

II. SUMMARY OF FINDINGS

REPORT HIGHLIGHTS

The following bullet points highlight major findings from the body of this report.

Regional Framework

- Approximately 3.098 million people currently reside in San Diego County, and by 2020 the population is projected to grow by 822,020 people.
- There are approximately 1.510 million jobs in San Diego County with an additional 356,400 jobs projected to be added by 2020, for an annual growth rate of 1.2 percent.
- San Diego's unemployment rate of 5.0 percent is lower than California's unemployment rate of 5.9 percent.
- UC San Diego is the third largest employer in San Diego County.
- The median household income in San Diego in 2007 was \$69,530 (in constant 2007 dollars) and is expected to grow by approximately 4.1 percent per year through 2010.
- The median home price in San Diego is \$399,000, and home prices are projected to decline for the next two years before stabilizing in 2010.
- Defense, technology, manufacturing and tourism sectors are the most prominent industries in the region.

UC San Diego contributions to the Regional Workforce

- The US News and World Report ranked UC San Diego 8th in the United States among public universities.
- During FY 2006-07, UC San Diego conferred 6,500 degrees, including many in math, computer science, biology and engineering.
- Nearly one-third of UC San Diego alumni currently reside in San Diego County.
- UC San Diego Extension offers 2,000 continuing education courses to working professionals and other adult residents in the region.
- UC San Diego faculty and alumni have started hundreds of successful companies in San Diego, California, and around the world.

UC San Diego Contributions to the Medical and Health Sectors

- Approximately 650 School of Medicine alumni live in San Diego County, many serving patients throughout the wide spectrum of medical specialties.
- Several major organizations on campus specialize in medical research including the Rebecca and John Moores Cancer Center.
- The UC San Diego Medical Center serves 21,000 inpatients and 476,000 outpatients annually.
- Enrollment in the Skaggs School of Pharmacy and Pharmaceutical Sciences has stabilized at 60 students per class.

University Purchasing and Payroll

- UC San Diego is a major employer as well as a significant purchaser of goods and services in San Diego County.
- UC San Diego's revenues totaled approximately \$2.306 billion in FY 2006-07.
- An estimated \$1.710 billion in salaries and wages, goods and services, and construction were spent by UC San Diego in the County of San Diego.
- In FY 2006-07 UC San Diego paid more than \$1.137 billion in salaries and wages.
- UC San Diego purchased \$1.015 billion worth of goods and services and spent \$340.7 million on capital expenditures in FY 2006-07.
- UC San Diego spent \$625.3 million on goods, services, and construction in San Diego County.
- Annually, \$800.0 million is spent by UC San Diego Medical Center.

Direct, Indirect and Induced Economic Impacts

- The impact of spending by UC San Diego in the City of San Diego was \$2.275 billion in total spending, 20,790 jobs, and \$1.228 billion in personal income.
- The impact of spending by UC San Diego in the County of San Diego was \$917.3 million in total spending, 8,360 jobs, and \$482.9 million in personal income.
- The impact of spending by UC San Diego elsewhere in the State of California was \$829.9 million in total spending, 5,090 jobs, and \$613.2 million in personal income.
- The total impact of spending by UC San Diego in the State was \$4.022 billion in total spending, 34,230 full-time equivalent jobs, and \$2.324 billion in personal income.

University Student, Visitor and Retiree Impacts

- In FY 2006-07 approximately 26,880 undergraduate and graduate students spent \$242.6 million throughout San Diego County.
- 13,800 University Extension students and 2,200 international students spent a combined total of \$8.486 million in San Diego County.
- The 1.431 million visitors to UC San Diego spent \$6.266 million in San Diego County in FY 2006-07.
- The 3,560 retired employees living in San Diego County spent \$111.1 million in the County.

Research at UC San Diego

- A wide variety of research is conducted at UC San Diego which in turn is a significant generator of jobs and income.
- UC San Diego "imports" grants and contracts awards from outside San Diego County, which in turn provide considerable economic value to the region.
- In FY 2006-07 UC San Diego spent approximately \$714.3 million on research.
- During FY 2006-07, 85 license agreements were formulated, 373 new inventions were disclosed, and 64 patents were added to the University's patent portfolio. UC San Diego currently holds over 500 active patents, ranking third among all UC campuses.
- At least 193 companies have been founded by UC San Diego faculty or alumni.
- At least \$10.248 billion in annual sales were generated by UC San Diego start up companies in California alone.

UC San Diego Community Outreach, Service and Partnerships

- A host of community outreach and academic enrichment programs attest to the efforts by UC San Diego to support economically disadvantaged and at risk students, with The Pruess School serving as just one example.
- UC San Diego has over 70 volunteer student service organizations.
- UCSD-TV, CONNECT and ATHENA are some examples of the many partnerships between UC San Diego and the community.

Cultural and Recreational Programs

- The Stuart Collection, University Art Gallery, Music, Theatre and Dance performances, Art Power!, and La Jolla Playhouse are just five examples of the many cultural and art offerings at UC San Diego.
- Approximately 400,000 people visit the Birch Aquarium annually.
- 19 different athletic teams compete in over 180 events.
- 228 fitness classes are offered by Campus Recreation and are open to the public.

THE REGIONAL FRAMEWORK

The main campus of UC San Diego is located within the City of San Diego, the seat of San Diego County and the largest city within the County. The San Diego region, comprised of 18 cities and the County government, is served by the San Diego Association of Governments (SANDAG). In 2007, San Diego County's population was nearly 3.098 million people, ranking as the second most-populated County in California. Between 2000 and 2020 population in the County is projected to grow at an average annual rate of 1.1 percent, adding 822,000 people by 2020.

San Diego County is a job hub in Southern California with 1.510 million jobs and growth projected to remain strong. Job growth is expected to exceed household growth through 2020. Approximately 252,800 new homes are projected with 356,000 additional jobs. This strong average annual growth rate of 1.2 percent demonstrates the resilience of the local economy even during the state's economic downturn of the early 2000s.

Traditionally, the San Diego County economy has been dominated by the defense, technology, manufacturing, and tourism sectors. The current employment growth leaders are software and technology-based industries, including biotechnology. These industries have helped carry the defense and manufacturing industries as these industries, particularly their presence in the San Diego economy, currently rely more heavily on technological innovations than in the past. The financial services industry is also compensating for the recent housing crisis by gravitating towards entrepreneurial investment and investing in the technology industries as opposed to residential development.

Institutions of higher education have traditionally been major regional industry sectors as well. In 2007, four of the top 20 employers in San Diego County were institutions of higher education. These four institutions contributed 19.4 percent of all jobs within the top 20 employers.¹ Aside from contributing a significant number of jobs, institutions of higher

¹ See Table 3 on page 19. The four institutions are UC San Diego, San Diego State University, San Diego Community College District, and University of San Diego. Collectively, these institutions contributed 47,090 jobs in 2007.

education provide the local economy with a revenue stream that is relatively impervious to economic downturns.

CONTRIBUTIONS TO THE REGIONAL WORKFORCE

UC San Diego's undergraduate program is organized around six residential colleges, each complete with their own campus, residences, offices, and general education courses and specialty courses. Students belong to each college but can focus their study within any of the following six divisions: Arts and Humanities, Biological Sciences, Physical Sciences, Social Sciences, and the Jacobs School of Engineering. Also Graduate students play an integral role in UC San Diego campus life. There are several graduate and professional schools at UC San Diego including the Graduate School of International Relations and Pacific Studies (IR/PS), Rady School of Management, UC San Diego School of Medicine, and Skaggs School of Pharmacy and Pharmaceutical Sciences. The University offers 114 undergraduate and graduate degree programs throughout its various departments and schools. In FY 2006-07, enrollment was approximately 26,880 students comprised of 21,370 undergraduate and 5,510 graduate students.

Degree Programs and Graduates

The highly skilled graduates of UC San Diego's colleges and schools are perhaps the University's most significant contribution to the San Diego County and California economies. Of the alumni for which there are available data, approximately 78.4 percent live in the State of California in 2007.² Of these alumni, approximately 33.3 percent of the total live in San Diego County.

Each year, UC San Diego graduates add to the pool of skilled labor in the region and throughout the state. In the 2006-07 Fiscal Year, UC San Diego conferred approximately 6,500 degrees, including 5,060 bachelor's, 901 master's, and 535 doctoral degrees.

The tourism, manufacturing, transportation, defense, biotechnology, technology, and construction sectors have traditionally driven the San Diego County economy. While the construction sector has slowed in recent months due to the downturn in the housing industry, the professional sectors have remained stable in San Diego. These industries rely on a more highly-educated workforce to operate the sophisticated technology that is ever more critical to doing business in the "new economy." In particular, San Diego's economy relies heavily on jobs requiring at least a bachelor's degree as the minimum level of education.³

UC San Diego plays a major role in supporting the growth of the San Diego County economy by providing a steady stream of bachelor's, master's, and doctoral degree recipients to the local workforce each year. In FY 2006-07 UC San Diego graduated 233 B.S. degrees and 58 M.S. degrees in Math and Computer Science, and 155 B.S. degrees, 34 M.S. degrees, and 20 Ph.D.'s in Bioengineering, which supported the expansion of the skilled labor pool for high-tech businesses and biotech businesses in San Diego. There were also: 139 B.S. degrees, 33 M.S. degrees, and 12 Ph.D.'s awarded in Mechanical Engineering; 81 B.S. degrees, 23 M.S.

² For the purposes of determining alumni residence, alumni are defined as all persons who have enrolled in UC San Diego undergraduate or graduate programs for at least six months.

³ "Occupational Employment Projections," California State Employment Development Department (EDD), <http://www.labormarketinfo.edd.ca.gov>

degrees, and 9 Ph.D.'s awarded in Structural Engineering; and 59 B.S. degrees, 16 M.S. degrees, and 12 Ph.D.'s awarded in other engineering majors. These degree programs provided the manufacturing, transportation, defense, and construction industries with a deep pool of skilled labor.

UC San Diego Extension

In addition to graduates of UC San Diego's degree programs, the University contributes to the development of the regional workforce through its UC San Diego Extension continuing education programs. These programs help enhance and develop the skills of working professionals and other adult residents in the region. UC San Diego Extension offers specialized studies, certificate programs, and professional degrees in partnership with campus departments. Approximately 100 certificate programs and twelve specialized study programs are offered at UC San Diego Extension. In 2006-07, there were a total of approximately 20,000 enrollments in some 2,000 UC San Diego Extension courses.⁴

Businesses Founded by UC San Diego Alumni and Faculty

In addition to providing skilled workers to the region, UC San Diego faculty and alumni have started hundreds of successful companies in San Diego, California and around the world. These companies range from very small startups to the Fortune 500, Qualcomm Incorporated. The companies contribute to the local economy by attracting revenue dollars from outside the region, employing local residents, and making expenditures that generate further economic impacts.

UC San Diego personnel and CBRE Consulting identified at least 193 companies founded by UC San Diego faculty and alumni.⁵ Of these, CBRE Consulting identified operational information for 67 of the businesses located in California and found that 28 companies have been acquired by other companies. The 67 businesses currently operating in California for which data were available achieved an estimated \$10.239 billion in revenue in 2007 and had combined employment of approximately 17,260.⁶ These high revenue and employment levels are strong indicators of local economic impacts, attributable to company expenditures on personnel (salaries and wages) and goods and services. In addition, these businesses support the local real estate industry through their real estate operations. Please note, these impacts are in large part due to Qualcomm's revenue. The list of companies, their annual sales, number of employees, and year started are listed in Appendix C.

⁴ Total enrollments include 2,200 international students and 4,000 on-line students. Estimates of enrollment and number of programs are approximate figures provided by UC San Diego Extension.

⁵ UC San Diego Tech TIPS and Office of Alumni Relations personnel acknowledge that the actual list of companies founded by UC San Diego faculty and alumni exceeds 193 names, but not all of the companies are actively tracked by those offices.

⁶ These figures are considered underestimates based on CBRE's understanding that there are other companies affiliated with UC San Diego faculty and alumni, that are not tracked by UC San Diego offices.

QUANTITATIVE ECONOMIC IMPACTS

University Purchasing and Payroll

In addition to its contributions to workforce development, UC San Diego is a significant economic force in the San Diego region by virtue of its position as a major employer and a major purchaser of goods and services.

Sources of Revenue. The impact of the University on the local economy can be measured to some degree by the amount of revenue it collects from outside the region, revenue that is then used to finance spending on salaries and goods within the region. In FY 2006-07, University revenues totaled \$2.306 billion, of which approximately 45.9 percent came from sources outside of San Diego County.

UC San Diego Spending. The majority of UC San Diego's spending was concentrated in San Diego County. During FY 2006-07, the University spent nearly \$2.492 billion on salaries and wages, goods and services, and construction, of which an estimated \$1.710 billion, or 68.6 percent, was spent in San Diego County. Since approximately \$1.247 billion of the University's revenue came from sources within the County, this means that UC San Diego made a net contribution of approximately \$463.1 million to the local economy.

Employment and Payroll. UC San Diego is the third major employer in the San Diego Region Behind the State of California (40,600 employees) and the Federal Government (39,900 employees). In FY 2006-07, UC San Diego paid \$1.137 billion in salaries and wages to 1,260 student and 15,500 non-student employees.

Purchasing and Construction. In FY 2006-07, UC San Diego purchased more than \$1.015 billion worth of goods and services and spent nearly \$340.7 million on capital expenditures. Over \$625.3 million, or 46.1 percent, of UC San Diego's total purchasing on goods, services, and construction was collectively spent in San Diego County during FY 2006-07.

Direct, Indirect, and Induced Economic Impacts of UC San Diego Spending

The impact of UC San Diego on the economy is greater than the total of the University's direct spending on salaries and wages, goods and services, and construction. This is because money spent by the University is spent again by the recipient employees and local businesses. Employees use their salaries and wages to purchase from other businesses. Businesses make their own purchases and hire employees, who also spend their salaries and wages throughout the local, regional, and state economies. A chain reaction of indirect and induced spending continues, with subsequent rounds of additional spending gradually diminished through savings, taxes, and expenditures made outside the state.

Using the IMPLAN input-output Model, and with the assistance of Applied Economics, CBRE Consulting estimated the "total" economic impacts – including direct, indirect, and induced economic impacts – of University purchases of goods and services, payroll expenditures, and spending on capital projects during the 2006-07 fiscal year. The analysis estimates total impacts in three distinct ways – spending, full-time equivalent employment, and personal income – at the city, county, and state levels. Findings from this analysis include the following:

- The impact of spending by UC San Diego in the City of San Diego was approximately \$2.275 billion in total spending, 20,790 jobs, and \$1.228 billion in personal income.
- UC San Diego's spending generated an additional impact elsewhere in San Diego County of approximately \$917.3 million in total spending, 8,360 jobs, and \$482.9 million in personal income.
- UC San Diego's spending contributed elsewhere in California another \$829.9 million in total spending, 5,090 jobs, and \$613.2 million in personal income.
- In all, UC San Diego's total economic impact in California was approximately \$4.022 billion in total spending, 34,230 full-time equivalent jobs, and \$2.324 billion in personal income statewide in the 2006-07 fiscal year.

University Students, Visitors, and Retiree Impacts

In addition to the impact of UC San Diego as an institution, the presence of the University anchors students, visitors, and UC San Diego retirees to the local area; their presence in turn supports the local, regional, and state economies.

- Total UC San Diego student enrollment in 2006-07 was 26,880 students, approximately 93.1 percent of whom lived in the City of San Diego. A conservative estimate of student spending suggests that students spent \$207.3 million in the City of San Diego, an additional \$35.26 million elsewhere in San Diego County, and an additional \$13.89 million in the rest of California.
- Enrollment in the University Extension's Continuing Education courses (excluding 4,000 on-line students and 2,200 international students) totaled approximately 13,800 in FY 2006-07, with a direct spending impact to the City of San Diego conservatively estimated at \$399,400.⁷
- Approximately 2,200 international students came to UC San Diego in FY 2006-07 through the International Student office. Based on conservatively estimated capture rates and the data on average student spending provided by campus departments and other sources, it is estimated that UC San Diego international students spent nearly \$7.004 million in the City of San Diego, an additional \$1.082 million elsewhere in San Diego County, and another \$2.272 million in the rest of California.
- Combined, University Extension students (both continuing education and international students) spent nearly \$7.404 million in the City of San Diego, an additional \$1.082 million elsewhere in San Diego County, and another \$2.272 million in the rest of California during the 2006-07 fiscal year.
- Each year, UC San Diego attracts thousands of visitors to commencement ceremonies, academic programs, libraries, museums, performances, athletic events, summer camps and workshops, and other special events. More than 1.431 million visitors came to the

⁷ International students are excluded from this figure because they are accounted for separately. On-line students are excluded because on-line students are not required to travel to the UC San Diego campus for classes, and therefore do not generate spending impacts.

UC San Diego campus during FY 2006-07. Based on information regarding the nature of the various events, CBRE Consulting estimated that visitors to UC San Diego campus events spent \$5.710 million in San Diego during the 2006-07 fiscal year, and another \$555,600 elsewhere in the County.

- According to data from the UC Office of the President, in January 2008 there were 4,750 retired employees from UC San Diego, 3,910 of whom live in the State of California. Of the California residents, 1,870 live in the City of San Diego and 1,690 live elsewhere in San Diego County. Total annual retirement benefit payments to UC San Diego retirees in California during the 2006-07 fiscal year were nearly \$116.7 million.

Using the IMPLAN input-output model, CBRE Consulting estimated that the spending associated with UC San Diego students, extension students, international students, visitors, and retirees in FY 2006-07 generated the following direct, indirect, and induced spending, employment, and income impacts:⁸

- In the City of San Diego, \$388.0 million in total spending, 3,440 jobs, and \$163.0 million in personal income.
- An additional impact of approximately \$138.5 million in total spending, 1,040 jobs, and \$92.95 million in personal income elsewhere in San Diego County.
- An additional impact of approximately \$73.44 million in total spending, 297 jobs, and \$31.77 million in personal income elsewhere in the State.
- In all, students, visitors, and retirees at UC San Diego had a total economic impact in California of \$599.9 million in total spending, 4,770 full-time equivalent jobs, and \$287.8 million in personal income statewide in the 2006-07 fiscal year.

Total University Economic Impacts

Table 1 summarizes estimated overall impacts for the 2006-07 fiscal year. In all, the combined impacts of the University, its students, campus visitors, and UC San Diego retirees were as follows:

⁸ All employment impacts are measured on a full-time equivalent (FTE) basis.

Table 1: Summary of Economic Impacts in California, 2006-07

<u>Geography/Category</u>	<u>Total University Impacts</u>	<u>Total Student, Visitor, and Retiree Spending Impacts</u>	<u>Combined Impacts</u>
City of San Diego			
Total Spending	\$2,274,994,174	\$388,035,613	\$2,663,029,787
Total Jobs	20,786	3,437	24,224
Total Personal Income	\$1,227,596,635	\$163,038,810	\$1,390,635,445
Other San Diego County			
Total Spending	\$917,320,512	\$138,470,050	\$1,055,790,562
Total Jobs	8,355	1,036	9,391
Total Personal Income	\$482,917,747	\$92,946,914	\$575,864,661
Other California			
Total Spending	\$829,888,301	\$73,438,674	\$903,326,975
Total Jobs	5,087	297	5,384
Total Personal Income	\$613,177,728	\$31,774,418	\$644,952,147
Total UC San Diego Impacts			
Total Spending	\$4,022,202,987	\$599,944,337	\$4,622,147,323
Total Jobs	34,229	4,771	38,999
Total Personal Income	\$2,323,692,111	\$287,760,142	\$2,611,452,253

Sources: UC San Diego; and CBRE Consulting.

Notes: Figures may not add due to rounding. Geographies are independent of one another.

- In the City of San Diego, \$2.663 billion in total spending, 24,220 total jobs, and \$1.391 billion in personal income.
- An additional impact of approximately \$1.056 billion in total spending, 9,390 jobs, and \$575.9 million in personal income elsewhere in San Diego County.
- An additional impact of approximately \$903.3 million in total spending, 5,380 jobs, and \$645.0 million in personal income elsewhere in the state.
- The combined economic impacts in California were \$4.622 billion in total spending, 39,000 full-time equivalent jobs, and \$2.611 billion in personal income.

RESEARCH AND MEDICAL CONTRIBUTIONS

Contributions to the Medical and Health Sector

UC San Diego plays a critical role in supporting the medical and health sector in San Diego County. The School of Medicine and Skaggs School of Pharmacy and Pharmaceutical Sciences train the next generation of physicians. The research institutions and centers focus on a combination of medical education, research, and patient care, thus benefiting the San Diego community and beyond. In addition, the UC San Diego Medical Center offers healthcare services to the region-wide population with many services aimed at addressing the healthcare needs of underserved communities in the region.

Research Contributions

As an engine of knowledge creation, UC San Diego contributes to the economy of San Diego County and the State of California in several important ways. First, because most research

funding is sponsored by the Federal government, with a lesser amount from foundations and major corporations, University research is a significant generator of jobs and income. It is, in effect, a major export industry, bringing into San Diego County millions of dollars from sources outside the region. Second, the products of University research have potential commercial applications and provide the basis for creation of new enterprises or the expansion of existing ones. Finally, the presence of a large academic research complex in the region serves as a magnet for corporate research and development centers and related enterprises.

Equally important, the research conducted at the numerous centers and institutions at UC San Diego helps to advance the knowledge and understanding of issues of great importance in today's society and contributes to the development of technologies that improve the quality of life in countless ways. This research focuses on concerns related to a wide variety of issues such as engineering, biology, health science, the environment, and international relations.

University Research as an Export Industry. The National Science Foundation ranks UC San Diego 7th in the nation in federal research and development expenditures.⁹ Spending associated with sponsored research projects at UC San Diego during Fiscal Year 2006-07 totaled \$716.1 million.¹⁰ The Federal government provided approximately 71.1 percent of the funding for the University's research expenditures during the year. Total research funding has increased significantly at UC San Diego, with total research awards reaching nearly \$714.3 million in the 2006-07 fiscal year, up 13.9 percent from 2002-2003.

Contributions of Key Research Programs at UC San Diego. UC San Diego has many research centers, programs, and institutions. These research centers span the fields of engineering, natural and agricultural sciences, humanities, social sciences, education, and international relations. Some of the key UC San Diego research projects, centers, and institutions, and their contributions locally and beyond, include the following:

- **The Scripps Institution of Oceanography.** Scripps Institution of Oceanography is one of the oldest, largest, and most important centers for marine science research, graduate training, and public service in the world, and currently operates more than 300 research programs in 65 countries, on every continent, and in every ocean worldwide.¹¹ UC San Diego scientists at Scripps Institution of Oceanography are pioneers in climate change science and the first to precisely measure greenhouse gases in the atmosphere. The Scripps Institution of Oceanography also operates Birch Aquarium in La Jolla as a public forum for its research findings.
- **California Institute for Telecommunications and Information Technology (Calit2).** Calit2 focuses on innovation in technologies related to the life sciences, telecommunication, information technology, and nanotechnology. Calit2 plays an influential role in the local knowledge community by developing and deploying prototype infrastructure and devices to be used by other research departments in real-world contexts.
- **Whitaker Institute of Biomedical Engineering (WIBE).** The Whitaker Institute of Biomedical Engineering (WIBE) aims to advance knowledge in biomedical engineering by promoting

⁹ Ucsdnews.ucsd.edu/new/html-prototypes/about/index.html

¹⁰ These impacts of UC San Diego research spending are included in the estimated economic impacts discussed in Chapter VI.

¹¹ Figures are estimates provided by the Scripps Institution of Oceanography.

interdisciplinary research and training among engineering, biology, and medicine, with the ultimate goal of improving the health and quality of human life. This coordination between engineering and biomedical research allows the unique generation of quantitative research in the biomedical field and leads to innovative investigative approaches.

- ***Institute on Global Conflict and Cooperation (IGCC)***. The Institute on Global Conflict and Cooperation (IGCC) is a multi-campus research unit (MRU) serving all ten UC campuses and the Los Alamos and Lawrence Livermore National Laboratories. Through its many research programs, the IGCC provides opportunities for UC faculty and students to collaborate with government officials domestically and internationally, to establish effective international policy.
- ***The Center for Comparative Immigration Studies (CCIS)***. A campus-wide research unit of UC San Diego established in 1999 as part of the Division of Social Sciences, CCIS conducts basic and policy-oriented research projects on international migration and refugee flows throughout the world. These studies seek to illuminate the U.S. immigration experience through systematic comparison with other countries of immigration, especially in Europe and the Asia-Pacific region.
- ***Graduate School of International Relations and Pacific Studies (IR/PS)***. IR/PS operates a number of research centers and affiliated programs that aim to mold the forces of economic growth, technological innovation, and environmental and security challenges into positive instruments of peace, prosperity, and democracy. For example, the **Center on Pacific Economies (CPE)** examines why countries in the Pacific region, the Americas, and Asia differ in their ability to maintain sustainable growth, financial stability, technological innovation, and economic equity. The **Center for U.S.-Mexican Studies** supports research relevant to current policy issues between Mexico and the United States, which is a growing area of interest for the government of both countries.

From the Laboratory to the Marketplace

UC San Diego policy encourages the practical application of research for the public benefit. To this end, UC San Diego's Office of Technology Transfer and Intellectual Property Services (TechTIPS) assists in the disclosure and development of campus researchers' invention properties and encourages their further development through licensing or business start-ups. In FY 2006-07, UC San Diego faculty and staff disclosed 373 new inventions, 64 U.S. patents were added to the University's patent portfolio, and 85 license agreements were formulated.

The **William J. von Liebig Center** also provides support for UC San Diego research projects approaching commercialization. The von Liebig Center catalyzes the commercialization of early stage technologies specifically out of the Jacobs School of Engineering. In five years since its founding on campus in 2001, the von Liebig Center has funded 66 early-stage technologies with grants of up to \$50,000. These projects have resulted in 19 licenses and helped to launch 15 start-up companies, which have attracted more than \$71.00 million in subsequent capital from the private sector.¹²

¹² Information provided by Rex Graham, Communications Director for Jacobs School of Engineering, May 28 2008. The start-up companies that received assistance from the von Liebig Center were included in the analysis of start-up companies in Appendix C, Table 31 and Table 32.

The technologies developed through research at UC San Diego offer strong promise for commercial application. The commercialization of these technologies could over time yield significant economic benefits to the San Diego County region, the State of California, and the nation. A few examples of the University's research achievements and their applications include the following.

- **Tinnitus Otosound Products.** Three collaborating UC San Diego researchers theorized that generating external auditory stimuli to match the exact frequency of the sound in a patient's brain could mitigate the ringing within their brain. The result of their research is Customized Sound Therapy, which mitigates the ringing experienced by over 30 million Americans. Since the company was formed in 2003, Tinnitus Otosound Products has operated on roughly \$550,000 in grants, refining its technology and conducting trials for the Food and Drug Administration so that the therapy may be classified as a medical treatment as opposed to only a mitigation device.¹³
- **App2You.** App2you builds database-driven web applications based on user-provided sketches that describe the page structure and the flow of information on the page in simple, non-technical terms. Sophisticated algorithms are applied to the back-end database design based on the options chosen by the user.¹⁴ In this way, sophisticated web database applications may be easily created by users without web design experience.
- **Traversa Therapeutics, Inc.** Traversa Therapeutics, Inc. was founded by researchers at the Howard Hughes Medical Institute at UC San Diego in mid-2006 and has secured worldwide exclusive licenses to intellectual property. The company engages in two core tasks: the discovery, development, and commercialization of an RNAi delivery platform that can be utilized by therapeutic companies to treat acute, chronic, and infectious human diseases; and the advancement of the company's own therapeutic programs for the specific treatment of Leukemia and Glioblastoma.

UC San Diego's direct, indirect, and induced economic impacts associated with start-up companies like Tinnitus Otosound Products, App2You, and Traversa Therapeutics, Inc. were estimated using multipliers provided by the IMPLAN input-output model. Of the 193 company names on record with UC San Diego offices, CBRE Consulting identified 67 companies that remained independent and operational in the State of California.¹⁵ The direct, indirect, and induced economic impacts associated with these 67 companies are estimated as follows:

- \$22.621 billion in spending, 85,100 jobs, and \$5.875 billion in personal income generated within the City of San Diego,
- \$2.834 billion in spending, 29,400 jobs, and \$736.7 million in personal income generated in other areas of San Diego County,

¹³ The operating budget for Tinnitus Otosound Products is based on information provided in an article published by the New York Times on January 18, 2007 titled "The Route from Research to Start-Up."

¹⁴ Jacobs School of Engineering, Pulse newsletter, spring 2007.

¹⁵ UC San Diego personnel acknowledge that the original list of 193 companies is not comprehensive, and therefore the economic impacts estimated for the 67 identified companies are conservative.

- Another \$3.832 billion in spending, 15,080 jobs, and \$1.539 billion in personal income generated in the State of California excluding San Diego County.
- Total statewide impacts are \$29.287 billion in spending, 129,570 total jobs, and \$8.150 billion in personal income generated.

COMMUNITY OUTREACH, SERVICE, AND PARTNERSHIPS

In addition to its commitment to high quality education and research, it is the University's vision to "be a vital part of the fabric of San Diego's diverse communities."¹⁶ UC San Diego accomplishes this in a wide variety of ways, including community outreach programs, partnerships with local and regional governments and non-profits, academic service-learning, and UC San Diego student, staff and faculty volunteerism.

UC San Diego Community Outreach Programs

Many of the University's community outreach programs focus primarily on efforts to improve the quality of education in San Diego County and to enhance the educational opportunities and achievement of local students. These outreach efforts include programs targeted at economically disadvantaged and at-risk students, academic enrichment for local students, and programs that provide teacher training and other support for local educators.

Community Partnerships

UC San Diego participates in several ongoing partnership initiatives with local, regional, and state government agencies, as well as community service organizations and non-profits. Examples of these partnership initiatives include UCSD-TV, and the Lesbian Gay Bisexual Transgender Resource Center (LGBT). UC San Diego also helped to establish CONNECT, a local organization that collaborates with scientists, engineers, innovators, and the venture capital community to commercialize technology and build successful companies.¹⁷

Academic Service-Learning

In addition to outreach and partnership initiatives, the University incorporates community service directly into the curriculum of its graduate and undergraduate programs and encourages students to become involved. Many graduate and undergraduate course internships include paid and unpaid work at public service and community-minded organizations. Some examples of other service-learning and community involvement opportunities include Partners at Learning (PAL) and Teams in Engineering Service (TIES).

Student, Staff, and Faculty Volunteer Programs

The contributions of the UC San Diego community extend beyond formal initiatives, programs, and courses. UC San Diego students, staff, and faculty are also very active in community service through individual and group volunteerism. There are more than 70 student volunteer service organizations at UC San Diego. Through UC San Diego's Volunteer Connection, students are connected to various volunteer opportunities in the community. Students dedicate thousands of

¹⁶ *UCSD and You* publication, Department of Government and Community Relations.

¹⁷ <http://www.connect.org/about>

hours of service each year to organizations including Best Buddies, Eyes on the Elderly, Active Students for Teens, and Community Outreach Effort (CORE).

CULTURAL AND RECREATIONAL PROGRAMS

UC San Diego provides a wide range of cultural programs that are open to local residents along with students, faculty, and staff. Cultural offerings include programming in the visual and performing arts, hosting prominent artists who put on performances and exhibitions, and providing venues for local artists to display their talents. A few examples of UC San Diego's cultural offerings include The Stuart Collection, University Art Gallery, Musical Performances, Theatre and Dance Performances, and ArtPower.

Through collegiate sporting events, athletic facilities, gardens and public spaces, UC San Diego provides a wide variety of recreational opportunities to the local community. A sampling of these offerings include: Intercollegiate Athletics, Recreational Facilities Program, and the Birch Aquarium at Scripps Institution of Oceanography.