



UNIVERSITY  
OF  
CALIFORNIA

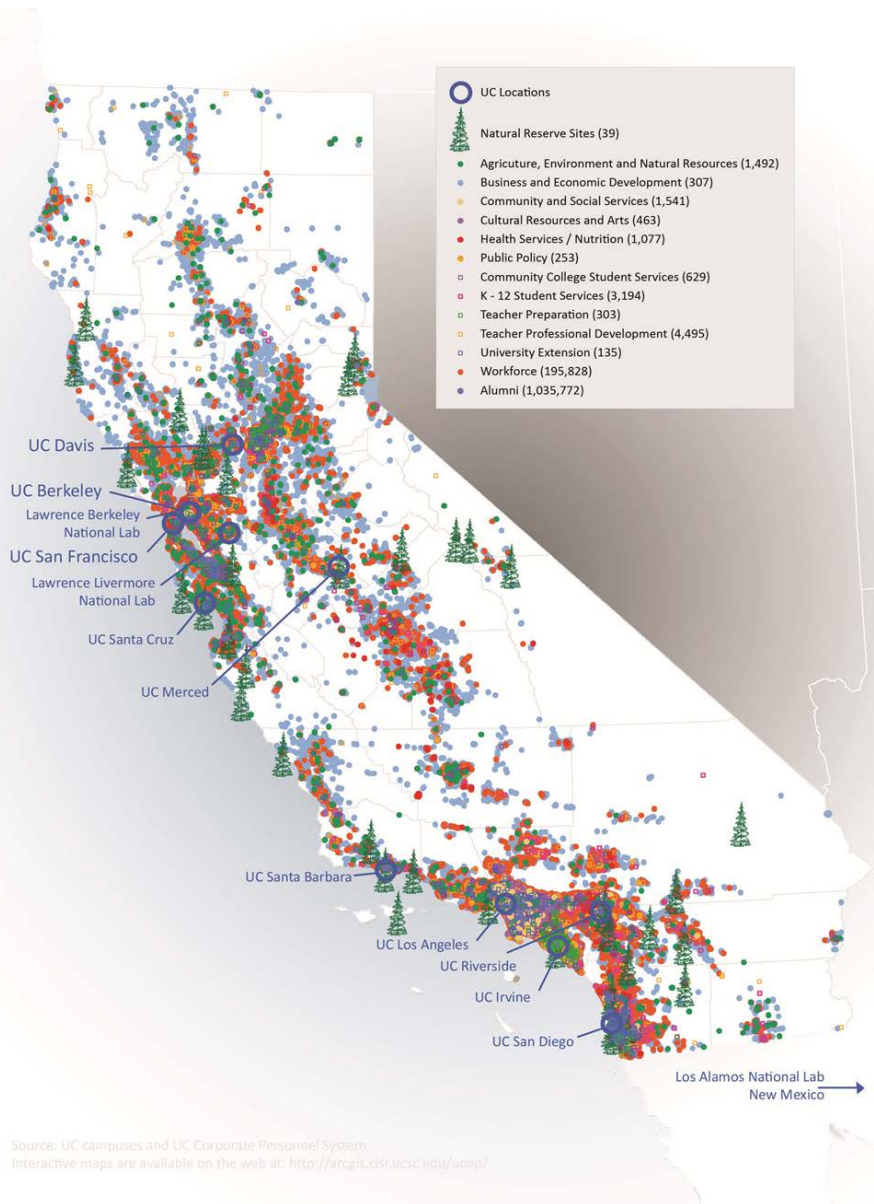


## Outputs of a Research University

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Pamela Brown, Vice President for Institutional  
Research and Academic Planning  
UC Office of the President

# Outputs of a research university



What we have and where we are going

- Research
- Teaching
- Socio-economic impact



# *PUBLIC TRANSIT*

UC research results in five new inventions every day—like this exoskeleton that helps people with spinal cord injuries to walk again.



## UC Research:

- \$4.3 billion spent in California, most from outside
- Over 12,500 active patents
- More than 840 startups based on UC patents since 1976 – about 85 percent based in California

# Research output: discovery, job creation and economic impact

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## UC RESEARCH IMPACTS IN CALIFORNIA

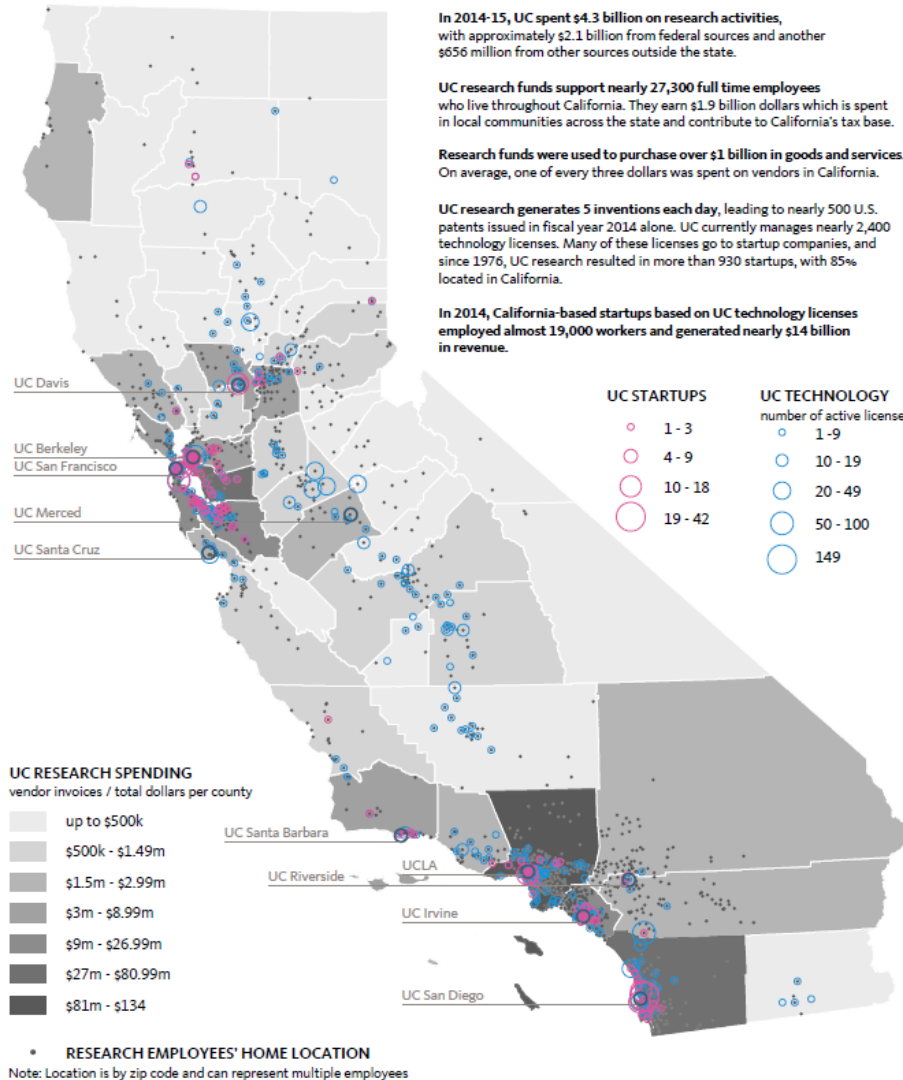
In 2014-15, UC spent \$4.3 billion on research activities, with approximately \$2.1 billion from federal sources and another \$656 million from other sources outside the state.

UC research funds support nearly 27,300 full time employees who live throughout California. They earn \$1.9 billion dollars which is spent in local communities across the state and contribute to California's tax base.

Research funds were used to purchase over \$1 billion in goods and services. On average, one of every three dollars was spent on vendors in California.

UC research generates 5 inventions each day, leading to nearly 500 U.S. patents issued in fiscal year 2014 alone. UC currently manages nearly 2,400 technology licenses. Many of these licenses go to startup companies, and since 1976, UC research resulted in more than 930 startups, with 85% located in California.

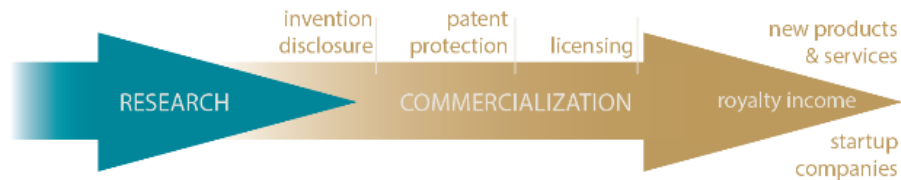
In 2014, California-based startups based on UC technology licenses employed almost 19,000 workers and generated nearly \$14 billion in revenue.



Illustrating economic impact of a research university by:

- Attracting dollars and talent into the state
- Creating jobs and employment opportunities
- Supporting local businesses through purchase of goods and services
- Demonstrating impact with innovation hubs, as well as beyond individual campus locations

# Research output: discovery, job creation and economic impact



Show contributions to the state and innovation economy through:

- Inventions, patents, licenses, and startup activity
- Support for critical economic industries (e.g., health care and agriculture)
- Research on major issues (e.g., carbon neutrality, precision medicine)

## Invention Disclosure Activity

Inventions Disclosed	1,745
Inventions Disclosed (with non-UC co-inventors)	320
Inventions Obligated under a Letter of Intent	257
Inventions Optioned	83
Plant Varieties Licensed	32
Utility Inventions Licensed	391
Inventions Earning Royalties/Fees	2,168

## Patent Protection Activity

US First Filings (provisional)	849
US First Filings (non-provisional)	18
US First Filings (all types)	867
US Secondary Filings (provisional)	194
US Secondary Filings (non-provisional)	695
US Secondary Filings (all types)	889
US Patents Issued	520
First Foreign Filings	418
Foreign Patents Issued	795

## Financial Activity

Income from Royalties and Fees	\$177,158,637
Payments to Joint Holders	(\$11,125,286)
Legal and Other Direct Expenses	(\$43,719,468)
Legal Expense Reimbursements	\$27,856,930
Income Available for Distribution	\$150,170,814
Inventor Shares	\$43,420,910
Research Allocation Share	\$8,345,800
General Fund Share	\$26,021,961
Total Research Expenditures (NSF survey)	\$6,485,431,448
Inventors Paid Shares	2,161

## Licensing Activity

Secrecy Agreements Issued	1,020
Letters of Intent Issued	215
Options Issued	53
Utility Licenses Issued (exclusive)	109
Utility Licenses Issued (non-exclusive)	77
Utility Licenses Issued (all types)	186
Plant Licenses Issued	53
Interinstitutional Agreements Issued	86
Start-Up Companies Formed	85

## Portfolio (fiscal year-end)

Total Active Inventions *	12,203
Total Inventions Obligated under a Letter of Intent	586
Total Inventions Optioned	233
Total Plant Varieties Licensed	117
Total Utility Inventions Licensed	2,487
Total Active US Patents *	4,621
Total Active Foreign Patents *	4,833
Total Active Options	151
Total Active Plant Licenses	666
Total Active Utility Licenses	1,749

\* For these metrics, UC System figures do not include LBNL.

Sources:

(1) UC Technology Commercialization Reports (<http://www.ucop.edu/innovation-alliances-services/innovation/innovation-impact/technology-commercialization-report.html>).

(2) NSF Higher Education Research and Development surveys (<http://www.nsf.gov/statistics/herd/>).

Fiscal Year

2014-15

Location

- UC System
- Berkeley
- Davis
- Irvine
- Los Angeles
- Merced
- Riverside
- San Diego
- San Francisco
- Santa Barbara
- Santa Cruz
- Berkeley Lab (LBNL)



# *PUBLIC DEFENDER*

Treatments developed at UC, like this hepatitis B vaccine, have saved millions of lives and improved millions more.

## UC Health:

- Educates half of California's medical students and residents
- Operates fourth largest health care delivery system
- Cares for patients of whom nearly 60 percent are covered by Medi-Cal, Medicare or uninsured
- Provides half of the state's organ transplants and one-fourth of extensive burn care
- Serves as state's Ebola health care centers



A low-angle photograph of a graduation ceremony. Graduates in black gowns are seen from the chest up, with their arms raised and hands open, celebrating. Numerous black mortarboard caps are captured in mid-air, scattered across the upper half of the frame. The background features a large, ornate brick building with Gothic-style architectural details like pointed arches and decorative stonework. The sky is a clear, bright blue.

# *PUBLIC WORKS*

More than 70 percent of UC graduates join the state's workforce directly after graduating, in fields spanning education, engineering, health care, and manufacturing.

# Teaching output: leadership, employment and earnings

## UC undergraduate alumni outcomes

- < Number of bachelor's degrees issued by UC is growing
- Many UC graduates go on to work in CA
- UC graduates work in a wide variety of industries
- Graduates double their earnings between 2 and 10
- There is great value in earning a college degree >

More than 70 percent of the most recent graduating cohort were found working in California after two years. The data are based on CA Employment Development Department data and exclude federal employees and those who are self-employed. About half of domestic nonresidents and one-fourth of international students were found employed in the state.

Years after graduation

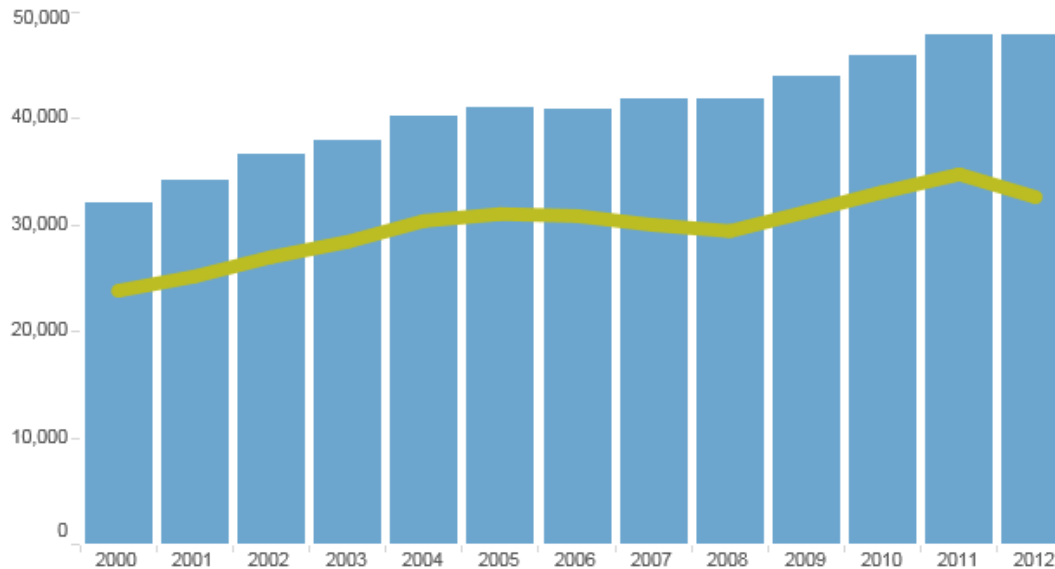
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- Earners
- Graduates

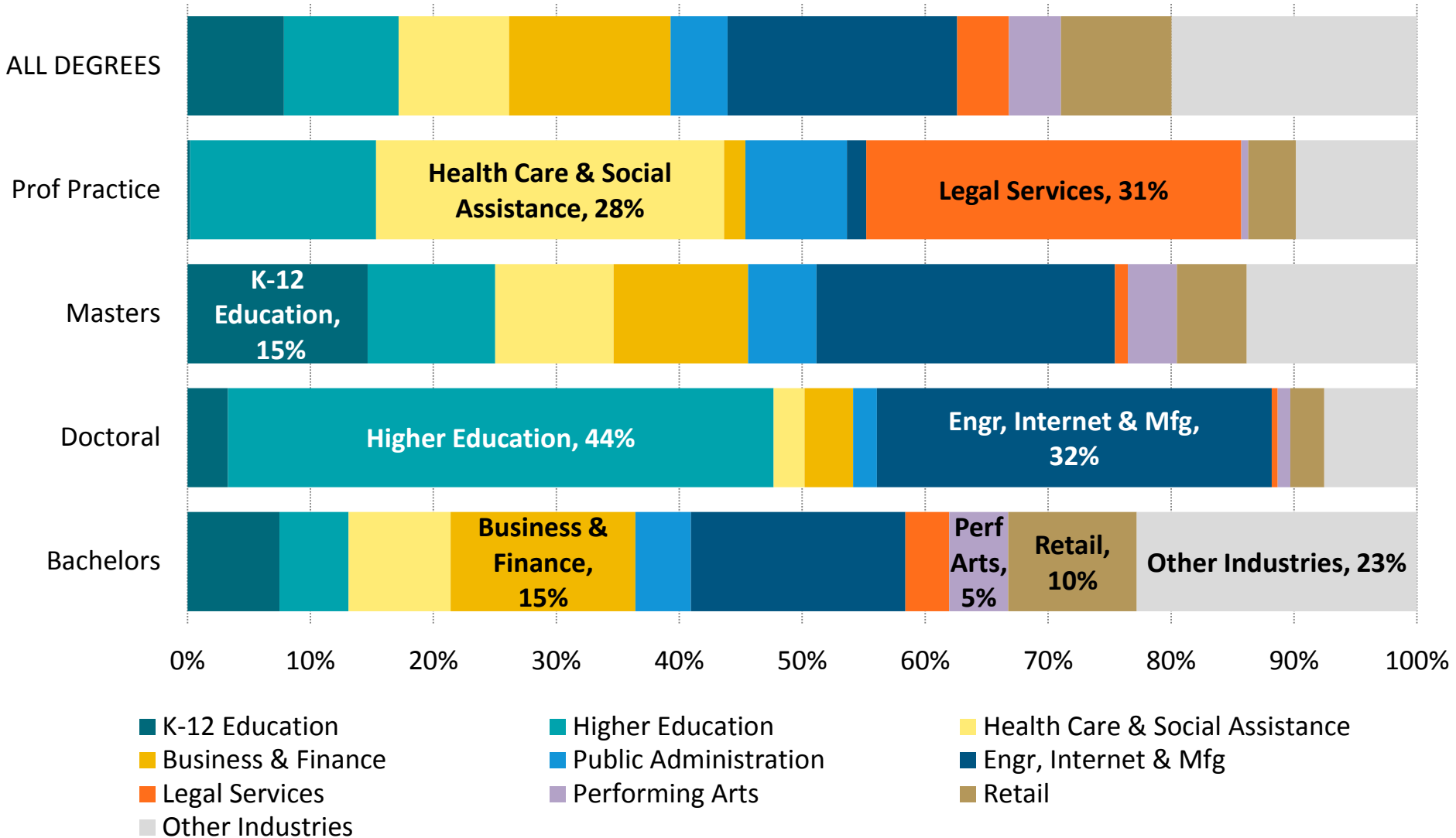
- (All)
- CA Resident
- NR Domestic
- International
- (All)
- Freshmen
- CA Comm Coll Transfers
- Other
- (All)
- Arts & Humanities
- Business
- Engineering & CS
- Life Sciences
- Physical Sciences
- Social Sciences
- Other Majors

Earners found in CA by year of graduation





# Teaching output: leadership, employment and earnings



# Teaching output: leadership, employment and earnings

## UC Doctoral Student/Alumni Honors

UC Grad Slam Winner



UC Riverside's Peter Bryley (chemical and environmental engineering Ph.D. student) is working to create smaller, more powerful microprocessors using graphene instead of silicon.

Forbes 30 Under 30



UC San Diego's Sarah Guthals (computer science, Ph.D., emphasis in education) co-founded [ThoughtStem](#), a company that develops programs to teach coding to children via Minecraft and other methods.

Pulitzer Prize Winner



UC Berkeley's Viet Thanh Nguyen (english Ph.D. and english & ethnic studies, BA) won for his debut novel, "The Sympathizer," a blackly humorous thriller and political commentary about a double-agent living in California after the Vietnam War.

## UC Undergraduate Alumni Honors

Forbes 30 Under 30



UC Santa Barbara's Andrew Yakub (Physics, BA) founded [Rayton Solar](#) which uses laser deposition technology make solar wafers that are 1/100<sup>th</sup> the thickness of standard wafers.

Forbes 30 Under 30



UCLA's Ann Wang (International Development Studies, BA) and Jessica Willison (Communication Studies, BA) co-founded [Enrou](#), an online marketplace for products made in US and developing communities in the world.

Pulitzer Prize Winner



UC Santa Cruz's Martha Mendoza (journalism and education major, BA) work, conducted over 18 months, resulted in the freeing of more than 2,000 slaves.



Chief Justice Tani Gorre Cantil-Sakauye, first Asian-Filipina American to serve.  
UC Davis BA and JD recipient

# Teaching output: leadership, employment and earnings



- IRAP effort to highlight the impact of UC in fields beyond STEM
- Highlights UC alumni who are:
  - Oscar nominees
  - Previous Oscar winners
  - Entertainment industry professionals
- Highlights economic impact of UC arts graduates working in arts and entertainment

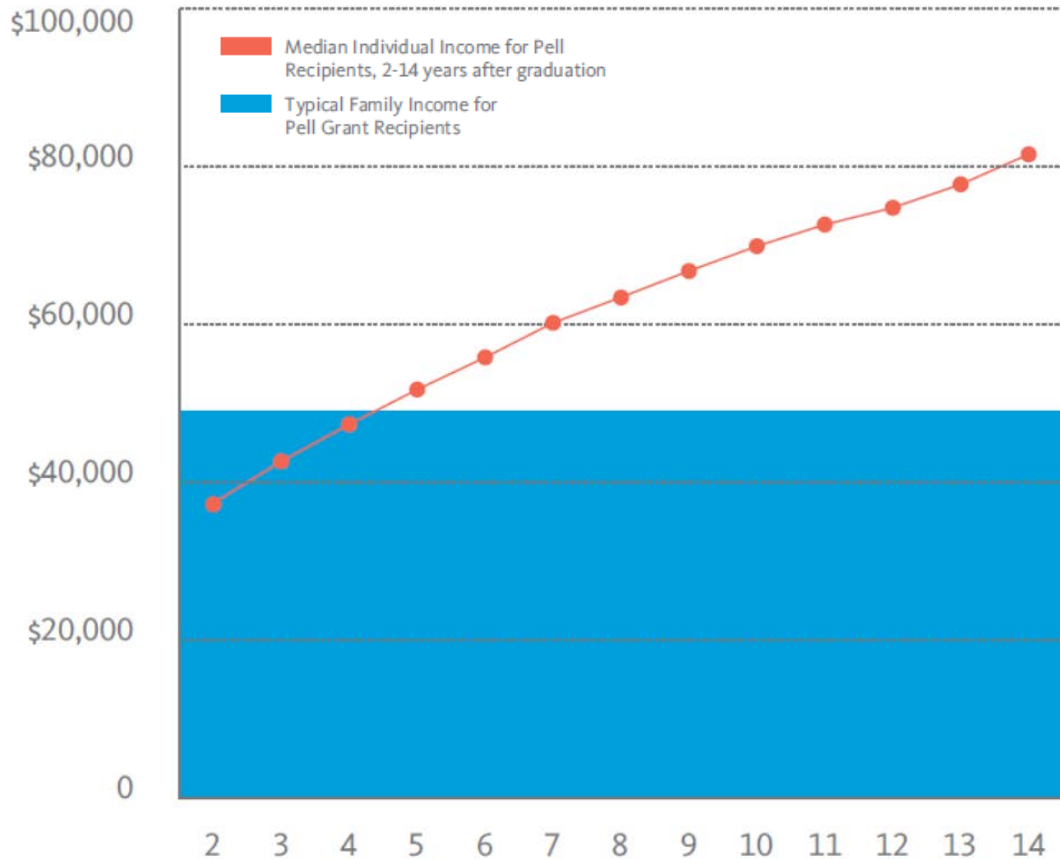




# *PUBLIC KNOWLEDGE*

Half of Californians in UC's freshmen class will be the first in their families to earn a college degree.

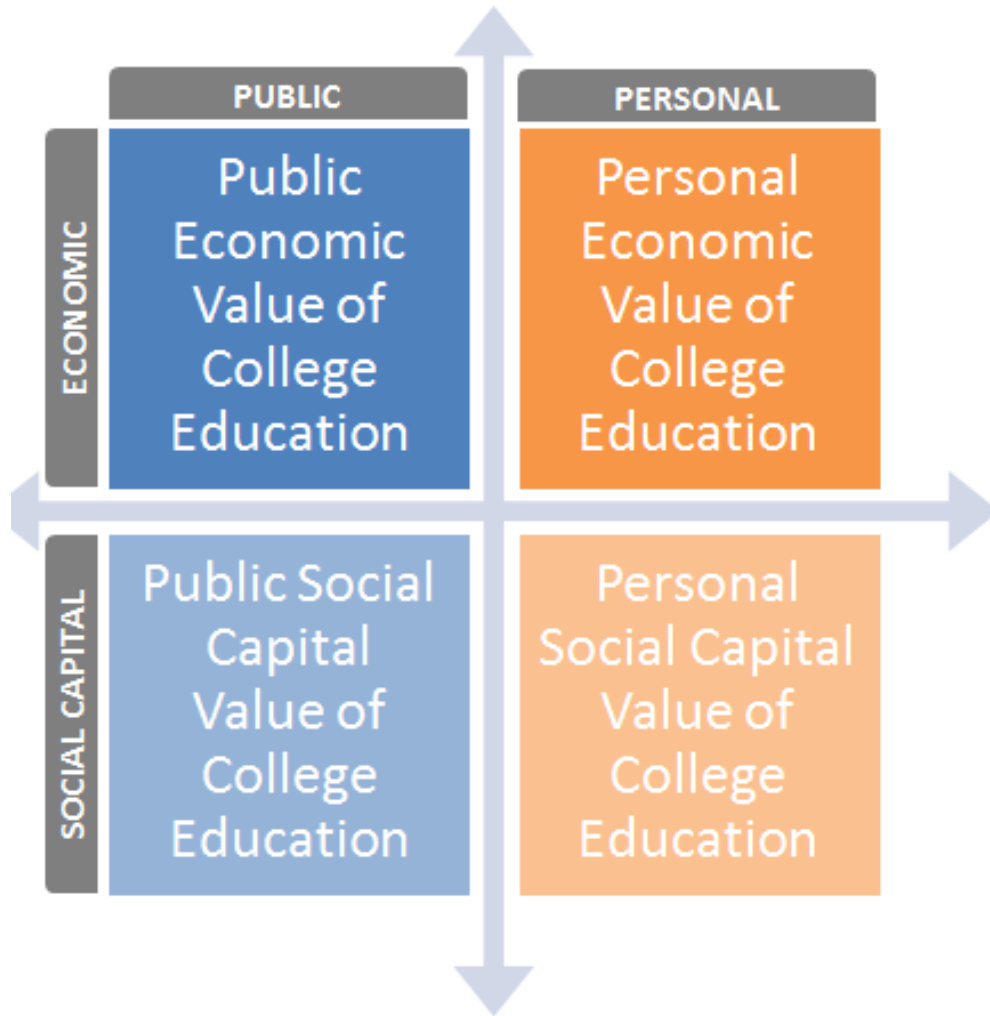
# Socio-economic impact: access, affordability and outcomes



UC undergraduate education at a glance:

- 42% first-generation students
- 40% Pell grant recipients
- 57% have all tuition paid by financial aid
- 45% graduate without loans
- Nearly 90% of freshman and transfer entrants earn their degree

# What's next – demonstrating value of a UC degree



**Public/Economic** quadrant (top left) represents outcomes related to the public good, defined primarily in financial terms. Examples: tax revenues, fulfillment of state workforce needs.

**Public/Social Capital** quadrant (bottom left) represents outcomes related to the public good, defined primarily in non-financial terms. Examples: civic engagement, social cohesion/appreciation of diversity.

**Personal/Economic** quadrant (top right) encompasses outcomes related to the personal (or individual) financial good. Examples: earnings, employment outcomes.

**Personal/Social Capital** quadrant (bottom right) includes outcomes that demonstrate the personal (or individual) value not defined in financial terms. Examples: learning experiences/skill development, health outcomes, career satisfaction.



# What's next – expanding efforts to illustrate local economic impact



## University of California: Impact in the North State Region

### Educating local residents at all 10 UC campuses

Over the last five years, almost 1,200 north state region residents enrolled at the University of California. These undergraduate and graduate students are enrolled at all ten UC campuses. UC Davis, known for its agricultural and veterinary science programs, is the most popular.

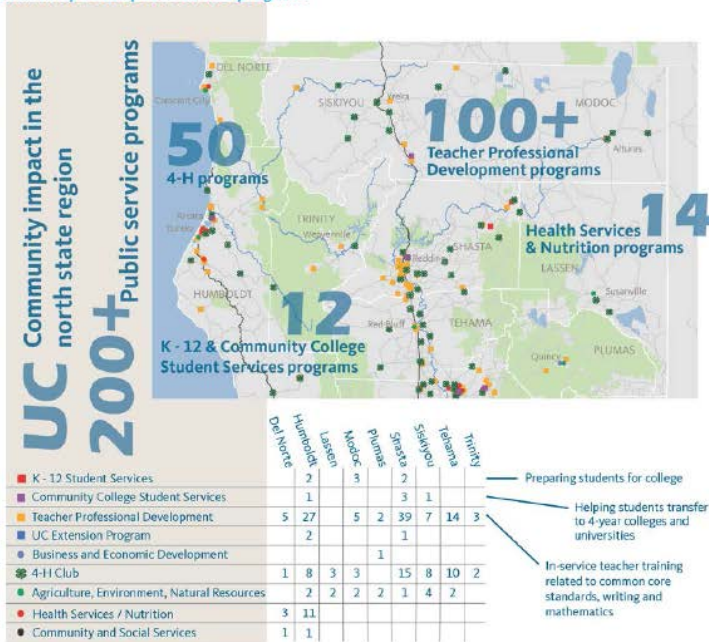
### Transfers from selected regional community colleges

	2011-2015 new UC enrollment
Shasta College, Redding	218
College Of The Redwoods, Eureka	36
College Of The Siskiyous, Weed	17

### Freshman from selected regional high schools

	2011-2015 new UC enrollment
Shasta High School, Redding	74
Arcata High School, Arcata	69
University Preparatory School, Redding	55
Foothill High School, Palo Cedro	54
Eureka Senior High School, Eureka	47
Red Bluff High School, Red Bluff	46
West Valley High School, Cottonwood	39
Enterprise High School, Redding	34
Mount Shasta High School, Mount Shasta	29
McKinleyville High School, McKinleyville	25
Northcoast Prep & Perf Arts Acad, Arcata	25

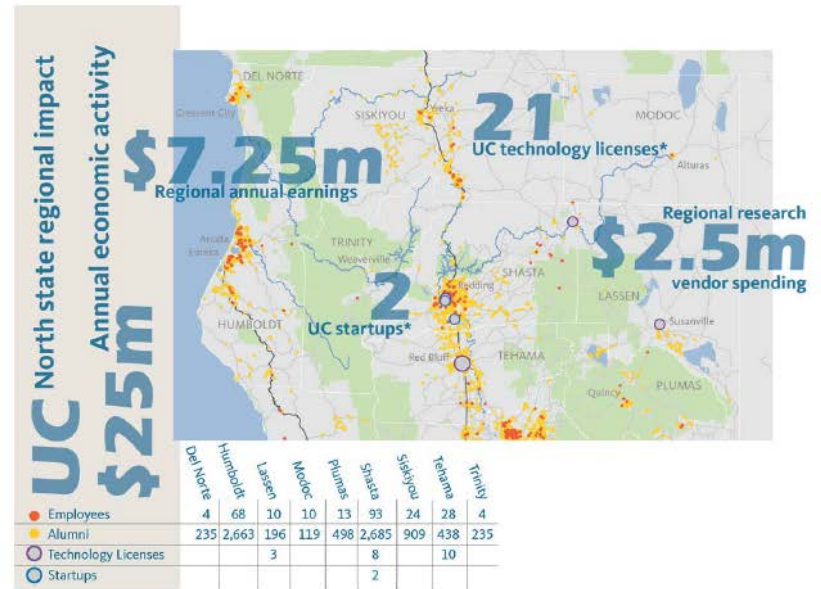
### UC's community-based public service programs



## University of California: Impact in the North State Region

### Impacting communities through economic activity

University operations generate well over \$25 million in annual economic activity with 10% of that number contributed by UC research funds in purchasing local goods and services even though the region is not home to a UC campus. In addition, nearly 8,000 alumni and retirees call the north state region home.



There are over 20 technology licenses which allow local businesses, primarily nursery operations, permission to develop and commercialize a UC technology. In addition, there are two startup businesses in the north state that developed through commercializing UC technology.

To learn more about the University of California, visit these websites:

- UC Information Center: <http://universityofcalifornia.edu/infocenter>
- UC in California: an interactive map: <http://arcgis.cisr.ucsc.edu/ucop/>
- UC News: <http://universityofcalifornia.edu/news>