State University** has become a national leader in animal health and food safety.

In collaboration with partners across the university and the world, researchers at **North Carolina State University** have designed the first interactive virtual representation of poet John Donne's Gunpowder Day sermon at Paul's Cross, London.

Section 2: Public Research Universities Contribute to the Innovation Economy

As research and education centers, public research universities drive state economies. For example, in 2012–2013, start-up and spin-off companies associated with the University of North Carolina system added \$27.9 billion in income to the state economy.¹³ In the same year, the Uni-

Between 2012 and 2013,¹² research at public universities resulted in:



versity of Hawaii generated \$3.61 billion in local business sales, \$1.10 billion in employee earnings, \$194 million in state tax revenues, and over 28,500 jobs in the state.¹⁴ In Florida, nearly 8 percent of the state’s total workforce and 7 percent of the state’s gross domestic product (GDP) is related in some way to the state university system.¹⁵

Universities foster research- and innovation-based relationships with business, industry, the non-profit sector, and government.

The University of Cincinnati

Research Institute, the University of Wisconsin–Milwaukee Research Foundation, and Innovate ABQ at the University of New Mexico all connect academic experts to industry partners and serve as hubs of innovation and engines of growth. Many universities have created innovation accelerators that encourage a culture of entrepreneurship by sponsoring start-up competitions, providing seed funding, or offering catalyst grants, while also serving as magnets to business and industry. The top innovation clusters in the country are affiliated with and geographically near research universities, both public and private.

Universities manage their intellectual property for the public good. While technology transfer and intellectual property can result in new revenue for public research universities, the primary purpose of these policies is to serve the public interest. Universities stimulate economic growth through responsible management of intellectual property and its transfer.



20/50 Among the **fifty** higher education institutions worldwide most successful in creating venture capital–supported entrepreneurs, **twenty** are U.S. public research universities.¹⁶

Section 3: Public Research Universities Provide Quality Educational Opportunities and Programs at a Highly Efficient Cost

Public research universities experiment with innovations in teaching and learning, including “flipped” and “hybrid” classrooms (in which lectures take place online and class time is devoted to discussion), and other alternative teaching methodologies that take advantage of information technology and online education.¹⁸ Projects such as the Global Classrooms Initiative at the University of Maryland provide financial support to faculty who develop innovative project-based courses that use digital technology to bring together students from partner universities around the world. The Entrepreneur-in-Residence Program at Penn State helps students learn how to build and lead companies, license products, and create patents. And through extension centers and life-long learning institutes, public research universities are able to educate tens of thousands of citizens who would otherwise be beyond the reach of their campuses.

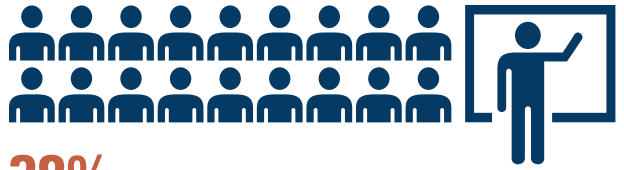
Institutional leaders align academic initiatives with the strengths and needs of the region and the nation. In 2013, public research universities awarded 41 percent of all baccalaureate or graduate level degrees/certificates in areas of national need (as defined by the federal government).¹⁹ Through these universities, students also gain access to internships and co-op experiences in local and regional companies, in some cases earning pay for their work. More than one in every four students at public research universities held an internship in 2012–2013, and one in ten interned under the direction of a university faculty member over that same period.²⁰ Public

For graduates of public research universities, the average median midcareer salary is

\$80,050



At public research universities:



38% of courses have fewer than 20 students

18:1 The average student-to-faculty ratio

83% of freshmen return for their sophomore year¹⁷

research universities provide the platform and incentive for companies and students to engage with each other.

Undergraduates at public research universities benefit from faculty and graduate-student mentoring. Students learn from cutting-edge researchers, in all disciplines, who share new knowledge and the excitement of discovery through their

teaching.²¹ The many available opportunities for undergraduates to participate in research provide invaluable hands-on application of classroom learning and skills training for the future.

For graduates of public research universities, a college education (including tuition, living expenses, and foregone income) typically pays for itself within five to seven years of post-graduate employment.²² Public research universities hold the second highest graduation rate among all Carnegie-classified public colleges and universities (trailing only public art, music, and design schools)²³; and job opportunities for college graduates are far better than for the general population and unemployment rates are lower.²⁴ The average median midcareer salary for graduates of public research universities is \$80,050. Over the last fifty years, the percentage of underpaid college graduates (defined as making less than the median pay of high school graduates) has decreased by one-third.²⁵ Although there are differences in earning potential across majors, especially early in a graduate's professional life, college graduates in all majors earn at least 60 percent more than high school graduates over the course of a career.²⁶

Undergraduate Research on Campus & Beyond

Over **1,500 undergraduate students** participate in the Undergraduate Research Apprentice Program at the **University of California, Berkeley**. Students have the choice between working on semester- or year-long faculty-led projects across all academic departments.

At **Miami University** in Ohio, **more than 2,000 undergraduate students** work with professors on funded research each year. In the annual spring Undergraduate Research Forum, undergraduates have the unique opportunity to get published and present to the university community on topics ranging from eye tracking and face processing to wine-drinking behavior in millennials.

University of Nebraska's Undergraduate Creative Activities and Research Experience program is complemented by skill-building seminars in topics

such as ethics, data management, networking and presentations, and preparing for graduate school. In FY 2014-15, hundreds of students completed faculty-sponsored projects in areas ranging from agriculture and natural resources to nursing.

The **University of Connecticut** has ten different funding programs for its undergraduate student researchers. The **UConn IDEA Grant** provides up to \$4,000 for student-designed projects targeting the arts, community service, entrepreneurship, and academic research.

Over **200 research projects** are available for undergraduate student/faculty collaboration through the Office of Undergraduate Research at the **University of Wisconsin–Milwaukee**. The projects are open to all classes, and freshman and sophomore

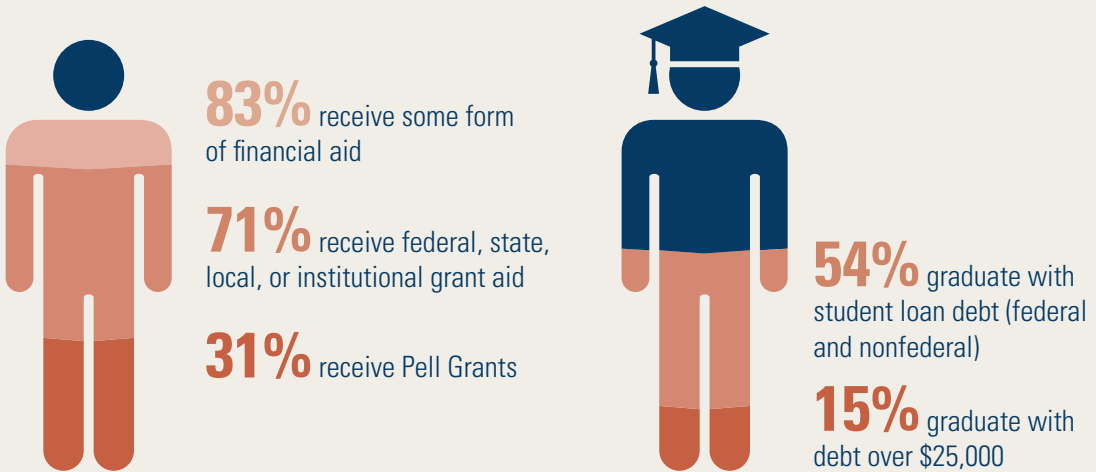
student researchers are enrolled in seminars about the culture of university research.

Undergraduates at **Pennsylvania State University** publish, perform, exhibit, and present their research projects at Penn State's annual **Undergraduate Exhibition**, while also sharing their work at national conferences and meetings. Conference travel funding helps students attend events, giving them critical opportunities for networking and professional development.

Posters at the Capitol celebrates the research and scholarly achievements of undergraduates from across the state of Tennessee. Students from the **University of Tennessee** and other state universities travel to Nashville to have lunch with legislators, meet the governor, and explain their various projects.

Section 4: Public Research Universities are Working to Maintain and Improve Access and Affordability

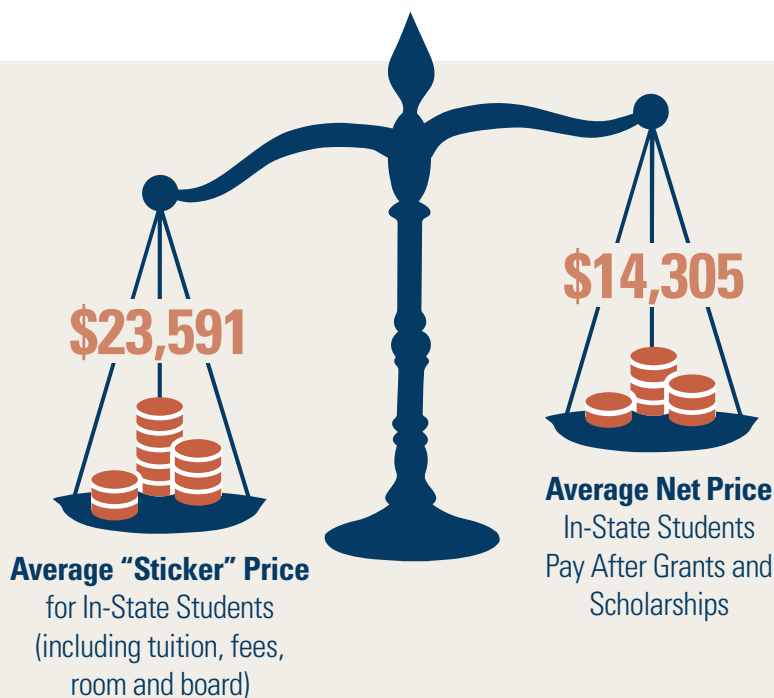
Financial Aid and Access for Undergraduates of the Class of 2013



Source: National Center for Education Statistics, IPEDS [Integrated Postsecondary Education Data System], U.S. Department of Education Institute of Education Sciences, <https://nces.ed.gov/ipeds/>.

The average price of tuition, room and board, and other on-campus fees at public research universities for in-state students is about \$24,000 per year. With financial aid, that amount is reduced on average to about \$14,000 per year.²⁷

The number of students at public research universities who receive federal Pell Grants, an indicator of the volume of students from low-income families, has increased by 8 percent over the past five years. Many states, university systems, and individual institutions have created their own affordability initiatives that target low- and middle-income students. In California, the Cal Grants Program lowers the cost of tuition to \$0 for students from families with household incomes at \$80,000 or below. The University of Delaware's Commitment to Delawareans guarantees to meet the full demonstrated financial need of all qualified residents who submit a FAFSA (Free Application for Federal Student Aid); Delaware hopes to ensure that no student will graduate with loans in excess of 25 percent of the cost of a four-year education. Moreover, low-income students at public research universities typically graduate at higher rates than their peers at other public colleges and universities and private for-profit institutions.²⁸



Source: National Center for Education Statistics, IPEDS [Integrated Postsecondary Education Data System], U.S. Department of Education Institute of Education Sciences, <https://nces.ed.gov/ipeds/>.

Recognizing that there are different paths to four-year degrees, many institutions also work closely with high school and community colleges to develop dual enrollment, joint admission, automatic admission, and transfer articulation policies (such as 2NAU at Northern Arizona University) that provide students with lower-cost options for transfer and graduation.

Tuition at public research universities often covers only one-third of the actual cost of a student's education.²⁹ Grants, state appropriations, endowment earnings and contributions, and philanthropy subsidize the remaining costs. Thus, as states have reduced higher education appropriations and enrollments have increased, universities have been forced to raise tuition. There has been a direct correlation between the reductions in state support and tuition increases even while taking into account the many cost-cutting measures individual institutions have employed.³⁰

About half (54 percent) of all undergraduates at public research universities take out loans to pay for their bachelor's degrees.³¹ Among them, the average debt at graduation is about \$25,000, or \$6,300 for each year of a four-year degree. Of those students who take out loans, 40 percent owe less than \$10,000 and nearly 70 percent owe less than \$25,000 at the time of graduation.³²

Section 5: Public Research Universities Value Responsible Spending

Public research universities have suffered massive budget cuts. State cuts have reduced total funding for public research universities by 20 percent per enrolled student over the past decade.³³ Forty-six of the fifty states cut support for higher education from 2008 to 2013, some by more than one-third. As doctoral degree-granting institutions, public research universities have less flexibility to absorb budget reductions than do large comprehensive universities. For example, comprehensive universities may be able to respond by increasing class sizes, while public research universities are prevented from doing so because graduate training requires intense faculty-student interaction. The education of graduate students is essential to the research mission and to the production of future faculty members, and therefore to the health of the entirety of higher education.

The main driver of tuition increases has been the loss of state appropriations, which have reduced per-student support by as much as 40 percent.³⁴ Tuition increases alone cannot make up the difference. It is a widely held public belief that the state supports public universities. But with state appropriations in many cases making up less than 20 percent of public research university budgets, and in some cases even less than 10 percent,³⁵ this is clearly a myth; new funding models are needed to increase resources.

Major Operating Expenditures at Public Research Universities by Function, 2013–2014



Source: National Center for Education Statistics, IPEDS [Integrated Postsecondary Education Data System], U.S. Department of Education Institute of Education Sciences, <https://nces.ed.gov/ipeds/>.

Public research universities have cut costs in recent years by:

- Reprioritizing investment around areas of excellence
- Adopting shared services strategies that consolidate human resources, purchasing, and other administrative functions to take advantage of economies of scale
- Engaging in strategic partnerships with other public research universities, research and industry leaders, and local and state government
- Redesigning benefits programs to increase eligibility requirements, higher deductibles, and extended vesting periods
- Discontinuing or realigning activities, programs, and practices that don't align with the most critical needs of the state and nation
- Reallocating resources to match changing enrollment patterns
- Conserving energy and cutting utility costs through the use of solar voltaic systems
- Restructuring administration to better match resources with academic needs
- Promoting entrepreneurial strategies for revenue generation
- The adoption of Responsibility Centered Management (RCM) budgeting, in which academic schools and colleges are responsible for managing their own direct revenue and expenses.

Many public research universities have lowered administrative and operational expenses by finding new efficiencies.

For example, between 2006 and 2009, the Arizona State System gained a cost savings of 38 percent by redesigning its course offerings.³⁶ Similarly, from 2010 to 2013, four-year universities in Missouri reduced costs by 30 percent through course redesigns in thirteen classes.³⁷ These findings are supported by the *U.S. News & World Report's* rankings of the most efficient colleges and universities, which are dominated by public research universities.³⁸

Conclusion

Public research universities have experienced a greater decline in state appropriations (as a percentage of operating revenue) than either community colleges or master's colleges or universities, threatening both the educational and research missions of these fundamental U.S. institutions. Most universities have instituted new programs to reduce costs, but years of dramatic budget cuts have left little room for austerity: public research universities increasingly are expected to serve more Americans with less funding. In response to this need, the Lincoln Project is developing new strategies for ensuring that public research universities continue to serve the nation as engines of innovation, growth, and opportunity for Americans of all backgrounds.

This is the first in a series of five publications that will examine the importance of our public research universities. Subsequent publications will include detailed overviews of challenges facing higher education funding at the state level; the current financial models of public research universities and how they are changing; and the myriad impacts of the research conducted at these institutions on people, the economy, and the nation. Ultimately, the Lincoln Project will offer substantive policy recommendations for sustaining these institutions and advancing their growth.

Endnotes

- 1 National Science Board, *Diminishing Funding and Rising Expectations: Trends and Challenges for Public Research Universities* (a companion to *Science and Engineering Indicators 2012*) (Arlington, Va.: National Science Foundation, 2012), <http://www.nsf.gov/nsb/sei/companion2/files/nsb1245.pdf>.
- 2 Additionally, sixty-one percent of entering freshmen come from the top quarter of their graduating high school class, and thirty-five percent come from the top fifth of their graduating high school class. See *U.S. News & World Report*, U.S. News College Compass (2015).
- 3 National Center for Education Statistics, “Digest of Education Statistics,” Table 303.10 “Total Fall Enrollment in Degree-Granting Postsecondary Institutions, by Attendance Status, Sex of Student, and Control of Institution: Selected Years, 1947 through 2023,” U.S. Department of Education Institute of Education Sciences, http://nces.ed.gov/programs/digest/d13/tables/dt13_303.10.asp.
- 4 For the purposes of this project, *public research universities* signify institutions that are Carnegie-classified as Very High Research Activity or High Research Activity as of 2014, are located in one of the fifty states, and educate undergraduate students. See National Center for Education Statistics, IPEDS [Integrated Postsecondary Education Data System], U.S. Department of Education Institute of Education Sciences, <https://nces.ed.gov/ipeds/>.
- 5 As of 2011, U.S. colleges and universities were conducting 55 percent of the nation’s basic research and 15 percent of all research done in the United States. See National Science Foundation, *Science and Engineering Indicators 2014*, <http://www.nsf.gov/statistics/seind14/index.cfm/chapter-4/c4h.htm>.
- 6 Anderson Economic Group, *Empowering Michigan: Seventh Annual Economic Impact Report of Michigan’s University Research Corridor* (East Lansing, Mich.: Anderson Economic Group, 2014), http://mispartanimpact.msu.edu/_files/pdf/urc-econimpact-report-2013.pdf.
- 7 National Center for Education Statistics, IPEDS; CareerOneStop, “State Profile: Largest Employers,” <http://www.careeronestop.org/>; and Infogroup, <http://www.infogroup.com/>.
- 8 Jonathan R. Cole, *The Great American University: Its Rise to Preeminence, Its Indispensable National Role, Why It Must Be Protected* (New York: PublicAffairs, 2009), 193–195.
- 9 For some examples of excellence in this area, see Association of Public & Land-grant Universities (APLU), Innovation and Economic Prosperity Universities Designation and Awards Program, <http://www.aplu.org/projects-and-initiatives/economic-development-and-community-engagement/innovation-and-economic-prosperity-universities-designation-and-awards-program/>.
- 10 National Center for Education Statistics, IPEDS.
- 11 *Ibid.*
- 12 Association of University Technology Managers, *AUTM Licensing Activity Survey FY2013* (Deerfield, Ill.: Association of University Technology Managers, 2014).
- 13 University of North Carolina, North Carolina Independent Colleges & Universities, and North Carolina Community Colleges, *Demonstrating the Collective Economic Value of North Carolina’s Higher Education Institutions* (February 2015), 7, http://www.northcarolina.edu/sites/default/files/documents/nche_mainreport_final_feb17.pdf.
- 14 The Economic Research Organization at the University of Hawai’i, *The Economic Impact of Astronomy in Hawai’i* (Honolulu: University of Hawai’i Economic Research Organization, 2014).
- 15 Alan W. Hodges, Thomas J. Stevens, Rodney L. Clouser, Julie Harrington, Martijn Niekus, and Keith Baker, *Economic Contributions of the State University System of Florida in Fiscal Year 2009–10* (March 8, 2012), <http://www.fred.ifas.ufl.edu/economic-impact-analysis/pdf/SUS-of-Florida-FY-2009-10.pdf>.
- 16 PitchBook, “The Top 50 Universities Producing VC-Backed Entrepreneurs,” *PitchBook Venture Capital Monthly*, August/September 2014, 5.
- 17 Further, one-quarter of all public research universities have retention rates of 90 percent or greater. See *U.S. News & World Report*, U.S. News College Compass (2015).
- 18 William G. Bowen, Matthew M. Chingos, Kelly A. Lack, and Thomas I. Nygren, *Interactive Learning Online at Public Universities: Evidence from Randomized Trials* (New York: Ithaca S+R, 2012), <http://www.sr.ithaka.org/sites/default/files/reports/sr-ithaka-interactive-learning-online-at-public-universities.pdf>.
- 19 Areas of national need as identified by the U.S. Department of Education’s Graduate Assistance in Areas of National Need Program include: Biological Sciences/Life Sciences, Chemistry, Computer and Information Sciences, Engineering, Foreign Languages and Literatures, Mathematics, Nursing, Physics, and Educational Evaluation, Research, and Statistics. See National Center for Education Statistics, IPEDS.
- 20 Krista M. Soria, Matt Johnson, and Alex Reinhard, “High-Impact Practices and College Students’ Development of Pluralistic Outcomes,” a paper presented at the International Leadership Association Conference in San Diego, California, on November 2, 2014.

- 21 Susan H. Russell, Mary P. Hancock, and James McCullough, "Benefits of Undergraduate Research Experiences," *Science* 316 (5824) (2007): 548–549.
- 22 Calculations total student living expenses, tuition, fees, and foregone income over four to six years. They then compare the incomes of college-educated professionals to the total cost of college. Average cost of attendance for public research universities based on Henry E. Brady, "What's the Problem with Higher Education in California?" notes from a presentation on "Higher Education Finance in California" given in Sacramento, California, on November 14, 2014; David H. Autor, "Skills, Education, and the Rise of Earnings Inequality among the 'Other 99 Percent,'" *Science* 344 (2014): 843–851; and Claudia Goldin and Lawrence F. Katz, *The Race between Education and Technology* (Cambridge, Mass.: Belknap Press, 2008).
- 23 National Center for Education Statistics, IPEDS.
- 24 Sandy Baum, Jennifer Ma, and Kathleen Payea, *Education Pays 2013: The Benefits of Higher Education for Individuals and Society* (New York: The College Board, 2013), <https://trends.collegeboard.org/sites/default/files/education-pays-2013-full-report.pdf>. See also Anthony P. Carnevale, Stephen J. Rose, and Ban Cheah, *The College Payoff: Education, Occupations, Lifetime Earnings* (Washington, D.C.: The Georgetown University Center on Education and Workforce, 2011), <https://cew.georgetown.edu/wp-content/uploads/2014/11/collegetpayoff-complete.pdf>.
- 25 The percentage of college graduates earning less than the median income of high school graduates dropped from 25 percent in 1960 to 17.7 percent in 2010. See PayScale, "2014–2015 PayScale College Salary Report," <http://www.payscale.com/college-salary-report>; and Matthew T. Lambert, *Privatization and the Public Good: Public Universities in the Balance* (Cambridge, Mass.: Harvard Education Press, 2014), 66–67.
- 26 Baum et al., *Education Pays 2013*, "Figure 1.2: Expected Lifetime Earnings Relative to High School Graduates, by Education Level," <http://trends.collegeboard.org/education-pays/figures-tables/lifetime-earnings-education-level>.
- 27 Note that the total cost of an education at the nation's leading public flagship universities is 42 percent the cost of an education at comparable private research universities. See National Center for Education Statistics, IPEDS.
- 28 Ibid.
- 29 Ibid.
- 30 Association of American Universities, "Facts about Higher Education Financing," <https://www.aau.edu/WorkArea/DownloadAsset.aspx?id=6818>.
- 31 National Center for Education Statistics, IPEDS; and The Institute for College Access & Success, College InSight, <http://www.college-insight.org>.
- 32 The College Board, "Distribution of Outstanding Education Debt Balances, 2013," <http://trends.collegeboard.org/student-aid/figures-tables/distribution-outstanding-education-debt-balances-2013>.
- 33 National Science Board, *Diminishing Funding and Rising Expectations*.
- 34 Center on Budget and Policy Priorities, *States are Still Funding Higher Education below Pre-Recession Levels* (Washington, D.C.: Center on Budget and Policy Priorities, 2014), <http://www.cbpp.org/files/5-1-14sfp.pdf>.
- 35 University of Virginia Office of Public Affairs, "Financing the University 101: The University of Virginia," <http://www.virginia.edu/finance101/state.html> (accessed April 6, 2015).
- 36 The National Center for Academic Transformation, "Arizona Board of Regents: Learner-Centered Education Course Redesign Initiative," http://www.thencat.org/States/AZ/ABOR_Savings.htm.
- 37 The National Center for Academic Transformation, "Missouri Course Redesign Initiative (2010–2013)," http://www.thencat.org/States/MO/MO_Savings.html.
- 38 Robert Morse and Diane Tolis, "Data Show Which Top-Ranked Colleges Operate Most Efficiently," *U.S. News & World Report*, January 15, 2015, <http://www.usnews.com/education/blogs/college-rankings-blog/2015/01/15/data-show-which-top-ranked-colleges-operate-most-efficiently>.

The Lincoln Project: Excellence and Access in Public Higher Education

Advisory Group

Robert Birgeneau, *Cochair*, University of California, Berkeley

Mary Sue Coleman, *Cochair*, University of Michigan

Lawrence S. Bacow, Tufts University

Gene D. Block, University of California, Los Angeles

Henry Brady, University of California, Berkeley

Phil Bredesen, former Governor of Tennessee

Nancy Cantor, Rutgers-Newark

John T. Casteen III, University of Virginia

Jonathan Cole, Columbia University

Gray Davis, former Governor of California

Patrick Doyle, Domino's

David B. Frohnmayer†, University of Oregon

E. Gordon Gee, The Ohio State University

Matthew Goldstein, The City University of New York

Donald Graham, Graham Holdings Company

Carl Guardino, Silicon Valley Leadership Group

Robert D. Haas, Levi Strauss & Co.

Jim Hackett, Steelcase

Ann Weaver Hart, University of Arizona

Michael Hout, New York University

Kay Bailey Hutchison, former United States Senator, Texas

Jim Leach, University of Iowa

Earl Lewis, The Andrew W. Mellon Foundation

Ann Marie Lipinski, Nieman Foundation for Journalism at Harvard University

William Powers, Jr., The University of Texas at Austin

John Rogers, Ariel Investments

Thomas Siebel, C3 Energy; First Virtual Group

Shirley M. Tilghman, Princeton University

Phyllis M. Wise, University of Illinois at Urbana-Champaign

Frank Yeary, CamberView Partners LLC; University of California, Berkeley

Pauline Yu, American Council of Learned Societies

Funders

The William and Flora Hewlett Foundation

The Spencer Foundation

Carnegie Corporation of New York

Thomas and Stacey Siebel Foundation

Robert and Colleen Haas

Project Staff

John Tessitore

Samantha Carney

Eliza Berg

Elissa Chin Lu, *Consultant*

Beata FitzPatrick, *Consultant*

† *Deceased*



AMERICAN ACADEMY
OF ARTS & SCIENCES