

## CHAPTER TEN



## Public Service

Isaí Ambrosio, the program director of the Davenport Resource Service Center (DRSC), has been named the inaugural activist-in-residence of UC Santa Cruz's Research Center for the Americas (RCA).

"For me, activism is about being proactive," said Ambrosio. "Here in Davenport, we have to be proactive. We have to go out and talk to people."

The residency is the brainchild of RCA Director Sylvanna Falcón, an associate professor of Latin American and Latino studies, who envisions it as a way to forge stronger ties between the University and the community.

"We were looking for people with demonstrated leadership in nonprofit and community-serving organizations, and Isaí really stood out to the selection committee," she said.

"He has made a deep personal and professional commitment to social change and social justice in North County. He will be a great partner and looks forward to meeting with students, faculty, and staff."

# PUBLIC SERVICE

## Part of the UC mission

Along with teaching and research, UC contributes to the well-being of the state's population and economic growth through its public service efforts. UC's impact goes well beyond its on-campus activities. UC has a significant presence in nearly every community throughout California.

Educational outreach forms a crucial part of UC's service to the state, including a network of world-class museums, libraries, herbaria, and other facilities open to the public for shared learning. Every UC campus administers hundreds or thousands of community-based programs across a range of foci, from community and social services to teacher professional development and K–12 student services.

The University exhibits a steadfast commitment to public service in part through support of sustainable agriculture, environmental stewardship, healthy families, and education. The Division of Agriculture and Natural Resources (ANR), the UC Natural Reserve System, the community-based programs of the Division of Diversity and Engagement, and all ten campuses are highlighted in this chapter.

## UC Agriculture and Natural Resources

### UC's land-grant history

The Morrill Land-Grant Acts emphasized that the role of the University is to develop “useful and practical information ... and to promote scientific investigations and experiments.” The Acts created a federal-state partnership for agricultural research and technology transfer. The University of California was chartered as California's land-grant university. Subsequently, the Hatch Act of 1887 established state agricultural experiment stations. In 1914, the Smith-Lever Act established Cooperative Extension (CE) services to extend university research through outreach and education. UC's Division of Agriculture and Natural Resources is UC's land-grant arm. State legislation incorporated county governments to become the third legal partner, such that today, UC ANR represents a three-way partnership with federal, state, and county governments.

UC ANR personnel and programs deliver resources from the UC system to Californians — even if there is no campus nearby. UC ANR forms teams, across UC and beyond, to develop innovative, multidisciplinary, science-based solutions to complex issues. CE is also the education and outreach arm, serving all 58 California counties by bringing UC research to local communities. UC ANR's mission is to engage UC with the people of California to achieve innovation in research and education that supports:

- sustainable, safe, and nutritious food production and delivery
- economic success in a global economy
- a sustainable, healthy, and productive environment
- science literacy and youth development programs

### UC ANR statewide network

UC ANR operates a statewide network of researchers and educators dedicated to the development and application of knowledge to address local agricultural, environmental, and health issues. This network of local Cooperative Extension (CE) sites and Research and Extension Centers (RECs) is often the face of the University to Californians to those with no other connection to the University. In 2018, 175 Cooperative Extension Advisors were conducting research, outreach, and education from local CE offices. Nine statewide RECs provide education for the public and

places for researchers to conduct field experiments. Approximately 565 affiliated Agricultural Experiment Station (AES) researchers are located at three campuses, and 115 CE Specialists are located at five campuses, RECs, and county offices. UC ANR maintains and enhances connections that engage UC with the people of California through more than 3,000 local partnership programs (10.1.1).

In 2018, AES and CE published over 1,700 peer-reviewed publications and 340 popular articles, and developed 18 patents. CE programs, including volunteers, had close to 770,000 educational exchanges with adults and youth statewide. CE educators and volunteers disseminated science-based information through over 45,000 community-based short courses, classes, workshops, demonstrations, and field days across the state.

CE academics conducted over 680 media programs and interviews. For example, CE provided objective information on biotechnology for the documentary film *Food Evolution*. There have been more than 740 screenings at venues around the world to a variety of audiences, including the National Academies of Science and the Food and Agricultural Organization of the United Nations. The film has garnered critical acclaim from the New York Times, Los Angeles Times, and Forbes.

UC ANR also provided science-based information to policy and decision makers through 685 policy engagement activities. For example, academic expertise about the current status and considerations for testing lead in drinking water informed the passage of California legislation (AB 2370), which will require lead testing in childcare facilities and allocate state budget funds for implementation and remediation of any lead contamination.

UC ANR's statewide California Naturalist Program promotes stewardship of the state's natural resources through education and service. The program develops the curriculum, trains partner organizations, and ensures quality through monitoring and evaluation. Since its inception in 2012, the program has worked with over 45 partner organizations and certified over 2,700 graduates as California Naturalists, who volunteer in support of conservation and restoration efforts on over 700,000 acres.

UC ANR's UC Master Gardener Program extends to the public research-based information about food gardening and sustainable landscaping, including green waste reduction, pest management, water conservation, and pollinator-friendly gardens. There are over 6,000 UC Master Gardener volunteers in 50 California counties. In 2018, they donated over 530,000 public service hours with an estimated value of \$15.6 million. Participants reported adopting and improving gardening practices that protect natural resources and promote healthy people and communities. For example, they improved over two million square feet of pollinator gardens and habitat, which increases yields in home food gardens and supports local agricultural productivity.

UC ANR's statewide 4-H Youth Development Program uses a positive youth development framework and promotes experiential, inquiry-based science learning. UC 4-H annually engages over 140,000 youth aged 5–19 to help them reach their full potential through working and learning in partnership with over 14,000 caring adult volunteers. Over the past three years, overall enrollment has increased 77 percent and enrollment of Latino(a) participants has increased 161 percent. 4-H youth report many benefits, including 88 percent who have developed science skills and abilities, and 83 percent who have participated in a community service project. The California Juntos 4-H Program bridges the gap between high school and higher education for Latino(a) youth. At the end of a three-day Academy focused on science, technology, engineering, and mathematics (STEM) education and careers, 95 percent of the Latino(a) participants indicated they are planning to attend college, compared to 45 percent on the first day. The 4-H program had the largest growth in STEM projects, with almost 170,000 youth projects on robotics, rocketry, environmental science, agri-science, biotechnology, and computer science. The 4-H STEM programs instill curiosity, critical thinking, and scientific literacy — skills needed in tomorrow's science leaders and workforce. Seventy-two percent of the 4-H youth in grades 8–12 want a job that involves science.

UC ANR manages two statewide nutrition education programs: the California Expanded Food and Nutrition Program (EFNEP) in 24 counties and the UC CalFresh Program in 31 counties. EFNEP delivers research-based nutrition education to limited-resource families with young children to improve healthy lifestyle choices. In 2018, EFNEP reached over 51,000 adults and youth. Evaluations of adult participants indicate 95 percent improved at least one diet quality practice, and 83 percent improved one or more food safety skills. The UC CalFresh Program involves the USDA, California Department of Social Services, and UC Cooperative Extension. The program serves persons eligible for the federal Supplemental Nutrition Assistance Program (SNAP-Ed). In 2018, in-person education was provided to 110,000 participants. Evaluation findings showed individuals' gains in healthy eating behaviors, and organizations reported policy, system, or environmental improvements, such as in school lunchrooms, farm-to-school programs, and school gardens.

### The scope of UC ANR impact

California is a national and global leader in food production and agricultural exports, which are affected by social, regulatory, economic, and environmental challenges. Despite the state's robust agricultural sector, one out of every eight Californians does not know where their next meal will come from. UC ANR lives and works in communities, conducting research and communicating findings through demonstrations and educational programs to improve food quality, quantity, safety, and access. As a result, growers increased yields while reducing inputs, improving efficiency and profitability, and contributing to the state's economic prosperity. In addition, UC ANR participants demonstrated learning and behavior changes related to food resource management and informed food policies, which can lead to increased access to affordable, safe, and healthy food.

The state's natural resources face threats from climate change, urban sprawl, air and water pollution, and invasive species. Rangelands and forests are experiencing the effects of wildfires and droughts. UC ANR translates research into actionable management strategies to protect the environment and increase the long-term viability of farming, ranching, and forestry in California, and to help communities deal with growing risks from fires and droughts. As a result of UC ANR outreach and education, landowners adopted recommended practices for grazing and rangeland management, water conservation and preserving water quality, and sustainable use of forest and wildland resources. In response to the state's past two years of catastrophic wildfires, UC ANR conducted fire hazard research, some of which was incorporated into CAL FIRE's protocol. Outreach and education on fire resiliency has been used in community planning and policies. In this way, program outcomes contribute to increased ecological sustainability and help California realize the many benefits of the state's rich and diverse natural resources.

California's rapid population growth increases pressure on community resources, presenting challenges to health and safety. UC ANR produces tools, programs, and policy-relevant research that result in healthy living for individuals and communities. Program participants adopted healthy lifestyle practices and communities gained improved access to green spaces and healthy foods. In addition, UC ANR childcare research findings informed nutrition policy at both federal and state levels, and resulted in revisions to the federal Child and Adult Care Food Program nutrition standards. Benefits also include safe drinking water, clean air, and reduced exposure to pesticides. Collectively, these efforts contribute to a healthier California, improving public health and reducing healthcare costs.

### UC Natural Reserve System

The UC Natural Reserve System (NRS) is a network of protected natural areas throughout California. These lands are managed for research, teaching, and public service, and are a major component of UC's environmental stewardship. Its 41 reserves, covering more than 756,000 acres, make it the largest university-administered reserve system in the world (10.2.1).

As one of four trustee agencies recognized under the California Environmental Quality Act, the University of California holds reserve natural resources in trust for the people of the State of California. Reserve managers protect endangered plants and animals, restore native habitats, and control invasive species. Reserves also serve the public by holding lecture series, guided hikes, and other community events; lending scientific expertise to conservation initiatives; and hosting tens of thousands of California schoolchildren on field trips.

Most major state ecosystems are represented in the NRS, from coastal tidepools to inland deserts, oak savannas to offshore islands, and wetlands to Sierra Nevada forests. Reserves also serve as gateways to more than one million acres of public lands. NRS reserves include lands purchased by the University, donated by private landowners, and made available to the reserve system via partnerships with state and national parks, land trusts, and government agencies. Reserve amenities such as classrooms, lodging, laboratories, and internet access attract tens of thousands of users each year. These include researchers, students taking university courses, schoolchildren, and the general public. Those who seek to understand the workings of natural California come to the NRS to take classes, develop field skills, and conduct research.

More than 150 undergraduate courses across the UC system include visits to NRS reserves each year. Topics of study range from botany to zoology, archaeology to environmental planning, public health to the performing and visual arts. Scientists flock to reserves because reserve lands are protected in perpetuity. They feel comfortable launching long-term studies within reserve boundaries. Work at reserves produced more than 2,900 peer-reviewed papers, book chapters, and books between 2010 and 2018.

In 2019, Point Reyes Field Station and Lassen Field Station joined the NRS as partnership reserves, which are jointly managed with the National Park Service at Point Reyes National Seashore and Lassen Volcanic National Park, respectively.

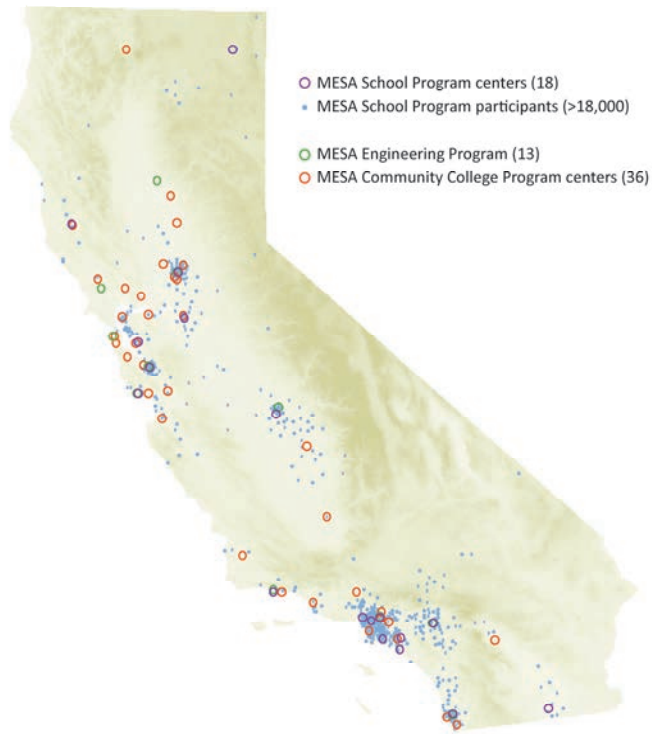
More than fifty years after its inception, the need for the NRS has never been greater. Climate change, pollution, extinctions, and invasive species are fraying the fabric upon which life on Earth depends. By supporting university-level teaching, research and public service, the NRS contributes to the understanding and wise stewardship of the Earth.

## Educational partnerships

For nearly 50 years, the University of California's Student Academic Preparation and Educational Partnerships (SAPEP) programs have helped prepare California students for higher education (10.3.1). Program activities are centered on student academic preparation, community college articulation support, school and community partnerships, and online and technology-assisted services. SAPEP programs served nearly 180,000 K–12 students at more than 1,400 public schools and more than 27,000 students at all 114 California community colleges in 2017–18.

The goal is to promote achievement by supporting academic preparation and college readiness. Programs include the Early Academic Outreach Program (EAOP), which focuses on “a–g” course completion (a prerequisite for admission to UC and CSU); K–20 Regional Intersegmental Alliances (aka P–20), creating ties between campuses, schools, local communities, and business organizations; The Puente Project, focusing on college-preparatory English skill development; Transfer Prep, focusing on community college transfer support; and Mathematics, Engineering, Science Achievement (MESA), focusing on STEM (science, technology, engineering, and mathematics) skills development.





The Mathematics, Engineering, Science Achievement (MESA) program integrates UC's core missions of teaching and public service by focusing on the academic preparation of students at K–12 schools, community colleges and four-year universities. Through its three components — the MESA Schools Program (MSP), the MESA Community College Program (MCCP), and the MESA Engineering Program (MEP) — MESA serves more than 25,000 California students annually.

MESA Schools Program (MSP) centers are housed in 18 locations and serve more than 18,000 students at about 400 K–12 schools. Centers offer classes that reinforce math and science content standards. MESA activities include workshops aimed at strengthening study skills and monitoring progress.

The MESA Community College Program (MCCP) manages 36 centers at community

colleges, serving around 4,000 students annually. These centers provide academic excellence workshops, orientation courses, academic advising, and counseling activities to help community college students transfer to a four-year university in a timely manner.

The MESA Engineering Program (MEP) operates 13 centers located in public (UC and CSU) and private universities across the state. Serving about 3,000 students annually, these centers assist college students in attaining four-year degrees in engineering and computer science by providing tutoring and academic skills workshops. In partnership with local industry leaders, MEP centers also provide career and professional development opportunities for students. In addition to the activities UC undertakes to strengthen K–12 and community college students academically, UC plays an important role in preparing California's teacher workforce. UC's Teacher Education Programs prepare teacher candidates to engage students in rigorous, relevant, and inquiry-based educational experiences. Located at eight UC campuses, Teacher Education Programs recruit, prepare, and support educators who are committed to academic excellence, equity, and integrity, and to cultivating the highest levels of achievement and opportunity for all students.

UC also provides ongoing support to educators already in the workforce through professional development programs. For example, the California Subject Matter Project (CSMP) is a network of nine discipline-based statewide projects, providing more than 2,000 professional development events for educators at more than 10,000 schools each year. CSMP professional learning opportunities are aligned with state-adopted standards and are collaboratively designed by K–12 and university educators to enhance learning for all students (10.3.2).

## Social and economic impact

Including the programs of ANR, the Natural Reserve System, and UC's educational partnerships mentioned above, the University of California administers more than 20,000 community-based programs across the state. Because the well-being of every California citizen and community is important, all campuses sponsor and manage programs far from their locations. For example, UC San Diego, near the southern border of California, runs clinical internship sites in Crescent City and other communities near the northern border of California; UC Davis, in the Central Valley, runs the Oiled Wildlife Care Network in Morro Beach on the central coast; and UC Santa Barbara, on the California Coast runs the Outdoor Science Education Program in several locations on the east side of the Sierra Nevada range. All of UC's community-based programs may be discovered and explored at: [ucal.us/maps](https://ucal.us/maps).

### UC's social impact

Through community and social services programs and cultural resources and arts programs, UC administers internship and field study programs that connect students and alumni with their communities; volunteer centers working on issues such as domestic violence, fair housing advocacy, and employment training; arts education and outreach programs that teach art, dance, drama, music, and digital arts in the community (10.4.1).

### UC's economic impact

Through business and economic development programs and public policy programs, UC facilitates internships offered in partnership with local companies, where students gain both UC credits and professional experience. Other programs bring local high-tech and green-tech companies together with motivated individuals to foster student participation in community economic development (10.4.1).

As California's economy becomes increasingly dependent on highly educated workers, the role of the University of California in training the state's future workforce becomes more vital. Industries relying on skilled workers in the STEM fields represent a major component of California's economy. UC awards half of the state's bachelor's degrees in STEM fields.

More than 1.2 million UC alumni live and work in California (10.4.2). They are leaders, volunteers, and contributors to the vitality of its communities, businesses, and culture. UC's operations also add significantly to the state's economy. With approximately 210,000 employees, UC is California's third-largest employer (10.4.3). With expenditures of about \$29.5 billion, much in the form of salaries, wages, and benefits, UC annually generates more than \$46 billion in economic activity in California. UC contributes more than \$32 billion to the gross state product and attracts over \$8 billion in annual funding from outside the state. True to its land-grant mission, the UC system touches many aspects of life in California. The UC public service mission has evolved in tandem with the changing needs of our state and local communities, and has developed programs and partnerships that improve the lives of all Californians.

### For more information

UC in California interactive map, includes California counties, regions, campuses, UC system, and California elected representative districts: [ucal.us/maps](http://ucal.us/maps)

Division of Agriculture and Natural Resources: [ucanr.edu](http://ucanr.edu)

Natural Reserve System: [ucnrs.org](http://ucnrs.org)

MESA Programs: [mesa.ucop.edu](http://mesa.ucop.edu)

CalTeach: [calteach.universityofcalifornia.edu](http://calteach.universityofcalifornia.edu)

Early Academic Outreach Program (EAOP): [eaop.org](http://eaop.org)

The Puente Project: [puente.berkeley.edu](http://puente.berkeley.edu)

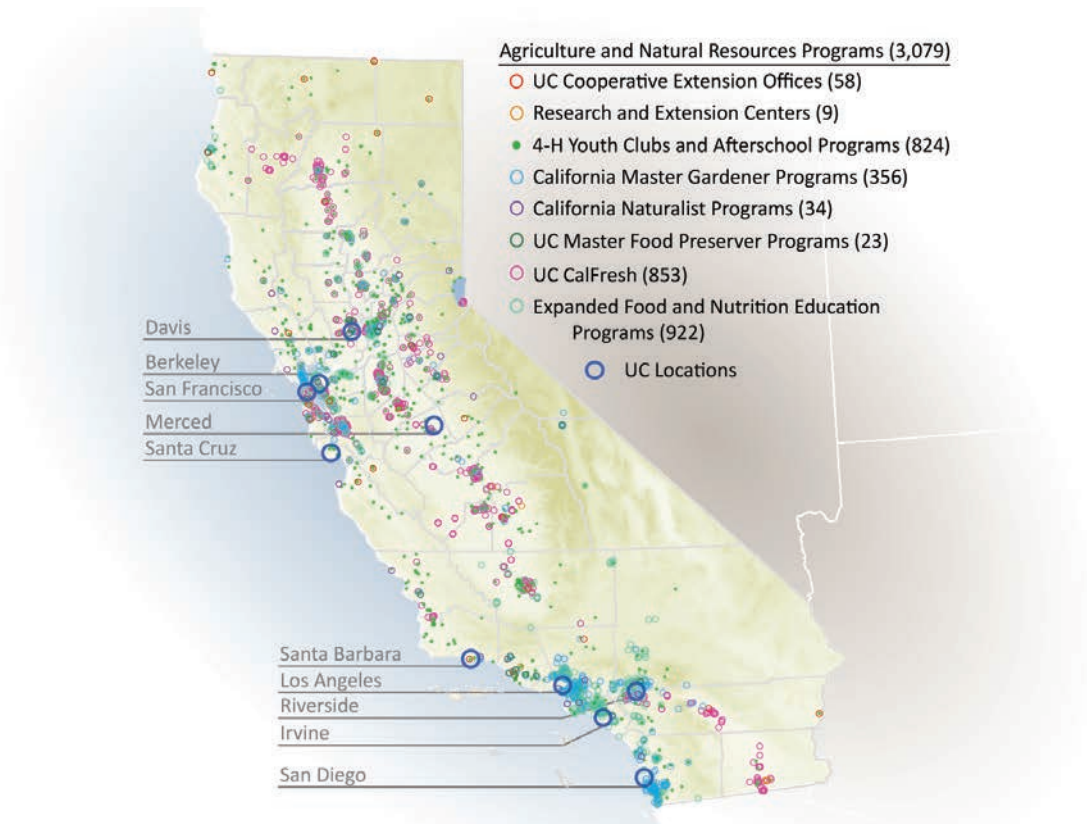
California Subject Matter Project: [csmp.ucop.edu](http://csmp.ucop.edu)



## 10.1 AGRICULTURE AND NATURAL RESOURCES

**UC's Division of Agriculture and Natural Resources brings the power of UC research and education to local communities across California.**

### 10.1.1 UC Division of Agriculture and Natural Resources programs



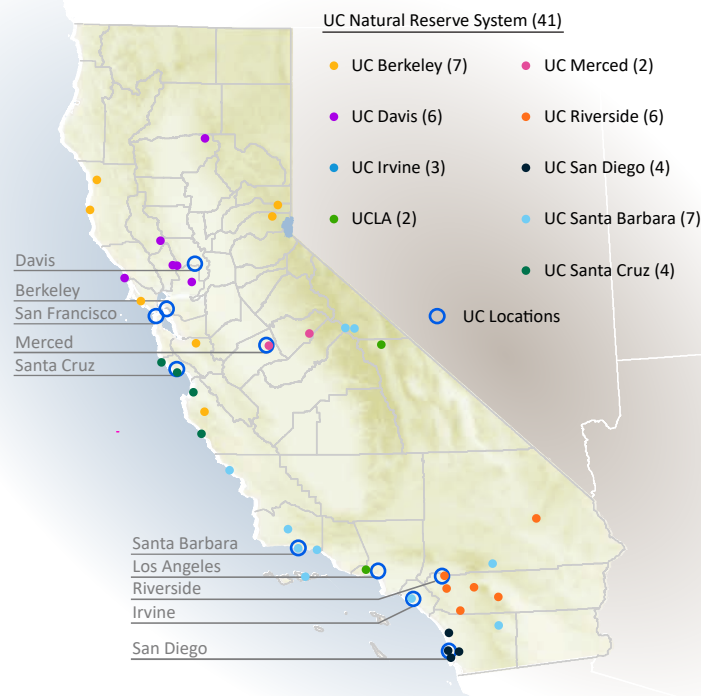
Source: UC campuses

UC's land-grant arm, Agriculture and Natural Resources (ANR), operates several of California's most important agriculture and nutrition awareness and education programs, including Cooperative Extension, Research and Extension Centers, the 4-H youth development statewide program, the California Master Gardener program, the California Naturalist program, the UC Master Food Preservers program, UC CalFresh, and Expanded Food and Nutrition Education programs.

## 10.2 NATURAL RESERVE SYSTEM

The UC Natural Reserve System covers more than 750,000 acres and represents most of California's major ecosystems.

### 10.2.1 UC Natural Reserve System



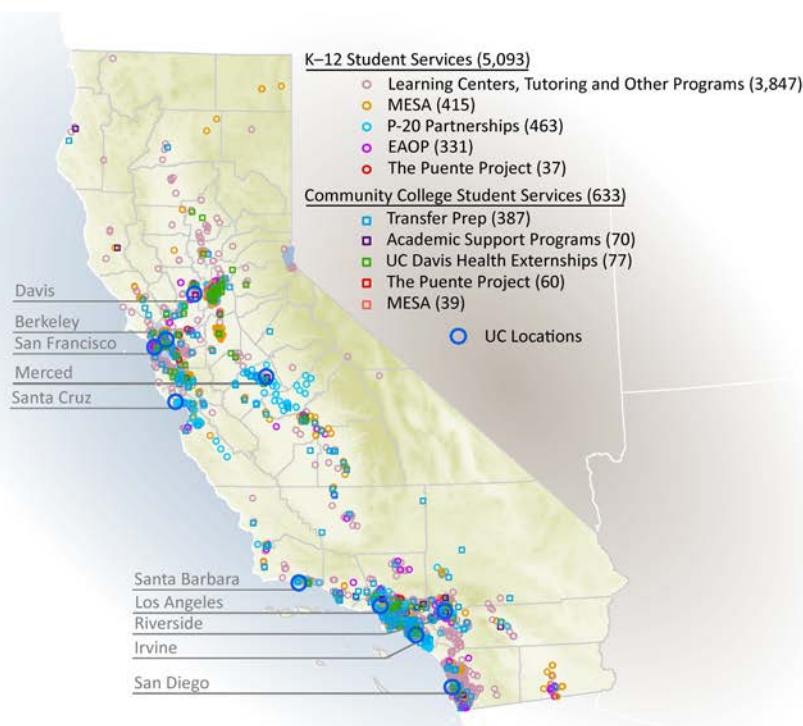
Source: UC campuses

As a major component of UC's environmental stewardship role, the UC Natural Reserve System (NRS) manages a network of protected natural areas throughout California. Its 41 sites include more than 756,000 acres, making it the largest university-administered reserve system in the world.

These lands provide undisturbed environments to conduct research, enhance student educational experiences, and provide sites for public service programs. In 2019, Point Reyes Field Station and Lassen Field Station joined the NRS as partnership reserves, which are jointly managed with the National Park Service at Point Reyes National Seashore and Lassen Volcanic National Park, respectively.

## UC programs improve academic skills of K–12 and community college students across California.

### 10.3.1 UC K–12 and community college student services programs



Source: UC campuses

Student Academic Preparation and Educational Partnerships (SAPEP) programs such as the Early Academic Outreach Program (EAOP), Mathematics, Engineering, Science Achievement (MESA) and The Puente Project are designed to increase completion of college preparatory (“a-g”) courses, support enrollment directly from high school into four-year institutions, and support preparedness to transfer from community colleges to four-year institutions.

Students who participate in SAPEP programs are more likely to complete “a-g” courses (79 percent of SAPEP participants in AY2017–18 vs. 47 percent of

California public high school graduates<sup>1</sup>) and attend California public two- and four-year universities (64 percent of SAPEP participants in AY2017–18 vs. 41 percent of California public high school graduates<sup>2</sup>).

In 2017–18, SAPEP programs served nearly 180,000 K–12 students at more than 1,400 public schools, and over 27,000 community college students at all 114 community colleges. In addition, over 53,000 parents/guardians of K–12 students and nearly 10,000 teachers, counselors and school administrators also participated in SAPEP programs.

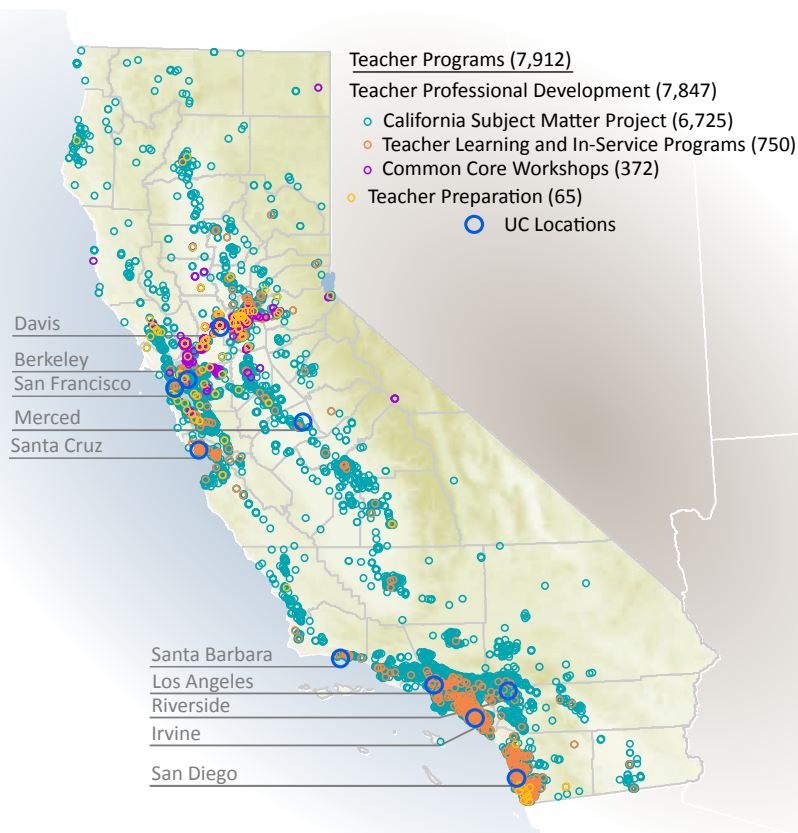
<sup>1</sup> Comparison data are for the Class of 2017, the most recent year available from the California Department of Education's DataQuest (see [dq.cde.ca.gov/dataquest/](http://dq.cde.ca.gov/dataquest/)).

<sup>2</sup> Comparison data are for fall 2009 enrollments by the Class of 2009, the most recent year available from the

California Postsecondary Education Commission's study of statewide college-going within California (see [cpec.ca.gov/StudentData/CACGRCounty.asp](http://cpec.ca.gov/StudentData/CACGRCounty.asp)).

### UC helps prepare California's teacher workforce and strengthens the skills of teachers throughout their careers.

#### 10.3.2 UC teacher professional development and teacher preparation programs



Source: UC campuses

The University of California plays an important role in preparing teachers for their careers and providing them professional development. UC manages more than 7,800 teacher professional development programs and 65 teacher preparation programs.

The California Subject Matter Project, for example, creates sustainable teacher learning communities throughout California. Its network of nine discipline-based projects supports professional development to improve instructional practices and student achievement.

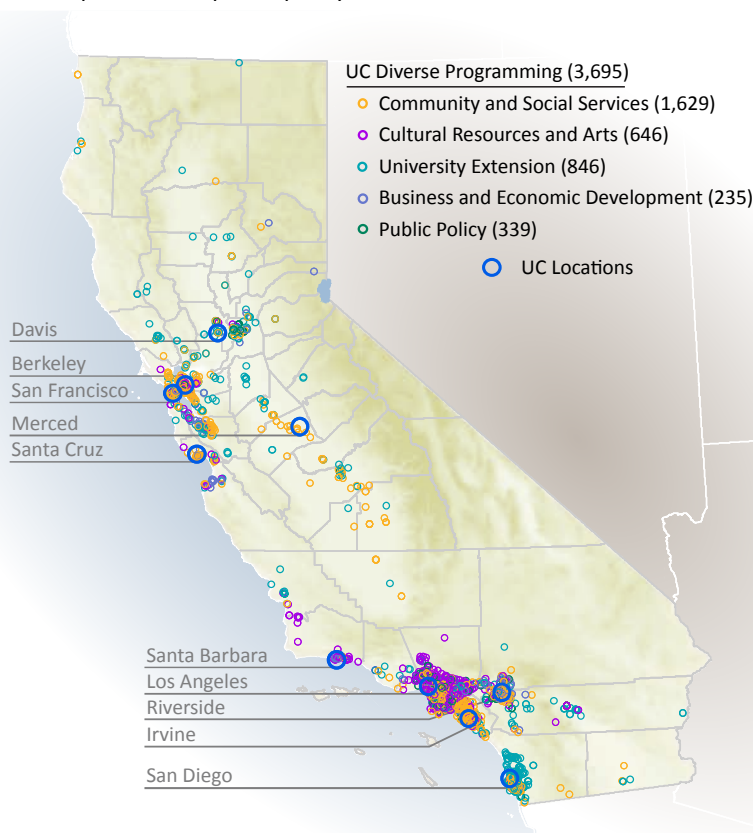
Teacher professional development activities include teacher workshops related to Common Core State Standards, writing, mathematics, and in-service teacher training.

Teacher preparation programs include CalTeach, a component of the Science and Mathematics Initiative (SMI). Through this program, UC recruits and prepares its undergraduates majoring in mathematics and science for teaching careers, and provides special coursework and field experiences in K–12 schools. Since its inception in 2005, CalTeach has served more than 15,000 UC undergraduates, many of them now credentialed STEM educators in California public schools.

## 10.4 SOCIAL AND ECONOMIC IMPACT

### UC is involved in communities across California through a wide range of local-level service programs.

#### 10.4.1 UC programs for community and social services, cultural resources and arts, university extension, business and economic development, and public policy



Source: UC campuses

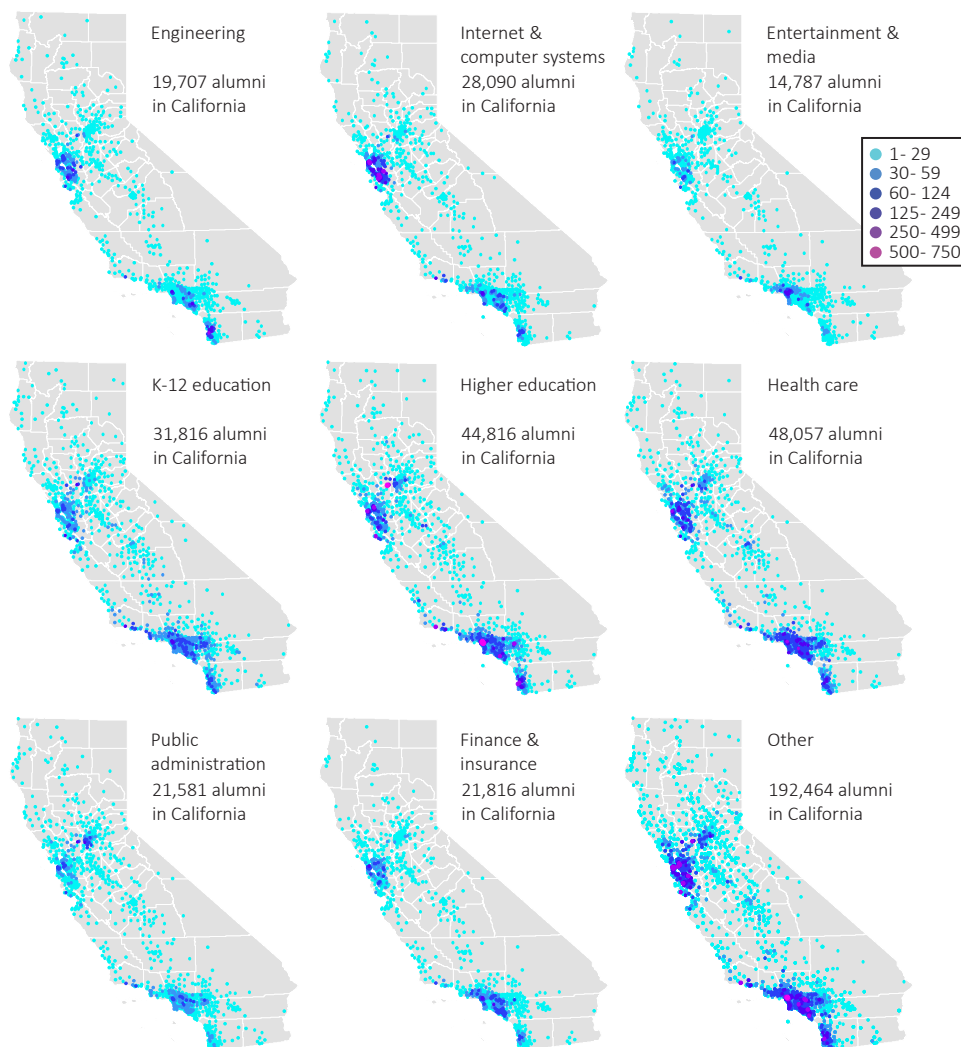
UC administers around 1,630 programs providing community and social services throughout the state, and about 650 arts education and outreach programs that expose students and community members to art and culture through performing arts, theater, cultural events, and other activities. The University operates 235 business-related programs statewide.

Serving about 500,000 course registrants, almost 850 UC University Extension programs offering some 17,000 different courses encourage lifelong learning for all Californians. Additionally, nearly 340 public policy programs engage the community and raise awareness of public policy issues.

## 10.4 SOCIAL AND ECONOMIC IMPACT

### Of UC's more than two million living alumni, many reside within California.

#### 10.4.2 Location and industry of employment of UC alumni since 2000, in California Fall 2015



Source: UC campuses, EDD; Other includes industries such as retail & wholesale, manufacturing, transportation, construction, legal services, and others.

Campus alumni offices maintain recent residential address information for more than 85 percent of those alumni. These maps display the distribution across California of UC graduates in each of eight different industries, as reported by California Employment Development Department (EDD).

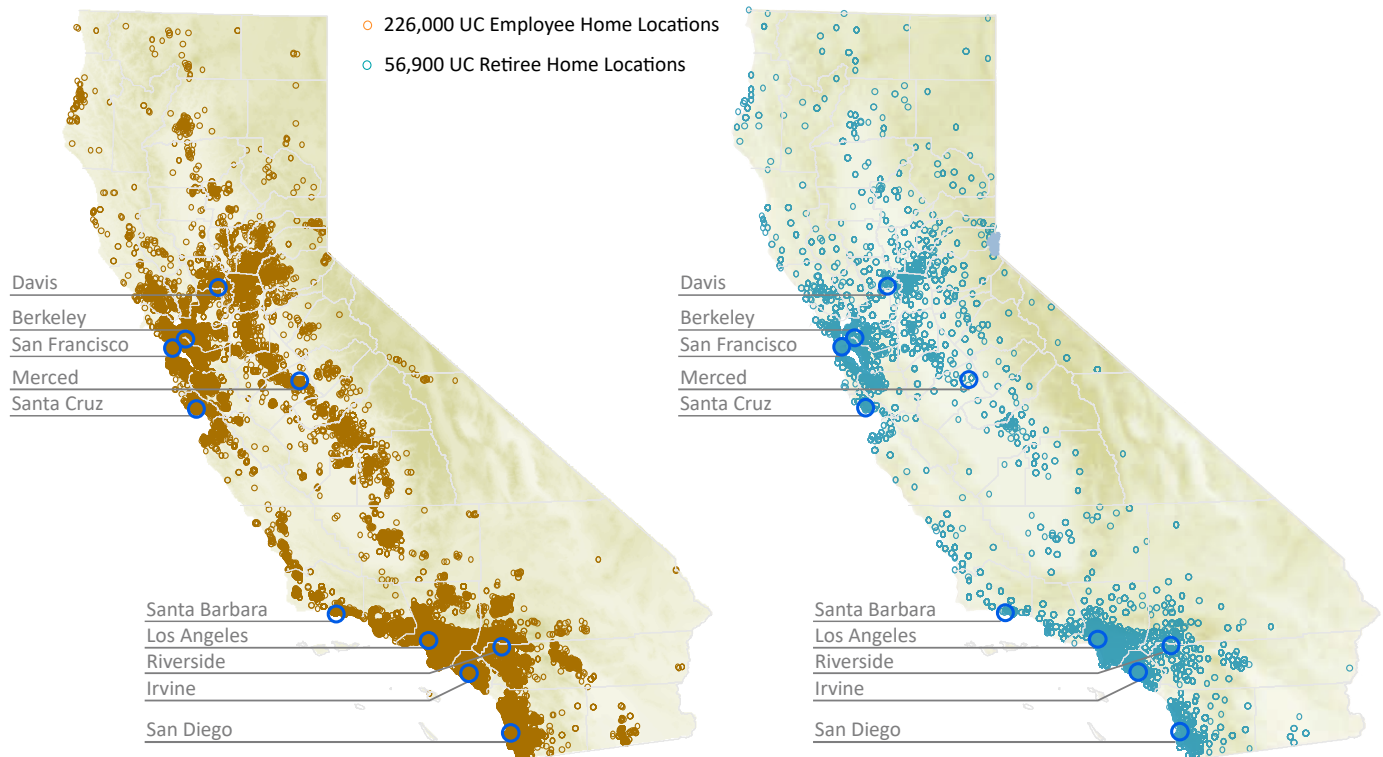
The industry with the largest employment of young UC graduates is health care, employing about 12 percent of these alumni, followed by higher education.



## 10.4 SOCIAL AND ECONOMIC IMPACT

**UC is one of California's largest employers, with close to 230,000 employees.**

### 10.4.3 Faculty, academics and staff employees; retirees, in California Faculty, academics and staff, 2016; retirees, 2017



Source: UC Information Center Data Warehouse

The University of California employs approximately 230,000 faculty, academics, and staff, making it the third-largest employer in California. With employees residing throughout the state, UC's economic impact goes well beyond its ten campus locations. Members of its workforce purchase goods and contribute to local economies across the state.

All told, the ripple effect of UC's operations generates more than \$46 billion in economic activity statewide. In addition to the current employees shown on this map, nearly 57,000 of UC's almost 75,000 retirees reside in California, and their UC pension benefits also contribute to the communities in which they reside.